2013 ▶ 2014

Cutting Tools

Tungaloy Main Catalogue

www.tungaloy.com

Notes to Users of this Catalogue

- This catalogue is an introduction to Tungaloy Cutting Tools.
- Specifications and stock status described in this catalogue are subject to change without prior notice.
- All unit sizes are metric - in millimeter (mm).
- Units used in the catalogue conform to ISO standards in principle.

Stock status symbols

●	: Stocked items
▲	: Discontinued items
★	: Available in 2013

No symbol: Not stocked

Note: The products described in this catalogue are as of Jul. 2012.

Ordering information

- When ordering, specify the Cat. No., grade and quantity.
  (Example for TAC inserts)
  CNMG120408-TM T9125, 10 pcs.
- TAC toolholders and TAC mills are shipped without inserts. Inserts must be ordered separately.
- For the special grades or special products, please contact your nearest Tungaloy sales office.

Constitution of Tungaloy Cutting Tool Catalogue

In this catalogue, products are described by machining types such as TAC turning inserts, TAC turning toolholders, threading tools and drilling tools. Users can select optimum tools by using the following searching methods.

●Searching from the numerical / alphabetical index (Chapter 16)

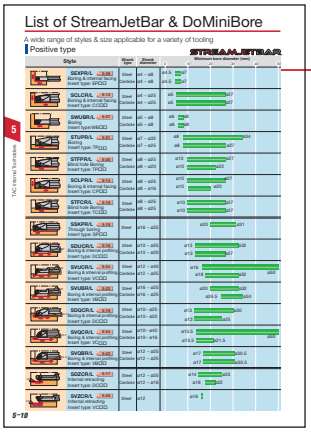
Catalogue numbers of products and parts are listed in numerical and alphabetical order in Chapter 16. When searching the product of known Cat. No., use this index.

●Searching from the classification of tools

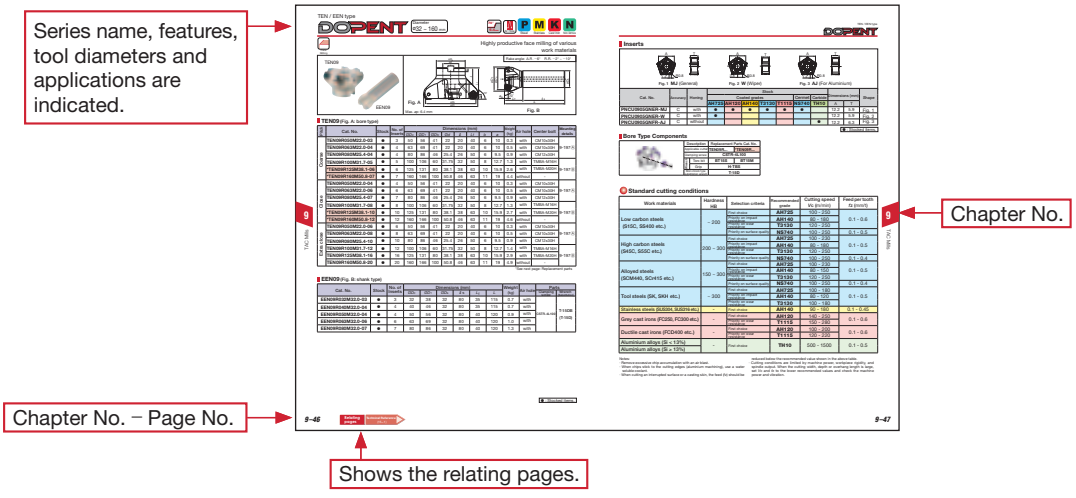
When searching the product from the tool type, open the title page of the chapter of the tool type.
For example, when searching the TAC boring tool:

●Searching from the tool list in each chapter

Search from the tool list.



●Basic Constitution of Tungaloy Cutting Tool Catalogue



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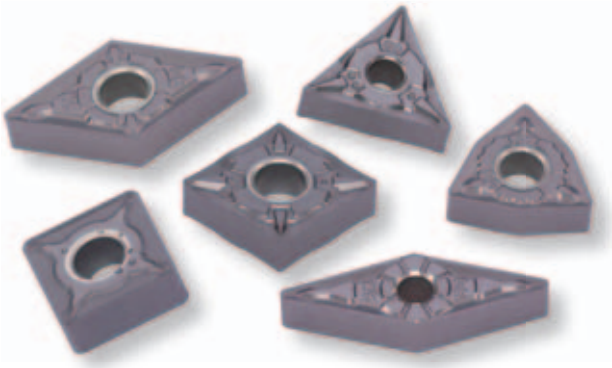
Special surface technology

PREMIUMTEC
TUNGALOY



New Grades

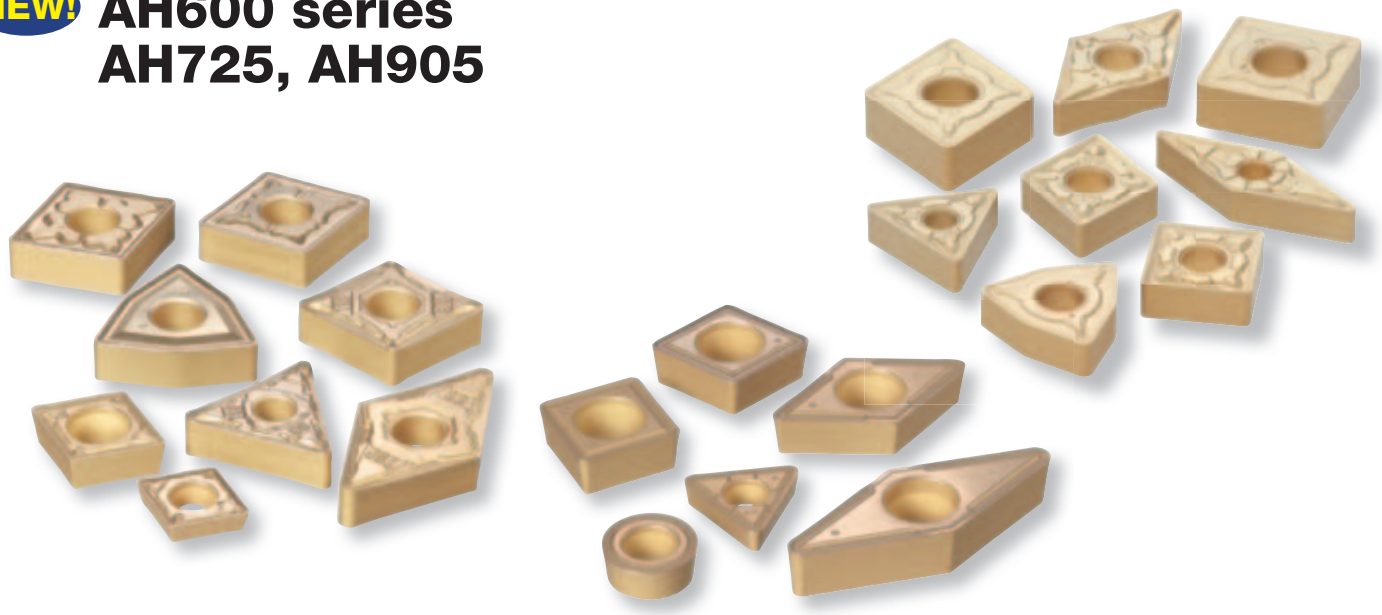
T9100 series

NEW! **T6100 series**

T5100 series

NEW! **AH600 series**

AH725, AH905

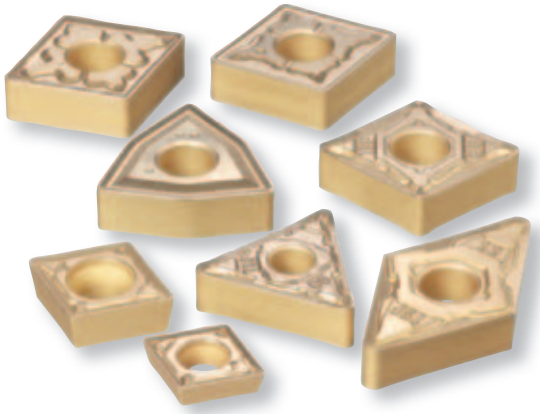


T9100 SERIES
TUNGALOY

NEW! PREMIUMTEC
TUNGALOY

New CVD coated grade for steel turning

Provides a high level of reliability with excellent fracture resistance!



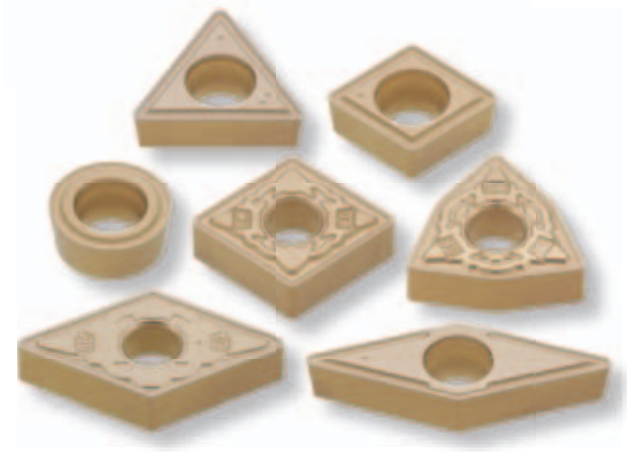
T5100 SERIES

TUNGALOY

PREMIUMTEC

TUNGALOY

Excellent cutting performance with significantly improved wear and impact resistance.



T6100 SERIES

TUNGALOY

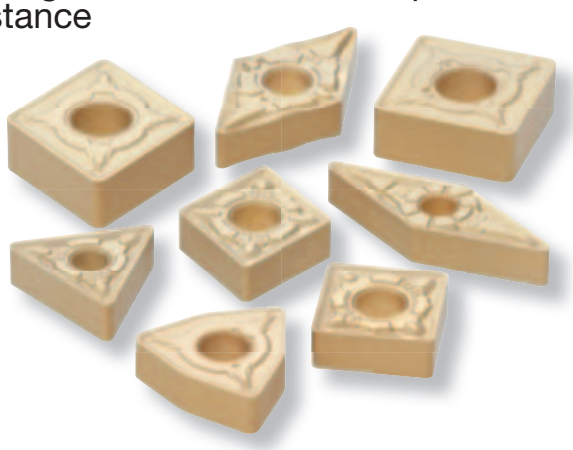
NEW! PREMIUMTEC

TUNGALOY

Incredible reliability in stainless steel turning

T6120: Suitable grade for high speed cutting due to excellent plastic deformation resistance

T6130: Versatile grade for medium to high speed cutting. This is credit to exceptional wear resistance



AH600 SERIES
TUNGALOY

NEW! PREMIUMTEC
TUNGALOY

Exceptional tool life due to the newly developed PVD coating

AH630: Versatile grade that has an excellent balance of fracture and wear resistance

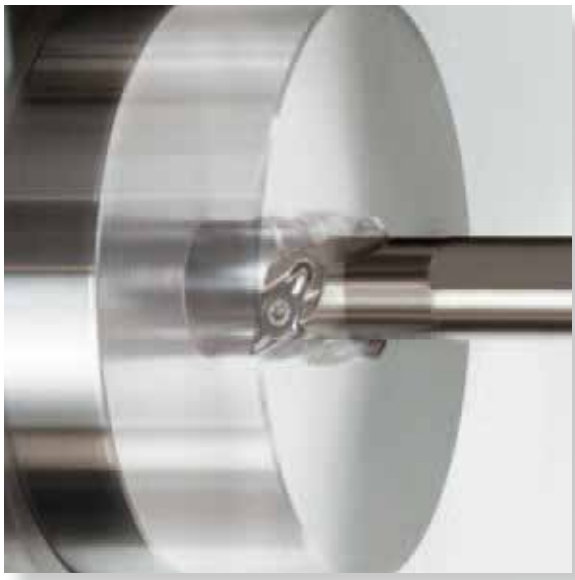
AH645: Provides outstanding reliability with high fracture resistance

DOMTURN
BORE LINE

NEW!

Sharpness of positive inserts with twice the number of cutting edges

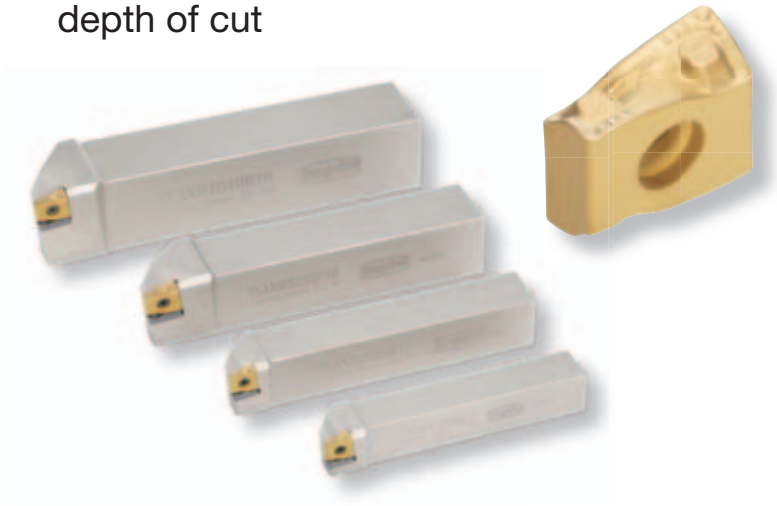
- Applicable from ø12 mm min bore with double sided insert
- High performance toolholders that have high rigidity and excellent chip evacuation

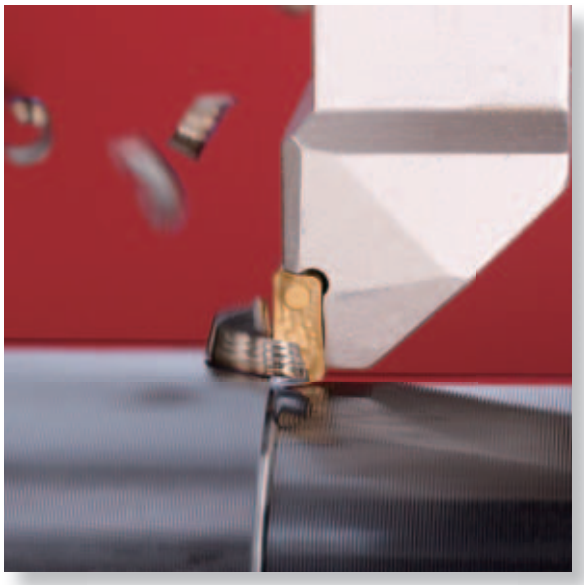


TURNTEC
TUNGALOY

Cutting-edge technology provides maximum productivity

- Suitable for highly productive roughing operations
- Long cutting edges cover a fluctuating depth of cut





TURNINGA
TUNGALOY

Toolholders for external and internal turning

Improved clamping forces provide high accuracy and stable long tool life

STREAMJETBAR
TUNGALOY

Toolholders for internal turning

Highly rigid boring bars with excellent chip evacuation

TUNGCUT
TUNGALOY

The complete grooving solution

- Multifunctional system for diverse grooving needs
- NS530 Cermet grade has been extended to feature fine surface finishing inserts

TINYTURN
TUNGALOY

NEW!

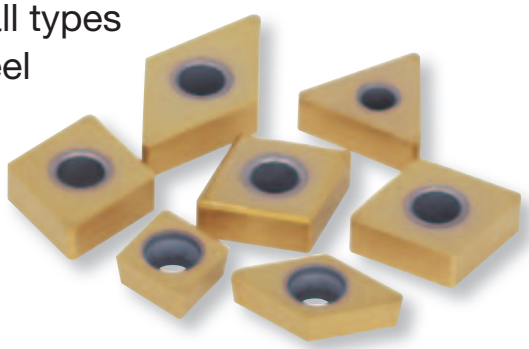
Solid boring bars applicable for min ø0.6 mm bore!

- Fine cutting edge and smooth coating offer high precision machining
- Wide range of items can be applied to a wide range of internal operations

BXM SERIES
TUNGALOY

The new standard coated CBN grade for hardened steel machining

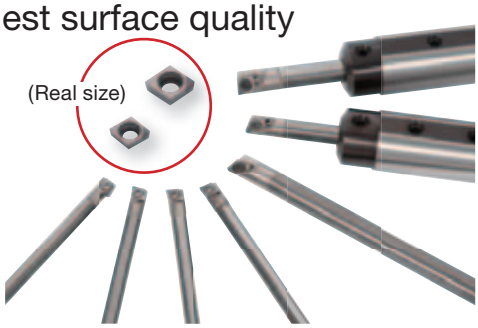
Applicable for all types of hardened steel turning

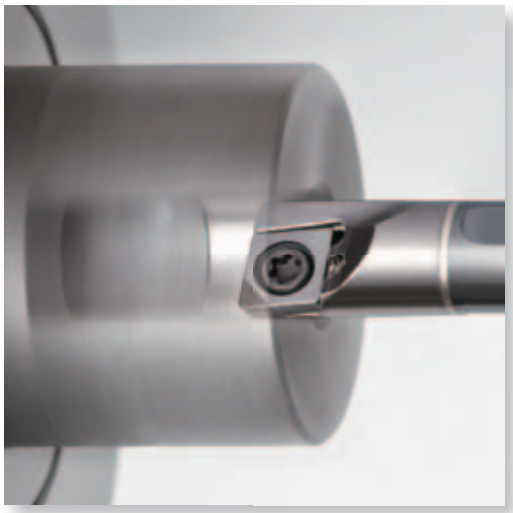


MINI T-CBN
TUNGALOY

NEW! **The smallest indexable CBN inserts in the world**

- For boring down to ø4.5 mm with CBN inserts
- Sharp cutting edge reduces the cutting forces and provides the finest surface quality

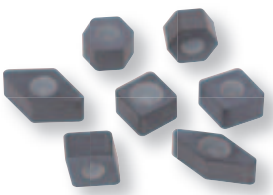




DIMPLEFX
TUNGALOY

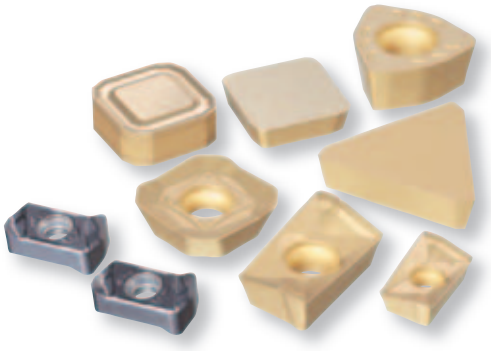
Ceramic insert with dimple for high speed machining of cast irons

New innovative clamping system delivers high productivity!



Special surface technology

PREMIUMTEC
TUNGALOY



New Grades

AH725 / AH130 / T1115

Provides a smooth insert surface to prevent chip adhesion and improve chipping resistance

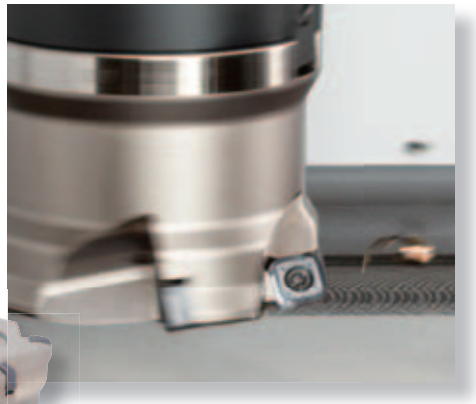
DOFEED SERIES
TUNGALOY

NEW! ***New-generation of high feed cutters offering incredible productivity***

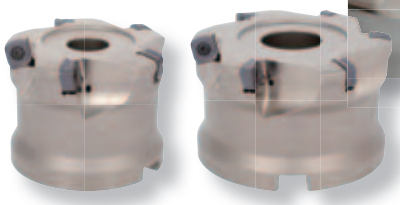
- Large inclination drastically reduces the cutting forces and prevents chattering
- Two sizes of insert allow a wider tool diameter range

DOFEEDQUAD
TUNGALOY

NEW! ***High productivity and economical solution with 8 corner type inserts***



- Dovetail structure improves the clamping strength
- Ideal insert with high fracture resistance for outstanding productivity



ROUGHINGMILL SERIES

TUNGALOY

NEW! ***Long cutting edges create incredible productivity***

TUNGQUAD

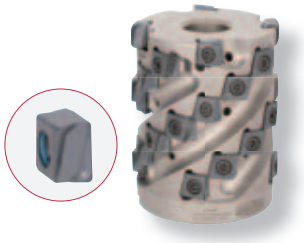
- 4 cornered insert with excellent sharpness
- Suitable for roughing operations on small to medium size machines

TUNGREC

- Insert geometry with large positive rake angle reduces the cutting forces
- Newly developed cutter body with high density insert pocket provides the exceptional productivity

TECMILL

- Tangential insert with tough cutting edges allow the high productivity
- Suitable for heavy machining of a wide range of materials



TUNGQUAD

TUNGALOY

Highly productive small diameter cutter

TUNGREC
TUNGALOY

The multi-purpose high precision cutter

- Helical cutting edges provide smooth cutting
- 4 types of chipbreaker and various kinds of cutter bodies cater to a wide range of applications

TECMILL
TUNGALOY

Highly rigid shoulder milling cutters for roughing operations with tangential insert

- Economical double sided insert with 4 edges
- Excellent balance with toughness and sharpness

TECSLOT
TUNGALOY

NEW!

Incredibly secure system for slot milling

- Excellent productivity credit to a rigid cutter body with high density insert pockets
- Thick tangential insert with tough cutting edges

DOREC
TUNGALOY

NEW!

Economical double sided square insert with high level of sharpness

- Remarkable productivity with tough cutting edges
- Innovatively designed cutting edges reduce the cutting forces

DOOCTO TUNGALOY

DOQUAD TUNGALOY

Face milling cutter

The best solution for steel and cast iron milling!

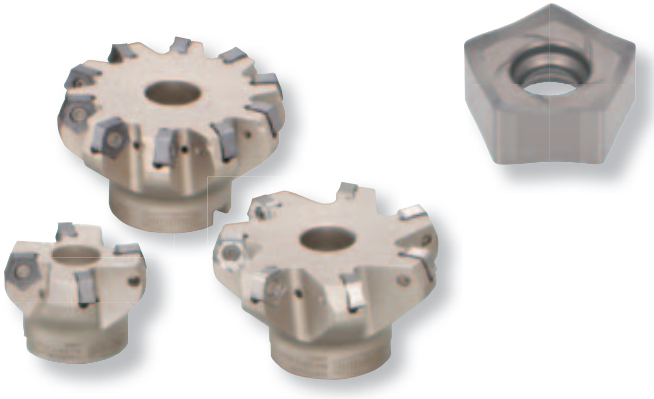
- Available with octagonal or square inserts and different cutter bodies for each type of insert
- 2 types of clamping systems
- Extremely versatile series

DOPENT TUNGALOY

Face milling cutter

Pentagonal double sided insert with 10 cutting edges

- High productivity at high feed rate condition
- NS740 Cermet grade is expanded, providing exceptional surface finish



ROUNDSPLIT
TUNGALOY

Radial milling cutter

Serrated cutting edges prevent chattering

- Serrated edges provides smooth cutting in long overhang applications
- Serrated and round inserts fit in the same pocket

TUNGMEISTER
TUNGALOY

Head changeable endmills

Endmilling innovation!

- The most effective tooling with hundreds of combinations!
- Easy head clamping system drastically reduces tool changing time

TUNGSIX-DRILL

TUNGALOY

NEW!

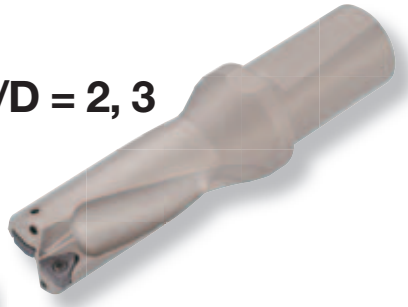
Special surface technology PREMIUMTEC

TUNGALOY

The most economical solution for drilling with innovative insert and grade

- Enhanced corner offers incredibly stable drilling
- New revolutionary grade AH9030 allows long tool life

Diameter range:
ø28 ~ ø54.0 mm L/D = 2, 3



TUNGDRILLTWISTED

TUNGALOY

Higher productivity due to superior chip evacuation!

- Newly developed DG chipbreaker is added
- 4 types of chipbreaker demonstrate the excellent chip control in a wide range of materials

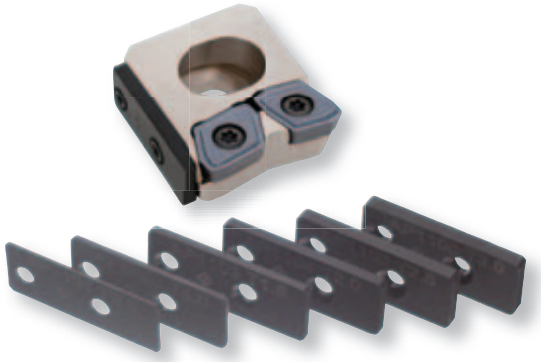
NEW!

TUNGDRILLBIG

TUNGALOY

Expandable diameter drill

- The drill diameter can be changed by using “Setting plates”
- 5 kinds of drill bodies cover the entire diameter range ø55 - ø80 mm



DRILLMEISTER

TUNGALOY

NEW!

The innovative head changeable drill for high productivity

- Easy and secure clamping system drastically reduces tool set-up time
- DrillMeister with exclusive chamfering adapter reduces machining process time

TUNGHOLD
TUNGALOY

Tooling System

Unique function and wide range of variation

A large variety of holders, collet chucks, endmill holders and face mill arbors that can be applied to a wide range of machining applications.

TUNGCAP
TUNGALOY

NEW!

Tooling System

Quick change system for flexible machines

TungCap has a polygon design taper that can be applied to a wider range of cutting applications on flexible machines.

Safety Notes

Tungaloy implements the highest standards when manufacturing cutting tool products. The following precautions must be exercised whenever working with or near metalcutting machinery and metalcutting tool products.

1. Cemented tungsten carbide, coated carbide, cermet, ceramic, polycrystalline compact (hard materials) are hard and brittle. Therefore, caution must be used during cutting operation. During the cutting operation, tools may be broken due to thermal shock, excessive tool wear or mishandling which may cause serious injury to the operator.

2. During operation of the machine, a machine guard, safety glasses, gloves etc. should always be used to prevent injury due to hot flying chips, fragmented cutting tools, broken work pieces, etc.

3. Some cutting tools may have sharp edges. Safety gloves should always be used when handling these products.

4. During the cutting operation, high temperature sparks may be generated by broken tools or chips and could cause a fire. Precautions must be taken during machine placement and while using water-insoluble cutting fluid.

5. When grinding carbide cutting tool materials, adequate ventilation, respiratory protection mask and eye protection should be used to protect the operator from grinding dust injury.

6. Consult the Material Safety Data Sheet (MSDS) for details on potentially hazardous properties and substances associated with grinding carbide. (MSDS sheets are available upon request.)

7. Tungaloy suggests the implementation of well established safety practices during the use of all cutting tool products. Tungaloy recommends compliance with industry safety standards in all sectors of the work environment.

Unified symbols for cutting conditions and tool dimensions

The Japan Cemented Carbide Tool Manufacturers' Association, in cooperation with The Japan Small Cutting Tools Association, has enacted unified quantity symbols of cutting conditions and tool specifications for users' convenience.

(Quantity symbols of cutting conditions) Symbol / Unit

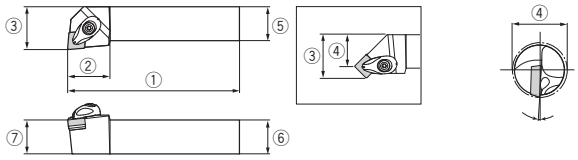
Turning	Cutting speed		Feed		Depth of cut		Cutting edge width		Work diameter	
	Vc	m/min	*f*	mm/rev	*ap*	mm	*W*	mm	*øDm*	mm
	Power consumption		Specific cutting force		Theoretical surface roughness		Corner radius		Number of revolutions	
	Pc	kW	*kc*	MPa	*h*	μm	*rε*	mm	*n*	min^{-1}

Milling	Cutting speed		Feed speed		Feed per tooth		Feed		Number of teeth	
	Vc	m/min	*Vf*	mm/min	*fz*	mm/t	*f*	mm/rev	z	
	Axial depth of cut		Radial depth of cut		Pick feed		Power consumption		Specific cutting force	
	ap	mm	*ae*	mm	*Pf*	mm	*Pc*	kW	*kc*	MPa
	Chip removal rate		Number of revolutions							
	Q	cm^3/min	*n*	min^{-1}						

Drilling	Cutting speed		Feed speed		Feed		Tool diameter		Power consumption	
	Vc	m/min	*Vf*	mm/min	*f*	mm/rev	*øDc*	mm	*Pc*	kW
	Torque		Thrust force		Specific cutting force		Drilling depth		Number of revolutions	
	Mc	N·m	*Tc*	N	*Kc*	MPa	*H*	mm	*n*	min^{-1}

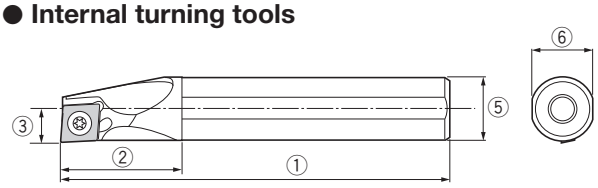
Dimensional symbols of turning tools

● External turning tools



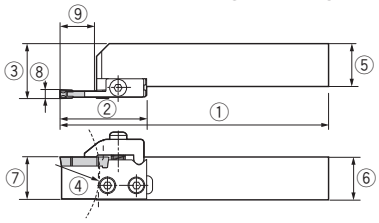
①	②	③	④	⑤	⑥	⑦
Overall length	Head length	Distance to cutting edge	Distance to cutting edge	Shank width	Shank height	Cutting edge height
L1	*L2*	*f*	*f1*	*b*	*h*	*h1*

● Internal turning tools



①	②	③	④	⑤	⑥
Overall length	Head length	Distance to cutting edge	Minimum bore diameter	Shank diameter	Shank height
L1	*L2*	*f*	*øDm*	*øDs*	*h*

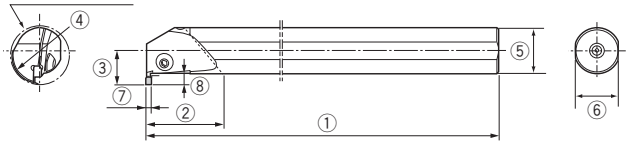
● External and face grooving tools



①	②	③	④	⑤
Overall length	Head length	Distance to cutting edge	Maximum grooving diameter	Shank width
L1	*L2*	*f*	*øDm*	*b*
⑥	⑦	⑧	⑨	
Shank height	Cutting edge height	Cutting edge width	Maximum grooving depth	
h	*h1*	*w*	*ar*	

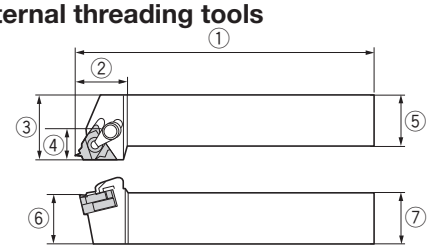
● Internal grooving tools

Min. bore diameter *øDm*



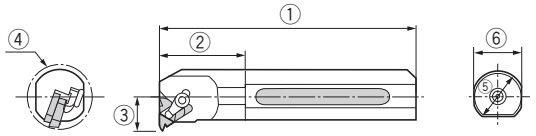
①	②	③	④
Overall length	Head length	Distance to cutting edge	Maximum grooving diameter
L1	*L2*	*f*	*øDm*
⑤	⑥	⑦	⑧
Shank diameter	Shank height	Cutting edge width	Maximum grooving depth
øDs	*h*	*w*	*ar*

● External threading tools



①	②	③	④	⑤	⑥	⑦
Overall length	Head length	Distance to cutting edge	Shoulder width	Shank width	Shank height	Cutting edge height
L1	*L2*	*f*	-	*b*	*h*	*h1*

● Internal threading tools



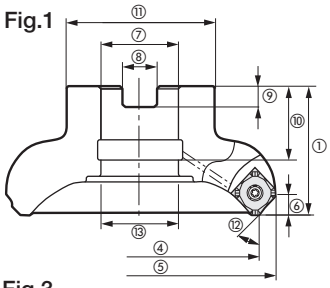
①	②	③	④	⑤	⑥
Overall length	Head length	Distance to cutting edge	Maximum grooving diameter	Shank diameter	Shank height
L1	*L2*	*f*	*øDm*	*øDs*	*h*

Dimensional symbols of milling tools

● Bore type milling tools

Square shoulder cutter

Fig.1



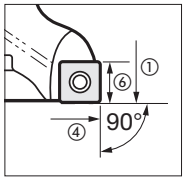


Fig.2

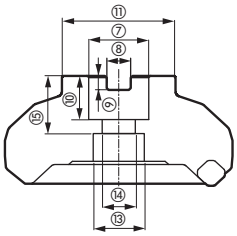


Fig.3

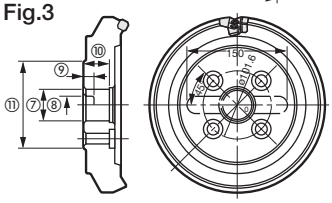
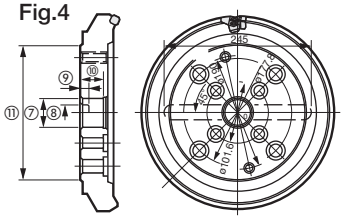
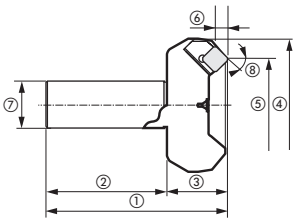


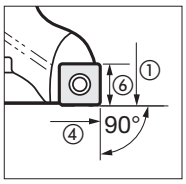
Fig.4



● Shank type milling tools



Square shoulder cutter

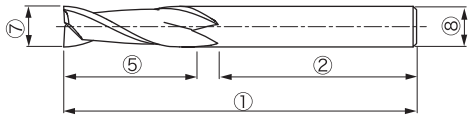


①	②	③	④
Overall length	Shank length	Cutter height	Cutter diameter
L	ℓ_S	L_f	$\varnothing D_c$
⑤	⑥	⑦	⑧
Maximum outer diameter	Maximum depth of cut	Shank diameter	Corner angle
$\varnothing D_1$	ap	$\varnothing D_s$	κ

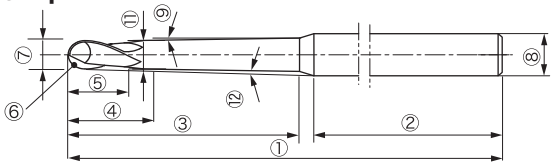
①	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
Cutter height	Cutter diameter	Maximum outer diameter	Maximum depth of cut	Hole diameter	Key way width	Key way depth	Mounting hole depth	Mounting flat diameter	Corner angle	Mounting bolt counter bore dia.	Mounting bolt hole diameter	Mounting bolt hole depth
L_f	$\varnothing D_c$	$\varnothing D_1$	ap	d	a	b	ℓ	$\varnothing D_b$	κ	$\varnothing d_1$	$\varnothing d_2$	ℓ_1

Dimensional symbols of endmills

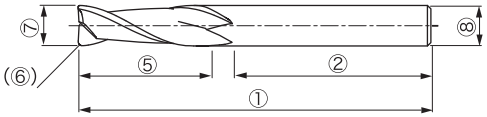
● Square endmills



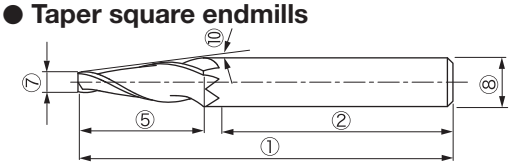
●Taper-neck ball endmills



● Radius endmills

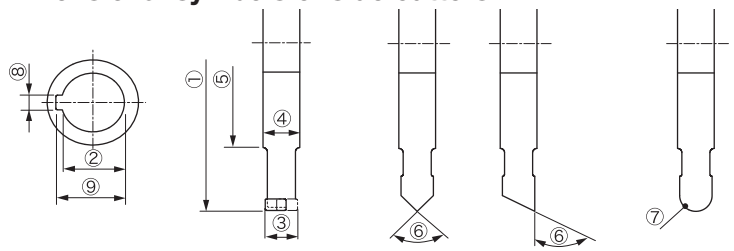


● Taper square endmills



①	②	③	④	⑤	⑥ Ball end	⑥ Radius end	⑦	⑧	⑨	⑩	⑪	⑫	⑬
Overall length	Shank length	Neck length	Length of parallel portion	Cutting edge length	Ball radius	Corner radius	Tool diameter	Shank diameter	Half angle of neck taper	Half angle of cutting edge taper	Neck diameter	Interference angle	Helix angle
L	ℓ_S	ℓ_2	ℓ_1	ℓ	R	r	$\varnothing D_c$	$\varnothing D_s$	θ_n	θ_c	$\varnothing D_1$	$\theta\kappa$	λ

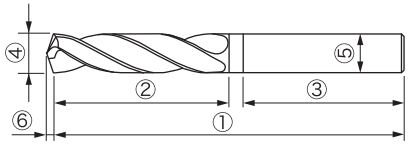
Dimensional symbols of side cutters



①	②	③	④	⑤
Cutter diameter	Bore diameter	Cutting edge width	Boss thickness	Boss diameter
$\varnothing D_c$	$\varnothing d$	ℓ	T	$\varnothing D_b$
⑥	⑦	⑧	⑨	⑩
Cutting edge angle	Corner radius	Key way width	Key way depth	Number of teeth
α	R	a	b	z

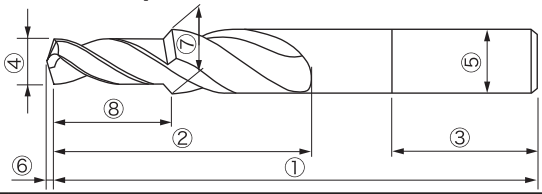
Dimensional symbols of drills

● Solid straight drills



①	②	③	④	⑤	⑥
Overall length	Flute length	Shank length	Drill diameter	Shank diameter	Point length
L	ℓ	ℓ_S	$\varnothing D_c$	$\varnothing D_s$	L_p

● Solid step drills



①	②	③	④	⑤	⑥	⑦	⑧
Overall length	Flute length	Shank length	First step drill diameter	Shank diameter	Point length	Second step drill diameter	Step length
L	ℓ	ℓ_S	$\varnothing D_c$	$\varnothing D_s$	L_p	$\varnothing D_{c2}$	ℓ_1

1 Grades

Products

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■ Cermet 1-8
■ PCBN (T-CBN) 1-10
■ PCD (T-DIA) 1-12
■ Ceramics 1-13
■ Uncoated Cemented Carbides 1-14
■ Ultra fine Grain Cemented Carbides 1-15

Grade selection

Grade selection for turning

P Steel | M Stainless | K Cast Iron | N Non-ferrous | S Superalloys | H Hard Materials

ISO	Coated grades CVD	Coated grades PVD	Cermets	Ceramics	PCBN & PCD	Uncoated cemented carbides
P01	T9105					
P05						
P10	T9115	AH710	NS520			
P15	NEW		NS530 GT530 AT530			
P20	T9125 T313V	AH725 AH120 SH730 GH730 GH130	J530 GT730 NS730			
P25	NEW	AH740				UX30
P30	T9135	J740				
P35	NEW					
P40		NEW NEW NEW				
P45						
P50						
M01						
M05						
M10	T9115	AH710				
M15	T6020 T6120		NS530 GT530 GT730			UX30
M20	T6130	AH725 AH630 GH330	NS730 J530			
M25	T6030 NEW T9125 T313V	AH645 AH120 GH730 SH730 GH130				
M30	NEW NEW	J740				
M35		NEW NEW NEW				
M40						
M45						
M50						
K01				LX21	BX930 BX870	
K05	T5105		NS520 GT530 GT730		BX950 BX910	TH10
K10	T5115	GH110 AH110 AH710		FX105	NEW	
K15	NEW T5125		NS530	CX710	BXC90 BX90S	UX30
K20	NEW T9125 T313V	AH725 AH120 GH730 GH130				
K25	NEW NEW					
K30		NEW NEW				
K35						
K40						
K45						
K50						
N01					DX160 DX180	KS05F
N05		DS1100 GH110			DX140	
N10		DS1200			DX120	KS15F TH10
N15					DX110	
N20						
N25						
N30						
N35						
N40						
N45						
N50						
S01		AH905				
S05		SH730 AH110			BX950	TH10
S10		AH120			BX480 BX470	KS20
S15		NEW				
S20		NEW AH725				
S25						
S30		NEW				
S35		NEW				
S40						
S45						
S50						
H01				LX11	BXM10 BX310	
H05					BX330	TH10
H10					NEW BXM20	
H15					BXC50 BX360	
H20					NEW BX380	
H25						
H30						
H35						
H40						
H45						
H50						

Grade selection for rotating

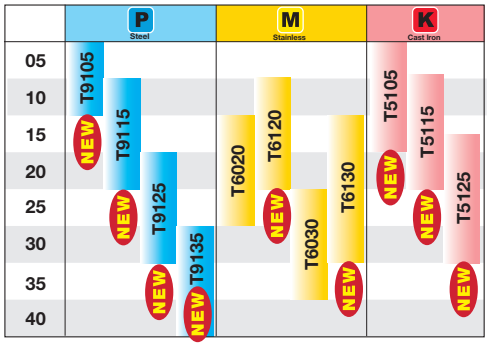
P Steel | M Stainless | K Cast Iron | N Non-ferrous | S Superalloys | H Hard Materials

ISO	Coated grades CVD	Coated grades PVD	Cermets	Ceramics	PCBN & PCD	Uncoated cemented carbides
P01						
P05						
P10						
P15	T313W	AH330, GH330, AH9030	NS530			
P20	T3130, T313W	AH725, AH120, AH130, AH140, AH3035, AH9030, GH130, AH330, GH330, AH730	NS740, NS530, N308, X407			UX30
P25	T3130	AH725, AH120, AH130, AH140, AH3035, AH9030, GH130, AH330, GH330, AH730	NS740, NS530, N308, X407			UX30
P30	T3130	AH725, AH120, AH130, AH140, AH3035, AH9030, GH130, AH330, GH330, AH730	NS740, NS530, N308, X407			UX30
P35	T3130	AH725, AH120, AH130, AH140, AH3035, AH9030, GH130, AH330, GH330, AH730	NS740, NS530, N308, X407			UX30
P40	T3130	AH725, AH120, AH130, AH140, AH3035, AH9030, GH130, AH330, GH330, AH730	NS740, NS530, N308, X407			UX30
P45	T3130 NEW	AH725 NEW, AH120 NEW, AH130 NEW, AH140 NEW, AH3035 NEW, AH9030 NEW, GH130, AH330, GH330, AH730	NS740, NS530, N308, X407			UX30
P50	T3130 NEW	AH725 NEW, AH120 NEW, AH130 NEW, AH140 NEW, AH3035 NEW, AH9030 NEW, GH130, AH330, GH330, AH730	NS740, NS530, N308, X407			UX30
M01						
M05						
M10						
M15						
M20	T3130	AH725, AH120, AH130, AH140, GH110, GH130, AH330, GH330, GH340, AH730	NS740, NS530, N308			UX30
M25	T3130	AH725, AH120, AH130, AH140, GH110, GH130, AH330, GH330, GH340, AH730	NS740, NS530, N308			UX30
M30	T3130	AH725, AH120, AH130, AH140, GH110, GH130, AH330, GH330, GH340, AH730	NS740, NS530, N308			UX30
M35	T3130	AH725, AH120, AH130, AH140, GH110, GH130, AH330, GH330, GH340, AH730	NS740, NS530, N308			UX30
M40	T3130	AH725, AH120, AH130, AH140, GH110, GH130, AH330, GH330, GH340, AH730	NS740, NS530, N308			UX30
M45	T3130 NEW	AH725 NEW, AH120 NEW, AH130 NEW, AH140 NEW, GH110, GH130, AH330, GH330, GH340, AH730	NS740, NS530, N308			UX30
M50	T3130 NEW	AH725 NEW, AH120 NEW, AH130 NEW, AH140 NEW, GH110, GH130, AH330, GH330, GH340, AH730	NS740, NS530, N308			UX30
K01					BX870, BX910	
K05					BX870, BX910	TH10
K10	T1115	GH110, AH110, AH725, AH120, GH130, AH330		FX105, CX710	BX950, BX870, BX910	TH10
K15	T1115	GH110, AH110, AH725, AH120, GH130, AH330		FX105, CX710	BX950, BX870, BX910 NEW	TH10, UX30
K20	T1115	GH110, AH110, AH725, AH120, GH130, AH330		FX105, CX710	BX950, BX870, BX910 NEW	TH10, UX30
K25	T1115	GH110, AH110, AH725, AH120, GH130, AH330		FX105, CX710	BX950, BX870, BX910 NEW	TH10, UX30
K30	T1115 NEW	AH725 NEW, AH120 NEW, GH130				
K35	T1115 NEW	AH725 NEW, AH120 NEW, GH130				
K40						
K45						
K50						
N01					DX160	KS05F
N05		DS1100			DX160, DX140	KS05F, KS15F, TH10
N10		DS1100, DS1200			DX160, DX140	KS05F, KS15F, TH10
N15		DS1100, DS1200			DX160, DX140	KS05F, KS15F, TH10
N20		DS1100, DS1200			DX160, DX140	KS05F, KS15F, TH10
N25		DS1200			DX160, DX140	KS05F, KS15F, TH10
N30						
N35						
N40						
N45						
N50						
S01						
S05						KS20
S10						KS20
S15						KS20
S20						
S25						
S30						
S35						
S40						
S45						
S50						
H01						
H05						
H10						KS20
H15						KS20
H20						KS20
H25						
H30						
H35						
H40						
H45						
H50						

Coated grades / CVD

Chemical Vapour Deposition

For Turning



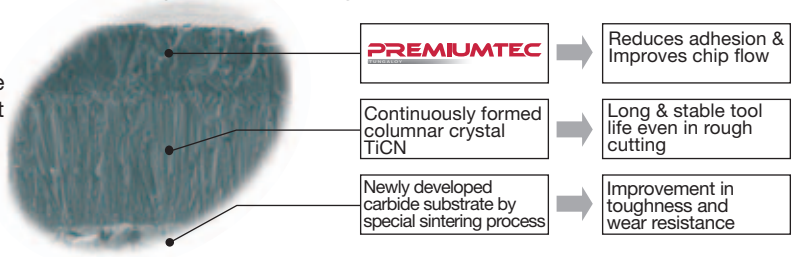
CVD coated carbide grades consist of a cemented carbide substrate such as TiCN, TiN, Al_2O_3 or additional alternatives. These are deposited to 3 to 16 µm thick by means of a chemical vapour deposition method. The coating layer is hard and improves heat and oxidation resistance to make it chemically stable. With these advantages the coated grades prolong tool life and increase machining efficiency.
The newly developed Tungaloy technology - "**PremiumTec**" is a specialized surface smoothing technology that reduces the friction coefficient and prevents the concentration of micro stresses. This improves adhesion performance and increases chip and wear resistance.

PREMIUMTEC

NEW T9100 series for steels

CVD coated grades for turning steels

The T9115 & T9125 are CVD coated grades for general purpose steel turning. The grades guarantee high reliability and quality by applying the new Tungaloy triple technologies. With the effect of "Adhesion reinforcement technology" and "Columnar stabilization technology", the grades ensure excellent chipping resistance and stable tool life. The special "**PremiumTec**" surface smoothing technology further stabilizes tool life.

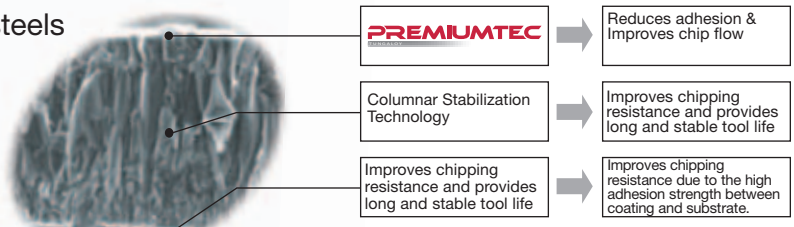


PREMIUMTEC

NEW T6100 series for stainless steels

CVD coated grades for turning stainless steels

Ideal combination of exclusive substrate and newly developed coating layer provides stable and long tool life when machining stainless steels due to the high adhesion strength, wear and plastic deformation resistance. New SF and SH chipbreakers expands the application area for stainless steel machining.

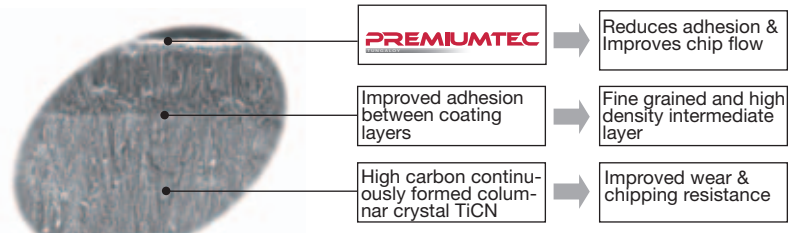


PREMIUMTEC

NEW T5100 series for cast irons

CVD coated grades for turning grey and ductile cast irons

This series features high carbon and fine grained coating structure that has improved wear and impact resistance. Three grades together with three chipbreaker types ensure excellent cutting performance when turning grey and ductile cast irons.

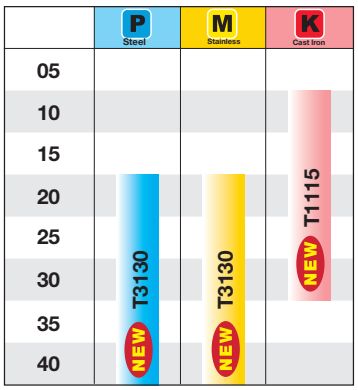


PREMIUMTEC

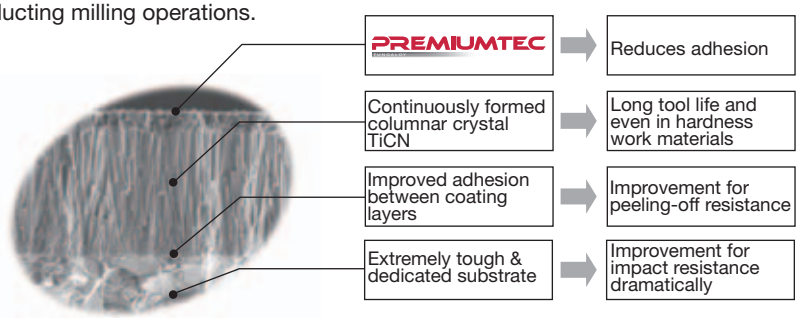
NEW T3130 for steels

CVD coated grades for milling steels

For Milling



The T3130 provides dramatic improvements in chipping and impact resistance due to its "Adhesion reinforcement technology" and "Columnar stabilization technology". The "**PremiumTec**" surface smoothing technology also contributes to the insert stabilization when conducting milling operations.



For Turning

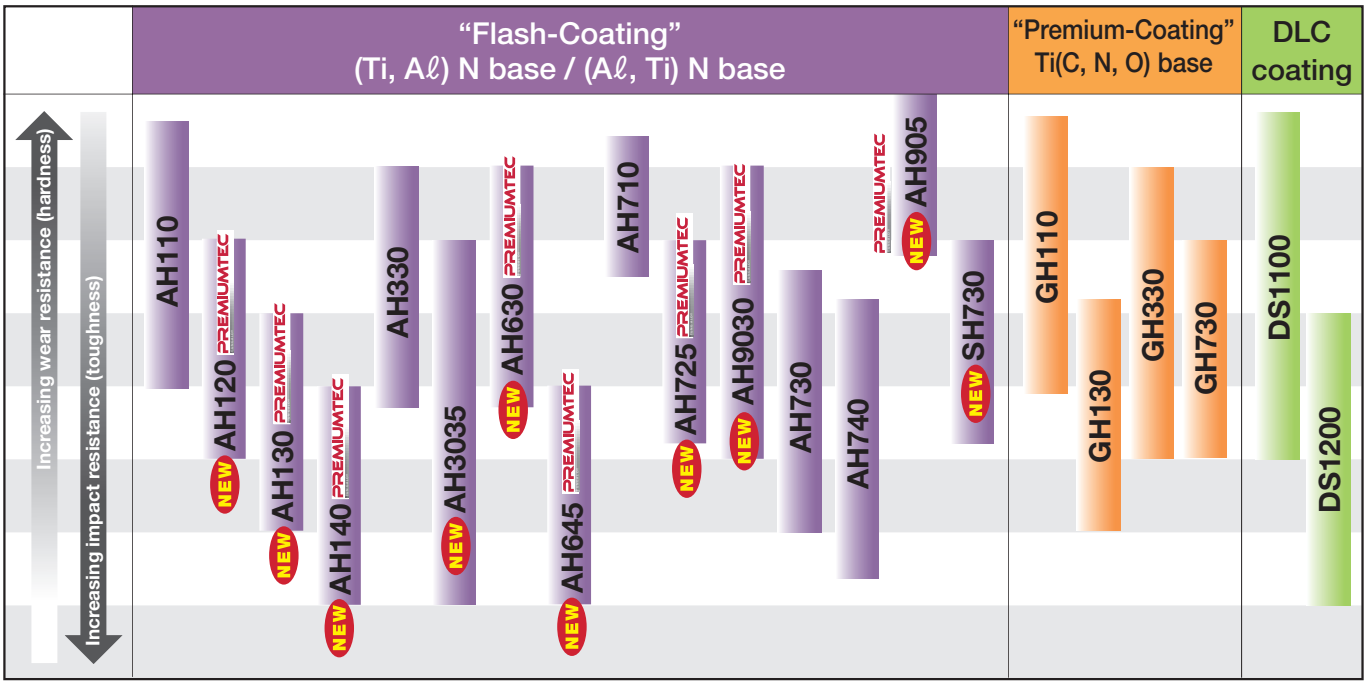
Application	Grades	Substrate			Coating layer		Features
	Application code	Specific gravity	Hardness (HRA)	Transverse rupture strength (GPa)	Main composition	Thickness (μm)	
P Steel	PREMIUMTEC NEW T9105 P01 - P10	14.2	91.5	2.4	Continuously formed columnar crystal TiCN + Aℓ2O3	16	**For steels** The "**PremiumTec**" surface smoothing technology enhances the performance of tools. The new coating layer consists of continuously formed columnar crystals that are integrated into crystal size and direction. This new coating layer creates the adhesion for each coating layer and dramatically prevents the micro cracking and chipping effect. T9105: T9105 shows excellent performance during high speed cutting. T9115: Well-balanced grade enhances chipping and wear resistance. T9125: The versatile grade that dramatically improves chipping resistance.T9115: Well-balanced grade enhances chipping and wear resistance. T9135: T9135 shows excellent impact resistance during heavy interrupted cutting.
	PREMIUMTEC NEW T9115 P10 - P20	13.9	91.0	2.5		16	
	PREMIUMTEC NEW T9125 P20 - P30	13.7	90.0	2.6		16	
	PREMIUMTEC NEW T9135 P30 - P40	13.5	89.0	2.6		16	
M Stainless	PREMIUMTEC NEW T6120 M10 - M20	13.9	91.0	2.5	Continuously formed columnar crystal TiCN + Aℓ2O3	8	**For stainless steels** The combination of exclusive substrate and new coating layer with high chipping resistance significantly improves wear and fracture resistance. T6120: Offers excellent wear resistance for high speed cutting. T6130: Provides exceptional wear resistance at medium to high cutting speed.
	PREMIUMTEC NEW T6130 M15 - M30	14.6	89.0	2.6		8	
	T6020 M15 - M25	14.1	90.0	2.5	Special Titanium compound (columnar)	6	**For stainless steels** The T6000 series has improved notch wear and chipping resistance with its combination of special substrates and extremely high coating adhesion.T6020: Applicable for medium to high speed machining and continuous to light interrupted cutting. T6030: Applicable for low to medium speed cutting and has extremely excellent impact resistance. For interrupted cutting.
	T6030 M25 - M35	14.6	89.0	2.6		6	
K Cast Iron	PREMIUMTEC NEW T5105 K05 - K15	15.0	92.5	2.4	High carbon and fine columnar crystal TiCN + Aℓ2O3	16	**For grey and ductile cast irons** The "**PremiumTec**" surface smoothing technology delivers high performance with stability. The coating layer of the T5100 series features fine grained and hard columnar crystals of TiCN and this drastically improves wear resistance. When combined with the dedicated cemented carbide substrate that has a fine structure and high-strength, the three grades of the T5100 series promotes excellent cutting performance in a wide range of cast iron turning applications. T5105: Excels in wear and deformation resistance in high-speed, continuous turning. T5115: General purpose grade that achieves stable machining in a wide range of machining conditions from continuous to interrupted cutting. T5125: This grade excels when conducting heavy interrupted cutting. The very tough grade has a high resistance to unpredicted tool breakages.
	PREMIUMTEC NEW T5115 K10 - K20	14.8	91.5	2.7		16	
	PREMIUMTEC NEW T5125 K15 - K30	14.0	90.5	2.8		16	
Threading	T313V -	14.5	90.5	2.3	Special Titanium compound (columnar) + Aℓ2O3	3	**For threading** Features specially engineered substrate with excellent resistance to impact and plastic deformation. This is credit to a well controlled coating composition and layer thickness.

For Milling

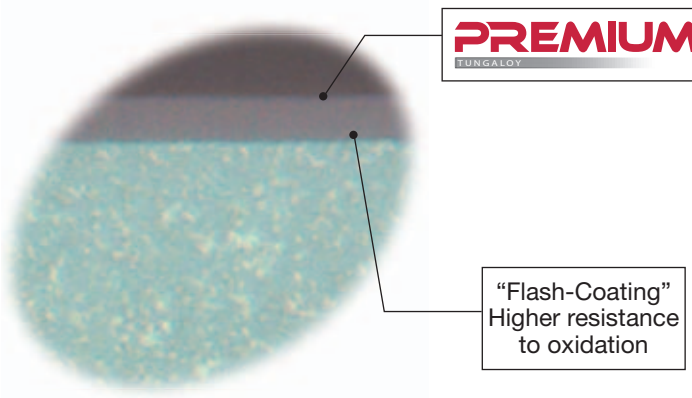
Application	Grades	Substrate			Coating layer		Features
	Application code	Specific gravity	Hardness (HRA)	Transverse rupture strength (GPa)	Main composition	Thickness (μm)	
P Steel	PREMIUMTEC NEW T3130 P20 - P40	14.0	89.5	2.8	Continuously formed columnar crystal TiCN + Aℓ2O3	6	**For steels, stainless steels** The "**PremiumTec**" surface smoothing technology improves performance with stability. "Adhesion reinforcement technology" and "Columnar stabilization technology" create stable long tool life. This enhances performance with increased wear and chipping resistance when conducting milling operations.
M Stainless	PREMIUMTEC NEW T3130 M20 - M40	14.0	89.5	2.8	Continuously formed columnar crystal TiCN + Aℓ2O3	6	**For steels, stainless steels** The "**PremiumTec**" surface smoothing technology improves performance with stability. "Adhesion reinforcement technology" and "Columnar stabilization technology" create stable long tool life. This enhances performance with increased wear and chipping resistance when conducting milling operations.
K Cast Iron	PREMIUMTEC NEW T1115 K10 - K25	14.9	91.5	2.7	Continuously formed columnar crystal TiCN + Aℓ2O3	11	**For grey and ductile cast irons** The "**PremiumTec**" surface smoothing technology improves performance with stability. "Adhesion reinforcement technology" and "Columnar stabilization technology" create stable and long tool life. This improves the performance for impact and chipping resistance. It combines with a thick aluminium layer that improves wear resistance.

Coated grades / PVD

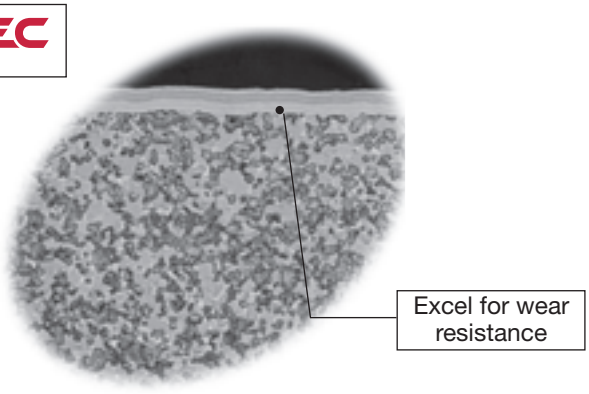
Physical Vapour Deposition



PVD coated carbides consist of a cemented carbide substrate that contains a Titanium compound such as (Ti, Aℓ)N that is coated to about 1 to 3 µm thick by means of the physical deposition (PVD) method. The lower coating temperature ensures the substrate does not form any brittle harmful layer and can maintain the original shape and dimensions. The Ti(C, N, O) base coating is superior to TiN coatings in regard to wear resistance. Whereas a (Ti, Aℓ)N base coat has a higher resistance to oxidation. The excellent toughness of both the coating and substrate make these grades suitable for interrupted cutting. Their sharp cutting edge allows the grades to be used for cutting difficult-to-cut materials that tend to be work hardened. "**PremiumTec**" is treated with a CVD coating and also a PVD coated layer that reduces adhesion and enhances chip flow.



Microstructure of "Flash-Coating"

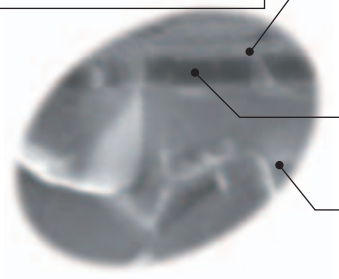


Microstructure of "Premium-Coating"

DS1100, DS1200 DLC coating grades for milling aluminium alloys

DLC = Diamond Like Carbon

Amorphous carbon having diamond like characteristics



Smooth surface and low affinity with aluminium alloys
→Low tendency to adherence
→Good surface finish
→Good chip control

Improved adhesion between coating and substrate
→Ensures stable machining

Fine grained substrate ensures cutting edge sharpness
→Low cutting forces

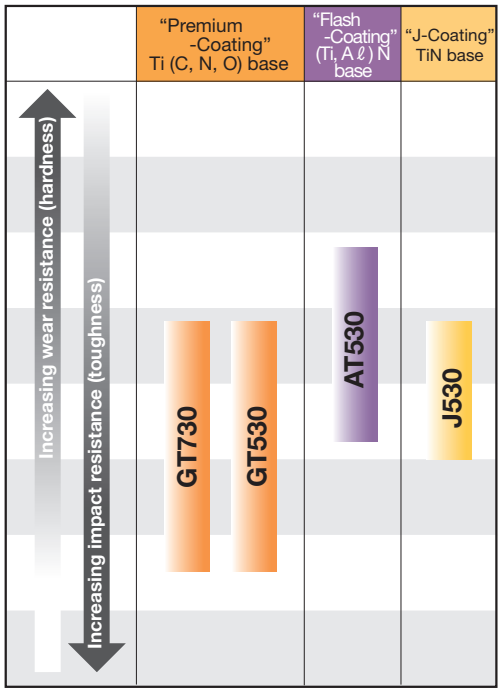
Excellent surface quality

Application	Grades	Substrate			Coating layer		Features
	Application code	Specific gravity	Hardness (HRA)	Transverse rupture strength (GPa)	Main composition	Thickness (μm)	
P Steel	PREMJMTEC NEW AH120 P20 - P35	14.5	90.8	2.8	"Flash -Coating" (Ti, Aℓ)N base	3	**General grade** Both wear resistance and impact resistance are well-balanced in all general grades.
	PREMJMTEC NEW AH130 P25 - P40	14.1	90.5	3.0		3	**For steels & stainless steels / very tough grade** Excellent performance and reliability for tough machining applications.
	AH330 P15 - P30	12.6	91.1	2.3		3	**For steels and stainless steels** Substrate is highly reliable P30 carbide. This grade incorporates high temperature strength.
	PREMJMTEC NEW AH3035 P20 - P45	14.0	89.5	3.2		5	**For steels** AH3035 demonstrates incredible toughness in cutting of steels.
	AH710 P10 - P20	15.0	93.0	2.9		3	**For grooving** Excellent wear resistance and toughness.
	PREMJMTEC NEW AH725 P20 - P35	14.4	91.5	3.0		2	**General grade** PVD coated "Flash-Coating" fine grain cemented carbides.
	NEW AH730 P25 - P40	14.4	91.5	3.0		3	**For steels** Combined with fine grained carbide substrate, this grade provides both wear resistance and toughness.
	AH740 P25 - P40	13.9	91.5	3.5		3	**For steels** Excels in high temperature strength and chipping resistance.
	PREMJMTEC NEW AH9030 P15 - P35	14.5	90.8	2.8		5	**For steels** With excellent wear and chipping resistance.
	NEW SH730 P20 - P35	14.4	91.5	3.0		1	**For steels, stainless steels and superalloys (thin PVD)** The extremely wear resistant cutting edge maintains exceptional sharpness.
	GH730 P20 - P35	14.4	91.5	3.0	"Premium -Coating" Ti(C, N, O) base	3	**For grooving and parting off at low speed** The "Premium-Coating" is treated with fine grained cemented carbide that has high transverse rupture strength.
	GH330 P15 - P30	12.6	91.1	2.3		3	**For steels and stainless steels** Substrate is highly reliable P30 grade. Excels in wear and impact resistance.
M Stainless	PREMJMTEC NEW AH120 M20 - M35	14.5	90.8	2.8	"Flash -Coating" (Ti, Aℓ)N base	3	**General grade** For continuous to medium interrupted cutting of stainless steels.
	PREMJMTEC NEW AH130 M25 - M40	14.1	90.5	3.0		3	**For steels & stainless steels** Excellent performance and reliability when applied to tough machining applications.
	PREMJMTEC NEW AH140 M30 - M45	14.4	89.5	2.6		3	**For stainless steels** For milling of stainless steels at low speeds.
	PREMJMTEC NEW AH630 M15 - M30	14.4	91.5	3.0		5	**For stainless steels (AH600 series)** Versatile grade for stainless steels. With excellent wear and chipping resistance, AH630 grade is suitable for stainless steel machining at low to medium cutting speed.
	PREMJMTEC NEW AH645 M30 - M40	14.0	89.5	3.2		5	**For stainless steels (AH600 series)** AH645 demonstrates incredible toughness in cutting of stainless steels.
	PREMJMTEC NEW AH725 M20 - M35	14.4	91.5	3.0		2	**General grade** General grade that is "Flash-Coating" with a fine grain cemented carbide.
	NEW SH730 M20 - M35	14.4	91.5	3.0		1	**For steels, stainless steels and superalloys (thin PVD)** Cutting edge with sharpness is maintained with excellent wear resistance characteristics that are ideal for stainless steel machining.
	GH730 M20 - M35	14.4	91.5	3.0	"Premium -Coating" Ti(C, N, O) base	3	**For grooving and parting off at low speed** PVD coated "Premium-Coating" fine grain cemented carbides. This grade improves wear resistance.
	GH330 M15 - M30	12.6	91.1	2.3		3	**For steels and stainless steels** For continuous to medium interrupted cutting of stainless steels.
K Cast Iron	AH110 K10 - K25	14.7	92.0	2.4	"Flash -Coating" (Ti, Aℓ)N base	3	**For cast irons and heat resisting alloys** For continuous to medium interrupted cutting of cast irons at high speeds.
	PREMJMTEC NEW AH120 K15 - K30	14.5	90.8	2.8		3	**General grade** General grade for cast irons. For various cutting conditions.
	GH110 K10 - K25	14.7	92.0	2.4	"Premium -Coating" Ti(C, N, O) base	3	**For cast irons and non-ferrous metals** Excels in wear resistance.
N Non-ferrous	DS1100 N05 - N20	15.0	93.0	2.9	DLC coating	Thin layer	**For aluminium alloys** Can suppress chips welding to cutting edges, producing consistently high quality surface and realizing long tool life.
	DS1200 N10 - N25	14.7	92.0	2.4	DLC coating	Thin layer	**For aluminium alloys** Can prevent chips welding to cutting edges, producing a consistently high quality surface finish and extending tool life.
	GH110 N05 - N15	14.7	92.0	2.4	"Premium -Coating" Ti(C, N, O) base	3	**For cast irons and non-ferrous metals** Improves wear resistance.
S Superalloys	AH110 S05 - S15	14.7	92.0	2.4	"Flash -Coating" (Ti, Aℓ)N base	3	**For cast irons and heat resisting alloys** Excellent plastic deformation resistance.
	PREMJMTEC NEW AH120 S10 - S25	14.5	90.8	2.8		3	**General grade** Excels in both plastic deformation and chipping resistance.
	PREMJMTEC NEW AH905 S01 - S10	15.0	93.0	2.9	(Aℓ, Ti)N base	1.5	**For superalloys** Excels in both cutting edge sharpness and wear resistance.
	PREMJMTEC NEW AH725 S20 - S30	14.4	91.5	3.0	"Flash -Coating" (Ti, Aℓ)N base	2	**For grooving** Tough grade that is ideal for super alloys.
	NEW SH730 S05 - S15	14.4	91.5	3.0		1	**For steels, stainless steels and superalloys (thin PVD)** Excels in both cutting edge sharpness and wear resistance.
For small lathes	J740 -	13.9	91.5	3.5	"J-Coating" TiN base	1	**For small lathes** Ultra fine grain cemented carbides coated with TiN based compounds.

Cermet

Cermet

Coated Cermet

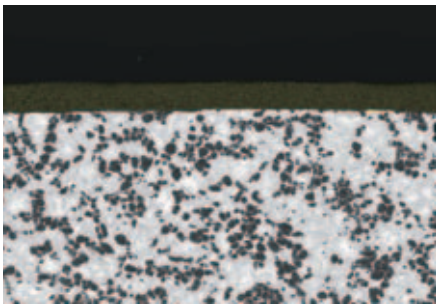


Cermet consists of a hard phase and a binding phase, which is the case with cemented carbides. The hard phase consists mainly of Titanium carbide TiC and Titanium nitride TiN. These carbides and nitrides have superior strength and oxidation resistance when working at high temperatures when compared with Tungsten carbide WC.
Furthermore, there is little tendency to react with the work material and this ensures high crater resistance. Finally, Cermet grades are applicable to high and low speed cutting ranges whilst delivering excellent surface roughness.

For Turning "Super fine Cermet" GT730, NS730

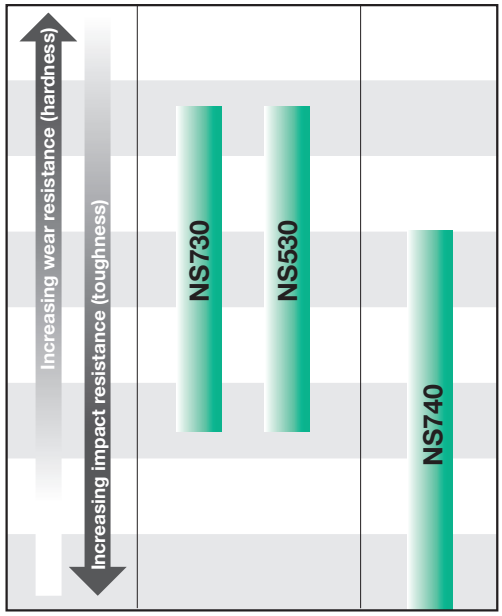
Cermet creates a high quality surface finish due to the combination of "Fine-grain reinforcement technology" and "Surface smoothing technology". This improves the impact resistance, which is generally a weak point of Cermet.

- "Fine-grain reinforcement technology"
  This technology enhances the reliability and performance of the grade. It offers improved wear and impact resistance with its high bonding strength, heat resistant Titanium compound and fine bonding grain Titanium compound that prevents crack propagation and improves toughness.
- "Surface smoothing technology"
  The cutting edge remains smooth at all times by means of the fine grain heat resistant Titanium compound and specialized sintering technology.



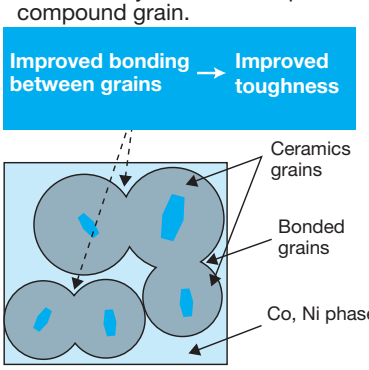
Microstructure of **GT730**

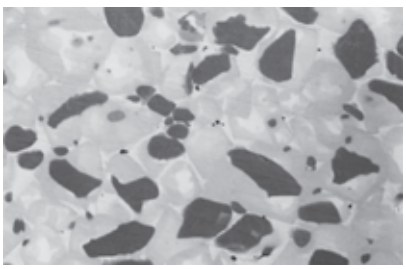
Uncoated



For Milling "Skeleton Reinforced Cermet" NS740

- "Skeleton reinforced technology"
  "Skeleton reinforced technology" enhances toughness whilst keeping hardness by means of improvement of bonding strength among ceramic compound grain.





Microstructure of **NS740**

Coated Cermet

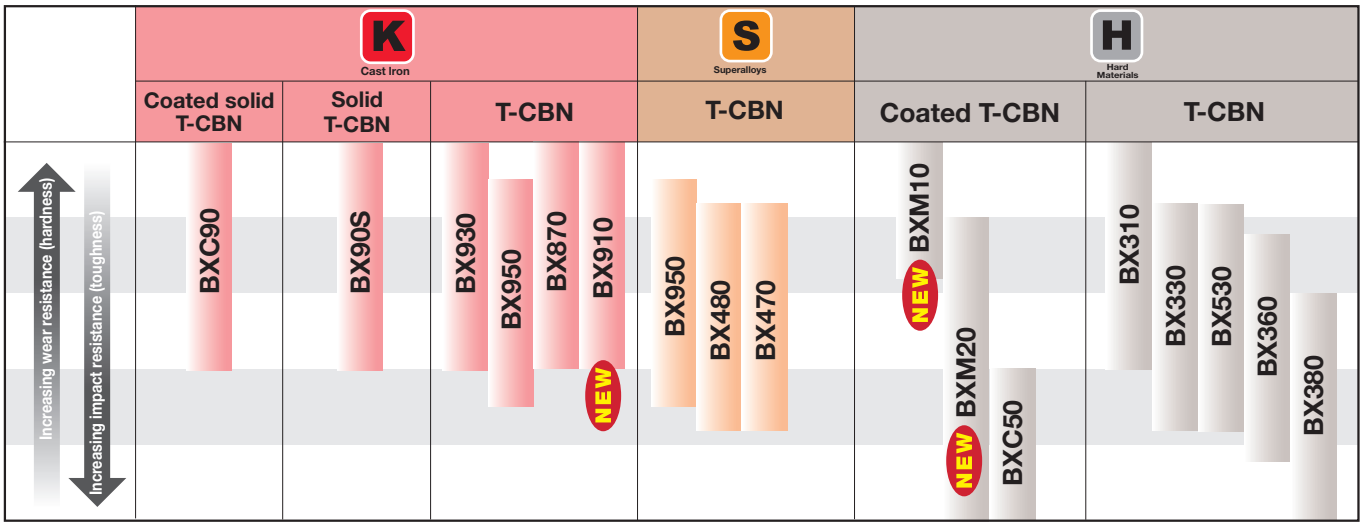
Application	Grades	Substrate			Coating layer		Features
		Specific gravity	Hardness (HRA)	Transverse rupture strength (GPa)	Main composition	Thickness (μm)	
P Steel	GT730	6.8	92.0	2.2	"Premium -Coating" Ti(C, N, O) base	3	**First choice** Covering a wide range of cutting speeds. Well balanced surface quality and wear resistance.
P Steel	GT530	7.2	91.7	2.0		3	**For steels** PVD coated grade for finish to medium cutting of steel.
P Steel	AT530	7.2	91.7	2.0	"Flash -Coating" (Ti, Aℓ)N base	3	**For steels** High wear resistance and toughness that is combined by a flash-coated layer.
K Cast Iron	GT520	6.6	92.1	1.7	"Premium -Coating" Ti(C, N, O) base	3	**For steel and cast iron machining at high speed** Increased wear resistance without decreasing the toughness of the substrates.
For small lathes	J530	7.2	91.5	2.0	"J-Coating" TiN base	1	**For small lathes** Cermet coated PVD-TiN based compounds.

Uncoated

Application	Grades	Substrate			Features
		Specific gravity	Hardness (HRA)	Transverse rupture strength (GPa)	
P Steel	NS730	6.8	92.0	2.2	**Priority on impact resistance** Superior resistance to thermal and mechanical fracture. Reduces machining costs.
P Steel	NS740	6.8	91.7	2.2	**For steels** Very tough grade for milling. Excellent thermal crack resistance. This grade also provides good wear and impact resistance.
P Steel	NS530	7.2	91.7	2.0	**For steels and cast iron** Excellent wear resistance and toughness.
K Cast Iron	NS530	7.2	91.7	2.0	**For steels and cast iron** Excellent wear resistance and toughness.

PCBN (T-CBN)

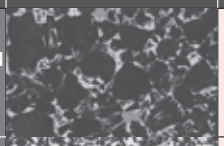
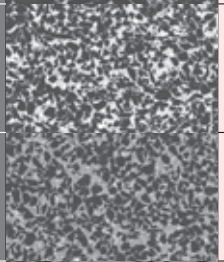
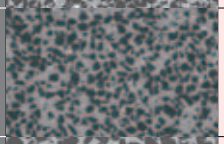
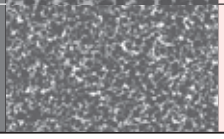
Polycrystalline Cubic Boron Nitride Compacts (PCBN), T-CBN

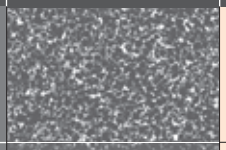
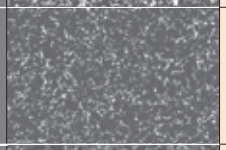
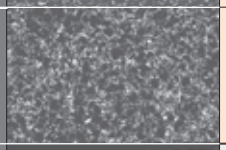
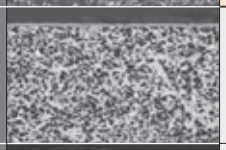
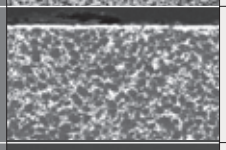
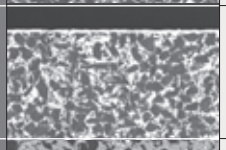
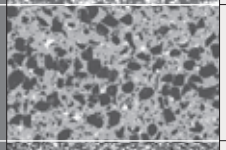
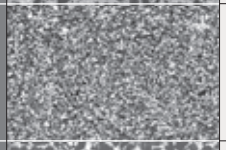
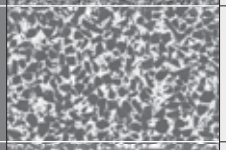
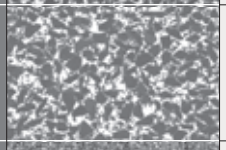


The PCBN material is sintered under ultra high-pressure and temperature with cubic boron nitride particles and a special binder. The hardness is more than twice that of cemented carbide, with the hardness at high temperature exceeding that of cemented carbide. CBN has no tendency to react with ferrous materials (different to diamonds). This makes it suitable for high speed cutting of cast iron, the finishing of hardened steel, ferrous sintered metals (valve seats) etc. This material is also suited to finish machining of super heat resistant alloys. The use of CBN sintered materials improve the surface finish and accuracy, making finishes comparable to grinding.

Multi-corner Negative insert

Multi-corner Positive insert

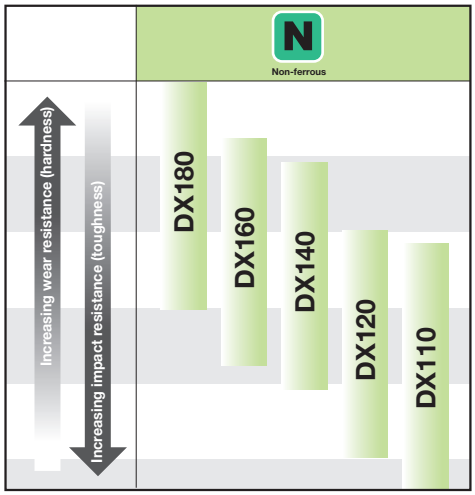
Application	Grades	Microstructure	Hardness (Hv)	Transverse rupture strength (GPa)	Features
K Cast Iron	BXC90 Coated solid T-CBN (BX90S) Solid T-CBN		3900 ~ 4100	1.80 ~ 1.90	**Coated grade for high speed continuous or interrupted machining** Medium grained CBN particles are bound with special binder. The surface is coated with dedicated coating material.
	BX850		3300 ~ 3500	0.75 ~ 0.85	**PCBN grade for machining cast irons** General purpose, cast iron machining grade featuring excellent impact resistance.
	BX870		3000 ~ 3200	0.95 ~ 1.20	**For machining cast iron Cylinder liners** Excellent wear resistance and tool life when machining cast iron liners.
	NEW BX910		2600 ~ 2800	0.80 ~ 0.90	**CBN grade for centrifugally cast iron machining** With excellent wear resistance, BX910 provides long and stable tool life while machining centrifugally cast iron, like cylinder liner, at high cutting speed.
	BX930		3000 ~ 3200	0.95 ~ 1.20	**PCBN grade for machining grey and ductile cast irons** Features closely calculated CBN content and medium sized CBN particles bound with special binder. Excels in impact resistance.
	BX950		3900 ~ 4100	1.80 ~ 1.90	**High CBN content grade for high speed machining** PCBN grade featuring a high CBN content with cobalt alloy binder.

Application	Grades	Microstructure	Hardness (Hv)	Transverse rupture strength (GPa)	Features
S Superalloys	BX950		3900 ~ 4100	1.80 ~ 1.90	**High CBN content grade for high speed machining** PCBN grade featuring high CBN content and use of cobalt alloy binder.
	BX480		4100 ~ 4300	1.90 ~ 2.10	**PCBN grade for machining ferrous sintered metals and hard rolls** World's highest content of CBN in a practical tool material. Features the highest hardness level of all the T-CBN grades*.
	BX470		4100 ~ 4300	1.90 ~ 2.10	**Super fine grain PCBN grade for machining ferrous sintered metals** The highest content of CBN in the world as a practical tool material*.
H Hard Materials	NEW BXM10 Coated T-CBN		2700 ~ 2900	0.80 ~ 0.90	**Coated grade for high-speed continuous and light interrupted machining** High crater resistance CBN substrate. The surface is coated with a dedicated coating material.
	NEW BXM20 Coated T-CBN		3500 ~ 3700	1.35 ~ 1.50	**First choice: Coated grade for continuous and interrupted machining and the removal of the carburized layer** High chipping resistance CBN substrate. The surface is coated with a dedicated coating material.
	BXC50 Coated T-CBN		3500 ~ 3700	1.15 ~ 1.30	**Coated grade for continuous to interrupted machining** Medium grained CBN particles are bound with special binder. The surface is coated with dedicated coating material.
	BX310		2700 ~ 2900	0.80 ~ 0.90	**High speed, continuous machining grade** The binding force between particles is improved by using relatively coarse CBN grains. Excellent wear resistance.
	BX330		2800 ~ 3000	0.85 ~ 0.95	**Super fine grained grade for superior surface finish** Super fine grain CBN particles are bound with a special binder. Maintains its very sharp cutting edges.
	BX360		3200 ~ 3400	1.00 ~ 1.10	**General purpose grade for continuous to ordinarily interrupted machining** Composed with fine grained and coarse grained CBN particles. General purpose grade featuring excellent impact resistance.
	BX380		3500 ~ 3700	1.15 ~ 1.30	**Tough grade for heavily interrupted machining** Composed of relatively high content of coarse CBN particles. It contributes to the excellent impact resistance.
	BX530		2800 ~ 3000	0.85 ~ 0.95	**Ultra fine grain PCBN grade for superior surface finish** Features homogeneous and ultra fine grain structure that is produced with Tungaloy's own manufacturing method. The world's finest grain PCBN*.

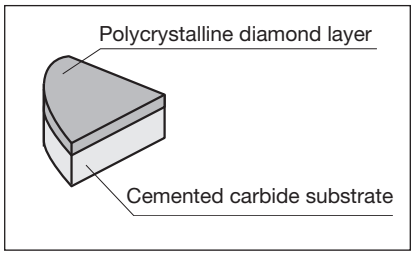
*As of July 2010

PCD (T-DIA)

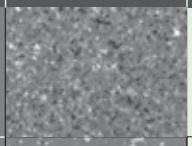
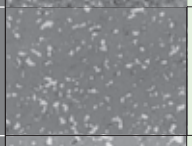
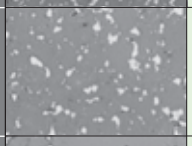
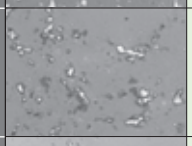
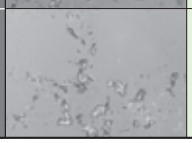
Polycrystalline Diamond Compacts (PCD), T-DIA



Diamond is the hardest known material on the earth. This is an advanced diamond based tool material where tiny diamond crystals are tightly sintered on the cemented carbide alloy base by means of a super high pressure and temperature process. When compared to the single crystal diamond, the hardness is slightly reduced but PCD is uniform in its structure. Additionally the heat resistant performance of a single crystal diamond can differ according to the crystal quality and orientation. PCD is therefore the optimum choice for cutting non-ferrous and non-metal materials.



Structure of T-DIA

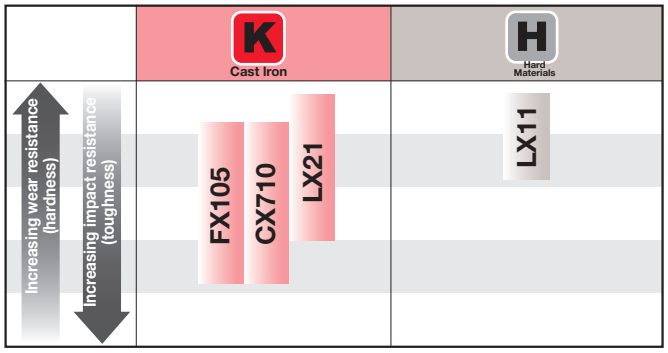
Application	Grades	Microstructure	Grain size (μm)	Hardness (Hv)	Strength (GPa)	Features
N Non-ferrous	DX110		< 1	8500	1.8	Super fine grain T-DIA grade for superior surface finish. Excels in cutting edge sharpness and produces consistently high quality surface finish, resulting from gradual wear resistance.
	DX120		4.5	9000	1.8	For precision machining of non-ferrous metals and nonmetals where high quality surface finish is required. Features the finest grain structure in T-DIA series and excels in grindability and cutting edge sharpness.
	DX140		12.5	10000	1.7	Used for machining of non-ferrous metals and nonmetals. Composed of medium and fine grain diamond, provides moderate wear resistance and grindability.
	DX160		28	11000	1.6	Can be used for machining half sintered ceramics and cemented carbides, stones and non-ferrous metals. Mixed sintered compact composed of large and fine grain diamond. Grindability is superior to that of DX180.
	DX180		45	12000	1.5	Suitable for turning half sintered ceramics and cemented carbides. Features the highest purity levels with large grain PCD for excellent wear resistance.

Regrinding method

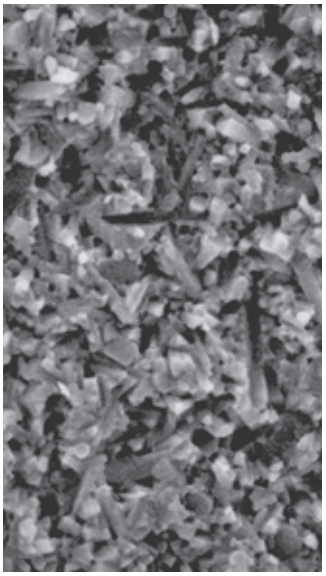
Wheel	Diamond wheel
Bond	Vitrified bond
Grain size	Roughing: #400 ~ 600 Finishing: Finer than #1000
Concentration	100 ~ 125
Grinding speed	900 ~ 1200 m/min

Ceramics

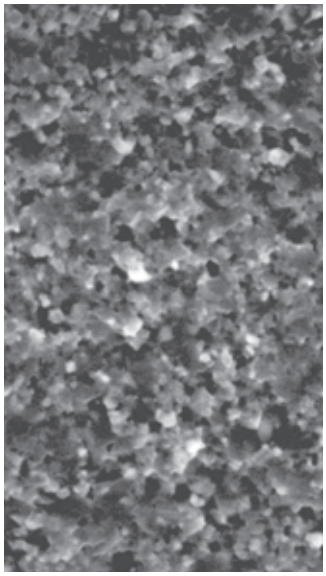
Ceramics



Tungaloy ceramics consist of high purity fine powder Oxides, Nitrides and Carbides. The fine and dense compacting ensures superior wear resistance, adhesion resistance, oxidation resistance and heat resistance.
These grades enable high speed finish to light machining, offering high accuracy and high quality surface finishes. Ceramic grades are classified into alumina base and silicon nitride based groups. These can be selected according to the application.



Microstructure of **FX105**



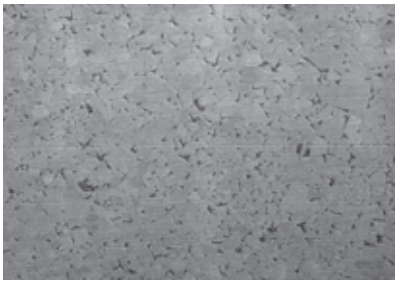
Microstructure of **LX11**

Application	Grade (Colour)	Specific gravity	Hardness (HRA)	Transverse rupture strength (GPa)	Fracture toughness K_{1C}(MPa·$m^{1/2}$)	Modulus of elasticity (GPa)	Features
K Cast Iron	**FX105** Grey	3.24	93.0	1.3	6.1	290	This silicon nitride based Ceramic is used for high speed cutting of cast irons. It has superior strength, toughness and thermal characteristics compared to Al_2O_3 based ceramics.
	CX710 Grey	3.20	92.9	1.1	6.3	290	Si_3N_4 based ceramics for high speed cutting of cast irons. Higher toughness level and heat conductivity than the FX105 grade.
	LX21 Black	4.24	94.0	0.8	4.3	370	Al_2O_3 based Ceramics for continuous cutting of cast irons. By adding titanium carbide to alumina, its toughness is improved whilst maintaining excellent wear resistance.
H Hard Materials	**LX11** Gold	4.35	94.0	0.9	4.3	400	Al_2O_3 based ceramics used for continuous turning of ferrous hard materials. Improved strength and toughness with a fine microstructure consisting of Alumina and Titanium Carbonitride.

Uncoated Cemented Carbides

Uncoated Cemented Carbides (Tungaloy Cutting Tool Grades)

Tungaloy's cemented carbides are sintered with Tungsten carbide WC, Titanium carbide TiC and Co binder phase. Tungaloy matches the original unique grades with the application to ensure stable performance and complete quality control. Tungaloy offers superior mechanical and thermal wear resistance when compared with high speed tool steel.



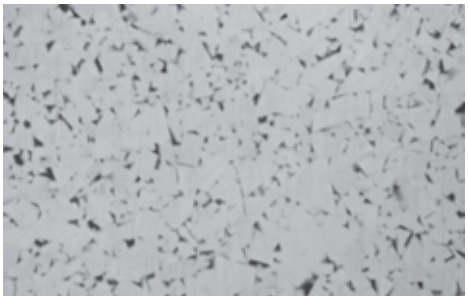
Microstructure of **KS05F**

Application	ISO Application code	Grades	Specific gravity	Hardness (HRA)	Transverse rupture strength (GPa)	Compression strength (GPa)	Modulus of elasticity (GPa)	Thermal expansion coefficient ($X10^{-6}/K$)	Thermal conductivity (W/(m·K))
P Steel	P30	UX30	12.6	91.1	2.3	4.9	490	5.8	38
M Stainless	M30	UX30	12.6	91.1	2.3	4.9	490	5.8	38
K Cast Iron	K05	TH03	13.8	93.8	1.9	6.2	590	5.3	99
	K10	TH10	14.7	92.0	2.4	6.1	620	5.4	97
	K20	KS20	14.5	90.8	2.8	6.1	620	5.4	96
N Non-ferrous	N05	KS05F	15.0	93.0	2.9	5.9	640	5.4	90
	N10	TH10	14.7	92.0	2.4	6.1	620	5.4	97
	N15	KS15F	14.4	91.5	3.0	4.4	580	5.6	79
S Superalloys	S10	TH10	14.7	92.0	2.4	6.1	620	5.4	97
	S20	KS20	14.5	90.8	2.8	6.1	620	5.4	96
H Hard Materials	H05	TH03	13.8	93.8	1.9	6.2	590	5.3	99
	H10	TH10	14.7	92.0	2.4	6.1	620	5.4	97

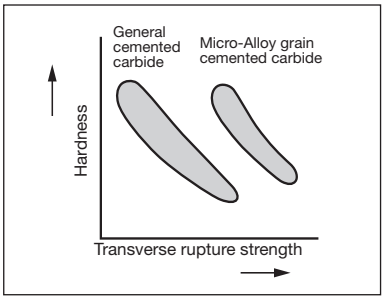
Ultra fine Grain Cemented Carbides

Micro-Alloy

Microstructure of **EM10** 1 µm



Microstructure of **F** 1 µm



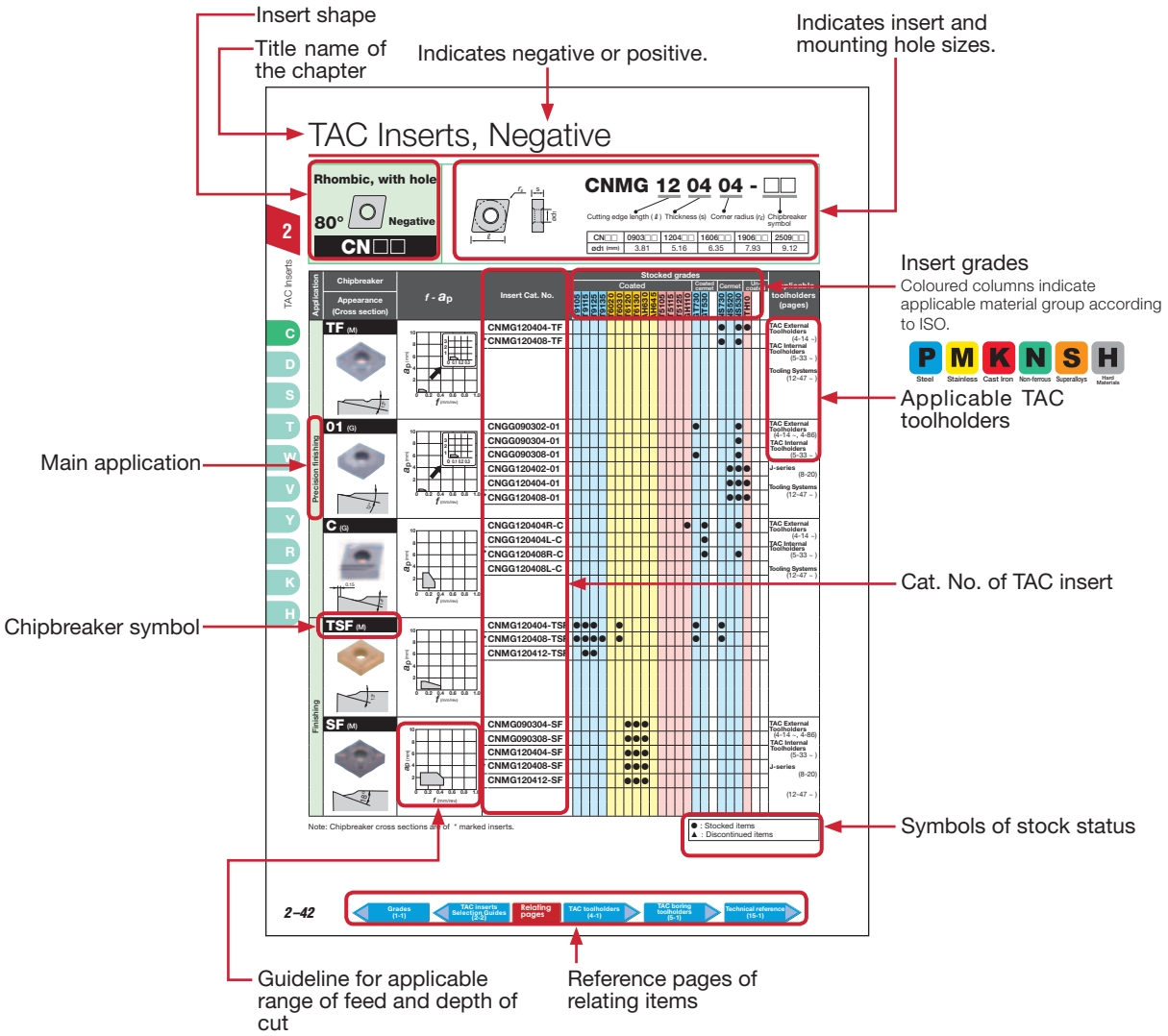
Mechanical properties of ultra-fine grain cemented carbide

Micro-Alloy is characterized by the WC hard phase (major component) which is extremely fine (average particle size 1 µm or less) when compared with normal cemented carbide alloys. This ensures higher strength (toughness) than general carbide alloys of the same hardness. This alloy demonstrates high performance within the application range of high speed tool steel. This is appropriate for cutting tools when the workpiece is too small to achieve the desired cutting speed or for a small diameter endmill or drill.

Grades	Specific gravity	Hardness (HRA)	Transverse rupture strength (GPa)	Compression strength (GPa)	Modulus of elasticity (GPa)	Thermal expansion coefficient ($X10^{-6}$/K)	Thermal conductivity (W/(m·K))	Features
F	14.9	93.4	2.5	6.9	640	5.4	85	Tungaloy's hardest Micro-Alloy delivers excellent wear resistance and cutting edge toughness. Suitable for low speed, small depths of cut and lowfeed machining. Mainly used for small tools such as on automatic turning centers.
EM10	14.0	91.5	3.4	6.4	550	5.7	70	Used for solid endmills and other milling cutters. Provides superior chipping resistance with its micro grain.

Chapter Composition of TAC Inserts

- ◆ Each page of this chapter is composed so that you can select an appropriate insert for your machining operation.
- ◆ TAC inserts for turning are arranged by shape as follows: C (80°) → D (55°) → S (90°) → T (60°) → W (80°) → V (35°) → Y (25°) → R (360°) → Other shapes
- ◆ In the same shape, inserts are arranged in order of negative to positive. In the negative/positive inserts, they are arranged in order of "with hole" to "without hole" respectively.
- ◆ Chipbreaker types are arranged in order of precision finishing, medium finishing, medium cutting, and heavy cutting or according to the degree of the feed or depth of cut to be applied. No chipbreaker inserts are arranged on the last page of each insert shape



■Ordering information

- ● When ordering, please specify Cat. No., grade and quantity.
  Example: **CNMG120408-TM T9115** 10 pieces.
  - Standard packing quantity is 10 pieces.

Guidance

■ TAC insert designation system 2-2
■ Selection system by work material 2-4
■ Chipbreaker overview 2-28
■ TAC inserts navigation system 2-41

2 TAC Inserts

Products

■ TAC inserts, Negative type

Coated, cermet, uncoated and ceramic inserts

- CN□□ 80° Rhombic with hole 2-42
- CN□□ 80° Rhombic without hole . 2-51
- DN□□ 55° Rhombic with hole 2-52
- DN□□ 55° Rhombic without hole . 2-60
- SN□□ 90° Square with hole 2-61
- SN□□ 90° Square without hole . 2-69
- TN□□ 60° Triangular with hole 2-70
- TN□□ 60° Triangular without hole . 2-79
- WN□□ 80° Trigon with hole 2-80
- VN□□ 35° Rhombic with hole 2-87
- VNGD 35° Rhombic without hole 2-90
- YN□□ 25° Polygon with hole 2-91
- RN□□ Round with hole 2-92
- RN□□ Round without hole 2-93
- KNMX 55° Parallelogram without hole 2-94
- HNGD 120° Hexagon without hole 2-95

■ TAC inserts, Positive type

Coated, cermet, uncoated and ceramic inserts

- CC□□ 80° Rhombic with hole 2-96
- CP□□ 80° Rhombic with hole 2-102
- DC□□ 55° Rhombic with hole ... 2-105
- EP□□ 75° Rhombic with hole 2-111
- SC□□ 90° Square with hole ... 2-112
- SP□□ 90° Square with hole ... 2-114
- SP□□ 90° Square without hole 2-116
- TC□□ 60° Triangular with hole 2-118
- TP□□ 60° Triangular with hole ... 2-123
- TP□□ 60° Triangular without hole 2-130
- WB□□ 80° Trigon with hole 2-132
- WP□□ 80° Trigon

(Dedicated inserts for TurnFeed) with hole . 2-132
- VB□□ 35° Rhombic with hole 2-133
- VC□□ 35° Rhombic with hole 2-135
- VP□□ 35° Rhombic with hole 2-137
- YWMT 25° Rhombic with hole 2-139
- RC□□ Round with hole 2-140
- RC□□ Round without hole 2-141
- RT□□ Round without hole 2-142

■ TAC insert, Special shapes

Coated, cermet, uncoated and ceramic inserts

- JXF□ for front turning 2-144
- JXR□ for reverse turning 2-144
- JXB□ for back turning 2-145
- JTB□ for back turning 2-145
- J10E□ for back turning 2-146
- 10E□ for back turning 2-146

Designation System for TAC Inserts

● Conforms to “Indexable Inserts for Cutting Tools - Designation” (JIS B4120-1998, and ISO 1832 / AM1-1998)

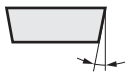
① Shape

Symbol	Shape	Nose angle (degree)	Figure
H	Hexagonal	120°	
O	Octagonal	135°	
P	Pentagonal	108°	
S	Square	90°	
T	Triangular	60°	
C	Rhombic	80°	
D		55°	
E		75°	
F		50°	
M		86°	
V		35°	
Y	Y-shape (Tungaloy's symbol)	25°	
W	Trigon	80°	
L	Rectangular	90°	
A	Parallelogram	85°	
B		82°	
K		55°	
R	Round	-	

Notes : With respect to the nose angles of rhombic and parallelogram shaped inserts, use the smaller angle respectively.

② Relief angle

Symbol	Relief angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Others
X	Special



③ Accuracy

Symbol (class)	Tolerance (mm)		
	Corner height (m)	Thickness (s)	I. C. dia. (ød)
A	±0.005	±0.025	±0.025
F	±0.005	±0.025	±0.013
C	±0.013	±0.025	±0.025
H	±0.013	±0.025	±0.013
E	±0.025	±0.025	±0.025
G	±0.025	±0.13	±0.025
J	±0.005	±0.025	±0.005 ~ ±0.13
K	±0.013	±0.025	±0.05 ~ ±0.13
L	±0.025	±0.025	±0.05 ~ ±0.13
M	±0.08 ~ ±0.18	±0.13	±0.05 ~ ±0.13
N	±0.08 ~ ±0.18	±0.025	±0.05 ~ ±0.13
U	±0.13 ~ ±0.38	±0.13	±0.08 ~ ±0.25

	①	②	③	④	⑤
[Example]	T	N	M	G	16
[Example]	C	C	G	T	09

④ Groove and hole

Symbol	Hole	Shape of hole	Chip-breaker	Shape
N	Without	-	Without	
R			Single-sided	
F			Double-sided	
A	With	Cylindrical hole	Without	
M			Single-sided	
G			Double-sided	
W		Partly cylindrical hole, single-side 40° ~ 60° Counter sink	Without	
T			Single-sided	
Q		Partly cylindrical hole, double-side 40° ~ 60° Counter sink	Without	
U			Double-sided	
B		Partly cylindrical hole, single-side 70° ~ 90° Counter sink	Without	
H			Single-sided	
C		Partly cylindrical hole, double-side 70° ~ 90° Counter sink	Without	
J			Double-sided	
X	-	-	-	

⑤ Cutting edge length

* R		S		C		W		T		D		V		K		I. C.dia. (mm)
Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	
		03	3.97	03	4.0			06	6.9	04	4.8					3.97
		04	4.76	04	4.8			08	8.2	05	5.8	08	8.3			4.76
*05	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5
		05	5.56	05	5.6	03	3.8	09	9.6	06	6.8					5.56
*06	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6
		06	6.35	06	6.5	04	4.3	11	11	07	7.8	11	11.2			6.35
		07	7.94	08	8.1	05	5.4	13	13.8	09	9.7					7.94
*08	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8
09	9.525	09	9.525	09	9.7	06	6.5	16	16.5	11	11.6	16	16.6	16	19.7	9.525
*10	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10
*12	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12
12	12.7	12	12.7	12	12.9	08	8.7	22	22	15	15.5	22	22.1			12.7
15	15.875	15	15.875	16	16.1	10	10.9	27	27.5	19	19.4					15.875
*16	16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	16
19	19.05	19	19.05	19	19.3	13	13	33	33	23	23.3					19.05
*20	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20
		22	22.225	22	22.6			38	38.5	27	27.1					22.225
*25	25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	25
25	25.4	25	25.4	25	25.8			44	44	31	31					25.4
31	31.75	31	31.75	32	32.2			55	55	38	38.8					31.75
*32	32	–	–	–	–	–	–	–	–	–	–	–	–	–	–	32

*When M0 is included in the Cat. No., the inscribed-circle diameter is metric size.

● Detailed accuracy for J,K,L,M,N and U classes

For inserts with nose corner angles larger than 55°

Unit: mm

Inscribed circle	Tolerance on inscribed circle dia. (ød)		Tolerance on corner height (m)		Insert shapes applied
	J,K,L,M,N (class)	U (class)	J,K,L,M,N (class)	U (class)	
6.35	±0.05	±0.08	±0.08	±0.13	H W O R P S T C,E,M
9.525					
12.7	±0.08	±0.13	±0.13	±0.2	
15.875	±0.1	±0.18	±0.15	±0.27	
19.05					
25.4	±0.13	±0.25	±0.18	±0.38	
31.75	±0.15	±0.25	±0.2	±0.38	
32					

For M-type inserts with nose corner angles of 55° (Shape: D), 35° (Shape: V), 25° (Shape: Y)

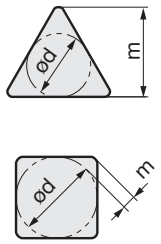
Unit: mm

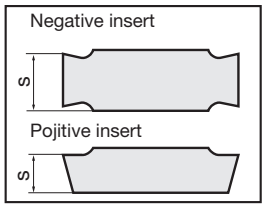
Inscribed circle	Tolerance on inscribed circle dia. (ød)	Tolerance on corner height (m)	Insert shapes applied
6.35	±0.05	±0.11	D
9.525			
12.7	±0.08	±0.15	
15.875	±0.1	±0.18	
19.05			
6.35	±0.05	±0.16	V
9.525			Y

Note on insert thickness

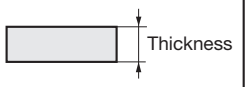
With regard to the insert thickness for chipbreaker inserts, the thickness (s) drawn in the outlined insert shapes on pages XX to XX is defined as "s" (height from the bottom face to the cutting edge) shown in the figure at right.

Inscribed circle (ød)
Corner height (m)





Symbol	Thickness (mm)
X1	1.39
01	1.59
T1	1.79
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52



⑥ Thickness

[Example]

⑥	⑦		⑩
04	08	-	TM

⑥	⑦	⑧	⑨		⑩
T3	04	F	N	-	JS

(Optional symbol) (Optional symbol) (Supplementary symbol)

⑦ Corner radius

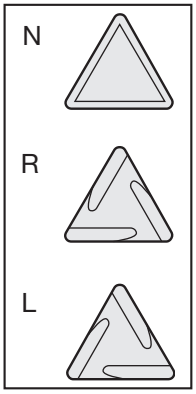
Symbol	Corner radius r_ε (mm)
00	0.03
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
28	2.8
32	3.2

⑧ Symbols of major cutting edge

Symbol	Condition of cutting edge	Shape
F	Sharp edge	
E	Honed rounded edge	
W.T	Honed chamfered edge	
S	Combination honed edge	

⑨ Hand of insert

Symbol	Hand
R	Right
L	Left
N	Neutral



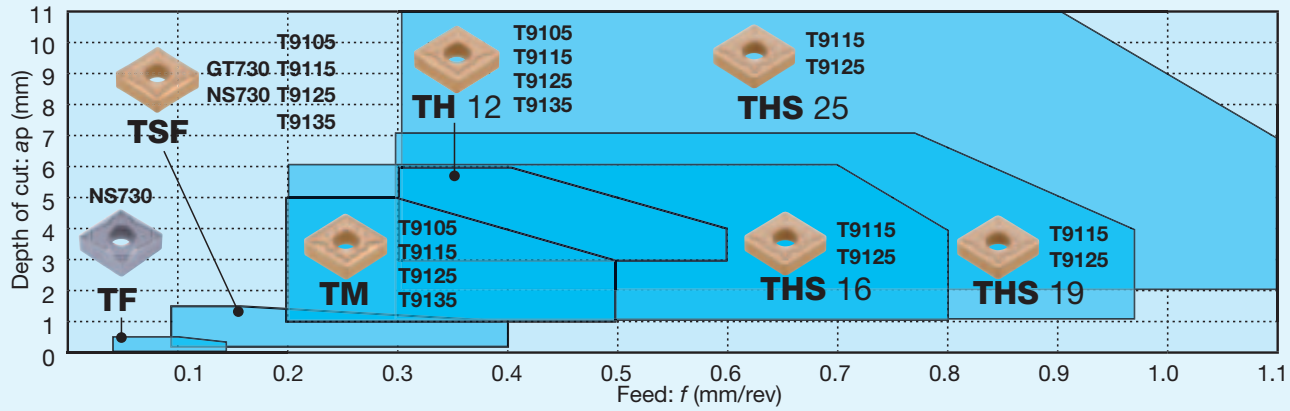
⑩ Chipbreakers

Symbol	Applications	Symbol	Applications
01(TF)	Precision finishing (Basic selection)	C	Finishing (Right and left hand)
TS	Finishing (Basic selection)	D	Finishing (Right and left hand)
TSF	Finishing (Basic selection)	P	Finishing of Aluminium alloys
TM	Medium cutting (Basic selection)	W	Finishing (Angular type)
THS	Medium to heavy cutting (Basic selection)	PSF	Finishing (Positive type)
TRS	Medium to heavy cutting	PSS	Finishing to light cutting (Positive insert)
TUS	Heavy cutting	PS	Finishing to medium cutting (Positive type Basic selection)
DM	Medium cutting	PM	Medium cutting (Positive type)
HMM	Medium cutting	AL	Finishing to medium cutting of aluminium alloys
SF	Finishing of stainless steels	RS	Medium cutting (For round inserts)
SS	Finishing of stainless and mild steels	W□□	Finishing (Angular type)
SM	Medium cutting of stainless steels	H□□	Finishing (Parallel)
S	Medium cutting of stainless steels	11	Finishing
SH	Medium to heavy cutting of stainless steels	61	Small depth of cut and high feed (For round inserts)
SA	For heat-resisting alloys and stainless steels	S1	Finishing (For KNMX type)
ZF	Finishing and copying	J08,J10	For small lathes
ZM	Finishing to medium cutting and copying	JS	For small lathes
NS	Finishing and copying	JRP	For small lathes
NM	Finish to medium cutting and copying	JPP	For small lathes
AS	Small depth of cut and high feed	JSP	For small lathes
AFW	Small depth of cut and high feed (Wiper type Inserts)		
ASW	Small depth of cut and high feed (Wiper type Inserts)		
CB	Medium cutting		
CM	Medium cutting of cast irons		
All-round	Medium cutting		
A	Finishing (Right and left hand)		
B	Finishing (Right and left hand)		

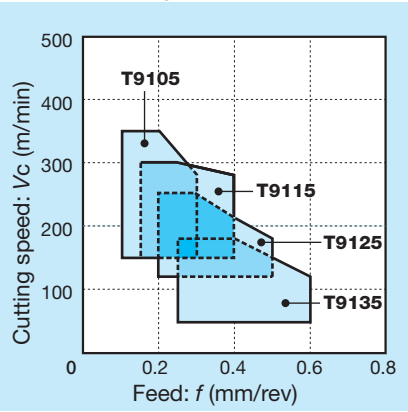
Basic Chipbreakers Negative Inserts

P Steel

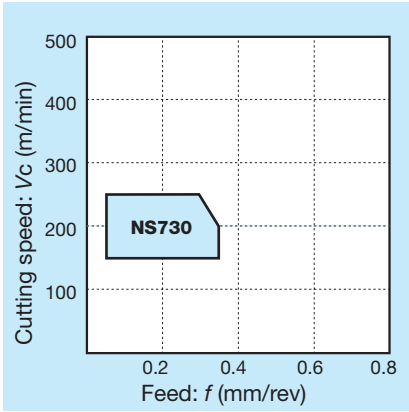
Chipbreaker System for Turning (Negative Inserts)

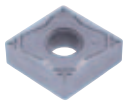
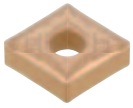


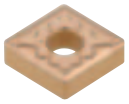
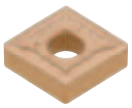
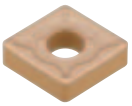
CVD coated grades



Coated cermets / Cermets



Chipbreaker	Appearance	Features
TF		The sharp cutting edge and raised projection near corner contribute to excellent chip control at very small depths of cut and low feeds. Economical M-class tolerance and low cost.
TSF		First choice chipbreaker for finishing steels. The dimple structure decreases the contact area between the insert surface and chips, resulting in significant reduction of heat occurrence.

Chipbreaker	Appearance	Features
TM		General purpose chipbreaker used for medium cutting. Unique chipbreaker geometry with sharp edges and large rake angle assures free cutting action in a wide range of cutting conditions.
TH		Double-sided 3-dimensional chipbreaker with a wide land and broad groove used for medium to heavy cutting including interruption and unfavorable surface conditions. Also performs well in high feed machining.
THS		Excellent chip control in a broad range of depth of cut. Strong cutting edge being suitable for interrupted and high feed operations.

Standard Cutting Conditions

Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)		
						Low carbon steels, Alloy steels	Medium carbon steels, Alloy steels	High carbon steels, Alloy steels
Precision finishing	Light interrupted	TF	NS730	0.05 - 0.5	0.03 - 0.15	150 - 250	100 - 250	100 - 200
Finishing	Light interrupted	TSF	GT730	0.2 - 1.5	0.08 - 0.4	150 - 300	80 - 250	80 - 200
	Heavy interrupted		T9125			120 - 250	80 - 200	80 - 150
Medium cutting	Continuous to heavy interrupted	TM	T9105	1.0 - 5.0	0.2 - 0.5	180 - 350	180 - 350	180 - 300
			T9115			150 - 300	150 - 300	120 - 250
			T9125			120 - 250	80 - 200	80 - 150
			T9135			50 - 180	50 - 150	50 - 120
Medium to heavy cutting	Continuous to light interrupted	TH	T9105	3.0 - 6.0	0.3 - 0.6	180 - 350	180 - 350	180 - 300
			T9115			150 - 300	150 - 300	120 - 250
			T9125			120 - 250	80 - 200	80 - 150
			T9135			50 - 180	50 - 150	50 - 120

Low carbon steels, Alloy steels: C10E, 15CrMo5, 20Cr4H, etc. Medium carbon steels, Alloy steels: C45, 42CrMo4, etc.
High carbon steels, Alloy steels: 35CrNiMo6, etc.

Selection System Negative Inserts

Continuous	Light interrupted	Heavy interrupted
		

P Steel

Steel

Precision finishing [a_p = ~ 0.5 mm]

Continuous

Basic: TF NS730
- Wear → 01 GT730

Light interrupted

Basic: TF NS730
- Fracture → TSF GT730

Finishing [a_p = 0.3 ~ 1.5 mm]

Continuous

Basic: TSF GT730
- Chip control → ZF GT730

Light interrupted

Basic: TSF GT730
- Fracture → TSF T9115

Heavy interrupted

Basic: TSF T9125
- Fracture → TSF T9135

Medium cutting [a_p = 1.0 ~ 4.0 mm]

Continuous

Basic: TM T9115
- Wear → TM T9105
- Chip control → ZM T9115

Light interrupted

Basic: TM T9125
- Fracture → TM T9135
- Wear → TM T9115

Heavy interrupted

Basic: TM T9135
- Fracture → DM T9135

Medium to heavy cutting [a_p = 3.0 ~ 6.0 mm]

Continuous

Basic: TH T9115
- Wear → TH T9105
- Chip control → TM T9115

Light interrupted

Basic: TH T9125
- Fracture → TH T9135
- Wear → TH T9115

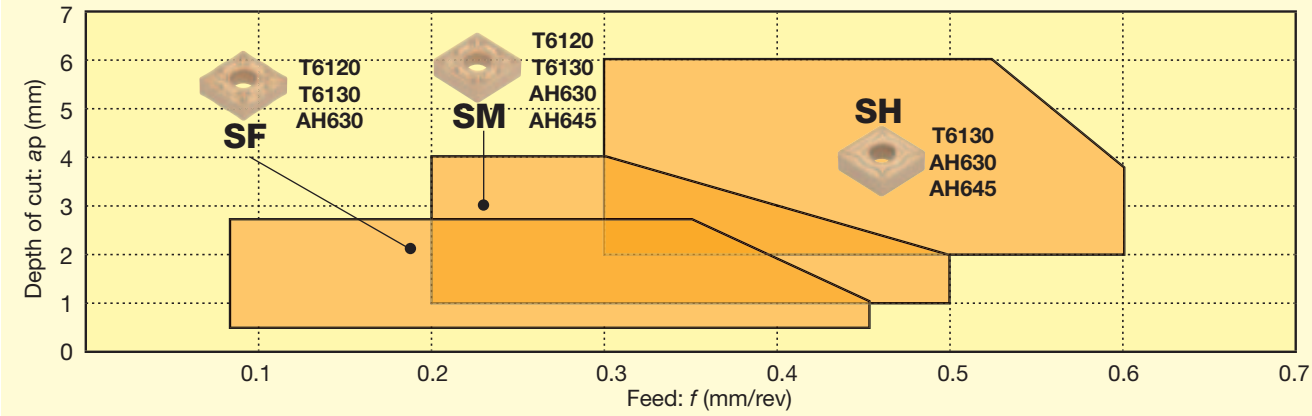
Heavy interrupted

Basic: TH T9135
- Fracture → TUS T9135

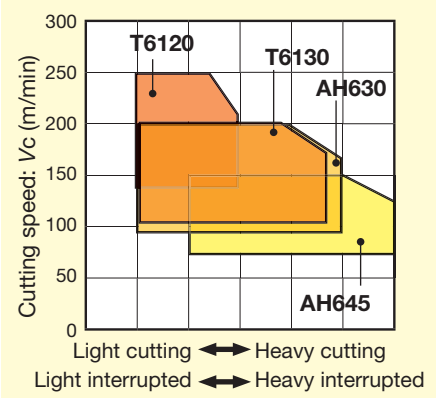
Basic Chipbreakers Negative Inserts

M Stainless Steel

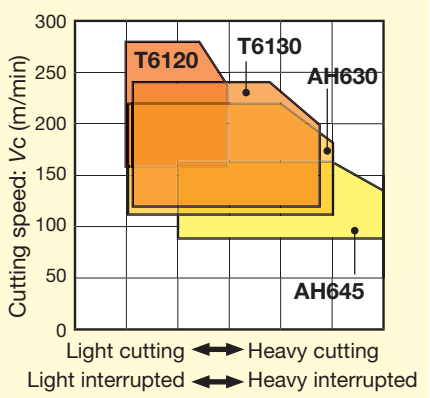
Chipbreaker System for Turning



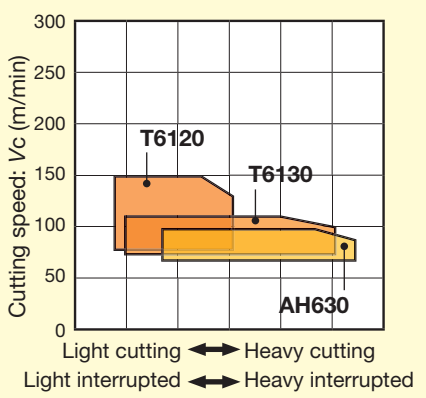
Austenitic stainless steel

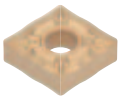
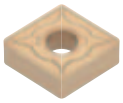


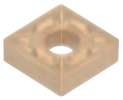
Ferritic / martensite stainless steel



Precipitation hardened stainless steel



Chipbreaker	Appearance	Features
SF		Exellent chip control when finish cutting. Outstanding chip control when high feed turning at small depth of cut.
SH		Suitable for roughing operations and interrupted machining with tough cutting edges.

Chipbreaker	Appearance	Features
SM		Applicable to a wide range of cutting condition with sharp edge. Recommended chipbreaker for stainless steel turning.

Standard Cutting Conditions

Operation	Work condition	Chipbreaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed *Vc* (m/min)
Finishing	Continuous	SF	T6120	0.5 - 2.5	0.08 - 0.45	140 - 240
	Continuous to light interrupted		T6130			100 - 200
	Heavy interrupted		AH630			90 - 190
Medium cutting	Continuous	SM	T6120	1.0 - 4.0	0.2 - 0.5	140 - 240
	Continuous to light interrupted		T6130			100 - 200
	Light interrupted		AH630			90 - 190
	Heavy interrupted		AH645			70 - 150
Medium to heavy cutting	Continuous to light interrupted	SH	T6130	2.0 - 6.0	0.3 - 0.6	100 - 200
	Light interrupted		AH630			90 - 190
	Heavy interrupted		AH645			70 - 150

Stainless steels: X5CrNi18-10, X5CrNiMo17-12-2, etc.

Grades (1-1) Relating pages

Selection System Negative Inserts

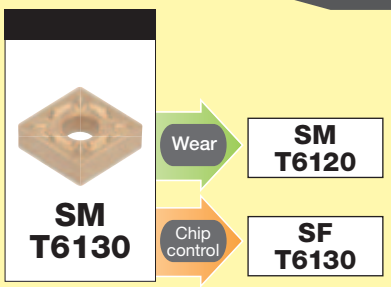
Continuous	Light interrupted	Heavy interrupted
		

M Stainless Steel

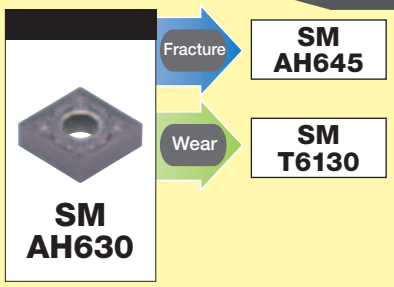
Stainless

Finishing [a_p = 0.5 ~ 1.5 mm]

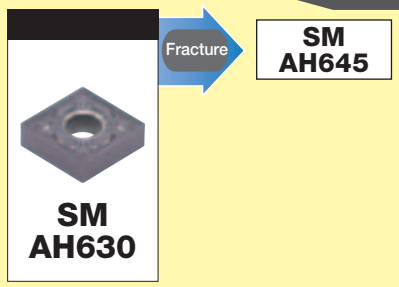
Continuous



Light interrupted

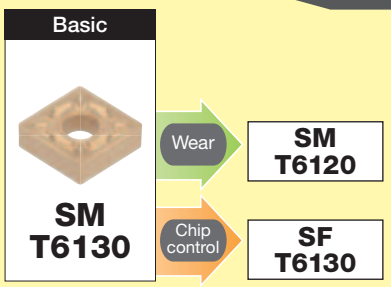


Heavy interrupted

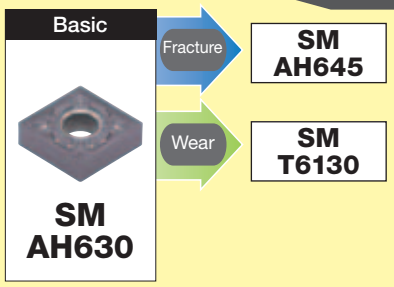


Medium cutting [a_p = 1.0 ~ 4.0 mm]

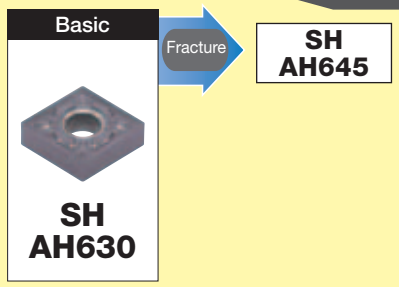
Continuous



Light interrupted

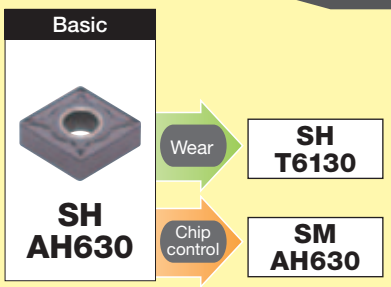


Heavy interrupted

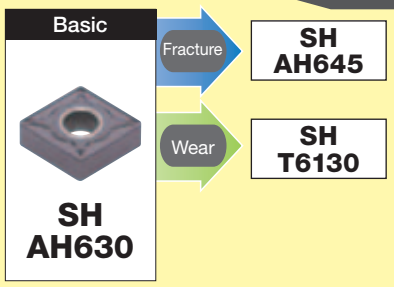


Medium to heavy cutting [a_p = 2.0 ~ 6.0 mm]

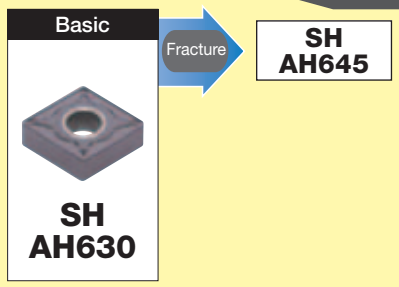
Continuous



Light interrupted



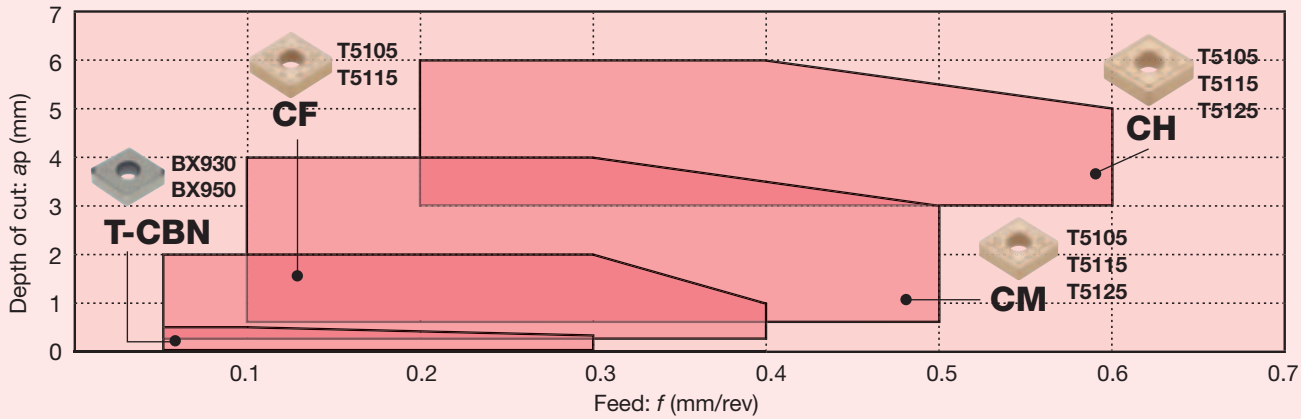
Heavy interrupted



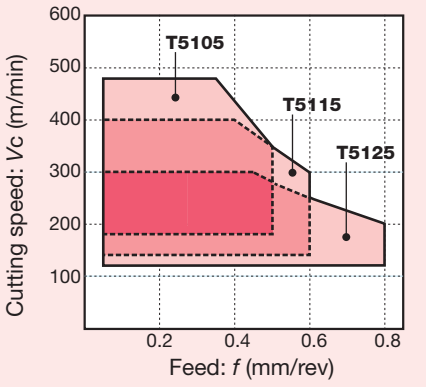
Basic Chipbreakers Negative Inserts

K Cast Iron

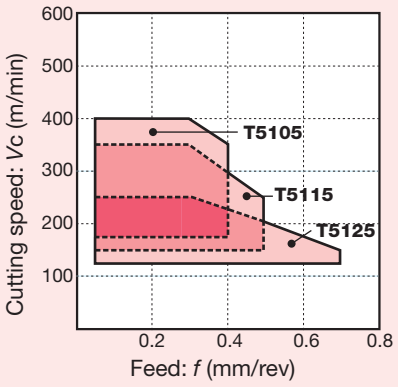
Chipbreaker System for Turning (Negative Inserts)



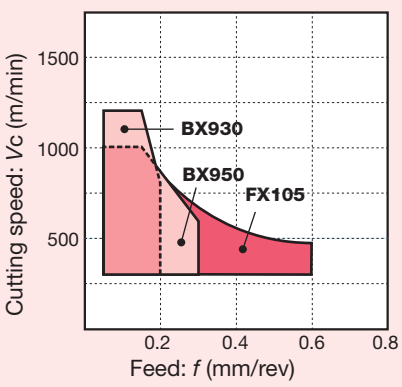
Grey cast irons

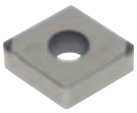
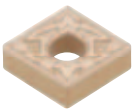


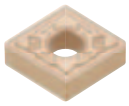
Ductile cast irons



High speed cutting: for grey cast irons



Chip-breaker	Appearance	Features
No chip-breaker (T-CBN)		T-CBN inserts. Performs well in high speed finishing of cast iron.
CF		Low cutting force chipbreaker for cast iron. Combined with an arc-shaped concave and a high rake (substantially 20° rake angle), allows drastically reducing cutting forces and suppressing the deformation of thin walled components and burr occurrence.

Chip-breaker	Appearance	Features
CM		First choice chipbreaker for cast iron. An all around chipbreaker, which is applicable for a wide range of cutting conditions from continuous to interrupted machining with the positive land and wide chip pocket
CH		Chipbreaker with reinforced cutting-edge for cast iron. Utilizing the land support and negative land design, features stable insert seating and high cutting edge strength even in heavy cutting.

Standard Cutting Conditions

Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)	
						Grey cast irons	Ductile cast irons
High speed cutting	Continuous	Without	**BX930**	0.05 - 0.5	0.05 - 0.2	300 - 1200	100 - 500
	Light interrupted		**BX950**		0.05 - 0.3	300 - 1000	100 - 300
	Continuous	Without	**FX105**	0.05 - 3.0	0.05 - 0.6	300 - 1000	-
Finishing	Continuous	**CF**	**T5105**	0.5 - 2.0	0.05 - 0.4	180 - 480	180 - 400
	Light interrupted		**T5115**			140 - 400	140 - 370
Medium cutting	Continuous	**CM**	**T5105**	1.0 - 4.0	0.1 - 0.5	180 - 480	180 - 400
	Light interrupted		**T5115**			140 - 400	140 - 370
	Heavy interrupted		**T5125**			120 - 300	120 - 250
Heavy cutting	Continuous	**CH**	**T5105**	3.0 - 6.0	0.1 - 0.6	180 - 480	180 - 400
	Light interrupted		**T5115**			140 - 400	140 - 370
	Heavy interrupted		**T5125**			120 - 300	120 - 250

Grey cast irons: GG25 etc. Ductile cast irons: GGG45 etc.

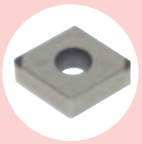
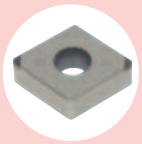
Selection System Negative Inserts

Continuous	Light interrupted	Heavy interrupted
		

K Cast Iron

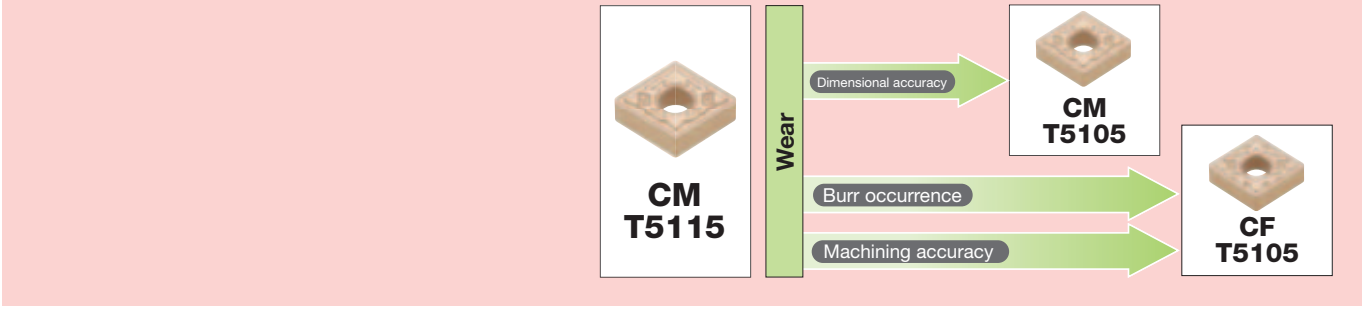
Cast Iron

For high speed machining

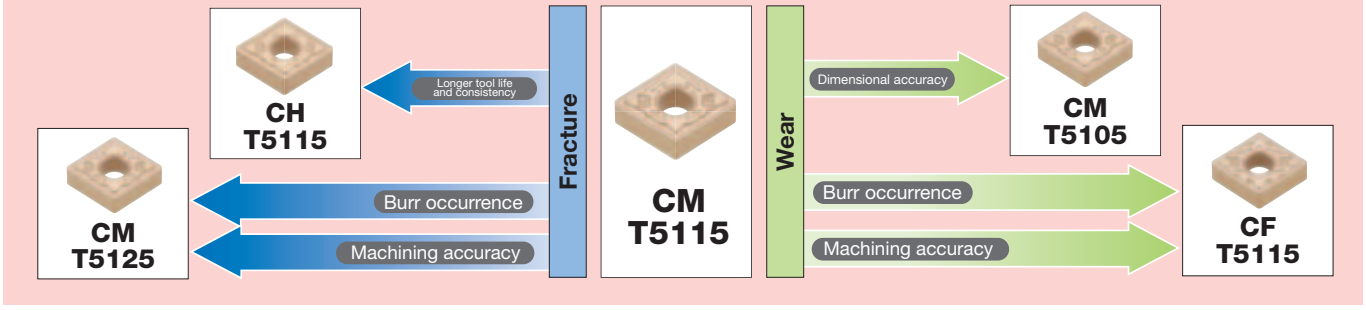
Continuous	Light interrupted
	
T-CBN BX930	**T-CBN BX950**

Finishing [a_p = 0.5 ~ 2.0 mm], **Medium cutting** [a_p = 1.0 ~ 5.0 mm], **Medium to heavy cutting** [a_p = 3.0 ~ 6.0 mm]

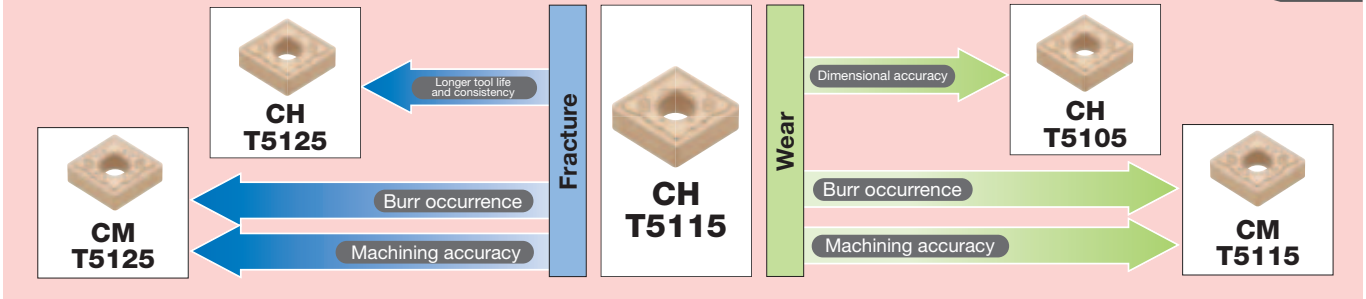
Continuous



Light interrupted



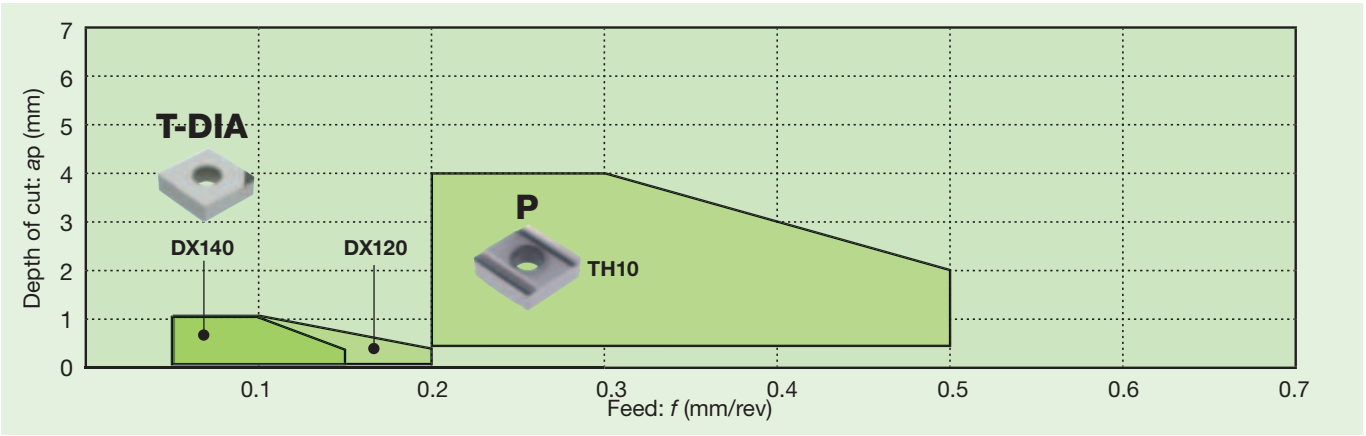
Heavy interrupted



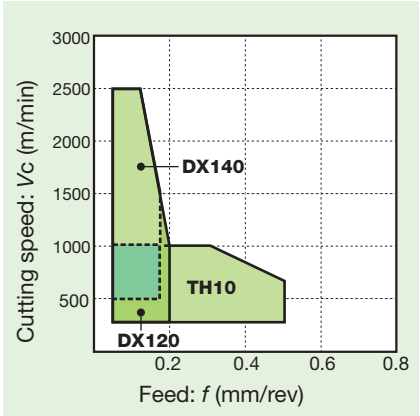
Basic Chipbreakers Negative Inserts

N Non-ferrous Metal

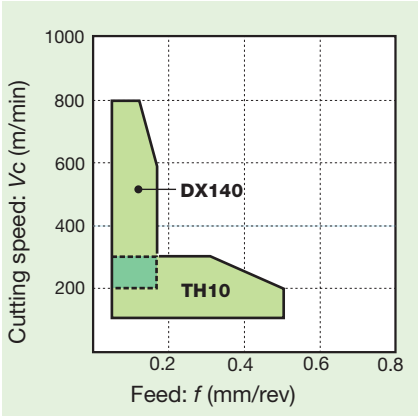
Chipbreaker System for Turning (Negative Inserts)



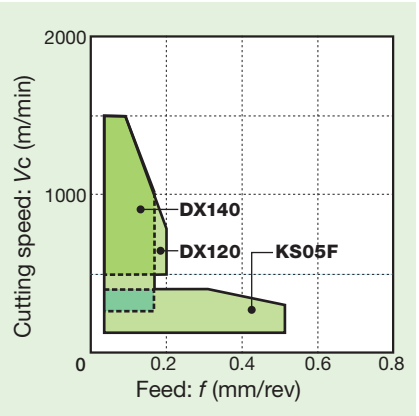
Aluminium alloys (Si < 13%)

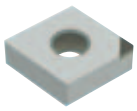
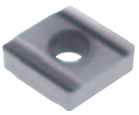


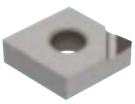
Aluminium alloys (Si ≥ 13%)



Copper alloys



Chip-breaker	Appearance	Features
No chip-breaker (T-DIA)		Performs well in high speed finishing of non-ferrous materials.
P		Excels in sharpness of cutting edges and effectively used for machining non-ferrous metals such as aluminium alloys and copper alloys.

Chip-breaker	Appearance	Features
With chip-breaker (T-DIA)		The wide chipbreaker width contributes to excellent chip control.

Standard Cutting Conditions

Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)		
						Aluminium alloys (Si < 12%)	Aluminium alloys (Si > 12%)	Copper alloys
Precision finishing	Continuous	Without	DX140	0.05 - 1.0	0.05 - 0.15	500 - 2500	400 - 800	500 - 1500
	Light interrupted	with	DX120	0.05 - 1.0	0.05 - 0.20	300 - 2500	-	500 - 1500
Finishing	Continuous	Without	DX140	0.05 - 1.0	0.05 - 0.15	500 - 2500	400 - 800	500 - 1500
	Light interrupted					300 - 1800	400 - 600	400 - 1200
	Heavy interrupted	P	TH10	0.5 - 4.0	0.2 - 0.5	100 - 500	100 - 200	100 - 200
Medium cutting	Continuous	P	TH10	0.5 - 4.0	0.2 - 0.5	100 - 1000	100 - 300	100 - 300
	Light interrupted					100 - 800	100 - 200	100 - 200
	Heavy interrupted					100 - 500	100 - 200	100 - 200

Grades (1-1) Relating pages

Selection System Negative Inserts

Continuous	Light interrupted	Heavy interrupted
		

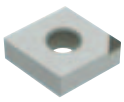
N Non-ferrous Metal

Non-ferrous

Precision finishing [a_p = ~ 0.5 mm]

Continuous

Basic

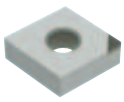


T-DIA DX140

Wear → T-DIA DX160

Light interrupted

Basic



T-DIA DX140

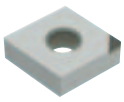
Surface → With chipbreaker T-DIA DX120

Wear → T-DIA DX160

Finishing [a_p = 0.5 ~2.0 mm]

Continuous

Basic



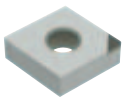
T-DIA DX140

Surface → With chipbreaker T-DIA DX120

Wear → T-DIA DX160

Light interrupted

Basic



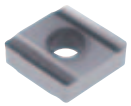
T-DIA DX140

Fracture → P TH10

Wear → T-DIA DX160

Heavy interrupted

Basic

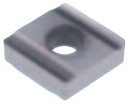


P TH10

Medium cutting [a_p = 1.0 ~ 4.0 mm]

Continuous

Basic

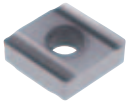


P TH10

Wear → T-DIA DX140

Light interrupted

Basic

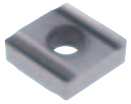


P TH10

Wear → T-DIA DX140

Heavy interrupted

Basic

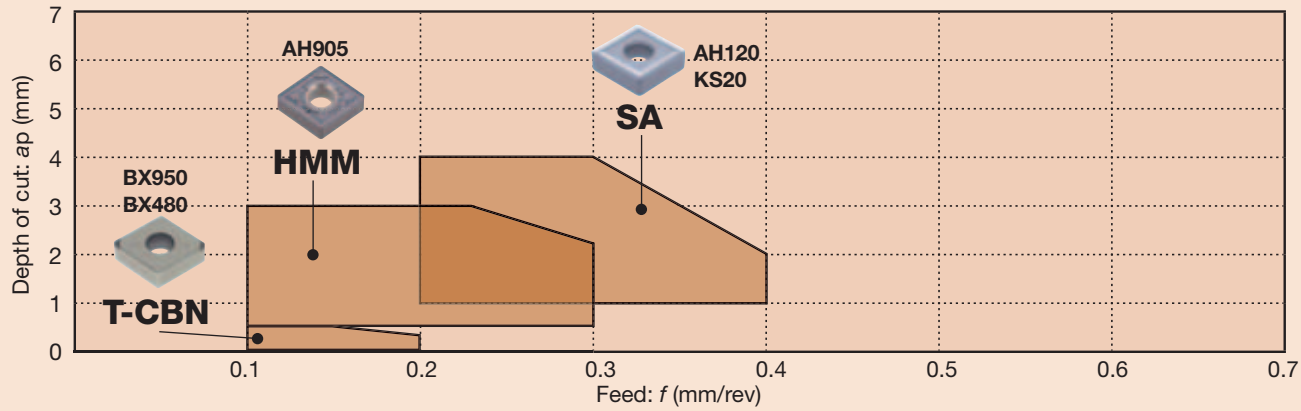


P TH10

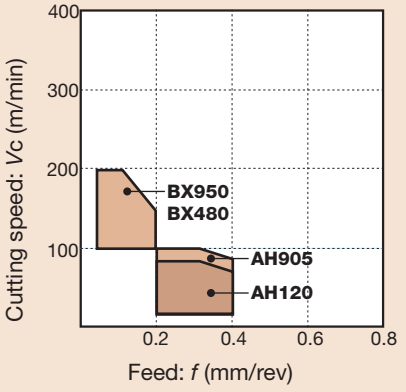
Basic Chipbreakers Negative Inserts

Superalloys and titanium

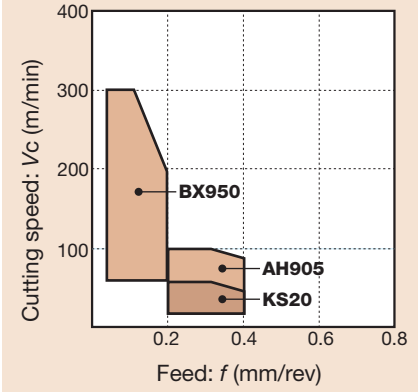
Chipbreaker System for Turning (Negative Inserts)

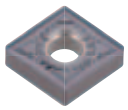


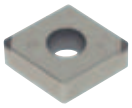
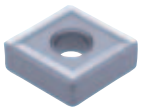
Titanium alloys



Ni-base alloys



Chipbreaker	Appearance	Features
HMM		Low cutting force chipbreaker for super alloys. Combined with the narrow positive land and uneven dots on the rake face allows a small contact area for chips, reducing cutting forces considerably.

Chipbreaker	Appearance	Features
No chip-breaker (T-CBN)		T-CBN inserts. Performs well in finishing of heat-resistant or titanium alloys.
SA		This chipbreaker is designed its to reduce the contact-area between tool and chip, preventing the insert from raising temperature during cutting.

Standard Cutting Conditions

Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)	
						Titanium alloys	Ni-base alloys
Precision finishing	Continuous	Without	**BX950**	0.1 - 0.5	0.05 - 0.2	100 - 200	70 - 300
	Light interrupted		**BX480**				-
Finishing to Medium cutting	Continuous	**HMM**	**AH905**	0.5 - 3.0	0.1 - 0.3	20 - 100	20 - 100
	Light interrupted					20 - 80	20 - 50
	Heavy interrupted					10 - 60	10 - 40
Medium cutting	Continuous	**SA**	**AH120**	1.0 - 4.0	0.2 - 0.4	30 - 80	-
	Light interrupted					30 - 80	20 - 50
	Heavy interrupted					10 - 60	10 - 40

Ni-base alloys: INCONEL718 etc.
Titanium alloys: Ti-6Al-4V etc

Selection System Negative Inserts

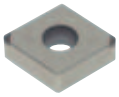
Continuous	Light interrupted	Heavy interrupted
		

S Superalloys and titanium

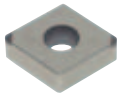
Superalloys

Precision finishing [a_p = ~ 0.5 mm]

Continuous

Basic

T-CBN BX950

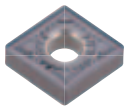
Light interrupted

Basic

T-CBN BX950

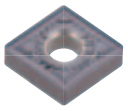
Fracture → No chipbreaker **TH10**

Finishing [a_p = 0.5 ~ 2.0 mm]

Continuous

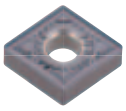
Basic

HMM AH905

Light interrupted

Basic

HMM AH905

Fracture → **All-round AH120**

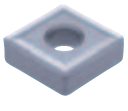
Heavy interrupted

Basic

HMM AH905

Fracture → **All-round AH120**

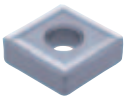
Medium cutting [a_p = 1.0 ~ 4.0 mm]

Continuous

Basic

SA AH120

Wear → **All-round AH110**

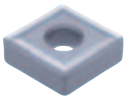
Light interrupted

Basic

SA AH120

Fracture → **All-round AH110**

Wear → **All-round AH110**

Heavy interrupted

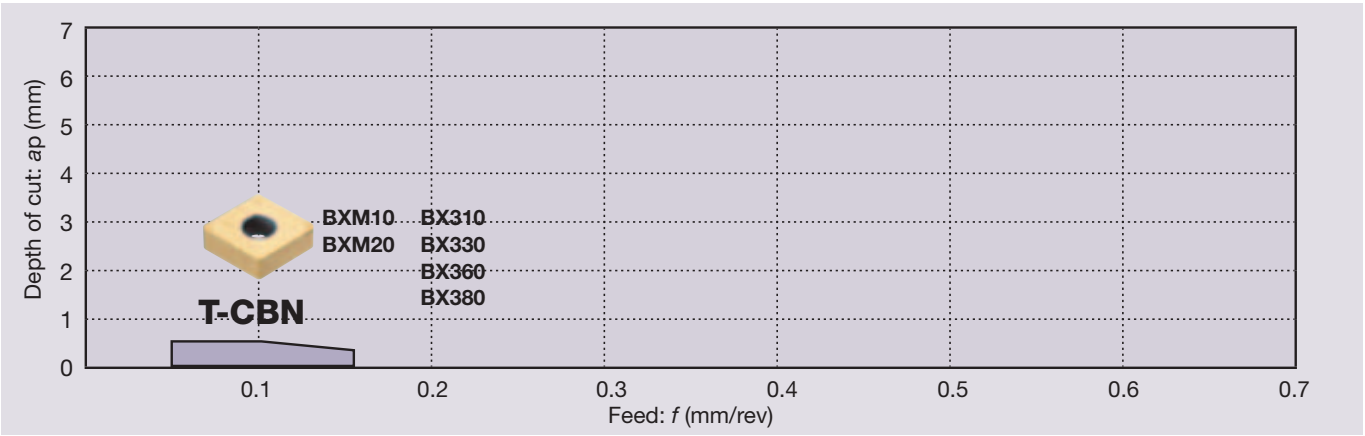
Basic

SA AH120

Fracture → **All-round AH120**

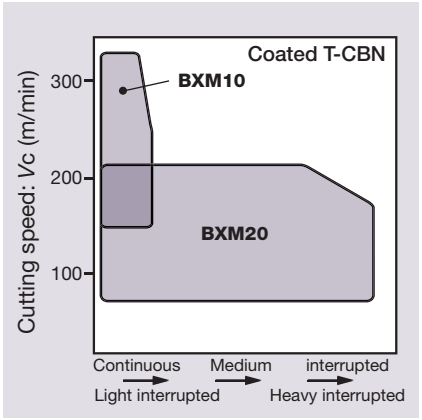
Basic Chipbreakers Negative Inserts

H Hard Materials

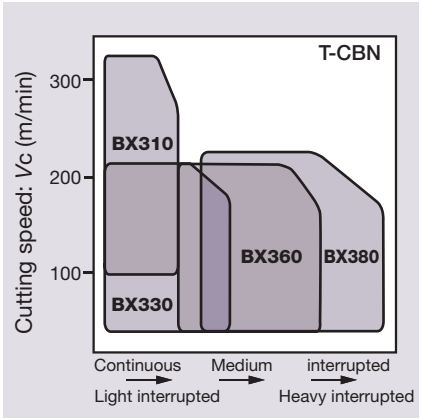
Chipbreaker System for Turning (Negative Inserts)

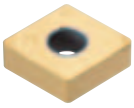


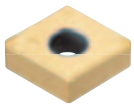
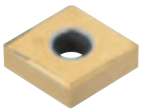
Coated T-CBN



T-CBN



Chipbreaker	Appearance	Features
No chip-breaker (T-CBN)		Performs well in finishing of hardened steel.

Chipbreaker	Appearance	Features
HF		When used in removing a carburized layer, excels in chip control at small depth of cut.
HM		When used in removing a carburized layer, excels in chip control at large depth of cut.

Standard Cutting Conditions

Operation	Work condition	Chipbreaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed *Vc* (m/min)
Precision finishing	Continuous to light interrupted	Without	BXM10	0.05 - 0.3	0.03 - 0.18	150 - 350
Finishing	Continuous to heavy interrupted	Without	BXM20	0.05 - 0.3	0.05 - 0.25	70 - 220
Removing of carburized layer	Continuous	HF	BXM20	0.2 - 0.75	0.05 - 0.2	70 - 220
		HM		0.5 - 1.0		

Hardened steels, Pre-hardened steels: X100CrMoV5, X40CrMoV5-1 etc.

Grades (1-1)
Relating pages

Selection System Negative Inserts

Continuous	Light interrupted	Medium interrupted	Heavy interrupted
			

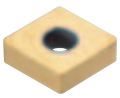
H Hard Materials

Hard Materials

Precision finishing [a_p = ~ 0.2 mm]

Continuous

Basic

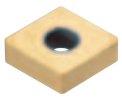


T-CBN BXM20

For high speed Wear → **T-CBN BXM10**

Light interrupted

Basic



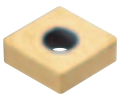
T-CBN BXM20

For high speed Wear → **T-CBN BXM10**

Finishing [a_p = ~ 0.5 mm]

Continuous

Basic

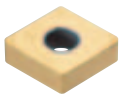


T-CBN BXM20

For high speed Wear → **T-CBN BXM10**

Light interrupted

Basic



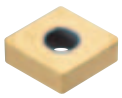
T-CBN BXM20

Fracture → **-H BXM20**

For high speed Wear → **T-CBN BXM10**

Medium ~ Heavy interrupted

Basic



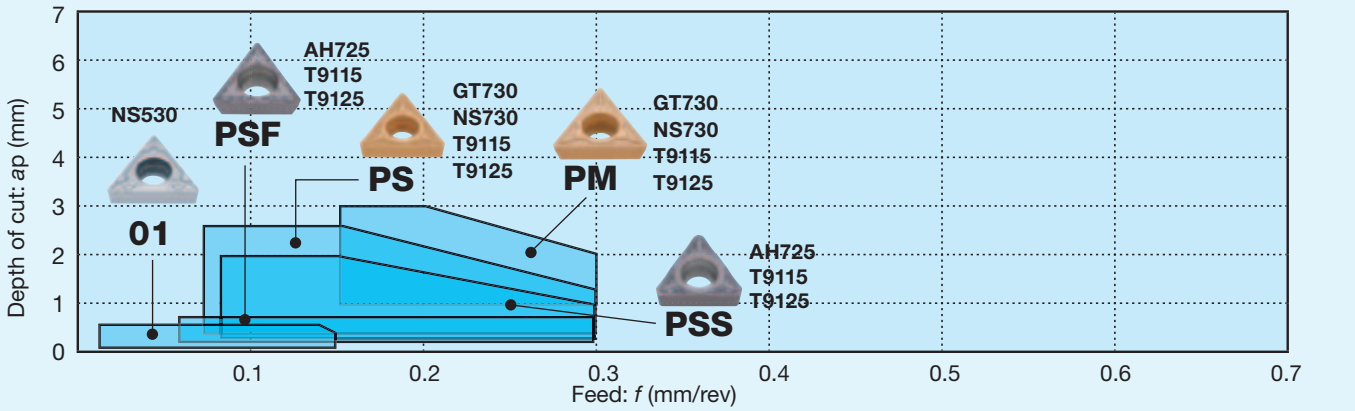
T-CBN BXM20

Fracture → **-H BXM20**

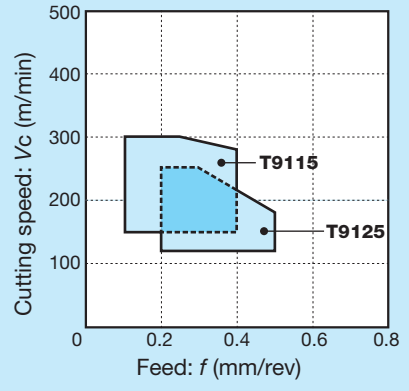
Basic Chipbreakers Positive Inserts

P Steel

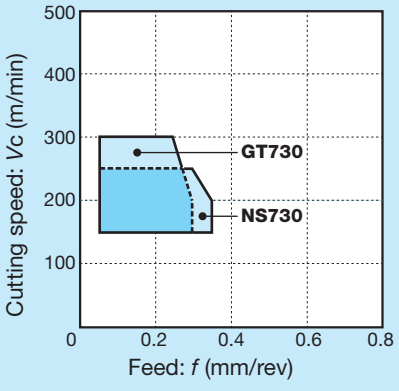
Chipbreaker System for Turning (Positive Inserts)

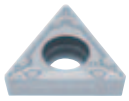
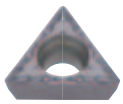
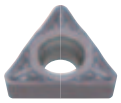


CVD coated grades



Coated cermets / Cermets



Chipbreaker	Appearance	Features
01		The sharp cutting edge and raised projection near corner contribute to excellent chip control at very small depth of cut and low feed.
PSF		Developed chipbreaker for finishing at low cutting depths. Optimal chip control due to pre-positioned chipbreaker element.
PSS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.

Chipbreaker	Appearance	Features
PS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.
PM		Developed chipbreaker for medium cutting. Excellent chip control due to wide, positive chip flow zone.

Standard Cutting Conditions

Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)		
						Low carbon steels, Alloy steels	Medium carbon steels, Alloy steels	High carbon steels, Alloy steels
Precision finishing	Continuous	01	GT730	0.05 - 0.5	0.03 - 0.15	150 - 300	80 - 250	80 - 200
	Light interrupted		NS530			150 - 250	80 - 220	80 - 180
Finishing	Continuous	PSF	AH725	0.1 - 0.5	0.05 - 0.3	50 - 180	50 - 180	40 - 150
	Light interrupted					50 - 180	50 - 180	40 - 150
	Heavy interrupted					50 - 150	50 - 150	40 - 120
Finishing to light cutting	Continuous	PSS	AH725	0.3 - 2.0	0.08 - 0.3	50 - 180	50 - 180	40 - 150
	Light interrupted					50 - 180	50 - 180	40 - 150
	Heavy interrupted					50 - 150	50 - 150	40 - 120
Finishing to Medium cutting	Continuous to Heavy interrupted	PS	T9115	0.5 - 2.5	0.08 - 0.3	120 - 250	100 - 200	80 - 180
			T9125			120 - 250	80 - 180	80 - 120
Medium cutting	Continuous to Heavy interrupted	PM	T9115	1.0 - 3.0	0.15 - 0.3	120 - 250	100 - 200	80 - 180
			T9125			120 - 250	80 - 180	80 - 120

Low carbon steels, Alloy steels: C10E, 15CrMo5, 20Cr4H, etc. Medium carbon steels, Alloy steels: C45, 42CrMo4, etc.
High carbon steels, Alloy steels: 35CrNiMo6, etc.

Grades (1-1) Relating pages

Selection System Positive Inserts

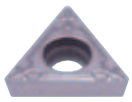
P Steel

Steel

Precision finishing [a_p = ~ 0.5 mm]

Continuous

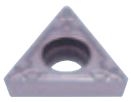
Basic



01
NS530

Light interrupted

Basic



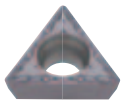
01
NS530

Fracture → PSF AH725

Finishing [a_p = 0.1 ~ 0.5 mm]

Continuous

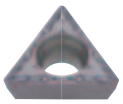
Basic



PSF
AH725

Light interrupted

Basic

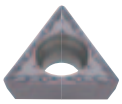


PSF
AH725

Fracture → PSF T9115

Heavy interrupted

Basic



PSF
AH725

Fracture → PS T9125

Finishing to Medium cutting [a_p = 0.5 ~ 2.5 mm]

Continuous

Basic

PSS
T9115

Light interrupted

Basic

PS
T9115

Fracture → PS T9125

Wear → PS GT730

Heavy interrupted

Basic

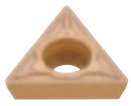
PS
T9125

Fracture → PM T9125

Medium cutting [a_p = 1.0 ~ 3.0 mm]

Continuous

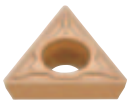
Basic



PM
T9115

Light interrupted

Basic

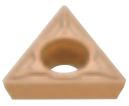


PM
T9115

Fracture → PM T9125

Heavy interrupted

Basic

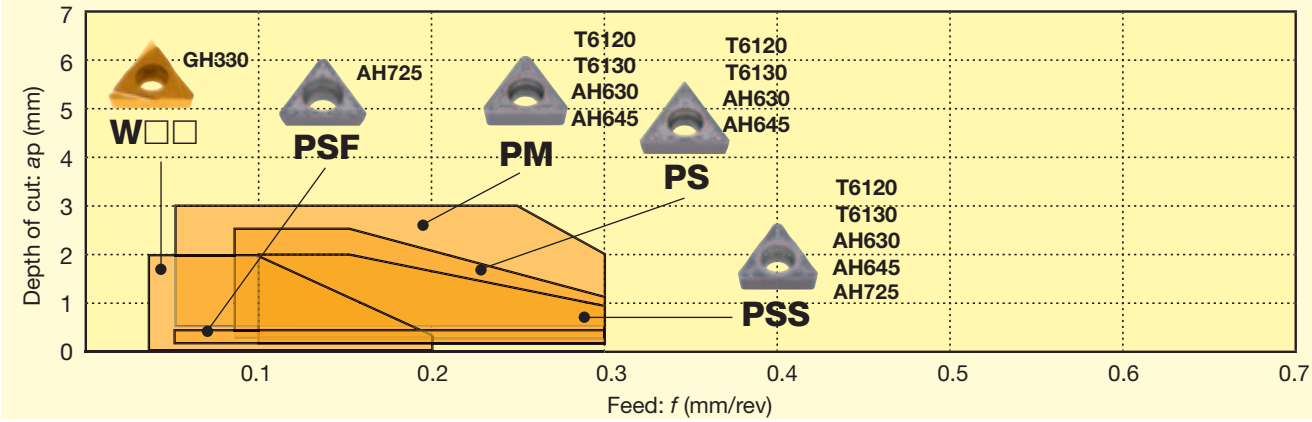


PM
T9125

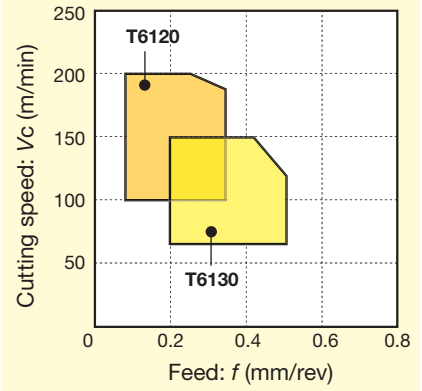
Basic Chipbreakers Positive Inserts

M Stainless Steel

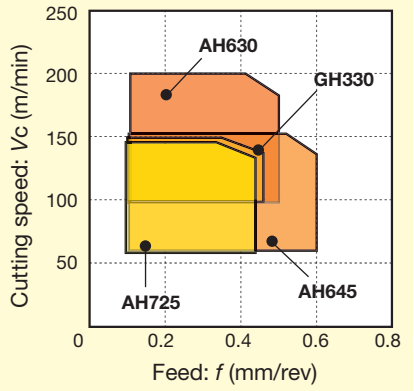
Chipbreaker System for Turning (Positive Inserts)

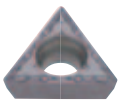


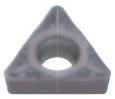
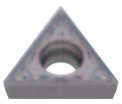
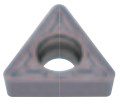
CVD coated grades



PVD coated grades



Chipbreaker	Appearance	Features
W□□		Designed to control the direction of chip flow and used for precision finish boring. Provides excellent chip evacuation which is important to attain a highly accurate bore.
PSF		Developed chipbreaker for finishing at low cutting depths. Optimal chip control due to pre-positioned chipbreaker element.

Chipbreaker	Appearance	Features
PSS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.
PS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.
PM		Developed chipbreaker for medium cutting. Excellent chip control due to wide, positive chip flow zone.

Standard Cutting Conditions

Operation	Work condition	Chipbreaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed *Vc* (m/min)
Precision finishing	Continuous	W□□	GH330	0.05 - 2.0	0.03 - 0.2	100 - 150
Finishing	Continuous	PSF	AH725	0.1 - 0.5	0.05 - 0.3	50 - 150
	Light interrupted					50 - 150
	Heavy interrupted					50 - 120
Finishing to light cutting	Continuous	PSS	AH725	0.3 - 2.0	0.08 - 0.3	50 - 150
	Light interrupted					50 - 150
	Heavy interrupted					50 - 120
Finishing to medium cutting	Continuous	PS	T6130	0.5 - 2.5	0.08 - 0.3	100 - 200
	Light interrupted		AH630			100 - 200
	Heavy interrupted		AH630			70 - 170
Medium cutting	Continuous	PM	T6130	1.0 - 3.0*	0.15 - 0.3	100 - 200
	Light interrupted		AH630			100 - 200
	Heavy interrupted		AH630			50 - 100

*For CCMT0602 and DCMT0702 type inserts, *ap* = 0.5 - 2.5
Stainless steels: X5CrNi18-10, X5CrNiMo17-12-2, etc.

Selection System Positive Inserts

M Stainless Steel

Stainless

Precision finishing [a_p = ~ 0.5 mm]

Continuous

Basic

WCC GH330

Light interrupted

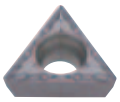
Basic

WCC GH330

Finishing [a_p = 0.3 ~ 1.5 mm]

Continuous

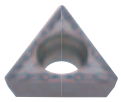
Basic



PSF AH725

Light interrupted

Basic



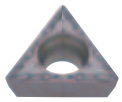
PSF AH725

Fracture → PS AH645

Wear → PS AH630

Heavy interrupted

Basic



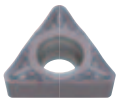
PSF AH725

Fracture → PS AH645

Finishing to Medium cutting [a_p = 0.5 ~ 2.5 mm]

Continuous

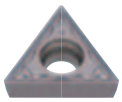
Basic



PSS AH630

Light interrupted

Basic



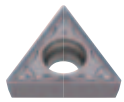
PS AH630

Fracture → PM AH645

Wear → PS T6130

Heavy interrupted

Basic



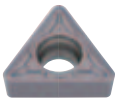
PS AH630

Fracture → PM AH645

Medium cutting [a_p = 1.0 ~ 3.0 mm]

Continuous

Basic

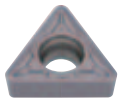


PM AH630

Wear → PM T6120

Light interrupted

Basic



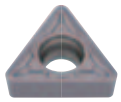
PM AH630

Fracture → PM AH645

Wear → PM T6130

Heavy interrupted

Basic



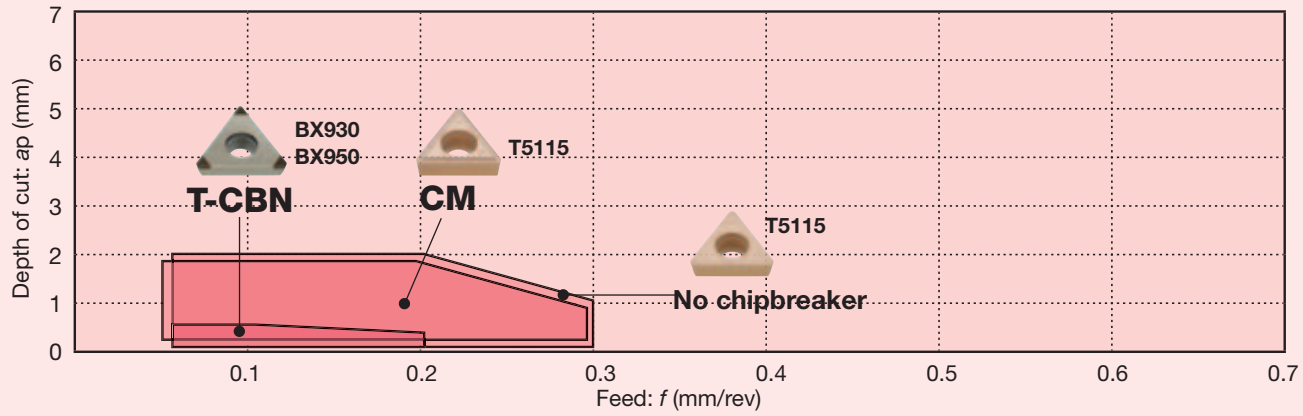
PM AH630

Fracture → PM AH645

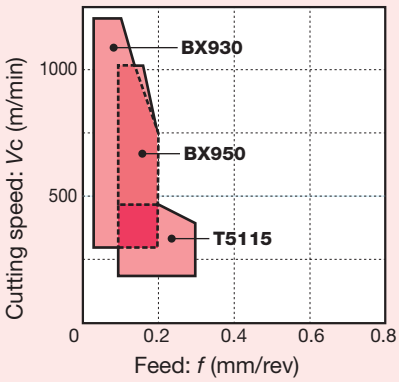
Basic Chipbreakers Positive Inserts

K Cast Iron

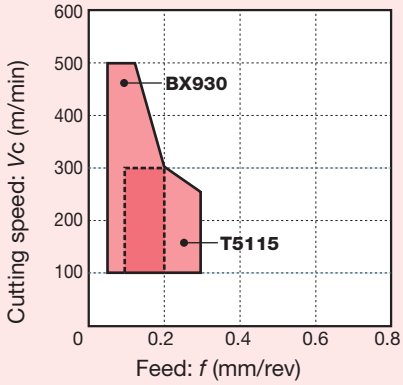
Chipbreaker System for Turning (Positive Inserts)

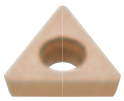


Grey cast irons



Ductile cast irons



Chipbreaker	Appearance	Features
No chip-breaker (T-CBN)		Performs well in high speed finishing of cast iron.
No chip-breaker		Can cover a wide range of applications from finishing to roughing of cast irons. Excels in cutting edge strength.

Chipbreaker	Appearance	Features
CM		All-around chipbreaker for general purpose cutting, provides low cutting forces and excellent performance in finishing to medium cutting.

Standard Cutting Conditions

Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)	
						Grey cast irons	Ductile cast irons
Precision finishing	Continuous	Without	**BX930**	0.05 - 0.5	0.05 - 0.2	300 - 1200	100 - 500
	Light interrupted		**BX950**			300 - 800	100 - 300
Finishing	Continuous	**CM**	**T5115**	0.05 - 2.0	0.05 - 0.3	150 - 450	100 - 300
	Light interrupted					100 - 300	100 - 250
	Heavy interrupted					100 - 200	100 - 200
Medium cutting	Continuous	Without	**T5115**	0.05 - 2.0	0.05 - 0.3	150 - 450	100 - 300
	Light interrupted					100 - 300	100 - 250
	Heavy interrupted					100 - 200	100 - 200

Grey cast irons: GG25 etc.
Ductile cast irons: GGG45 etc.

Cast Iron

Cast Iron

For high speed machining

Continuous	Light interrupted
	
T-CBN BX930	T-CBN BX950

Finishing to Medium cutting [a_p = 0.5 ~ 3.0 mm]

Continuous

Basic

CM T5115

Wear → T-CBN BX930

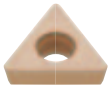
Light interrupted

Basic

CM T5115

Heavy interrupted

Basic

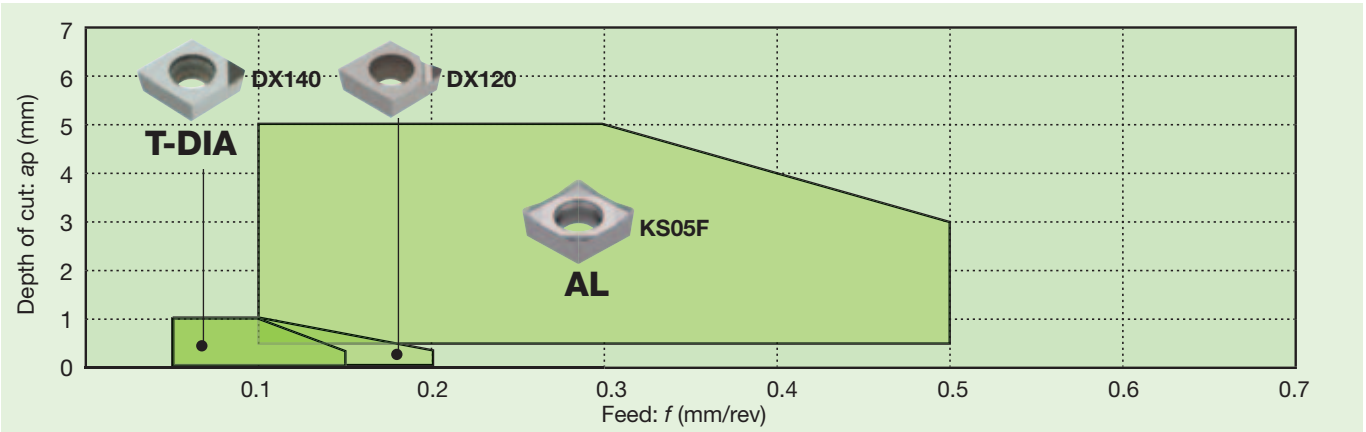


No chipbreaker T5115

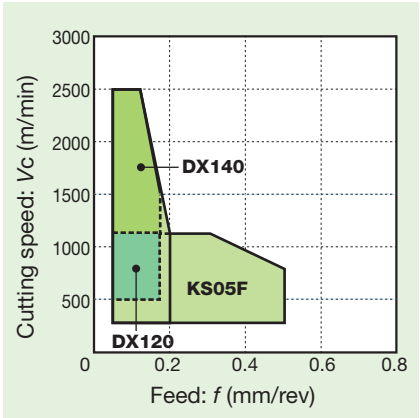
Basic Chipbreakers Positive Inserts

N Non-ferrous Metal

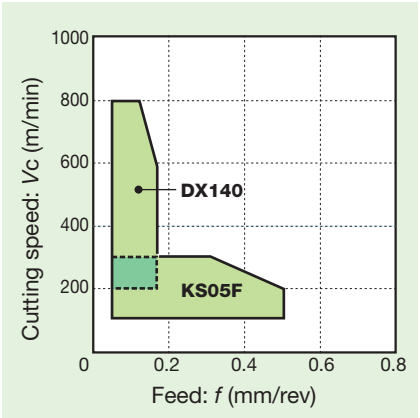
Chipbreaker System for Turning (Positive Inserts)



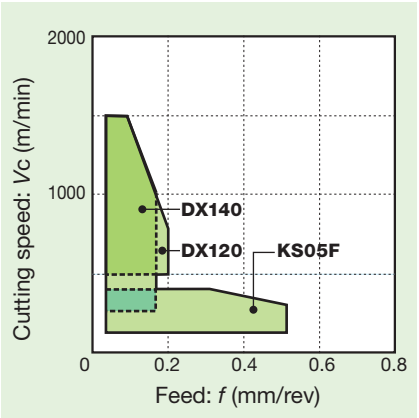
Aluminium alloys (Si < 12%)

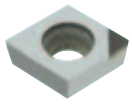
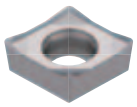


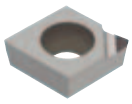
Aluminium alloys (Si ≥ 12%)



Copper alloys



Chipbreaker	Appearance	Features
No chip-breaker (T-DIA)		Performs well in high speed finishing of non-ferrous materials.
AL		Extremely sharp cutting edge. Polished surface. Excellent chip forming at high cutting feeds. Low power consumption.

Chipbreaker	Appearance	Features
With chip-breaker (T-DIA)		The wide chipbreaker width contributes to excellent chip control.

Standard Cutting Conditions

Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)		
						Aluminium alloys (Si < 12%)	Aluminium alloys (Si > 12%)	Copper alloys
Precision finishing	Continuous	Without	**DX140**	0.05 - 1.0	0.05 - 0.15	500 - 2500	400 - 800	500 - 1500
	Light interrupted	with	**DX120**	0.05 - 1.0	0.05 - 0.2	300 - 2500	-	500 - 1500
Finishing	Continuous	Without	**DX140**	0.05 - 1.0	0.05 - 0.15	500 - 2500	400 - 800	500 - 1500
	Light interrupted					300 - 1800	400 - 600	400 - 1200
	Heavy interrupted	**AL**	**KS05F**	0.5 - 5.0	0.1 - 0.5	100 - 600	100 - 200	-
Medium cutting	Continuous	**AL**	**KS05F**	0.5 - 5.0	0.1 - 0.5	100 - 1200	100 - 300	100 - 300
	Light interrupted					100 - 900	100 - 200	100 - 200
	Heavy interrupted					100 - 600	100 - 200	-

Grades (1-1) Relating pages

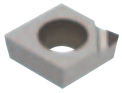
N Non-ferrous Metal

Non-ferrous

Precision finishing [a_p = ~ 0.5 mm]

Continuous

Basic

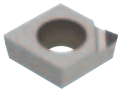


With chipbreaker **DX120**

Wear → T-DIA DX140

Light interrupted

Basic



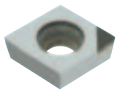
With chipbreaker **DX120**

Wear → T-DIA DX140

Finishing [a_p = 0.5 ~ 2.0 mm]

Continuous

Basic



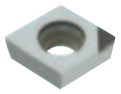
T-DIA DX140

Wear → T-DIA DX160

Chip control → With chipbreaker T-DIA DX120

Light interrupted

Basic



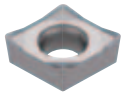
T-DIA DX140

Fracture → AL KS05F

Wear → T-DIA DX160

Heavy interrupted

Basic

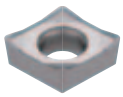


AL KS05F

Medium cutting [a_p = 1.0 ~ 5.0 mm]

Continuous

Basic

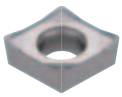


AL KS05F

Wear → With chipbreaker T-DIA DX120

Light interrupted

Basic

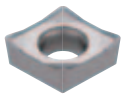


AL KS05F

Wear → T-DIA DX140

Heavy interrupted

Basic

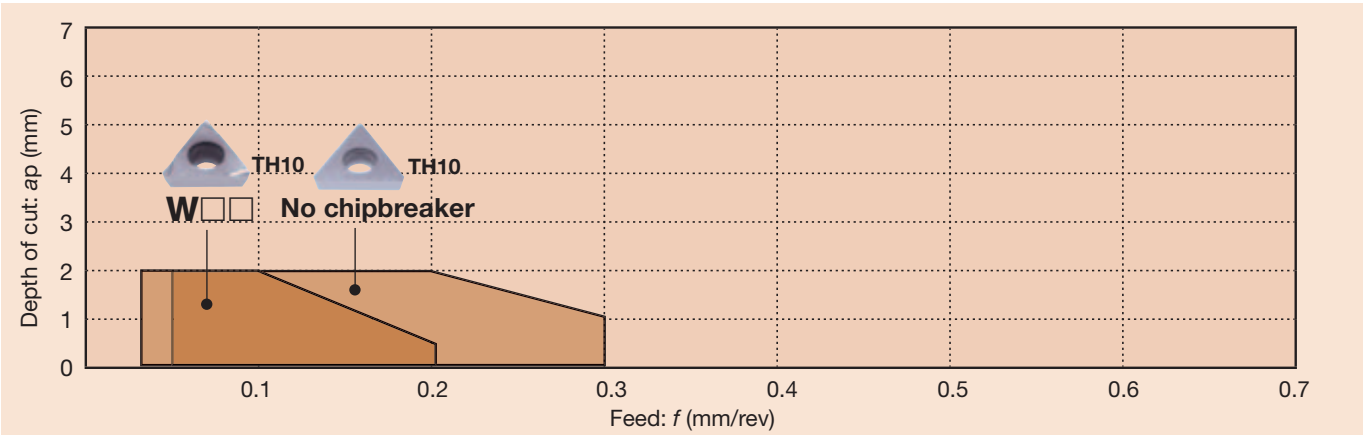


AL KS05F

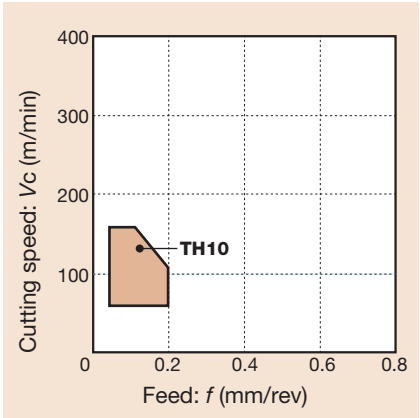
Basic Chipbreakers Positive Inserts

S Superalloys and titanium

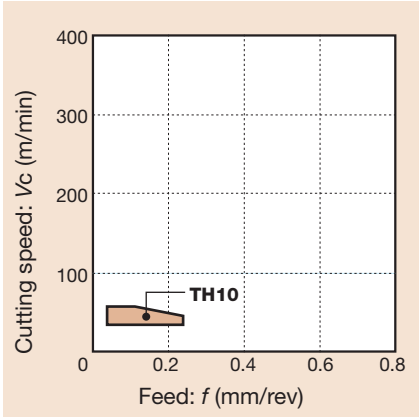
Chipbreaker System for Turning (Positive Inserts)

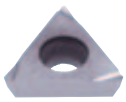


Titanium alloys



Ni-base alloys



Chipbreaker	Appearance	Features
W□□		Designed to control the direction of chip flow and used for precision-finish boring. Provides excellent chip evacuation which is important to attain a highly accurate bore.
No chip-breaker		Can cover a wide range of applications from finishing to roughing. Excels in cutting edge strength.

Standard Cutting Conditions

Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)	
						Titanium alloys	Ni-base alloys
Precision finishing	Continuous	**W□□**	**TH10**	0.05 - 2.0	0.03 - 0.2	50 - 150	10 - 50
	Light interrupted					50 - 100	10 - 30
Finishing	Continuous	No chipbreaker	**TH10**	0.05 - 2.0	0.05 - 0.3	50 - 150	10 - 50
	Light interrupted					50 - 100	10 - 30
	Heavy interrupted					30 - 80	10 - 30

Ni-base alloys: INCONEL718 etc.
Titanium alloys: Ti-6Al-4V etc.

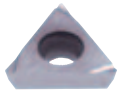
S Superalloys and titanium

Superalloys

Precision finishing [a_p = ~ 0.5 mm]

Continuous

Basic

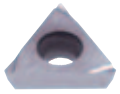


W□□
TH10

Wear → T-CBN BX950

Light interrupted

Basic



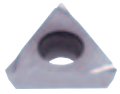
W□□
TH10

Wear → T-CBN BX950

Finishing [a_p = 0.5 ~ 2.0 mm]

Continuous

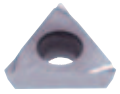
Basic



W□□
TH10

Light interrupted

Basic

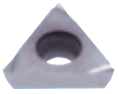


W□□
TH10

Fracture → No chipbreaker TH10

Heavy interrupted

Basic



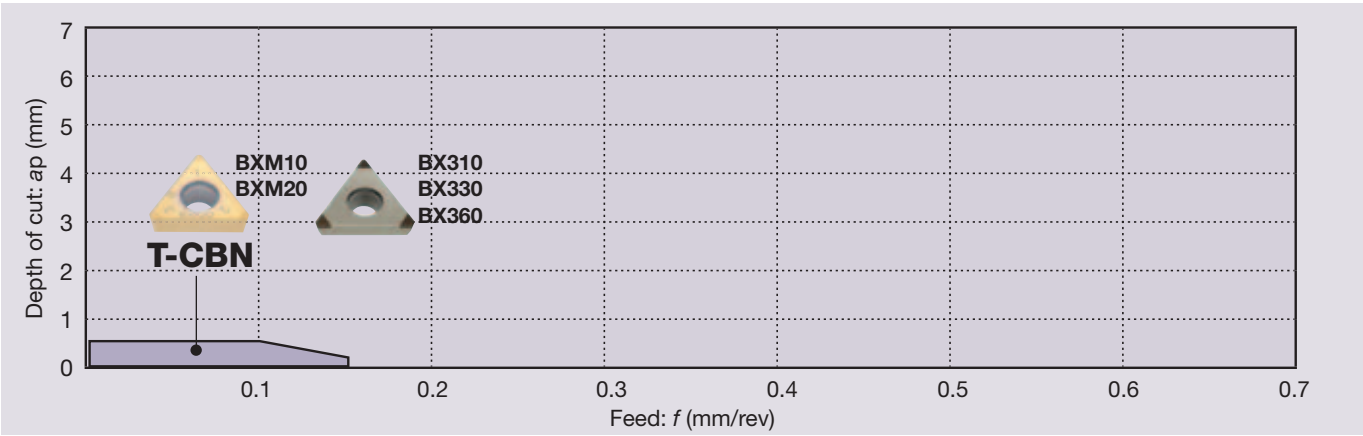
W□□
TH10

Fracture → No chipbreaker TH10

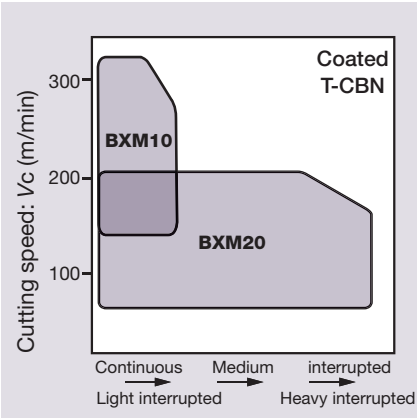
Basic Chipbreakers Positive Inserts

H Hard Materials

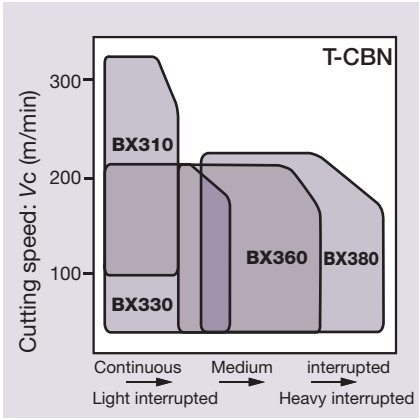
Chipbreaker System for Turning (Positive Inserts)

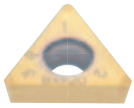


Coated T-CBN



T-CBN



Chipbreaker	Appearance	Features
No chip-breaker (T-CBN)		Performs well in finishing of hardened steel.

Standard Cutting Conditions

Operation	Work condition	Chipbreaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed *Vc* (m/min)
Precision finishing	Continuous	No chipbreaker (T-CBN)	**BXM10**	0.05 - 0.3	0.03 - 0.15	150 - 350
	Light interrupted		**BXM20**			70 - 220
Finishing	Continuous ~ interrupted	No chipbreaker (T-CBN)	**BXM20**	0.07 - 0.5	0.05 - 0.3	70 - 220

Hardened steels, Pre-hardened steels: X100CrMoV5, X40CrMoV5-1 etc.

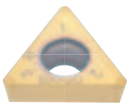
H Hard Materials

Hard Materials

Finishing [a_p = ~ 0.3 mm]

Continuous

Basic



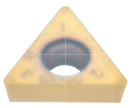
T-CBN BXM20

For high speed Wear

T-CBN BXM10

Light interrupted

Basic



T-CBN BXM20

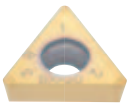
For high speed Wear

T-CBN BXM10

Finishing [a_p = ~ 0.3 mm]

Continuous

Basic



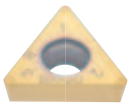
T-CBN BXM20

For high speed Wear

T-CBN BXM10

Light interrupted

Basic



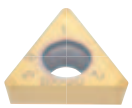
T-CBN BXM20

For high speed Wear

T-CBN BXM10

Medium ~ Heavy interrupted

Basic



T-CBN BXM20

Chipbreaker Overview

TAC Negative Inserts for General Turning with hole

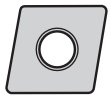
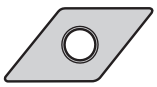
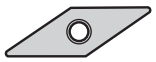
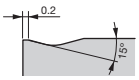
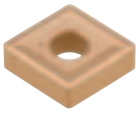
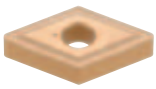
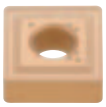
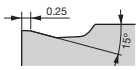
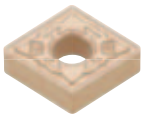
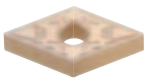
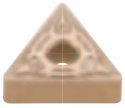
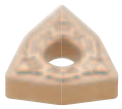
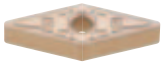
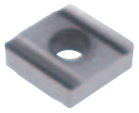
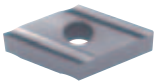
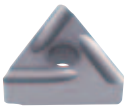
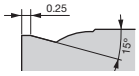
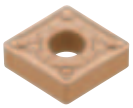
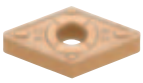
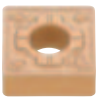
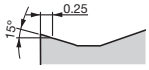
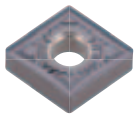
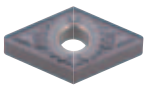
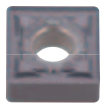
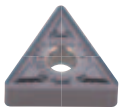
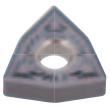
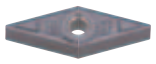
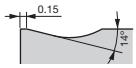
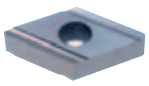
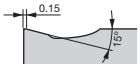
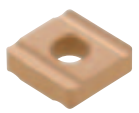
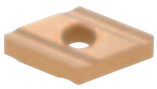
Appli-cation	Chipbreaker	C	D	S	T	W	V	
	Negative	80° Negative	55° Negative	90° Negative	60° Negative	80° Negative	35° Negative	
Precision finishing	TF (M)	2-42	2-52	2-61	2-70	2-80	2-87	
	01 (G)	2-42	2-52	2-61	2-70	2-80	2-87	
	A~D (G)	2-42		2-61	2-70			
	W (G)				2-71			
Finishing	TSF (M)	2-42	2-52	2-61	2-71	2-80	2-87	
	SF (M)	2-42	2-52	2-62	2-71	2-80	2-87	
	TS (M)	2-43	2-52	2-62	2-71	2-80	2-87	
	SS (M)	2-43	2-53	2-62	2-71	2-81	2-88	

Appli-cation	Chipbreaker	C	D	S	T	W	V	Y
	Negative	80° Negative	55° Negative	90° Negative	60° Negative	80° Negative	35° Negative	25° Negative
Finishing	CF (M)	2-43	2-53	2-62	2-72	2-81	2-88	
Finishing	ZF (M)	2-43	2-53	2-62	2-72	2-81	2-88	2-91
Finishing	NS (M)	2-43	2-53	2-63	2-72	2-81		
Finishing	11 (M)	2-44	2-53	2-63	2-72	2-82	2-88	
Finishing	AFW (M)	2-44				2-81		
Finishing to medium cutting	ZM (M)	2-45	2-54	2-63	2-73	2-83	2-88	2-91
Finishing to medium cutting	NM (M)	2-45	2-55	2-64	2-73	2-83		

Chipbreaker Overview

TAC Negative Inserts for General Turning with hole

Application	Chipbreaker	C	D	S	T	W	V	R
	Negative	80° Negative	55° Negative	90° Negative	60° Negative	80° Negative	35° Negative	Negative
Finishing to medium cutting	— (M)	2-50	2-59	2-68	2-78	2-86	2-90	
	— (G)	2-50	2-59	2-68	2-78			2-92
High feed, small depth of cut	ASW (M)	2-44				2-82		
	AS (M)	2-44	2-54	2-64	2-73	2-82		
Boring (Double sided)	SS (G)		2-59			2-86		
	TS (G)		2-59			2-86		
	CB (M)	2-45	2-54		2-73	2-82		
Medium cutting	TM (M)	2-45	2-55	2-64	2-74	2-83	2-89	
	SM (M)	2-46	2-55	2-64	2-74	2-83	2-89	

Appli-cation	Chipbreaker	C	D	S	T	W	V	R
	Negative							
		80° Negative	55° Negative	90° Negative	60° Negative	80° Negative	35° Negative	Negative
Medium cutting	**All-round** (M) 	 2-46	 2-55	 2-65	 2-74	 2-84	 2-89	
	CM (M) 	 2-46	 2-56	 2-65	 2-75	 2-84	 2-89	
	P (G) 	 2-48	 2-58	 2-66	 2-77			
	DM (M) 	 2-46	 2-56	 2-65	 2-75	 2-84	 2-89	
	HMM (M) 	 2-47	 2-56	 2-65	 2-75	 2-84	 2-90	
	Parallel (G) 		 2-57					
	SA (M) 	 2-48		 2-66	 2-76	 2-85		
	S (M) 	 2-48	 2-58	 2-66	 2-77			

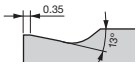
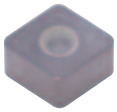
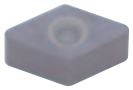
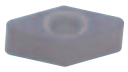
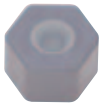
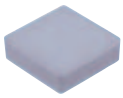
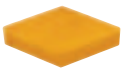
Chipbreaker Overview

TAC Negative Inserts for General Turning with hole

Appli-cation	Chipbreaker	C	D	S	T	W	V	R
	Negative	80° Negative	55° Negative	90° Negative	60° Negative	80° Negative	35° Negative	Negative
Medium to heavy cutting	THS (M)	2-48	2-58	2-67	2-77	2-85		
Medium to heavy cutting	TH (M)	2-48	2-58	2-67	2-77	2-85		
Medium to heavy cutting	SH (M)	2-49	2-58	2-67		2-85		
Medium to heavy cutting	CH (M)	2-49	2-58	2-67	2-77	2-86		
Medium to heavy cutting (Single sided)	TRS (M)	2-49		2-67				
Heavy cutting	TUS (M)	2-49		2-68				
Heavy cutting	TU (M)	2-49		2-68				
	61 (M)							2-92

Chipbreaker Overview

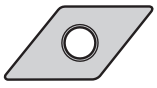
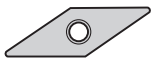
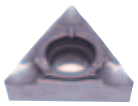
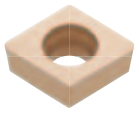
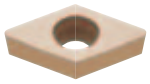
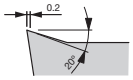
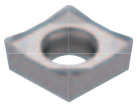
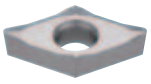
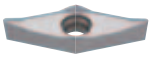
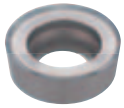
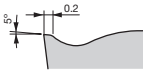
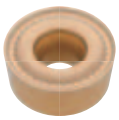
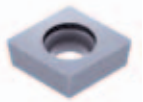
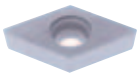
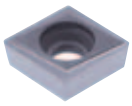
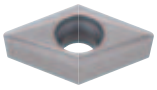
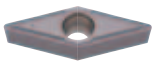
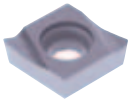
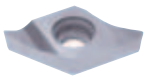
TAC Negative Inserts for General Turning — without hole

Appli-cation	Chipbreaker	C	D	S	T	V	R	KNMX	H
	Negative	80° Negative	55° Negative	90° Negative	60° Negative	35° Negative	Negative	55° Negative	120° Negative
Finishing	**S1** (M) 							 2-94	
Finishing to medium cutting	— (G)	 2-51	 2-60	 2-69		 2-90			 2-95
	— (M)	 2-51		 2-69					
	— (G)	 2-51	 2-60	 2-69	 2-79		 2-93		
Finishing to roughing	— (G)	 2-51	 2-60	 2-69					

Chipbreaker Overview

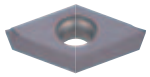
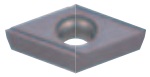
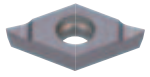
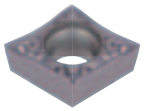
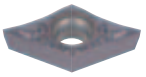
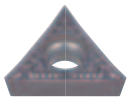
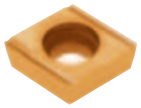
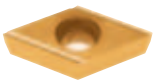
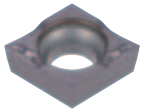
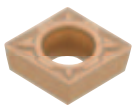
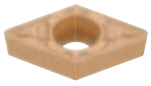
TAC Positive Inserts for General Turning with hole

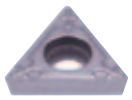
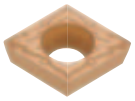
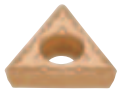
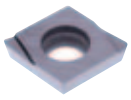
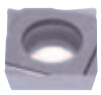
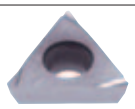
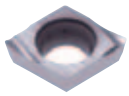
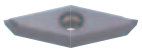
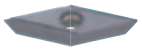
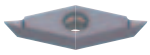
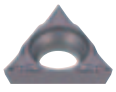
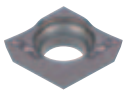
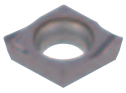
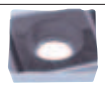
Appli-cation	Chipbreaker	C	D	S	T	V	Y	R
	Positive 7°	80° Positive 7°	55° Positive 7°	90° Positive 7°	60° Positive 7°	35° Positive 7°	25° Positive 7°	Positive 7°
Precision finishing	01 (G)	2-96	2-105		2-118			
Finishing	PSF (M)	2-96	2-105		2-118	2-135		
Finishing	PF (M)	2-96	2-105	2-112		2-135		
Finishing	W□□ (G)	2-96	2-105		2-118			
Finishing to light cutting	PSS (M)	2-97	2-106		2-118	2-135		
Finishing to medium cutting	PS (M)	2-97	2-106	2-112	2-119	2-135		
Finishing to medium cutting	ZF (M)						2-139	
Finishing to medium cutting	CM (M)	2-97	2-106	2-112	2-119	2-135		2-140
Finishing to medium cutting	ZM (M)						2-139	

Appli-cation	Chipbreaker	C	D	S	T	V	R
	Positive 7°						
		80° Positive 7°	55° Positive 7°	90° Positive 7°	60° Positive 7°	35° Positive 7°	Positive 7°
Finishing to medium cutting	**SS** (G) 				 2-119		
	— (M) 	 2-101	 2-110				
	AL (G) 	 2-98	 2-106		 2-120	 2-136	 2-140
	RS (M) 						 2-140
	— (G) 	 2-101	 2-110				
	— (with hand) (G) 				 2-121		
	All-round (G) 	 2-100	 2-107			 2-136	
	Angular (G) 	 2-100	 2-107				

Chipbreaker Overview

TAC Positive Inserts for General Turning with hole

Appli-cation	Chipbreaker	C	D	S	T	V	R
	Positive 7°	80° Positive 7°	55° Positive 7°	90° Positive 7°	60° Positive 7°	35° Positive 7°	Positive 7°
For external turning on small lathes (Sharp edges)	JRP (E)		 2-107				
	JPP (E)		 2-108				
	JSP (E)		 2-108				
	JS (G)	 2-99	 2-108		 2-120		
	J□□ (G)	 2-99	 2-109		 2-120		
For internal turning on small lathes	JS (G)	 2-99					
Medium cutting	PM (M)	 2-100	 2-109	 2-112	 2-122		
Heavy cutting	61 (M)						 2-141

Appli-cation	Chipbreaker	C	S	T	E	V
	Positive 11°	80° Positive11°	90° Positive 11°	60° Positive 11°	75° Positive 11°	35° Positive 11°
Precision finishing	**01** (G)			 2-123		
Finishing	**PSF** (M)	 2-102		 2-123		
Finishing	**PF** (M)	 2-102		 2-123		
Finishing	**W□□** (G)	 2-102	 2-114	 2-124	 2-111	
For external turning on small lathes (Sharp edges)	**JRP** (E)					 2-137
For external turning on small lathes (Sharp edges)	**JPP** (E)					 2-137
For external turning on small lathes (Sharp edges)	**JSP** (E)					 2-138
For internal turning on small lathes	**JS** (G)			 2-124	 2-111	
Finishing	**J08** (G)				 2-111	
Finishing	— (with hand) (G)		 Former Tungaloy-standard hole Not ISO 2-114			
Finishing	— (with hand) (G)			 Former Tungaloy-standard hole Not ISO 2-127		

Chipbreaker Overview

TAC Positive Inserts for General Turning with hole

Appli-cation	Chipbreaker	C	S	T
	Positive 11°	80° Positive 11°	90° Positive 11°	60° Positive 11°
Finishing to light cutting	PSS (M)	2-102		2-125
Finishing to medium cutting	PS (M)	2-103	2-114	2-126
	CM (M)	2-103	2-114	2-126
	SS (G)			2-126
	— (M)	2-104	2-115	2-128
	H□□ (G)			2-127
	— (G)		2-115	2-128
Medium cutting	PM (M)	2-103		2-128
	All-round (M)	2-103		

Appli-cation	Chipbreaker	W
	Positive 11°	Positive 11°
Super high feed	ML (M)	2-132

Appli-cation	Chipbreaker	W	V
	Positive 5°	80° Positive 5°	35° Positive 5°
Finishing	**PSF** (M)		2-133
Finishing	**PF** (M)		2-133
Finishing	**W08** (G)	2-132	
Finishing	**W11** (G)	2-132	
Finishing to light cutting	**PSS** (M)		2-133
Finishing to medium cutting	**PS** (M)		2-133
Finishing to medium cutting	**CM** (M)		2-133
For external turning on small lathes (Sharp edges)	**JS** (G)		2-134
For external turning on small lathes (Sharp edges)	**J10** (G)		2-134
For internal turning on small lathes	**JS** (G)	2-132	

Appli-cation	Chipbreaker	W	V
	Positive 5°	80° Positive 5°	35° Positive 5°
For external turning on small lathes (Honed edges)	**J10** (G)		2-134

Appli-cation	Chipbreaker	JXF□
	Positive	Positive
Front-turning Inserts	—	2-144

Appli-cation	Chipbreaker	JXR□
	Positive	Positive
Reverse-turning Inserts	—	2-144

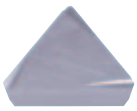
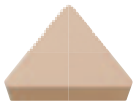
Appli-cation	Chipbreaker	JXB□
	Positive	Positive
Back-turning Inserts	—	2-145

Appli-cation	Chipbreaker	JTB□
	Positive	Positive
Back-turning Inserts	—	2-145

Appli-cation	Chipbreaker	J10E□
	Positive	Positive
Back-turning Inserts	—	2-146

Chipbreaker Overview

TAC Positive Inserts for General Turning — without hole

Appli-cation	Chipbreaker	S	T	R
	Positive 11°	90° Positive 11°	60° Positive 11°	Positive 11°
Finishing	— (G)	 2-116		
Finishing	— (with hand) (G)	 2-116	 2-130	
Finishing to medium cutting	**CM** (M)	 2-116	 2-130	
Finishing to medium cutting	— (M)	 2-117	 2-131	
Finishing to medium cutting	— (G)		 2-131	
Finishing to medium cutting	**PS** (M)		 2-130	

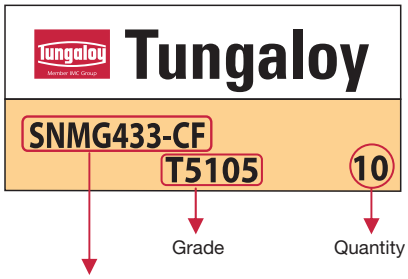
Appli-cation	Chipbreaker	RT□
	Round	Special round inserts
Medium cutting	—	 2-142

TAC Insert Navigation System

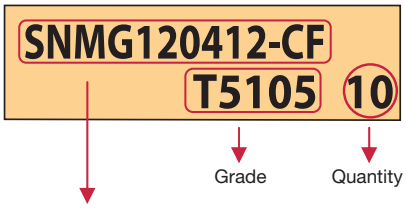
TAC insert navigation system indicates the proper work material and cutting conditions for the insert grade.

Label indication on insert case

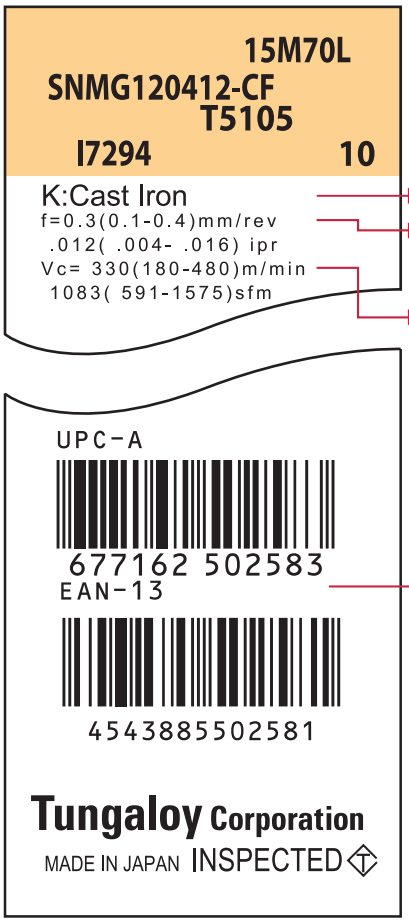
◆ Upside of case



◆ Side of case



◆ Underside of case



Indicates the proper work material for the grade.

Indicates the proper feed rate for the chipbreaker.
Upper position: ISO (Metric system)
Lower position: Inch system

0.3(0.1 - 0.4)mm/rev
❶ ❷
❶ Recommended feed
❷ Applicable feed range

Indicates the proper cutting speed for the grade.
Upper position: ISO (Metric system)
Lower position: Inch system

330(180 - 480)m/min
❶ ❷
❶ Recommended speed
❷ Recommended speed range

Barcode
EAN (European Article Number) code and UPC (Universal Product Code) are printed.
EAN is called JAN (Japanese Article Number) in Japan.

Work material classification system

- **P** Steel : Low carbon steels, alloy steels (180HB) S10C, SCM415, SCr420H / C10E, 15CrMo5, 20Cr4H, etc.
- **M** Stainless Steel : Austenitic JIS SUS304 / X5CrNi18-10, etc.
- **K** Cast Iron : Grey cast irons JIS FC200 / GG20, etc.
- **N** Non-ferrous Metal : Aluminium alloys
- **S** Superalloys and titanium : Ni-base alloys INCONEL718, etc.
- **H** Hard Materials : Hardened steels (60HRC) SKD11 / X100CrMoV5, etc.

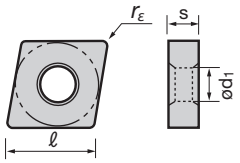
Note: For details, refer to page 15-3 (Technical reference)

TAC Inserts, Negative

Rhombic, with hole

80° Negative

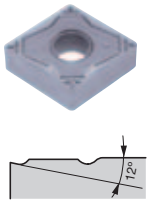
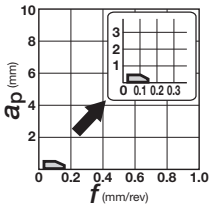
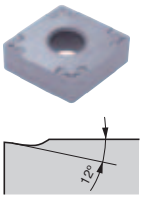
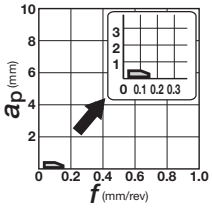
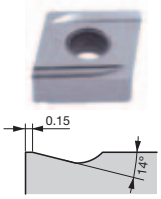
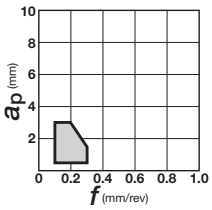
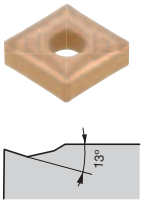
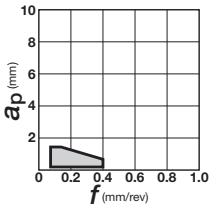
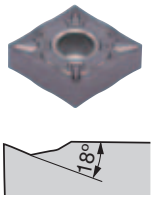
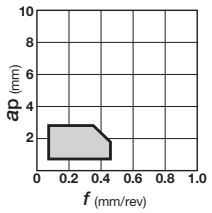
CN□□



CNMG 12 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CN□□	0903□□	1204□□	1606□□	1906□□	2509□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	GH110	Coated cermet GT730	GT530	Cermet NS730	NS520	NS530	Un-coated TH10	Applicable toolholders (pages)
Precision finishing	**TF** (M) 		CNMG120404-TF						●	●	●	●	●							●		●	●	TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			*CNMG120408-TF						●	●	●	●	●							●		●		
	01 (G) 		CNGG090302-01														●					●		TAC External Toolholders (4-14 ~, 4-86) TAC Internal Toolholders (5-33 ~) J-series (8-20)
			CNGG090304-01														●					●		
			CNGG090308-01														●					●		
			CNGG120402-01																	●	●	●		
			CNGG120404-01																	●	●	●		
			*CNGG120408-01																	●	●	●		
	C (G) 		CNGG120404R-C													●		●				●		TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			CNGG120404L-C															●						
			*CNGG120408R-C															●				●		
			CNGG120408L-C																					
Finishing	**TSF** (M) 		CNMG120404-TSF	●	●	●			●								●			●				
			*CNMG120408-TSF	●	●	●	●		●								●			●				
			CNMG120412-TSF		●	●																		
	SF (M) 		CNMG090304-SF							●	●	●												TAC External Toolholders (4-14 ~, 4-86) TAC Internal Toolholders (5-33 ~) J-series (8-20)
			CNMG090308-SF							●	●	●												
			CNMG120404-SF							●	●	●												
			*CNMG120408-SF							●	●	●												
			CNMG120412-SF							●	●	●												

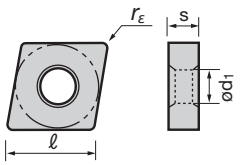
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

80° Negative

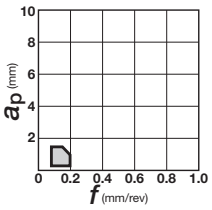
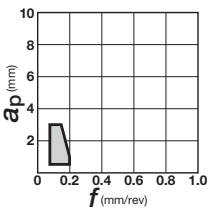
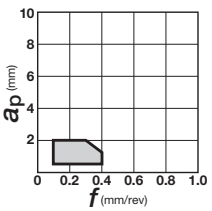
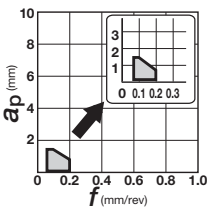
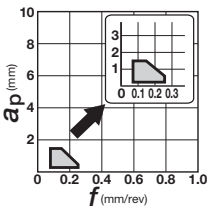
CN□□



CNMG 12 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

CN□□	0903□□	1204□□	1606□□	1906□□	2509□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated: T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	GH330	Coated cermet: GT720	GT730	GT530	Cermet: NS730	NS520	NS530	Applicable toolholders (pages)
Finishing	**TS** (M)		CNMG120404-TS		●	●	●		▲											●		▲	●	TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			*CNMG120408-TS	●	●	●	●		▲											●		▲	●	
			CNMG120412-TS		●	●	●															▲	●	
	SS (M)		CNMG120404-SS					●	●	●	●	●	●				●							
			*CNMG120408-SS					●	●	●	●	●	●				●							
			CNMG120412-SS					●	●	●	●	●	●				●							
	CF (M)		CNMG120404-CF											●	●									
			CNMG120408-CF											●	●									
			*CNMG120412-CF											●	●									
	ZF (M)		CNMG120404-ZF		●	●													●	●	●			
			*CNMG120408-ZF		●	●	●												●	●	●			
			CNMG120412-ZF																					
	NS (M)		CNMG120404-NS																				●	
			*CNMG120408-NS		●	●																	●	

Note: Chipbreaker cross sections are of * marked inserts.

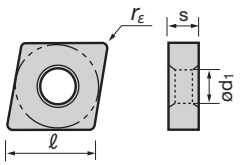
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, with hole

80° Negative

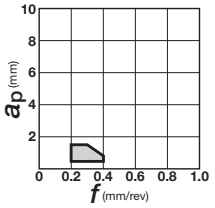
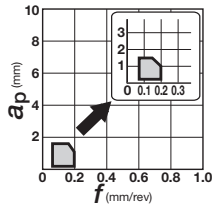
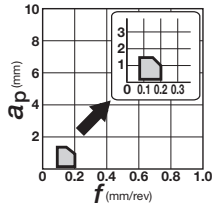
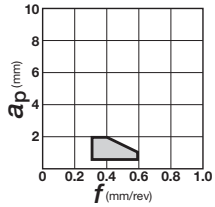
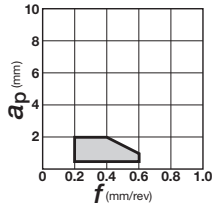
CN□□



CNMG 12 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CN□□	0903□□	1204□□	1606□□	1906□□	2509□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	GH330	Coated cermet GT720	GT730	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Finishing	**AFW** (M)		CNMG120404-AFW		●	●						●		●		TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			*CNMG120408-AFW	●	●	●	●					●				
	11 (M)		CNMG120404-11							▲			▲	●		●	
			*CNMG120408-11								●		▲	●		●	
Finishing of mild steels	**17** (M)		CNMG120404-17											●			
			*CNMG120408-17											●			
High feed, small depth of cutting	**ASW** (M)		*CNMG120408-ASW	●	●	●								●		
			CNMG120412-ASW	●	●	●								●		
	AS (M)		CNMG120404-AS	●	●	●								●		
			*CNMG120408-AS	●	●	●	●							●		
			CNMG120412-AS		●	●	●									

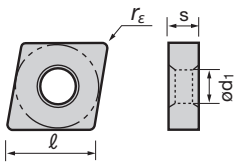
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

80° Negative

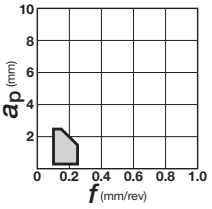
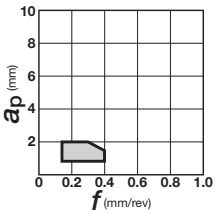
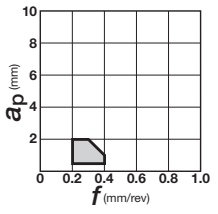
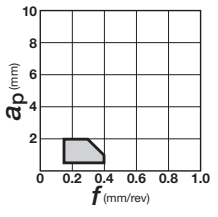
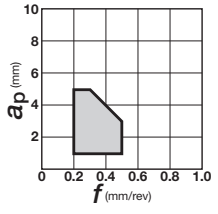
CN□□



CNMG 12 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

CN□□	0903□□	1204□□	1606□□	1906□□	2509□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	Coated cermet GT730	GT530	Cermet NS530	Applicable toolholders (pages)
Boring (Double sided chipbreaker)	**CB** (M)		CNMG090304-CB											●	TAC External Toolholders (4-15 ~) TAC Internal Toolholders (5-33 ~)
			*CNMG090308-CB									●			
Finishing to medium cutting	**ZM** (M)		*CNMG120408-ZM		●	●	●					●	●		TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			CNMG120412-ZM		●	●	●					●	●		
			CNMG120416-ZM		●	●									
	27 (M)		CNMG120404-27											●	
			*CNMG120408-27											●	
	NM (M)		CNMG120408-NM	●	●	●	●							●	
			*CNMG120412-NM		●	●	●								
Medium cutting	**TM** (M)		CNMG090304-TM		●	●									TAC External Toolholders (4-14 ~, 4-86) TAC Internal Toolholders (5-33 ~) J-series (8-20)
			CNMG090308-TM		●	●	●								
			CNMG120404-TM	●	●	●	●		●						
			*CNMG120408-TM	●	●	●	●		●						
			CNMG120412-TM	●	●	●	●		●						
			CNMG120416-TM		●	●	●		●						
			CNMG160612-TM	●	●	●	●								
			CNMG190608-TM	●	●	●	●								
			CNMG190612-TM	●	●	●	●								

Note: Chipbreaker cross sections are of * marked inserts.

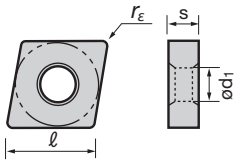
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, with hole

80°  **Negative**

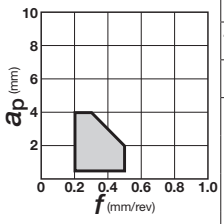
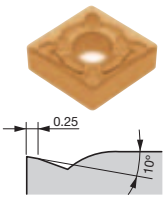
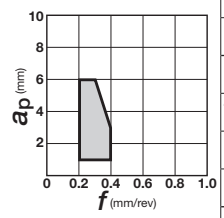
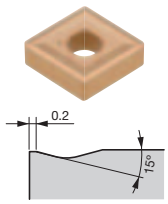
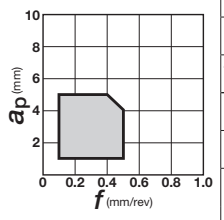
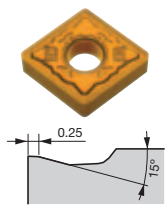
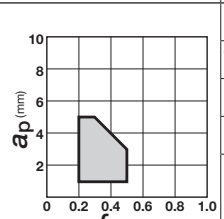
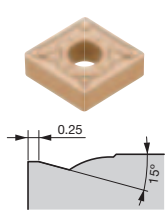
CN□□



CNMG 12 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CN□□	0903□□	1204□□	1606□□	1906□□	2509□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	AH110	AH120	Coated cermet GT720	GT730	Cermet NS730	NS520	NS530	Un-coated TH10	Applicable toolholders (pages)
Medium cutting	**SM** (M)		CNMG120404-SM					●	●	●	●	●	●												TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			*CNMG120408-SM					●	●	●	●	●	●												
			CNMG120412-SM					●	●	●	●	●	●												
	All-round (M)		CNMG090304		●	●														●		●		●	TAC External Toolholders (4-14 ~, 4-86) TAC Internal Toolholders (5-33 ~) J-series (8-20)
			CNMG090308	●	●	●	●												●	●		●			
			CNMG120404	●	●	●	●							●	●	●	●	●		●		●		●	●
			*CNMG120408	●	●	●	●							●	●	●	●	●		●		●	▲	●	●
			CNMG120412	●	●	●	●							●	●	●	●	●					▲	●	●
			CNMG120416	●	●	●	●							●	●	●									
			CNMG160608	●	●	●	●							●	●	●									
			CNMG160612	●	●	●	●							●	●	●									
			CNMG160616	●	●	●	●							●	●	●									
			CNMG190608		●	●	●																		
			CNMG190612	●	●	●	●							●	●	●									
			CNMG190616		●	●	●							●	●	●									
	CM (M)		CNMG120404-CM											●	●	●									TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			CNMG120408-CM											●	●	●									
			*CNMG120412-CM											●	●	●									
			CNMG160608-CM											●	●	●									
			CNMG160612-CM											●	●	●									
	DM (M)		CNMG120404-DM		●	●																			TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			*CNMG120408-DM	●	●	●	●																		
			CNMG120412-DM	●	●	●	●																		
			CNMG120416-DM																						

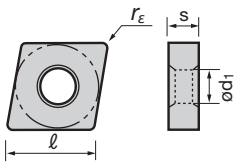
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

80° Negative

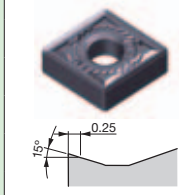
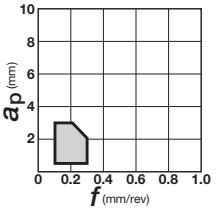
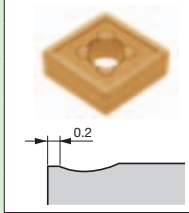
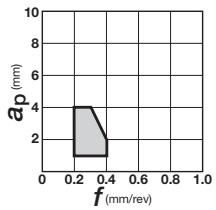
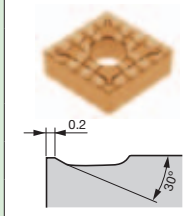
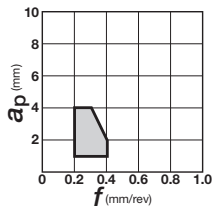
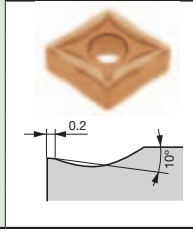
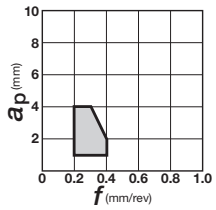
CN□□



CNMG 12 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

CN□□	0903□□	1204□□	1606□□	1906□□	2509□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	T6130	T5105	T5115	AH110	AH905	GH330	Coated cermet GT720	Cermet NS520	NS530	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	**HMM (M)** 		CNMG120404-HMM						●						TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			*CNMG120408-HMM						●						
			CNMG120412-HMM						●						
			CNMG160608-HMM						●						
			CNMG160612-HMM						●						
			CNMG160616-HMM						●						
	33 (M) 		*CNMG120408-33					●			●				
	37 (M) 		CNMG120404-37										●		
			*CNMG120408-37							●			●	●	
			CNMG120412-37										●		
	38 (M) 		CNMG120404-38							●					
			*CNMG120408-38							●					

Note: Chipbreaker cross sections are of * marked inserts.

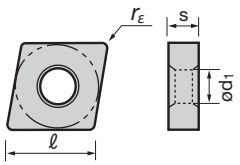
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, with hole

80° Negative

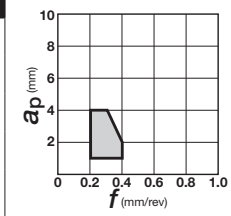
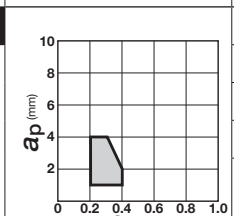
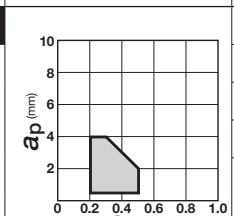
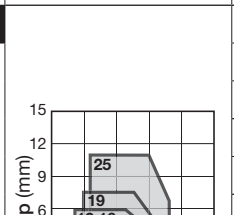
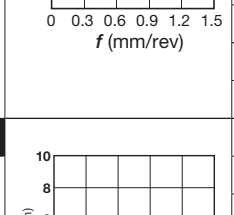
CN□□



CNMG 12 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CN□□	0903□□	1204□□	1606□□	1906□□	2509□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	AH120	GH110	GH330	Coated cermet GT720	GT730	Cermet NS530	Un-coated TH10	KS20	Applicable toolholders (pages)
Medium cutting	**SA** (M)		CNMG120404-SA					●	●	●	●	●	●	●								TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			*CNMG120408-SA					●	●	●	●	●	●	●							●	
			CNMG120412-SA					●	●	●	●	●	●	●							●	
			CNMG190612-SA																		●	
			CNMG190616-SA																		●	
	S (M)		CNMG120404R-S			●	●		●		●	●	●			●	●		●			
			CNMG120404L-S			●	●		●		●	●	●			●		●	●			
			*CNMG120408R-S			●	●		●		●	●	●			●	●		●			
			CNMG120408L-S			●	●		●		●	●	●			●						
	P (G)		CNGG120404R-P												●				●		●	
			CNGG120404L-P												●				●		●	
			*CNGG120408R-P												●				●		●	
			CNGG120408L-P												●						●	
Medium to heavy cutting	**THS** (M)		CNMG120408-THS	●	●	●	●															TAC External Toolholders (4-14 ~)
			CNMG120412-THS	●	●	●	●															
			CNMG120416-THS	●	●	●	●															
			*CNMG160612-THS	●	●	●	●															
			CNMG160616-THS	●	●	●	●															
			CNMG190612-THS		●	●	●															
			CNMG190616-THS		●	●	●															
			CNMG190624-THS		●	●	●															
			CNMG250924-THS		●	●	●															
	TH (M)		*CNMG120408-TH	●	●	●	●		●													TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			CNMG120412-TH	●	●	●	●		●													
			CNMG120416-TH	●	●	●	●		●													
			CNMG160612-TH	●	●	●	●		●													
			CNMG160616-TH	●	●	●	●		●													
			CNMG190612-TH	●	●	●	●		●													
			CNMG190616-TH	●	●	●	●		●													

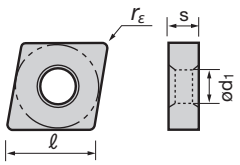
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

80° Negative

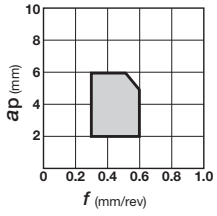
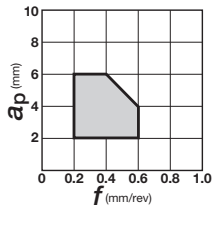
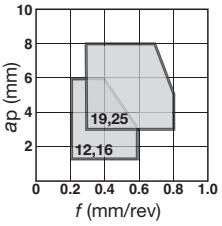
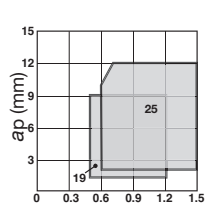
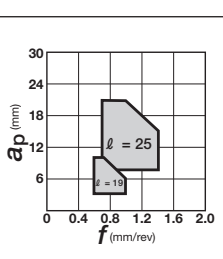
CN□□



CNMG 12 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CN□□	0903□□	1204□□	1606□□	1906□□	2509□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	T5105	T5115	T5125	Applicable toolholders (pages)
Medium to heavy cutting	**SH** (M)		CNMG120408-SH						●	●	●				TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			CNMG120412-SH						●	●	●				
			CNMG120416-SH						●	●	●				
			*CNMG160612-SH						●	●	●				
			CNMG160616-SH						●	●	●				
			CNMG190612-SH						●	●	●				
			CNMG190616-SH						●	●	●				
	CH (M)		CNMG120404-CH									●	●	●	
			CNMG120408-CH									●	●	●	
			*CNMG120412-CH									●	●	●	
			CNMG160612-CH									●	●	●	
			CNMG160616-CH									●	●	●	
			CNMG190612-CH									●	●	●	
			CNMG190616-CH									●	●	●	
Medium to heavy cutting (Single sided)	**TRS** (M)		CNMM120408-TRS		●	●	●								TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			CNMM120412-TRS		●	●	●								
			*CNMM160612-TRS		●	●	●								
			CNMM160616-TRS		●	●	●								
			CNMM190616-TRS		●	●	●								
			CNMM190624-TRS		●	●	●								
			CNMM250924-TRS		●	●	●								
Heavy cutting (Single sided)	**TUS** (M)		*CNMM190608-TUS		●	●									TAC External Toolholders (4-14 ~)
			CNMM190612-TUS		●	●	●								
			CNMM190616-TUS		●	●	●								
			CNMM190624-TUS		●	●	●								
			CNMM190632-TUS		●	●									
			CNMM250916-TUS		●	●	●								
			CNMM250924-TUS		●	●	●								
			CNMM250932-TUS		●	●									
	TU (M)		CNMM190612-TU			●	●								
			*CNMM190616-TU			●	●								
			CNMM190624-TU		●	●	●								
			CNMM250724-TU												
			CNMM250924-TU			●	●								

Note: Chipbreaker cross sections are of * marked inserts.

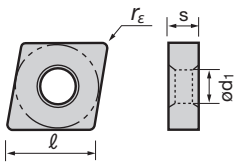
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, with hole

80° Negative

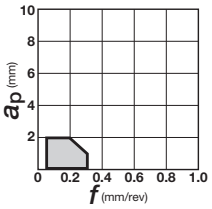
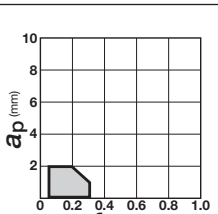
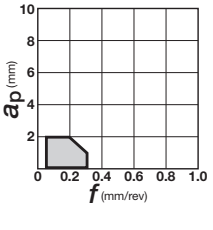
CN□□



CNMA 12 04 04

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

CN□□	0903□□	1204□□	1606□□	1906□□	2509□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T5105	T5115	T5125	Cermet NS520	NS530	Uncoated TH10	Ceramics FX105	LX21	LX11	Applicable toolholders (pages)
Finishing to medium cutting	- (M)		CNMA120404					●	●	●			●				TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
			CNMA120408	●				●	●	●	▲		●	●			
			CNMA120412	●				●	●	●			●	●			
			CNMA120416	●				●	●	●			●				
			CNMA160608					●	●	●							
			CNMA160612					●	●	●							
			CNMA160616					●	●	●							
			CNMA190612					●	●	●							
			CNMA190616					●	●	●							
	Wiper (M)		CNMA120408W											●			
			CNMA120412W											●			
			CNMA120416W											●			
	- (G)		CNGA120404									●			●	●	
			CNGA120408								●			●	●	●	
			CNGA120412											●	●	●	
			CNGA120416											●		●	
			CNGA120420													●	

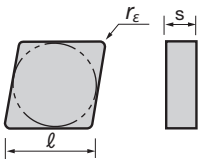
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, without hole

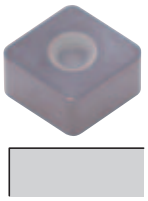
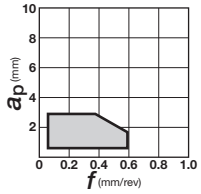
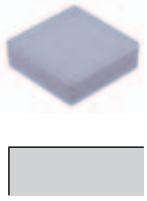
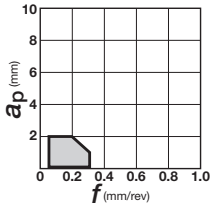
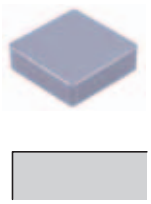
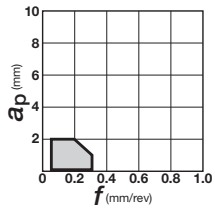
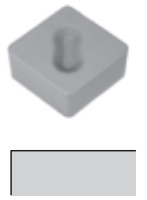
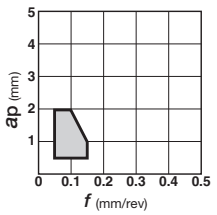
80° Negative

CN□□



CNMN 12 04 04

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - a_p	Insert Cat. No.	Stocked grades: Ceramics FX105	LX21	LX11	CX710	Applicable toolholders (pages)
Finishing to medium cutting	– (G) 		CNGD120712	●				TAC External Toolholders (4-36)
			CNGD120716	●				
	– (M) 		CNMN120408	●				TAC External Toolholders (4-46)
			CNMN120412	●				
	– (G) 		CNGN120404			●		
			CNGN120408	●		●		
			CNGN120412	●		●		
			CNGN120416	●	●	●		
			CNGN120420	●				
			CNGN120708	●		●		
			CNGN120712	●		●		
			CNGN120716	●		●		
			CNGN120720			●		
Finishing to roughing	– (G) 		CNGX120708	●				
			CNGX120712	●				
			CNGX120716	●			●	

Note: Chipbreaker cross sections are of * marked inserts.

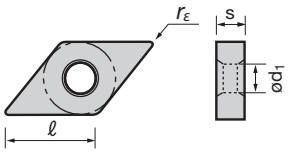
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, with hole

55° Negative

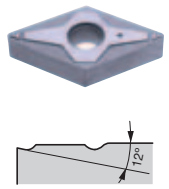
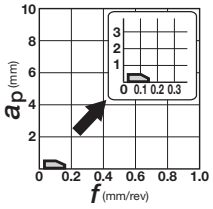
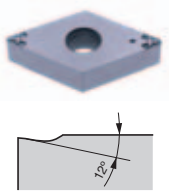
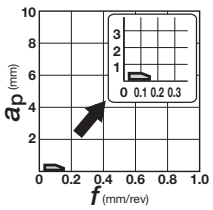
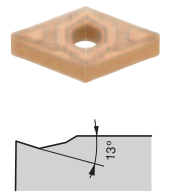
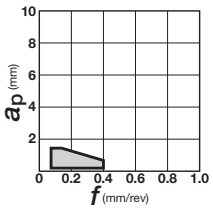
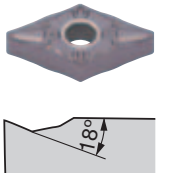
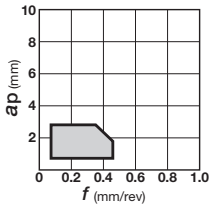
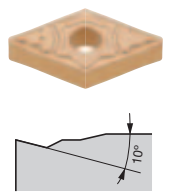
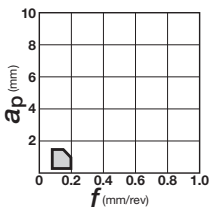
DN□□



DNMG 15 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

DN□□	1104□□	1504□□	1506□□
ød1 (mm)	3.81	5.16	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	GH110	GH330	Coated cermet GT720	GT730	GT530	Cermet NS730	NS520	NS530	Uncoated TH10	KS20	Applicable toolholders (pages)
Precision finishing	**TF** (M) 		DNMG150404-TF																●		●	●		TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			*DNMG150408-TF																●		●			
	01 (G) 		DNGG110402-01																		●			TAC External Toolholders (4-18 ~, 4-86) TAC Internal Toolholders (5-34 ~) J-series (8-20)
			DNGG110404-01																	●	●			
			DNGG110408-01													●			●		●			
			DNGG150402-01																	●	●	●		
			DNGG150404-01											●						●	●	●		
			*DNGG150408-01											●						●	●	●		
Finishing	**TSF** (M) 		DNMG150404-TSF	●	●	●	●		●								●		●					TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			*DNMG150408-TSF	●	●	●	●		●								●		●					
			DNMG150412-TSF	●	●	●	●																	
			DNMG150604-TSF		●	●											●							
			DNMG150608-TSF	●	●	●	●										●							
			DNMG150612-TSF	●	●	●	●																	
	SF (M) 		DNMG150404-SF							●	●	●												
			* DNMG150408-SF							●	●	●												
			DNMG150604-SF							●	●	●												
			DNMG150608-SF							●	●	●												
	TS (M) 		DNMG150404-TS		●	●	●		▲									●		▲	●			
			*DNMG150408-TS	●	●	●	●		▲									●		▲	●			
			DNMG150412-TS	●	●	●	●													▲	●			
			DNMG150604-TS																	▲	●			
			DNMG150608-TS		●	●														▲	●			
			DNMG150612-TS		●	●														▲	●			

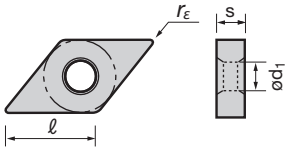
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

55° Negative

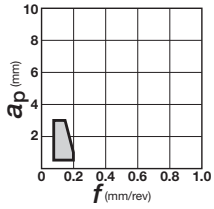
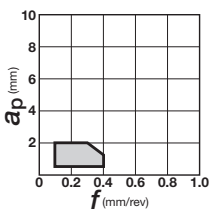
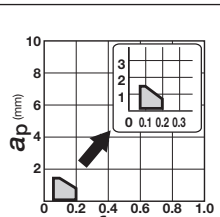
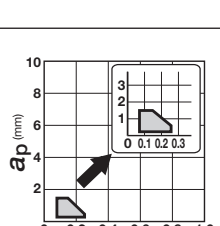
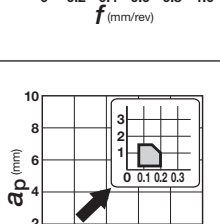
DN□□



DNMG 15 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

DN□□	1104□□	1504□□	1506□□
ød1 (mm)	3.81	5.16	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	GH330	Coated cermet GT730	GT530	Cermet NS730	NS520	NS530	Un-coated TH10	KS20	Applicable toolholders (pages)
Finishing	**SS** (M)		DNMG150404-SS					●	●	●	●	●	●				●								TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			DNMG150408-SS					●	●	●	●	●	●				●							●	
			*DNMG150412-SS					●	●	●	●	●	●												
			DNMG150604-SS					●	●	●	●	●	●				●								
			DNMG150608-SS					●	●	●	●	●	●				●								
			DNMG150612-SS					●	●	●	●	●	●												
	CF (M)		DNMG150404-CF											●	●										
			DNMG150408-CF											●	●										
			*DNMG150412-CF											●	●										
			DNMG150604-CF											●	●										
			DNMG150608-CF											●	●										
			DNMG150612-CF											●	●										
	ZF (M)		DNMG150404-ZF		●	●	●											●	●	●					
			*DNMG150408-ZF		●	●	●											●	●	●					
			DNMG150412-ZF		●	●	●																		
			DNMG150604-ZF		●	●																			
			DNMG150608-ZF		●	●	●																		
			DNMG150612-ZF		●	●																			
	NS (M)		DNMG150404-NS			●																●			
			*DNMG150408-NS	●	●	●																●			
			DNMG150604-NS																						
			DNMG150608-NS																						
	11 (M)		DNMG110404-11																		●	●			
			DNMG110408-11																		●	●			
			*DNMG150404-11														●				●	●	●		
			DNMG150408-11																		●	●			

Note: Chipbreaker cross sections are of * marked inserts.

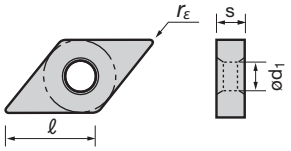
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, with hole

55° Negative

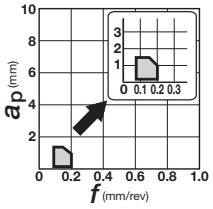
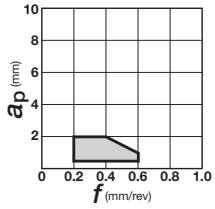
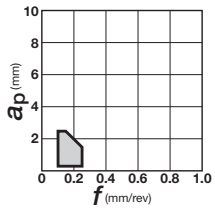
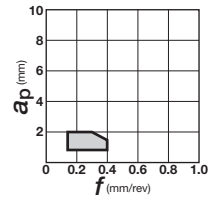
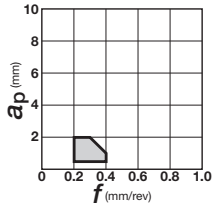
DN□□



DNMG 15 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

DN□□	1104□□	1504□□	1506□□
ød1 (mm)	3.81	5.16	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	Coated cermet GT730	GT530	Cermet NS730	NS530	Applicable toolholders (pages)
Finishing of mild steels	**17** (M)		DNMG150404-17										●	TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			*DNMG150408-17										●	
High feed, small depth of cut	**AS** (M)		DNMG150404-AS		●		●						●	
			*DNMG150408-AS		●	●	●						●	
			DNMG150412-AS		●	●	●						●	
			DNMG150604-AS		●								●	
			DNMG150608-AS		●	●							●	
			DNMG150612-AS		●									
Boring (Double sided chipbreaker)	**CB** (M)		DNMG110404-CB										●	TAC External Toolholders (4-18 ~, 4-86) TAC Internal Toolholders (5-34 ~) J-series (8-20)
			*DNMG110408-CB		●								●	
Finishing to medium cutting	**ZM** (M)		*DNMG150408-ZM		●	●	●			●	●			TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			DNMG150412-ZM		●	●	●			●				
			DNMG150416-ZM											
			DNMG150608-ZM		●	●	●							
			DNMG150612-ZM		●	●								
			DNMG150616-ZM											
	27 (M)		DNMG150404-27										●	
			*DNMG150408-27										●	

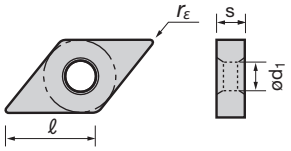
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

55° Negative

DN□□



DNMG 15 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

DN□□	1104□□	1504□□	1506□□
ød1 (mm)	3.81	5.16	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	AH110	AH120	Coated cermet GT730	Cermet NS730	NS520	NS530	Un-coated TH10	Applicable toolholders (pages)
Finishing to medium cutting	NM (M)		*DNMG150408-NM	●	●	●																●		TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			DNMG150412-NM	●	●	●																●		
			DNMG150608-NM																					
			DNMG150612-NM																					
Medium cutting	TM (M)		DNMG110404-TM	●	●	●																		TAC External Toolholders (4-18 ~, 4-86) TAC Internal Toolholders (5-34 ~) J-series (8-20)
			DNMG110408-TM	●	●	●																		
			DNMG150404-TM	●	●	●	●		●															
			*DNMG150408-TM	●	●	●	●		●															
			DNMG150412-TM	●	●	●	●		●											●				
			DNMG150416-TM		●	●																		
			DNMG150604-TM	●	●	●	●		●															
			DNMG150608-TM	●	●	●	●		●															
			DNMG150612-TM	●	●	●	●		●															
			DNMG150616-TM		●	●																		
	SM (M)		DNMG150404-SM					●	●	●	●	●	●											TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			*DNMG150408-SM					●	●	●	●	●	●											
			DNMG150412-SM					●	●	●	●	●	●											
			DNMG150604-SM					●	●	●	●	●	●											
			DNMG150608-SM					●	●	●	●	●	●											
			DNMG150612-SM					●	●	●	●	●	●											
	All-round (M)		DNMG110404		●	●								●	●	●			●		●	●		TAC External Toolholders (4-18 ~, 4-86) TAC Internal Toolholders (5-34 ~) J-series (8-20)
			DNMG110408	●	●	●	●							●	●	●			●		●	●		
			DNMG150404		●	●	●							●	●	●	●	●	●		●	●	●	
			*DNMG150408	●	●	●	●							●	●	●	●	●	●		●	●	●	
			DNMG150412	●	●	●	●							●	●	●	●	●	●		●	●	●	
			DNMG150416		●	●								●	●	●								
			DNMG150604		●	●								●	●	●						●	●	
			DNMG150608	●	●	●	●							●	●	●						●	●	
			DNMG150612	●	●	●	●							●	●	●						●	●	
			DNMG150616		●	●																		

● : Stocked items
▲ : Discontinued items

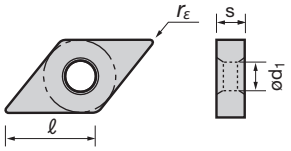
Note: Chipbreaker cross-sections are of * marked inserts.

TAC Inserts, Negative

Rhombic, with hole

55° Negative

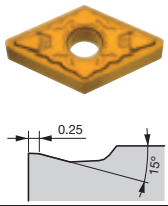
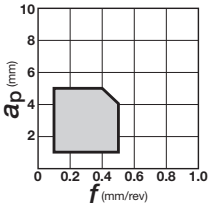
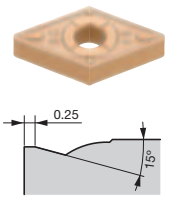
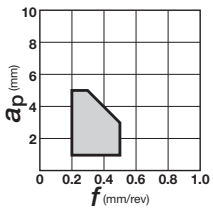
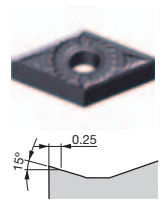
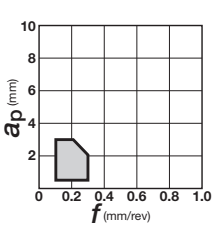
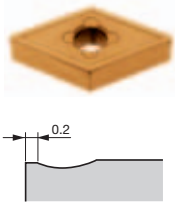
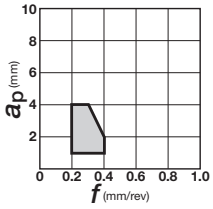
DN□□



DNMG 15 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

DN□□	1104□□	1504□□	1506□□
ød1 (mm)	3.81	5.16	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T5105	T5115	T5125	AH110	AH905	GH110	GH330	Cermet NS530	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	**CM** (M) 		DNMG150404-CM							●	●	●							TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			DNMG150408-CM							●	●	●							
			DNMG150412-CM							●	●	●							
			DNMG150604-CM							●	●	●							
			DNMG150608-CM							●	●	●							
			DNMG150612-CM							●	●	●							
	DM (M) 		DNMG150404-DM																
			*DNMG150408-DM		●	●	●												
			DNMG150412-DM	●	●	●	●												
			DNMG150416-DM																
			DNMG150604-DM		●														
			DNMG150608-DM		●	●	●												
			DNMG150612-DM	●	●	●	●												
			DNMG150616-DM	●															
	HMM (M) 		DNMG150404-HMM										●						
			*DNMG150408-HMM										●						
			DNMG150412-HMM										●						
	33 (M) 		DNMG150404-33										●						
			*DNMG150408-33										●					●	

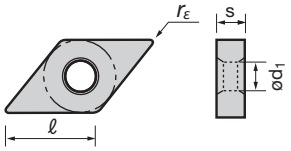
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

55° Negative

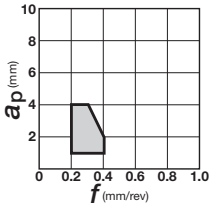
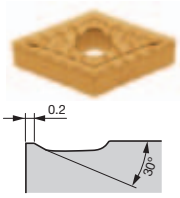
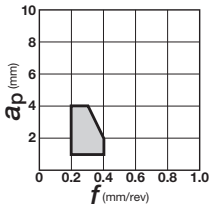
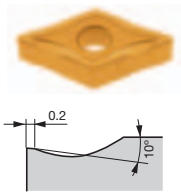
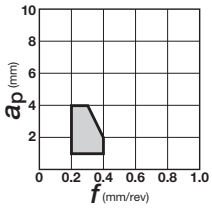
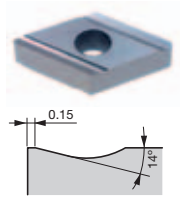
DN□□



DNMG 15 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

DN□□	1104□□	1504□□	1506□□
ød1 (mm)	3.81	5.16	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	Coated T6130	Coated GH330	Coated cermet GT530	Cermet NS730	Cermet NS530	Applicable toolholders (pages)
Medium cutting	**37** (M)		DNMG150404-37						●	TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			*DNMG150408-37			●			●	
			DNMG150412-37						●	
	38 (M)		*DNMG150408-38			●				
										
	Parallel (G)		DNGG150404R				●		●	
			DNGG150404L				●		●	
			*DNGG150408R				●		●	
			DNGG150408L				●		●	

Note: Chipbreaker cross sections are of * marked inserts.

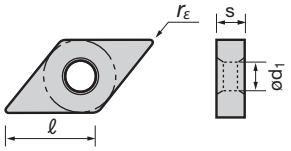
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, with hole

55° Negative

DN□□



DNMG 15 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

DN□□	1104□□	1504□□	1506□□
ød1 (mm)	3.81	5.16	5.16

Application	Chipbreaker Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated: T9105	T9115	T9125	T9135	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	GH110	GH330	Coated cermet: GT730	Cermet: NS730	NS530	Un-coated: TH10	Applicable toolholders (pages)
Medium cutting	S (M)		DNMG150404R-S			●	●	●		●	●	●					●			●		TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			DNMG150404L-S			●	●	●		●	●	●					●	●		●		
			*DNMG150408R-S			●	●	●		●	●	●					●	●		●		
			DNMG150408L-S			●	●	●		●	●	●					●		●			
			DNMG150604R-S			●	●	●		●	●	●										
			DNMG150604L-S			●	●	●		●	●	●										
			DNMG150608R-S			●	●	●		●	●	●					●					
			DNMG150608L-S			●	●	●		●	●	●										
	P (G)		DNGG150402R-P													●					●	
			DNGG150402L-P													●					●	
			*DNGG150404R-P													●					●	
			DNGG150404L-P													●					●	
			DNGG150408R-P																		●	
			DNGG150408L-P																		●	
Medium to heavy cutting	THS (M)		DNMG150408-THS	●	●	●																
			DNMG150412-THS	●	●	●																
			DNMG150416-THS	●	●																	
			DNMG150608-THS	●	●	●																
			*DNMG150612-THS	●	●	●																
			DNMG150616-THS	●	●																	
	TH (M)		*DNMG150408-TH	●	●	●	●															
			DNMG150412-TH	●	●	●	●															
			DNMG150416-TH	●	●																	
			DNMG150608-TH	●	●	●	●															
			DNMG150612-TH	●	●	●	●															
			DNMG150616-TH	●	●	●																
	SH (M)		DNMG150408-SH							●	●	●										
			*DNMG150412-SH							●	●	●										
			DNMG150416-SH							●	●	●										
			DNMG150608-SH							●	●	●										
			DNMG150612-SH							●	●	●										
	CH (M)		DNMG150404-CH										●	●	●							
			DNMG150408-CH										●	●	●							
			*DNMG150412-CH										●	●	●							
			DNMG150604-CH										●	●	●							
			DNMG150608-CH										●	●	●							
			DNMG150612-CH										●	●	●							

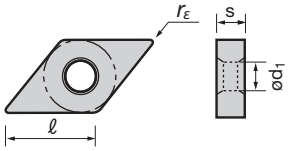
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

55° Negative

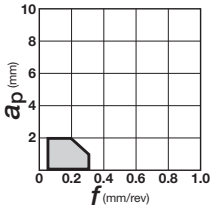
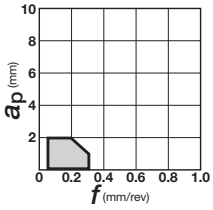
DN□□



DNMA 15 04 04

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε)

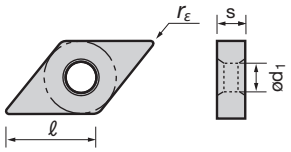
DN□□	1104□□	1504□□	1506□□
ød1 (mm)	3.81	5.16	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T5105	T5115	T5125	Coated cermet GT720	GT730	Cermet NS730	NS520	Uncoated TH10	Ceramics FX105	LX21	LX11	Applicable toolholders (pages)
Finishing to medium cutting	– (M)		DNMA150404	●	●	●		●		▲	●				TAC External Toolholders (4-18 ~) TAC Internal Toolholders (5-34 ~)
			DNMA150408	●	●	●					●				
			DNMA150412	●	●	●									
			DNMA150604	●	●	●									
			DNMA150608	●	●	●									
			DNMA150612	●	●	●									
	– (G)		DNGA150404							●	●		●	●	
			DNGA150408							●	●	●	●	●	
			DNGA150412									●	●	●	
			DNGA150416									●			
			DNGA150608											●	
			DNGA150612											●	
			DNGA150616											●	
			DNGA150620											●	

Rhombic, with hole

55° Negative

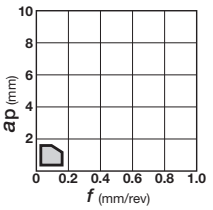
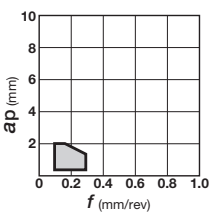
DXGU



DXGU 07 03 02 R - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Hand | Chipbreaker symbol

DXGU	0703□□
ød1 (mm)	2.7

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated AH725	Coated cermet GT530	Cermet NS530	Applicable toolholders (pages)
Finishing (low cutting forces)	SS (G)		DXGU070302R-SS	●	●	●	TAC Internal Toolholders (5-31)
			DXGU070302L-SS	●	●	●	
			DXGU070304R-SS	●	●	●	
			*DXGU070304L-SS	●	●	●	
Finishing to medium cutting	TS (G)		DXGU070302R-TS	●	●	●	
			DXGU070302L-TS	●	●	●	
			DXGU070304R-TS	●	●	●	
			*DXGU070304L-TS	●	●	●	
			DXGU070308R-TS	●	●	●	
			DXGU070308L-TS	●	●	●	

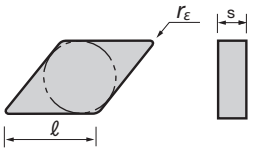
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, without hole

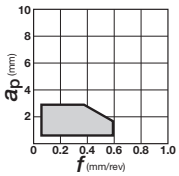
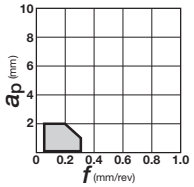
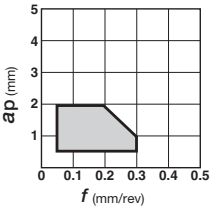
55° Negative

DN□□



DNGN 15 04 04

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - a_p	Insert Cat. No.	Stocked grades: Ceramics FX105	LX21	LX11	Applicable toolholders (pages)
Finishing to medium cutting	- (G)		DNGD150708	●			TAC External Toolholders (4-36 ~)
			DNGD150712	●			
			DNGD150716	●			
	- (G)		DNGN150404			●	
			DNGN150408			●	
			DNGN150412	●		●	
			DNGN150416	●			
			DNGN150708			●	
			DNGN150712			●	
			DNGN150716			●	
Finishing to roughing	-		DNGX120712	●			
			DNGX150708				
			DNGX150712	●			
			DNGX150716				

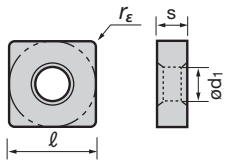
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Square, with hole

90° Negative

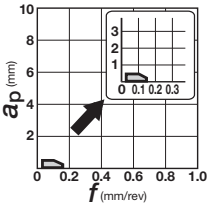
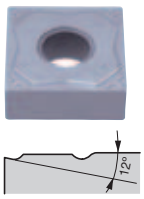
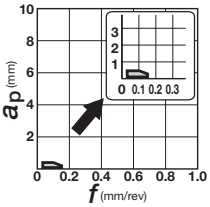
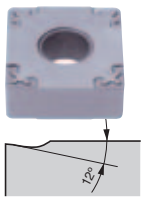
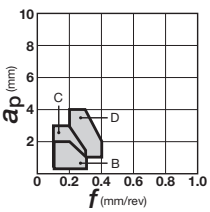
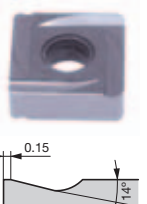
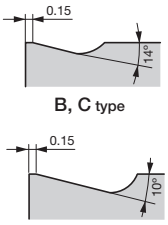
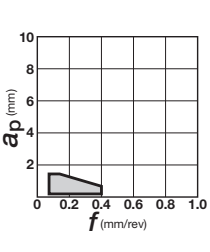
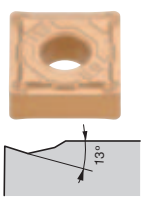
SN□□



SNMG 12 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

SN□□	0903□□	1204□□	1506□□	1906□□	2507(09)□□	3109□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12	8.80

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	Coated cermet GT730	GT530	Cermet NS730	NS520	NS530	X407	Applicable toolholders (pages)
Precision finishing	**TF** (M)		SNMG120404-TF							●		●		●		TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-36 ~)
			*SNMG120408-TF							●		●		●		
	01 (G)		SNGG090302-01											●		
			SNGG090304-01											●		
			*SNGG090308-01										●	●		
			SNGG120402-01											●		
			SNGG120404-01											●		
			SNGG120408-01										●	●		
	B ~ D (G)		SNGG090304R-B								●			●	●	
			SNGG090304L-B								●			●	●	
			*SNGG090308R-B								●			●	●	
			SNGG090308L-B								●			●	●	
			SNGG120404R-C								●			●		
			SNGG120404L-C								●			●	●	
			*SNGG120408R-C								●			●		
			SNGG120408L-C								●			●	●	
			*SNGG120408R-D											●		
			SNGG120408L-D											●		
	 B, C type D type															
Finishing	**TSF** (M)		SNMG120404-TSF	●	●					●						
			*SNMG120408-TSF	●	●					●		●				
			SNMG120412-TSF	●	●											

Note: Chipbreaker cross sections are of * marked inserts.

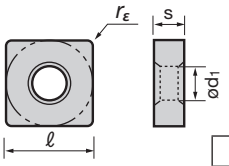
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Square, with hole

90°  **Negative**

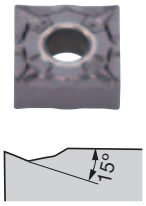
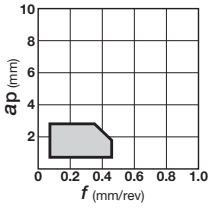
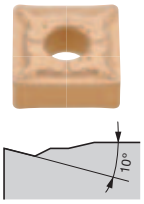
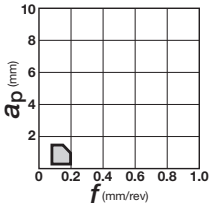
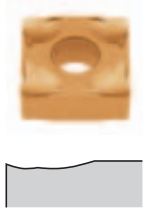
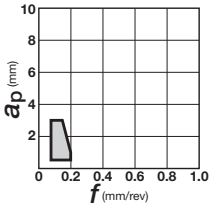
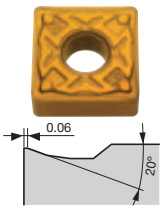
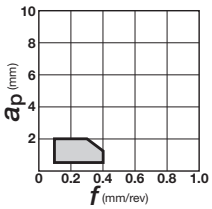
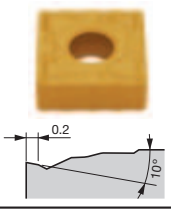
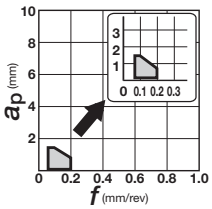
SN□□



SNMG 12 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

SN□□	0903□□	1204□□	1506□□	1906□□	2507(09)□□	3109□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12	8.80

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	Coated cermet T5105	T5115	T5125	GH330	Coated cermet GT730	GT530	Cermet NS730	NS520	NS530	Applicable toolholders (pages)
Finishing	**SF** (M) 		SNMG120404-SF							●	●	●											TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-36 ~)
			*SNMG120408-SF							●	●	●											
	TS (M) 		SNMG120404-TS		●	●												●			▲	●	
			*SNMG120408-TS	●	●	●	●											●			▲	●	
			SNMG120412-TS		●	●	●															●	
	SS (M) 		SNMG120404-SS					●	●	●	●	●	●				●						
			*SNMG120408-SS					●	●	●	●	●	●				●						
			SNMG120412-SS					●	●	●	●	●	●										
	CF (M) 		SNMG120408-CF											●	●								
			*SNMG120412-CF											●	●								
	ZF (M) 		SNMG120404-ZF																	●			
			*SNMG120408-ZF																	●			
			SNMG120412-ZF																				

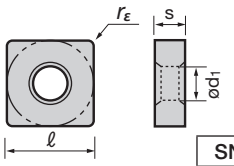
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Square, with hole

90° Negative

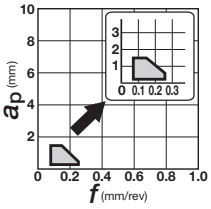
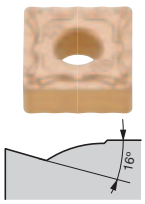
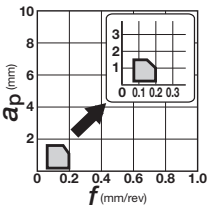
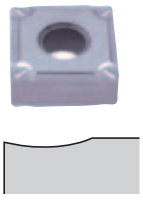
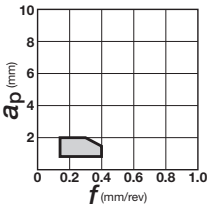
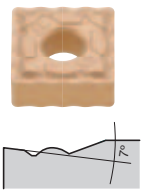
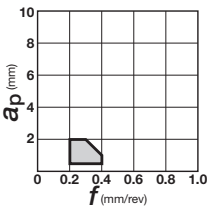
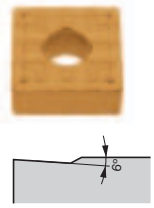
SN□□



SNMG 12 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

SN□□	0903□□	1204□□	1506□□	1906□□	2507(09)□□	3109□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12	8.80

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	Coated cermet GT730	Cermet NS730	NS520	NS530	Uncoated TH10	Applicable toolholders (pages)
Finishing	**NS** (M)		SNMG120404-NS					▲					TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-36 ~)
			*SNMG120408-NS		●	●							
			SNMG120412-NS										
	11 (M)		SNMG120404-11						●		●		
			SNMG120408-11					●	●		●	●	
			*SNMG120412-11										
Finishing to medium cutting	**ZM** (M)		*SNMG120408-ZM		●	●	●						
			SNMG120412-ZM		●	●	●						
			SNMG120416-ZM										
	27 (M)		*SNMG120408-27								●		
													

Note: Chipbreaker cross sections are of * marked inserts.

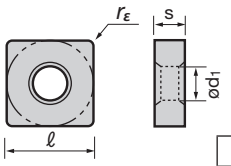
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Square, with hole

90° Negative

SN□□



SNMG 12 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

SN□□	0903□□	1204□□	1506□□	1906□□	2507(09)□□	3109□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12	8.80

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated: T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	AH110	AH120	Coated cermet: GT720	GT730	Cermet: NS730	NS520	NS530	Un-coated: TH10	Applicable toolholders (pages)
Finishing to medium cutting	**NM** (M)		*SNMG120412-NM																						TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-36 ~)
High feed, small depth of cut	**AS** (M)		SNMG120404-AS																						
			*SNMG120408-AS	●	●																		●		
			SNMG120412-AS																						
Medium cutting	**TM** (M)		SNMG090304-TM		●	●	●																		
			SNMG090308-TM		●	●	●																		
			SNMG120404-TM		●	●			●																
			*SNMG120408-TM	●	●	●	●		●																
			SNMG120412-TM	●	●	●	●		●																
			SNMG120416-TM		●	●	●		●																
			SNMG150608-TM		●																				
			SNMG150612-TM		●																				
			SNMG190608-TM		●																				
			SNMG190612-TM		●																				
	SM (M)		*SNMG120408-SM					●	●	●	●	●	●												
			SNMG120412-SM					●	●	●	●	●	●												

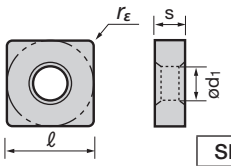
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Square, with hole

90° Negative

SN□□



SNMG 12 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (rε) Chipbreaker symbol

SN□□	0903□□	1204□□	1506□□	1906□□	2507(09)□□	3109□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12	8.80

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated: T9105	T9115	T9125	T9135	T6120	T6130	T5105	T5115	T5125	AH110	AH120	AH905	Coated cermet: GT720	GT730	Cermet: NS730	NS520	NS530	Uncoated: TH10	Applicable toolholders (pages)
Medium cutting	**All-round (M)**		SNMG090304		●	●											●	▲		●	●	TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-36 ~)
			SNMG090308		●	●	●										●	▲		●	●	
			SNMG120404		●	●	●			●	●	●	●	●			●	▲	▲	●	●	
			*SNMG120408	●	●	●	●			●	●	●	●	●		●	●	▲	▲	●	●	
			SNMG120412	●	●	●	●			●	●	●	●	●			●	▲		●	●	
			SNMG120416	●	●	●	●			●	●	●										
			SNMG120420		●	●	●			●	●	●										
			SNMG150612		●	●	●															
			SNMG150616		●	●																
			SNMG190612		●	●	●			●	●	●										
			SNMG190616		●	●	●			●	●	●										
			SNMG250724		●	●	●															
	CM (M)		SNMG120408-CM							●	●	●										
			*SNMG120412-CM							●	●	●										
	DM (M)		SNMG120404-DM																			
			*SNMG120408-DM		●	●																
			SNMG120412-DM		●	●	●															
	HMM (M)		*SNMG120408-HMM												●							
			SNMG120412-HMM												●							

Note: Chipbreaker cross sections are of * marked inserts.

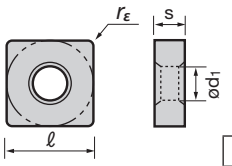
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Square, with hole

90° Negative

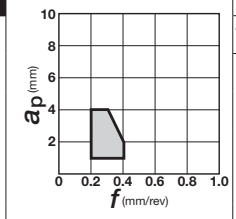
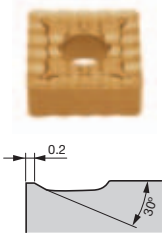
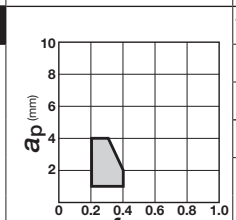
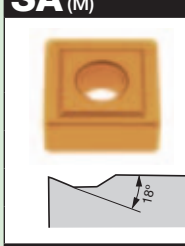
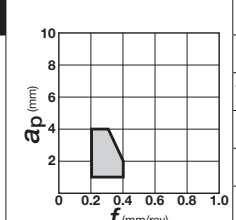
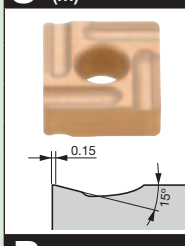
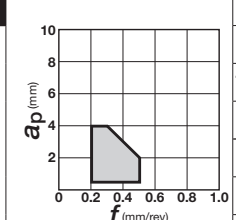
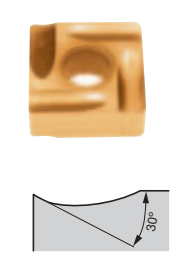
SN□□



SNMG 12 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

SN□□	0903□□	1204□□	1506□□	1906□□	2507(09)□□	3109□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12	8.80

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9015	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	AH120	GH110	GH330	Coated cermet GT720	GT730	Cermet NS530	Uncoated TH10	KS20	Applicable toolholders (pages)
Medium cutting	**37** (M)		SNMG120404-37																●			TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-36 ~)
			*SNMG120408-37												●				●			
	SA (M)		*SNMG120404-SA					●	●	●	●	●	●	●								
			SNMG120408-SA					●	●	●	●	●	●	●							●	
			SNMG120412-SA					●	●	●	●	●	●	●								
			SNMG190612-SA																		●	
	S (M)		SNMG120404R-S			●	●		●		●	●	●						●			
			SNMG120404L-S			●	●		●		●	●	●						●			
			*SNMG120408R-S			●	●		●		●	●	●			●			●			
			SNMG120408L-S			●	●		●		●	●	●			●			●			
			SNMG120412R-S																			
			SNMG120412L-S																			
	P (G)		SNGG090304R-P												●					●		
			SNGG090304L-P												●					●		
			*SNGG090308R-P												●	●			●	●		
			SNGG090308L-P																	●		
			SNGG120404R-P												●					●		
			SNGG120404L-P												●					●		
			SNGG120408R-P												●					●		
			SNGG120408L-P												●					●		

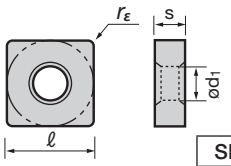
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Square, with hole

90° Negative

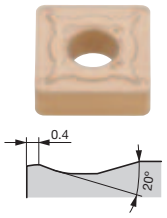
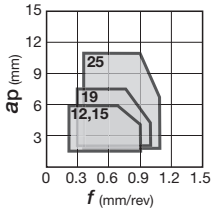
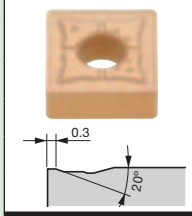
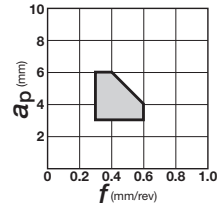
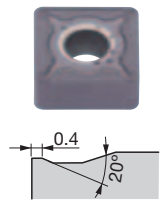
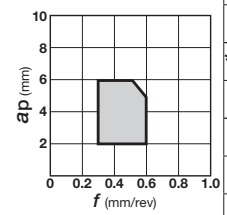
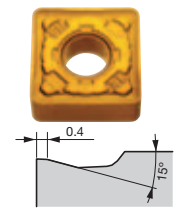
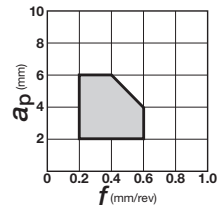
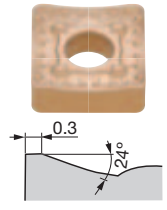
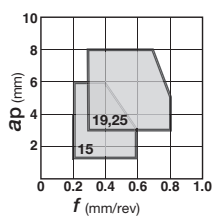
SN□□



SNMG 12 04 08 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

SN□□	0903□□	1204□□	1506□□	1906□□	2507(09)□□	3109□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12	8.80

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	GH110	GH330	Cermet NS530	Uncoated TH10	KS20	Applicable toolholders (pages)
Medium to heavy cutting	**THS** (M) 		SNMG120408-THS	●	●	●																TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-36 ~)
			SNMG120412-THS	●	●	●																
			SNMG150612-THS	●	●																	
			SNMG150616-THS	●	●																	
			*SNMG190608-THS	●	●	●																
			SNMG190612-THS	●	●	●																
			SNMG190616-THS	●	●	●																
			SNMG190624-THS	●	●	●																
			SNMG250716-THS	●	●	●																
			SNMG250724-THS	●	●	●																
	TH (M) 		*SNMG120408-TH	●	●	●		●														
			SNMG120412-TH	●	●	●		●														
			SNMG150612-TH	●	●	●		●														
			SNMG150616-TH	●	●	●		●														
			SNMG190612-TH	●	●	●	●	●														
			SNMG190616-TH	●	●	●	●	●														
	SH (M) 		SNMG120408-SH								●	●	●									
			SNMG120412-SH								●	●	●									
			*SNMG150612-SH								●	●	●									
			SNMG150616-SH								●	●	●									
			SNMG190612-SH								●	●	●									
			SNMG190616-SH								●	●	●									
	CH (M) 		SNMG120408-CH											●	●	●						
			*SNMG120412-CH											●	●	●						
			SNMG120416-CH											●	●	●						
Heavy cutting (Single sided)	**TRS** (M) 		SNMM150612-TRS	●	●	●																TAC External Toolholders (4-25 ~)
			SNMM150616-TRS	●	●	●																
			*SNMM190616-TRS	●	●	●																
			SNMM190624-TRS	●	●	●																
			SNMM250924-TRS	●	●	●																

● : Stocked items
▲ : Discontinued items

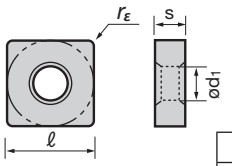
Note: Chipbreaker cross sections are of * marked inserts.

TAC Inserts, Negative

Square, with hole

90° Negative

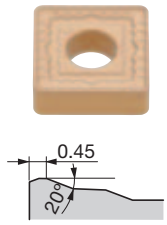
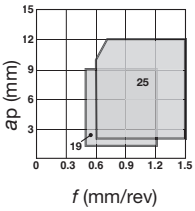
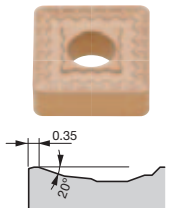
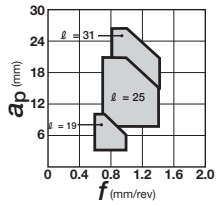
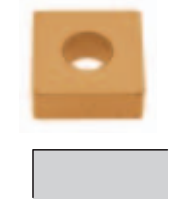
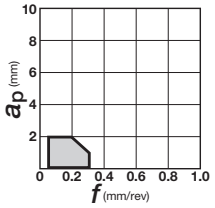
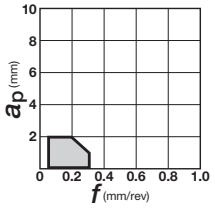
SN□□



SNMA 12 04 04

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

SN□□	0903□□	1204□□	1506□□	1906□□	2507(09)□□	3109□□
ød1 (mm)	3.81	5.16	6.35	7.93	9.12	8.80

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T5105	T5115	T5125	Coated cermet GT720	GT730	Cermet NS520	NS530	Uncoated TH10	Ceramics FX105	LX21	LX11	Applicable toolholders (pages)
Heavy cutting (Single sided)	**TUS** (M) 		*SNMM190612-TUS	●	●	●													TAC External Toolholders (4-25 ~)
			SNMM190616-TUS	●	●	●													
			SNMM190624-TUS	●	●	●													
			SNMM250724-TUS	●	●	●													
			SNMM250732-TUS	●	●														
			SNMM250924-TUS	●	●	●													
			SNMM250932-TUS	●	●														
	TU (M) 		SNMM190612-TU																
			*SNMM190616-TU				●												
			SNMM190624-TU			●	●												
			SNMM250724-TU			●	●												
			SNMM250924-TU	●	●														
			SNMM310924-TU																
Finishing to medium cutting	**-** (M) 		SNMA090308												●				TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-36 ~)
			SNMA120404					●	●	●	●								
			SNMA120408					●	●	●			▲		●	●			
			SNMA120412					●	●	●			▲		●	●			
			SNMA120416					●	●	●									
	- (G) 		SNGA090304												●				
			SNGA120404								●			●	●			●	
			SNGA120408										●		●	●		●	
			SNGA120412												●	●	●	●	
			SNGA120416													●		●	

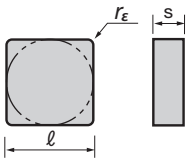
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Square, without hole

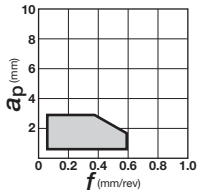
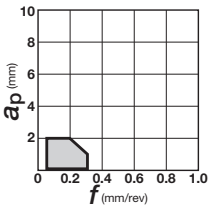
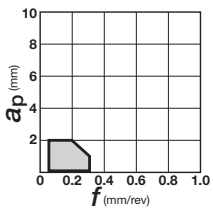
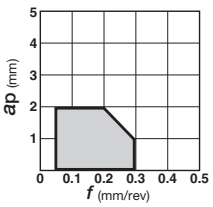
90° Negative

SN□□



SNGN 12 04 04

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Uncoated TH10	Uncoated KS20	Ceramics FX105	Ceramics LX21	Ceramics LX11	Ceramics CX710	Applicable toolholders (pages)
Finishing to medium cutting	- (G)		SNGD120712			●				TAC External Toolholders (4-36)
			SNGD120716			●				
	- (G)		SNGN090308				●	●		TAC External Toolholders (4-50 ~)
			SNGN120304					●		
			SNGN120312					●		
			SNGN120404					●		
			SNGN120408	●		●	●	●		
			SNGN120412			●	●	●		
			SNGN120416			●	●	●		
			SNGN120420			●	●			
			SNGN120424			●				
			SNGN120708					●		
			SNGN120712			●		●		
			SNGN120716			●		●		
			SNGN120720					●		
	- (M)		SNMN120408	●						
			SNMN120412							
			SNMN120416							
			SNMN120420							
			SNMN120424							
			SNMN190412							
Finishing to roughing	- (G)		SNGX120708			●				
			SNGX120712			●				
			SNGX120716			●			●	

Note: Chipbreaker cross sections are of * marked inserts.

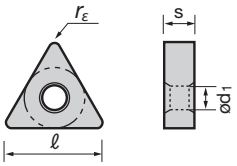
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Triangular, with hole

60° Negative

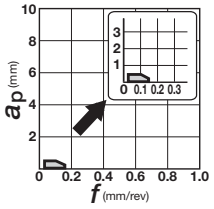
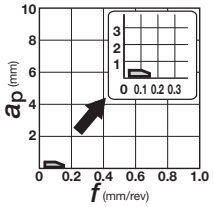
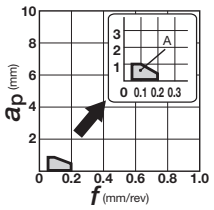
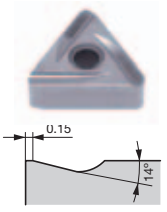
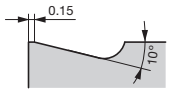
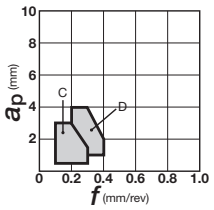
TN□□



TNMG 16 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

TN□□	1103□□	1603□□	1604□□	2204□□
ød1 (mm)	2.26	3.81	3.81	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	GH110	GH330	Coated cermet GT720	GT530	Cermet NS730	NS520	NS530	X407	Uncoated TH10	Applicable toolholders (pages)
Precision finishing	**TF** (M)		TNMG160404-TF											●	▲	●		●	TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			*TNMG160408-TF											●	▲	●			
			TNMG160412-TF																
	01 (G)		TNGG110302-01													●			
			TNGG110304-01													●			
			TNGG110308-01												▲	●			
			TNGG160402-01							●					●	●		●	
			TNGG160404-01							●					●	●		●	
			*TNGG160408-01							●					●	●			
			TNGG160412-01									●				●			
	A~D (G)		*TNGG110304R-A										●			●			
	 -A		TNGG110304L-A										●			●			
			TNGG110308R-A										●			●			
			TNGG110308L-A										●			●			
			TNGG160304R-C										●			●	●		
			TNGG160304L-C										●			●			
			TNGG160308R-C													●			
			TNGG160308L-C													●			
			TNGG160400R-C													●			
			TNGG160400L-C													●			
			TNGG160402R-C										●			●	●	●	
			TNGG160402L-C										●			●	●		
			TNGG160404R-C							●	●		●		●	●	●	●	
			TNGG160404L-C							●	●		●			●	●	●	
	 -C, -D		*TNGG160408R-C							●	●		●		●	●	●	●	
			TNGG160408L-C							●	●		●			●	●	●	
			TNGG220404R-D													●	●		
			TNGG220404L-D													●			
			*TNGG220408R-D													●	●		
			TNGG220408L-D													●			

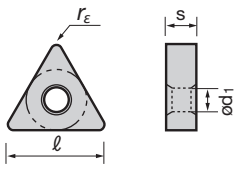
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, with hole

60° Negative

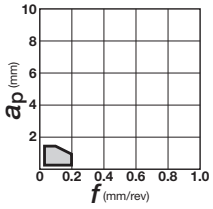
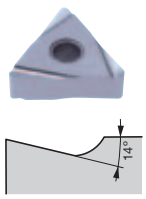
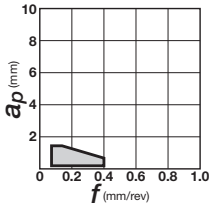
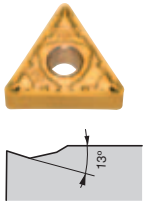
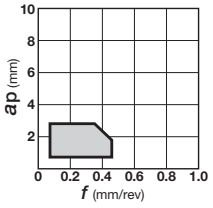
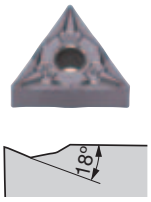
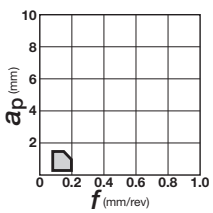
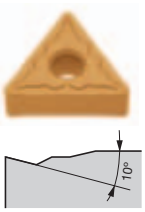
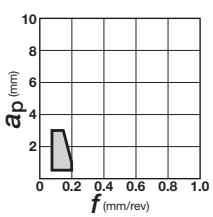
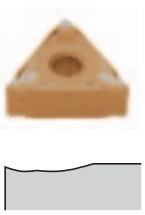
TN□□



TNMG 16 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

TN□□	1103□□	1603□□	1604□□	2204□□
ød1 (mm)	2.26	3.81	3.81	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	GH330	Coated cermet GT730	GT530	Cermet NS730	NS520	NS530	Uncoated TH10	KS20	Applicable toolholders (pages)
Precision finishing	**W** (G)		TNGG160404R-D																●	●		TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			TNGG160404L-W																●	●		
			* TNGG160408R-W																●			
			TNGG160408L-W																●			
Finishing	**TSF** (M)		TNMG160402-TSF												●			●				
			TNMG160404-TSF		●	●	●		●						●			●				
			* TNMG160408-TSF	●	●	●	●		●						●			●				
			TNMG160412-TSF		●	●	●								●			●				
	SF (M)		TNMG160404-SF							●	●	●										
			* TNMG160408-SF							●	●	●										
			TNMG160412-SF							●	●	●										
	TS (M)		TNMG160404-TS		●	●	●		▲							●		▲	●			
			* TNMG160408-TS	●	●	●	●		▲							●		▲	●			
			TNMG160412-TS	●	●	●	●												●			
	SS (M)		TNMG160404-SS					●	●	●	●	●	●	●							●	
			TNMG160408-SS					●	●	●	●	●	●	●							●	
			TNMG160412-SS					●	●	●	●	●	●	●								
			* TNMG220404-SS					●	●	●	●	●	●	●								
			TNMG220408-SS					●	●	●	●	●	●	●								
			TNMG220412-SS						●	●	●	●	●									

Note: Chipbreaker cross sections are of * marked inserts.

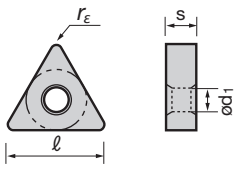
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Triangular, with hole

60° Negative

TN□□



TNMG 16 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

TN□□	1103□□	1603□□	1604□□	2204□□
ød1 (mm)	2.26	3.81	3.81	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T5105	T5115	T5125	GH330	Coated cermet GT730	Cermet NS730	NS520	NS530	Uncoated TH10	Applicable toolholders (pages)
Finishing	CF (M)		TNMG160404-CF							●	●								TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			*TNMG160408-CF							●	●								
	ZF (M)		TNMG160404-ZF		●	●	●							●		●			
			*TNMG160408-ZF		●	●	●							●		●			
			TNMG160412-ZF																
	NS (M)		TNMG160404-NS		●	●											●		
			*TNMG160408-NS	●	●	●											●		
	11 (M)		TNMG110304-11												●	●			
			TNMG110308-11												●	●			
			TNMG160402-11												●	●			
			TNMG160404-11										●		●	●		●	
			*TNMG160408-11												●	●		▲	
			TNMG160412-11												●	●			
			TNMG220404-11												●	●			
			TNMG220408-11												●	●			
Finishing of mild steels	17 (M)		TNMG160404-17										●				●		
			*TNMG160408-17														●		

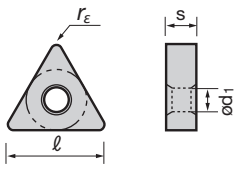
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, with hole

60° Negative

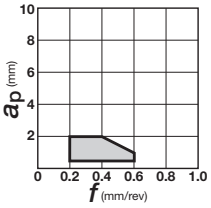
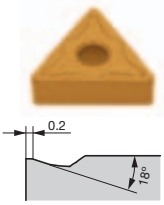
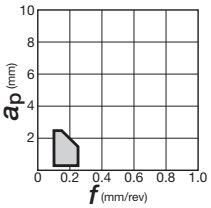
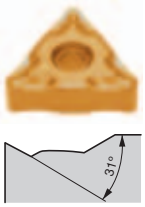
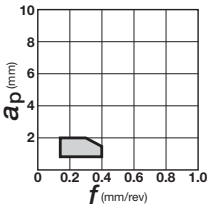
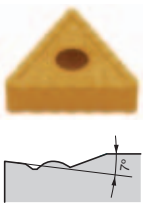
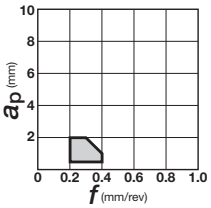
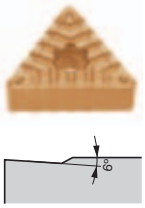
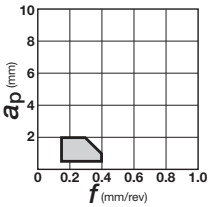
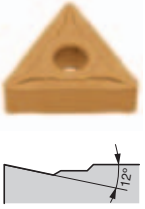
TN□□



TNMG 16 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

TN□□	1103□□	1603□□	1604□□	2204□□
ød1 (mm)	2.26	3.81	3.81	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	Coated cermet GT730	Cermet NS520	NS530	Applicable toolholders (pages)
High feed, small depth of cut	**AS** (M)		TNMG160404-AS			●	●					●	TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			*TNMG160408-AS	●	●	●	●					●	
			TNMG160412-AS	●	●	●							
Boring (Double sided chipbreaker)	**CB** (M)		TNMG110304-CB		●							●	TAC External Toolholders (4-54 ~) TAC Internal Toolholders (5-36 ~)
			*TNMG110308-CB		●							●	
Finishing to medium cutting	**ZM** (M)		TNMG160404-ZM		●	●	●			●			TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			TNMG160408-ZM		●	●	●			●			
			*TNMG160412-ZM		●	●	●						
			TNMG220408-ZM										
			TNMG220412-ZM			●							
	27 (M)		*TNMG160408-27									●	
			TNMG220408-27									●	
	NM (M)		*TNMG160408-NM			●						●	
			TNMG160412-NM		●	●							

Note: Chipbreaker cross sections are of * marked inserts.

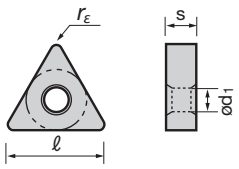
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Triangular, with hole

60° Negative

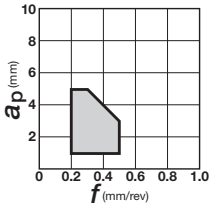
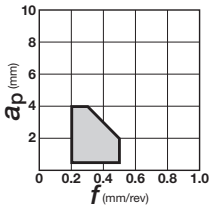
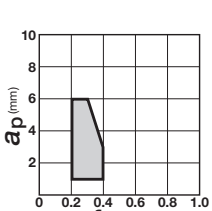
TN□□



TNMG 16 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

TN□□	1103□□	1603□□	1604□□	2204□□
ød1 (mm)	2.26	3.81	3.81	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	AH110	AH120	Coated cermet GT720	GT730	Cermet NS730	NS520	NS530	Un-coated TH10	Applicable toolholders (pages)
Medium cutting	**TM** (M)		TNMG110304-TM		●	●	●																●		TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			TNMG110308-TM		●	●	●																●		
			TNMG160404-TM		●	●	●		●																
			*TNMG160408-TM	●	●	●	●		●																
			TNMG160412-TM	●	●	●	●		●											●					
			TNMG220408-TM	●	●	●	●		●																
			TNMG220412-TM		●	●	●		●																
			TNMG220416-TM		●	●																			
	SM (M)		TNMG160404-SM					●	●	●	●	●	●												
			*TNMG160408-SM					●	●	●	●	●	●												
			TNMG160412-SM					●	●	●	●	●	●												
			TNMG220408-SM							●	●	●	●												
			TNMG220412-SM							●	●	●	●												
	All-round (M)		TNMG110304		●	●								●	●	●				●	●		●	●	
			TNMG110308		●	●								●	●	●				●	●		●	●	
			TNMG160304																		●		●	●	
			TNMG160308																		●		●	●	
			TNMG160404	●	●	●	●							●	●	●	●	●		●	●	▲	●	●	
			*TNMG160408	●	●	●	●							●	●	●	●	●	●	●	●	▲	●	●	
			TNMG160412	●	●	●	●							●	●	●	●	●			●		●	●	
			TNMG160416		●	●	●							●	●	●								●	
			TNMG160420		●	●	●																		
			TNMG220408	●	●	●	●							●	●	●								●	
			TNMG220412	●	●	●	●							●	●	●								●	
			TNMG220416		●	●								●	●	●								●	

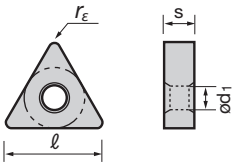
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, with hole

60° Negative

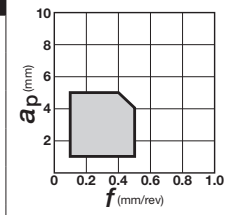
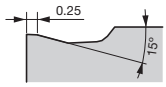
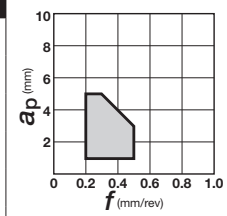
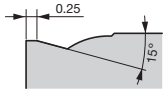
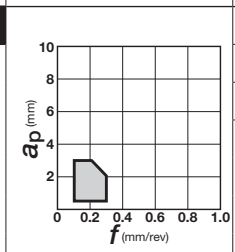
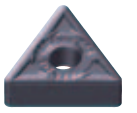
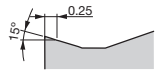
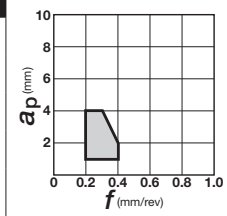
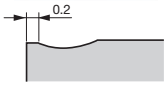
TN□□



TNMG 16 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

TN□□	1103□□	1603□□	1604□□	2204□□
ød1 (mm)	2.26	3.81	3.81	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T5105	T5115	T5125	AH905	GH110	GH330	Coated cermet GT720	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	**CM** (M)		TNMG160404-CM							●	●	●						TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
	 		TNMG160408-CM							●	●	●						
			*TNMG160412-CM							●	●	●						
			TNMG220408-CM							●	●	●						
			TNMG220412-CM							●	●	●						
	DM (M)		TNMG160404-DM															
	 		*TNMG160408-DM	●	●	●	●											
			TNMG160412-DM		●	●												
			TNMG220408-DM															
			TNMG220412-DM															
			TNMG220416-DM															
	HMM (M)		TNMG160404-HMM										●					
	 		*TNMG160408-HMM										●					
			TNMG160412-HMM										●					
	33 (M)		TNMG160404-33														●	
	 		*TNMG160408-33														●	
			TNMG220404-33													●		

Note: Chipbreaker cross sections are of * marked inserts.

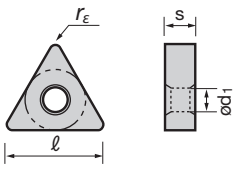
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Triangular, with hole

60° Negative

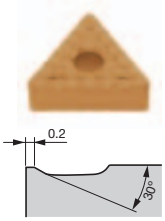
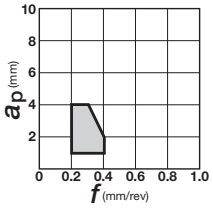
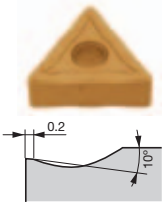
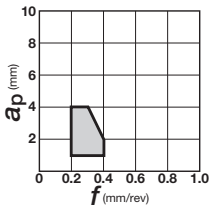
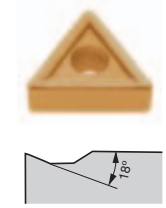
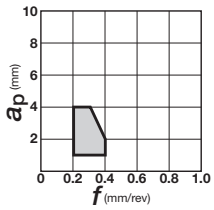
TN□□



TNMG 16 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

TN□□	1103□□	1603□□	1604□□	2204□□
ød1 (mm)	2.26	3.81	3.81	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6020	T6030	T6120	T6130	AH630	AH645	AH120	GH330	Cermet NS520	NS530	Uncoated KS20	UX25	Applicable toolholders (pages)
Medium cutting	**37** (M) 		TNMG160404-37								●		●			TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			*TNMG160408-37								●		●			
	38 (M) 		TNMG160404-38								●					
			*TNMG160408-38								●					
	SA (M) 		TNMG160404-SA	●	●	●	●	●	●	●						
			*TNMG160408-SA	●	●	●	●	●	●	●				●		
			TNMG160412-SA		●	●	●	●	●	●				●		
			TNMG220408-SA		●	●	●	●	●					●		
			TNMG220412-SA		●	●	●	●	●							

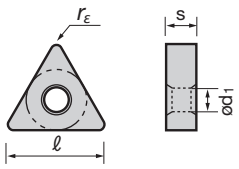
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, with hole

60° Negative

TN□□



TNMG 16 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

TN□□	1103□□	1603□□	1604□□	2204□□
ød1 (mm)	2.26	3.81	3.81	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	GH110	GH330	Cermet NS520	NS530	Uncoated UX25	TH10	Applicable toolholders (pages)
Medium cutting	**S** (M)		TNMG160404R-S			●	●		●		●	●	●					●		●	▲		TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			TNMG160404L-S			●	●		●		●	●	●					●		●			
			*TNMG160408R-S			●	●		●		●	●	●					●		●			
			TNMG160408L-S			●	●		●		●	●	●					●		●			
			TNMG220404R-S			●	●		●		●	●	●										
			TNMG220404L-S			●	●		●		●	●	●					●					
			TNMG220408R-S			●	●		●		●	●	●					●		●			
			TNMG220408L-S			●	●		●		●	●	●					●		●			
	P (G)		TNGG160402R-P														●	●		●		●	
			TNGG160402L-P														●	●		●		●	
			TNGG160404R-P														●	●		●		●	
			TNGG160404L-P														●	●		●		●	
			*TNGG160408R-P														●	●		●		●	
			TNGG160408L-P														●	●		●		●	
Medium to heavy cutting	**THS** (M)		TNMG220408-THS		●	●	●																TAC External Toolholders (4-22)
			*TNMG220412-THS		●	●	●																
	TH (M)		*TNMG220408-TH		●	●	●		●														
			TNMG220412-TH		●	●	●		●														
	CH (M)		TNMG160404-CH											●	●	●							TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			TNMG160408-CH											●	●	●							
			*TNMG160412-CH											●	●	●							
			TNMG220408-CH											●	●	●							
			TNMG220412-CH											●	●	●							
			TNMG220416-CH											●	●	●							

Note: Chipbreaker cross sections are of * marked inserts.

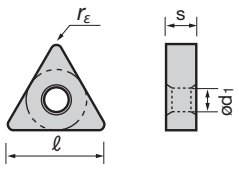
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Triangular, with hole

60° Negative

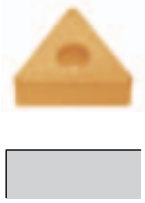
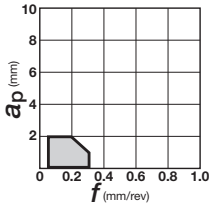
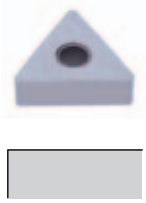
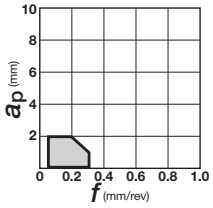
TN□□



TNMA 16 04 04

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

TN□□	1103□□	1603□□	1604□□	2204□□
ød1 (mm)	2.26	3.81	3.81	5.16

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T5105	T5115	T5125	GH110	Coated cermet GT720	Cermet NS520	NS530	Uncoated TH03	TH10	Ceramics FX105	LX21	LX11	Applicable toolholders (pages)
Finishing to medium cutting	- (M) 		TNMA160404					●	●	●						●				TAC External Toolholders (4-22 ~, 4-86) TAC Internal Toolholders (5-36 ~) J-series (8-20)
			TNMA160408					●	●	●		●		▲		●	●			
			TNMA160412					●	●	●							●			
			TNMA160416					●	●	●										
			TNMA160420					●	●	●										
			TNMA220404					●	●	●										
			TNMA220408					●	●	●										
			TNMA220412					●	●	●										
			TNMA220416					●	●	●										
	- (G) 		TNGA110304													●				
			TNGA110308													●				
			TNGA160304													●				
			TNGA160308													●				
			TNGA160404								●		●	●		●	●		●	●
			TNGA160408								●		●			●	●	●	●	●
			TNGA160412										●			●	●	●	●	
			TNGA160416													●	●		●	
			TNGA220408													●				

● : Stocked items
▲ : Discontinued items

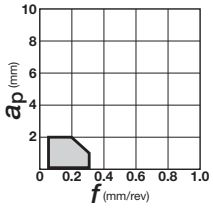
Triangular, without hole

60° Negative

TN□□

TNGN 16 04 04

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - a_p	Insert Cat. No.	Stocked grades: Uncoated TH10	Ceramics FX105	Ceramics LX21	Ceramics LX11	Applicable toolholders (pages)
Finishing to medium cutting	- (G)		TNGN160404			●	●	TAC External Toolholders (4-47 ~)
			TNGN160408	●		●	●	
			TNGN160412	●	●	●	●	
			TNGN160416		●		●	
			TNGN160420		●			
			TNGN160708				●	
			TNGN160712				●	

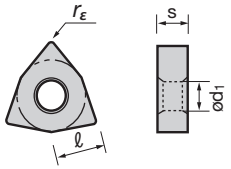
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Trigon, with hole

80° Negative

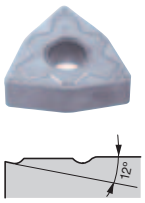
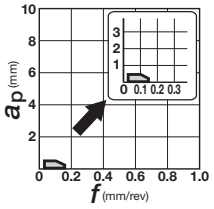
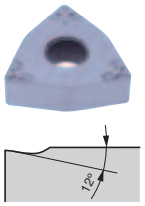
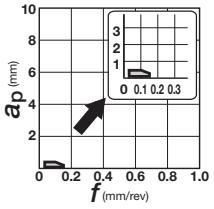
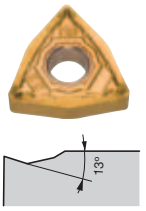
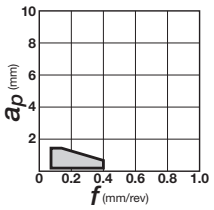
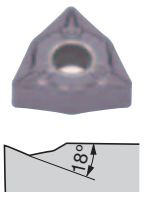
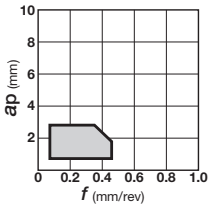
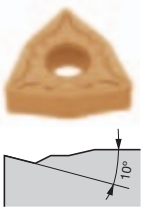
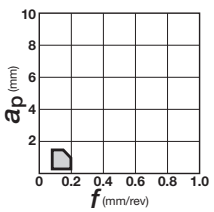
WN□□



WNMG 08 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

WN□□	0604□□	0804□□	1006□□	1306□□
ød1 (mm)	3.81	5.16	6.35	7.93

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	GH330	Coated cermet GT720	GT730	GT530	Cermet NS730	NS520	NS530	Applicable toolholders (pages)
Precision finishing	**TF** (M) 		WNMG080404-TF															●		●	TAC External Toolholders (4-17 ~) TAC Internal Toolholders (5-38 ~)
			*WNMG080408-TF															●		●	
	01 (G) 		WNGG060402-01																	●	
			*WNGG060404-01																	●	
			WNGG080402-01																●	●	
			WNGG080404-01												●				●	●	
			WNGG080408-01												●					●	
Finishing	**TSF** (M) 		WNMG060404-TSF	●	●																
			*WNMG060408-TSF	●	●																
			WNMG080404-TSF	●	●	●			●							●		●			
			WNMG080408-TSF	●	●	●			●							●		●			
			WNMG080412-TSF	●	●	●															
	SF (M) 		WNMG060404-SF							●	●	●									
			WNMG060408-SF							●	●	●									
			WNMG080404-SF							●	●	●									
			*WNMG080408-SF							●	●	●									
	TS (M) 		WNMG080404-TS	●	●	●		▲									●		▲	●	
			*WNMG080408-TS	●	●	●		▲									●		▲	●	
			WNMG080412-TS	●	●	●													▲	●	

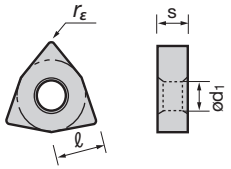
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Trigon, with hole

80° Negative

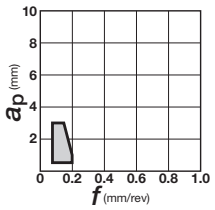
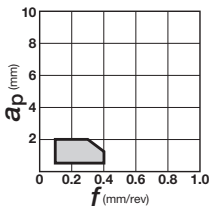
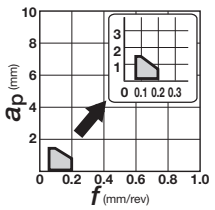
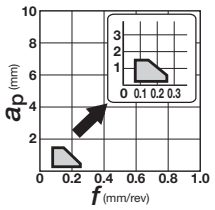
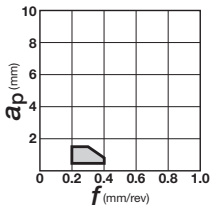
WN□□



WNMG 08 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

WN□□	0604□□	0804□□	1006□□	1306□□
ød1 (mm)	3.81	5.16	6.35	7.93

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	GH330	T5105	T5115	T5125	Coated cermet GT720	GT730	GT530	Cermet NS730	NS530	Applicable toolholders (pages)
Finishing	**SS** (M)		WNMG080404-SS					●	●	●	●	●	●	●									TAC External Toolholders (4-17 ~) TAC Internal Toolholders (5-38 ~)
			*WNMG080408-SS					●	●	●	●	●	●	●									
			WNMG080412-SS					●	●	●	●	●	●										
	CF (M)		WNMG080404-CF												●	●							
			WNMG080408-CF												●	●							
			*WNMG080412-CF												●	●							
	ZF (M)		WNMG060404-ZF		●	●																	
			WNMG060408-ZF		●	●																	
			WNMG080404-ZF		●	●	●												●			●	
			*WNMG080408-ZF		●	●	●												●			●	
			WNMG080412-ZF																				
	NS (M)		WNMG080404-NS		●	●																	
			*WNMG080408-NS		●	●																●	
	AFW (M)		WNMG060404-AFW		●	●																●	
			WNMG060408-AFW	●	●	●	●																
			WNMG080404-AFW		●	●																●	
			*WNMG080408-AFW	●	●	●	●															●	

Note: Chipbreaker cross sections are of * marked inserts.

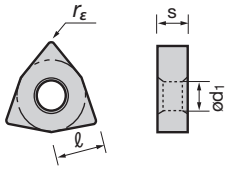
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Trigon, with hole

80° Negative

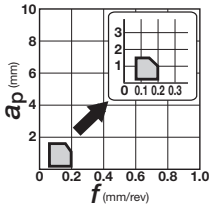
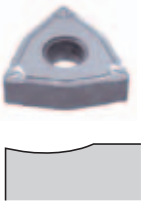
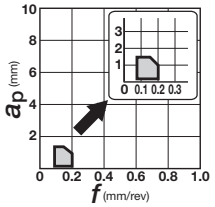
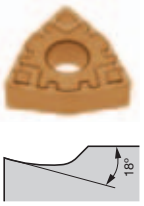
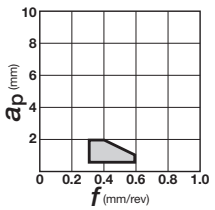
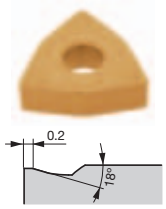
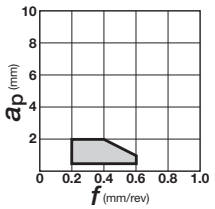
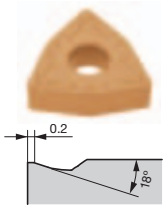
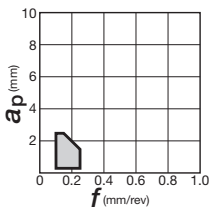
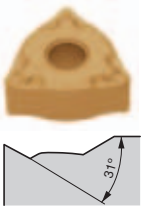
WN□□



WNMG 08 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

WN□□	0604□□	0804□□	1006□□	1306□□
ød1 (mm)	3.81	5.16	6.35	7.93

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	Cermet NS730	NS530	Applicable toolholders (pages)
Finishing	**11** (M)		WNMG080404-11						●	TAC External Toolholders (4-17 ~) TAC Internal Toolholders (5-38 ~)
			*WNMG080408-11						●	
Finishing of mild steels	**17** (M)		WNMG080404-17						●	
			*WNMG080408-17						●	
High feed, small depth of cut	**ASW** (M)		WNMG060408-ASW	●	●	●				
			WNMG060412-ASW	●	●	●	●			
			*WNMG080408-ASW	●	●	●	●			
			WNMG080412-ASW	●	●	●	●			
	AS (M)		WNMG080404-AS	●					●	
			*WNMG080408-AS	●	●	●	●		●	
			WNMG080412-AS	●	●	●	●		●	
Boring (Double sided chipbreaker)	**CB** (M)		WNMG060404-CB			●			●	
			*WNMG060408-CB			●			●	

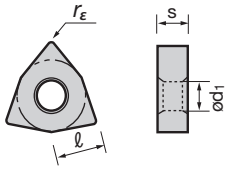
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Trigon, with hole

80° Negative

WN□□



WNMG 08 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

WN□□	0604□□	0804□□	1006□□	1306□□
ød1 (mm)	3.81	5.16	6.35	7.93

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	AH110	AH120	Coated cermet GT730	GT530	Cermet NS730	NS530	Un-coated TH10	Applicable toolholders (pages)
Finishing to medium cutting	ZM (M)		WNMG060408-ZM	●	●	●																		TAC External Toolholders (4-17 ~) TAC Internal Toolholders (5-38 ~)
			WNMG060412-ZM	●	●	●																		
			*WNMG080408-ZM	●	●	●													●	●				
			WNMG080412-ZM	●	●	●																		
			WNMG080416-ZM	●	●																			
	NM (M)		*WNMG080408-NM	●	●	●																		
			WNMG080412-NM	●	●	●	●																	
Medium cutting	TM (M)		WNMG060404-TM		●	●	●																	
			WNMG060408-TM	●	●	●	●																	
			WNMG080404-TM	●	●	●	●		●															
			*WNMG080408-TM	●	●	●	●		●															
			WNMG080412-TM	●	●	●	●		●															
			WNMG080416-TM	●	●	●																		
	SM (M)		WNMG080404-SM					●	●	●	●	●	●											
			*WNMG080408-SM					●	●	●	●	●	●											
			WNMG080412-SM					●	●	●	●	●	●											

Note: Chipbreaker cross sections are of * marked inserts.

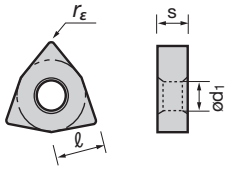
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Trigon, with hole

80° Negative

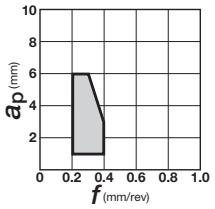
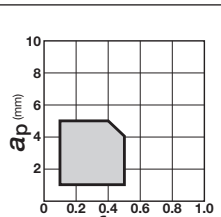
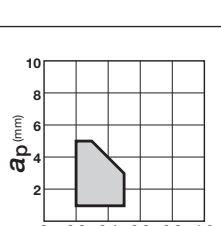
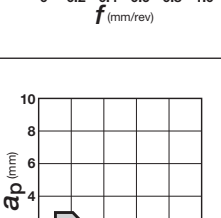
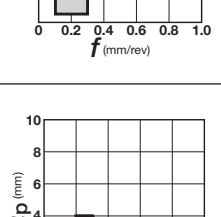
WN□□



WNMG 08 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

WN□□	0604□□	0804□□	1006□□	1306□□
ød1 (mm)	3.81	5.16	6.35	7.93

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T5105	T5115	T5125	AH110	AH120	AH905	Coated cermet GT720	GT730	Cermet NS730	NS520	NS530	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	**All-round** (M)		WNMG060404		●	●		●	●	●										TAC External Toolholders (4-17 ~) TAC Internal Toolholders (5-38 ~)
			WNMG060408		●	●		●	●	●										
			WNMG080404	●	●	●	●	●	●	●	●	●			●		▲		●	●
			*WNMG080408	●	●	●	●	●	●	●	●	●			●		▲	▲	●	●
			WNMG080412	●	●	●	●	●	●	●	●	●							●	●
			WNMG080416	●	●	●	●	●	●	●										
	CM (M)		WNMG080408-CM					●	●	●										
			*WNMG080412-CM					●	●	●										
	DM (M)		WNMG080404-DM																	
			*WNMG080408-DM	●	●	●	●													
			WNMG080412-DM	●	●	●	●													
	HMM (M)		WNMG080404-HMM										●							
			*WNMG080408-HMM										●							
			WNMG080412-HMM										●							
	33 (M)		WNMG080404-33											●						
			*WNMG080408-33																●	

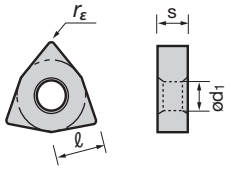
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Trigon, with hole

80° Negative

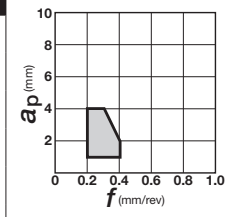
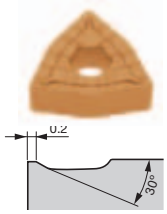
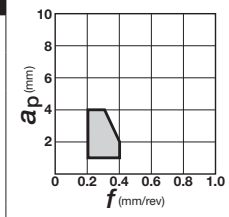
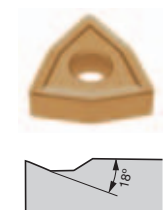
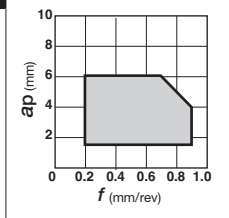
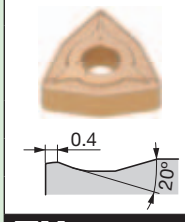
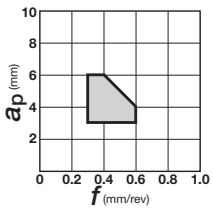
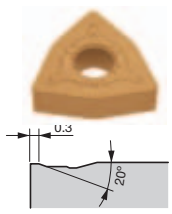
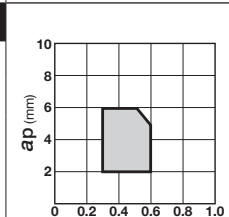
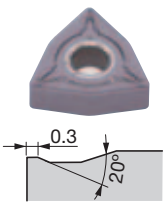
WN□□



WNMG 08 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

WN□□	0604□□	0804□□	1006□□	1306□□
ød1 (mm)	3.81	5.16	6.35	7.93

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	GH330	Cermet NS530	Uncoated KS20	Applicable toolholders (pages)
Medium cutting	**37** (M)		WNMG080404-37															●		TAC External Toolholders (4-17 ~) TAC Internal Toolholders (5-38 ~)
			*WNMG080408-37														●	●		
	SA (M)		*WNMG080408-SA					●	●	●	●	●	●						●	
			WNMG080412-SA					●	●	●	●	●	●							
Medium to heavy cutting	**THS** (M)		WNMG080408-THS	●	●	●	●													
			*WNMG080412-THS	●	●	●	●													
			WNMG080416-THS		●	●														
			WNMG100612-THS		●	●	●													
			WNMG100616-THS		●	●	●													
	TH (M)		*WNMG080408-TH	●	●	●	●		●											
			WNMG080412-TH	●	●	●	●		●											
			WNMG080416-TH	●	●	●														
			WNMG100612-TH		●	●														
			WNMG100616-TH		●	●														
	SH (M)		WNMG080408-SH								●	●	●							
			*WNMG080412-SH								●	●	●							

Note: Chipbreaker cross sections are of * marked inserts.

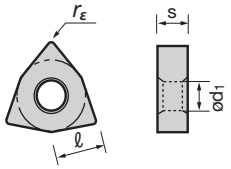
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Trigon, with hole

80° Negative

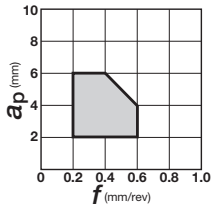
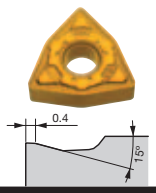
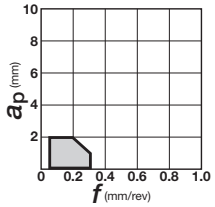
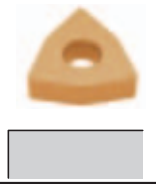
WN□□



WNMM 08 04 08 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

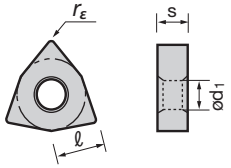
WN□□	0604□□	0804□□	1006□□	1306□□
ød1 (mm)	3.81	5.16	6.35	7.93

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	T6130	T5105	T5115	T5125	Coated cermet GT730	Cermet NS520	Uncoated TH10	Applicable toolholders (pages)
Medium to heavy cutting	CH (M)		WNMG080408-CH			●	●	●				TAC External Toolholders (4-17 ~) TAC Internal Toolholders (5-38 ~)
			*WNMG080412-CH			●	●	●				
Finishing to medium cutting	- (M)		WNMA080404			●	●	●			●	
			WNMA080408			●	●	●		▲	●	
			WNMA080412			●	●	●				
			WNMA080416			●	●	●				

Trigon, with hole

80° Negative

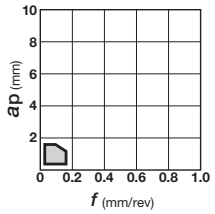
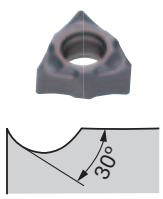
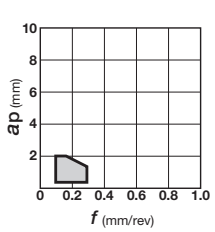
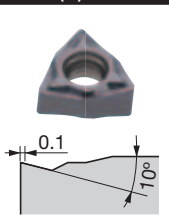
WXGU



WXGU 04 03 02 R - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Hand | Chipbreaker symbol

DXGU	0403□□
ød1 (mm)	2.7

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated AH725	Coated cermet GT530	Cermet NS530	Applicable toolholders (pages)
Finishing (low cutting force)	SS (G)		WXGU040302R-SS	●	●	●	TAC Internal Toolholders (5-31)
			WXGU040302L-SS	●	●	●	
			WXGU040304R-SS	●	●	●	
			*WXGU040304L-SS	●	●	●	
Finishing to medium cutting	TS (G)		WXGU040302R-TS	●	●	●	
			WXGU040302L-TS	●	●	●	
			WXGU040304R-TS	●	●	●	
			*WXGU040304L-TS	●	●	●	
			WXGU040308R-TS	●	●	●	
			WXGU040308L-TS	●	●	●	

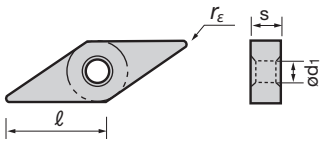
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

35° Negative

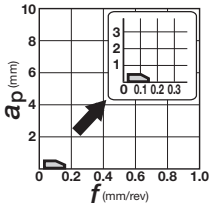
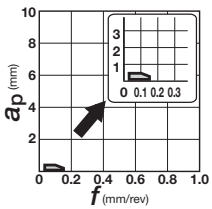
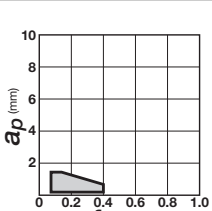
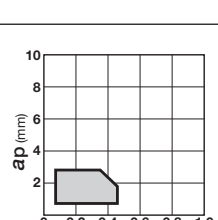
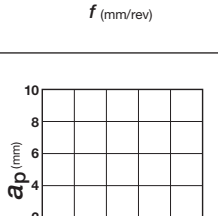
VN□□



VNMG 16 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

VN□□	1604□□
ød1 (mm)	3.81

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	GH110	GH330	Coated cermet GT720	GT730	GT530	Cermet NS730	NS520	NS530	Uncoated TH10	Applicable toolholders (pages)
Precision finishing	TF (M)		VNMG160404-TF														●		●		TAC External Toolholders (4-30 ~) TAC Internal Toolholders (5-37 ~)
			*VNMG160408-TF											●			●		●		
	01 (G)		VNGG160402-01									●						●	●	●	
			*VNGG160404-01															●	●	●	
			VNGG160408-01															●	●		
Finishing	TSF (M)		VNMG160402-TSF												●		●				
			VNMG160404-TSF	●	●	●	●								●		●				
			*VNMG160408-TSF	●	●	●	●								●		●				
			VNMG160412-TSF	●	●	●	●														
	SF (M)		VNMG160404-SF					●	●	●											
			*VNMG160408-SF					●	●	●											
	TS (M)		VNMG160404-TS		●	●	●									●		▲	●		
			*VNMG160408-TS		●	●	●									●		▲	●		
			VNMG160412-TS		●	●	●											▲	●		

Note: Chipbreaker cross sections are of * marked inserts.

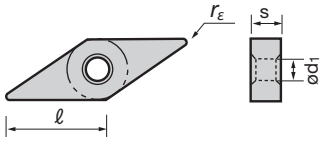
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, with hole

35° Negative

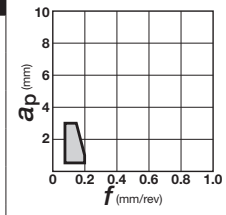
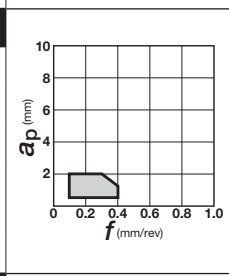
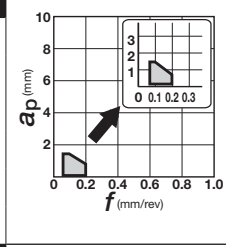
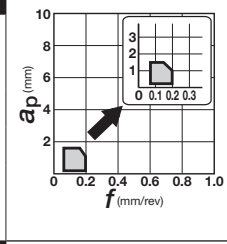
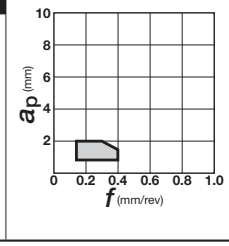
VN□□



VNMG 16 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

VN□□	1604□□
ød1 (mm)	3.81

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	Coated cermet T5105	T5115	GH330	GT730	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Finishing	SS (M)		*VNMG160404-SS					●	●	●	●	●	●			●					TAC External Toolholders (4-30 ~) TAC Internal Toolholders (5-37 ~)
			VNMG160408-SS					●	●	●	●	●	●			●					
			VNMG160412-SS					●	●	●	●	●	●			●					
	CF (M)		VNMG160404-CF											●	●						
			*VNMG160408-CF											●	●						
	ZF (M)		VNMG160404-ZF	●	●	●										●		●			
			*VNMG160408-ZF	●	●	●										●		●			
			VNMG160412-ZF	●	●	●															
	11 (M)		*VNMG160404-11													●		▲●		●	
			VNMG160408-11															▲●			
			VNMG160412-11															▲●			
Finishing to medium cutting	ZM (M)		*VNMG160408-ZM	●	●	●											●				
			VNMG160412-ZM	●	●	●															

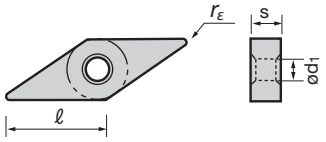
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

35° Negative

VN□□



VNMG 16 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

VN□□	1604□□
ød1 (mm)	3.81

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6020	T6030	T6120	T6130	AH630	AH645	T5105	T5115	T5125	AH110	AH120	Coated cermet GT730	Cermet NS730	NS530	Un-coated TH10	Applicable toolholders (pages)
Medium cutting	**TM** (M)		VNMG160404-TM	●	●	●	●		●														TAC External Toolholders (4-30 ~) TAC Internal Toolholders (5-37 ~)
			*VNMG160408-TM	●	●	●	●		●														
			VNMG160412-TM	●	●	●	●		●														
	SM (M)		VNMG160404-SM							●	●	●	●										
			*VNMG160408-SM					●	●	●	●	●	●										
			VNMG160412-SM							●	●	●	●										
	All-round (M)		VNMG160404	●	●	●	●							●	●	●	●	●	●	●	●	●	
			*VNMG160408	●	●	●	●							●	●	●	●	●	●	●	●	●	
			VNMG160412		●	●								●	●	●				●	●		
	CM (M)		VNMG160408-CM											●	●	●							
			*VNMG160412-CM											●	●	●							
	DM (M)		VNMG160404-DM																				
			*VNMG160408-DM	●	●	●	●																
			VNMG160412-DM		●	●	●																

Note: Chipbreaker cross sections are of * marked inserts.

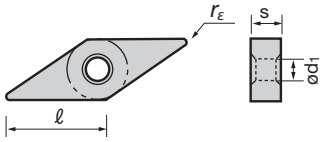
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Rhombic, with hole

35° Negative

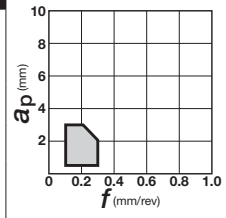
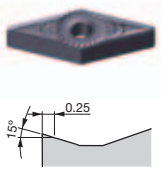
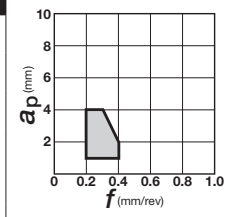
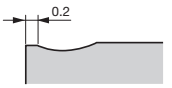
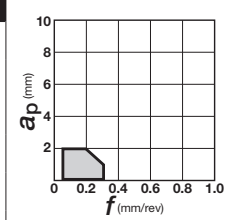
VN□□



VNMG 16 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

VN□□	1604□□
ød1 (mm)	3.81

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	T6130	T5105	T5115	T5125	AH110	AH905	Coated cermet	Cermet NS520	NS530	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	HMM (M)		VNMG160404-HMM							●					TAC External Toolholders (4-30 ~) TAC Internal Toolholders (5-37 ~)
			*VNMG160408-HMM							●					
			VNMG160412-HMM							●					
	33 (M)		VNMG160404-33						●					●	
			*VNMG160408-33											●	
															
Finishing to medium cutting	- (M)		VNMA160402											●	
			VNMA160404			●	●	●				▲		●	
			VNMA160408			●	●	●				▲		●	

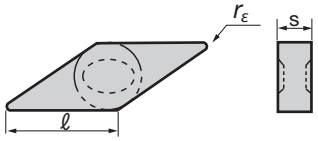
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, without hole

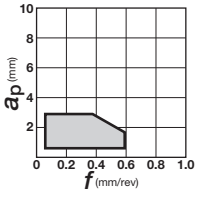
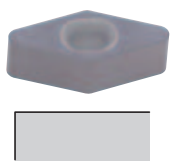
35° Negative

VNGD



VNGD 16 07 12

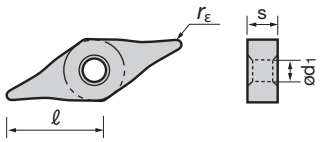
Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Ceramics FX105	Applicable toolholders (pages)
Finishing to medium cutting	- (G)		VNGD160712	●	TAC External Toolholders (4-37)
					

Y-shape, with hole

25° Negative

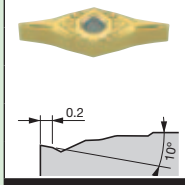
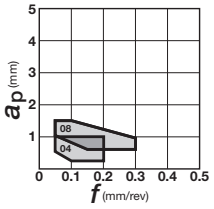
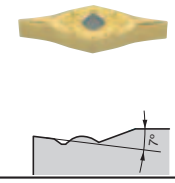
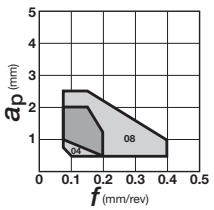
YN□□



YNMG 16 04 04 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

YNMG	1604□□
ød1 (mm)	3.81

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	Coated cermet GT730	Applicable toolholders (pages)
Finishing to medium cutting	**ZF** (M) 		YNMG160404-ZF			●	●			●	TAC External Toolholders (4-30 ~) TAC Internal Toolholders (5-37 ~)
			*YNMG160408-ZF			●	●			●	
	ZM (M) 		YNMG160404-ZM			●	●			●	
			*YNMG160408-ZM			●	●			●	

Note: Chipbreaker cross sections are of * marked inserts.

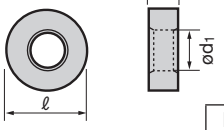
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Round, with hole

Negative

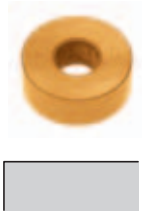
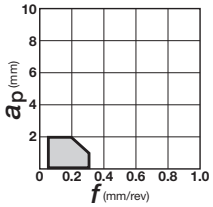
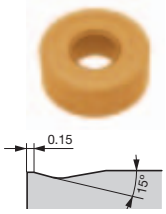
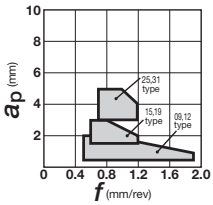
RN□□



RNMG 12 04 00 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

RN□□	090300	120400	150600	190600	250900	310900
ød1 (mm)	3.81	5.16	6.43	7.93	9.22	12.78

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	Uncoated TH10	Ceramics FX105	LX11	Applicable toolholders (pages)
Finishing to medium cutting	- (G) 		RNGA120400							●	TAC External Toolholders (4-32 ~)
Heavy cutting	61 (M) 		RNMG090300-61		●●						
			*RNMG120400-61	●●	●●	●●	●●	●			
			RNMG150600-61		●●						
			RNMG190600-61		●●	●●	●●				
			RNMG250900-61		●●						
			RNMG310900-61								

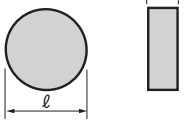
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Round, without hole

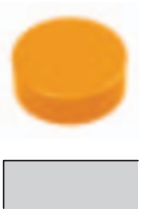
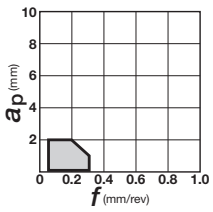
Negative

RN□□



RNGN 12 04 00

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - a_p	Insert Cat. No.	Stocked grades: Ceramics FX105	Ceramics LX11	Applicable toolholders (pages)
Finishing to medium cutting	- (G) 		RNGN120400	●	●	TAC External Toolholders (4-51)
			RNGN120700		●	

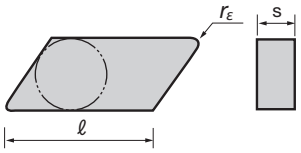
● : Stocked items
▲ : Discontinued items

TAC Inserts, Negative

Parallelogram, without hole

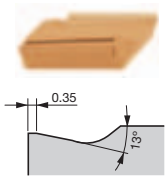
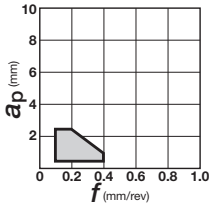
55° Negative

KNMX



KNMX 16 04 05 R - □□

- Cutting edge length (ℓ) — 16
- Thickness (s) — 04
- Corner radius (r_ε) — 05
- Hand of insert — R
- Chipbreaker symbol — □□

Application	Chipbreaker / Appearance (Cross section)	f - a_p	Insert Cat. No.	Stocked grades: Coated: GH330	Applicable toolholders (pages)
Finishing	**S1** (M) 		KNMX160405R-S1	●	TAC External Toolholders (4-61 ~)
			KNMX160405L-S1	●	
			*KNMX160410R-S1		
			KNMX160410L-S1		

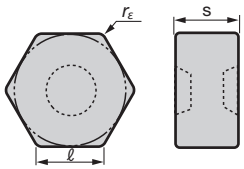
Note: Chipbreaker crosssections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Hexagon

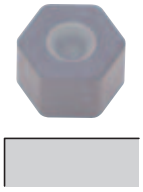
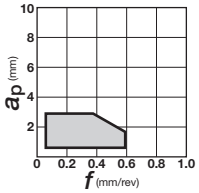
120° Negative

HNGD



HNGD 05 07 12

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Ceramics FX105	Applicable toolholders (pages)
Finishing to medium cutting	- (G) 		HNGD050712	●	TAC External Toolholders (4-37)
			HNGD050716	●	

Note: Chipbreaker cross sections are of * marked inserts.

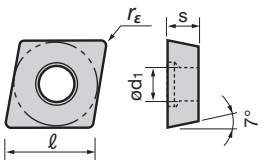
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

80° Positive 7°

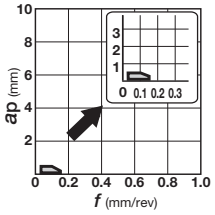
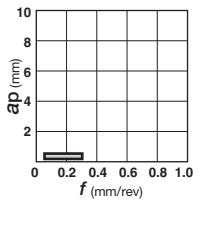
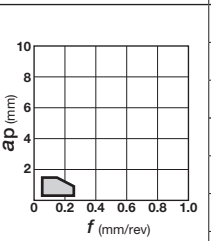
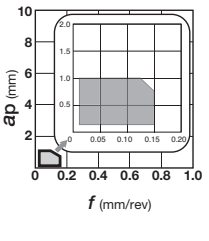
CC□□



CCGT 06 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CC□T(W)	03X1□□	04T1□□	0602□□	09T3□□	1204□□
ød1 (mm)	1.9	2.3	2.8	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T6020	T6030	AH725	GH110	GH330	GH730	J740	Coated cermet SH730	GT730	AT530	GT530	Cermet J530	NS730	NS530	Uncoated TH10	UX30	Applicable toolholders (pages)
Precision finishing	**01** (G)		CCGT060202-01													●					●					TAC External Toolholders (4-63 ~, 4-75 ~) TAC Internal Toolholders (5-12 ~) J-series (8-9)
			*CCGT09T302-01													●					●					
Finishing	**PSF** (M)		CCMT060202-PSF									●														
			CCMT060204-PSF	●	●							●														
			CCMT09T302-PSF									●														
			CCMT09T304-PSF	●	●							●														
			*CCMT09T308-PSF	●	●							●														
	PF (M)		CCMT060202-PF							●	●				●			●				●	●			
			CCMT060204-PF							●	●				●			●				●	●			
			CCMT060208-PF							●	●							●				●	●			
			CCMT09T302-PF							●	●				●							●	●			
			CCMT09T304-PF							●	●				●			●				●	●			
			*CCMT09T308-PF							●	●							●				●	●			
	W08 (G)		CCGT03X100R-W08														●							●		TAC Internal Toolholders (5-12 ~) J-series (8-36)
			CCGT03X100L-W08														●							●		
			CCGT03X101R-W08														●							●		
			CCGT03X101L-W08														●							●		
			CCGT03X102R-W08														●							●		
			CCGT03X102L-W08														●							●		
			CCGT03X104R-W08														●							●		
			CCGT03X104L-W08														●							●		
			CCGT04T100R-W08														●							●		
			CCGT04T100L-W08														●							●		
			CCGT04T101R-W08														●							●		
			CCGT04T101L-W08														●							●		
			*CCGT04T102R-W08														●							●		
			CCGT04T102L-W08														●							●		
			CCGT04T104R-W08														●							●		
			CCGT04T104L-W08														●							●		

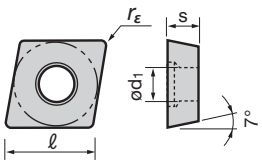
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

80° Positive 7°

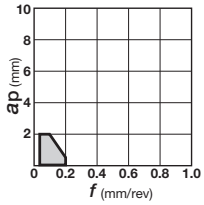
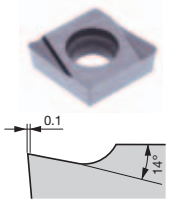
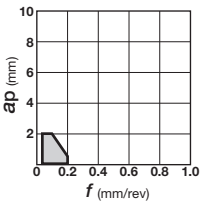
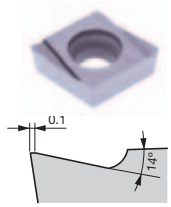
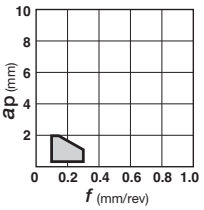
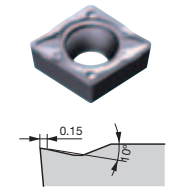
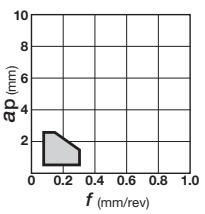
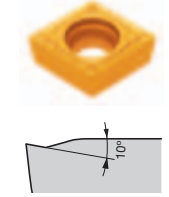
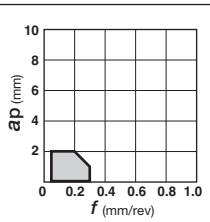
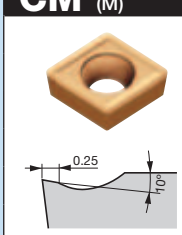
CC□□



CCGT 06 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CC□T(W)	03X1□□	04T1□□	0602□□	09T3□□	1204□□
ød1 (mm)	1.9	2.3	2.8	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	GH110	GH330	GH730	Coated cermet GT730	AT530	GT530	Cermet NS730	NS530	Uncoated TH10	UX30	Applicable toolholders (pages)
Finishing	**W15** (G)		CCGT060200R-W15																	●	●	●		TAC External Toolholders (4-63 ~, 4-75 ~) TAC Internal Toolholders (5-12 ~) J-series (8-9)
			CCGT060200L-W15																		●	●		
			CCGT060202R-W15																		●	●		
			CCGT060202L-W15																●		●	●		
			*CCGT060204R-W15												●						●	●		
			CCGT060204L-W15											●	●				●		●	●	●	
			CCGT060208L-W15																●					
	W20 (G)		CCGT09T302R-W20																		●	●		
			CCGT09T302L-W20																●		●	●		
			*CCGT09T304R-W20																		●			
			CCGT09T304L-W20											●	●				●		●	●		
			CCGT09T308R-W20																		●			
			CCGT09T308L-W20																●		●			
Finishing to light cutting	**PSS** (M)		CCMT060204-PSS	●	●	●	●				●	●	●											
			CCMT060208-PSS	●	●	●	●				●	●	●											
			*CCMT09T304-PSS	●	●	●	●				●	●	●											
			CCMT09T308-PSS	●	●	●	●				●	●	●											
			CCMT120404-PSS	●	●	●	●				●	●	●											
			CCMT120408-PSS	●	●	●	●				●	●	●											
			CCMT120412-PSS	●	●	●	●				●	●	●											
Finishing to medium cutting	**PS** (M)		CCMT060202-PS	●	●	●	●	●	●		●	●	●			●	●	▲		●	●			
			CCMT060204-PS	●	●	●	●	●	●		●	●	●			●	●	▲		●	●			
			*CCMT060208-PS	●	●	●	●	●	●		●	●	●			●	●	▲		●	●			
			CCMT09T302-PS	●	●	●	●	●	●		●	●	●			●	●	▲		●	●			
			CCMT09T304-PS	●	●	●	●	●	●		●	●	●			●	●	▲		●	●			
			CCMT09T308-PS	●	●	●	●	●	●		●	●	●			●	●	▲		●	●			
			CCMT120404-PS	●	●	●	●	●	●		●	●	●				●			●				
			CCMT120408-PS	●	●	●	●	●	●		●	●	●				●			●				
			CCMT120412-PS	●	●	●	●	●	●		●	●	●				●			●				
	CM (M)		CCMT060204-CM							●														
			CCMT060208-CM							●														
			CCMT09T304-CM							●														
			CCMT09T308-CM							●														
			*CCMT09T312-CM							●														
			CCMT120404-CM							●														
			CCMT120408-CM							●														

Note: Chipbreaker cross-sections are of * marked inserts.

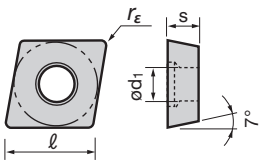
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

80° Positive 7°

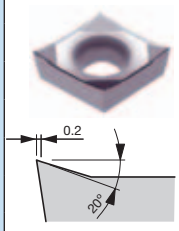
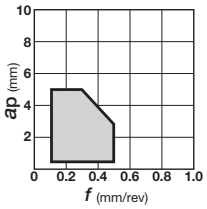
CC□□



CCGT 06 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CC□T(W)	03X1□□	04T1□□	0602□□	09T3□□	1204□□
ød1 (mm)	1.9	2.3	2.8	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T5115	AH725	Coated cermet GT730	AT530	GT530	J530	Cermet NS730	NS530	Uncoated KS05F	TH10	Applicable toolholders (pages)
Finishing to medium cutting	**AL** (G) 		CCGT060202-AL															●		TAC External Toolholders (4-63 ~, 4-75 ~) TAC Internal Toolholders (5-12 ~) J-series (8-9)
			CCGT060204-AL															●		
			*CCGT09T302-AL															●		
			CCGT09T304-AL															●		
			CCGT09T308-AL															●		
			CCGT120402-AL															●		
			CCGT120404-AL															●		
			CCGT120408-AL															●		

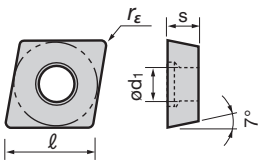
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

80° Positive 7°

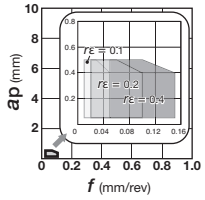
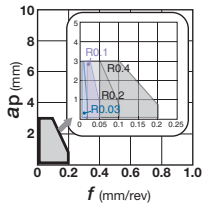
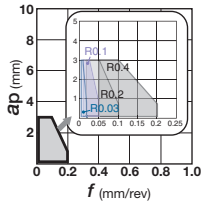
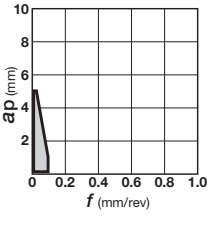
CC□□



CCGT 06 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CC□T(W)	03X1□□	04T1□□	0602□□	09T3□□	1204□□
ød1 (mm)	1.9	2.3	2.8	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T5115	AH725	GH110	GH330	GH730	J740	SH730	Coated cermet GT730	AT530	GT530	J530	Cermet NS730	NS530	Uncoated KS05F	TH10	Applicable toolholders (pages)
For internal turning on small lathes	JS (G)		CCGT03X101-JS												●										TAC Internal Toolholders (5-12 ~) J-series (8-36)
			CCGT03X102-JS												●										
			CCGT03X104-JS												●										
			*CCGT04T101-JS												●										
			CCGT04T102-JS												●										
			CCGT04T104-JS												●										
For external turning on small lathes (Sharp edges)	JS (G)		CCGT060200FN-JS												●										TAC External Toolholders (4-63 ~, 4-75 ~) TAC Internal Toolholders (5-12 ~) J-series (8-9)
			CCGT060201FN-JS												●										
			CCGT060202FN-JS												●										
			CCGT060204FN-JS												●										
			CCGT09T300FN-JS												●										
			*CCGT09T301FN-JS												●										
			CCGT09T302FN-JS												●										
			CCGT09T304FN-JS												●										
For external turning on small lathes	JS (G)		CCGT060201N-JS								●														
			CCGT060202N-JS								●														
			CCGT060204N-JS								●														
			*CCGT09T301N-JS								●														
			CCGT09T302N-JS								●														
			CCGT09T304N-JS								●														
For external turning on small lathes (Sharp edges)	J10 (G)		CCGT060200FR-J10												●									●	
			CCGT060200FL-J10												●							●		●	
			CCGT060201FR-J10												●							●		●	
			CCGT060201FL-J10												●									●	
			CCGT060202FR-J10												●							●		●	
			CCGT060202FL-J10												●							●		●	
			CCGT09T300FR-J10												●									●	
			CCGT09T300FL-J10												●									●	
			CCGT09T301FR-J10												●									●	
			CCGT09T301FL-J10												●							●		●	
			*CCGT09T302FR-J10												●							●		●	
			CCGT09T302FL-J10												●							●		●	

Note: Chipbreaker cross-sections are of * marked inserts.

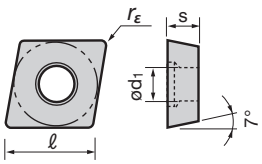
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

80° Positive 7°

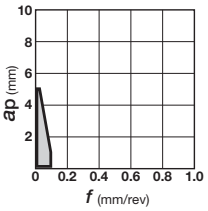
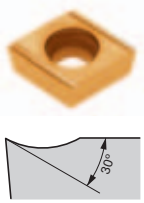
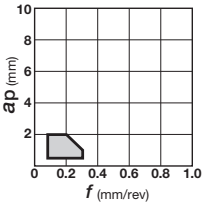
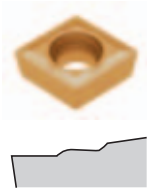
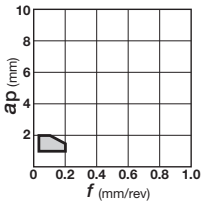
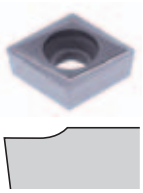
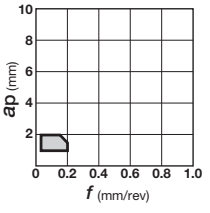
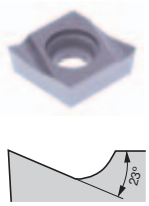
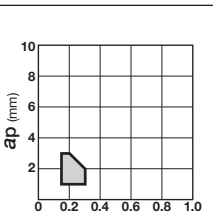
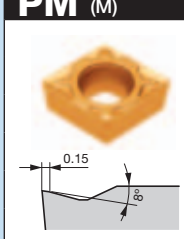
CC□□



CCGT 06 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CC□T(W)	03X1□□	04T1□□	0602□□	09T3□□	1204□□
ød1 (mm)	1.9	2.3	2.8	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated: T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	GH730	SH730	Coated cermet: GT730	AT530	GT530	Cermet: J530	NS730	NS530	Uncoated: KS05F	TH10	Applicable toolholders (pages)
On small lathes (Honed edges)	**J10** (G)		CCGT060201R-J10																					TAC External Toolholders (4-63 ~, 4-75 ~) TAC Internal Toolholders (5-12 ~) J-series (8-9)
			CCGT060201L-J10																					
			CCGT060202R-J10																●					
			CCGT060202L-J10																●					
			CCGT09T301R-J10																					
			CCGT09T301L-J10																●					
			*CCGT09T302R-J10																●					
			CCGT09T302L-J10																●					
Finishing to medium cutting	**23** (M)		CCMT060202-23																		●			
			CCMT060204-23																		●			
			*CCMT09T304-23																		●			
			CCMT09T308-23																	●	●			
	All-round (G)		CCGT060202																		●			
			CCGT060204																		●			
			CCGT09T302																		●			
			*CCGT09T304																		●			
			CCGT09T308																		●			
	Angular (G)		CCGT060200R																				●	
			CCGT060202R																				●	
			CCGT060202L																				●	
			CCGT060204L																				●	
			CCGT09T302R																				●	
			CCGT09T302L																				●	
			*CCGT09T304R																				●	
			CCGT09T304L																				●	
Medium cutting	**PM** (M)		CCMT060204-PM	●	●	●	●	●	●		●	●	●	●		●				●	●			
			CCMT060208-PM	●	●	●	●	●	●		●	●	●	●		●				●	●			
			CCMT09T304-PM	●	●	●	●	●	●		●	●	●	●		●				●	●			
			*CCMT09T308-PM	●	●	●	●	●	●		●	●	●	●		●				●	●			
			CCMT09T312-PM	●	●	●	●	●	●		●	●	●			●								
			CCMT120408-PM			●	●	●	●		●	●	●			●				●				
			CCMT120412-PM			●	●	●	●		●	●	●			●				●				

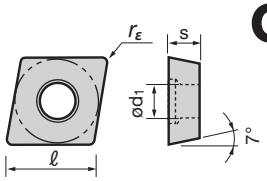
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

80° Positive 7°

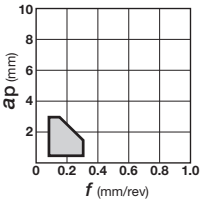
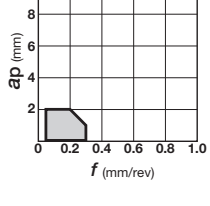
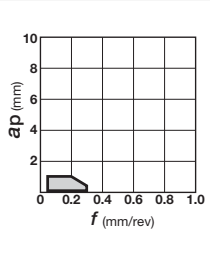
CC□□



CCMW 06 02 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CC□T(W)	03X1□□	04T1□□	0602□□	09T3□□	1204□□
ød1 (mm)	1.9	2.3	2.8	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T5115	AH725	GH110	GH330	GH730	J740	SH730	Coated cermet GT730	AT530	GT530	J530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	24 (M)		CCMT060202-24																	●		TAC External Toolholders (4-63 ~, 4-75 ~) TAC Internal Toolholders (5-12 ~) J-series (8-9)
			CCMT060204-24																	●		
			CCMT060208-24																	●		
			CCMT09T302-24																	●		
			*CCMT09T304-24																	●		
			CCMT09T308-24																	●		
			CCMT120408-24																	●		
Finishing to medium cutting	- (M)		CCMW060204					●														
			CCMW060208					●														
			*CCMW09T304					●														
			CCMW09T308					●														
	- (G)		CCGW060202																		●	
			*CCGW060204																		●	
			CCGW09T304							●											●	

Note: Chipbreaker cross-sections are of * marked inserts.

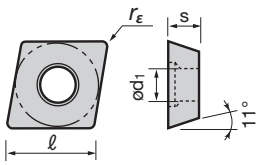
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

80° Positive 11°

CP□□



CPGT 05 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CP□T(W)	0502□□	0602□□	0802□□	0903□□
ød1 (mm)	2.5	2.8	3.4	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	GH730	Coated cermet GT730	AT530	Cermet NS730	NS530	Un-coated TH10	Applicable toolholders (pages)
Finishing	PSF (M)		CPMT060202-PSF								●									TAC Internal Toolholders (5-14 ~)
			CPMT060204-PSF	●	●						●									
			CPMT080202-PSF								●									
			CPMT080204-PSF	●	●						●									
			CPMT090302-PSF								●									
			*CPMT090304-PSF	●	●						●									
			CPMT09T302-PSF								●									
			CPMT09T304-PSF	●	●						●									
	PF (M)		CPMT090302-PF					●	●						●		●	●		
			*CPMT090304-PF					●	●						●		●	●		
			CPMT090308-PF					●	●								●	●		
	W15 (G)		CPGT050202R-W15														●	●		
			CPGT050202L-W15														●	●		
			CPGT050204R-W15															●		
			CPGT050204L-W15															●		
			CPGT080202R-W15															●	●	
			CPGT080202L-W15															●	●	
			*CPGT080204R-W15														●	●	●	
			CPGT080204L-W15															●	●	
	W20 (G)		CPGT090302R-W20															●	●	TAC Internal Toolholders (5-14 ~)
			CPGT090302L-W20															●	●	
			*CPGT090304R-W20															●	●	
			CPGT090304L-W20															●	●	
Finishing to light cutting	PSS (M)		CPMT060204-PSS	●	●						●									
			CPMT080204-PSS	●	●	●	●				●	●	●							
			CPMT080208-PSS	●	●	●	●				●	●	●							
			*CPMT090304-PSS	●	●	●	●				●	●	●							
			CPMT090308-PSS	●	●	●	●				●	●	●							
			CPMT09T304-PSS	●	●						●									
			CPMT09T308-PSS	●	●						●									

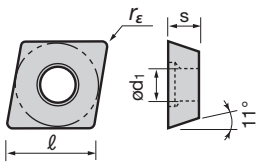
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

80° Positive 11°

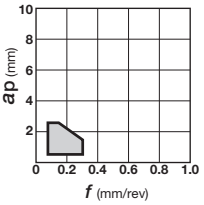
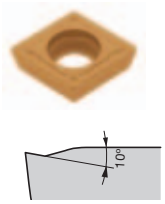
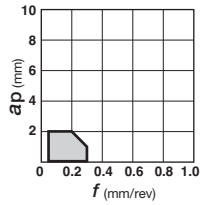
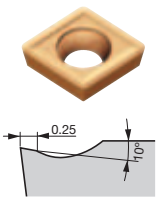
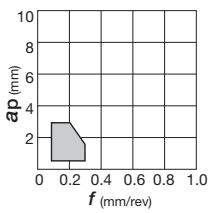
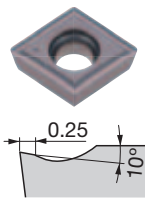
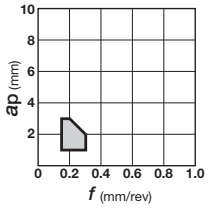
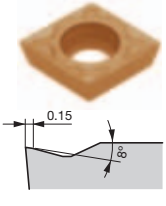
CP□□



CPMT 06 02 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CP□T(W)	0502□□	0602□□	0802□□	0903□□
ød1 (mm)	2.5	2.8	3.4	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	AH905	Coated cermet GH730	GT730	AT530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Finishing to medium cutting	**PS** (M)		CPMT060202-PS	●	●						●				●	●		●	●		TAC Internal Toolholders (5-14 ~)
			CPMT060204-PS	●	●						●				●	●	▲	●	●		
			CPMT080202-PS	●	●	●	●	●	●		●	●	●			●	▲	●	●		
			CPMT080204-PS	●	●	●	●	●	●		●	●	●			●	▲	●	●		
			CPMT080208-PS	●	●	●	●	●	●		●	●	●			●	▲	●	●		
			*CPMT090304-PS	●	●	●	●	●	●		●	●	●			●	▲	●	●		
			CPMT090308-PS	●	●	●	●	●	●		●	●	●			●	▲	●	●		
			CPMT09T302-PS	●	●						●										
			CPMT09T304-PS	●	●						●										
			CPMT09T308-PS	●	●						●										
	CM (M)		CPMT060204-CM							●											TAC Internal Toolholders (5-14 ~)
			CPMT060208-CM							●											
			CPMT080204-CM							●											
			CPMT080208-CM							●											
			CPMT090304-CM							●											
			*CPMT090308-CM							●											
			CPMT09T304-CM							●											
			CPMT09T308-CM							●											
			CPMT09T312-CM							●											
			CPMT120408-CM							●											
			CPMT120412-CM							●											
Medium cutting	**All-round** (M)		*CPMT120408											●							TAC Internal Toolholders (5-14 ~)
																					
	PM (M)		CPMT060204-PM			●	●	●	●		●	●	●			●		●				
			CPMT060208-PM	●	●	●	●	●	●		●	●	●			●		●				
			*CPMT090304-PM	●	●	●	●	●	●		●	●	●			●		●	●			
			CPMT090308-PM	●	●	●	●	●	●		●	●	●			●		●	●			

Note: Chipbreaker cross-sections are of * marked inserts.

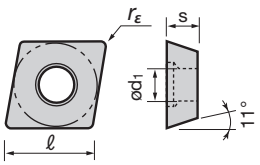
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

80° Positive 11°

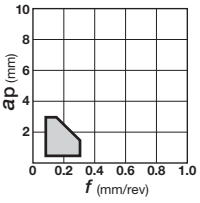
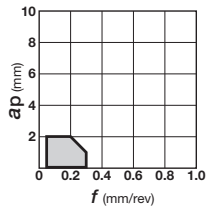
CP□□



CPMW 08 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

CP□T(W)	0502□□	0602□□	0802□□	0903□□
ød1 (mm)	2.5	2.8	3.4	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	T6130	T5115	AH725	GH730	Coated cermet GT730	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	24 (M)		CPMT080202-24								●		TAC Internal Toolholders (5-14 ~)
			CPMT090302-24							●			
			CPMT120408-24								●		
			CPMT160508-24								●		
			CPMT160512-24								●		
	- (M)		CPMW080202										
			CPMW080204			●					●		
			CPMW080208			●							
			CPMW090302										
			*CPMW090304			●							
			CPMW090308			●							

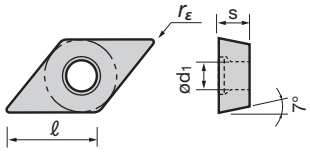
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

55° Positive 7°

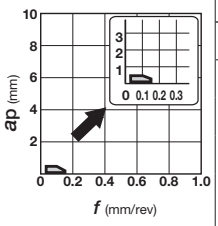
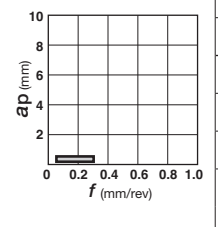
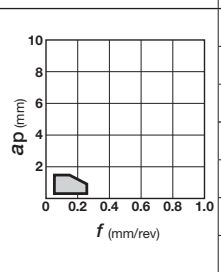
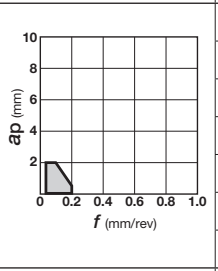
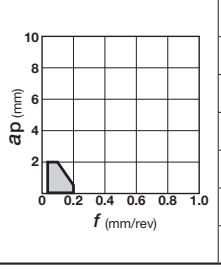
DC□□



DCGT 07 02 02 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

DC□T(W)	0702□□	11T3□□
ød1 (mm)	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T6020	T6030	T5115	AH725	AH905	GH330	GH730	J740	Coated cermet GT730	AT530	GT530	J530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Precision finishing	**01** (G)		DCGT070202-01														●				●				TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-17 ~) J-series (8-12)
			*DCGT11T302-01														●				●				
Finishing	**PSF** (M)		DCMT070202-PSF										●												
			DCMT070204-PSF	●	●								●												
			DCMT11T302-PSF										●												
			*DCMT11T304-PSF	●	●								●	●											
			DCMT11T308-PSF	●	●								●	●											
	PF (M)		DCMT070202-PF							●	●					●		●				●	●		
			DCMT070204-PF							●	●					●		●				●	●		
			DCMT070208-PF							●	●							●				●	●		
			DCMT11T302-PF							●	●					●		●				●	●		
			DCMT11T304-PF							●	●					●		●				●	●		
			*DCMT11T308-PF							●	●							●				●	●		
	W10 (G)		DCGT070200R-W10																				●	●	
			DCGT070200L-W10																			●	●	●	
			DCGT070202R-W10																				●	●	
			DCGT070202L-W10																	●			●		
			*DCGT070204R-W10												●								●	●	
			DCGT070204L-W10												●					●			●	●	
			DCGT070208L-W10																	●					
	W15 (G)		DCGT11T302R-W15																				●	●	
			DCGT11T302L-W15																				●		
			*DCGT11T304R-W15																				●		
			DCGT11T304L-W15												●								●	●	
			DCGT11T308R-W15																				●	●	
			DCGT11T308L-W15																	●			●	●	

Note: Chipbreaker cross-sections are of * marked inserts.

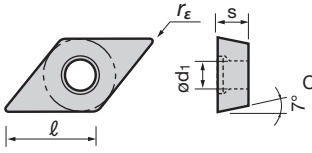
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

55° Positive 7°

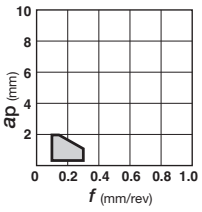
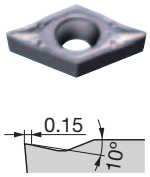
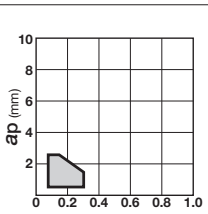
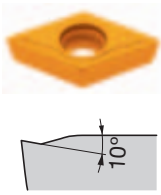
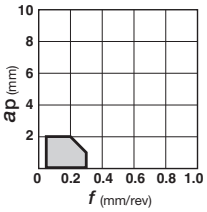
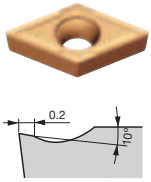
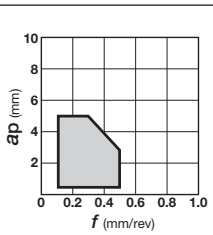
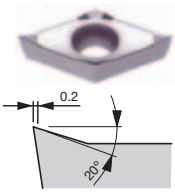
DC□□



DCGT 07 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

DC□T(W)	0702□□	11T3□□
ød1 (mm)	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated: T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	AH905	GH330	GH730	J740	Coated cermet: GT730	AT530	GT530	J530	Cermet: NS730	NS530	Uncoated: KS05F	TH10	Applicable toolholders (pages)
Finishing to Light cutting	**PSS** (M)		DCMT070204-PSS	●	●	●	●				●	●	●													TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-17 ~) J-series (8-12)
			DCMT070208-PSS	●	●	●	●				●	●	●													
			*DCMT11T304-PSS	●	●	●	●				●	●	●	●												
			DCMT11T308-PSS	●	●	●	●				●	●	●	●												
			DCMT11T312-PSS	●	●	●	●				●	●	●	●												
Finishing to medium cutting	**PS** (M)		DCMT070202-PS	●	●	●	●	●	●		●	●	●			●		●	▲			●	●			
			*DCMT070204-PS	●	●	●	●	●	●		●	●	●			●		●	▲			●	●			
			DCMT070208-PS	●	●						●					●		●				●	●			
			DCMT11T302-PS	●	●	●	●	●	●		●	●	●			●		●	▲			●	●			
			*DCMT11T304-PS	●	●	●	●	●	●		●	●	●	●		●		●	▲			●	●			
			DCMT11T308-PS	●	●	●	●	●	●		●	●	●	●		●		●	▲			●	●			
			DCMT11T312-PS	●	●	●	●	●	●		●	●	●	●				●				●				
	CM (M)		DCMT070204-CM							●																
			DCMT070208-CM							●																
			*DCMT11T304-CM							●																
			DCMT11T308-CM							●																
			DCMT11T312-CM							●																
	AL (G)		DCGT070202-AL																					●		
			DCGT070204-AL																					●		
			*DCGT11T302-AL																					●		
			DCGT11T304-AL																					●		
			DCGT11T308-AL																					●		

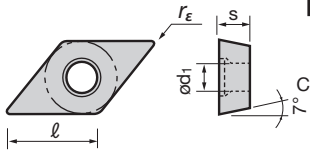
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

55° Positive 7°

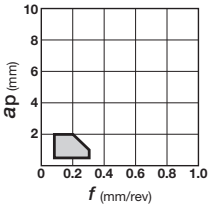
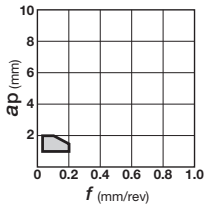
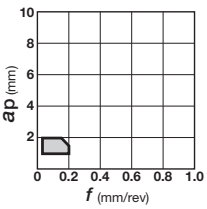
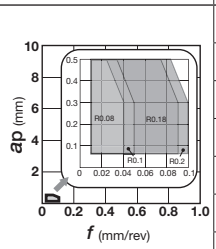
DC□□



DCGT 07 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

DC□T(W)	0702□□	11T3□□
ød1 (mm)	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	T6130	GH110	SH730	Coated cermet GT730	Cermet NS730	NS530	Uncoated KS05F	TH10	Applicable toolholders (pages)
Finishing to medium cutting	**23** (M)		DCMT070204-23							●			TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-17 ~) J-series (8-12)
			*DCMT11T304-23							●			
			DCMT11T308-23						▲	●			
	All-round (G)		DCGT070202					●		●			
			*DCGT070204							●			
			DCGT11T302							●			
			DCGT11T304							●			
			*DCGT11T308							●			
	Angular (G)		DCGT070202R									●	
			DCGT070202L									●	
			*DCGT070204R									●	
			DCGT070204L									●	
			DCGT11T302R									●	
			DCGT11T302L									●	
			DCGT11T304R									●	
			DCGT11T304L									●	
For external turning on small lathes (Sharp edges)	**JRP** (E)		DCET0702008MFR-JRP				●						
			DCET0702008MFL-JRP				●						
			DCET070201 MFR-JRP				●						
			DCET070201 MFL-JRP				●						
			DCET0702018MFR-JRP				●						
			DCET0702018MFL-JRP				●						
			DCET070202 MFR-JRP				●						
			DCET070202 MFL-JRP				●						
			DCET11T3008MFR-JRP				●						
			DCET11T3008MFL-JRP				●						
			DCET11T301 MFR-JRP				●						
			DCET11T301 MFL-JRP				●						
			DCET11T3018MFR-JRP				●						
			DCET11T3018MFL-JRP				●						
			*DCET11T302 MFR-JRP				●						
			DCET11T302 MFL-JRP				●						

Note: Chipbreaker cross-sections are of * marked inserts.

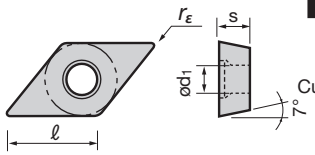
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

55° Positive 7°

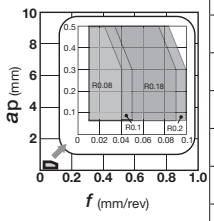
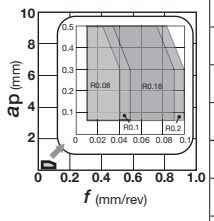
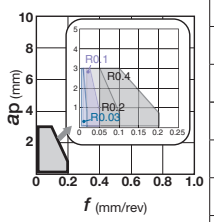
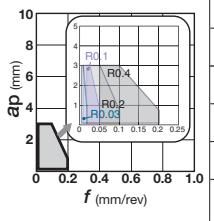
DC□□



DCGT 07 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

DC□T(W)	0702□□	11T3□□
ød1 (mm)	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	AH725	GH110	GH730	J740	SH730	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
For external turning on small lathes (Sharp edges)	JPP (E)		DCET0702008MFR-JPP											●				TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-17 ~) J-series (8-12)
			DCET0702008MFL-JPP											●				
			DCET070201MFR-JPP											●				
			DCET070201MFL-JPP											●				
			DCET0702018MFR-JPP											●				
			DCET0702018MFL-JPP											●				
			DCET070202MFR-JPP											●				
			DCET070202MFL-JPP											●				
			DCET11T3008MFR-JPP											●				
			DCET11T3008MFL-JPP											●				
			DCET11T301MFR-JPP											●				
			DCET11T301MFL-JPP											●				
			DCET11T3018MFR-JPP											●				
			DCET11T3018MFL-JPP											●				
			*DCET11T302MFR-JPP											●				
			DCET11T302MFL-JPP											●				
	JSP (E)		DCET0702008MFN-JSP											●				
			DCET070201MFN-JSP											●				
			*DCET0702018MFN-JSP											●				
			DCET070202MFN-JSP											●				
			DCET11T3008MFN-JSP											●				
			DCET11T301MFN-JSP											●				
			DCET11T3018MFN-JSP											●				
			DCET11T302MFN-JSP											●				
	JS (G)		DCGT070200FN-JS											●				
			DCGT070201FN-JS											●				
			DCGT070202FN-JS											●				
			DCGT11T300FN-JS											●				
			*DCGT11T301FN-JS											●				
			DCGT11T302FN-JS											●				
			DCGT11T304FN-JS											●				
On small lathes	JS (G)		DCGT070201N-JS							●								
			DCGT070202N-JS							●								
			*DCGT11T301N-JS							●								
			DCGT11T302N-JS							●								
			DCGT11T304N-JS							●								

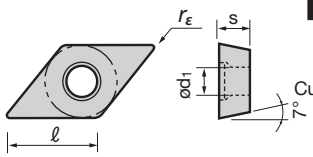
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

55° Positive 7°

DC□□



DCGT 07 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

DC□T(W)	0702□□	11T3□□
ød1 (mm)	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	GH730	J740	Coated cermet GT730	J530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
For external turning on small lathes (Sharp edges)	J10 (G)	ap (mm) 10 8 6 4 2 / 0 0.2 0.4 0.6 0.8 1.0 f (mm/rev)	*DCGT070200FR-J10												●					●	TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-17 ~) J-series (8-12)
			DCGT070200FL-J10												●					●	
			DCGT070201FR-J10												●				●	●	
			DCGT070201FL-J10												●			▲	●	●	
			DCGT070202FR-J10												●				●	●	
			DCGT070202FL-J10												●			▲	●	●	
			DCGT11T300FR-J10												●					●	
			DCGT11T300FL-J10												●					●	
			DCGT11T301FR-J10												●				●	●	
			DCGT11T301FL-J10												●				●	●	
			DCGT11T302FR-J10												●				●	●	
			DCGT11T302FL-J10												●				●	●	
On small lathes (Honed edges)	J10 (G)	ap (mm) 10 8 6 4 2 / 0 0.2 0.4 0.6 0.8 1.0 f (mm/rev)	*DCGT070201R-J10																		
			DCGT070201L-J10																		
			DCGT070202R-J10																		
			DCGT070202L-J10																		
			DCGT11T301R-J10																		
			DCGT11T301L-J10																		
			*DCGT11T302R-J10																		
			DCGT11T302L-J10																		
Medium cutting	PM (M)	ap (mm) 10 8 6 4 2 ℓ=11 ℓ=07 / 0 0.2 0.4 0.6 0.8 1.0 f (mm/rev)	DCMT070204-PM	●	●	●	●	●	●		●	●	●	●		●		●	●		
			DCMT070208-PM	●	●	●	●	●	●		●	●	●	●		●		●	●		
			DCMT11T304-PM	●	●	●	●	●	●		●	●	●	●		●		●	●		
			*DCMT11T308-PM	●	●	●	●	●	●		●	●	●	●		●		●	●		
			DCMT11T312-PM		●	●	●	●	●		●	●	●			●		●			
	24 (M)	ap (mm) 10 8 6 4 2 / 0 0.2 0.4 0.6 0.8 1.0 f (mm/rev)	DCMT070202-24																●		
			DCMT070204-24																●		
			DCMT070208-24																●		
			DCMT11T302-24																●		
			*DCMT11T304-24																●		
			DCMT11T308-24																●		

Note: Chipbreaker cross-sections are of * marked inserts.

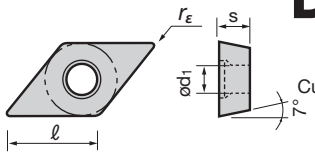
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

55° Positive 7°

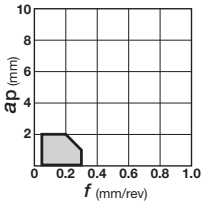
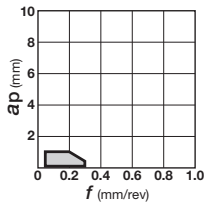
DC□□



DCGW 07 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

DC□T(W)	0702□□	11T3□□
ød1 (mm)	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	T6130	T5115	AH725	GH110	GH730	Coated cermet GT730	J530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	- (M)		DCMW070204			●									TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-17 ~) J-series (8-12)
			DCMW070208			●									
			*DCMW11T304			●									
			DCMW11T308			●									
	- (G)		DCGW070202											●	
			DCGW070204					●						●	
			*DCGW11T304											●	
			DCGW11T308											●	

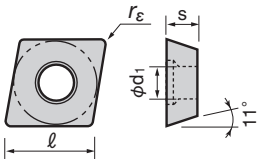
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

75° Positive 11°

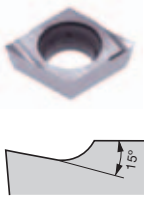
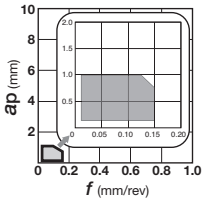
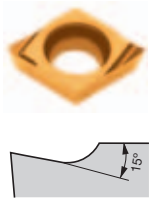
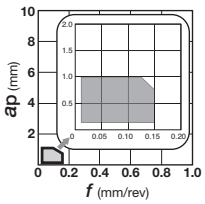
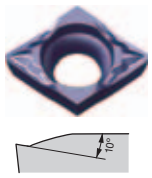
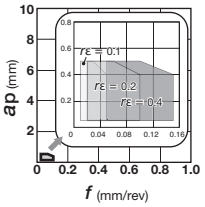
EPGT



EPGT 04 01 00 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

EPGT	03X1□□	0401□□
ød1 (mm)	1.9	2.3

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	GH110	J740	SH730	Coated cermet GT730	GT530	Cermet NS730	NS530	Uncoated TH10	UX30	Applicable toolholders (pages)
Finishing	**W08** (G) 		EPGT03X100R-W08									●					●		TAC Internal Toolholders (5-28 ~) J-series (8-39)
			EPGT03X100L-W08									●					●		
			EPGT03X101R-W08									●					●		
			EPGT03X101L-W08									●					●		
			*EPGT03X102R-W08									●					●		
			EPGT03X102L-W08									●					●		
			EPGT03X104R-W08									●					●		
			EPGT03X104L-W08									●					●		
			EPGT040100R-W08									●					●		
			EPGT040100L-W08							●		●				●	●		
			EPGT040101R-W08									●					●		
			EPGT040101L-W08									●					●		
			EPGT040102R-W08							●		●				●	●		
			EPGT040102L-W08							●		●		●		●	●	●	
			EPGT040104R-W08							●		●				●	●		
			EPGT040104L-W08							●		●		●		●	●	●	
	J08 (G) 		EPGT040100L-J08								●	●							
			*EPGT040102L-J08								●	●							
			EPGT040104L-J08								●	●							
For internal turning on small lathes	**JS** (G) 		EPGT03X101-JS									●							
			EPGT03X102-JS									●							
			EPGT03X104-JS									●							
			*EPGT040101-JS									●							
			EPGT040102-JS									●							
			EPGT040104-JS									●							

Note: Chipbreaker cross-sections are of * marked inserts.

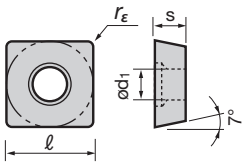
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Square, with hole

90° Positive 7°

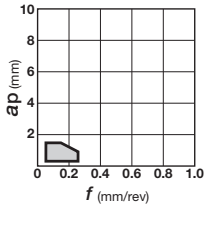
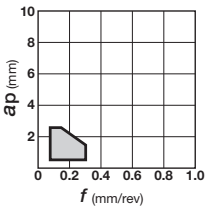
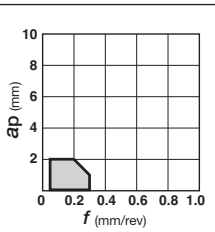
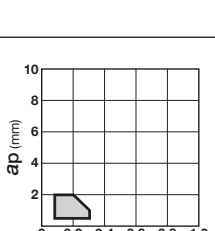
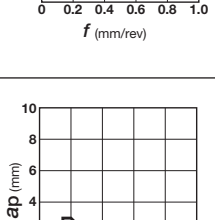
SC□□



SCMT 12 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

SC□T(W)	0702□□	09T3□□	1204□□
ød1 (mm)	3.4	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH120	AH725	AH630	AH645	Coated cermet GT730	AT530	Cermet NS730	NS530	Applicable toolholders (pages)
Finishing	PF (M)		*SCMT09T304-PF					●	●								●	●	TAC External Toolholders (4-66 ~)
			SCMT09T308-PF					●	●								●	●	
Finishing to medium cutting	PS (M)		*SCMT09T304-PS	●	●	●	●	●	●			●	●	●	●		●	●	
			SCMT09T308-PS	●	●	●	●	●	●			●	●	●	●	▲	●	●	
			SCMT120404-PS	●	●	●	●	●	●			●	●	●	●		●	●	
			SCMT120408-PS	●	●	●	●	●	●			●	●	●	●		●	●	
	CM (M)		SCMT09T304-CM							●									
			*SCMT09T308-CM							●									
			SCMT09T312-CM							●									
			SCMT120404-CM							●									
			SCMT120408-CM							●									
	23 (M)		SCMT09T302-23															●	
			SCMT09T308-23								●						●	●	
			*SCMT120408-23								●						●		
Medium cutting	PM (M)		*SCMT09T304-PM	●	●	●	●	●	●			●	●	●			●	●	
			SCMT09T308-PM	●	●	●	●	●	●			●	●	●			●	●	
			SCMT120408-PM	●	●	●	●	●	●			●	●	●			●	●	
			SCMT120412-PM		●	●	●	●	●			●	●	●			●	●	

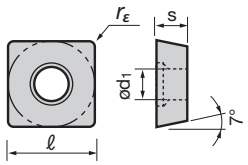
Note: Chipbreaker cross sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Square, with hole

90° Positive 7°

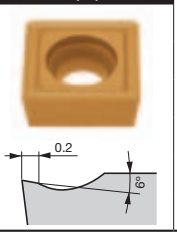
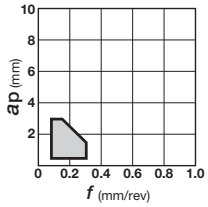
SC□□



SCMT 07 02 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

SC□T(W)	0702□□	09T3□□	1204□□
ød1 (mm)	3.4	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated: T9105	T9115	T9125	T9135	T6120	T6130	T5115	AH120	AH725	AH630	AH645	Coated cermet: GT730	AT530	Cermet: NS730	NS530	Applicable toolholders (pages)
Medium cutting	**24** (M) 		SCMT070204-24															●		TAC External Toolholders (4-66 ~)
			SCMT09T302-24															●		
			*SCMT09T304-24															●		
			SCMT09T308-24															●		
			SCMT120404-24															●		
			SCMT120408-24															●		

Note: Chipbreaker cross-sections are of * marked inserts.

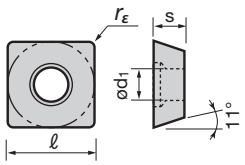
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Square, with hole

90° Positive 11°

SP □□

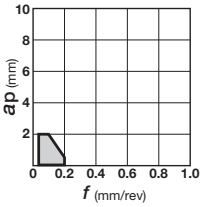
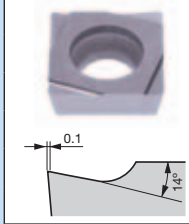
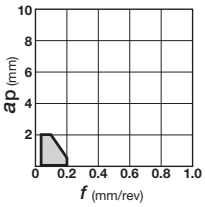
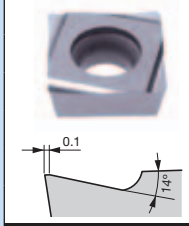
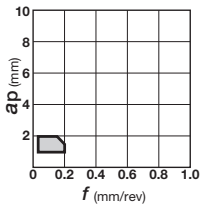
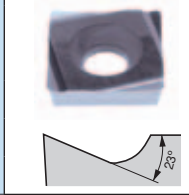
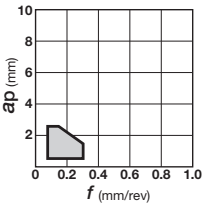
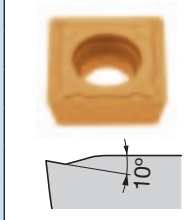
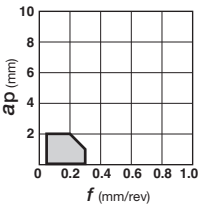
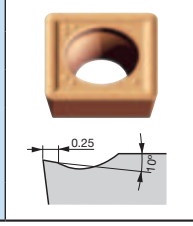


SPGT 09 03 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

SP□T(W)	0903□□	1204□□
ød1 (mm)	4.4	5.5

SPGM(A)	0903□□	1203□□
ød1 (mm)	4.0	5.0

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	AH725	AH630	AH645	T5115	Coated cermet GT730	AT530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Finishing	**W15** (G)		SPGT090302R-W15														●		TAC Internal Toolholders (5-18 ~)
			SPGT090302L-W15														●		
			*SPGT090304R-W15														●		
			SPGT090304L-W15														●	●	
			SPGT090308R-W15														●	●	
			SPGT090308L-W15														●	●	
	W20 (G)		*SPGT120404R-W20														●		
			SPGT120404L-W20														●		
			SPGT120408R-W20														●		
			SPGT120408L-W20													●	●		
	- (with hand) (G) (Tungaloy's standard hole)		SPGM090304L														●		
			SPGM120304L														●		
			*SPGM120308L														●		
Finishing to medium cutting	**PS** (M)		SPMT090304-PS	●	●	●	●	●	●	●	●	●		●	▲		●		TAC Internal Toolholders (5-18 ~)
			SPMT090308-PS	●	●	●	●	●	●	●	●	●		●	▲		●		
			SPMT120404-PS	●	●	●	●	●	●	●	●	●		●	▲		●		
			*SPMT120408-PS	●	●	●	●	●	●	●	●	●		●	▲		●		
	CM (M)		SPMT090304-CM										●						
			*SPMT090308-CM										●						
			SPMT120404-CM										●						
			SPMT120408-CM										●						

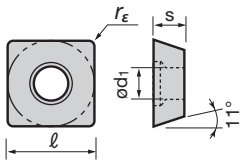
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Square, with hole

90° Positive 11°

SP□□

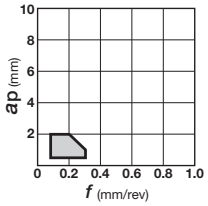
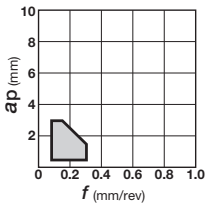
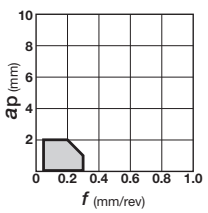
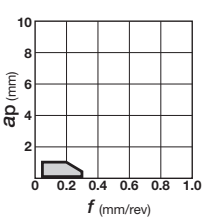
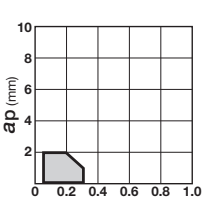


SPMT 09 03 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

SP□T(W)	0903□□	1204□□
ød1 (mm)	4.4	5.5

SPGM(A)	0903□□	1203□□
ød1 (mm)	4.0	5.0

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	AH725	T5115	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Finishing to medium cutting	23 (M)		SPMT090304-23										●		TAC External Toolholders (5-18 ~)
			SPMT090308-23										●		
			*SPMT120404-23										●		
			SPMT120408-23										●		
Medium cutting	24 (M)		SPMT090304-24										●		
			*SPMT090308-24										●		
			SPMT120404-24										●		
			SPMT120408-24										●		
Finishing to medium cutting	- (M)		SPMW090304								●				
			SPMW090308								●				
			*SPMW120404								●				
			SPMW120408								●				
	- (G)		SPGW090302											●	
			*SPGW090304											●	
			SPGW120404											●	
	- (G) (Tungaloy's standard hole)		*SPGA090304										●		

Note: Chipbreaker cross-sections are of * marked inserts.

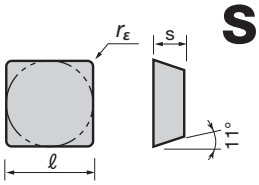
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Square, without hole

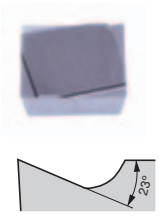
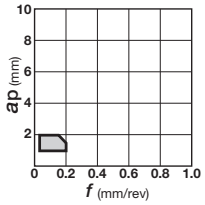
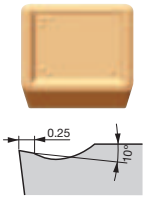
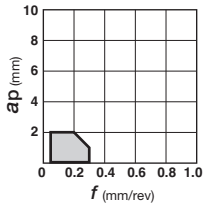
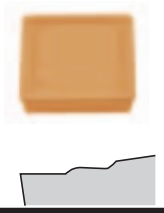
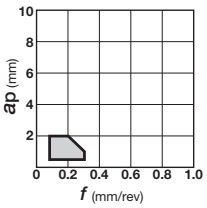
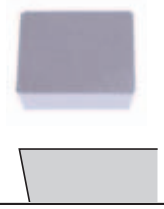
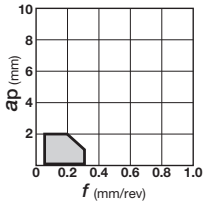
90° Positive 11°

SP □□



SPMR 09 03 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T5115	Cermet NS730	NS530	Uncoated TH10	Ceramics LX11	Applicable toolholders (pages)
Finishing to medium cutting	- (with hand) (G) 		*SPGR090304L							●			TAC External Toolholders (4-73 ~) TAC Internal Toolholders (5-59)
	CM (M) 		SPMR090304-CM					●					
			*SPMR090308-CM					●					
			SPMR120304-CM					●					
			SPMR120308-CM					●					
			SPMR120312-CM					●					
	23 (M) 		SPMR090304-23							●			
			SPMR090308-23							●			
			SPMR120304-23							●			
			*SPMR120308-23							●			
			SPMR120312-23										
	- (G) 		SPGN090304								●	●	
			SPGN090308								●	●	
			SPGN120302										
			*SPGN120304								●	●	
			SPGN120308								●	●	
			SPGN120312						●	●		●	
			SPGN120408								●		

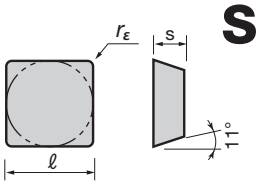
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Square, without hole

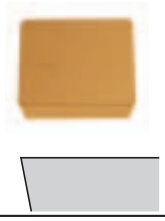
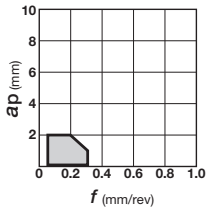
90° Positive 11°

SP □□



SPMN 09 03 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T5115	Cermet NS730 NS530	Uncoated TH10 UX30	Ceramics LX11	Applicable toolholders (pages)
Finishing to medium cutting	- (M) 		SPMN090304	●				TAC External Toolholders (4-73 ~) TAC Internal Toolholders (5-59)
			SPMN090308	●				
			*SPMN120304	●				
			SPMN120308	●	● ●	● ●		
			SPMN120312	●		●		
			SPMN120408	●		●		
			SPMN120412	●				

Note: Chipbreaker cross-sections are of * marked inserts.

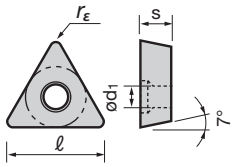
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Triangular, with hole

60° Positive 7°

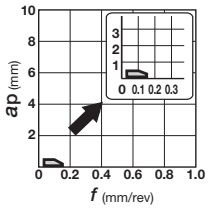
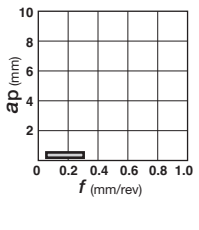
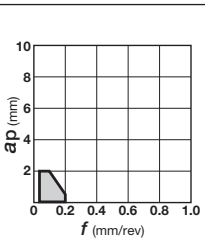
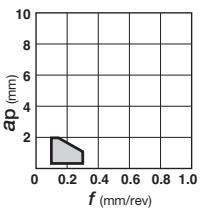
TC □□



TCGT 09 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

TC□T	0801□□	0802□□-J08	0902□□	1102□□	16T3□□
ød1 (mm)	2.7	2.3	2.5	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated: T9105	T9115	T9125	T9135	T6120	T6130	T5115	AH725	GH730	J740	Coated cermet: GT730	AT530	GT530	J530	Cermet: NS730	NS520	NS530	Un-coated: KS05F	TH10	Applicable toolholders (pages)
Precision finishing	**01** (G)		TCGT090202-01																	●			
			*TCGT090204-01											●		●			●	●		●	TAC External Toolholders (4-65, 4-82) TAC Internal Toolholders (5-19 ~) J-series (8-16)
			TCGT110202-01										●			●	●			●			
			TCGT110204-01													●			●	●		●	
			TCGT110208-01																	●			
			TCGT16T304-01													●				●		●	
			TCGT16T308-01																●	●		●	
Finishing	**PSF** (M)		TCMT090202-PSF								●												
			TCMT090204-PSF		●	●					●												
			TCMT110202-PSF								●												
			*TCMT110204-PSF		●	●					●												
			TCMT110302-PSF								●												
			TCMT110304-PSF		●	●					●												
			TCMT16T304-PSF		●	●					●												TAC External Toolholders (4-65) TAC Internal Toolholders (5-19)
	W15 (G)		TCGT16T302L-W15																	●		●	
			*TCGT16T304L-W15																	●		●	
			TCGT16T308L-W15																	●		●	
Finishing to light cutting	**PSS** (M)		TCMT090204-PSS		●	●					●												TAC External Toolholders (4-65, 4-82) TAC Internal Toolholders (5-19 ~) J-series (8-16)
			TCMT090208-PSS		●	●					●												
			*TCMT110204-PSS		●	●					●												
			TCMT110208-PSS		●	●					●												
			TCMT110304-PSS		●	●					●												
			TCMT110308-PSS		●	●					●												
			TCMT16T304-PSS		●	●					●												
			TCMT16T308-PSS		●	●					●												
			TCMT16T312-PSS		●	●					●												

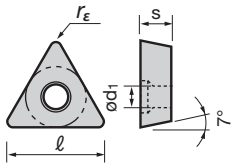
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, with hole

60° Positive 7°

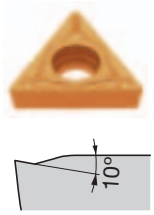
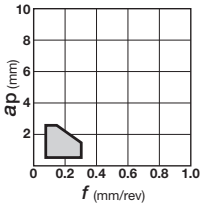
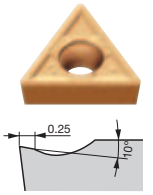
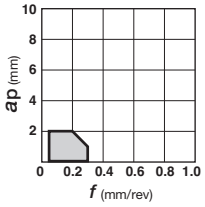
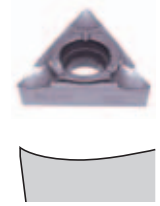
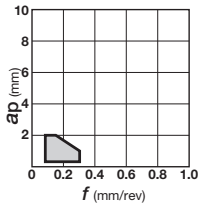
TC □□



TCMT 09 02 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

TC□T	0801□□	0802□□-J08	0902□□	1102□□	16T3□□
ød1 (mm)	2.7	2.3	2.5	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	GH730	J740	Coated cermet GT730	AT530	GT530	Cermet NS730	NS520	NS530	Uncoated KS05F	TH10	Applicable toolholders (pages)
Finishing to medium cutting	**PS** (M) 		TCMT090204-PS								●													TAC External Toolholders (4-65, 4-82) TAC Internal Toolholders (5-19 ~) J-series (8-16)
			TCMT090208-PS								●													
			TCMT110202-PS	●	●	●	●	●	●		●	●	●	●		●			●		●			
			*TCMT110204-PS	●	●	●	●	●	●		●	●	●	●		●	▲		●		●			
			TCMT110208-PS	●	●	●	●	●	●		●	●	●	●		●	▲		●		●			
			TCMT110302-PS	●	●	●	●	●	●			●	●			●			●					
			TCMT110304-PS	●	●	●	●	●	●			●	●			●			●					
			TCMT110308-PS	●	●	●	●	●	●			●	●			●			●					
			TCMT16T302-PS	●	●	●	●	●	●		●	●	●			●			●					
			TCMT16T304-PS	●	●	●	●	●	●		●	●	●			●			●		●			
			TCMT16T308-PS	●	●	●	●	●	●		●	●	●			●	▲		●		●			
	CM (M) 		TCMT090204-CM							●														
			TCMT090208-CM							●														
			TCMT110204-CM							●														
			TCMT110208-CM							●														
			*TCMT110304-CM							●														
			TCMT110308-CM							●														
			TCMT16T304-CM							●														
			TCMT16T308-CM							●														
			TCMT16T312-CM							●														
	SS (G) 		TCGT110202-SS																		●			
			TCGT110204-SS																		●			
			*TCGT110208-SS																		●			
			TCGT16T304-SS																		●			
			TCGT16T308-SS																		●			

Note: Chipbreaker cross-sections are of * marked inserts.

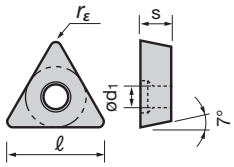
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Triangular, with hole

60° Positive 7°

TC □□



TCGT 11 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

TC□T	0801□□	0802□□-J08	0902□□	1102□□	16T3□□
ød1 (mm)	2.7	2.3	2.5	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	AH725	GH730	J740	SH730	Coated cermet J530	Cermet NS730	NS530	Uncoated KS05F	TH10	Applicable toolholders (pages)
Finishing to medium cutting	AL (G)		TCGT110202-AL														●		TAC External Toolholders (4-65, 4-82) TAC Internal Toolholders (5-19 ~) J-series (8-16)
			TCGT110204-AL														●		
			*TCGT16T302-AL														●		
			TCGT16T304-AL														●		
			TCGT16T308-AL														●		
For external turning on small lathes (Sharp edges)	JS (G)		TCGT110200FN-JS										●						
			*TCGT110201FN-JS										●						
			TCGT110202FN-JS										●						
			TCGT110204FN-JS										●						
For external turning on small lathes (Honed edges)	JS (G)		*TCGT110201N-JS							●									
			TCGT110202N-JS							●									
			TCGT110204N-JS							●									
For external turning on small lathes (Sharp edges)	J08 (G)		TCGT080200FR-J08									●						●	
			TCGT080200FL-J08									●				●		●	
			TCGT080201FR-J08									●						●	
			TCGT080201FL-J08									●						●	
			*TCGT080202FR-J08									●						●	
			TCGT080202FL-J08									●						●	
On small lathes (Honed edges)	J08 (G)		TCGT080201R-J08											●					
			TCGT080201L-J08											●					
			*TCGT080202R-J08											●					
			TCGT080202L-J08											●					

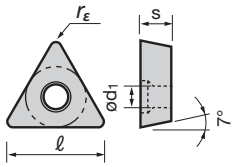
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, with hole

60° Positive 7°

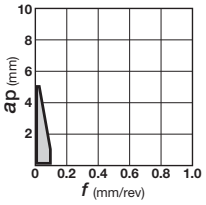
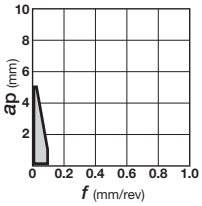
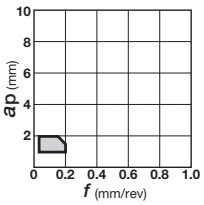
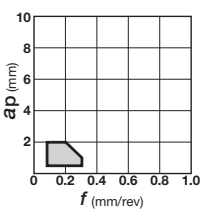
TC□□



TCGT 09 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

TC□T	0801□□	0802□□-J08	0902□□	1102□□	16T3□□
ød1 (mm)	2.7	2.3	2.5	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	Coated T6130	Coated AH725	Coated GH730	Coated J740	Coated cermet GT730	Coated cermet J530	Cermet NS730	Cermet NS530	Uncoated TH10	Applicable toolholders (pages)
On small lathes (Sharp edges)	J10 (G)		TCGT110200FR-J10					●				●		TAC External Toolholders (4-65, 4-82) TAC Internal Toolholders (5-19 ~) J-series (8-16)
			TCGT110200FL-J10					●						
			TCGT110201FR-J10					●						
			TCGT110201FL-J10					●						
			TCGT110202FR-J10					●			●	●		
			TCGT110202FL-J10					●				●		
			TCGT110300FR-J10					●				●		
			TCGT110300FL-J10					●						
			TCGT110301FR-J10					●				●		
			TCGT110301FL-J10					●						
			*TCGT110302FR-J10					●				●		
			TCGT110302FL-J10					●				●		
On small lathes (Honed edges)	J10 (G)		TCGT110201R-J10								▲			
			TCGT110201L-J10								▲			
			TCGT110202R-J10							●				
			TCGT110202L-J10							●				
			*TCGT110301R-J10							●				
			TCGT110301L-J10							●				
			TCGT110302R-J10							●				
			TCGT110302L-J10							●				
Finishing	- (with hand) (G)		*TCGT080102R									●	●	
Finishing to medium cutting	23 (M)		TCMT090202-23									●		TAC External Toolholders (4-65, 4-82) TAC Internal Toolholders (5-19 ~) J-series (8-16)
			TCMT090204-23									●		
			TCMT110202-23									●		
			*TCMT110204-23									●		
			TCMT110208-23									●		
			TCMT16T304-23									●		
			TCMT16T308-23								▲	●		

Note: Chipbreaker cross-sections are of * marked inserts.

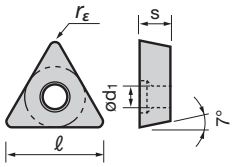
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Triangular, with hole

60° Positive 7°

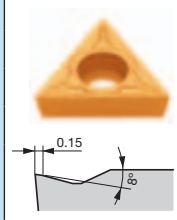
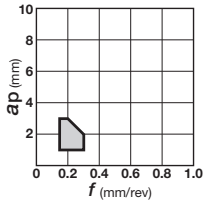
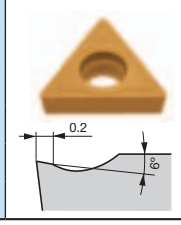
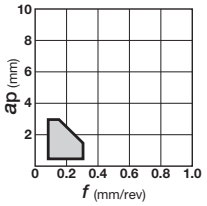
TC□□



TCMT 09 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

TC□T	0801□□	0802□□-J08	0902□□	1102□□	16T3□□
ød1 (mm)	2.7	2.3	2.5	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T6020	T6030	AH725	AH630	AH645	Coated cermet GT730	J530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	**PM** (M) 		TCMT110202-PM					●	●	●	●	●	●	●	●		●			**TAC External Toolholders** (4-65, 4-82) **TAC Internal Toolholders** (5-19 ~) **J-series** (8-16)
			TCMT110204-PM		●	●		●	●	●	●	●	●	●	●		●	●		
			TCMT110208-PM		●	●		●	●	●	●	●	●	●	●		●	●		
			TCMT110302-PM					●	●	●		●	●	●	●		●			
			TCMT110304-PM					●	●	●		●	●	●	●		●			
			TCMT110308-PM					●	●	●		●	●	●	●		●			
			*TCMT16T304-PM		●	●		●	●	●	●	●	●	●	●		●	●		
			TCMT16T308-PM		●	●		●	●	●	●	●	●	●	●		●	●		
			TCMT16T312-PM		●	●		●	●	●	●	●	●	●	●		●	●		
	24 (M) 		TCMT090202-24														▲	●		
			TCMT090204-24															●		
			*TCMT110202-24															●		
			TCMT110204-24															●		
			TCMT110208-24															●		
			TCMT16T304-24															●		
			TCMT16T308-24															●		

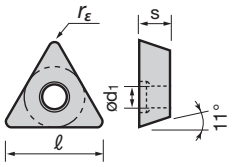
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, with hole

60° Positive 11°

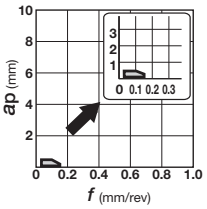
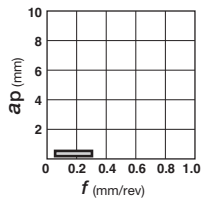
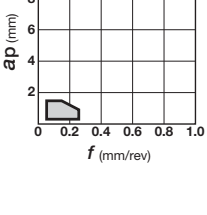
TP□□



TPGT 09 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

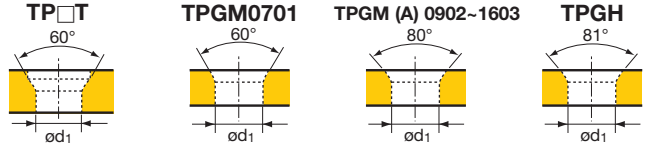
ød1 (mm)		0701□□	0802□□	0902□□	1102□□	1103□□	1303□□	1603□□	16T3□□
	TP□T(W)	-	2.3	2.5	2.8	3.4	3.4	-	4.4
	TPGM(A)	2.7	-	3.2	3.0	3.0	-	4.0	-
	TPGH	-	2.3	3.0	3.4	3.4	-	4.5	-

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T6020	T6030	GH110	GH330	GH730	AH725	SH730	Coated cermet GT720	GT730	GT530	Cermet NS730	NS520	NS530	Uncoated TH10	UX30	Applicable toolholders (pages)
Precision finishing	01 (G)		TPGT090202-01																●			●			TAC External Toolholders (5-20 ~)
			*TPGT090204-01																●		●	●	●		
			TPGT110202-01																●			●			
			TPGT110204-01																●		●	●	●		
			TPGT110208-01																			●			
			TPGT130302-01														●					●			
			TPGT130304-01																●		●	●	●		
			TPGT130308-01																	●	●	●			
			TPGT16T304-01																●		●	●	●		
			TPGT16T308-01														●	●			●	●			
Finishing	PSF (M)		TPMT090202-PSF												●										
			TPMT090204-PSF		●	●									●										
			TPMT110202-PSF												●										
			*TPMT110204-PSF		●	●									●										
			TPMT110302-PSF												●										
			TPMT110304-PSF		●	●									●										
			TPMT130304-PSF		●	●									●										
			TPMT16T304-PSF		●	●									●										
	PF (M)		TPMT110204-PF							●	●			●				●		●		●			
			TPMT110208-PF							●	●							●		●		●			
			TPMT110302-PF							●	●			●						●		●			
			TPMT110304-PF							●	●			●				●		●		●			
			TPMT130304-PF							●	●							●		●		●			
			TPMT130308-PF							●	●									●		●			
			*TPMT16T304-PF							●	●							●		●		●			
			TPMT16T308-PF							●	●									●					

Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Mounting hole specifications

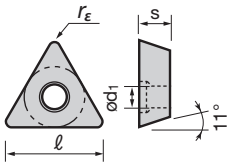


TAC Inserts, positive

Triangular, with hole

60° Positive 11°

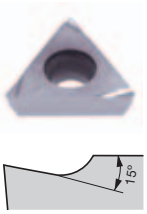
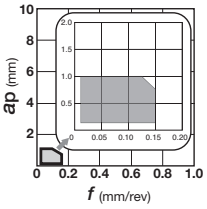
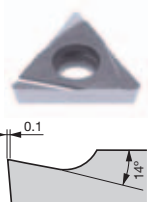
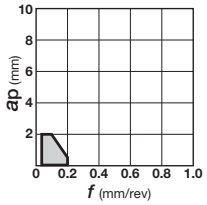
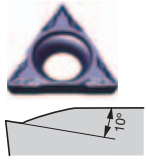
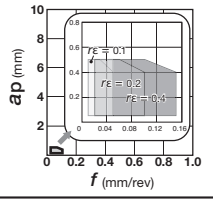
TP □□



TPGT 08 02 02L - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

		0701□□	0802□□	0902□□	1102□□	1103□□	1303□□	1603□□	16T3□□
ød1 (mm)	TP□T(W)	-	2.3	2.5	2.8	3.4	3.4	-	4.4
	TPGM(A)	2.7	-	3.2	3.0	3.0	-	4.0	-
	TPGH	-	2.3	3.0	3.4	3.4	-	4.5	-

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	GH110	GH330	GH730	SH730	Coated cermet GT730	GT530	Cermet NS730	NS520	NS530	Uncoated TH10	UX30	Applicable toolholders (pages)
Finishing	**W08** (G) 		TPGT070100R-W08										●						●		TAC Internal Toolholders (5-21 ~) J-series (8-37 ~)
			TPGT070100L-W08										●						●		
			TPGT070101R-W08										●						●		
			TPGT070101L-W08										●						●		
			TPGT070102R-W08										●						●		
			TPGT070102L-W08										●						●		
			TPGT070104R-W08										●						●		
			TPGT070104L-W08										●						●		
			TPGT080200L-W08											●	●			●			
			TPGT080202L-W08							●					●			●	●	●	
			*TPGT080204L-W08							●					●			●	●	●	
	W15 (G) 		TPGT090202R-W15															●			J-series (5-20 ~)
			TPGT090202L-W15												●			●	●		
			*TPGT090204R-W15															●			
			TPGT090204L-W15							●	●				●			●	●	●	
			TPGT110202R-W15															●			
			TPGT110202L-W15												●			●	●		
			*TPGT110204R-W15															●			
			TPGT110204L-W15							●	●				●			●	●	●	
			TPGT110208R-W15															●			
			TPGT110208L-W15															●		●	
			TPGT110302L-W15															●			
			TPGT110304R-W15															●			
			TPGT110304L-W15															●			
			TPGT110308L-W15															●			
			TPGT130302R-W15															●			
			TPGT130302L-W15												●			●	●		
			TPGT130304R-W15							●								●			
			TPGT130304L-W15							●	●				●			●	●	●	
			TPGT130308R-W15															●			
			TPGT130308L-W15											●				●	●		
			TPGT16T302R-W15															●			
			TPGT16T302L-W15												●			●	●		
			TPGT16T304R-W15															●			
			TPGT16T304L-W15							●	●				●			●	●	●	
			*TPGT16T308R-W15															●			
			TPGT16T308L-W15															●	●	●	
For internal turning on small lathes	**JS** (G) 		*TPGT070101-JS										●								
			TPGT070102-JS										●								
			TPGT070104-JS										●								

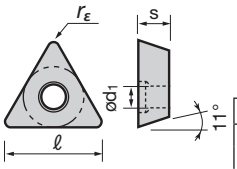
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, with hole

60° Positive 11°

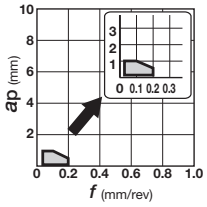
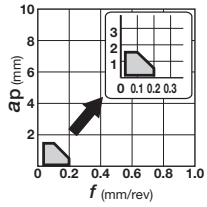
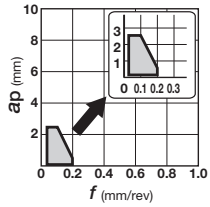
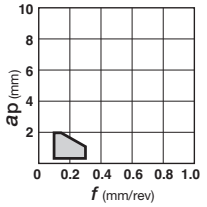
TP □□



TPGH 09 02 02L - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

ød1 (mm)		0701□□	0802□□	0902□□	1102□□	1103□□	1303□□	1603□□	16T3□□
	TP□T(W)	-	2.3	2.5	2.8	3.4	3.4	-	4.4
	TPGM(A)	2.7	-	3.2	3.0	3.0	-	4.0	-
	TPGH	-	2.3	3.0	3.4	3.4	-	4.5	-

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	AH725	AH630	AH645	GH110	GH330	Coated cermet GT730	AT530	Cermet NS730	NS530	Uncoated TH10	UX30	Applicable toolholders (pages)
Finishing	**W10** (G)		*TPGH080202R-W10																		J-series (5-20 ~)
			TPGH080202L-W10												●						
			TPGH080204R-W10																		
			TPGH080204L-W10												●						
			TPGH090202R-W10																		
			TPGH090202L-W10																		
			TPGH090204R-W10																		
			TPGH090204L-W10												●						
	W13 (G)		*TPGH110202R-W13																		J-series (5-20 ~)
			TPGH110202L-W13																		
			TPGH110204R-W13																		
			TPGH110204L-W13												●						
			TPGH110302R-W13																		
			TPGH110302L-W13												●						
			TPGH110304R-W13																		
			TPGH110304L-W13												●						
	W18 (G)		*TPGH160302R-W18																		
			TPGH160302L-W18																		
			TPGH160304R-W18																		
			TPGH160304L-W18																		
Finishing to light cutting	**PSS** (M)		TPMT090204-PSS		●	●		●	●	●	●	●									
			TPMT090208-PSS		●	●		●	●	●	●	●									
			*TPMT110204-PSS		●	●		●	●	●	●	●									
			TPMT110208-PSS		●	●		●	●	●	●	●									
			TPMT110304-PSS		●	●		●	●	●	●	●									
			TPMT110308-PSS		●	●		●	●	●	●	●									
			TPMT130304-PSS		●	●		●	●	●	●	●									
			TPMT130308-PSS		●	●		●	●	●	●	●									
			TPMT16T304-PSS		●	●		●	●	●	●	●									
			*TPMT16T308-PSS		●	●		●	●	●	●	●									

Note: Chipbreaker cross-sections are of * marked inserts.

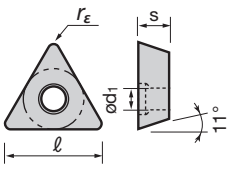
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Triangular, with hole

60° Positive 11°

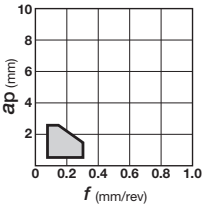
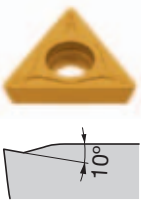
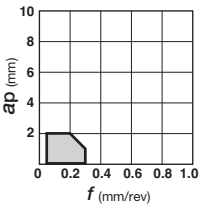
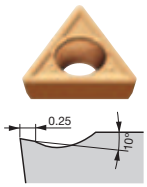
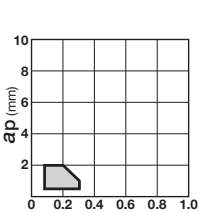
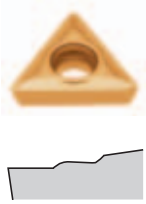
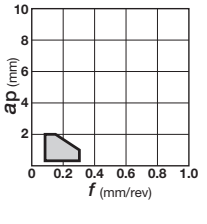
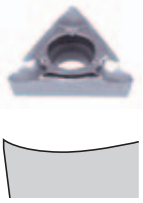
TP □□



TPGT 11 02 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

		0701□□	0802□□	0902□□	1102□□	1103□□	1303□□	1603□□	16T3□□
ød1 (mm)	TP□T(W)	-	2.3	2.5	2.8	3.4	3.4	-	4.4
	TPGM(A)	2.7	-	3.2	3.0	3.0	-	4.0	-
	TPGH	-	2.3	3.0	3.4	3.4	-	4.5	-

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	GH330	Coated cermet GH730	GT730	AT530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Finishing to medium cutting	**PS** (M)		TPMT090202-PS	●	●	●	●	●	●		●	●	●		●	●		●	●		TAC External Toolholders (5-20 ~)
			TPMT090204-PS	●	●	●	●	●	●		●	●	●		●	●	▲	●	●		
			TPMT090208-PS	●	●	●	●	●	●		●	●	●		●	●	▲	●	●		
			TPMT110202-PS	●	●	●	●	●	●		●	●	●		●	●	▲	●	●		
			*TPMT110204-PS	●	●	●	●	●	●		●	●	●		●	●	▲	●	●		
			TPMT110208-PS	●	●	●	●	●	●		●	●	●		●	●	▲	●	●		
			TPMT110304-PS	●	●	●	●	●	●		●	●	●		●	●	▲	●	●		
			TPMT110308-PS	●	●	●	●	●	●		●	●	●		●	●	▲	●	●		
			TPMT130302-PS	●	●			●	●		●					●		●	●		
			TPMT130304-PS	●	●	●	●	●	●		●	●	●			●	▲	●	●		
			TPMT130308-PS	●	●	●	●	●	●		●	●	●			●	▲	●	●		
			TPMT16T304-PS	●	●	●	●	●	●		●	●	●			●	▲	●	●		
			TPMT16T308-PS	●	●	●	●	●	●		●	●	●			●	▲	●	●		
	CM		TPMT090204-CM							●											
			TPMT090208-CM							●											
			TPMT110204-CM							●											
			TPMT110208-CM							●											
			*TPMT110304-CM							●											
			TPMT110308-CM							●											
			TPMT130304-CM							●											
			TPMT130308-CM							●											
			TPMT16T304-CM							●											
			TPMT16T308-CM							●											
			TPMT16T312-CM							●											
	23 (G)		TPMT090202-23																●		
			TPMT090204-23																●		
			TPMT110204-23																●		
			TPMT110208-23																●		
			TPMT130304-23																●		
			TPMT130308-23																●		
			TPMT16T304-23																●		
			TPMT16T308-23																●		
	SS (G)		TPGT110202-SS																●		
			*TPGT110204-SS											●					●		
			TPGT110208-SS																●		
			TPGT130302-SS																●		
			TPGT130304-SS											●					●		
			TPGT130308-SS																●		
			TPGT16T304-SS											●					●		
			TPGT16T308-SS																●		

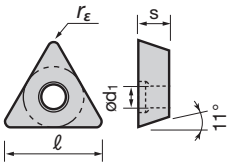
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, with hole

60° Positive 11°

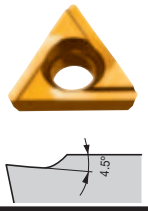
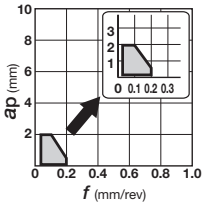
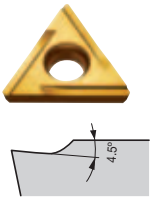
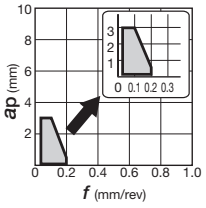
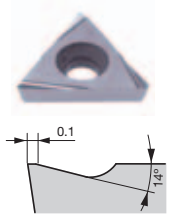
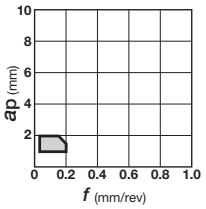
TP □□



TPGH 11 03 02R - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

ød1 (mm)		0701□□	0802□□	0902□□	1102□□	1103□□	1303□□	1603□□	16T3□□
	TP□T(W)	-	2.3	2.5	2.8	3.4	3.4	-	4.4
	TPGM(A)	2.7	-	3.2	3.0	3.0	-	4.0	-
	TPGH	-	2.3	3.0	3.4	3.4	-	4.5	-

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T5115	AH725	GH330	GH730	Coated cermet GT730	AT530	Cermet NS730	NS530	Uncoated TH10	UX30	Applicable toolholders (pages)
Finishing to medium cutting	**H11** (G) 		*TPGH110302R-H11																	
			TPGH110302L-H11																	
			TPGH110304R-H11																	
			TPGH110304L-H11											●						
	H13 (G) 		*TPGH160304R-H13																	
			TPGH160304L-H13																	
	- (with hand) (G) Tungaloy-standard hole Not ISO  TPGM□□□□□□R/L		*TPGM070102R														●				TAC Internal Toolholders (5-21 ~)
			TPGM070102L														●		●	
			TPGM070104R														●			
			TPGM070104L														●		●	
			TPGM090202R														●			
			TPGM090202L														●			
			TPGM090204L														●			
			TPGM110202R														●			
			*TPGM110202L														●			●
			TPGM110204R														●			
			TPGM110204L														●			●
			TPGM110302R														●			
			TPGM110302L														●			
			TPGM110302L-2																●	
			TPGM110304R														●			
			TPGM110304L														●			●
			TPGM110304L-2																●	
			TPGM160302L														●			
			TPGM160304R														●			
			TPGM160304L														●			●
			*TPGM160304L-2																●	

Note: Chipbreaker cross-sections are of * marked inserts.

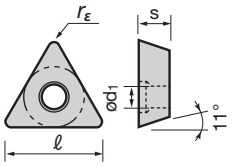
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Triangular, with hole

60° Positive 11°

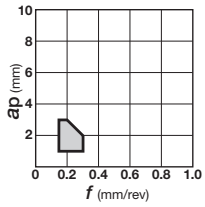
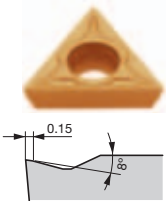
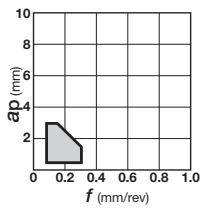
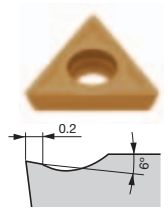
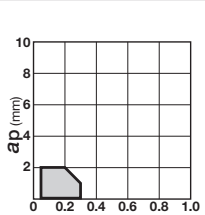
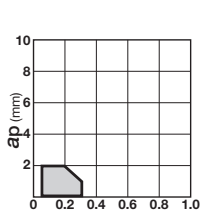
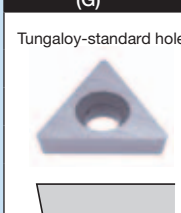
TP □□



TPMT 09 02 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

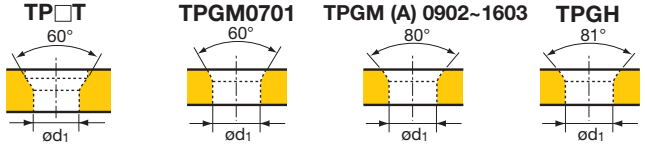
ød1 (mm)		0701□□	0802□□	0902□□	1102□□	1103□□	1303□□	1603□□	16T3□□
	TP□T(W)	-	2.3	2.5	2.8	3.4	3.4	-	4.4
	TPGM(A)	2.7	-	3.2	3.0	3.0	-	4.0	-
	TPGH	-	2.3	3.0	3.4	3.4	-	4.5	-

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	Coated cermet GH330	GT730	AT530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Medium cutting	**PM** (M)		TPMT090204-PM			●	●	●	●		●	●	●		●		●			TAC Internal Toolholders (5-20 ~)
			TPMT090208-PM			●	●	●	●		●	●	●		●		●			
			TPMT110204-PM	●	●	●	●	●	●		●	●	●	●	●		●	●		
			TPMT110208-PM	●	●	●	●	●	●		●	●	●	●	●		●	●		
			TPMT110304-PM	●	●	●	●	●	●		●	●	●	●	●		●	●		
			TPMT110308-PM	●	●	●	●	●	●		●	●	●	●	●		●	●		
			TPMT130304-PM		●	●	●	●	●		●	●	●		●		●	●		
			TPMT130308-PM		●	●	●	●	●		●	●	●		●		●	●		
			*TPMT16T304-PM		●	●	●	●	●		●	●	●		●		●	●		
			TPMT16T308-PM		●	●	●	●	●		●	●	●		●		●	●		
			TPMT16T312-PM		●	●	●	●	●		●	●	●		●		●	●		
	24 (M)		TPMT090202-24															●		
			TPMT090204-24															●		
			TPMT110204-24															●		
			*TPMT110208-24															●		
			TPMT130304-24															●		
			TPMT130308-24															●		
			TPMT16T304-24															●		
			TPMT16T308-24															●		
Finishing to medium cutting	**-** (M)		TPMW110204							●										
			TPMW110208							●										
			*TPMW130304							●										
			TPMW130308							●										
			TPMW16T304							●										
			TPMW16T308							●										
	- (G) Tungaloy-standard hole		TPGA090204																●	
			TPGA110202															●	●	
			*TPGA110204																●	
			TPGA110302															●	●	
			TPGA110304																●	
			TPGA160304															●	●	
			TPGA160308																●	

Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

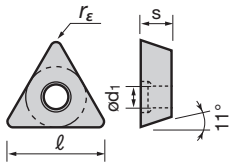
Mounting hole specifications



Triangular, with hole

60° Positive 11°

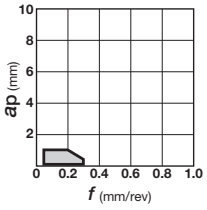
TP □□



TPGW 09 02 02

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

TPGW	0902□□	1102□□	1103□□	1303□□	16T3□□
ød1 (mm)	2.5	2.8	3.4	3.4	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T5115	GH110	Coated cermet GT730	Cermet NS730	NS530	Un-coated TH10	Applicable toolholders (pages)
Finishing to medium cutting	- (G)		TPGW090202												●	TAC Internal Toolholders (5-20 ~)
			TPGW090204												●	
			TPGW110202												●	
			TPGW110204								●				●	
			*TPGW110304												●	
			TPGW130304												●	
			TPGW16T304								●				●	
			TPGW16T308												●	

Note: Chipbreaker cross-sections are of * marked inserts.

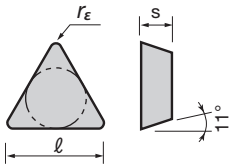
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Triangular, without hole

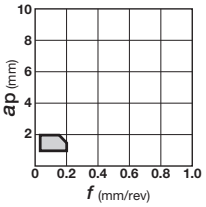
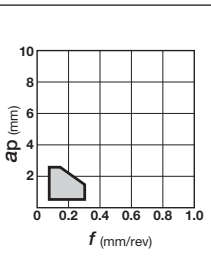
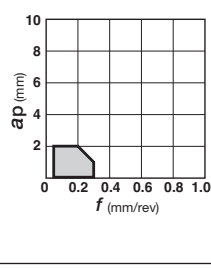
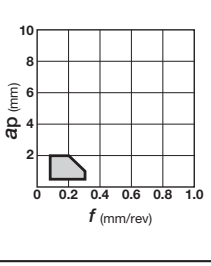
60° Positive 11°

TP □□



TPMR 11 03 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T5115	GH110	Coated cermet GT730	Cermet NS730	NS530	Un-coated TH10	Applicable toolholders (pages)
Finishing to medium cutting	- (with hand) (G)		TPGR110302L											●		TAC External Toolholders (4-73) TAC Internal Toolholders (5-50)
			*TPGR110304L											●		
			TPGR160304R											●		
			TPGR160304L											●		
			TPGR160308L											●		
	PS (M)		*TPMR110304-PS			●						●				
			TPMR110308-PS			●						●				
			TPMR160304-PS			●						●				
			TPMR160308-PS			●						●				
	CM (M)		TPMR110304-CM							●						
			*TPMR110308-CM							●						
			TPMR160304-CM							●						
			TPMR160308-CM							●						
			TPMR160312-CM							●						
	23 (M)		*TPMR110304-23											●	▲	
			TPMR110308-23											●	●	
			TPMR160304-23											●	●	
			TPMR160308-23											●	▲	
			TPMR160312-23													

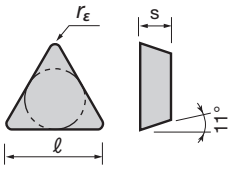
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Triangular, without hole

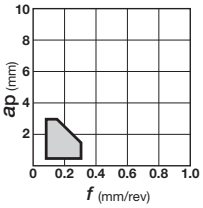
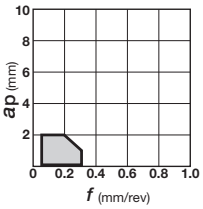
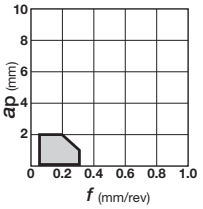
60° Positive 11°

TP □□



TPGN 16 03 12

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T5115	GH110	Cermet NS530	Uncoated TH10	UX30	Ceramics LX21	LX11	Applicable toolholders (pages)
Medium cutting	24 (M)		TPMR090204-24							●					TAC External Toolholders (4-73) TAC Internal Toolholders (5-50)
			*TPMR110304-24							●					
			TPMR110308-24							●					
			TPMR160304-24							●					
			TPMR160308-24							●					
Finishing to medium cutting	- (M)		TPMN110304					●			●				
			TPMN110308					●							
			*TPMN160304					●			●				
			TPMN160308					●			●	●			
			TPMN160312					●							
			TPMN220408									●			
	- (G)		TPGN110302								●				
			TPGN110304						●		●		●	●	
			TPGN110308								●			●	
			TPGN160302								●				
			*TPGN160304						●	●	●			●	
			TPGN160308						●	●	●			●	
			TPGN160312											●	
			TPGN220404								●				

Note: Chipbreaker cross-sections are of * marked inserts.

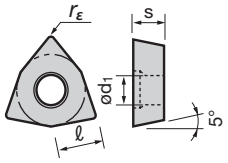
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Trigon, with hole

80° Positive 5°

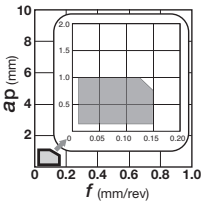
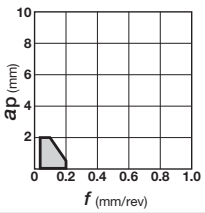
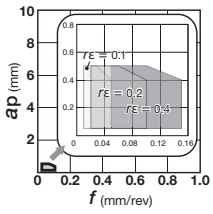
WBGT



WBGT 03 01 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

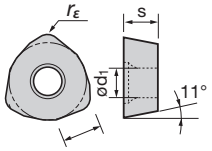
WBGT	0301□□	0601□□	0802□□
ød1 (mm)	2.3	2.3	2.3

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	GH110	SH730	Coated cermet NS530	Cermet TH10	UX30	Applicable toolholders (pages)
Finishing	W08 (G)		WBGT030100R-W08						●				TAC Internal Toolholders (5-29 ~)
			WBGT030100L-W08						●	●	●	●	
			WBGT030101R-W08						●				
			WBGT030101L-W08						●		●		
			*WBGT030102R-W08						●				
			WBGT030102L-W08					●	●	●	●	●	
			WBGT030104R-W08						●				
			WBGT030104L-W08					●	●	●	●	●	
	W11 (G)		WBGT060102L-W11							●			
			WBGT060104L-W11							●			
			WBGT080202L-W11							●			
			*WBGT080204L-W11							●			
For internal turning on small lathes	JS (G)		*WBGT030101R-JS						●				
			WBGT030101L-JS						●				
			WBGT030102R-JS						●				
			WBGT030102L-JS						●				
			WBGT030104R-JS						●				
			WBGT030104L-JS						●				

Trigon, with hole

80° Positive 11°

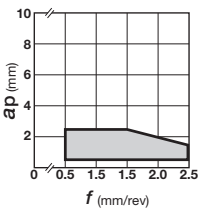
WPMT



WPMT 09 07 25ZPR - ML

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

WPMT	090725
ød1 (mm)	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	AH120	Applicable toolholders (pages)
Heavy	ML (M)		*WPMT090725ZPR-ML		●	●		●	TAC External Toolholders (4-42)
			WPMT090725ZPL-ML		●	●		●	

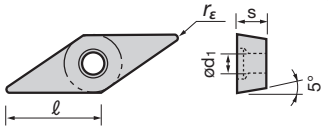
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

35° Positive 5°

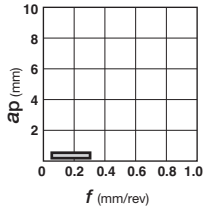
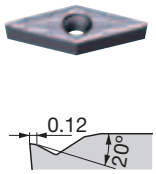
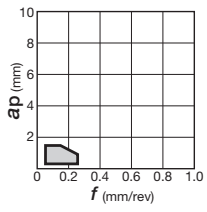
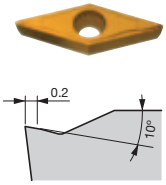
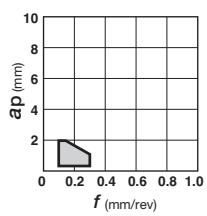
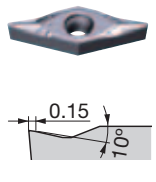
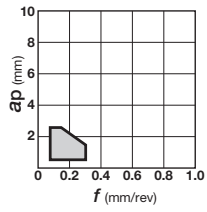
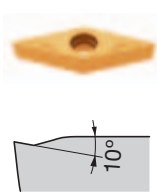
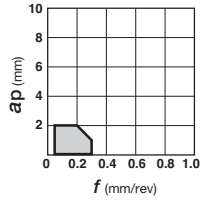
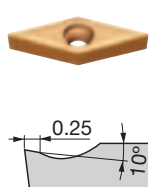
VB □□



VBMT 11 03 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (rε) | Chipbreaker symbol

VB□T	1103□□	1604□□
ød1 (mm)	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T6020	T6030	T5115	Coated cermet AH725	AH630	AH645	GT730	AT530	J530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
Finishing	**PSF** (M)		VBMT110302-PSF										●									TAC Internal Toolholders (5-22 ~)
			VBMT110304-PSF		●	●							●									J-series (8-17 ~)
			VBMT160402-PSF										●									
			*VBMT160404-PSF		●	●							●									
	PF (M)		VBMT110302-PF							●	●					●			●			
			VBMT110304-PF							●	●					●			●			
			*VBMT110308-PF							●	●					●			●			
			VBMT160404-PF							●	●					●			●			
			VBMT160408-PF							●	●					●			●			
Finishing to light cutting	**PSS** (M)		VBMT110304-PSS		●	●		●	●				●	●	●							
			VBMT110308-PSS		●	●		●	●				●	●	●							
			*VBMT160404-PSS		●	●		●	●				●	●	●							
			VBMT160408-PSS		●	●		●	●				●	●	●							
			VBMT160412-PSS		●	●							●									
Finishing to medium cutting	**PS** (M)		*VBMT110302-PS		●	●		●	●	●	●		●	●	●	●	▲		●	●		
			VBMT110304-PS		●	●		●	●	●	●		●	●	●	●	▲		●	●		
			VBMT110308-PS		●	●		●	●	●	●		●	●	●	●	▲		●	●		
			VBMT160402-PS		●	●		●	●	●	●		●	●	●	●			●			
			VBMT160404-PS		●	●		●	●	●	●		●	●	●	●	▲		●	●		
			VBMT160408-PS		●	●		●	●	●	●		●	●	●	●	▲		●	●		
	CM (M)		VBMT110304-CM									●										
			VBMT110308-CM									●										
			*VBMT160404-CM									●										
			VBMT160408-CM									●										
			VBMT160412-CM									●										

Note: Chipbreaker cross-sections are of * marked inserts.

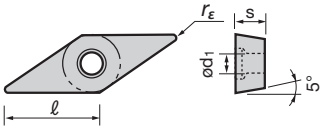
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

35° Positive 5°

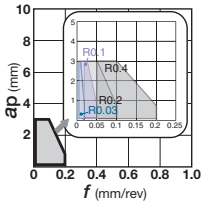
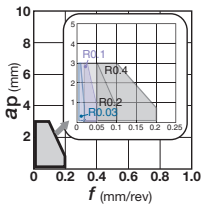
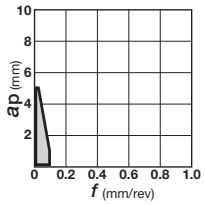
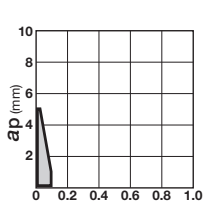
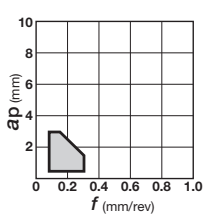
VB □□



VBGT 11 03 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

VB□T	1103□□	1604□□
ød1 (mm)	2.8	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	T5115	AH725	J740	Coated cermet SH730	GT730	AT530	J530	Cermet NS730	NS530	Uncoated TH10	Applicable toolholders (pages)
For external turning on small lathes (Sharp edges)	JS (G)		VBGT110300FN-JS										●							TAC Internal Toolholders (5-22 ~)
			VBGT110301FN-JS										●							J-series (8-17 ~)
			VBGT110302FN-JS										●							
			*VBGT110304FN-JS										●							
On small lathes	JS (G)		VBGT110301N-JS								●									
			VBGT110302N-JS								●									
			*VBGT110304N-JS								●									
For external turning on small lathes (Sharp edges)	J10 (G)		*VBGT110300FR-J10									●							●	
			VBGT110300FL-J10									●							●	
			VBGT110301FR-J10									●						●	●	
			VBGT110301FL-J10									●						●	●	
			VBGT110302FR-J10									●						●	●	
			VBGT110302FL-J10									●						●	●	
			VBGT110304FR-J10									●						●	●	
			VBGT110304FL-J10									●						●	●	
For external turning on small lathes (Honed edges)	J10 (G)		VBGT110301R-J10																	
			VBGT110301L-J10																	
			*VBGT110302R-J10													●				
			VBGT110302L-J10													●				
			VBGT110304R-J10													●				
			VBGT110304L-J10													●				
Medium cutting	24 (M)		* VBMT160404-24															●		
			VBMT160408-24															●		

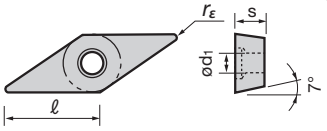
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

35° Positive 7°

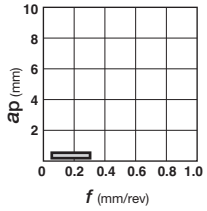
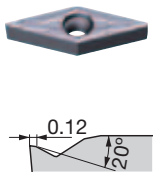
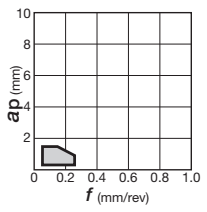
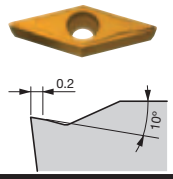
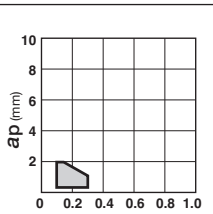
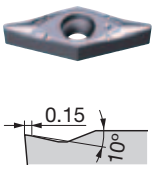
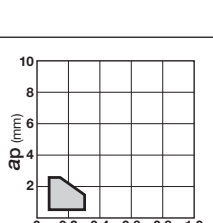
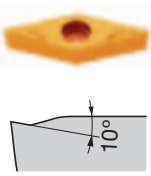
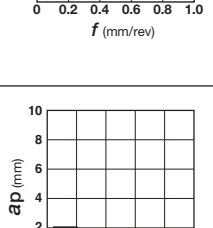
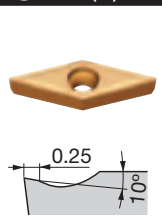
VC□□



VCMT 11 03 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

VC□T	0802□□	1103□□	1604□□	2205□□
ød1 (mm)	2.3	2.8	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T6120	T6130	T6020	T6030	T5115	AH725	AH630	AH645	AH905	Coated cermet GT730	AT530	Cermet NS730	NS530	Uncoated KS05F	Applicable toolholders (pages)
Finishing	**PSF** (M)		VCMT080202-PSF								●									TAC External Toolholders (4-65 ~) TAC Internal Toolholders (5-22)
			VCMT080204-PSF	●	●						●									
			VCMT110302-PSF								●									
			VCMT110304-PSF	●	●						●									
			*VCMT160404-PSF	●	●						●			●						
			VCMT160408-PSF	●	●						●			●						
	PF (M)		VCMT080202-PF					●	●						●		●			
			VCMT080204-PF					●	●						●		●			
			VCMT160404-PF					●	●						●		●			
			*VCMT160408-PF					●	●						●		●			
Finishing to light cutting	**PSS** (M)		VCMT110304-PSS	●	●	●	●				●	●	●							
			VCMT110308-PSS	●	●	●	●				●	●	●							
			*VCMT160404-PSS	●	●	●	●				●	●	●	●						
			VCMT160408-PSS	●	●	●	●				●	●	●	●						
Finishing to medium cutting	**PS** (M)		VCMT110302-PS	●	●	●	●	●	●		●	●	●		●	▲	●	●		
			VCMT110304-PS	●	●	●	●	●	●		●	●	●		●	▲	●	●		
			*VCMT110308-PS	●	●	●	●	●	●		●	●	●		●	▲	●	●		
			VCMT160404-PS	●	●	●	●	●	●		●	●	●	●	●	▲	●	●		
			VCMT160408-PS	●	●	●	●	●	●		●	●	●	●	●	▲	●	●		
	CM (M)		VCMT080204-CM							●										
			*VCMT160404-CM							●										
			VCMT160408-CM							●										
			VCMT160412-CM							●										

Note: Chipbreaker cross-sections are of * marked inserts.

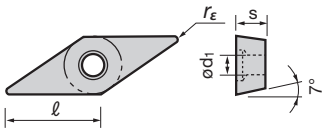
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

35° Positive 7°

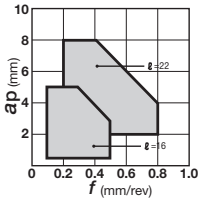
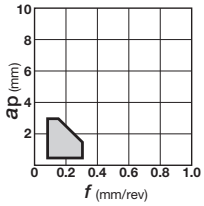
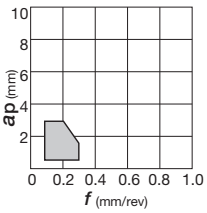
VC□□



VCGT 16 04 04 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

VC□T	0802□□	1103□□	1604□□	2205□□
ød1 (mm)	2.3	2.8	4.4	5.5

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	Coated T6130	Coated T5115	Coated AH905	Cermet NS530	Uncoated KS05F	Applicable toolholders (pages)
Finishing to medium cutting	**AL** (G)		VCGT160404-AL						●	TAC External Toolholders (4-65 ~) TAC Internal Toolholders (5-22)
			VCGT160408-AL						●	
			*VCGT160412-AL						●	
			VCGT220520-AL						●	
			VCGT220530-AL						●	
	24 (M)		VCMT160404-24					●		
			*VCMT160408-24					●		
Medium cutting	**All-round** (M)		VCMT160404				●			
			*VCMT160408				●			
			VCMT160412				●			

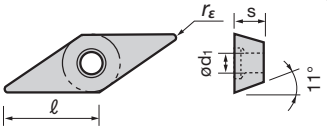
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

35° Positive 11°

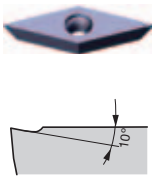
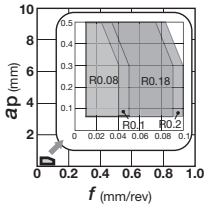
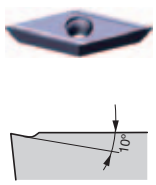
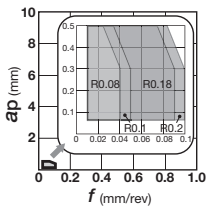
VP □□



VPET 11 03 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

VPET	0802□□	1103□□
ød1 (mm)	2.3	2.8

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T6120	Coated T6130	Coated T5115	Coated SH730	Cermet NS530	Uncoated KS05F	Applicable toolholders (pages)
For external turning on small lathes (Sharp edges)	**JRP** (E) 		VPET0802008MFR-JRP				●			J-series (8-19)
			VPET0802008MFL-JRP				●			
			VPET080201 MFR-JRP				●			
			VPET080201 MFL-JRP				●			
			VPET0802018MFR-JRP				●			
			VPET0802018MFL-JRP				●			
			VPET080202 MFR-JRP				●			
			VPET080202 MFL-JRP				●			
			VPET1103008MFR-JRP				●			
			VPET1103008MFL-JRP				●			
			VPET110301 MFR-JRP				●			
			VPET110301 MFL-JRP				●			
			VPET1103018MFR-JRP				●			
			VPET1103018MFL-JRP				●			
			*VPET110302 MFR-JRP				●			
			VPET110302 MFL-JRP				●			
	JPP (E) 		VPET0802008MFR-JPP				●			
			VPET0802008MFL-JPP				●			
			VPET080201 MFR-JPP				●			
			VPET080201 MFL-JPP				●			
			VPET0802018MFR-JPP				●			
			VPET0802018MFL-JPP				●			
			VPET080202 MFR-JPP				●			
			VPET080202 MFL-JPP				●			
			VPET1103008MFR-JPP				●			
			VPET1103008MFL-JPP				●			
			VPET110301 MFR-JPP				●			
			VPET110301 MFL-JPP				●			
			VPET1103018MFR-JPP				●			
			VPET1103018MFL-JPP				●			
			*VPET110302 MFR-JPP				●			
			VPET110302 MFL-JPP				●			

Note: Chipbreaker cross-sections are of * marked inserts.

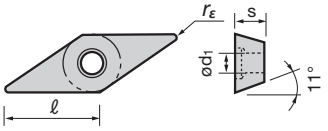
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Rhombic, with hole

35° Positive 11°

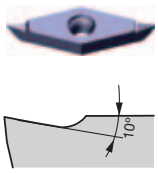
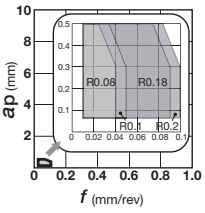
VP □□



VPET 11 03 02 - □□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

VPET	0802□□	1103□□
ød1 (mm)	2.3	2.8

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated SH730	Cermet NS530	Uncoated KS05F	Applicable toolholders (pages)
For external turning on small lathes (Sharp edges)	**JSP** (E) 		VPET0802008MFN-JSP	●			J-series (8-19)
			VPET080201 MFN-JSP	●			
			VPET0802018MFN-JSP	●			
			VPET080202 MFN-JSP	●			
			VPET1103008MFN-JSP	●			
			VPET110301 MFN-JSP	●			
			VPET1103018MFN-JSP	●			
			*VPET110302 MFN-JSP	●			

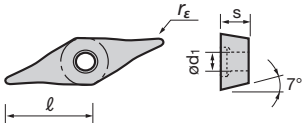
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Rhombic, with hole

25° Positive 7°

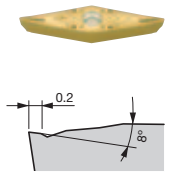
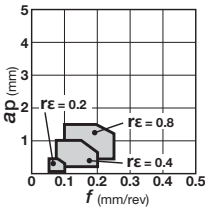
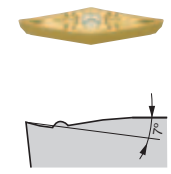
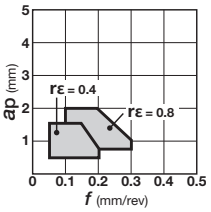
YWMT



YWMT 16 T3 04 -□□

Cutting edge length (ℓ) | Thickness (s) | Corner radius (r_ε) | Chipbreaker symbol

YWMT	11T2□□	16T3□□
ød1 (mm)	2.3	2.86

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T6120	T6130	AH725	Coated cermet GT730	AT530	Cermet NS730	NS530	Uncoated KS05F	Applicable toolholders (pages)
Finishing to medium cutting	**ZF** (M) 		YWMT11T202-ZF			●					●					TAC External Toolholders (4-43) TAC Internal Toolholders (5-30)
			YWMT11T204-ZF			●					●					
			*YWMT16T302-ZF			●					●					
			YWMT16T304-ZF			●					●					
			YWMT16T308-ZF			●					●					
	ZM (M) 		YWMT11T204-ZM			●					●					
			*YWMT16T304-ZM			●					●					
			YWMT16T308-ZM			●					●					

Note: Chipbreaker cross-sections are of * marked inserts.

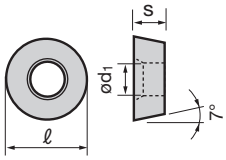
● : Stocked items
▲ : Discontinued items

TAC Inserts, positive

Round, with hole

Positive 7°

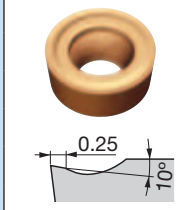
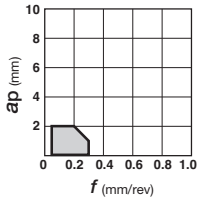
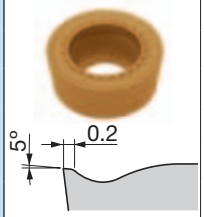
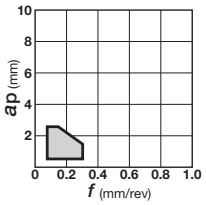
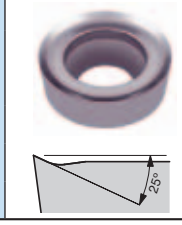
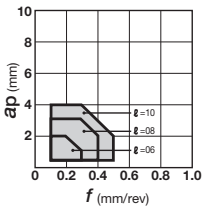
RC□□



RCGT 06 02 M0 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

Hole dia. (ød1) : See as below.

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T5115	AH905	Cermet NS730	NS530	Uncoated KS05F	TH10	Applicable toolholders (pages)
Finishing to medium cutting	**CM** (M) 		RCMT0502M0-CM					●						TAC External Toolholders (4-61, 4-62)
			RCMT0602M0-CM					●						
			*RCMT0803M0-CM					●						
	RS (M) 		RCMT10T3M0-RS	●	●				●					
			RCMT1204M0-RS	●	●				●					
			*RCMT1606M0-RS	●	●									
			RCMT2006M0-RS		●									
			RCMT2507M0-RS		●									
	AL (G) 		RCGT0602M0-AL									●		TAC External Toolholders (4-61, 4-62)
			RCGT0803M0-AL									●		
			*RCGT1003M0-AL									●		

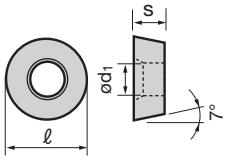
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Round, with hole

Positive 7°

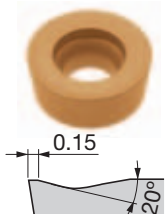
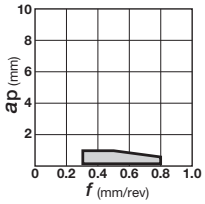
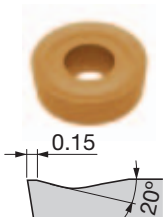
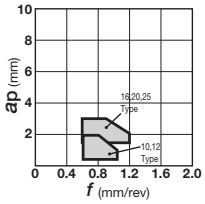
RC□□



RCMT 06 02 M0 - □□

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε) Chipbreaker symbol

Hole dia. (ød1) : See as below.

Application	Chipbreaker Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9105	T9115	T9125	T9135	T5115	AH905	Cermet NS730	NS530	Uncoated KS05F	TH10	Applicable toolholders (pages)
Heavy cutting	**61** (M) 		RCMT0502M0-61	●	●					●			●	TAC External Toolholders (4-61, 4-62)
			*RCMT0602M0-61	●	●					●			●	
			RCMT0803M0-61	●	●					●			●	
	61 (M) 		RCMM1003M0-61	●	●				●	●			●	
			RCMM1204M0-61	●	●				●	●			●	
			*RCMM1606M0-61	●	●								●	
			RCMM2006M0-61	●	●								●	
			RCMM2507M0-61	●	●									

Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

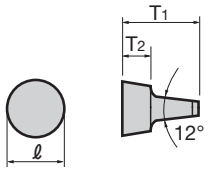
ød1 (mm) Cat. No.	0502M0	0602M0	0803M0	1003M0	10T3M0	1204M0	1606M0	2006M0	2507M0
RC□T	2.5	2.8	3.4	4.4	4.4	4.4	5.5	6.5	7.6
RCMM	-	-	-	3.6	-	4.2	5.2	6.5	7.2

TAC Inserts, positive

Special Round Inserts

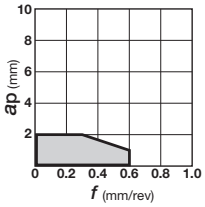
Positive

RT□□



RT 05

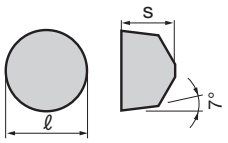
Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Uncoated TH10	Stocked grades: Uncoated KS20	Dimensions (mm) ℓ	Dimensions (mm) T1	Dimensions (mm) T2	Applicable toolholders (pages)
Medium cutting	- 		RT05	●		5	6.5	2.5	TAC External Toolholders (4-65)
			RT06	●	●	6	7.7	3.0	
			RT08	●		8	10.3	4.2	

Round, without hole

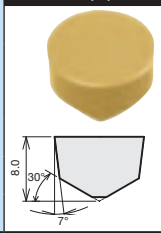
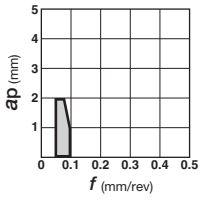
Positive 7°

RC□□



RCGX 09 08 00

Cutting edge length (ℓ) Thickness (s) Corner radius (r_ε)

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated T9115	T9125	T9005	T9015	T9025	T9035	T5115	Ceramics LX11	Applicable toolholders (pages)
Finishing	- (G) 		RCGX090800								●	
			RCGX120800								●	

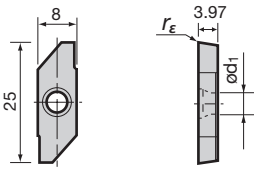
Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items
▲ : Discontinued items

Front turning Inserts

Positive

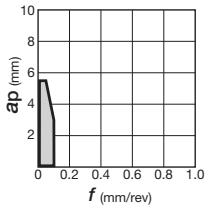
JXF□



JXFR 8000 F

Hand — Corner radius (r_ε) — Sharp edge

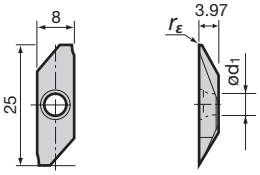
rε / ød1	JXFR	8000	8010
	rε	0.03	0.1
	ød1	4.4	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated J740	Cermet NS530	Uncoated TH10	Applicable toolholders (pages)
Front turning	– 		JXFR8000F	●	●	●	TAC External Toolholders (4-81) J-series (8-21)
			JXFR8010F	●	●	●	

Reverse turning Inserts

Positive

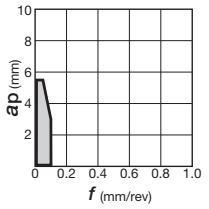
JXR□



JXRR 8000 F

Hand — Corner radius (r_ε) — Sharp edge

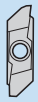
rε / ød1	JXFR	8000	8010
	rε	0.03	0.1
	ød1	4.4	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated J740	Cermet NS530	Uncoated TH10	Applicable toolholders (pages)
Reverse turning	– 		JXRR8000F	●	●	●	TAC External Toolholders (4-81) J-series (8-21)
			JXRR8010F	●	●	●	

● : Stocked items
▲ : Discontinued items

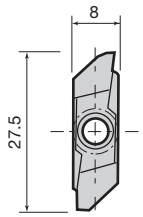
TAC Inserts, positive

Back turning Inserts



Positive

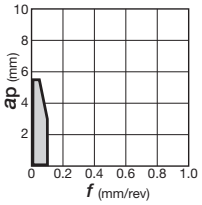
JXB□



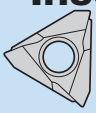
JXBR 8000 F

Hand — Corner radius (r_ε) — F : Sharp edge, □ : Honed edge

rε / ød1	JXB□	8000	8005	8010	8015
	rε	0.03	0.05	0.10	0.15
	ød1	4.4	4.4	4.4	4.4

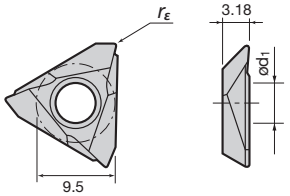
Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated J740	Cermet NS530	Uncoated TH10	Applicable toolholders (pages)
Back turning	–		JXBR8000F	●	●	●	TAC External Toolholders (4-82) J-series (8-22)
			JXBL8000F	●		●	
			JXBR8005F	●		●	
			JXBL8005F	●		●	
			JXBR8005	●			
			JXBL8005	●			
			JXBR8010F	●	●	●	
			JXBL8010F	●		●	
			JXBR8010	●			
			JXBL8010	●			
			JXBR8015F	●		●	
			JXBL8015F	●		●	
			JXBR8015	●			
			JXBL8015	●			

Backturning Inserts



Positive

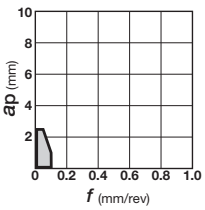
JTB□



JTBR 3000 F

Hand — Corner radius (r_ε) — F : Sharp edge, □ : Honed edge

rε / ød1	JXB□	3000	3005	3010	3015
	rε	0.03	0.05	0.10	0.15
	ød1	4.4	4.4	4.4	4.4

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated J740	Coated cermet J530	Cermet NS530	Uncoated TH10	Applicable toolholders (pages)
Back turning	–		JTBR3000F	●		●	●	TAC External Toolholders (4-83) J-series (8-23)
			JTBL3000F	●		●	●	
			JTBR3005F	●		●	●	
			JTBL3005F	●		●	●	
			JTBR3005	●	●			
			JTBL3005	●	▲			
			JTBR3010F	●		●	●	
			JTBL3010F	●		●	●	
			JTBR3010	●	●			
			JTBL3010	●	●			
			JTBR3015F	●				

● : Stocked items
▲ : Discontinued items

Back turning Inserts

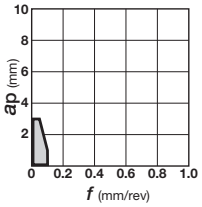
Positive

J10E□

J10ER 005B F

Hand — Corner radius (rε) — F : Sharp edge / □ : Honed edge

rε / ød1	J10E□	005	010
	rε	0.05	0.10
	ød1	3.0	3.0

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Coated J740	Coated cermet J530	Cermet NS530	Uncoated TH10	Applicable toolholders (pages)
Back turning	– 		J10ER005BF	●		●	●	TAC External Toolholders (4-84) J-series (8-24)
			J10EL005BF	●		●	●	
			J10ER005B	●	●			
			J10EL005B	●	▲			
			J10ER010BF	●		●	●	
			J10EL010BF	●		●	●	
			J10ER010B	●	●			
			J10EL010B	●	▲			

Back turning Inserts

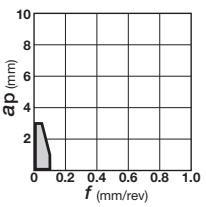
Positive

10E□

10ER 100B

Hand

rε / ød1	10E□	100	150	300
	rε	0.03	0.03	-
	ød1	3.0	3.0	-

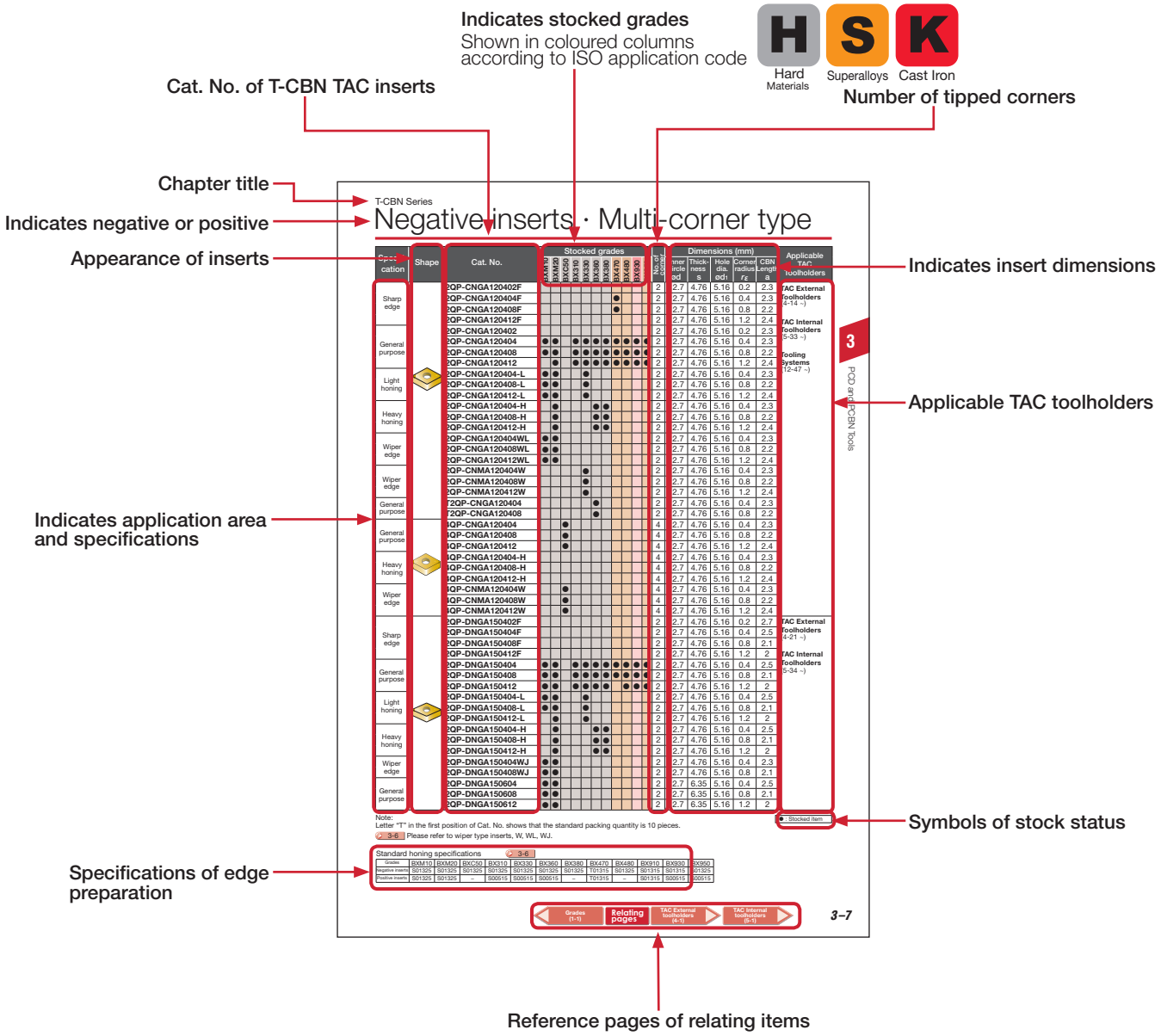
Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No.	Stocked grades: Cermet NS530	Uncoated TH10	Applicable toolholders (pages)
Back turning	– 		10ER100B		●	TAC External Toolholders (4-84) J-series (8-24)
			10ER100BC	●		
			10EL100B		●	
			10ER150B		●	
			10ER150BC	●		
			10EL150B		●	
			10ER300	●	●	
			10EL300		●	

*10ER / L300 : Insert blank

● : Stocked items
▲ : Discontinued items

Chapter Composition of T-CBN (PCBN) and T-DIA (PCD) Tools

- ◆ T-CBN and T-DIA TAC inserts are arranged by shape as follows: C(80°) → D(55°) → S(90°) → T(60°) → V(35°) → W(80°)
- ◆ In the same shape, inserts are arranged as follows: Negative inserts (Multi-corner → Single-corner) Positive inserts (Multi-corner → Single-corner)



■ Ordering information

- ● When ordering, please specify Cat. No., grade, and quantity.
  Example: **2QP-DNGA150408 BXM20** 1 piece.
  - •Standard packing quantity is 1 piece.
  - •Letter “T” in the 1st position of Cat. No. shows 10 pieces packing.
  - •Other packing quantity is written separately.

Guidance

■ Designation system for TAC T-CBN inserts ····· 3-2
■ Designation system for TAC T-DIA inserts ····· 3-3
■ Selection system for TAC T-CBN inserts by work material ····· 3-4
■ Honing specifications for TAC T-CBN inserts ····· 3-6
■ Specifications of TAC T-CBN inserts with wiper edge ····· 3-6
■ Outline of T-DIA series ····· 3-20

3 T-CBN (PCBN) and T-DIA (PCD) tools

Products

■ T-CBN tools

● TAC inserts Negative type multi-corner type inserts ····· 3-7
● TAC inserts Negative type one corner type ····· 3-11
● TAC inserts Positive type multi-corner type inserts ····· 3-12
● TAC inserts Positive type one corner type ····· 3-15
● TAC inserts Solid T-CBN inserts ····· 3-17
● TAC inserts T-CBN grooving inserts ····· 3-17

■ T-DIA tools

● TAC inserts Negative type with rake angle ····· 3-21
● TAC inserts Negative type ····· 3-21
● TAC inserts Positive type with rake angle ····· 3-22
● TAC inserts Positive type ····· 3-22

Designation System for TAC T-CBN (PCBN) Inserts

Multi-Corner type

2 QP - CNGA120404 -L

① ② ③ ④

① No. of corners

2	One side Multi-Corner type
3	
4	Both side Multi-Corner type
6	

② Type

QP	T-CBN Inserts

③ ISO symbol

④ Special feature & chipbreaker

Without	Standard honing
-L	Light honing angle Wear resistance priority
-H	Heavy honing angle Impact resistance priority
W	Wiper type insert
W□	Round wiper type insert
F	Sharp edges
-HF	With chipbreaker
-HM	With chipbreaker

Multi-Corner type (10 inserts packing)

T 2 QP - CNGA120408

①

① "T" shows 10 inserts packing.

For general turning

TNGA160402 - QBN

① ②

① ISO symbol

② TAC T-CBN inserts

T-CBN (PCBN tipped) grooving Inserts

XG R 63 10 S - QBN

① ② ③ ④ ⑤

① For grooving tool GX-type

② Hand of Insert

L	Left
R	Right

③ Groove width

10 → 1.0 mm
15 → 1.5 mm etc.

④ S : Corner radius (r_ε) is 0.2 mm.

⑤ TAC T-CBN inserts

Designation System for TAC T-DIA Inserts

Inserts for turning

TPGW110204 - **DIA**

① ISO symbol

② TAC T-DIA inserts

Inserts for milling

SECN42ZFR - **DIA**

① ISO symbol

② TAC T-DIA inserts

Y **DEN1505PDFR** - **D**

① ISO symbol

② ISO symbol

③ Special feature

① Type	
Symbol	Type
Y	Special

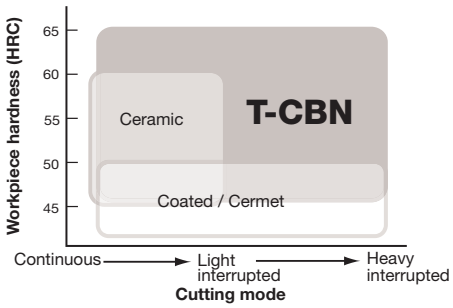
*Tungaloy symbol

③ Special feature	
D	PCD-tipped insert
WD	Wiper inserts
BD	Deburring wiper inserts

T-CBN (PCBN) Series

H T-CBN series for machining hardened steels and hard materials

■ Application area



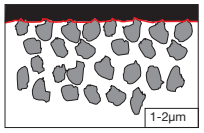
Necessity of PCBN grades

The condition necessary to cut the work: material is: Hardness of tool ≥ Hardness of tool X 3

- Hardened steel (60HRC) → 700 Hv ● Cemented carbide → 1600 Hv
- PCBN (BX360) → 3300 Hv

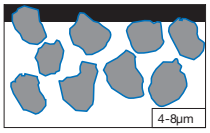
● Effects of grain size of CBN on surface roughness and cutting speed

[Fine-grained CBN]



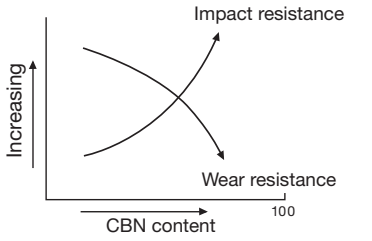
Fine grained PCBN provided with sharp cutting edge.
Good surface roughness

[Rough-grained CBN]



Rough grained PCBN. CBN particles are hold firmly.
Allows high speed machining

● Features of CBN grades for machining hardened steel and other hard materials



Fewer CBN content ⇨ Increasing wear resistance
Much CBN content ⇨ Increasing impact resistance

Basic selection of T-CBN grades in machining of hardened steel and hard material

● Coated T-CBN grades

BXM10 For high speeds cutting

BXM20 For general purpose
First recommendation

● Uncoated T-CBN grades

BX310 For high speeds / Priority on wear resistance in continuous cutting

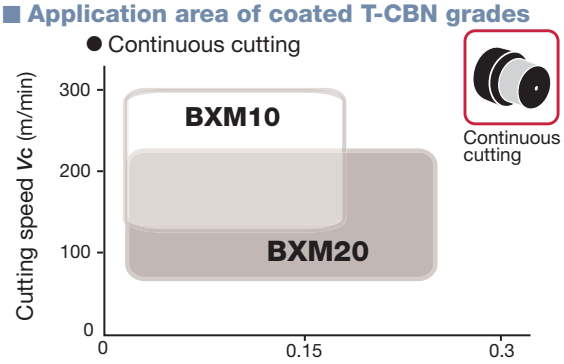
BX330 For medium speeds / Priority on surface quality

BX360 For low to medium speeds / General purpose grade, excels in impact resistance

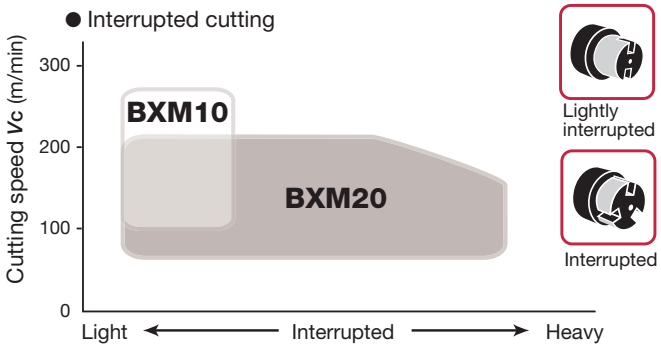
BX380 For low to medium speeds / Priority on impact resistance in heavily interrupted cutting

■ Application area of coated T-CBN grades

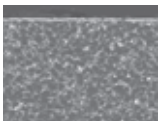
● Continuous cutting



● Interrupted cutting



Effects of Coated T-CBN grades



Coated on hard CBN
Hardness:
CBN > Coating layer

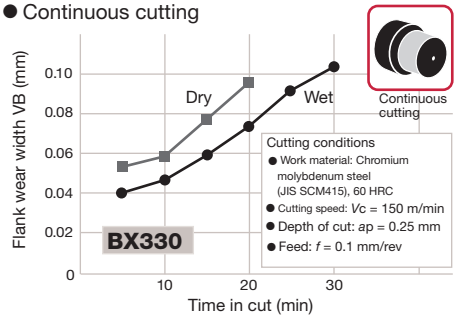
● Protect CBN from oxidation wear
Since the coating layer intercepts air, oxidation wear of CBN can be prevented.

● Peeling of coating layer can be protected
Hard and deformation resistant CBN is excellent substrate material.

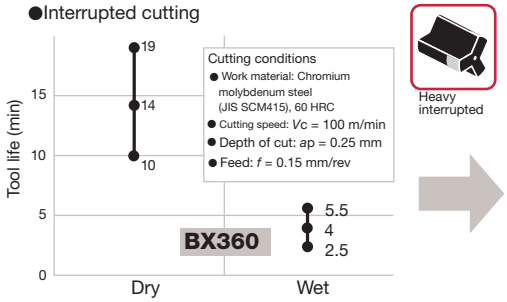
→ **Improved resistance to flank wear**

Effects of coolant in machining of hardened steel

● Continuous cutting



●Interrupted cutting

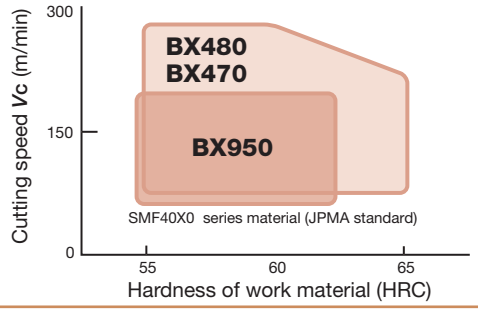


● In continuous cutting, wet cutting is superior to dry cutting in tool life for wear.
● In interrupted cutting, dry cutting is superior to wet cutting in tool life for fracture.

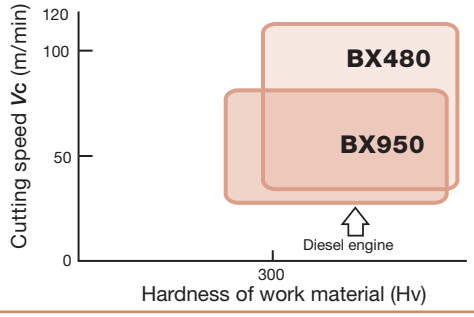
S T-CBN series for machining sintered metals

Application area

● Ferrous sintered metal



● Valve seat



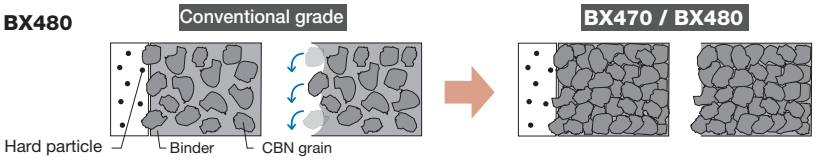
BX470
Priority on burr prevention and surface finish

BX480
Priority on wear resistance and versatility

BX950
For general sintered metal parts

Features of BX470 and BX480

●Machining of sintered metal including hard particles



Binder phase are selectively worn away by hard particles.
⇨ Wear proceeds with falling-out of CBN grains,

By increasing CBN content, wear of binder layer is suppressed.
⇨Improved wear resistance

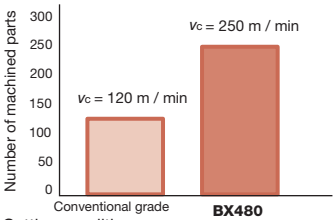
●Features of **BX470** and **BX480**

CBN content: 95 vol%
Hv = 4100 ~ 4300

The world highest CBN content as a commercially available material.

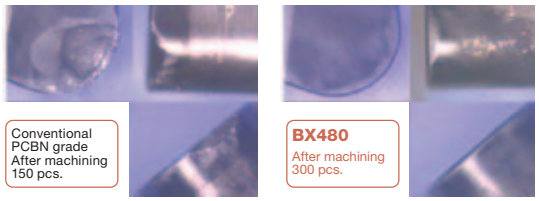
*as of July 2010

■ BX480 (Facing of gears)



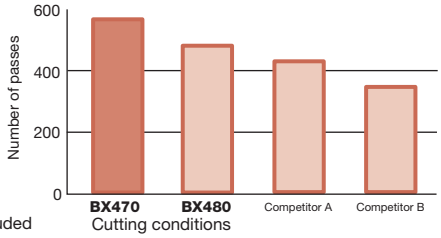
Cutting conditions
● Work material: Sintered metal (> HRA60)
● Insert: DCMW11T308
● Depth of cut: ap = 0.2 ~ 0.5 mm
● Feed : f = 0.07 mm/rev
● Coolant : Water soluble type ● Interrupted cutting

■ BX470/BX480 Tool failure after machining sintered metal



Cutting conditions
● Work material: Sintered metal (> HRA60), Nitriding, Hard particles included
● Cutting speed: Vc = 110 m/min ● Depth of cut: ap = 0.15 mm
● Feed: f = 0.1 mm/rev ● Coolant : Water soluble type
● Interrupted cutting

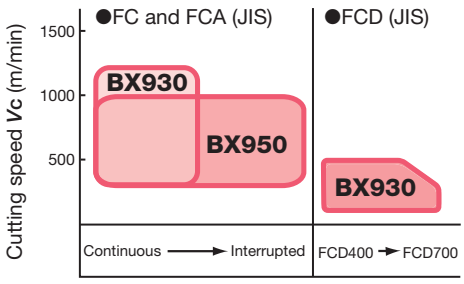
■ BX470 (Tool life criterion: Burr occurrence)



Cutting conditions
● Work material: Ferrous sintered metal
● Cutting speed: Vc = 100 m/min
● Depth of cut: ap = 0.15 ~ 0.3 mm
● Feed: f = 0.07 ~ 0.25 mm/rev
● Dry and interrupted cutting

K T-CBN series for machining grey and ductile cast irons

Application area

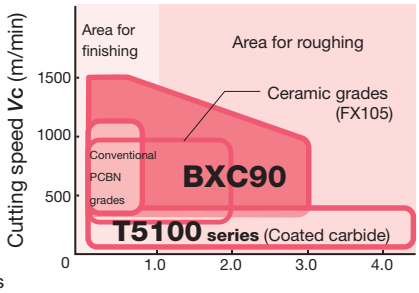


BX930
· General purpose, first choice grade.
· Dedicated grade for machining ductile cast iron

BX950
· Suitable for interrupted machining
· Excels in impact resistance

BX910
· For machining cylinder liners

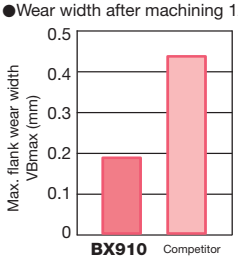
● Solid coated T-CBN grades

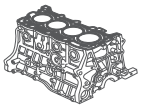


BXC90
· One-piece solid structure
· Applicable for small to large depths of cut

■ Machining of cylinder liners (Machining example of **BX910**)

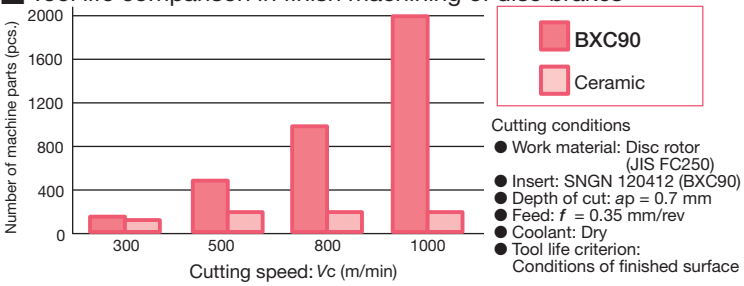
●Wear width after machining 120 pcs. ●Tool failure after machining 120 pcs.





Cutting conditions
● Work material:
Cylinder liner (Spin casting)
Machining type: Finish boring
● Cutting speed: Vc = 1,000 m/min
● Machine: Special purpose machine
● Coolant: Wet

■ Tool life comparison in finish machining of disc brakes



Cutting conditions
● Work material: Disc rotor (JIS FC250)
● Insert: SNGN 120412 (BXC90)
● Depth of cut: ap = 0.7 mm
● Feed: f = 0.35 mm/rev
● Coolant: Dry
● Tool life criterion:
Conditions of finished surface

Honing specifications

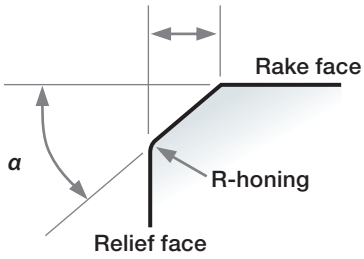
●T-CBN inserts with special honing specifications are made to order. Refer to the following description.

Designation system for honing

Example:
Honing width 0.15 mm
Honing angle - 30°
With R-honing

S	0	1	5	3	0
Shape	Honing width (W)			Honing angle (α)	

Honing width W



T ··· Chamfered honing
S ··· Chamfered + R-honing
E ··· R-honing alone
F ··· Sharp edges

● Symbol

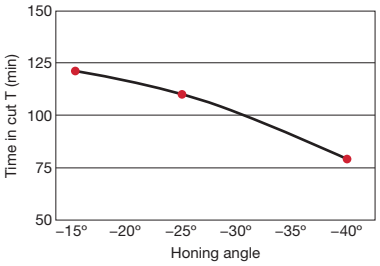
W	Amount of honing
005	0.05 mm
010	0.10 mm
013	0.13 mm
015	0.15 mm
020	0.20 mm

α	Honing angle
10°	- 10°
15°	- 15°
20°	- 20°
25°	- 25°
30°	- 30°
35°	- 35°
40°	- 40°

● Honing specification can be selected in combination of items described here.
● Inserts with "R" honing alone are available.
Note: There are unavailable combinations.
For details, ask your nearest Tungaloy sales office.

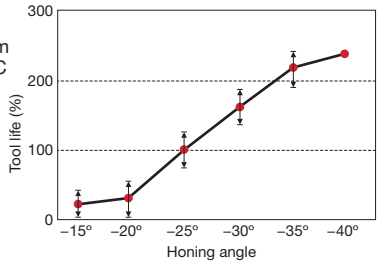
Honing specifications for machining hardened steels and other hard materials
Standard honing: 0.13 × 25° + R-honing
"-L" honing : 0.13 × 15° + R-honing
"-H" honing : 0.13 × 35° + R-honing

● Relationship between honing angle and tool life in continuous turning



Cutting conditions
Work material: Chromium molybdenum steel (JIS SCM415), 60 HRC
Insert: TNGN160404 (BX360)
Cutting speed: *Vc* = 100 m/min
Feed: *f* = 0.15 mm/rev
Depth of cut: *ap* = 0.25 mm
Coolant: Dry
Tool life criterion: VBmax = 0.15 mm
Honing: 0.13 × □□°+ R-honing

● Relationship between honing angle and tool life in interrupted turning



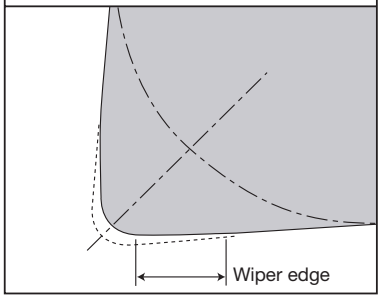
Cutting conditions
Work material: Chromium molybdenum steel (JIS SCM415), 60 HRC
Insert: TNGN160404 (BX360)
Cutting speed: *Vc* =100 m/min
Feed: *f* = 0.15 mm/rev
Depth of cut: *ap* = 0.25 mm
Coolant: Dry
Tool life criterion: Fracture
Honing: 0.13 × □□° + R-honing

●General rule
- For continuous cutting, small honing angle is favorable to minimize wear in general.
- For interrupted cutting, large honing angle is favorable to minimize fracture in general.

Wiper insert

●A finishing edge (wiper edge) is formed at the point of intersection between corner radius and straight cutting edge.

Wiper edge geometry



■ Effect of wiper edge

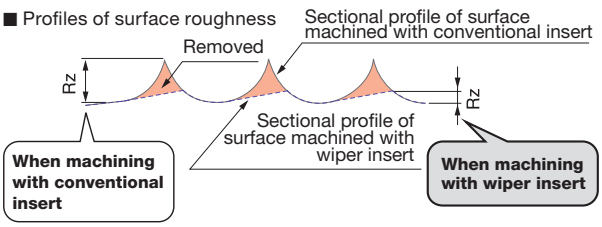
●Doubles the productivity → Reduced machining time

The wiper edge can double the feed rate and moreover does not deteriorate the surface roughness. (Note: Feed rate: *f* < 0.3 mm/rev)

●Superior surface roughness → By integrating roughing and finishing into one process, productivity can be increased.

Compared with conventional inserts only with corner radius, surface roughness can be improved with the wiper edge.

■ Profiles of surface roughness



■ Recommended toolholders for wiper-edged inserts

	2QP-CNGA1204**WL	3QP-WNGA080408WL	2QP-DNGA1504**WJ	3QP-TNGA1604**WG
End cutting angle	95°		93°	91°
External toolholder	ACLNR/L*****12-A	AWLNR/L*****08-A	ADJNR/L*****15-A	ATGNR/L*****16-A ATFNR/L*****16-A
	DCLNR/L*****12	DWLNR/L*****08	DDJNR/L*****15	DTGNR/L*****16 DTFNR/L*****16
Internal toolholder	A***-ACLNR/L12-D***	A***-AWLNR/L08-D***	A***-ADUNR/L15-D***	A***-ATFNR/L16-D***

Negative inserts · Multi-corner type

Specification	Shape	Cat. No.	Stocked grades										No. of corner	Dimensions (mm)					Applicable TAC Toolholders
			BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX930	BX950		Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN Length a	
Sharp edge		2QP-CNGA120402F												2	12.7	4.76	5.16	0.2	2.3	TAC External Toolholders (4-14 ~)
		2QP-CNGA120404F								●				2	12.7	4.76	5.16	0.4	2.3	
		2QP-CNGA120408F								●				2	12.7	4.76	5.16	0.8	2.2	
		2QP-CNGA120412F												2	12.7	4.76	5.16	1.2	2.4	TAC Internal Toolholders (5-33 ~)
General purpose		2QP-CNGA120402												2	12.7	4.76	5.16	0.2	2.3	
		2QP-CNGA120404	●	●		●	●	●	●	●	●	●	●	2	12.7	4.76	5.16	0.4	2.3	
		2QP-CNGA120408	●	●		●	●	●	●	●	●	●	●	2	12.7	4.76	5.16	0.8	2.2	
		2QP-CNGA120412		●		●	●	●	●	●	●	●	●	2	12.7	4.76	5.16	1.2	2.4	
Light honing		2QP-CNGA120404-L	●	●			●							2	12.7	4.76	5.16	0.4	2.3	
		2QP-CNGA120408-L	●	●			●							2	12.7	4.76	5.16	0.8	2.2	
		2QP-CNGA120412-L	●	●			●							2	12.7	4.76	5.16	1.2	2.4	
Heavy honing		2QP-CNGA120404-H		●				●	●					2	12.7	4.76	5.16	0.4	2.3	
		2QP-CNGA120408-H		●				●	●					2	12.7	4.76	5.16	0.8	2.2	
		2QP-CNGA120412-H		●				●	●					2	12.7	4.76	5.16	1.2	2.4	
Wiper edge		2QP-CNGA120404WL	●	●										2	12.7	4.76	5.16	0.4	2.3	
		2QP-CNGA120408WL	●	●										2	12.7	4.76	5.16	0.8	2.2	
		2QP-CNGA120412WL	●	●										2	12.7	4.76	5.16	1.2	2.4	
Wiper edge		2QP-CNMA120404W					●							2	12.7	4.76	5.16	0.4	2.3	
		2QP-CNMA120408W					●							2	12.7	4.76	5.16	0.8	2.2	
		2QP-CNMA120412W					●							2	12.7	4.76	5.16	1.2	2.4	
General purpose		T2QP-CNGA120404						●						2	12.7	4.76	5.16	0.4	2.3	
		T2QP-CNGA120408						●						2	12.7	4.76	5.16	0.8	2.2	
General purpose		4QP-CNGA120404			●									4	12.7	4.76	5.16	0.4	2.3	
		4QP-CNGA120408			●									4	12.7	4.76	5.16	0.8	2.2	
		4QP-CNGA120412			●									4	12.7	4.76	5.16	1.2	2.4	
Heavy honing		4QP-CNGA120404-H												4	12.7	4.76	5.16	0.4	2.3	
		4QP-CNGA120408-H												4	12.7	4.76	5.16	0.8	2.2	
		4QP-CNGA120412-H												4	12.7	4.76	5.16	1.2	2.4	
Wiper edge		4QP-CNMA120404W			●									4	12.7	4.76	5.16	0.4	2.3	
		4QP-CNMA120408W			●									4	12.7	4.76	5.16	0.8	2.2	
		4QP-CNMA120412W			●									4	12.7	4.76	5.16	1.2	2.4	
Sharp edge		2QP-DNGA150402F												2	12.7	4.76	5.16	0.2	2.7	TAC External Toolholders (4-21 ~)
		2QP-DNGA150404F												2	12.7	4.76	5.16	0.4	2.5	
		2QP-DNGA150408F												2	12.7	4.76	5.16	0.8	2.1	
		2QP-DNGA150412F												2	12.7	4.76	5.16	1.2	2	TAC Internal Toolholders (5-34 ~)
General purpose		2QP-DNGA150404	●	●		●	●	●	●	●	●	●	●	2	12.7	4.76	5.16	0.4	2.5	
		2QP-DNGA150408	●	●		●	●	●	●	●	●	●	●	2	12.7	4.76	5.16	0.8	2.1	
		2QP-DNGA150412	●	●		●	●	●	●		●	●	●	2	12.7	4.76	5.16	1.2	2	
Light honing		2QP-DNGA150404-L	●	●			●							2	12.7	4.76	5.16	0.4	2.5	
		2QP-DNGA150408-L	●	●			●							2	12.7	4.76	5.16	0.8	2.1	
		2QP-DNGA150412-L		●			●							2	12.7	4.76	5.16	1.2	2	
Heavy honing		2QP-DNGA150404-H		●				●	●					2	12.7	4.76	5.16	0.4	2.5	
		2QP-DNGA150408-H		●				●	●					2	12.7	4.76	5.16	0.8	2.1	
		2QP-DNGA150412-H		●				●	●					2	12.7	4.76	5.16	1.2	2	
Wiper edge		2QP-DNGA150404WJ	●	●										2	12.7	4.76	5.16	0.4	2.3	
		2QP-DNGA150408WJ	●	●										2	12.7	4.76	5.16	0.8	2.1	
General purpose		2QP-DNGA150604	●	●										2	12.7	6.35	5.16	0.4	2.5	
		2QP-DNGA150608	●	●										2	12.7	6.35	5.16	0.8	2.1	
		2QP-DNGA150612	●	●										2	12.7	6.35	5.16	1.2	2	

Note:
Letter "T" in the first position of Cat. No. shows that the standard packing quantity is 10 pieces.

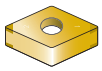
● : Stocked item

3-6 Please refer to wiper type inserts, W, WL, WJ.

Standard honing specifications 3-6

Grades	BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative inserts	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive inserts	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

Negative inserts · Multi-corner type

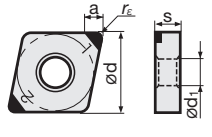
Specification	Shape	Cat. No.	Stocked grades											No. of corner	Dimensions (mm)					Applicable TAC toolholders
			BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950		Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN Length a	
General purpose		4QP-DNGA150404			●										4	12.7	4.76	5.16	0.4	2.5	TAC External Toolholders (4-21 ~) TAC Internal Toolholders (5-34 ~)
		4QP-DNGA150408			●										4	12.7	4.76	5.16	0.8	2.1	
		4QP-DNGA150412			●										4	12.7	4.76	5.16	1.2	2	
Heavy honing		4QP-DNGA150404-H													4	12.7	4.76	5.16	0.4	2.5	
		4QP-DNGA150408-H													4	12.7	4.76	5.16	0.8	2.1	
		4QP-DNGA150412-H													4	12.7	4.76	5.16	1.2	2	
General purpose		2QP-SNGA120404		●		●	●	●	●		●		●	●	2	12.7	4.76	5.16	0.4	2.4	TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-35 ~)
		2QP-SNGA120408		●		●	●	●	●		●		●	●	2	12.7	4.76	5.16	0.8	2.4	
		2QP-SNGA120412		●		●	●	●	●		●		●	●	2	12.7	4.76	5.16	1.2	2.4	
Light honing		2QP-SNGA120404-L					●								2	12.7	4.76	5.16	0.4	2.4	
		2QP-SNGA120408-L		●			●								2	12.7	4.76	5.16	0.8	2.4	
		2QP-SNGA120412-L		●			●								2	12.7	4.76	5.16	1.2	2.4	
Heavy honing		2QP-SNGA120404-H						●	●						2	12.7	4.76	5.16	0.4	2.4	
		2QP-SNGA120408-H		●				●	●						2	12.7	4.76	5.16	0.8	2.4	
		2QP-SNGA120412-H		●				●	●						2	12.7	4.76	5.16	1.2	2.4	
General purpose		4QP-SNGA120404			●										4	12.7	4.76	5.16	0.4	2.4	
		4QP-SNGA120408			●										4	12.7	4.76	5.16	0.8	2.4	
		4QP-SNGA120412			●										4	12.7	4.76	5.16	1.2	2.4	
Heavy honing		4QP-SNGA120408-H													4	12.7	4.76	5.16	0.8	2.4	
		4QP-SNGA120412-H													4	12.7	4.76	5.16	1.2	2.4	
General purpose		2QP-SNGN090308										●			2	9.525	3.18	-	0.8	2.4	
		2QP-SNGN090312										●			2	9.525	3.18	-	1.2	2.4	
Sharp edge		3QP-TNGA160402F													3	9.525	4.76	3.81	0.2	2.3	TAC External Toolholders (4-24 ~) TAC Internal Toolholders (5-36 ~)
		3QP-TNGA160404F								●					3	9.525	4.76	3.81	0.4	2.2	
		3QP-TNGA160408F								●					3	9.525	4.76	3.81	0.8	1.9	
		3QP-TNGA160412F													3	9.525	4.76	3.81	1.2	2.4	
General purpose		3QP-TNGA160404	●	●		●	●	●	●	●	●		●	●	3	9.525	4.76	3.81	0.4	2.2	
		3QP-TNGA160408	●	●		●	●	●	●	●	●		●	●	3	9.525	4.76	3.81	0.8	1.9	
		3QP-TNGA160412	●	●		●	●	●	●	●	●		●	●	3	9.525	4.76	3.81	1.2	2.4	
Light honing		3QP-TNGA160404-L	●	●			●								3	9.525	4.76	3.81	0.4	2.2	
		3QP-TNGA160408-L	●	●			●								3	9.525	4.76	3.81	0.8	1.9	
		3QP-TNGA160412-L	●	●			●								3	9.525	4.76	3.81	1.2	2.4	
Heavy honing		3QP-TNGA160404-H		●				●	●						3	9.525	4.76	3.81	0.4	2.2	
		3QP-TNGA160408-H		●				●	●						3	9.525	4.76	3.81	0.8	1.9	
		3QP-TNGA160412-H		●				●	●						3	9.525	4.76	3.81	1.2	2.4	
Wiper edge		3QP-TNGA160404WG		●											3	9.525	4.76	3.81	0.4	2.4	
		3QP-TNGA160408WG	●	●											3	9.525	4.76	3.81	0.8	2.2	
General purpose		T3QP-TNGA160404						●							3	9.525	4.76	3.81	0.4	2.2	
		T3QP-TNGA160408						●							3	9.525	4.76	3.81	0.8	1.9	
General purpose		6QP-TNGA160404			●										6	9.525	4.76	3.81	0.4	2.2	
		6QP-TNGA160408			●										6	9.525	4.76	3.81	0.8	1.9	
		6QP-TNGA160412			●										6	9.525	4.76	3.81	1.2	2.4	
Heavy honing		6QP-TNGA160404-H													6	9.525	4.76	3.81	0.4	2.2	
		6QP-TNGA160408-H													6	9.525	4.76	3.81	0.8	1.9	
		6QP-TNGA160412-H													6	9.525	4.76	3.81	1.2	2.4	

Note:
Letter "T" in the first position of Cat. No. shows that the standard packing quantity is 10 pieces.

● : Stocked item

3-6 Please refer to wiper type inserts, WG.

Negative insert



Standard honing specifications 3-6

Grades	BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative inserts	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive inserts	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

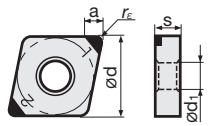
Negative inserts · Multi-corner type

Specification	Shape	Cat. No.	Stocked grades BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX930	BX950	No. of corner	Dimensions (mm) Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN Length a	Applicable TAC toolholders
General purpose		2QP-VNGA160402												2	9.525	4.76	3.81	0.2	3.5	TAC External Toolholders (4-30 ~)
		2QP-VNGA160404	●	●		●	●	●	●	●	●	●	●	2	9.525	4.76	3.81	0.4	3.1	
Light honing		2QP-VNGA160408	●	●		●	●	●	●	●	●	●	●	2	9.525	4.76	3.81	0.8	2.2	
		2QP-VNGA160412		●										2	9.525	4.76	3.81	1.2	3	TAC Internal Toolholders (5-37 ~)
		2QP-VNGA160404-L	●	●			●							2	9.525	4.76	3.81	0.4	3.1	
		2QP-VNGA160408-L	●	●			●							2	9.525	4.76	3.81	0.8	2.2	
Heavy honing		2QP-VNGA160404-H		●				●	●					2	9.525	4.76	3.81	0.4	3.1	
		2QP-VNGA160408-H		●				●	●					2	9.525	4.76	3.81	0.8	2.2	
General purpose		4QP-VNGA160404			●									4	9.525	4.76	3.81	0.4	3.1	
		4QP-VNGA160408			●									4	9.525	4.76	3.81	0.8	2.2	
		4QP-VNGA160412												4	9.525	4.76	3.81	1.2	3	
Reinforced cutting edge		4QP-VNGA160404-H												4	9.525	4.76	3.81	0.4	3.1	
		4QP-VNGA160408-H												4	9.525	4.76	3.81	0.8	2.2	
Wiper edge		3QP-WNGA080408	●	●		●	●	●	●		●	●	●	3	12.7	4.76	5.16	0.8	2.2	TAC External Toolholders (4-17 ~)
General purpose		3QP-WNGA080408WL	●	●										3	12.7	4.76	5.16	0.8	2.2	
																				TAC Internal Toolholders (5-38 ~)
General purpose		6QP-WNGA080408			●									6	12.7	4.76	5.16	0.8	2.2	

● : Stocked item

3-6 Please refer to wiper type inserts, WL.

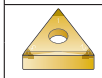
Negative insert



Standard honing specifications 3-6

Grades	BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative inserts	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive inserts	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

Negative inserts · Multi-corner type Hard Breaker (T-CBN inserts with chipbreaker)

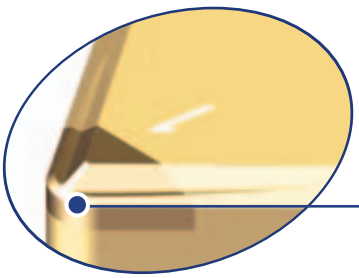
Specification	Shape	Cat. No.	Stocked grades BXM20		No. of corner	Dimensions (mm) Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN Length a	Applicable TAC toolholders
With chipbreaker		2QP-CNGM120408-HF	●		2	12.7	4.76	5.16	0.8	2.2	**TAC External Toolholders** (4-14 ~) **TAC Internal Toolholders** (5-33 ~)
		2QP-CNGM120412-HF	●		2	12.7	4.76	5.16	1.2	2.4	
		2QP-DNGM150408-HF	●		2	12.7	4.76	5.16	0.8	2.1	
		2QP-DNGM150412-HF	●		2	12.7	4.76	5.16	1.2	2	
		3QP-TNGM160408-HF	●		3	9.525	4.76	3.81	0.8	1.9	
		3QP-TNGM160412-HF	●		3	9.525	4.76	3.81	1.2	2.4	
		2QP-VNGM160408-HF	●		2	9.525	4.76	3.81	0.8	2.2	
With chipbreaker		2QP-CNGM120408-HM	●		2	12.7	4.76	5.16	0.8	2.2	
		2QP-CNGM120412-HM	●		2	12.7	4.76	5.16	1.2	2.4	
		2QP-DNGM150408-HM	●		2	12.7	4.76	5.16	0.8	2.1	
		2QP-DNGM150412-HM	●		2	12.7	4.76	5.16	1.2	2	
		3QP-TNGM160408-HM	●		3	9.525	4.76	3.81	0.8	1.9	
		3QP-TNGM160412-HM	●		3	9.525	4.76	3.81	1.2	2.2	
		2QP-VNGM160408-HM	●		2	9.525	4.76	3.81	0.8	2.4	

● : Stocked item

"Hard Breakers" for removing the carburized layer

Two types of chipbreaker provide excellent chip control in a wide application range !

HF type For finishing

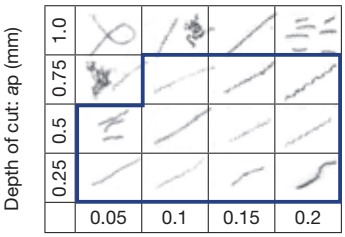


Single sided CBN insert provides higher stability in heavy machining.

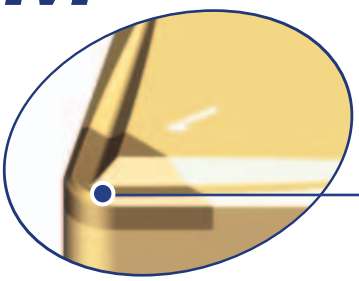
Excellent chip control in small DoC due to the high functional nose. Delivers exceptional surface finishes.

■ Example of chips

● HF Chipbreaker



HM type For medium cutting

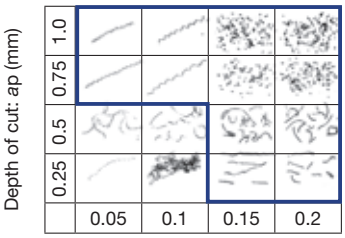


Single sided CBN insert provides higher stability in heavy machining.

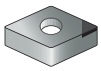
Providing ideal chip control in large DoC by the well designed chipbreaker. Suitable for medium cutting or roughing.

■ Example of chips

● HM Chipbreaker



Negative inserts · One-corner type

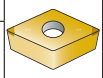
Application & features	Shape	Cat. No.	Stocked grades T-CBN BX360			No. of corner	Dimensions (mm) Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN length a	Applicable TAC toolholders
Finishing to medium cutting		CNGA120402-QBN	●			1	12.7	4.76	5.16	0.2	4.1	TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-53 ~)
		CNGA120404-QBN	●			1	12.7	4.76	5.16	0.4	4.0	
		CNGA120408-QBN	●			1	12.7	4.76	5.16	0.8	3.9	
		CNGA120412-QBN	●			1	12.7	4.76	5.16	1.2	3.9	
		CNGN090404-QBN				1	9.525	4.76	–	0.4	3.8	
		CNGN090408-QBN				1	9.525	4.76	–	0.8	3.8	
		DNGA150402-QBN	●			1	12.7	4.76	5.16	0.2	4.3	TAC External Toolholders (4-21 ~) TAC Internal Toolholders (5-34 ~)
		DNGA150404-QBN	●			1	12.7	4.76	5.16	0.4	4.1	
		DNGA150408-QBN	●			1	12.7	4.76	5.16	0.8	3.8	
		DNGA150412-QBN	●			1	12.7	4.76	5.16	1.2	3.4	
Finishing to medium cutting		SNGA120402-QBN	●			1	12.7	4.76	5.16	0.2	4.1	TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-35 ~)
		SNGA120404-QBN	●			1	12.7	4.76	5.16	0.4	4.1	
		SNGA120408-QBN	●			1	12.7	4.76	5.16	0.8	4.1	
		SNGA120412-QBN	●			1	12.7	4.76	5.16	1.2	4.1	
Finishing to medium cutting		SNGN120402-QBN				1	12.7	4.76	–	0.2	4.1	TAC External Toolholders (4-50 ~)
		SNGN120404-QBN				1	12.7	4.76	–	0.4	4.1	
		SNGN120408-QBN				1	12.7	4.76	–	0.8	4.1	
		SNGN120412-QBN				1	12.7	4.76	–	1.2	4.1	
Finishing to medium cutting		TNGA160402-QBN	●			1	9.525	4.76	3.81	0.2	4.4	TAC External Toolholders (4-24 ~) TAC Internal Toolholders (5-36 ~)
		TNGA160404-QBN	●			1	9.525	4.76	3.81	0.4	4.2	
		TNGA160408-QBN	●			1	9.525	4.76	3.81	0.8	4.0	
		TNGA160412-QBN	●			1	9.525	4.76	3.81	1.2	3.7	
Finishing to medium cutting		TNGN160402-QBN				1	9.525	4.76	–	0.2	4.4	TAC External Toolholders (4-47 ~)
		TNGN160404-QBN				1	9.525	4.76	–	0.4	4.2	
		TNGN160408-QBN				1	9.525	4.76	–	0.8	4.0	
		TNGN160412-QBN				1	9.525	4.76	–	1.2	3.7	

● : Stocked item

Standard honing specifications 3-6

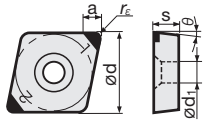
Grades	BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative inserts	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive inserts	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

Positive inserts · Multi-corner type (G class)

Specification	Shape	Cat. No.	Stocked grades BXM10	BXM20	BX470	BX910	No. of corner	Dimensions (mm) Clearance angle θ	Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN Length a	Applicable TAC toolholders
General purpose		2QP-CCGW060202	●	●			2	7°	6.35	2.38	2.8	0.2	2.3	**TAC External Toolholders** (4-63 ~) **TAC Internal Toolholders** (5-12 ~)
		2QP-CCGW060204	●	●	●		2	7°	6.35	2.38	2.8	0.4	2.3	
General purpose		2QP-CCGW09T302					2	7°	9.525	3.97	4.4	0.2	2.3	
		2QP-CCGW09T304	●	●	●		2	7°	9.525	3.97	4.4	0.4	2.3	
		2QP-CCGW09T308	●	●	●		2	7°	9.525	3.97	4.4	0.8	2.2	
General purpose		2QP-DCGW070202	●	●			2	7°	6.35	2.38	2.8	0.2	2.7	**TAC External Toolholders** (4-63 ~) **TAC Internal Toolholders** (5-16 ~)
		2QP-DCGW070204	●	●	●		2	7°	6.35	2.38	2.8	0.4	2.5	
		2QP-DCGW070208			●		2	7°	6.35	2.38	2.8	0.8	2.5	
Sharp edge		2QP-DCGW11T302F			●		2	7°	9.525	3.97	4.4	0.2	2.7	
		2QP-DCGW11T304F			●		2	7°	9.525	3.97	4.4	0.4	2.5	
General purpose		2QP-DCGW11T302	●	●			2	7°	9.525	3.97	4.4	0.2	2.7	
		2QP-DCGW11T304	●	●	●		2	7°	9.525	3.97	4.4	0.4	2.5	
		2QP-DCGW11T308	●	●	●		2	7°	9.525	3.97	4.4	0.8	2.1	
General purpose		2QP-SPGW09T308				●	2	11°	9.525	3.97	4.4	0.8	2.4	
		2QP-SPGW09T312				●	2	11°	9.525	3.97	4.4	1.2	2.4	
General purpose		2QP-SPGW120408				●	2	11°	12.7	4.76	5.5	0.8	2.4	
		2QP-SPGW120412				●	2	11°	12.7	4.76	5.5	1.2	2.4	
		2QP-SPGW120416				●	2	11°	12.7	4.76	5.5	1.6	2.4	
General purpose		2QP-SPGN090308				●	2	11°	9.525	3.18	-	0.8	2.4	
		2QP-SPGN090312				●	2	11°	9.525	3.18	-	1.2	2.4	
General purpose		3QP-TPGW080202					3	11°	4.76	2.38	2.3	0.2	2.4	**TAC Internal Toolholders** (5-20 ~)
		3QP-TPGW080204	●	●			3	11°	4.76	2.38	2.3	0.4	2.2	
General purpose		3QP-TPGW090202		●			3	11°	5.56	2.38	2.5	0.2	2.3	
		3QP-TPGW090204	●	●			3	11°	5.56	2.38	2.5	0.4	2.2	
General purpose		3QP-TPGW110202		●			3	11°	6.35	2.38	2.8	0.2	2.3	
		3QP-TPGW110204	●	●	●		3	11°	6.35	2.38	2.8	0.4	2.2	
		3QP-TPGW110208			●		3	11°	6.35	2.38	2.8	0.8	2.2	
Sharp edge		3QP-TPGW110302F					3	11°	6.35	3.18	3.4	0.2	2.3	
		3QP-TPGW110304F			●		3	11°	6.35	3.18	3.4	0.4	2.2	
		3QP-TPGW110308F			●		3	11°	6.35	3.18	3.4	0.8	2	
General purpose		3QP-TPGW110302		●			3	11°	6.35	3.18	3.4	0.2	2.3	
		3QP-TPGW110304	●	●	●		3	11°	6.35	3.18	3.4	0.4	2.2	
		3QP-TPGW110308	●	●	●	●	3	11°	6.35	3.18	3.4	0.8	1.9	
General purpose		3QP-TPGW130302		●			3	11°	7.94	3.18	3.4	0.2	2.3	
		3QP-TPGW130304	●	●			3	11°	7.94	3.18	3.4	0.4	2.2	
		3QP-TPGW130308					3	11°	7.94	3.18	3.4	0.8	2	
General purpose		3QP-TPGW16T302					3	11°	9.525	3.97	4.4	0.2	2.3	
		3QP-TPGW16T304	●	●			3	11°	9.525	3.97	4.4	0.4	2.2	
		3QP-TPGW16T308	●	●			3	11°	9.525	3.97	4.4	0.8	1.9	
Sharp edge		3QP-TPGW160402F					3	11°	9.525	4.76	4.4	0.2	2.3	
		3QP-TPGW160404F					3	11°	9.525	4.76	4.4	0.4	2.2	
		3QP-TPGW160408F					3	11°	9.525	4.76	4.4	0.8	2	
General purpose		3QP-TPGW160404	●	●			3	11°	9.525	4.76	4.4	0.4	2.2	
		3QP-TPGW160408		●			3	11°	9.525	4.76	4.4	0.8	2	
General purpose		3QP-TPGN110308				●	3	11°	6.35	3.18	-	0.8	1.9	
		3QP-TPGN110312				●	3	11°	6.35	3.18	-	1.2	2.4	

● : Stocked item

Positive insert



Standard honing specifications 3-6

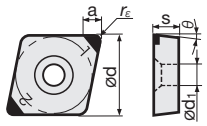
Grades	BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative inserts	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive inserts	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

Positive inserts · Multi-corner type (G class)

Specification	Shape	Cat. No.	Stocked grades BXM10	Stocked grades BXM20	No. of corner	Dimensions (mm) Clearance angle θ	Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN Length a	Applicable TAC toolholders
General purpose		**2QP-VBGW110302**			2	5°	6.35	3.18	2.8	0.2	3.5	**TAC External Toolholders** (4-83 ~) **TAC Internal Toolholders** (5-22 ~)
		2QP-VBGW110304	●	●	2	5°	6.35	3.18	2.8	0.4	3.1	
		2QP-VBGW110308	●	●	2	5°	6.35	3.18	2.8	0.8	2.2	
		2QP-VBGW160402			2	5°	9.525	4.76	4.4	0.2	3.5	
		2QP-VBGW160404	●	●	2	5°	9.525	4.76	4.4	0.4	3.1	
		2QP-VBGW160408	●	●	2	5°	9.525	4.76	4.4	0.8	2.2	
General purpose		**2QP-VCGW160402**			2	7°	9.525	4.76	4.4	0.2	3.5	**TAC External Toolholders** (4-65 ~) **TAC Internal Toolholders** (5-24 ~)
		2QP-VCGW160404	●	●	2	7°	9.525	4.76	4.4	0.4	3.1	
		2QP-VCGW160408			2	7°	9.525	4.76	4.4	0.8	2.2	

● : Stocked item

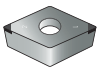
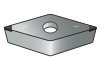
Positive insert



Standard honing specifications 3-6

Grades	BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative inserts	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive inserts	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

Positive inserts · Multi-corner type

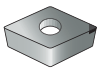
Specification	Shape	Cat. No.	Stocked grades BX310	BX330	BX360	BX930	BX950	No. of corner	Dimensions (mm) Clearance angle θ	Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN Length a	Applicable TAC toolholders
Finishing General purpose		2QP-CCMW060202	●	●	●			2	7°	6.35	2.38	2.8	0.2	2.3	**TAC External Toolholders** (4-63 ~) **TAC Internal Toolholders** (5-12 ~)
		2QP-CCMW060204	●	●	●	●	●	2	7°	6.35	2.38	2.8	0.4	2.3	
		2QP-CCMW09T304	●	●	●	●	●	2	7°	9.525	3.97	4.4	0.4	2.3	
		2QP-CCMW09T308	●	●	●			2	7°	9.525	3.97	4.4	0.8	2.2	
Finishing General purpose		2QP-DCMW070202	●	●	●			2	7°	6.35	2.38	2.8	0.2	2.7	**TAC External Toolholders** (4-63 ~) **TAC Internal Toolholders** (5-16~)
		2QP-DCMW070204	●	●	●	●	●	2	7°	6.35	2.38	2.8	0.4	2.5	
		2QP-DCMW11T302	●	●	●			2	7°	9.525	3.97	4.4	0.2	2.7	
		2QP-DCMW11T304	●	●	●	●	●	2	7°	9.525	3.97	4.4	0.4	2.5	
		2QP-DCMW11T308	●	●	●			2	7°	9.525	3.97	4.4	0.8	2.1	
		2QP-SPMN090304		●	●	●		2	11°	9.525	3.18	–	0.4	2.4	**TAC External Toolholders** (4-73) **TAC Internal Toolholders** (5-61)
		2QP-SPMN090308		●	●	●		2	11°	9.525	3.18	–	0.8	2.4	
Finishing General purpose		3QP-TPMW080204	●	●	●	●		3	11°	4.76	2.38	2.3	0.4	2.2	**TAC Internal Toolholders** (5-20 ~)
		3QP-TPMW090202		●	●	●		3	11°	5.56	2.38	2.5	0.2	2.3	
		3QP-TPMW090204	●	●	●	●		3	11°	5.56	2.38	2.5	0.4	2.2	
		3QP-TPMW110202	●	●	●	●		3	11°	6.35	2.38	2.8	0.2	2.3	
		3QP-TPMW110204	●	●	●	●		3	11°	6.35	2.38	2.8	0.4	2.2	
		3QP-TPMW110302	●	●	●	●	●	3	11°	6.35	3.18	3.4	0.2	2.4	
		3QP-TPMW110304	●	●	●	●	●	3	11°	6.35	3.18	3.4	0.4	2.2	
		3QP-TPMW110308	●	●	●	●	●	3	11°	6.35	3.18	3.4	0.8	1.9	
		3QP-TPMW130302	●	●	●	●	●	3	11°	7.94	3.18	3.4	0.2	2.4	
		3QP-TPMW130304	●	●	●	●	●	3	11°	7.94	3.18	3.4	0.4	2.2	
		3QP-TPMW16T304	●	●	●	●	●	3	11°	9.525	3.97	4.4	0.4	2.2	
		3QP-TPMW16T308	●					3	11°	9.525	3.97	4.4	0.8	1.9	
		3QP-TPMW160404	●	●	●	●		3	11°	9.525	4.76	4.4	0.4	2.2	
		3QP-TPMW160408	●	●	●	●		3	11°	9.525	4.76	4.4	0.8	1.9	
Finishing to medium cutting General purpose		3QP-TPMN110302		●	●	●	●	3	11°	6.35	3.18	–	0.2	2.3	**TAC External Toolholders** (4-73) **TAC Internal Toolholders** (5-50)
		3QP-TPMN110304		●	●	●	●	3	11°	6.35	3.18	–	0.4	2.2	
		3QP-TPMN110308		●	●	●	●	3	11°	6.35	3.18	–	0.8	1.9	
		3QP-TPMN160304		●	●	●	●	3	11°	9.525	3.18	–	0.4	2.2	
		3QP-TPMN160308		●	●	●	●	3	11°	9.525	3.18	–	0.8	1.9	
Finishing General purpose		2QP-VBMW110304	●	●	●	●		2	5°	6.35	3.18	2.8	0.4	3.1	**TAC External Toolholders** (4-83 ~) **TAC Internal Toolholders** (5-22 ~)
		2QP-VBMW110308	●	●	●	●		2	5°	6.35	3.18	2.8	0.8	2.2	
		2QP-VBMW160404	●	●	●			2	5°	9.525	4.76	4.4	0.4	2.2	
		2QP-VBMW160408	●	●	●			2	5°	9.525	4.76	4.4	0.8	2.2	
Finishing General purpose		2QP-VCMW160404		●	●	●		2	5°	9.525	4.76	4.4	0.4	2.2	**TAC External Toolholders** (4-65 ~) **TAC Internal Toolholders** (5-24 ~)

● : Stocked item

Standard honing specifications 3-6

Grades	BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative inserts	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive inserts	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

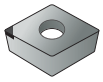
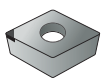
Positive inserts · One-corner type

Application & features	Shape	Cat. No.	Stocked grades T-CBN BX330	No. of corner	Dimensions (mm) Clearance angle θ	Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN length a	Applicable TAC toolholders
Finishing General purpose Packing Qty: 2 pcs.		Q-CCMW060204	●	1	7°	6.35	2.38	2.8	0.4	2.5	**TAC External Toolholders** (4-63 ~) **TAC Internal Toolholders** (5-12 ~)
		Q-CCMW09T304	●	1	7°	9.525	3.97	4.4	0.4	2.5	
		Q-DCMW070204	●	1	7°	6.35	2.38	2.8	0.4	2.1	**TAC External Toolholders** (4-63 ~) **TAC Internal Toolholders** (5-16~)
		Q-DCMW11T304	●	1	7°	9.525	3.97	4.4	0.4	2.1	
		Q-SPGN090304	●	1	11°	9.525	3.18	–	0.4	2.8	**TAC External Toolholders** (4-73) **TAC Internal Toolholders** (5-61)
		Q-SPGN090308	●	1	11°	9.525	3.18	–	0.8	2.8	
		Q-TPMW080204	●	1	11°	4.76	2.38	2.3	0.4	2.2	**TAC Internal Toolholders** (5-20 ~)
		Q-TPMW090202	●	1	11°	5.56	2.38	2.5	0.2	2.4	
		Q-TPMW090204	●	1	11°	5.56	2.38	2.5	0.4	2.3	
		Q-TPMW110202	●	1	11°	6.35	2.38	2.8	0.2	2.4	
		Q-TPMW110204	●	1	11°	6.35	2.38	2.8	0.4	2.2	
		Q-TPMW110304	●	1	11°	6.35	3.18	3.4	0.4	2.2	
		Q-TPMW110308	●	1	11°	6.35	3.18	3.4	0.8	1.9	
		Q-TPMW130302	●	1	11°	7.94	3.18	3.4	0.2	2.4	
		Q-TPMW130304	●	1	11°	7.94	3.18	3.4	0.4	2.3	
		Q-TPMW16T304	●	1	11°	9.525	3.97	4.4	0.4	2.3	
		Q-TPMW160404	●	1	11°	9.525	4.76	4.4	0.4	2.3	
		Q-TPMW160408	●	1	11°	9.525	4.76	4.4	0.8	1.9	
		Q-TPGN110304	●	1	11°	6.35	3.18	–	0.4	2.2	**TAC External Toolholders** (4-73) **TAC Internal Toolholders** (5-50)
		Q-TPGN110308	●	1	11°	6.35	3.18	–	0.8	2.2	
		Q-TPGN160304	●	1	11°	9.525	3.18	–	0.4	2.3	
		Q-TPGN160308	●	1	11°	9.525	3.18	–	0.8	1.9	

● : Stocked item

MINI T-CBN

Positive inserts · Mini

Application & features	Shape	Cat. No.	Stocked grades T-CBN BX310	No. of corner	Dimensions (mm) Clearance angle θ	Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN length a	Applicable TAC toolholders
Finishing to medium cutting		1QP-CCGW03X102	●	1	7°	3.57	1.39	1.9	0.2	1.4	**TAC Internal Toolholders** (5-12)
		1QP-CCGW03X104	●	1	7°	3.57	1.39	1.9	0.4	1.3	
		1QP-CCGW04T102	●	1	7°	4.37	1.79	2.3	0.2	1.9	
		1QP-CCGW04T104	●	1	7°	4.37	1.79	2.3	0.4	1.8	
		1QP-EPGW03X102	●	1	11°	3.57	1.39	1.9	0.2	1.4	**TAC Internal Toolholders** (5-28) **Tooling Systems** (12-41)
		1QP-EPGW03X104	●	1	11°	3.57	1.39	1.9	0.4	1.3	
		1QP-EPGW040102	●	1	11°	3.97	1.59	2.3	0.2	1.7	
		1QP-EPGW040104	●	1	11°	3.97	1.59	2.3	0.4	1.6	

● : Stocked item

Standard honing specifications 3-6

Grades	BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative inserts	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive inserts	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

Positive inserts · One-corner type

Application & features	Shape	Cat. No.	Stocked grades T-CBN BX360	No. of corner	Dimensions (mm) Clearance angle θ	Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	CBN length a	Applicable TAC toolholders
Finishing to medium cutting		SPGN090304-QBN	●	1	11°	9.525	3.18	–	0.4	4.1	**TAC External Toolholders** (4-73) **TAC Internal Toolholders** (5-61)
		SPGN090308-QBN	●	1	11°	9.525	3.18	–	0.8	4.1	
		SPGN090312-QBN	●	1	11°	9.525	3.18	–	1.2	4.1	
		SPGN120308-QBN	●	1	11°	12.7	3.18	–	0.8	4.1	
		SPGN120312-QBN	●	1	11°	12.7	3.18	–	1.2	4.1	
Finishing to medium cutting		TPGW090202-QBN	●	1	11°	5.56	2.38	2.5	0.2	3.3	**TAC Internal Toolholders** (5-20 ~)
		TPGW090204-QBN	●	1	11°	5.56	2.38	2.5	0.4	3.2	
		TPGW110202-QBN	●	1	11°	6.35	2.38	2.8	0.2	3.9	
		TPGW110204-QBN	●	1	11°	6.35	2.38	2.8	0.4	3.7	
		TPGW130302-QBN	●	1	11°	7.94	3.18	3.4	0.2	3.9	
		TPGW130304-QBN	●	1	11°	7.94	3.18	3.4	0.4	3.7	
		TPGW16T302-QBN	●	1	11°	9.525	3.97	4.4	0.2	4.4	
		TPGW16T304-QBN	●	1	11°	9.525	3.97	4.4	0.4	4.2	
		TPGW16T308-QBN	●	1	11°	9.525	3.97	4.4	0.8	4	
		TPGN110304-QBN	●	1	11°	6.35	3.18	–	0.4	3.7	**TAC External Toolholders** (4-73) **TAC Internal Toolholders** (5-50)
		TPGN110308-QBN	●	1	11°	6.35	3.18	–	0.8	3.5	
		TPGN160304-QBN	●	1	11°	9.525	3.18	–	0.4	4.2	
		TPGN160308-QBN	●	1	11°	9.525	3.18	–	0.8	4	
Finishing		TBGN060104-15-QBN	●	3	5°	3.97	1.59	–	0.4	6.4	
		TBGN060108-15-QBN	●	3	5°	3.97	1.59	–	0.8	6	
Finishing to medium cutting		CPGA090204-QBN	●	1	11°	9.525	2.38	4	0.4	4	**Tungaloy's former toolholders (Not ISO)**
		CPGA090208-QBN	●	1	11°	9.525	2.38	4	0.8	3.8	
Finishing to medium cutting		TPGA090202-QBN	●	1	11°	5.56	2.38	3.2	0.2	3.1	**Tungaloy's former toolholders (Not ISO)**
		TPGA090204-QBN	●	1	11°	5.56	2.38	3.2	0.4	2.9	
		TPGA110202-QBN	●	1	11°	6.35	2.38	3	0.2	3.9	
		TPGA110204-QBN	●	1	11°	6.35	2.38	3	0.4	3.7	
		TPGA110302-QBN	●	1	11°	6.35	3.18	3	0.2	3.9	
		TPGA110304-QBN	●	1	11°	6.35	3.18	3	0.4	3.7	
		TPGA160302-QBN	●	1	11°	9.525	3.18	4	0.2	4.4	
		TPGA160304-QBN	●	1	11°	9.525	3.18	4	0.4	4.2	
		TPGA160308-QBN	●	1	11°	9.525	3.18	4	0.8	4	

● : Stocked item

Standard honing specifications 3-6

Grades	BXM10	BXM20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative inserts	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive inserts	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

T-CBN series

Coated Solid T-CBN (BXC90)

Application & features	Shape	Cat. No.	Stocked grades: Coated Solid T-CBN: BXC90	Dimensions (mm): Inner circle: ød	Thickness: s	Corner radius: r_ε
Finishing to heavy cutting		S-CNGN090308	●	9.525	3.18	0.8
		S-CNGN090312	●	9.525	3.18	1.2
		S-CNGN120408	●	12.7	4.76	0.8
		S-CNGN120412	●	12.7	4.76	1.2
		S-RNGN090300	●	9.525	3.18	–
		S-RNGN120400	●	12.7	4.76	–
		S-SNGN090308	●	9.525	3.18	0.8
		S-SNGN090312	●	9.525	3.18	1.2
		S-SNGN120308	●	12.7	3.18	0.8
		S-SNGN120312	●	12.7	3.18	1.2
		S-SNGN120408	●	12.7	4.76	0.8
		S-SNGN120412	●	12.7	4.76	1.2
		S-TNGN110308	●	6.35	3.18	0.8
		S-TNGN110312	●	6.35	3.18	1.2
		S-TNGN160408	●	9.525	4.76	0.8
		S-TNGN160412	●	9.525	4.76	1.2

● : Stocked item

T-CBN Series

Solid T-CBN (BX90S)

Application & features	Shape	Cat. No.	Stocked grades: Solid T-CBN: BX90S	Dimensions (mm): Inner circle: ød	Thickness: s	Corner radius: r_ε
Finishing to heavy cutting		S-CNMN090308		9.25	3.18	0.8
		S-CNMN090312		9.525	3.18	1.2
		S-CNMN120408		12.7	4.76	0.8
		S-CNMN120412		12.7	4.76	1.2
		S-RNMN090300		9.525	3.18	–
		S-RNMN120400		12.7	4.76	–
		S-SNMN090308		9.525	3.18	0.8
		S-SNMN090312		9.525	3.18	1.2
		S-SNMN120308		12.7	3.18	0.8
		S-SNMN120312		12.7	3.18	1.2
		S-SNMN120408		12.7	4.76	0.8
		S-SNMN120412		12.7	4.76	1.2
		S-TNMN110308		6.35	3.18	0.8
		S-TNMN110312		6.35	3.18	1.2
		S-TNMN160408		9.525	4.76	0.8
		S-TNMN160412		9.525	4.76	1.2

T-CBN Series

T-CBN (PCBN tipped) grooving Inserts

Application & features	Shape	Cat. No.	Stocked grades: T-CBN: BX360: R	L	No. of corner	Dimensions (mm): Groove width ±0.05	Max. groove depth	Corner radius r_ε	Applicable TAC toolholders
Grooving		XGR/L6310S-QBN			1	1.0	1.5	0.2	TAC toolholders: GX-□□□□R/LE (6-49) TAC boring toolholders: GX-□□□□L/RI (Min. bore dia. ø55) (6-92)
		XGR/L6315S-QBN	●		1	1.5	2.3	0.2	
		XGR/L6320S-QBN	●		1	2.0	3	0.2	
		XGR/L6325S-QBN	●		1	2.5	3.8	0.2	
		XGR/L6330S-QBN	●		1	3.0	4.5	0.2	
		XGR/L6335S-QBN	●		1	3.5	5.3	0.2	
		XGR/L6340S-QBN	●		1	4.0	6	0.2	
		XGR/L6345S-QBN	●		1	4.5	6	0.2	

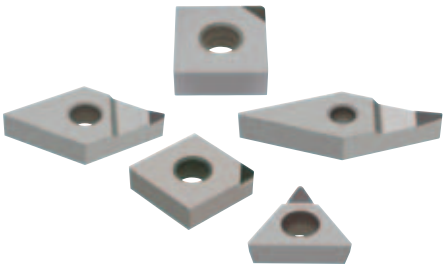
● : Stocked item

MEMO

MEMO

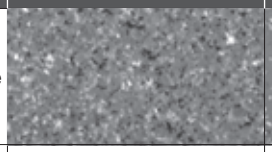
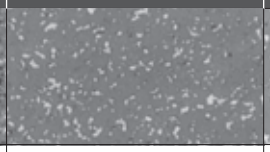
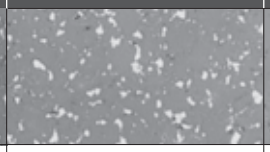
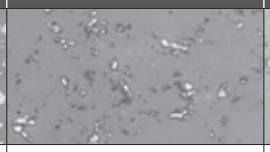
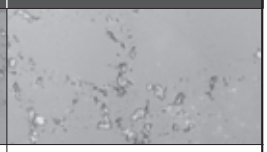
PCD grades

T-DIA series



Expanded product line allows T-DIA tools to be applied to wider work materials and cutting conditions.

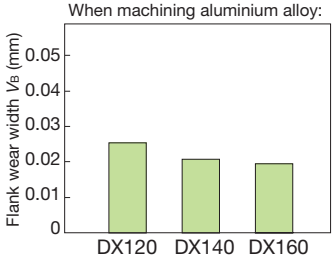
Features and applications (Physical and mechanical properties)

	DX110	DX120	DX140	DX160	DX180
Grade					
Property	Super fine grained grade. Excels in surface finish.	Fine grained grade. Excels in surface finish.	General purpose grade	High purity grade for hard materials	Highly wear resistant grade for special applications
Approx. grain size of diamond (μm)	< 1	4.5	12.5	28	45
Hardness (Hv)	6000 →				12000 (Harder)
Wear resistance	→				Higher
Grindability (Cutting edge sharpness)	Better ←				

Note: T-DIA grades are not suitable for ferrous materials (such as hardened steel, chilled cast iron), and Ni- or Co-base superalloys.

Cutting performance (Wear resistance)

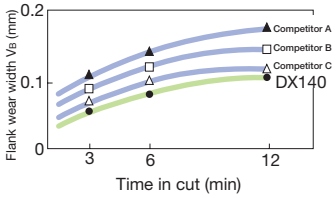
When machining aluminium alloy:



Continuous external turning

- Work material: 10 % Si, aluminium alloy
- Insert: SPGN120308-DIA
- Toolholder: CSBPR2525M4
- Cutting speed: v_c = 500 m/min
- Feed: f = 0.1 mm/rev
- Depth of cut: a_p = 0.5 mm
- Coolant: Dry cutting
- Time in cut: 30 min

When machining FRP:



Face milling

- Work material: Fiber reinforced plastics (FRP)
- Insert: SPCN42ZFR-DIA
- Milling cutter: TPG4208R-A
- Cutting speed: v_c = 942 m/min
- Feed: f = 0.1 mm/rev
- Depth of cut: a_p = 1.5 mm
- Coolant: Dry cutting

Grade selection guide

DX140 Basic selection (General purpose grade)

- For precision machining
- When good surface finish is required.
- When interrupted cutting is involved.

→ **DX120** Excels in cutting-edge sharpness and impact resistance. → **DX110** Super fine grained grade

- When machining hard materials such as high silicon aluminium alloys (Si > 12 %)
- Simultaneous machining of aluminium alloy and cast iron.
- When high wear resistance is required.

→ **DX160** Superior wear resistance → **DX180** Special purpose grade

- When requiring higher wear resistance than DX160 (such as when machining high silicon materials, cemented carbides, semi-sintered ceramics, etc.)

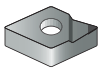
Standard cutting conditions for turning

Work material	Cutting speed v_c (m/min)	Depth of cut a_p (mm)	Feed f (mm/rev)	Grade applicability				
				DX110	DX120	DX140	DX160	DX180
Aluminium alloys (Si < 12 %)	1500 (1000-2500)	0.5 (0.05-2.0)	0.1 (0.05-0.2)	○	○	◎		
Aluminium alloys (Si > 12 %)	600 (400-800)	0.5 (0.05-2.0)	0.1 (0.05-0.2)			○	◎	
Copper, brass	800 (500-1500)	0.5 (0.05-2.0)	0.1 (0.05-0.2)	○	○	◎		
Phosphor bronze	400 (300-500)	0.5 (0.05-2.0)	0.1 (0.05-0.2)	○	○	◎		
Carbon, graphite	400 (300-500)	0.5 (0.05-2.0)	0.1 (0.05-0.2)			◎		
FRP	700 (500-1000)	0.2 (0.05-0.5)	0.05 (0.03-0.1)	○	◎	○		
Plastics	700 (500-1000)	0.2 (0.05-0.5)	0.03 (0.01-0.05)	○	◎	○		
Cemented carbides (D40 ~ D60)	15 (10-20)	0.1 (0.05-0.2)	0.03 (0.01-0.05)				○	◎
Semi-sintered ceramics	130 (100-150)	0.5 (0.05-2.0)	0.05 (0.03-0.1)				○	◎

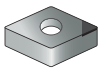
(Note) ◎ : First choice ○ : Second choice

TAC T-DIA (PCD) Inserts

Negative inserts (with rake angle)

Application & features	Shape	Cat. No.	Stocked grades (Sharpenability Better ← → Wear resistance Higher)			Dimensions (mm)					Applicable toolholders
			DX120	DX140	DX180	Inner circle ød	Thick-ness s	Hole dia. ød1	Corner radius r_ε	DIA length a	
Finishing low resistance		CNMM120402-DIA	●			12.7	4.76	5.16	0.2	3.5	TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
		CNMM120404-DIA	●			12.7	4.76	5.16	0.4	3.5	
		DNMM150402-DIA	●			12.7	4.76	5.16	0.2	3.3	TAC External Toolholders (4-21 ~) TAC Internal Toolholders (5-34 ~)
		DNMM150404-DIA	●			12.7	4.76	5.16	0.4	3.1	
		TNMM160402-DIA	●			9.525	4.76	3.81	0.2	3.3	TAC External Toolholders (4-24 ~) TAC Internal Toolholders (5-36 ~)
		TNMM160404-DIA	●			9.525	4.76	3.81	0.4	3.2	
		VNMM160402-DIA	●			9.525	4.76	3.81	0.2	4.8	TAC External Toolholders (4-30 ~) TAC Internal Toolholders (5-37 ~)
		VNMM160404-DIA	●			9.525	4.76	3.81	0.4	4.4	
		VNMM160408-DIA	●			9.525	4.76	3.81	0.8	3.6	

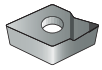
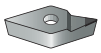
Negative inserts

Application & features	Shape	Cat. No.	Stocked grades (Sharpenability Better ← → Wear resistance Higher)			Dimensions (mm)					Applicable toolholders
			DX120	DX140	DX160	Inner circle ød	Thick-ness s	Hole dia. ød1	Corner radius r_ε	DIA length a	
Finishing to medium cutting		CNGA120404-DIA		●		12.7	4.76	5.16	0.4	3.5	TAC External Toolholders (4-14 ~) TAC Internal Toolholders (5-33 ~)
		CNGA120408-DIA				12.7	4.76	5.16	0.8	3.4	
		DNGA150404-DIA		●	●	12.7	4.76	5.16	0.4	3.1	TAC External Toolholders (4-21 ~) TAC Internal Toolholders (5-34 ~)
		DNGA150408-DIA		●		12.7	4.76	5.16	0.8	2.8	
		TNGA160304-DIA				9.525	3.18	3.81	0.4	3.2	TAC External Toolholders (4-24 ~) TAC Internal Toolholders (5-36 ~)
		TNGA160308-DIA				9.525	3.18	3.81	0.8	2.9	
		TNGA160404-DIA		●	●	9.525	4.76	3.81	0.4	3.2	
		TNGA160408-DIA		●	●	9.525	4.76	3.81	0.8	2.9	
		SNGA120404-DIA		●	▲	12.7	4.76	5.16	0.4	3.6	TAC External Toolholders (4-25 ~) TAC Internal Toolholders (5-35 ~)
		SNGA120408-DIA		●	▲	12.7	4.76	5.16	0.8	3.6	
		SNGN090308-DIA				9.525	3.18	–	0.8	3.6	TAC External Toolholders (4-50~)
		SNGN120408-DIA		●		12.7	4.76	–	0.8	3.6	

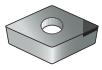
● : Stocked items.
▲: Shortly unavailable

TAC T-DIA (PCD) Inserts

Positive inserts (with rake angle)

Application & features	Shape	Cat. No.	Stocked grades (Sharpenability Better ← → Wear resistance Higher)			Dimensions (mm)						Applicable toolholders
			DX120	DX140	DX160	Clearance angle θ	Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	DIA length a	
Finishing low resistance		CCMT060202-DIA	●			7°	6.35	2.38	2.8	0.2	2.4	TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-12 ~)
		CCMT060204-DIA	●			7°	6.35	2.38	2.8	0.4	2.4	
		CCMT09T302-DIA	●			7°	9.525	3.97	4.4	0.2	2.4	
		CCMT09T304-DIA	●			7°	9.525	3.97	4.4	0.4	2.4	
		DCMT070202-DIA	●			7°	6.35	2.38	2.8	0.2	2.3	TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-16~)
		DCMT070204-DIA	●			7°	6.35	2.38	2.8	0.4	2.1	
		DCMT11T302-DIA	●			7°	9.525	3.97	4.4	0.2	3.2	
		DCMT11T304-DIA	●			7°	9.525	3.97	4.4	0.4	3.0	
		TCMT080202-DIA	●			7°	4.76	2.38	2.3	0.2	2.2	TAC External Toolholders (4-65) TAC Internal Toolholders (5-19)
		TCMT080204-DIA	●			7°	4.76	2.38	2.3	0.4	2.0	
		TCMT110202-DIA	●			7°	6.35	2.38	2.8	0.2	2.4	
		TCMT110204-DIA	●			7°	6.35	2.38	2.8	0.4	2.2	
		TCMT110302-DIA	●			7°	6.35	3.18	2.8	0.2	2.4	
		TCMT110304-DIA	●			7°	6.35	3.18	2.8	0.4	2.2	
		VCMT160402-DIA	●			7°	9.525	4.76	4.4	0.2	4.8	TAC External Toolholders (4-65 ~) TAC Internal Toolholders (5-24 ~)
		VCMT160404-DIA	●			7°	9.525	4.76	4.4	0.4	4.4	

Positive inserts

Application & features	Shape	Cat. No.	Stocked grades (Sharpenability Better ← → Wear resistance Higher)			Dimensions (mm)						Applicable toolholders
			DX120	DX140	DX160	Clearance angle θ	Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	DIA length a	
Finishing to medium cutting		CCGW060200-DIA		●		7°	6.35	2.38	2.8	0.05	2.4	TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-12 ~)
		CCGW060202-DIA		●		7°	6.35	2.38	2.8	0.2	2.4	
		CCGW060204-DIA		●		7°	6.35	2.38	2.8	0.4	2.4	
		CCGW09T302-DIA		●		7°	9.525	3.97	4.4	0.2	3.5	
		CCGW09T304-DIA		●	●	7°	9.525	3.97	4.4	0.4	3.5	
		CCGW09T308-DIA		●	▲	7°	9.525	3.97	4.4	0.8	3.4	
		DCGW070200-DIA		●		7°	6.35	2.38	2.8	0.05	2.4	TAC External Toolholders (4-63 ~) TAC Internal Toolholders (5-16~)
		DCGW070202-DIA	●	●		7°	6.35	2.38	2.8	0.2	2.3	
		DCGW070204-DIA		●		7°	6.35	2.38	2.8	0.4	2.1	
		DCGW11T302-DIA		●		7°	9.525	3.97	4.4	0.2	3.2	
		DCGW11T304-DIA		●		7°	9.525	3.97	4.4	0.4	3.0	
		DCGW11T308-DIA		●		7°	9.525	3.97	4.4	0.8	2.7	
		SPGN090302-DIA				11°	9.525	3.18	–	0.2	3.6	TAC External Toolholders (4-73) TAC Internal Toolholders (5-61)
		SPGN090304-DIA			▲	11°	9.525	3.18	–	0.4	3.6	
		SPGN090308-DIA		●		11°	9.525	3.18	–	0.8	3.6	
		SPGN120302-DIA		●		11°	12.7	3.18	–	0.2	3.6	
		SPGN120304-DIA		●	▲	11°	12.7	3.18	–	0.4	3.6	
		SPGN120308-DIA		●	●	11°	12.7	3.18	–	0.8	3.6	
		SPGN120312-DIA				11°	12.7	3.18	–	1.2	3.6	
		TCGW110202-DIA				7°	6.35	2.38	2.8	0.2	2.4	TAC External Toolholders (4-65) TAC Internal Toolholders (5-19)
		TCGW110204-DIA				7°	6.35	2.38	2.8	0.4	2.2	
		TCGW16T302-DIA				7°	9.525	3.97	4.4	0.2	3.3	
		TCGW16T304-DIA				7°	9.525	3.97	4.4	0.4	3.2	
		TCGW16T308-DIA				7°	9.525	3.97	4.4	0.8	2.9	
		TPGW080202-DIA		●		11°	4.76	2.38	2.3	0.2	2.4	TAC Internal Toolholders (5-20 ~)
		TPGW080204-DIA		●		11°	4.76	2.38	2.3	0.4	2.3	
		TPGW090202-DIA	●	●		11°	5.56	2.38	2.5	0.2	2.4	
		TPGW090204-DIA		●		11°	5.56	2.38	2.5	0.4	2.2	
		TPGW110202-DIA	●	●		11°	6.35	2.38	2.8	0.2	2.4	
		TPGW110204-DIA		●		11°	6.35	2.38	2.8	0.4	2.2	
		TPGW130302-DIA	●	●		11°	7.94	3.18	3.4	0.2	3.3	
		TPGW130304-DIA		●		11°	7.94	3.18	3.4	0.4	3.2	
		TPGW16T302-DIA		●		11°	9.525	3.97	4.4	0.2	3.3	
		TPGW16T304-DIA		●		11°	9.525	3.97	4.4	0.4	3.2	
		TPGW16T308-DIA		●		11°	9.525	3.97	4.4	0.8	2.9	

● : Stocked items.
▲: Shortly unavailable

TAC T-DIA (PCD) Inserts

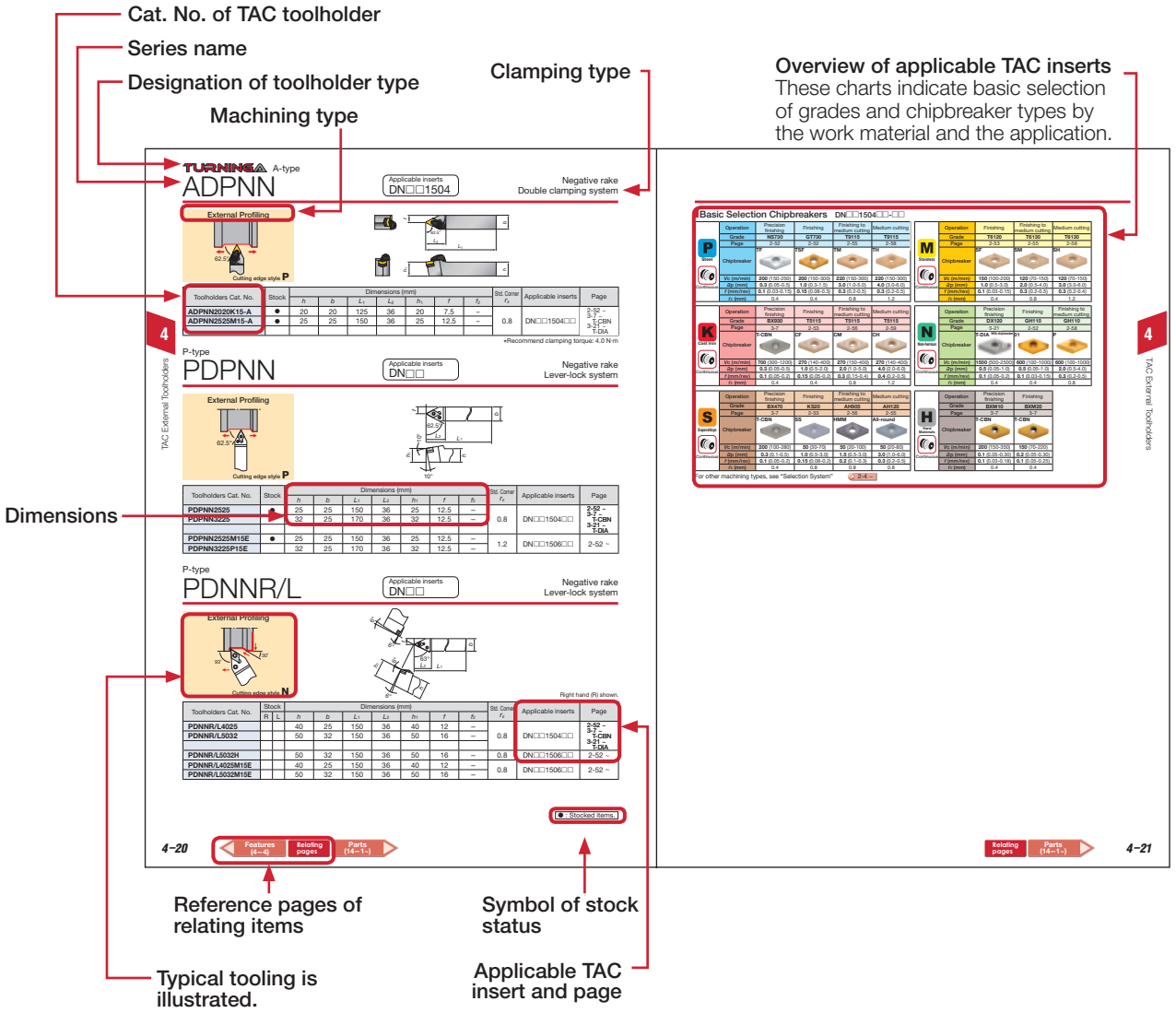
Positive inserts

Application & features	Shape	Cat. No.	Stocked grades (Sharpenability Better ← → Wear resistance Higher)			Dimensions (mm)						Applicable toolholders
			DX120	DX140	DX160	Clearance angle θ	Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε	DIA length a	
Finishing to medium cutting		TPGN090204-DIA		●		11°	5.56	2.38	–	0.4	2.2	TAC Internal Toolholders (5-20 ~)
		TPGN090208-DIA				11°	5.56	2.38	–	0.8	2.0	
		TPGN110301-DIA				11°	6.35	3.18	–	0.1	3.4	
		TPGN110302-DIA				11°	6.35	3.18	–	0.2	3.3	
		TPGN110304-DIA	●	●		11°	6.35	3.18	–	0.4	3.2	
		TPGN110308-DIA		●		11°	6.35	3.18	–	0.8	2.9	
		TPGN160301-DIA				11°	9.525	3.18	–	0.1	3.4	
		TPGN160302-DIA		●		11°	9.525	3.18	–	0.2	3.3	
		TPGN160304-DIA	●	●	▲	11°	9.525	3.18	–	0.4	3.2	
		TPGN160308-DIA		●		11°	9.525	3.18	–	0.8	2.9	
		TPGN160312-DIA				11°	9.525	3.18	–	1.2	2.6	
		VCGW160402-DIA		●		7°	9.525	4.76	4.4	0.2	4.8	TAC External Toolholders (4-65 ~) TAC Internal Toolholders (5-24 ~)
		VCGW160404-DIA		●		7°	9.525	4.76	4.4	0.4	4.4	
		VCGW160408-DIA				7°	9.525	4.76	4.4	0.8	3.6	
		VCGW160412-DIA				7°	9.525	4.76	4.4	1.2	2.7	
		VCGW220530-DIA				7°	12.7	5.56	5.5	3.0	5.0	
Finishing		EPGW040102-DIA		●		11°	3.97	1.59	2.3	0.2	2.0	TAC Internal Toolholders (5-28 ~)
		EPGW040104-DIA		●		11°	3.97	1.59	2.3	0.4	1.9	
Finishing to medium cutting		CPGA090202-DIA		●		11°	9.525	2.38	4.0	0.2	2.4	Tungaloy's former toolholders (Not ISO)
		CPGA090204-DIA		●		11°	9.525	2.38	4.0	0.4	2.4	
		TPGA090202-DIA		●		11°	5.556	2.38	3.2	0.2	2.4	Tungaloy's former toolholders (Not ISO)
		TPGA090204-DIA		●		11°	5.556	2.38	3.2	0.4	2.2	
		TPGA110202-DIA		●		11°	6.35	3.18	3.0	0.2	2.4	
		TPGA110204-DIA		●		11°	6.35	3.18	3.0	0.4	2.2	
		TPGA110302-DIA		●		11°	6.35	3.18	3.0	0.2	2.4	
		TPGA110304-DIA		●		11°	6.35	3.18	3.0	0.4	2.2	
		TPGA110308-DIA		●		11°	6.35	3.18	3.0	0.8	2.0	
		TPGA160302-DIA		●		11°	9.525	3.18	4.0	0.2	3.3	
		TPGA160304-DIA		●		11°	9.525	3.18	4.0	0.4	3.2	
		TPGA160308-DIA		●		11°	9.525	3.18	4.0	0.8	2.9	

● : Stocked items.
▲: Shortly unavailable

Chapter Composition of TAC External Toolholders

◆New and main products are arranged by the insert shape to be used. In the same group, they are arranged by the cutting edge style.
◆Other products are arranged by the series.



■Ordering information

● When ordering TAC toolholders, please specify Cat. No. and quantity.
Example: **ACLNR2525M12-A** 1 piece.
- Standard packing quantity is 1 piece.
- Inserts must be ordered separately.

Guidance

■ Designation system for general purpose TAC external toolholders 4–2
■ Outline of new TAC toolholder “Turning A” 4–4
■ Outline of new “Y Pro series” for Profiling 4–6
■ Structures and features of external TAC toolholders 4–8
■ Types and applications of TAC toolholders 4–10

4 TAC External Toolholders

Products

■ **TAC toolholders for external turning**
- Turning A [Double clamping system]
- D-type [One-action double clamping system]
- P-type [Lever-lock system]
  - for CN □□ inserts 4–14
  - for WN □□ inserts 4–17
  - for DN □□ inserts 4–18
  - for TN □□ inserts 4–22
  - for SN □□ inserts 4–25
  - for VN □□ / YN □□ inserts 4–30
  - for RN □□ inserts 4–32
- Replacement parts for Turning A 4–33
  - for D-type 4–34
  - for P-type 4–35
- DimpleFX [Double clamping system] for dimple ceramic inserts 4–36
- TurnTec [Screw-on system] 4–39
- TurnFeed [Double clamping system] for super high feeds 4–42
- Y-Pro series [Screw-on system] 4–42
- A-type [Clamp-on system] 4–44
- M-type [Multi-clamping system] 4–46
- C-type [Clamp-on system] 4–54
- H-type [Pull-down-pin system] for heavy cutting 4–56

■ **TAC external toolholders for positive inserts**
- S-type [Screw-on system] 4–57
- T-type [Taper-lock system] 4–65
- P-type [Lever lock system] 4–66
- C-type [Clamp-on system] 4–67

■ **J-series TAC external toolholders for small lathes** 4–69

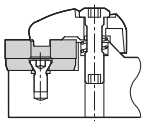
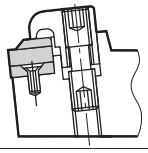
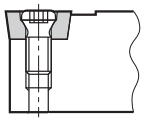
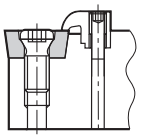
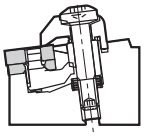
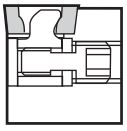
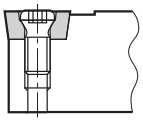
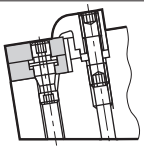
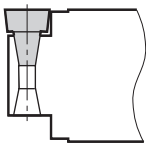
■ **J-series special purpose TAC toolholders for small lathes**
- JSXG type for front and reverse turning 4–81
- JSXB type for back turning 4–82
- JSTB type for back turning 4–83
- JS-TBL3 type for back turning 4–83
- JSEG type for back turning 4–84

■ **H-type** [Pull-down, cartridge system] for wheel turning 4–85

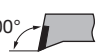
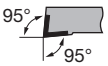
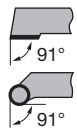
■ **MS-type** [Lever lock / screw-on system] 4–86

Designation System for TAC Toolholders

① Clamping system

A Double Clamping					
C Clamp-on		JS Screw-on		X Double Clamping	
D One-Double		JT Back clamping		S Screw-on	
P Lever-lock		M Multi clamping		T Taper-lock	

③ Cutting edge style

Symbol	Shape	Offset					
A		Without	H		With	P *		Without
			I		Without	Q *		With
			J		With	S		With
B		Without	J2 *		Without	V		Without
C		Without	K		With	U		With
D		Without	L		With	X		With
E		Without	L2 *		Without	Y		With
F		With	N		Without	Z		Without
G		With	N3 *		With	No mark: ISO symbol *mark: Tungaloy's symbol		
			P *		Without			

(Example) A W L N R

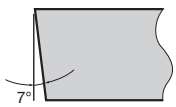
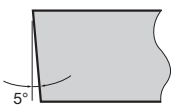
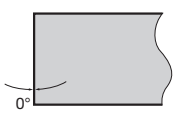
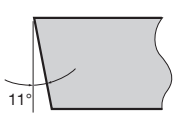
(Example) P T G N R

① ② ③ ④ ⑤

② Insert shape

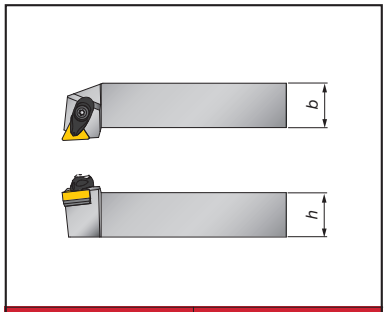
C	80° Rhombic
D	55° Rhombic
K	55° Parallelogram
R	Round
S	Square
T	Triangular
V	35° Rhombic
W	Trigon

④ Relief angle of insert

C	
B	
N	
P	

⑤ Hand of tool

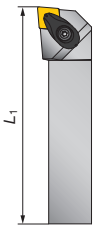
L	
N	
R	



⑥ Height *h* (mm) | ⑦ Width *b* (mm)

Shank size

F	80
H	100
K	125
M	150
P	170
Q	180
R	200
S	250
T	300
U	350



⑧ Holder length L_1 (mm)

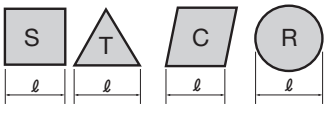
RD	Ceramic insert with dimple
C	M-type for ceramic insert
A	Turning A

⑪ Added symbol

⑥	⑦	⑧			⑪
25	25	M	08	-	A
20	20	K	3		3
			⑨		⑩

⑨ Insert size (ℓ)

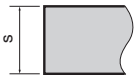
Symbol	Inscribed circle (mm)
3	9.525
4	12.7
5	15.875
6	19.05
8	25.4



In the ISO metric system, edge length of inserts is expressed by ℓ in 2 digits.

⑩ Insert thickness (s)

Symbol	Thickness (mm)
2	3.18
3	4.76



Turning Ace TURNINGA

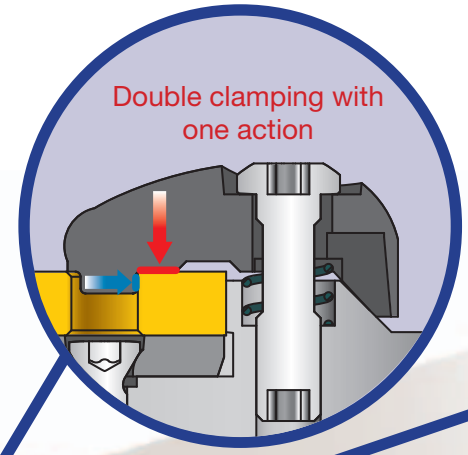
4-14 ~

Highly rigid “Double-Clamp” system provides remarkable stability and high accuracy!

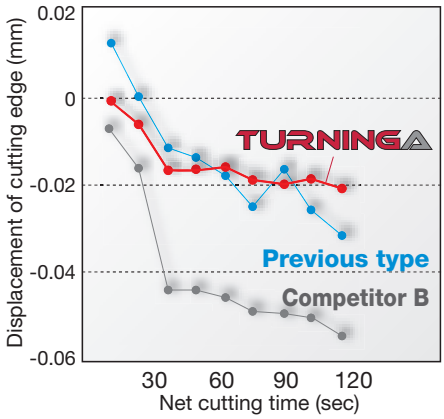
Simple and strong double-clamp system

Provides strong clamping force with one screw

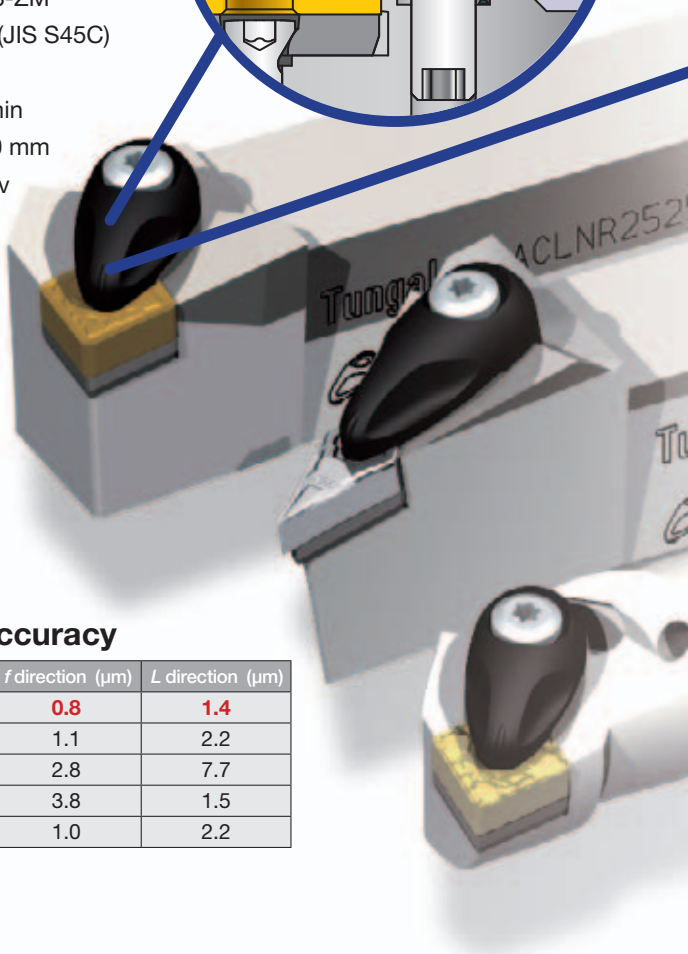
Only one screw and one action delivers double clamping force by simultaneously pushing down and pulling. This strong clamping force provides high stability for the cutting edge.



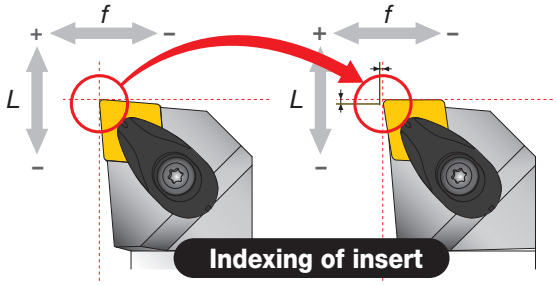
■ **Comparison of cutting edge stability**



Toolholder	: AVJNR2525M16-A
Insert	: VNMG160408-ZM
Work material	: Carbon steel (JIS S45C)
Machining mode	: Continuous
Cutting speed	: *Vc* = 150 m/min
Depth of cut	: *ap* = 1.0 ~ 2.0 mm
Feed	: *f* = 0.3 mm/rev



Higher indexing accuracy

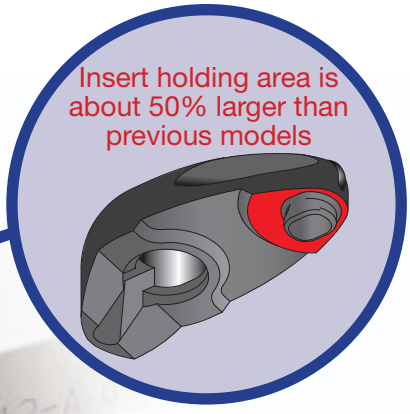


■ **Indexing accuracy**

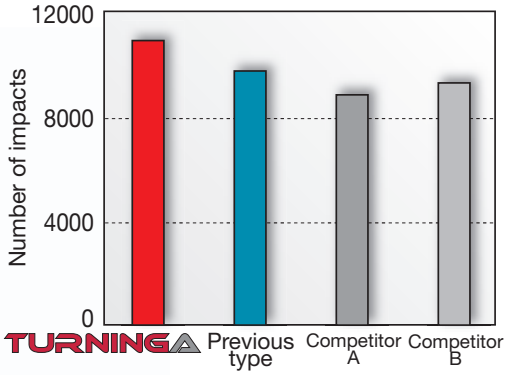
Type	*f* direction (μm)	*L* direction (μm)
TURNINGA	0.8	1.4
Previous type	1.1	2.2
Competitor A	2.8	7.7
Competitor B	3.8	1.5
Competitor C	1.0	2.2

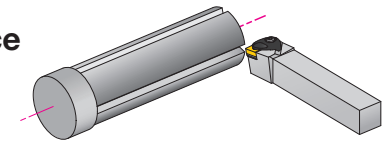
Unique clamp improves rigidity

Larger holding area enhances clamping force drastically. Higher rigidity provides excellent stability and reduces vibration.



■ **Comparison of impact resistance**



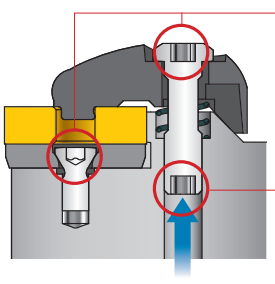


Toolholder	: ACLNR2525M12-A
Insert	: CNMG120408-TM
Grade	: T9115
Work material	: Carbon steel (JIS S45C)
Machining mode	: Interrupted
Cutting speed	: *Vc* = 200 m/min
Depth of cut	: *ap* = 1.0 ~ 2.0 mm
Feed	: *f* = 0.3 mm/rev

Easy handling and maintenance

Only one wrench required

Only one wrench is required for the clamping screw and the shim screw.
Easy maintenance!

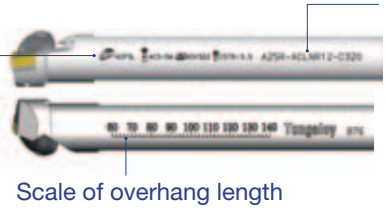


Marking

Parts Cat. No. are marked on the holder.

External-use toolholder

Internal-use toolholders



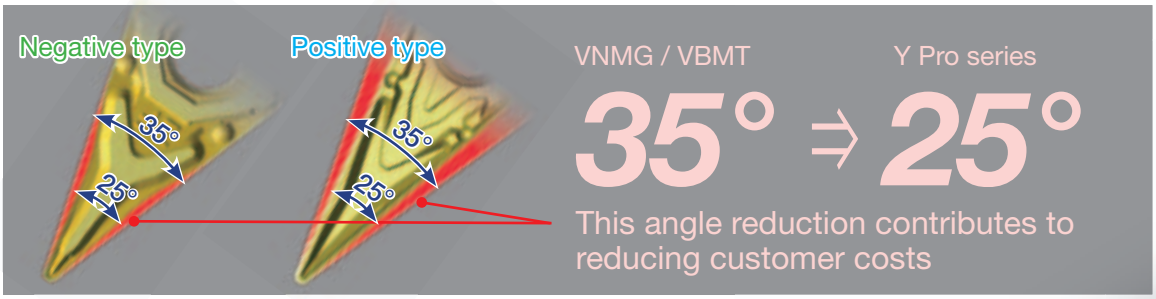
The last three digits indicate min. bore diameter.
(Example : -D320 indicates 32.0 mm)

Profiling inserts

Y-PRO SERIES

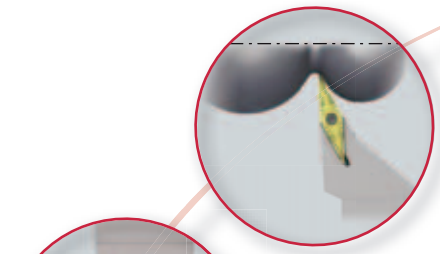
PATENT PENDING

A new concept in profiling!
Inserts with a 25° corner angle to expand machining possibilities!!



Suitable for a wide range of machining applications

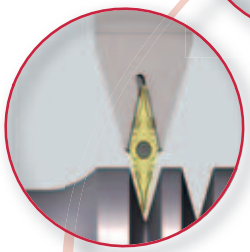
The new Y-Pro series expands the machining range of Taper cutting, undercutting and "V" grooving applications.



Negative Positive

Spherical profiling

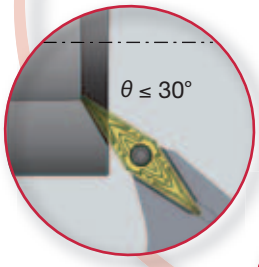
Enlarged clearance expands the interference avoidance area.



Negative Positive

"V" grooving

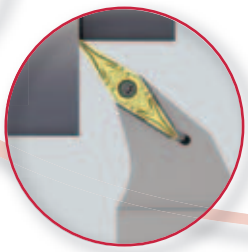
Suitable for various "V" grooving applications



Positive

Face profiling

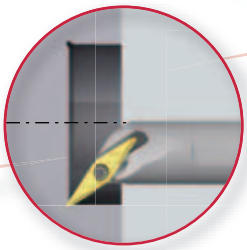
Allows drastic productivity and capability improvements



Positive

External undercutting

Allows a range of undercut forms to be machined



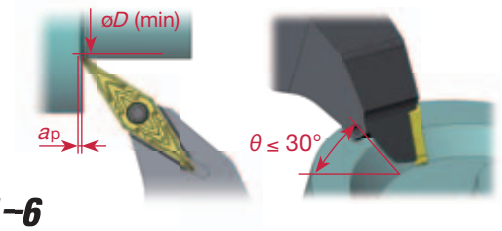
Positive

Internal undercutting and profiling

Allows undercutting of small diameters.

Comparison of undercutting capability

Reduced tool interference



Y Pro series / YWMT type

Corner r_ε	a_p (mm)	øD (mm)
0.2	0.5	ø10
	1.0	ø16
0.4	0.5	ø15
	1.0	ø18
0.8	0.5	ø21
	1.0	ø26

Corner angle 35° / VBMT type

Corner r_ε	a_p (mm)	øD (mm)
0.4	0.5	ø25
	1.0	ø30
0.8	0.5	ø45
	1.0	ø55

Improves the capability of small diameter machining!

YNMG type – Extremely capable and flexible insert

Negative

YNMG inserts are applicable for existing external and internal toolholders.

The Y-Pro series improves the application range for under cutting, V-grooving and taper machining.

Conventional **VNMG** 35° type

Same toolholder for both inserts

YNMG 25° type

Corner radius *r*ε
0.4 mm ⇒ 6.1 mm
Corner radius *r*ε
0.8 mm ⇒ 4.7 mm

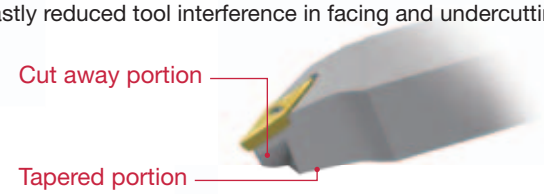
For detailed applicability to toolholders, see "Instruction for use" in our leaflet. When using competitor's toolholders, the applicability should be checked in advance.

YWMT type - for a variety of machining processes

Positive

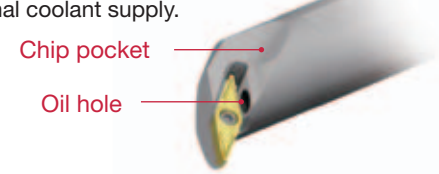
■External toolholders

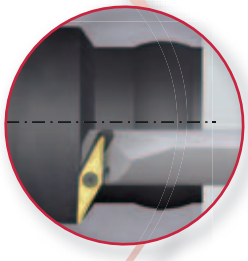
Vastly reduced tool interference in facing and undercutting.



■Internal toolholders

By using the specialized "Stream Jet Bar" series of boring toolholders, excellent chip evacuation is guaranteed with its internal coolant supply.





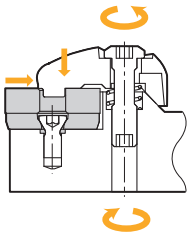
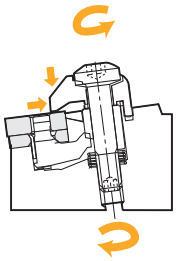
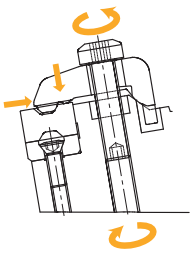
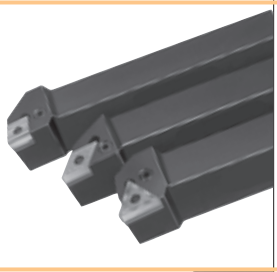
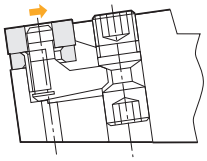
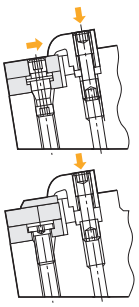
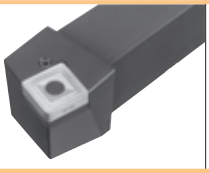
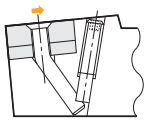
Positive

Internal profiling

Compared to 35°positive insert, can handle smaller bore diameters.

Structures and Features of External TAC Toolholders

Negative

Turning A **A** Double clamping 1st Choice 4-14 ~			● Improved rigidity allows excellent cutting edge positioning accuracy and extended tool life. ● Enlarged engaging area with the insert contributes to excellent cutting edge positioning, even when using a VNMG type insert (35° corner angle) whose cutting edge tends to displace. ● Simple clamping mechanism allows low cost tooling. Insert can be clamped with only one wrench.
D "One-Double" High rigidity 4-14 ~			● Easy and reliable clamping through a one action, double clamping operation. The single action of tightening the clamping screw results in a double action via the clamp and lever that securely fastens the insert into position. ● Unsurpassed stability at the cutting point.
DimpleFX **C** Double clamping for dimple ceramic insert High rigidity 4-36 ~			● Pulling down at dimple and pressing the insert top, Highly rigid double clamping system, ● Just "one" screw is needed for clamping. Easy handling and rigid clamping ● Easy operation in upside-down position
P Lever lock General 4-15 ~			● High indexing accuracy due to a 2 face restraining mechanism and exhibits excellent performance with NC lathe and special purpose machines.
M Multi clamping 4-46 ~			● Insert holding mechanism is combination of lock-pin system and clamp-on system. ● Toolholders specifically for use with a ceramics insert are also available. ● A wide range of styles and sizes of toolholders and inserts are available.
H Retract-pin Heavy duty 4-56 ~			● TAC toolholders for extra heavy use

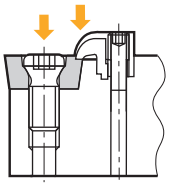
Positive

TurnFeed X

Double Clamping (Screw-on / clamp)

High feed

4-42 ~

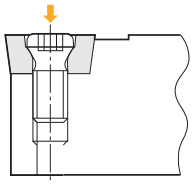


- Allows super high feed machining. Amazingly 8 times the productivity.
- The double clamping mechanism of the clamping screw and the clamp can securely clamp the insert.

S

Screw-on

4-42 ~



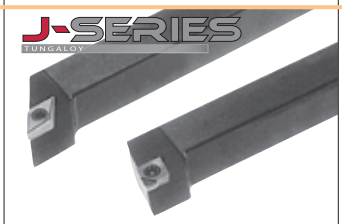
- Simple clamping mechanism.
- Smart shape without overhang area.
- Good cutting action by using positive inserts.

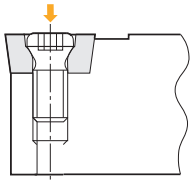
J

Screw-on

Small lathes

4-69 ~





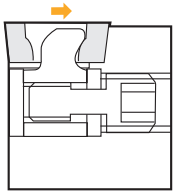
- Available in small to medium shank sizes and abundant cutting edge styles.
- Secure insert fastening by highly durable Torx screw.
- The shank of J type toolholders is ground on all four faces.

JT

Back clamping

Small lathes

4-69 ~



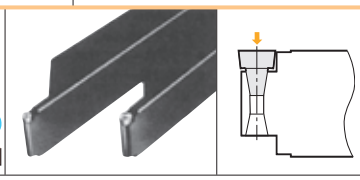
- Good operability for indexing the insert in limited space such as on gang tooling type lathes.
- Good handling allows wrenching the clamping screw from back side of the toolholder.
- Available shank height: 8, 10, 12 and 16 mm

T

Taper-lock

General

4-65



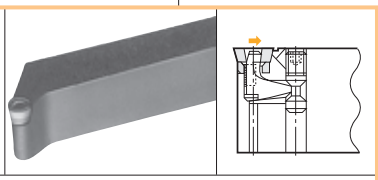
- Simplest mechanism composed only of an insert and toolholder.
- Can be used by simply pushing the insert into the tapered hole of the toolholder.
- The cavity formed on the top of the insert allows freer cutting action and chatterless machining.
- Inserts are available in ø5, ø6, and ø8 mm diameters.

P

Lever lock

General

4-66



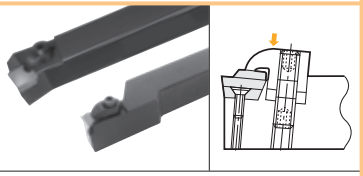
- Positive rake round insert is clamped through lever lock type clamping mechanism with high indexing, accuracy.
- Used for external, face, profile cutting and high feed is possible with excellent surface finish.
- Insert diameters: ø10,12,16, 20, 25 mm

C

Clamp-on

General

4-67 ~

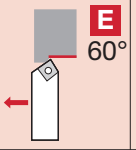
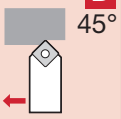
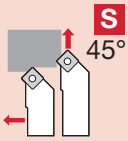
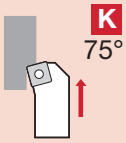
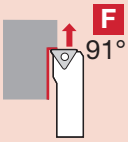
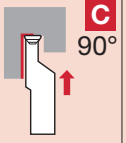
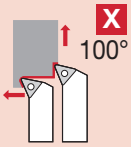
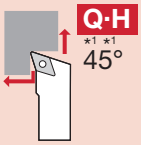
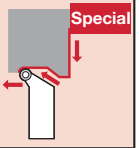


- General purpose, clamp-on system, positive rake toolholders.
- Strong insert clamping and excellent indexing accuracy.
- The positive rake design allows freer cutting action.

Types and Applications of TAC Toolholders

Negative

Application	Turning Facing	External profiling				Turning			
Cutting edge style / Type	L 95°	J 93°	N 63°	V 72.5°	P 62.5°	A 91°	G 91°	B·R 75°	
Turning A Double clamping	80° CN□□ ACLNR/L □12-A □16-A □19-A ▷4-14 80° WN□□ AWLNR/L □06-A □08-A ▷4-17	55° DN□□ ADJNR/L □15-A □1506-A ▷4-18 35° VN□□ AVJNR/L □16-A ▷4-30 60° TN□□ ATJNR/L □16-A ▷4 -24 25° YNMG AVJNR/L □16-A ▷4-30		35° VN□□ AVVNN □16-A ▷4-30 25° YNMG AVVNN □16-A ▷4-30	55° DN□□ ADPNN □15-A ▷4-20		60° TN□□ ATGNR/L □16-A □22-A ▷4-22	90° SN□□ ASBNR/L □12-A □15-A □19-A ▷4-25	
D One-Double	80° CN□□ DCLNR/L □12 □16 □19 ▷4-14 80° WN□□ DWLNR/L □06 □08 ▷4-17	55° DN□□ DDJNR/L □15 □1506 ▷4-18					60° TN□□ DTGNR/L □16 □22 ▷4-22	90° SN□□ DSBNR/L □12 □15 □19 ▷4-25	
C Double clamping for dimple ceramic insert	80° CNGD CCLNR □1207-RD ▷4-36	55° DNGD CDJNR/L □1507-RD ▷4-36	55° DNGD CDNNN □1507-RD ▷4-37	35° VNGD CVVNN □1607-RD ▷4-37					
P Lever lock	80° CN□□ PCLNR/L □09 □12 □16 □19 ▷4-15	55° DN□□ PDJNR/L □11 □15 □1506 ▷4-18	55° DN□□ PDNNR/L □15 □1506 ▷4-20		55° DN□□ PDPNN □15 □1506 ▷4-20		60° TN□□ PTGNR/L □16 □22 □27 ▷4-22	90° SN□□ PSBNR/L □09 □12 □15 □19 □25 ▷4-25 100° CN□□ PCBNR/L □12 □16 □19 ▷4-16	
M Multi clamping	80° CN□□ MCLNR/L □12 □16 □19 ▷4-46 80° CN□□ MCLNR/L □12 ▷4-46 80° WN□□ MWLNR/L □08 □10 □13 ▷4-46	35° VN□□ MVJNR/L □16 ▷4-49 55° DN□□ MDJNR/L □11 □15 □1506 ▷4-47 25° YNMG MVJNR/L □16 ▷4-49 55° DN□□ MDJNR/L □15 ▷4-47 60° TN□□ MTJNR/L □16 □22 ▷4-47 60° TN□□ MTJNR/L □16 □22 ▷4-47		35° VN□□ MVVNN □16 ▷4-50 25° YNMG MVVNN □16 ▷4-50	55° DN□□ MDPNN □11 □15 □1506 ▷4-47 55° DN□□ MDPNN □15 ▷4-47		60° TN□□ MTGNR/L □16 □22 □27 □33 ▷4-48 60° TN□□ MTGNR/L □16 □22 ▷4-48	90° SN□□ MSBNR/L □12 ▷4-50 90° SN□□ MSBNR/L □12 ▷4-50	
C Clamp-on		55° KNMX CKJNR/L □16 ▷4-55	55° KNMX CKNNR/L □16 ▷4-55				60° TN□□ CTGNR/L □16 ▷4-54	90° SN□□ CSBNR/L □12 ▷4-54	
H Retract-pin								90° SNMM HSRNR/L □31 ▷4-56	
JT Back clamping	80° CN□□ JTCL2NR/L □09 ▷4-80	55° DN□□ JTDJ2NR/L □11 ▷4-80				60° TN□□ JTTANR/L □16 ▷4-80			

Turning Chamfering		Turning/Facing Chamfering	Facing			Profiling			External profiling
 E 60°	 D 45°	 S 45°	 K 75°	 F 91°	 C 90°	 X 100°	 Q·H *1 *1 45°		 Special
	90° SN□□ ASDNN □12-A 4-26	90° SN□□ ASSNR/L □12-A □15-A □19-A 4-28	90° SN□□ ASKNR/L □12-A 4-27	60° TN□□ ATFNR/L □16-A □22-A 4-23			55° DN□□ ADQNR/L □15-A □1506-A 4-19 60° TN□□ ATQNR/L □16-A 4-24	35° VN□□ AVQNR/L □16-A 4-30 25° YNMG AVQNR/L □16-A 4-30	- RN□□ ARGNR/L □12-A 4-32
	90° SN□□ DSDNN □12 4-26	90° SN□□ DSSNR/L □12 4-28	90° SN□□ DSKNR/L □12 4-27	60° TN□□ DTFNR/L □16 □22 4-23			55° DN□□ DDQNR/L □15 □1506 4-19		- RN□□ DRGNR/L □12 4-32
		90° SNGD CSSNR/L □1207-RD 4-36 90° HNGD CHSNR/L □0507-RD 4-37							
	90° SN□□ PSDNN □09 □12 □15 4-26	90° SN□□ PSSNR/L □09 □12 □15 □19 4-28	90° SN□□ PSKNR/L □09 □12 □19 □25 4-27	60° TN□□ PTFNR/L □16 □22 □27 4-23 80° CN□□ PCFNR/L □12 4-15			55° DN□□ PDQNR/L □15 □1506 4-19		- RNMG PRGNR/L □09 □12 4-32
60° TN□□ MTENN □16 □22 4-49	90° SN□□ MSDNN □12 4-50 90° SN□□ MSDNN □12 4-50	90° SN□□ MSSNR/L □12 4-50 90° SN□□ MSSNR/L □12 4-50	90° SN□□ MSKNR/L □12 4-50 90° SN□□ MSKNR/L □12 4-50	60° TN□□ MTFNR/L □16 □22 □27 4-49 60° TN□□ MTFNR/L □16 □22 □27 4-49			55° DN□□ MDQNR/L □11 □15 □1506 4-47 55° DN□□ MDQNR/L □15 4-47 35° VN□□ MVQNR/L □16 4-49	25° YNMG MVQNR/L □16 4-49 60° TN□□ MTQNR/L □16 □22 4-48 60° TN□□ MTQNR/L □16 □22 4-48	- RN□□ MRGNR/L □12 4-51 80° RN□□ MRGNR/L □12 4-51
	90° SN□□ CSDNN □12 4-54	90° SN□□ CSSNR/L □12 4-54	90° SN□□ CSKNR/L □12 4-54	60° TN□□ CTFNR/L □16 4-54					

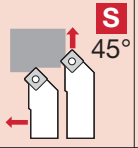
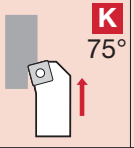
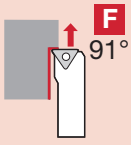
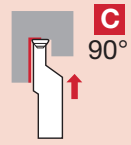
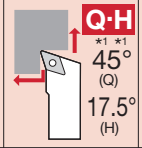
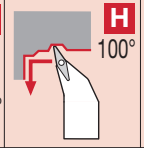
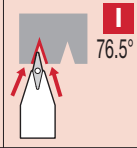
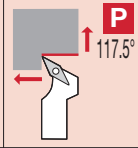
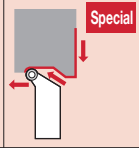
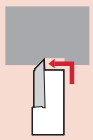
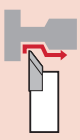
Note:*1 marked Q and H style are Tungaloy Standard.

Types and Applications of TAC Toolholders

Positive

Application	Turning Facing	External profiling			Turning			Turning Facing	Turning Chamfering	
Cutting edge style / Type	L 95°	J 93°	V 72.5°	N 62.5°	A 91°	G 91°	B·R 75°	X 20°	D 45°	
X Double clamping (Screw-on/clamp)								80° WPMT XWXPR/L □09 4-42		
P Lever lock										
C Clamp-on						60° TP□□ CTGPR/L □16 4-67	90° SP□□ CSBPR/L □09 □12 4-67		90° SP□□ CSDPN □09 □12 4-67	
J Screw-on 8-1	80° CC□□ JSCLCR/L □06 □09 4-70 80° CC□□ JSCL2CR/L *2 □06 □09 4-69 35° VP□□ JSVL2PR/L □08 4-79	55° DC□□ JSDJCR/L □07 □11 4-73 55° DC□□ JSDJ2CR/L *2 □07 4-72 35° VB□□ JSVJBR/L □11 4-77 35° VB□□ JSVJ2BR/L □11 4-77		55° DC□□ JSDNCN □07 □11 4-73 55° DC□□ JSDN3CR/L *3 □07 □11 4-74	80° CC□□ JSCACR/L □06 □09 4-70 60° TC□□ JSTACR/L □08 □11 4-76 35° VB□□ JSVABR/L □11 4-78	80° CC□□ JSCGCR/L □06 □09 4-71				
S Screw-on	80° CC□□ SCLCR/L □06 □09 □12 4-57 80° CC□□ SCL2CR/L *2 □06 4-57	55° DC□□ SDJCR/L □11 4-58 55° DC□□ SDJ2CR/L *2 □07 4-57 35° VC□□ SVJCR/L □16 4-59 25° YWMT SYJBR/L □16 4-42	35° VC□□ SVVCN □16 4-60	55° DC□□ SDNCN □07 □11 4-58 55° DC□□ SDN3CR/L *3 □07 □11 4-58	60° TC□□ STACR/L □08 □09 □11 □16 4-59 60° TP□□ STAPR/L (Tungaloy Standard) □11 4-59	80° CC□□ SCGCR/L □06 □09 4-57			90° SC□□ SSDCN □07 □09 4-60 90° SP□□ SSDPN (Tungaloy Standard) □07 □09 4-60	
JT Back clamping	80° CC□□ JTCL2CR/L □06 □09 4-69	55° DC□□ JTDJ2CR/L □07 □11 4-72			60° TC□□ JTTACR/L □08 □11 4-76					
T Taper-lock										

*2: L2 and J2: 0 offsetting *3 

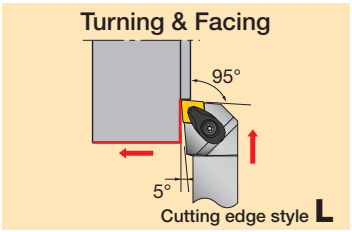
	Turning/Facing Chamfering	Facing			Profiling				External profiling	Back turning	Front turning Reverse turning
	 S 45°	 K 75°	 F 91°	 C 90°	 Q·H *1 *1 45° (Q) 17.5° (H)	 H 100°	 I 76.5°	 P 117.5°	 Special		
									- RCM□ PRGCR/L □10 □12 □16 □20 □25 4-66 - RCM□ PRDCN □10 □12 □16 □20 □25 4-66		
	90° SP□□ CSSPR/L □09 □12 4-68	90° SP□□ CSKPR/L □09 □12 4-67	60° TP□□ CTFPR/L □16 4-67	60° TP□□ CTCPR/L □16 4-67							
			80° CC□□ JSCFCR/L □06 □09 4-71 55° DC□□ JSDFCR/L □07 □11 4-74					35° VP□□ JSVP2PR/L □08 □11 4-79		JXBR JSXBR/L □8 4-82 JTBR JSTBR/L □3 4-83 JTBR3 JS□□K-TBL 3 4-83 J10ER JSEGR/L □10 4-84	JX□□ JSXGR/L □8 4-81 55° DC□□ JS□□K-SDUCL 07 11 4-75
			80° CC□□ SCFCR/L □06 □09 4-57 55° DC□□ SDFCR/L □07 □11 4-58		35° VC□□ SVQCR/L □16 4-59 55° DC□□ SDQCR/L □11 4-58 35° VCG□ SVHCR/L □08 4-60 25° YWMT SYQBR/L □16 4-43	25° YWMT SYHBR/L □16 4-43	25° YWMT SYIBN □16 4-43		- RCMT SRACR/L □05 □06 □08 4-61 - RCMT SRGCR/L □05 □06 □08 □10 4-61 - RCMT SRDCN □06 □08 □10 4-62	Note: JSXB R/L type is also used for JXT-type threading inserts.	Note: JSXG R/L type is also used for JXG-type Grooving inserts.
									- RT□□ TRACN □05 □06 □08 4-65 - RT□□ TRDCN □05 □06 □08 4-65		

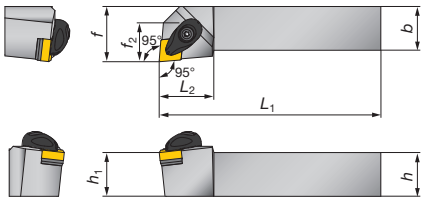
Note:*1 marked Q and H style are Tungaloy Standard.

ACLNR/L

Applicable inserts
CN□□

Negative rake
Double clamping system





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
ACLNR/L2020K12-A	●	●	20	20	125	26	20	25	19	0.8	CN□□1204□□	2-42 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
ACLNR/L2525M12-A	●	●	25	25	150	30	25	32	21			
ACLNR/L3225P12-A	●	●	32	25	170	30	32	32	21			
ACLNR/L2525M16-A	●	●	25	25	150	31	25	32	22	1.2	CN□□1606□□	2-45 ~
ACLNR/L3225P16-A	●	●	32	25	170	31	32	32	22			
ACLNR/L3232P16-A	●	●	32	32	170	31	32	40	22			
ACLNR/L3232P19-A	●	●	32	32	170	40	32	40	25	1.2	CN□□1906□□	2-45 ~
ACLNR/L4040S19-A	●	●	40	40	250	40	40	50	25			

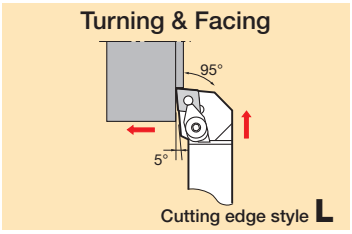
*Recommend clamping torque: 4.0 N·m

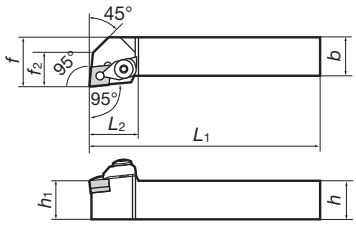
D-type

DCLNR/L

Applicable inserts
CN□□

Negative rake
"One-Double" system





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
DCLNR/L2020K12	●	●	20	20	125	30	20	25	18	0.8	CN□□1204□□ (Except for 57-type chipbreaker inserts)	2-42 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
DCLNR/L2525M12	●	●	25	25	150	30	25	32	18			
DCLNR/L3225P12	●	●	32	25	170	30	32	32	18			
DCLNR/L3225P16			32	25	170	40	32	32	22	1.2	CN□□1606□□ (Except for 57-type chipbreaker inserts)	2-45 ~
DCLNR/L3232P16			32	32	170	40	32	40	22			
DCLNR/L3232P19			32	32	170	45.5	32	40	25	1.2	CN□□1906□□ (Except for 57-type chipbreaker inserts)	2-45 ~
DCLNR/L4040R19			40	40	200	45.5	40	50	25			

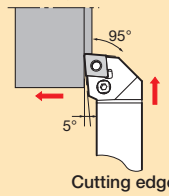
● : Stocked items.

PCLNR/L

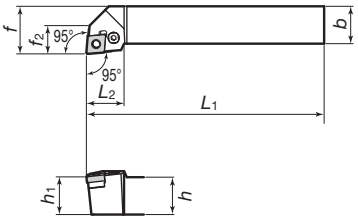
Applicable inserts
CN□□

Negative rake
Lever-lock system

Turning & Facing



Cutting edge style **L**



Right hand (R) shown.

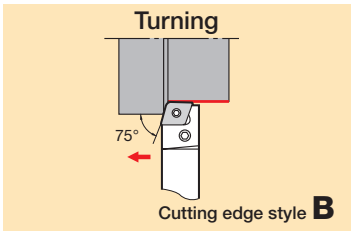
Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
PCLNR/L1616H09	●	●	16	16	100	20	16	20	15	0.8	CN□□0903□□	2-42 ~
PCLNR/L2020K09	●	●	20	20	125	20	20	25	15			
PCLNR/L2525M09	●	●	25	25	150	20	25	32	15			
PCLNR/L1616H12E	●	●	16	16	100	26	16	20	–	0.8	CN□□1204□□	2-42 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
PCLNR/L2020K12E	●	●	20	20	125	28	20	25	18			
PCLNR/L2525M12E	●	●	25	25	150	28	25	32	18			
PCLNR/L3225P12E	●	●	32	25	170	28	32	32	18			
PCLNR/L2525M16E	●	●	25	25	150	31	25	25	–	1.2	CN□□1606□□	2-45 ~
PCLNR/L3225P16E		●	32	25	150	31	32	32	–			
PCLNR/L3232P16E	●		32	32	170	31	32	40	–			
PCLNR/L3232P19E	●	●	32	32	170	40	32	40	25	1.2	CN□□1906□□	2-42 ~
PCLNR/L4040R19E			40	40	200	40	40	50	25			

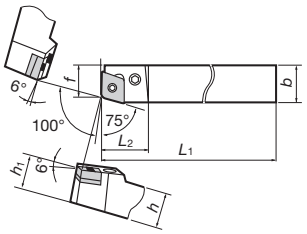
● : Stocked items.

PCBNR/L

Applicable inserts
CN□□

Negative rake
Lever-lock system





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
PCBNR/L2020K12E	●	●	20	20	125	28	20	17	–	0.8	CN□□1204□□	2-42 ~
PCBNR/L2525M12E	●	●	25	25	150	28	25	22	–			
PCBNR/L2525M16E	●		25	25	150	35	25	22	–	1.2	CN□□1606□□	2-45 ~
PCBNR/L3225P16E			32	25	170	35	32	22	–			
PCBNR/L3232P16E			32	32	170	35	32	27	–			
PCBNR/L3232P19E	●		32	32	170	40	32	27	–	1.2	CN□□1906□□	2-45 ~

*100° corners are used. ● : Stocked items.

Basic Selection Chipbreakers CN□□1204□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-42	2-42	2-45	2-48
Chipbreaker	TF	TSF	TM	TH
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.6)
r_ε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**T6120**	**T6130**	**T6130**
Page	2-42	2-46	2-49
Chipbreaker	SF	SM	SH
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
r_ε (mm)	0.4	0.8	1.6

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-7	2-43	2-46	2-49
Chipbreaker	T-CBN	CF	CM	CH
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.6)
r_ε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**DX120**	**TH10**	**GH110**
Page	3-21	2-42	2-48
Chipbreaker	T-DIA	01	P
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)
r_ε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing to medium cutting	Medium cutting
Grade	**BX470**	**AH905**	**AH120**
Page	3-7	2-47	2-48
Chipbreaker	T-CBN	HMM	SA
Vc (m/min)	**200** (100-280)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
r_ε (mm)	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-7	3-7
Chipbreaker	T-CBN	T-CBN
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
r_ε (mm)	0.4	0.4

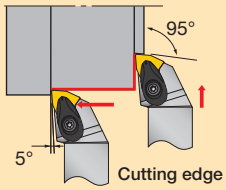
For other machining types, see “Selection System” 2-4 ~

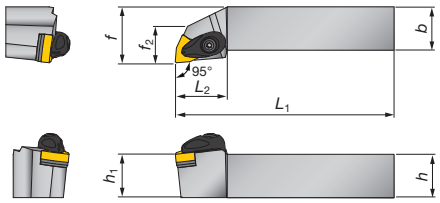
AWLNR/L

Applicable inserts
WN□□

Negative rake
Double clamping system

Turning & Facing





Right hand (R) shown.

Toolholders Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Page
AWLNR/L2020K06-A	●	●	20	20	125	27	20	25	16	0.8	WN□□0604□□	2-80 ~
AWLNR/L2525M06-A	●	●	25	25	150	27	25	32	23			
AWLNR/L2020K08-A	●	●	20	20	125	30	20	25	19	0.8	WN□□0804□□	2-80 ~ 3-9 ~ T-CBN
AWLNR/L2525M08-A	●	●	25	25	150	30	25	32	21			
AWLNR/L3225P08-A	●	●	32	25	170	30	32	32	21			

*Recommend clamping torque: WN□□0604: 3.0 N·m, WN□□0804: 4.0 N·m

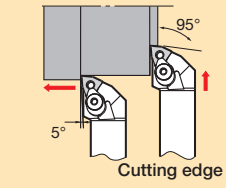
D-type

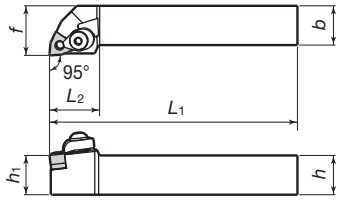
DWLNR/L

Applicable inserts
WN□□

Negative rake
"One-Double" system

Turning & Facing





Right hand (R) shown.

Toolholders Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Page
DWLNR/L2020K06	●	●	20	20	125	25.5	20	25	–	0.8	WN□□0604□□	2-80 ~
DWLNR/L2525M06	●	●	25	25	150	26	25	32	–			
DWLNR/L2020K08	●	●	20	20	125	31	20	25	–	0.8	WN□□0804□□ (Except for 57-type chipbreaker inserts)	2-80 ~ 3-9 ~ T-CBN
DWLNR/L2525M08	●	●	25	25	150	31	25	32	–			
DWLNR/L3225P08	●	●	32	25	170	30	32	32	–			

Basic Selection Chipbreakers WN□□0804□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-80	2-80	2-83	2-85
Chipbreaker	**TF**	**TSF**	**TM**	**TH**
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-250)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
r_ε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**T6120**	**T6130**	**T6130**
Page	2-80	2-83	2-85
Chipbreaker	**SF**	**SM**	**SH**
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
r_ε (mm)	0.4	0.8	1.6

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-9	2-81	2-84	2-86
Chipbreaker	**T-CBN**	**CF**	**CM**	**CH**
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.5)
r_ε (mm)	0.4	0.4	0.8	1.2

S Superalloys — Continuous

Operation	Precision finishing	Finishing to medium cutting	Medium cutting
Grade	**BX480**	**AH905**	**KS20**
Page	3-9	2-84	2-85
Chipbreaker	**T-CBN**	**HMM**	**SA**
Vc (m/min)	**200** (70-300)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)	**3.0** (1.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
r_ε (mm)	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-9	3-9
Chipbreaker	**T-CBN**	**T-CBN**
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
r_ε (mm)	0.4	0.4

For other machining types, see "Selection System" 2-4 ~

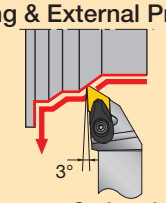
● : Stocked items.

ADJNR/L

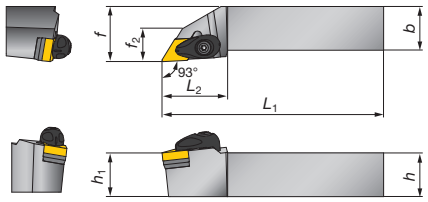
Applicable inserts
DN□□

Negative rake
Double clamping sysetm

Turning & External Profiling



Cutting edge style **J**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
ADJNR/L2020K15-A	●	●	20	20	125	36	20	25	17	0.8	DN□□1504□□	2-52 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
ADJNR/L2525M15-A	●	●	25	25	150	36	25	32	18			
ADJNR/L3225P15-A	●	●	32	25	170	36	32	32	18			
ADJNR/L2020K1506-A	●	●	20	20	125	36	20	25	17	0.8	DN□□1506□□	2-52 ~
ADJNR/L2525M1506-A	●	●	25	25	150	36	25	32	18			

*Recommend clamping torque: 4.0 N·m

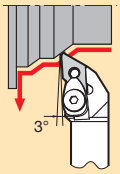
D-type

DDJNR/L

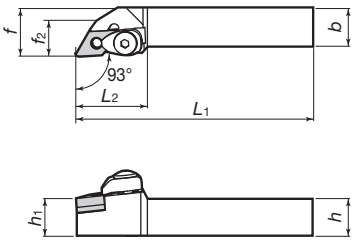
Applicable inserts
DN□□

Negative rake
"One-Double" system

Turning & External Profiling



Cutting edge style **J**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
DDJNR/L2020K15	●	●	20	20	125	38	20	25	19	0.8	DN□□1504□□ (Except for 57-type chipbreaker inserts)	2-52 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
DDJNR/L2525M15	●	●	25	25	150	38	25	32	19			
DDJNR/L3225P15	●	●	32	25	170	38	32	32	19			
DDJNR/L2020K1506	●	●	20	20	125	38	20	25	19	0.8	DN□□1506□□ (Except for 57-type chipbreaker inserts)	2-52 ~
DDJNR/L2525M1506	●	●	25	25	150	38	25	32	19			
DDJNR/L3225P1506	●	●	32	25	170	38	32	32	19			

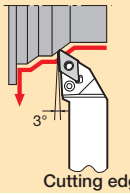
P-type

PDJNR/L

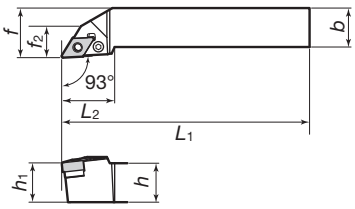
Applicable inserts
DN□□

Negative rake
Lever-lock system

Turning & External Profiling



Cutting edge style **J**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
PDJNR/L1616H11	●	●	16	16	100	27	16	20	16	0.8	DN□□1104□□	2-52 ~
PDJNR/L2020K11	●	●	20	20	125	27	20	25	16			
PDJNR/L2525M11	●	●	25	25	150	27	25	32	19			
PDJNR/L2020	●	●	20	20	125	32	20	25	19	0.8	DN□□1504□□	2-52 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
PDJNR/L2520	●	●	25	20	150	32	25	25	19			
PDJNR/L2525	●	●	25	25	150	32	25	32	19			
PDJNR/L3225	●	●	32	25	170	32	32	32	19			
PDJNR/L3232			32	32	170	32	32	40	19			
PDJNR/L2020K15E	●		20	20	125	32	20	25	–	1.2	DN□□1506□□	2-52 ~
PDJNR/L2525M15E	●	●	25	25	150	32	25	32	–			
PDJNR/L3225P15E	●		32	25	170	32	32	34	–			
PDJNR/L3232P15E			32	32	170	32	32	40	32			

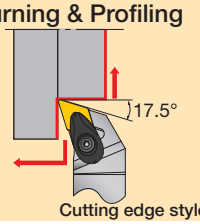
● : Stocked items.

ADQNR/L

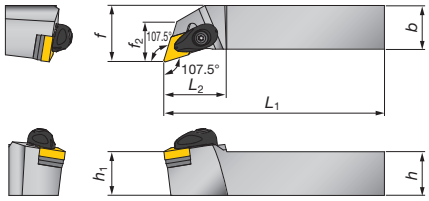
Applicable inserts
DN□□

Negative rake
Double clamping system

Turning & Profiling



Cutting edge style Q



Right hand (R) shown.

Toolholders Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Page
ADQNR/L2020K15-A	●	●	20	20	125	32	20	25	21	0.8	DN□□1504□□	2-52 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
ADQNR/L2525M15-A	●	●	25	25	150	36	25	32	23			
ADQNR/L2020K1506-A	●	●	20	20	125	32	20	25	21	0.8	DN□□1506□□	2-52 ~
ADQNR/L2525M1506-A	●	●	25	25	150	36	25	32	23			

*Recommend clamping torque: 4.0 N·m

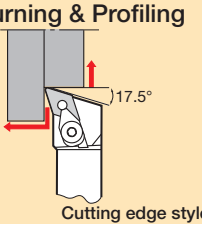
D-type

DDQNR/L

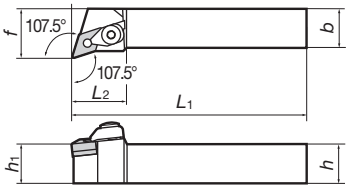
Applicable inserts
DN□□

Negative rake
"One-Double" system

Turning & Profiling



Cutting edge style Q



Right hand (R) shown.

Toolholders Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Page
DDQNR/L2020K15	●	●	20	20	125	35	20	25	–	0.8	DN□□1504□□ (Except for 57-type chipbreaker inserts)	2-52 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
DDQNR/L2525M15	●	●	25	25	150	35	25	32	–			
DDQNR/L3225P15	●	●	32	25	170	35	32	32	–			
DDQNR/L2020K1506	●	●	20	20	125	35	20	25	–	0.8	DN□□1506□□ (Except for 57-type chipbreaker inserts)	2-52 ~
DDQNR/L2525M1506	●	●	25	25	150	35	25	32	–			
DDQNR/L3225P1506	●	●	32	25	170	35	32	32	–			

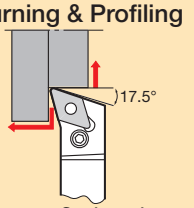
P-type

PDQNR/L

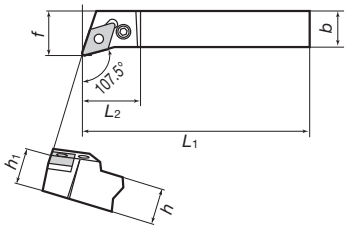
Applicable inserts
DN□□

Negative rake
Lever-lock system

Turning & Profiling



Cutting edge style Q



Right hand (R) shown.

Toolholders Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Page
PDQNR/L2020			20	20	125	32	20	25	–	0.8	DN□□1504□□	2-52 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
PDQNR/L2525	●	●	25	25	150	32	25	32	–			
PDQNR/L3225			32	25	170	32	32	32	–			
PDQNR/L3232			32	32	170	32	32	40	–			
PDQNR/L2020K15E			20	20	125	32	20	25	–	1.2	DN□□1506□□	2-52 ~
PDQNR/L2525M15E			25	25	150	32	25	32	–			
PDQNR/L3225P15E			32	25	170	32	32	32	–			
PDQNR/L3232P15E			32	32	170	32	32	40	–			

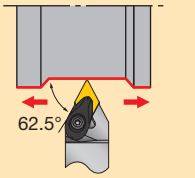
● : Stocked items.

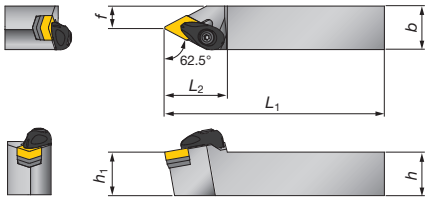
ADPNN

Applicable inserts
DN□□1504

Negative rake
Double clamping system

External Profiling





Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
		h	b	L_1	L_2	h_1	f	f_2			
ADPNN2020K15-A	●	20	20	125	36	20	7.5	–	0.8	DN□□1504□□	2-52 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
ADPNN2525M15-A	●	25	25	150	36	25	12.5	–			

*Recommend clamping torque: 4.0 N·m

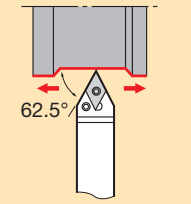
P-type

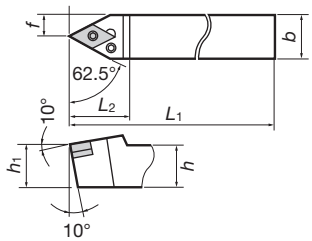
PDPNN

Applicable inserts
DN□□

Negative rake
Lever-lock system

External Profiling





Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
		h	b	L_1	L_2	h_1	f	f_2			
PDPNN2525	●	25	25	150	36	25	12.5	–	0.8	DN□□1504□□	2-52 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
PDPNN3225		32	25	170	36	32	12.5	–			
PDPNN2525M15E	●	25	25	150	36	25	12.5	–	1.2	DN□□1506□□	2-52 ~
PDPNN3225P15E		32	25	170	36	32	12.5	–			

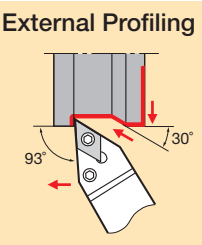
P-type

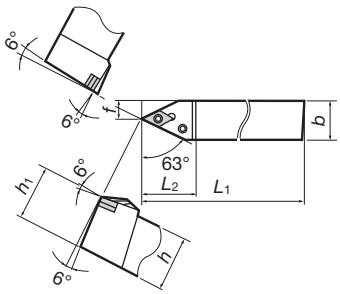
PDNNR/L

Applicable inserts
DN□□

Negative rake
Lever-lock system

External Profiling





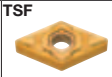
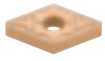
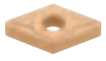
Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
PDNNR/L4025			40	25	150	36	40	12	–	0.8	DN□□1504□□	2-52 ~ 3-7 ~ T-CBN 3-21 ~ T-DIA
PDNNR/L5032			50	32	150	36	50	16	–			
PDNNR/L5032H			50	32	150	36	50	16	–	0.8	DN□□1506□□	2-52 ~
PDNNR/L4025M15E			40	25	150	36	40	12	–	0.8	DN□□1506□□	2-52 ~
PDNNR/L5032M15E			50	32	150	36	50	16	–			

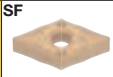
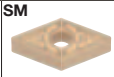
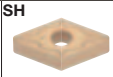
● : Stocked items.

Basic Selection Chipbreakers DN□□1504□□-□□

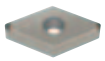
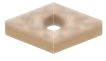
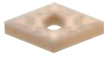
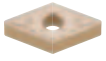
P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-52	2-52	2-55	2-58
Chipbreaker	**TF** 	**TSF** 	**TM** 	**TH** 
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

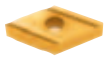
M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**T6120**	**T6130**	**T6130**
Page	2-53	2-55	2-58
Chipbreaker	**SF** 	**SM** 	**SH** 
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.8	1.2

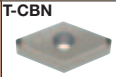
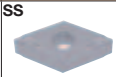
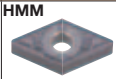
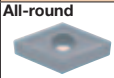
K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-7	2-53	2-56	2-59
Chipbreaker	**T-CBN** 	**CF** 	**CM** 	**CH** 
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

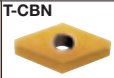
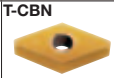
N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**DX120**	**GH110**	**GH110**
Page	3-21	2-52	2-58
Chipbreaker	**T-DIA** With chipbreaker 	**01** 	**P** 
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX470**	**KS20**	**AH905**	**AH120**
Page	3-7	2-53	2-56	2-55
Chipbreaker	**T-CBN** 	**SS** 	**HMM** 	**All-round** 
Vc (m/min)	**200** (100-280)	**50** (30-70)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.0** (0.5-3.0)	**1.5** (0.5-3.0)	**3.0** (1.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.08-0.2)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-7	3-7
Chipbreaker	**T-CBN** 	**T-CBN** 
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

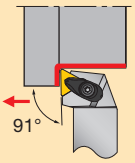
For other machining types, see “Selection System” 2-4 ~

ATGNR/L

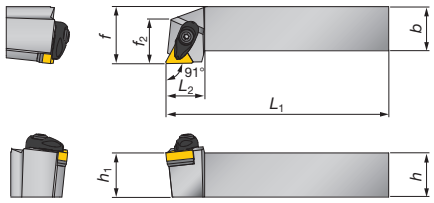
Applicable inserts
TN□□

Negative rake
Double clamping system

Turning



Cutting edge style **G**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
ATGNR/L2020K16-A	●	●	20	20	125	22	20	25	22	0.8	TN□□1604□□	2-70 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
ATGNR/L2525M16-A	●	●	25	25	150	22	25	32	25			
ATGNR/L2525M22-A	●	●	25	25	150	26	25	32	26	0.8	TN□□2204□□	2-70 ~

*Recommend clamping torque: TN□□1604: 3.0 N·m, TN□□2204: 4.0 N·m

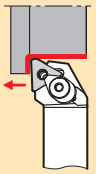
D-type

DTGNR/L

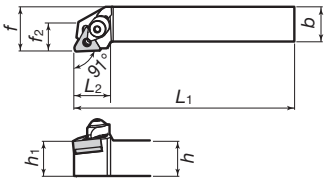
Applicable inserts
TN□□

Negative rake
"One-Double" system

Turning



Cutting edge style **G**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
DTGNR/L2020K16	●	●	20	20	125	21	20	25	16	0.8	TN□□1604□□ (Except for 57-type chipbreaker inserts)	2-70 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
DTGNR/L2525M16	●	●	25	25	150	21	25	32	21			
DTGNR/L2525M22	●	●	25	25	150	28	25	32	25	0.8	TN□□2204□□ (Except for 57-type chipbreaker inserts)	2-70 ~

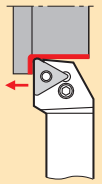
P-type

PTGNR/L

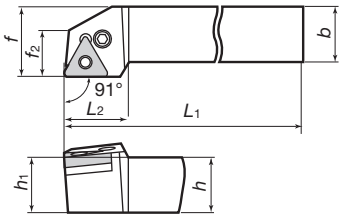
Applicable inserts
TN□□

Negative rake
Lever-lock system

Turning



Cutting edge style **G**



Right hand (R) shown.

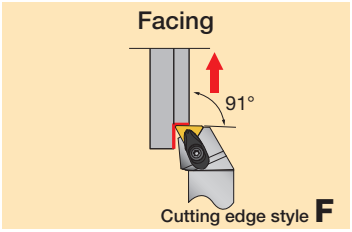
Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
PTGNR/L1616H16E	●	●	16	16	100	22	16	20	16	0.8	TN□□1604□□	2-70 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
PTGNR/L2020K16E	●	●	20	20	125	22	20	25	16			
PTGNR/L2525M16E	●	●	25	25	150	22	25	32	21			
PTGNR/L3225P16E			32	25	170	22	32	32	21			
PTGNR/L2525M22E	●	●	25	25	150	28	25	32	24	0.8	TN□□2204□□	2-70 ~
PTGNR/L3225P22E	●	●	32	25	170	28	32	32	24			
PTGNR/L3232P22E	●		32	32	170	28	32	40	28			
PTGNR/L3232P27E			32	32	170	35	32	40	30	1.2	TN□□2706□□	

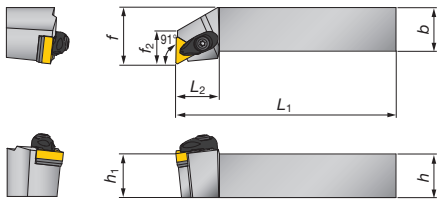
● : Stocked items.

ATFNR/L

Applicable inserts
TN□□

Negative rake
Double clamping system





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
ATFNR/L2020K16-A	●	●	20	20	125	25	20	25	18	0.8	TN□□1604□□	2-70 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
ATFNR/L2525M16-A	●	●	25	25	150	25	25	32	19			
ATFNR/L2525M22-A	●	●	25	25	150	29	25	32	23	0.8	TN□□2204□□	2-70 ~

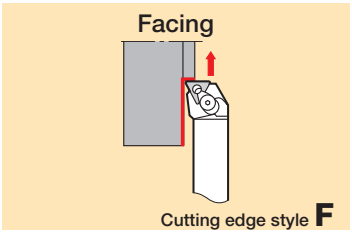
*Recommend clamping torque: TN□□1604: 3.0 N·m, TN□□2204: 4.0 N·m

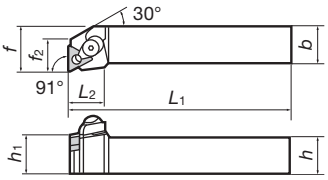
D-type

DTFNR/L

Applicable inserts
TN□□

Negative rake
"One-Double" system





Right hand (R) shown.

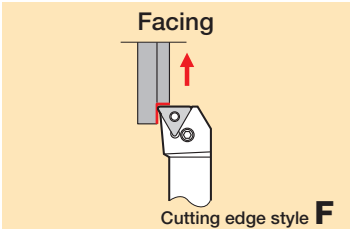
Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
DTFNR/L2020K16	●	●	20	20	125	23	20	25	18.5	0.8	TN□□1604□□	2-70 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
DTFNR/L2525M16	●	●	25	25	150	23	25	32	20			
DTFNR/L2525M22	●	●	25	25	150	31	25	32	24	0.8	TN□□2204□□	2-70 ~

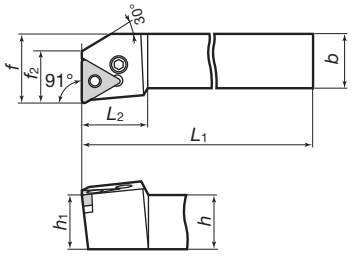
P-type

PTFNR/L

Applicable inserts
TN□□

Negative rake
Lever-lock system





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
PTFNR/L1616H16E	●	●	16	16	100	22	16	20	18	0.8	TN□□1604□□	2-70 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
PTFNR/L2020K16E	●	●	20	20	125	22	20	25	17.5			
PTFNR/L2525M16E	●	●	25	25	150	22	25	32	20			
PTFNR/L3225P16E	●	●	32	25	170	22	32	32	20			
PTFNR/L2525M22E	●	●	25	25	150	28	25	32	24	0.8	TN□□2204□□	2-70 ~
PTFNR/L3225P22E	●	●	32	25	170	28	32	32	24			
PTFNR/L3232P27E			32	32	170	31	32	40	30	1.2	TN□□2706□□	
PTFNR/L4040P27E			40	40	200	31	40	50	30			

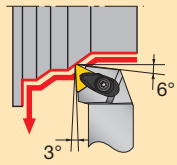
● : Stocked items.

ATJNR/L

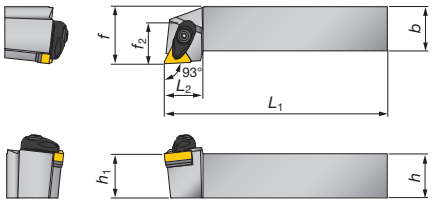
Applicable inserts
TN□□1604

Negative rake
Double clamping system

Turning • External Profiling



Cutting edge style **J**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
ATJNR/L2020K16-A	●	●	20	20	125	22	20	25	23	0.8	TN□□1604□□	2-70 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
ATJNR/L2525M16-A	●	●	25	25	150	22	25	32	25			

*Recommend clamping torque: 3.0 N·m

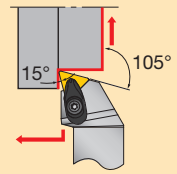
A-type

ATQNR/L

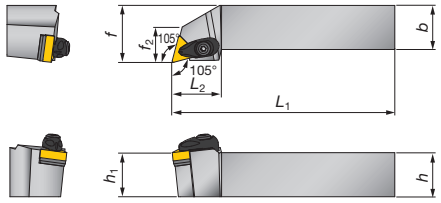
Applicable inserts
TN□□1604

Negative rake
Double clamping system

External Profiling



Cutting edge style **Q**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
ATQNR/L2020K16-A	●	●	20	20	125	28	20	25	18	0.8	TN□□1604□□	2-70 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
ATQNR/L2525M16-A	●	●	25	25	150	28	25	32	20			

*Recommend clamping torque: 3.0 N·m

Basic Selection Chipbreakers TN□□1604□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-70	2-71	2-74	2-77
Chipbreaker	**TF** 	**TSF** 	**TM** 	**TH** 
Vc (m/min)	**200** (150-250)	**200** (150-300)	**200** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
r_ε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting
Grade	**T6120**	**T6130**
Page	2-71	2-74
Chipbreaker	**SF** 	**SM** 
Vc (m/min)	**150** (100-200)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.4)
r_ε (mm)	0.4	0.8

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-8	2-72	2-75	2-77
Chipbreaker	**T-CBN** 	**CF** 	**CM** 	**CH** 
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.6)
r_ε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**DX120**	**GH110**	**GH110**
Page	3-21	2-70	2-76h
Chipbreaker	**T-DIA** With chipbreaker 	**01** 	**P** 
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**3.0** (0.2-0.5)
r_ε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX470**	**KS20**	**AH905**	**AH120**
Page	3-8	2-71	2-75	2-76
Chipbreaker	**T-CBN** 	**SS** 	**HMM** 	**SA** 
Vc (m/min)	**200** (100-280)	**50** (30-70)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.0** (0.5-3.0)	**1.5** (0.5-3.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
r_ε (mm)	0.4	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-8	3-8
Chipbreaker	**T-CBN** 	**T-CBN** 
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
r_ε (mm)	0.4	0.4

For other machining types, see "Selection System" 2-4 ~

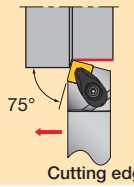
● : Stocked items.

ASBNR/L

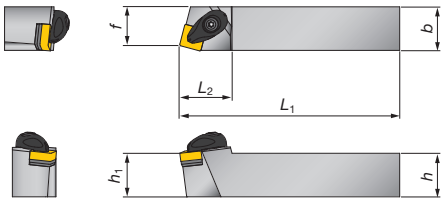
Applicable inserts
SN□□

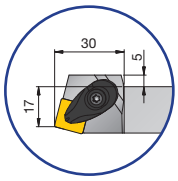
Negative rake
Double clamping system

Turning



Cutting edge style **B**





Enlarged view of 2020 type

Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
ASBNR/L2020K12-A	●	●	20	20	125	30	20	17	–	0.8	SN□□1204□□	2-61 ~, 3-8 ~ T-CBN 3-21 ~ T-DIA
ASBNR/L2525M12-A	●	●	25	25	150	30	25	22	–			
ASBNR/L2525M15-A	●	●	25	25	150	42.5	25	22	–	1.2	SN□□1506□□	2-64 ~
ASBNR/L3232P15-A	●	●	32	32	170	42.5	32	27	–			
ASBNR/L3232P19-A	●	●	32	32	170	47.5	32	27	–	1.2	SN□□1906□□	2-64 ~
ASBNR/L4040S19-A	●	●	40	40	250	47.5	40	35	–			

*Recommend clamping torque: 4.0 N·m

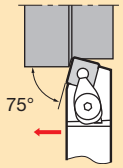
D-type

DSBNR/L

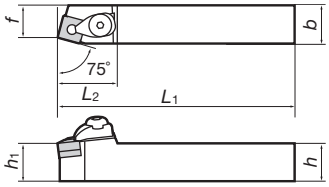
Applicable inserts
SN□□

Negative rake
"One-Double" system

Turning



Cutting edge style **B**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
DSBNR/L2020K12	●	●	20	20	125	35	20	17	–	0.8	SN□□1204□□ (Except for 57-type chipbreaker inserts)	2-61 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
DSBNR/L2525M12	●	●	25	25	150	35	25	22	–			
DSBNR/L3225P15			32	25	170	42.5	32	22	–	1.2	SN□□1506□□ (Except for 57-type chipbreaker inserts)	2-64 ~
DSBNR/L3232P15			32	32	170	42.5	32	27	–			
DSBNR/L3232P19			32	32	170	47.5	32	27	–	1.2	SN□□1906□□ (Except for 57-type chipbreaker inserts)	2-64 ~
DSBNR/L4040R19			40	40	200	47.5	40	35	–			

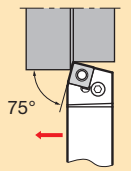
P-type

PSBNR/L

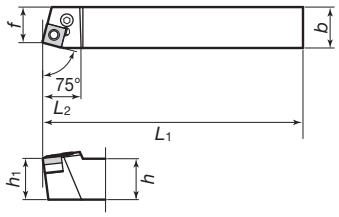
Applicable inserts
SN□□

Negative rake
Lever-lock system

Turning



Cutting edge style **B**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
PSBNR/L1616H09E			16	16	100	22	16	13	–	0.8	SN□□0903□□	2-61 ~
PSBNR/L2020K12E	●	●	20	20	125	28	20	17	–	0.8	SN□□1204□□	2-61 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
PSBNR/L2525M12E	●	●	25	25	150	24	25	22	–			
PSBNR/L3225P12E	●	●	32	25	170	28	32	22	–			
PSBNR/L2525M15E	●	●	25	25	150	35	25	22	–	1.2	SN□□1506□□	2-64 ~
PSBNR/L3225P15E			32	25	170	35	32	22	–			
PSBNR/L3232P15E	●	●	32	32	170	35	32	27	–			
PSBNR/L3232P19E	●	●	32	32	170	40	32	27	–	1.2	SN□□1906□□	2-64 ~
PSBNR/L4040R19E			40	40	200	40	40	35	–			
PSBNR/L5050T25E			50	50	300	48	50	43	–	2.4	SN□□2507□□	2-64 ~

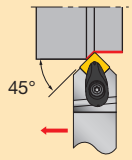
● : Stocked items.

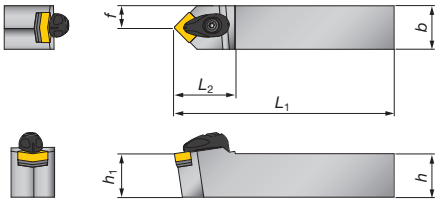
ASDNN

Applicable inserts
SN□□1204□□

Negative rake
Double clamping system

Turning & Chamfering





Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
		h	*b*	L_1	L_2	h_1	*f*	f_2			
ASDNN2020K12-A	●	20	20	125	35	20	10	–	0.8	SN□□1204□□	2-61 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
ASDNN2525M12-A	●	25	25	150	35	25	12.5	–			

*Recommend clamping torque: 4.0 N·m

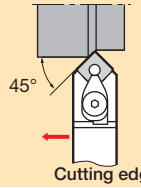
D-type

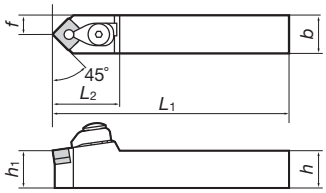
DSDNN

Applicable inserts
SN□□1204

Negative rake
"One-Double" system

Turning & Chamfering





Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
		h	*b*	L_1	L_2	h_1	*f*	f_2			
DSDNN2020K12	●	20	20	125	36	20	10	–	0.8	SN□□1204□□ (Except for 57-type chipbreaker inserts)	2-61 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
DSDNN2525M12	●	25	25	150	36	25	12.5	–			

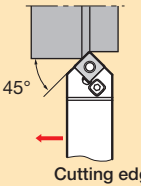
P-type

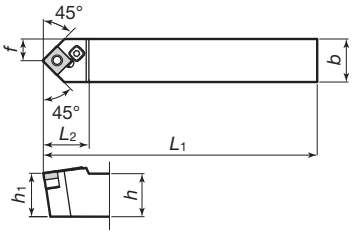
PSDNN

Applicable inserts
SN□□

Negative rake
Lever-lock system

Turning & Chamfering





Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
		h	*b*	L_1	L_2	h_1	*f*	f_2			
PSDNN1616H09E		16	16	100	22	16	8.0	–	0.8	SN□□0903□□	2-61 ~
PSDNN2020K12E	●	20	20	125	30	20	10.3	–	0.8	SN□□1204□□	2-61 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
PSDNN2525M12E	●	25	25	150	30	25	12.8	–			
PSDNN3225P12E	●	32	25	170	30	32	12.8	–			
PSDNN3232P15E		32	32	170	–	32	–	–	1.2	SN□□1506□□	2-64 ~

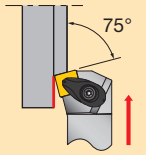
● : Stocked items.

ASKNR/L

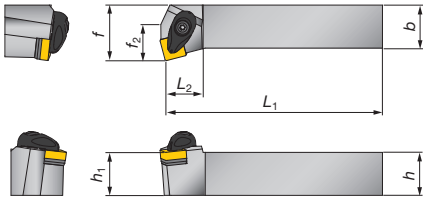
Applicable inserts
SN□□1204□□

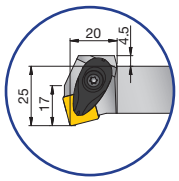
Negative rake
Double clamping system

Facing



Cutting edge style **K**





Enlarged view of 2020 type

Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
ASKNR/L2020K12-A	●	●	20	20	125	20	20	25	17	0.8	SN□□1204□□	2-61 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
ASKNR/L2525M12-A	●	●	25	25	150	22	25	32	21			

*Recommend clamping torque: 4.0 N·m

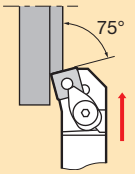
D-type

DSKNR/L

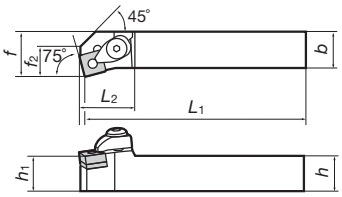
Applicable inserts
SN□□1204

Negative rake
"One-Double" system

Facing



Cutting edge style **K**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
DSKNR/L2020K12	●	●	20	20	125	31	20	25	17	0.8	SN□□1204□□ (Except for 57-type chipbreaker inserts)	2-61 ~ 3-8 ~ T-CBN 3-21 ~ T-DIA
DSKNR/L2525M12	●	●	25	25	150	31	25	32	17			

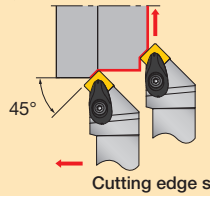
● : Stocked items.

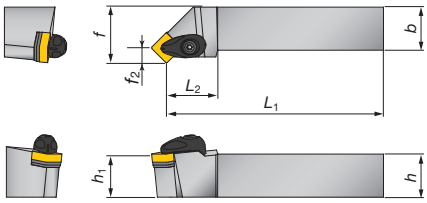
ASSNR/L

Applicable inserts
SN□□

Negative rake
Double clamping system

Turning & Facing & Chamfering





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
ASSNR/L2020K12-A	●	●	20	20	125	30	20	25	8.3	0.8	SN□□1204□□	2-61 ~
ASSNR/L2525M12-A	●	●	25	25	150	30	25	32				
ASSNR/L2525M15-A	●	●	25	25	150	25	25	32	10.3	1.2	SN□□1506□□	2-64 ~
ASSNR/L3232P15-A	●	●	32	32	170	25	32	40				
ASSNR/L3232P19-A	●	●	32	32	170	27.5	32	40	12.5	1.2	SN□□1906□□	2-64 ~
ASSNR/L4040S19-A	●	●	40	40	250	27.5	40	50				

*Recommend clamping torque: 4.0 N·m

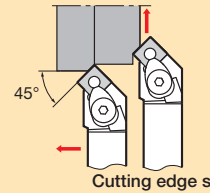
D-type

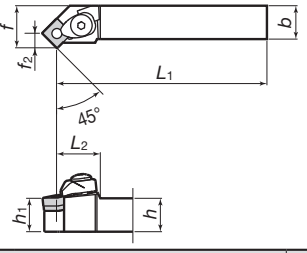
DSSNR/L

Applicable inserts
SN□□1204

Negative rake
“One-Double” system

Turning & Facing & Chamfering





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
DSSNR/L2020K12	●	●	20	20	125	34.3	20	25	8.3	0.8	SN□□1204□□ (Except for 57-type chipbreaker inserts)	2-61 ~
DSSNR/L2525M12	●	●	25	25	150	34.3	25	32				

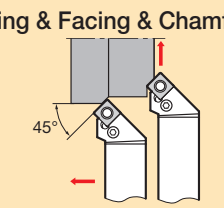
P-type

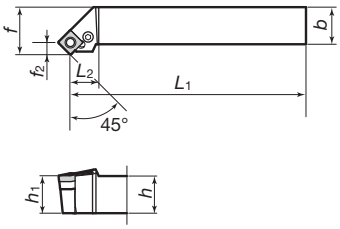
PSSNR/L

Applicable inserts
SN□□

Negative rake
Lever-lock system

Turning & Facing & Chamfering





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	h	b	L_1	L_2	h_1	f	f_2			
PSSNR/L1616H09E	●		16	16	94	16	16	20	6.1	0.8	SN□□0903□□	2-61 ~
PSSNR/L2020K12E	●	●	20	20	116	21	20	25	8.3	0.8	SN□□1204□□	2-61 ~
PSSNR/L2525M12E	●	●	25	25	141	21	25	32				
PSSNR/L3225P12E	●	●	32	25	161	21	32	32				
PSSNR/L2525M15E	●	●	25	25	140	25	25	32	10.2	1.2	SN□□1506□□	2-64 ~
PSSNR/L3225P15E			32	25	160	25	32	32				
PSSNR/L3232P15E			32	32	160	25	32	40				
PSSNR/L3232P19E	●		32	32	157.5	27.5	32	40	12.5	1.2	SN□□1906□□	2-64 ~
PSSNR/L4040R19E			40	40	187.5	27.5	40	50				

● : Stocked items.

Basic Selection Chipbreakers SN□□1204□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-61	2-61	2-64	2-67
Chipbreaker	**TF** 	**TSF** 	**TM** 	**TH** 
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**T6120**	**T6130**	**T6130**
Page	2-62	2-64	2-67
Chipbreaker	**SF** 	**SM** 	**SH** 
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.4)	**0.3** (0.2-0.3)
rε (mm)	0.4	0.8	1.6

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-8	2-62	2-65	2-67
Chipbreaker	**T-CBN** 	**CF** 	**CM** 	**CH** 
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.6)
rε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing to medium cutting
Grade	**DX140**	**GH110**
Page	3-21	2-66
Chipbreaker	**T-DIA** 	**P** 
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8

S Superalloys — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX480**	**AH905**	**AH120**
Page	3-8	2-65	2-66
Chipbreaker	**T-CBN** 	**HMM** 	**SA** 
Vc (m/min)	**200** (70-300)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.3)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Finishing
Grade	**BXM20**
Page	3-8
Chipbreaker	**T-CBN** 
Vc (m/min)	**150** (70-220)
ap (mm)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.05-0.25)
rε (mm)	0.4

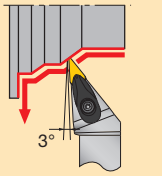
For other machining types, see “Selection System” 2-4 ~

TURNING A-type AVJNR/L

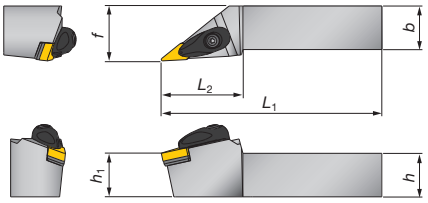
Applicable inserts
VN / YN□□1604

Negative rake
Double clamping system

Turning & External Profiling



Cutting edge style **J**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
AVJNR/L2020K16-A	●	●	20	20	125	43	20	25	–	0.8	VN□□1604□□ YN□□1604□□	2-87 ~ 2-91 ~ 3-9 ~ T-CBN 3-21 ~ T-DIA
AVJNR/L2525M16-A	●	●	25	25	150	46	25	32	–			

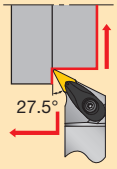
*Recommend clamping torque: 3.0 N·m

TURNING A-type AVQNR/L

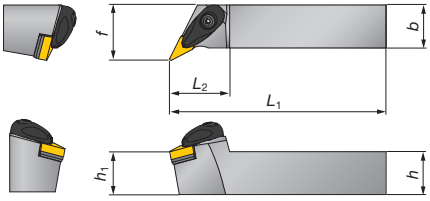
Applicable inserts
VN / YN□□1604

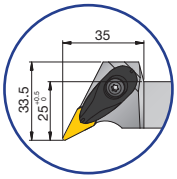
Negative rake
Double clamping system

Profiling



Cutting edge style **Q**





Enlarged view of 2020 type

Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
AVQNR/L2020K16-A	●	●	20	20	125	35	20	25	–	0.8	VN□□1604□□ YN□□1604□□	2-87 ~ 2-91 ~ 3-9 ~ T-CBN 3-21 ~ T-DIA
AVQNR/L2525M16-A	●	●	25	25	150	35	25	32	–			

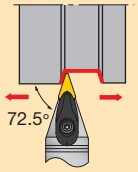
*Recommend clamping torque: 3.0 N·m

TURNING A-type AVVNN

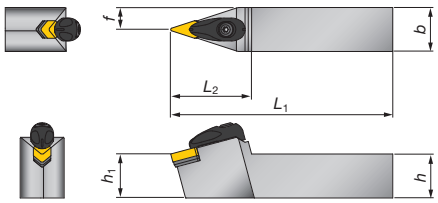
Applicable inserts
VN / YN□□1604

Negative rake
Double clamping system

Turning & External Profiling



Cutting edge style **V**



Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
		h	*b*	L_1	L_2	h_1	*f*	f_2			
AVVNN2020K16-A	●	20	20	125	46	20	10	–	0.8	VN□□1604□□ YN□□1604□□	2-87 ~ 2-91 ~ 3-9 ~ T-CBN 3-21 ~ T-DIA
AVVNN2525M16-A	●	25	25	150	46	25	12.5	–			

*Recommend clamping torque: 3.0 N·m

● : Stocked items.

Basic Selection Chipbreakers VN□□1604□□-□□

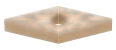
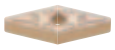
P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**NS730**	**GT730**	**T9115**
Page	2-87	2-87	2-89
Chipbreaker	**TF** 	**TSF** 	**TM** 
Vc (m/min)	**200** (150-250)	**200** (150-300)	**180** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.4	0.8

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting
Grade	**T6120**	**T6130**
Page	2-87	2-89
Chipbreaker	**SF** 	**SM** 
Vc (m/min)	**150** (100-200)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.8

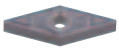
K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**BX930**	**T5115**	**T5115**
Page	3-9	2-88	2-89
Chipbreaker	**T-CBN** 	**CF** 	**CM** 
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)
rε (mm)	0.4	0.4	0.8

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing
Grade	**DX120**	**GH110**
Page	3-21	2-87
Chipbreaker	**T-DIA** With chipbreaker 	**01** 
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)
rε (mm)	0.4	0.2

S Superalloys — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**BX470**	**BX480**	**AH905**
Page	3-9	3-9	2-90
Chipbreaker	**T-CBN** 	**T-CBN** 	**HMM** 
Vc (m/min)	**200** (100-280)	**200** (70-300)	**50** (20-100)
ap (mm)	**0.3** (0.1-0.5)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.05-0.3)	**0.2** (0.1-0.3)
rε (mm)	0.4	0.4	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-9	3-9
Chipbreaker	**T-CBN** 	**T-CBN** 
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

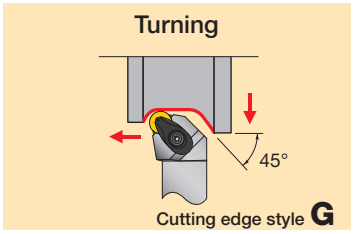
For other machining types, see “Selection System” 2-4 ~

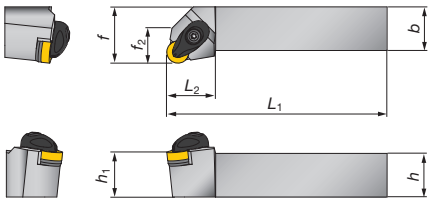
TURNING A A-type

ARGNR/L

Applicable inserts
RN□□120400

Negative rake
Double clamping system





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
ARGNR/L2525M12-A	●	●	25	25	150	28	25	32	20	6.35	RN□□120400	2-92 ~

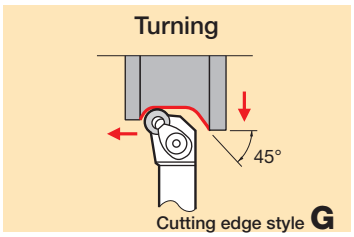
*Recommend clamping torque: 4.0 N·m

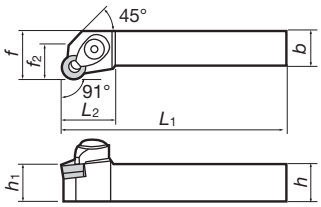
D-type

DRGNR/L

Applicable inserts
RN□□120400

Negative rake
"One-Double" system





Right hand (R) shown.

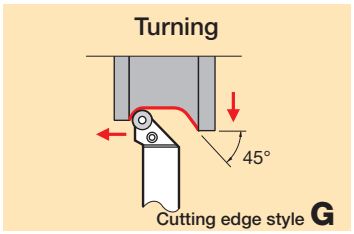
Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
DRGNR/L2525M12	●	●	25	25	150	28	25	32	18	6	RN□□120400	2-92 ~

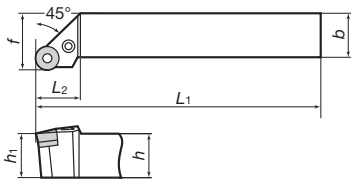
P-type

PRGNR/L

Applicable inserts
RN□□

Negative rake
Lever-lock system





Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_2			
PRGNR/L2020K09E	●	●	20	20	125	19	20	25	–	4.5	RNMG090300-61	2-92 ~
PRGNR/L2525M09E	●	●	25	25	150	25	25	32	–			
PRGNR/L2525M12E	●	●	25	25	150	25	25	32	–	6	RN□□120400	2-92 ~

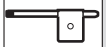
Basic Selection Chipbreakers RN□□1204□□-□□

P Steel	Operation	Finishing to medium cutting
	Grade	**T9115**
	Page	2-92
Continuous	Chipbreaker	61 
	Vc (m/min)	**220** (150-300)
	ap (mm)	**1.0** (0.5-2.0)
	f (mm/rev)	**0.8** (0.5-1.0)
	r_ε (mm)	–

● : Stocked items.

Parts

Parts for Turning A

Toolholder Cat. No.	Applicable inserts	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench	Recommended clamping torque (N·m)
									
ACLNR/L (External·Internal)	**CN□□1204□□**	ACP4S	ACS-5W	BP-7	SP-2.5	ASC422	CSTB-3.5	T-15F	4.0
	CN□□1606□□	ACP5S	ACS-6W	BP-8.8		ASC533	CSTB-5	KEYV-T20	6.4
	CN□□1906□□	ACP6S				ASC634			
ADJNR/L	**DN□□1504□□**	ACP4S	ACS-5W	BP-7	SP-2.5	ASD432	CSTB-3.5	T-15F	4.0
ADPNN									
ADQNR/L									
ADUNR/L (Internal)									
ADJNR/L	**DN□□1506□□**	ACP4S	ACS-5W	BP-7	SP-2.5	ASD423	CSTB-3.5	T-15F	4.0
ADQNR/L									
ADUNR/L (Internal)									
ATGNR/L	**TN□□2204□□**	ACP4S	ACS-5W	BP-7	SP-2.5	AST422	CSTB-3.5	T-15F	4.0
ATFNR/L									
ATJNR/L	**TN□□1604□□**	ACP3S	ACS-5W	BP-7	SP-2.5	AST322	CSTB-3.5	T-15F	3.0
ATGNR/L									
ATFNR/L (External·Internal)									
ATQNR/L									
ASBNR/L	**SN□□1204□□**	ACP4S	ACS-5W	BP-7	SP-2.5	ASS422	CSTB-3.5	T-15F	4.0
	SN□□1506□□	ACP5S	ACS-6W	BP-8.8		ASS533	CSTB-5	KEYV-T20	6.4
	SN□□1906□□	ACP6S				ASS634			
ASDNN	**SN□□1204□□**	ACP4S	ACS-5W	BP-7	SP-2.5	ASS422	CSTB-3.5	T-15F	4.0
ASSNR/L	**SN□□1204□□**	ACP4S	ACS-5W	BP-7	SP-2.5	ASS422	CSTB-3.5	T-15F	4.0
	SN□□1506□□	ACP5S	ACS-6W	BP-8.8		ASS533	CSTB-5	KEYV-T20	6.4
	SN□□1906□□	ACP6S				ASS634			
ASKNR/L (External·Internal)	**SN□□1204□□**	ACP4S	ACS-5W	BP-7	SP-2.5	ASS422	CSTB-3.5	T-15F	4.0
AVJNR/L	**VN□□1604□□** **YN□□1604□□**	ACP3L	ACS-5W	BP-7	SP-2.5	ASV322	CSTB-3.5	T-15F	3.0
AVVNN									
AVQNR/L									
AVUNR/L (Internal)									
AWLNR/L (External·Internal)	**WN□□0604□□**	ACP3S	ACS-5W	BP-7	SP-2.5	ASW322	CSTB-3.5	T-15F	3.0
AWLNR/L (External·Internal)	**WN□□0804□□**	ACP4S	ACS-5W	BP-7	SP-2.5	ASW422	CSTB-3.5	T-15F	4.0
ARGNR/L	**RN□□1204□□**	ACP4S	ACS-5W	BP-7	SP-2.5	ASR420	CSTB-3.5	T-15F	4.0

Note: Replacement parts of former A-type toolholders are not applicable to " TURNING A " toolholders.

Relating pages
Parts (14–1~)

Parts

Parts for D-type

Toolholders Cat. No.		Applicable inserts		Shim	Spring pin	Lever	Clamp	Clamp screw	Piston	Spring	Wrench
		Cat. No.	Shape								
DCLNR/L	2020K12 2525M12 3225P12	CN□□1204□□		LSC42	LSP4	DLCL43	DCPM-43	DLCS43	DPIS43	BP-10	P-3 P-4
	3225P16 3232P16	CN□□1606□□		ELSC53	LSP6C	DLCL54	DCPM-54	DLCS54	DPIS54	BP-13	P-4
	3232P19 4040R19	CN□□1906□□		ELSC63	LSP6	DLCL64	DCPM-64	DLCS64	DPIS64	BP-15	P-5
DWLNR/L	2020K06 2525M06	WN□□0604□□		LSW312	LSP3	LCL33	DCPM-33	DLCS33	DPIS33	BP-9	P-2.5 P-3
	2020K08 2525M08 3225P08	WN□□0804□□		LSW42	LSP4	DLCL43	DCPM-43	DLCS43	DPIS43	BP-10	P-3 P-4
DDJNR/L DDQNR/L	2020K15 2525M15 3225P15	DN□□1504□□		LSD42	LSP4	DLCL43	DCPM-43	DLCS43	DPIS43	BP-10	P-3 P-4
	2020K1506 2525M1506 3225P1506	DN□□1506□□		LSD42	LSP4	DLCL43	DCPM-43	DLCS43	DPIS44	BP-10	P-3 P-4
DTGNR/L DTFNR/L	2020K16 2525M16	TN□□1604□□		LST317	LSP3	LCL33	DCPM-33	DLCS33	DPIS33	BP-9	P-2.5 P-3
	2525M22	TN□□2204□□		LST42	LSP4	DLCL43	DCPM-43	DLCS43	DPIS43	BP-10	P-3 P-4
DSBNR/L	2020K12 2525M12	SN□□1204□□		LSS42	LSP4	DLCL43	DCPM-43	DLCS43	DPIS43	BP-10	P-3 P-4
	3225P15 3232P15	SN□□1506□□		ELSS53	LSP6C	DLCL54	DCPM-54	DLCS54	DPIS54	BP-13	P-4
	3232P19 4040R19	SN□□1906□□		ELSS63	LSP6	DLCL64	DCPM-64	DLCS64	DPIS64	BP-15	P-5
DSDNN DSKNR/L DSSNR/L	2020K12 2525M12	SN□□1204□□		LSS42	LSP4	DLCL43	DCPM-43	DLCS43	DPIS43	BP-10	P-3 P-4
DRGNR/L	2525M12	RN□□120400		LSR42	LSP4	DLCL43	DCPM-43	DLCS43	DPIS43	BP-10	P-3 P-4

Parts for P-type

Toolholders Cat. No.		Applicable inserts		Shim	Spring pin	Lever	Clamping screw	Wrench
		Cat. No.	Shape					
PCLNR/L PCBNR/L	1616H09 2020K09 2525M09	CN□□0903□□		ELSC32	LSP3L	LCL33	LCS3	P-2.5
	1616H12E	CN□□1204□□		ELSC42	LSP4	LCL4	LCS4CA	P-3
	2020K12E 2525M12E 3225P12E			ELSC42	LSP4S	LCL43M	LCS4	P-3
	2525M16E 3225P16E 3232P16E	CN□□1606□□		ELSC53	LSP6C	LCL5	LCS5	P-3
	3232P19E 4040R19E	CN□□1906□□		ELSC63	LSP6	LCL6	LCS6	P-4
PDJNR/L PDQNR/L PDPNN	1616H11 2020K11 2525M11	DN□□1104□□		ELSD32	LSP3	LCL33L	LCS3	P-2.5
	2020 2520 2525 3225 3232	DN□□1504□□		ELSD42	LSP4S	LCL44	ELCS4	P-3
	2020K15E 2525M15E 3225P15E 3232P15E	DN□□1506□□		ELSD42	LSP4S	LCL44	ELCS4	P-3
PTGNR/L PTFNR/L	1616H16E 2020K16E 2525M16E 3225P16E	TN□□1604□□		ELST317	LSP3	LCL33	LCS3	P-2.5
	2525M22E 3225P22E 3232P22E	TN□□2204□□		ELST42	LSP4S	LCL43M	LCS3	P-3
	3232P27E 4040P27E	TN□□2706□□		ELST53	LSP6C	LCL54	LCS5	P-3
PSBNR/L PSDNN PSSNR/L	1616H09E	SN□□0903□□		ELSS32	LSP3L	LCL33	LCS3	P-2.5
	2020K12E 2525M12E 3225P12E	SN□□1204□□		ELSS42	LSP4S	LCL43M	LCS4	P-3
	2525M15E 3225P15E 3232P15E	SN□□1506□□		ELSS53	LSP5	LCL5	LCS5CA	P-3
	3232P19E 4040R19E	SN□□1906□□		ELSS63	LSP6	LCL6	LCS6	P-4
	5050T25E	SN□□2507□□		ELSS84	LSP8	LCL8	LCS8	P-5
PRGNR/L	2020K09E 2525M09E	RNMG090300-61		ELSR32	LSP3L	LCL33	LCS3	P-2.5
	2525M12E	RN□□120400		ELSR42	LSP4S	LCL43M	LCS4	P-3

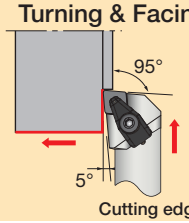
DIMPLEFX C-type for dimple inserts

CCLNR/L

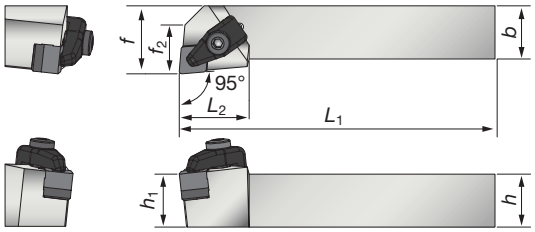
Applicable inserts
CNGD1207□□

Negative rake
Double clamping system

Turning & Facing



Cutting edge style **L**



Right hand (R) shown.

Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner rε	Applicable inserts	Page
		h	b	L_1	L_2	h_1	f	f_2			
CCLNR2525M1207-RD	●	25	25	150	33	25	32	23	1.2	CNGD1207□□	4-38
CCLNL2525M1207-RD	●	25	25	150	33	25	32	23	1.2		4-38
CCLNR3225P1207-RD	●	32	25	170	33	32	32	23	1.2		4-38

*Recommend clamping torque: 4.0 N·m

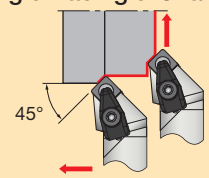
DIMPLEFX C-type for dimple inserts

CSSNR/L

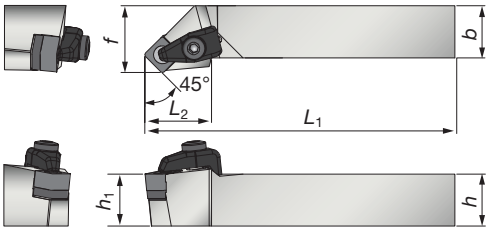
Applicable inserts
SNGD1207□□

Negative rake
Double clamping system

Turning & Facing & Chamfering



Cutting edge style **S**



Right hand (R) shown.

Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner rε	Applicable inserts	Page
		h	b	L_1	L_2	h_1	f	f_2			
CSSNR2525M1207-RD	●	25	25	150	32	25	32	–	1.2	SNGD1207□□	4-38
CSSNL2525M1207-RD	●	25	25	150	32	25	32	–	1.2		4-38

*Recommend clamping torque: 4.0 N·m

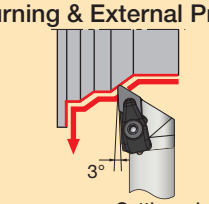
DIMPLEFX C-type for dimple inserts

CDJNR/L

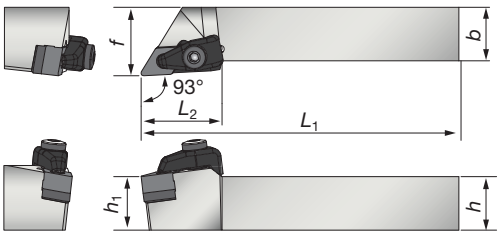
Applicable inserts
DNGD1507□□

Negative rake
Double clamping system

Turning & External Profiling



Cutting edge style **J**



Right hand (R) shown.

Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner rε	Applicable inserts	Page
		h	b	L_1	L_2	h_1	f	f_2			
CDJNR2525M1507-RD	●	25	25	150	38	25	32	–	1.2	DNGD1507□□	4-38
CDJNL2525M1507-RD	●	25	25	150	38	25	32	–	1.2		4-38
CDJNR3225P1507-RD	●	32	25	170	38	32	32	–	1.2		4-38

*Recommend clamping torque: 4.0 N·m

● : Stocked items.

Relating pages
Parts (14–1~)

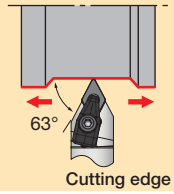
DIMPLEFX C-type for dimple inserts

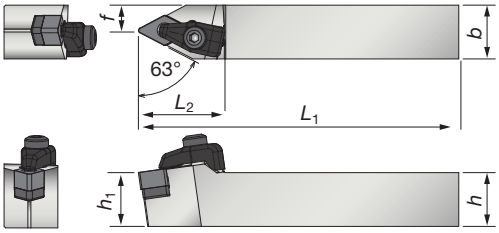
CDNNN

Applicable inserts
DNGD1507□□

Negative rake
Double clamping system

Turning & External Profiling





Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
		h	*b*	L_1	L_2	h_1	*f*	f_2			
CDNNN2525M1507-RD	●	25	25	150	40	25	12.5	–	1.2	DNGD1507□□	4-38

*Recommend clamping torque: 4.0 N·m

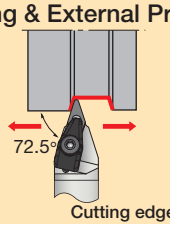
DIMPLEFX C-type for dimple inserts

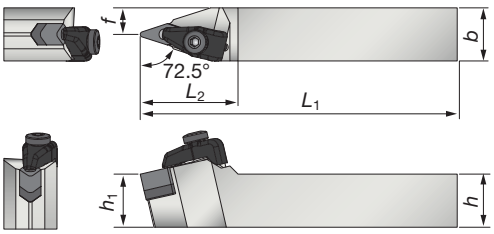
CVVNN

Applicable inserts
VNGD160712

Negative rake
Double clamping system

Turning & External Profiling





Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
		h	*b*	L_1	L_2	h_1	*f*	f_2			
CVVNN2525M1607-RD	●	25	25	150	46	25	12.5	–	1.2	VNGD160712	4-38

*Recommend clamping torque: 4.0 N·m

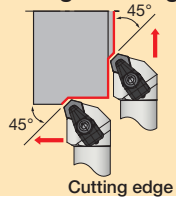
DIMPLEFX C-type for dimple inserts

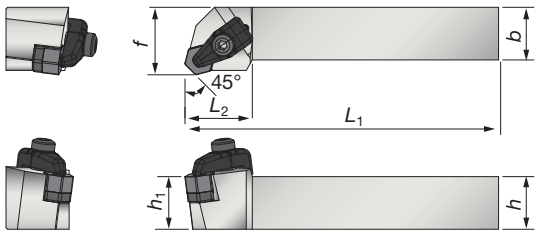
CHSNR

Applicable inserts
HNGD0507□□

Negative rake
Double clamping system

Turning & Facing





Toolholders Cat. No.	Stock	Dimensions (mm)							Std. Corner r_ε	Applicable inserts	Page
		h	*b*	L_1	L_2	h_1	*f*	f_2			
CHSNR2525M0507-RD	●	25	25	150	32	25	32	–	1.2	HNGD0507□□	4-38

*Recommend clamping torque: 4.0 N·m

● : Stocked items.

Inserts / Parts / Standard cutting conditions

Inserts for C-type

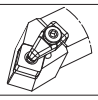
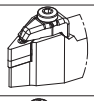
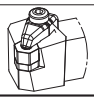
Application	Shape	Cat. No.	Stocked Grade FX105	Dimensions (mm) Inner circle ød	Thickness s	Hole dia. ød1	Corner radius rε
Finishing to medium cutting		CNGD120712	●	12.7	7.94	–	1.2
		CNGD120716	●	12.7	7.94	–	1.6
		SNGD120712	●	12.7	7.94	–	1.2
		SNGD120716	●	12.7	7.94	–	1.6
		DNGD150708	●	12.7	7.94	–	0.8
		DNGD150712	●	12.7	7.94	–	1.2
		DNGD150716	●	12.7	7.94	–	1.6
		VNGD160712	●	9.525	7.94	–	1.2
		HNGD050712	●	12.7	7.94	–	1.2
		HNGD050716	●	12.7	7.94	–	1.6

Note: Applicable only C-type toolholder for dimple.

Standard cutting conditions

Application	Grade	Work materials	Cutting speed Vc (m/min)	Depth of cut ap (mm)	Feed f (mm/rev)
K Cast Iron	FX105	Grey cast irons	**700** (300 - 1000)	**1.0** (0.05 - 3.0)	**0.3** (0.05 - 0.6)
		Ductile cast irons	**200** (100 - 300)	**1.0** (0.05 - 3.0)	**0.2** (0.05 - 0.4)

Parts for C-type

Toolholders Cat. No.	Applicable Inserts Cat. No.	Applicable Inserts Shape	Shim	Shim Screw	Clamp	Clamp Screw	Spring	Wrench
								
CCLNR2525M1207-RD	CNGD1207□□		CC44-A	BH5-10-A	CCP4-A	CCS4-A	BP-5-A	P-4 P-3
CCLNL2525M1207-RD								
CCLNR3225P1207-RD								
CSSNR2525M1207-RD	SNGD1207□□		CS44-A					
CSSNL2525M1207-RD								
CDJNR2525M1507-RD	DNGD1507□□		CD44-A					
CDJNL2525M1507-RD								
CDJNR3225P1507-RD								
CDNNN2525M1507-RD	DNGD1507□□							
CVVNN2525M1607-RD	VNGD160712		CV34-A	BH-4-10-A				
CHSNR2525M0507-RD	HNGD0507□□		CH44-A	BH-40050-A				

● : Stocked items.

Relating pages
Parts (14–1~)

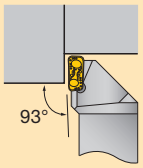
TURNTEC T-type

TLANR/L

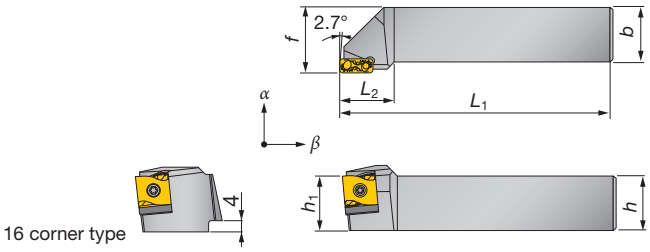
Applicable inserts
LNMX□□□□□□

Negative rake
Screw-on system

Turning & Facing



Cutting edge style **A**



16 corner type

Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)								Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	*α*	*β*		
TLANR/L1616H12	●	●	16	16	100	20	16	20	-6°	-6°	**LNMX1204□□□R/L**	4-40
TLANR/L1616M12S	●	●	16	16	150	20	16	20	-6°	-6°		
TLANR/L2020K12	●	●	20	20	125	20	20	25	-6°	-6°		
TLANR/L2525M12	●	●	25	25	150	20	25	30	-6°	-6°		
TLANR/L2020K16	●	●	20	20	125	25	20	25	-6°	-6°	**LNMX1606□□□R/L**	4-40
TLANR/L2525M16	●	●	25	25	150	25	25	30	-6°	-6°		
TLANR/L3232P16	●	●	32	32	170	35	32	37	-6°	-6°		
TLANR/L4040R16	●	●	40	40	200	35	40	47	-6°	-6°		
TLANR/L3232P24	●	●	32	32	170	35	32	38	-6°	-6°	**LNMX2410□□□R/L**	4-40
TLANR/L4040R24	●	●	40	40	200	40	40	47	-6°	-6°		
TLANR/L5050S24	●	●	50	50	250	40	50	57	-6°	-6°		

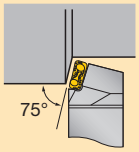
TURNTEC T-type

TLBNR/L

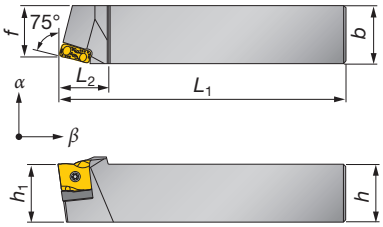
Applicable inserts
LNMX2410□□

Negative rake
Screw-on system

Turning



Cutting edge style **B**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)								Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	*α*	*β*		
TLBNR/L4040R24	●	●	40	40	200	35	40	35	-7.4°	-4.3°	**LNMX2410□□□R/L**	4-40

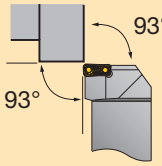
TURNTEC T-type

TLFNR/L

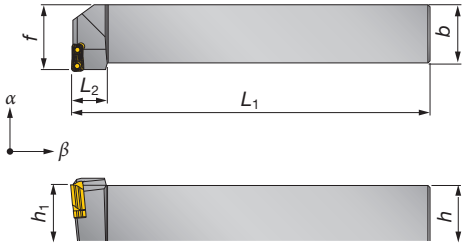
Applicable inserts
LNMX1606□□

Negative rake
Screw-on system

Facing & Turning



Cutting edge style **F**



Right hand (R) shown.

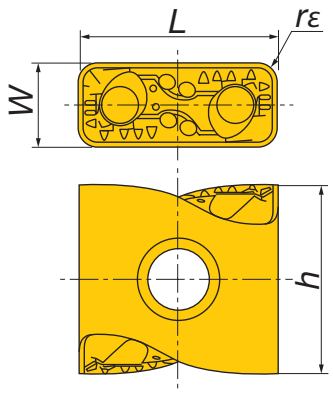
Toolholders Cat. No.	Stock		Dimensions (mm)								Applicable inserts	Page
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	*α*	*β*		
TLFNR/L2525M16	●	●	25	25	150	20	25	30	-6°	-6°	**LNMX1606□□□L/R**	4-40
TLFNR/L3232P16	●	●	32	32	170	20	32	37	-6°	-6°		

★The right hand insert (R) is used for the left hand toolholders (TLFNL □□ type), and the left hand insert (L) is used for the right hand toolholders (TLFNR □□ type).

● : Stocked items

Inserts / Parts / Standard cutting conditions

Inserts for TurnTec

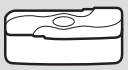
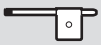


Right hand (R) shown.

Cat. No.	Stocked grades						Dimensions (mm)			
	Coated									
	T9115		T9125		AH725		W	L	h	rε
	R	L	R	L	R	L				
LNMX120408R/L-TDR	●	●	●	●			4.8	12.0	11.6	0.8
LNMX120412R/L-TDR	●	●	●	●			4.8	12.0	11.6	1.2
LNMX160608R/L-TDR	●	●	●	●			6.4	16.2	13.5	0.8
LNMX160612R/L-TDR	●	●	●	●			6.4	16.2	13.5	1.2
LNMX160616R/L-TDR	●	●	●	●			6.4	16.2	13.5	1.6
LNMX241016R/L-TDR	●	★	●	★			9.4	24.0	20.5	1.6
LNMX241024R/L-TDR	●	★	●	★			9.4	24.0	20.5	2.4
LNMX160608R/L-MDR	●	●			★	★	6.4	16.2	13.5	0.8
LNMX160612R/L-MDR	★	★			★	★	6.4	16.2	13.5	1.2
LNMX120408R/L-TWR	★	★	★	★			4.8	12.0	11.6	0.8
LNMX120412R/L-TWR	★	★	★	★			4.8	12.0	11.6	1.2
LNMX160608R/L-TWR	★	★	★	★			6.4	16.2	13.5	0.8
LNMX160612R/L-TWR	★	★	★	★			6.4	16.2	13.5	1.2

● : Stocked items
★ : Available from 2013

Parts for TurnTec

Toolholders Cat. No.	Applicable inserts	Shim	Shim screw	Spring pin	Wrench for shim screw	clamping screw	Wrench
				–			
TLANR/L1616H12	**LNMX1204□□R/L**	TSL12R/L	CSTF-2L055-S	–	T-6F-S	CSTB-3.5L115-S	KEYV-T10
TLANR/L1616M12S							
TLANR/L2020K12							
TLANR/L2525M12							
TLANR/L2020K16	**LNMX1606□□R/L**	TSL16R/L	–	PSP-16	–	CSTB-4L115-S	KEYV-T15
TLANR/L2525M16							
TLANR/L3232P16							
TLANR/L4040R16							
TLANR/L3232P24	**LNMX2410□□R/L**	TSL24R/L	–	SP 16-L14	–	CSTB-5L163-S	KEYV-T20
TLANR/L4040R24							
TLANR/L5050S24							
TLBNR/L4040R24	**LNMX2410□□R/L**	TSL24R/L	–	SP 16-L14	–	CSTB-5L163-S	KEYV-T20
TLFNR/L2525M16	**LNMX1606□□L/R**	TSL16L/R	–	PSP-16	–	CSTB-4L115-S	KEYV-T15
TLFNR/L3232P16							

Relating pages
Parts (14–1~)

Standard cutting conditions

* Values in red shows the condition for facing

LNMX1204□□□-□□□

Work materials	Chip-breakers	Grades	Cutting speed *Vc* (m/min)	Depth of cut: *ap* (mm)		Feed: *f* (mm/rev)	
				r_ε: 0.8	r_ε: 1.2	r_ε: 0.8	r_ε: 1.2
Steels S45C, SCM415 etc. (C45, 18CrMo4 etc.)	TDR	T9115	120 - 250	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		T9125	80 - 180				
	TWR	T9115	120 - 250	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		T9125	80 - 180				
Stainless steels SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	TDR	T9115	100 - 180	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		T9125	80 - 180				
	TWR	T9115	100 - 180	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		T9125	80 - 180				

LNMX1606□□□-□□□

Work materials	Chip-breakers	Grades	Cutting speed *Vc* (m/min)	Depth of cut: *ap* (mm)			Feed: *f* (mm/rev)		
				r_ε: 0.8	r_ε: 1.2	r_ε: 1.6	r_ε: 0.8	r_ε: 1.2	r_ε: 1.6
Steels S45C, SCM415 etc. (C45, 18CrMo4 etc.)	TDR	T9115	120 - 250	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	1 - 8 1 - 3.2	0.15 - 0.6	0.25 - 0.8	0.3 - 1
		T9125	80 - 180						
	TWR	T9115	120 - 250	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	-	0.15 - 0.6	0.25 - 0.8	-
		T9125	80 - 180						
Stainless steels SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	TDR	T9115	100 - 180	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	1 - 8 1 - 3.2	0.15 - 0.6	0.25 - 0.8	0.3 - 1
		T9125	80 - 180						
	MDR	T9115	100 - 150	1.5 - 6 0.5 - 3.2	1.5 - 7 0.8 - 3.2	-	0.1 - 0.5	0.15 - 0.7	-
		AH725	50 - 150						
	TWR	T9115	100 - 180	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	-	0.15 - 0.6	0.25 - 0.8	-
		T9125	80 - 180						

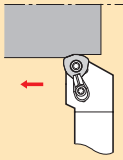
LNMX2410□□□-□□□

Work materials	Chip-breakers	Grades	Cutting speed *Vc* (m/min)	Depth of cut: *ap* (mm)		Feed: *f* (mm/rev)	
				r_ε: 1.6	r_ε: 2.4	r_ε: 1.6	r_ε: 2.4
Steels S45C, SCM415 etc. (C45, 18CrMo4 etc.)	TDR	T9115	120 - 250	4 - 15 1 - 4.5	5 - 15 1 - 4.5	0.3 - 1.0	0.3 - 1.1
		T9125	80 - 150				
Stainless steels SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	TDR	T9115	100 - 180	4 - 15 1 - 4.5	5 - 15 1 - 4.5	0.3 - 1.0	0.3 - 1.1
		T9125	80 - 150				

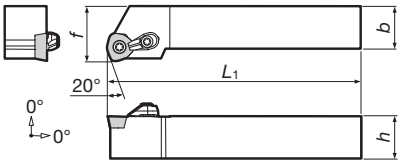
XWXPR/L

Positive rake
Double clamping system

Turning & Facing



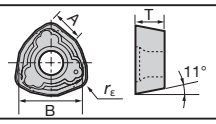
Cutting edge style **X**



Right hand (R) shown.

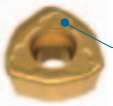
Cat. No.	Stock		Dimensions (mm)				Applicable inserts	Clamp set	Clamping screw	Wrench
	R	L	*h*	*b*	L_1	*f*				
XWXPR/L2525M09	●	●	25	25	150	32	WPMT090725ZPR/L-ML	CSY-20	CSTB-5	IP-20T
XWXPR/L3232P09	●	●	32	32	170	40				
XWXPR/L4040S09	●	●	40	40	250	50				

Inserts



Cat. No.	Accuracy	Honing	Grades			Dimensions (mm)			
			T9115	**T9125**	**AH120**	A	B	T	r_ε
WPMT090725ZPR-ML	M	With	●	●	●	9	15	7	2.5
WPMT090725ZPL-ML			●	●	●				

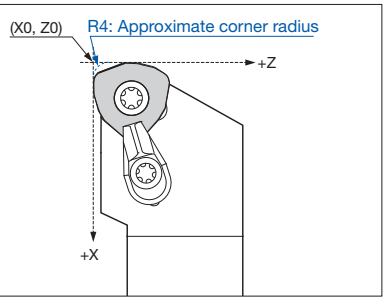
Note: Care should be taken not to confuse the hand of inserts to be used.



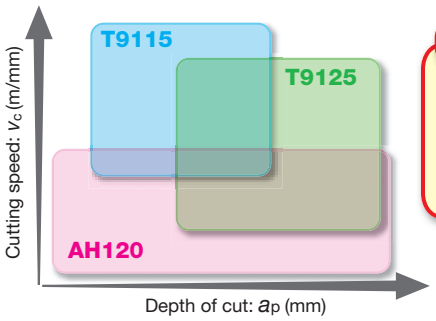
ML type chipbreaker

Letter "L" is marked on the rake face of left hand inserts, allowing easy distinction of the hand of inserts.

Zero point setting method



Application on areas



First choice

● T9125
- For low to medium speed machining and interrupted cutting.
- Excels in chipping and impact resistance.

● T9115
- For continuous machining at medium to high speeds.
- Excels in both wear and impact resistance.

● AH120 (Complementary grade for stainless and mild steels)
- In machining stainless and mild steels, if chipping or breakage occurs, use AH120.

Standard cutting conditions

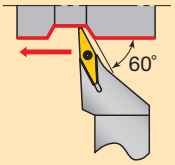
Work materials	Grades	Chipbreaker	Cutting speed v_c (m/min)	Depth of cut a_p (mm)	Feed *f* (mm/rev)
Mild and low carbon steels (JIS SS400, S25C, etc.) < 180 HB	**T9125**	**ML**	**150** (100 - 250)	0.5 - 2.5	1.5 (0.5 - 2.5)
Carbon and alloy steels (JIS S50C, SCM440, etc.) < 300HB	**T9115**		**150** (100 - 250)		
Stainless steels (JIS SUS304, SUS316, etc.) < 250 HB	**T9125**		**150** (100 - 250)		
Grey and ductile cast irons (JIS FC250, FCD400, etc.)	**AH120**		**150** (100 - 250)		

Note: When the side cutting edge is used for facing, the maximum feed is limited to within 1.0 mm/rev.

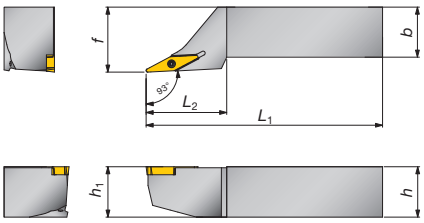
SYJBR/L

Positive rake
Screw-on system

Spherical surface cutting / Taper cutting



Cutting edge symbol **J**



Right hand (R) shown.

Toolholders Cat. No.	Stock		Dimensions (mm)						Std. Corner radius r_ε	Applicable insert	Replacement parts	
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench
SYJBR/L2020K16	●	●	20	20	125	35	20	25	0.8	YWMT16T3□□	CSTB-2.5L080	T-8F
SYJBR/L2525M16	●	●	25	25	150	40	25	32				

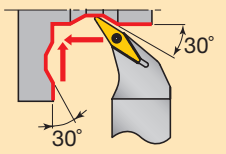
● : Stocked items.
▲ : Shortly unavailable

Y-PRO SERIES S-type

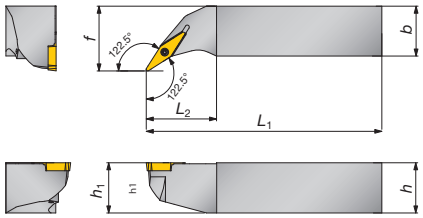
SYQBR/L

Positive rake
Screw-on system

External & Undercutting



Cutting edge symbol **Q**



Right hand (R) shown.

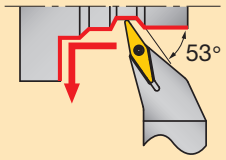
Toolholders Cat. No.	Stock		Dimensions (mm)						Std. Corner radius r_ε	Applicable insert	Replacement parts	
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench
SYQBR/L2020K16	●	●	20	20	125	35	20	27	0.8	YWMT16T3□□	CSTB-2.5L080	T-8F
SYQBR/L2525M16	●	●	25	25	150	35	25	32				

Y-PRO SERIES S-type

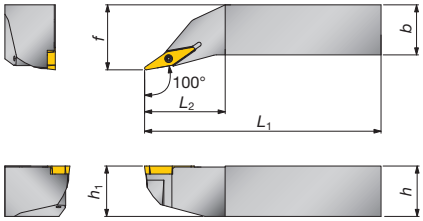
SYHBR/L

Positive rake
Screw-on system

External & Retracting



Cutting edge symbol **H**



Right hand (R) shown.

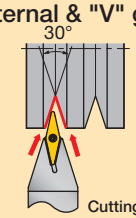
Toolholders Cat. No.	Stock		Dimensions (mm)						Std. Corner radius r_ε	Applicable insert	Replacement parts	
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench
SYHBR/L2020K16	●	●	20	20	125	35	20	27	0.8	YWMT16T3□□	CSTB-2.5L080	T-8F
SYHBR/L2525M16	●	●	25	25	150	40	25	32				

Y-PRO SERIES S-type

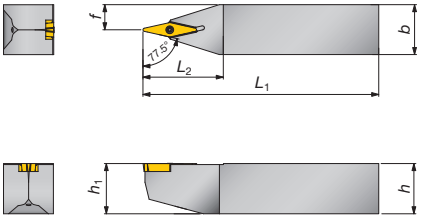
SYIBN

Positive rake
Screw-on system

External & "V" grooving

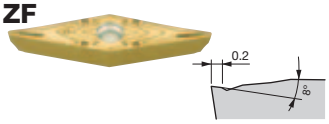
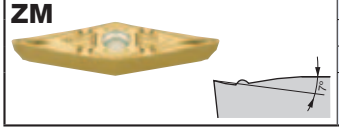


Cutting edge symbol **I**



Toolholders Cat. No.	Stock	Dimensions (mm)						Std. Corner radius r_ε	Applicable insert	Replacement parts	
		h	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench
SYIBN2020K16	●	20	20	125	32	20	10	0.8	YWMT16T3□□	CSTB-2.5L080	T-8F
SYIBN2525M16	●	25	25	150	40	25	12.5				

Inserts

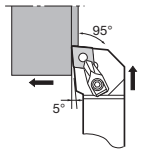
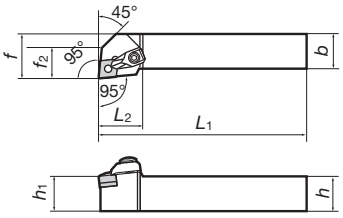
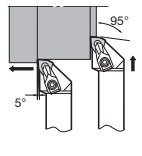
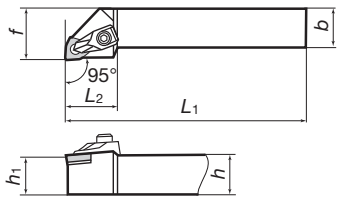
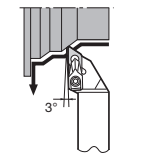
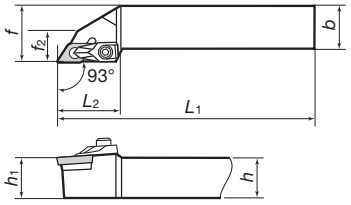
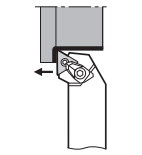
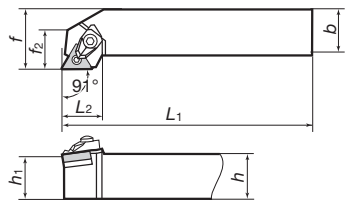
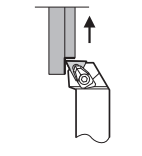
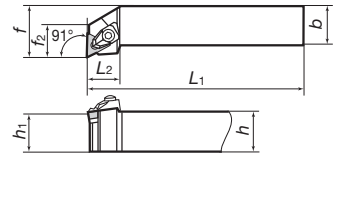
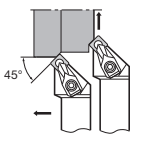
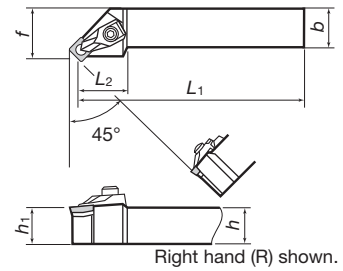
Chipbreaker symbol / Shape and section	Cat. No.	Accuracy	Stocked grades: Coated carbide T9125	Stocked grades: Coated cermet GT730	Dimensions (mm): I.C. dia.	Thickness	Hole dia.(ø)	Corner radius
ZF 	**YWMT11T202-ZF**	M	●	●	4.679	2.78	2.3	0.2
	YWMT11T204-ZF		●	●				0.4
	YWMT16T302-ZF		●	●	7.018	3.97	2.86	0.2
	* **YWMT16T304-ZF**		●	●				0.4
	YWMT16T308-ZF		●	●				0.8
ZM 	**YWMT11T204-ZM**	M	●	●	4.679	2.78	2.3	0.4
	* **YWMT16T304-ZM**		●	●	7.018	3.97	2.86	0.4
	YWMT16T308-ZM		●	●				0.8

Note: Chipbreaker sections shown above are of * marked Cat. Nos.

● : Stocked items.
▲ : Shortly unavailable

Toolholders for External Turning

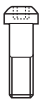
Negative rake
Clamp-on system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning • Facing **ACLNR/L**  Cutting edge style **L**	ACLNR/L2020K12			20	20	125	30	20	25	18	0.8	CN□□1204□□ (Except for 57-type chipbreaker inserts) 80° 2-42 ~	 Right hand (R) shown.
	ACLNR/L2525M12			25	25	150		25	32				
Turning • Facing **AWLNR/L**  Cutting edge style **L**	AWLNR/L2020K08			20	20	125	31	20	25	–	0.8	WN□□0804□□ (Except for 57-type chipbreaker inserts) 80° 2-80 ~	 Right hand (R) shown.
	AWLNR/L2525M08			25	25	150		25	32				
External profiling **ADJNR/L**  Cutting edge style **J**	ADJNR/L2020K15			20	20	125	37.5	20	25	19	0.8	DN□□1504(06)□□ Refer to 1) and 2) in next page. (Except for 57-type chipbreaker inserts) 55° 2-52 ~	 Right hand (R) shown.
	ADJNR/L2525M15			25	25	150		25	32				
Turning **ATGNR/L**  Cutting edge style **G**	ATGNR/L2020K16			20	20	125	21	20	25	16	0.8	TN□□1604□□ (Except for 57-type chipbreaker inserts) 60° 2-70 ~	 Right hand (R) shown.
	ATGNR/L2525M16			25	25	150		25	32	21			
Facing **ATFNR/L**  Cutting edge style **F**	ATFNR/L2020K16			20	20	125	21	20	25	18.5	0.8	TN□□1604□□ (Except for 57-type chipbreaker inserts) 60° 2-70 ~	 Right hand (R) shown.
	ATFNR/L2525M16			25	25	150		25	32	20			
Turning·Facing Chamfering **ASSNR/L**  Cutting edge style **S**	ASSNR/L2020K12			20	20	125	24.5	20	25	–	0.8	SN□□1204□□ (Except for 57-type chipbreaker inserts) 90° 2-61 ~	 Right hand (R) shown.
	ASSNR/L2525M12			25	25	150		25	32				

* Will be replaced by Turning A.

Relating pages
Parts (14–1~)

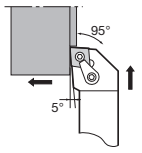
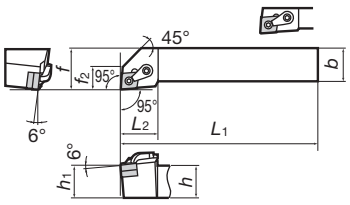
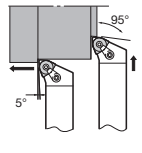
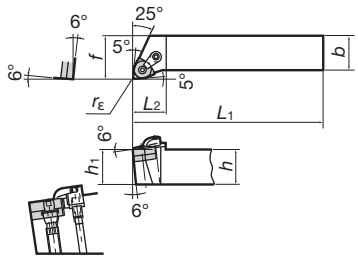
Parts for A-type

Toolholders Cat. No.		Applicable inserts		Shim	Spring pin	Spring	Clamp	Clamping screw	Wrench
		Cat. No.	Shape						
ACLNR/L	2020K12 2525M12	CN□□1204□□		LSC42	LSP4	BP-9	ACP4	ACS4	P-4
AWLNR/L	2020K08 2525M08	WN□□0804□□		LSW42	LSP4	BP-9	ACP4	ACS4	P-4
ADJNR/L	2020K15 2525M15	DN□□1504(06)□□		LSD43[1)] LSD42[2)]	LSP4	BP-9	ACP4	ACS4	P-4
ATGNR/L ATFNR/L	2020K16 2525M16	TN□□1604□□		LST317	LSP3	BP-7	ACP3	ACS3	P-3
ASSNR/L	2020K12 2525M12	SN□□1204□□		LSS42	LSP4	BP-9	ACP4	ACS4	P-4

1) For 4.76 mm thick inserts
2) For 6.35 mm thick inserts

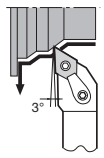
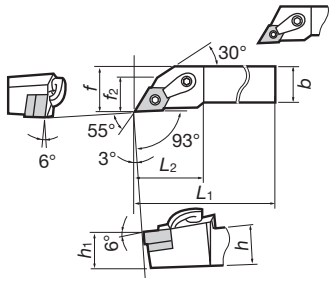
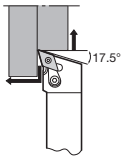
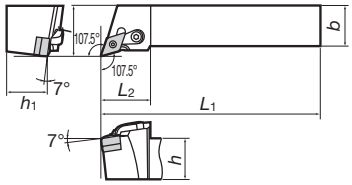
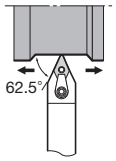
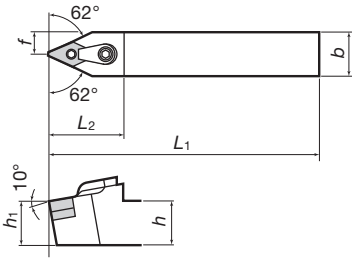
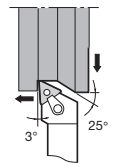
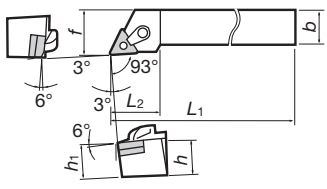
Toolholders for External Turning

Negative rake
Multi clamping system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning • Facing **MCLNR/L**  Cutting edge style **L**	MCLNR/L1616H12			16	16	100	32	16	20	–	0.8	CN□□1204□□ 80° 80° 2-42 ~ T-CBN 3-7 ~ T-DIA 3-21 ~	 Right hand (R) shown.
	MCLNR/L2020K12			20	20	125		20	25	18			
	MCLNR/L2525M12	●	●	25	25	150		25	32				
	MCLNR/L3225P12			32		170		32					
	MCLNR/L2020K12C			20	20	125	32	20	25	18	0.8	CN□□1207□□ 80° 2-51 CN□□1206□□ 80°	
	MCLNR/L2525M12C			25	25	150		25	32				
	MCLNR/L3225P12C			32		170		32					
	MCLNR/L2525M16			25	25	150	35	25	32	22	1.2	CN□□1606□□ 80° 2-45 ~ (CN□□1604□□)	
	MCLNR/L3225P16			32		170		32					
	MCLNR/L3232P16				32				40				
	MCLNR/L3232P19			32	32	170	36	32	40	30	1.2	CN□□1906□□ 80° 2-45 ~	
	MCLNR/L4040R19			40	40	200		40	50				
Turning • Facing **MWLNR/L**  Cutting edge style **L**	MWLNR/L2020K08	●		20	20	125	25	20	25	–	0.8	WN□□0804□□ 80° 2-80 ~ T-CBN 3-9 ~	 Right hand (R) shown.
	MWLNR/L2525M08	●	●	25	25	150		25	32				
	MWLNR/L3225P08			32		170		32					
	MWLNR/L2525M10			25	25	150	30	25	32	–	1.2	WN□□1006□□ 80° 2-85	
	MWLNR/L3225P10			32		170		32					
	MWLNR/L3232P10				32				40				
	MWLNR/L4040R10			40	40	200		40	50				
	MWLNR/L3232P13			32	32	170	38	32	40	–	1.2	WN□□1306□□ 80°	
	MWLNR/L4040R13			40	40	200		40	50				

● : Stocked items.

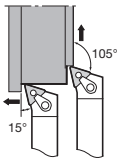
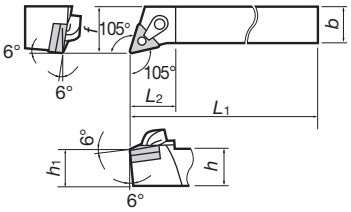
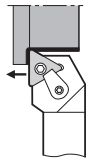
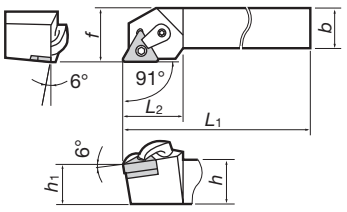
Relating pages
Parts (14–1~)

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
External profiling **MDJNR/L**  Cutting edge style **J**	MDJNR/L1616H11			16	16	100	30	16	20	–	0.8	DN□□1104□□ 55° 2-52 ~	
	MDJNR/L2020K15			20	20	125	38	20	25	19	0.8	DN□□1504□□ 55° 55° DN□□1506□□ 55° 2-52 ~ T-CBN 3-7 ~ T-DIA 3-21 ~	
	MDJNR/L2525M15	●		25	25	150		25	32				
	MDJNR/L3225P15			32		170		32					
	MDJNR/L3232P15				32				40				
	MDJNR/L2020K15C			20	20	125	38	20	25	19	0.8	DN□□1507□□ 55° 2-60 ~ DN□□1506□□ 55° 2-52 ~	
	MDJNR/L2525M15C			25	25	150		25	32				
	MDJNR/L3225P15C			32		170		32					
	MDJNR/L3232P15C				32				40				
													Right hand (R) shown.
Profiling **MDQNR/L**  Cutting edge style **Q**	MDQNR/L1616H11			16	16	100	30	16	20	–	0.8	DN□□1104□□ 55° 2-52 ~	
	MDQNR/L2020K15			20	20	125	36	20	25	–	0.8	DN□□1504□□ 55° 55° DN□□1506□□ 55° 2-52 ~ T-CBN 3-7 ~ T-DIA 3-21 ~	
	MDQNR/L2525M15			25	25	150		25	32				
	MDQNR/L3225P15			32		170		32					
	MDQNR/L3232P15				32				40				
													Right hand (R) shown.
External profiling **MDPNN**  Cutting edge style **P**	MDPNN1616H11			16	16	100	36	16	8	–	0.8	DN□□1104□□ 55° 2-52 ~	
	MDPNN2020K15			20	20	125	42	20	10		0.8	DN□□1504□□ 55° 55° DN□□1506□□ 55° 2-52 ~ T-CBN 3-7 ~ T-DIA 3-21 ~	
	MDPNN2525M15	●		25	25	150		25	12.5				
	MDPNN3225P15			32		170		32					
	MDPNN3232P15				32				16				
External profiling **MTJNR/L**  Cutting edge style **J**	MTJNR/L2020K16			20	20	125	28	20	25	–	0.8	TN□□1603□□ TN□□1604□□ 60° 60° 2-70 ~ T-CBN 3-8 ~ T-DIA 3-21 ~	
	MTJNR/L2525M16	●		25	25	150		25	32				
	MTJNR/L3225P16			32		170		32					
	MTJNR/L2525M22			25	25	150	32	25	32	–	0.8	TN□□2204□□ 60° 60° 2-70 ~	
	MTJNR/L3225P22			32		170		32					
	MTJNR/L3232P22				32				40				
													Right hand (R) shown.

● : Stocked items.

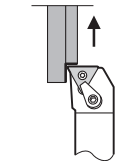
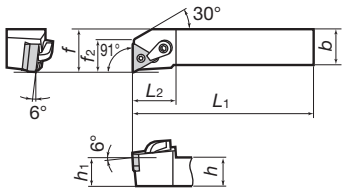
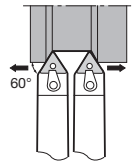
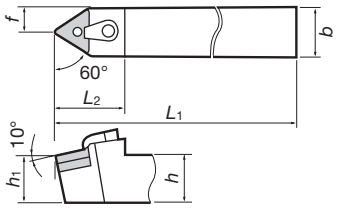
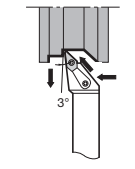
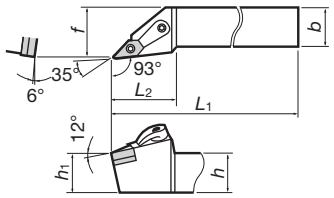
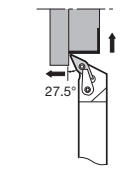
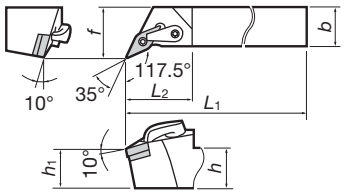
Toolholders for External Turning

Negative rake
Multi clamping system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Profiling **MTQNR/L**  Cutting edge style **Q**	MTQNR/L2020K16	●		20	20	125	26	20	25	–	0.8	TN□□1603□□ TN□□1604□□ 60° 60° 2-70 ~ T-CBN 3-8 ~ T-DIA 3-21 ~	
	MTQNR/L2525M16	●		25	25	150		25	32				
	MTQNR/L3225P16			32	25	170		32					
	MTQNR/L2525M22			25	25	150	32	25	32	–	0.8	TN□□2204□□ 60° 60° 2-70 ~	
	MTQNR/L3225P22			32		170		32					
	MTQNR/L3232P22				32				40				
													Right hand (R) shown.
Turning **MTGNR/L**  Cutting edge style **G**	MTGNR/L1616H16			16	16	100	28	16	20	–	0.8	TN□□1603□□ TN□□1604□□ 60° 60° 2-70 ~ T-CBN 3-8 ~ T-DIA 3-21 ~	
	MTGNR/L2020K16			20	20	125		20	25				
	MTGNR/L2525M16			25	25	150		25	32				
	MTGNR/L2020K16C			20	20	125	28	20	25	–	0.8	TN□□1607□□ 60° 2-79 ~	
	MTGNR/L2525M16C			25	25	150		25	32				
	MTGNR/L2525M22			25	25	150	32	25	32	–	0.8	TN□□2204□□ 60° 60° 2-70 ~	
	MTGNR/L3225P22			32		170		32					
	MTGNR/L3232P22				32				40				
	MTGNR/L2525M27			25	25	150	38	25	32	–	1.2	TN□□2706□□ 60°	
	MTGNR/L3232P27			32	32	170		32	40				
	MTGNR/L4040R27			40	40	200		40	50				
	MTGNR/L3232P33			32	32	170	40	32	40	–	1.2	TN□□3307□□ 60°	
	MTGNR/L4040R33			40	40	200		40	50				
													Right hand (R) shown.

● : Stocked items.

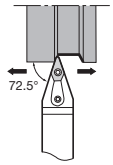
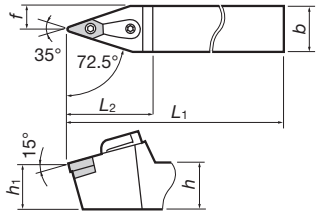
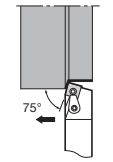
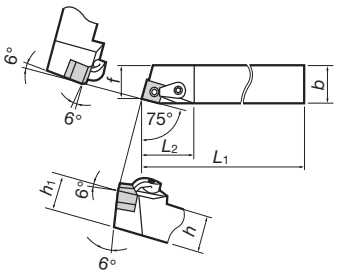
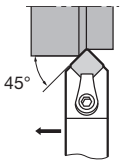
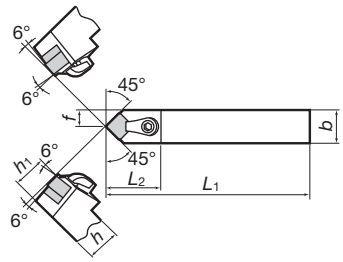
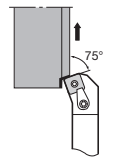
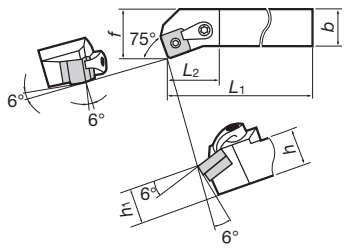
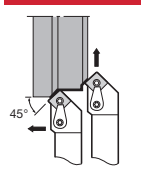
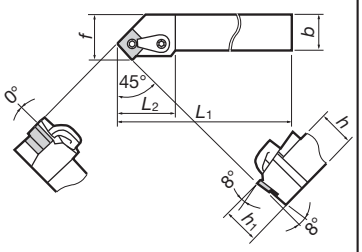
Relating pages
Parts (14–1~)

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Facing **MTFNR/L**  Cutting edge style **F**	MTFNR/L1616H16			16	16	100	28	16	20	18	0.8	TN□□1603□□ TN□□1604□□ 60° 60° 2-70 ~ T-CBN 3-8 ~ T-DIA 3-21 ~	 Right hand (R) shown.
	MTFNR/L2020K16			20	20	125		20	25				
	MTFNR/L2525M16			25	25	150		25	32				
	MTFNR/L2020K16C			20	20	125	28	20	25	18	0.8	TN□□1607□□ 60° 2-79	
	MTFNR/L2525M16C			25	25	150		25	32				
	MTFNR/L2525M22			25	25	150	32	25	32	24	0.8	TN□□2204□□ 60° 60° 2-70 ~	
	MTFNR/L3225P22			32		170		32					
	MTFNR/L3232P27			32	32	170	31	32	40	30	1.2	TN□□2706□□ 60°	
	MTFNR/L4040R27			40	40	200		40	50				
Turning Chamfering **MTENN**  Cutting edge style **E**	MTENN2020K16			20	20	125	35	20	10	–	0.8	TN□□1603□□ TN□□1604□□ 60° 60° 2-70 ~ T-CBN 3-8 ~ T-DIA 3-21 ~	
	MTENN2525M16	●		25	25	150		25	12.5				
	MTENN3225P16			32		170		32					
	MTENN2525M22			25	25	150	38	25	12.5	–	0.8	TN□□2204□□ 60° 60° 2-70 ~	
	MTENN3225P22			32		170		32					
	MTENN3232P22				32				16				
External profiling **MVJNR/L**  Cutting edge style **J**	MVJNR/L2020K16	●	●	20	20	125	42	20	25	–	0.8	VN□□1604□□ 35° 2-87 ~ T-CBN 3-9 ~ T-DIA 3-21 ~ YNMG1604□□ 25° 2-91	 Right hand (R) shown.
	MVJNR/L2525M16	●	●	25	25	150		25	32				
	MVJNR/L3225P16	●	●	32		170		32					
	MVJNR/L3232P16	●	●		32				40				
Profiling **MVQNR/L**  Cutting edge style **Q**	MVQNR/L2020K16	●	●	20	20	125	40	20	25	–	0.8	VN□□1604□□ 35° 2-87 ~ T-CBN 3-9 ~ T-DIA 3-21 ~ YNMG1604□□ 25° 2-91	 Right hand (R) shown.
	MVQNR/L2525M16	●	●	25	25	150		25	32				
	MVQNR/L3225P16			32		170		32					
	MVQNR/L3232P16	●	●		32				40				

● : Stocked items.

Toolholders for External Turning

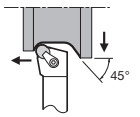
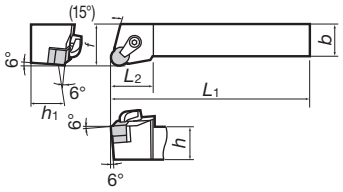
Negative rake
Multi clamping system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
External profiling **MVVNN**  Cutting edge style **V**	MVVNN2020K16	●		20	20	125	48	20	10	–	0.8	VN□□1604□□ 35° 2-87 ~ T-CBN 3-9 ~ T-DIA 3-21 ~ YNMG1604□□ 25° 2-91	
	MVVNN2525M16	●		25	25	150		25	12.5				
	MVVNN3225P16	●		32		170		32					
Turning **MSBNR/L**  Cutting edge style **B**	MSBNR/L2020K12			20	20	125	32.5	20	17	–	0.8	SN□□1204□□ 90° 90° 2-61 ~ T-CBN 3-8 ~ T-DIA 3-21 ~	 Right hand (R) shown.
	MSBNR/L2525M12			25	25	150		25	22				
	MSBNR/L2020K12C			20	20	125	32.5	20	17	–	0.8	SN□□1207□□ 90° 2-69 SN□□1206□□ 90°	
	MSBNR/L2525M12C			25	25	150		25	22				
Turning Chamfering **MSDNN**  Cutting edge style **D**	MSDNN2020K12			20	20	125	34	20	10.0	–	0.8	SN□□1204□□ 90° 90° 2-61 ~ T-CBN 3-8 ~ T-DIA 3-21 ~	
	MSDNN2525M12			25	25	150		25	12.5				
	MSDNN2020K12C			20	20	125	34	20	10.0	–	0.8	SN□□1207□□ 90° 2-69 SN□□1206□□ 90°	
	MSDNN2525M12C			25	25	150		25	12.5				
Facing **MSKNR/L**  Cutting edge style **K**	MSKNR/L2020K12			20	20	125	29	20	25	–	0.8	SN□□1204□□ 90° 90° 2-61 ~ T-CBN 3-8 ~ T-DIA 3-21 ~	 Right hand (R) shown.
	MSKNR/L2525M12			25	25	150		25	32				
	MSKNR/L2020K12C			20	20	125	29	20	25	–	0.8	SN□□1207□□ 90° 2-69 SN□□1206□□ 90°	
	MSKNR/L2525M12C			25	25	150		25	32				
Turning·Facing Chamfering **MSSNR/L**  Cutting edge style **S**	MSSNR/L2020K12			20	20	133	34	20	25	–	0.8	SN□□1204□□ 90° 90° 2-61 ~ T-CBN 3-8 ~ T-DIA 3-21 ~	 Right hand (R) shown.
	MSSNR/L2525M12			25	25	158		25	32				
	MSSNR/L2020K12C			20	20	133	34	20	25	–	0.8	SN□□1207□□ 90° 2-69 ~ SN□□1206□□ 90°	
	MSSNR/L2525M12C			25	25	158		25	32				

● : Stocked items.

Relating pages
Parts (14–1~)

Toolholders for External Turning

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning **MRGNR/L**  Cutting edge style **G**	MRGNR/L2020K12			20	20	125	28	20	25	(12)	–	RN□□120400 ◎ 2-92	 Right hand (R) shown.
	MRGNR/L2525M12			25	25	150		25	32				
	MRGNR/L2020K12C			20	20	125	28	20	25	(12)	–	RNGN120700 ○ 2-93	
	MRGNR/L2525M12C			25	25	150		25	32				

● : Stocked items.

Replacement Parts for M-type

Replacement Parts for M-type TAC Toolholders

● When using the inserts shown in the shaded cells, the optional parts shown in the shaded cells are needed. You may purchase them separately.
● 1) Used for 1616H16. ● 2) Used for MSDNN. ● 3) Used for MDJNR/L ● 4) Used for MVVNN

Toolholders Cat. No		Applicable inserts		Shim	Lock pin	Shim screw	Clamp	Clamping screw	Chipbreaker piece	Lock pin Wrench	Wrench
		Cat. No.	Shape								
MSBNR/L MSDNN MSKNR/L MSSNR/L	2020K12 2525M12	SN□□1204□□		MSS-432	MLP46	–	MCPM-21	MCS625-3	CBS-4M	P-2.5F	P-3
		SN□□1204□□			–	MSP-6.3			2) CBS-4MN	(P-2.5F)	P-3
	2020K12C 2525M12C	SN□□1207□□		MSS-432	–	MSP-6.3	MCPM-21	MCS625-3	CBS-4M 2) CBS-4MN	P-2.5F	P-3
		SN□□1206□□		MSS-442	MLP46L	–					
MTFNR/L MTGNR/L MTJNR/L MTQNR/L MTENN	1616H16 2020K16 2525M16 3225P16	TN□□1604□□		MST-322	MLP34L	–	1) MCPM-20 MCPM-21	1) MCS620-3 MCS625-3	CBT-3M	P-2F	P-3
		TN□□1604□□			–	MSP-5					
		TN□□1603□□		MST-332	MLP34L	–	1) MCPM-20 MCPM-21	1) MCS620-3 MCS625-3	CBT-3M	P-2F	P-3
		TN□□1603□□			–	MSP-5					
	2020K16C 2525M16C	TN□□1607□□		MST-322	–	MSP-5	MCPM-21	MCS625-3	CBT-3M	(P-2F)	P-3
	2525M22 3225P22 3232P22	TN□□2204□□		MST-432	MLP46	–	MCPM-9	MCS828-4	CBT-4M	P-2.5F	P-4
		TN□□2204□□			–	MSP-6.3					
	2525M27 3225P27 4040R27	TN□□2706□□		MST-533	MLP58	–	MCPM-12	MCS828-4	–	P-3	P-4
	3232P33 4040R33	TN□□3307□□		MST-644	MLP68L	–	MCPM-30	MCS825-4	–	P-3	P-4
MCLNR/L	1616H12 2020K12 2525M12 3225P12	CN□□1204□□		MSC-432	MLP46	–	MCPM-21	MCS625-3	CBC-4MN	P-2.5F	P-3
		CN□□1204□□			–	MSP-6.3					
	2020K12C 2525 3225P12C	CN□□1207□□		MSC-432	–	MSP-6.3	MCPM-21	MCS625-3	CBC-4MN	P-2.5F	P-3
		CN□□1206□□		MSC-442	MLP46L	–					
	2525M16 3225P16 3232P16	CN□□1606□□		MSC-533	MLP58	–	MCPM-12	MCS828-4	–	P-3	P-4
		CN□□1604□□		MSC-543							
	3232P19 4040R19	CN□□1906□□		MSC-634	MLP68	–	MCPM-12	MCS828-4	–	P-4	P-4
MDJNR/L MDPNN MDQNR/L	1616H11	DN□□1104□□		MSD-322	MLP34L	–	MCPM-20	MCS620-3	–	P-2F	P-3
	2020K15 2525M15 3225P15 3232P15	DN□□1506□□		MSD-432	MLP46L	–	MCPM-22	MCS625-3	3) CBD-4MR/L CBD-4MN	P-2.5F	P-3
		DN□□1504□□		MSD-442		–					
		DN□□1504□□		MSD-442	–	MSP-6.3					
	2020K15C 2525M15C 3225P15C 3232P15C	DN□□1507□□		MSD-432	–	MSP-6.3	MCPM-22	MCS625-3	3) CBD-4MR/L CBD-4MN	P-2.5F	P-3
		DN□□1506□□		MSD-442	MLP46L	–					

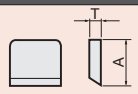
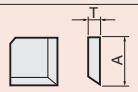
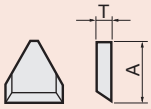
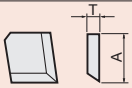
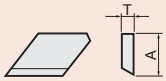
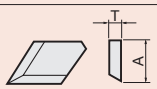
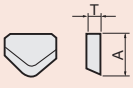
Replacement Parts for M-type

Toolholders Cat. No.		Applicable inserts		Shim	Lock pin	Shim screw	Clamp	Clamping screw	Chipbreaker piece	Lock pin Wrench	Wrench
		Cat. No.	Shape								
MVJNR/L MVVNN MVQNR/L	2020K16 2525M16 3225P16 3232P16	VN□□1604□□		MSV-322	MLP34L	–	MCPM-22 MCPM-30 [4)]	MCS625-3 MCS828-4 [4)]	–	P-2F	P-3 P-4 [4)]
MRGNR/L	2020K12 2525M12	RN□□1204□□		MSR-43	MLP46	–	MCPM-21	MCS625-3	CBR-4MN	P-2.5F	P-3
		RN□□1204□□			–	MSP-6.3					
	2020K12C 2525M12C	RN□□1207□□		MSR-43	–	MSP-6.3	MCPM-21	MCS625-3	CBR-4MN	P-2.5F	P-3
		RN□□1206□□		MSR-44	MLP46L	–					
MWLNR/L	2020K08 2525M08 3225P08	WN□□0804□□		MSW-432	MLP46	–	MCPM-6	MCS520-2.5	–	P-2.5	P-2.5
	2525M10 3225P10 3232P10 4040R10	WN□□1006□□		MSW-533	MLP58	–	MCPM-21	MCS625-3	–	P-3	P-3
	3232P13 4040R13	WN□□1306□□		MSW-633	MLP68	–	MCPM-12	MCS828-4	–	P-4	P-4

Note : The shims are made of Tungaloy grade D30, and the chipbreaker pieces are of TX30.

List of Chipbreaker Pieces

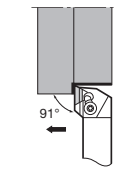
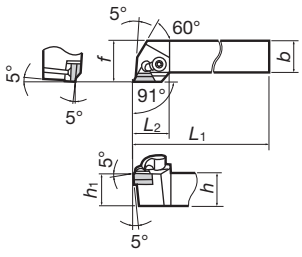
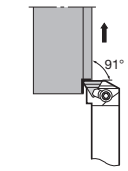
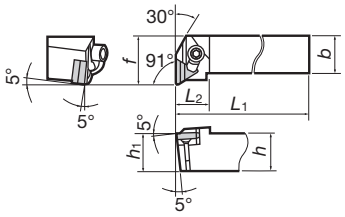
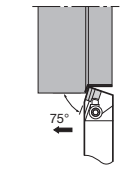
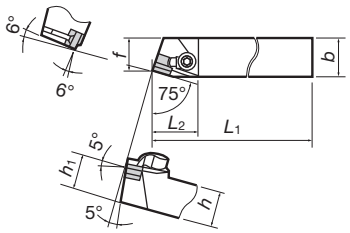
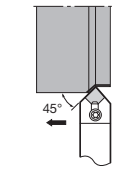
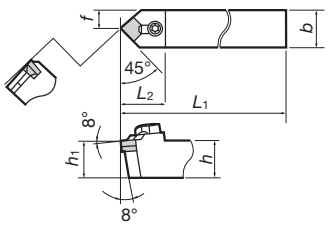
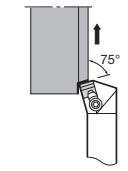
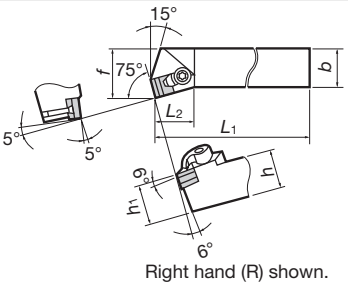
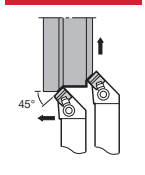
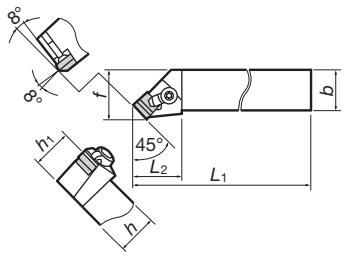
In addition to the standard chipbreaker pieces, optional chipbreaker pieces are available separately.
Select the proper one that is suitable for your cutting conditions.

Shape	Cat. No.	Applicable inserts	Dimensions(mm)		Chipbreaker width when assembled (mm)
			A	T	
	CBS-4S	SN□□1204□□	11.6	2.5	1.5
	CBS-4M	SN□□1207□□	10.6		2.5
	CBS-4L		9.1		4.0
	CBS-4SN	SN□□1204□□	11.5	2.5	1.5
	CBS-4MN	SN□□1207□□	10.5		2.5
	CBS-4LN		9.0		4.0
	CBT-3S	TN□□1604□□	12.1	2.5	1.5
	CBT-3M	TN□□1607□□	11.1		2.5
	CBT-3L		10.1		3.5
	CBT-4S	TN□□2204□□	16.9	2.5	1.5
	CBT-4M		15.9		2.5
	CBT-4L		14.4		3.5
	CBC-4SN	CN□□1204□□	11.5	2.5	1.5
	CBC-4MN	CN□□1207□□	10.5		2.5
	CBC-4LN		9.5		3.5
	CBD-4SR/L	DN□□1504□□	11.5	2.5	1.5
	CBD-4MR/L	DN□□1506□□	10.5		2.5
	CBD-4LR/L	DN□□1507□□	9.5		3.5
	CBD-4SN	DN□□1506□□	11.5	2.5	1.5
	CBD-4MN		10.5		2.5
	CBD-4LN		9.5		3.5
	CBR-4SN	RN□□1204□□	11.9	2.5	1.5
	CBR-4MN	RN□□1206□□	10.9		2.5

Relating pages
Parts (14–1~)

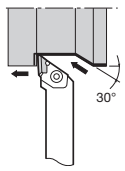
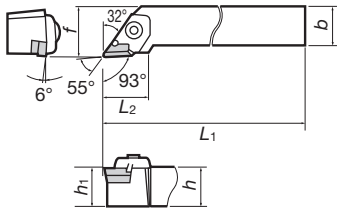
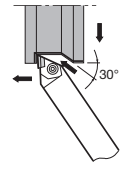
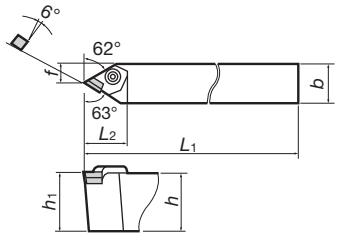
Toolholders for External Turning

Negative rake
Clamp-on system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning **CTGNR/L**  Cutting edge style **G**	CTGNR/L2020	●	●	20	20	125	28.5	20	25	–	0.8	TN□□1604□□ 60° △ 2-79	 Right hand (R) shown.
	CTGNR/L2525	●	●	25	25	150		25	32				
Facing **CTFNR/L**  Cutting edge style **F**	CTFNR/L2020	●	●	20	20	125	22	20	25	–	0.8	TN□□1604□□ 60° △ 2-79	 Right hand (R) shown.
	CTFNR/L2525	●	●	25	25	150		25	32				
Turning **CSBNR/L**  Cutting edge style **B**	CSBNR/L2020	●		20	20	125	31	20	17	–	0.8	SN□□1204□□ 90° □ 2-69	 Right hand (R) shown.
	CSBNR/L2525	●	●	25	25	150		25	22				
Turning Chamfering **CSDNN**  Cutting edge style **D**	CSDNN2020		●	20	20	125	32	20	10.0	–	0.8	SN□□1204□□ 90° □ 2-69	
	CSDNN2525		●	25	25	150		25	12.5				
Facing **CSKNR/L**  Cutting edge style **K**	CSKNR/L2020			20	20	125	25	20	25	–	0.8	SN□□1204□□ 90° □ 2-69	 Right hand (R) shown.
	CSKNR/L2525	●	●	25	25	150		25	32				
Turning·Facing Chamfering **CSSNR/L**  Cutting edge style **S**	CSSNR/L2020	●	●	20	20	125	31	20	25	–	0.8	SN□□1204□□ 90° □ 2-69	 Right hand (R) shown.
	CSSNR/L2525	●	●	25	25	150		25	32				

● : Stocked items.

Relating pages
Parts (14–1~)

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
External profiling **CKJNR/L**  Cutting edge style **J**	CKJNR/L2525	●	●	25	25	150	32	25	32	–	0.8	KNMX1604□□ 55° 2-94	 Right hand (R) shown.
	CKJNR/L3232			32	32	170		32	40				
External profiling **CKNNR/L**  Cutting edge style **N**	CKNNR/L4025			40	25	150	37	40	15	–	0.8	KNMX1604□□ 55° 2-94	 Right hand (R) shown.
	CKNNR/L5032			50	32			50	16				

● : Stocked items.

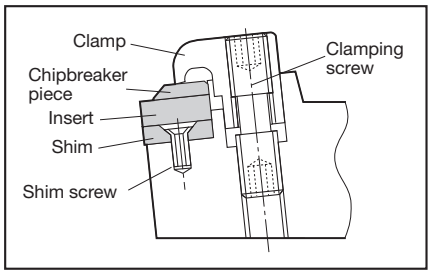
Parts of C-type

Toolholders Cat. No.		Applicable inserts Cat. No.	Shape	Chipbreaker piece	Shim	Shim screw	Clamp	Clamping screw	Wrench
CTGNR/L CTFNR	2020 2525	TN□□1604□□	△	NCT-2□	NAT-32	SM3×0.5×8	NF-84A	NDS-8A	P-4
CSBNR/L	2020 2525	SN□□1204□□	□	NCS-3□	NAS-42	SM3×0.5×8	NF-84A	NDS-8A	P-4
CSKNR/L CSSNR/L CSDNN	2020 2525	SN□□1204□□	□	NCS-3□N	NAS-42	SM3×0.5×8	NF-84A	NDS-8A	P-4

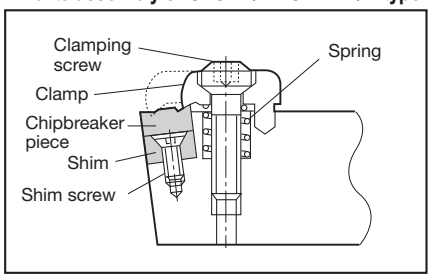
Toolholders Cat. No.		Applicable inserts Cat. No.	Shape	Shim	Clamping screw	Clamp	Spring	Pin	Shim screw	Wrench
CKJNR/L	2525 3232	KNMX1604□□	▱	CSK54R/L	CTS-M6	CPK5R/L	SP913	BP-490	SM3×0.5×10	P-4
CKNNR/L	4025 5032									

Parts Assembly and Chipbreaker Pieces for C-type TAC Toolholders

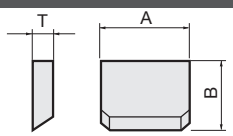
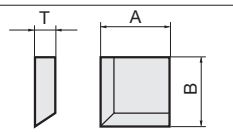
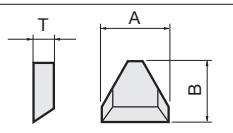
• **Parts assembly of negative rake type**



• **Parts assembly of CKJNR/L·ECKNNR/L-type**



• **List of chipbreaker piece for positive rake, C-type toolholders**

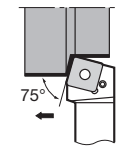
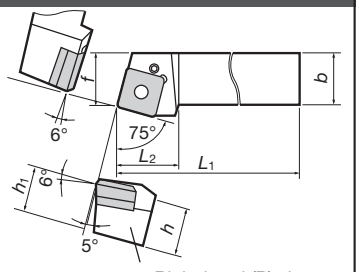
Shape	Cat. No.	Dimensions (mm) A	B	T	Chipbreaker width when assembled (mm)
	NCS-3L	12.7	8.7	2.5	4.0
	NCS-3M*		10.2		2.5
	NCS-3S		11.2		1.5
	NCS-3LN	8.7	8.7	2.5	4.0
	NCS-3MN*	10.2	10.2		2.5
	NCS-3SN	11.2	11.2		1.5
	NCT-2L	12.5	9.8	2.5	3.5
	NCT-2M*	13.6	10.8		2.5
	NCT-2S	14.8	11.8		1.5

Note: *marked items are standard parts. Shim is made of TX30 grade.

Relating pages
Parts (14–1~)

Toolholders for External Turning

Negative rake
Retract-pin system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning **HSRNR/L**  Cutting edge style **R**	HSRNR/L4040R	●	●	40	40	200	50	40	43	–	1.6	SNMM3109□□ 90° ◎ 2-68	 Right hand (R) shown.
	HSRNR/L5050S	●	●	50	50	250	60	50	53				

● : Stocked items.

Parts of H-type

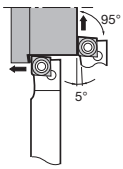
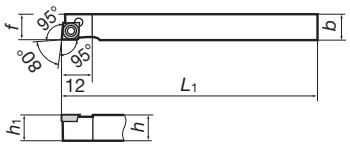
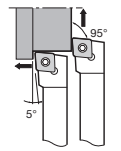
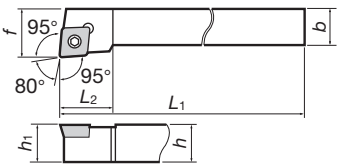
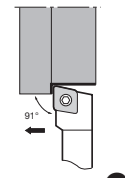
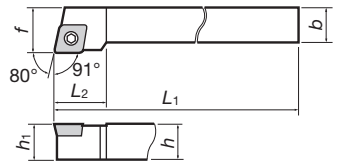
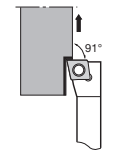
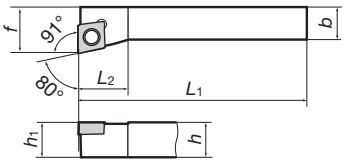
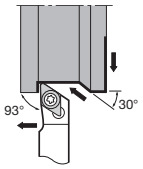
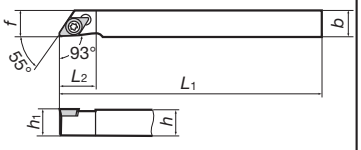
Toolholders Cat. No.		Applicable inserts Cat. No.	Applicable inserts Shape	Shim	Retract pin	Clamping screw	Wrench
							
HSRNR/L	4040R 5050S	SNMM3109□□	◎	NAS-04	SW99	LS-8	P-4

Relating pages
Parts (14–1~)

Toolholders for External Turning

Applicable inserts CC/DC□□

Positive rake
Screw-on system

Tooling styles	Cat. No.	Stock R	Stock L	h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning • Facing **SCL2CR/L**  Cutting edge style **L2**	SCL2CR/L1010H			10	10	100	12	10	10	–	0.4	CC□□0602□□ 80° 2-96 ~	Without offset  Right hand (R) shown.
	SCL2CR/L1010K06					125							
	SCL2CR/L1212H			12	12	100		12	12				
	SCL2CR/L1212K06					125							
Turning • Facing **SCLCR/L**  Cutting edge style **L**	SCLCR/L1212H			12	12	100	12	12	16	–	0.4	CC□□0602□□ 80° 2-96 ~	 Right hand (R) shown.
	SCLCR/L1616H			16	16	100	16	16	20	–	0.8	CC□□09T3□□ 80° 2-96 ~	
	SCLCR/L1616H09	●	●										
	SCLCR/L2020K12	●	●	20	20	125	20	20	25	–	0.8	CC□□1204□□ 80° 2-97 ~	
Turning **SCGCR/L**  Cutting edge style **G**	SCGCR/L1212H			12	12	100	12	12	16	–	0.4	CC□□0602□□ 80° 2-96 ~	 Right hand (R) shown.
	SCGCR/L1616H			16	16	100	16	16	20	–	0.8	CC□□09T3□□ 80° 2-96 ~	
Facing **SCFCR/L**  Cutting edge style **F**	SCFCR/L1212H			12	12	100	16	12	16	–	0.4	CC□□0602□□ 80° 2-96 ~	 Right hand (R) shown.
	SCFCR/L1616H			16	16	100	16	16	20	–	0.8	CC□□09T3□□ 80° 2-96 ~	
Turning·Profiling **SDJ2CR/L**  Cutting edge style **J2**	SDJ2CR/L1010H			10	10	100	14	10	10	–	0.4	DC□□0702□□ 55° 2-105 ~	Without offset  Right hand (R) shown.
	SDJ2CR/L1010K07					125							
	SDJ2CR/L1212H			12	12	100		12	12				
	SDJ2CR/L1212K07					125							

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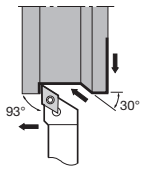
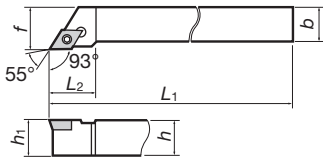
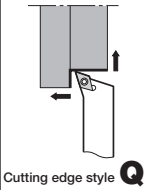
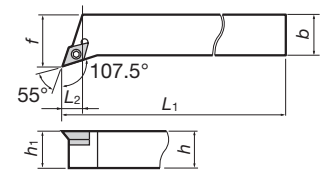
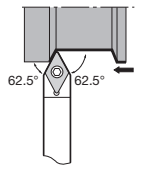
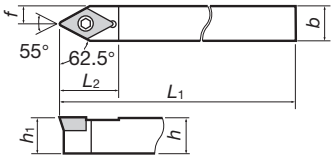
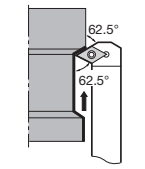
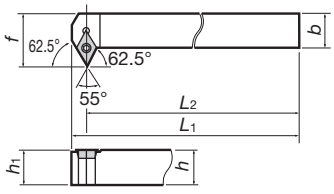
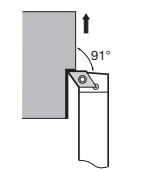
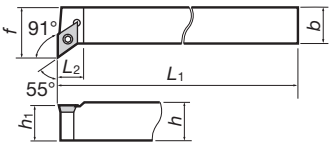
● : Stocked items.

Toolholders for External Turning

Positive rake
Screw-on system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
External profiling **SDJCR/L**  Cutting edge style **J**	SDJCR/L1212H			12	12	100	14	12	16	–	0.4	DC□□0702□□ 55° 2-105 ~	 Right hand (R) shown.
	SDJCR/L1616H			16	16	100	18	16	20	–	0.8	DC□□11T3□□ 55° 2-105 ~	
	SDJCR/L1616H11	●					20						
	SDJCR/L2020K11	●	●	20	20	125	20.5	20	25				
	SDJCR/L2525M11	●	●	25	25	150	21.5	25	32				
Profiling **SDQCR/L**  Cutting edge style **Q**	SDQCR/L2020K11	●	●	20	20	125	20.5	20	25	–		DC□□11T3□□ 55° 2-105 ~	 Right hand (R) shown.
	SDQCR/L2525M11	●		25	25	150	21.5	25	32				
Turning·Profiling **SDNCN**  Cutting edge style **N**	SDNCN1010H			10	10	100	14	10	5	–	0.4	DC□□0702□□ 55° 2-105 ~	 Right hand (R) shown.
	SDNCN1010K07					125							
	SDNCN1212H			12	12	100		12	6				
	SDNCN1212K07					125							
	SDNCN1616H			16	16	100	21	16	8	–	0.8	DC□□11T3□□ 55° 2-105 ~	
	SDNCN1616H11	●											
	SDNCN2020K11	●		20	20	125		20	10				
	SDNCN2525M11	●		25	25	150		25	12.5				
External profiling **SDN3CR/L**  Cutting edge style **N3**	SDN3CR/L1212H			12	12	105	100	12	18	–	0.4	DC□□0702□□ 55° 2-105 ~	 Right hand (R) shown.
	SDN3CR/L1616H			16	16	107	100	16	25	–	0.8	DC□□11T3□□ 55° 2-105 ~	
Facing **SDFCR/L**  Cutting edge style **F**	SDFCR/L1212H			12	12	100	8	12	16	–	0.4	DC□□0702□□ 55° 2-105 ~	 Right hand (R) shown.
	SDFCR/L1616H			16	16	100	10.5	16	22	–	0.8	DC□□11T3□□ 55° 2-105 ~	

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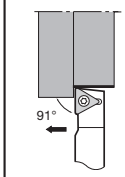
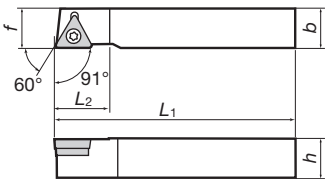
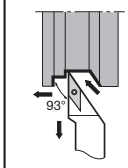
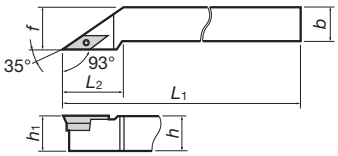
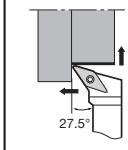
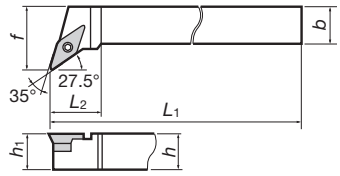
● : Stocked items.

Relating pages Parts (14–1~)

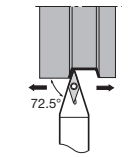
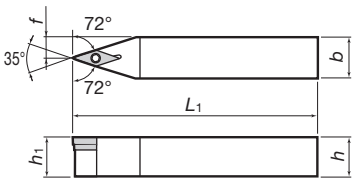
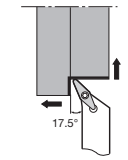
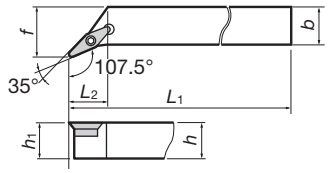
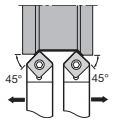
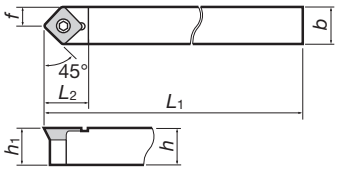
Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning **STACR/L**  Cutting edge style **A**	STACR/L0808H			8	8	100	10.5	8	8	–	0.2	TC□□0802□□ 60° 2-120 ~	Without offset  Right hand (R) shown.
	STACR/L1010H			10	10			10	10				
	STACR/L1212H			12	12			12	12				
	STACR/L0808H09			8	8	100	10.5	8	8	–	0.4	TC□□0902□□ 60° 2-118 ~	
	STACR/L0808K09					125							
	STACR/L1010H09			10	10	100		10	10				
	STACR/L1010K09					125							
	STACR/L1212H11			12	12	100	12	12	12	–	0.4	TC□□1102□□ 60° 2-118 ~	
	STACR/L1212K11					125							
	STACR/L1616H16	●	●	16	16	100	22.5	16	16	–	0.8	TC□□16T3□□ 60° 2-118 ~	
	STAPR/L1616H			16	16	100	13	16	16	–		TPGA/M1103□□ 60° 2-127 ~	
External profiling **SVJCR/L**  Cutting edge style **J**	SVJCR/L1616H16	●	●	16	16	100	32	16	20	–	0.8	VC□□1604□□ 35° 2-135	 Right hand (R) shown.
	SVJCR/L2020K16	●	●	20	20	125		20	25				
	SVJCR/L2525M16	●	●	25	25	150	40	25	32				
	SVJCR/L3225P16			32	25	170		32					
Profiling **SVQCR/L**  Cutting edge style **Q**	SVQCR/L2020K16	●	●	20	20	125	35	20	27	–	0.8	VC□□1604□□ 35° 2-135	 Right hand (R) shown.
	SVQCR/L2525M16	●	●	25	25	150		25	32				
	SVQCR/L3225P16			32		170		32					

T-CBN 3-13 ~ T-DIA 3-22 ~

● : Stocked items.

Toolholders for External Turning

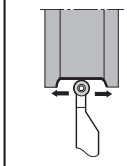
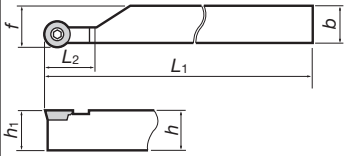
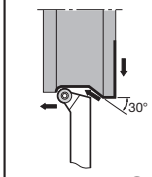
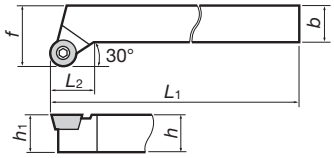
Positive rake
Screw-on system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
External profiling **SVVCN**  Cutting edge style **V**	SVVCN2020K16	●		20	20	125	–	20	10	–	0.8	VC□□1604□□ 35° 2-135 T-CBN 3-13 T-DIA 3-22	
	SVVCN2525M16	●		25	25	150		25	12.5				
	SVVCN3225P16			32		170		32					
Profiling **SVHCR/L**  Cutting edge style **H**	SVHCR/L2020K22			20	20	125	33.8	20	25	–	0.8	VCG□2205□□ 35° 2-136	 Right hand (R) shown.
	SVHCR/L2525M22	●	●	25	25	150		25	32				
Turning Chamfering **SSDCN SSDPN**  Cutting edge style **D**	SSDCN1010H07			10	10	100	12	10	5	–	0.4	SC□□0702□□ 90° 2-113	
	SSDCN1010K07	●				125							
	SSDCN1212H09			12	12	100	15	12	6	–	0.8	SC□□09T3□□ 90° 2-112	
	SSDCN1212K09	●				125							
	SSDCN1616H09	●		16	16	100		16	8				
	SSDPN1010H	●		10	10	100	12	10	5	–	0.4	SPJP042TND2 SPMP042ERD 90° 11-20	
	SSDPN1212H	●		12	12			12	6				
	SSDPN1616H	●		16	16	100	14	16	8	–	0.8	SPJM322TND2 SPMM322ERD 90° 11-20	

T-CBN 3-13 ~

● : Stocked items.

Relating pages Parts (14–1~)

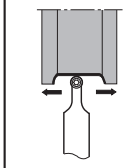
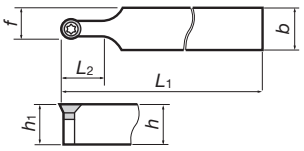
Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning **SRACR/L**  Cutting edge style **A**	SRACR/L1010H05	●		10	10	100	10	10	10.3	–	–	RCMT0502M0 ◎ 2-140	
	SRACR/L1212H05	●	▲	12	12			12	12.3				
	SRACR/L1616H05	●	▲	16	16			16	16.3				
	SRACR/L2020K05	●	●	20	20	125		20	20.3				
	SRACR/L2525M05	●	●	25	25	150		25	25.3				
	SRACR/L1212H06	●	●	12	12	100	12	12	12.4	–	–	RC□T0602M0 ◎ 2-140 ~	
	SRACR/L1616H06	●	●	16	16			16	16.4				
	SRACR/L2020K06	●	●	20	20	125		20	20.4				
	SRACR/L2525M06	●	●	25	25	150		25	25.4				
	SRACR/L1616H08	●	●	16	16	100	16	16	16.5	–	–	RC□T0803M0 ◎ 2-140 ~	
	SRACR/L2020K08	●	●	20	20	125		20	20.5				
	SRACR/L2525M08	●	●	25	25	150		25	25.5				Right hand (R) shown.
Turning **SRGCR/L**  Cutting edge style **G**	SRGCR/L1212H05	●	▲	12	12	100	9.5	12	16	–	–	RCMT0502M0 ◎ 2-140	
	SRGCR/L1616H05	●	●	16	16			16	20				
	SRGCR/L2020K05	●	●	20	20	125	11.2	20	25				
	SRGCR/L2525M05	●	●	25	25	150	14.7	25	32				
	SRGCR/L1212H06	●	●	12	12	100	10	12	16	–	–	RC□T0602M0 ◎ 2-140 ~	
	SRGCR/L1616H06	●	●	16	16			16	20				
	SRGCR/L2020K06	●	●	20	20	125	12	20	25				
	SRGCR/L2525M06	●	●	25	25	150	15	25	32				
	SRGCR/L1616H08	●	●	16	16	100	11	16	20	–	–	RC□T0803M0 ◎ 2-140 ~	
	SRGCR/L2020K08	●	●	20	20	125	12.7	20	25				
	SRGCR/L2525M08	●	●	25	25	150	16.2	25	32				
	SRGCR/L2020K10	●	●	20	20	125	14	25	25	–	–	RC□T1003M0 ◎ 2-140 ~	
	SRGCR/L2525M10	●	●	25	25	150	17.5	25	32				Right hand (R) shown.

● : Stocked items.
▲ : Shortly unavailable

Relating pages
Parts (14–1~)

Toolholders for External Turning

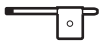
Positive rake
Screw-on system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning Chamfering **SRDCN**  Cutting edge style **D**	SRDCN2020K06	●		20	20	125	12	20	13	–	–	RC□T0602M0  2-140 ~	
	SRDCN2525M06	●		25	25	150		25	15.5	–			
	SRDCN2020K08	●		20	20	125	16	20	14	–	–	RC□T0803M0  2-140 ~	
	SRDCN2525M08	●		25	25	150		25	16.5	–			
	SRDCN2020K10	●		20	20	125	20.3	25	15	–	–	RC□T1003M0  2-140	
	SRDCN2525M10	●		25	25	150			17.5	–			

● : Stocked items.

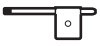
Relating pages
Parts (14–1~)

Replacement Parts for S-type

Toolholders Cat. No.		Applicable inserts		Clamping screw	Wrench	Shim	Shim screw	Wrench
		Cat. No.	Shape					
SCL2CR/L	1010H 1010K06 1212H 1212K07	CC□□0602□□		CSTB-2.5L	T-8F	–	–	–
SCLCR/L SCGCR/L SCFCR/L	1212H	CC□□0602□□		CSTB-2.5	T-8F	–	–	–
	1616H	CC□□09T3□□		CSTB-4	T-15F			
	1616H09			CSTB-3.5L		SSC32	DTS5-3.5	P-3.5
	2020K12	CC□□1204□□		CSTB-4F		SSC4T3	DTS6-4	P-4
SDJ2CR/L SDNCN SDJCR/L SDN3CR/L SDQCR/L SDFCR/L	1010H 1010K07 1212H 1212K07	DC□□0702□□		CSTB-2.5	T-8F	–	–	–
	1616H	DC□□11T3□□		CSTB-4	T-15F	–	–	–
	1616H11 2020K11 2525M11			CSTB-3.5L		SSD32	DTS5-3.5	P-3.5
STACR/L	0808H 1010H 1212H	TC□□0802□□		CSTB-2.2	T-7F	–	–	–
	0808H09 0808K09 1010H09 1010K09	TC□□0902□□						
	1212H11 1212K11	TC□□1102□□		CSTB-2.5	T-8F			
	1616H16	TC□□16T3□□		CSTB-3.5L	T-15F	SST32	DTS5-3.5	P-3.5
STAPR/L	1616H	TPGA/M1103□□		CSTA-NO2L	T-8F	–	–	–
SVJCR/L SVQCR/L SVVCN	1616H16 2020K16 2525M16 3225P16	VC□□1604□□		CSTB-3.5L	T-15F	SSV32	DTS5-3.5	P-3.5
SVHCR/L	2020K22 2525M22	VCG□2205□□		CSTB-4.5L 110P	T-15F	SSV42	DTS6-4.5	P-4.5
SSDCN	1010H07 1010K07	SC□□0702□□		CSTB-3	T-9F	–	–	–
	1212H09 1212K09	SC□□09T3□□		CSTB-4	T-15F			
	1616H09			CSTB-3.5L		SSS32	DTS5-3.5	P-3.5

Relating pages
Parts (14–1~)

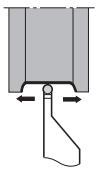
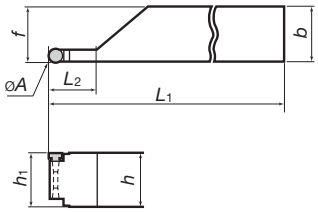
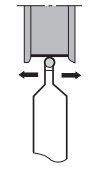
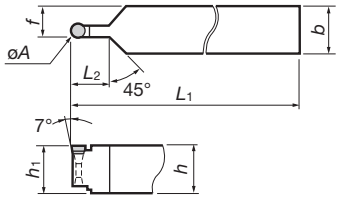
Replacement Parts for S-type

Toolholders Cat. No.		Applicable inserts		Clamping screw	Wrench	Shim	Shim screw	Wrench
		Cat. No.	Shape					
SSDPN	1010H 1212H	SPJP/M042TND2		CSTA-NO3	T-9F	–	–	–
	1616H	SPJP/M322TND2		CSTA-NO5				
SRACR/L SRGCR/L SRDCN	1010H05 1212H05 1616H05 2020K05 2525M05	RCMT0502M0-61		CSTB-2.2R	T-7F	–	–	–
	1212H06 1616H06 2020K06 2525M06	RC□T0602M0		CSTB-2.5	T-8F			
	1616H08 2020K08 2525M08	RC□T0803M0		CSTB-3	T-9F			
	2020K10 2525M10	RC□T1003M0		CSTB-3.5L	T-15F	SSR32	DTS5-3.5	P-3.5

Relating pages
Parts (14–1~)

Toolholders for External Turning

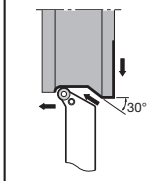
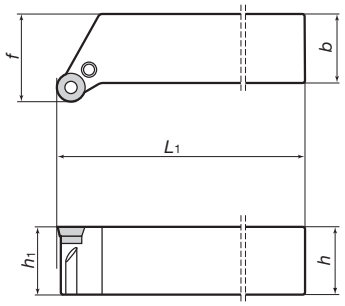
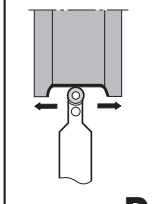
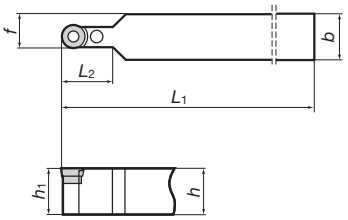
Positive rake
Taper lock system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning **TRACN**  Cutting edge style **A**	TRACN2020K05	●		20	20	125	20	20	20.31	5	–	RT05 ○ 2-142	
	TRACN2525M05	●		25	25	150		25	25.31				
	TRACN2020K06	●		20	20	125	22	20	20.37	6	–	RT06 ○ 2-142	
	TRACN2525M06	●		25	25	150		25	25.37				
	TRACN2525M08	●		25	25	150	25	25	25.52	8	–	RT08 ○ 2-142	
Turning Chamfering **TRDCN**  Cutting edge style **D**	TRDCN2020K05	●		20	20	125	20	20	12.5	5	–	RT05 ○ 2-142	
	TRDCN2525M05	●		25	25	150		25	15				
	TRDCN2020K06			20	20	125	22	20	13	6	–	RT06 ○ 2-142	
	TRDCN2525M06	●			25	25	150	25	15.5				
	TRDCN2525M08			25	25	150	25	25	16.5	8	–	RT08 ○ 2-142	

● : Stocked items.

Toolholders for External Turning

Positive rake
Lever lock system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning **PRGCR/L**  Cutting edge style **G**	PRGCR/L2020K10	●	●	20	20	125	–	20	25	–	–	RCMM1003M0 ◎ 2-141	 Right hand (R) shown.
	PRGCR/L2525M10			25	25	150		25	32				
	PRGCR/L2525M12	●	●	25	25	150	–	25	32	–	–	RCM□1204M0 ◎ 2-141	
	PRGCR/L3225P16	●	●	32	25	170	–	32	32	–	–	RCM□1606M0 ◎ 2-141	
	PRGCR/L3232P20	●	●	32	32	170	–	32	40	–	–	RCM□2006M0 ◎ 2-141	
	PRGCR/L4040S25			40	40	250	–	40	50	–	–	RCM□2507M0 ◎ 2-141	
Turning Chamfering **PRDCN**  Cutting edge style **D**	PRDCN2020K10		●	20	20	125	22	20	15	–	–	RCMM1003M0 ◎ 2-141	
	PRDCN2525M12		●	25	25	150	24	25	18.5	–	–	RCM□1204M0 ◎ 2-141	
	PRDCN3225P12		●	32		170		32					
	PRDCN3225P16		●	32	25	170	28	32	20.5	–	–	RCM□1606M0 ◎ 2-141	
	PRDCN3232P20		●	32	32	170	32	32	26	–		RCM□2006M0 ◎ 2-141	
	PRDCN4040R25		●	40	40	200	42	40	32.5	–	–	RCM□2507M0 ◎ 2-141	

● : Stocked items.

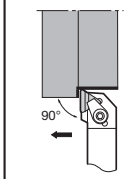
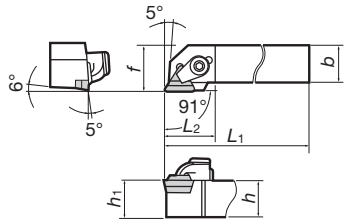
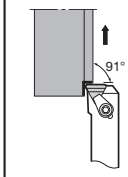
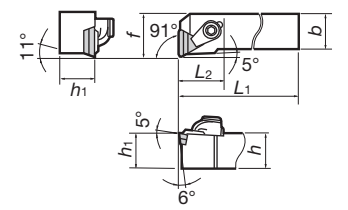
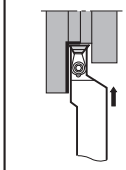
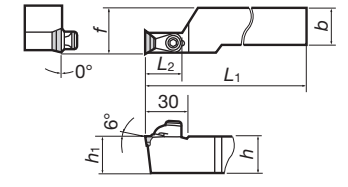
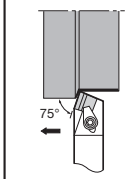
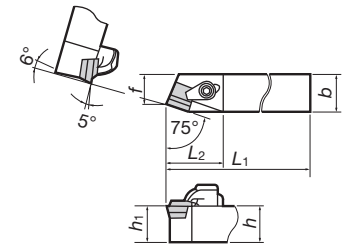
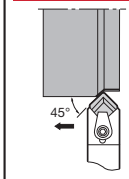
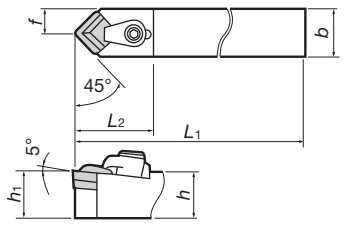
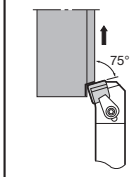
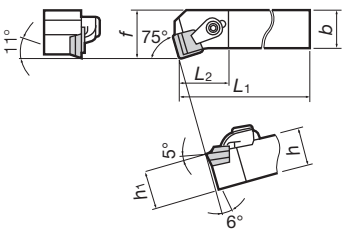
Parts of P-type

Toolholders Cat. No.		Applicable inserts Cat. No.	Applicable inserts Shape	Shim	Clamping-screw	Spring pin	Lever	Wrench
PRGCR/L PRDCN	2020K10 2525M10	RCM□1003M0	◎	LSR32C	LCS2	LSP3	LCL3C	P-2
	2525M12 3225P12	RCM□1204M0	◎	LSR42C	LCS3	LSP3	LCL4C	P-2.5
	3225P16	RCM□1606M0	◎	LSR53C	LCS5	LSP4	LCL5C	P-3
	3232P20	RCM□2006M0	◎	LSR63C	LCS5	LSP6C	LCL6C	P-3
	4040S25	RCM□2507M0	◎	LSR84C	LCS8C	LSP6	LCL8C	P-4

Relating pages
Parts (14–1~)

Toolholders for External Turning

Positive rake
Clamp-on system

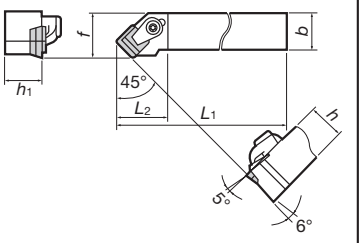
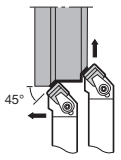
Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning **CTGPR/L**  Cutting edge style **G**	CTGPR/L1616H3	●	●	16	16	100	23	16	20		0.8	TP□□1603□□ 60°△ 2-130 ~	 Right hand (R) shown.
	CTGPR/L2020K3	●	●	20	20	125	27	20	25	–			
	CTGPR/L2525M3	●	●	25	25	150		25	32				
Facing **CTFPR/L**  Cutting edge style **F**	CTFPR/L1616H3	●	●	16	16	100	23	16	20		0.8	TP□□1603□□ 60°△ 2-130 ~	 Right hand (R) shown.
	CTFPR/L2020K3	●	●	20	20	125	26	20	25	–			
	CTFPR/L2525M3	●	●	25	25	150		25	32				
Facing **CTCPR/L**  Cutting edge style **C**	CTCPR/L2020K3			20	20	125	25	20	25		0.8	TP□□1603□□ 60°△ 2-130 ~	 Right hand (R) shown.
	CTCPR/L2525M3	●	●	25	25	150	32	25	32	–			
	CTCPR/L3232P3			32	32	170	40	32	40				
Turning **CSBPR/L**  Cutting edge style **B**	CSBPR/L1616H3	●	●	16	16	100	25	16	13	–	0.4	SP□□0903□□ 90°□ 2-116 ~	 Right hand (R) shown.
	CSBPR/L2020K4	●	●	20	20	125	32	20	17	–	0.8	SP□□1203□□ 90°□ 2-116 ~	
	CSBPR/L2525M4	●	●	25	25	150		25	22				
Turning Chamfering **CSDPN**  Cutting edge style **D**	CSDPN1616H3		●	16	16	100	26	16	8			SP□□0903□□ 90°□ 2-116 ~	
	CSDPN2020K4		●	20	20	125	34	20	10	–	0.8	SP□□1203□□ 90°□ 2-116 ~	
	CSDPN2525M4		●	25	25	150		25	12.5				
Facing **CSKPR/L**  Cutting edge style **K**	CSKPR/L1616H3			16	16	100	23	16	20		0.8	SP□□0903□□ 90°□ 2-116 ~	 Right hand (R) shown.
	CSKPR/L2020K4			20	20	125	26	20	25	–	0.8	SP□□1203□□ 90°□ 2-116 ~	
	CSKPR/L2525M4			25	25	150		25	32				

● : Stocked items.

Relating pages
Parts (14–1~)

Toolholders for External Turning

Positive rake
Clamp-on system

Tooling styles	Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	L_1	L_2	h_1	f	f_2	Std. Corner r_ε	Applicable inserts	Shape
Turning·Facing Chamfering **CSSPR/L**	CSSPR/L1616H3	●		16	16	105.5	23	16	20	–	0.8	SP□□0903□□ 90° □ 2-116 ~	
	CSSPR/L2020K4	●		20	20	133	28	20	25	–	0.8	SP□□1203□□ 90° □ 2-116 ~	
	CSSPR/L2525M4	●		25	25	158		25	32				
Cutting edge style **S**													

Right hand (R) shown.

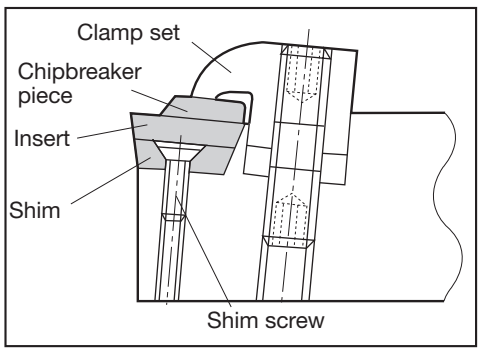
● : Stocked items.

Parts of C-type

Toolholders Cat. No.		Applicable inserts Cat. No.	Applicable inserts Shape	Chipbreaker piece	Shim	Clamp set	Shim screw	Wrench
CTGPR/L CTFPR/L	1616H3 2020K3 2525M3	TP□□1603□□	△	CBT-3M	PAT-32	CSG-6L CSG-8	SM3×0.5×8	P-3 P-4
CTCPR/L	2020K3 2525M3 3232P3	TP□□1603□□	△	CBT-3M	PAT-32	CSW-2	SM3×0.5×8	P-4
CSBPR/L CSKPR/L CSSPR/L	1616H3 2020K4 2525M4	SP□□0903□□ SP□□1203□□	□	CBS-3M CBS-4M	PAS-32 PAS-42	CSG-6L CSG-8	SM2.5×0.45×8 SM3×0.5×8	P-3 P-4
CSDPN	1616H3 2020K4 2525M4	SP□□0903□□ SP□□1203□□	□	CBS-3M CBS-4MN	PAS-32 PAS-42	CSG-6L CSG-8	SM2.5×0.45×8 SM3×0.×8	P-3 P-4

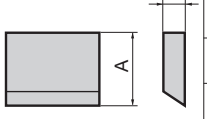
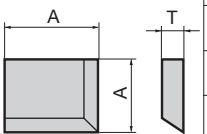
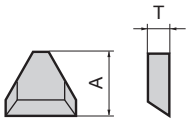
Parts Assembly and Chipbreaker Pieces for C-type TAC Toolholders

• Parts assembly of positive rake type



Note: Shim is made of D30 grade.

• List of chipbreaker piece for positive rake, C-type toolholders

Shape	Cat. No.	Applicable insert	Dimensions(mm) A	Dimensions(mm) T	Chipbreaker width when assembled (mm)
	CBS-3S	SP□□0903□□	8.33	2	1.5
	CBS-3M*		7.33	2	2.5
	CBS-4S	SP□□1203□□	11.6	2.5	1.5
	CBS-4M*		10.6	2.5	2.5
	CBS-4L		9.1	2.5	4
	CBS-3SN	SP□□0903□□	8.33	2	1.5
	CBS-3MN*		7.33	2	2.5
	CBS-4SN	SP□□1203□□	11.6	2.5	1.5
	CBS-4MN*		10.6	2.5	2.5
	CBS-4LN		9.1	2.5	4
	CBT-3S	TP□□1603□□	12.1	2.5	1.5
	CBT-3M*		11.1	2.5	2.5
	CBT-3L		10.1	2.5	3.5

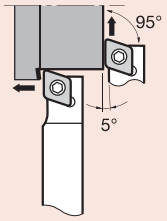
Note: *marked items are standard parts. Chipbreaker piece made of TX30 grade.

Relating pages
Parts (14–1~)

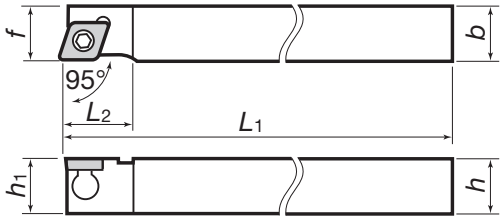
JTCL2CR/L

Without offset / Positive rake
Side clamping system

Turning / Facing



Cutting edge style **L2**



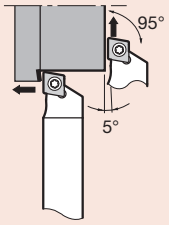
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamp	Clamping screw	Wrench
JTCL2CR/L0810K06	●	●	8	10	125	12	8	10	0.4	**CC□□0602**	JCP-2	JDS-3525	P-2F
JTCL2CR/L1010K06	●	●	10	10	125	12	10	10	0.4				
JTCL2CR/L1212M09	●	●	12	12	150	16	12	12	0.8	**CC□□09T3**	JCP-3	JDS-5040	P-2.5F
JTCL2CR/L1616M09	●	●	16	16	150	16	16	16	0.8				

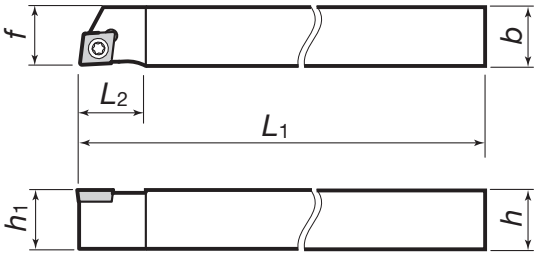
JSCL2CR/L

Without offset / Positive rake
Screw-on system

Turning / Facing



Cutting edge style **L2**



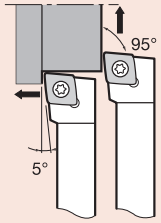
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSCL2CR/L1010K06	●	●	10	10	125	12	10	10	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCL2CR/L1212K06	●	●	12	12	125	12	12	12	0.4				

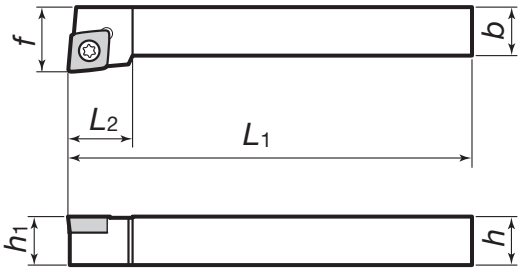
JSCLCR/L

Positive rake
Screw-on system

Turning / Facing



Cutting edge style **L**



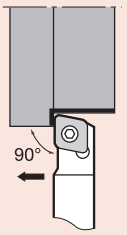
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSCLCR/L0808H06	●	●	8	8	100	12	8	10	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCLCR/L1010H06	●	●	10	10	100	12	10	12	0.4				
JSCLCR/L1212H09	●	●	12	12	100	16	12	16	0.8	**CC□□09T3**	CSTB-4SD	T-8F	1.2
JSCLCR/L1616H09	●	●	16	16	100	16	16	20	0.8				

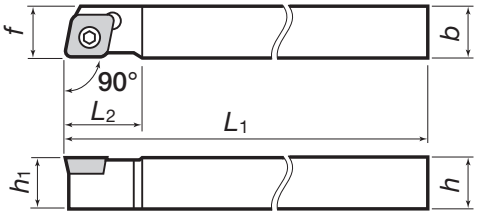
JSCACR/L

Without offset / Positive rake
Screw-on system

Turning



Cutting edge style **A**



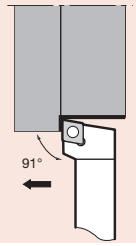
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSCACR/L0808H06	●	●	8	8	100	12	8	8	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCACR/L1010H06	●	●	10	10	100	12	10	10	0.4				
JSCACR/L1212H09	●	●	12	12	100	16	12	12	0.8	**CC□□09T3**	CSTB-4SD	T-8F	1.2

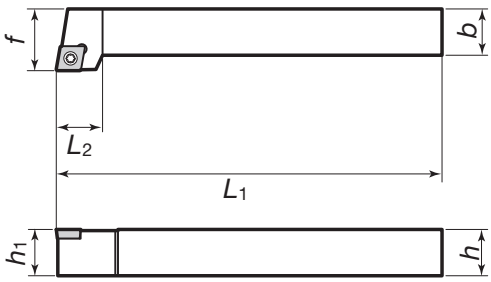
JSCGCR/L

Positive rake
Screw-on system

Turning



Cutting edge style **G**



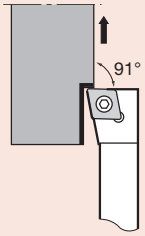
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSCGCR/L1212H06	●	●	12	12	100	12	12	16	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCGCR/L1616H09	●	●	16	16	100	16	16	20	0.8	**CC□□09T3**	CSTB-4SD	T-8F	1.2

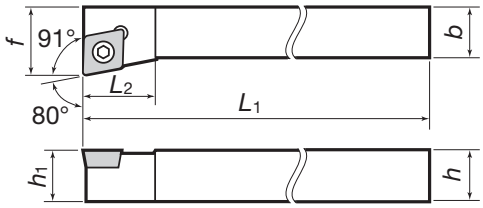
JSCFCR/L

Positive rake
Screw-on system

Facing



Cutting edge style **F**



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)							Std. corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_1			Clamping screw	Wrench	
JSCFCR/L1212H06			12	12	100	16	12	16	-	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCFCR/L1616H09			16	16	100	16	16	20	-	0.8	**CC□□09T3**	CSTB-4SD	T-8F	1.2

Basic Selection Chipbreakers CC□□0602 CC□□09T3

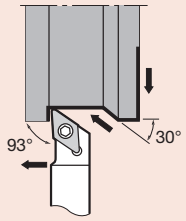
Operation	Precision finishing	Precision finishing	Finishing	Finishing to medium cutting	Finishing to medium cutting	Finishing to light cutting	Finishing to medium cutting	Cast Iron	Cast Iron	Aluminium alloy	Aluminium alloy	Aluminium alloy	Hard materials
Chipbreaker	JS	01	PSF	J10	FR/L-J10	PSS	PS	CM	–	AL	Angular	With chipbreaker	T-CBN
Page	2-99	2-96	2-96	2-100	2-99	2-97	2-97	2-97	2-101	2-98	2-100	3-22	3-12
Appearance / Toolholders					Sharp edges								
JTC*/JSC**06	CCGT0602**	CCGT0602**	CCMT0602**	CCGT0602**	CCGT0602**	CCMT0602**	CCMT0602**	CCMT0602**	CCMW0602**	CCGT0602**	CCGT0602**	CCMT0602**	2QP-CCGW0602**
JTC*/JSC**09	CCGT09T3**	CCGT09T3**	CCMT09T3**	CCGT09T3**	CCGT09T3**	CCMT09T3**	CCMT09T3**	CCMT09T3**	CCMW09T3**	CCGT09T3**	CCGT09T3**	CCMT09T3**	2QP-CCGW09T3**

● : Stocked items.

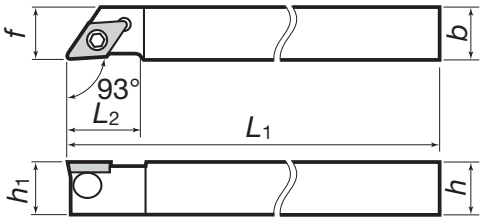
JTDJ2CR/L

Without offset / Positive rake
Back clamping system

Turning / profiling



Cutting edge style **J2**



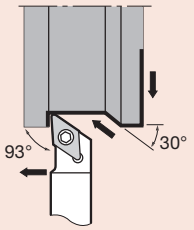
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	h	b	L_1	L_2	h_1	f			Clamp	Clamping screw	Wrench
JTDJ2CR/L0810K07	●	●	8	10	125	14	8	10	0.4	**DC□□0702**	JCP-2	JDS-3525	P-2F
JTDJ2CR/L1010K07	●	●	10	10	125	14	10	10	0.4				
JTDJ2CR/L1212M11	●	●	12	12	150	18	12	12	0.8	**DC□□11T3**	JCP-3	JDS-5040	P-2.5F
JTDJ2CR/L1616M11	●	●	16	16	150	18	16	16	0.8				

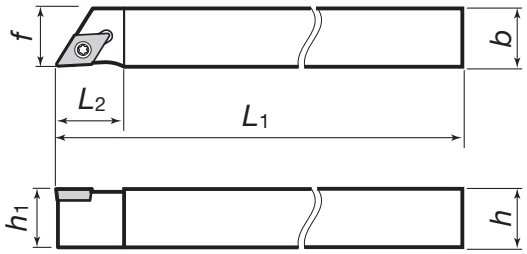
JSDJ2CR/L

Without offset / Positive rake
Screw-on system

Profiling



Cutting edge style **J2**



Right hand (R) shown

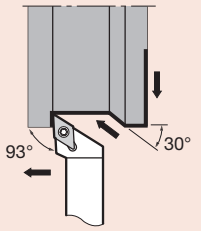
Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSDJ2CR/L1010K07	●	●	10	10	125	14	10	10	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDJ2CR/L1212K07	●	●	12	12	125	14	12	12	0.4				

Basic Selection Chipbreaker DC□□

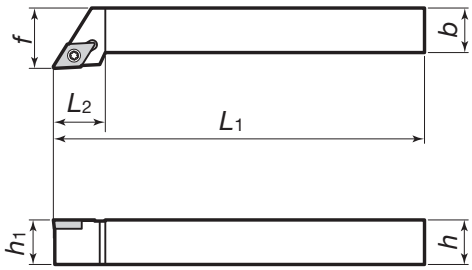
JSDJCR/L

Positive rake
Screw-on system

Profiling



Cutting edge style **J**



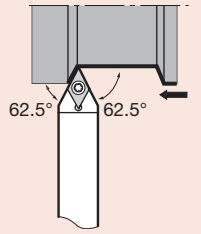
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSDJCR/L0808H07	●	●	8	8	100	14	8	10	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDJCR/L1212H07	●	●	12	12	100	14	12	16	0.4				
JSDJCR/L1010H11	●	●	10	10	100	18	10	12	0.8	**DC□□11T3**	CSTB-2.5	T-8F	1.2
JSDJCR/L1212H11	●	●	12	12	100	18	12	16	0.8				
JSDJCR/L1616H11	●	●	16	16	100	18	16	20	0.8		CSTB-4SD		

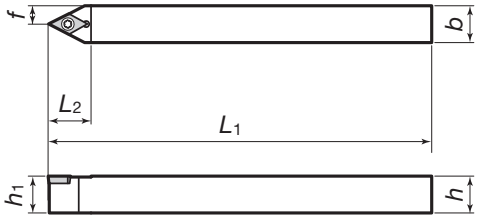
JSDNCN

Positive rake
Screw-on system

Profiling



Cutting edge style **N**



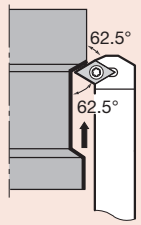
Cat. No.	Stock	Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
		h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSDNCN0808H07	●	8	8	100	14	8	4	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDNCN1010K07	●	10	10	125	14	10	5	0.4				
JSDNCN1212K07	●	12	12	125	14	12	6	0.4				
JSDNCN1212H11	●	12	12	100	21	12	6	0.8	**DC□□11T3**	CSTB-4SD	T-8F	1.2
JSDNCN1616H11	●	16	16	100	21	16	8	0.8				

Relating pages
Cutting conditions (8–3)
Parts (14–1~)

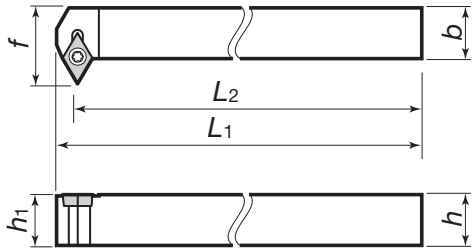
JSDN3CR/L

Positive rake
Screw-on system

Profiling



Cutting edge style **N3**



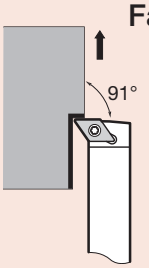
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSDN3CR/L1212H07	●	●	12	12	105	100	12	18	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDN3CR/L1616H11	●	●	16	16	107	100	16	25	0.8	**DC□□11T3**	CSTB-4SD	T-8F	1.2

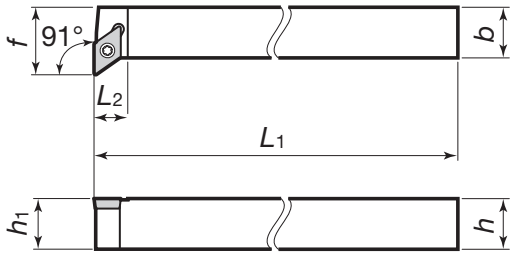
JSDFCR/L

Positive rake
Screw-on system

Facing



Cutting edge style **F**



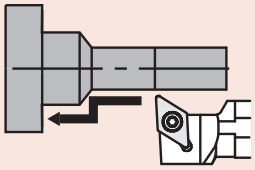
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSDFCR/L1212H07	●	●	12	12	100	8	12	16	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDFCR/L1616H11	●	●	16	16	100	10.5	16	22	0.8	**DC□□11T3**	CSTB-4SD	T-8F	1.2

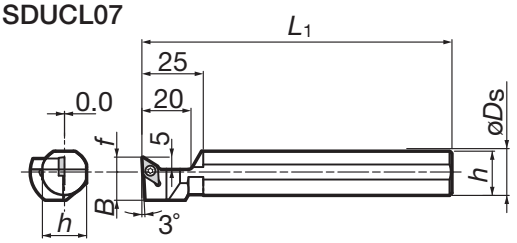
JS-SDUCL

Positive rake
Screw-on system

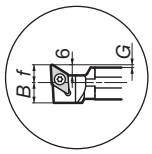
Profiling



SDUCL07



SDUCL11



Left hand (L) shown.

Cat. No.	Stock		Dimensions (mm)							Std. Corner	Applicable inserts	Clamping screw	Wrench	Torque (N·m)
	R	L	øDs	f	L1	L2	h	B	G	rε				
JS19K-SDUCL07		●	19.05	6	125	-	18	11.5	-	0.4	DC□□0702□□	CSTB-2.5	T-8F	1.2
JS20K-SDUCL07		●	20				19							
JS22K-SDUCL07		●	22				21							
JS19K-SDUCL11		●	19.05	10	125	-	18	11.5	1.525	0.8	DC□□11T3□□	CSTB-4SD	T-8F	1.2
JS20K-SDUCL11		●	20				19		1.0					
JS22K-SDUCL11		●	22	11			21		1.0					
JS25K-SDUCL11		●	25.4	12			24	12.7	0.7					

Basic Selection Chipbreakers DC□□0702 DC□□11T3

Operation	Precision finishing	Precision finishing	Precision finishing	Precision finishing	Precision finishing	Finishing	Finishing to medium cutting	Finishing to medium cutting	Finishing to light cutting	Finishing to medium cutting	Cast Iron	Cast Iron	Aluminium alloy
Chipbreaker	JS	JRP	JPP	JSP	01	PSF	J10	FR/L-J10	PSS	PS	CM	–	AL
Page	2-108	2-107	2-108	2-108	2-105	2-105	2-109	2-109	2-106	2-106	2-106	2-110	2-106
Appearance / Toolholders	 Sharp edges												
JTD*/JSD**07	DCGT0702**	DCET0702**	DCET0702**	DCET0702**	DCGT0702**	DCMT0702**	DCGT0702**	DCGT0702**	DCMT0702**	DCMT0702**	DCMT0702**	DCMW0702**	DCGT0702**
JTD**11	DCGT11T3**	DCET11T3**	DCET11T3**	DCET11T3**	DCGT11T3**	DCMT11T3**	DCGT11T3**	DCGT11T3**	DCMT11T3**	DCMT11T3**	DCMT11T3**	DCMW11T3**	DCGT11T3**

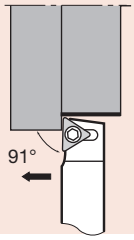
Operation	Aluminium alloy	Aluminium alloy	Hard materials
Chipbreaker	Angular	With chipbreaker	T-CBN
Page	2-107	3-22	3-12
Appearance / Toolholders			
JTD*/JSD**07	DCGT0702**	DCMT0702**	2QP-DCGW0702**
JTD**11	DCGT11T3**	DCMT11T3**	2QP-DCGW11T3**

J-SERIES JT-type / External Turning

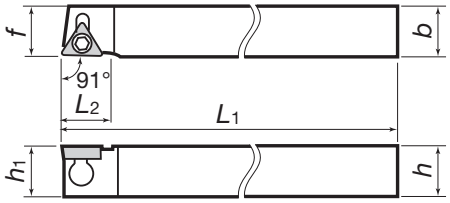
JTTACR/L

Without offset / Positive rake
Back clamping system

Turning



Cutting edge style **A**



Right hand (R) shown

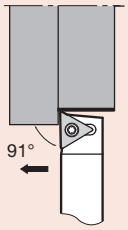
Cat. No.	Stock		Dimensions (mm)						Standard corner radius rε	Applicable inserts	Parts		
	R	L	h	b	L1	L2	h1	f			Clamp	Clamping screw	Wrench
JTTACR/L0810K08	●	●	8	10	125	10	8	10	0.2	TC□□0802	JCP-1	JDS-3525	P-2F
JTTACR/L1010K08	●	●	10	10	125	10	10	10	0.2				
JTTACR/L1212M11	●	●	12	12	150	12	12	12	0.4	TC□□1102	JCP-2	JDS-3525	P-2F
JTTACR/L1616M11	●	●	16	16	150	12	16	16	0.4				

J-SERIES J-type / External Turning

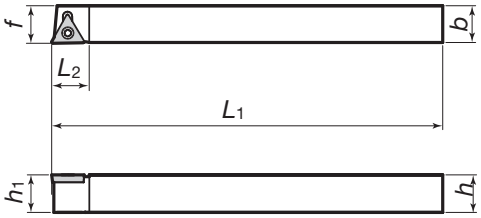
JSTACR/L

Without offset / Positive rake
Screw-on system

Turning



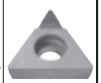
Cutting edge style **A**



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius rε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L1	L2	h1	f			Clamping screw	Wrench	
JSTACR/L0808K08	●	●	8	8	125	10	8	8	0.2	TC□□0802	CSTB-2L	T-6F	0.6
JSTACR/L1010K08	●	●	10	10	125	10	10	10	0.2				
JSTACR/L1212K11	●	●	12	12	125	12	12	12	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
JSTACR/L1616H11	●	●	16	16	100	12	16	16	0.4				

Basic Selection Chipbreakers TC□□0802 TC□□1102

Operation	Precision finishing	Precision finishing	Finishing	Finishing to medium cutting	Finishing to medium cutting	Finishing to light cutting	Finishing to medium cutting	Cast Iron	Aluminium alloy	Aluminium alloy
Chipbreaker	JS	01	PSF	J08/J10	FR/L-J10	PSS	PS	CM	AL	With chipbreaker
Page	2-120	2-118	2-118	2-120 · 121	2-121	2-118	2-119	2-119	2-120	3-22
Appearance / Toolholders					 Sharp edges					
JTT*/JST**08	–	–	–	TCGT0802**	TCGT0802**	–	–	–	–	TCMT0802**
JTT**/JST**11	TCGT1102**	TCGT1102**	TCGT1102**	TCGT1102**	TCGT1102**	TCMT1102**	TCMT1102**	TCMT1102**	TCGT1102**	TCMT1102**

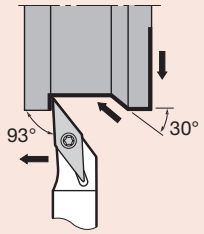
● : Stocked items.

Relating pages
Cutting conditions (8–3)
Parts (14–1~)

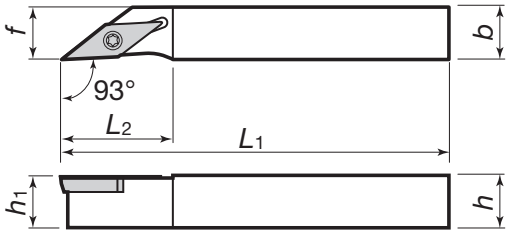
JSVJ2BR/L

Without offset / Positive rake
Screw-on system

Profiling



Cutting edge style **J2**



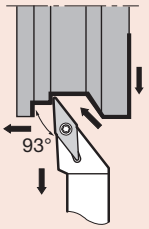
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSVJ2BR/L1010K11	●	●	10	10	125	21	10	10	0.2	VB□□1103	CSTB-2.5	T-8F	1.2
JSVJ2BR/L1212K11	●	●	12	12	125	21	12	12	0.2				
JSVJ2BR/L1616K11	●	●	16	16	125	21	16	16	0.2				

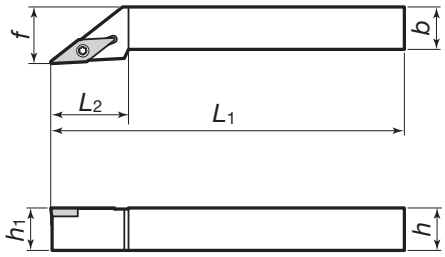
JSVJBR/L

Positive rake
Screw-on system

Profiling



Cutting edge style **J**



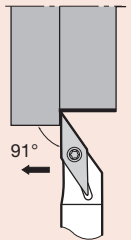
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSVJBR/L1010H11	●	●	10	10	100	20	10	12	0.4	VB□□1103	CSTB-2.5	T-8F	1.2
JSVJBR/L1212H11	●	●	12	12	100	22	12	16	0.4				
JSVJBR/L1616H11	●	●	16	16	100	22	16	20	0.4				

JSVABR/L

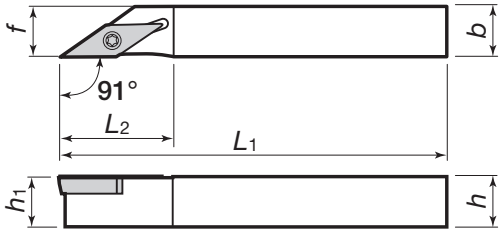
Without offset / Positive rake
Screw-on system

Turning



Cutting edge style **A**

Without offset



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSVABR/L1010K11	●	●	10	10	125	21	10	10	0.2	**VB□□1103**	CSTB-2.5	T-8F	1.2
JSVABR/L1212K11	●	●	12	12	125	21	12	12	0.2				
JSVABR/L1616K11	●	●	16	16	125	21	16	16	0.2				

Basic Selection Chipbreakers VB□□1103

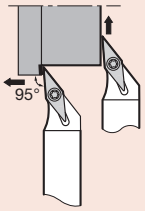
Operation	Precision finishing	Finishing	Finishing to medium cutting	Finishing to medium cutting	Finishing to light cutting	Finishing to medium cutting	Cast Iron	Aluminium alloy	Hard materials
Chipbreaker	JS	PSF	J10	FR/L-J10	PSS	PS	CM	J10	T-CBN
Page	2-134	2-133	2-134	2-134	2-133	2-133	2-133	2-134	3-13
Appearance / Toolholders			 Sharp edges						
JSV**11	VBGT1103**	VBMT1103**	VBGT1103**	VBGT1103**	VBMT1103**	VBMT1103**	VBGT1103**	VBGT1103**	2QP-VBGW1103**

Relating pages
Cutting conditions (8–3)
Parts (14–1~)

JSVL2PR/L

Without offset / Positive rake
Screw-on system

Turning / facing



Cutting edge style **L2**

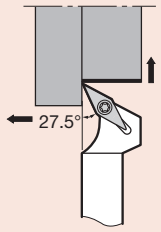
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSVL2PR/L1010K08	●	●	10	10	125	16	10	10	0.2	**VP□□0802**	CSTB-2L	T-6F	0.6
JSVL2PR/L1212K08	●	●	12	12	125	16	12	12	0.2				
JSVL2PR/L1616K08	●	●	16	16	125	16	16	16	0.2				

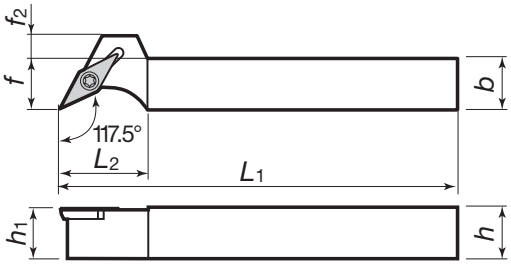
JSVP2PR/L

Positive rake
Screw-on system

Profiling



Cutting edge style **P2**



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)							Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f	f_2			Clamping screw	Wrench	
JSVP2PR/L1010K08	●	●	10	10	125	16	10	10	4	0.2	**VP□□0802**	CSTB-2L	T-6F	0.6
JSVP2PR/L1212K08	●	●	12	12	125	16	12	12	2	0.2				
JSVP2PR/L1616K08	●	●	16	16	125	16	16	16	-	0.2				
JSVP2PR/L1010K11	●	●	10	10	125	20	10	10	8	0.2	**VP□□1103**	CSTB-2.5	T-8F	1.2
JSVP2PR/L1212K11	●	●	12	12	125	20	12	12	6	0.2				
JSVP2PR/L1616K11	●	●	16	16	125	20	16	16	4	0.2				

Basic Selection Chipbreakers VP□□

Operation	Precision finishing	Precision finishing	Precision finishing
Chipbreaker	JRP	JPP	JSP
Page	2-137	2-137	2-138
Appearance / Toolholders			
JSVP**08	VPET0802**	VPET0802**	VPET0802**
JSVP**11	VPET1103**	VPET1103**	VPET1103**

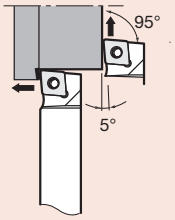
● : Stocked items.

J-SERIES JT-type / External Turning

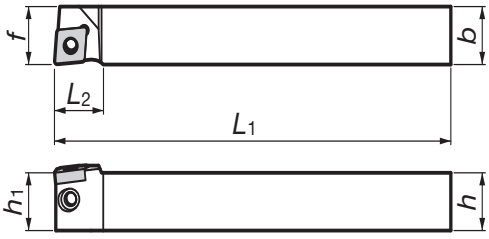
JTCL2NR/L

Without offset / Negative rake
Side clamping system

Turning / facing



Cutting edge style **L2**



Right hand (R) shown

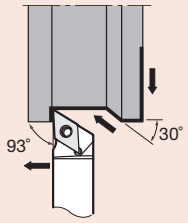
Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	h	b	L_1	L_2	h_1	f			Clamp	Clamping screw	Wrench
JTCL2NR/L1216K09			12	16	125	15.6	12	16	0.4	CN□□0903 2-42 ~	JCP-3N	JDS-5040	P-2.5F
JTCL2NR/L1616K09			16	16	125	15.6	16	16	0.4				

J-SERIES JT-type / External Turning

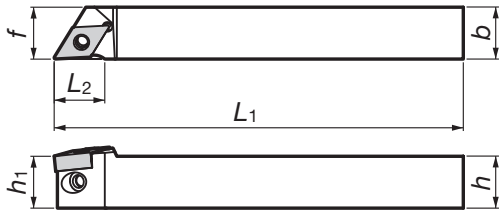
JTDJ2NR/L

Without offset / Negative rake
Side clamping system

Turning / profiling



Cutting edge style **J2**



Right hand (R) shown

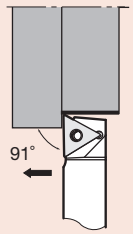
Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	h	b	L_1	L_2	h_1	f			Clamp	Clamping screw	Wrench
JTDJ2NR/L1216K11			12	16	125	15.6	12	16	0.4	DN□□1104 2-52 ~	JCP-3N	JDS-5040	P-2.5F
JTDJ2NR/L1616K11			16	16	125	15.6	16	16	0.4				

J-SERIES JT-type / External Turning

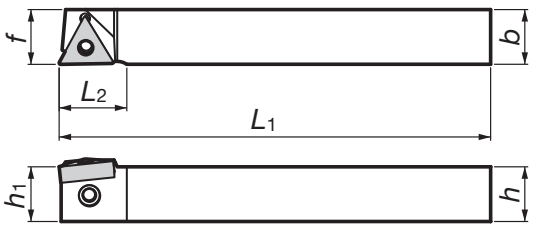
JTTANR/L

Without offset / Negative rake
Side clamping system

Turning



Cutting edge style **A**



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	h	b	L_1	L_2	h_1	f			Clamp	Clamping screw	Wrench
JTTANR/L1216K16	●	●	12	16	125	19.8	12	16	0.4	TN□□1604 2-70 ~	JCP-3N	JDS-5040	P-2.5F
JTTANR/L1616K16	●	●	16	16	125	19.8	16	16	0.4				

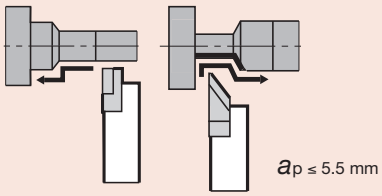
● : Stocked items.

Relating pages
Cutting conditions (8–3)
Parts (14–1~)

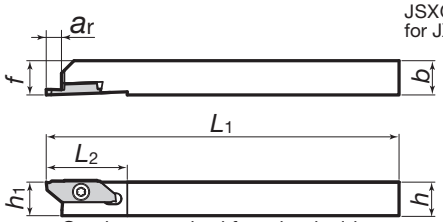
JSXGR/L

Without offset
Screw-on system

Front and reverse turning

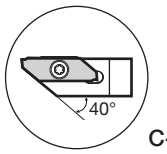


Front turning Reverse turning



Can be wrenched from back side with double socket torx screw.

JSXGR/L-type toolholders are used for JXG-type grooving inserts.

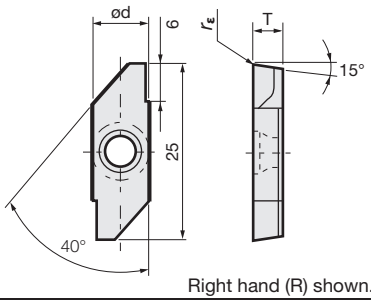


C-type

Right hand (R) shown.

Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	a_r	h_1	f				
JSXGR/L1010K8-C	●	●	10	10	125	29	6.7	10	10	JXFR/L8□□□ JXRR/L8□□□	CSTB-4SD	T-8F	(T-8L)
JSXGR/L1212K8-C	●	●	12	12				12	12				
JSXGR/L1616K8	●	●	16	16			6.5	16	16				
JSXGR/L2020K8	●	●	20	20				20	20				
JSXGR/L2525K8	●	●	25	25				25	25				∗Optional

Applicable inserts

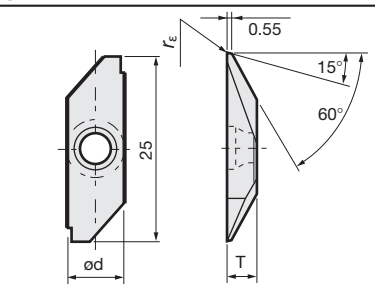


Right hand (R) shown.

JXF-type inserts (with sharp edges) for front turning

Cat. No.	Dimensions (mm)				Stock							
	ød	T	r_ε	Max. depth of cut	Coated		Cermet				Uncoated	
					J740		NS530				TH10	
					R	L	R	L	R	L	R	L
JXFR/L8000F	8	3.97	0.03	5.5	●		●				●	
JXFR/L8010F			0.1		●		●				●	

Applicable inserts



Right hand (R) shown.

JXR-type inserts (with sharp edges) for reverse turning

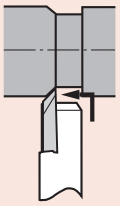
Cat. No.	Dimensions (mm)				Stock							
	ød	T	r_ε	Max. depth of cut	Coated		Cermet				Uncoated	
					J740		NS530				TH10	
					R	L	R	L	R	L	R	L
JXRR/L8000F	8	3.97	0.03	5.5	●		●				●	
JXRR/L8010F			0.1		●		●				●	

● : Stocked items.

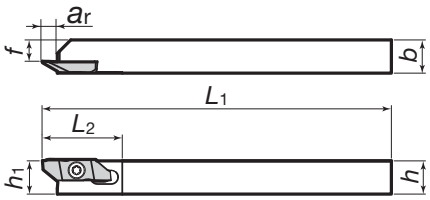
JSXBR/L

Without offset
Screw-on system

Back turning with large depth of cut

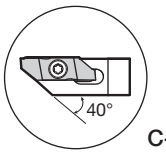


$a_p \leq 5.5$ mm



Can be wrenched from back side with double socket torx screw.

JSXBR/L-type toolholders are also used for JXT-type threading inserts.

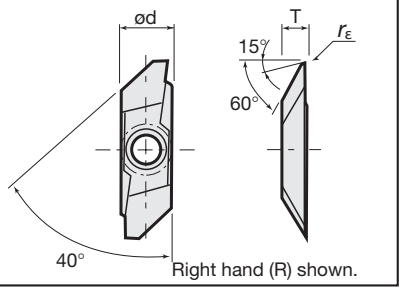


C-type

Right hand (R) shown.

Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	a_r	h_1	f				
JSXBR/L1010K8-C	●	●	10	10	125	29	6.7	10	5.7	JXBR/L8□□□	CSTB-4SD	T-8F	(T-8L)
JSXBR/L1212K8-C	●	●	12	12				12	7.7				
JSXBR/L1616K8	●	●	16	16			6.4	16	11.7				
JSXBR/L2020K8	●	●	20	20				20	15.7				
JSXBR/L2525K8	●	●	25	25				25	20.7				∗Optional

Applicable inserts



Right hand (R) shown.

JXB-type inserts (with sharp edges)

Cat. No.	Dimensions (mm)				Stock							
	ød	T	r_ε	Max. depth of cut	Coated		Cermet				Uncoated	
					J740		NS530				TH10	
					R	L	R	L	R	L	R	L
JXBR/L8000F	8	3.97	0.03	5.5	●	●	●				●	●
JXBR/L8005F			0.05		●	●					●	●
JXBR/L8010F			0.1		●	●	●				●	●
JXBR/L8015F			0.15		●	●					●	●

JXB-type inserts (with honed edges)

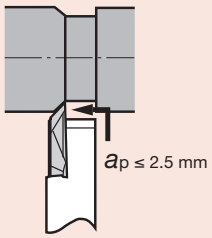
Cat. No.	Dimensions (mm)				Stock							
	ød	T	r_ε	Max. depth of cut	Coated		Cermet				Uncoated	
					J740		NS530				TH10	
					R	L	R	L	R	L	R	L
JXBR/L8005	8	3.97	0.05	5.5	●	●						
JXBR/L8010			0.1		●	●						
JXBR/L8015			0.15		●	●						

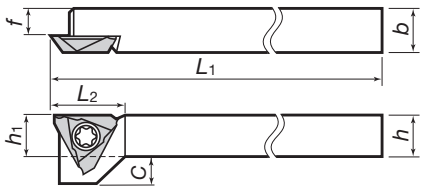
● : Stocked items.

JSTBR/L

Without offset
Screw-on system

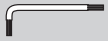
Back turning





Can be wrenched from back side with double socket torx screw.

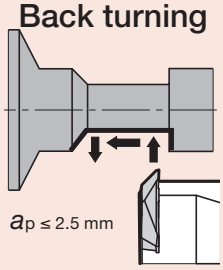
Right hand (R) shown.

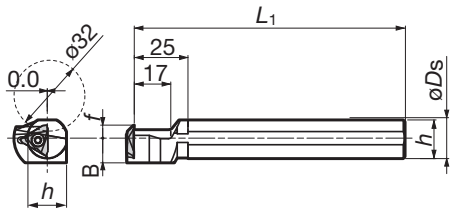
Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	h_1	f	C				
JSTBR/L1010K3	●	●	10	10	125	15	10	6	5	JTBR/L3□□□	CSTB-4SD	T-8F	(T-8L)
JSTBR/L1212K3	●	●	12	12			12	8	3				∗Optional
JSTBR/L1616K3	●	●	16	16			16	12	-				

JS-TBL3

Positive rake
Screw-on system

Back turning

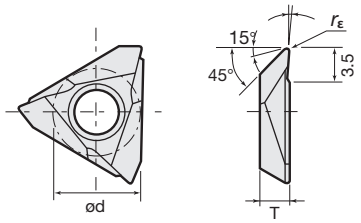




Cat. No.	Stock	Dimensions (mm)						Applicable inserts	Clamping screw	Wrench
		$øD_s$	f	L_1	L_2	h	B			
JS19K-TBL3	●	19.05	6	125	-	18	11.5	JTBR3□□□	CSTB-4S	T-15F
JS20K-TBL3	●	20				19				
JS22K-TBL3	●	22				21				
JS25K-TBL3	●	25.4	10			24	12.7			

Notes: Left hand holder use right hand insert.

Applicable inserts



Right hand (R) shown.

JTB-type inserts (with sharp edges)

Cat. No.	Dimensions (mm)				Stock											
	ød	T	rε	Max. depth of cut	Coated J740		Coated cermet J530				Cermet NS530				Uncoated TH10	
					R	L	R	L	R	L	R	L	R	L	R	L
JTBR/L3000F	9.438	3.18	0.03	2.5	●	●					●	●			●	●
JTBR/L3005F			0.05		●	●					●	●			●	●
JTBR/L3010F			0.1		●	●					●	●			●	●
JTBR/L3015F			0.15		●											

JTB-type inserts (with honed edges)

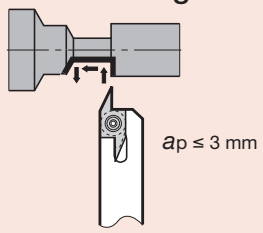
Cat. No.	Dimensions (mm)				Stock											
	ød	T	rε	Max. depth of cut	Coated J740		Coated cermet J530				Cermet NS530				Uncoated TH10	
					R	L	R	L	R	L	R	L	R	L	R	L
JTBR/L3005	9.438	3.18	0.05	2.5	●	●	●	●								
JTBR/L3010			0.1		●	●	●	●								
JTBR/L3015			0.15													

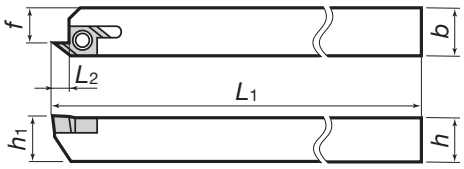
● : Stocked items.

JSEGR/L

Without offset
Screw-on system

Back turning

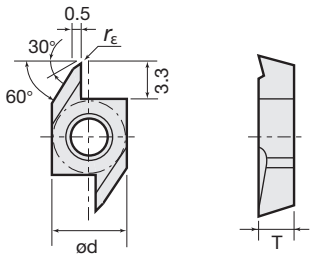




Right hand (R) shown.

Cat. No.	Stock		Dimensions (mm)						Applicable inserts	Clamping screw	Wrenches	
	R	L	h	b	L_1	L_2	h_1	f				
JSEGR/L1010K10	●	●	10	10	125	3.3	10	7.5	J10ER/L□□□□□	CSTB-2.5	T-8F	(T-8L)
JSEGR/L1212K10	●	●	12	12			12	9.5				∗Optional
JSEGR/L1616K10	●	●	16	16			16	13.5				

Applicable inserts



Right hand (R) shown.

J10E-type inserts (with sharp edges)

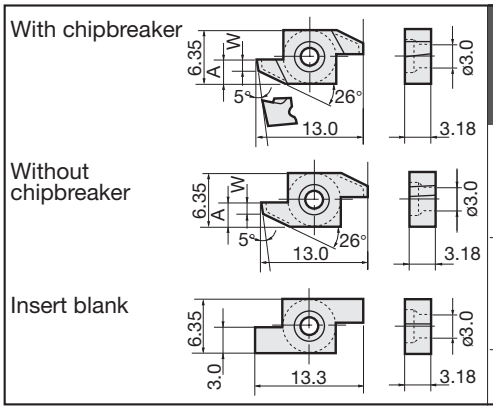
Cat. No.	Dimensions (mm)			Max. depth of cut	Stock											
					Coated		Coated cermet				Cermet				Uncoated	
					J740		J530				NS530				TH10	
	ød	T	rε		R	L	R	L	R	L	R	L	R	L	R	L
J10ER/L005BF	6.35	3.18	0.05	3	●	●					●	●			●	●
J10ER/L010BF			0.1		●	●					●	●			●	●
J10ER/L015BF			0.15													

J10E-type inserts (with honed edges)

Cat. No.	Dimensions (mm)			Max. depth of cut	Stock											
					Coated		Coated cermet				Cermet				Uncoated	
					J740		J530				NS530				TH10	
	ød	T	rε		R	L	R	L	R	L	R	L	R	L	R	L
J10ER/L005B	6.35	3.18	0.05	3	●	●	●	●								
J10ER/L010B			0.1		●	●	●	●								
J10ER/L015B			0.15													

Notes: Right hand holder use right hand insert and left hand holder use left hand insert.

Applicable inserts

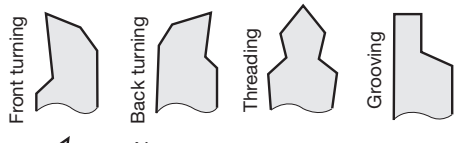


Right hand (R) shown.

Type	Cat. No.	Dimensions (mm)		Stock					
				Cermet				Uncoated	
				NS530				TH10	
		W	A	R	L	R	L	R	L
With chipbreaker	10ER/L100BC	1	2.5	●					
	10ER/L150BC	1.5	3	●					
Without chipbreaker	10ER/L100B	1	2.5					●	●
	10ER/L150B	1.5	3					●	●
Insert blank	10ER/L300	–	–	●				●	●

Notes: Right hand holder (SEGR~) use right hand insert (10ER~) and left hand holder (SEGL~) use left hand insert (10EL~).

Formed examples of insert blanks



Notes:
- Front relief angle, side relief angle, edge width can be ground depending on the application.
- Insert blanks can be formed to a profiling tool which has a width up to 3mm.

Standard cutting conditions

Operations		Work materials	Carbon steels	Stainless steels	Brass
Lateral feed (external turning)	Cutting speed (m/min)		~ 100	~ 50	~ 200
	Feed (mm/rev)	Roughing	~ 0.06	~ 0.03	~ 0.1
		Medium	~ 0.03	~ 0.025	~ 0.06
		Finishing	~ 0.02	~ 0.015	~ 0.04
Parting-off Grooving Forming	Cutting speed (m/min)		~ 80	~ 30	~ 150
	Feed (mm/rev)	Roughing	~ 0.02	~ 0.015	~ 0.05
		Medium	~ 0.015	~ 0.01	~ 0.03
		Finishing	~ 0.01	~ 0.008	~ 0.015

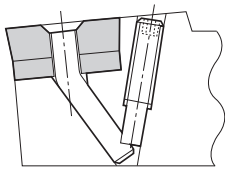
● : Stocked items.

Relating pages
Parts (14–1~)

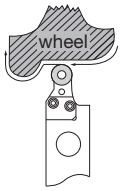
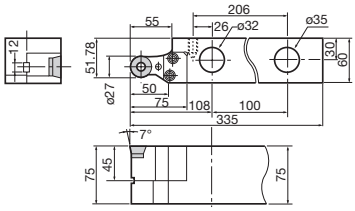
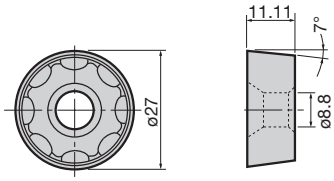
HRACR/L

Applicable inserts
RCMT2711M0-62

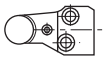
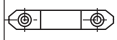
Positive rake

Appli	Type	Appearance	Clamping mechanism	Features
For railway wheel turning	H Draw-in pin type			• Easy maintenance cartridge type. • Specifically designed chipbreaker provides excellent impact resistance. • Excellent chip control and broad application area. • Can be used for general turning such as roll turning.

H-type for Turning Railway Wheels

Tooling styles	Cat. No.	Stock R	Stock L	Applicable inserts	Shape	Shape of inserts
Turning • Profiling HRACR/L 	HRACR/L7560×27			RCMT2711M0-62	 Right hand (R) shown.	

Parts of H-type

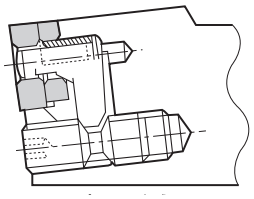
Cat. No.	Cartridge	Hex.socket head screw	Key	Shim	Hex. socket head screw	Wrench
						
HRACR/L7560×27	HD27R/L	M8×55 (For cartridge)	HK01	HSR27	M4×12 (For key)	P-6

Note: Shim is made of D30 grade.

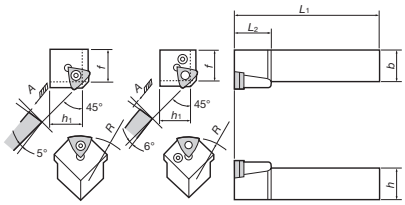
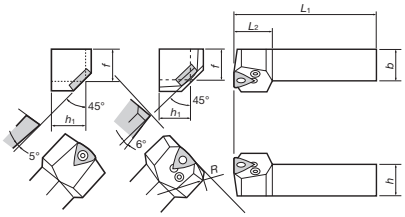
Relating pages
Parts (14–1~)

PTVN/PTHN

Negative rake
Lever-lock system

Appli.	Type	Appearance	Clamping mechanism	Features
For Finishing	**MS** Screw-on type or Lever-lock type		 Lever-lock type shown	• A revolutionary turning tool with an inclined and curved cutting edge used for finishing. • Can produce a high quality surface finish at a feed rate ten times as great as the feed rate for conventional turning. • Hand of tool is neutral. • Can be used for turning difficult materials such as stainless steel.

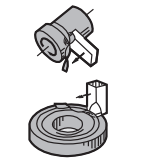
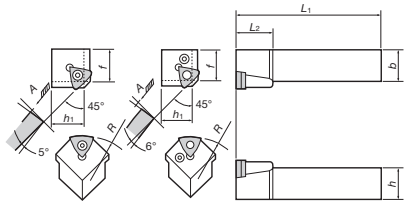
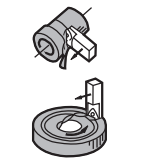
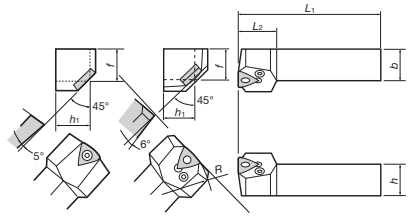
MS-type for Finishing (Negative rake • Lever-lock type)

Tooling styles	Cat. No.	Stock	Dimensions (mm)							Applicable inserts	Shape
			h	*b*	L_1	L_2	h_1	*f*	*R*		
O.D. and I.D. Turning and Facing **PTVN**   Vertical type	**PTVN2525M50**		25	25	150	32	25	25	50	TNGA2204-50	 Viewed from A
	PTVN3232P50		32	32	170	36	32	32			
	PTVN2525M100		25	25	150	32	25	25	100	TNGA2204-100	
	PTVN3232P100		32	32	170	36	32	32			
	PTVN2525M300		25	25	150	32	25	25	300	TNGA2204-300	
	PTVN3232P300		32	32	170	36	32	32			
O.D. and I.D. Turning and Facing **PTHN**   Horizontal type	**PTHN2525M50**		25	25	150	32	25	25	50	TNGA2204-50	
	PTHN3232P50		32	32	170	36	32	32			
	PTHN2525M100		25	25	150	32	25	25	100	TNGA2204-100	
	PTHN3232P100		32	32	170	36	32	32			
	PTHN2525M300		25	25	150	32	25	25	300	TNGA2204-300	
	PTHN3232P300		32	32	170	36	32	32			

Relating pages
Parts (14–1~)

STVP/HP

MS-type for Finishing (Positive rake • Screw-on type)

Tooling styles	Cat. No.	Stock	Dimensions (mm)							Applicable inserts	Shape
			h	*b*	L_1	L_2	h_1	*f*	*R*		
O.D. and I.D. Turning and Facing **STVP**  Vertical type	**STVP2525M50**		25	25	150	32	25	25	50	TPGA2204-50	 Viewed from A
	STVP3232P50		32	32	170	36	32	32			
	STVP2525M100		25	25	150	32	25	25	100	TPGA2204-100	
	STVP3232P100		32	32	170	36	32	32			
	STVP2525M300		25	25	150	32	25	25	300	TPGA2204-300	
	STVP3232P300		32	32	170	36	32	32			
O.D. and I.D. Turning and Facing **STHP**  Horizontal type	**STHP2525M50**		25	25	150	32	25	25	50	TPGA2204-50	
	STHP3232P50		32	32	170	36	32	32			
	STHP2525M100		25	25	150	32	25	25	100	TPGA2204-100	
	STHP3232P100		32	32	170	36	32	32			
	STHP2525M300		25	25	150	32	25	25	300	TPGA2204-300	
	STHP3232P300		32	32	170	36	32	32			

Parts of MS-type

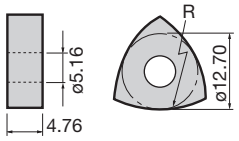
Parts of MS-type

Toolholders Cat. No.		Applicable inserts Cat. No.	Shape	Shim	Lever	Clamping screw	Spring	Wrench
PTVN PTHN	2525M50 3232P50	TNGA2204-50		LST42K	LCL4	LCS4K	LSP4	P-3
	2525M100 3232P100	TNGA2204-100						
	2525M300 3232P300	TNGA2204-300						
STVP STHP	2525M50 3232P50	TPGA2204-50		–	–	CSTA-5S	–	T-15F
	2525M100 3232P100	TPGA2204-100						
	2525M300 3232P300	TPGA2204-300						

Applicable inserts

• **Negative inserts**

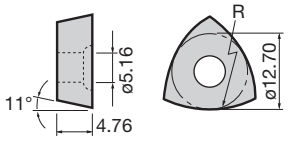
TNGA



Cat. No.	Cutting edge R (mm)	Stocked grades Cermet NS530	Uncoated TH10
TNGA2204-300	300	●	●
TNGA2204-100	100		●
TNGA2204-50	50		

• **Positive inserts**

TPGA



Cat. No.	Cutting edge R (mm)	Stocked grades Cermet NS530	Uncoated TH10
TPGA2204-300	300	●	●
TPGA2204-100	100	●	●
TPGA2204-50	50		●

Standard cutting conditions

Operation	Toolholder type	Cutting edge R	Finishing Cutting speed *Vc* (m/min)	Feed *f*(mm/rev)	Depth of cut *ap* (mm)
External or Internal	STHP, PTVN or PTVN	50 100 300	~ 300 (180)	~ 1.5 ~ 2.5 ~ 3.0	~ 0.1
	STVP or PTVN	50 100 300	~ 300 (180)	~ 1.5 ~ 2.0 ~ 4.0	~ 0.1 ~ 0.05 ~ 0.05
Facing	STHP or PTHN	50 100 300	~ 300 (180)	~ 1.5 ~ 2.5 ~ 8.0	~ 0.3 ~ 0.2 ~ 0.1
	STVP or PTVN	50 100 300	~ 300 (180)	~ 1.5 ~ 2.5 ~ 8.0	~ 0.1 ~ 0.05 ~ 0.05

Note: Please use proper cutting conditions by shape of workpiece and others.
Note: Cutting speeds in parentheses are for cutting stainless steel.

● : Stocked items.

MEMO

Chapter Composition of TAC Internal Toolholders

◆Products are arranged by the series as follows: Stream Jet Bars → General purpose TAC boring toolholders
◆In the same series, they are arranged by the insert shape to be used. In the same group, they are arranged by the cutting edge style.

Cat. No. of TAC boring toolholder

Typical application
Main application (such as internal turning, facing, profiling) of the toolholder type is illustrated.

Series name

Designation of toolholder type

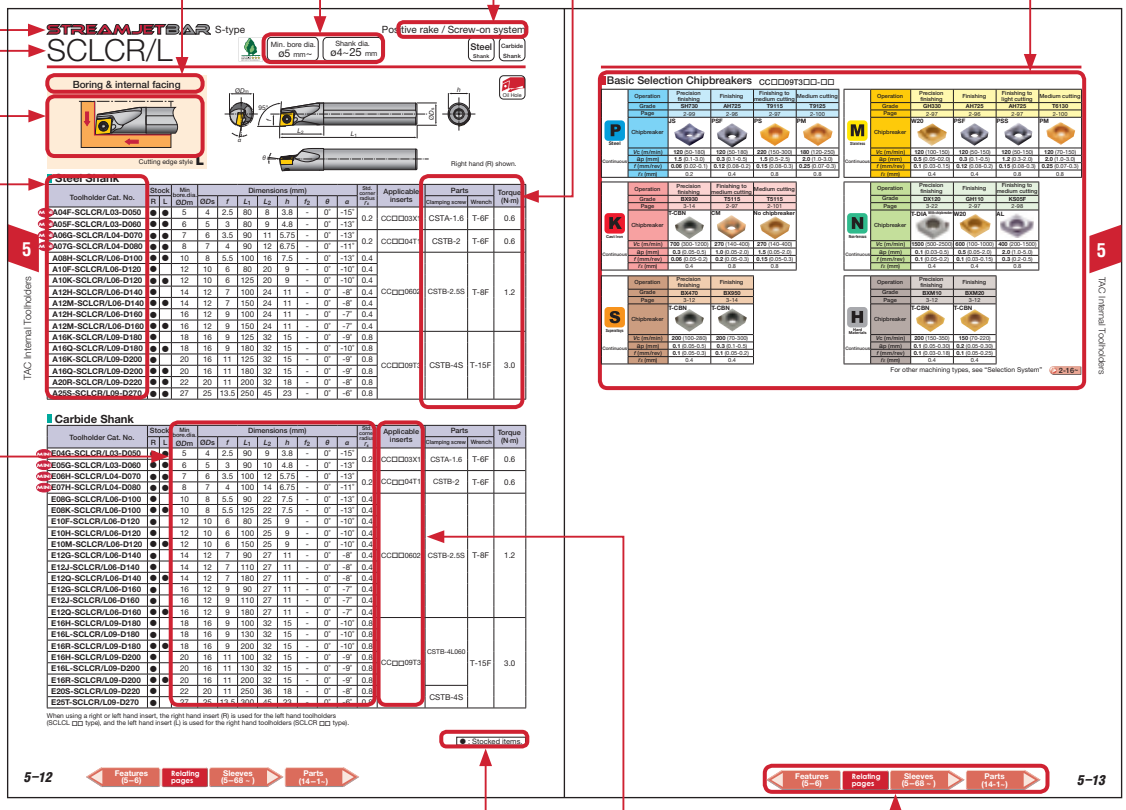
Machining type

Minimum bore diameter and shank diameter range

Type of clamping system

Replacement parts

Overview of applicable TAC inserts
These charts indicate basic selection of grades and chipbreaker types by the work material and the application.



Dimensions of toolholders

Symbol of stock status

Reference pages of relating items

Applicable TAC inserts

■ Meaning of icons

● Min. bore diameter ● Shank diameter

Min. bore dia. ø5 mm

Shank dia. ø4~25 mm

● Shank material

Steel Shank | Carbide Shank | Tsuppari-Ichiban Shank

● Coolant through

Oli Hole

■ Ordering information

● When ordering TAC boring toolholders, please specify Cat. No. and quantity.

Example: **A16Q-STUPR1103-D180** 1 piece

- Standard packing quantity is 1 piece
- Inserts must be ordered separately.

Guidance

■ Designation system for TAC internal toolholders ····· 5-2
■ Outline of new TAC boring toolholder, “DoMiniTurn” ····· 5-4
■ Outline of new TAC boring toolholder, “StreamJetBar” ····· 5-6
■ Clamping mechanism and features of TAC boring toolholders····· 5-9
■ “Stream Jet Bars” overview ····· 5-10
■ Machining method of internal spherical surface ····· 5-26

5 TAC Internal Toolholders

Products

■ **“Stream Jet Bar”**

● SCLCR/L type	(CC□□ inserts)	Boring & internal facing	5–12
● SCLPR/L type	(CP□□ inserts)	Boring & internal facing	5–14
● SDQCR/L • SDUCR/L type	(DC□□ inserts	Boring & internal profiling	5–16
● SDZCR/L type	(DC□□ inserts)	Internal retracting	5–17
● SSKPR/L type	(SP□□ inserts)	Through boring	5–18
● STFCR/L type	(TC□□ inserts)	Blind hole boring	5–19
● STFPR/L type	(TP□□ inserts)	Blind hole boring	5–20
● STUPR/L type	(TP□□ inserts)	Boring	5–21
● SVQBR/L • SVUBR/L type	(VB□□ inserts)	Boring & internal profiling	5–22
● SVZBR/L type	(VB□□ inserts)	Internal retracting	5–23
● SVJBR/L type	(VB□□ inserts)	Internal sphere cutting	5–23
● SVQCR/L • SVUCR/L type	(VC□□ inserts)	Boring & internal profiling	5–24
● SVZCR/L type	(VC□□ inserts)	Internal retracting	5–25
● SVJCR/L type	(VC□□ inserts)	Internal sphere cutting	5–25
● SWUBR/L type	(WB□□ inserts)	Boring	5–27
● SEZPR/L type	(EP□□ inserts)	Internal retracting	5–28
● SEXPR/L type	(EP□□ inserts)	Boring & internal facing	5–28
● SYQBR/L type	(YW□□ inserts)	Internal undercut & profiling	5–30
● SYUBR/L type	(YW□□ inserts)	Boring & internal profiling	5–30

■ **“DoMiniTurn”**

● SWLXR/L type	(WX□□ inserts)	Boring & internal facing	5–31
● SDXXR/L type	(DX□□ inserts)	Boring & internal profiling	5–31
● SDZXR/Ltype	(DX□□ inserts)	Internal retracting	5–32

■ **“Stream Jet Bar”**

● PCLNR/L type	(CN□□ inserts)	Boring & internal facing	5–34
● PDUNR/L type	(DN□□ inserts)	Internal profiling	5–35
● PDZNR/L type	(DN□□ inserts)	Internal retracting	5–35
● PSKNR/L type	(SN□□ inserts)	Through boring	5–36
● PTFNR/L • PTUNR/L type	(TN□□ inserts)	Boring	5–37
● PVUNR/L type	(VN□□ inserts)	Boring & internal profiling	5–38
● PWLNR/L type	(WN□□ inserts)	Boring & facing	5–39

■ **“Turning A”**

● ACLNR/L type	(CN□□ inserts)	Boring & internal facing	5–40
● ADUNR/L type	(DN□□ inserts)	Boring & internal facing	5–41
● ASKNR/L type	(SN□□ inserts)	Through boring	5–42
● ATFNR/L type	(TN□□ inserts)	Blind hole boring	5–43
● AVUNR/L type	(VN□□ inserts)	Boring & internal profiling	5–44
● AWLNR/L type	(WN□□ inserts)	Boring & internal facing	5–45

■ **“TurnTec”**

● TLANR/L type	(LNMX inserts)	Boring & internal facing	5–46

■ **General purpose**

● TAC boring toolholders	(TP□□, TN□□ inserts)	Boring / blind hole boring	5–48
● TAC boring toolholders	(TP□□, TN□□ inserts)	Boring	5–51
● TAC boring toolholders	(WB□□ inserts)	Boring	5–54
● TAC boring toolholders	(C□□□ inserts)	Boring / internal facing	5–55
● TAC boring toolholders	(WN□□ inserts)	Boring / internal facing	5–58
● TAC boring toolholders	(EP□□, SP□□ inserts)	Boring / internal facing	5–59
● TAC boring toolholders	(SN□□ inserts)	Boring / through boring	5–59
● TAC boring toolholders	(DC□□, DN□□ inserts)	Boring / internal profiling	5–62
● TAC boring toolholders	(VB□□, VC□□ inserts)	Boring / internal profiling	5–65
● TAC boring toolholders	(DC□□, DN□□ inserts)	Boring / internal retracting	5–67

■ **Sleeves** ····· 5–68

Designation System for TAC Internal Toolholders

A	Double clamping		
P	Lever-lock	C	Clamp-on
M	Multi clamping	S	Screw-on

④ Clamping system

C	80° Rhombic
D	55° Rhombic
K	55° Parallelogram
R	Round
S	Square
T	Triangular
V	35° Rhombic
Y	25° Rhombic (Non ISO)
W	Trigon

⑤ Insert shape

A ① **12** ② **M** ③ **-** **S** ④ **T** ⑤

① Bar composition

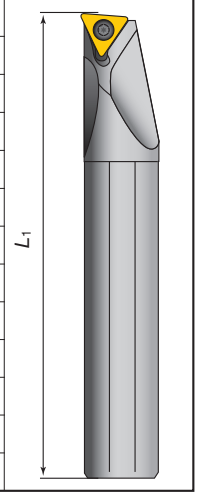
A	Steel shank with oil hole
E	Carbide shank with steel head & oil hole
C	Carbide shank with steel head
S	Steel shank
T	Steel shank reinforced with carbide plates (“Tsuppari-Ichiban”)
JS	J series Steel shank

② Bar diameter

Bar diameter is shown in mm.

③ Toolholder length L_1 (mm)

F	80
G	90
H	100
J	110
K	125
L	130
M	150
P	170
Q	180
R	200
S	250
T	300
U	350



Symbol	Style	Offset						
A	90°	Without	G	91° / 91°	With	S	45°	With
						V	72.5°	Without
			J	93°	With	U	93°	With
B	75°	Without	K	75°	With	X *	100°	With
C	90°	Without	L	95° / 95°	With	Y	80°	With
D	45°	Without	N	63°	Without	Z	93°	Without
E	60°	Without	P *	62.5°	Without	Note *mark: Tungaloy standard No mark: ISO standard		
F	91°	With	Q *	45°	With			

6 Cutting edge style

C	7°
B	5°
N	0°
P	11°
X	Special

7 Relief angle of insert

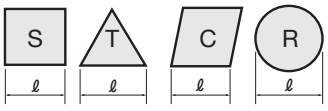
6	7		8	9		10	11	
U	P	-	R	11	02	C	-	D140

8 Hand of tool

R	
L	

9 Insert size ℓ + (S)

For M, S, & C types conformed to ISO



"In ISO metric system, a two digit number indicates the edge length (R) of the insert to be used in mm.
If the insert thickness is different for the same edge length, add the thickness symbol (s) (two digit number).

In above example, TP"□□1102□□
ℓ s

10 Oil hole

Only "Tsuppari-Ichiban" holder

11 Min. bore diameter (mm)

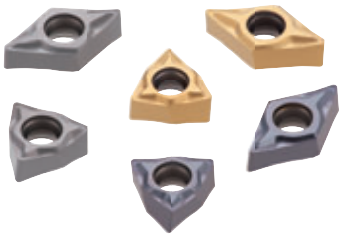
Stream Jet Bar		Tsuppari-Ichiban	
D140	ø14.0	D14	ø14.0

DOMTURN

Remarkable sharpness reduces cutting forces while the double sided insert increases the number of cutting edges !

Features

Uniquely designed double sided insert



Minimum bore diameter: ø12 mm
→ Economic advantages with twice the number of cutting edges

Advanced edge shape reduces the cutting forces
→ Similar design to positive type inserts to prevent chattering

One insert type for shank diameter range from ø10 mm ~ ø20 mm
→ Left & Right handed inserts with G-class accuracy create precision machining

Ideal grade series for various applications
→ **AH725** for general steel cutting, **GT530** with high wear resistance for fine surface finishes and the **NS530** for economic performance

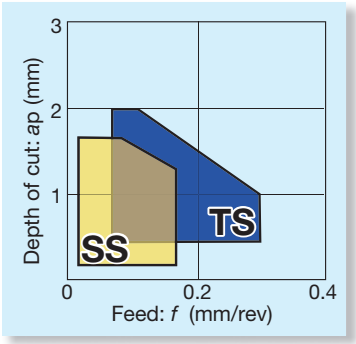
Originally designed exclusive insert

TS: general purpose
(Recommended for steel machining)

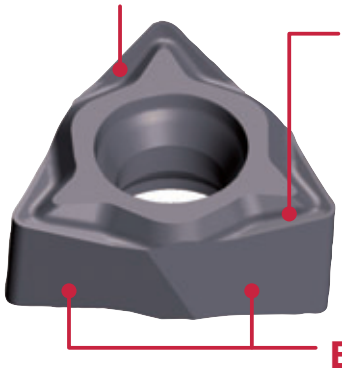
P Steel M Stainless K Cast Iron

SS: generates low cutting forces
(Recommended for stainless steel machining)

M Stainless P Steel K Cast Iron

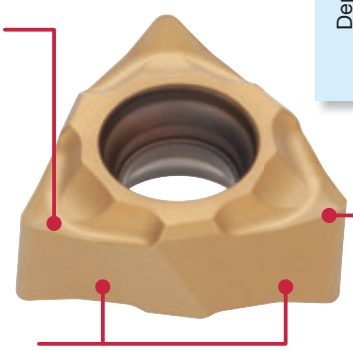


Large inclination on edge
Reduces cutting forces and chattering



Wide chip-pocket
Prevents chip packing
Prevents the re-cutting of chips

Enhances the clamping rigidity
Uniquely designed shape to precisely fit to the toolholder



Large rake angle and optimum pocket shape
Drastically reduces cutting forces
Smooth chip evacuation

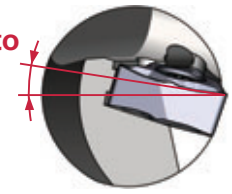
High performance boring bars with optimum design

Excellent chip evacuation and high rigidity

(Same structure as StreamJetBar series)

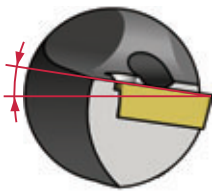
DOMTURN

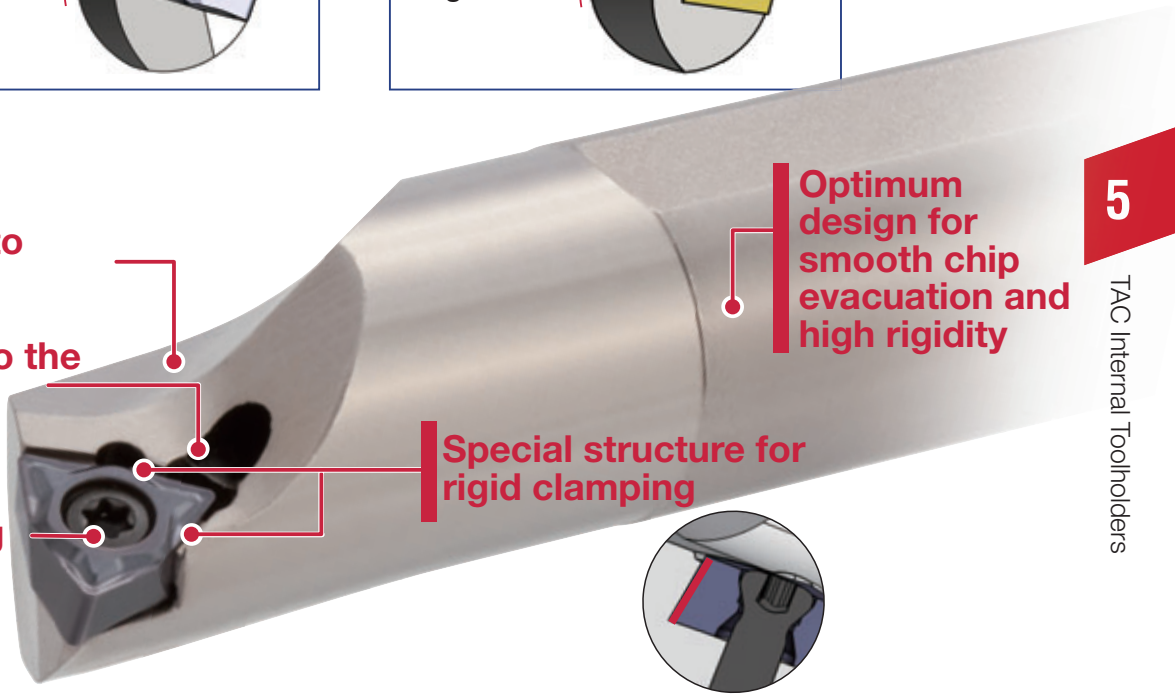
Similar to positive type



Conventional positive type insert

Small rake angle





Dove-tail structure (wedge shape) creates high clamping force

Cutting performance

Anti-vibration strength

Same strength level as positive type inserts

Steel shank
Cutting speed : *Vc* = 150 m/min
Work material : S45C / C45
Coolant : Wet (internal supply)

Overhang length: 36 mm (L/D = 3) Shank diameter: ø12 mm

DOMTURN

Depth of cut: ap (mm)				
2.0	OK	OK	OK	OK
1.5	OK	OK	OK	OK
1.0	OK	OK	OK	OK
0.5	OK	OK	OK	OK
ap / f	0.05	0.10	0.15	0.20

Feed: *f* (mm/rev)

Overhang length

Depth of cut: ap (mm)				
2.0	OK	OK	OK	OK
1.5	OK	OK	OK	OK
1.0	OK	OK	OK	OK
0.5	OK	OK	OK	OK
ap / f	0.05	0.10	0.15	0.20

Feed: *f* (mm/rev)

STREAMJETBAR

Extensive simulation analysis has enabled Tungaloy to develop a highly-rigid Stream Jet Bar with the ideal tool geometry for excellent chip evacuation.

New MINI

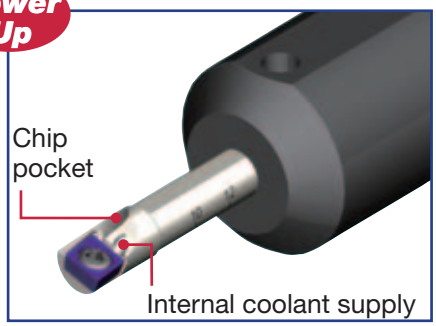
Stream Jet Bar MINI for small diameter machining applications!

Features

1 Excellent performance for small diameter machining operations

- Minimum bore diameter from ø4.5 mm
- Steel & carbide shank available
- Straight shank type available
- Can be used with internal coolant supply
- Well designed chip pocket for excellent chip evacuation
- Easy to adjust overhang due to marked scale on shank
- Improved rigidity for minimizing bar deflection & chatter by FEM (Finite Element Method)
- Added Z cutting edge style for back boring

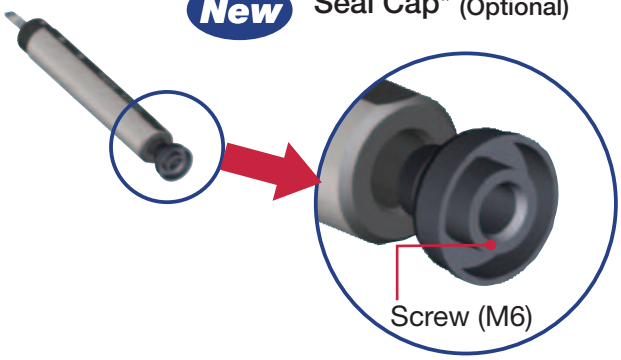
Power Up



2 Applicable for a wide variety of machines

- Applicable sleeve for a variety of small lathes
- Supplied with Seal cap* (optional)
- Suitably designed sleeve for directed external coolant flow (see picture below)

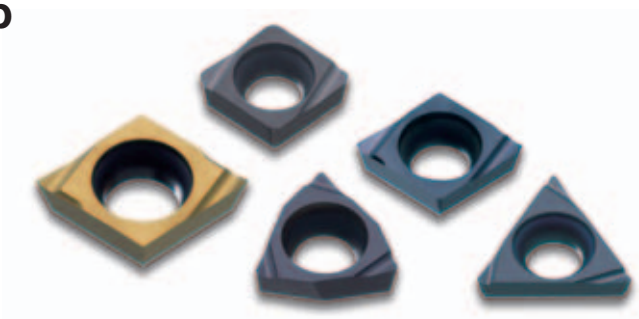
New Seal Cap* (Optional)



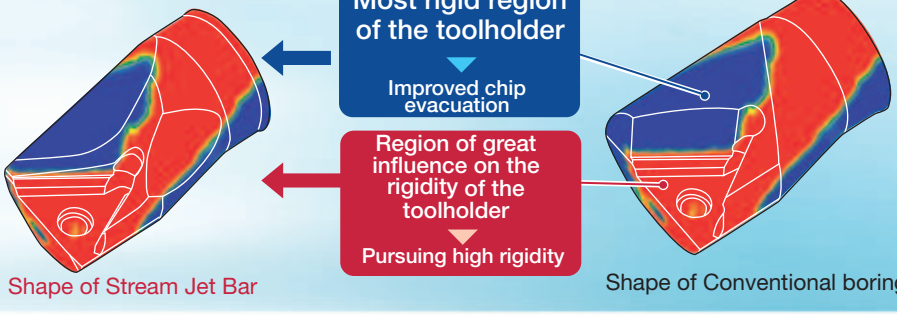
Attention: Please use the installation tools (e.g. a plastic hammer etc.), if difficult to ensure proper alignment

3 Stable tool life & excellent chip control

- W08 type chipbreaker
- Superior cutting edge due to fine grain carbide grade
- Two grades of inserts: **SH730** (for general purpose), **TH10** (for non-ferrous)
- Expansion of corner R0.1 spec on "**EPGT04**" & "**WBGT03**" insert types



● Finite Analysis of the load transition

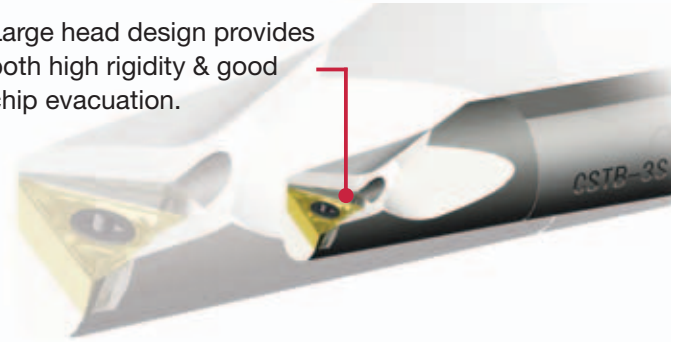


Increased rigidity for minimizing bar deflection & chatter

● **Rigidity in comparison to a conventional boring bar (Illustrations)**

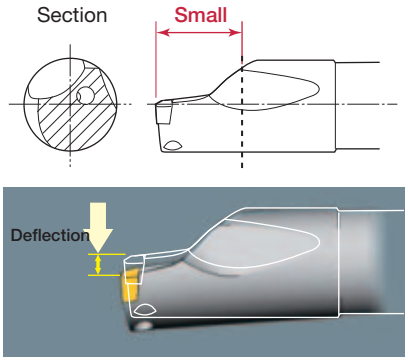
The rigidity of the bar in the direction of the principal force is maximized because the thickest portion of the head is located as close as possible to the cutting edge.
Note: Load 1000N (*Vc* = 150 m/min, *ap* = 1.5 mm, *f* = 0.2 mm/rev are assumed) A16Q-STUPR13-D180

Large head design provides both high rigidity & good chip evacuation.

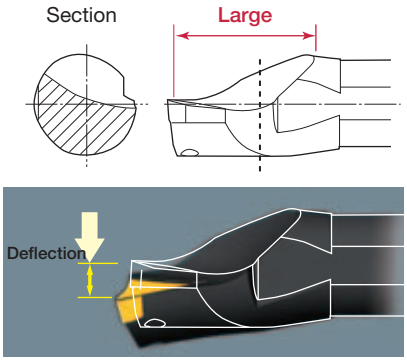


About 20% reduction in deflection compared to conventional bar

STREAMJETBAR



Conventional boring bar

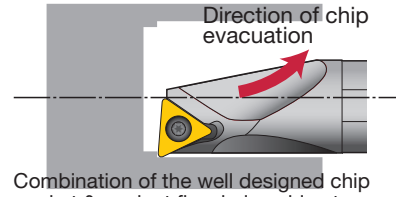


New pocket design for excellent chip evacuation

● **Cutting performance**

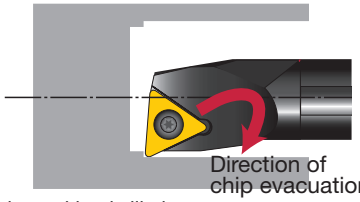
The excellent chip evacuation minimizes tool failure caused by re-cutting chips & poor chip control. Damage to the work surface from chips is also eliminated.

STREAMJETBAR



Combination of the well designed chip pocket & coolant flow helps chips to effectively evacuate.

Conventional boring bar



Chip packing is likely to occur.

The oil hole is positioned as close as possible to the cutting edge to ensure fluid is fed directly to the cutting point.

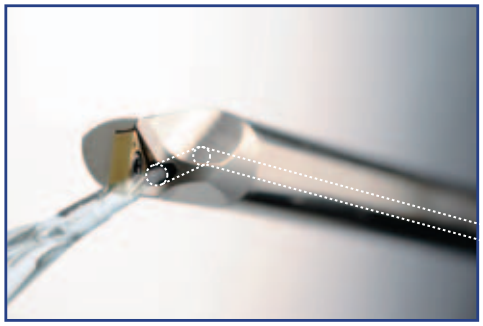
● **Oil hole design**

Distance between the cutting edge & the oil hole is minimized. (Distance is reduced by 50% compared to existing boring bars.)

● **Screw for oil hole***

In the case of not using the oil hole, a special screw can be inserted to prevent chip coiling (optional).

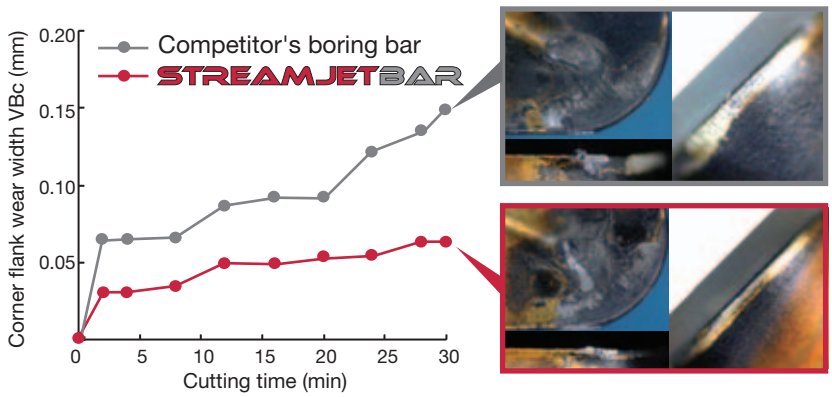
* Negative type only



STREAMJETBAR

Improved tool life

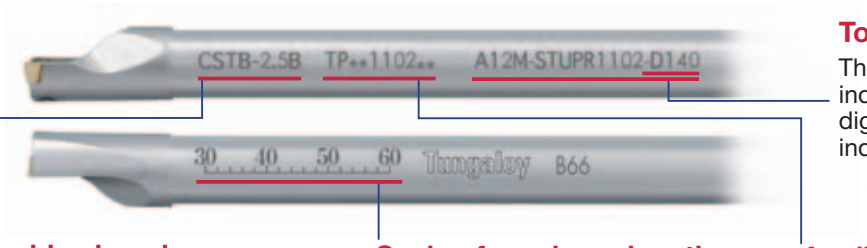
By supplying the optimum level of cutting fluid, flank wear & rake face wear are suppressed, considerably improving tool life.



Toolholder	: A16Q-STUPR1103-D180
Insert	: TPMT110304-PS (GT730)
Work material	: S45C (220HB)
	: Boring (ø30 ~ 50 mm)
Cutting speed	: *Vc* = 100 m/min
Depth of cut	: *ap* = 0.5 mm
Feed	: *f* = 0.2 mm/rev
Cutting fluid	: Wet

"Easy to use"

● Marking specifications



Toolholder Cat. No.
The minimum bore diameter is indicated in the Cat. No. The three-digit number at the end of the text indicates the minimum bore diameter.
(Example)-D140 → 14.0 mm

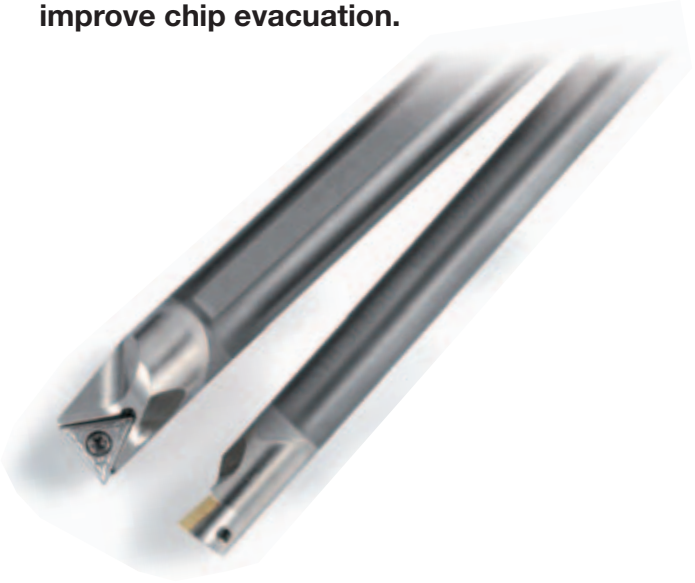
Applicable clamping screw Cat. No. (Positive type only)
If screw is missing, this detail simplifies locating a replacement with Cat. No.

Scale of overhang length
Useful for easy setting of the toolholder.

Applicable insert Cat. No.
Can identify the insert size & relief angle at a glance. Simplified tool management.

Carbide shank type

Combination of the highly rigid carbide shank & the head geometry can increase the tool rigidity & improve chip evacuation.



● Guide to L/D

Steel shank	Carbide shank
L/D ≤ 3	L/D ≤ 5

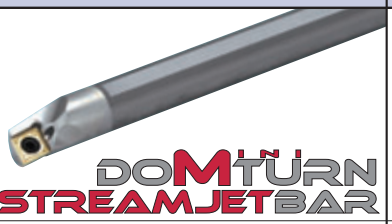
(Note) L : Overhang length, D: Shank diameter

● For precision boring

The increased rigidity suppresses chatter, producing excellent surface finishes.
Excellent chip evacuation minimizes damage to the surface caused by chip re-cutting. This further improves surface finish.

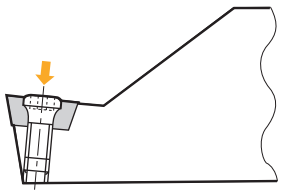
Clamping Mechanism & Features of TAC Internal Toolholders

Shank material

Steel Shank	Carbide Shank	"Tsuppari-Ichiban"
		
● Economical. ● Min. bore dia: ø4.5 ~ ø63 mm. ● Screw-on, clamp-on, pin-lock & double clamping types are stocked.	● Finishing accuracy is good with excellent resistance to chatter. ● Screw-on & clamp-on types (min. bore dia: ø4.5 ~ ø34 mm) are standard stocked.	● Provides highly rigid shank reinforced with carbide plates. ● Good resistance to chatter. ● Low cost, close to steel shank. ● Min. bore dia: ø20 mm for P-type, ø14 mm for S-type. ● Also available in oil hole shank type.

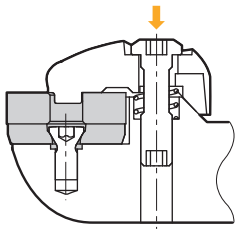
Clamping system

S Screw-on



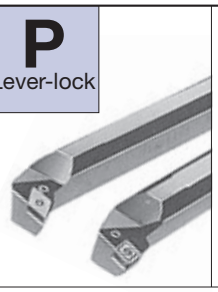
- Simple clamping mechanism.
- Smart shape without overhang area.
- Minimum bore diameter: ø4.5 mm.
- Good cutting action by using positive inserts.
- Carbide shanks that have excellent resistance to chatter.
- "Tsuppari-Ichiban" shanks (reinforced with carbide plates) are also stocked.

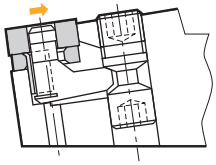
A Double clamping



- Increased clamping rigidity contributes to superior cutting edge positioning accuracy & longer tool life.
- Enlarged insert holding area of the clamp allows more accurate cutting edge positioning. It delivers high performance even when using VNMG type (35° corner angle) inserts, which tend to destabilize cutting edge positioning.
- Simple structure keeps cost low. Easy clamping with only one wrench.

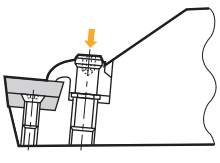
P Lever-lock





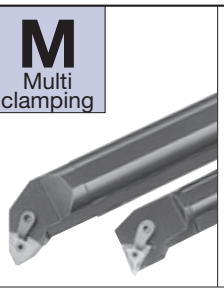
- Negative rake, lever-lock type, round shank boring bars.
- The insert is positively held into a two wall pocket, excelling in indexing accuracy.
- Minimum bore diameter: ø20 mm.
- "Tsuppari-Ichiban" shanks that are reinforced with carbide plates are also stocked.

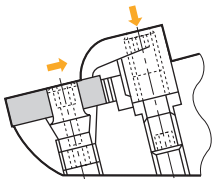
C Clamp-on



- Clamp-on type insert locking mechanism assures secure holding & accurate indexing.
- For inserts without a hole, it provides stronger cutting edge strength than S-type tools & can withstand heavier cutting conditions.
- Minimum bore diameter: ø16 mm

M Multi clamping





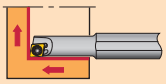
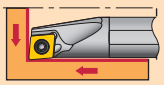
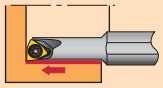
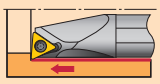
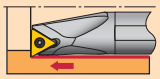
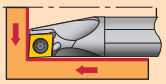
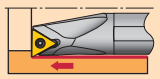
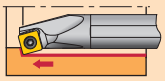
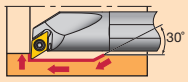
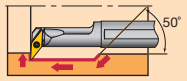
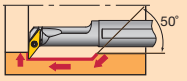
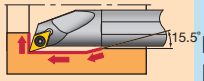
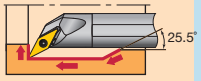
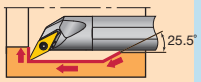
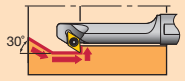
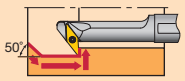
- Combination of lock-pin & top clamp provides positive insert holding & superior indexing accuracy.
- Suitable for medium to large diameter boring.
- Minimum bore diameter: ø32 mm

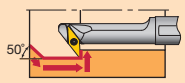
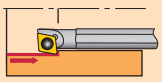
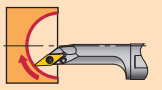
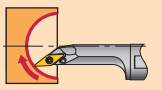
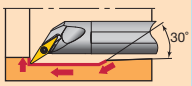
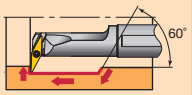
List of StreamJetBar & DoMiniTurn

A wide range of styles & size applicable for a variety of tooling

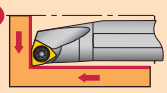
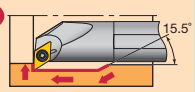
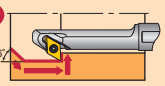
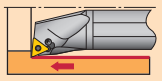
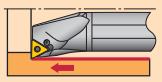
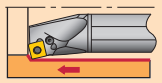
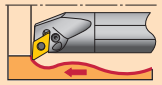
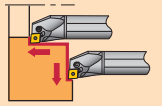
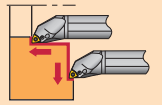
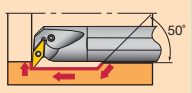
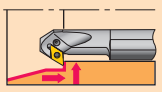
Positive type

STREAMJETBAR

Style	Shank type	Shank diameter	Minimum bore diameter (mm) 0 10 20 30 40 50
 **SEXPR/L** 5-28 Boring & internal facing Insert type: EP□□	Steel Carbide	ø4 ~ ø8 ø4 ~ ø8	ø4.5 ø7 ø4.5 ø7
 **SCLCR/L** 5-12 Boring & internal facing Insert type: CC□□	Steel Carbide	ø4 ~ ø25 ø4 ~ ø25	ø5 ø27 ø5 ø27
 **SWUBR/L** 5-27 Boring Insert type:WB□□	Steel Carbide	ø5 ~ ø8 ø5 ~ ø8	ø6 ø8 ø6 ø8
 **STUPR/L** 5-21 Boring Insert type: TP□□	Steel Carbide	ø7 ~ ø32 ø7 ~ ø25	ø8 ø34 ø8 ø27
 **STFPR/L** 5-20 Blind hole Boring Insert type: TP□□	Steel Carbide	ø8 ~ ø25 ø8 ~ ø20	ø10 ø27 ø10 ø22
 **SCLPR/L** 5-14 Boring & internal facing Insert type: CP□□	Steel Carbide	ø8 ~ ø25 ø8 ~ ø16	ø10 ø27 ø10 ø20
 **STFCR/L** 5-19 Blind hole Boring Insert type: TC□□	Steel Carbide	ø8 ~ ø25 ø8 ~ ø25	ø10 ø27 ø10 ø27
 **SSKPR/L** 5-18 Through boring Insert type: SP□□	Steel	ø16 ~ ø25	ø20 ø31
 **SDUCR/L** 5-16 Boring & internal profiling Insert type: DC□□	Steel Carbide	ø10 ~ ø25 ø10 ~ ø20	ø13 ø32 ø13 ø27
 **SVUCR/L** 5-24 Boring & internal profiling Insert type: VC□□	Steel Carbide	ø12 ~ ø40 ø12 ~ ø25	ø16 ø50 ø18 ø32
 **SVUBR/L** 5-22 Boring & internal profiling Insert type: VB□□	Steel Carbide	ø16 ~ ø25 ø16 ~ ø25	ø20 ø32 ø24.5 ø34
 **SDQCR/L** 5-16 Boring & internal profiling Insert type: DC□□	Steel Carbide	ø10~ ø25 ø10~ ø20	ø13 ø30 ø13 ø25
 **SVQCR/L** 5-24 Boring & internal profiling Insert type: VC□□	Steel Carbide	ø10~ ø40 ø10~ ø16	ø13.5 ø50 ø13.5 ø21.5
 **SVQBR/L** 5-22 Boring & internal profiling Insert type: VB□□	Steel Carbide	ø12 ~ ø25 ø12 ~ ø25	ø17 ø30.5 ø17 ø30.5
 **SDZCR/L** 5-17 Internal retracting Insert type: DC□□	Steel Carbide	ø12 ~ ø25 ø12 ~ ø16	ø14 ø25 ø18 ø22
 **SVZCR/L** 5-25 Internal retracting Insert type: VC□□	Steel	ø12	ø16

Style		Shank type	Shank diameter	Minimum bore diameter (mm) 0 10 20 30 40 50
	**SVZBR/L** 5-23 Internal retracting Insert type: VE□□	Steel	ø16 ~ ø32	ø20 ~ ø40
	**SEZPR/L** 5-28 Internal retracting Insert type: EP□□	Steel Carbide	ø4 ~ ø5 ø4 ~ ø5	ø5.5 ~ ø6.5 ø5.5 ~ ø6.5
	**SVJCR/L** 5-25 Internal sphere cutting Insert type:VC□□	Steel	ø12 ~ ø16	ø16 ~ ø20
	**SVJBR/L** 5-23 Internal sphere cutting Insert type:VB□□	Steel	ø20 ~ ø25	ø25 ~ ø30
	**SYQBR/L** 5-30 Internal undercut & profiling Insert type:YW□□	Steel Carbide	ø12 ~ ø16 ø12 ~ ø16	ø17 ~ ø21.5 ø17 ~ ø21.5
	**SYUBR/L** 5-30 Boring & internal profiling Insert type: YW□□	Steel Carbide	ø16 ø12 ~ ø16	ø20 ø20 ~ ø24.5

Negative type

Style		Shank type	Shank diameter	Minimum bore diameter (mm) 0 10 20 30 40 50 60 70
New 	**SWLXR/L** 5-31 Boring and facing Insert type: **WXGU**	Steel Carbide	ø10 ~ ø20 ø10 ~ ø20	ø12 ~ ø22 ø12 ~ ø22
New 	**SDXXR/L** 5-31 Internal profiling Insert type: **DXGU**	Steel Carbide	ø10 ~ ø20 ø10 ~ ø20	ø13 ~ ø24 ø13 ~ ø24
New 	**SDZXR/L** 5-32 Internal retracting Insert type: **DXGU**	Steel Carbide	ø12 ~ ø20 ø12 ~ ø16	ø14 ~ ø20 ø18 ~ ø22
	**PTUNR/L** 5-37 Boring Insert type: TN□□	Steel	ø16 ~ ø32	ø20 ~ ø40
	**PTFNR/L** 5-37 Boring Insert type: TN□□	Steel	ø25 ~ ø50	ø32 ~ ø63
	**PSKNR/L** 5-36 Through boring Insert type: SN□□	Steel	ø32 ~ ø50	ø40 ~ ø63
	**PDUNR/L** 5-35 Internal profiling Insert type: DN□□	Steel	ø20 ~ ø50	ø25 ~ ø63
	**PCLNR/L** 5-34 Boring & internal facing Insert type: CN□□	Steel	ø16 ~ ø50	ø20 ~ ø63
	**PWLNR/L** 5-39 Boring & facing Insert type: WN	Steel	ø16 ~ ø40	ø20 ~ ø50
	**PVUNR/L** 5-38 Boring & Internal profiling Insert type: VN□□	Steel	ø25 ~ ø40	ø37 ~ ø50
	**PDZNR/L** 5-35 Internal retracting Insert type: DN□□	Steel	ø32 ~ ø50	ø40 ~ ø63

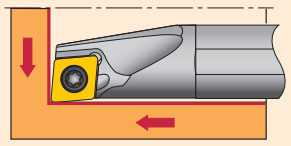
SCLCR/L

Min. bore dia. ø5 mm~

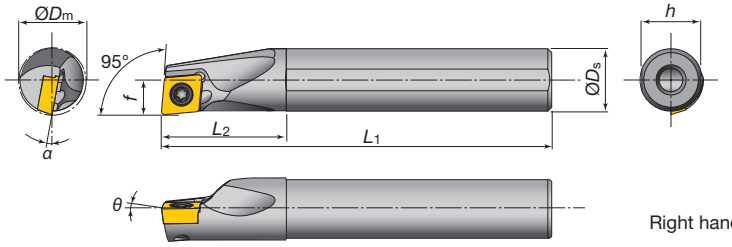
Shank dia. ø4~25 mm

Steel Shank | Carbide Shank

Boring & internal facing



Cutting edge style **L**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	ØDs	f	L_1	L_2	h	f_2	θ	α	Std. corner radius r_ε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
MINI A04F-SCLCR/L03-D050	●	●	5	4	2.5	80	8	3.8	-	0°	-15°	0.2	CC□□03X1	CSTA-1.6	T-6F	0.6
MINI A05F-SCLCR/L03-D060	●	●	6	5	3	80	9	4.8	-	0°	-13°					
MINI A06G-SCLCR/L04-D070	●	●	7	6	3.5	90	11	5.75	-	0°	-13°	0.2	CC□□04T1	CSTB-2	T-6F	0.6
MINI A07G-SCLCR/L04-D080	●	●	8	7	4	90	12	6.75	-	0°	-11°					
A08H-SCLCR/L06-D100	●	●	10	8	5.5	100	16	7.5	-	0°	-13°	0.4	CC□□0602	CSTB-2.5S	T-8F	1.2
A10F-SCLCR/L06-D120	●		12	10	6	80	20	9	-	0°	-10°	0.4				
A10K-SCLCR/L06-D120	●	●	12	10	6	125	20	9	-	0°	-10°	0.4				
A12H-SCLCR/L06-D140	●		14	12	7	100	24	11	-	0°	-8°	0.4				
A12M-SCLCR/L06-D140	●	●	14	12	7	150	24	11	-	0°	-8°	0.4				
A12H-SCLCR/L06-D160	●		16	12	9	100	24	11	-	0°	-7°	0.4				
A12M-SCLCR/L06-D160	●	●	16	12	9	150	24	11	-	0°	-7°	0.4				
A16K-SCLCR/L09-D180	●		18	16	9	125	32	15	-	0°	-9°	0.8	CC□□09T3	CSTB-4S	T-15F	3.0
A16Q-SCLCR/L09-D180	●	●	18	16	9	180	32	15	-	0°	-10°	0.8				
A16K-SCLCR/L09-D200	●		20	16	11	125	32	15	-	0°	-9°	0.8				
A16Q-SCLCR/L09-D200	●	●	20	16	11	180	32	15	-	0°	-9°	0.8				
A20R-SCLCR/L09-D220	●	●	22	20	11	200	32	18	-	0°	-8°	0.8				
A25S-SCLCR/L09-D270	●	●	27	25	13.5	250	45	23	-	0°	-6°	0.8				

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	ØDs	f	L_1	L_2	h	f_2	θ	α	Std. corner radius r_ε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
MINI E04G-SCLCR/L03-D050	●	●	5	4	2.5	90	9	3.8	-	0°	-15°	0.2	CC□□03X1	CSTA-1.6	T-6F	0.6
MINI E05G-SCLCR/L03-D060	●	●	6	5	3	90	10	4.8	-	0°	-13°					
MINI E06H-SCLCR/L04-D070	●	●	7	6	3.5	100	12	5.75	-	0°	-13°	0.2	CC□□04T1	CSTB-2	T-6F	0.6
MINI E07H-SCLCR/L04-D080	●	●	8	7	4	100	14	6.75	-	0°	-11°					
E08G-SCLCR/L06-D100	●		10	8	5.5	90	22	7.5	-	0°	-13°	0.4	CC□□0602	CSTB-2.5S	T-8F	1.2
E08K-SCLCR/L06-D100	●	●	10	8	5.5	125	22	7.5	-	0°	-13°	0.4				
E10F-SCLCR/L06-D120	●		12	10	6	80	25	9	-	0°	-10°	0.4				
E10H-SCLCR/L06-D120	●		12	10	6	100	25	9	-	0°	-10°	0.4				
E10M-SCLCR/L06-D120	●	●	12	10	6	150	25	9	-	0°	-10°	0.4				
E12G-SCLCR/L06-D140	●		14	12	7	90	27	11	-	0°	-8°	0.4				
E12J-SCLCR/L06-D140	●		14	12	7	110	27	11	-	0°	-8°	0.4				
E12Q-SCLCR/L06-D140	●	●	14	12	7	180	27	11	-	0°	-8°	0.4				
E12G-SCLCR/L06-D160	●		16	12	9	90	27	11	-	0°	-7°	0.4				
E12J-SCLCR/L06-D160	●		16	12	9	110	27	11	-	0°	-7°	0.4				
E12Q-SCLCR/L06-D160	●	●	16	12	9	180	27	11	-	0°	-7°	0.4				
E16H-SCLCR/L09-D180	●		18	16	9	100	32	15	-	0°	-10°	0.8	CC□□09T3	CSTB-4L060	T-15F	3.0
E16L-SCLCR/L09-D180	●		18	16	9	130	32	15	-	0°	-10°	0.8				
E16R-SCLCR/L09-D180	●	●	18	16	9	200	32	15	-	0°	-10°	0.8				
E16H-SCLCR/L09-D200	●		20	16	11	100	32	15	-	0°	-9°	0.8				
E16L-SCLCR/L09-D200	●		20	16	11	130	32	15	-	0°	-9°	0.8				
E16R-SCLCR/L09-D200	●	●	20	16	11	200	32	15	-	0°	-9°	0.8				
E20S-SCLCR/L09-D220	●		22	20	11	250	36	18	-	0°	-8°	0.8		CSTB-4S		
E25T-SCLCR/L09-D270	●		27	25	13.5	300	45	23	-	0°	-6°	0.8				

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SCLCL □□ type), and the left hand insert (L) is used for the right hand toolholders (SCLCR □□ type).

● : Stocked items.

Basic Selection Chipbreakers CC□□09T3□□-□□

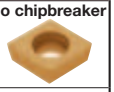
P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	SH730	AH725	T9115	T9125
Page	2-99	2-96	2-97	2-100
Chipbreaker	JS 	PSF 	PS 	PM 
Vc (m/min)	**120** (50-180)	**120** (50-180)	**220** (150-300)	**180** (120-250)
ap (mm)	**1.5** (0.1-3.0)	**0.3** (0.1-0.5)	**1.5** (0.5-2.5)	**2.0** (1.0-3.0)
f (mm/rev)	**0.06** (0.02-0.1)	**0.12** (0.08-0.2)	**0.15** (0.08-0.3)	**0.25** (0.07-0.3)
*r*ε (mm)	0.2	0.4	0.8	0.8

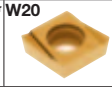
M Stainless — Continuous

Operation	Precision finishing	Finishing	Finishing to light cutting	Medium cutting
Grade	GH330	AH725	AH725	T6130
Page	2-97	2-96	2-97	2-100
Chipbreaker	W20 	PSF 	PSS 	PM 
Vc (m/min)	**120** (100-150)	**120** (50-150)	**120** (50-150)	**120** (70-150)
ap (mm)	**0.5** (0.05-02.0)	**0.3** (0.1-0.5)	**1.2** (0.3-2.0)	**2.0** (1.0-3.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.12** (0.08-0.2)	**0.15** (0.08-0.3)	**0.25** (0.07-0.3)
*r*ε (mm)	0.4	0.4	0.8	0.8

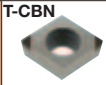
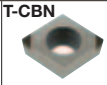
K Cast Iron — Continuous

Operation	Precision finishing	Finishing to medium cutting	Medium cutting
Grade	BX930	T5115	T5115
Page	3-14	2-97	2-101
Chipbreaker	T-CBN 	CM 	No chipbreaker 
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.05-2.0)	**1.5** (0.05-2.0)
f (mm/rev)	**0.06** (0.05-0.2)	**0.2** (0.05-0.3)	**0.15** (0.05-0.3)
*r*ε (mm)	0.4	0.8	0.8

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	DX120	GH110	KS05F
Page	3-22	2-97	2-98
Chipbreaker	T-DIA With chipbreaker 	W20 	AL 
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**400** (200-1500)
ap (mm)	**0.1** (0.03-0.5)	**0.5** (0.05-2.0)	**2.0** (1.0-5.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)
*r*ε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing
Grade	BX470	BX950
Page	3-12	3-14
Chipbreaker	T-CBN 	T-CBN 
Vc (m/min)	**200** (100-280)	**200** (70-300)
ap (mm)	**0.1** (0.05-0.5)	**0.3** (0.1-0.5)
f (mm/rev)	**0.1** (0.05-0.3)	**0.1** (0.05-0.2)
*r*ε (mm)	0.4	0.4

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	BXM10	BXM20
Page	3-12	3-12
Chipbreaker	T-CBN 	T-CBN 
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
*r*ε (mm)	0.4	0.4

For other machining types, see “Selection System” 2-16~

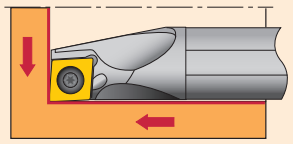
SCLPR/L

Min. bore dia. ø10 mm~

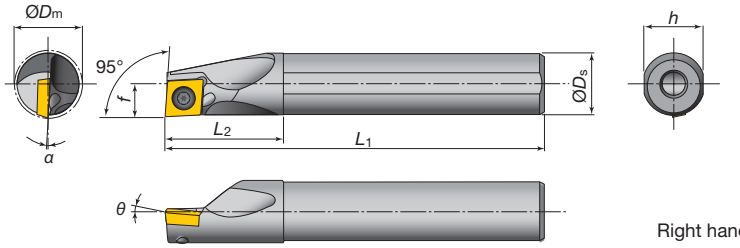
Shank dia. ø8~25 mm

Steel Shank | Carbide Shank

Boring & internal facing



Cutting edge style **L**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	ØDm	ØDs	f	L_1	L_2	h	f_2	θ	α			Clamping screw	Wrench	
A08H-SCLPR/L06-D100	●	●	10	8	5.5	100	16	7.5	-	+5°	-8°	0.4	CP□□0602	CSTB-2.5S	T-8F	1.2
A10K-SCLPR/L06-D120	●	●	12	10	6	125	20	9	-	+5°	-5°	0.4	CP□□0602	CSTB-2.5S	T-8F	1.2
A10K-SCLPR/L08-D120	●	●	12	10	6	125	20	9	-	+5°	-5°	0.4	CP□□0802	CSTB-3L042	T-9F	1.4
A12M-SCLPR/L06-D140	●	●	14	12	7	150	24	11	-	+5°	-4°	0.4	CP□□0602	CSTB-2.5S	T-8F	1.2
A12M-SCLPR/L08-D140	●	●	14	12	7	150	24	11	-	+5°	-4°	0.4	CP□□0802	CSTB-3L050	T-9F	1.4
A12M-SCLPR/L08-D160	●	●	16	12	9	150	24	11	-	+5°	-3°	0.4				
A16Q-SCLPR/L09-D180	●	●	18	16	9	180	32	15	-	+5°	-3.5°	0.8	CP□□0903	CSTB-4L060	T-15F	3.0
A16Q-SCLPR/L09-D200	●	●	20	16	11	180	32	15	-	+5°	-3°	0.8				
A20R-SCLPR/L09-D220	●	●	22	20	11	200	36	18	-	+5°	-2°	0.8				
A25S-SCLPR/L09-D270	●	●	27	25	13.5	250	45	23	-	+5°	-1°	0.8				

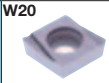
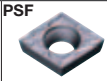
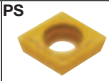
Carbide Shank

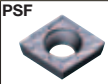
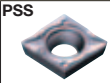
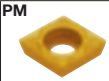
Toolholder Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	ØDm	ØDs	f	L_1	L_2	h	f_2	θ	α			Clamping screw	Wrench	
E08K-SCLPR/L06-D100	●	●	10	8	5.5	125	22	7.5	-	+5°	-8°	0.4	CP□□0602	CSTB-2.5S	T-8F	1.2
E10M-SCLPR/L06-D120	●	●	12	10	6	150	25	9	-	+5°	-5°	0.4	CP□□0602	CSTB-2.5S	T-8F	1.2
E10H-SCLPR/L08-D120	●		12	10	6	100	25	9	-	+5°	-5°	0.4	CP□□0802	CSTB-3L042	T-9F	1.4
E10M-SCLPR/L08-D120	●	●	12	10	6	150	25	9	-	+5°	-5°	0.4				
E12Q-SCLPR/L06-D140	●	●	14	12	7	180	27	11	-	+5°	-4°	0.4	CP□□0602	CSTB-2.5S	T-8F	1.2
E12G-SCLPR/L08-D140	●		14	12	7	90	27	11	-	+5°	-4°	0.4	CP□□0802	CSTB-3L050	T-9F	1.4
E12J-SCLPR/L08-D140	●		14	12	7	110	27	11	-	+5°	-4°	0.4				
E12Q-SCLPR/L08-D140	●	●	14	12	7	180	27	11	-	+5°	-4°	0.4				
E12G-SCLPR/L08-D160	●		16	12	9	90	27	11	-	+5°	-3°	0.4				
E12J-SCLPR/L08-D160	●		16	12	9	110	27	11	-	+5°	-3°	0.4				
E12Q-SCLPR/L08-D160	●	●	16	12	9	180	27	11	-	+5°	-3°	0.4				
E16H-SCLPR/L09-D180	●		18	16	9	100	32	15	-	+5°	-3.5°	0.8	CP□□0903	CSTB-4L060	T-15F	3.0
E16L-SCLPR/L09-D180	●		18	16	9	130	32	15	-	+5°	-3.5°	0.8				
E16R-SCLPR/L09-D180	●	●	18	16	9	200	32	15	-	+5°	-3.5°	0.8				
E16H-SCLPR/L09-D200	●		20	16	11	100	32	15	-	+5°	-3°	0.8				
E16L-SCLPR/L09-D200	●		20	16	11	130	32	15	-	+5°	-3°	0.8				
E16R-SCLPR/L09-D200	●	●	20	16	11	200	32	15	-	+5°	-3°	0.8				

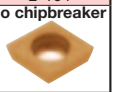
When using a right or left hand insert, the right hand (R) insert is used for the left hand toolholders (SCLPL □□ type), and the left hand insert (L) is used for the right hand toolholders (SCLPR □□ type).

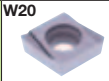
● : Stocked items.

Basic Selection Chipbreakers CP□□0903□□-□□

	Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
P Steel	Grade	NS530	AH725	T9115	T9125
	Page	2-102	2-102	2-103	2-103
	Chipbreaker	W20 	PSF 	PS 	PM 
Continuous	*Vc* (m/min)	**200** (150-250)	**120** (50-180)	**220** (150-300)	**180** (120-250)
	ap (mm)	**0.5** (0.05-2.5)	**0.3** (0.1-0.5)	**1.5** (0.5-2.5)	**2.0** (1.0-3.0)
	f (mm/rev)	**0.1** (0.03-0.15)	**0.12** (0.08-0.2)	**0.15** (0.08-0.3)	**0.25** (0.07-0.3)
	*r*ε (mm)	0.4	0.4	0.8	0.8

	Operation	Finishing	Finishing to light cutting	Medium cutting
M Stainless	Grade	AH725	AH725	T6130
	Page	2-102	2-102	2-103
	Chipbreaker	PSF 	PSS 	PM 
Continuous	*Vc* (m/min)	**120** (50-150)	**120** (50-150)	**120** (70-150)
	ap (mm)	**0.3** (0.1-0.5)	**1.2** (0.3-2.0)	**2.0** (1.0-3.0)
	f (mm/rev)	**0.12** (0.08-0.2)	**0.15** (0.08-0.3)	**0.25** (0.07-0.3)
	*r*ε (mm)	0.4	0.8	0.8

	Operation	Finishing to medium cutting	Medium cutting
K Cast Iron	Grade	T5115	T5115
	Page	2-103	2-104
	Chipbreaker	CM 	No chipbreaker 
Continuous	*Vc* (m/min)	**270** (140-400)	**270** (140-400)
	ap (mm)	**1.0** (0.05-2.0)	**1.5** (0.05-2.0)
	f (mm/rev)	**0.2** (0.05-0.3)	**0.15** (0.05-0.3)
	*r*ε (mm)	0.8	0.8

	Operation	Finishing
N Non-ferrous	Grade	TH10
	Page	2-102
	Chipbreaker	W20 
Continuous	*Vc* (m/min)	**600** (100-1000)
	ap (mm)	**0.5** (0.05-2.0)
	f (mm/rev)	**0.1** (0.03-0.15)
	*r*ε (mm)	0.4

For other machining types, see “Selection System”

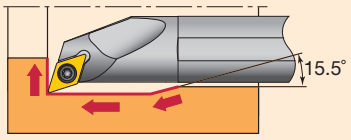
2-16~

STREAMJETBAR S-type SDQCR/L

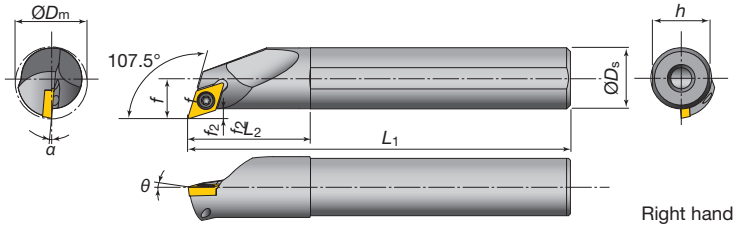
Positive rake / Screw-on system

Min. bore dia. ø13 mm~ | Shank dia. ø10~25 mm | Steel Shank | Carbide Shank

Boring & internal profiling



Cutting edge style **Q**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L_1	L_2	h	f_2	θ	a	Std. corner radius r_ε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
A10K-SDQCR/L07-D130	●	●	13	10	7.6	125	20	9	2.6	0°	-8°	0.4	DC□□0702	CSTB-2.5S	T-8F	1.2
A12M-SDQCR/L07-D160	●	●	16	12	8.6	150	24	11	2.6	0°	-6°	0.4				
A16Q-SDQCR/L07-D200	●	●	20	16	10.6	180	32	15	2.6	0°	-5°	0.4				
A20R-SDQCR/L11-D250	●	●	25	20	13.7	200	36	18	3.7	0°	-7°	0.8	DC□□11T3	CSTB-4S	T-15F	3.0
A25S-SDQCR/L11-D300	●	●	30	25	16.2	250	45	23	3.7	0°	-4°	0.8				

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L_1	L_2	h	f_2	θ	a	Std. corner radius r_ε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
E10H-SDQCR/L07-D130	●		13	10	7.6	100	25	9	2.5	0°	-8°	0.4	DC□□0702	CSTB-2.5S	T-8F	1.2
E10M-SDQCR/L07-D130	●	●	13	10	7.6	150	25	9	2.6	0°	-8°	0.4				
E12J-SDQCR/L07-D160	●		16	12	8.6	110	27	11	2.5	0°	-6°	0.4				
E12Q-SDQCR/L07-D160	●	●	16	12	8.6	180	27	11	2.6	0°	-6°	0.4				
E16L-SDQCR/L07-D200	●		20	16	10.6	130	32	15	2.5	0°	-5°	0.4				
E16R-SDQCR/L07-D200	●	●	20	16	10.6	200	32	15	2.6	0°	-5°	0.4				
E20S-SDQCR/L11-D250	●	●	25	20	13.7	250	36	18	3.7	0°	-7°	0.8	DC□□11T3	CSTB-4S	T-15F	3.0

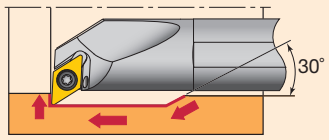
When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SDQCL □□ type), and the left hand insert (L) is used for the right hand toolholders (SDQCR □□ type).

STREAMJETBAR S-type SDUCR/L

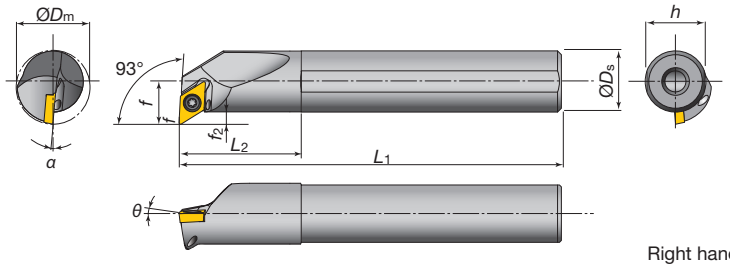
Positive rake / Screw-on system

Min. bore dia. ø13 mm~ | Shank dia. ø10~25 mm | Steel Shank | Carbide Shank

Boring & internal profiling



Cutting edge style **U**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L_1	L_2	h	f_2	θ	a	Std. corner radius r_ε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
A10K-SDUCR/L07-D130	●	●	13	10	7	125	20	9	2.0	0°	-10°	0.4	DC□□0702	CSTB-2.5S	T-8F	1.2
A12M-SDUCR/L07-D160	●	●	16	12	9.3	150	24	11	3.3	0°	-6°	0.4				
A16Q-SDUCR/L07-D200	●	●	20	16	11.3	180	32	15	3.3	0°	-5°	0.4		CSTB-2.5		
A20R-SDUCR/L11-D270	●	●	27	20	16.1	200	36	18	6.1	0°	-5°	0.8	DC□□11T3	CSTB-4S	T-15F	3.0
A25S-SDUCR/L11-D320	●	●	32	25	18.6	250	45	23	6.1	0°	-4°	0.8				

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L_1	L_2	h	f_2	θ	a	Std. corner radius r_ε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
E10H-SDUCR/L07-D130	●		13	10	7	100	25	9	1.9	5°	-3.5°	0.4	DC□□0702	CSTB-2.5S	T-8F	1.2
E10M-SDUCR/L07-D130	●	●	13	10	7	150	25	9	2.0	0°	-10°	0.4				
E12J-SDUCR/L07-D160	●		16	12	9.3	110	27	11	3.2	0°	-6°	0.4				
E12Q-SDUCR/L07-D160	●	●	16	12	9.3	180	27	11	3.3	0°	-6°	0.4				
E16L-SDUCR/L07-D200	●		20	16	11.3	130	32	15	3.2	0°	-5°	0.4				
E16R-SDUCR/L07-D200	●	●	20	16	11.3	200	32	15	3.3	0°	-5°	0.4		CSTB-2.5		
E20S-SDUCR/L11-D270	●		27	20	16.1	250	36	18	6.1	0°	-5°	0.8	DC□□11T3	CSTB-4S	T-15F	3.0

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SDUCL type), and the left hand insert (L) is used for the right hand toolholders (SDUCR type).

● : Stocked items.

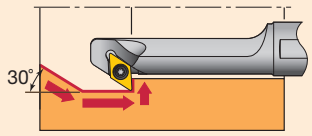
SDZCR/L

Min. bore dia. ø14 mm~

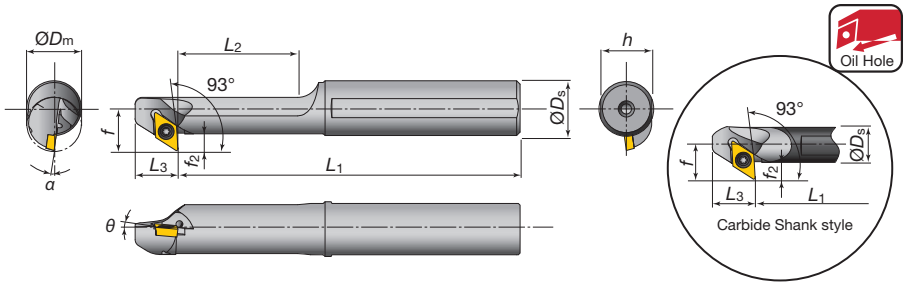
Shank dia. ø12~25 mm

Steel Shank | Carbide Shank

Internal retracting



Cutting edge style **Z**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	ØDs	f	L1	L2	L3	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
A12M-SDZCR/L07-D140	●	●	14	12	10.5	150	30	12.5	11	4.5	0°	-9°	0.4	DC□□0702	CSTB-2.5	T-8F	1.2
A16Q-SDZCR/L07-D160	●	●	16	16	12.5	180	35	12.5	15	4.5	0°	-8°	0.4				
A20R-SDZCR/L11-D200	●	●	20	20	15.5	200	40	15	18	5.5	0°	-8°	0.8	DC□□11T3	CSTB-4S	T-15F	3.0
A25S-SDZCR/L11-D250	●	●	25	25	18	250	50	15	23	5.5	0°	-6°	0.8				

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	ØDs	f	L1	L2	L3	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
E12Q-SDZCR/L07-D180	●	●	18	12	10.5	180	-	12.5	11	4.5	0°	-8°	0.4	DC□□0702	CSTB-2.5	T-8F	1.2
E16R-SDZCR/L07-D220	●	●	22	16	12.5	200	-	12.5	15	4.5	0°	-6°	0.4				

When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (SDZCR □□ type), and the left hand insert (L) is used for the left hand toolholders (SDZCL □□ type).

Basic Selection Chipbreakers DC□□11T3□□-□□

	Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
P Steel	Grade	SH730	AH725	T9115	T9125
	Page	2-108	2-105	2-106	2-109
	Chipbreaker	JS	PSF	PS	PM
Continuous	Vc (m/min)	120 (50-180)	120 (50-180)	180 (120-250)	180 (120-250)
	ap (mm)	1.5 (0.1-3.0)	0.3 (0.1-0.5)	3.0 (0.5-2.5)	2.0 (1.0-3.0)
	f (mm/rev)	0.06 (0.02-0.1)	0.12 (0.08-0.2)	0.15 (0.08-0.3)	0.25 (0.07-0.3)
	rε (mm)	0.2	0.4	0.8	0.8

	Operation	Precision finishing	Finishing	Finishing to light cutting	Medium cutting
M Stainless	Grade	GH330	AH725	AH725	T6130
	Page	2-105	2-105	2-106	2-109
	Chipbreaker	W15	PSF	PSS	PM
Continuous	Vc (m/min)	120 (100-150)	120 (50-150)	120 (50-150)	120 (70-150)
	ap (mm)	0.5 (0.05-2.0)	0.3 (0.1-0.5)	1.2 (0.3-2.0)	2.0 (1.0-3.0)
	f (mm/rev)	0.1 (0.03-0.15)	0.12 (0.08-0.2)	0.15 (0.08-0.3)	0.25 (0.07-0.3)
	rε (mm)	0.4	0.4	0.8	0.8

	Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
K Cast Iron	Grade	BX930	TH10	T5115	T5115
	Page	3-14	2-105	2-106	2-110
	Chipbreaker	T-CBN	W15	CM	No chipbreaker
Continuous	Vc (m/min)	700 (300-1200)	70 (30-100)	270 (140-400)	270 (140-400)
	ap (mm)	0.3 (0.05-0.5)	0.5 (0.5-2.0)	1.0 (0.05-2.0)	1.0 (0.05-2.0)
	f (mm/rev)	0.1 (0.05-0.2)	0.1 (0.0.3-0.15)	0.2 (0.05-0.3)	0.2 (0.05-0.3)
	rε (mm)	0.4	0.4	0.8	0.8

	Operation	Precision finishing	Finishing	Finishing
N Non-ferrous	Grade	DX120	TH10	KF05F
	Page	3-22	2-105	2-106
	Chipbreaker	T-DIA With chipbreaker	W15	AL
Continuous	Vc (m/min)	1500 (500-2500)	600 (100-1000)	400 (200-1500)
	ap (mm)	0.1 (0.03-0.5)	1.0 (0.5-2.0)	2.0 (1.0-5.0)
	f (mm/rev)	0.1 (0.05-0.2)	0.1 (0.03-0.15)	0.3 (0.2-0.5)
	rε (mm)	0.4	0.4	0.8

	Operation	Precision finishing	Finishing
S Superalloys	Grade	BX470	BX950
	Page	3-12	3-14
	Chipbreaker	T-CBN	T-CBN
Continuous	Vc (m/min)	200 (100-280)	200 (70-300)
	ap (mm)	0.1 (0.05-0.5)	0.3 (0.1-0.5)
	f (mm/rev)	0.1 (0.05-0.3)	0.1 (0.05-0.3)
	rε (mm)	0.4	0.4

	Operation	Precision finishing	Finishing
H Hard Materials	Grade	BXM10	BXM20
	Page	3-12	3-12
	Chipbreaker	T-CBN	T-CBN
Continuous	Vc (m/min)	200 (150-350)	150 (70-220)
	ap (mm)	0.1 (0.05-0.30)	0.2 (0.05-0.30)
	f (mm/rev)	0.1 (0.03-0.18)	0.1 (0.05-0.25)
	rε (mm)	0.4	0.4

For other machining types, see "Selection System"
2-16~

● : Stocked items.

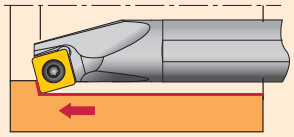
SSKPR/L

Min. bore dia. ø20 mm~

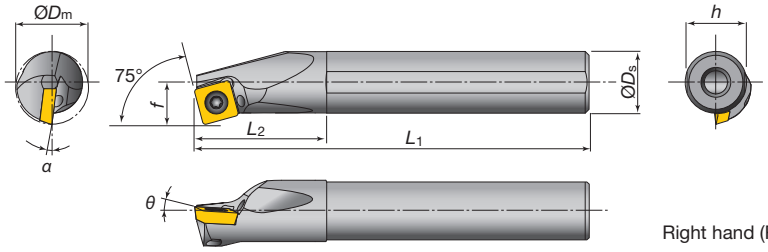
Shank dia. ø16~25 mm

Steel Shank

Through boring



Cutting edge style **K**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
A16Q-SSKPR/L09-D200	●		20	16	11	180	32	15	-	+5°	-6°	0.8	SP□□0903	CSTB-4L060	T-15F	3.0
A20R-SSKPR/L09-D240	●		24	20	13	200	36	18	-	+5°	-2°	0.8				
A25S-SSKPR/L12-D310	●		31	25	17	250	45	23	-	+5°	-2°	0.8	SP□□1204	CSTB-5S	T-20F	6.0

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SSKPL □□ type), and the left hand insert (L) is used for the right hand toolholders (SSKPR □□ type).

Basic Selection Chipbreakers SP□□0903□□-□□

	Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
P Steel	Grade	**NS530**	**GT730**	**T9115**	**T9125**
	Page	2-114	2-114	2-114	2-114
	Chipbreaker	W15	PS	PS	PS
Continuous	*Vc* (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**180** (120-250)
	ap (mm)	**0.5** (0.05-2.0)	**1.5** (0.5-2.5)	**1.5** (0.5-2.5)	**1.5** (0.5-3.0)
	f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.15** (0.08-0.3)	**0.15** (0.08-0.3)
	rε (mm)	0.4	0.4	0.8	0.8

	Operation	Finishing	Finishing to medium cutting
M Stainless	Grade	**T6120**	**T6130**
	Page	2-114	2-114
	Chipbreaker	PS	PS
Continuous	*Vc* (m/min)	**150** (100-200)	**120** (70-150)
	ap (mm)	**1.5** (0.5-2.5)	**1.5** (0.5-2.5)
	f (mm/rev)	**0.15** (0.08-0.3)	**0.15** (0.08-0.3)
	rε (mm)	0.4	0.4

	Operation	Finishing	Finishing to medium cutting	Medium cutting
K Cast Iron	Grade	**TH10**	**T5115**	**T5115**
	Page	2-114	2-114	2-115
	Chipbreaker	W15	CM	No chipbreaker
Continuous	*Vc* (m/min)	**70** (30-100)	**270** (140-400)	**270** (140-400)
	ap (mm)	**0.5** (0.05-2.0)	**1.0** (0.05-2.0)	**1.0** (0.05-2.0)
	f (mm/rev)	**0.1** (0.03-0.15)	**0.2** (0.05-0.3)	**0.2** (0.05-0.3)
	rε (mm)	0.4	0.8	0.8

For other machining types, see “Selection System”
2-16~

● : Stocked items.

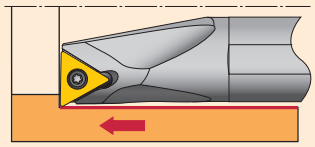
STFCR/L

Min. bore dia. ø10 mm~

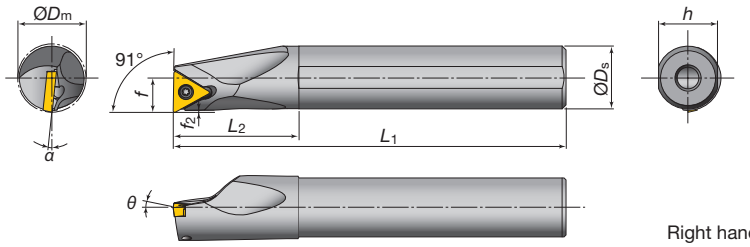
Shank dia. ø8~25 mm

Steel Shank | Carbide Shank

Blind hole boring



Cutting edge style **F**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius	Applicable inserts	Parts		Torque
	R	L	ØDm	ØDs	f	L_1	L_2	h	f_2	θ	a	r_ε		Clamping screw	Wrench	(N·m)
A08H-STFCR/L09-D100			10	8	5.5	100	16	7.5	0.6	0°	-12°	0.4	TC□□0902	CSTB-2.2S	T-7F	0.9
A10K-STFCR/L09-D120			12	10	6.5	125	20	9	0.6	0°	-10°	0.4				
A10K-STFCR/L1102-D120			12	10	6.5	125	20	9	0.6	0°	-10°	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
A10K-STFCR/L1103-D120	●	●	12	10	6.5	125	20	9	0.6	0°	-13°	0.4	TC□□1103	CSTB-2.5	T-8F	1.2
A12M-STFCR/L09-D140			14	12	7	150	24	11	0.5	0°	-8°	0.4	TC□□0902	CSTB-2.2	T-7F	0.9
A12M-STFCR/L1102-D140			14	12	7	150	24	11	0.5	0°	-8°	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
A12M-STFCR/L1103-D140	●	●	14	12	7	150	24	11	0.5	0°	-10°	0.4	TC□□1103	CSTB-2.5	T-8F	1.2
A16Q-STFCR/L09-D180			18	16	9	180	32	15	0.6	0°	-6°	0.4	TC□□0902	CSTB-2.2	T-7F	0.9
A16Q-STFCR/L1102-D180			18	16	9	180	32	15	0.6	0°	-6°	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
A16Q-STFCR/L1103-D180	●	●	18	16	9	180	32	15	0.5	0°	-7°	0.4	TC□□1103	CSTB-2.5	T-8F	1.2
A20R-STFCR/L1102-D220			22	20	11	200	36	18	0.5	0°	-4°	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
A20R-STFCR/L16-D220			22	20	11	200	36	18	0.4	0°	-7°	0.8	TC□□16T3	CSTB-4M	T-15F	3.0
A25S-STFCR/L16-D270			27	25	13.5	250	45	23	0.4	0°	-5°	0.8				

Carbide Shank

Toolholder Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius	Applicable inserts	Parts		Torque
	R	L	ØDm	ØDs	f	L_1	L_2	h	f_2	θ	a	r_ε		Clamping screw	Wrench	(N·m)
E08K-STFCR/L09-D100			10	8	5.5	125	22	7.5	0.6	0°	-12°	0.4	TC□□0902	CSTB-2.2S	T-7F	0.9
E10M-STFCR/L09-D120			12	10	6.5	150	25	9	0.6	0°	-10°	0.4				
E10M-STFCR/L1102-D120			12	10	6.5	150	25	9	0.6	0°	-10°	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
E10M-STFCR/L1103-D120	●	●	12	10	6.5	150	25	9	0.7	0°	-13°	0.4	TC□□1103	CSTB-2.5	T-8F	1.2
E12Q-STFCR/L09-D140			14	12	7	180	27	11	0.6	0°	-8°	0.4	TC□□0902	CSTB-2.2	T-7F	0.9
E12Q-STFCR/L1102-D140			14	12	7	180	27	11	0.6	0°	-8°	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
E12Q-STFCR/L1103-D140	●	●	14	12	7	180	27	11	0.5	0°	-10°	0.4	TC□□1103	CSTB-2.5	T-8F	1.2
E16R-STFCR/L09-D180			18	16	9	200	32	15	0.6	0°	-6°	0.4	TC□□0902	CSTB-2.2	T-7F	0.9
E16R-STFCR/L1102-D180			18	16	9	200	32	15	0.6	0°	-6°	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
E16R-STFCR/L1103-D180	●	●	18	16	9	200	32	15	0.5	0°	-7°	0.4	TC□□1103	CSTB-2.5	T-8F	1.2
E20S-STFCR/L1102-D220			22	20	11	250	36	18	0.6	0°	-4°	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
E20S-STFCR/L16-D220			22	20	11	250	36	18	0.6	0°	-7°	0.8	TC□□16T3	CSTB-4M	T-15F	3.0
E25T-STFCR/L16-D270			27	25	13.5	300	45	23	0.5	0°	-5°	0.8				

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (STFCL □□ type), and the left hand insert (L) is used for the right hand toolholders (STFCR □□ type).

Basic Selection Chipbreakers TC□□1102□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	SH730	AH725	T9115	T9125
Page	2-120	2-118	2-119	2-122
Chipbreaker	JS	PSF	PS	PM
Vc (m/min)	**120** (50-180)	**120** (50-180)	**220** (150-300)	**180** (120-250)
ap (mm)	**1.5** (0.1-3.0)	**0.3** (0.1-0.5)	**1.5** (0.5-2.5)	**2.0** (1.0-3.0)
f (mm/rev)	**0.06** (0.02-0.1)	**0.12** (0.08-0.2)	**0.15** (0.08-0.3)	**0.25** (0.07-0.3)
r_ε (mm)	0.2	0.4	0.8	0.8

M Stainless — Continuous

Operation	Finishing	Finishing to light cutting	Medium cutting
Grade	AH725	AH725	T6130
Page	2-118	2-118	2-122
Chipbreaker	PSF	PSS	PM
Vc (m/min)	**120** (50-150)	**120** (50-150)	**120** (70-150)
ap (mm)	**0.3** (0.1-0.5)	**1.2** (0.3-2.0)	**1.5** (1.0-3.0)
f (mm/rev)	**0.12** (0.08-0.2)	**0.15** (0.08-0.3)	**0.25** (0.07-0.3)
r_ε (mm)	0.4	0.8	0.8

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing to medium cutting
Grade	DX120	KS05F
Page	3-22	2-120
Chipbreaker	T-DIA With chipbreaker	AL
Vc (m/min)	**1500** (500-2500)	**400** (200-1500)
ap (mm)	**0.3** (0.03-0.5)	**2.0** (1.0-5.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.3** (0.2-0.5)
r_ε (mm)	0.4	0.8

For other machining types, see "Selection System"

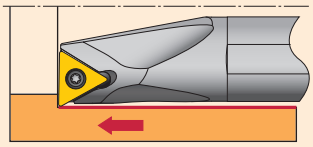
2-16~

● : Stocked items.

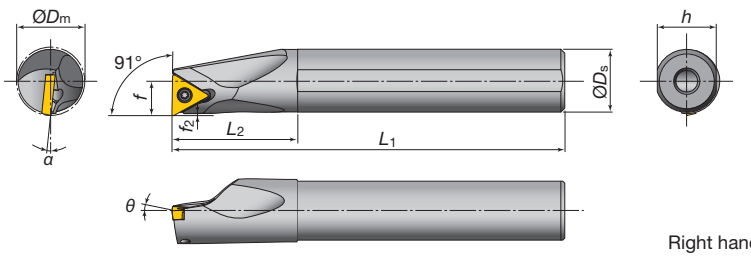
STFPR/L

Min. bore dia. ø10 mm~ | Shank dia. ø8~25 mm | Steel Shank | Carbide Shank

Blind hole boring



Cutting edge style **F**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius	Applicable inserts	Parts		Torque (N·m)
	R	L	ØDm	ØDs	f	L_1	L_2	h	f_2	θ	a	r_ε		Clamping screw	Wrench	
A08H-STFPR/L09-D100	●	●	10	8	5.5	100	16	7.5	0.7	+5°	-8°	0.4	TP□□0902*	CSTB-2.2S	T-7F	0.9
A10K-STFPR/L1102-D120	●	●	12	10	6.5	125	20	9	0.7	+5°	-6°	0.4	TP□□1102*	CSTB-2.5B	T-8F	1.2
A10K-STFPR/L1103-D120			12	10	6.5	125	20	9	0.7	+5°	-7°	0.4	TP□□1103*	CSTB-3L050	T-9F	1.4
A12M-STFPR/L1102-D140	●	●	14	12	7	150	24	11	0.6	+5°	-4°	0.4	TP□□1102*	CSTB-2.5	T-8F	1.2
A12M-STFPR/L1103-D140			14	12	7	150	24	11	0.6	+5°	-4°	0.4	TP□□1103*	CSTB-3S	T-9F	1.4
A16Q-STFPR/L1103-D180			18	16	9	180	32	15	0.7	+5°	-2°	0.4				
A16Q-STFPR/L13-D180	●	●	18	16	9	180	32	15	0.7	+5°	-2°	0.4	TP□□1303*	CSTB-3S	T-9F	1.4
A20R-STFPR/L13-D220	●		22	20	11	200	36	18	0.8	+5°	-2°	0.4		CSTB-3		
A25S-STFPR/L16-D270	●		27	25	13.5	250	45	23	0.6	+5°	-1°	0.4	TP□□16T3*	CSTB-4M	T-15F	3.0

Carbide Shank

Toolholder Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius	Applicable inserts	Parts		Torque (N·m)
	R	L	ØDm	ØDs	f	L_1	L_2	h	f_2	θ	a	r_ε		Clamping screw	Wrench	
E08K-STFPR/L09-D100	●	●	10	8	5.5	125	22	7.5	0.7	+5°	-8°	0.4	TP□□0902*	CSTB-2.2S	T-7F	0.9
E10M-STFPR/L1102-D120	●	●	12	10	6.5	150	25	9	0.7	+5°	-6°	0.4	TP□□1102*	CSTB-2.5B	T-8F	1.2
E10M-STFPR/L1103-D120			12	10	6.5	150	25	9	0.7	+5°	-7°	0.4	TP□□1103*	CSTB-3L050	T-9F	1.4
E12Q-STFPR/L1102-D140	●	●	14	12	7	180	27	11	0.6	+5°	-4°	0.4	TP□□1102*	CSTB-2.5	T-8F	1.2
E12Q-STFPR/L1103-D140			14	12	7	180	27	11	0.6	+5°	-4°	0.4	TP□□1103*	CSTB-3S	T-9F	1.4
E16R-STFPR/L1103-D180			18	16	9	200	32	15	0.7	+5°	-2°	0.4				
E16R-STFPR/L13-D180	●		18	16	9	200	32	15	0.7	+5°	-2°	0.4	TP□□1303*	CSTB-3S	T-9F	1.4
E20S-STFPR/L13-D220	●		22	20	11	250	36	18	0.8	+5°	-2°	0.4		CSTB-3		

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (STFPL □□ type), and the left hand insert (L) is used for the right hand toolholders (STFPR □□ type).
* Inserts of TPGH, TPGM and TPGA are not applicable.

Basic Selection Chipbreakers TP□□1102□□-□□

	Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
P Steel	Grade	NS730	AH725	T9115	T9125
	Page	2-123	2-123	2-126	2-128
	Chipbreaker	01	PSF	PS	PM
Continuous	Vc (m/min)	**200** (150-250)	**120** (50-180)	**180** (120-250)	**180** (120-250)
	ap (mm)	**0.5** (0.05-0.5)	**0.3** (0.1-0.5)	**3.0** (0.5-2.5)	**2.0** (1.0-3.0)
	f (mm/rev)	**0.1** (0.03-0.15)	**0.12** (0.08-0.2)	**0.15** (0.08-0.3)	**0.25** (0.07-0.3)
	r_ε (mm)	0.4	0.4	0.8	0.8

	Operation	Precision finishing	Finishing	Finishing to light cutting	Medium cutting
M Stainless	Grade	GH330	AH725	AH725	T6130
	Page	2-124	2-123	2-125	2-128
	Chipbreaker	W15	PSF	PSS	PM
Continuous	Vc (m/min)	**120** (100-150)	**120** (50-150)	**120** (50-150)	**120** (70-150)
	ap (mm)	**0.5** (0.05-2.0)	**0.3** (0.1-0.5)	**1.2** (0.3-2.0)	**2.0** (1.0-3.0)
	f (mm/rev)	**0.1** (0.03-0.15)	**0.12** (0.08-0.2)	**0.15** (0.08-0.3)	**0.25** (0.07-0.3)
	r_ε (mm)	0.4	0.4	0.8	0.8

	Operation	Precision finishing	Finishing to medium cutting	Medium cutting
K Cast Iron	Grade	BX930	T5115	T5115
	Page	3-14	2-126	2-128
	Chipbreaker	T-CBN	CM	No chipbreaker
Continuous	Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (140-400)
	ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.05-2.0)	**1.0** (0.05-2.0)
	f (mm/rev)	**0.1** (0.05-0.2)	**0.2** (0.05-0.3)	**0.2** (0.05-0.3)
	r_ε (mm)	0.4	0.8	0.8

	Operation	Precision finishing	Finishing
N Non-ferrous	Grade	DX140	GH110
	Page	3-22	2-124
	Chipbreaker	T-DIA	W15
Continuous	Vc (m/min)	**1500** (500-2500)	**600** (100-1000)
	ap (mm)	**0.5** (0.05-1.0)	**1.0** (0.5-2.0)
	f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.0.3-0.15)
	r_ε (mm)	0.4	0.4

	Operation	Precision finishing	Finishing
S Superalloys	Grade	BX470	BX950
	Page	3-12	3-14
	Chipbreaker	T-CBN	T-CBN
Continuous	Vc (m/min)	**200** (100-280)	**200** (70-300)
	ap (mm)	**0.1** (0.05-0.5)	**0.3** (0.1-0.5)
	f (mm/rev)	**0.1** (0.05-0.3)	**0.1** (0.05-0.3)
	r_ε (mm)	0.4	0.4

	Operation	Precision finishing	Finishing
H Hard Materials	Grade	BXM10	BXM20
	Page	3-12	3-12
	Chipbreaker	T-CBN	T-CBN
Continuous	Vc (m/min)	**200** (150-350)	**150** (70-220)
	ap (mm)	**0.1** (0.05-0.3)	**0.2** (0.05-0.3)
	f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
	r_ε (mm)	0.4	0.4

● : Stocked items.

For other machining types, see “Selection System”

2-16~

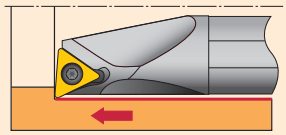
STUPR/L

Min. bore dia. ø8 mm~

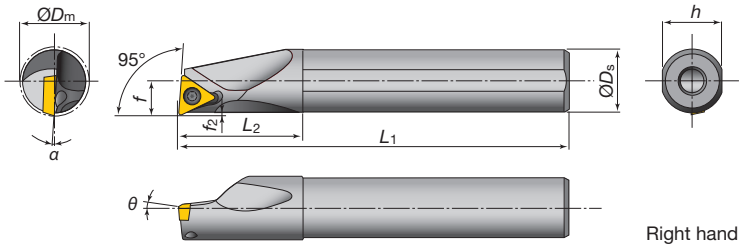
Shank dia. ø7~32 mm

Steel Shank | Carbide Shank

Boring



Cutting edge style **U**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L_1	L_2	h	f_2	θ	α	Std. corner radius r_ε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
MINI A07G-STUPR/L07-D080	●	●	8	7	4	90	12	6.75	0.4	+5°	-10°	0.4	TPOO0701	CSTB-2.2L038	T-7F	0.9
A08H-STUPR/L07-D080	●	●	8	8	4	100	19.5	7.5	0.5	+5°	-10°	0.4	TPOO0701	CSTB-2.2L038	T-7F	0.9
A08H-STUPR/L09-D100	●	●	10	8	5.5	100	16	7.5	0.6	+5°	-8°	0.4	TPOO0902*	CSTB-2.2L038	T-7F	0.9
A10F-STUPR/L1102-D120	●		12	10	6.5	80	20	9	1.4	+5°	-6°	0.4	TPOO1102*	CSTB-2.5S	T-8F	1.2
A10K-STUPR/L1102-D120	●	●	12	10	6.5	125	20	9	0.7	+5°	-6°	0.4				
A10K-STUPR/L1103-D120	●	●	12	10	6.5	125	20	9	0.6	+5°	-10°	0.4	TPOO1103*	CSTB-3L050	T-9F	1.4
A12H-STUPR/L1102-D140	●		14	12	7	100	24	11	0.9	+5°	-4°	0.4	TPOO1102*	CSTB-2.5B	T-8F	1.2
A12M-STUPR/L1102-D140	●	●	14	12	7	150	24	11	0.7	+5°	-4°	0.4				
A12M-STUPR/L1103-D140	●	●	14	12	7	150	24	11	0.6	+5°	-6°	0.4	TPOO1103*	CSTB-3L050	T-9F	1.4
A12H-STUPR/L1102-D160	●		16	12	9	100	24	11	0.6	+5°	-3°	0.4	TPOO1102*	CSTB-2.5B	T-8F	1.2
A12M-STUPR/L1102-D160	●	●	16	12	9	150	24	11	0.6	+5°	-3°	0.4				
A16K-STUPR/L13-D180	●		18	16	9	125	32	15	0.9	+5°	-3°	0.4	TPOO1303*	CSTB-3S	T-9F	1.4
A16Q-STUPR/L1103-D180	●	●	18	16	9	180	32	15	0.8	+5°	-4°	0.4	TPOO1103*	CSTB-3S	T-9F	1.4
A16Q-STUPR/L13-D180	●	●	18	16	9	180	32	15	0.6	+5°	-3°	0.4	TPOO1303*	CSTB-3S	T-9F	1.4
A16K-STUPR/L13-D200	●		20	16	11	125	32	15	0.6	+5°	-3°	0.4	TPOO1303*	CSTB-3S	T-9F	1.4
A16Q-STUPR/L13-D200	●	●	20	16	11	180	32	15	0.6	+5°	-3°	0.4				
A20R-STUPR/L1103-D220	●	●	22	20	11	200	36	18	0.7	+5°	-2°	0.4	TPOO1103*			
A20R-STUPR/L13-D220	●	●	22	20	11	200	36	18	0.7	+5°	-2°	0.4	TPOO1303*	CSTB-3	T-9F	1.4
A25S-STUPR/L16-D270	●	●	27	25	13.5	250	45	23	0.5	+5°	-1°	0.8	TPOO16T3*	CSTB-4M	T-15F	3.0
A32T-STUPR/L16-D340	●	●	34	32	17	300	50	30	0.7	+5°	0°	0.8				

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L_1	L_2	h	f_2	θ	α	Std. corner radius r_ε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
MINI E07H-STUPR/L07-D080	●	●	8	7	4	100	14	6.75	0.3	+5°	-10°	0.4	TPOO0701	CSTB-2.2L038	T-7F	0.9
E08G-STUPR/L07-D080	●		8	8	4	90	44.5	7.5	0.5	+5°	-10°	0.4	TPOO0701	CSTB-2.2L038	T-7F	0.9
E08K-STUPR/L07-D080	●	●	8	8	4	125	44.5	7.5	0.5	+5°	-10°	0.4				
E08G-STUPR/L09-D100	●		10	8	5.5	90	22	7	0.6	+5°	-8°	0.4	TPOO0902*	CSTB-2.2L038	T-7F	0.9
E08K-STUPR/L09-D100	●	●	10	8	5.5	125	22	7	0.6	+5°	-8°	0.4				
E10F-STUPR/L1102-D120	●		12	10	6.5	80	25	9	0.5	+5°	-6°	0.4	TPOO1102*	CSTB-2.5S	T-8F	1.2
E10H-STUPR/L1102-D120	●		12	10	6.5	100	25	9	0.6	+5°	-6°	0.4				
E10M-STUPR/L1102-D120	●	●	12	10	6.5	150	25	9	0.6	+5°	-6°	0.4				
E10M-STUPR/L1103-D120	●	●	12	10	6.5	150	25	9	0.7	+5°	-10°	0.4	TPOO1103*	CSTB-3L050	T-9F	1.4
E12G-STUPR/L1102-D140	●		14	12	7	90	27	11	0.9	+5°	-4°	0.4	TPOO1102*	CSTB-2.5S	T-8F	1.2
E12J-STUPR/L1102-D140	●		14	12	7	110	27	11	0.6	+5°	-4°	0.4		CSTB-2.5B	T-8F	1.2
E12Q-STUPR/L1102-D140	●	●	14	12	7	180	27	11	0.6	+5°	-4°	0.4				
E12Q-STUPR/L1103-D140	●	●	14	12	7	180	27	11	0.7	+5°	-6°	0.4	TPOO1103*	CSTB-3L050	T-9F	1.4
E12G-STUPR/L1102-D160	●		16	12	9	90	27	11	0.6	+5°	-3°	0.4	TPOO1102*	CSTB-2.5B	T-8F	1.2
E12J-STUPR/L1102-D160	●		16	12	9	110	27	11	0.6	+5°	-3°	0.4				
E12Q-STUPR/L1102-D160	●	●	16	12	9	180	27	11	0.6	+5°	-3°	0.4				
E16H-STUPR/L13-D180	●		18	16	9	100	32	15	0.9	+5°	-3°	0.4	TPOO1303*	CSTB-3S	T-9F	1.4
E16R-STUPR/L1103-D180	●	●	18	16	9	200	32	15	0.8	+5°	-4°	0.4	TPOO1103*	CSTB-3S	T-9F	1.4
E16L-STUPR/L13-D180	●		18	16	9	130	32	15	0.6	+5°	-3°	0.4	TPOO1303*	CSTB-3S	T-9F	1.4
E16R-STUPR/L13-D180	●	●	18	16	9	200	32	15	0.6	+5°	-3°	0.4				
E16H-STUPR/L13-D200	●		20	16	11	100	32	15	0.6	+5°	-3°	0.4				
E16L-STUPR/L13-D200	●		20	16	11	130	32	15	0.6	+5°	-3°	0.4				
E16R-STUPR/L13-D200	●	●	20	16	11	200	32	15	0.6	+5°	-3°	0.4				
E20S-STUPR/L1103-D220	●		22	20	11	250	36	18	0.7	+5°	-2°	0.4	TPOO1103*	CSTB-3S	T-9F	1.4
E20S-STUPR/L13-D220	●		22	20	11	250	36	18	0.6	+5°	-2°	0.4	TPOO1303*	CSTB-3	T-9F	1.4
E25T-STUPR/L16-D270	●		27	25	13.5	300	45	23	0.5	+5°	-1°	0.8	TPOO16T3*	CSTB-4M	T-15F	3.0

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (STUPL □□ type), and the left hand insert (L) is used for the right hand toolholders (STUPR □□ type).

* Inserts of TPGH, TPGM and TPGA are not applicable.

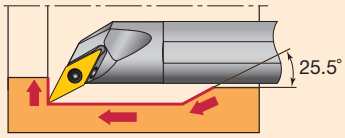
● : Stocked items.

STREAMJETBAR S-type SVQBR/L

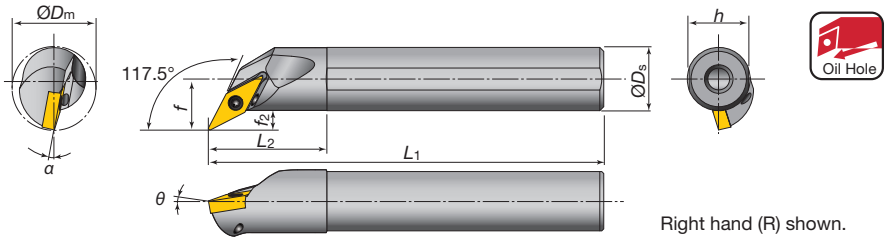
Positive rake / Screw-on system

Min. bore dia. ø17 mm~ | Shank dia. ø12~25 mm | Steel Shank | Carbide Shank

Boring & internal profiling



Cutting edge style **F**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
A12M-SVQBR/L11-D170	●	●	17	12	10.5	150	24	11	4.5	-5°	-10°	0.4	VB□□1103	CSTB-2.5	T-8F	1.2
A16Q-SVQBR/L11-D215	●	●	21.5	16	13	180	30	15	5	-5°	-8°	0.4				
A20R-SVQBR/L11-D255	●	●	25.5	20	15	200	36	18	5	-5°	-6°	0.4				
A25S-SVQBR/L16-D305	●	●	30.5	25	17.5	250	45	23	5	-5°	-8°	0.8	VB□□1604	CSTB-3.5	T-15F	3.0

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
E12Q-SVQBR/L11-D170	●	●	17	12	10.5	180	27	11	4.5	-5°	-10°	0.4	VB□□1103	CSTB-2.5	T-8F	1.2
E16R-SVQBR/L11-D215	●	●	21.5	16	13	200	32	15	5	-5°	-8°	0.4				
E20S-SVQBR/L11-D255	●	●	25.5	20	15	250	36	18	5	-5°	-6°	0.4				
E25T-SVQBR/L16-D305	●	●	30.5	25	17.5	300	45	23	5	-5°	-8°	0.8	VB□□1604	CSTB-3.5	T-15F	3.0

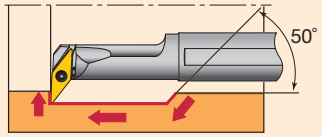
When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVQBL type), and the left hand insert (L) is used for the right hand toolholders (SVQBR type).

STREAMJETBAR S-type SVUBR/L

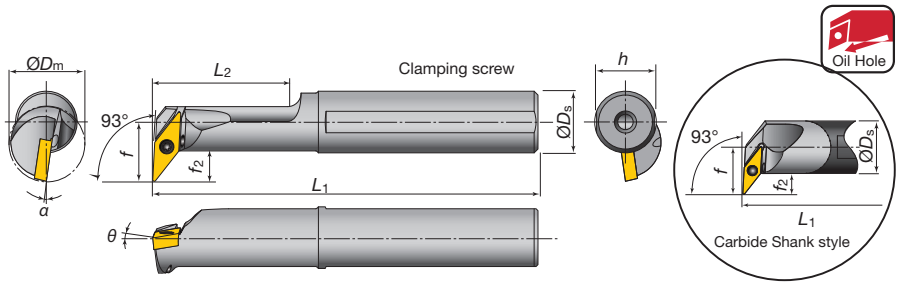
Positive rake / Screw-on system

Min. bore dia. ø20 mm~ | Shank dia. ø16~25 mm | Steel Shank | Carbide Shank

Boring & internal profiling



Cutting edge style **U**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
A16Q-SVUBR/L11-D200	●	●	20	16	15.5	180	35	15	8	0°	-8°	0.4	VB□□1103	CSTB-2.5	T-8F	1.2
A20R-SVUBR/L11-D250	●	●	25	20	17.5	200	40	19	8	0°	-7°	0.4				
A25S-SVUBR/L16-D320	●	●	32	25	20.5	250	50	23	8.5	0°	-6°	0.8	VB□□1604	CSTB-3.5	T-15F	3.0

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
E16R-SVUBR/L11-D245	●	●	24.5	16	16	200	-	15	8	0°	-8°	0.4	VB□□1103	CSTB-2.5	T-8F	1.2
E20S-SVUBR/L11-D285	●	●	28.5	20	18	250	-	19	8	0°	-7°	0.4				
E25T-SVUBR/L16-D340	●	●	34	25	21	300	-	23	8.5	0°	-6°	0.8	VB□□1604	CSTB-3.5	T-15F	3.0

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVUBL □□ type), and the left hand insert (L) is used for the right hand toolholders (SVUBR □□ type).

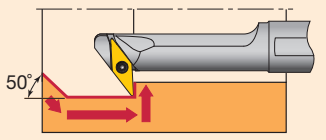
● : Stocked items.

STREAMJETBAR S-type SVZBR/L

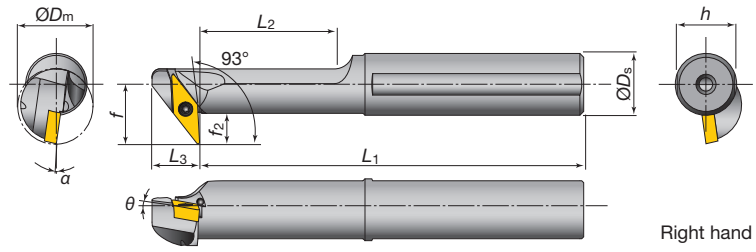
Positive rake / Screw-on system

Min. bore dia. ø20 mm~ | Shank dia. ø16~32 mm | Steel Shank

Internal retracting



Cutting edge style **Z**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	L3	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
A16Q-SVZBR/L11-D200	●	●	20	16	15.5	180	35	12.5	15	8	0°	-8°	0.4	VB□□1103	CSTB-2.5	T-8F	1.2
A20R-SVZBR/L11-D250	●	●	25	20	17.5	200	40	12.5	18	8	0°	-7°	0.4				
A25S-SVZBR/L16-D320	●	●	32	25	24	250	50	17.5	23	12	0°	-6°	0.8	VB□□1604	CSTB-3.5	T-15F	3.0
A32T-SVZBR/L16-D400	●	●	40	32	27.5	300	72	17.5	30	12	0°	-5°	0.8		CSTB-3.5L		

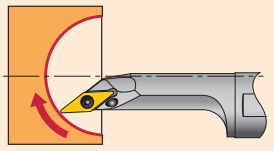
When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (SVZBR type), and the left hand insert (L) is used for the left hand toolholders (SVZBL type).hh

STREAMJETBAR S-type SVJBR/L

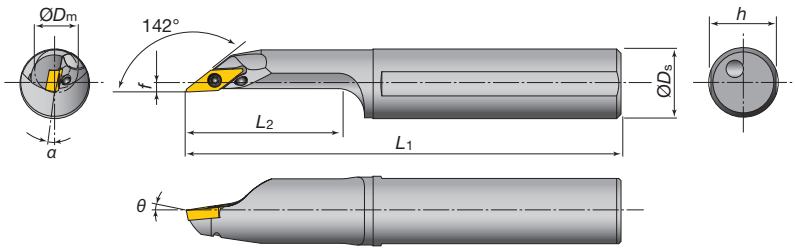
Positive rake / Screw-on system

Min. bore dia. ø25 mm~ | Shank dia. ø20~25 mm | Steel Shank

Internal sphere cutting



Cutting edge style **J**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
A20R-SVJBR/L11-D250	●	●	25	20	2	200	40	18	-	-5°	-5°	0.4	VB□□1103	CSTB-2.5	T-8F	1.2
A25S-SVJBR/L11-D300	●	●	30	25	3.5	250	50	23	-	-5°	-5°	0.4				

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVJBL type), and the left hand insert (L) is used for the right hand toolholders (SVJBR type).

How to use SVJC(B)R/L-type tools 5-24

Basic Selection Chipbreakers VB□□1103□□-□□

	Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
P Steel	Grade	SH730	AH725	T9115	T9125
	Page	2-134	2-133	2-133	2-133
	Chipbreaker	JS	PSF	PS	PSS
Continuous	Vc (m/min)	**120** (50-180)	**120** (50-180)	**220** (150-300)	**180** (120-150)
	ap (mm)	**1.5** (0.1-3.0)	**0.3** (0.1-0.5)	**1.5** (0.5-2.5)	**1.5** (0.5-3.0)
	f (mm/rev)	**0.06** (0.02-0.1)	**0.12** (0.08-0.2)	**0.15** (0.08-0.3)	**0.15** (0.08-0.3)
	rε (mm)	0.2	0.4	0.4	0.8

	Operation	Precision finishing	Finishing	Finishing to light cutting
M Stainless	Grade	J740	AH725	AH725
	Page	2-134	2-133	2-133
	Chipbreaker	FR/L-J10 (Sharp edges)	PSF	PSS
Continuous	Vc (m/min)	**50** (10-100)	**120** (50-150)	**120** (50-150)
	ap (mm)	**1.0** (0.5-2.0)	**0.3** (0.1-0.5)	**1.2** (0.3-2.0)
	f (mm/rev)	**0.03** (0.01-0.05)	**0.12**(0.08-0.2)	**0.15** (0.08-0.3)
	rε (mm)	0.2	0.4	0.8

	Operation	Precision finishing	Finishing	Finishing to medium cutting
K Cast Iron	Grade	BX930	TH10	T5115
	Page	3-14	2-134	2-133
	Chipbreaker	T-CBN	J10	CM
Continuous	Vc (m/min)	**700** (300-1200)	**70** (30-100)	**270** (140-400)
	ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**1.0** (0.05-2.0)
	f (mm/rev)	**0.1** (0.05-0.2)	**0.03** (0.01-0.05)	**0.2** (0.05-0.3)
	rε (mm)	0.4	0.4	0.8

	Operation	Precision finishing	Finishing
H Hard Materials	Grade	BXM10	BXM20
	Page	3-13	3-13
	Chipbreaker	T-CBN	T-CBN
Continuous	Vc (m/min)	**200** (150-350)	**150** (70-220)
	ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
	f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
	rε (mm)	0.4	0.4

For other machining types, see "Selection System"

2-16~

● : Stocked items.

STREAMJETBAR S-type SVQCR/L

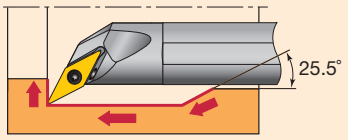
Positive rake / Screw-on system

Min. bore dia. ø13.5 mm~

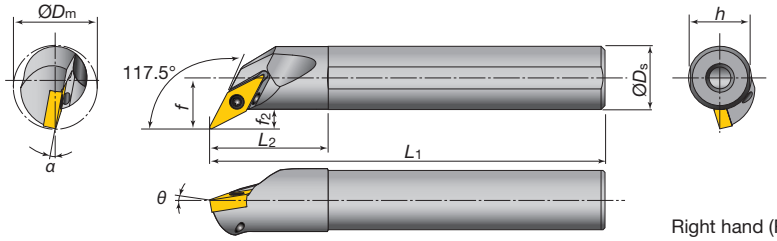
Shank dia. ø10~40 mm

Steel Shank | Carbide Shank

Boring & internal profiling



Cutting edge style **Q**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
A10K-SVQCR/L08-D135	●	●	13.5	10	8	125	20	9	3	-5°	-8°	0.4	VC□□0802	CSTB-2L	T-6F	0.6
A16Q-SVQCR/L11-D215	●	●	21.5	16	13	180	30	15	4.9	-5°	-8°	0.4	VC□□1103	CSTB-2.5	T-8F	1.2
A25S-SVQCR/L16-D320			32	25	17	250	45	23	4.5	0°	-5°	0.8	VC□□1604	CSTB-3.5	T-15F	3.0
A32T-SVQCR/L16-D400			40	32	22	300	50	23	6	0°	-3°	0.8				
A40U-SVQCR/L16-D500			50	40	27	350	60	23	7	0°	-1°	0.8				

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
E10M-SVQCR/L08-D135	●	●	13.5	10	8	150	25	9	3	-5°	-8°	0.4	VC□□0802	CSTB-2L	T-6F	0.6
E16R-SVQCR/L11-D215	●	●	21.5	16	13	200	32	15	4.9	-5°	-8°	0.4	VC□□1103	CSTB-2.5	T-8F	1.2

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVQCL □□ type), and the left hand insert (L) is used for the right hand toolholders (SVQCR □□ type).

STREAMJETBAR S-type SVUCR/L

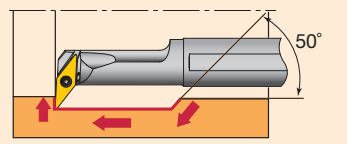
Positive rake / Screw-on system

Min. bore dia. ø16 mm~

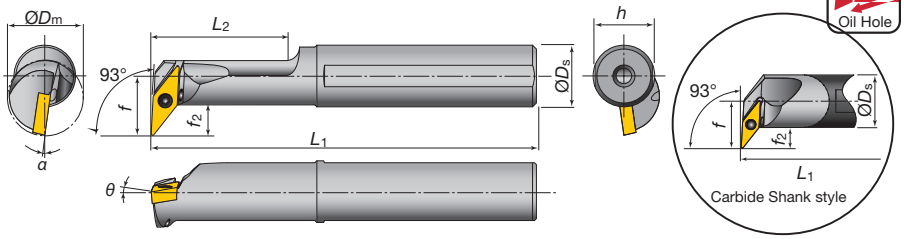
Shank dia. ø12~40 mm

Steel Shank | Carbide Shank

Boring & internal profiling



Cutting edge style **U**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
A12M-SVUCR/L08-D160	●	●	16	12	11	150	30	11	5.5	0°	-8°	0.4	VC□□0802	CSTB-2L	T-6F	0.6
A25S-SVUCR/L16-D320	●	●	32	25	19	250	45	23	6.5	0°	-5°	0.8	VC□□1604	CSTB-3.5	T-15F	3.0
A32T-SVUCR/L16-D400			40	32	22	300	50	30	6	0°	-3°	0.8		CSTB-3.5L		
A40U-SVUCR/L16-D500			50	40	27	350	60	37	7	0°	-1°	0.8				

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
E12Q-SVUCR/L08-D180	●	●	18	12	11.5	180	-	11	5.5	0°	-8°	0.4	VC□□0802	CSTB-2L	T-6F	0.6
E25T-SVUCR/L16-D320	●	●	32	25	19	300	-	23	6.5	0°	-5°	0.8	VC□□1604	CSTB-3.5	T-15F	3.0

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVUCL □□ type), and the left hand insert (L) is used for the right hand toolholders (SVUCR □□ type).

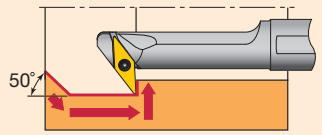
● : Stocked items.

STREAMJETBAR S-type SVZCR/L

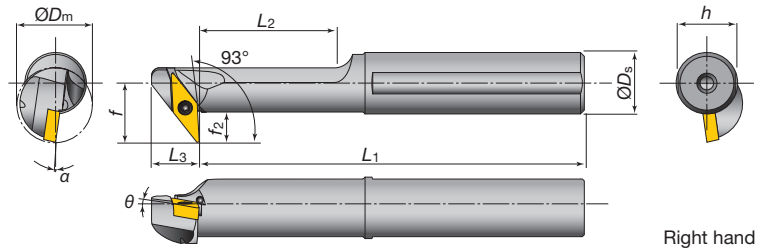
Positive rake / Screw-on system

Min. bore dia. ø16 mm | Shank dia. ø12 mm | Steel Shank

Internal retracting



Cutting edge style **Z**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	L3	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
A12M-SVZCR/L08-D160	●	●	16	12	11	150	30	10	11	5.5	0°	-8°	0.4	VC□□0802	CSTB-2L	T-6F	0.6

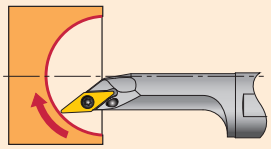
When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (SVZCR □□ type), and the left hand insert (L) is used for the left hand toolholders (SVZCL □□ type).

STREAMJETBAR S-type SVJCR/L

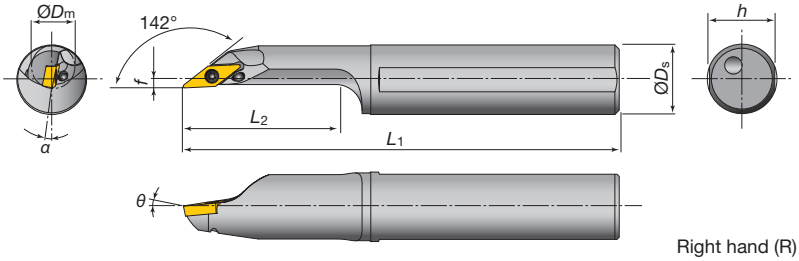
Positive rake / Screw-on system

Min. bore dia. ø16 mm~ | Shank dia. ø12~16 mm | Steel Shank

Internal sphere cutting



Cutting edge style **J**



Oil Hole

Right hand (R) shown.

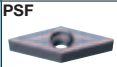
Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
A12M-SVJCR/L08-D160	●	●	16	12	2	150	28	11	-	-5°	-5°	0.4	VC□□0802	CSTB-2L	T-6F	0.6
A16Q-SVJCR/L08-D200	●	●	20	16	2	180	35	15	-	-5°	-5°	0.4				

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVJCL □□ type), and the left hand insert (L) is used for the right hand toolholders (SVJCR □□ type).

How to use SVJC(B)R/L-type tools 5-24

Basic Selection Chipbreakers VC□□0802□□-□□

	Operation	Finishing to medium cutting
P Steel	Grade	AH725
	Page	2-135
	Chipbreaker	PSF 
Continuous	Vc (m/min)	**120** (50-180)
	ap (mm)	**0.3** (0.1-0.5)
	f (mm/rev)	**0.12** (0.08-0.2)
	rε (mm)	0.4

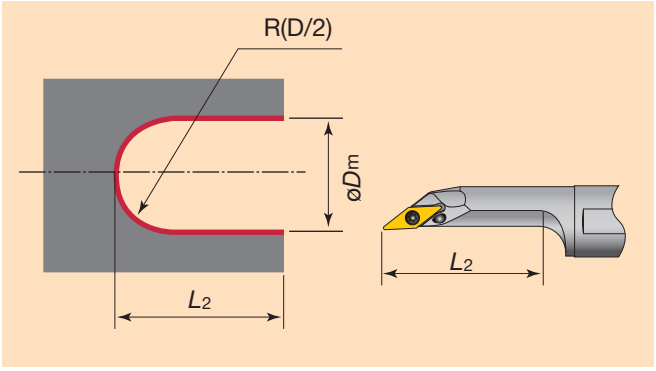
	Operation	Finishing to medium cutting
M Stainless	Grade	AH725
	Page	2-135
	Chipbreaker	PSF 
Continuous	Vc (m/min)	**120** (50-150)
	ap (mm)	**0.3** (0.1-0.5)
	f (mm/rev)	**0.12** (0.08-0.2)
	rε (mm)	0.4

● : Stocked items.

How to use SVJC(B)R/L-type tools

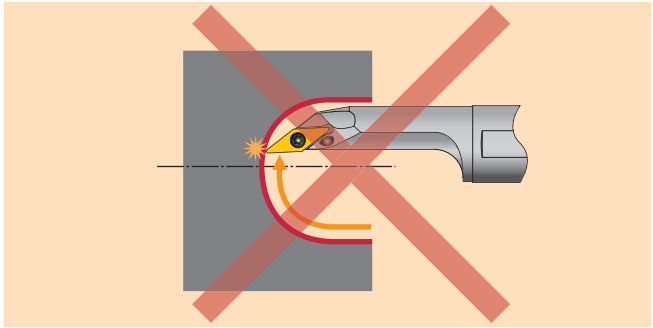
General machining information

The minimum machinable radius (R) of the internal sphere is 1/2 of the minimum bore diameter (øD_m).
The maximum machinable depth of the bore is within the L_2 size of the tool.

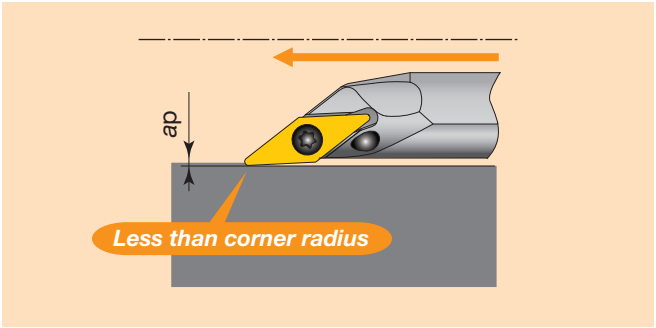


Cautionary points

To avoid insert breakage the tool point should not overrun the bore center.



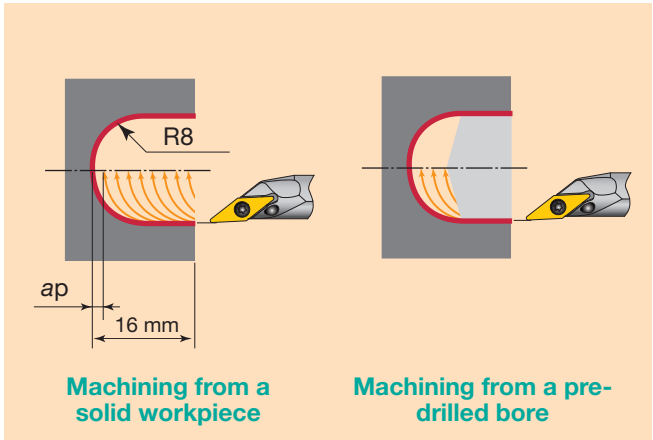
To avoid burr, the depth of cut should be within the corner radius.



Machining examples

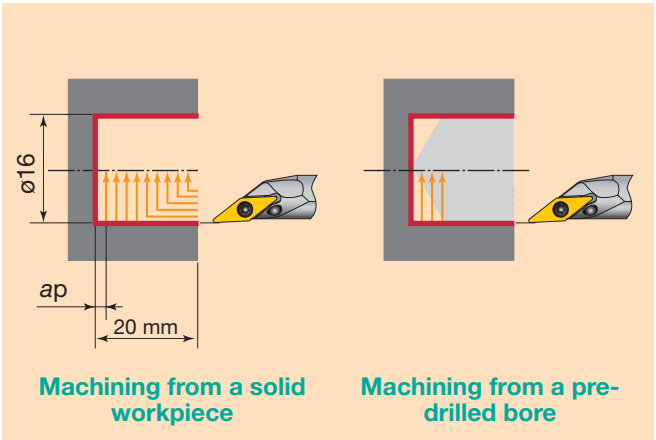
Machining of internal sphere

Work material : S45C
Toolholder : A12M-SVJCR08-D160
Insert : VCMT080204-PF (NS730)
Cutting speed : *Vc* = ~ 100 m/min
No of revs. : *n* = 3000 min^{-1} (constant)
Feed : *f* = 0.1 mm/rev
Depth of cut : *a*p = 0.5 mm



Machining of the bottom face of a bore

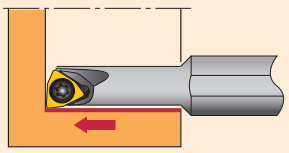
Work material : S45C
Toolholder : A12M-SVJCR08-D160
Insert : VCMT080204-PSF (T9115)
Cutting speed : *Vc* = ~ 100 m/min
No of revs. : *n* = 3000 min^{-1} (constant)
Feed : *f* = 0.1 mm/rev
: *f* = 0.05 mm/rev (only for plunging)
Depth of cut : *a*p = 0.5 mm



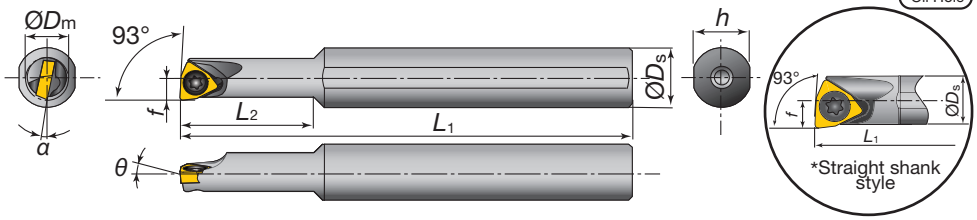
SWUBR/L

Min. bore dia. ø6 mm~ | Shank dia. ø5~8 mm | Steel Shank | Carbide Shank

Boring



Cutting edge style **U**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
MINI *A05F-SWUBR/L03-D060	●	●	6	5	3	80	9	4.8			-13°					
MINI *A06G-SWUBR/L03-D070	●	●	7	6	3.5	90	11	5.75	-	0°	-12°	0.4	WB□□0301	CSTB-2	T-6F	0.6
MINI *A07G-SWUBR/L03-D080	●	●	8	7	4	90	12	6.75			-11°					
A08H-SWUBR03-D060	●		6	8	3.1	100	18	7.5	-	0°	-12°	0.4	WB□□0301	CSTB-2	T-6F	0.6
A08H-SWUBR03-D070	●		7	8	3.6	100	20	7.5	-	0°	-12°	0.4				

Carbide Shank

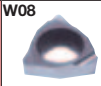
Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Clamping screw	Parts: Wrench	Torque (N·m)
MINI *E05G-SWUBR/L03-D060	●	●	6	5	3	90	10	4.8			-13°					
MINI *E06H-SWUBR/L03-D070	●	●	7	6	3.5	100	12	5.75	-	0°	-12°	0.4	WB□□0301	CSTB-2	T-6F	0.6
MINI *E07H-SWUBR/L03-D080	●	●	8	7	4	100	14	6.75			-11°					
E08K-SWUBR03-D060	●		6	8	3.1	125	30	7.5	-	0°	-12°	0.4	WB□□0301	CSTB-2	T-6F	0.6
E08K-SWUBR03-D070	●		7	8	3.6	125	40	7.5	-	0°	-12°	0.4				

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SWUBL □□ type), and the left hand insert (L) is used for the right hand toolholders (SWUBR □□ type).

Basic Selection Chipbreakers WB□□0301□□-□□

	Operation	Finishing
P Steel	Grade	SH730
	Page	2-132
	Chipbreaker	W08 
Continuous	Vc (m/min)	**100** (50-150)
	ap (mm)	**0.5** (0.05-1.0)
	f (mm/rev)	**0.06** (0.02-0.1)
	rε (mm)	0.2

	Operation	Finishing
M Stainless	Grade	SH730
	Page	2-132
	Chipbreaker	W08 
Continuous	Vc (m/min)	**100** (30-150)
	ap (mm)	**0.5** (0.05-1.0)
	f (mm/rev)	**0.06** (0.02-0.1)
	rε (mm)	0.2

	Operation	Finishing
K Cast Iron	Grade	TH10
	Page	2-132
	Chipbreaker	W08 
Continuous	Vc (m/min)	**70** (30-100)
	ap (mm)	**0.5** (0.05-2.0)
	f (mm/rev)	**0.1** (0.03-0.2)
	rε (mm)	0.4

	Operation	Finishing
N Non-ferrous	Grade	GH110
	Page	2-132
	Chipbreaker	W08 
Continuous	Vc (m/min)	**600** (100-1000)
	ap (mm)	**1.0** (0.5-2.0)
	f (mm/rev)	**0.1** (0.03-0.2)
	rε (mm)	0.2

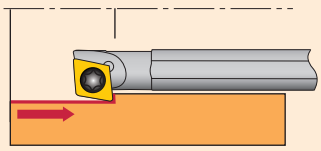
● : Stocked items.

STREAMJETBAR S-type SEZPR/L

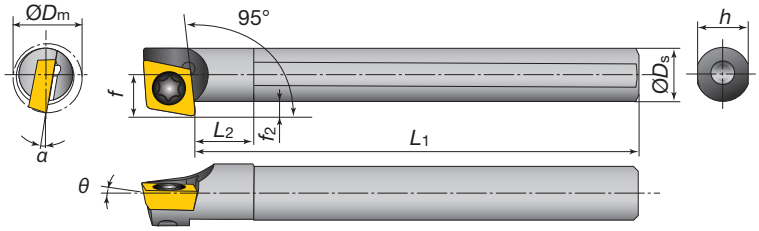
Positive rake / Screw-on system

Min. bore dia. ø5.5 mm~ | Shank dia. ø4~5 mm | Steel Shank | Carbide Shank

Internal retracting



Cutting edge style **Z**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
MINI A04F-SEZPR/L03-D055	●	●	5.5	4	3.2	80	4	3.8	1.2	0°	-8°	0.2	EP□□03X1	CSTA-1.6	T-6F	0.6
MINI A05F-SEZPR/L03-D065	●	●	6.5	5	3.7	80	5	4.8			-6°					

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
MINI E04G-SEZPR/L03-D055	●	●	5.5	4	3.2	90	5	3.8	1.2	0°	-8°	0.2	EP□□03X1	CSTA-1.6	T-6F	0.6
MINI E05G-SEZPR/L03-D065	●	●	6.5	5	3.7	90	6	4.8			-6°					

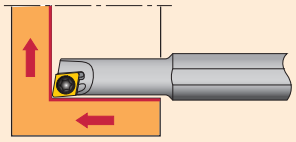
When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (SEZPR □□ type), and the left hand insert (L) is used for the left hand toolholders (SEZPL □□ type).

STREAMJETBAR S-type SEXPR/L

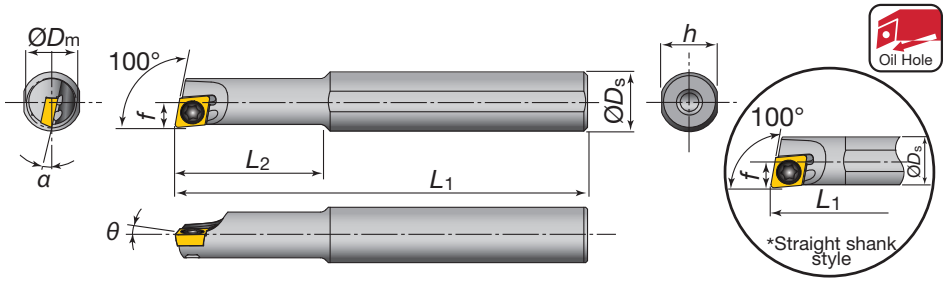
Positive rake / Screw-on system

Min. bore dia. ø4.5 mm~ | Shank dia. ø4~8 mm | Steel Shank | Carbide Shank

Boring & internal facing



Cutting edge style **X**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
MINI *A04F-SEXPR/L03-D045	●	●	4.5	4	2.3	80	8	3.8	-	0°	-15°	0.2	EP□□03X1	CSTA-1.6	T-6F	0.6
MINI *A04F-SEXPR/L03-D050	●	●	5	4	2.5	80	8	3.8	-	0°	-13°	0.2				
MINI *A05F-SEXPR/L04-D055	●	●	5.5	5	2.75	80	9	4.8	-	0°	-12°	0.4	EP□□0401	CSTB-2	T-6F	0.6
MINI *A06G-SEXPR/L04-D070	●	●	7	6	3.6	90	11	5.75	-	0°	-12°	0.4	EP□□0401	CSTB-2	T-6F	0.6
A08H-SEXPR/L04-D055	●	●	5.5	8	2.75	100	16	7.5	-	0°	-12°	0.4	EP□□0401	CSTB-2	T-6F	0.6
A08H-SEXPR/L04-D070	●	●	7	8	3.6	100	20	7.5	-	0°	-12°	0.4				0.6

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
MINI *E04G-SEXPR/L03-D045	●	●	4.5	4	2.3	90	9	3.8	-	0°	-15°	0.2	EP□□03X1	CSTA-1.6	T-6F	0.6
MINI *E04G-SEXPR/L03-D050	●	●	5	4	2.5	90	9	3.8	-	0°	-13°	0.2				
MINI *E05G-SEXPR/L04-D055	●	●	5.5	5	2.75	90	10	4.8	-	0°	-12°	0.4	EP□□0401	CSTB-2	T-6F	0.6
MINI *E06H-SEXPR/L04-D070	●	●	7	6	3.6	100	12	5.75	-	0°	-12°	0.4	EP□□0401	CSTB-2	T-6F	0.6
E08K-SEXPR/L04-D055	●	●	5.5	8	2.75	125	28	7.5	-	0°	-12°	0.4	EP□□0401	CSTB-2	T-6F	0.6
E08K-SEXPR/L04-D070	●	●	7	8	3.6	125	40	7.5	-	0°	-12°	0.4				0.6

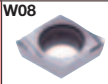
When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders SEXPL □□ type), and the left hand insert (L) is used for the right hand toolholders (SEXPR □□ type).

● : Stocked items.

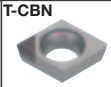
Basic Selection Chipbreakers EP□□0401□□-□□

	Operation	Finishing
P Steel	Grade	SH730
	Page	2-111
	Chipbreaker	W08 
Continuous	*Vc* (m/min)	**100** (50-150)
	ap (mm)	**0.5** (0.05-1.0)
	f (mm/rev)	**0.06** (0.02-0.1)
	rε (mm)	0.2

	Operation	Finishing
M Stainless	Grade	SH730
	Page	2-111
	Chipbreaker	W08 
Continuous	*Vc* (m/min)	**100** (30-150)
	ap (mm)	**0.5** (0.05-1.0)
	f (mm/rev)	**0.06** (0.02-0.1)
	rε (mm)	0.2

	Operation	Finishing
K Cast Iron	Grade	TH10
	Page	2-111
	Chipbreaker	W08 
Continuous	*Vc* (m/min)	**70** (30-100)
	ap (mm)	**0.5** (0.05-2.0)
	f (mm/rev)	**0.1** (0.03-0.2)
	rε (mm)	0.4

	Operation	Precision finishing	Finishing
N Non-ferrous	Grade	DX140	GH110
	Page	3-23	2-111
	Chipbreaker	T-DIA 	W08 
Continuous	*Vc* (m/min)	**1500** (500-2500)	**600** (100-1000)
	ap (mm)	**0.1** (0.03-0.5)	**1.0** (0.5-2.0)
	f (mm/rev)	**0.1** (0.05-0.15)	**0.1** (0.03-0.2)
	rε (mm)	0.2	0.4

	Operation	Precision finishing
H Hard Materials	Grade	BX310
	Page	3-15
	Chipbreaker	T-CBN 
Continuous	*Vc* (m/min)	**80** (30-150)
	ap (mm)	**0.1** (0.03-0.2)
	f (mm/rev)	**0.05** (0.03-0.1)
	rε (mm)	0.2

● : Stocked items.

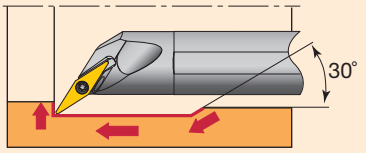
STREAMJETBAR S-type

SYQBR/L

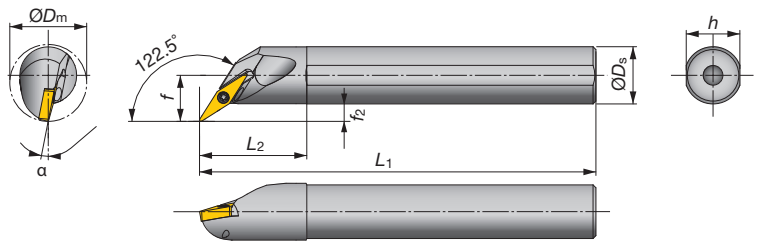
Positive rake / Screw-on system

Min. bore dia. ø17 mm~ | Shank dia. ø12~16 mm | Steel Shank | Carbide Shank

Internal undercut & profiling



Cutting edge style **Q**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
A12M-SYQBR/L11-D170	●	●	17	12	10.5	150	24	11	4.5	-5°	-10°	0.4	YW□□11T2	CSTB-2L	T-6F	0.6
A16Q-SYQBR/L11-D215	●	●	21.5	16	13	180	30	15	5	-5°	-8°	0.4				

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
E12Q-SYQBR/L11-D170	●	●	17	12	10.5	180	27	11	4.5	-5°	-10°	0.4	YW□□11T2	CSTB-2L	T-6F	0.6
E16R-SYQBR/L11-D215	●	●	21.5	16	13	200	32	15	5	-5°	-8°	0.4				

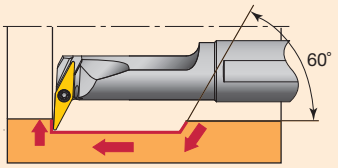
STREAMJETBAR S-type

SYUBR/L

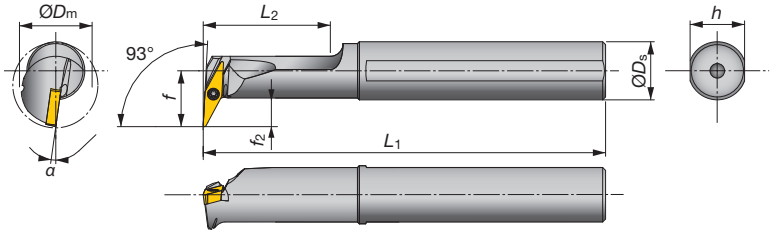
Positive rake / Screw-on system

Min. bore dia. ø20 mm~ | Shank dia. ø12~16 mm | Steel Shank | Carbide Shank

Boring & internal profiling



Cutting edge style **U**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
A16Q-SYUBR/L11-D200	●	●	20	16	15.5	180	35	15	8	0°	-8°	0.4	YW□□11T2	CSTB-2L	T-6F	0.6

Carbide Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
E12Q-SYUBR/L11-D200	●	●	20	12	13.5	180	27	11	7.5	0°	-8°	0.4	YW□□11T2	CSTB-2L	T-6F	0.6
E16R-SYUBR/L11-D245	●	●	24.5	16	16	200	32	15	8	0°	-8°	0.4				

Basic Selection Chipbreakers YW□□11T2□□-□□

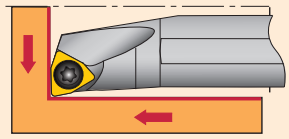
	Operation	Finishing	Finishing to medium cutting
P Steel	Grade	GT730	T9125
	Page	2-139	2-139
	Chipbreaker	ZF 	ZM 
Continuous	Vc (m/min)	**200** (150-300)	**180** (120-250)
	ap (mm)	**0.5** (0.2-1.0)	**1.4** (0.75-2.0)
	f (mm/rev)	**0.15** (0.08-0.2)	**0.2** (0.1-0.25)
	rε (mm)	0.4	0.8

● : Stocked items.

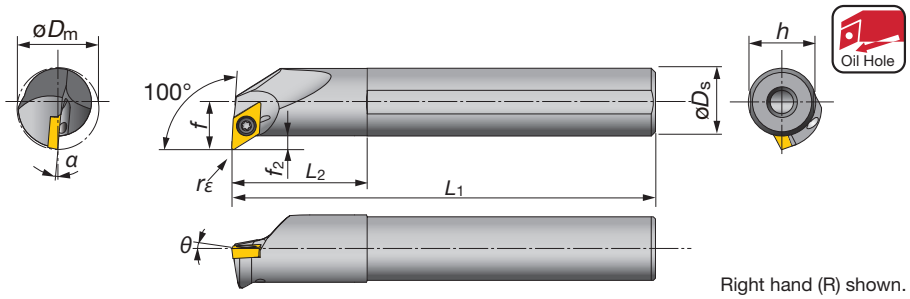
SWLXR/L

Min. bore dia. ø12 mm~ | Shank dia. ø10~20 mm | Steel Shank | Carbide Shank

Boring & internal facing



Cutting edge style **L**



Right hand (R) shown.

Steel shank

Cat. No	Stock R	Stock L	Min bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Insert	Parts Clamping screw	Parts Wrench	Torque (N·m)
A10K-SWLXR/L04-D120	●	●	12	10	6	125	20	9	-	-10°	-16°	0.4	WXGU0403** L/R	SR34-514	T-7F	0.9
A12M-SWLXR/L04-D140	●	●	14	12	7	150	24	11	-	-10°	-14°	0.4				
A16Q-SWLXR/L04-D180	●	●	18	16	9	180	32	15	-	-10°	-11°	0.4				
A20R-SWLXR/L04-D220	●	●	22	20	11	200	36	18	-	-10°	-10°	0.4				

Carbide shank

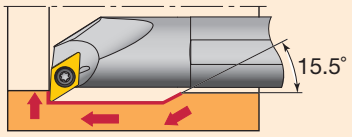
Cat. No	Stock R	Stock L	Min bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Insert	Parts Clamping screw	Parts Wrench	Torque (N·m)
E10M-SWLXR/L04-D120	●	●	12	10	6	150	25	9	-	-10°	-16°	0.4	WXGU0403** L/R	SR34-514	T-7F	0.9
E12Q-SWLXR/L04-D140	●	●	14	12	7	180	27	11	-	-10°	-14°	0.4				
E16R-SWLXR/L04-D180	●	●	18	16	9	200	32	15	-	-10°	-11°	0.4				
E20S-SWLXR/L04-D220	●	●	22	20	11	250	36	18	-	-10°	-10°	0.4				

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SWLXL04-D**) , and the left hand insert (L) is used for the right hand toolholders (SWLXR04-D**) .

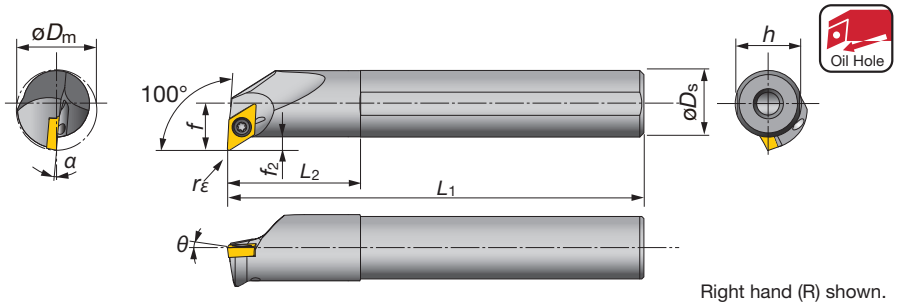
SDXXR/L

Min. bore dia. ø13 mm~ | Shank dia. ø10~20 mm | Steel Shank | Carbide Shank

Boring & internal profiling



Cutting edge style **X**



Right hand (R) shown.

Steel shank

Cat. No	Stock R	Stock L	Min bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Insert	Parts Clamping screw	Parts Wrench	Torque (N·m)
A10K-SDXXR/L07-D130	●	●	13	10	7.6	125	20	9	2.6	-14°	-16°	0.4	DXGU0703** L/R	SR34-514	T-7F	0.9
A12M-SDXXR/L07-D160	●	●	16	12	8.6	150	24	11	2.6	-14°	-14°	0.4				
A16Q-SDXXR/L07-D200	●	●	20	16	10.6	180	32	15	2.6	-13°	-13°	0.4				
A20R-SDXXR/L07-D240	●	●	24	20	12.6	200	36	18	2.6	-13°	-12°	0.4				

Carbide shank

Cat. No	Stock R	Stock L	Min bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Insert	Parts Clamping screw	Parts Wrench	Torque (N·m)
E10M-SDXXR/L07-D130	●	●	13	10	7.6	150	25	9	2.6	-14°	-16°	0.4	DXGU0703** L/R	SR34-514	T-7F	0.9
E12Q-SDXXR/L07-D160	●	●	16	12	8.6	180	27	11	2.6	-14°	-14°	0.4				
E16R-SDXXR/L07-D200	●	●	20	16	10.6	200	32	15	2.6	-13°	-13°	0.4				
E20S-SDXXR/L07-D240	●	●	24	20	12.6	250	36	18	2.6	-13°	-12°	0.4				

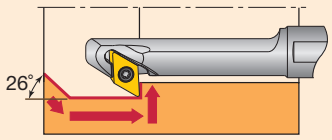
When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SDXXL07-D**) , and the left hand insert (L) is used for the right hand toolholders (SDXXR07-D**) .

● : Stocked items.

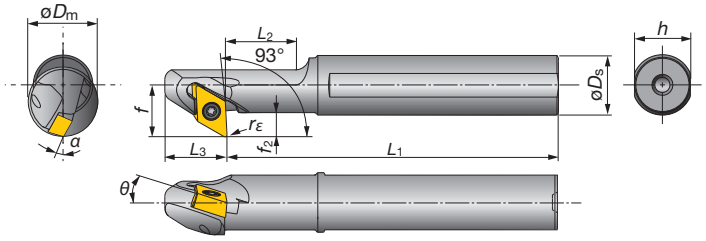
SDZXR/L

Min. bore dia. ø14 mm~ | Shank dia. ø12~20 mm | Steel Shank | Carbide Shank

New **Internal retracting**



Cutting edge style **Z**



Oil Hole

Right hand (R) shown.

Steel shank

Cat. No	Stock R	Stock L	Min bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	L3	h	f2	θ	α	Std. corner radius rε	Insert	Parts Clamping screw	Parts Wrench	Torque (N·m)
A12M-SDZXR/L07-D140	★	★	14	12	11	150	30	13	11	4.5	-10°	-14°	0.4	DXGU0703** R/L	SR34-514	T-7F	0.9
A16Q-SDZXR/L07-D160	★	★	16	16	13	180	35	13	15	4.5	-10°	-12.5°	0.4				
A20R-SDZXR/L07-D200	★	★	20	20	15	200	40	13	18	4.5	-10°	-10.5°	0.4				

Carbide shank

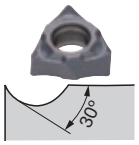
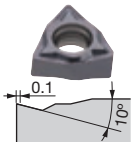
Cat. No	Stock R	Stock L	Min bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	L3	h	f2	θ	α	Std. corner radius rε	Insert	Parts		Torque (N·m)
E12Q-SDZXR/L07-D180	★	★	18	12	11	180	-	13	11	4.5	-11°	-11°	0.4	DXGU0703** R/L	SR34-514	T-7F	0.9
E16R-SDZXR/L07-D220	★	★	22	16	13	200	-	13	15	4.5	-11°	-9°	0.4				

When using a right or left hand insert, the right hand insert (R) is used with the right hand toolholders (SDZXR07-D**), and the left hand insert (L) is used with the left hand toolholders (SDZXL07-D**).

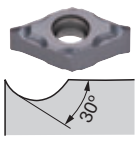
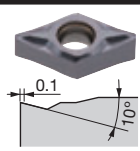
● : Stocked items.
★ : Available in 2013

Inserts

80° Trigon

Application	Chipbreaker Appearance (Cross section)	Cat. No.	Grades Coated AH725	Coated cermet GT530	Cermet NS530	Dimensions (mm) I.C. dia. ød	Thickness s	Hole dia. ød1	Corner radius rε
New Finishing (low cutting forces)	SS 	WXGU040302R-SS	●	●	●	6.35	3.18	2.7	0.2
		WXGU040302L-SS	●	●	●				
		WXGU040304R-SS	●	●	●				0.4
		*WXGU040304L-SS	●	●	●				
Finishing to medium cutting	TS 	WXGU040302R-TS	●	●	●	6.35	3.18	2.7	0.2
		WXGU040302L-TS	●	●	●				
		WXGU040304R-TS	●	●	●				0.4
		*WXGU040304L-TS	●	●	●				
		WXGU040308R-TS	●	●	●				0.8
		WXGU040308L-TS	●	●	●				

55° Rhombic

Application	Chipbreaker Appearance (Cross section)	Cat. No.	Grades Coated AH725	Coated cermet GT530	Cermet NS530	Dimensions (mm) I.C. dia. ød	Thickness s	Hole dia. ød1	Corner radius rε
New Finishing (low cutting forces)	SS 	DXGU070302R-SS	●	●	●	6.35	3.18	2.7	0.2
		DXGU070302L-SS	●	●	●				
		DXGU070304R-SS	●	●	●				0.4
		*DXGU070304L-SS	●	●	●				
Finishing to medium cutting	TS 	DXGU070302R-TS	●	●	●	6.35	3.18	2.7	0.2
		DXGU070302L-TS	●	●	●				
		DXGU070304R-TS	●	●	●				0.4
		*DXGU070304L-TS	●	●	●				
		DXGU070308R-TS	●	●	●				0.8
		DXGU070308L-TS	●	●	●				

Note: Chipbreaker cross-sections are of * marked inserts.

● : Stocked items.

Standard cutting conditions

Work materials	Priority	Grades	Cutting Speed *Vc* (m/min)	Chip-breaker	Depth of cut *ap* (mm)	Feed *f* (mm/rev)
Low carbon steels SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.) Carbon steels S45C, S55C etc. (C45, C55 etc.) Low alloy steels SCM415 etc. Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	First choice	**AH725**	50 ~ 180	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3
	For improved surface finish	**NS530**	80 ~ 250	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3
	For wear resistance	**GT530**	80 ~ 300	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.) Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X6Cr17, X20Cr13 etc.) Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	First choice	**AH725**	50 ~ 150	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3
Grey cast irons FC250 etc. (GG25 etc.)	First choice	**AH725**	50 ~ 180	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3
	For improved surface finish	**NS530**	80 ~ 250	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3
	For wear resistance	**GT530**	80 ~ 300	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3
Ductile cast irons FCD700 etc. (GGG70 etc.)	First choice	**AH725**	50 ~ 120	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3
	For improved surface finish	**NS530**	80 ~ 150	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3
	For wear resistance	**GT530**	80 ~ 180	**SS**	0.15 - 1.5	0.05 - 0.2
				TS	0.3 - 2.0	0.08 - 0.3

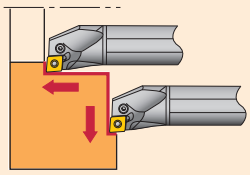
PCLNR/L

Min. bore dia. ø20 mm~

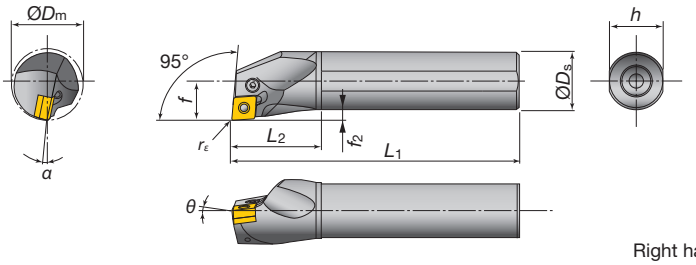
Shank dia. ø16~50 mm

Steel Shank

Boring & internal facing



Cutting edge style **L**



Oil Hole

Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore. dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts: Shim	Lever	Clamping screw	Spring pin	Wrench	Oil supply attachment	Screw for oil hole	Torque (N·m)
A16M-PCLNR/L09-D200	●	●	20	16	11	150	32	15	3	-6°	-14°	0.8	CN□□0903	-	LCL32N	LCS22A	-	P-2F	-	SSHM3-4	1.7
A20Q-PCLNR/L09-D250	●	●	25	20	13	180	36	18	3	-6°	-12°	0.8							EA-20		
A25R-PCLNR/L09-D320	●	●	32	25	17	200	45	23	4.5	-6°	-11°	0.8							EA-25	SSHM5-6	
A25R-PCLNR/L12-D320	●	●	32	25	17	200	45	23	4.5	-6°	-13°	0.8	CN□□1204	-	LCL43N	LCS43	-	P-2.5	EA-25	SSHM5-6	2.7
A32S-PCLNR/L12-D400	●	●	40	32	22	250	50	30	6	-6°	-11°	0.8		LSC42BR/L	LCL4	LCS4	LSP4	P-3	EA-32		4.8
A40T-PCLNR/L12-D500	●	●	50	40	27	300	60	37	7	-6°	-10°	0.8							-	SSHM6-6	
A50U-PCLNR/L12-D630	●	●	63	50	35	350	65	47	10	-6°	-8°	0.8									

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PCLNL □□ type), and the left hand insert (L) is used for the right hand toolholders (PCLNR □□ type).

Basic Selection Chipbreakers CN□□1204□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	NS730	GT730	T9115	T9115
Page	2-42	2-42	2-45	2-48
Chipbreaker	TF	TSF	TM	TH
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.6)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	T6120	T6130	T6130
Page	2-42	2-46	2-49
Chipbreaker	SF	SM	SH
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	1.6

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	BX930	T5115	T5115	T5115
Page	3-7	2-43	2-46	2-49
Chipbreaker	T-CBN	CF	CM	CH
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.6)
rε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	DX120	TH10	GH110
Page	3-21	2-42	2-48
Chipbreaker	T-DIA With chipbreaker	01	P
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing to medium cutting	Medium cutting
Grade	BX470	AH905	AH120
Page	3-7	2-47	2-48
Chipbreaker	T-CBN	HMM	SA
Vc (m/min)	**200** (100-280)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	BXM10	BXM20
Page	3-7	3-7
Chipbreaker	T-CBN	T-CBN
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see “Selection System” 2-4 ~

● : Stocked items.

PDUNR/L

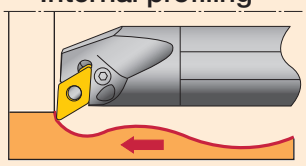
Min. bore dia. ø25 mm~

Shank dia. ø20~50 mm

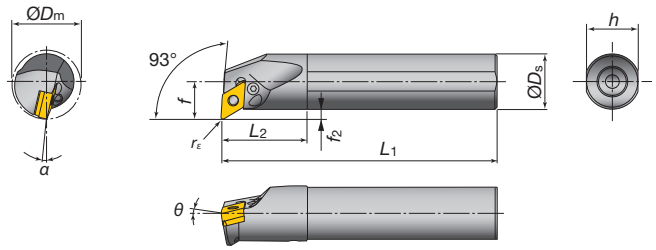
Steel Shank

Oil Hole

Internal profiling



Cutting edge style **U**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts: Shim	Lever	Clamping screw	Spring pin	Wrench	Oil supply attachment	Screw for oil hole	Torque (N·m)
A20Q-PDUNR/L11-D250	●	●	25	20	13	180	36	18	3	-6°	-14°	0.8	DN□□1104	-	LCL33NL	LCS22A	-	P-2F	EA-20	SSHM2.5-3	1.7
A25R-PDUNR/L11-D320	●	●	32	25	17	200	45	23	4.5	-6°	-12°	0.8		ELSD317BR/L	LCL33L	LCS3	LSP3	P-2.5	EA-25	SSHM3-4	2.7
A32S-PDUNR/L15-D400	●	●	40	32	22	250	50	30	6	-6°	-13°	0.8	DN□□1504	LSD42BR/L	LCL4	LCS4	LSP4	P-3	EA-32	SSHM5-6	4.8
A40T-PDUNR/L15-D500	●	●	50	40	27	300	60	37	7	-6°	-10°	0.8							-	SSHM6-6	
A50U-PDUNR/L15-D630	●	●	63	50	35	350	65	47	10	-6°	-8°	0.8									
A32S-PDUNR/L1506-D400	●	●	40	32	22	250	50	30	6	-6°	-13°	0.8	DN□□1506	ELSD42	LCL44	ELCS4	LSP4S	P-3	EA-32	SSHM5-6	4.8
A40T-PDUNR/L1506-D500	●	●	50	40	27	300	60	37	7	-6°	-11°	0.8							-	SSHM6-6	
A50U-PDUNR/L1506-D630	●	●	63	50	35	350	65	47	10	-6°	-10°	0.8									

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PDUNL □□ type), and the left hand insert (L) is used for the right hand toolholders (PDUNR □□ type).

PDZNR/L

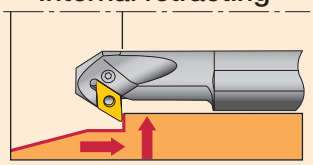
Min. bore dia. ø40 mm~

Shank dia. ø32~50 mm

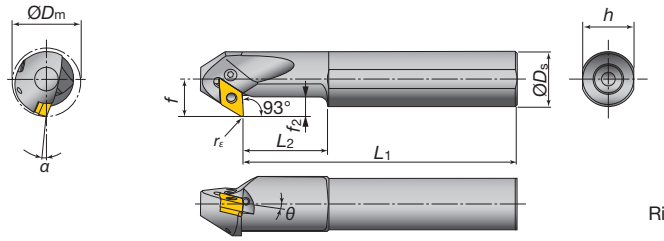
Steel Shank

Oil Hole

Internal retracting



Cutting edge style **Z**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts: Shim	Lever	Clamping screw	Spring pin	Wrench	Oil supply attachment	Screw for oil hole	Torque (N·m)
A32S-PDZNR/L15-D400	●	●	40	32	22	250	50	30	11.5	-6°	-13°	0.8	DN□□1504	LSZ42BR/L	LCL4	LCS4	LSP4	P-3	EA-32	SSHM4-5	4.8
A40T-PDZNR/L15-D500	●	●	50	40	27	300	60	37	14.5	-6°	-10°	0.8							-	SSHM5-6	
A50U-PDZNR/L15-D630	●	●	63	50	35	350	65	47	14.5	-6°	-8°	0.8								SSHM6-6	

When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (PDZNR □□ type), and the left hand insert (L) is used for the left hand toolholders (PDZNL □□ type).

Basic Selection Chipbreakers DN□□1504□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	NS730	GT730	T9115	T9115
Page	2-52	2-52	2-55	2-58
Chipbreaker	TF	TSF	TM	TH
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	T6120	T6130	T6130
Page	2-53	2-55	2-58
Chipbreaker	SF	SM	SH
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.8	1.2

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	BX930	T5115	T5115	T5115
Page	3-7	2-53	2-56	2-59
Chipbreaker	T-CBN	CF	CM	CH
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	DX120	GH110	GH110
Page	3-21	2-52	2-58
Chipbreaker	T-DIA With chipbreaker	01	P
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	BX470	KS20	AH905	AH120
Page	3-7	2-53	2-56	2-55
Chipbreaker	T-CBN	SS	HMM	All-round
Vc (m/min)	**200** (100-280)	**50** (30-70)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.0** (0.5-3.0)	**1.5** (0.5-3.0)	**3.0** (1.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.08-0.2)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	BXM10	BXM20
Page	3-7	3-7
Chipbreaker	T-CBN	T-CBN
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see "Selection System" 2-4 ~

PSKNR/L

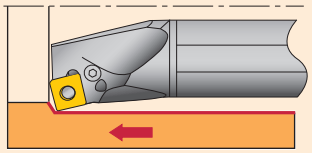
Min. bore dia. ø40 mm~

Shank dia. ø32~50 mm

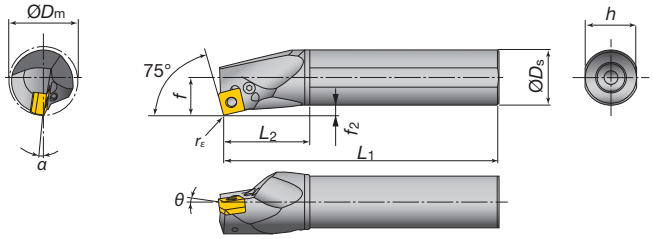
Steel Shank

Oil Hole

Through boring



Cutting edge style **K**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts: Shim	Lever	Clamping screw	Spring pin	Wrench	Oil supply attach-ment	Screw for oil hole	Torque (N·m)
A32S-PSKNR/L12-D400	●	●	40	32	22	250	50	30	6	-6°	-10°	0.8	SN□□1204	LSS42BR/L	LCL4	LCS4	LSP4	P-3	EA-32	SSHM4-5	4.8
A40T-PSKNR/L12-D500	●	●	50	40	27	300	60	37	7	-6°	-10°	0.8							-	SSHM6-6	
A50U-PSKNR/L12-D630	●	●	63	50	35	350	65	47	10	-6°	-8°	0.8									

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PSKNL □□ type), and the left hand insert (L) is used for the right hand toolholders (PSKNR □□ type).

Basic Selection Chipbreakers SN□□1204□□-□□

P Steel / Continuous	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-61	2-61	2-64	2-67
Chipbreaker	**TF**	**TSF**	**TM**	**TH**
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless / Continuous	Finishing	Finishing to medium cutting	Medium cutting
Grade	**T6120**	**T6130**	**T6130**
Page	2-62	2-64	2-67
Chipbreaker	**SF**	**SM**	**SH**
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.4)	**0.3** (0.2-0.3)
rε (mm)	0.4	0.8	1.6

K Cast Iron / Continuous	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-8	2-62	2-65	2-67
Chipbreaker	**T-CBN**	**CF**	**CM**	**CH**
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.6)
rε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous / Continuous	Precision finishing	Finishing to medium cutting
Grade	**DX140**	**GH110**
Page	3-21	2-66
Chipbreaker	**T-DIA**	**P**
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8

S Superalloys / Continuous	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX480**	**AH905**	**AH120**
Page	3-8	2-65	2-66
Chipbreaker	**T-CBN**	**HMM**	**SA**
Vc (m/min)	**200** (70-300)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.3)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8

H Hard Materials / Continuous	Finishing
Grade	**BXM20**
Page	3-8
Chipbreaker	**T-CBN**
Vc (m/min)	**150** (70-220)
ap (mm)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.05-0.25)
rε (mm)	0.4

For other machining types, see "Selection System" 2-4 ~

● : Stocked items.

STREAMJETBAR P-type PTFNR/L

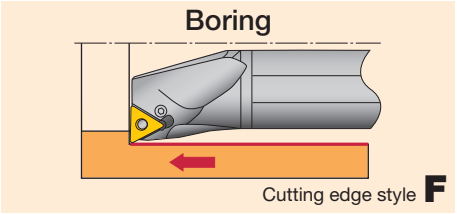
Negative rake / Lever-lock system

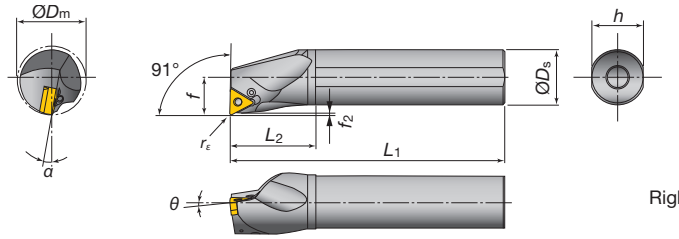
Min. bore dia. ø32 mm~

Shank dia. ø25~50 mm

Steel Shank

Oil Hole





Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Shim	Lever	Clamping screw	Spring pin	Wrench	Oil supply attachment	Screw for oil hole	Torque (N·m)
A25R-PTFNR/L16-D320	●	●	32	25	17	200	45	23	1.2	-6°	-12°	0.8	TN□□1604	ELST317BR/L	LCL33	LCS3	LSP3	P-2.5	EA-25	SSHM4-5	2.7
A32S-PTFNR/L16-D400	●	●	40	32	22	250	50	30	1.1	-6°	-10°	0.8		LST317BR/L	LCL3				EA-32		
A40T-PTFNR/L16-D500	●	●	50	40	27	300	60	37	1.1	-6°	-10°	0.8							-	SSHM6-6	
A50U-PTFNR/L16-D630	●	●	63	50	35	350	65	47	1.1	-6°	-8°	0.8									

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PTFNL □□ type), and the left hand insert (L) is used for the right hand toolholders (PTFNR □□ type).

STREAMJETBAR P-type PTUNR/L

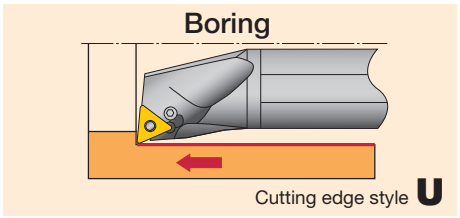
Negative rake / Lever-lock system

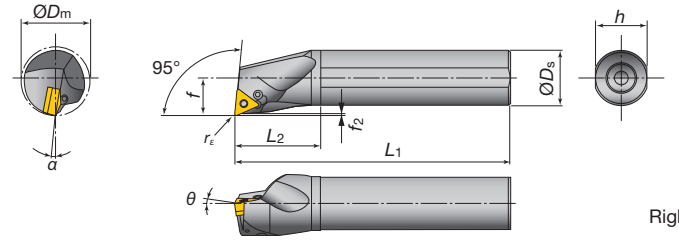
Min. bore dia. ø20 mm~

Shank dia. ø16~32 mm

Steel Shank

Oil Hole





Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Shim	Lever	Clamping screw	Spring pin	Wrench	Oil supply attachment	Screw for oil hole	Torque (N·m)
A16M-PTUNR/L11-D200	●	●	20	16	11	150	32	15	1	-6°	-14°	0.4	TN□□1103	-	LCL22N	LCS22A	-	P-2F	-	SSHM3-4	1.7
A20Q-PTUNR/L11-D250	●	●	25	20	13	180	36	18	1	-6°	-12°	0.4							EA-20		
A25R-PTUNR/L16-D320	●	●	32	25	17	200	45	23	1.4	-6°	-12°	0.8	TN□□1604	ELST317BR/L	LCL33	LCS3	LSP3	P-2.5	EA-25	SSHM4-5	2.7
A32S-PTUNR/L16-D400	●	●	40	32	22	250	50	30	1.3	-6°	-10°	0.8		LST317BR/L	LCL3				EA-32		

* The insert hole conforms to the ISO standard.
* Tool holder length may be different to the ISO standard.

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PTUNL □□ type), and the left hand insert (L) is used for the right hand toolholders (PTUNR □□ type).

Basic Selection Chipbreakers TN□□1604□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	NS730	GT730	T9115	T9115
Page	2-70	2-71	2-74	2-77
Chipbreaker	TF	TSF	TM	TH
Vc (m/min)	**200** (150-250)	**200** (150-300)	**200** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting
Grade	T6120	T6130
Page	2-71	2-74
Chipbreaker	SF	SM
Vc (m/min)	**150** (100-200)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.8

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	BX930	T5115	T5115	T5115
Page	3-8	2-72	2-75	2-77
Chipbreaker	T-CBN	CF	CM	CH
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.6)
rε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	DX120	GH110	GH110
Page	3-21	2-70	2-76h
Chipbreaker	T-DIA (With chipbreaker)	01	P
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**3.0** (0.2-0.5)
rε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	BX470	KS20	AH905	AH120
Page	3-8	2-71	2-75	2-76
Chipbreaker	T-CBN	SS	HMM	SA
Vc (m/min)	**200** (100-280)	**50** (30-70)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.0** (0.5-3.0)	**1.5** (0.5-3.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	BXM10	BXM20
Page	3-8	3-8
Chipbreaker	T-CBN	T-CBN
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see "Selection System" 2-4 ~

● : Stocked items.

PVUNR/L

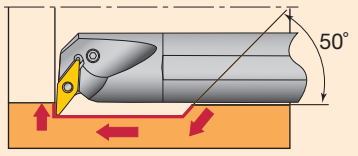
Min. bore dia. ø37 mm~

Shank dia. ø25~40 mm

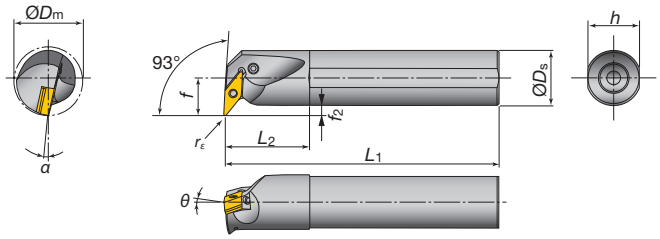
Steel Shank

Oil Hole

Boring & internal profiling



Cutting edge style **U**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Shim	Lever	Clamping screw	Spring pin	Wrench	Oil supply attachment	Screw for oil hole	Torque (N·m)
A25R-PVUNR/L16-D370	●	●	37	25	22	200	45	23	9.5	-5°	-14°	0.8	VN□□1604	LSV317BR/L	LCL3V	LCS3V	LSP3	P-2.5	EA-25	SSHM3-4	2.7
A32S-PVUNR/L16-D400	●	●	40	32	22	250	50	30	6	-5°	-12°	0.8							EA-32		
A40T-PVUNR/L16-D500	●	●	50	40	27	300	60	37	7	-5°	-10°	0.8							-	SSHM5-6	

Basic Selection Chipbreakers VN□□1604□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**NS730**	**GT730**	**T9115**
Page	2-87	2-87	2-89
Chipbreaker	**TF**	**TSF**	**TM**
Vc (m/min)	**200** (150-250)	**200** (150-300)	**180** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.4	0.8

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting
Grade	**T6120**	**T6130**
Page	2-87	2-89
Chipbreaker	**SF**	**SM**
Vc (m/min)	**150** (100-200)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.8

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**BX930**	**T5115**	**T5115**
Page	3-9	2-88	2-89
Chipbreaker	**T-CBN**	**CF**	**CM**
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)
rε (mm)	0.4	0.4	0.8

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing
Grade	**DX120**	**GH110**
Page	3-21	2-87
Chipbreaker	**T-DIA** With chipbreaker	**01**
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)
rε (mm)	0.4	0.2

S Superalloys — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**BX470**	**BX480**	**AH905**
Page	3-9	3-9	2-90
Chipbreaker	**T-CBN**	**T-CBN**	**HMM**
Vc (m/min)	**200** (100-280)	**200** (70-300)	**50** (20-100)
ap (mm)	**0.3** (0.1-0.5)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.05-0.3)	**0.2** (0.1-0.3)
rε (mm)	0.4	0.4	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-9	3-9
Chipbreaker	**T-CBN**	**T-CBN**
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see “Selection System” 2-4 ~

● : Stocked items.

PWLNR/L

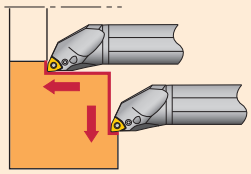
Min. bore dia. ø20 mm~

Shank dia. ø16~40 mm

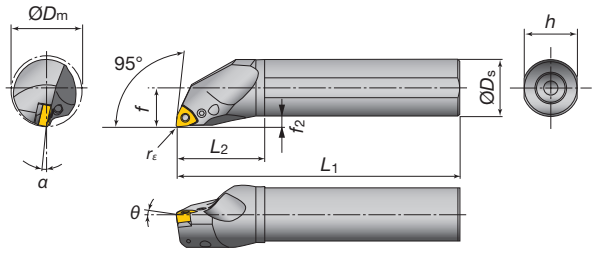
Steel Shank

Oil Hole

Boring & facing



Cutting edge style **L**



Right hand (R) shown.

Steel Shank

Toolholder Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) ØDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts: Shim	Lever	Clamping screw	Spring pin	Wrench	Oil supply attachment	Screw for oil hole	Torque (N·m)
A16M-PWLNR/L06-D200	●	●	20	16	11	150	32	15	3	-8°	-17°	0.8	WN□□0604	-	LCL33N	LCS33	-	P-2F	-	SSHM3-4	1.7
A20Q-PWLNR/L06-D250	●	●	25	20	13	180	36	18	3	-6°	-14°	0.8		-			-		EA-20		
A25R-PWLNR/L06-D320	●	●	32	25	17	200	45	23	4.5	-6°	-12°	0.8		LSW312BR/L	LCL3	LCS3B	LSP3	P-2.5	EA-25	SSHM5-6	2.7
A32S-PWLNR/L06-D400	●	●	40	32	22	250	50	30	6	-6°	-11°	0.8				LCS3		P-2.5	EA-32		
A25R-PWLNR/L08-D320	●	●	32	25	17	200	45	23	4.5	-6°	-13°	0.8	WN□□0804	-	LCL43N	LCS43	-	P-2.5	EA-25	SSHM5-6	2.7
A32S-PWLNR/L08-D400	●	●	40	32	22	250	50	30	6	-6°	-11°	0.8		LSW42BR/L	LCL4	LCS4	LSP4	P-3	EA-32		4.8
A40T-PWLNR/L08-D500	●	●	50	40	27	300	60	37	7	-6°	-10°	0.8							-	SSHM6-6	

Basic Selection Chipbreakers WN□□0804□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-80	2-80	2-83	2-85
Chipbreaker	**TF**	**TSF**	**TM**	**TH**
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-250)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**T6120**	**T6130**	**T6130**
Page	2-80	2-83	2-85
Chipbreaker	**SF**	**SM**	**SH**
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	1.6

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-9	2-81	2-84	2-86
Chipbreaker	**T-CBN**	**CF**	**CM**	**CH**
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

S Superalloys — Continuous

Operation	Precision finishing	Finishing to medium cutting	Medium cutting
Grade	**BX480**	**AH905**	**KS20**
Page	3-9	2-84	2-85
Chipbreaker	**T-CBN**	**HMM**	**SA**
Vc (m/min)	**200** (70-300)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)	**3.0** (1.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-9	3-9
Chipbreaker	**T-CBN**	**T-CBN**
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see "Selection System" 2-4 ~

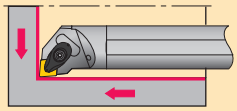
● : Stocked items.

ACLNR/L

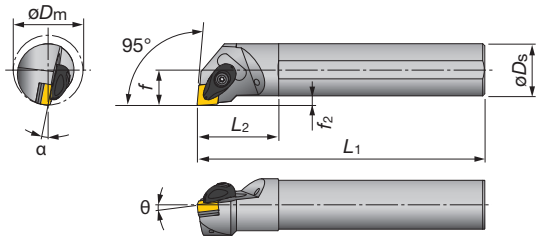
Negative rake / Double clamping system

Min. bore dia. ø32 mm~ | Shank dia. ø25~50 mm | Steel Shank

Boring & Internal facing



Cutting edge style **L**



Oil Hole

Right hand (R) shown.

Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) øDs	f	L1	L2	h	f2	α	θ	Std. corner rε	Applicable inserts	Page
A25R-ACLNR/L12-D320	●	●	32	25	17	200	45	23	4.5	–13°	–6°	0.8	CN□□1204□□	2-42~
A32S-ACLNR/L12-D400	●	●	40	32	22	250	50	30	6	–10°				
A40T-ACLNR/L12-D500	●	●	50	40	27	300	55	37	7	–8°				
A50U-ACLNR/L12-D630	●		63	50	35	350	65	47	10	–7°				

T-CBN inserts 3-7~ T-DIA inserts 3-21~

Basic Selection Chipbreakers CN□□1204□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-42	2-42	2-45	2-48
Chipbreaker	**TF**	**TSF**	**TM**	**TH**
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.6)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**T6120**	**T6130**	**T6130**
Page	2-42	2-46	2-49
Chipbreaker	**SF**	**SM**	**SH**
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	1.6

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-7	2-43	2-46	2-49
Chipbreaker	**T-CBN**	**CF**	**CM**	**CH**
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.6)
rε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**DX120**	**TH10**	**GH110**
Page	3-21	2-42	2-48
Chipbreaker	**T-DIA** With chipbreaker	**01**	**P**
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing to medium cutting	Medium cutting
Grade	**BX470**	**AH905**	**AH120**
Page	3-7	2-47	2-48
Chipbreaker	**T-CBN**	**HMM**	**SA**
Vc (m/min)	**200** (100-280)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-7	3-7
Chipbreaker	**T-CBN**	**T-CBN**
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see “Selection System” 2-4 ~

Parts for A-type

Cat. No.	Applicable inserts	Clamp	Clamping screw	Shim	Shim screw	Spring	Springpin	Wrench	Recommend clamping torque(N·m)
A□□□-ACLNR/L	**CN□□1204□□**	ACP4S	ACS-5W	ASC422	CSTB-3.5	BP-7	SP-2.5	T-15F	4.0

Note: Replacement parts of former A-type toolholders are not applicable to “Turning A” toolholders.

● : Stocked items.

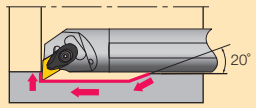
Relating pages Parts (14-1~)

ADUNR/L

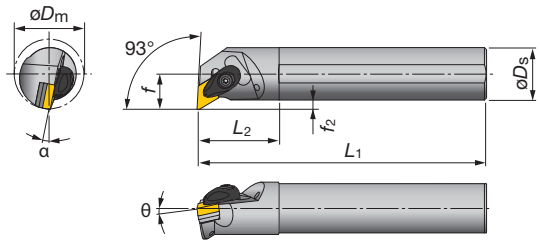
Negative rake / Double clamping system

Min. bore dia. ø32 mm~ | Shank dia. ø25~50 mm | Steel Shank

Boring & Internal facing



Cutting edge style **U**



Oil Hole

Right hand (R) shown.

Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) øDs	f	L1	L2	h	f2	α	θ	Std. corner rε	Applicable inserts	Page
A25R-ADUNR/L15-D320	●	●	32	25	17	200	45	23	4.5	–13°	–6°	0.8	DN□□1504□□	2-52~
A32S-ADUNR/L15-D400	●	●	40	32	22	250	50	30	6	–11°				
A40T-ADUNR/L15-D500	●		50	40	27	300	55	37	7	–8°				
A50U-ADUNR/L15-D630	●		63	50	35	350	65	47	10	–7°				
A25R-ADUNR/L1506-D320	●	●	32	25	17	200	45	23	4.5	–13°	–6°	0.8	DN□□1506□□	2-52~
A32S-ADUNR/L1506-D400	●	●	40	32	22	250	50	30	6	–11°				

T-CBN inserts 3-7~ T-DIA inserts 3-21~

Basic Selection Chipbreakers DN□□1504□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	NS730	GT730	T9115	T9115
Page	2-52	2-52	2-55	2-58
Chipbreaker	TF	TSF	TM	TH
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	T6120	T6130	T6130
Page	2-53	2-55	2-58
Chipbreaker	SF	SM	SH
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.8	1.2

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	BX930	T5115	T5115	T5115
Page	3-7	2-53	2-56	2-59
Chipbreaker	T-CBN	CF	CM	CH
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	DX120	GH110	GH110
Page	3-21	2-52	2-58
Chipbreaker	T-DIA With chipbreaker	01	P
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	BX470	KS20	AH905	AH120
Page	3-7	2-53	2-56	2-55
Chipbreaker	T-CBN	SS	HMM	All-round
Vc (m/min)	**200** (100-280)	**50** (30-70)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.0** (0.5-3.0)	**1.5** (0.5-3.0)	**3.0** (1.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.08-0.2)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	BXM10	BXM20
Page	3-7	3-7
Chipbreaker	T-CBN	T-CBN
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see “Selection System” 2-4 ~

Parts for A-type

Cat. No.	Applicable inserts	Clamp	Clamping screw	Shim	Shim screw	Spring	Springpin	Wrench	Recommend clamping torque(N·m)
A□□□-ADUNR/L15	DN□□1504□□	ACP4S	ACS-5W	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F	4.0
A□□□-ADUNR/L1506	DN□□1506□□	ACP4S	ACS-5W	ASD423	CSTB-3.5	BP-7	SP-2.5	T-15F	4.0

Note: Replacement parts of former A-type toolholders are not applicable to “Turning A” toolholders.

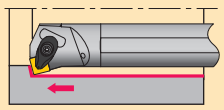
● : Stocked items.

ASKNR/L

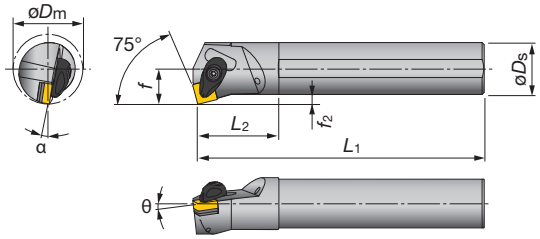
Negative rake / Double clamping system

Min. bore dia. ø32 mm~ | Shank dia. ø25~32 mm | Steel Shank

Through boring



Cutting edge style **K**



Oil Hole

Right hand (R) shown.

Cat. No.	Stock R	Stock L	Min bore.dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	α	θ	Std. corner rε	Applicable inserts	Page
A25R-ASKNR/L12-D320	●	●	32	25	17	200	45	23	4.5	–13°	–6°	0.8	SN□□1204□□	2-61~
A32S-ASKNR/L12-D400	●	●	40	32	22	250	50	30	6	–10°				

T-CBN inserts 3-8~ T-DIA inserts 3-21~

Basic Selection Chipbreakers SN□□1204□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-61	2-61	2-64	2-67
Chipbreaker	**TF** 	**TSF** 	**TM** 	**TH** 
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**T6120**	**T6130**	**T6130**
Page	2-62	2-64	2-67
Chipbreaker	**SF** 	**SM** 	**SH** 
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.4)	**0.3** (0.2-0.3)
rε (mm)	0.4	0.8	1.6

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-8	2-62	2-65	2-67
Chipbreaker	**T-CBN** 	**CF** 	**CM** 	**CH** 
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.6)
rε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing to medium cutting
Grade	**DX140**	**GH110**
Page	3-21	2-66
Chipbreaker	**T-DIA** 	**P** 
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8

S Superalloys — Continuous

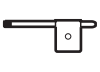
Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX480**	**AH905**	**AH120**
Page	3-8	2-65	2-66
Chipbreaker	**T-CBN** 	**HMM** 	**SA** 
Vc (m/min)	**200** (70-300)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.3)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Finishing
Grade	**BXM20**
Page	3-8
Chipbreaker	**T-CBN** 
Vc (m/min)	**150** (70-220)
ap (mm)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.05-0.25)
rε (mm)	0.4

For other machining types, see “Selection System” 2-4 ~

Parts for A-type

Cat. No.	Applicable inserts	Clamp 	Clamping screw 	Shim 	Shim screw 	Spring 	Springpin 	Wrench 	Recommend clamping torque(N·m)
A□□□-ASKNR/L	**SN□□1204□□**	ACP4S	ACS-5W	ASS422	CSTB-3.5	BP-7	SP-2.5	T-15F	4.0

Note: Replacement parts of former A-type toolholders are not applicable to “Turning A” toolholders.

● : Stocked items.

Relating pages Parts (14-1~)

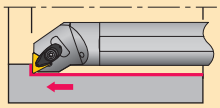
ATFNR/L

Negative rake / Double clamping system

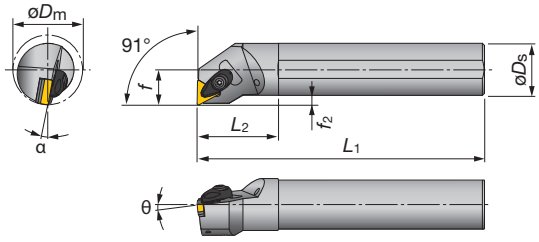
Min. bore dia. ø32 mm~ | Shank dia. ø25~32 mm | Steel Shank

Oil Hole

Blind hole boring



Cutting edge style **F**



Right hand (R) shown.

Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) øDs	f	L1	L2	h	f2	α	θ	Std. corner rε	Applicable inserts	Page
A25R-ATFNR/L16-D320	●	●	32	25	17	200	45	23	4.5	–13°	–6°	0.8	TN□□1604□□	2-70~
A32S-ATFNR/L16-D400	●	●	40	32	22	250	50	30	6	–10°				

T-CBN inserts 3-8~ | T-DIA inserts 3-21~

Basic Selection Chipbreakers TN□□1604□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-70	2-71	2-74	2-77
Chipbreaker	TF	TSF	TM	TH
Vc (m/min)	**200** (150-250)	**200** (150-300)	**200** (150-300)	**220** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting
Grade	**T6120**	**T6130**
Page	2-71	2-74
Chipbreaker	SF	SM
Vc (m/min)	**150** (100-200)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.8

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-8	2-72	2-75	2-77
Chipbreaker	T-CBN	CF	CM	CH
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.6)
rε (mm)	0.4	0.4	0.8	1.2

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**DX120**	**GH110**	**GH110**
Page	3-21	2-70	2-76h
Chipbreaker	T-DIA With chipbreaker	01	P
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**3.0** (0.2-0.5)
rε (mm)	0.4	0.4	0.8

S Superalloys — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX470**	**KS20**	**AH905**	**AH120**
Page	3-8	2-71	2-75	2-76
Chipbreaker	T-CBN	SS	HMM	SA
Vc (m/min)	**200** (100-280)	**50** (30-70)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.0** (0.5-3.0)	**1.5** (0.5-3.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-8	3-8
Chipbreaker	T-CBN	T-CBN
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see "Selection System" 2-4 ~

Parts for A-type

Cat. No.	Applicable inserts	Clamp	Clamping screw	Shim	Shim screw	Spring	Springpin	Wrench	Recommend clamping torque (N·m)
A□□□-ATFNR/L	**TN□□1604□□**	ACP3S	ACS-5W	AST322	CSTB-3.5	BP-7	SP-2.5	T-15F	3.0

Note: Replacement parts of former A-type toolholders are not applicable to "Turning A" toolholders.

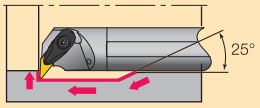
● : Stocked items.

AVUNR/L

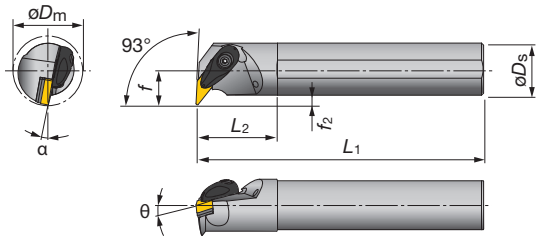
Negative rake / Double clamping system

Min. bore dia. ø40 mm~ | Shank dia. ø32~40 mm | Steel Shank

Boring & internal profiling



Cutting edge style **U**



Oil Hole

Right hand (R) shown.

Cat. No.	Stock R	Stock L	Min bore.dia. ØDm	Dimensions (mm) øDs	f	L1	L2	h	f2	α	θ	Std. corner rε	Applicable inserts	Page
A32S-AVUNR/L16-D400	●	●	40	32	22	250	50	30	6	–10°	–6°	0.8	VN□□1604□□	2-88~
A40T-AVUNR/L16-D500	●	●	50	40	27	300	55	37	7	–8°			YN□□1604□□	2-87~

T-CBN inserts 3-9~ T-DIA inserts 3-21~

Basic Selection Chipbreakers VN□□1604□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**NS730**	**GT730**	**T9115**
Page	2-87	2-87	2-89
Chipbreaker	**TF**	**TSF**	**TM**
Vc (m/min)	**200** (150-250)	**200** (150-300)	**180** (150-300)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.4	0.8

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting
Grade	**T6120**	**T6130**
Page	2-87	2-89
Chipbreaker	**SF**	**SM**
Vc (m/min)	**150** (100-200)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.4)
rε (mm)	0.4	0.8

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**BX930**	**T5115**	**T5115**
Page	3-9	2-88	2-89
Chipbreaker	**T-CBN**	**CF**	**CM**
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-4.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)
rε (mm)	0.4	0.4	0.8

N Non-ferrous — Continuous

Operation	Precision finishing	Finishing
Grade	**DX120**	**GH110**
Page	3-21	2-87
Chipbreaker	**T-DIA** With chipbreaker	**01**
Vc (m/min)	**1500** (500-2500)	**600** (100-1000)
ap (mm)	**0.5** (0.05-1.0)	**0.5** (0.05-1.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.03-0.15)
rε (mm)	0.4	0.2

S Superalloys — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting
Grade	**BX470**	**BX480**	**AH905**
Page	3-9	3-9	2-90
Chipbreaker	**T-CBN**	**T-CBN**	**HMM**
Vc (m/min)	**200** (100-280)	**200** (70-300)	**50** (20-100)
ap (mm)	**0.3** (0.1-0.5)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.1** (0.05-0.3)	**0.2** (0.1-0.3)
rε (mm)	0.4	0.4	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-9	3-9
Chipbreaker	**T-CBN**	**T-CBN**
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see “Selection System” 2-4 ~

Parts for A-type

Cat. No.	Applicable inserts	Clamp	Clamping screw	Shim	Shim screw	Spring	Springpin	Wrench	Recommend clamping torque(N·m)
A□□□-AVUNR/L	**VN□□1604□□** **YN□□1604□□**	ACP3L	ACS-5W	ASV322	CSTB-3.5	BP-7	SP-2.5	T-15F	3.0

Note: Replacement parts of former A-type toolholders are not applicable to “Turning A” toolholders.

● : Stocked items.

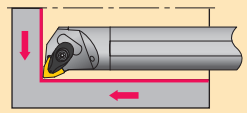
Relating pages Parts (14-1~)

AWLNR/L

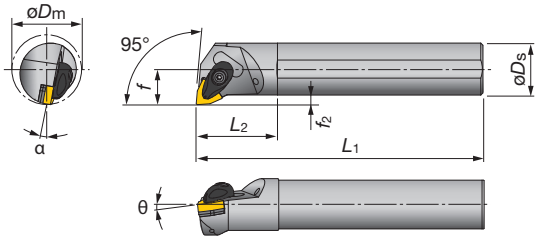
Negative rake / Double clamping system

Min. bore dia. ø32 mm~ | Shank dia. ø25~50 mm | Steel Shank

Boring & facing



Cutting edge style **L**



Oil Hole

Right hand (R) shown.

Cat. No.	Stock R	Stock L	Min bore.dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	α	θ	Std. corner rε	Applicable inserts	Page
A25R-AWLNR/L06-D320	●	●	32	25	17	200	45	23	4.5	–13°	–6°	0.8	WN□□0604□□	2-80~
A32S-AWLNR/L06-D400	●	●	40	32	22	250	50	30	6	–10°				
A25R-AWLNR/L08-D320	●	●	32	25	17	200	45	23	4.5	–13°	–6°	0.8	WN□□0804□□	2-80~
A32S-AWLNR/L08-D400	●	●	40	32	22	250	50	30	6	–10°				
A40T-AWLNR/L08-D500	●	●	50	40	27	300	55	37	7	–8°				
A50U-AWLNR/L08-D630	●	●	63	50	35	350	65	47	10	–7°				

T-CBN inserts 3-9~

Basic Selection Chipbreakers WN□□0804□□-□□

P Steel — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**NS730**	**GT730**	**T9115**	**T9115**
Page	2-80	2-80	2-83	2-85
Chipbreaker	**TF**	**TSF**	**TM**	**TH**
Vc (m/min)	**200** (150-250)	**200** (150-300)	**220** (150-300)	**220** (150-250)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.3-1.5)	**3.0** (1.0-5.0)	**4.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.15** (0.08-0.3)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

M Stainless — Continuous

Operation	Finishing	Finishing to medium cutting	Medium cutting
Grade	**T6120**	**T6130**	**T6130**
Page	2-80	2-83	2-85
Chipbreaker	**SF**	**SM**	**SH**
Vc (m/min)	**150** (100-200)	**120** (70-150)	**120** (70-150)
ap (mm)	**1.0** (0.5-3.0)	**2.0** (0.5-4.0)	**3.0** (3.0-6.0)
f (mm/rev)	**0.1** (0.03-0.15)	**0.3** (0.2-0.5)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	1.6

K Cast Iron — Continuous

Operation	Precision finishing	Finishing	Finishing to medium cutting	Medium cutting
Grade	**BX930**	**T5115**	**T5115**	**T5115**
Page	3-9	2-81	2-84	2-86
Chipbreaker	**T-CBN**	**CF**	**CM**	**CH**
Vc (m/min)	**700** (300-1200)	**270** (140-400)	**270** (150-400)	**270** (140-400)
ap (mm)	**0.3** (0.05-0.5)	**1.0** (0.5-2.0)	**2.0** (1.0-5.0)	**4.0** (2.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.15** (0.05-0.2)	**0.3** (0.15-0.4)	**0.4** (0.2-0.5)
rε (mm)	0.4	0.4	0.8	1.2

S Superalloys — Continuous

Operation	Precision finishing	Finishing to medium cutting	Medium cutting
Grade	**BX480**	**AH905**	**KS20**
Page	3-9	2-84	2-85
Chipbreaker	**T-CBN**	**HMM**	**SA**
Vc (m/min)	**200** (70-300)	**50** (20-100)	**50** (20-80)
ap (mm)	**0.3** (0.1-0.5)	**1.5** (0.5-3.0)	**3.0** (1.0-6.0)
f (mm/rev)	**0.1** (0.05-0.2)	**0.2** (0.1-0.3)	**0.3** (0.2-0.5)
rε (mm)	0.4	0.8	0.8

H Hard Materials — Continuous

Operation	Precision finishing	Finishing
Grade	**BXM10**	**BXM20**
Page	3-9	3-9
Chipbreaker	**T-CBN**	**T-CBN**
Vc (m/min)	**200** (150-350)	**150** (70-220)
ap (mm)	**0.1** (0.05-0.30)	**0.2** (0.05-0.30)
f (mm/rev)	**0.1** (0.03-0.18)	**0.1** (0.05-0.25)
rε (mm)	0.4	0.4

For other machining types, see "Selection System" 2-4 ~

● : Stocked items.

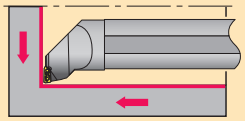
Parts for A-type

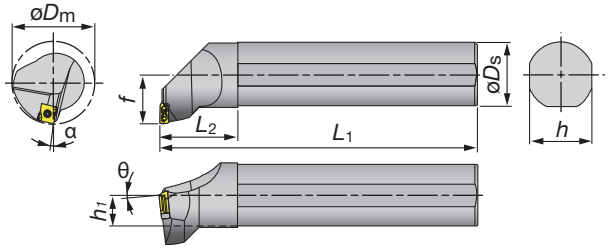
Cat. No.	Applicable inserts	Clamp	Clamping screw	Shim	Shim screw	Spring	Springpin	Wrench	Recommend clamping torque(N·m)
A□□□-AWLNR/L06	**WN□□0604□□**	ACP3S	ACS-5W	ASW322	CSTB-3.5	BP-7	SP-2.5	T-15F	3.0
A□□□-AWLNR/L08	**WN□□0804□□**	ACP4S	ACS-5W	ASW422	CSTB-3.5	BP-7	SP-2.5	T-15F	4.0

Note: Replacement parts of former A-type toolholders are not applicable to "Turning A" toolholders.

● : Stocked items.

Boring & Internal facing



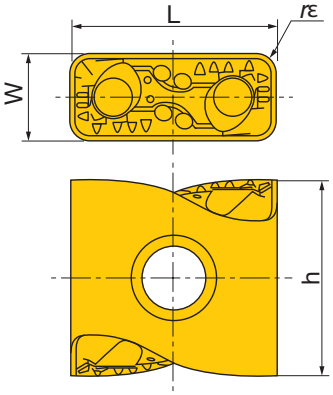


Right hand (R) shown.

Toolholders Cat. No.	Stock		Min bore.dia.	Dimensions (mm)						α	θ	Applicable inserts
	R	L	øDm	øDs	f	L1	L2	h	h1			
S25T-TLANR/L12-D530	●	●	53	25	17	300	40	23	11.5	-6°	-14°	LNMX1204□□L/R
S32U-TLANR/L12-D530	●	●	53	32	22	350	45	29	14.5	-6°	-14°	
S40V-TLANR/L12-D530	●	●	53	40	27	400	53	36	18	-6°	-14°	
S50U-TLANR/L16-D850	●	●	85	50	37	350	63	46	23	-6°	-10°	LNMX1606□□L/R

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (S-TLANL□□ type), and the left hand insert (L) is used for the right hand toolholders (S-TLANR□□ type).

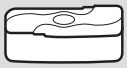
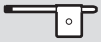
Inserts for TurnTec



Right hand (R) shown.

Cat. No.	Stocked grades						Dimensions (mm)			
	Coated									
	T9115		T9125		AH725		W	L	h	rε
	R	L	R	L	R	L				
LNMX120408R/L-TDR	●	●	●	●			4.8	12.0	11.6	0.8
LNMX120412R/L-TDR	●	●	●	●			4.8	12.0	11.6	1.2
LNMX160608R/L-TDR	●	●	●	●			6.4	16.2	13.5	0.8
LNMX160612R/L-TDR	●	●	●	●			6.4	16.2	13.5	1.2
LNMX160616R/L-TDR	●	●	●	●			6.4	16.2	13.5	1.6
LNMX160608R/L-MDR	●	●			★	★	6.4	16.2	13.5	0.8
LNMX160612R/L-MDR	★	★			★	★	6.4	16.2	13.5	1.2
LNMX120408R/L-TWR	★	★	★	★			4.8	12.0	11.6	0.8
LNMX120412R/L-TWR	★	★	★	★			4.8	12.0	11.6	1.2
LNMX160608R/L-TWR	★	★	★	★			6.4	16.2	13.5	0.8
LNMX160612R/L-TWR	★	★	★	★			6.4	16.2	13.5	1.2

Parts for TurnTec

Toolholders Cat. No.	Applicable Inserts	Shim	Shim Screw	Spring pin	Wrench for shim screw	Clamping screw	Wrench
				–			
S25T-TLANR/L12-D530	LNMX1204□□L/R	TSL12L/RI	CSTF-2L055-S	–	T-6F-S	CSTB-3.5L115-S	KEYV-T10
S32U-TLANR/L12-D530							
S40V-TLANR/L12-D530							
S50U-TLANR/L16-D850	LNMX1606□□L/R	TSL16L/RI	–	PSP-16	–	CSTB-4L115-S	KEYV-T15

● : Stocked items
★ : Available from 2013

Standard cutting conditions

* Values in red shows the condition for facing

LNMX1204□□□-□□□

Work materials	Chip-breakers	Grades	Cutting speed *Vc* (m/min)	Depth of cut: *ap* (mm)		Feed: *f* (mm/rev)	
				r_ε: 0.8	r_ε: 1.2	r_ε: 0.8	r_ε: 1.2
Steels S45C, SCM415 etc. (C45, 18CrMo4 etc.)	TDR	T9115	120 - 250	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		T9125	80 - 180				
	TWR	T9115	120 - 250	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		T9125	80 - 180				
Stainless steels SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	TDR	T9115	100 - 180	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		T9125	80 - 180				
	TWR	T9115	100 - 180	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		T9125	80 - 180				

LNMX1606□□□-□□□

Work materials	Chip-breakers	Grades	Cutting speed *Vc* (m/min)	Depth of cut: *ap* (mm)			Feed: *f* (mm/rev)		
				r_ε: 0.8	r_ε: 1.2	r_ε: 1.6	r_ε: 0.8	r_ε: 1.2	r_ε: 1.6
Steels S45C, SCM415 etc. (C45, 18CrMo4 etc.)	TDR	T9115	120 - 250	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	1 - 8 1 - 3.2	0.15 - 0.6	0.25 - 0.8	0.3 - 1
		T9125	80 - 180						
	TWR	T9115	120 - 250	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	-	0.15 - 0.6	0.25 - 0.8	-
		T9125	80 - 180						
Stainless steels SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	TDR	T9115	100 - 180	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	1 - 8 1 - 3.2	0.15 - 0.6	0.25 - 0.8	0.3 - 1
		T9125	80 - 180						
	MDR	T9115	100 - 150	1.5 - 6 0.5 - 3.2	1.5 - 7 0.8 - 3.2	-	0.1 - 0.5	0.15 - 0.7	-
		AH725	50 - 150						
	TWR	T9115	100 - 180	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	-	0.15 - 0.6	0.25 - 0.8	-
		T9125	80 - 180						

STFPR/L

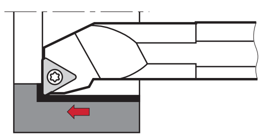
Min. bore dia. ø8mm~ | Shank dia. ø8~32mm

Positive rake / Screw-on system

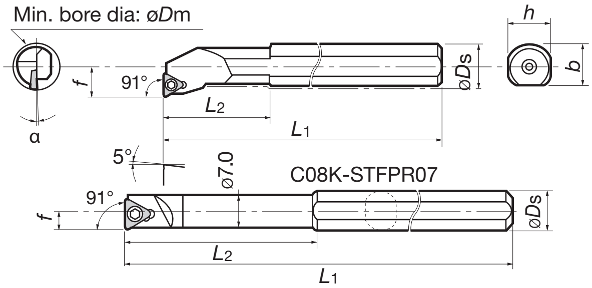
Steel Shank | Carbide Shank

Blind hole boring

STFPR/L



Cutting edge style **F**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
S08H-STFPR/L07			8	8	4	100	20	7	-	10°	0.4	TPGM	0701□□ 2-127	CSTB-2.2S	T-7F
S08H-STFPR/L09			10	8	5.5	100	16	7	-	8°	0.4	TP□□ * Excepting TPGH, TPGM, TPGA	0902□□ 2-123~	CSTB-2.2S	T-7F
S10K-STFPR/L11			12	10	6.5	125	20	9	-	6°	0.4		1102□□ 2-123~	CSTB-2.5	T-8F
S12M-STFPR/L11			16	12	9	150	24	11	11.5	4°					
S16Q-STFPR/L13			20	16	11	180	30	15	15.5	3°	0.4		1303□□ 2-123~	CSTB-3	T-9F
S20R-STFPR/L13			24	20	13	200	40	18	19	2°					
S25S-STFPR/L16			31	25	17	250	45	23	24	0°	0.8		16T3□□ 2-123~	CSTB-4	T-15F
S32T-STFPR/L16			39	32	22	300	50	30	31						

T-CBN inserts 3-12 ~ T-DIA insert 3-22 ~

Carbide Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
C08K-STFPR/L07			8	8	4	125	45	7	-	10°	0.4	TPGM	0701□□ 2-127	CSTB-2.2S	T-7F
C08K-STFPR/L09			10	8	5.5	125	-	7	-	8°	0.4	TP□□ * Excepting TPGH, TPGM, TPGA	0902□□ 2-123~	CSTB-2.2S	T-7F
C10M-STFPR/L11			12	10	6.5	150	-	9	-	6°	0.4		1102□□ 2-123~	CSTB-2.5	T-8F
C12Q-STFPR/L11			16	12	9	180		11		4°					
C16R-STFPR/L13			20	16	11	200	-	15	-	3°	0.4		1303□□ 2-123~	CSTB-3	T-9F
C20S-STFPR/L13			24	20	13	250		18		2°					
C25T-STFPR/L16			31	25	17	300	-	23	-	0°	0.8		16T3□□ 2-123~	CSTB-4	T-15F

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-12 ~ T-DIA insert 3-22 ~

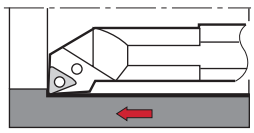
● : Stocked items.

PTFNR/L

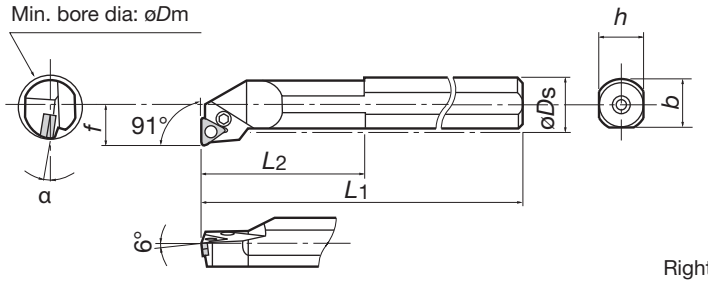
Min. bore dia. ø40mm~ | Shank dia. ø32~50mm | Steel Shank

Boring

PTFNR/L



Cutting edge style **F**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Shim	Lever	Clamping screw	Spring	Wrench
S32S-PTFNR/L16	●	●	40	32	22	250	50	30	29.5	10°	0.8	TN□□	1604□□ 2-70~	LST317B R / L	LCL3	LCS3	LSP3	P-2.5
S40T-PTFNR/L16	●	●	50	40	27	300	55	37	37.5									
S50U-PTFNR/L16	●		63	50	35	350	65	47	47.5	8°								

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-8 ~ | T-DIA inserts 3-21

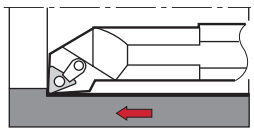
M-type / Internal Turning

MTFNR/L

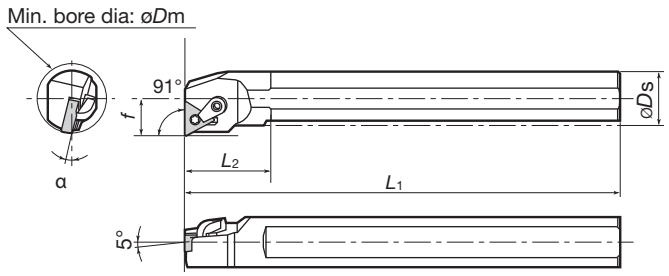
Min. bore dia. ø32mm | Shank dia. ø25mm | Steel Shank

Blind hole boring

MTFNR/L



Cutting edge style **F**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Lock pin	Clamp	Clamping screw	Shim	Wrench for lock pin	Wrench for clamp
S25R-MTFNR/L16	▲	▲	32	25	17	200	40	23	22.5	12°	0.8	TN□□	1604□□ 2-70~	MLP33L	MCL-5M* MCPM-6	MCS 520-2.5	-	P-2F	P-2.5

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-8 ~ | T-DIA inserts 3-21

Note: * marked parts type No. is former type No.

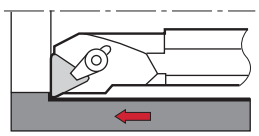
● : Stocked items.
▲ : Will be replaced by new products.

CTFPR/L

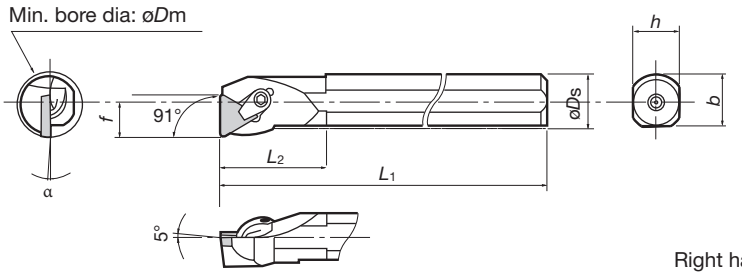
Min. bore dia. ø16mm~ | Shank dia. ø12~32mm | Steel Shank | Carbide Shank

Blind hole boring

CTFPR/L



Cutting edge style **F**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	a	Std. corner rε	Applicable inserts		Clamp set	Wrench	Shim	Shim screw
S12M-CTFPR/L11	●	●	16	12	9	150	25	11	11.5	6°	0.4	TP□□ (Without hole)	1103□□ 2-130~	CSW-00	P-2.5	-	-
S16Q-CTFPR/L11	●	●	20	16	11	180	30	15	15	4°				CSG-5S			
S20R-CTFPR/L16	●	●	25	20	13	200	40	18	18.5	2°	0.8		1603□□ 2-130~	CSG-6S	P-3	-	-
S25S-CTFPR/L16	●	●	32	25	17	250	45	23	22.5	0°				CSG-6			
S32T-CTFPR/L16	●	●	40	32	22	300	50	30	29.5							PAT-32	M3×0.5×6

T-CBN inserts 3-14 ~ T-DIA inserts 3-23

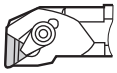
Carbide Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	a	Std. corner rε	Applicable inserts		Clamp set	Wrench	Shim	Shim screw
C12Q-CTFPR/L11	●	●	16	12	9	180	-	11	-	6°	0.4	TP□□ (Without hole)	1103□□ 2-130~	CSW-00	P-2.5	-	-
C16R-CTFPR/L11	●	●	20	16	11	200		15		4°				CSG-5S			

Notes: • The hole of inserts conforms to ISO standard.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-14 ~ T-DIA inserts 3-23

Parts for positive-rake C-type toolholders when using chipbreaker piece

Toolholder Cat. No.	Shape	Clamp set	Chipbreaker piece
C12Q / S12M-CTFPR/L11		-	-
C16R / S16Q-CTFPR/L11		CSG-5	CBT-2M, (S)
S20R-CTFPR/L16 S25S-CTFPR/L16 S32T-CTFPR/L16		CSG-6	CBT-3M, (S, L)

Note: When using chipbreaker piece, order above optional parts separately. Chipbreaker piece grade: TX30

● : Stocked items.

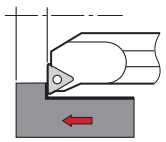
STUPR/L

Min. bore dia. ø8mm~ | Shank dia. ø8~32mm

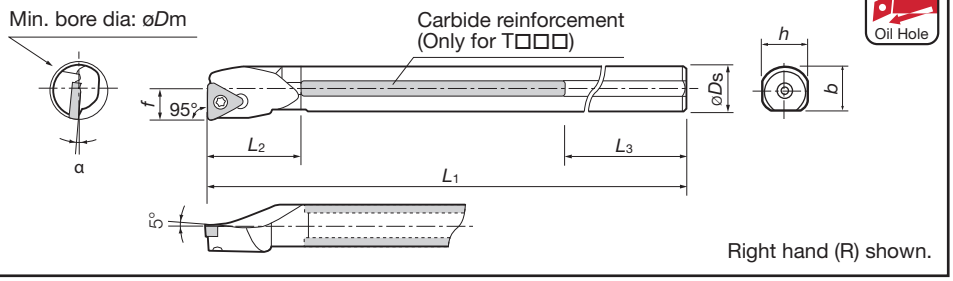
Tsuppari-Ichiban Shank | Steel Shank | Carbide Shank

Boring

STUPR/L



Cutting edge style **U**



Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	øDs	f	L1	L2	L3	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
T12M-STUPR/L11-D14	●		14	-	12	7	150	24	59	11	-	4°	0.4	TPG□□ *Excepting TPGH, TPGM, TPGA	1102□□ 2-123~	CSTB-2.5B	T-8F
T12M-STUPR/L11	●	●	16			9		25	58							CSTB-2.5	
T16Q-STUPR/L13-D18	●		18	-	16	9	180	30	59	15	-	3.5°	0.4		1303□□ 2-123~	CSTB-3S	T-9F
T16Q-STUPR/L13	●	●	20			11						3°				CSTB-3	
T20R-STUPR/L13C-D22	●		22	Rc1/4	20		200	35	49	18		2°				CSTB-3S	
T20R-STUPR/L13	●	●	24	-		13		40								CSTB-3	
T25S-STUPR/L16C-D27	●		27	Rc1/4	25	13.5	250	40	64	23	-	1°	0.8		16T3□□ 2-123~	CSTB-4S	T-15F
T25S-STUPR/L16	●	●	31	-		17		45				0°					

T-CBN inserts 3-12~ T-DIA inserts 3-22 ~

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Coolant supply attachment
S08H-STUPR/L07			8	8	4	100	21	7	-	10°	0.4	TPGM	0701□□ 2-127	CSTB-2.2S	T-7F	-
S08H-STUPR/L09			10	8	5.5	100	16	7	-	8°	0.4	TPG□□ *Excepting *TPGH, TPGM, TPGA	0902□□ 2-123~	CSTB-2.2S	T-7F	-
S10K-STUPR/L11			12	10	6.5	125	20	9	-	6°	0.4		1102□□ 2-123~	CSTB-2.5	T-8F	-
S12M-STUPR/L11			16	12	9	150	24	11	11.5	4°						
S16Q-STUPR/L13			20	16	11	180	30	15	15.5	3°	0.4		1303□□ 2-123~	CSTB-3	T-9F	-
S20R-STUPR/L13			24	20	13	200	40	18	19	2°						
S25S-STUPR/L16			31	25	17	250	45	23	24	0°	0.8		16T3□□ 2-123~	CSTB-4S	T-15F	-
S32T-STUPR/L16			39	32	22	300	50	30	31							
A20R-STUPR/L13			24	20	13	200	40	18	19		0.4	TPG□□ *Excepting TPGH, TPGM, TPGA	1303□□ 2-123~	CSTB-3	T-9F	EA-20
A25S-STUPR/L16			31	25	17	250	45	23	24		0.8		16T3□□ 2-123~	CSTB-4S	T-15F	EA-25

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-12 ~ T-DIA inserts 3-22 ~

● : Stocked items.

STUPR/L

Min. bore dia. ø8mm~ | Shank dia. ø8~32mm | Steel Shank | Carbide Shank

Carbide Shank

Cat. No.	Stock R	Stock L	Min. bore dia. $øD_m$	Oil hole	Dimensions (mm) $øD_s$	f	L_1	L_2	L_3	h	b	a	Std. corner $r\varepsilon$	Applicable inserts		Clamping screw	Wrench
C08K-STUPR/L07			8	-	8	4	125	45	-	7	-	10°	0.4	TPGM	0701□□ 2-127	CSTB-2.2S	T-7F
C08K-STUPR/L09			10	-	8	5.5	125	-	-	7	-	8°	0.4	TP□□ *Excepting TPGH, TPGM, TPGA	0902□□ 2-123~	CSTB-2.2S	T-7F
C10M-STUPR/L11			12	-	10	6.5	150	-	-	9	-	6°	0.4		1102□□ 2-123~	CSTB-2.5	T-8F
C12Q-STUPR/L11			16		12	9	180			11		4°					
C16R-STUPR/L13			20	-	16	11	200	-	-	15	-	3°	0.4		1303□□ 2-123~	CSTB-3	T-9F
C20S-STUPR/L13			24		20	13	250			18		2°					
C25T-STUPR/L16			31	-	25	17	300	-	-	23	-	0°	0.8		16T3□□ 2-123~	CSTB-4S	T-15F
E08J-STUPR/L07			8	-	8	4	110	40	-	7.5	-	-	0.4	TPGM	0701□□ 2-123~	CSTB-2.2S	T-7F
E08G-STUPR/L07							90										
E08J-STUPR/L09			10	-	8	5.5	110	-	-	7.5	-	-	0.4	TP□□ *Excepting TPGH, TPGM, TPGA	0902□□ 2-123~	CSTB-2.2S	T-7F
E08G-STUPR/L09							90										
E10K-STUPR/L11			12	-	10	6.5	120	-	-	9.5	-	-	0.4		1102□□ 2-123~	CSTB-2.5	T-8F
E10H-STUPR/L11							100										
E12L-STUPR/L11			16	-	12	9	130			11.5	-	-					
E12J-STUPR/L11							110										
E16M-STUPR/L13			20	-	16	11	150	-	-	15.5	-	-	0.4		1303□□ 2-123~	CSTB-3	T-9F
E16L-STUPR/L13							130										

Note: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-12 ~ T-DIA inserts 3-22 ~

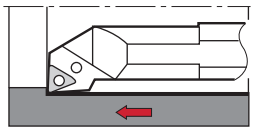
● : Stocked items.

PTUNR/L

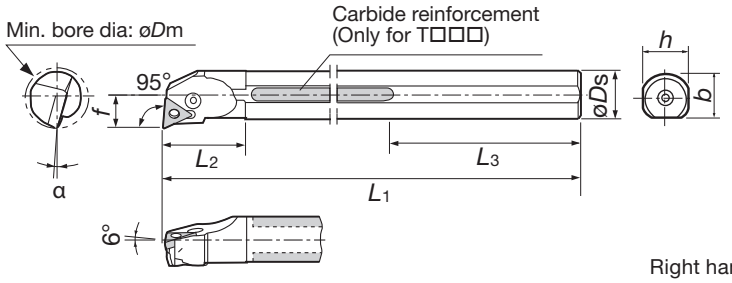
Min. bore dia. ø20mm~ | Shank dia. ø16~50mm | Tsuppari-Ichiban Shank | Carbide Shank

Boring

PTUNR/L



Cutting edge style **U**



Oil Hole

Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Lever	Spring	Shim
T16Q-PTUNR/L11	●		20	-	16	11	180	27	59	15	-	14°	0.4	TN□□	1103□□ 2-70~	LCS22A	P-2F	LCL22N	-	-
T20R-PTUNR/L11C	●		25	Rc1/4	20	13	200	35	49	18		12°								
T25S-PTUNR/L16C	●		32		25	17	250	40	64	23		12°	0.8		1604□□ 2-70~	LCS3	P-2.5	LCL3	LSP3	ELST317B R/L
T32U-PTUNR/L16C	●		40	Rc1/2	32	22	350	50	103	30	-	10°								LST317B R/L
T40V-PTUNR/L16C	●		50		40	27	400	55	88	37								LCL3		
T50W-PTUNR/L16C	●		63		50	35	450	65	63	47		8°								

T-CBN inserts 3-8 ~ T-DIA inserts 3-21

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Lever	Spring	Shim	Coolant supply attachment
S16M-PTUNR/L11	●	●	20	16	11	150	30	15	15.5	14°	0.4	TN□□	1103□□ 2-70~	LCS22A	P-2F	LCL22N	-	-	-
S20Q-PTUNR/L11	●	●	25	20	13	180	35	18	19	12°									
S25R-PTUNR/L16	●	●	32	25	17	200	40	23	24	12°	0.8		1604□□ 2-70~	LCS3	P-2.5	LCL33	LSP3	ELST317B R/L	-
A32S-PTUNR/L16	●	●	40	32	22	250	50	30	29.5	12°	0.8	TN□□	1604□□ 2-70~	LCS3	P-2.5	LCL3	LSP3	LST317B R/L	EA-32

T-CBN inserts 3-8 ~ T-DIA inserts 3-21

Notes : • The hole of inserts conforms to ISO standard.
• Toolholder lengths do not always conform to ISO.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

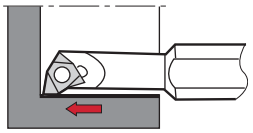
● : Stocked items.

SWUBR

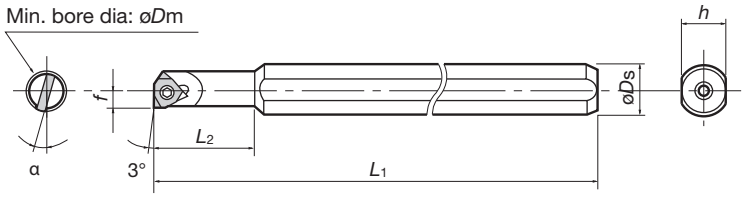
Min. bore dia. ø6mm~ | Shank dia. ø8mm | Steel Shank | Carbide Shank

Boring

SWUBR



Cutting edge style **U**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock	Min. bore dia. øDm	Dimensions (mm)								Std. corner rε	Applicable inserts		Clamping screw	Wrench
	R		øDs	f	L1	L2	h	b	α	a					
S08H-SWUBR036		6	8	3.1	100	18	7	-	12°	-	0.4	WB□□	0301□□ 2-132	CSTB-2	T-6F
S08H-SWUBR037		7		3.6		20									

Carbide Shank

Cat. No.	Stock	Min. bore dia. øDm	Dimensions (mm)								Std. corner rε	Applicable inserts		Clamping screw	Wrench
	R		øDs	f	L1	L2	h	b	α	a					
C08K-SWUBR036		6	8	3.1	125	30	7	-	12°	-	0.4	WB□□	0301□□ 2-132	CSTB-2	T-6F
C08K-SWUBR037		7		3.6		40									

Notes : • The hole of inserts conforms to ISO standard.
• When using a left hand insert, it is used for right hand toolholders.

● : Stocked items.

Relating pages | Sleeves (5–69) | Parts (14–1~)

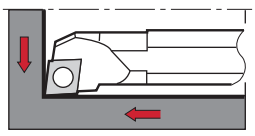
SCLCR/L

Min. bore dia. ø10mm~ | Shank dia. ø8~25mm

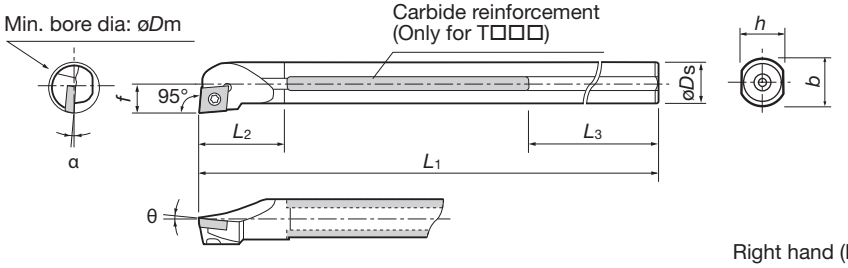
Tsuppari-Ichiban Shank | Steel Shank | Carbide Shank

Boring & Internal facing

SCLCR/L



Cutting edge style **L**



Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	θ	Std. corner rε	Applicable inserts		Clamping screw	Wrench
T12M-SCLCR/L06	●	●	16	-	12	9	150	22	59	11	-	10°	0°	0.4	CC□□	0602□□ 2-96~	CSTB-2.5	T-8F
T16Q-SCLCR/L09	●	●	20	-	16	11	180	27	59	15	-	10°	0°	0.8	CC□□	09T3□□ 2-96~	CSTB-4S	T-15F
T20R-SCLCR/L09C	●	●	25	Rc1/4	20	13	200	35	49	18	-	8°	0°	0.8	CC□□	09T3□□ 2-96~	CSTB-4S	T-15F
T25S-SCLCR/L09C	●	●	32	Rc1/4	25	17	250	40	64	23	-	6°	0°	0.8	CC□□	09T3□□ 2-96~	CSTB-4S	T-15F

T-CBN inserts 3-12 ~ T-DIA inserts 3-22

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	θ	Std. corner rε	Applicable inserts		Clamping screw	Wrench
S08H-SCLCR/L06			10	-	8	5.5	100	16	-	7	-	13°	0°	0.4	CC□□	0602□□ 2-96~	CSTB-2.5S	T-8F
S10K-SCLCR/L06			13	-	10	7	125	25	-	9	-	12°	0°	0.4	CC□□	0602□□ 2-96~	CSTB-2.5	T-8F
S12M-SCLCR/L06			16	-	12	9	150	25	-	11	11.5	10°	0°	0.4	CC□□	0602□□ 2-96~	CSTB-2.5	T-8F
S16Q-SCLCR/L09			20	-	16	11	180	30	-	15	15.5	10°	0°	0.8	CC□□	09T3□□ 2-96~	CSTB-4S	T-15F
S20R-SCLCR/L09			25	-	20	13	200	35	-	18	19	6°	0°	0.8	CC□□	09T3□□ 2-96~	CSTB-4S	T-15F
S25S-SCLCR/L09			32	-	25	17	250	40	-	23	24	6°	0°	0.8	CC□□	09T3□□ 2-96~	CSTB-4S	T-15F

T-CBN inserts 3-12 ~ T-DIA inserts 3-22

Carbide Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	θ	Std. corner rε	Applicable inserts		Clamping screw	Wrench
C08K-SCLCR/L06			10	-	8	5.5	125	21.5	-	7	-	13°	0°	0.4	CC□□	0602□□ 2-96~	CSTB-2.5S	T-8F
C10M-SCLCR/L06			13	-	10	7	150	-	-	9	-	12°	0°	0.4	CC□□	0602□□ 2-96~	CSTB-2.5	T-8F
C12Q-SCLCR/L06			16	-	12	9	180	-	-	11	-	10°	0°	0.4	CC□□	0602□□ 2-96~	CSTB-2.5	T-8F
C16R-SCLCR/L09			20	-	16	11	200	-	-	15	-	10°	0°	0.8	CC□□	09T3□□ 2-96~	CSTB-4S	T-15F
C20S-SCLCR/L09			25	-	20	13	250	-	-	18	-	8°	0°	0.8	CC□□	09T3□□ 2-96~	CSTB-4S	T-15F
C25T-SCLCR/L09			32	-	25	17	300	-	-	23	-	6°	0°	0.8	CC□□	09T3□□ 2-96~	CSTB-4S	T-15F

T-CBN inserts 3-12 ~ T-DIA inserts 3-22

Notes: • The hole of inserts conforms to ISO standard.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

● : Stocked items.

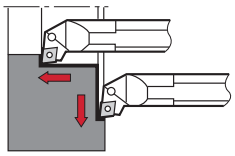
PCLNR/L

Negative rake / Lever-lock system

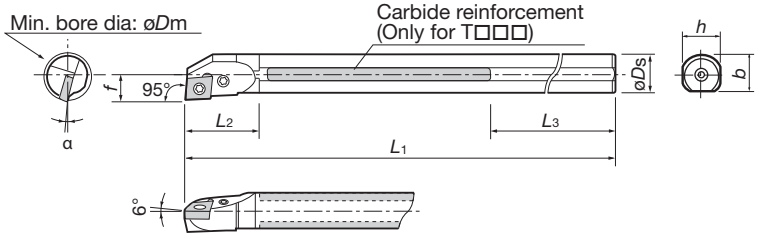
Min. bore dia. ø20mm~ | Shank dia. ø16~50mm | Tsuppari-Ichiban Shank | Steel Shank

Boring / Facing

PCLNR/L



Cutting edge style **L**



Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	øDs	f	L1	L2	L3	h	b	a	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Lever	Shim	Spring
T16Q-PCLNR/L09	●		20	-	16	11	180	27	59	15		14°			0903□□ 2-42~	LCS22A	P-2F	LCL32N	-	-
T20R-PCLNR/L09C	●		25	Rc1/4	20	13	200	35	49	18	-	12°	0.8							
T25S-PCLNR/L09C	●		32		25	17	250	40	64	23		11°		CN□□						
T32U-PCLNR/L12C	●		40		32	22	350	50	103	30		11°								
T40V-PCLNR/L12C	●		50	Rc1/2	40	27	400	55	88	37	-	10°	0.8		1204□□ 2-42~	LCS4	P-3	LCL4	LSC42B R/L	LSP4
T50W-PCLNR/L12C	●		63		50	35	450	65	63	47		8°								

T-CBN inserts 3-7 ~ T-DIA inserts 3-21

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	øDs	f	L1	L2	L3	h	b	a	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Lever	Shim	Spring
S16M-PCLNR/L09	●	●	20	-	16	11	150	30		15	15.5	14°			0903□□ 2-42~	LCS22A	P-2F	LCL32N	-	-
S20Q-PCLNR/L09	●	●	25	-	20	13	180	35	-	18	19	12°	0.8							
S25R-PCLNR/L09	●	●	32	-	25	17	200	40		23	24	11°		CN□□						
S32S-PCLNR/L12	●	●	40	-	32	22	250	50		30	29.5	11°								
S40T-PCLNR/L12	●	●	50	-	40	27	300	55	-	37	37.5	10°	0.8		1204□□ 2-42~	LCS4	P-3	LCL4	LSC42B R/L	LSP4
S50U-PCLNR/L12	●	●	63	-	50	35	350	65		47	47.5	8°								

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-7~ T-DIA inserts 3-21

● : Stocked items.

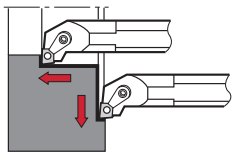
MCLNR/L

Negative rake / Multi clamping system

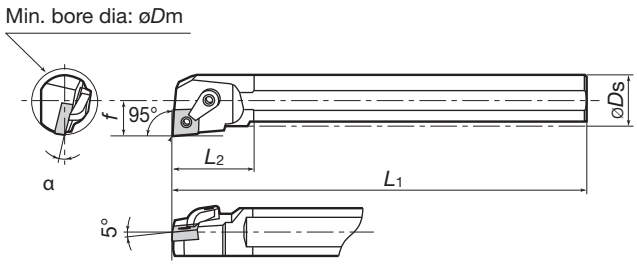
Min. bore dia. ø32mm | Shank dia. ø25mm | Steel Shank

Boring / facing

MCLNR/L



Cutting edge style **L**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Lock pin	Clamp	Clamping screw	Shim	Wrench for lock pin	Wrench for clamp
S25R-MCLNR/L12	●	●	32	25	17	200	40	23	22.5	12°	0.8	CN□□	1204□□ 2-42~	MLP44	MCPM-21	MCS620-3	-	P-2.5F	P-3

T-CBN inserts 3-7 ~ T-DIA inserts 3-21

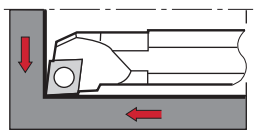
SCLPR/L

Positive rake / Screw-on system

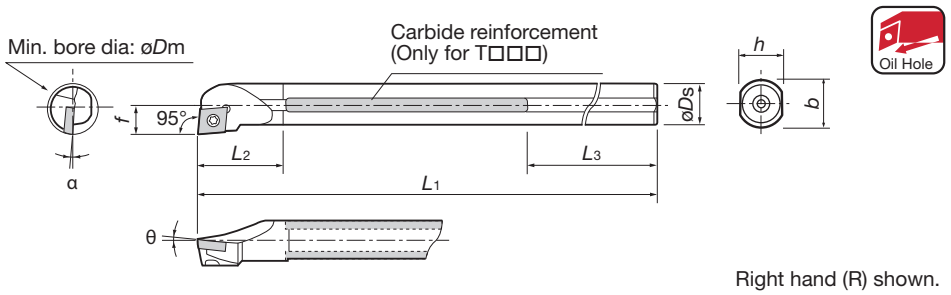
Min. bore dia. ø14mm~ | Shank dia. ø12~25mm | Tsuppari-Ichiban Shank

Boring / facing

SCLPR/L



Cutting edge style **L**



Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	α	θ	Std. corner rε	Applicable inserts		Clamping screw	Wrench
T12M-SCLPR/L08-D14	●		14	-	12	7	150	22	59	11	4°	5°	0.4	CP□□	0802□□ 2-102~	CSTB-3L050	T-9F
T12M-SCLPR/L08	●	●	16			9		25			3°						
T16Q-SCLPR/L09-D18	●		18	-	16	9	180	27	59	15	3.5°				0903□□ 2-102~	CSTB-4L060	T-15F
T16Q-SCLPR/L09	●	●	20			11		30			4°					CSTB-4S	
T20R-SCLPR/L09C-D22	●		22	Rc1/4	20		200	35	49	18	2°		0.8			CSTB-4L060	
T20R-SCLPR/L09	●	●	25	-		13										CSTB-4S	
T25S-SCLPR/L09C-D27	●		27	Rc1/4	25	13.5	250	40	64	23	1°					CSTB-4L060	
T25S-SCLPR/L09	●	●	32	-		17					0°					CSTB-4S	

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

● : Stocked items.

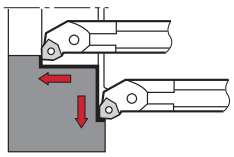
PWLNR/L

Min. bore dia. ø20mm~ | Shank dia. ø16~25mm | Steel Shank

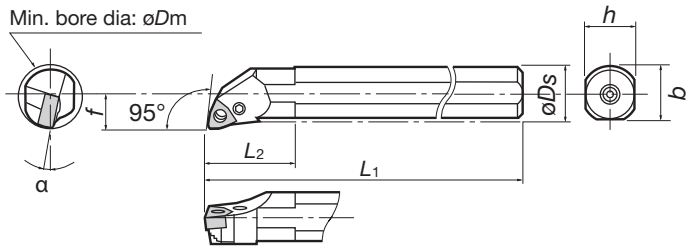
Negative rake / Lever-lock system

Boring / facing

PWLNR/L



Cutting edge style **L**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Shim	Lever	Clamping screw	Spring	Wrench
S16M-PWLNR/L06	●	●	20	16	11	150	30	15	15.5	17°	0.8	WN□□	0604□□ 2-80~	-	LCL33N	LCS33	-	P-2F
S20Q-PWLNR/L06	●	●	25	20	13	180	35	18	19	14°								
S25R-PWLNR/L06	●	●	32	25	17	200	40	23	24	12°				LSW312B R / L	LCL3	LCS3B	LSP3	P-2.5

M-type / Internal Turning

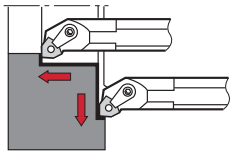
MWLNR/L

Min. bore dia. ø32mm~ | Shank dia. ø25~50mm | Steel Shank

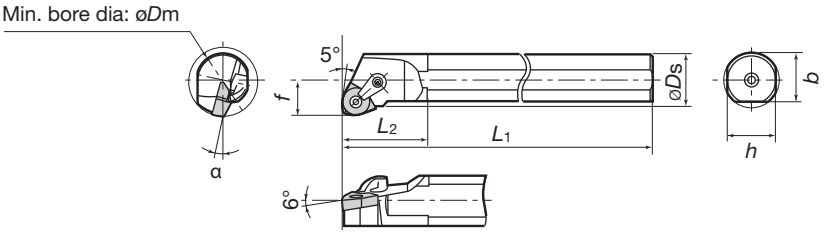
Negative rake / Multi clamping system

Boring / facing

MWLNR/L



Cutting edge style **L**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Lock pin	Clamp	Clamping screw	Shim	Wrench for lock pin	Wrench for clamp
S25R-MWLNR/L08	▲	▲	32	25	17	200	40	23	22.5	12°	0.8	WN□□	0804□□ 2-80~	MLP44	MCPM-6	MCS 520-2.5	-	P-2.5F	P-2.5
S32S-MWLNR/L08	▲	▲	44	32	22	250	50	30	29.5	10°				MLP46			MSW -432BR/L		
S40T-MWLNR/L08	▲	▲	54	40	27	300	60	37	37.5										
S50U-MWLNR/L08	▲	▲	70	50	35	350	75	47	47.5										

T-CBN inserts 3-9

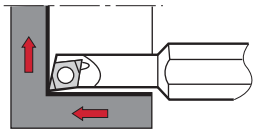
● : Stocked items.
▲ : Will be replaced by new products.

SEXPR/L

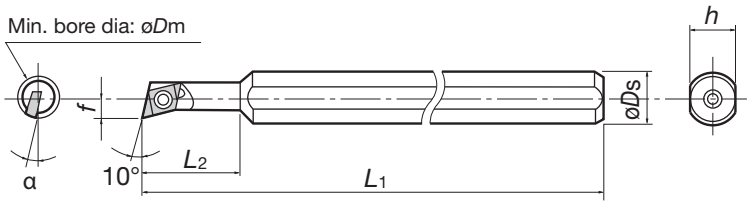
Min. bore dia. ø5.5mm~ | Shank dia. ø8mm | Steel Shank | Carbide Shank

Boring & facing

SEXPR/L



Cutting edge style **X**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
S08H-SEXPR/L045			5.5	8	2.75	100	16	7	-	12°	0.4	EP□□	0401□□ 2-111	CSTB-2	T-6F
JS08H-SEXPR/L045	●				2.7										
S08H-SEXPR/L047			7		3.6		20								
JS08H-SEXPR/L047	●														

T-DIA inserts 3-23

Carbide Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
C08K-SEXPR/L045			5.5	8	2.75	125	28	7	-	12°	0.4	EP□□	0401□□ 2-111	CSTB-2	T-6F
C08K-SEXPR/L047			7		3.6		40								

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-DIA inserts 3-23

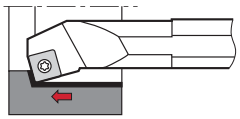
S-type / Internal Turning

SSKPR/L

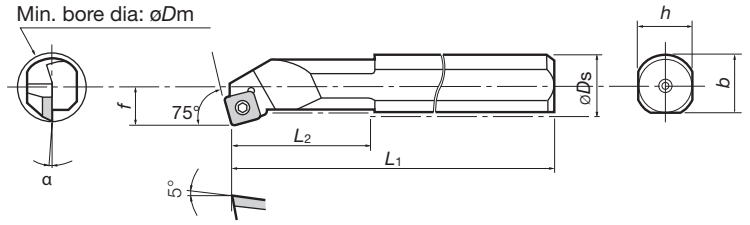
Min. bore dia. ø20mm~ | Shank dia. ø16~32mm | Steel Shank

Through boring

SSKPR/L



Cutting edge style **K**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
S16Q-SSKPR/L09			20	16	11	180	30	15	15.5	6°	0.8	SP□□	0903□□ 2-114	CSTB-4S	T-15F
S20R-SSKPR/L09			24	20	13	200	40	18	19	2°					
S25S-SSKPR/L12			31	25	17	250	45	23	24	2°	0.8		1204□□ 2-114	CSTB-5	T-20F
S32T-SSKPR/L12			39	32	22	300	50	30	31	0°					

Notes : • The hole of inserts conforms to ISO standard.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-15

● : Stocked items.

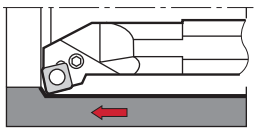
PSKNR/L

Negative rake / Lever-lock system

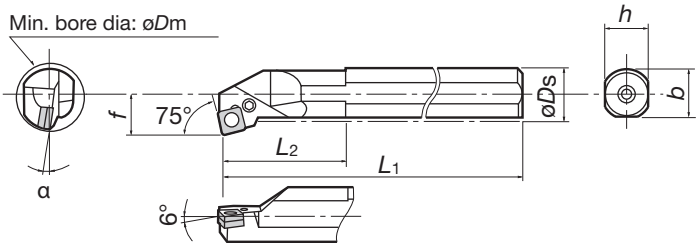
Min. bore dia. ø40mm~ | Shank dia. ø32~50mm | Steel Shank

Through boring

PSKNR/L



Cutting edge style **K**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	a	Std. corner rε	Applicable inserts		Shim	Lever	Clamping screw	Spring	Wrench
S32S-PSKNR/L12	●		40	32	22	250	50	30	29.5	10°	0.8	SN□□	1204□□ 2-61~	LSS42B R / L	LCL4	LCS4	LSP4	P-3
S40T-PSKNR/L12	●		50	40	27	300	55	37	37.5									
S50U-PSKNR/L12	●		63	50	35	350	65	47	47.5	8°								

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-8 ~ T-DIA inserts 3-21

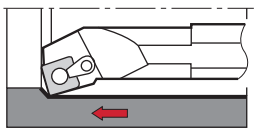
MSKNR/L

Negative rake / Multi clamping system

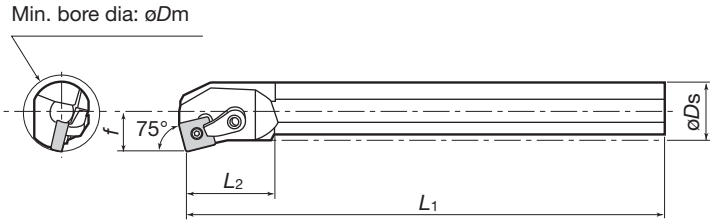
Min. bore dia. ø32mm | Shank dia. ø25mm | Steel Shank

Boring & through boring

MSKNR/L



Cutting edge style **K**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	a	Std. corner rε	Applicable inserts		Lock pin	Clamp	Clamping screw	Shim	Wrench for lock pin	Wrench for clamp
S25R-MSKNR/L12	▲	▲	32	25	17	200	40	23	22.5	12°	0.8	SN□□	1204□□ 2-61~	MLP44	MCL- 6* MCPM-21	MCS620-3	-	P-2.5F	P-3

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-8 ~ T-DIA inserts 3-21

Note: * marked parts type No. is former type No.

● : Stocked items.
▲ : Will be replaced by new products.

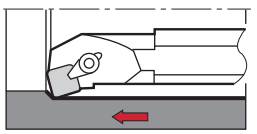
Relating pages Parts (14–1~)

CSKPR/L

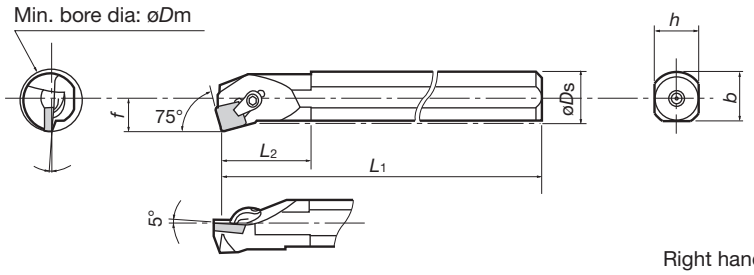
Min. bore dia. ø20mm~ | Shank dia. ø16~32mm | Steel Shank | Carbide Shank

Boring & Through boring

CSKPR/L



Cutting edge style **K**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamp set	Wrench	Shim	Shim screw
S16Q-CSKPR/L09	●		20	16	11	180	30	15	15	4°	0.8	SP□□ (Without hole)	0903□□ 2-116	CSG-5S	P-2.5	-	-
S20R-CSKPR/L09	●	●	25	20	13	200	40	18	18.5	2°				CSG-5			
S25S-CSKPR/L12	●		32	25	17	250	45	23	22.5	0°	0.8		1203□□ 2-116	CSG-6	P-3	-	-
S32T-CSKPR/L12			40	32	22	300	50	30	29.5							PAS-42	SM3 ×0.5×6

T-CBN inserts 3-14 ~ T-DIA inserts 3-22

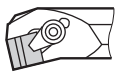
Carbide Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamp set	Wrench	Shim	Shim screw
C16R-CSKPR/L09	●		20	16	11	200	-	15	-	4°	0.8	SP□□ (Without hole)	0903□□ 2-116	CSG-5S	P-2.5	-	-

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-14 ~ T-DIA inserts 3-22

Parts for positive-rake C-type toolholders when using chipbreaker piece

Toolholder Cat. No.	Shape	Clamp set	Chipbreaker piece
C16R · S16Q-CSKPR / L09 S20R - CSKPR / L09 S25S - CSKPR / L12 S32T - CSKPR / L12		CSG-5	CBS-3M, (S, L)
		CSG-6	CBS - 4M, (S, L)

Note: When using chipbreaker piece, order above optional parts separately. Chipbreaker piece grade:TX30

● : Stocked items.

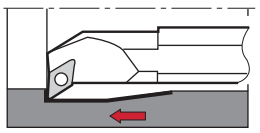
SDUCR/L

Positive rake / Screw-on system

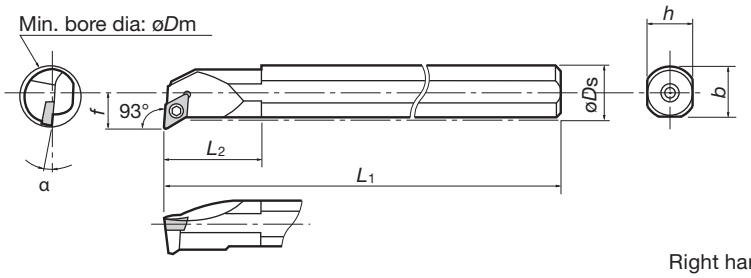
Min. bore dia. ø13mm~ | Shank dia. ø10~25mm | Steel Shank | Carbide Shank

Internal profiling

SDUCR/L



Cutting edge style **U**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
S10K-SDUCR/L07			13	10	7	125	25	9	10	10°	0.4	DC□□	0702□□ 2-105~	CSTB-2.5	T-8F
S12M-SDUCR/L07			16	12	9	150	25	11	11.5	8°	0.4	DC□□	0702□□ 2-105~	CSTB-2.5	T-8F
S16Q-SDUCR/L07			20	16	11	180	30	15	15.5	6°	0.4	DC□□	0702□□ 2-105~	CSTB-2.5	T-8F
S20R-SDUCR/L11			25	20	13	200	35	18	18.5	8°	0.4	DC□□	11T3□□ 2-105~	CSTB-4S	T-15F
S25S-SDUCR/L11			32	25	17	250	40	23	24	4°	0.4	DC□□	11T3□□ 2-105~	CSTB-4	T-15F

T-CBN inserts 3-12 ~ T-DIA inserts 3-22

Carbide Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
C10M-SDUCR/L07			13	10	7	150	24	9	-	10°	0.4	DC□□	0702□□ 2-105~	CSTB-2.5	T-8F
C12Q-SDUCR/L07			16	12	9	180	-	11	12	8°	0.4	DC□□	0702□□ 2-105~	CSTB-2.5	T-8F
C16R-SDUCR/L07			20	16	11	200	-	15	16	6°	0.4	DC□□	0702□□ 2-105~	CSTB-2.5	T-8F
C20S-SDUCR/L11			25	20	13	250	-	18	-	8°	0.4	DC□□	11T3□□ 2-105~	CSTB-4S	T-15F

T-CBN inserts 3-12 ~ T-DIA inserts 3-22

Notes: • The hole of inserts conforms to ISO standard.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

PDUNR/L

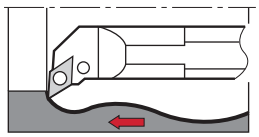
Min. bore dia. ø25mm~ | Shank dia. ø20~50mm

Negative rake / Lever-lock system

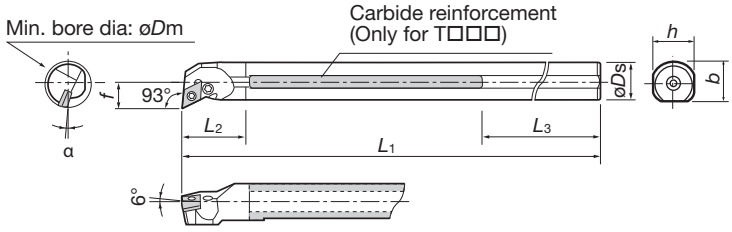
Tsuppari-Ichiban Shank | Steel Shank

Internal profiling

PDUNR/L



Cutting edge style **U**



Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Lever	Shim	Spring
T32U-PDUNR/L15C	●		40	Rc1/2	32	22	350	50	103	30	-	13°	0.8	DN□□	1504□□ 2-52~	LCS4	P-3	LCL4	LSD42B R / L	LSP4
T40V-PDUNR/L15C	●		50		40	27	400	55	88	37		10°								
T50W-PDUNR/L15C	●		63		50	35	450	65	63	47		8°								

T-CBN inserts 3-7 ~ T-DIA inserts 3-21

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Lever	Shim	Spring
S20Q-PDUNR/L11	●	●	25	-	20	13	180	35	-	18	19	14°	0.8	DN□□	1104□□ 2-52~	LCS22A	P-2F	LCL33NL	-	-
S25R-PDUNR/L11	●	●	32		25	17	200	40		23	24	12°				LCS3	P-2.5	LCL33L	ELSD317B R / L	LSP3
S32S-PDUNR/L15	●	●	40	-	32	22	250	50	-	30	29.5	13°	0.8		1504□□ 2-52~	LCS4	P-3	LCL4	LSD42B R / L	LSP4
S40T-PDUNR/L15	●	●	50		40	27	300	55		37	37.5	10°								
S50U-PDUNR/L15	●	●	63		50	35	350	65		47	47.5	8°								

T-CBN inserts 3-7 ~ T-DIA inserts 3-21

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

MDUNR/L

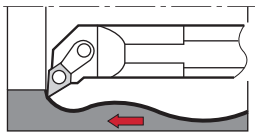
Min. bore dia. ø32mm~ | Shank dia. ø25mm

Negative rake / Multi clamping system

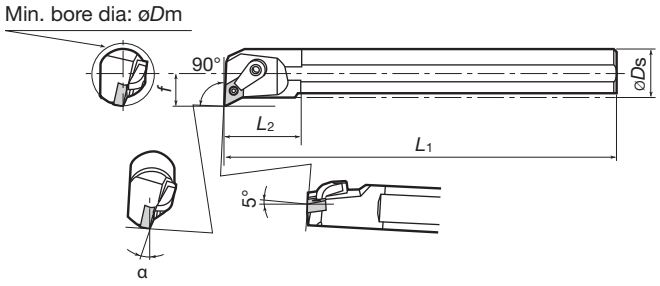
Steel Shank

Internal profiling

MDUNR/L



Cutting edge style **U**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Lock pin	Clamp	Clamping screw	Shim	Wrench for lock pin	Wrench for clamp
S25R-MDUNR/L11	▲	▲	32	25	17	200	40	23	22.5	12°	0.8	DN□□	1104□□ 2-52~	MLP33L	MCL- 6* MCPM-21	MCS620-3	-	P-2F	P-3

Notes: • When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

Note: * marked parts type No. is former type No.

● : Stocked items.
▲ : Will be replaced by new products.

Relating pages | Parts (14–1~)

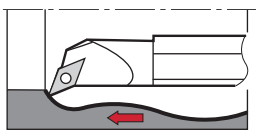
SDQCR/L

Min. bore dia. ø13mm~ | Shank dia. ø10~25mm

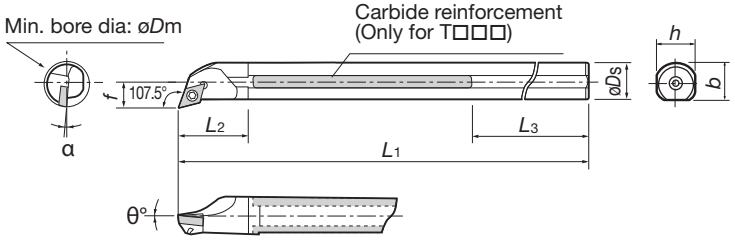
Tsuppari-Ichiban Shank | Steel Shank | Carbide Shank

Internal profiling

SDQCR/L



Cutting edge style **Q**



Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
T16Q-SDQCR/L07	●	●	20	-	16	11	180	27	59	15	-	6°	0.4	DC□□	0702□□ 2-105	CSTB-2.5	T-8F
T20R-SDQCR/L11C	●	●	25	Rc1/4	20	13	200	35	49	18	-	6°	0.8		11T3□□ 2-105	CSTB-4M	T-15F
T25S-SDQCR/L11C	●	●	32		25	17	250	40	64	23		4°				CSTB-4	

T-CBN inserts 3-12 ~ T-DIA inserts 3-22

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
S10K-SDQCR/L07			13	-	10	7	125	25	-	9	-	10°	0.4	DC□□	0702□□ 2-105	CSTB-2.5	T-8F
S12M-SDQCR/L07			16		12	9	150	25		11	11.5	7°					
S16Q-SDQCR/L07			20		16	11	180	30		15	15.5	6°					
S20R-SDQCR/L11			25	-	20	13	200	35	-	18	19	6°	0.8		11T3□□ 2-105	CSTB-4M	T-15F
S25S-SDQCR/L11			32		25	17	250	40		23	24	4°				CSTB-4	

T-CBN inserts 3-12 ~ T-DIA inserts 3-22

Carbide Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench
C10M-SDQCR/L07			13	-	10	7	150	-	-	9	-	10°	0.4	DC□□	0702□□ 2-105	CSTB-2.5	T-8F
C12Q-SDQCR/L07			16		12	9	180			11		7°					
C16R-SDQCR/L07			20		16	11	200			15		6°					
C20S-SDQCR/L11			25	-	20	13	250	-	-	18	-	6°	0.8		11T3□□ 2-105	CSTB-4M	T-15F

T-CBN inserts 3-12 ~ T-DIA inserts 3-22

Notes: • The hole of inserts conforms to ISO standard.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

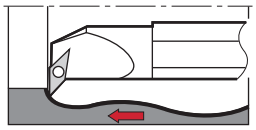
● : Stocked items.

SVUBR/L

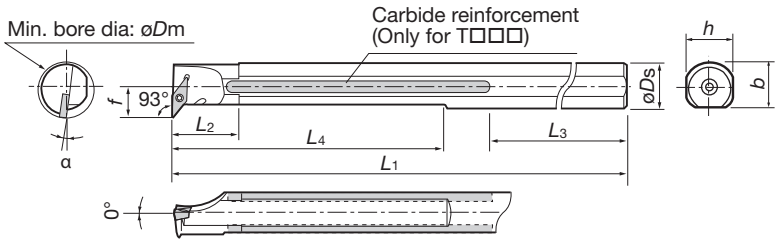
Min. bore dia. ø25mm | Shank dia. ø20mm | Tsuppari-Ichiban Shank

Internal profiling

SVUBR/L



Cutting edge style **U**



Oil Hole

Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	L4	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Shim	Shim screw	Wrench
T20R-SVUBR/L11C	●		25	Rc1/4	20	14	200	30	59	121	18	-	8°	0.4	VB□□	1103□□ 2-133	CSTB-2.5	T-8F	-	-	-

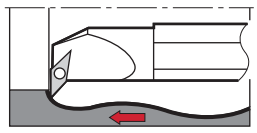
T-CBN inserts 3-13 ~

SVUCR/L

Min. bore dia. ø32mm~ | Shank dia. ø25~40mm | Tsuppari-Ichiban Shank | Steel Shank

Internal profiling

SVUCR/L



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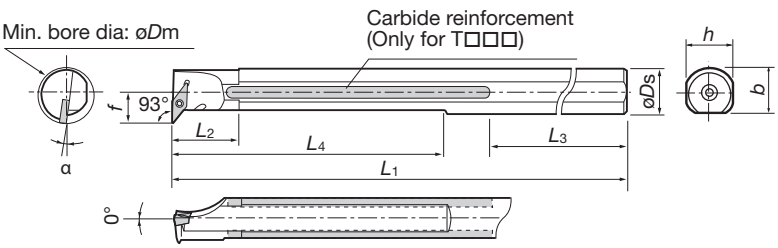


Oil Hole

Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	L4	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Shim	Shim screw	Wrench
T25S-SVUCR/L16C	●		32	Rc1/4	25	19	250	40	64	-	23	-	5°	0.8	VC□□	1604□□ 2-135	CSTB-3.5L	T-15F	-	-	-

T-CBN inserts 3-13 ~ T-DIA inserts 3-22 ~

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	Dimensions (mm) øDs	f	L1	L2	L3	L4	h	b	α	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Shim	Shim screw	Wrench
S25S-SVUCR/L16			32	-	25	19	250	40	-	-	23	24	5°	0.8	VC□□	1604□□ 2-135	CSTB-3.5L	T-15F	-	-	-
S32T-SVUCR/L16			40		32	22	300	50			30	31	3°						SSV32 (Grade:D30)	DTS5-3.5	P-3.5
S40U-SVUCR/L16			50		40	27	350	60			37	38.5	1°								

Notes: • The hole of inserts conforms to ISO standard.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-13 ~ T-DIA inserts 3-22 ~

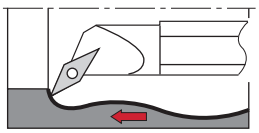
● : Stocked items.

SVQBR/L

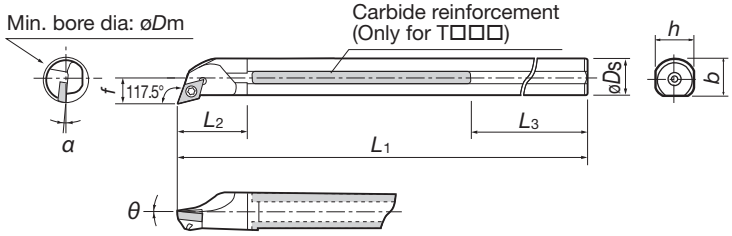
Min. bore dia. ø25mm | Shank dia. ø20mm | Tsuppari-Ichiban Shank

Internal profiling

SVQBR/L



Cutting edge style **Q**



Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	øDs	f	L1	L2	L3	h	b	α	θ	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Shim	Shim screw	Wrench
T20R-SVQBR/L11C	●		25	Rc1/4	20	14	200	30	59	18	-	7°	5°	0.4	VB□□	1103□□ 2-133	CSTB-2.5	T-8F	-	-	-

Notes: • The hole of inserts conforms to ISO standard.

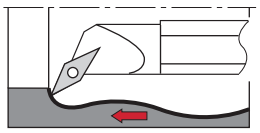
T-CBN inserts 3-13 ~

SVQCR/L

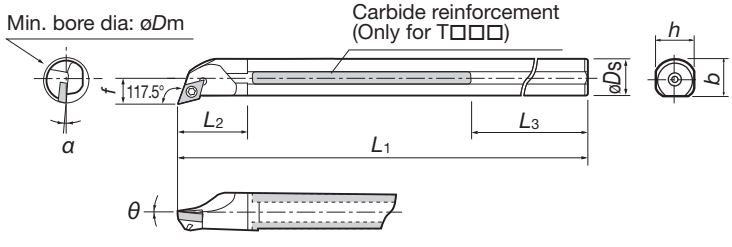
Min. bore dia. ø32mm~ | Shank dia. ø25~40mm | Tsuppari-Ichiban Shank | Steel Shank

Internal profiling

SVQCR/L



Cutting edge style **Q**



Right hand (R) shown.

"Tsuppari-Ichiban" (Reinforced with carbide)

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	øDs	f	L1	L2	L3	h	b	α	θ	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Shim	Shim screw	Wrench
T25S-SVQCR/L16C	●		32	Rc1/4	25	17	250	40	64	23	-	5°	0°	0.8	VC□□	1604□□ 2-135	CSTB-3.5L	T-15F	-	-	-

T-CBN inserts 3-13 ~ T-DIA inserts 3-22 ~

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Oil hole	øDs	f	L1	L2	L3	h	b	α	θ	Std. corner rε	Applicable inserts		Clamping screw	Wrench	Shim	Shim screw	Wrench
S25S-SVQCR/L16			32	-	25	17	250	40	-	23	24	5°	0°	0.8	VC□□	1604□□ 2-135 ~	CSTB-3.5L	T-15F	-	-	-
S32T-SVQCR/L16			40		32	22	300	50		30	31	3°							SSV32 (Grade:D30)	DTS5-3.5	P-3.5
S40U-SVQCR/L16			50		40	27	350	60		37	38.5	1°									

Notes: • The hole of inserts conforms to ISO standard.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

T-CBN inserts 3-13 ~ T-DIA inserts 3-22 ~

● : Stocked items.

SDZCR/L

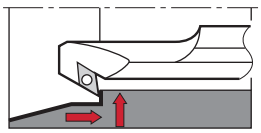
Min. bore dia. ø14mm~ | Shank dia. ø12~25mm

Positive rake / Screw-on system

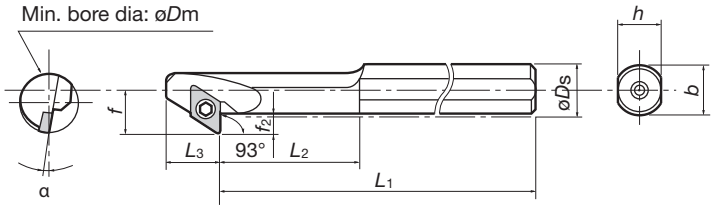
Steel Shank | Carbide Shank

Internal retracting

SDZCR/L



Cutting edge style **Z**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	f2	Std. corner rε	Applicable inserts		Clamping screw	Wrench
S12M-SDZCR/L07			14	12	10.5	150	32.5	12.5	11	11.5	9°	5	0.4	DC□□	0702□□ ▶2-105~	CSTB-2.5	T-8F
S16Q-SDZCR/L07			16	16	12.5	180	37.5		15	15.5	8°						
S20R-SDZCR/L11			20	20	15.5	200	40	14.4	18	19	8°	6.5	0.8		11T3□□ ▶2-105~	CSTB-4S CSTB-4M	T-15F
S25S-SDZCR/L11			25	25	18	250	50		23	24	6°						

T-CBN inserts ▶3-12 ~ T-DIA inserts ▶3-22

Carbide Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	L3	h	b	α	f2	Std. corner rε	Applicable inserts		Clamping screw	Wrench
C12Q-SDZCR/L07			18	12	10.5	180	-	12.5	11	-	8°	4.5	0.4	DC□□	0702□□ ▶2-105~	CSTB-2.5	T-8F
C16R-SDZCR/L07			22	16	12.5	200			15		6°						

Notes: • The hole of inserts conforms to ISO standard.
• When using a right or left hand insert, the right hand insert is used for right hand toolholders and the left hand insert is used for left hand toolholders.

T-CBN inserts ▶3-12 ~ T-DIA inserts ▶3-22

PDZNR/L

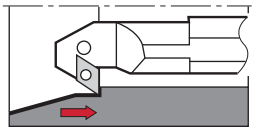
Min. bore dia. ø40mm~ | Shank dia. ø32~50mm

Negative rake / Lever-lock system

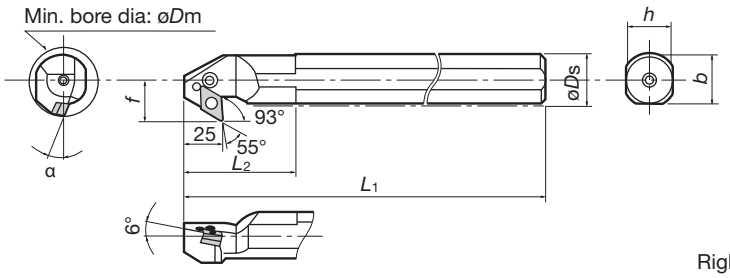
Steel Shank

Internal retracting

PDZNR/L



Cutting edge style **Z**



Right hand (R) shown.

Steel Shank

Cat. No.	Stock R	Stock L	Min. bore dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	b	α	Std. corner rε	Applicable inserts		Shim	Lever	Clamping screw	Spring	Wrench
S32S-PDZNR/L15	●	●	40	32	22	275	55	30	29.5	13°	0.8	DN□□	1504□□ ▶2-52~	LSZ42B R / L	LCL4	LCS4	LSP4	P-3
S40T-PDZNR/L15	●		50	40	27	325	60	37	37.5	10°								
S50U-PDZNR/L15	●		60	50	35	375	65	47	47.5	8°								

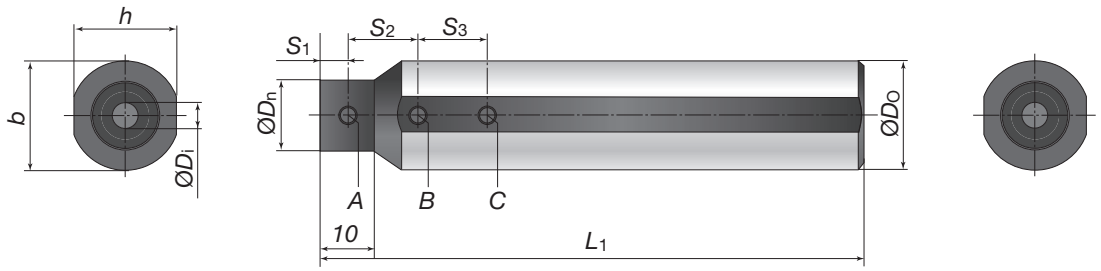
Notes: • When using a right or left hand insert, the right hand insert is used for right hand toolholders and the left hand insert is used for left hand toolholders.

T-CBN inserts ▶3-7 T-DIA inserts ▶3-21

● : Stocked items.

Sleeves

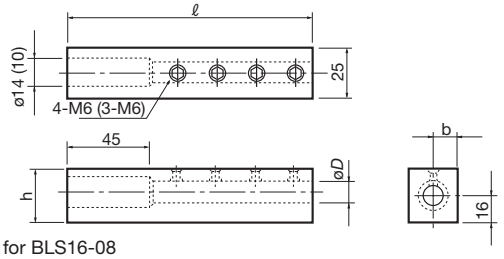
BLM type (Round shank for StreamJetBarMini)



Cat. No.	Stock	Dimensions (mm)									Replacement parts				
											Clamping screws			Wrench	Seal cap* (Inner screw)
		øDo	øDi	øDn	L1	h	b	S1	S2	S3	A	B	C		
BLM159-04	●	15.875	4	15	100	15	15.875	5	15	15	SSHM4-4	SSHM4-4	SSHM4-4	P-2	CA-16 (M6)
BLM159-05	●		5												
BLM159-06	●		6						20	20					
BLM159-07	●		7												
BLM16-04	●	16	4	15	100	15	16	5	15	15	SSHM4-4	SSHM4-4	SSHM4-4	P-2	CA-16 (M6)
BLM16-05	●		5												
BLM16-06	●		6						20	20					
BLM16-07	●		7												
BLM19-04	●	19.05	4	18	100	18	19.05	5	15	15	SSHM4-4	SSHM4-6	SSHM4-6	P-2	CA-16 (M6)
BLM19-05	●		5									SSHM4-4	SSHM4-4		
BLM19-06	●		6						20	20					
BLM19-07	●		7												
BLM20-04	●	20	4	13	100	19	20	5	15	15	SSHM4-4	SSHM4-6	SSHM4-6	P-2	CA-16 (M6)
BLM20-05	●		5	14											
BLM20-06	●		6	15					20	20		SSHM4-4	SSHM4-4		
BLM20-07	●		7	16											
BLM22-04	●	22	4	13	125	21	22	5	15	15	SSHM4-4	SSHM4-6	SSHM4-6	P-2	CA-16 (M6)
BLM22-05	●		5	14											
BLM22-06	●		6	15					20	20					
BLM22-07	●		7	16											
BLM25-04	●	25	4	13	125	24	25	5	15	15	SSHM4-4	SSHM4-8	SSHM4-8	P-2	CA-16 (M6)
BLM25-05	●		5	14											
BLM25-06	●		6	15					20	20					
BLM25-07	●		7	16								SSHM4-6	SSHM4-6		
BLM254-04	●	25.4	4	13	125	24	25.4	5	15	15	SSHM4-4	SSHM4-8	SSHM4-8	P-2	CA-16 (M6)
BLM254-05	●		5	14											
BLM254-06	●		6	15					20	20					
BLM254-07	●		7	16								SSHM4-6	SSHM4-6		

*Seal cap (optional)

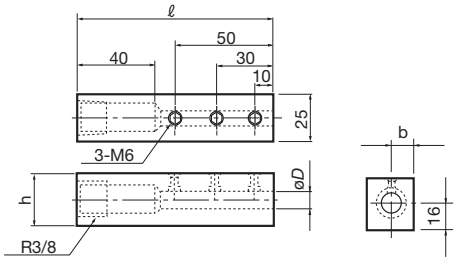
BLS type (Square shank)



( ) is for BLS16-08

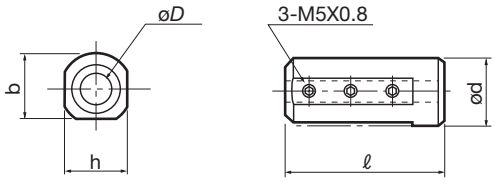
Cat. No.	Stock	Applicable shank dia. øD	Dimensions (mm)		
			ℓ	h	b
BLS16-08	●	8	125	28	12.5
BLS16-10	●	10			
BLS16-12	●	12			

BLS-C type (Square shank)



Cat. No.	Stock	Applicable shank dia. øD	Dimensions (mm)		
			ℓ	h	b
BLS16-08C	●	8	100	28	12.5
BLS16-10C	●	10			
BLS16-12C	●	12			

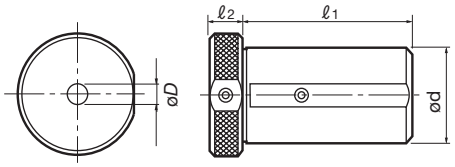
BLM type (Round shank)



Above drawing shows BLM25-□□C type.

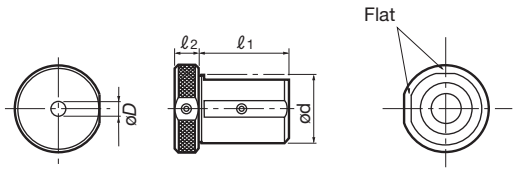
Cat. No.	Stock	Applicable shank dia. øD	Dimensions (mm)			
			ød	ℓ	h	b
BLM19-08	●	8	19.05	100	18	18
BLM20-08	●		20		19	
BLM22-08	●		22	125	21	21
BLM254-08	●		25.4		24	24
BLM25-08C	●		25	55		
BLM25-10C	●	10				23
BLM25-12C	●	12				

BLC type (Standard type)



Cat. No.	Stock	Applicable shank dia. øD	Dimensions (mm)		
			ℓ1	ℓ2	ød
BLC40-8	●	8	73	13	40
BLC40-10	●	10			
BLC40-12	●	12			
BLC40-16	●	16			

BLC type (Short type)



Cat. No.	Stock	Applicable shank dia. øD	Dimensions (mm)		
			ℓ1	ℓ2	ød
BLC32-8C	●	8	45	20	32
BLC32-10C	●	10			
BLC32-12C	●	12			
BLC40-8C	●	8	55	13	40
BLC40-10C	●	10			
BLC40-12C	●	12			
BLC40-16C	●	16			

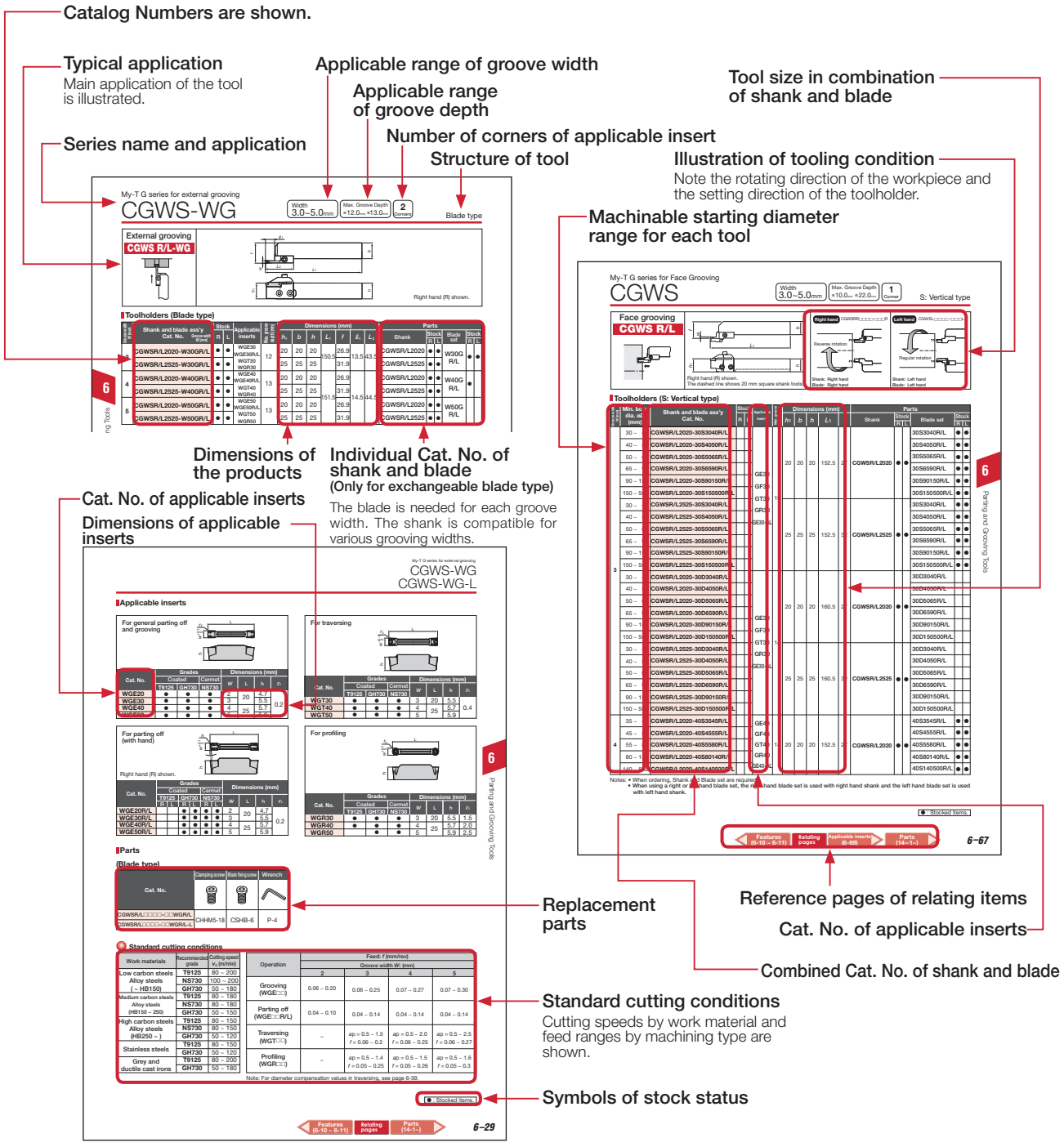
● : Stocked items.

Chapter Composition of Grooving and Parting Tools

◆In this chapter, products are classified and arranged by machining type as follows: External grooving tools → Parting tools → Face grooving tools → Internal grooving tools

◆In the machining type, tools are arranged by product series.

◆In the internal grooving tools, tools are arranged in order of sizes of minimum grooving diameter.



■Ordering information

- When ordering the toolholder, please specify Cat. No. and quantity.
  Example: **CTER2020-4T25··· 1** piece.
- When ordering a combined set of the shank and blade, please individually specify their Cat. No. and quantity.
  Example: **CGWSR2525··· 1** piece.
  30S5065R··· 1 piece.
  - Standard packing quantity of toolholders and blades is 1 piece.
  - Blade clamping screws are packing with shank.
- When ordering inserts for grooving and parting tools, please specify Cat. No., grade, and quantity.
  Example: **DGS3-020 AH725··· 10** pieces.
  - Standard packing quantity of inserts is 10 pieces.

Guidance

■ Designation system for TungCut ····· 6–2
■ Features of TungCut ····· 6–3
■ Designation system for My-T G series ····· 6–6
■ Features of My-T series ····· 6–10
■ Grooving tools overview ····· 6–12
■ Selection guide for grooving tools ····· 6–14
■ Guideline for ordering special inserts of TungCut ····· 6–94

6 Grooving and parting tools

Products

■External grooving tools

● TungCut series	D□□ / S□□ inserts	1, 2 corners insert	6–19
● My-T G series	WGE, WGT, WGR inserts	2 corners insert, blade type	6–26
● My-T G series	WGE, WGT, WGR inserts	2 corners insert, mono block type	6–28
● My-T G series	GE, GT, GR inserts	1 corner insert, blade type	6–30
● My-T G series	GE, GT, GR inserts	1 corner insert, mono block type	6–32
● My-T CGD series (precision type)	CGD inserts	2 corners insert, blade type	6–34
● My-T FLEX series (For traverse feed)	FLEX inserts	2 corners insert, blade type	6–36
● Grooving tools	CTD inserts	2 corners insert, mono block type	6–39
● Grooving tools	GBR/L inserts	3 corners insert, mono block type	6–40
● O-ring and lock ring grooving tools	GOR/L, GLR/L inserts	3 corners insert, mono block type	6–42
● Grooving tools	XGR/L inserts	2 corners insert, blade type	6–43
● J-series grooving tools for small lathes	JVGR/L inserts	2 corners insert, mono block type	6–44
● J-series grooving tools for small lathes	JTGR/L inserts	3 corners insert, mono block type	6–44

■Parting tools

● TungCut series	DG□ / SG□ inserts	1, 2 corners insert	6–46
● My-T G series	GE inserts	1 corner insert, mono block type	6–50
● Grooving tools	CTR/L, CTN inserts	1 corner insert, tool block type	6–52
● Parting blades SCTH type			6–54
● J-series parting tools for small lathes	JXGR/L inserts	2 corners insert, mono block type	6–54
● J-series parting tools for small lathes	JCCR/L inserts	2 corners insert, mono block type	6–55
● J-series parting tools for small lathes	JCGN inserts	2 corners insert, mono block type	6–55

■Face grooving tools

● TungCut series	DTX / DTF inserts	2 corners insert	6–56
● My-T G series, S-type	GE, GF, GT, GR inserts	1 corner insert, blade type	6–61
● My-T G series, T-type	GE, GF, GT, GR inserts	1 corner insert, blade type	6–64
● My-T FLEX series (For traverse feed)	FLEX inserts	2 corners insert, blade type	6–67
● GX type grooving tools	GX inserts	2 corners insert, blade type	6–68
● CFGS type grooving tools, S-type	FGC inserts	1 corner insert, blade type	6–69
● CFGT type grooving tools, T-type	FGC inserts	1 corner insert, blade type	6–71

■Internal grooving tools

● TungCut series	DT□ inserts	2 corners insert	6–75
● Grooving tools (bore dia. ø8 ~)	GR/L inserts	1 corner insert, mono block type	6–78
● Grooving tools (bore dia. ø20 ~)	GIR/L inserts	2 corners insert, mono block type	6–80
● My-T G series (bore dia. ø25 ~)	GE,GN, GT, GR inserts	1 corner insert, mono block type	6–81
● Grooving tools (bore dia. ø35 ~)	GBL/R inserts	3 corners insert, mono block type	6–82
● Grooving tools (bore dia. ø55 ~)	XGL/R inserts	2 corners insert, blade type	6–84
● My-T FLEX series (bore dia. ø80 ~)	FLEX inserts	2 corners insert, blade type	6–85

Designation System for TungCut

Inserts

①	②	③		④		⑤	⑥	⑦
D	G	M	-	2 / 200	-	020	15	R

① Number of edge	
D	Double corners
S	Single corner

② Application	
T	Traversing & grooving
G	Grooving

③ For use	
M	Grooving
S	Grooving (sharpness)
E	External
I	Internal
F	Face grooving
A	Aluminium
IU	Internal Undercut
R	Round for profiling
X	Multi purpose

④ Groove width (mm)	
2	2 (molded)
200	2.00 (ground)

⑤ Corner Radius (mm)	
002	0.02
020	0.2

⑥ Front Angle	
4	4°
6	6°
8	8°
15	15°

⑦ Hand of tool	
L	left
R	right

Toolholders

①	②	③	④	⑤		⑥		⑦	⑧		⑧
J	C	G	P	L/R		2525 / 20	-	3	T19	-	044070 / D250

① J series	
J	For small lathe

② Clamp on	
C	Clamp on

③ For use	
T	Traversing & grooving
G	Grooving
A	Adapter
H	Holder

④ For use	
P	Parting & Grooving
E	External
I	Internal
F	Facing
FV	Holder (Horizontal)
S	Holder (Vertical)

⑤ Hand of tool	
L	left
R	right

⑥ Shank size (mm)	
2525	25 (height) × 25 (width)
20	ø20 (shank dia)
	20 (shank height)

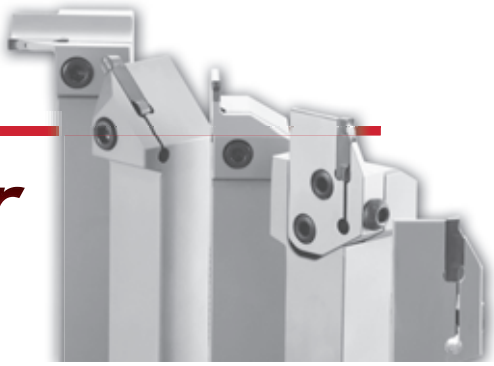
⑦ Groove width (mm)	
2	2
3	3
4	4

⑧ Overhang (mm)	
T19	19
T25	25

⑨ Bore.dia. (mm)	
044070	44 ~ 70 (Facing)
D250	ø250 ~

Insert application

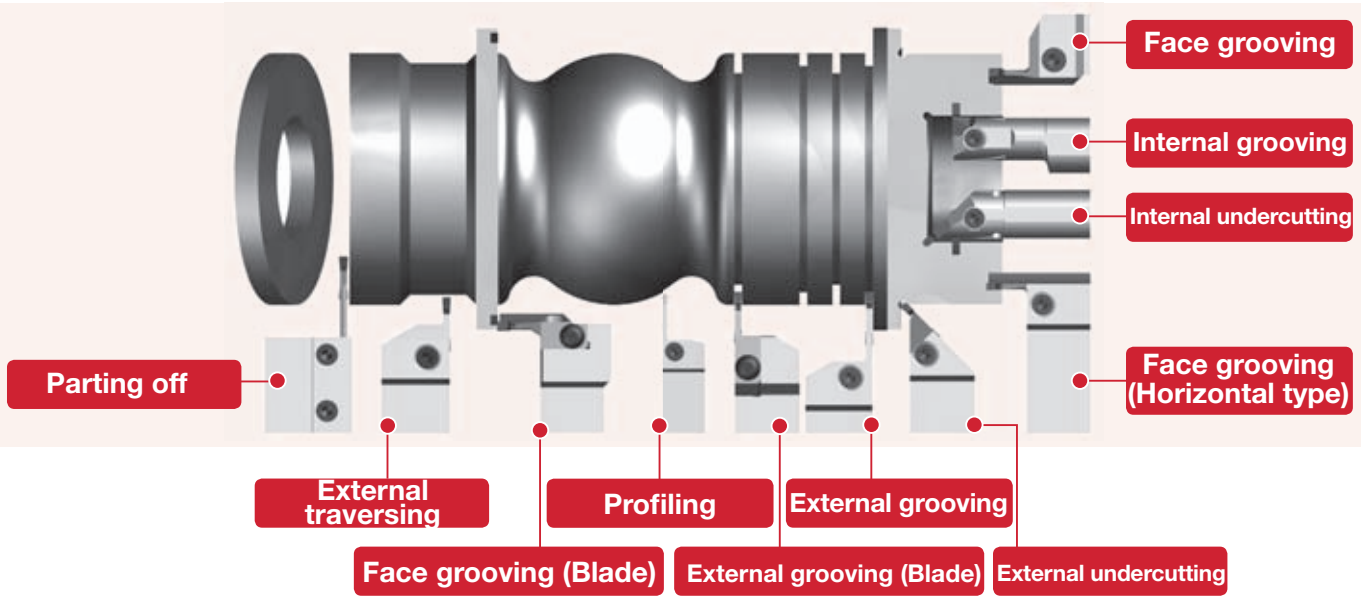
Insert	Application						
	Grooving			Parting off	Traversing		
	External	Internal	Face		External	Internal	Face
DGS / SGS	●		●	●			
DGM / SGM	●		●	●			
DTE	●		●		●		●
DGE	●						
DTX	●	●	●	●	●	●	●
DTI		●				●	
DTF			●				●
DTR	●				●		
DTIU	● (Undercutting)	● (Undercutting)					
DTA					● (Al wheel machining)	● (Al wheel machining)	



Multifunctional system for diverse grooving needs !

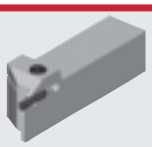
Suited to a wide variety of grooving operations

Multi-functional grooving system



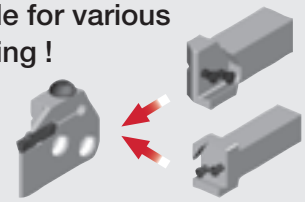
Mono block toolholders

High rigidity !



Blades with shank holders

Available for various machining !



Blades with tool blocks

Suitable for large diameter machining !

Standard cutting conditions

Work materials	Hardness	Cutting speed: *Vc* (m/min)		
		AH725	GH130	TH10
Steels S45C, SCM435 etc. (C45, 34CrMo4 etc.)	< 300 HB	50 ~ 180	40 ~ 150	–
Stainless steels SUS303, SUS304 etc. (X10CrNiS18-9 etc.)	< 200 HB	50 ~ 120	50 ~ 120	–
Grey cast irons, Ductile cast irons FC250, FCD450 etc. (GG25, GGG45 etc.)	–	–	50 ~ 180	–
Aluminium alloys (Si < 12%)	–	–	–	100 ~ 500
Titanium alloys (Ti-6Al-4V etc.)	< 40 HRC	20 ~ 80	20 ~ 80	–

Feature of TungCut

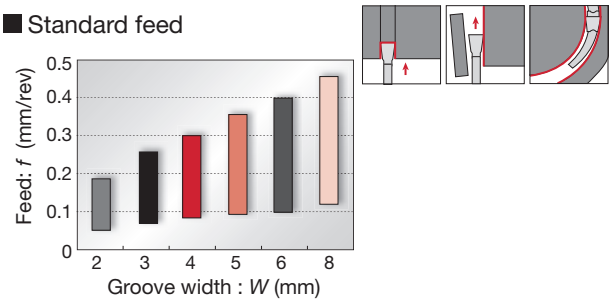
Inserts

External grooving and parting off

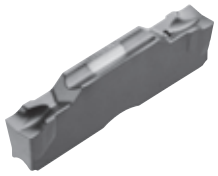
DGM type (2 corners)
SGM type (1 corner)

1st choice for external grooving and parting-off

- Smooth chip evacuation
- Well designed edge with high strength
- Handed insert available

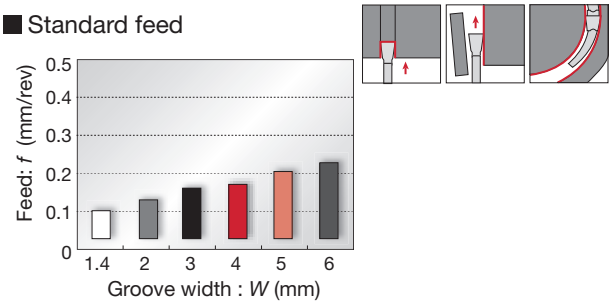


DGS type (2 corners)
SGS type (1 corner)



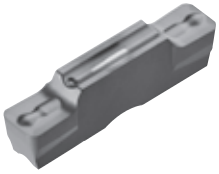
Lower cutting force and superior sharpness

- Unique designed edge and chipbreaker
- Handed insert available



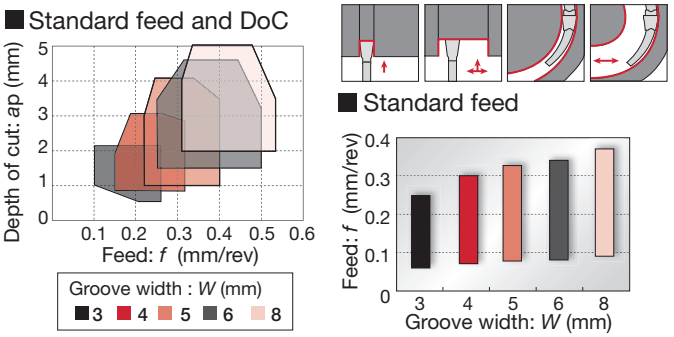
External, face grooving and traversing

DTE type (2 corners)



For general purpose

- Unique breaker makes chips shorter
- Molded and ground insert available

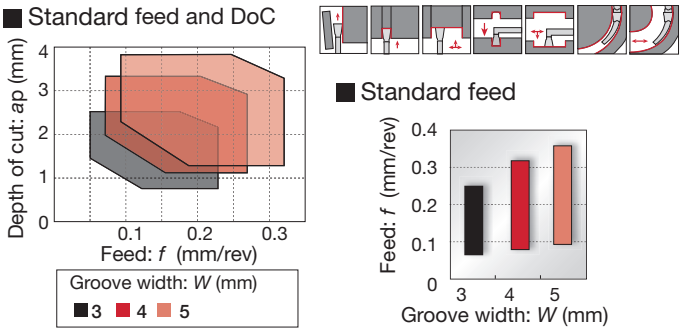


External, internal, face grooving and traversing

DTX type (2 corners)

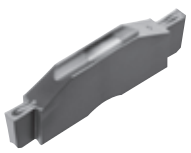
Multi-functional type

- Well balanced sharpness and strength
- Multi functional insert



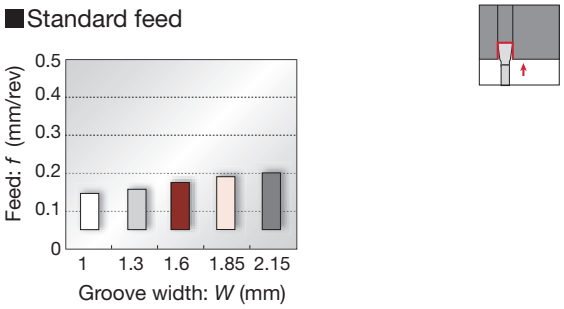
External grooving

DGE type (2 corners)



For high accurate and shallow groove

- Excellent chip control



Profiling and undercutting

DTR type (2 corners)

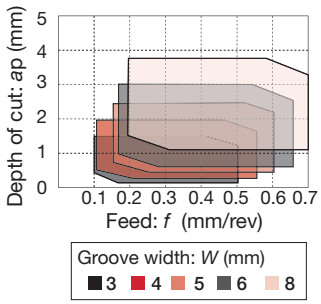
Molded

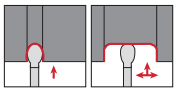
Ground

Full radius type

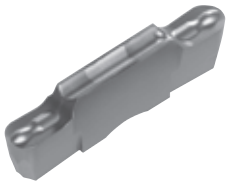
- Excellent chip control
- Molded and ground insert available

■Standard feed and DoC





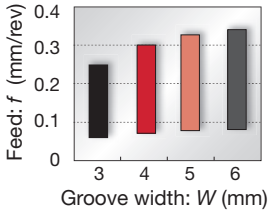
DTIU type (2 corners)

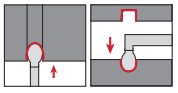


Full radius type

- Excellent chip control
- For undercutting

■Standard feed





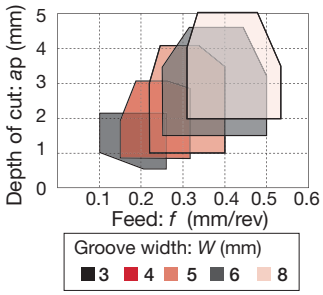
Internal grooving and traversing

DTI type (2 corners)

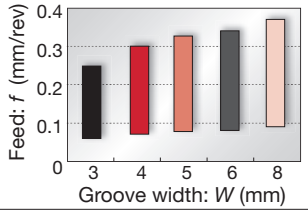
1st choice for internal grooving

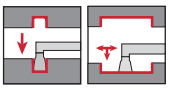
- Unique chipbreaker makes chips shorter
- Molded and ground insert available

■Standard feed and DoC



■Standard feed





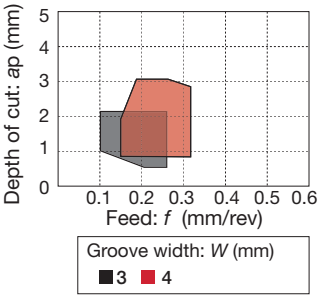
Face grooving and traversing

DTF type (2 corners)

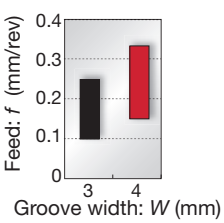
1st choice for face grooving

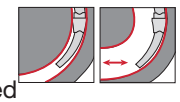
- Unique chipbreaker makes chips shorter
- Handed insert

■Standard feed and DoC



■Standard feed





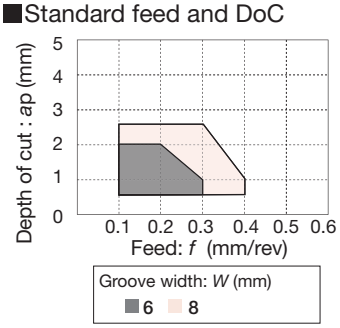
Aluminium wheel machining

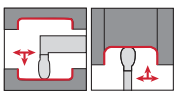
DTA type (2 corner)

Full radius type

- Excellent chip control
- For aluminium wheel profiling
- Ground insert

■Standard feed and DoC





Designation System for My-T G series

Inserts

W G E 30 R

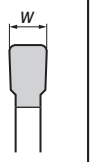
① ② ③ ④ ⑤

① No. of corners	
W	2 corners type
No sign	1 corner type

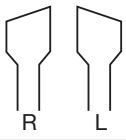
② My-T G series

③ For use	
E	For general grooving
N	For internal grooving
F	For face grooving
T	For traversing
R	For profiling

④ Groove width *W* (mm)	
20	2
30	3
40	4
50	5



⑤ Hand of tool	
R	Right
L	Left



Toolholders for external and face grooving

C	Clamp-on
① Clamping mechanism	

G	90°
② Angle of cutting edge	

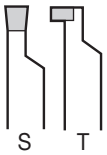
W	2 corners or blade type
S	1 corner and mono block type
③ Type	

C G W S R 25 25 - 30S3040R

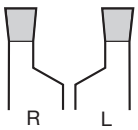
① ② ③ ④ ⑤ ⑥ ⑦

Blade

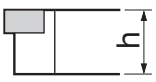
④ Direction of setting inserts		
S	Vertical type	
T	Horizontal type	



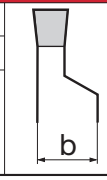
⑤ Hand of tool	
R	Right
L	Left



⑥ Height of shank h (mm)	
20	20
25	25



⑦ Width of shank b (mm)	
20	20
25	25



Blades for external and face grooving

W	2 corners type
No sign	1 corner type

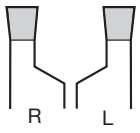
0 No. of corners

30	3	
40	4	
50	5	

1 Groove width *W* (mm)

G	For external grooving

2 Application

R	Right	
L	Left	

5 Hand of tool

-L	For deep grooving
No sign	For general grooving

6

Blade for external grooving

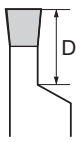
0	1	2	5	6
W	30	G	R	-L

Blade for face grooving

1	2	3	4	5
30	S	30	40	R

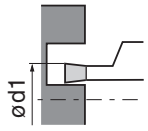
2 Groove depth D (mm)

Symbol	Groove width	Groove depth
S	3	10
D		14
S	4	14
D	5	22



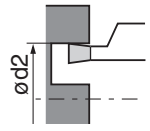
3 Min. bore dia. d1 (mm)

30	ø30
40	ø40



4 Max. bore dia. d2 (mm)

40	ø40
30	ø30



Toolholders for internal grooving

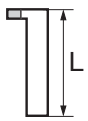
S	Steel shank

1 Shank material

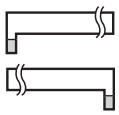
20	ø20
25	ø25
30	ø30

2 Diameter of shank (mm)

Q	180
R	200
S	250



3 Length of shank L (mm)

R	Right	
L	Left	

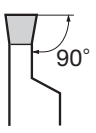
7 Hand of tool

1	2	3		4	5	6	7	8
S	20	R	-	C	G	T	R	30

4 Clamping mechanism

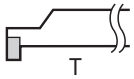
C	Clamp-on

5 Angle of cutting edge

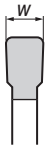
G	90°	

6 Direction of setting inserts

T	Vertical type



8 Groove width *W* (mm)

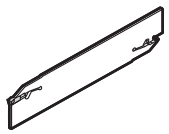
30	3	
40	4	
50	5	

Designation System for My-T G series

Blades for parting off

CCH 32 - 30

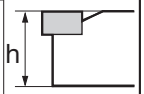
① Blades



For My-T G series

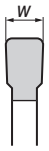
② Height of blades h (mm)

32	32



③ Groove width *W* (mm)

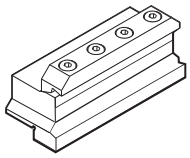
30	3
40	4
50	5



Tool blocks

CCBS 20 - 32

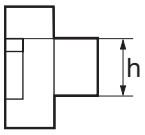
① Tool blocks



The tool block for CCH type blade

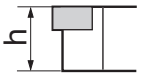
② Height of tool blocks h (mm)

20	20
25	25
32	32



③ Height of blades h (mm)

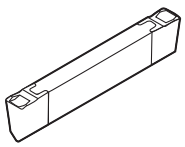
32	32



TAC Inserts

CGD 300

① My-T CGD series



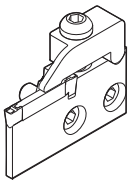
② Groove width *W* (mm)

200	2
300	3
400	4
500	5
600	6
700	7
800	8

Blades for external and face grooving

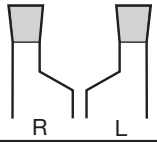
CGD R 3

① My-T CGD series



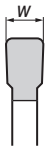
② Hand of tool

R	Right
L	Left



③ Groove width *W* (mm)

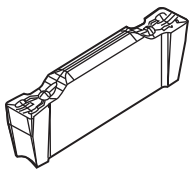
2	2
3	3
4	4
5	5
6	6



TAC Inserts

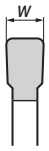
FLEX 30 R

① My-T FLEX series



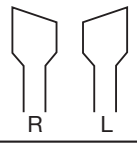
② Groove width W (mm)

30	3
40	4
50	5



③ Hand of tool

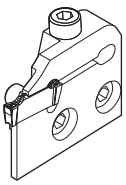
R	Right
L	Left



Blades for external and face grooving

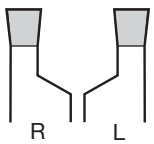
FL R 3 GP

① For My-T FLEX series



② Hand of tool

R	Right
L	Left



③ Groove width W (mm)

3	3
4	4
5	5

④ Operation

GP	For external grooving
NP	For internal grooving
TP	For face grooving

Features of My-T series

My-T G series

For aluminium

GE-AL Width: 2.0 ~ 4.0 mm

Reduce cutting force and chip welding due to the combination of sharp chipbreaker and fine grain cemented carbide.

For internal grooving

GN Width: 3.0 ~ 5.0 mm

Lower cutting resistance and better cutting action than GE type. Used for internal grooving when problems with chip control and chattering occur.

For face grooving

GF Width: 3.0 ~ 5.0 mm

Larger width of chipbreaker than GE type and with good chip control. Used for face grooving when problems with chip control and chattering occur.

For traversing

WGT • GT Width: 3.0 ~ 5.0 mm

Lower cutting resistance and better cutting action for traversing. Suitable for external, internal grooving and extending face slots etc

For profiling

WGT • GR

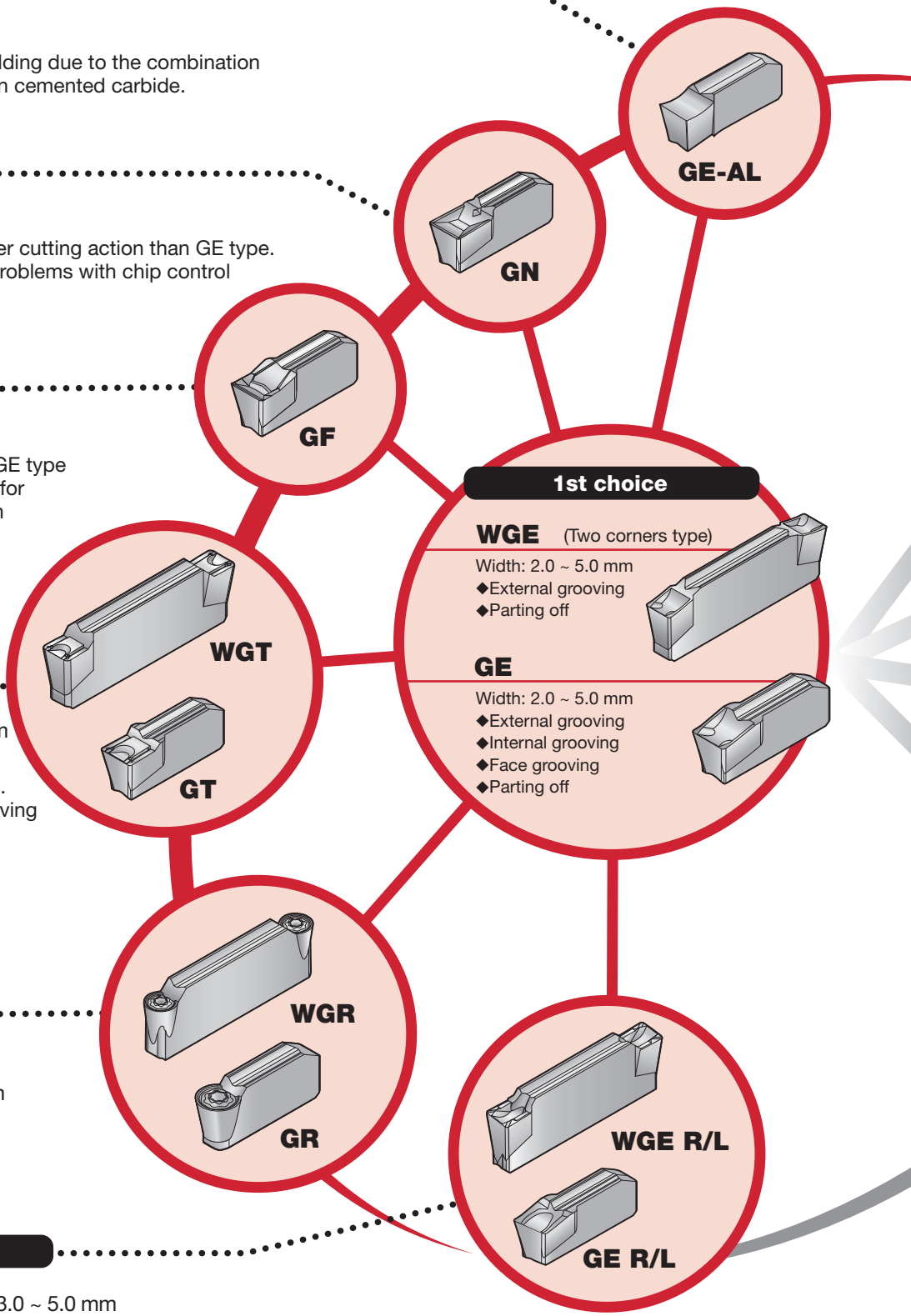
Width: 3.0 (1.5R) ~ 5.0 (2.5R) mm

Lower cutting resistance and better chip control for profiling.

For parting off

WGE R/L • GE R/L Width: 3.0 ~ 5.0 mm

A chipbreaker with good chip control for parting off. These inserts are effective to minimize burr generation when workpiece is cut off.



My-T G series

■WGE, GE type inserts almighty chipbreaker

- Excellent chip control for external grooving, internal grooving and face grooving.

■Specialist of grooving

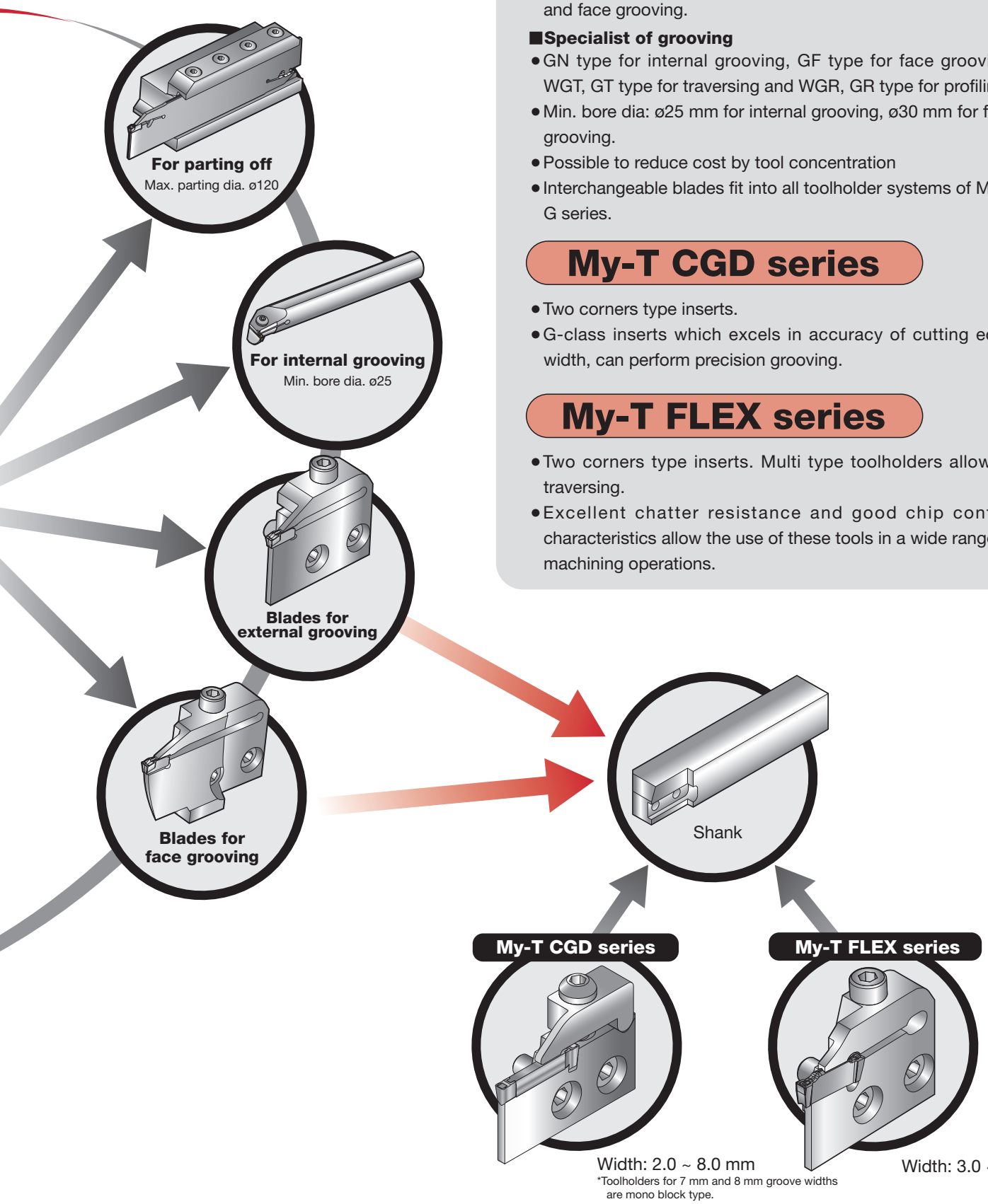
- GN type for internal grooving, GF type for face grooving, WGT, GT type for traversing and WGR, GR type for profiling.
- Min. bore dia: ø25 mm for internal grooving, ø30 mm for face grooving.
- Possible to reduce cost by tool concentration
- Interchangeable blades fit into all toolholder systems of My-T G series.

My-T CGD series

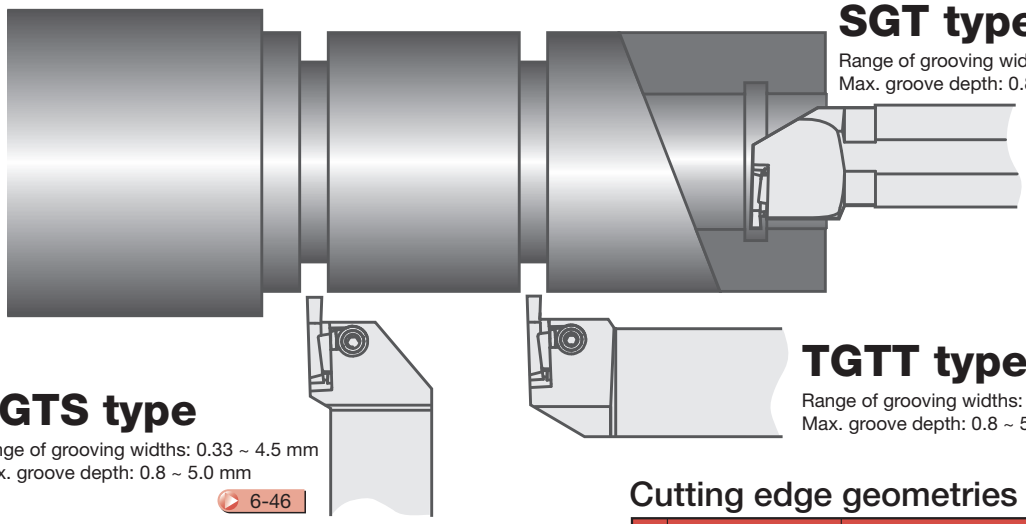
- Two corners type inserts.
- G-class inserts which excels in accuracy of cutting edge width, can perform precision grooving.

My-T FLEX series

- Two corners type inserts. Multi type toolholders allowing traversing.
- Excellent chatter resistance and good chip control characteristics allow the use of these tools in a wide range of machining operations.



Three Corners type Grooving Tools TGTS, TGTT, and SGT type series



SGT type 6-88

Range of grooving widths: 0.33 ~ 4.5 mm
Max. groove depth: 0.8 ~ 5.0 mm

TGTT type 6-46

Range of grooving widths: 0.33 ~ 4.5 mm
Max. groove depth: 0.8 ~ 5.0 mm

TGTS type

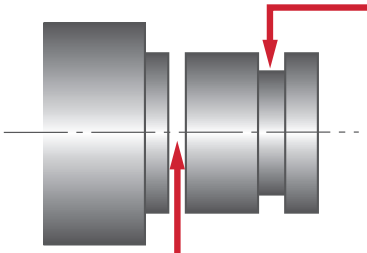
Range of grooving widths: 0.33 ~ 4.5 mm
Max. groove depth: 0.8 ~ 5.0 mm
6-46

- For Steels
  AH710 “Flash-Coat” PVD coating
  NS730 “Super fine” Cermet
- For non-ferrous metals
  KS05F fine grained cemented carbide

Cutting edge geometries

	GB type	GB-R type
Grooving shape	Normal groove (Square)	Full radius groove (Round)
		
Range of groove widths	0.33 mm ~ 4.5 mm	1.0 mm (0.5R) ~ 4.0 mm (2R)

J series for small lathes

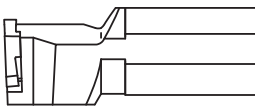


●External Grooving

JSVGR/L 6-50
Groove width: 0.33 ~ 2.0 mm
Groove depth: 0.7 ~ 5.5 mm

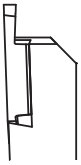
JSTGR/L 6-50
Groove width: 0.33 ~ 3.0 mm
Groove depth: 0.7 ~ 2.6 mm

JS-TGL3 6-50
Groove width: 0.33 ~ 3.0 mm
Groove depth: 0.7 ~ 2.6 mm



●Parting and External Grooving

JSXGR/L 6-60
Groove width: 0.7 ~ 2.0 mm
Parting dia: < ø9 ~ 12



JCGSSR/L 6-56
Groove width: 2.0 mm
Parting dia: < ø20 ~ 32

JCCWSR/L 6-61
Groove width: 2.0 mm
Parting dia: < ø20

JCGWSR/L 6-61
Groove width: 2.0 mm
Parting dia: < ø20

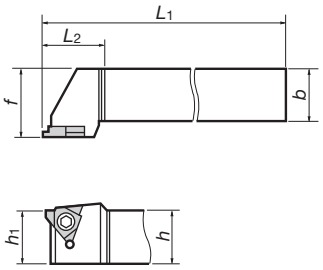
External Grooving / Face Grooving

Inserts for o-ring grooving and lock-ring grooving

SGT type External Grooving

GOR/L Inserts for O-ring grooving
GLR/L Inserts for lock-ring grooving

6-48

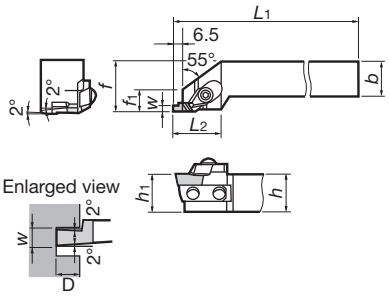


For general grooving

GX type External, Face, and Internal Grooving

Tungaloy original style grooving tools

External Grooving 6-49
Face Grooving 6-74
Internal grooving 6-90

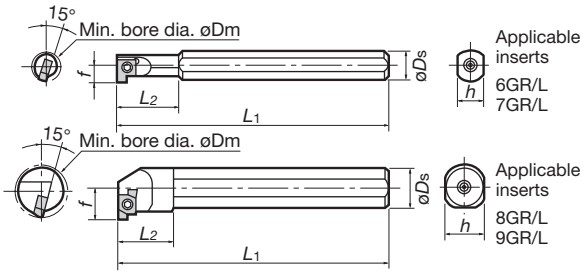


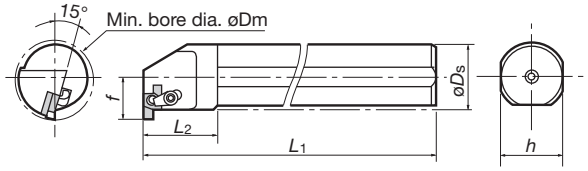
For general grooving

SNG / CNG type Internal Grooving

Special tools for internal grooving.
Applicable grooving widths: 1 ~ 3.5 mm
Min. machining dia: ø8mm
Available in both steel shank for general use and carbide shank for anti chattering requirements.

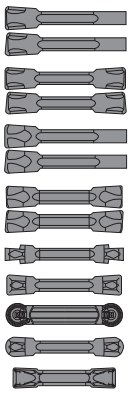
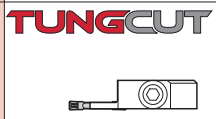
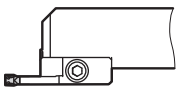
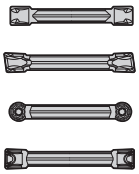
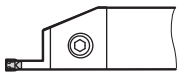
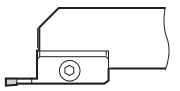
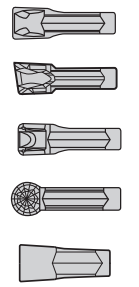
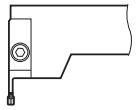
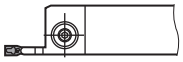
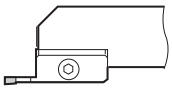
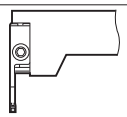
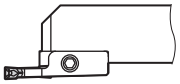
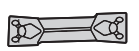
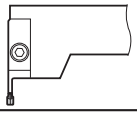
6-84



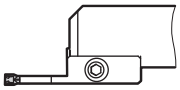
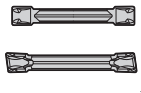
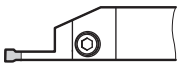
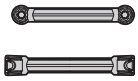
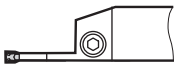
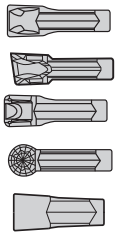
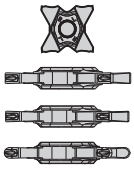
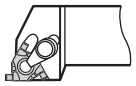
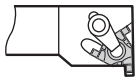
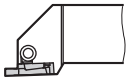
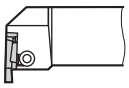
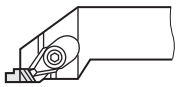
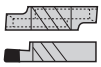
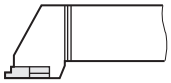
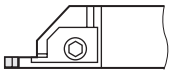


Selection Guide of Tools

External Grooving

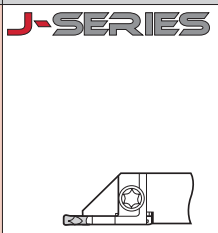
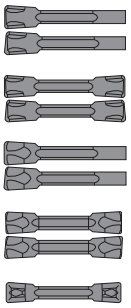
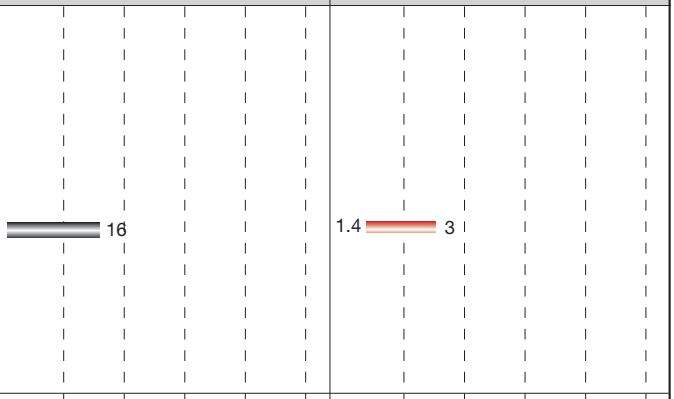
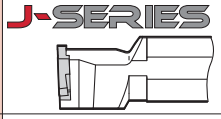
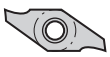
Appli.	Type		Appearance	Shape	Groove depth 10 20 30 40 50 (mm)	Groove width 2 4 6 8 10 (mm)
TungCut	CTER/L 6-21	Mono block			36	2 8
	CAER/L 6-23	Blade			20	3 6
	JCTER/L 6-22	Mono block			Max. parting off dia. ø32	1.4 3
	CGEUR/L 6-22	Mono block			3.4	3 6
My-T series	CGWS-WG 6-28	Blade			13	3 5
	CGWS-W 6-30	Mono block			13	3 5
	CGWS-G 6-32	Blade			12	2 5
	CGWT-G 6-32	Blade			12	3 5
	CGSS 6-34	Mono block			16	2 5
	CGWS-CGD 6-36	Blade			21	2 8
	CGWT-CGD 6-36	Blade			19.5	2 6
	CGWS-FLGP 6-38	Blade			14	3 5
	CGWT-FLGP 6-38	Blade			14	3 5

External Grooving

Appli.	Type	Appearance	Shape	Groove depth 10 20 30 40 50 (mm)	Groove width 2 4 6 8 10 (mm)
My-T series	CGWS-WG-L Deep Grooving 6-28 Blade			21.5	2 5
My-T series	CGWS-W-L Deep Grooving 6-30 Mono block			21.5	2 5
My-T series	CGSS-D Deep Grooving 6-34 Mono block			25	3 5
TetraCut	STC 6-42	TETRACUT 		6.4	0.5 3.18
GTGN	CE 6-44			1.8	1 2.25
GTGN	B-CE 6-44			1.8	1 2.25
Special tools	TGTS 6-46			5	0.33 4.5
Special tools	TGTT 6-46			5	0.33 4.5
Special tools	GX-E 6-49			6	1 4.5
Special tools	SGT 6-48			4	1.15 4.2
Special tools	CTW 6-41			20	3 5

Selection Guide of Tools

External Grooving

Appli.	Type	Appearance	Shape	Groove depth 10 20 30 40 50 (mm)	Groove width 2 4 6 8 10 (mm)
J series	**JCTER/L** 6-22			 16	1.4 3
	JSTG 6-50			2.6	0.33 3
	JS-TGL3 6-50			2.6	0.33 3
	JSVG 6-50			5.5	0.33 2

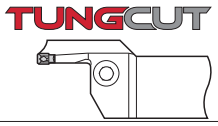
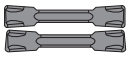
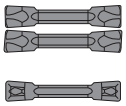
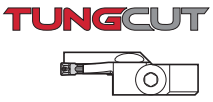
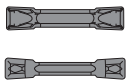
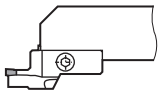
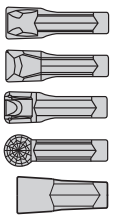
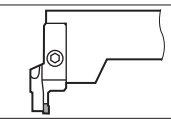
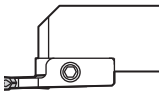
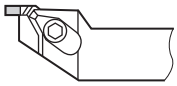
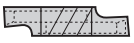
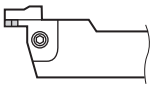
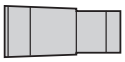
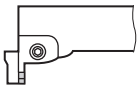
MEMO

Selection Guide of Tools

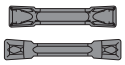
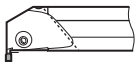
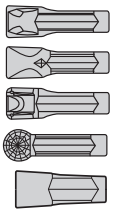
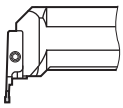
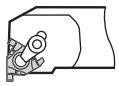
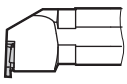
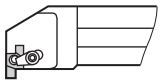
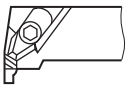
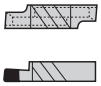
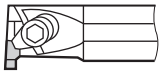
Parting off

Appli.	Type	Appearance	Shape	Groove depth 10 20 30 40 50 (mm)	Groove width 2 4 6 8 10 (mm)
TungCut	CGER/L (Mono block) 6-52	TUNGCUT		Max. parting off dia. ø29 ~ 55	1.4 – 4
	CGP (Blade) 6-53	TUNGCUT		Max. parting off dia. ø26 ~ 160	1.4 – 8
	JCTER/L (Mono block) 6-52	TUNGCUT		Max. parting off dia. ø32	1.4 – 3
My-T series	JCGSS 6-56			Max. parting off dia. ø20 ~ 32	2
	CCH 6-56			Max. parting off dia. ø100 ~ 120	3 – 5
Special tools	CTH 6-58			Max. parting off dia. ø100	3 – 6
	CTS 6-59			Max. parting off dia. ø50	3 – 6
	SCTH 6-60				3 – 6
J series	JCTER/L (Mono block) 6-52	J-SERIES		Max. parting off dia. ø82	1.4 – 3
	JSXG 6-60	J-SERIES		6	0.7 – 2.0
	JCGSS 6-56	J-SERIES		Max. parting off dia. ø20 ~ 32	2
	JCCWS 6-61	J-SERIES	Neutral (JCCN200F) / With hand (JCCR/L200F)	Max. parting off dia. ø20	2
	JCGWS 6-61	J-SERIES	Neutral (JCGN200F) / With hand (JCGN200FR/L)	Max. parting off dia. ø20	2

Face grooving

Appli.	Type		Appearance	Shape	Groove depth (mm)	Groove width (mm)
TungCut	CTFR/L 6-62	Mono block			25	3 – 6
	CTFVR/L 6-63	Mono block			20	3 – 6
	CAFR/L 6-64	Blade			25	3 – 6
My-T series	CGWS- ••S•• ••D•• 6-67	Blade			22	3 – 5
	CGWT- ••S•• ••D•• 6-70	Blade			22	3 – 5
	CGWS-FLTP 6-73	Blade			6	5
Special tools	GX-F 6-74				6	1 – 4.5
	CFGS 6-75				26	3 – 8
	CFGT 6-77				26	3 – 8

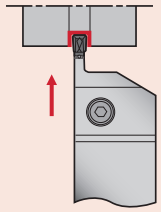
Internal grooving

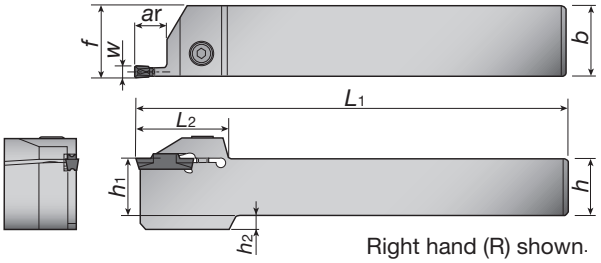
Appli.	Type	Appearance	Shape	Groove depth (mm)	Groove width (mm)
TungCut	CTIR/L Mono block 6-81			10	3 – 8
TungCut	CGIUR/L Mono block 6-81			2.8	3 – 6
TungCut	CTER/L-15A Mono block 6-82			30	6 – 8
TungCut	CGIUR/L-15A Mono block 6-82			85	6 – 8
My-T series	CGT 6-87			6	3 – 5
My-T series	CGWT-FLNP 6-93			10	3
GTGN	CN 6-88			1.8	1 – 2.25
Special tools	SGT 6-90			2.5	0.33 – 4.5
Special tools	SNG 6-84			3	1 – 3.5
Special tools	CNG 6-84			5	1 – 5
Special tools	GX-I 6-92			6	1 – 4.5
Special tools	CGX 6-86			5.3	1 – 5

CTER/L

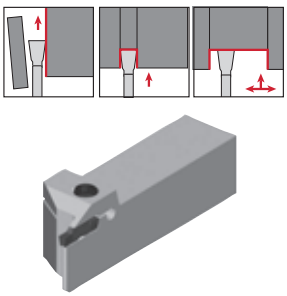
Width 2.0~8.0mm | Max. Groove Depth ≤8.0mm, ≤36.0mm | 1, 2 Corners

Grooving / traversing





Right hand (R) shown.



Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock R	Stock L	*Max. groove depth ar (mm)	Dimensions (mm) h1	b	h	L1	**f	W	h2	L2	Inserts	Parts Clamping screw	Parts Wrench
2	CTER/L1616-2T08	●	●	8	16	16	16	110	16.1	2	4	33	DGM/SGM DGS/SGS DGE DTX DTE DTR DTA	CM5x0.8x16-A	P-4
	CTER/L2020-2T08	●	●	8	20	20	20	125	20.1	2	-	33		CM5x0.8x20-A	
	CTER/L2525-2T08	●	●	8	25	25	25	150	25.1	2	-	33		CM5x0.8x25-A	
	CTER/L1616-2T12	●	●	12	16	16	16	110	16.1	2	4	32		CM5x0.8x16-A	
	CTER/L2020-2T12	●	●	12	20	20	20	125	20.1	2	-	32		CM5x0.8x20-A	
	CTER/L2525-2T12	●	●	12	25	25	25	150	25.1	2	-	32		CM5x0.8x25-A	
	CTER/L1616-2T17	●	●	17	16	16	16	110	16.1	2	4	37		CM5x0.8x16-A	
	CTER/L2020-2T17	●	●	17	20	20	20	125	20.1	2	-	37		CM5x0.8x20-A	
	CTER/L2525-2T17	●	●	17	25	25	25	150	25.1	2	-	37		CM5x0.8x25-A	
3	CTER/L1616-3T09	●	●	9	16	16	16	110	16.3	3	4	32		CM5x0.8x16-A	P-4
	CTER/L2020-3T09	●	●	9	20	20	20	125	20.3	3	-	32		CM5x0.8x20-A	
	CTER/L2525-3T09	●	●	9	25	25	25	150	25.3	3	-	32		CM5x0.8x25-A	
	CTER/L1616-3T20	●	●	20	16	16	16	110	16.3	3	4	38.5		CM5x0.8x16-A	
	CTER/L2020-3T20	●	●	20	20	20	20	125	20.3	3	-	38.5		CM5x0.8x20-A	
	CTER/L2525-3T20	●	●	20	25	25	25	150	25.3	3	-	38.5		CM5x0.8x25-A	
	CTER/L2525-3T25	●	●	25	25	25	25	150	25.3	3	-	44.5		CM5x0.8x25-A	
4	CTER/L1616-4T10	●	●	10	16	16	16	110	16.5	4	4	32		CM6x1x16-A	P-5
	CTER/L2020-4T10	●	●	10	20	20	20	125	20.5	4	-	32		CM6x1x20-A	
	CTER/L2525-4T10	●	●	10	25	25	25	150	25.5	4	-	32		CM6x1x25-A	
	CTER/L1616-4T25	●	●	25	16	16	16	110	16.5	4	4	45		CM6x1x16-A	
	CTER/L2020-4T25	●	●	25	20	20	20	125	20.5	4	-	45		CM6x1x20-A	
	CTER/L2525-4T25	●	●	25	25	25	25	150	25.5	4	-	45		CM6x1x25-A	
	CTER/L3232-4T25	●	●	25	32	32	32	170	32.5	4	-	45		CM6x1x25-A	
5	CTER/L2020-5T12	●	●	12	20	20	20	125	20.6	5	-	37		CM6x1x20-A	
	CTER/L2525-5T12	●	●	12	25	25	25	150	25.6	5	-	37		CM6x1x25-A	
	CTER/L2525-5T32	●	●	32	25	25	25	150	25.5	5	-	56		CM6x1x25-A	
	CTER/L3232-5T32	●	●	32	32	32	32	170	32.5	5	-	56		CM6x1x25-A	
6	CTER/L2020-6T12	●	●	12	20	20	20	125	20.6	6	-	37		CM8x1.25x20-A	P-6
	CTER/L2525-6T12	●	●	12	25	25	25	150	25.6	6	7	37			
	CTER/L2525-6T32	●	●	32	25	25	25	150	25.5	6	7	56			
	CTER/L3232-6T32	●	●	32	32	32	32	170	32.5	6	-	56			
8	CTER/L2525-8T16	●	●	16	25	25	25	150	26.1	8	7	47		CM8x1.25x20-A	P-6
	CTER/L2525-8T25	●	●	25	25	25	25	150	26.1	8	7	47			
	CTER/L3232-8T25	●	●	25	32	32	32	170	33.1	8	-	47			
	CTER/L2525-8T36	●	●	36	25	25	25	150	26.1	8	7	60			
	CTER/L3232-8T36	●	●	36	32	32	32	170	33.1	8	-	60			

* When depth is deeper than insert length, 1 corner type is recommended.

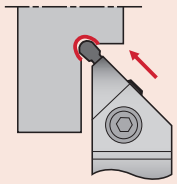
** "*f*" value in the above table is calculated with groove width "*W*" shown in the table.

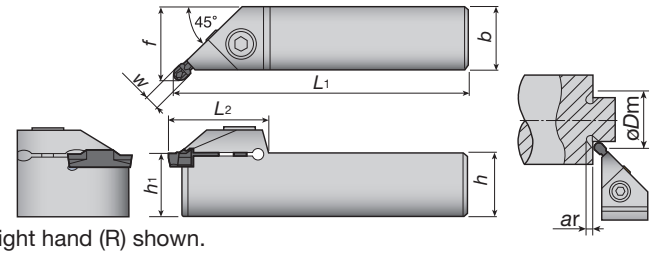
● : Stocked items.

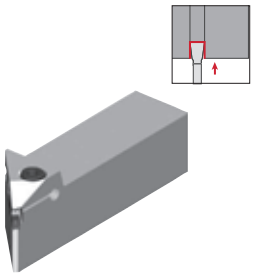
CGEUR/L

Width 3.0~6.0mm | Max. Groove Depth ≤2.8mm, ≤3.4mm | 2 Corners

External undercutting







Right hand (R) shown.

Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock R	Stock L	Min. dia. øDm (mm)	Max. groove depth ar (mm)	Dimensions (mm) b	h	L1	*f	W	h1	L2	Inserts	Parts Clamping screw	Parts Wrench
3	CGEUR/L1616-3T02	●	●	32	2.8	16	16	110	19.3	3	16	30	DTIU	CM5x0.8x16-A	P-4
	CGEUR/L2020-3T02	●	●	32	2.8	20	20	125	23.3	3	20	30			
	CGEUR/L2525-3T02	●	●	32	2.8	25	25	150	28.3	3	25	30			
4	CGEUR/L1616-4T02	●	●	32	2.8	16	16	110	19.5	4	16	31		CM6x1x16-A	P-5
	CGEUR/L2020-4T02	●	●	32	2.8	20	20	125	23.5	4	20	31		CM6x1x20-A	
	CGEUR/L2525-4T02	●	●	32	2.8	25	25	150	28.5	4	25	31		CM6x1x25-A	
5, 6	CGEUR/L2525-6T03	●	●	34	3.4	25	25	150	28.9	6	25	35		CM6x1x25-A	P-5

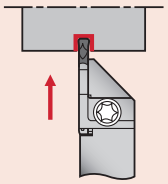
* "*f*" value in the above table is calculated with groove width "*W*" shown in the table.

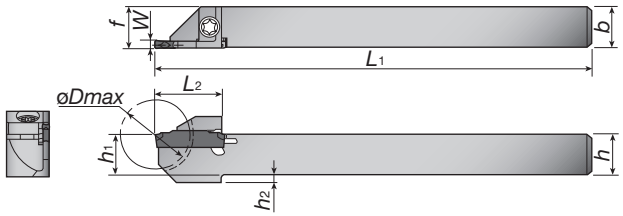
JCTER/L

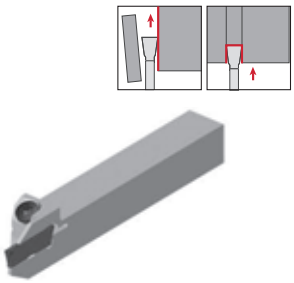
Width 1.4~3.0mm | Max. dia. ≤20.0mm, ≤32.0mm | 1, 2 Corners

For small lathes

Grooving / traversing







Right hand (R) shown.

Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock R	Stock L	Max. dia. øDmax (mm)	Dimensions (mm) h1	b	h	L1	*f	W	h2	L2	Inserts	Parts Clamping screw	Parts Wrench
1	JCTER/L1010-1.4T10	●	●	20	10	10	10	125	10.2	1.4	-	18	DGS1.4-016	CSHB-4-A	T-15F
	JCTER/L1212-1.4T12	●	●	24	12	12	12	125	12.2	1.4	-	19.5			
	JCTER/L1414-1.4T12	●	●	24	14	14	14	125	14.2	1.4	-	19.5			
	JCTER/L1616-1.4T16	●	●	32	16	16	16	125	16.2	1.4	-	24			
2	JCTER/L1010-2T10	●	●	20	10	10	10	125	10.1	2	2	19	DGM/SGM DGS/SGS DGE DTE	CSHB-4-A	T-15F
	JCTER/L1212-2T12	●	●	24	12	12	12	125	12.1	2	2	19			
	JCTER/L1414-2T12	●	●	24	14	14	14	125	14.1	2	-	19			
	JCTER/L1616-2T16	●	●	32	16	16	16	125	16.1	2	-	24			
3	JCTER/L1212-3T12	●	●	24	12	12	12	125	12.3	3	-	19		CSHB-4-A	T-15F
	JCTER/L1616-3T16	●	●	32	16	16	16	125	16.3	3	-	24			
	JCTER/L2020-3T16	●	●	32	20	20	20	125	20.3	3	-	24			

* "*f*" value in the above table is calculated with groove width "*W*" shown in the table.

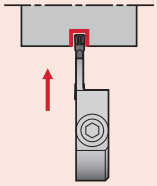
● : Stocked items.

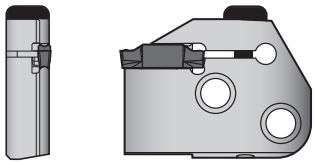
Features (6-3 ~ 6-5) | Relating pages | Applicable inserts (6-24 ~) | Parts (14-1~)

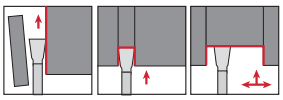
CAER/L

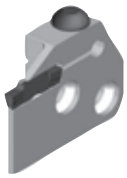
Width 3.0~6.0mm | Max. Groove Depth ≤16.0mm, ≤20.0mm | 1, 2 Corners

Grooving / traversing









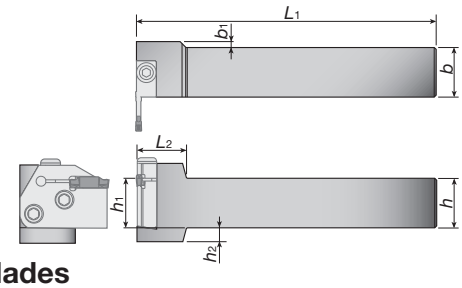
Right hand (R) shown.

Blades (For general purpose)

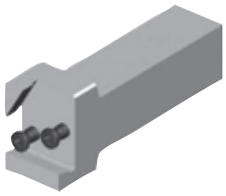
Insert seat size	Cat. No.	Stock R	Stock L	*Max. groove depth ar (mm)	Dimensions (mm) L_1	Dimensions (mm) f	Dimensions (mm) W	Inserts	Shank	Parts: Clamping screw	Parts: Wrench
3	CAER/L-3T16	●	●	16	45	10.4	3	DGS/SGS DGM/SGM DTX DTE DTR	CHFVR/L CHSR/L	BHM6-20-A	P-4
4	CAER/L-4T16	●	●	16	45	10.5	4				
5	CAER/L-5T20	●	●	20	49	10.5	5				
6	CAER/L-6T20	●	●	20	49	10.5	6				

CHFVR/L

Horizontal type



Right hand (R) shown.



Toolholders for blades

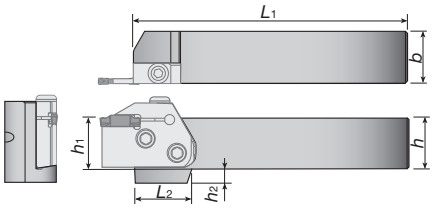
Cat. No.	Stock R	Stock L	Dimensions (mm) h_1	b	h	L_1	b_1	h_2	L_2	Blades	Parts: Clamping screw	Parts: Wrench
CHFVR/L2020	●	●	20	20	20	150	8	12	25	CAER/L CAFR/L	CSHB-6-A	P-4
CHFVR/L2525	●	●	25	25	25	150	3	7	25			
CHFVR/L3232	●	●	32	32	32	170	-	-	25			

Combination of blade and toolholder

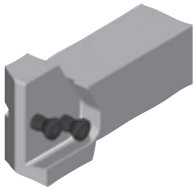
Toolholders	Blades CAERㅁㅁㅁ	CAELㅁㅁㅁ	CAFRㅁㅁㅁ	CAFLㅁㅁㅁ
CHFVR***		●	●	
CHFVL***	●			●

CHSR/L

Vertical type



Right hand (R) shown.



Toolholders for blades

Cat. No.	Stock R	Stock L	Dimensions (mm) h_1	b	h	L_1	h_2	L_2	Blades	Parts: Clamping screw	Parts: Wrench
CHSR/L2020	●	●	20	20	20	133	12	35	CAER/L CAFR/L	CSHB-6-A	P-4
CHSR/L2525	●	●	25	25	25	133	7	28			
CHSR/L3232	●	●	32	32	32	153	-	28			

Combination of blade and toolholder

Toolholders	Blades CAERㅁㅁㅁ	CAELㅁㅁㅁ	CAFRㅁㅁㅁ	CAFLㅁㅁㅁ
CHSR***	●			●
CHSL***		●	●	

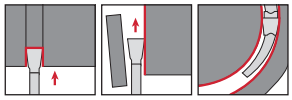
● : Stocked items.

CTER/L,CGEUR/L, JCTER/L, CAER/L inserts

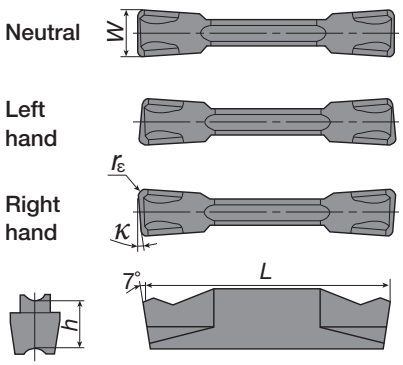
Applicable inserts

● Notation of "insert seat size"

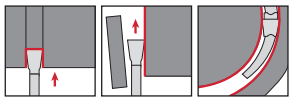
Seat size and grooving width are different. Seat size measure is for the specification of the setting insert. Please note this point.



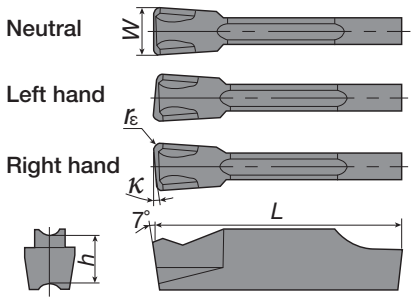
DGM External grooving and parting off, 2 corners



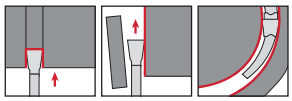
Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
2	DGM2-020	●		●		2	0.2	20	5	-
	DGM2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	DGM2-020-8R/L	●	●	●	●	2	0.2	20	5	8°
	DGM2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
	DGM2-002-15R/L	●	●	●	●	2	0.02	19.6	5	15°
3	DGM3-020	●		●		3	0.2	20	5	-
	DGM3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	DGM3-002-6R/L	●	●	●	●	3	0.02	19.6	5	6°
	DGM3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
4	DGM4-030	●		●		4	0.3	20	5	-
	DGM4-030-4R/L	●	●	●	●	4	0.3	20	5	4°
	DGM4-030-15R/L	●	●	●	●	4	0.3	20	5	15°
5	DGM5-030	●		●		5	0.3	25	5.5	-
	DGM5-030-4R	●		●		5	0.3	25	5.5	4°
6	DGM6-030	●		●		6	0.3	25	5.5	-
8	DGM8-040	●		●		8	0.4	30	6.7	-



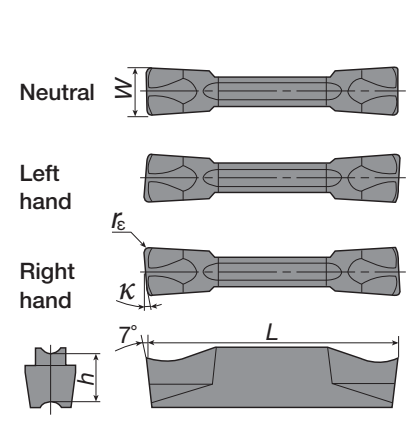
SGM External deep grooving and parting off, 1 corner



Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
2	SGM2-020	●		●		2	0.2	20	5	-
	SGM2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
3	SGM3-020	●		●		3	0.2	20	5	-
	SGM3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	SGM3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
4	SGM4-030	●		●		4	0.3	20	5	
	SGM4-030-4R/L	●	●	●	●	4	0.3	20	5	4°
5	SGM5-030	●		●		5	0.3	25	5.5	
6	SGM6-030	●		●		6	0.3	25	5.5	-



DGS External grooving and parting off, 2 corners

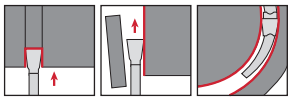


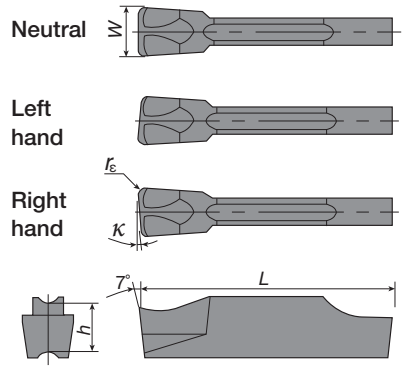
Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
1	DGS1.4-016	●		●		1.4	0.16	16	4.3	-
2	DGS2-020	●		●		2	0.2	20	5	-
	DGS2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	DGS2-002-6R/L	●	●	●	●	2	0.02	19.6	5	6°
	DGS2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
	DGS2-002-15R/L	●	●	●	●	2	0.02	19.6	5	15°
3	DGS3-020	●		●		3	0.2	20	5	-
	DGS3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	DGS3-002-6R/L	●	●	●	●	3	0.02	19.6	5	6°
	DGS3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
	DGS3-002-15R/L	●	●	●	●	3	0.02	19.6	5	15°
4	DGS4-030	●		●		4	0.3	20	5	-
	DGS4-030-4R/L	●	●	●	●	4	0.3	20	5	4°
5	DGS5-030	●		●		5	0.3	25	5.5	-
6	DGS6-030	●		●		6	0.3	25	5.5	-

* For special inserts of TungCut, please refer to page 6-94.

● : Stocked items.

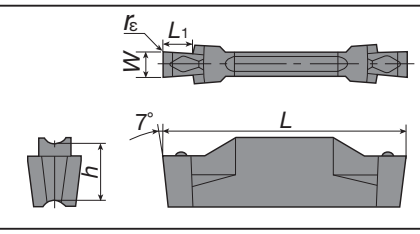
SGS External deep grooving and parting off, 1 corner





Insert seat size	Cat. No.	Grades Coated AH725 R	Grades Coated AH725 L	Grades Coated GH130 R	Grades Coated GH130 L	Dimensions (mm) W±0.05	r_ε	L	h	κ
2	SGS2-020	●		●		2	0.2	20	5	-
	SGS2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	SGS2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
3	SGS3-020	●		●		3	0.2	20	5	-
	SGS3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	SGS3-002-6R/L	●	●	●	●	3	0.02	19.8	5	6°
	SGS3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
	SGS3-002-15R/L	●	●	●	●	3	0.02	19.8	5	15°
4	SGS4-030	●		●		4	0.3	20	5	-
5	SGS5-030	●		●		5	0.3	25	5.5	-
6	SGS6-030	●		●		6	0.3	25	5.5	-

DGE External grooving (Ground), 2 corners



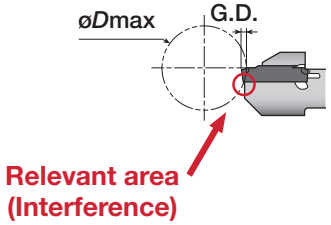
Insert seat size	Cat. No.	Grades Coated AH725	Grades Coated GH130	Dimensions (mm) W±0.02	r_ε ±0.05	L_1	L	h
2	DGE100-000	●	●	1	0	2.5	20	5
	DGE130-000	●	●	1.3	0	2.5	20	5
	DGE160-010	●	●	1.6	0.1	2.5	20	5
	DGE185-010	●	●	1.85	0.1	3.5	20	5
	DGE215-015	●	●	2.15	0.15	3.5	20	5

● Caution for DGE

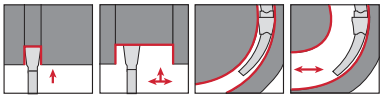
*ø*Dmax is limited as shown in picture in right according to groove depth, G.D. Please refer to the following table.

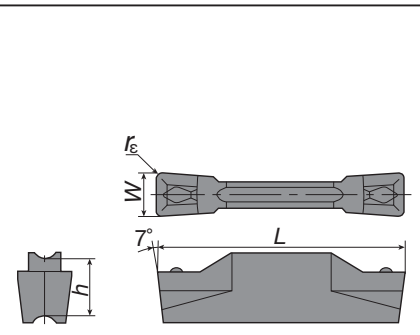
G.D. = Groove depth

Cat. No.	Max. groove depth	*ø*Dmax G.D. = 1	G.D. = 1.5	G.D. = 2	G.D. = 2.5	G.D. = 3
DGE100-000	2	∞	18.6	11.5	-	-
DGE130-000						
DGE160-010						
DGE185-010	3				8.8	7
DGE215-015						



DTE External, face grooving and traversing (Ground)





Insert seat size	Cat. No.	Grades Coated AH725	Grades Coated GH130	Grades Cermet NS530	Dimensions (mm) W±0.02	r_ε ±0.05	L	h
3	DTE265-015	●	●	★	2.65	0.15	20	5
	DTE300-020	●	●	★	3	0.2	20	5
	DTE300-040	●	●	★	3	0.4	20	5
	DTE315-015	●	●	★	3.15	0.15	20	5
4	DTE400-040	●	●	★	4	0.4	20	5
	DTE400-080	●	●	★	4	0.8	20	5
	DTE415-015	●	●	★	4.15	0.15	20	5
5	DTE478-055	●	●	★	4.78	0.55	25	5.5
	DTE500-040	●	●	★	5	0.4	25	5.5
	DTE500-080	●	●	★	5	0.8	25	5.5
	DTE515-015	●	●		5.15	0.15	25	5.5
6	DTE600-080	●	●		6	0.8	25	5.5
	DTE600-120	●	●		6	1.2	25	5.5
8	DTE800-080	●	●		8	0.8	30	6.7
	DTE800-120	●	●		8	1.2	30	6.7

● : Stocked items
★ : Available in 2013

* For special inserts of TungCut, please refer to page 6-94.

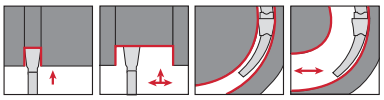
CTER/L, JCTER/L, CAER/L inserts

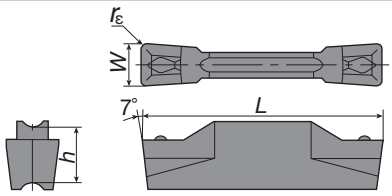
Applicable inserts

● Notation of “insert seat size”

Seat size and grooving width are different. Seat size measure is for the specification of the setting insert. Please note this point.

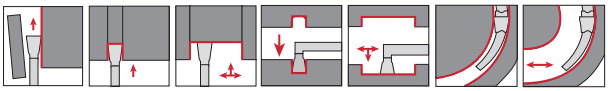
DTE External, face grooving and traversing (Molded)

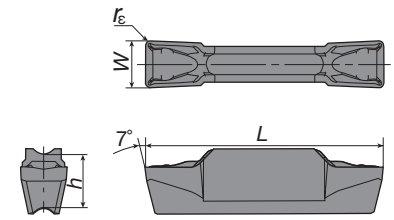




Insert seat size	Cat. No.	Grades			Dimensions (mm)			
		Coated		Cermet				
		AH725	GH130	NS530	W±0.05	rε	L	h
3	DTE3-040	●	●	★	3	0.4	20	5
4	DTE4-040	●	●	★	4	0.4	20	5

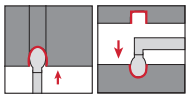
DTX External, internal, face grooving and traversing

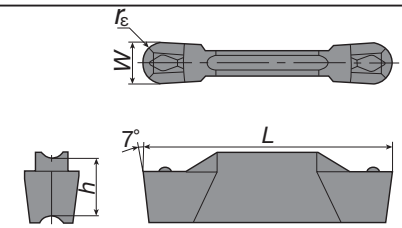




Insert seat size	Cat. No.	Grades		Dimensions (mm)			
		Coated					
		AH725	GH130	W±0.05	rε	L	h
3	DTX3-030	●	●	3	0.3	20	5
4	DTX4-040	●	●	4	0.4	20	5
5	DTX5-040	●	●	5	0.4	25	5.5

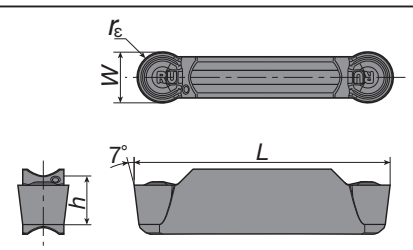
DTR Profiling and undercutting (Ground)





Insert seat size	Cat. No.	Grades		Dimensions (mm)			
		Coated					
		AH725	GH130	W±0.02	rε	L	h
3	DTR300-150	●	●	3	1.5	20	5
4	DTR400-200	●	●	4	2	20	5
5	DTR478-239	●	●	4.78	2.39	25	5.5
	DTR500-250	●	●	5	2.5	25	5.5
6	DTR600-300	●	●	6	3	25	5.5

Profiling and undercutting (Molded)

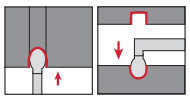


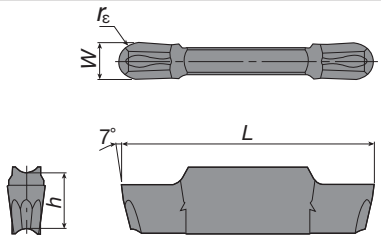
Insert seat size	Cat. No.	Grades		Dimensions (mm)			
		Coated					
		AH725	GH130	W±0.05	rε	L	h
3	DTR3-150	●	●	3	1.5	20	5
4	DTR4-200	●	●	4	2	20	5
5	DTR5-250	●	●	5	2.5	25	5.5
6	DTR6-300	●	●	6	3	25	5.5
8	DTR8-400	●	●	8	4	30	6.7

● : Stocked items
★ : Available in 2013

* For special inserts of TungCut, please refer to page 6-94.

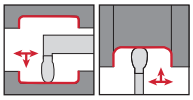
DTIU Profiling and undercutting (Ground)

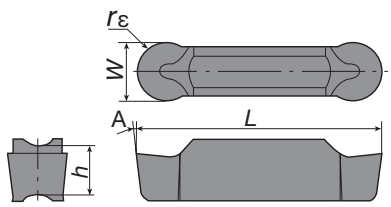




Insert seat size	Cat. No.	Grades Coated		Dimensions (mm)			
		AH725	GH130	W±0.02	rε	L	h
3	DTIU300-150	●	●	3v	1.5	20	5
4	DTIU400-200	●	●	4	2	20	5
5	DTIU500-250	●	●	5	2.5	25	5.5
6	DTIU600-300	●	●	6	3	25	5.5

DTA Aluminium wheel machining (Ground)





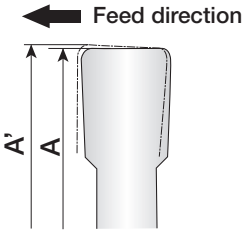
Insert seat size	Cat. No.	Grades Carbide	Dimensions (mm)				
		TH10	W±0.02	rε	L	h	A
6	DTA600-300	●	6	3	25	5.5	7°
8	DTA800-400	●	8	4	30	6.7	10°

● : Stocked items.

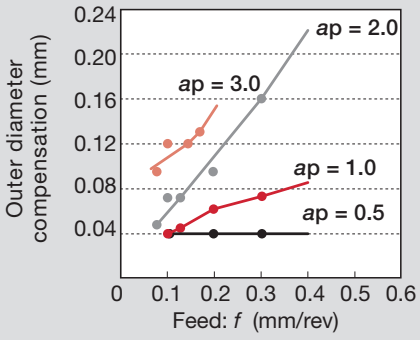
* For special inserts of TungCut, please refer to page 6-94.

Notice in “traversing”

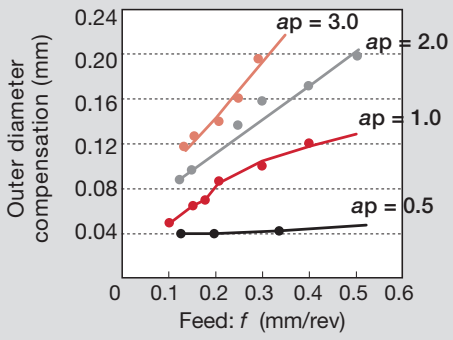
When traversing, the insert is pushed by the directional cutting force feed. As a result of this condition the diameter of the workpiece may change. (See picture on right) In such cases, trial cutting is essential to measure the actual diameter. For your reference, the compensated values (SAMPLES) are shown in the following graph.



Insert : DTE300-040
Toolholder : CTER2525-3T09



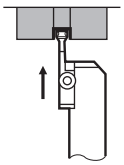
Insert : DTE400-040
Toolholder : CTER2525-4T10

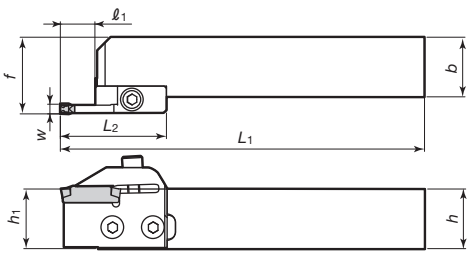


CGWS-WG

Width 3.0~5.0mm | Max. Groove Depth ≤12.0mm, ≤13.0mm | 2 Corners | Blade type

External grooving
CGWS R/L-WG





Right hand (R) shown.

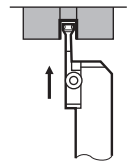
Toolholders (Blade type)

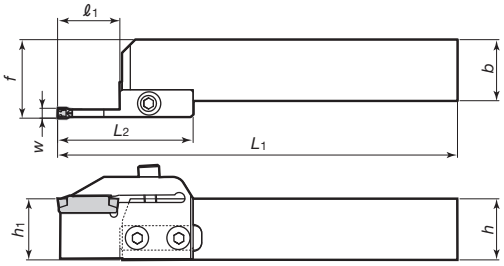
Groove width W (mm)	Shank and blade ass'y Cat. No.	Groove width W (mm)	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	h1	b	h	L1	f	ℓ1	L2	Shank	Stock R	Stock L	Blade set	Stock R	Stock L
3	CGWSR/L2020-W30GR/L		●	●	WGE30 WGE30R/L WGT30 WGR30	12	20	20	20	150.5	26.9	13.5	43.5	CGWSR/L2020	●	●	W30G R/L	●	●
	CGWSR/L2525-W30GR/L		●	●			25	25	25		31.9			CGWSR/L2525	●	●			
4	CGWSR/L2020-W40GR/L		●	●	WGE40 WGE40R/L WGT40 WGR40	13	20	20	20	151.5	26.9	14.5	44.5	CGWSR/L2020	●	●	W40G R/L	●	
	CGWSR/L2525-W40GR/L		●	●			25	25	25		31.9			CGWSR/L2525	●	●			
5	CGWSR/L2020-W50GR/L		●	●	WGE50 WGE50R/L WGT50 WGR50	13	20	20	20		26.9			CGWSR/L2020	●	●	W50G R/L		
	CGWSR/L2525-W50GR/L		●	●			25	25	25		31.9			CGWSR/L2525	●	●			

CGWS-WG-L

Width 2.0~5.0mm | Max. Groove Depth ≤15.0mm, ≤21.5mm | 2 Corners | Blade type

External deep grooving
CGWS R/L-WG-L





Deep Grooving

Right hand (R) shown.

Toolholders (Blade type)

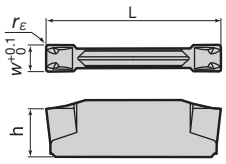
Groove width W (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	h1	b	h	L1	f	ℓ1	L2	Shank	Stock R	Stock L	Blade set	Stock R	Stock L
2	CGWSR/L2020-W20GR/L-L	●	●	WGE20 WGE20R/L	15	20	20	20	153.5	26.7	16.5	46.5	CGWSR/L2020	●	●	W20G R/L-L	●	
	CGWSR/L2525-W20GR/L-L	●	●			25	25	25		31.7			CGWSR/L2525	●	●			
3	CGWSR/L2020-W30GR/L-L	●	●	WGE30 WGE30R/L WGT30 WGR30	16.5 16.5 16.5 17.5	20	20	20	157.5	26.9	20.5	50.5	CGWSR/L2020	●	●	W30G R/L-L	●	●
	CGWSR/L2525-W30GR/L-L	●	●			25	25	25		31.9			CGWSR/L2525	●	●			
4	CGWSR/L2020-W40GR/L-L	●	●	WGE40 WGE40R/L WGT40 WGR40	21 21 21 21.5	20	20	20	162.5	26.9	25.5	55.5	CGWSR/L2020	●	●	W40G R/L-L	●	
	CGWSR/L2525-W40GR/L-L	●	●			25	25	25		31.9			CGWSR/L2525	●	●			
5	CGWSR/L2020-W50GR/L-L	●	●	WGE50 WGE50R/L WGT50 WGR50	21	20	20	20		26.9			CGWSR/L2020	●	●	W50G R/L-L	●	
	CGWSR/L2525-W50GR/L-L	●	●			25	25	25		31.9			CGWSR/L2525	●	●			

Notes: • Max. groove depth may differ by using inserts.
• When ordering, Shank and blade ass'y Cat. No. or Shank and Blade set are required.
• When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.

● : Stocked items.

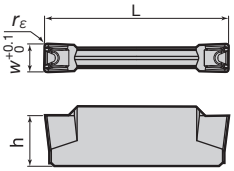
Applicable inserts

For general parting off and grooving



Cat. No.	Grades			Dimensions (mm)			
	Coated		Cermet				
	T9125	GH730	NS730	w	L	h	r_ε
WGE20	●	●	●	2	20	4.7	0.2
WGE30	●	●	●	3		5.5	
WGE40	●	●	●	4	25	5.7	
WGE50	●	●	●	5		5.9	

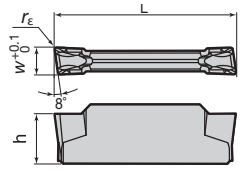
For traversing



Cat. No.	Grades			Dimensions (mm)			
	Coated		Cermet				
	T9125	GH730	NS730	w	L	h	r_ε
WGT30	●	●	●	3	20	5.5	0.4
WGT40	●	●	●	4	25	5.7	
WGT50	●	●	●	5		5.9	

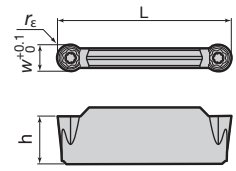
For parting off (with hand)

Right hand (R) shown.



Cat. No.	Grades						Dimensions (mm)			
	Coated				Cermet					
	T9125		GH730		NS730					
	R	L	R	L	R	L	w	L	h	r_ε
WGE20R/L			●	●	●	●	2	20	4.7	0.2
WGE30R/L			●	●	●	●	3		5.5	
WGE40R/L			●	●	●	●	4	25	5.7	
WGE50R/L			●	●	●	●	5		5.9	

For profiling



Cat. No.	Grades			Dimensions (mm)			
	Coated		Cermet				
	T9125	GH730	NS730	w	L	h	r_ε
WGR30	●	●	●	3	20	5.5	1.5
WGR40	●	●	●	4	25	5.7	2.0
WGR50		●	●	5		5.9	2.5

Parts

(Blade type)

Cat. No.	Clamping screw	Blade fixing screw	Wrench
CGWSR/L□□□□-□□WGR/L CGWSR/L□□□□-□□WGR/L-L	CHHM5-18	CSHB-6	P-4

Standard cutting conditions

Work materials	Recommended grade	Cutting speed v_c (m/min)
Low carbon steels Alloy steels (~ HB150)	**T9125**	80 ~ 200
	NS730	100 ~ 200
	GH730	50 ~ 180
Medium carbon steels Alloy steels (HB150 ~ 250)	**T9125**	80 ~ 180
	NS730	80 ~ 180
	GH730	50 ~ 150
High carbon steels Alloy steels (HB250 ~)	**T9125**	80 ~ 150
	NS730	80 ~ 150
	GH730	50 ~ 120
Stainless steels	**T9125**	80 ~ 150
	GH730	50 ~ 120
Grey and ductile cast irons	**T9125**	80 ~ 200
	GH730	50 ~ 180

Operation	Feed: f (mm/rev)			
	Groove width W: (mm)			
	2	3	4	5
Grooving (WGE□□)	0.06 ~ 0.20	0.06 ~ 0.25	0.07 ~ 0.27	0.07 ~ 0.30
Parting off (WGE□□R/L)	0.04 ~ 0.10	0.04 ~ 0.14	0.04 ~ 0.14	0.04 ~ 0.14
Traversing (WGT□□)	–	ap = 0.5 ~ 1.5 f = 0.06 ~ 0.2	ap = 0.5 ~ 2.0 f = 0.06 ~ 0.25	ap = 0.5 ~ 2.5 f = 0.06 ~ 0.27
Profiling (WGR□□)	–	ap = 0.5 ~ 1.4 f = 0.05 ~ 0.25	ap = 0.5 ~ 1.5 f = 0.05 ~ 0.26	ap = 0.5 ~ 1.6 f = 0.05 ~ 0.3

Note: For diameter compensation values in traversing, see page 6-39.

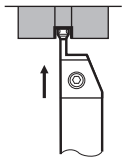
● : Stocked items.

CGWS-W

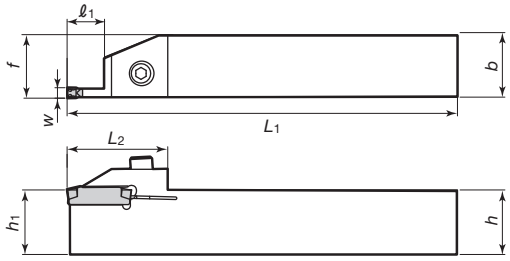
Width 3.0~5.0mm | Max. Groove Depth ≤12.0mm, ≤13.0mm | 2 Corners | Mono block without offset

External grooving

CGWS R/L-W



● Without offset



Right hand (R) shown.

Toolholders (Mono block type)

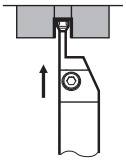
Groove width W (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) h_1	b	h	L_1	f	ℓ_1	L_2
3	CGWSR/L1616-W30	●		WGE30 WGE30R/L WGT30 WGR30	12	16	16	16	125	16.4	13.5	34
	CGWSR/L2020-W30	●	●			20	20	20	150	20.4		
	CGWSR/L2525-W30	●				25	25	25		25.4		
4	CGWSR/L2020-W40	●		WGE40 WGE40R/L WGT40 WGR40	13	20	20	20		20.4	14.5	39
	CGWSR/L2525-W40	●				25	25	25		25.4		
5	CGWSR/L2020-W50	●	●	WGE50 WGE50R/L WGT50 WGR50	13	20	20	20		20.4		
	CGWSR/L2525-W50		●			25	25	25		25.4		

CGWS-W-L

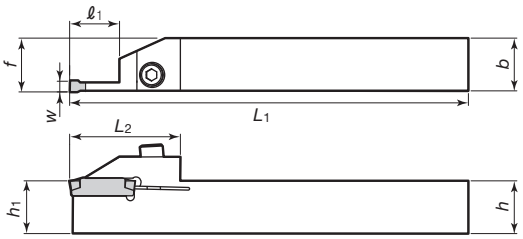
Width 2.0~5.0mm | Max. Groove Depth ≤15.0mm, ≤21.5mm | 2 Corners | Mono block without offset

External deep grooving

CGWS R/L-W-L



● Without offset



Deep Grooving

Right hand (R) shown.

Toolholders (Mono block type)

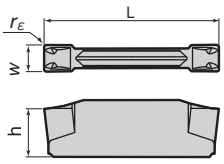
Groove width W (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) h_1	b	h	L_1	f	ℓ_1	L_2
2	CGWSR/L1616-W20-L	●		WGE20 WGE20R/L	15	16	16	16	125	16.2	16.5	37
	CGWSR/L2020-W20-L	●	●			20	20	20	150	20.2		
	CGWSR/L2525-W20-L	●	●			25	25	25		25.2		
3	CGWSR/L1616-W30-L	●		WGE30 WGE30R/L WGT30 WGR30	16.5 16.5 16.5 17.5	16	16	16	125	16.4	20.5	
	CGWSR/L2020-W30-L	●	●			20	20	20	150	20.4		
	CGWSR/L2525-W30-L	●	●			25	25	25		25.4		
4	CGWSR/L2020-W40-L	●		WGE40 WGE40R/L WGT40 WGR40	21 21 21 21.5	20	20	20		20.4	25.5	42
	CGWSR/L2525-W40-L	●				25	25	25		25.4		
5	CGWSR/L2020-W50-L	●	●	WGE50 WGE50R/L WGT50 WGR50	21	20	20	20		20.4		
	CGWSR/L2525-W50-L	●	●			25	25	25		25.4		

Note: • Max. groove depth may differ by using inserts.

● : Stocked items.

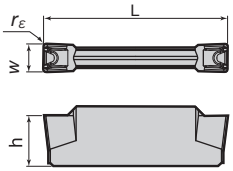
Applicable inserts

For general parting off and grooving



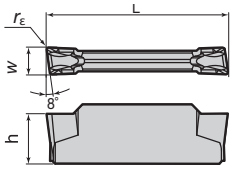
Cat. No.	Grades			Dimensions (mm)			
	Coated		Cermet				
	T9125	GH730	NS730	w	L	h	rε
WGE20	●	●	●	2	20	4.7	0.2
WGE30	●	●	●	3		5.5	
WGE40	●	●	●	4	25	5.7	
WGE50	●	●	●	5		5.9	

For traversing



Cat. No.	Grades			Dimensions (mm)			
	Coated		Cermet				
	T9125	GH730	NS730	w	L	h	rε
WGT30	●	●	●	3	20	5.5	0.4
WGT40	●	●	●	4	25	5.7	
WGT50	●	●	●	5		5.9	

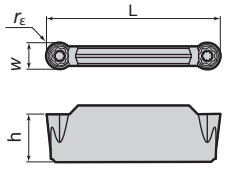
For parting off (with hand)



Right hand (R) shown.

Cat. No.	Grades						Dimensions (mm)			
	Coated				Cermet					
	T9125		GH730		NS730		w	L	h	rε
	R	L	R	L	R	L				
WGE20R/L			●	●	●	●	2	20	4.7	0.2
WGE30R/L			●	●	●	●	3		5.5	
WGE40R/L			●	●	●	●	4	25	5.7	
WGE50R/L			●	●	●	●	5		5.9	

For profiling



Cat. No.	Grades			Dimensions (mm)			
	Coated		Cermet				
	T9125	GH730	NS730	w	L	h	rε
WGR30	●	●	●	3	20	5.5	1.5
WGR40	●	●	●	4	25	5.7	2.0
WGR50		●	●	5		5.9	2.5

Parts

(Mono block type)

Cat. No.	Clamping screw	Wrench
CGWSR/L□□□□-□□-W	CHHM5-18	P-4
CGWSR/L□□□□-□□-W-L		

Standard cutting conditions

Work materials	Recommended grade	Cutting speed v_c (m/min)
Low carbon steels Alloy steels (~ HB150)	T9125	80 ~ 200
	NS730	100 ~ 200
	GH730	50 ~ 180
Medium carbon steels Alloy steels (HB150 ~ 250)	T9125	80 ~ 180
	NS730	80 ~ 180
	GH730	50 ~ 150
High carbon steels Alloy steels (HB250 ~)	T9125	80 ~ 150
	NS730	80 ~ 150
	GH730	50 ~ 120
Stainless steels	T9125	80 ~ 150
	GH730	50 ~ 120
Grey and ductile cast irons	T9125	80 ~ 200
	GH730	50 ~ 180

Operation	Feed: f (mm/rev)			
	Groove width: W (mm)			
	2	3	4	5
Grooving (WGE□□)	0.06 ~ 0.20	0.06 ~ 0.25	0.07 ~ 0.27	0.07 ~ 0.30
Parting off (WGE□□R/L)	0.04 ~ 0.10	0.04 ~ 0.14	0.04 ~ 0.14	0.04 ~ 0.14
Traversing (WGT□□)	-	ap = 0.5 ~ 1.5 f = 0.06 ~ 0.2	ap = 0.5 ~ 2.0 f = 0.06 ~ 0.25	ap = 0.5 ~ 2.5 f = 0.06 ~ 0.27
Profiling (WGR□□)	-	ap = 0.5 ~ 1.4 f = 0.05 ~ 0.25	ap = 0.5 ~ 1.5 f = 0.05 ~ 0.26	ap = 0.5 ~ 1.6 f = 0.05 ~ 0.3

Note: For diameter compensation values in traversing, see page 6-39.

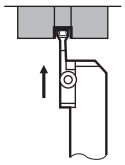
● : Stocked items.

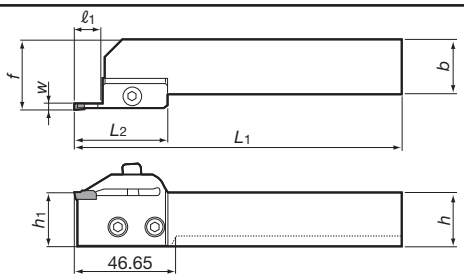
CGWS-G

Width 2.0~5.0mm | Max. Groove Depth ≤12.0mm | 1 Corner

S: Vertical type

External grooving
CGWS R/L-G





Right hand (R) shown.
The dashed line shows 20 mm-square shank tools .

Toolholders (S: Vertical type)

Groove width W (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	h_1	b	h	L_1	f	ℓ_1	L_2	Shank	Stock R	Stock L	Blade set	Stock R	Stock L
2	CGWSR/L2020-20GR/L	●	●	GE20 GE20-AL	12	20	20	20	150.2	26.8	13.15	43.15	CGWSR/L2020	●	●	20GR/L	●	●
	CGWSR/L2525-20GR/L	●	●			25	25	25		31.8			CGWSR/L2525	●	●			
3	CGWSR/L2020-30GR/L	●	●	GE30 GE30R/L GT30 GR30 GE30-AL	12	20	20	20		27			CGWSR/L2020	●	●	30GR/L	●	●
	CGWSR/L2525-30GR/L	●	●			25	25	25		32			CGWSR/L2525	●	●			
4	CGWSR/L2020-40GR/L	●	●	GE40 GE40R/L GT40 GR40 GE40-AL	12	20	20	20		27.1			CGWSR/L2020	●	●	40GR/L	●	●
	CGWSR/L2525-40GR/L	●	●			25	25	25		32.1			CGWSR/L2525	●	●			
5	CGWSR/L2020-50GR/L	●		GE50 GE50R/L GT50 GR50	12	20	20	20		27.2			CGWSR/L2020	●	●	50GR/L	●	●
	CGWSR/L2525-50GR/L	●				25	25	25		32.2			CGWSR/L2525	●	●			

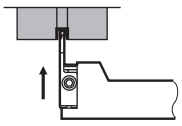
Notes: • When ordering, Shank and blade ass'y Cat. No. or Shank and Blade-set are required.
• When using a right or left hand blade-set, the right hand blade-set is used with right hand shank and the left hand blade-set is used with left hand shank.

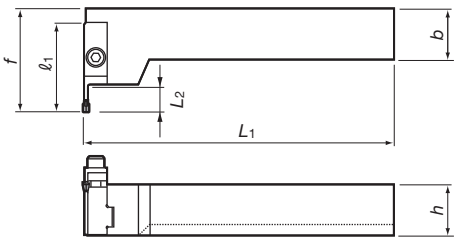
CGWT-G

Width 3.0~5.0mm | Max. Groove Depth ≤12.0mm | 1 Corner

T: Horizontal type

External grooving
CGWT R/L-G





Right hand (R) shown.
The dashed line shows 20 mm-square shank tools .

Toolholders (T: Horizontal type)

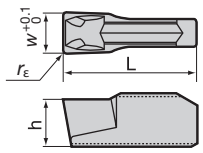
Groove width W (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	b	h	L_1	f	ℓ_1	L_2	Shank	Stock R	Stock L	Blade set	Stock R	Stock L
3	CGWTR/L2020-30GL/R			GE30 GE30R/L GT30 GR30 GE30-AL	12	20	20	150	49.9	43.15	12.9	CGWTR/L2020	●	●	30GL/R	●	●
	CGWTR/L2525-30GL/R					25	25					CGWTR/L2525	●	●			
4	CGWTR/L2020-40GL/R			GE40 GE40R/L GT40 GR40 GE40-AL	12	20	20	150.1				CGWTR/L2020	●	●	40GL/R	●	●
	CGWTR/L2525-40GL/R					25	25					CGWTR/L2525	●	●			
5	CGWTR/L2020-50GL/R			GE50 GE50R/L GT50 GR50	12	20	20	150.2				CGWTR/L2020	●	●	50GL/R	●	●
	CGWTR/L2525-50GL/R					25	25					CGWTR/L2525	●	●			

Notes: • When ordering, Shank and blade ass'y Cat. No. or Shank and Blade-set are required.
• When using a right or left hand blade-set, the right hand blade-set is used with left hand shank and the left hand blade-set is used with right hand shank.

● : Stocked items.

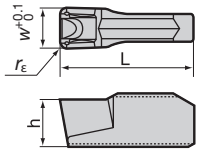
Applicable inserts

For general parting off and grooving



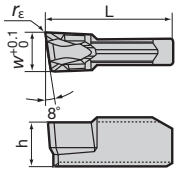
Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet					
	T9125	GH730	NS530	NS730	W	L	h	r_ε
GE20		●	●	●	2	10	3.5	0.2
GE30	●	●	●	●	3			
GE40	●	●	●	●	4		4.0	
GE50	●	●	●	●	5	12	4.5	

For traversing



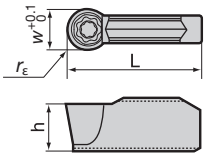
Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet					
	T9125	GH730	NS530	NS730	W	L	h	r_ε
GT30		●	●	●	3	10	3.5	0.4
GT40		●	●	●	4		4.0	
GT50	●	●	●	●	5	12	4.5	

Right hand (R) shown.



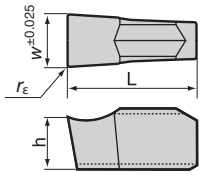
Cat. No.	Grades						Dimensions (mm)			
	Coated				Cermet					
	T9125		GH730		NS730		W	L	h	r_ε
	R	L	R	L	R	L				
GE30R/L			●	●	●	●	3	10	3.5	0.2
GE40R/L			●	●	●	●	4		4.0	
GE50R/L			●	●	●	●	5	12	4.5	

For profiling



Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet					
	T9125	GH730	NS530	NS730	W	L	h	r_ε
GR30		●	●	●	3	10	3.5	1.5
GR40	●	●	●	●	4		4.0	2.0
GR50	●	●	●	●	5	12	4.5	2.5

For aluminium and non-ferrous metals



Cat. No.	Grades	Dimensions (mm)			
	Uncoated				
	KS05F	W	L	h	r_ε
GE20-AL	●	2	10	3.5	0.2
GE30-AL	●	3			
GE40-AL	●	4		4.0	

Parts (Blade type)

Cat. No.	Clamping screw	Blade fixing screw	Wrench
CGWSR/L□□□□-□□WGR/L	CHHM5-18	CSHB-6	P-4
CGWSR/L□□□□-□□WGR/L-L			

Standard cutting conditions

Work materials	Recommended grade	Cutting speed v_c (m/min)
Low carbon steels Alloy steels (~ 150HB)	T9125	80 ~ 200
	NS730	100 ~ 200
	GH730	50 ~ 180
Medium carbon steels Alloy steels (150 ~ 250HB)	T9125	80 ~ 180
	NS730	80 ~ 180
	GH730	50 ~ 150
High carbon steels Alloy steels (250HB ~)	T9125	80 ~ 150
	NS730	80 ~ 150
	GH730	50 ~ 120
Stainless steels	T9125	80 ~ 150
	GH730	50 ~ 120
Grey and ductile cast irons	T9125	80 ~ 200
	GH730	50 ~ 180
Aluminium alloys, Non-ferrous metals	KS05F	200 ~ 300

Operation	Feed: f (mm/rev) Groove width: W (mm)			
	2	3	4	5
Grooving (GE□□)	0.06 ~ 0.20	0.06 ~ 0.25	0.07 ~ 0.27	0.07 ~ 0.30
Parting off (GE□□R/L)	0.04 ~ 0.10	0.04 ~ 0.14	0.04 ~ 0.14	0.04 ~ 0.14
Traversing (GT□□)	-	ap = 0.5 ~ 1.5 f = 0.06 ~ 0.2	ap = 0.5 ~ 2.0 f = 0.06 ~ 0.25	ap = 0.5 ~ 2.5 f = 0.06 ~ 0.27
Profiling (GR□□)	-	ap = 0.5 ~ 1.4 f = 0.05 ~ 0.25	ap = 0.5 ~ 1.5 f = 0.05 ~ 0.26	ap = 0.5 ~ 1.6 f = 0.05 ~ 0.3
Grooving for Aluminium alloys (GE□□-AL)	0.03 ~ 0.1	0.03 ~ 0.1	0.03 ~ 0.1	-

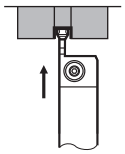
Note: For diameter compensation values in traversing, see page 6-39.

● : Stocked items.

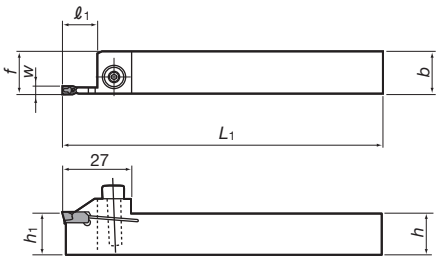
CGSS

Width 2.0~5.0mm | Max. Groove Depth ≤ 12.0mm, ≤ 16.0mm | 1 Corner | Mono block without offset

External grooving
CGSS R/L



● Without offset



Right hand (R) shown.

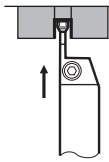
Toolholders (Mono block type)

Groove width W (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) h1	b	h	L1	f	ℓ1
2	CGSSR/L1616-20	●	●	GE20 GE20-AL	16	16	16	16	125	16.2	17
	CGSSR/L2020-20	●	●			20	20	20	150	20.2	
	CGSSR/L2525-20	●	●			25	25	25		25.2	
3	CGSSR/L1616-30	●	●	GE30 GE30R/L GT30 GR30 GE30-AL	12	16	16	16	125	16.5	13.5
	CGSSR/L2020-30	●	●			20	20	20	150	20.5	
	CGSSR/L2525-30	●	●			25	25	25		25.5	
4	CGSSR/L1616-40			GE40 GE40R/L GT40 GR40 GE40-AL	12	16	16	16	125	16.6	
	CGSSR/L2020-40	●	●			20	20	20	150	20.6	
	CGSSR/L2525-40	●	●			25	25	25		25.6	
5	CGSSR/L1616-50			GE50 GE50R/L GT50 GR50	12	16	16	16	125	16.7	
	CGSSR/L2020-50	●	●			20	20	20	150	20.7	
	CGSSR/L2525-50	●	●			25	25	25		25.7	

CGSS-D

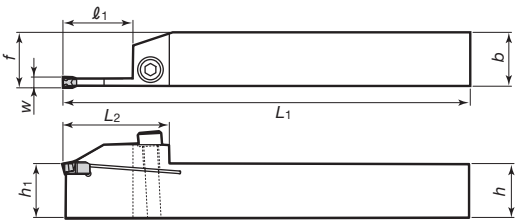
Width 3.0~5.0mm | Max. Groove Depth ≤ 22.0mm, ≤ 25.0mm | 1 Corner | Mono block without offset

External deep grooving
CGSS R/L-D



● Without offset

Deep Grooving



Right hand (R) shown.

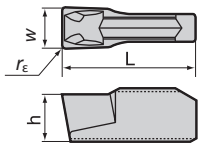
Toolholders (Mono block type)

Groove width W (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) h1	b	h	L1	f	ℓ1	L2
3	CGSSR/L1616-30D	●	●	GE30 GE30R/L GE30-AL	22	16	16	16	125	16.5	23	36.2
	CGSSR/L2020-30D	●	●			20	20	20	150	20.5		
	CGSSR/L2525-30D	●	●			25	25	25		25.5		
4	CGSSR/L1616-40D			GE40 GE40R/L GE40-AL	25	16	16	16	125	16.6	26	39.5
	CGSSR/L2020-40D	●	●			20	20	20	150	20.6		
	CGSSR/L2525-40D	●	●			25	25	25		25.6		
5	CGSSR/L1616-50D			GE50 GE50R/L	25	16	16	16	125	16.7		
	CGSSR/L2020-50D	●	●			20	20	20	150	20.7		
	CGSSR/L2525-50D	●	●			25	25	25		25.7		

● : Stocked items.

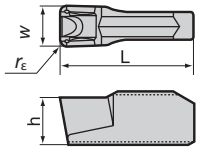
Applicable inserts

For general parting off and grooving



Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet					
	T9125	GH730	NS530	NS730	W	L	h	rε
GE20		●	●	●	2	10	3.5	0.2
GE30	●	●	●	●	3			
GE40	●	●	●	●	4		4.0	
GE50	●	●	●	●	5	12	4.5	

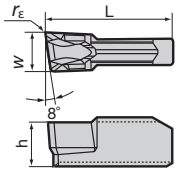
For traversing



Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet					
	T9125	GH730	NS530	NS730	W	L	h	rε
GT30		●	●	●	3	10	3.5	0.4
GT40		●	●	●	4		4.0	
GT50	●	●	●	●	5	12	4.5	

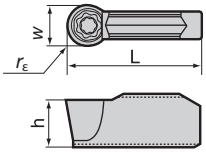
For parting off (with hand)

Right hand (R) shown.



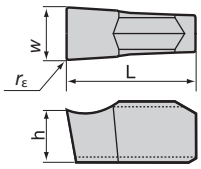
Cat. No.	Grades						Dimensions (mm)			
	Coated				Cermet					
	T9125		GH730		NS730		W	L	h	rε
	R	L	R	L	R	L				
GE30R/L			●	●	●	●	3	10	3.5	0.2
GE40R/L			●	●	●	●	4		4.0	
GE50R/L			●	●	●	●	5	12	4.5	

For profiling



Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet					
	T9125	GH730	NS530	NS730	W	L	h	rε
GR30		●	●	●	3	10	3.5	1.5
GR40	●	●	●	●	4		4.0	2.0
GR50	●	●	●	●	5	12	4.5	2.5

For aluminium and non-ferrous metals



Cat. No.	Grades	Dimensions (mm)			
	Uncoated				
	KS05F	W	L	h	rε
GE20-AL	●	2	10	3.5	0.2
GE30-AL	●	3			
GE40-AL	●	4		4.0	

Parts (Mono block type)

Cat. No.	Clamping screw	Wrench
CGSSR/L□□□□–□□	CHHM5-18	P-4
CGSSR/L□□□□–□□-D		

Standard cutting conditions

Work materials	Recommended grade	Cutting speed v_c (m/min)
Low carbon steels Alloy steels (~ 150HB)	T9125	80 ~ 200
	NS730	100 ~ 200
	GH730	50 ~ 180
Medium carbon steels Alloy steels (150 ~ 250HB)	T9125	80 ~ 180
	NS730	80 ~ 180
	GH730	50 ~ 150
High carbon steels Alloy steels (250HB ~)	T9125	80 ~ 150
	NS730	80 ~ 150
	GH730	50 ~ 120
Stainless steels	T9125	80 ~ 150
	GH730	50 ~ 120
Grey and ductile cast irons	T9125	80 ~ 200
	GH730	50 ~ 180
Aluminium alloys, Non-ferrous metals	KS05F	200 ~ 300

Operation	Feed: f (mm/rev) Groove width: W (mm)			
	2	3	4	5
Grooving (GE□□)	0.06 ~ 0.20	0.06 ~ 0.25	0.07 ~ 0.27	0.07 ~ 0.30
Parting off (GE□□R/L)	0.04 ~ 0.10	0.04 ~ 0.14	0.04 ~ 0.14	0.04 ~ 0.14
Traversing (GT□□)	-	ap = 0.5 ~ 1.5 f = 0.06 ~ 0.2	ap = 0.5 ~ 2.0 f = 0.06 ~ 0.25	ap = 0.5 ~ 2.5 f = 0.06 ~ 0.27
Profiling (GR□□)	-	ap = 0.5 ~ 1.4 f = 0.05 ~ 0.25	ap = 0.5 ~ 1.5 f = 0.05 ~ 0.26	ap = 0.5 ~ 1.6 f = 0.05 ~ 0.3
Grooving for Aluminium alloys (GE□□-AL)	0.03 ~ 0.1	0.03 ~ 0.1	0.03 ~ 0.1	-

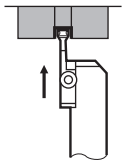
Note: For diameter compensation values in traversing, see page 6-39.

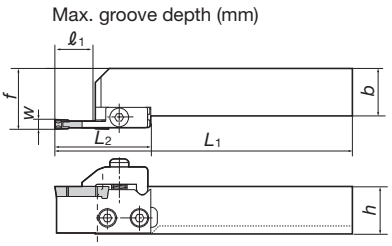
● : Stocked items.

CGWS-CGD

Width 2.0~8.0mm | Max. Groove Depth ≤ 16.0mm, ≤ 21.6mm | 2 Corners | S: Vertical type

External grooving CGWS R/L





Right hand (R) shown.
The dashed line shows 20 mm square shank tools.

Toolholders (S: Vertical type)

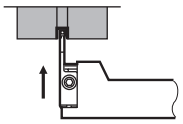
Groove width W (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	Max. parting off dia. (mm)	Dimensions (mm) b	h	L_1	f	L_2	Parts: Shank	Stock R	Stock L	Blade set	Stock R	Stock L
2	CGWSR/L2020-CGDR/L2	●	●	CGD200	16	35	20	20	152	26.45	45	CGWSR/L2020	●	●	CGDR/L2	●	
	CGWSR/L2525-CGDR/L2		●				25	25		31.45		CGWSR/L2525	●	●			
3	CGWSR/L2020-CGDR/L3		●	CGD300	21.6	46	20	20	157.6	26.45	50.6	CGWSR/L2020	●	●	CGDR/L3	●	●
	CGWSR/L2525-CGDR/L3	●					25	25		31.45		CGWSR/L2525	●	●			
4	CGWSR/L2020-CGDR/L4	●	●	CGD400	21.6	46	20	20		26.65		CGWSR/L2020	●	●	CGDR/L4	●	
	CGWSR/L2525-CGDR/L4	●	●				25	25		31.65		CGWSR/L2525	●	●			
5	CGWSR/L2020-CGDR/L5	●	●	CGD500	21.6	46	20	20		26.95		CGWSR/L2020	●	●	CGDR/L5	●	
	CGWSR/L2525-CGDR/L5		●				25	25		31.95		CGWSR/L2525	●	●			
6	CGWSR/L2020-CGDR/L6	●	●	CGD600	21.6	46	20	20		27.1		CGWSR/L2020	●	●	CGDR/L6		●
	CGWSR/L2525-CGDR/L6	●	●				25	25		32.1		CGWSR/L2525	●	●			
7•8	CGWSR/L2525-8	●		CGD700	21.6	50			150	26.35	–	–			–		
	CGWSR/L3232-8	●		CGD800			32	32	170	33.35							

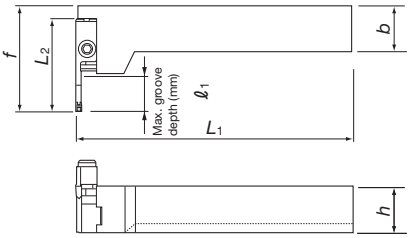
Notes: • When ordering, Shank and blade ass'y Cat. No. or Shank and Blade-set are required.
• When using a right or left hand blade-set, the right hand blade-set is used with right hand shank and the left hand blade-set is used with left hand shank.

CGWT-CGD

Width 2.0~6.0mm | Max. Groove Depth ≤ 13.5mm, ≤ 19.5mm | 1 Corner | T: Horizontal type

External grooving CGWT R/L





Max. parting off dia. is different to CGWSR/L type.
Right hand (R) shown.
The dashed line shows 20 mm square shank tools.

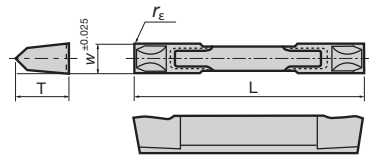
Toolholders (T: Horizontal type)

Groove width W (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	Max. parting off dia. (mm)	Dimensions (mm) b	h	L_1	f	L_2	Parts: Shank	Stock R	Stock L	Blade set	Stock R	Stock L
2	CGWTR/L2020-CGDL/R2			CGD200	13.5	27	20	20	149.4	51.75	45	CGWTR/L2020	●	●	CGDL/R2	●	
	CGWTR/L2525-CGDL/R2						25	25				CGWTR/L2525	●	●			
3	CGWTR/L2020-CGDL/R3			CGD300	19.5	39	20	20		57.35	50.6	CGWTR/L2020	●	●	CGDL/R3	●	●
	CGWTR/L2525-CGDL/R3						25	25				CGWTR/L2525	●	●			
4	CGWTR/L2020-CGDL/R4			CGD400	19.5	39	20	20	149.6			CGWTR/L2020	●	●	CGDL/R4	●	
	CGWTR/L2525-CGDL/R4						25	25				CGWTR/L2525	●	●			
5	CGWTR/L2020-CGDL/R5			CGD500	19.5	39	20	20	149.9			CGWTR/L2020	●	●	CGDL/R5	●	
	CGWTR/L2525-CGDL/R5						25	25				CGWTR/L2525	●	●			
6	CGWTR/L2020-CGDL/R6			CGD600	19.5	39	20	20	150.1			CGWTR/L2020	●	●	CGDL/R6		●
	CGWTR/L2525-CGDL/R6						25	25				CGWTR/L2525	●	●			

Notes: • When ordering, Shank and blade ass'y Cat. No. or shank and blade-set are required.
• When using a right or left hand blade-set, the right hand blade-set is used with left hand shank and the left hand blade-set is used with right hand shank.

● : Stocked items.

Applicable inserts

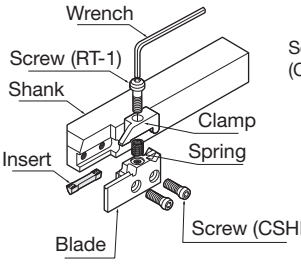


Dimensions (mm)				Cat. No.	Grades			
					Coated	Cermet		Uncoated
$w^{\pm 0.025}$	L	T	r_ε		GH330	NS530		UX30
2	20	3.25	0.2	CGD200	●	●		●
3	28.6	6.3		CGD300	●	●		●
4				CGD400	●	●		●
5				CGD500	●	●		●
6		8.5		CGD600	●	●		●
7				CGD700	●	●		●
8				CGD800	●	●		●

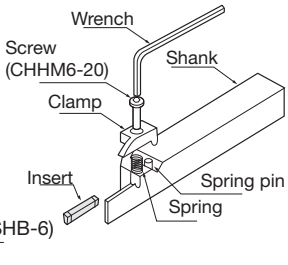
Note: When ordering special sizes (2.0~8.5 mm), please contact us.

Packing : 5pcs.

Parts



CGWSR/L□□□□ -CGDR/L□



CGWSR/L□□□□ -8

Cat. No.	Parts						Applicable insert
	Blade	Clamp	Clamping screw	Spring pin	Spring	Wrench	
CGDR/L2	TCR/L2	CCR/L2	CSHB-6 (2 pieces) RT-1 (1 piece)	–	BP-9	P-4	CGD200
CGDR/L3	TCR/L3	CCR/L3					CGD300
CGDR/L4	TCR/L4	CCR/L4					CGD400
CGDR/L5	TCR/L5	CCR/L5					CGD500
CGDR/L6	TCR/L6	CCR/L6					CGD600
CGWSR/L2525-8	–	CCR/L8	CHHM6-20	5×14AW	BP-9	P-5	CGD700
CGWSR/L3232-8							CGD800

Standard cutting conditions

Operation	Cutting speed v_c (m/min)	Groove width: W (mm) Feed: f (mm/rev)						
		2	3	4	5	6	7	8
Grooving Low carbon steels	100 ~ 200	0.08 ~ 0.20	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25
Grooving Medium carbon steels				0.08 ~ 0.30	0.08 ~ 0.30	0.08 ~ 0.30	0.08 ~ 0.30	0.08 ~ 0.30
Parting off	100 ~ 150	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15

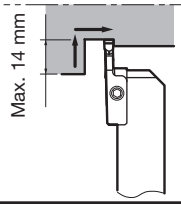
● : Stocked items.

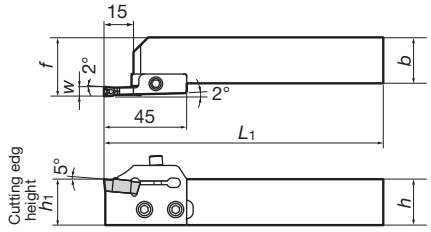
CGWS-FL

Width 3.0~5.0mm | Max. Groove Depth ≤ 10.0mm, ≤ 14.0mm | 2 Corners

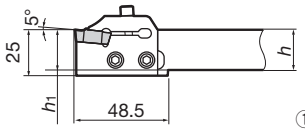
S: Vertical type

External grooving CGWS R/L

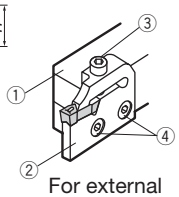




2020 shank type shown



Right hand (R) shown.



For external grooving

Toolholders (S: Vertical type)

Groove width w (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	Dimensions (mm) h1	b	h	L1	f	Parts: Shank ①	Stock R	Stock L	Blade set ②	Stock R	Stock L
3	CGWSR/L2020-FLR/L3GP	●	●	FLEX30R/L	10	20	20	20	152	27	CGWSR/L2020	●	●	FLR/L3GP	●	
4	CGWSR/L2020-FLR/L4GP		●	FLEX40R/L	12									FLR/L4GP	●	●
5	CGWSR/L2020-FLR/L5GP	●	●	FLEX50R/L	14									FLR/L5GP	●	●
3	CGWSR/L2525-FLR/L3GP	●	●	FLEX30R/L	10	25	25	25	152	32	CGWSR/L2525	●	●	FLR/L3GP	●	
4	CGWSR/L2525-FLR/L4GP			FLEX40R/L	12									FLR/L4GP	●	●
5	CGWSR/L2525-FLR/L5GP	●	●	FLEX50R/L	14									FLR/L5GP	●	●

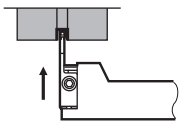
Notes: • When ordering, Shank and blade ass'y Cat. No. or Shank and Blade-set are required.
• When using a right or left hand blade-set, the right hand blade-set is used with right hand shank and the left hand blade-set is used with left hand shank.

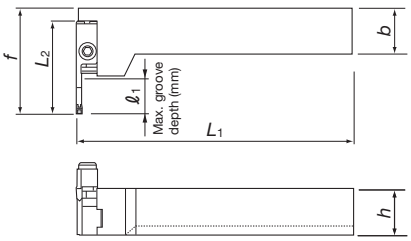
CGWT-FL

Width 3.0~5.0mm | Max. Groove Depth ≤ 10.0mm, ≤ 14.0mm | 2 Corners

T: Horizontal type

External grooving CGWT R/L





Right hand (R) shown.

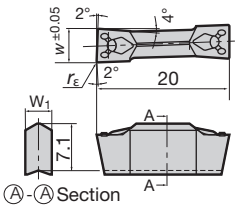
Toolholders (T: Horizontal type)

Groove width W (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth ℓ1 (mm)	Dimensions (mm) b	h	L1	f	L2	Parts: Shank	Stock R	Stock L	Blade set	Stock R	Stock L
3	CGWTR/L2020-FLL/R3GP			FLEX30L/R	10	20	20	150	52	45	CGWTR/L2020	●	●	FLL/R3GP	●	
4	CGWTR/L2020-FLL/R4GP			FLEX40L/R	12									FLL/R4GP	●	
5	CGWTR/L2020-FLL/R5GP			FLEX50L/R	14									FLL/R5GP	●	
3	CGWTR/L2525-FLL/R3GP			FLEX30L/R	10						CGWTR/L2525	●	●	FLL/R3GP	●	
4	CGWTR/L2525-FLL/R4GP			FLEX40L/R	12									FLL/R4GP	●	
5	CGWTR/L2525-FLL/R5GP			FLEX50L/R	14									FLL/R5GP	●	

Notes: • When ordering, Shank and blade ass'y Cat. No. or Shank and Blade-set are required.
• When using a right or left hand blade-set, the right hand blade-set is used with left hand shank and the left hand blade-set is used with right hand shank.

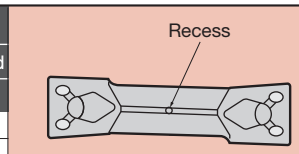
● : Stocked items.

Applicable inserts



Right hand (R) shown.

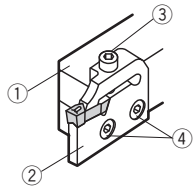
Dimensions (mm)			Hand	Cat. No.	Grades			
					Coated	Cermet		Uncoated
W	r_ε	W_1			T9125	NS530		UX30
3	0.4	2.15	R	FLEX30R		●		
			L	FLEX30L		●		
4		3.1	R	FLEX40R		●		
			L	FLEX40L		●		
5		4	R	FLEX50R	●	●		●
			L	FLEX50L	●	●		●



Left hand inserts are identified with a recessed dot.

Note: • When using a right or left insert,the right hand insert is used with right hand blade-set and the left hand insert is used with left hand bladeset.

Parts



Cat. No.	Clamping screw ③	Blade fixing screw ④	Wrench
			
CGWSR/L□□□□–FLR/L□GP CGWTR/L□□□□–FLL/R□GP	CHHM5-18	CSHB-6	P-4

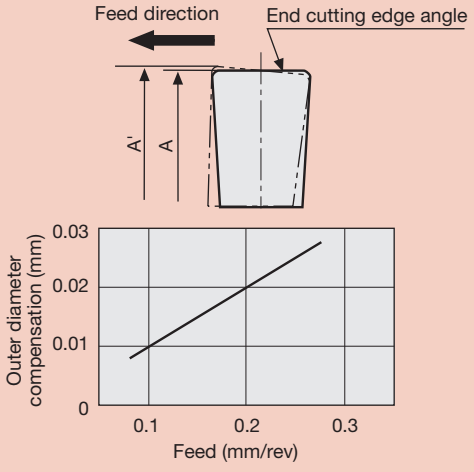
Standard cutting conditions

Insert grades	Insert Cat. No.	Grooving		Lateral feed machining			Coolant
		Cutting speed v_c (m/min)	Feed *f* (mm/rev)	Cutting speed v_c (m/min)	Feed *f* (mm/rev)	Depth of cut a_p (mm)	
Coated **T9125**	FLEX50R/L	80 ~ 150	0.05 ~ 0.3	80 ~ 250	0.1 ~ 0.3	1.0 ~ 2.5	Necessary
Cermet **NS530**	FLEX30R/L	80 ~ 200	0.05 ~ 0.2	80 ~ 200	0.1 ~ 0.2	0.8 ~ 1.5	
	FLEX40R/L		0.05 ~ 0.25			0.8 ~ 2.0	
	FLEX50R/L		0.05 ~ 0.3		0.1 ~ 0.3	1.0 ~ 2.5	
Uncoated **UX30**	FLEX50R/L	60 ~ 150	0.05 ~ 0.3	60 ~ 150	0.1 ~ 0.3	1.0 ~ 2.5	

Notes: • The cutting conditions given above are based on cutting medium carbon steel (S48C, 200HB).
• When the 20 mm square shank tools are used, machining should be perfomed at approximately 80% of the values shown above.

Cautionary Notes

- When performing OD machining, the tool point must be set at a right angle to the axial direction of the work.
- When replacing an insert, the replacement should be made only after completely removing any chips or other foreign matter from the tool clamping area on the holder by using compressed air, etc.
- Never tighten the insert mounting screws when an insert has not been installed since doing so can deform the screws and prevent the future installation of an insert.
- Flex-Tool has mechanism in which the end cutting edge angle is formed by accepting a cutting force. In external grooving, there is a possibility that if the cutting conditions (feed and depth of cut) are set too high, the programmed diameter will not be achieved. To prevent this problem, it is necessary to perform a compensation in the program by an amount that is equal to the amount A'-A that is shown in the drawing on the right. The values of compensation corresponding to the feeds are also shown in the graph.

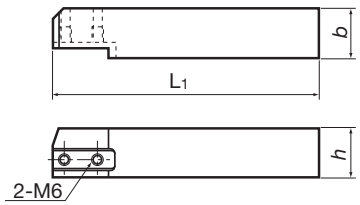


Guidelines for compensating outer diameter

● : Stocked items.

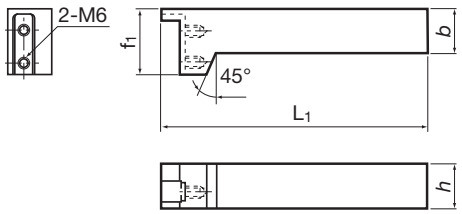
My-T series, Shank

S: Vertical type



Cat. No.	Stock		Dimensions (mm)			
	R	L	*b*	*h*	L_1	f_1
CGWSR/L2020	●	●	20	20	137	–
CGWSR/L2525	●	●	25	25	137	–

T: Horizontal type



Cat. No.	Stock		Dimensions (mm)			
	R	L	*b*	*h*	L_1	f_1
CGWTR/L2020	●	●	20	20	150	37
CGWTR/L2525	●	●	25	25	150	37

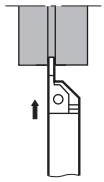
● : Stocked items.

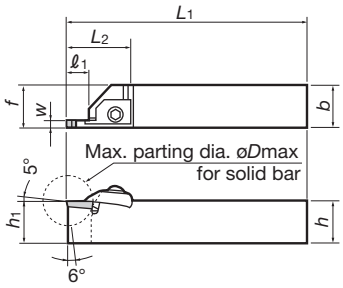
CTW

Width 3.0~5.0mm | Max. Groove Depth ≤ 14.0mm, ≤ 20.0mm | 2 Corners

For parting off and grooving

CTW R/L

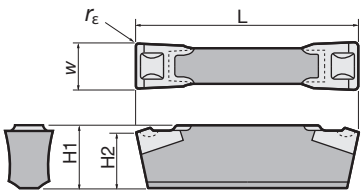




Right hand (R) shown.

Groove width W (mm)	Cat. No.	Stock R	Stock L	Applicable insert	Groove depth (mm)	Dimensions (mm) øDmax	h1	b	h	L1	L2	f
3	CTWR/L2020-3	●	●	CTD3	14	32	20	20	20	150	41	20.25
	CTWR/L2525-3	●	●				25	25	25			25.25
4	CTWR/L2020-4	●	●	CTD4			20	20	20			20.25
	CTWR/L2525-4	●	●				25	25	25			25.25
5	CTWR/L2525-5	●	●	CTD5	20	42					46	25.25

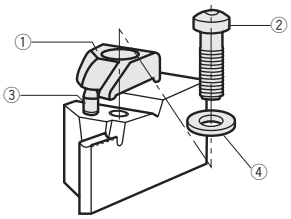
Applicable Inserts



Insert Cat. No.	Grade Coated AH725	Dimensions (mm) W±0.1	L	H1	H2	rε
CTD3	●	3	20	4.3	4	0.2
CTD4	●	4		5.3	5	
CTD5	●	5	25	6.3	6	

Package qty : 5pcs.

Parts



Cat. No.	Parts ①Clamp	②Clamping screw	③Clamp pusher	④Washer	Wrench
CTWR/L2020-3	CTC-3R/L	CTS-M6	BP-360	CDW6	P-4
CTWR/L2525-3					
CTWR/L2020-4	CTC-4R/L				
CTWR/L2525-4					
CTWR/L2525-5	CTC-5R/L				

Standard cutting conditions

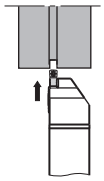
Operation (Work materials)		Cutting speed v_c (m/min)	Feed: f (mm/rev) CTD3	CTD4	CTD5
Grooving	Low carbon steels	100 ~ 150	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25
	Medium carbon steels		0.08 ~ 0.25	0.08 ~ 0.3	0.08 ~ 0.3
Parting off		100 ~ 150	0.08 ~ 0.15		

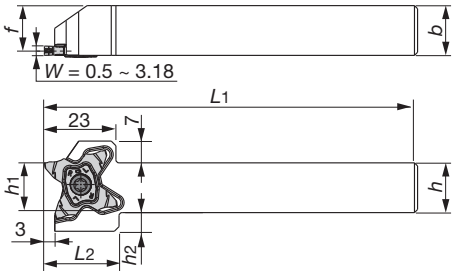
● : Stocked items.

STC

Width 0.5~3.18mm | Max. groove depth ≤ 6.4mm | 4 Corners

External grooving
STC R/L



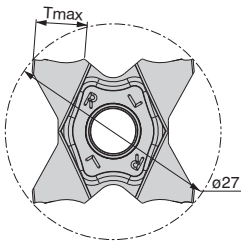


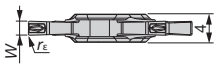
Right hand (R) shown.

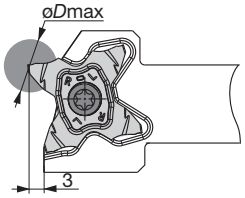
Cat. No.	Stock		Dimensions (mm)							Parts		Wrench
										Screw		
	R	L	h_1	b	h	L_1	f	h_2	L_2	R	L	
STCR/L1010-27	●	●	10	10	10	120	8.5	9.5	24	SR 16-212-01397L	SR 16-212-01397	T-2010/5
STCR/L1212-27	●	●	12	12	12	120	10.5	8	24	SR 16-212-01397L	SR 16-212-01397	
STCR/L1616-27	●	●	16	16	16	120	14.5	6	24	SR 16-212-01397L	SR 16-212-01397	
STCR/L2020-27	●	●	20	20	20	120	18.5	2	24	SR 16-212-01397L	SR 16-212-01397	
STCR/L2525-27	●	●	25	25	25	135	23.5	-	-	SR 16-212-01397L	SR 16-212-01397	

Insert

4 cornered insert for grooving and parting off







Right hand (R) shown.

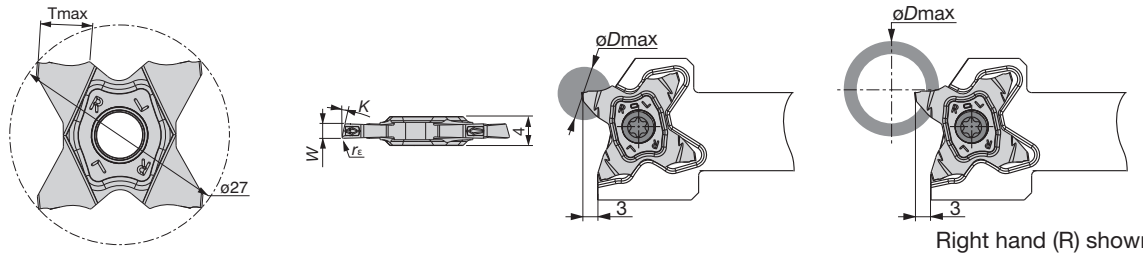
Cat. No.	Stock	Dimensions (mm)				Relation of groove depth (T) and Max. diameter (øDmax)											
	Coating	Cutting edge width W ± 0.02 (mm)	Corner radius r_ε	Max. grooving depth Tmax	Max. parting off diameter (solid bar)	T≤1.0	T≤2.0	T≤3.0	T≤3.5	T≤4.0	T≤4.5	T≤5.0	T≤5.5	T≤5.7	T≤6.0	T≤6.2	T≤6.4
	AH725																
TCS27-050-000	●	0.50	0.00	1.0	2.0	∞	-	-	-	-	-	-	-	-	-	-	-
TCS27-050-004	●	0.50	0.04	2.5	5.0	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-075-010	●	0.75	0.10	2.5	5.0	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-080-000	●	0.80	0.00	1.6	3.2	∞	-	-	-	-	-	-	-	-	-	-	-
TCS27-100-006	●	1.00	0.06	3.5	7.0	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-100-010	●	1.00	0.10	3.5	7.0	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-104-000	●	1.04	0.00	2.0	4.0	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-120-000	●	1.20	0.00	2.0	4.0	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-125-010	●	1.25	0.10	3.5	7.0	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-125-020	●	1.25	0.20	3.5	7.0	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-140-000	●	1.40	0.00	2.0	4.0	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-147-000	●	1.47	0.00	2.5	5.0	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-150-010	●	1.50	0.10	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-150-020	●	1.50	0.20	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-157-015	●	1.57	0.15	3.0	6.0	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-170-010	●	1.70	0.10	3.0	6.0	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-175-010	●	1.75	0.10	3.0	6.0	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-175-020	●	1.75	0.20	3.0	6.0	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-178-018	●	1.78	0.18	3.0	6.0	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-185-020	●	1.85	0.20	3.0	6.0	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-196-015	●	1.96	0.15	3.0	6.0	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-200-010	●	2.00	0.10	6.4	12.8	∞	∞	∞	600	280	180	130	105	85	60	50	30
TCS27-200-020	●	2.00	0.20	6.4	12.8	∞	∞	∞	600	280	180	130	105	85	60	50	30
TCS27-222-015	●	2.22	0.15	3.5	7.0	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-230-020	●	2.30	0.20	3.5	7.0	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-239-015	●	2.39	0.15	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-247-020	●	2.47	0.20	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-250-010	●	2.50	0.10	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-250-030	●	2.50	0.30	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-270-010	●	2.70	0.10	6.2	12.4	∞	∞	∞	600	280	180	135	105	95	85	78	-
TCS27-287-020	●	2.87	0.20	6.2	12.4	∞	∞	∞	600	280	180	135	105	95	85	78	-
TCS27-300-000	●	3.00	0.00	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCS27-300-020	●	3.00	0.20	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCS27-300-030	●	3.00	0.30	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCS27-300-040	●	3.00	0.40	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCS27-315-015	●	3.15	0.15	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	68
TCS27-318-020	●	3.18	0.20	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	68

● : Stocked items / Packing Quantity = 5 pcs.

Relating pages | Parts (14-1~)

Insert

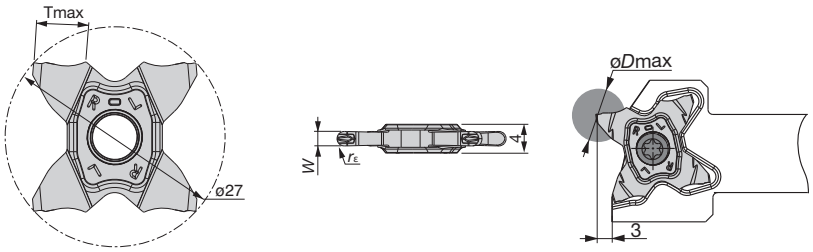
4 cornered & handed inserts for parting off



Right hand (R) shown.

Cat. No.	Stock	Dimensions (mm)				Max. parting off dia. øDmax (mm)	
	Coating	Cutting edge width	Corner radius	Max. grooving depth	Front edge angle		
	AH725	W ± 0.02 (mm)	rε	Tmax	K	Solid bar	Tube
TCS27-100-15R/L	●	1.00	0.06	3.5	15°	7.0	600
TCS27-150-6R/L	●	1.50	0.06	5.7	6°	11.4	35
TCS27-150-15R/L	●	1.50	0.06	5.7	15°	11.4	35
TCS27-200-6R/L	●	2.00	0.10	6.4	6°	12.8	30
TCS27-200-15R/L	●	2.00	0.10	6.4	15°	12.8	30

4 cornered inserts with full radius for grooving and profiling



Right hand (R) shown.

Cat. No.	Stock	Dimensions (mm)			Relation of groove depth (T) and Max. diameter (øDmax)											
	Coating	Cutting edge width	Corner radius	Max. parting off diameter (solid bar)												
	AH725	W ± 0.02 (mm)	rε	Tmax	T≤1.0	T≤2.0	T≤3.0	T≤3.5	T≤4.0	T≤4.5	T≤5.0	T≤5.5	T≤5.7	T≤6.0	T≤6.2	T≤6.4
TCS27-157-079	●	1.57	0.79	3.0	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-200-100	●	2.00	1.00	3.0	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-239-120	●	2.39	1.20	5.7	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-300-150	●	3.00	1.50	6.4	∞	∞	∞	600	280	180	135	105	95	85	78	55

● : Stocked items / Packing Quantity = 5 pcs.

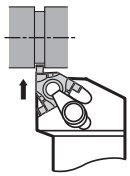
Standard cutting conditions

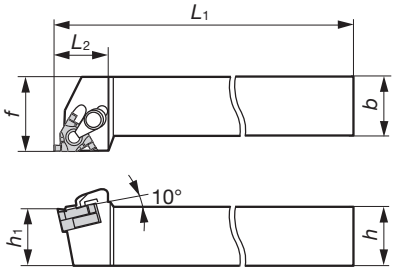
Work materials	Grades	Cutting speed Vc (m/min)	Feed: f (mm/rev)			Depth of cut for profiling (with full radius insert) ap (mm)
			Grooving, Parting off	Parting off (with hand)	Profiling (with full radius insert)	
Steels (S45C / C45 etc.)	AH725	100 ~ 200	0.05 ~ 0.15	0.04 ~ 0.12	0.05 ~ 0.10	Max 0.5
Alloy steels (SCM435 / 34CrMo4 etc.)		50 ~ 180				
Stainless steels (SUS304 / X5CrNi18-9 etc.)		50 ~ 150				
Grey cast irons (FC250 / 250 / GG25 etc.)		50 ~ 180				
Ductile cast irons (FCD400 / 400-15 / GGG400 etc.)		50 ~ 120				
Titanium alloys (Ti-6Al-4V etc.)		30 ~ 60				

CE

Width 1~2.25 mm | Max. groove depth ≤ 1.8 mm | 3 Corners

External grooving
CE R/L





* When using the GTGN insert, the exclusive shim shown in the table must be used. Exclusive shim should be ordered separately.

Right hand (R) shown.

Steel shank Screw-on, clamp-on type

Cat. No	Stock	Dimensions (mm)						Insert	Shim *
		h	b	L_1	L_2	h_1	*f*		
CER1212H16DT	●	12	12	100	24	12	16	GTGN-16ER/IL□□□	G16ER/IL-DT
CEL1212H16DT	●	12	12	100	24	12	16	GTGN-16EL/IR□□□	G16EL/IR-DT
CER1616H16DT	●	16	16	100	24	16	20	GTGN-16ER/IL□□□	G16ER/IL-DT
CEL1616H16DT	●	16	16	100	24	16	20	GTGN-16EL/IR□□□	G16EL/IR-DT
CER2020K16DT	●	20	20	125	24	20	25	GTGN-16ER/IL□□□	G16ER/IL-DT
CEL2020K16DT	●	20	20	125	24	20	25	GTGN-16EL/IR□□□	G16EL/IR-DT
CER2525M16DT	●	25	25	150	28	25	32	GTGN-16ER/IL□□□	G16ER/IL-DT
CEL2525M16DT	●	25	25	150	28	25	32	GTGN-16EL/IR□□□	G16EL/IR-DT

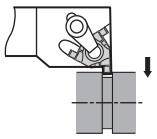
Steel shank Clamp-on type

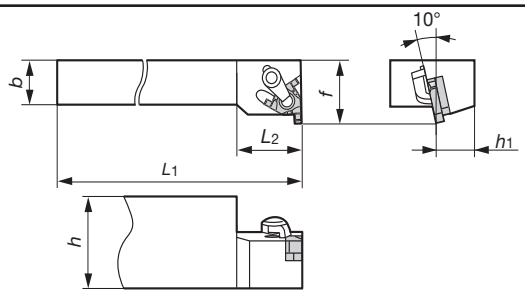
Cat. No	Stock	Dimensions (mm)						Insert	Shim *
		h	b	L_1	L_2	h_1	*f*		
CER3232P16T	●	32	32	170	32	32	40	GTGN-16ER/IL□□□	G16ER/IL-S

B-CE

Width 1~2.25 mm | Max. groove depth ≤ 1.8 mm | 3 Corners

External grooving
B-CE R/L





* When using the GTGN insert, the exclusive shim shown in the table must be used. Exclusive shim should be ordered separately.

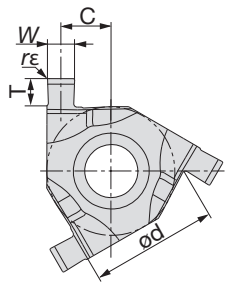
Right hand (R) shown.

Steel shank Clamp-on type for gang tooling lathe

Cat. No	Stock	Dimensions (mm)						Insert	Shim *
		h	b	L_1	L_2	h_1	*f*		
B-CER16M16	●	32	16	150	24	16	22	GTGN-16ER/IL□□□	G16ER/IL-S
B-CEL16M16	●	32	16	150	24	16	22	GTGN-16EL/IR□□□	G16EL/IR-S

Shim

Cat. No.	Toolholder		Insert
	Type	External	
G16ER/IL-DT	Screw-on Clamp-on	CER□□□□□16DT	GTGN-16ER/IL□□□
G16EL/IR-DT		CEL□□□□□16DT	GTGN-16EL/IR□□□
G16ER/IL-S	Clamp-on	B-CER16M16, CER3232P16T	GTGN-16ER/IL□□□
G16EL/IR-S		B-CEL16M16	GTGN-16EL/IR□□□

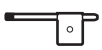


Right hand (R) shown.

Insert size	Groove width W ± 0.03 (mm)	Cat. No.	Grade	Dimensions (mm)				Shim	
			Coated	ød	Max. groove depth T	rε	Center of width C	Dual method clamp type; Screw-on/ Clamp-on	Clamp-on type
			SH730						
16	1.00	**GTGN-16ER/IL100**	●	9.525	1.25	0.1	4.22	G16ER/IL-DT	G16ER/IL-S
	1.20	**GTGN-16ER/IL120**	●		1.30		4.12		
	1.40	**GTGN-16ER/IL140**	●		1.50		4.02		
	1.70	**GTGN-16ER/IL170**	●		1.70		3.87		
	1.95	**GTGN-16ER/IL195**	●		1.70		3.75		
	2.25	**GTGN-16ER/IL225**	●		1.80		3.60		
16	1.00	**GTGN-16EL/IR100**	●	9.525	1.25	0.1	4.22	G16EL/IR-DT	G16EL/IR-S
	1.20	**GTGN-16EL/IR120**	●		1.30		4.12		
	1.40	**GTGN-16EL/IR140**	●		1.50		4.02		
	1.70	**GTGN-16EL/IR170**	●		1.70		3.87		
	1.95	**GTGN-16EL/IR195**	●		1.70		3.75		
	2.25	**GTGN-16EL/IR225**	●		1.80		3.60		

Note: GTGN insert is applicable for both external and internal grooving, but the hand of tool is opposite in external and internal machining. Shim for GTGN is exclusive to each type of toolholders

Packing quantity = 10 pcs

Cat. No	Clamp set	Shim screw	Clamping screw	Wrench
				
CER/L1212H16DT	CSP16	DTS5-3.5	CSTB-3.5ST	T-15F P-3.5
CER/L1616H16DT				
CER/L2020K16DT				
CER/L2525M16DT				
CER/L3232P16T		-	-	T-15F
B-CER/L16M16				

Standard cutting conditions

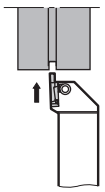
Work materials	Grades	Cutting speed Vc (m/min)	Feed f (mm/rev)
Steels S45C, SCM440 etc. (C45, 42CrMo4 etc.)	**SH730**	**50 - 150**	**0.05 - 0.10**
Stainless steels SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)		**30 - 150**	**0.05 - 0.10**
Heat-resistant alloys, Titanium alloys etc. (Ti-6Al-4V etc.)		**30 - 100**	**0.05 - 0.10**

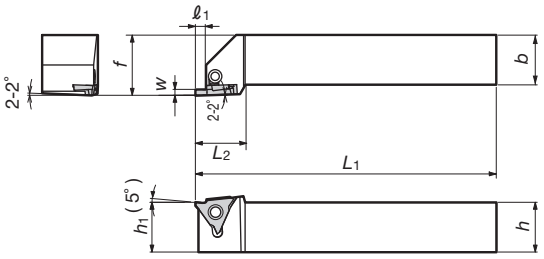
Relating pages
Parts (14–1~)

TGTS

Width 0.33~4.5mm | Max. Groove Depth ≤2.0mm, ≤5.0mm | 3 Corners

External grooving
TGTS R/L





Right hand (R) shown.

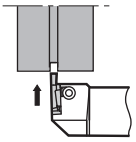
Groove width W (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) L1	L2	h1	f	h	b	ℓ1
0.33 ~ 2.5	TGTSR/L2020K16	●	●	GBR/L32□□□	2.5	125	25	20	25	20	20	2.8
0.33 ~ 2.5	TGTSR/L2525M16	●	●	GBR/L32□□□	2.5	150	25	25	30	25	25	2.8
1.0 ~ 1.45	TGTSR/L2020K22-1	●	●	GBR/L43125 ~ 145 GBR/L43050R	2	125	25	20	25	20	20	2.5
1.5 ~ 2.3	TGTSR/L2020K22-2	●	●	GBR/L43150 ~ 230 GBR/L43075R ~ 100R	3.5	125	25	20	25	20	20	4.1
2.5 ~ 4.5	TGTSR/L2020K22-3	●	●	GBR/L43250 ~ 450 GBR/L43125R ~ 200R	5	125	25	20	25	20	20	5.4
1.25 ~ 1.45	TGTSR/L2525M22-1	●	●	GBR/L43125 ~ 145 GBR/L43050R	2	150	25	25	30	25	25	2.5
1.5 ~ 2.3	TGTSR/L2525M22-2	●	●	GBR/L43150 ~ 230 GBR/L43075R ~ 100R	3.5	150	25	25	30	25	25	4.1
2.5 ~ 4.5	TGTSR/L2525M22-3	●	●	GBR/L43250 ~ 450 GBR/L43125R ~ 200R	5	150	25	25	30	25	25	5.4

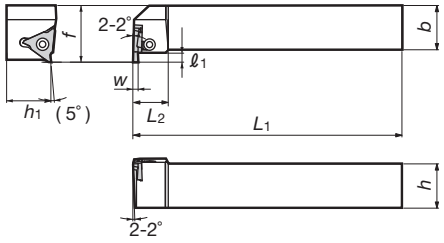
Note: • When using a right or left hand insert, the right hand insert is used with right hand toolholder and the left hand insert is used with left hand toolholder.

TGTT

Width 0.33~4.5mm | Max. Groove Depth ≤2.0mm, ≤5.0mm | 3 Corners

External grooving
TGTT R/L





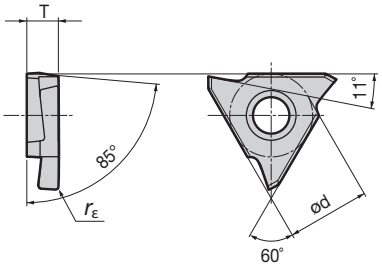
Right hand (R) shown.

Groove width W (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) L1	L2	h1	f	h	b	ℓ1
0.33 ~ 2.5	TGTTR/L2020K16	●	●	GBL/R32□□□	2.5	125	20	20	27	20	20	2.8
0.33 ~ 2.5	TGTTR/L2525M16	●	●	GBL/R32□□□	2.5	150	20	25	32	25	25	2.8
1.0 ~ 1.45	TGTTR/L2020K22-1	●	●	GBL/R43125 ~ 145 GBL/R43050R	2	125	20	20	27	20	20	2.5
1.5 ~ 2.3	TGTTR/L2020K22-2	●	●	GBL/R43150 ~ 230 GBL/R43075R ~ 100R	3.5	125	20	20	27	20	20	4.1
2.5 ~ 4.5	TGTTR/L2020K22-3	●	●	GBL/R43250 ~ 450 GBL/R43125R ~ 200R	5	125	20	20	27	20	20	5.4
1.25 ~ 1.45	TGTTR/L2525M22-1	●	●	GBL/R43125 ~ 145 GBL/R43050R	2	150	20	25	32	25	25	2.5
1.5 ~ 2.3	TGTTR/L2525M22-2	●	●	GBL/R43150 ~ 230 GBL/R43075R ~ 100R	3.5	150	20	25	32	25	25	4.1
2.5 ~ 4.5	TGTTR/L2525M22-3	●	●	GBL/R43250 ~ 450 GBL/R43125R ~ 200R	5	150	20	25	32	25	25	5.4

Note: • When using a right or left hand insert, the right hand insert is used with left hand toolholder and the left hand insert is used with right hand toolholder.

Applicable Inserts

GBR/L32

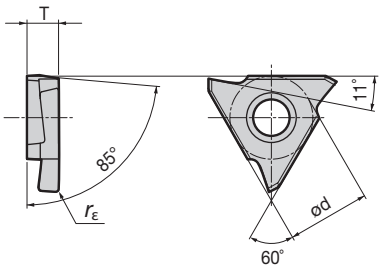


Right hand (R) shown.

W ±0.025	Max. groove depth	rε	ød	T	Insert Cat. No.	Grades Coated AH710 R	Coated AH710 L	Cermet NS730 R	Cermet NS730 L	Uncoated KS05F R	Uncoated KS05F L
0.33	0.8	0.03	9.525	3.18	GBR/L32033	●	●	●	●	●	
0.5	1.2	0.05			GBR/L32050	●	●	●	●	●	
0.75	2	0.05			GBR/L32075	●	●	●	●	●	
0.95	2	0.05			GBR/L32095	●	●	●	●	●	
1	2	0.05			GBR/L32100	●	●	●	●	●	
1.25	2	0.2			GBR/L32125	●	●	●	●	●	
1.45	2	0.2			GBR/L32145	●	●	●	●	●	
1.5	2	0.2			GBR/L32150	●	●	●	●	●	
2	2.5	0.2			GBR/L32200	●	●	●	●	●	
2.5	2.5	0.2			GBR/L32250	●	●	●	●	●	

● : Stocked items.

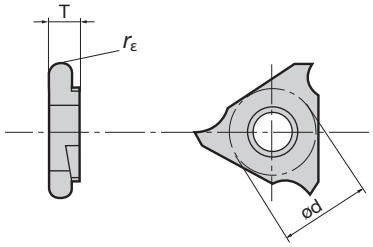
GBR/L43



Right hand (R) shown.

Dimensions (mm)					Cat. No.	Grades					
						Coated		Cermet		Uncoated	
						AH710		NS730		KS05F	
$W^{\pm0.025}$	Max. groove depth	r_ε	ød	T		R	L	R	L	R	L
1.25	2	0.2	12.7	4.76	GBR/L43125	●	●	●	●	●	
1.45	2	0.2	12.7	4.76	GBR/L43145	●	●	●	●	●	
1.5	3.5	0.2	12.7	4.76	GBR/L43150	●	●	●	●	●	
1.75	3.5	0.2	12.7	4.76	GBR/L43175	●	●	●	●	●	
1.85	3.5	0.2	12.7	4.76	GBR/L43185	●	●	●	●	●	
2	3.5	0.2	12.7	4.76	GBR/L43200	●	●	●	●	●	
2.3	3.5	0.2	12.7	4.76	GBR/L43230	●	●	●	●	●	
2.5	5	0.3	12.7	4.76	GBR/L43250	●	●	●	●	●	
2.65	5	0.3	12.7	4.76	GBR/L43265	●	●	●	●	●	
2.8	5	0.3	12.7	4.76	GBR/L43280	●	●	●	●	●	
3	5	0.3	12.7	4.76	GBR/L43300	●	●	●	●	●	
3.3	5	0.3	12.7	4.76	GBR/L43330	●	●	●	●	●	
3.5	5	0.3	12.7	4.76	GBR/L43350	●	●	●	●	●	
4	5	0.4	12.7	4.76	GBR/L43400	●	●	●	●	●	
4.3	5	0.4	12.7	4.76	GBR/L43430	●	●	●	●	●	
4.5	5	0.4	12.7	4.76	GBR/L43450	●	●	●	●	●	

GBR/L43-R (Rudius)



Right hand (R) shown.

Dimensions (mm)					Cat. No.	Grades					
						Coated		Cermet		Uncoated	
						AH710		NS730		KS05F	
$W^{\pm0.025}$	Max. groove depth	r_ε	ød	T		R	L	R	L	R	L
1	2	0.5	12.7	4.76	GBR/L43050R	●	●	●	●	●	●
1.5	3.5	0.75			GBR/L43075R	●	●	●	●	●	●
2	3.5	1			GBR/L43100R	●	●	●	●	●	●
2.5	5	1.25			GBR/L43125R	●	●	●	●	●	●
3	5	1.5			GBR/L43150R	●	●	●	●	●	●
4	5	2			GBR/L43200R	●	●	●	●	●	●

● : Stocked items.

Standard cutting conditions

Work materials	Hardness	Recommended grade	Cutting speed: v_c (m/min)	Feed: f (mm/rev)
Carbon steels, Alloy steels (JIS S45C, SCM415, etc.)	150 - 240HB	**NS730**	150 (100-200)	0.1 (0.02-0.25)
		AH710	100 (60-150)	0.15 (0.05-0.25)
Stainless steels (JIS SUS304, etc.)	≤240HB	**AH710**	80 (60-150)	0.10 (0.05-0.15)
Cast irons (JIS FC250, etc.)	Tensile strength ≤350 N/mm^2	**AH710**	100 (60-150)	0.10 (0.05-0.15)
Non-ferrous metals (Aluminium, etc.)	–	**KS05F**	250 (200-300)	0.10 (0.05-0.15)

Parts

TGTS-type

Cat. No.	Parts		
	Wedge	Clamping screw	Wrench
TGTSR/L2020K16	CP900	MCS520-2.5	P-2.5
TGTSR/L2525M16			
TGTSR/L2020K22-1	CP910		
TGTSR/L2020K22-2			
TGTSR/L2020K22-3			
TGTSR/L2525M22-1			
TGTSR/L2525M22-2			
TGTSR/L2525M22-3			

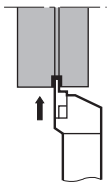
TGTT-type

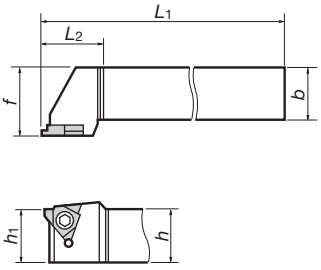
Cat. No.	Parts		
	Wedge	Clamping screw	Wrench
TGTTR/L2020K16	CP900	MCS520-2.5	P-2.5
TGTTR/L2525M16			
TGTTR/L2020K22-1	CP910		
TGTTR/L2020K22-2			
TGTTR/L2020K22-3			
TGTTR/L2525M22-1			
TGTTR/L2525M22-2			
TGTTR/L2525M22-3			

SGT

O-ring Width 2.5~4.1mm | Lock-ring Width 1.15~4.2mm | 3 Corners

External grooving SGT R/L



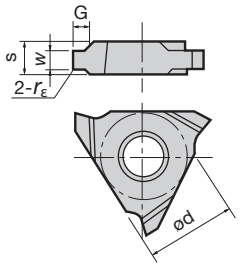


Right hand (R) shown.

Cat. No.	Stock R	Stock L	Applicable inserts	Dimensions (mm) h_1	b	h	L_1	L_2	f	Clamping screw	Wrench
SGTR/L1616-3	●		GLR/L3□□□	16	16	16	100	20	20	CSTB-4	T-15F
SGTR/L2020-3	●	●		20	20	20	125		25		
SGTR/L2525-3	●	●		25	25	25	150		32		
SGTR/L2020-4	●	●	GLR/L4□□□ GOR/L4□□□	20	20	20	125	30	25	CSTB-5	T-20F
SGTR/L2525-4	●	●		25	25	25	150		32		
SGTR/L3232-4				32	32	32	170		40		

Applicable Inserts

GOR/L (O-ring)

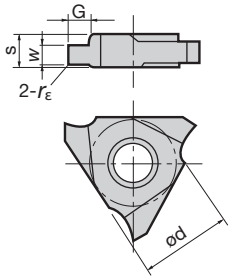


Right hand (R) shown.

Dimensions (mm) $W^{+0.1}_{+0.05}$	G	r_ε	Insert Cat. No.	Grades Cermet NS530 R	L	Uncoated UX30 R	L	Dimensions (mm) ød	s
2.5	1.5	0.4	GOR/L4190	●				●		12.7	4.76
3.2	2		GOR/L4240	●				●			
4.1	2.5	0.7	GOR/L4310	●				●			

External grooves for JIS O-ring for static and dynamic use, nominal sizes: P3 ~ P10, P10A ~ P22, and G25 ~ G145.

GLR/L (Lock-ring)



Right hand (R) shown.

Dimensions (mm) $W^{+0.1}_{+0.05}$	G	r_ε	Insert Cat. No.	Grades Cermet NS530 R	L	Uncoated UX30 R	L	Dimensions (mm) ød	s
1.15	1.5	0.1	GLR/L3115	●	●			●	●	9.525	3.18
1.35			GLR/L3135	●	●			●			
1.65	2		GLR/L3165	●				●			
1.75			GLR/L3175	●				●	●		
1.9	2.5		GLR/L3190								
1.95			GLR/L3195	●	●			●	●		
2.2	3		GLR/L3220	●	●			●	●		
2.7			GLR/L3270	●				●	●		

JIS C-type retaining rings for shaft, nominal sizes: 10 ~ 80.
JIS E-type retaining rings for shallow grooves, nominal sizes: 10 ~ 24.
JIS C-type retaining rings for shaft, nominal sizes: 20 ~ 80.

Dimensions (mm) $W^{+0.1}_{+0.05}$	G	r_ε	Insert Cat. No.	Grades Cermet NS530 R	L	Uncoated UX30 R	L	Dimensions (mm) ød	s
1.15	1.5	0.1	GLR/L4115	●				●		12.7	4.76
1.35			GLR/L4135	●	●			●			
1.65	2		GLR/L4165	●				●			
1.75			GLR/L4175	●				●			
1.9	2.5		GLR/L4190	●	●						
1.95			GLR/L4195	●	●			●			
2.2	3.5		GLR/L4220	●	●			●	●		
2.7			GLR/L4270	●				●			
3.2	4		GLR/L4320	●	●			●	●		
4.2			GLR/L4420	●	●			●	●		

JIS C-type retaining rings for shaft, nominal sizes: 10 ~ 120.
JIS E-type retaining rings for shallow grooves, nominal sizes: 10 ~ 24.
JIS C-type retaining rings for shaft, nominal sizes: 20 ~ 200.

Standard cutting conditions

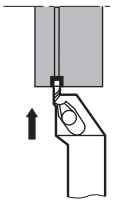
Grades	Cutting speed V_C (m/min)	Feed: f (mm/rev) W < 2 mm	W = 2 ~ 4 mm	W > 4 mm
NS530	80 ~ 200	0.05 ~ 0.1	0.08 ~ 0.2	0.08 ~ 0.25
UX30	60 ~ 150			

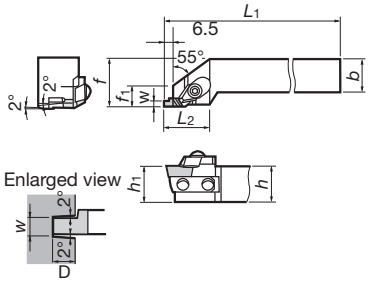
● : Stocked items.

GX-E

Width 1.0~4.5mm | Max. Groove Depth ≤ 1.5mm, ≤ 6.0mm | 2(1) Corners

External grooving GX-R/LE





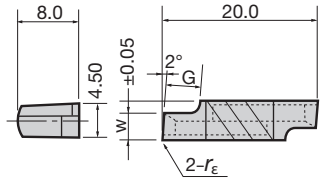
Right hand (R) shown.

Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) h_1	b	h	L_1	L_2	f	f_1
GX-2020R/LE	●	●	XGR/L63□□	6	20	20	20	125	35	25	15
GX-2525R/LE	●	●			25	25	25	150		32	

Note: • Max.groove width and max. groove depth shown in the above table are the values when the insert having the largest cutting edge width is used.

Inserts

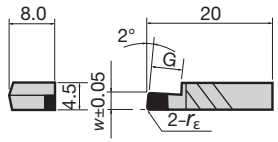
XGR/L



Right hand (R) shown.

Dimensions (mm) W±0.05	Max.groove depth	G	r_ε	Insert Cat. No.	Grades: Cermet NS530 R	NS530 L	Uncoated TH10 R	TH10 L	UX30 R	UX30 L	TX10S R	TX10S L
1	1.5	1.8	0	XGR/L6310S								
			0.2	XGR/L6310-02	●	●	●	●	●	●	●	
1.5	2.3	2.5	0	XGR/L6315S								
			0.2	XGR/L6315-02	●	●	●	●	●	●	●	
2	3	3.2	0	XGR/L6320S								
			0.2	XGR/L6320-02	●	●	●	●	●	●	●	●
2.5	3.8	3.9	0	XGR/L6325S								
			0.2	XGR/L6325-02	●	●	●	●	●	●	●	●
3	4.5	4.6	0	XGR/L6330S								
			0.2	XGR/L6330-02	●	●	●	●	●	●	●	●
3.5	5.3	5.4	0	XGR/L6335S								
			0.2	XGR/L6335-02	●	●	●	●	●	●	●	●
4	6	6.1	0	XGR/L6340S								
			0.2	XGR/L6340-02	●	●	●	●	●	●	●	●
4.5			0	XGR/L6345S								
			0.2	XGR/L6345-02	●	●	●	●	●	●	●	

XGR/L-QBN



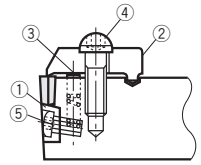
Right hand (R) shown.

Dimensions (mm) W±0.05	Max.groove depth	G	r_ε	Insert Cat. No.	T-CBN BX360 R	BX360 L
1	1.5	2.5	0.2	XGR/L6310S-QBN		
1.5	2.3			XGR/L6315S-QBN	●	
2	3	3.2		XGR/L6320S-QBN	●	
2.5	3.8	3.9		XGR/L6325S-QBN	●	
3	4.5	4.6		XGR/L6330S-QBN	●	
3.5	5.3	5.4		XGR/L6335S-QBN	●	
4	6	6.1		XGR/L6340S-QBN	●	
4.5				XGR/L6345S-QBN	●	

Note: • When using a right or left hand insert, the right hand insert is used with right hand toolholder and the left hand insert is used with left hand toolholder.

"BX360" : 1-insert packing

Parts



Cat. No.	Parts ①Shim	Clamp set	④Clamping screw	⑤Shim screw	Wrench
GX-2020R/LE	SL-6R/L	CP81A (②ClampCP81 ③Pusher BP-3 Spring)	RT-1	BHM4-8	P-4
GX-2525R/LE	SL-1R/L				

Standard cutting conditions

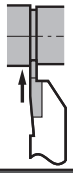
Work materials	Grades	Cutting speed v_c (m/min)	Feed: f (mm/rev) W < 2 mm	W = 2 ~ 4 mm	W > 4 mm
Carbon steels	NS530	80 ~ 200	0.05 ~ 0.1	0.08 ~ 0.2	0.08 ~ 0.25
	TX10S	60 ~ 150			
	UX30				
Cast irons , Light alloys	TH10	60 ~ 150	0.05 ~ 0.1	0.08 ~ 0.2	0.08 ~ 0.25
Hardened steels	BX360	50 ~ 180	0.05 ~ 0.15	0.05 ~ 0.15	0.05 ~ 0.15

● : Stocked items.

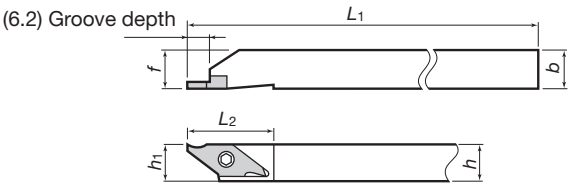
JSVG

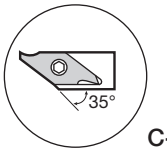
Width 0.33~2.0mm | Max. Groove Depth ≤0.7mm, ≤5.5mm | 2 Corners

External grooving JSVG R/L



(Two corners type)





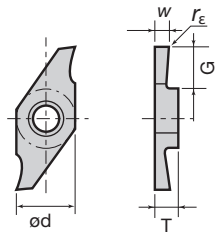
C-type

Right hand (R) shown.

Cat. No.	Stock R	Stock L	Applicable inserts	Dimensions (mm) h	b	L_1	L_2	h_1	f	Clamping screw	Wrench	
JSVGR/L1010K-C	●	●	JVGR/L□□□F	10	10	125	23	10	10	CSTB-3S	T-9F	(T-9L)
JSVGR/L1212K-C	●	●		12	12			12	12			
JSVGR/L1616K	●	●		16	16			16	16			

Note: Parts in parenthesis are optional parts.

Applicable inserts JVG-type inserts (sharp edges)



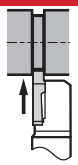
Right hand (R) shown.

Cat. No.	Dimensions (mm) ød	T	$W^{+0.05}_{0}$	G	Max. groove depth	rε	Grade Coated J740 R	Coated J740 L	Cermet NS530 R	Cermet NS530 L	Uncoated TH10 R	Uncoated TH10 L
JVGR/L033F	7.94	3.18	0.33	0.8	0.7	0	●		●		●	
JVGR/L050F			0.5	1.2	1.1		●		●		●	
JVGR/L075F			0.75	2	1.9		●		●		●	
JVGR/L095F			0.95				●		●		●	
JVGR/L100F			1	6	5.5		●		●	●	●	●
JVGR/L125F			1.25	5.5	5		●		●		●	
JVGR/L150F			1.5	6	5.5		●		●	●	●	●
JVGR/L200F			2				●		●		●	

JSTG

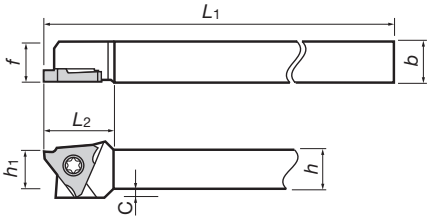
Width 0.33~2.0mm | Max. Groove Depth ≤0.7mm, ≤5.5mm | 3 Corners

External grooving JSTG R/L



(Three corners type)

Can be wrenched from back side with double socket torx screw.



Right hand (R) shown.

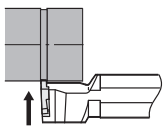
Cat. No.	Stock R	Stock L	Applicable inserts	Dimensions (mm) h	b	L_1	L_2	h_1	f	C	Clamping screw	Wrench	
JSTGR/L1010K3	●	●	JTGR/L3□□□(F)	10	10	125	18.5	10	10	2	CSTB-4SD	T-8F	(T-8L)
JSTGR/L1212K3	●	●		12	12			12	12	–			
JSTGR/L1616K3	●	●		16	16			16	16				

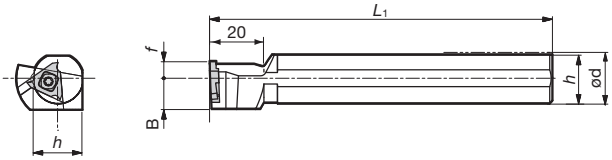
Note: Parts in parenthesis are optional parts.

JS-TGL3

Width 0.33~2.0mm | Max. Groove Depth ≤0.7mm, ≤5.5mm | 3 Corners

External grooving JS-TGL3





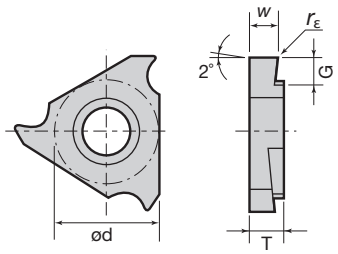
Left hand (L) shown.

Cat. No.	Stock	Applicable inserts	Dimensions (mm) ød	f	L_1	L_2	h	B	Clamping screw	Wrench
JS19K-TGL3	●	JTGR3□□□(F)	19.05	6	125	–	18	11.5	CSTB-4S	T-15F
JS20K-TGL3	●		20				19			
JS22K-TGL3	●		22				21			
JS25K-TGL3	●		25.4	10			24	12.7		

● : Stocked items.

Applicable inserts

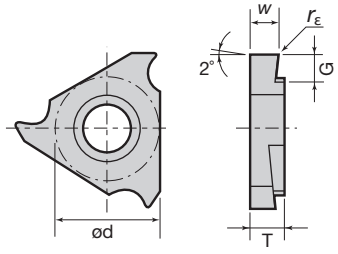
JTG-type inserts (With sharp edges)



Right hand (R) shown.

Cat. No.	Dimensions (mm)						Grades					
							Coated		Cermet		Uncoated	
							J740		NS530		TH10	
	ød	T	$W^{+0.05}_{0}$	G	Max. groove depth	r_ε	R	L	R	L	R	L
JTGR/L3033F	9.525	3.18	0.33	0.8	0.7	0.03	●	●	●	●	●	●
JTGR/L3043F			0.43	1.2	1.1		●					
JTGR/L3050F			0.5				●	●	●	●	●	●
JTGR/L3065F			0.65	2	1.9		●					
JTGR/L3075F			0.75				●	●	●	●	●	●
JTGR/L3080F			0.8				●					
JTGR/L3085F			0.85				●					
JTGR/L3095F			0.95				●	●	●	●	●	●
JTGR/L3100F			1	2.2	2.1	0.05	●	●	●	●	●	●
JTGR/L3110F			1.1				●					
JTGR/L3120F			1.2				●					
JTGR/L3125F			1.25				●	●	●	●	●	●
JTGR/L3130F			1.3				●					
JTGR/L3140F			1.4				●					
JTGR/L3145F			1.45				●	●	●	●	●	●
JTGR/L3150F			1.5				●	●	●	●	●	●
JTGR/L3175F			1.75				●	●	●	●	●	●
JTGR/L3180F			1.8				●					
JTGR/L3200F			2	2.7	2.6		●	●	●	●	●	●
JTGR/L3225F			2.25				●					
JTGR/L3250F			2.5				●	●	●	●	●	●
JTGR/L3275F			2.75				●					
JTGR/L3300F			3				●					

JTG-type inserts (With honed edges)



Right hand (R) shown.

Cat. No.	Dimensions (mm)						Grades							
							Coated		Coatedcermet				Uncoated	
							J740		J530				TH10	
	ød	T	$W^{+0.05}_{0}$	G	Max. groove depth	r_ε	R	L	R	L	R	L	R	L
JTGR/L3033	9.525	3.18	0.33	0.8	0.7	0.03								
JTGR/L3050			0.5	1.2	1.1									
JTGR/L3075			0.75	2.0	1.9									
JTGR/L3095			0.95											
JTGR/L3100			1	2.2	2.1	0.05			●	●				
JTGR/L3125			1.25						●	●				
JTGR/L3145			1.45						●	●				
JTGR/L3150			1.5						●	●				
JTGR/L3175			1.75						●	●				
JTGR/L3200			2	2.7	2.6				●	●				
JTGR/L3250			2.5						●	●				

Standard cutting conditions for J series grooving tools

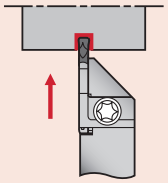
Grade	Work materials	Cutting speed: v_c (m/min)	Feed: f (mm/rev)
J740	General steels Stainless steels Free-cutting steels	10-50-100	0.01-0.05-0.1
NS530 **J530**	General steels Stainless steels	50-80-150	0.01-0.05-0.1
TH10	Aluminium alloys, copper alloys, etc.	10-80-200	0.01-0.05-0.1
	Difficult-to-cut materials, titanium alloys, etc.	10-20-30	0.01-0.05-0.1

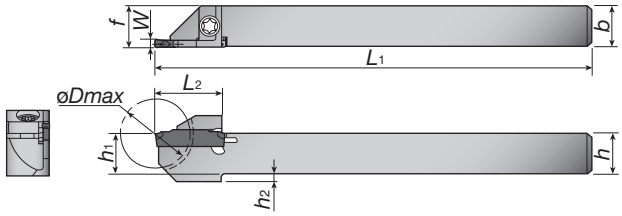
● : Stocked items.

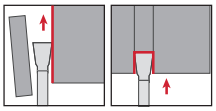
JCTER/L

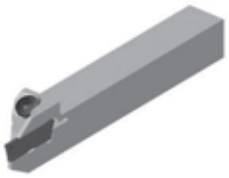
Width 1.4~3.0mm | Max. parting off dia. ≤20.0mm, ≤32.0mm | 1, 2 Corners | For small lathes

Parting off / grooving









Right hand (R) shown.

Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock R	Stock L	Max. dia. øDmax (mm)	Dimensions (mm) h1	b	h	L1	*f	W	h2	L2	Inserts	Parts Clamping screw	Parts Wrench
1	JCTER/L1010-1.4T10	●	●	20	10	10	10	125	10.2	1.4	-	18	DGS1.4-016	CSHB-4-A	T-15F
	JCTER/L1212-1.4T12	●	●	24	12	12	12	125	12.2	1.4	-	19.5			
	JCTER/L1414-1.4T12	●	●	24	14	14	14	125	14.2	1.4	-	19.5			
	JCTER/L1616-1.4T16	●	●	32	16	16	16	125	16.2	1.4	-	24			
2	JCTER/L1010-2T10	●	●	20	10	10	10	125	10.1	2	2	19	DGM/SGM DGS/SGS DGE DTE	CSHB-4-A	T-15F
	JCTER/L1212-2T12	●	●	24	12	12	12	125	12.1	2	2	19			
	JCTER/L1414-2T12	●	●	24	14	14	14	125	14.1	2	-	19			
	JCTER/L1616-2T16	●	●	32	16	16	16	125	16.1	2	-	24			
3	JCTER/L1212-3T12	●	●	24	12	12	12	125	12.3	3	-	19		CSHB-4-A	T-15F
	JCTER/L1616-3T16	●	●	32	16	16	16	125	16.3	3	-	24			
	JCTER/L2020-3T16	●	●	32	20	20	20	125	20.3	3	-	24			

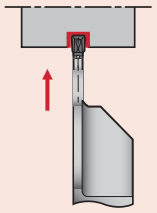
* "*f*" value in the above table is calculated with groove width "*W*" shown in the table.

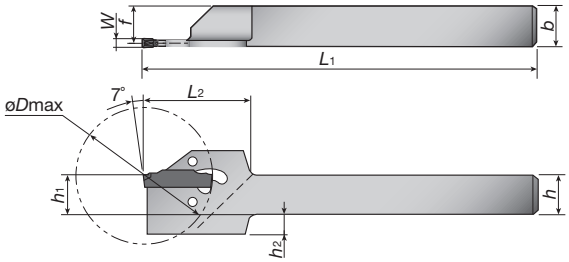
Note: Please refer to the inserts "DGE" and "DTE" on page 6-25.

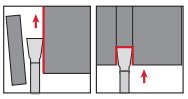
CGER/L

Width 1.4~4.0mm | Max. Groove Depth ≤9.7mm, ≤20.3mm | 1, 2 Corners

Parting off / deep grooving







Right hand (R) shown.

Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock R	Stock L	Max. dia. øDm (mm) DGS/M	SGS/M	Max. groove depth ar (mm)	Dimensions (mm) h1	b	h	L1	*f	W	h2	L2	Inserts	Parts Wrench
1	CGER/L2020-1.4T14	●	●	29	29	9.7	20	20	20	125	20.2	1.4	-	30	DGS1.4-016	CRW23
2	CGER/L1212-2T17	●	●	35	35	11.8	12	12	12	150	12.1	2	6	30	DGM/SGM DGS/SGS	CRW33
	CGER/L1616-2T17	●	●	35	35	11.8	16	16	16	150	16.1	2	2	30		
	CGER/L2020-2T17	●	●	35	35	9.8	20	20	20	125	20.1	2	-	30		
3	CGER/L1212-3T19	●	●	38	40	12	12	12	12	150	12.3	3	6	30		CRW33
	CGER/L1616-3T19	●	●	38	45	14.9	16	16	16	150	16.3	3	2	30		
	CGER/L2020-3T19	●	●	38	45	13.2	20	20	20	125	20.3	3	-	30		
4	CGER/L2020-4T19	●	●	38	55	20.3	20	20	20	125	20.4	4	-	32		CRW33

* "*f*" value in the above table is calculated with groove width "*W*" shown in the table.

● : Stocked items.

Features (6-3 ~ 6-5) | Relating pages | Applicable inserts (6-54 ~ 6-55) | Parts (14–1~)

CGP

Width 1.4~8.0mm | Max. parting off dia. ≤25mm, ≤120mm | 1, 2 Corners

Parting off / deep grooving

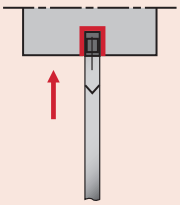


Fig. 1

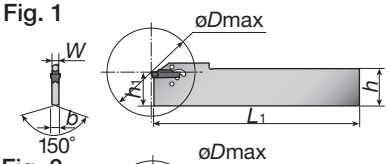


Fig. 2

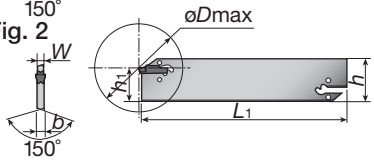
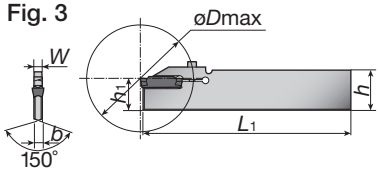
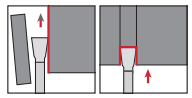
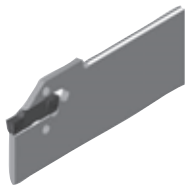


Fig. 3







Blades

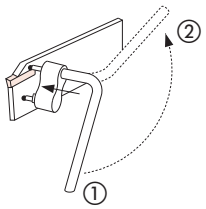
Insert seat size	Cat. No.	Stock	*Max. parting off dia. øDm (mm)	Dimensions (mm)					Inserts	Parts		Shape
				h_1	b	h	L_1	W		Clamping screw	Wrench	
1	CGP26-1.4S	●	26	21.4	1	26	150	1.4	DGS1.4-016	-	CRW23	Fig. 1
	CGP32-1.4D	●	26	24.8	1	32	150	1.4				Fig. 2
2	CGP26-2S	●	40	21.4	1.8	26	150	2	SGM SGS	-	CRW33	Fig. 1
	CGP32-2D	●	50	24.8	1.8	32	150	2				Fig. 2
3	CGP26-3S	●	50	21.4	2.4	26	150	3		-	CRW33	Fig. 1
	CGP32-3D	●	100	24.8	2.4	32	150	3				Fig. 2
4	CGP26-4S	●	80	21.4	3.2	26	150	4		-	CRW33	Fig. 1
	CGP32-4D	●	100	24.9	3.2	32	150	4				Fig. 2
	CGP45-4D	●	120	38.1	3.2	45	150	4				
5	CGP32-5D	●	120	24.9	4	32	150	5		-	CRW33	Fig. 2
6	CGP32-6D	●	120	24.9	5.2	32	150	6		-	CRW33	Fig. 2
8	CGP32-8S-CL	●	80	24.9	6.2	32	150	8		CM4x0.7x20-M0-A	P-3	Fig. 3

Caution

Wrench, CRW□□, should be ordered separately.

Newly developed wrench

Insert is clamped by the elastic deformation of upper jaw.
Low clamping stress increases the stability and tool life.

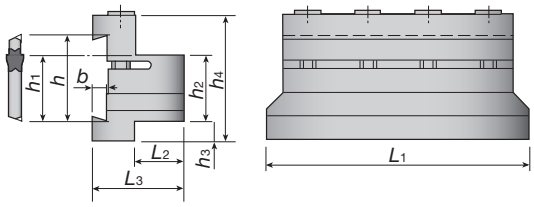


①→②: unclamp
②→①: clamp

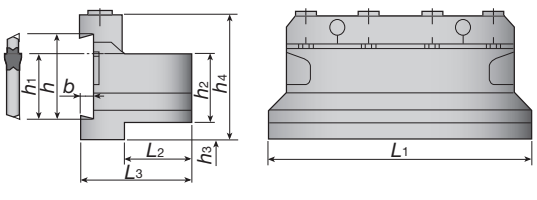
CTBF / CTBU

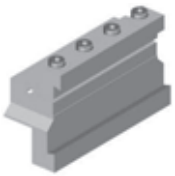
Deep grooving / parting off

CTBF type



CTBU type





Tool block for CGP blades

Cat. No.	Stock	Dimensions (mm)									Blade	Parts		
		h_1	b	h	L_1	h_2	h_3	h_4	L_2	L_3		Clamping screw	Clamp	Wrench
CTBF25-45	●	38.1	5.5	45	110	25	25	66	22	40	CGP	CM6x1.0x40-A	-	P-5
CTBF32-45	●	38.1	5.5	45	120	32	18	66	28	45		CM6x1.0x40-A	-	
CTBU20-26	●	21.4	4	26	86	20	9	43	21	38		CM6x30-S	CT-86	
CTBU25-26	●	21.4	4	26	110	25	5	45	23	42		CM6x30-S	CT-100	
CTBU20-32	●	24.8	5.3	32	100	20	13	50	19	38		CM6x30-S	CT-105	
CTBU25-32	●	24.8	5.3	32	110	25	8	50	23	42		CM6x30-S	CT-110	
CTBU32-32	●	24.8	5.3	32	110	32	5	54	29	48		CM6x30-S	CT-110	

● : Stocked items.

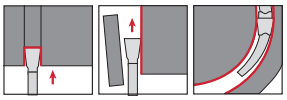
CGER/L, CGP, JCTER/L inserts

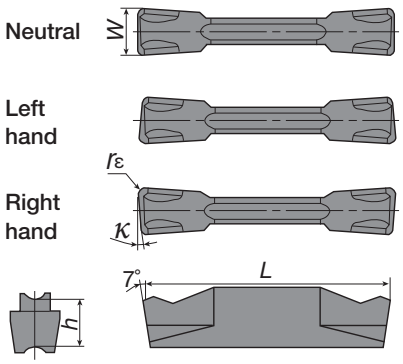
Applicable inserts

● Notation of "insert seat size"

Seat size and grooving width are different. Seat size measure is for the specification of the setting insert. Please note this point.

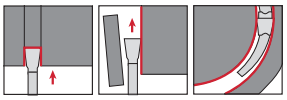
DGM External grooving and parting off, 2 corners

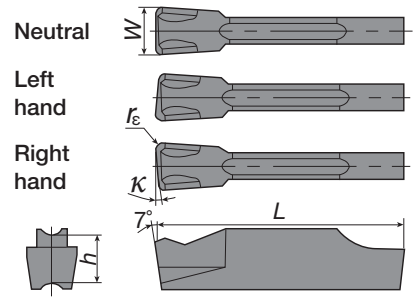




Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
2	DGM2-020	●		●		2	0.2	20	5	-
	DGM2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	DGM2-020-8R/L	●	●	●	●	2	0.2	20	5	8°
	DGM2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
	DGM2-002-15R/L	●	●	●	●	2	0.02	19.6	5	15°
3	DGM3-020	●		●		3	0.2	20	5	-
	DGM3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	DGM3-002-6R/L	●	●	●	●	3	0.02	19.6	5	6°
	DGM3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
4	DGM4-030	●		●		4	0.3	20	5	-
	DGM4-030-4R/L	●	●	●	●	4	0.3	20	5	4°
	DGM4-030-15R/L	●	●	●	●	4	0.3	20	5	15°
5	DGM5-030	●		●		5	0.3	25	5.5	-
	DGM5-030-4R	●		●		5	0.3	25	5.5	4°
6	DGM6-030	●		●		6	0.3	25	5.5	-
8	DGM8-040	●		●		8	0.4	30	6.7	-

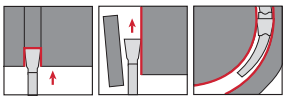
SGM External deep grooving and parting off, 1 corner

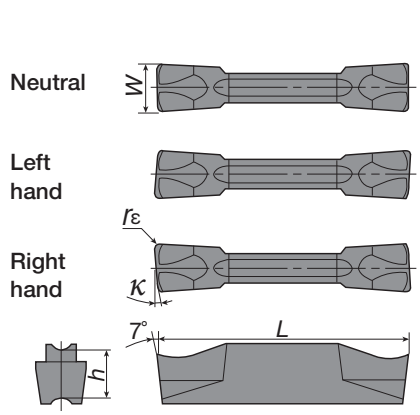




Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
2	SGM2-020	●		●		2	0.2	20	5	-
	SGM2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
3	SGM3-020	●		●		3	0.2	20	5	-
	SGM3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	SGM3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
4	SGM4-030	●		●		4	0.3	20	5	
	SGM4-030-4R/L	●	●	●	●	4	0.3	20	5	4°
5	SGM5-030	●		●		5	0.3	25	5.5	
6	SGM6-030	●		●		6	0.3	25	5.5	-

DGS External grooving and parting off, 2 corners





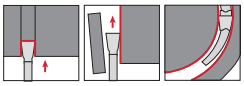
Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
1	DGS1.4-016	●		●		1.4	0.16	16	4.3	-
2	DGS2-020	●		●		2	0.2	20	5	-
	DGS2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	DGS2-002-6R/L	●	●	●	●	2	0.02	19.6	5	6°
	DGS2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
	DGS2-002-15R/L	●	●	●	●	2	0.02	19.6	5	15°
3	DGS3-020	●		●		3	0.2	20	5	-
	DGS3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	DGS3-002-6R/L	●	●	●	●	3	0.02	19.6	5	6°
	DGS3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
	DGS3-002-15R/L	●	●	●	●	3	0.02	19.6	5	15°
4	DGS4-030	●		●		4	0.3	20	5	-
	DGS4-030-4R/L	●	●	●	●	4	0.3	20	5	4°
5	DGS5-030	●		●		5	0.3	25	5.5	-
6	DGS6-030	●		●		6	0.3	25	5.5	-

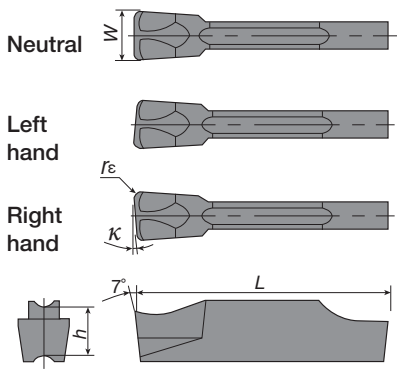
* For special inserts of TungCut, please refer to page 6-94.

● : Stocked items.

Features (6-3 ~ 6-5) Relating pages Parts (14–1~)

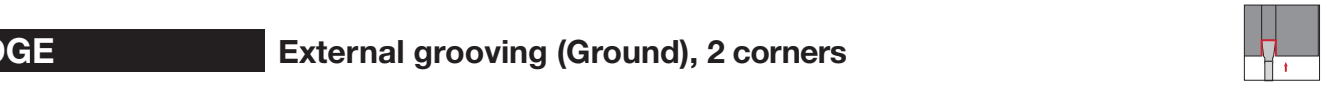
SGS External deep grooving and parting off, 1 corner

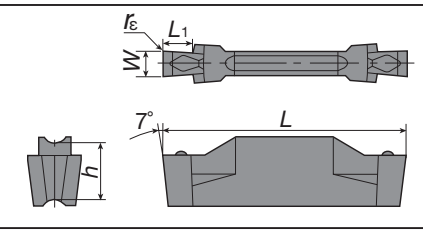




Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
2	SGS2-020	●		●		2	0.2	20	5	-
	SGS2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	SGS2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
3	SGS3-020	●		●		3	0.2	20	5	-
	SGS3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	SGS3-002-6R/L	●	●	●	●	3	0.02	19.8	5	6°
	SGS3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
	SGS3-002-15R/L	●	●	●	●	3	0.02	19.8	5	15°
4	SGS4-030	●		●		4	0.3	20	5	-
5	SGS5-030	●		●		5	0.3	25	5.5	-
6	SGS6-030	●		●		6	0.3	25	5.5	-

DGE External grooving (Ground), 2 corners

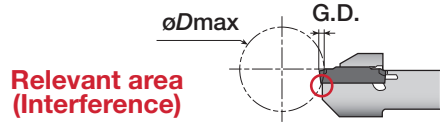




Insert seat size	Cat. No.	Grades Coated AH725	GH130	Dimensions (mm) W±0.02	rε ±0.05	L1	L	h
2	DGE100-000	●	●	1	0	2.5	20	5
	DGE130-000	●	●	1.3	0	2.5	20	5
	DGE160-010	●	●	1.6	0.1	2.5	20	5
	DGE185-010	●	●	1.85	0.1	3.5	20	5
	DGE215-015	●	●	2.15	0.15	3.5	20	5

● Caution for DGE

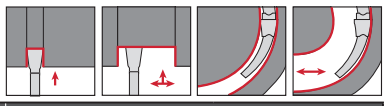
*ø*Dmax is limited as shown in following according to groove depth, G.D. Please refer to the right table.

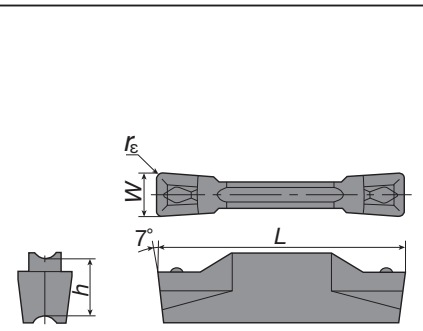


G.D. = Groove depth

Cat. No.	Max. groove depth	øDmax G.D. = 1	G.D. = 1.5	G.D. = 2	G.D. = 2.5	G.D. = 3
DGE100-000	2	∞	18.6	11.5	-	-
DGE130-000						
DGE160-010						
DGE185-010	3				8.8	7
DGE215-015						

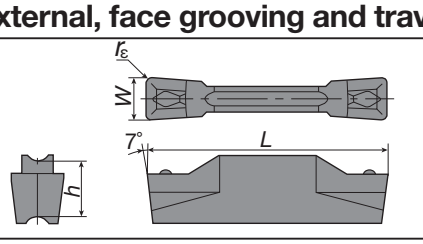
DTE External, face grooving and traversing (Ground)





Insert seat size	Cat. No.	Grades Coated AH725	GH130	Cermet NS530	Dimensions (mm) W±0.02	rε ±0.05	L	h
3	DTE265-015	●	●	★	2.65	0.15	20	5
	DTE300-020	●	●	★	3	0.2	20	5
	DTE300-040	●	●	★	3	0.4	20	5
	DTE315-015	●	●	★	3.15	0.15	20	5
4	DTE400-040	●	●	★	4	0.4	20	5
	DTE400-080	●	●	★	4	0.8	20	5
	DTE415-015	●	●	★	4.15	0.15	20	5
5	DTE478-055	●	●	★	4.78	0.55	25	5.5
	DTE500-040	●	●	★	5	0.4	25	5.5
	DTE500-080	●	●	★	5	0.8	25	5.5
	DTE515-015	●	●		5.15	0.15	25	5.5
6	DTE600-080	●	●		6	0.8	25	5.5
	DTE600-120	●	●		6	1.2	25	5.5
8	DTE800-080	●	●		8	0.8	30	6.7
	DTE800-120	●	●		8	1.2	30	6.7

External, face grooving and traversing (Molded)



Insert seat size	Cat. No.	Grades Coated AH725	GH130	Cermet NS530	Dimensions (mm) W±0.05	rε	L	h
3	DTE3-040	●	●	★	3	0.4	20	5
4	DTE4-040	●	●	★	4	0.4	20	5

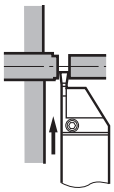
⁎ For special inserts of TungCut, please refer to page 6-94.

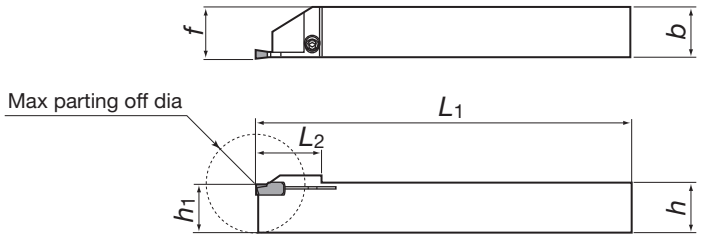
● : Stocked items
★ : Available from 2013

JCGSS

Width 2.0mm | Max. parting off dia. ≤ø20.0mm, ≤ø32.0mm | 1 Corner

Parting off JCGSS R/L





Right hand (R) shown.

Toolholders for parting off on small lathes

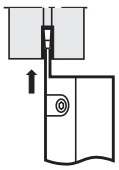
Groove width W (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Max. parting off dia. (mm)	Dimensions (mm) b	h	h1	L1	f	L2
2	JCGSSR/L1010-20	●	●	GE20 GE20-AL	20	10	10	10	125	10.2	15
	JCGSSR/L1212-20	●	●		25	12	12	12		12.2	19
	JCGSSR/L1616-20	●	●		32	16	16	16		16.2	22.5

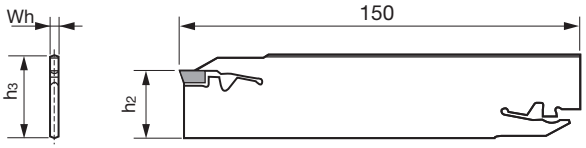
CCH

Width 3.0~5.0mm | Max. parting off dia. ≤ø100mm, ≤ø120mm | 1 Corner

Blades for parting off
Tool blocks

Parting off CCH

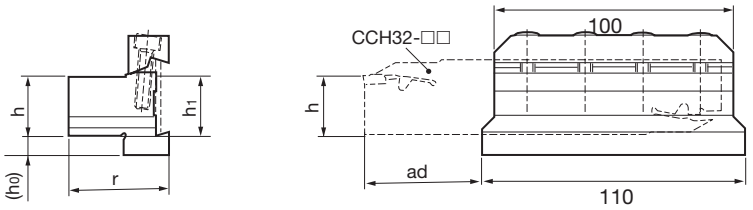




Blades for parting off

Groove width W (mm)	Cat. No.	Stock	Applicable inserts	Max. parting off dia. (mm)	Dimensions (mm) Wh	h2	h3
3	CCH32-30	●	GE30 GE30R/L GE30-AL	100	2.2	24.6	31.31
4	CCH32-40	●	GE40 GE40R/L GE40-AL		3.2	24.47	31.04
5	CCH32-50	●	GE50 GE50R/L	120	4.2	24.33	30.77

Tool blocks

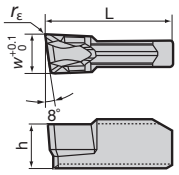


Cat. No.	Stock	Suitable blade	Overhang ad (mm)	Dimensions (mm) h1	ℓ	h	h0
CCBS20-32	●	CCH32-□□	Groove width W = 3 ~ 4: 50 W = 5: 60	20	38	20	13
CCBS25-32	●			25	42	25	8
CCBS32-32	●			32		32	5

Features (6-10 ~ 6-11) | Relating pages | Applicable inserts (6-57) | Parts (14–1~)

Applicable inserts

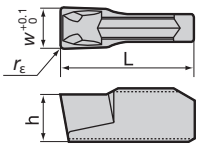
For parting off
(With hand)



Right hand (R) shown.

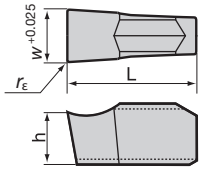
Cat. No.	Grades						Dimensions (mm)			
	Coated				Cermet					
	T9125		GH730		NS730					
	R	L	R	L	R	L	W	L	h	r_ε
GE30R/L			●	●	●	●	3	10	3.5	0.2
GE40R/L			●	●	●	●	4		4.0	
GE50R/L			●	●	●	●	5	12	4.5	

For General
parting off and
Grooving



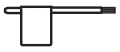
Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet					
	T9125	GH730	NS530	NS730	W	L	h	r_ε
GE20	●	●	●	●	2	10	3.5	0.2
GE30	●	●	●	●	3			
GE40	●	●	●	●	4		4.0	
GE50	●	●	●	●	5	12	4.5	

For aluminium
and non-ferrous
metals

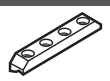
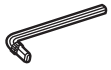


Cat. No.	Grades	Dimensions (mm)			
	Uncoated				
	KS05F	W	L	h	r_ε
GE20-AL	●	2	10	3.5	0.2
GE30-AL	●	3			
GE40-AL	●	4		4.0	

Parts

Cat. No.	Clamping screw	Wrench
		
JCGSSR/L□□□□–□□	CSTB-3	T-9F

Parts

Cat. No.	Wedge	Screw	Wrench for screw	Wrench for tool block
				
CCH□□–□□	CC-32	CM6×25	P-5	CTL-2
CCBS□□–□□				

Standard cutting conditions

Work materials	Recommended grade	Cutting speed v_c (m/min)
Low carbon steels Alloy steels (~ 150HB)	T9125	80 ~ 200
	NS730	100 ~ 200
	GH730	50 ~ 180
Medium carbon steels Alloy steels (150 ~ 250HB)	T9125	80 ~ 180
	NS730	80 ~ 180
	GH730	50 ~ 150
High carbon steels Alloy steels (250HB ~)	T9125	80 ~ 150
	NS730	80 ~ 150
	GH730	50 ~ 120
Stainless steels	T9125	80 ~ 150
	GH730	50 ~ 120
Grey and ductile cast irons	T9125	80 ~ 200
	GH730	50 ~ 180
Aluminium alloys, Non-ferrous metals	KS05F	200 ~ 300

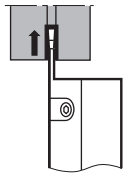
Operation	Feed: f (mm/rev) Groove width: W (mm)			
	2	3	4	5
Parting off (GE□□R/L)	–	0.04 ~ 0.14	0.04 ~ 0.14	0.04 ~ 0.14
Grooving, Parting off (GE□□)	0.05 ~ 0.14	0.05 ~ 0.15	0.05 ~ 0.16	0.05 ~ 0.17
Grooving, Parting off for Aluminium alloys (GE□□-AL)	0.03 ~ 0.1	0.03 ~ 0.1	0.03 ~ 0.1	–

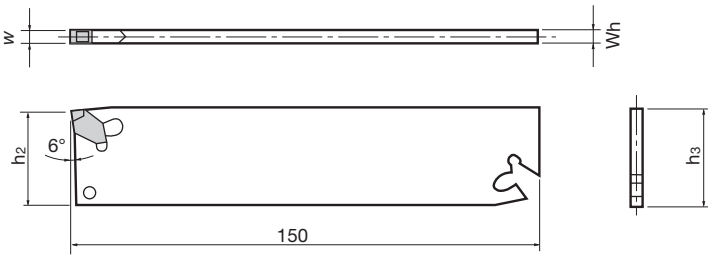
● : Stocked items.

CTH

Width 3.0~6.0mm | Max. parting off dia. ≤ø100mm | 1 Corner | Blades for parting off Tool blocks

Parting off CTH

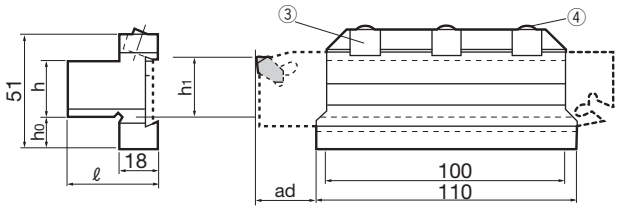




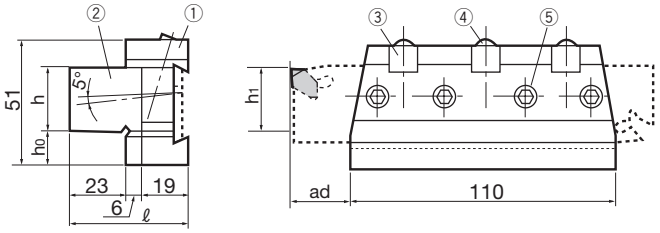
Groove width W (mm)	Blade Cat. No.	Stock	Applicable inserts	Max. parting off dia. (mm)	Dimensions (mm)		
					Wh	h2	h3
3	CTH32-3	●	CT□3□	100	2.2	30.27	32.24
4	CTH32-4	●	CT□4□		3.2	30.13	31.97
5	CTH32-5	●	CT□5□		4.2	30	31.7
6	CTH32-6	●	CT□6□		5.2	29.87	31.44

Tool blocks

One piece type CTBN



Two piece type CTBS



Tool block Cat. No.	Stock	Applicable blades	Overhang ad (mm)	Dimensions (mm)			
				h1	ℓ	h	h0
CTBN20-32	●	CTH32-3 CTH32-4 CTH32-5 CTH32-6	50	20.2	38	20	19.56
CTBN25-32	●			25.2		25	14.56
CTBN32-32	●			32.2	43	32	7.56
CTBS20-32	●			20.2	48	20	19.36
CTBS25-32	●			25.2		25	14.36
CTBS32-32	●			32.2		32	7.36

Parts

Tool block Cat. No.	Parts						
	①Main body	②Base	③Wedge	④Wedge clamping screw	⑤Hex. socket head screw	Wrench	Insert extractor
CTBN20-32	–	–	CTW-2	NDS-8S	–	P-4	CTL-2
CTBN25-32							
CTBN32-32							
CTBS20-32	CTB-32	CB-20	CTW-2	DS-8	M5×15		
CTBS25-32		CB-25					
CTBS32-32		CB-32					

Standard cutting conditions for CTH, CTS

Operation / Work materials		Cutting speed v_c (m/min)	Feed: f (mm/rev)					
			CTN3	CTN4	CTN5	CTN6	CTR/L□	CT□□K
Grooving	Low carbon steels	100 ~ 150	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.3	–	–
	Medium carbon steels			0.08 ~ 0.3	0.08 ~ 0.3			
	Cast irons, Light alloys	100 ~ 200	–	–	–	–		0.1 ~ 0.3
Parting off	Low carbon steels	100 ~ 150	0.08 ~ 0.2	0.08 ~ 0.2	0.08 ~ 0.2	0.08 ~ 0.2	0.08 ~ 0.15	–
	Medium carbon steels							
	Cast irons, Light alloys	100 ~ 200	–	–	–	–	–	0.1 ~ 0.3

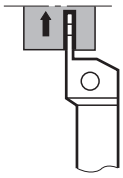
Note: When using CTS type (blade type) toolholders, reduce the values given in the table by 80 %.

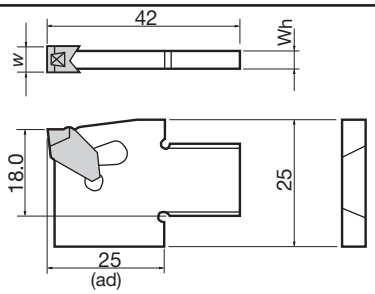
● : Stocked items.

CTS

Width 3.0~6.0mm | Max. parting off dia. ≤ø50mm | 1 Corner | Blades for parting off Tool blocks

Parting off
CTS R/L

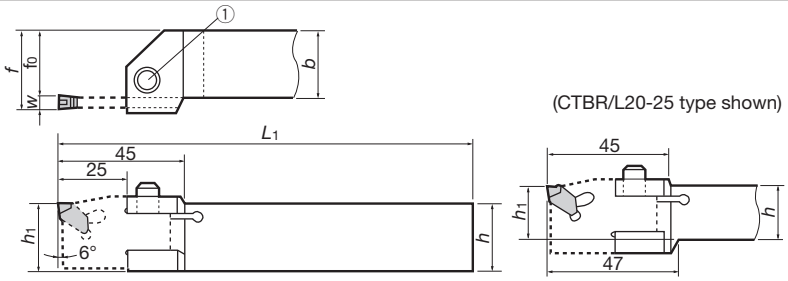




Right hand (R) shown.

Groove width W (mm)	Blade Cat. No.	Stock R	Stock L	Applicable inserts	Overhang ad (mm)	Dimensions (mm) Wh
3	CTSR/L25-3	●	●	CT□3□	Max. 25	2.2
4	CTSR/L25-4	●		CT□4□		3.2
5	CTSR/L25-5	●		CT□5□		4.2
6	CTSR/L25-6	●		CT□6□		5.2

Toolholders



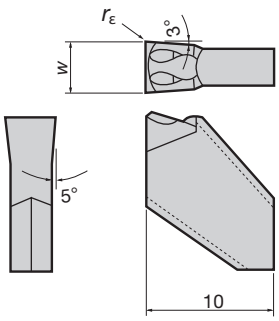
(CTBR/L20-25 type shown)

Right hand (R) shown.

Groove width W (mm)	Cat. No.	Stock R	Stock L	Applicable blade	Overhang (mm) ad	Dimensions (mm) h1	h	b	L1	f0	f	Parts ①Clamping screw	Parts Wrench
3	CTBR/L20-25		●	CTSR/L25-3	Max.25 Max.cut off dia. ø50	20.2	20	25	150	19.6	22.6	M6×20	P-5
4			●	CTSR/L25-4							23.6		
3	CTBR/L25-25			CTSR/L25-3		25.2	25	25	150	24.6	27.6	M6×20	P-5
4				CTSR/L25-4							28.6		
5				CTSR/L25-5							29.6		
6				CTSR/L25-6							30.6		

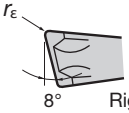
Inserts for CTH, CTS, and SCTH type parting off toolholders

CTN



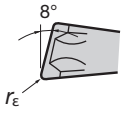
Neutral (N) shown

CTR



Right hand (R)

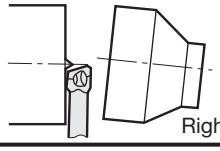
CTL



Left hand (L)

Dimensions (mm) W±0.2	Dimensions (mm) rε	Cat. No.	Grades Coated T313W N	Coated T313W R	Coated T313W L	Uncoated TX40 N	Uncoated TX40 R	Uncoated TX40 L	Uncoated TH10 N	Uncoated TH10 R	Uncoated TH10 L
3	0.2	CTN3	●			●					
		CTN3K							●		
		CTR/L3		●	●		●				
		CTR/L3K								●	●
4	0.2	CTN4	●			●					
		CTN4K							●		
		CTR/L4		●	●						
		CTR/L4K								●	●
5	0.3	CTN5	●								
		CTN5K							●		
		CTR/L5		●							
		CTR/L5K								●	
6	0.3	CTN6	●								
		CTN6K							●		
		CTR/L6									
		CTR/L6K									

Chuck side (Regular revolution)



Right hand (CTR)

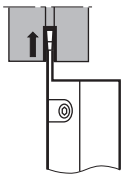
Notes:
- Right hand and left hand inserts are effective to minimize burr generation when workpiece is cut off.
- CT□□K type inserts with positive rake and sharp cutting edge are suitable for parting off and grooving of light alloys and cast irons.

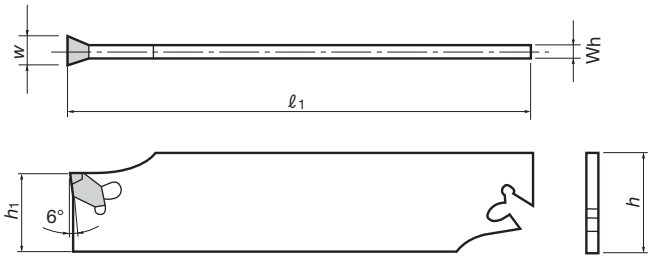
● : Stocked items.
▲ : Shortly unavailable

SCTH

Width 3.0~6.0mm | 1 Corner

Parting off SCTH





Blades for parting off

Cat. No.	Stock	Dimensions (mm)					Applicable tool block Cat. No.		Applicable inserts
		W	h_1	Wh	h	ℓ			
SCTH26-3		3	21.16	2.2	25.35	110	SGTB R/L 25-6,	SGTBN16-5	CT□3□
SCTH26-4		4	21.05	3.2	25.14		SGTBN19-5,	SGTBU20-5	CT□4□
SCTH32-3		3	24.8	2.2	31.41	150	SGTBN19-6,	SGTBN25-6	CT□3□
SCTH32-4		4	24.66	3.2	31.14		SGTBN32-6,	SGTBU20-6	CT□4□
SCTH32-5		5	24.53	4.2	30.87		SGTBU25-6,	SGTBU32-6	CT□5□
SCTH32-6		6	24.39	5.2	30.61		SGTBU32-25-6,	SGTBK32-9	CT□6□

Note: These blades are compatible only with the tool blocks shown in the above table.

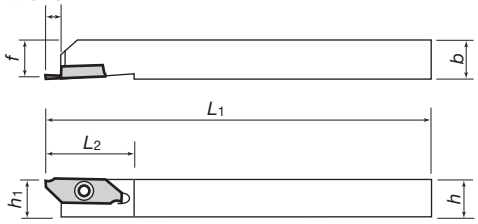
J series for Small Lathes

JSXG

Width 0.7~2.0mm | Max. dia. ≤ 4.5mm, ≤ 6.0mm | 2 Corners

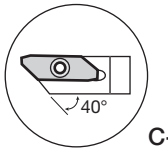
Parting off • Grooving JSXG R/L

(Two corners type) (6.5)



Can be wrenched from back side with double socket torx screw.

JSXG type toolholders are also used for front-turning JXF type inserts and reverse-turning JXR type inserts.



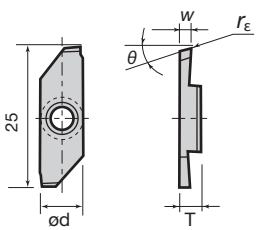
C-type

Right hand (R) shown.

Cat. No.	Stock		Applicable inserts	Dimensions (mm)						Parts		
										Clamping screw	Wrench	
	R	L		h	b	L_1	L_2	h_1	f			(optional)
JSXGR/L1010K8-C	●	●	JXGR/L8□□□	10	10	125	29	10	9.9	CSTB-4SD	T-8F	(T-8L)
JSXGR/L1212K8-C	●	●		12	12			12	11.9			
JSXGR/L1616K8	●	●		16	16			16	15.9			
JSXGR/L2020K8	●	●		20	20			20	19.9			
JSXGR/L2525K8	●	●		25	25			25	24.9			

Applicable inserts

JXG-type inserts (With sharp edges and cutting direction)



Right hand (R) shown.

Cat. No.	Dimensions (mm)						Grades											
							Coated		Coated cermet				Cermet				Uncoated	
							J740		J530				NS530				TH10	
	ød	T	$W^{+0.025}$	θ	Max. groove depth	r_ε	R	L	R	L	R	L	R	L	R	L	R	L
JXGR/L8070FA	8	3.97	0.7	15°	4.5	0	●	●					●	●			●	●
JXGR/L8070FA-005						0.05	●											
JXGR/L8100FA			1		6	0	●	●					●	●			●	●
JXGR/L8100FA-005						0.05	●											
JXGR/L8100FA45					4.5	0	●						●				●	
JXGR/L8100FA45-005						0.05	●											
JXGR/L8120FA			1.2		6	0												
JXGR/L8150FA			1.5			0	●	●					●	●			●	●
JXGR/L8150FA-005						0.05	●											
JXGR/L8150FA50					5	0	●						●				●	
JXGR/L8150FA50-005						0.05	●											
JXGR/L8180FA			1.8		6	0	●						●				●	
JXGR/L8180FA-005						0.05	●											
JXGR/L8200FA			2			0	●	●					●	●			●	●
JXGR/L8200FA-005						0.05	●											
JXGR/L8200FN				0°		0	●	●					●	●			●	●
JXGR/L8200FN-005						0.05	●											

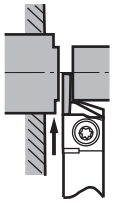
● : Stocked items.

Features (6-10 ~ 6-11) | Relating pages | Parts (14–1~)

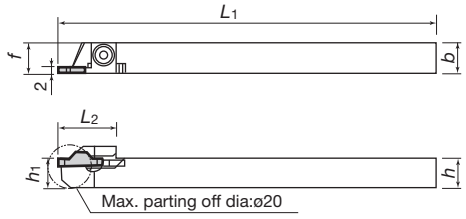
JCCWS

Width ~ 2.0mm | Max. parting off dia. ≤ø20.0mm | 2 Corners

Parting off JCCWS R/L



(Two corners type)

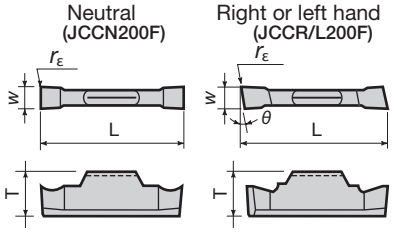


Right hand (R) shown.

Cat. No.	Stock R	Stock L	Applicable inserts	Dimensions (mm) h	b	L1	L2	h1	f	Max. parting off dia	Parts: Clamping screw	Parts: Wrench	Parts: Wrench (optional)
JCCWSR/L1010K2	●	●	JCC□200F	10	10	125	19	10	10	ø20	CSTB-4S	T-15F	(T-15L)
JCCWSR/L1212K2	●	●		12	12			12	12				
JCCWSR/L1616K2	●	●		16	16			16	16				
JCCWSR/L2020K2	●	●		20	20			20	20				
JCCWSR/L2525K2	●	●		25	25			25	25				

Applicable inserts

JCC-type inserts (With sharp edges)



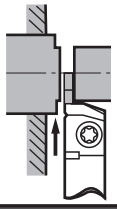
Right hand (R) shown.

Cat. No.	Dimensions (mm) T	W	L	rε	θ	Grades: Coated J740 R	L	Coated cermet J530 R	L	Cermet NS530 R	L	R	L	Uncoated TH10 R	L
JCCN200F	4.8	2	15	0	–	●		●						●	
JCCN200F-005				0.05		●									
JCCR/L200F				0	15°	●	●	●	●					●	●
JCCR/L200F-005				0.05		●	●								

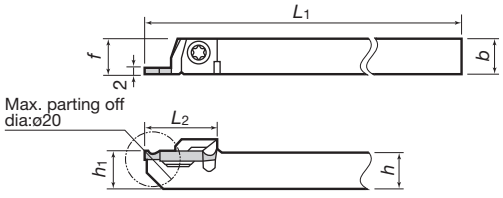
JCGWS

Width ~ 2.0mm | Max. parting off dia. ≤ø20.0mm | 2 Corners

Parting off JCGWS R/L



(Two corners type)

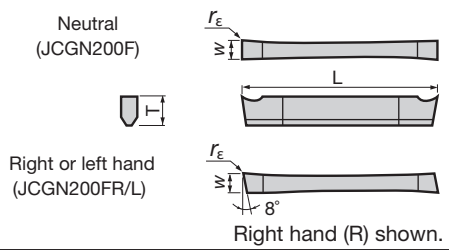


Right hand (R) shown.

Cat. No.	Stock R	Stock L	Applicable inserts	Dimensions (mm) h	b	L1	L2	h1	f	Max. parting off dia	Parts: Clamping screw	Parts: Wrench	Parts: Wrench (optional)
JCGWSR/L1010K2	●	●	JCGN200□	10	10	125	20	10	10	ø20	CSTB-4S	T-15F	(T-15L)
JCGWSR/L1212K2	●	●		12	12			12	12				
JCGWSR/L1616K2	●	●		16	16			16	16				

Applicable inserts

JCG-type inserts (With sharp edges)



Right hand (R) shown.

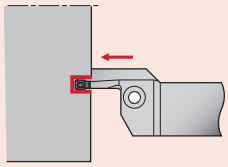
Cat. No.	Dimensions (mm) T	W	L	rε	Grades: Coated J740 R	L	Coated cermet J530 R	L	Cermet NS530 R	L	R	L	Uncoated TH10 R	L
JCGN200F	3	2	20	0.05	●		●						●	
JCGN200FR/L					●	●	●	●					●	●

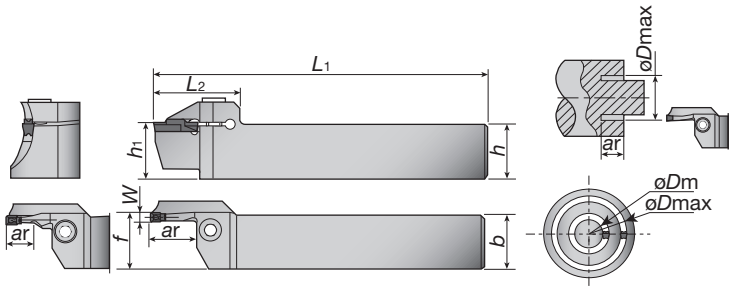
● : Stocked items.

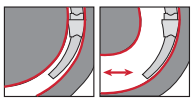
CTFR/L

Width 3.0~6.0mm | Max. Groove Depth ≤10.0mm, ≤25.0mm | 2 Corners

Face grooving / traversing







Right hand (R) shown.

Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock R	Stock L	Min. dia. øDm (mm)	Max. dia. øDm (mm)	Max. groove depth[1] ar (mm)	Dimensions (mm) h1	b	h	L1	f[3]	W	L2	Inserts[4]	Parts: Clamping screw	Parts: Wrench
3	CTFR/L2525-3T10-024035	●	●	24	35	10	25	25	25	150	25.5	3	38	DTF / DTX	CM6x1x25-A	P-5
	CTFR/L2525-3T10-029040	●	●	29	40	10	25	25	25	150		3	38			
	CTFR/L2525-3T10-034050	●	●	34	50	10	25	25	25	150		3	38	DTF / DTX / DTE / DGM / DGS		
	CTFR/L2525-3T15-044070	●	●	44	70	15	25	25	25	150		3	38			
	CTFR/L2525-3T15-064100	●	●	64	100	15	25	25	25	150		3	38			
4	CTFR/L2525-4T10-022036	●	●	22	36	10	25	25	25	150	25.6	4	39	DTF / DTX	CM6x1x25-A	P-5
	CTFR/L2525-4T20-028042	●	●	28	42	20[2]	25	25	25	150		4	39			
	CTFR/L2525-4T20-034050	●	●	34	50	20[2]	25	25	25	150		4	39			
	CTFR/L2525-4T20-042070	●	●	42	70	20	25	25	25	150		4	39	DTF / DTX / DTE / DGM / DGS		
	CTFR/L2525-4T20-062120	●	●	62	120	20	25	25	25	150		4	39			
	CTFR/L2525-4T20-112200	●	●	112	200	20	25	25	25	150		4	39			
5	CTFR/L2525-5T25-050080	●	●	50	80	25	25	25	25	150	25.6	5	49	DTX /DTE / DGM / DGS	CM8x1.25x25-A	P-6
	CTFR/L2525-5T25-070110	●	●	70	110	25	25	25	25	150		5	49			
	CTFR/L2525-5T25-100150	●	●	100	150	25	25	25	25	150		5	49			
	CTFR/L2525-5T25-140200	●	●	140	200	25	25	25	25	150		5	49			
6	CTFR/L2525-6T25-048070	●	●	48	70	25	25	25	25	150	25.6	6	49	DTE / DGM / DGS	CM8x1.25x25-A	P-6
	CTFR/L2525-6T25-058100	●	●	58	100	25	25	25	25	150		6	49			
	CTFR/L2525-6T25-088180	●	●	88	180	25	25	25	25	150		6	49			
	CTFR/L2525-6T25-168400	●	●	168	400	25	25	25	25	150		6	49			

(1) When depth is deeper than insert length, 1 corner type is recommended.

(2) When DTF insert is installed, Max. "*ar*" should be 15 mm.

(3) "*f*" value in the above table is calculated with groove width "*W*" shown in the table.

Caution

In DTF and DTX insert types, seat size "6" inserts are not available. When 6 size insert is required, the DTE, DGM or DGS type is recommended.

(4) Min. diameter ø*D*m of DTE, DGS and DGM insert

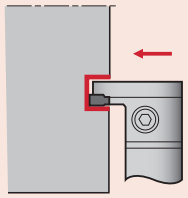
Inserts	ø*D*m (mm)	Note
DTE 3 / DGS 3 / DGM 3	ø44	When diameter is smaller than ø*D*m, DTF or DTX type insert is recommended.
DTE 4 / DGS 4 / DGM 4	ø42	

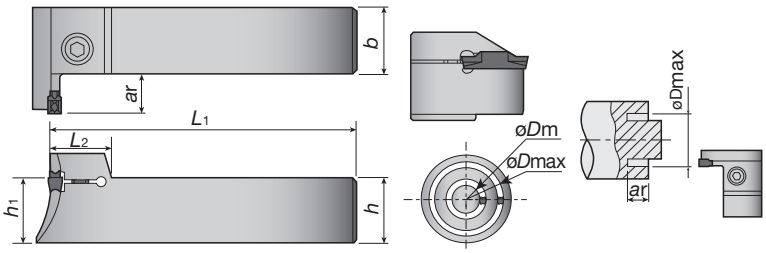
● : Stocked items.

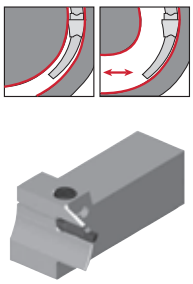
CTFVR/L

Width 3.0~6.0mm | Max. Groove Depth ≤10.0mm, ≤20.0mm | 2 Corners

Face grooving / traversing







Right hand (R) shown.

Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock R	Stock L	Min. dia. øDm (mm)	Max. dia. øDm (mm)	*Max. groove depth ar (mm)	Dimensions (mm) h1	b	h	L1	W	L2	Inserts(4)	Parts: Clamping screw	Parts: Wrench
3	CTFVR/L2525-3T10-024035	●	●	24	35	10	25	25	25	150	3	18	DTF / DTX	CM5x0.8x25-A	P-4
	CTFVR/L2525-3T10-029040	●	●	29	40	10	25	25	25	150	3	18			
	CTFVR/L2525-3T10-034050	●	●	34	50	15	25	25	25	150	3	18	DTF / DTX / DTE / DGM / DGS		
	CTFVR/L2525-3T15-044060	●	●	44	60	10	25	25	25	150	3	18			
	CTFVR/L2525-3T15-054085	●	●	54	85	15	25	25	25	150	3	18			
4	CTFVR/L2525-4T12-022040	●	●	22	40	12	25	25	25	150	4	18.5	DTF / DTX	CM6x1x25-A	P-5
	CTFVR/L2525-4T15-032050	●	●	32	50	15	25	25	25	150	4	18.5			
	CTFVR/L2525-4T15-042060	●	●	42	60	15	25	25	25	150	4	18.5	DTF / DTX / DTE / DGM / DGS		
	CTFVR/L2525-4T15-052085	●	●	52	85	15	25	25	25	150	4	18.5			
5	CTFVR/L2525-5T20-050080	●	●	50	80	20	25	25	25	150	5	22	DTX /DTE / DGM / DGS	CM8x1.25x25-A	P-6
	CTFVR/L2525-5T20-070110	●	●	70	110	20	25	25	25	150	5	22			
	CTFVR/L2525-5T20-100150	●	●	100	150	20	25	25	25	150	5	22			
	CTFVR/L2525-5T20-140200	●	●	140	200	20	25	25	25	150	5	22			
6	CTFVR/L2525-6T20-048085	●	●	48	85	20	25	25	25	150	6	22	DTE / DGM / DGS	CM8x1.25x25-A	P-6
	CTFVR/L2525-6T20-073150	●	●	73	150	20	25	25	25	150	6	22			
	CTFVR/L2525-6T20-138250	●	●	138	250	20	25	25	25	150	6	22			

Caution

In DTF and DTX insert types, seat size “6” inserts are not available. When 6 size insert is required, the DTE, DGM or DGS type is recommended.

(4) Min. diameter øDm of DTE, DGS and DGM insert

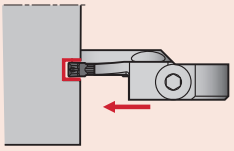
Inserts	øDm (mm)	Note
DTE 3 / DGS 3 / DGM 3	ø44	When diameter is smaller than øDm, DTF or DTX type insert is recommended.
DTE 4 / DGS 4 / DGM 4	ø42	

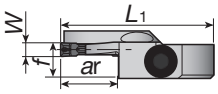
● : Stocked items.

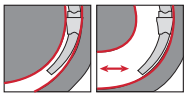
CAFR/L

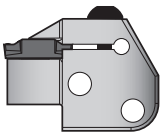
Width 3.0~6.0mm | Max. Groove Depth ≤12.0mm, ≤25.0mm | 2 Corners

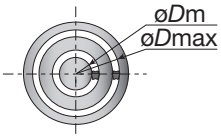
Face grooving and traversing











Right hand (R) shown.

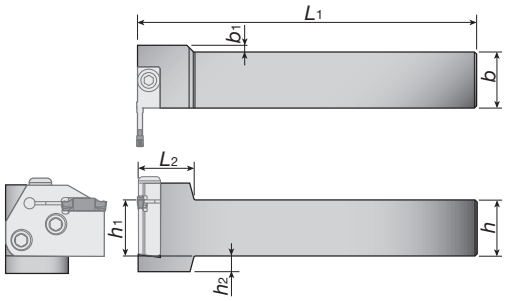
Blades

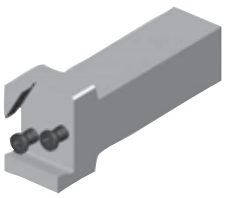
Insert seat size	Cat. No.	Stock R	Stock L	Min. dia. øDm (mm)	Max. dia. øDm (mm)	Max. groove depth ar (mm)	Dimensions (mm) L1	Dimensions (mm) f(2)	Dimensions (mm) W	Inserts(3)	Shank	Parts Clamping screw	Parts Wrench
3	CAFR/L-3T12-040055	●	●	40	55	12	45	10.4	3	DTF	CHFVR/L CHSR/L	BHM6-20-A	P-4
	CAFR/L-3T12-055075	●	●	55	75	12	45	10.4	3	DTF DTE DTX DGS DGM			
	CAFR/L-3T12-075100	●	●	75	100	12	45	10.4	3				
	CAFR/L-3T12-100140	●	●	100	140	12	45	10.4	3				
	CAFR/L-3T12-140200	●	●	140	200	12	45	10.4	3				
4	CAFR/L-4T16-050070	●	●	50	70	16	45	10.5	4			BHM6-20-A	P-4
	CAFR/L-4T16-070100	●	●	70	100	16	45	10.5	4				
	CAFR/L-4T16-100150	●	●	100	150	16	45	10.5	4				
	CAFR/L-4T16-150250	●	●	150	250	16	45	10.5	4				
5	CAFR/L-5T20-055080	●	●	55	80	20	49	10.5	5			BHM6-20-A	P-4
	CAFR/L-5T20-080120	●	●	80	120	20	49	10.5	5				
	CAFR/L-5T20-120180	●	●	120	180	20	49	10.5	5				
	CAFR/L-5T20-180300	●	●	180	300	20	49	10.5	5				
	CAFR/L-5T20-300000	●	●	300	∞	20	49	10.5	5				
6	CAFR/L-6T25-060090	●	●	60	90	25(1)	55	10.5	6			BHM6-20-A	P-4
	CAFR/L-6T25-090150	●	●	90	150	25(1)	55	10.5	6				
	CAFR/L-6T25-150250	●	●	150	250	25(1)	55	10.5	6				
	CAFR/L-6T25-250400	●	●	250	400	25(1)	55	10.5	6				

(1) When depth is deeper than insert length, 1 corner type is recommended.
(2) "*f*" value in the above table is calculated with groove width "*W*" shown in the table.
(3) For Min. diameter øDm of DTE, DGS and DGM insert, please refer to "Caution" on previous page.

CHFVR/L

Horizontal type





Right hand (R) shown.

Toolholders for blades

Cat. No.	Stock R	Stock L	Dimensions (mm) h1	b	h	L1	b1	h2	L2	Blades	Parts Clamping screw	Parts Wrench
CHFVR/L2020	●	●	20	20	20	150	8	12	25	CAER/L CAFR/L	CSHB-6-A	P-4
CHFVR/L2525	●	●	25	25	25	150	3	7	25			
CHFVR/L3232	●	●	32	32	32	170	-	-	25			

Combination of blade and toolholder

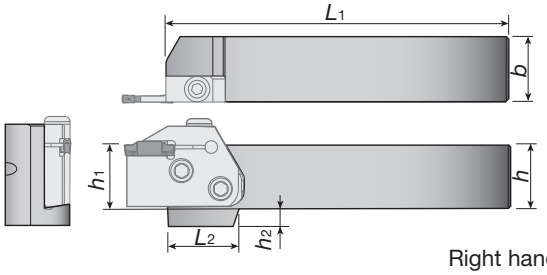
Toolholders	Blades CAER□□□	CAEL□□□	CAFR□□□	CAFL□□□
CHFVR***		●	●	
CHFVL***	●			●

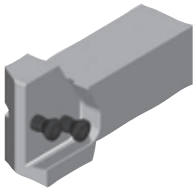
● : Stocked items.

Features (6-3 ~ 6-5) | Relating pages | Applicable inserts (6-65 ~ 6-66) | Parts (14-1~)

CHSR/L

Vertical type





Right hand (R) shown.

Toolholders for blades

Cat. No.	Stock		Dimensions (mm)						Blades	Parts	
	R	L	h_1	b	h	L_1	h_2	L_2		Clamping screw	Wrench
CHSR/L2020	●	●	20	20	20	133	12	35	CAER/L	CSHB-6-A	P-4
CHSR/L2525	●	●	25	25	25	133	7	28	CAFR/L		
CHSR/L3232	●	●	32	32	32	153	-	28			

Combination of blade and toolholder

Toolholders	Blades			
	CAER□□□	CAELL□□□	CAFR□□□	CAFL□□□
CHSR***	●			●
CHSL***		●	●	

TUNGCUT

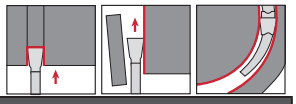
CTFR/L, CTFVR/L, CAFR/L inserts

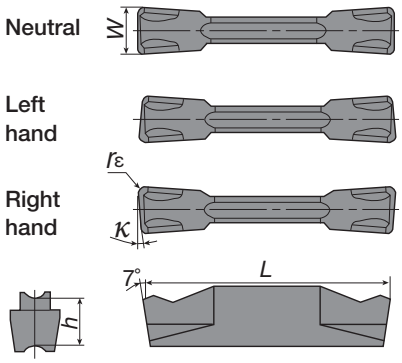
Applicable inserts

● Notation of “insert seat size”

Seat size and grooving width are different. Seat size measure is for the specification of the setting insert. Please note this point.

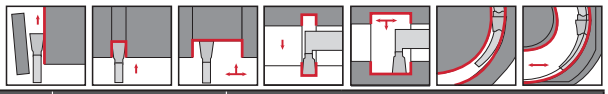
DGM — External grooving and parting off, 2 corners

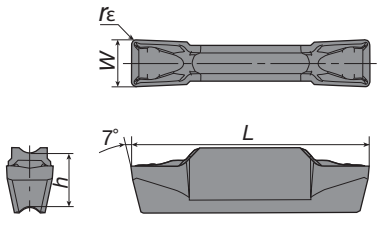




Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
2	DGM2-020	●		●		2	0.2	20	5	-
	DGM2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	DGM2-020-8R/L	●	●	●	●	2	0.2	20	5	8°
	DGM2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
	DGM2-002-15R/L	●	●	●	●	2	0.02	19.6	5	15°
3	DGM3-020	●		●		3	0.2	20	5	-
	DGM3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	DGM3-002-6R/L	●	●	●	●	3	0.02	19.6	5	6°
	DGM3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
4	DGM4-030	●		●		4	0.3	20	5	-
	DGM4-030-4R/L	●	●	●	●	4	0.3	20	5	4°
	DGM4-030-15R/L	●	●	●	●	4	0.3	20	5	15°
5	DGM5-030	●		●		5	0.3	25	5.5	-
	DGM5-030-4R	●		●		5	0.3	25	5.5	4°
6	DGM6-030	●		●		6	0.3	25	5.5	-
8	DGM8-040	●		●		8	0.4	30	6.7	-

DTX — External, internal, face grooving and traversing





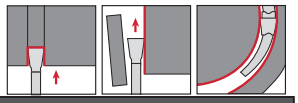
Insert seat size	Cat. No.	Grades Coated AH725	GH130	Dimensions (mm) W±0.05	rε	L	h
3	DTX3-030	●	●	3	0.3	20	5
4	DTX4-040	●	●	4	0.4	20	5
5	DTX5-040	●	●	5	0.4	25	5.5

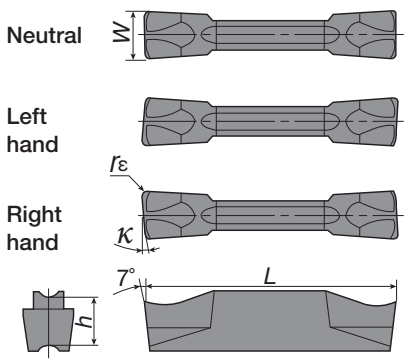
● : Stocked items.

* For special inserts of TungCut, please refer to page 6-94.

CTFR/L, CTFVR/L, CAFR/L inserts

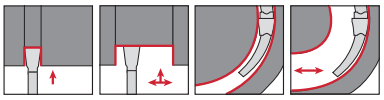
DGS External grooving and parting off, 2 corners

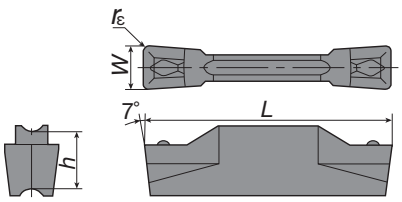




Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
1	DGS1.4-016	●		●		1.4	0.16	16	4.3	-
2	DGS2-020	●		●		2	0.2	20	5	-
	DGS2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	DGS2-002-6R/L	●	●	●	●	2	0.02	19.6	5	6°
	DGS2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
	DGS2-002-15R/L	●	●	●	●	2	0.02	19.6	5	15°
3	DGS3-020	●		●		3	0.2	20	5	-
	DGS3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	DGS3-002-6R/L	●	●	●	●	3	0.02	19.6	5	6°
	DGS3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
	DGS3-002-15R/L	●	●	●	●	3	0.02	19.6	5	15°
4	DGS4-030	●		●		4	0.3	20	5	-
	DGS4-030-4R/L	●	●	●	●	4	0.3	20	5	4°
5	DGS5-030	●		●		5	0.3	25	5.5	-
6	DGS6-030	●		●		6	0.3	25	5.5	-

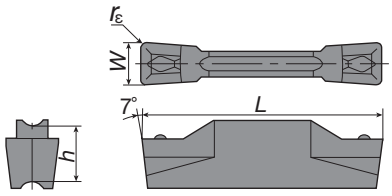
DTE External, face grooving and traversing (Ground)





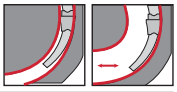
Insert seat size	Cat. No.	Grades Coated AH725	Coated GH130	Cermet NS530	Dimensions (mm) W±0.02	rε ±0.05	L	h
3	DTE265-015	●	●	★	2.65	0.15	20	5
	DTE300-020	●	●	★	3	0.2	20	5
	DTE300-040	●	●	★	3	0.4	20	5
	DTE315-015	●	●	★	3.15	0.15	20	5
4	DTE400-040	●	●	★	4	0.4	20	5
	DTE400-080	●	●	★	4	0.8	20	5
	DTE415-015	●	●	★	4.15	0.15	20	5
5	DTE478-055	●	●	★	4.78	0.55	25	5.5
	DTE500-040	●	●	★	5	0.4	25	5.5
	DTE500-080	●	●	★	5	0.8	25	5.5
	DTE515-015	●	●		5.15	0.15	25	5.5
6	DTE600-080	●	●		6	0.8	25	5.5
	DTE600-120	●	●		6	1.2	25	5.5
8	DTE800-080	●	●		8	0.8	30	6.7
	DTE800-120	●	●		8	1.2	30	6.7

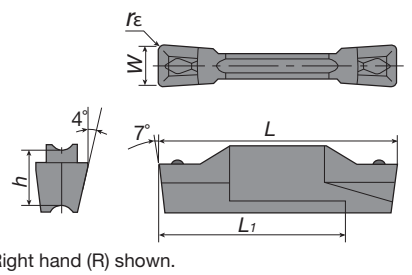
External, face grooving and traversing (Molded)



Insert seat size	Cat. No.	Grades Coated AH725	Coated GH130	Cermet NS530	Dimensions (mm) W±0.05	rε	L	h
3	DTE3-040	●	●	★	3	0.4	20	5
4	DTE4-040	●	●	★	4	0.4	20	5

DTF Face grooving and traversing





Right hand (R) shown.

Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	L1
3	DTF3-040-R/L	●	●	●	●	3	0.4	20	5	16
4	DTF4-040-R/L	●	●	●	●	4	0.4	20	5	16

Note: •Apply right hand inserts to right hand holders and left hand inserts to left hand holders.

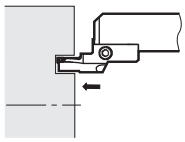
* For special inserts of TungCut, please refer to page 6-94.

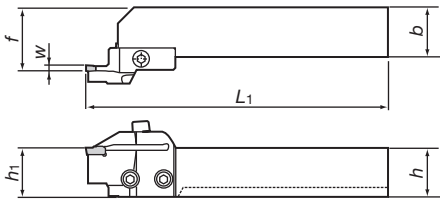
● : Stocked items
★ : Available from 2013

CGWS

Width 3.0~5.0mm | Max. Groove Depth ≤10.0mm, ≤22.0mm | 1 Corner | S: Vertical type

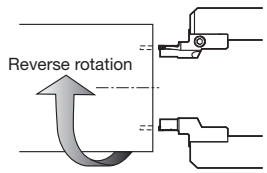
Face grooving
CGWS R/L





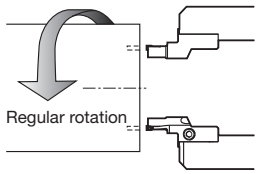
Right hand (R) shown.
The dashed line shows 20 mm square shank tools.

Right hand CGWSRR□□□□-□□□R



Shank: Right hand
Blade: Right hand

Left hand CGWSL□□□□-□□□L



Shank: Left hand
Blade: Left hand

Toolholders (S: Vertical type)

Groove width W (mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	h_1	b	h	L_1	f	Parts: Shank	Stock R	Stock L	Parts: Blade set	Stock R	Stock L
3	30 ~ 40	CGWSR/L2020-30S3040R/L			GE30 GF30 GT30 GR30 GE30-AL	10	20	20	20	152.5	27	CGWSR/L2020	●	●	30S3040R/L	●	●
	40 ~ 50	CGWSR/L2020-30S4050R/L													30S4050R/L	●	●
	50 ~ 65	CGWSR/L2020-30S5065R/L													30S5065R/L	●	●
	65 ~ 90	CGWSR/L2020-30S6590R/L													30S6590R/L	●	●
	90 ~ 150	CGWSR/L2020-30S90150R/L													30S90150R/L	●	●
	150 ~ 500	CGWSR/L2020-30S150500R/L													30S150500R/L	●	●
	30 ~ 40	CGWSR/L2525-30S3040R/L					25	25	25	152.5	32	CGWSR/L2525	●	●	30S3040R/L	●	●
	40 ~ 50	CGWSR/L2525-30S4050R/L													30S4050R/L	●	●
	50 ~ 65	CGWSR/L2525-30S5065R/L													30S5065R/L	●	●
	65 ~ 90	CGWSR/L2525-30S6590R/L													30S6590R/L	●	●
	90 ~ 150	CGWSR/L2525-30S90150R/L													30S90150R/L	●	●
	150 ~ 500	CGWSR/L2525-30S150500R/L													30S150500R/L	●	●
	30 ~ 40	CGWSR/L2020-30D3040R/L			GE30 GF30 GT30 GR30 GE30-AL	14	20	20	20	160.5	27	CGWSR/L2020	●	●	30D3040R/L		
	40 ~ 50	CGWSR/L2020-30D4050R/L													30D4050R/L		
	50 ~ 65	CGWSR/L2020-30D5065R/L													30D5065R/L		
	65 ~ 90	CGWSR/L2020-30D6590R/L													30D6590R/L		
	90 ~ 150	CGWSR/L2020-30D90150R/L													30D90150R/L		
	150 ~ 500	CGWSR/L2020-30D150500R/L													30D150500R/L		
	30 ~ 40	CGWSR/L2525-30D3040R/L					25	25	25	160.5	32	CGWSR/L2525	●	●	30D3040R/L		
	40 ~ 50	CGWSR/L2525-30D4050R/L													30D4050R/L		
	50 ~ 65	CGWSR/L2525-30D5065R/L													30D5065R/L		
	65 ~ 90	CGWSR/L2525-30D6590R/L													30D6590R/L		
	90 ~ 150	CGWSR/L2525-30D90150R/L													30D90150R/L		
	150 ~ 500	CGWSR/L2525-30D150500R/L													30D150500R/L		
4	35 ~ 45	CGWSR/L2020-40S3545R/L			GE40 GF40 GT40 GR40 GE40-AL	14	20	20	20	152.5	27	CGWSR/L2020	●	●	40S3545R/L	●	●
	45 ~ 55	CGWSR/L2020-40S4555R/L													40S4555R/L	●	●
	55 ~ 80	CGWSR/L2020-40S5580R/L													40S5580R/L	●	●
	80 ~ 140	CGWSR/L2020-40S80140R/L													40S80140R/L	●	●
	140 ~ 500	CGWSR/L2020-40S140500R/L													40S140500R/L	●	●

Notes: • When ordering, Shank and Blade set are required.
• When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.

● : Stocked items.

CGWS

Width 3.0~5.0mm | Max. Groove Depth ≤10.0mm, ≤22.0mm | 1 Corner

S: Vertical type

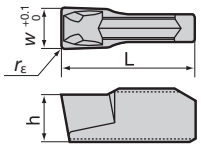
Groove width W (mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	h_1	b	h	L_1	f	Parts: Shank	Stock R	Stock L	Parts: Blade set	Stock R	Stock L
4	35 ~ 45	CGWSR/L2525-40S3545R/L			GE40 GF40 GT40 GR40 GE40-AL	14	25	25	25	152.5	32	CGWSR/L2525	●	●	40S3545R/L		●
	45 ~ 55	CGWSR/L2525-40S4555R/L													40S4555R/L		●
	55 ~ 80	CGWSR/L2525-40S5580R/L													40S5580R/L		●
	80 ~ 140	CGWSR/L2525-40S80140R/L													40S80140R/L		●
	140 ~ 500	CGWSR/L2525-40S140500R/L													40S140500R/L		●
	35 ~ 45	CGWSR/L2020-40D3545R/L			GE40 GF40 GT40 GR40 GE40-AL	22	20	20	20	160.5	27	CGWSR/L2020	●	●	40D3545R/L		●
	45 ~ 55	CGWSR/L2020-40D4555R/L													40D4555R/L		
	55 ~ 80	CGWSR/L2020-40D5580R/L													40D5580R/L		●
	80 ~ 140	CGWSR/L2020-40D80140R/L													40D80140R/L	●	●
	140 ~ 500	CGWSR/L2020-40D140500R/L													40D140500R/L		●
	35 ~ 45	CGWSR/L2525-40D3545R/L					25	25	25	160.5	32	CGWSR/L2525	●	●	40D3545R/L	●	●
	45 ~ 55	CGWSR/L2525-40D4555R/L													40D4555R/L	●	●
	55 ~ 80	CGWSR/L2525-40D5580R/L													40D5580R/L	●	●
	80 ~ 140	CGWSR/L2525-40D80140R/L													40D80140R/L	●	●
	140 ~ 500	CGWSR/L2525-40D140500R/L													40D140500R/L	●	●
5	35 ~ 45	CGWSR/L2020-50S3545R/L			GE50 GF50 GT50 GR50	14	20	20	20	152.5	27	CGWSR/L2020	●	●	50S3545R/L	●	●
	45 ~ 55	CGWSR/L2020-50S4555R/L													50S4555R/L	●	●
	55 ~ 75	CGWSR/L2020-50S5575R/L													50S5575R/L	●	●
	75 ~ 130	CGWSR/L2020-50S75130R/L													50S75130R/L	●	●
	130 ~ 500	CGWSR/L2020-50S130500R/L													50S130500R/L	●	●
	35 ~ 45	CGWSR/L2525-50S3545R/L					25	25	25	152.5	32	CGWSR/L2525	●	●	50S3545R/L	●	●
	45 ~ 55	CGWSR/L2525-50S4555R/L													50S4555R/L	●	●
	55 ~ 75	CGWSR/L2525-50S5575R/L													50S5575R/L		
	75 ~ 130	CGWSR/L2525-50S75130R/L													50S75130R/L	●	●
	130 ~ 500	CGWSR/L2525-50S130500R/L													50S130500R/L		
	35 ~ 45	CGWSR/L2020-50D3545R/L			GE50 GF50 GT50 GR50	22	20	20	20	160.5	27	CGWSR/L2020	●	●	50D3545R/L		
	45 ~ 55	CGWSR/L2020-50D4555R/L													50D4555R/L	●	
	55 ~ 75	CGWSR/L2020-50D5575R/L													50D5575R/L	●	●
	75 ~ 130	CGWSR/L2020-50D75130R/L													50D75130R/L		
	130 ~ 500	CGWSR/L2020-50D130500R/L													50D130500R/L		●
	35 ~ 45	CGWSR/L2525-50D3545R/L					25	25	25	160.5	32	CGWSR/L2525	●	●	50D3545R/L	●	●
	45 ~ 55	CGWSR/L2525-50D4555R/L													50D4555R/L	●	●
	55 ~ 75	CGWSR/L2525-50D5575R/L													50D5575R/L	●	●
	75 ~ 130	CGWSR/L2525-50D75130R/L													50D75130R/L	●	●
	130 ~ 500	CGWSR/L2525-50D130500R/L													50D130500R/L	●	●

Notes: • When ordering, Shank and Blade set are required.
• When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.

● : Stocked items.

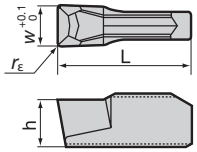
Applicable inserts

For face grooving



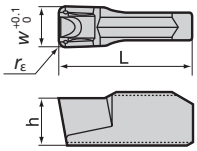
Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet		W	L	h	r_ε
	T9125	GH730	NS530	NS730				
GE30	●	●	●	●	3	10	3.5	0.2
GE40	●	●	●	●	4		4.0	
GE50	●	●	●	●	5	12	4.5	

For face grooving (Improved chip control)



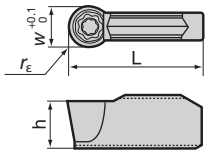
Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet		W	L	h	r_ε
	T9125	GH730	NS530	NS730				
GF30		●	●	●	3	10	3.5	0.2
GF40		●	●	●	4		4.0	
GF50		●	●	●	5	12	4.5	

For face traversing



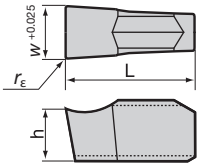
Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet		W	L	h	r_ε
	T9125	GH730	NS530	NS730				
GT30		●	●	●	3	10	3.5	0.4
GT40		●	●	●	4		4.0	
GT50	●	●	●	●	5	12	4.5	

For face profiling (Full radius)



Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet		W	L	h	r_ε
	T9125	GH730	NS530	NS730				
GR30		●	●	●	3	10	3.5	1.5
GR40	●	●	●	●	4		4.0	2.0
GR50	●	●	●	●	5	12	4.5	2.5

For face grooving of aluminium alloys and non-ferrous metals



Cat. No.	Grades	Dimensions (mm)			
	Uncoated	W	L	h	r_ε
	KS05F				
GE30-AL	●	3	10	3.5	0.2
GE40-AL	●	4		4.0	

Parts

Cat. No.	Clamping screw	Blade fixing screw	Wrench
CGWSR/L□□□□–□□S/D□□□□R/L	S:CHHM5-18 D:CM5×0.8×16	CSHB-6	P-4

Example: CGWSR2020-30 S 3040R
S:CHHM5-18
D:CM5×0.8×16

Standard cutting conditions

Work materials	Recommended grade	Cutting speed v_c (m/min)
Low carbon steels Alloy steels (~ 150HB)	T9125	80 ~ 200
	NS730	100 ~ 200
	GH730	50 ~ 180
Medium carbon steels Alloy steels (150 ~ 250HB)	T9125	80 ~ 180
	NS730	80 ~ 180
	GH730	50 ~ 150
High carbon steels Alloy steels (250HB ~)	T9125	80 ~ 150
	NS730	80 ~ 150
	GH730	50 ~ 120
Stainless steels	T9125	80 ~ 150
	GH730	50 ~ 120
Grey and ductile cast irons	T9125	80 ~ 200
	GH730	50 ~ 180
Aluminium alloys, Non-ferrous metals	KS05F	200 ~ 300

Operation	Feed: f (mm/rev) Groove width: W (mm)		
	3	4	5
Face grooving (GE□□)	0.06 ~ 0.22	0.06 ~ 0.24	0.07 ~ 0.26
Face grooving (GF□□)	0.04 ~ 0.25	0.05 ~ 0.26	0.05 ~ 0.30
Face traversing (GT□□)	ap = 0.5 ~ 1.5 f = 0.06 ~ 0.2	ap = 0.5 ~ 2.0 f = 0.06 ~ 0.25	ap = 0.5 ~ 2.5 f = 0.06 ~ 0.27
Face traversing (GR□□)	ap = 0.5 ~ 1.4 f = 0.05 ~ 0.25	ap = 0.5 ~ 1.5 f = 0.05 ~ 0.26	ap = 0.5 ~ 1.6 f = 0.05 ~ 0.3
Face grooving for aluminium alloys (GE□□-AL)	0.03 ~ 0.1	0.03 ~ 0.1	–

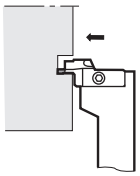
Notes: • For diameter compensation values in traversing, see page 6-39.
• For occurrence of vibrations in face traversing, set the feed to the lower side of the values show in the above table.

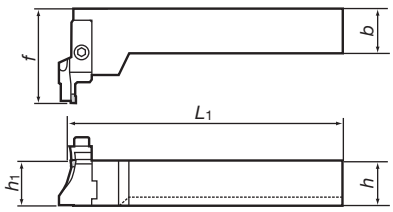
● : Stocked items.

CGWT

Width 3.0~5.0mm | Max. Groove Depth ≤10.0mm, ≤22.0mm | 1 Corner | T: Horizontal type

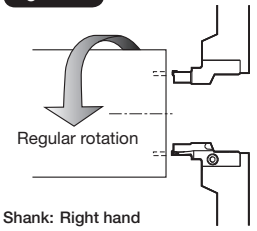
Face grooving CGWT R/L





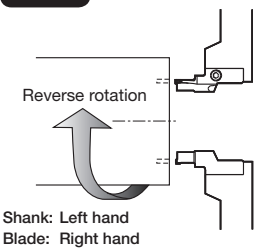
Right hand (R) shown.
The dashed line shows 20 mm square shank tools.

Right hand CGWTR□□□□-□□□L



Shank: Right hand
Blade: Left hand

Left hand CGWTL□□□□-□□□R



Shank: Left hand
Blade: Right hand

Toolholders (T: Horizontal type)

Groove width W (mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	h_1	b	h	L_1	f	Shank	Stock R	Stock L	Blade set	Stock R	Stock L
3	30 ~ 40	CGWTR/L2020-30S3040L/R			GE30 GF30 GT30 GR30 GE30-AL	10	20	20	20	150	52.25	CGWTR/L2020	●	●	30S3040L/R	●	●
	40 ~ 50	CGWTR/L2020-30S4050L/R													30S4050L/R	●	●
	50 ~ 65	CGWTR/L2020-30S5065L/R													30S5065L/R	●	●
	65 ~ 90	CGWTR/L2020-30S6590L/R													30S6590L/R	●	●
	90 ~ 150	CGWTR/L2020-30S90150L/R													30S90150L/R	●	●
	150 ~ 500	CGWTR/L2020-30S150500L/R													30S150500L/R	●	●
	30 ~ 40	CGWTR/L2525-30S3040L/R					25	25	25	150	52.25	CGWTR/L2525	●	●	30S3040L/R	●	●
	40 ~ 50	CGWTR/L2525-30S4050L/R													30S4050L/R	●	●
	50 ~ 65	CGWTR/L2525-30S5065L/R													30S5065L/R	●	●
	65 ~ 90	CGWTR/L2525-30S6590L/R													30S6590L/R	●	●
	90 ~ 150	CGWTR/L2525-30S90150L/R													30S90150L/R	●	●
	150 ~ 500	CGWTR/L2525-30S150500L/R													30S150500L/R	●	●
	30 ~ 40	CGWTR/L2020-30D3040L/R			GE30 GF30 GT30 GR30 GE30-AL	14	20	20	20	150	60.25	CGWTR/L2020	●	●	30D3040L/R		
	40 ~ 50	CGWTR/L2020-30D4050L/R													30D4050L/R		
	50 ~ 65	CGWTR/L2020-30D5065L/R													30D5065L/R		
	65 ~ 90	CGWTR/L2020-30D6590L/R													30D6590L/R		
	90 ~ 150	CGWTR/L2020-30D90150L/R													30D90150L/R		
	150 ~ 500	CGWTR/L2020-30D150500L/R													30D150500L/R		
	30 ~ 40	CGWTR/L2525-30D3040L/R					25	25	25	150	60.25	CGWTR/L2525	●	●	30D3040L/R		
	40 ~ 50	CGWTR/L2525-30D4050L/R													30D4050L/R		
	50 ~ 65	CGWTR/L2525-30D5065L/R													30D5065L/R		
	65 ~ 90	CGWTR/L2525-30D6590L/R													30D6590L/R		
	90 ~ 150	CGWTR/L2525-30D90150L/R													30D90150L/R		
	150 ~ 500	CGWTR/L2525-30D150500L/R													30D150500L/R		
4	35 ~ 45	CGWTR/L2020-40S3545L/R			GE40 GF40 GT40 GR40 GE40-AL	14	20	20	20	150	52.25	CGWTR/L2020	●	●	40S3545L/R		●
	45 ~ 55	CGWTR/L2020-40S4555L/R													40S4555L/R		●
	55 ~ 80	CGWTR/L2020-40S5580L/R													40S5580L/R		●
	80 ~ 140	CGWTR/L2020-40S80140L/R													40S80140L/R		●
	140 ~ 500	CGWTR/L2020-40S140500L/R													40S140500L/R		●

Notes: • When ordering, Shank and Blade set are required.
• When using a right or left hand blade set, the right hand blade set is used with left hand shank and the left hand blade set is used with right hand shank.

● : Stocked items.

Groove width W (mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	h_1	b	h	L_1	f	Shank	Stock R	Stock L	Blade set	Stock R	Stock L
4	35 ~ 45	CGWTR/L2525-40S3545L/R			GE40 GF40 GT40 GR40 GE40-AL	14	25	25	25	150	52.25	CGWTR/L2525	●	●	40S3545L/R		●
	45 ~ 55	CGWTR/L2525-40S4555L/R													40S4555L/R		
	55 ~ 80	CGWTR/L2525-40S5580L/R													40S5580L/R		●
	80 ~ 140	CGWTR/L2525-40S80140L/R													40S80140L/R	●	●
	140 ~ 500	CGWTR/L2525-40S140500L/R													40S140500L/R		●
	35 ~ 45	CGWTR/L2020-40D3545L/R			GE40 GF40 GT40 GR40 GE40-AL	22	20	20	20	150	60.25	CGWTR/L2020	●	●	40D3545L/R	●	●
	45 ~ 55	CGWTR/L2020-40D4555L/R													40D4555L/R	●	●
	55 ~ 80	CGWTR/L2020-40D5580L/R													40D5580L/R	●	●
	80 ~ 140	CGWTR/L2020-40D80140L/R													40D80140L/R	●	●
	140 ~ 500	CGWTR/L2020-40D140500L/R													40D140500L/R	●	●
	35 ~ 45	CGWTR/L2525-40D3545L/R					25	25	25	150	60.25	CGWTR/L2525	●	●	40D3545L/R	●	●
	45 ~ 55	CGWTR/L2525-40D4555L/R													40D4555L/R	●	●
	55 ~ 80	CGWTR/L2525-40D5580L/R													40D5580L/R	●	●
	80 ~ 140	CGWTR/L2525-40D80140L/R													40D80140L/R	●	●
	140 ~ 500	CGWTR/L2525-40D140500L/R													40D140500L/R	●	●
5	35 ~ 45	CGWTR/L2020-50S3545L/R			GE50 GF50 GT50 GR50	14	20	20	20	150	52.25	CGWTR/L2020	●	●	50S3545L/R	●	●
	45 ~ 55	CGWTR/L2020-50S4555L/R													50S4555L/R	●	●
	55 ~ 75	CGWTR/L2020-50S5575L/R													50S5575L/R	●	●
	75 ~ 130	CGWTR/L2020-50S75130L/R													50S75130L/R	●	●
	130 ~ 500	CGWTR/L2020-50S130500L/R													50S130500L/R	●	●
	35 ~ 45	CGWTR/L2525-50S3545L/R					25	25	25	150	52.25	CGWTR/L2525	●	●	50S3545L/R	●	●
	45 ~ 55	CGWTR/L2525-50S4555L/R													50S4555L/R	●	●
	55 ~ 75	CGWTR/L2525-50S5575L/R													50S5575L/R		
	75 ~ 130	CGWTR/L2525-50S75130L/R													50S75130L/R	●	●
	130 ~ 500	CGWTR/L2525-50S130500L/R													50S130500L/R		
	35 ~ 45	CGWTR/L2020-50D3545L/R			GE50 GF50 GT50 GR50	22	20	20	20	150	60.25	CGWTR/L2020	●	●	50D3545L/R		
	45 ~ 55	CGWTR/L2020-50D4555L/R													50D4555L/R	●	
	55 ~ 75	CGWTR/L2020-50D5575L/R													50D5575L/R	●	●
	75 ~ 130	CGWTR/L2020-50D75130L/R													50D75130L/R		
	130 ~ 500	CGWTR/L2020-50D130500L/R													50D130500L/R		●
	35 ~ 45	CGWTR/L2525-50D3545L/R					25	25	25	150	60.25	CGWTR/L2525	●	●	50D3545L/R	●	●
	45 ~ 55	CGWTR/L2525-50D4555L/R													50D4555L/R	●	●
	55 ~ 75	CGWTR/L2525-50D5575L/R													50D5575L/R	●	●
	75 ~ 130	CGWTR/L2525-50D75130L/R													50D75130L/R	●	●
	130 ~ 500	CGWTR/L2525-50D130500L/R													50D130500L/R	●	●

Notes: • When ordering, Shank and Blade set are required.
• When using a right or left hand blade set, the right hand blade set is used with left hand shank and the left hand blade set is used with right hand shank.

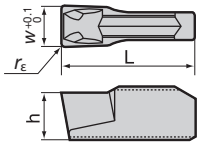
● : Stocked items.

CGWT

Width 3.0~5.0mm | Max. Groove Depth ≤10.0mm, ≤22.0mm | 1 Corner | T: Horizontal type

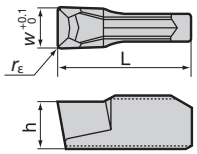
Applicable inserts

For face grooving



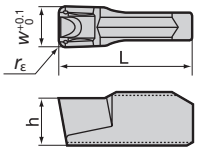
Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet		W	L	h	r_ε
	T9125	GH730	NS530	NS730				
GE30	●	●	●	●	3	10	3.5	0.2
GE40	●	●	●	●	4		4.0	
GE50	●	●	●	●	5	12	4.5	

For face grooving (Improved chip control)



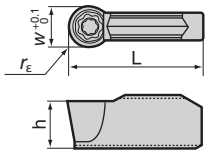
Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet		W	L	h	r_ε
	T9125	GH730	NS530	NS730				
GF30		●	●	●	3	10	3.5	0.2
GF40		●	●	●	4		4.0	
GF50		●	●	●	5	12	4.5	

For face traversing



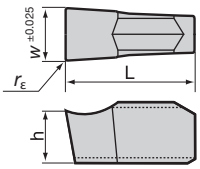
Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet		W	L	h	r_ε
	T9125	GH730	NS530	NS730				
GT30		●	●	●	3	10	3.5	0.4
GT40		●	●	●	4		4.0	
GT50	●	●	●	●	5	12	4.5	

For face profiling (Full radius)



Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet		W	L	h	r_ε
	T9125	GH730	NS530	NS730				
GR30		●	●	●	3	10	3.5	1.5
GR40	●	●	●	●	4		4.0	2.0
GR50	●	●	●	●	5	12	4.5	2.5

For face grooving of aluminium alloys and non-ferrous metals



Cat. No.	Grades	Dimensions (mm)			
	Uncoated	W	L	h	r_ε
	KS05F				
GE30-AL	●	3	10	3.5	0.2
GE40-AL	●	4		4.0	

Parts

Cat. No.	Clamping screw	Blade fixing screw	Wrench
CGWTR/L□□□□–□□S/D□□□□L/R	S:CHHM5-18 D:CM5×0.8×16	CSHB-6	P-4

Example: CGWTR2020-30 S 3040L
S:CHHM5-18
D:CM5×0.8×16

Standard cutting conditions

Work materials	Recommended grade	Cutting speed v_c (m/min)
Low carbon steels	T9125	80 ~ 200
Alloy steels	NS730	100 ~ 200
(~ 150HB)	GH730	50 ~ 180
Medium carbon steels	T9125	80 ~ 180
Alloy steels	NS730	80 ~ 180
(150 ~ 250HB)	GH730	50 ~ 150
High carbon steels	T9125	80 ~ 150
Alloy steels	NS730	80 ~ 150
250HB	GH730	50 ~ 120
Stainless steels	T9125	80 ~ 150
	GH730	50 ~ 120
Grey and	T9125	80 ~ 200
ductile cast irons	GH730	50 ~ 180
Aluminium alloys, Non-ferrous metals	KS05F	200 ~ 300

Operation	Feed: f (mm/rev) Groove width: W (mm)		
	3	4	5
Face grooving (GE□□)	0.06 ~ 0.22	0.06 ~ 0.24	0.07 ~ 0.26
Face grooving (GF□□)	0.04 ~ 0.25	0.05 ~ 0.26	0.05 ~ 0.30
Face traversing (GT□□)	ap = 0.5 ~ 1.5 f = 0.06 ~ 0.2	ap = 0.5 ~ 2.0 f = 0.06 ~ 0.25	ap = 0.5 ~ 2.5 f = 0.06 ~ 0.27
Face traversing (GR□□)	ap = 0.5 ~ 1.4 f = 0.05 ~ 0.25	ap = 0.5 ~ 1.5 f = 0.05 ~ 0.26	ap = 0.5 ~ 1.6 f = 0.05 ~ 0.3
Face grooving for aluminium alloys (GE□□-AL)	0.03 ~ 0.1	0.03 ~ 0.1	–

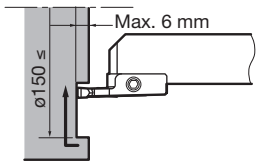
Notes: • For diameter compensation values in traversing, see page 6-39.
• For occurrence of vibrations in face traversing, set the feed to the lower side of the values show in the above table.

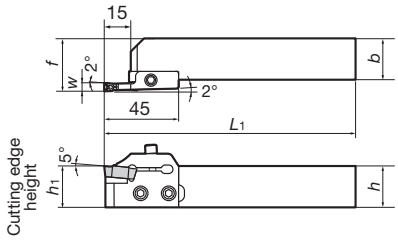
● : Stocked items.

CGWS-FL

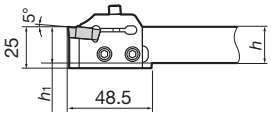
Width 5mm | Max. Groove Depth ≤ 6.0mm | 2 Corners | S: Vertical type

Face Grooving CGWS R/L

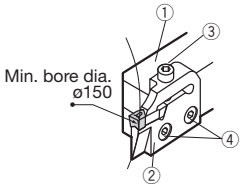




2020 shank type shown



Right hand (R) shown.



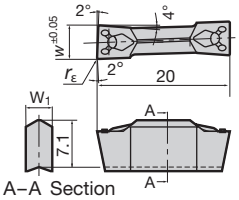
For face grooving

Toolholders (S: Vertical type)

Groove width w (mm)	Min. bore dia. øD (mm)	Max. groove depth (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Dimensions (mm) b	h	L_1	h_1	f	Parts: Shank①	Stock R	Stock L	Blade set	Stock R	Stock L
5	>150	6	CGWSR/L2020-FLR/L5TP	●	●	FLEX50R/L	20	20	152	20	27	CGWSR/L2020	●	●	FLR/L5TP		●
			CGWSR/L2525-FLR/L5TP	●	●	FLEX50R/L	25	25		25	32	CGWSR/L2525	●	●			

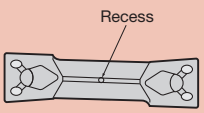
Notes: • When ordering, Shank and blade ass'y Cat. No. or Shank and Blade set are required.
• When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.

Applicable inserts



Right hand (R) shown.

Dimensions (mm) W	rε	W1	Hand	Cat. No.	Grades Coated T9125	Cermet NS530	Uncoated UX30
5	0.4	4	R	FLEX50R	●	●	●
			L	FLEX50L	●	●	●



Left hand inserts are identified with a recessed dot.

Note: • When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.

Parts

Cat. No.	Clamping screw③	Blade fixing screw④	Wrench
CGWSR/L□□□□-FLR/L□TP	CHHM5-18	CSHB-6	P-4

Cautionary Notes

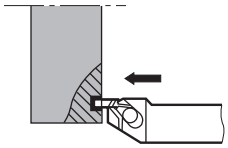
- When facing, the operation should proceed from the OD toward the center in order to prevent tool breakage.
- When facing, depth of cut and feed should be performed at approximately 70% of the values shown above.

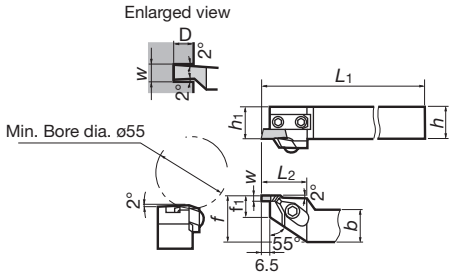
● : Stocked items.

GX-F

Width 1.0~4.5mm | Max. Groove Depth ≤1.5mm, ≤6.0mm | 2 Corners | S: Vertical type

Face grooving GX-R/LF





Right hand (R) shown.

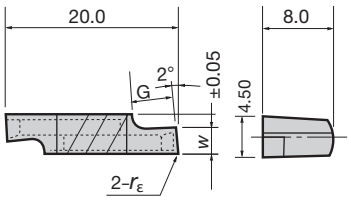
Min. bore dia. øD (mm)	Max. groove width (mm)	Max. groove depth (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Dimensions (mm) h_1	b	h	L_1	L_2	f	f_1
55	4.5	6	GX-2020R/LF			XNL/R63□□	20	20	20	125	35	25	15
			GX-2525R/LF	●	●		25	25	25	150		32	

Note: • When using a right or left hand insert, the right hand insert is used with left hand toolholder and the left hand insert is used with right hand toolholder.

Note: Max. groove width and max. groove depth shown in the above table are the values when the insert with the largest cutting edge width is used.

Inserts

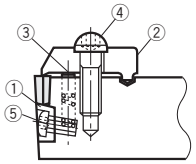
XNR/L



Left hand (L) shown.

Dimensions (mm) w±0.05	Max.groove depth	G	r_ε	Cat. No.	Grades: Cermet NS530 R	NS530 L	Uncoated TH10 R	TH10 L	UX30 R	UX30 L	TX10S R	TX10S L
1	1.5	1.8	0	XNR/L6310S								
			0.2	XNR/L6310-02	●	●	●	●				
1.5	2.3	2.5	0	XNR/L6315S								
			0.2	XNR/L6315-02	●	●	●	●			●	
2	3	3.2	0	XNR/L6320S								
			0.2	XNR/L6320-02	●	●	●	●			●	●
2.5	3.8	3.9	0	XNR/L6325S								
			0.2	XNR/L6325-02	●	●	●	●				
3	4.5	4.6	0	XNR/L6330S								
			0.2	XNR/L6330-02	●	●	●	●			●	●
3.5	5.3	5.4	0	XNR/L6335S								
			0.2	XNR/L6335-02	●	●	●	●				
4	6	6.1	0	XNR/L6340S								
			0.2	XNR/L6340-02	●	●	●	●			●	●
4.5			0	XNR/L6345S								
			0.2	XNR/L6345-02	●	●	●	●				

Parts



Cat. No.	Parts ①Shim	Clamp set	④Clamping screw	⑤Shim screw	Wrench
GX-2020R/LF	SL-8R/L	CP81A (②ClampCP81 ③Pusher BP-3 Spring)	RT-1	BHM4-8	P-4
GX-2525R/LF	SL-3R/L				

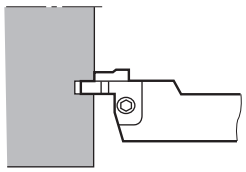
● : Stocked items.

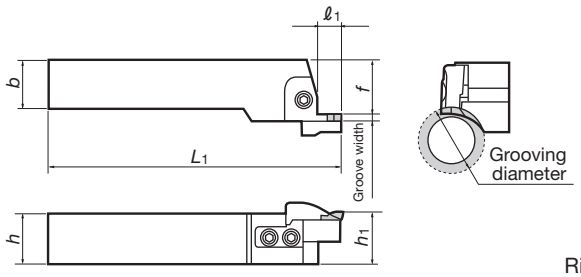
Features (6-12 ~ 6-13) | Relating pages | Parts (14–1~)

CFGS

Width 3.0~8.0mm | Max. Groove Depth ≤10.0mm, ≤26.0mm | 1 Corner

Face grooving
CFGS R/L





Right hand (R) shown.

Groove width: 3 mm

Groove width W (mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	Dimensions (mm) h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamp	Other parts
3	30 ~ 40	CFGSR/L2020-3SA	●	●	FGC3	10	21	20	20	125	22	CFGSR/L2020	FBR/L25-3SA	CFG-3SR/L	All components
	40 ~ 50	CFGSR/L2020-3SB	●	●									FBR/L25-3SB		
	50 ~ 60	CFGSR/L2020-3SC	●	●									FBR/L25-3SC		
	60 ~ 80	CFGSR/L2020-3SD	●	●			20.5						FBR/L25-3SD		
	80 ~ 120	CFGSR/L2020-3SE	●	●									FBR/L25-3SE		
	120 ~ 200	CFGSR/L2020-3SF					20						FBR/L25-3SF		
	200 ~ 500	CFGSR/L2020-3SG											FBR/L25-3SG		
	30 ~ 40	CFGSR/L2525-3SA	●	●			26	25	25	150	29	CFGSR/L2525	FBR/L25-3SA		
	40 ~ 50	CFGSR/L2525-3SB	●	●									FBR/L25-3SB		
	50 ~ 60	CFGSR/L2525-3SC	●	●									FBR/L25-3SC		
	60 ~ 80	CFGSR/L2525-3SD	●	●			25.5						FBR/L25-3SD		
	80 ~ 120	CFGSR/L2525-3SE	●	●									FBR/L25-3SE		
	120 ~ 200	CFGSR/L2525-3SF					25						FBR/L25-3SF		
	200 ~ 500	CFGSR/L2525-3SG											FBR/L25-3SG		

Groove width: 4 mm

Groove width W (mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max.groove depth (mm)	Dimensions (mm) h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamp	Other parts
4	30 ~ 40	CFGSR/L2020-4SA	●	●	FGC4	10	21	20	20	125	21	CFGSR/L2020	FBR/L25-4SA	CFG-4SR/L	All components
	40 ~ 50	CFGSR/L2020-4SB	●	●									FBR/L25-4SB		
	50 ~ 60	CFGSR/L2020-4SC	●	●									FBR/L25-4SC		
	60 ~ 80	CFGSR/L2020-4SD	●	●			20.5						FBR/L25-4SD		
	80 ~ 120	CFGSR/L2020-4SE	●	●									FBR/L25-4SE		
	120 ~ 200	CFGSR/L2020-4SF					20						FBR/L25-4SF		
	200 ~ 500	CFGSR/L2020-4SG											FBR/L25-4SG		
	30 ~ 40	CFGSR/L2525-4SA	●	●			26	25	25	150	28	CFGSR/L2525	FBR/L25-4SA		
	40 ~ 50	CFGSR/L2525-4SB	●	●									FBR/L25-4SB		
	50 ~ 60	CFGSR/L2525-4SC	●	●									FBR/L25-4SC		
	60 ~ 80	CFGSR/L2525-4SD	●	●			25.5						FBR/L25-4SD		
	80 ~ 120	CFGSR/L2525-4SE		●									FBR/L25-4SE		
	120 ~ 200	CFGSR/L2525-4SF					25						FBR/L25-4SF		
	200 ~ 500	CFGSR/L2525-4SG											FBR/L25-4SG		
4	30 ~ 40	CFGSR/L2020-4DA			FGC4	20	21	20	20	135	21	CFGSR/L2020	FBR/L25-4DA	CFG-4DR/L	
	40 ~ 50	CFGSR/L2020-4DB											FBR/L25-4DB		
	50 ~ 60	CFGSR/L2020-4DC											FBR/L25-4DC		
	60 ~ 80	CFGSR/L2020-4DD					20.5						FBR/L25-4DD		
	80 ~ 120	CFGSR/L2020-4DE											FBR/L25-4DE		
	120 ~ 200	CFGSR/L2020-4DF					20						FBR/L25-4DF		
	200 ~ 500	CFGSR/L2020-4DG											FBR/L25-4DG		
	30 ~ 40	CFGSR/L2525-4DA	●	●			26	25	25	160	28	CFGSR/L2525	FBR/L25-4DA		
	40 ~ 50	CFGSR/L2525-4DB	●	●									FBR/L25-4DB		
	50 ~ 60	CFGSR/L2525-4DC	●	●									FBR/L25-4DC		
	60 ~ 80	CFGSR/L2525-4DD	●	●			25.5						FBR/L25-4DD		
	80 ~ 120	CFGSR/L2525-4DE	●	●									FBR/L25-4DE		
	120 ~ 200	CFGSR/L2525-4DF					25						FBR/L25-4DF		
	200 ~ 500	CFGSR/L2525-4DG											FBR/L25-4DG		

Notes: • Right hand toolholders are used in regular rotation.
• Left hand toolholders are used in reverse rotation.
• When using these face grooving toolholders, right hand ones use a right hand bladeset and left hand ones are left hand bladeset.

● : Stocked items.

Relating pages | Applicable inserts (6-80) | Parts (14–1~)

CFGS

Width 3.0~8.0mm | Max. Groove Depth ≤10.0mm, ≤26.0mm | 1 Corner

Groove width: 5 mm

Groove width W (mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamp	Other parts
5	30 ~ 40	CFGSR/L2020-5SA	●	●	FGC5	12	21	20	20	127	20	CFGSR/L 2020	FBR/L25-5SA	CFG-5SR/L	All components
	40 ~ 50	CFGSR/L2020-5SB	●	●									FBR/L25-5SB		
	50 ~ 60	CFGSR/L2020-5SC	●	●									FBR/L25-5SC		
	60 ~ 80	CFGSR/L2020-5SD	●	●			20.5						FBR/L25-5SD		
	80 ~ 120	CFGSR/L2020-5SE	●	●									FBR/L25-5SE		
	120 ~ 200	CFGSR/L2020-5SF											FBR/L25-5SF		
	200 ~ 500	CFGSR/L2020-5SG					20						FBR/L25-5SG		
	30 ~ 40	CFGSR/L2525-5SA	●	●			26	25	25	152	27	CFGSR/L 2525	FBR/L25-5SA		
	40 ~ 50	CFGSR/L2525-5SB	●	●									FBR/L25-5SB		
	50 ~ 60	CFGSR/L2525-5SC	●	●									FBR/L25-5SC		
	60 ~ 80	CFGSR/L2525-5SD	●	●			25.5						FBR/L25-5SD		
	80 ~ 120	CFGSR/L2525-5SE	●	●									FBR/L25-5SE		
	120 ~ 200	CFGSR/L2525-5SF											FBR/L25-5SF		
	200 ~ 500	CFGSR/L2525-5SG					20						FBR/L25-5SG		
5	30 ~ 40	CFGSR/L2020-5DA			FGC5	22	21	20	20	137	20	CFGSR/L 2020	FBR/L25-5DA	CFG-5DR/L	
	40 ~ 50	CFGSR/L2020-5DB											FBR/L25-5DB		
	50 ~ 60	CFGSR/L2020-5DC											FBR/L25-5DC		
	60 ~ 80	CFGSR/L2020-5DD					20.5						FBR/L25-5DD		
	80 ~ 120	CFGSR/L2020-5DE											FBR/L25-5DE		
	120 ~ 200	CFGSR/L2020-5DF											FBR/L25-5DF		
	200 ~ 500	CFGSR/L2020-5DG					20						FBR/L25-5DG		
	30 ~ 40	CFGSR/L2525-5DA	●	●			26	25	25	162	27	CFGSR/L 2525	FBR/L25-5DA		
	40 ~ 50	CFGSR/L2525-5DB	●	●									FBR/L25-5DB		
	50 ~ 60	CFGSR/L2525-5DC	●	●									FBR/L25-5DC		
	60 ~ 80	CFGSR/L2525-5DD		●			25.5						FBR/L25-5DD		
	80 ~ 120	CFGSR/L2525-5DE	●	●									FBR/L25-5DE		
	120 ~ 200	CFGSR/L2525-5DF											FBR/L25-5DF		
	200 ~ 500	CFGSR/L2525-5DG					25						FBR/L25-5DG		

Groove width: 6 mm

Groove width W (mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamping screw	Other parts
6	40 ~ 50	CFGSR/L2020-6SB			FGC6	14	21	20	20	129	19	CFGSR/L 2020	FBR/L25-6SB	CFG-6SR/L	All components
	50 ~ 60	CFGSR/L2020-6SC											FBR/L25-6SC		
	60 ~ 80	CFGSR/L2020-6SD					20.5						FBR/L25-6SD		
	80 ~ 120	CFGSR/L2020-6SE											FBR/L25-6SE		
	120 ~ 200	CFGSR/L2020-6SF											FBR/L25-6SF		
	200 ~ 500	CFGSR/L2020-6SG					20						FBR/L25-6SG		
	40 ~ 50	CFGSR/L2525-6SB	●				26	25	25	154	26	CFGSR/L 2525	FBR/L25-6SB		
	50 ~ 60	CFGSR/L2525-6SC	●	●									FBR/L25-6SC		
	60 ~ 80	CFGSR/L2525-6SD	●	●			25.5						FBR/L25-6SD		
	80 ~ 120	CFGSR/L2525-6SE	●	●									FBR/L25-6SE		
	120 ~ 200	CFGSR/L2525-6SF											FBR/L25-6SF		
	200 ~ 500	CFGSR/L2525-6SG					25						FBR/L25-6SG		
6	40 ~ 50	CFGSR/L2020-6DB			FGC6	24	21	20	20	139	19	CFGSR/L 2020	FBR/L25-6DB	CFG-6DR/L	
	50 ~ 60	CFGSR/L2020-6DC											FBR/L25-6DC		
	60 ~ 80	CFGSR/L2020-6DD					20.5						FBR/L25-6DD		
	80 ~ 120	CFGSR/L2020-6DE											FBR/L25-6DE		
	120 ~ 200	CFGSR/L2020-6DF											FBR/L25-6DF		
	200 ~ 500	CFGSR/L2020-6DG					20						FBR/L25-6DG		
	40 ~ 50	CFGSR/L2525-6DB					26	25	25	164	26	CFGSR/L 2525	FBR/L25-6DB		
	50 ~ 60	CFGSR/L2525-6DC											FBR/L25-6DC		
	60 ~ 80	CFGSR/L2525-6DD					25.5						FBR/L25-6DD		
	80 ~ 120	CFGSR/L2525-6DE											FBR/L25-6DE		
	120 ~ 200	CFGSR/L2525-6DF											FBR/L25-6DF		
	200 ~ 500	CFGSR/L2525-6DG					25						FBR/L25-6DG		

Groove width: 8 mm

Groove width W (mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamp	Other parts
8	60 ~ 80	CFGSR/L3232-8SD	●	●	FGC8	16	32.5	32	32	170	24.5	CFGSR/L 3232	FBR/L32-8SD	CFG-8SR/L	All components
	80 ~ 120	CFGSR/L3232-8SE	●	●									FBR/L32-8SE		
	120 ~ 200	CFGSR/L3232-8SF					32						FBR/L32-8SF		
	200 ~ 500	CFGSR/L3232-8SG											FBR/L32-8SG		
8	60 ~ 80	CFGSR/L3232-8DD			FGC8	26	32.5	32	32	180	24.5	CFGSR/L 3232	FBR/L32-8DD	CFG-8DR/L	
	80 ~ 120	CFGSR/L3232-8DE											FBR/L32-8DE		
	120 ~ 200	CFGSR/L3232-8DF					32						FBR/L32-8DF		
	200 ~ 500	CFGSR/L3232-8DG											FBR/L32-8DG		

Notes:
- Right hand toolholders are used in regular rotation.
- Left hand toolholders are used in reverse rotation.
- When using these face grooving toolholders, right hand ones use a right hand bladeset and left hand ones are left hand bladeset.
- Each toolholder set includes all components.

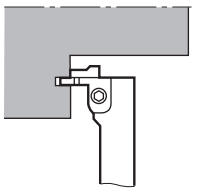
● : Stocked items.

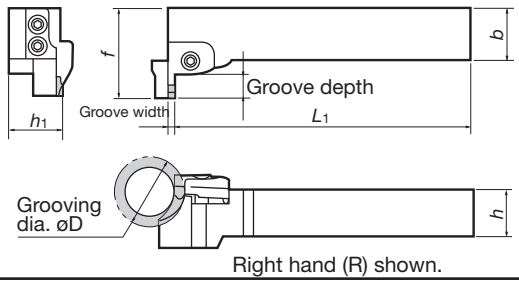
Relating pages | Applicable inserts (6-80) | Parts (14–1~)

CFGT

Width 3.0~8.0mm | Max. Groove Depth ≤10.0mm, ≤26.0mm | 1 Corner

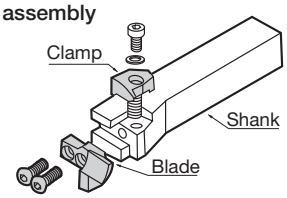
Face grooving
CFGT R/L





Right hand (R) shown.

Part assembly



Common parts

Blade fixing screw	Clamping screw	Spring	Wrench	Washer
CSHB-6	CHHM5-18	BP-7	P-4	CPW5

Groove width: 3 mm

Groove width W(mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	Dimensions (mm) h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamp	Other parts
3	30 ~ 40	CFGTR/L2020-3SA	●	●	FGC3	10	21	20	20	122	44	CFGTR/L 2020	FBR/L25-3SA	CFG-3SR/L	All components
	40 ~ 50	CFGTR/L2020-3SB	●	●									FBR/L25-3SB		
	50 ~ 60	CFGTR/L2020-3SC	●	●									FBR/L25-3SC		
	60 ~ 80	CFGTR/L2020-3SD	●	●			20.5						FBR/L25-3SD		
	80 ~ 120	CFGTR/L2020-3SE	●	●									FBR/L25-3SE		
	120 ~ 200	CFGTR/L2020-3SF					20						FBR/L25-3SF		
	200 ~ 500	CFGTR/L2020-3SG											FBR/L25-3SG		
	30 ~ 40	CFGTR/L2525-3SA		●			26	25	25	147	44	CFGTR/L 2525	FBR/L25-3SA		
	40 ~ 50	CFGTR/L2525-3SB	●	●									FBR/L25-3SB		
	50 ~ 60	CFGTR/L2525-3SC		●									FBR/L25-3SC		
	60 ~ 80	CFGTR/L2525-3SD	●	●			25.5						FBR/L25-3SD		
	80 ~ 120	CFGTR/L2525-3SE	●	●									FBR/L25-3SE		
	120 ~ 200	CFGTR/L2525-3SF					25						FBR/L25-3SF		
	200 ~ 500	CFGTR/L2525-3SG											FBR/L25-3SG		

Groove width: 4 mm

Groove width W(mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	Dimensions (mm) h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamping screw	Other parts
4	30 ~ 40	CFGTR/L2020-4SA	●	●	FGC4	10	21	20	20	121	44	CFGTR/L 2020	FBR/L25-4SA	CFG-4SR/L	
	40 ~ 50	CFGTR/L2020-4SB	●	●									FBR/L25-4SB		
	50 ~ 60	CFGTR/L2020-4SC	●	●									FBR/L25-4SC		
	60 ~ 80	CFGTR/L2020-4SD	●	●			20.5						FBR/L25-4SD		
	80 ~ 120	CFGTR/L2020-4SE	●	●									FBR/L25-4SE		
	120 ~ 200	CFGTR/L2020-4SF					20						FBR/L25-4SF		
	200 ~ 500	CFGTR/L2020-4SG											FBR/L25-4SG		
	30 ~ 40	CFGTR/L2525-4SA	●	●			26	25	25	146	44	CFGTR/L 2525	FBR/L25-4SA		
	40 ~ 50	CFGTR/L2525-4SB	●	●									FBR/L25-4SB		
	50 ~ 60	CFGTR/L2525-4SC	●	●									FBR/L25-4SC		
	60 ~ 80	CFGTR/L2525-4SD	●	●			25.5						FBR/L25-4SD		
	80 ~ 120	CFGTR/L2525-4SE		●									FBR/L25-4SE		
	120 ~ 200	CFGTR/L2525-4SF					25						FBR/L25-4SF		
	200 ~ 500	CFGTR/L2525-4SG											FBR/L25-4SG		All components
4	30 ~ 40	CFGTR/L2020-4DA			FGC4	20	21	20	20	121	54	CFGTR/L 2020	FBR/L25-4DA	CFG-4DR/L	
	40 ~ 50	CFGTR/L2020-4DB											FBR/L25-4DB		
	50 ~ 60	CFGTR/L2020-4DC											FBR/L25-4DC		
	60 ~ 80	CFGTR/L2020-4DD					20.5						FBR/L25-4DD		
	80 ~ 120	CFGTR/L2020-4DE											FBR/L25-4DE		
	120 ~ 200	CFGTR/L2020-4DF					20						FBR/L25-4DF		
	200 ~ 500	CFGTR/L2020-4DG											FBR/L25-4DG		
	30 ~ 40	CFGTR/L2525-4DA		●			26	25	25	146	54	CFGTR/ L2525	FBR/L25-4DA		
	40 ~ 50	CFGTR/L2525-4DB		●									FBR/L25-4DB		
	50 ~ 60	CFGTR/L2525-4DC	●	●									FBR/L25-4DC		
	60 ~ 80	CFGTR/L2525-4DD		●			25.5						FBR/L25-4DD		
	80 ~ 120	CFGTR/L2525-4DE	●	●									FBR/L25-4DE		
	120 ~ 200	CFGTR/L2525-4DF					25						FBR/L25-4DF		
	200 ~ 500	CFGTR/L2525-4DG											FBR/L25-4DG		

Notes:
- Right hand toolholders are used in regular rotation.
- Left hand toolholders are used in reverse rotation.
- When using these face grooving toolholders, right hand ones use a right hand bladeset and left hand ones are left hand bladeset.
- Each toolholder set includes all components.

● : Stocked items.

CFGT

Width 3.0~8.0mm | Max. Groove Depth ≤10.0mm, ≤26.0mm | 1 Corner

Groove width: 5 mm

Groove width W(mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamping screw	Other parts
5	30 ~ 40	CFGTR/L2020-5SA	●	●	FGC5	12	21	20	20	120	46	CFGTR/L 2020	FBR/L25-5SA	CFG-5SR/L	All components
	40 ~ 50	CFGTR/L2020-5SB	●										FBR/L25-5SB		
	50 ~ 60	CFGTR/L2020-5SC	●	●									FBR/L25-5SC		
	60 ~ 80	CFGTR/L2020-5SD	●	●			20.5						FBR/L25-5SD		
	80 ~ 120	CFGTR/L2020-5SE	●	●									FBR/L25-5SE		
	120 ~ 200	CFGTR/L2020-5SF					20						FBR/L25-5SF		
	200 ~ 500	CFGTR/L2020-5SG											FBR/L25-5SG		
	30 ~ 40	CFGTR/L2525-5SA		●			26	25	25	145	46	CFGTR/L 2525	FBR/L25-5SA		
	40 ~ 50	CFGTR/L2525-5SB	●	●									FBR/L25-5SB		
	50 ~ 60	CFGTR/L2525-5SC	●	●									FBR/L25-5SC		
	60 ~ 80	CFGTR/L2525-5SD	●	●			25.5						FBR/L25-5SD		
	80 ~ 120	CFGTR/L2525-5SE	●	●									FBR/L25-5SE		
	120 ~ 200	CFGTR/L2525-5SF					25						FBR/L25-5SF		
	200 ~ 500	CFGTR/L2525-5SG											FBR/L25-5SG		
5	30 ~ 40	CFGTR/L2020-5DA			FGC5	22	21	20	20	120	56	CFGTR/L 2020	FBR/L25-5DA	CFG-5DR/L	
	40 ~ 50	CFGTR/L2020-5DB											FBR/L25-5DB		
	50 ~ 60	CFGTR/L2020-5DC											FBR/L25-5DC		
	60 ~ 80	CFGTR/L2020-5DD					20.5						FBR/L25-5DD		
	80 ~ 120	CFGTR/L2020-5DE											FBR/L25-5DE		
	120 ~ 200	CFGTR/L2020-5DF					20						FBR/L25-5DF		
	200 ~ 500	CFGTR/L2020-5DG											FBR/L25-5DG		
	30 ~ 40	CFGTR/L2525-5DA	●	●			26	25	25	145	56	CFGTR/L 2525	FBR/L25-5DA		
	40 ~ 50	CFGTR/L2525-5DB	●	●									FBR/L25-5DB		
	50 ~ 60	CFGTR/L2525-5DC	●	●									FBR/L25-5DC		
	60 ~ 80	CFGTR/L2525-5DD	●	●			25.5						FBR/L25-5DD		
	80 ~ 120	CFGTR/L2525-5DE	●	●									FBR/L25-5DE		
	120 ~ 200	CFGTR/L2525-5DF					25						FBR/L25-5DF		
	200 ~ 500	CFGTR/L2525-5DG											FBR/L25-5DG		

Groove width: 6 mm

Groove width W(mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamping screw	Other parts
6	40 ~ 50	CFGTR/L2020-6SB			FGC6	14	21	20	20	119	48	CFGTR/L 2020	FBR/L25-6SB	CFG-6SR/L	All components
	50 ~ 60	CFGTR/L2020-6SC											FBR/L25-6SC		
	60 ~ 80	CFGTR/L2020-6SD					20.5						FBR/L25-6SD		
	80 ~ 120	CFGTR/L2020-6SE											FBR/L25-6SE		
	120 ~ 200	CFGTR/L2020-6SF					20						FBR/L25-6SF		
	200 ~ 500	CFGTR/L2020-6SG											FBR/L25-6SG		
	40 ~ 50	CFGTR/L2525-6SB	●	●			26	25	25	144	48	CFGTR/L 2525	FBR/L25-6SB		
	50 ~ 60	CFGTR/L2525-6SC	●										FBR/L25-6SC		
	60 ~ 80	CFGTR/L2525-6SD	●				25.5						FBR/L25-6SD		
	80 ~ 120	CFGTR/L2525-6SE	●	●									FBR/L25-6SE		
	120 ~ 200	CFGTR/L2525-6SF					25						FBR/L25-6SF		
	200 ~ 500	CFGTR/L2525-6SG											FBR/L25-6SG		
6	40 ~ 50	CFGTR/L2020-6DB			FGC6	24	21	20	20	119	58	CFGTR/L 2020	FBR/L25-6DB	CFG-6DR/L	
	50 ~ 60	CFGTR/L2020-6DC											FBR/L25-6DC		
	60 ~ 80	CFGTR/L2020-6DD					20.5						FBR/L25-6DD		
	80 ~ 120	CFGTR/L2020-6DE											FBR/L25-6DE		
	120 ~ 200	CFGTR/L2020-6DF					20						FBR/L25-6DF		
	200 ~ 500	CFGTR/L2020-6DG											FBR/L25-6DG		
	40 ~ 50	CFGTR/L2525-6DB					26	25	25	144	58	CFGTR/ L2525	FBR/L25-6DB		
	50 ~ 60	CFGTR/L2525-6DC											FBR/L25-6DC		
	60 ~ 80	CFGTR/L2525-6DD					25.5						FBR/L25-6DD		
	80 ~ 120	CFGTR/L2525-6DE											FBR/L25-6DE		
	120 ~ 200	CFGTR/L2525-6DF					25						FBR/L25-6DF		
	200 ~ 500	CFGTR/L2525-6DG											FBR/L25-6DG		

Groove width: 8 mm

Groove width W(mm)	Min. bore dia. øD (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	h_1	b	h	L_1	f	Components of set: Shank	Blade	Clamping screw	Other parts
8	60 ~ 80	CFGTR/L3232-8SD	●		FGC8	16	32.5	32	32	162	50	CFGTR/L3232	FBR/L32-8SD	CFG-8SR/L	All components
	80 ~ 120	CFGTR/L3232-8SE	●	●									FBR/L32-8SE		
	120 ~ 200	CFGTR/L3232-8SF					32						FBR/L32-8SF		
	200 ~ 500	CFGTR/L3232-8SG											FBR/L32-8SG		
8	60 ~ 80	CFGTR/L3232-8DD			FGC8	26	32.5	32	32	162	60	CFGTR/L3232	FBR/L32-8DD	CFG-8DR/L	
	80 ~ 120	CFGTR/L3232-8DE											FBR/L32-8DE		
	120 ~ 200	CFGTR/L3232-8DF					32						FBR/L32-8DF		
	200 ~ 500	CFGTR/L3232-8DG											FBR/L32-8DG		

Notes: •Right hand toolholders are used in regular rotation.
• Left hand toolholders are used in reverse rotation.
•When using these face grooving toolholders, right hand ones use a right hand bladeset and left hand ones are left hand bladeset.
•Each toolholder set includes all components.

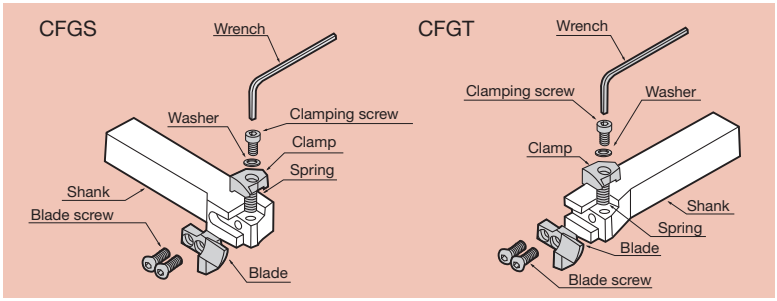
● : Stocked items.

Relating pages | Applicable inserts (6-80) | Parts (14–1~)

CFGS / CFGT

All components

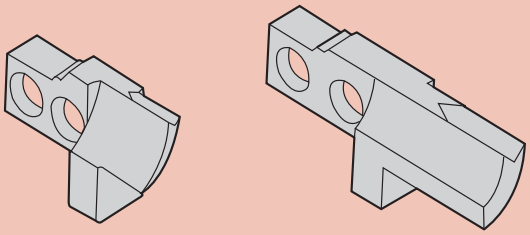
Blade fixing screw	Clamping screw	Spring	Wrench	Washer
				
CSHB-6	CHHM5-18	BP-7	P-4	CPW5



Blades and clamps

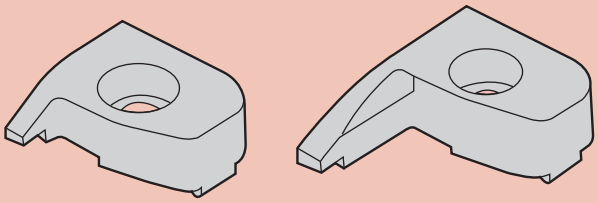
Blade

Shallow groove type (FBR/L□□-□S□) Deep groove type (FBR/L□□-□D□)



Clamp

Shallow groove type (CFG-□SR/L) Deep groove type (CFG-□DR/L)

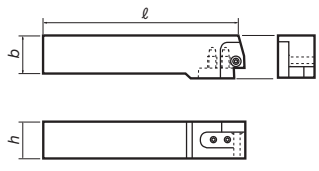


Min. bore dia. øD (mm)	Groove depth (mm)	Groove width W(mm)	Blade Cat. No.	Blade Stock R	Blade Stock L	Clamp Cat. No.	Clamp Stock R	Clamp Stock L
30 ~ 40	10	3	FBR/L25-3SA	●	●	CFG-3SR/L	●	●
40 ~ 50			FBR/L25-3SB	●	●			
50 ~ 60			FBR/L25-3SC	●	●			
60 ~ 80			FBR/L25-3SD	●				
80 ~ 120			FBR/L25-3SE	●				
120 ~ 200			FBR/L25-3SF					
200 ~ 500			FBR/L25-3SG					
30 ~ 40	10	4	FBR/L25-4SA		●	CFG-4SR/L	●	●
40 ~ 50			FBR/L25-4SB	●	●			
50 ~ 60			FBR/L25-4SC		●			
60 ~ 80			FBR/L25-4SD		●			
80 ~ 120			FBR/L25-4SE	●	●			
120 ~ 200			FBR/L25-4SF					
200 ~ 500			FBR/L25-4SG					
30 ~ 40	20	4	FBR/L25-4DA	●	●	CFG-4DR/L	●	●
40 ~ 50			FBR/L25-4DB	●	●			
50 ~ 60			FBR/L25-4DC	●	●			
60 ~ 80			FBR/L25-4DD	●	●			
80 ~ 120			FBR/L25-4DE	●	●			
120 ~ 200			FBR/L25-4DF					
200 ~ 500			FBR/L25-4DG					
30 ~ 40	12	5	FBR/L25-5SA		●	CFG-5SR/L	●	●
40 ~ 50			FBR/L25-5SB	●	●			
50 ~ 60			FBR/L25-5SC	●	●			
60 ~ 80			FBR/L25-5SD		●			
80 ~ 120			FBR/L25-5SE		●			
120 ~ 200			FBR/L25-5SF					
200 ~ 500			FBR/L25-5SG					

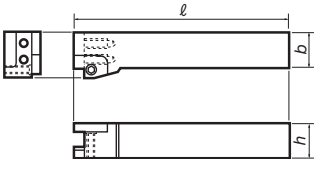
Min. bore dia. øD (mm)	Groove depth (mm)	Groove width W(mm)	Blade Cat. No.	Blade Stock R	Blade Stock L	Clamp Cat. No.	Clamp Stock R	Clamp Stock L
30 ~ 40	22	5	FBR/L25-5DA		●	CFG-5DR/L	●	●
40 ~ 50			FBR/L25-5DB		●			
50 ~ 60			FBR/L25-5DC		●			
60 ~ 80			FBR/L25-5DD	●	●			
80 ~ 120			FBR/L25-5DE	●	●			
120 ~ 200			FBR/L25-5DF					
200 ~ 500			FBR/L25-5DG					
40 ~ 50	14	6	FBR/L25-6SB	●	●	CFG-6SR/L	●	●
50 ~ 60			FBR/L25-6SC	●	●			
60 ~ 80			FBR/L25-6SD	●	●			
80 ~ 120			FBR/L25-6SE	●	●			
120 ~ 200			FBR/L25-6SF					
200 ~ 500			FBR/L25-6SG					
40 ~ 50	24	6	FBR/L25-6DB	●		CFG-6DR/L	●	●
50 ~ 60			FBR/L25-6DC	●	●			
60 ~ 80			FBR/L25-6DD		●			
80 ~ 120			FBR/L25-6DE	●	●			
120 ~ 200			FBR/L25-6DF					
200 ~ 500			FBR/L25-6DG					
60 ~ 80	16	8	FBR/L32-8SD	●		CFG-8SR/L	●	●
80 ~ 120			FBR/L32-8SE	●				
120 ~ 200			FBR/L32-8SF					
200 ~ 500			FBR/L32-8SG					
60 ~ 80	26	8	FBR/L32-8DD	●		CFG-8DR/L	●	
80 ~ 120			FBR/L32-8DE	●				
120 ~ 200			FBR/L32-8DF					
200 ~ 500			FBR/L32-8DG					

●Shank

CFGS



CFGT



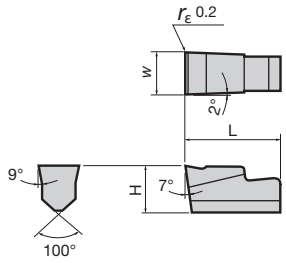
Cat. No.	Stock R	Stock L	Dimensions (mm) h	b	ℓ	Parts
CFGSR/L2020	●	●	20	20	114.25	All components
CFGSR/L2525			25	25	139.25	
CFGSR/L3232	●		32	32	153.25	
CFGTR/L2020	●	●	20	20	125.75	All components
CFGTR/L2525		●	25	25	150.75	
CFGTR/L3232	●	●	32	32	170.75	

● : Stocked items.

Relating pages
Parts (14–1~)

CFGS / CFGT

Inserts



Dimensions (mm)			Cat. No.	Grades			
				Coated	Cermet		Uncoated
$w \pm 0.1$	L	H		T313V	NS530		UX30
3	10	4.29	FGC3	●	●		
4	10	4.5	FGC4	●	●		
5	12	5.5	FGC5	●	●		
6	14	6.5	FGC6				●
8	16	8	FGC8				●

Grade selection guide

Grades	Main applications	P group				K group			
		01	10	20	30	01	10	20	30
UX30	Low to medium speed cutting of steel, cast steel, cast iron and stainless steel		■	■	■		■	■	■
NS530	Medium to high speed cutting of steel and alloy steel, with satisfactory surface finish		■	■					
T313V	Low to high speed cutting of steel, cast steel, cast iron and stainless steel Standard cutting conditions		■	■	■		■	■	■

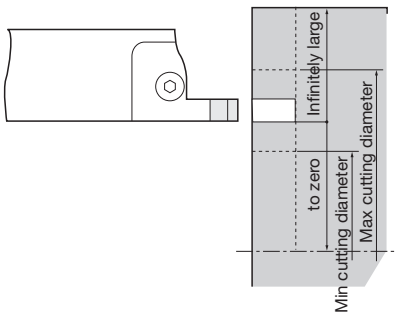
Standard cutting conditions

Work material : General carbon steel, JIS S45C Cutting fluid: Water soluble cutting fluid	Groove width: *W* (mm)				
	3	4	5	6	8
Cutting speed v_c (m/min)	70 ~ 150	70 ~ 150	70 ~ 120	70 ~ 120	50 ~ 100
Feed *f* (mm/rev)	0.05 ~ 0.15	0.05 ~ 0.2	0.05 ~ 0.15	0.05 ~ 0.15	0.05 ~ 0.1

Notes: • Above cutting conditions are applied to the shallow groove type (groove depth 10 ~ 16 mm).
• In the case of a deep groove type (groove depth 20~26 mm), apply 60~70% of above cutting conditions.
• The use of water soluble cutting fluid is recommended to discharge chips, protect the finished surface, and prevent chipping.

Notes on cutting diameter

- SA~SG types can widen the groove outward infinitely after grooving from the minimum to maximum diameter.
- SF and SG types can widen the groove inward to minimum zero after grooving from the minimum to maximum diameter. (See the figure)
- SA~SE types can not be used to widen the groove more inward from the minimum diameter.

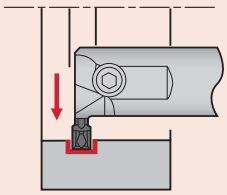


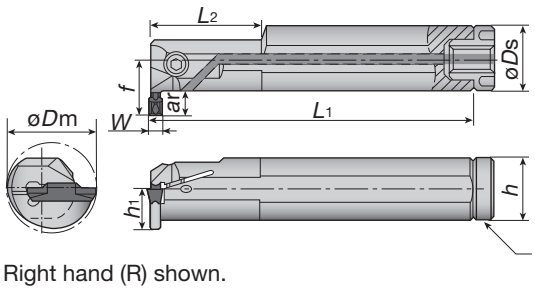
● : Stocked items.

CTI R/L

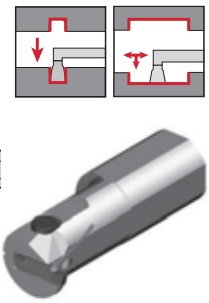
Width 3.0~8.0mm | Max. Groove Depth ≤4.0mm, ≤10.0mm | 2 Corners

Grooving and traversing





Right hand (R) shown.



Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock R	Stock L	Min. dia. øDm (mm)	Max. groove depth ar (mm)	Dimensions (mm) øDs	h1	h	*L1	f	W	L2	Inserts	Parts: Clamping screw	Wrench	Seal cap	Internal screw
3	CTIR/L20-3T06-D250	●	●	25	6	20	9	18	160	15.8	3	40	DTI DTX	CM5x0.8x12-A	P-4	CA-20	M6
	CTIR/L25-3T05-D250	●	●	25	5.1	25	11.5	23	200	17.5	3	40		CM5x0.8x16-A		CA-25	R1/8"
	CTIR/L25-3T08-D320	●	●	32	8	25	11.5	23	200	21.5	3	40					
	CTIR/L32-3T10-D400	●	●	40	10	32	15	30	250	27	3	60				CA-32	
4	CTIR/L20-4T06-D250	●	●	25	6	20	9	18	160	15.8	4	40		CM5x0.8x12-A	P-4	CA-20	M6
	CTIR/L25-4T08-D320	●	●	32	8	25	11.5	23	200	21.5	4	40		CM5x0.8x16-A		CA-25	R1/8"
	CTIR/L32-4T04-D310	●	●	31	4	32	15	30	250	20.8	4	60				CA-32	
	CTIR/L32-4T10-D400	●	●	40	10	32	15	30	250	27	4	60					
5	CTIR/L25-5T05-D310	●	●	31	5	25	11.5	23	200	17.3	5	60		CM6x1x16-A	P-5	CA-25	R1/8"
	CTIR/L32-5T10-D400	●	●	40	10	32	15	30	250	27	5	60		CM6x1x20-A		CA-32	
6	CTIR/L32-6T04-D310	●	●	31	4	32	15	30	250	20.8	6	60		CM6x1x20-A	P-5	CA-32	R1/8"
	CTIR/L32-6T10-D400	●	●	40	10	32	15	30	250	27	6	60					
8	CTIR/L32-8T05-D370	●	●	37	5	32	15	30	250	21.3	8	60		CM6x1x25-A	P-5	CA-32	R1/8"
	CTIR/L40-8T05-D420	●	●	42	5.8	40	19	38	300	25.8	8	65				CA-40	

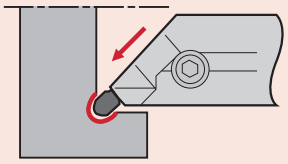
* "L_1" value in the above table is calculated with groove width "W" shown in the table.

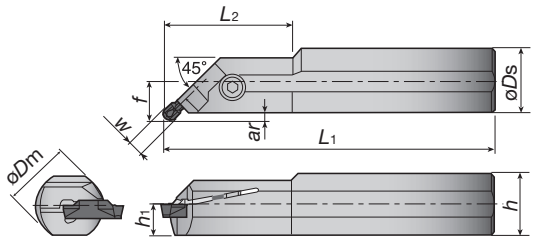
● : Stocked items.

CGIUR/L

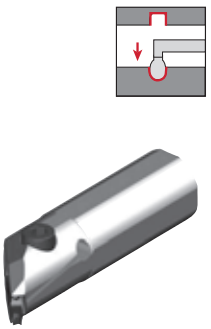
Width 3.0~6.0mm | Max. Groove Depth ≤2.86mm | 2 Corners

Internal undercutting





Right hand (R) shown.



Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock R	Stock L	Min. dia. øDm (mm)	Max. groove depth ar (mm)	Dimensions (mm) øDs	h1	h	L1	*f	W	L2	Inserts	Parts: Clamping screw	Wrench
3	CGIUR/L20-3T02-D380	●	●	38	2.8	20	9.5	19	160	12.8	3	-	DTIU	CM5x0.8x12-A	P-4
	CGIUR/L25-3T02-D380	●	●	38	2.8	25	11.5	23	200	14.8	3	40		CM5x0.8x16-A	
4	CGIUR/L20-4T02-D380	●	●	38	2.8	20	9.5	19	160	12.9	4	-			
	CGIUR/L25-4T02-D460	●	●	46	2.8	25	11.5	23	200	14.9	4	40			
5, 6	CGIUR/L25-6T02-D460	●	●	46	2.8	25	11.5	23	200	15.2	6	-		CM6x1x16-A	P-5

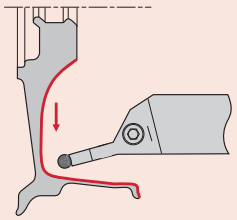
* "f" value in the above table is calculated with groove width "W" shown in the table.

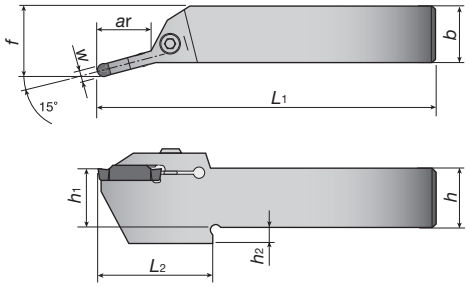
● : Stocked items.

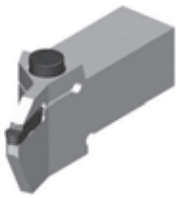
CTER/L-15A

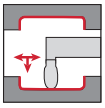
Width 6.0~8.0mm | Max. Groove Depth ≤30mm | 2 Corners

For aluminium wheel machining









Right hand (R) shown.

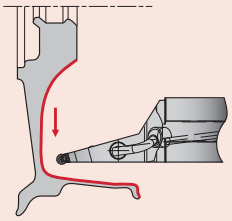
Toolholders (Mono block type)

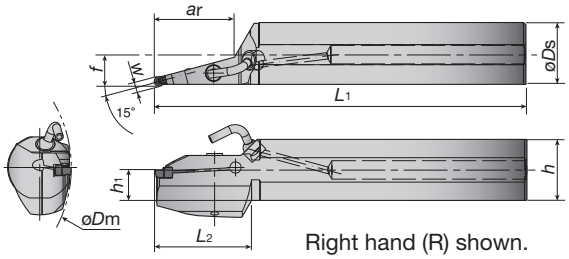
Insert seat size	Cat. No.	Stock		Max. groove depth	Dimensions (mm)							Inserts	Parts	
		R	L	ar (mm)	h_1	b	h	h_2	L_1	W	L_2		Clamping screw	Wrench
6	CTER/L2525-6T25-15A	●	●	25	25	25	25	7	150	6	50.5	DTA	CM6x1x25-A	P-5
8	CTER/L2525-8T30-15A	●	●	30	25	25	25	7	150	8	55			

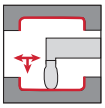
CGIUR/L-15A

Width 6.0~8.0mm | Max. Groove Depth ≤85mm | 2 Corners

For aluminium wheel machining







Right hand (R) shown.

Toolholders (Mono block type)

Insert seat size	Cat. No.	Stock		Min. dia. øDm (mm)	Max. groove depth ar (mm)	Dimensions (mm)							Inserts	Parts			
		R	L			øDs	h_1	h	L_1	f	W	L_2		Clamping screw	Wrench	Seal cap	Internal screw
6	CGIUR/L40-6T50-D160-15A	●	●	160	50	40	19	38.5	320	19.7	6	60	DTA	CM6x1x25-A	P-5	CA-40	R1/8"
8	CGIUR/L40-8T83-D160-15A	●	●	160	83	40	19	38.5	320	20.5	8	85					
6	CGIUR/L50-6T85-D200-15A	●	●	200	85	50	23.5	48.5	350	25.2	6	85					
8	CGIUR/L50-8T85-D200-15A	●	●	200	85	50	23.5	48.5	350	25.9	8	85					

Nozzle parts

Coolant pipe	Coolant nozzle
PNZ5	CNZ125

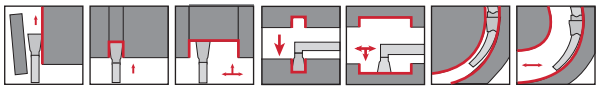
CTI R/L, CGIUR/L, CTER/L-15A, CGIUR/L-15A inserts

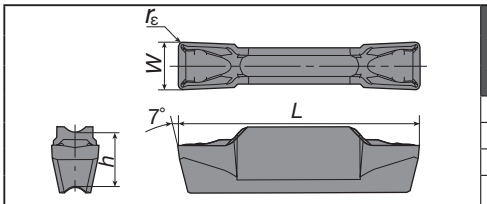
Applicable inserts

● Notation of “insert seat size”

Seat size and grooving width are different. Seat size measure is for the specification of the setting insert. Please note this point.

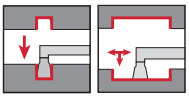
DTX — External, internal, face grooving and traversing

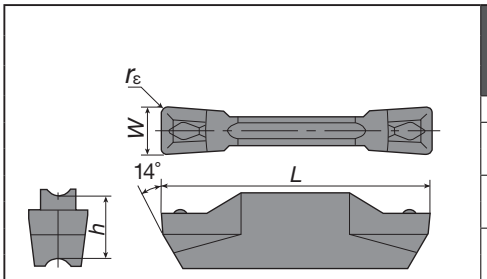




Insert seat size	Cat. No.	Grades Coated AH725	Grades Coated GH130	Dimensions (mm) W±0.05	rε	L	h
3	DTX3-030	●	●	3	0.3	20	5
4	DTX4-040	●	●	4	0.4	20	5
5	DTX5-040	●	●	5	0.4	25	5.5

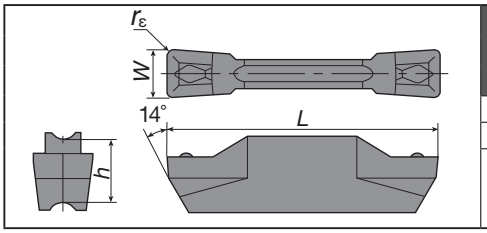
DTI — Internal grooving and traversing (Ground)





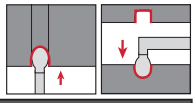
Insert seat size	Cat. No.	Grades Coated AH725	Grades Coated GH130	Dimensions (mm) W±0.02	rε±0.05	L	h
3	DTI300-040	●	●	3	0.4	20	5
4	DTI400-040	●	●	4	0.4	20	5
	DTI400-080	●	●	4	0.8	20	5
5	DTI500-040	●	●	5	0.4	25	5.5
	DTI500-080	●	●	5	0.8	25	5.5
6	DTI600-080	●	●	6	0.8	25	5.5
	DTI600-120	●	●	6	1.2	25	5.5
8	DTI800-080	●	●	8	0.8	30	6.7
	DTI800-120	●	●	8	1.2	30	6.7

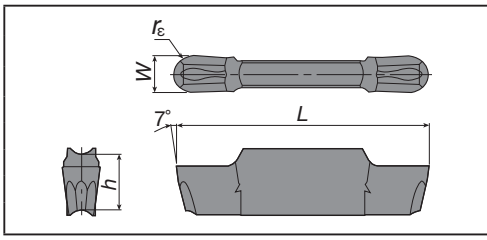
Internal grooving and traversing (Molded)



Insert seat size	Cat. No.	Grades Coated AH725	Grades Coated GH130	Dimensions (mm) W±0.05	rε	L	h
3	DTI3-040	●	●	3	0.4	20	5
4	DTI4-040	●	●	4	0.4	20	5

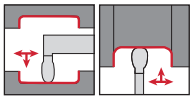
DTIU — Profiling and undercutting (Ground)

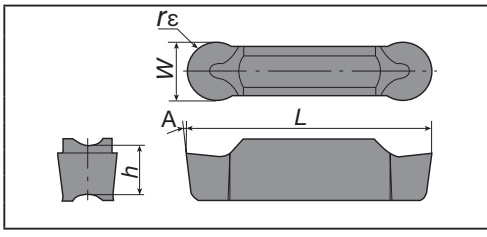




Insert seat size	Cat. No.	Grades Coated AH725	Grades Coated GH130	Dimensions (mm) W±0.02	rε	L	h
3	DTIU300-150	●	●	3	1.5	20	5
4	DTIU400-200	●	●	4	2	20	5
5	DTIU500-250	●	●	5	2.5	25	5.5
6	DTIU600-300	●	●	6	3	25	5.5

DTA — Aluminium wheel machining (Ground)





Insert seat size	Cat. No.	Grades Carbide TH10	Dimensions (mm) W±0.02	rε	L	h	A
6	DTA 600-300	●	6	3	25	5.5	7°
8	DTA 800-400	●	8	4	30	6.7	10°

● : Stocked items.

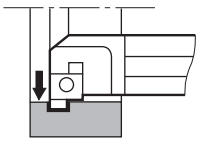
⋆ For special inserts of TungCut, please refer to page 6-94.

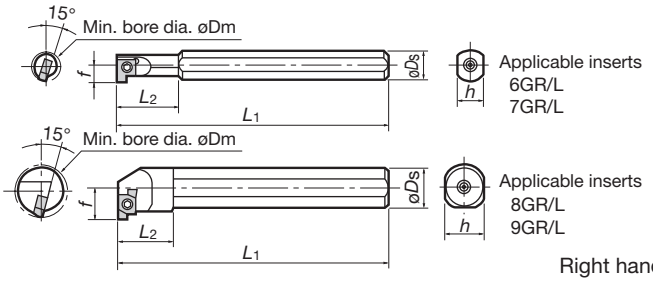
SNG

Width 1.0~3.5mm | Max. Groove Depth ≤1.5mm, ≤ 3.0mm | 1, 2 Corners | Screw-on type

Internal grooving
SNG R/L

Screw-on type





Right hand (R) shown.

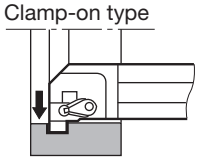
Max. groove width (mm)	Min. bore dia. øDm (mm)	Shank material	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) øDs	f	L1	L2	h	Parts Clamping screw	Parts Wrench
2	8	Steel	SNGR/L08H06	●	●	6GR/L□□□	1.5	8	4.7	100	18	7	CSTB-2L040	T-6F
	10		SNGR/L08H07	●	●	7GR/L□□□			5.8		23		CSTB-2.2S	T-7F
	12		SNGR/L10K07	●	●			10	6.8	125	29	9		
3.5	14		SNGR/L10K08	●	●	8GR/L□□□	2		7.6		15		CSTB-2.2	
	16		SNGR/L12M08	●	●			12	8.6	150	18	11		
3.5	20		SNGR/L16Q09	●	●	9GR/L□□□	3	16	11.6	180	20	15	CSTB-2.5L080	T-8F
	24		SNGR/L20R09	●	●			20	13.6	200	25	18		
2	8	Carbide	SNGR/L08K06SC	●	●	6GR/L□□□	1.5	8	4.7	125	28	7	CSTB-2L040	T-6F
	10		SNGR/L08K07SC	●	●	7GR/L□□□			5.8		35		CSTB-2.2S	T-7F
	12		SNGR/L10M07SC	●	●			10	6.8	150	45	9		
3.5	14		SNGR/L10M08SC	●	●	8GR/L□□□	2	10	7.6				CSTB-2.2	
	16		SNGR/L12Q08SC	●	●			12	8.6	180	–	11		
3.5	20		SNGR/L16R09SC	●	●	9GR/L□□□	3	16	11.6	200		15	CSTB-2.5L080	T-8F

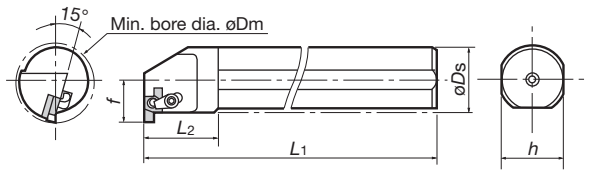
CNG

Width 1.0~5.0mm | Max. Groove Depth ≤5.0mm | 2 Corners | Clamp-on type

Internal grooving
CNG R/L

Clamp-on type





Right hand (R) shown.

Max. groove width (mm)	Min. bore dia. øDm (mm)	Shank material	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) øDs	f	L1	L2	h	Parts Clamp	Parts Shim	Parts Clamping screw	Parts Wrench
5	32	Steel	CNGR/L25S15	●	●	15GR/L□□□	5	25	18.1	250	30	23	CSP22	SGSR/L151	DTS5-3.5	T-20F
	40		CNGR/L32T15	●	●			32	22.1	300	35	30				
	48		CNGR/L40U15	●	●			40	26.1	350	45	38				

Optional parts for CNG type toolholders

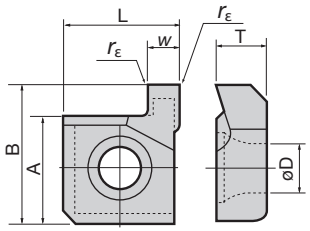
When using as a screw-on type, use the following parts.

Toolholder Cat. No.	Clamping screw	Wrench
CNGR/L25S15 CNGR/L32T15 CNGR/L40U15	CSTB-3.5L	T-15F

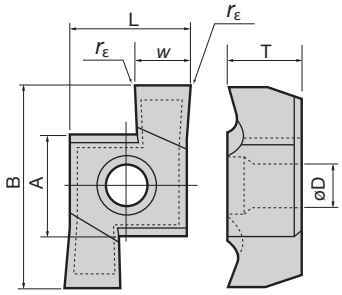
● : Stocked items.

Inserts (SNG•CNG type)

● One corner type
6GR/L□□□
7GR/L□□□



● Two corners type
8GR/L□□□
9GR/L□□□
15GR/L□□□



Right hand (R) shown.

Inserts for general grooving

Max. groove depth (mm)	Groove width $w \pm 0.025$ (mm)	Insert Cat. No.	Grades								Dimensions (mm)					
			Cermet				Uncoated									
			NS530				TH10		UX30							
			R	L	R	L	R	L	R	L	A	B	T	øD	L	r_ε
1.5	1	6GR/L100	●				●		●	●	4.76	6.44	2.34	2.3	5.56	0.2
	1.5	6GR/L150	●				●	●	●	●						
	2	6GR/L200	●	●			●	●	●	●						
	1	7GR/L100	●				●		●		5.56	7.36	3.08	2.58		
	1.5	7GR/L150	●				●		●							
	2	7GR/L200	●	●			●	●	●	●						
2	1	8GR/L100									5.56	10.16	3.87	2.58	6.15	
	1.5	8GR/L150	●	●			●		●							
	2	8GR/L200	●	●			●	●	●							
	2.5	8GR/L250	●				●	●	●	●						
	3	8GR/L300	●	●			●	●	●	●						
	3.5	8GR/L350	●	●			●		●							
1.5	1	9GR/L100									6.35	12.95	4.66	2.86	7.74	
2	1.5	9GR/L150	●	●			●		●	●						
3	2	9GR/L200	●	●			●	●	●	●						
	2.5	9GR/L250	●	●			●		●	●						
	3	9GR/L300	●	●			●	●	●	●						
	3.5	9GR/L350	●	●			●		●	●						
1.5	1	15GR/L100									9.2	20.8	5.1	4.8	10.8	
2	1.5	15GR/L150														
3	2	15GR/L200	●				●		●							
	2.5	15GR/L250	●				●		●							
	3	15GR/L300	●				●		●	●						
	3.5	15GR/L350	●	●			●		●							
4	4	15GR/L400	●				●		●							
	4.5	15GR/L450	●	●			●	●	●							
5	5	15GR/L500	●	●			●		●							

Inserts for lock-ring grooves (made to order)

Max. groove depth (mm)	Groove width $w^{+0.10}_{+0.05}$ (mm)	Insert Cat. No.	Grades								Dimensions (mm)				
			Cermet				Uncoated								
			NS530				TH10		UX30						
			R	L	R	L	R	L	R	L	A	T	øD	L	r_ε
1.5	1.15	6GR/L115									4.76	2.34	2.3	5.56	0.1
	1.35	6GR/L135													
	1.15	7GR/L115									5.56	3.08	2.58	5.56	
	1.35	7GR/L135													
	1.75	7GR/L175													
	1.35	8GR/L135									5.56	3.87	2.58	6.15	
	1.75	8GR/L175													
2	1.95	8GR/L195													
1.5	1.75	9GR/L175									6.35	4.66	2.86	7.74	
2	1.95	9GR/L195													
	2.2	9GR/L220													
2.5	2.7	9GR/L270													
1.5	1.75	15GR/L175									9.2	5.1	4.8	10.8	
2	1.95	15GR/L195													
	2.2	15GR/L220													
2.5	2.7	15GR/L270													
3	3.2	15GR/L320													
3.5	4.2	15GR/L420													

● Inserts for lock-ring grooves are made to order.

Notes: • When using a right or left hand insert, the right hand insert is used with right hand toolholder and the left hand insert is used with left hand toolholder.

Standard cutting conditions

Work materials	Cutting speed: v_c (m/min)	Feed: f (mm/rev)
Medium carbon steels (S45C)	40 ~ 150	0.05 ~ 0.15
Cast irons, Light alloys	60 ~ 200	0.05 ~ 0.15

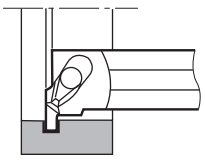
Notes: • Cutting conditions shown left are a guideline only.
• When grooving cluse to the minimum bore diameter or with long reach conditions, reduce the conditions shown left by approximately 50 %.
• To help chip evacuation, use water-soluble cutting fluid. The fluid should be applied sufficiently to the cutting point.
When using without cutting fluid, reduce both the cutting speeds and feeds shown on the left by 50 % at least.

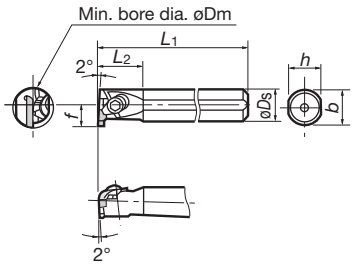
● : Stocked items.

CGX

Width 1.0~5.0mm | Max. Groove Depth ≤1.5mm, ≤ 5.3mm | 2 Corners

Internal grooving
CGX R/L

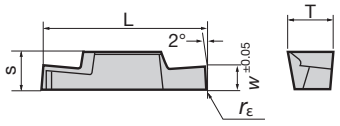




Right hand (R) shown.

Groove width (mm)	Min. bore dia.(mm) øDm	Shank material	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) øDs	f	L1	L2	h	b	Parts Clamping screw	Parts Wrench
1 ~ 3	20	Steel	CGXR/L0016	●	●	GIR/L52□□	3	16	11.3	150	24	15	15.5	CSW-0	P-2.5
	24		CGXR/L0020	●	●			20	13.3	180	30	18	19		
1 ~ 5	32		CGXR/L0025	●	●	GIR/L63□□	5.3	25	18	200	38	23	24	CSW-2	P-4
	40		CGXR/L0032	●	●			32	23	250	48	30	31		
	48		CGXR/L0040	●	●			40	27	300	60	37	38.5		
1 ~ 3	20	Carbide	CGXR/L16SC	●	●	GIR/L52□□	3	16	11.3	200	24	15	—	CSW-0	P-2.5

Inserts



Right hand (R) shown.

Dimensions (mm) s	T	L	rε	w±0.05	Max.Groove depth	Cat. No.	Grades Cermet NS530 R	L	Uncoated TH10 R	L
3.5	4.5	15	0.2	1	1.5	GIR/L5210-02	●	●	●	●
			0			GIR/L5210				
			0.2	1.5	2.3	GIR/L5215-02	●	●	●	●
			0			GIR/L5215				
			0.2	2	3	GIR/L5220-02	●	●	●	●
			0			GIR/L5220				
			0.2	2.5	3	GIR/L5225-02	●	●	●	●
			0			GIR/L5225				
			0.2	3	3	GIR/L5230-02	●	●	●	●
			0			GIR/L5230				
5.5	6.5	24	0.2	1	1.5	GIR/L6310-02	●	●	●	●
			0			GIR/L6310				
			0.2	1.5	2.3	GIR/L6315-02	●	●	●	●
			0			GIR/L6315				
			0.2	2	3	GIR/L6320-02	●	●	●	●
			0			GIR/L6320				
			0.2	2.5	3.8	GIR/L6325-02	●	●	●	●
			0			GIR/L6325				
			0.2	3	4.5	GIR/L6330-02	●	●	●	●
			0			GIR/L6330				
			0.2	3.5	5.3	GIR/L6335-02	●	●	●	●
			0			GIR/L6335				
			0.2	4.0	5.3	GIR/L6340-02	●	●	●	●
			0			GIR/L6340				
			0.2	4.5	5.3	GIR/L6345-02	●	●	●	●
			0			GIR/L6345				
			0.2	5	5.3	GIR/L6350-02	●	●	●	●
			0			GIR/L6350				

Note: • When using a right or left hand insert, the right hand insert is used with right hand toolholder and the left hand insert is used with left hand toolholder.

Standard cutting conditions (External & internal grooving)

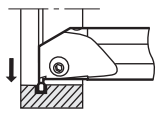
Work materials	Grades	Cutting speed v_c (m/min)	Feed: f (mm/rev) W < 2 mm	W = 2 ~ 4 mm	W > 4 mm
Carbon steels	NS530	80 ~ 150	0.05 ~ 0.1	0.08 ~ 0.15	0.08 ~ 0.2
Cast irons, Light alloys	TH10	60 ~ 150	0.05 ~ 0.1	0.08 ~ 0.15	0.08 ~ 0.2

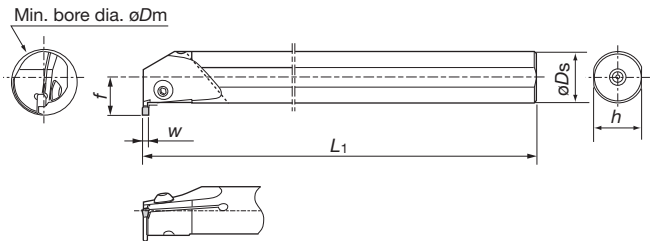
● : Stocked items.

CGT

Width 3.0~5.0mm | Max. Groove Depth ≤3.5mm, ≤ 6.0mm | 1 Corner

Internal grooving
CGT R/L



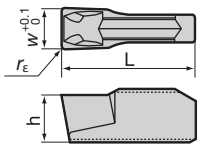


Right hand (R) shown.

Groove width w (mm)	Min. bore dia. øDm (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) øDs	f	L1	h
3	25	S20Q-CGTR/L30	●	●	GE30,GN30,GT30 GR30,GE30-AL	3.5	20	14.5	180	18
	32	S25R-CGTR/L30	●	●		5	25	18.5	200	23
4	32	S25R-CGTR/L40	●	●	GE40,GN40,GT40 GR40,GE40-AL	5				
	40	S32S-CGTR/L40	●	●		6	32	23	250	30
5	32	S25R-CGTR/L50	●	●	GE50,GN50 GT50,GR50	5	25	18.5	200	23
	40	S32S-CGTR/L50	●	●		6	32	23	250	30

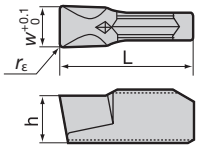
Applicable inserts

For general grooving



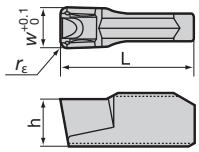
Cat. No.	Grades Coated T9125	GH730	Cermet NS530	NS730	Dimensions (mm) w	L	h	rε
GE30	●	●	●	●	3	10	3.5	0.2
GE40	●	●	●	●	4		4.0	
GE50	●	●	●	●	5	12	4.5	

For internal grooving



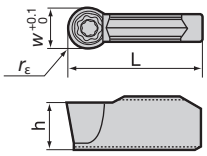
Cat. No.	Grades Coated T9125	GH730	Cermet NS530	NS730	Dimensions (mm) w	L	h	rε
GN30		●	●	●	3	10	3.5	0.2
GN40		●	●	●	4		4.0	
GN50		●	●	●	5	12	4.5	

For internal traversing



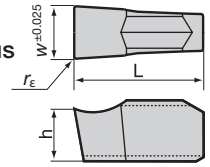
Cat. No.	Grades Coated T9125	GH730	Cermet NS530	NS730	Dimensions (mm) w	L	h	rε
GT30		●	●	●	3	10	3.5	0.4
GT40		●	●	●	4		4.0	
GT50	●	●	●	●	5	12	4.5	

For internal profiling



Cat. No.	Grades Coated T9125	GH730	Cermet NS530	NS730	Dimensions (mm) w	L	h	rε
GR30		●	●	●	3	10	3.5	1.5
GR40	●	●	●	●	4		4.0	2.0
GR50	●	●	●	●	5	12	4.5	2.5

For aluminium and non-ferrous metals



Cat. No.	Grades Uncoated KS05F	Dimensions (mm) w	L	h	rε
GE30-AL	●	3	10	3.5	0.2
GE40-AL	●	4		4.0	

Parts

Cat. No.	Clamping screw	Wrench
S□□□-CGTR/L□□	BHM5-14	P-3

● : Stocked items.

Standard cutting conditions

Work materials	Recommended grade	Cutting speed v_c (m/min)
Low carbon steels Alloy steels (~ HB150)	T9125	80 ~ 200
	NS730	100 ~ 200
	GH730	50 ~ 180
Medium carbon steels Alloy steels (HB150 ~ 250)	T9125	80 ~ 180
	NS730	80 ~ 180
	GH730	50 ~ 150
High carbon steels Alloy steels (HB250 ~)	T9125	80 ~ 150
	NS730	80 ~ 150
	GH730	50 ~ 120
Stainless steels	T9125	80 ~ 150
	GH730	50 ~ 120
Grey and ductile cast irons	T9125	80 ~ 200
	GH730	50 ~ 180
Aluminium alloys, Non-ferrous metals	KS05F	200 ~ 300

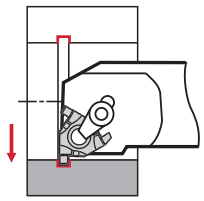
Operation	Feed: f (mm/rev) Groove width: W (mm) 3	4	5
Internal Grooving (GE□□)	0.04 ~ 0.14	0.05 ~ 0.15	0.05 ~ 0.16
Internal Grooving (GN□□)	0.04 ~ 0.16	0.05 ~ 0.18	0.05 ~ 0.20
Internal Traversing (GT□□)	ap = 0.5 ~ 1.5 f = 0.06 ~ 0.2	ap = 0.5 ~ 2.0 f = 0.06 ~ 0.25	ap = 0.5 ~ 2.5 f = 0.06 ~ 0.27
Internal Traversing (GR□□)	ap = 0.5 ~ 1.4 f = 0.05 ~ 0.25	ap = 0.5 ~ 1.5 f = 0.05 ~ 0.26	ap = 0.5 ~ 1.6 f = 0.05 ~ 0.3
Internal Grooving for Aluminium alloys (GE□□-AL)	0.03 ~ 0.1	0.03 ~ 0.1	–

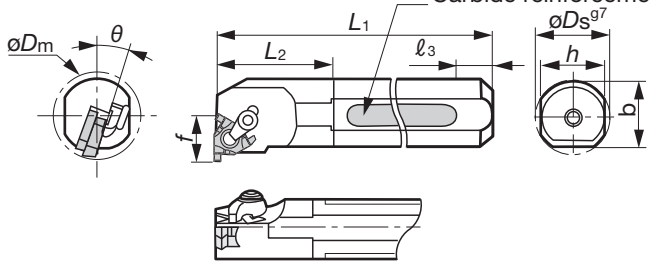
Notes: • For diameter compensation values in traversing, see page 6-39.
• For occurrence of vibrations in traversing, set the feed to the lower side of the values show in the above table.

CN / GTGN

Width 1~2.25 mm | Max. groove depth ≤ 1.8 mm | 3 Corners

Internal grooving
CN R/L





* When using the GTGN insert, the exclusive shim shown in the table must be used. Exclusive shim should be ordered separately.

Right hand (R) shown.

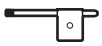
Tsuppari-Ichiban with carbide reinforcement Screw-on, clamp-on type

Cat. No	Stock	Dimensions (mm)								θ	Insert	Shim *
		Min. bore dia. øDm	øDs	f	L1	L2	ℓ3	h	b			
TCNR0020R16DT	●	24	20	14	200	30	49	18	-	15°	GTGN-16EL/IR□□□	G16EL/IR-DT
TCNR0025S16DT	●	29	25	16.5	250	38	64	23	-	15°	GTGN-16EL/IR□□□	G16EL/IR-DT

Steel shank Clamp-on type

Cat. No	Stock	Dimensions (mm)								θ	Insert	Shim *
		Min. bore dia. øDm	øDs	f	L1	L2	ℓ3	h	b			
CNR0020P16	●	24	20	14	170	30	-	18	19	15°	GTGN-16EL/IR□□□	G16EL/IR-S
CNL0020P16	●	24	20	14	170	30	-	18	19	15°	GTGN-16ER/IL□□□	G16ER/IL-S
CNR0025R16	●	29	25	16.5	200	38	-	23	24	15°	GTGN-16EL/IR□□□	G16EL/IR-S
CNL0025R16	●	29	25	16.5	200	38	-	23	24	15°	GTGN-16ER/IL□□□	G16ER/IL-S
CNR0032S16	●	37	32	20.1	250	48	-	30	31	15°	GTGN-16EL/IR□□□	G16EL/IR-S
CNL0032S16	●	37	32	20.1	250	48	-	30	31	15°	GTGN-16ER/IL□□□	G16ER/IL-S

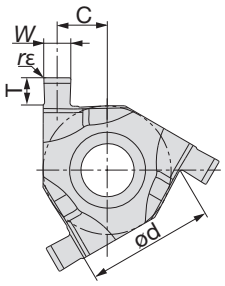
● : Stocked items

Cat. No	Clamp set	Shim screw	Clamping screw	Wrench
				
TCNR/L0020R16DT	CSP16	DTS5-3.5	CSTB-3.5ST	T-15F P-3.5
TCNR/L0025S16DT				
CNR/L0020P16		-	-	T-15F
CNR/L0025R16				
CNR/L0032S16				

Shim

Cat. No.	Toolholder		Insert
	Type	Internal	
G16ER/IL-DT	Screw-on Clamp-on	TCNL□□□□□16DT	GTGN-16ER/IL□□□
G16EL/IR-DT		TCNR□□□□□16DT	GTGN-16EL/IR□□□
G16ER/IL-S	Clamp-on	CNL□□□□□16	GTGN-16ER/IL□□□
G16EL/IR-S		CNR□□□□□16	GTGN-16EL/IR□□□

Relating pages | Parts (14–1~)



Right hand (R) shown.

Insert size	Groove width W ± 0.03 (mm)	Cat. No.	Grade	Dimensions (mm)				Shim	
			Coated SH730	ød	Max. groove depth T	rε	Center of width C	Dual method clamp type; Screw-on/ Clamp-on	Clamp-on type
16	1.00	**GTGN-16ER/IL100**	●	9.525	1.25	0.1	4.22	G16ER/IL-DT	G16ER/IL-S
	1.20	**GTGN-16ER/IL120**	●		1.30		4.12		
	1.40	**GTGN-16ER/IL140**	●		1.50		4.02		
	1.70	**GTGN-16ER/IL170**	●		1.70		3.87		
	1.95	**GTGN-16ER/IL195**	●		1.70		3.75		
	2.25	**GTGN-16ER/IL225**	●		1.80		3.60		
16	1.00	**GTGN-16EL/IR100**	●	9.525	1.25	0.1	4.22	G16EL/IR-DT	G16EL/IR-S
	1.20	**GTGN-16EL/IR120**	●		1.30		4.12		
	1.40	**GTGN-16EL/IR140**	●		1.50		4.02		
	1.70	**GTGN-16EL/IR170**	●		1.70		3.87		
	1.95	**GTGN-16EL/IR195**	●		1.70		3.75		
	2.25	**GTGN-16EL/IR225**	●		1.80		3.60		

Note: GTGN insert is applicable for both external and internal grooving, but the hand of tool is opposite in external and internal machining. Shim for GTGN is exclusive to each type of toolholders

Packing quantity = 10 pcs

Standard cutting conditions

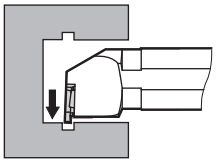
Work materials	Grades	Cutting speed Vc (m/min)	Feed f (mm/rev)
Steels S45C, SCM440 etc. (C45, 42CrMo4 etc.)	**SH730**	50 - 150	0.05 - 0.10
Stainless steels SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)		30 - 150	0.05 - 0.10
Heat-resistant alloys, Titanium alloys etc. (Ti-6Al-4V etc.)		30 - 100	0.05 - 0.10

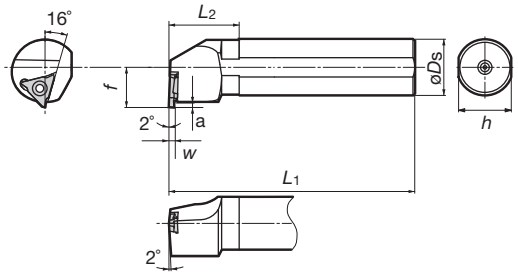
Relating pages
Parts (14–1~)

SGT

Width 0.33~4.5mm | Max. Groove Depth ≤0.8mm, ≤ 2.5mm | 3 Corners | Screw-on type

Internal grooving
SGT R/L





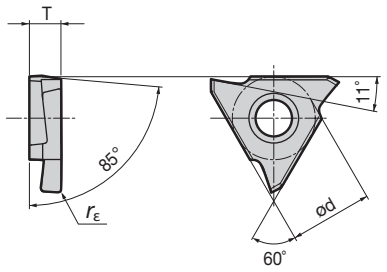
Right hand (R) shown.

Groove width W (mm)	Min. bore dia. øDm (mm)	Cat. No.	Applicable inserts	Max. groove depth (mm)	Stock R	Stock L	L1	L2	f	øDs	h1	a
0.33 ~ 2.5	ø35	S25R-SGTR/L16	GBL/R32□□□	2	●	●	200	30	17.5	25	23	2.5
1.25 ~ 4.5	ø40	S32S-SGTR/L22	GBL/R43□□□(R)	2.5	●	●	250	30	23	32	30	3.0

Note: When using a right or left hand insert, the right hand insert is used with left hand toolholder and the left hand insert is used with right hand toolholder.

Applicable inserts

GBL/R32

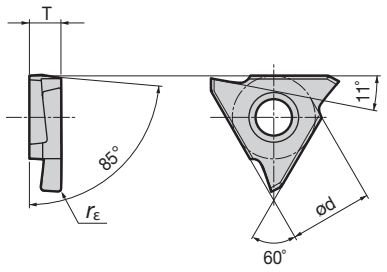


Right hand (R) shown.

W±0.025	Max. groove depth (mm)	rε	ød	T	Insert Cat. No.	Grades: Coated AH710 R	Coated AH710 L	Cermet NS730 R	Cermet NS730 L	Uncoated KS05F R	Uncoated KS05F L
0.33	0.8	0.03	9.525	3.18	GBL/R32033	●	●	●	●	●	
0.5	1.2	0.05			GBL/R32050	●	●	●	●	●	
0.75	2	0.05			GBL/R32075	●	●	●	●	●	
0.95	2	0.05			GBL/R32095	●	●	●	●	●	
1	2	0.05			GBL/R32100	●	●	●	●	●	
1.25	2	0.2			GBL/R32125	●	●	●	●	●	
1.45	2	0.2			GBL/R32145	●	●	●	●	●	
1.5	2	0.2			GBL/R32150	●	●	●	●	●	
2	2.5	0.2			GBL/R32200	●	●	●	●	●	
2.5	2.5	0.2			GBL/R32250	●	●	●	●	●	

Note: S25R-SGTR/L16 Max. groove depth = 2.0 mm

GBL/R43



Right hand (R) shown.

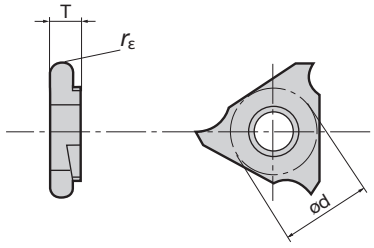
W±0.025	Max. groove depth (mm)	rε	ød	T	Insert Cat. No.	Grades: Coated AH710 R	Coated AH710 L	Cermet NS730 R	Cermet NS730 L	Uncoated KS05F R	Uncoated KS05F L
1.25	2	0.2	12.7	4.76	GBL/R43125	●	●	●	●	●	
1.45	2	0.2	12.7	4.76	GBL/R43145	●	●	●	●	●	
1.5	3.5	0.2	12.7	4.76	GBL/R43150	●	●	●	●	●	
1.75	3.5	0.2	12.7	4.76	GBL/R43175	●	●	●	●	●	
1.85	3.5	0.2	12.7	4.76	GBL/R43185	●	●	●	●	●	
2	3.5	0.2	12.7	4.76	GBL/R43200	●	●	●	●	●	
2.3	3.5	0.2	12.7	4.76	GBL/R43230	●	●	●	●	●	
2.5	5	0.3	12.7	4.76	GBL/R43250	●	●	●	●	●	
2.65	5	0.3	12.7	4.76	GBL/R43265	●	●	●	●	●	
2.8	5	0.3	12.7	4.76	GBL/R43280	●	●	●	●	●	
3	5	0.3	12.7	4.76	GBL/R43300	●	●	●	●	●	
3.3	5	0.3	12.7	4.76	GBL/R43330	●	●	●	●	●	
3.5	5	0.3	12.7	4.76	GBL/R43350	●	●	●	●	●	
4	5	0.4	12.7	4.76	GBL/R43400	●	●	●	●	●	
4.3	5	0.4	12.7	4.76	GBL/R43430	●	●	●	●	●	
4.5	5	0.4	12.7	4.76	GBL/R43450	●	●	●	●	●	

Note: S25R-SGTR/L16 Max. groove depth = 2.5 mm

● : Stocked items.

Features (6-12 ~ 6-13) | Relating pages | Parts (14–1~)

GBL/R43-R



Right hand (R) shown.

Dimensions (mm)					Insert Cat. No.	Grades					
						Coated		Cermet		Uncoated	
						AH710		NS730		KS05F	
$W^{\pm 0.025}$	Max. groove depth (mm)	r_ε	ød	T		R	L	R	L	R	L
1	2	0.5	12.7	4.76	GBL/R43050R	●	●	●	●	●	●
1.5	3.5	0.75			GBL/R43075R	●	●	●	●	●	●
2	3.5	1			GBL/R43100R	●	●	●	●	●	●
2.5	5	1.25			GBL/R43125R	●	●	●	●	●	●
3	5	1.5			GBL/R43150R	●	●	●	●	●	●
4	5	2			GBL/R43200R	●	●	●	●	●	●

Note: S25R-SGTR/L16 Max. groove depth = 2.5 mm

Standard cutting conditions

Work materials	Hardness	Recommended grade	Cutting speed: v_c (m/min)	Feed: f (mm/rev)
Carbon steels, Alloy steels (JIS S45C, SCM415, etc.)	150-240HB	NS730	150 (100-200)	0.1 (0.02-0.25)
		AH710	100 (60-150)	0.15 (0.05-0.25)
Stainless steels (JIS SUS304, etc.)	< 240HB	AH710	80 (60-150)	0.10 (0.05-0.15)
Cast irons (JIS FC250, etc.)	Tensile strength ≤ 350 N/mm^2	AH710	100 (60-150)	0.10 (0.05-0.15)
Non-ferrous metals (Aluminium, etc.)	–	KS05F	250 (200-300)	0.10 (0.05-0.15)

Parts

SGT-type for internal grooving

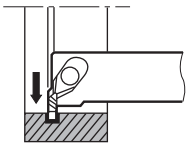
Cat. No.	Parts	
	Clamping screw	Wrench
S25R-SGTR/L16	CSTB-4S	T-15F
S32S-SGTR/L22	CSTB-5S	T-20F

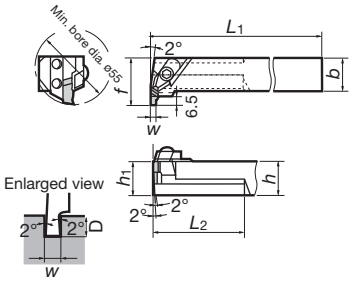
● : Stocked items.

GX-I

Width 1.0~4.5mm | Max. Groove Depth ≤1.5mm, ≤ 6.0mm | 2,1 Corners

Internal grooving GX-R/LI





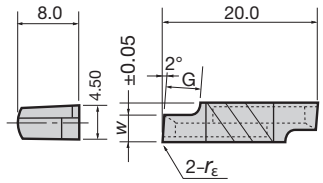
Right hand (R) shown.

Max. groove width W (mm)	Min. bore dia. øDm (mm)	Cat. No.	Stock R	Stock L	Applicable inserts	Max. groove depth (mm)	Dimensions (mm) h_1	b	h	L_1	L_2	f	f_1
4.5	55	GX-2020R/LI			XGL/R63□□	6	20	20	20	160	60	35	–
		GX-2525R/LI	●	●			25	25	25	200	70		

Note: • Max. groove width and max. groove depth shown in the above table are the values when the insert with the largest cutting edge width is used.

Inserts

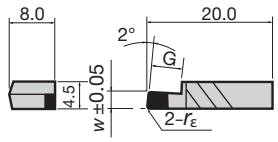
XGR/L



Right hand (R) shown.

W±0.05	Max.Groove depth	G	rε	Cat. No.	Grades: Cermet NS530 R	NS530 L	Uncoated TH10 R	TH10 L	UX30 R	UX30 L	TX10S R	TX10S L
1	1.5	1.8	0	XGR/L6310S								
			0.2	XGR/L6310-02	●	●	●	●	●	●	●	
1.5	2.3	2.5	0	XGR/L6315S								
			0.2	XGR/L6315-02	●	●	●	●	●	●	●	
2	3	3.2	0	XGR/L6320S								
			0.2	XGR/L6320-02	●	●	●	●	●	●	●	●
2.5	3.8	3.9	0	XGR/L6325S								
			0.2	XGR/L6325-02	●	●	●	●	●	●	●	●
3	4.5	4.6	0	XGR/L6330S								
			0.2	XGR/L6330-02	●	●	●	●	●	●	●	●
3.5	5.3	5.4	0	XGR/L6335S								
			0.2	XGR/L6335-02	●	●	●	●	●	●	●	●
4	6	6.1	0	XGR/L6340S								
			0.2	XGR/L6340-02	●	●	●	●	●	●	●	●
4.5			0	XGR/L6345S								
			0.2	XGR/L6345-02	●	●	●	●	●	●	●	

XGR/L-QBN



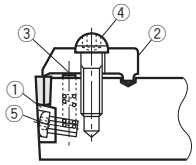
Right hand (R) shown.

W±0.05	Max.Groove depth	G	rε	Cat. No.	T-CBN BX360 R	BX360 L
1	1.5	2.5	0.2	XGR/L6310S-QBN		
1.5	2.3			XGR/L6315S-QBN	●	
2	3	3.2		XGR/L6320S-QBN	●	
2.5	3.8	3.9		XGR/L6325S-QBN	●	
3	4.5	4.6		XGR/L6330S-QBN	●	
3.5	5.3	5.4		XGR/L6335S-QBN	●	
4	6	6.1		XGR/L6340S-QBN	●	
4.5				XGR/L6345S-QBN	●	

Note: • When using a right or left hand insert, the right hand insert is used with left hand toolholder and the left hand insert is used with right hand toolholder.

Packing Quantity=1pc.

Parts



Cat. No.	Parts ①Shim	Clamp set	④Clamping screw	⑤Shim screw	Wrench
GX-2020R/LI	SL-7R/L	CP81B (②ClampCP81 ③Pusher BP-0 Spring)	RT-1	BHM4-8	P-4
GX-2525R/LI	SL-2R/L			BHM3-8	

Standard cutting conditions

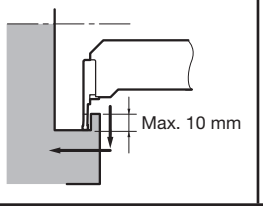
Work materials	Grades	Cutting speed v_c (m/min)	Feed f (mm/rev) $W \leq 2$ mm	$W = 2 \sim 4$ mm	$W \geq 4$ mm
Carbon steels	NS530	80 ~ 200	0.05 ~ 0.1	0.08 ~ 0.2	0.08 ~ 0.25
	TX10S	60 ~ 150			
	UX30				
Cast irons, Light alloys	TH10	60 ~ 150	0.05 ~ 0.1	0.08 ~ 0.2	0.08 ~ 0.25
Hardened steels	BX360	50 ~ 180	0.05 ~ 0.15	0.05 ~ 0.15	0.05 ~ 0.15

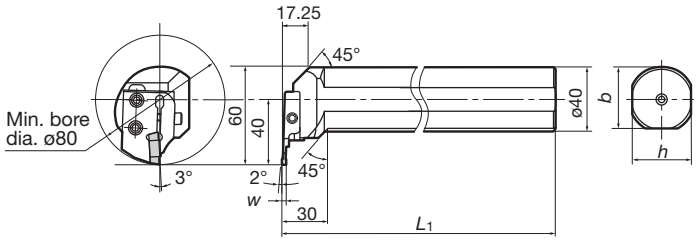
● : Stocked items.

CGWT

Width 3.0mm | Max. Groove Depth ≤10.0mm | 2 Corners | T: Horizontal type

Internal Grooving
CGWT R/L





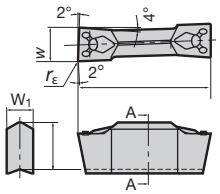
Right hand (R) shown.

Toolholders (T: Horizontal type)

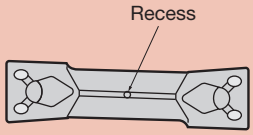
Groove width W (mm)	Min. bore dia. øDm (mm)	Shank and blade ass'y Cat. No.	Stock R	Stock L	Applicable insert	Max. groove depth (mm)	Dimensions (mm) f	h	b	L_1	ℓ	Parts: Shank①	Stock R	Stock L	Blade set②	Stock R	Stock L
3	80	CGWTR/L0040-FLL/R3NP	●	●	FLEX30L/R	10	–	37.5	37	180	–	CGWTR/L0040	●	●	FLL/R3NP	●	●

Notes: • Special shank of blade for FLEX type.
• When using a right or left hand blade set, the right hand blade set is used with left hand shank and the left hand blade set is used with right hand shank.

Applicable inserts



Right hand (R) shown.



Left hand inserts are identified with a recessed dot.

Dimensions (mm) W	r_ε	W1	Hand	Cat. No.	Grades: Coated T9125	Cermet NS530	
3	0.4	2.15	R	FLEX30R		●	
			L	FLEX30L		●	

Note: • When using a right or left insert, the right hand insert is used with right hand blade set and the left hand insert is used with left hand bladeset.

Parts

Cat. No.	Clamping screw	Blade fixing screw	Wrench
CGWTR/L0040-FLL/R3NP	CHHM5-18	CSHB-6	P-4

● : Stocked items.

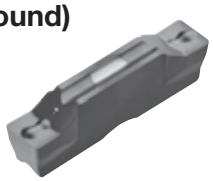
Guideline for ordering special inserts

Specially designed inserts are available upon request.

Acceptable specification

- *Specialized inserts must be manufactured from the main insert styles shown below.*
- **AH725, GH130** *and the* **TH10** *grades are available.*

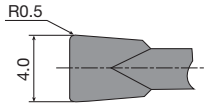
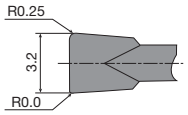
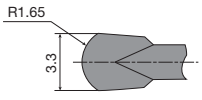
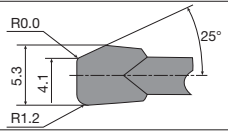
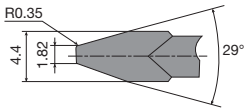
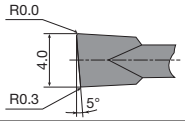
※ *Please contact Tungaloy for more details.*

External grooving & traversing		External grooving & traversing	Profiling & undercutting	
DTE (Ground)	**DGE (Ground)**	**DTI (Ground)**	**DTR (Ground)**	**DTIU (Ground)**
				

Designation system for special inserts (sample)

DTE	320	-	000R-025L	AH725
❶ Main style of insert	❷ Max. width of insert		❸ Additional codes	❹ Grade

Sample of shape

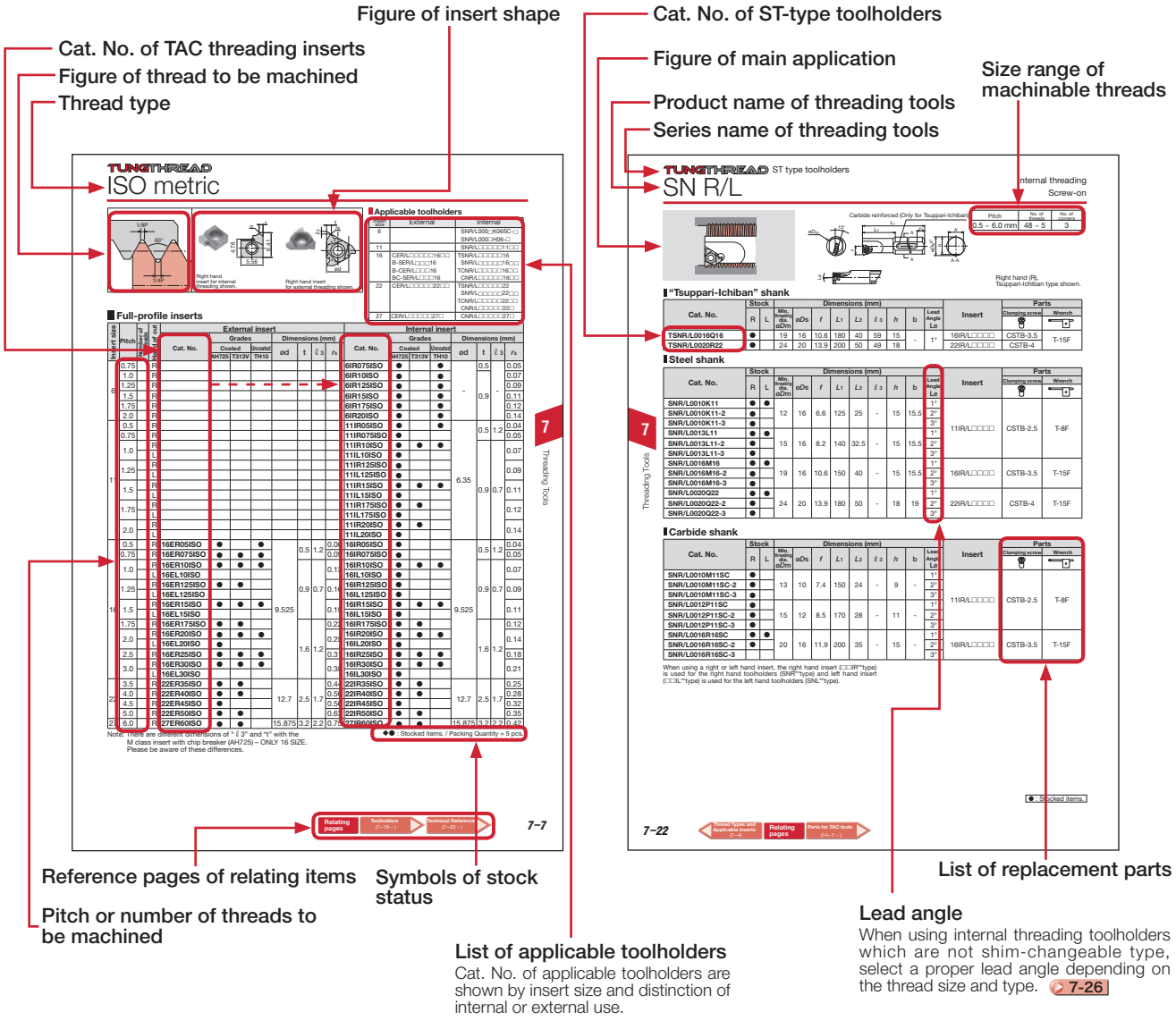
Shape	Samples of designation	Notes
	**DTE400-050 GH130**	Main style: DTE type Special corner radius
	**DTE320-000R025L AH725**	Main style: DTE type Special corner radius, asymmetric type
	**DTR330-165 TH10**	Main style: DTR type Full radius type with special insert width
	**DTE530-120R-25LA TH10**	Main style: DTE type Special figure of groove, asymmetric type
	**DTE440-035-29A TH10**	Main style: DTE type Special figure of groove
	**DTE400-030R-005RA TH10**	Main style: DTE type Right handed insert with special angle and corner radius.

MEMO

Chapter Composition of Threading Tools

◆Series are arranged as follows: SN-type threading tools for small diameter threads → ST-type threading tools → TT-type threading tools →Thread milling cutters

◆In each series, toolholders and inserts are arranged by the thread types to be machined.



■Ordering information

- When ordering a threading toolholder, please specify Cat. No. and quantity.
  Example: **TSNR0020R22 1** piece.
  - Standard packing quantity of threading toolholders is 1 piece.
- When ordering threading inserts, please specify Cat. No., grade, and quantity.
  Example: **16IR15ISO T313V 15** pieces.
  - Standard packing quantity of threading inserts is 5 pieces.

Guidance

- Designation system for TAC threading tools ····· 7–2
- Threading tools overview ····· 7–3
- Thread types and applicable inserts ····· 7–4
- Chipbreaker series ····· 7–6
- Threading methods and combinations ····· 7–24
- Fundamentals of screw threads ····· 7–25
- Shim replacement method ····· 7–26
- Selection of ST-type toolholders ····· 7–28
- Standard cutting conditions ····· 7–37
- Infeed methods in threading ····· 7–37
- Table of infeed and number of passes ····· 7–38
- Designation system for TAC threading tools (TT-type) ····· 7-40
- Troubleshooting in threading ····· 7–46

7 Threading Tools

Products

■ threading inserts

- ISO metric — full-profile inserts ····· 7–7
- Unified — full-profile inserts ····· 7–9
- 60° metric — partial-profile inserts ····· 7–10
- 55° Whitworth — full-profile inserts ····· 7–11
- 55° — partial-profile inserts ····· 7–12
- PT — full-profile inserts ····· 7–13
- NPT — full-profile inserts ····· 7–14
- NPTF — full-profile inserts ····· 7–14
- 30° Trapezoidal ····· 7–15
- 29° Trapezoidal ····· 7–15
- Round — full-profile inserts ····· 7–16
- Buttress — full-profile inserts ····· 7–16
- Round (DIN405) — full-profile inserts ····· 7–17
- Aerospace — full-profile inserts ····· 7–17

■ threading toolholders

- CER/L type — external toolholders ····· 7–19
- B-S/C E R/L — external toolholders ····· 7–20
- BC-SE R/L — external toolholders ····· 7–21
- BLM — sleeves ····· 7–21
- SNR/L type — internal toolholders (ø12 ~) ····· 7–22
- CNR/L type — internal toolholders (ø24 ~) ····· 7–23

■ TT-type threading tools

- 60° metric — partial-profile inserts ····· 7–40
- 55° Whitworth — partial-profile inserts ····· 7-40
- TT-type toolholders ····· 7-41

■ J series threading tools for small lathes

- JSTTR/L, JS-TTL3 type external toolholders and JTT type inserts ····· 7–42
- JSXBR/L type external toolholders and JXT □ R/L type inserts ····· 7–43

■ Threading mills

- Threading mills (Single tooth type) for 60° threads ····· 7-44

Designation System for TAC Threading Tools

Inserts

16 I R 175 ISO - B

① ② ③ ④ ⑤ ⑥

① Insert size

Symbol	I. C. dia (mm)
06	-
11	6.35
16	9.525
22	12.7
27	15.875

② External or Internal

E	External
I	Internal

③ Hand of insert

R	Right hand
L	Left hand

④ Pitch (No. of threads)

Partial-profile inserts	
A	Pitch: 0.5 ~ 1.5 mm TPI: 48 ~ 16
AG	Pitch: 0.5 ~ 3.0 mm TPI: 48 ~ 8
G	Pitch: 1.75 ~ 3.0 mm TPI: 14 ~ 8
N	Pitch: 3.5 ~ 5.0 mm TPI: 7 ~ 5
Z	Pitch: 4.0 ~ 6.0 mm TPI: 6 ~ 4

Full-profile inserts

Metric thread: pitch (mm)×10 or
100 inch: TPI (TPI / 25.4 mm)
(Examples) 05: 0.5 mm pitch×10
175: 1.75 mm pitch×100
14: 14 TPI / 25.4 mm

⑤ Thread type

Partial-profile inserts	
60°	60° thread angle
55°	55° thread angle
TR	30° trapezoidal
ACME	29° trapezoidal
Full-profile inserts	
ISO	Metric
UN	Unified
W	Whitworth
PT	JIS taper pipe
NPT	National pipe
NPTF	National pipe
RAPI	API round
BAPI	API buttress
RD	Round (DIN405)
UNJ	Aerospace

⑥ Chipbreaker

B	With
-	Without

Note: Please identify new designation system for internal inserts.
-i.e."N"→"I"
(Example) Conventional: 16NR15ISO
New: 16IR15ISO

Toolholders for external threading

C E R 25 25 M 16 DT

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Clamping method

C	Clamp-on
S	Screw-on

② External or Internal

E	External

③ Hand of tool

R	Right
L	Left

④ Shank size (mm) Height

⑤ Shank size (mm) Width

⑥ Shank size (mm) Length

H	100	R	200
K	125	S	250
M	150	T	300
N	160	U	350
P	170	V	400

⑦ Insert size

Symbol	I. C. dia (mm)
06	–
11	6.35
16	9.525
22	12.7
27	15.875

⑧

T	With offset
DT	With offset Usable as screw-on or clamp-on type

Toolholders for internal threading

S N R 00 10 K 11 -DT SC -2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

① Clamping method

TC	"Tsuppari-Ichiban", clamp-on
TS	"Tsuppari-Ichiban", screw-on
C	Clamp-on
S	Screw-on

② External or internal

N	Internal

④

00	For internal

⑤ Shank dia (mm)

⑧

DT	With offset. Usable as screw-on or clamp-on type

⑨

SC	Carbide shank

⑩ Lead angle

None	1°
–2	2°
–3	3°

Toolholders for gang tooling

B- S E R 12 K 16

Ⓐ ① ② ③ Ⓑ ⑥ ⑦

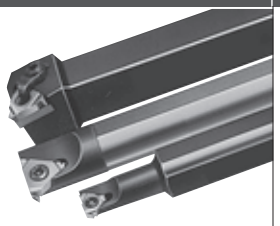
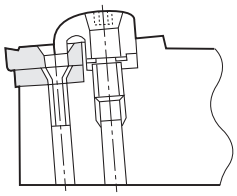
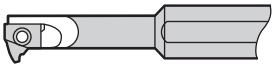
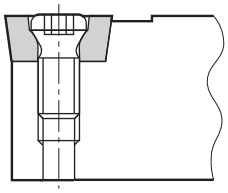
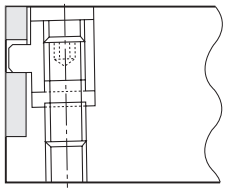
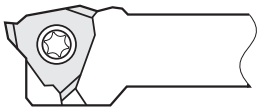
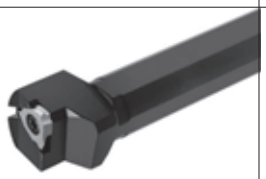
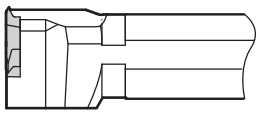
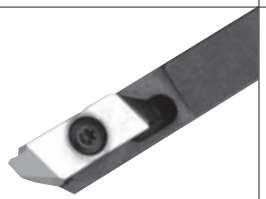
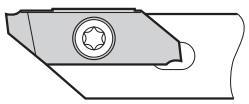
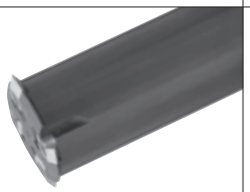
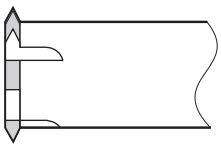
Ⓐ

B-	Single edge type
BC-	Combination type

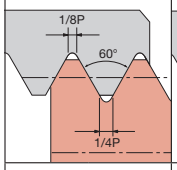
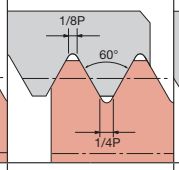
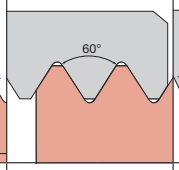
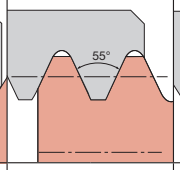
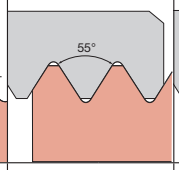
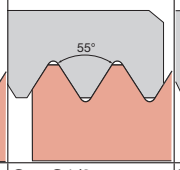
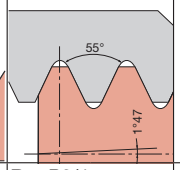
Ⓑ Cutting edge height (mm)

Threading Tool System

Clamping Mechanism and Features

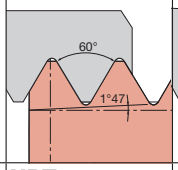
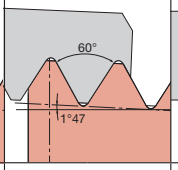
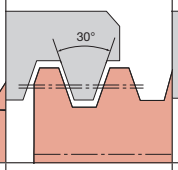
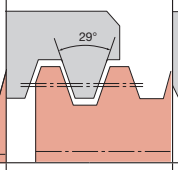
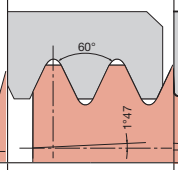
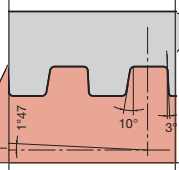
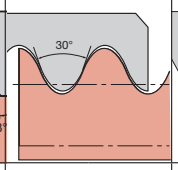
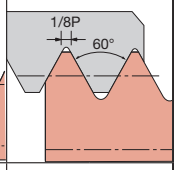
Type	Appearance	Clamping mechanism	Features
ST Screw-on type Clamp-on type		 Clamp-on type shown	● With the unique combination of the clamp and the mouth shape of the insert hole, the insert is held with precision accuracy. ● Specially designed chipbreakers are formed on the insert, achieving free flowing chip control for internal and external threading. ● A variety of insert shapes and sizes are available from stock. 7-19 ~
SN Screw-on type			● Can be applied to internal threads of small diameters (down to M10). ● Full-profile inserts for metric (ISO), Whitworth, Taper pipe (PT) and American pipe (NPT) threads and partial-profile inserts for 60° and 55° thread angles are available as standard. 7-21
TT Pin type Screw-down			● Specially designed clamp mechanism enables the insert to be held securely and accurately in the insert pocket. ● Both 55° and 60° included angles are available as standard stock items. ● Machinable pitch: P ≤ 3 mm. ● Minimum machinable diameter for internal threading is ø50 mm. 7-40
JSTT Screw-on type			● J series threading tools for use on small lathes. ● Toolholders are ground on four faces to maintain stability and accuracy. ● The insert is clamped with a both end torx screw, resulting in easy and rapid changing or indexing of the insert. ● Best suited for threading of small parts. ● Three corner type insert. Applicable for 55 and 60° threads of 0.5 to 1.0 mm pitches. 7-42
JS-TTL3 Screw-on type			● J series threading tools for use on small lathes. ● Best suited for threading of small parts. ● Three corner type insert. Applicable for 55 and 60° threads of 0.5 to 1.0 mm pitches. 7-42
JSXB Screw-on type			● J series threading tools for use on small lathes. ● Toolholders are ground on four faces to maintain stability and accuracy. ● The insert is clamped with a both end torx screw, resulting in easy and rapid changing or indexing of the insert. ● Best suited for threading of small parts. ● Two corner type insert. Applicable for 60° threads of 0.5 to 1.0 mm pitches. Usable for threading to corner. 7-43
Threading mills Single tooth type			● TAC type threading mill. Suitable for machining large diameter threads. ● One thread mill with 60° corner inserts usable for a wide range of thread diameters. ● Used for helical feed threading and can produce high quality threads due to the elimination of chip recutting. 7-44

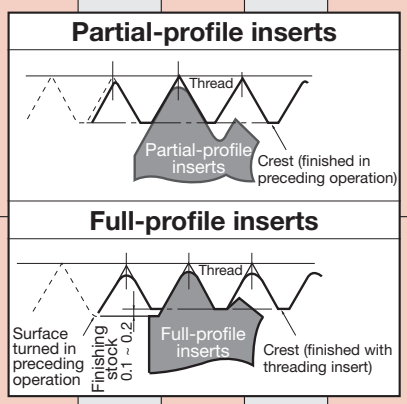
Thread Types and Applicable Inserts

Thread Types		ISO metric 60°		Unified 60°		General 60°		Whitworth 55°		General 55°		Parallel 55°		JIS taper pipe 55°	
															
		M M8 M8x1		**UNC** 3/8-16UNC **UNF** No.8-36UNF **UNEF** 1/4-32UNEF				**W** W3/4 W50/7				**G** G1/2 **PF** PF7 **Rp** Rp3/4 **PS** PS7		**R** R3/4 **PT** PT7 **Rc** Rc3/4	
		Pitch	TPI	Pitch	TPI	Pitch	TPI	Pitch	TPI	Pitch	TPI	Pitch	TPI	Pitch	TPI
External thread	Partial-profile					0.5~1.5 0.5~3 1.75~3 0.5~3 4~6	48~16 48~8 14~8 7~5 6~4			0.5~1.5 0.5~3 1.75~3 0.5~3	48~16 48~8 14~8 7~5				
	Partial-profile with chip-breaker					0.5~1.5 0.5~3 1.75~3	48~16 48~8 14~8			0.5~3 1.75~3	7~5 14~8				
	Full-profile	0.5 0.75 1 1.25 1.5 1.75 2 2.5 3 3.5 4 4.5 5 6		(0.794) (0.907) (1.058) (1.270) (1.411) (1.588) (1.814) (1.954) (2.117) (2.309) (2.540) (2.822) (3.175) (3.629) (4.233) (5.080)	32 28 24 20 18 16 14 13 12 11 10 9 8 7 6 5			(0.907) (0.970) (1.270) (1.411) (1.588) (1.814) (2.117) (2.309) (2.540) (2.822) (3.175) (3.629) (4.233) (5.080)	28 26 20 18 16 14 12 11 10 9 8 7 6 5			(0.907) (0.970) (1.270) (1.411) (1.588) (1.814) (2.117) (2.309) (2.540) (2.822) (3.175) (3.629) (4.233) (5.080)	28 26 20 18 16 14 12 11 10 9 8 7 6 5	(1.337) (1.814) (0.907) (2.309)	19 14 28 11
	Full-profile with chip-breaker	0.5 0.75 1 1.25 1.5 1.75 2 2.5 3		(1.058) (1.270) (1.411) (1.588) (1.814) (1.954) (2.117) (3.175)	24 20 18 16 14 13 12 8			(1.337) (1.588) (1.814) (2.309)	19 16 14 11			(1.337) (1.588) (1.814) (2.309)	19 16 14 11	(1.337) (1.814) (2.309)	19 14 11
Internal thread	Partial-profile					0.5~1.5 0.5~3 1.75~3 0.5~3 4~6	48~16 48~8 14~8 7~5 6~4			0.5~1.5 0.5~3 1.75~3 0.5~3	48~16 48~8 14~8 7~5				
	Partial-profile with chip-breaker					0.5~1.5 0.5~3 1.75~3	48~16 48~8 14~8			0.5~3 1.75~3	7~5 14~8				
	Full-profile	0.5 0.75 1 1.25 1.5 1.75 2 2.5 3 3.5 4 4.5 5 6		(0.794) (0.907) (1.058) (1.270) (1.411) (1.588) (1.814) (1.954) (2.117) (2.309) (2.540) (2.822) (3.175) (3.629) (4.233) (5.080)	32 28 24 20 18 16 14 13 12 11 10 9 8 7 6 5			(1.337) (1.814) (0.907) (0.970) (1.270) (1.411) (1.588) (1.814) (2.117) (2.309) (2.540) (2.822) (3.175) (3.629) (4.233) (5.080)	19 14 28 26 20 18 16 14 12 11 10 9 8 7 6 5	(1.337)	19	(1.337) (1.814) (0.907) (0.970) (1.270) (1.411) (1.588) (1.814) (2.117) (2.309) (2.540) (2.822) (3.175) (3.629) (4.233) (5.080)	19 14 28 26 20 18 16 14 12 11 10 9 8 7 6 5	(1.337) (1.814) (0.907) (2.309)	19 14 28 11
	Full-profile with chip-breaker	0.5 0.75 1 1.25 1.5 1.75 2 2.5 3		(1.058) (1.270) (1.411) (1.588) (1.814) (1.954) (2.117) (3.175)	20 18 16 14 13 12 8			(1.337) (1.588) (1.814) (2.309)	19 16 14 11			(1.337) (1.588) (1.814) (2.309)	19 16 14 11	(1.337) (1.814) (2.309)	19 14 11

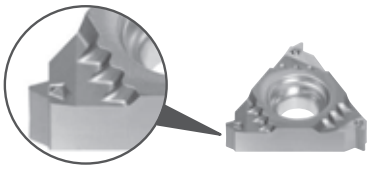
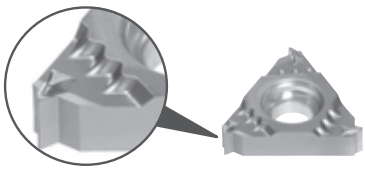
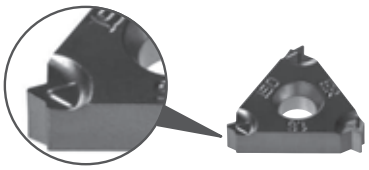
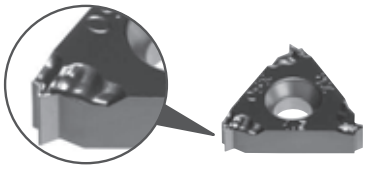
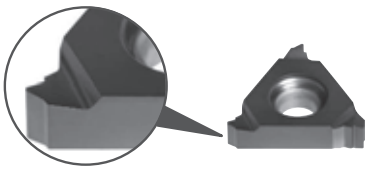
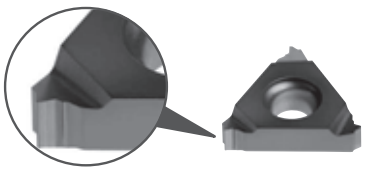
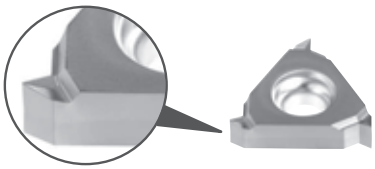
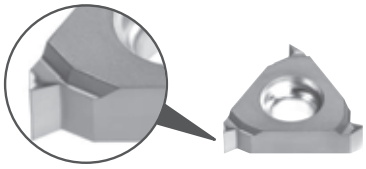
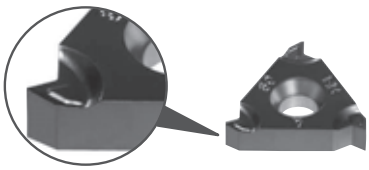
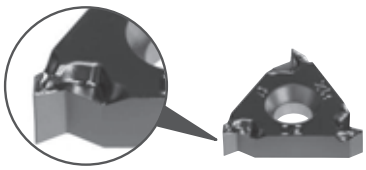
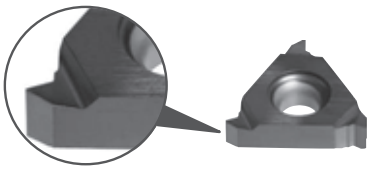
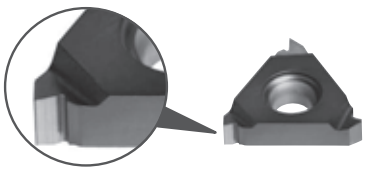
* ( ) is reference

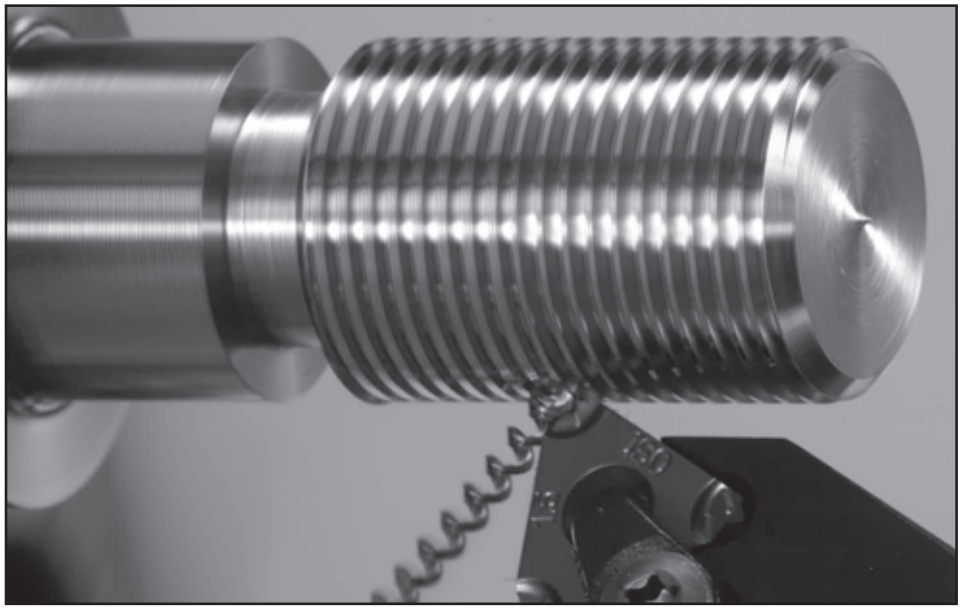
Thread Types and Applicable Inserts

	American National Pipe 60°				Trapezoidal 30°		Trapezoidal 29°		Oil well pipe Round		Oil well pipe Buttress		Round DIN405		Aerospace	
																
	NPT 3/8-18NPT		**NPTF**		**Tr** Tr10x2 **TM** TM10		**TW** TW20 **ACME** 3/8-12ACME		**RAPI**		**BAPI**		**Rd**		**UNJ**	
	Pitch	TPI	Pitch	TPI	Pitch	TPI	Pitch	TPI	Pitch	TPI	Pitch	TPI	Pitch	TPI	Pitch	TPI
Partial-profile					1.5 2 3 4 5 6		(2.117) (2.540) (3.175) (4.233) (5.080)	12 10 8 6 5								
Partial-profile with chip-breaker																
Full-profile	(0.941) (1.411) (1.814) (2.209) (3.175)	27 18 14 11.5 8	(0.941) (1.411) (1.814) (2.209) (3.175)	27 18 14 11.5 8					(2.540) (3.175)	10 8	(2.540)	10				32 28 24 20 18 16 14 12 10 8
Full-profile with chip-breaker	(1.411) (1.814) (2.209) (3.175)	18 14 11.5 8														
Partial-profile					1.5 2 3 4 5		(2.117) (2.540) (3.175) (4.233) (5.080)	12 10 8 6 5								
Partial-profile with chip-breaker																
Full-profile	(0.941) (1.411) (1.814) (2.209) (3.175)	27 18 14 11.5 8	(1.814) (2.209) (3.175)	14 11.5 8					(2.540) (3.175)	10 8	(2.540)	10				
Full-profile with chip-breaker	(1.411) (1.814) (2.209) (3.175)	18 14 11.5 8														

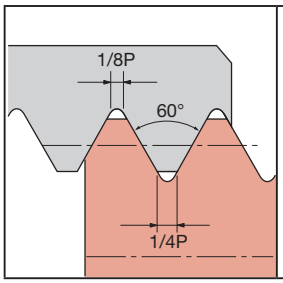


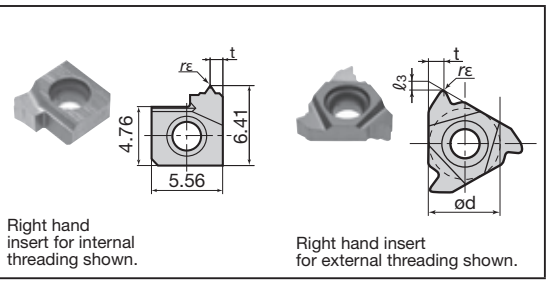
Chipbreaker series

Insert type		Grades	External insert	Internal insert
Full-profile inserts	With chipbreaker	Cermet		
		Coated		
	Without chipbreaker	Coated, Coated carbide		
Partial-profile inserts	With chipbreaker	Cermet		
		Coated		
	Without chipbreaker	Coated, Coated carbide		



ISO metric





Right hand insert for internal threading shown.

Right hand insert for external threading shown.

Applicable toolholders

Insert size	External	Internal
6		SNR/L000□K06SC-□ SNR/L000□H06-□
11		SNR/L□□□□□11□□
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□
27	CER/L□□□□□27□	CNR/L□□□□□27□

Full-profile inserts

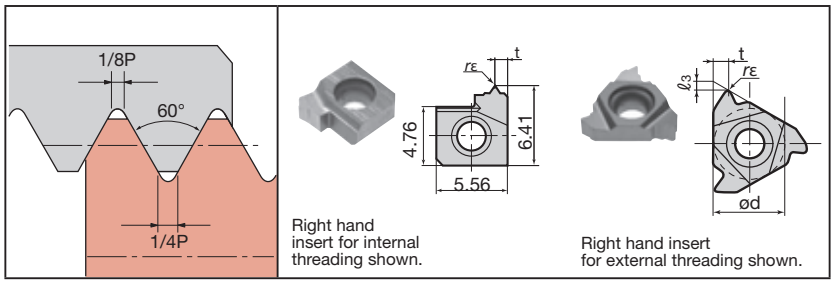
Insert size	Pitch	Number of threads	Hand of cut	External insert									Internal insert							
				Cat. No.	Grades			Dimensions (mm)					Cat. No.	Grades			Dimensions (mm)			
					Coated		Uncoated	ød	t	ℓ3	rε			Coated		Uncoated	ød	t	ℓ3	rε
					AH725	T313V	TH10							AH725	T313V	TH10				
6	0.75		R									6IR075ISO	●		●	-	0.5	-	0.05
	1.0		R									6IR10ISO	●		●		0.9		0.07
	1.25		R									6IR125ISO	●		●				0.09
	1.5		R									6IR15ISO	●		●				0.11
	1.75		R									6IR175ISO	●		●				0.12
	2.0		R									6IR20ISO	●		●				0.14
11	0.5		R									11IR05ISO	●		●	6.35	0.5	1.2	0.04
	0.75		R									11IR075ISO	●						0.05
	1.0		R									11IR10ISO	●	●	●		0.9	0.7	0.07
			L									11IL10ISO	●						
	1.25		R									11IR125ISO	●						0.09
			L									11IL125ISO	●						
	1.5		R									11IR15ISO	●	●	●				0.11
			L									11IL15ISO	●						
	1.75		R									11IR175ISO	●	●					0.12
			L									11IL175ISO	●						
	2.0		R									11IR20ISO	●	●					0.14
			L									11IL20ISO	●						
16	0.5		R	16ER05ISO	●		●	9.525	0.5	1.2	0.06	16IR05ISO	●			9.525	0.5	1.2	0.04
	0.75		R	16ER075ISO	●	●	●				0.09	16IR075ISO	●						0.05
	1.0		R	16ER10ISO	●	●	●		0.9	0.7	0.13	16IR10ISO	●	●	●		0.9	0.7	0.07
			L	16EL10ISO								16IL10ISO	●						
	1.25		R	16ER125ISO	●	●					0.16	16IR125ISO	●						0.09
			L	16EL125ISO								16IL125ISO	●						
	1.5		R	16ER15ISO	●	●	●				0.19	16IR15ISO	●	●	●				0.11
			L	16EL15ISO								16IL15ISO	●						
	1.75		R	16ER175ISO	●	●			1.6	1.2	0.22	16IR175ISO	●	●			1.6	1.2	0.12
	2.0		R	16ER20ISO	●	●	●				0.25	16IR20ISO	●	●	●				0.14
			L	16EL20ISO	●							16IL20ISO	●						
	2.5		R	16ER25ISO	●	●	●				0.31	16IR25ISO	●	●	●				0.18
	3.0		R	16ER30ISO	●	●	●				0.38	16IR30ISO	●	●	●				0.21
			L	16EL30ISO								16IL30ISO	●						
22	3.5		R	22ER35ISO	●	●		12.7	2.5	1.7	0.44	22IR35ISO	●	●		12.7	2.5	1.7	0.25
	4.0		R	22ER40ISO	●	●					0.50	22IR40ISO	●	●					0.28
	4.5		R	22ER45ISO	●						0.56	22IR45ISO	●						0.32
	5.0		R	22ER50ISO	●	●					0.63	22IR50ISO	●	●					0.35
27	6.0		R	27ER60ISO	●	●		15.875	3.2	2.2	0.75	27IR60ISO	●	●		15.875	3.2	2.2	0.42

Note: There are different dimensions of " ℓ 3" and "t" with the M class insert with chip breaker (AH725) – ONLY 16 SIZE. Please be aware of these differences.

◆● : Stocked items. / Packing Quantity = 5 pcs.

Relating pages | Toolholders (7–19 ~) | Technical Reference (7–25 ~)

ISO metric



Applicable toolholders

Insert size	External	Internal
6		SNR/L000□K06SC-□ SNR/L000□H06-□
11		SNR/L□□□□□11□□
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□
27	CER/L□□□□□27□	CNR/L□□□□□27□

Full-profile inserts with chipbreaker

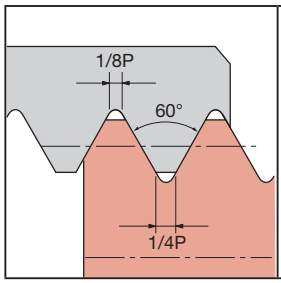
Insert size	Pitch	Number of threads	Hand of cut	External insert								Internal insert						
				Cat. No.	Grades		Dimensions (mm)				Cat. No.	Grades		Dimensions (mm)			
					Coated AH725	Uncoated NS730	ød	t	ℓ 3	r_ε		Coated AH725	Uncoated NS730	ød	t	ℓ 3	r_ε
11	0.5		R								11IR05ISO-B	●	●	6.35	0.5	1.2	0.04
	0.75		R								11IR075ISO-B	●	●				0.05
	1.0		R								11IR10ISO-B	●	●		0.9	0.7	0.08
	1.25		R								11IR125ISO-B	●	●				0.10
	1.5		R								11IR15ISO-B	●	●				0.12
	1.75		R								11IR175ISO-B	●	●				0.12
	2.0		R								11IR20ISO-B	●	●				0.14
16	0.5		R	16ER05ISO-B		●	9.525	0.5	1.2	0.06							
	0.75		R	16ER075ISO-B	◆			0.6	0.6	0.08							
						●		0.5	1.2	0.09							
	1.0		R	16ER10ISO-B	◆			0.7	0.7	0.11	16IR10ISO-B	◆		9.525	0.7	0.6	0.05
						●		0.9	0.7	0.13			●		0.9	0.7	0.08
	1.25		R	16ER125ISO-B	◆			0.9	0.8	0.14	16IR125ISO-B	◆			0.9	0.8	0.07
						●		0.9	0.7	0.16			●		0.9	0.7	0.10
	1.5		R	16ER15ISO-B	◆			1.0	0.8	0.19	16IR15ISO-B	◆			1.0	0.8	0.08
						●		0.9	0.7	0.19	16IR15ISO-B		●		0.9	0.7	0.12
	1.75		R	16ER175ISO-B	◆			1.2	0.9	0.20	16IR175ISO-B	◆			1.2	0.9	0.10
						●		1.6	1.2	0.22	16IR175ISO-B		●		1.6	1.2	0.14
	2.0		R	16ER20ISO-B	◆			1.3	1.0	0.24	16IR20ISO-B	◆			1.3	1.0	0.12
						●		1.6	1.2	0.25	16IR20ISO-B		●		1.6	1.2	0.14
	2.5		R	16ER25ISO-B	◆			1.5	1.1	0.30	16IR25ISO-B	◆			1.5	1.1	0.15
						●		1.6	1.2	0.31			●		1.6	1.2	0.18
	3.0		R	16ER30ISO-B	◆			1.6	1.2	0.38	16IR30ISO-B	◆			1.5	1.1	0.18
						●		1.6	1.2	0.38			●		1.6	1.2	0.21

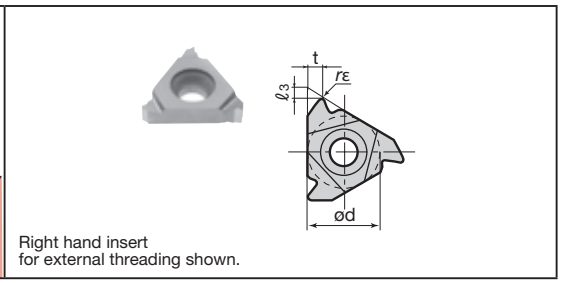
Note: ◆Please be aware of the different dimensions regarding "t" & " ℓ 3".
Required to modify the position of the cutting edge.
Target designation for the replacement of shim.

◆● : Stocked items. / Packing Quantity = 5 pcs.

Relating pages
Toolholders (7–19 ~)
Technical Reference (7–25 ~)

Unified





Right hand insert
for external threading shown.

Applicable toolholders

Insert size	External	Internal
11		SNR/L□□□□□11□□
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□

Full-profile inserts

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert: Cat. No.	Grades: Coated AH725	Grades: Coated T313V	Dimensions (mm): ød	t	ℓ3	rε	Internal insert: Cat. No.	Grades: Coated AH725	Grades: Coated T313V	Dimensions (mm): ød	t	ℓ3	rε
11	(0.794)	32	R								11IR32UN	●		6.35	0.5	1.2	0.06
	(0.907)	28	R								11IR28UN	●					0.06
	(1.058)	24	R								11IR24UN	●			0.9	0.7	0.07
	(1.270)	20	R								11IR20UN	●					0.09
	(1.411)	18	R								11IR18UN	●					0.10
	(1.588)	16	R								11IR16UN	●					0.11
	(1.814)	14	R								11IR14UN	●					0.13
16	(0.794)	32	R	16ER32UN	●		9.525	0.5	1.2	0.10	16IR32UN	●		9.525	0.5	1.2	0.06
	(0.907)	28	R	16ER28UN	●					0.11	16IR28UN	●					0.06
	(1.058)	24	R	16ER24UN	●			0.9	0.7	0.13	16IR24UN	●			0.9	0.7	0.07
	(1.270)	20	R	16ER20UN	●					0.16	16IR20UN	●					0.09
	(1.411)	18	R	16ER18UN	●					0.18	16IR18UN	●					0.10
	(1.588)	16	R	16ER16UN	●	●				0.20	16IR16UN	●	●				0.11
	(1.814)	14	R	16ER14UN	●	●		1.6	1.2	0.23	16IR14UN	●	●		1.6	1.2	0.13
	(1.954)	13	R	16ER13UN	●					0.24	16IR13UN	●					0.14
	(2.117)	12	R	16ER12UN	●	●				0.27	16IR12UN	●	●				0.15
	(2.309)	11	R	16ER11UN	●					0.29	16IR11UN	●					0.16
	(2.540)	10	R	16ER10UN	●					0.32	16IR10UN	●					0.18
	(2.822)	9	R	16ER9UN	●					0.35	16IR9UN	●					0.20
	(3.175)	8	R	16ER8UN	●	●				0.40	16IR8UN	●	●				0.22
22	(3.629)	7	R	22ER7UN	●		12.7	2.5	1.7	0.45	22IR7UN	●		12.7	2.5	1.7	0.25
	(4.233)	6	R	22ER6UN	●					0.53	22IR6UN	●					0.30
	(5.080)	5	R	22ER5UN	●					0.64	22IR5UN	●					0.36

Full-profile inserts with chipbreaker

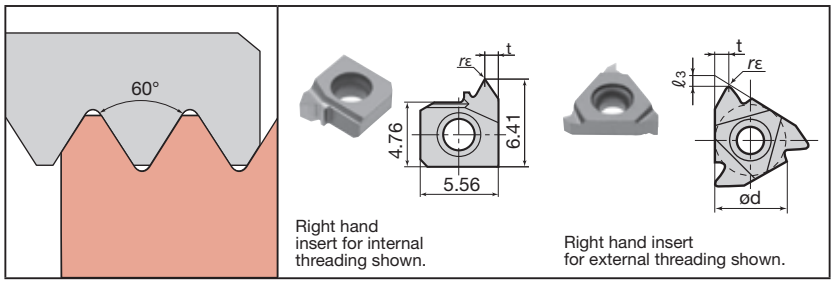
Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert: Cat. No.	Grades: Coated AH725	Grades: Cermet NS730	Dimensions (mm): ød	t	ℓ3	rε	Internal insert: Cat. No.	Grades: Coated AH725	Grades: Cermet NS730	Dimensions (mm): ød	t	ℓ3	rε
16	(1.058)	24	R	16ER24UN-B	◆		9.525	0.8	0.7	0.11							
						●		0.9	0.7	0.13							
	(1.270)	20	R	16ER20UN-B	◆			0.9	0.8	0.14	16IR20UN-B	◆		9.525	0.9	0.8	0.06
						●		0.9	0.7	0.16			●		0.9	0.7	0.09
	(1.411)	18	R	16ER18UN-B	◆			1.0	0.8	0.15	16IR18UN-B	◆			1.0	0.8	0.07
						●		0.9	0.7	0.18	16IR18UN-B		●		0.9	0.7	0.10
	(1.588)	16	R	16ER16UN-B	◆			1.1	0.9	0.19	16IR16UN-B	◆			1.1	0.9	0.09
						●		0.9	0.7	0.20	16IR16UN-B		●		0.9	0.7	0.11
	(1.814)	14	R	16ER14UN-B	◆			1.2	1.0	0.22	16IR14UN-B	◆			1.2	0.9	0.10
						●		1.6	1.2	0.23	16IR14UN-B		●		1.6	1.2	0.13
	(1.954)	13	R	16ER13UN-B	◆			1.3	1.0	0.24							
	(2.117)	12	R	16ER12UN-B	◆			1.4	1.1	0.25	16IR12UN-B	◆		9.525	1.4	1.1	0.12
						●		1.6	1.2	0.27			●		1.6	1.2	0.15
	(3.175)	8	R	16ER8UN-B	◆			1.6	1.2	0.41	16IR8UN-B	◆			1.5	1.1	0.19
						●		1.6	1.2	0.40			●		1.6	1.2	0.22

Note: ◆Please be aware of the different dimensions regarding "t" & "ℓ3".
Required to modify the position of the cutting edge.
Target designation for the replacement of shim.

◆● : Stocked items. / Packing Quantity = 5 pcs.

Relating pages
Toolholders (7–19 ~)
Technical Reference (7–25 ~)

60° thread angle



Right hand insert for internal threading shown.

Right hand insert for external threading shown.

Applicable toolholders

Insert size	External	Internal
6		SNR/L000□K06SC-□ SNR/L000□H06-□
11		SNR/L□□□□□11□□
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□
27	CER/L□□□□□27□	CNR/L□□□□□27□

Partial-profile inserts

Insert size	Pitch	Number of threads	Hand of cut	External insert								Internal insert							
				Cat. No.	Grades			Dimensions (mm)				Cat. No.	Grades			Dimensions (mm)			
					Coated		Uncoated	ød	t	ℓ3	rε		Coated		Uncoated	ød	t	ℓ3	rε
					AH725	T313V	TH10						AH725	T313V	TH10				
6	0.5~1.5	48~16	R									6IRA60	●		●	-	0.9	-	0.04
11	0.5~1.5	48~16	R									11IRA60	●	●	●	6.35	0.9	0.7	0.04
			L									11ILA60	●	●	●				
16	0.5~1.5	48~16	R	16ERA60	●	●	●	9.525	0.9	0.7	0.06	16IRA60	●	●	●	9.525	0.9	0.7	0.04
			L	16ELA60	●	●	●		0.9	0.7	0.06	16ILA60	●	●	●				
	0.5~3.0	48~8	R	16ERAG60	●	●			1.6	1.2	0.06	16IRAG60	●	●			1.6	1.2	0.04
	1.75~3	14~8	R	16ERG60	●	●	●		1.6	1.2	0.22	16IRG60	●	●	●				0.12
			L	16ELG60	●	●			0.5	1.2	0.22	16ILG60	●	●	●				
22	3.5~5	7~5	R	22ERN60	●	●	●	12.7	0.5	1.2	0.44	22IRN60	●	●	●	12.7	2.5	1.7	0.25
			L	22ELN60	●	●			0.5	1.2	0.44	22ILN60	●	●					
27	4~6	6~4	R	27ERZ60	●	●		15.875	0.9	0.7	0.50	27IRZ60	●	●		15.875	3.2	2.2	0.28

Partial-profile inserts with chipbreaker

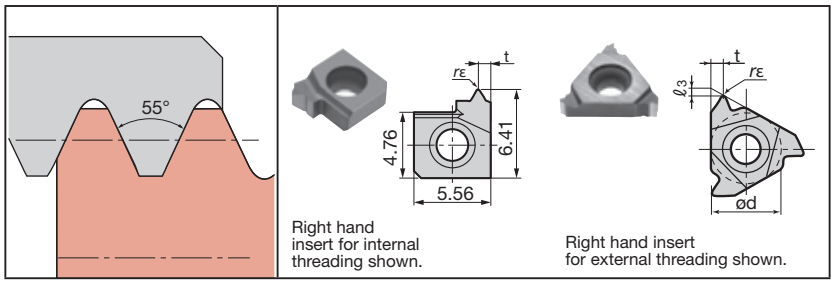
Insert size	Pitch	Number of threads	Hand of cut	External insert							Internal insert							
				Cat. No.	Grades		Dimensions (mm)				Cat. No.	Grades		Dimensions (mm)				
					Coated	Cermet	ød	t	ℓ3	rε		Coated	Cermet	ød	t	ℓ3	rε	
					AH725	NS730						AH725	NS730					
11	0.5~1.5	48~16	R								11IRA60-B	●	●	6.35	0.9	0.7	0.04	
16	0.5~1.5	48~16	R	16ERA60-B	◆		9.525	0.9	0.8	0.05	16IRA60-B	◆		9.525	0.9	0.8	0.05	
				16ERA60-B		●		0.9	0.7	0.06	16IRA60-B		●		1.6	1.1	0.04	
	0.5~3.0	48~8	R	16ERAG60-B	◆			1.7	1.2	0.06	16IRAG60-B	◆			1.7	1.2	0.05	
						●		1.6	1.1	0.06	16IRAG60-B		●		1.6	1.2	0.04	
	1.75~3.0	14~8	R	16ERG60-B	◆			1.7	1.2	0.17	16IRG60-B	◆			1.7	1.2	0.10	
						●		1.6	1.2	0.22	16IRG60-B		●		1.6	1.2	0.14	

Note: ◆Please be aware of the different dimensions regarding "t" & "ℓ3".
Required to modify the position of the cutting edge.
Target designation for the replacement of shim.

◆● : Stocked items. / Packing Quantity = 5 pcs.

Relating pages
Toolholders (7–19 ~)
Technical Reference (7–25 ~)

55° Whitworth



Applicable toolholders

Insert size	External	Internal
6		SNR/L000□K06SC-□ SNR/L000□H06-□
11		SNR/L□□□□□11□□
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□

Full-profile inserts

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert								Internal insert							
				Cat. No.	Grades			Dimensions (mm)				Cat. No.	Grades			Dimensions (mm)			
					Coated		Uncoated	ød	t	ℓ3	r_ε		Coated		Uncoated	ød	t	ℓ3	r_ε
					AH725	T313V	TH10						AH725	T313V	TH10				
6	(1.337)	19	R									**6IR19W**	●		●	-	0.9	-	0.17
11	(1.337)	19	R									**11IR19W**	●	●	●	6.35	0.9	0.7	0.17
	(1.814)	14	R									**11IR14W**	●	●	●				0.23
16	(0.907)	28	R	**16ER28W**	●	●		9.525	0.9	0.7	0.11	**16IR28W**	●			9.525	0.9	0.7	0.11
	(0.97)	26	R	**16ER26W**	●						0.12	**16IR26W**	●						0.12
	(1.27)	20	R	**16ER20W**	●						0.16	**16IR20W**	●						0.16
	(1.337)	19	R	**16ER19W**	●	●					0.17	**16IR19W**	●						0.17
	(1.411)	18	R	**16ER18W**	●						0.18	**16IR18W**	●						0.18
	(1.588)	16	R	**16ER16W**	●	●					0.20	**16IR16W**	●	●					0.20
	(1.814)	14	R	**16ER14W**	●	●	●		1.6	1.2	0.23	**16IR14W**	●	●	●		1.6	1.2	0.23
			L	**16EL14W**	●														
	(2.117)	12	R	**16ER12W**	●	●					0.27	**16IR12W**	●	●					0.27
	(2.309)	11	R	**16ER11W**	●	●	●				0.29	**16IR11W**	●	●	●				0.29
	(2.54)	10	R	**16ER10W**	●	●					0.32	**16IR10W**	●	●			1.6	1.2	0.32
	(2.822)	9	R	**16ER9W**	●						0.35	**16IR9W**	●						0.35
	(3.175)	8	R	**16ER8W**	●	●					0.40	**16IR8W**	●	●					0.40
22	(3.629)	7	R	**22ER7W**	●			12.7	2.5	1.7	0.45	**22IR7W**	●			12.7	2.5	1.7	0.45
	(4.233)	6	R	**22ER6W**	●						0.53	**22IR6W**	●						0.53
	(5.08)	5	R	**22ER5W**	●						0.64	**22IR5W**	●						0.64

Full-profile inserts with chipbreaker

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert							Internal insert							
				Cat. No.	Grades		Dimensions (mm)				Cat. No.	Grades		Dimensions (mm)				
					Coated	Cermet	ød	t	ℓ3	r_ε		Coated	Cermet	ød	t	ℓ3	r_ε	
					AH725	NS730						AH725	NS730					
16	(1.337)	19	R	**16ER19W-B**	◆		9.525	1.0	0.8	0.16								
						●		0.9	0.7	0.17	**16IR19W-B**		●	9.525	0.9	0.7	0.17	
	(1.588)	16	R	**16ER16W-B**	◆			1.1	0.9	0.20	**16IR16W-B**	◆			1.1	0.9	0.20	
	(1.814)	14	R	**16ER14W-B**	◆			1.2	1.0	0.24	**16IR14W-B**	◆			1.2	1.0	0.23	
						●		1.6	1.2	0.23	**16IR14W-B**		●		1.6	1.2	0.23	
	(2.309)	11	R	**16ER11W-B**	◆			1.5	1.1	0.31	**16IR11W-B**	◆			1.5	1.1	0.30	
						●		1.6	1.2	0.29			●		1.6	1.2	0.29	

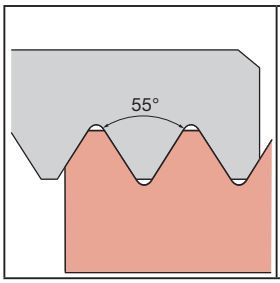
Note: ◆Please be aware of the different dimensions regarding "t" & "ℓ3".
Required to modify the position of the cutting edge.
Target designation for the replacement of shim.

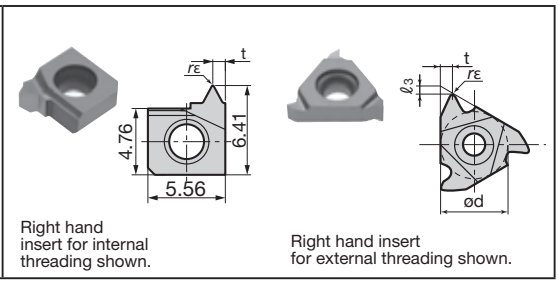
◆● : Stocked items. / Packing Quantity = 5 pcs.

7 Threading Tools

Relating pages | Toolholders (7–19 ~) | Technical Reference (7–25 ~)

55° thread angle





Right hand insert for internal threading shown.

Right hand insert for external threading shown.

Applicable toolholders

Insert size	External	Internal
6		SNR/L000□K06SC-□ SNR/L000□H06-□
11		SNR/L□□□□□11□□
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□

Partial-profile inserts

Insert size	Pitch	Number of threads	Hand of cut	External insert								Internal insert							
				Cat. No.	Grades			Dimensions (mm)				Cat. No.	Grades			Dimensions (mm)			
					Coated		Uncoated	ød	t	ℓ3	rε		Coated		Uncoated	ød	t	ℓ3	rε
					AH725	T313V	TH10						AH725	T313V	TH10				
6	0.5~1.5	48~16	R									**6IRA55**	●		●	-	0.9	-	0.07
11	0.5~1.5	48~16	R									**11IRA55**	●	●	●	6.35	0.9	0.7	0.07
16	0.5~1.5	48~16	R	**16ERA55**	●	●	●	9.525	0.9	0.7	0.07	**16IRA55**	●	●	●	9.525	0.9	0.7	0.07
	0.5~3.0	48~8	R	**16ERAG55**	●				1.7	1.2	0.07	**16IRAG55**	●				1.7	1.2	0.07
	1.75~3.0	14~8	R	**16ERG55**	●	●	●		1.6	1.2	0.25	**16IRG55**	●	●	●		1.7	1.2	0.25
22	0.5~3.0	7~5	R	**22ERN55**	●	●	●	12.7	2.5	1.7	0.50	**22IRN55**	●	●	●	12.7	2.5	1.7	0.50

Partial-profile inserts with chipbreaker

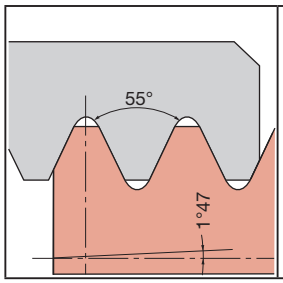
Insert size	Pitch	Number of threads	Hand of cut	External insert						Internal insert						
				Cat. No.	Grades	Dimensions (mm)				Cat. No.	Grades	Dimensions (mm)				
					Coated	ød	t	ℓ3	rε		Coated	ød	t	ℓ3	rε	
					AH725						AH725					
16	0.5~3.0	48~8	R	**16ERAG55-B**	◆	9.525	1.7	1.2	0.06	**16IRAG55-B**	◆	9.525	1.7	1.2	0.07
	1.75~3.0	14~8	R	**16ERG55-B**	◆				0.23	**16IRG55-B**	◆				0.22

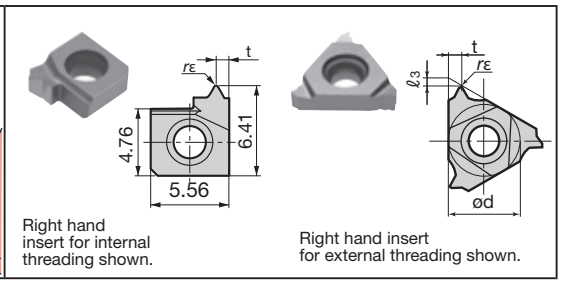
Note: ◆Please be aware of the different dimensions regarding "t" & "ℓ3".
Required to modify the position of the cutting edge.
Target designation for the replacement of shim.

◆● : Stocked items. / Packing Quantity = 5 pcs.

Relating pages
Toolholders (7–19 ~)
Technical Reference (7–25 ~)

PT JIS Taper pipe





Applicable toolholders

Insert size	External	Internal
6		SNR/L000□K06SC-□ SNR/L000□H06-□
11		SNR/L□□□□□11□□
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□

Full-profile inserts

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert								Internal insert							
				Cat. No.	Grades			Dimensions (mm)				Cat. No.	Grades			Dimensions (mm)			
					Coated		Uncoated	ød	t	ℓ3	rε		Coated		Uncoated	ød	t	ℓ3	rε
					AH725	T313V	TH10						AH725	T313V	TH10				
6	(1.337)	19	R									**6IR19PT**	●		●	-	0.9	-	0.14
11	(1.337)	19	R									**11IR19PT**	●	●	●	6.35	0.9	0.7	0.14
	(1.814)	14	R									**11IR14PT**	●	●	●				0.16
16	(0.907)	28	R	**16ER28PT**	●	●		9.525	0.9	0.7	0.09								
	(1.337)	19	R	**16ER19PT**	●	●					0.14	**16IR19PT**	●			9.525	0.9	0.7	0.14
	(1.814)	14	R	**16ER14PT**	●	●			1.6	1.2	0.16	**16IR14PT**	●	●	●		1.6	1.2	0.16
	(2.309)	11	R	**16ER11PT**	●	●					0.26	**16IR11PT**	●	●	●				0.26

Full-profile inserts with chipbreaker

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert							Internal insert							
				Cat. No.	Grades		Dimensions (mm)				Cat. No.	Grades		Dimensions (mm)				
					Coated	Cermet	ød	t	ℓ3	rε		Coated	Cermet	ød	t	ℓ3	rε	
					AH725	NS730						AH725	NS730					
16	(1.337)	19	R	**16ER19PT-B**		●	9.525	0.9	0.7	0.18	**16IR19PT-B**		●	9.525	0.9	0.7	0.18
	(1.814)	14	R	**16ER14PT-B**	◆			1.2	1	-	**16IR14PT-B**	◆			1	0.9	-
						●		1.6	1.2	0.25	**16IR14PT-B**		●		1.6	1.2	0.25
	(2.309)	11	R	**16ER11PT-B**	◆			1.5	1.1	-	**16IR11PT-B**	◆			1.5	1.1	-
						●		1.6	1.2	0.32			●		1.6	1.2	0.32

Note: ◆Please be aware of the different dimensions regarding "t" & "ℓ3".
Required to modify the position of the cutting edge.
Target designation for the replacement of shim.

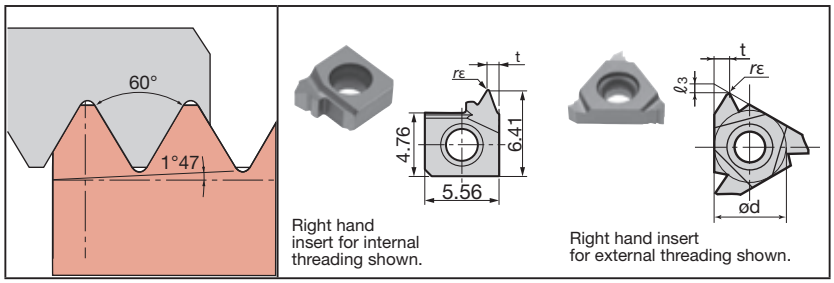
◆● : Stocked items. / Packing Quantity = 5 pcs.

7 Threading Tools

Relating pages
Toolholders (7–19 ~)
Technical Reference (7–25 ~)

TUNGTHREAD

NPT American National Pipe



Applicable toolholders

Insert size	External	Internal
6		SNR/L000□K06SC-□ SNR/L000□H06-□
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□

Full-profile inserts

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert: Cat. No.	Grades: Coated AH725	Grades: Coated T313V	Grades: Uncoated TH10	Dimensions (mm): ød	t	ℓ3	rε	Internal insert: Cat. No.	Grades: Coated AH725	Grades: Coated T313V	Grades: Uncoated TH10	Dimensions (mm): ød	t	ℓ3	rε
6	(1.411)	18	R									6IR18NPT	●		●	-	0.9	-	0.03
16	(0.941)	27	R	16ER27NPT	●			9.525	0.5	1.2	0.02	16IR27NPT	●			9.525	0.5	1.2	0.02
	(1.411)	18	R	16ER18NPT	●	●			0.9	0.7	0.03	16IR18NPT	●				0.9	0.7	0.03
	(1.814)	14	R	16ER14NPT	●						0.04	16IR14NPT	●		●				0.04
	(2.209)	11.5	R	16ER115NPT	●				1.6	1.2	0.05	16IR115NPT	●		●		1.6	1.2	0.05
	(3.175)	8	R	16ER8NPT	●						0.07	16IR8NPT	●		●				0.07

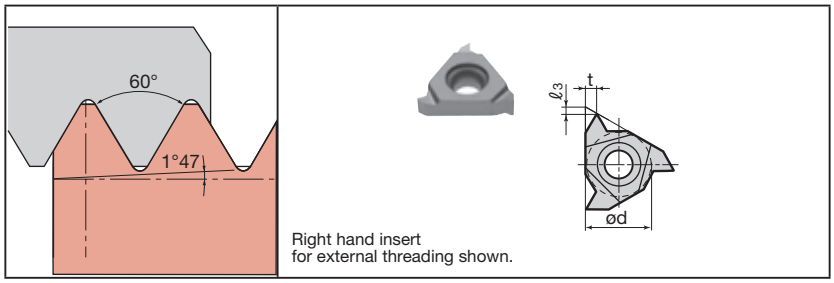
Full-profile inserts with chipbreaker

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert: Cat. No.	Grades: Coated AH725	Grades: Cermet NS730	Dimensions (mm): ød	t	ℓ3	rε	Internal insert: Cat. No.	Grades: Coated AH725	Grades: Cermet NS730	Dimensions (mm): ød	t	ℓ3	rε
16	(1.411)	18	R	16ER18NPT-B	◆		9.525	1	0.8	-				9.525			
						●		0.9	0.7	0.07	16IR18NPT-B		●		0.9	0.7	0.07
	(1.814)	14	R	16ER14NPT-B	◆			1.2	0.9	-	16IR14NPT-B	◆			1.5	1.1	-
						●		1.6	1.2	0.08	16IR14NPT-B		●		1.6	1.2	0.08
	(2.209)	11.5	R	16ER115NPT-B	◆			1.5	1.1	-	16IR115NPT-B	◆			1.2	0.9	-
						●		1.6	1.2	0.09	16IR115NPT-B		●		1.6	1.2	0.09
	(3.175)	8	R	16ER8NPT-B	◆			1.8	1.3	-	16IR8NPT-B	◆			1.8	1.3	-

Note: ◆Please be aware of the different dimensions regarding "t" & "ℓ3". Required to modify the position of the cutting edge. Target designation for the replacement of shim.

TUNGTHREAD

NPTF



Applicable toolholders

Insert size	External	Internal
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□

Full-profile inserts

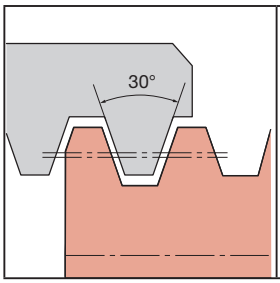
Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert: Cat. No.	Grades: Coated AH725	Dimensions (mm): ød	t	ℓ3	rε	Internal insert: Cat. No.	Grades: Coated AH725	Dimensions (mm): ød	t	ℓ3	rε
16	(0.941)	27	R	16ER27NPTF	●	9.525	0.5	1.2	-			9.525	1.6	1.2	-
	(1.411)	18	R	16ER18NPTF	●		0.9	0.7	-						
	(1.814)	14	R	16ER14NPTF	●		1.6	1.2	-	16IR14NPTF	●				
	(2.209)	11.5	R	16ER115NPTF	●					16IR115NPTF	●				
	(3.175)	8	R	16ER8NPTF	●					16IR8NPTF	●				

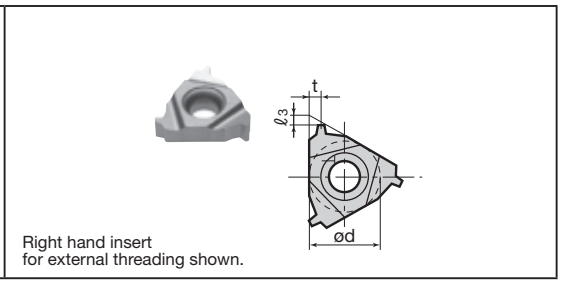
◆● : Stocked items. / Packing Quantity = 5 pcs.

Relating pages
Toolholders (7–19 ~)
Technical Reference (7–25 ~)

TUNGTHREAD

30° Trapezoidal (DIN103)





Right hand insert
for external threading shown.

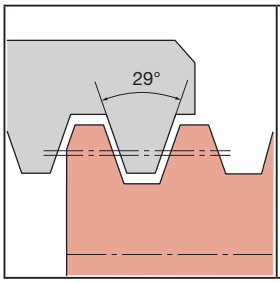
Applicable toolholders

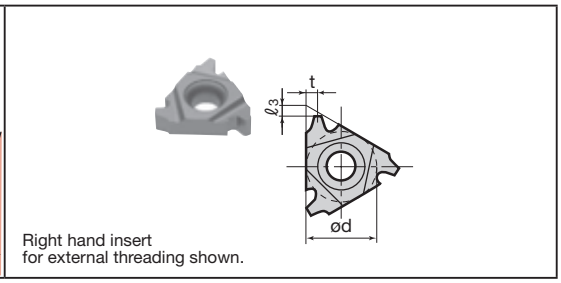
Insert size	External	Internal
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□
27	CER/L□□□□□27□	CNR/L□□□□□27□

Insert size	Pitch	Number of threads	Hand of cut	External insert							Internal insert						
				Cat. No.	Grades		Dimensions (mm)				Cat. No.	Grades		Dimensions (mm)			
					Coated		ød	t	ℓ3	rε		Coated		ød	t	ℓ3	rε
					AH725	T313V						AH725	T313V				
16	1.5		R	**16ER15TR**	●		9.525	0.9	0.7	-	**16IR15TR**	●		9.525	0.9	0.7	-
	2		R	**16ER20TR**	●	●		1.6	1.3		**16IR20TR**	●	●		1.6	1.3	
	3		R	**16ER30TR**	●	●					**16IR30TR**	●	●				
22	4		R	**22ER40TR**	●	●	12.7	2.5	2	-	**22IR40TR**	●	●	12.7	2.5	2	-
	5		R	**22ER50TR**	●	●					**22IR50TR**	●	●				
27	6		R	**27ER60TR**	●	●	15.875	3.2	2.5	-							

TUNGTHREAD

29° Trapezoidal (ACME)





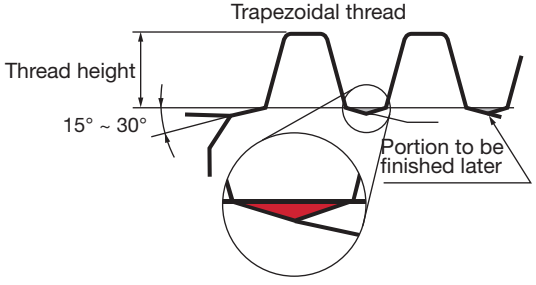
Right hand insert
for external threading shown.

Applicable toolholders

Insert size	External	Internal
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert							Internal insert						
				Cat. No.	Grades		Dimensions (mm)				Cat. No.	Grades		Dimensions (mm)			
					Coated		ød	t	ℓ3	rε		Coated		ød	t	ℓ3	rε
					AH725	T313V						AH725	T313V				
16	(2.117)	12	R	**16ER12ACME**	●		9.525	1.6	1.3	-	**16IR12ACME**	●		9.525	1.6	1.3	-
	(2.540)	10	R	**16ER10ACME**	●						**16IR10ACME**	●					
	(3.175)	8	R	**16ER8ACME**	●	●					**16IR8ACME**	●	●				
22	(4.233)	6	R	**22ER6ACME**	●	●	12.7	2.5	2	-	**22IR6ACME**	●	●	12.7	2.5	2	-
	(5.080)	5	R	**22ER5ACME**	●	●					**22IR5ACME**	●	●				

● When machining trapezoidal threads:

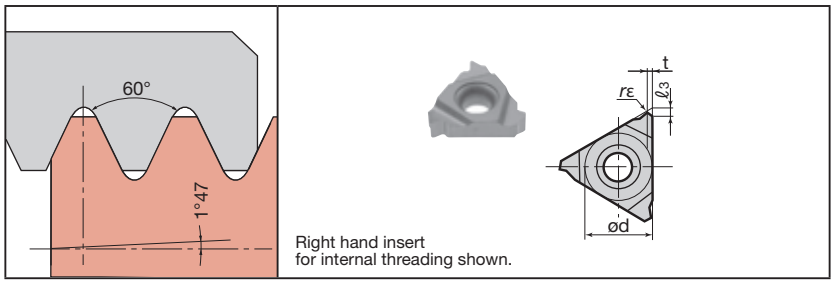


In trapezoidal threads, since slants of 15° to 30° are left on the crest of the thread as shown in Figure below, these portions must be finished later.
Burrless threads can be produced with the full-profile insert.

◆● : Stocked items. / Packing Quantity = 5 pcs.

TUNGTHREAD

Round (API 5B)



Applicable toolholders

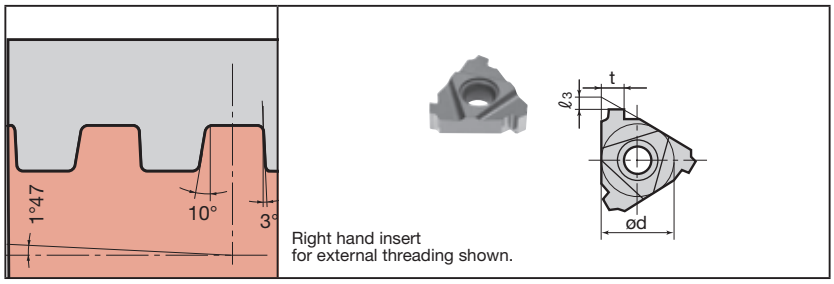
Insert size	External	Internal
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□

Full-profile inserts

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert							Internal insert						
				Cat. No.	Grades		Dimensions (mm)				Cat. No.	Grades		Dimensions (mm)			
					Coated		ød	t	ℓ3	rε		Coated		ød	t	ℓ3	rε
					AH725	T313V						AH725	T313V				
16	(2.54)	10	R	**16ER10RAPI**	●		9.525	1.6	1.2	0.36	**16IR10RAPI**	●	●	9.525	1.6	1.2	0.36
	(3.175)	8	R	**16ER8RAPI**	●					0.43	**16IR8RAPI**	●	●				0.43

TUNGTHREAD

Buttress (API 5B)



Applicable toolholders

Insert size	External	Internal
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□

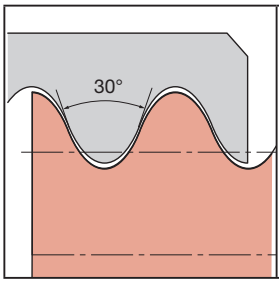
Full-profile inserts

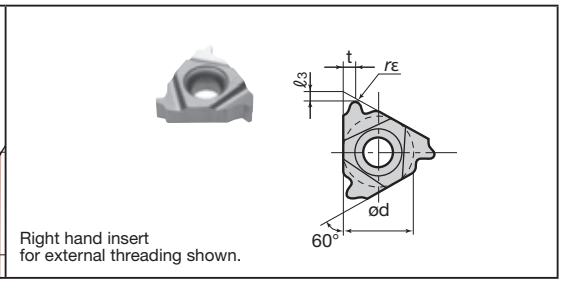
Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert						Internal insert					
				Cat. No.	Grades	Dimensions (mm)				Cat. No.	Grades	Dimensions (mm)			
					Coated	ød	t	ℓ3	rε		Coated	ød	t	ℓ3	rε
					AH725						AH725				
22	(2.54)	10	R	**22ER5BAPI**	●	12.7	3.72	2.2	-	**22IR5BAPI**	●	12.7	3.45	2.2	-

◆● : Stocked items. / Packing Quantity = 5 pcs.

TUNGTHREAD

Round (DIN405)





Right hand insert
for external threading shown.

Applicable toolholders

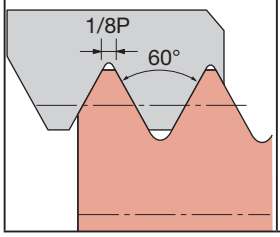
Insert size	External	Internal
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16	TSNR/L□□□□□16 SNR/L□□□□□16□□ TCNR/L□□□□□16□□ CNR/L□□□□□16□□
22	CER/L□□□□□22□□	TSNR/L□□□□□22 SNR/L□□□□□22□□ TCNR/L□□□□□22□□ CNR/L□□□□□22□

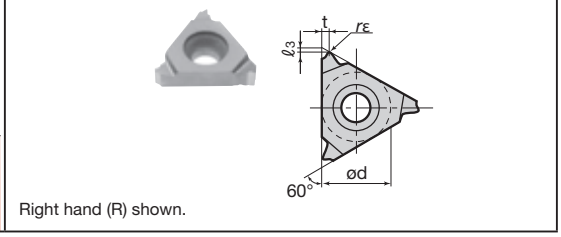
Full-profile inserts

Insert size	Pitch	Number of threads	Hand of cut	External insert						Internal insert					
				Cat. No.	Grades	Dimensions (mm)				Cat. No.	Grades	Dimensions (mm)			
					Coated AH725	ød	t	ℓ_3	r_ε		Coated AH725	ød	t	ℓ_3	r_ε
16		10	R	**16ER10RD**		9.525	1.6	1.5	0.60	**16IR10RD**		9.525	1.6	1.5	0.55
		8	R	**16ER8RD**					0.75	**16IR8RD**					0.68
22		6	R	**22ER6RD**		12.7	2.5	2.0	1.00	**22IR6RD**		12.7	2.5	2.0	0.91
		4	R	**22ER4RD**					1.50	**22IR4RD**					1.36

TUNGTHREAD

Aerospace





Right hand (R) shown.

Applicable toolholders

Insert size	External
16	CER/L□□□□□16□□ B-SER/L□□□16 B-CER/L□□□16 BC-SER/L□□□16

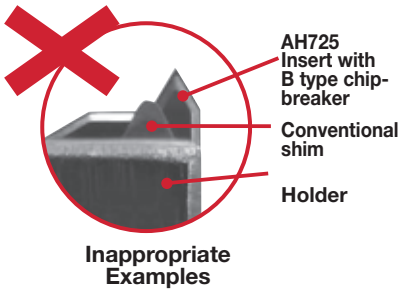
Full-profile inserts

Insert size	Pitch	Number of threads	Hand of cut	External insert					
				Cat. No.	Grades	Dimensions (mm)			
					Coated AH725	ød	t	ℓ_3	r_ε
16		32	R	**16ER32UNJ**	●	9.525	0.5	1.2	0.13
		28	R	**16ER28UNJ**	●				0.15
		24	R	**16ER24UNJ**	●		0.9	0.7	0.18
		20	R	**16ER20UNJ**	●				0.21
		18	R	**16ER18UNJ**	●				0.24
		16	R	**16ER16UNJ**	●				0.26
		14	R	**16ER14UNJ**	●		1.6	1.2	0.3
		12	R	**16ER12UNJ**	●				0.35
		10	R	**16ER10UNJ**	●				0.42
		8	R	**16ER8UNJ**	●				0.53

◆● : Stocked items. / Packing Quantity = 5 pcs.

IMPORTANT NOTICE Replacement of shim sheet

If the conventional shim is still used, please exchange to standard (New) shim according to the following list.



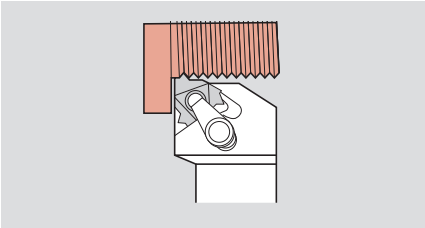
Inappropriate Examples

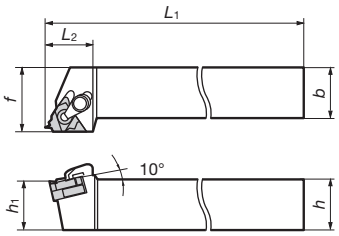
List of interchangeable shims (Size 16 · Insert).

Holder type	Lead Angle	External Cat. No.		Internal Cat. No.	
		① Conventional	❶ Standard (New)	② Conventional	❷ Standard (New)
Dual clamping methods of screw-on and clamp-on	4°	GXE16-4DT	**AE16-4DT**	GXN16-4DT	**AN16-4DT**
	3°	GXE16-3DT	**AE16-3DT**	GXN16-3DT	**AN16-3DT**
	2°	GXE16-2DT	**AE16-2DT**	GXN16-2DT	**AN16-2DT**
	1° (Standard)	GX16-1DT	**A16-1DT**	GX16-1DT	**A16-1DT**
	0°	GXE16-0DT	**AE16-0DT**	GXN16-0DT	**AN16-0DT**
	-1°	GXE16-99DT	**AE16-99DT**	GXN16-99DT	**AN16-99DT**
	-2°	GXE16-98DT	**AE16-98DT**	GXN16-98DT	**AN16-98DT**
Clamp-on	4°	GXE16-4	**AE16-4**	GXN16-4	**AN16-4**
	3°	GXE16-3	**AE16-3**	GXN16-3	**AN16-3**
	2°	GXE16-2	**AE16-2**	GXN16-2	**AN16-2**
	1° (Standard)	GXE16-1	**A16-1**	GXN16-1	**A16-1**
	0°	GXE16-0	**AE16-0**	GXN16-0	**AN16-0**
	-1°	GXE16-99	**AE16-99**	GXN16-99	**AN16-99**
	-2°	GXE16-98	**AE16-98**	GXN16-98	**AN16-98**

CE R/L

External threading
Dual methods of screw-on and clamp-on clamping





Pitch	No. of threads	No. of corners
0.5 ~ 6.0 mm	32 ~ 4	3

Right hand (R), carbide shank type shown.

Steel shank (Dual methods of screw-on and clamp-on clamping)

Cat. No.	Stock		Dimensions (mm)						Insert	Parts				
	R	L	*h*	*b*	L_1	L_2	h_1	*f*		Clamp set	Shim	Shim screw	Clamping screw	Wrench
CER/L1212H16DT	●	●	12	12	100	24	12	16	16ER/L□□□□	CSP16	A16-1DT	DTS5-3.5	CSTB-3.5ST	T-15F P-3.5
CER/L1616H16DT	●	●	16	16	100	24	16	20						
CER/L2020K16DT	●	●	20	20	125	24	20	25						
CER/L2525M16DT	●	●	25	25	150	28	25	32						
CER/L2525M22DT	●	●	25	25	150	31.3	25	32	22ER/L□□□□	CSP22	GX22-1DT	DTS6-4	CSTB-4ST	T-15F T-20F P-4

Note: New shim is used for both right and left hand toolholders.

Steel shank (Clamp-on type)

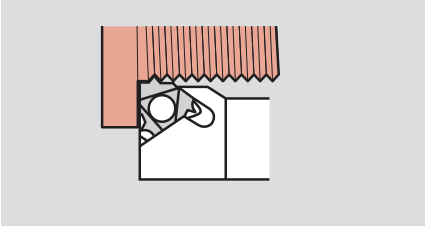
Cat. No.	Stock		Dimensions (mm)						Insert	Parts				
	R	L	*h*	*b*	L_1	L_2	h_1	*f*		Clamp set	Shim set R	Shim set L	Clamping screw	Wrench
CER/L1212H16T			12	12	100	22	12	16	16ER/L□□□□	CSP16	A16-1	A16-1	-	T-15F
CER/L1616H16T			16	16	100	22	16	20						
CER/L2020K16T			20	20	125	22	20	25						
CER/L2525M16T			25	25	150	25	25	32						
CER/L3232P16T	●		32	32	170	32	32	40						
CER/L2525M22T			25	25	150	28	25	32	22ER/L□□□□	CSP22	NXE22-1	NXN22-1	-	T-20F
CER/L3232P22T	●		32	32	170	32	32	40						
CER/L4040R22T			40	40	200	36	40	50						
CER/L2525M27T	●		25	25	150	34	25	32	27ER/L□□□□	CSP27	NXE27-1	NXN27-1	-	P-4
CER/L3232P27T	●		32	32	170	34	32	40						
CER/L4040R27T			40	40	200	40	40	50						

Note:
A clamp set for CER/L type consists of a clamp and a clamping screw.
A shim set for CER/L type consists of a shim and a shim screw.
Standard shims for CER/L type can be used for both left hand and right hand toolholders. Use either of the sides depending on the hand.

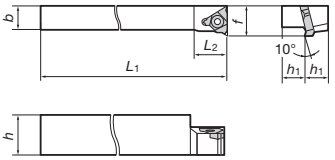
● : Stocked items.

B-S/C E R/L

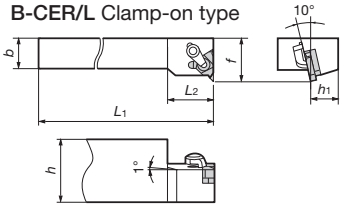
External threading
Dual methods of screw-on and clamp-on clamping



B-SER/L Screw-on type



B-CER/L Clamp-on type



Pitch	No. of threads	No. of corners
0.5 ~ 6.0 mm	32 ~ 4	3

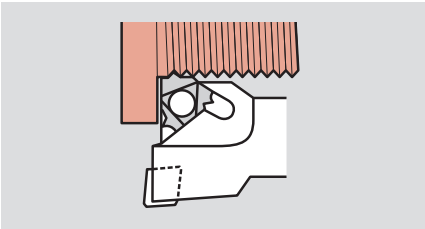
Right hand (R) shown.

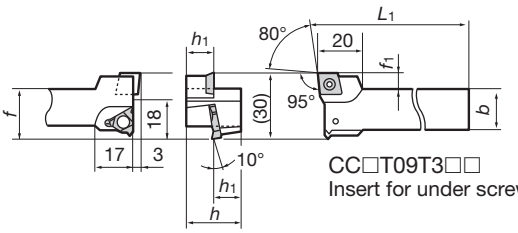
Steel shank

Cat. No.	Stock		Dimensions (mm)						Insert	Parts				
	R	L	*h*	*b*	L_1	L_2	h_1	*f*		Clamp set	Shim set R	Shim set L	Clamping screw	Wrench
B-SER/L10H16	●		20	10	100	15	10	16	16ER/L□□□□	-	-	-	CSTB-3.5	T-15F
B-SER/L12K16	●		24	12	125	18	12	18						
B-CER/L16M16	●	●	32	16	150	24	16	22		CSP16	A16-1	A16-1	-	T-15F

BC-SE R/L

External threading
Screw-on





CC□T09T3□□
Insert for under screw

Pitch	No. of threads	No. of corners
0.5 ~ 6.0 mm	32 ~ 4	3

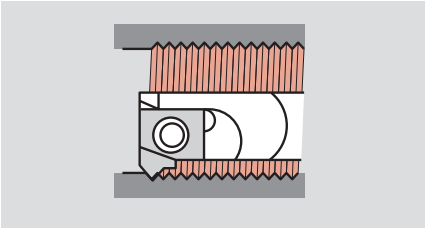
Right hand (R), carbide shank type shown.

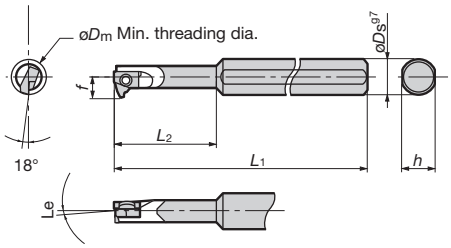
Steel shank

Cat. No.	Stock		Dimensions (mm)							Insert	Parts	
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_1		Clamping screw	Wrench
BC-SER/L12K16	●		24	16	125	-	12	23	7	16ER/L□□□□ CC□T09T3□□	CSTB-3.5	T-15F
BC-SER/L16M16			32	20	150	-	16	25	5			

● : Stocked items.

SN R/L-2/3





Pitch	No. of threads	No. of corners
0.5 ~ 2.0 mm	48 ~ 16	1

Right hand (R), carbide shank type shown.

Steel shank

Cat. No.	Stock		Dimensions (mm)							Insert	Parts	
	R	L	Min. threading dia. øDm	øDs	f	L_1	L_2	h	Lead Angle Le		Clamping screw	Wrench
SNR/L0006H06-2	●		8	8	4.7	100	18	7	2°	6IR/L□□□□	CSTB-2L040	T-6F
SNR/L0006H06-3	●								3°			
SNR/L0008H06-2	●		10	8	5.7	100	-	7	2°		CSTB-2L	T-6F
SNR/L0008H06-3	●								3°			

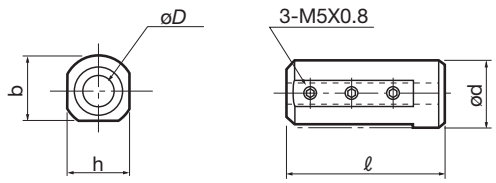
Carbide shank

Cat. No.	Stock		Dimensions (mm)							Insert	Parts	
	R	L	Min. threading dia. øDm	øDs	f	L_1	L_2	h	Lead Angle Le		Clamping screw	Wrench
SNR/L0006K06SC-2	●		8	8	4.7	125	30	7	2°	6IR/L□□□□	CSTB-2L040	T-6F
SNR/L0006K06SC-3	●								3°			
SNR/L0008K06SC-2	●		10	8	5.7	125	-	7	2°		CSTB-2L	T-6F
SNR/L0008K06SC-3	●								3°			

Note: When using a right or left hand insert, the right hand insert (6IR ** type), is used for the right hand toolholders (SNR ** type).

Sleeves

BLM type (Round shank)



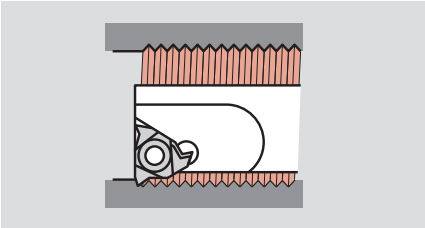
Above drawing shows BLM25-□□C type.

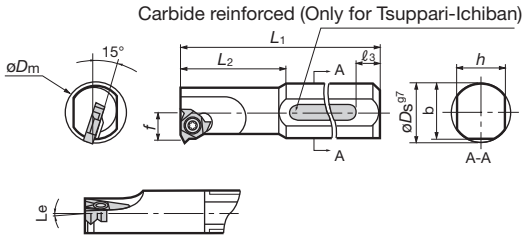
Cat. No.	Stock	Applicable shank dia. øD	Dimensions (mm)			
			ød	ℓ	h	b
BLM19-08	●	8	19.05	100	18	18
BLM20-08	●		20		19	
BLM22-08	●		22	125	21	21
BLM254-08	●		25.4		24	24
BLM25-08C	●		25	55		23

Note: When setting the toolholder on a tool post, direct clamping on the shank with bolts should be avoided.
Placing the sleeve between the toolholder and tool post is recommended for stable operation.

● : Stocked items.

SN R/L





Pitch	No. of threads	No. of corners
0.5 ~ 6.0 mm	48 ~ 5	3

Right hand (R),
Tsuppari-Ichiban type shown.

"Tsuppari-Ichiban" shank

Cat. No.	Stock		Dimensions (mm)									Insert	Parts	
	R	L	Min. threading dia. øDm	øDs	f	L1	L2	ℓ3	h	b	Lead Angle Le		Clamping screw	Wrench
TSNR/L0016Q16	●		19	16	10.6	180	40	59	15	-	1°	16IR/L□□□□	CSTB-3.5	T-15F
TSNR/L0020R22	●		24	20	13.9	200	50	49	18			22IR/L□□□□	CSTB-4	

Steel shank

Cat. No.	Stock		Dimensions (mm)									Insert	Parts	
	R	L	Min. threading dia. øDm	øDs	f	L1	L2	ℓ3	h	b	Lead Angle Le		Clamping screw	Wrench
SNR/L0010K11	●	●	12	16	6.6	125	25	-	15	15.5	1°	11IR/L□□□□	CSTB-2.5	T-8F
SNR/L0010K11-2	●										2°			
SNR/L0010K11-3	●										3°			
SNR/L0013L11	●	●	15	16	8.2	140	32.5	-	15	15.5	1°			
SNR/L0013L11-2	●										2°			
SNR/L0013L11-3	●										3°			
SNR/L0016M16	●	●	19	16	10.6	150	40	-	15	15.5	1°	16IR/L□□□□	CSTB-3.5	T-15F
SNR/L0016M16-2	●										2°			
SNR/L0016M16-3	●										3°			
SNR/L0020Q22	●	●	24	20	13.9	180	50	-	18	19	1°	22IR/L□□□□	CSTB-4	T-15F
SNR/L0020Q22-2	●										2°			
SNR/L0020Q22-3	●										3°			

Carbide shank

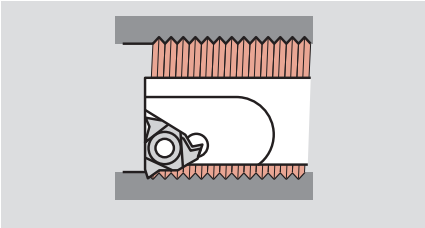
Cat. No.	Stock		Dimensions (mm)									Insert	Parts	
	R	L	Min. threading dia. øDm	øDs	f	L1	L2	ℓ3	h	b	Lead Angle Le		Clamping screw	Wrench
SNR/L0010M11SC	●		13	10	7.4	150	24	-	9	-	1°	11IR/L□□□□	CSTB-2.5	T-8F
SNR/L0010M11SC-2	●										2°			
SNR/L0010M11SC-3	●										3°			
SNR/L0012P11SC	●		15	12	8.5	170	28	-	11	-	1°			
SNR/L0012P11SC-2	●										2°			
SNR/L0012P11SC-3	●										3°			
SNR/L0016R16SC	●	●	20	16	11.9	200	35	-	15	-	1°	16IR/L□□□□	CSTB-3.5	T-15F
SNR/L0016R16SC-2	●										2°			
SNR/L0016R16SC-3											3°			

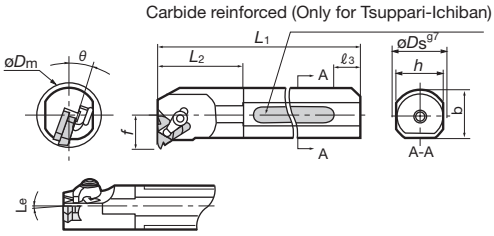
When using a right or left hand insert, the right hand insert (□□IR**type) is used for the right hand toolholders (SNR**type) and left hand insert (□□IL**type) is used for the left hand toolholders (SNL**type).

● : Stocked items.

CN R/L

Internal threading
Dual methods of screw-on and clamp-on clamping





Pitch	No. of threads	No. of corners
0.5 ~ 6.0 mm	48 ~ 5	3

Right hand (R),
Tsuppari-Ichiban type shown.

"Tsuppari-Ichiban" shank (Dual methods of screw-on and clamp-on clamping)

Cat. No.	Stock		Dimensions (mm)										Insert	Parts				
	R	L	Min. threading dia. øDm	øDs	f	L1	L2	ℓ3	h	b	θ	Lead Angle Le		Clamp set	Shim	Shim screw	Clamping screw	Wrench
TCNR/L0020R16DT	●		24	20	14	200	30	49	18	-	15°	1°	16IR/L□□□□	CSP16	A16-1DT	DTS5-3.5	CSTB-3.5ST	T-15F P-3.5
TCNR/L0025S16DT	●		29	25	16.5	250	38	64	23									
TCNR/L0032T16DT			37	32	20.1	300	48	53	30									
TCNR/L0025S22DT	●		30	25	18.2	250	38	64	23	-	15°	1°	22IR/L□□□□	CSP22	GX22-1DT	DTS6-4	CSTB-4ST	T-15F T-20F P-4
TCNR/L0032T22DT			38	32	21.9	300	48	53	30									

Note: Shim is used for both right and left hand toolholders.

Steel shank (Clamp-on type)

Cat. No.	Stock		Dimensions (mm)										Insert	Parts				
	R	L	Min. threading dia. øDm	øDs	f	L1	L2	ℓ3	h	b	θ	Lead Angle Le		Clamp set	Shim set R	Shim set L	Clamping screw	Wrench
CNR/L0020P16	●	●	24	20	14	170	30	-	18	19	15°	1°	16IR/L□□□□	CSP16	A16-1	A16-1	-	T-15F
CNR/L0025R16	●	●	29	25	16.5	200	38		23	24								
CNR/L0032S16	●	●	37	32	20.1	250	48		30	31								
CNR/L0040T16			45	40	24.1	300	60		37	38.5								
CNR/L0050U16			55	50	29.4	350	75		47	48.5								
CNR/L0025R22	●	●	30	25	18.2	200	38	-	23	24	15°	1°	22IR/L□□□□	CSP22	NXN22-1	NXE22-1	-	T-20F
CNR/L0032S22	●	●	38	32	21.9	250	48		30	31								
CNR/L0040T22			46	40	26.1	300	60		37	38.5								
CNR/L0050U22			56	50	31	350	75		47	48.5								
CNR/L0063V22			69	63	37.5	400	95		60	61.5								
CNR/L0040T27	●		46	40	26.9	300	60	-	37	38.5	10°	1°	27IR/L□□□□	CSP27	NXN27-1	NXE27-1	-	P-4
CNR/L0050U27			56	50	31.9	350	75		47	48.5								
CNR/L0063V27			70	63	38.7	400	95		60	61.5								

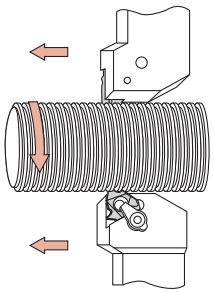
Note: • A clamp set for CNR/L type toolholders consists of a clamp and a clamping screw.
• A shim set for CNR/L type toolholders consists of a shim and a shim fixing screw.
• Standard shims for CNR/L type toolholders are commonly used for right and left hand toolholders.
When using a right or left hand insert, the right hand insert (□□IR**type) is used for the right hand toolholder (CNR**type) and left hand insert (□□IL**type) is used for left hand toolholder (CNL**type).

● : Stocked items.

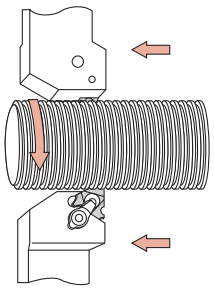
Threading Methods and Combinations

External threading

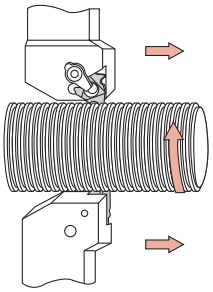
Right hand thread



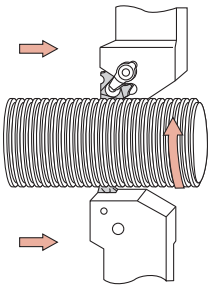
Work rotation	Regular
Feed direction	Toward chuck side
Hand of toolholder	Right
Hand of insert	Right
Standard shim	①



Work rotation	Regular
Feed direction	From chuck side
Hand of toolholder	Left
Hand of insert	Left
Standard shim	④

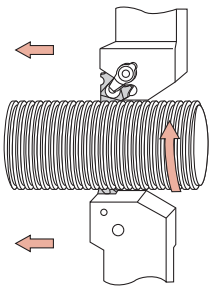


Work rotation	Reverse
Feed direction	Toward chuck side
Hand of toolholder	Right
Hand of insert	Right
Standard shim	①

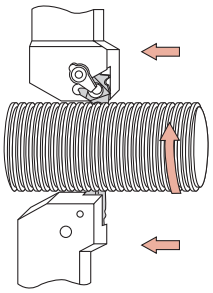


Work rotation	Reverse
Feed direction	From chuck side
Hand of toolholder	Left
Hand of insert	Left
Standard shim	④

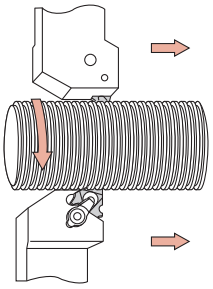
Left hand thread



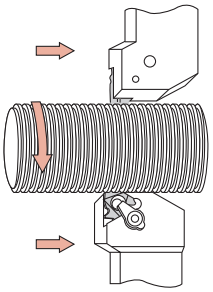
Work rotation	Reverse
Feed direction	Toward chuck side
Hand of toolholder	Left
Hand of insert	Left
Standard shim	②



Work rotation	Reverse
Feed direction	From chuck side
Hand of toolholder	Right
Hand of insert	Right
Standard shim	③



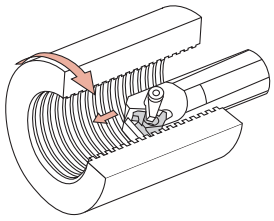
Work rotation	Regular
Feed direction	Toward chuck side
Hand of toolholder	Left
Hand of insert	Left
Standard shim	②



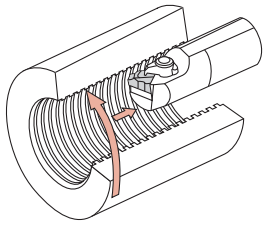
Work rotation	Regular
Feed direction	From chuck side
Hand of toolholder	Right
Hand of insert	Right
Standard shim	③

Internal threading

Right hand thread

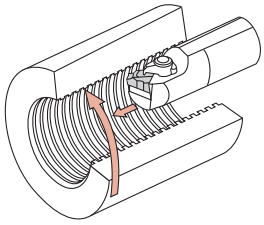


Work rotation	Regular
Feed direction	Toward chuck side
Hand of toolholder	Right
Hand of insert	Right
Standard shim	②

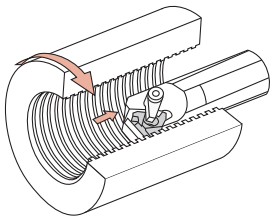


Work rotation	Reverse
Feed direction	From chuck side
Hand of toolholder	Left
Hand of insert	Left
Standard shim	③

Left hand thread



Work rotation	Reverse
Feed direction	Toward chuck side
Hand of toolholder	Left
Hand of insert	Left
Standard shim	①



Work rotation	Regular
Feed direction	From chuck side
Hand of toolholder	Right
Hand of insert	Right
Standard shim	④

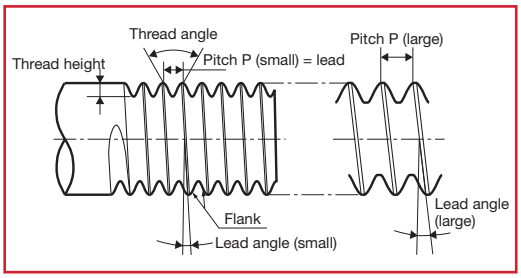
Standard shim

No.	New	No.	New
①	A16-1DT	②	A16-1DT
	A16-1		A16-1
	GX22-1DT		GX22-1DT
	NXE22-1		NXN22-1
	NXE27-1		NXN27-1
③	AE16-99DT	④	AN16-99DT
	AE16-99		AN16-99
	GXE22-99DT		GXN22-99DT
	NXE22-99		NXN22-99
	NXE27-99		NXN27-99

Fundamentals of screw threads

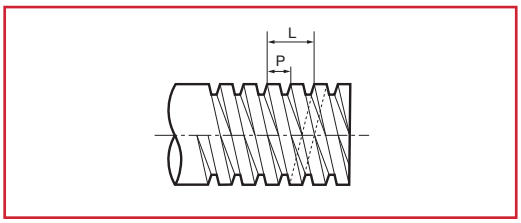
Relationship between lead, lead angle and pitch

1. Lead is the axial distance a screw advances in one rotation. In single start screw, the lead is equal to the pitch.
2. The inclination angle of a threaded groove is called lead angle. In screws of the same diameter, the lead angle increases as the pitch increases.
3. The side face of a completed thread groove is called flank. The distance between the crest and the root is called thread height.



Single and multi start thread

1. The single start thread has a single groove. Two start thread or three start thread has two grooves or three grooves respectively.
2. When viewing the section of the multi start thread, the pitch is same as that of the single start thread. The lead of the two start thread is twice the pitch. The multi start thread is mainly used for trapezoidal threads.



Tolerance class of threads

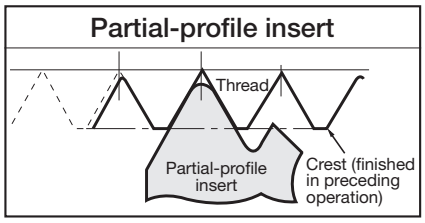
Tolerance classes of screw threads are expressed as follows:
Metric coarse external thread: 6h, 6g Metric coarse internal thread: 5H, 6H
These classes are ranked with tolerances of thread diameter, pitch, thread angle, etc. For fastening applications, 6H- and 6g-class (former JIS second class) threads, manufactured by cutting or rolling, are generally used. 5H- and 4h-class threads (former JIS first class) are generally finished by grinding.
For example, M8-6g means metric coarse external thread of 6g tolerance class.

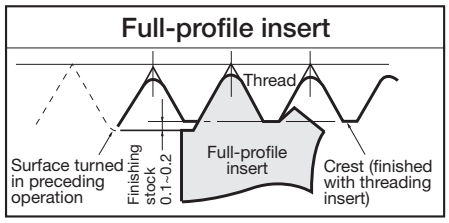
TAC threading inserts

Difference between full-profile and partial-profile insert

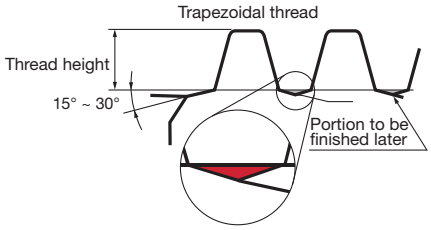
Full-profile insert

In the full-profile insert, the major diameter of the thread is finished by the profiled finishing edge as shown in Figure below. Therefore, about 0.1 mm of finishing stock must be left on the outer surface of the workpiece before threading. In trapezoidal threads, since slants of 15° to 30° are left on the crest of the thread as shown in Figure below, these portions must be finished later.
Burrless threads can be produced with the full-profile insert.





When machining trapezoidal threads:



Partial-profile insert

Partial-profile inserts can not be used for finishing of the crest, but can be applied to a wide range of pitches.

For example

Cat. No.	Pitch	No. of threads	r_ε
16ERA60	0.5 ~ 1.5	48 ~ 16	0.06
16ERG60	1.75 ~ 3.0	14 ~ 8	0.22

Corner radii of inserts are fitted to the thread of the smallest pitch.

Difference between external and internal use inserts

In full-profile inserts for metric and unified threads, the corner radius and thread height differ from those for the external and internal use insert respectively. Therefore, the right hand insert for external use and the left hand insert for internal use are not the same tool.
Since the rake angles of toolholders are -10° for external toolholders and -15° for internal toolholders, the external / internal toolholders can not be used for machining internal / external thread.
In Whitworth thread, though the external thread and internal thread have the same thread form, the external and internal toolholders are incompatible because of the different rake angle.

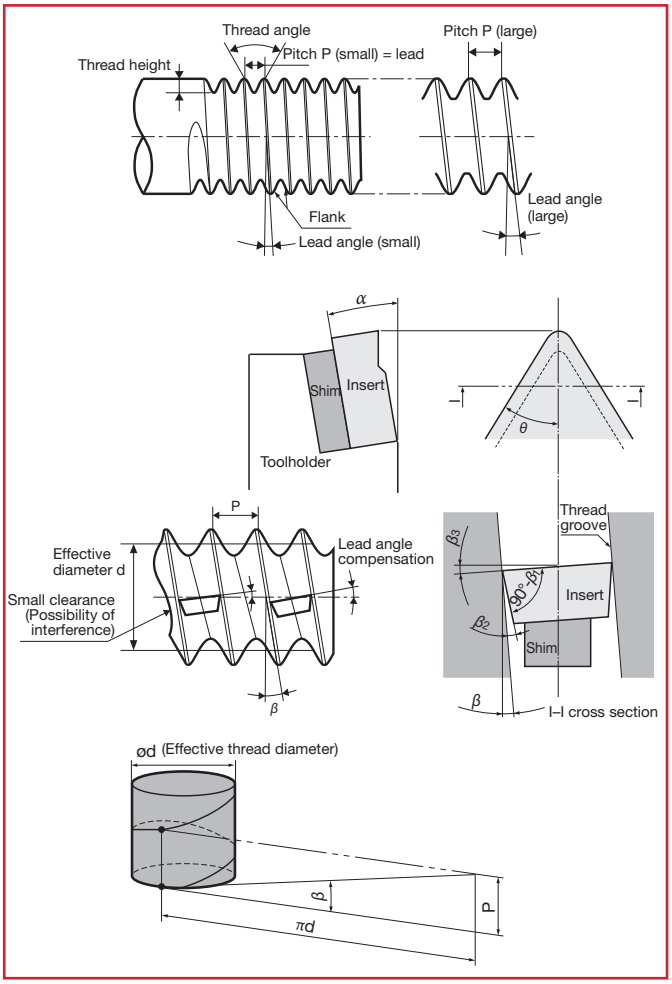
For example

Cat. No.	Applicable inserts	r_ε	Thread hight
16ER20ISO	External	0.25	1.52
16IL20ISO	Internal	0.14	1.30

Shim replacement method

Compensation for the lead angle and tool relief angle

When the pitch is large or the screw diameter is small, the lead angle becomes large and the effective relief angle on the advance flank side β_2 becomes small. In particular, this will cause shorter life of the insert in the case of trapezoidal screw with small flank angle. It is ideal without any interference for the thread cutting insert to have an equal relief angle on both right and left. Replace the shim so that the rake face of insert faces the thread groove direction (that is, $\beta = \beta_3$).



Calculating the lead angle

The lead angle is calculated as follows:

$$\beta = \tan^{-1}(\ell / \pi d) = \tan^{-1}(nP/\pi d)$$

β : Lead angle
ℓ : Lead
n : No. of threads
P : Pitch
d : Thread diameter

Calculating the relief angle

The relief angle β_1 is calculated as follows:

$$\beta_1 = \tan^{-1}(\tan\theta \cdot \tan\alpha)$$

The α of a standard toolholder is 10° for external threading and 15° for internal threading.

Included angle 2θ	θ	β_1	
		External threading tool	Internal threading tool
60°	30°	5.8°	8.8°
55°	27.5°	5.2°	7.9°
30°	15°	2.7°	4.1°
29°	14.5°	2.6°	4°

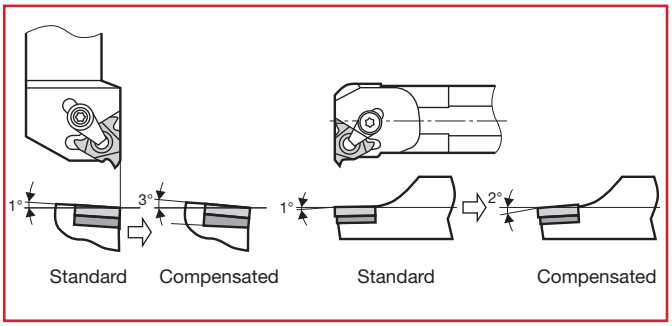
Accordingly, the effective relief angle is calculated as follows:

$$\beta_2 = \beta_1 + \beta_3 - \beta$$

β : Lead angle
β_2 : Effective relief angle
β_3 : Lead angle compensation value

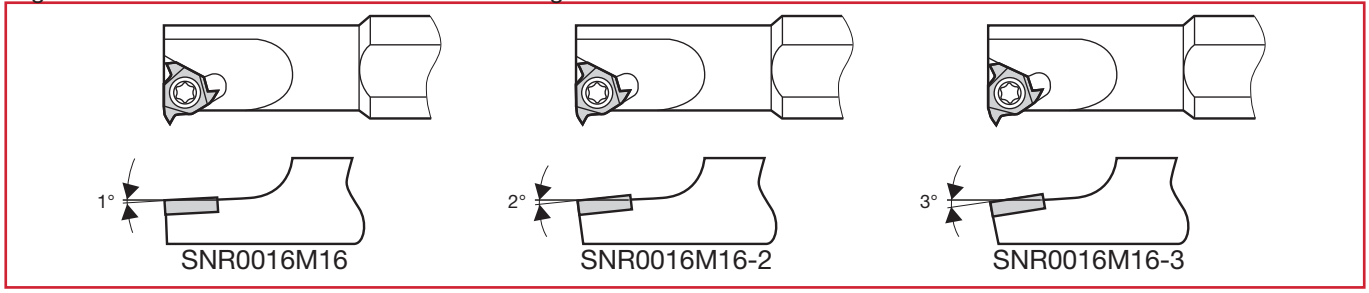
In other words, $\beta_1 = \beta_2$ when the thread lead angle is equal to the compensation value. Namely, the relief angle of the tool itself is equal to the effective relief angle. If the wrong compensation value is used, $\beta_1 > \beta_2$. Namely, the effective relief angle becomes smaller. Therefore, carry out compensation of the lead angle so that the following range is obtained:

±1° when the included angle is 60° and 55°
±30′ when the included angle is 30° and 29°



Compensation of lead angle for shim less internal toolholders

When using internal threading toolholders without shim, the above-mentioned method can not be applied for lead angle compensation. Therefore, special toolholders for large lead angles are available as shown below. The final figure of the Cat. No. (-2 or -3) indicates 2° or 3° lead angle to be used respectively. The toolholders without these figures are for 1° lead angle.



Type of shim

The Cat. No. of the shim and compensated lead angles are shown in the table.

Compensated lead angles	-2°	-1°	0°	1°	2°	3°	4°
Shim	□□□-98	□□□-99	□□□-0	□□□-1	□□□-2	□□□-3	□□□-4

Note: The last numeral of the shim Cat. No. is the compensated lead angle.

■ Toolholders and applicable shims

Screw-on / clamp-on dual toolholders

Toolholder Cat. No.	Shim	
	R	L
CER/L□□□□□16DT	AE16-□DT	AN16-□DT
CER/L□□□□□22DT	GXE22-□DT	GXN22-□DT
TCNR/L□□□□□16DT	AN16-□DT	AE16-□DT
TCNR/L□□□□□22DT	GXN22-□DT	GXE22-□DT

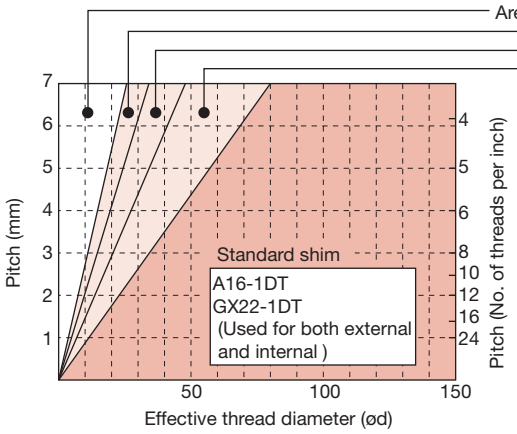
Note: Standard shim is AE16-1DT or GX22-1DT. Other types are optional.

Clamp-on type toolholders

Toolholder Cat. No.	Shim	
	R	L
CER/L□□□□□16-T	AE16-□	AN16-□
CER/L□□□□□22-T	NXE22-□	NXN22-□
CER/L□□□□□27-T	NXE27-□	NXN27-□
CNR/L□□□□□16	AN16-□	AE16-□
CNR/L□□□□□22	NXN22-□	NXE22-□
CNR/L□□□□□27	NXN27-□	NXE27-□
B-CER/L□□□16	AE16-□	AN16-□

Note: Standard shim is □□□□□-1. Other types are optional.

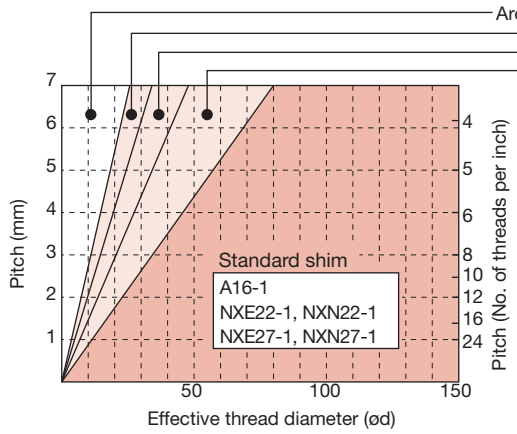
Shim selection guide for screw-on / clamp-on dual ST-type tools



● List of exchangeable shims (Grade: D30)

	Cat. No.	Stock	Cat. No.	Stock	Cat. No.	Stock	Cat. No.	Stock
$\beta 2$ = 4°	AE16-4DT	●	AN16-4DT	●	GXE22-4DT	●	GXN22-4DT	●
$\beta 2$ = 3°	AE16-3DT	●	AN16-3DT	●	GXE22-3DT	●	GXN22-3DT	●
$\beta 2$ = 2°	AE16-2DT	●	AN16-2DT	●	GXE22-2DT	●	GXN22-2DT	●
$\beta 2$ = 1° Standard shim	A16-1DT	●	A16-1DT	●	GX22-1DT	●	GX22-1DT	●
$\beta 2$ = 0°	AE16-0DT	●	AN16-0DT	●	GXE22-0DT	●	GXN22-0DT	●
$\beta 2$ = -1°	AE16-99DT	●	AN16-99DT	●	GXE22-99DT	●	GXN22-99DT	●
$\beta 2$ = -2°	AE16-98DT	●	AN16-98DT	●	GXE22-98DT	●	GXN22-98DT	●
Applicable toolholders	CER--16DT TCNL--16DT		CEL--16DT TCNR--16DT		CER--22DT TCNL--22DT		CEL--22DT TCNR--22DT	

Shim selection guide for clamp-on type ST-tools



● List of exchangeable shims (Grade: D30)

	Cat. No.	Stock	Cat. No.	Stock	Cat. No.	Stock	Cat. No.	Stock	Cat. No.	Stock	Cat. No.	Stock
$\beta 2$ = 4°	AE16-4	●	AN16-4	●	NXE22-4	●	NXN22-4	●	NXE27-4		NXN27-4	
$\beta 2$ = 3°	AE16-3	●	AN16-3	●	NXE22-3	●	NXN22-3	●	NXE27-3		NXN27-3	
$\beta 2$ = 2°	AE16-2	●	AN16-2	●	NXE22-2	●	NXN22-2	●	NXE27-2		NXN27-2	
$\beta 2$ = 1° Standard shim	A16-1	●	A16-1	●	NXE22-1	●	NXN22-1	●	NXE27-1	●	NXN27-1	●
$\beta 2$ = 0°	AE16-0	●	AN16-0	●	NXE22-0	●	NXN22-0	●	NXE27-0		NXN27-0	
$\beta 2$ = -1°	AE16-99	●	AN16-99	●	NXE22-99	●	NXN22-99	●	NXE27-99		NXN27-99	
$\beta 2$ = -2°	AE16-98	●	AN16-98	●	NXE22-98	●	NXN22-98	●	NXE27-98		NXN27-98	
Applicable toolholders	CER--16T CNL--16 B-CER--16		CEL--16T CNR--16 B-CEL--16		CER--22T CNL--22		CEL--22T CNR--22		CER--27T CNL--27		CEL--27T CNR--27	

● : Stocked items.

Selection of ST-type Toolholders

Selection of Internal Threading Toolholders

Relation between internal toolholders and machinable threads

In the tables starting from page 7-29, the relationships between toolholders, inserts, threads to be machined, and shims to be replaced are shown. In these tables, the criteria are set as follows.

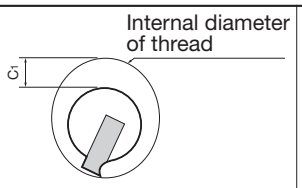
- **The minimum machining diameter.**
- **The L/D ratio of the toolholder.**
- **The lead angle of the thread.**
- **Cutting conditions**

Especially when machining near the minimum machining diameter, the compensation for the lead angle should be done carefully.
Moreover, in threading, because chips generally can not be broken into small pieces, the shank size should be selected in consideration of adequate clearance (C1).

Symbols

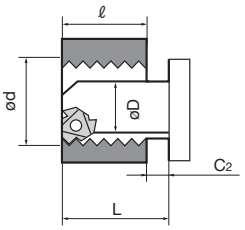
- ◯ Recommended
- [•] Usable
- [2] Needs replacing of the shim. "2" indicates "Change to the shim for 2° lead angle".
- Unusable

Clearance C_1

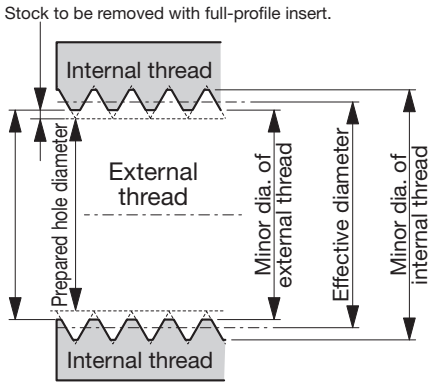


$C_1 \geq 3$ mm
(1 mm for SN-Mini types (6IR))

Overhang ratio L/D



Steel shank	L/D ≤ 2→◯
Carbide shank	L/D ≤ 3→◯



How to use the tables

①Firstly, find the nominal thread diameter. Example: M35 X 1.5
②The table indicates that the lead angle is 1°48′.
③The Cat. No. of the insert to be used corresponds with IR15ISO.
④By following the row to the right, [•] and ◯ marks are found. The ◯ mark indicates the optimum toolholder type. The toolholders of [•] mark are usable, but less rigid because the shank diameter against the threading diameter is smaller than those of ◯ marked toolholder. In this example, CNR0025R16 and TCNR0020R16DT are the optimum toolholders. The insert Cat.No. is 16IR15ISO.
⑤In the case of M33 X 3 thread, the lead angle is 1°46′. By following the row to the right. [2] mark is found. This indicates that the shim should be replaced to 2° type. For calculation of the lead angle, refer to page 7-26.

Metric fine screw thread (ISO)

(For full size of this table, see page 7-30.)

Nominal size	Pitch	Effective diameter	Lead angle	Shank material	Steel shank																Carbide shank								"Tsuppari-Ichiban"					
				Insert size	6IR				11IR				16IR				22IR				6IR				11IR				16IR		16IR			22IR	
				Holder Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	SNR0020Q22	SNR0020Q22-2	CNR0025R22	CNR0032S22	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TSNR0020R22	TCNR0025S22DT
				Insert Cat. No.																															
M33×1.5	1.5	32.03	0°51′	IR15ISO					•		•		•		◯									•		•		•		•	◯				
M33×2	2	31.7	1°09′	IR20ISO	•		•		•		•		•		•	◯					•		•		•		•		•	◯				
M33×3	3	31.05	1°46′	IR30ISO											[2]															[2]				
M35×1.5	1.5	34.03	0°48′	IR15ISO					•		•		•		•	◯								•		•		•		•	◯				
M36×1.5	1.5	35.03	0°47′	IR15ISO					•		•		•		•	◯								•		•		•		•	◯				
M36×2	2	34.7	1°03′	IR20ISO											•	◯					•		•	•		•		•		•	◯				
M36×3	3	34.05	1°36′																											•	[2]				
M38×1.5	1.5	37																						•		•		•		•	•	◯			
																								•		•		•		•	•				

Selection of Internal Toolholders—Relationship between thread sizes, toolholders, and inserts—Part 1

Metric coarse screw thread (ISO)

Nominal size	Pitch	Effective diameter	Lead angle	Shank material	Steel shank																Carbide shank								"Tsuppari-Ichiban"	
				Insert size	6IR				11IR				16IR		22IR					27IR			6IR				11IR		16IR		22IR	
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11-2	SNR0010K11-3	SNR0013L11-2	SNR0013L11-3	SNR0016M16-2	SNR0016M16-3	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	(CNR0040T22)	CNR0040T27	(CNR0050U27)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC-2	SNR0010M11SC-3	SNR0016R16SC-2	(SNR0016R16SC-3)	TCNR0025S22DT	(TCNR0032T22DT)
M10	1.5	9.03	3°02′	IR15ISO																										
M11	1.5	10.03	2°44′	IR15ISO		○																○								
M12	1.75	10.86	2°56′	IR175ISO		○																○								
M14	2	12.7	2°52′	IR20ISO		•		○														•		○						
M16	2	14.7	2°29′	IR20ISO	•		○															•		○						
M18	2.5	16.38	2°47′	IR25ISO																										
M20	2.5	18.38	2°29′	IR25ISO																										
M22	2.5	20.38	2°14′	IR25ISO																										
M24	3	22.05	2°29′	IR30ISO																										
M27	3	25.05	2°11′	IR30ISO									○															○		
M30	3.5	27.73	2°18′	IR35ISO																										
M33	3.5	30.73	2°05′	IR35ISO											○															
M36	4	33.4	2°11′	IR40ISO											○															
M39	4	36.4	2°00′	IR40ISO											•		[2]												[2]	
M42	4.5	39.08	2°06′	IR45ISO											•		[2]												[2]	
M45	4.5	42.08	1°57′	IR45ISO											•		[2]												[2]	
M48	5	44.75	2°02′	IR50ISO											•		[2]	[2]											[2]	[2]
M52	5	48.75	1°52′	IR50ISO											•		[2]	[2]											[2]	[2]
M56	5.5	52.43	1°55′	IR55ISO																										
M60	5.5	56.43	1°47′	IR55ISO																[2]										
M64	6	60.1	1°49′	IR60ISO																[2]										
M68	6	64.1	1°42′	IR60ISO																[2]	[2]									

[2] : Change the shim to NXN22-2

[2] : Change the shim to NXN27-2

[2] : Change the shim to GXN22-2DT

Metric fine screw thread (ISO)

1/4

Nominal size	Pitch	Effective diameter	Lead angle	Shank material	Steel shank										Carbide shank									
				Insert size	6IR				11IR						6IR				11IR					
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0010K11-3	SNR0013L11	SNR0013L11-2	SNR0013L11-3	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0010M11SC-3	SNR0012P11SC	SNR0012P11SC-2	SNR0012P11SC-3
M9×0.75	0.75	8.51	1°36′	IR075ISO																				
M9×1	1	8.32	2°11′	IR10ISO																				
M10×0.75	0.75	9.51	1°26′	IR075ISO																				
M10×1	1	9.35	1°57′	IR10ISO	○										○									
M10×1.25	1.25	9.19	2°29′	IR125ISO																				
M11×0.75	0.75	10.51	1°18′	IR075ISO																				
M11×1	1	10.35	1°46′	IR10ISO	○										○									
M12×1	1	11.35	1°36′	IR10ISO	•		○								•		○							
M12×1.25	1.25	11.19	2°02′	IR125ISO	○										○									
M12×1.5	1.5	11.03	2°29′	IR15ISO	○										○									
M14×1	1	13.35	1°22′	IR10ISO																				
M14×1.25	1.25	13.19	1°44′	IR125ISO	•		○								•		○							
M14×1.5	1.5	13.03	2°06′	IR15ISO	•		○								•		○							
M15×1	1	14.35	1°16′	IR10ISO																				
M15×1.5	1.5	14.03	1°57′	IR15ISO	•		○								•		○							
M16×1	1	15.35	1°11′	IR10ISO					○															
M16×1.5	1.5	15.03	1°49′	IR15ISO	•		○								•		○							
M17×1	1	16.35	1°07′	IR10ISO					○										○					
M17×1.5	1.5	16.03	1°42′	IR15ISO	•		•			○					•		○							
M18×1	1	17.35	1°03′	IR10ISO					○										○					
M18×1.5	1.5	17.03	1°36′	IR15ISO	•		•			○					•		•			○				
M18×2	2	16.7	2°11′	IR20ISO	•		•			○					•		•			○				
M20×1	1	19.35	0°57′	IR10ISO					•			○							•			○		
M20×1.5	1.5	19.03	1°26′	IR15ISO					•			○							•			○		
M20×2	2	18.7	1°57′	IR20ISO	•		•			○					•		•			•			○	

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Selection of ST-type Toolholders

Metric fine screw thread (ISO)

2/4

Nominal size	Pitch	Effective diameter	Lead angle	Shank material	Steel shank												Carbide shank												"Tsuppari-Ichiban"	
				Insert size	6IR				11IR				16IR				6IR				11IR					16IR				16IR	
				Holder Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0013L11-3	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0010M11SC-3	SNR0012P11SC	SNR0012P11SC-2	SNR0012P11SC-3	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT
				Insert Cat. No.																											
M22×1	1	21.35	0°51′	IR10ISO					•		○										•			○								
M22×1.5	1.5	21.03	1°18′	IR15ISO	•		•		•		○							•		•				○								
M22×2	2	20.7	1°46′	IR20ISO	•		•			•		○						•		•			•			○						
M24×1	1	23.35	0°47′	IR10ISO							○			•							•			○						•		
M24×1.5	1.5	23.03	1°11′	IR15ISO	•		•				○			•				•		•				○						•		
M24×2	2	22.07	1°39′	IR20ISO	•		•			•		○						•		•			•			○						
M25×1	1	24.35	0°45′	IR10ISO					•		○			•										○			•			•		
M25×1.5	1.5	24.03	1°08	IR15ISO	•		•		•		○			•				•		•				○			•			•		
M25×2	2	23.7	1°32′	IR20ISO	•		•			•		○			•			•		•			•			○						
M26×1.5	1.5	25.03	1°06′	IR15ISO	•		•		•		•			○				•		•			•			•			•	○		
M27×1	1	26.35	0°42′	IR10ISO					•		•			○							•			•			•			○		
M27×1.5	1.5	26.03	1°03′	IR15ISO	•		•		•		•			○				•		•				•			•			○		
M27×2	2	25.7	1°25′	IR20ISO	•		•		•		•			○				•		•				•			•			○		
M28×1	1	27.35	0°40′	IR10ISO					•		•			○							•			•			•			○		
M28×1.5	1.5	27.03	1°01′	IR15ISO	•		•		•		•			○				•		•				•			•			○		
M28×2	2	26.7	1°22′	IR20ISO	•		•		•		•			○				•		•				•			•			○		
M30×1	1	29.35	0°37′	IR10ISO					•		•			○							•			•			•			○		
M30×1.5	1.5	29.03	0°57′	IR15ISO					•		•			○							•			•			•			○		
M30×2	2	28.7	1°16′	IR20ISO	•		•		•		•			○				•		•				•			•			○		
M30×3	3	28.05	1°57′	IR30ISO											○													○				
M32×1.5	1.5	31.03	0°53′	IR15ISO					•		•			○			○				•			•			•			•	○		
M32×2	2	30.07	1°11′	IR20ISO	•		•		•		•			○			○	•		•				•			•			•	○		

Metric fine screw thread (ISO)

3/4

Nominal size	Pitch	Effective diameter	Lead angle	Shank material	Steel shank														Carbide shank								"Tsuppari-Ichiban"			
				Insert size	6IR				11IR				16IR				22IR		6IR				11IR			16IR	16IR				22IR	
				Holder Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	SNR0020Q22	SNR0020Q22-2	CNR0025R22	CNR0032S22	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TSNR0020R22	TCNR0025S22DT
				Insert Cat. No.																														
M33×1.5	1.5	32.03	0°51′	IR15ISO					•		•		•		○								•		•		•		•	○				
M33×2	2	31.7	1°09′	IR20ISO	•		•		•		•		•		•	○					•		•		•		•		•	○				
M33×3	3	31.05	1°46′	IR30ISO											2														•	2				
M35×1.5	1.5	34.03	0°48′	IR15ISO					•		•		•		•	○							•		•		•		•	○				
M36×1.5	1.5	35.03	0°47′	IR15ISO					•		•		•		•	○							•		•		•		•	○				
M36×2	2	34.7	1°03′	IR20ISO	•		•		•		•		•		•	○					•		•		•		•		•	○				
M36×3	3	34.05	1°36′	IR30ISO											2														•	2				
M38×1.5	1.5	37.03	0°44′	IR15ISO					•		•		•		•	○							•		•		•		•	•	○			
M39×1.5	1.5	38.03	0°43′	IR15ISO					•		•		•		•	○							•		•		•		•	•	○			
M39×2	2	38.7	0°58′	IR20ISO					•		•		•		•	○							•		•		•		•	•	○			
M39×3	3	37.05	1°29′	IR30ISO									•		•	○											•		•	•	○			
M40×1.5	1.5	39.03	0°42′	IR15ISO					•		•		•		•	○							•		•		•		•	•	○			
M40×2	2	37.8	0°57′	IR20ISO					•		•		•		•	○							•		•		•		•	•	○			
M40×3	3	38.05	1°26′	IR30ISO									•		•	○											•		•	•	○			
M42×1.5	1.5	41.03	0°40′	IR15ISO					•		•		•		•	○							•		•		•		•	•	○			
M42×2	2	40.7	0°54′	IR20ISO					•		•		•		•	○							•		•		•		•	•	○			
M42×3	3	40.05	1°22′	IR30ISO									•		•	○											•		•	•	○			
M42×4	4	39.4	1°51′	IR40ISO													2																•	2
M45×1.5	1.5	44.03	0°37′	IR15ISO					•		•		•		•	•	○						•		•		•		•	•	○	○		
M45×2	2	43.7	0°50′	IR20ISO					•		•		•		•	•	○						•		•		•		•	•	○	○		
M45×3	3	43.05	1°16′	IR30ISO									•		•	•	○				•		•		•		•		•	•	○	○		
M45×4	4	42.4	1°43′	IR40ISO													2																•	2
M48×1.5	1.5	47.03	0°35′	IR15ISO					•		•		•		•	•	○						•		•		•		•	•	○	○		
M48×2	2	46.7	0°47′	IR20ISO					•		•		•		•	•	○						•		•		•		•	•	○	○		
M48×3	3	46.05	1°11′	IR30ISO									•		•	•	○										•		•	•	○	○		
M48×4	4	45.4	1°36′	IR40ISO														2															•	2

2 : Change the shim to AN16-2

2 : Change the shim to NXN22-2

2 : Change the shim to AN16-2DT

2 : Change the shim to GXN22-2DT

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Metric fine screw thread (ISO)

Nominal size	Pitch	Effective diameter	Lead angle	Shank material	Steel shank																Carbide shank								"Tsuppari-Ichiban"			
				Insert size	6IR				11IR				16IR						22IR				6IR				11IR				16IR		16IR		22IR	
				Holder Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	(CNR0040T16)	(CNR0050U16)	SNR0020Q22	SNR0020Q22-2	CNR0025R22	CNR0032S22	(CNR0040T22)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TCNR0020R22	TCNR0025S22DT	(TCNR0032T22DT)
				Insert Cat. No.																																		
M50×1.5	1.5	49.03	0°33′	IR15ISO					•		•		•		•	○	•										•		•		•		•	•	○	○			
M50×2	2	48.7	0°45′	IR20ISO					•		•		•		•	○											•		•		•		•	•	○	○			
M50×3	3	48.05	1°08′	IR30ISO									•		•	○															•		•	•	○	○			
M52×1.5	1.5	51.03	0°32′	IR15ISO					•		•		•		•	•	○										•		•		•		•	•	○	○			
M52×2	2	50.7	0°43′	IR20ISO					•		•		•		•	•	○										•		•		•		•	•	○	○			
M52×3	3	50.05	1°06′	IR30ISO									•		•	○	•														•		•	•	○	○			
M52×4	4	49.4	1°29′	IR40ISO														•	•	•	•																•	•	○
M55×1.5	1.5	54.03	0°30′	IR15ISO					•		•		•		•	○	•										•		•		•		•	•	○	○			
M55×2	2	53.7	0°41′	IR20ISO					•		•		•		•	•	○										•		•		•		•	•	○	○			
M55×3	3	53.05	1°02′	IR30ISO									•		•	•	○														•		•	•	○	○			
M55×4	4	52.4	1°24′	IR40ISO														•	•	•	•	○															•	•	○
M56×1.5	1.5	55.03	0°30′	IR15ISO					•		•		•		•	•	○										•		•		•		•	•	○	○			
M56×2	2	54.7	0°40′	IR20ISO					•		•		•		•	•	○										•		•		•		•	•	○	○			
M56×3	3	54.05	1°01′	IR30ISO									•		•	•	○														•		•	•	○	○			
M56×4	4	53.4	1°22′	IR40ISO														•	•	•	•	○															•	•	○
M58×1.5	1.5	57.03	0°29′	IR15ISO					•		•		•		•	•	○										•		•		•		•	•	○	○			
M58×2	2	56.7	0°39′	IR20ISO					•		•		•		•	•	○										•		•		•		•	•	○	○			
M58×3	3	56.05	0°59′	IR30ISO									•		•	•	○														•		•	•	○	○			
M58×4	4	55.4	1°19′	IR40ISO														•	•	•	•	○															•	•	○
M60×1.5	1.5	59.03	0°28′	IR15ISO					•		•		•		•	•	○										•		•		•		•	•	○	○			
M60×2	2	58.7	0°37′	IR20ISO					•		•		•		•	•	○										•		•		•		•	•	○	○			
M60×3	3	58.05	0°57′	IR30ISO									•		•	•	○														•		•	•	○	○			
M60×4	4	57.4	1°16′	IR40ISO														•	•	•	•	○															•	•	○

Unified coarse screw thread (UNC)

Nominal size	TPI	Effective diameter	Lead angle	Shank material	Steel shank																		Carbide shank										"Tsuppari-Ichiban"	
				Insert size	11IR						16IR			22IR						27IR			11IR						16IR				22IR	
				Holder Cat. No.	SNR0010K11	SNR0010K11-2	SNR0010K11-3	SNR0013L11	SNR0013L11-2	SNR0013L11-3	SNR0016M16	SNR0016M16-2	SNR0016M16-3	SNR0020Q22	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	(CNR0040T22)	CNR0040T27	(CNR0050U27)	(CNR0063V27)	SNR0010M11SC	SNR0010M11SC-2	SNR0010M11SC-3	SNR0012P11SC	SNR0012P11SC-2	SNR0012P11SC-3	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TCNR0025S22DT	(TCNR0032T22DT)
				Insert Cat. No.																														
7/16-14UNC	14	9.93	3°20′	(IR14UN)																														
1/2-13UNC	13	11.43	3°07′	(IR13UN)																														
9/16-12UNC	12	12.91	2°59′	IR12UN																														
5/8-11UNC	11	14.38	2°56′	(IR11UN)																														
3/4-10UNC	10	17.4	2°40′	(IR10UN)																														
7/8-9UNC	9	20.39	2°31′	IR9UN																														
1-8UNC	8	23.34	2°29′	IR8UN								○																						
1 1/8-7UNC	7	26.22	2°31′	(IR7UN)																														
1 1/4-7UNC	7	29.39	2°15′	(IR7UN)											○																				
1 3/8-6UNC	6	32.17	2°24′	(IR6UN)											○																				
1 1/2-6UNC	6	35.35	2°11′	(IR6UN)											○		2																2	
1 3/4-5UNC	5	41.15	2°15′	(IR5UN)											○		2																2	
2-4 1/2UNC	4.5	47.14	2°11′	(IR45UN)																														
2 1/4-4 1/2UNC	4.5	53.49	1°55′	(IR45UN)															2															
2 1/2-4UNC	4	59.38	1°57′	(IR4UN)															2															
2 3/4-4UNC	4	65.73	1°46′	(IR4UN)															2	2														
3-4UNC	4	72.08	1°36′	(IR4UN)															2	2														
3 1/4-4UNC	4	78.43	1°29′	(IR4UN)															•	•	○													
3 1/2-4UNC	4	84.78	1°22′	(IR4UN)															•	•	○													
3 3/4-4UNC	4	91.13	1°16′	(IR4UN)															•	•	○													
4-4UNC	4	97.48	1°11′	(IR4UN)															•	•	○													

2 : Change the shim to NXN22-2

2 : Change the shim to NXN27-2

2 : Change the shim to GXN22-2DT

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Selection of ST-type Toolholders

Unified fine screw thread (UNF)

Nominal size	TPI	Effective diameter	Lead angle	Shank material	Steel shank										Carbide shank								"Tsuppari-Ichiban"		
				Insert size	6IR				11IR		16IR				6IR				11IR				16IR		16IR		
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11-2	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT
3/8-24UNF	24	8.84	2°11′	(IR24UN)																					
				IRA60																					
7/16-20UNF	20	10.29	2°15′	(IR20UN)																					
				IRA60	○										○										
1/2-20UNF	20	11.87	1°57′	(IR20UN)																					
				IRA60	•		○								•		○								
9/16-18UNF	18	13.37	1°55′	(IR18UN)																					
				IRA60	•		○								•		○								
5/8-18UNF	18	14.96	1°43′	(IR18UN)																					
				IRA60	•		○								•		○								
3/4-16UNF	16	18.02	1°36′	IR16UN					○											○					
7/8-14UNF	14	21.05	1°34′	IR14UN					•	○										•		○			
1-12UNF	12	24.03	1°36′	IR12UN								○												○	
1 1/8-12UNF	12	27.2	1°25′	IR12UN							○												○		○		
1 1/4-12UNF	12	30.38	1°16′	IR12UN							•		○										○		•	○	
1 3/8-12UNF	12	33.55	1°09′	IR12UN							•		•	○									○		•	•	○
1 1/2-12UNF	12	36.73	1°03′	IR12UN							•		•	○									○		•	•	○

Whitworth coarse screw thread (W)

Nominal size	TPI	Pitch	Effective diameter	Lead angle	Shank material	Steel shank									Carbide shank			"Tsuppari-Ichiban"	
					Insert size	16IR		22IR					27IR		16IR			22IR	
					Holder Cat. No. / Insert Cat. No.	SNR0016M16-2	SNR0016M16-3	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	(CNR0040T22)	CNR0040T27	(CNR0050U27)	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TCNR0025S22DT	(TCNR0032T22DT)
W7/16	14	1.81	9.95	3°19′	(IR14W)														
W1/2	12	2.12	11.35	3°24′	IR12W														
W9/16	12	2.12	12.93	2°59′	IR12W														
W5/8	11	2.31	14.4	2°55′	IR11W														
W3/4	10	2.54	17.42	2°39′	IR10W														
W7/8	9	2.82	20.42	2°31′	(IR9W)														
W1	8	3.18	23.37	2°29′	IR8W	○													
W1 1/8	7	3.63	26.25	2°31′	(IR7W)														
W1 1/4	7	3.63	29.43	2°15′	(IR7W)			○											
W1 3/8	6	4.23	32.21	2°24′	(IR6W)			○											
W1 1/2	6	4.23	35.39	2°11′	(IR6W)			○											
W1 5/8	5	5.08	38.02	2°26′	(IR5W)			•		[2]								[2]	
W1 3/4	5	5.08	41.2	2°15′	(IR5W)			•		[2]								[2]	
W1 7/8	4.5	5.64	44.01	2°20′	(IR45W)														
W2	4.5	5.64	47.19	2°11′	(IR45W)														
W2 1/4	4	6.35	53.08	2°11′	(IR4W)														
W2 1/2	4	6.35	59.43	1°57′	(IR4W)								[2]						

[2] : Change the shim to NXN22-2

[2] : Change the shim to NXN27-2

[2] : Change the shim to GXN22-2DT

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Whitworth fine screw thread (W)

1/2

Nominal size	TPI	Pitch	Effective diameter	Lead angle	Shank material	Steel shank											Carbide shank				"Tsuppari-Ichiban"		
					Insert size	6IR				11IR				16IR					11IR		16IR		16IR		
					Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	SNR0010M11SC-2	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT
W13	16	1.588	11.98	2°25′	(IR16W)																			
W13.5	16	1.588	12.48	2°19′	(IR16W)																			
W14	16	1.588	12.98	2°14′	(IR16W)																			
W14.5	16	1.588	13.48	2°09′	(IR16W)																			
W15	16	1.588	13.98	2°04′	(IR16W)																			
W16	14	1.814	14.84	2°14′	(IR14W)																			
W17	14	1.814	15.84	2°05′	(IR14W)						○													
W18	14	1.814	16.84	1°58′	(IR14W)						○								○					
W19	12	2.117	17.65	2°11′	IR12W																			
W20	12	2.117	18.65	2°04′	IR12W																			
W21	12	2.117	19.65	1°58′	IR12W																			
W22	12	2.117	20.65	1°52′	IR12W																			
W23	10	2.54	21.37	2°10′	IR10W																			
W24	10	2.54	22.37	2°04′	IR10W																			
W25	10	2.54	23.37	1°59′	IR10W										○									
W26	10	2.54	24.37	1°54′	IR10W										○						○			
W28	9	2.822	26.19	1°58′	(IR9W)										○						○			
W30	9	2.822	28.19	1°50′	(IR9W)										○						○			
W32	9	2.822	30.19	1°42′	(IR9W)										•		[2]				•		[2]	
W34	8	3.175	31.97	1°49′	IR8W										•		[2]				•		[2]	
W35	8	3.175	32.97	1°45′	IR8W										•		[2]				•		[2]	
W36	8	3.175	33.97	1°42′	IR8W										•		2	[2]			•		2	[2]
W38	8	3.175	35.97	1°37′	IR8W										•		2	[2]			•		2	[2]
W40	8	3.175	37.97	1°31′	IR8W										•		2	[2]			•		2	[2]
W42	8	3.175	39.97	1°27′	IR8W												•	○			○		•	○

[2] : Change the shim to AN16-2 ← [2] : Change the shim to AN16-2DT ←

Whitworth fine screw thread (W)

2/2

Nominal size	TPI	Pitch	Effective diameter	Lead angle	Shank material	Steel shank									"Tsuppari-Ichiban"		
					Insert size	22IR							27IR			22IR	
					Holder Cat. No. / Insert Cat. No.	SNR0020Q22	SNR0020Q22-2	CNR0025R22	CNR0032S22	(CNR0040T22)	(CNR0050U22)	(CNR0063V22)	CNR0040T27	(CNR0050U27)	(CNR0063V27)	TSNR0020R22	TCNR0025S22DT	(TCNR0032T22DT)
W44	7	3.629	41.68	1°35′	(22IR7W)		•	[2]								•	[2]	
W45	7	3.629	42.68	1°33′	(22IR7W)		•	[2]								•	[2]	
W46	7	3.629	43.68	1°31′	(22IR7W)		•	[2]								•	[2]	
W48	7	3.629	45.68	1°27′	(22IR7W)	•		•	○							•	•	○
W50	7	3.629	47.68	1°23′	(22IR7W)	•		•	○							•	•	○
W52	7	3.629	49.68	1°20′	(22IR7W)	•		•	○							•	•	○
W55	6	4.233	52.29	1°29′	(22IR6W)	•		•	○							•	•	○
W58	6	4.233	55.29	1°24′	(22IR6W)	•		•	•	○						•	•	○
W60	6	4.233	57.29	1°21′	(22IR6W)	•		•	•	○						•	•	○
W62	6	4.233	59.29	1°18′	(22IR6W)	•		•	•	○						•	•	○
W65	6	4.233	62.29	1°14′	(22IR6W)	•		•	•	○						•	•	○
W68	6	4.233	65.29	1°11′	(22IR6W)	•		•	•	•	○					•	•	○
W70	6	4.233	67.29	1°09′	(22IR6W)	•		•	•	•	○					•	•	○
W72	6	4.233	69.29	1°07′	(22IR6W)	•		•	•	•	○					•	•	○
W75	5	5.08	71.75	1°17′	(22IR5W)	•		•	•	•	○					•	•	○
W78	5	5.08	74.75	1°14′	(22IR5W)	•		•	•	•	○					•	•	○
W80	5	5.08	76.75	1°12′	(22IR5W)	•		•	•	•	○					•	•	○
W82	5	5.08	78.75	1°11′	(22IR5W)	•		•	•	•	•	○				•	•	○
W85	5	5.08	81.75	1°08′	(22IR5W)	•		•	•	•	•	○				•	•	○
W88	5	5.08	84.75	1°06′	(22IR5W)	•		•	•	•	•	○				•	•	○
W90	5	5.08	86.75	1°04′	(22IR5W)	•		•	•	•	•	○				•	•	○
W92	5	5.08	88.75	1°03′	(22IR5W)	•		•	•	•	•	○				•	•	○
W95	5	5.08	91.75	1°01′	(22IR5W)	•		•	•	•	•	○				•	•	○
W98	5	5.08	94.75	0°59′	(22IR5W)	•		•	•	•	•	○				•	•	○
W100	5	5.08	96.75	0°57′	(22IR5W)	•		•	•	•	•	○				•	•	○
W105	5	5.08	101.75	0°55′	(22IR5W)	•		•	•	•	•	○				•	•	○
W110	4	6.35	105.93	0°52′	(27IR4W)								•	•	○			

[2] : Change the shim to NXN22-2 ← [2] : Change the shim to GXN22-2 ←

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Selection of ST-type Toolholders

30° trapezoidal thread (TR)

1/2

Nominal size	Pitch	Effective diameter	Lead angle	Shank material	Steel shank														Carbide shank			"Tsuppari-Ichiban"						
				Insert size	16IR								22IR						27IR		16IR				16IR				22IR		
				Holder Cat. No. / Insert Cat. No.	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	CNR0032S16	CNR0040T16	CNR0050U16	SNR0020Q22	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	CNR0040T27	(CNR0050U27)	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TSNR0020R22	TCNR0025S22DT	(TCNR0032T22DT)
TR22×3	3	20.5	2°40′	IR30TR																								
TR24×5	5	21.5	4°14′	IR50TR																								
TR24×3	3	22.5	2°26′	IR30TR																								
TR26×5	5	23.5	3°52′	IR50TR																								
TR26×3	3	24.5	2°14′	IR30TR		○																						
TR28×5	5	25.5	3°34′	IR50TR																								
TR28×3	3	26.5	2°04′	IR30TR		•														○								
TR30×6	6	27	4°03′	IR60TR																								
TR30×3	3	28.5	1°55′	IR30TR		•														○								
TR32×6	6	29	3°46′	IR60TR																								
TR32×3	3	30.5	1°48′	IR30TR		•		[2]												•				[2]				
TR34×6	6	31	3°32′	IR60TR																								
TR34×3	3	32.5	1°41′	IR30TR		•		[2]												•				[2]				
TR36×6	6	33	3°19′	IR60TR																								
TR36×3	3	34.5	1°35′	IR30TR		•		2	[2]											•				[2]	[2]			
TR38×3	3	36.5	1°30′	IR30TR		•		2	[2]											•				[2]	[2]			
TR40×3	3	38.5	1°25′	IR30TR	•			•	○											○				•	○			
TR42×3	3	40.5	1°21′	IR30TR	•			•	○											○				•	○			
TR44×3	3	42.5	1°17′	IR30TR	•			•	•	○										○				•	•	○		
TR46×3	3	44.5	1°14′	IR30TR	•			•	•	○										○				•	•	○		
TR48×3	3	46.5	1°11′	IR30TR	•			•	•	○										○				•	•	○		
TR50×3	3	48.5	1°08′	IR30TR	•			•	•	○										○				•	•	○		
TR52×3	3	50.5	1°05′	IR30TR	•			•	•	•	○									○				•	•	○		
TR55×3	3	53.5	1°01′	IR30TR	•			•	•	•	○									○				•	•	○		
TR60×3	3	58.5	0°56′	IR30TR	•			•	•	•	○									○				•	•	○		

[2] : Change the shim to AN16-2

[2] : Change the shim to AN16-2DT

30° trapezoidal thread (TR)

2/2

Nominal size	Pitch	Effective diameter	Lead angle	Shank material	Steel shank																Carbide shank			"Tsuppari-Ichiban"						
				Insert size	16IR						22IR								27IR			16IR				16IR				22IR		
				Holder Cat. No. / Insert Cat. No.	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	CNR0032S16	SNR0020Q22	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	(CNR0040T22)	(CNR0050U22)	(CNR0063V22)	CNR0040T27	(CNR0050U27)	(CNR0063V27)	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TSNR0020R22	TCNR0025S22DT	(TCNR0032T22DT)
TR65×4	4	63	1°09′	IR40TR							•			•	•	•	○										•	•	○
TR70×4	4	68	1°04′	IR40TR							•			•	•	•	○										•	•	○
TR75×4	4	73	1°00′	IR40TR							•			•	•	•	○										•	•	○
TR80×4	4	78	0°56′	IR40TR							•			•	•	•	•	○									•	•	○
TR85×4	4	83	0°53′	IR40TR							•			•	•	•	•	○									•	•	○
TR90×4	4	88	0°50′	IR40TR							•			•	•	•	•	○									•	•	○
TR95×4	4	93	0°47′	IR40TR							•			•	•	•	•	○									•	•	○
TR100×4	4	98	0°45′	IR40TR							•			•	•	•	•	○									•	•	○
TR105×4	4	103	0°42′	IR40TR							•			•	•	•	•	○									•	•	○
TR110×4	4	108	0°41′	IR40TR							•			•	•	•	•	○									•	•	○
TR115×6	6	112	0°59′	IR60TR															•	•	○									
TR120×6	6	117	0°56′	IR60TR															•	•	○									
TR125×6	6	122	0°54′	IR60TR															•	•	○									
TR130×6	6	127	0°52′	IR60TR															•	•	○									
TR135×6	6	132	0°50′	IR60TR															•	•	○									
TR140×6	6	137	0°48′	IR60TR															•	•	○									
TR145×6	6	142	0°46′	IR60TR															•	•	○									
TR150×6	6	147	0°45′	IR60TR															•	•	○									
TR155×6	6	152	0°43′	IR60TR															•	•	○									
TR160×6	6	157	0°42′	IR60TR															•	•	○									
TR165×6	6	162	0°41′	IR60TR															•	•	○									
TR170×6	6	167	0°39′	IR60TR															•	•	○									

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Parallel pipe thread (PF) This table is also applied to G, Rp, and PS type threads.

Nominal size	TPI	Pitch	Effective diameter	Lead angle	Shank material	Steel shank												Carbide shank										"Tsuppari-Ichiban"			
					Insert size	6IR		11IR				16IR						6IR			11IR				16IR		16IR			
					Holder Cat. No.	SNR0006H06-2	SNR0008H06-2	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	(CNR0040T16)	(CNR0050U16)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)
					Insert Cat. No.																										
PF1/4	19	1.34	12.30	1°59′	IR19W	•	○												•		○										
PF3/8	19	1.34	15.81	1°33′	IR19W	•	•		○										•		○										
PF1/2	14	1.81	19.79	1°40′	IR14W				•		○												•		○						
PF5/8	14	1.81	21.75	1°31′	IR14W				•		○												•		○						
PF3/4	14	1.81	25.08	1°19′	IR14W			•		•		○										•		•		○		○			
PF7/8	14	1.81	29.04	1°08′	IR14W			•		•		•		○								•		•		○		•	○		
PF1	11	2.31	31.77	1°20′	IR11W							•		○												○		•	○		
PF1-1/8	11	2.31	36.42	1°09′	IR11W							•		•	○											○		•	•	○	
PF1-1/4	11	2.31	40.43	1°02′	IR11W							•		•	○											○		•	•	○	
PF1-1/2	11	2.31	46.32	0°55′	IR11W							•		•	•	○										○		•	•	•	○
PF1-3/4	11	2.31	52.27	0°48′	IR11W							•		•	•	•	○									○		•	•	•	○
PF2	11	2.31	58.14	0°43′	IR11W							•		•	•	•	○									○		•	•	•	○
PF2-1/4	11	2.31	64.23	0°39′	IR11W							•		•	•	•	•	○								○		•	•	•	○
PF2-1/2	11	2.31	73.71	0°34′	IR11W							•		•	•	•	•	○								○		•	•	•	○
PF2-3/4	11	2.31	80.06	0°32′	IR11W							•		•	•	•	•	○								○		•	•	•	○
PF3	11	2.31	86.41	0°29′	IR11W									0	0	0	0	0											0	0	0
PF3-1/2	11	2.31	98.85	0°26′	IR11W									0	0	0	0	0											0	0	0
PF4	11	2.31	111.55	0°23′	IR11W									0	0	0	0	0											0	0	0
PF4-1/2	11	2.31	124.25	0°20′	IR11W									0	0	0	0	0											0	0	0
PF5	11	2.31	136.95	0°18′	IR11W									0	0	0	0	0											0	0	0
PF6	11	2.31	162.35	0°16′	IR11W									0	0	0	0	0											0	0	0
PF7	11	2.31	187.35	0°13′	IR11W									0	0	0	0	0											0	0	0
PF8	11	2.31	213.15	0°12′	IR11W									0	0	0	0	0											0	0	0
PF9	11	2.31	238.55	0°11′	IR11W									0	0	0	0	0											0	0	0
PF10	11	2.31	263.95	0°10′	IR11W									0	0	0	0	0											0	0	0
PF12	11	2.31	314.75	0°08′	IR11W									0	0	0	0	0											0	0	0

0 : Change the shim to AN16-0 ←

0 : Change the shim to AN16-0DT ←

Taper pipe thread (PT) This table is also applied to Rc type pipe thread.

Nominal size	TPI	Pitch	Effective diameter	Lead angle	Shank material	Steel shank												Carbide shank										"Tsuppari-Ichiban"			
					Insert size	6IR				11IR				16IR					6IR			11IR				16IR		16IR			
					Holder Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	(CNR0040T16)	(CNR0050U16)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)
					Insert Cat. No.																										
PT1/4	19	1.34	12.30	1°59′	IR19PT	○													○												
PT3/8	19	1.34	15.81	1°33′	IR19PT	•		○											•		○										
PT1/2	14	1.81	19.79	1°40′	IR14PT						○													•		○					
PT3/4	14	1.81	25.28	1°19′	IR14PT									○									•		•		○	○			
PT1	11	2.31	31.77	1°20′	IR11PT									•		○											○	•	○		
PT1 1/4	11	2.31	40.43	1°02′	IR11PT									•		•	○										○	•	•	○	
PT1 1/2	11	2.31	46.32	0°55′	IR11PT									•		•	•	○									○	•	•	•	○
PT2	11	2.31	58.14	0°43′	IR11PT									•		•	•	•	○								○	•	•	•	○
PT2 1/2	11	2.31	73.71	0°34′	IR11PT									•		•	•	•	•	○							○	•	•	•	○
PT3	11	2.31	86.41	0°29′	IR11PT											0	0	0	0	0									0	0	0
PT3 1/2	11	2.31	98.85	0°26′	IR11PT											0	0	0	0	0									0	0	0
PT4	11	2.31	111.55	0°23′	IR11PT											0	0	0	0	0									0	0	0
PT5	11	2.31	136.95	0°18′	IR11PT											0	0	0	0	0									0	0	0
PT6	11	2.31	162.35	0°16′	IR11PT											0	0	0	0	0									0	0	0
PT7	11	2.31	187.75	0°13′	IR11PT											0	0	0	0	0									0	0	0
PT8	11	2.31	213.15	0°12′	IR11PT											0	0	0	0	0									0	0	0
PT9	11	2.31	238.55	0°11′	IR11PT											0	0	0	0	0									0	0	0
PT10	11	2.31	263.95	0°10′	IR11PT											0	0	0	0	0									0	0	0
PT12	11	2.31	314.75	0°08′	IR11PT											0	0	0	0	0									0	0	0

0 : Change the shim to AN16-0 ←

0 : Change the shim to AN16-0DT ←

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Selection of ST-type Toolholders

Taper pipe thread (NPT)

Nominal size	TPI	Pitch	Lead angle	Shank material	Steel shank											Carbide shank							"Tsuppari-Ichiban"			
				Insert size	6IR				16IR							6IR				16IR			16IR			
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	CNR0032S16	(CNR0040T16)	(CNR0050U16)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)
3/8NPT	18	1.41	1°37′	**IR18NPT**	•		○										•		○								
1/2NPT	14	1.81	1°40′	**IR14NPT**																							
3/4NPT	14	1.81	1°19′	**IR14NPT**					○												○			○			
1NPT	11.5	2.21	1°17′	**IR115NPT**					○			○									○			•	○		
1 1/4NPT	11.5	2.21	1°00′	**IR115NPT**					○			•	•	○							○			•	•	•	○
1 1/2NPT	11.5	2.21	0°52′	**IR115NPT**					○			•	•	○							○			•	•	•	○
2NPT	11.5	2.21	0°41′	**IR115NPT**					○			•	•	•	•	○					○			•	•	•	○
2 1/2NPT	8	3.175	0°50′	**IR8NPT**					○			•	•	•	•	○					○			•	•	•	○
3NPT	8	3.175	0°40′	**IR8NPT**					○			•	•	•	•	○					○			•	•	•	○
3 1/2NPT	8	3.175	0°35′	**IR8NPT**					○			•	•	•	•	○					○			•	•	•	○
4NPT	8	3.175	0°31′	**IR8NPT**					○			•	•	•	•	○					○			•	•	•	○
5NPT	8	3.175	0°25′	**IR8NPT**								0	0	0	0	0									0	0	0
6NPT	8	3.175	0°21′	**IR8NPT**								0	0	0	0	0									0	0	0
8NPT	8	3.175	0°16′	**IR8NPT**								0	0	0	0	0									0	0	0
10NPT	8	3.175	0°13′	**IR8NPT**								0	0	0	0	0									0	0	0
12NPT	8	3.175	0°11′	**IR8NPT**								0	0	0	0	0									0	0	0
14NPT	8	3.175	0°10′	**IR8NPT**								0	0	0	0	0									0	0	0
16NPT	8	3.175	0°09′	**IR8NPT**								0	0	0	0	0									0	0	0
18NPT	8	3.175	0°08′	**IR8NPT**								0	0	0	0	0									0	0	0
20NPT	8	3.175	0°07′	**IR8NPT**								0	0	0	0	0									0	0	0
24NPT	8	3.175	0°06′	**IR8NPT**								0	0	0	0	0									0	0	0

0 : Change the shim to AN16-0 ←

0 : Change the shim to AN16-0DT ←

29° trapezoidal thread (ACME)

Nominal size	TPI	Pitch	Effective diameter	Lead angle	Shank material	Steel shank												Carbide shank			"Tsuppari-Ichiban"			
					Insert size	16IR						22IR					27IR		16IR			16IR		22IR	
					Holder Cat. No. / Insert Cat. No.	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	CNR0032S16	SNR0020Q22	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	CNR0040T27	(CNR0050U27)	SNR0016R16SC	SNR0016R16SC-2	SNR0016R16SC-3	TSNR0016Q16	TCNR0020R16DT	TCNR0025S22DT	(TCNR0032T22DT)
3/8	12	2.12	8.465	4°33′	**IR12ACME**																			
7/16	12	2.12	10.053	3°50′	**IR12ACME**																			
1/2	10	2.54	11.43	4°03′	**IR10ACME**																			
5/8	8	3.18	14.274	4°03′	**IR8ACME**																			
3/4	6	4.23	16.934	4°33′	**IR6ACME**																			
7/8	6	4.23	20.109	3°50′	**IR6ACME**																			
1	5	5.08	22.86	4°03′	**IR5ACME**																			
1-1/8	5	5.08	26.035	3°33′	**IR5ACME**																			
1-1/4	5	5.08	29.21	3°10′	**IR5ACME**																			
1-3/8	4	6.35	31.75	3°39′	**IR4ACME**																			
1-1/2	4	6.35	34.925	3°19′	**IR4ACME**																			
1-3/4	4	6.35	41.275	2°48′	**IR4ACME**																			
2	4	6.35	47.625	2°26′	**IR4ACME**																			

Because this thread standard is characterized with large pitch and small diameter, (that is a large lead angle) the standard inserts and toolholders can not be used for machining this thread type. The application is limited to outside of the standard.

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Standard Cutting Conditions and Infeed Methods

Standard cutting conditions

Work material	Hardness	Cutting speed: v_c (m/min)			
		AH725	T313V	NS730	TH10
Carbon steels	< 200HB	80 ~ 180	100 ~ 200	150 ~ 200	–
	> 200HB	60 ~ 160	100 ~ 150	100 ~ 170	–
Stainless steels	–	50 ~ 130	70 ~ 130	–	–
Cast irons	–	–	70 ~ 150	–	70 ~ 90
Non-ferrous metals	–	–	–	–	100 ~ 500
Heat-resisting alloys	–	–	–	–	10 ~ 40
Hard materials	50 ~ 60HRC	–	–	–	10 ~ 30

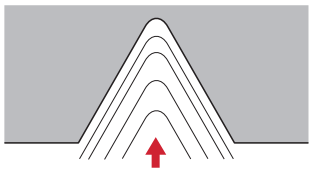
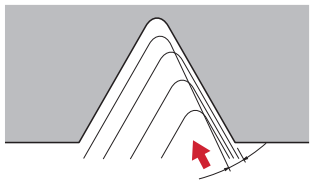
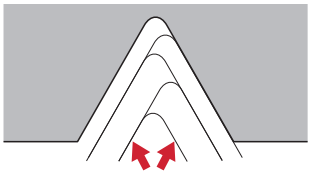
Threading Guidelines

Determine the infeed per pass and number of threads whilst referring to the table and description below.

Pitch	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5	5 ~
No. of threads	48	32	24	20	16	14	12	10	8	7	6	5.5	5 ~
No. of passes	4 ~ 6	4 ~ 7	4 ~ 8	5 ~ 9	6 ~ 10	7 ~ 12	7 ~ 12	8 ~ 14	10 ~ 16	11 ~ 18	11 ~ 18	11 ~ 19	12 ~ 24

Note:
- When using the full-profile insert, set the total infeed amount by taking the finish stock of 0.1mm into account.
- Set the first infeed to 150 ~ 200% of nose R and do not allow it to exceed 0.5 mm.
- The infeed amount during the final pass must be a minimum of 0.05 mm. No zero cuts should be made. (Extra small infeed or zero cutting of work hardened surfaces will reduce tool life.)
- The partial-profile insert or inside diameter insert has small nose R. Reduce the infeed per pass and increase the no. of passes.
- Regarding standard infeed per passes and no. of passes, please refer to our catalogue.

Infeed Methods for ST-type Tools

Infeed method	Features
 Straight infeed (radial infeed)	• Most simple and usual method Suitable for relatively small pitch threads of easily machinable material. • Chip contact length on right and left is longer, causing chattering, with increased load on the nose end. • When the half included angle is not symmetrical to the right and left, infeeding in the direction of 1/2 of the included angle will ensure equal machining with right and left cutting edges.
 Single edge infeed (flank infeed)	• Suitable for large pitch threads or easy to tear materials. Effectively prevents chattering. • Chips are discharged in one direction only. Satisfactory chip control. • Edge on the right (with zero infeed) tends to be worn heavily.
 Modified single-edge infeed (flank infeed)	• Suitable for large pitch threads or easy to tear materials. Effectively prevents chattering. • Chips are discharged in one direction only. Satisfactory chip control. • Edge on the right performs some cutting, therefore wear of this edge can thus be suppressed.
 Alternating flank infeed	• Suitable for large pitch threads or easy to tear material. Effectively prevents chattering. • Chips are discharged alternately in right and left directions, resulting possibly in entanglement. • Right and left edges are used alternately, ensuring uniform wear and extending tool life.

Infeed per Pass and Number of Passes

ISO metric full-profile inserts (for external)

Pitch	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6
Height of thread	0.32	0.47	0.63	0.79	0.95	1.11	1.27	1.58	1.9	2.21	2.53	2.85	3.16	3.48	3.8
Total depth of cut	0.42	0.57	0.73	0.89	1.05	1.21	1.37	1.68	2	2.31	2.63	2.95	3.26	3.58	3.9
Number of passes 1	0.15	0.18	0.25	0.25	0.3	0.3	0.3	0.3	0.35	0.35	0.4	0.4	0.45	0.5	0.5
2	0.12	0.12	0.2	0.2	0.25	0.25	0.25	0.25	0.3	0.3	0.35	0.35	0.35	0.35	0.4
3	0.1	0.12	0.13	0.15	0.2	0.2	0.2	0.25	0.25	0.3	0.3	0.3	0.3	0.3	0.3
4	0.05	0.1	0.1	0.14	0.15	0.16	0.2	0.23	0.2	0.25	0.25	0.25	0.25	0.25	0.25
5		0.05	0.05	0.1	0.1	0.15	0.15	0.2	0.2	0.21	0.2	0.2	0.25	0.23	0.25
6				0.05	0.05	0.1	0.12	0.15	0.15	0.2	0.2	0.2	0.2	0.2	0.2
7						0.05	0.1	0.15	0.15	0.15	0.15	0.2	0.2	0.2	0.2
8							0.05	0.1	0.15	0.15	0.15	0.15	0.18	0.15	0.15
9								0.05	0.1	0.15	0.15	0.15	0.15	0.15	0.15
10									0.1	0.1	0.13	0.15	0.15	0.15	0.15
11									0.05	0.1	0.1	0.15	0.13	0.15	0.15
12										0.05	0.1	0.1	0.1	0.15	0.15
13											0.1	0.1	0.1	0.15	0.15
14											0.05	0.1	0.1	0.1	0.15
15												0.1	0.1	0.1	0.1
16												0.05	0.1	0.1	0.1
17													0.1	0.1	0.1
18													0.05	0.1	0.1
19														0.1	0.1
20														0.05	0.1
21															0.1
22															0.05
23															
24															

ISO metric full-profile inserts (for internal)

Pitch	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6
Height of thread	0.29	0.43	0.58	0.72	0.87	1.01	1.16	1.45	1.74	2.03	2.32	2.61	2.9	3.19	3.48
Total depth of cut	0.39	0.53	0.68	0.82	0.97	1.11	1.26	1.55	1.84	2.13	2.42	2.71	3	3.29	3.58
Number of passes 1	0.08	0.1	0.14	0.15	0.2	0.2	0.2	0.25	0.25	0.3	0.3	0.35	0.35	0.4	0.4
2	0.07	0.09	0.13	0.13	0.16	0.18	0.18	0.22	0.22	0.25	0.25	0.25	0.25	0.25	0.25
3	0.07	0.08	0.11	0.12	0.14	0.16	0.17	0.2	0.2	0.22	0.22	0.22	0.22	0.22	0.22
4	0.06	0.08	0.1	0.11	0.12	0.14	0.16	0.18	0.18	0.2	0.2	0.2	0.2	0.2	0.2
5	0.06	0.07	0.08	0.1	0.12	0.12	0.14	0.16	0.16	0.18	0.18	0.18	0.2	0.2	0.19
6	0.05	0.06	0.07	0.09	0.1	0.1	0.12	0.15	0.15	0.16	0.18	0.18	0.18	0.18	0.18
7		0.05	0.05	0.07	0.08	0.09	0.1	0.1	0.14	0.14	0.16	0.16	0.16	0.16	0.17
8				0.05	0.05	0.07	0.08	0.1	0.13	0.13	0.14	0.14	0.14	0.14	0.16
9						0.05	0.06	0.08	0.12	0.12	0.14	0.14	0.14	0.14	0.15
10							0.05	0.06	0.1	0.11	0.12	0.12	0.13	0.13	0.14
11								0.05	0.08	0.1	0.12	0.12	0.13	0.13	0.14
12									0.06	0.1	0.1	0.12	0.12	0.13	0.13
13									0.05	0.07	0.1	0.11	0.12	0.12	0.13
14										0.05	0.09	0.1	0.12	0.12	0.13
15											0.07	0.1	0.11	0.12	0.12
16											0.05	0.09	0.1	0.12	0.12
17												0.08	0.1	0.1	0.12
18												0.05	0.1	0.1	0.1
19													0.08	0.1	0.1
20													0.05	0.1	0.1
21														0.08	0.1
22														0.05	0.1
23															0.08
24															0.05

Unified full-profile inserts

	For external							For internal						
No. of thread	24	20	18	16	14	12	8	24	20	18	16	14	12	8
Height of thread	0.67	0.8	0.89	1.01	1.15	1.34	2.01	0.61	0.74	0.82	0.92	1.05	1.23	1.84
Total depth of cut	0.77	0.9	0.99	1.11	1.25	1.44	2.11	0.71	0.84	0.92	1.02	1.15	1.33	1.94
Number of passes 1	0.25	0.25	0.28	0.3	0.3	0.3	0.35	0.2	0.2	0.2	0.2	0.25	0.25	0.3
2	0.22	0.2	0.23	0.25	0.25	0.25	0.3	0.16	0.16	0.18	0.18	0.2	0.2	0.25
3	0.15	0.16	0.18	0.18	0.23	0.21	0.25	0.12	0.13	0.15	0.16	0.18	0.18	0.22
4	0.1	0.14	0.15	0.15	0.18	0.18	0.22	0.1	0.12	0.14	0.14	0.16	0.16	0.2
5	0.05	0.1	0.1	0.1	0.14	0.15	0.2	0.08	0.1	0.1	0.11	0.13	0.13	0.18
6		0.05	0.05	0.08	0.1	0.12	0.2	0.05	0.08	0.1	0.1	0.1	0.1	0.16
7				0.05	0.05	0.1	0.16		0.05	0.05	0.08	0.08	0.1	0.14
8						0.08	0.16				0.05	0.05	0.08	0.12
9						0.05	0.12						0.08	0.12
10							0.1						0.05	0.1
11							0.05							0.1
12														0.05
13														
14														

Whitworth full-profile inserts

	For external									For internal								
No. of thread	20	19	18	16	14	12	11	10	8	20	19	18	16	14	12	11	10	8
Height of thread	0.83	0.88	0.92	1.04	1.19	1.39	1.51	1.66	2.08	0.83	0.88	0.92	1.04	1.19	1.39	1.51	1.66	2.08
Total depth of cut	0.93	0.98	1.02	1.14	1.29	1.49	1.61	1.76	2.18	0.93	0.98	1.02	1.14	1.29	1.49	1.61	1.76	2.18
Number of passes 1	0.25	0.28	0.3	0.3	0.3	0.3	0.3	0.35	0.35	0.2	0.2	0.22	0.22	0.25	0.25	0.25	0.3	0.35
2	0.2	0.22	0.24	0.25	0.25	0.25	0.25	0.3	0.3	0.18	0.18	0.18	0.18	0.21	0.21	0.21	0.25	0.3
3	0.18	0.18	0.18	0.18	0.23	0.2	0.2	0.23	0.25	0.16	0.16	0.17	0.17	0.2	0.2	0.2	0.22	0.25
4	0.15	0.15	0.15	0.14	0.2	0.18	0.18	0.2	0.23	0.14	0.16	0.16	0.16	0.18	0.18	0.18	0.2	0.22
5	0.1	0.1	0.1	0.12	0.16	0.15	0.15	0.15	0.22	0.12	0.13	0.14	0.14	0.16	0.16	0.16	0.16	0.2
6	0.05	0.05	0.05	0.1	0.1	0.14	0.14	0.14	0.2	0.08	0.1	0.1	0.12	0.14	0.14	0.14	0.14	0.18
7				0.05	0.05	0.12	0.12	0.12	0.18	0.05	0.05	0.05	0.1	0.1	0.1	0.12	0.12	0.16
8						0.1	0.12	0.12	0.16				0.05	0.05	0.1	0.1	0.12	0.14
9						0.05	0.1	0.1	0.14						0.1	0.1	0.1	0.12
10							0.05	0.05	0.1						0.05	0.1	0.1	0.11
11									0.05							0.05	0.05	0.1
12																		0.05
13																		
14																		
15																		

30° Trapezoidal inserts

	For external					For internal				
Pitch	2	3	4	5	6	2	3	4	5	6
Height of thread	1.25	1.75	2.25	2.75	3.5	1.25	1.75	2.25	2.75	3.5
Total depth of cut	1.35	1.85	2.35	2.85	3.6	1.35	1.85	2.35	2.85	3.6
Number of passes 1	0.25	0.25	0.3	0.3	0.3	0.2	0.22	0.25	0.25	0.25
2	0.2	0.22	0.25	0.25	0.25	0.18	0.2	0.22	0.22	0.22
3	0.2	0.2	0.22	0.2	0.23	0.18	0.18	0.2	0.2	0.21
4	0.18	0.18	0.2	0.2	0.2	0.16	0.16	0.2	0.18	0.2
5	0.15	0.17	0.18	0.18	0.18	0.15	0.16	0.17	0.18	0.18
6	0.12	0.16	0.16	0.16	0.18	0.13	0.16	0.16	0.16	0.18
7	0.1	0.14	0.15	0.16	0.16	0.1	0.14	0.16	0.16	0.16
8	0.1	0.14	0.14	0.15	0.16	0.1	0.14	0.14	0.15	0.16
9	0.05	0.12	0.14	0.14	0.16	0.1	0.12	0.14	0.14	0.16
10		0.12	0.12	0.14	0.16	0.05	0.12	0.12	0.14	0.16
11		0.1	0.12	0.14	0.16		0.1	0.12	0.14	0.16
12		0.05	0.12	0.12	0.15		0.1	0.12	0.12	0.15
13			0.1	0.12	0.15		0.05	0.1	0.12	0.15
14			0.1	0.12	0.15			0.1	0.12	0.15
15			0.05	0.12	0.14			0.1	0.12	0.14
16				0.1	0.14			0.05	0.1	0.14
17				0.1	0.12				0.1	0.12
18				0.1	0.12				0.1	0.12
19				0.05	0.12				0.1	0.12
20					0.12				0.05	0.12
21					0.1					0.1
22					0.1					0.1
23					0.05					0.1
24										0.05
25										
26										

29° Trapezoidal inserts

	For external			For internal		
No. of thread	8	6	5	8	6	5
Height of thread	1.88	2.41	2.92	1.88	2.41	2.92
Total depth of cut	1.98	2.51	3.02	1.98	2.51	3.02
Number of passes 1	0.25	0.25	0.25	0.22	0.22	0.22
2	0.22	0.22	0.22	0.2	0.2	0.2
3	0.2	0.2	0.2	0.18	0.18	0.18
4	0.18	0.18	0.18	0.16	0.18	0.18
5	0.16	0.17	0.18	0.16	0.16	0.16
6	0.16	0.16	0.16	0.16	0.15	0.16
7	0.16	0.16	0.16	0.15	0.15	0.15
8	0.14	0.14	0.14	0.14	0.14	0.14
9	0.14	0.14	0.14	0.14	0.14	0.14
10	0.12	0.14	0.14	0.12	0.14	0.14
11	0.1	0.14	0.14	0.1	0.14	0.14
12	0.1	0.12	0.14	0.1	0.12	0.14
13	0.05	0.12	0.12	0.1	0.12	0.12
14		0.12	0.12	0.05	0.12	0.12
15		0.1	0.12		0.1	0.12
16		0.1	0.12		0.1	0.12
17		0.05	0.12		0.1	0.12
18			0.12		0.05	0.12
19			0.1			0.1
20			0.1			0.1
21			0.05			0.1
22						0.05
23						
24						
25						
26						

PT full-profile inserts

	For external				For internal		
No. of thread	28	19	14	11	19	14	11
Height of thread	0.6	0.86	1.16	1.48	0.86	1.16	1.48
Total depth of cut	0.7	0.96	1.26	1.58	0.96	1.26	1.58
Number of passes 1	0.25	0.28	0.3	0.3	0.22	0.25	0.25
2	0.2	0.2	0.25	0.25	0.2	0.22	0.22
3	0.1	0.18	0.2	0.22	0.18	0.18	0.18
4	0.1	0.15	0.15	0.18	0.16	0.14	0.18
5	0.05	0.1	0.11	0.15	0.1	0.12	0.15
6		0.05	0.1	0.12	0.05	0.1	0.13
7			0.1	0.11	0.05	0.1	0.12
8			0.05	0.1		0.1	0.1
9				0.1		0.05	0.1
10				0.05			0.1
11							0.05
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							

NPT full-profile inserts

	For external				For internal		
No. of thread	18	14	11.5	8	14	11.5	8
Height of thread	1.14	1.47	1.79	2.58	1.47	1.79	2.58
Total depth of cut	1.24	1.57	1.89	2.68	1.57	1.89	2.68
Number of passes 1	0.2	0.25	0.25	0.3	0.22	0.22	0.25
2	0.18	0.22	0.22	0.25	0.2	0.2	0.2
3	0.17	0.2	0.2	0.2	0.18	0.18	0.2
4	0.16	0.18	0.18	0.2	0.18	0.18	0.2
5	0.14	0.17	0.18	0.2	0.16	0.16	0.2
6	0.12	0.16	0.17	0.2	0.14	0.16	0.2
7	0.12	0.12	0.16	0.18	0.12	0.16	0.18
8	0.1	0.12	0.14	0.18	0.12	0.14	0.18
9	0.05	0.1	0.12	0.16	0.1	0.12	0.16
10		0.05	0.12	0.16	0.1	0.12	0.16
11			0.1	0.14	0.05	0.1	0.14
12			0.05	0.14		0.1	0.14
13				0.12		0.05	0.12
14				0.1			0.1
15				0.1			0.1
16				0.05			0.1
17							0.05
18							
19							
20							
21							
22							
23							
24							
25							
26							

Designation System for TAC Threading Tools (TT-type)

Insert

TT **R** **42** **M** **-005**

① Hand	
R	Right
L	Left

② Insert size (mm)	
Inscribed circle	12.7
Thickness	3.2

③ Thread type	
M	60° thread angle
W	55° thread angle

④ Corner radius (mm)	
Blank	0
-005	0.05

Toolholder

TT- **20** **20** **R** **E**

① Shank height (mm)

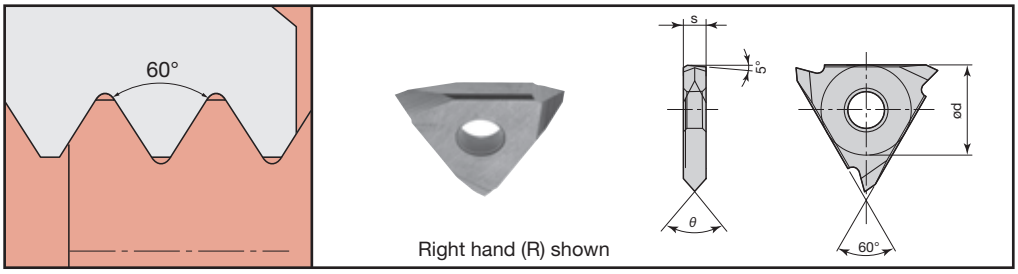
② Shank width (mm)

③ Hand	
R	Right
L	Left

④ External or Internal	
E	External
I	Internal

TT-type Inserts

60° metric



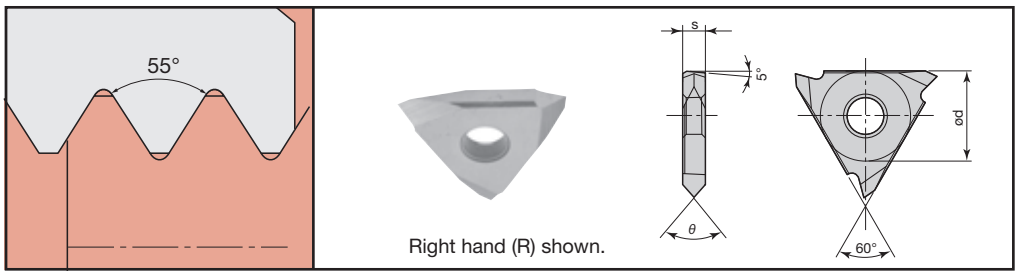
Right hand (R) shown

Partial-profile inserts for external and internal threads

Pitch	No. of threads	Hand of cut	Cat. No.	Grades				Dimensions (mm)			Applicable toolholders
				Uncoated		Cermet		ød	s	θ	
				TH10		NS530					
≤ 3	≥ 8	R	TTR42M					12.7	3.2	60°	TT-□□□□RE/LI
		L	TTL42M								TT-□□□□LE/RI
≤ 3	≥ 8	R	TTR42M-005	●		●		12.7	3.2	60°	TT-□□□□RE/LI
		L	TTL42M-005	●		●					TT-□□□□LE/RI

TT-type Inserts

55° Whitworth



Right hand (R) shown.

partial-profile inserts for external and internal threads

Pitch	No. of threads	Hand of cut	Cat. No.	Grades				Dimensions (mm)			Applicable toolholders
				Uncoated		Cermet		ød	s	θ	
				TH10		NS530					
≤ 3	≥ 8	R	TTR42W					12.7	3.2	55°	TT-□□□□RE/LI
		L	TTL42W								TT-□□□□LE/RI
≤ 3	≥ 8	R	TTR42W-005	●		●		12.7	3.2	55°	TT-□□□□RE/LI
		L	TTL42W-005	●		●					TT-□□□□LE/RI

Packing Quantity : 5pcs.

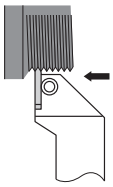
● : Stocked items.

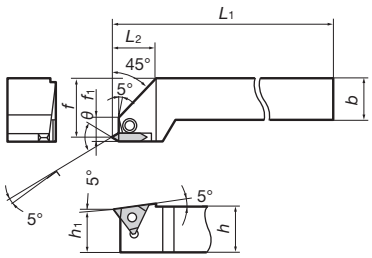
TT-R/LE

Pitch ~3mm | Pitch Number of Threads 8~ | 3 No. of corners

External threading

External threading
TT-R/LE





Right hand (R) shown.

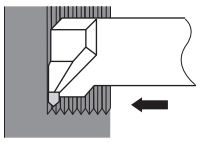
Cat. No.	Hand of cut	Stock	Dimensions (mm)							Applicable inserts	Parts		
			h	b	L_1	L_2	h_1	f	f_1		①Clamp	②Clamping screw	Wrench
TT-2020RE	R		20	20	125	25	20	25	15	TTR42□○○○	CP91	DS-6	P-3
TT-2020LE	L									TTL42□○○○			
TT-2525RE	R	●	25	25	150		25	32		TTR42□○○○			
TT-2525LE	L	●								TTL42□○○○			

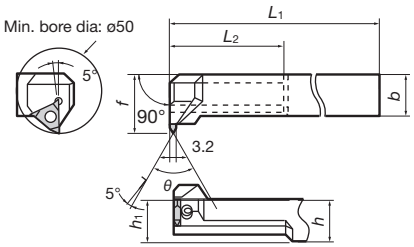
TT-R/LI

Pitch ~3mm | Pitch Number of Threads 8~ | 3 No. of corners

Internal threading

Internal threading
TT-R/LI



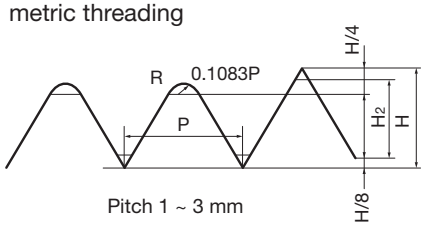


Right hand (R) shown.

Cat. No.	Hand of cut	Stock	Dimensions (mm)							Applicable inserts	Parts		
			h	b	L_1	L_2	h_1	f	f_1		①Clamp	②Clamping screw	Wrench
TT-2020RI	R		20	20	160	60	20	30	–	TTL42□○○○	CP91	DS-6	P-3
TT-2020LI	L									TTR42□○○○			
TT-2525RI	R	●	25	25	200	70	25	35		TTL42□○○○			
TT-2525LI	L									TTR42□○○○			

Notes : When using a right or left hand insert, the right hand insert is used for left hand toolholders and left hand insert is used for right hand toolholders.

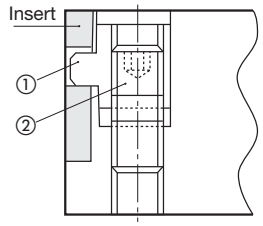
- Relationship between pitch, depth of cut and number of passes for external metric threading



Note: Maximum machinable pitch is 3 mm.

	P	1	1.25	1.5	1.75	2	2.5	3
	H_2	0.6	0.76	0.92	1.09	1.25	1.57	1.9
	H	0.866	1.083	1.299	1.516	1.732	2.165	2.598
Number of passes	1	0.25	0.3	0.3	0.3	0.35	0.4	0.4
	2	0.15	0.2	0.25	0.25	0.25	0.3	0.35
	3	0.1	0.1	0.15	0.2	0.2	0.25	0.28
	4	0.05	0.06	0.1	0.1	0.16	0.2	0.2
	5	0.05	0.06	0.05	0.1	0.1	0.15	0.2
	6		0.06	0.05	0.07	0.07	0.1	0.13
	7			0.02	0.05	0.05	0.07	0.1
	8				0.02	0.02	0.05	0.1
	9					0.02	0.03	0.05
	10						0.02	0.05
	11							0.02
	12							0.02

● Part assembly



● : Stocked items.

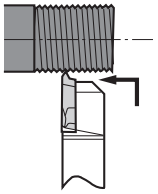
Relating pages | Parts for TAC tools (14–1 ~)

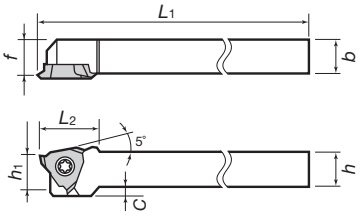
JSTT R/L

Pitch 0.5~1mm | Pitch Number of Threads 48~24 | 3 No. of corners

Without offset
J-type • Screw-on type

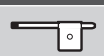
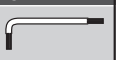
External threading
JSTTR/L





Can be wrenched from back side with both-end Torx screw.

Right hand (R) shown.

Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	h_1	f	C				
JSTTR/L1010K3	●		10	10	125	16.5	10	9.5	2	JTTR/L3□□□□	CSTB-4SD	T-8F	(T-8L)
JSTTR/L1212K3	●		12	12			12	11.5	—				∗Optional
JSTTR/L1616K3	●		16	16			16	15.5					

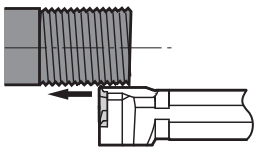
J series for Threading Tools

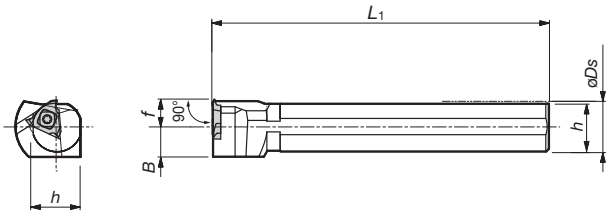
JS-TTL3

Pitch 0.5~1mm | Pitch Number of Threads 48~24 | 3 No. of corners

J-type • Screw-on type

External threading
JS-TTL3

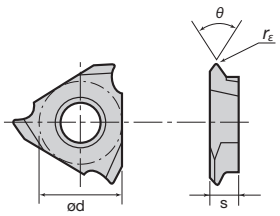




Left hand (L) shown.

Cat. No.	Stock	Dimensions (mm)						Applicable inserts	Clamping screw	Wrench
		$øD_S$	f	L_1	L_2	h	B			
JS19K-TTL3	●	19.05	10	125		18	11.5	JTTR30□□F	CSTB-4S	T-15F
JS20K-TTL3	●	20				19				
JS22K-TTL3	●	22				21				
JS25K-TTL3	●	25.4				24	12.7			

JTT-type inserts (sharp edge)



Right hand (R) shown.

Cat. No.	Dimensions (mm)				Stocked grades											
					Coated		Coated Cermet		Cermet						Uncoated	
					J740		J530				NS530				TH10	
	θ	ød	s	r_ε	R	L	R	L	R	L	R	L	R	L	R	L
JTTR/L3005F-55	55°	9.525	3.18	0.05	●											
JTTR/L3005F	60°				●						●				●	
JTTR/L3010F				0.1	●						●				●	

Notes: Left hand holder use right hand insert.
Machinable pitch range: 0.5 to 1 mm.

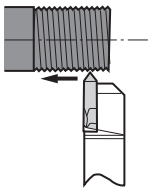
● : Stocked items.

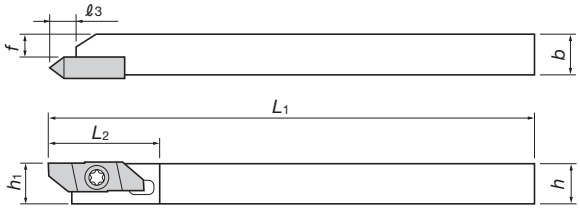
JSXB R/L

Pitch 0.5~1mm | Pitch Number of Threads 48~24 | 2 No. of corners

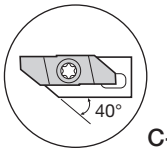
J-type • Screw-on type

External threading
JSXBR/L





JSXB type toolholders are also used for back turning JXB-type inserts.



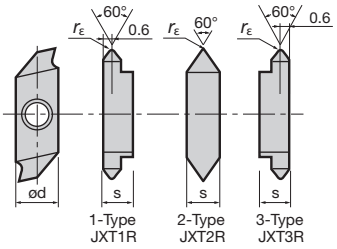
C-type

- Can be wrenched from back side with both end torx screw.
- This toolholder is also compatible with JSXB-type insert for back turning.

Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	ℓ_3	h_1	f				
JSXBR/L1010K8-C	●	●	10	10	125	29	6.4	10	5.7	JXT□R/L□□□□□	CSTB-4SD	T-8F	(T-8L) ∗Optional
JSXBR/L1212K8-C	●	●	12	12				12	7.7				
JSXBR/L1616K8	●	●	16	16				16	11.7				
JSXBR/L2020K8	●	●	20	20				20	15.7				
JSXBR/L2525K8	●	●	25	25				25	20.7				

JXT-type inserts (sharp edge)



Right hand (R) shown.

Cat. No.	Dimensions (mm)				Stocked grades							
					Coated		Cermet				Uncoated	
					J740		NS530				TH10	
	θ	ød	s	r_ε	R	L	R	L	R	L	R	L
JXT1R/L6000F	60°	8	3.97	0.03	●		●				●	
JXT2R/L6000F					●		●				●	
JXT3R/L6000F												

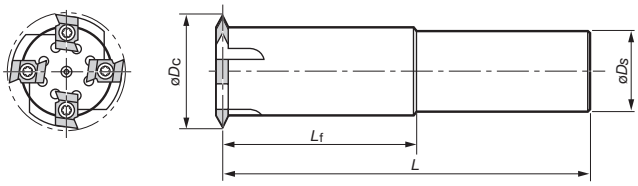
Notes: Right hand holder use right hand insert and left hand holder use left hand insert.
Machinable pitch range: 0.5 to 1 mm.

● : Stocked items

Single tooth threading mills

2 No. of corners | Thread type M28~M95mm

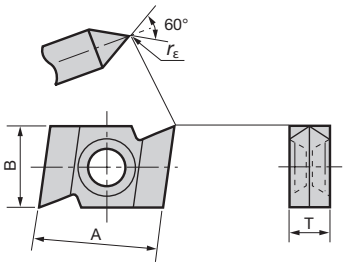
P Steel | M Stainless



Right hand, 4 teeth shown.

Cat. No.	Stock		No. of teeth	Dimensions (mm)				Applicable inserts	Clamping screw	Wrench	Range of Internal thread
	R	L		øDc	øDs	Lf	L				
D23-D25-45R/L	○		1	23	25	45	115	T1-R□□	CSTB-4	T-15F	M28 ~ M30
D25-D25-45R/L	○		1	25	25	45	115				M32 ~ M42
D38-D32-85R/L	○		2	38	32	85	165				M45 ~ M56
D50-D42-100R/L	○		4	50	42	100	190				M58 ~ M68
D55-D42-100R/L	○		4	55	42	100	190	T2-R□□	CSTB-5	T-20F	M64 ~ M85
D60-D42-100R/L	○		4	60	42	100	190				M70 ~ M85
D80-D42-100R/L	○		6	80	42	100	190				M90 ~

Applicable Inserts



Right and Left inserts is share.

Cat. No.	Grade	Dimensions (mm)			
	GH330	A	B	T	rε
T1-R14	○	14.4	9.525	4.76	0.14
T1-R28	○				0.28
T1-R35					0.35
T2-R14	○	17.8	12.70	6.35	0.14
T2-R28	○				0.28
T2-R35					0.35
T2-R42					0.42

Standard cutting conditions

Work materials	Grades	Cutting speed v_c (m/min)	Feed per tooth f_z (mm/t)
Mild steels・Unharded steels (< 200HB)	GH330	150 ~ 200	0.3 ~ 0.4
Carbon steels・Alloy steels (< 300HB)	GH330	150 ~ 200	0.17 ~ 0.26
Die steels (< 50HRC)	GH330	30 ~ 50	0.14 ~ 0.2
Stainless steels (< 300HB)	GH330	100 ~ 150	0.2 ~ 0.4

Notes on machining

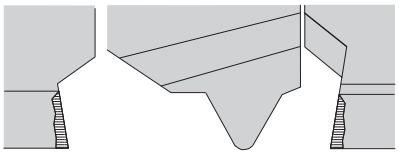
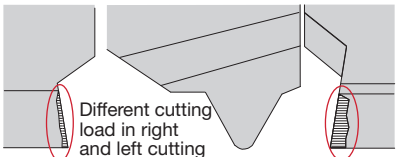
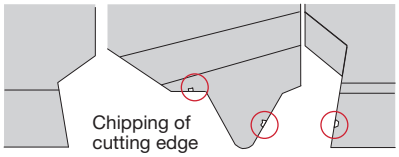
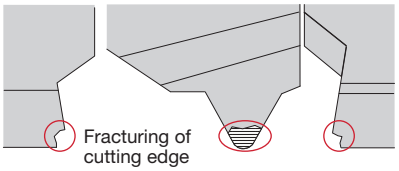
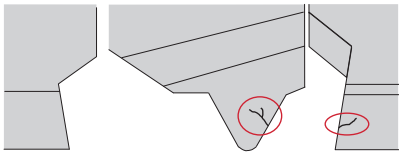
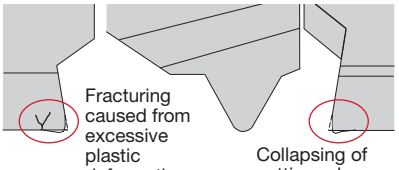
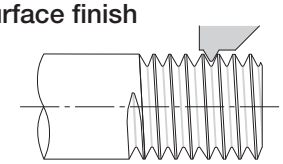
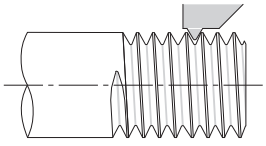
- Climb milling is recommended.
- When threading a blind hole, use the right hand cutter in right hand rotation. Cut up from the bottom to prevent chip recutting.
- When machining internal threads from the mouth, use the left hand cutter in left hand rotation.

○ : Please contact our sales office.

Threading mills and applicable threads

Cutter dia.	Applicable Thread								Minor diameter of max.pitch thread	
	Thread type	Coarse screw thread	Fine screw thread						Coarse screw thread	Fine screw thread
D23 X 1 tooth T1-type of inserts	M28					2	1.5	1		25.835
	M30	3.5			3	2	1.5	1	26.211	
D25 X 1 tooth T1-type of inserts	M32					2	1.5			29.835
	M33	3.5			3	2	1.5		29.211	
	M35						1.5			33.376
	M36	4.0			3	2	1.5		31.670	
	M38						1.5			36.376
	M39	4.0			3	2	1.5		34.670	
	M40				3	2	1.5			36.752
	M42	4.5		4	3	2	1.5		37.129	
D38 X 2 teeth T1-type of inserts	M45				3	2	1.5		40.129	
	M48	5.0		4	3	2	1.5		42.587	
	M50				3	2	1.5			46.752
	M52	5.0		4	3	2	1.5		46.587	
	M55			4	3	2	1.5			50.670
	M56	5.5		4	3	2	1.5		50.046	
D50 X 4 teeth T1-type of inserts	M58				3	2	1.5			53.670
	M60			4	3	2	1.5		54.046	
	M62			4	3	2	1.5			57.670
	M64	6.0		4	3	2	1.5		57.505	
	M65			4	3	2	1.5			60.670
	M68	6.0		4	3	2	1.5		61.505	
D55 X 4 teeth T2-type of inserts	M64			4	3	2	1.5		57.505	
	M65			4	3	2	1.5			60.670
	M68	6.0		4	3	2	1.5		61.505	
D60 X 4 teeth T2-type of inserts	M70			4	3	2	1.5			63.505
	M72		6	4	3	2	1.5			65.505
	M75			4	3	2	1.5			70.670
	M76		6	4	3	2	1.5			69.505
	M78					2				75.835
	M80		6	4	3	2	1.5			73.505
	M82					2				79.835
	M85		6	4	3	2				78.505
D80 X 6 teeth T2-type of inserts	M90			4	3	2				83.505
	M95		6	4	3	2				88.505

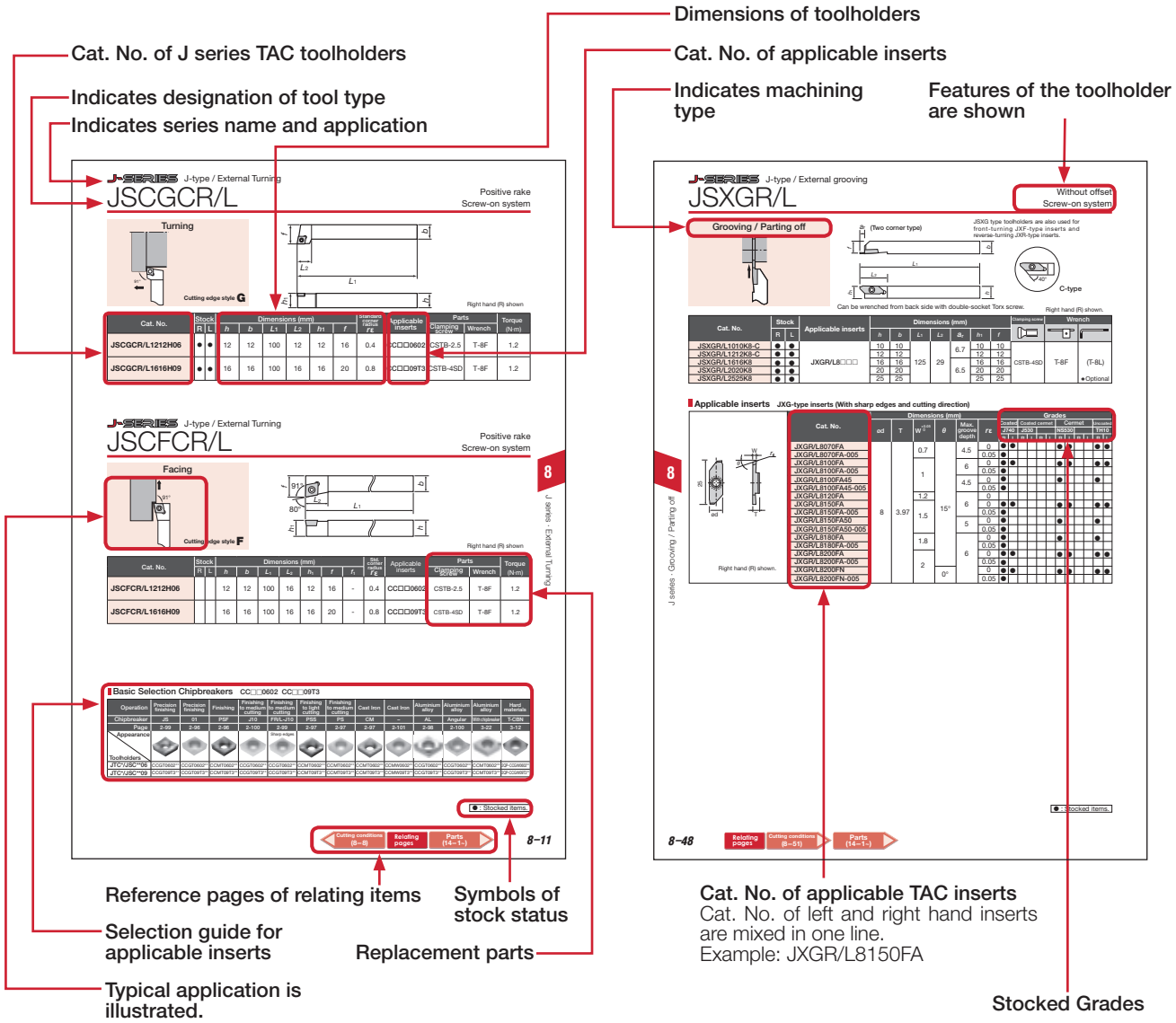
Troubleshooting in Threading for ST-type Tools

Problem	Possible causes	Countermeasures
Excessive wear  Flank wear develops.	• Cutting speed too high.	• Reduce the cutting speed.
	• Incorrect carbide grade.	• Change to a more wear resistant grade.
	• Too many passes.	• Reduce the number of passes.
	• Too small depth of cut in finishing.	• Increase the depth of cut to at least 0.05 mm or more in final finishing.
	• Poor coolant supply.	• Supply sufficient coolant to the cutting point.
Uneven wear in the left and right flank faces  Different cutting load in right and left cutting edges.	• Incorrect relief angles for the thread's lead angle.	• Select a proper shim.
	• Use of flank infeed.	• Change to alternative flank infeed.
	• Half angles of the thread are asymmetrical.	• Coincide the infeed angle of the tool with a half angle of the thread.
Chipping  Chipping of cutting edge	• Too low cutting speed.	• Increase the cutting speed.
	• Too small honing width.	• Increase the honing width.
Edge breakage  Fracturing of cutting edge	• Recutting chips.	• Supply sufficient coolant to the cutting point.
	• Caused from the work shape.	• Chamfer the portion from which the tool enters the cut and add a groove to the portion from which the tool leaves the cut. The chamfer and groove should be larger than the thread height.
	• Unstable holding of the workpiece and the tool.	• Reinforce the holding and select a tougher insert grade.
Insert cracking  Cracks occur in cutting edge	• Inconsistent coolant supply.	• Use constant flood coolant to the cutting point.
	• Too high cutting speed.	• Reduce the cutting speed.
	• Incorrect grade selection.	• Change to a tougher grade.
Distinct plastic deformation  Fracturing caused from excessive plastic deformation Collapsing of cutting edge	• Too large depth of cut per pass.	• Reduce the depth of cut per pass.
	• Insufficient coolant supply.	• Supply sufficient coolant to the cutting point.
	• Too high cutting speed.	• Reduce the cutting speed.
	• Incorrect grade selection.	• Use a harder insert grade.
Poor surface finish  Rubbed surface or chip welding	• Improper relief angle.	• Select a proper shim.
	• Too low cutting speed.	• Increase the cutting speed.
	• Too rapid tool wear.	• Change to a more wear resistant grade.
Inaccurate thread form  Disqualified in gaging.	• Inaccurate tool setting.	• Check and correct the cutting edge height and tool inclination by using a dial gage.
	• Insufficient thread height.	• Check and correct the depth of cut.
	• Too rapid tool wear.	• Change to a more wear resistant grade.

MEMO

Chapter Composition of J series Tools for Small Lathes

◆In this chapter, specifications of tools are described by machining type in order of following: External turning, Facing → Front turning, Reverse turning, Back turning → Boring → Grooving → Parting → Threading



■ Ordering information

- When ordering a J series toolholder, please specify Cat. No. and quantity.
  Example: **JSCLC R 1212 H09 1** piece
  - Standard packing quantity is 1 piece
  - Inserts must be ordered separately
- When ordering a J series TAC inserts, please specify Cat. No., grade and quantity.
  Example: **JXGR8150FA J740 10** pieces
  - Standard packing quantity: 10 pieces

Guidance

■ Introduction of J series turning tools ····· 8-2
■ Overview J series turning tools ····· 8-3
■ Types and application of TAC External Toolholders ····· 8-5
■ Insert grades for J series turning tools ····· 8-8
■ The features of grades and standard cutting conditions ····· 8-8
■ Overview of J series Internal Turning ····· 8-26
■ TinyTurn Standard cutting condition ····· 8-35
■ StreamJetBar Standard cutting condition ····· 8-41
■ Types and application of TAC Grooving and Parting Tools ····· 8-42

8 J series Turning Tools for Small Lathes

Products

■ External turning tools

● JTC□	Turning / Facing	Side clamping system	CC□□ inserts	8-9
● JSC□	Turning / Facing	Screw-on system	CC□□ inserts	8-9
● JTD□	Turning / Profiling	Side clamping system	DC□□ inserts	8-12
● JSD□	External profiling	Screw-on system	DC□□ inserts	8-12
● JS-SDUCL	Front turning (Round shank)	Screw-on system	DC□□ inserts	8-15
● JTT□	Turning	Side clamping system	TC□□ inserts	8-16
● JST□	Turning	Screw-on system	TC□□ inserts	8-16
● JSV□	Turning / Facing / Profiling	Screw-on system	VP□□ inserts	8-17
● JSV□	Turning / Facing / Profiling	Screw-on system	VB□□ inserts	8-19
● JT□□	Turning / Facing / Profiling	Side clamping system	CN□□ / DN□□ / TN□□ inserts (negative)	8-20
● JSXGR/L	Front and Reverse turning		JXFR/L, JXRR/L inserts	8-21
● JSXBR/L	Back turning		JXBR/L inserts	8-22
● JSTBR/L	Back turning		JTBR/L inserts	8-23
● JS-TBL3	Back turning (Round shank)		JTBR/L inserts	8-23
● JSEGR/L	Back turning	Screw-on system	J10ER/L inserts	8-24

■ Internal turning tools

● Solid boring bars "TinyTurn" JB type				
JBT	Boring, profiling, chamfering			8-28
JBP	Boring, chamfering			8-29
JBU	Back boring, chamfering			8-29
JBC	Boring, 45° chamfering			8-30
JBB	Back boring			8-30
JBI	Threading (metric thread)			8-31
JBG	Grooving			8-32
JBF	Face grooving			8-33
JBS	Face grooving (for machining shaft)			8-33
JBR	Boring, profiling (full radius type)			8-34
JBBS sleeves				8-34
● Internal Turning "StreamJetBar"				
● SCLCR/L	Boring / internal facing	Screw-on system	CC□□ inserts	8-36
● STUPR/L	Boring	Screw-on system	TP□□ inserts	8-37
● SWUBR/L	Boring	Screw-on system	WB□□ inserts	8-38
● SE□PR/L	Retracting / Facing	Screw-on system	EP□□ inserts	8-39
● BLM sleeves				8-41

■ Grooving and parting tools

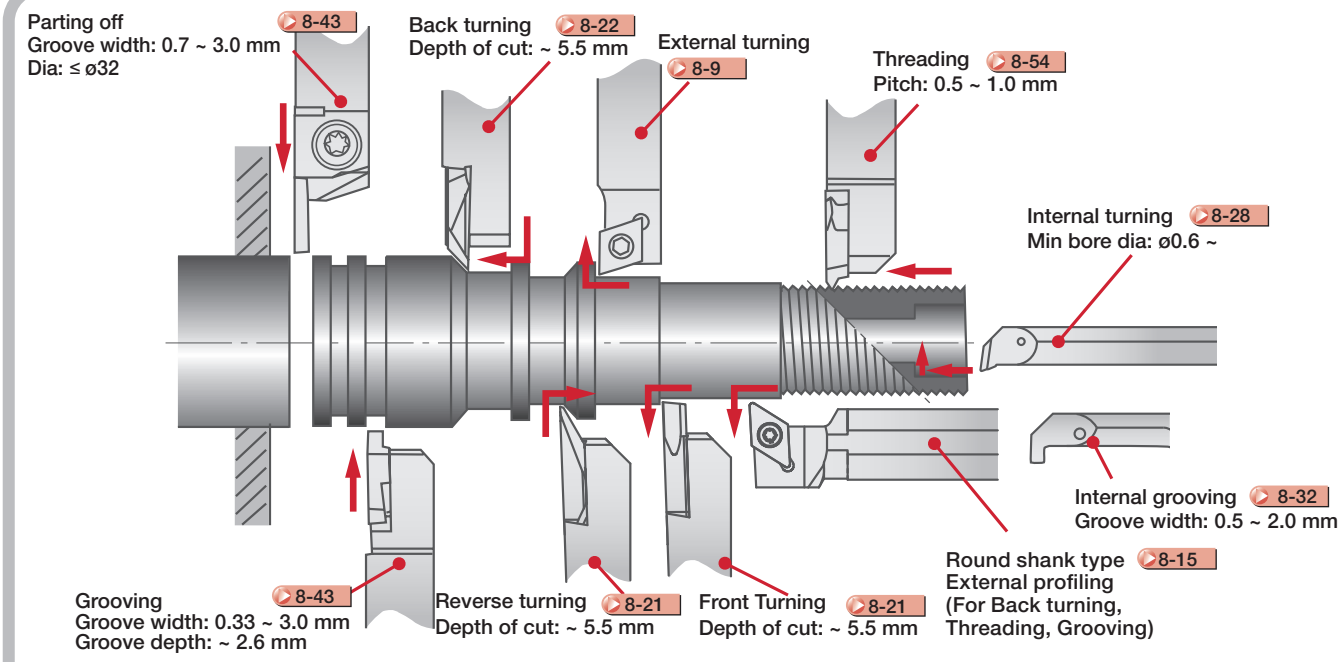
● JCTER/L	Grooving / Parting off	D□□inserts	8-43
● JSXGR/L	Grooving / Parting off	JSXGR/L inserts	8-48
● JSVGR/L	Grooving	JVGR/L inserts	8-49
● JSTGR/L	Grooving	JTGR/L inserts	8-50
● JS-TGL3	Grooving (Round shanks)	JTGR/L inserts	8-50
● JCGSSR/L	Parting off	GE20 inserts	8-52
● JCCWSR/L	Parting off	JCCR/L inserts	8-53
● JCGWSR/L	Parting off	JCGN inserts	8-53

■ Threading tools

● JSTTR/L	External threading	JTTR/L inserts	8-54
● JS-TTL3	External threading (Round shank)	JTTR/L inserts	8-54
● JSXBR/L	External threading	JXT□R/L inserts	8-55
● SER/L	External threading	16ER/L inserts	8-56

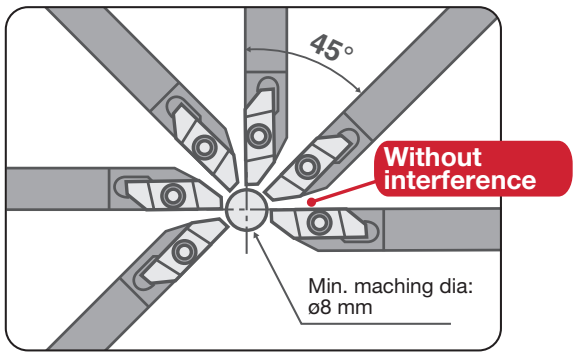
J-SERIES Introduction of tools

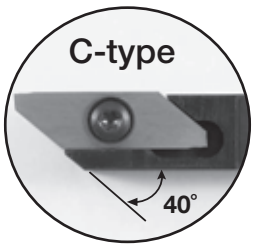
J-SERIES Tooling example



- **Applicable for various machining such as front turning, back turning, grooving, threading, parting off, internal turning and so on.**

- **Suitable for cam style small lathe (C-type toolholders)**





JSXG

- C-type toolholders specially suited for cam style small lathe.
- Min. simultaneous machining dia: ø8 mm.
- Applicable for front turning, back turning, reverse turning, threading, parting off and grooving.

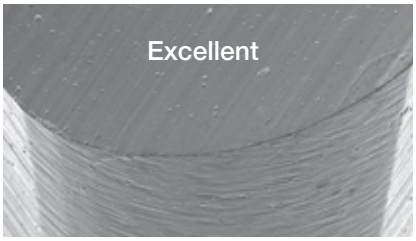
J-SERIES Insert grades for tools

- Excellent sharpness and long tool life by the combination of ultra fine grain cemented carbides and thin PVD-coat, "SH-coat".

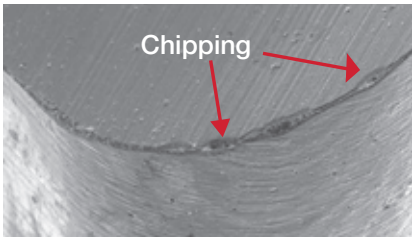
SH730

General cemented carbide

- Comparison of sharpness



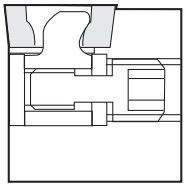
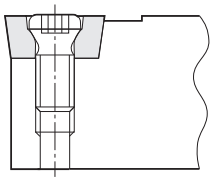
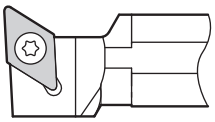
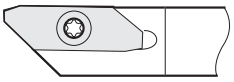
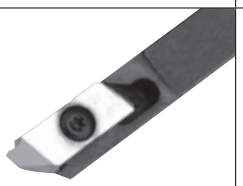
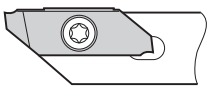
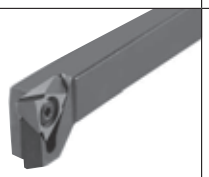
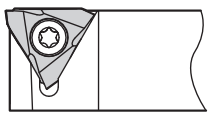
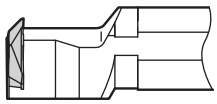
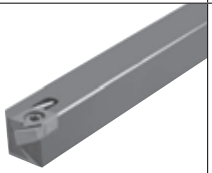
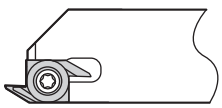
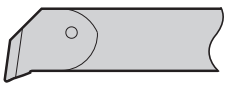
J series



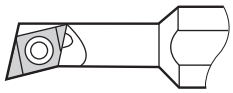
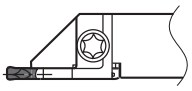
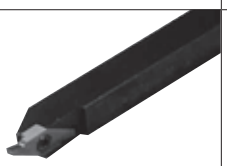
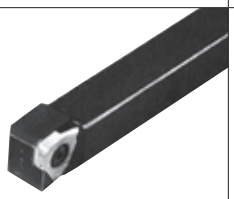
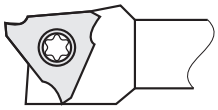
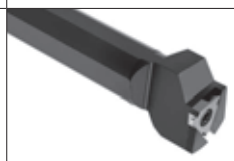
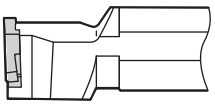
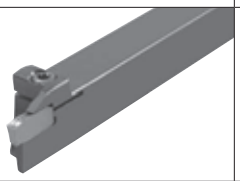
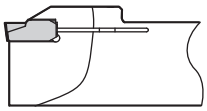
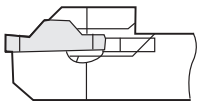
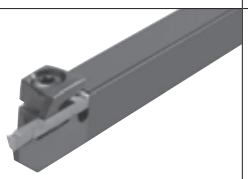
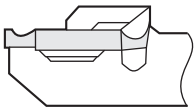
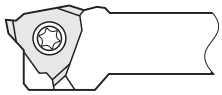
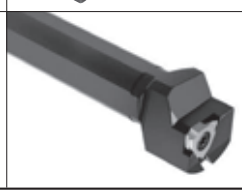
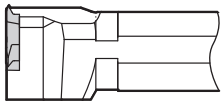
Competitor

Overview of J series tools

Clamping Mechanism and Features

Appli.	Type	Appearance	Clamping mechanism	Features
External turning	**JT** 8-9			● Good operability for indexing the insert in limited space such as on gang tooling type lathes ● Good handling allows operation of clamping screw from back side of the toolholder ● Available shank height : 8, 10, 12 and 16 mm
	J 8-9			● Available in small to medium shank sizes and abundant cutting edge styles ● The smaller shank size toolholders are best suitable for CNC automatics and other small lathes and larger sizes are usable for general purpose lathes. ● Secure insert fastening by highly durable torx screw
	JS-SDUCL 8-15 (Round shank)			● Round shank type for small lathe ● For external copying ● Shank dia: ø19.05 ~ ø25.4 mm
Reverse turning	**JSXG** Front and reverse turning 8-21 Grooving and parting off 8-48			● The insert is clamped with a both end torx screw, resulting in easy and rapid changing or indexing of the insert. (Can be operated from the back side with a both end torx screw.) ● Applicable for front, reverse turning, grooving and parting off by changing insert ● Max. groove depth is 6.0 mm
	JSXB Back turning 8-22 Threading 8-55			● The insert is clamped with a both end torx screw, resulting in easy and rapid changing or indexing of the insert. (Can be operated from the back side with a both end torx screw.) ● Applicable for back turning and threading by changing insert ● The inserts for threading are two corner type. Applicable for 60° threads of 0.5 to 1.0 mm pitches.
	JSTB 8-23			● Applicable for back turning ● The insert is clamped with a both end torx screw, resulting in easy and rapid changing or indexing of the insert. (Can be operated from the back side with a both end torx screw.) ● Three corner type insert
	JS-TBL3 8-23 (Round shank)			● Round shank type for small lathe ● For back turning ● Shank dia: ø19.05 ~ ø25.4 mm
	JSEG 8-24			● Applicable for back turning ● Max. Parting off dia: ø3 mm ● Two corner type insert
Internal turning	**JB□** 8-28			● 146 solid bar items in a wide range of geometries ● Minimum boring diameter: ø*D*m = 0.6 mm

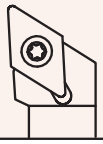
Overview of J series tools

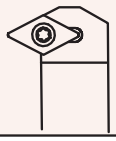
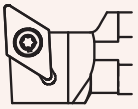
Appli.	Type	Appearance	Clamping mechanism	Features
Internal turning	**Stream JetBar Mini** (Round shank) 8-36			● Minimum bore diameter from ø4.5 mm ● Steel and carbide shank available ● Straight shank type available ● Can be used with internal coolant supply ● Well designed chip pocket for excellent chip evacuation
Grooving	**JCTER/L** 8-43			● M-class insert with good chip control ● Applicable in various grooving and parting off ● Right and left hand inserts are stocked
	JSVG 8-49			● Applicable for grooving ● Max. groove depth is 5.5 mm
	JSTG 8-50			● Applicable for grooving ● The insert is clamped with a both end torx screw, resulting in easy and rapid changing or indexing of the insert. (Can be operated from the the back side with a both end torx screw.) ● Applicable for grooving E-ring grooves of small parts (Cutting edge width: 0.33 ~ 2.5 mm) ● Three corner type insert
	JS-TGL3 (Round shank) 8-50			● Round shank type for grooving ● Shank dia: ø19.05 ~ ø25.4 mm ● Three corner type insert
Parting off	**JCGSS** 8-52			● Applicable for parting off ● M-class insert with good chip control ● One corner type insert
	JCCWS 8-53			● Applicable for parting off ● Secure engaging of the clamp and the top face of the insert, allows secure clamping and superior accuracy of cutting edge positioning. ● Right and left hand inserts are stocked.
	JCGWS 8-53			● Applicable for parting off ● Right and left hand inserts are stocked.
Threading	**JSTT** 8-54			● Applicable for threading ● The insert is clamped with a both end torx screw, resulting in easy and rapid changing or indexing of the insert. (Can be operated from the back side with a both end torx screw.) ● Three corner type insert
	JS-TTL3 (Round shank) 8-54			● Round shank type for threading ● Shank dia: ø19.05 ~ ø25.4 mm ● Machinable pitch range: 0.5 ~ 1 mm

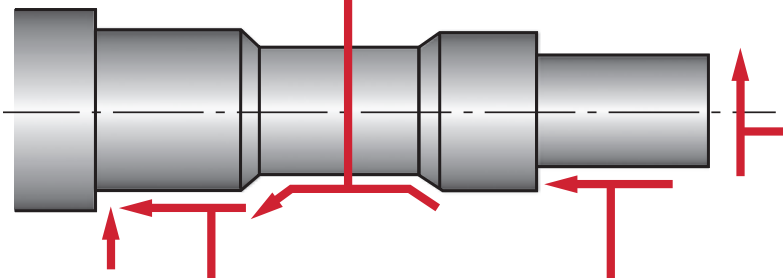
Types and application of TAC External Toolholders

For external profiling

Positive rake

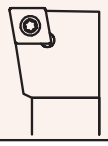
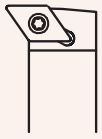
JTDJ2CR/L (P.8-12)	JSDJ2CR/L (P.8-12)	JSDJCR/L (P.8-13)	JSVJ2BR/L (P.8-17)	JSVP2PR/L (P.8-19)
Shank size 8 ~ 16 mm	Shank size 10 ~ 12 mm	Shank size 8 ~ 16 mm	Shank size 10 ~ 16 mm	Shank size 10 ~ 16 mm
Back side clamping Without offset	Screw-on clamping Without offset	Screw-on clamping With offset	Screw-on clamping Without offset	Screw-on clamping Without offset
				

Positive rake				Negative rake
JSVJBR/L (P.8-17)	JSDNCN (P.8-13)	JSDN3CR/L (P.8-14)	JS-SDUCL (P.8-15)	JTDJ2NR/L (P.8-20)
Shank size 10 ~ 16 mm	Shank size 8 ~ 16 mm	Shank size 12 ~ 16 mm	Shank size ø19.05 ~ 25.4 mm	Shank size 12 ~ 16 mm
Screw-on clamping With offset	Screw-on clamping With offset	Screw-on clamping With offset	Screw-on clamping With offset	Back side clamping Without offset
				

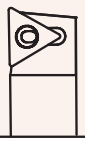
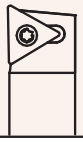
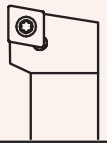
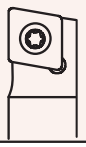
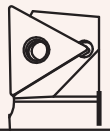


For facing

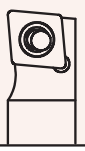
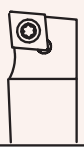
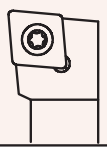
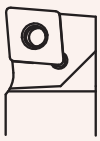
Positive rake

JSCFCR/L (P.8-11)	JSDFCR/L (P.8-14)
Shank size 12 ~ 16 mm	Shank size 12 ~ 16 mm
Screw-on clamping With offset	Screw-on clamping With offset
	

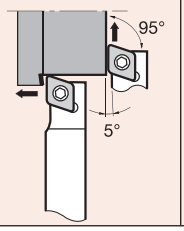
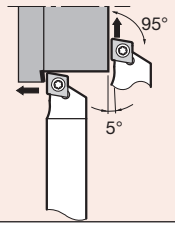
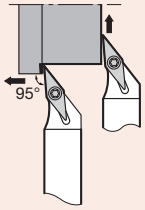
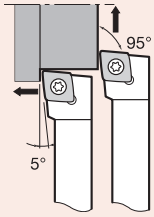
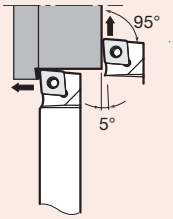
For external turning

Positive rake					Negative rake
JTTACR/L (P.8-16)	JSTACR/L (P.8-16)	JSCGCR/L (P.8-11)	JSCACR/L (P.8-10)	JSVABR/L (P.8-18)	JTTANR/L (P.8-20)
Shank size 8 ~ 16 mm	Shank size 8 ~ 16 mm	Shank size 12 ~ 16 mm	Shank size 8 ~ 12 mm	Shank size 10 ~ 16 mm	Shank size 12 ~ 16 mm
Back side clamping Without offset	Screw-on clamping Without offset	Screw-on clamping With offset	Screw-on clamping Without offset	Screw-on clamping Without offset	Back side clamping Without offset
					

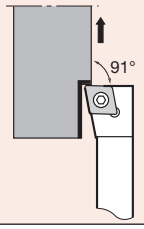
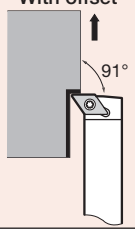
For external turning and facing

Positive rake				Negative rake
JTCL2CR/L (P.8-9)	JSCL2CR/L (P.8-9)	JSCLCR/L (P.8-10)	JSVL2PR/L (P.8-19)	JTCL2NR/L (P.8-20)
Shank size 8 ~ 16 mm	Shank size 10 ~ 12 mm	Shank size 8 ~ 16 mm	Shank size 10 ~ 16 mm	Shank size 12 ~ 16 mm
Back side clamping Without offset	Screw-on clamping Without offset	Screw-on clamping With offset	Screw-on clamping Without offset	Back side clamping Without offset
				

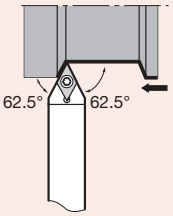
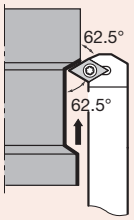
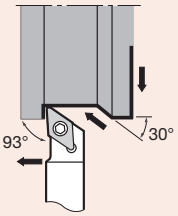
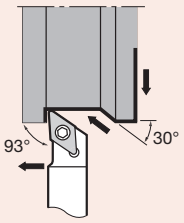
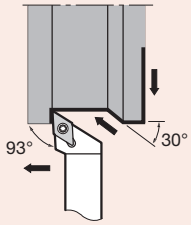
For external turning and facing

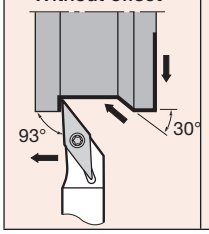
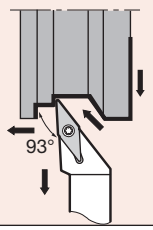
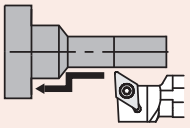
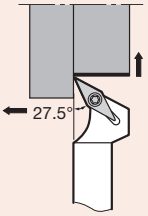
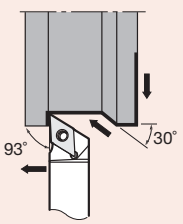
Positive rake				Negative rake
JTCL2C (P.8-9) Cutting edge angle: 95° Back side clamping Without offset	JSCL2C (P.8-9) Cutting edge angle: 95° Screw-on clamping Without offset	JSVL2P (P.8-19) Cutting edge angle: 95° Screw-on clamping Without offset	JSCLC (P.8-10) Cutting edge angle: 95° Screw-on clamping With offset	JTCL2N (P.8-20) Cutting edge angle: 95° Back side clamping Without offset
				

For facing

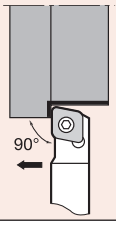
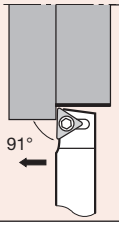
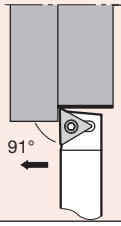
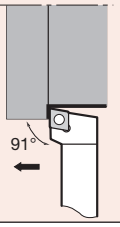
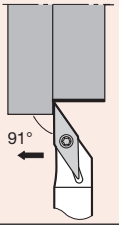
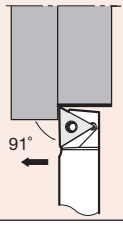
Positive rake	
JSCFC (P.8-11) Cutting edge angle: 91° Screw-on clamping With offset	JSDFC (P.8-14) Cutting edge angle: 91° Screw-on clamping With offset
	

For external turning and facing

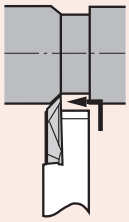
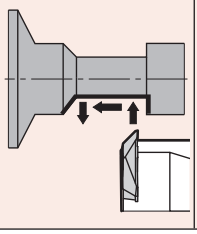
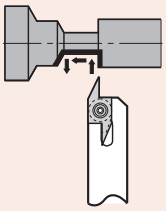
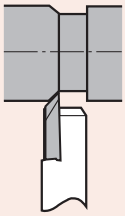
Positive rake				
JSDNCN (P.8-13) Cutting edge angle: 62.5° Screw-on clamping With offset	JSDN3C (P.8-14) Cutting edge angle: 62.5° Screw-on clamping With offset	JTDJ2C (P.8-12) Cutting edge angle: 93° Back side clamping Without offset	JSDJ2C (P.8-12) Cutting edge angle: 93° Screw-on clamping Without offset	JSDJC (P.8-13) Cutting edge angle: 93° Screw-on clamping With offset
				

Positive rake				Negative rake
JSVJ2B (P.8-17) Cutting edge angle: 93° Screw-on clamping Without offset	JSVJB (P.8-17) Cutting edge angle: 93° Screw-on clamping With offset	JS-SDUCL (P.8-15) Cutting edge angle: 93° Screw-on clamping With offset	JSVP2P (P.8-19) Cutting edge angle: 117.5° Screw-on clamping Without offset	JTDJ2N (P.8-20) Cutting edge angle: 93° Back side clamping Without offset
				

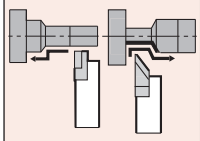
For external turning

Positive rake					Negative rake
JSCAC (P.8-10) Cutting edge angle: 90° Screw-on clamping Without offset	JTTAC (P.8-16) Cutting edge angle: 91° Back side clamping Without offset	JSTAC (P.8-16) Cutting edge angle: 91° Screw-on clamping Without offset	JSCGC (P.8-11) Cutting edge angle: 91° Back side clamping With offset	JSVAB (P.8-18) Cutting edge angle: 91° Screw-on clamping Without offset	JTTAN (P.8-20) Cutting edge angle: 91° Back side clamping Without offset
					

For back turning

Positive rake			
JSTB (P.8-23) Screw-on clamping Without offset	JS-TBL3 (P.8-23) Screw-on clamping With offset	JSEG (P.8-24) Screw-on clamping Without offset	JSXB (P.8-22) Screw-on clamping Without offset
			

For front and reverse turning

Positive rake
JSXG (P.8-21) Screw-on clamping Without offset


Feature of grades

Grades	Main composition	Features
AH725	Ultra fine grain cemented carbide + PVD coated	● The special (Ti,Al)N coated layer and a cemented carbide substrate bring the best use of its features such as wear resistance, long tool life, hardness and toughness. Highly recommended in steels and stainless steel operation.
SH730		● The unique (Ti,Al)N coating layer increases sharpness, chipping resistance and welding resistance. Enables enhanced tool life in superalloys machining.
J740		● "J-coat" developed for small parts machining. ● Excellent sharp cutting edge. ● Superior toughness and chipping resistance in general steel, stainless steel and free cutting steel machining.
NS530	Cermet	● General purpose grade offering great economy and fine surface finish.
J530	Coated cermet (Cermet + PVD coated)	● "J-coat" developed for small parts machining. ● Good sharp cutting edge and surface roughness. ● High wear and edge build up resistance.
TH10	Uncoated cemented carbide	● Long tool life for non-ferrous metals and difficult-to-cut materials.

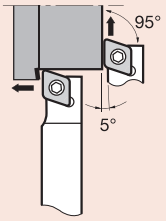
Standard cutting conditions (External turning)

Working material	Operation	Chip-breaker	Grades	Depth of cut: *a*p (mm)	Feed: *f* (mm/rev) (*r*ε = 0.1)	Cutting speed: *V*c (m/min)
General steels	Precision finishing	**JS**	**AH725**	0.1 - 3.0	0.01 - 0.05	50 - 180
		JPR	**SH730**	0.1 - 0.5	0.01 - 0.05	50 - 150
		JPP	**SH730**	0.1 - 0.5	0.01 - 0.05	50 - 150
		JSP	**SH730**	0.1 - 0.5	0.01 - 0.05	50 - 150
		01	**J530**	0.05 - 0.5	0.03 - 0.15	70 - 250
			J740	0.05 - 0.5	0.03 - 0.15	10 - 100
	General	**J□□**	**NS530**	0.1 - 5.0	0.01 - 0.1	50 - 220
			J530	0.1 - 5.0	0.01 - 0.1	70 - 250
			J740	0.1 - 5.0	0.01 - 0.1	10 - 100
Free cutting steels (JIS : SUM)	Precision finishing	**JS**	**AH725**	0.1 - 3.0	0.01 - 0.05	50 - 180
		JPR	**SH730**	0.1 - 0.5	0.01 - 0.05	50 - 150
		JPP	**SH730**	0.1 - 0.5	0.01 - 0.05	50 - 150
		JSP	**SH730**	0.1 - 0.5	0.01 - 0.05	50 - 150
		01	**J740**	0.05 - 0.5	0.03 - 0.15	10 - 100
	General	**J□□**	**J740**	0.1 - 5.0	0.01 - 0.1	10 - 100
Stainless steels (JIS : SUS303)	Precision finishing	**JS**	**SH730**	0.1 - 3.0	0.01 - 0.05	30 - 150
			AH725	0.1 - 3.0	0.01 - 0.05	50 - 150
		JPR	**SH730**	0.1 - 0.5	0.01 - 0.05	30 - 150
		JPP	**SH730**	0.1 - 0.5	0.01 - 0.05	30 - 150
		JSP	**SH730**	0.1 - 0.5	0.01 - 0.05	30 - 150
		01	**J530**	0.05 - 0.5	0.03 - 0.15	50 - 220
			J740	0.05 - 0.5	0.03 - 0.15	10 - 100
	General	**J□□**	**J530**	0.1 - 5.0	0.01 - 0.1	50 - 220
			J740	0.1 - 5.0	0.01 - 0.1	10 - 100
Cast irons	General	**J□□**	**TH10**	0.1 - 5.0	0.01 - 0.1	20 - 100
Non-ferrous metals	General	**J□□**	**TH10**	0.1 - 5.0	0.01 - 0.1	100 - 1000
Difficult-to-cut materials	Precision finishing	**JS**	**SH730**	0.1 - 3.0	0.01 - 0.05	30 - 100
			AH725	0.1 - 3.0	0.01 - 0.05	30 - 100
		JPR	**SH730**	0.1 - 0.5	0.01 - 0.05	30 - 100
		JPP	**SH730**	0.1 - 0.5	0.01 - 0.05	30 - 100
		JSP	**SH730**	0.1 - 0.5	0.01 - 0.05	30 - 100
	General	**J□□**	**TH10**	0.1 - 5.0	0.01 - 0.1	10 - 150
Hard materials	General	**J□□**	**TH10**	0.1 - 5.0	0.01 - 0.1	10 - 60

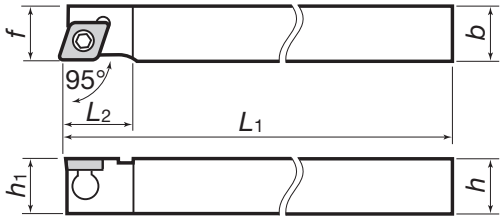
JTCL2CR/L

Without offset / Positive rake
Side clamping system

Turning / Facing



Cutting edge style **L2**



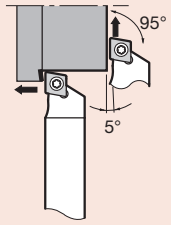
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamp	Clamping screw	Wrench
JTCL2CR/L0810K06	●	●	8	10	125	12	8	10	0.4	**CC□□0602**	JCP-2	JDS-3525	P-2F
JTCL2CR/L1010K06	●	●	10	10	125	12	10	10	0.4				
JTCL2CR/L1212M09	●	●	12	12	150	16	12	12	0.8	**CC□□09T3**	JCP-3	JDS-5040	P-2.5F
JTCL2CR/L1616M09	●	●	16	16	150	16	16	16	0.8				

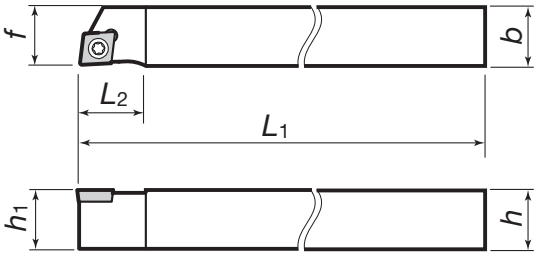
JSCL2CR/L

Without offset / Positive rake
Screw-on system

Turning / Facing



Cutting edge style **L2**



Right hand (R) shown

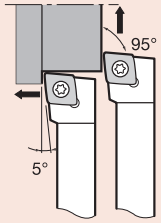
Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSCL2CR/L1010K06	●	●	10	10	125	12	10	10	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCL2CR/L1212K06	●	●	12	12	125	12	12	12	0.4				

● : Stocked items.

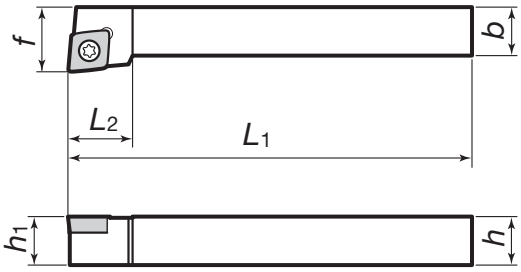
JSCLCR/L

Positive rake
Screw-on system

Turning / Facing



Cutting edge style **L**



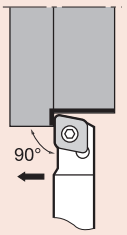
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSCLCR/L0808H06	●	●	8	8	100	12	8	10	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCLCR/L1010H06	●	●	10	10	100	12	10	12	0.4				
JSCLCR/L1212H09	●	●	12	12	100	16	12	16	0.8	**CC□□09T3**	CSTB-4SD	T-8F	1.2
JSCLCR/L1616H09	●	●	16	16	100	16	16	20	0.8				

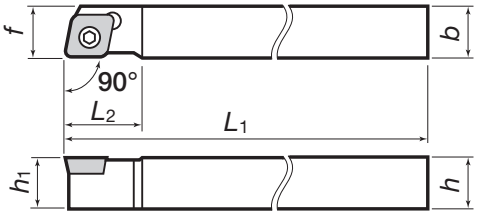
JSCACR/L

Without offset / Positive rake
Screw-on system

Turning



Cutting edge style **A**



Right hand (R) shown

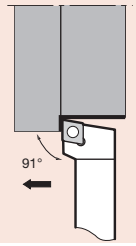
Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSCACR/L0808H06	●	●	8	8	100	12	8	8	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCACR/L1010H06	●	●	10	10	100	12	10	10	0.4				
JSCACR/L1212H09	●	●	12	12	100	16	12	12	0.8	**CC□□09T3**	CSTB-4SD	T-8F	1.2

● : Stocked items.

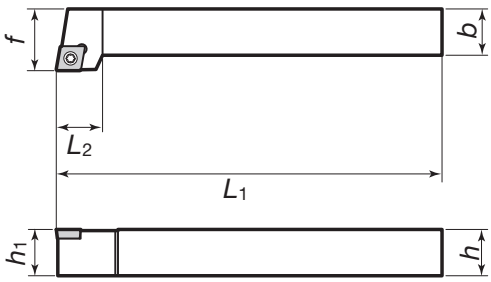
JSCGCR/L

Positive rake
Screw-on system

Turning



Cutting edge style **G**



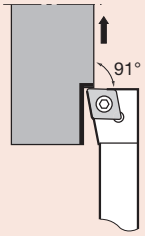
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSCGCR/L1212H06	●	●	12	12	100	12	12	16	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCGCR/L1616H09	●	●	16	16	100	16	16	20	0.8	**CC□□09T3**	CSTB-4SD	T-8F	1.2

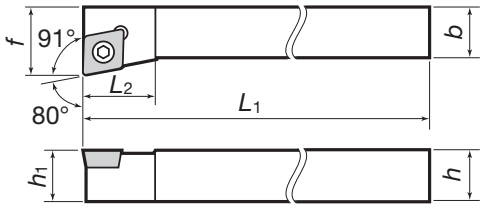
JSCFCR/L

Positive rake
Screw-on system

Facing



Cutting edge style **F**



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)							Std. corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*	f_1			Clamping screw	Wrench	
JSCFCR/L1212H06			12	12	100	16	12	16	-	0.4	**CC□□0602**	CSTB-2.5	T-8F	1.2
JSCFCR/L1616H09			16	16	100	16	16	20	-	0.8	**CC□□09T3**	CSTB-4SD	T-8F	1.2

Basic Selection Chipbreakers CC□□0602 CC□□09T3

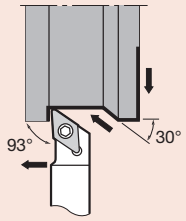
Operation	Precision finishing	Precision finishing	Finishing	Finishing to medium cutting	Finishing to medium cutting	Finishing to light cutting	Finishing to medium cutting	Cast Iron	Cast Iron	Aluminium alloy	Aluminium alloy	Aluminium alloy	Hard materials
Chipbreaker	JS	01	PSF	J10	FR/L-J10	PSS	PS	CM	–	AL	Angular	With chipbreaker	T-CBN
Page	2-99	2-96	2-96	2-100	2-99	2-97	2-97	2-97	2-101	2-98	2-100	3-22	3-12
Appearance / Toolholders					Sharp edges								
JTC*/JSC**06	CCGT0602**	CCGT0602**	CCMT0602**	CCGT0602**	CCGT0602**	CCMT0602**	CCMT0602**	CCMT0602**	CCMW0602**	CCGT0602**	CCGT0602**	CCMT0602**	2QP-CCGW0602**
JTC*/JSC**09	CCGT09T3**	CCGT09T3**	CCMT09T3**	CCGT09T3**	CCGT09T3**	CCMT09T3**	CCMT09T3**	CCMT09T3**	CCMW09T3**	CCGT09T3**	CCGT09T3**	CCMT09T3**	2QP-CCGW09T3**

● : Stocked items.

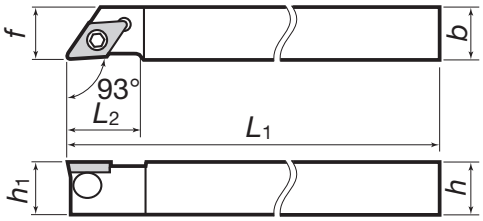
JTDJ2CR/L

Without offset / Positive rake
Back clamping system

Turning / profiling



Cutting edge style **J2**



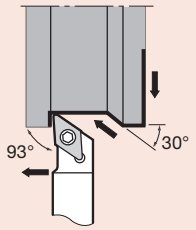
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	h	b	L_1	L_2	h_1	f			Clamp	Clamping screw	Wrench
JTDJ2CR/L0810K07	●	●	8	10	125	14	8	10	0.4	**DC□□0702**	JCP-2	JDS-3525	P-2F
JTDJ2CR/L1010K07	●	●	10	10	125	14	10	10	0.4				
JTDJ2CR/L1212M11	●	●	12	12	150	18	12	12	0.8	**DC□□11T3**	JCP-3	JDS-5040	P-2.5F
JTDJ2CR/L1616M11	●	●	16	16	150	18	16	16	0.8				

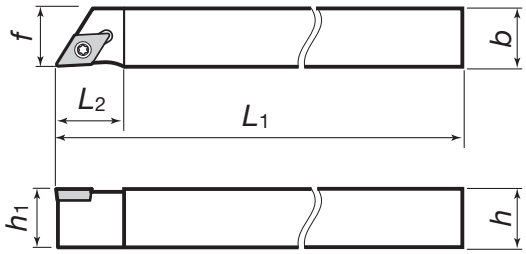
JSDJ2CR/L

Without offset / Positive rake
Screw-on system

Profiling



Cutting edge style **J2**



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSDJ2CR/L1010K07	●	●	10	10	125	14	10	10	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDJ2CR/L1212K07	●	●	12	12	125	14	12	12	0.4				

Basic Selection Chipbreaker DC□□

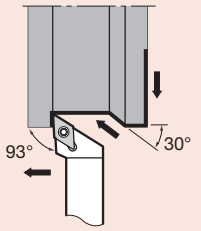
● : Stocked items.

Cutting conditions (8–8) | Relating pages | Parts (14–1~)

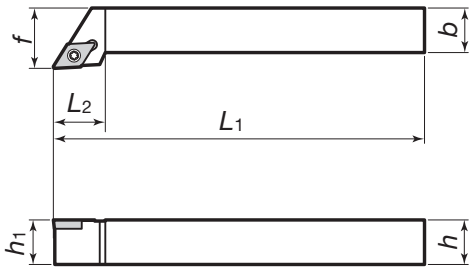
JSDJCR/L

Positive rake
Screw-on system

Profiling



Cutting edge style **J**



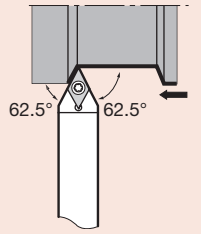
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSDJCR/L0808H07	●	●	8	8	100	14	8	10	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDJCR/L1212H07	●	●	12	12	100	14	12	16	0.4				
JSDJCR/L1010H11	●	●	10	10	100	18	10	12	0.8	**DC□□11T3**	CSTB-2.5	T-8F	1.2
JSDJCR/L1212H11	●	●	12	12	100	18	12	16	0.8				
JSDJCR/L1616H11	●	●	16	16	100	18	16	20	0.8		CSTB-4SD		

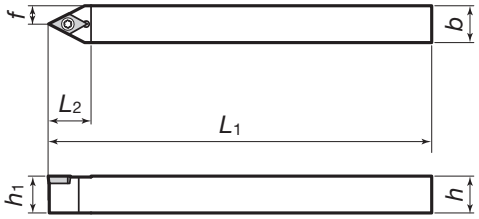
JSDNCN

Positive rake
Screw-on system

Profiling



Cutting edge style **N**



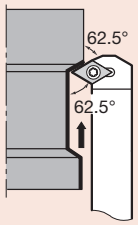
Cat. No.	Stock	Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
		h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSDNCN0808H07	●	8	8	100	14	8	4	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDNCN1010K07	●	10	10	125	14	10	5	0.4				
JSDNCN1212K07	●	12	12	125	14	12	6	0.4				
JSDNCN1212H11	●	12	12	100	21	12	6	0.8	**DC□□11T3**	CSTB-4SD	T-8F	1.2
JSDNCN1616H11	●	16	16	100	21	16	8	0.8				

● : Stocked items.

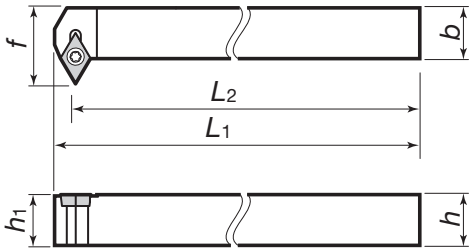
JSDN3CR/L

Positive rake
Screw-on system

Profiling



Cutting edge style **N3**



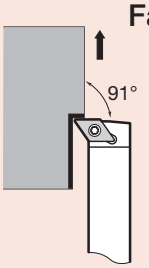
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSDN3CR/L1212H07	●	●	12	12	105	100	12	18	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDN3CR/L1616H11	●	●	16	16	107	100	16	25	0.8	**DC□□11T3**	CSTB-4SD	T-8F	1.2

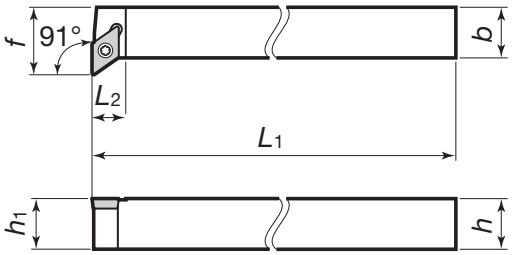
JSDFCR/L

Positive rake
Screw-on system

Facing



Cutting edge style **F**



Right hand (R) shown

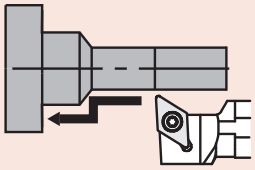
Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSDFCR/L1212H07	●	●	12	12	100	8	12	16	0.4	**DC□□0702**	CSTB-2.5	T-8F	1.2
JSDFCR/L1616H11	●	●	16	16	100	10.5	16	22	0.8	**DC□□11T3**	CSTB-4SD	T-8F	1.2

● : Stocked items.

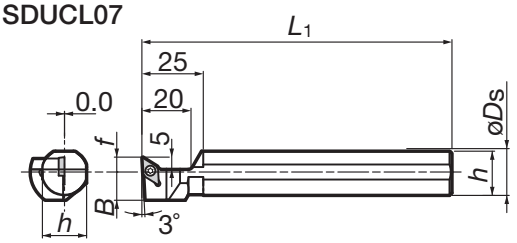
JS-SDUCL

Positive rake
Screw-on system

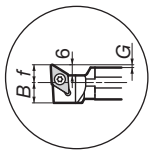
Profiling



SDUCL07



SDUCL11



Left hand (L) shown.

Cat. No.	Stock		Dimensions (mm)							Std. Corner	Applicable inserts	Clamping screw	Wrench	Torque (N·m)
	R	L	øDs	f	L1	L2	h	B	G	rε				
JS19K-SDUCL07		●	19.05	6	125	-	18	11.5	-	0.4	DC□□0702□□	CSTB-2.5	T-8F	1.2
JS20K-SDUCL07		●	20				19							
JS22K-SDUCL07		●	22				21							
JS19K-SDUCL11		●	19.05	10	125	-	18	11.5	1.525	0.8	DC□□11T3□□	CSTB-4SD	T-8F	1.2
JS20K-SDUCL11		●	20				19		1.0					
JS22K-SDUCL11		●	22	11			21		1.0					
JS25K-SDUCL11		●	25.4	12			24	12.7	0.7					

Basic Selection Chipbreakers DC□□0702 DC□□11T3

Operation	Precision finishing	Precision finishing	Precision finishing	Precision finishing	Precision finishing	Finishing	Finishing to medium cutting	Finishing to medium cutting	Finishing to light cutting	Finishing to medium cutting	Cast Iron	Cast Iron	Aluminium alloy
Chipbreaker	JS	JRP	JPP	JSP	01	PSF	J10	FR/L-J10	PSS	PS	CM	–	AL
Page	2-108	2-107	2-108	2-108	2-105	2-105	2-109	2-109	2-106	2-106	2-106	2-110	2-106
Appearance / Toolholders	 Sharp edges												
JTD*/JSD**07	DCGT0702**	DCET0702**	DCET0702**	DCET0702**	DCGT0702**	DCMT0702**	DCGT0702**	DCGT0702**	DCMT0702**	DCMT0702**	DCMT0702**	DCMW0702**	DCGT0702**
JTD**11	DCGT11T3**	DCET11T3**	DCET11T3**	DCET11T3**	DCGT11T3**	DCMT11T3**	DCGT11T3**	DCGT11T3**	DCMT11T3**	DCMT11T3**	DCMT11T3**	DCMW11T3**	DCGT11T3**

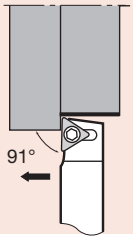
Operation	Aluminium alloy	Aluminium alloy	Hard materials
Chipbreaker	Angular	With chipbreaker	T-CBN
Page	2-107	3-22	3-12
Appearance / Toolholders			
JTD*/JSD**07	DCGT0702**	DCMT0702**	2QP-DCGW0702**
JTD**11	DCGT11T3**	DCMT11T3**	2QP-DCGW11T3**

● : Stocked items.

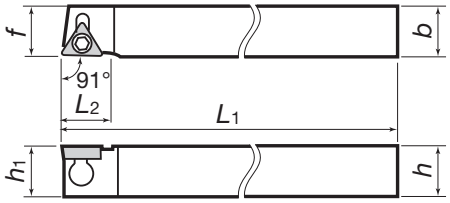
JTTACR/L

Without offset / Positive rake
Back clamping system

Turning



Cutting edge style **A**



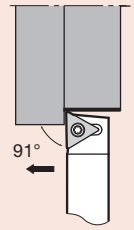
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius rε	Applicable inserts	Parts		
	R	L	h	b	L1	L2	h1	f			Clamp	Clamping screw	Wrench
JTTACR/L0810K08	●	●	8	10	125	10	8	10	0.2	TC□□0802	JCP-1	JDS-3525	P-2F
JTTACR/L1010K08	●	●	10	10	125	10	10	10	0.2				
JTTACR/L1212M11	●	●	12	12	150	12	12	12	0.4	TC□□1102	JCP-2	JDS-3525	P-2F
JTTACR/L1616M11	●	●	16	16	150	12	16	16	0.4				

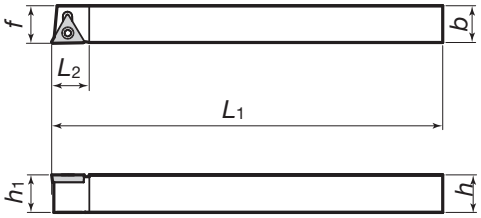
JSTACR/L

Without offset / Positive rake
Screw-on system

Turning



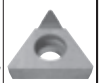
Cutting edge style **A**



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius rε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L1	L2	h1	f			Clamping screw	Wrench	
JSTACR/L0808K08	●	●	8	8	125	10	8	8	0.2	TC□□0802	CSTB-2L	T-6F	0.6
JSTACR/L1010K08	●	●	10	10	125	10	10	10	0.2				
JSTACR/L1212K11	●	●	12	12	125	12	12	12	0.4	TC□□1102	CSTB-2.5	T-8F	1.2
JSTACR/L1616H11	●	●	16	16	100	12	16	16	0.4				

Basic Selection Chipbreakers TC□□0802 TC□□1102

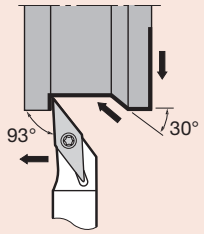
Operation	Precision finishing	Precision finishing	Finishing	Finishing to medium cutting	Finishing to medium cutting	Finishing to light cutting	Finishing to medium cutting	Cast Iron	Aluminium alloy	Aluminium alloy
Chipbreaker	JS	01	PSF	J08/J10	FR/L-J10	PSS	PS	CM	AL	With chipbreaker
Page	2-120	2-118	2-118	2-120 · 121	2-121	2-118	2-119	2-119	2-120	3-22
Appearance / Toolholders					 Sharp edges					
JTT*/JST**08	–	–	–	TCGT0802**	TCGT0802**	–	–	–	–	TCMT0802**
JTT**/JST**11	TCGT1102**	TCGT1102**	TCGT1102**	TCGT1102**	TCGT1102**	TCMT1102**	TCMT1102**	TCMT1102**	TCGT1102**	TCMT1102**

● : Stocked items.

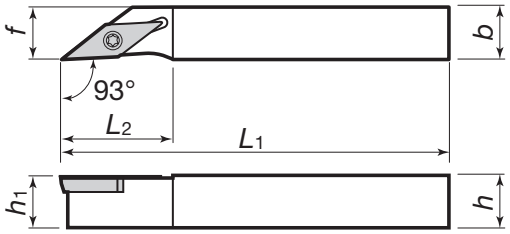
JSVJ2BR/L

Without offset / Positive rake
Screw-on system

Profiling



Cutting edge style **J2**



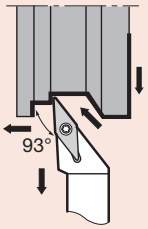
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSVJ2BR/L1010K11	●	●	10	10	125	21	10	10	0.2	VB□□1103	CSTB-2.5	T-8F	1.2
JSVJ2BR/L1212K11	●	●	12	12	125	21	12	12	0.2				
JSVJ2BR/L1616K11	●	●	16	16	125	21	16	16	0.2				

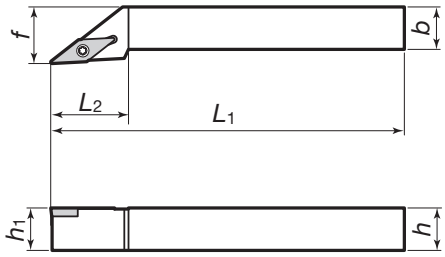
JSVJBR/L

Positive rake
Screw-on system

Profiling



Cutting edge style **J**



Right hand (R) shown

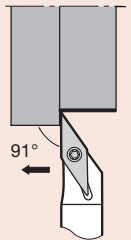
Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSVJBR/L1010H11	●	●	10	10	100	20	10	12	0.4	VB□□1103	CSTB-2.5	T-8F	1.2
JSVJBR/L1212H11	●	●	12	12	100	22	12	16	0.4				
JSVJBR/L1616H11	●	●	16	16	100	22	16	20	0.4				

● : Stocked items.

JSVABR/L

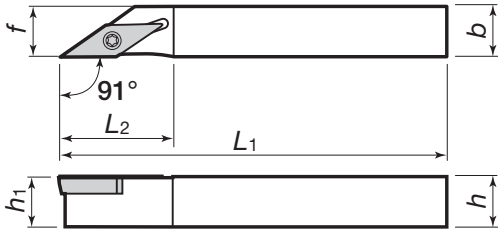
Without offset / Positive rake
Screw-on system

Turning



Cutting edge style **A**

Without offset



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	*h*	*b*	L_1	L_2	h_1	*f*			Clamping screw	Wrench	
JSVABR/L1010K11	●	●	10	10	125	21	10	10	0.2	**VB□□1103**	CSTB-2.5	T-8F	1.2
JSVABR/L1212K11	●	●	12	12	125	21	12	12	0.2				
JSVABR/L1616K11	●	●	16	16	125	21	16	16	0.2				

Basic Selection Chipbreakers VB□□1103

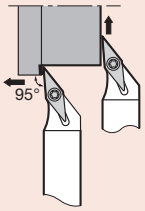
Operation	Precision finishing	Finishing		Finishing to medium cutting	Finishing to medium cutting	Finishing to light cutting	Finishing to medium cutting	Cast Iron	Aluminium alloy	Hard materials
Chipbreaker	JS	PSF		J10	FR/L-J10	PSS	PS	CM	J10	T-CBN
Page	2-134	2-133		2-134	2-134	2-133	2-133	2-133	2-134	3-13
Appearance / Toolholders				 Sharp edges						
JSV11**	VBGT1103**	VBMT1103**		VBGT1103**	VBGT1103**	VBMT1103**	VBMT1103**	VBGT1103**	VBGT1103**	2QP-VBGW1103**

● : Stocked items.

JSVL2PR/L

Without offset / Positive rake
Screw-on system

Turning / facing



Cutting edge style **L2**

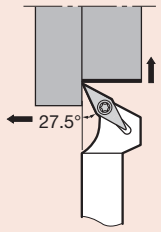
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f			Clamping screw	Wrench	
JSVL2PR/L1010K08	●	●	10	10	125	16	10	10	0.2	**VP□□0802**	CSTB-2L	T-6F	0.6
JSVL2PR/L1212K08	●	●	12	12	125	16	12	12	0.2				
JSVL2PR/L1616K08	●	●	16	16	125	16	16	16	0.2				

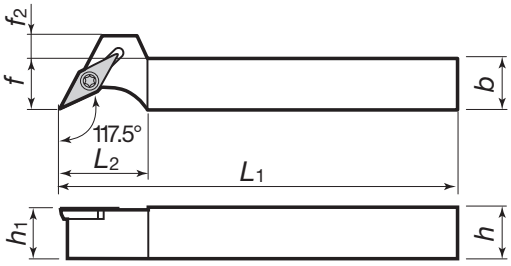
JSVP2PR/L

Positive rake
Screw-on system

Profiling



Cutting edge style **P2**



Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)							Standard corner radius r_ε	Applicable inserts	Parts		Torque (N·m)
	R	L	h	b	L_1	L_2	h_1	f	f_2			Clamping screw	Wrench	
JSVP2PR/L1010K08	●	●	10	10	125	16	10	10	4	0.2	**VP□□0802**	CSTB-2L	T-6F	0.6
JSVP2PR/L1212K08	●	●	12	12	125	16	12	12	2	0.2				
JSVP2PR/L1616K08	●	●	16	16	125	16	16	16	-	0.2				
JSVP2PR/L1010K11	●	●	10	10	125	20	10	10	8	0.2	**VP□□1103**	CSTB-2.5	T-8F	1.2
JSVP2PR/L1212K11	●	●	12	12	125	20	12	12	6	0.2				
JSVP2PR/L1616K11	●	●	16	16	125	20	16	16	4	0.2				

Basic Selection Chipbreakers VP□□

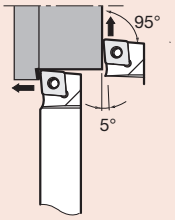
Operation	Precision finishing	Precision finishing	Precision finishing
Chipbreaker	JRP	JPP	JSP
Page	2-137	2-137	2-138
Appearance / Toolholders			
JSVP**08	VPET0802**	VPET0802**	VPET0802**
JSVP**11	VPET1103**	VPET1103**	VPET1103**

● : Stocked items.

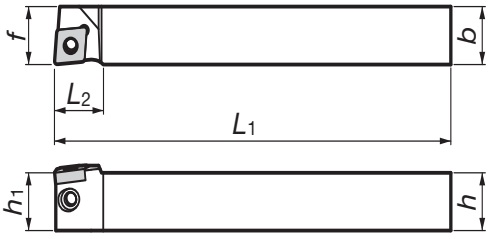
JTCL2NR/L

Without offset / Negative rake
Side clamping system

Turning / facing



Cutting edge style **L2**



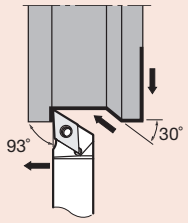
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	h	b	L_1	L_2	h_1	f			Clamp	Clamping screw	Wrench
JTCL2NR/L1216K09			12	16	125	15.6	12	16	0.4	**CN□□0903** 2-42 ~	JCP-3N	JDS-5040	P-2.5F
JTCL2NR/L1616K09			16	16	125	15.6	16	16	0.4				

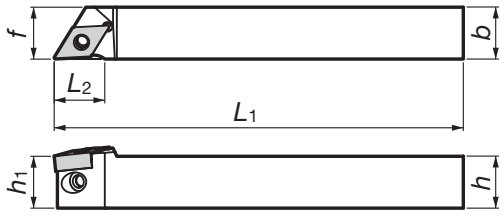
JTDJ2NR/L

Without offset / Negative rake
Side clamping system

Turning / profiling



Cutting edge style **J2**



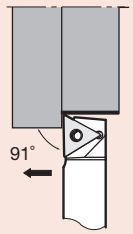
Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	h	b	L_1	L_2	h_1	f			Clamp	Clamping screw	Wrench
JTDJ2NR/L1216K11			12	16	125	15.6	12	16	0.4	**DN□□1104** 2-52 ~	JCP-3N	JDS-5040	P-2.5F
JTDJ2NR/L1616K11			16	16	125	15.6	16	16	0.4				

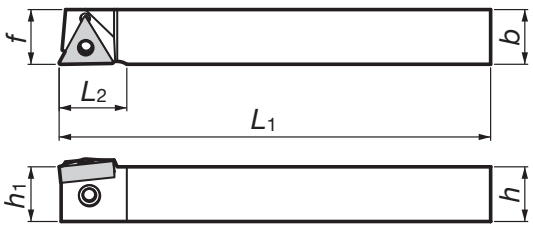
JTTANR/L

Without offset / Negative rake
Side clamping system

Turning



Cutting edge style **A**



Right hand (R) shown

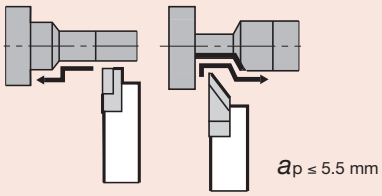
Cat. No.	Stock		Dimensions (mm)						Standard corner radius r_ε	Applicable inserts	Parts		
	R	L	h	b	L_1	L_2	h_1	f			Clamp	Clamping screw	Wrench
JTTANR/L1216K16	●	●	12	16	125	19.8	12	16	0.4	**TN□□1604** 2-70 ~	JCP-3N	JDS-5040	P-2.5F
JTTANR/L1616K16	●	●	16	16	125	19.8	16	16	0.4				

● : Stocked items.

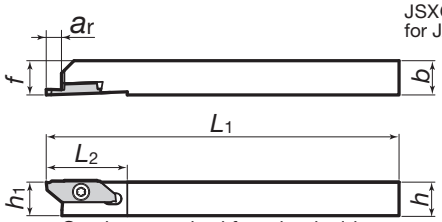
JSXGR/L

Without offset
Screw-on system

Front and reverse turning

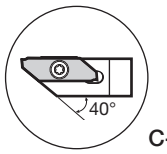


Front turning Reverse turning



Can be wrenched from back side with double socket torx screw.

JSXGR/L-type toolholders are used for JXG-type grooving inserts.

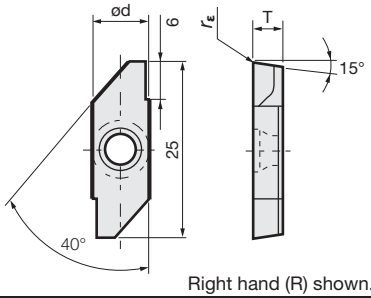


C-type

Right hand (R) shown.

Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	a_r	h_1	f				
JSXGR/L1010K8-C	●	●	10	10	125	29	6.7	10	10	JXFR/L8□□□ JXRR/L8□□□	CSTB-4SD	T-8F	(T-8L)
JSXGR/L1212K8-C	●	●	12	12				12	12				
JSXGR/L1616K8	●	●	16	16				16	16				
JSXGR/L2020K8	●	●	20	20			6.5	20	20				
JSXGR/L2525K8	●	●	25	25				25	25				∗Optional

Applicable inserts

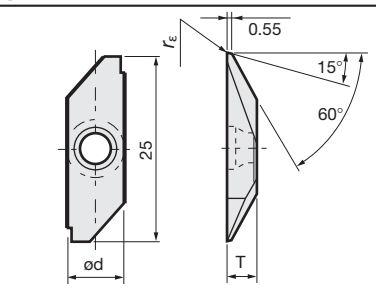


Right hand (R) shown.

JXF-type inserts (with sharp edges) for front turning

Cat. No.	Dimensions (mm)				Stock							
	ød	T	r_ε	Max. depth of cut	Coated		Cermet				Uncoated	
					J740		NS530				TH10	
					R	L	R	L	R	L	R	L
JXFR/L8000F	8	3.97	0.03	5.5	●		●				●	
JXFR/L8010F			0.1		●		●				●	

Applicable inserts



Right hand (R) shown.

JXR-type inserts (with sharp edges) for reverse turning

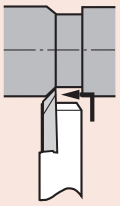
Cat. No.	Dimensions (mm)				Stock							
	ød	T	r_ε	Max. depth of cut	Coated		Cermet				Uncoated	
					J740		NS530				TH10	
					R	L	R	L	R	L	R	L
JXRR/L8000F	8	3.97	0.03	5.5	●		●				●	
JXRR/L8010F			0.1		●		●				●	

● : Stocked items.

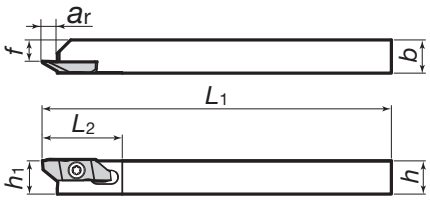
JSXBR/L

Without offset
Screw-on system

Back turning with large depth of cut

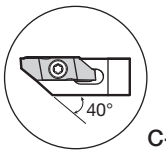


$a_p \leq 5.5$ mm



Can be wrenched from back side with double socket torx screw.

JSXBR/L-type toolholders are also used for JXT-type threading inserts.

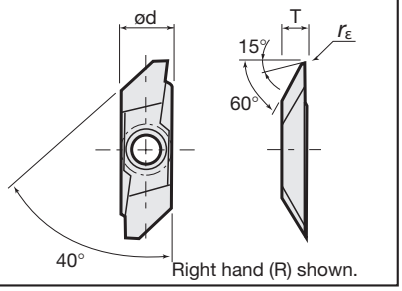


C-type

Right hand (R) shown.

Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	a_r	h_1	f				
JSXBR/L1010K8-C	●	●	10	10	125	29	6.7	10	5.7	JXBR/L8□□□	CSTB-4SD	T-8F	(T-8L)
JSXBR/L1212K8-C	●	●	12	12				12	7.7				
JSXBR/L1616K8	●	●	16	16			6.4	16	11.7				
JSXBR/L2020K8	●	●	20	20				20	15.7				
JSXBR/L2525K8	●	●	25	25				25	20.7				∗Optional

Applicable inserts



Right hand (R) shown.

JXB-type inserts (with sharp edges)

Cat. No.	Dimensions (mm)				Stock							
	ød	T	r_ε	Max. depth of cut	Coated		Cermet				Uncoated	
					J740		NS530				TH10	
					R	L	R	L	R	L	R	L
JXBR/L8000F	8	3.97	0.03	5.5	●	●	●				●	●
JXBR/L8005F			0.05		●	●					●	●
JXBR/L8010F			0.1		●	●	●				●	●
JXBR/L8015F			0.15		●	●					●	●

JXB-type inserts (with honed edges)

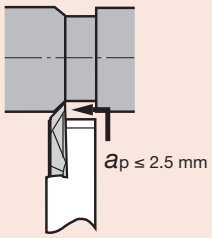
Cat. No.	Dimensions (mm)				Stock							
	ød	T	r_ε	Max. depth of cut	Coated		Cermet				Uncoated	
					J740		NS530				TH10	
					R	L	R	L	R	L	R	L
JXBR/L8005	8	3.97	0.05	5.5	●	●						
JXBR/L8010			0.1		●	●						
JXBR/L8015			0.15		●	●						

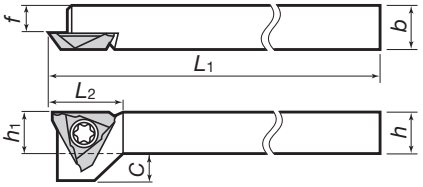
● : Stocked items.

JSTBR/L

Without offset
Screw-on system

Back turning





Can be wrenched from back side with double socket torx screw.

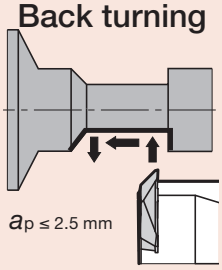
Right hand (R) shown.

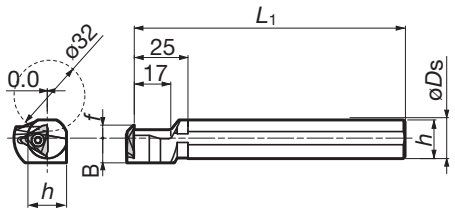
Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	h_1	f	C				
JSTBR/L1010K3	●	●	10	10	125	15	10	6	5	JTBR/L3□□□	CSTB-4SD	T-8F	(T-8L) ∗Optional
JSTBR/L1212K3	●	●	12	12			12	8	3				
JSTBR/L1616K3	●	●	16	16			16	12	-				

JS-TBL3

Positive rake
Screw-on system

Back turning

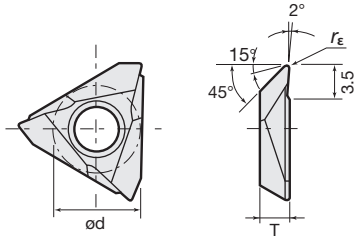




Cat. No.	Stock	Dimensions (mm)						Applicable inserts	Clamping screw	Wrench
		$øD_s$	f	L_1	L_2	h	B			
JS19K-TBL3	●	19.05	6	125	-	18	11.5	JTBR3□□□	CSTB-4S	T-15F
JS20K-TBL3	●	20				19				
JS22K-TBL3	●	22				21				
JS25K-TBL3	●	25.4	10			24	12.7			

Notes: Left hand holder use right hand insert.

Applicable inserts



Right hand (R) shown.

JTB-type inserts (with sharp edges)

Cat. No.	Dimensions (mm)				Stock									
	ød	T	rε	Max. depth of cut	Coated J740		Coated cermet J530				Cermet NS530			Uncoated TH10	
					R	L	R	L	R	L	R	L	R	L	R	L
JTBR/L3000F	9.438	3.18	0.03	2.5	●	●					●	●			●	●
JTBR/L3005F			0.05		●	●					●	●			●	●
JTBR/L3010F			0.1		●	●					●	●			●	●
JTBR/L3015F			0.15		●											

JTB-type inserts (with honed edges)

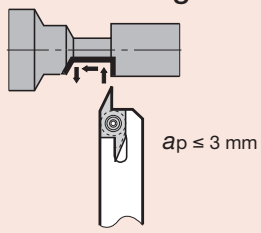
Cat. No.	Dimensions (mm)				Stock									
	ød	T	rε	Max. depth of cut	Coated J740		Coated cermet J530				Cermet NS530			Uncoated TH10	
					R	L	R	L	R	L	R	L	R	L	R	L
JTBR/L3005	9.438	3.18	0.05	2.5	●	●	●	●								
JTBR/L3010			0.1		●	●	●	●								
JTBR/L3015			0.15													

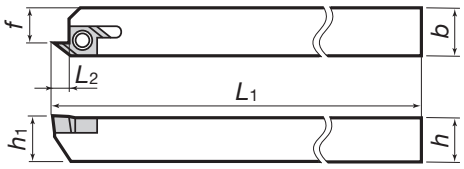
● : Stocked items.

JSEGR/L

Without offset
Screw-on system

Back turning

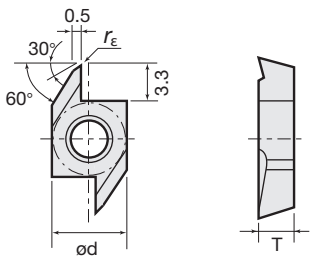




Right hand (R) shown.

Cat. No.	Stock		Dimensions (mm)						Applicable inserts	Clamping screw	Wrenches	
	R	L	h	b	L_1	L_2	h_1	f				
JSEGR/L1010K10	●	●	10	10	125	3.3	10	7.5	J10ER/L□□□□□	CSTB-2.5	T-8F	(T-8L)
JSEGR/L1212K10	●	●	12	12			12	9.5				∗Optional
JSEGR/L1616K10	●	●	16	16			16	13.5				

Applicable inserts



Right hand (R) shown.

J10E-type inserts (with sharp edges)

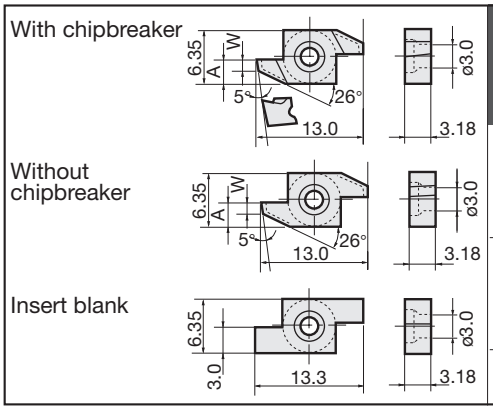
Cat. No.	Dimensions (mm)			Max. depth of cut	Stock											
					Coated		Coated cermet				Cermet				Uncoated	
					J740		J530				NS530				TH10	
	ød	T	rε		R	L	R	L	R	L	R	L	R	L	R	L
J10ER/L005BF	6.35	3.18	0.05	3	●	●					●	●			●	●
J10ER/L010BF			0.1		●	●					●	●			●	●
J10ER/L015BF			0.15													

J10E-type inserts (with honed edges)

Cat. No.	Dimensions (mm)			Max. depth of cut	Stock											
					Coated		Coated cermet				Cermet				Uncoated	
					J740		J530				NS530				TH10	
	ød	T	rε		R	L	R	L	R	L	R	L	R	L	R	L
J10ER/L005B	6.35	3.18	0.05	3	●	●	●	●								
J10ER/L010B			0.1		●	●	●	●								
J10ER/L015B			0.15													

Notes: Right hand holder use right hand insert and left hand holder use left hand insert.

Applicable inserts

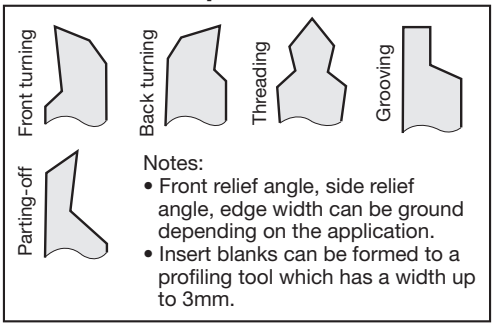


Type	Cat. No.	Dimensions (mm)		Stock					
				Cermet				Uncoated	
				NS530				TH10	
		W	A	R	L	R	L	R	L
With chipbreaker	10ER/L100BC	1	2.5	●					
	10ER/L150BC	1.5	3	●					
Without chipbreaker	10ER/L100B	1	2.5					●	●
	10ER/L150B	1.5	3					●	●
Insert blank	10ER/L300	–	–	●				●	●

Right hand (R) shown.

Notes: Right hand holder (SEGR~) use right hand insert (10ER~) and left hand holder (SEGL~) use left hand insert (10EL~).

Formed examples of insert blanks



Notes:
- Front relief angle, side relief angle, edge width can be ground depending on the application.
- Insert blanks can be formed to a profiling tool which has a width up to 3mm.

Standard cutting conditions

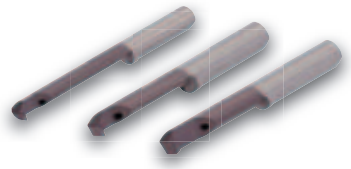
Operations		Work materials	Carbon steels	Stainless steels	Brass
Lateral feed (external turning)	Cutting speed (m/min)		~ 100	~ 50	~ 200
	Feed (mm/rev)	Roughing	~ 0.06	~ 0.03	~ 0.1
		Medium	~ 0.03	~ 0.025	~ 0.06
		Finishing	~ 0.02	~ 0.015	~ 0.04
Parting-off Grooving Forming	Cutting speed (m/min)		~ 80	~ 30	~ 150
	Feed (mm/rev)	Roughing	~ 0.02	~ 0.015	~ 0.05
		Medium	~ 0.015	~ 0.01	~ 0.03
		Finishing	~ 0.01	~ 0.008	~ 0.015

● : Stocked items.

MEMO

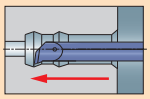
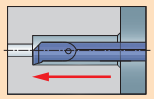
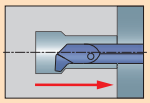
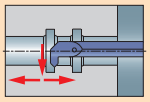
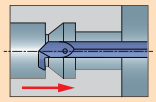
Overview of J series Internal Turning

TINYTURN

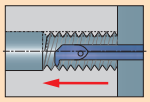


- 146 solid bar items in a wide range of geometries
- Minimum boring diameter: *ø*Dm = 0.6 mm

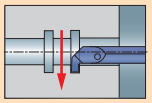
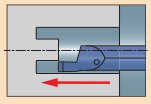
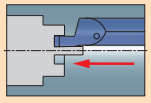
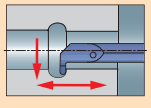
Boring, profiling, chamfering

Type	Application		Shank diameter *ø*Ds (mm)	Min. bore dia. *ø*Dm (mm) 0 2 4 6 8 10
JBT (P. 8-28)		Boring, profiling, chamfering	ø4, ø7	ø0.6 — ø7.0
JBP (P. 8-29)		Boring, chamfering	ø4, ø7	ø2.8 — ø5.0
JBU (P. 8-29)		Back boring, chamfering	ø7	ø5.0
JBC (P. 8-30)		Boring, 45° chamfering	ø7	ø5.0 — ø6.8
JBB (P. 8-30)		Back boring	ø4, ø7	ø3.0 — ø7.0

Threading

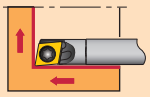
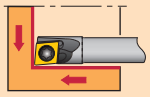
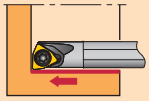
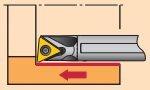
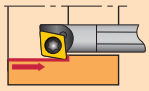
Type	Application		Shank diameter *ø*Ds (mm)	Min. bore dia. *ø*Dm (mm) 0 2 4 6 8 10
JBI (P. 8-31)		Threading (Metric thread)	ø4, ø7	ø4.0 — ø7.0

Grooving

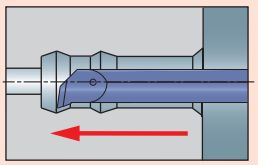
Type	Application		Shank diameter *ø*Ds (mm)	Groove width W (mm)	Min. bore dia. *ø*Dm (mm) 0 2 4 6 8 10 12 14 15
JBG (P. 8-32)		Grooving	ø4, ø7	0.5 - 2.0	ø2.0 — ø6.8
JBF (P. 8-33)		Face grooving	ø7	1.0 - 3.0	ø6.0 — ø15.0
JBS (P. 8-33)		Face grooving (for shaft)	ø7	2.0	ø6.0
JBR (P. 8-34)		Boring, profiling (full radius type)	ø7	1.0	ø5.0 — ø6.8

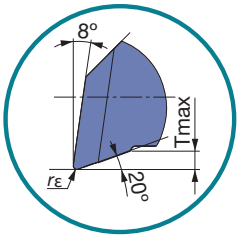
STREAMJETBARMINI

Positive type

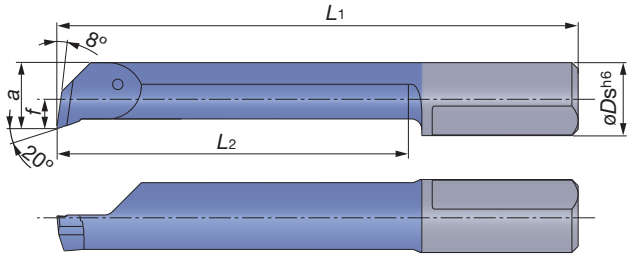
Style	Shank type	Shank diameter	Minimum bore diameter (mm) 0 10 20 30 40 50
 **SEXPR/L** ⇒8-39 Boring and facing Insert type: EP□□	Steel Carbide	ø4 ~ ø6 ø4 ~ ø6	ø4.5 ø7 ø4.5 ø7
 **SCLCR/L** ⇒8-36 Boring and facing Insert type: CC□□	Steel Carbide	ø4 ~ ø7 ø4 ~ ø7	ø5 ø8 ø5 ø8
 **SWUBR/L** ⇒8-38 Boring Insert type: WB□□	Steel Carbide	ø5 ~ ø7 ø5 ~ ø7	ø6 ø8 ø6 ø8
 **STUPR/L** ⇒8-37 Boring Insert type: TP□□	Steel Carbide	ø7 ø7	ø8 ø8
 **SEZPR/L** ⇒8-39 Internal retracting Insert type: EP□□	Steel Carbide	ø4 ~ ø5 ø4 ~ ø5	ø5.5 ø6.5 ø5.5 ø6.5

Boring, profiling, chamfering





Details of edge



Right hand (R) shown.

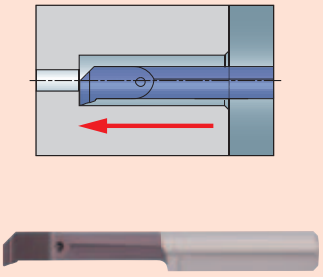
Cat. No.	Grade SH730 R	Grade SH730 L	Min. bore dia. øDm (mm)	Dimensions (mm) øDs	f	a	L1	Overhang length L2	Tmax	Corner radius rε +0.05 0
JBTR/L04020004-D006	●		0.6	4	-	0.5	18.5	2	0.08	0.04
JBTR/L04030004-D006	●		0.6	4	-	0.5	19.5	3	0.08	0.04
JBTR/L04045005-D010	●		1	4	-	0.9	21	4.5	0.1	0.05
JBTR/L04065005-D010	●		1	4	-	0.9	23	6.5	0.1	0.05
JBTR/L04040005-D020	●		2	4	-	1.7	20.5	4	0.1	0.05
JBTR/L04090005-D020	●		2	4	-	1.7	25.5	9	0.1	0.05
JBTR/L04140005-D020	●		2	4	-	1.7	30.5	14	0.1	0.05
JBTR/L04090010-D028	●	●	2.8	4	0.6	2.6	25.5	9	0.2	0.10
JBTR/L04150010-D028	●	●	2.8	4	0.6	2.6	31.5	15	0.2	0.10
JBTR/L04190010-D028	●	●	2.8	4	0.6	2.6	35.5	19	0.2	0.10
JBTR/L04090010-D040	●	●	4	4	1.5	3.5	25.5	9	0.3	0.10
JBTR/L04150010-D040	●	●	4	4	1.5	3.5	31.5	15	0.3	0.10
JBTR/L04190010-D040	●	●	4	4	1.5	3.5	35.5	19	0.3	0.10
JBTR/L04230010-D040	●		4	4	1.5	3.5	39.5	23	0.3	0.10
JBTR/L04270010-D040	●		4	4	1.5	3.5	43.5	27	0.3	0.10
JBTR/L07090015-D050	●	●	5	7	0.9	4.4	25	9	0.5	0.15
JBTR/L07140015-D050	●	●	5	7	0.9	4.4	30	14	0.5	0.15
JBTR/L07190015-D050	●	●	5	7	0.9	4.4	35	19	0.5	0.15
JBTR/L07240015-D050	●	●	5	7	0.9	4.4	40	24	0.5	0.15
JBTR/L07290015-D050	●	●	5	7	0.9	4.4	45	29	0.5	0.15
JBTR/L07340015-D050	●		5	7	0.9	4.4	50	34	0.5	0.15
JBTR/L07140015-D060	●	●	6	7	1.8	5.3	30	14	0.5	0.15
JBTR/L07210015-D060	●	●	6	7	1.8	5.3	37	21	0.5	0.15
JBTR/L07240015-D060	●	●	6	7	1.8	5.3	40	24	0.5	0.15
JBTR/L07290015-D060	●	●	6	7	1.8	5.3	45	29	0.5	0.15
JBTR/L07340015-D060	●		6	7	1.8	5.3	50	34	0.5	0.15
JBTR/L07410015-D060	●		6	7	1.8	5.3	57	41	0.5	0.15
JBTR/L07190015-D068	●	●	6.8	7	2.8	6.3	35	19	0.6	0.15
JBTR/L07240015-D068	●		6.8	7	2.8	6.3	40	24	0.6	0.15
JBTR/L07290015-D068	●	●	6.8	7	2.8	6.3	45	29	0.6	0.15
JBTR/L07340015-D070	●	●	7	7	2.8	6.3	50	34	0.6	0.15
JBTR/L07390015-D070	●		7	7	2.8	6.3	55	39	0.6	0.15
JBTR/L07440015-D070	●		7	7	2.8	6.3	60	44	0.6	0.15
JBTR/L07490015-D070	●		7	7	2.8	6.3	65	49	0.6	0.15

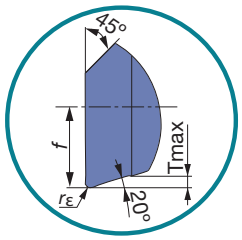
● : Stocked items

JBP

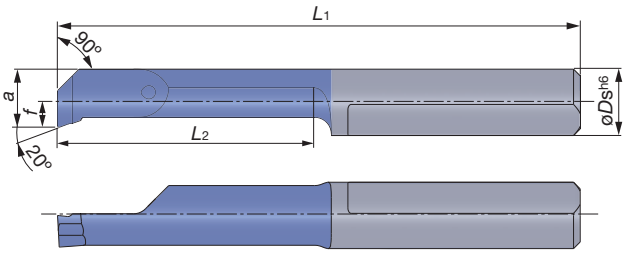
Solid boring bars

Boring, chamfering





Details of edge

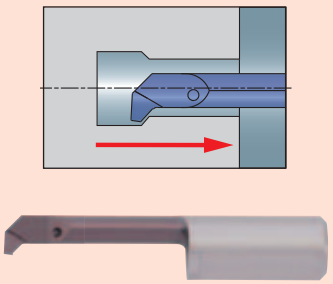


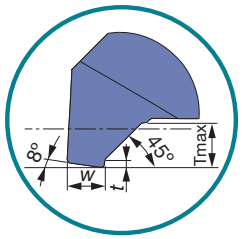
Cat. No.	Grade	Min. bore dia. øDm (mm)	Dimensions (mm)						
	SH730		øDs	f	a	L1	Overhang length L2	Tmax	Corner radius r_ε $^{+0.05}_{0}$
JBPR04090010-D028	●	2.8	4	0.6	2.6	25.5	9	0.2	0.10
JBPR04150010-D028	●	2.8	4	0.6	2.6	31.5	15	0.2	0.10
JBPR04090010-D040	●	4	4	1.5	3.5	25.5	9	0.3	0.10
JBPR04150010-D040	●	4	4	1.5	3.5	31.5	15	0.3	0.10
JBPR07140015-D050	●	5	7	0.9	4.4	30	14	0.5	0.15
JBPR07190015-D050	●	5	7	0.9	4.4	35	19	0.5	0.15

JBU

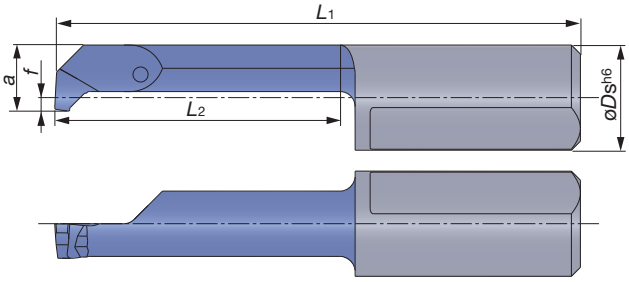
Solid boring bars

Back boring, chamfering





Details of edge



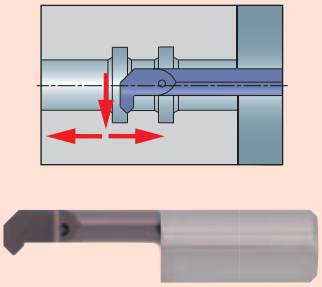
Right hand (R) shown.

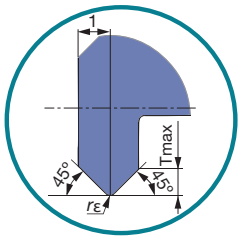
Cat. No.	Grade		Min. bore dia. øDm (mm)	Dimensions (mm)							Groove width (mm)
	SH730			øDs	f	a	L1	Overhang length L2	t	Tmax	W $^{+0.05}_{0}$
	R	L									
JBUR/L07140010-D050	●		5	7	0.9	4.4	30	14	0.2	1	1
JBUR/L07190010-D050	●		5	7	0.9	4.4	35	19	0.2	1	1

JBC

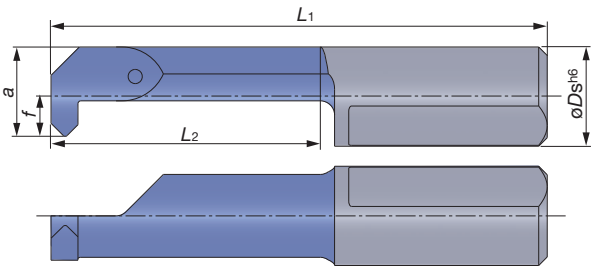
Solid boring bars

Boring, 45° chamfering





Details of edge

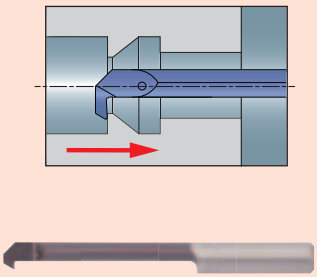


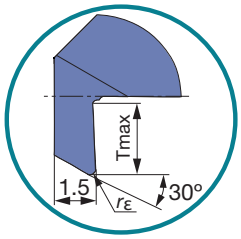
Cat. No.	Grade	Min. bore dia. øDm (mm)	Dimensions (mm)						
	SH730		øDs	f	a	L1	Overhang length L2	Tmax	Corner radius rε ± 0.05
JBCR07140020-D050	●	5	7	0.9	4.4	30	14	0.7	0.2
JBCR07190020-D050	●	5	7	0.9	4.4	35	19	0.7	0.2
JBCR07190020-D068	●	6.8	7	2.8	6.3	35	19	0.7	0.2

JBB

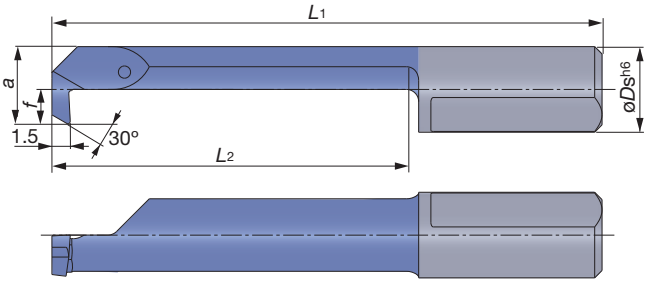
Solid boring bars

Back boring





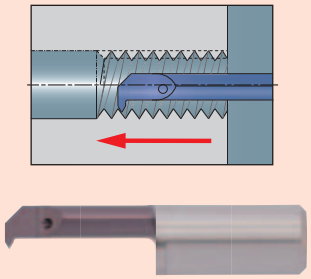
Details of edge

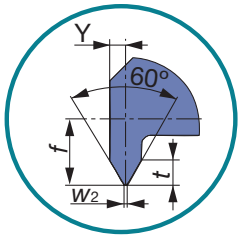


Cat. No.	Grade	Min. bore dia. øDm (mm)	Dimensions (mm)						
	SH730		øDs	f	a	L1	Overhang length L2	Tmax	Corner radius rε ± 0.05
JBBR04140020-D030	●	3	4	0.6	2.6	30	14	0.5	0.2
JBBR04190020-D030	●	3	4	0.6	2.6	35	19	0.5	0.2
JBBR04140015-D040	●	4	4	1.5	3.5	30	14	0.8	0.15
JBBR04240015-D040	●	4	4	1.5	3.5	40	24	0.8	0.15
JBBR07190020-D050	●	5	7	0.9	4.4	35	19	1	0.2
JBBR07290020-D050	●	5	7	0.9	4.4	45	29	1	0.2
JBBR07190020-D060	●	6	7	1.8	5.3	35	19	1.8	0.2
JBBR07290020-D060	●	6	7	1.8	5.3	45	29	1.8	0.2
JBBR07190020-D070	●	7	7	2.8	6.3	35	19	2.5	0.2
JBBR07290020-D070	●	7	7	2.8	6.3	45	29	2.5	0.2

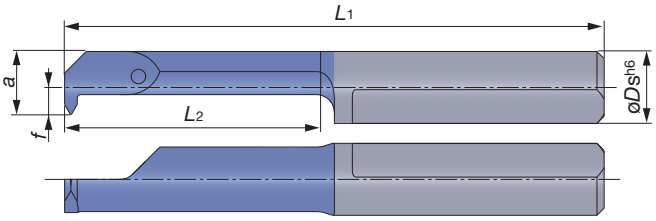
● : Stocked items

Threading (metric thread)





Details of edge



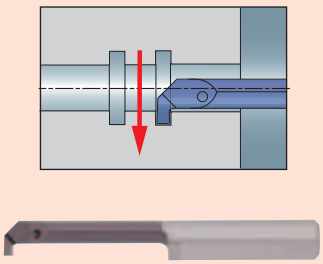
Cat. No.	Grade	Pitch	Min. bore dia.	Flat width	Dimensions (mm)						
	SH730	(mm)	øDm (mm)	W2 $^{0}_{-0.02}$	øDs	f	a	L1	Overhang length L2	t	Y
JBIR04140050-D040	●	0.5	4	0.06	4	1.5	3.5	30	14	0.3	0.35
JBIR07140050-D050	●	0.5	5	0.06	7	0.9	4.4	30	14	0.3	0.35
JBIR07140075-D050	●	0.75	5	0.09	7	0.9	4.4	30	14	0.4	0.45
JBIR07140100-D048	●	1	4.8	0.12	7	0.9	4.4	30	14	0.6	0.55
JBIR07140100-D060	●	1	6	0.12	7	1.8	5.3	30	14	0.6	0.55
JBIR07140125-D060	●	1.25	6	0.15	7	1.8	5.3	30	14	0.7	0.65
JBIR07140150-D060	●	1.5	6	0.18	7	1.8	5.3	30	14	0.8	0.75
JBIR07140150-D070	●	1.5	7	0.18	7	2.8	6.3	30	14	0.8	0.75

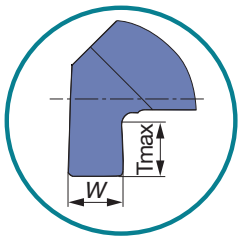
● : Stocked items

JBG

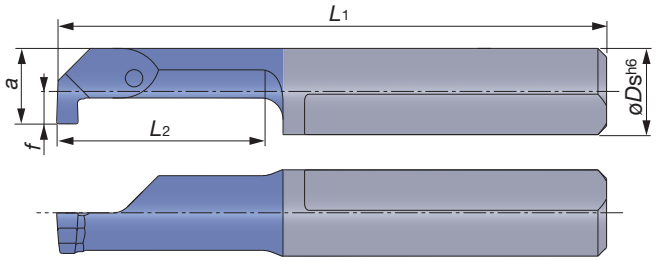
Solid boring bars

Grooving





Details of edge



Right hand (R) shown.

Cat. No.	Grade SH730 R	Grade SH730 L	Groove width $W^{+0.05}_{0}$ (mm)	Min. bore dia. øDm (mm)	Dimensions (mm) øDs	f	a	L1	Overhang length L2	Tmax
JBGR/L04050050-D020	●		0.5	2	4	0.2	1.8	21	5	0.4
JBGR/L04100050-D020	●		0.5	2	4	0.2	1.8	26	10	0.4
JBGR/L04050070-D030	●		0.7	3	4	0.7	2.7	21	5	0.6
JBGR/L04100070-D030	●		0.7	3	4	0.7	2.7	26	10	0.6
JBGR/L04090100-D040	●		1	4	4	1.5	3.5	25.5	9	0.8
JBGR/L04150100-D040	●		1	4	4	1.5	3.5	31.5	15	0.8
JBGR/L07090100-D050	●		1	5	7	0.9	4.4	25	9	1
JBGR/L07140100-D050	●		1	5	7	0.9	4.4	30	14	1
JBGR/L07090150-D050	●		1.5	5	7	0.9	4.4	25	9	1
JBGR/L07140150-D050	●		1.5	5	7	0.9	4.4	30	14	1
JBGR/L07090200-D050	●		2	5	7	0.9	4.4	25	9	1
JBGR/L07190200-D050	●		2	5	7	0.9	4.4	35	19	1
JBGR/L07090100-D060	●	●	1	6	7	1.8	5.3	25	9	1.8
JBGR/L07140100-D060	●		1	6	7	1.8	5.3	30	14	1.8
JBGR/L07210100-D060	●		1	6	7	1.8	5.3	37	21	1.8
JBGR/L07290100-D060	●		1	6	7	1.8	5.3	45	29	1.8
JBGR/L07090150-D060	●	●	1.5	6	7	1.8	5.3	25	9	1.8
JBGR/L07140150-D060	●		1.5	6	7	1.8	5.3	30	14	1.8
JBGR/L07210150-D060	●		1.5	6	7	1.8	5.3	37	21	1.8
JBGR/L07240150-D060	●		1.5	6	7	1.8	5.3	40	24	1.8
JBGR/L07290150-D060	●		1.5	6	7	1.8	5.3	45	29	1.8
JBGR/L07090200-D060	●		2	6	7	1.8	5.3	25	9	1.8
JBGR/L07140200-D060	●		2	6	7	1.8	5.3	30	14	1.8
JBGR/L07210200-D060	●		2	6	7	1.8	5.3	37	21	1.8
JBGR/L07240200-D060	●		2	6	7	1.8	5.3	40	24	1.8
JBGR/L07290200-D060	●		2	6	7	1.8	5.3	45	29	1.8
JBGR/L07090100-D068	●		1	6.8	7	2.7	6.2	25	9	2.5
JBGR/L07140100-D068	●		1	6.8	7	2.7	6.2	30	14	2.5
JBGR/L07210100-D068	●		1	6.8	7	2.7	6.2	37	21	2.5
JBGR/L07090150-D068	●		1.5	6.8	7	2.7	6.2	25	9	2.5
JBGR/L07140150-D068	●		1.5	6.8	7	2.7	6.2	30	14	2.5
JBGR/L07210150-D068	●		1.5	6.8	7	2.7	6.2	37	21	2.5
JBGR/L07290150-D068	●		1.5	6.8	7	2.7	6.2	45	29	2.5
JBGR/L07090200-D068	●		2	6.8	7	2.7	6.2	25	9	2.5
JBGR/L07140200-D068	●	●	2	6.8	7	2.7	6.2	30	14	2.5
JBGR/L07210200-D068	●		2	6.8	7	2.7	6.2	37	21	2.5
JBGR/L07250200-D068	●		2	6.8	7	2.7	6.2	40	25	2.5
JBGR/L07290200-D068	●		2	6.8	7	2.7	6.2	45	29	2.5

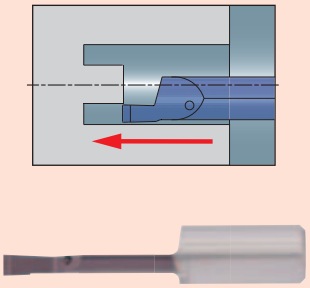
* The corner radius is less than 0.1 mm.

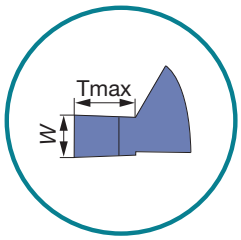
● : Stocked items

JBF

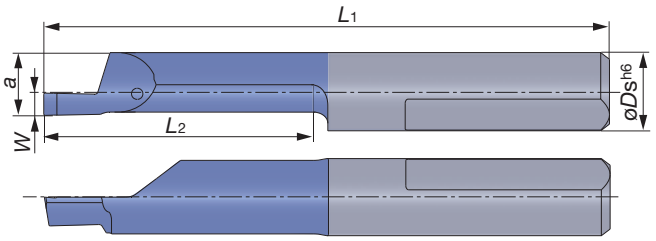
Solid boring bars

Face grooving





Details of edge



Right hand (R) shown.

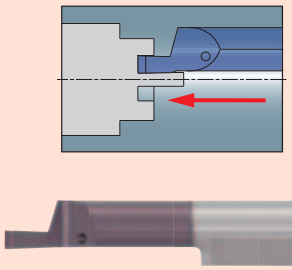
Cat. No.	Grade SH730 R	Grade SH730 L	Groove width W +0.05 0 (mm)	Min. bore dia. øDm (mm)	Dimensions (mm) øDs	a	L1	Overhang length L2	Tmax
JBFR/L07110100-D060	●		1	6	7	5.2	26	10	1.5
JBFR/L07110150-D060	●		1.5	6	7	5.2	26	10	2
JBFR/L07110200-D060	●		2	6	7	5.2	26	10	3
JBFR/L07110250-D080	●		2.5	8	7	5.9	27	11	3.5
JBFR/L07110300-D080	●		3	8	7	5.9	27	11	3.5
JBFR/L07210150-D080	●	●	1.5	8	7	5.9	36	21	2.5
JBFR/L07210200-D080	●		2	8	7	5.9	36	21	3
JBFR/L07210250-D080	●		2.5	8	7	5.9	36	21	3.5
JBFR/L07210300-D080	●		3	8	7	5.9	36	21	3.5
JBFR/L07300200-D080	●	●	2	8	7	5.9	46	30	3
JBFR/L07300300-D080	●		3	8	7	5.9	46	30	3.5
JBFR/L07110100-D080	●		1	8	7	5.9	27	11	1.5
JBFR/L07110150-D080	●		1.5	8	7	5.9	27	11	2.5
JBFR/L07110200-D080	●		2	8	7	5.9	27	11	3
JBFR/L07200200-D080	●		2	8	7	5.9	36	20	3
JBFR/L07200250-D150	●		2.5	15	7	5.9	36	20	20
JBFR/L07200300-D150	●		3	15	7	5.9	36	20	20
JBFR/L07300300-D150	●		3	15	7	5.9	46	30	30

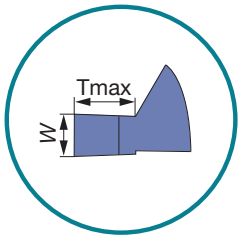
* The corner radius is less than 0.1 mm.

JBS

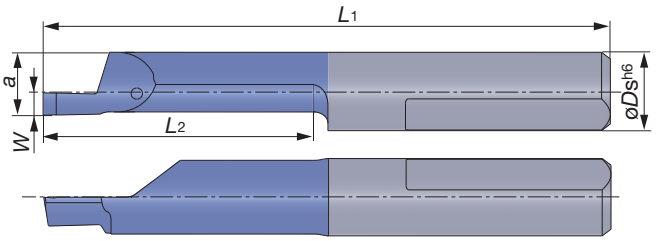
Solid boring bars

Face grooving (for machining shaft)





Details of edge

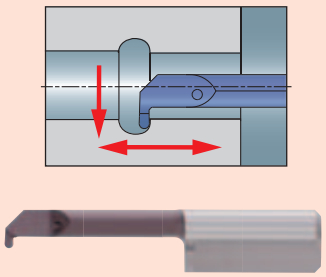


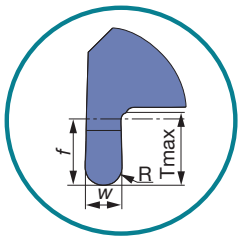
Cat. No.	Grade SH730	Groove width W +0.05 0 (mm)	Min. bore dia. øDm (mm)	Dimensions (mm) øDs	a	L1	Overhang length L2	Tmax
JBSR07200200-D060	●	2	6	7	5.2	36	20	4

* The corner radius is less than 0.1 mm.

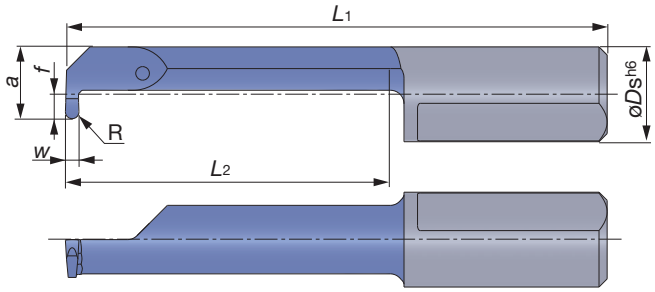
● : Stocked items

Boring, profiling (full radius type)





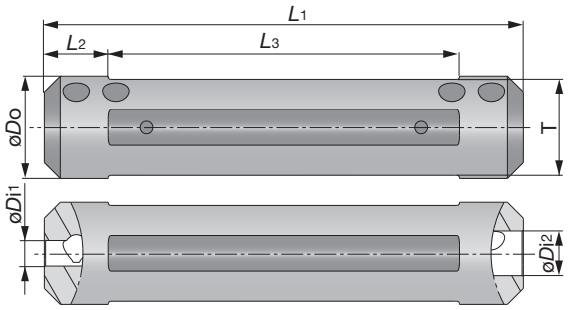
Details of edge



Cat. No.	Grade	Groove width $W^{+0.05}_{0}$ (mm)	Min. bore dia. øDm (mm)	Dimensions (mm)						
	SH730			øDs	f	a	L1	Overhang length L2	Tmax	R
JBRR07190050-D050	●	1	5	7	0.9	4.4	35	19	1	0.5
JBRR07240050-D060	●	1	6	7	1.8	5.3	40	24	1.8	0.5
JBRR07290050-D068	●	1	6.8	7	2.8	6.3	45	29	2.5	0.5

Sleeves

JBBS For TinyTurn



Cat. No.	Stock	Dimensions (mm)							Replacement parts	
		øDo	øDi1	øDi2	L1	L2	L3	T	Clamping screw	Wrench
JBBS12-4-4	●	12	4	4	75	10	55	10.3	SSHM5-4PF-S	P-2.5
JBBS127-4-4	●	12.7	4	4	76.2	10	56.2	11.6	SSHM5-6PF-S	P-2.5
JBBS14-4-4	●	14	4	4	75	10	55	12	SSHM5-4PF-S	P-2.5
JBBS159-4-7	●	15.875	4	7	76.2	10	56.2	14	SSHM5-6PF-S	P-2.5
JBBS16-4-7	●	16	4	7	75	10	55	15	SSHM5-6PF-S	P-2.5
JBBS19-4-7	●	19.05	4	7	89	10	69	17.2	SSHM5-6PF-S	P-2.5
JBBS20-4-7	●	20	4	7	90	10	70	18	SSHM5-6PF-S	P-2.5
JBBS22-4-7	●	22	4	7	90	10	70	20	SSHM5-6PF-S	P-2.5
JBBS25-4-7	●	25	4	7	100	10	80	23	SSHM5-6PF-S	P-2.5
JBBS254-4-7	●	25.4	4	7	90	10	70	23.4	SSHM5-6PF-S	P-2.5

● : Stocked items

Standard cutting condition

Boring, profiling, chamfering, back boring

Work materials	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
Steel S45C, SCM435 (C45, 34CrMo4) etc.	SH730	**90** (40 - 140)	**0.05** (0.01 - 0.08) *
Stainless steels SUS303, SUS304 (X10CrNiS18-9, X5CrNi18-9) etc.		**90** (40 - 140)	
Grey cast irons, ductile cast irons FC250, FCD400 (GG25, GGG40) etc.		**60** (30 - 100)	
Aluminium alloys, copper alloys Si < 12%		**150** (90 - 200)	* JBTR/L04020004-D006, JBTR/L04030004-D006 Max. *f* = 0.01 mm/rev
Titanium alloys Ti-6Al-4V etc.		**60** (30 - 100)	

Threading (metric thread)

Work materials	Grade	Cutting speed *Vc* (m/min)	Number of passes				
			Pitch (mm)				
			0.5	0.75	1	1.25	1.5
Steel S45C, SCM435 (C45, 34CrMo4) etc.	SH730	140	6 - 8	8 - 10	10 - 12	12 - 15	15 - 18
Stainless steels SUS303, SUS304 (X10CrNiS18-9, X5CrNi18-9) etc.		105	8	10	12	15	18
Grey cast irons, ductile cast irons FC250, FCD400 (GG25, GGG40) etc.		115	7	9	12	14	17
Aluminium alloys, copper alloys Si < 12%		350	6	8	10	12	15

Internal grooving

Work materials	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
Steel S45C, SCM435 (C45, 34CrMo4) etc.	SH730	**90** (40 - 140)	**0.02** (0.01 - 0.03)
Stainless steels SUS303, SUS304 (X10CrNiS18-9, X5CrNi18-9) etc.		**90** (40 - 140)	
Grey cast irons, ductile cast irons FC250, FCD400 (GG25, GGG40) etc.		**60** (30 - 100)	
Aluminium alloys, copper alloys Si < 12%		**150** (90 - 200)	
Titanium alloys Ti-6Al-4V etc.		**60** (30 - 100)	

Face grooving

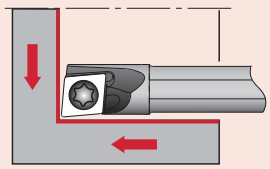
Work materials	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
Steel S45C, SCM435 (C45, 34CrMo4) etc.	SH730	**90** (40 - 140)	**0.03** (0.01 - 0.05)
Stainless steels SUS303, SUS304 (X10CrNiS18-9, X5CrNi18-9) etc.		**90** (40 - 140)	
Grey cast irons, ductile cast irons FC250, FCD400 (GG25, GGG40) etc.		**60** (30 - 100)	
Aluminium alloys, copper alloys Si < 12%		**150** (90 - 200)	
Titanium alloys Ti-6Al-4V etc.		**60** (30 - 100)	

Relating pages
Parts (14–1~)

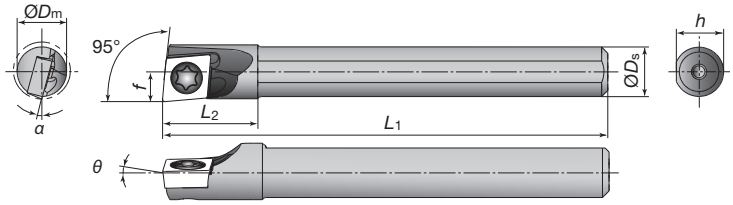
SCLCR/L STREAMJETBARMINI

Positive rake
screw-on system

Boring & internal facing



Cutting edge style **L**



Right hand (R) shown

Steel shank

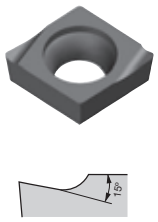
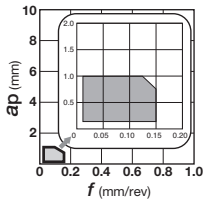
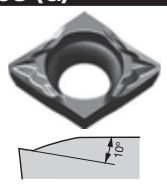
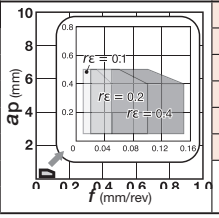
Cat. No.	Stock R	Stock L	Min bore.dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
A04F-SCLCR/L03-D050	●	●	5	4	2.5	80	8	3.8	-	0°	-15°	0.2	CC□□03X1	CSTA-1.6	T-6F	0.6
A05F-SCLCR/L03-D060	●	●	6	5	3	80	9	4.8	-	0°	-13°					
A06G-SCLCR/L04-D070	●	●	7	6	3.5	90	11	5.75	-	0°	-13°	0.2	CC□□04T1	CSTB-2	T-6F	0.6
A07G-SCLCR/L04-D080	●	●	8	7	4	90	12	6.75	-	0°	-11°					

Carbide shank

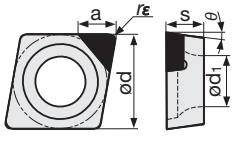
Cat. No.	Stock R	Stock L	Min bore.dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	a	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
E04G-SCLCR/L03-D050	●	●	5	4	2.5	90	9	3.8	-	0°	-15°	0.2	CC□□03X1	CSTA-1.6	T-6F	0.6
E05G-SCLCR/L03-D060	●	●	6	5	3	90	10	4.8	-	0°	-13°					
E06H-SCLCR/L04-D070	●	●	7	6	3.5	100	12	5.75	-	0°	-13°	0.2	CC□□04T1	CSTB-2	T-6F	0.6
E07H-SCLCR/L04-D080	●	●	8	7	4	100	14	6.75	-	0°	-11°					

When using a right or left hand insert, the right hand insert is used for the left hand toolholders (SCLCL □□ type), and the left hand insert is used for the right hand toolholders (SCLCR □□ type).

Applicable inserts

Application	Chipbreaker Appearance (Cross section)	f - ap	Insert Cat. No. (Metric)	Dimensions (mm) I.C. dia. ød	Thickness s	Hole dia. (Ø) ød1	Corner radius rε	Grades Coated SH730	Grades Carbide TH10
Finishing	**W08 (G)** 		CCGT03X100R-W08	3.57	1.39	1.9	0.03	●	●
			CCGT03X100L-W08					●	●
			CCGT03X101R-W08				0.10	●	●
			CCGT03X101L-W08					●	●
			CCGT03X102R-W08				0.20	●	●
			CCGT03X102L-W08					●	●
			CCGT03X104R-W08				0.40	●	●
			CCGT03X104L-W08					●	●
			CCGT04T100R-W08	4.37	1.79	2.3	0.03	●	●
			CCGT04T100L-W08					●	●
			CCGT04T101R-W08				0.10	●	●
			CCGT04T101L-W08					●	●
			CCGT04T102R-W08				0.20	●	●
			CCGT04T102L-W08					●	●
			CCGT04T104R-W08				0.40	●	●
			CCGT04T104L-W08					●	●
	JS (G) 		CCGT03X101-JS	3.57	1.39	1.9	0.10	●	
			CCGT03X102-JS				0.20	●	
			CCGT03X104-JS				0.40	●	
			CCGT04T101-JS	4.37	1.79	2.3	0.10	●	
			CCGT04T102-JS				0.20	●	
			CCGT04T104-JS				0.40	●	

Applicabale inserts (T-CBN)



Cat. No.	Dimensions (mm) Relief angle θ	I.C.dia ød	Thickness s	Hole dia ød1	Corner R rε	CBN length a	Grades BX310
1QP-CCGW03X102	7°	3.57	1.39	1.9	0.2	1.4	●
1QP-CCGW03X104	7°	3.57	1.39	1.9	0.4	1.3	●
1QP-CCGW04T102	7°	4.37	1.79	2.3	0.2	1.9	●
1QP-CCGW04T104	7°	4.37	1.79	2.3	0.4	1.8	●

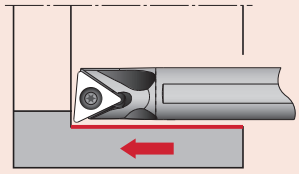
● : Stocked items.

Relating pages
Cutting conditions (8–41)
Parts (14–1~)

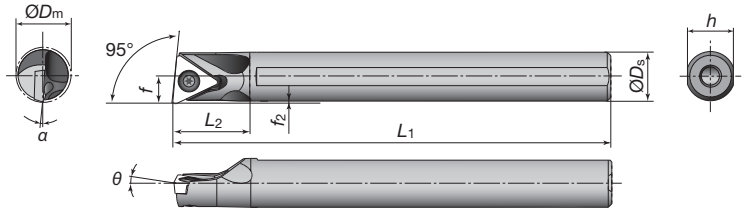
STUPR/L STREAMJETBARMINI

Positive rake
screw-on system

Boring



Cutting edge style U



Steel shank

Right hand (R) shown

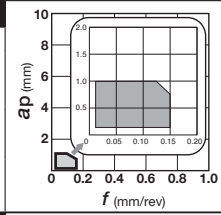
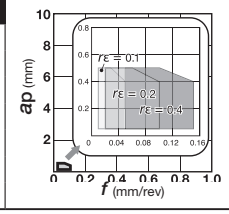
Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius	Applicable inserts	Parts		Torque
	R	L	øDm	øDs	f	L1	L2	h	f2	θ	α	rε		Clamping screw	Wrench	(N·m)
A07G-STUPR/L07-D080	●	●	8	7	4	90	12	6.75	0.4	+5°	-10°	0.4	TP□□0701	CSTB-2.2L038	T-7F	0.9

Carbide shank

Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius	Applicable inserts	Parts		Torque
	R	L	øDm	øDs	f	L1	L2	h	f2	θ	α	rε		Clamping screw	Wrench	(N·m)
E07H-STUPR/L07-D080	●	●	8	7	4	100	14	6.75	0.3	+5°	-10°	0.4	TP□□0701	CSTB-2.2L038	T-7F	0.9

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (STUPL □□ type), and the left hand insert (L) is used for the right hand toolholders (STUPR □□ type).

Applicable inserts

Application	Chipbreaker Appearance (Cross section)	f - ap	Insert Cat. No. (Metric)	Dimensions (mm) I.C. dia. ød	Thickness s	Hole dia. (Ø) ød1	Corner radius rε	Grades Coated SH730	Grades Carbide TH10
Finishing	W08 (G)		TPGT070100R-W08	4.37	1.59	2.58	0.03	●	●
			TPGT070100L-W08					●	●
			TPGT070101R-W08				0.10	●	●
			TPGT070101L-W08					●	●
			TPGT070102R-W08				0.20	●	●
			TPGT070102L-W08					●	●
			TPGT070104R-W08				0.40	●	●
			TPGT070104L-W08					●	●
	JS (G)		TPGT070101-JS	4.37	1.59	2.58	0.10	●	
			TPGT070102-JS				0.20	●	
			TPGT070104-JS				0.40	●	

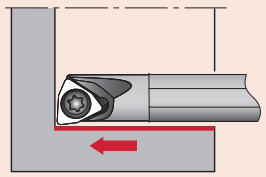
● : Stocked items.

Relating pages
Cutting conditions (8–41)
Parts (14–1~)

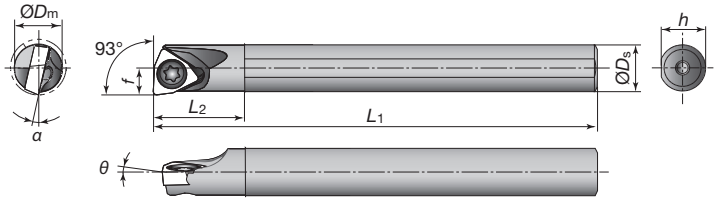
SWUBR/L STREAMJETBARMINI

Positive rake
screw-on system

Boring



Cutting edge style U



Right hand (R) shown

Steel shank

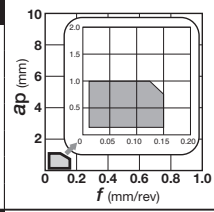
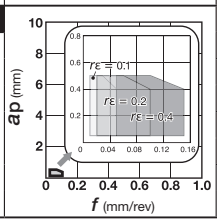
Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius	Applicable inserts	Parts		Torque
	R	L	øDm	øDs	f	L1	L2	h	f2	θ	α	rε		Clamping screw	Wrench	(N·m)
A05F-SWUBR/L03-D060	●	●	6	5	3	80	9	4.8			-13°					
A06G-SWUBR/L03-D070	●	●	7	6	3.5	90	11	5.75	-	0°	-12°	0.4	WB□□0301	CSTB-2	T-6F	0.6
A07G-SWUBR/L03-D080	●	●	8	7	4	90	12	6.75			-11°					

Carbide shank

Cat. No.	Stock		Min bore.dia.	Dimensions (mm)								Std. corner radius	Applicable inserts	Parts		Torque
	R	L	øDm	øDs	f	L1	L2	h	f2	θ	α	rε		Clamping screw	Wrench	(N·m)
E05G-SWUBR/L03-D060	●	●	6	5	3	90	10	4.8			-13°					
E06H-SWUBR/L03-D070	●	●	7	6	3.5	100	12	5.75	-	0°	-12°	0.4	WB□□0301	CSTB-2	T-6F	0.6
E07H-SWUBR/L03-D080	●	●	8	7	4	100	14	6.75			-11°					

When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SWUBL □□ type), and the left hand insert (L) is used for the right hand toolholders (SWUBR □□ type).

Applicable inserts

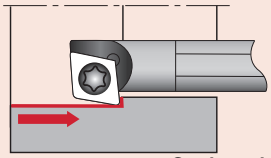
Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No. (Metric)	Dimensions (mm)				Grades				
								Coated		Cermet	Carbide	
				I.C. dia. ød	Thickness s	Hole dia. (Ø) ød1	Corner radius rε	SH730	GH110	NS530	TH10	UX30
Finishing	W08 (G)		WBGT030100R-W08	3.97	1.59	2.3	0.03	●				
			WBGT030100L-W08					●		●	●	●
			WBGT030101R-W08				0.10	●				
			WBGT030101L-W08					●			●	
			WBGT030102R-W08				0.20	●				
			WBGT030102L-W08					●	●	●	●	●
			WBGT030104R-W08				0.40	●				
			WBGT030104L-W08					●	●	●	●	●
	JS (G)		WBGT030101R-JS	3.97	1.59	2.3	0.10	●				
			WBGT030101L-JS					●				
			WBGT030102R-JS				0.20	●				
			WBGT030102L-JS					●				
			WBGT030104R-JS				0.40	●				
			WBGT030104L-JS					●				

● : Stocked items.

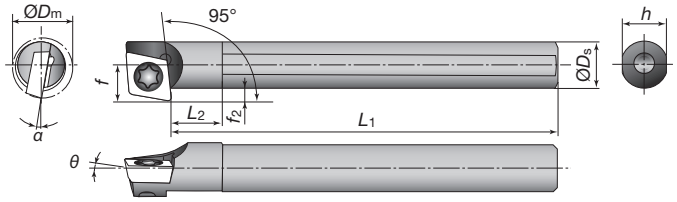
SEZPR/L STREAMJETBARMINI

Positive rake
screw-on system

Internal retracting



Cutting edge style **Z**



Right hand (R) shown

Steel shank

Cat. No.	Stock R	Stock L	Min bore.dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
A04F-SEZPR/L03-D055	●	●	5.5	4	3.2	80	4	3.8	1.2	0°	-8°	0.2	EP□□03X1 8-40	CSTA-1.6	T-6F	0.6
A05F-SEZPR/L03-D065	●	●	6.5	5	3.7	80	5	4.8			-6°					

Carbide shank

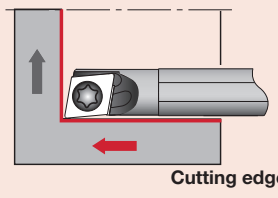
Cat. No.	Stock R	Stock L	Min bore.dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
E04G-SEZPR/L03-D055	●	●	5.5	4	3.2	90	5	3.8	1.2	0°	-8°	0.2	EP□□03X1 8-40	CSTA-1.6	T-6F	0.6
E05G-SEZPR/L03-D065	●	●	6.5	5	3.7	90	6	4.8			-6°					

When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (SEZPR □□ type), and the left hand insert (L) is used for the left hand toolholders (SEZPL □□ type).

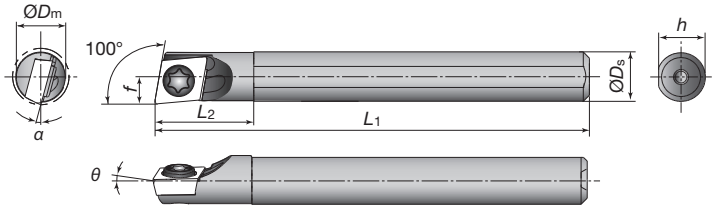
SEXPR/L STREAMJETBARMINI

Positive rake
screw-on system

Boring & internal facing



Cutting edge style **X**



Right hand (R) shown

Steel shank

Cat. No.	Stock R	Stock L	Min bore.dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
A04F-SEXPR/L03-D045	●	●	4.5	4	2.3	80	8	3.8	-	0°	-15°	0.2	EP□□03X1 8-40	CSTA-1.6	T-6F	0.6
A04F-SEXPR/L03-D050	●	●	5	4	2.5	80	8	3.8	-	0°	-13°					
A05F-SEXPR/L04-D055	●	●	5.5	5	2.75	80	9	4.8	-	0°	-12°	0.4	EP□□0401 8-40	CSTB-2	T-6F	0.6
A06G-SEXPR/L04-D070	●	●	7	6	3.6	90	11	5.75	-	0°	-12°					

Carbide shank

Cat. No.	Stock R	Stock L	Min bore.dia. øDm	Dimensions (mm) øDs	f	L1	L2	h	f2	θ	α	Std. corner radius rε	Applicable inserts	Parts Clamping screw	Parts Wrench	Torque (N·m)
E04G-SEXPR/L03-D045	●	●	4.5	4	2.3	90	9	3.8	-	0°	-15°	0.2	EP□□03X1 8-40	CSTA-1.6	T-6F	0.6
E04G-SEXPR/L03-D050	●	●	5	4	2.5	90	9	3.8	-	0°	-13°					
E05G-SEXPR/L04-D055	●	●	5.5	5	2.75	90	10	4.8	-	0°	-12°	0.4	EP□□0401 8-40	CSTB-2	T-6F	0.6
E06H-SEXPR/L04-D070	●	●	7	6	3.6	100	12	5.75	-	0°	-12°					

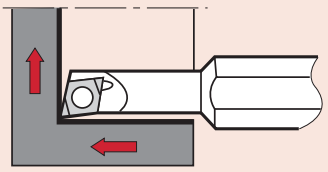
When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SEXPL □□ type), and the left hand insert (L) is used for the right hand toolholders (SEXPR □□ type).

● : Stocked items.

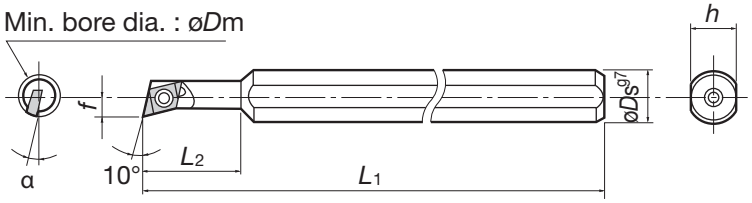
JS08H-SEXPR

Without offset / Positive rake
Screw-on system

Boring / Internal facing



Cutting edge style **X**

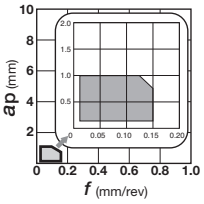
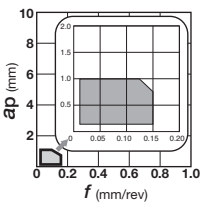
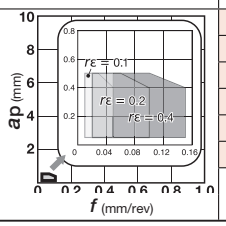


Right hand (R) shown.

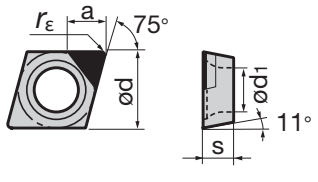
Cat. No.	Stock R	Stock L	Min. bore dia. øDm (mm)	Dimensions (mm) øDs	f	L1	L2	h	b	α	a	Std. Corner rε	Applicable insert	Clamping screw	Wrench
JS08H-SEXPR/L045	●		5.5	8	2.7	100	16	7	-	12°	-	0.4	EP□□0401□□	CSTB-2	T-6F
JS08H-SEXPR/L047	●		7		3.6		20								

● : Stocked items.

Applicable inserts

Application	Chipbreaker / Appearance (Cross section)	f - ap	Insert Cat. No. (Metric)	Dimensions (mm) I.C. dia. ød	Thickness s	Hole dia. (Ø) ød1	Corner radius rε	Grades Coated SH730	J740	GH110	Cermet NS530	GT530	Carbide TH10	UX30
Finishing	W08 (G)		EPGT03X100R-W08	3.57	1.39	1.9	0.03	●					●	
			EPGT03X100L-W08					●					●	
			EPGT03X101R-W08				0.10	●					●	
			EPGT03X101L-W08					●					●	
			EPGT03X102R-W08				0.20	●					●	
			EPGT03X102L-W08					●					●	
			EPGT03X104R-W08				0.40	●					●	
			EPGT03X104L-W08					●					●	
			EPGT040100R-W08	3.97	1.59	2.3	0.03	●					●	
			EPGT040100L-W08					●		●	●		●	
			EPGT040101R-W08				0.10	●					●	
			EPGT040101L-W08					●					●	
			EPGT040102R-W08				0.20	●		●	●		●	
			EPGT040102L-W08					●		●	●	●	●	●
			EPGT040104R-W08				0.40	●		●	●		●	
			EPGT040104L-W08					●		●	●	●	●	●
	J08 (G)		EPGT040100L-J08	3.97	1.59	2.3	0.03	●	●					
			EPGT040102L-J08				0.20	●	●					
			EPGT040104L-J08				0.40	●	●					
	JS (G)		EPGT03X101-JS	3.57	1.39	1.9	0.10	●						
			EPGT03X102-JS				0.20	●						
			EPGT03X104-JS				0.40	●						
			EPGT040101-JS	3.97	1.59	2.3	0.10	●						
			EPGT040102-JS				0.20	●						
			EPGT040104-JS				0.40	●						

Applicable T-CBN & T-DIA inserts



Cat. No.	Dimensions (mm) Inner circle ød	Thickness s	Hole ød1	Corner radius rε	Length of T-CBN, T-DIA edge a	Stock T-CBN & T-DIA BX310	DX140
1QP-EPGW03X102	3.57	1.39	1.9	0.2	1.4	●	
1QP-EPGW03X104				0.4	1.3	●	
1QP-EPGW040102	3.970	1.59	2.3	0.2	1.7	●	
1QP-EPGW040104				0.4	1.6	●	
EPGW040102-DIA	3.970	1.59	2.3	0.2	2.0		●
EPGW040104-DIA				0.4	1.9		●

"DX140" : Packing quantity = 1 pcs.

● : Stocked items.

Relating pages | Cutting conditions (8–41) | Parts (14–1~)

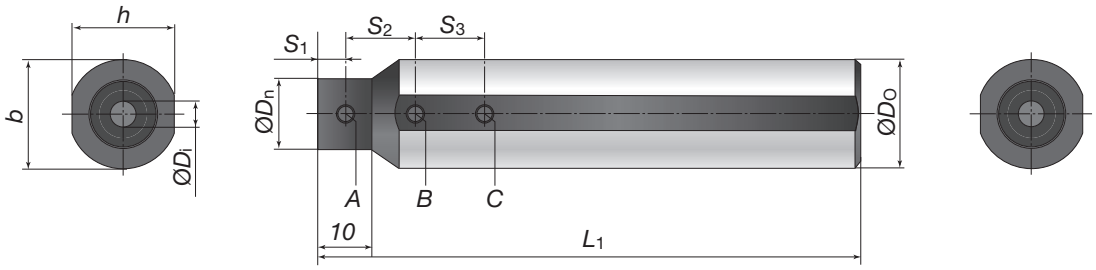
Standard cutting conditions (Internal turning)

Work material	Chip-breaker	Grades	Cutting Speed *Vc* (m/min)	Depth of cut *ap* (mm)	Feed: *f* (mm/rev)			
					*r*ε = 0.03	*r*ε = 0.1	*r*ε = 0.2	*r*ε = 0.4
Steels S45C, SCM435 etc.	**W08 J08**	**SH730**	50 - **100** - 150	0.05 - **0.5** - 1.0	0.005 ~ **0.01** ~ 0.02	0.01 ~ **0.03** ~ 0.05	0.02 ~ **0.06** ~ 0.10	0.05 ~ **0.10** ~ 0.15
Stainless steels SUS303, SUS304 etc.	**W08**		30 - **100** - 150					
Grey cast irons **Ductile cast irons** FC250, FCD450 etc.		**TH10**	30 - **70** - 100					
Aluminium alloys **Copper alloys** Si < 13%			100 - **300** - 500					
Titanium **Titanium alloys** Ti-6Al-4V etc.		**SH730**	30 - **60** - 100					

Sleeves

BLM type

(Round shank for Stream Jet Bar MINI)



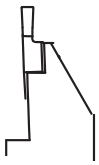
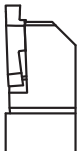
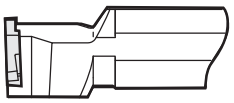
Cat. No.	Stock										Replacement parts				
											Clamping screws			Wrench	Seal cap* (Inner screw)
		øDo	øDi	øDn	*L*1	h	b	*S*1	*S*2	*S*3	*A*	*B*	*C*		
BLM159-04	●	15.875	4	15	100	15	15.875	5	15	15	SSHM4-4	SSHM4-4	SSHM4-4	P-2	CA-16 (M6)
BLM159-05	●		5												
BLM159-06	●		6						20	20					
BLM159-07	●		7												
BLM16-04	●	16	4	15	100	15	16	5	15	15	SSHM4-4	SSHM4-4	SSHM4-4	P-2	CA-16 (M6)
BLM16-05	●		5												
BLM16-06	●		6						20	20					
BLM16-07	●		7												
BLM19-04	●	19.05	4	18	100	18	19.05	5	15	15	SSHM4-4	SSHM4-6	SSHM4-6	P-2	CA-16 (M6)
BLM19-05	●		5									SSHM4-4	SSHM4-4		
BLM19-06	●		6						20	20					
BLM19-07	●		7												
BLM20-04	●	20	4	13	100	19	20	5	15	15	SSHM4-4	SSHM4-6	SSHM4-6	P-2	CA-16 (M6)
BLM20-05	●		5	14											
BLM20-06	●		6	15					20	20		SSHM4-4	SSHM4-4		
BLM20-07	●		7	16											
BLM22-04	●	22	4	13	125	21	22	5	15	15	SSHM4-4	SSHM4-6	SSHM4-6	P-2	CA-16 (M6)
BLM22-05	●		5	14											
BLM22-06	●		6	15					20	20					
BLM22-07	●		7	16											
BLM25-04	●	25	4	13	125	24	25	5	15	15	SSHM4-4	SSHM4-8	SSHM4-8	P-2	CA-16 (M6)
BLM25-05	●		5	14											
BLM25-06	●		6	15					20	20					
BLM25-07	●		7	16								SSHM4-6	SSHM4-6		
BLM254-04	●	25.4	4	13	125	24	25.4	5	15	15	SSHM4-4	SSHM4-8	SSHM4-8	P-2	CA-16 (M6)
BLM254-05	●		5	14											
BLM254-06	●		6	15					20	20					
BLM254-07	●		7	16								SSHM4-6	SSHM4-6		

*Seal cap (optional) ● : Stocked items.

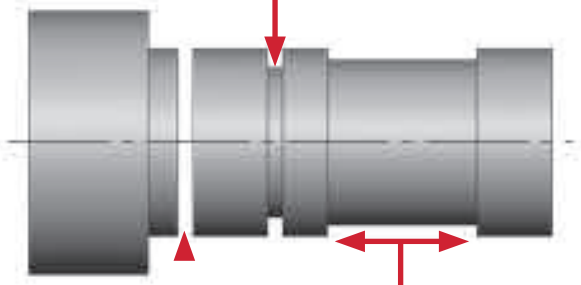
Relating pages Parts (14–1~)

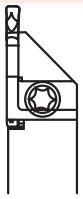
Types and application of TAC Grooving and Parting Tools

For grooving

JSVGR/L (P. 8-49) Shank size 10 ~ 16 mm **Groove with: 0.33 ~ 2.0 mm** **Max. groove depth: 0.7 ~ 5.5 mm**	JSTGR/L (P. 8-50) Shank size 10 ~ 16 mm **Groove with: 0.33 ~ 3.0 mm** **Max. groove depth: 0.7 ~ 2.6 mm**	JS-TGL3 (P. 8-50) Shank dia. ø19.05 ~ ø25.4 mm **Groove with: 0.33 ~ 3.0 mm** **Max. groove depth: 0.7 ~ 2.6 mm**
		

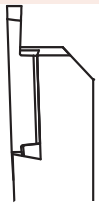
For grooving, parting off and traversing



JCTER/L (P. 8-43) New Shank size 10 ~ 20 mm **Groove width: 1.0 ~ 3.0 mm** **Max.parting dia. : ø32 mm**


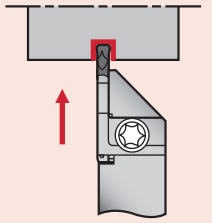
TUNGCUT

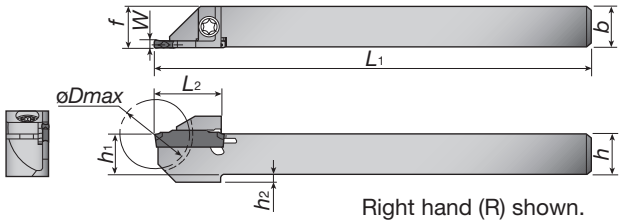
For grooving and parting off

JSXGR/L (P. 8-48) Shank size 10 ~ 25 mm **Groove with: 0.7 ~ 2.0 mm** **Max. parting dia: ø9 ~ ø12 mm**	JCGSSR/L (P. 8-52) Shank size 10 ~ 16 mm **Groove width: 2.0 mm** **Max. parting dia: ø20 ~ ø32 mm**	JCCWSR/L (P. 8-53) Shank size 10 ~ 25 mm **Groove width: 2.0 mm** **Max. parting dia: ø20 mm**	JCGWSR/L (P. 8-53) Shank size 10 ~ 16 mm **Groove width: 2.0 mm** **Max. parting dia: ø20 mm**
			

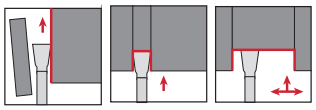
JCTER/L TUNGCUT

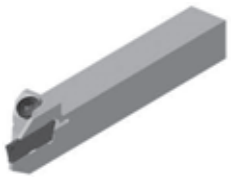
Grooving / Parting off





Right hand (R) shown.

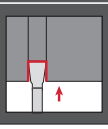
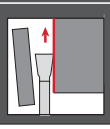
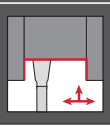




Insert seat size	Cat. No.	Stock R	Stock L	Max. dia. øDmax (mm)	Dimensions (mm) h1	b	h	L1	*f	W	h2	L2	Inserts	Parts Clamping screw	Parts Wrench
1	JCTER/L1010-1.4T10	●	●	20	10	10	10	125	10.2	1.4	-	18	DGS1.4-016 8-45	CSHB-4-A	T-15F
	JCTER/L1212-1.4T12	●	●	24	12	12	12	125	12.2	1.4	-	19.5			
	JCTER/L1414-1.4T12	●	●	24	14	14	14	125	14.2	1.4	-	19.5			
	JCTER/L1616-1.4T16	●	●	32	16	16	16	125	16.2	1.4	-	24			
2	JCTER/L1010-2T10	●	●	20	10	10	10	125	10.1	2	2	19	DGM/SGM DGS/SGS DGE DTE 8-43~45	CSHB-4-A	T-15F
	JCTER/L1212-2T12	●	●	24	12	12	12	125	12.1	2	2	19			
	JCTER/L1414-2T12	●	●	24	14	14	14	125	14.1	2	-	19			
	JCTER/L1616-2T16	●	●	32	16	16	16	125	16.1	2	-	24			
3	JCTER/L1212-3T12	●	●	24	12	12	12	125	12.3	3	-	19		CSHB-4-A	T-15F
	JCTER/L1616-3T16	●	●	32	16	16	16	125	16.3	3	-	24			
	JCTER/L2020-3T16	●	●	32	20	20	20	125	20.3	3	-	24			

* "*f*" value in the above table is calculated with groove width "*W*" shown in the table.

Insert application

Insert	Application: Grooving External	Parting off	Traversing External
			
DGM / SGM	●	●	
DGS / SGS	●	●	
DTE	●		●
DGE	●		

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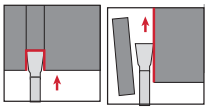
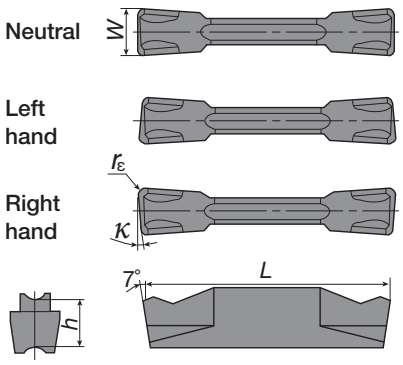
Applicable inserts

● Notation of “insert seat size”

Seat size and grooving width are different. Seat size measure is for the specification of the setting insert. Please note this point.

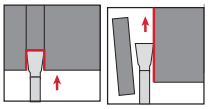
DGM External grooving and parting off, 2 corners

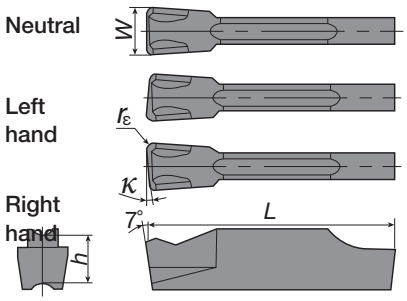




Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
2	DGM 2-020	●		●		2	0.2	20	5	-
	DGM 2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	DGM 2-020-8R/L	●	●	●	●	2	0.2	20	5	8°
	DGM 2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
	DGM 2-002-15R/L	●	●	●	●	2	0.02	19.6	5	15°
3	DGM 3-020	●		●		3	0.2	20	5	-
	DGM 3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	DGM 3-002-6R/L	●	●	●	●	3	0.02	19.6	5	6°
	DGM 3-020-15R/L	●	●	●	●	3	0.2	20	5	15°

SGM External deep grooving and parting off, 1 corner

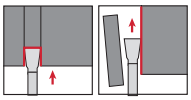


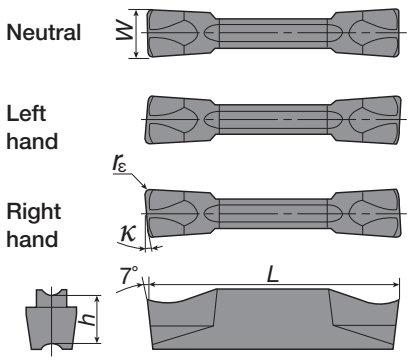


Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
2	SGM 2-020	●		●		2	0.2	20	5	-
	SGM 2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
3	SGM 3-020	●		●		3	0.2	20	5	-
	SGM 3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	SGM 3-020-15R/L	●	●	●	●	3	0.2	20	5	15°

● : Stocked items.

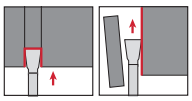
DGS External grooving and parting off, 2 corners

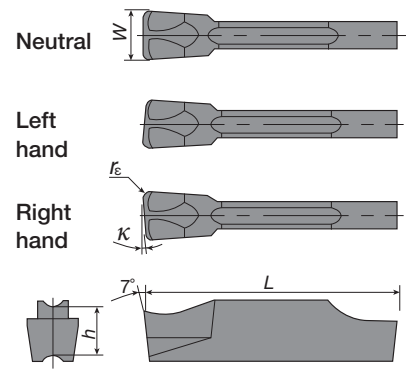




Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
1	DGS1.4-016	●		●		1.4	0.16	16	4.3	-
2	DGS2-020	●		●		2	0.2	20	5	-
	DGS2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	DGS2-002-6R/L	●	●	●	●	2	0.02	19.6	5	6°
	DGS2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
	DGS2-002-15R/L	●	●	●	●	2	0.02	19.6	5	15°
3	DGS3-020	●		●		3	0.2	20	5	-
	DGS3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	DGS3-002-6R/L	●	●	●	●	3	0.02	19.6	5	6°
	DGS3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
	DGS3-002-15R/L	●	●	●	●	3	0.02	19.6	5	15°

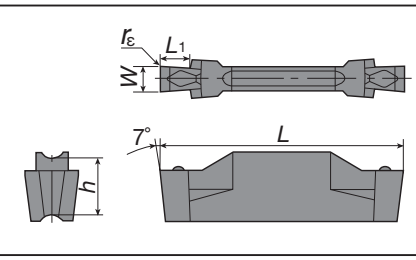
SGS External deep grooving and parting off, 1 corner





Insert seat size	Cat. No.	Grades Coated AH725 R	AH725 L	GH130 R	GH130 L	Dimensions (mm) W±0.05	rε	L	h	κ
2	SGS 2-020	●		●		2	0.2	20	5	-
	SGS 2-020-6R/L	●	●	●	●	2	0.2	20	5	6°
	SGS 2-020-15R/L	●	●	●	●	2	0.2	20	5	15°
3	SGS 3-020	●		●		3	0.2	20	5	-
	SGS 3-020-6R/L	●	●	●	●	3	0.2	20	5	6°
	SGS 3-002-6R/L	●	●	●	●	3	0.02	19.8	5	6°
	SGS 3-020-15R/L	●	●	●	●	3	0.2	20	5	15°
	SGS 3-002-15R/L	●	●	●	●	3	0.02	19.8	5	15°

DGE External grooving (Ground)



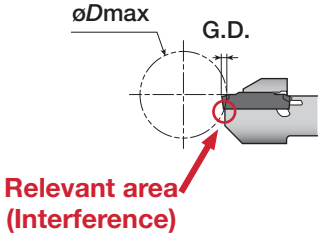
Insert seat size	Cat. No.	Grades Coated AH725	AH130	Dimensions (mm) W±0.02	rε±0.05	L1	L	h
2	DGE100-000	●	●	1	0	2.5	20	5
	DGE130-000	●	●	1.3	0	2.5	20	5
	DGE160-010	●	●	1.6	0.1	2.5	20	5
	DGE185-010	●	●	1.85	0.1	3.5	20	5
	DGE215-015	●	●	2.15	0.15	3.5	20	5

Caution

*ø*Dmax is limited as shown in picture in right according to groove depth, G.D. Please refer to the following table.

G.D. = Groove depth

Cat. No.	Max. groove depth	*ø*Dmax G.D. = 1	G.D. = 1.5	G.D. = 2	G.D. = 2.5	G.D. = 3
DGE100-000	2	∞	18.6	11.5	-	-
DGE130-000						
DGE160-010						
DGE185-010	3				8.8	7
DGE215-015						



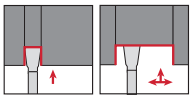
● : Stocked items.

JCTER/L TUNGCUT

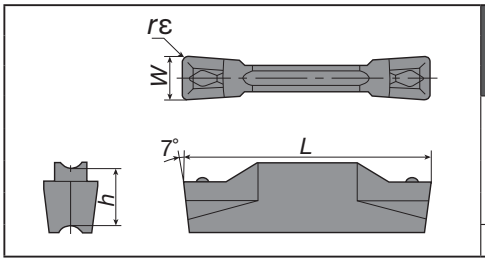
Applicable inserts

● Notation of “insert seat size”

Seat size and grooving width are different. Seat size measure is for the specification of the setting insert. Please note this point.

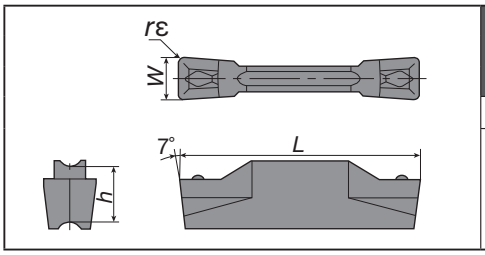


DTE External face grooving and traversing (Ground)



Insert seat size	Cat. No.	Grades Coated			Dimensions (mm)			
		AH725	GH130	NS530	W±0.02	rε±0.05	L	h
3	DTE265-015	●	●	★	2.65	0.15	20	5
	DTE300-020	●	●	★	3	0.2	20	5
	DTE300-040	●	●	★	3	0.4	20	5
	DTE315-015	●	●	★	3.15	0.15	20	5

External face grooving and traversing (Molded)



Insert seat size	Cat. No.	Grades Coated			Dimensions (mm)			
		AH725	GH130	NS530	W±0.05	rε	L	h
3	DTE3-040	●	●	★	3	0.4	20	5

● : Stocked items
★ : Available from 2013

Standard cutting conditions

Insert type	Application	insert seat size	Groove width *W* (mm)	Feed rate: *f* (mm/rev) Depth of cut: *a*p (mm)	Features
DGM (2 corners) **SGM** (1 corner)	External grooving & parting off	2	2	*f* = 0.05 ~ 0.2	· Smooth chip evacuation · Well designed edge with high strength · Handed insert available
		3	3	*f* = 0.07 ~ 0.25	
DGS (2 corners) **SGS** (1 corner)	External grooving & parting off	1	1.4	*f* = 0.02 ~ 0.1	· Sharper edge, and low cutting force · Unique designed edge and chipbreaker · Handed insert available
		2	2	*f* = 0.03 ~ 0.13	
		3	3	*f* = 0.03 ~ 0.17	
DGE (2 corners)	Grooving	2	1	*f* = 0.05 ~ 0.15	· For narrow grooving · Excellent chip control · Ground insert with high accuracy
			1.3	*f* = 0.05 ~ 0.17	
			1.6	*f* = 0.05 ~ 0.18	
			1.85	*f* = 0.05 ~ 0.19	
			2.15	*f* = 0.05 ~ 0.2	
DTE (2 corners)	External traversing & External grooving	3	3 (Grooving)	*f* = 0.05 ~ 0.25	· Unique chipbreaker makes chips shorter · Molded and ground insert available
			3 (Turning)	*f* = 0.1 ~ 0.25 *a*p = 0.5 ~ 2.2	

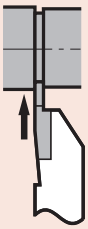
Work materials	Hardness	Cutting speed: *Vc* (m/min)	
		AH725	GH130
Steels S45C, SCM435 etc. C45, 34CrMo4 etc.	< 300 HB	50 ~ 180	40 ~ 150
Stainless steels SUS303, SUS304 etc. X10CrNiS18-9 etc.	< 200 HB	50 ~ 120	50 ~ 120
Grey cast irons, Ductile cast irons FC250, FCD450 etc. GG25, GGG45 etc.	-	-	50 ~ 180
Titanium, Titanium alloys Ti-6Al-4V etc.	< 40 HRC	-	20 ~ 80

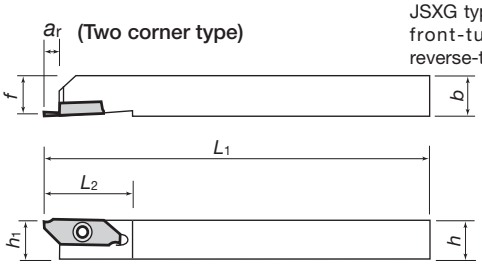
Relating pages
Parts (14–1~)

JSXGR/L

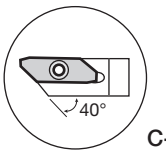
Without offset
Screw-on system

Grooving / Parting off





JSXG type toolholders are also used for front-turning JXF-type inserts and reverse-turning JXR-type inserts.



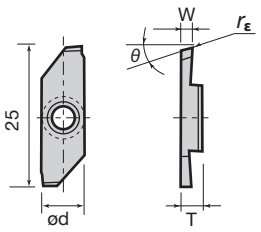
C-type

Can be wrenched from back side with double-socket Torx screw.

Right hand (R) shown.

Cat. No.	Stock		Applicable inserts	Dimensions (mm)							Clamping screw	Wrench	
	R	L		h	b	L_1	L_2	a_r	h_1	f			
JSXGR/L1010K8-C	●	●	JXGR/L8□□□	10	10	125	29	6.7	10	10	CSTB-4SD	T-8F	(T-8L)
JSXGR/L1212K8-C	●	●		12	12				12	12			
JSXGR/L1616K8	●	●		16	16			6.5	16	16			
JSXGR/L2020K8	●	●		20	20				20	20			
JSXGR/L2525K8	●	●		25	25				25	25			∗Optional

Applicable inserts JXG-type inserts (With sharp edges and cutting direction)



Right hand (R) shown.

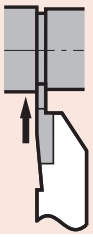
Cat. No.	Dimensions (mm)						Grades											
							Coated		Coated cermet				Cermet				Uncoated	
							J740		J530				NS530				TH10	
	ød	T	$W^{+0.05}_{0}$	θ	Max. groove depth	r_ε	R	L	R	L	R	L	R	L	R	L	R	L
JXGR/L8070FA	8	3.97	0.7	15°	4.5	0	●	●					●	●			●	●
JXGR/L8070FA-005						0.05	●											
JXGR/L8100FA			1		6	0	●	●					●	●			●	●
JXGR/L8100FA-005						0.05	●											
JXGR/L8100FA45					4.5	0	●						●				●	
JXGR/L8100FA45-005						0.05	●											
JXGR/L8120FA			1.2		6	0												
JXGR/L8150FA			1.5			0	●	●					●	●			●	●
JXGR/L8150FA-005						0.05	●											
JXGR/L8150FA50					5	0	●						●				●	
JXGR/L8150FA50-005						0.05	●											
JXGR/L8180FA			1.8		6	0	●						●				●	
JXGR/L8180FA-005						0.05	●											
JXGR/L8200FA			2			0	●	●					●	●			●	●
JXGR/L8200FA-005						0.05	●											
JXGR/L8200FN				0°		0	●	●					●	●			●	●
JXGR/L8200FN-005						0.05	●											

● : Stocked items.

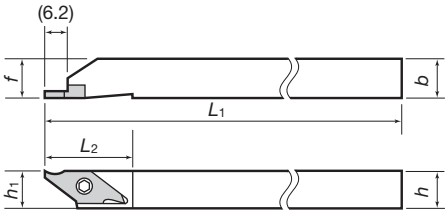
JSVGR/L

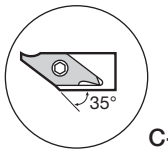
Without offset
Screw-on system

Grooving



(Two corner type)



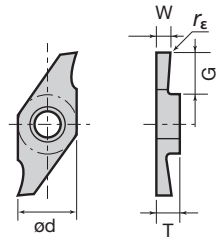


C-type

Right hand (R) shown.

Cat. No.	Stock		Applicable inserts	Dimensions (mm)						Clamping screw	Wrench	
	R	L		h	b	L_1	L_2	h_1	f			
JSVGR/L1010K-C	●	●	JVGR/L□□□(F)	10	10	125	23	10	10	CSTB-3S	T-9F	(T-9L) ∗Optional
JSVGR/L1212K-C	●	●		12	12			12	12			
JSVGR/L1616K	●	●		16	16			16	16			

Applicable inserts JVG-type inserts (sharp edges)



Right hand (R) shown.

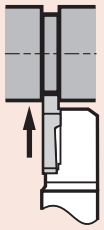
Cat. No.	Dimensions (mm)						Grades							
							Coated		Cermet				Uncoated	
							J740		NS530				TH10	
	ød	T	$W^{+0.05}_{0}$	G	Max. groove depth	r_ε	R	L	R	L	R	L	R	L
JVGR/L033F	7.94	3.18	0.33	0.8	0.7	0	●		●				●	
JVGR/L050F			0.5	1.2	1.1		●		●				●	
JVGR/L075F			0.75	2	1.9		●		●				●	
JVGR/L095F			0.95				●		●				●	
JVGR/L100F			1	6	5.5		●		●	●			●	●
JVGR/L125F			1.25	5.5	5		●		●				●	
JVGR/L150F			1.5	6	5.5		●		●	●			●	●
JVGR/L200F			2				●		●				●	

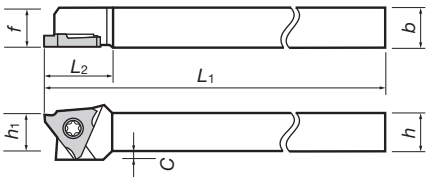
● : Stocked items.

JSTGR/L

Without offset
Screw-on system

Grooving





Can be wrenched from back side with double-socket Torx screw.

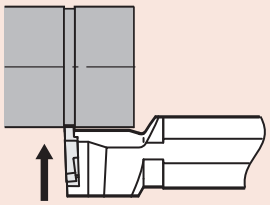
Right hand (R) shown.

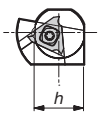
Cat. No.	Stock		Applicable inserts	Dimensions (mm)							Clamping screw	Wrench	
	R	L		h	b	L_1	L_2	h_1	f	C			
JSTGR/L1010K3	●	●	JTGR/L3□□□(F) 8-51	10	10	125	18.5	10	10	2	CSTB-4SD	T-8F	(T-8L) ∗Optional
JSTGR/L1212K3	●	●		12	12			12	12	-			
JSTGR/L1616K3	●	●		16	16			16	16				

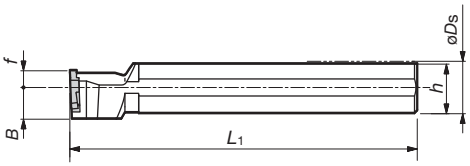
JS-TGL3

Screw-on system

Grooving







Leht hand (L) shown.

Cat. No.	Stock		Applicable inserts	Dimensions (mm)						Clamping screw	Wrench
	R	L		øDs	f	L_1	L_2	h	B		
JS19K-TGL3		●	JTGR3□□□ (F) 8-51	19.05	6	125	-	18	11.5	CSTB-4S	T-15F
JS20K-TGL3		●		20				19			
JS22K-TGL3		●		22				21			
JS25K-TGL3		●		25.4	10			24	12.7		

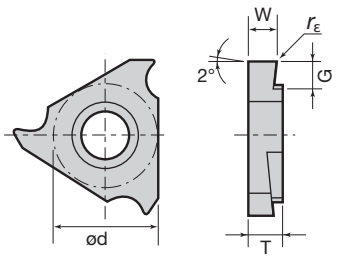
● : Stocked items.

JSTGR/L, JS-TGL3

Without offset
Screw-on system

Applicable inserts

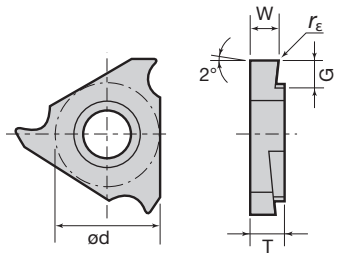
JTG-type inserts (With sharp edges)



Right hand (R) shown.

Cat. No.	Dimensions (mm)						Grades											
							Coated						Cermet				Uncoated	
							J740						NS530				TH10	
	ød	T	$W^{+0.05}_{0}$	G	Max. groove depth	r_ε	R	L					R	L	R	L	R	L
JTGR/L3033F	9.525	3.18	0.33	0.8	0.7	0.03	●	●					●	●			●	●
JTGR/L3043F			0.43	1.2	1.1		●											
JTGR/L3050F			0.5				●	●					●	●			●	●
JTGR/L3065F			0.65	2	1.9		●											
JTGR/L3075F			0.75				●	●					●	●			●	●
JTGR/L3080F			0.8				●											
JTGR/L3085F			0.85				●											
JTGR/L3095F			0.95				●	●					●	●			●	●
JTGR/L3100F			1	2.2	2.1	0.05	●	●					●	●			●	●
JTGR/L3110F			1.1				●											
JTGR/L3120F			1.2				●											
JTGR/L3125F			1.25				●	●					●	●			●	●
JTGR/L3130F			1.3				●											
JTGR/L3140F			1.4				●											
JTGR/L3145F			1.45				●	●					●	●			●	●
JTGR/L3150F			1.5				●	●					●	●			●	●
JTGR/L3175F			1.75				●	●					●	●			●	●
JTGR/L3180F			1.8				●											
JTGR/L3200F			2	2.7	2.6		●	●					●	●			●	●
JTGR/L3225F			2.25				●											
JTGR/L3250F			2.5				●	●					●	●			●	●
JTGR/L3275F			2.75				●											
JTGR/L3300F			3				●											

JTG-type inserts (With honed edges)



Right hand (R) shown.

Cat. No.	Dimensions (mm)						Grades											
							Coated		Coated cermet				Cermet				Uncoated	
							J740		J530				NS530				TH10	
	ød	T	$W^{+0.05}_{0}$	G	Max. groove depth	r_ε	R	L	R	L	R	L	R	L	R	L	R	L
JTGR/L3033	9.525	3.18	0.33	0.8	0.7	0.03												
JTGR/L3050			0.5	1.2	1.1													
JTGR/L3075			0.75	2.0	1.9													
JTGR/L3095			0.95															
JTGR/L3100			1	2.2	2.1	0.05			●	●								
JTGR/L3125			1.25						●	●								
JTGR/L3145			1.45						●	●								
JTGR/L3150			1.5						●	●								
JTGR/L3175			1.75						●	●								
JTGR/L3200			2	2.7	2.6				●	●								
JTGR/L3250			2.5						●	●								

Standard cutting conditions

Grade	Work materials	Cutting speed: v_C (m/min)	Feed: f (mm/rev)
J740	General steels Stainless steels Free-cutting steels	10-50-100	0.01-0.05-0.1
NS530 J530	General steels Stainless steels	50-80-150	0.01-0.05-0.1
TH10	Aluminium alloys, Brass, etc.	10-80-200	0.01-0.05-0.1
	Difficult-to-cut materials, Titanium alloys, etc.	10-20-30	0.01-0.05-0.1

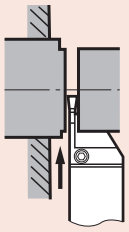
● : Stocked items.

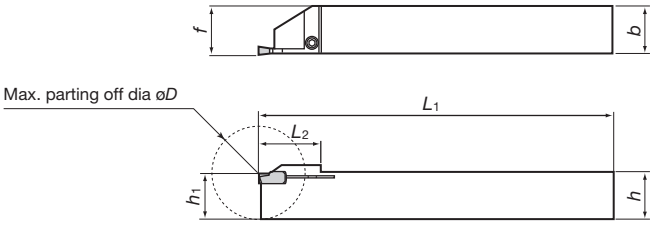
Relating pages
Parts (14–1~)

JCGSSR/L

Without offset
Screw-on system

Parting off

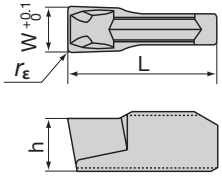




Right hand (R) shown.

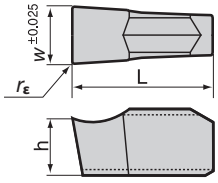
Groove width (mm)	Cat. No.	Stock		Applicable inserts	Max. parting off dia øD (mm)	Dimensions (mm)						Clamping screw	Wrench
		R	L			b	h	h_1	L_1	f	L_2		
2	JCGSSR/L1010-20	●	●	GE20 GE20-AL	20	10	10	10	125	10.2	15	CSTB-3	T-9F
	JCGSSR/L1212-20	●	●		25	12	12	12		12.2	19		
	JCGSSR/L1616-20	●	●		32	16	16	16		16.2	22.5		

Applicable inserts



Cat. No.	Grades				Dimensions (mm)			
	Coated		Cermet		W	L	h	rε
	T9125	GH730	NS730	NS530				
GE20	●	●	●	●	2	10	3.5	0.2

For aluminium and non-ferrous metals



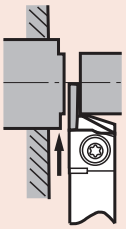
Cat. No.	Grade	Dimensions (mm)			
	Uncoated	W	L	h	rε
	KS05F				
GE20-AL	●	2	10	3.5	0.2

● : Stocked items.

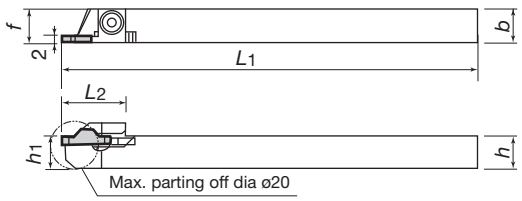
JCCWSR/L

Without offset
Clamp-on system

Parting off



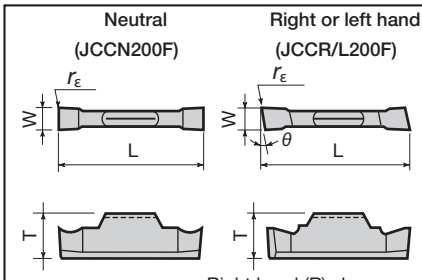
(Two corner type)



Right hand (R) shown.

Cat. No.	Stock R	Stock L	Applicable inserts	h	b	L_1	L_2	h_1	f	Max. parting off dia	Clamping screw	Wrench	
JCCWSR/L1010K2	●	●	JCC□200F	10	10	125	19	10	10	ø20	CSTB-4S	T-15F	(T-15L) ∗ Optional
JCCWSR/L1212K2	●	●		12	12			12	12				
JCCWSR/L1616K2	●	●		16	16			16	16				
JCCWSR/L2020K2	●	●		20	20			20	20				
JCCWSR/L2525K2	●	●		25	25			25	25				

Applicable inserts JCC-type inserts (With sharp edges)

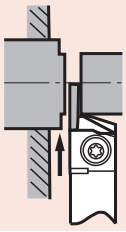


Cat. No.	T	W	L	rε	θ	Grades: Coated J740 R	Coated J740 L	Coated Cermet J530 R	Coated Cermet J530 L	Cermet R	Cermet L	Cermet NS530 R	Cermet NS530 L	Uncoated TH10 R	Uncoated TH10 L
JCCN200F	4.8	2	15	0	-	●		●						●	
JCCN200F-005				0.05		●									
JCCR/L200F				0	15°	●	●	●	●					●	●
JCCR/L200F-005				0.05		●	●								

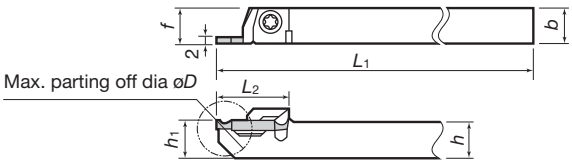
JCGWSR/L

Without offset
Clamp-on system

Parting off



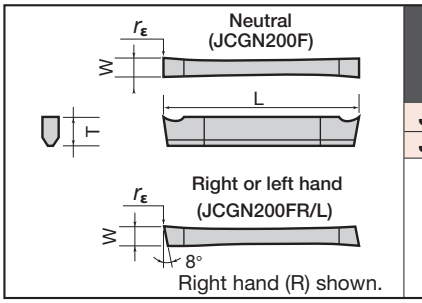
(Two corner type)



Right hand (R) shown.

Cat. No.	Stock R	Stock L	Applicable inserts	h	b	L_1	L_2	h_1	f	Max. parting off dia øD	Clamping screw	Wrench	
JCGWSR/L1010K2	●	●	JCGN200□	10	10	125	20	10	10	ø20	CSTB-4S	T-15F	(T-15L) ∗Optional
JCGWSR/L1212K2	●	●		12	12			12	12				
JCGWSR/L1616K2	●	●		16	16			16	16				

Applicable inserts JCG-type inserts (With sharp edges)



Cat. No.	T	W	L	rε	Grades: Coated J740 R	Coated J740 L	Coated Cermet J530 R	Coated Cermet J530 L	Cermet R	Cermet L	Cermet NS530 R	Cermet NS530 L	Uncoated TH10 R	Uncoated TH10 L
JCGN200F	3	2	20	0.05	●		●						●	
JCGN200FR/L					●	●	●	●					●	●

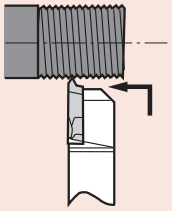
● : Stocked items.

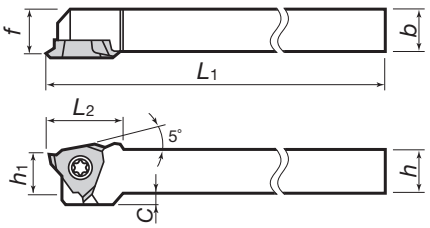
Relating pages
Parts (14–1~)

JSTTR/L

Without offset
Screw-on system

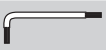
External threading





Can be wrenched from back side with both-end Torx screw.

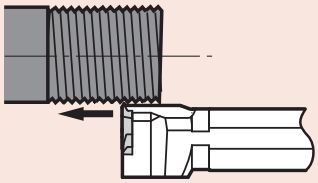
Right hand (R) shown.

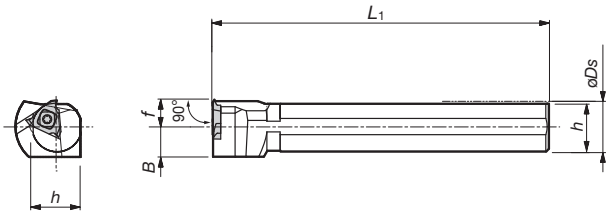
Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	h_1	f	C				
JSTTR/L1010K3	●		10	10	125	16.5	10	9.5	2	JTTR/L3□□□□	CSTB-4SD	T-8F	(T-8L)
JSTTR/L1212K3	●		12	12			12	11.5	-				∗Optional
JSTTR/L1616K3	●		16	16			16	15.5					

JS-TTL3

Screw-on system

External threading

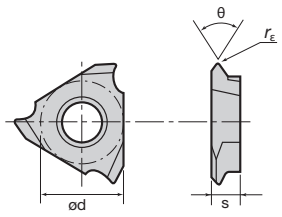




Left hand (L) shown.

Cat. No.	Stock		Dimensions (mm)						Applicable inserts	Clamping screw	Wrench
	R	L	$øD_S$	f	L_1	L_2	h	B			
JS19K-TTL3		●	19.05	10	125	-	18	11.5	JTTR30□□F	CSTB-4S	T-15F
JS20K-TTL3		●	20				19				
JS22K-TTL3		●	22				21				
JS25K-TTL3		●	25.4				24	12.7			

JTT-type inserts (sharp edge)



Right hand (R) shown.

Cat. No.	Dimensions (mm)				Grades											
	θ	ød	T	$r_ε$	Coated J740		Coated Cermet J530				Cermet NS530				Uncoated TH10	
					R	L	R	L	R	L	R	L	R	L	R	L
JTTR/L3005F-55	55°	9.525	3.18	0.05	●											
JTTR/L3005F	60°				●						●				●	
JTTR/L3010F				0.1	●						●				●	

Notes: Left hand holder use right hand insert.
Machinable pitch range: 0.5 to 1 mm.

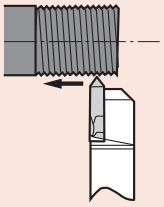
● : Stocked items.

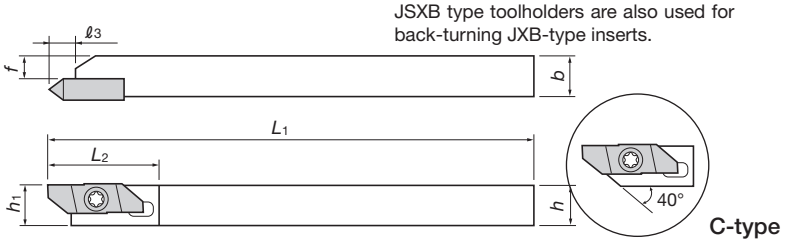
Relating pages
Parts (14–1~)

JSXBR/L

Screw-on system

External threading





C-type

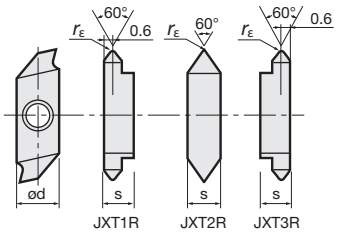
JSXB type toolholders are also used for back-turning JXB-type inserts.

- Can be wrenched from back side with both-end Torx screw.
- This toolholder is also compatible with JSXB-type insert for back turning.

Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamping screw	Wrench	
	R	L	h	b	L_1	L_2	ℓ_3	h_1	f				
JSXBR/L1010K8-C	●	●	10	10	125	29	6.4	10	5.7	JXT□R/L□□□□□□	CSTB-4SD	T-8F	(T-8L)
JSXBR/L1212K8-C	●	●	12	12				12	7.7				
JSXBR/L1616K8	●	●	16	16				16	11.7				
JSXBR/L2020K8	●	●	20	20				20	15.7				
JSXBR/L2525K8	●	●	25	25				25	20.7				∗Optional

JXT-type inserts (sharp edge)



Right hand (R) shown.

Cat. No.	Dimensions (mm)				Grades							
	θ	ød	s	rε	Coated		Cermet				Uncoated	
					J740		NS530				TH10	
					R	L	R	L	R	L	R	L
JXT1R/L6000F	60°	8	3.97	0.03	●		●				●	
JXT2R/L6000F					●		●				●	
JXT3R/L6000F												

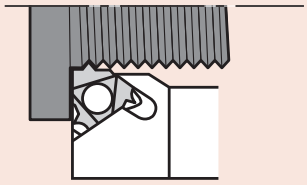
Notes: Right hand holder use right hand insert and left hand holder use left hand insert.
Machinable pitch range: 0.5 to 1 mm.

● : Stocked items.

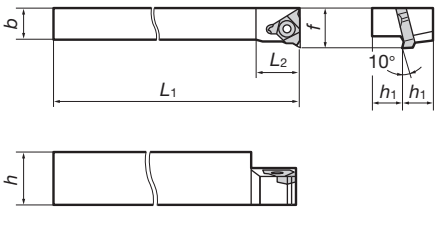
B-SER/L, B-CER/L TUNGTHREAD

Screw-on system, clamp-on system

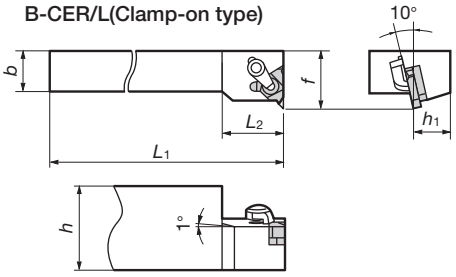
External threading



B-SER/L(Screw-on type)



B-CER/L(Clamp-on type)



Right hand (R) shown

B-type Toolholders (For gang tooling)

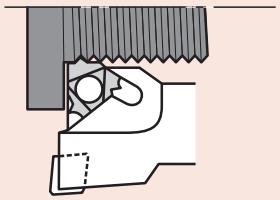
Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamp set	Shim set		Clamping screw	Wrench
	R	L	h	b	L_1	L_2	h_1	f	f_1			R	L		
B-SER/L10H16	●		20	10	100	15	10	16	-	16ER/L□□□□ 7-7~	-	-	-	CSTB-3.5	T-15F
B-SER/L12K16	●		24	12	125	18	12	18	-						
B-CER/L16M16	●	●	32	16	150	24	16	22	-		CSP16	A16-1		-	

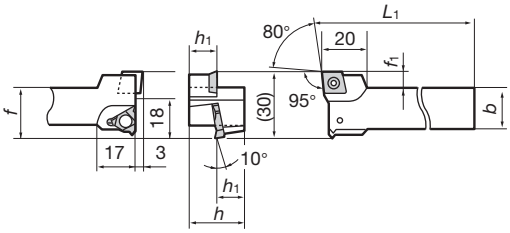
TAC Toolholders for External threading

BC-SER/L TUNGTHREAD

Screw-on system

External threading





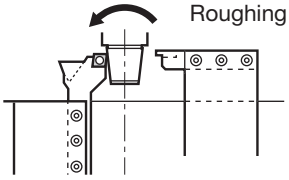
Right hand (R) shown

BC-type Toolholders (Screw-on type, for gang tooling)

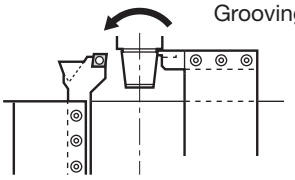
Cat. No.	Stock		Dimensions (mm)							Applicable inserts	Clamp set	Shim set		Clamping screw	Wrench
	R	L	h	b	L_1	L_2	h_1	f	f_1			R	L		
BC-SER/L12K16	●		24	16	125	-	12	23	7	16ER/L□□□□ 7-7~ CC□T09T3□□ 2-96~ (Used for before threading)	-	-	-	CSTB-3.5	T-15F
BC-SER/L16M16			32	20	150	-	16	25	5						

● **Tooling examples using BC-type toolholders**

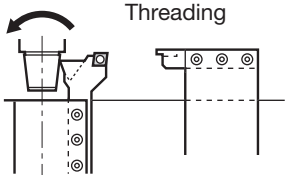
Roughing



Grooving



Threading

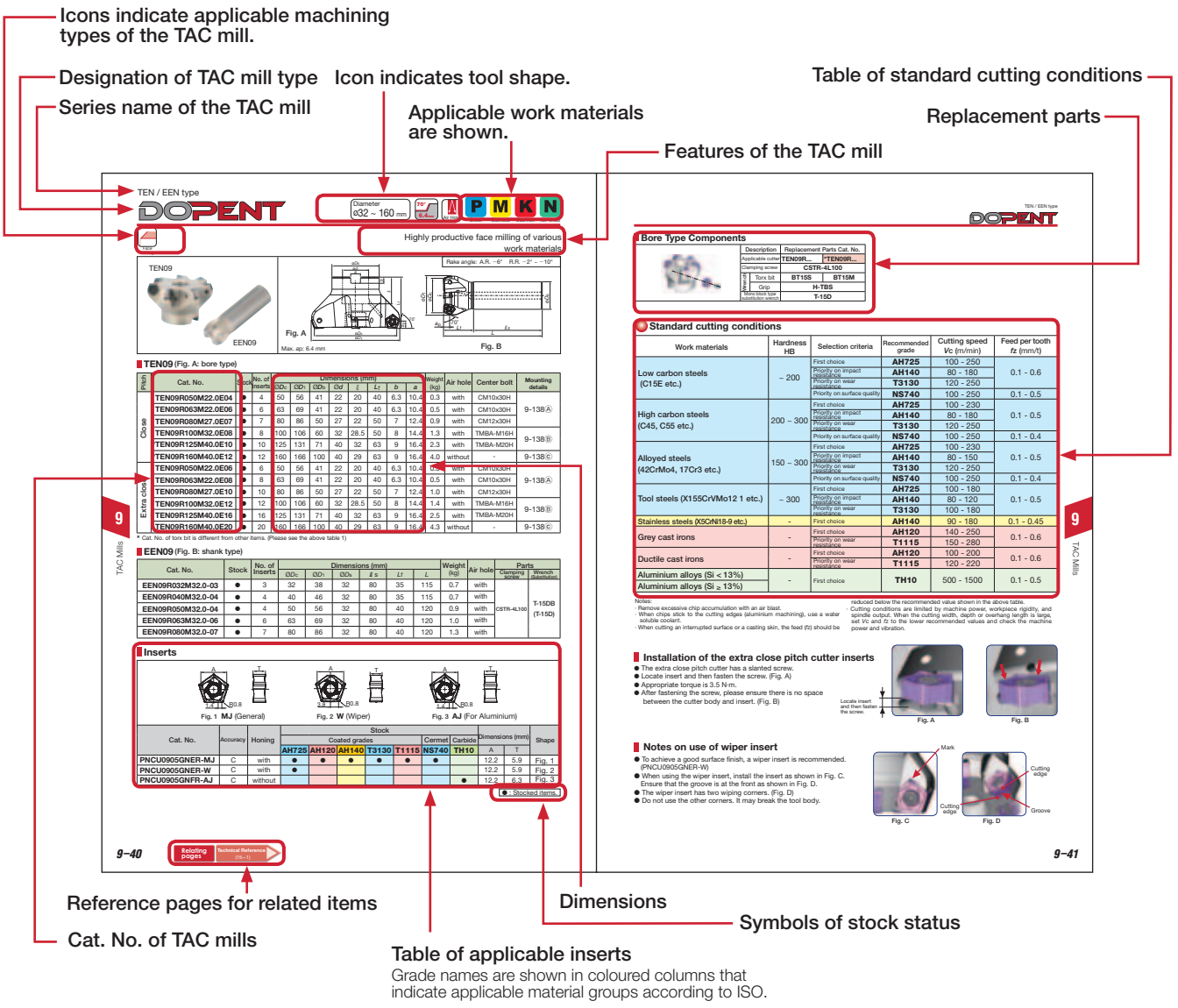


● : Stocked items.

MEMO

Chapter Composition of TAC Mills

- In this chapter, products are arranged by cutter type. Please refer to the index page of this chapter for further details.
- The index for each standard product is shown from page 9-30.



Icons overview

■ Icons showing shape of TAC mills

● Tool diameter range

Tool diameter ø10~16mm

● Icons indicate corner angle and maximum depth of cut (a_p)

86° 8mm | 65° 6mm | 45° 3mm

■ Icons showing machining types

■ Ordering information

- When ordering TAC mill, please specify Cat. No. and quantity.
  Example: **TPW13R080M27.0E06 1** piece.
  - Standard packing quantity is 1 piece.
  - Inserts must be ordered separately.
- When ordering TAC milling inserts, please specify Cat. No., grade, and quantity.
  Example: **SWMT1304PDPR-MJ AH120 10** pieces.
  - Standard packing quantity is 10 pieces.

Guidance

- Designation system for TAC Mills 9–2
- Designation system for TAC Milling Inserts 9–4
- Selection guide for TAC Mills 9–6
- Basic selection for TAC Mills 9–20
- TAC Mills overview 9–32
- Mounting details of TAC Mills 9–138
- Features and selection guide of TAC Mills 9–139

9 TAC Mills

Products

TAC Mills for face milling
- DoPent 9–40
- DoOcto, DoQuad 9–42
- TAW13 9–44
- TME4400I/B 9–48
- TMD5400RIE 9–50
- TGP4100RBAB 9–51
- TGN4200-AE 9–53
- DAD15 (T-DIA tipped) 9–54

TAC Mills for shoulder milling
- DoRec 9–56
- TungRec 9–58
- TecMill 9–67
- TungQuad 9–70
- TPW13 9–72
- EPH Hybrid TAC Mill 9–74
- EVH Hybrid TAC Mill 9–78
- DPD15/EDPD15 (T-DIA tipped) 9–80
- TPP16RIE 9–82
- TSE3000R(IA)E 9–84
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TAC Mills for Super high feed machining
- DoFeed Series 9–92
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- EXH 9–100
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Radius TAC Mills
- RoundSplit 9–107
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TAC Mills for difficult-to-cut materials
- T/ERF6000 9–112

Multi-functional TAC Endmills
- EVX 9–114
- ESD10 9–116

TAC Ball Endmills
- EBP 9–118
- EBD 9–119
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TAC Roughing Endmills
- ELP-A 9–121

Z-feed plunging TAC Mills
- TZP12 9–122
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“Tsuppari-Ichiban” modular system
- TMS 9–126

TAC Chamfering Mills
- ECC31 9–127

TAC Counter Boring Cutters
- TCB 9–129

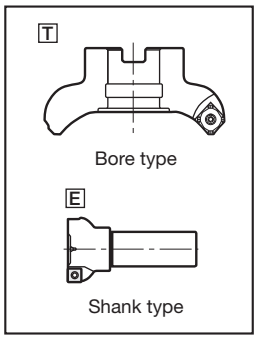
TAC Mills dedicated for finishing
- MSSFP4000 9-130
- MS 9–131
- QPP15 (T-CBN tipped) 9–132

TAC Side Cutters
- TecSlot 9–134
- SVN4000 9–137

TAC Milling Inserts 9–140

Designation System for TAC Mills

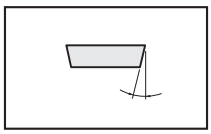
TAC Mills [New products]



Symbol	Type
T	Bore type
E	Shank type

① Type

H	Hybrid TAC Mill Series



Symbol	Relief angle
C	7°
P	11°
D	15°
E	20°
F	25°
N	0°
Others	Special

③ Relief angle

Symbol	Hand
R	Right
L	Left

⑤ Direction of cut

Symbol	Unit
M	mm
U	in

⑦ Unit

Symbol	Type
T~: General type	
–	JIS
E	ISO
A	ANSI
E~: Shank type	
–	Cylindrical
W	Weldon
C	Combination

⑨ Attachment specification

Symbol	Type
W	Wedge clamp
L	Long shank
LE	Long edge
CS	Carbide shank

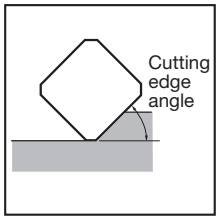
⑪ Additional feature

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
T	A	W	13	R	080	M	27.0	E	06	--

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
E	V	H	07	R	012	M	12.0	-	02	L

② Angle, Category

Symbol	Cutting edge angle
P	90° ~ 80°
E	80° ~ 70°
D	60° ~ 50°
A	50° ~ 40°
L	With long cutting edge
Others	Special

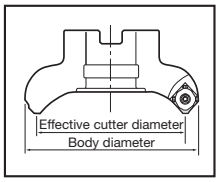


④ Cutting edge length

Symbol	Size (ℓ)
S	
T	
R	
H	
A	

⑥ Effective cutter diameter

Symbol	Size
M: Unit in mm	
080	80
200	200
I: Unit in inch	
200	2
10H	10

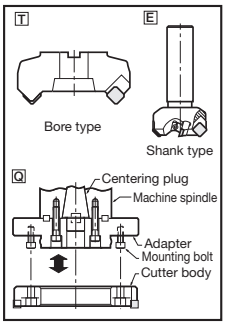


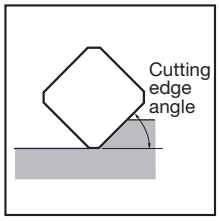
⑧ Attachment size

Symbol	Size
M: Unit in mm Hole diameter	
20.0	20
25.4	25.4
31.7	31.75
47.6	47.625
I: Unit in inch Hole diameter	
0075	0.75
0125	1.25
0200	2
E~: Shank type Shank diameter (mm)	
10.0	10
12.0	12
16.0	16
25.0	25
32.0	32

⑩ Number of inserts

TAC Mills [Previous products]





Symbol	Type
V	Vertical insert
Q	Quick change
E	Shank
T	Bore
S	Special
D	All PCD tipped
Q	All PCBN tipped

① Type

Symbol	Cutting edge angle
X	Others
Z	Others
V	Others
P	90° ~ 80°
E	80° ~ 70°
D	60° ~ 50°
A	50° ~ 40°

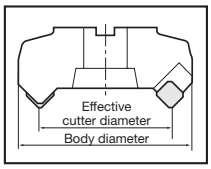
② Angle

Symbol	Relief angle
C	7°
D	15°
E	20°
F	25°
N	0°
P	11°
X	Others

③ Relief angle

Ⓡ Symbol	Ⓡ Size	Ⓢ Symbol	Ⓢ Size	Ⓒ Symbol	Ⓒ Size	Ⓣ Symbol	Ⓣ Size	Inscribed circle dia. (mm)
		06	6.35	06	6.5	11	11	6.35
		07	7.94	08	8.1	13	13.8	7.94
09	9.525	09	9.525	09	9.7	16	16.5	9.525
10	10	–	–	–	–	–	–	10
12	12	–	–	–	–	–	–	12
12	12.7	12	12.7	12	12.9	22	22	12.7
15	15.875	15	15.875	16	16.1	27	27.5	15.875
16	16	–	–	–	–	–	–	16
19	19.05	19	19.05	19	19.3	33	33	19.05
20	20	–	–	–	–	–	–	20
25	25	–	–	–	–	–	–	25
25	25.4	25	25.4	25	25.8	44	44	25.4
31	31.75	31	31.75	32	32.2	55	55	31.75

④ Cutting edge length



Symbol	Effective diameter (mm)
050	50
063	63
080	80
100	100
125	125
160	160
200	200
250	250
315	315
355	355
400	400

⑤ Effective cutter diameter

Example

Metric system

①	②	③	④	⑤	⑥	⑦	
T	P	S	11	040	R	B	(-) E

Example

Inch system

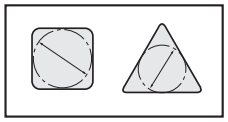
①	⑧	③	⑨	⑩	⑪	⑥	⑦	
T	M	D	5	4	06	R	I	(-) E

⑧ Symbol	⑧ Application, geometry etc.
M	For machining centers
F	For finishing
G	General purpose
S	For square shoulder milling
H	High rake geometry
P	Negative axial, positive radial rake geometry
R	Use round inserts
U	For difficult to cut materials
C	For chamfering
L	Long edge type
T	For threading

⑧ Application,etc.

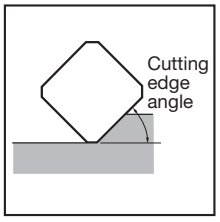
⑨ Symbol	⑨ I. C. (mm)
3	9.525
4	12.7
5	15.875
6	19.05
7	22.225
8	25.4
9	31.75

⑨ Size of applicable insert



⑩ Symbol	⑩ Cutting edge angle
0	90° ~ 80°
1	80° ~ 70°
2	70° ~ 60°
3	60° ~ 50°
4	50° ~ 40°
5	40° ~ 30°
6	30° ~ 20°
7	20° ~ 10°

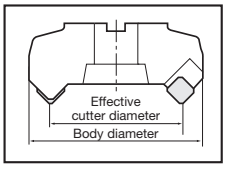
⑩ Angle

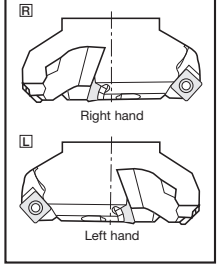


⑪ Symbol	⑪ Effective diameter (mm)
50	50
63	63
03	80
04	100
05	125
06	160
08	200
10	250
12	315
14	355
16	400

Note: For diameter of less than 80mm,nominal dimensions (mm) of effective diameter are shown

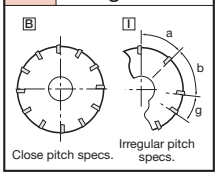
⑪ Effective cutter diameter





⑥ Direction of cut

⑦ Symbol	⑦ Additional feature
B	Close pitch
I	Irregular pitch
A(-A)	Modified type
S	For distinguishing shank size
L	Long shank



⑦ Additional feature

Note: The above nomenclature is not applicable for VSN6000I, MS cutter, TCB, PES1500 and TBN etc.

Designation System for TAC Milling Inserts

Symbol	Hole	Hole shape	Chip groove	Section shape
N	Without	–	Without	
R			On one side	
F			On both sides	
W	With	Partially cylindrical hole with 40° ~ 60° mouth on one side	Without	
T			On one side	
Q		Partially cylindrical hole with 40° ~ 60° mouth on both sides	Without	
U			On both sides	
B		Partially cylindrical hole with 70° ~ 90° mouth on one side	Without	
H			On one side	
C		Partially cylindrical hole with 70° ~ 90° mouth on both sides	Without	
J			On both sides	
X	–	–	–	

④ Insert type

Symbol	Cutting edge length (ℓ)
S	
T	
R	
H	
A	

⑤ Cutting edge length

*The thickness is different according to the product symbol.

Symbol	Thickness
02	2.38
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52

Thickness

⑥ Thickness (mm)

Example

Metric system

①	②	③	④	⑤
S	E	E	N	12

Example

Inch system

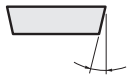
①	②	③	④	⑤
S	D	K	N	4

① Shape

Symbol	Shape	Included angle (degree)	Outlined figure
H	Hexagonal	120°	
S	Square	90°	
T	Triangular	60°	
C	Rhombic	80°	
E		75°	
G		70°	
L	Rectangular	90°	
A	Parallelogram	85°	
R	Round		
W	Trigon	80°	
W	Special (wiper)	–	
O	Octagonal	135°	
P	Pentagonal	108°	
X	Special	Others angle	
Y	Special	Others angle	
Z	Special	Others angle	

② Relief angle

Symbol	Relief angle (degree)
C	7°
D	15°
E	20°
F	25°
G	30°
M	Others
N	0°
P	11°
Q	Others
O	Others
X	Others
S	Others
W	Double relief

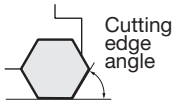


③ Tolerance class (mm)

Symbol	Tolerance on corner height	Tolerance on thickness	Tolerance on inscribed circle
A	± 0.005	± 0.025	± 0.025
C	± 0.013	± 0.025	± 0.025
E	± 0.025	± 0.025	± 0.025
G	± 0.025	± 0.13	± 0.025
H	± 0.013	± 0.025	± 0.013
K	± 0.013	± 0.025	± 0.05 ~ ± 0.13
M	± 0.08 ~ ± 0.18	± 0.13	± 0.05 ~ ± 0.13
N	± 0.08 ~ ± 0.18	± 0.025	± 0.05 ~ ± 0.13

Inscribed circle dia.	Tolerance on inscribed circle (ød)		Tolerance on corner height (mm)	
	J, K, L, M, N (class)	U (class)	M, N (class)	U (class)
6.35	± 0.05	± 0.08	± 0.08	± 0.13
9.525				
12.7	± 0.08	± 0.13	± 0.13	± 0.2
15.875	± 0.1	± 0.18	± 0.15	± 0.27
19.05				
25.4	± 0.13	± 0.25	± 0.18	± 0.38

Symbol	Cutting edge angle
A	45°
D	60°
E	75°
F	85°
G	70°
H	87°
P	90°
Z	Other angles



⑦ Angle

Symbol	Relief angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
Z	Other angles

⑧ Chamfer flat relief angle

Symbol	Condition	Shape
F	Sharp edge	
E	Round honing	
T	Chamfer honing	
S	Combi-nation honing	
P	Combi-nation round honing	

⑨ Cutting edge condition

Symbol	Hand
R	Right
L	Left
N	Neutral

⑩ Hand of insert

Symbol	Applications
12	Chamfer flat width: 1.2 mm
14	Chamfer flat width: 1.4 mm
16	Chamfer flat width: 1.6 mm
20	Chamfer flat width: 2.0 mm
24	Chamfer flat width: 2.4 mm
D	PCD-tipped insert
T	Double-rake edge insert
W	Wiper insert (Multiple corner type)
WS	Wiper insert (Single corner type)
WD	Wiper insert (PCD tipped insert)
BD	Deburring wiper insert (PCD tipped insert)
MJ	Chipbreaker for general purpose
MH	Chipbreaker for high feed (Mill dia.)
ML	Chipbreaker for reduced cutting forces
MS	Functional curvature insert for stainless steels
HJ	Chipbreaker for general purpose
AJ	Functional curvature insert for nonferrous metals
NMJ	Seratted cutting edge insert for general
NAJ	Seratted cutting edge insert for aluminium

⑪

⑥	⑦	⑧	⑨	⑩		⑪
03	A	G	T	N	-	T
2	Z		T	N		16
⑥	⑦		⑨	⑩		⑪

④ Insert type

Symbol	Chip groove	Hole
A	Without	With
F	On both sides	Without
G	On both sides	With
M	On one side	With
N	Without	With
U	Without	Without
W	Without	With

⑤ Inscribed circle

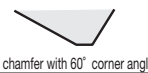
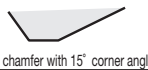
Symbol		Inscribed circle dia. (mm)
Inch system	3	9.525
	4	12.7
	5	15.875
	6	19.05

⑥ Thickness

Symbol		Thickness (mm)
Inch system	2	3.18
	3	4.76
	4	6.35
	6	9.52

⑦ Corner geometry

Symbol	Geometry (mm)
1	0.4 (0.397)
2	0.8 (0.794)
3	1.2 (1.191)
4	1.6 (1.588)
5	2.0 (1.984)
6	2.4 (2.381)

Symbol	Explanation
F	Special finishing edge (Example: Insert for MS cutter)
H	 Flat chamfer with 60° corner angle
S	 Flat chamfer with 15° corner angle
Z	 Flat chamfer with various corner angle.

Note on nomenclature for wiper inserts:
For the imperial system, the “W” symbol is used for the insert shape. For the metric system, the symbol shape is the same as for conventional inserts. The wiper is distinguished by placing a symbol such as W, WS or a WD in position 10.

Selection Guide for TAC mills

Face milling

P Steel (≤ 300HB)

High feed per tooth
fz ≥ 0.3 mm/t

1st choice

Body

DOPENT

TEN09

EEN09

Max. *ap* = 6.4 mm

9-40

Insert

Heavy interrupted

AH140 / MJ

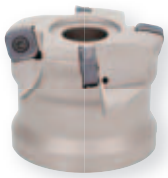
AH725 / MJ

For higher surface quality

NS740 / MJ

Body

DOFEEDQUAD



TXQ12

9-98

Insert

AH725 / MJ

Body

TUNGMILL

TAW13

øDc = ~ ø160 mm
Max. *ap* = 2 mm (HJ insert)

9-44

Insert

AH120 / HJ

Quick change system for insert

Body

TME4400I

Max. *ap* = 5 mm
(Flat insert)

9-48

Insert

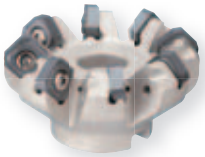
For higher surface quality

AH120 → NS740

Large depth of cut
ap ≥ 6mm

Body

DOQUAD



TAN07

9-42

Insert

Heavy interrupted

AH725 / MJ → AH140 / MJ

Face milling

M Stainless

High feed per tooth
fz ≥ 0.3 mm/t

1st choice

Body

TUNGMILL

TAW13

Max. *ap* = 4 mm (MS insert)

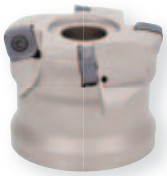
9-44

Insert

AH130 / MS

Body

DOFEEDQUAD



TXQ12

9-98

Insert

AH130 / MJ

Body

TUNGMILL

TAW13

øDc = ~ ø160 mm
Max. *ap* = 2 mm (HJ insert)

9-44

Insert

AH130 / HJ

Quick change system
for insert

Body

TME4400I

Max. *ap* = 4 mm
(MS insert)

9-48

Insert

AH130 / MS

For low cost and high
performance: 10 corners
per insert

Body

DOPENT

TEN09

EEN09

9-40

Insert

AH140 / MJ

Selection Guide for TAC mills

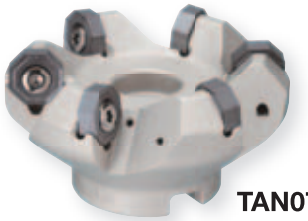
Face milling

K Cast iron

1st choice

Body

DOOCTO



TAN07

Max. *ap* = 4.7 mm

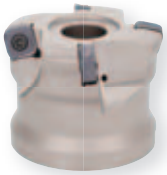
9-42

Insert

AH120 / ML → Heavy interrupted → AH725 / MJ

High feed per tooth
fz ≥ 0.3 mm/t

Body



DOFEEDQUAD

øDc = ~ ø125 mm
Max. *ap* = 2 mm

TXQ12

9-98

Insert

AH120 / MJ

Body

TUNGMILL

TAW13

øDc = ~ ø160 mm
Max. *ap* = 2 mm (HJ insert)

9-44

Insert

T1115 / HJ

Quick change system
for insert

Body

DOOCTO

Max. *ap* = 4.7 mm

TAN07-W

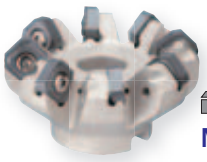
9-42

Insert

AH120 / ML → Heavy interrupted → AH725 / MJ

Fluctuating depth of cut
ap ≥ 4.5 mm

Body



DOQUAD

Max. *ap* = 7.5 mm

TAN07

9-42

Insert

AH120 / ML → Heavy interrupted → AH725 / MJ

With CBN insert
For high productivity
with high cutting speed

Body

Non-stock standard

Max. *ap* = 1 mm
Vc = ~ 2000 m/min

QPP15

9-132

Insert

BX950

Face milling

N Non-ferrous

With PCD insert
For high productivity and precision machining

Body

DAD15
Max. *ap* = 5 mm
Non stock standard

9-80

Insert

DX140

1st choice

Body

TUNGMILL

TAW13
Max. *ap* = 4 mm (AJ insert)

9-44

Insert

DS1100 / AJ

For low cost and high performance: 10 corners per insert

Body

DOPENT

TEN09 **EEN09**
Max. *ap* = 6.4 mm

9-40

Insert

TH10 / AJ

Quick change system for insert

Body

TME4400I
Max. *ap* = 4 mm

9-48

Insert

TH10

Face milling

S Superalloys (Heat-resisting alloy etc.)

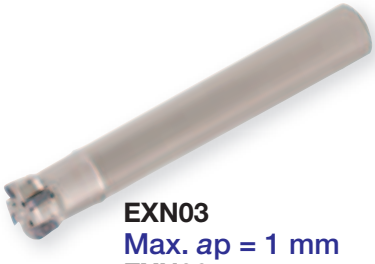
H Hard materials (40 ~ 60HRC)

1st choice

Body

DOFEED SERIES

TXN06
Max. *ap* = 1.5 mm



EXN03
Max. *ap* = 1 mm
EXN06
Max. *ap* = 1.5 mm

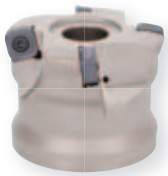
9-92

Insert

Hard materials	Superalloys
AH725 / MJ	AH725 / ML

For low cost and high performance: 8 corners per insert

Body



DOFEEDQUAD

TXQ12
øDc = ~ ø125 mm
Max. *ap* = 2 mm

9-98

Insert

AH725 / MJ

Square shoulder milling

P Steel (≤ 300HB)

Heavy interrupted machining on large machines (e.g. BT50)

1st choice

Body

DOREC

TPQ

EPQ

T/EPQ11: Max. *ap* = 9 mm
T/EPQ18: Max. *ap* = 16 mm

9-58

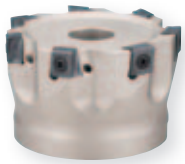
Insert

Heavy interrupted

AH725 / MJ → AH140 / MJ

Body

TECMILL



TPM11/16

EPM11

T/EPM11: Max. *ap* = 9.7 mm
TPM16: Max. *ap* = 15.1 mm

9-67

Insert

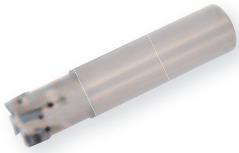
For higher chipping resistance

AH725 / MJ → AH140 / MJ

Body

TUNGREC

TPO07/18
TPS11



EPO07/18
EPS11

07 type: Max. *ap* = 7 mm
11 type: Max. *ap* = 10.6 mm
18 type: Max. *ap* = 16.7 mm

9-58

Insert

Heavy interrupted

AH725 / MJ → AH140 / MJ

Large depth of cut
ap ≥ 16 mm

High productivity, high wall straightness
(≤ 50 µm)

Body

TUNGQUAD

ELD05

øDc = ø20, ø25
Max. *ap*:
ø20 = 20.3 mm
ø25 = 24.2 mm

9-70

Insert

AH725 / MJ

For higher chipping resistance → AH140 / MJ

Body

TUNGREC

TLS11

ELS11

øDc = ø25 ~ ø50
Max. *ap*: ø25 = 30.4 mm, ø32 = 39.4 mm
ø40 = 40 mm, ø50 = 48.8 mm

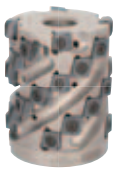
9-58

Insert

AH725 / MJ

Body

TECMILL



TLM11

øDc =
ø50 mm, ø63 mm
Max. *ap*:
ø50 mm = 59 mm
ø63 mm = 67.4 mm

9-67

Insert

AH725 / MJ

For higher chipping resistance → AH140 / MJ

Square shoulder milling

M Stainless

Heavy interrupted machining on large machines (e.g. BT50)

1st choice

Body — TUNGREC

TPO07/18, TPS11

EPO07/18, EPS11

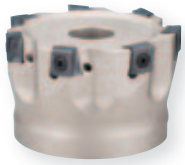
07 type: Max. *ap* = 7 mm
11 type: Max. *ap* = 10.6 mm
18 type: Max. *ap* = 16.7 mm

9-58

Insert

TPO07/18	TPS/EPS11
AH140 / MJ	AH130 / MS

Body — TECMILL



TPM11/16

EPM11

T/EPM11: Max. *ap* = 9.7 mm
TPM16: Max. *ap* = 15.1 mm

9-67

Insert

AH140 / MJ

Body — DOREC

TPQ

EPQ

T/EPQ11: Max. *ap* = 9 mm
T/EPQ18: Max. *ap* = 16 mm

9-56

Insert

AH140 / MJ

Large depth of cut
ap ≥ 16 mm

For low cost and high performance: 4 corners per insert

Body — TUNGQUAD

ELD05

øDc = ø20, ø25
Max. *ap*:
ø20 = 20.3 mm
ø25 = 24.2 mm

9-70

Insert

AH140 / MJ

Body — TUNGREC

TLS11

ELS11

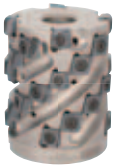
øDc = ø25 ~ ø50
Max. *ap*: ø25 = 30.4 mm, ø32 = 39.4 mm
ø40 = 40 mm, ø50 = 48.8 mm

9-58

Insert

AH130 / MS

Body — TECMILL



TLM11

øDc =
ø50 mm, ø63 mm
Max. *ap*:
ø50 mm = 59 mm
ø63 mm = 67.4 mm

9-67

Insert

AH140 / MJ

Square shoulder milling

K Cast iron

1st choice

Body

DOREC

TPQ

EPQ

T/EPQ11: Max. *ap* = 9 mm
T/EPQ18: Max. *ap* = 16 mm

9-56

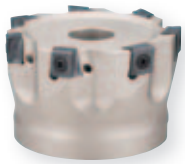
Insert

AH120 / MJ

Heavy interrupted machining on large machines (e.g. BT50)

Body

TECMILL



TPM11/16

EPM11

T/EPM11: Max. *ap* = 9.7 mm
TPM16: Max. *ap* = 15.1 mm

9-67

Insert

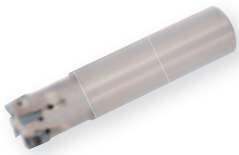
For high wear resistance

AH120 / MJ → T1115/ MJ

Body

TUNGREC

TPO07/18
TPS11



EPO07/18
EPS11

07 type: Max. *ap* = 7 mm
11 type: Max. *ap* = 10.6 mm
18 type: Max. *ap* = 16.7 mm

9-58

Insert

T/EPO: AH725 / MJ

T/EPS: T1115 / MJ

Large depth of cut
ap ≥ 16 mm

High productivity, high wall straightness
(≤ 50 µm)

Body

TUNGQUAD

ELD05

øDc = ø20, ø25
Max. *ap*:
ø20 = 20.3 mm
ø25 = 24.2 mm

9-70

Insert

AH725 / MJ

Body

TUNGREC

TLS11

ELS11

øDc = ø25 ~ ø50
Max. *ap*: ø25 = 30.4 mm, ø32 = 39.4 mm
ø40 = 40 mm, ø50 = 48.8 mm

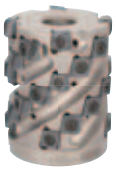
9-58

Insert

AH120 / MJ

Body

TECMILL



TLM11

øDc =
ø50 mm, ø63 mm
Max. *ap*:
ø50 mm = 59 mm
ø63 mm = 67.4 mm

9-67

Insert

AH120 / MJ

Selection Guide for TAC mills

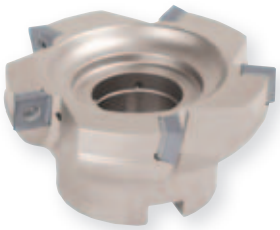
Square shoulder milling

N Non-ferrous

1st choice

Body

TUNGMILL



TPW13

Max. *ap* = 10 mm

9-72

Insert

DS1100 / AJ

High productivity, high wall straightness (≤ 50 µm)

Body

TUNGREC

TPO07/18
TPS11

EPO07/18
EPS11

07 type: Max. *ap* = 7 mm
11 type: Max. *ap* = 10.6 mm
18 type: Max. *ap* = 16.7 mm

9-58

Insert

T/EPO: KS15F / AJ

T/EPS11: DS1100 / AJ

Large depth of cut
ap ≥ 10 mm

Body

TUNGQUAD

ELD05

øDc = ø20, ø25
Max. *ap*:
ø20 = 20.3 mm
ø25 = 24.2 mm

9-70

Insert

TH10 / MJ

Body

TUNGREC

TLS11

ELS11

øDc = ø25 ~ ø50
Max. *ap*: ø25 = 30.4 mm, ø32 = 39.4 mm
ø40 = 40 mm, ø50 = 48.8 mm

9-58

Insert

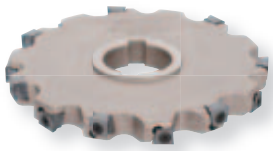
DS1100 / AJ

P Steel (≤ 300HB) M Stainless K Cast iron

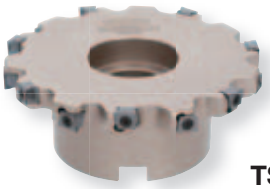
Slotting

TECSLOT

9-134



ASN



TSN

Finishing

Face milling (Finish operation)

9-176

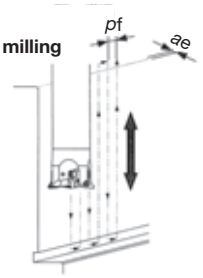
SFP4000

Finishing wall with plunging

TZF11

9-124

Z-feed milling



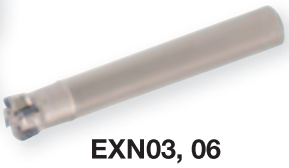
Profiling & pocket milling

P Steel (≤ 300HB) K Cast iron

DOFEED SERIES

9-92

TXN03, 06

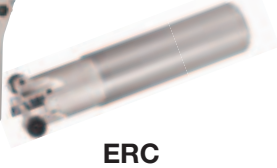


EXN03, 06

ROUNDSPLIT

9-107

TRC



ERC

TZP 9-122

EVX

9-114

TUNGREC

EPO07/18

EPS11

9-58

HYBRIDTACMILL

EPH

9-74

EVH

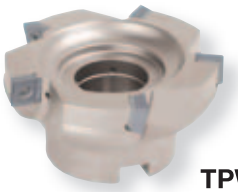
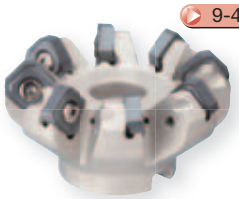
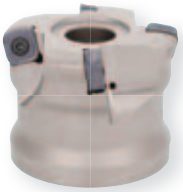
9-78

EBP 9-118

EBD 9-119

Selection Guide for TAC mills

Selection guide by workpiece shape

Shape of workpiece	Suitable tools (TAC mills)
Low rigidity work (thin plate, easy chattering products) 	DOPENT 9-40  TEN09 EEN09 TUNGMILL 9-72  TPW13
Narrow work 	DOPENT 9-40  TEN09 Extra close  TAN07 Extra close DOOCTO DOQUAD 9-42
Scaled surface, fluctuating depth of cut 	DOQUAD 9-42  TAN07 TECMILL 9-67  TPM11/16
Smelted surface 	DOFEED SERIES 9-92  TXN06 DOFEEDQUAD 9-98  TXQ12 ROUNDSPLIT 9-107  TRC16

Selection guide for shoulder milling tools by machine tool and application

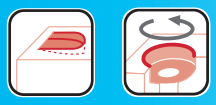
Machines	Small size machine (e.g. BT30)	Medium size machine (e.g. BT40)	Large size machine (e.g. BT50)
Pocket milling, contouring & ramping	 TUNGREC 18 / TUNGREC 11 / TUNGREC 07		
Face milling, shoulder milling & slot milling	 TECMILL 11, 16 / DOREC 11, 18 / TUNGQUAD		

Chart 1 Application related chart / First priority is economical solution

Appli-cation	Setup / operation limitation	Depth of cut *ap* (mm)		Tool dia *øDc*	1. Priority (Economical)	2. Priority	3. Priority (High reliability)	Finishing Priority
Shoulder milling	Productivity Priority Stable setup	Small	< 2	Small	TPD/EPD05	TPO/EPO07	TPS/EPS11	TPS/EPS11
		Medium	< 4	Small	TPO/EPO07	TPS/EPS11		TPS/EPS11
				Large	TPQ/EPQ11	TPW/EPW13	TPM/EPM11	TPQ/EPQ11
	Unstable setup	Small	< 2	Small	TPD/EPD05	TPO/EPO07	TPS/EPS11	TPS/EPS11
		Medium	< 4	Small	TPO/EPO07	TPS/EPS11		TPS/EPS11
				Large	TPW/EPW13	TPQ/EPQ11	TPO/EPO18	TPO/EPO18
	Interrupted cut	Small	< 2	Small	TPS/EPS11	TPO/EPO07		TPO/EPO18
		Medium	< 4	Small	TPS/EPS11	TPO/EPO18		TPO/EPO18
				Large	TPM/EPM11	TPQ/EPQ11		TPO/EPO18
	Long overhang	Small		Small	TPO/EPO18	TPS/EPS11		EPH11/13/18
				Large	TPO/EPO18	TPQ/EPQ11		TPO/EPO18
	Ramping, Multifunction				TPS/EPS11	TPO/EPO18	EVX	
Face milling	Productivity Priority Stable setup	Small	< 2	Medium	TEN/EEN09	TAW/EAW13	TXQ12	TEN/EEN09
		Medium	< 4	Medium	TEN/EEN09	TAW/EAW13		TEN/EEN09
				Large	TAN07	TEN/EEN09	TAN07	TAN07
	Unstable setup	Small	< 2	Medium	TEN/EEN09	TAW/EAW13		TAW/EAW13
		Medium	< 4	Medium	TAW/EAW13	TEN/EEN09		TAW/EAW13
				Large	TAW/EAW13	TEN/EEN09		TAW/EAW13
	Interrupted cut	Small	< 2	Medium	TEN/EEN09	TEN/EEN09	TXQ12	TAW/EAW13
		Medium	< 4	Medium	TAW/EAW13	TEN/EEN09		TAW/EAW13
				Large	TAN07	TAN07	TEN/EEN09	TAN07
	Long overhang	Small		Medium	TAW/EAW13	TEN/EEN09		TAW/EAW13
				Large	TAW/EAW13	TEN/EEN09		TAW/EAW13
High feed milling	Productivity Priority Stable setup	Small	< 1	Small	TXN/EXN03	TXP/EXP		
			< 2	Medium	TXN/EXN06	TXQ12	TXP/EXP	TXD15
				Large	TXN/EXN06	TXQ12	TXP/EXP	TXD15
	Unstable setup			Small	TXN/EXN03	TXP/EXP		
				Medium	TXP/EXP	TXN/EXN06		
	Interrupted cut			Small	TXN/EXN03			
				Medium	TXN/EXN06	TXQ12		
	Long overhang							
Profiling	Productivity Priority Stable setup			Small	EWD			
				Medium	TRC/ERC	TRP/ERP	TRD/ERD	
	Unstable setup				TRC/ERC	TRP/ERP		
	Interrupted cut				TRC/ERC	TRP/ERP		
	Long overhang				TRC/ERC	TRP/ERP		

Chart 2

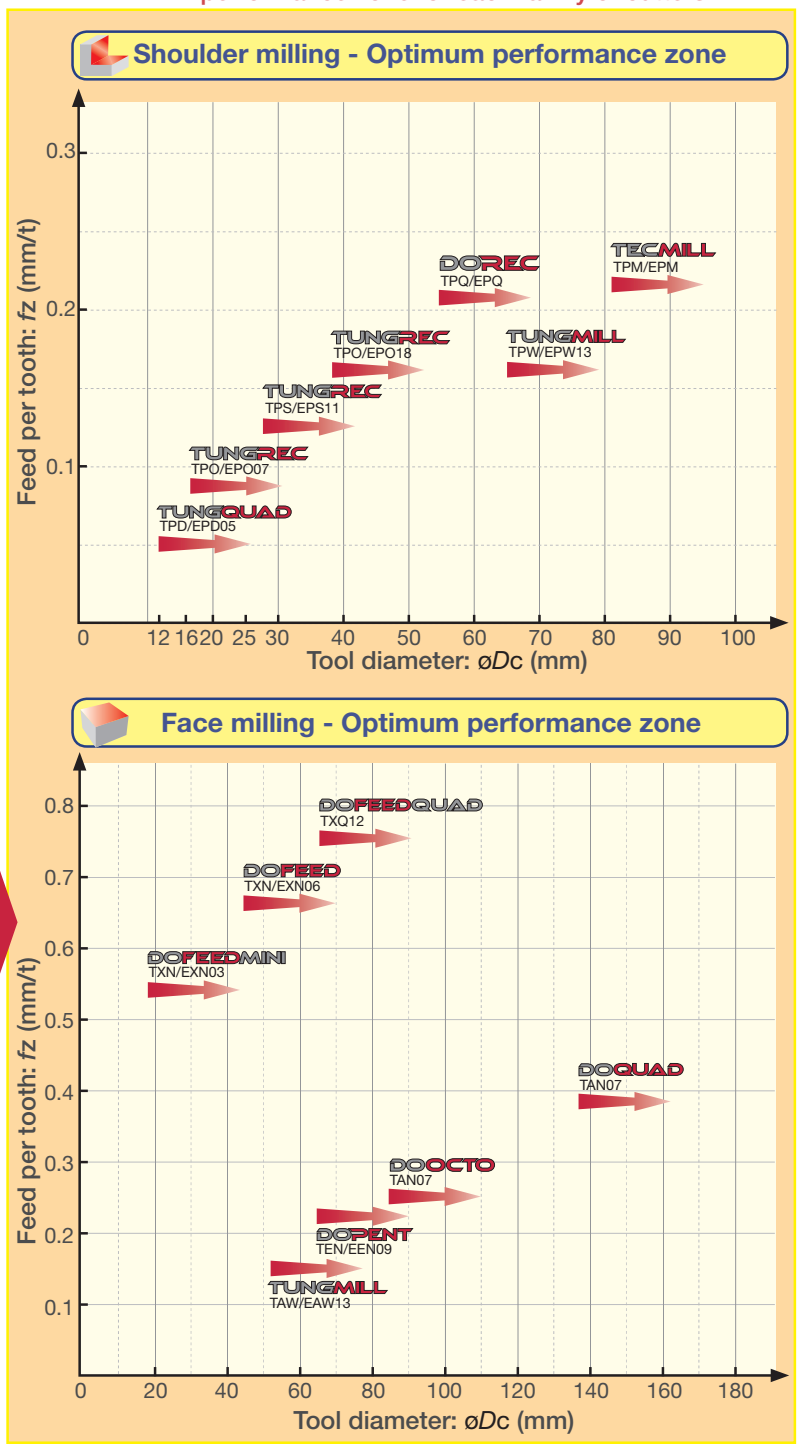
Appli-cation	Work materials	Setup / operation	
Shoulder milling	P Steel	Productivity priority Stable setup	
		Unstable setup	
		Interrupted cut	
		Long overhang	
	M Stainless	Productivity priority Stable setup	
		Unstable setup	
		Interrupted cut	
		Long overhang	
	K Cast iron	Productivity priority Stable setup	
		Unstable setup	
		Interrupted cut	
		Long overhang	
	N Non-ferrous	Productivity priority Stable setup	
		Unstable setup	
		Interrupted cut	
		Long overhang	
Face milling	P Steel	Productivity priority Stable setup	
		Unstable setup	
		Interrupted cut	
		Long overhang	
	M Stainless	Productivity priority Stable setup	
		Unstable setup	
		Interrupted cut	
		Long overhang	
	K Cast iron	Productivity priority Stable setup	
		Unstable setup	
		Interrupted cut	
		Long overhang	
	N Non-ferrous	Productivity priority Stable setup	
		Unstable setup	
		Interrupted cut	
		Long overhang	

Material related chart / First priority is high reliability

limitation	1. Priority	2. Priority	3. Priority
	High reliability ←		
General	DOREC TPQ/EPQ	TECMILL TPM/EPM	
High DoC	ROUGHINGMILL Roughing series		
	TUNGREC TPO/EPO18	TUNGREC TPS/EPS11	TUNGMILL TPW/EPW13
	TECMILL TPM/EPM	TUNGMILL TPW/EPW13	TUNGREC TPO/EPO18
	TUNGREC TPO/EPO18		
	TUNGREC TPO/EPO	DOREC TPQ/EPQ	TECMILL TPM/EPM
	TUNGREC TPO/EPO		
	TECMILL TPM/EPM	DOREC TPQ/EPQ	
	TUNGREC TPO/EPO		
	TECMILL TPM/EPM	DOREC TPQ/EPQ	
	DOREC TPQ/EPQ		
	TECMILL TPM/EPM	DOREC TPQ/EPQ	
	TUNGREC TPO/EPO		
	TUNGMILL TAW/EAW13	TUNGREC TPO/EPO	
	TUNGMILL TAW/EAW13	TUNGREC TPO/EPO	
	TUNGREC TPO/EPO		
	TUNGREC TPO/EPO		
General	DOPENT TEN/EEN09	DOOCTO TAN07	TUNGMILL TAW/EAW13
High DoC	DOPENT TEN/EEN09	DOQUAD TAN07	
High feed	DOFEEDQUAD TXQ12	MILLFEED TXP	
	TUNGMILL TAW/EAW13	DOPENT TEN/EEN09	
	DOOCTO DOQUAD TAN07	DOPENT TEN/EEN09	TUNGMILL TAW/EAW13
	TUNGMILL TAW/EAW13	DOPENT TEN/EEN09	
General	TUNGMILL TAW/EAW13	DOPENT TEN/EEN09	DOOCTO TAN07
High DoC	TUNGMILL TAW/EAW13	DOPENT TEN/EEN09	DOQUAD TAN07
High feed	DOFEEDQUAD TXQ12	DOFEED TXN/EXN06	
	TUNGMILL TAW/EAW13	DOPENT TEN/EEN09	
	DOOCTO DOQUAD TAN07	DOPENT TEN/EEN09	TUNGMILL TAW/EAW13
	TUNGMILL TAW/EAW13	DOPENT TEN/EEN09	
General	DOOCTO TAN07	DOQUAD TAN07	DOPENT TEN/EEN09
High DoC	DOQUAD TAN07	DOPENT TEN/EEN09	
High feed	DOFEEDQUAD TXQ12	DOFEED TXN/EXN06	
	TUNGMILL TAW/EAW13	DOPENT TEN/EEN09	
	DOOCTO DOQUAD TAN07	DOPENT TEN/EEN09	TUNGMILL TAW/EAW13
	TUNGMILL TAW/EAW13	DOPENT TEN/EEN09	
	TUNGMILL DPD	TUNGMILL TFE	DOPENT TEN/EEN09
	TUNGMILL TAW/EAW	TUNGMILL TFE	DOPENT TEN/EEN09
	TUNGMILL TAW/EAW	DOPENT TEN/EEN09	
	TUNGMILL TFE		

Chart 3

This graph shows the starting range for optimum performance zone for each family of cutters



How to use:

- Please shortlist the recommended product family from chart 1, 2 or both and then cross check if the diameter (*øDc*) and the feed per tooth (*fz*) required by customer is suitable for this family by chart 3.
- Feed per tooth (*fz*) shown in chart 3 is only an indicator and customer can use feeds ±20% of the shown value depending upon the material, parameters.
- For further operating parameters please refer to the recommended cutting conditions in the catalogue for the respective product.

Face Milling

1st choice

DOPENT

9-40

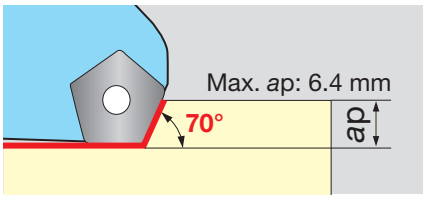
Work materials

P	M	K	N
Steel	Stainless	Cast Iron	Non-ferrous

TEN09

EEN09

Pentagonal, double sided insert with 10 cutting edges!
Can be used on a variety of materials and applications that demand superior sharpness!



Pitch / Diameter	Number of inserts	
	Close	Extra close
ø32	3	-
ø40	4	-
ø50	4	6
ø63	6	8
ø80	7	10
ø100	8	12
ø125	10	16
ø160	12	20

Clamping	Air hole
Screw	○
Wiper	**Adjusting**
○	-
Shank type	**Close pitch**
○	○

Accuracy
C

Variations of inserts	
General purpose	MJ
For aluminium alloys	AJ

Work materials

P Steel K Cast Iron

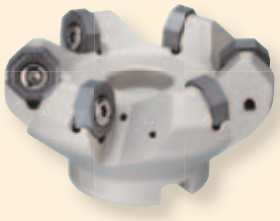
For cast iron and steel

DOOCTO DOQUAD

9-42

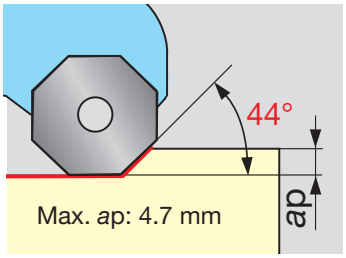
With octagonal or square inserts, please only select one type of cutter body.

DOOCTO



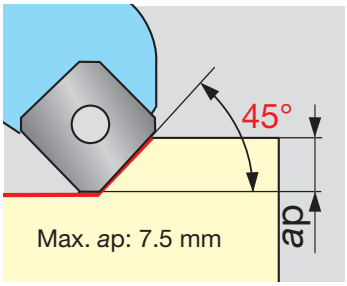
DOOCTO

Economical milling cutter which uses octagonal, double sided insert with 16 cutting edges!

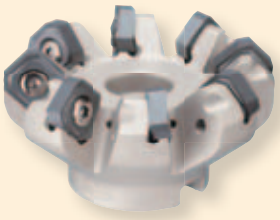


DOQUAD

Productive milling cutter that utilises square inserts.



DOQUAD



Pitch / Diameter	Number of inserts		
	Screw on type		Wedge type
	Coarse	Close	Extra close
ø63	5	6	8
ø80	6	8	10
ø100	7	10	14
ø125	8	12	18
ø160	10	15	22
ø200	12	18	28

Variations of inserts	
For steel	MJ
For cast iron	ML

Clamping	Air hole
Screw	○
Wedge	-
Wiper	**Adjusting**
○	-
Shank type	**Close pitch**
-	○

Accuracy
M, H

Low cutting forces

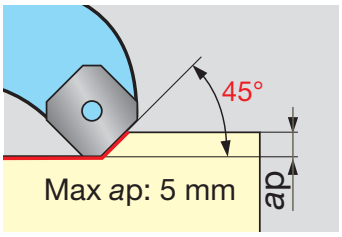
TUNGMILL

9-44

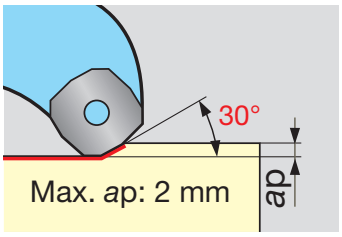
Work materials

P Steel | M Stainless | K Cast Iron | N Non-ferrous

Many items for a wide range of work materials.
Newly designed insert for high feed milling.



General insert



Case of HJ insert

TAW13

Diameter \ Pitch	Number of inserts	
	Standard	Close
ø50	4	5
ø63	5	6
ø80	6	8
ø100	7	10
ø125	8	12
ø160	10	16

Clamping	Air hole	Adjusting
Screw	○	-
Wiper	**Shank type**	**Close pitch**
○	○	○

Variations of inserts	
General purpose	MJ / without
Low resistance	ML
For stainless steels	MS
High feed	HJ
For aluminium alloys	AJ/T-DIA (PCD) Inserts

Accuracy
M, G

Shoulder Milling

TUNGREC

High productivity and high wall straightness

9-58

Work materials

P Steel | M Stainless | K Cast Iron | N Non-ferrous | S Superalloys

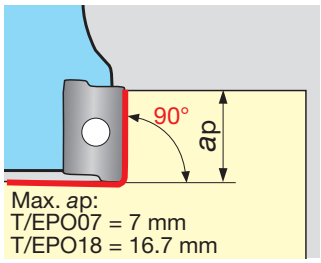
TPO07

EPO07

TPO18

EPO18

High speed, high efficiency mills featuring free cutting action, suitable for a wide range of work materials.



Max. *ap*:
T/EPO07 = 7 mm
T/EPO18 = 16.7 mm

TPO/EPO 07

Pitch / type / Diameter	Number of inserts		
	Coarse	Close	Long
ø12	-	2	2
ø16	2	4	2
ø18	-	4	2
ø20	3	5	3
ø22	-	5	3
ø25	3	7	3
ø28	-	7	3
ø32	8	-	-
ø40	10	-	-
ø50	12	-	-

Clamping	Air hole	Adjusting
Screw	○	-
Wiper	**Shank type**	**Close pitch**
-	○	○

Variations of inserts	
General purpose	MJ
For aluminium alloys	AJ
High feed	HJ (only TPO / EPO07)

Accuracy
M, G

TPO/EPO 18

Pitch / type / Diameter	Number of inserts		
	Coarse	Close	Long
ø25	2	-	2
ø28	2	-	2
ø30	2	3	2
ø32	2	3	2
ø35	2	3	2
ø40	3, 4	4	2
ø50	3, 5	5	-
ø63	6	-	-
ø80	7	-	-
ø100	8	-	-
ø125	9	-	-
ø160	10	-	-

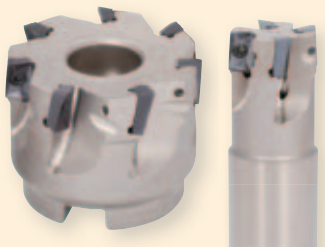
High productivity and high wall straightness

TUNGREC

9-58

Work materials

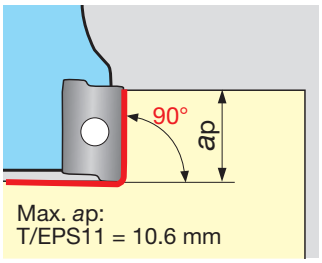
P	M	K	N	S
Steel	Stainless	Cast Iron	Non-ferrous	Superalloys



TPS11

EPS11

High speed, high efficiency mills featuring free cutting action, suitable for a wide range of work materials.



Max. ap:
T/EPS11 = 10.6 mm

TPS/EPS11

Pitch / type / Diameter	Number of inserts				
	Cylindrical			Weldon	
	Coarse	Close	Long	Coarse	Close
ø12	1	-	1	1	-
ø16	2	-	2	2	-
ø18	2	-	2	-	-
ø20	2	3	2	-	3
ø21	-	3	2	-	-
ø25	3	4	2	-	4
ø26	-	4	2	-	-
ø32	3	5	2	-	5
ø33	-	5	2	-	-
ø40	-	6	-	-	-
ø50	-	7	-	-	-
ø63	-	8	-	-	-

TLS11

ELS11

TLS/ELS11

Diameter	Effective No. of edge lines	Number of inserts	Max. ap (mm)
ø25	2	6	30.4
ø32	3	12	39.4
ø40	3	12	40
ø50	4	20	48.8

Clamping	Air hole
Screw	○
Adjusting	**Wiper**
-	-
Shank type	**Close pitch**
○	○

Variations of inserts	
General purpose	MJ
For aluminium alloys	AJ / DLC coated
For stainless steels	MS

Accuracy
M, G

High productivity, high cost performance

DOREC

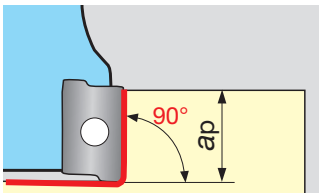
9-56

P Steel M Stainless K Cast Iron S Superalloys

TPQ

EPQ

- Economical 4 cornered insert with high sharpness
- Tough cutting edges provide high productivity machining
- Unique edge design on insert reduces cutting forces



Max. *ap*:
T/EPQ11 = 9 mm
T/EPQ18 = 16 mm

TPQ/EPQ

Pitch / type / Diameter	Number of inserts
	Coarse
ø40	5
ø50	3, 6
ø63	4, 7
ø80	5, 10
ø100	6, 12
ø125	8
ø160	9

Clamping	Air hole	Adjusting
Screw	○	-
Wiper	**Shank type**	**Close pitch**
-	○	-

Variations of inserts	
General purpose	MJ

Accuracy
M

High productivity, high reliability

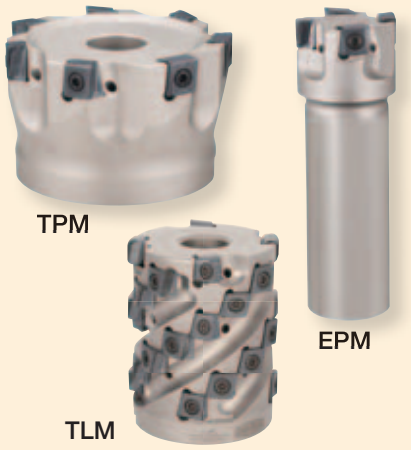
TECMILL

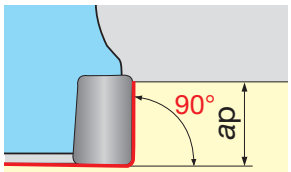
9-67

Work materials

P Steel | M Stainless | K Cast Iron | S Superalloys

- Tangential clamping cutter
- A combination of strength and stability





Max. *ap*:
T/EPM11 = 9.7 mm
TPM16 = 15.1 mm

TPM/EPM

Diameter \ Pitch	Number of inserts	
	Coarse	Close
ø32	3	-
ø40	4	-
ø50	4, 5	-
ø63	6	-
ø80	5, 7	9
ø100	6, 8	11
ø125	7	-

TLM

Diameter	Effective No. of edge lines	Number of inserts	Max. *ap* (mm)
ø50	3	21	59
ø63	4	32	67.4

Clamping	Air hole	Adjusting
Screw	○	-
Wiper	**Shank type**	**Close pitch**
-	○	○

Variations of inserts	
General purpose	MJ

Accuracy
M

General priority on low cutting force

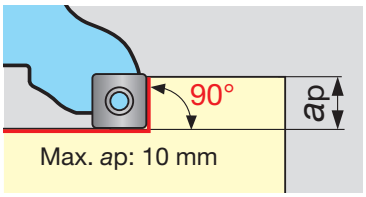
TUNGMILL

9-72

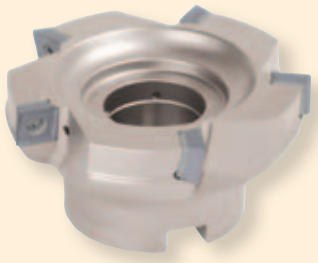
Work materials

P Steel | M Stainless | K Cast Iron | N Non-ferrous

- Uniquely designed cutting edge geometry ensures free cutting action
- Can suppress chatter in slotting
- Improved shoulder straightness



Max. *ap*: 10 mm



TPW13

Diameter \ Pitch	Number of inserts	
	Standard	Close
ø50	4	5
ø63	5	6
ø80	6	8
ø100	7	10
ø125	8	12

Clamping	Air hole	Adjusting
Screw	○	-
Wiper	**Shank type**	**Close pitch**
-	○	○

Variations of inserts	
General purpose	MJ
Low resistance	ML
For stainless steels	MS
For aluminium alloys	AJ / DLC coated

Accuracy
M, G

For small & medium machines

TUNGQUAD

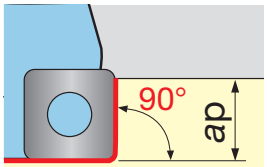
9-70

Work materials

P Steel | M Stainless | K Cast Iron | N Non-ferrous

Highly efficient small diameter cutter.

TPD05 EPD05 ELD05



Max. *ap*: 4.0 mm

TPD/EPD05

Diameter	Number of inserts
ø12	2
ø16	3
ø20	4
ø25	5
ø32	6
ø40	8

ELD05

Diameter	Effective No. of edge lines	Number of inserts	Max. *ap* (mm)
ø20	2	10	20.3
ø25	3	18	24.2

Clamping	Air hole	Adjusting
Screw	○	-
Wiper	**Shank type**	**Close pitch**
-	○	○

Variations of inserts	
General purpose	MJ
For aluminium alloys	AJ

Accuracy
M, H

For small & medium machines

HYBRIDTACMILL

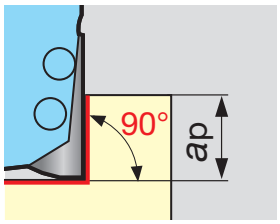
9-74

Work materials

P Steel | M Stainless | K Cast Iron | N Non-ferrous

Hybrid TAC Mill, EPH, generates low cutting forces for high productivity and highly accurate machining compared to solid endmills.

EPH



Max. *ap*: EPH11: 10 mm
EPH13: 12 mm
EPH18: 16 mm

Type / Diameter	Number of inserts Standard / long
ø10	2
ø12,13,14	2
ø16	2, 3
ø17,18,20,21	3
ø25, ø26	4

Clamping	Air hole	Helix angle
DD - FiT	-	15°

Variations of inserts	
General purpose	MJ
For aluminium alloys	AJ / DLC coated

Accuracy
G

High Feed Milling

DOFEED SERIES

High productivity, low cutting forces

Work materials: P Steel, M Stainless, K Cast Iron, S Superalloys, H Hard Materials

9-92

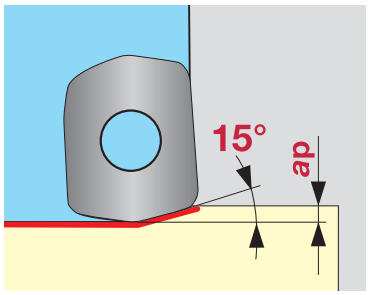
High feed milling cutters with high density insert pockets
Economical double sided insert with low cutting forces

EXN03

EXN06

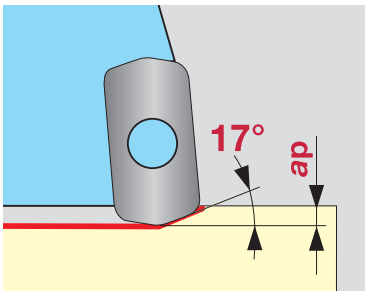
TXN06

TXN06 / EXN06



LNMU06 type: Max. *ap* = 1.5 mm

EXN03



LNMU03 type: Max. *ap* = 1.0 mm

EXN03 / EXN06

Diameter \ Pitch / type	Number of inserts	
	Standard	Long
ø16	2	2
ø18	2	2
ø20	4	3
ø22	4	3
ø25	5	4
ø28	5	4
ø30	5	4
ø32	2, 6	2, 5
ø35	2	2
ø40	3	3

TXN06

Diameter \ Pitch / type	Number of inserts
	Long
ø50	5
ø63	6
ø80	8

Clamping	Air hole	Adjusting
Screw	○	-
Wiper	**Shank type**	**Close pitch**
-	○	○

Variations of inserts	
General purpose	MJ
For low cutting force	ML

Accuracy
M

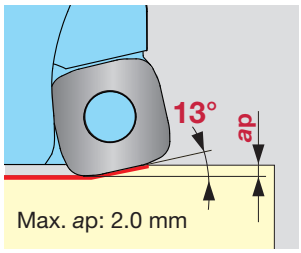
High productivity, high cost performance

DOFEEDQUAD

Work materials: P Steel, M Stainless, K Cast Iron, S Superalloys, H Hard Materials

9-98

Super high feed milling cutter with high reliability. Applicable for a wide range of work materials. Double sided insert with 8 corners, provides high economical advantages.



TXQ12

Diameter \ Pitch / type	Number of inserts
	Coarse
ø50	3
ø52	3
ø63	4
ø66	4
ø80	5
ø100	6
ø125	7

Clamping	Air hole	Adjusting
Screw	○	-
Wiper	**Shank type**	**Close pitch**
-	-	-

Variations of inserts	
General purpose	MJ

Accuracy
M

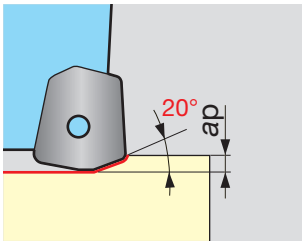
For small & medium machines

HYBRIDTACMILL

Work materials: P Steel, M Stainless, K Cast Iron, N Non-ferrous

9-100

**"Hybrid TAC Mill" for super high feed milling.
Improved productivity in roughing.**



Max. ap: EXH06 = 0.6 mm
EXH07 = 0.6 mm
EXH09 = 0.8 mm

EXH

Diameter \ Pitch	Number of inserts
	Standard
ø10	2
ø12	2
ø16	2

Clamping	Air hole	Long shank
SS - FiT	○	○

Variations of inserts	
For high feed	MJ
For aluminium alloys	AJ / DLC coated

Accuracy
G

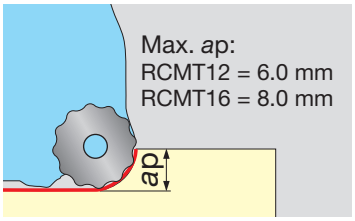
Die Engraving / Pocketing

For long overhang applications — ROUNDSPLIT

9-107

Work materials: P Steel, M Stainless, K Cast Iron, N Non-ferrous, S Superalloys

Milling without chatter can be achieved by overlapping the serrated cutting edges. Used for long overhang applications.



Pitch / Diameter	Number of inserts		
	Coarse	Long	Extra Long
ø32	3	3	3
ø33	3	3	3
ø40	2, 4	2, 4	2, 4
ø50	3, 4, 5	3, 5	3, 5
ø52	4, 5	-	-
ø63	5, 6	-	-
ø80	6, 7	-	-
ø100	7	-	-
ø125	8	-	-

Clamping	Air hole
Screw	○
Wiper	**Adjusting**
-	-
Shank type	**Close pitch**
○	-

Accuracy
C

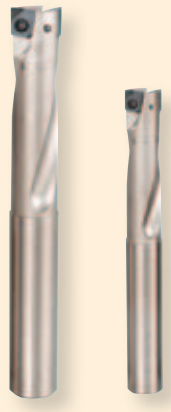
Variations of inserts	
General purpose, with serrated cutting edge	NMJ
General purpose, Round insert	MJ
For aluminium alloys, with serrated cutting edge	NAJ

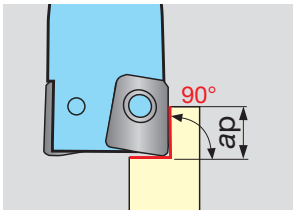
For small & medium machines — HYBRIDTACMILL

9-78

Work materials: P Steel, M Stainless, K Cast Iron, N Non-ferrous

Multi-functional "Hybrid TAC Mill" Can be applied to a variety of machining applications such as shoulder milling, slotting and hole making.





Max. *ap*: EVH06: 3 mm
EVH07: 3.5 mm
EVH09: 4.5 mm

Pitch / Diameter	Number of inserts
	Standard
ø10	2
ø12	2
ø16	2

Clamping	Air hole	Long shank
SS - FiT	○	○

Variations of inserts	
General purpose	MJ
For aluminium alloys	AJ / DLC coated

Accuracy
G

Slot Milling

High reliability

TECSLOT

9-134

Work materials

P Steel | M Stainless | K Cast Iron | S Superalloys

ASN
Axial drive

TSN
Radial drive

Highly rigid cutter body and tough tangential insert offer incredibly secure slot milling.

ASN

Diameter \ Pitch/Width	Number of inserts		
	Lf 16 mm	Lf 19 mm	Lf 25 mm
ø100	5/10	5/10	-
ø125	6/12	6/12	5/10
ø160	7/14	7/14	6/12
ø200	8/16	8/16	7/14
ø250	-	9/18	8/16

Clamping	Air hole
Screw	-
Wiper	**Adjusting**
-	-
Shank type	**Close pitch**
-	-

Accuracy
E

TSN

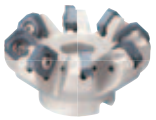
Diameter \ Pitch/Width	Number of inserts		
	Lf 16 mm	Lf 19 mm	Lf 25 mm
ø100	5/10	5/10	-
ø125	6/12	6/12	5/10
ø160	7/14	7/14	6/12
ø200	8/16	8/16	7/14
ø250	-	9/18	8/16

Variations of inserts	
General purpose	MJ

TAC Mill Overview

Bore types

Face Milling

Application	Series and type	Applicable inserts	Cutting edge angle / Max.depth of cut / Applications	Small — Tool diameter (mm) / Number of inserts — Large	Page
High productivity face milling of various work materials	DOPENT TUNGALOY **TEN09** 	PNCU0905GN** Wiper insert	70° 6.4 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous	50 (4,6) 63 (6,8) 80 (7,10) 100 (8,12) 125 (10,16) 160 (12,20); Face Milling	9-40
High productivity face milling of cast iron	DOOCTO DOQUAD TUNGALOY **TAN07** 	ONMU0705** ONHU0705** SNMU1706** SNHU1706** Wiper insert	45° 4.7 mm 7.5 mm; K Cast Iron, P Steel	63 (5,6 8) 80 (6,8 10) 100 (7,10 14) 125 (8,12 18) 160 (10,15 22) 200 (12,18 28); Face Milling	9-42
Low cutting force and high productivity milling of various work materials	TUNGMILL TUNGALOY **TAW13** 	SWMT13T3** SWMW13T3** SWGT13T3** Wiper insert WWCW13T3**	45° 5 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous	50 (4,5) 63 (5,6) 80 (6,8) 100 (7,10) 125 (8,12) 160 (10,16); Face Milling, Chamfering	9-44
General purpose face milling of various work materials	Lightning Mill **TME4400I/B**  TME4400I TME4400B	SECN1203** SEEN1203** SEKN1203** SEKR1203**	45° 4 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous	63 (5) 80 (4,6) 100 (5,7) 125 (6,9) 160 (8,12); Face Milling, Chamfering	9-48
Heavy duty face milling at large depth of cut for various work materials	Heavy duty TAC Mill **TMD5400IRE** 	SDCN53Z** SDEN53Z** SDKR53Z**	45° 6 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous	100 (4) 125 (6) 160 (6) 200 (8) 250 (10) 315 (12); Face Milling, Chamfering	9-50
High feed face milling and case milling of cast irons (Close pitch type)	TAC Mill **TGP4100RBAE** 	SPCN42S** SPEN423** SPEN42S** SPKN42S** SPKR42S** SPGN1203** Wiper insert WPAN42S**	75° 7 mm; K Cast Iron, P Steel, M Stainless	100 (8) 125 (10) 160 (12); Face Milling	9-51
Face milling of cast irons	TAC Mill (Double sided, negative inserts are used) **TGN4200-AE** 	SNCN43Z** SNKN43Z** SNKF43Z** SNMN1204**	65° 6 mm; K Cast Iron, P Steel	80 (5) 100 (6) 125 (8) 160 (10); Face Milling	9-53
Milling of difficult to cut materials such as Superalloys and hard materials	TAC radius mill **TRF6000** 	RFEN2004**	R 10 mm; S Superalloys, M Stainless, H Hard Materials	80 (4) 100 (5) 125 (6) 160 (8); Face Milling, Radius Milling	9-112

Shoulder Milling

Application	Series and type	Applicable inserts	Cutting edge angle Max.depth of cut Applications	Small — Tool diameter (mm) Number of inserts — Large	Page
High productivity shoulder milling	DOREC TUNGALOY **TPQ11** **TPQ18** 	LQMU1107** LQMU1808**	90° 9 mm 16 mm P Steel M Stainless K Cast Iron S Superalloys	30 40 50 60 70 80 100 120 160 180 200 250 300 40 50 63 80 100 125 160 4 3,6 4,7 5,10 6,12 8 9 Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling	9-56
High productivity shoulder milling	TUNGREC TUNGALOY **TPO07** 	AOMT0702** AOGT0702**	90° 7 mm P Steel M Stainless K Cast Iron N Non-ferrous S Superalloys	32 40 50 8 10 12 Face Milling, Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole	9-58
Precision square shoulder and general purpose milling	TUNGREC TUNGALOY **TPS11** 	ASMT11T3** ASGT11T3**	90° 10.6 mm P Steel M Stainless K Cast Iron N Non-ferrous	40 50 63 6 7 8 Face Milling, Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole	9-60
High productivity shoulder milling	TUNGREC TUNGALOY **TPO18** 	AOMT1805** AOGT1805**	90° 16.7 mm P Steel M Stainless K Cast Iron N Non-ferrous S Superalloys	40 50 63 80 100 125 160 4 5 6 7 8 9 10 Face Milling, Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole	9-63
High productivity shoulder milling	TECMILL TUNGALOY **TPM11** **TPM16** 	LMMU1107** LMMU1607**	90° 9.7 mm 15.1 mm P Steel M Stainless K Cast Iron S Superalloys	50 63 80 100 125 5 6 5,7 6,8 7 9 11 Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling	9-67
Highly efficient shoulder milling	TUNGQUAD TUNGALOY **TPD05** 	SDMT0502** SDHT0502**	90° 4 mm P Steel M Stainless K Cast Iron N Non-ferrous	32 40 6 8 Face Milling, Shoulder Milling, Slotting	9-70
Low cutting force and high productivity milling of various work materials	TUNGMILL TUNGALOY **TPW13** 	SWMT1304** SWGT1304**	90° 10 mm P Steel M Stainless K Cast Iron N Non-ferrous	50 63 80 100 125 4,5 5,6 6,8 7,10 8,12 Face Milling, Shoulder Milling	9-72
Roughing milling	TUNGREC TUNGALOY **TLS11** 	ASMT11T3..., ASGT11T3...	90° 48.8 mm P Steel M Stainless K Cast Iron N Non-ferrous S Superalloys	25 40 2/6 3/12 32 50 3/12 4/20 Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling	9-61

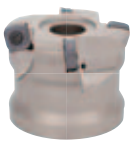
TAC Mill Overview

Bore types

Shoulder Milling

Application	Series and type	Applicable inserts	Cutting edge angle Max.depth of cut Applications	Small — Tool diameter (mm) Number of inserts — Large	Page
Roughing milling	TECMILL TUNGALOY **TLM11** 	LMMU1107**	90° 59, 67.4 mm; P Steel, M Stainless, K Cast Iron, S Superalloys	30 40 50 60 70 80 100 120 160 180 200 250 300 50 63 3/21 4/32 Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling	9-68
Heavy duty square shoulder milling of various work materials	Heavy duty TAC Mill **TPP16RIE** 	SPMR1605**	90° 12 mm; P Steel, K Cast Iron, M Stainless	80 100 125 160 200 250 315 4 5 6 8 10 12 14 Face Milling, Face Milling, Shoulder Milling	9-82
Square shoulder milling of various work materials (Low cutting force)	TAC Mill **TSE4000IA** 	TECN43Z** TEEN43Z** TEKR2204**	90° 10 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous	80 100 125 160 4 6 6 8 Face Milling, Shoulder Milling	9-86

High Feed Milling

Application	Series and type	Applicable inserts	Corner R Max.depth of cut Applications	Small — Tool diameter (mm) Number of inserts — Large	Page
For high speed milling of steels, stainless steels, cast irons and titanium alloys	DOFEED TUNGALOY **TXN03** **TXN06** 	LNMU06X 5ZER-M*	17° 1.5 mm; P Steel, M Stainless, K Cast Iron, S Superalloys, H Hard Materials	40 50 52 55 60 65 70 80 100 125 150 200 40 50 52 63 80 6 5 5 6 8 Shoulder Milling, Slotting, Pocketing, Ramping, Plunging, Enlarging Hole	9-92
For high speed milling of steels, stainless steels, cast irons and titanium alloys	DOFEEDQUAD TUNGALOY **TXQ12** 	SQMU1206 ZSR-MJ	13° 2 mm; P Steel, M Stainless, K Cast Iron, S Superalloys, H Hard Materials	50 52 63 66 80 100 125 3 3 4 4 5 6 7 Face Milling	9-98
Super high feed and three-dimensional milling	MILLFEED TUNGALOY **TXP05** **TXP06** **TXP08** **TXP09** 	WPMW06X4** WPMT06X4** WPMT0806** WPMT0907**	20°, 10° 1.5, 3 mm; P Steel, M Stainless, K Cast Iron, H Hard Materials	50 52 63 66 80 100 125 3 3 3,4 5,6 4 4,5 6,7 5,6 6,7 Face Milling, Pocketing, Ramping, Enlarging Hole	9-102

9 TAC Mills

Radial Milling

Application	Series and type	Applicable inserts	Corner R Max.depth of cut Applications	Small — Tool diameter (mm) Number of inserts — Large	Page
Die engraving of various work materials	ROUNDSPLIT IMMERSION **TRC12** **TRC16** 	RCMT1204** RCMT1606**	R 6, 8 mm P Steel, M Stainless, K Cast Iron, N Non-ferrous, S Superalloys	30 45 40 50 55 60 70 80 90 100 125 130 40 (4) 50 (4,5) 52 (4,5) 63 (5,6) 66 (5,6) 80 (6,7) 100 (7) 125 (8) Face Milling, Radius Milling, Slotting, Pocketing, Ramping, Profiling, Enlarging Hole	9-107
Die engraving	TAC Flash radius mill **TRD12** **TRD16** 	RDMT1204** RDMT1604** RDMW1204** RDMW1606**	R 6, 8 mm P Steel, M Stainless, K Cast Iron, H Hard Materials	50 (4) 52 (4) 63 (4,5) 66 (4,5) 80 (4,5) 100 (5) Face Milling, Radius Milling, Slotting, Pocketing, Ramping, Profiling, Enlarging Hole	9-110

Milling Cutters for Super Finishing

Application	Series and type	Applicable inserts	Max.depth of cut Applications	Small — Tool diameter (mm) Number of inserts — Large	Page
High precision finishing of steels and cast irons	Super finishing TAC Mill **SFP4000** 	SPHA435FNW	0.2 mm P Steel, M Stainless, K Cast Iron, N Non-ferrous	50 60 70 80 100 120 140 160 180 200 250 100 (2) 125 (2) 160 (4) Face Milling, Face Milling	9-130

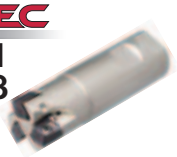
TAC Mill Overview

Shank types

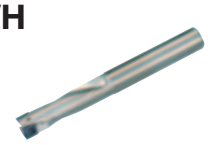
Face Milling

Application	Series and type	Applicable inserts	Cutting edge angle Max.depth of cut Applications	Small — Tool diameter (mm) / Number of inserts — Large	Page
Highly productive face milling of various work materials	DOPENT TUNGALOY **EEN09** 	PNCU0905GN** Wiper insert	70° 6.4 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous	25 30 40 50 60 80 100 32 (3) 40 (4) 50 (4) 63 (6) 80 (7) Face Milling	9-40

Shoulder Milling

Application	Series and type	Applicable inserts	Cutting edge angle Max.depth of cut Applications	Small — Tool diameter (mm) / Number of inserts — Large	Page
High productivity shoulder milling	DOREC TUNGALOY **EPQ11 EPQ18** 	LQMU1107** LQMU1808**	90° 9 mm 16 mm; P Steel, M Stainless, K Cast Iron, S Superalloys	10 16 17 19 20 23 25 30 35 40 60 80 25 (2) 32 (3) 40 (3,4) 50 (4,5) 63 (6) 80 (7) Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling	9-56
High productivity shoulder milling	TUNGREC TUNGALOY **EPO07** 	AOMT0702** AOGT0702**	90° 7 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous, S Superalloys	12 (2) 16 (2,4) 18 (2,4) 20 (3,5) 22 (3,5) 25 (3,7) 28 (3,7) Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole	9-58
General purpose multi-function cutter for high precision square shoulder milling	TUNGREC TUNGALOY **EPS11** 	ASMT11T3** ASGT11T3**	90° 10.6 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous	12 (1) 16 (2) 18 (2) 20 (2,3) 21 (2,3) 25 (2,3,4) 26 (2,3,4) 30 (2,3,4) 32 (2,3,5) 33 (2,3,5) 40 (2,3,4,6) 50 (3,5,7) Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole	9-60
Highly productive shoulder milling	TUNGREC TUNGALOY **EPO18** 	AOMT1805** AOGT1805**	90° 16.7 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous, S Superalloys	25 (2) 28 (2) 30 (2,3) 32 (2,3) 35 (2,3) 40 (2,3,4) 50 (3,5) 63 (3,4,6) Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole	9-62
High productivity shoulder milling	TAC Mill TECMILL TUNGALOY **EPM11** 	LMMU1107**	90° 9.7 mm; P Steel, M Stainless, K Cast Iron, S Superalloys	32 (3) 40 (4) 50 (4) Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling	9-67
Highly efficient roughing milling	TUNGQUAD TUNGALOY **EPD05** 	SDMT0502** SDHT0502**	90° 4 mm; P Steel, M Stainless, K Cast Iron, N Non-ferrous	12 (2) 16 (3) 20 (4) 25 (5) 32 (6) 40 (8) Face Milling, Shoulder Milling, Slotting	9-70

Shoulder Milling

Application	Series and type	Applicable inserts	Cutting edge angle Max.depth of cut Applications	Small — Tool diameter (mm) / Number of inserts — Large	Page
Small diameter multi-functional cutter for high precision milling	HYBRIDTACMILL **EPH11** **EPH13** **EPH18** 	XHGR1102** XHGR1302** XHGR18T2**	90° 10, 12, 16 mm P Steel M Stainless K Cast Iron N Non-ferrous	10 (2) 14 (2) 20 (3) 25 (4) 12 (2) 16 (2,3) 18 (3) 21 (3) 26 (4) 13 (2) 17 (3) Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole	9-74
Small diameter, multi-functional type	HYBRIDTACMILL **EVH** 	Central insert XVGT06H2**C-** XVGT07X3**C-** XVGT09X4**C-** Peripheral insert XVGT06H2**P-** XVGT07X3**P-** XVGT09T4**P-**	90° 3, 3.5, 4.5 mm P Steel M Stainless K Cast Iron N Non-ferrous	10 (2) 16 (2) 12 (2) Shoulder Milling, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole, Drilling	9-78
Roughing milling	TUNGREC **ELS11** 	ASMT11T3** ASGT11T3**	90° ~ 40 mm P Steel M Stainless K Cast Iron N Non-ferrous S Superalloys	25 (2/6) 32 (3/12) 40 (3/12) Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling	9-61
Roughing milling	TUNGQUAD **ELD05** 	SDMT0502** SDHT0502**	90° 20.3 mm 24.2 mm P Steel M Stainless K Cast Iron N Non-ferrous	20 (2/10) 25 (3/18) Shoulder Milling, Slotting	9-70
Multi-functional milling of steels and cast irons	TAC Flash Mill with center cutting edge **EVX** 	XXMU08T2** XXMU10H3** XXMU12X4** XXMU16X5**	90° ~ 15 mm P Steel M Stainless K Cast Iron	16 (2) 20 (2) 25 (2) 32 (2) Shoulder Milling, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole, Drilling	9-100
Multi-functional milling of various work materials	TAC Flash Endmill **ESD10** 	GDMT10H3** GDGT10H3**	90° 9, 15 mm P Steel M Stainless K Cast Iron N Non-ferrous	20 (1) 25 (2) 32 (2) Shoulder Milling, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole	9-116
General purpose, multi-functional type for precision square shoulder milling	Top-Feed Mill AD **EPS17** 	ASMT1705** ASGT1705**	90° P Steel M Stainless K Cast Iron N Non-ferrous	25 (2) 32 (2,3) 40 (2,3 4) 50 (3,5) 63 (3,4 6) 26 (2) 30 (2,3) 33 (2,3) Shoulder Milling, Radius Milling, Slotting, Slotting, Side Milling, Pocketing, Ramping, Plunging, Enlarging Hole	9-88
Heavy duty rough milling of steels and cast irons	TAC roughing Endmill **ELP-A** 	APMT0703** APMT09T3** APMT1204** ADMT1203** ADMT17T3** ADMT2104**	90° ~ 44 mm P Steel M Stainless K Cast Iron	25 (2) 32 (2) 40 (2) Deep Shoulder Milling, Slotting, Side Milling	9-121

TAC Mill Overview

Shank types

High Feed Milling

Application	Series and type	Applicable inserts	Cutting edge angle Max.depth of cut Applications	Small — Tool diameter (mm) Number of inserts — Large	Page
Multi-functional cutter for super high feed milling	DOFEED SERIES **EXN03** **EXN06** 	LNMU0303**** LNMU06X5****	17° 1 mm P Steel, M Stainless, K Cast Iron, S Hard Materials, H Superalloys	10 15 20 25 30 35 40 50 60 63 80 16 (2) 20 (3,4) 25 (4,5) 30 (4,5) 18 (2) 22 (3,4) 28 (4,5) 32 (2,5,6) Face Milling, Slotting, Pocketing, Ramping, Plunging, Enlarging Hole	9-92
Small-diameter, multi-functional type for super high feed milling	HYBRIDTACMILL **EXH** 	Central insert XXGT06H2**C-** XXGT07X3**C-** XXGT09X4**C-** Peripheral insert XXGT06H2**P-** XXGT07X3**P-** XXGT09X4**P-**	20° 0.6, 0.8 mm P Steel, M Stainless, K Cast Iron, N Non-ferrous	10 (2) 16 (2) 12 (2) Face Milling, Slotting, Pocketing, Ramping, Plunging, Enlarging Hole, Drilling	9-100
For super high feed, three-dimensional machining	MILLFEED **EXP** 	WPMW05H3** WPMT05H3** WPMW06X4** WPMT06X4** WPMT0806** WPMT0907**	20°, 10° 1.5, 3 mm P Steel, M Stainless, K Cast Iron, H Hard Materials	20 (2) 25 (2) 26 (2) 21 (2) 32 (2,3) 33 (2,3) 40 (2,3) 50 (2,3 4) Face Milling, Pocketing, Ramping, Enlarging Hole	9-102

Radial Milling

Application	Series and type	Applicable inserts	Cutting edge angle Max.depth of cut Applications	Small — Tool diameter (mm) Number of inserts — Large	Page
Die engraving of various work materials	ROUNDSPLIT **ERC12** **ERC16** 	RCMT1204** RCMT1606**	R 6, 8 mm P Steel, M Stainless, K Cast Iron, N Non-ferrous, S Superalloys	10 12 16 18 20 25 30 35 40 50 63 32 (3) 33 (3) 40 (2,4) 50 (3,5) Face Milling, Radius Milling, Slotting, Pocketing, Ramping, Profiling, Enlarging Hole	9-107
Three-dimensional machining and die engraving	Small diameter, TAC Flash radius mill **HWD** 	RDMW0501M0 RDMW0702M0 RDMW1003M0	R ~ 5 mm P Steel, K Cast Iron, H Hard Materials	10 (2) 12 (3) 15 (3,4) 20 (2,4 5) 25 (3,5 6) Face Milling, Radius Milling, Slotting, Pocketing, Ramping, Profiling, Enlarging Hole	9-126
For difficult to cut materials such as super alloys and hard materials	TAC radius mill **ERF6000** 	RFEN2004**	R 10 mm S Superalloys, M Stainless, H Hard Materials	50 (3) 63 (4) Face Milling, Radius Milling	9-112

Ball Endmills

Application	Series and type	Applicable inserts	Corner R Max.depth of cut Applications	Small — Tool diameter (mm) Number of inserts — Large	Page
Finishing to medium finishing of steels and cast irons	TAC ball Endmill **TBN1000** 	ZNCA1002** ZNCA1203** ZNCA1603** ZNCA2004** ZNCA2505** ZNCA3005** ZNMM2004** ZNMM2505** ZNMM3005**	R ~ 15 mm; K Cast Iron, P Steel	10 12 16 20 25 30 (1 1 1 1 1 1); Pocketing Ramping Profiling	9-120
Die engraving and medium finishing of steels and cast irons	TAC Flash ball Endmill **EBP** 	Radius edge inserts ZPET2004-MJ ZPET2505-MJ ZPET3006-MJ Peripheral inserts DCMW070204TN DCMW11T304TN	R ~ 15 mm; P Steel, H Hard Materials, K Cast Iron	20 25 30 (2 2 2); Radius Milling Pocketing Ramping Profiling	9-118
Rough engraving of steel and cast iron dies	TAC Flash ball Endmill (Large diameter type) **EBD** 	Radius edge inserts ZDMT4005-MJ ZDMT5006-MJ Peripheral inserts SCMT09T308-23 SCMT120408-23	R ~ 25 mm; P Steel, H Hard Materials, K Cast Iron	40 50 (4+3 4+3); Radius Milling Pocketing Ramping Profiling	9-119

Special Purpose TAC Mills

Application	Series and type	Applicable inserts	Cutting edge angle Max.depth of cut Applications	Small — Tool diameter (mm) Number of inserts — Large	Page
Chamfering	TAC Flash chamfering mill **ECC31** 	XCET310404ER	45° Chamfering, 30° Chamfering, 60° Chamfering; P Steel, M Stainless, K Cast Iron	30° 5 ~ 52 (Effective diameter) 1 (No. of inserts) 45° 5 ~ 42 (Effective diameter) 2 (No. of inserts) 60° 5 ~ 33 (Effective diameter) 2 (No. of inserts) Cham-fering Cham-fering	9-127
Counter boring	TAC counter boring cutter **TCB** 	SPMP831DS SPMP042ERD SPMM322ERD SPMM432ERD	90°; P Steel, M Stainless, K Cast Iron	14 17.5 20 23 26 29 32 35 39 43 (1 2 2 2 2 2 2 2 2 2); Cham-fering	9-129
Slotting	TECSLOT **ASN** 	LMEU1008** ZNEN-MJ LMEU1208** ZNEN-MJ LMEU1509** ZNEN-MJ	90°; P Steel, M Stainless, K Cast Iron, S Superalloys	100 125 160 200 250 (5/10 5/10 6/12 7/14 8/16 6/12 7/14 8/16 9/18); Slotting	9-134
Slotting	TECSLOT **TSN** 	LMEU1008** ZNEN-MJ LMEU1208** ZNEN-MJ LMEU1509** ZNEN-MJ	90°; P Steel, M Stainless, K Cast Iron, S Superalloys	100 125 160 200 250 (5/10 5/10 6/12 7/14 8/16 6/12 7/14 8/16 9/18); Slotting	9-134
Parting off and slotting	TAC side cutter **SVN4000** 	SNEN12T2** SNEN1233**	90°; P Steel, K Cast Iron, N Non-ferrous	100 125 160 200 (2,5 3,6 4,8 5,10); Slotting	9-137

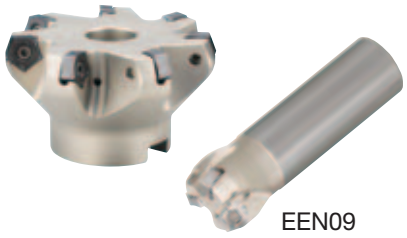
DOPENT

Diameter ø32 ~ 160 mm | 70° 6.4mm | Air Hole | P Steel | M Stainless | K Cast Iron | N Non-ferrous

Face Milling

Highly productive face milling of various work materials

TEN09



EEN09

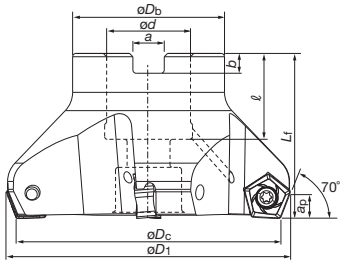


Fig. A

Max. *ap*: 6.4 mm

Rake angle: A.R. −6° R.R. −2° ~ −10°

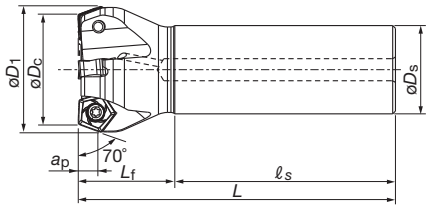


Fig. B

TEN09 (Fig. A: bore type)

Pitch	Cat. No.	Stock	No. of Inserts	Dimensions (mm) ØDc	ØD1	ØDb	Ød	ℓ	Lf	b	a	Weight (kg)	Air hole	Center bolt	Mounting details
Close	TEN09R050M22.0E04	●	4	50	56	41	22	20	40	6.3	10.4	0.3	with	CM10x30H	9-138Ⓐ
	TEN09R063M22.0E06	●	6	63	69	41	22	20	40	6.3	10.4	0.5	with	CM10x30H	
	TEN09R080M27.0E07	●	7	80	86	50	27	22	50	7	12.4	0.9	with	CM12x30H	
	TEN09R100M32.0E08	●	8	100	106	60	32	28.5	50	8	14.4	1.3	with	TMBA-M16H	9-138Ⓑ
	*TEN09R125M40.0E10	●	10	125	131	71	40	32	63	9	16.4	2.3	with	TMBA-M20H	
	*TEN09R160M40.0E12	●	12	160	166	100	40	29	63	9	16.4	4.0	without	-	9-138Ⓒ
Extra close	TEN09R050M22.0E06	●	6	50	56	41	22	20	40	6.3	10.4	0.3	with	CM10x30H	9-138Ⓐ
	TEN09R063M22.0E08	●	8	63	69	41	22	20	40	6.3	10.4	0.5	with	CM10x30H	
	TEN09R080M27.0E10	●	10	80	86	50	27	22	50	7	12.4	1.0	with	CM12x30H	
	TEN09R100M32.0E12	●	12	100	106	60	32	28.5	50	8	14.4	1.4	with	TMBA-M16H	9-138Ⓑ
	TEN09R125M40.0E16	●	16	125	131	71	40	32	63	9	16.4	2.5	with	TMBA-M20H	
	TEN09R160M40.0E20	●	20	160	166	100	40	29	63	9	16.4	4.3	without	-	9-138Ⓒ

* Cat. No. of torx bit is different from other items. (Please see the above table 1)

EEN09 (Fig. B: shank type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm) ØDc	ØD1	ØDs	ℓ s	Lf	L	Weight (kg)	Air hole	Parts Clamping screw	Wrench (Substitution)
EEN09R032M32.0-03	●	3	32	38	32	80	35	115	0.7	with	CSTR-4L100	T-15DB (T-15D)
EEN09R040M32.0-04	●	4	40	46	32	80	35	115	0.7	with		
EEN09R050M32.0-04	●	4	50	56	32	80	40	120	0.9	with		
EEN09R063M32.0-06	●	6	63	69	32	80	40	120	1.0	with		
EEN09R080M32.0-07	●	7	80	86	32	80	40	120	1.3	with		

Inserts

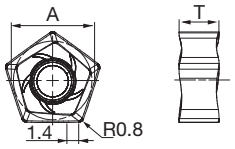


Fig. 1 **MJ** (General)

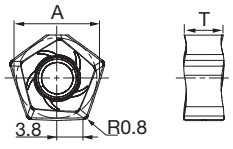


Fig. 2 **W** (Wiper)

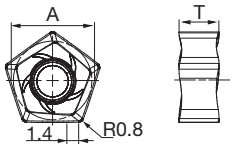


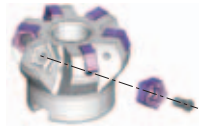
Fig. 3 **AJ** (For Aluminium)

Cat. No.	Accuracy	Honing	Stock Coated grades AH725	AH120	AH140	T3130	T1115	Cermet NS740	Carbide TH10	Dimensions (mm) A	T	Shape
PNCU0905GNER-MJ	C	with	●	●	●	●	●	●		12.2	5.9	Fig. 1
PNCU0905GNER-W	C	with	●							12.2	5.9	Fig. 2
PNCU0905GNFR-AJ	C	without							●	12.2	6.3	Fig. 3

● : Stocked items.

Relating pages | Technical Reference (15–1)

Bore Type Components



Description		Replacement Parts Cat. No.	
Applicable cutter		TEN09R...	*TEN09R...
Clamping screw		CSTR-4L100	
Wrench	Torx bit	BT15S	BT15M
	Grip	H-TBS	
Mono block type substitution wrench		T-15D	

Standard cutting conditions

Work materials	Hardness HB	Selection criteria	Recommended grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Low carbon steels (C15E etc.)	~ 200	First choice	**AH725**	100 - 250	0.1 - 0.6
		Priority on impact resistance	**AH140**	80 - 180	
		Priority on wear resistance	**T3130**	120 - 250	
		Priority on surface quality	**NS740**	100 - 250	0.1 - 0.5
High carbon steels (C45, C55 etc.)	200 ~ 300	First choice	**AH725**	100 - 230	0.1 - 0.5
		Priority on impact resistance	**AH140**	80 - 180	
		Priority on wear resistance	**T3130**	120 - 250	
		Priority on surface quality	**NS740**	100 - 250	0.1 - 0.4
Alloyed steels (42CrMo4, 17Cr3 etc.)	150 ~ 300	First choice	**AH725**	100 - 230	0.1 - 0.5
		Priority on impact resistance	**AH140**	80 - 150	
		Priority on wear resistance	**T3130**	120 - 250	
		Priority on surface quality	**NS740**	100 - 250	0.1 - 0.4
Tool steels (X155CrVMo12 1 etc.)	~ 300	First choice	**AH725**	100 - 180	0.1 - 0.5
		Priority on impact resistance	**AH140**	80 - 120	
		Priority on wear resistance	**T3130**	100 - 180	
Stainless steels (X5CrNi18-9 etc.)	-	First choice	**AH140**	90 - 180	0.1 - 0.45
Grey cast irons	-	First choice	**AH120**	140 - 250	0.1 - 0.6
		Priority on wear resistance	**T1115**	150 - 280	
Ductile cast irons	-	First choice	**AH120**	100 - 200	0.1 - 0.6
		Priority on wear resistance	**T1115**	120 - 220	
Aluminium alloys (Si < 13%)	-	First choice	**TH10**	500 - 1500	0.1 - 0.5
Aluminium alloys (Si ≥ 13%)					

Notes:
· Remove excessive chip accumulation with an air blast.
· When chips stick to the cutting edges (aluminium machining), use a water soluble coolant.
· When cutting an interrupted surface or a casting skin, the feed (*fz*) should be reduced below the recommended value shown in the above table.
· Cutting conditions are limited by machine power, workpiece rigidity, and spindle output. When the cutting width, depth or overhang length is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

Installation of the extra close pitch cutter inserts

- The extra close pitch cutter has a slanted screw.
- Locate insert and then fasten the screw. (Fig. A)
- Appropriate torque is 3.5 N·m.
- After fastening the screw, please ensure there is no space between the cutter body and insert. (Fig. B)

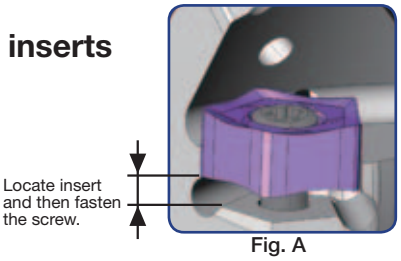


Fig. A

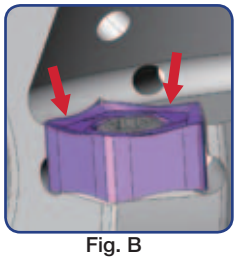


Fig. B

Notes on use of wiper insert

- To achieve a good surface finish, a wiper insert is recommended. (PNCU0905GNER-W)
- When using the wiper insert, install the insert as shown in Fig. C. Ensure that the groove is at the front as shown in Fig. D.
- The wiper insert has two wiping corners. (Fig. D)
- Do not use the other corners. It may break the tool body.

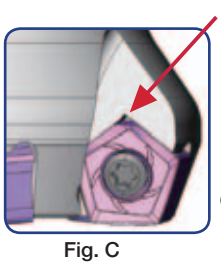


Fig. C

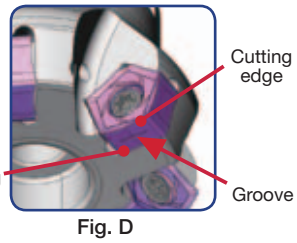
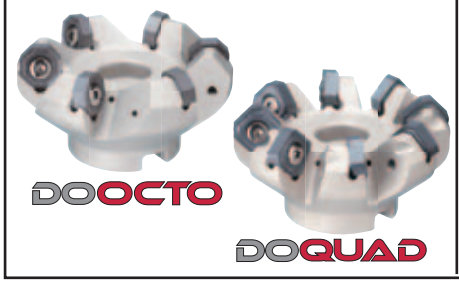


Fig. D

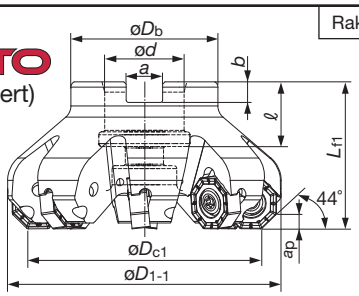
Face Milling

Screw on type



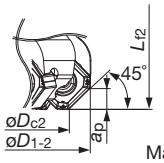
Rake angle: A.R. −6° R.R. +15.5°

DOOCTO (Octagonal insert)



Max. ap: 4.7 mm

DOQUAD (Square insert)



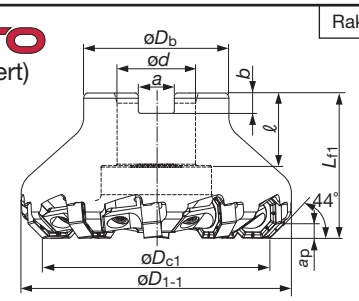
Max. ap: 7.5 mm

Pitch	Cat. No.	Stock	No. of Inserts	Dimensions (mm) øDc1	øDc2	øD1-1	øD1-2	øDb	ød	ℓ	Lf1	Lf2	b	a	Weight (kg)	Air hole	Center bolt	Mounting details
Coarse	TAN07R063M22.0E05	●	5	63	60.3	76	76.3	41	22	20	40	41.4	6.3	10.4	0.5	with	CM10x30H	9-138Ⓐ
	TAN07R080M27.0E06	●	6	80	77.3	93	93.3	50	27	22	50	51.4	7	12.4	1.0	with	CM12x30H	9-138Ⓐ
	TAN07R100M32.0E07	●	7	100	97.3	113	113.3	60	32	28.5	50	51.4	8	14.4	1.5	with	TMBA-M16H	9-138Ⓑ
	TAN07R125M40.0E08	●	8	125	122.3	138	138.3	71	40	29	63	64.4	9	16.4	2.5	with	TMBA-M20H	9-138Ⓑ
	TAN07R160M40.0E10	●	10	160	157.3	173	173.3	100	40	29	63	64.4	9	16.4	4.0	without	-	9-138Ⓒ
	TAN07R200M60.0E12	●	12	200	197.3	213	213.3	135	60	39	63	64.4	14	25.7	6.5	without	-	9-138Ⓒ
NEW	TAN07R250M60.0E15	★	15	250	247.3	263	263.3	130	60	39	63	64.4	14	25.7	9.0	without	-	9-138Ⓒ
NEW	TAN07R315M60.0E18	★	18	315	312.3	328	328.3	220	60	39	80	81.4	14	25.7	18.0	without	-	9-138Ⓒ
Close	TAN07R063M22.0E06	●	6	63	60.3	76	76.3	41	22	20	40	41.4	6.3	10.4	0.5	with	CM10x30H	9-138Ⓐ
	TAN07R080M27.0E08	●	8	80	77.3	93	93.3	50	27	22	50	51.4	7	12.4	1.0	with	CM12x30H	9-138Ⓐ
	TAN07R100M32.0E10	●	10	100	97.3	113	113.3	60	32	28.5	50	51.4	8	14.4	1.5	with	TMBA-M16H	9-138Ⓑ
	TAN07R125M40.0E12	●	12	125	122.3	138	138.3	71	40	29	63	64.4	9	16.4	2.5	with	TMBA-M20H	9-138Ⓑ
	TAN07R160M40.0E15	●	15	160	157.3	173	173.3	100	40	29	63	64.4	9	16.4	4.0	without	-	9-138Ⓒ
	TAN07R200M60.0E18	●	18	200	197.3	213	213.3	135	60	39	63	64.4	14	25.7	6.5	without	-	9-138Ⓒ
NEW	TAN07R250M60.0E21	★	21	250	247.3	263	263.3	130	60	39	63	64.4	14	25.7	9.0	without	-	9-138Ⓒ
NEW	TAN07R315M60.0E24	★	24	315	312.3	328	328.3	220	60	39	80	81.4	14	25.7	18.0	without	-	9-138Ⓒ

Wedge type

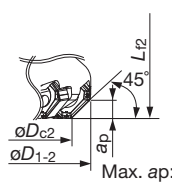
Rake angle: A.R. −6° R.R. +15.5°

DOOCTO (Octagonal insert)



Max. ap: 4.7 mm

DOQUAD (Square insert)



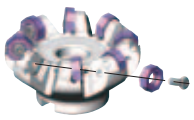
Max. ap: 7.5 mm

Pitch	Cat. No.	Stock	No. of Inserts	Dimensions (mm) øDc1	øDc2	øD1c1-	øD2c1-	øDb	ød	ℓ	Lf1	Lf2	b	a	Weight (kg)	Air hole	Mounting details
Extra close	TAN07R063M22.0E08W	●	8	63	60.3	76	76.3	41	22	20	40	41.4	6.3	10.4	0.6	without	9-138Ⓑ
	TAN07R080M27.0E10W	●	10	80	77.3	93	93.3	50	27	25	50	51.4	7	12.4	1.1	without	9-138Ⓑ
	TAN07R100M32.0E14W	●	14	100	97.3	113	113.3	60	32	28.5	50	51.4	8	14.4	1.6	without	9-138Ⓑ
	TAN07R125M40.0E18W	●	18	125	122.3	138	138.3	71	40	29	63	64.4	9	16.4	2.5	without	9-138Ⓑ
	TAN07R160M40.0E22W	●	22	160	157.3	173	173.3	100	40	29	63	64.4	9	16.4	3.6	without	9-138Ⓒ
	TAN07R200M60.0E28W	●	28	200	197.3	213	213.3	135	60	39	63	64.4	14	25.7	5.8	without	9-138Ⓒ

Replacement parts

● : Stocked items.

Screw on type



	Description	Cat. No.	
	Applicable cutter	TAN07R...	*TAN07R...
	Clamping screw	CSPE-5L150	
Wrench	Torx bit	BLD IP20/S7	BLD IP20/M7
Wrench	Grip	H-TB	H-TB
	Mono block type substitution wrench	IP-20T	

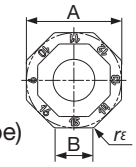
Wedge type

	Description	Cat. No.
	Applicable cutter	TAN07R...W
	Clamping screw	DS-6P
	Wedge	CL ARM-10-TUNG1
Wrench	Torx bit	BLD IP15/S7
Wrench	Grip	H-TBS

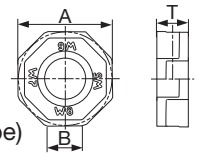
Inserts

Octagonal insert DOOCTO

MJ, ML
(16 corner type)



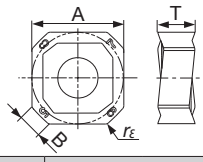
W
(Wiper, 8 corner type)



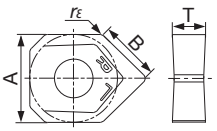
Cat. No.	Accuracy	Honing	Stocked grades NEW				Dimensions (mm)			
			AH120	AH140	AH725	T1115	A	B	T	r_ε
ONMU0705ANPN-MJ	M	with		●	●		17.3	7.2	6.2	0.8
ONHU0705ANPN-MJ	H	with		●	●		17.3	7.2	6.2	0.8
ONMU0705ANPN-ML	M	with	●			★	17.3	7.2	6.2	0.8
ONHU0705ANTN-ML	H	with	●	●	●	★	17.3	7.2	6.2	0.8
ONHU0705ANPR-W	H	with	●				17.5	6.4	5.8	-

Square insert DOQUAD

MJ, ML
(8 corner type)



W
(Wiper, 2 corner type)



Cat. No.	Accuracy	Honing	Stocked grades NEW				Dimensions (mm)			
			AH120	AH140	AH725	T1115	A	B	T	r_ε
SNMU1706ANPR-MJ	M	with		●	●		17.3	4.4	6.98	0.8
SNHU1706ANPR-MJ	H	with		●	●		17.3	4.4	6.98	0.8
SNMU1706ANTR-ML	M	with	●			★	17.3	4.4	6.98	0.8
SNHU1706ANTR-ML	H	with	●			★	17.3	4.4	6.98	0.8
SNHU1706ANFN-W	H	without	●				17.3	11	6.5	0.4

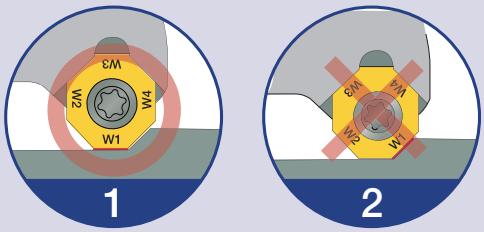
Standard cutting conditions

● : Stocked items
★ : Available from 2013

Work material	Hardness HB	Priority	Recommended Grades	Recommended Chipbreaker	Cutting Speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t)
Low carbon steels C15E etc.	~ 200	First choice	**AH725**	**MJ**	100 - 250	0.2 - 0.5
		For impact resistance	**AH140**	**MJ**	80 - 180	
High carbon steels C45E, C55E etc.	200 ~ 300	First choice	**AH725**	**MJ**	100 - 230	0.2 - 0.4
		For impact resistance	**AH140**	**MJ**	80 - 180	
Alloy steels 42CrMo4, 17Cr3 etc.	150 ~ 300	First choice	**AH725**	**MJ**	100 - 230	0.2 - 0.4
		For impact resistance	**AH140**	**MJ**	80 - 150	
Tool steels X153CrMoV12, HS6-6-2 etc.	~ 300	First choice	**AH725**	**MJ**	100 - 180	0.2 - 0.4
Grey cast irons GG25, GG30 etc.	150 ~ 250	First choice	**AH120**	**ML**	150 - 250	0.17 - 0.5
		For impact resistance	**AH725**	**MJ**	150 - 250	
		Priority on wear resistance	**T1115**	**ML**	180 - 300	
Ductile cast irons GGG40 etc.	150 ~ 250	First choice	**AH120**	**ML**	100 - 180	0.17 - 0.5
		For impact resistance	**AH725**	**MJ**	100 - 180	
		Priority on wear resistance	**T1115**	**ML**	120 - 200	

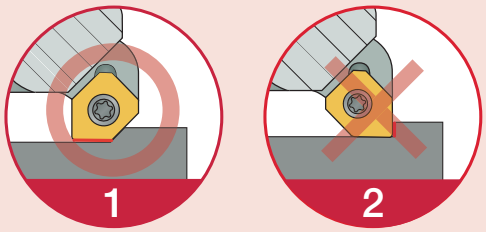
Attention for wiper inserts

DOOCTO



Just one wiper insert is needed in a cutter
Feed rate: f < 5.5 mm/rev

DOQUAD



Just one wiper insert is needed in a cutter
Feed rate: f < 9.5 mm/rev

TUNGMILL

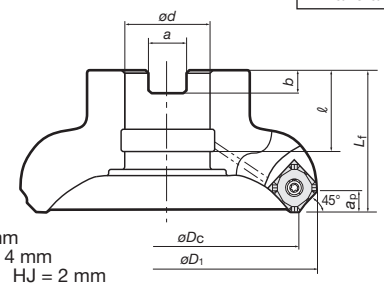
Diameter ø50 ~ 160 mm | 45° ~ 5mm | Air Hole | P Steel | M Stainless | K Cast Iron | N Non-ferrous

Face Milling | Chamfering

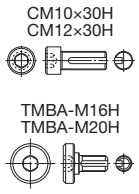
For general purpose milling of general steels, stainless steels, cast irons, and non-ferrous metals

TAW13

Rake angle: A.R. +17° ~ +20° R.R. −16° ~ −11°



Max. ap:
Flat top = 5 mm
MJ, MS, AJ = 4 mm
ML = 2.5 mm HJ = 2 mm



Centre bolt

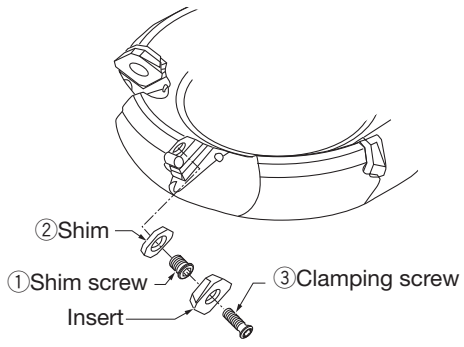
Right hand (R) shown.

TAW13 (Bore type)

Pitch	Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	øD1	ød	ℓ	Lf	b	a	Weight (kg)	Air hole	Cutter mounting bolts	Mounting details
Coarse	TAW13R050M22.0E04	●	4	50	63	22	20	40	6.3	10.4	0.4	With	CM10X30H	9-138Ⓐ
	TAW13R063M22.0E05	●	5	63	76						0.6			
	TAW13R080M27.0E06	●	6	80	94	27	22	50	7	12.4	1	With	CM12X30H	
	TAW13R100M32.0E07	●	7	100	114	32	28.5		8	14.4	1.5	With	TMBA-M16H	9-138Ⓑ
	TAW13R125M40.0E08	●	8	125	139	40	32	63	9	16.4	2.7	With	TMBA-M20H	
	TAW13R160M40.0E10	●	10	160	174		29				4.4	Without	–	
Close	TAW13R050M22.0E05	●	5	50	63	22	20	40	6.3	10.4	0.4	With	CM10X30H	9-138Ⓐ
	TAW13R063M22.0E06	●	6	63	76						0.6			
	TAW13R080M27.0E08	●	8	80	94	27	22	50	7	12.4	1	With	CM12X30H	
	TAW13R100M32.0E10	●	10	100	114	32	28.5		8	14.4	1.5	With	TMBA-M16H	9-138Ⓑ
	TAW13R125M40.0E12	●	12	125	139	40	32	63	9	16.4	3	With	TMBA-M20H	
	TAW13R160M40.0E16	●	16	160	174		29				4.4	Without	–	

● : Stocked items.

Replacement parts



No	Descriptions	Cat. No.
①	Shim screw	DTS5-3.5SS
②	Shim	FSSA1102
③	Clamping screw	CSPB-3.5
–	Wrench	P-3.5
–	Wrench	IP-15D

Inserts

SWMT13T3AFPR-MJ

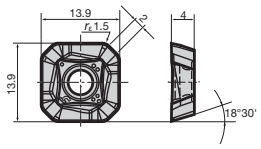


Fig. 1

SWMT13T3AFER-ML

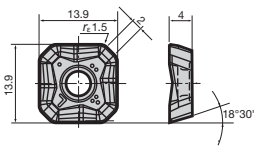


Fig. 2

SWMW13T3AFTR

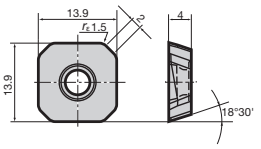


Fig. 3

SWMT13T3AFPR-HJ

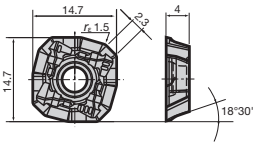


Fig. 4

SWMT13T3AFPR-MS

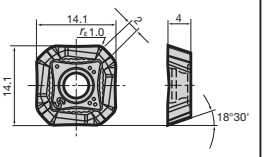


Fig. 5

SWGT13T3AFFR-AJ

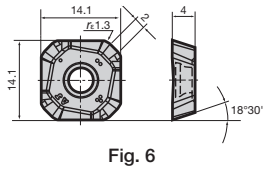


Fig. 6

SWGT13T3AFPR-MJ

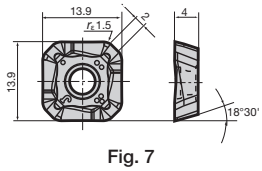


Fig. 7

WWCW13T3AFE/FR-WS

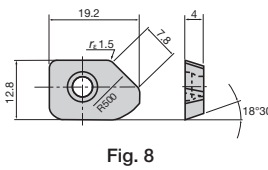


Fig. 8

WWCW13T3AFFR-WD

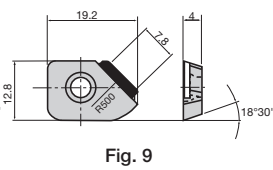


Fig. 9

Type	Cat. No.	Accuracy	Honing	Grades										Figure
				Coated						DLC coated	Cermet	Carbide	T-DIA	
				T3130	T1115	AH120	AH130	AH140	GH110	DS1100	NS740	KS05F	DX140	
General	SWMT13T3AFPR-MJ	M	With	●	●	●	●	●			●			Fig. 1
	SWMT13T3AFER-ML					●								Fig. 2
	SWMW13T3AFTR			●	●	●					●			Fig. 3
	SWMT13T3AFPR-HJ			●	●	●	●	●						Fig. 4
	SWMT13T3AFPR-MS						●	●						Fig. 5
	SWGT13T3AFFR-AJ	G	Without							●		●		Fig. 6
	SWGT13T3AFPR-MJ		With			●					●			Fig. 7
Wiper	WWCW13T3AFER-WS	C							●		●			Fig. 8
	WWCW13T3AFFR-WS		Without							●		●		
	WWCW13T3AFFR-WD												●	Fig. 9

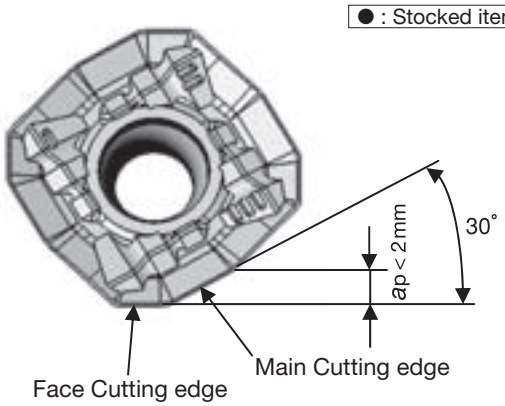
"DX140" : Packing Quantity = 1 pcs.

● : Stocked items.

Notes for use of HJ-type inserts

HJ-type inserts can be used for high feed machining.
When using the insert, care should be taken with the following:

- The maximum depth of cut is *ap* = 2 mm. Select feeds within the above value.
- Do not use the HJ-type inserts with other types (such as MJ- and MS-types) in the same body.
- The outer shape of the HJ-type insert is different from those of other types (such as MJ- and MS-types), but the insert can be held in the same insert pocket.



Notes on use of wiper insert

- When requiring good surface finishes, use of a wiper insert (WWCW13T3AF_ R-W_) is recommended. In general, installing one wiper insert delivers superior surface finishes.
- When using the wiper insert, install the insert as shown in Fig. 1. If the insert is installed as shown in Fig. 2, breakage of the insert is inevitable and normal surface finish can not be obtained.
- The wiper insert must not be used together with HJ-type inserts

Fig. A

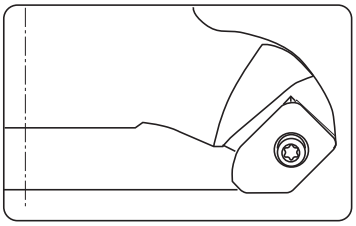
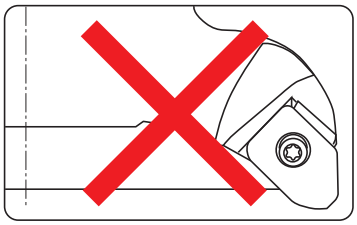


Fig. B



- The wiper insert has one wiping corner.
- The peripheral cutting edge of the wiper insert is retracted from the edge of the normal inserts. Therefore, the feed per tooth (*fz* mm/t) of the normal insert following the wiper insert is double that of other inserts.
- When using the wiper insert, depth of cut (*ap*) less than 1 mm is recommended.

Standard cutting conditions

Work materials	Priority	Grades	Cutting speed v_C (m/min)	Roughing (Depth of cut: > 1.0 mm) Feed per tooth: f_Z (mm/t)					
				MJ	ML	HJ	MS	Flat	AJ
Mild and low carbon steels (St37, etc.) < 180 HB	First choice	AH120	100 - 270	0.05 - 0.3	0.05 - 0.25	0.2 - 0.6	-	0.05 - 0.3	-
	Priority on wear resistance	T3130	150 - 300	0.05 - 0.3	-	0.2 - 0.6	-	0.05 - 0.3	-
	Priority on impact resistance	AH130 AH140	80 - 180	0.05 - 0.3	-	-	0.1 - 0.25	-	-
	Priority on surface quality	NS740	100 - 300	0.05 - 0.23	-	-	-	0.05 - 0.23	-
Carbon and alloy steels (Ck45, 42CrMo4, etc.) < 300 HB	First choice	AH120	100 - 230	0.05 - 0.25	0.05 - 0.2	0.2 - 0.5	-	0.05 - 0.25	-
	Priority on wear resistance	T3130	150 - 280	0.05 - 0.25	-	0.2 - 0.5	-	0.05 - 0.25	-
	Priority on impact resistance	AH130 AH140	80 - 150	0.05 - 0.25	-	0.2 - 0.5	-	-	-
	Priority on surface quality	NS740	100 - 230	0.05 - 0.2	-	-	-	0.05 - 0.2	-
Die steels (X96CrMoV12, etc.) < 30 HRC	First choice	AH120	100 - 180	0.05 - 0.2	0.05 - 0.2	0.2 - 0.4	-	0.05 - 0.2	-
	Priority on wear resistance	T3130	100 - 180	0.05 - 0.2	-	0.2 - 0.4	-	0.05 - 0.2	-
Stainless steels (X5CrNi18-9, X5CrNiMo17-12-2 etc.) < 250 HB	First choice	AH130 AH140	80 - 200	0.1 - 0.25	-	0.2 - 0.5	0.1 - 0.2	-	-
	Priority on wear resistance	AH120	150 - 250	0.1 - 0.25	0.1 - 0.2	0.2 - 0.5	-	0.1 - 0.25	-
Grey cast irons (FC250, FC300 etc.)	First choice	T1115	180 - 300	0.05 - 0.25	-	0.2 - 0.6	-	0.05 - 0.25	-
	Priority on impact resistance	AH120	150 - 250	0.05 - 0.25	0.05 - 0.2	0.2 - 0.6	-	0.05 - 0.25	-
Ductile cast irons (FCD400, FCD600 etc.)	First choice	T1115	120 - 200	0.05 - 0.25	-	0.2 - 0.6	-	0.05 - 0.25	-
	Priority on impact resistance	AH120	100 - 180	0.05 - 0.25	0.05 - 0.2	0.2 - 0.6	-	0.05 - 0.25	-
Aluminium alloys (Si < 13 %)	-	DS1100 KS05F	300 - 1000	-	-	-	-	-	0.05 - 0.2
Aluminium alloys (Si ≥ 13%)	-	DS1100 KS05F	80 - 300	-	-	-	-	-	0.05 - 0.2
Copper alloys	-	DS1100 KS05F	200 - 500	-	-	-	-	-	0.05 - 0.2

Standard cutting conditions

Work materials	Priority	Grades	Cutting speed v_C (m/min)	Light cutting to finishing (Depth of cut: < 1.0 mm) Feed per tooth: f_Z (mm/t)					
				MJ	ML	HJ	MS	Flat	AJ
Mild and low carbon steels (St37, etc.) < 180 HB	First choice	AH120	100 - 270	0.05 - 0.25	0.05 - 0.2	0.2 - 0.6	-	0.05 - 0.25	-
	Priority on wear resistance	T3130	150 - 300	0.05 - 0.25	-	0.2 - 0.6	-	0.05 - 0.25	-
	Priority on impact resistance	AH130 AH140	80 - 180	0.05 - 0.25	-	-	0.1 - 0.2	-	-
	Priority on surface quality	NS740	100 - 300	0.05 - 0.2	-	-	-	0.05 - 0.2	-
Carbon and alloy steels (Ck45, 42CrMo4, etc.) < 300 HB	First choice	AH120	100 - 230	0.05 - 0.2	0.05 - 0.15	0.2 - 0.5	-	0.05 - 0.2	-
	Priority on wear resistance	T3130	150 - 280	0.05 - 0.2	-	0.2 - 0.5	-	0.05 - 0.2	-
	Priority on impact resistance	AH130 AH140	80 - 150	0.05 - 0.2	-	0.2 - 0.5	-	-	-
	Priority on surface quality	NS740	100 - 230	0.05 - 0.18	-	-	-	0.05 - 0.18	-
Die steels (X96CrMoV12, etc.) < 30 HRC	First choice	AH120	100 - 180	0.05 - 0.18	0.05 - 0.12	0.2 - 0.4	-	0.05 - 0.18	-
	Priority on wear resistance	T3130	100 - 180	0.05 - 0.18	-	0.2 - 0.4	-	0.05 - 0.18	-
Stainless steels (X5CrNi18-9, X5CrNiMo17-12-2 etc.) < 250 HB	First choice	AH130 AH140	80 - 200	0.1 - 0.2	-	0.2 - 0.5	0.1 - 0.18	-	-
	Priority on wear resistance	AH120	150 - 250	0.1 - 0.2	0.1 - 0.18	0.2 - 0.5	-	0.1 - 0.2	-
Grey cast irons (FC250, FC300 etc.)	First choice	T1115	180 - 300	0.1 - 0.2	-	0.2 - 0.6	-	0.1 - 0.2	-
	Priority on impact resistance	AH120	150 - 250	0.1 - 0.2	0.05 - 0.18	0.2 - 0.6	-	0.1 - 0.2	-
Ductile cast irons (FCD400, FCD600 etc.)	First choice	T1115	120 - 200	0.1 - 0.2	-	0.2 - 0.6	-	0.1 - 0.2	-
	Priority on impact resistance	AH120	100 - 180	0.1 - 0.2	0.05 - 0.18	0.2 - 0.6	-	0.1 - 0.2	-
Aluminium alloys (Si < 13 %)	-	DS1100 KS05F	300 - 1000	-	-	-	-	-	0.05 - 0.2
Aluminium alloys (Si ≥ 13%)	-	DS1100 KS05F	80 - 300	-	-	-	-	-	0.05 - 0.2
Copper alloys	-	DS1100 KS05F	200 - 500	-	-	-	-	-	0.05 - 0.2

Notes:
- When cutting at a large depth of cut or a large cutting width, the cutting speed (v_C) and feed (f_Z) should be set to the lower side of the values shown in the above table.
- Dry cutting (or air-blowing) is generally recommended. However, when chips tend to excessively adhere to the cutting edges when machining stainless steel, use a water soluble cutting fluid. In this case, use the AH140 grade at speeds lower than vc = 100 m/min.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.
- TAW13 type TAC mills cannot be used for axial-feed cutting such as ramping, plunging and drilling.

MEMO

TME4400I/B

Diameter ø63 ~ 160 mm

45° 4mm

P Steel M Stainless K Cast Iron N Non-ferrous

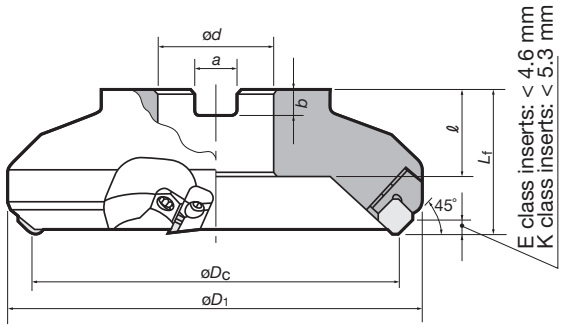
Face Milling Chamfering

For general purpose, high-feed milling of general steels, stainless steels, cast irons, and non-ferrous metals

TME4400I

TME4400B

Rake angle: TME: A.R. +24° R.R. −8°~−6°



Max. ap: 4 mm

Right hand (R) shown.

TME4400 I (Irregular pitch)

Cat. No.	Stock	No. of inserts	Dimensions (mm)							Weight (kg)	Mounting details
			øDc	øD1	ød	ℓ	Lf	b	a		
TME4403RIE	●	4	80	101.5	27	26	50	7	12.4	1.43	9-138Ⓑ
TME4404RIE	●	5	100	120.2	32	32	63	8	14.4	2.74	
TME4405RIE	●	6	125	145.2	40			9	16.4	4.04	
TME4406RIE	●	8	160	181.2		29				5.82	9-138Ⓒ

* Cutting edge height (F) is for when SEEN1203AG□N type inserts are used.

9 TAC Mills

TME4400B (Close pitch)

Cat. No.	Stock	No. of inserts	Dimensions (mm)							Weight (kg)	Mounting details
			øDc	øD1	ød	ℓ	Lf	b	a		
TME4463RBE	●	5	63	87.2	22	20	40	6.3	10.4	1.00	9-138Ⓐ
TME4403RBE	●	6	80	101.5	27	26	50	7	12.4	1.43	9-138Ⓑ
TME4404RBE	●	7	100	120.2	32	32	63	8	14.4	2.77	
TME4405RBE	●	9	125	145.2	40			9	16.4	4.06	
TME4406RBE	●	12	160	181.2		29				5.86	9-138Ⓒ

* Cutting edge height (F) is for when SEEN1203AG□N type inserts are used.

● : Stocked items.

Relating pages Technical Reference (15–1)

Inserts

SE□N1203AG□N (-T)

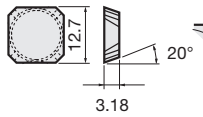


Fig. 1

SEKN 1203AG□N

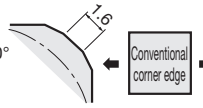


Fig. 2

SEE/CN 1203AG□N

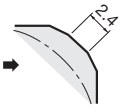


Fig. 3

SEEN 1203AGTNCR

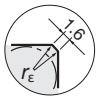


Fig. 4

SEEN 1203AGTNCR-14

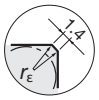


Fig. 5

SEKN 1203AG□N-T

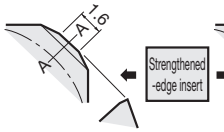


Fig. 6

SEEN 1203AG□N-T

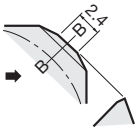
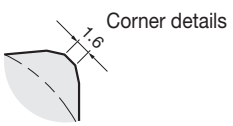


Fig. 7

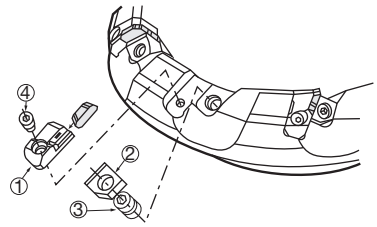
SEKR1203AGSR-MJ
SEKR1203AGPN-MS



Cat. No.	Corner details	Accuracy	Honing	Grades: Coated T3130	Coated T1115	Coated AH120	Coated AH130	Coated AH140	Coated AH330	Coated GH330	Cermet NS740	Uncoated UX30	Uncoated TH10	Figure	Application
SECN1203AGFN	Conventional insert	C	Without										●	Fig. 2	Light alloys
SEEN1203AGTN		E	With		●	●	●	●		●	●	●		Fig. 2	Steels, cast irons
SEEN1203AGFN			Without										●		Light alloys
SEEN1203AGTNCR			With	●		●	●	●	●					Fig. 3	Steels, cast irons
SEEN1203AGTNCR-14											●			Fig. 4	Steels
SEEN1203AGTN-T	Strengthened-edge insert			●							●	●		Fig. 6	Steels, cast irons
SEEN1203AGFN-T			Without												Light alloys
SEKN1203AGTN	Conventional insert	K	With	●		●	●	●	●	●	●	●		Fig. 1	Steels, cast irons
SEKN1203AGFN			Without												Light alloys
SEKN1203AGTNCR			With								●			Fig. 3	Steels, cast irons
SEKN1203AGTN-T	Strengthened-edge insert			●	●					●	●	●		Fig. 5	Steels, cast irons
SEKN1203AGFN-T			Without										●		Light alloys
SEKR1203AGSR-MJ	With 3-dimensional chipbreaker		With	●		●			●	●				Fig. 7	Steels, cast irons
SEKR1203AGPN-MS							●	●							Stainless steels

Notes:
- SE□N1203AG□N (conventional type) and SE□N1203AG□N-T (strengthened type) inserts should not be used together in the same cutter body.
- SE□N1203 (42) AF□N type inserts should not be used in the T/EME4400-type body.
- SECN1203AGFN type is exclusively used for milling aluminium alloys and other non-ferrous light alloys. Its top flat face is ground to mirror-like finish.
- The strengthened type inserts have greater edge strength to prevent edge chipping.

Replacement parts



No	Descriptions	Cat. No. TME4403RIE ~ 4405RIE TME4403RBE ~ 4405RBE	Cat. No. TME4406RIE TME4406RBE
①	Locator	LE444R	LE446R
②	Insert locking wedge	WF444R	WF444R
③	Wedge fixing screw	FDS-8S	FDS-8S
④	Locator fixing screw	CM4X0.7X14	CM4X0.7X14
–	T-handle wrench	TP-4	TP-4

Standard cutting conditions

Work materials	Grades	Roughing (Depth of cut: ap 1.5 ~ 4 mm) Cutting speed vc (m/min)	Roughing Feed per tooth fz (mm/t)	Finishing (Depth of cut: ap 0.3 ~ 0.7 mm) Cutting speed vc (m/min)	Finishing Feed per tooth fz (mm/t)
Mild steels Unhardened steels (< 180 HB)	**T3130**	150 ~ 300	0.1 ~ 0.28	180 ~ 300	0.1 ~ 0.3
	NS740	150 ~ 250	0.1 ~ 0.2	150 ~ 250	0.1 ~ 0.25
	AH120 • GH330	150 ~ 200	0.1 ~ 0.25		0.1 ~ 0.28
	AH330	150 ~ 280	0.1 ~ 0.28	180 ~ 300	0.1 ~ 0.3
	AH130•AH140•UX30	100 ~ 180		130 ~ 200	
Carbon steels Alloy steels (< 300 HB)	**T3130**	150 ~ 280	0.1 ~ 0.25	200 ~ 280	0.1 ~ 0.28
	NS740	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
	AH120 • GH330	100 ~ 200	0.1 ~ 0.23		0.1 ~ 0.25
	UX30	80 ~ 130	0.1 ~ 0.25	100 ~ 150	0.1 ~ 0.28
Die steels (< 30 HRC)	**AH120 • GH330**	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2
	UX30	80 ~ 130		80 ~ 130	
Stainless steels (< 250 HB)	**AH130 • AH140**	80 ~ 180	0.15 ~ 0.25	100 ~ 200	0.15 ~ 0.28
	AH120	150 ~ 230	0.15 ~ 0.23	200 ~ 250	0.15 ~ 0.25
	UX30	150 ~ 180		180 ~ 200	
Cast irons Ductile cast irons	**T1115**	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
	TH10 • UX30	80 ~ 130		80 ~ 130	
Aluminium alloys (Si < 13%)	**TH10**	200 ~ 1000	0.1 ~ 0.2	350 ~ 1000	0.1 ~ 0.3
Copper alloy	**TH10**	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25

Notes:
- Dry cutting is recommended for all materials except for aluminium alloys.
- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

● : Stocked items.

TMD5400RIE

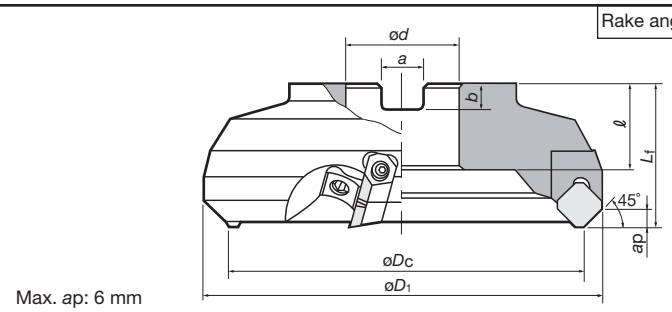
Diameter ø100 ~ 315 mm | 45° 6mm

P Steel | M Stainless | K Cast Iron | N Non-ferrous

Face Milling | Chamfering

For general purpose, large depth milling of general steels, stainless steels, cast irons, and non-ferrous metals

Rake angle: A.R. +15° R.R. −3°



Max. *ap*: 6 mm

Right hand (R) shown.

Cat. No.	Stock	No. of inserts	Dimensions (mm)							Weight (kg)	Mounting details
			øDc	*øD1*	*ød*	*ℓ*	*Lf*	*b*	*a*		
TMD5404RIE	●	4	100	118	32	32	63	8	14.4	2.5	9-138Ⓑ
TMD5405RIE	●	6	125	142	40			9	16.4	3.7	
TMD5406RIE	●		160	176		29				5.8	9-138Ⓒ
TMD5408RIE	●	8	200	216	60	38		14	25.7	9.0	
TMD5410RIE	●	10	250	265						16.3	
TMD5412RIE	●	12	315	330						25.2	9-138Ⓓ

Inserts

SDKN1504AE□N

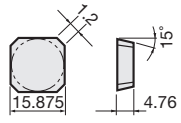


Fig. 1

SDEN1504AETN20 SDKN1504AETN16

Corner details

Fig. 2

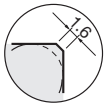


Fig. 3

SDKR1504AESR-MJ

(With 3-dimensional chipbreaker)

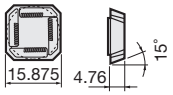


Fig. 4

SDEN1504AETNCR

Corner details

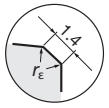


Fig. 5

SDKN1504AETNCR

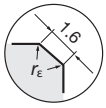


Fig. 6

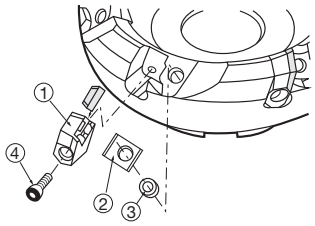
Right hand (R) shown.

Cat. No. (Inch)	ISO Cat. No. (Metric)	Accuracy	Honing	Grades									Figure
				Coated					Cermet		Uncoated		
				T3130	AH120	AH130	AH140	GH330	NS740	N308	UX30	TH10	
SDCN53ZTN	SDCN1504AETN	C	With						●	●			Fig. 1
SDEN53ZTN	SDEN1504AETN	E						●	●	●	●		
SDEN53ZTNCR	SDEN1504AETNCR								●				Fig. 5
SDEN53ZTN20	SDEN1504AETN-20			●									Fig. 2
SDEN53ZFN	SDEN1504AEFN		Without									●	Fig. 1
SDKN53ZTN	SDKN1504AETN	K	With		●	●	●	●	●	▲	●		
SDKN53ZTNCR	SDKN1504AETNCR								●				Fig. 6
SDKN53ZTN16	SDKN1504AETN-16			●									Fig. 3
SDKN53ZFN	SDKN1504AEFN		Without									●	Fig. 1
SDKR53ZSR-MJ	SDKR1504AESR-MJ		With	●				●					Fig. 4

Notes: Inserts can be used for former PS-series TAC mills.

● : Stocked items
▲ : Discontinued items

Replacement parts



No.	Part	Part Cat. No.
①	Locator	LD540R
②	Insert locking wedge	WF500R
③	Wedge fixing screw	FDS-8S
④	Locator fixing screw	CM4×0.7×20
–	T-handle wrench	TP-4

Notes:
- Dry cutting is recommended for all materials except for aluminium alloys.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

Standard cutting conditions

Work materials	Grades	Roughing (Depth of cut: *ap* 1.5 ~ 6 mm)		Finishing (Depth of cut: *ap* 0.3 ~ 0.7 mm)	
		Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)
Mild steels Unhardened steels (< 180 HB)	NS740 • N308	150 ~ 250	0.1 ~ 0.25	150 ~ 250	0.1 ~ 0.3
	AH120 • GH330		0.1 ~ 0.35		0.1 ~ 0.35
	T3130	150 ~ 300		180 ~ 300	
	UX30• AH130	100 ~ 180		130 ~ 200	
Carbon steels Alloy steels (< 300 HB)	T3130	150 ~ 280	0.1 ~ 0.35	180 ~ 280	0.1 ~ 0.35
	NS740 • N308	100 ~ 180	0.1 ~ 0.25	150 ~ 200	0.1 ~ 0.3
	AH120 • GH330	100 ~ 200	0.1 ~ 0.3		0.1 ~ 0.35
	UX30	80 ~ 130		100 ~ 150	
Die steels (< 30 HRC)	T3130 • AH120	100 ~ 150	0.1 ~ 0.2	100 ~ 150	0.1 ~ 0.2
	UX30	80 ~ 130		80 ~ 130	
Stainless steels (< 250 HB)	AH130 • AH140	80 ~ 180	0.15 ~ 0.3	100 ~ 200	0.15 ~ 0.33
	AH120 • GH330	150 ~ 230	0.15 ~ 0.3	200 ~ 250	0.15 ~ 0.3
	UX30	150 ~ 180		180 ~ 200	
Cast irons, Ductile cast irons	TH10 • UX30	80 ~ 130	0.1 ~ 0.3	80 ~ 130	0.1 ~ 0.3
Aluminium alloys (Si < 13%)	TH10	200 ~ 1000	0.05 ~ 0.3	350 ~ 1000	0.1 ~ 0.3
Copper alloys	TH10	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25

TGP4100RBAE

Diameter ø100 ~ 160 mm | 75° 7mm | K Cast Iron | P Steel | M Stainless

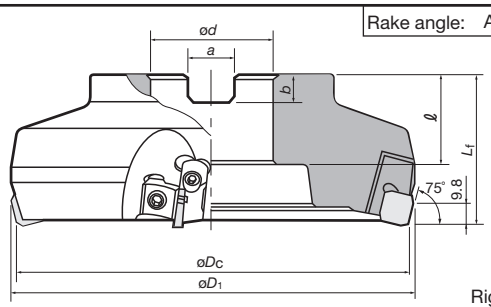
Face Milling

For general purpose, high-feed milling of cast irons, general steels and stainless steels,

TGP4100 I A

TGP4100BA

Rake angle: A.R. +7° R.R. +1°



Max. ap: 7 mm

Right hand (R) shown.

TGP4100BA (Close pitch)

Cat. No.	Stock	No. of inserts	Dimensions (mm)							Weight (kg)	Mounting details
			øDc	øD1	ød	ℓ	Lf	b	a		
TGP4104RBAE	●	8	100	108	32	25	63	8	14.4	2.4	9-138Ⓐ
TGP4105RBAE	●	10	125	132	40	32		9	16.4	3.6	9-138Ⓑ
TGP4106RBAE	●	12	160	167		29				5.8	9-138Ⓒ

Inserts

SP□N1203ED□R/L

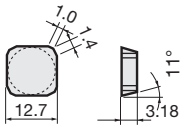


Fig. 1

SPEN120312□N Corner details

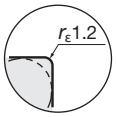


Fig. 2

SPKR1203EDSR-MJ (With 3-dimensional chipbreaker)

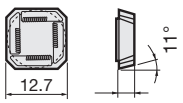
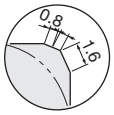


Fig. 3

Corner details



Wiper insert One-corner type

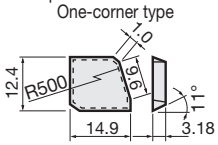
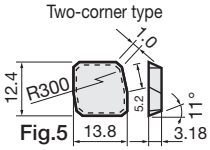


Fig. 4

Two-corner type



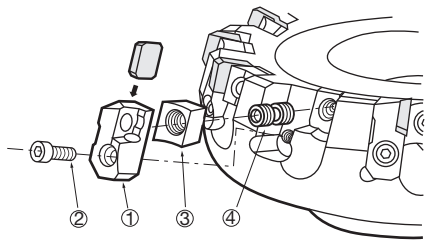
Right hand (R) shown.

Type	Cat. No.	ISO Cat. No. (Metric)	Accuracy	Honing	Grades: Coated T3130	Coated T1115	Coated AH120	Coated AH140	Coated GH330	Cermet NS740	Cermet N308	Uncoated UX30	Uncoated TH10	Ceramics FX105	Figure
Genaral	SPCN42STR	SPCN1203EDTR	C	With						●	●	●			Fig. 1
	SPCN42SFR	SPCN1203EDFR		Without									●		
	SPEN423TN*	SPEN120312TN	E	With	●					●		●			Fig. 2
	SPEN423FN*	SPEN120312FN		Without									●		
	SPEN42STR	SPEN1203EDTR		With						●					
	SPKN42STR	SPKN1203EDTR	K		●	●	●	●	●	●	●	●		●*	Fig. 1
	SPKN42STL	SPKN1203EDTL								●		●			
	SPKN42SFR	SPKN1203EDFR		Without									●		
	SPKN42SFL	SPKN1203EDFL											●		
	SPKR42SSR-MJ	SPKR1203EDSR-MJ		With	●	●			●						Fig. 3
	SPGN120312TN		G											●*	Fig. 2
Wiper	Two-corner WPAN42SFR	SPAX1203EDFR-W	A	Without									●		Fig. 5
	One-corner WPAN42SFRS	SPAX1203EDFR-WS											●		Fig. 4

Notes: * marked inserts should not be used with wiper inserts.
Inserts can be used for former PS-series TAC mills.

● : Stocked items.

Replacement parts



No	Descriptions	Cat. No.
①	Locator	LP413R
②	Locator fixing screw	CM4X0.7X14
③	Insert locking wedge	WF310R
④	Wedge fixing screw	FDS-8S
–	T-handle wrench	TP-4

Relating pages | Technical Reference (15–1)

TGP4100RBAE

Standard cutting conditions

Work materials	Grades	Roughing (Depth of cut: *ap* 1.5 ~ 4 mm)		Finishing (Depth of cut: *ap* 0.3 ~ 0.7 mm)	
		Cutting speed v_c (m/min)	Feed per tooth f_z (mm/t)	Cutting speed v_c (m/min)	Feed per tooth f_z (mm/t)
Cast irons Ductile cast irons	**T1115**	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.23
	TH10 • UX30	80 ~ 130		80 ~ 130	
	FX105	200 ~ 500		200 ~ 600	0.1 ~ 0.3
Mild steels Unhardened steels (< 180 HB)	**NS740 • N308**	150 ~ 250	0.1 ~ 0.18	150 ~ 250	0.1 ~ 0.23
	AH120 • GH330		0.1 ~ 0.23		0.1 ~ 0.25
	T3130	150 ~ 300	0.1 ~ 0.25	180 ~ 300	0.1 ~ 0.28
	UX30	100 ~ 180		130 ~ 200	
Carbon steels Alloy steels (< 300 HB)	**T3130**	150 ~ 280	0.1 ~ 0.23	180 ~ 280	0.1 ~ 0.25
	NS740 • N308	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
	AH330 • AH120	100 ~ 200	0.1 ~ 0.2		
	UX30	80 ~ 130	0.1 ~ 0.23	100 ~ 150	0.1 ~ 0.25
Carbon steels Alloy steels (> 300 HB)	**T3130 • GH330**	150 ~ 230	0.1 ~ 0.23	180 ~ 280	0.1 ~ 0.25
	NS740 • N308	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
	UX30	80 ~ 130	0.1 ~ 0.23	100 ~ 150	0.1 ~ 0.25
Die steels (< 30 HRC)	**T3130**	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2
	UX30	80 ~ 130		80 ~ 130	
Stainless steels (< 250 HB)	**AH120 • AH140**	150 ~ 230	0.15 ~ 0.2	200 ~ 250	0.15 ~ 0.23
	UX30	150 ~ 180	0.15 ~ 0.2	180 ~ 200	

Notes: • Dry cutting is recommended for above materials.
• When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

• No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
• Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

Relating pages
Technical Reference (15–1)

Economy type TAC Mills

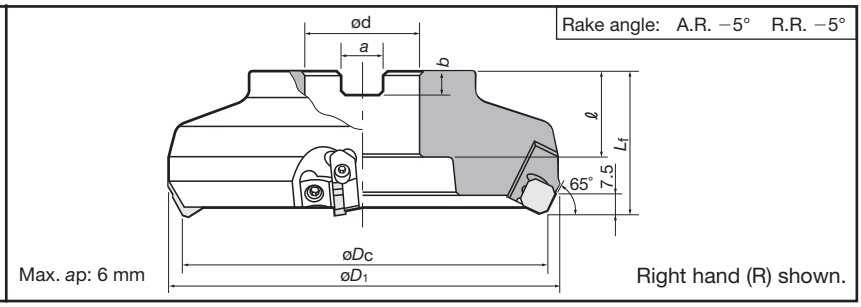
TGN4200-AE

Diameter ø80 ~ 160 mm | 65° 6mm

K Cast Iron | P Steel

Face Milling

For general purpose milling of cast irons and steels



Cat. No.	Stock	No. of inserts	Dimensions (mm)							Weight (kg)	Mounting details
			øDc	øD1	ød	ℓ	Lf	b	a		
TGN4203R-AE	●	5	80	92	27	22	50	7	12.4	1.5	9-138Ⓐ
TGN4204R-AE	●	6	100	112	32	32	63	8	14.4	2.4	9-138Ⓑ
TGN4205R-AE	●	8	125	136	40			9	16.4	3.9	
TGN4206R-AE	●	10	160	171		29				6.1	9-138Ⓒ

Inserts

SNKN1204ZNTN

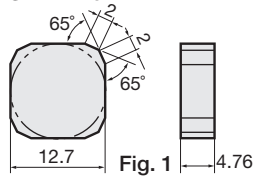


Fig. 1

SNMN1204□□TN
Corner details

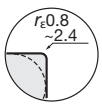


Fig. 2

SNKF1242NTN

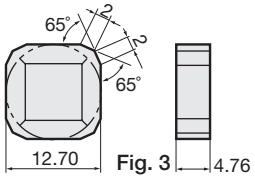
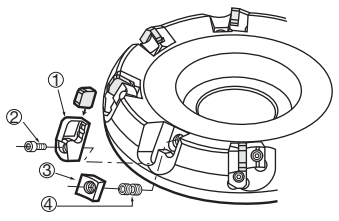


Fig. 3

Cat. No.	ISO Cat. No. (Metric)	Accuracy	Honing	Grades									Figure
				Coated		Cermet			Uncoated		Ceramics		
				T3130	T1115	NS740	N308		UX30	TH10	FX105	CX710	
SNCN43ZTN	SNCN1204ZNTN	C	With			●	●		●				Fig. 1
SNCN43ZFN	SNCN1204ZNFN		Without							●			
SNKN43ZTN	SNKN1204ZNTN	K	With	●	●	●			●		●		
SNKN43ZFN	SNKN1204ZNFN		Without										
SNKF43ZTN	SNKF1204ZNTN		With		●				●				Fig. 3
SNKF43ZFN	SNKF1204ZNFN		Without							●			
SNMN120408TN		M	With								●		Fig. 2
SNMN120412TN				●	●				●		●		
SNMN120416TN											●		
SNMN120420TN											●		
SNMN120424TN											●		

Notes: Inserts can be used for former PS-series TAC mills.

Replacement parts



No.	Part	Part Cat. No.
①	Locator	LN423R/L
②	Locator fixing screw	CM4×0.7×14
③	Insert locking wedge	WP440R/L
④	Wedge fixing screw	FDS-8S
–	T-handle wrench	TP-4

Standard cutting conditions

Work materials	Grades	Roughing (Depth of cut: 1.5 ~ 4 mm)		Finishing (Depth of cut: 0.3 ~ 0.7 mm)	
		Cutting speed v_c (m/min)	Feed per tooth f_z (mm/t)	Cutting speed v_c (m/min)	Feed per tooth f_z (mm/t)
Cast irons Ductile cast irons	TH10•UX30	80 ~ 130	0.1 ~ 0.25	80 ~ 130	0.1 ~ 0.3
	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
	FX105	200 ~ 500	0.1 ~ 0.35	200 ~ 600	0.1 ~ 0.4
Mild steels Unhardened steels (< 180 HB)	T3130	150 ~ 250	0.1 ~ 0.3	180 ~ 250	0.1 ~ 0.3
	NS740•N308	100 ~ 200	0.1 ~ 0.2	150 ~ 250	0.1 ~ 0.25
	UX30	100 ~ 180	0.1 ~ 0.3	130 ~ 200	0.1 ~ 0.3
Carbon steels Alloy steels (< 300 HB)	T3130	130 ~ 250	0.1 ~ 0.3	150 ~ 250	0.1 ~ 0.3
	NS740•N308	100 ~ 180	0.1 ~ 0.2	150 ~ 200	0.1 ~ 0.25
	UX30	80 ~ 130	0.1 ~ 0.3	100 ~ 150	0.1 ~ 0.3

Notes: • Dry cutting is recommended for above materials.
• When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

● : Stocked items.

Relating pages | Technical Reference (15–1)

DAD15

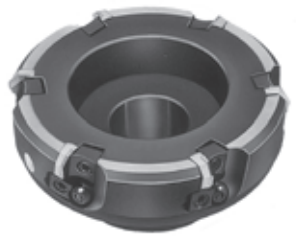
Diameter ø80 ~ 315 mm

45° 5mm

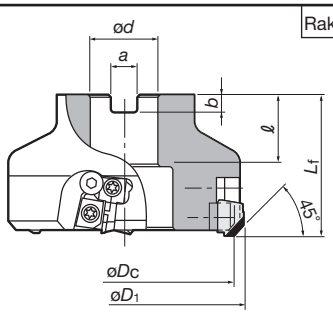
N Non-ferrous

Face Milling

For high speed milling of aluminium alloys and non-ferrous metals



Rake angle: A.R. +8.5° R.R. +5.0°



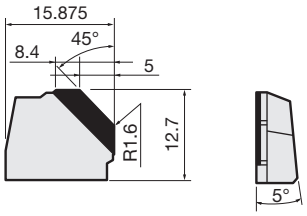
Max. *ap*: 5 mm

Right hand (R) shown.

Cat. No.	Stock	No. of inserts	Dimensions (mm)							Weight (kg)	Mounting details
			øDc	*øD1*	*ød*	*ℓ*	*Lf*	*b*	*a*		
DAD15080R-E		4	80	90	27	40	26	7	12.4	1.4	9-138Ⓐ
DAD15100R-E			100	110	32		28.5	8	14.4	2.4	
DAD15125R-E		6	125	135	40	63	32	9	16.4	3.6	9-138Ⓑ
DAD15160R-E			160	170			29			5.5	
DAD15200R-E		8	200	210	60		38	14	25.7	8.9	9-138Ⓒ
DAD15250R-E		10	250	260						14.6	
DAD15315R-E		12	315	325						24.0	9-138Ⓓ

Inserts

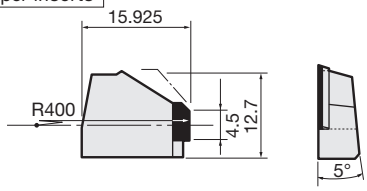
General insert



Right hand (R) shown.

Cat. No.	Grades T-DIA	Stock
YDEN1505ADFR-D	DX140	●

Wiper inserts

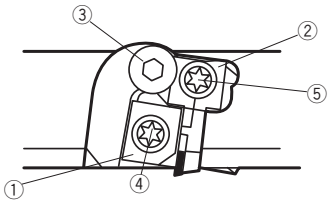


Right hand (R) shown.

Cat. No.	Grades T-DIA	Stock
YDEN1505ADFR-WD	DX140	●

"DX140" : Packing Quantity = 1 pcs.

Replacement parts



Right hand (R) shown.

No.	Descriptions	Part Cat. No.
①	Insert locking wedge	FW304R-D
②	Locator adjusting wedge	FW325R-D
③	Screw for preventing wedge from flying out	BHM615-GT
④	Wedge fixing screw (øD = 80)	FDS-8ST-18
	Wedge fixing screw (for øD > 80)	FDS-8ST
⑤	Adjusting wedge fixing screw	FDS-8ST-18
–	Wrench	T-27T

Standard cutting conditions

Work materials	Grades	Cutter dia. *øDc*	80	100	125	160	200	250	315
Aluminium alloys (Si < 13%)	DX140 (T-DIA)	Maximum cutting speed *Vcmax* (m/mim)	4000						
		Maximum revolution *nmax* (min^{-1})	16000	12700	10200	8000	6400	5100	4000
		Depth of cut *ap* (mm)	~ 5						
		Feed *fz* (mm/t)	0.05 ~ 0.28						
Aluminium alloys (Si ≥ 13%)		Cutting speed *Vc* (m/min)	200 ~ 500						

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

Cautionary Points in Use

- To avoid a danger of unbalanced revolution, the TAC mill should not be used in a state of reduced number of inserts.
- Use the cutter within the maximum revolutions written on the cutter body.
- When using the cutter at a cutting speed more than 1500 m/min, the balance quality of the arbor and toolholder should be prepared within class G16.
- When installing the inserts, recommended clamping torque for the wedge fixing screw is 9.8 N·m.

● : Stocked items.

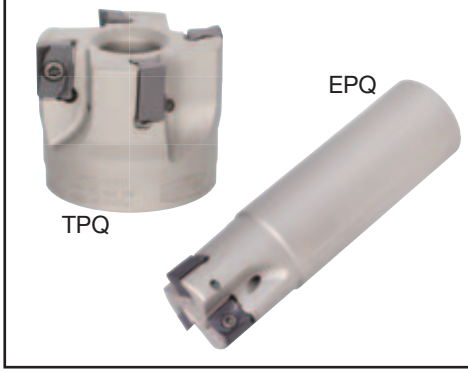
Relating pages Technical Reference (15–1)

MEMO

DOREC

JIS Diameter ø25 ~ 160 mm | 90° 9.16 mm | Air Hole | P Steel | M Stainless | K Cast Iron | S Superalloys

Face Milling | Radius Milling | Slotting | Slotting | Side Milling



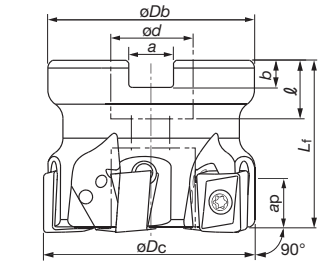


Fig. A

Max. *ap*:
LQMU11 type = 9 mm
LQMU18 type = 16 mm

Rake angle: A.R. +4°~+5° R.R. +13°~+15°

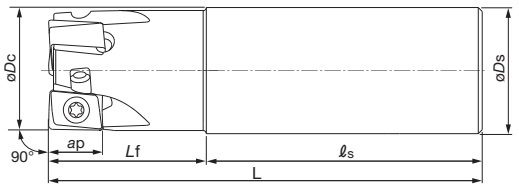


Fig. B

Right hand (R) shown.

TPQ11, 18 (Fig. A: bore type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm)							Weight (kg)	Air hole	Center bolt	Inserts	Mounting details
			øDc	øDb	ød	ℓ	Lf	b	a					
TPQ11R040M16.0E04	●	4	40	35	16	20	40	5.6	8.4	0.2	with	CM8x30H	LQMU1107**PNER-MJ	9-138Ⓐ
TPQ11R050M22.0E06	●	6	50	41	22	20	40	6.3	10.4	0.4	with	CM10x30H		
TPQ11R063M22.0E07	●	7	63	47	22	20	40	6.3	10.4	0.6	with	CM10x30H		
TPQ11R080M27.0E10	●	10	80	46	27	22	50	7	12.4	1.0	with	CM12x30H		
TPQ11R100M32.0E12	●	12	100	60	32	28.5	50	8	14.4	1.4	with	TMBA-M16H		9-138Ⓑ
TPQ18R050M22.0E03	●	3	50	47	22	20	40	6.3	10.4	0.4	with	CM10x30H	LQMU1808**PNER-MJ	9-138Ⓐ
TPQ18R063M27.0E04	●	4	63	55	27	26	50	7	12.4	0.5	with	CM10x30H		
TPQ18R080M27.0E05	●	5	80	55	27	26	50	7	12.4	0.9	with	CM12x30H		
TPQ18R100M32.0E06	●	6	100	70	32	32	50	8	14.4	1.4	with	TMBA-M16H		9-138Ⓑ
TPQ18R125M40.0E08	●	8	125	80	40	38	63	9	16.4	2.9	with	TMBA-M20H		
TPQ18R160M40.0E09	●	9	160	100	40	38	63	9	16.4	4.1	without	-		

EPQ11, 18 (Fig. B: shank type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm)					Weight (kg)	Air hole	Shank type	Inserts
			øDc	øDs	ℓs	Lf	L				
EPQ11R025M25.0-02	●	2	25	25	70	30	100	0.3	with	Cylindrical	LQMU1107**PNER-MJ
EPQ11R032M32.0-03	●	3	32	32	80	35	115	0.7	with		
EPQ11R040M32.0-04	●	4	40	32	80	35	115	0.8	with		
EPQ11R050M32.0-05	●	5	50	32	80	40	120	0.9	with		
EPQ11R063M32.0-06	●	6	63	32	80	40	120	1.1	with		
EPQ11R080M32.0-07	●	7	80	32	80	40	120	1.4	with		
EPQ18R040M32.0W03	●	3	40	32	75	35	110	0.7	with	Weldon	LQMU1808**PNER-MJ
EPQ18R050M32.0W04	●	4	50	32	75	40	115	0.9	with		

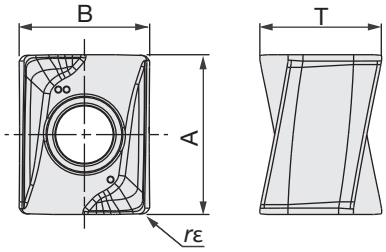
Bore type Components

Description		Replacement Parts Cat. No.	
Applicable cutter		T/EPQ11R...	T/EPQ18R...
Clamping screw		CSTB-3.5L115	SR14-591
Wrench	Torx bit	BLDT10/S7	BT20M
	Grip	SW6-SD	H-TB
Mono block type substitution wrench		T-10D	T-20D

● : Stocked items.

Relating pages | Technical Reference (15–1)

Inserts



Cat. No.	Accuracy	Honing	Stock			Dimensions (mm)				Cutter
			Coated			A	B	T	R	
			AH725	AH120	AH140					
LQMU110704PNER-MJ	M	with	●	●	●	11.0	9.0	8.3	0.4	EPQ11 TPQ11
LQMU110708PNER-MJ	M	with	●	●	●	11.0	9.0	8.3	0.8	
LQMU110716PNER-MJ	M	with	●	●	●	11.0	9.0	8.3	1.6	
LQMU180804PNER-MJ	M	with	●	●	●	17.5	11.5	10.9	0.4	EPQ18 TPQ18
LQMU180808PNER-MJ	M	with	●	●	●	17.5	11.5	10.9	0.8	
LQMU180816PNER-MJ	M	with	●	●	●	17.5	11.5	10.9	1.6	
LQMU180824PNER-MJ	M	with	●	●	●	17.5	11.5	10.9	2.4	

● : Stocked items.

Standard cutting conditions

Work Materials	Hardness HB	Grades	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Low carbon steel (C15E etc.)	~ 200	AH725	100 - 250	0.10 - 0.25
High carbon steel (C45, C55 etc.)	200 ~ 300		100 - 230	0.10 - 0.20
Alloyed steel (42CrMo4, 17Cr3 etc.)	150 ~ 300			
Tool steel (X155 CrVMo121 etc.)	~ 300		100 - 180	
Stainless stee (300 series, X5CrNi189 etc.)	-	AH140	90 - 180	0.10 - 0.25
Grey cast iron (GG25 / 250 etc.)	150 ~ 250	AH120	140 - 250	0.10 - 0.25
Ductile cast iron (GGG40 / 450-10S etc.)			110 - 200	0.10 - 0.25
Heat-resisting alloy (Ti-6AL-4V, Inconel 718 etc.)	-	AH725	20 - 50	0.08 - 0.20

· To remove excessive chip accumulation use an air blast.
· When cutting an interrupted surface or a casted skin, the feed per tooth (*fz*) should be reduced to the lower recommended value shown in the above table.
· Cutting conditions are limited by machine power, work piece rigidity and spindle output. When the cutting width, depth or overhang length is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

TUNGREC

Diameter ø12 ~ 50 mm

P Steel | M Stainless | K Cast Iron | N Non-ferrous | S Superalloys

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For high speed milling of steels, stainless, and superalloys

Rake angle: A.R. + 7° R.R. + 13°~ + 18°

TPO07

EPO07

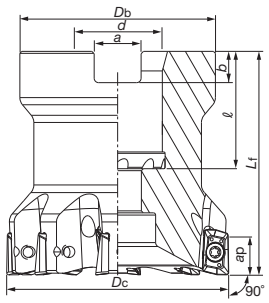
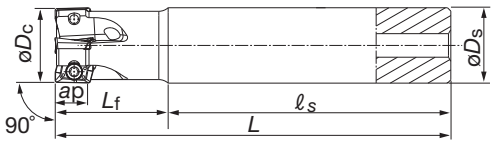


Fig. A



Max. ap : 7 mm (MJ)
: 6.4 mm (AJ)
: 0.8 mm (HJ)

Fig. B

TPO07 (Fig. A: bore type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm) *ØDc	ØDb	Ød	ℓ	**Lf	b	a	Weight (kg)	Air hole	Center bolt	Clamping Screw	Inserts	Mounting details
TPO07R032M16.0E08	●	8	32	30	16	21	40	5.6	8.4	0.1	with	CM8x30H	CSTB-2.5L046	AOMT0702... AOGT0702...	9-138Ⓐ
TPO07R040M16.0E10	●	10	40	35	16	21	40	5.6	8.4	0.2	with	CM8x30H			
TPO07R050M22.0E12	●	12	50	41	22	22	40	6.3	10.4	0.3	with	CM10x30H			

EPO07 (Fig. B: shank type)

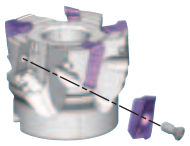
Type	Cat. No.	Stock	No. of Inserts	Dimensions (mm) *ØDc	ØDs	ℓ s	**Lf	**L	Weight (kg)	Air hole	Clamping Screw	Inserts
Coarse pitch	EPO07R016M12.0-02	●	2	16	12	50	20	70	0.1	with	CSTB-2.5L046	AOMT0702... AOGT0702...
	EPO07R020M16.0-03	●	3	20	16	60	30	90	0.1	with		
	EPO07R025M20.0-03	●	3	25	20	60	35	95	0.3	with		
Close pitch	EPO07R012M12.0-02	●	2	12	12	50	18	68	0.1	with		
	EPO07R016M16.0-04	●	4	16	16	60	24	84	0.1	with		
	EPO07R018M16.0-04	●	4	18	16	60	24	84	0.1	with		
	EPO07R020M20.0-05	●	5	20	20	70	30	100	0.2	with		
	EPO07R022M20.0-05	●	5	22	20	70	30	100	0.2	with		
	EPO07R025M25.0-07	●	7	25	25	80	35	115	0.4	with		
	EPO07R028M25.0-07	●	7	28	25	80	35	115	0.4	with		
Long shank	EPO07R012M12.0-02L	●	2	12	12	95	30	125	0.1	with		
	EPO07R016M16.0-02L	●	2	16	16	105	40	145	0.2	with		
	EPO07R018M16.0-02L	●	2	18	16	105	40	145	0.2	with		
	EPO07R020M20.0-03L	●	3	20	20	135	50	185	0.4	with		
	EPO07R022M20.0-03L	●	3	22	20	135	50	185	0.4	with		
	EPO07R025M25.0-03L	●	3	25	25	150	70	220	0.7	with		
	EPO07R028M25.0-03L	●	3	28	25	150	70	220	0.7	with		

*The øDc in the above table shows the diameter when MJ and AJ chipbreakers are used. When HJ chipbreaker is used, the tool diameter is equal to the above shown øDc + 0.6 mm.

**The Lf and L in the above table show the lengths when MJ chipbreaker is used. When AJ chipbreaker is used, the lengths are equal to Lf, L + 0.1 mm. When HJ chipbreaker is used, the lengths are equal to Lf, L + 0.5 mm.

Replacement parts

Description	Replacement parts Cat. No.
Wrench	T-7DB



Inserts

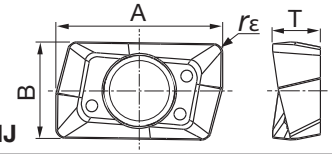


Fig. 1 MJ

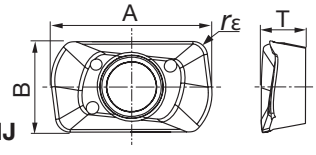


Fig. 2 HJ

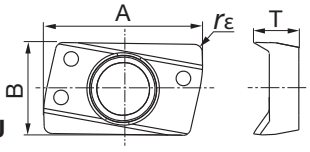


Fig. 3 AJ

Cat. No.	Accuracy	Honing	Grades Coated AH725	Coated AH140	Carbide KS15F	Dimensions (mm) A	B	T	rε	Shape	Cutter
AOMT070202PDPR-MJ	M	with	●	●		8.0	4.7	2.3	0.2	Fig. 1	EPO07 TPO07
AOMT070204PDPR-MJ	M	with	●	●		8.0	4.7	2.3	0.4	Fig. 1	
AOMT070208PDPR-MJ	M	with	●	●		8.0	4.7	2.3	0.8	Fig. 1	
AOMT070216PDPR-MJ	M	with	●	●		8.0	4.7	2.3	1.6	Fig. 1	
AOMT070208PDPR-HJ	M	with	●	●		8.8	4.9	2.4	0.8	Fig. 2	
AOGT070204PDFR-AJ	G	without			●	8.1	4.7	2.3	0.4	Fig. 3	

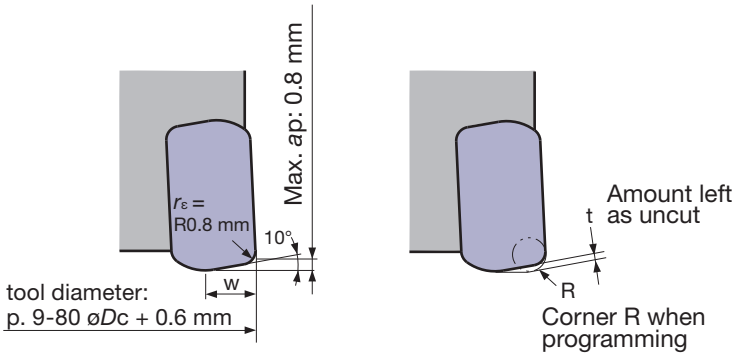
● : Stocked items.

Standard cutting conditions

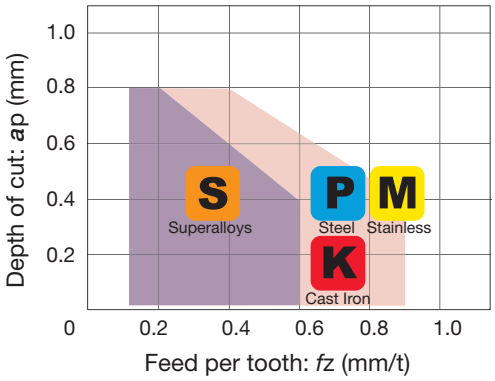
Work material	Brinell hardness HB	Grades	Cutting Speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t)		
				MJ	**HJ**	**AJ**
Low carbon steels (C15E etc.)	~ 200	**AH725**	90 - 200	0.05 - 0.1	0.4 - 0.9	-
High carbon steels and Alloyed steels (C45, C55 etc.)	200 ~ 300	**AH725**	90 - 150	0.05 - 0.1	0.4 - 0.9	-
Tool Steel (X153CrMoV12 etc.)	150 ~ 300	**AH725**	80 - 120	0.05 - 0.1	0.4 - 0.9	-
Stainless steel (X5CrNi18-9 etc.)	-	**AH140**	90 - 150	0.05 - 0.1	0.4 - 0.9	-
Grey cast iron (GG25, GG30 etc.)	150 ~ 250	**AH725**	100 - 180	0.05 - 0.1	0.4 - 0.9	-
Ductile cast iron (GGG45 etc.)	150 ~ 250	**AH725**	80 - 150	0.05 - 0.1	0.4 - 0.9	-
Aluminium alloys (Si < 13%)	-	**KS15F**	300 - 1000	-	-	0.08 - 0.2
Aluminium alloys (Si ≥ 13%)	-	**KS15F**	100 - 200	-	-	0.08 - 0.2
Titanium alloys (Ti-6Al-4V etc.)	-	**AH725**	20 - 50	0.05 - 0.1	0.4 - 0.9	-
Heat resistant alloys (Inconel718 etc.)	-	**AH725**	20 - 35	0.05 - 0.08	0.2 - 0.6	-

Cautionary points when using HJ inserts

HJ type inserts are designed for high feed machining.
Please note the following when using HJ inserts:
1. The peripheral shape of HJ insert differs from that of other inserts (MJ, AJ). However the same insert pocket can be used.
2. When using HJ inserts, all the inserts on the cutter body must be HJ type. Do not use other types of inserts (MJ and AJ types) with HJ inserts on the same cutter body.
3. When using CAD/CAM, program it as a radius cutter. The table below shows the corner R in programming and the uncut area (t).
4. With HJ inserts, the tool diameter is equal to the diameters shown on p. 9-80 ø*D*c + 0.6 mm



TungRec 07 type HJ inserts Standard conditions



Max. depth of cut max ap (mm)	Main cutting edge length W (mm)	Amount left as uncut t (mm)	Corner R when program-ming
0.8	3.0	0.4	R 0.5
		0.3	R 1.0

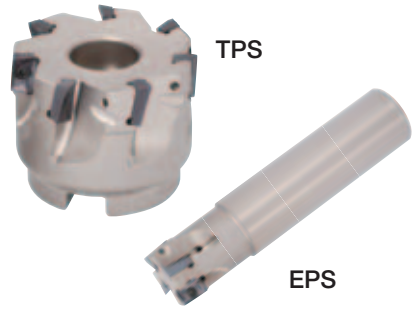
TUNGREC

Diameter ø12~63 mm

P Steel | M Stainless | K Cast Iron | N Non-ferrous

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For high speed milling of steels, stainless, and superalloys



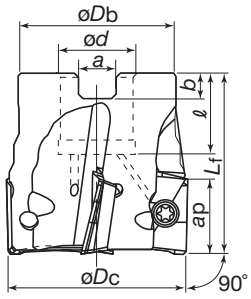


Fig. A

Rake angle: TPS11: A.R. +15.5° ~ +18° R.R. -8° ~ -6.5°
EPS11: A.R. +9° ~ +17.5° R.R. -20° ~ -7°

Cylindrical

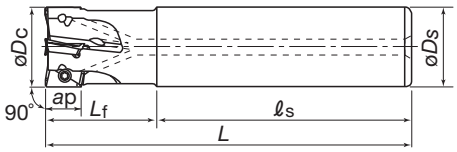


Fig. B

Max. ap: 10.6 mm

TPS11 (Fig. A: bore type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm)							Weight (kg)	Air hole	Center bolt	Clamping screw	Inserts	Mounting details
			øDc	øDb	ød	ℓ	Lf	b	a						
TPS11040RB-E	●	6	40	35	16	19	40	5.6	8.4	0.2	without	CM8X30	CSPB-2.5	ASMT11T3... ASGT11T3...	9-138Ⓐ
TPS11050RB-E	●	7	50	41	22	20	40	6.3	10.4	0.4	without	CM10X30			
TPS11063RB-E	●	8	63	41	22	20	45	6.3	10.4	0.6	without				

EPS11 (Fig. B: shank type)

Type	Cat. No.	Stock	No. of Inserts	Dimensions (mm)					Weight (kg)	Air hole	Clamping Screw	Inserts
				ØDc	ØDs	ℓs	Lf	L				
Coarse pitch	EPS11012RS	●	1	12	16	60	25	85	0.1	with	CSPB-2.5S	ASMT11T3... ASGT11T3...
	EPS11016RS	●	2	16					0.1	with		
	EPS11018RS	●	2	18					0.1	with		
	EPS11020RS	●	2	20	20	70	30	100	0.2	with		
	EPS11021RS	●	2	21					0.2	with		
	EPS11025RS	●	3	25	25	80	35	115	0.4	with	CSPB-2.5	
	EPS11026RS	●	3	26					0.4	with		
	EPS11030RS	●	3	30					0.4	with		
	EPS11032RS	●	3	32	32		40	120	0.7	with		
	EPS11033RS	●	3	33					0.7	with		
	EPS11040RS	●	4	40					0.8	with		
	EPS11050RS	●	5	50					1.0	with		
Close pitch	EPS11020RSB	●	3	20	20	70	30	100	0.2	with	CSPB-2.5S	
	EPS11021RSB	●	3	21					0.2	with		
	EPS11025RSB	●	4	25	25	80	35	115	0.4	with	CSPB-2.5	
	EPS11026RSB	●	4	26					0.4	with		
	EPS11030RSB	●	4	30					0.4	with		
	EPS11032RSB	●	5	32	32	80	40	120	0.7	with		
	EPS11033RSB	●	5	33					0.7	with		
	EPS11040RSB	●	6	40					0.8	with		
	EPS11050RSB	●	7	50					1.0	with		

The next page is followed.

● : Stocked items.

Relating pages | Technical Reference (15–1)

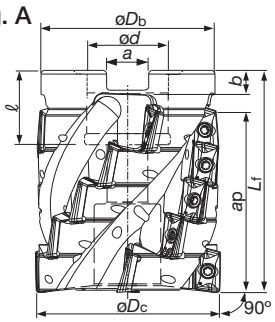
EPS11 (Fig. B: shank type)

Type	Cat. No.	Stock	No. of Inserts	Dimensions (mm) ØDc	ØDs	ℓ s	Lf	L	Weight (kg)	Air hole	Clamping Screw	Inserts
Long shank	EPS11012RL	●	1	12	16	95	30	125	0.2	with	CSPB-2.5S	ASMT11T3... ASGT11T3...
	EPS11016RL	●	2	16					0.2	with		
	EPS11018RL	●	2	18		105	40	145	0.2	with		
	EPS11020RL	●	2	20	20	135	50	185	0.4	with		
	EPS11021RL	●	2	21					0.4	with		
	EPS11025RL	●	2	25	25	150	70	220	0.8	with	CSPB-2.5	
	EPS11026RL	●	2	26					0.8	with		
	EPS11030RL	●	2	30					0.9	with		
	EPS11032RL	●	2	32	32	175	80	255	1.5	with		
	EPS11033RL	●	2	33					1.5	with		
	EPS11040RL	●	2	40		205	50		1.6	with		
	EPS11040RLS42	●	2	40	42	210	100	310	3.0	with		
	EPS11050RL	●	3	50		310	50	360	3.9	with		
For BT30 taper MC	EPS11025RSS20	●	2	25	20	60	35	95	0.2	with		
	EPS11030RSS20	●	2	30					0.3	with		
	EPS11032RSS20	●	2	32					0.3	with		
	EPS11040RSS20	●	3	40					0.4	with		
	EPS11050RSS20	●	3	50					0.5	with		

Type		Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	øDs	ℓ s	Lf	L	Weight (kg)	Air hole	Clamping Screw	Inserts
Weldon	Coarse pitch	EPS11012RS-E	●	1	12	16	55	25	80	0.1	with	CSPB-2.5S	ASMT11T3... ASGT11T3...
		EPS11016RS-E	●	2	16		60		85	0.1	with		
	Close pitch	EPS11020RSB-E	●	3	20	20		30	90	0.2	with		
		EPS11025RSB-E	●	4	25	25		35	95	0.4	with	CSPB-2.5	
		EPS11032RSB-E	●	5	32	32	70	40	110	0.7	with		

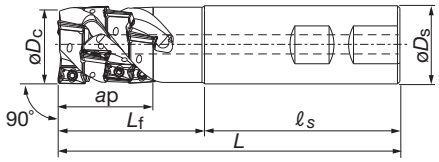
TLS11 / ELS11
For roughing milling

Fig. A



Rake angle: TLS11: A.R. +11.4° R.R. -7°
ELS11: A.R. +6.3° ~ +9.4° R.R. -10° ~ -8°

Fig. B



(Fig. A: bore type)

Cat. No.	Stock	No. of eff. edge lines	Dimensions (mm) øDc	øDb	ød	ℓ	Lf	b	a	Max. ap	Weight (kg)	Air hole	Center bolt	No. of inserts	Inserts	Mounting details
TLS11R050M22.0E04	●	4	50	47	22	20	60	6.3	10.4	48.8	0.5	with	CM10X40H	20	ASMT11T3... ASGT11T3...	9-138Ⓐ

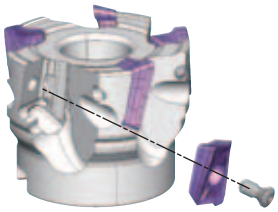
(Fig. B: shank type)

Cat. No.	Stock	No. of eff. edge lines	Dimensions (mm) øDc	øDs	ℓ s	Lf	L	Max. ap	Weight (kg)	Air hole	No. of inserts	Inserts
ELS11R025M25.0W02	●	2	25	25	80	40	120	30.4	0.4	with	6	ASMT11T3... ASGT11T3...
ELS11R032M32.0W03	●	3	32	32	80	60	140	39.4	0.8	with	12	
ELS11R040M42.0W03	●	3	40	42	90	60	150	40	1.4	with	12	

● : Stocked items.

Relating pages
Technical Reference (15–1)

Replacement Parts



TPS / EPS11

Description	Replacement parts Cat. No.
Wrench	**IP-8D**

TLS / ELS11

Descriptions	Cat. No.
Clamping screw	**CSPB-2.5**
Wrench	**IP-8D**

Inserts

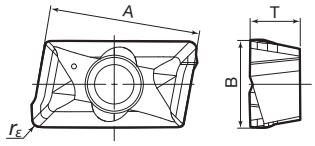


Fig. 1 **MJ**

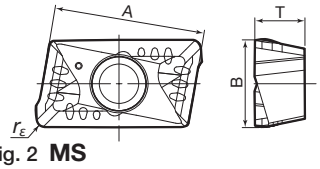


Fig. 2 **MS**

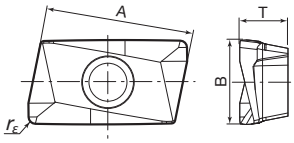


Fig. 3 **AJ**

Cat. No.	Accuracy	Honing	Grades: Coated AH725	AH120	AH130	AH140	T3130	T1115	DLC coated DS1100	Cermet NS740	Uncoated KS05F	Dimensions (mm) A	B	T	r_ε	Shape	Cutter
ASMT11T304PDPR-MJ	M	with	●	●			●	●		●		11.6	6.7	3.7	0.4	Fig. 1	EPS11 TPS11
ASMT11T308PDPR-MJ		with	●	●			●	●		●					0.8	Fig. 1	
ASMT11T312PDPR-MJ		with	●	●			●								1.2	Fig. 1	
ASMT11T316PDPR-MJ		with	●	●			●			●					1.6	Fig. 1	
ASMT11T320PDPR-MJ		with		●											2.0	Fig. 1	
ASMT11T330PDPR-MJ		with		●											3.0	Fig. 1	
ASMT11T304PDPR-MS		with			●	●									0.4	Fig. 2	
ASGT11T304PDFR-AJ	G	without							●		●				0.4	Fig. 3	
ASGT11T308PDFR-AJ		without							●		●				0.8	Fig. 3	

● : Stocked items.

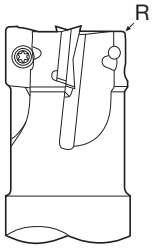
Cautionary point in modifying cutter bodies

TPS / EPS11, TLS / ELS11

When using inserts with corner radius $r_\varepsilon \geq 2.0$ mm, standard cutter bodies have to be modified "R".

TLS / ELS11

From 2nd row onwards, please use insert with $r\varepsilon$ = 0.4 or 0.8 mm



Corner radius r_ε (mm)	The dimension of modifying (mm)
0.4 ~ 1.6	Unnecessary
2.0 ~ 3.0	2

Standard cutting conditions

Work material	Brinell hardness HB	Priority	Grade	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t) MJ	MS	AJ
Low carbon steels (C15E etc.)	~ 200	First choice	**AH725**	100 - 250	0.1 - 0.2	-	-
		For wear resistance	**T3130**				
		For surface appearance	**NS740**		0.05 - 0.15		
High carbon steels and Alloyed steels (C45, C55 etc.)	200 ~ 300	First choice	**AH725**	100 - 200	0.1 - 0.15	-	-
		For wear resistance	**T3130**				
		For surface appearance	**NS740**		0.05 - 0.12		
Tool Steel (X155CrVMo12 1 etc.)	150 ~ 300	First choice	**AH725**	100 - 150	0.1 - 0.15	-	-
		For wear resistance	**T3130**				
Stainless steel (X5CrNi18-9 etc.)	-	-	**AH130**	80 - 200	-	0.08 - 0.2	-
Grey cast iron (GG25, GG30 etc.)	150 ~ 250		**AH120**	100 - 250	0.12 - 0.2	-	-
		First choice	**T1115**				
Ductile cast iron (GGG45 etc.)	150 ~ 250	For wear resistance	**AH120**	80 - 200	0.12 - 0.2	-	-
		First choice	**T1115**				
Aluminium alloys (Si < 13%)	-	For wear resistance	**DS1100**	300 - 1000	-	-	0.05 - 0.2
Aluminium alloys (Si ≥ 13%)	-	-	**DS1100**	100 - 200	-	-	0.05 - 0.2
Copper alloys	-	-	**KS05F**	200 - 500	-	-	0.05 - 0.2
Titanium alloys (Ti-6Al-4V etc.)	-	-	**AH130**	20 - 60	-	0.08 - 0.15	-
Heat resistant alloys (Inconel718 etc.)	-	-	**AH725**	20 - 40	0.08 - 0.13	-	-

Roughing type TLS11 / ELS11

Work material	Brinell hardness HB	Priority	Grade	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t)		
					MJ	**MS**	**AJ**
Low carbon steels (C15E etc.)	~ 200	First choice	**AH725**	100 - 250	0.10 - 0.18	-	-
		For wear resistance	**T3130**				
High carbon steels and Alloyed steels (C45, C55 etc.)	200 ~ 300	First choice	**AH725**	100 - 200	0.08 - 0.14	-	-
		For wear resistance	**T3130**				
Tool Steel (X153CrMoV12 1 etc.)	150 ~ 300	First choice	**AH725**	100 - 150	0.08 - 0.14	-	-
		For wear resistance	**T3130**				
Stainless steel (X5CrNi18-9 etc.)	-	-	**AH130**	100 - 150	-	0.08 - 0.15	-
Grey cast iron (GG25, GG30 etc.)	150 ~ 250	First choice	**AH120**	100 - 250	0.10 - 0.18	-	-
		For wear resistance	**T1115**				
Ductile cast iron (GGG45 etc.)	150 ~ 250	First choice	**AH120**	80 - 200	0.10 - 0.18	-	-
		For wear resistance	**T1115**				
Aluminium alloys (Si < 13%)	-	-	**DS1100**	200 - 500	-	-	0.05 - 0.18
Aluminium alloys (Si ≥ 13%)	-	-	**DS1100**	100 - 200	-	-	0.05 - 0.18
Titanium alloys (Ti-6Al-4V etc.)	-	-	**AH130**	20 - 60	-	0.08 - 0.14	-
Heat resistant alloys (Inconel718 etc.)	-	-	**AH725**	20 - 40	0.06 - 0.12	-	-

Relating pages
Technical Reference (15–1)

TUNGREC

Diameter ø25~160 mm

P Steel | M Stainless | K Cast Iron | N Non-ferrous | S Superalloys

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For high speed milling of steels, stainless, and superalloys

TPO18

EPO18

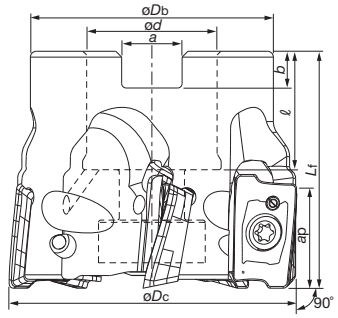


Fig. A

Max. *ap*: 16.7 mm

Rake angle: A.R. +14°~+17° R.R. +22°~+31°

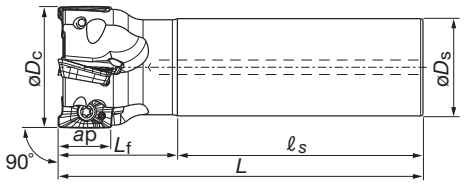


Fig. B

TPO18 (Fig. A: bore type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm) *ØDc	ØDb	Ød	ℓ	Lf	b	a	Weight (kg)	Air hole	Center bolt	Clamping screw	Inserts	Mounting details
TPO18R040M16.0E04	●	4	40	35	16	18	40	5.6	8.4	0.2	with	FSHM8-30H	CSTB-4L093	AOMT1805... AOGT1805...	9-138Ⓐ
TPO18R050M22.0E05	●	5	50	41	22	20	40	6.3	10.4	0.3	with	CM10x30H			
TPO18R063M22.0E06	●	6	63	41	22	20	40	6.3	10.4	0.5	with	CM10x30H			
TPO18R080M27.0E07	●	7	80	50	27	22	50	7	12.4	1.0	with	CM12x30H	CSTB-4L120		9-138Ⓐ
TPO18R100M32.0E08	●	8	100	60	32	28.5	50	8	14.4	1.4	with	TMBA-M16H			9-138Ⓑ
TPO18R125M40.0E09	●	9	125	71	40	32	63	9	16.4	2.8	with	TMBA-M20H			
TPO18R160M40.0E10	●	10	160	100	40	29	63	9	16.4	4.9	without	-			

EPO18 (Fig. B: shank type)

Type	Cat. No.	Stock	No. of Inserts	Dimensions (mm) *ØDc	ØDs	ℓ s	Lf	L	Weight (kg)	Air hole	Clamping Screw	Inserts
Coarse pitch	EPO18R025M25.0-02	●	2	25	25	80	35	115	0.4	with	CSTB-4L085	AOMT1805... AOGT1805...
	EPO18R028M25.0-02	●	2	28	25	80	35	115	0.4	with		
	EPO18R030M32.0-02	●	2	30	32	80	40	120	0.6	with		
	EPO18R032M32.0-02	●	2	32	32	80	40	120	0.7	with	CSTB-4L093	
	EPO18R035M32.0-02	●	2	35	32	80	40	120	0.7	with		
	EPO18R040M32.0-03	●	3	40	32	80	40	120	0.7	with		
	EPO18R050M32.0-03	●	3	50	32	80	40	120	0.8	with		
	EPO18R063M32.0-04	●	4	63	32	80	45	125	1.0	with	CSTB-4L120	
Close pitch	EPO18R030M32.0-03	●	3	30	32	80	40	120	0.6	with	CSTB-4L085	
	EPO18R032M32.0-03	●	3	32	32	80	40	120	0.6	with	CSTB-4L093	
	EPO18R035M32.0-03	●	3	35	32	80	40	120	0.7	with		
	EPO18R040M32.0-04	●	4	40	32	80	40	120	0.7	with		
	EPO18R050M32.0-05	●	5	50	32	80	40	120	0.8	with		
	EPO18R063M32.0-06	●	6	63	32	80	45	125	1.1	with	CSTB-4L120	
Long shank	EPO18R025M25.0-02L	●	2	25	25	150	70	220	0.8	with	CSTB-4L085	AOMT1805... AOGT1805...
	EPO18R028M25.0-02L	●	2	28	25	150	70	220	0.8	with		
	EPO18R030M32.0-02L	●	2	30	32	175	80	255	1.4	with		
	EPO18R032M32.0-02L	●	2	32	32	175	80	255	1.5	with	CSTB-4L093	
	EPO18R035M32.0-02L	●	2	35	32	175	80	255	1.5	with		
	EPO18R040M32.0-02L	●	2	40	32	205	50	255	1.6	with		
	EPO18R040M42.0-02L	●	2	40	42	210	100	310	3.0	with		
	EPO18R050M42.0-03L	●	3	50	42	310	50	360	3.8	with		
	EPO18R063M42.0-03L	●	3	63	42	310	50	360	4.0	with	CSTB-4L120	

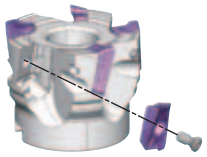
* The *øDc* in the above table shows the diameter when MJ chipbreaker is used. When AJ chipbreaker is used, the diameter is equal to the above shown *øDc* + 0.2 mm.

● : Stocked items.

Relating pages | Technical Reference (15–1)

Replacement Parts

Description		Replacement parts Cat. No.	
Applicable cutter		TPO18R...	EPO18R...
Wrench	Torx bit	**BT15M**	-
	Grip	**H-TBS**	-
Mono block type substitution wrench		-	**T-15DB**



Inserts

Fig. 1 **MJ**

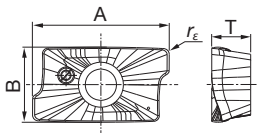
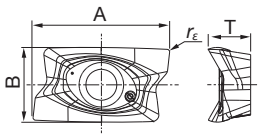


Fig. 2 **AJ**



Cat. No.	Accuracy	Honing	Grades			Dimensions (mm)				Shape	Cutter
			Coated		Carbide						
			AH725	**AH140**	**KS15F**	A	B	T	r_ε		
AOMT180508PDPR-MJ	M	with	●	●		19.5	10.7	5.6	0.8	Fig. 1	**EPO18 TPO18**
AOMT180516PDPR-MJ	M	with	●	●		19.5	10.7	5.6	1.6	Fig. 1	
AOMT180524PDPR-MJ	M	with	●	●		19.5	10.7	5.6	2.4	Fig. 1	
AOMT180532PDPR-MJ	M	with	●	●		19.5	10.7	5.6	3.2	Fig. 1	
AOGT180504PDFR-AJ	G	with			●	19.8	10.8	6.1	0.4	Fig. 2	
AOGT180508PDFR-AJ	G	without			●	19.7	10.8	6.1	0.8	Fig. 2	

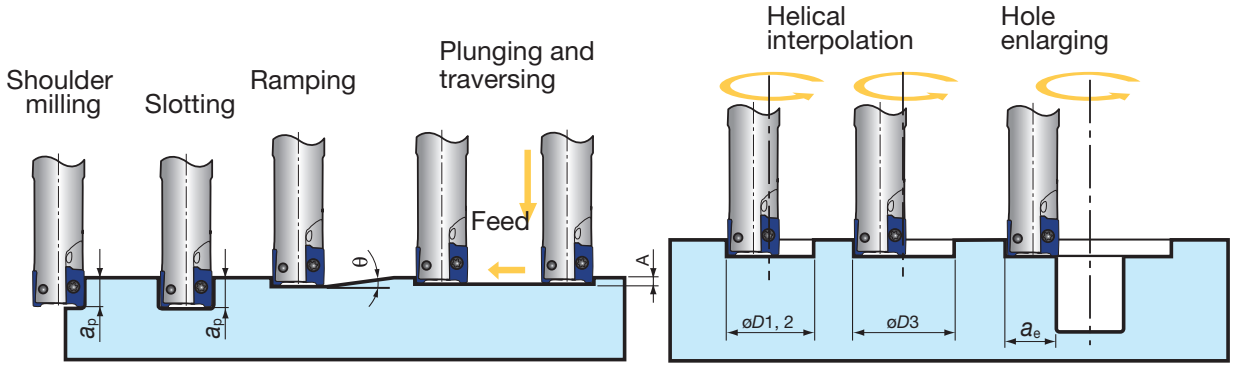
● : Stocked items.

Standard cutting conditions

Work material	Brinell hardness HB	Grades	Cutting Speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t)	
				MJ	**AJ**
Low carbon steels (C15E etc.)	~ 200	**AH725**	100 - 250	0.08 - 0.25	-
High carbon steels and Alloyed steels (C45, C55 etc.)	200 ~ 300	**AH725**	100 - 230	0.08 - 0.2	-
Tool Steel (X153CrMoV12 1 etc.)	150 ~ 300	**AH725**	100 - 180	0.08 - 0.2	-
Stainless steel (5CrNi18-9 etc.)	-	**AH140**	90 - 200	0.08 - 0.2	-
Grey cast iron (GG25, GG30 etc.)	150 ~ 250	**AH725**	140 - 250	0.08 - 0.25	-
Ductile cast iron (GGG45 etc.)	150 ~ 250	**AH725**	110 - 200	0.08 - 0.25	-
Aluminium alloys (Si < 13%)	-	**KS15F**	300 - 1000	-	0.05 - 0.25
Aluminium alloys (Si ≥ 13%)	-	**KS15F**	100 - 200	-	0.05 - 0.25
Titanium alloys (Ti-6Al-4V etc.)	-	**AH725**	20 - 60	0.08 - 0.18	-
Heat resistant alloys (Inconel718 etc.)	-	**AH725**	20 - 40	0.07 - 0.15	-

· To remove excessive chip accumulation use an air blast.
· When chips stick to the cutting edges (aluminium machining), use a water soluble coolant.
· When cutting an interrupted surface or a casted skin, the feed per tooth (*fz*) should be reduced to the lower recommended value shown in the above table.
· Cutting conditions are limited by machine power, work piece rigidity, and spindle output. When the cutting width, depth, or overhang length is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

Machining modes



Cat. No.	Tool-ø	Max. depth of cut *ap* (mm)	Max. ramping angle *θ*	Max. plunging A (mm)	Min. machining ø*D*1 (mm)	Max. machining ø*D*2 (mm)	*Max. machining ø*D*3 (mm)	Max. cutting width in enlarging *ae* (mm)
EPO07R012...	ø12	7	8°	0.5	16	23	20.5	11.5
EPO07R016...	ø16	7	5°	0.5	24	31	28.5	15.5
EPO07R018...	ø18	7	4°	0.5	28	35	32.5	17.5
EPO07R020...	ø20	7	3.5°	0.5	32	39	36.5	19.5
EPO07R022...	ø22	7	3°	0.5	36	43	40.5	21.5
EPO07R025...	ø25	7	2.5°	0.5	42	49	46.5	24.5
EPO07R028...	ø28	7	2°	0.5	48	55	52.5	27.5
TPO07R032M16.0E08	ø32	7	1.8°	0.5	56	63	60.5	31.5
TPO07R040M16.0E10	ø40	7	1.2°	0.5	72	79	76.5	39.5
TPO07R050M22.0E12	ø50	7	0.9°	0.5	92	99	96.5	49.5
EPS11012R...	ø12	10.6	6°	0.5	15	23	21	11.5
EPS11016R...	ø16	10.6	5°	0.5	20	31	29	15.5
EPS11018R...	ø18	10.6	4°	0.5	26	35	33	17.5
EPS11020R...	ø20	10.6	3°	0.5	28	39	37	19.5
EPS11021R...	ø21	10.6	3°	0.5	30	41	39	20.5
EPS11025R...	ø25	10.6	2°	0.5	38	49	47	24.5
EPS11026R...	ø26	10.6	2°	0.5	40	51	49	25.5
EPS11030R...	ø30	10.6	1.5°	0.5	48	59	57	29.5
EPS11032R...	ø32	10.6	1.5°	0.5	52	63	61	31.5
EPS11033R...	ø33	10.6	1.5°	0.5	54	65	63	32.5
EPS/TPS11040R...	ø40	10.6	1°	0.5	68	79	77	39.5
EPS11040RLS42	ø40	10.6	1°	0.5	68	79	77	39.5
EPS/TPS11050R...	ø50	10.6	0.7°	0.5	68	99	97	49.5
TPS11063RB	ø63	10.6	0.5°	0.5	114	125	123	62.5
TPS11080RB	ø80	10.6	0.4°	0.5	148	159	157	79.5
TPS11100RB	ø100	10.6	0.3°	0.5	188	199	197	99.5
EPO18R025...	ø25	16.7	6°	1	31.5	48	44	24
EPO18R028...	ø28	16.7	4.5°	1	37.5	54	50	27
EPO18R030...	ø30	16.7	4°	1	41.5	58	54	29
EPO18R032...	ø32	16.7	3.5°	1	45.5	62	58	31
EPO18R035...	ø35	16.7	3°	1	51.5	68	64	34
TPO/EPO18R040...	ø40	16.7	2.5°	1	61.5	78	74	39
TPO/EPO18R050...	ø50	16.7	1.9°	1	81.5	98	94	49
TPO/EPO18R063...	ø63	16.7	1.4°	1	107.5	124	120	62
TPO18R...	ø80	16.7	1°	1	141.5	158	154	79
TPO18R...	ø100	16.7	0.8°	1	181.5	198	194	99
TPO18R...	ø125	16.7	0.6°	1	231.5	248	244	124
TPO18R...	ø160	16.7	0.4°	1	301.5	318	314	159

*Flat bottom hole

Notes: Corner r_ε for dimensions of ø*D*1, ø*D*2, and ø*D*3: r_ε 0.4 for EPO 07 / EPS 11 and r_ε 0.8 for EPO 18.

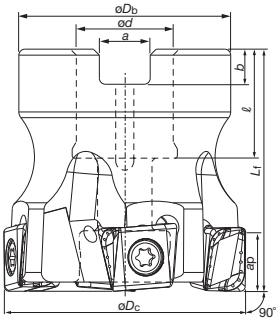
TECMILL

ISO Diameter ø32 ~ 125 mm | 90° 9.7, 15.1 mm | Air Hole | P Steel | M Stainless | K Cast Iron | S Superalloys

Face Milling | Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling

High productivity shoulder milling

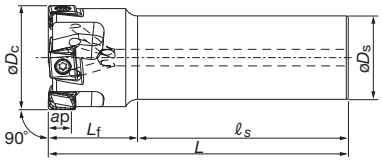
Fig. A



Max. *ap*:
T/EPM11 = 9.7 mm
TPM16 = 15.1 mm

Rake angle: A.R. + 5° ~ + 6° R.R. + 9° ~ + 13°

Fig. B



Right hand (R) shown.

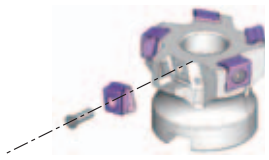
TPM11, 16 (Fig. A: bore type)

Pitch	Cat. No.	Stock	No. of Inserts	Dimensions (mm) ØDc	ØDb	Ød	ℓ	Lf	b	a	Weight (kg)	Air hole	Center bolt	Inserts	Mounting details
Coarse	TPM11R050M22.0E05	●	5	50	41	22	20	40	6.3	10.4	0.3	with	CM10x30H	LMMU1107**PNER-MJ	9-138Ⓐ
	TPM11R063M22.0E06	●	6	63	41	22	20	40	6.3	10.4	0.5	with	CM10x30H		
	TPM11R080M27.0E07	●	7	80	50	27	22	50	7	12.4	1.0	with	CM12x30H		
	TPM11R100M32.0E08	●	8	100	60	32	28.5	50	8	14.4	1.4	with	TMBA-M16H		9-138Ⓑ
	TPM16R080M27.0E05	●	5	80	50	27	22	50	7	12.4	1.0	with	CM12x30H	LMMU1609**PNER-MJ	9-138Ⓐ
	TPM16R100M32.0E06	●	6	100	60	32	28.5	50	8	14.4	1.5	with	TMBA-M16H		9-138Ⓑ
	TPM16R125M40.0E07	●	7	125	71	40	32	63	9	16.4	2.7	with	TMBA-M20H		
Close	TPM11R080M27.0E09	●	9	80	50	27	22	50	7	12.4	1.0	with	CM12x30H	LMMU1107**PNER-MJ	9-138Ⓐ
	TPM11R100M32.0E11	●	11	100	60	32	28.5	50	8	14.4	1.5	with	TMBA-M16H		9-138Ⓑ

EPM11 (Fig. B: shank type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm) ØDc	ØDs	ℓs	Lf	L	Weight (kg)	Air hole	Inserts
EPM11R032M32.0-03	●	3	32	32	80	35	115	0.6	with	LMMU1107**PNER-MJ
EPM11R040M32.0-04	●	4	40	32	80	35	115	0.7	with	
EPM11R050M32.0-04	●	4	50	32	80	40	120	0.9	with	
EPM11R063M32.0-06	●	6	63	32	80	40	120	1.2	with	
EPM11R080M32.0-07	●	7	80	32	80	40	120	1.6	with	

Bore type Components



Description		Replacement Parts Cat. No.	
Applicable cutter		TPM11R...	TPM16R...
Clamping screw		CSTB-3.5L110	CSTB-5L159
Wrench	Torx bit	BT15S	BT20S
	Grip	H-TB	H-TB
Mono block type substitution wrench		T-15T	T-20T

Shank type Components

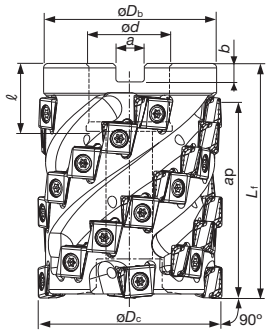
Description	Parts Cat. No.
Clamping screw	CSTB-3.5L110
Wrench (Substitution Wrench)	T-15DB (T-15D)

● : Stocked items.

Roughing type

TLM11

Rake angle: A.R. +5.1° ~ +5.3° R.R. +13.4° ~ +13.8°

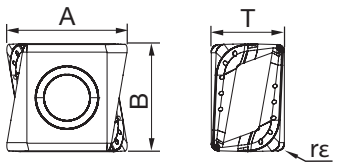


Cat. No.	Stock	No. of eff. edge lines	Dimensions (mm)								Weight (kg)	Air hole	Center bolt	Number of inserts	Inserts	Mounting details
			øDc	øDb	ød	ℓ	Lf	b	a	ap						
TLM11R050M22.0E03	●	3	50	47	22	20	70	6.3	10.4	58.5	0.8	with	SD06-A3	21	**LMMU1107**PNER-MJ**	9-138Ⓐ
TLM11R063M27.0E04	●	4	63	59	27	22	80	7	12.4	66.9	1.4	with	SD08-98	32		

Roughing type: Replacement parts

Description		Cat. No.	
Applicable cutter		**TLM11R050…**	**TLM11R063…**
Clamping screw		**CSTB-3.5L110**	
Wrench	Torx bit	**BT15S**	
	Grip	**H-TB**	
Mono block type substitution wrench		**T-15T**	

Inserts



Cat. No.	Accuracy	Honing	Stock					Dimensions (mm)				Cutter
			Coated grades									
			AH725	AH120	AH140	T3130	T1115	A	B	T	rε	
LMMU110708PNER-MJ	M	with	●	●	●	●	●	11.7	10.5	7.1	0.8	TLM11 EPM11 TPM11
LMMU110716PNER-MJ	M	with	●	●	●	●	●	11.5	10.5	7.1	1.6	
LMMU110724PNER-MJ	M	with	●	●	●	●	●	11.3	10.5	7.1	2.4	
LMMU110732PNER-MJ	M	with	●	●	●	●	●	11.1	10.5	7.1	3.2	
LMMU160908PNER-MJ	M	with	●	●	●	●	●	17.3	16.0	9.5	0.8	TPM16
LMMU160916PNER-MJ	M	with	●	●	●	●	●	17.1	16.0	9.5	1.6	
LMMU160924PNER-MJ	M	with	●	●	●		●	16.9	16.0	9.5	2.4	
LMMU160932PNER-MJ	M	with	●	●	●		●	16.8	16.0	9.5	3.2	

● : Stocked items.

Standard cutting conditions

Work material	Brinell hardness HB	Priority	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Low carbon steels (C15E etc.)	~ 200	First choice	**AH725**	100 - 250	0.12 - 0.3
		For impact resistance	**AH140**	80 - 180	
		For wear resistance	**T3130**	120 - 250	
High carbon steels (C45, C55 etc.)	200 ~ 300	First choice	**AH725**	100 - 230	0.12 - 0.25
		For impact resistance	**AH140**	80 - 180	
		For wear resistance	**T3130**	120 - 250	
Alloyed steels (42CrMo4, 17Cr3 etc.)	150 ~ 300	First choice	**AH725**	100 - 230	0.12 - 0.25
		For impact resistance	**AH140**	80 - 150	
		For wear resistance	**T3130**	120 - 250	
Tool steels (X155CrVMo12 1 etc.)	~ 300	First choice	**AH725**	100 - 180	0.12 - 0.25
		For impact resistance	**AH140**	80 - 120	
		For wear resistance	**T3130**	100 - 180	
Stainless steels (X5CrNi18-9 etc.)	-	First choice	**AH140**	90 - 180	0.12 - 0.3
Grey cast irons (GG25, GG30 etc.)	150 ~ 250	First choice	**AH120**	140 - 250	0.12 - 0.3
		For wear resistance	**T1115**		
Ductile cast irons (GGG45 etc.)		First choice	**AH120**	110 - 200	0.12 - 0.3
		For wear resistance	**T1115**		
Heat-resisting alloy (Inconel 718, Ti-6AL-4V etc.)	-	First choice	**AH725**	20 - 50	0.1 - 0.2

Note:
· To remove excessive chip accumulation use an air blast.
· When cutting interrupted surfaces like a casting skin, the cutting feed (*fz*) should be set below the values shown in the above table.
· Tool overhang should be minimized.
When machining with long overhang applications the tool tends to chatter. Please reduce the feed rate *fz*.
· Cutting conditions are limited by machine power and material rigidity. When the cutting width or depth is large, set *Vc* and *fz* below the recommended values and check the machine vibration and spindle load.

Roughing type

Work material	Brinell hardness HB	Priority	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Low carbon steels (C15E etc.)	~ 200	First choice	**AH725**	100 - 250	0.10 - 0.23
		Priority for impact resistance	**AH140**	80 - 180	
		Priority for wear resistance	**T3130**	100 - 250	
High carbon steels (C45, C55 etc.)	200 ~ 300	First choice	**AH725**	100 - 200	0.08 - 0.21
		Priority for impact resistance	**AH140**	80 - 150	
		Priority for wear resistance	**T3130**	100 - 200	
Alloyed steels (42CrMo4 etc.)	150 ~ 300	First choice	**AH725**	100 - 200	0.08 - 0.21
		Priority for impact resistance	**AH140**	80 - 150	
		Priority for wear resistance	**T3130**	100 - 200	
Tool steels (X155CrVMo12 1 etc.)	~ 300	First choice	**AH725**	100 - 150	0.08 - 0.21
		Priority for impact resistance	**AH140**	80 - 120	
		Priority for wear resistance	**T3130**	100 - 150	
Stainless steels (X5CrNi18-9 etc.)	-	First choice	**AH140**	90 - 150	0.08 - 0.21
Grey cast irons (GG25, GG30 etc.)	150 ~ 250	First choice	**AH120**	100 - 250	0.10 - 0.25
		Priority for wear resistance	**T1115**		
Ductile cast irons (GGG45 / 450-10S etc.)		First choice	**AH120**	100 - 250	0.10 - 0.25
		Priority for wear resistance	**T1115**		
Heat-resisting alloy (Inconel 718 / Ti-6AL-4V etc.)	-	First choice	**AH725**	20 - 50	0.06 - 0.15

• On the 1st row of roughing type cutter, all type of insert can be used
• From 2nd row onwards, please use insert with r_ε = 0.4 or 0.8 mm

TUNGQUAD

Diameter ø12 ~ 40 mm | 90° 4 mm | Air Hole | P Steel | M Stainless | K Cast Iron | N Non-ferrous

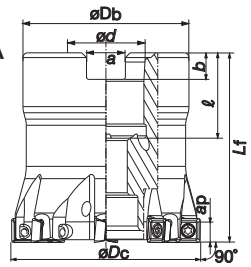
Face Milling | Shoulder Milling | Slotting

High efficiency shoulder milling

TPD05

EPD05

Fig. A



Max. ap: 4.0 mm

Rake angle: A.R. + 5° R.R. - 7° ~ + 12°

straight

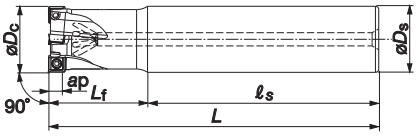
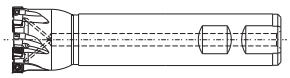


Fig. B

weldon



Right hand (R) shown.

TPD05 (Fig. A: bore type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm)							Weight (kg)	Air hole	Cutter mounting screw	Inserts	Mounting details
			øDc	øDb	ød	ℓ	Lf	b	a					
TPD05R032M16.0E06	●	6	32	30	16	20	32	5.6	8.4	0.1	with	CM8x30H	SDMT050204PN-MJ SDHT050204FN-AJ	9-138Ⓐ
TPD05R040M22.0E08	●	8	40	38	22	22	40	6.3	10.4	0.2	with	CM10x30H		

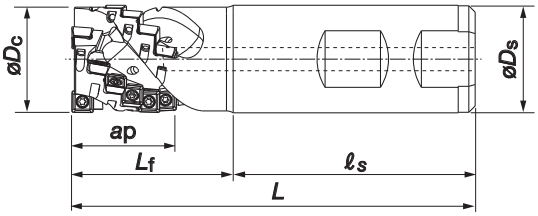
EPD05 (Fig. B: shank type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm)					Weight (kg)	Air hole	Shank type	Inserts
			øDc	øDs	ℓs	Lf	L				
EPD05R012M12.0-02	●	2	12	12	62	18	80	0.1	with	straight	SDMT050204PN-MJ SDHT050204FN-AJ
EPD05R016M16.0-03	●	3	16	16	90	20	110	0.2	with	straight	
EPD05R020M20.0W04	●	4	20	20	80	25	105	0.2	with	weldon	
EPD05R025M20.0W05	●	5	25	20	90	25	115	0.3	with	weldon	
EPD05R032M25.0W06	●	6	32	25	98	32	130	0.5	with	weldon	
EPD05R040M32.0W08	●	8	40	32	100	40	140	0.8	with	weldon	

Roughing type

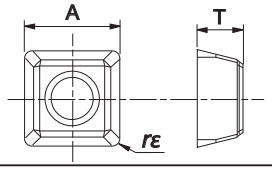
ELD05

Rake angle: A.R. + 5° R.R. - 3°



Cat. No.	Stock	No. of eff. edge lines	Dimentions (mm)						Weight (kg)	Air hole	Number of inserts	Inserts
			øDc	øDs	ℓ s	Lf	L	ap				
ELD05R020M20.0W02	●	2	20	20	53	32	85	20.3	0.2	with	10	SDMT050204PN-MJ SDHT050204FN-AJ
ELD05R025M25.0W03	●	3	25	25	59	36	95	24.2	0.3	with	18	

Inserts



Cat. No.	Accuracy	Honing	Stock			Dimensions (mm)			Cutter
			Coated grades		Carbide				
			AH725	AH140	TH10	A	T	rε	
SDMT050204PN-MJ	M	with	●	●		5.09	2.38	0.4	TPD05... EPD05... ELD05...
SDHT050204FN-AJ	H	without			●	5.09	2.39	0.4	

Replacement parts

Descriptions	Parts Cat. No.
Clamping screw	CSPB-2L043
Wrench	IP-6DB

● : Stocked items.

Standard cutting conditions

Work material	Brinell hardness HB	Grades	Cutting Speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Low carbon steels (C15E4 etc.)	~ 200	**AH725**	230 - 320	0.04 - 0.10
High carbon steels (C45 etc.)	200 ~ 300		150 - 230	
Alloyed steels (42CrMo4 etc.)	150 ~ 300			
Tool steels (X153CrMoV12 etc.)	~ 300		110 - 130	0.03 - 0.09
Stainless steels (X5CrNi18-9 etc.)	–	**AH140**	100 - 200	0.03 - 0.09
Grey cast irons (GG25 etc.)	150 ~ 250	**AH725**	200 - 300	0.05 - 0.12
Ductile cast irons (GGG45 etc.)			160 - 240	
Aluminium alloys (Si < 13%)	–	**TH10**	350 - 500	0.05 - 0.15
Aluminium alloys (Si ≥ 13%)	–		100 - 200	

* For deep and wide cutting, set the Vc and fz to the lower recommended limits and check the vibration and spindle load of the machine.

Roughing type

Work material	Brinell hardness HB	Grades	Cutting Speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Low carbon steels (C15E4 etc.)	< 200	**AH725**	100 - 250	0.04 - 0.10
High carbon steels (C45 etc.)	200 - 300		100 - 200	
Alloyed steels (42CrMo4 etc.)	150 - 300			
Tool steels (X153CrMoV12 etc.)	< 300		100 - 130	0.03 - 0.09
Stainless steels (X5CrNi18-9 etc.)	-	**AH140**	100 - 150	0.03 - 0.09
Grey cast irons (GG25 etc.)	150 - 250	**AH725**	100 - 250	0.05 - 0.12
Ductile cast irons (GGG45 etc.)			80 - 200	
Aluminium alloys (Si < 13%)	-	**TH10**	200 - 500	0.05 - 0.15
Aluminium alloys (Si ≥ 13%)	-		100 - 200	

TUNGMILL

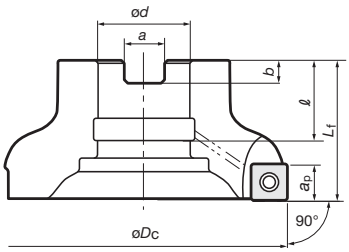
Diameter ø50 ~ 125 mm | 90° 10 mm | Air Hole | P Steel | M Stainless | K Cast Iron | N Non-ferrous

Face Milling | Shoulder Milling

For square shoulder milling of general steels, stainless steels, cast irons and non-ferrous metals

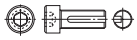
TPW13

Rake angle: A.R. +11.5° R.R. −13° ~ −10.5°

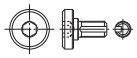


Max. ap: 10 mm

CM10×30H
CM12×30H



TMBA-M16H
TMBA-M20H



Mill body fixing screw

Right hand (R) shown.

TPW13 (Bore type)

Pitch	Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	ød	ℓ	Lf	b	a	Weight (kg)	Air hole	Mill body fixing screw	Mounting details
Coarse	TPW13R050M22.0E04	●	4	50	22	20	40	6.3	10.4	0.3	With	CM10×30H	9-138Ⓐ
	TPW13R063M22.0E05	●	5	63						0.4			
	TPW13R080M27.0E06	●	6	80	27	22	50	7	12.4	0.8	With	CM12×30H	
	TPW13R100M32.0E07	●	7	100	32	28.5		8	14.4	1.2	With	TMBA-M16H	9-138Ⓑ
	TPW13R125M40.0E08	●	8	125	40	32	63	9	16.4	2.4	With	TMBA-M20H	
Extra close	TPW13R050M22.0E05	●	5	50	22	20	40	6.3	10.4	0.3	With	CM12x30H	9-138Ⓐ
	TPW13R063M22.0E06	●	6	63						0.4			
	TPW13R080M27.0E08	●	8	80	27	22	50	7	12.4	0.8	With	CM12X30H	
	TPW13R100M32.0E10	●	10	100	32	28.5		8	14.4	1.2	With	TMBA-M16H	9-138Ⓑ
	TPW13R125M40.0E12	●	12	125	40	32	63	9	16.4	2.5	With	TMBA-M20H	

Inserts

SWMT1304PDPR-MJ

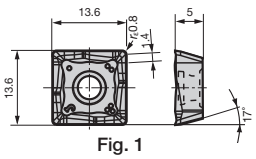


Fig. 1

SWMT1304PDER-ML

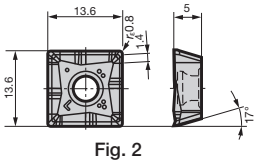


Fig. 2

SWMT1304PDPR-MS

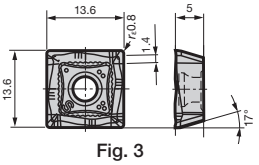


Fig. 3

SWGT1304PDPR-MJ

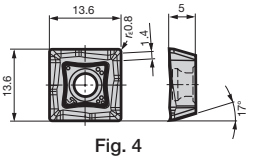


Fig. 4

SWGT1304PDFR-AJ

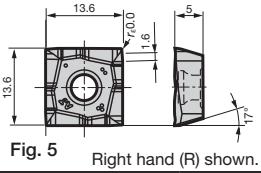


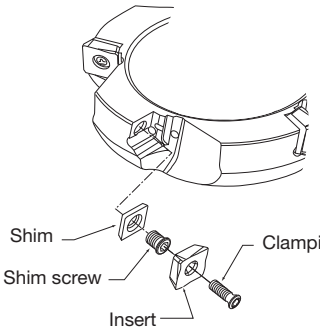
Fig. 5

Right hand (R) shown.

Cat. No.	Accuracy	Honing	Grades: Coated T3130	T1115	AH120	AH130	AH140	DLC coated DS1100	Cermet NS740	Uncoated KS05F	Figure
SWMT1304PDPR-MJ	M	With	●	●	●	●	●		●		Fig. 1
SWMT1304PDER-ML					●						Fig. 2
SWMT1304PDPR-MS						●	●				Fig. 3
SWGT1304PDPR-MJ	G				●				●		Fig. 4
SWGT1304PDFR-AJ		Without						●		●	Fig. 5

● : Stocked items.

Replacement parts



Right hand (R) shown.

No	Part	Part Cat. No. TPW13R...
①	Shim screw	DTS5-3.5SS
②	Shim	FSSP1102
③	Clamping screw	CSPB-3.5
-	Wrench	P-3.5
-	Wrench	IP-15D

Relating pages | Technical Reference (15–1)

Standard cutting conditions

Work materials	Priority	Grades	Cutting speed v_C (m/min)	Roughing (Depth of cut: > 1.0 mm) Feed per tooth f_Z (mm/t)			
				MJ	ML	MS	AJ
Mild & Low carbon steels (St37, etc.) < 180 HB	First choice	AH120	100 - 270	0.05 - 0.25	0.05 - 0.2	-	-
	Priority on wear resistance	T3130	150 - 300	0.05 - 0.25	-	-	-
	Priority on impact resistance	AH130·AH140	80 - 180	0.05 - 0.25	-	0.05 - 0.2	-
	Priority on surface quality	NS740	100 - 300	0.05 - 0.15	-	-	-
Carbon & alloy steels (Ck45, 42CrMo4, etc.) < 300 HB	First choice	AH120	100 - 230	0.05 - 0.2	0.05 - 0.15	-	-
	Priority on wear resistance	T3130	150 - 280	0.05 - 0.2	-	-	-
	Priority on impact resistance	AH130·AH140	80 - 150	0.05 - 0.2	-	-	-
	Priority on surface quality	NS740	100 - 230	0.05 - 0.15	-	-	-
Die steels (X96CrMoV12, etc.) < 30 HRC	First choice	AH120	100 - 180	0.05 - 0.15	0.05 - 0.12	-	-
	Priority on wear resistance	T3130	100 - 180	0.05 - 0.15	-	-	-
Stainless steels (X5CrNi18-10, X5CrNiMo17-13-2 etc.) < 250 HB	First choice	AH130·AH140	80 - 200	0.05 - 0.2	-	0.05 - 0.18	-
	Priority on wear resistance	AH120	150 - 250	0.05 - 0.2	0.05 - 0.15	-	-
Grey cast Irons (GG25, GG30 etc.)	First choice	T1115	180 - 300	0.05 - 0.2	-	-	-
	Priority on impact resistance	AH120	150 - 250	0.05 - 0.2	0.05 - 0.15	-	-
Ductile cast Irons (GGG40, GGG60 etc.)	First choice	T1115	120 - 200	0.05 - 0.2	-	-	-
	Priority on impact resistance	AH120	100 - 180	0.05 - 0.2	0.05 - 0.15	-	-
Aluminium alloys (Si < 13 %)	-	DS1100·KS05F	300 - 1000	-	-	-	0.05 - 0.2
Aluminium alloys (Si ≥ 13%)	-	DS1100·KS05F	80 - 300	-	-	-	0.05 - 0.2
Copper alloys	-	DS1100·KS05F	200 - 500	-	-	-	0.05 - 0.2

Work materials	Priority	Grades	Cutting speed v_C (m/min)	Light cutting to finishing (Depth of cut: < 1.0 mm) Feed per tooth f_Z (mm/t)			
				MJ	ML	MS	AJ
Mild & Low carbon steels (St37, etc.) < 180 HB	First choice	AH120	100 - 270	0.05 - 0.2	0.05 - 0.18	-	-
	Priority on wear resistance	T3130	150 - 300	0.05 - 0.2	-	-	-
	Priority on impact resistance	AH130·AH140	80 - 180	0.05 - 0.2	-	0.05 - 0.18	-
	Priority on surface quality	NS740	100 - 300	0.05 - 0.12	-	-	-
Carbon & alloy steels (Ck45, 42CrMo4, etc.) < 300 HB	First choice	AH120	100 - 230	0.05 - 0.18	0.05 - 0.12	-	-
	Priority on wear resistance	T3130	150 - 280	0.05 - 0.18	-	-	-
	Priority on impact resistance	AH130·AH140	80 - 150	0.05 - 0.18	-	-	-
	Priority on surface quality	NS740	100 - 230	0.05 - 0.12	-	-	-
Die steels (X96CrMoV12, etc.) < 30 HRC	First choice	AH120	100 - 180	0.05 - 0.12	0.05 - 0.1	-	-
	Priority on wear resistance	T3130	100 - 180	0.05 - 0.12	-	-	-
Stainless steels (X5CrNi18-10, X5CrNiMo17-13-2 etc.) < 250 HB	First choice	AH130·AH140	80 - 200	0.05 - 0.18	-	0.05 - 0.15	-
	Priority on wear resistance	AH120	150 - 250	0.05 - 0.18	0.05 - 0.12	-	-
Grey cast Irons (GG25, GG30 etc.)	First choice	T1115	180 - 300	0.05 - 0.18	-	-	-
	Priority on impact resistance	AH120	150 - 250	0.05 - 0.18	0.05 - 0.12	-	-
Ductile cast Irons (GGG40, GGG60 etc.)	First choice	T1115	120 - 200	0.05 - 0.18	-	-	-
	Priority on impact resistance	AH120	100 - 180	0.05 - 0.18	0.05 - 0.12	-	-
Aluminium alloys (Si < 13 %)	-	DS1100·KS05F	300 - 1000	-	-	-	0.05 - 0.2
Aluminium alloys (Si ≥ 13%)	-	DS1100·KS05F	80 - 300	-	-	-	0.05 - 0.2
Copper alloys	-	DS1100·KS05F	200 - 500	-	-	-	0.05 - 0.2

Notes:
- When cutting at a large depth of cut or a large cutting width, the cutting speed (v_C) and feed (fz) should be set to the lower side of the values shown in the above table.
- Dry cutting (or air-blowing) is generally recommended. However, when chips tend to excessively adhere to the cutting edges such as when machining stainless steel, use a water soluble cutting fluid.
- When wet machining mild steels, carbon steels, and alloy steels, use T3130 at lower cutting conditions.
- TPW13 type TAC mills can not be used for axial-feed cutting such as ramping, plunging, and drilling.

EPH

HYBRIDTACMILL

Diameter ø10 ~ 26 mm

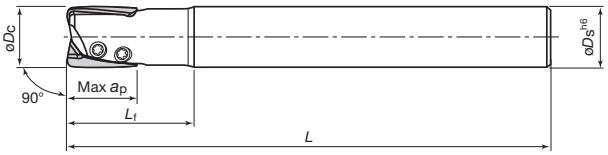
90° 10, 12, 16 mm

P Steel M Stainless K Cast Iron N Non-ferrous

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For multi-functional milling of steels, stainless steels, cast irons and aluminium alloys

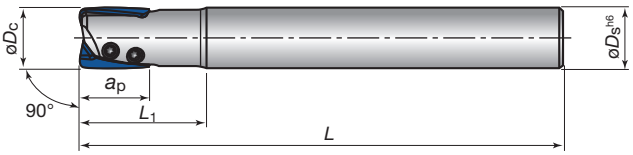
Helix angle 15°



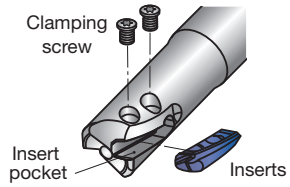
Max. *ap*: 9-75

Right hand (R) shown.

●Straight type

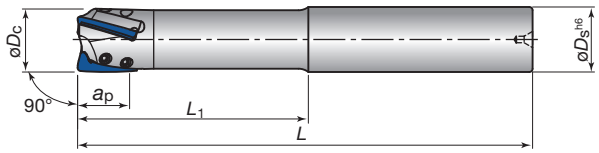


Tool assembly and replacement parts

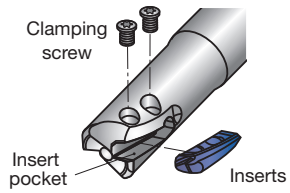


Cat. No.	Stock	No.of inserts	Dimensions (mm)					Clamping screw (Std. fastening torque)	Wrench	Applicable inserts
			øDc	øDs	Max. ap	L	L_1			
EPH11R010M10.0-2	●	2	10	10	10	80	21	CSP-2L033 (0.7 N·m)	IP-6F	XHGR1102□□□R-□□
EPH13R012M12.0-2	●	2	12	12	12	80	25	CSPB-2.2SH (1.1 N·m)	IP-7D	XHGR1302□□□R-□□
EPH18R016M16.0-2	●	2	16	16	16	100	33	CSPB-2.5SH (1.1 N·m)	IP-7D	XHGR18T2□□□R-□□
EPH18R016M16.0-3	●	3	16	16	16	100	33			
EPH18R020M20.0-3	●	3	20	20	16	110	41			
EPH18R025M25.0-4	●	4	25	25	16	120	51			

●Long type



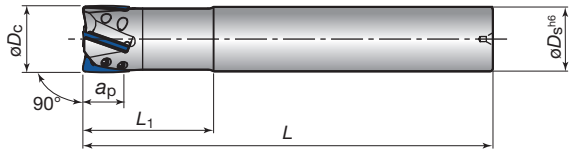
Tool assembly and replacement parts



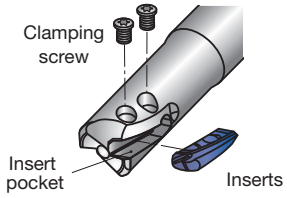
Cat. No.	Stock	No.of inserts	Dimensions (mm)					Clamping screw (Std. fastening torque)	Wrench	Applicable inserts
			øDc	øDs	Max. ap	L	L_1			
EPH11R010M10.0-2L	●	2	10	10	10	100	36	CSP-2L033 (0.7 N·m)	IP-6F	XHGR1102□□□R-□□
EPH13R012M12.0-2L	●	2	12	12	12	110	43	CSPB-2.2SH (1.1 N·m)	IP-7D	XHGR1302□□□R-□□
EPH18R016M16.0-2L	●	2	16	16	16	130	56	CSPB-2.5SH (1.1 N·m)	IP-7D	XHGR18T2□□□R-□□
EPH18R016M16.0-3L	●	3	16	16	16	130	56			
EPH18R020M20.0-3L	●	3	20	20	16	140	71			
EPH18R025M25.0-4L	●	4	25	25	16	160	88.5			

● : Stocked items.

●Undercut type

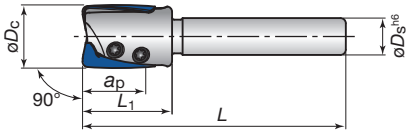


Tool assembly and replacement parts

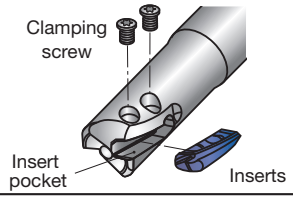


Cat. No.	Stock	No.of inserts	Dimensions (mm)					Clamping screw (Std. fastening torque)	Wrench	Applicable inserts
			øDc	øDs	Max. ap	L	L_1			
EPH13R013M12.0-2	●	2	13	12	12	110	25	CSPB-2.2SH (1.1 N·m)	IP-7D	XHGR1302□□□R-□□
EPH13R014M12.0-2	●	2	14	12	12	110	25			
EPH18R017M16.0-3	●	3	17	16	16	130	33	CSPB-2.5SH (1.1 N·m)	IP-7D	XHGR18T2□□□R-□□
EPH18R018M16.0-3	●	3	18	16	16	130	33			
EPH18R021M20.0-3	●	3	21	20	16	140	41			
EPH18R026M25.0-4	●	4	26	25	16	160	51			

● Reduced shank for automatic lathes

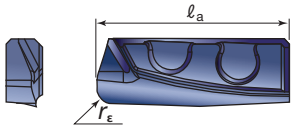


Tool assembly and replacement parts



Cat. No.	Stock	No.of inserts	Dimensions (mm)					Clamping screw (Std. fastening torque)	Wrench	Applicable inserts
			øDc	øDs	Max. ap	L	L_1			
EPH11R010M06.0-2	●	2	10	6	10	50	15	CSP-2L033 (0.7N·m)	IP-6F	XHGR1102□□□R-□□
EPH13R012M07.0-2	●	2	12	7	12	50	17	CSPB-2.2SH (1.1N·m)	IP-7D	XHGR1302□□□R-□□
EPH18R016M10.0-3	●	3	16	10	16	60	22	CSPB-2.5SH (1.1N·m)	IP-7D	XHGR18T2□□□R-□□
EPH18R020M10.0-3	●	3	20	10	16	60	22			

Inserts



Cat. No.	Grade	Dimensions (mm)		Appli-cations	Applicable cutter
	AH730	ℓ_a	Corner R r_ε		
XHGR110202ER-MJ	●	11	0.2	P Steel M Stainless K Cast Iron	EPH11R□□
XHGR110204ER-MJ	●		0.4		
XHGR110205ER-MJ	●		0.5		
XHGR110208ER-MJ	●		0.8		
XHGR110210ER-MJ	●		1.0		
XHGR110212ER-MJ	●		1.2		
XHGR110215ER-MJ	●		1.5		
XHGR110216ER-MJ	●		1.6		
XHGR110220ER-MJ	●		2.0		
XHGR130202ER-MJ	●	13	0.2		EPH13R□□
XHGR130204ER-MJ	●		0.4		
XHGR130205ER-MJ	●		0.5		
XHGR130208ER-MJ	●		0.8		
XHGR130210ER-MJ	●		1.0		
XHGR130212ER-MJ	●		1.2		
XHGR130215ER-MJ	●		1.5		
XHGR130216ER-MJ	●		1.6		
XHGR130220ER-MJ	●		2.0		
XHGR18T202ER-MJ	●	18	0.2		EPH18R□□
XHGR18T204ER-MJ	●		0.4		
XHGR18T205ER-MJ	●		0.5		
XHGR18T208ER-MJ	●		0.8		
XHGR18T210ER-MJ	●		1.0		
XHGR18T212ER-MJ	●		1.2		
XHGR18T215ER-MJ	●		1.5		
XHGR18T216ER-MJ	●		1.6		
XHGR18T220ER-MJ	●		2.0		

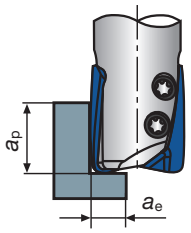
Note: When using inserts with a corner radius in excess of 1 mm, additional work to the cutter body is needed.

Cat. No.	Grade	Dimensions (mm)		Appli-cations	Applicable cutter
	DS1200	ℓ_a	Corner R r_ε		
XHGR110200FR-AJ	●	11	0	N Non-ferrous	EPH11R□□
XHGR110202FR-AJ	●		0.2		
XHGR110204FR-AJ	●		0.4		
XHGR110205FR-AJ	●		0.5		
XHGR110208FR-AJ	●		0.8		
XHGR110210FR-AJ	●		1.0		
XHGR110212FR-AJ	●		1.2		
XHGR110215FR-AJ	●		1.5		
XHGR110216FR-AJ	●		1.6		
XHGR110220FR-AJ	●		2.0		
XHGR130200FR-AJ	●	13	0		EPH13R□□
XHGR130202FR-AJ	●		0.2		
XHGR130204FR-AJ	●		0.4		
XHGR130205FR-AJ	●		0.5		
XHGR130208FR-AJ	●		0.8		
XHGR130210FR-AJ	●		1.0		
XHGR130212FR-AJ	●		1.2		
XHGR130215FR-AJ	●		1.5		
XHGR130216FR-AJ	●		1.6		
XHGR130220FR-AJ	●		2.0		
XHGR18T200FR-AJ	●	18	0		EPH18R□□
XHGR18T202FR-AJ	●		0.2		
XHGR18T204FR-AJ	●		0.4		
XHGR18T205FR-AJ	●		0.5		
XHGR18T208FR-AJ	●		0.8		
XHGR18T210FR-AJ	●		1.0		
XHGR18T212FR-AJ	●		1.2		
XHGR18T215FR-AJ	●		1.5		
XHGR18T216FR-AJ	●		1.6		
XHGR18T220FR-AJ	●		2.0		

● : Stocked items.

Standard cutting conditions

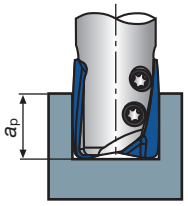
● Shoulder milling



a_p: Axial depth of cut
a_e: Radial depth of cut

Work material	Cutting speed V_C (m/min)	Feed per tooth f_Z (mm/t)	Cutting conditions		
			ø10 ≤ øD_C < ø12	ø12 ≤ øD_C < ø16	ø16 ≤ øD_C ≤ ø26
Carbon steels Alloy steels (< 30HRC)	60 ~ 180	0.03 ~ 0.1	V_C = 120 m/mim, f_Z = 0.08 mm/t		
			a_p ≤ 7.5 mm a_e ≤ 1.5 mm	a_p ≤ 9.0 mm a_e ≤ 1.5 mm	a_p ≤ 12.0 mm a_e ≤ 2.0 mm
Alloy steels prehardened steels (30 ~ 40HRC)	50 ~ 150	0.03 ~ 0.08	V_C = 100 m/min, f_Z = 0.05 mm/t		
			a_p ≤ 5.5 mm a_e ≤ 1.5 mm	a_p ≤ 6.5 mm a_e ≤ 1.5 mm	a_p ≤ 9.0 mm a_e ≤ 2.0 mm
Stainless steels (< 250HB)	50 ~ 150	0.03 ~ 0.06	V_C = 100 m/min, f_Z = 0.04 mm/t		
			a_p ≤ 4.5 mm a_e ≤ 1.5 mm	a_p ≤ 5.5 mm a_e ≤ 1.5 mm	a_p ≤ 7.5 mm a_e ≤ 2.0 mm
Grey cast iron	80 ~ 200	0.03 ~ 0.1	V_C = 140 m/min, f_Z = 0.08 mm/t		
			a_p ≤ 9.5 mm a_e ≤ 2.0 mm	a_p ≤ 11.5 mm a_e ≤ 2.0 mm	a_p ≤ 15.5 mm a_e ≤ 3.0 mm
Ductile cast iron	60 - 160	0.03 ~ 0.1	V_C = 110 m/min, f_Z = 0.08 mm/t		
			a_p ≤ 9.5 mm a_e ≤ 2.0 mm	a_p ≤ 11.5 mm a_e ≤ 2.0 mm	a_p ≤ 15.5 mm a_e ≤ 3.0 mm
Aluminium alloys (Si < 13%)	100 ~ 300	0.03 ~ 0.1	V_C = 200 m/min, f_Z = 0.07 mm/t		
			a_p ≤ 9.5 mm a_e ≤ 2.0 mm	a_p ≤ 11.5 mm a_e ≤ 2.0 mm	a_p ≤ 15.5 mm a_e ≤ 3.0 mm
Aluminium alloys (Si ≥ 13%)	80 ~ 180	0.03 ~ 0.08	V_C = 130 m/min, f_Z = 0.06 mm/t		
			a_p ≤ 9.5 mm a_e ≤ 2.0 mm	a_p ≤ 11.5 mm a_e ≤ 2.0 mm	a_p ≤ 15.5 mm a_e ≤ 3.0 mm

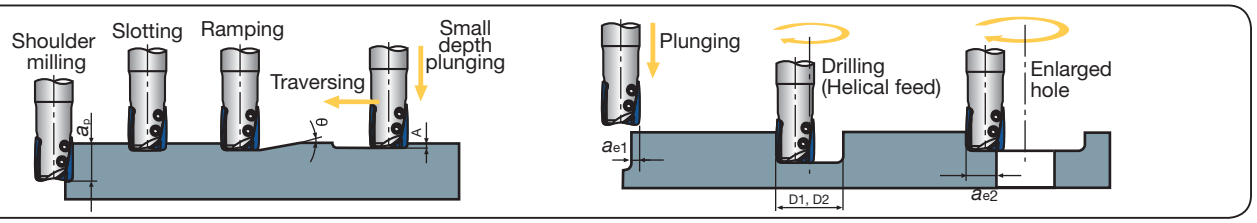
● Slotting



Work material	Cutting speed V_C (m/min)	Feed per tooth f_Z (mm/t)	Cutting conditions				
			ø10 ≤ øD_C < ø12	ø12 ≤ øD_C < ø16	ø16 ≤ øD_C ≤ ø18	ø18 < øD_C ≤ ø21	ø21 < øD_C ≤ ø26
Carbon steels Alloy steels (< 30HRC)	60 ~ 180	0.03 ~ 0.1	V_C = 100 m/mim, f_Z = 0.06 mm/t				
			a_p ≤ 1.5 mm	a_p ≤ 2.0 mm	a_p ≤ 3.0 mm	a_p ≤ 2.5 mm	a_p ≤ 2.5 mm
Alloy steels prehardened steels (30 ~ 40HRC)	50 ~ 150	0.03 ~ 0.08	V_C = 70 m/min, f_Z = 0.05 mm/t				
			a_p ≤ 1.0 mm	a_p ≤ 1.5 mm	a_p ≤ 2.0 mm	a_p ≤ 1.5 mm	a_p ≤ 1.5 mm
Stainless steels (< 250HB)	50 ~ 150	0.03 ~ 0.06	V_C = 70 m/min, f_Z = 0.04 mm/t				
			a_p ≤ 1.0 mm	a_p ≤ 1.0 mm	a_p ≤ 1.5 mm	a_p ≤ 1.5 mm	a_p ≤ 1.5 mm
Grey cast iron	80 ~ 200	0.03 ~ 0.1	V_C = 120 m/min, f_Z = 0.07 mm/t				
			a_p ≤ 3.5 mm	a_p ≤ 4.0 mm	a_p ≤ 4.5 mm	a_p ≤ 3.5 mm	a_p ≤ 3.0 mm
Ductile cast iron	60 ~ 160	0.03 ~ 0.1	V_C = 80 m/min, f_Z = 0.07 mm/t				
			a_p ≤ 3.5 mm	a_p ≤ 4.0 mm	a_p ≤ 4.5 mm	a_p ≤ 3.5 mm	a_p ≤ 3.0 mm
Aluminium alloys (Si < 13%)	100 ~ 300	0.03 ~ 0.1	V_C = 150 m/min, f_Z = 0.07 mm/t				
			a_p ≤ 3.5 mm	a_p ≤ 4.0 mm	a_p ≤ 4.5 mm	a_p ≤ 3.5 mm	a_p ≤ 3.0 mm
Aluminium alloys (Si ≥ 13%)	80 ~ 180	0.03 ~ 0.08	V_C = 110 m/min, f_Z = 0.06 mm/t				
			a_p 3.5 mm	a_p 4.0 mm	a_p 4.5 mm	a_p 3.5 mm	a_p 3.0 mm

Notes:
- When slotting, use a rigid machine.
- When chips stay in the cutting zone during slotting or pocketing, use air to remove chips from the work area.
- If chips tend to stick to the cutting edge (such as aluminium alloy machining), use a water soluble cutting fluid.
- If cutting a casting skin or heavily interrupted work surface, decrease the feed per tooth and maximum depth of cut to 1/2 to 2/3 times the values shown in the table.
- Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.
- Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually whilst making sure the machine is running normally.

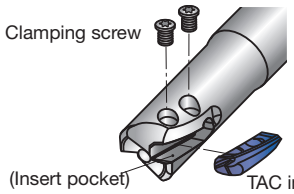
Machining modes



type	Cat. No.	Tool ø øDc (mm)	Max. depth of cut ap (mm)	Max. ramping angle θ	Max. plunging depth A (mm)	Max. cutting width in plunging ae1 (mm)	Min. machinable hole ø øD1 (mm)	Max. machinable hole ø øD2* (mm)	Max. cutting width in enlarged hole ae2* (mm)
Straight	**EPH11R010M10.0-2**	ø10	10	3°	0.3	3	13	19.5	9.7
	EPH13R012M12.0-2	ø12	12	3.5°	0.3	3	16	23.5	11.7
	EPH18R016M16.0-2	ø16	16	3.5°	0.3	4	22	31.5	15.7
	EPH18R016M16.0-3	ø16	16	3.5°	0.3	4	22	31.5	15.7
	EPH18R020M20.0-3	ø20	16	2°	0.3	4	29	39.5	19.7
	EPH18R025M25.0-4	ø25	16	1.5°	0.3	4	39	49.5	24.7
Long	**EPH11R010M10.0-2L**	ø10	10	3°	0.3	3	13	19.5	9.7
	EPH13R012M12.0-2L	ø12	12	3.5°	0.3	3	16	23.5	11.7
	EPH18R016M16.0-2L	ø16	16	3.5°	0.3	4	22	31.5	15.7
	EPH18R016M16.0-3L	ø16	16	3.5°	0.3	4	22	31.5	15.7
	EPH18R020M20.0-3L	ø20	16	2°	0.3	4	29	39.5	19.7
	EPH18R025M25.0-4L	ø25	16	1.5°	0.3	4	39	49.5	24.7
Undercut	**EPH13R013M12.0-2**	ø13	12	2°	0.3	3	17	25.5	12.7
	EPH13R014M12.0-2	ø14	12	1.5°	0.3	3	19	27.5	13.7
	EPH18R017M16.0-3	ø17	16	3°	0.3	4	23	33.5	16.7
	EPH18R018M16.0-3	ø18	16	2.5°	0.3	4	25	35.5	17.7
	EPH18R021M20.0-3	ø21	16	2°	0.3	4	31	41.5	20.7
	EPH18R026M25.0-4	ø26	16	1.5°	0.3	4	41	51.5	25.7
For automatic lathes	**EPH11R010M06.0-2**	ø10	10	3°	0.3	3	13	19.5	9.7
	EPH13R012M07.0-2	ø12	12	3.5°	0.3	3	16	23.5	11.7
	EPH18R016M10.0-3	ø16	16	3.5°	0.3	4	22	31.5	15.7
	EPH18R020M10.0-3	ø20	16	2°	0.3	4	29	39.5	19.7

*Where the insert corner radius ≤ 0.2 mm

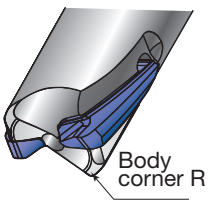
Replacement parts



Cat. No.	Clamping screw	Wrench
EPH11R010**	CSP-2L033	IP-6F
EPH13R012**	CSPB-2.2SH	IP-7D
EPH18R016**	CSPB-2.5SH	IP-7D

Notes on using large radius inserts

When using the inserts which have a large corner radius in excess of 1.0 mm, additional work is needed to the corner of the body.

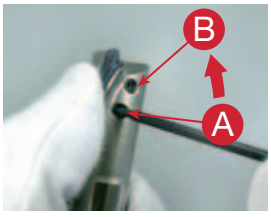


Insert corner radius r_ε (mm)	Required rework to body corner R (mm)
$0 \leq r_\varepsilon \leq 1.0$	No additional work
$1.0 < r_\varepsilon \leq 2.0$	R2.0

Insert mounting procedure (EPH-type)

Fasten the inserts in order of Ⓐ to Ⓑ

①After loosening the clamping screws, insert the insert in the insert pocket of the body whilst pushing it with your finger.
②Lightly fasten the clamping screws in order of A and B.
③For all the inserts, carry out the above steps ① and ②.
④Securely tighten the clamping screws in order of Ⓐ and Ⓑ.
(Refer to the standard tightening torque values.)
⑤For all the inserts, carry out the above step ④.
⑥Check the condition of insert seating, clearance between the insert and insert pocket, the tool diameter, and the peripheral edge runout.



EVH

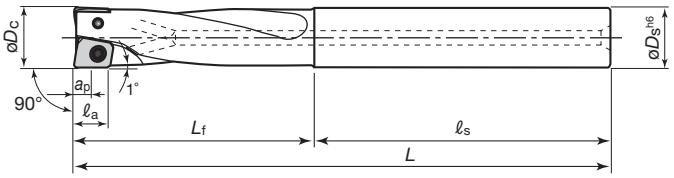
HYBRIDTACMILL

Diameter ø10 ~ 16 mm | 90° ~ 4.5 mm | Air Hole | P Steel | M Stainless | K Cast Iron | N Non-ferrous

Shoulder Milling | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole | Drilling

For multi-functional milling of steels, stainless steels, cast irons and aluminium alloys

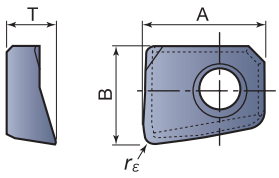
Rake angle: A.R. + 20° R.R. + 12°



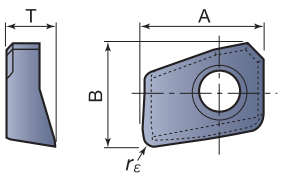
Right hand (R) shown.

Cat. No.	Stock	No. of inserts	Dimensions (mm) Tool dia. øDc	Shank dia. øDs	Effective edge length ap	Max. edge length ℓa	Overall length L	Neck length Lf	Shank length ℓs	Clamping screw (Std. fastening torque)	Wrench	Applicable inserts
EVH06R010M10.0-02	●	2	10	10	3	5	90	40	50	CSPD-1.8S (0.7N·m)	IP-6F	XVGT06H205□□-□□
EVH07R012M12.0-02	●	2	12	12	3.5	6	98	48	50	CSPB-2H (0.7N·m)	IP-6F	XVGT07X305□□-□□
EVH09R016M16.0-02	●	2	16	16	4.5	8	124	64	60	CSPB-2.5S (1.3N·m)	IP-8D	XVGT09X405□□-□□

Inserts



Center edge inserts

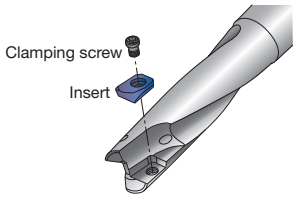


Peripheral edge inserts

	Cat. No.	Grade AH730	Dimensions (mm) A	B	T	Corner R rε	Appli-cation	Applicable cutter
Center edge	**XVGT06H205EC-MJ**	●	6.2	5	2.5	0.5	P Steel	EVH06R010M10.0-02
Center edge	**XVGT07X305EC-MJ**	●	7.1	6.1	3	0.5	P Steel	EVH07R012M12.0-02
Center edge	**XVGT09X405EC-MJ**	●	9	8.2	4	0.5	P Steel	EVH09R016M16.0-02
Peripheral edge	**XVGT06H205EP-MJ**	●	6.2	5.3	2.5	0.5	M Stainless	EVH06R010M10.0-02
Peripheral edge	**XVGT07X305EP-MJ**	●	7.1	6.4	3	0.5	K Cast Iron	EVH07R012M12.0-02
Peripheral edge	**XVGT09X405EP-MJ**	●	9	8.2	4	0.5	K Cast Iron	EVH09R016M16.0-02

	Cat. No.	Grade DS1200	Dimensions (mm) A	B	T	Corner R rε	Appli-cation	Applicable cutter
Center edge	**XVGT06H205FC-AJ**	●	6.2	5	2.5	0.5	N Non-ferrous	EVH06R010M10.0-02
Center edge	**XVGT07X305FC-AJ**	●	7.1	6.1	3	0.5	N Non-ferrous	EVH07R012M12.0-02
Center edge	**XVGT09X405FC-AJ**	●	9	8.2	4	0.5	N Non-ferrous	EVH09R016M16.0-02
Peripheral edge	**XVGT06H205FP-AJ**	●	6.2	5.3	2.5	0.5	N Non-ferrous	EVH06R010M10.0-02
Peripheral edge	**XVGT07X305FP-AJ**	●	7.1	6.4	3	0.5	N Non-ferrous	EVH07R012M12.0-02
Peripheral edge	**XVGT09X405FP-AJ**	●	9	8.2	4	0.5	N Non-ferrous	EVH09R016M16.0-02

Replacement parts

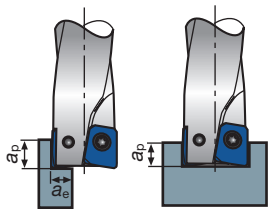


Cat. No.	Clamping screw	Wrench
EVH06R010**	CSPD-1.8S	IP-6F
EVH07R012**	CSPB-2H	IP-6F
EVH09R016**	CSPB-2.5S	IP-8D

● : Stocked items.

Standard cutting conditions

●Shoulder milling, Slotting

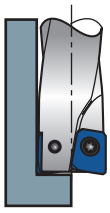


Side cutting Slotting

a_p: Axial depth of cut
a_e: Radial depth of cut

Work material		Carbon steels and alloy steels		Alloy steels and prehardened steelst		Stainless steels		Cast irons		Aluminium alloys (Si < 13%)		Aluminium alloys (Si ≥ 13%)	
Hardness		< 30HRC		30 ~ 40HRC		< 250HB		–		–		–	
Cutting speed		Vc = 50 ~ 120 m/min		Vc = 30 ~ 100 m/min		Vc = 50 ~ 120 m/min		Vc = 60 ~ 140 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 200 m/min	
Conditions		No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min
Tool dia. (mm)	ø10	2550	380	1910	190	2550	380	3180	510	6370	1020	4770	670
	ø12	2120	320	1590	160	2120	320	2650	420	5300	850	3980	560
	ø16	1590	240	1190	120	1590	240	1990	320	3980	640	2980	420
Depth of cut	Side cutting	a_p < 0.25D a_e < 0.2D		a_p < 0.25D a_e < 0.2D		a_p < 0.25D a_e < 0.2D		a_p < 0.25D a_e < 0.3D		a_p < 0.25D a_e < 0.3D		a_p < 0.25D a_e < 0.3D	
	Slotting	a_p < 0.1D		a_p < 0.1D		a_p < 0.1D		a_p < 0.15D		a_p < 0.2D		a_p < 0.2D	

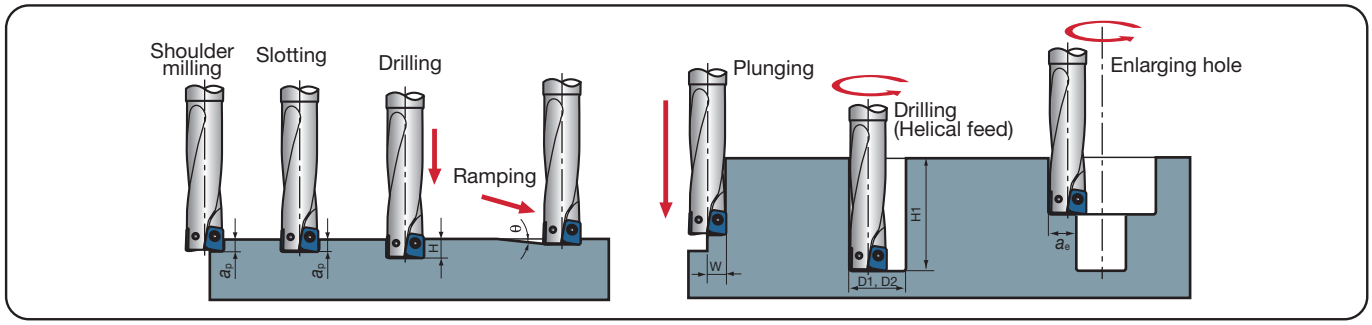
●Drilling•Plunging



Work material		Carbon steels and alloy steels		Alloy steels and prehardened steelst		Stainless steels		Cast irons		Aluminium alloys (Si < 13%)		Aluminium alloys (Si ≥ 13%)	
Hardness		< 30HRC		30 ~ 40HRC		< 250HB		–		–		–	
Cutting speed		Vc = 50 ~ 120 m/min		Vc = 30 ~ 100 m/min		Vc = 50 ~ 120 m/min		Vc = 60 ~ 140 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 300 m/min	
Conditions		No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min
Tool dia. (mm)	ø10	2550	130	1910	80	2550	130	3180	190	6370	450	4770	290
	ø12	2120	110	1590	65	2120	110	2650	160	5300	370	3980	240
	ø16	1590	80	1190	50	1590	80	1990	120	3980	280	2980	180

Note: ● In slotting or pocketing where chips tend to stay in the cutting zone, use an air blast to remove chips to prevent chip recutting.
● When chips tend to weld excessively on the cutting edge such as in machining aluminium alloys, use a water soluble cutting fluid.
● In the case of cutting a casting skin or a heavily interrupted work surface, decrease the feed per tooth and the maximum depth of cut to 1/2 to 2/3 times the values shown in the table.
● Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.
● Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually whilst making sure that the machine is running normally.

Machining modes



Cat. No.	Tool dia.	Effective edge length ap (mm)	Max.drilling depth H (mm)	Max.cutting width in plunging W (mm)	Max. ramping angle θ	Min. machinable hole dia. øD1 (mm)	Min. machinable hole dia. øD2 (mm)	Max. cutting width in enlarging hole ae (mm)	Max.depth of boring H1 (mm)
EVH06R010M10.0-02	ø10	3	5	5	5°	12	19	9	30
EVH07R012M12.0-02	ø12	3.5	6	6	5°	14	23	11	36
EVH09R016M16.0-02	ø16	4.5	8	8	5°	18	31	15	48

DPD15・EDPD15

Diameter ø50~315 mm | 90° | 7 mm

Non-ferrous

Face Milling | Face Milling | Shoulder Milling

For high speed milling of aluminium alloys and non-ferrous metals

DPD15

EDPD15

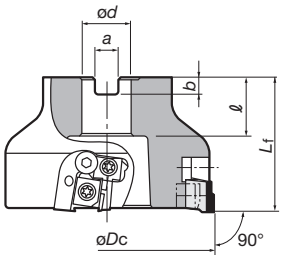


Fig. A

Max. *ap*: 7 mm

Rake angle: DPD A.R. + 8.5° R.R. + 5
EDPD A.R. + 7° R.R. 0°

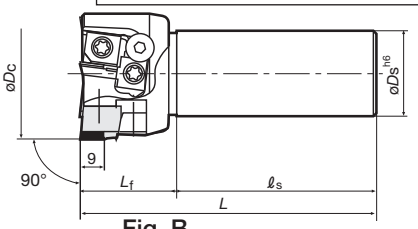


Fig. B

Right hand (R) shown.

DPD15 (Fig. A: bore type)

Cat. No.	Stock	No. of inserts	Dimensions (mm)						Weight (kg)	Mounting details
			øDc	ød	ℓ	Lf	b	a		
DPD15080R-E		4	80	27	26	40	7	12.4	1.2	9-138Ⓐ
DPD15100R-E			100	32	28.5		8	14.4	2.2	
DPD15125R-E		6	125	40	32	63	9	16.4	3.6	9-138Ⓑ
DPD15160R-E			160		29				5.2	
DPD15200R-E		8	200	60	38		14	25.7	8.2	9-138Ⓒ
DPD15250R-E		10	250						13.4	
DPD15315R-E		12	315						22.5	9-138Ⓓ

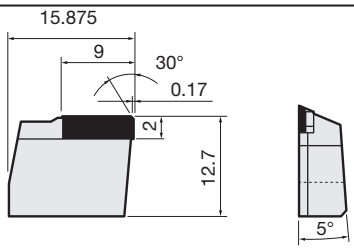
Note: Use hexagon-socket head screw CM12×30 for fitting the cutter to AO-3M/W, CM16×40 for fitting the cutter to AO-4M/W.

EDPD15 (Fig. B: shank type)

Cat. No.	Stock	No. of inserts	Dimensions (mm)				
			øDc	øDs	ℓs	Lf	L
EDPD15050R/L		3	50	32	80	35	115
EDPD15063R/L		4	63				

Inserts

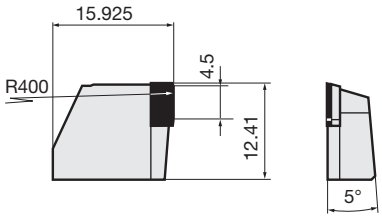
General insert



Right hand (R) shown.

Cat. No.	Grade	Stock
	T-DIA	R
YDEN1505PDFR/L-D	DX140	●

Wiper insert



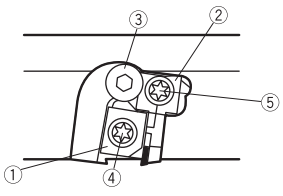
Right hand (R) shown.

Cat. No.	Grade	Stock
	T-DIA	R
YDEN1505PDFR/L-WD	DX140	●

"DX140" : Packing Quantity = 1pcs.

● : Stocked items.

Replacement parts



Right hand (R) shown.

No.	Parts	Part Cat. No.	
		DPD15	EDPD15
①	Insert locking wedge	FW304R-D	FW304R-D
②	Locator adjusting wedge	FW325R-D	FW325R-D
③	Screw for preventing wedge from flying out	BHM615-GT	BHM611-GT
④	Wedge fixing screw (øD = 80)	FDS-8ST-18	FDS-8SST
	Wedge fixing screw (for øD > 80)	FDS-8ST	–
⑤	Adjusting wedge fixing screw	FDS-8ST-18	FDS-8SST
–	Wrench	T-27T	T-27T

Relating pages | Technical Reference (15–1)

Standard cutting conditions

DPD15/EDPD15

Work material		Grades	Cutter dia. øD_C	50	63	80	100	125	160	200	250	315
Aluminium alloys	(Si < 13%)	DX140 (T-DIA)	Maximum cutting speed v_{cmax} (m/min)	3100	3900	4000						
			Maximum No. of revolution n_{max} (min^{-1})	19700		16000	12700	10200	8000	6400	5100	4000
			Depth of cut a_p (mm)	~ 7								
			Feed per tooth f_z (mm/t)	0.05 ~ 0.2								
	(Si ≥ 13%)		Cutting speed v_c (m/min)	200 ~ 500								

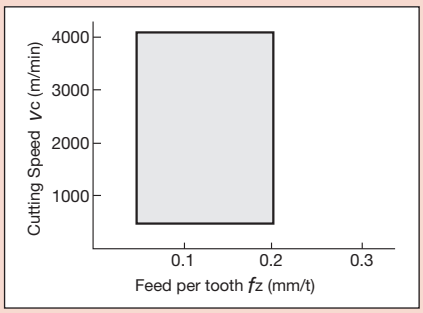
- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

Applicable work materials

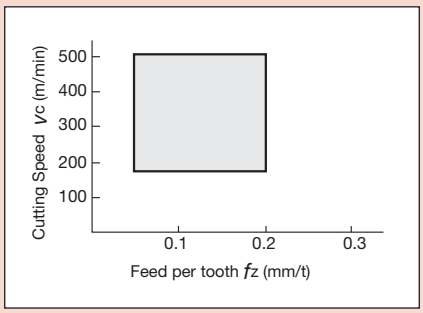
Aluminium alloys (Si < 13%)	Cast aluminium alloys: JIS AC2C–T6, AC4B–T6, etc. Aluminium die castings: JIS ADC12, etc. Various forged and rolled workpiece: 2017, 5056, 7075, etc.
Aluminium alloys (Si ≥ 13%)	A390, etc. (Use at speeds up to 500 m/min)
Non-ferrous metals	Copper alloys, etc.

Cutting condition range

[Aluminium alloys (Si < 13%)] (Insert grade: DX140 (T-DIA))



[Aluminium alloys (Si ≥ 13%)] (Insert grade: DX140 (T-DIA))



Notes: • Wet cutting is recommended. Use a water-soluble cutting fluid.
• Dry cutting is also possible. However, wet cutting excels in chipbreaking and attaining superior surface quality.

Cautionary points for use

- To avoid the danger of unbalanced revolution, the TAC mill should not be used in a state of reduced number of inserts.
- Use the cutter within the maximum revolutions written on the cutter body.
- When using the cutter at a cutting speed less than v_c = 1500 m/min, the balance quality of the arbor and toolholder should be prepared within class G16.
- When installing the inserts, recommended clamping torque for the wedge fixing screw is 9.8 N·m.

TPP16RIE

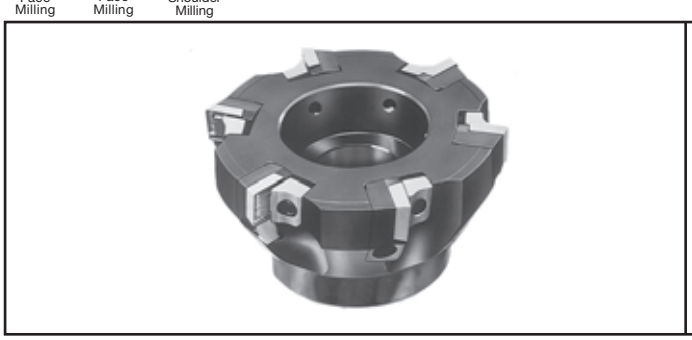
Diameter ø80 ~ 315 mm

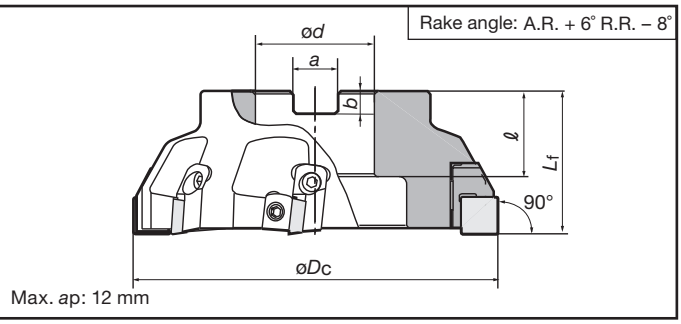
90° 12 mm

P Steel K Cast Iron M Stainless

Face Milling | Face Milling | Shoulder Milling

For large depth, square shoulder milling of general steels, cast irons and stainless steels

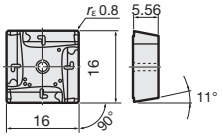




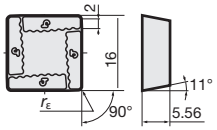
Cat. No.	Stock	No. of inserts	Dimensions (mm)						Weight (kg)	Mounting details
			øDc	ød	ℓ	Lf	b	a		
TPP16080RIE	●	4	80	27	26	50	7	12.4	1.0	9-138Ⓑ
TPP16100RIE	●	5	100	32	32	63	8	14.4	1.8	
TPP16125RIE	●	6	125	40			9	16.4	2.8	
TPP16160RIE	●	8	160		29				4.6	
TPP16200RIE	●	10	200	60	38		14	25.7	6.9	9-138Ⓒ
TPP16250RIE	●	12	250						13.0	
TPP16315RIE	●	14	315						22.2	9-138Ⓓ

Inserts

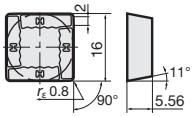
SPMR1605PPPR-ML



SPMR1605PPTR-MJ

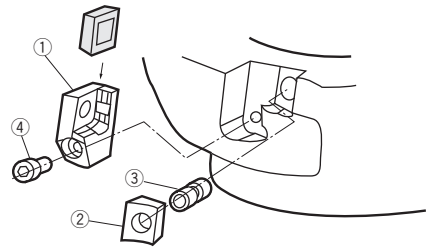


SPMR1605PPTR-MH



Cat. No.	Accu-racy	Honing	Grades			
			Coated			Uncoated
			T3130	T1115	GH330	UX30
SPMR1605PPPR-ML	M	With			●	
SPMR1605PPTR-MJ			●	●	●	●
SPMR1605PPTR-MH			●		●	●

Replacement parts



No.	Descriptions	Cat. No
①	Locator	LPP16R
②	Insert locking wedge	WPP16R
③	Wedge fixing screw	FDS-8S (FDS-8SS)
④	Locator fixing screw	CM5X0.8X12
–	T-handle wrench	TP-4

Notes : Part cat. No. in ( ) is used for TPP16080R and TPP16100RIE.

● : Stocked items.

Relating pages | Technical Reference (15–1)

Standard cutting conditions

●For MJ-chipbreaker inserts (General purpose)

Work materials	Grades	Roughing (Depth of cut: *ap* > 1.5 mm)		Finishing (Depth of cut: *ap* = 0.3 ~ 0.7 mm)	
		Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)
Mild steels Unhardened steels (< 180 HB)	**GH330**	100 ~ 230	0.1 ~ 0.25	130 ~ 250	0.1 ~ 0.3
	T3130	130 ~ 300	0.1 ~ 0.28	180 ~ 300	
	UX30	100 ~ 180	0.1 ~ 0.25	130 ~ 200	
Carbon steels Alloy steels (< 300 HB)	**GH330**	100 ~ 180	0.1 ~ 0.2	130 ~ 200	0.1 ~ 0.28
	T3130	130 ~ 280	0.1 ~ 0.25	180 ~ 280	
	UX30	80 ~ 130	0.1 ~ 0.2	100 ~ 150	
Die steels (< 30 HRC)	**GH330**	100 ~ 150	0.1 ~ 0.18	100 ~ 150	0.1 ~ 0.2
	UX30	80 ~ 130		80 ~ 130	
Cast irons Ductile cast irons	**T1115**	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
	UX30	80 ~ 130	0.1 ~ 0.2	80 ~ 130	
Stainless steels (< 250 HB)	**GH330**	150 ~ 200	0.15 ~ 0.23	200 ~ 250	0.15 ~ 0.25

●For ML-chipbreaker inserts (Sharpness-priority)

Work materials	Grades	Roughing (Depth of cut: *ap* > 1.5 mm)		Finishing (Depth of cut: *ap* = 0.3 ~ 0.7 mm)	
		Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)
Mild steels Unhardened steels (< 180 HB)	**GH340**	100 ~ 200	0.05 ~ 0.17	100 ~ 230	0.05 ~ 0.2
	GH330	130 ~ 230		150 ~ 250	
	AH330	130 ~ 370		150 ~ 400	
Carbon steels Alloy steels (< 300 HB)	**GH340**	100 ~ 170	0.05 ~ 0.12	100 ~ 200	0.05 ~ 0.15
	GH330	150 ~ 180		150 ~ 200	
Stainless steels (< 250 HB)	**GH340**	100 ~ 170	0.05 ~ 0.12	100 ~ 200	0.05 ~ 0.15
	GH330	150 ~ 200		200 ~ 250	

●For MH-chipbreaker inserts (Toughness-priority)

Work materials	Grades	Roughing (Depth of cut: *ap* > 1.5 mm)		Finishing (Depth of cut: *ap* = 0.3 ~ 0.7 mm)	
		Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)
Mild steels Unhardened steels (< 180 HB)	**GH330**	100 ~ 230	0.15 ~ 0.3	130 ~ 250	0.15 ~ 0.35
	T3130	130 ~ 300	0.15 ~ 0.33	180 ~ 300	0.15 ~ 0.38
	UX30	100 ~ 180	0.15 ~ 0.3	130 ~ 200	0.15 ~ 0.35
Carbon steels Alloy steels (< 300 HB)	**GH330**	100 ~ 180	0.15 ~ 0.24	130 ~ 200	0.15 ~ 0.35
	T3130	130 ~ 280	0.15 ~ 0.3	180 ~ 280	
	UX30	80 ~ 130	0.15 ~ 0.24	100 ~ 150	
Die steels (< 30 HRC)	**GH330**	100 ~ 150	0.15 ~ 0.22	100 ~ 150	0.15 ~ 0.28
	UX30	80 ~ 130		80 ~ 130	
Cast irons Ductile cast irons	**T1115**	100 ~ 200	0.15 ~ 0.24	100 ~ 200	0.15 ~ 0.3
	UX30	80 ~ 130	0.15 ~ 0.24	80 ~ 130	

Notes:
- As a rule, dry cutting (or air-blowing) is generally recommended.
- If a cutting fluid is used, the cutting speed should be set to the lower side of the values shown in the above table.
- When being used in square shoulder milling, climb milling is recommended.
- In square shoulder milling of stainless steel, when chips tend to be recut during cutting, change to up-milling mode.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

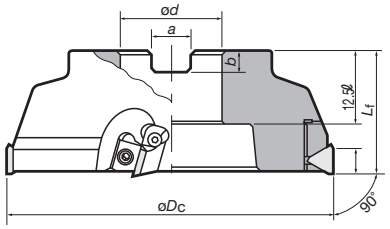
TSE3000R(IA)E

Diameter ø50 ~ 100 mm | 90° 8 mm | P Steel | M Stainless | K Cast Iron | N Non-ferrous

Face Milling | Shoulder Milling

For square shoulder milling of general steels, stainless steels, cast irons and non-ferrous metals

Rake angle: A.R. + 17° R.R. + 5°



Max. ap: 8 mm

Right hand (R) shown.

TSE3000 I (Irregular pitch)

Cat. No.	Stock	No. of inserts	Dimensions (mm)						Weight (kg)	Mounting details
			øDc	ød	ℓ	Lf	b	a		
TSE3050RE	●	3	50	22	20	40	6.3	10.4	0.3	9-138Ⓐ
TSE3063RE	●	3	63						0.5	
TSE3003RIAE	●	4	80	27	26	50	7	12.4	1.0	
TSE3004RIAE	●	6	100	32	32	63	8	14.4	2.0	

Note: TSE3050R/L and TSE3063R/L are not irregular pitch spec.

Inserts

TECN1603PETR

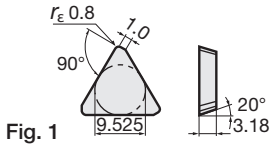


Fig. 1

TECN1603PEFR-D

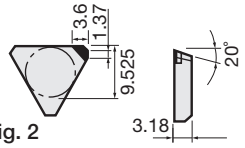


Fig. 2

TEKR1603PEPR-MS

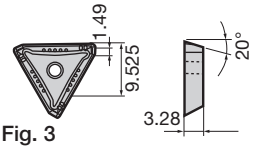


Fig. 3

Corner details

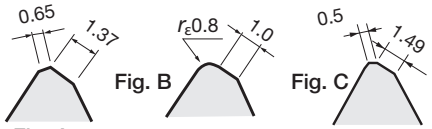


Fig. A | Fig. B | Fig. C

Right hand (R) shown.

Cat. No.	ISO Cat. No. (Metric)	Corner Detail	Accuracy	Honing	Grades													Shape
					Coated							Cermet		Uncoated	T-DIA			
					T3130	T1115	AH120	AH130	AH140	AH330	GH330	NS740	N308	UX30	TH10	DX140	DX160	
TECN32ZTR	TECN1603PETR	Fig. B	C	With								●	●	●				Fig. 1
TECN32ZFR	TECN1603PEFR	Fig. A		Without											●			
TECN32ZFR-DIA	TECN1603PEFR-D															●		Fig. 2
TEEN32ZTR	TEEN1603PETR	Fig. B	E	With	●	●	●	●	●	●	●	●	●	●				Fig. 1
TEEN32ZFR	TEEN1603PEFR	Fig. A		Without											●			
TEKR1603PEPR-MS		Fig. C	K	With					●									Fig. 3

Note: T-DIA is trade name for Tungaloy's PCD grade. Available in one-corner type.

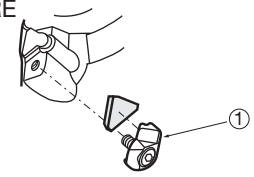
"DX140","DX160" : Packing Quantity = 1 pcs.

● : Stocked items.

Relating pages | Technical Reference (15–1)

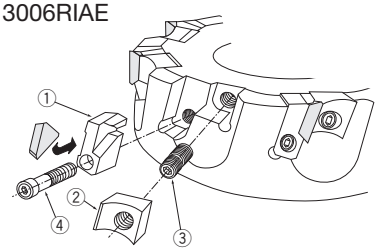
Replacement parts (Used for TSE3000IA·TSE4000IA)

TSE3050E ~ TSE3063RE



No.	Descriptions	Cat. No.
①	Clamp-set	CSL-4
–	Wrench	P-3

TSE3003RIAE ~ 3006RIAE



No.	Descriptions	Cat. No.
①	Locator	LE303R
②	Insert locking wedge	WF330R
③	Wedge fixing screw	FDS-8S
④	Locator fixing screw	CM4X0.7X12
–	T-handle	TP-4

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

Standard cutting conditions

Applied to cutter dia. ≥ ø50 mm

Work materials	Grades	Roughing (Depth of cut: > 1.5mm)		Finishing (Depth of cut: 0.3 ~ 0.7 mm)	
		Cutting speed v_C (m/min)	Feed per tooth f_Z (mm/t)	Cutting speed v_C (m/min)	Feed per tooth f_Z (mm/t)
Mild steels Unhardened steels (< 180 HB)	**AH120 • GH330**	130 ~ 230	0.1 ~ 0.2	130 ~ 250	0.1 ~ 0.23
	T3130	130 ~ 300	0.1 ~ 0.23	150 ~ 300	0.1 ~ 0.25
	NS740 • N308	130 ~ 200	0.1 ~ 0.18	150 ~ 250	0.1 ~ 0.2
	UX30 • AH130	100 ~ 180	0.1 ~ 0.2	130 ~ 200	0.1 ~ 0.23
Carbon steels Alloy steels (< 300 HB)	**AH120 • GH330**	100 ~ 200	0.1 ~ 0.18	130 ~ 230	0.1 ~ 0.2
	T3130	130 ~ 280	0.1 ~ 0.2	180 ~ 280	0.1 ~ 0.23
	NS740 • N308	100 ~ 150	0.1 ~ 0.15	150 ~ 200	0.1 ~ 0.18
	UX30	80 ~ 130	0.1 ~ 0.18	100 ~ 150	0.1 ~ 0.2
Die steels (< 30 HRC)	**T3130 • AH120**	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2
	UX30	80 ~ 130		80 ~ 130	
Stainless steels (< 250 HB)	**AH130 • AH140**	80 ~ 180	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
	AH120 • GH330	150 ~ 200	0.1 ~ 0.18	200 ~ 250	
Cast irons	**T1115**	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.2
	TH10	80 ~ 130		80 ~ 130	0.1 ~ 0.25
Aluminium alloys (Si < 13%)	**TH10**	200 ~ 1000	0.05 ~ 0.25	350 ~ 1000	0.1 ~ 0.25
	DX140		0.05 ~ 0.15		0.1 ~ 0.2
Copper alloys	**TH10**	200 ~ 500	0.1 ~ 0.15	200 ~ 500	0.1 ~ 0.2

Note: • Dry cutting is recommended except for aluminium alloys
• Maximum depth of cut for TECN32ZFR-DIA is 2.5 mm.
• When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

● : Stocked items.

TSE4000RIAE

Diameter ø80 ~ 160mm

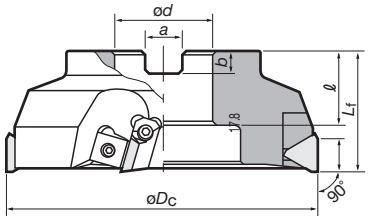
90° 10 mm

P Steel M Stainless K Cast Iron N Non-ferrous

Face Milling Shoulder Milling

For large depth, square shoulder milling of general steels, stainless steels, cast irons and non-ferrous metals

Rake angle: TSE A.R. + 17° R.R. + 5°
Rake angle: ESE A.R. + 17° R.R. + 1° ~ + 4°



Max. ap: 10 mm

Right hand (R) shown.

TSE4000ⅠA (Bore type, Irregular pitch)

Cat. No.	Stock	No. of inserts	Dimensions (mm)						Weight (kg)	Mounting details
			øDc	ød	ℓ	Lf	b	a		
TSE4003RIAE	●	4	80	27	26	50	7	12.4	1.0	9-138Ⓐ
TSE4004RIAE	●	6	100	32	32	63	8	14.4	1.9	
TSE4005RIAE	●		125	40			9	16.4	2.9	9-138Ⓑ
TSE4006RIAE	●	8	160		29				4.9	9-138Ⓒ

Inserts

TE□N43Z□R/L

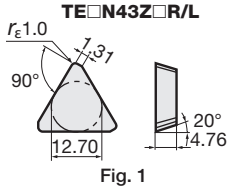


Fig. 1

TECN2204PEFR-D

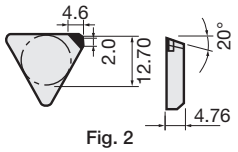


Fig. 2

TEKR2204PEPR-MS

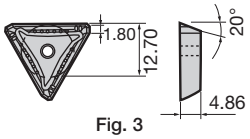


Fig. 3

Right hand (R) shown.

Corner details

Fig. A

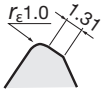


Fig. B

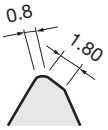


Fig. C

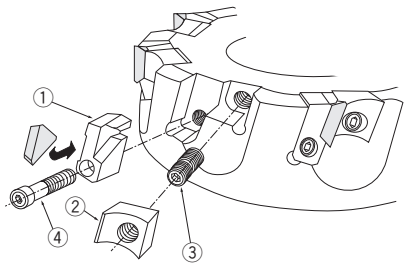
Note: E-class insert are a little different from above figure in detail.

Cat. No.	ISO Cat. No. (Metric)	Corner Detail	Accuracy	Honing	Grades													Shape
					Coated							Cermet		Uncoated	T-DIA			
					T3130	T1115	AH120	AH130	AH140	AH330	GH330	NS740	N308	UX30	TH10	DX140	DX160	
TECN43ZTR	TECN2204PETR	Fig. B	C	With								●	●	●				Fig. 1
TECN43ZFR	TECN2204PEFR	Fig. A		Without											●			
TECN43ZFR-DIA	TECN2204PEFR-D															●	▲	Fig. 2
TEEN43ZTR	TEEN2204PETR	Fig. B	E	With	●	●	●	●	●	●	●	●	●	●				Fig. 1
TEEN43ZFR	TEEN2204PEFR	Fig. A		Without											●			
TEKR2204PEPR-MS		Fig. C	K	With					●									Fig. 3

Note: T-DIA is trade name for Tungaloy's PCD grade.Available in one-corner type

"DX140","DX160" : Packing Quantity = 1 pcs.

Replacement parts



No	Descriptions	Cat. No.	
		TSE4003RIAE TSE4004RIAE	TSE4005RIAE ~TSE4006RIAE
①	Locator	LE403R	LE405R
②	Insert locking wedge	WF330N	WF500R
③	Wedge fixing screw	FDS-8S	FDS-8S
④	Locator fixing screw	CM4X0.7X14	CM4X0.7X14
–	T-handle wrench	TP-4	TP-4

● : Stocked items.
▲ : Shortly unavailable

Relating pages Technical Reference (15–1)

Standard cutting conditions

Work materials	Grades	Roughing (Depth of cut *ap*: > 1.5 mm)		Finishing (Depth of cut *ap*: 0.3 ~ 0.7 mm)	
		Cutting speed v_c (m/min)	Feed per tooth f_z (mm/t)	Cutting speed v_c (m/min)	Feed per tooth f_z (mm/t)
Mild steels Unhardened steels (< 180 HB)	**AH330**	130 ~ 370	0.1 ~ 0.2	150 ~ 400	0.1 ~ 0.23
	AH120 • GH330	130 ~ 230		150 ~ 250	
	T3130	130 ~ 300	0.1 ~ 0.23	180 ~ 300	0.1 ~ 0.25
	NS740 • N308	130 ~ 200	0.1 ~ 0.18	150 ~ 250	0.1 ~ 0.2
	UX30 • AH140	100 ~ 180	0.1 ~ 0.2	130 ~ 200	0.1 ~ 0.23
Carbon steels Alloy steels (< 300 HB)	**AH330**	100 ~ 300	0.1 ~ 0.18	150 ~ 320	0.1 ~ 0.2
	AH120 • GH330	100 ~ 180		150 ~ 200	
	T3130	130 ~ 280	0.1 ~ 0.2	180 ~ 280	0.1 ~ 0.23
	AH140	80 ~ 130	0.1 ~ 0.18	100 ~ 200	0.1 ~ 0.18
	NS740 • N308	100 ~ 150	0.1 ~ 0.15	150 ~ 200	0.1 ~ 0.18
	UX30	80 ~ 130	0.1 ~ 0.18	100 ~ 150	0.1 ~ 0.2
Die steels (< 30 HRC)	**AH330**	100 ~ 250	0.1 ~ 0.15	100 ~ 250	0.1 ~ 0.2
	T3130 • AH120 • GH330	100 ~ 150		100 ~ 150	
	UX30	80 ~ 130		80 ~ 130	
Stainless steels (< 250 HB)	**AH130 • AH140**	80 ~ 180	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
	AH120	150 ~ 200	0.1 ~ 0.18	200 ~ 250	
Cast irons Ductile cast irons	**T1115**	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
	TH10	80 ~ 130		80 ~ 130	
Aluminium alloys (Si < 13%)	**TH10**	200 ~ 1000	0.05 ~ 0.25	350 ~ 1000	0.1 ~ 0.25
	DX140		0.05 ~ 0.15		0.1 ~ 0.2
Copper alloys	**TH10**	200 ~ 500	0.1 ~ 0.15	200 ~ 500	

Note:
- Dry cutting is recommended for all materials except for aluminium alloys.
- Maximum depth of cut for TECN2204PEFR-D is 3.5 mm.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

TPS/EPS17

Diameter ø25 ~ 63 mm | 90° | Air Hole

P Steel | M Stainless | K Cast Iron | N Non-ferrous

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For multi-functional milling of general steels, stainless steels, cast irons and aluminium alloys

TPS

EPS

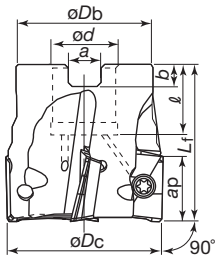


Fig. A

Rake angle: EPS11: A.R. +9° ~ +17.5° R.R. -20° ~ -7°

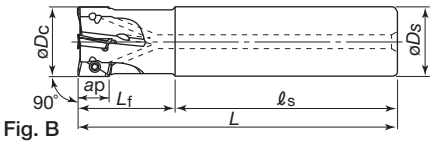
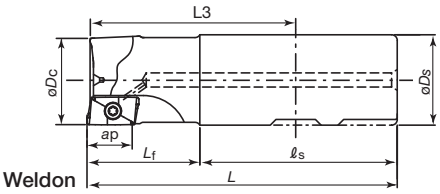


Fig. B



Weldon

9-90

Max. ap: 10.6 mm

Right hand (R) shown.

TPS17 (Fig. A: bore type)

Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	ød	ℓ	Lf	b	a	Weight (kg)	Applicable inserts	Clamping screw	Wrench	Center bolts		Mounting details
TPS17040RB-E	▲	4	40	16	19	40	5.6	8.4	0.2	AS□T1705□□ PD□R-□□	CSPB-4S	IP-15D	FSHM8-30	Fig. 1	-
TPS17050RB-E	▲	5	50	22	20		6.3	10.4	0.3				CM10X30	Fig. 2	9-138Ⓐ
TPS17063RB-E	▲	6	63			45			0.6						

● : Stocked items.
▲ : Shortly unavailable

Center bolts

Fig. 1

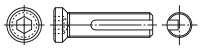


Fig. 2

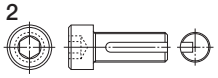
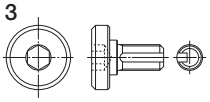
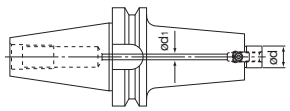


Fig. 3



Cautionary point on modifying arbors when using "TPS" cutter with air hole



Mounting diameter ød (mm)	16	22
Applicable arbor type	SMA SM1	FMC SM1
Hole diameter ød1 (mm)	4 ~ 6	5 ~ 8

Note: When using "TPS" cutter in internal air blow cutting, use corresponding arbor.

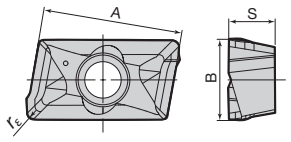
EPS17 (Fig. B: shank type)

Pitch	Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	L	Lf	ℓs	øDs	L3	Applicable inserts	Clamping screw	Wrench
Coarse	EPS17025RS	▲	2	25	115	35	80	25	-	AS□T1705□□ PD□R-□□	CSPB-4S	IP-15D
	EPS17026RS	▲	2	26					-			
	EPS17032RS	▲	2	32	120	40		32	-			
Close	EPS17032RSB	▲	3	32	120	40	80	32	-			
	EPS17033RSB	▲	3	33					-			
Long shank	EPS17025RL	▲	2	25	220	70	150	25	-			
	EPS17026RL	▲	2	26					-			
	EPS17032RL	▲	2	32	255	80	175	32	-			
Weldon	EPS17025RS-E	▲	2	25	95	35	60	25	63			
	EPS17032RSB-E	▲	3	32	110	40	70	32	74			

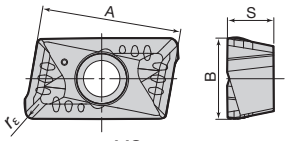
● : Stocked items.

Relating pages | Technical Reference (15–1)

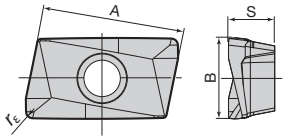
Inserts



-MJ



-MS



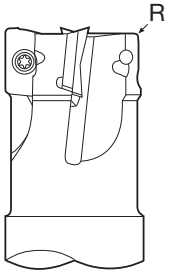
-AJ

Cat. No.	Corner r_ε	Accuracy	Grades								Dimensions (mm)		
			Coated					DLC coated	Cermet	Uncoated	A	B	S
			AH120	AH130	AH140	T3130	T1115	DS1100	NS740	KS05F			
ASMT170504PDPR-MJ	0.4	M	●			●	●		●		16.9	9.8	5.6
ASMT170508PDPR-MJ	0.8		●			●	●		●				
ASMT170512PDPR-MJ	1.2		●			●							
ASMT170516PDPR-MJ	1.6		●			●			●				
ASMT170520PDPR-MJ	2.0		●										
ASMT170530PDPR-MJ	3.0		●										
ASMT170532PDPR-MJ	3.2		●			●			●				
ASMT170508PDPR-MS	0.8			●	●								
ASGT170504PDFR-AJ	0.4	G						●		●			
ASGT170508PDFR-AJ	0.8							●		●			

● : Stocked items.

Cautionary point in modifying cutter bodies

When using inserts with corner radius $r_\varepsilon \geq 2.0$ mm, standard cutter bodies have to be modified “R”.



Corner radius r_ε (mm)	The dimension of modifying (mm)
0.4 ~ 1.6	Unnecessary
2.0 ~ 3.2	2

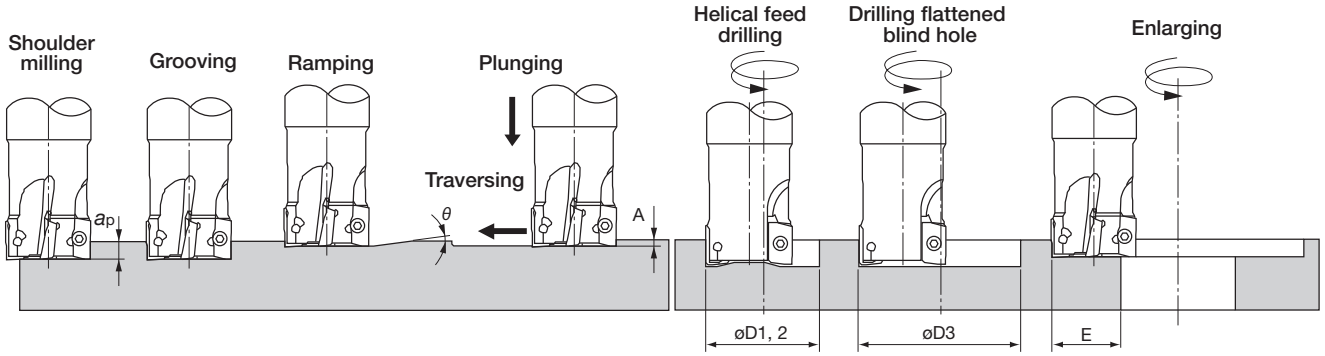
Standard cutting conditions

Work materials	Grades	Chip-breaker	Cutting speed V_C (m/min)			Feed per tooth f_Z (mm/t)		
			Cutter dia. ø12	Cutter dia. ø16, ø20	Cutter dia. > ø25	Cutter dia. ø12	Cutter dia. ø16, ø20	Cutter dia. > ø25
Mild steel, Low Carbon steels (St37 etc.) < 180HB	NS740	MJ	80 ~ 100	100 ~ 120	100 ~ 150	0.05 ~ 0.08	0.05 ~ 0.12	0.05 ~ 0.15
	AH120	MJ	80 ~ 100	100 ~ 150	100 ~ 150	0.05 ~ 0.10	0.12 ~ 0.20	0.12 ~ 0.20
Carbon steels, Alloy steels (Ck45, 42CrMo4etc) < 300HB	NS740	MJ	80 ~ 100	80 ~ 100	80 ~ 120	0.05 ~ 0.08	0.05 ~ 0.08	0.05 ~ 0.10
	T3130	MJ	80 ~ 100	80 ~ 120	100 ~ 200	0.05 ~ 0.10	0.10 ~ 0.15	0.10 ~ 0.20
Die steels (X96CrMoV12etc.) < 300HB	T3130	MJ	80 ~ 100	80 ~ 120	100 ~ 150	0.05 ~ 0.10	0.10 ~ 0.15	0.12 ~ 0.20
Stainless steels (X5CrNi18 9etc.) < 250HB	AH130 • AH140	MS	80 ~ 100	100 ~ 150	100 ~ 200	0.05 ~ 0.10	0.12 ~ 0.15	0.12 ~ 0.20
Grey Cast irons, DuctileCast irons etc. (GG25, GGG40 etc.)	T1115	MJ	80 ~ 100	100 ~ 150	100 ~ 200	0.08 ~ 0.12	0.12 ~ 0.20	0.15 ~ 0.25
Aluminium alloys (Si < 13%)	DS1100	AJ	300 ~ 1000			0.05 ~ 0.2		
Aluminium alloys (Si ≥ 13%)	DS1100	AJ	100 ~ 200			0.05 ~ 0.2		
Copper alloys	KS05F	AJ	200 ~ 500			0.05 ~ 0.2		

Notes: • When using at L/D ≥ 4, machining at the lower feed rate.
• This TAC mill is not designed to cope with the centrifugal force and dynamic balance at high speeds over 1000 m/mim.
Therefore, the cutting speed in the outer diameter of the mill should not exceed 1000 m/min.

TPS/EPS17

Machining capability



Cat. No.	Tool ø	Max. depth of cut **ap** (mm)	Max. ramping angle θ	Max. depth of plunging **A** (mm)	Min. machining hole dia. **øD1** (mm)*	Max. machining hole dia. **øD2** (mm)*	Hole dia. in drilling (Blind hole) **øD3** (mm)*	Max. cutting width in enlarging hole **E** (mm)
EPS17025·····	ø25	16.3	5°	1.0	32	48	46 ~ 48	24
EPS17026·····	ø26	16.3	5°		34	51	49 ~ 51	25.5
EPS17030·····	ø30	16.2	4°		42	59	57 ~ 59	29.5
EPS17032·····	ø32	16.2	3.5°		46	62	60 ~ 62	31
EPS17033·····	ø33	16.2	3.5°		48	65	63 ~ 65	32.5
E/TPS17040·····	ø40	16.2	2.5°		62	78	76 ~ 78	39
EPS17040·····	ø40	16.2	2.5°		62	78	76 ~ 78	39
E/TPS17050·····	ø50	16.1	1.5°		82	98	96 ~ 98	49
E/TPS17063·····	ø63	16	1°		108	124	122 ~ 124	62

Notes : Corner r_ε for dimensions of øD1, øD2, and øD3: r_ε= 0.8.

Relating pages
Technical Reference (15–1)

MEMO

DOFEED SERIES

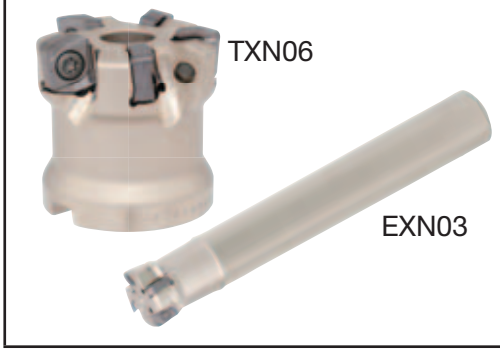
Diameter ø16 ~ 80 mm

15°·17° 1 mm Air Hole

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Face Milling | Slotting | Pocketing | Ramping | Plunging | Enlarging Hole

For high speed milling of steels, stainless steels, cast irons and titanium alloys



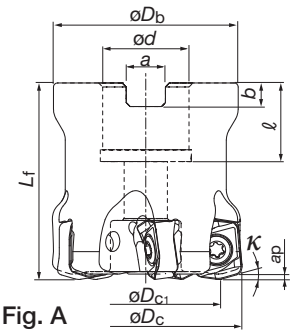


Fig. A

Rake angle: T/EXN03 = A.R. +6° R.R = +5°~ +11°
T/EXN06 = A.R. +10° R.R. -2° ~ +4°

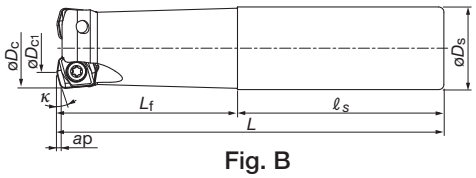


Fig. B

Max.ap: EXN03 = 1 mm
TXN06 = 1.5 mm
EXN06 = 1.5 mm

TXN (Fig. A: bore type)

type	Cat. No.	Stock	No. of Inserts	Dimensions (mm)									Weight (kg)	Air hole	Center bolt	Insert	Mounting details
				øDc	øDc1	øDb	ød	ℓ	Lf	b	a	κ					
Coarse	New TXN06R050M22.0E04	●	4	50	37.6	47	22	20	50	6.3	10.4	15°	0.4	with	FSHM10-40H	LNMU06...	9-138Ⓐ
	New TXN06R052M22.0E04	★	4	52	39.6	50	22	20	50	10.4	6.3	15°	0.5		FSHM10-40H		
	New TXN06R063M22.0E04	●	4	63	50.6	59	22	20	50	6.3	10.4	15°	0.8		CM10X30H		
	New TXN06R066M27.0E04	★	4	66	53.6	63	27	22	50	12.4	7	15°	0.8		CM12X30H		
	New TXN06R080M27.0E05	★	5	80	67.6	76	27	22	63	7	12.4	15°	1.6		CM12X30H		
Close	New TXN03R040M16.0E06	●	6	40	33.6	47	16	20	40	6.3	10.4	17°	0.2		CM8X30H	LNMU03...	
	New TXN03R050M22.0E08	●	8	50	43.6	47	22	20	50	5	8	17°	0.5		CM10X30H		
	TXN06R050M22.0E05	●	5	50	37.6	47	22	20	50	6.3	10.4	15°	0.4		FSHM10-40H	LNMU06...	
	TXN06R052M22.0E05	●	5	52	39.6	49	22	20	50	6.3	10.4	15°	0.5		FSHM10-40H		
	TXN06R063M22.0E06	●	6	63	50.6	59	22	20	50	6.3	10.4	15°	0.8		CM10X30H		
	TXN06R066M27.0E06	●	6	66	53.6	63	27	22	50	7	12.4	15°	0.8		CM12X30H		
	TXN06R080M27.0E08	●	8	80	67.6	76	27	22	63	7	12.4	15°	1.6		CM12X30H		

EXN (Fig. B: Shank type)

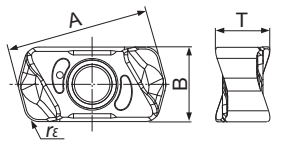
type	Cat. No.	Stock	No. of Inserts	Dimensions (mm)							Weight (kg)	Air hole	Insert
				øDc	øDc1	øDs	L	Lf	ℓ s	κ			
Standard	EXN03R016M16.0-02	●	2	16	9.6	16	100	30	70	17°	0.2	with	LNMU03...
	EXN03R018M16.0-02	●	2	18	11.5	16	100	30	70	17°	0.2		
	EXN03R020M20.0-04	●	4	20	13.5	20	130	50	80	17°	0.3		
	EXN03R022M20.0-04	●	4	22	15.5	20	130	50	80	17°	0.3		
	EXN03R025M25.0-05	●	5	25	18.5	25	140	60	80	17°	0.5		
	EXN03R028M25.0-05	●	5	28	21.5	25	140	60	80	17°	0.5		
	EXN03R030M32.0-05	●	5	30	23.5	32	150	70	80	17°	0.8		
	EXN03R032M32.0-06	●	6	32	25.5	32	150	70	80	17°	0.9		
	New EXN03R035M32.0-06	●	6	35	28.5	32	150	35	115	17°	0.9		
	EXN06R032M32.0-02	●	2	32	19.7	32	150	70	80	15°	0.8	with	LNMU06...
	EXN06R035M32.0-02	●	2	35	22.7	32	150	45	105	15°	0.9		
	EXN06R040M32.0-03	●	3	40	27.7	32	150	45	105	15°	0.9		
Long	EXN03R016M16.0-02L	●	2	16	9.6	16	150	50	100	17°	0.2	with	LNMU03...
	EXN03R018M16.0-02L	●	2	18	11.5	16	150	25	125	17°	0.2		
	EXN03R020M20.0-03L	●	3	20	13.5	20	160	80	80	17°	0.3		
	EXN03R022M20.0-03L	●	3	22	15.5	20	160	30	130	17°	0.4		
	EXN03R025M25.0-04L	●	4	25	18.5	25	180	100	80	17°	0.6		
	EXN03R028M25.0-04L	●	4	28	21.5	25	180	35	145	17°	0.7		
	EXN03R030M32.0-04L	●	4	30	23.5	32	200	120	80	17°	0.9		
	EXN03R032M32.0-05L	●	5	32	25.5	32	200	120	80	17°	1.1		
	New EXN03R035M32.0-05L	●	5	35	28.5	32	200	35	165	17°	1.2		
	EXN06R032M32.0-02L	●	2	32	19.7	32	200	120	80	15°	1.1	with	LNMU06...
	EXN06R035M32.0-02L	●	2	35	22.7	32	200	45	155	15°	1.2		
	EXN06R040M32.0-03L	●	3	40	27.7	32	220	45	175	15°	1.3		

● : Stocked items
★ : Available from 2013

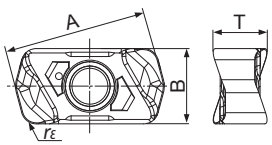
Replacement parts

Descriptions		Parts Cat. No.		
Applicable cutter		TXN06R...	T/EXN03R...	EXN06R...
Clamping screw		CSPB-5	CSPB-2.5	CSPB-5
Wrench	Bit	BLD IP20/S7	IP-8D	IP-20D
	Handle	H-TBS		

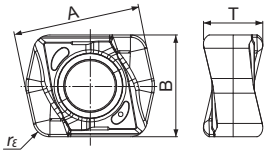
Inserts



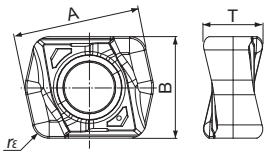
MJ (for general purpose)



ML (for low cutting force)



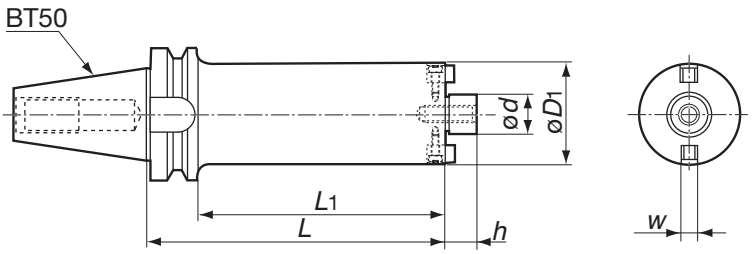
MJ (for general purpose)



ML (for low cutting force)

Cat. No.	Accuracy	Honing	Grades				Dimensions (mm)			
			AH725	AH120	AH130	New AH3035	A	B	T	r_ε
LNMU0303ZER-MJ	M	with	●		●	●	11.59	6.0	4.29	1.2
LNMU0303ZER-ML	M	with	●		●	●				
LNMU06X5ZER-MJ	M	with	●	●	●	●	15	12	7	2
LNMU06X5ZER-ML	M	with	●	●	●	●				

Arbors



※No through air hole.

Cat. No.	Stock	Dimensions (mm)						Weight (kg)	Applicable TAC mills
		L	L1	øD1	ød	h	w		
BT50-FMC22-138-47	●	138	100	47	22	18	10	5.2	TXN06R050M22.0E05 TXN03R050M22.0E08
BT50-FMC22-188-47	●	188	150					5.9	
BT50-FMC22-243-47	●	243	205					6.5	
BT50-FMC22-293-47	●	293	255					7.2	
BT50-FMC22-178-59	●	178	140	59				6.8	TXN06R063M22.0E06
BT50-FMC22-238-59	●	238	200					8	
BT50-FMC22-308-59	●	308	270					9.5	
BT50-FMC22-373-59	●	373	335					10.9	
BT50-FMA31.75-215-76	●	215	177	76	31.75	30	12.7	10	TXN06R080M31.7-08
BT50-FMA31.75-295-76	●	295	257					12.9	
BT50-FMA31.75-375-76	●	375	337					15.8	

● : Stocked items

Standard cutting conditions

Work material		Hardness	Priority	Grades	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t) Tool dia: *øDc* (mm) ø16~ ø22	ø25 ~ ø50	Plunging
Carbon steels C45, C55 etc.		~ 300HB	First choice	**AH725**	**MJ**	100 - 300	0.5 -1.2	0.5 - 1.5	0.1
			for low cutting force	**AH725**	**ML**		0.5 - 0.7	0.5 - 1.0	
			for impact resistance	**AH3035**	**MJ**		0.5 -1.2	0.5 - 1.5	
Alloy steels 42CrMo4, 17Cr3 etc.		~ 300HB	First choice	**AH725**	**MJ**	100 - 200	0.5 -1.2	0.5 - 1.5	0.1
			for low cutting force	**AH725**	**ML**		0.5 - 0.7	0.5 - 1.0	
			for impact resistance	**AH3035**	**MJ**		0.5 -1.2	0.5 - 1.5	
Prehardened steels NAK80, PX5 etc.		30 ~ 40HRC	-	**AH3035**	**ML**	100 - 200	0.5 - 0.7	0.5 - 1.0	0.1
Stainless steels X5CrNi18-10, X5CrNiMo17-12-2 etc.		~ 200HB	First choice	**AH130**	**ML**	100 - 150	0.3 - 0.5	0.3 - 0.7	0.08
			for impact resistance	**AH130**	**MJ**		0.3 - 0.8	0.3 - 0.8	
Grey cast irons GG25, GGG30 etc.		150 ~ 250HB	-	**AH725**	**MJ**	100 - 300	0.5 - 1.2	0.5 - 1.5	0.1
Ductile cast irons GGG40 etc.		150 ~ 250HB	-	**AH725**	**MJ**	80 - 200	0.5 - 1.2	0.5 - 1.5	0.1
Titanium alloy Ti-6Al-4V etc.		~ 40HRC	-	**AH725**	**ML**	30 - 60	0.3 - 0.5	0.3 - 0.7	0.08
Hardened steels	X40CrMoV5-1 etc.	40 ~ 50HRC	-	**AH3035**	**MJ**	80 - 130	0.1 - 0.2	0.1 - 0.3	0.05
	X153CrMoV12 etc.	50 ~ 60HRC				50 - 70	0.03 - 0.05	0.03 - 0.07	0.03

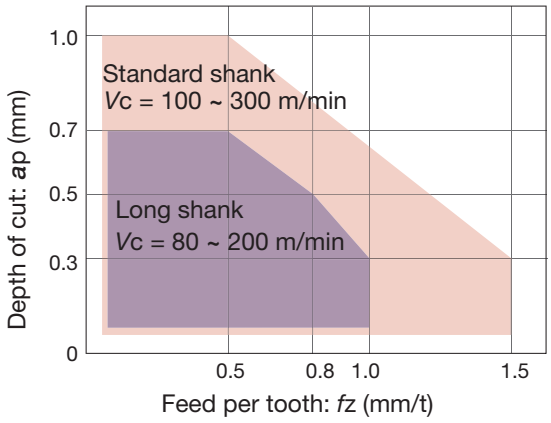
■ When chips stay in the cutting zone during slotting or pocketing, use air blast to remove chips from the work area.

■ Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.

Cautionary points in use

■ The use of a standard or long shank

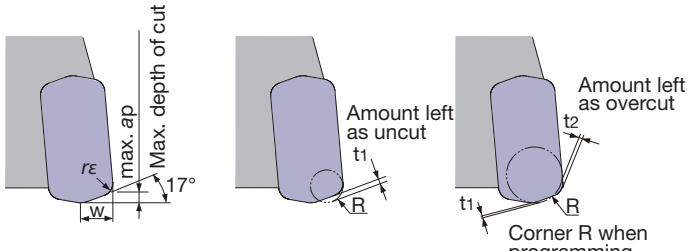
When using a long shank, please lower the cutting conditions (*Vc*, *fz*, *ap*) to 70% of the maximum conditions for the standard shank.



Tool dia.: *øDc* = ø16 ~ 35 mm
Work material: C55 (200HB)
L/D ratio of overhang
Standard shank: L/D ≤ 3
Long shank: L/D = 4

■ Tool geometry on programming

When programming for CAM, the tool should be considered as a radius cutters. Usually, the corner radius should be set as R = 1.5 mm. If a larger radius is used, overcutting will occur. The following table shows the amount left as uncut (t_1) and overcut (t_2).



Max. depth of cut max *ap* (mm)	Corner radius *r*ε (mm)	W (mm)	Corner R when programming	Amount left as uncut t_1 (mm)	Amount left as overcut t_2 (mm)
1.0	1.2	3.0	1.0	0.6	-
			1.5	0.5	-
			2.0	0.25	0.08
			2.5	0.14	0.26

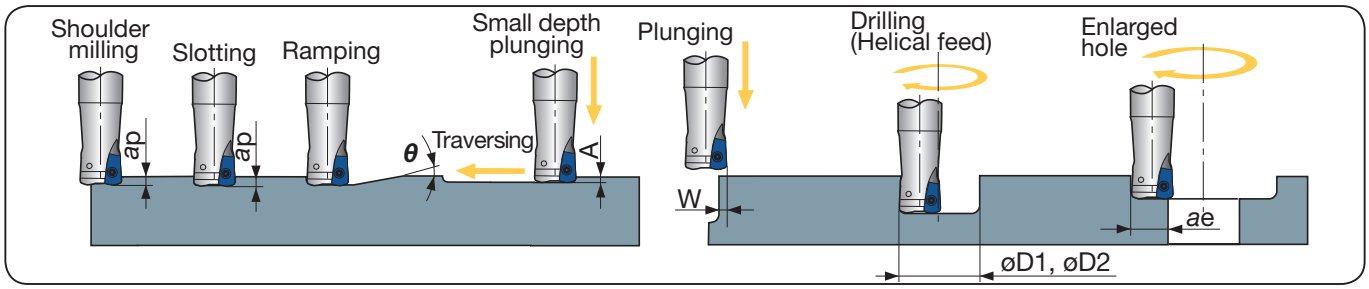
Each value in table is calculated theoretically at the maximum condition.

Tool dia.: øDc (mm), Number of revolutions: n (min-1), Feed speed: Vf (mm/min), Max. depth of cut: ap = 1.0 mm																				
ø16, z = 2		ø18, z = 2		ø20, z = 4		ø22, z = 4		ø25, z = 5		ø28, z = 5		ø30, z = 5		ø32, z = 6		ø35, z = 6		ø40, z = 6		ø50, z = 8	
n	Vf	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf	n	Vf
3,980	6,370	3,540	5,660	3,180	10,180	2,890	9,250	2,550	12,750	2,270	11,350	2,120	10,600	1,990	11,940	1,820	10,920	1,590	9,540	1,270	10,160
Vc = 200 m/min, fz = 0.8 mm/t								Vc = 200 m/min, fz = 1.0 mm/t													
3,980	4,780	3,540	4,250	3,180	7,630	2,890	6,940	2,550	10,200	2,270	9,080	2,120	8,480	1,990	9,550	1,820	8,740	1,590	7,630	1,270	8,130
Vc = 200 m/min, fz = 0.6 mm/t								Vc = 200 m/min, fz = 0.8 mm/t													
3,980	6,370	3,540	5,660	3,180	10,180	2,890	9,250	2,550	12,750	2,270	11,350	2,120	10,600	1,990	11,940	1,820	10,920	1,590	9,540	1,270	10,160
Vc = 200 m/min, fz = 0.8 mm/t								Vc = 200 m/min, fz = 1.0 mm/t													
2,980	4,770	2,650	4,240	2,390	7,650	2,170	6,940	1,910	9,550	1,710	8,550	1,590	7,950	1,490	8,940	1,360	8,160	1,190	7,140	950	5,700
Vc = 150 m/min, fz = 0.8 mm/t								Vc = 150 m/min, fz = 1.0 mm/t													
2,980	3,580	2,650	3,180	2,390	5,740	2,170	5,210	1,910	7,640	1,710	6,840	1,590	6,360	1,490	7,150	1,360	6,530	1,190	5,710	950	4,560
Vc = 150 m/min, fz = 0.6 mm/t								Vc = 150 m/min, fz = 0.8 mm/t													
2,980	4,770	2,650	4,240	2,390	7,650	2,170	6,940	1,910	9,550	1,710	8,550	1,590	7,950	1,490	8,940	1,360	8,160	1,190	7,140	950	5,700
Vc = 150 m/min, fz = 0.8 mm/t								Vc = 150 m/min, fz = 1.0 mm/t													
2,980	3,580	2,650	3,180	2,390	5,740	2,170	5,210	1,910	7,640	1,710	6,840	1,590	6,360	1,490	7,150	1,360	6,530	1,190	5,710	950	4,560
Vc = 150 m/min, fz = 0.6 mm/t								Vc = 150 m/min, fz = 0.8 mm/t													
2,390	1,910	2,120	1,700	1,910	3,060	1,740	2,780	1,530	3,830	1,360	3,400	1,270	3,180	1,190	3,570	1,090	3,270	950	2,850	760	3,040
Vc = 120 m/min, fz = 0.4 mm/t								Vc = 120 m/min, fz = 0.5 mm/t													
2,390	2,390	2,120	2,120	1,910	3,820	1,740	3,480	1,530	4,590	1,360	4,080	1,270	3,810	1,190	4,280	1,090	3,920	950	3,420	760	3,650
Vc = 120 m/min, fz = 0.5 mm/t								Vc = 120 m/min, fz = 0.6 mm/t													
3,980	6,370	3,540	5,660	3,180	10,180	2,890	9,250	2,550	12,750	2,270	11,350	2,120	10,600	1,990	11,940	1,820	10,920	1,590	9,540	1,270	10,160
Vc = 200 m/min, fz = 0.8 mm/t								Vc = 200 m/min, fz = 1.0 mm/t													
2,980	4,770	2,650	4,240	2,390	7,650	2,170	6,940	1,910	9,550	1,710	8,550	1,590	7,950	1,490	8,940	1,360	8,160	1,190	7,140	950	5,700
Vc = 150 m/min, fz = 0.8 mm/t								Vc = 150 m/min, fz = 1.0 mm/t													
800	640	710	570	640	1,020	580	930	510	1,280	450	1,130	420	1,050	400	1,200	360	1,080	320	960	250	1,000
Vc = 40 m/min, fz = 0.4 mm/t								Vc = 40 m/min, fz = 0.5 mm/t													
1,990	600	1,770	530	1,590	950	1,450	870	1,270	1,270	1,140	1,140	1,060	1,060	990	1,190	910	1,090	800	960	640	1,020
Vc = 100 m/min, fz = 0.15 mm/t								Vc = 100 m/min, fz = 0.2 mm/t													
1,190	100	1,060	80	950	150	870	140	760	190	680	170	640	160	600	180	550	170	480	140	380	150
Vc = 60 m/min, fz = 0.04 mm/t								Vc = 60 m/min, fz = 0.05 mm/t													

■ The above table shows the conditions for standard shank type cutters. When using long shank type cutters, the number of teeth may be different. In this case, the cutting conditions should be changed by referring to: "The usage of standard and long shanks" shown in previous page.

■ Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually while making sure the machine is running normally.

Machining capability



Cat. No.	Tool dia. øDc (mm)	Max. depth of cut ap (mm)	Max. ramping angle θ	Max. plunging depth A (mm)	Max. cutting width in plunging W (mm)	Min. machinable hole dia. øD1 (mm)	Max. machinable hole dia. øD2 (mm)	Max. cutting width in enlarged hole ae (mm)
EXN03R016M16.0-□□□	ø16	1	2.1°	0.3	3.5	22	30	12.5
EXN03R018M16.0-□□□	ø18	1	1.7°	0.3	3.5	26	34	14.5
EXN03R020M20.0-□□□	ø20	1	1.4°	0.3	3.5	30	38	16.5
EXN03R022M20.0-□□□	ø22	1	1.2°	0.3	3.5	34	42	18.5
EXN03R025M25.0-□□□	ø25	1	1.0°	0.3	3.5	40	48	21.5
EXN03R028M25.0-□□□	ø28	1	0.8°	0.3	3.5	46	54	24.5
EXN03R030M32.0-□□□	ø30	1	0.7°	0.3	3.5	50	58	26.5
EXN03R032M32.0-□□□	ø32	1	0.7°	0.3	3.5	54	62	28.5

· For øDc up to 33 mm, slot milling, ramping or contouring is not recommended as chips may be re-cut

Standard cutting conditions

Work material		Hardness	Priority	Grades	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t) Tool dia: ø*Dc* (mm) ø32 ~ ø80	Feed per tooth: *fz* (mm/t) Feed when plunging *fz* (mm/t)
Carbon steels C45, C55 etc.		~ 300HB	first choice	**AH725**	**MJ**	100 - 300	0.5 - 1.5	0.15
			for wear resistance	**AH120**	**MJ**			
			for impact resistance	**AH3035**	**MJ**			
Alloy steels 42CrMo4, 17Cr3 etc.		~ 300HB	first choice	**AH725**	**MJ**	100 - 200	0.5 - 1.5	0.15
			for wear resistance	**AH120**	**MJ**			
			for impact resistance	**AH3035**	**MJ**			
Prehardened steels NAK80, PX5 etc.		30 ~ 40HRC	-	**AH3035**	**ML**	100 - 200	0.5 - 1.0	0.15
Stainless steels X5CrNi18-10, X5CrNiMo17-12-2 etc.		~ 200HB	first choice	**AH130**	**ML**	100 - 150	0.3 - 0.7	0.1
			for impact resistance	**AH130**	**MJ**		0.3 - 0.8	
Grey cast irons GG25, GGG30 etc.		150 ~ 250HB	first choice	**AH120**	**MJ**	100 - 300	0.5 - 1.5	0.15
			for low cutting force	**AH120**	**ML**		0.5 - 1.0	
Ductile cast irons GGG40 etc.		150 ~ 250HB	first choice	**AH120**	**MJ**	80 - 200	0.5 - 1.5	0.15
			for low cutting force	**AH120**	**ML**		0.5 - 1.0	
Titanium alloy Ti-6Al-4V etc.		~ 40HRC	-	**AH725**	**ML**	30 - 60	0.3 - 0.7	0.08
Hardened steels	X40CrMoV5-1 etc.	40 ~ 50HRC	-	**AH3035**	**MJ**	80 - 130	0.1 - 0.3	0.05
	X153CrMoV12 etc.	50 ~ 60HRC		**AH3035**	**MJ**	50 - 70	0.03 - 0.07	0.03

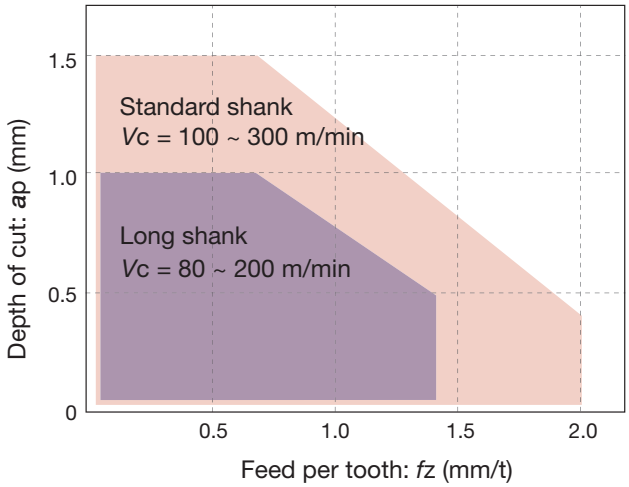
■ When chips stay in the cutting zone during slotting or pocketing, use an air blast to remove chips from the work area.

■ Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.

Cautionary points for use

The usage of a standard & long shank

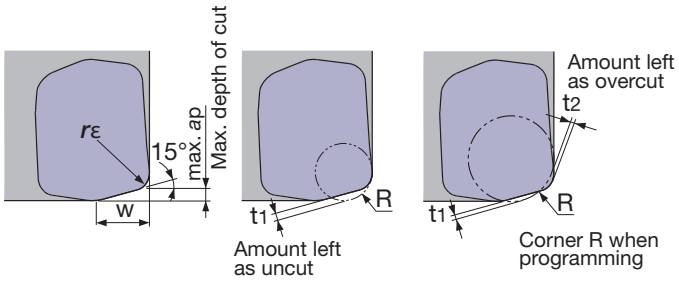
When using a long shank, please lower the cutting conditions (*Vc*, *fz*, *ap*) to 70% of the maximum conditions for the standard shank.



Tool dia.: ø*Dc* = ø32 ~ 40 mm
Work material: C55 (200HB)
L/D ratio of overhang
Standard shank: L/D ≤ 3
Long shank: L/D = 4

Tool geometry on programming

When programming for CAM, the tool should be considered as a radius cutters. Usually, the corner radius should be set as R = 3.0 mm. If a larger radius is used, overcutting will occur. The following table shows the amount left as uncut (t_1) and overcut (t_2).



Max. depth of cut max ap (mm)	Corner radius rε (mm)	W (mm)	Corner R when program-ming	Amount left as uncut t1 (mm)	Amount left as overcut t2 (mm)
1.5	2.0	6.0	2.0	0.1	-
			3.0	0.77	-
			4.0	0.54	0.26

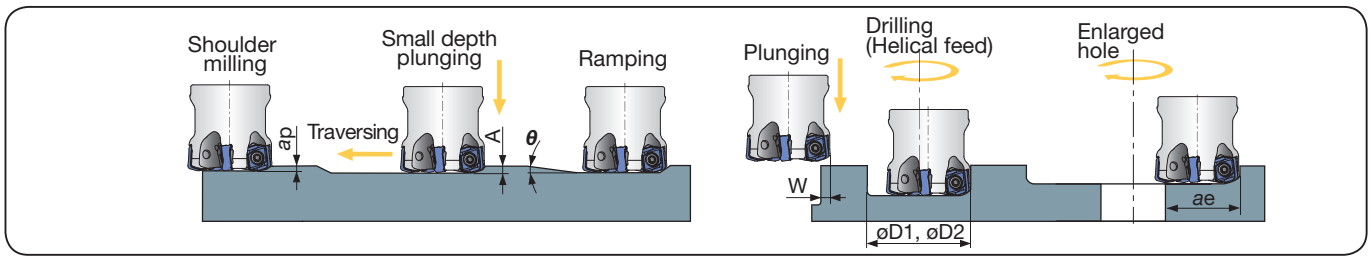
Each value in table is calculated theoretically at the maximum condition.

Tool dia.: øDc (mm), Number of revolutions: n (min-1), Feed speed: Vf (mm/min), Max. depth of cut: ap = 1.5 mm														
ø32, z = 2		ø35, z = 2		ø40, z = 3		ø50			ø63			ø80		
							Vf			Vf			Vf	
n	Vf	n	Vf	n	Vf	n	Standard (z = 4)	Close (z = 5)	n	Standard (z = 4)	Close (z = 6)	n	Standard (z = 5)	Close (z = 8)
1,990	3,980	1,820	3,640	1,590	4,770	1,270	5,080	6,350	1,010	4,040	6,060	800	4,000	6,400
Vc = 200 m/min, fz = 1.0 mm/t														
1,490	2,980	1,360	2,720	1,190	3,570	950	3,800	4,750	760	3,040	4,560	600	3,000	4,800
Vc = 150 m/min, fz = 1.0 mm/t														
1,490	2,380	1,360	2,180	1,190	2,860	950	3,040	3,800	760	2,430	3,650	600	2,400	3,840
Vc = 150 m/min, fz = 0.8 mm/t														
1,190	1,190	1,090	1,090	950	1,430	760	1,520	1,900	610	1,220	1,830	480	1,200	1,920
Vc = 120 m/min, fz = 0.5 mm/t														
1,190	1,430	1,090	1,310	950	1,710	760	1,820	2,280	610	1,470	2,200	480	1,440	2,300
Vc = 120 m/min, fz = 0.6 mm/t														
1,990	2,390	1,820	2,180	1,590	2,860	1,270	3,050	3,810	1,010	2,430	3,640	800	2,400	3,840
Vc = 200 m/min, fz = 0.6 mm/t														
1,990	3,180	1,820	2,910	1,590	3,820	1,270	4,060	5,080	1,010	3,230	4,850	800	3,200	5,120
Vc = 200 m/min, fz = 0.8 mm/t														
1,490	2,980	1,360	2,720	1,190	3,570	950	3,800	4,750	760	3,040	4,560	600	3,000	4,800
Vc = 150 m/min, fz = 1.0 mm/t														
1,490	2,380	1,360	2,180	1,190	2,860	950	3,040	3,800	760	2,430	3,650	600	2,400	3,840
Vc = 150 m/min, fz = 0.8 mm/t														
400	400	360	360	320	480	250	500	630	200	400	600	160	400	640
Vc = 40 m/min, fz = 0.5 mm/t														
990	400	910	360	800	480	640	510	640	510	410	610	400	400	640
Vc = 100 m/min, fz = 0.2 mm/t														
600	60	550	60	480	70	380	80	100	300	60	90	240	60	100
Vc = 60 m/min, fz = 0.05 mm/t														

■ The above table shows the conditions for standard shank type cutters. When using long shank type cutters, the number of teeth may be different. In this case, the cutting conditions should be changed by referring to: “The usage of standard and long shanks” shown in previous page.

■ Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually while making sure the machine is running normally.

Machining capability



Cat. No.	Tool dia. øDc (mm)	Max. depth of cut ap (mm)	Max. ramping angle θ	Max. plunging depth A (mm)	Max. cutting width in plunging W (mm)	Min. machinable hole dia. øD1 (mm)	Max. machinable hole dia. øD2 (mm)	Max. cutting width in enlarged hole ae (mm)
EXN06R032M32.0-□□□	ø32	1.5	2.0°	0.5	6.0	47	59	25
EXN06R035M32.0-□□□	ø35	1.5	1.7°	0.5	6.0	53	65	28
EXN06R040M32.0-□□□	ø40	1.5	1.3°	0.5	6.0	63	75	33
TXN06R050M...	ø50	1.5	0.9°	0.5	6.0	83	95	43
TXN06R052M...	ø52	1.5	0.8°	0.5	6.0	85	97	45
TXN06R063M...	ø63	1.5	0.6°	0.5	6.0	109	121	56
TXN06R066M...	ø66	1.5	0.5°	0.5	6.0	112	124	59
TXN06R080M...	ø80	1.5	0.5°	0.5	6.0	143	155	73

DOFEEDQUAD

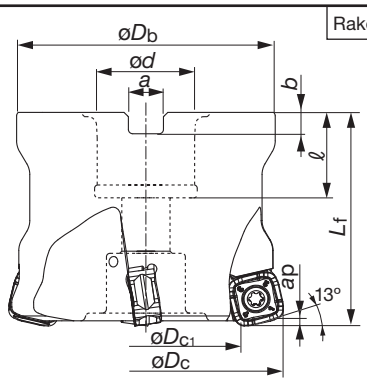
Diameter ø50~125 mm | 13° | 2 mm | P Steel | M Stainless | K Cast Iron

Face Milling

For high speed milling of steels, stainless, catiron and superalloys

TXQ12

Rake angle: A.R. +7° R.R. -8° ~ -4.5°



Max. ap: 2.0 mm

Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	øDc1	øDb	ød	ℓ	Lf	b	a	Weight (kg)	Air hole	Center bolt	Insert	Mounting details
TXQ12R050M22.0E04	●	3	50	33.8	47	22	20	50	6.3	10.4	0.4	with	FSHM10-40H	SQMU1206 ZER-MJ	9-138Ⓐ
TXQ12R052M22.0E04	●	3	52	35.8	49	22	20	50	6.3	10.4	0.5		FSHM10-40H		
TXQ12R063M22.0E04	●	4	63	46.8	59	22	20	50	6.3	10.4	0.8		CM10X30H		
TXQ12R066M27.0E04	●	4	66	49.8	63	27	22	50	7	12.4	0.9		CM10X30H		
TXQ12R080M27.0E05	●	5	80	63.8	76	27	22	63	7	12.4	1.6		CM12X30H		
TXQ12R100M32.0E06	●	6	100	83.8	96	32	25	63	8	14.4	3.0		CM16X40H		
TXQ12R125M40.0E07	●	7	125	108.8	98	40	32	63	9	16.4	3.2		TMBA-M20H		

● : Stocked items.

Standard cutting conditions

Work material	Hardness	Priority	Grades	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
High carbon steels (C45 etc.)	~ 300HB	First choice	**AH725**	100 - 300	0.5 - 2.0
		For wear resistance	**T3130**		
		For impact resistance	**AH130**		
Alloyed steels (42CrMo4 etc.)	~ 300HB	First choice	**AH725**	100 - 200	0.5 - 1.5
		For wear resistance	**T3130**		
		For impact resistance	**AH130**		
Prehardened steels(NAK80 etc.)	30 ~ 40HRC	-	**AH725**	100 - 200	0.5 - 1.0
Stainless steel (X5CrNi18-9 etc.)	~ 200HB	-	**AH130**	100 - 150	0.3 - 0.8
Grey cast iron (GG25 etc.)	-	-	**AH120**	100 - 300	0.5 - 2.0
Ductile cast irons (GGG40 etc.)	-	-	**AH120**	80 - 200	0.5 - 2.0
Titanium alloy (Ti-6Al-4V etc.)	~ 40HRC	-	**AH725**	30 - 60	0.3 - 0.7
Hardened steels (X40CrMoV5-1 etc.)	40 ~ 50HRC	-	**AH725**	80 - 130	0.1 - 0.3
	50 ~ 60HRC			50 - 70	0.03 - 0.07

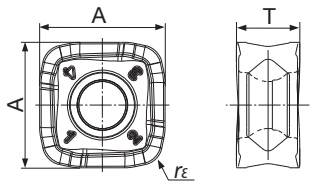
· Slot or pocket milling is not recommended, since the chip re-cutting easily occurs.
· Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.
· Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually while making sure the machine is running normally.

Relating pages | Technical Reference (15–1)

Replacement parts

Description		Parts Cat. No.
Clamping screw		CSPB-4
Wrench	Bit	BLD IP15/S7
	Handle	H-TBS

Inserts



Cat. No.	Accuracy	Honing	Grades PREMIUMTEC				Dimensions (mm)		
			AH725	AH130	AH120	T3130	A	T	rε
SQMU1206ZSR-MJ	M	with	●	●	●	●	11.7	6	2

■ Grade selection

Grades	P Steel	M Stainless	K Cast Iron	S Superalloys	H Hard Materials
AH725	◎		○	◎	◎
AH130	○ For impact resistance	◎			
AH120			◎		
T3130	◎ For wear resistance				

◎: First choice
○: Applicable

Tool dia.: øDc (mm), Number of revolutions: n (min-1), Feed speed: Vf (mm/min), Max. depth of cut: ap = 2 mm									
ø50		ø63		ø80		ø100		ø125	
n	Vf	n	Vf	n	Vf	n	Vf	n	Vf
1,270	4,570	1,010	4,850	790	4,740	630	4,540	500	4,200
Vc = 200 m/min, fz = 1.2 mm/t									
950	2,850	750	3,000	590	2,950	470	2,820	380	2,660
Vc = 150 m/min, fz = 1.0 mm/t									
950	2,280	750	2,400	590	2,360	470	2,260	380	2,130
Vc = 150 m/min, fz = 0.8 mm/t									
760	1,140	600	1,200	470	1,180	380	1,140	300	1,050
Vc = 120 m/min, fz = 0.5 mm/t									
1,270	4,570	1,010	4,850	790	4,740	630	4,540	500	4,200
Vc = 200 m/min, fz = 1.2 mm/t									
950	3,420	750	3,600	590	3,540	470	3,380	380	3,190
Vc = 150 m/min, fz = 1.2 mm/t									
250	370	200	400	150	380	120	360	100	350
Vc = 40 m/min, fz = 0.5 mm/t									
630	380	500	400	390	390	310	370	250	350
Vc = 100 m/min, fz = 0.2 mm/t									
380	60	300	60	235	60	190	60	150	50
Vc = 60 m/min, fz = 0.05 mm/t									

EXH

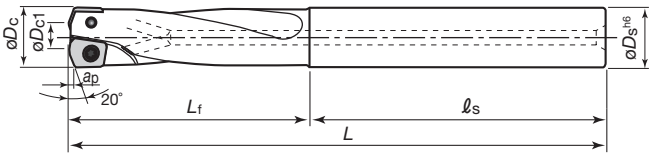
HYBRIDTACMILL

Diameter ø10 ~ 16 mm | 20° | 0.6, 0.8 mm | Air Hole | P Steel | M Stainless | K Cast Iron | N Non-ferrous

Face Milling | Slotting | Pocketing | Ramping | Plunging | Enlarging Hole | Drilling

For high feed milling of steels and aluminium alloys

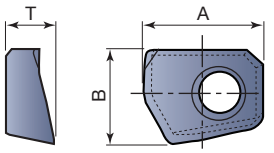
Rake angle: A.R. +20° R.R. +12°



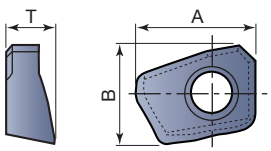
Right hand (R) shown.

Cat. No.	Stock	No. of inserts	Dimensions (mm) Tool dia. øDc	Shank dia. øDs	Effective diameter øDc1	Effective edge length ap	Overall length L	Neck length Lf	Shank length ℓs	Clamping screw (Std. fastening torque)	Wrench	Applicable inserts
EXH06R010M10.0-02	●	2	10	10	5	0.6	90	40	50	CSPD-1.8S (0.7 N·m)	IP-6F	XXGT06H205□□-□□
EXH07R012M12.0-02	●	2	12	12	7	0.6	98	48	50	CSPB-2H (0.7 N·m)	IP-6F	XXGT07X305□□-□□
EXH09R016M16.0-02	●	2	16	16	10	0.8	124	64	60	CSPB-2.5S (1.3 N·m)	IP-8D	XXGT09X408□□-□□

Inserts



Center edge inserts

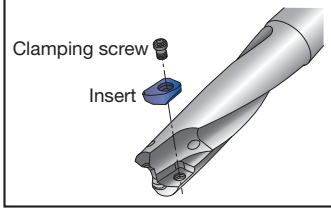


Peripheral edge inserts

	Cat. No.	Grade AH730	Dimensions (mm) A	B	T	Appli-cation	Applicable cutter
Center edge	XXGT06H205EC-MJ	●	6.2	4.9	2.5	P Steel	EXH06R010M10.0-02
Center edge	XXGT07X305EC-MJ	●	7	5.9	3		EXH07R012M12.0-02
Center edge	XXGT09X408EC-MJ	●	8.9	7.9	4	M Stainless	EXH09R016M16.0-02
Peripheral edge	XXGT06H205EP-MJ	●	6.2	5.1	2.5		EXH06R010M10.0-02
Peripheral edge	XXGT07X305EP-MJ	●	7	6.3	3	K Cast Iron	EXH07R012M12.0-02
Peripheral edge	XXGT09X408EP-MJ	●	8.9	8.0	4		EXH09R016M16.0-02

	Cat. No.	Grade DS1200	Dimensions (mm) A	B	T	Appli-cation	Applicable cutter
Center edge	XXGT06H205FC-AJ	●	6.2	4.9	2.5		EXH06R010M10.0-02
Center edge	XXGT07X305FC-AJ	●	7	5.9	3		EXH07R012M12.0-02
Center edge	XXGT09X408FC-AJ	●	8.9	7.9	4	N Non-ferrous	EXH09R016M16.0-02
Peripheral edge	XXGT06H205FP-AJ	●	6.2	5.1	2.5		EXH06R010M10.0-02
Peripheral edge	XXGT07X305FP-AJ	●	7	6.3	3		EXH07R012M12.0-02
Peripheral edge	XXGT09X408FP-AJ	●	8.9	8.0	4		EXH09R016M16.0-02

Replacement parts



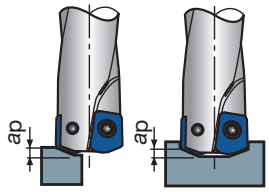
Cat. No.	Clamping screw	Wrench
EXH06R010**	CSPD-1.8S	IP-6F
EXH07R012**	CSPB-2H	IP-6F
EXH09R016**	CSPB-2.5S	IP-8D

● : Stocked items.

Relating pages | Technical Reference (15–1)

Standard cutting conditions

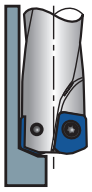
●Shoulder milling, Slotting



ap: Axial depth of cut

Work material		Carbon steels and alloy steels		Alloy steels and prehardened steelst		Stainless steels		Cast irons		Aluminium alloys (Si < 13%)		Aluminium alloys (Si ≥ 13%)	
Hardness		< 30HRC		30 ~ 40HRC		< 250HB		–		–		–	
Cutting speed		Vc = 100 ~ 300 m/min		Vc = 100 ~ 250 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 500 m/min		Vc = 100 ~ 300 m/min	
Conditions		No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min
Tool dia. (mm)	ø10	4770	1430	3820	760	4770	1430	6360	2540	9550	5730	6360	3180
	ø12	3980	1190	3180	630	3980	1190	5300	2120	7950	4770	5300	2650
	ø16	2980	890	2380	470	2980	890	3970	1580	5960	3570	3970	1980
Depth of cut	ø10	ap < 0.6		ap < 0.5		ap < 0.6		ap < 0.6		ap < 0.6		ap < 0.6	
	ø12	ae < 0.6		ae < 0.5		ae < 0.6		ae < 0.6		ae < 0.6		ae < 0.6	
	ø16	ap < 0.8		ap < 0.6		ap < 0.8		ap < 0.8		ap < 0.8		ap < 0.8	

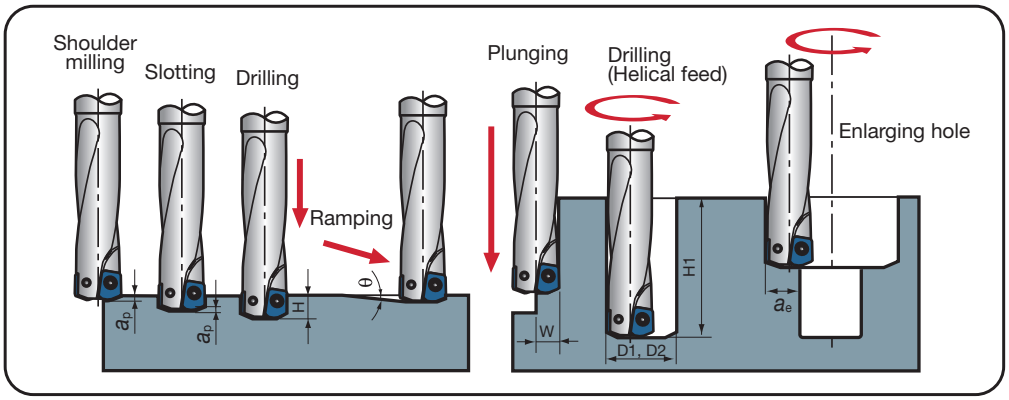
●Plunging



Work material		Carbon steels and alloy steels		Alloy steels and prehardened steelst		Stainless steels		Cast irons		Aluminium alloys (Si < 13%)		Aluminium alloys (Si ≥ 13%)	
Hardness		< 30HRC		30 ~ 40HRC		< 250HB		–		–		–	
Cutting speed		Vc = 100 ~ 300 m/min		Vc = 100 ~ 250 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 500 m/min		Vc = 100 ~ 300 m/min	
Conditions		No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min	No. of rev. n min^{-1}	Feed speed Vf mm/min
Tool dia. (mm)	ø10	4770	240	3820	150	4770	240	6360	440	9550	760	6360	440
	ø12	3980	200	3180	130	3980	200	5300	370	7950	640	5300	370
	ø16	2980	150	2380	95	2980	150	3970	280	5960	480	3970	280

Note: ● In slotting or pocketing where chips tend to stay in the cutting zone, use an air blast to remove chips for preventing chip recutting.
● When chips tend to weld excessively on the cutting edge such as in machining aluminium alloys, use a water soluble cutting fluid.
● In the case of cutting a casting skin or a heavily interrupted work surface, decrease the feed per tooth and the maximum depth of cut to 1/2 to 2/3 times the values shown in the table.
● Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.
● Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually whilst making sure that the machine is running normally.

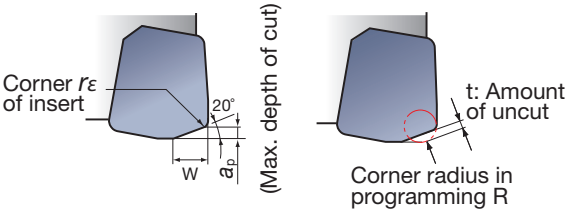
Machining modes



Cat. No.	Tool dia.	Effective edge length ap (mm)	Max.depth of drilling H (mm)	Max. cutting width in plunging W (mm)	Max. ramping angle θ	Min. machinable hole dia. D1 (mm)	Max. machinable hole dia. D2 (mm)	Max. cutting width in enlarging hole ae (mm)	Max.depth of boring H1 (mm)
EXH06R010M10.0-02	ø10	0.6	5	5	5°	12	19	7	30
EXH07R012M12.0-02	ø12	0.6	6	6	5°	14	23	9	36
EXH09R016M16.0-02	ø16	0.8	8	8	5°	18	31	12.5	48

Notes for programming

When using CAD/CAM, please program it as for radius cutter.
The following table shows actual cutting edge geometry and amount of unfinished work cut.



Cat. No.	Tool dia. (mm)	Max. depth of cut ap (mm)	Corner of insert rε	Wide of tooth W (mm)	Amount of uncut t (mm)	Corner radius in programming R
EXH06R010M10.0-02	ø10	0.6	0.5	2.5	0.7	R0.5
					0.6	R1.0
EXH07R012M12.0-02	ø12	0.6	0.5	2.5	0.7	R0.5
					0.6	R1.0
EXH09R016M16.0-02	ø16	0.8	0.8	3.0	0.8	R0.5
					0.7	R1.0
					0.6	R1.5

Face Milling | Pocketing | Ramping | Enlarging Hole

For high feed milling of general steels, cast irons, stainless steels, and hard materials

TXP

EXP

The below figures show the mill with air hole.

Rake angle: A.R. +5° R.R. -4° ~ -6°

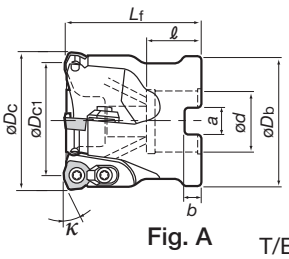


Fig. A

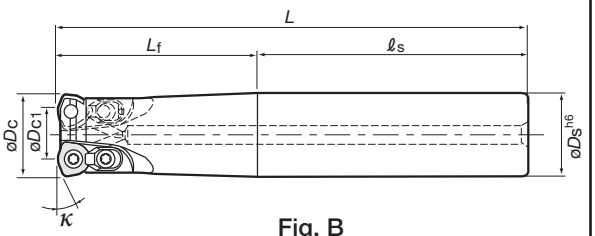


Fig. B

T/EXP 05, 06, 09: $\kappa = 20°$
T/EXP 08: $\kappa = 10°$

Centre bolts

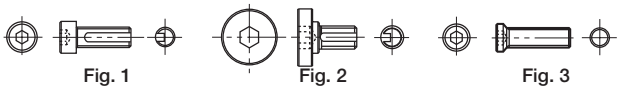


Fig. 1 Fig. 2 Fig. 3

Max. *ap*: 9-106

TXP (Fig. A: bore type)

Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	Effective dia. øDc1	ℓ	Lf	b	a	ød	øDb	Weight (kg)	Air hole	Applicable inserts	Centre bolts Cat. No.	Fig.	Mounting details
TXP05063RB-E	●	6	63	55.4	20	50	6.3	10.4	22	59	0.8	With	WPM□05H315ZPR	CM10X30H	1	9-138Ⓐ
TXP05080RB-E	●	7	80	72.4	22	63	7	12.4	27	76	1.7	With		CM12X30H		
TXP06063RB-E	●	5	63	54.4	20	50	6.3	10.4	22	59	0.7	With	WPM□06X415ZPR	CM10X30H		
TXP06080RB-E	●	6	80	71.4	22	63	7	12.4	27	76	1.6	With		CM12X30H		9-138Ⓐ
TXP08050R-E	●	3	50	38.6	20	50	6.3	10.4	22	47	0.4	Without	WPMT080615Z□R	FSHM10-40	3	
TXP08052R-E	●		52	40.6						50	0.5	Without				
TXP08063R-E	●	4	63	51.6						59	0.7	Without		-	-	
TXP08066R-E	●		66	54.6	22		7.0	12.4	27	63	0.8	Without				
TXP08080R-E	●	5	80	68.6		63				76	1.5	Without				
TXP08100R-E	●	6	100	88.6	25		8	14.4	32	96	2.5	Without				
TXP08125R-E	●	7	125	113.6	32		9	16.4	40	98	3.1	With		TMBA-M20H	2	9-138Ⓑ
TXP09063R-E	●	3	63	49.4	20	50	6.3	10.4	22	59	0.6	Without	WPMT090725Z□R	-	-	9-138Ⓐ
TXP09080R-E	●	4	80	66.4	22	63	7	12.4	27	76	1.3	Without				
TXP09100R-E	●	5	100	86.4	25		8	14.4	32	96	2.4	Without				
TXP09125R-E	●	6	125	111.4	32		9	16.4	40	98	2.9	Without				9-138Ⓑ

● : Stocked items.

EXP (Fig. B: shank type)

type	Cat. No.	Stock	No. of inserts	Dimensions (mm)						Applicable inserts
				$øD_C$	Effective dia. $øD_{C1}$	L	L_f	ℓ_S	$øD_S$	
Standard	EXP05020RS	●	2	20	12.4	130	50	80	20	WPM□05H315ZPR(-□□□)
	EXP05021RS	●		21	13.4					
	EXP06025RS	●	2	25	16.4	140	60	80	25	WPM□06X415ZPR(-□□□)
	EXP06026RS	●		26	17.4					
	EXP06032RS	●		32	23.4	150	70		32	
	EXP06032RSB	●	3							
	EXP06033RS	●	2	33	24.4					
	EXP06033RSB	●	3							
	EXP06040RS	●		40	31.4		50	100		
	EXP08040RSA	●	2	40	28.6	150	50	100	32	WPMT080615Z□R(-□□□)
	EXP09050RS	●	2	50	36.4	150	50	100	42	WPMT090725Z□R(-□□□)
Long	EXP05020RL	●	2	20	12.4	180	100	80	20	WPM□05H315ZPR(-□□□)
	EXP05021RL	●		21	13.4					
	EXP06025RL	●	2	25	16.4	200	120	80	25	WPM□06X415ZPR(-□□□)
	EXP06026RL	●		26	17.4					
	EXP06032RL	●		32	23.4				32	
	EXP06032RLB	●	3							
	EXP06033RL	●	2	33	24.4					
	EXP06033RLB	●	3							
	EXP06040RL	●		40	31.4	250	50	200		
	EXP06040RLS42	●							42	
	EXP08040RLA	●	2	40	28.6	250	50	200	32	WPMT080615Z□R(-□□□)
	EXP09050RL	●	2	50	36.4	250	50	200	42	WPMT090725Z□R(-□□□)
Extra long	EXP05020RLL	●	2	20	12.4	250	130	120	20	WPM□05H315ZPR(-□□□)
	EXP05021RLL	●		21	13.4		50	200		
	EXP06025RLL	●	2	25	16.4	300	180	120	25	WPM□06X415ZPR(-□□□)
	EXP06026RLL	●		26	17.4		60	240		
	EXP06032RLL	●		32	23.4		180	120	32	
	EXP06033RLL	●		33	24.4		70	230		
	EXP06040RLL	●	3	40	31.4		50	250		
	EXP08040RLL	●	2	40	28.6	300	50	250	32	WPMT080615Z□R(-□□)

Replacement Parts

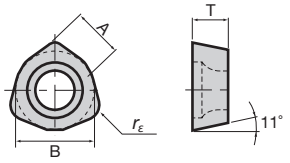
Cat. No.	Clamping screw	Clamp set	Wrench
			
EXP05 -	CSPB-3.5S	-	IP-15D
TXP06 -	CSPB-4S	CSY-15	IP-15D
EXP06 -			
TXP08 -	CSTB-5	CSX20	T-20T
EXP08 -			
TXP09 -	CSPB-5	CSY-20	IP-20T

● : Stocked items.

Inserts

05 type

General insert



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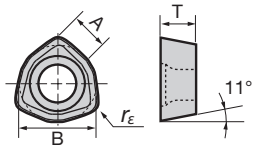

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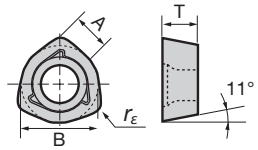

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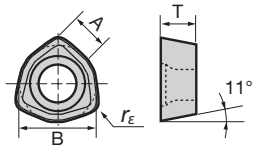
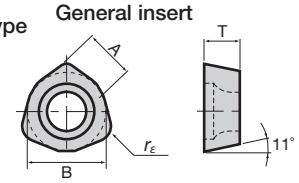


Cat. No.	Accuracy	Honing	Grades				Dimensions (mm)			
			AH120	AH140	T3130	AH730	A	B	T	r_ε
WPMW05H315ZPR	M	With	●	●	●		5	7.94	3.5	1.5
WPMT05H315ZPR-ML			●	●	●					
WPMT05H315ZPR-MH			●	●						
WPMT05H315ZPR-DML						●				

06 type

General insert



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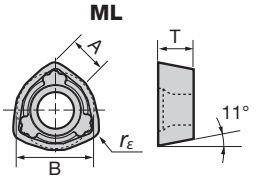

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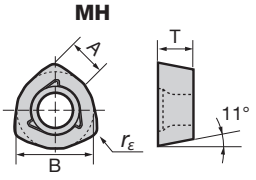

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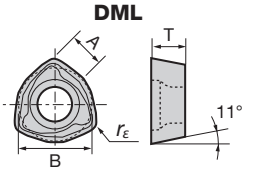
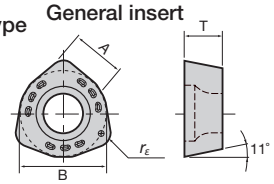


Cat. No.	Accuracy	Honing	Grades					Dimensions (mm)			
			AH120	AH130	AH140	T3130	AH730	A	B	T	r_ε
WPMW06X415ZPR	M	With	●		●	●		6	9.525	4.2	1.5
WPMT06X415ZPR-ML			●	●	●	●					
WPMT06X415ZPR-MH			●		●						
WPMT06X415ZPR-DML							●				

08 type

General insert



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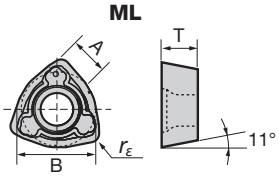

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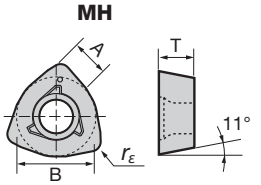

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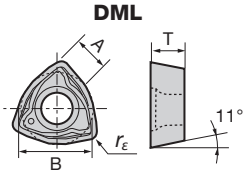
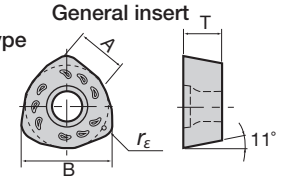


Cat. No.	Accuracy	Honing	Grades					Dimensions (mm)			
			AH120	AH130	AH140	T3130	AH730	A	B	T	r_ε
WPMT080615ZSR	M	With	●	●	●	●		8	12.87	6.35	1.5
WPMT080615ZPR-ML			●	●	●	●					
WPMT080615ZSR-MH			●		●						
WPMT080615ZPR-DML							●				

09 type

General insert



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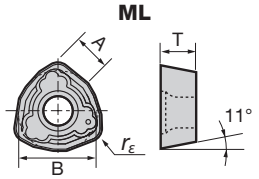

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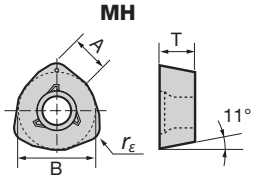

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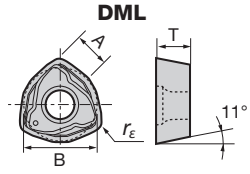


Cat. No.	Accuracy	Honing	Grades					Dimensions (mm)			
			AH120	AH130	AH140	T3130	AH730	A	B	T	r_ε
WPMT090725ZSR	M	With	●		●	●		9	15	7	2.5
WPMT090725ZPR-ML			●	●	●	●					
WPMT090725ZSR-MH			●	●	●						
WPMT090725ZPR-DML							●				

● : Stocked items.

Standard cutting conditions

05·06 type

Work material	Insert grades	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	ø20, 21 (z = 2)	ø25, 26 (z = 2)	ø32, 33 (z = 2, 3)	ø40 (z = 3)	ø50 (z = 4)
Carbon Steels (C50 etc.) < 300HB	**AH120 (T3130)**	100 - 250	0.5 - 2.0	*Vc* = 150 m/min, *fz* = 0.8 mm/t *ap* =1.0 mm, *ae* = 1.0D mm	*Vc* = 150 m/min, *fz* = 1.0 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm			
				When plunging in small depth: *fz* = 0.2 mm/t				
Alloy steels (42CrMo4 etc.) < 300 HB	**AH120 (T3130)**	100 - 200	0.5 - 2.0	*Vc* = 130 m/min, *fz* = 0.8 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm	*Vc* = 130 m/min, *fz* = 1.0 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm			
				When plunging in small depth: *fz* = 0.2 mm/t				
Prehardened steels (X96CrMoV12 etc.) 30 - 40HRC	**AH120 (T3130)**	80 - 150	0.5 - 1.0	*Vc* = 100 m/min, *fz* = 0.5 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm	*Vc* = 100 m/min, *fz* = 0.5 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm			
				When plunging in small depth: *fz* = 0.1 mm/t				
Stainless steels (X5CrNi18 9 etc.)	**AH130 AH140**	100 - 200	0.5 - 2.0	*Vc* = 130 m/min, *fz* = 0.8 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm	*Vc* = 130 m/min, *fz* = 1.0 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm			
				When plunging in small depth: *fz* = 0.2 mm/t				
Cast irons (GG25 etc.)	**AH120**	100 - 250	0.8 - 2.5	*Vc* = 150 m/min, *fz* = 1.0 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm	*Vc* = 180 m/min, *fz* = 1.5 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm			
				When plunging in small depth: *fz* = 0.2 mm/t				
Hard materials (SDK, DH31 etc.) 40 - 50HRC	**AH730**	50 - 80	0.5 - 1.0	*Vc* = 70 m/min, *fz* = 0.7 mm/t *ap* = 0.7 mm, *ae* = 1.0D mm	*Vc* = 70 m/min, *fz* = 0.7 mm/t *ap* = 0.7 mm, *ae* = 1.0D mm			
				When plunging in small depth: *fz* = 0.1 mm/t				

08 type

Work material	Insert grades	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	ø20, 21 (z = 2)	ø50 (z = 3)	ø63 (z = 4)	ø80 (z = 5)	ø100 (z = 6)	ø125 (z = 7)	ø160 (z = 8)
Carbon Steels (C50 etc.) < 300HB	**AH120 (T3130)**	100 - 250	0.5 - 2.0	*Vc* = 180 m/min, *fz* = 1.0 mm/t *ap* = 1.0 mm, *ae* = 40 mm	*Vc* = 200 m/min, *fz* = 1.5 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.2 mm/t						
Alloy steels (42CrMo4 etc.) < 300 HB	**AH120 (T3130)**	100 - 200	0.5 - 2.0	*Vc* = 130 m/min, *fz* = 1.0 mm/t *ap* = 1.0 mm, *ae* = 40 mm	*Vc* = 150 m/min, *fz* = 1.5 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.2 mm/t						
Prehardened steels (X96CrMoV12 etc.) 30 - 40HRC	**AH120 (T3130)**	80 - 150	0.5 - 1.0	*Vc* = 100 m/min, *fz* = 0.5 mm/t *ap* = 1.0 mm, *ae* = 40 mm	*Vc* = 120 m/min, *fz* = 0.8 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.1 mm/t						
Stainless steels (X5CrNi18 9 etc.)	**AH130 AH140**	100 - 200	0.5 - 2.0	*Vc* = 130 m/min, *fz* = 1.0 mm/t *ap* = 1.0 mm, *ae* = 40 mm	*Vc* = 150 m/min, *fz* = 1.5 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.2 mm/t						
Cast irons (GG25 etc.)	**AH120**	150 - 250	0.8 - 2.5	*Vc* = 180 m/min, *fz* = 1.5 mm/t *ap* = 1.0 mm, *ae* = 40 mm	*Vc* = 200 m/min, *fz* = 2.0 mm/t *ap* = 1.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.2 mm/t						
Hard materials (SDK, DH31 etc.) 40 - 50HRC	**AH730**	50 - 80	0.5 - 1.0	*Vc* = 70 m/min, *fz* = 0.7 mm/t, *ap* = 0.7 mm, *ae* = 1.0D mm						
				When plunging in small depth: *fz* = 0.1 mm/t						

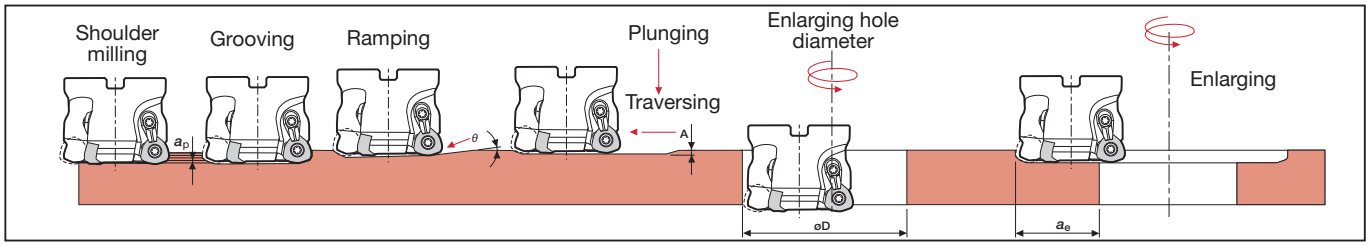
Note: • The above values of cutting speed show the standard speed when overhang length of tool is below 3D. The cutting speed and the feed rate should be set at the lower limit values when overhang length of tool exceeds 3D.
• Thick and heavy chips are discharged by these TAC mills. Use internal air supply or air-blowing in order to prevent tool failure.

09 type

Work material	Insert grades	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	ø50 (z = 2)	ø63 (z = 3)	ø80 (z = 4)	ø100 (z = 5)	ø125 (z = 6)	ø160 (z = 7)
Carbon Steels (C50 etc.) < 300HB	**AH120 (T3130)**	100 - 250	0.5 - 2.0	*Vc* = 200 m/min, *fz* = 1.5 mm/t, *ap* = 2.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.2 mm/t					
Alloy steels (42CrMo4 etc.) < 300 HB	**AH120 (T3130)**	100 - 200	0.5 - 2.0	*Vc* = 150 m/min, *fz* = 1.5 mm/t, *ap* = 2.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.2 mm/t					
Prehardened steels (X96CrMoV12 etc.) 30 - 40HRC	**AH120 (T3130)**	80 - 150	0.5 - 1.0	*Vc* = 120 m/min, *fz* = 0.8 mm/t, *ap* = 2.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.1 mm/t					
Stainless steels (X5CrNi18 9 etc.)	**AH130 AH140**	100 - 200	0.5 - 2.0	*Vc* = 150 m/min, *fz* = 1.5 mm/t, *ap* = 2.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.2 mm/t					
Cast irons (GG25 etc.)	**AH120**	150 - 250	0.8 - 2.5	*Vc* = 200 m/min, *fz* = 2.0 mm/t, *ap* = 2.0 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.2 mm/t					
Hard materials (SDK, DH31 etc.) 40 - 50HRC	**AH730**	60 - 100	0.5 - 1.0	*Vc* = 70 m/min, *fz* = 0.7 mm/t, *ap* = 0.7 mm, *ae* = 1.0D mm					
				When plunging in small depth: *fz* = 0.1 mm/t					

Notes : The cutting speed and feed should be set to 70 to 80 % of the value shown in the above table when overhang length of tool exceeds 3D.

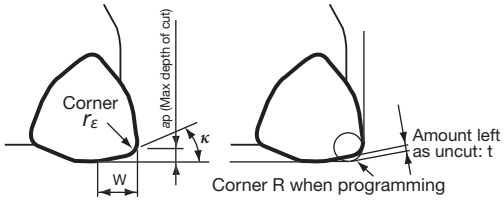
Machining capability



Cat. No.	Cutter dia. ø	Max. depth of cut ap (mm)	Max. ramping angle θ	Max. ramping angle A (mm)	Min. machining hole dia. øD (mm)	Max. machining hole dia. øD (mm)	Max. cutting width in enlarging hole ae (mm)
TXP05063RB-E	63	1.5	1°	0.5	116	123	59
TXP05080RB-E	80		0°30'		150	157	76
TXP06063RB-E	63		1°	1.0	109	123	58
TXP06080RB-E	80		0°30'		143	157	75
TXP08050R-E	50		4°		72	97	44
TXP08052R-E	52				76	101	46
TXP08063R-E	63		2°30'		98	123	57
TXP08066R-E	66				104	129	60
TXP08080R-E	80		1°30'		132	157	74
TXP08100R-E	100		1°		172	197	94
TXP08125R-E	125		0°45'		222	247	119
TXP09063R-E	63	3.0	2°	1.5	98	123	56
TXP09080R-E	80		1°30'		132	157	73
TXP09100R-E	100		1°		172	197	93
TXP09125R-E	125		0°45'		222	247	118
EXP05020...	20	1.5	3°	0.5	30	37	16
EXP05021...	21		2°30'		32	39	17
EXP06025...	25		5°	1.0	33	47	20
EXP06026...	26		4°30'		35	49	21
EXP06032...	32		3°30'		47	61	27
EXP06033...	33		3°		49	63	28
EXP06040...	40		2°		63	77	35
EXP08040...			6°		53		34

Tool geometry on programming

When programming for CAD/CAM, the tool should be assumed to be a radius cutter shown in below table. In the case, the amount left as uncut (t) is shown below.



TXP / EXP	Max. depth of cut ap	Corner of insert rε	Cutting edge angle κ	W	t	Corner R when programming
05	1.5	1.5	20°	3.8	0.5	R2
06	1.5	1.5	20°	4.3	0.7	R2.5
08	1.5	1.5	10°	5.7	0.7	R2
09	3.0	2.5	20°	6.8	1.4	R3
					1.2	R4

● : Stocked items

ROUNDSPLIT

Diameter ø32 ~ 125 mm | R 6, 8 mm | Air Hole

P Steel | M Stainless | K Cast Iron | N Non-ferrous | S Superalloys

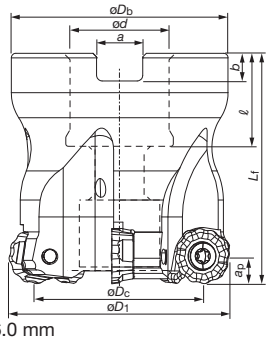
Face Milling | Radius Milling | Slotting | Pocketing | Ramping | Profiling | Enlarging Hole

Die engraving of various work materials

TRC12

ERC12

Fig. A



Max. ap:
T/ERC12 = 6.0 mm
T/ERC16 = 8.0 mm

Rake angle: A.R. +0° R.R. −1°~ -5°

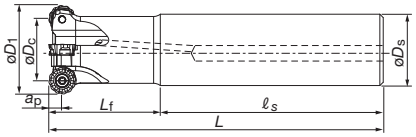


Fig. B

TRC12, 16 (Fig. A: bore type)

Cat. No.	Stock	No. of Inserts	Dimensions (mm)								Weight (kg)	Air hole	Centre bolt	Inserts	Mounting details
			øD1	øDc	øDb	ød	ℓ	Lf	b	a					
TRC12R040M16.0E04	●	4	40	28	35	16	19	40	5.6	8.4	0.2	With	FSHM8-30H	RCMT1204*N-***	9-138Ⓐ
TRC12R050M22.0E05	●	5	50	38	47	22	20	50	6.3	10.4	0.4	With	CM10X30H		
TRC12R052M22.0E05	●	5	52	40	49	22	20	50	6.3	10.4	0.4	With	CM10X30H		
TRC12R063M22.0E06	●	6	63	51	59	22	20	50	6.3	10.4	0.7	With	CM10X30H		
TRC12R066M22.0E06	●	6	66	54	62	22	20	50	6.3	10.4	0.7	With	CM10X30H		
TRC12R080M27.0E07	●	7	80	68	76	27	22	50	7	12.4	1.1	With	CM12X30H		
TRC16R050M22.0E04	●	4	50	34	47	22	20	50	6.3	10.4	0.3	With	FSHM10-40H	RCMT1606*N-***	9-138Ⓐ
TRC16R052M22.0E04	●	4	52	36	49	22	20	50	6.3	10.4	0.4	With	FSHM10-40H		
TRC16R063M22.0E05	●	5	63	47	59	22	20	50	6.3	10.4	0.6	With	CM10X30H		
TRC16R066M22.0E05	●	5	66	50	62	22	20	50	6.3	10.4	0.7	With	CM10X30H		
TRC16R080M27.0E06	●	6	80	64	76	27	22	50	7	12.4	1.0	With	CM12X30H		
TRC16R100M32.0E07	●	7	100	84	96	32	25	63	8	14.4	2.4	With	CM16X40H		
TRC16R125M40.0E08	●	8	125	109	98	40	32	63	9	16.4	3.0	With	TMBA-M20H		9-138Ⓑ

ERC12, 16 (Fig. B: shank type)

type	Cat. No.	Stock	No. of Inserts	Dimensions (mm)						Weight (kg)	Air hole	Inserts
				øD1	øDc	øDs	ℓs	Lf	L			
Standard	ERC12R032M32.0-03	●	3	32	20	32	80	70	150	0.8	With	RCMT1204*N-***
	ERC12R033M32.0-03	●	3	33	21	32	80	70	150	0.8	With	
	ERC12R040M32.0-04	●	4	40	28	32	100	50	150	0.8	With	
	ERC12R050M42.0-05	●	5	50	38	42	100	50	150	1.5	With	
	ERC16R040M32.0-02	●	2	40	24	32	100	50	150	0.8	With	RCMT1606*N-***
	ERC16R050M42.0-03	●	3	50	34	42	100	50	150	1.4	With	
Long	ERC12R032M32.0-03L	●	3	32	20	32	100	150	250	1.3	With	RCMT1204*N-***
	ERC12R033M32.0-03L	●	3	33	21	32	100	150	250	1.4	With	
	ERC12R040M32.0-04L	●	4	40	28	32	200	50	250	1.5	With	
	ERC12R050M42.0-05L	●	5	50	38	42	200	50	250	2.6	With	
	ERC16R040M32.0-02L	●	2	40	24	32	200	50	250	1.4	With	RCMT1606*N-***
	ERC16R050M42.0-03L	●	3	50	34	42	200	50	250	2.4	With	
Extra long	ERC12R032M32.0-03LL	●	3	32	20	32	120	180	300	1.6	With	RCMT1204*N-***
	ERC12R033M32.0-03LL	●	3	33	21	32	230	70	300	1.7	With	
	ERC12R040M32.0-04LL	●	4	40	28	32	250	50	300	1.8	With	
	ERC12R050M42.0-05LL	●	5	50	38	42	250	50	300	3.0	With	
	ERC16R040M32.0-02LL	●	2	40	24	32	250	50	300	1.7	With	RCMT1606*N-***
	ERC16R050M42.0-03LL	●	3	50	34	42	250	50	300	3.0	With	

● : Stocked items.

Inserts

For general machining
with serrated cutting edge

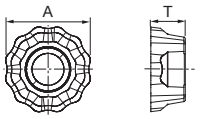


Fig. 1 **NMJ**

For general machining
Round insert

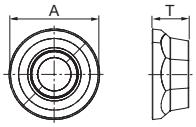


Fig. 2 **MJ**

For aluminium machining
with serrated cutting edge

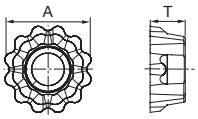
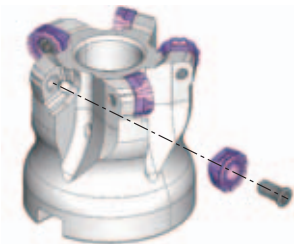


Fig. 3 **NAJ**

● : Stocked items.

Cat. No.	Accuracy	Honing	Stock				Dimensions (mm)		Shape	Cutter
			Coated grades			Carbide				
			AH725	AH120	AH140	KS15F	A	T		
RCMT1204EN-NMJ	M	with	●	●	●		12	4.8	Fig. 1	E/TRC12
RCMT1204EN-MJ	M	with	●	●	●		12	4.8	Fig. 2	
RCMT1204FN-NAJ	M	without				●	12	4.8	Fig. 3	
RCMT1606EN-NMJ	M	with	●	●	●		16	6.5	Fig. 1	E/TRC16
RCMT1606EN-MJ	M	with	●	●	●		16	6.5	Fig. 2	
RCMT1606FN-NAJ	M	without				●	16	6.5	Fig. 3	

Replacement Parts



Descriptions		Replacement parts Cat. No.		
Applicable cutter		TRC12R...	TRC16R050~100...	TRC16R125...
Clamping screw		CSTB-4L090	CSTB-5L120	CSTB-5L120
Wrench	Torx Bit	BT15S	BT20S	BT20M
	Grip	H-TBS	H-TB	H-TB
Mono block type wrench (substitution)		T-15D	T-20D	T-20D

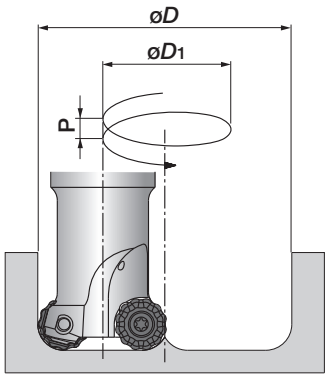
Descriptions	Replacement parts Cat. No.		
Applicable cutter	ERC12R...	ERC16R...	ERC16R040M32.0-02
Clamping screw	CSTB-4L090	CSTB-5L120	CSTB-5L105
Wrench (substitution)	T-15DB (T-15D)	T-20DB (T-20D)	T-20DB (T-20D)

Standard cutting conditions

Work material	Brinell hardness HB	Grades	Cutting Speed *Vc* (m/min)	Feed per tooth *fz* (mm/t) each chipbreaker		
				NMJ	MJ	NAJ
Low carbon steels (C15E etc.)	≤ 200	AH725	100 - 220	0.17 - 0.3	0.2 - 0.7	-
High carbon steels (C45, C55 etc.)	200 - 300		100 - 200	0.17 - 0.25		
Alloyed steels (42CrMo4, 17Cr3 etc.)	150 - 300					
Tool steels (X155CrVMo121 etc.)	≤ 300		100 - 180			
Stainless steels (300 Series, X5CrNi189 etc.)	-	AH140	90 - 180	0.15 - 0.25	0.2 - 0.6	-
Grey cast irons	150 - 250	AH120	140 - 250	0.17 - 0.3	0.2 - 0.7	-
Ductile cast irons	150 - 250	AH120	100 - 200	0.17 - 0.3	0.2 - 0.7	-
Aluminium alloys (Si < 13%)	-	KS15F	500 - 1200	-	-	0.1 - 0.3
Aluminium alloys (Si ≥ 13%)	-		100 - 300			
Heat-resisting alloy (Ti-6Al-4V, Inconel718 etc.)	-	AH725	20 - 50	0.15 - 0.25	0.2 - 0.6	-

· To remove excessive chip accumulation use an air blast.
· When chips stick to the cutting edges (aluminium machining), use a water soluble cutting fluid.
· Cutting conditions are limited by machine power and material rigidity. When the cutting width or depth is large, set *Vc* and *fz* below the recommended values and check the machine vibration and spindle load.

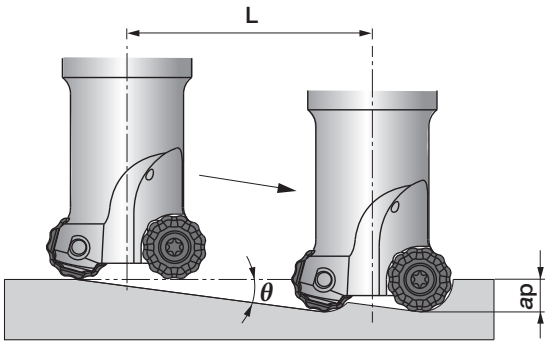
Holemaking with helical feed



Cat. No.	Tool ø øDc (mm)	Min. machining diameter (mm)		Max. machining diameter (mm)		Pitch P (mm)
		øD	øD1	øD	øD1	
ERC12R032…	ø32	52	20	62	30	< 6
ERC12R033…	ø33	54	21	64	31	< 6
T/ERC12R040…	ø40	68	28	78	38	< 6
T/ERC12R050…	ø50	88	38	98	48	< 6
TRC12R063…	ø63	114	51	124	61	< 6
TRC12R080…	ø80	148	68	158	78	< 6
ERC16R040…	ø40	64	24	78	38	< 8
T/ERC16R050…	ø50	84	34	98	48	< 8
TRC16R063…	ø63	110	47	124	61	< 8
TRC16R080…	ø80	144	64	158	78	< 8
TRC16R100…	ø100	184	84	198	98	< 8
TRC16R125…	ø125	234	109	248	123	< 8

When holemaking with a helical feed, the pitch (P) needs to be set at lower values than that shown above.

Ramping



Cat. No.	Tool ø øDc (mm)	Max. ramping angle θ	L (mm): tool pass length when ramping angle is 2 degrees				
			ap (mm)				
			2	3	4	6	8
ERC12R032…	ø32	10°	57	85	114	171	–
ERC12R033…	ø33	9°					
T/ERC12R040…	ø40	6°					
T/ERC12R050…	ø50	4°					
TRC12R063…	ø63	3°					
TRC12R080…	ø80	2.3°					
ERC16R040…	ø40	12°					229
T/ERC16R050…	ø50	7.4°					
TRC16R063…	ø63	6°					
TRC16R080…	ø80	4.3°					
TRC16R100…	ø100	3°					
TRC16R125…	ø125	2.4°					

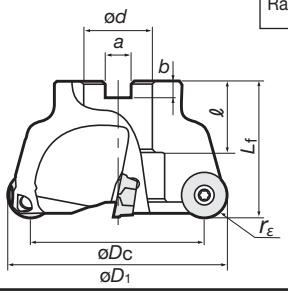
Tool pass length: **L = ap / tan θ**, Ramping angle needs to be set at smaller than 2 degrees in order to prevent chips from getting tangled.

TRD12·16

Diameter ø50 ~ 100 mm | R 6, 8 mm | P Steel | M Stainless | K Cast Iron | H Hard Materials

Face Milling | Radius Milling | Slotting | Pocketing | Ramping | Profiling | Enlarging Hole

For multi-functional milling of steels, cast irons and hard materials



Rake angle:			
	TRD	A.R. + 10°	R.R. – 6° ~ 0°
	ERD	A.R. + 8° ~ 10°	R.R. – 6° ~ – 2°

Max. ap: RDMT/W12 type = 6.0 mm
RDMT/W16 type = 8.0 mm

TRD12·16 (Fig. A: bore type)

Cat. No.	Stock	Applicable insert	No. of inserts	Dimensions (mm)								Weight (kg)	Mounting details
				r_ε	øD1	øDc	Lf	ℓ	ød	b	a		
TRD12050R-E	●	RDMT1204ZDPN-MJ RDMW1204ZDSN	4	6	50	38	40	20	22	6.3	10.4	0.3	9-138Ⓐ
TRD12052R-E	●		4		52	40							
TRD12063R-E	●		5		63	51						0.4	
TRD12066R-E	●		5		66	54		22		7	12.4	0.5	
TRD12080R-E	●		6		80	68	50		27			0.8	9-138Ⓑ
TRD12100R-E	●		6		100	88		26	32	8	14.4	1.4	
TRD16063R-E	●	RDMT1606ZDPN-MJ RDMW1606ZDSN	4	8	63	47	40	20	22	6.3	10.4	0.4	9-138Ⓐ
TRD16066R-E	●		4		66	50	50	22	27	7	12.4	0.5	
TRD16080R-E	●		5		80	64						0.7	
TRD16100R-E	●		6		100	84		26	32	8	14.4	1.1	9-138Ⓑ

Inserts

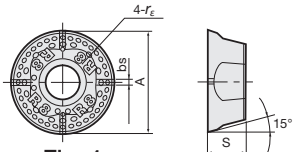


Fig. 1

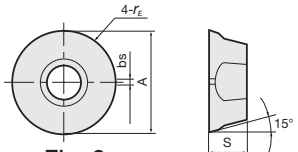


Fig. 2

Cat No.	Accuracy	Honing	Figure	Grades						Dimensions (mm)			
				Coated					Uncoated				
				T3130	AH120	AH130	AH140	AH330	UX30	A	S	bs	r_ε
RDMT1204ZDPN-MJ	M	With	Fig. 1	●	●		●	●	●	12.8	4.76	0.8	6
RDMW1204ZDSN			Fig. 2	●	●		●						
RDMT1606ZDPN-MJ			Fig. 1	●	●	●	●	●	●	16.8	6.35		8
RDMW1606ZDSN			Fig. 2	●	●		●						

Replacement parts

Parts	Part Cat. No.	
	T/ERD12	T/ERD16
Clamping screw	CSTB-3.5	CSTB-5
Wrench	T-15D	T-20D

● : Stocked items.

Relating pages | Technical Reference (15–1)

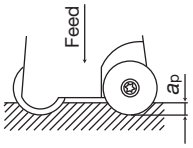
Standard cutting conditions

Work materials	Grades	Cutting speed *Vc* (m/min)	Feed per tooth *f* (mm/t)	
			T/ERD12	T/ERD16
Carbon steels (C50 etc.) < 300 HB	**AH120**	120 - 220	0.3 - 0.5	0.3 - 0.6
	AH330	140 - 240	0.2 - 0.4	0.2 - 0.5
	UX30	80 - 120		
Alloy steels (42CrMo4, 17Cr3 etc.) < 300 HB	**AH120**	100 - 200	0.2 - 0.45	0.2 - 0.5
	AH330	120 - 220	0.15 - 0.35	0.15 - 0.4
	UX30	60 - 120		
Die steels (X96CrMoV12 etc.) < 300 HB	**AH120**	80 - 180	0.2 - 0.35	0.25 - 0.45
	AH330	100 - 200	0.1 - 0.3	0.1 - 0.4
Stainless steels (X5CrNi18 9 etc.)	**AH130•AH140**	100 - 200	0.2 - 0.3	0.2 - 0.4
Grey Cast irons (GG25 etc.)	**AH120**	120 - 240	0.3 - 0.5	0.3 - 0.6
	AH330	150 - 250	0.2 - 0.4	0.2 - 0.5
Hard materials < 45 HRC	**AH120**	60 - 140	0.08 - 0.25	0.1 - 0.3

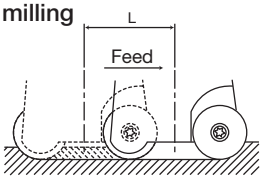
Note: When the depth of cut is smaller than 2 mm, use the higher limit of feed values shown above. When larger than 3 mm, use the lower limit of the feed values.

Plunging + traverse feed milling

Plunging



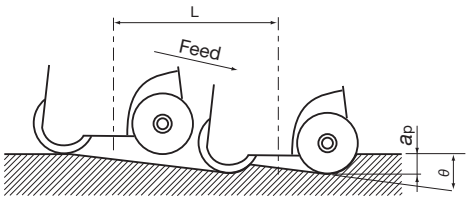
Traverse feed milling



Cat. No.	Max. plunging depth *ap* (mm)	Min. traverse length to flatten the bottom surface: L (mm)
TRD12050R-E	4	Tool diameter øD_1 - 11
TRD12052R-E		
TRD12063R-E		
TRD12066R-E		
TRD12080R-E		
TRD12100R-E		
TRD16063R-E	5.5	Tool diameter øD_1 - 15
TRD16066R-E		
TRD16080R-E		
TRD16100R-E		

Notes: • In plunging, the maximum plunging depth is limited as shown in the above table.
• In plunging, set the Z-axis feed in a range of 0.05 to 0.1 mm/t.
• When plunging, use peck-feed every 1 mm (or smaller than 1 mm) to break chips.

Ramping

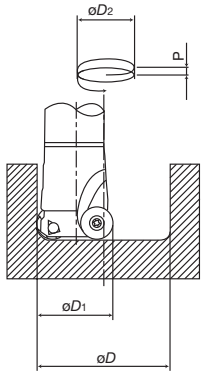


Cat. No.	Max. ramping angle *θ*
TRD12050R-E	6°
TRD12052R-E	5.5°
TRD12063R-E	4°
TRD12066R-E	4°
TRD12080R-E	2.5°
TRD12100R-E	1.5°
TRD16063R-E	6°
TRD16066R-E	6°
TRD16080R-E	4°
TRD16100R-E	3°

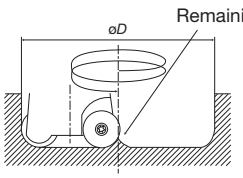
Notes: • tan*θ* = depth of cut: *ap* / length of tool pass: L
• In ramping, the ramping angle should be set within the maximum ramping angle.

Helical feed drilling

Unit: mm



Cat. No.	Min. machining diameter		Mix. machining diameter		P
	øD	*øD2*	*øD*	*øD2*	
TRD12050R-E	88	38	98	48	< 6
TRD12052R-E	92	40	102	50	
TRD12063R-E	114	51	124	61	
TRD12066R-E	120	54	130	64	
TRD16080R-E	148	68	158	78	
TRD16100R-E	188	88	198	98	
TRD16063R-E	110	47	124	61	< 8
TRD16066R-E	120	50	130	64	
TRD16080R-E	144	64	158	78	
TRD16100R-E	184	84	198	98	



øD_1 : Tool diameter
ø*D* : Drilling diameter
øD_2 : Tool pass diameter
P : Z-axis feed per one round of tool pass (Pitch of helical cycle)

• In helical feed hole machining, the machinable hole diameters are limited by the tool diameter as shown in the above tables.
• When machining between the minimum and maximum machining diameters, a projection remains in the center of the bottom surface of the hole as shown in the Figure at right. Remove it by traverse feed milling.

T/ERF6000

Diameter ø50 ~ 160 mm | R 10 mm | M Stainless | S Superalloys | H Hard Materials

Face Milling | Radius Milling

For face milling of hard materials and other difficult-to-cut materials

TRF6000 I

ERF6000

Rake angle: A.R. +19° R.R. +3°

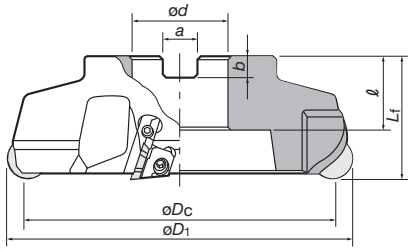


Fig. A

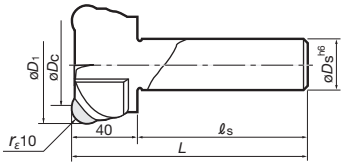


Fig. B

Max. *ap*: 3 mm (RFEN2004ZF□N), 10 mm (RFEN2004M0□N)

TRF6000RIE (Fig. A: Irregular pitch for vibration-free milling)

Cat. No.	Stock	No. of inserts	Dimensions (mm)							Weight (kg)	Mounting details
			øDc	øD1	ød	ℓ	Lf	b	a		
TRF6003RIE	●	4	80	100	27	26	50	7	12.4	1.4	9-138Ⓑ
TRF6004RIE	●	5	100	120	32	32	63	8	14.4	2.5	
TRF6005RIE	●	6	125	145	40			9	16.4	3.9	
TRF6006RIE	●	8	160	180		29				5.8	9-138Ⓒ

ERF6000 (Fig. B: shank type)

Cat. No.	Stock	No. of inserts	Dimensions (mm)				
			øDc	øD1	øDs	L	ℓs
ERF6050RE	●	3	50	70	32	120	80
ERF6063RE	●	4	63	83			

Note: The above TAC Endmills are not irregular pitch spec.

Inserts

RFEN2004ZF□N
(With partially flattened flanks)

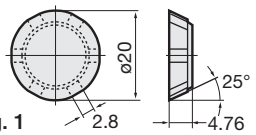


Fig. 1

RFEN2004M0□N

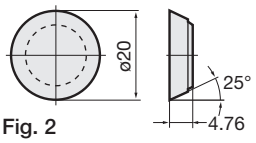


Fig. 2

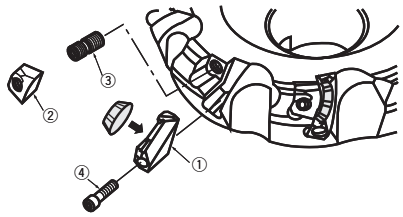
Cat. No.	Accuracy	Honing	Grades				Shape
			Coated		Uncoated		
			GH330	AH120	KS20	UX30	
RFEN2004ZFTN	E	With	●	●	●	●	Fig. 1
RFEN2004M0TN		With	●		●	●	Fig. 2

Notes : • RFEN2004M0TN type inserts should not be used for finishing requiring surface finish better than 12S.
• RFEN2004ZF□N type Inserts can be used for both finishing and roughing at depth of cut up to 3 mm.
• RFEN2004M0TN does not have flattened flanks.

● : Stocked items.

Relating pages | Technical Reference (15–1)

Replacement parts



No.	Descriptions	Cat. No.	
		TRF6003RIE~ TRF6006RIE	ERF6050R ERF6063R
①	Locator	LF602R	LF602R
②	Insert locking wedge	WF603R	WF602R
③	Wedge fixing screw	FDS-8S	FDS-6Z
④	Locator fixing screw	CM4X0.7X20	CM4X0.7X20
⑤	T-handle wrench	TP-4	TP-3A

Standard cutting conditions

Work materials		Grades	Depth of cut = 1 ~ 3 mm		Depth of cut = 0.4 ~ 1 mm		Cutting fluid
			Cutting speed v_C (m/min)	Feed per tooth f_Z (mm/t)	Cutting speed v_C (m/min)	Feed per tooth f_Z (mm/t)	
Stainless steels	Austenitic, Ferritic X5CrNi18-9, X6Cr17 (< 300HB)	AH120•GH330	150 - 250	0.20 - 0.35	180 - 250	0.2 - 0.5	Dry cutting
		UX30	150 - 230				
	Precipitatio hardening X5CrNiCuNb 16-4 (< 35HRC)	AH120•GH330	150 - 200	0.15 - 0.3	180 - 250	0.2 - 0.4	Dry cutting
		UX30	130 - 180		150 - 200		
Superalloys Inconel, Hastelloy etc.		KS20	20 - 30	0.10 - 0.15	20 - 50	0.2 - 0.4	Water insoluble type
Titanium alloys Ti-6Al-4V etc.		KS20	40 - 50	0.15 - 0.35	40 - 60	0.2 - 0.5	Water soluble type or dry cutting
Hard materials (40 - 50HRC)		KS20	20 - 50	0.05 - 0.1	20 - 50	0.05 - 0.2	Water insoluble type

Note: Cutting width should be within 60 to 70 % of effective cutter diameter.

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

EVX

Diameter ø16 ~ 32 mm | 90° ~ 15 mm | Air Hole

P Steel | K Stainless | M Cast Iron

Shoulder Milling | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole | Drilling

For multi-functional milling of steels, cast irons and stainless steels

Rake angle:	Standard type	A.R. +2° ~ +5° R.R. −10° ~ − 3.5°
	Long type	A.R. +5° R.R. −4° ~ − 2°

Fig. A

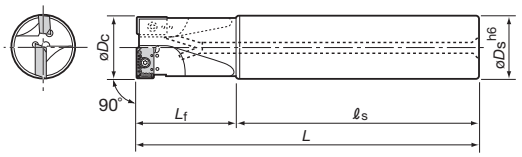
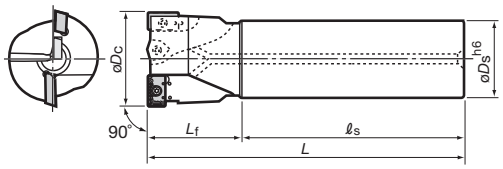


Fig. B



Max. ap: 9-115

EVX : ø16 ~ 32 mm

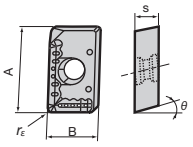
Type	Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	øDs	ℓs	Lf	L	Air hole	Applicable insert	Fig.
Standard	EVX08016RSA-E	●	2	16	16	55	30	85	With	XXMU08T204PR-MJ	Fig. C
Long	EVX08016RLA-E	●					50	105	With		
Extra-long	EVX08016RLA	●				135	40	175	With		Fig. A
Standard	EVX10020RSA-E	●	2	20	20	60	30	90	With	XXMU10H308PR-MJ	Fig. C
Long	EVX10020RLA-E	●					60	120	With		
Extra-long	EVX10020RLA	●				135	50	185	With		Fig.A
Standard	EVX12025RSA-E	●	2	25	25	60	40	100	With	XXMU12X408PR-MJ	Fig. C
Long	EVX12025RLA-E	●					75	135	With		
Extra-long	EVX12025RLA	●				150	70	220	With		Fig. A
Standard	EVX16032RSA-E	●	2	32	25	60	50	110	With	XXMU16X508PR-MJ	Fig. C
Long	EVX16032RLA-E	●					95	155	With		
Extra-long	EVX16032RLA	●			32	175	80	255	With		Fig. A

Replacement parts for ISO

Cat. No.	Clamping screw	Wrench
EVX08016	CSPB-2.2	IP-7D
EVX10020	CSPB-2.5	IP-8D
EVX12025	CSPD-3	IP-10D
EVX16032	CSPB-3.5	IP-15D

Inserts

Fig. 1
Used for both peripheral and center edges



Cat. No.	Accuracy	Honing	Grades Coated AH120	Coated AH140	Dimensions (mm) A	B	s	rε	θ	C	Figure
XXMU08T204PR-MJ	M	With	●	●	8.2	5.6	2.78	0.4	10°	–	Fig. 1
XXMU10H308PR-MJ			●	●	10.6	6.8	3.5	0.8	11°		
XXMU12X408PR-MJ			●	●	13.2	7.9	4.2				
XXMU16X508PR-MJ			●	●	16.8	11.1	5.0				

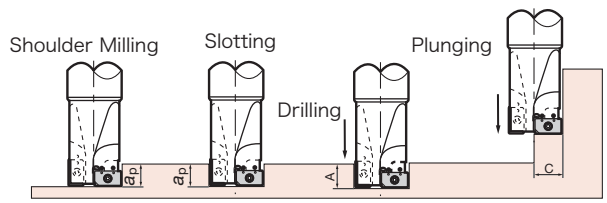
● : Stocked items.

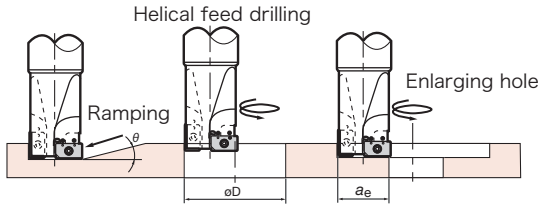
Relating pages | Technical Reference (15–1)

Standard cutting conditions

Work material	Grades	øD: ø16 ~ ø20 mm			øD: ø25 ~ ø63 mm		
		Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)		Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	
			Shouldering·Grooving	Drilling		Shouldering·Grooving	Drilling
Carbon steels (Ck50 etc.) < 300 HB	**AH120**	100 - 180	0.05 - 0.20	0.03 - 0.08	120 - 200	0.08 - 0.25	0.05 - 0.10
Alloy steels (42CrMo4 etc.) < 300 HB	**AH120**	80 - 160	0.05 - 0.15	0.03 - 0.08	100 - 180	0.08 - 0.20	0.05 - 0.10
Die steels (X96CrMoV12 etc.) < 300 HB	**AH120**	60 - 120	0.05 - 0.13	0.03 - 0.06	80 - 150	0.08 - 0.15	0.03 - 0.08
Stainless steels (X5CrNi18 9 etc.)	**AH140**	70 - 140	0.05 - 0.15	0.03 - 0.08	90 - 160	0.08 - 0.20	0.03 - 0.08
Cast irons (GG25 etc.)	**AH120**	100 - 180	0.05 - 0.25	0.03 - 0.10	120 - 200	0.08 - 0.25	0.05 - 0.10

Machining capability





	Cat. No.	Tool diameter øDc	Effective cutting edge length (*ap*)	Max. drilling depth (A)	Max. cutting width in plunging (C)	Max. ramping angle (D)	Min. machining hole dia. (øDmin)	Max. machining hole dia. (øDmax)	Max. cutting width in enlarging hole (*ae*)
Standard type / Long type	**EVX08016R...**	16	7	8	8	3°	19.2	30	14
	EVX10020R...	20	9	10	10	3°	24	38	18
	EVX12025R...	25	11.5	12.5	12.5	3°	30	48	23
	EVX16032R...	32	15	16	16	3°	38.4	62	30

ESD10

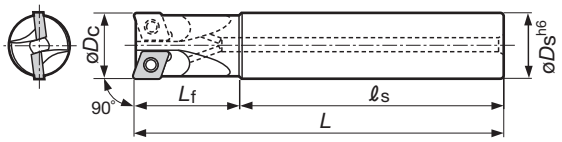
Diameter ø20 ~ 32 mm | 90° 9, 15 mm | Air Hole

P Steel | M Stainless | K Cast Iron | N Non-ferrous

Shoulder Milling | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For multi-functional milling of general steels, stainless steels, cast irons and non-ferrous metals

Rake angle:	ESD10	A.R. +8.5° ~ +10° R.R. – 10° ~ – 5°



Max. ap: 9-117

TSD10 (Fig. A: bore type)

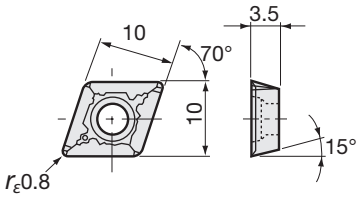
Cat. No.	Stock	No. of inserts	Dimensions (mm)					Applicable inserts	Clamping screw	Wrench
			øDc	L	Lf	ℓs	øDs			
ESD10020RS-E	●	1	20	80	30	50	20	GDMT10H3PDPR-MJ GDGT10H3PDFR-AJ	CSTB-3.5H	T-15D
ESD10025RS-E	●	2	25	96	40	56	25			
ESD10032RS-E	●		32	110	50	60	32			

Replacement parts

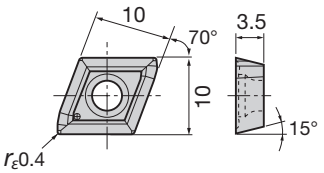
Cat. No.	Clamping screw	Wrench
T/ESD10	CSTB-3.5H	T-15D

Inserts

GDMT10H3PDPR-MJ



GDGT10H3PDFR-AJ



Cat. No.	Accuracy	Honing	Coated				DLC coated	Uncoated	
			AH120	AH140	AH330	T3130	DS1100	UX30	TH10
GDMT10H3PDPR-MJ	M	With	●	●	●	●		●	
GDGT10H3PDFR-AJ	G	Without					●		●

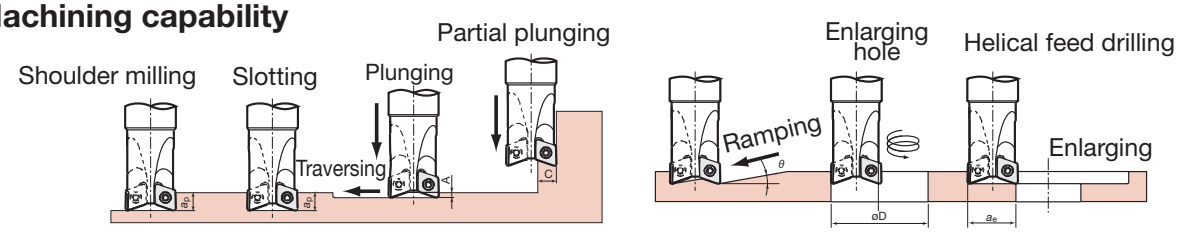
● : Stocked items.

Relating pages | Technical Reference (15–1)

Standard cutting conditions

Work material	Grades	ESD (ø20 ~ 32 mm)		
		Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	
			Shouldering, grooving, Z-feed milling	Partial plunging
Carbon steels (C50 etc.) < 300 HB	**AH120**	100 - 180	0.05 - 0.2	0.03 - 0.1
	AH330	120 - 230	0.05 - 0.15	0.03 - 0.08
	UX30	80 - 130		
	T3130	100 - 180	0.05 - 0.2	0.03 - 0.1
Alloy steels (42CrMo4 etc.) < 300 HB	**AH120**	80 - 160	0.05 - 0.15	0.03 - 0.08
	AH330	100 - 200	0.05 - 0.13	0.03 - 0.06
	UX30	80 - 120		
	T3130	80 - 160	0.05 - 0.15	0.03 - 0.08
Die steels (X96CrMoV12 etc.) < 300 HB	**AH120**	60 - 120	0.05 - 0.13	0.03 - 0.06
	AH330	80 - 160	0.05 - 0.1	0.03 - 0.05
	UX30	60 - 100		
	T3130	60 - 120	0.05 - 0.13	0.03 - 0.06
Stainless steels (X5CrNi18 9 etc.)	**AH140**	80 - 160	0.05 - 0.15	0.03 - 0.08
Cast irons (GG25 etc.)	**AH120**	100 - 180	0.05 - 0.25	0.03 - 0.1
	AH330	120 - 230	0.05 - 0.2	0.03 - 0.08
	UX30	80 - 130		
Aluminium alloys	**DS1100**	200 - 1000	0.05 - 0.25	0.05 - 0.15
Copper alloys	**TH10**	200 - 400	0.05 - 0.25	0.05 - 0.15

Machining capability



Cat. No.	Cutter dia. ø*Dc* (mm)	*ap* (mm)	A (mm)	C (mm)	*θ*	Min. øD (mm)	Max. øD (mm)	*ae* (mm)
ESD10020R...	20	9	2.5	8	10°	24	38	18
ESD10025R...	25	9	2.5	9	10°	32	48	23
ESD10032R...	32	9	2.5	9	6°30'	46	62	30

ap = Effective cutting edge length A = Max. plunging depth
C = Max. cutting width in plunging
θ = Max. ramping angle øD = Machining hole dia.
ae = Max. cutting width in enlarging hole (E)

● : Stocked items.

EBP

Diameter ø20 ~ 32 mm

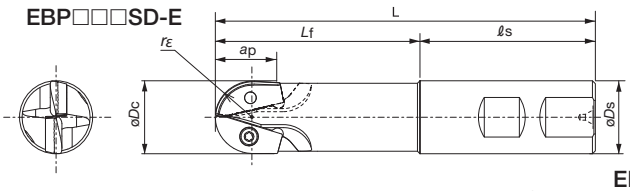
R ~ 15 mm

P Steel | K Cast Iron | H Hard Materials

Radius Milling | Pocketing | Ramping | Profiling

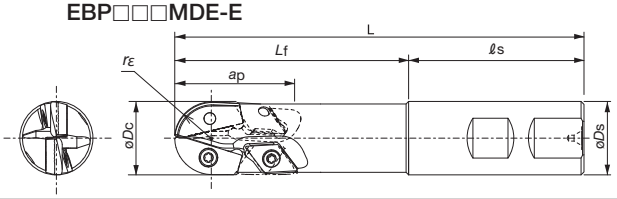
For medium to finish engraving of steel and cast iron dies

EBP□□□SD-E

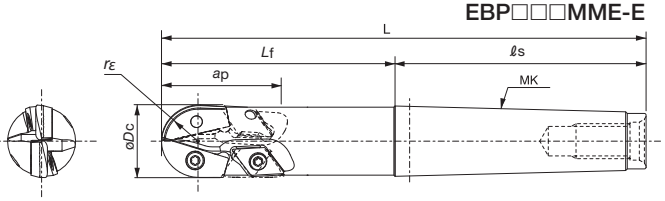


Tolerance on R ±0.08

EBP□□□MDE-E



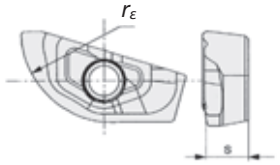
EBP□□□MME-E



Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	L	Lf	ℓs	øDs	ap	rε	MK	Applicable inserts		for ZPET Clamping screw	for ZPET Wrench	for DCMW Clamping screw	for DCMW Wrench
EBP020SD-E	●	2	20	116	60	56	20	16	10	-	ZPET2004-MJ	-	CSTD-3T	T-10D	-	-
EBP020MDE-E	●	2+2		126				29.5				DCMW070204TN			CSTB-2.5S	T-8D
EBP020MME-E	●	2+2		139	70	69	-			MK2						
EBP025SD-E	●	2	25	130		60	25	21	12.5	-	ZPET2505-MJ	-	CSTB-4S	T-15D	-	-
EBP025MDE-E	●	2+2		140	80			41				DCMW11T304TN			CSTB-4S	T-15D
EBP025MME-E	●	2+2		166		86	-			MK3						
EBP032SD-E	●	2	32	140		60	32	25	16	-	ZPET3206-MJ	-	CSTB-5	T-20D	-	-
EBP032MDE-E	●	2+2		160	100			46				DCMW11T304TN			CSTB-4S	T-15D
EBP032MME-E	●	2+2		209		109	-			MK4						

Inserts

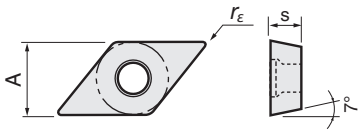
For R-edge



Cat. No.	Accuracy	Honing	Stocked grade Coated AH120	Stocked grade Coated AH330	Dimensions (mm) s	Dimensions (mm) rε
ZPET2004-MJ	E	With	●	●	4.5	10
ZPET2505-MJ			●	●	4.625	12.5
ZPET3206-MJ			●	●	6.75	16

"ZPET3006-MJ" : Packing Quantity=1 pcs.

For peripheral edge

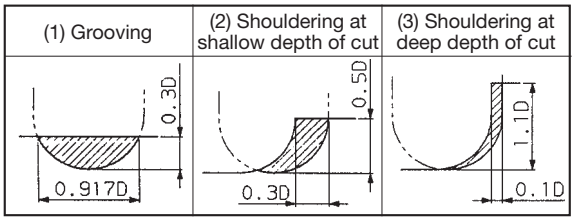


Cat. No.	Accuracy	Honing	Stocked grade Coated AH120	Stocked grade Coated AH330	Dimensions (mm) A	Dimensions (mm) s	Dimensions (mm) rε
DCMW070204TN	M	With	●	●	6.35	2.38	0.4
DCMW11T304TN			●	●	9.525	3.97	

Standard cutting conditions

Work material	Grade	Machining type	Cutting speed Vc (m/min)	Table feed vf (mm/min) Tool dia. : ø20	Tool dia. : ø25	Tool dia. : ø32
Carbon steels (C55 etc.) < 300 HB	AH120	(1)	170 - 230	610 - 910	460 - 760	360 - 660
		(2)	200 - 260	900 - 1300	680 - 1080	530 - 930
		(3)	150 - 200	420 - 350	310 - 610	230 - 530
Alloy steels (42CrMo4 etc.) < 300 HB	AH120	(1)	150 - 210	530 - 830	400 - 700	300 - 600
		(2)	180 - 240	800 - 1200	600 - 400	470 - 870
		(3)	130 - 180	360 - 660	250 - 550	190 - 490
Die steels (X96CrMoV12 etc.) < 300 HB	AH330	(1)	120 - 180	420 - 720	310 - 610	230 - 530
		(2)	150 - 210	660 - 1060	490 - 890	370 - 770
		(3)	100 - 150	260 - 560	180 - 480	130 - 430
Cast irons (GG25 etc.)	AH120	(1)	170 - 230	800 - 1100	610 - 910	490 - 790
		(2)	200 - 260	900 - 1400	700 - 1200	530 - 1030
		(3)	150 - 200	420 - 720	310 - 610	230 - 530
Hardened steels Prehardened steels < 45 HRC	AH120	(1)	60 - 100	150 - 350	100 - 300	100 - 260
		(2)	70 - 130	160 - 460	100 - 400	100 - 360
		(3)	40 - 80	140 - 240	100 - 200	80 - 180

Machining types



Notes:
- Cutting speeds shown in the left table are of the most outer diameter of the tool.
- When the depth of cut is the upper limit shown in the above figures, set the cutting conditions to the lowest values shown left.
- When using long edge types (MSE), set the cutting speed and feed to 60 to 80 % of values shown in the table.
- When using long shank types (LSE), set the cutting speed and feed to 20 to 50 % of values shown in the table, bearing in mind the overhang length.

● : Stocked items.

Relating pages | Technical Reference (15–1)

TAC Flash ball endmills (Large diameter type)

EBD

Diameter ø40 ~ 50 mm

R ~ 25 mm

P Steel | K Cast Iron | H Hard Materials

Radius Milling | Pocketing | Ramping | Profiling

For medium to rough engraving of steel and cast iron dies

Tolerance on R ±0.2

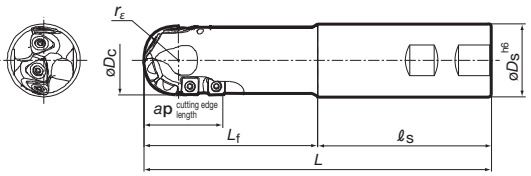


Fig. A

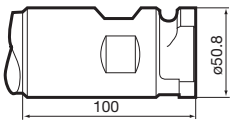
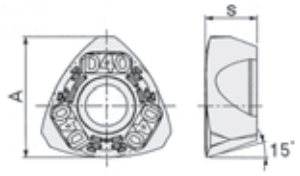


Fig. B
Combination shank

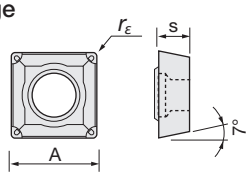
Cat. No.	Stock	No. of inserts	Dimensions (mm)							Applicable inserts	Clamping screw	Wrench
			øDc	L	L_f	ℓ_s	ap	r_ε	øDs			
EBD040SDE-E	●	4+3	40	170	100	70	45	20	40	ZDMT4005-MJ SCMT09T308-23	CSTB-4M	T-15T
EBD040MME-E	●	4+3	40	170	120	109	45	20	MK4			
EBD050SDE-E	●	4+3	50	229	100	70	59	25	40	ZDMT5006-MJ SCMT120408-23	CSTB-5	T-20T
EBD050MME-E	●	4+3	50	256	120	136	59	25	MK5			

Standard cutting

For R-edge



For peripheral edge



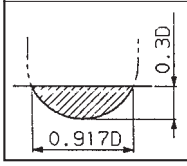
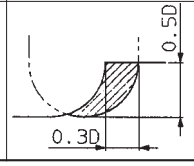
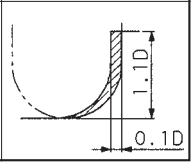
* The figure shows ZDMT4005-MJ.

	Cat. No.	Accuracy	Honing	Grade	Dimensions (mm)		
				Coated AH120	A	s	r_ε
R-edge	ZDMT4005-MJ	M	With	●	13	5.5	–
R-edge	ZDMT5006-MJ			●	16.2	6.5	–
Peripheral edge	SCMT09T308-23			●	9.525	3.97	0.8
Peripheral edge	SCMT120408-23			●	12.7	4.76	0.8

Standard cutting conditions

Work material	Grade	Machining type	Cutting speed Vc (m/min)	Table feed vf (mm/min) Tool dia. : ø40	Tool dia. : ø50
Carbon steels (C55 etc.) < 300 HB	AH120	(1)	150 - 210	610 - 910	460 - 760
		(2)	170 - 230	900 - 1300	680 - 1080
		(3)	130 - 190	420 - 720	310 - 610
Alloy steels (42CrMo4 etc.) < 300 HB	AH120	(1)	130 - 190	530 - 830	400 - 700
		(2)	150 - 210	800 - 1200	800 - 1000
		(3)	110 - 170	360 - 660	250 - 550
Die steels (X96CrMoV12 etc.) < 300 HB	AH120	(1)	110 - 170	420 - 720	310 - 610
		(2)	130 - 190	660 - 1060	490 - 890
		(3)	90 - 150	260 - 560	180 - 480
Cast irons (GG25 etc.)	AH120	(1)	170 - 230	800 - 1000	610 - 910
		(2)	190 - 250	900 - 1400	700 - 1200
		(3)	150 - 210	420 - 720	310 - 610
Hardened steels Prehardened steels < 45 HRC	AH120	(1)	70 - 110	150 - 350	100 - 300
		(2)	80 - 120	160 - 460	100 - 400
		(3)	50 - 90	140 - 240	100 - 200

Machining types

(1) Grooving	(2) Shouldering at shallow depth of cut	(3) Shouldering at deep depth of cut
		

Notes:

- Cutting speeds shown in the left table are of the most outer diameter of the tool.
- The values of the cutting speeds and feeds shown in the table are of under general cutting conditions. The values should be modified depending on the power and rigidity of the machine to be used, and work holding conditions.
- When using the long shank type, the depth of cut, pick feed, cutting speed, and table feed should be reduced to 70 %-90 % of the values shown in the tables.

● : Stocked items.

TBN1000

Diameter ø10 ~ 30 mm | R ~ 15 mm

K Cast Iron | P Steel

Pocketing | Ramping | Profiling

For medium to finish engraving of steel and cast iron dies

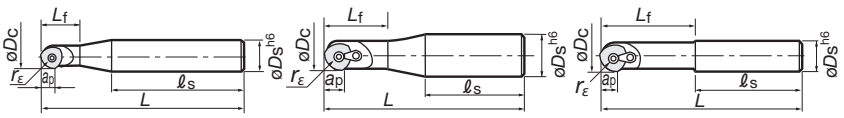


Fig. A | Fig. B | Fig. C

Cat. No.	Stock	Applicable insert	Dimensions (mm)							Fig.	Clamping screw	Clamp	Clamp screw	Wrench
			øDc	rε	L	ap	Lf	ℓs	øDs					
TBN1100SE	●	ZNCA1002FN2	10	5	90	5	15	60	16	A	CSTB-2.5B	–	–	T-8D
TBN1120SE	●	ZNCA1203FN	12	6	110	6	20	70			CSTB-3S			T-9D
TBN1160SE	●	ZNCA1603FN	16	8	130	8	25	85	20		CSTB-4S			T-15D
TBN1200SE	●	ZNCA2004FN ZNMM2004EN	20	10	160	10	35	100	25		CSTA-5S			T-15D
TBN1250SE	●	ZNCA2505FN ZNMM2505EN	25	12.5	175	12.5	45	100	32	B	CSTA-5S	CP536	DS-6T	T-15D
TBN1300SE	●	ZNCA3005FN ZNMM3005EN	30	15	190	15	90	100	32	C				

Inserts

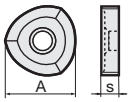


Fig. 1

Fig. 2

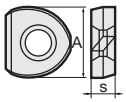


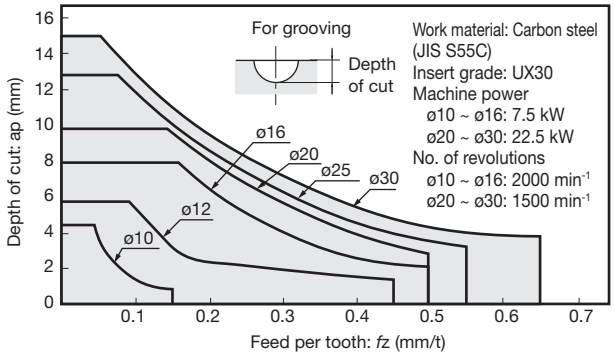
Fig. 3

Note : Type B inserts, used for cutter smaller than ø16 mm, are single-sided type.

Cat. No.	Accuracy	Grades		Dimensions (mm)		No. of cutting edges per insert	Type	Application
		Uncoated						
		TH10	UX30	A	s			
ZNCA1002FN2	C	●	●	7.958	2.5	2	Fig. 3	UX30 grade for steels TX10 grade for cast irons and light alloys
ZNCA1203FN		●	●	9.735	3	3	Fig. 2	
ZNCA1603FN		●	●	12.772	3.5			
ZNCA2004FN		●	●	15.862	4	6		
ZNCA2505FN		●	●	19.826	5			
ZNCA3005FN		●	●	23.618	5.5			
ZNMM2004EN	M		●	15.862	4	3	Fig. 1	
ZNMM2505EN			●	19.826	5			
ZNMM3005EN			●	23.618	5.5			

Note : M-class inserts are mainly used for medium finishing and C-class inserts are most suitable for finishing.

Guidelines for selecting depth of cut and feed



Standard cutting conditions for finishing

Work materials: Cast iron, carbon steels and alloy steels

Cat. No.	Grades	No. of rev. n (min-1)	Pick feed pf (mm)	Table feed Vf (mm/min)
TBN1100SE	UX30 TH10	3200	0.3	480
TBN1120SE		2700		540
TBN1160SE		2000	0.5	650
TBN1200SE		1600		700
TBN1250SE		1300		580
TBN1300SE		1100		550

Note: For die steels, reduce the spindle speed to 80% and the feed to 75-85% respectively of the values shown above.

- No. of revolutions (min-1) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

● : Stocked items.

Relating pages | Technical Reference (15–1)

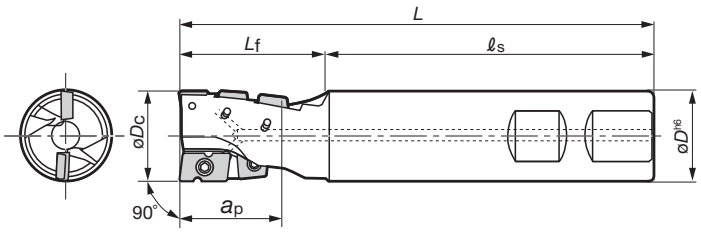
ELP-A

Diameter ø25 ~ 40 mm | 90° ~ 44 mm | Air Hole

P Steel | M Stainless | K Cast Iron

Deep Shoulder Milling | Slotting | Side Milling

For roughing, large-depth shouldering, and slotting of steels and cast irons



Cat. No.	Stock	No. of inserts	Dimensions (mm)						Applicable inserts	Clamping screw	Wrench
			øDc	L	Lf	ℓs	ap	øDs			
ELP13025RA	●	2 (5)	25	130	40	90	28	25	APMT070308PN-MJ ADMT130308PR-MJ	CSPB-2.5 CSPD-3	IP-8D IP-10D
ELP17032RA	●		32	140	50		35	32	APMT09T308PN-MJ ADMT17T308PR-MJ	CSPD-3 CSPB-4S	IP-10D IP-15D
ELP21040RAS40	●		40	150	60		44	40	APMT120408PN-MJ ADMT210408PR-MJ	CSPB-4 CSTB-5	IP-15D T-20D

Inserts

Fig. A
(Used for end cutting edge)

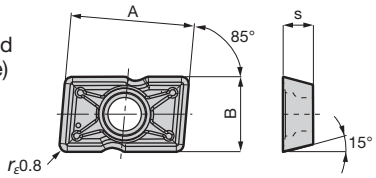
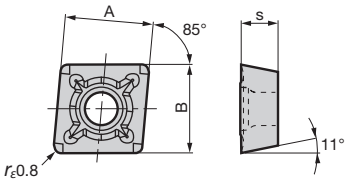


Fig. B
(Used for both end and peripheral edges)



Cat. No.	Accuracy	Honing	Grades				Dimensions (mm)			Figure
			AH120	AH140	T3130	GH330	A	B	s	
ADMT130308PR-MJ	M	With	●	●	●		13.1	7.94	3.18	Fig. A
ADMT17T308PR-MJ			●	●	●		16.6	9.525	3.97	
ADMT210408PR-MJ			●	●	●		20.6	12.7	4.76	
APMT070308PN-MJ			●	●	●	●	7.94	7.94	3.18	Fig. B
APMT09T308PN-MJ			●	●	●	●	9.525	9.525	3.97	
APMT120408PN-MJ			●	●	●	●	12.7	12.7	4.76	

● : Stocked items.

Standard cutting conditions

Work materials	Grades	Cutter diameter (mm)					
		ø25		ø32		ø40	
		Vc (m/min)	fz (mm/t)	Vc (m/min)	fz (mm/t)	Vc (m/min)	fz (mm/t)
Mild steels, Low carbon steels St37 etc.	T3130 (AH120)	60 - 150	0.08 - 0.2	60 - 150	0.1 - 0.3	60 - 150	0.1 - 0.3
High carbon steels, Alloy steels C45, C55 etc.		60 - 120		60 - 120		60 - 120	
Die steels X96CrMoV12 etc.		60 - 100		60 - 100		60 - 100	
Stainless steels X5CrNi18 9 etc.	AH140	70 - 120	0.08 - 0.2	70 - 120	0.1 - 0.3	70 - 120	0.1 - 0.3
Cast irons GG25, GGG50 etc.	AH120	60 - 150	0.08 - 0.2	60 - 150	0.1 - 0.3	60 - 150	0.1 - 0.3

• *Vc*: Cutting speed
• *fz*: Feed per tooth (Feed per revolution is *fz* × 2 as effective number of teeth is equal to two)

Notes : • To get the best of the tool's performance, use of a high-accuracy, side-lock type toolholder or milling chuck which has a high gripping force is recommended.
• Excessive tool overhang from the toolholder should be avoided to prevent chatter.

TZP12

Diameter ø50 ~ 80 mm

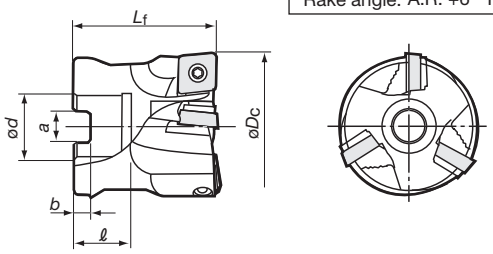
90°

P Steel K Cast Iron

Plunging Face Milling

For Z-feed milling of steels and cast irons

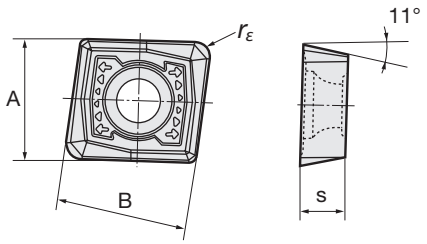
Rake angle: A.R. +6° R.R. –2°



Max. *ap*: 9-123

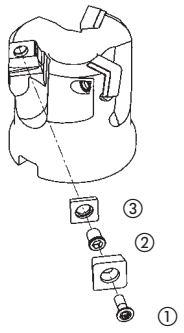
Pitch	Cat. No.	Stock	No. of inserts	Dimensions (mm) øDc	ød	ℓ	Lf	b	a	Weight (kg)	Mounting details
Standard	TZP12050R-E	●	3	50	22	20	50	6.3	10.4	0.38	9-138Ⓐ
	TZP12063R-E	●		63						0.72	
	TZP12080R-E	●	4	80	27	26	63	7	12.4	1.51	9-138Ⓐ

Inserts



Cat. No.	Accuracy	Honing	Grades AH120	Grades T3130	Dimensions (mm) A	B	s	r_ε	Eff. cutting edge length (mm)
APMT120416PR-MJ	M	With	●	●	12.7	13.5	4.76	1.6	10

Replacement parts



No.	Descriptions	Cat. No.
①	Clamping screw	CSTB-3.5T
②	Shim screw	DTS5-3.5S
③	Shim	ZSA1102
–	Wrench	P-3.5
–	Wrench	T-20D

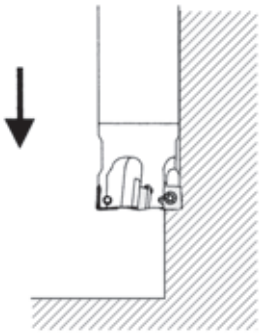
● : Stocked items.

Relating pages Technical Reference (15–1)

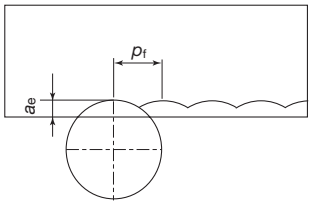
Standard cutting conditions

Work materials	Grades	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Carbon steels, Alloy steels	**AH120**	100 - 200	0.1 - 0.3
	T3130	150 - 250	0.1 - 0.25
Die steels (X96CrMoV12) < 300 HB	**AH120**	100 - 200	0.1 - 0.3
	T3130	150 - 250	0.1 - 0.25
Prehardened steels < 45 HRC	**AH120**	60 - 120	0.1 - 0.2
Cast irons (GG···, GGG···)	**AH120**	100 - 200	0.1 - 0.3

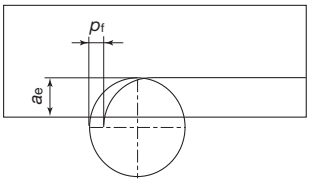
Z-feed miling



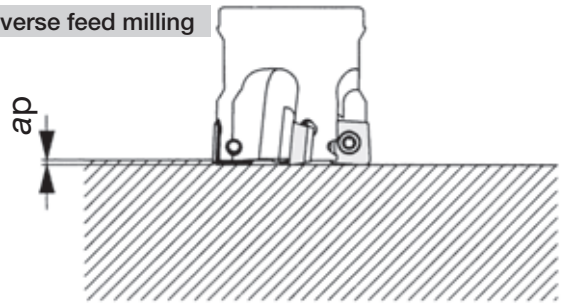
Machining method (1)



Machining method (2)



Traverse feed milling



Machining method	Z-feed milling		Traverse feed milling
	Pick feed p_f (mm)	Radial depth of cut *ae* (mm)	Depth of cut *ap* (mm)
(1)	Tool dia. øD/2	Within effective cutting edge length	≤ 0.5
(2)	Within effective cutting edge length	Tool dia. øD/2	

Note: In Z-feed milling, select either of the machining method (1) or (2) and decide the depth of cut according to the application.

● : Stocked items.

TZF11

Diameter ø50 ~ 80 mm

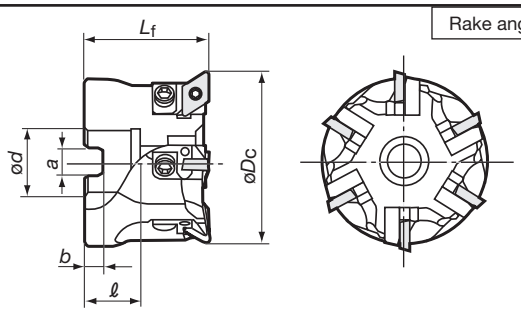
90°

P Steel K Cast Iron H Hard Materials

Plunging Face Milling

For Z-feed finish milling of steels and cast irons

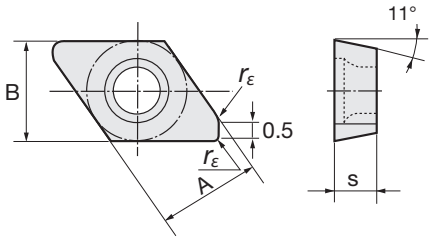
Rake angle: A.R. 0° R.R. –6°~0°



Max. ap: 9-125

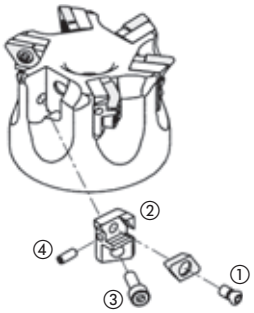
Cat. No.	Stock	No. of inserts	Dimensions (mm)						Weight (kg)	Mounting details
			øDc	ød	ℓ	Lf	b	a		
TZF11050R-E	●	4	50	22	20	45	6.3	10.4	0.38	9-138Ⓐ
TZF11063R-E	●	6	63						0.72	
TZF11080R-E	●	7	80	27	26	63	7	12.4	1.51	

Inserts



Cat. No.	Accuracy	Honing	Grades			Dimensions (mm)			
			Coated		Cermet	A	B	s	rε
			AH120	AH740	NS530				
DPCW11T3ZFR	C	Without	●	●	●	9.525	9.525	3.97	1.0

Replacement parts



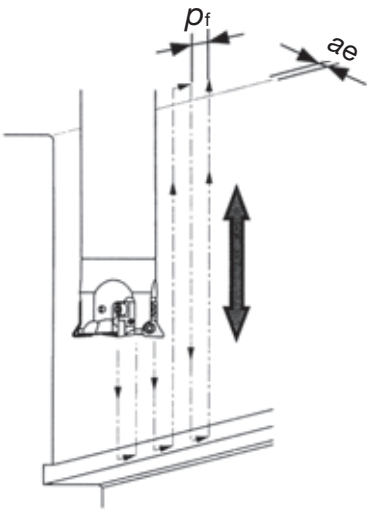
No.	Descriptions	Cat. No.
①	Clamping screw	CSTB-4S
②	Cartridge	SDUPR09CZ-11
③	Cartridge fixing screw	CM4X0.7X12
④	Cartridge adjusting screw	SSHM3-10
-	Wrench	T-15D
-	Hex. wrench	P-1.5, P-3

● : Stocked items.

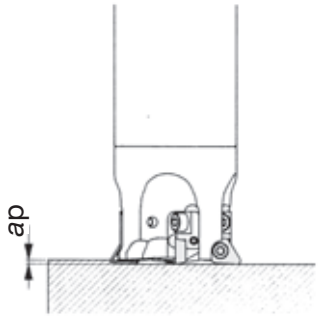
Standard cutting conditions

Work materials	Grades	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Carbon steels, Alloy steels (< 300 HB)	**NS530**	150 - 400	0.05 - 0.20
	AH740	150 - 350	
Cast irons (GG25 etc.)	**AH740**	200 - 500	0.05 - 0.20
Ductile cast irons (GGG25 etc.)	**AH740**	150 - 350	
Prehardened steels, Hard materials (40-55 HRC)	**AH740**	100 - 200	0.05 - 0.15

Z-feed miling



Traverse feed milling



Z-feed milling		Traverse feed milling
Pick feed *pf* (mm)	Radial depth of cut *ae* (mm)	Depth of cut *ap* (mm)
0.5 - 1.0	< 0.5	≤ 0.5

- Dry cutting (or air blow) at a depth of cut up *ae* to 0.3 mm (allowable max. 0.5 mm) and a pick feed *pf* from 0.5 to 1.0 mm is recommended.
- TZF11 type cutters are not designed to adjust dynamic balance. Therefore, when the tool's overhang ratio (cutter diameter-to-length) exceeds 6:1, special care should be taken with the revolution speed. (At first, start the machining at 50 % of the speed shown in the table of the standard cutting conditions, and then gradually increase the speed whilst confirming safety.)
- To produce highly accurate surface finish, use the cutter on a machine with sufficient rigidity.

●Cautionary points in use

- Use the cutter for finish milling of vertical wall surfaces requiring long tool-overhang of L/D > 6.
- Radial cutting edge run-out should be adjusted within 0.01 mm.
- In addition to Z-feed milling, TZF11 type cutters can be also used for traverse feed milling. (*ap* ≤ 0.5 mm)

● : Stocked items.

TMS

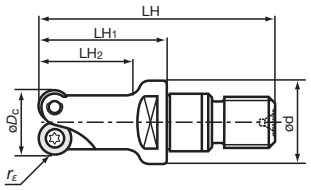
Diameter ø10 ~ 25 mm

P Steel | K Cast Iron | M Stainless | N Non-ferrous | H Hard Materials

Face Milling | Face Milling | Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Profiling | Plunging | Enlarging Hole | Drilling | Counter Milling

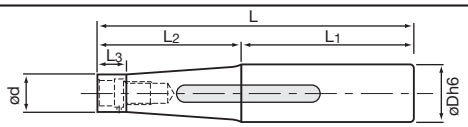
HWD-type cutting heads + T-BAR modular system

ap: HWD05: 2.5 mm
HWD07: 3.5 mm
HWD10: 5.0 mm



Cat. No.	Stock	No. of inserts	Dimensions (mm)					Applicable insert	Radius of inserts r_ε	Screw	Wrench	Thread	Extensions
			øDc	LH1	LH2	LH	ød						
HWD05010R		2	10	20	15	37	13	RDMW0501M0	2.5	CSTD-1.8	T-6D	M8 x 1	HD01520L110T
HWD05012R	●	3	12	20	15	37	13						
HWD05015R	●	4	15	20	–	37	13						
HWD05020R	●	5	20	20	–	38	18					M12 X1.5	HD02025L150T
HWD05025R		6	25	25	–	45	23					M14 X1.5	HD02532L170T
HWD07015R		3	15	20	–	37	13	RDMW0702M0	3.5	CSTB-2.5S	T-8D	M8 X 1	HD01520L110T
HWD07020R	●	4	20	20	–	38	18					M12 X1.5	HD02025L150T
HWD07025R	●	5	25	25	–	45	23					M14 X1.5	HD02532L170T
HWD10020R	●	2	20	20	–	38	18	RDMW1003M0	5	CSTB-3.5H	T-15D	M12 X1.5	HD02025L150T
HWD10025R	●	3	25	25	–	45	23					M14 X1.5	HD02532L170T

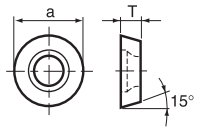
Specifications of straight-shank "Tsuppari-Ichiban" (T-BAR)



Shank Cat. No.	Stock	Cutter head Cat. No.	Tool dia. (mm)	Dimensions (mm)					
				ød	L	L1	L2	L3	øD
HD01520L110T	●	HWD05	ø10 - 15	13	110	50	60	10	20
HD02025L150T	●	HWD...20	ø20	18	150	70	80	20	25
HD02532L170T	●	HWD...25	ø25	23	170	90	80	20	32

* The products shown in above are made to order.

Inserts



Cat. No.	Grade	Dimensions (mm)	
	AH120	a	T
RDMW0501M0	●	5.0	1.40
RDMW0702M0	●	7.0	2.38
RDMW1003M0	●	10.0	3.18

Standard cutting conditions

Work materials	Grades	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Cutting depth: ap (mm)		
				ø10, 12	ø15, 20	ø25
Carbon steels < 300 HB	AH120	200 - 500	0.15 - 0.45	≤ 0.5	≤ 0.7	≤ 1.0
Alloy steels < 300 HB		120 - 350	0.15 - 0.35			
Die steels < 300 HB		100 - 300	0.10 - 0.30			
Cast irons		200 - 500	0.20 - 0.50			
Hardened steels < 40 HRC		70 - 200	0.10 - 0.25			

• No. of revolutions n (min^{-1}) = Cutting speed V_C (m/min) x 1000 ÷ 3.14 ÷ Cutter ø (mm)
• Feed speed V_f (mm/min) = n (min^{-1}) x Feed per tooth f_Z (mm/t) x z (No. of inserts)

● : Stocked items

Relating pages | Technical Reference (15–1)

ECC31

Chamfering of hole ø5mm ~

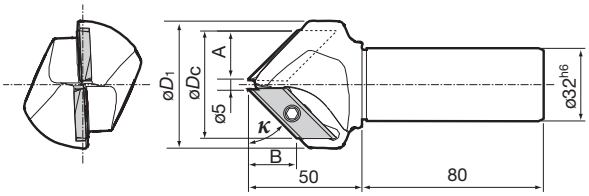
60° Chamfering | 45° Chamfering | 30° Chamfering

P Steel | M Stainless | K Cast Iron

Chamfering | Chamfering

For chamfering of general steels, stainless steels and cast irons

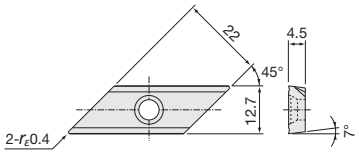
Rake angle: A.R. −5°~ −3° R.R. −15° ~ −10°



The accuracy of κ : ±1°

Cat. No.	Stock	No. of inserts	Dimensions (mm) κ	A	B	øD1	øDc	Applicable insert	Clamping screw	Wrench
ECC31005R-30	●	1	60°	14.5	25.5	40	34	XCET 310404ER	CSTB-5S	T-20D
ECC31005R-45	●	2	45°	20.5	20.5	56	46			
ECC31005R-60	●		30°	25.5	14.5	72	55			

Inserts



Cat. No.	Accuracy	Honing	Stock Coated AH330	Cermet NS740	Cermet NS530	Uncoated UX30
XCET310404ER	E	With	●	●	●	●

Packing Quantity = 5 pcs.

Standard cutting conditions

Work materials	Grades	No. of revolutions: n (min-1)	Feed per tooth: fz (mm/t)
Carbon steels (C55 etc.)	NS740•NS530	1000 - 7000	0.1 - 0.25
Alloy steels (42CrMo4 etc.) < 300 HB	UX30	700 - 4900	
Die steels (X40CrMoV5-1 etc.) < 300 HB	AH330	1000 - 7000	0.1 - 0.2
Stainless steels (X5CrNi18-10 etc.) < 250 HB	AH330	1000 - 7000	0.1 - 0.25
Cast irons (GG25 etc.)	AH330	1000 - 7000	0.1 - 0.25

Notes:
- When the hole diameter to be chamfered is small or the cutting edges near the front end of tool are used, use at higher side of the revolution range shown in the Table. In contrast, when the hole diameter to be chamfered is large or the cutting edges far from the tool's front end are used, use the lower side of the revolution range shown in the Table.
- When chamfering a small diameter hole (smaller than ø10 mm) in a plunge-milling mode, peck-feeding should not be used.
- When the hole diameter to be chamfered is smaller than ø10 mm or the cutting edges near the tool's front end are used, the feed should be set within 0.15 mm/t.

● : Stocked items.

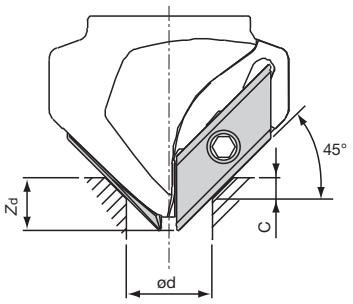
Relating pages | Technical Reference (15−1)

ECC31

Guidelines for programming

Z-axis plunging depth Z_d (mm) in 45° chamfering of hole

Hole dia. ød (mm)	Size of chamfering C (mm)						
	0.5	1	1.5	2	3	4	5
5	0.7	1.2	1.7	2.2	3.2		
6	1.2	1.7	2.2	2.7	3.7		
6.8	1.6	2.1	2.6	3.1	4.1		
8	2.2	2.7	3.2	3.7	4.7		
8.5	2.4	2.9	3.4	3.9	4.9		
10	3.2	3.7	4.2	4.7	5.7	6.7	7.7
10.2	3.3	3.8	4.3	4.8	5.8	6.8	7.8
12	4.2	4.7	5.2	5.7	6.7	7.7	8.7
14	5.2	5.7	6.2	6.7	7.7	8.7	9.7
16	6.2	6.7	7.2	7.7	8.7	9.7	10.7
17.5	6.9	7.4	7.9	8.4	9.4	10.4	11.4
20	8.2	8.7	9.2	9.7	10.7	11.7	12.7
21	8.7	9.2	9.7	10.2	11.2	12.2	13.2
24	10.2	10.7	11.2	11.7	12.7	13.7	14.7
30	13.2	13.7	14.2	14.7	15.7	16.7	17.7
33	14.7	15.2	15.7	16.2	17.2	18.2	19.2
36	16.2	16.7	17.2	17.7	18.7	19.7	
42	19.2	19.7	20.2				

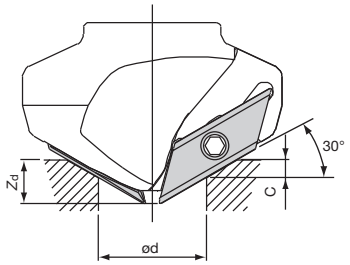


Tool: ECC31005R-45

Note: When the hole depth is smaller than the Z-axis plunging depth (Zd), special care should be taken to avoid an interference between the tool's front end and the bottom of the hole.

Z-axis plunging depth Z_d (mm) in 30° chamfering of hole

Hole dia. ød (mm)	Size of chamfering C (mm)						
	0.5	1	1.5	2	2.5	3	3.5
5	0.6	1.1	1.6	2.1			
6	0.9	1.4	1.9	2.4			
6.8	1.1	1.6	2.1	2.6			
8	1.4	1.9	2.4	2.9			
8.5	1.6	2.1	2.6	3.1			
10	2.0	2.5	3.0	3.5	4.0	4.5	5.0
10.2	2.1	2.6	3.1	3.6	4.1	4.6	5.1
12	2.6	3.1	3.6	4.1	4.6	5.1	5.6
16	3.7	4.2	4.7	5.2	5.7	6.2	6.7
17.5	4.2	4.7	5.2	5.7	6.2	6.7	7.2
20	4.9	5.4	5.9	6.4	6.9	7.4	7.9
21	5.2	5.7	6.2	6.7	7.2	7.7	8.2
24	6.1	6.6	7.1	7.6	8.1	8.6	9.1
30	7.8	8.3	8.8	9.3	9.8	10.3	10.8
33	8.7	9.2	9.7	10.2	10.7	11.2	11.7
36	9.5	10.0	10.5	11.0	11.5	12.0	12.5
38	10.1	10.6	11.1	11.6	12.1	12.6	13.1
42	11.2	11.7	12.2	12.7	13.2	13.7	14.2
46	12.4	12.9	13.4	13.9	14.4		
48	13	13.5	14	14.5			
52	14.1						

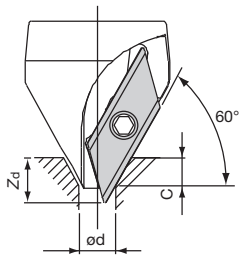


Tool: ECC31005R-60

Note: When the hole depth is smaller than the Z-axis plunging depth (Zd), special care should be taken to avoid an interference between the tool's front end and the bottom of the hole.

Z-axis plunging depth Z_d (mm) in 60° chamfering of hole

Hole dia. ød (mm)	Size of chamfering C (mm)							
	0.5	1	1.5	2	2.5	3	3.5	4
5	0.8	1.3	1.8	2.3	2.8			
6	1.7	2.2	2.7	3.2	3.7			
6.8	2.4	2.9	3.4	3.9	4.4			
8	3.4	3.9	4.4	4.9	5.4			
8.5	3.8	4.3	4.8	5.3	5.8			
10	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6
10.2	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8
12	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4
16	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8
17.5	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1
20	13.7	14.2	14.7	15.2	15.7	16.2	16.7	17.2
21	14.6	15.1	15.6	16.1	16.6	17.1	17.6	18.1
24	17.2	17.7	18.2	18.7	19.2	19.7	20.2	20.7
30	22.4	22.9	23.4	23.9	24.4	24.9	25.4	
33	24.9	25.4						



Tool: ECC31005R-30

Note: When the hole depth is smaller than the Z-axis plunging depth (Zd), special care should be taken to avoid an interference between the tool's front end and the bottom of the hole.

TCB

Diameter ø14 ~ 39 mm

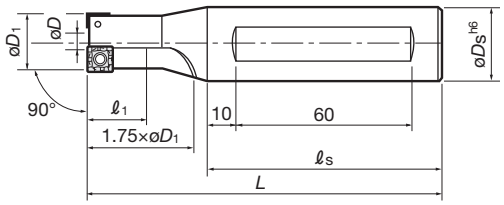
90°

P Steel M Stainless K Cast Iron

Counter Milling

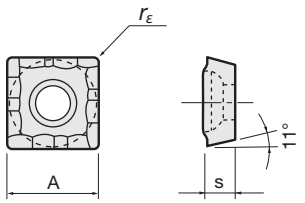
For counter milling of general steels, cast irons and stainless steels

Rake angle: A.R. Pozitive R.R. Negative



Cat. No.	Stock	No. of inserts	Dimensions (mm) øD1	øDs	øD	ℓ1	ℓs	L	Applicable screw size	Applicable inserts	Clamping screw	Wrench
TCB-140	●	1	14	25	4.0	18	80	117	M8	SPMP831DS	CSTB-2.2S	T-7D
TCB-175	●	2	17.5		7.1	22		115	M10		CSTB-2.2	
TCB-200	●		20		8.2	25		120	M12	SPMP042ERD	CSTA-NO3	T-9D
TCB-230	●		23		11.0	29		126	M14			
TCB-260	●		26	32	14.0	33		132	M16			
TCB-290	●		29			30		138	M18	SPMM322ERD	CSTA-NO5	
TCB-320	●		32		16.9	–		144	M20			
TCB-350	●		35		14.0	–		150	M22	SPMM432ERD	CSTA-4	T-15D
TCB-390	●		39		17.9	–		158	M24			

Inserts



Cat. No.	Accuracy	Coated T313W	Dimensions (mm) A	s	rε	Application
SPMP831DS	M	●	6.35	2.38	0.4	Steel · Cast irons
SPMP042ERD		●	7.938	3.18	0.8	
SPMM322ERD		●	9.525			
SPMM432ERD		●	12.7	4.76		

Note: No dimples on SPMP831DS.

Standard cutting conditions (for TCB-200)

Work materials	Grade	Cutting speed v_c (m/min)	Feed f (mm/rev)	Cutting fluid
Carbon steels	T313W	80 - 150	0.12 - 0.24	Water soluble type
Stainless steels, Mild steels	T313W	150 - 200	0.05 - 0.12	Water soluble type
Cast irons	T313W	70 - 130	0.20 - 0.40	Water soluble type or dry cutting

Notes : • For cutters under 20 mm diameter, be sure to use a cutting fluid and select lower cutting speeds than shown above.
• For TCB-140 type, reduce the feeds to 1/2 of the values shown in the table.

● : Stocked items.

Relating pages Technical Reference (15–1)

SFP4000

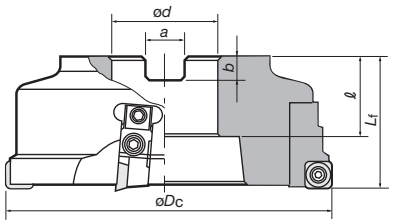
Diameter ø100 ~ 160 mm | 0.1 mm

P Steel | M Stainless | K Cast Iron | N Non-ferrous

Face Milling | Face Milling

For precision finishing of general steels, cast irons and stainless steels

Rake angle: A.R. +5° R.R. −20°



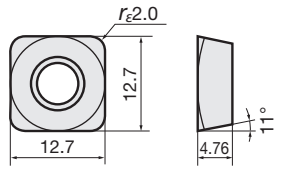
Max. *ap*: 0.1 mm

Right hand (R) shown.

SFP4000 (Bore type)

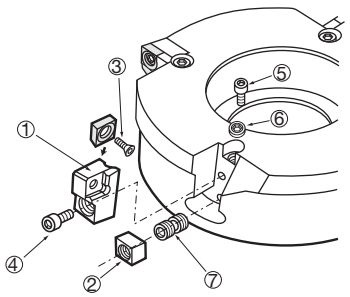
Cat. No.	Stock	No. of inserts	Dimensions (mm)						Weight (kg)	Mounting details
			øDc	ød	ℓ	Lf	b	a		
SFP4004RE	●	2	100	32	32	40	8	14.4	2.3	9-138Ⓐ
SFP4005RE	●		125	40			9	16.4	3.5	9-138Ⓑ
SFP4006RE	●	4	160		29	50			5.8	9-138Ⓒ

Inserts



Cat. No. (Inch)	ISO Cat. No. (Metric)	Accuracy	Honing	Cermet	Uncoated
				N308	TH10
SPHA435FNW	SPHB120420FN-W	H	Without	●	●

Replacement parts



No.	Descriptions	Part Cat. No.
①	Locator	LW400R
②	Locator adjusting wedge	FW-305
③	Insert fixing screw	CSTA-5S
④	Locator fixing screw	CM5X0.8X16
⑤	Hex. socket-head screw	CM5X0.8X8
⑥	Washer	(JIS) L5
⑦	Wedge-locking screw	FDS-8S
–	Spring washer	(JIS) 5S
–	T-handle wrench	P-4
–	Wrench	T-15D

Standard cutting conditions

Work materials	Grade	Cutting speed v_c (m/min)	Feed: *f* (mm/rev)		Depth of cut a_p (mm)
			SFP	EFP	
Mild steels	N308	180 ~ 250	≤ 6	≤ 4	≤ 0.1
Carbon steels		150 ~ 200			
Alloy steels					
Stainless steels	N308	160 ~ 200	≤ 4	≤ 3	≤ 0.1
Cast irons	TH10	100 ~ 150	≤ 5	≤ 3	≤ 0.2
Non-ferrous metals	TH10	200 ~ 500	≤ 6	≤ 4	≤ 0.1

Note: Under above conditions, attainable surface roughness is 3 to 4 µm Rz_{JIS} for steels and 6 to 12 µm Rz_{JIS} for cast irons.

- No. of revolutions n (min^{-1}) = Cutting speed V_C (m/min) x 1000 ÷ 3.14 ÷ Cutter ø (mm)
- Feed speed V_f (mm/min) = n (min^{-1}) x Feed per tooth f_Z (mm/t) x z (No. of inserts)

● : Stocked items

Relating pages | Technical Reference (15–1)

MS

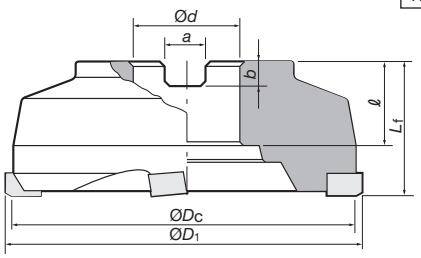
Diameter ø100 ~ 300 mm | 0.1 mm

P Steel | K Cast Iron | H Hard Materials

Face Milling

For precision finishing of steels and cast irons

Rake angle: A.R. −5° R.R. −30°



Max. *ap*: 0.1 mm

Right hand (R) shown.

Cat. No.	Stock	No. of inserts	Dimensions (mm)							Weight (kg)	Mounting details
			øDc	øD1	ød	ℓ	Lf	b	a		
MS04RE		2	100	105	32	32	55	8	14.4	3	9-138Ⓑ
MS05RE		2	125	130	40		60	9	16.4	4	
MS06RE		4	160	165		29				5	9-138Ⓒ
MS08RE		4	200	205	60	38		14	25.7	8.5	
MS10RE		4	250	255						14	9-138Ⓓ
MS12RE		4	300	305						23	

Inserts

Fig. 1 **SNAC1509PNTR**

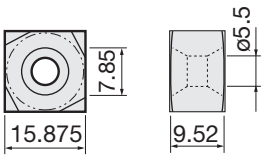
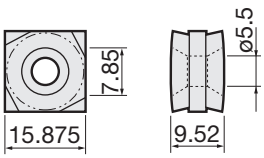


Fig. 2 **SNAJ1509PNTR**



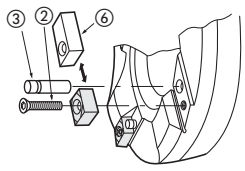
Right hand (R) shown.

Cat. No. (Inch)	ISO Cat. No. (Metric)	Accuracy	Cutting edge length (mm)	Grades			Figure
				Cermet		Uncoated	
				X407			
SNAA56FTR	SNAC1509PNTR	A	7.80	●			Fig. 1
SNAG56FTR	SNAJ1509PNTR						Fig. 2

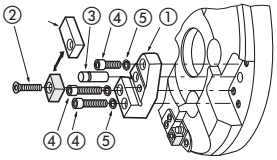
Packing Quantity = 4 pcs.

Replacement parts

MS04R/L ~ MS06R/L



MS08R/L ~ MS12R/L (Locator type)



No.	Parts	Part Cat. No.		
		MS04R/L	MS05R/L, MS06R/L	MS08R/L~MS12R/L
①	Locator	—	—	LMS56R
②	Clamping screw	CST-5	CST-5	CST-5
③	Pin	SP-8	SP-8	SP-8
④	Locator fixing screw	—	—	CM6X25, CM6X16
⑤	Washer			VA6
⑥	Protector	PMS4R/L	PMS5R/L	PMS5R
–	Wrench	T-25D	T-25D	T-25D

Standard cutting conditions

Work materials	Grade	Cutting speed v_c (m/min)	Feed per tooth f_z (mm/t)	Depth of cut a_p (mm)
Mild steels	X407	260 - 300	≤ 6	≤ 0.1
Carbon steels		120 - 180		
Alloy steels				
Die steels				
Cast irons	X407	100 - 150	≤ 6	≤ 0.1
Carbon steels (> 40HRC)	X407	150 - 200	≤ 3	≤ 0.05

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

● : Stocked items.

Relating pages | Technical Reference (15–1)

QPP15

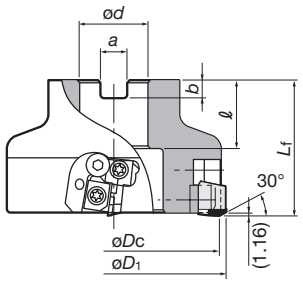
Diameter ø80 ~ 400 mm | 60° | 1 mm

Cast Iron

Face Milling

For high speed finishing of cast irons

Rake angle: A.R. +5.5° R.R. −3°



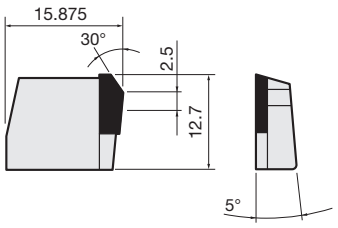
Max. ap: 1 mm

Right hand (R) shown.

Cat. No.	Stock	No. of inserts	Dimensions (mm)							Weight (kg)	Mounting details
			øDc	øD1	ød	ℓ	Lf	b	a		
QPP15080R-E		4	80	84	27	26	50	7	12.4	1.1	9-138Ⓐ
QPP15100R-E		6	100	104	32	28.5	63	8	14.4	2.1	
QPP15125R-E		6	125	129	40	32		9	16.4	3.7	9-138Ⓑ
QPP15160R-E		8	160	164		29				5.3	
QPP15200R-E		10	200	204	60	38		14	25.7	8.3	9-138Ⓒ
QPP15250R-E		12	250	254						13.5	
QPP15315R-E		14	315	319			80			22.6	9-138Ⓓ
QPP15355R-E		16	355	359						33.4	
QPP15400R-E		18	400	404						43.3	

Note: QPP15 type TAC mills can be made to have quick-change mounting specification shown on page 9-153.

Inserts

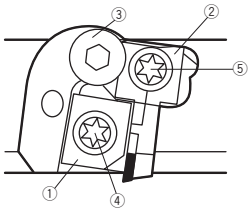


Right hand (R) shown.

Cat. No.	Grade T-CBN	Stock
YPEN1505PPTR -Q	BX950	●

Packing Quantity = 1 pcs.

Replacement parts



Right hand (R) shown.

No.	Descriptions	Part Cat. No.
①	Insert locking wedge	FW304R-D
②	Locator adjusting wedge	FW325R-D
③	Screw for preventing wedge from flying out	BHM615-GT
④	Wedge fixing screw (øD = 80)	FDS-8ST-18
	Wedge fixing screw (for øD > 80)	FDS-8ST
⑤	Adjusting wedge fixing screw	FDS-8ST-18
–	Wrench	T-27T

Standard cutting conditions

Work materials	Grade	Cutting speed v_c (m/min)	Feed per tooth. f_z (mm/t)	Depth of cut a_p (mm)
Grey cast irons (GG25 ~ GGG35)	BX950	350 - 2000	0.1 - 0.25	0.1 - 1.0

Note : Dry cutting is recommended.

Features of QPP15

1 Highly efficient and accurate machining capability

Performs well in high-speed machining and produces a fine surface finish on machining centers and special purpose machines.
Attainable accuracies: $Rz_{JIS} \leq 3.0$ µm, Rz ($Rmax$) ≤ 6.0 µm

2 Provided with adjusting mechanism for all the inserts

The axial run out of the cutter is micro adjustable with the adjusting wedge provided for each insert.
Attainable axial run out: < 5 µm

3 Superior resistance to centrifugal force

The inserts are firmly fixed even when using at speeds as high as v_c 2000 m/min and do not exhibit any looseness.

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

● : Stocked items.

MEMO

TECSLOT

Diameter ø100 ~ 250 mm

90°

P Steel | M Stainless | K Cast Iron | S Superalloys

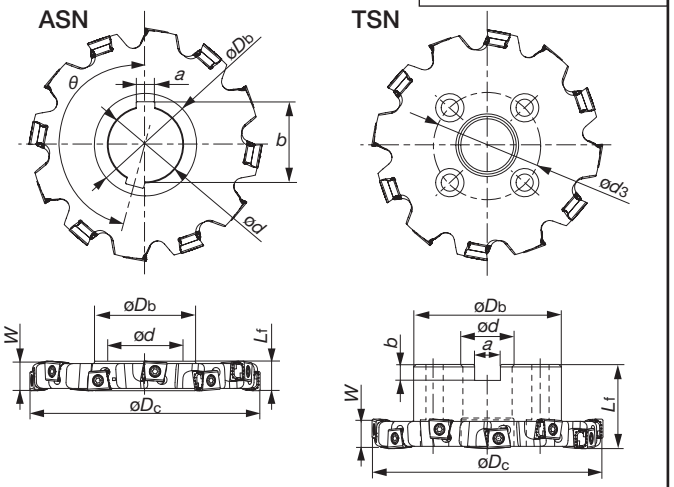
Slotting

For slotting of general steels, cast irons, and stainless steels

ASN

TSN

Rake angle: A.R. +4° ~ +4.8°
R.R. +2.5° ~ +7.3°



Axial drive: ASN

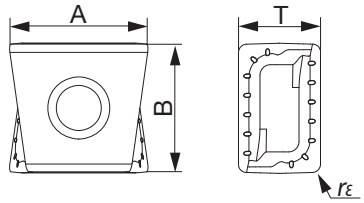
Edge width W (mm)	Cat. No.	Stock	No. of edge lines / No. of inserts	Dimensions (mm)							Insert
				øDc	øDb	ød	Lf	b	a	θ	
16	ASN10R100M32.0E16-05	●	5/10	100	47	32	16	34.8	8	162°	LMEU1008** ZNEN-MJ
	ASN10R125M40.0E16-06	●	6/12	125	55	40	16	43.5	10	165°	
	ASN10R160M40.0E16-07	●	7/14	160	55	40	16	43.5	10	167.14°	
	ASN10R200M50.0E16-08	●	8/16	200	69	50	16	53.6	12	168.75°	
19	ASN12R100M32.0E19-05	●	5/10	100	47	32	19	34.8	8	162°	LMEU1208** ZNEN-MJ
	ASN12R125M40.0E19-06	●	6/12	125	55	40	19	43.5	10	165°	
	ASN12R160M40.0E19-07	●	7/14	160	55	40	19	43.5	10	167.14°	
	ASN12R200M50.0E19-08	●	8/16	200	69	50	19	53.6	12	168.75°	
	ASN12R250M50.0E19-09	●	9/18	250	84	50	19	53.6	12	170°	
25	ASN15R125M40.0E25-05	●	5/10	125	55	40	25	43.5	10	165°	LMEU1509** ZNEN-MJ
	ASN15R160M40.0E25-06	●	6/12	160	55	40	25	43.5	10	167.14°	
	ASN15R200M50.0E25-07	●	7/14	200	69	50	25	53.6	12	168.75°	
	ASN15R250M50.0E25-08	●	8/16	250	84	50	25	53.6	12	170°	

Radial drive: TSN

Edge width W (mm)	Cat. No.	Stock	No. of edge lines / No. of inserts	Dimensions (mm)							Insert
				øDc	øDb	ød	Lf	b	a	P.C.D. ød3	
16	TSN10R100M27.0E16-05	●	5/10	100	58	27	50	7	12.4	-	LMEU1008** ZNEN-MJ
	TSN10R125M32.0E16-06	●	6/12	125	66	32	50	8	14.4	-	
	TSN10R160M40.0E16-07	●	7/14	160	82	40	63	9	16.4	-	
	TSN10R200M40.0E16-08	●	8/16	200	88	40	63	9	16.4	66.7	
19	TSN12R100M27.0E19-05	●	5/10	100	58	27	50	7	12.4	-	LMEU1208** ZNEN-MJ
	TSN12R125M32.0E19-06	●	6/12	125	66	32	50	8	14.4	-	
	TSN12R160M40.0E19-07	●	7/14	160	82	40	63	9	16.4	-	
	TSN12R200M40.0E19-08	●	8/16	200	88	40	63	9	16.4	66.7	
	TSN12R250M60.0E19-09	●	9/18	250	128	60	63	14	25.7	101.6	
25	TSN15R125M32.0E25-05	●	5/10	125	66	32	50	8	14.4	-	LMEU1509** ZNEN-MJ
	TSN15R160M40.0E25-06	●	6/12	160	82	40	63	9	16.4	-	
	TSN15R200M40.0E25-07	●	7/14	200	88	40	63	9	16.4	66.7	
	TSN15R250M60.0E25-08	●	8/16	250	128	60	63	14	25.7	101.6	

● : Stocked items.

Inserts



Cat. No.	Accuracy	Honing	Grades			Dimensions (mm)			
			AH725	AH140	AH120	A	B	T	r_ε
LMEU100808ZNEN-MJ	E	with	●	●	●	12.7	10.5	8	0.8
LMEU100816ZNEN-MJ			●	●	●	12.5			1.6
LMEU100824ZNEN-MJ			●	●	●	12.4			2.4
LMEU100832ZNEN-MJ			●	●	●	12.2			3.2
LMEU120808ZNEN-MJ	E	with	●	●	●	13.6	12.7	8	0.8
LMEU120816ZNEN-MJ			●	●	●	13.4			1.6
LMEU120824ZNEN-MJ			●	●	●	13.2			2.4
LMEU120832ZNEN-MJ			●	●	●	13.1			3.2
LMEU150908ZNEN-MJ	E	with	●	●	●	15.6	15	9.5	0.8
LMEU150916ZNEN-MJ			●	●	●	15.4			1.6
LMEU150924ZNEN-MJ			●	●	●	15.3			2.4
LMEU150932ZNEN-MJ			●	●	●	15.1			3.2

Replacement parts

Descriptions		Parts Cat. No.	
Applicable cutter		ASN10R... ASN12R... TSN10R... TSN12R...	ASN15R... TSN15R...
Clamping screw		SM40-143-H0	CSTB-5L159
Wrench	Bit	BT15S	BT20S
	Grip	H-TB	H-TB

● : Stocked items.

Replacement parts

Work materials	Hardness (HB)	Priority	Grades	Cutting speed *Vc* (m/min)	Chip thickness t (mm)
Low carbon steels C10E etc.	< 200	First choice	**AH725**	90 - 180	0.13 - 0.25
		Priority for impact resistance	**AH140**		
High carbon steels C45 etc.	200 - 300	First choice	**AH725**	90 - 180	0.13 - 0.25
		Priority for impact resistance	**AH140**		
Alloy steels 42CrMo4 etc.	150 - 300	First choice	**AH725**	90 - 180	0.13 - 0.25
		Priority for impact resistance	**AH140**		
Tool steels X40CrMoV5-1 etc.	< 300	First choice	**AH725**	90 - 180	0.13 - 0.25
		Priority for impact resistance	**AH140**		
Stainless steel X5CrNi-18-9 etc.	-	-	**AH140**	90 - 200	0.13 - 0.25
Grey cast irons GG25 etc.	150 - 250	-	**AH120**	120 - 230	0.13 - 0.3
Ductile cast irons GGG45 etc.		-	**AH120**	90 - 150	0.13 - 0.2
Titanium alloys Ti-6Al-4V etc.	-	-	**AH725**	30 - 40	0.07 - 0.13
Nickel-based alloys Inconel718 etc.	-	-	**AH725**	20 - 35	0.07 - 0.13

Chip thickness “t”

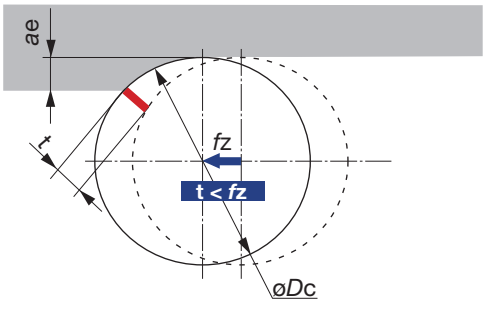
- Chip thickness “t” is one of the most important factors for chip evacuation in slot milling.
- Hence, setup feed per edge line (*fz*) should be calculated according to chip thickness (t).

Slotting with a slot milling cutter

$$t \fallingdotseq 2 \times fz \times \sqrt{(ae / \phi Dc) \times (1 - (ae / \phi Dc)}$$

$$fz \fallingdotseq t / 2 / \sqrt{(ae / \phi Dc) \times (1 - (ae / \phi Dc)}$$

øDc : Tool diameter (mm)
fz : Feed per edge line (mm/t)
ae : Depth of slot (mm)



TAC side milling cutters

SVN4000

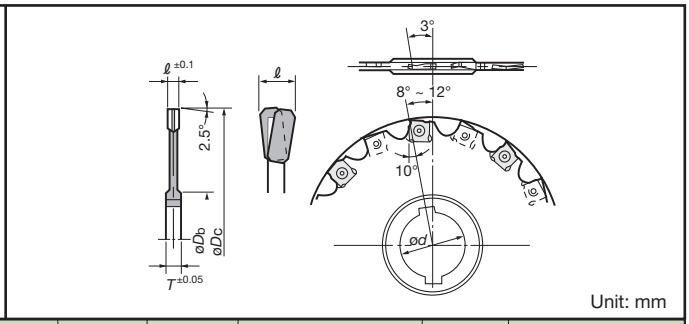
Diameter ø100 ~ 200 mm

90°

P Steel K Cast Iron N Non-ferrous

Slotting

For slotting of steels, cast irons and aluminium alloys



Unit: mm

Cat. No.	Stock M	Stock W	Cutter dia. øDc	Tool width ℓ	No. of staggered lines	Mounting hole dia. ød M (Metric)	Mounting hole dia. ød W (Inch)	Hub dia. øDb	Hub thick. T	Insert	No. of inserts	Parts Screw	Parts Wrench
SVN4100-5M/W	●		100	5	2	32	31.75	48	8	SNEN12T2ZT/FN	10	CST-3.5S	T-9D
SVN4100-6M/W	●			6					10	SNEN1233ZT/FN		CST-3.5S	
SVN4100-8M/W	●			8	4				12		8	CST-3.5	
SVN4125-5M/W	●		125	5	2				8	SNEN12T2ZT/FN	12	CST-3.5S	
SVN4125-6M/W	●			6					10	SNEN1233ZT/FN		CST-3.5	
SVN4125-8M/W	●			8	4				12				
SVN4160-5M/W	●		160	5	2	40	38.1	58	8	SNEN12T2ZT/FN	16	CST-3.5S	
SVN4160-6M/W	●			6					10	SNEN1233ZT/FN		CST-3.5	
SVN4160-8M/W	●			8	4				12				
SVN4200-5M/W	●		200	5	2			68	8	SNEN12T2ZT/FN	20	CST-3.5S	
SVN4200-6M/W	●			6					10	SNEN1233ZT/FN		CST-3.5	
SVN4200-8M/W	●			8	4				12				

● Notes on specifications of specials made to order

① The cutter widths (ℓ) are available in a range from 5 mm to 12 mm.

② The maximum cutter diameter available is ø960 mm.

③ Special mounting specifications are also available on request.

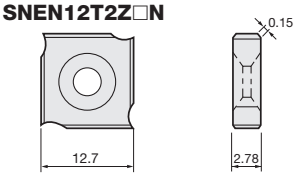
● Nomenclature

SVN4□□□–□ M/W

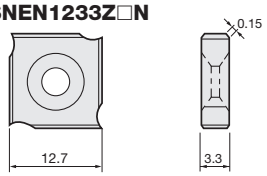
Cutter diameter Tool width Mounting hole spec.

Inserts

SNEN12T2Z□N



SNEN1233Z□N



Cat. No.	Accuracy	Honing	Grades Uncoated UX30	Grades Uncoated TH10
SNEN12T2ZTN	E	With	●	
SNEN12T2ZFN		Without		●
SNEN1233ZTN		With	●	
SNEN1233ZFN		Without		●

Standard cutting conditions

Work materials	Grades	Cutting speed v_c (m/min)
Carbon steels (< 300 HB)	**UX30**	80 - 120
Die steels (< 300 HB)	**UX30**	60 - 80
Cast irons	**TH10**	80 - 100
Aluminium alloys	**TH10**	600 - 1000

Note: SVN4000 type TAC mills should be used only for roughing. Attainable accuracy of groove width is ±0.1 mm.

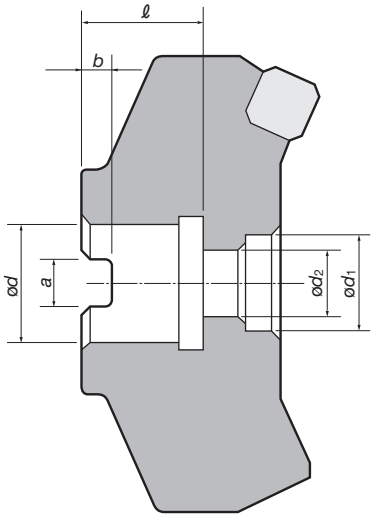
- No. of revolutions n (min^{-1}) = Cutting speed V_c (m/min) x 1000 ÷ 3.14 ÷ Cutter ø (mm)
- Feed speed V_f (mm/min) = n (min^{-1}) x Feed per tooth f_z (mm/t) x z (No. of inserts)

● : Stocked items.

Mounting Details for TAC Mills

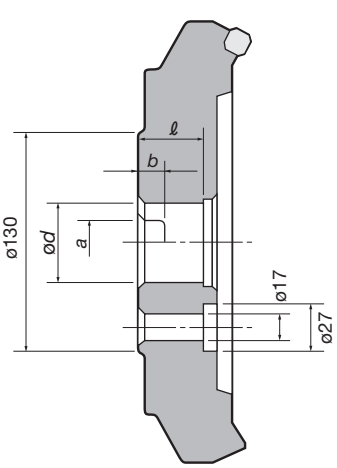
Cutter diameter (mm)	Figure	Dimensions (mm)					
		$\varnothing d_1$	$\varnothing d_2$	$\varnothing d$	b	a	ℓ
ø50, ø52, ø63, ø66	Ⓐ	18	10	22	6.3	10.4	20
ø80	Ⓐ	20	13.5	27	7	12.4	22
	Ⓑ	38	–				26
ø100	Ⓐ	27	17.5	32	8	14.4	25
	Ⓑ	45	–				32
ø125	Ⓑ	56	–	40	9	16.4	
ø160 (ø150)	Ⓒ	–	–				29
ø200	Ⓒ	–	–	60	14	25.7	38
ø250	Ⓒ	–	–				
ø315 (ø300)	Ⓓ	–	–				

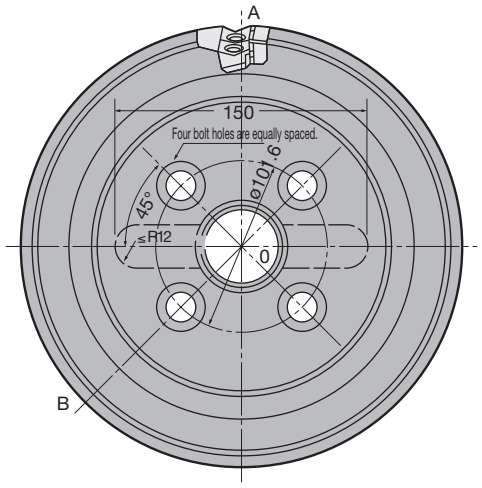
Ⓐ



Note: Can be mounted with a commercially available hex. socket head screw.

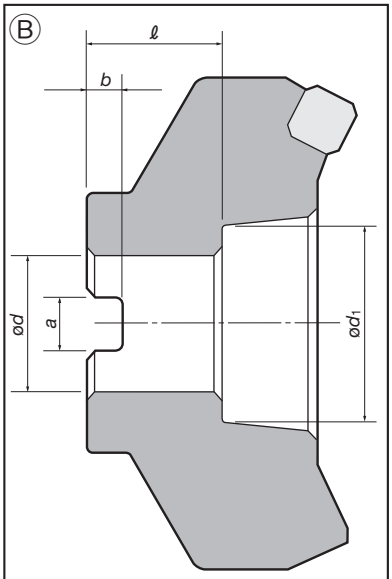
Ⓒ



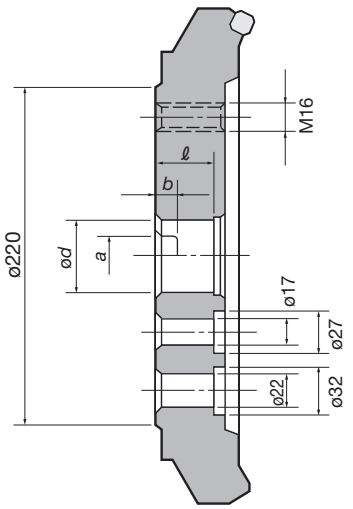


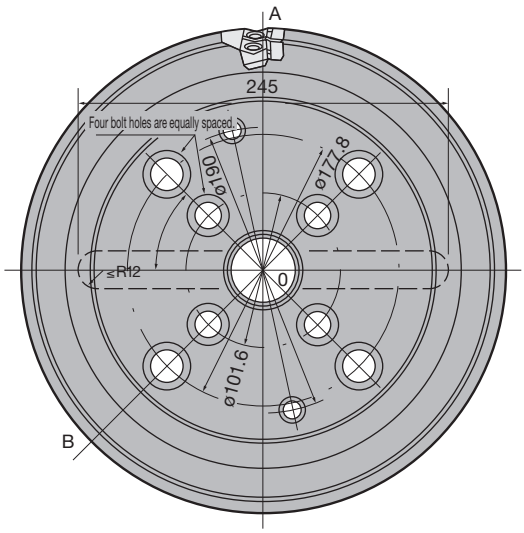
Notes: • Keyway slot of ø200 mm cutter is opened through.
• Some of ø200 TAC mills are not provided with ø27 counter sink.

Ⓑ



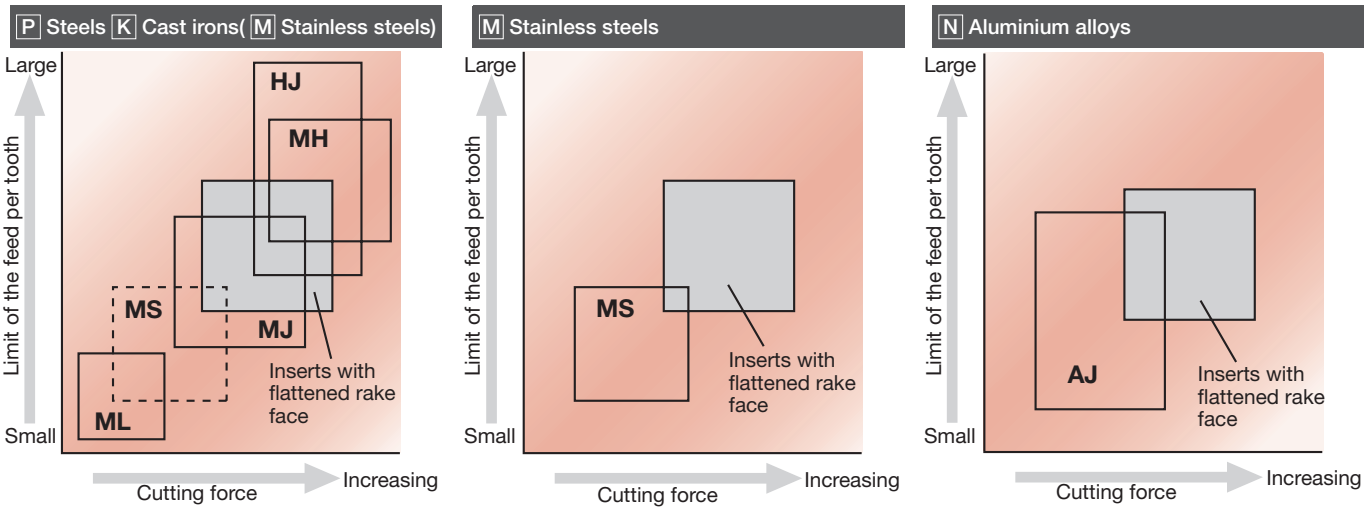
Ⓓ





TAC Milling Inserts

Guideline for Selection of Inserts for Milling



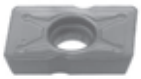
Features of Inserts for Milling

Type	Features	Work materials	Cross sections of the cutting edge (Outline figure)
MJ	• The inserts have functional curvatures at cutting edges and relief faces. • General inserts with both impact resistance and the function of cutting force reduction.	P Steels K Cast irons Ductile cast irons (M Stainless steels)	Land width Rake angle
HJ	• Allows super high feeds as high as 1.5 to 2 times those of general purpose inserts. • Even under high machining load at high feeds, ensures superior impact resistance and low cutting forces. (Maximum depth of cut: 2 mm)		Land width Rake angle
ML	• Lowered cutting force compared with MJ type • Applicable when chattering occurs in using MJ type.		Land width Rake angle
MH	• Suitable for high feed milling. • Available when chipping occurs in using MJ type. • Toughness priority.		Land width Rake angle
MS	• Low cutting force compared with MJ type • For stainless steels (and mild steels) • Applicable for burr reduction.	M Stainless steels (Mild steels)	Land width Rake angle
AJ	• For non-ferrous metals such as aluminium alloys etc. • Inserts have sharp edges and mirror like rake faces. • Applicable for burr reduction.	N Aluminium alloys (Non-ferrous metals)	Rake angle

TAC Milling Inserts

Inserts

●ADMT□□□□08PR-MJ

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH140	T3130								Applicable TAC mills (Page)
	ADMT130308PR-MJ	M	With	●	●	●								ELP-A (Used for end cutting edge) 9-121
	ADMT17T308PR-MJ			●	●	●								
	ADMT210408PR-MJ			●	●	●								

●AECW□□□□PES/FR, AEMW□□□□PES/T/FR

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	GH330			Cermet NS740		Uncoated TH10	UX30				Applicable TAC mills (Page)
	AECW1403PESR	C	With	●	●			●			●				EPE4000 (Former products)
	AECW16T3PESR		With	●	●			●			●				EPE5000 (Former products)
	AECW1804PESR		With	●	●			●			●				EPE6000 (Former products)
	AECW1804PEFR		Without					●		●					
	AEMW1403PETR	M	With		●			●			●				EPE4000 (Former products)
	AEMW16T3PETR		With		●			●			●				EPE5000 (Former products)
	AEMW1804PETR		With		●			●			●				EPE6000 (Former products)
	AEMW1804PEFR		Without							●					

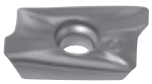
●AO□T0702□□PD□R-MJ/HJ/AJ

TUNGREC TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	AH140			Uncoated KS15F							Applicable TAC mills (Page)
 -MJ	AOMT070202PDPR-MJ	M	With	●	●										EPO07R TPO07R 9-58
	AOMT070204PDPR-MJ			●	●										
	AOMT070208PDPR-MJ			●	●										
	AOMT070216PDPR-MJ			●	●										
	AOMT070208PDPR-HJ			●	●										
	AOGT070204PDFR-AJ	G	Without					●							

● : Stocked items.

●AO□T1805□□PD□R-MJ/AJ

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	Coated AH140	Coated	Coated	Uncoated KS15F	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Applicable TAC mills (Page)
 -MJ	AOMT180508PDPR-MJ	M	With	●	●									EPO18R TPO18R 9-64
	AOMT180516PDPR-MJ			●	●									
	AOMT180524PDPR-MJ			●	●									
	AOMT180532PDPR-MJ			●	●									
 -AJ	AOGT180504PDFR-AJ	G	Without					●						
	AOGT180508PDFR-AJ							●						

●APMT120416PR-MJ

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	Coated T3130	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Applicable TAC mills (Page)
	APMT120416PR-MJ	M	With	●	●									TZP12 9-122

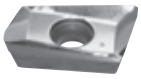
●APMT□□□□08PN-MJ

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	Coated AH140	Coated GH330	Coated T3130	Coated	Coated	Coated	Coated	Coated	Coated	Applicable TAC mills (Page)
	APMT070308PN-MJ	M	With	●	●	●	●							ELP-A 9-121 (Used for both end and peripheral edges)
	APMT09T308PN-MJ			●	●	●	●							
	APMT120408PN-MJ			●	●	●	●							

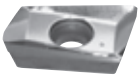
● : Stocked items.

TAC Milling Inserts

●AS□T11T3□□PD□R-MJ/MS/AJ

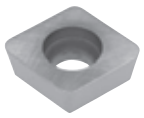
Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	AH120	AH130	AH140	T3130	T1115		DLC coated DS1100	Cermet NS740	Uncoated KS05F	Applicable TAC mills (Page)
 -MJ	ASMT11T304PDPR-MJ	M	With	●	●			●	●			●		EPS11 TPS11 ELS11 TLS11 9-62
	ASMT11T308PDPR-MJ			●	●			●	●			●		
	ASMT11T312PDPR-MJ			●	●			●						
	ASMT11T316PDPR-MJ			●	●			●				●		
 -MS	ASMT11T320PDPR-MJ				●									
	ASMT11T330PDPR-MJ				●									
	ASMT11T304PDPR-MS					●	●							
 -AJ	ASGT11T304PDFR-AJ	G	Without								●		●	
	ASGT11T308PDFR-AJ										●		●	

●AS□T1705□□PD□R-MJ/MS/AJ

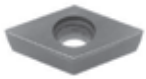
Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	AH120	AH130	AH140	T3130	T1115		DLC coated DS1100	Cermet NS740	Uncoated KS05F	Applicable TAC mills (Page)
 -MJ	ASMT170504PDPR-MJ	M	With		●			●	●			●		EPS17 TPS17 9-89
	ASMT170508PDPR-MJ				●			●	●			●		
	ASMT170512PDPR-MJ				●			●						
	ASMT170516PDPR-MJ				●			●				●		
 -MS	ASMT170520PDPR-MJ				●									
	ASMT170530PDPR-MJ				●									
	ASMT170532PDPR-MJ				●			●				●		
	ASMT170508PDPR-MS					●	●							
 -AJ	ASGT170504PDFR-AJ	G	Without								●		●	
	ASGT170508PDFR-AJ										●		●	

● : Stocked items.

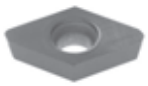
●CPMW/T□□□□08EN

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated GH330				Uncoated UX30							Applicable TAC mills (Page)
	CPMW050208EN	M	With	●				●							EVP1000 (Former products)
	CPMW06T208EN			●				●							
	CPMT080308EN			●				●							

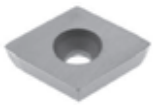
●DCMW□□□□04TN

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH330										Applicable TAC mills (Page)
	DCMW070204TN	M	With	●	●										EBP 9-118
	DCMW11T304TN			●	●										

●DPCW11T3ZFR

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH740				Cermet NS530							Applicable TAC mills (Page)
	DPCW11T3ZFR	C	Without	●				●							TZF11 9-124

●EDKW53ZT/FR

Shape	Cat. No.		Accuracy	Honing	Stocked grades: Coated GH330				Uncoated UX30						Applicable TAC mills (Page)
	EDKW53ZTR	EDKW1504EDTR	K	With	●				●						ESD5000 (Former products)

●GD□T□□□□PD□R-MJ/AJ

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH140	AH330	T3130			DLC coated DS1100		Uncoated UX30	TH10		Applicable TAC mills (Page)
 -MJ	GDMT10H3PDPR-MJ	M	With	●	●	●	●					●			ESD10 9-116
	GDGT10H3PDFR-AJ	G	Without							●			●		
 -AJ															

● : Stocked items.

TAC Milling Inserts

●LMEU□□□□□□ZNEN-MJ

TECSLOT TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades									Applicable TAC mills (Page)
				Coated									
				AH725	AH120	AH140							
 -MJ	LMEU100808ZNEN-MJ	E	With	●	●	●							ASN10R TSN10R 9-135
	LMEU100816ZNEN-MJ			●	●	●							
	LMEU100824ZNEN-MJ			●	●	●							
	LMEU100832ZNEN-MJ			●	●	●							
	LMEU120808ZNEN-MJ	E	With	●	●	●							ASN12R TSN12R 9-135
	LMEU120816ZNEN-MJ			●	●	●							
	LMEU120824ZNEN-MJ			●	●	●							
	LMEU120832ZNEN-MJ			●	●	●							
	LMEU150908ZNEN-MJ	E	With	●	●	●							ASN15R TSN15R 9-135
	LMEU150916ZNEN-MJ			●	●	●							
	LMEU150924ZNEN-MJ			●	●	●							
	LMEU150932ZNEN-MJ			●	●	●							

●LMMU□□□□□□PNER-MJ

TECMILL TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades									Applicable TAC mills (Page)
				Coated									
				AH725	AH120	AH140	T3130	T1115					
 -MJ	LMMU110708PNER-MJ	M	With	●	●	●	●	●					EPM11 TPM11 TLM11 9-68
	LMMU110716PNER-MJ			●	●	●	●	●					
	LMMU110724PNER-MJ			●	●	●	●	●					
	LMMU110732PNER-MJ			●	●	●	●	●					
	LMMU160908PNER-MJ			●	●	●	●	●					TPM16 9-68
	LMMU160916PNER-MJ			●	●	●	●	●					
	LMMU160924PNER-MJ			●	●	●		●					
	LMMU160932PNER-MJ			●	●	●		●					

● : Stocked items.

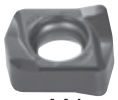
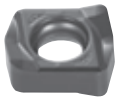
●LNMU0303ZER-MJ/ML

DOFEEDMINI TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated: AH725	AH130	AH3035 (NEW)	Applicable TAC mills (Page)
 -MJ  -ML	LNMU0303ZER-MJ	M	With	●	●	●	EXN03 9-93
	LNMU0303ZER-ML			●	●	●	

●LNMU06X5ZER-MJ/ML

DOFEED TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated: AH725	AH120	AH130	AH3035 (NEW)	Applicable TAC mills (Page)
 -MJ  -ML	LNMU06X5ZER-MJ	M	With	●	●	●	●	EXN06 9-93
	LNMU06X5ZER-ML			●	●	●	●	

●LQMU□□□□□□PNER-MJ

DOREC TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated: AH725	AH120	AH140	Applicable TAC mills (Page)
 -MJ	LQMU110704PNER-MJ	M	With	●	●	●	E/TPQ11 9-57
	LQMU110708PNER-MJ			●	●	●	
	LQMU110716PNER-MJ			●	●	●	
	LQMU180804PNER-MJ			●	●	●	E/TPQ18 9-57
	LQMU180808PNER-MJ			●	●	●	
	LQMU180816PNER-MJ			●	●	●	
	LQMU180824PNER-MJ			●	●	●	

● : Stocked items.

TAC Milling Inserts

●ON□U□□□□AN□□-ML/MJ/W

DOOCTO TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	AH120	AH140	T1115 (NEW)	Applicable TAC mills (Page)
 -ML	ONHU0705ANPN-MJ	H	With	●		●		TAN07 9-43
	ONHU0705ANTN-ML			●	●	●	★	
	ONHU0705ANPR-W				●			
 -MJ	ONMU0705ANPN-MJ	M		●		●		
	ONMU0705ANPN-ML				●		★	
 -W								

●PNCU0905GN□R-MJ/W/AJ

DOPENT TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	AH120	AH140	T3130 (NEW)	T1115 (NEW)	Cermet NS740 (NEW)	Uncoated TH10	Applicable TAC mills (Page)
 -MJ	PNCU0905GNER-MJ	C	With	●	●	●	●	●	●		E/TEN09 9-40
	PNCU0905GNER-W			●							
 -W	PNCU0905GNFR-AJ		Without							●	
 -AJ											

●RCMT□□□□EN-NMJ/MJ, RCMT□□□□FN-NAJ

ROUNDSPLIT TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	AH120	AH140	Uncoated KS15F	Applicable TAC mills (Page)
 -NMJ	RCMT1204EN-NMJ	M	With	●	●	●		E/TRC12, 16 9-108
	RCMT1606EN-NMJ			●	●	●		
	RCMT1204EN-MJ			●	●	●		
	RCMT1606EN-MJ			●	●	●		
 -MJ	RCMT1204FN-NAJ		Without				●	
	RCMT1606FN-NAJ						●	
 -NAJ								

● : Stocked items
★ : Available from 2013

●RDMW05/07/10□□M0

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated: AH120	Applicable TAC mills (Page)
	RDMW0501M0	M	With	●	HWD05 9-126
	RDMW0702M0			●	HWD07 9-126
	RDMW1003M0			●	HWD10 9-126

●RDCM1203T/FN, RDMA1203T/FN

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Uncoated: UX30	Applicable TAC mills (Page)
	RDCM1203TN	RDCM1203M0TN	C	With	●	ERD4000 (Former products)
	RDCM1203FN	RDCM1203M0FN		Without		
	RDMA1203TN	RDMA1203M0TN	M	With	●	
	RDMA1203FN	RDMA1203M0FN		Without		

●RDM□1204ZD□N(-MJ), RDM□1606ZD□N(-MJ)

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated: AH120, AH130, AH140, AH330, T3130; Uncoated: UX30	Applicable TAC mills (Page)
 - MJ	RDMT1204ZDPN-MJ	M	With	● ● ● ● ●	TRD12 9-110
	RDMT1606ZDPN-MJ			● ● ● ● ●	TRD16 9-110
	RDMW1204ZDSN			● ● ●	TRD12 9-110
	RDMW1606ZDSN			● ● ●	TRD16 9-110

●RFEN2004□□T/FN

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated: AH120, GH330; Uncoated: KS20, UX30	Applicable TAC mills (Page)
	RFEN2004M0TN	E	With	● ● ●	TRF6000 ERF6000 9-112
	RFEN2004M0FN		Without		
	RFEN2004ZFTN		With	● ● ● ●	
	RFEN2004ZFFN		Without		

● : Stocked items.

TAC Milling Inserts

●SCMT□□□□08-23

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated: AH120	Applicable TAC mills (Page)
	SCMT09T308-23	M	With	●	EBD 9-119
	SCMT120408-23			●	

●SD□N1203AETN, SDCN1203AEFN-D, SD□R1203AETN-MJ, SDKR1203AE□□-M□

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Coated: AH120	AH130	AH140	AH330	GH330	T3130	T1115	Cermet: NS740	N308	Uncoated: TH10	UX30	T-DIA: DX140	Applicable TAC mills (Page)
	SDKN42ZTN	SDKN1203AETN-12	K	With	●	●	●	●	●		●	●	●		●		TMD440I TGD4400-A TFD4400-A EMD4403 RI-S32 EGD4400 (Former products)
	SDKN42ZFN	SDKN1203AEFN-12		Without										●			
	SDKN42ZTNCR	SDKN1203AETN-CR		With								●					
	SDKN42ZTN16	SDKN1203AETN-16								●							
	SDCN42ZFN-DIA	SDCN1203AEFN-D	C	Without												●	
- MJ	SDMR1203AETN-MJ		M	With								●					
	SDKR42ZPN-MS	SDKR1203AEPN-MS	K				●										
	SDKR42ZSR-MJ	SDKR1203AESR-MJ			●			●	●	●							

"DX140" : Packing quantity=1 pcs

●SD□N53Z□N□, SDKR53ZSR-MJ

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Coated: AH120	AH130	AH140	GH330	T3130	Cermet: NS740	N308	Uncoated: TH10	UX30	Applicable TAC mills (Page)
	SDCN53ZTN	SDCN1504AETN	C	With						●	●			TMD5400RIE 9-50
	SDCN53ZFN	SDCN1504AEFN		Without										
	SDEN53ZTN	SDEN1504AETN	E	With				●		●	▲		●	
	SDEN53ZFN	SDEN1504AEFN		Without								●		
	SDKN53ZTN	SDKN1504AETN	K	With	●	●	●	●		●	●		●	
	SDKN53ZFN	SDKN1504AEFN		Without								●		
	SDEN53ZTN20	SDEN1504AETN-20	E	With					●					
	SDKN53ZTN16	SDKN1504AETN-16	K						●					
- MJ	SDEN53ZTNCR	SDEN1504AETNCR	E							●				
	SDKN53ZTNCR	SDKN1504AETNCR	K							●				
	SDKR53ZSR-MJ	SDKR1504AESR-MJ	K					●	●					

● : Stocked items.
▲ : Shortly unavailable

●SDMT050204PN-MJ, SDHT050204FN-AJ

TUNGQUAD

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	Coated AH140	Coated	Uncoated TH10										Applicable TAC mills (Page)
 -MJ	SDMT050204PN-MJ	M	With	●	●												TPD05 EPD05 ELD05 9-70
	SDHT050204FN-AJ	H	Without				●										
 -AJ																	

●SD□T1204AF□N-□□

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH140	AH330	GH330	T3130		Cermet NS740	NS530		Uncoated TH10			Applicable TAC mills (Page)
 -MJ	SDMT1204AFPN-MJ	M	With	●	●	●	●	●								TAD12 (Former products)
	SDMT1204AFTN-MJ									●	●					
	SDMT1204AFPN-ML			●		●										
	SDMT1204AFPN-MS				●											
 -AJ	SDGT1204AFTN-MJ	G		●		●				●	●					
	SDGT1204AFFN-AJ		Without										●			

●SD□T1204PD□R-□□

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH140	AH330	GH330	T3130		Cermet NS740	NS530		Uncoated TH10			Applicable TAC mills (Page)
 -MJ	SDMT1204PDSR-MJ	M	With	●	●	●	●	●								TPD12 (Former products)
	SDMT1204PDTR-MJ									●	●					
	SDMT1204PDPR-ML			●		●										
	SDMT1204PDPR-MS				●											
 -AJ	SDGT1204PDTR-MJ	G		●		●				●	●					
	SDGT1204PDFR-AJ		Without										●			

● : Stocked items.

TAC Milling Inserts

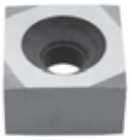
●SE□N1203AG□□, SEKR1203AGSR-MJ

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH130	AH140	AH330	GH330	T3130	T1115		Cermet NS740	Uncoated TH10	UX30	Applicable TAC mills (Page)
	SECN1203AGTN	C	With												
	SECN1203AGFN		Without										●		
	SEEN1203AGTN	E	With	●	●	●		●		●		●		●	
	SEEN1203AGFN		Without										●		
	SEEN1203AGTNCR		With	●	●	●	●		●						
	SEEN1203AGTNCR-14											●			
	SEKN1203AGTN	K		●	●	●	●	●	●			●		●	TME4400I
-MJ	SEKN1203AGFN		Without												
	SEKN1203AGTNCR		With									●			TME4400B
	SEEN1203AGTN-T	E							●			●		●	
	SEEN1203AGFN-T		Without												9-49
	SEKN1203AGTN-T	K	With					●	●	●		●		●	
-MS	SEKN1203AGFN-T		Without										●		
	SEKR1203AGSR-MJ		With	●			●	●	●						
	SEKR1203AGPN-MS				●	●									

●SN□N43ZT/FN, SNKF43ZT/FN

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Coated T3130	T1115		Cermet NS740	N308		Uncoated TH10	UX30			Ceramics FX105	CX710	Applicable TAC mills (Page)
	SNCN43ZTN	SNCN1204ZNTN	C	With				●	●			●					TGN4200-A
	SNCN43ZFN	SNCN1204ZNFN		Without							●						9-53
	SNKN43ZTN	SNKN1204ZNTN	K	With	●	●		●				●			●		
	SNKN43ZFN	SNKN1204ZNFN		Without													
	SNKF43ZTN	SNKF1204ZNTN		With		●						●					
	SNKF43ZFN	SNKF1204ZNFN		Without							●						

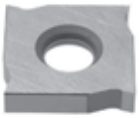
●SNA□56FTR/L, SNC□56FTR/L

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Cermet X407										Applicable TAC mills (Page)
	SNAA56FTR	SNAC1509PNTR	A	With	●										MS cutter (Former products)
	SNAG56FTR	SNAJ1509PNTR													

Packing Quantity=4 pcs.

● : Stocked items.

●SNEN12T2Z□N, SNEN1233Z□N

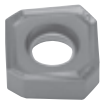
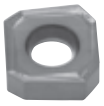
Shape	Cat. No.	Accuracy	Honing	Stocked grades: Uncoated UX30	Uncoated TH10	Applicable TAC mills (Page)
	SNEN12T2ZTN	E	With	●		SVN4000 9-137
	SNEN12T2ZFN		Without		●	
	SNEN1233ZTN		With	●		
	SNEN1233ZFN		Without		●	

●SNMN□□□□

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	Coated T3130	Coated T1115	Uncoated UX30	Caramics FX105	Caramics CX710	Applicable TAC mills (Page)
	SNMN120408TN	M	With					●		TGN4200-A 9-53
	SNMN120412TN			●	●	●	●	●		
	SNMN120416TN							●		
	SNMN120420TN							●		
	SNMN120424TN							●		
	SNMN190412TN							▲		
	SNMN190416TN							●		

●SNMU1706AN□R-ML/MJ, SNHU1706AN□□-MJ/W

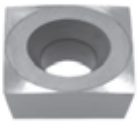
DOQUAD TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	Coated AH120	Coated AH140	Coated T1115 NEW	Applicable TAC mills (Page)
 -ML	SNHU1708ANPR-MJ	H	With	●		●		TAN07 9-43
	SNHU1708ANTR-ML				●		★	
	SNHU1708ANFN-W		Without		●			
	SNMU1708ANPR-MJ	M	With	●		●		
 -MJ	SNMU1708ANTR-ML				●		★	

● : Stocked items
▲ : Shortly unavailable
★ : Available from 2013

TAC Milling Inserts

●SPHA431FNW, SPHA435FNW

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades										Applicable TAC mills (Page)
					Cermet		Uncoated								
					N308		TH10								
	SPHA435FNW	SPHB120420FN-W	H	Without	●		●								TFD4400-A (Former products) TFP4000IA (Former products) SFP4000 9-130

●SPMP831DS, SPMP/M□□2ERD

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades										Applicable TAC mills (Page)
					Coated										
					T313W										
	SPMP831DS	SPMT060204-DS	M	With	●										TCB 9-129
	SPMP042ERD	SPMP080308ER-D			●										
	SPMM322ERD	SPMT090308ER-D			●										
	SPMM432ERD	SPMT120408ER-D			●										

●SPMR1605PP□R-M□

Shape	Cat. No.	Accuracy	Honing	Stocked grades												Applicable TAC mills (Page)
				Coated					Uncoated							
				GH330	T3130	T1115			UX30							
 -MJ	SPMR1605PPTR-MJ	M	With	●	●	●			●							TPP16RIE 9-82
	SPMR1605PPTR-MH			●	●				●							
	SPMR1605PPPR-ML			●												
  -ML																

● : Stocked items.

●SP□□1203

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH140	GH330	T3130	T1115		Cermet NS740	N308	Uncoated TH10	UX30	Ceramics FX105	CX710	Applicable TAC mills (Page)
	SPEN423TN	SPEN120312TN	E	With				●			●			●			TGP 4100RBAE 9-51
	SPEN423FN	SPEN120312FN		Without									●				
	SPCN42STR	SPCN1203EDTR	C	With							●	●		●			
	SPCN42STL	SPCN1203EDTL															
	SPCN42SFR	SPCN1203EDFR		Without									●				
	SPCN42SFL	SPCN1203EDFL															
	SPEN42STR	SPEN1203EDTR	E	With							●						
	SPEN42STL	SPEN1203EDTL															
	SPKN42STR	SPKN1203EDTR	E		●	●	●	●	●		●	●		●	●		
	SPKN42STL	SPKN1203EDTL									●			●			
	SPKN42SFR	SPKN1203EDFR		Without									●				
	SPKN42SFL	SPKN1203EDFL											●				
	SPGN120312TN		G	With											●		
	SPKR42SSR-MJ	SPKR1203EDSR-MJ	K	With			●	●	●								

●SQMU1203ZSR-MJ

DOFEEDQUAD TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH725	AH120	AH130	T3130								Applicable TAC mills (Page)
	SQMU1206ZSR-MJ	M	With	●	●	●	●								TXQ12 9-99

● : Stocked items.

TAC Milling Inserts

●SW□□13T3AF□R-□□

TUNGMILL TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH130	AH140	T3130	T1115		GH110	DLC coated DS1100	Cermet NS740	Uncoated KS05F		Applicable TAC mills (Page)
 -MJ	SWMT13T3AFPR-MJ	M	With	●	●	●	●	●				●			TAW13 9-45
	SWMT13T3AFER-ML			●											
	SWMW13T3AFTR			●			●	●				●			
 -ML	SWMT13T3AFPR-HJ			●	●	●	●	●							
	SWMT13T3AFPR-MS				●	●									
 -FL	SWGT13T3AFFR-AJ	G	Without								●		●		
	SWGT13T3AFPR-MJ		With	●								●			
 -HJ															
 -MS															
 -AJ															
 SWGT-MJ															

● : Stocked items.

●SW□□1304PD□R-□□

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH130	AH140	T3130	T1115			DLC coated DS1100	Cermet NS740	Uncoated KS05F		Applicable TAC mills (Page)
 -MJ	SWMT1304PDPR-MJ	M	With	●	●	●	●	●				●			TPW13 9-72
	SWMT1304PDER-ML			●											
	SWMT1304PDPR-MS				●	●									
 -ML	SWGT1304PDFR-AJ	G	Without								●		●		
	SWGT1304PDPR-MJ		With	●								●			
 -MS															
 -AJ															
 SWGT-MJ															

●TECN32Z□□, TEEN32Z□□, TECN32ZFR-DIA, TEKR1603PEPR-MS

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH130	AH140	AH330	GH330	T3130	T1115		Cermet NS740	N308	Uncoated TH10	UX30		T-DIA DX140	Applicable TAC mills (Page)
	TECN32ZTR	TECN1603PETR	C	With									●	●		●			TSE 3000R(IA)E 9-84
	TECN32ZTL	TECN1603PETL																	
	TECN32ZFR	TECN1603PEFR		Without											●				
	TECN32ZFL	TECN1603PEFL																	
 -DIA	TEEN32ZTR	TEEN1603PETR	E	With	●	●	●	●	●	●	●		●	●		●			
	TEEN32ZTL	TEEN1603PETL																	
	TEEN32ZFR	TEEN1603PEFR		Without											●				
	TEEN32ZFL	TEEN1603PEFL																	
	TECN32ZFR-DIA	TECN1603PEFR-D	C															●	
 -MS	TEKR1603PEPR-MS		K	With			●												

"DX140": Packing Quantity=1 pcs.

● : Stocked items.

TAC Milling Inserts

●TE□N43Z□□, TECN43ZFR-DIA, TEKR2204PEPR-MS

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH130	AH140	AH330	GH330	T3130	T1115	Cermet NS740	N308	Uncoated TH10	UX30	T-DIA DX140	DX160	Applicable TAC mills (Page)
	TECN43ZTR	TECN2204PETR	C	With								●	●		●			TSE4000IA
	TECN43ZTL	TECN2204PETL																
	TECN43ZFR	TECN2204PEFR		Without										●				
	TECN43ZFL	TECN2204PEFL																
 -DIA	TEEN43ZTR	TEEN2204PETR	E	With	●	●	●	●	●	●	●	●	●		●			9-86
	TEEN43ZTL	TEEN2204PETL																
	TEEN43ZFR	TEEN2204PEFR		Without										●				
	TEEN43ZFL	TEEN2204PEFL																
	TECN43ZFR-DIA	TECN2204PEFR-D	C	Without												●	▲	
 -MS	TEKR2204PEPR-MS		K	With			●											

"DX140": Packing Quantity=1 pcs.

●WDCN42ZFR-DIA

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: T-DIA DX140	Applicable TAC mills (Page)
 Wiper inserts	WDCN42ZFR-DIA	SDCX1203AEFR-WD	C	Without	●	(Former products)

"DX140" : Packing Quantity=1 pcs.

●SPAX1203EDFR-W

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Cermet N308	Uncoated TH10	Applicable TAC mills (Page)
 Wiper inserts (Two corner type)	WPAN42SFR	SPAX1203EDFR-W	A	Without	●	●	TGP4100BAE 9-51

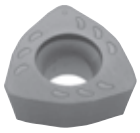
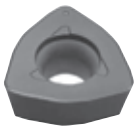
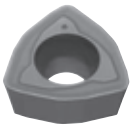
● : Stocked items.

●SPAX1203EDFR-WS

Shape	Cat. No.	ISO Metric Cat. No.	Accuracy	Honing	Stocked grades: Uncoated TH10	Applicable TAC mills (Page)
 Wiper inserts (Two corner type)	WPAN42SFRS	SPAX1203EDFR-WS	A	Without	●	TGP4100BAE 9-51

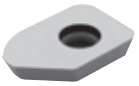
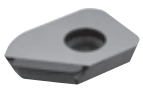
●WPMW/T□□□□□□Z□R-(M□)

MILLFEED TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH130	AH140	T3130	AH730	Applicable TAC mills (Page)
	WPMW05H315ZPR	M	With	●		●	●		EXP05, 06, 08, 09 TXP06, 08, 09 9-104
	WPMW06X415ZPR			●		●	●		
	WPMT080615ZSR			●	●	●	●		
	WPMT090725ZSR			●		●	●		
 -ML	WPMT05H315ZPR-ML	M	With	●		●	●		
	WPMT06X415ZPR-ML			●	●	●	●		
	WPMT080615ZPR-ML			●	●	●	●		
	WPMT090725ZPR-ML			●	●	●	●		
 -MH	WPMT05H315ZPR-MH	M	With	●		●			
	WPMT06X415ZPR-MH			●		●			
	WPMT080615ZSR-MH			●		●			
	WPMT090725ZSR-MH			●	●	●			
 -DML	WPMT05H315ZPR-DML	M	With					●	
	WPMT06X415ZPR-DML							●	
	WPMT080615ZPR-DML							●	
	WPMT090725ZPR-DML							●	

●WWCW13T3AF□R-□□

TUNGMILL TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated GH110	DLC coated DS1100	Cermet NS740	Uncoated KS05F	T-DIA DX140	Applicable TAC mills (Page)
	WWCW13T3AFER-WS	C	With	●		●			TAW13 9-45
	WWCW13T3AFFR-WS		Without		●		●		
 -WD	WWCW13T3AFFR-WD							●	

"DX140" : Packing Quantity=1 pcs.

● : Stocked items.

TAC Milling Inserts

●XCET310404ER

Shape	Cat. No.	Accuracy	Honing	Stocked grades												Applicable TAC mills (Page)
				Coated			Cermet			Uncoated						
				AH330			NS740	NS530		UX30						
	XCET310404ER	E	With	●			●	●		●						ECC31 9-127

●XHGR□□□□□□ER-MJ

HYBRIDTACMILL TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades												Applicable TAC mills (Page)
				Coated												
				AH730												
 -MJ	XHGR110202ER-MJ	G	With	●												EPH11, 13, 18 9-75
	XHGR110204ER-MJ			●												
	XHGR110205ER-MJ			●												
	XHGR110208ER-MJ			●												
	XHGR110210ER-MJ			●												
	XHGR110212ER-MJ			●												
	XHGR110215ER-MJ			●												
	XHGR110216ER-MJ			●												
	XHGR110220ER-MJ			●												
	XHGR130202ER-MJ			●												
	XHGR130204ER-MJ			●												
	XHGR130205ER-MJ			●												
	XHGR130208ER-MJ			●												
	XHGR130210ER-MJ			●												
	XHGR130212ER-MJ			●												
	XHGR130215ER-MJ			●												
	XHGR130216ER-MJ			●												
	XHGR130220ER-MJ			●												
	XHGR18T202ER-MJ			●												
	XHGR18T204ER-MJ			●												
	XHGR18T205ER-MJ			●												
	XHGR18T208ER-MJ			●												
	XHGR18T210ER-MJ			●												
	XHGR18T212ER-MJ			●												
	XHGR18T215ER-MJ			●												
	XHGR18T216ER-MJ			●												
	XHGR18T220ER-MJ			●												

● : Stocked items.

●XHGR□□□□□□FR-AJ

HYBRIDTACMILL TUNGALOY

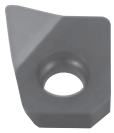
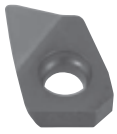
Shape	Cat. No.	Accuracy	Honing	Stocked grades												Applicable TAC mills (Page)
				DLC coated												
				DS1200												
 -AJ	XHGR110200FR-AJ	G	Without	●												EPH11, 13, 18 9-75
	XHGR110202FR-AJ			●												
	XHGR110204FR-AJ			●												
	XHGR110205FR-AJ			●												
	XHGR110208FR-AJ			●												
	XHGR110210FR-AJ			●												
	XHGR110212FR-AJ			●												
	XHGR110215FR-AJ			●												
	XHGR110216FR-AJ			●												
	XHGR110220FR-AJ			●												
	XHGR130200FR-AJ			●												
	XHGR130202FR-AJ			●												
	XHGR130204FR-AJ			●												
	XHGR130205FR-AJ			●												
	XHGR130208FR-AJ			●												
	XHGR130210FR-AJ			●												
	XHGR130212FR-AJ			●												
	XHGR130215FR-AJ			●												
	XHGR130216FR-AJ			●												
	XHGR130220FR-AJ			●												
	XHGR18T200FR-AJ			●												
	XHGR18T202FR-AJ			●												
	XHGR18T204FR-AJ			●												
	XHGR18T205FR-AJ			●												
	XHGR18T208FR-AJ			●												
	XHGR18T210FR-AJ			●												
	XHGR18T212FR-AJ			●												
	XHGR18T215FR-AJ			●												
	XHGR18T216FR-AJ			●												
	XHGR18T220FR-AJ			●												

● : Stocked items.

TAC Milling Inserts

●XVGT□□□□□□EC-MJ, XVGT□□□□□□EP-MJ, XVGT□□□□□□FC-AJ, XVGT□□□□□□FP-AJ

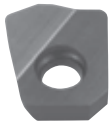
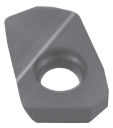
HYBRIDTACMILL TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH730			DLC coated DS1200									Applicable TAC mills (Page)
 Center edge insert	XVGT06H205EC-MJ	G	With	●												EVH 9-78
	XVGT07X305EC-MJ			●												
	XVGT09X405EC-MJ			●												
	XVGT06H205EP-MJ			●												
	XVGT07X305EP-MJ			●												
	XVGT09X405EP-MJ			●												
 Peripheral edge insert	XVGT06H205FC-AJ		Without				●									
	XVGT07X305FC-AJ						●									
	XVGT09X405FC-AJ						●									
	XVGT06H205FP-AJ						●									
	XVGT07X305FP-AJ						●									
	XVGT09X405FP-AJ						●									

9 TAC Mills

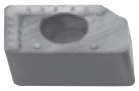
●XXGT□□□□□□EC-MJ, XXGT□□□□□□-MJ, XXGT□□□□□□FC-AJ, XXGT□□□□□□-AJ

HYBRIDTACMILL TUNGALOY

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH730			DLC coated DS1200									Applicable TAC mills (Page)
 Center edge insert	XXGT06H205EC-MJ	G	With	●												EXH 9-100
	XXGT07X305EC-MJ			●												
	XXGT09X408EC-MJ			●												
	XXGT06H205EP-MJ			●												
	XXGT07X305EP-MJ			●												
	XXGT09X408EP-MJ			●												
 Peripheral edge insert	XXGT06H205FC-AJ		Without				●									
	XXGT07X305FC-AJ						●									
	XXGT09X408FC-AJ						●									
	XXGT06H205FP-AJ						●									
	XXGT07X305FP-AJ						●									
	XXGT09X408FP-AJ						●									

● : Stocked items.

●XXMU□□□□□□PR-MJ

Shape	Cat. No.	Accuracy	Honing	Stocked grades												Applicable TAC mills (Page)
				Coated												
				AH120	AH140											
	XXMU08T204PR-MJ	M	With	●	●											EVX 9-114
	XXMU10H308PR-MJ			●	●											
	XXMU12X408PR-MJ			●	●											
	XXMU16X508PR-MJ			●	●											

●YDEN1505ADFR/L-D/WD

Shape	Cat. No.	Accuracy	Honing	Stocked grades												Applicable TAC mills (Page)
				T-DIA												
				DX140												
 General inserts  Wiper inserts	YDEN1505ADFR-D	E	Without	●												DAD15 9-54
	YDEN1505ADFR-WD			●												

"DX140": Packing Quantity = 1 pcs.

●YDEN1505PDFR/L-D/WD

Shape	Cat. No.	Accuracy	Honing	Stocked grades												Applicable TAC mills (Page)
				T-DIA												
				DX140												
 General inserts  Wiper inserts	YDEN1505PDFR-D	E	Without	●												DPD15 9-80 EDPD15
	YDEN1505PDFR-WD			●												

●YPEN1505PPTR/L-Q

"DX140": Packing Quantity = 1 pcs.

Shape	Cat. No.	Accuracy	Honing	Stocked grades												Applicable TAC mills (Page)
				T-CBN												
				BX950												
	YPEN1505PPTR-Q	E	With	●												QPP15 9-132

"BX950": Packing Quantity = 1 pcs.

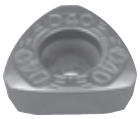
● : Stocked items.

TAC Milling Inserts

●ZD□A□□□□T/FN

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Uncoated UX30	Applicable TAC mills (Page)
	ZDKA0704TN	K	With		TBF1000 (Former products)
	ZDKA1105TN			▲	
	ZDCA0804TN	C		●	
	ZDCA1105TN			●	

●ZDMT□□□□-MJ

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	Applicable TAC mills (Page)
	ZDMT4005-MJ	M	With	●	EBD040 9-119
	ZDMT5006-MJ			●	EBD050 9-119

●ZNCA□□□□FN, ZNMM□□□□EN

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Uncoated TH10	UX30	Applicable TAC mills (Page)
	ZNCA1002FN2	C	Without	●	●	TBN1000 9-120
	ZNCA1203FN			●	●	
	ZNCA1603FN			●	●	
	ZNCA2004FN			●	●	
	ZNCA2505FN			●	●	
	ZNCA3005FN			●	●	
	ZNMM2004EN	M	With		●	
	ZNMM2505EN				●	
	ZNMM3005EN				●	

●ZPET□□□□-MJ

Shape	Cat. No.	Accuracy	Honing	Stocked grades: Coated AH120	AH330	Applicable TAC mills (Page)
	ZPET2004-MJ	E	With	●	●	EBP020 9-118
	ZPET2505-MJ			●	●	EBP025 9-118
	ZPET3006-MJ			●	●	EBP030 9-118

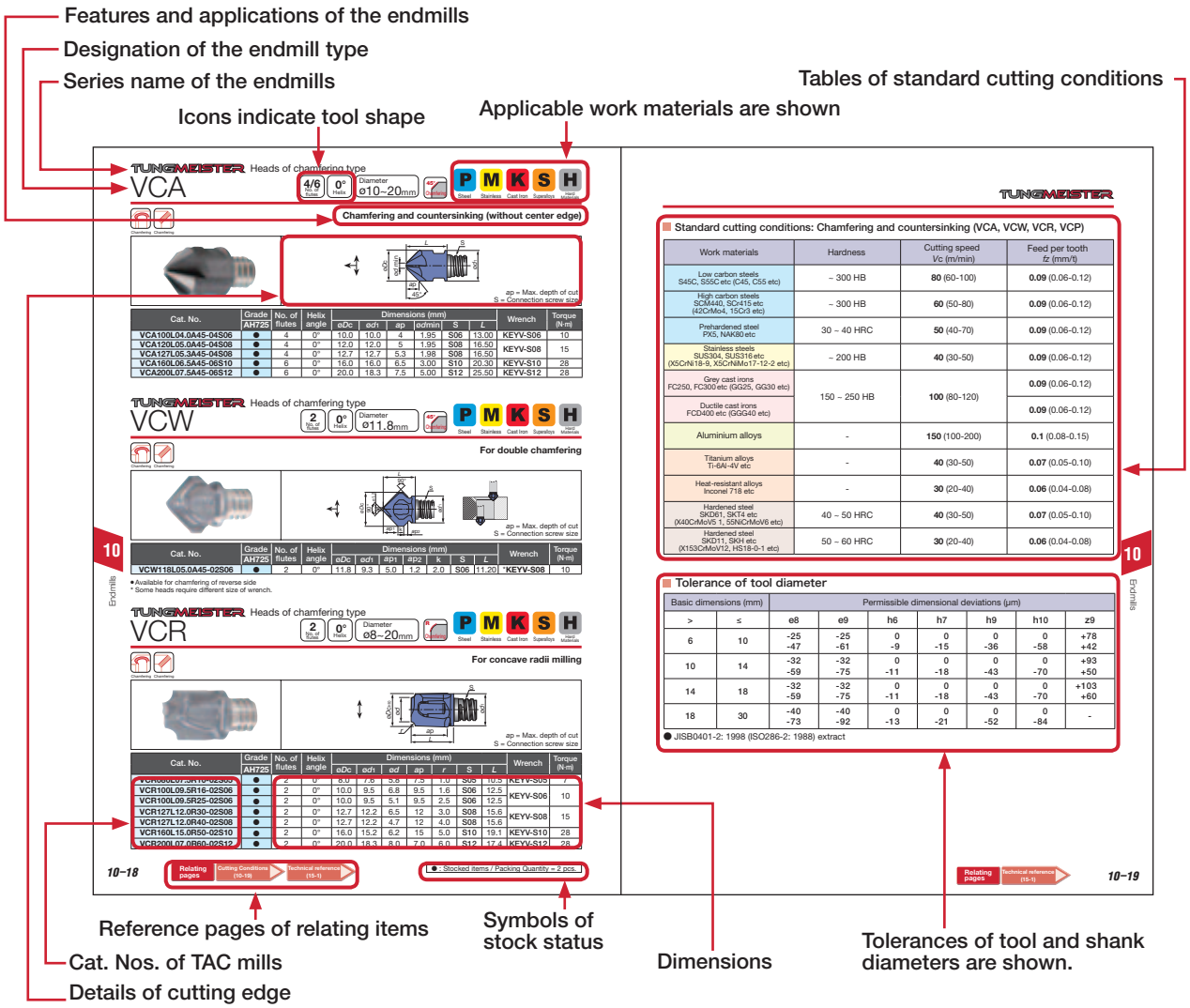
"ZPET3006-MJ": Packing Quantity = 5 pcs.

● : Stocked items.
▲ : Shortly unavailable

MEMO

Chapter Composition of Endmills

◆ Products are arranged by machining type.



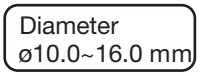
Icons overview

■ Icons showing tool shape

● Number of flutes

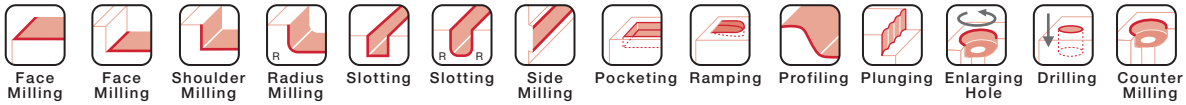
● Helix angle

● Tool diameter range



● Icons indicate corner angle

■Icons showing machining types



■ Ordering information

- When ordering heads of TungMeister, please specify Cat. No. and quantity.
  Example: **VEE080L05.0R00-03S05 2** pieces. (Standard packing quantity is 2 pieces.)
- When ordering shanks of TungMeister, please specify Cat. No. and quantity.
  Example: **VSSD08L060S05-S 1** piece. (Standard packing quantity is 1 piece.)
- Wrench of TungMeister should be orderded separately.

Guidance

■ Features of TungMeister (Indexable endmills) 10-2
■ Designation system for TungMeister 10-4

10 Endmills

Products

■ TungMeister (Indexable endmills)

Heads

● Square type	VED, VEE	10-5
● Toroidal type	VRB, VRC, VRD, VFX	10-9
● Ball type	VBB, VBD, VBE	10-12
● Drilling type	VCP, VDP, VGC	10-15
● Chamfering type	VCA, VCW, VCR	10-18
● Slotting type	VST, VTB	10-20

Shanks

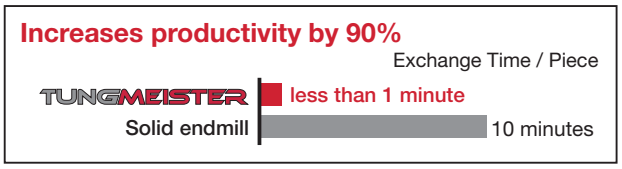
● Straight	VSSD	10-23
● Straight (Weldon)	VSSD	10-24
● Straight (Taper neck)	VTSD	10-25
● Straight (for Slotting)	VSC, VSTD	10-26
● Adapters of TungFlex	VAD-M	10-27

The most effective tooling solution with the option of hundreds of tools!

Tool changeover times can be measurably reduced!

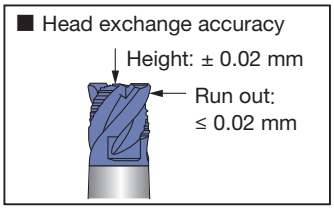
► Reduces tool changeover times drastically!!

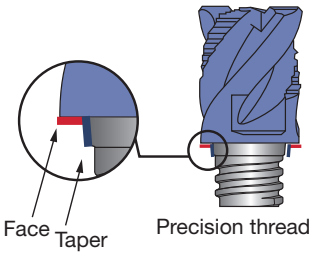
- Machine downtime is decreased considerably.



► Highly accurate repeatability

- Accuracy can be maintained by touching the taper and face.





► The weight of the tool to be disposed is reduced

- Reduces tool disposal

For example: ø12 mm / square endmill

TUNGMEISTER : OAL 20 mm → weight 20 g
conventional solid endmill : OAL 80 mm → weight 140 g

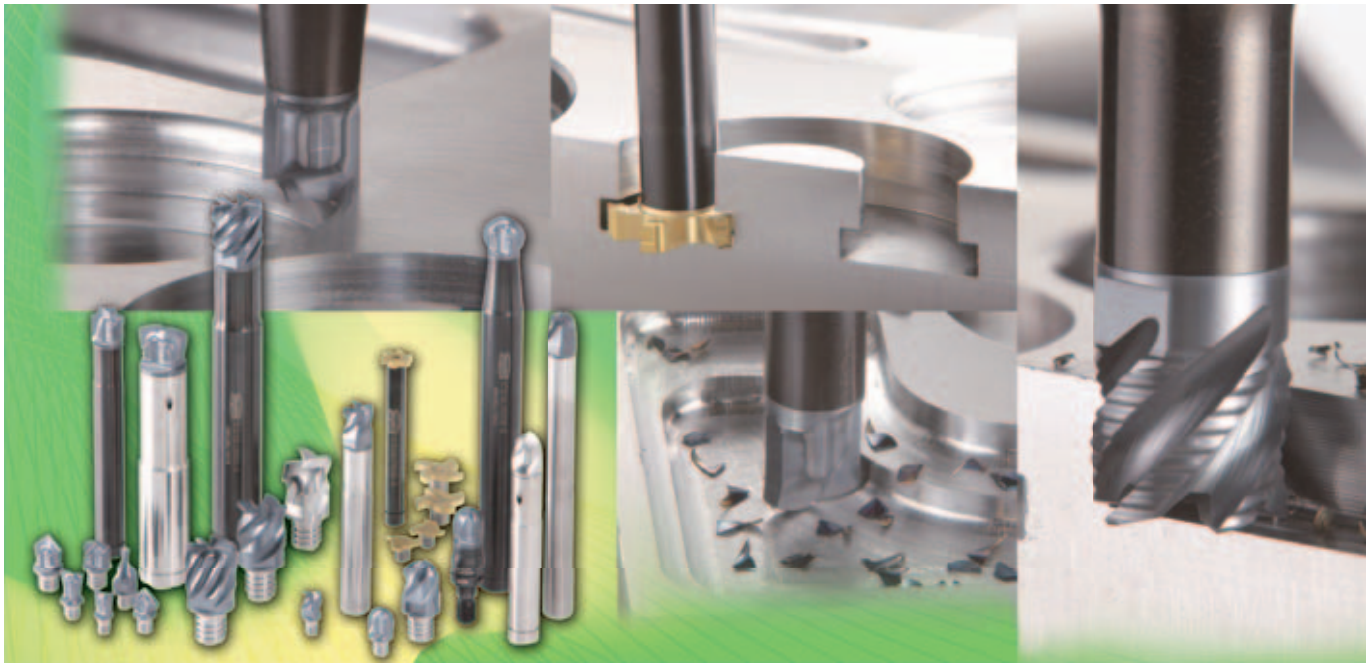
► No regrinding cost

- No laborious endmill regrinding required.

1 Wide range of cutting heads (257 items)

Flexible combinations

2 Three kinds of shank material



Overview

Head

Head	Square	Toroidal	Ball	Drilling (Centering drill)	Chamfering	Slotting
Appearance						
Page	10-5 ~ 8	10-9, 11	10-12, 13	10-15 ~ 17	10-18	10-20 ~ 22

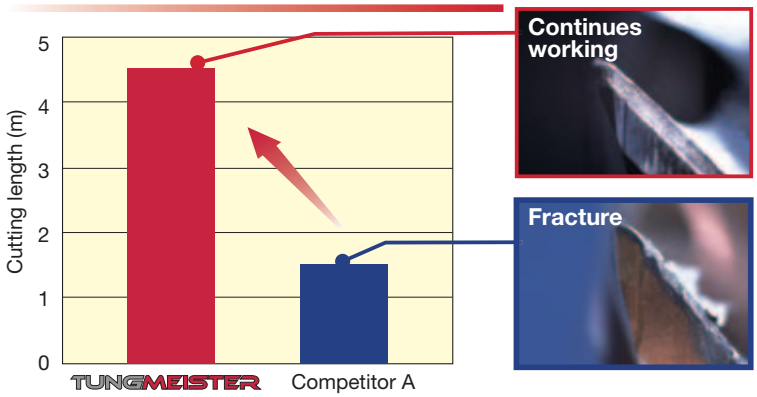
Shank

Shank	Straight	Weldon	Straight	Straight (Slotting)	Adaptor for TungFlex
Neck	Straight	Straight	Taper		
Appearance					
Steel	●	●	●	●	●
Carbide	●	-	●	●	-
Carbide (with coolant hole)	-	-	-	●	-
Tungsten (with coolant hole)	●	-	●	-	-
Page	10-23, 24	10-24	10-25, 26	10-26	10-27

Cutting performance

Work material: SUS304 / X5CrNi18-10 (200HB)
Head : VEE100L07.0R05-04S06
(ø10 mm, square type, 4 flutes)
Grade: AH725
Shank: VSSD10L075S06-S
(Straight shank & neck, steel)
Machine : Horizontal M/C BT40
Holder : Collet chuck
Cutting fluids: Dry

Comparison of milling in stainless steels



Cutting speed: *Vc* = 100 m/min
Feed per tooth: *fz* = 0.07 mm/t
Depth of cut : *ap* = 5 mm
Cutting width : *ae* = 1.5 mm

· Competitor A cutting edges fractured after 1.7 minutes machining and 1.5 m cutting length.
· The TungMeister cutting edges maintain operation after 5 minutes machining.

Comparison of milling surface on stainless steels

Cutting speed: *Vc* = 130 m/min
Feed per tooth: *fz* = 0.05 mm/t
Depth of cut : *ap* = 5 mm
Cutting width : *ae* = 2 mm

· When machining tough stainless steel the burr with the TungMeister is minimal. However, competitor A has a large burr when working under the same conditions.

TUNGMEISTER Designation System

Shank

V	SS	D10	L070	S	06	-	W	-	A
①	②	③	④	⑤	⑥		⑦		⑧

①Series	
V	TungMeister

②Shank type	
SS	Straight neck
TS	Taper neck
SC	Slotting
ST	for T-Slotting
AD	TungFlex adaptor

③Shank diameter (mm)	
D08	ø8
D10	ø10
D12	ø12
D16	ø16
D20	ø20
D25	ø25
VSC, VAD type	
100	ø10
120	ø12
130	ø13
180	ø18
210	ø21

④Length (mm)	
L070	70

⑤Shape of shank	
S	Cylindrical
W	Weldon

⑥Connection screw size	
05	S05
06	S06
08	S08
10	S10
12	S12

⑦Shank material	
S	Steel
C	Carbide
W	Tungsten

⑧Additional feature	
A	with coolant hole
M	Screw size (TungFlex adapters)

Head

● Square endmill

V	E	E	080	L05.0	R00	-	03	S05
①	②	③	④	⑤	⑥	⑦	⑧	⑨

● Ball nose endmill

V	B	D	200	L15.0	-	BG	-	04	S12
①	②	③	④	⑤		⑥	⑦	⑧	⑨

①Series	
V	TungMeister

②Cutting edge	
E	Square
B	Ball
R	Radius
FX	for high feed
CA	for chamfering
CP	Spot drilling
CW	for chamfering (front and back)
CR	for R chamfering
GC	for counter boring
DP	for center drilling
S	for slotting
T	for T-slotting

③Helix angle / Rake face	
B	0°
C	15°
D	30°
E	45°
F	60°
T	Land

④Diameter (mm)	
060	ø6
200	ø20

⑤Cutting edge length (mm)	
Length	
L07.0	7
L15.0	15
Groove width	
W1.50	1.5
W1.57	1.57
W10.0	10

⑥Corner shape / Angle	
Nose radius	
R00	Sharp edge
R005	R0.05
R01	R0.1
R05	R0.5
R10	R1.0
Chamfer type	
C15	0.15 x 45°
C30	0.3 x 45°
C60	0.6 x 45°
Chamfering head	
A30	30°
A60	60°
R chamfering head	
R10	R1.0
R16	R1.6
Ball nose	
SG	Sphere / high precision
BM	Ball / general purpose
BG	Ball / high precision

⑦Additional feature	
I	Irregular pitch
A	for aluminium
R	for roughing
C	Combined edge

⑧The number of flutes	
General	
02	2
06	6
Slotting head VST type	
3	3
4	4

⑨Connection screw size	
S05	S05
S06	S06
S08	S08
S10	S10
S12	S12

TUNGMEISTER Heads of square type

VEE

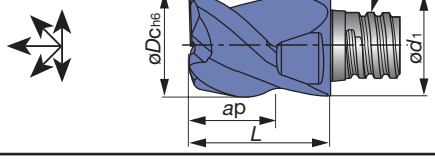
3 No. of flutes | 45° Helix | Diameter ø8~12mm | 90°

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Shoulder Milling | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For general purpose

corner radii: r = 0 mm



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	r	S	L	Wrench	Torque (N·m)
VEE080L05.0R00-03S05	●	3	45°	8	7.7	5	0	S05	10.0	KEYV-S05	7
VEE100L07.0R00-03S06	●	3	45°	10	9.7	7	0	S06	13.0	KEYV-S06	10
VEE120L09.0R00-03S08	●	3	45°	12	11.7	9	0	S08	16.5	KEYV-S08	15

TUNGMEISTER Heads of square type

VED / VEE

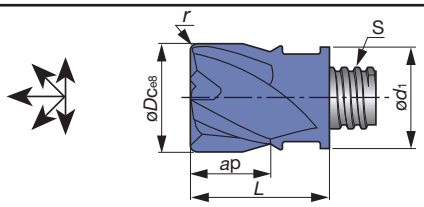
4 No. of flutes | 30°/45° Helix | Diameter ø6~20mm | 90°

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For general purpose

corner radii: r = 0 ~ 4.0 mm



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	r	S	L	Wrench	Torque (N·m)
VEE060L05.0R00-04S05	●	4	45°	6	8	5	0	S05	10.0	KEYV-S05	7
VEE080L05.0R00-04S05	●	4	45°	8	7.7	5	0	S05	10.0		
VED080L05.0R05-04S05	●	4	30°	8	7.7	5	0.5	S05	10.0		
VED080L05.0R10-04S05	●	4	30°	8	7.7	5	1.0	S05	10.0		
VED080L05.0R15-04S05	●	4	30°	8	7.7	5	1.5	S05	10.0		
VEE100L07.0R00-04S06	●	4	45°	10	9.7	7	0	S06	13.0	KEYV-S06	10
VED100L07.0R05-04S06	●	4	30°	10	9.7	7	0.5	S06	13.0		
VEE100L07.0R05-04S06	●	4	45°	10	9.7	7	0.5	S06	13.0		
VED100L07.0R10-04S06	●	4	30°	10	9.7	7	1.0	S06	13.0		
VEE100L07.0R10-04S06	●	4	45°	10	9.7	7	1.0	S06	13.0		
VEE120L09.0R00-04S08	●	4	45°	12	11.7	9	0	S08	16.5	KEYV-S08	15
VED120L09.0R05-04S08	●	4	30°	12	11.7	9	0.5	S08	16.5		
VEE120L09.0R05-04S08	●	4	45°	12	11.7	9	0.5	S08	16.5		
VED120L09.0R10-04S08	●	4	30°	12	11.7	9	1.0	S08	16.5		
VEE120L09.0R10-04S08	●	4	45°	12	11.7	9	1.0	S08	16.5		
VEE160L12.0R00-04S10	●	4	45°	16	15.3	12	0	S10	20.5	KEYV-S10	28
VED160L12.0R05-04S10	●	4	30°	16	15.3	12	0.5	S10	20.5		
VEE160L12.0R05-04S10	●	4	45°	16	15.3	12	0.5	S10	20.5		
VED160L12.0R10-04S10	●	4	30°	16	15.3	12	1.0	S10	20.5		
VEE160L12.0R10-04S10	●	4	45°	16	15.3	12	1.0	S10	20.5		
VED160L12.0R15-04S10	●	4	30°	16	15.3	12	1.5	S10	20.5		
VEE160L12.0R15-04S10	●	4	45°	16	15.3	12	1.5	S10	20.5		
VED160L12.0R20-04S10	●	4	30°	16	15.3	12	2.0	S10	20.5		
VEE160L12.0R20-04S10	●	4	45°	16	15.3	12	2.0	S10	20.5		
VED160L12.0R30-04S10	●	4	30°	16	15.3	12	3.0	S10	20.5		
VEE160L12.0R30-04S10	●	4	45°	16	15.3	12	3.0	S10	20.5		
VED160L12.0R40-04S10	●	4	30°	16	15.3	12	4.0	S10	20.5		
VEE160L12.0R40-04S10	●	4	45°	16	15.3	12	4.0	S10	20.5		
VEE200L15.0R00-04S12	●	4	45°	20	18.3	15	0	S12	25.5	KEYV-S12	28
VED200L15.0R05-04S12	●	4	30°	20	18.3	15	0.5	S12	25.5		
VED200L15.0R10-04S12	●	4	30°	20	18.3	15	1.0	S12	25.5		
VED200L15.0R20-04S12	●	4	30°	20	18.3	15	2.0	S12	25.5		
VED200L15.0R30-04S12	●	4	30°	20	18.3	15	3.0	S12	25.5		

● : Stocked items / Packing Quantity = 2 pcs.

Relating pages | Cutting Conditions (10-10) | Technical reference (15-1)

TUNGMEISTER Heads of square type

VEE

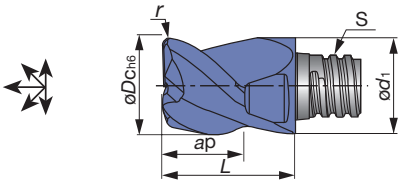
3 No. of flutes | 38° Helix | Diameter ø7.7~19.7mm | 90°

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For roughing before keyways

corner radii: *r* = 0.2 ~ 0.4 mm



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	r	S	L	Wrench	Torque (N·m)
VEE077L04.0R02-03S05	●	3	38°	7.7	7.7	4	0.2	S05	10.0	KEYV-S05	7
VEE097L05.0R03-03S06	●	3	38°	9.7	9.7	5	0.3	S06	13.0	KEYV-S06	10
VEE117L07.0R03-03S08	●	3	38°	11.7	11.7	7	0.3	S08	16.5	KEYV-S08	15
VEE157L08.0R03-03S10	●	3	38°	15.7	15.3	8	0.3	S10	20.5	KEYV-S10	28
VEE197L12.0R04-03S12	●	3	38°	19.7	18.3	12	0.4	S12	25.5	KEYV-S12	28

TUNGMEISTER Heads of square type

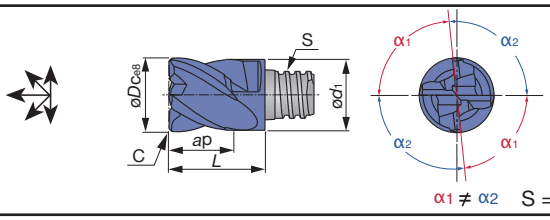
VEE-I

4 No. of flutes | 38° Helix | Diameter ø8~20mm | 90°

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Shoulder Milling | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

Irregular pitch



α1 ≠ α2

ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	C	S	L	Wrench	Torque (N·m)
VEE080L05.0C30I04S05	●	4	38°	8	7.7	5	0.3	S05	10.0	KEYV-S05	7
VEE100L07.0C40I04S06	●	4	38°	10	9.7	7	0.4	S06	13.0	KEYV-S06	10
VEE120L09.0C50I04S08	●	4	38°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15
VEE160L12.0C60I04S10	●	4	38°	16	15.3	12	0.6	S10	20.5	KEYV-S10	28
VEE200L15.0C60I04S12	●	4	38°	20	18.3	15	0.6	S12	25.5	KEYV-S12	28

TUNGMEISTER Heads of square type

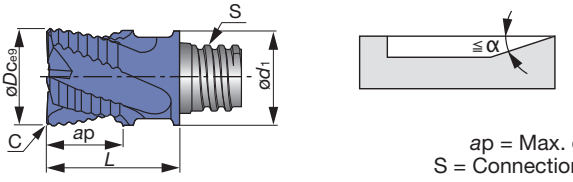
VEE-R

4/5/6 No. of flutes | 45° Helix | Diameter ø8~20mm | 90°

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Shoulder Milling | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For roughing



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	C	S	L	α	Wrench	Torque (N·m)
VEE080L05.0C25R04S05	●	4	45°	8	7.7	5	0.25	S05	10.0	90°	KEYV-S05	7
VEE100L07.0C30R04S06	●	4	45°	10	9.7	7	0.3	S06	13.0	90°	KEYV-S06	10
VEE120L09.0C35R04S08	●	4	45°	12	11.7	9	0.35	S08	16.5	90°	KEYV-S08	15
VEE160L12.0C40R05S10	●	5	45°	16	15.3	12	0.4	S10	20.5	7°	KEYV-S10	28
VEE200L15.0C40R06S12	●	6	45°	20	18.3	15	0.4	S12	25.5	3°	KEYV-S12	28

● : Stocked items / Packing Quantity = 2 pcs.

TUNGMEISTER Heads of square type

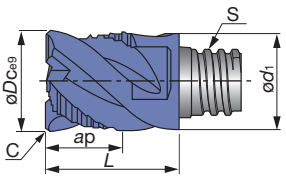
VEE-C

4 No. of flutes | 45° Helix | Diameter ø8~20mm | 90°

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Shoulder Milling | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

Combined edges for finishing & roughing



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	C	S	L	Wrench	Torque (N·m)
VEE080L05.0C30C04S05	●	4	45°	8	7.7	5	0.3	S05	10.0	KEYV-S05	7
VEE100L07.0C30C04S06	●	4	45°	10	9.7	7	0.3	S06	13.0	KEYV-S06	10
VEE120L09.0C40C04S08	●	4	45°	12	11.7	9	0.4	S08	16.5	KEYV-S08	15
VEE160L12.0C60C04S10	●	4	45°	16	15.3	12	0.6	S10	20.5	KEYV-S10	28
VEE200L15.0C60C04S12	●	4	45°	20	18.3	15	0.6	S12	25.5	KEYV-S12	28

TUNGMEISTER Heads of square type

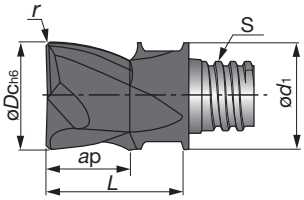
VEE-A

2 No. of flutes | 45° Helix | Diameter ø10~12mm | 90°

N Non-ferrous

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For aluminium machining
corner radii: *r* = 0.5 ~ 1.0 mm



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade KS15F	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	r	S	L	Wrench	Torque (N·m)
VEE100L07.0R05A02S06	●	2	45°	10	9.7	7	0.5	S06	13.0	KEYV-S06	10
VEE100L07.0R10A02S06	●	2	45°	10	9.7	7	1.0	S06	13.0		
VEE120L09.0R05A02S08	●	2	45°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15

TUNGMEISTER Heads of square type

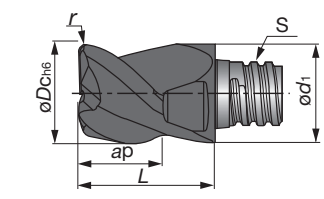
VEE-A

3 No. of flutes | 45° Helix | Diameter ø8~20mm | 90°

N Non-ferrous

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

For aluminium machining
corner radii: *r* = 0 ~ 2.0 mm



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade KS15F	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	r	S	L	Wrench	Torque (N·m)
VEE080L05.0R05A03S05	●	3	45°	8	7.7	5	0.5	S05	10.0	KEYV-S05	7
VEE100L06.0R05A03S06	●	3	45°	10	9.7	6	0.5	S06	13.0	KEYV-S06	10
VEE100L06.0R10A03S06	●	3	45°	10	9.7	6	1.0	S06	13.0		
VEE120L08.0R05A03S08	●	3	45°	12	11.7	8	0.5	S08	16.5	KEYV-S08	15
VEE120L08.0R10A03S08	●	3	45°	12	11.7	8	1.0	S08	16.5		
VEE160L10.0R00A03S10	●	3	45°	16	15.3	10	0	S10	20.5	KEYV-S10	28
VEE160L10.0R10A03S10	●	3	45°	16	15.3	10	1.0	S10	20.5		
VEE160L10.0R20A03S10	●	3	45°	16	15.3	10	2.0	S10	20.5		
VEE200L12.0R05A03S12	●	3	45°	20	18.3	12	0.5	S12	25.5	KEYV-S12	28
VEE200L12.0R10A03S12	●	3	45°	20	18.3	12	1.0	S12	25.5		
VEE200L12.0R20A03S12	●	3	45°	20	18.3	12	2.0	S12	25.5		

● : Stocked items / Packing Quantity = 2 pcs.

Relating pages | Cutting Conditions (10-10) | Technical reference (15-1)

TUNGMEISTER Heads of square type

VED / VEE

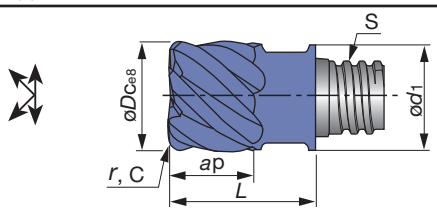
6 No. of flutes | 30°/45°/50° Helix | Diameter ø8~12mm | 90°

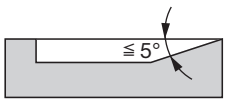
S Superalloys | H Hard Materials

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

Without central edge

corner radii: r = 0 ~ 1.5 mm





ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade		No. of flutes	Helix angle	Dimensions (mm)							Wrench	Torque (N·m)
	AH725	AH750			øDc	ød1	ap	r	C	S	L		
VEE080L05.0R05-06S05	●		6	45°	8	7.7	5	0.5	-	S05	10.0	KEYV-S05	7
VEE080L05.0R10-06S05	●		6	45°	8	7.7	5	1.0	-	S05	10.0		
VEE080L05.0R15-06S05	●		6	45°	8	7.7	5	1.5	-	S05	10.0		
VEE080L05.0C10-06S05		●	6	50°	8	7.7	5	-	0.1	S05	10.0		
VEE100L07.0R00-06S06	●		6	45°	10	9.7	7	0	-	S06	13.0	KEYV-S06	10
VED100L07.0R05-06S06	●		6	30°	10	9.7	7	0.5	-	S06	13.0		
VEE100L07.0R05-06S06	●		6	45°	10	9.7	7	0.5	-	S06	13.0		
VED100L07.0R10-06S06	●		6	30°	10	9.7	7	1.0	-	S06	13.0		
VEE100L07.0R10-06S06	●		6	45°	10	9.7	7	1.0	-	S06	13.0		
VED100L07.0R15-06S06	●		6	30°	10	9.7	7	1.5	-	S06	13.0		
VEE100L07.0R15-06S06	●		6	45°	10	9.7	7	1.5	-	S06	13.0		
VEE100L07.0C10-06S06		●	6	50°	10	9.7	7	-	0.1	S06	13.0		
VEE120L09.0R00-06S08	●		6	45°	12	11.7	9	0	-	S08	16.5	KEYV-S08	15
VED120L09.0R05-06S08	●		6	30°	12	11.7	9	0.5	-	S08	16.5		
VED120L09.0R10-06S08	●		6	30°	12	11.7	9	1.0	-	S08	16.5		
VEE120L09.0R10-06S08	●		6	45°	12	11.7	9	1.0	-	S08	16.5		
VEE120L09.0R15-06S08	●		6	45°	12	11.7	9	1.5	-	S08	16.5		
VEE120L09.0C10-06S08		●	6	50°	12	11.7	9	-	0.1	S08	16.5		

TUNGMEISTER Heads of square type

VED / VEE

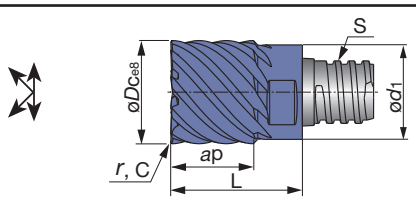
8/10 No. of flutes | 30°/50° Helix | Diameter ø16~20mm | 90°

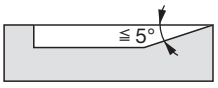
S Superalloys | H Hard Materials

Shoulder Milling | Radius Milling | Slotting | Slotting | Side Milling | Pocketing | Ramping | Plunging | Enlarging Hole

Without central edge

corner radii: r = 0.5 ~ 2.0 mm





ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade		No. of flutes	Helix angle	Dimensions (mm)							Wrench	Torque (N·m)
	AH725	AH750			øDc	ød1	ap	r	C	S	L		
VED160L12.0R05-08S10	●		8	30°	16	15.3	12	0.5	-	S10	20.5	KEYV-S10	28
VED160L12.0R10-08S10	●		8	30°	16	15.3	12	1.0	-	S10	20.5		
VED160L12.0R16-08S10	●		8	30°	16	15.3	12	1.6	-	S10	20.5		
VED160L12.0R20-08S10	●		8	30°	16	15.3	12	2.0	-	S10	20.5		
VEE160L12.0C20-08S10		●	8	50°	16	15.3	12	-	0.2	S10	20.5		
VED200L15.0R10-10S12	●		10	30°	20	18.3	15	1.0	-	S12	25.5	KEYV-S12	28
VED200L15.0R20-10S12	●		10	30°	20	18.3	15	2.0	-	S12	25.5		
VEE200L15.0C20-10S12		●	10	50°	20	18.3	15	-	0.2	S12	25.5		

● : Stocked items / Packing Quantity = 2 pcs.

Relating pages | Cutting Conditions (10-10) | Technical reference (15-1)

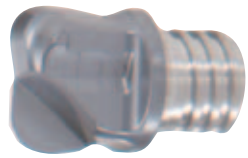
TUNGMEISTER Heads of toroidal type

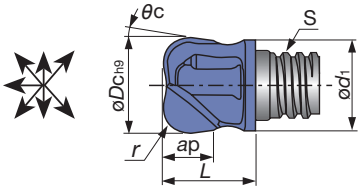
VRB / VRC

2 No. of flutes | 15°/0° Helix | 5°/7° relief angle | Diameter ø10~20mm | R

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Radius Milling | Pocketing | Ramping | Enlarging Hole





ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	r	θc	S	L	Wrench	Torque (N·m)
VRC100L07.0R05-02S06	●	2	15°	10	9.5	7	0.5	5°	S06	12.4		
VRC100L07.0R10-02S06	●	2	15°	10	9.5	7	1.0	5°	S06	12.4	KEYV-S06	10
VRB100L06.0R20-02S06	●	2	0°	10	9.2	6	2.0	7°	S06	12.4		
VRB120L05.7R30-02S06	●	2	0°	12	9.5	5.7	3.0	7°	**S06**	9.1		
VRB120L05.4R40-02S06	●	2	0°	12	9.5	5.4	4.0	7°	**S06**	9.1	***KEYV-S08**	
VRB120L06.3R16-02S08	●	2	0°	12	11.5	5.9	1.6	7°	S08	11.1		
VRB120L06.2R20-02S08	●	2	0°	12	11.5	6.2	2.0	7°	S08	11.1		
VRB120L06.1R25-02S08	●	2	0°	12	11.5	5.8	2.5	7°	S08	11.1	KEYV-S08	15
VRB120L06.1R30-02S08	●	2	0°	12	11.5	5.7	3.0	7°	S08	11.1		
VRB120L05.9R40-02S08	●	2	0°	12	11.5	5.5	4.0	7°	S08	11.1		
VRB160L08.0R50-02S10	●	2	0°	16	15.2	8	5.0	7°	S10	20.2	KEYV-S10	
VRB200L11.1R30-02S12	●	2	0°	20	18.3	11	3.0	7°	S12	17.0		
VRB200L11.5R40-02S12	●	2	0°	20	18.3	11.3	4.0	7°	S12	17.3		28
VRB200L11.5R50-02S12	●	2	0°	20	18.3	11.3	5.0	7°	S12	17.3	KEYV-S12	
VRB200L11.4R60-02S12	●	2	0°	20	18.3	11.2	6.0	7°	S12	17.3		
VRB200L11.3R80-02S12	●	2	0°	20	18.3	11.1	8.0	7°	S12	17.3		

● Suitable for contouring operation
* Some heads require different size of wrench.

TUNGMEISTER Heads of toroidal type

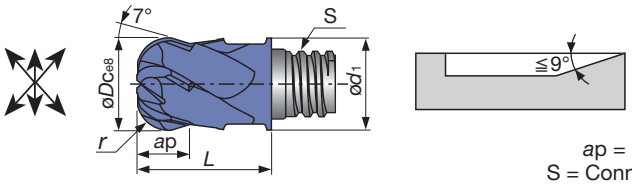
VRD

6 No. of flutes | 30° Helix | 7° back taper sided | Diameter ø8~16mm | R

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Radius Milling | Pocketing | Ramping | Enlarging Hole

Back taper sided



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	r	S	L	Wrench	Torque (N·m)
VRD080L04.0R20-06S05	●	6	30°	8	7.7	4	2.0	S05	10.0	KEYV-S05	7
VRD100L05.0R30-06S06	●	6	30°	10	9.7	5	3.0	S06	13.0	KEYV-S06	10
VRD120L07.0R40-06S08	●	6	30°	12	11.7	7	4.0	S08	16.5	KEYV-S08	15
VRD160L09.0R50-06S10	●	6	30°	16	15.3	9	5.0	S10	20.5	KEYV-S10	28

● : Stocked items / Packing Quantity = 2 pcs.

Standard cutting conditions: Shoulder milling / Slotting (VEE: 3 flutes, VED/VEE: 4 flutes, VEE-A, VEE-I, VEE-R, VEE-C, VRB, VRC, VRD)

Work materials	Hardness	Shoulder milling					Slot milling			
		Cutting speed *Vc* (m/min)	Tool diameter ø*Dc* (mm)	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)	Width of cut *ae* (mm)	Cutting speed *Vc* (m/min)	Tool diameter ø*Dc* (mm)	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)
Low carbon steels S45C, S55C etc (C45, C55 etc)	~ 300 HB	**130** (80-180)	ø6: **0.05** (0.03-0.07) ø8: **0.07** (0.05-0.09) ø10: **0.09** (0.07-0.12) ø12: **0.10** (0.08-0.13) ø16: **0.12** (0.09-0.15) ø20: **0.13** (0.10-0.17)		0.6 x ø*Dc*	0.25 x ø*Dc*	**70** (50-100)	ø6: **0.03** (0.03-0.04) ø8: **0.03** (0.03-0.04) ø10: **0.04** (0.04-0.05) ø12: **0.05** (0.05-0.06) ø16: **0.07** (0.06-0.08) ø20: **0.08** (0.07-0.10)		0.5 x ø*Dc*
High carbon steels SCM440, SCr415 etc (42CrMo4, 15Cr3 etc)	~ 300 HB	**100** (60-140)					**60** (40-80)			
Prehardened steel PX5, NAK80 etc	30 ~ 40 HRC	**90** (60-120)					**50** (40-70)			
Stainless steels SUS304, SUS316 etc (X5CrNi18-9, X5CrNiMo17-12-2 etc)	~ 200 HB	**70** (40-100)					**40** (30-60)			
Grey cast irons FC250, FC300 etc (GG25, GG30 etc)	150 ~ 250 HB	**140** (80-200)					**80** (50-120)			
Ductile cast irons FCD400 etc (GGG40 etc)										
Aluminium alloys (Si < 13%)	-	**300** (200-700)					**200** (130-400)			
Aluminium alloys (Si ≥13%)	-	**200** (100-300)					**130** (70-200)			
Titanium alloys Ti-6Al-4V etc	-	**60** (40-80)				0.05 x ø*Dc*	**30** (20-40)			0.2 x ø*Dc*
Heat-resistant alloys Inconel 718 etc	-	**30** (20-40)					**15** (10-20)			
Hardened steel SKD61, SKT4 etc (X40CrMoV5 1, 55NiCrMoV6 etc)	40 ~ 50 HRC	**60** (40-80)					**40** (25-60)			
Hardened steel SKD11, SKH etc (X153CrMoV12, HS18-0-1 etc)	50 ~ 60 HRC	**40** (20-60)					**20** (10-30)			

Standard cutting conditions: Shoulder milling (VED / VEE: 6 flutes, VED / VEE: 8, 10 flutes)

Work materials	Hardness (HRC)	Shoulder milling				
		Cutting speed *Vc* (m/min)	Tool diameter ø*Dc* (mm)	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)	Width of cut *ae* (mm)
Titanium alloys Ti-6Al-4V etc	-	**90** (60 - 120)	ø8: **0.07** (0.05-0.09) ø10: **0.09** (0.07-0.12) ø12: **0.10** (0.08-0.13) ø16: **0.12** (0.09-0.15) ø20: **0.13** (0.10-0.17)		0.6 x ø*Dc*	0.02 x ø*Dc*
Heat-resistant alloys Inconel 718 etc	-	**40** (30 - 60)				
Hardened steel SKD61, SKT4 etc (X40CrMoV5 1, 55NiCrMoV6 etc)	40 ~ 50	**120** (80 - 160)				
Hardened steel SKD11, SKH etc (X153CrMoV12, HS18-0-1 etc)	50 ~ 60	**60** (40 - 90)				

Relating pages
Technical reference (15-1)

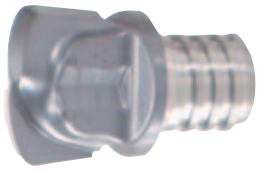
VFX

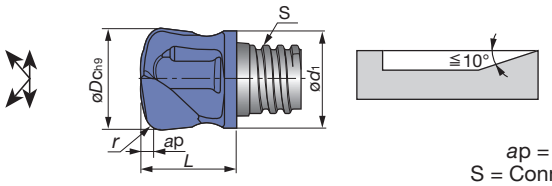
2 No. of flutes | 0° Helix | Diameter ø10~20mm | 20°

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Pocketing | Ramping | Enlarging Hole

For high feed milling





ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	r(1)	S	L	Wrench	Torque (N·m)
VFX100L00.6R20-02S06	●	2	0°	10	9.6	0.6	2.0	S06	12.5	KEYV-S06	10
VFX120L01.0R25-02S08	●	2	0°	12	11.5	1.0	2.5	S08	11.1	KEYV-S08	15
VFX160L01.1R30-02S10	●	2	0°	16	15.2	1.1	3.0	S10	20.0	KEYV-S10	28
VFX200L01.5R33-02S12	●	2	0°	20	18.3	1.5	3.3	S12	17.5	KEYV-S12	28

(1) When using CAD/CAM, please program as this radius.
Note: For VFX head, Taper neck shank or Tungsten shank should be recommended.

● : Stocked items / Packing Quantity = 2 pcs.

Standard cutting conditions: Pocketing with high feed (VFX)

Work materials	Hardness	Cutting speed Vc (m/min)	ø10 Feed per tooth fz (mm/t)	ø10 Depth of cut ap (mm)	ø12 Feed per tooth fz (mm/t)	ø12 Depth of cut ap (mm)	ø16 Feed per tooth fz (mm/t)	ø16 Depth of cut ap (mm)	ø20 Feed per tooth fz (mm/t)	ø20 Depth of cut ap (mm)	Width of cut ae (mm)
Low carbon steels S45C, S55C etc (C45, C55 etc)	~ 300 HB	**150** (100-200)	**0.5** (0.3-0.7)	0.5	**0.6** (0.4-0.8)	0.5	**0.7** (0.5-0.9)	0.75	**0.8** (0.6-1.0)	1.0	0.6 x øDc
High carbon steels SCM440, SCr415 etc (42CrMo4, 15Cr3 etc)	~ 300 HB	**130** (80-180)	**0.4** (0.2-0.6)	0.5	**0.5** (0.3-0.7)	0.5	**0.6** (0.4-0.8)	0.75	**0.7** (0.5-0.9)	1.0	0.6 x øDc
Prehardened steel PX5, NAK80 etc	30 ~ 40 HRC	**120** (80-160)	**0.3** (0.2-0.5)	0.4	**0.3** (0.2-0.5)	0.4	**0.4** (0.3-0.6)	0.5	**0.4** (0.3-0.6)	0.75	0.6 x øDc
Stainless steels SUS304, SUS316 etc (X5CrNi18-9, X5CrNiMo17-12-2 etc)	~ 200 HB	**80** (60-100)	**0.4** (0.2-0.6)	0.4	**0.4** (0.2-0.6)	0.4	**0.5** (0.3-0.7)	0.5	**0.5** (0.3-0.7)	0.75	0.6 x øDc
Grey cast irons FC250, FC300 etc (GG25, GG30 etc)	150 ~ 250 HB	**160** (100-220)	**0.5** (0.3-0.7)	0.5	**0.6** (0.4-0.8)	0.75	**0.7** (0.5-0.9)	0.75	**0.8** (0.6-1.0)	1.0	0.6 x øDc
Ductile cast irons FCD400 etc (GGG40 etc)			**0.4** (0.2-0.6)	0.5	**0.5** (0.3-0.7)	0.75	**0.6** (0.4-0.8)	0.75	**0.7** (0.5-0.9)	1.0	0.6 x øDc
Titanium alloys Ti-6Al-4V etc	-	**60** (40-80)	**0.3** (0.2-0.5)	0.4	**0.3** (0.2-0.5)	0.4	**0.4** (0.2-0.6)	0.5	**0.4** (0.2-0.6)	0.5	0.25 x øDc
Heat-resistant alloys Inconel 718 etc	-	**30** (20-40)	**0.2** (0.1-0.3)	0.3	**0.2** (0.1-0.3)	0.3	**0.2** (0.1-0.3)	0.4	**0.2** (0.1-0.3)	0.4	0.25 x øDc
Hardened steel SKD61, SKT4 etc (X40CrMoV5 1, 55NiCrMoV6 etc)	40~ 50 HRC	**60** (40-80)	**0.3** (0.2-0.4)	0.3	**0.3** (0.2-0.4)	0.3	**0.4** (0.3-0.5)	0.4	**0.4** (0.3-0.5)	0.4	0.45 xøDc
Hardened steel SKD11, SKH etc (X153CrMoV12, HS18-0-1 etc)	50~ 60 HRC	**40** (20-60)	**0.15** (0.1-0.2)	0.2	**0.15** (0.1-0.2)	0.2	**0.2** (0.1-0.3)	0.3	**0.2** (0.1-0.3)	0.3	0.25 x øDc

Relating pages | Technical reference (15-1)

TUNGMEISTER Heads of ball type

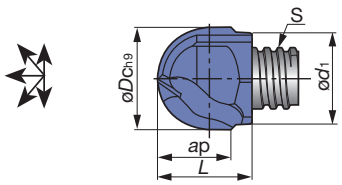
VBB-BM

2 No. of flutes | 0° Helix | Diameter ø8~16mm | 90° With R

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Pocketing | Ramping | Profiling

For general purpose



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	S	L	Wrench	Torque (N·m)
VBB080L08.0-BM-02S05	●	2	0°	8	7.6	8	S05	10.0	KEYV-S05	7
VBB100L10.0-BM-02S06	●	2	0°	10	9.5	10	S06	12.4	KEYV-S06	10
VBB120L12.0-BM-02S08	●	2	0°	12	11.5	11.5	S08	15.3	KEYV-S08	15
VBB160L16.0-BM-02S10	●	2	0°	16	15.2	16	S10	19.1	KEYV-S10	28

● For roughing

TUNGMEISTER Heads of ball type

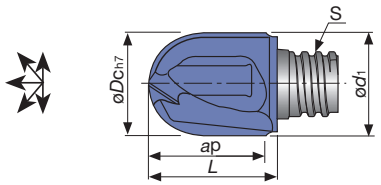
VBB-BG

2 No. of flutes | 0° Helix | Diameter ø8~16mm | 90° With R

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Pocketing | Ramping | Profiling

For high precision



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH750	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	S	L	Wrench	Torque (N·m)
VBB080L08.0-BG-02S05	●	2	0°	8	7.6	8	S05	10.0	KEYV-S05	7
VBB100L10.0-BG-02S06	●	2	0°	10	9.6	10	S06	12.4	KEYV-S06	10
VBB120L12.0-BG-02S08	●	2	0°	12	11.5	12	S08	15.3	KEYV-S08	15
VBB160L16.0-BG-02S10	●	2	0°	16	15.2	16	S10	19.1	KEYV-S10	28

TUNGMEISTER Heads of ball type

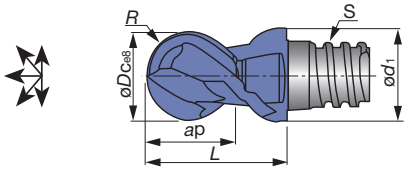
VBD-BG

2 No. of flutes | 30° Helix | Diameter ø8~16mm | 90° With R

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Pocketing | Ramping | Profiling

For high precision



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	R	S	L	Wrench	Torque (N·m)
VBD080L05.0-BG-02S05	●	2	30°	8	7.7	5	3.982(1)	S05	10.0	KEYV-S05	7
VBD100L07.0-BG-02S06	●	2	30°	10	9.7	7	4.982(1)	S06	13.0	KEYV-S06	10
VBD120L09.0-BG-02S08	●	2	30°	12	11.7	9	5.978(2)	S08	16.5	KEYV-S08	15
VBD160L09.5-BG-02S10	●	2	30°	16	15.3	9	7.978(2)	S10	20.5	KEYV-S10	28

● The tolerance of R : (1) ± 0.010 (2) ± 0.012

● : Stocked items / Packing Quantity = 2 pcs.

TUNGMEISTER Heads of ball type

VBD / VBE-BG

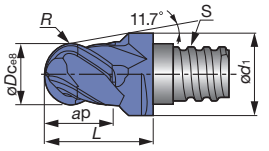
4 No. of flutes | 30°/45° Helix | Diameter ø6~20mm | 90° With R

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

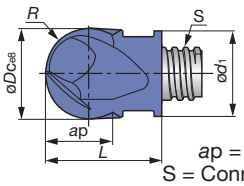
Pocketing | Ramping | Profiling

For high precision

VBE



VBD



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	R	S	L	Wrench	Torque (N·m)
VBE060L05.5-BG-04S05	●	4	45°	6	8.0	5.5	2.987(1)	S05	10.0	KEYV-S05	7
VBD080L05.0-BG-04S05	●	4	30°	8	7.7	5	3.982(1)	S05	10.0	KEYV-S05	7
VBD100L07.0-BG-04S06	●	4	30°	10	9.7	7	4.982(1)	S06	13.0	KEYV-S06	10
VBD120L09.0-BG-04S08	●	4	30°	12	11.7	9	5.978(2)	S08	16.5	KEYV-S08	15
VBD160L12.0-BG-04S10	●	4	30°	16	15.3	12	7.978(2)	S10	20.5	KEYV-S10	28
VBD200L15.0-BG-04S12	●	4	30°	20	18.3	15	9.972(2)	S12	25.5	KEYV-S12	28

● The tolerance of R : (1) ± 0.010 (2) ± 0.012

TUNGMEISTER Heads of ball type

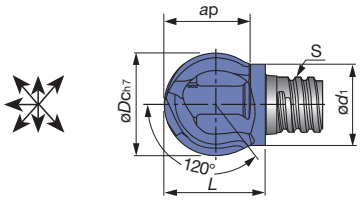
VBB-SG

2 No. of flutes | 0° Helix | Diameter ø10~20mm | 90° With R

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Pocketing | Ramping | Profiling

Spherical designed edge



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	S	L	Wrench	Torque (N·m)
VBB100L08.0-SG-02S05	●	2	0°	10	7.6	8	S05	10.1	KEYV-S05	7
VBB120L09.6-SG-02S06	●	2	0°	12	9.6	9.6	S06	11.6	*KEYV-S08	10
VBB160L12.9-SG-02S08	●	2	0°	16	11.5	12.9	S08	15.4	*KEYV-S10	15
VBB200L16.1-SG-02S10	●	2	0°	20	15.2	16.1	S10	18.5	KEYV-S10	28

● For pull-cutting on the vertical wall
* Some heads require different size of wrench.

TUNGMEISTER Heads of ball type

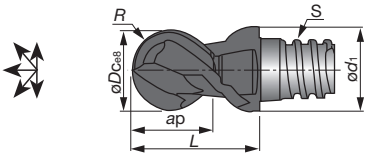
VBE-BGA

2 No. of flutes | 45° Helix | Diameter ø8~20mm | 90° With R

N Non-ferrous

Pocketing | Ramping | Profiling

For aluminium machining



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade KS15F	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	R	S	L	Wrench	Torque (N·m)
VBE080L05.0-BGA02S05	●	2	45°	8	7.7	5	3.982(1)	S05	10.0	KEYV-S05	7
VBE100L07.0-BGA02S06	●	2	45°	10	9.7	7	4.982(1)	S06	13.0	KEYV-S06	10
VBE120L09.0-BGA02S08	●	2	45°	12	11.7	9	5.987(2)	S08	16.5	KEYV-S08	15
VBE160L12.0-BGA02S10	●	2	45°	16	15.3	12	7.978(2)	S10	20.5	KEYV-S10	28
VBE200L15.0-BGA02S12	●	2	45°	20	18.3	15	9.972(2)	S12	25.5	KEYV-S12	28

● The tolerance of R : (1) ± 0.010 (2) ± 0.012

● : Stocked items / Packing Quantity = 2 pcs.

Relating pages | Cutting Conditions (10-14) | Technical reference (15-1)

Standard cutting conditions: Profiling (VBB-BM / BG / SG, VBD-BG, VBE-BGA)

Work materials	Hardness	Profiling (for roughing)					Profiling (for semi-finishing and finishing)				
		Cutting speed *Vc* (m/min)	Tool diameter *øDc* (mm)	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)	Pick feed *Pf* (mm)	Cutting speed *Vc* (m/min)	Tool diameter *øDc* (mm)	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)	Pick feed *Pf* (mm)
Low carbon steels S45C, S55C etc (C45, C55 etc)	~ 300 HB	**150** (100-200)	ø6: **0.05** (0.03-0.07) ø8: **0.06** (0.04-0.08) ø10: **0.07** (0.05-0.10) ø12: **0.08** (0.06-0.11) ø16: **0.09** (0.07-0.13) ø20: **0.11**(0.08-0.15)		0.3 x ø*Dc*	0.4 x ø*Dc*	**180** (120-250)	ø6: **0.06** (0.04-0.09) ø8: **0.08** (0.06-0.11) ø10: **0.09** (0.07-0.12) ø12: **0.10** (0.08-0.13) ø16: **0.12** (0.09-0.16) ø20: **0.14** (0.10-0.18)		0.1 x ø*Dc*	0.15 x ø*Dc*
High carbon steels SCM440, SCr415 etc (42CrMo4, 15Cr3 etc)	~ 300 HB	**130** (80-180)					**160** (100-220)				
Prehardened steel PX5, NAK80 etc	30 ~ 40 HRC	**120** (80-160)					**150** (100-200)				
Stainless steels SUS304, SUS316 etc (X5CrNi18-9, X5CrNiMo17-12-2 etc)	~ 200 HB	**80** (60-100)					**100** (80-120)				
Grey cast irons FC250, FC300 etc (GG25, GG30 etc)	150 ~ 250 HB	**160** (100-220)					**200** (120-280)				
Ductile cast irons FCD400 etc (GGG40 etc)											
Aluminium alloys (Si < 13%)	-	**300** (200-700)					**500** (300-1000)				
Aluminium alloys (Si ≥13%)	-	**200** (100-300)					**300** (150-400)				
Titanium alloys Ti-6Al-4V etc	-	**60** (40-80)				0.2 x ø*Dc*	**70** (50-100)			0.08 x ø*Dc*	0.1 x ø*Dc*
Heat-resistant alloys Inconel 718 etc	50~ 60 HRC	**30** (20-40)					**40** (30-50)				
Hardened steel SKD61, SKT4 etc (X40CrMoV5 1, 55NiCrMoV6 etc)	-	**60** (40-80)					**70** (50-100)				
Hardened steel SKD11, SKH etc (X153CrMoV12, HS18-0-1 etc)	50~ 60 HRC	**40** (20-60)					**50** (30-80)				

Relating pages
Technical reference (15-1)

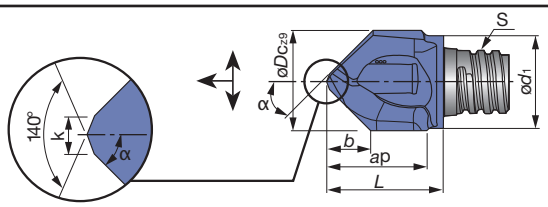
VCP

2 No. of flutes | 0° Helix | Diameter ø8~16.5mm | 60° Chamfering | 45° Chamfering | 30° Chamfering

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Drilling Chamfering Chamfering

For spot drilling, chamfering and countersinking



b = Max. hole depth
ap = Max. depth of cut
S = Connection screw size

Point angle = 60°

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	b	S	L	k	α	Wrench	Torque (N·m)
VCP100L09.5A30-02S06	●	2	0°	10.0	9.5	8.5	7.5	S06	11.75	1.5	30°	KEYV-S06	10
VCP120L12.0A30-02S08	●	2	0°	12.0	11.5	11	9.2	S08	15.4	1.5	30°	KEYV-S08	15
VCP160L15.0A30-02S10	●	2	0°	16.0	15.2	16	12.0	S10	20.2	2.5	30°	KEYV-S10	28

● Min. chamfering: ø1.5 mm

Point angle = 90°

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	b	S	L	k	α	Wrench	Torque (N·m)
VCP080L07.7A45-02S05	●	2	0°	8.0	7.6	7.5	3.7	S05	9.75	1.0	45°	KEYV-S05	7
VCP083L07.9A45-02S05	●	2	0°	8.3	7.6	7.5	3.8	S05	10.0	1.0	45°		
VCP100L09.0A45-02S06	●	2	0°	10.0	9.5	9.5	4.4	S06	11.75	1.5	45°	KEYV-S06	10
VCP104L09.0A45-02S06(1)	●	2	0°	10.4	9.5	9.5	4.6	S06	11.75	1.5	45°		
VCP120L12.0A45-02S08	●	2	0°	12.0	11.5	11.5	5.4	S08	15.4	1.5	45°	KEYV-S08	15
VCP124L12.0A45-02S08(1)	●	2	0°	12.4	11.5	11.5	5.6	S08	15.4	1.5	45°		
VCP160L15.0A45-02S10	●	2	0°	16.0	15.2	15	7.1	S10	18.8	1.5	45°	KEYV-S10	28
VCP165L15.0A45-02S10	●	2	0°	16.5	15.2	15	7.1	S10	18.8	1.5	45°		

● Min. chamfering: ø1.5 mm

Point angle = 120°

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	b	S	L	k	α	Wrench	Torque (N·m)
VCP100L09.5A60-02S06	●	2	0°	10.0	9.5	9.5	2.7	S06	12.7	1.5	60°	KEYV-S06	10
VCP120L12.0A60-02S08	●	2	0°	12.0	11.5	11.5	3.3	S08	15.2	1.5	60°	KEYV-S08	15
VCP160L15.5A60-02S10	●	2	0°	16.0	15.2	16	4.4	S10	19.9	1.5	60°	KEYV-S10	28

● Min. chamfering: ø1.5 mm

● : Stocked items / Packing Quantity = 2 pcs.

VDP

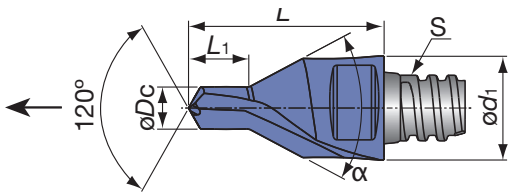
2 No. of flutes

Diameter ø3.28~6.46mm

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Drilling

For center drilling (DIN332)



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	L1	S	L	α	Wrench	Torque (N·m)
VDP328L04.6A30-02S05	●	2	-	3.28	8	4.6	S05	15.0	59.5°	KEYV-S05	7
VDP412L05.9A30-02S06	●	2	-	4.12	10	5.9	S06	19.0	59.5°	KEYV-S06	10
VDP513L07.2A30-02S08	●	2	-	5.13	12	7.2	S08	23.0	59.5°	KEYV-S08	15
VDP646L08.9A30-02S10	●	2	-	6.46	16	8.9	S10	28.0	59.5°	KEYV-S10	28

Standard cutting conditions: Drilling (VCP, VDP)

Work materials	Hardness	Cutting speed Vc (m/min)	Feed: f (mm/rev) VDP328	VDP412	VDP513	VDP646	VCP
Low carbon steels S45C, S55C etc (C45, C55 etc)	~ 300 HB	**60** (40-80)	**0.06** (0.04-0.08)	**0.07** (0.05-0.10)	**0.07** (0.05-0.10)	**0.09** (0.06-0.12)	**0.09** (0.06-0.12)
High carbon steels SCM440, SCr415 etc (42CrMo4, 15Cr3 etc)	~ 300 HB	**40** (30-50)	**0.06** (0.04-0.08)	**0.07** (0.05-0.10)	**0.07** (0.05-0.10)	**0.09** (0.06-0.12)	**0.09** (0.06-0.12)
Prehardened steel PX5, NAK80 etc	30 ~ 40 HRC	**25** (20-30)	**0.06** (0.04-0.08)	**0.07** (0.05-0.10)	**0.07** (0.05-0.10)	**0.09** (0.06-0.12)	**0.09** (0.06-0.12)
Stainless steels SUS304, SUS316 etc (X5CrNi18-9, X5CrNiMo17-12-2 etc)	~ 200 HB	**20** (15-25)	**0.06** (0.04-0.08)	**0.07** (0.05-0.10)	**0.07** (0.05-0.10)	**0.09** (0.06-0.12)	**0.09** (0.06-0.12)
Grey cast irons FC250, FC300 etc (GG25, GG30 etc)	150 ~ 250 HB	**80** (60-100)	**0.07** (0.05-0.09)	**0.09** (0.07-0.12)	**0.09** (0.07-0.12)	**0.15** (0.12-0.18)	**0.15** (0.12-0.18)
Ductile cast irons FCD400 etc (GGG40 etc)			**0.06** (0.04-0.08)	**0.07** (0.05-0.10)	**0.07** (0.05-0.10)	**0.12** (0.10-0.15)	**0.12** (0.10-0.15)
Titanium alloys Ti-6Al-4V etc	-	**20** (15-25)	**0.05** (0.04-0.07)	**0.05** (0.04-0.07)	**0.05** (0.04-0.07)	**0.05** (0.04-0.07)	**0.05** (0.04-0.07)
Heat-resistant alloys Inconel 718 etc	-	**15** (10-20)	**0.04** (0.03-0.06)	**0.04** (0.03-0.06)	**0.04** (0.03-0.06)	**0.04** (0.03-0.06)	**0.04** (0.03-0.06)
Hardened steel SKD61, SKT4 etc (X40CrMoV5 1, 55NiCrMoV6 etc)	40~ 50 HRC	**20** (15-25)	**0.05** (0.04-0.07)	**0.05** (0.04-0.07)	**0.05** (0.04-0.07)	**0.05** (0.04-0.07)	**0.05** (0.04-0.07)
Hardened steel SKD11, SKH etc (X153CrMoV12, HS18-0-1 etc)	50~ 60 HRC	**15** (10-20)	**0.04** (0.03-0.06)	**0.04** (0.03-0.06)	**0.04** (0.03-0.06)	**0.04** (0.03-0.06)	**0.04** (0.03-0.06)

Relating pages | Technical reference (15-1)

VGC

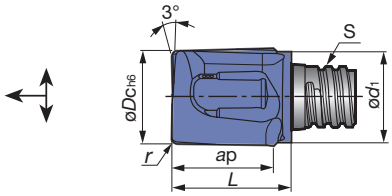
2 No. of flutes | 0° Helix | Diameter ø7.8~16.0mm | 90°

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Counter Milling

For counter boring

corner radii: *r* = 0.2 ~ 2.0 mm



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	r	S	L	Wrench	Torque (N·m)
VGC078L08.0R02-02S05	●	2	10°	7.8	7.6	8	0.2	S05	10.0	KEYV-S05	7
VGC080L08.0R04-02S05	●	2	10°	8.0	7.6	8	0.4	S05	10.0		
VGC080L08.0R10-02S05	●	2	10°	8.0	7.6	8	1.0	S05	10.0		
VGC080L08.0R20-02S05	●	2	10°	8.0	7.6	8	2.0	S05	10.0		
VGC098L09.0R03-02S06	●	2	10°	9.8	9.5	9.5	0.3	S06	12.4	KEYV-S06	10
VGC100L09.0R04-02S06	●	2	10°	10.0	9.5	9.5	0.4	S06	12.4		
VGC100L09.0R10-02S06	●	2	10°	10.0	9.5	9.5	1.0	S06	12.4		
VGC100L09.0R20-02S06	●	2	10°	10.0	9.5	9.5	2.0	S06	12.4		
VGC117L10.0R03-02S08	●	2	10°	11.7	11.5	10	0.3	S08	14.2	KEYV-S08	15
VGC120L10.0R04-02S08	●	2	10°	12.0	11.5	10	0.4	S08	14.2		
VGC120L10.0R10-02S08	●	2	10°	12.0	11.5	10	1.0	S08	14.2		
VGC120L10.0R20-02S08	●	2	10°	12.0	11.5	10	2.0	S08	14.2		
VGC157L15.0R03-02S10	●	2	10°	15.7	15.2	15	0.3	S10	19.0	KEYV-S10	28
VGC160L15.0R04-02S10	●	2	10°	16.0	15.2	15	0.4	S10	19.0		
VGC160L15.0R08-02S10	●	2	10°	16.0	15.2	15	0.8	S10	19.0		

● Can drill with step feed

● : Stocked items / Packing Quantity = 2 pcs.

Standard cutting conditions: Counter boring (VGC)

Work materials	Hardness	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
Low carbon steels S45C, S55C etc (C45, C55 etc)	~ 300 HB	**60** (40-80)	**0.06** (0.04-0.08)
High carbon steels SCM440, SCr415 etc (42CrMo4, 15Cr3 etc)	~ 300 HB	**40** (30-50)	**0.06** (0.04-0.08)
Prehardened steel PX5, NAK80 etc	30 ~ 40 HRC	**25** (20-30)	**0.06** (0.04-0.08)
Stainless steels SUS304, SUS316 etc (X5CrNi18-9, X5CrNiMo17-12-2 etc)	~ 200 HB	**20** (15-25)	**0.06** (0.04-0.08)
Grey cast irons FC250, FC300 etc (GG25, GG30 etc)	150 ~ 250 HB	**80** (60-100)	**0.07** (0.05-0.09)
Ductile cast irons FCD400 etc (GGG40 etc)			**0.06** (0.04-0.08)
Titanium alloys Ti-6Al-4V etc	-	**20** (15-25)	**0.05** (0.04-0.07)
Heat-resistant alloys Inconel 718 etc	-	**15** (10-20)	**0.04** (0.03-0.06)
Hardened steel SKD61, SKT4 etc (X40CrMoV5 1, 55NiCrMoV6 etc)	40 ~ 50 HRC	**20** (15-25)	**0.05** (0.04-0.07)
Hardened steel SKD11, SKH etc (X153CrMoV12, HS18-0-1 etc)	50 ~ 60 HRC	**15** (10-20)	**0.04** (0.03-0.06)

・When drilling, the step feed (woodpeckering feed) operation should be applied with the depth of 0.3 - 0.5 mm per step.
・Apply the same cutting conditions as the VEE type head when conducting shoulder milling or slotting operations.

Relating pages | Technical reference (15-1)

TUNGMEISTER Heads of chamfering type

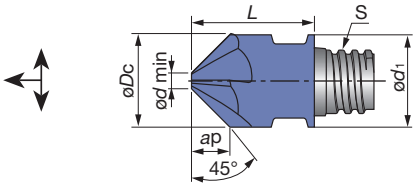
VCA

4/6 No. of flutes | 0° Helix | Diameter ø10~20mm | 45° Chamfering

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Chamfering Chamfering

Chamfering and countersinking (without center edge)



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap	ødmin	S	L	Wrench	Torque (N·m)
VCA100L04.0A45-04S06	●	4	0°	10.0	10.0	4	1.95	S06	13.00	KEYV-S06	10
VCA120L05.0A45-04S08	●	4	0°	12.0	12.0	5	1.95	S08	16.50	KEYV-S08	15
VCA127L05.3A45-04S08	●	4	0°	12.7	12.7	5.3	1.98	S08	16.50		
VCA160L06.5A45-06S10	●	6	0°	16.0	16.0	6.5	3.00	S10	20.30	KEYV-S10	28
VCA200L07.5A45-06S12	●	6	0°	20.0	18.3	7.5	5.00	S12	25.50	KEYV-S12	28

TUNGMEISTER Heads of chamfering type

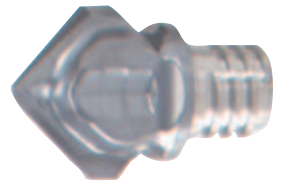
VCW

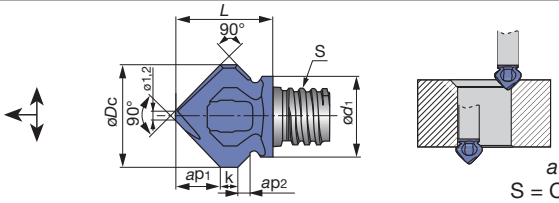
2 No. of flutes | 0° Helix | Diameter ø11.8mm | 45° Chamfering

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Chamfering Chamfering

For double chamfering





ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ap1	ap2	k	S	L	Wrench	Torque (N·m)
VCW118L05.0A45-02S06	●	2	0°	11.8	9.3	5.0	1.2	2.0	S06	11.20	*KEYV-S08	10

● Available for chamfering of reverse side
* Some heads require different size of wrench.

TUNGMEISTER Heads of chamfering type

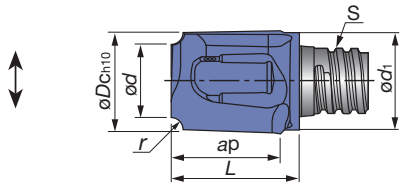
VCR

2 No. of flutes | 0° Helix | Diameter ø8~20mm | R Chamfering

P Steel | M Stainless | K Cast Iron | S Superalloys | H Hard Materials

Chamfering Chamfering

For concave radii milling



ap = Max. depth of cut
S = Connection screw size

Cat. No.	Grade AH725	No. of flutes	Helix angle	Dimensions (mm) øDc	ød1	ød	ap	r	S	L	Wrench	Torque (N·m)
VCR080L07.5R10-02S05	●	2	0°	8.0	7.6	5.8	7.5	1.0	S05	10.5	KEYV-S05	7
VCR100L09.5R16-02S06	●	2	0°	10.0	9.5	6.8	9.5	1.6	S06	12.5	KEYV-S06	10
VCR100L09.5R25-02S06	●	2	0°	10.0	9.5	5.1	9.5	2.5	S06	12.5		
VCR127L12.0R30-02S08	●	2	0°	12.7	12.2	6.5	12	3.0	S08	15.6	KEYV-S08	15
VCR127L12.0R40-02S08	●	2	0°	12.7	12.2	4.7	12	4.0	S08	15.6		
VCR160L15.0R50-02S10	●	2	0°	16.0	15.2	6.2	15	5.0	S10	19.1	KEYV-S10	28
VCR200L07.0R60-02S12	●	2	0°	20.0	18.3	8.0	7.0	6.0	S12	17.4	KEYV-S12	28

● : Stocked items / Packing Quantity = 2 pcs.

Standard cutting conditions: Chamfering and countersinking (VCA, VCW, VCR, VCP)

Work materials	Hardness	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Low carbon steels S45C, S55C etc (C45, C55 etc)	~ 300 HB	**80** (60-100)	**0.09** (0.06-0.12)
High carbon steels SCM440, SCr415 etc (42CrMo4, 15Cr3 etc)	~ 300 HB	**60** (50-80)	**0.09** (0.06-0.12)
Prehardened steel PX5, NAK80 etc	30 ~ 40 HRC	**50** (40-70)	**0.09** (0.06-0.12)
Stainless steels SUS304, SUS316 etc (X5CrNi18-9, X5CrNiMo17-12-2 etc)	~ 200 HB	**40** (30-50)	**0.09** (0.06-0.12)
Grey cast irons FC250, FC300 etc (GG25, GG30 etc)	150 ~ 250 HB	**100** (80-120)	**0.09** (0.06-0.12)
Ductile cast irons FCD400 etc (GGG40 etc)			**0.09** (0.06-0.12)
Aluminium alloys	-	**150** (100-200)	**0.1** (0.08-0.15)
Titanium alloys Ti-6Al-4V etc	-	**40** (30-50)	**0.07** (0.05-0.10)
Heat-resistant alloys Inconel 718 etc	-	**30** (20-40)	**0.06** (0.04-0.08)
Hardened steel SKD61, SKT4 etc (X40CrMoV5 1, 55NiCrMoV6 etc)	40 ~ 50 HRC	**40** (30-50)	**0.07** (0.05-0.10)
Hardened steel SKD11, SKH etc (X153CrMoV12, HS18-0-1 etc)	50 ~ 60 HRC	**30** (20-40)	**0.06** (0.04-0.08)

Tolerance of tool diameter

Basic dimensions (mm)		Permissible dimensional deviations (μm)						
>	≤	e8	e9	h6	h7	h9	h10	z9
6	10	-25 -47	-25 -61	0 -9	0 -15	0 -36	0 -58	+78 +42
10	14	-32 -59	-32 -75	0 -11	0 -18	0 -43	0 -70	+93 +50
14	18	-32 -59	-32 -75	0 -11	0 -18	0 -43	0 -70	+103 +60
18	30	-40 -73	-40 -92	0 -13	0 -21	0 -52	0 -84	-

● JISB0401-2: 1998 (ISO286-2: 1988) extract

Relating pages
Technical reference (15-1)

VST

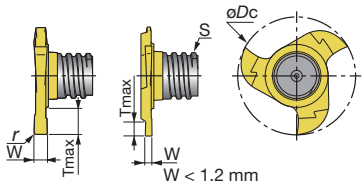
3 No. of flutes

Diameter ø15.7, 17.7mm

P Steel M Stainless K Cast Iron S Superalloys

Slotting Slotting Slotting

For slotting



S = Connection screw size

Cat. No.	Grade GH130	No. of flutes	Helix angle	Dimensions (mm) øDc	W±0.02	r	S	Tmax	Wrench	Torque (N·m)
VST157W1.50R010-3S06	●	3	-	15.7	1.50	0.10	S06	2.8	KEYV-177	10
VST157W1.57R020-3S06	●	3	-	15.7	1.57	0.20	S06	2.8		
VST157W2.00R020-3S06	●	3	-	15.7	2.00	0.20	S06	2.8		
VST157W2.39R020-3S06	●	3	-	15.7	2.39	0.20	S06	2.8		
VST157W2.50R020-3S06	●	3	-	15.7	2.50	0.20	S06	2.8		
VST157W3.00R020-3S06	●	3	-	15.7	3.00	0.20	S06	2.8		
VST157W3.17R020-3S06	●	3	-	15.7	3.17	0.20	S06	2.8		
VST177W1.20R005-3S06	●	3	-	17.7	1.20(1)	0.05	S06	3.8		
VST177W1.40R005-3S06	●	3	-	17.7	1.40(1)	0.05	S06	3.8		
VST177W1.50R010-3S06	●	3	-	17.7	1.50	0.10	S06	3.8		
VST177W1.57R020-3S06	●	3	-	17.7	1.57	0.20	S06	3.8		
VST177W1.70R005-3S06	●	3	-	17.7	1.70(1)	0.05	S06	3.8		
VST177W2.00R020-3S06	●	3	-	17.7	2.00	0.20	S06	3.8		
VST177W2.20R110-3S06	●	3	-	17.7	2.20	1.10	S06	3.8		
VST177W2.39R020-3S06	●	3	-	17.7	2.39	0.20	S06	3.8		
VST177W2.50R020-3S06	●	3	-	17.7	2.50	0.20	S06	3.8		
VST177W3.00R020-3S06	●	3	-	17.7	3.00	0.20	S06	3.8		
VST177W3.17R020-3S06	●	3	-	17.7	3.17	0.20	S06	3.8		

(1) W is based on DIN471 / 472

● : Stocked items / Packing Quantity = 2 pcs.

Relating pages | Cutting Conditions (10-23) | Technical reference (15-1)

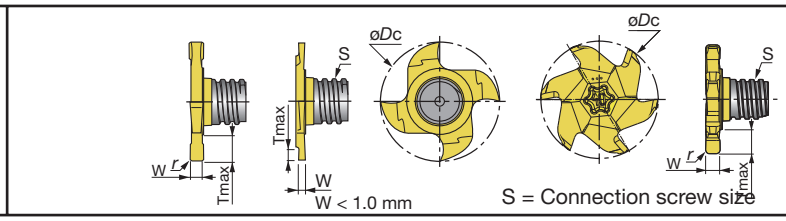
TUNGMEISTER Heads of slotting type
VST

4/6 No. of flutes | Diameter ø21.7, 27.7mm

P Steel | M Stainless | K Cast Iron | S Superalloys

Slotting | Slotting | Slotting

For slotting



Cat. No.	Grade GH130	No. of flutes	Helix angle	Dimensions (mm) øDc	W±0.02	r	S	Tmax	Wrench	Torque (N·m)
VST217W0.76R000-4S08	●	4	-	21.7	0.76(1)	0.00	S08	1.5	KEYV-217	15
VST217W0.86R000-4S08	●	4	-	21.7	0.86 (1)	0.00	S08	1.7		
VST217W0.96R000-4S08	●	4	-	21.7	0.96(1)	0.00	S08	1.9		
VST217W1.00R005-4S08	●	4	-	21.7	1.00	0.05	S08	2.0		
VST217W1.20R005-4S08	●	4	-	21.7	1.20 (1)	0.05	S08	4.5		
VST217W1.40R005-4S08	●	4	-	21.7	1.40(1)	0.05	S08	4.5		
VST217W1.57R000-4S08	●	4	-	21.7	1.57	0.00	S08	4.5		
VST217W1.70R010-4S08	●	4	-	21.7	1.70 (1)	0.10	S08	4.5		
VST217W1.95R020-4S08	●	4	-	21.7	1.95 (1)	0.20	S08	4.5		
VST217W2.00R020-4S08	●	4	-	21.7	2.00	0.20	S08	4.5		
VST217W2.25R020-4S08	●	4	-	21.7	2.25(1)	0.20	S08	4.5		
VST217W2.39R020-4S08	●	4	-	21.7	2.39	0.20	S08	4.5		
VST217W2.50R020-4S08	●	4	-	21.7	2.50	0.20	S08	4.5		
VST217W2.75R020-4S08	●	4	-	21.7	2.75(1)	0.20	S08	4.5		
VST217W3.00R020-4S08	●	4	-	21.7	3.00	0.20	S08	4.5		
VST217W3.17R020-4S08	●	4	-	21.7	3.17	0.20	S08	4.5		
VST217W3.25R020-4S08	●	4	-	21.7	3.25(1)	0.20	S08	4.5		
VST217W4.00R020-4S08	●	4	-	21.7	4.00	0.20	S08	4.5		
VST217W4.25R020-4S08	●	4	-	21.7	4.25(1)	0.20	S08	4.5		
VST217W4.75R020-4S08	●	4	-	21.7	4.75	0.20	S08	4.5		
VST217W5.25R020-4S08	●	4	-	21.7	5.25 (1)	0.20	S08	4.5		
VST277W2.50R020-6S10	●	6	-	27.7	2.50	0.20	S10	6.0	KEYV-T40L	28
VST277W5.25R020-6S10	●	6	-	27.7	5.25	0.20	S10	6.0		
VST277W10.0R020-6S10	●	6	-	27.7	10.00	0.20	S10	6.0		

(1) W is based on DIN471 / 472

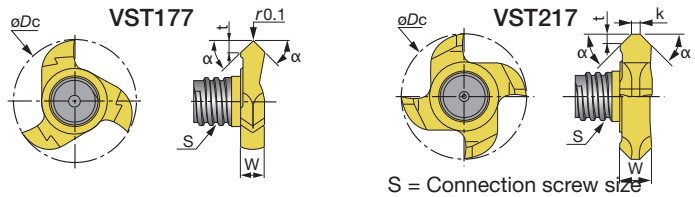
TUNGMEISTER Heads of slotting type
VST-A45

3/4 No. of flutes | Diameter ø17.7, 21.7mm

P Steel | M Stainless | K Cast Iron | S Superalloys

Slotting | Slotting

For chamfering



Cat. No.	Grade GH130	No. of flutes	Helix angle	Dimensions (mm) øDc	W	α	S	t	k	Wrench	Torque (N·m)
VST177L01.40A45-3S06	●	3	-	17.7	3.40	45°	S06	1.4	-	KEYV-177	10
VST217L01.70A45-4S08	●	4	-	21.7	5.50	45°	S08	1.7	1.5	KEYV-217	15

● : Stocked items / Packing Quantity = 2 pcs.

Relating pages | Cutting Conditions (10-23) | Technical reference (15-1)

TUNGMEISTER Heads of slotting type

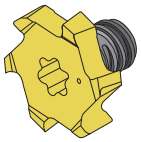
VTB

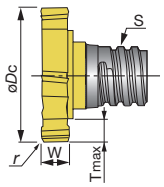
6 No. of flutes | Diameter ø13.5~25.0mm

P Steel | M Stainless | K Cast Iron | S Superalloys

Slotting | Slotting | Slotting

For slotting





S = Connection screw size

Cat. No.	Grade GH130	No. of flutes	Helix angle	Dimensions (mm) øDc $^{0}_{-0.05}$	W$^{\pm0.02}$	Tmax	S	r	Wrench	Torque (N·m)
VTB135W3.00R04-06S05	●	6	-	13.5	3	2.65	S05	0.4	KEYV-T20	7
VTB135W4.00R04-06S05	●	6	-	13.5	4	2.65	S05	0.4		
VTB160W2.00R04-06S06	●	6	-	16.0	2	3.00	S06	0.4		10
VTB160W3.00R04-06S06	●	6	-	16.0	3	3.00	S06	0.4	KEYV-T25	
VTB160W4.00R04-06S06	●	6	-	16.0	4	3.00	S06	0.4		
VTB165W2.00R04-06S06	●	6	-	16.5	2	3.25	S06	0.4	KEYV-T20	
VTB165W3.00R04-06S06	●	6	-	16.5	3	3.25	S06	0.4	KEYV-T25	
VTB165W4.00R04-06S06	●	6	-	16.5	4	3.25	S06	0.4		
VTB195W4.00R04-06S08	●	6	-	19.5	4	3.45	S08	0.4	KEYV-T30L	15
VTB195W5.00R04-06S08	●	6	-	19.5	5	3.45	S08	0.4		
VTB195W6.00R04-06S08	●	6	-	19.5	6	3.45	S08	0.4		
VTB225W5.00R04-06S08	●	6	-	22.5	5	4.95	S08	0.4	KEYV-T40L	
VTB225W6.00R04-06S08	●	6	-	22.5	6	4.95	S08	0.4		
VTB225W8.00R04-06S08	●	6	-	22.5	8	4.95	S08	0.4		
VTB250W6.00R04-06S08	●	6	-	25.0	6	5.90	S08	0.4	KEYV-T50L	
VTB250W8.00R04-06S08	●	6	-	25.0	8	5.90	S08	0.4		
VTB250W5.00R04-06S10	●	6	-	25.0	5	4.30	S10	0.4		28
VTB250W6.00R04-06S10	●	6	-	25.0	6	4.30	S10	0.4		
VTB250W8.00R04-06S10	●	6	-	25.0	8	4.30	S10	0.4		

TUNGMEISTER Heads of slotting type

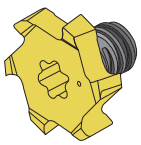
VTB-15

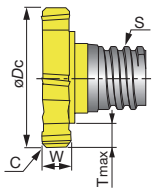
6 No. of flutes | Diameter ø13.5mm

P Steel | M Stainless | K Cast Iron | S Superalloys

Slotting | Slotting | Slotting

For chamfered slotting





S = Connection screw size

Cat. No.	Grade GH130	No. of flutes	Helix angle	Dimensions (mm) øDc $^{0}_{-0.05}$	W$^{\pm0.05}$	Tmax	S	C	Wrench	Torque (N·m)
VTB135W2.00C15-06S05	●	6	-	13.5	2.5	2.65	S05	0.15	KEYV-T20	7

● High density type

● : Stocked items / Packing Quantity = 2 pcs.

Relating pages | Cutting Conditions (10-23) | Technical reference (15-1)

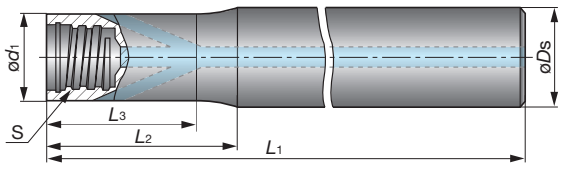
Standard cutting conditions: Slotting (VST, VTB)

Work materials	Hardness (HB)	VST type		VTB type	
		Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
Low carbon steels S45C, S55C etc (C45, C55 etc)	~ 300	**130** (80-180)	**0.10** (0.05-0.15)	**130** (80-180)	**0.13** (0.08-0.18)
High carbon steels SCM440, SCr415 etc (42CrMo4, 15Cr3 etc)	~ 300	**90** (60-120)	**0.08** (0.04-0.12)	**90** (60-120)	**0.10** (0.05-0.15)
Stainless steels SUS304, SUS316 etc (X5CrNi18-9, X5CrNiMo17-12-2 etc)	~ 200	**80** (50-120)	**0.08** (0.04-0.12)	**80** (50-120)	**0.10** (0.05-0.15)
Grey cast irons FC250, FC300 etc (GG25, GG30 etc)	150 ~ 250	**150** (100-200)	**0.10** (0.05-0.15)	**150** (100-200)	**0.13** (0.08-0.18)
Ductile cast irons FCD400 etc (GGG40 etc)			**0.08** (0.04-0.12)		**0.10** (0.05-0.15)
Aluminium alloys (Si < 13%)	-	**300** (200-600)	**0.10** (0.05-0.15)	**300** (200-600)	**0.13** (0.08-0.18)
Aluminium alloys (Si ≥13%)	-	**200** (100-300)	**0.08** (0.03-0.13)	**200** (100-300)	**0.10** (0.05-0.15)
Titanium alloys Ti-6Al-4V etc	-	**50** (40-60)	**0.08** (0.04-0.12)	**50** (40-60)	**0.10** (0.05-0.15)
Heat-resistant alloys Inconel 718 etc	-	**25** (15-35)	**0.06** (0.02-0.10)	**25** (15-35)	**0.06** (0.02-0.10)

TUNGMEISTER Shanks

VSSD-W-A

Straight shank and neck with coolant hole



S = Connection screw size

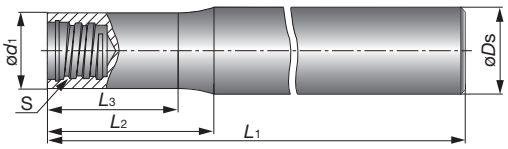
Cat. No.	Stock	Dimensions (mm)						Shank material
		øDs	*ød1*	*L1*	*L2*	*L3*	S	
VSSD10L070S06-W-A	●	10	9.6	70	20	19	**S06**	Tungsten
VSSD10L090S06-W-A	●	10	9.6	90	40	39	**S06**	
VSSD10L110S06-W-A	●	10	9.6	110	60	59	**S06**	
VSSD12L070S08-W-A	●	12	11.5	70	20	19	**S08**	
VSSD12L090S08-W-A	●	12	11.5	90	40	39	**S08**	
VSSD12L110S08-W-A	●	12	11.5	110	60	59	**S08**	
VSSD12L130S08-W-A	●	12	11.5	130	80	79	**S08**	
VSSD16L070S10-W-A	●	16	15.2	70	20	18.5	**S10**	
VSSD16L090S10-W-A	●	16	15.2	90	40	36.5	**S10**	
VSSD16L110S10-W-A	●	16	15.2	110	60	58.5	**S10**	
VSSD16L130S10-W-A	●	16	15.2	130	80	78.5	**S10**	
VSSD20L090S12-W-A	●	20	18.3	90	40	37	**S12**	
VSSD20L130S12-W-A	●	20	18.3	130	80	77	**S12**	

Relating pages
Technical reference (15-1)

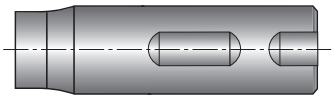
VSSD

Straight shank and neck

Cylindrical type



Weldon type



S = Connection screw size

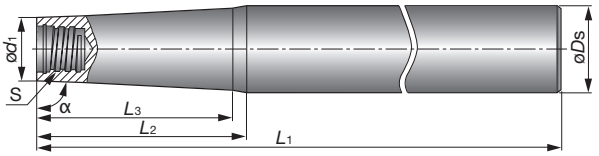
Cat. No.	Stock	Dimensions (mm)						Shank style	Shank material
		øDs	ød1	L1	L2	L3	S		
VSSD08L060S05-S	●	8	7.6	60	15	12.5	S05	Cylindrical	Steel
VSSD10L075S06-S	●	10	9.6	75	20	17.5	S06		
VSSD12L090S08-S	●	12	11.5	90	16	13.5	S08		
VSSD16L100S10-S	●	16	15.2	100	20	18	S10		
VSSD20L120S12-S	●	20	18.3	120	25	20.5	S12		
VSSD08L070S05-C	●	8	7.6	70	20	18.5	S05	Cylindrical	Carbide
VSSD08L090S05-C	●	8	7.6	90	40	38.5	S05		
VSSD08L110S05-C	●	8	7.6	110	60	58.5	S05		
VSSD10L070S06-C	●	10	9.6	70	20	18.5	S06		
VSSD10L090S06-C	●	10	9.6	90	40	38.5	S06		
VSSD10L110S06-C	●	10	9.6	110	60	58.5	S06		
VSSD10L150S06-C	●	10	9.6	150	100	98.5	S06		
VSSD12L070S08-C	●	12	11.5	70	20	18	S08		
VSSD12L090S08-C	●	12	11.5	90	40	38	S08		
VSSD12L110S08-C	●	12	11.5	110	60	58	S08		
VSSD12L130S08-C	●	12	11.5	130	80	78	S08		
VSSD16L090S10-C	●	16	15.2	90	40	38	S10		
VSSD16L110S10-C	●	16	15.2	110	60	58	S10		
VSSD16L130S10-C	●	16	15.2	130	80	78	S10		
VSSD16L150S10-C	●	16	15.2	150	100	98	S10		
VSSD20L090S12-C	●	20	18.3	90	40	37	S12		
VSSD20L130S12-C	●	20	18.3	130	80	77	S12		
VSSD20L200S12-C	●	20	18.3	200	120	117	S12		
VSSD12L055W05-S	●	12	7.6	55	3.8	-	S05	Weldon	Steel
VSSD16L065W06-S	●	16	9.5	65	6	-	S06		
VSSD16L065W08-S	●	16	11.5	65	4	-	S08		
VSSD20L070W10-S	●	20	15.2	70	4	-	S10		
VSSD25L075W12-S	●	25	18.3	75	7.2	-	S12		

● : Stocked items.

Relating pages
Technical reference (15-1)

VTSD

Straight shank and taper neck



S = Connection screw size

Cat. No.	Stock	Dimensions (mm)							Shank material
		α	øDs	ød1	L1	L2	L3	S	
VTSD12L080S05-S	●	85°	12	7.6	80	25	-	S05	Steel
VTSD12L100S05-S	●	89°	12	7.6	100	35	29	S05	
VTSD16L125S06-S	●	85°	16	9.6	125	34	31	S06	
VTSD16L160S06-S	●	89°	16	9.6	160	55	46.5	S06	
VTSD16L140S08-S	●	85°	16	11.5	140	22	19	S08	
VTSD20L170S08-S	●	89°	20	11.5	170	80	69.5	S08	
VTSD20L140S10-S	●	85°	20	15.2	140	27.5	-	S10	
VTSD25L170S10-S	●	85°	25	15.2	170	56	-	S10	
VTSD20L190S10-S	●	89°	20	15.2	190	80	73	S10	
VTSD25L160S12-S	●	85°	25	18.3	160	40	-	S12	
VTSD32L190S12-S	●	85°	32	18.3	190	80	-	S12	
VTSD25L210S12-S	●	89°	25	18.3	210	100	94.5	S12	
VTSD12L110S05-C	●	89°	12	7.6	110	60	56	S05	Carbide
VTSD12L130S05-C	●	89°	12	7.6	130	80	77	S05	
VTSD16L150S05-C	●	89°	16	7.6	150	100	91	S05	
VTSD16L150S06-C	●	89°	16	9.6	150	100	98	S06	
VTSD16L170S06-C	●	89°	16	9.6	170	120	116.5	S06	
VTSD16L130S08-C	●	89°	16	11.5	130	80	76.5	S08	
VTSD16L150S08-C	●	89°	16	11.5	150	100	98	S08	
VTSD20L170S08-C	●	89°	20	11.5	170	120	112	S08	
VTSD20L170S10-C	●	89°	20	15.2	170	120	119	S10	
VTSD20L190S10-C	●	89°	20	15.2	190	140	-	S10	
VTSD20L210S10-C	●	89°	20	15.2	210	160	-	S10	
VTSD25L180S12-C	●	89°	25	18.3	180	120	115	S12	
VTSD25L250S12-C	●	89°	25	18.3	250	140	136.5	S12	

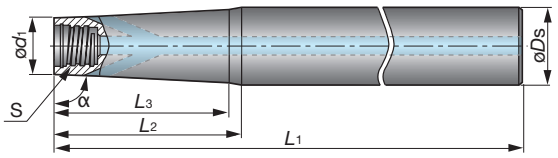
● : Stocked items.

Relating pages
Technical reference (15-1)

TUNGMEISTER Shanks

VTSD-W-A

Straight shank and taper neck with coolant hole



S = Connection screw size

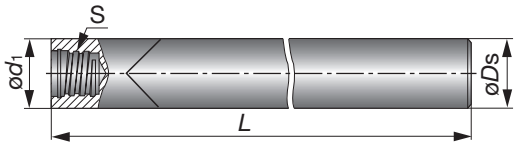
Cat. No.	Stock	Dimensions (mm)							Shank material
		α	øDs	ød1	L1	L2	L3	S	
VTSD12L110S06-W-A	●	89°	12	9.6	110	60	59	S06	Tungsten
VTSD16L170S06-W-A	●	89°	16	9.6	170	120	116	S06	

TUNGMEISTER Shanks

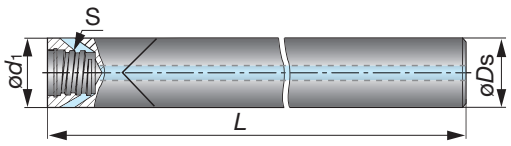
VSC

Straight shank for VST type slotting heads

VSC



VSC-A



S = Connection screw size

Cat. No.	Stock	Dimensions (mm)				Coolant hole	Shank material
		øDs	ød1	L	S		
VSC100L100S06-C	●	10	10	100	S06	without	Carbide
VSC120L100S08-C-A	●	12	12	100	S08	with	

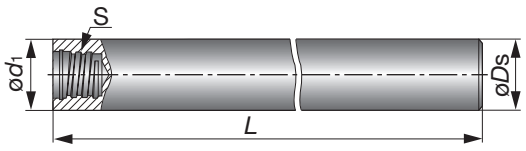
Note:

- For VSC-C type shank, just VST slotting head is recommended. If other heads are used on the VSC-C shank, the depth of cut must be smaller than the max. ap in each head. The VSC-C type shank does not have external clearance, so the shank may interfere with the work piece.

TUNGMEISTER Shanks

VSTD

Straight shank for VTB type slotting heads



S = Connection screw size

Cat. No.	Stock	Dimensions (mm)				Shank material
		øDs	ød1	L	S	
VSTD08L070S05-S	●	8	8	70	S05	Steel
VSTD10L080S06-S	●	10	10	80	S06	
VSTD12L090S08-S	●	12	12	90	S08	
VSTD16L100S10-S	●	16	16	100	S10	

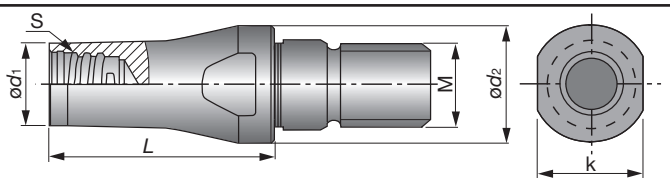
Note:

- For VSTD type shank, only VTB slotting head is recommended. If other heads are used on the VSTD shank, the depth of cut must be smaller than the max. ap in each head. The VSTD type shank does not have external clearance, so the shank may interfere with the work piece.

● : Stocked items.

VAD-M

Adapters of TungFlex



S = Connection screw size

Cat. No.	Stock	Dimensions (mm)						Shank material
		ød1	ød2	L	S	M	k	
VAD130L016S08-S-M8	●	11.7	13	16	S08	M8	11	Steel
VAD130L025S08-S-M8	●	11.7	13	25	S08	M8	11	
VAD180L020S08-S-M10	●	11.7	18	20	S08	M10	13	
VAD180L025S08-S-M10	●	11.7	18	25	S08	M10	11	
VAD210L020S08-S-M12	●	11.7	21	20	S08	M12	12.75	
VAD210L025S08-S-M12	●	11.7	21	25	S08	M12	12.75	

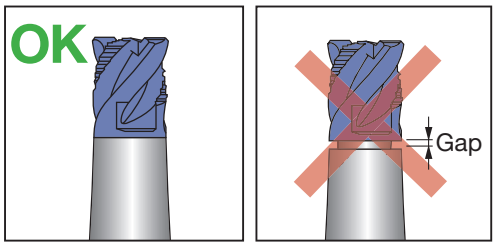
Wrench

Appearance	Cat. No.	Stock	Connection screw size	Torque (N·m)	Applicable head
	KEYV-S05	●	S05	7	Square Ball Radius Drilling Chamfering Counter boring
	KEYV-S06	●	S06	10	
	KEYV-S08	●	S08	15	
	KEYV-S10	●	S10	28	
	KEYV-S12	●	S12	28	
	KEYV-177	●	S06	10	Slotting VST type
	KEYV-217	●	S08	15	
	KEYV-T40L	●	S08 / S10	15	Slotting VST and VTB type
	KEYV-T20	●	S05	7	Slotting VTB type
			S06	10	
	KEYV-T25	●	S06	10	
	KEYV-T30L	●	S08	15	
	KEYV-T50L	●	S08	28	
			S10		

Note: Optional parts

CAUTIONARY POINTS IN USE

- The cutting heads specified by Tungaloy must be used. Avoid using alternate heads that are not Tungaloy products as this will damage the shank and can cause severe accident or injury.
- Before setting the head, clean the connection screw with an air blast or a wiping cloth to remove chips and other foreign matter that may remain.
- Do not apply the lubricant to the connection screw.
- Please use the correct “Wrench” with the correct cutting head. Tighten the head slowly until the face of the head contacts the shank. (Please refer to the picture shown on the right.) Re-tightening or over-tightening is not required. Excessive tightening may cause the cutting head to break.
- Do not apply excessive force or a hammer when tightening or exchanging the cutting heads.

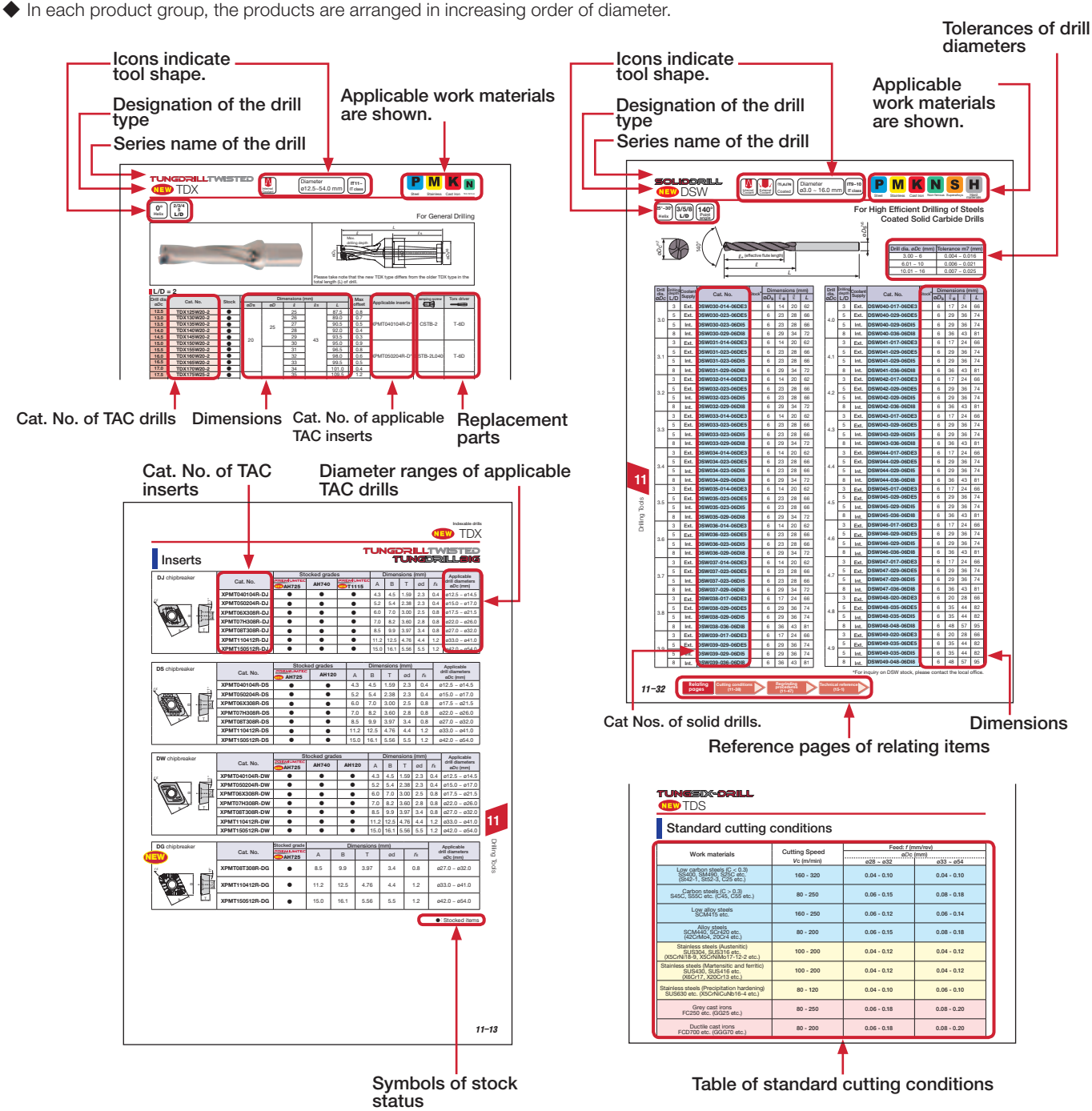


● : Stocked items.

Relating pages
Technical reference (15-1)

Chapter Composition of Drilling Tools

- In this chapter, products are arranged in order as follows: TAC Drills → Solid drills
- In each product group, the products are arranged in increasing order of diameter.



Icons overview

■ Icons showing drill shapes

● Drill diameter range

Diameter ø3.0~20.0mm

● Type of coating

(Ti,Aℓ)N Coated

TiN Coated

● Approximate tolerance obtained in drilling

IT9~10 IT class

● Helix angle

30° Helix

● Point angle

140° Point angle

● L / D

3 L/D

● Coolant supply method

Internal Coolant

External Coolant

■ Ordering information

- When ordering TAC drill, please specify Cat. No. and quantity.
  Example: **TDX160W20-2** 1 piece.
  - Standard packing quantity is 1 piece.
  - Inserts must be ordered separately.
- When ordering TAC inserts for TAC drill, please specify Cat. No., grade, and quantity.
  Example: **XPMT050204R-DJ AH725** 10 pieces.
  - Standard packing quantity is 10 pieces.
- When ordering solid or brazed drill, please specify Cat. No. and quantity.
  Example: **DSW030-014-06DE3** 1 piece.
  - Standard packing quantity is 1 piece.

Guidance

■ List of Drilling Tools for steels 11-2
■ Basic Selection of Drilling Tools 11-4
■ Designation system for TAC Drilling Inserts 11-24
■ Regrinding Procedures 11-47

11 Drilling Tools

Products

■ Indexable drills

● TungdrillTwisted	L/D = 2, 3, 4, 5	ø12.5 ~ ø54.0	11-8
● TungDrillBig	L/D = 2.5	ø55.0 ~ ø80.0	11-12
● TAC inserts for TungDrill			11-13
● TungSix-Drill	L/D = 2, 3	ø28.0 ~ ø54.0	11-16
● TungHold tooling system: TungBore			11-19
● Chamfering ring for indexable drills			11-20
● EZ Sleeve			11-22

■ TAC Drilling inserts 11-26

■ Indexable head drills

● DrillMeister	L/D = 3	ø10.0 ~ ø19.5	11-28
● Chamfering ring for DrillMeister			11-29

■ Solid drills

● DSW SoridDrill	L/D = 3, 5, 8	ø3.0 ~ ø16.0	11-32
● DSX GigaJetDrills	L/D = 3, 5, 8	ø3.0 ~ ø20.0	11-40
● DSM GigaMiniDrills	L/D = 5, 10, 15	ø0.1 ~ ø3.0	11-45

■ Gun drills
● TungGun / For deep hole drilling indexable head gun drills 11-48

List of Drilling Tools

Notes : • Shaded bands in drill diameter ranges show stocked ranges.
• White bands in drill diameter ranges show unstocked ranges.

Operation	Tool name	Type	Appearance	Work materials: Mild steels	Steels	High Hardened steels	Stainless steels	Difficult-to-cut Materials	Cast irons	Ductile cast irons	Aluminium alloys	Non-ferrous metals	Machinable L/D ratio	Drill diameter range (mm)
General drilling	Large diameter TAC drills	NEW TDX		◎	◎	◎	◎	○	◎	◎	◎		2,3, 4,5	ø12.5 – ø54
	Indexable large diameter drill with cartridge	NEW TDX		◎	◎	◎	◎	○					2.5	ø55 – ø80
	Large diameter TAC drills	NEW TDS		◎	◎	◎	◎	○					2,3	ø28 – ø54
	Indexable head drills	NEW TIDC		◎	◎	○	○	○					3	ø10.3 – ø19.5
	Coated or uncoated solid carbide drills for small diameter drilling	NEW DSW		◎	◎	○	○	○					3,5, 8	ø3.0 – ø16
	For Steels Giga Mini Drills	DSM		○	◎	○	◎	○					5, 10	ø0.1 – ø3.0
Deep hole drilling	Indexable head gun drills	NEW GNSTG		◎	◎	○	○	○	◎	◎	○	○	※	ø10.5 – ø16.1

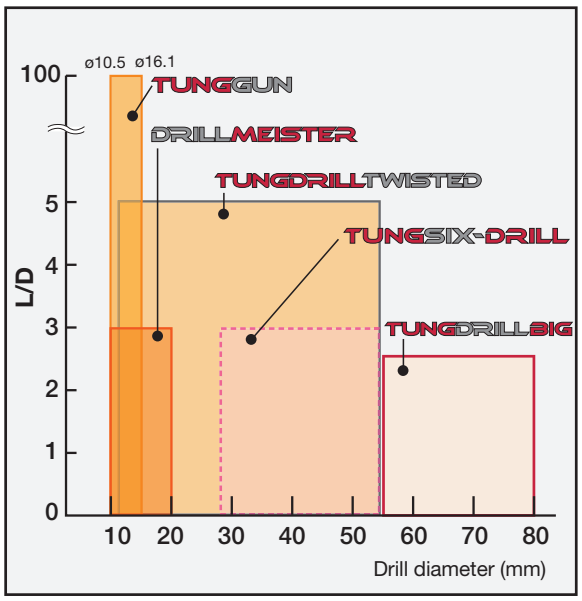
◎: Best suitable ○: Usable

Type	Type of coolant supply	IT class	Attainable surface roughness (*RzJIS*)	Features	Page
TUNGDRILL TWISTED NEW **TDX**	Internal	11 ~	12 ~	• Indexable insert type drills • Four corner insert design for economical drilling Excellent chip evacuation	11-8
TUNGDRILL BIG NEW **TDX**	Internal	11 ~	12 ~	• Indexable large diameter drill with cartridge. Highly rigid body provides stable machining. Cartridge protests the drill body from damage and prolongs the tool life. Drill diameter can be adjusted by using setting plates.	11-12
TUNGSIX-DRILL NEW **TDS**	Internal	11 ~	12 ~	• Indexable drill with 6 cornered insert offers high economical advantage. • New insert grade with improved adhesion and chipping resistance demonstrates stable and long tool life.	11-16
DRILLMEISTER NEW **TIDC**	Internal	9 ~ 10	6.3 ~ 25	• Head indexable drill. High reliable clamping system provides secure head clamp and easy operation. Unique designed cutting edges and rigid body offers stable drilling.	11-28
SOLIDDRILL NEW **DSW**	Internal External	9 ~ 10	6.3 ~ 25	• Highly versatile coated solid carbide drill. • Newly developed grade and cutting edge shape provides excellent chip control and long tool life due to wear and fracture resistance.	11-32
DSM	External	9 ~ 10	–	• Coated solid drills with ø3 mm shank. • Applicable for very small diameter drilling from ø0.1 mm	11-45
TUNGGUN NEW **GNSTG**	Internal	8 ~ 9	6.3 ~ 25	• Head indexable GunDrill • Unique clamping system allows easy operation on the machine and significantly reduces tool changing time.	11-48

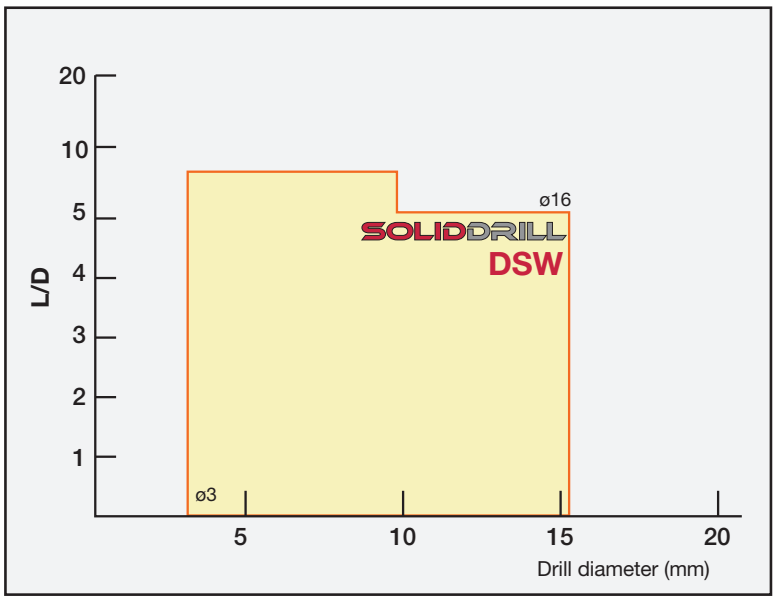
Basic Selection of Drilling Tools

Application ranges of drilling tools

Indexable drill



Solid drill, Brazed carbide drills

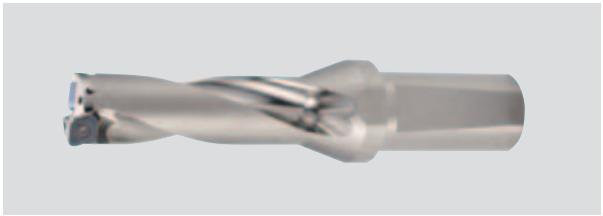


Large diameter drilling

TUNGDRILLTWISTED NEW TDX

11-8

Applicable work materials: P Steel, M Stainless, K Cast Iron, N Non-ferrous



Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Indexable	Internal	○	—	—	—

Hole depth	Drill diameter	Approximate accuracy
< 5 x tool diameter	ø12.5 ~ ø54.0	Hole diameter (IT) 11~ Roughness (RzJIS): 12~

Features

Excellent surface finish and stable chip evacuation with newly developed drill body!

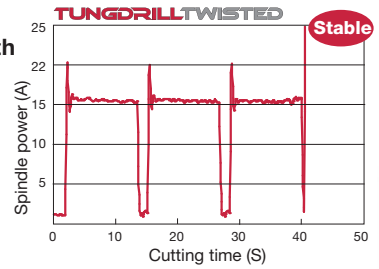
- Highly economic = TDX concept.
- Excellent chip evacuation!
- Applicable to various machining applications.
- Ideally-balanced with a strong and rigid design = TDX concept.
- Improved drilling durability!

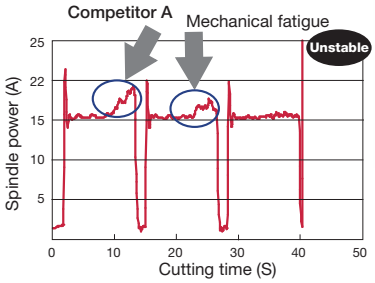
The new AH725 PVD coated grade now offers new chipbreakers! PREMIUMTEC

- Flat and smooth coated surface by adopting "Triple Force Technology".
- Significantly improved resistance to chip welding and insert edge chipping.

● **Stabilization of spindle power**

New TDX type





Workpiece	: SCM440 (JIS)
Drill	: ø22 mm, L/D = 3
Cutting speed	: *Vc* = 180 m/min
Feed	: *f* = 0.13 mm/rev
Drilling depth	: 3D (Blind)
Machine	: Vertical machining center
Cutting fluid	: Water soluble type

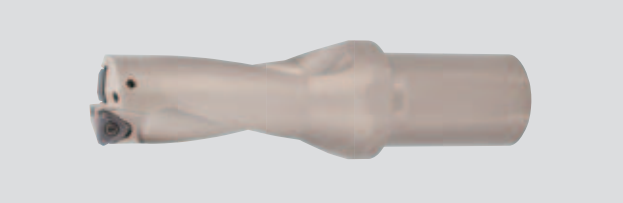
Large diameter drilling

TUNGSIX-DRILL

11-16

NEW TDS

Applicable work materials: P Steel, M Stainless



Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Indexable	External	○	—	Same as drill dia.	—
Hole depth		**Drill diameter**		**Approximate accuracy**	
< 3 x tool diameter		ø28 ~ ø54		Hole diameter (IT) 11~ Roughness (RzJIS): 12~	

Features

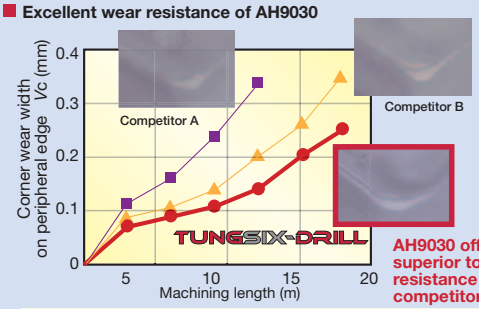
The only drill available with 6 cornered inserts

- 6 cornered insert provides economical advantage.
- Only one type of insert is required for peripheral and central edge.
- Enhanced corner shape on central insert edge allows incredible fracture resistance.
- Newly designed insert pocket prevents incorrect insert clamping

New PVD coated AH9030 grade with PremiumTec

- Special surface technology “PremiumTec” is applied
- Significantly improved adhesion and chipping resistance
- DJ chipbreaker can be applied for improved versatility and reduced cutting forces

■ Excellent wear resistance of AH9030



AH9030 offers superior to wear resistance against competitors.

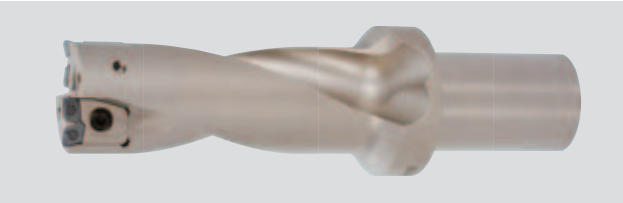
Drill	: TDS280W32-3	Feed	: *f* = 0.1 mm/rev
Insert	: WWMU08X408R-DJ	Hole diameter	: ø28 mm
Grade	: AH9030	Hole depth	: H = 84 mm
Work material	: S55C / C55	Machine	: Horizontal M/C, BT40
Cutting speed	: *Vc* = 140 m/min	Coolant	: Wet (Internal supply)

TUNGDRILLBIG

11-12

NEW TDX

Applicable work materials: P Steel, M Stainless, K Cast Iron, N Non-ferrous



Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Indexable	External	○	—	Same drill dia.	—
Hole depth		**Drill diameter**		**Approximate accuracy**	
< 3 x tool diameter		ø55 ~ ø80		Hole diameter (IT) 11~ Roughness (RzJIS): 12~	

Features

Adjustable large diameter drill with cartridge

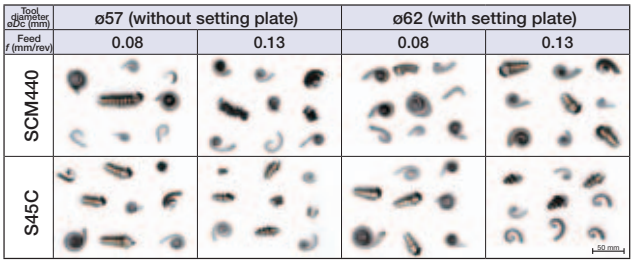
- Drill diameter can be adjusted by changing setting plates.
- The same inserts as the TungdrillTwisted can be used. This simplifies inventory control.
- By exchanging cartridges, the drill body maintains a long tool life even if the insert seat is damaged.

Highly rigid body and optimized insert position

- Provides well balanced cutting forces and stable machining conditions for highly accurate hole making.
- Creates small chips and allows excellent chip evacuation.

Chip control

Chips are well controlled and shortened.



▶ No chip control difference with or without setting plates. This ensures stable machining in each diameter range.

Drill	: TDX57-62F50-2.5	Cutting speed	: *Vc* = 160 m/min
Insert	: XPMT08T308R-DJ	Hole depth	: H = 70 mm
Grade	: AH725	Coolant	: Wet (Intrenal)
Machine	: Vertical M/C, BT50		

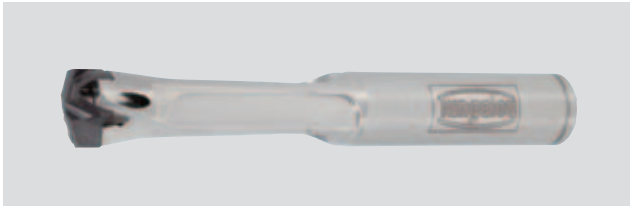
Basic Selection of Drilling Tools

General drilling

DRILLMEISTER 11-28

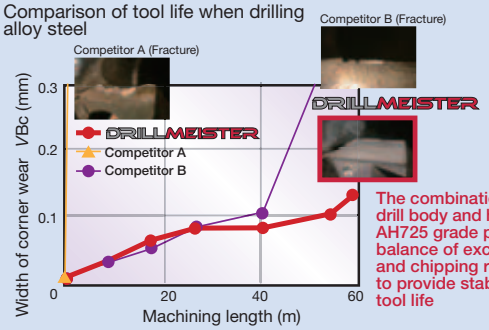
Applicable work materials: P Steel, M Stainless, K Cast Iron, N Non-ferrous, S Superalloys

NEW TIDC + DMP



Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Indexable	Internal	○	-	10, 12, 14, 15, 17, 19	140°
Hole depth		Drill diameter		Approximate accuracy	
< 3 x tool diameter		ø10.3 ~ ø19.5		Hole diameter (IT) 9 ~ 10 Roughness (RzJIS): 6.3 ~ 25	

■ Comparison of tool life when drilling alloy steel



The combination of a rigid drill body and head with the AH725 grade provides a balance of excellent wear and chipping resistance to provide stable and long tool life

Drill diameter : ø*Dc* = ø12 mm
Work material : SCM440
Cutting speed: *Vc* = 100 m/min
Feed : *f* = 0.25 mm/rev
Hole depth: *H* = 36 mm (blind hole)
Coolant : Wet
Machine : Vertical M/C

Features

Clamping system for secure and easy operation

- Drill head can be changed easily even on the machine.
- High clamping force and accurate clamp system provides stable machining.

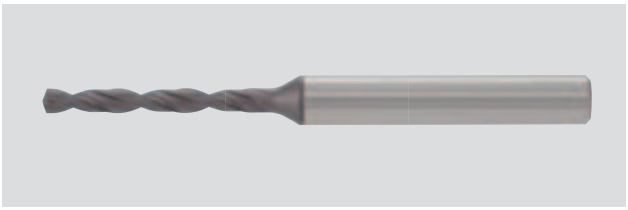
With exclusive chamfering adaptor, DrillMeister allows both drilling and chamfering in one operation.

- 3 kinds of chamfering angle can be selected and the chamfering adaptor is freely adjustable.

SOLIDDRILL 11-32

Applicable work materials: P Steel, M Stainless, K Cast Iron, N Non-ferrous, H Hard Materials

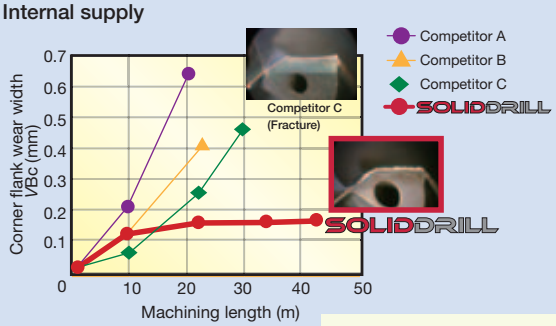
NEW DSW



Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Solid	Internal	○	-	6, 8, 10, 12, 14, 16	140°
Hole depth		Drill diameter		Approximate accuracy	
< 3 x tool diameter		ø3.0 ~ ø16.0		Hole diameter (IT) 9 ~ 10 Roughness (RzJIS): 6.3 ~ 25	

Drilling of carbon steel, S45C / C45 (220HB)

■ Internal supply



Excellent adhesion strength reduces sudden chipping on the corner and decreases flank wear. The adhesion strength of the coating is essential when drilling carbon steel.

Drill : ø*Dc* = ø8 mm
Cutting speed : *Vc* = 80 m/min
Feed : *f* = 0.2 mm/rev
Drilling depth : *H* = 40 mm (Blind)
Coolant : Wet
Machine : Vertical M/C

Features

The newly developed cutting edge with a new PVD grade delivers high wear resistance

- Allows stable and long tool life for a wide range of work materials.
- Improved adhesion strength of coating layer prevents the edge from chipping

The newly developed flute breaks chips into smaller pieces, resulting in excellent chip control

Worldwide standard shank style - Standardized with DIN6535-Form HA

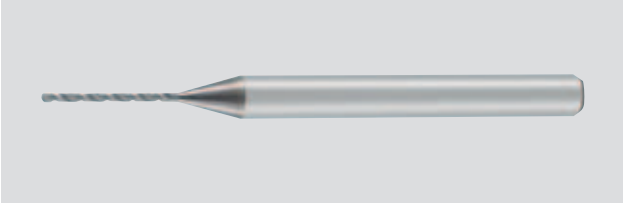
- Only 6 sizes of shank diameter available, - ø6, ø8, ø10, ø12, ø14, ø16 mm.
- This reduces the number of collets required.

DSM

11-45

Giga Mini Drills

Applicable work materials: P Steel, M Stainless, K Cast Iron, N Non-ferrous, H Hard Materials



Structure	Coolant supply method	Coating	Helix angle	Shank	Point angle
Solid	External	○	30°	3 mm	140°

Hole depth	Drill diameter	Approximate accuracy
< 3~15 X tool diameter	ø0.10 ~ ø3.00	Hole diameter (IT) 9~10 —

Features

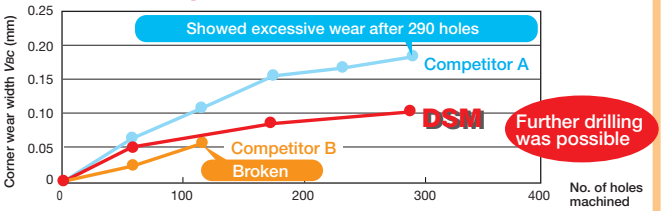
Highly tough tool material and rigid tool geometry

- Allows stable drilling for extra small diameter (ø0.1 to ø3.0 mm) where tool breakage is likely to occur.
- Web thinning in spite of small diameter drills assures accurate hole positioning.

Dedicated coating for small diameter drilling

- Machinable number of holes is 1.5 to 2 times higher than competitor drills.
- Tool life improvements when machining stainless steel and Kovar.

Tool life comparison



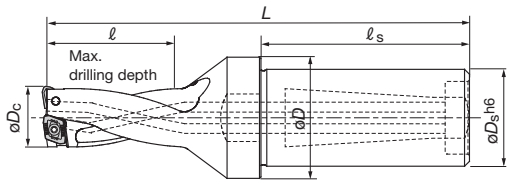
● Cutting conditions

Drill diameter	:	ø3.0 mm	Cutting speed	:	Vc = 52 m/min
Work material	:	Carbon steel (JIS S45C)	Feed	:	*f* = 0.06 mm/rev
Machine	:	Vertical machining center	Step length	:	0.75 mm
Coolant	:	Water soluble type	Drilling depth	:	15 mm (blind hole)

The DSM drill showed less wear and could continue further drilling.

0° Helix
2/3/4 5 L/D

For General Drilling



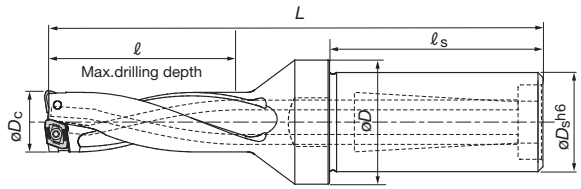
Please take note that the new TDX type differs from the older TDX type in the total length (L) of drill.

L/D = 2

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)					Max offset	Applicable inserts	Clamping screw	Torx driver
			øDs	øD	ℓ	ℓs	L				
12.5	TDX125W20-2	●	20	25	25	43	87.5	0.8	XPMT040104R-D*	CSTB-2	T-6D
13.0	TDX130W20-2	●			26		89.0	0.7			
13.5	TDX135W20-2	●			27		90.5	0.5			
14.0	TDX140W20-2	●			28		92.0	0.4			
14.5	TDX145W20-2	●			29		93.5	0.3			
15.0	TDX150W20-2	●		32	30		95.0	0.9	XPMT050204R-D*	CSTB-2L040	T-6D
15.5	TDX155W20-2	●			31		96.5	0.8			
16.0	TDX160W20-2	●			32		98.0	0.6			
16.5	TDX165W20-2	●			33		99.5	0.5			
17.0	TDX170W20-2	●			34		101.0	0.4			
17.5	TDX175W25-2	●	25	32	35	50	109.5	1.2	XPMT06X308R-D*	CSTB-2.2R	T-7D
18.0	TDX180W25-2	●			36		111.0	1.1			
18.5	TDX185W25-2	●			37		112.5	0.9			
19.0	TDX190W25-2	●			38		114.0	0.8			
19.5	TDX195W25-2	●			39		115.5	0.7			
20.0	TDX200W25-2	●			40		117.0	0.5			
20.5	TDX205W25-2	●			41		118.5	0.4			
21.0	TDX210W25-2	●			42		120.0	0.3			
21.5	TDX215W25-2	●			43		121.5	0.2			
22.0	TDX220W25-2	●		37	44		123.0	1.2	XPMT07H308R-D*	CSTB-2.5	T-8D
22.5	TDX225W25-2	●			45		124.5	1.1			
23.0	TDX230W25-2	●			46		126.0	0.9			
23.5	TDX235W25-2	●			47		127.5	0.8			
24.0	TDX240W25-2	●			48		129.0	0.7			
24.5	TDX245W25-2	●			49		130.5	0.5			
25.0	TDX250W25-2	●			50		132.0	0.4			
25.5	TDX255W25-2	●			51		133.5	0.3			
26.0	TDX260W25-2	●			52		135.0	0.2			
27.0	TDX270W32-2	●	32	40	54	55	143.0	1.5	XPMT08T308R-D*	CSTB-3	T-9D
28.0	TDX280W32-2	●			56		146.0	1.2			
29.0	TDX290W32-2	●			58		149.0	1.0			
30.0	TDX300W32-2	●			60		152.0	0.7			
31.0	TDX310W32-2	●			62		155.0	0.4			
32.0	TDX320W32-2	●			64		158.0	0.2			
33.0	TDX330W40-2	●	40	50	66	65	171.0	2.3	XPMT110412R-D*	CSTB-4	T-15D
34.0	TDX340W40-2	●			68		174.0	2.1			
35.0	TDX350W40-2	●			70		177.0	1.8			
36.0	TDX360W40-2	●			72		180.0	1.5			
37.0	TDX370W40-2	●			74		183.0	1.3			
38.0	TDX380W40-2	●			76		186.0	1.0			
39.0	TDX390W40-2	●			78		189.0	0.7			
40.0	TDX400W40-2	●			80		192.0	0.5			
41.0	TDX410W40-2	●			82		195.0	0.2			
42.0	TDX420W40-2	●		55	84		198.0	3.1	XPMT150512R-D*	CSTB-5	T-20D
43.0	TDX430W40-2	●			86		201.0	2.9			
44.0	TDX440W40-2	●			88		204.0	2.6			
45.0	TDX450W40-2	●			90		207.0	2.3			
46.0	TDX460W40-2	●			92		210.0	2.1			
47.0	TDX470W40-2	●			94		213.0	1.8			
48.0	TDX480W40-2	●			96		216.0	1.5			
49.0	TDX490W40-2	●			98		219.0	1.3			
50.0	TDX500W40-2	●			100		222.0	1.0			
51.0	TDX510W40-2	●			102		225.0	0.7			
52.0	TDX520W40-2	●			104		228.0	0.5			
53.0	TDX530W40-2	●			106		231.0	-			
54.0	TDX540W40-2	●			108		234.0	-			

Note: L/D = Hole depth / Drill diameter

● : Stocked items.



Please take note that new TDX type differs from old TDX type in the total length (L) of drill

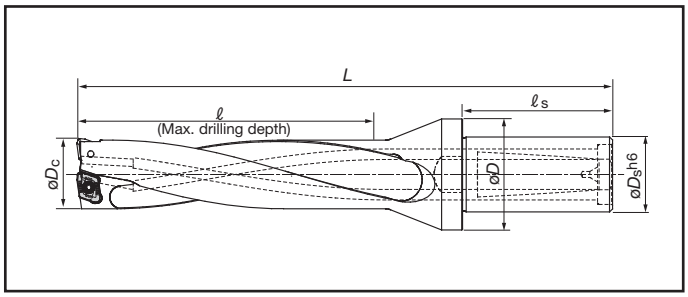
L/D = 3

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)					Max offset	Applicable inserts	Clamping screw	Torx driver
			øDs	øD	ℓ	ℓs	L				
12.5	TDX125W20-3	●	20	25	37.5	43	100	0.8	XPMT040104R-D*	CSTB-2	T-6D
13.0	TDX130W20-3	●			39		102	0.7			
13.5	TDX135W20-3	●			40.5		104	0.5			
14.0	TDX140W20-3	●			42		106	0.4			
14.5	TDX145W20-3	●			43.5		108	0.3			
15.0	TDX150W20-3	●			45		110	0.9	XPMT050204R-D*	CSTB-2L040	T-6D
15.5	TDX155W20-3	●		32	46.5		112	0.8			
16.0	TDX160W20-3	●			48		114	0.6			
16.5	TDX165W20-3	●			49.5		116	0.5			
17.0	TDX170W20-3	●			51		118	0.4			
17.5	TDX175W25-3	●	25		52.5	50	127	1.2	XPMT06X308R-D*	CSTB-2.2R	T-7D
18.0	TDX180W25-3	●			54		129	1.1			
18.5	TDX185W25-3	●			55.5		131	0.9			
19.0	TDX190W25-3	●			57		133	0.8			
19.5	TDX195W25-3	●			58.5		135	0.7			
20.0	TDX200W25-3	●			60		137	0.5			
20.5	TDX205W25-3	●			61.5		139	0.4			
21.0	TDX210W25-3	●			63		141	0.3			
21.5	TDX215W25-3	●			64.5		143	0.2			
22.0	TDX220W25-3	●			66		145	1.2	XPMT07H308R-D*	CSTB-2.5	T-8D
22.5	TDX225W25-3	●		37	67.5		147	1.1			
23.0	TDX230W25-3	●			69		149	0.9			
23.5	TDX235W25-3	●			70.5		151	0.8			
24.0	TDX240W25-3	●			72		153	0.7			
24.5	TDX245W25-3	●			73.5		155	0.5			
25.0	TDX250W25-3	●			75		157	0.4			
25.5	TDX255W25-3	●			76.5		159	0.3			
26.0	TDX260W25-3	●			78		161	0.2			
27.0	TDX270W32-3	●	32	40	81	55	170	1.5	XPMT08T308R-D*	CSTB-3	T-9D
28.0	TDX280W32-3	●			84		174	1.2			
29.0	TDX290W32-3	●			87		178	1.0			
30.0	TDX300W32-3	●			90		182	0.7			
31.0	TDX310W32-3	●			93		186	0.4			
32.0	TDX320W32-3	●			96		190	0.2			
33.0	TDX330W40-3	●	40	50	99	65	204	2.3	XPMT110412R-D*	CSTB-4	T-15D
34.0	TDX340W40-3	●			102		208	2.1			
35.0	TDX350W40-3	●			105		212	1.8			
36.0	TDX360W40-3	●			108		216	1.5			
37.0	TDX370W40-3	●			111		220	1.3			
38.0	TDX380W40-3	●			114		224	1.0			
39.0	TDX390W40-3	●			117		228	0.7			
40.0	TDX400W40-3	●			120		232	0.5			
41.0	TDX410W40-3	●			123		236	0.2			
42.0	TDX420W40-3	●		55	126		240	3.1	XPMT150512R-D*	CSTB-5	T-20D
43.0	TDX430W40-3	●			129		244	2.9			
44.0	TDX440W40-3	●			132		248	2.6			
45.0	TDX450W40-3	●			135		252	2.3			
46.0	TDX460W40-3	●			138		256	2.1			
47.0	TDX470W40-3	●			141		260	1.8			
48.0	TDX480W40-3	●			144		264	1.5			
49.0	TDX490W40-3	●			147		268	1.3			
50.0	TDX500W40-3	●			150		272	1.0			
51.0	TDX510W40-3	●			153		276	0.7			
52.0	TDX520W40-3	●			156		280	0.5			
53.0	TDX530W40-3	●			159		284	-			
54.0	TDX540W40-3	●			162		288	-			

Note: L/D = Hole depth / Drill diameter

● : Stocked items.

Relating pages | Cutting conditions (11-14) | Technical reference (15-1)

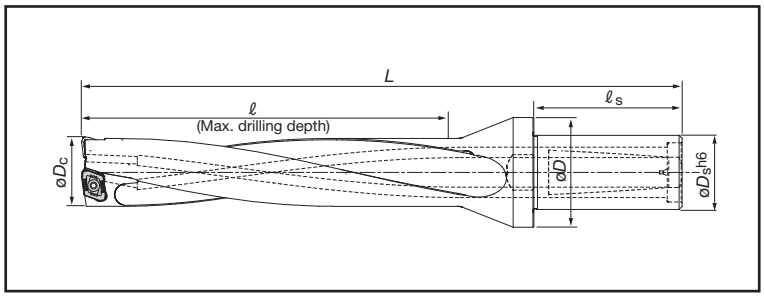


L/D = 4

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm) øDs	øD	ℓ	ℓs	L	Max offset	Applicable inserts	Clamping screw	Torx driver
12.5	TDX125W20-4	●	20	25	50	43	116	0.8	XPMT040104R-D*	CSTB-2	T-6D
13.0	TDX130W20-4	●			52		118	0.7			
13.5	TDX135W20-4	●			54		121	0.5			
14.0	TDX140W20-4	●			56		123	0.4			
14.5	TDX145W20-4	●			58		125	0.3			
15.0	TDX150W20-4	●			60		128	0.9	XPMT050204R-D*	CSTB-2L040	T-6D
15.5	TDX155W20-4	●		32	62		130	0.8			
16.0	TDX160W20-4	●			64		132	0.6			
16.5	TDX165W20-4	●			66		135	0.5			
17.0	TDX170W20-4	●			68		137	0.4			
17.5	TDX175W25-4	●	25		70	50	148	1.2	XPMT06X308R-D*	CSTB-2.2R	T-7D
18.0	TDX180W25-4	●			72		150	1.1			
18.5	TDX185W25-4	●			74		152	0.9			
19.0	TDX190W25-4	●			76		154	0.8			
19.5	TDX195W25-4	●			78		157	0.7			
20.0	TDX200W25-4	●			80		160	0.5			
20.5	TDX205W25-4	●			82		162	0.4			
21.0	TDX210W25-4	●			84		164	0.3			
21.5	TDX215W25-4	●			86		166	0.2			
22.0	TDX220W25-4	●		37	88		169	1.2	XPMT07H308R-D*	CSTB-2.5	T-8D
22.5	TDX225W25-4	●			90		171	1.1			
23.0	TDX230W25-4	●			92		173	0.9			
23.5	TDX235W25-4	●			94		175	0.8			
24.0	TDX240W25-4	●			96		178	0.7			
24.5	TDX245W25-4	●			98		181	0.5			
25.0	TDX250W25-4	●			100		183	0.4			
25.5	TDX255W25-4	●			102		185	0.3			
26.0	TDX260W25-4	●			104		187	0.2			
27.0	TDX270W32-4	●	32	40	108	55	198	1.5	XPMT08T308R-D*	CSTB-3	T-9D
28.0	TDX280W32-4	●			112		203	1.2			
29.0	TDX290W32-4	●			116		208	1.0			
30.0	TDX300W32-4	●			120		213	0.7			
31.0	TDX310W32-4	●			124		217	0.4			
32.0	TDX320W32-4	●			128		222	0.2			
33.0	TDX330W40-4	●	40	50	132	65	238	2.3	XPMT110412R-D*	CSTB-4	T-15D
34.0	TDX340W40-4	●			136		243	2.1			
35.0	TDX350W40-4	●			140		248	1.8			
36.0	TDX360W40-4	●			144		252	1.5			
37.0	TDX370W40-4	●			148		258	1.3			
38.0	TDX380W40-4	●			152		262	1.0			
39.0	TDX390W40-4	●			156		267	0.7			
40.0	TDX400W40-4	●			160		272	0.5			
41.0	TDX410W40-4	●			164		277	0.2			
42.0	TDX420W40-4	●		55	168		282	3.1	XPMT150512R-D*	CSTB-5	T-20D
43.0	TDX430W40-4	●			172		287	2.9			
44.0	TDX440W40-4	●			176		292	2.6			
45.0	TDX450W40-4	●			180		296	2.3			
46.0	TDX460W40-4	●			184		302	2.1			
47.0	TDX470W40-4	●			188		306	1.8			
48.0	TDX480W40-4	●			192		311	1.5			
49.0	TDX490W40-4	●			196		316	1.3			
50.0	TDX500W40-4	●			200		320	1.0			
51.0	TDX510W40-4	●			204		325	0.7			
52.0	TDX520W40-4	●			208		330	0.5			
53.0	TDX530W40-4	●			212		335	-			
54.0	TDX540W40-4	●			216		339	-			

Note: L/D = Hole depth / Drill diameter

● : Stocked items.



L/D = 5

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm) øDs	øD	ℓ	ℓs	L	Max offset	Applicable inserts	Clamping screw	Torx driver
12.5	TDX125W20-5	●	20	25	62.5	43	128	0.8	XPMT040104R-D*	CSTB-2	T-6D
13.0	TDX130W20-5	●			65.0		131	0.7			
13.5	TDX135W20-5	●			67.5		134	0.5			
14.0	TDX140W20-5	●			70.0		137	0.4			
14.5	TDX145W20-5	●			72.5		140	0.3			
15.0	TDX150W20-5	●			75.0		143	0.9	XPMT050204R-D*	CSTB-2L040	T-6D
15.5	TDX155W20-5	●		32	77.5		146	0.8			
16.0	TDX160W20-5	●			80.0		148	0.6			
16.5	TDX165W20-5	●			82.5		152	0.5			
17.0	TDX170W20-5	●			85.0		154	0.4			
17.5	TDX175W25-5	●	25		87.5	50	165	1.2	XPMT06X308R-D*	CSTB-2.2R	T-7D
18.0	TDX180W25-5	●			90.0		168	1.1			
18.5	TDX185W25-5	●			92.5		171	0.9			
19.0	TDX190W25-5	●			95.0		173	0.8			
19.5	TDX195W25-5	●			97.5		176	0.7			
20.0	TDX200W25-5	●			100.0		180	0.5			
20.5	TDX205W25-5	●			102.5		182	0.4			
21.0	TDX210W25-5	●			105.0		185	0.3			
21.5	TDX215W25-5	●			107.5		188	0.2			
22.0	TDX220W25-5	●			110.0		191	1.2	XPMT07H308R-D*	CSTB-2.5	T-8D
22.5	TDX225W25-5	●		37	112.5		193	1.1			
23.0	TDX230W25-5	●			115.0		196	0.9			
23.5	TDX235W25-5	●			117.5		199	0.8			
24.0	TDX240W25-5	●			120.0		202	0.7			
24.5	TDX245W25-5	●			122.5		205	0.5			
25.0	TDX250W25-5	●			125.0		208	0.4			
25.5	TDX255W25-5	●			127.5		211	0.3			
26.0	TDX260W25-5	●			130		213	0.2			
27.0	TDX270W32-5	●	32	40	135	55	225	1.5	XPMT08T308R-D*	CSTB-3	T-9D
28.0	TDX280W32-5	●			140		231	1.2			
29.0	TDX290W32-5	●			145		237	1.0			
30.0	TDX300W32-5	●			150		243	0.7			
31.0	TDX310W32-5	●			155		248	0.4			
32.0	TDX320W32-5	●			160		254	0.2			
33.0	TDX330W40-5	●	40	50	165	65	271	2.3	XPMT110412R-D*	CSTB-4	T-15D
34.0	TDX340W40-5	●			170		277	2.1			
35.0	TDX350W40-5	●			175		283	1.8			
36.0	TDX360W40-5	●			180		288	1.5			
37.0	TDX370W40-5	●			185		295	1.3			
38.0	TDX380W40-5	●			190		300	1.0			
39.0	TDX390W40-5	●			195		306	0.7			
40.0	TDX400W40-5	●			200		312	0.5			
41.0	TDX410W40-5	●			205		318	0.2			
42.0	TDX420W40-5	●		55	210		324	3.1	XPMT150512R-D*	CSTB-5	T-20D
43.0	TDX430W40-5	●			215		330	2.9			
44.0	TDX440W40-5	●			220		336	2.6			
45.0	TDX450W40-5	●			225		341	2.3			
46.0	TDX460W40-5	●			230		348	2.1			
47.0	TDX470W40-5	●			235		353	1.8			
48.0	TDX480W40-5	●			240		359	1.5			
49.0	TDX490W40-5	●			245		365	1.3			
50.0	TDX500W40-5	●			250		370	1.0			
51.0	TDX510W40-5	●			255		376	0.7			
52.0	TDX520W40-5	●			260		382	0.5			
53.0	TDX530W40-5	●			265		388	-			
54.0	TDX540W40-5	●			270		393	-			

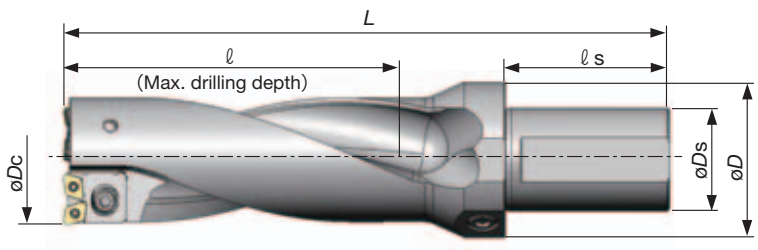
Note: L/D = Hole depth / Drill diameter

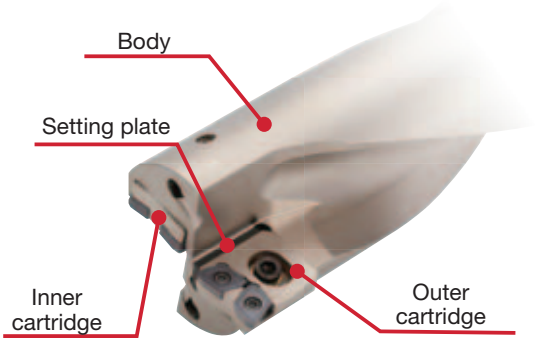
● : Stocked items.

Relating pages
Cutting conditions (11-14)
Technical reference (15-1)

0° Helix

2.5 L/D





Cat. No.	Stock	Dimensions (mm)						Weight (kg)	Outer cartridge	Inner cartridge	Setting plate		Applicable inserts
		øDc	øDs	øD	ℓ	ℓ s	L				Cat. No.	(mm)	
TDX55-56F50-2.5	●	55	50	75	140	80	260	3.2	TDX08CA-P0	TDX08CA-C0	-	-	XPMT08T308R-**
		56									AP0801	0.5	
TDX57-62F50-2.5	●	57	50	75	155	80	280	3.6	TDX08CA-P1	TDX08CA-C1	-	-	XPMT08T308R-**
		58									AP0801	0.5	
		59									AP0802	1.0	
		60									AP0803	1.5	
		61									AP0804	2.0	
		62									AP0805	2.5	
TDX63-66F50-2.5	●	63	50	75	165	80	295	4.2	TDX08CA-P2	TDX08CA-C2	-	-	XPMT08T308R-**
		64									AP0801	0.5	
		65									AP0802	1.0	
		66									AP0803	1.5	
TDX67-73F50-2.5	●	67	50	75	183	80	320	5.0	TDX11CA-P1	TDX11CA-C1	-	-	XPMT110412R-**
		68									AP1101	0.5	
		69									AP1102	1.0	
		70									AP1103	1.5	
		71									AP1104	2.0	
		72									AP1105	2.5	
		73									AP1106	3.0	
TDX74-80F50-2.5	●	74	50	75	200	80	330	5.7	TDX11CA-P2	TDX11CA-C2	-	-	XPMT110412R-**
		75									AP1101	0.5	
		76									AP1102	1.0	
		77									AP1103	1.5	
		78									AP1104	2.0	
		79									AP1105	2.5	
		80									AP1106	3.0	

●: Stocked items

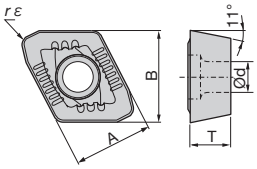
Replacement Parts

Cat. No.	Screws				Washer	Wrenches			
	For cartridge (Inner, outer)	For setting plate	For insert	For sideport		For cartridge (Inner, outer)	For setting plate	For insert	For sideport
TDX55-56F50-2.5	CM5x0.8x12	CSTB-3	CSTB-3	PT1/4GN	5.3x10x1	P-4	T-9D	T-9D	P-6
TDX57-62F50-2.5									
TDX63-66F50-2.5	CM6x15				6.4x12.5x1.6	P-5		T-15D	
TDX67-73F50-2.5	CM6x16		CSTB-4						
TDX74-80F50-2.5	CM6x16								

Inserts

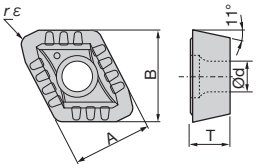
TUNGDRILLTWISTED
TUNGDRILLBIG

DJ chipbreaker



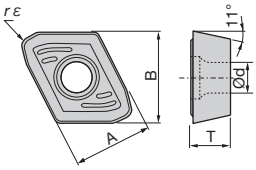
Cat. No.	Stocked grades			Dimensions (mm)					Applicable drill diameters øDc (mm)
	PREMIUMTEC NEW AH725	AH740	PREMIUMTEC NEW T1115	A	B	T	ød	rε	
XPMT040104R-DJ	●	●	●	4.3	4.5	1.59	2.3	0.4	ø12.5 ~ ø14.5
XPMT050204R-DJ	●	●	●	5.2	5.4	2.38	2.3	0.4	ø15.0 ~ ø17.0
XPMT06X308R-DJ	●	●	●	6.0	7.0	3.00	2.5	0.8	ø17.5 ~ ø21.5
XPMT07H308R-DJ	●	●	●	7.0	8.2	3.60	2.8	0.8	ø22.0 ~ ø26.0
XPMT08T308R-DJ	●	●	●	8.5	9.9	3.97	3.4	0.8	ø27.0 ~ ø32.0
XPMT110412R-DJ	●	●	●	11.2	12.5	4.76	4.4	1.2	ø33.0 ~ ø41.0
XPMT150512R-DJ	●	●	●	15.0	16.1	5.56	5.5	1.2	ø42.0 ~ ø54.0

DS chipbreaker



Cat. No.	Stocked grades		Dimensions (mm)					Applicable drill diameters øDc (mm)
	PREMIUMTEC NEW AH725	AH120	A	B	T	ød	rε	
XPMT040104R-DS	●	●	4.3	4.5	1.59	2.3	0.4	ø12.5 ~ ø14.5
XPMT050204R-DS	●	●	5.2	5.4	2.38	2.3	0.4	ø15.0 ~ ø17.0
XPMT06X308R-DS	●	●	6.0	7.0	3.00	2.5	0.8	ø17.5 ~ ø21.5
XPMT07H308R-DS	●	●	7.0	8.2	3.60	2.8	0.8	ø22.0 ~ ø26.0
XPMT08T308R-DS	●	●	8.5	9.9	3.97	3.4	0.8	ø27.0 ~ ø32.0
XPMT110412R-DS	●	●	11.2	12.5	4.76	4.4	1.2	ø33.0 ~ ø41.0
XPMT150512R-DS	●	●	15.0	16.1	5.56	5.5	1.2	ø42.0 ~ ø54.0

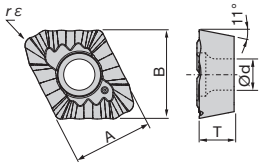
DW chipbreaker



Cat. No.	Stocked grades			Dimensions (mm)					Applicable drill diameters øDc (mm)
	PREMIUMTEC NEW AH725	AH740	AH120	A	B	T	ød	rε	
XPMT040104R-DW	●	●	●	4.3	4.5	1.59	2.3	0.4	ø12.5 ~ ø14.5
XPMT050204R-DW	●	●	●	5.2	5.4	2.38	2.3	0.4	ø15.0 ~ ø17.0
XPMT06X308R-DW	●	●	●	6.0	7.0	3.00	2.5	0.8	ø17.5 ~ ø21.5
XPMT07H308R-DW	●	●	●	7.0	8.2	3.60	2.8	0.8	ø22.0 ~ ø26.0
XPMT08T308R-DW	●	●	●	8.5	9.9	3.97	3.4	0.8	ø27.0 ~ ø32.0
XPMT110412R-DW	●	●	●	11.2	12.5	4.76	4.4	1.2	ø33.0 ~ ø41.0
XPMT150512R-DW	●	●	●	15.0	16.1	5.56	5.5	1.2	ø42.0 ~ ø54.0

NEW

DG chipbreaker



Cat. No.	Stocked grade	Dimensions (mm)					Applicable drill diameters øDc (mm)
	PREMIUMTEC NEW AH725	A	B	T	ød	rε	
XPMT08T308R-DG	●	8.5	9.9	3.97	3.4	0.8	ø27.0 ~ ø32.0
XPMT110412R-DG	●	11.2	12.5	4.76	4.4	1.2	ø33.0 ~ ø41.0
XPMT150512R-DG	●	15.0	16.1	5.56	5.5	1.2	ø42.0 ~ ø54.0

●: Stocked items

Recommended inserts

Drill dia. øDc: ø12.5 ~ ø54.0

Work materials	First choice	High feed	High speed	Troubleshooting			
				Breakage	Wear	Surface finish	Chip control
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (st42-1, St52-3, C25 etc.)	**DS, AH725**			**DW, AH725**		**DW, AH120**	**DG, AH725**
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	**DJ, AH725**	**DW, AH725**	**DS, AH120**	**DW, AH725**	**DJ, T1115**	**DW, AH725**	
Low alloy steels SCM415 etc.	**DS, AH725**			**DW, AH725**		**DW, AH725**	
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	**DJ, AH725**	**DW, AH725**	**DS, AH120**	**DW, AH725**	**DJ, T1115**	**DW, AH725**	
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	**DS, AH725**			**DS, AH120**		**DW, AH120**	**DG, AH725**
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	**DS, AH725**			**DS, AH120**		**DW, AH120**	
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	**DS, AH725**			**DS, AH120**		**DW, AH120**	
Grey cast irons FC250 etc. (GG25 etc.)	**DJ, T1115**	**DJ, AH725**		**DJ, AH725**		**DW, AH740**	
Ductile cast irons FCD700 etc. (GGG70 etc.)	**DJ, T1115**	**DJ, AH725**		**DJ, AH725**		**DW, AH740**	
Aluminium alloys A2017, ADC12 etc.	**DW, AH725**						

Standard cutting conditions

Work materials	Cutting Speed *Vc* (m/min)	Series L/D	Feed: *f* (mm/rev)				
			ø12.5 ~ ø14.5	ø15.0 ~ ø17.0	ø17.5 ~ ø26.0	ø27.0 ~ ø32.0	ø33.0 ~ ø54.0
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (st42-1, St52-3, C25 etc.)	**240** (160 - 320)	2D, 3D	**0.04** (0.02-0.06)	**0.04** (0.02-0.06)	**0.07** (0.04-0.10)	**0.07** (0.04-0.10)	**0.07** (0.04-0.10)
		4D, 5D	**0.04** (0.02-0.06)	**0.04** (0.02-0.06)	**0.07** (0.04-0.10)	**0.07** (0.04-0.10)	**0.07** (0.04-0.10)
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	**140** (80 - 250)	2D, 3D	**0.07** (0.04-0.10)	**0.08** (0.04-0.12)	**0.10** (0.06-0.13)	**0.11** (0.06-0.15)	**0.13** (0.08-0.18)
		4D, 5D	**0.06** (0.04-0.08)	**0.06** (0.04-0.08)	**0.08** (0.06-0.10)	**0.09** (0.06-0.12)	**0.11** (0.08-0.14)
Low alloy steels SCM415 etc.	**210** (160 - 250)	2D, 3D	**0.06** (0.04-0.08)	**0.06** (0.04-0.08)	**0.09** (0.06-0.12)	**0.09** (0.06-0.12)	**0.10** (0.06-0.14)
		4D, 5D	**0.06** (0.04-0.08)	**0.06** (0.04-0.08)	**0.09** (0.06-0.12)	**0.09** (0.06-0.12)	**0.10** (0.06-0.14)
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	**140** (80 - 200)	2D, 3D	**0.07** (0.04-0.10)	**0.08** (0.04-0.12)	**0.10** (0.06-0.13)	**0.11** (0.06-0.15)	**0.13** (0.08-0.18)
		4D, 5D	**0.06** (0.04-0.08)	**0.06** (0.04-0.08)	**0.08** (0.06-0.10)	**0.09** (0.06-0.12)	**0.11** (0.08-0.14)
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	**150** (100 - 200)	2D, 3D	**0.05** (0.02-0.08)	**0.05** (0.02-0.08)	**0.07** (0.04-0.10)	**0.08** (0.04-0.12)	**0.08** (0.04-0.12)
		4D, 5D	**0.05** (0.02-0.08)	**0.05** (0.02-0.08)	**0.07** (0.04-0.10)	**0.08** (0.04-0.12)	**0.08** (0.04-0.12)
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	**160** (100 - 220)	2D, 3D	**0.05** (0.02-0.08)	**0.05** (0.02-0.08)	**0.07** (0.04-0.10)	**0.08** (0.04-0.12)	**0.08** (0.04-0.12)
		4D, 5D	**0.05** (0.02-0.08)	**0.05** (0.02-0.08)	**0.07** (0.04-0.10)	**0.08** (0.04-0.12)	**0.08** (0.04-0.12)
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	**100** (80 - 120)	2D, 3D	**0.06** (0.04-0.08)	**0.06** (0.04-0.08)	**0.06** (0.04-0.08)	**0.07** (0.04-0.10)	**0.08** (0.06-0.10)
		4D, 5D	**0.06** (0.04-0.08)	**0.06** (0.04-0.08)	**0.06** (0.04-0.08)	**0.07** (0.04-0.10)	**0.08** (0.06-0.10)
Grey cast irons FC250 etc. (GG25 etc.)	**170** (80 - 250)	2D, 3D	**0.09** (0.06-0.12)	**0.09** (0.06-0.12)	**0.11** (0.06-0.15)	**0.12** (0.06-0.18)	**0.14** (0.08-0.20)
		4D, 5D	**0.08** (0.06-0.10)	**0.08** (0.06-0.10)	**0.09** (0.06-0.12)	**0.10** (0.06-0.14)	**0.12** (0.08-0.16)
Ductile cast irons FCD700 etc. (GGG70 etc.)	**140** (80 - 200)	2D, 3D	**0.08** (0.04-0.12)	**0.08** (0.04-0.12)	**0.11** (0.06-0.15)	**0.12** (0.06-0.18)	**0.14** (0.08-0.20)
		4D, 5D	**0.07** (0.04-0.10)	**0.07** (0.04-0.10)	**0.09** (0.06-0.12)	**0.10** (0.06-0.14)	**0.12** (0.08-0.16)
Aluminium alloys A2017, ADC12 etc.	**300** (200 - 400)	2D, 3D	**0.11** (0.10-0.12)	**0.12** (0.10-0.15)	**0.18** (0.15-0.20)	**0.18** (0.15-0.20)	**0.20** (0.15-0.25)
		4D, 5D	**0.10** (0.08-0.12)	**0.10** (0.08-0.12)	**0.14** (0.12-0.16)	**0.14** (0.12-0.16)	**0.16** (0.12-0.20)

NEW Standard cutting conditions for DG type chipbreaker

Work materials	Cutting Speed *Vc* (m/min)	Series L/D	Feed: *f* (mm/rev)	
			ø27.0 ~ ø32.0	ø33.0 ~ ø54.0
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (st42-1, St52-3, C25 etc.)	**100** (60 - 180)	2D, 3D 4D, 5D	**0.07** (0.04-0.10)	

- When using the smaller side of the diameter range, the feed rate should be set lower.
- For work materials of 40 HRC, the feed rate should be set below 50%.
- For difficult-to-cut materials (heat-resistant alloys, etc.), the cutting speed should be set 25% below that of carbon steels.
- For high-feed machining, apply a feed rate that is approximately 1.5 times the standard feed conditions.
- High speed machining means cutting speeds over 150 m/min.
- When using DW insert for troubleshooting, use it within the range of standard cutting conditions.
- DG type chipbreaker is suitable for heavy machines that have low-rpm spindles. If chatter occurs, a lower feed rate is recommended.

Recommended inserts

Drill dia. ø*Dc*: ø55 ~ ø80

Work materials	First choice	High feed	High speed	Troubleshooting		
				Breakage	Wear	Surface finish
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	**DS, AH725**		**DJ, AH725**	**DS, AH120**		**DW, AH725**
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	**DJ, AH725**	**DW, AH725**	**DJ, AH725**	**DW, AH740**	**DJ, T1115**	**DW, AH725**
Low alloy steels SCM415 etc. (15CrMo5 etc.)	**DS, AH725**		**DJ, AH725**	**DS, AH120**		**DW, AH725**
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	**DJ, AH725**	**DW, AH725**	**DJ, AH725**	**DW, AH740**	**DJ, T1115**	**DW, AH725**
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	**DS, AH725**		**DS, AH725**	**DS, AH120**		**DW, AH725**
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	**DS, AH725**		**DS, AH725**	**DS, AH120**		**DW, AH725**
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	**DS, AH725**		**DS, AH725**	**DS, AH120**		**DW, AH725**
Grey cast irons FC250 etc. (GG25 etc.)	**DJ, AH725**	**DW, AH725**	**DJ, T1115**	**DW, AH740**	**DJ, T1115**	**DW, AH725**
Ductile cast irons FCD700 etc. (GGG70 etc.)	**DJ, AH725**	**DW, AH725**	**DJ, T1115**	**DW, AH740**	**DJ, T1115**	**DW, AH725**
Aluminium alloys A2017, ADC12 etc.	**DW, AH725**	**DW, AH725**	**DJ, AH725**	**DW, AH740**		

Standard cutting conditions

Work materials	Cutting speed *Vc* (m/min)	Feed: *f* (mm/rev)		
		ø55 ~ ø62	ø63 ~ ø73	ø74 ~ ø80
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	**240** (160-320)	**0.07** (0.04-0.10)	**0.07** (0.04-0.10)	**0.07** (0.04-0.10)
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	**140** (80-250)	**0.13** (0.08-0.18)	**0.13** (0.08-0.18)	**0.15** (0.10-0.20)
Low alloy steels SCM415 etc. (15CrMo5 etc.)	**210** (160-250)	**0.10** (0.04-0.16)	**0.10** (0.04-0.16)	**0.10** (0.04-0.16)
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	**140** (80-200)	**0.13** (0.08-0.18)	**0.13** (0.08-0.18)	**0.14** (0.08-0.20)
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	**150** (100-200)	**0.08** (0.04-0.12)	**0.08** (0.04-0.12)	**0.10** (0.06-0.14)
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	**160** (100-200)	**0.08** (0.04-0.12)	**0.08** (0.04-0.12)	**0.10** (0.06-0.14)
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	**100** (80-120)	**0.08** (0.04-0.10)	**0.08** (0.04-0.10)	**0.09** (0.06-0.12)
Grey cast irons FC250 etc. (GG25 etc.)	**170** (80-250)	**0.14** (0.08-0.20)	**0.14** (0.08-0.20)	**0.16** (0.10-0.22)
Ductile cast irons FCD700 etc. (GGG70 etc.)	**140** (80-200)	**0.14** (0.08-0.20)	**0.14** (0.08-0.20)	**0.16** (0.10-0.22)
Aluminium alloys A2017, ADC12 etc.	**300** (200-400)	**0.20** (0.15-0.25)	**0.20** (0.15-0.25)	**0.23** (0.18-0.28)

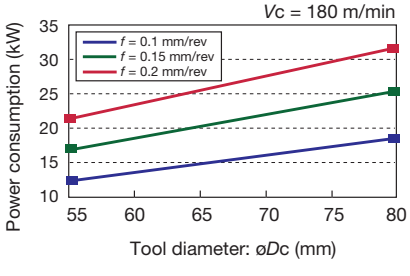
NEW Standard cutting conditions for DG chipbreaker

Work materials	Cutting speed *Vc* (m/min)	Feed: *f* (mm/rev)
		ø55 ~ ø80
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	**100** (60 - 180)	**0.07** (0.04-0.10)

Caution

Machine

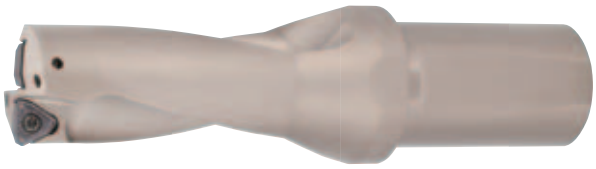
- Use drills on a fully covered machine to maintain safety.
- Use drills on a high powered machine such as a BT50.
- Figure on right shows reference of required machine power.

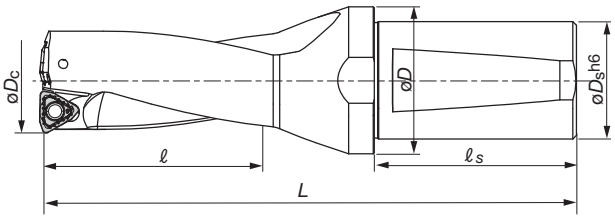


Cutting coolant

- Use water soluble type coolant with internal supply.
- Coolant pressure higher than 1MPa is essential.

0° Helix
2/3 L/D

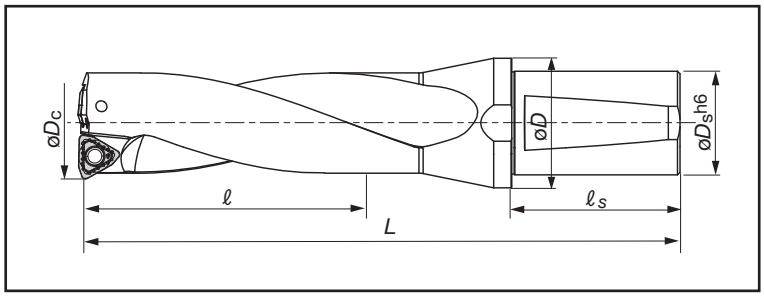




L/D = 2

Cat. No	Stock	Dimensions (mm)						Max Offset (Radius)	Weight (kg)	Applicable inserts	Clamping screw	Torx driver
		øDc	øDs	øD	ℓ	ℓ s	L					
TDS280W32-2	●	28	32	40	56	55	145	1.3	0.6	WWMU08X408R-DJ	CSTB-3	T-9D
TDS290W32-2	●	29			58		148	1.1	0.7			
TDS300W32-2	●	30			60		151	0.8	0.7			
TDS310W32-2	●	31			62		154	0.5	0.7			
TDS320W32-2	●	32			64		157	0.2	0.8			
TDS330W40-2	●	33	40	50	66	65	170	1.7	1.2	WWMU09X510R-DJ	CSTB-4	T-15D
TDS340W40-2	●	34			68		173	1.4	1.2			
TDS350W40-2	●	35			70		176	1.2	1.2			
TDS360W40-2	●	36			72		179	0.9	1.3			
TDS370W40-2	●	37			74		182	0.7	1.3			
TDS380W40-2	●	38			76		185	0.4	1.3			
TDS390W40-2	●	39	40	50	78	65	188	2.2	1.4	WWMU11X512R-DJ	CSTB-5	T-20D
TDS400W40-2	●	40			80		191	1.9	1.4			
TDS410W40-2	●	41			82		194	1.7	1.5			
TDS420W40-2	●	42		55	84		197	1.5	1.6			
TDS430W40-2	●	43			86		200	1.3	1.6			
TDS440W40-2	●	44			88		203	1	1.7			
TDS450W40-2	●	45			90		206	0.7	1.7			
TDS460W40-2	●	46			92		209	0.4	1.8			
TDS470W40-2	●	47	40	55	94	65	212	2.6	1.9	WWMU13X512R-DJ	CSTB-5	T-20D
TDS480W40-2	●	48			96		215	2.4	1.9			
TDS490W40-2	●	49			98		218	2.2	1.9			
TDS500W40-2	●	50			100		221	2	2.0			
TDS510W40-2	●	51			102		224	1.7	2.1			
TDS520W40-2	●	52			104		227	1.5	2.2			
TDS530W40-2	●	53			106		230	1.3	2.3			
TDS540W40-2	●	54			108		233	1	2.4			

● : Stocked items



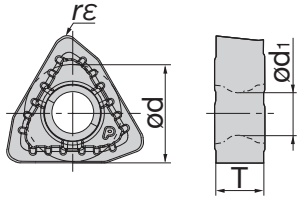
L/D = 3

Cat. No	Stock	Dimensions (mm)						Max Offset (Radius)	Weight (kg)	Applicable inserts	Clamping screw	Torx driver
		øDc	øDs	øD	ℓ	ℓ s	L					
TDS280W32-3	●	28	32	40	84	55	173	1.3	0.7	WWMU08X408R-DJ	CSTB-3	T-9D
TDS290W32-3	●	29			87		177	1.1	0.7			
TDS300W32-3	●	30			90		181	0.8	0.8			
TDS310W32-3	●	31			93		185	0.5	0.8			
TDS320W32-3	●	32			96		189	0.2	0.9			
TDS330W40-3	●	33	40	50	99	65	203	1.7	1.3	WWMU09X510R-DJ	CSTB-4	T-15D
TDS340W40-3	●	34			102		207	1.4	1.3			
TDS350W40-3	●	35			105		211	1.2	1.3			
TDS360W40-3	●	36			108		215	0.9	1.4			
TDS370W40-3	●	37			111		219	0.7	1.4			
TDS380W40-3	●	38			114		223	0.4	1.5			
TDS390W40-3	●	39	40	50	117	65	227	2.2	1.6	WWMU11X512R-DJ	CSTB-5	T-20D
TDS400W40-3	●	40			120		231	1.9	1.6			
TDS410W40-3	●	41			123		235	1.7	1.7			
TDS420W40-3	●	42		55	126		239	1.5	1.8			
TDS430W40-3	●	43			129		243	1.3	1.8			
TDS440W40-3	●	44			132		247	1	1.9			
TDS450W40-3	●	45			135		251	0.7	2.0			
TDS460W40-3	●	46			138		255	0.4	2.1			
TDS470W40-3	●	47	40	55	141	65	259	2.6	2.2	WWMU13X512R-DJ	CSTB-5	T-20D
TDS480W40-3	●	48			144		263	2.4	2.3			
TDS490W40-3	●	49			147		267	2.2	2.3			
TDS500W40-3	●	50			150		271	2	2.4			
TDS510W40-3	●	51			153		275	1.7	2.5			
TDS520W40-3	●	52			156		279	1.5	2.6			
TDS530W40-3	●	53			159		283	1.3	2.7			
TDS540W40-3	●	54			162		287	1	2.9			

● : Stocked items

Inserts

DJ chipbreaker



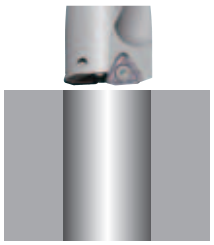
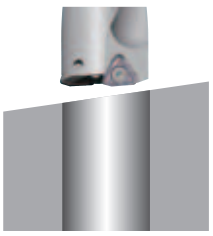
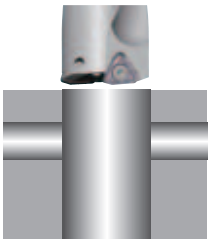
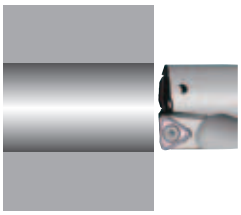
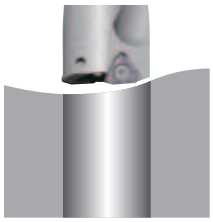
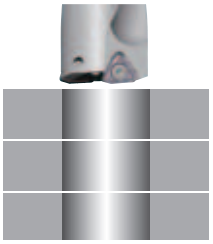
Cat. No.	Stocked grades	Dimensions (mm)				Applicable drill diameters
	PREMIUMTEC NEW AH9030	ød	T	ød1	rε	øDc (mm)
WWMU08X408R-DJ	●	8.0	3.9	3.4	0.8	ø28.0 ~ ø32.0
WWMU09X510R-DJ	●	9.7	4.9	4.4	1.0	ø33.0 ~ ø38.0
WWMU11X512R-DJ	●	11.3	5.7	5.5	1.2	ø39.0 ~ ø46.0
WWMU13X512R-DJ	●	13.0	5.7	5.5	1.2	ø47.0 ~ ø54.0

Standard cutting conditions

Work materials	Cutting Speed *Vc* (m/min)	Feed: *f* (mm/rev)	
		øDc (mm)	
		ø28 ~ ø32	ø33 ~ ø54
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	160 - 320	0.04 - 0.10	0.04 - 0.10
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	80 - 250	0.06 - 0.15	0.08 - 0.18
Low alloy steels SCM415 etc.	160 - 250	0.06 - 0.12	0.06 - 0.14
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	80 - 200	0.06 - 0.15	0.08 - 0.18
Stainless steels (Austenitic) SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	100 - 200	0.04 - 0.12	0.04 - 0.12
Stainless steels (Martensitic and ferritic) SUS430, SUS416 etc. (X6Cr17, X20Cr13 etc.)	100 - 200	0.04 - 0.12	0.04 - 0.12
Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4 etc.)	80 - 120	0.04 - 0.10	0.06 - 0.10
Grey cast irons FC250 etc. (GG25 etc.)	80 - 250	0.06 - 0.18	0.08 - 0.20
Ductile cast irons FCD700 etc. (GGG70 etc.)	80 - 200	0.06 - 0.18	0.08 - 0.20

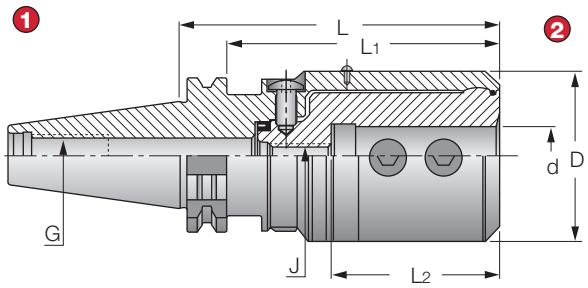
Application range

In case of Interrupted cutting, feed should be decreased.

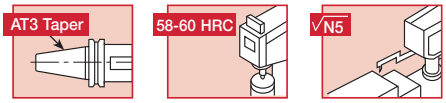
Feed *f* (mm/rev)	Upper table	0.05	0.05	0.05
Application	OK Plane surface 	OK Slant surface 	OK Cross hole 	OK Plunging 
Feed *f* (mm/rev)	0.1	0.05	Disapprove	Disapprove
Application	OK Boring 	OK Round surface 	Stacked plate 	Back boring 

TUNGBORE Diameter Adjust DIN69871

BORE DIN69871



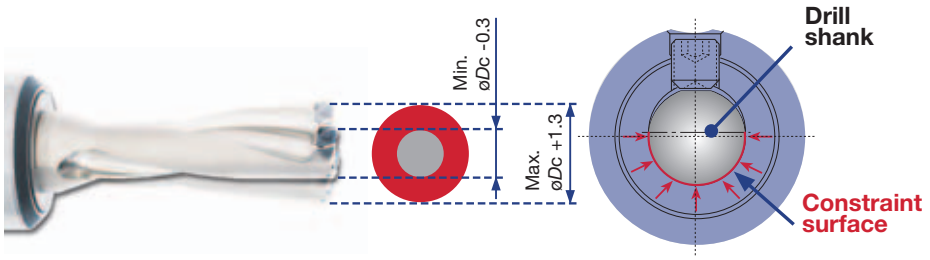
1 **BORE DIN69871 Form A/B**
2 **ISO 9766**



BORE DIN69871 Adjustable Drilling Diameter Holder

Cat. No.	Dimensions (mm)						
	ød	øD	L	L_1	L_2	J	G
TUNGBOREDIN6987140EM16	16	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM20	20	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM25	25	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM32	32	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM40	40	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987150EM16	16	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM20	20	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM25	25	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM32	32	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM40	40	72	115.6	96.5	71	M10	M24

Add B for coolant through the flange.

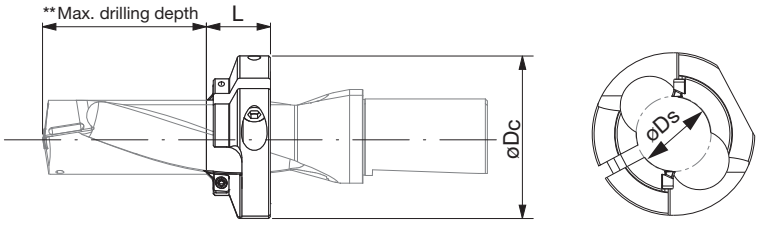


The bore section is actually made from two shifted circular sections. The clamping screw pushes the drill shank through a narrow opening, forcing elastic deformation of the holder. Contact is made around more than 180°, providing a high clamping force.

* Adjustable range of diameter in TDX drill is different by each item.
Therefore, please refer to the maximum offset value shown in TDX drill leaflet.

Chamfering ring

TDXCF



Cat. No.	Stock	Dimensions (mm)				Application drill	**Max. drilling depth (mm)			
		*ø*Ds	*ø*Dc	*L*	Tool Dia.		L/D = 2	L/D = 3	L/D = 4	L/D = 5
TDXCF130L25		12.55	49	25	12.5	TDX125W20-*	7.3	19.8	32.3	44.8
					13.0	TDX130W20-*	8.4	21.4	34.4	47.4
TDXCF140L25		13.25	49	25	13.5	TDX135W20-*	9.6	23.1	36.6	50.1
					14.0	TDX140W20-*	10.7	24.7	38.7	52.7
TDXCF150L25		14.25	49	25	14.5	TDX145W20-*	11.9	26.4	40.9	55.4
					15.0	TDX150W20-*	13.0	28.0	43.0	58.0
TDXCF160L25		15.25	49	25	15.5	TDX155W20-*	14.2	29.7	45.2	60.7
					16.0	TDX160W20-*	15.3	31.3	47.3	63.3
TDXCF170L25		16.25	49	25	16.5	TDX165W20-*	16.5	33.0	49.5	66.0
					17.0	TDX170W20-*	17.6	34.6	51.6	68.6
TDXCF180L25	●	17.3	49	25	17.5	TDX175W25-*	18.8	36.3	53.8	71.3
					18.0	TDX180W25-*	19.9	37.9	55.9	73.9
TDXCF190L25	●	18.1	49	25	18.5	TDX185W25-*	21.1	39.6	58.1	76.6
					19.0	TDX190W25-*	22.2	41.2	60.2	79.2
TDXCF200L25	●	19.1	49	25	19.5	TDX195W25-*	23.4	42.9	62.4	81.9
					20.0	TDX200W25-*	24.5	44.5	64.5	84.5
TDXCF210L25	●	20.1	49	25	20.5	TDX205W25-*	25.7	46.2	66.7	87.2
					21.0	TDX210W25-*	26.8	47.8	68.8	89.8
TDXCF220L25	●	21.1	49	25	21.5	TDX215W25-*	28.0	49.5	71.0	92.5
					22.0	TDX220W25-*	29.1	51.1	73.1	95.1
TDXCF230L25	●	22.1	49	25	22.5	TDX225W25-*	30.3	52.8	75.3	97.8
					23.0	TDX230W25-*	31.4	54.4	77.4	100.4
TDXCF240L25	●	23.1	49	25	23.5	TDX235W25-*	32.6	56.1	79.6	103.1
					24.0	TDX240W25-*	33.7	57.7	81.7	105.7
TDXCF250L25	●	23.95	49	25	24.5	TDX245W25-*	34.9	59.4	83.9	108.4
					25.0	TDX250W25-*	36.0	61.0	86.0	111.0
TDXCF260L30	●	24.95	64	30	25.5	TDX255W25-*	32.2	57.7	83.2	108.7
					26.0	TDX260W25-*	33.3	59.3	85.3	111.3
TDXCF270L30	●	25.9	64	30	27.0	TDX270W32-*	35.6	62.6	89.6	116.6
TDXCF280L30	●	26.9	64	30	28.0	TD□280W32-*	37.9	65.9	93.9	121.9
TDXCF290L30	●	27.9	64	30	29.0	TD□290W32-*	40.2	69.2	98.2	127.2
TDXCF300L30	●	28.9	64	30	30.0	TD□300W32-*	42.5	72.5	102.5	132.5
TDXCF310L30	●	29.9	64	30	31.0	TD□310W32-*	44.8	75.8	106.8	137.8
TDXCF320L30	●	30.9	64	30	32.0	TD□320W32-*	47.1	79.1	111.1	143.1
TDXCF330L30		31.8	64	30	33.0	TD□330W40-*	49.4	82.4	115.4	148.4
TDXCF340L30		32.8	64	30	34.0	TD□340W40-*	51.7	85.7	119.7	153.7
TDXCF350L30		33.8	64	30	35.0	TD□350W40-*	54.0	89.0	124.0	159.0
TDXCF360L30		34.8	85	30	36.0	TD□360W40-*	57.3	93.3	129.3	165.3
TDXCF370L30		35.8	85	30	37.0	TD□370W40-*	58.6	95.6	132.6	169.6
TDXCF380L30		36.8	85	30	38.0	TD□380W40-*	60.9	98.9	136.9	174.9
TDXCF390L30		37.8	85	30	39.0	TD□390W40-*	63.2	102.2	141.2	180.2
TDXCF400L30		38.8	85	30	40.0	TD□400W40-*	65.5	105.5	145.5	185.5
TDXCF410L30		39.8	85	30	41.0	TD□410W40-*	67.8	108.8	149.8	190.8
TDXCF420L30		40.6	85	30	42.0	TD□420W40-*	70.1	112.1	154.1	196.1
TDXCF430L30		41.6	85	30	43.0	TD□430W40-*	72.4	115.4	158.4	201.4
TDXCF440L30		42.6	85	30	44.0	TD□440W40-*	74.7	118.7	162.7	206.7
TDXCF450L30		43.6	85	30	45.0	TD□450W40-*	77.0	122.0	167.0	212.0
TDXCF460L30		44.6	85	30	46.0	TD□460W40-*	80.3	126.3	172.3	218.3
TDXCF470L30		45.6	85	30	47.0	TD□470W40-*	81.6	128.6	175.6	222.6
TDXCF480L30		46.6	85	30	48.0	TD□480W40-*	83.9	131.9	179.9	227.9
TDXCF490L30		47.6	85	30	49.0	TD□490W40-*	86.2	135.2	184.2	233.2
TDXCF500L30		48.6	85	30	50.0	TD□500W40-*	88.5	138.5	188.5	238.5
TDXCF510L30		49.6	85	30	51.0	TD□510W40-*	90.8	141.8	192.8	243.8
TDXCF520L30		50.6	85	30	52.0	TD□520W40-*	93.1	145.1	197.1	249.1
TDXCF530L30		51.6	85	30	53.0	TD□530W40-*	95.4	148.4	201.4	254.4
TDXCF540L30		52.6	85	30	54.0	TD□540W40-*	97.7	151.7	205.7	259.7

● : Stocked items

Chamfering tool insert & part list

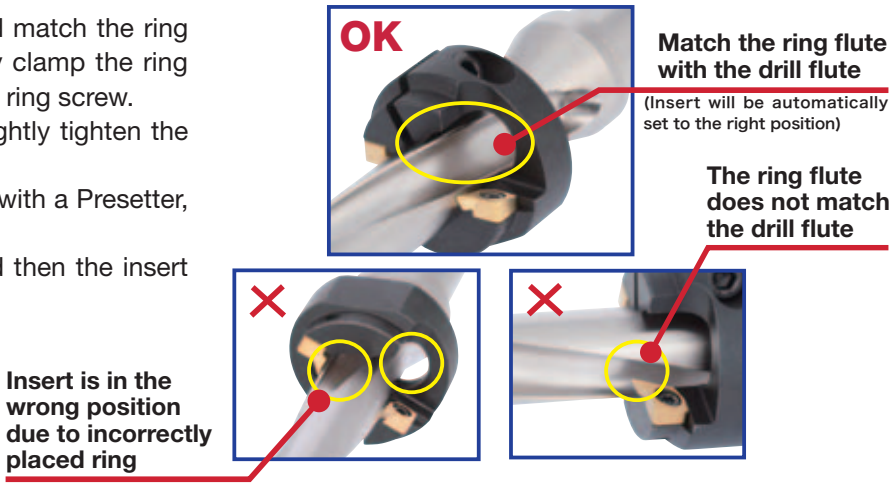
TUNGDRILLBIG

Cat. No.	Insert	Stocked grade GH130	Insert clamping screw	Torque (N·m)	Ring clamping screw	Torque (N·m)	Wrench for insert	Wrench for ring
TDXCF130L25 ~ TDXCF250L25	XHGX090700R-45A	●	CSPB-4S	3.5	CM6X16	7.0	T-15D	P-5
TDXCF260L30 ~ TDXCF540L30					CM8 x 20	8.0		

● : Stocked items

Points of caution when mounting the chamfering ring on drill body

① Place the ring on the drill body and match the ring flute with the drill flute. Temporarily clamp the ring on the body by lightly tightening the ring screw. Place the inserts on the ring and lightly tighten the insert screws.
② Adjust the ring to the right position with a Presetter, height gauge or Vernier caliper.
③ Securely tighten the ring screw and then the insert screw.



Cautious points for TDX and TDS

Using TungdrillTwisted

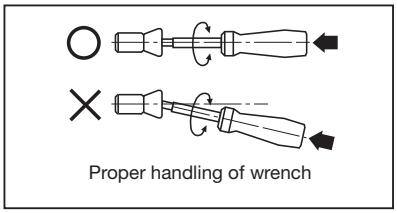
- Ensure that the drilling machine to be used has sufficient rigidity and motor output.
- Not recommended for drilling stacked plates.
- Be sure to carry out proper alignment when drilling is to be performed on a rotating workpiece.

Cutting fluid

- Be sure to supply cutting fluid through the tool.
- A water soluble emulsifiable type cutting fluid should be used.
- Fluid pressure of 1 MPa or higher and fluid quantity of 7R/min or more are essential. For 4D and 5D type, a fluid pressure of 1.5 MPa or higher and fluid quantity of 10R/min or more is recommended.

Cautionary points for setting inserts

- Before installing the insert in the drill body, remove all foreign matter from the insert pocket.
- When clamping and unclamping the insert, the center-line of the wrench should be aligned with the center-line of the screw. Misalignment may result in deformation of the socket of the screw head or the tip of the wrench.
- When installing the insert, eliminate all play between the insert pocket and the bottom face of the insert.


Proper handling of wrench

- Replace the screw before it will be excessively deformed or worn out by long term use.

EZ Sleeve

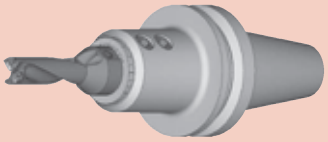
Use EZ sleeves for the following purposes

Hole diameter adjustment on the milling machine

Adjusting the finishing diameter when milling

Adjusting the finishing diameter in tool-rotating applications such as on machining centres and milling machines:

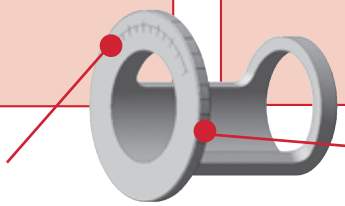
By using EZ sleeve, the finishing diameter can be adjusted in the range from +0.6 mm to -0.2 mm.



Adjusting cutting edge height on lathe

Adjusting of the cutting edge height in work rotating applications such as on lathes:

By using EZ sleeve, the cutting edge height can be adjusted in the range from +0.3 mm to -0.2 mm. It results in eliminating troubles caused by improper cutting-edge height.



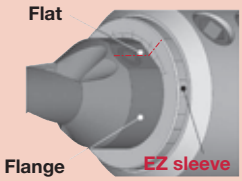
Scale for adjusting finishing diameter in milling (Periphery of sleeve)

Scale for adjusting cutting edge height in turning (Front face of sleeve)

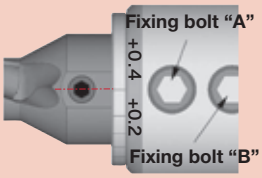
Setting of EZ sleeve

Adjusting finishing diameter in milling

As shown in the Figure below, set the EZ sleeve between the drill shank and the toolholder.



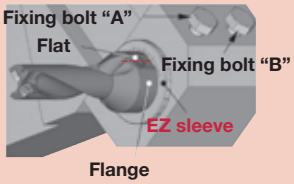
Align the graduated scale on the periphery of the EZ sleeve with the center of the flat of the drill flange.
In the Figure shown below, the sleeve is set so that the finishing diameter will be increased by 0.4 mm.



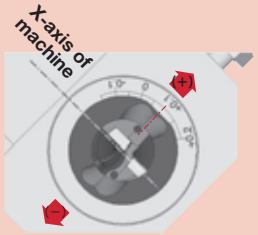
When rotating the EZ sleeve, insert the wrench into the hole at the flange periphery and rotate the EZ sleeve.
Screws A + B have to be loosened.
Secure the drill by screw A. Secure the EZ sleeve by lightly tightening screw B.
Tighten screw B only lightly otherwise EZ sleeve can be damaged!

Adjusting cutting edge height on lathe

As shown in the Figure below, set the EZ sleeve between the drill shank and the toolblock.



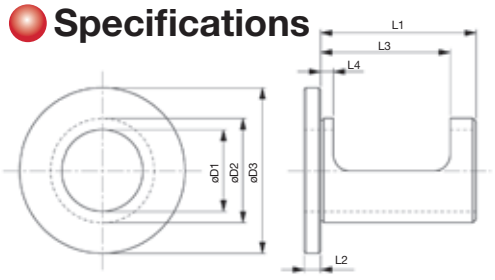
Align the graduated scale on the front face of the Esleeve with the center of the flat of the drill flange.
In the Figure shown below, the sleeve is set so that the center of the drill will shift by 0.1 mm to the plus (+) direction.



Cautious points

- Can not be used for collect chuck holders.
- Over L/D 4 or bigger adjustment, please reduce feed.
- For smaller adjustment, the drill itself will interfere with the hole diameter. It is recommended that hole diameter should be adjusted to a larger diameter than the drill diameter.

Specifications



Sleeve Cat. No.	Stock	øD1	øD2	øD3	L1	L2	L3	L4	Adjusting range of finishing diameter	Adjusting range of cutting edge height
EZ2025	●	20	25	46	49	5	32.5	4	+0.4 ~ - 0.2	+0.2 ~ - 0.15
EZ2532	●	25	32	51	52	5	38	4	+0.4 ~ - 0.2	+0.2 ~ - 0.15
EZ3240	●	32	40	54	62	5	43	4	+0.4 ~ - 0.2	+0.2 ~ - 0.15
EZ4050	●	40	50	69	63	5	55	4	+0.6 ~ - 0.2	+0.3 ~ - 0.2

Note: Select the sleeve so that the D1 of the sleeve will be same as the diameter of the drill shank.

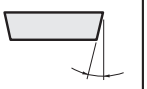
MEMO

Designation System for TAC Drilling Inserts

Symbol	Shape	Included angle (degree)	Outlined figure
H	Hexagonal	120°	
S	Square	90°	
T	Triangular	60°	
C	Rhombic	80°	
E		75°	
G		70°	
L	Rectangular	90°	
A	Parallelogram	85°	
R	Round		
W	Trigon	80°	
X	Special	Others angle	
Y	Special		
Z	Special shape for ball endmills, etc.		

① Shape

Symbol	Relief angle (degree)
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	
S	Others
W	Others
X	Others



② Relief angle

Inscribed circle dia.	Tolerance on inscribed circle (ød)		Tolerance on corner height (mm)	
	J,K,L,M,N (class)	U (class)	M,N(class)	U(class)
6.35	±0.05	±0.08	±0.08	±0.13
9.525				
12.7	±0.08	±0.13	±0.13	±0.2
15.875	±0.1	±0.18	±0.15	±0.27
19.05				
25.4	±0.13	±0.25	±0.18	±0.38

Symbol	Tolerance on corner height	Tolerance on thickness	Tolerance on inscribed circle
A	±0.005	±0.025	±0.025
C	±0.013	±0.025	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.13	±0.025
H	±0.013	±0.025	±0.013
K	±0.013	±0.025	±0.05 ~ ±0.13
M	±0.08 ~ ±0.18	±0.13	±0.05 ~ ±0.13
N	±0.08 ~ ±0.18	±0.025	±0.05 ~ ±0.13

③ Tolerance class (mm)

Example

Metric system

①	②	③	④	⑤
X	P	M	T	07

④ Insert type

Symbol	Hole	Hole shape	Chip groove	Section shape
N	Without	-	Without	
R			On one side	
F			On both sides	
W	With	Partially cylindrical hole with 40°~60° mouth on one side	Without	
T			On one side	
Q		Partially cylindrical hole with 40°~60° mouth on both sides	Without	
U			On both sides	
B		Partially cylindrical hole with 70°~90° mouth on one side	Without	
H			On one side	
C		Partially cylindrical hole with 70°~90° mouth on both sides	Without	
J			On both sides	
X	-	-	-	

⑤ Cutting edge length

Symbol	Cutting edge length (ℓ)
S	
T	
R	
H	
A	

Example

H3 ⑥ **08** ⑦ **[T]** ⑧ **R** ⑨ **-** **DJ** ⑩

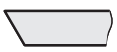
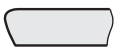
⑥ Thickness

Symbol	Thickness. (mm)
01	1.59
02	2.38
X3	3.00
03	3.18
H3	3.60
T3	3.97
04	4.76
05	5.56

⑦ Corner radius

Symbol	Corner radius r_ε (mm)
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4

⑧ Cutting edge condition

Symbol	Condition	Shape
F	Sharp edge	
E	Round honing	
T	Chamfer honing	
S	Combination honing	
P	Combination round honing	

⑨ Hand of insert

Symbol	Hand
R	Right
L	Left
N	Neutral

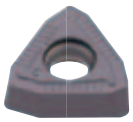
⑩ Special feature

D	For Drilling
D2	For Drilling
D4	For Drilling
DC	For Drilling
DG	For mild steel
DJ	For general
DS	For stainless steel
DW	Wiper

TAC Inserts for TAC Drills

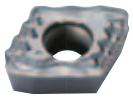
● WWMU□□□□□□R-DJ

TUNGSIX-DRILL

Shape	Cat. No.		Accuracy	Honing	Stocked grades: Coated: NEW AH9030					Applicable drill diameters	Applicable TAC drills (Page)
	WWMU08X408R-DJ		M	With	●					ø28.0 ~ ø32.0	NEW TAC drill TDS 11-16
	WWMU09X510R-DJ				●					ø33.0 ~ ø38.0	
	WWMU11X512R-DJ				●					ø39.0 ~ ø46.0	
	WWMU13X512R-DJ				●					ø47.0 ~ ø54.0	

● XPMT□□□□□□R-DG

TUNGDRILLTWISTED TUNGDRILLBIG

Shape	Cat. No.		Accuracy	Honing	Stocked grades: Coated: NEW AH725					Applicable drill diameters	Applicable TAC drills (Page)
	XPMT08T308R-DG		M	With	●					ø27.0 ~ ø32.0	NEW TAC drill TDX 11-8
	XPMT110412R-DG				●					ø33.0 ~ ø41.0	
	XPMT150512R-DG				●					ø42.0 ~ ø54.0	

● XPMT□□□□□□R-DJ

TUNGDRILLTWISTED TUNGDRILLBIG

Shape	Cat. No.		Accuracy	Honing	Stocked grades: Coated: NEW AH725	NEW AH740	NEW T1115			Applicable drill diameters	Applicable TAC drills (Page)
	XPMT040104R-DJ		M	With	●	●	●			ø12.5 ~ ø14.5	NEW TAC drill TDX 11-8
	XPMT050204R-DJ				●	●	●			ø15.0 ~ ø17.0	
	XPMT06X308R-DJ				●	●	●			ø17.5 ~ ø21.5	
	XPMT07H308R-DJ				●	●	●			ø22.0 ~ ø26.0	
	XPMT08T308R-DJ				●	●	●			ø26.5 ~ ø32.0	
	XPMT110412R-DJ				●	●	●			ø33.0 ~ ø41.0	
	XPMT150512R-DJ				●	●	●			ø42.0 ~ ø54.0	

● : Stocked items

● XPMT□□□□□□R-DS

TUNGDRILL TWISTED
TUNGDRILL BIG

Shape	Cat. No.		Accuracy	Honing	Stocked grades: Coated: NEW AH725	AH120				Applicable drill diameters	Applicable TAC drills (Page)
	XPMT040104R-DS		M	With	●	●				ø12.5 ~ ø14.5	NEW TAC drill TDX 11-8
	XPMT050204R-DS				●	●				ø15.0 ~ ø17.0	
	XPMT06X308R-DS				●	●				ø17.5 ~ ø21.5	
	XPMT07H308R-DS				●	●				ø22.0 ~ ø26.0	
	XPMT08T308R-DS				●	●				ø26.5 ~ ø32.0	
	XPMT110412R-DS				●	●				ø33.0 ~ ø41.0	
	XPMT150512R-DS				●	●				ø42.0 ~ ø54.0	

● XPMT□□□□□□R-DW

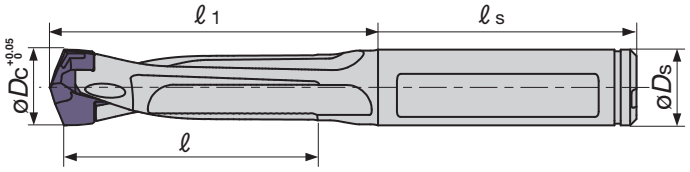
TUNGDRILL TWISTED
TUNGDRILL BIG

Shape	Cat. No.		Accuracy	Honing	Stocked grades: Coated: NEW AH725	AH120	AH740			Applicable drill diameters	Applicable TAC drills (Page)
	XPMT040104R-DW		M	With	●	●	●			ø12.5 ~ ø14.5	NEW TAC drill TDX 11-8
	XPMT050204R-DW				●	●	●			ø15.0 ~ ø17.0	
	XPMT06X308R-DW				●	●	●			ø17.5 ~ ø21.5	
	XPMT07H308R-DW				●	●	●			ø22.0 ~ ø26.0	
	XPMT08T308R-DW				●	●	●			ø26.5 ~ ø32.0	
	XPMT110412R-DW				●	●	●			ø33.0 ~ ø41.0	
	XPMT150512R-DW				●	●	●			ø42.0 ~ ø54.0	

● : Stocked items

3 L/D | 140° Point angle

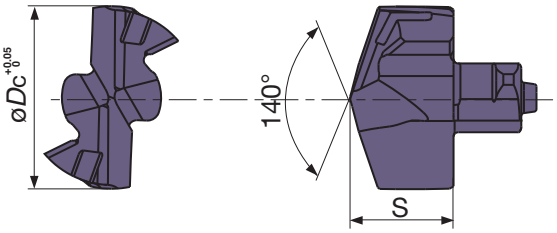
Drill body



Cat. No.	Stock	Dimensions (mm)					Pocket size	lamping key (included)	Applicable head
		øDc	øDs	ℓ	ℓ1	ℓs			
TIDC100C10-3	●	10 ~ 10.4	10	30	45.2	41	10	K-TID10-19.99	DMP103
TIDC120C12-3	●	12 ~ 12.4	12	36	52	41	12		DMP120, DMP121
TIDC140C14-3	●	14 ~ 14.4	14	42	59.2	44	14		DMP140, DMP141
TIDC150C15-3	●	15 ~ 15.9	15	45	62.7	45	15		DMP150, DMP155, DMP156
TIDC170C17-3	●	17 ~ 17.9	17	51	71.9	48	17		DMP175
TIDC190C19-3	●	19 ~ 19.9	19	57	78.6	54	19		DMP195

- Please select the drill head which diameter must be bigger than drill body. (Applicable drill head with diameter øDc shown in above table.)
- Machined hole diameter may change depend on the rigidity of machine or cutting condition.

Drill head



Cat. No.	Stock	Dimensions (mm)		Pocket size	Applicable drill body	Applicable screw size
	AH725	øDc	S			
DMP103	●	10.3	6.2	10	TIDC100C10-3	M12x1.75
DMP120	●	12.0	7.0	12	TIDC120C12-3	M14x2
DMP121	●	12.1	7.0	12		(M14x2)
DMP140	●	14.0	8.15	14	TIDC140C14-3	M16x2
DMP141	●	14.1	8.15	14		(M16x2)
DMP150	●	15.0	8.73	15	TIDC150C15-3	M16x1.0
DMP155	●	15.5	8.73	15		M18x2.5
DMP156	●	15.6	8.73	15		(M18x2.5)
DMP175	●	17.5	9.9	17	TIDC170C17-3	M20x2.5
DMP195	●	19.5	11.0	19	TIDC190C19-3	M22x2.5

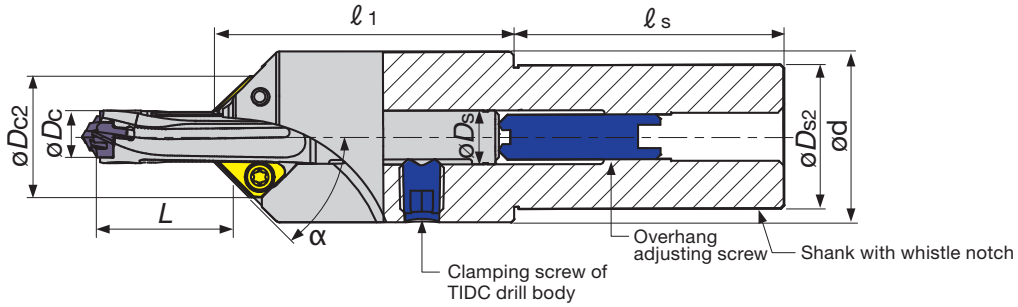
Packing Quantity = 2 pcs.
● : Stocked items

Standard cutting condition

Work material	Cutting speed Vc (m/min)	Feed: f (mm/rev) øDc (mm)				
		ø10 - ø11.9	ø12 - ø13.9	ø14 - ø15.9	ø16 - ø19.9	ø20 - ø25.9
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	80 - 140	0.15 - 0.28	0.18 - 0.30	0.20 - 0.35	0.25 - 0.45	0.25 - 0.45
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	70 - 120	0.15 - 0.28	0.18 - 0.30	0.20 - 0.35	0.25 - 0.45	0.25 - 0.45
Low alloy steels SCM415 etc.	70 - 120	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.40	0.25 - 0.45
Alloy steels SCM440, SCr420 etc. (42CrMo4, 20Cr4 etc.)	40 - 90	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.40	0.25 - 0.45
Stainless steels SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.)	30 - 70	0.12 - 0.18	0.14 - 0.20	0.16 - 0.24	0.16 - 0.26	0.18 - 0.30
Grey cast irons FC250 etc. (GG25 etc.)	80 - 180	0.20 - 0.35	0.25 - 0.40	0.30 - 0.45	0.35 - 0.55	0.35 - 0.60
Ductile cast irons FCD700 etc. (GGG70 etc.)	80 - 140	0.20 - 0.35	0.25 - 0.40	0.30 - 0.45	0.35 - 0.55	0.35 - 0.60
Aluminium alloys ADC12 etc.	80 - 220	0.25 - 0.40	0.30 - 0.45	0.35 - 0.50	0.40 - 0.60	0.50 - 0.75
Titanium alloys Ti-6Al-4V etc.	20 - 50	0.08 - 0.15	0.10 - 0.28	0.12 - 0.20	0.14 - 0.22	0.18 - 0.27
Nickel-based alloys	20 - 50	0.08 - 0.13	0.10 - 0.15	0.12 - 0.18	0.12 - 0.22	0.14 - 0.22

- Cutting conditions in above table shows the general condition
- Cutting conditions should be changed depend on the rigidity and power of the machine and the workpiece material.

Chamfering adaptor TIDCF type

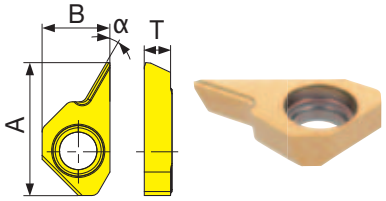


Cat. No.	Stock	Dimensions (mm)							Applicable drill body	
		øDc	øDs2	ød	øDc2	ℓ 1	ℓ s	L	Cat. No.	øDs (mm)
TIDCF100-W32	●	10.0 ~ 10.4	32	38	24.9	67.3	60	14.5 ~ 31.8	TIDC100C10-3	10
TIDCF120-W32	●	12.0 ~ 12.4	32	38	26.9	67.3	60	16.5 ~ 37.7	TIDC120C12-3	12
TIDCF140-W32	●	14.0 ~ 14.4	32	38	28.4	67.3	60	18.1 ~ 45.0	TIDC140C14-3	14
TIDCF150-W32	●	15.0 ~ 15.9	32	38	29.4	67.3	60	19.7 ~ 47.4	TIDC150C15-3	15
TIDCF170-W32	●	17.0 ~ 17.9	32	38	31.4	67.3	60	21.4 ~ 54.9	TIDC170C17-3	17
TIDCF190-W32	●	19.0 ~ 19.9	32	38	33.4	75	60	28.5 ~ 62.3	TIDC190C19-3	19

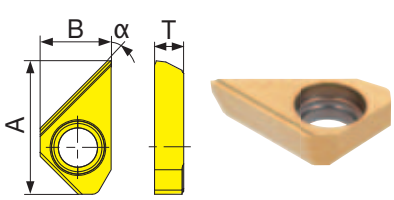
• Chamfering angle α should be depend on chamfering insert

Chamfering insert

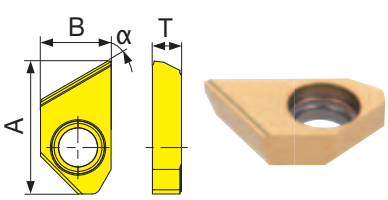
XHGT-30A



XHGR-45A



XHGR-60A



Cat. No.	Stock	Dimensions (mm)			Chamfering angle α	Maximum width of chamfer
	GH730	A	B	T		
XHGT090300-30A	●	16	8.8	3.3	30°	1.5
XHGR090300-45A	●	16	8.8	3.3	45°	6.0
XHGR090300-60A	●	16	8.8	3.3	60°	3.5

Note: Chamfering insert must be clamped after fixing the TIDC drill body in adaptor.

Replacement parts

Clamping screw of TIDC drill body	Overhang adjusting screw	Wrench	Clamping screw of insert	Wrench	
				Torx bit	Grip
SCREWM10X1.5SPECIAL	SRM10X10DIN916	HW5.0	SR14-544/S	BLDT15/S7	SW6-SD

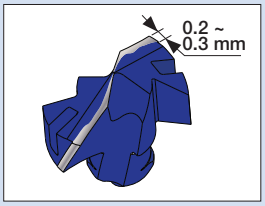
●: Stocked items
Packing Quantity = 2 pcs

Relating pages
Technical reference (15-1)

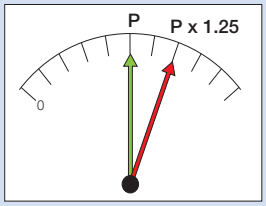
Notice when using

● Criteria for head change (Criteria of tool life)

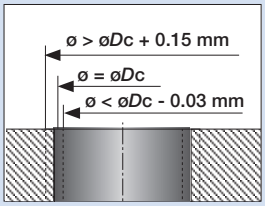
The followings are the general criteria of tool life



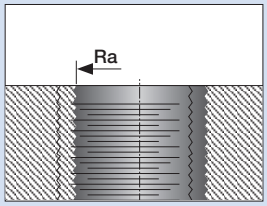
Width of corner wear: 0.2 - 0.3 mm



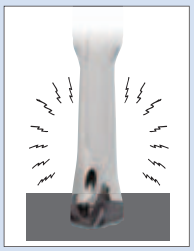
Spindle load: Increased by 25% higher than load of beginning



Hole diameter: 0.15 mm bigger, or 0.03 mm smaller than drill diameter



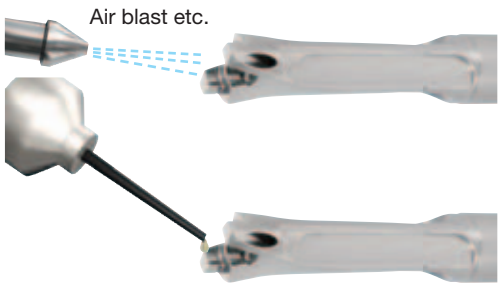
Surface finish: Rougher than the beginning



Abnormal noise, or vibration

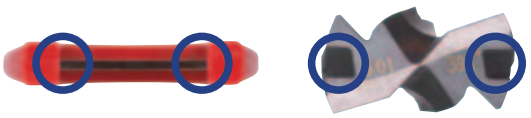
● How to clamp the drill head

① Cleaning the pocket and oiling

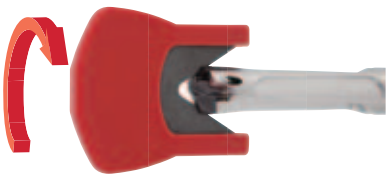


② Set the drill head in the pocket

③ Set the clamping key on the drill head



④ Clamp

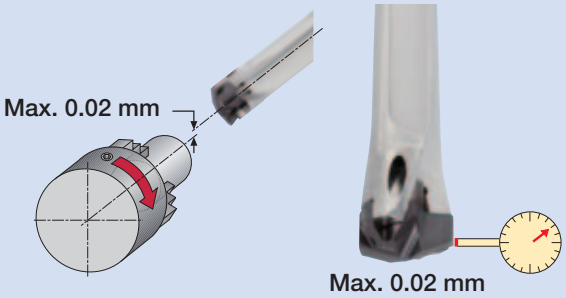


● Coolant supply

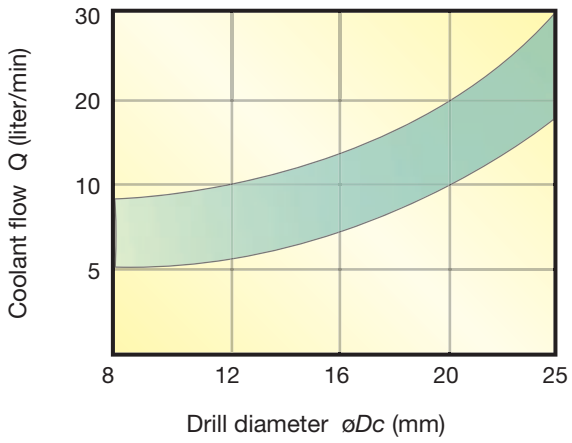
Internal supply should be recommended.

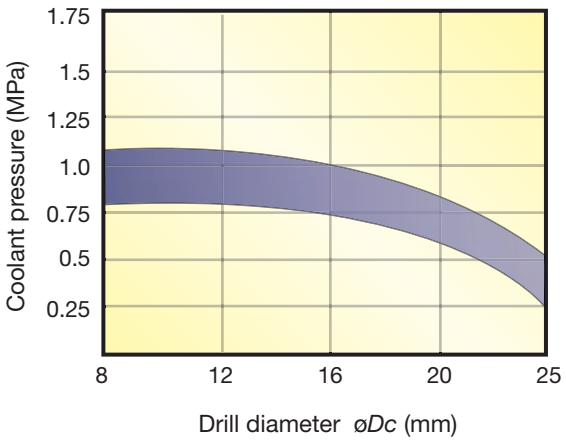
● Run out

Run out less than 0.02 mm should be recommended.

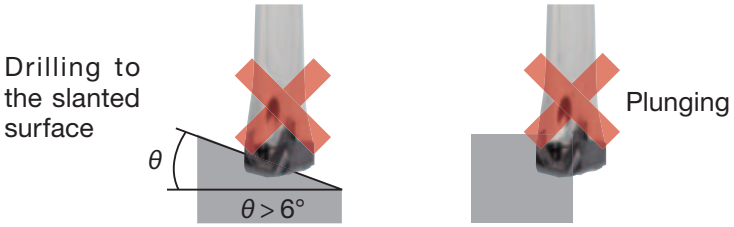


The coolant flow and pressure required



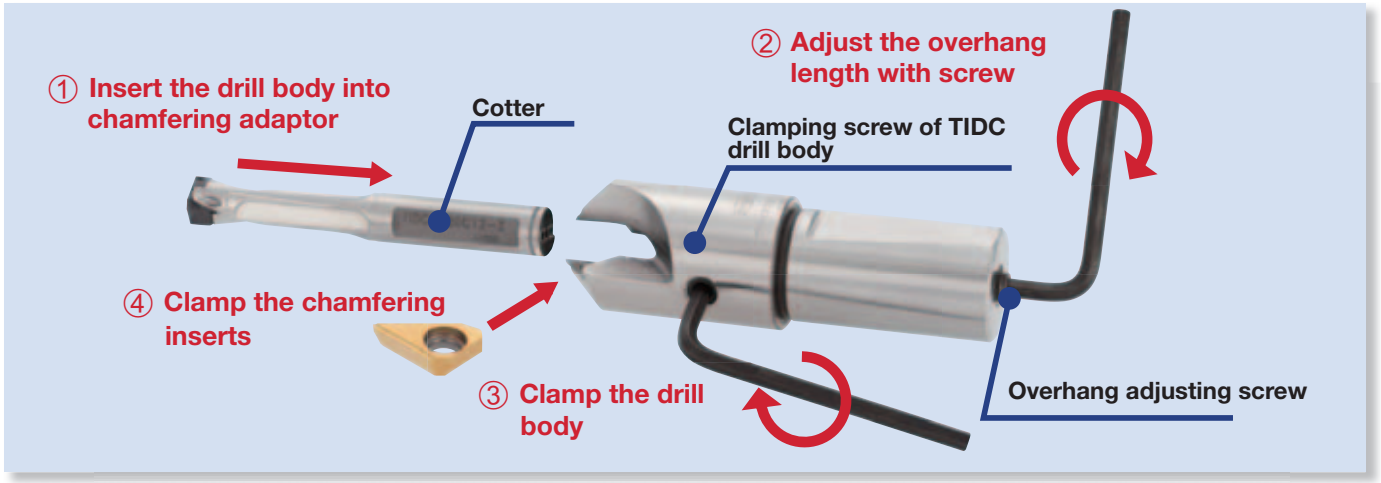


Not-recommended application



How to mount the drill body into the chamfering adaptor

The overhang length of drill can be changed by the adjusting screw at the bottom of adaptor.
Drill body must contact to the adjusting screw. This screw supports the drill against thrust force when drilling.



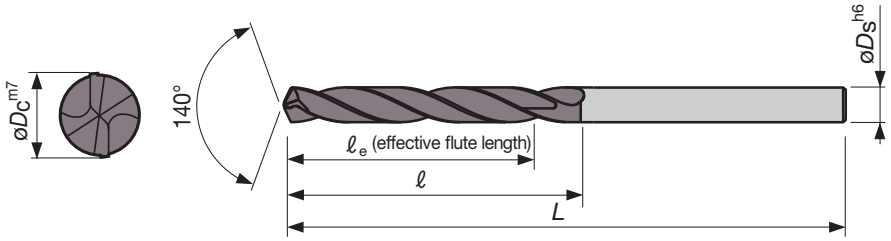
Procedure

① Insert the TIDC drill body into the chamfering adaptor without clamping chamfering inserts.
② Adjust the overhang length of drill body with adjusting screw from the bottom of adaptor.
③ Tighten the clamping screw of drill body and fix. When tightening, the screw must contact to the cotter. When screw contacts to the cotter, the flutes of TIDC drill body fit the position of chamfering inserts.
④ Clamp the chamfering inserts. When tightening the screw, insert must fit to the seat.

Notice
Before removing the drill body from adaptor, chamfering inserts must be removed.
The overhang adjusting screw can operate from the top of adaptor with flat-blade screwdriver. Once the adaptor sets on holder, overhang length of drill body can be adjusted by operating the screw from the top of adaptor.

25°~30° Helix | 3/5/8 L/D | 140° Point angle

For High Efficient Drilling of Steels
Coated Solid Carbide Drills



Drill dia. *øDc* (mm)	Tolerance m7 (mm)
3.00 ~ 6	0.004 ~ 0.016
6.01 ~ 10	0.006 ~ 0.021
10.01 ~ 16	0.007 ~ 0.025

Drill dia. *øDc*	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm) *øDs*	*ℓe*	*ℓ*	*L*
3.0	3	Ext.	DSW030-014-06DE3		6	14	20	62
	5	Ext.	DSW030-023-06DE5		6	23	28	66
	5	Int.	DSW030-023-06DI5		6	23	28	66
	8	Int.	DSW030-029-06DI8		6	29	34	72
3.1	3	Ext.	DSW031-014-06DE3		6	14	20	62
	5	Ext.	DSW031-023-06DE5		6	23	28	66
	5	Int.	DSW031-023-06DI5		6	23	28	66
	8	Int.	DSW031-029-06DI8		6	29	34	72
3.2	3	Ext.	DSW032-014-06DE3		6	14	20	62
	5	Ext.	DSW032-023-06DE5		6	23	28	66
	5	Int.	DSW032-023-06DI5		6	23	28	66
	8	Int.	DSW032-029-06DI8		6	29	34	72
3.3	3	Ext.	DSW033-014-06DE3		6	14	20	62
	5	Ext.	DSW033-023-06DE5		6	23	28	66
	5	Int.	DSW033-023-06DI5		6	23	28	66
	8	Int.	DSW033-029-06DI8		6	29	34	72
3.4	3	Ext.	DSW034-014-06DE3		6	14	20	62
	5	Ext.	DSW034-023-06DE5		6	23	28	66
	5	Int.	DSW034-023-06DI5		6	23	28	66
	8	Int.	DSW034-029-06DI8		6	29	34	72
3.5	3	Ext.	DSW035-014-06DE3		6	14	20	62
	5	Ext.	DSW035-023-06DE5		6	23	28	66
	5	Int.	DSW035-023-06DI5		6	23	28	66
	8	Int.	DSW035-029-06DI8		6	29	34	72
3.6	3	Ext.	DSW036-014-06DE3		6	14	20	62
	5	Ext.	DSW036-023-06DE5		6	23	28	66
	5	Int.	DSW036-023-06DI5		6	23	28	66
	8	Int.	DSW036-029-06DI8		6	29	34	72
3.7	3	Ext.	DSW037-014-06DE3		6	14	20	62
	5	Ext.	DSW037-023-06DE5		6	23	28	66
	5	Int.	DSW037-023-06DI5		6	23	28	66
	8	Int.	DSW037-029-06DI8		6	29	34	72
3.8	3	Ext.	DSW038-017-06DE3		6	17	24	66
	5	Ext.	DSW038-029-06DE5		6	29	36	74
	5	Int.	DSW038-029-06DI5		6	29	36	74
	8	Int.	DSW038-036-06DI8		6	36	43	81
3.9	3	Ext.	DSW039-017-06DE3		6	17	24	66
	5	Ext.	DSW039-029-06DE5		6	29	36	74
	5	Int.	DSW039-029-06DI5		6	29	36	74
	8	Int.	DSW039-036-06DI8		6	36	43	81

Drill dia. *øDc*	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm) *øDs*	*ℓe*	*ℓ*	*L*
4.0	3	Ext.	DSW040-017-06DE3		6	17	24	66
	5	Ext.	DSW040-029-06DE5		6	29	36	74
	5	Int.	DSW040-029-06DI5		6	29	36	74
	8	Int.	DSW040-036-06DI8		6	36	43	81
4.1	3	Ext.	DSW041-017-06DE3		6	17	24	66
	5	Ext.	DSW041-029-06DE5		6	29	36	74
	5	Int.	DSW041-029-06DI5		6	29	36	74
	8	Int.	DSW041-036-06DI8		6	36	43	81
4.2	3	Ext.	DSW042-017-06DE3		6	17	24	66
	5	Ext.	DSW042-029-06DE5		6	29	36	74
	5	Int.	DSW042-029-06DI5		6	29	36	74
	8	Int.	DSW042-036-06DI8		6	36	43	81
4.3	3	Ext.	DSW043-017-06DE3		6	17	24	66
	5	Ext.	DSW043-029-06DE5		6	29	36	74
	5	Int.	DSW043-029-06DI5		6	29	36	74
	8	Int.	DSW043-036-06DI8		6	36	43	81
4.4	3	Ext.	DSW044-017-06DE3		6	17	24	66
	5	Ext.	DSW044-029-06DE5		6	29	36	74
	5	Int.	DSW044-029-06DI5		6	29	36	74
	8	Int.	DSW044-036-06DI8		6	36	43	81
4.5	3	Ext.	DSW045-017-06DE3		6	17	24	66
	5	Ext.	DSW045-029-06DE5		6	29	36	74
	5	Int.	DSW045-029-06DI5		6	29	36	74
	8	Int.	DSW045-036-06DI8		6	36	43	81
4.6	3	Ext.	DSW046-017-06DE3		6	17	24	66
	5	Ext.	DSW046-029-06DE5		6	29	36	74
	5	Int.	DSW046-029-06DI5		6	29	36	74
	8	Int.	DSW046-036-06DI8		6	36	43	81
4.7	3	Ext.	DSW047-017-06DE3		6	17	24	66
	5	Ext.	DSW047-029-06DE5		6	29	36	74
	5	Int.	DSW047-029-06DI5		6	29	36	74
	8	Int.	DSW047-036-06DI8		6	36	43	81
4.8	3	Ext.	DSW048-020-06DE3		6	20	28	66
	5	Ext.	DSW048-035-06DE5		6	35	44	82
	5	Int.	DSW048-035-06DI5		6	35	44	82
	8	Int.	DSW048-048-06DI8		6	48	57	95
4.9	3	Ext.	DSW049-020-06DE3		6	20	28	66
	5	Ext.	DSW049-035-06DE5		6	35	44	82
	5	Int.	DSW049-035-06DI5		6	35	44	82
	8	Int.	DSW049-048-06DI8		6	48	57	95

*For inquiry on DSW stock, please contact the local office.

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm) øDs	ℓe	ℓ	L
5.0	3	Ext.	DSW050-020-06DE3		6	20	28	66
	5	Ext.	DSW050-035-06DE5		6	35	44	82
	5	Int.	DSW050-035-06DI5		6	35	44	82
	8	Int.	DSW050-048-06DI8		6	48	57	95
5.1	3	Ext.	DSW051-020-06DE3		6	20	28	66
	5	Ext.	DSW051-035-06DE5		6	35	44	82
	5	Int.	DSW051-035-06DI5		6	35	44	82
	8	Int.	DSW051-048-06DI8		6	48	57	95
5.2	3	Ext.	DSW052-020-06DE3		6	20	28	66
	5	Ext.	DSW052-035-06DE5		6	35	44	82
	5	Int.	DSW052-035-06DI5		6	35	44	82
	8	Int.	DSW052-048-06DI8		6	48	57	95
5.3	3	Ext.	DSW053-020-06DE3		6	20	28	66
	5	Ext.	DSW053-035-06DE5		6	35	44	82
	5	Int.	DSW053-035-06DI5		6	35	44	82
	8	Int.	DSW053-048-06DI8		6	48	57	95
5.4	3	Ext.	DSW054-020-06DE3		6	20	28	66
	5	Ext.	DSW054-035-06DE5		6	35	44	82
	5	Int.	DSW054-035-06DI5		6	35	44	82
	8	Int.	DSW054-048-06DI8		6	48	57	95
5.5	3	Ext.	DSW055-020-06DE3		6	20	28	66
	5	Ext.	DSW055-035-06DE5		6	35	44	82
	5	Int.	DSW055-035-06DI5		6	35	44	82
	8	Int.	DSW055-048-06DI8		6	48	57	95
5.6	3	Ext.	DSW056-020-06DE3		6	20	28	66
	5	Ext.	DSW056-035-06DE5		6	35	44	82
	5	Int.	DSW056-035-06DI5		6	35	44	82
	8	Int.	DSW056-048-06DI8		6	48	57	95
5.7	3	Ext.	DSW057-020-06DE3		6	20	28	66
	5	Ext.	DSW057-035-06DE5		6	35	44	82
	5	Int.	DSW057-035-06DI5		6	35	44	82
	8	Int.	DSW057-048-06DI8		6	48	57	95
5.8	3	Ext.	DSW058-020-06DE3		6	20	28	66
	5	Ext.	DSW058-035-06DE5		6	35	44	82
	5	Int.	DSW058-035-06DI5		6	35	44	82
	8	Int.	DSW058-048-06DI8		6	48	57	95
5.9	3	Ext.	DSW059-020-06DE3		6	20	28	66
	5	Ext.	DSW059-035-06DE5		6	35	44	82
	5	Int.	DSW059-035-06DI5		6	35	44	82
	8	Int.	DSW059-048-06DI8		6	48	57	95
6.0	3	Ext.	DSW060-020-06DE3		6	20	28	66
	5	Ext.	DSW060-035-06DE5		6	35	44	82
	5	Int.	DSW060-035-06DI5		6	35	44	82
	8	Int.	DSW060-048-06DI8		6	48	57	95
6.1	3	Ext.	DSW061-024-08DE3		8	24	34	79
	5	Ext.	DSW061-043-08DE5		8	43	53	91
	5	Int.	DSW061-043-08DI5		8	43	53	91
	8	Int.	DSW061-064-08DI8		8	64	76	114
6.2	3	Ext.	DSW062-024-08DE3		8	24	34	79
	5	Ext.	DSW062-043-08DE5		8	43	53	91
	5	Int.	DSW062-043-08DI5		8	43	53	91
	8	Int.	DSW062-064-08DI8		8	64	76	114
6.3	3	Ext.	DSW063-024-08DE3		8	24	34	79
	5	Ext.	DSW063-043-08DE5		8	43	53	91
	5	Int.	DSW063-043-08DI5		8	43	53	91
	8	Int.	DSW063-064-08DI8		8	64	76	114
6.4	3	Ext.	DSW064-024-08DE3		8	24	34	79
	5	Ext.	DSW064-043-08DE5		8	43	53	91
	5	Int.	DSW064-043-08DI5		8	43	53	91
	8	Int.	DSW064-064-08DI8		8	64	76	114
6.5	3	Ext.	DSW065-024-08DE3		8	24	34	79
	5	Ext.	DSW065-043-08DE5		8	43	53	91
	5	Int.	DSW065-043-08DI5		8	43	53	91
	8	Int.	DSW065-064-08DI8		8	64	76	114
6.6	3	Ext.	DSW066-024-08DE3		8	24	34	79
	5	Ext.	DSW066-043-08DE5		8	43	53	91
	5	Int.	DSW066-043-08DI5		8	43	53	91
	8	Int.	DSW066-064-08DI8		8	64	76	114
6.7	3	Ext.	DSW067-024-08DE3		8	24	34	79
	5	Ext.	DSW067-043-08DE5		8	43	53	91
	5	Int.	DSW067-043-08DI5		8	43	53	91
	8	Int.	DSW067-064-08DI8		8	64	76	114
6.8	3	Ext.	DSW068-024-08DE3		8	24	34	79
	5	Ext.	DSW068-043-08DE5		8	43	53	91
	5	Int.	DSW068-043-08DI5		8	43	53	91
	8	Int.	DSW068-064-08DI8		8	64	76	114
6.9	3	Ext.	DSW069-024-08DE3		8	24	34	79
	5	Ext.	DSW069-043-08DE5		8	43	53	91
	5	Int.	DSW069-043-08DI5		8	43	53	91
	8	Int.	DSW069-064-08DI8		8	64	76	114
7.0	3	Ext.	DSW070-024-08DE3		8	24	34	79
	5	Ext.	DSW070-043-08DE5		8	43	53	91
	5	Int.	DSW070-043-08DI5		8	43	53	91
	8	Int.	DSW070-064-08DI8		8	64	76	114
7.1	3	Ext.	DSW071-029-08DE3		8	29	41	79
	5	Ext.	DSW071-043-08DE5		8	43	53	91
	5	Int.	DSW071-043-08DI5		8	43	53	91
	8	Int.	DSW071-064-08DI8		8	64	76	114
7.2	3	Ext.	DSW072-029-08DE3		8	29	41	79
	5	Ext.	DSW072-043-08DE5		8	43	53	91
	5	Int.	DSW072-043-08DI5		8	43	53	91
	8	Int.	DSW072-064-08DI8		8	64	76	114
7.3	3	Ext.	DSW073-029-08DE3		8	29	41	79
	5	Ext.	DSW073-043-08DE5		8	43	53	91
	5	Int.	DSW073-043-08DI5		8	43	53	91
	8	Int.	DSW073-064-08DI8		8	64	76	114

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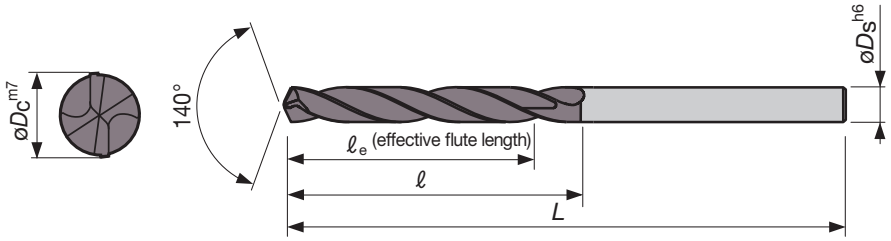

Drill dia. øDc (mm)	Tolerance m7 (mm)
3.00 ~ 6	0.004 ~ 0.016
6.01 ~ 10	0.006 ~ 0.021
10.01 ~ 16	0.007 ~ 0.025

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm) øDs	ℓe	ℓ	L
7.4	3	Ext.	DSW074-029-08DE3		8	29	41	79
	5	Ext.	DSW074-043-08DE5		8	43	53	91
	5	Int.	DSW074-043-08DI5		8	43	53	91
	8	Int.	DSW074-064-08DI8		8	64	76	114
7.5	3	Ext.	DSW075-029-08DE3		8	29	41	79
	5	Ext.	DSW075-043-08DE5		8	43	53	91
	5	Int.	DSW075-043-08DI5		8	43	53	91
	8	Int.	DSW075-064-08DI8		8	64	76	114
7.6	3	Ext.	DSW076-029-08DE3		8	29	41	79
	5	Ext.	DSW076-043-08DE5		8	43	53	91
	5	Int.	DSW076-043-08DI5		8	43	53	91
	8	Int.	DSW076-064-08DI8		8	64	76	114
7.7	3	Ext.	DSW077-029-08DE3		8	29	41	79
	5	Ext.	DSW077-043-08DE5		8	43	53	91
	5	Int.	DSW077-043-08DI5		8	43	53	91
	8	Int.	DSW077-064-08DI8		8	64	76	114
7.8	3	Ext.	DSW078-029-08DE3		8	29	41	79
	5	Ext.	DSW078-043-08DE5		8	43	53	91
	5	Int.	DSW078-043-08DI5		8	43	53	91
	8	Int.	DSW078-064-08DI8		8	64	76	114
7.9	3	Ext.	DSW079-029-08DE3		8	29	41	79
	5	Ext.	DSW079-043-08DE5		8	43	53	91
	5	Int.	DSW079-043-08DI5		8	43	53	91
	8	Int.	DSW079-064-08DI8		8	64	76	114
8.0	3	Ext.	DSW080-029-08DE3		8	29	41	79
	5	Ext.	DSW080-043-08DE5		8	43	53	91
	5	Int.	DSW080-043-08DI5		8	43	53	91
	8	Int.	DSW080-064-08DI8		8	64	76	114
8.1	3	Ext.	DSW081-035-10DE3		10	35	47	89
	5	Ext.	DSW081-049-10DE5		10	49	61	103
	5	Int.	DSW081-049-10DI5		10	49	61	103
	8	Int.	DSW081-080-10DI8		10	80	95	142
8.2	3	Ext.	DSW082-035-10DE3		10	35	47	89
	5	Ext.	DSW082-049-10DE5		10	49	61	103
	5	Int.	DSW082-049-10DI5		10	49	61	103
	8	Int.	DSW082-080-10DI8		10	80	95	142
8.3	3	Ext.	DSW083-035-10DE3		10	35	47	89
	5	Ext.	DSW083-049-10DE5		10	49	61	103
	5	Int.	DSW083-049-10DI5		10	49	61	103
	8	Int.	DSW083-080-10DI8		10	80	95	142

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm) øDs	ℓe	ℓ	L
8.4	3	Ext.	DSW084-035-10DE3		10	35	47	89
	5	Ext.	DSW084-049-10DE5		10	49	61	103
	5	Int.	DSW084-049-10DI5		10	49	61	103
	8	Int.	DSW084-080-10DI8		10	80	95	142
8.5	3	Ext.	DSW085-035-10DE3		10	35	47	89
	5	Ext.	DSW085-049-10DE5		10	49	61	103
	5	Int.	DSW085-049-10DI5		10	49	61	103
	8	Int.	DSW085-080-10DI8		10	80	95	142
8.6	3	Ext.	DSW086-035-10DE3		10	35	47	89
	5	Ext.	DSW086-049-10DE5		10	49	61	103
	5	Int.	DSW086-049-10DI5		10	49	61	103
	8	Int.	DSW086-080-10DI8		10	80	95	142
8.7	3	Ext.	DSW087-035-10DE3		10	35	47	89
	5	Ext.	DSW087-049-10DE5		10	49	61	103
	5	Int.	DSW087-049-10DI5		10	49	61	103
	8	Int.	DSW087-080-10DI8		10	80	95	142
8.8	3	Ext.	DSW088-035-10DE3		10	35	47	89
	5	Ext.	DSW088-049-10DE5		10	49	61	103
	5	Int.	DSW088-049-10DI5		10	49	61	103
	8	Int.	DSW088-080-10DI8		10	80	95	142
8.9	3	Ext.	DSW089-035-10DE3		10	35	47	89
	5	Ext.	DSW089-049-10DE5		10	49	61	103
	5	Int.	DSW089-049-10DI5		10	49	61	103
	8	Int.	DSW089-080-10DI8		10	80	95	142
9.0	3	Ext.	DSW090-035-10DE3		10	35	47	89
	5	Ext.	DSW090-049-10DE5		10	49	61	103
	5	Int.	DSW090-049-10DI5		10	49	61	103
	8	Int.	DSW090-080-10DI8		10	80	95	142
9.1	3	Ext.	DSW091-035-10DE3		10	35	47	89
	5	Ext.	DSW091-049-10DE5		10	49	61	103
	5	Int.	DSW091-049-10DI5		10	49	61	103
	8	Int.	DSW091-080-10DI8		10	80	95	142
9.2	3	Ext.	DSW092-035-10DE3		10	35	47	89
	5	Ext.	DSW092-049-10DE5		10	49	61	103
	5	Int.	DSW092-049-10DI5		10	49	61	103
	8	Int.	DSW092-080-10DI8		10	80	95	142
9.3	3	Ext.	DSW093-035-10DE3		10	35	47	89
	5	Ext.	DSW093-049-10DE5		10	49	61	103
	5	Int.	DSW093-049-10DI5		10	49	61	103
	8	Int.	DSW093-080-10DI8		10	80	95	142

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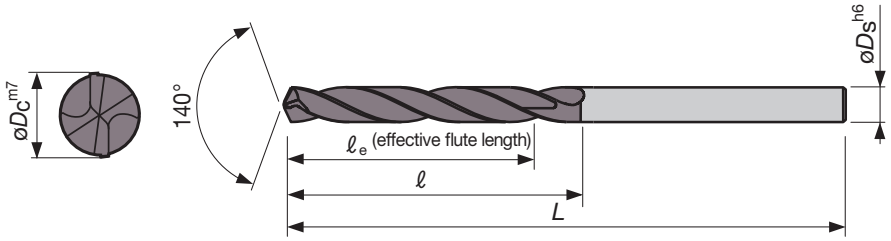
Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm)			
					øDs	ℓe	ℓ	L
9.4	3	Ext.	DSW094-035-10DE3		10	35	47	89
	5	Ext.	DSW094-049-10DE5		10	49	61	103
	5	Int.	DSW094-049-10DI5		10	49	61	103
	8	Int.	DSW094-080-10DI8		10	80	95	142
9.5	3	Ext.	DSW095-035-10DE3		10	35	47	89
	5	Ext.	DSW095-049-10DE5		10	49	61	103
	5	Int.	DSW095-049-10DI5		10	49	61	103
	8	Int.	DSW095-080-10DI8		10	80	95	142
9.6	3	Ext.	DSW096-035-10DE3		10	35	47	89
	5	Ext.	DSW096-049-10DE5		10	49	61	103
	5	Int.	DSW096-049-10DI5		10	49	61	103
	8	Int.	DSW096-080-10DI8		10	80	95	142
9.7	3	Ext.	DSW097-035-10DE3		10	35	47	89
	5	Ext.	DSW097-049-10DE5		10	49	61	103
	5	Int.	DSW097-049-10DI5		10	49	61	103
	8	Int.	DSW097-080-10DI8		10	80	95	142
9.8	3	Ext.	DSW098-035-10DE3		10	35	47	89
	5	Ext.	DSW098-049-10DE5		10	49	61	103
	5	Int.	DSW098-049-10DI5		10	49	61	103
	8	Int.	DSW098-080-10DI8		10	80	95	142
9.9	3	Ext.	DSW099-035-10DE3		10	35	47	89
	5	Ext.	DSW099-049-10DE5		10	49	61	103
	5	Int.	DSW099-049-10DI5		10	49	61	103
	8	Int.	DSW099-080-10DI8		10	80	95	142
10.0	3	Ext.	DSW100-035-10DE3		10	35	47	89
	5	Ext.	DSW100-049-10DE5		10	49	61	103
	5	Int.	DSW100-049-10DI5		10	49	61	103
	8	Int.	DSW100-080-10DI8		10	80	95	142
10.1	3	Ext.	DSW101-040-12DE3		12	40	55	102
	5	Ext.	DSW101-056-12DE5		12	56	71	118
	5	Int.	DSW101-056-12DI5		12	56	71	118
10.2	3	Ext.	DSW102-040-12DE3		12	40	55	102
	5	Ext.	DSW102-056-12DE5		12	56	71	118
	5	Int.	DSW102-056-12DI5		12	56	71	118
10.3	3	Ext.	DSW103-040-12DE3		12	40	55	102
	5	Ext.	DSW103-056-12DE5		12	56	71	118
	5	Int.	DSW103-056-12DI5		12	56	71	118
10.4	3	Ext.	DSW104-040-12DE3		12	40	55	102
	5	Ext.	DSW104-056-12DE5		12	56	71	118
	5	Int.	DSW104-056-12DI5		12	56	71	118
10.5	3	Ext.	DSW105-040-12DE3		12	40	55	102
	5	Ext.	DSW105-056-12DE5		12	56	71	118
	5	Int.	DSW105-056-12DI5		12	56	71	118
10.6	3	Ext.	DSW106-040-12DE3		12	40	55	102
	5	Ext.	DSW106-056-12DE5		12	56	71	118
	5	Int.	DSW106-056-12DI5		12	56	71	118
10.7	3	Ext.	DSW107-040-12DE3		12	40	55	102
	5	Ext.	DSW107-056-12DE5		12	56	71	118
	5	Int.	DSW107-056-12DI5		12	56	71	118
10.8	3	Ext.	DSW108-040-12DE3		12	40	55	102
	5	Ext.	DSW108-056-12DE5		12	56	71	118
	5	Int.	DSW108-056-12DI5		12	56	71	118
10.9	3	Ext.	DSW109-040-12DE3		12	40	55	102
	5	Ext.	DSW109-056-12DE5		12	56	71	118
	5	Int.	DSW109-056-12DI5		12	56	71	118
11.0	3	Ext.	DSW110-040-12DE3		12	40	55	102
	5	Ext.	DSW110-056-12DE5		12	56	71	118
	5	Int.	DSW110-056-12DI5		12	56	71	118
11.1	3	Ext.	DSW111-040-12DE3		12	40	55	102
	5	Ext.	DSW111-056-12DE5		12	56	71	118
	5	Int.	DSW111-056-12DI5		12	56	71	118
11.2	3	Ext.	DSW112-040-12DE3		12	40	55	102
	5	Ext.	DSW112-056-12DE5		12	56	71	118
	5	Int.	DSW112-056-12DI5		12	56	71	118
11.3	3	Ext.	DSW113-040-12DE3		12	40	55	102
	5	Ext.	DSW113-056-12DE5		12	56	71	118
	5	Int.	DSW113-056-12DI5		12	56	71	118
11.4	3	Ext.	DSW114-040-12DE3		12	40	55	102
	5	Ext.	DSW114-056-12DE5		12	56	71	118
	5	Int.	DSW114-056-12DI5		12	56	71	118
11.5	3	Ext.	DSW115-040-12DE3		12	40	55	102
	5	Ext.	DSW115-056-12DE5		12	56	71	118
	5	Int.	DSW115-056-12DI5		12	56	71	118
11.6	3	Ext.	DSW116-040-12DE3		12	40	55	102
	5	Ext.	DSW116-056-12DE5		12	56	71	118
	5	Int.	DSW116-056-12DI5		12	56	71	118
11.7	3	Ext.	DSW117-040-12DE3		12	40	55	102
	5	Ext.	DSW117-056-12DE5		12	56	71	118
	5	Int.	DSW117-056-12DI5		12	56	71	118
11.8	3	Ext.	DSW118-040-12DE3		12	40	55	102
	5	Ext.	DSW118-056-12DE5		12	56	71	118
	5	Int.	DSW118-056-12DI5		12	56	71	118
11.9	3	Ext.	DSW119-040-12DE3		12	40	55	102
	5	Ext.	DSW119-056-12DE5		12	56	71	118
	5	Int.	DSW119-056-12DI5		12	56	71	118
12.0	3	Ext.	DSW120-040-12DE3		12	40	55	102
	5	Ext.	DSW120-056-12DE5		12	56	71	118
	5	Int.	DSW120-056-12DI5		12	56	71	118
12.1	3	Ext.	DSW121-043-14DE3		14	43	60	107
	5	Ext.	DSW121-060-14DE5		14	60	77	124
	5	Int.	DSW121-060-14DI5		14	60	77	124
12.2	3	Ext.	DSW122-043-14DE3		14	43	60	107
	5	Ext.	DSW122-060-14DE5		14	60	77	124
	5	Int.	DSW122-060-14DI5		14	60	77	124
12.3	3	Ext.	DSW123-043-14DE3		14	43	60	107
	5	Ext.	DSW123-060-14DE5		14	60	77	124
	5	Int.	DSW123-060-14DI5		14	60	77	124

*For inquiry on DSW stock, please contact the local office.



Drill dia. *ø*Dc (mm)	Tolerance m7 (mm)
3.00 ~ 6	0.004 ~ 0.016
6.01 ~ 10	0.006 ~ 0.021
10.01 ~ 16	0.007 ~ 0.025

Drill dia. *ø*Dc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm) *ø*Ds	ℓe	ℓ	L
12.4	3	Ext.	DSW124-043-14DE3		14	43	60	107
	5	Ext.	DSW124-060-14DE5		14	60	77	124
	5	Int.	DSW124-060-14DI5		14	60	77	124
12.5	3	Ext.	DSW125-043-14DE3		14	43	60	107
	5	Ext.	DSW125-060-14DE5		14	60	77	124
	5	Int.	DSW125-060-14DI5		14	60	77	124
12.6	3	Ext.	DSW126-043-14DE3		14	43	60	107
	5	Ext.	DSW126-060-14DE5		14	60	77	124
	5	Int.	DSW126-060-14DI5		14	60	77	124
12.7	3	Ext.	DSW127-043-14DE3		14	43	60	107
	5	Ext.	DSW127-060-14DE5		14	60	77	124
	5	Int.	DSW127-060-14DI5		14	60	77	124
12.8	3	Ext.	DSW128-043-14DE3		14	43	60	107
	5	Ext.	DSW128-060-14DE5		14	60	77	124
	5	Int.	DSW128-060-14DI5		14	60	77	124
12.9	3	Ext.	DSW129-043-14DE3		14	43	60	107
	5	Ext.	DSW129-060-14DE5		14	60	77	124
	5	Int.	DSW129-060-14DI5		14	60	77	124
13.0	3	Ext.	DSW130-043-14DE3		14	43	60	107
	5	Ext.	DSW130-060-14DE5		14	60	77	124
	5	Int.	DSW130-060-14DI5		14	60	77	124
13.1	3	Ext.	DSW131-043-14DE3		14	43	60	107
	5	Ext.	DSW131-060-14DE5		14	60	77	124
	5	Int.	DSW131-060-14DI5		14	60	77	124
13.2	3	Ext.	DSW132-043-14DE3		14	43	60	107
	5	Ext.	DSW132-060-14DE5		14	60	77	124
	5	Int.	DSW132-060-14DI5		14	60	77	124
13.3	3	Ext.	DSW133-043-14DE3		14	43	60	107
	5	Ext.	DSW133-060-14DE5		14	60	77	124
	5	Int.	DSW133-060-14DI5		14	60	77	124
13.4	3	Ext.	DSW134-043-14DE3		14	43	60	107
	5	Ext.	DSW134-060-14DE5		14	60	77	124
	5	Int.	DSW134-060-14DI5		14	60	77	124
13.5	3	Ext.	DSW135-043-14DE3		14	43	60	107
	5	Ext.	DSW135-060-14DE5		14	60	77	124
	5	Int.	DSW135-060-14DI5		14	60	77	124
13.6	3	Ext.	DSW136-043-14DE3		14	43	60	107
	5	Ext.	DSW136-060-14DE5		14	60	77	124
	5	Int.	DSW136-060-14DI5		14	60	77	124

Drill dia. *ø*Dc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm) *ø*Ds	ℓe	ℓ	L
13.7	3	Ext.	DSW137-043-14DE3		14	43	60	107
	5	Ext.	DSW137-060-14DE5		14	60	77	124
	5	Int.	DSW137-060-14DI5		14	60	77	124
13.8	3	Ext.	DSW138-043-14DE3		14	43	60	107
	5	Ext.	DSW138-060-14DE5		14	60	77	124
	5	Int.	DSW138-060-14DI5		14	60	77	124
13.9	3	Ext.	DSW139-043-14DE3		14	43	60	107
	5	Ext.	DSW139-060-14DE5		14	60	77	124
	5	Int.	DSW139-060-14DI5		14	60	77	124
14.0	3	Ext.	DSW140-043-14DE3		14	43	60	107
	5	Ext.	DSW140-060-14DE5		14	60	77	124
	5	Int.	DSW140-060-14DI5		14	60	77	124
14.1	3	Ext.	DSW141-045-16DE3		16	45	65	115
	5	Ext.	DSW141-063-16DE5		16	63	83	133
	5	Int.	DSW141-063-16DI5		16	63	83	133
14.2	3	Ext.	DSW142-045-16DE3		16	45	65	115
	5	Ext.	DSW142-063-16DE5		16	63	83	133
	5	Int.	DSW142-063-16DI5		16	63	83	133
14.3	3	Ext.	DSW143-045-16DE3		16	45	65	115
	5	Ext.	DSW143-063-16DE5		16	63	83	133
	5	Int.	DSW143-063-16DI5		16	63	83	133
14.4	3	Ext.	DSW144-045-16DE3		16	45	65	115
	5	Ext.	DSW144-063-16DE5		16	63	83	133
	5	Int.	DSW144-063-16DI5		16	63	83	133
14.5	3	Ext.	DSW145-045-16DE3		16	45	65	115
	5	Ext.	DSW145-063-16DE5		16	63	83	133
	5	Int.	DSW145-063-16DI5		16	63	83	133
14.6	3	Ext.	DSW146-045-16DE3		16	45	65	115
	5	Ext.	DSW146-063-16DE5		16	63	83	133
	5	Int.	DSW146-063-16DI5		16	63	83	133
14.7	3	Ext.	DSW147-045-16DE3		16	45	65	115
	5	Ext.	DSW147-063-16DE5		16	63	83	133
	5	Int.	DSW147-063-16DI5		16	63	83	133
14.8	3	Ext.	DSW148-045-16DE3		16	45	65	115
	5	Ext.	DSW148-063-16DE5		16	63	83	133
	5	Int.	DSW148-063-16DI5		16	63	83	133
14.9	3	Ext.	DSW149-045-16DE3		16	45	65	115
	5	Ext.	DSW149-063-16DE5		16	63	83	133
	5	Int.	DSW149-063-16DI5		16	63	83	133

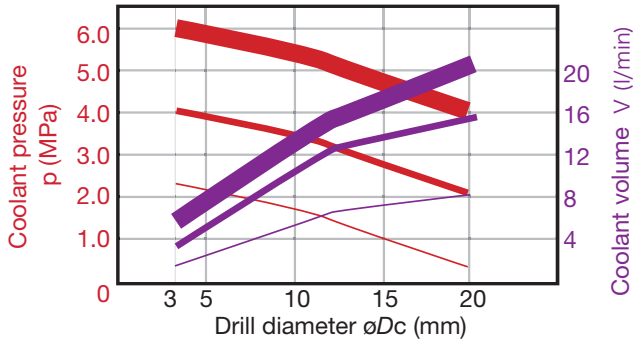
*For inquiry on DSW stock, please contact the local office.

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock*	Dimensions (mm) øDs	ℓe	ℓ	L
15.0	3	Ext.	DSW150-045-16DE3		16	45	65	115
	5	Ext.	DSW150-063-16DE5		16	63	83	133
	5	Int.	DSW150-063-16DI5		16	63	83	133
15.1	3	Ext.	DSW151-045-16DE3		16	45	65	115
	5	Ext.	DSW151-063-16DE5		16	63	83	133
	5	Int.	DSW151-063-16DI5		16	63	83	133
15.2	3	Ext.	DSW152-045-16DE3		16	45	65	115
	5	Ext.	DSW152-063-16DE5		16	63	83	133
	5	Int.	DSW152-063-16DI5		16	63	83	133
15.3	3	Ext.	DSW153-045-16DE3		16	45	65	115
	5	Ext.	DSW153-063-16DE5		16	63	83	133
	5	Int.	DSW153-063-16DI5		16	63	83	133
15.4	3	Ext.	DSW154-045-16DE3		16	45	65	115
	5	Ext.	DSW154-063-16DE5		16	63	83	133
	5	Int.	DSW154-063-16DI5		16	63	83	133
15.5	3	Ext.	DSW155-045-16DE3		16	45	65	115
	5	Ext.	DSW155-063-16DE5		16	63	83	133
	5	Int.	DSW155-063-16DI5		16	63	83	133
15.6	3	Ext.	DSW156-045-16DE3		16	45	65	115
	5	Ext.	DSW156-063-16DE5		16	63	83	133
	5	Int.	DSW156-063-16DI5		16	63	83	133
15.7	3	Ext.	DSW157-045-16DE3		16	45	65	115
	5	Ext.	DSW157-063-16DE5		16	63	83	133
	5	Int.	DSW157-063-16DI5		16	63	83	133
15.8	3	Ext.	DSW158-045-16DE3		16	45	65	115
	5	Ext.	DSW158-063-16DE5		16	63	83	133
	5	Int.	DSW158-063-16DI5		16	63	83	133
15.9	3	Ext.	DSW159-045-16DE3		16	45	65	115
	5	Ext.	DSW159-063-16DE5		16	63	83	133
	5	Int.	DSW159-063-16DI5		16	63	83	133
16.0	3	Ext.	DSW160-045-16DE3		16	45	65	115
	5	Ext.	DSW160-063-16DE5		16	63	83	133
	5	Int.	DSW160-063-16DI5		16	63	83	133

*For inquiry on DSW stock, please contact the local office.

Recommended coolant pressure and volume for internal coolant supply:

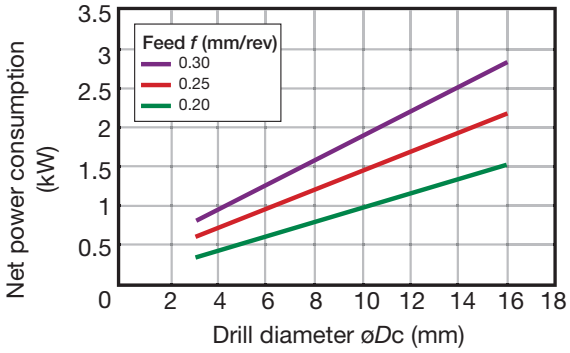
The following graph is a reference guide for pressure and volume. Values should be adjusted according to work material and actual chip evacuation.



: Ideal pressure
: Enough pressure
: Minimum pressure
: Ideal volume
: Enough volume
: Minimum volume

Reference for required spindle power:

The required spindle power may vary depending on the type of work material or hardness. A spindle with sufficient power should be used when referring to the below graph.



Work material : Alloy steel (SNCM439)
Cutting speed : *Vc* = 100 m/min

Designation system

The designation for the new solid drill series includes tool dimensions for easy product identification.

DSW ① **088** ② - **035** ③ - **10** ④ - **D** ⑤ **E** ⑥ **3** ⑦

① Series	
DSW	Series name of solid drill

② Drill dia. øDc (mm)	
088	ø8.8

③ Effective flute length ℓe (mm)	
035	35

④ Shank diameter øDs (mm)	
10	ø10

⑤ DIN 6535 - Form HA

⑥ Coolant Supply	
E	External (without coolant hole)
I	Internal (with coolant hole)

⑦ Drilling depth

Approximate value of L/D ratio.
Caution: Code may be different from the actual length. This is dependent upon the tool diameter.

Caution: "Effective flute length" shows the maximum flute length for effective chip evacuation. The actual drilling depth may be shorter than described depending on the work material or cutting conditions.

Standard cutting conditions

DSW-DE (External supply)

Work materials	Brinell hardness (HB)	Cutting Speed: *Vc* (m/min)			Feed: *f* (mm/rev)		
		ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	~ 180	40 - 100	60 - 120	60 - 130	0.15 - 0.30	0.15 - 0.35	0.20 - 0.50
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	180 ~ 300	40 - 90	50 - 120	60 - 130	0.15 - 0.30	0.15 - 0.35	0.20 - 0.40
High alloy steels SCM440 etc. (42CrMo4 etc.)	250 ~ 350	40 - 80	50 - 100	50 - 100	0.10 - 0.20	0.15 - 0.20	0.15 - 0.35
Stainless steels SUS304 etc. (X5CrNi18-9 etc.)	~ 200	10 - 20	10 - 20	10 - 20	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15
Grey cast irons FC300 etc. (GG30 etc.)	~ 200	40 - 90	50 - 95	50 - 100	0.15 - 0.30	0.20 - 0.40	0.20 - 0.50
Ductile cast irons FCD450 etc. (GGG45 etc.)	~ 300	30 - 80	40 - 90	45 - 90	0.10 - 0.30	0.20 - 0.40	0.20 - 0.40
Aluminium alloys ADC12 etc.	-	40 - 90	50 - 100	50 - 100	0.15 - 0.30	0.20 - 0.40	0.20 - 0.50
Titanium alloys Ti-6Al-4V etc.	-	20 - 40	20 - 40	20 - 40	0.10 - 0.20	0.15 - 0.25	0.15 - 0.40
Heat-resistant alloys, Inconel Inconel 718 etc.	250 ~	10 - 30	10 - 30	10 - 30	0.03 - 0.07	0.05 - 0.10	0.07 - 0.12
High hardened steels SKD11 etc.	~ 40HRC	10 - 30	10 - 30	10 - 30	0.05 - 0.15	0.05 - 0.15	0.05 - 0.20

· The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges.
· When using the smaller diameter tools in each range, set the feed "*f*" to the lower recommended values.
· The coolant supply is critical for the provision of stable machining conditions and enhanced tool life. A large coolant volume should be supplied, especially when drilling difficult-to-cut materials.
· When drilling stainless steel with low machinability such as austenitic stainless steel with a depth deeper than L/D = 3, a pecking cycle or internal coolant supply is recommended.

DSW-DI (Internal supply)

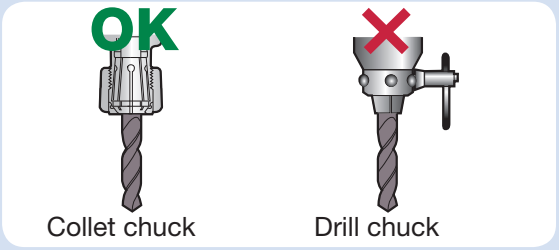
Work materials	Brinell hardness (HB)	Cutting Speed: *Vc* (m/min)			Feed: *f* (mm/rev)		
		ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	~ 180	70 - 140	80 - 160	90 - 190	0.15 - 0.30	0.15 - 0.35	0.20 - 0.50
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	180 ~ 300	40 - 90	40 - 90	60 - 130	0.15 - 0.30	0.15 - 0.35	0.20 - 0.40
High alloy steels SCM440 etc. (42CrMo4 etc.)	250 ~ 350	40 - 80	50 - 100	50 - 100	0.10 - 0.20	0.15 - 0.20	0.15 - 0.35
Stainless steels SUS304 etc. (X5CrNi18-9 etc.)	~ 200	25 - 75	25 - 75	25 - 75	0.05 - 0.15	0.05 - 0.15	0.10 - 0.30
Grey cast irons FC300 etc. (GG30 etc.)	~ 200	70 - 90	70 - 90	70 - 90	0.15 - 0.30	0.20 - 0.40	0.20 - 0.50
Ductile cast irons FCD450 etc. (GGG45 etc.)	~ 300	40 - 90	40 - 90	40 - 90	0.10 - 0.30	0.20 - 0.40	0.20 - 0.40
Aluminium alloys ADC12 etc.	-	60 - 200	60 - 200	60 - 200	0.15 - 0.30	0.20 - 0.40	0.20 - 0.50
Titanium alloys Ti-6Al-4V etc.	-	20 - 40	20 - 40	20 - 40	0.10 - 0.20	0.15 - 0.25	0.15 - 0.40
Heat-resistant alloys, Inconel Inconel 718 etc.	250 ~	10 - 30	10 - 30	10 - 30	0.03 - 0.07	0.05 - 0.10	0.07 - 0.12
High hardened steels SKD11 etc.	~ 40HRC	10 - 30	10 - 30	10 - 30	0.05 - 0.15	0.05 - 0.15	0.05 - 0.20

· The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges.
· When using the smaller diameter tools in each range, set the feed "*f*" to the lower recommended values.
· Oil holes that become blocked may cause drill breakages. A filter to prevent the circulation of chips must be used on the coolant supply system.

Guidelines for correct usage of carbide drills

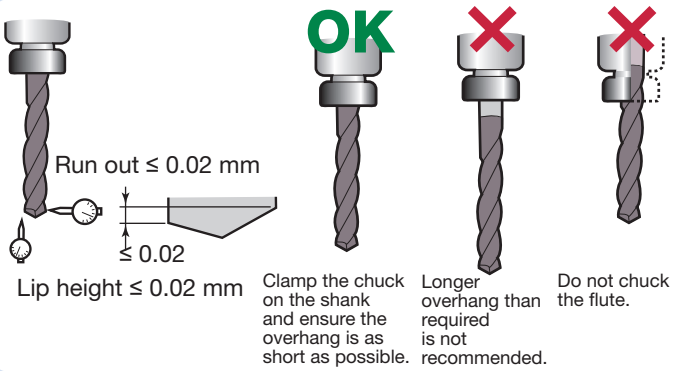
Holders for solid carbide drills:

A collet chuck holder is recommended for use with carbide drills. When using a milling chuck holder, a collet chuck with a straight shank or straight collet should be used.



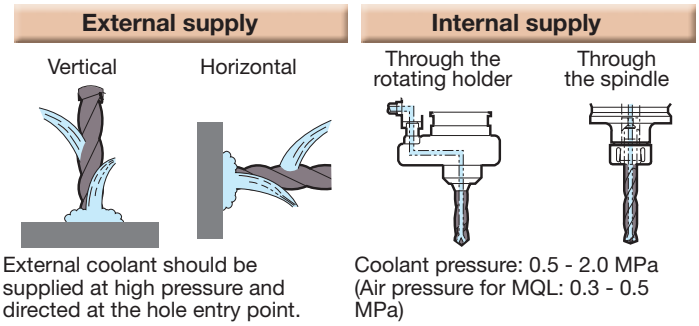
Chucking drills:

- Radial run out and lip height should be less than 0.02mm. If run out or lip height is larger (close to 0.05mm), machining is possible. However, less accurate holes or short tool life may be a result.
- Overhang length should be as short as possible.



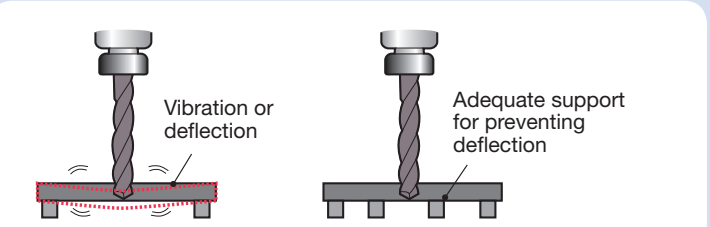
Coolant Supply:

When using a drill without a coolant hole, such as the DSW-DE type, coolant should always be directed to the entrance of the hole. Maintaining this supplying is very important for stable drilling performance.



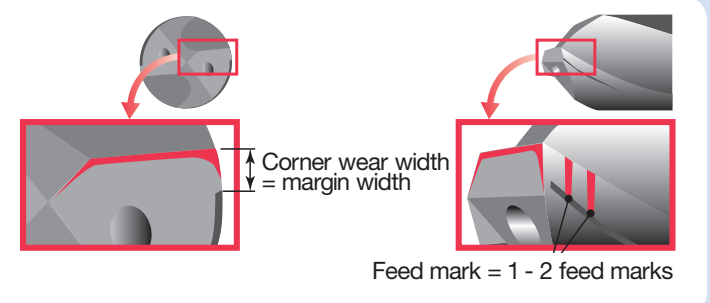
Clamping workpieces:

As solid carbide drills have a higher thrust force, machining with low rigidity or inadequate support can cause fractures or breakages through vibration. It is important the workpiece is rigidly clamped and has adequate support.



The criteria of tool life:

- Corner wear width: equal to margin width
- Feed mark: 1 - 2 feed marks on the margin
- Spindle load increase: 30% higher than starting level
- Irregular situation: worse chip control, hole diameter change, worse surface finish, larger burrs, bigger sound.



DSX

Internal Coolant | (Ti,Aℓ) N Coated | Diameter ø3.0~20.0 mm | IT9~10 IT class

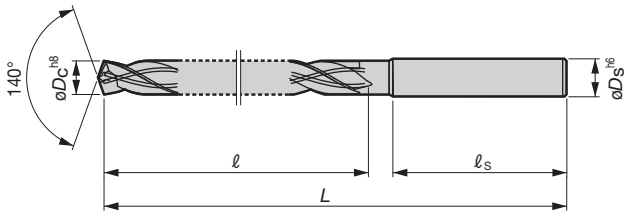
P Steel | M Stainless | K Cast Iron | N Non-ferrous | S Superalloys | H Hard Materials

30° Helix | 3/5/8 L/D | 140° Point angle

For High Speed and efficient Deep Hole Drilling of Steels
Coated solid carbide drills with spiral oil holes

Internal coolant supply

Drill Dia. øDc	øDc≤3.0	3.0<øDc≤6.0	6.0<øDc≤10.0	10.0<øDc≤18.0	18.0<øDc≤20.0
Tolerances	0 −0.014	0 −0.018	0 −0.022	0 −0.027	0 −0.033



L/D = 3

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm) øDs	ℓ	ℓs	L
3.0	DSX0300F03	▲	3.0	15	48	68
3.1	DSX0310F03	▲	4.0	18		71
3.2	DSX0320F03	▲				
3.3	DSX0330F03	▲				
3.4	DSX0340F03	▲				
3.5	DSX0350F03	▲				
3.6	DSX0360F03	▲		20		73
3.7	DSX0370F03	▲				
3.8	DSX0380F03	▲				
3.9	DSX0390F03	▲				
4.0	DSX0400F03	▲				
4.1	DSX0410F03	▲	5.0	23	50	78
4.2	DSX0420F03	▲				
4.3	DSX0430F03	▲				
4.4	DSX0440F03	▲				
4.5	DSX0450F03	▲				
4.6	DSX0460F03	▲		25		80
4.7	DSX0470F03	▲				
4.8	DSX0480F03	▲				
4.9	DSX0490F03	▲				
5.0	DSX0500F03	▲				
5.1	DSX0510F03	▲	6.0	28	52	82
5.2	DSX0520F03	▲				
5.3	DSX0530F03	▲				
5.4	DSX0540F03	▲				
5.5	DSX0550F03	▲				
5.6	DSX0560F03	▲		30		
5.7	DSX0570F03	▲				
5.8	DSX0580F03	▲				
5.9	DSX0590F03	▲				
6.0	DSX0600F03	▲				
6.1	DSX0610F03	▲	7.0	33	53	86
6.2	DSX0620F03	▲				
6.3	DSX0630F03	▲				
6.4	DSX0640F03	▲				
6.5	DSX0650F03	▲				
6.6	DSX0660F03	▲		35		88
6.7	DSX0670F03	▲				
6.8	DSX0680F03	▲				
6.9	DSX0690F03	▲				
7.0	DSX0700F03	▲				
7.1	DSX0710F03	▲	8.0	38	54	92
7.2	DSX0720F03	▲				
7.3	DSX0730F03	▲				
7.4	DSX0740F03	▲				

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm) øDs	ℓ	ℓs	L
7.5	DSX0750F03	▲	8.0	38	54	92
7.6	DSX0760F03	▲		40		94
7.7	DSX0770F03	▲				
7.8	DSX0780F03	▲				
7.9	DSX0790F03	▲				
8.0	DSX0800F03	▲				
8.1	DSX0810F03	▲	9.0	43	55	100
8.2	DSX0820F03	▲				
8.3	DSX0830F03	▲				
8.4	DSX0840F03	▲				
8.5	DSX0850F03	▲				
8.6	DSX0860F03	▲		45		
8.7	DSX0870F03	▲				
8.8	DSX0880F03	▲				
8.9	DSX0890F03	▲				
9.0	DSX0900F03	▲				
9.1	DSX0910F03	▲	10.0	48	56	106
9.2	DSX0920F03	▲				
9.3	DSX0930F03	▲				
9.4	DSX0940F03	▲				
9.5	DSX0950F03	▲				
9.6	DSX0960F03	▲		50		
9.7	DSX0970F03	▲				
9.8	DSX0980F03	▲				
9.9	DSX0990F03	▲				
10.0	DSX1000F03	▲				
10.1	DSX1010F03	▲	11.0	53	61	116
10.2	DSX1020F03	▲				
10.3	DSX1030F03	▲				
10.4	DSX1040F03	▲				
10.5	DSX1050F03	▲				
10.6	DSX1060F03	▲		55		
10.7	DSX1070F03	▲				
10.8	DSX1080F03	▲				
10.9	DSX1090F03	▲				
11.0	DSX1100F03	▲				
11.1	DSX1110F03	▲	12.0	58	62	122
11.2	DSX1120F03	▲				
11.3	DSX1130F03	▲				
11.4	DSX1140F03	▲				
11.5	DSX1150F03	▲				
11.6	DSX1160F03	▲		60		
11.7	DSX1170F03	▲				
11.8	DSX1180F03	▲				
11.9	DSX1190F03	▲				

▲ : Discontinued items

Relating pages | Cutting conditions (11-44) | Technical reference (15-1)

L/D = 5

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)			
			øDs	ℓ	ℓs	L
12.0	DSX1200F03	▲	12.0	60	62	122
12.1	DSX1210F03	▲	13.0	65	63	128
12.2	DSX1220F03	▲				
12.3	DSX1230F03	▲				
12.4	DSX1240F03	▲				
12.5	DSX1250F03	▲				
12.6	DSX1260F03	▲				
12.7	DSX1270F03	▲				
12.8	DSX1280F03	▲				
12.9	DSX1290F03	▲				
13.0	DSX1300F03	▲				
13.1	DSX1310F03	▲	14.0	70	64	134
13.2	DSX1320F03	▲				
13.3	DSX1330F03	▲				
13.4	DSX1340F03	▲				
13.5	DSX1350F03	▲				
13.6	DSX1360F03	▲				
13.7	DSX1370F03	▲				
13.8	DSX1380F03	▲				
13.9	DSX1390F03	▲				
14.0	DSX1400F03	▲				
14.1	DSX1410F03	▲	15.0	75	65	140
14.2	DSX1420F03	▲				
14.3	DSX1430F03	▲				
14.4	DSX1440F03	▲				
14.5	DSX1450F03	▲				
14.6	DSX1460F03	▲				
14.7	DSX1470F03	▲				
14.8	DSX1480F03	▲				
14.9	DSX1490F03	▲				
15.0	DSX1500F03	▲				
15.1	DSX1510F03	▲	16.0	80	66	146
15.2	DSX1520F03	▲				
15.3	DSX1530F03	▲				
15.4	DSX1540F03	▲				
15.5	DSX1550F03	▲				
15.6	DSX1560F03	▲				
15.7	DSX1570F03	▲				
15.8	DSX1580F03	▲				
15.9	DSX1590F03	▲				
16.0	DSX1600F03	▲				
16.5	DSX1650F03	▲	17.0	85	67	152
17.0	DSX1700F03	▲				
17.5	DSX1750F03	▲	18.0	90	68	158
18.0	DSX1800F03	▲				
18.5	DSX1850F03	▲	19.0	95	69	164
19.0	DSX1900F03	▲				
19.5	DSX1950F03	▲	20.0	100	70	170
20.0	DSX2000F03	▲				

Note: L/D = Hole depth / Drill diameter

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)			
			øDs	ℓ	ℓs	L
3.0	DSX0300F05	▲	3.0	24	48	77
3.1	DSX0310F05	▲	4.0	28		81
3.2	DSX0320F05	▲				
3.3	DSX0330F05	▲				
3.4	DSX0340F05	▲				
3.5	DSX0350F05	▲				
3.6	DSX0360F05	▲		32		85
3.7	DSX0370F05	▲				
3.8	DSX0380F05	▲				
3.9	DSX0390F05	▲				
4.0	DSX0400F05	▲				
4.1	DSX0410F05	▲	5.0	36	50	91
4.2	DSX0420F05	▲				
4.3	DSX0430F05	▲				
4.4	DSX0440F05	▲				
4.5	DSX0450F05	▲				
4.6	DSX0460F05	▲		40		94
4.7	DSX0470F05	▲				
4.8	DSX0480F05	▲				
4.9	DSX0490F05	▲				
5.0	DSX0500F05	▲				
5.1	DSX0510F05	▲	6.0	44	52	96
5.2	DSX0520F05	▲				
5.3	DSX0530F05	▲				
5.4	DSX0540F05	▲				
5.5	DSX0550F05	▲				
5.6	DSX0560F05	▲		48		100
5.7	DSX0570F05	▲				
5.8	DSX0580F05	▲				
5.9	DSX0590F05	▲				
6.0	DSX0600F05	▲				
6.1	DSX0610F05	▲	7.0	52	53	105
6.2	DSX0620F05	▲				
6.3	DSX0630F05	▲				
6.4	DSX0640F05	▲				
6.5	DSX0650F05	▲				
6.6	DSX0660F05	▲		56		109
6.7	DSX0670F05	▲				
6.8	DSX0680F05	▲				
6.9	DSX0690F05	▲				
7.0	DSX0700F05	▲				
7.1	DSX0710F05	▲	8.0	60	54	114
7.2	DSX0720F05	▲				
7.3	DSX0730F05	▲				
7.4	DSX0740F05	▲				
7.5	DSX0750F05	▲				
7.6	DSX0760F05	▲		64		118
7.7	DSX0770F05	▲				
7.8	DSX0780F05	▲				
7.9	DSX0790F05	▲				
8.0	DSX0800F05	▲				
8.1	DSX0810F05	▲	9.0	68	55	127
8.2	DSX0820F05	▲				
8.3	DSX0830F05	▲				
8.4	DSX0840F05	▲				
8.5	DSX0850F05	▲				
8.6	DSX0860F05	▲		72		
8.7	DSX0870F05	▲				
8.8	DSX0880F05	▲				
8.9	DSX0890F05	▲				

▲ : Discontinued items

DSX

Internal Coolant | (Ti,Aℓ) N Coated | Diameter ø3.0~20.0 mm | IT9~10 IT class

P Steel | M Stainless | K Cast Iron | N Non-ferrous | S Superalloys | H Hard Materials

Drill dia. $øD_C$	Cat. No.	Stock	Dimensions (mm)			
			$øD_S$	$ℓ$	$ℓ_S$	L
9.0	DSX0900F05	▲	9.0	72	55	127
9.1	DSX0910F05	▲	10.0	76	56	136
9.2	DSX0920F05	▲				
9.3	DSX0930F05	▲				
9.4	DSX0940F05	▲				
9.5	DSX0950F05	▲				
9.6	DSX0960F05	▲		80		
9.7	DSX0970F05	▲				
9.8	DSX0980F05	▲				
9.9	DSX0990F05	▲				
10.0	DSX1000F05	▲				
10.1	DSX1010F05	▲	11.0	84	61	149
10.2	DSX1020F05	▲				
10.3	DSX1030F05	▲				
10.4	DSX1040F05	▲				
10.5	DSX1050F05	▲				
10.6	DSX1060F05	▲		88		
10.7	DSX1070F05	▲				
10.8	DSX1080F05	▲				
10.9	DSX1090F05	▲				
11.0	DSX1100F05	▲				
11.1	DSX1110F05	▲	12.0	92	62	158
11.2	DSX1120F05	▲				
11.3	DSX1130F05	▲				
11.4	DSX1140F05	▲				
11.5	DSX1150F05	▲				
11.6	DSX1160F05	▲		96		
11.7	DSX1170F05	▲				
11.8	DSX1180F05	▲				
11.9	DSX1190F05	▲				
12.0	DSX1200F05	▲				
12.1	DSX1210F05	▲	13.0	104	63	167
12.2	DSX1220F05	▲				
12.3	DSX1230F05	▲				
12.4	DSX1240F05	▲				
12.5	DSX1250F05	▲				
12.6	DSX1260F05	▲				
12.7	DSX1270F05	▲				
12.8	DSX1280F05	▲				
12.9	DSX1290F05	▲				
13.0	DSX1300F05	▲				
13.1	DSX1310F05	▲	14.0	112	64	176
13.2	DSX1320F05	▲				
13.3	DSX1330F05	▲				
13.4	DSX1340F05	▲				
13.5	DSX1350F05	▲				
13.6	DSX1360F05	▲				
13.7	DSX1370F05	▲				
13.8	DSX1380F05	▲				
13.9	DSX1390F05	▲				
14.0	DSX1400F05	▲				
14.1	DSX1410F05	▲	15.0	120	65	185
14.2	DSX1420F05	▲				
14.3	DSX1430F05	▲				
14.4	DSX1440F05	▲				
14.5	DSX1450F05	▲				
14.6	DSX1460F05	▲				
14.7	DSX1470F05	▲				
14.8	DSX1480F05	▲				
14.9	DSX1490F05	▲				

Drill dia. $øD_C$	Cat. No.	Stock	Dimensions (mm)			
			$øD_S$	$ℓ$	$ℓ_S$	L
15.0	DSX1500F05	▲	15.0	120	65	185
15.1	DSX1510F05	▲	16.0	128	66	194
15.2	DSX1520F05	▲				
15.3	DSX1530F05	▲				
15.4	DSX1540F05	▲				
15.5	DSX1550F05	▲				
15.6	DSX1560F05	▲				
15.7	DSX1570F05	▲				
15.8	DSX1580F05	▲				
15.9	DSX1590F05	▲				
16.0	DSX1600F05	▲				
16.5	DSX1650F05	▲	17.0	136	67	203
17.0	DSX1700F05	▲				
17.5	DSX1750F05	▲	18.0	144	68	212
18.0	DSX1800F05	▲				
18.5	DSX1850F05	▲	19.0	152	69	221
19.0	DSX1900F05	▲				
19.5	DSX1950F05	▲	20.0	160	70	230
20.0	DSX2000F05	▲				

Note: L/D = Hole depth / Drill diameter

▲ : Discontinued items

Relating pages | Cutting conditions (11-44) | Technical reference (15-1)

L/D = 8

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)			
			øDs	ℓ	ℓs	L
3.0	DSX0300F08	▲	3.0	33	48	86
3.1	DSX0310F08		4.0	39	48	92
3.2	DSX0320F08					
3.3	DSX0330F08					
3.4	DSX0340F08					
3.5	DSX0350F08	▲				
3.6	DSX0360F08			44		97
3.7	DSX0370F08					
3.8	DSX0380F08					
3.9	DSX0390F08					
4.0	DSX0400F08	▲				
4.1	DSX0410F08		5.0	50	50	105
4.2	DSX0420F08					
4.3	DSX0430F08					
4.4	DSX0440F08					
4.5	DSX0450F08	▲				
4.6	DSX0460F08			55		110
4.7	DSX0470F08					
4.8	DSX0480F08					
4.9	DSX0490F08					
5.0	DSX0500F08	▲				
5.1	DSX0510F08		6.0	61	52	113
5.2	DSX0520F08					
5.3	DSX0530F08					
5.4	DSX0540F08					
5.5	DSX0550F08	▲				
5.6	DSX0560F08			66		118
5.7	DSX0570F08					
5.8	DSX0580F08					
5.9	DSX0590F08					
6.0	DSX0600F08	▲				
6.1	DSX0610F08		7.0	72	53	125
6.2	DSX0620F08					
6.3	DSX0630F08					
6.4	DSX0640F08					
6.5	DSX0650F08	▲				
6.6	DSX0660F08			77		130
6.7	DSX0670F08					
6.8	DSX0680F08					
6.9	DSX0690F08					
7.0	DSX0700F08	▲				
7.1	DSX0710F08		8.0	83	54	137
7.2	DSX0720F08					
7.3	DSX0730F08					
7.4	DSX0740F08					
7.5	DSX0750F08	▲				
7.6	DSX0760F08			88		142
7.7	DSX0770F08					
7.8	DSX0780F08					
7.9	DSX0790F08					
8.0	DSX0800F08	▲				

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)			
			øDs	ℓ	ℓs	L
8.1	DSX0810F08		9.0	94	55	154
8.2	DSX0820F08					
8.3	DSX0830F08					
8.4	DSX0840F08					
8.5	DSX0850F08	▲				
8.6	DSX0860F08			99		
8.7	DSX0870F08					
8.8	DSX0880F08					
8.9	DSX0890F08					
9.0	DSX0900F08	▲				
9.1	DSX0910F08		10.0	105	56	166
9.2	DSX0920F08					
9.3	DSX0930F08					
9.4	DSX0940F08					
9.5	DSX0950F08	▲				
9.6	DSX0960F08			110		
9.7	DSX0970F08					
9.8	DSX0980F08					
9.9	DSX0990F08					
10.0	DSX1000F08	▲				
10.1	DSX1010F08		11.0	116	61	182
10.2	DSX1020F08					
10.3	DSX1030F08					
10.4	DSX1040F08					
10.5	DSX1050F08	▲				
10.6	DSX1060F08			121		
10.7	DSX1070F08					
10.8	DSX1080F08					
10.9	DSX1090F08					
11.0	DSX1100F08	▲				
11.1	DSX1110F08		12.0	127	62	194
11.2	DSX1120F08					
11.3	DSX1130F08					
11.4	DSX1140F08					
11.5	DSX1150F08	▲				
11.6	DSX1160F08			132		
11.7	DSX1170F08					
11.8	DSX1180F08					
11.9	DSX1190F08					
12.0	DSX1200F08	▲				
12.1	DSX1210F08		13.0	143	63	206
12.2	DSX1220F08					
12.3	DSX1230F08					
12.4	DSX1240F08					
12.5	DSX1250F08	▲				
12.6	DSX1260F08					
12.7	DSX1270F08					
12.8	DSX1280F08					
12.9	DSX1290F08					
13.0	DSX1300F08	▲				
13.1	DSX1310F08		14.0	154	64	218

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Tool diameter
- Table feed (mm / min) = No. of revolutions × Feed per revolution

▲ : Discontinued items

DSX

Internal Coolant | (Ti,Aℓ) N Coated | Diameter ø3.0~20.0 mm | IT9~10 IT class

P Steel | M Stainless | K Cast Iron | N Non-ferrous | S Superalloys | H Hard Materials

Drill dia. øDc	Cat. No.	Stock	Dimensions (mm)			
			øDs	ℓ	ℓs	L
13.2	DSX1320F08		14.0	154	64	218
13.3	DSX1330F08					
13.4	DSX1340F08					
13.5	DSX1350F08	▲				
13.6	DSX1360F08					
13.7	DSX1370F08					
13.8	DSX1380F08					
13.9	DSX1390F08					
14.0	DSX1400F08	▲				
14.1	DSX1410F08		15.0	165	65	230
14.2	DSX1420F08					
14.3	DSX1430F08					
14.4	DSX1440F08					
14.5	DSX1450F08	▲				
14.6	DSX1460F08					
14.7	DSX1470F08					
14.8	DSX1480F08					
14.9	DSX1490F08					
15.0	DSX1500F08	▲				
15.1	DSX1510F08		16.0	176	66	242
15.2	DSX1520F08					
15.3	DSX1530F08					
15.4	DSX1540F08					
15.5	DSX1550F08	▲				
15.6	DSX1560F08					
15.7	DSX1570F08					
15.8	DSX1580F08					
15.9	DSX1590F08					
16.0	DSX1600F08	▲				

Standard cutting conditions

Work materials	Examples (JIS)	Hardness	Cutting speed: Vc (m/min)			Feed: f (mm/rev)		
			ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø20	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø20
Mild steels, Low carbon steels	USt.42-2, Ck25	< 180HB	70 - **120** - 140	80 - **130** - 160	90 - **160** - 190	0.15 - **0.20** - 0.25	0.20 - **0.30** - 0.35	0.25 - **0.30** - 0.40
Carbon steels, Alloy steels	CK45, 42CrMo4	180 ~ 300HB	50 - **100** - 130	70 - **120** - 160	80 - **140** - 170	0.15 - **0.20** - 0.25	0.20 - **0.30** - 0.35	0.25 - **0.30** - 0.40
High alloy steels etc.	42CrMoS4	250 ~ 350HB	40 - **80** - 100	60 - **90** - 140	60 - **100** - 160	0.10 - **0.15** - 0.20	0.15 - **0.25** - 0.30	0.15 - **0.25** - 0.30
Stainless steels	X5CrNi18-10	< 200HB	30 - **60** - 70	50 - **80** - 100	50 - **90** - 120	0.10 - **0.15** - 0.20	0.10 - **0.20** - 0.25	0.15 - **0.25** - 0.35
Grey cast irons	GG25	< 200HB	80 - **110** - 140	100 - **140** - 160	100 - **160** - 180	0.15 - **0.25** - 0.35	0.20 - **0.35** - 0.40	0.25 - **0.40** - 0.50
Ductile cast irons	GGG70	< 300HB	70 - **100** - 140	80 - **120** - 150	80 - **140** - 170	0.15 - **0.25** - 0.35	0.20 - **0.30** - 0.40	0.25 - **0.35** - 0.45
Aluminium alloys	ADC12	-	80 - **130** - 160	100 - **160** - 180	100 - **170** - 190	0.15 - **0.25** - 0.35	0.20 - **0.30** - 0.45	0.25 - **0.40** - 0.60
Titanium alloys	Ti-6Al-4V	-	25 - **40** - 60	30 - **60** - 80	30 - **60** - 80	0.10 - **0.15** - 0.20	0.10 - **0.20** - 0.25	0.15 - **0.25** - 0.35
Heat-resistant alloys	Inconel	250HB <	10 - **20** - 30	10 - **30** - 40	10 - **30** - 40	0.02 - **0.04** - 0.10	0.05 - **0.10** - 0.15	0.10 - **0.15** - 0.25
Hard materials	(SKD11)	< 40HRC	20 - **30** - 50	30 - **40** - 60	30 - **40** - 60	0.08 - **0.09** - 0.10	0.10 - **0.12** - 0.15	0.12 - **0.14** - 0.20

Note: • The cutting parameters shown in the table are merely a starting guideline for general machining.
• Values should be varied depending on the power or rigidity of the machine to be used. For the smaller side of drill diameters, select lower feeds.
• Chip packing in the oil holes may cause drill breakage. A filter preventing the circulation of chips should be used on coolant supply.
• Inconel is trademark of Huntington Alloys, Inc.

• No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Tool diameter
• Table feed (mm/min) = No. of revolutions × Feed per revolution

▲ : Discontinued items

Relating pages | Technical reference (15-1)

DSM

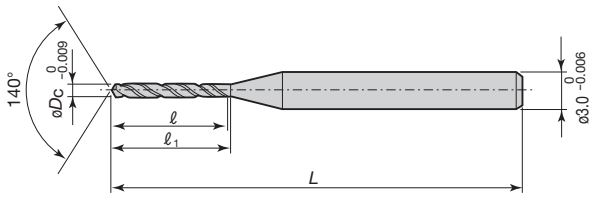
External Coolant | Ti (C,N) Coated | Diameter ø0.1~3.0 mm | IT9~10 IT class

P Steel | M Stainless | K Cast Iron | N Non-ferrous | H Superalloys | S Hard Materials

30° Helix | 5/10/15 L/D | 140° Point angle

For Steels
Coated solid carbide drills

External coolant supply



Drill dia. øDc	L/D	Cat. No.	Stock	Dimensions (mm) L	ℓ	ℓ1
0.10	10	DSM0010G10	●	38	1.15	1.4
0.11		DSM0011G10	●		1.25	1.5
0.12		DSM0012G10	●		1.35	1.6
0.13		DSM0013G10	●		1.55	1.8
0.14		DSM0014G10	●		1.65	1.9
0.15		DSM0015G10	●		1.75	2.0
0.16		DSM0016G10	●		1.85	2.1
0.17		DSM0017G10	●		1.95	2.2
0.18		DSM0018G10	●		2.15	2.4
0.19		DSM0019G10	●		2.25	2.5
0.20		DSM0020G10	●		2.35	2.6
0.21	10	DSM0021G10	●	38	2.45	2.7
0.22		DSM0022G10	●		2.55	2.8
0.23		DSM0023G10	●		2.75	3.0
0.24		DSM0024G10	●		2.85	3.1
0.25		DSM0025G10	●		3.0	3.3
0.26		DSM0026G10	●		3.1	3.4
0.27		DSM0027G10	●		3.2	3.5
0.28		DSM0028G10	●		3.4	3.7
0.29		DSM0029G10	●		3.5	3.8
0.30		DSM0030G10	●		3.9	4.2
0.31	15	DSM0031G15	●	38	5.6	5.9
0.32		DSM0032G15	●			
0.33		DSM0033G15	●			
0.34		DSM0034G15	●			
0.35		DSM0035G15	●			
0.36		DSM0036G15	●		6.5	6.8
0.37		DSM0037G15	●			
0.38		DSM0038G15	●			
0.39		DSM0039G15	●			
0.40		DSM0040G15	●			
0.41	15	DSM0041G15	●	38	7.4	7.7
0.42		DSM0042G15	●			
0.43		DSM0043G15	●			
0.44		DSM0044G15	●			
0.45		DSM0045G15	●			
0.46		DSM0046G15	●		8.1	8.7
0.47		DSM0047G15	●			
0.48		DSM0048G15	●			
0.49		DSM0049G15	●			
0.50		DSM0050G15	●			
0.51	10	DSM0051G10		38	6.6	7.2
0.52		DSM0052G10				
0.53		DSM0053G10				
0.54		DSM0054G10				
0.55		DSM0055G10	●			
0.56		DSM0056G10			7.3	7.9
0.57		DSM0057G10				
0.58		DSM0058G10				

Drill dia. øDc	L/D	Cat. No.	Stock	Dimensions (mm) L	ℓ	ℓ1
0.59	10	DSM0059G10		38	7.3	7.9
0.60		DSM0060G10	●			
0.61	10	DSM0061G10		38	7.9	8.5
0.62		DSM0062G10				
0.63		DSM0063G10				
0.64		DSM0064G10				
0.65		DSM0065G10	●			
0.66		DSM0066G10			8.6	9.2
0.67		DSM0067G10				
0.68		DSM0068G10				
0.69		DSM0069G10				
0.70		DSM0070G10	●			
0.71	10	DSM0071G10		38	9.2	9.8
0.72		DSM0072G10				
0.73		DSM0073G10				
0.74		DSM0074G10				
0.75		DSM0075G10	●			
0.76		DSM0076G10			9.9	10.5
0.77		DSM0077G10				
0.78		DSM0078G10				
0.79		DSM0079G10				
0.80		DSM0080G10	●			
0.81	10	DSM0081G10		38	10.5	11.1
0.82		DSM0082G10				
0.83		DSM0083G10				
0.84		DSM0084G10				
0.85		DSM0085G10				
0.86		DSM0086G10			9.9	10.5
0.87		DSM0087G10				
0.88		DSM0088G10				
0.89		DSM0089G10				
0.90		DSM0090G10	●			
0.91	10	DSM0091G10		38	10.5	11.1
0.92		DSM0092G10				
0.93		DSM0093G10				
0.94		DSM0094G10				
0.95	10	DSM0095G10		38	11.0	11.6
0.96		DSM0096G10				
0.97		DSM0097G10				
0.98		DSM0098G10				
0.99		DSM0099G10				
1.00		DSM0100G10	●		11.5	12.1
1.01	5	DSM0101G05		38	8.0	8.6
1.02		DSM0102G05				
1.03		DSM0103G05				
1.04		DSM0104G05				
1.05		DSM0105G05	●			
1.06		DSM0106G05				
1.07		DSM0107G05				

Drill dia. øDc	L/D	Cat. No.	Stock	Dimensions (mm) L	ℓ	ℓ1
1.08	5	DSM0108G05		38	8.0	8.6
1.09		DSM0109G05				
1.10		DSM0110G05	●			
1.11	5	DSM0111G05		38	8.9	9.5
1.12		DSM0112G05				
1.13		DSM0113G05				
1.14		DSM0114G05				
1.15		DSM0115G05				
1.16		DSM0116G05				
1.17		DSM0117G05				
1.18		DSM0118G05				
1.19		DSM0119G05				
1.20		DSM0120G05	●			
1.21	5	DSM0121G05		38	9.7	10.3
1.22		DSM0122G05				
1.23		DSM0123G05				
1.24		DSM0124G05				
1.25		DSM0125G05				
1.26		DSM0126G05				
1.27		DSM0127G05				
1.28		DSM0128G05				
1.29		DSM0129G05				
1.30		DSM0130G05	●			
1.31	5	DSM0131G05		38	10.5	11.1
1.32		DSM0132G05				
1.33		DSM0133G05				
1.34		DSM0134G05				
1.35		DSM0135G05				
1.36		DSM0136G05				
1.37		DSM0137G05				
1.38		DSM0138G05				
1.39		DSM0139G05				
1.40		DSM0140G05	●			
1.41	5	DSM0141G05		38	11.3	11.9
1.42		DSM0142G05				
1.43		DSM0143G05				
1.44		DSM0144G05				
1.45		DSM0145G05	●			
1.46		DSM0146G05				
1.47		DSM0147G05				
1.48		DSM0148G05				
1.49		DSM0149G05				
1.50		DSM0150G05	●			
1.51	5	DSM0151G05		45	12.1	12.7
1.52		DSM0152G05				
1.53		DSM0153G05				
1.54		DSM0154G05				
1.55		DSM0155G05	●			
1.56		DSM0156G05				

● : Stocked items

Relating pages | Cutting conditions (11-46) | Technical reference (15-1)

DSM

External Coolant | Ti (C,N) Coated | Diameter ø0.1~3.0 mm | IT9~10 IT class

P Steel | M Stainless | K Cast Iron | N Non-ferrous | H Superalloys | S Hard Materials

Drill dia. øDc	L/D	Cat. No.	Stock	Dimensions (mm) L	ℓ	ℓ1
1.57	5	DSM0157G05		45	12.1	12.7
1.58		DSM0158G05				
1.59		DSM0159G05				
1.60		DSM0160G05	●			
1.61	5	DSM0161G05		45	12.9	13.6
1.62		DSM0162G05				
1.63		DSM0163G05				
1.64		DSM0164G05				
1.65		DSM0165G05	●			
1.66		DSM0166G05				
1.67		DSM0167G05				
1.68		DSM0168G05				
1.69		DSM0169G05				
1.70		DSM0170G05	●			
1.71	5	DSM0171G05		45	13.7	14.3
1.72		DSM0172G05				
1.73		DSM0173G05				
1.74		DSM0174G05				
1.75		DSM0175G05				
1.76		DSM0176G05				
1.77		DSM0177G05				
1.78		DSM0178G05				
1.79		DSM0179G05				
1.80		DSM0180G05	●			
1.81	5	DSM0181G05		45	14.5	15.1
1.82		DSM0182G05	●			
1.83		DSM0183G05				
1.84		DSM0184G05				
1.85		DSM0185G05				
1.86		DSM0186G05				
1.87		DSM0187G05				
1.88		DSM0188G05				
1.89		DSM0189G05				
1.90		DSM0190G05	●			
1.91	5	DSM0191G05		45	15.3	15.9
1.92		DSM0192G05				
1.93		DSM0193G05				
1.94		DSM0194G05				
1.95		DSM0195G05	●			
1.96		DSM0196G05				
1.97		DSM0197G05				
1.98		DSM0198G05				
1.99		DSM0199G05				
2.00		DSM0200G05	●			
2.01	5	DSM0201G05		45	16.1	16.7
2.02		DSM0202G05				
2.03		DSM0203G05				
2.04		DSM0204G05				
2.05		DSM0205G05				
2.06	5	DSM0206G05		45	16.1	16.7
2.07		DSM0207G05				
2.08		DSM0208G05				
2.09		DSM0209G05				
2.10		DSM0210G05	●			
2.11	5	DSM0211G05		45	16.9	17.5
2.12		DSM0212G05				
2.13		DSM0213G05				
2.14		DSM0214G05				
2.15		DSM0215G05				
2.16		DSM0216G05				
2.17		DSM0217G05				
2.18		DSM0218G05				
2.19		DSM0219G05				
2.20		DSM0220G05	●			
2.21	5	DSM0221G05		45	17.7	18.3
2.22		DSM0222G05				
2.23		DSM0223G05				
2.24		DSM0224G05				
2.25		DSM0225G05				
2.26		DSM0226G05				
2.27		DSM0227G05				
2.28		DSM0228G05				
2.29		DSM0229G05				
2.30		DSM0230G05	●			
2.31	5	DSM0231G05		55	18.5	19.1
2.32		DSM0232G05				
2.33		DSM0233G05				
2.34		DSM0234G05				
2.35		DSM0235G05				
2.36		DSM0236G05				
2.37		DSM0237G05				
2.38		DSM0238G05				
2.39		DSM0239G05				
2.40		DSM0240G05	●			
2.41	5	DSM0241G05		55	19.3	19.9
2.42		DSM0242G05				
2.43		DSM0243G05				
2.44		DSM0244G05				
2.45		DSM0245G05				
2.46		DSM0246G05				
2.47		DSM0247G05				
2.48		DSM0248G05				
2.49		DSM0249G05				
2.50		DSM0250G05	●			
2.51	5	DSM0251G05		55	20.1	20.7
2.52		DSM0252G05				
2.53		DSM0253G05				
2.54		DSM0254G05				
2.55	5	DSM0255G05		55	20.1	20.7
2.56		DSM0256G05				
2.57		DSM0257G05				
2.58		DSM0258G05				
2.59		DSM0259G05				
2.60		DSM0260G05	●			
2.61	5	DSM0261G05		55	20.9	21.5
2.62		DSM0262G05				
2.63		DSM0263G05				
2.64		DSM0264G05				
2.65		DSM0265G05				
2.66		DSM0266G05				
2.67		DSM0267G05				
2.68		DSM0268G05				
2.69		DSM0269G05				
2.70		DSM0270G05	●			
2.71	5	DSM0271G05		55	21.7	22.3
2.72		DSM0272G05				
2.73		DSM0273G05				
2.74		DSM0274G05				
2.75		DSM0275G05				
2.76		DSM0276G05				
2.77		DSM0277G05				
2.78		DSM0278G05				
2.79		DSM0279G05				
2.80		DSM0280G05	●			
2.81	5	DSM0281G05		55	22.5	23.1
2.82		DSM0282G05				
2.83		DSM0283G05				
2.84		DSM0284G05				
2.85		DSM0285G05				
2.86		DSM0286G05				
2.87		DSM0287G05				
2.88		DSM0288G05				
2.89		DSM0289G05				
2.90		DSM0290G05	●			
2.91	5	DSM0291G05		55	23.3	23.9
2.92		DSM0292G05				
2.93		DSM0293G05				
2.94		DSM0294G05				
2.95		DSM0295G05				
2.96		DSM0296G05				
2.97		DSM0297G05				
2.98		DSM0298G05				
2.99		DSM0299G05				
3.00		DSM0300G05	●			

Note: L/D = Hole depth / Drill diameter

● : Stocked items

Standard cutting conditions

Work materials	Cutting speed: *Vc* (m/min) ø0.1 ~ ø0.3	ø0.3 ~ ø0.5	ø0.5 ~ ø3.0	Feed: *f* (mm/rev) ø0.1 ~ ø0.3	ø0.3 ~ ø0.5	ø0.5 ~ ø1.0	ø1.0 ~ ø2.0	ø2.0 ~ ø3.0
Carbon and alloy steels	5 - **15** - 20	15 - **25** - 30	25 - **40** - 60	0.001 - **0.002** - 0.004	0.002 - **0.005** - 0.01	0.005 - **0.01** - 0.05	0.03 - **0.06** - 0.09	0.05 - **0.08** - 0.1
Stainless steels	2 - **6** - 12	6 - **12** - 18	10 - **15** - 20	0.0005 - **0.002** - 0.004	0.002 - **0.005** - 0.008	0.005 - **0.01** - 0.03	0.01 - **0.02** - 0.04	0.02 - **0.03** - 0.05
Grey cast irons	5 - **10** - 15	10 - **20** - 25	20 - **35** - 50	0.0005 - **0.002** - 0.004	0.002 - **0.005** - 0.012	0.005 - **0.01** - 0.03	0.01 - **0.03** - 0.06	0.03 - **0.05** - 0.12
Ductile cast irons	5 - **10** - 15	10 - **20** - 25	20 - **35** - 50	0.001 - **0.002** - 0.003	0.002 - **0.005** - 0.01	0.005 - **0.01** - 0.02	0.01 - **0.03** - 0.05	0.03 - **0.05** - 0.1
Aluminium alloys	10 - **15** - 20	10 - **20** - 30	20 - **35** - 50	0.001 - **0.005** - 0.01	0.005 - **0.01** - 0.03	0.01 - **0.03** - 0.05	0.04 - **0.05** - 0.15	0.06 - **0.1** - 0.2
Copper / Brass	10 - **15** - 20	10 - **20** - 30	20 - **35** - 50	0.001 - **0.005** - 0.01	0.005 - **0.01** - 0.03	0.01 - **0.03** - 0.05	0.04 - **0.05** - 0.15	0.06 - **0.1** - 0.2
Hard materials	4 - **6** - 8	6 - **8** - 10	6 - **10** - 16	0.0005 - **0.001** - 0.002	0.001 - **0.003** - 0.005	0.005 - **0.01** - 0.02	0.01 - **0.02** - 0.03	0.02 - **0.04** - 0.06
Heat-resistant alloys	2 - **4** - 6	5 - **8** - 10	8 - **15** - 20	0.0005 - **0.001** - 0.003	0.002 - **0.003** - 0.004	0.002 - **0.003** - 0.004	0.002 - **0.003** - 0.004	Not recommended

Notes :

- When the drilling depth is deeper than L/D = 5, use drill pecking every 10 to 50% of the drill diameter.
- The above cutting conditions are applied to when a water soluble cutting fluid is used. For drilling a hole smaller than ø0.3 mm, use of a starting drill is recommended.
- When setting the drill, the drill run out should be within 0.002 mm on the taper. (Especially for the drill diameter smaller than ø0.5 mm)

Regrinding Procedures

Regrinding method [Applied to DSW]

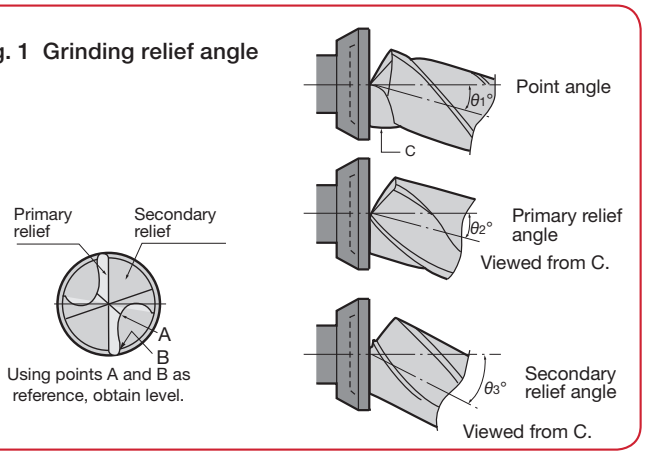
Before regrinding
Check the cutting edge for damage and wear. If any large fracture is found, remove with a silicon carbide wheel.

(1) Grinding the flank

● Use a 280 to 400 grit diamond cup type wheel of 100 ~ 200 mm in diameter.

1) Grind the relief surface so that primary relief angle (θ) of 2° can be formed as shown in Fig.1. After grinding the other side likewise, do sparkout grinding so that the difference of the lip height will be kept within 0.02 mm.
2) In the cases of DSW types: After grinding the primary relief angle (θ) 2°, without rotating the drill, grind the secondary relief surface so that the relief angle (θ) of 3° can be formed. In the same way as 2), take care to bring the ridge line formed between the primary and secondary relief surfaces to the drill center. (Values (θ) of 1° ~ 3° are shown in Table 1)

Fig. 1 Grinding relief angle



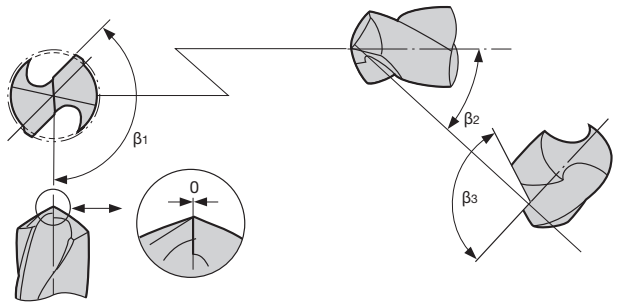
(2) Thinning

- Use a 280 ~ 400 grit diamond straight-type wheel of 100 ~ 200 mm in diameter.
- Conduct thinning in the same manner as cross thinning (X-type).
- Values of $\beta 1$ to $\beta 3$ written in the figures are given in the Table 2.

Table 1	θ_1 (Point angle)	θ_2 (Primary relief angle)	θ_3 (Secondary relief angle)	θ_4 (Rotating angle)
DSW	–20°	–5° ~ –9°	–23° ~ –27°	—

Table 2	β_1	β_2	β_3	R
DSW	145° ~ 150°	33° ~ 35°	108° ~ 112°	—

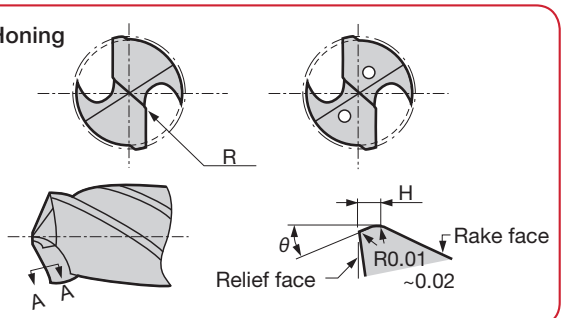
Fig. 2



(3) Honing

- The honing angle θ and width H should be varied depending on the drill type, diameter, and work material. Recommended honing specifications are given in the Table below.
- Honing procedures (refer to Fig.3)
  (1) Round the R portion shown in Fig.3 in large.
  (2) Then, roughly hone the cutting edge lines by using an electro-deposited diamond file of around 170 grit.
  (3) Carry out finish honing by using a diamond hand stick of 400 to 600 grit.
- The honing width should be changed depending on the drill diameter. For smaller side of diameters, the width should be in smaller side of values given in the Table.

Fig.3 Honing



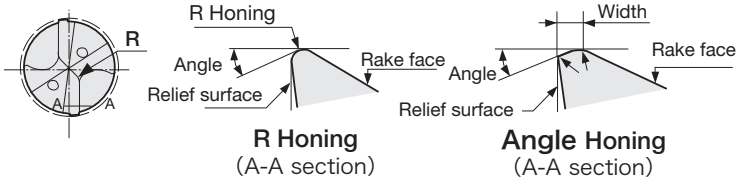
Honing specifications for DSW

- Honing

	~ ø6 mm	ø6 ~ ø10 mm	ø10 ~ ø16 mm
θ	- 20°	- 20°	- 20°
H	0.03 ~ 0.05	0.05 ~ 0.08	0.08 ~ 0.10

- R Honing

Dimensions (mm)	R Honing R (mm)
øDc ≦ ø6	0.02 ~ 0.04
ø6 < øDc ≦ ø12	0.03 ~ 0.05



After regrinding, check the following before use.

- The difference of the lip height is kept within 0.02 mm.
- Any damaged portion on the cutting edges is not left.
- Cutting edges are properly honed.
- Any grinding burr is not left.

Notes:
- For more details on regrinding, consult the nearest Tungaloy sales office.

TGI

Internal Coolant

Diameter ø10.4~16 mm

IT8~9 IT class

P Steel **M** Stainless **K** Cast Iron **N** Non-Ferrous **S** Superalloys

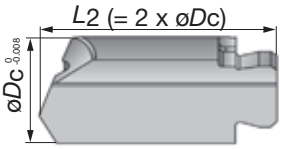
0° Helix

100 L/D

For Deep Hole Drilling
Indexable Head Gun Drills

Coolant supply: internal

Drill heads



M type

P type

Drill heads

Cat. No	Stock	Tool dia. øDc (mm)	Head length L2 (mm)	Head type	Wrench
TGI105-P-G-KS15F	●	10.5	21	P	K GDT-100
TGI110-P-G-KS15F	●	11	22	P	K GDT-110
TGI115-P-G-KS15F	●	11.5	23	P	
TGI120-P-G-KS15F	●	12	24	P	K GDT-120
TGI121-P-G-KS15F	●	12.1	24.2	P	
TGI130-P-G-KS15F	●	13	26	P	K GDT-130
TGI140-P-G-KS15F	●	14	28	P	K GDT-140
TGI141-P-G-KS15F	●	14.1	28.2	P	
TGI150-P-G-KS15F	●	15	30	P	K GDT-150
TGI160-P-G-KS15F	●	16	32	P	
TGI161-P-G-KS15F	●	16.1	32.2	P	
TGI110-M-G-KS15F	●	11	22	M	K GDT-110
TGI115-M-G-KS15F	●	11.5	23	M	
TGI120-M-G-KS15F	●	12	24	M	K GDT-120
TGI121-M-G-KS15F	●	12.1	24.2	M	
TGI140-M-G-KS15F	●	14	28	M	K GDT-140
TGI141-M-G-KS15F	●	14.1	28.2	M	
TGI160-M-G-KS15F	●	16	32	M	K GDT-150
TGI161-M-G-KS15F	●	16.1	32.2	M	
TGI110-P-G-AH725	●	11	22	P	K GDT-110
TGI120-P-G-AH725	●	12	24	P	K GDT-120
TGI140-P-G-AH725	●	14	28	P	K GDT-140

● : Stocked items

Drill body

* Drill body should be ordered depending on each application. When ordering, tool information such as drill diameter, overall length and type of driver must be specified.

Standard cutting condition

Work material	Cutting speed Vc (m/min)	Feed f (mm/rev) øDc (mm)		
		ø9.8 ~ ø11.69	ø11.7 ~ ø13.19	ø13.2 ~ ø16.19
Carbon steel, free-cutting steel	70 - 110	0.030 - 0.050	0.035 - 0.060	0.040 - 0.070
Low alloy steel (≤ 5% of alloying elements)	50 - 110	0.030 - 0.050	0.035 - 0.060	0.040 - 0.070
High alloy steel	50 - 70	0.025 - 0.040	0.030 - 0.045	0.035 - 0.050
Stainless steel	40 - 80	0.025 - 0.040	0.030 - 0.045	0.035 - 0.050
Cast iron	70 - 115	0.040 - 0.100	0.050 - 0.120	0.060 - 0.140
Aluminium alloy	80 - 160	0.030 - 0.170	0.030 - 0.180	0.035 - 0.190
Copper alloy	80 - 180	0.020 - 0.130	0.030 - 0.160	0.040 - 0.180
Titanium alloy	25 - 60	0.025 - 0.030	0.030 - 0.035	0.030 - 0.040
Hardened steel	25 - 50	0.025 - 0.030	0.030 - 0.035	0.030 - 0.040

* When machining carbon steel or alloy steel with M type head, 20 – 30% higher feed can be applied.

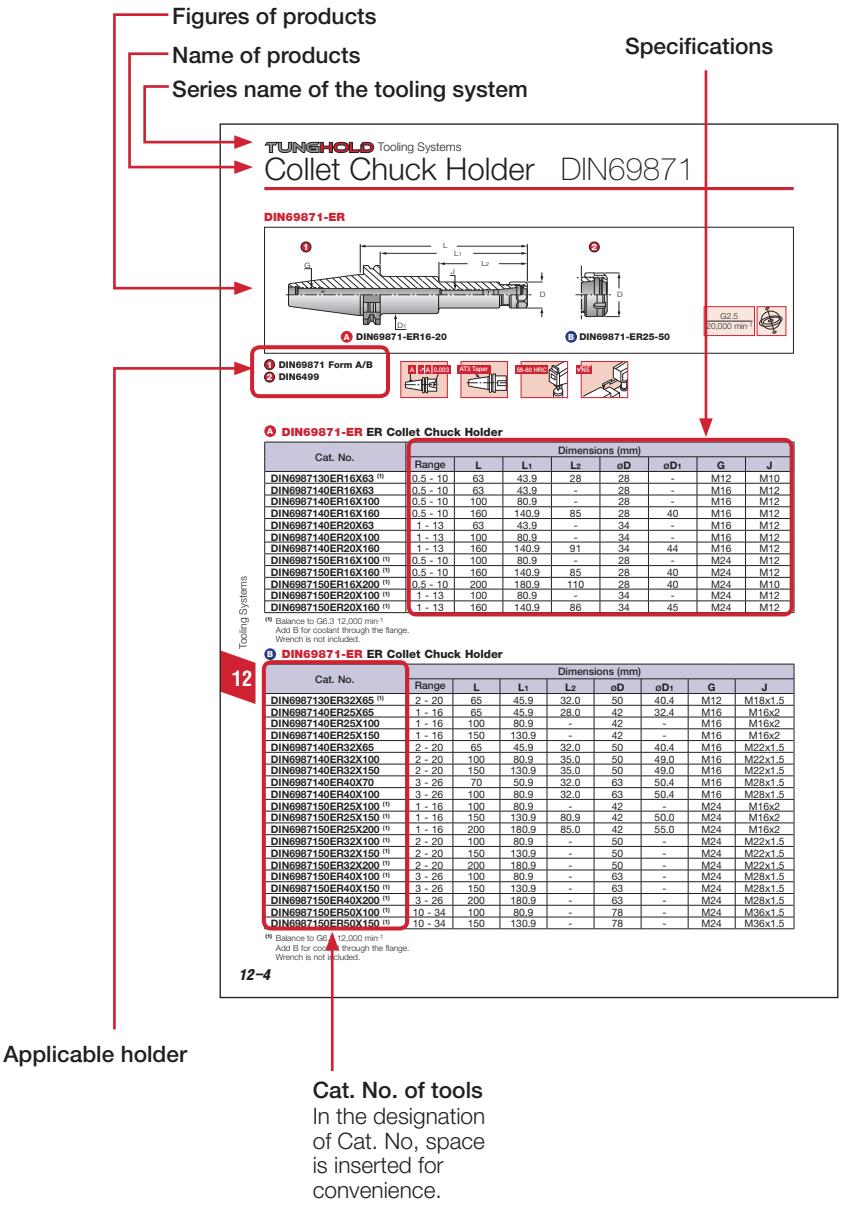
Relating pages Technical reference (15-1)

MEMO

Chapter Composition of Tooling Systems

◆In this chapter, products are arranged by system. For details, refer to the index page of this chapter.

◆As an example, pages of TungHold tooling system are shown below.



■Ordering information

● When ordering tools of TungHold tooling system, please specify Cat. No. and quantity.
Example: **DIN69871 30 ER16X 63** 1 piece (Standard packing quantity is 1 piece.)

Guidance

■ List of Tooling Systems 12-2
■ Introduction to TungHold Tooling System 12-3

12 Tooling Systems

Products

■ **TungHold Tooling System**
- Collet Chuck Holder 12-4
- ER Collet 12-7
- TungMax 12-13
- Side Lock Endmill Chuck Holder 12-16
- Side Lock Drill Chuck Holder 12-17
- Shell / Face Mill Holder 12-18
- TungBore 12-20
- TungFlex 12-21
- Pull Studs 12-25
- TungCap 12-26

■ **BeamWrench** 12-38

■ **Top-Borer Tools** 12-40

List of Tooling Systems

Tooling Systems

Tooling System

TUNGHOLD
TUNGCAP

- TungHold tooling system has a large variety of holders, collet chucks, endmill holders, face mill arbors which can be applied to any kind of machining application.
- Available unique function holders with adjustable diameter of indexable drill etc.
- Quick change polygon tool clamping system.

12-4

Parts

BEAMWRENCH

- Tungaloy has developed an innovative solution to tighten the torque screw to the correct torque. An LED light brightly illuminates when the required clamping torque has been achieved.

12-38

Boring Systems

Top-Borer tools

- Used for adjustable boring heads.
- Used for the application area of jig borer tools.
  (Min. bore diameter: ø5.5 mm)
- Available in three types of SEXP, SWUB and STUP.
- Carbide shank types are also available.

12-40

TUNGHOLD Tooling Systems

Quick change systems with polygon

TUNGCAP

- Quick change polygon tool clamping system.
- Extremely rigidity / high repeatability of the edge position.

12-26 ~

Collet chuck

TUNGSHORT

Holder available in 3 types: standard, short and high rigidity holder. Sealed collets are available in 3 types: precision, high precision and internal / external coolant type.

12-4 ~

Power chuck

TUNGMAX

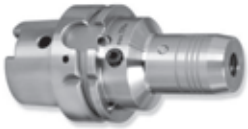
- High rigidity clamping with low torque.

12-13 ~

Hydraulic chuck

TUNGHYDRO

- High runout accuracy of less than 0.003 mm.



Quick change system

TUNGCLICK

- Quick and easy tool change system.

Modular tooling system

TUNGFLEX

- Works with various overhang lengths.
- General style.

TUNGFIT

- Highly rigid clamping.
- Quick-change style.

12-21 ~

TUNGDRILLTWISTED Adjustable holders

TUNGBORE Adjustable drilling diameter holder

- The diameter can be adjusted when used on a machining center.

12-20 ~

Centering tooling system

TUNGGYRO Center alignment collet chuck

- Adjusts the runout of drilling tools on the lathe.

TUNGGFI Floating reamer collet chuck

- Automatically adjusts the misalignment between reamer and prepared hole.

Balanceable collet chuck

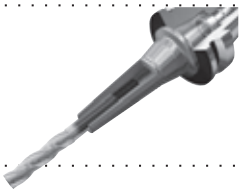
TUNGBALANCE

- Adjusts dynamic balance for high speed machining.

Thermal shrinking holder

TUNGSHRINK

- Available in various adapters for quick changovers.



Electrical nut-clamping torque control device

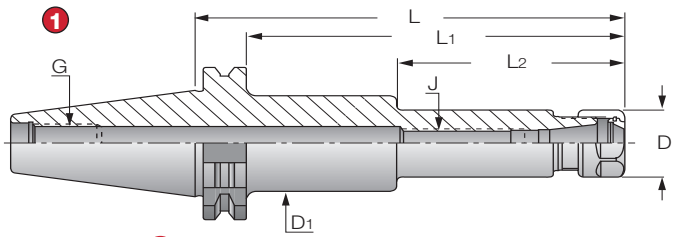
EASYLOCK

- Enables easy tool clamping / unclamping and maintains collet chuck accuracy.

Please refer to our Tungaloy Report of TungHold

Collet Chuck Holder DIN69871

DIN69871-ER

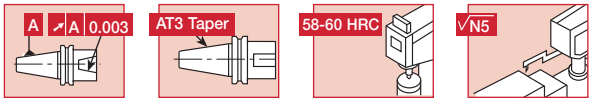


A DIN69871-ER16-20

B DIN69871-ER25-50

G2.5
20,000 min-1

1 DIN69871 Form A/B
2 DIN6499



A DIN69871-ER ER Collet Chuck Holder

Cat. No.	Dimensions (mm)							
	Range	L	L1	L2	øD	øD1	G	J
DIN6987130ER16X63 (1)	0.5 - 10	63	43.9	28	28	-	M12	M10
DIN6987140ER16X63	0.5 - 10	63	43.9	-	28	-	M16	M12
DIN6987140ER16X100	0.5 - 10	100	80.9	-	28	-	M16	M12
DIN6987140ER16X160	0.5 - 10	160	140.9	85	28	40	M16	M12
DIN6987140ER20X63	1 - 13	63	43.9	-	34	-	M16	M12
DIN6987140ER20X100	1 - 13	100	80.9	-	34	-	M16	M12
DIN6987140ER20X160	1 - 13	160	140.9	91	34	44	M16	M12
DIN6987150ER16X100 (1)	0.5 - 10	100	80.9	-	28	-	M24	M12
DIN6987150ER16X160 (1)	0.5 - 10	160	140.9	85	28	40	M24	M12
DIN6987150ER16X200 (1)	0.5 - 10	200	180.9	110	28	40	M24	M10
DIN6987150ER20X100 (1)	1 - 13	100	80.9	-	34	-	M24	M12
DIN6987150ER20X160 (1)	1 - 13	160	140.9	86	34	45	M24	M12

(1) Balance to G6.3 12,000 min-1
Add B for coolant through the flange.
Wrench is not included.

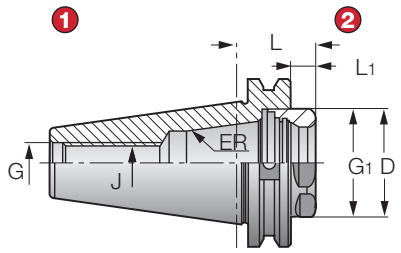
B DIN69871-ER ER Collet Chuck Holder

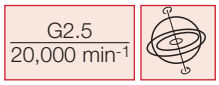
Cat. No.	Dimensions (mm)							
	Range	L	L1	L2	øD	øD1	G	J
DIN6987130ER32X65 (1)	2 - 20	65	45.9	32.0	50	40.4	M12	M18x1.5
DIN6987140ER25X65	1 - 16	65	45.9	28.0	42	32.4	M16	M16x2
DIN6987140ER25X100	1 - 16	100	80.9	-	42	-	M16	M16x2
DIN6987140ER25X150	1 - 16	150	130.9	-	42	-	M16	M16x2
DIN6987140ER32X65	2 - 20	65	45.9	32.0	50	40.4	M16	M22x1.5
DIN6987140ER32X100	2 - 20	100	80.9	35.0	50	49.0	M16	M22x1.5
DIN6987140ER32X150	2 - 20	150	130.9	35.0	50	49.0	M16	M22x1.5
DIN6987140ER40X70	3 - 26	70	50.9	32.0	63	50.4	M16	M28x1.5
DIN6987140ER40X100	3 - 26	100	80.9	32.0	63	50.4	M16	M28x1.5
DIN6987150ER25X100 (1)	1 - 16	100	80.9	-	42	-	M24	M16x2
DIN6987150ER25X150 (1)	1 - 16	150	130.9	80.9	42	50.0	M24	M16x2
DIN6987150ER25X200 (1)	1 - 16	200	180.9	85.0	42	55.0	M24	M16x2
DIN6987150ER32X100 (1)	2 - 20	100	80.9	-	50	-	M24	M22x1.5
DIN6987150ER32X150 (1)	2 - 20	150	130.9	-	50	-	M24	M22x1.5
DIN6987150ER32X200 (1)	2 - 20	200	180.9	-	50	-	M24	M22x1.5
DIN6987150ER40X100 (1)	3 - 26	100	80.9	-	63	-	M24	M28x1.5
DIN6987150ER40X150 (1)	3 - 26	150	130.9	-	63	-	M24	M28x1.5
DIN6987150ER40X200 (1)	3 - 26	200	180.9	-	63	-	M24	M28x1.5
DIN6987150ER50X100 (1)	10 - 34	100	80.9	-	78	-	M24	M36x1.5
DIN6987150ER50X150 (1)	10 - 34	150	130.9	-	78	-	M24	M36x1.5

(1) Balance to G6.3 12,000 min-1
Add B for coolant through the flange.
Wrench is not included.

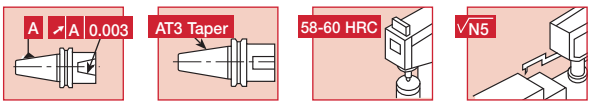
Collet Chuck Holder DIN69871

DIN69871-ER-SHORT





1. **DIN69871 Form A**
2. **DIN6499 ER-SHORT**



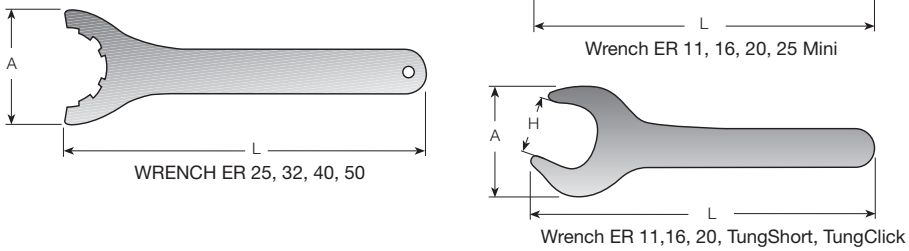
DIN69871-ER-SHORT Short ER Collet Chuck Holder

Cat. No.	Dimensions (mm)						
	Range	L	L_1	øD	G_1	G	J
DIN6987140ER32SHORT	2 - 20	28.6	9.5	40	M40x1.5	M16	M16
DIN6987140ER40SHORT	3 - 26	28.6	9.5	40	M50x1.5	M16	M16
DIN6987150ER32SHORT	2 - 20	28.6	9.5	40	M40x1.5	M24	M22x1.5
DIN6987150ER40SHORT	3 - 26	28.6	9.5	50	M50x1.5	M24	M28x1.5

Add B for coolant through the flange.
Wrench is not included.

Accessories

WRENCH-ER



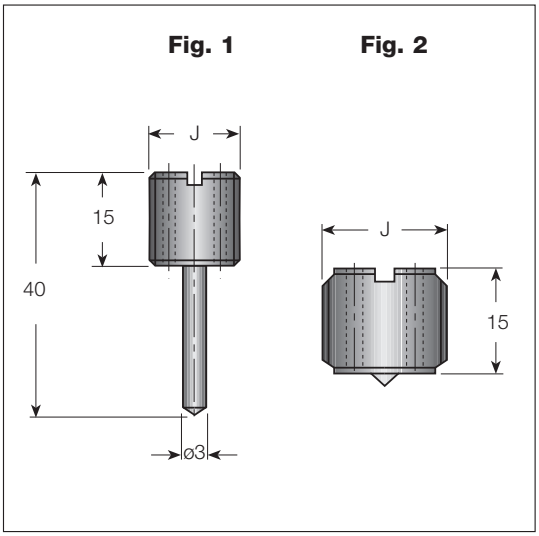
WRENCH-ER Wrench for ER DIN 6499

Cat. No.	Dimensions (mm)		
	A	H	L
WRENCHER11MINI	16.8	-	95
WRENCHER11	32	17	95
WRENCHER16MINI	22.5	-	117
WRENCHER16	42.8	25	143
WRENCHER20MINI	28	-	128
WRENCHER20	53.5	30	172
WRENCHER25MINI	29	-	120
WRENCHER25	70	-	207
WRENCHER32	78	-	255
WRENCHER40	95	-	285
WRENCHER50	110	-	350
WRENCHER32SHORT	75	36	303
WRENCHER40SHORT	94	46	378
WRENCHER32CLICKIN27	57	27	239
WRENCHER32CLICKIN32	67	32	273
WRENCHER20SHORTRING22	48	22	260

PRESET ER-JET

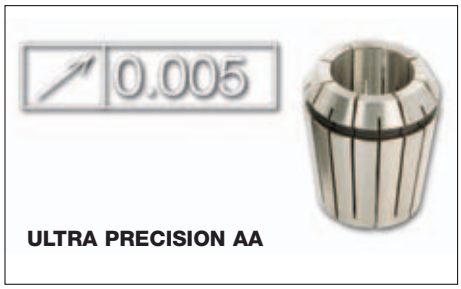
Preset Screws for ER Collet Chuck

Cat. No.	J (mm)	Fig.
PRESETER-JET8X1	M8X1.0	2
PRESETER-JET8X1.25	M8X1.25	2
PRESETER-JET10X1.5	M10X1.5	2
PRESETER-JET12X1	M12X1.0	2
PRESETER-JET12X1.75L	M12X1.75	1
PRESETER-JET12X1.75	M12X1.75	2
PRESETER-JET14X1	M14X1.0	2
PRESETER-JET16X2	M16X2	2
PRESETER-JET16X2L	M16X2	1
PRESETER-JET18X1	M18X1.0	2
PRESETER-JET18X1.5	M18X1.5	2
PRESETER-JET18X1.5L	M18X1.5	1
PRESETER-JET22X1.5	M22X1.5	2
PRESETER-JET22X1.5L	M22X1.5	1
PRESETER-JET28X1.5	M28X1.5	2



ER Collet

ER Spring Collet DIN 6499 (ULTRA PRECISION)



ER11, 16, 20-SPR-AA

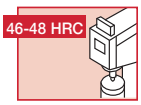
Cat. No	Range (mm)
ER11SPR0.5-1AA	0.5 - 1
ER11SPR1-2AA	1 - 2
ER11SPR2-3AA	2 - 3
ER11SPR3-4AA	3 - 4
ER11SPR4-5AA	4 - 5
ER11SPR5-6AA	5 - 6
ER11SPR6-7AA	6 - 7
ER16SPR0.5-1AA	0.5 - 1
ER16SPR1-2AA	1 - 2
ER16SPR2-3AA	2 - 3
ER16SPR3-4AA	3 - 4
ER16SPR4-5AA	4 - 5
ER16SPR5-6AA	5 - 6
ER16SPR6-7AA	6 - 7
ER16SPR7-8AA	7 - 8
ER16SPR8-9AA	8 - 9
ER16SPR9-10AA	9 - 10
ER20SPR1-2AA	1 - 2
ER20SPR2-3AA	2 - 3
ER20SPR3-4AA	3 - 4
ER20SPR4-5AA	4 - 5
ER20SPR5-6AA	5 - 6
ER20SPR6-7AA	6 - 7
ER20SPR7-8AA	7 - 8
ER20SPR8-9AA	8 - 9
ER20SPR9-10AA	9 - 10
ER20SPR10-11AA	10 - 11
ER20SPR11-12AA	11 - 12
ER20SPR12-13AA	12 - 13

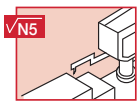
ER25, 32-SPR-AA

Cat. No	Range (mm)
ER25SPR1-2AA	1 - 2
ER25SPR2-3AA	2 - 3
ER25SPR3-4AA	3 - 4
ER25SPR4-5AA	4 - 5
ER25SPR5-6AA	5 - 6
ER25SPR6-7AA	6 - 7
ER25SPR7-8AA	7 - 8
ER25SPR8-9AA	8 - 9
ER25SPR9-10AA	9 - 10
ER25SPR10-11AA	10 - 11
ER25SPR11-12AA	11 - 12
ER25SPR12-13AA	12 - 13
ER25SPR13-14AA	13 - 14
ER25SPR14-15AA	14 - 15
ER25SPR15-16AA	15 - 16
ER32SPR2-3AA	2 - 3
ER32SPR3-4AA	3 - 4
ER32SPR4-5AA	4 - 5
ER32SPR5-6AA	5 - 6
ER32SPR6-7AA	6 - 7
ER32SPR7-8AA	7 - 8
ER32SPR8-9AA	8 - 9
ER32SPR9-10AA	9 - 10
ER32SPR10-11AA	10 - 11
ER32SPR11-12AA	11 - 12
ER32SPR12-13AA	12 - 13
ER32SPR13-14AA	13 - 14
ER32SPR14-15AA	14 - 15
ER32SPR15-16AA	15 - 16
ER32SPR16-17AA	16 - 17
ER32SPR17-18AA	17 - 18
ER32SPR18-19AA	18 - 19
ER32SPR19-20AA	19 - 20

ER40-SPR-AA

Cat. No	Range (mm)
ER40SPR3-4AA	3 - 4
ER40SPR4-5AA	4 - 5
ER40SPR5-6AA	5 - 6
ER40SPR6-7AA	6 - 7
ER40SPR7-8AA	7 - 8
ER40SPR8-9AA	8 - 9
ER40SPR9-10AA	9 - 10
ER40SPR10-11AA	10 - 11
ER40SPR11-12AA	11 - 12
ER40SPR12-13AA	12 - 13
ER40SPR13-14AA	13 - 14
ER40SPR14-15AA	14 - 15
ER40SPR15-16AA	15 - 16
ER40SPR16-17AA	16 - 17
ER40SPR17-18AA	17 - 18
ER40SPR18-19AA	18 - 19
ER40SPR19-20AA	19 - 20
ER40SPR20-21AA	20 - 21
ER40SPR21-22AA	21 - 22
ER40SPR22-23AA	22 - 23
ER40SPR23-24AA	23 - 24
ER40SPR24-25AA	24 - 25
ER40SPR25-26AA	25 - 26





ER Collet

ER Spring Collet DIN 6499

ER11, 16, 20-SPR

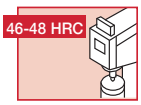
Cat. No	Range (mm)
ER11SPR0.5-1	0.5 - 1
ER11SPR1-2	1 - 2
ER11SPR2-3	2 - 3
ER11SPR3-4	3 - 4
ER11SPR4-5	4 - 5
ER11SPR5-6	5 - 6
ER11SPR6-7	6 - 7
ER16SPR0.5-1	0.5 - 1
ER16SPR1-2	1 - 2
ER16SPR2-3	2 - 3
ER16SPR3-4	3 - 4
ER16SPR4-5	4 - 5
ER16SPR5-6	5 - 6
ER16SPR6-7	6 - 7
ER16SPR7-8	7 - 8
ER16SPR8-9	8 - 9
ER16SPR9-10	9 - 10
ER20SPR1-2	1 - 2
ER20SPR2-3	2 - 3
ER20SPR3-4	3 - 4
ER20SPR4-5	4 - 5
ER20SPR5-6	5 - 6
ER20SPR6-7	6 - 7
ER20SPR7-8	7 - 8
ER20SPR8-9	8 - 9
ER20SPR9-10	9 - 10
ER20SPR10-11	10 - 11
ER20SPR11-12	11 - 12
ER20SPR12-13	12 - 13

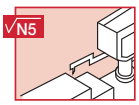
ER25, 32-SPR

Cat. No	Range (mm)
ER25SPR1-2	1 - 2
ER25SPR2-3	2 - 3
ER25SPR3-4	3 - 4
ER25SPR4-5	4 - 5
ER25SPR5-6	5 - 6
ER25SPR6-7	6 - 7
ER25SPR7-8	7 - 8
ER25SPR8-9	8 - 9
ER25SPR9-10	9 - 10
ER25SPR10-11	10 - 11
ER25SPR11-12	11 - 12
ER25SPR12-13	12 - 13
ER25SPR13-14	13 - 14
ER25SPR14-15	14 - 15
ER25SPR15-16	15 - 16
ER32SPR2-3	2 - 3
ER32SPR3-4	3 - 4
ER32SPR4-5	4 - 5
ER32SPR5-6	5 - 6
ER32SPR6-7	6 - 7
ER32SPR7-8	7 - 8
ER32SPR8-9	8 - 9
ER32SPR9-10	9 - 10
ER32SPR10-11	10 - 11
ER32SPR11-12	11 - 12
ER32SPR12-13	12 - 13
ER32SPR13-14	13 - 14
ER32SPR14-15	14 - 15
ER32SPR15-16	15 - 16
ER32SPR16-17	16 - 17
ER32SPR17-18	17 - 18
ER32SPR18-19	18 - 19
ER32SPR19-20	19 - 20

ER40, 50-SPR

Cat. No	Range (mm)
ER40SPR3-4	3 - 4
ER40SPR4-5	4 - 5
ER40SPR5-6	5 - 6
ER40SPR6-7	6 - 7
ER40SPR7-8	7 - 8
ER40SPR8-9	8 - 9
ER40SPR9-10	9 - 10
ER40SPR10-11	10 - 11
ER40SPR11-12	11 - 12
ER40SPR12-13	12 - 13
ER40SPR13-14	13 - 14
ER40SPR14-15	14 - 15
ER40SPR15-16	15 - 16
ER40SPR16-17	16 - 17
ER40SPR17-18	17 - 18
ER40SPR18-19	18 - 19
ER40SPR19-20	19 - 20
ER40SPR20-21	20 - 21
ER40SPR21-22	21 - 22
ER40SPR22-23	22 - 23
ER40SPR23-24	23 - 24
ER40SPR24-25	24 - 25
ER40SPR25-26	25 - 26
ER50SPR10-12	10 - 12
ER50SPR12-14	12 - 14
ER50SPR14-16	14 - 16
ER50SPR16-18	16 - 18
ER50SPR18-20	18 - 20
ER50SPR20-22	20 - 22
ER50SPR22-24	22 - 24
ER50SPR24-26	24 - 26
ER50SPR26-28	26 - 28
ER50SPR28-30	28 - 30
ER50SPR30-32	30 - 32
ER50SPR32-34	32 - 34





ER Collet, internal coolant

ER Collet - Sealed JET Collets 10 Mpa

ER16, 20, 25-SEAL

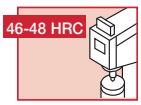
Cat. No	Range (mm)
ER16SEAL3-4	3 - 4
ER16SEAL4-5	4 - 5
ER16SEAL5-6	5 - 6
ER16SEAL6-7	6 - 7
ER16SEAL7-8	7 - 8
ER16SEAL8-9	8 - 9
ER16SEAL9-10	9 - 10
ER20SEAL3-4	3 - 4
ER20SEAL4-5	4 - 5
ER20SEAL5-6	5 - 6
ER20SEAL6-7	6 - 7
ER20SEAL7-8	7 - 8
ER20SEAL8-9	8 - 9
ER20SEAL9-10	9 - 10
ER20SEAL10-11	10 - 11
ER20SEAL11-12	11 - 12
ER20SEAL12-13	12 - 13
ER25SEAL3-4	3 - 4
ER25SEAL4-5	4 - 5
ER25SEAL5-6	5 - 6
ER25SEAL6-7	6 - 7
ER25SEAL7-8	7 - 8
ER25SEAL8-9	8 - 9
ER25SEAL9-10	9 - 10
ER25SEAL10-11	10 - 11
ER25SEAL11-12	11 - 12
ER25SEAL12-13	12 - 13
ER25SEAL13-14	13 - 14
ER25SEAL14-15	14 - 15
ER25SEAL15-16	15 - 16

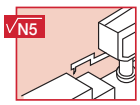
ER32-SEAL

Cat. No	Range (mm)
ER32SEAL3-4	3 - 4
ER32SEAL4-5	4 - 5
ER32SEAL5-6	5 - 6
ER32SEAL6-7	6 - 7
ER32SEAL7-8	7 - 8
ER32SEAL8-9	8 - 9
ER32SEAL9-10	9 - 10
ER32SEAL10-11	10 - 11
ER32SEAL11-12	11 - 12
ER32SEAL12-13	12 - 13
ER32SEAL13-14	13 - 14
ER32SEAL14-15	14 - 15
ER32SEAL15-16	15 - 16
ER32SEAL16-17	16 - 17
ER32SEAL17-18	17 - 18
ER32SEAL18-19	18 - 19
ER32SEAL19-20	19 - 20

ER40-SEAL

Cat. No	Range (mm)
ER40SEAL3-4	3 - 4
ER40SEAL4-5	4 - 5
ER40SEAL5-6	5 - 6
ER40SEAL6-7	6 - 7
ER40SEAL7-8	7 - 8
ER40SEAL8-9	8 - 9
ER40SEAL9-10	9 - 10
ER40SEAL10-11	10 - 11
ER40SEAL11-12	11 - 12
ER40SEAL12-13	12 - 13
ER40SEAL13-14	13 - 14
ER40SEAL14-15	14 - 15
ER40SEAL15-16	15 - 16
ER40SEAL16-17	16 - 17
ER40SEAL17-18	17 - 18
ER40SEAL18-19	18 - 19
ER40SEAL19-20	19 - 20
ER40SEAL20-21	20 - 21
ER40SEAL21-22	21 - 22
ER40SEAL22-23	22 - 23
ER40SEAL23-24	23 - 24
ER40SEAL24-25	24 - 25
ER40SEAL25-26	25 - 26





ER Collet, external coolant

ER Collet - Sealed JET2 Collets 10 Mpa

ER16, 20, 25-SEAL-JET2

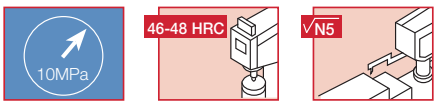
Cat. No	Range (mm)
ER16SEAL3-4JET2	3 - 4
ER16SEAL4-5JET2	4 - 5
ER16SEAL5-6JET2	5 - 6
ER16SEAL6-7JET2	6 - 7
ER16SEAL7-8JET2	7 - 8
ER16SEAL8-9JET2	8 - 9
ER16SEAL9-10JET2	9 - 10
ER20SEAL3-4JET2	3 - 4
ER20SEAL4-5JET2	4 - 5
ER20SEAL5-6JET2	5 - 6
ER20SEAL6-7JET2	6 - 7
ER20SEAL7-8JET2	7 - 8
ER20SEAL8-9JET2	8 - 9
ER20SEAL9-10JET2	9 - 10
ER20SEAL10-11JET2	10 - 11
ER20SEAL11-12JET2	11 - 12
ER20SEAL12-13JET2	12 - 13
ER25SEAL3-4JET2	3 - 4
ER25SEAL4-5JET2	4 - 5
ER25SEAL5-6JET2	5 - 6
ER25SEAL6-7JET2	6 - 7
ER25SEAL7-8JET2	7 - 8
ER25SEAL8-9JET2	8 - 9
ER25SEAL9-10JET2	9 - 10
ER25SEAL10-11JET2	10 - 11
ER25SEAL11-12JET2	11 - 12
ER25SEAL12-13JET2	12 - 13
ER25SEAL13-14JET2	13 - 14
ER25SEAL14-15JET2	14 - 15
ER25SEAL15-16JET2	15 - 16

ER32-SEAL-JET2

Cat. No	Range (mm)
ER32SEAL3-4JET2	3 - 4
ER32SEAL4-5JET2	4 - 5
ER32SEAL5-6JET2	5 - 6
ER32SEAL6-7JET2	6 - 7
ER32SEAL7-8JET2	7 - 8
ER32SEAL8-9JET2	8 - 9
ER32SEAL9-10JET2	9 - 10
ER32SEAL10-11JET2	10 - 11
ER32SEAL11-12JET2	11 - 12
ER32SEAL12-13JET2	12 - 13
ER32SEAL13-14JET2	13 - 14
ER32SEAL14-15JET2	14 - 15
ER32SEAL15-16JET2	15 - 16
ER32SEAL16-17JET2	16 - 17
ER32SEAL17-18JET2	17 - 18
ER32SEAL18-19JET2	18 - 19
ER32SEAL19-20JET2	19 - 20

ER40-SEAL-JET2

Cat. No	Range (mm)
ER40SEAL3-4JET2	3 - 4
ER40SEAL4-5JET2	4 - 5
ER40SEAL5-6JET2	5 - 6
ER40SEAL6-7JET2	6 - 7
ER40SEAL7-8JET2	7 - 8
ER40SEAL8-9JET2	8 - 9
ER40SEAL9-10JET2	9 - 10
ER40SEAL10-11JET2	10 - 11
ER40SEAL11-12JET2	11 - 12
ER40SEAL12-13JET2	12 - 13
ER40SEAL13-14JET2	13 - 14
ER40SEAL14-15JET2	14 - 15
ER40SEAL15-16JET2	15 - 16
ER40SEAL16-17JET2	16 - 17
ER40SEAL17-18JET2	17 - 18
ER40SEAL18-19JET2	18 - 19
ER40SEAL19-20JET2	19 - 20
ER40SEAL20-21JET2	20 - 21
ER40SEAL21-22JET2	21 - 22
ER40SEAL22-23JET2	22 - 23
ER40SEAL23-24JET2	23 - 24
ER40SEAL24-25JET2	24 - 25
ER40SEAL25-26JET2	25 - 26
ER40SPR25-26AA	25 - 26



ER Collet

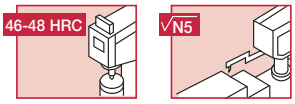
ER Spring Collet Sets

SET ER-SPR Spring Collet DIN6499

Cat. No.	Pcs.	Range (mm)
SETER11SPR7	7	0.5 - 7
SETER16SPR10	10	0.5 - 10
SETER20SPR12	12	1 - 13
SETER25SPR15	15	1 - 16
SETER32SPR18	18	2 - 20
SETER40SPR23	23	3 - 26
SETER50SPR12	12	10 - 34

SET ER-SPR-AA Spring Collet DIN6499 AA (Ultra Precision)

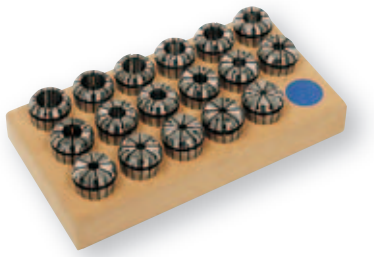
Cat. No.	Pcs.	Range (mm)
SETER11SPR7AA	7	0.5 - 7
SETER16SPR10AA	10	0.5 - 10
SETER20SPR12AA	12	1 - 13
SETER25SPR15AA	15	1 - 16
SETER32SPR18AA	18	2 - 20
SETER40SPR23AA	23	3 - 26



ER Coolant - Sealed Jet type Collet Sets

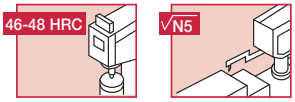
SET ER-SEAL Collet

Cat. No.	Pcs.	Range (mm)
SETER16SEAL7	7	3 - 10
SETER20SEAL10	10	3 - 13
SETER25SEAL13	13	3 - 16
SETER32SEAL17	17	3 - 20
SETER40SEAL23	23	3 - 26



SET ER-SEAL-JET2 Collet DIN6499 (External Coolant)

Cat. No.	Pcs.	Range (mm)
SETER16SEAL7JET2	7	3 - 10
SETER20SEAL10JET2	10	3 - 13
SETER25SEAL13JET2	13	3 - 16
SETER32SEAL17JET2	17	3 - 20
SETER40SEAL23JET2	23	3 - 26

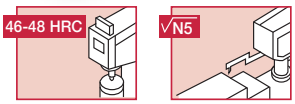


ER Spring Collet Sets DIN6499

SET ER-SPR-EM (1)

Cat. No.	Pcs.	Collet Sizes (mm)
SETER16SPR8EM	8	3, 4, 5, 6, 7, 8, 9, 10
SETER20SPR5EM	5	4, 6, 8, 10, 12
SETER25SPR6EM	6	4, 6, 8, 10, 12, 16
SETER32SPR6EM	6	6, 8, 10, 12,16, 20
SETER40SPR7EM	7	6, 8, 10, 12, 16, 20, 25

(1) Contains popular endmill sizes only.

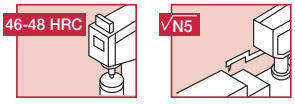


ER Coolant - Sealed type Jet Collet Sets (Internal Coolant)

SET ER-SEAL-EM (1)

Cat. No.	Pcs.	Collet Sizes (mm)
SETER16SEAL5EM	5	4, 5, 6, 8, 10
SETER20SEAL5EM	5	4, 6, 8, 10, 12
SETER25SEAL6EM	6	4, 6, 8, 10, 12, 16
SETER32SEAL6EM	6	6, 8, 10, 12, 16, 20
SETER40SEAL7EM	7	6, 8, 10, 12, 16, 20, 25

(1) Contains popular endmill sizes only.



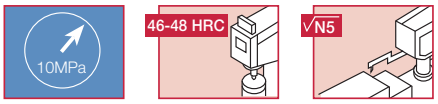
ER Collet

ER Coolant - Sealed type Jet Collet Sets (External Coolant)

SET ER-SEAL-EM JET2 (1)

Cat. No.	Pcs.	Collet Sizes (mm)
SETER16SEAL5EMJET2	5	4, 5, 6, 8, 10
SETER20SEAL5EMJET2	5	4, 6, 8, 10, 12
SETER25SEAL6EMJET2	6	4, 6, 8, 10, 12, 16
SETER32SEAL6EMJET2	6	6, 8, 10, 12, 16, 20
SETER40SEAL7EMJET2	7	6, 8, 10, 12, 16, 20, 25

(1) Contains popular endmill sizes only.

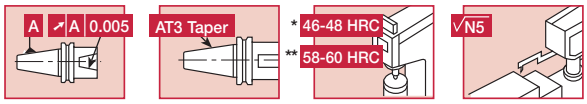


Taper Shank ER Collet type and Collet Kits

KIT

Cat. No.	Pcs.	Range (mm)
KITR-810ER16	10	0.5 - 10
KITR-818ER32	18	2 - 20
KITR-823ER40	23	3 - 26
KITDIN20803018ER32	18	2 - 20
KITDIN20804018ER32	18	2 - 20
KITDIN20803023ER40	23	3 - 26
KITDIN20804023ER40	23	3 - 26
KITDIN20805023ER40	23	3 - 26
KITDIN20804012ER50	12	10 - 34
KITDIN20805012ER50	12	10 - 34
KITMT318ER32	18	2 - 20
KITMT418ER32	18	2 - 20
KITMT423ER40	23	3 - 26

Each kit contains one collet chuck, a full set of ER collets and a Wrench.



* Collet
** Toolholder

Straight Shank ER Collet type and Collet Kits

KIT ST-ER-Mini MINI Collet Chuck type DIN6499

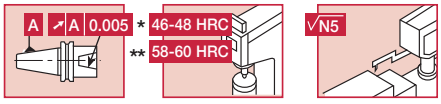
Cat. No.	Pcs.	Range (mm)
KITST12X807ER11M	7	0.5 - 7
KITST12X8010ER16M	10	0.5 - 10
KITST16X507ER11MF	7	0.5 - 7
KITST16X1007ER11M	7	0.5 - 7
KITST16X1507ER11M	7	0.5 - 7
KITST20X10010ER16M	10	0.5 - 10
KITST20X15010ER16M	10	0.5 - 10
KITST20X10012ER20M	12	1 - 12
KITST20X15012ER20M	12	1 - 12

Each kit contains one collet chuck, a full set of ER collets and a Wrench
F indicates a flat on the shank.

KIT ST-ER Collet Chuck type DIN6499

Cat. No.	Pcs.	Range (mm)
KITST16X507ER11F	7	0.5 - 7
KITST20X507ER11F	7	0.5 - 7
KITST20X1007ER11	7	0.5 - 7
KITST20X1507ER11	7	0.5 - 7
KITST20X5010ER16F	10	0.5 - 10
KITST20X10010ER16	10	0.5 - 10
KITST20X15010ER16	10	0.5 - 10
KITST20X5012ER20F	12	1 - 12
KITST25X10012ER20	12	1 - 12

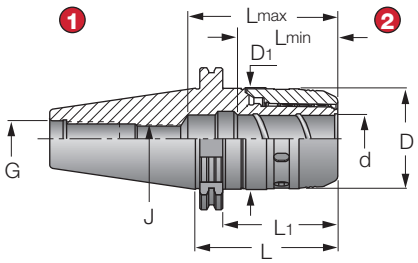
Each kit contains one collet chuck, a full set of ER collets and a Wrench
F indicates a flat on the shank.



* Collet
** Toolholder

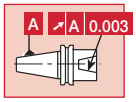
TUNGMAX Endmill Chuck Holder

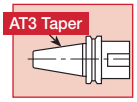
DIN69871-MAX

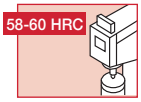


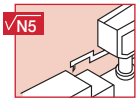
G6.3
10,000 min-1

1 **DIN69871 Form A/B**
2 **TungMax**









DIN69871-MAX Power Chuck Holder

Cat. No.	Dimensions (mm)									
	Range	ød	øD	øD1	L	L1	Lmin	Lmax	J	G
DIN6987140TUNGMAX20x95	6 - 20	20	51	53	95	76	56	69	M16	M16
DIN6987140TUNGMAX32x106	6 - 32	32	69	70	106	87	70	83	M16	M16
DIN6987150TUNGMAX20x105 (1)	6 - 20	20	51	53	105	86	56	69	M16	M24
DIN6987150TUNGMAX32x100 (1)	6 - 32	32	69	70	100	81	70	84	M20x2	M24
DIN6987150TUNGMAX32x135 (1)	6 - 32	32	69	70	135	116	71	85	M20x2	M24

Add B for coolant through the flange.
(1) Balanced to G6.3 8,000 min-1
Wrench is not included.

Preset Screw for Power Chuck

SC-SPR

Fig 1

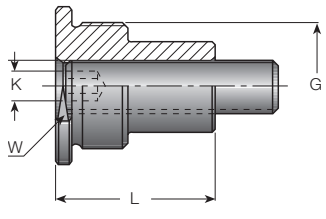
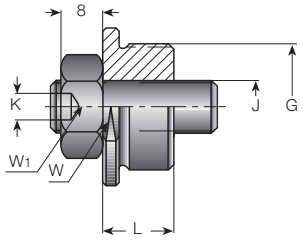


Fig 2

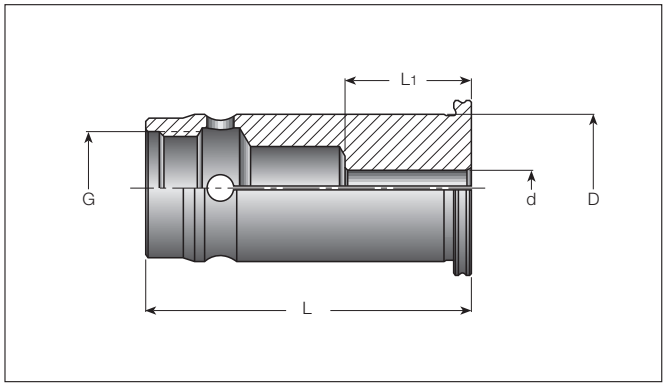


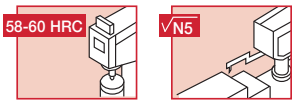
PRESET SC CAP Preset Screw for SC Collets (Power Chuck)

Cat. No.	Dimensions (mm)					Fig.	Wrench	Collet size
	L	W	J	G	Collet Range			
PRESETSCCAP8x1.25L	28	16	M8x25	M16	6 - 8	1	4	SC20
PRESETSCCAP8x1.25	15	16	M8x25	M16	10 - 16	2	4	
PRESETSCCAP10x1.5L	30.0	27	M10x30	M24x1.5	6 - 14	1	5	SC20
PRESETSCCAP10x1.5	13.5	27	M10x30	M24x1.5	16 - 25	2	5	

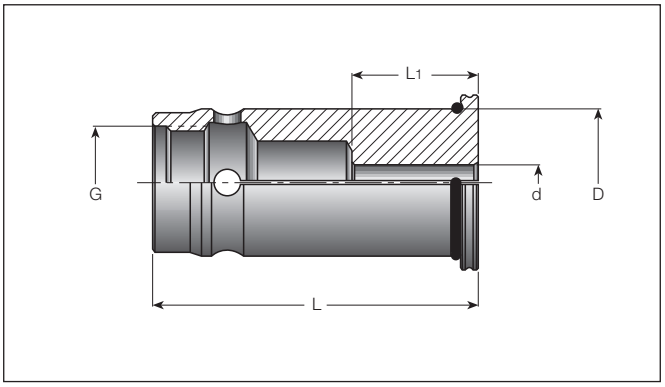
TUNGMAX Collets for Power Chuck

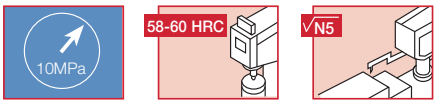
A SC-SPR





B SC-SEAL





A SC-SPR SC Straight Collet - Metric

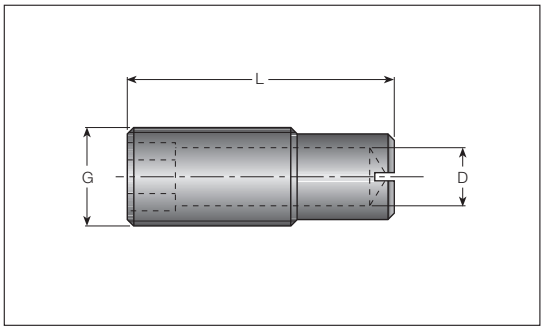
Cat. No.	Dimensions (mm)				
	ød	øD	L	L1	G
SC20SPR6	6	20	60	28	M16
SC20SPR8	8	20	60	28	M16
SC20SPR10	10	20	60	35	M16
SC20SPR12	12	20	60	40	M16
SC20SPR14	14	20	60	40	M16
SC20SPR15	15	20	60	40	M16
SC20SPR16	16	20	60	39	M16
SC32SPR6	6	32	72	28	M24x1.5
SC32SPR8	8	32	72	28	M24x1.5
SC32SPR10	10	32	72	35	M24x1.5
SC32SPR12	12	32	72	40	M24x1.5
SC32SPR14	14	32	72	40	M24x1.5
SC32SPR15	15	32	72	40	M24x1.5
SC32SPR16	16	32	72	44	M24x1.5
SC32SPR18	18	32	72	44	M24x1.5
SC32SPR19	19	32	72	44	M24x1.5
SC32SPR20	20	32	72	46	M24x1.5
SC32SPR24	84	32	72	45	M24x1.5
SC32SPR25	25	32	72	51	M24x1.5

B SC-SEAL SC Sealed Straight Collet - Metric

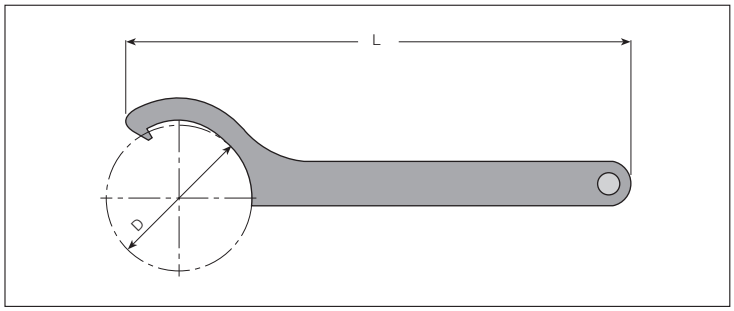
Cat. No.	Dimensions (mm)				
	ød	øD	L	L1	G
SC20SEAL6	6	20	60	28	M16
SC20SEAL8	8	20	60	28	M16
SC20SEAL10	10	20	60	35	M16
SC20SEAL12	12	20	60	40	M16
SC20SEAL14	14	20	60	40	M16
SC20SEAL15	15	20	60	40	M16
SC20SEAL16	16	20	60	39	M16
SC32SEAL6	6	32	72	28	M24x1.5
SC32SEAL8	8	32	72	28	M24x1.5
SC32SEAL10	10	32	72	35	M24x1.5
SC32SEAL12	12	32	72	40	M24x1.5
SC32SEAL14	14	32	72	40	M24x1.5
SC32SEAL15	15	32	72	40	M24x1.5
SC32SEAL16	16	32	72	44	M24x1.5
SC32SEAL18	18	32	72	44	M24x1.5
SC32SEAL19	19	32	72	44	M24x1.5
SC32SEAL20	20	32	72	46	M24x1.5
SC32SEAL24	24	32	72	46	M24x1.5
SC32SEAL25	25	32	72	51	M24x1.5

Preset Screw for TungMax

Cat. No.	Dimensions (mm)			
	G	L	øD	K
PRESETTUNGMAX16X30	M16	30	8	8
PRESETTUNGMAX16X44	M16	44	8	8
PRESETTUNGMAX20X55	M20	55	12	12

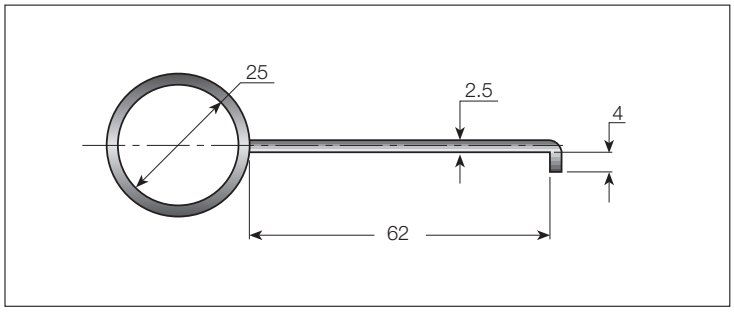


Wrench for TungMax Collets



Cat. No.	Dimensions (mm)	
	øD	L
WRENCHTUNGMAX20HOOK	26	205
WRENCHTUNGMAX32HOOK	68	240

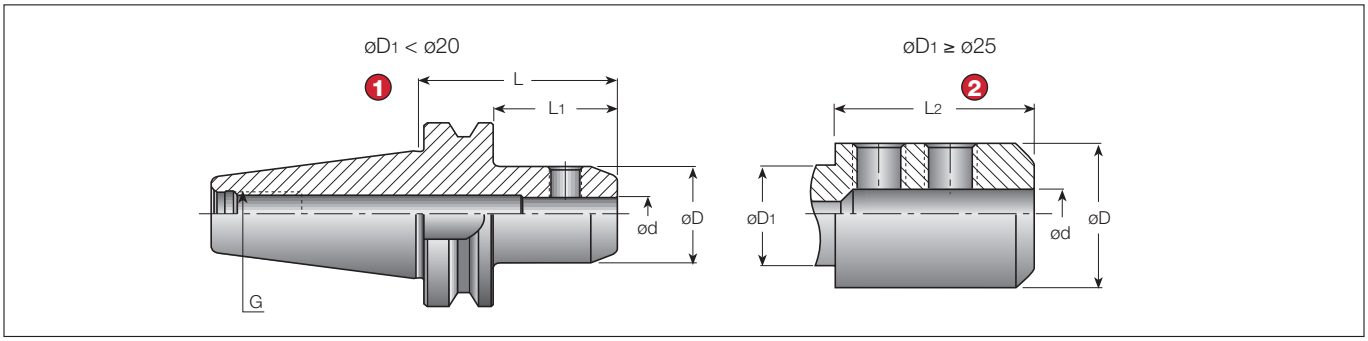
SC Collet Extracting Hook for TungMax



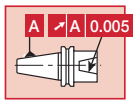
Cat. No.
EXTRACTORSCCOLLETS

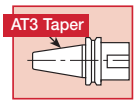
Side Lock Endmill Chuck Holder

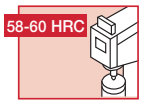
DIN69871-EM

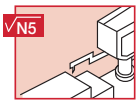


1. DIN69871 Form A/B
2. DIN6359
   DIN1835 Form B (Weldon type)









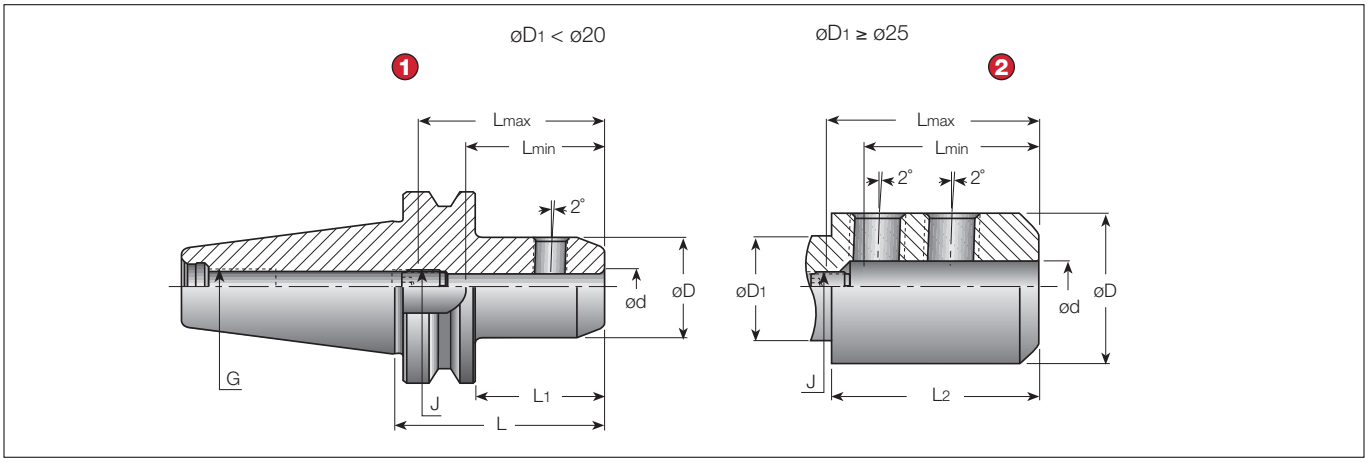
DIN69871-EM Endmill Chuck Holder (Weldon type)

Cat. No.	Dimensions (mm)						
	ød	øD	øD1	L	L1	L2	G
DIN6987130EM6X50	6	25	-	50	30.9	-	M12
DIN6987130EM8X50	8	28	-	50	30.9	-	M12
DIN6987130EM10X50	10	35	-	50	30.9	-	M12
DIN6987130EM14X63	14	44	-	63	43.9	-	M12
DIN6987130EM16X63	16	48	-	63	43.9	-	M12
DIN6987130EM18X72	18	50	-	72	52.9	-	M12
DIN6987130EM20X72	20	52	-	72	52.9	-	M12
DIN6987140EM6X50	6	25	-	50	30.9	-	M16
DIN6987140EM6X50B	6	25	-	50	30.9	-	M16
DIN6987140EM8X50	8	28	-	50	30.9	-	M16
DIN6987140EM8X50B	8	28	-	50	30.9	-	M16
DIN6987140EM10X50	10	35	-	50	30.9	-	M16
DIN6987140EM12X50	12	42	-	50	30.9	-	M16
DIN6987140EM12X50B	12	42	-	50	30.9	-	M16
DIN6987140EM14X63	14	44	-	63	43.9	-	M16
DIN6987140EM16X63	16	48	-	63	43.9	-	M16
DIN6987140EM16X63B	16	48	-	63	43.9	-	M16
DIN6987140EM18X63	18	50	-	63	43.9	-	M16
DIN6987140EM18X63B	18	50	-	63	43.9	-	M16
DIN6987140EM20X63	20	52	-	63	43.9	-	M16
DIN6987140EM20X63B	20	52	-	63	43.9	-	M16
DIN6987140EM25X100	25	65	49.0	100	80.9	65	M16
DIN6987140EM25X100B	25	65	49.0	100	80.9	65	M16
DIN6987140EM32X100	32	71	49.0	100	80.9	65	M16
DIN6987140EM32X100B	32	71	49.0	100	80.9	65	M16
DIN6987150EM6X63	6	25	-	63	43.9	-	M24
DIN6987150EM8X63	8	28	-	63	43.9	-	M24
DIN6987150EM10X63	10	35	-	63	43.9	-	M24
DIN6987150EM10X63B	10	35	-	63	43.9	-	M24
DIN6987150EM12X63	12	42	-	63	43.9	-	M24
DIN6987150EM12X63B	12	42	-	63	43.9	-	M24
DIN6987150EM14X63	14	44	-	63	43.9	-	M24
DIN6987150EM14X63B	14	44	-	63	43.9	-	M24
DIN6987150EM16X63	16	48	-	63	43.9	-	M24
DIN6987150EM16X63B	16	48	-	63	43.9	-	M24
DIN6987150EM18X63	18	50	-	63	43.9	-	M24
DIN6987150EM18X63B	18	50	-	63	43.9	-	M24
DIN6987150EM20X63	20	52	-	63	43.9	-	M24
DIN6987150EM20X63B	20	52	-	63	43.9	-	M24
DIN6987150EM25X80	25	65	-	80	60.9	-	M24
DIN6987150EM25X80B	25	65	-	80	60.9	-	M24
DIN6987150EM32X100	32	72	-	100	80.9	-	M24
DIN6987150EM32X100B	32	72	-	100	80.9	-	M24
DIN6987150EM40X100	40	90	79.9	100	80.9	43	M24
DIN6987150EM40X100B	40	90	79.9	100	80.9	43	M24
DIN6987150EM50X125	50	98	79.9	125	105.9	90	M24
DIN6987150EM50X125B	50	98	79.9	125	105.9	90	M24

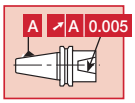
Add B for coolant through the flange.

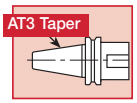
Side Lock Drill Chuck Holder

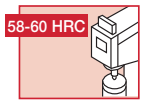
DIN69871-EM-E

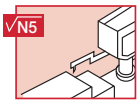


1. **DIN69871 Form A/B**
2. **DIN6359**
   DIN1835 Form E (whistle notch type)









DIN69871-EM-E Drill Chuck Holder (whistle notch type)

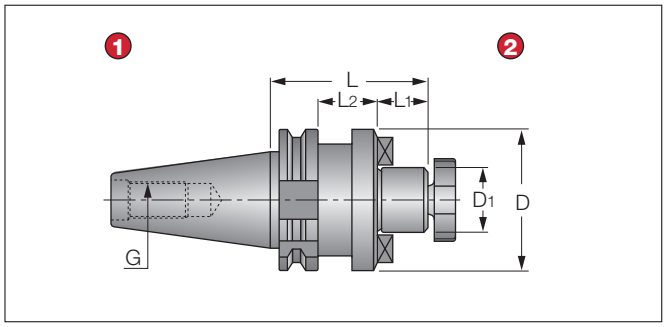
Cat. No.	Dimensions (mm)										Key
	ød	øD	øD1	L	L1	L2	Lmin	Lmax	J (1)	G	
DIN6987140EM8X50E	8	28	-	50	30.9	-	35	45	M6	M16	3
DIN6987140EM10X50E	10	35	-	50	30.9	-	39	49	M8	M16	4
DIN6987140EM12X50E	12	42	-	50	30.9	-	44	54	M10	M16	5
DIN6987140EM14X63E	14	44	-	63	43.9	-	44	54	M10	M16	5
DIN6987140EM16X63E	16	48	-	63	43.9	-	47	57	M12	M16	6
DIN6987140EM18X63E	18	50	-	63	43.9	-	47	57	M12	M16	6
DIN6987140EM20X63E	20	52	-	63	43.9	-	49	59	M16	M16	8
DIN6987140EM20X63EB	20	52	-	63	43.9	-	49	59	M16	M16	8
DIN6987140EM25X100E	25	64	49.0	100	80.9	65	54	64	M20X1.5	M16	10
DIN6987140EM25X100EB	25	64	49.0	100	80.9	65	54	64	M20X1.5	M16	10
DIN6987140EM32X100E	32	71	49.0	100	80.9	65	58	68	M20X1.5	M16	10
DIN6987150EM8X63E	8	28	-	63	43.9	-	35	45	M6	M24	3
DIN6987150EM10X63E	10	35	-	63	43.9	-	39	49	M8	M24	4
DIN6987150EM12X63E	12	42	-	63	43.9	-	44	54	M10	M24	5
DIN6987150EM14X63E	14	44	-	63	43.9	-	44	54	M10	M24	5
DIN6987150EM16X63E	16	48	-	63	43.9	-	47	57	M12	M24	6
DIN6987150EM18X63E	18	50	-	63	43.9	-	47	57	M12	M24	6
DIN6987150EM20X63E	20	52	-	63	43.9	-	49	59	M16	M24	8
DIN6987150EM20X63EB	20	52	-	63	43.9	-	49	59	M16	M24	8
DIN6987150EM25X80E	25	65	-	80	60.9	-	54	64	M20X1.5	M24	10
DIN6987150EM25X80EB	25	65	-	80	60.9	-	54	64	M20X1.5	M24	10
DIN6987150EM32X100E	32	72	-	100	80.9	-	58	68	M20X1.5	M24	10
DIN6987150EM32X100EB	32	72	-	100	80.9	-	58	68	M20X1.5	M24	10
DIN6987150EM40X100E	40	90	79.9	100	80.9	43	68	78	M20X1.5	M24	10
DIN6987150EM40X100EB	40	90	79.9	100	80.9	43	68	78	M20X1.5	M24	10
DIN6987150EM50X125EB	50	98	79.9	125	105.9	90	78	88	M20X1.5	M24	10

Add B for coolant through the flange.

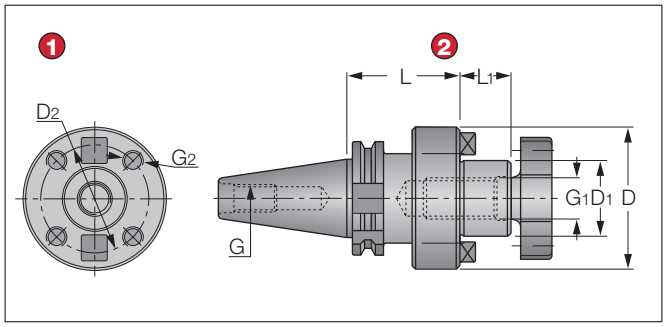
(1) The adjustment screw has an internal coolant hole.

Shell / Face Mill Holder DIN69871

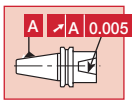
A DIN69871-SEM

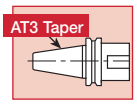


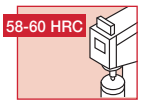
B DIN69871-FM

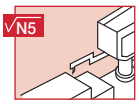


1 DIN69871 Form A
2 ISO 3937









1 DIN69871 Form A
2 DIN6357

A DIN69871-SEM Shell Mill Holder

Cat. No.	Dimensions (mm)					
	øD1	øD	L	L1	L2	G
DIN6987130SEM16X35	16	38	35	17	15.9	M12
DIN6987130SEM22X50	22	47	50	19	30.9	M12
DIN6987130SEM27X50	27	58	50	21	30.9	M12
DIN6987140SEM16X35	16	38	35	17	15.9	M16
DIN6987140SEM22X35	22	47	35	19	15.9	M16
DIN6987140SEM27X60	27	58	60	21	40.9	M16
DIN6987140SEM32X60	32	66	60	24	40.9	M16
DIN6987140SEM40X60	40	82	60	27	40.9	M16
DIN6987150SEM16X35	16	38	35	17	15.9	M24
DIN6987150SEM22X35	22	47	35	19	15.9	M24
DIN6987150SEM22X50X200	22	50	200	19	180.9	M24
DIN6987150SEM22X64X300	22	64	300	19	280.9	M24
DIN6987150SEM27X35	27	58	35	21	15.9	M24
DIN6987150SEM32X35	32	66	35	24	15.9	M24
DIN6987150SEM32X78X370	32	78	370	24	350.9	M24
DIN6987150SEM40X50	40	82	50	27	30.9	M24
DIN6987150SEM50X60	50	95	60	30	40.9	M24

Wrench is not included.

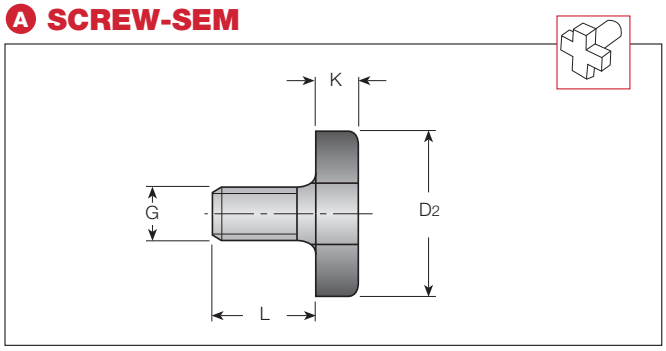
B DIN69871-FM Face Mill Holder

Cat. No.	Dimensions (mm)							
	øD1	øD	øD2	L	L1	G2	G1	G
DIN6987140FM40	40	88	66.7	60	27	M12	M20	M16
DIN6987150FM40	40	88	66.7	70	27	M12	M20	M24
DIN6987150FM60	60	128	101.6	70	40	M16	-	M24

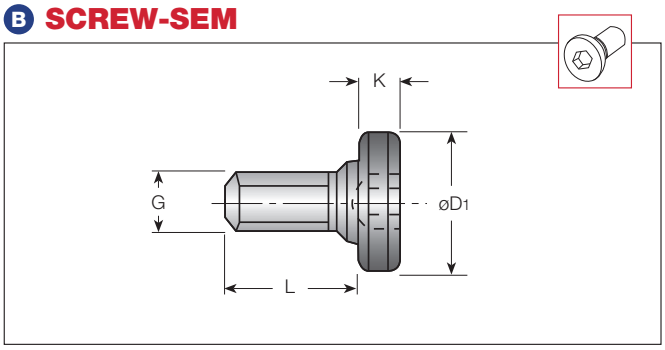
Wrench is not included.

Lock screw / Wrench for Shell Mill Holder

A SCREW-SEM



B SCREW-SEM



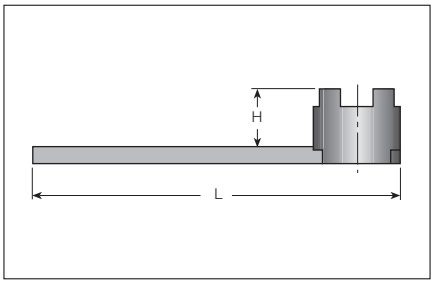
A SCREW-SEM Lock Screw for Shell Mill Holder

Cat. No.	Dimensions (mm)				
	Inner diameter of cutter body ø	G	øD1	K	L
M8CLAMPSCREWSEM16	16	M8	20	6	16
M10CLAMPSCREWSEM22	22	M10	28	7	18
M12CLAMPSCREWSEM27	25.4, 27	M12	35	8	22
M16CLAMPSCREWSEM32	31.75, 32	M16	42	9	26
M20CLAMPSCREWSEM40	38.1, 40	M20	52	10	30
M24CLAMPSCREWSEM50	50, 50.8	M24	63	12	36

WRENCH SEMC (Option)

Cat. No.	Dimensions (mm)			
	Inner diameter of cutter body ø	Screw Size	H	L
WRENCHM8SEMC16	16	M8	20	180
WRENCHM10SEMC22	22	M10	25	200
WRENCHM12SEMC27	25.4, 27	M12	32	225
WRENCHM16SEMC32	31.75, 32	M16	36	250
WRENCHM20SEMC40	38.1, 40	M20	40	280
WRENCHM24SEMC50	50, 50.8	M24	50	315

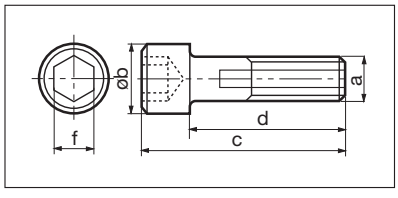
Wrench DIN 6368 for COMBI Shell Endmill Holder



B TMBA-M**H Lock Screw with coolant slot for Shell Mill Holder

Cat. No.	Dimensions (mm)				
	Inner diameter of cutter body ø	G	øD1	K	L
TMBA-M12H	25.4, 27	M12	33	8.5	26
TMBA-M16H	31.75, 32	M16	40	10	32.5
TMBA-M20H	38.1, 40	M20	50	10	34
TMBA-M24H	50, 50.8	M24	65	14	43

CM**H

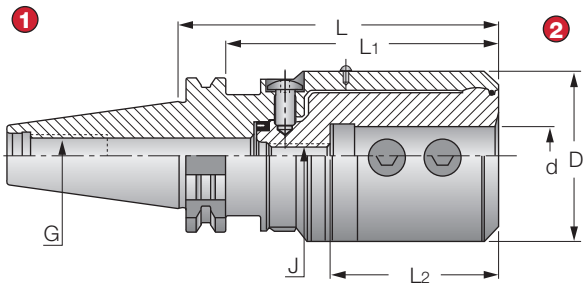


CM**H Lock Screw with coolant slot for Shell Mill Holder

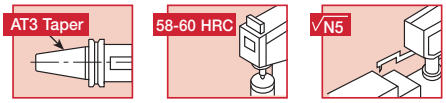
Cat. No.	Dimensions (mm)				
	a	øb	c	d	f
CM8X30H	M8×1.25	13	36	30	5
CM10X30H	M10×1.5	16	38	30	6
CM12X30H	M12×1.75	18	40	30	8
CM16X40H	M16×2	24	54	40	10

TUNGBORE Diameter Adjust DIN69871

BORE DIN69871



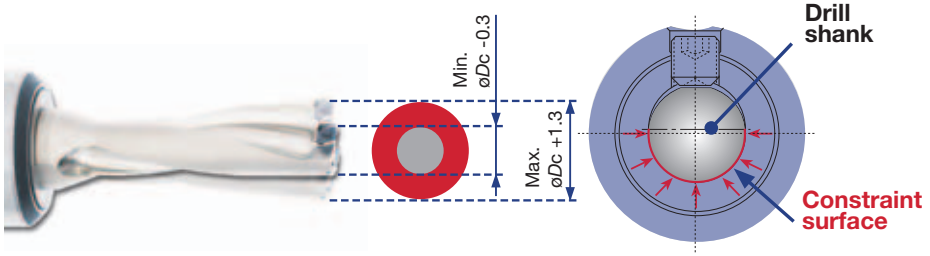
1 **BORE DIN69871 Form A/B**
2 **ISO 9766**



BORE DIN69871 Adjustable Drilling Diameter Holder

Cat. No.	Dimensions (mm)						
	ød	øD	L	L1	L2	J	G
TUNGBOREDIN6987140EM16	16	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM20	20	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM25	25	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM32	32	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987140EM40	40	72	135.6	116.5	71	M10	M16
TUNGBOREDIN6987150EM16	16	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM20	20	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM25	25	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM32	32	72	115.6	96.5	71	M10	M24
TUNGBOREDIN6987150EM40	40	72	115.6	96.5	71	M10	M24

Add B for coolant through the flange.



The bore section is actually made from two shifted circular sections. The clamping screw pushes the drill shank through a narrow opening, forcing elastic deformation of the holder. Contact is made around more than 180°, providing a high clamping force.

* Adjustable range of diameter in TDX drill is different by each item.
Therefore, please refer to the maximum offset value shown in TDX drill leaflet.

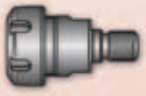
TUNGFLEX Indexable Modular System

MILLING HEADS

TUNGFLEX / TUNGSHRINK

Cat. No.	Connection
CDP_M-SRK	M10, M12

TUNGFLEX / Collet Chuck



Cat. No.	Connection
CDP_ER-M	M10, M12, M16

Square Endmills

Cat. No.	Connection
VGC	S05, S06, S08, S10
VEE-A	S05, S06, S08, S10, S12
VEE, VEC	S05, S06, S08, S10, S12
VEE-I	S05, S06, S08, S10, S12
VEE-C	S05, S06, S08, S10, S12
VEE-R	S05, S06, S08, S10, S12

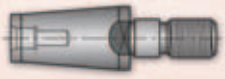
Ball Endmills, Toroidal Endmills

Cat. No.	Connection
VBE-BGA	S05, S06, S08, S10, S12
VBD-BG	S05, S06, S08, S10, S12
VBB-BG	S05, S06, S08, S10
VRC	S05, S06, S08, S10
VBB-BM	S05, S06, S08, S10
VBB-SG	S05, S06, S08, S10
VRB	S06, S08, S10, S12
VRD	S05, S06, S08, S10

High feed Endmills

Cat. No.	Connection
VFX-SG	S06, S08, S10, S12

ADAPTERS



Cat. No.	Connection
CAB	M06, M08
CAB	M08, M10
CAB	M10, M12
CAB	M12, M16

Legend

TUNGMEISTER Connection screw size	TUNGFLEX Connection
S05	M06
S06	M08
S08	M10
S10	M12
S12	M16

Centering Endmills

Cat. No.	Connection
VDP	S06

Concave radii milling Endmills

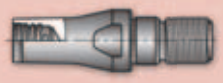
Cat. No.	Connection
VCR	S05, S06, S08, S10, S12

Chamfering Endmills

Cat. No.	Connection
VCA	S06, S08, S10, S12
VCP	S05, S06, S08, S10
VCW	S06

Thread Endmills

Cat. No.	Connection
VTB	S05, S06, S08, S10
VST	S06, S08, S10



Cat. No.	Connection	Connection
VAD-M	S08	M08
VAD-M	S08	M10
VAD-M	S08	M12

Features

- Modular system reduces stock cost by using the same head with different shank options.
- Enables machining with larger overthang.
- Same head can be mounted on metric and inch combinations.

SHANKS

S-M

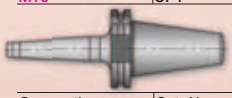
Connection	Shank size
M06	C10
M08	C16
M10	C20
M12	C25
M16	C32

S-M

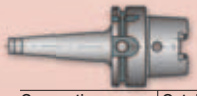
Connection	Shank size
M06	C10 / C12 / C16
M08	C16 / C20
M10	C20 / C25
M12	C25 / C32
M16	C32

S-M-CF4

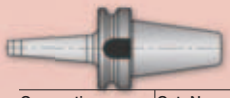
Cat. No.	
M12	CF4
M16	CF4



Connection	Cat. No.
M06	DIN 69871-ODP
M08	
M10	
M12	
M16	



Connection	Cat. No.
M06	HSK A-ODP HSK E-ODP
M08	
M10	
M12	
M16	



Connection	Cat. No.
M06	BT-ODP
M08	
M10	
M12	
M16	

Connection	Cat. No.
M06	ER32-ODP
M08	
M10	
M12	

VSS-D

Connection	Cat. No.
S05	W12 / C08
S06	W16 / C10
S08	W16 / C12
S10	W20 / C16
S12	W25 / C20

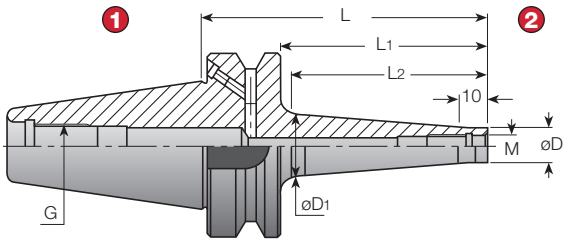
V TSD

Connection	Cat. No.
S05	C12 / C16
S06	C16 / C20
S08	C16 / C20
S10	C20 / C25
S12	C25 / C32

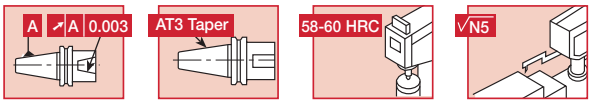
TUNGFLEX Indexable Modular System

DIN69871-ODP

G2.5
20,000 min^{-1}



1. **DIN69871 Form A/B**
2. **TungFlex**



DIN69871-ODP Indexable Modular System

Cat. No.	Dimensions (mm)						
	M	øD	øD1	L	L1	L2	G
DIN6987140ODP6X58	M06	9.8	13.0	58	38.9	32	M16
DIN6987140ODP6X98	M06	9.8	23.0	98	78.9	74	M16
DIN6987140ODP8X58	M08	13.1	15.0	58	38.9	32	M16
DIN6987140ODP8X98	M08	13.1	23.0	98	78.9	74	M16
DIN6987140ODP10X58	M10	18.0	20.0	58	38.9	32	M16
DIN6987140ODP10X98	M10	18.0	28.0	98	78.9	74	M16
DIN6987140ODP12X58	M12	21.0	24.0	58	38.9	34	M16
DIN6987140ODP12X98	M12	21.0	31.0	98	78.9	75	M16
DIN6987140ODP16X58	M16	29.0	28.6	58	38.9	33	M16
DIN6987140ODP16X98	M16	29.0	34.0	98	78.9	75	M16
DIN6987150ODP12X78	M12	23.0	30.0	78	58.9	50	M24
DIN6987150ODP12X128	M12	23.0	40.0	128	108.9	100	M24
DIN6987150ODP12X178	M12	23.0	40.0	178	158.9	150	M24
DIN6987150ODP12X228	M12	23.0	46.0	228	208.9	200	M24
DIN6987150ODP16X78	M16	29.0	34.0	78	58.9	50	M24
DIN6987150ODP16X128	M16	29.0	40.0	128	108.9	100	M24
DIN6987150ODP16X178	M16	29.0	55.0	178	158.9	150	M24
DIN6987150ODP16X228	M16	29.0	55.0	228	208.9	200	M24

(1) Balanced to G6.3 at max. *n*: 12,000 min^{-1}

CAB M-M

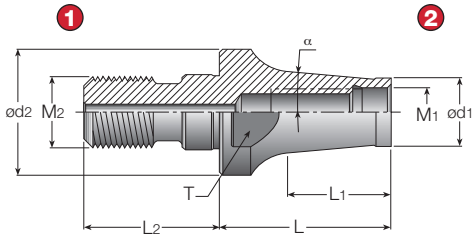


Fig 1

CAB-M-M-C

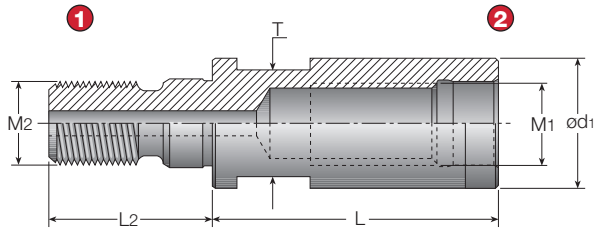
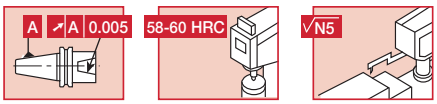


Fig 2

1 TungFlex
2 TungFlex

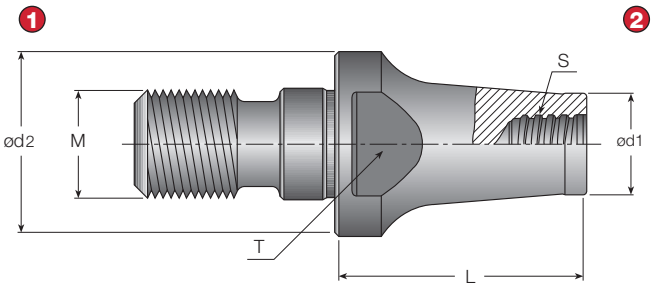


CAB M-M FLEX Reducer and Extensions

Cat. No.	Dimensions (mm)									Fig.
	M1	ød1	L	L1	M2	ød2	L2	T	α	
CABM06M06-C (1)	M6	9.8	25	-	M6	-	14.5	8.00	-	2
CABM06M08	M6	9.7	30	24.8	M8	13	17.5	9.50	5.7°	1
CABM08M08-C (1)	M8	13.0	30	-	M8	-	17.5	9.60	-	2
CABM08M10	M8	13.0	40	33.4	M10	18	20.0	15.00	5.2°	1
CABM10M10-C (1)	M10	18.0	35	-	M10	-	20.0	15.00	-	2
CABM10M10/15.8-C (1)	M10	15.8	35	-	M10	-	20.0	12.75	-	2
CABM10M12	M10	18.0	45	36.4	M12	21	22.0	17.00	2.5°	1
CABM12M12-C (1)	M12	21.0	40	-	M12	-	22.0	17.00	-	2
CABM12M16	M12	21.0	50	42.5	M16	29	25.0	25.00	6.3°	1
CABM16M16-C (1)	M16	29.0	40	-	M16	-	25.0	25.00	-	2

(1) With coolant holes.

VAD-M Adapter



1 TungFlex
2 TungMeister

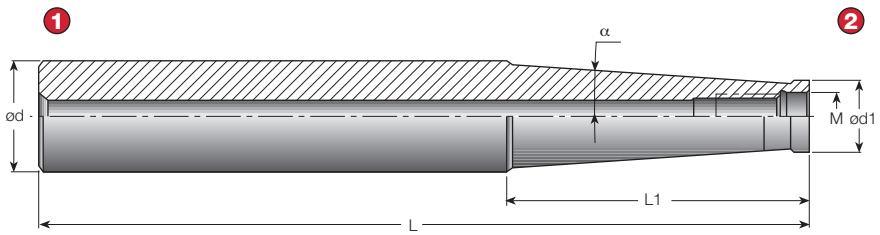
VAD-M Conversion Adapter

Cat. No.	Dimensions (mm)					
	S	L	ød1	ød2	M	T
VAD130L016S08-S-M8	S08	16	11.7	13.0	M8	11
VAD130L025S08-S-M8	S08	25	11.7	13.0	M8	11
VAD180L020S08-S-M10	S08	20	11.7	18.0	M10	13
VAD180L025S08-S-M10	S08	25	11.7	18.0	M10	11
VAD210L020S08-S-M12	S08	20	11.7	21.0	M12	12.75
VAD210L025S08-S-M12	S08	25	11.7	21.0	M12	12.75

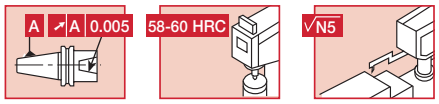
Wrench size, used on flats for tightening (not supplied).
Do not apply lubricant to the threaded connection.

TUNGFLEX Indexable Modular System

S M



1 **Straight Shank**
2 **TungFlex**



S M Straight Shank

Cat. No.	Dimensions (mm)					
	L	L_1	ød	$ød_1$	M	α
SM06-L60C10	60	20.0	10	9.7	M6	0°
SM06-L105-C12	105	60.0	12	9.7	M6	1.2°
SM06-L125-C16	125	60.0	16	9.7	M6	3.3°
SM08-L73C16	73	25.0	16	13.0	M8	0°
SM08-L128-C16	128	80.0	16	13.0	M8	0.9°
SM08-L170-C20	170	66.8	20	13.0	M8	3.3°
SM10-L80C20	80	30.0	20	18.0	M10	0°
SM10-L130-C20	130	80.0	20	18.0	M10	0.6°
SM10-L200-C25	200	57.2	25	19.0	M10	3.3°
SM12-L86-C25	86	30.0	25	21.0	M12	5.1°
SM12-L200-C32	200	78.0	32	21.0	M12	4.4°
SM16-L95-C32	95	35.0	32	29.0	M16	1.7°
SM16-L230-C32	230	50.0	32	29.0	M16	1.8°

Note: All of the shanks have coolant holes.

Pull Studs

PS BT-JIS / MAZAK

Fig 1

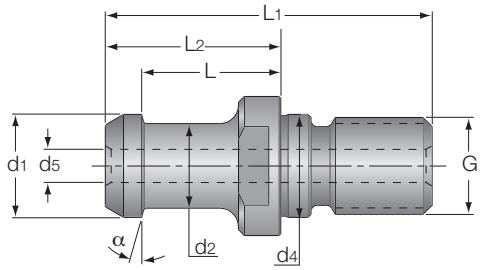


Fig 2

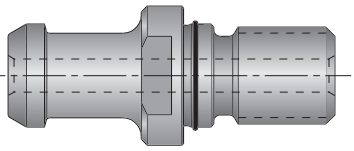


Fig 3

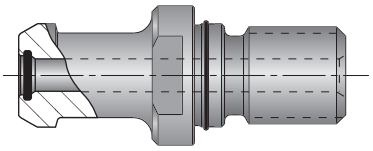
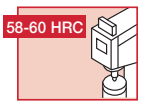
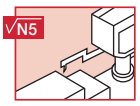


Fig 1: Coolant holes only in items with a "B" suffix.
Fig 2: With external O-ring.
Fig 3: With external and internal O-rings.





PS BT-JIS / MAZAK Pull Stud BT-JIS/ANSI - Metric

Cat. No.	Dimensions (mm)									Fig.
	G	ød1	ød2	ød4	ød5	L	L1	L2	α	
PSBT3015°M12JISB	M12	12.00	8.0	13	4.0	18.4	43.0	23.4	15°	1
PSBT4015°M16JISB	M16	19.00	14.0	17	5.5	23	54.0	29.0	15°	1
PSBT4015°M16JISOB	M16	19.00	14.0	17	5.5	23	54.0	29.0	15°	2
PSBT4015°M16JISOBO	M16	19.00	14.0	17	5.5	23	54.0	29.0	15°	3
PSBT5015°M24JISB	M24	28.00	21.0	25	8.0	25	74.0	34.0	15°	1
PSBT5015°M24JISOB	M24	28.00	21.0	25	8.0	25	74.0	34.0	15°	2
PSBT5015°M24JISOBO	M24	28.00	21.0	25	8.0	25	74.0	34.0	15°	3
PSBT4045°M16MAZAKB	M16	18.79	12.4	17	7.0	14.026	44.1	19.1	45°	1
PSBT5045°M24MAZAKB	M24	28.95	20.8	25	8.0	17.58	65.2	25.2	45°	1

PS BT-MAS

Fig 1

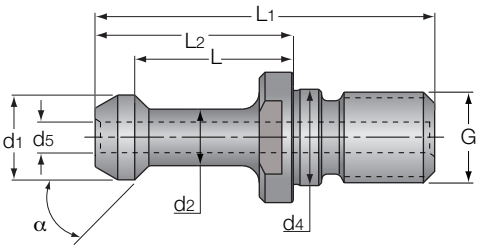


Fig 2

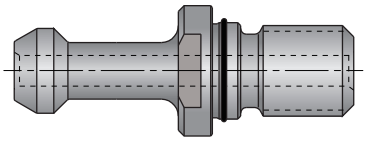


Fig 3

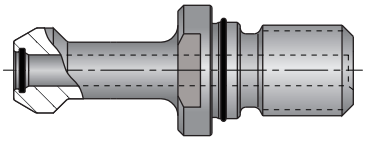
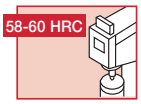
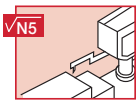


Fig 1: Coolant holes only in items with a "B" suffix.
Fig 2: With external O-ring.
Fig 3: With external and internal O-rings.





PS BT-MAS Pull Stud BT-MAS - Metric

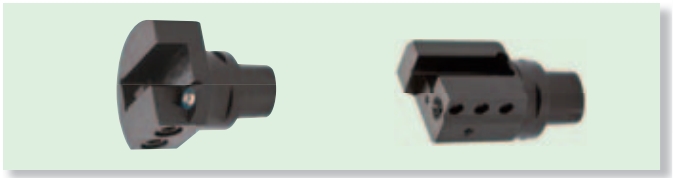
Cat. No.	Dimensions (mm)									Fig.
	G	ød1	ød2	ød4	ød5	L	L1	L2	α	
PSBT3045°M12MAS1	M12	11	7	12.5	-	18	43	23	45°	1
PSBT3045°M12MAS1B	M12	11	7	12.5	3	18	43	23	45°	1
PSBT3060°M12MAS2	M12	11	7	12.5	-	18	43	23	60°	1
PSBT3060°M12MAS2B	M12	11	7	12.5	3	18	43	23	60°	1
PSBT4045°M16MAS1	M16	15	10	17.0	-	28	60	35	45°	1
PSBT4045°M16MAS1B	M16	15	10	17.0	5.5	28	60	35	45°	1
PSBT4060°M16MAS2	M16	15	10	17.0	-	28	60	35	60°	1
PSBT4060°M16MAS2B	M16	15	10	17.0	5.5	28	60	35	60°	1
PSBT4090°M16MAS3	M16	15	10	17.0	-	28	60	35	90°	1
PSBT4090°M16MAS3B	M16	15	10	17.0	5.5	28	60	35	90°	1
PSBT5045°M24MAS1	M24	23	17	25.0	-	35	85	45	45°	1
PSBT5045°M24MAS1B	M24	23	17	25.0	6.0	35	85	45	45°	1
PSBT5045°M24MAS1OB	M24	23	17	25.0	6.0	35	85	45	45°	2
PSBT5045°M24MAS1OBO	M24	23	17	25.0	6.0	35	85	45	45°	3
PSBT5060°M24MAS2	M24	23	17	25.0	-	35	85	45	60°	1
PSBT5060°M24MAS2B	M24	23	17	25.0	6.0	35	85	45	60°	1
PSBT5060°M24MAS2OB	M24	23	17	25.0	6.0	35	85	45	60°	2
PSBT5090°M24MAS3	M24	23	17	25.0	-	35	85	45	90°	1
PSBT5090°M24MAS3B	M24	23	17	25.0	6.0	35	85	45	90°	1
PSBT5090°M24MAS3OB	M24	23	17	25.0	6.0	35	85	45	90°	2

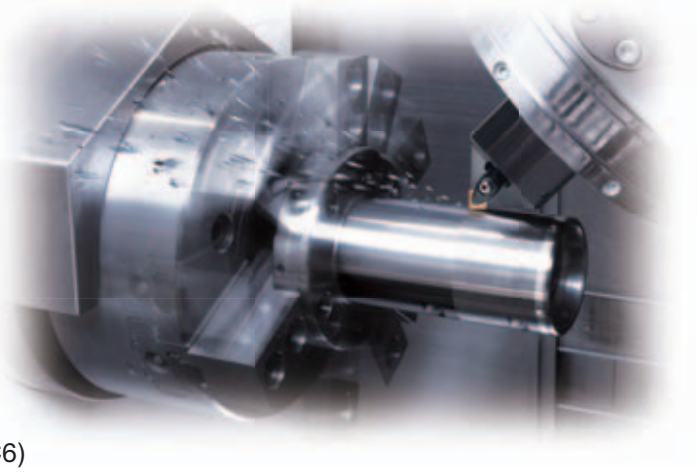
Quick change systems with polygon

TURNLINE

Toolholders for turning

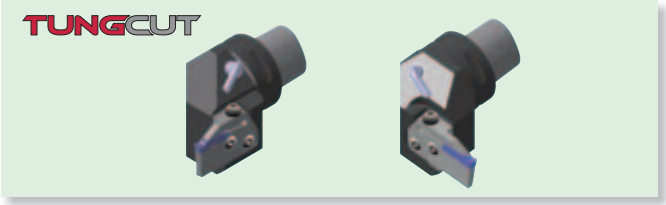
- **Adaptors for square shank toolholders**
  (Shank size: C4, C5)





- **Toolholders with PSC shank** (Shank size: C5, C6)

- **Grooving tool** (Shank size: C5, 6)

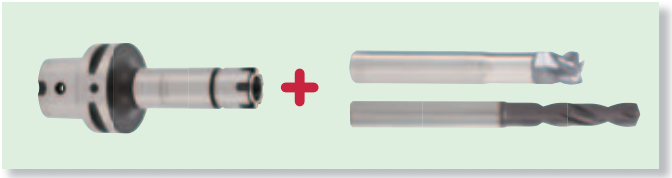


- **Adapter for boring bars**
  (Shank size: C4, 5, 6, 8)

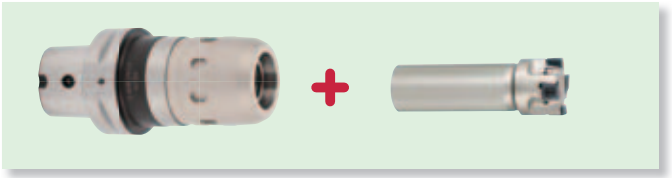
TOOLLINE

Holders for milling & drilling

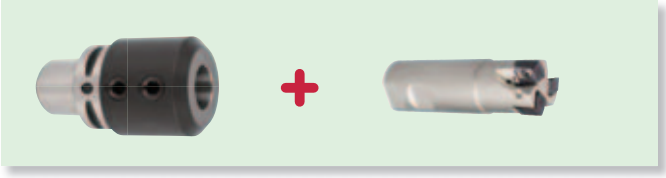
- **ER collet chuck holders** (Size: C4, 5, 6, 8)



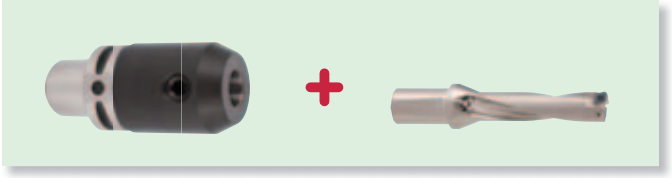
- **TungMax power chuck holders**
  (Size: C5, 6, 8)



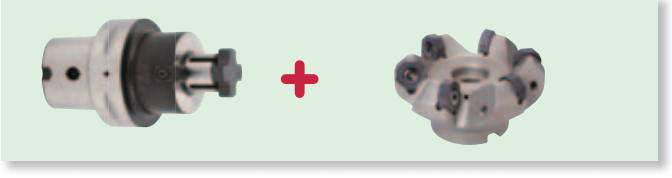
- **Side lock holders for endmill**
  (Size: C4, 5, 6, 8)



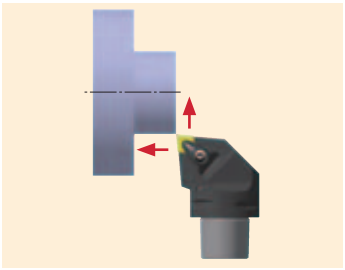
- **Side lock holders for drill** (Size: C4, 5, 6, 8)



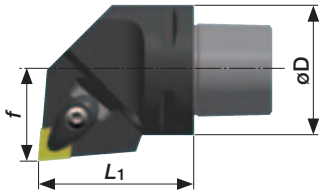
- **Face mill holders** (Size: C4, 5, 6, 8)

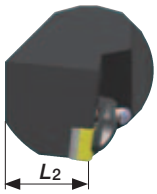


C-ACLNR/L External Turning — A-type (Negative rake, Double clamping system)



TURNINGA



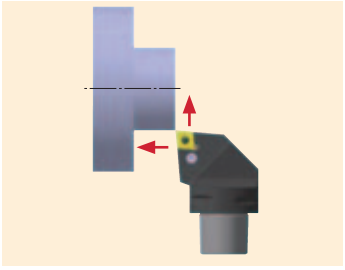


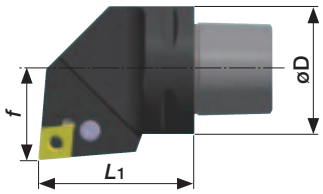
Right hand (R) shown

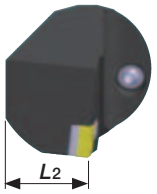
Cat. No.	Stock		Dimensions (mm)				Std. Corner radius r_ε	Applicable inserts	Shim	Spring pin	Sim screw	Clamp	Clamping screw	Spring	Wrench	Coolant nozzle
	R	L	øD	L_1	L_2	f										
C5ACLNR/L35060-12	●	●	50	60	32	35	0.8	CN** 1204**	ASC 422	SP-2.5	CSTB-3.5	ACP4S	ACS-5W	BP-7	T15F	EZ83
C6ACLNR/L45065-12	●	●	63	65	41	45										

Capable for normal pressure coolant

C-PCLNR/L External Turning — P -type (Negative rake, Lever-lock system)





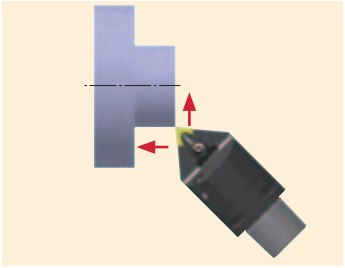


Right hand (R) shown

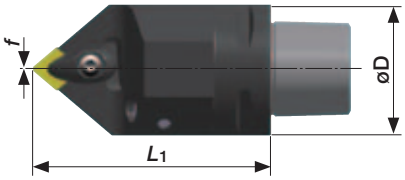
Cat. No.	Stock		Dimensions (mm)				Std. Corner radius r_ε	Applicable inserts	Shim	Spring pin	Lever	Clamping screw	Wrench	Coolant nozzle
	R	L	øD	L_1	L_2	f								
C5PCLNR/L35060-12	●	●	50	60	32	35	0.8	CN**1204**	LSC42	LSP-4	LCL4	LCS4	P-3	EZ104
C6PCLNR/L45065-12	●	●	63	65	41	45								

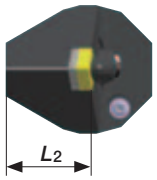
Capable for normal pressure coolant

C-ACLNN External Turning — A -type (Negative rake, Double clamping system)



TURNINGA





Cat. No.	Stock	Dimensions (mm)				Std. Corner radius r_ε	Applicable inserts	Shim	Spring pin	Sim screw	Clamp	Clamping screw	Spring	Wrench	Coolant nozzle
		øD	L_1	L_2	f										
C5ACLNN00090-12	●	50	90	32	0	0.8	CN** 1204**	ASC 422	SP-2.5	CSTB-3.5	ACP4S	ACS-5W	BP-7	T15F	EZ83
C5ACLNN00125-12	●	50	125	32	0										
C6ACLNN00100-12	●	63	100	37.5	0										
C6ACLNN00140-12	●	63	140	37.5	0										

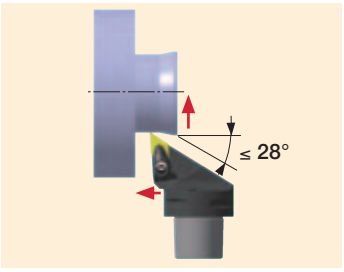
Capable for normal pressure coolant

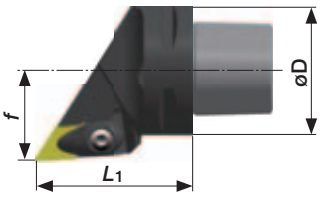
● : Stocked items

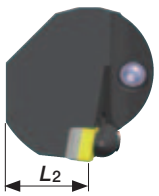
TUNGCAP Holders

C-ADJNR/L External Turning — A -type (Negative rake, Double clamping system)

TURNINGA







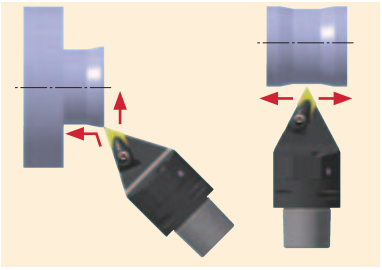
Right hand (R) shown

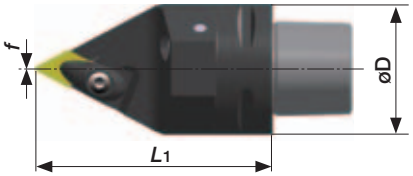
Cat. No.	Stock		Dimensions (mm)				Std. Corner r_ε	Applicable inserts	Shim	Spring pin	Sim screw	Clamp	Clamping screw	Spring	Wrench	Coolant nozzle
	R	L	øD	L_1	L_2	f										
C5ADJNR/L35060-15	●	●	50	60	32	35	0.8	DN**1504** (DN**1506**)	ASD423(06) (ASD432(04))	SP-2.5	CSTB-3.5	ACP4S	ACS-5W	BP-7	T15F	EZ104
C6ADJNR/L45065-15	●	●	63	65	41	45										

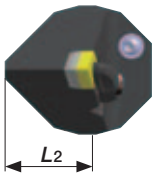
Capable for normal pressure coolant

C-ADNNN External Turning — A -type (Negative rake, Double clamping system)

TURNINGA



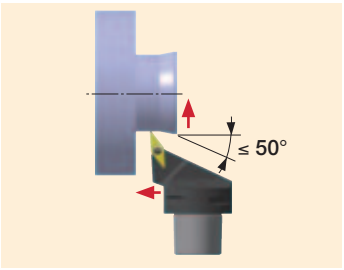


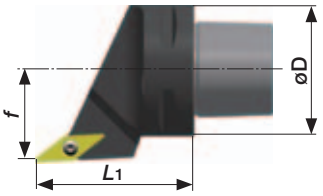


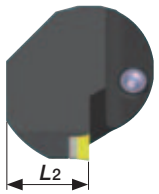
Cat. No.	Stock	Dimensions (mm)				Std. Corner r_ε	Applicable inserts	Shim	Spring pin	Sim screw	Clamp	Clamping screw	Spring	Wrench	Coolant nozzle
		øD	L_1	L_2	f										
C5ADNNN00090-15	●	50	90	32	0	0.8	DN**1504** (DN**1506**)	ASD423(06) (ASD432(04))	SP-2.5	CSTB-3.5	ACP4S	ACS-5W	BP-7	T15F	EZ104
C5ADNNN00125-15	●	50	125	32	0										
C6ADNNN00100-15	●	63	100	37.5	0										
C6ADNNN00140-15	●	63	140	37.5	0										

Capable for normal pressure coolant

C-SVJCR/L External Turning — S -type (Positive rake, Screw on clamping system)







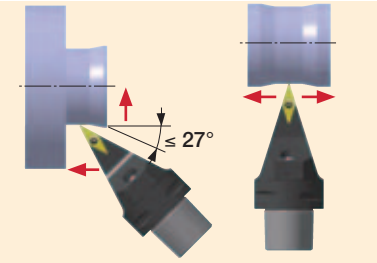
Right hand (R) shown

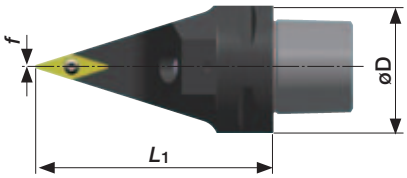
Cat. No.	Stock		Dimensions (mm)				Std. Corner r_ε	Applicable inserts	Shim	Sim screw	Clamping screw	Wrench	Wrench	Coolant nozzle
	R	L	øD	L_1	L_2	f								
C5SVJCR/L35060-16	●	●	50	60	32	35	0.8	VC**1604**	SSV32	DTS5-3.5	CSTB-3.5L	T-15F	P-3.5	EZ104
C6SVJCR/L45065-16	●	●	63	65	41	45								

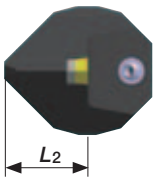
Capable for normal pressure coolant

● : Stocked items

C-SVVCN External Turning — S -type (Positive rake, Screw on clamping system)



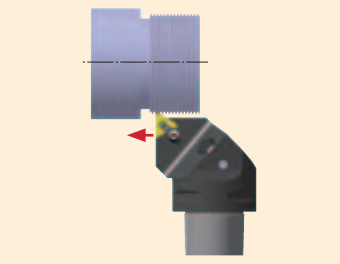


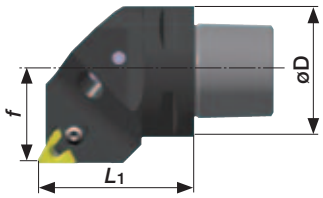


Cat. No.	Stock	Dimensions (mm)				Std. Corner r_ε	Applicable inserts	Shim	Sim screw	Clamping screw	Wrench	Wrench	Coolant nozzle
		øD	L_1	L_2	f								
C5SVVCN00090-16	●	50	90	32	0	0.8	VC**1604**	SSV32	DTS5-3.5	CSTB-3.5L	T-15F	P-3.5	EZ104
C5SVVCN00125-16	●	50	125	32	0								
C6SVVCN00100-16	●	63	100	37.5	0								
C6SVVCN00140-16	●	63	140	37.5	0								

Capable for normal pressure coolant

C-CER/L External threading — Dual method type



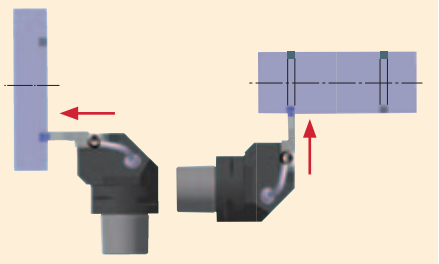


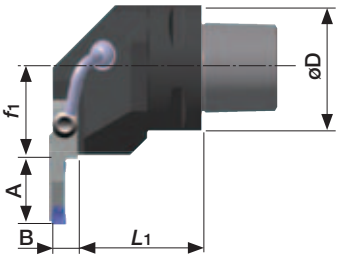
Right hand (R) shown

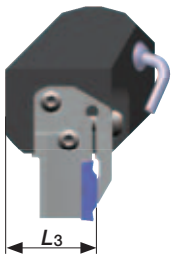
Cat. No.	Stock		Dimensions (mm)				Std. Corner r_ε	Applicable inserts	Shim	Sim screw	Clamping screw	Clamp set	Wrench	Wrench	Coolant nozzle
	R	L	øD	L_1	L_2	f									
C5CER/L35060-16ER	●	●	50	60	32	35	0.8	16ER/L	A16-1DT	DTS5-3.5	CSTB-3.5ST	CSP16	T-15F	P-3.5	EZ104
C6CER/L45065-16ER	●	●	63	65	41	45									

Capable for normal pressure coolant

C-CHFVR/L Grooving — Horizontal type







TUNGCUT

Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Applicable inserts	Blade	Clamping screw	Wrench	Coolant nozzle	Coolant pipe
	R	L	øD	L_1	*A	L_3	f_1	*B						
C5CHFVR/L35060	●	●	50	49.5	Table 1	36	35	Table 1	DTF, DTE, DTX DGS, DGM	CAER/L CAFR/L	CSHB-6-A	P-4	CNZ125	PNZ25
C6CHFVR/L45065	●	●	63	54.5		41	45							

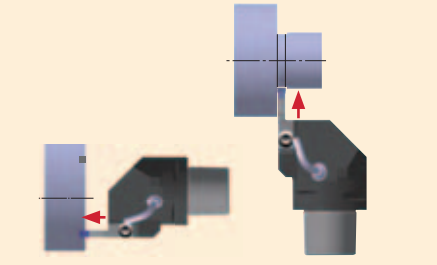
Capable for normal pressure coolant

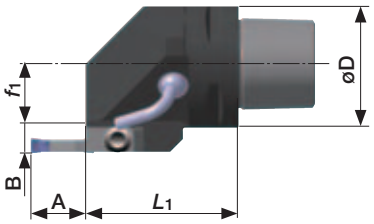
Combination of blade and toolholder

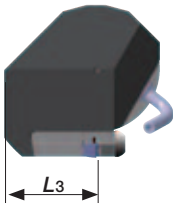
Toolholders	Blades			
	CAER□□□	CAEL□□□	CAFR□□□	CAFL□□□
CHFVR* **		●	●	
CHFVL* **	●			●

● : Stocked items

C-CHSR/L Grooving Vertical type







TUNGCUT

Right hand (R) shown

Cat. No.	Stock		Dimensions (mm)						Applicable inserts	Blade	Clamping screw	Wrench	Coolant nozzle	Coolant pipe
	R	L	øD	L_1	A	L_3	f_1	B						
C5CHSR/L35060	●	●	50	60	Table 1	36	24.5	Table 1	DGS/SGS, DGM/ SGM, DTX, DTE, DTR	CAER/L CAFR/L	CSHB-6-A	P-4	CNZ125	PNZ25
C6CHSR/L45065	●	●	63	65		41	34.5							

Capable for normal pressure coolant

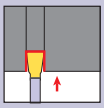
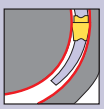
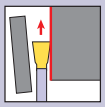
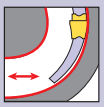
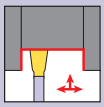
Combination of blade and toolholder

Toolholders	Blades			
	CAER□□□	CAEL□□□	CAFR□□□	CAFL□□□
CHSR***	●			●
CHSL***		●	●	

Table. 1: Offset dimensions for blade

	Blades	A	B
For external grooving	CAER/L-3T16	16	10.4
	CAER/L-4T16	16	10.5
	CAER/L-5T20	20	10.5
	CAER/L-6T20	20	10.5
For face grooving	CAFR/L-3T12-*	12	10.4
	CAFR/L-4T16-*	16	10.5
	CAFR/L-5T20-*	20	10.5
	CAFR/L-6T20-*	25	10.5

Insert application

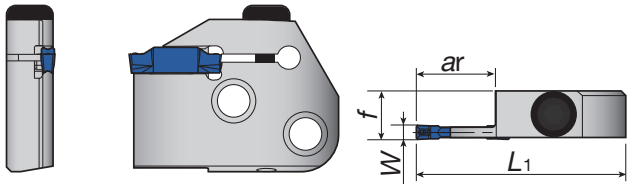
Insert	Application				
	Grooving		Parting off	Traversing	
	External	Face		External	Face
					
DGM / SGM	●	●	●		
DGS / SGS	●	●	●		
DTE	●	●		●	●
DGE	●				
DTX	●	●	●	●	●
DTI					
DTF		●			●
DTR	●			●	
DTIU	● Undercutting				
DTA				● Al wheel machining	

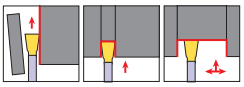
● : Stocked items

TUNGCAP Blades (For general purpose)

TUNGCUT

CAE R/L External grooving and turning

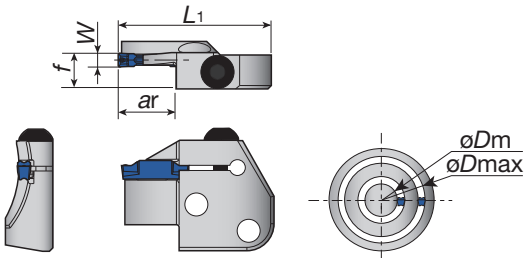


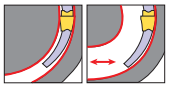


Right hand (R) shown

Insert seat size	Cat. No.	Stock R	Stock L	*Max. groove depth ar (mm)	Dimensions (mm) L1	Dimensions (mm) f	Dimensions (mm) W	Inserts	Shank	Parts Clamping screw	Parts Wrench
3	CAER/L-3T16	●	●	16	45	10.4	3	DGS / SGS DGM / SGM DTX DTE DTR	CHFVR/L CHSR/L	BHM6-20-A	P-4
4	CAER/L-4T16	●	●	16	45	10.5	4				
5	CAER/L-5T20	●	●	20	49	10.5	5				
6	CAER/L-6T20	●	●	20	49	10.5	6				

CAF R/L Face grooving and turning





Right hand (R) shown

Insert seat size	Cat. No.	Stock R	Stock L	Min. dia. øDm (mm)	Max. dia. øDm (mm)	Max. groove depth ar (mm)	Dimensions (mm) L1	Dimensions (mm) f(2)	Dimensions (mm) W	Inserts(3)	Shank	Parts Clamping screw	Parts Wrench
3	CAFR/L-3T12-040055	●	●	40	55	12	45	10.4	3	DTF	CHFVR/L CHSR/L	BHM6-20-A	P-4
	CAFR/L-3T12-055075	●	●	55	75	12	45	10.4	3	DTF DTE DTX DGS DGM			
	CAFR/L-3T12-075100	●	●	75	100	12	45	10.4	3				
	CAFR/L-3T12-100140	●	●	100	140	12	45	10.4	3				
	CAFR/L-3T12-140200	●	●	140	200	12	45	10.4	3				
4	CAFR/L-4T16-050070	●	●	50	70	16	45	10.5	4			BHM6-20-A	P-4
	CAFR/L-4T16-070100	●	●	70	100	16	45	10.5	4				
	CAFR/L-4T16-100150	●	●	100	150	16	45	10.5	4				
	CAFR/L-4T16-150250	●	●	150	250	16	45	10.5	4				
5	CAFR/L-5T20-055080	●	●	55	80	20	49	10.5	5			BHM6-20-A	P-4
	CAFR/L-5T20-080120	●	●	80	120	20	49	10.5	5				
	CAFR/L-5T20-120180	●	●	120	180	20	49	10.5	5				
	CAFR/L-5T20-180300	●	●	180	300	20	49	10.5	5				
	CAFR/L-5T20-300000	●	●	300	∞	20	49	10.5	5				
6	CAFR/L-6T25-060090	●	●	60	90	25(1)	55	10.5	6			BHM6-20-A	P-4
	CAFR/L-6T25-090150	●	●	90	150	25(1)	55	10.5	6				
	CAFR/L-6T25-150250	●	●	150	250	25(1)	55	10.5	6				
	CAFR/L-6T25-250400	●	●	250	400	25(1)	55	10.5	6				

(1) When depth is deeper than insert length, 1 corner type is recommended.

(2) "*f*" value in the above table is calculated with groove width "*W*" shown in the table.

Caution

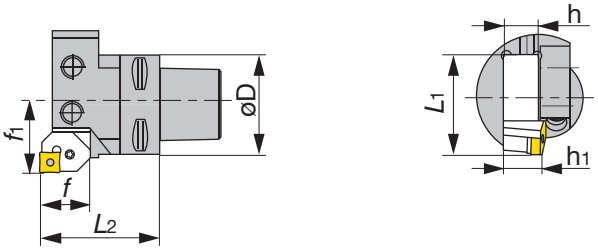
In DTF and DTX insert types, seat size "6" inserts are not available. When 6 size insert is required, the DTE, DGM or DGS type is recommended.

(3) Min. diameter ø*D*m of DTE, DGS and DGM insert

Inserts	ø*D*m (mm)	Note
DTE 3 / DGS 3 / DGM 3	ø44	When diameter is smaller than ø*D*m, DTF or DTX type insert is recommended.
DTE 4 / DGS 4 / DGM 4	ø42	
DTE 5 / DGS 5 / DGM 5	ø50	
DTE 6 / DGS 6 / DGM 6	ø48	

● : Stocked items

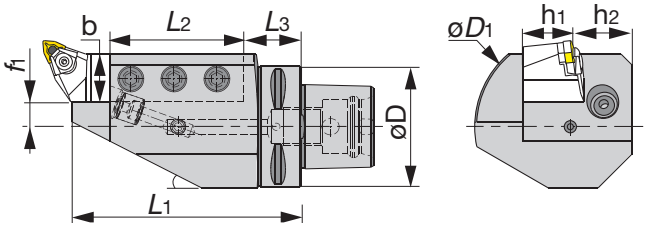
C-ADER/L Adapter for square shank toolholders



Cat. No.	Dimensions (mm)							Clamp screw
	øD	f_1	L_2	f	h_1	h	L_1	
C4ADE-20R/L	40	35	54	25	20	20	67	SR M10X20DIN912
C5ADE-20R/L	50	35	60	20	20	20	67	SR M10X16

Toolholders may be used after shortening shank length

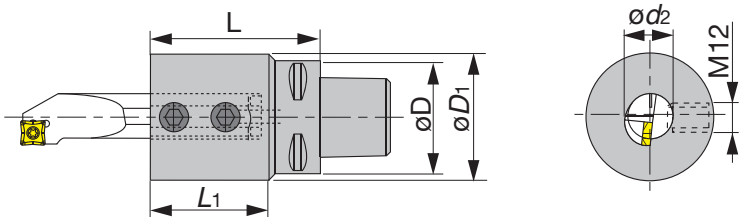
C-ASHR/L Adapter for square shank toolholders



Cat. No.	Dimensions (mm)										Clamp screw
	øD	L_1	L_2	L_3	f_2	h_1	b	h_2	h_3	$øD_1$	
C5ASHR/L201	50	98	63.5	24.5	10	20	20	33	30	90	SR M10x25 DIN915 45H
C6ASHR/L251	63	120	70	30	13	25	25	32	38	100	SR M12x30 DIN915 45H
C8ASHR/L32-1	80	140	95	35	8	32	32	32	40	110	

Toolholders may be used after shortening shank length

C-ADI Adapter for boring bars

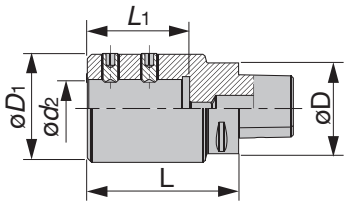


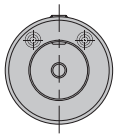
Cat. No.	Dimensions (mm)				
	øD	$ød_2$	$øD_1$	L	L_1
C4ADI25	40	25	60	80	60
C5ADI20	50	20	55	75	49
C5ADI25	50	25	60	85	60

● : Stocked items

TUNGCAP Adapter and sleeve

C-ABB Adapters for boring bars with sleeves





Cat. No.	Dimensions (mm)					Clamp screw	
	øD	ød2	øD1	L	L1	Used on A-type sleeves	Used on B-type sleeves
C5ABB-25-60	50	25	63	100	60	SRM10x20DIN915	SRM10x12DIN1835-B
C6ABB-25-60	63	25	63	100	60		
C6ABB-40-70	63	40	75	105	71	SRM12x20DIN915	SRM12x16DIN1835-B
C8ABB25-60	80	25	63	100	60	SRM10x20DIN915	SRM10x12DIN1835-B
C8ABB40-72	80	40	75	105	71	SRM12x20DIN915	SRM12x16DIN1835-B

SC Sleeves for C-ABB adapters

Fig. A

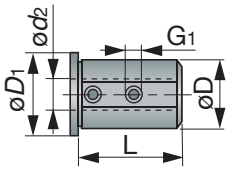
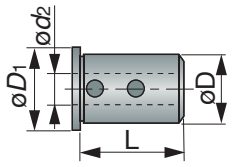


Fig. B

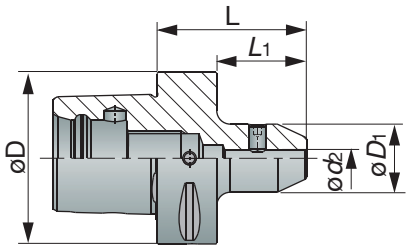


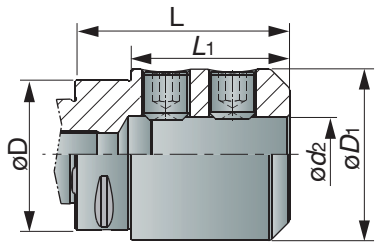
Cat. No.	Dimensions (mm)					
	øD	ød2	øD1	L	G1	Fig.
SC25T6A	25	6	31	56	M6	A
SC25T8A	25	8	31	56	M8	A
SC25T10A	25	10	31	56	M8	A
SC25T12A	25	12	31	56	M8	A
SC25T16B	25	16	31	56	-	B
SC25T20B	25	20	31	56	-	B
SC40T6A	40	6	46	58	M6	A

Cat. No.	Dimensions (mm)					
	øD	ød2	øD1	L	G1	Fig.
SC40T8A	40	8	46	58	M6	A
SC40T10A	40	10	46	58	M8	A
SC40T12A	40	12	46	58	M8	A
SC40T16B	40	16	46	58	-	B
SC40T20B	40	20	46	58	-	B
SC40T25B	40	25	46	58	-	B
SC40T32B	40	32	46	58	-	B

● : Stocked items

C-EM Weldon endmill holders (DIN1835 Form B)





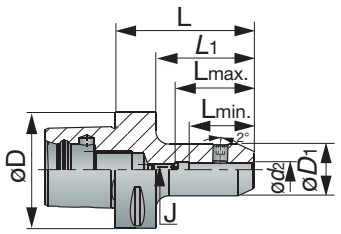
ød2 ≥ 25

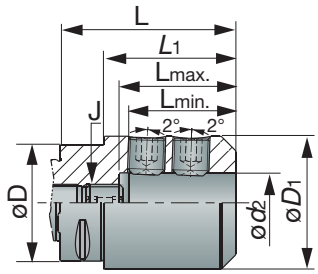
Cat. No.	Dimensions (mm)				
	øD	ød2	øD1	L	L1
C4EM06X50	40	6	25	50	30
C4EM08X50	40	8	28	50	30
C4EM10X50	40	10	35	50	30
C4EM12X55	40	12	42	55	35
C4EM14X55	40	14	44	55	35
C4EM16X60	40	16	48	60	40
C5EM06X50	50	6	25	50	30
C5EM08X50	50	8	28	50	30
C5EM10X55	50	10	35	55	35
C5EM12X60	50	12	42	60	40
C5EM14X60	50	14	44	60	40
C5EM16X60	50	16	48	60	40
C5EM18X60	50	18	50	60	40
C5EM20X60	50	20	52	60	40
C5EM25X85	50	25	65	85	65
C6EM6X55	63	6	25	55	33
C6EM8X55	63	8	28	55	33
C6EM10X60	63	10	35	60	38
C6EM12X60	63	12	42	60	38

Cat. No.	Dimensions (mm)				
	øD	ød2	øD1	L	L1
C6EM14X60	63	14	44	60	38
C6EM16X65	63	16	48	65	43
C6EM18X65	63	18	50	65	43
C6EM20X65	63	20	52	65	43
C6EM25X80	63	25	65	80	58
C6EM32X90	63	32	72	90	68
C6EM40X100	63	40	90	100	78
C8EM06X70	80	6	25	70	40
C8EM08X70	80	8	28	70	40
C8EM10X70	80	10	35	70	40
C8EM12X70	80	12	42	70	40
C8EM14X70	80	14	44	70	40
C8EM16X70	80	16	48	70	40
C8EM18X70	80	18	50	70	40
C8EM20X70	80	20	52	70	40
C8EM25X90	80	25	65	90	60
C8EM32X95	80	32	72	95	65
C8EM40X110	80	40	90	110	80
C8EM50X120	80	50	98	120	90

● : Stocked items

C-EM-E Drill holders (DIN1835 Form E whistle notch)





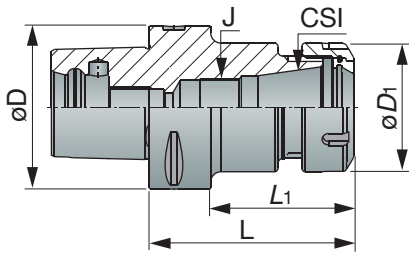
ød2 ≥ 25

Cat. No.	Dimensions (mm)							
	øD	ød2	øD1	L	L		L1	J
					Min.	Max.		
C4EM06X70E	40	6	25	70	30	35	50	M5
C4EM08X70E	40	8	28	70	35	43	50	M6
C4EM10X70E	40	10	35	70	39	45	50	M8
C4EM12X75E	40	12	42	75	44	49	55	M10
C4EM14X75E	40	14	44	75	44	49	55	M10
C5EM06X70E	50	6	25	70	30	35	50	M5
C5EM08X70E	50	8	28	70	35	43	50	M6
C5EM10X70E	50	10	35	70	39	45	50	M8
C5EM12X75E	50	12	42	75	44	49	55	M10
C5EM14X75E	50	14	44	75	44	49	55	M10
C5EM16X80E	50	16	48	80	47	52	60	M12
C5EM18X80E	50	18	50	80	47	52	60	M12
C5EM20X85E	50	20	52	85	49	55	65	M16
C6EM6X75E	63	6	25	75	30	36	53	M5
C6EM8X75E	63	8	28	75	35	43	53	M6
C6EM10X75E	63	10	35	75	39	46	53	M8
C6EM12X80E	63	12	42	80	44	49	58	M10

Cat. No.	Dimensions (mm)							
	øD	ød2	øD1	L	L		L1	J
					Min.	Max.		
C6EM14X80E	63	14	44	80	44	49	58	M10
C6EM16X85E	63	16	48	85	47	52	63	M12
C6EM18X85E	63	18	50	85	47	52	63	M12
C6EM20X85E	63	20	52	85	49	55	63	M16
C6EM25X90E	63	25	65	90	54	60	68	M20
C6EM32X95E	63	32	72	95	58	63	73	M20
C8EM06X65E	80	6	25	65	30	36	35	M5
C8EM08X65E	80	8	28	65	35	43	35	M6
C8EM10X65E	80	10	35	65	39	46	35	M8
C8EM12X70E	80	12	42	70	44	49	40	M10
C8EM14X70E	80	14	44	70	44	49	40	M10
C8EM16X75E	80	16	48	75	47	52	45	M12
C8EM18X75E	80	18	50	75	47	52	45	M12
C8EM20X80E	80	20	52	80	49	57	50	M16
C8EM25X90E	80	25	65	90	54	60	60	M20
C8EM32X95E	80	32	72	95	58	64	65	M20

● : Stocked items

C-ER ER collet holders (DIN6499)

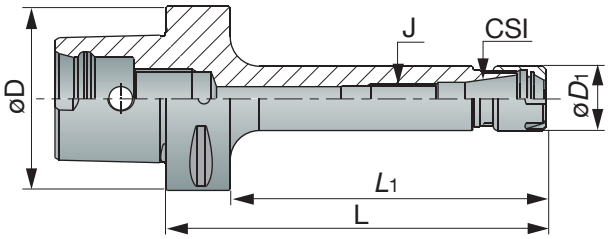


Cat. No.	Range		Dimensions (mm)					
	Min.	Max.	øD	CSI	øD1	L	L1	J
C4ER16X70	1	10	40	ER16	28	70	50	M10
C4ER20X35	1	13	40	ER20	34	35	27	-
C4ER20X52	1	13	40	ER20	34	52	32	-
C4ER25X38	1	16	40	ER25	42	38	30	-
C4ER25X52	1	16	40	ER25	42	52	32	-
C4ER32X54	2	20	40	ER32	50	54	34	-
C5ER16X100	1	10	50	ER16	28	100	80	M10
C5ER16X130	1	10	50	ER16	28	130	120	M10
C5ER20X055	1	13	50	ER20	34	55	35	-
C5ER20X100	1	13	50	ER20	34	100	80	M12
C5ER20X130	1	13	50	ER20	34	130	120	M12
C5ER25X055	1	16	50	ER25	42	55	35	-
C5ER25X100	1	16	50	ER25	42	100	80	M16
C5ER32X057	2	20	50	ER32	50	57	36	-
C5ER32X100	2	20	50	ER32	50	100	80	M22X1.5
C6ER16X100	1	10	63	ER16	28	100	78	M10
C6ER16X130	1	10	63	ER16	28	130	108	M10
C6ER16X160	1	10	63	ER16	28	160	138	M10
C6ER20X060	1	13	63	ER20	34	60	38	-
C6ER20X100	1	13	63	ER20	34	100	78	M12

Cat. No.	Range		Dimensions (mm)					
	Min.	Max.	øD	CSI	øD1	L	L1	J
C6ER20X130	1	13	63	ER20	34	130	108	M12
C6ER20X160	1	13	63	ER20	34	160	138	M12
C6ER25X060	1	16	63	ER25	42	60	38	-
C6ER25X100	1	16	63	ER25	42	100	78	M16
C6ER25X130	1	16	63	ER25	42	130	108	M16
C6ER25X160	1	16	63	ER25	42	160	138	M16
C6ER32X060	2	20	63	ER32	50	60	36	-
C6ER32X100	2	20	63	ER32	50	100	78	M22X1.5
C6ER32X130	2	20	63	ER32	50	130	108	M22X1.5
C6ER32X160	2	20	63	ER32	50	160	138	M22X1.5
C6ER40X065	3	26	63	ER40	63	65	37	-
C6ER40X100	3	26	63	ER40	63	100	78	M28X1.5
C6ER40X130	3	26	63	ER40	63	130	108	M28X1.5
C8ER32X70	2	20	80	ER32	50	70	40	-
C8ER32X100	2	20	80	ER32	50	100	70	M22x1.5
C8ER32X160	2	20	80	ER32	50	160	130	M22x1.5
C8ER40X70	3	26	80	ER40	63	70	40	-
C8ER40X100	3	26	80	ER40	63	100	70	M28x1.5
C8ER40X160	3	26	80	ER40	63	160	130	M28x1.5

Wrench is not included

C-ER-M Mini ER collet chuck holders (DIN 6499)

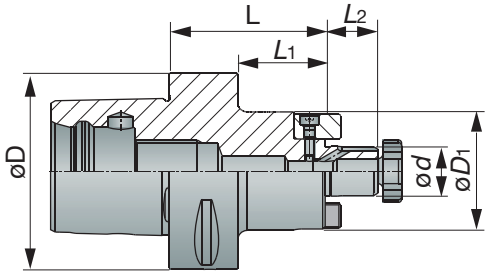


Cat. No.	Range		Dimensions (mm)					
	Min.	Max.	øD	CSI	øD1	L	L1	J
C4ER16X70M	0.5	10	40	ER16	22	70	50	M10
C5ER16X100M	0.5	10	50	ER16	22	100	80	M10
C5ER16X130M	0.5	10	50	ER16	22	130	120	M10
C6ER16X100M	0.5	10	63	ER16	22	100	78	M10
C6ER16X130M	0.5	10	63	ER16	22	130	108	M10
C6ER16X160M	0.5	10	63	ER16	22	160	138	M10

Wrench is not included

● : Stocked items

C-SEM Shell mill holders with coolant hole

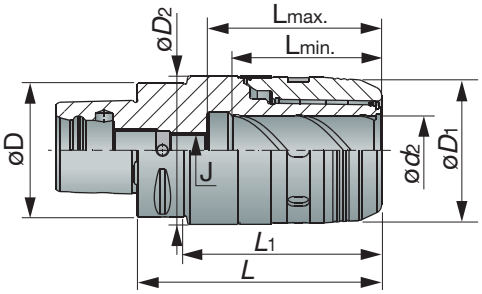


Cat. No.	Dimensions (mm)					
	øD	ød	øD1	L	L2	L1
C4SEM16X32C	40	16	38	32	12	17
C4SEM16X55C	40	16	38	55	35	17
C4SEM22X40C	40	22	47	40	20	19
C4SEM22X55C	40	22	47	55	35	19
C5SEM16X35C	50	16	38	35	17	15
C5SEM16X70C	50	16	38	70	17	50
C5SEM22X35C	50	22	47	35	19	15
C5SEM25.4X37C	63	25.4	50	37	22	-
C5SEM22X70C	50	22	47	70	19	50
C5SEM27X40C	50	27	58	40	21	20
C5SEM31.75X60C	63	31.75	64	60	30	-
C5SEM32X40C	50	32	63	40	24	20
C6SEM16X50C	63	16	38	50	17	28
C6SEM16X100C	63	16	38	100	17	78
C6SEM22X50C	63	22	47	50	19	28
C6SEM22X100C	63	22	47	100	19	78

Cat. No.	Dimensions (mm)					
	øD	ød	øD1	L	L2	L1
C6SEM25.4X37C	63	25.4	50	37	22	-
C6SEM27X60C	63	27	58	60	21	38
C6SEM27X100C	63	27	58	100	21	78
C6SEM31.75X60C	63	31.75	64	60	30	-
C6SEM32X60C	63	32	66	60	24	38
C6SEM38.1X60C	63	38.1	80	60	34	-
C6SEM40X60C	63	40	82	60	27	38
C8SEM16X50C	80	16	38	50	20	17
C8SEM16X100C	80	16	38	100	70	17
C8SEM22X50C	80	22	47	50	20	19
C8SEM22X100C	80	22	47	100	70	19
C8SEM27X50	80	27	58	50	20	21
C8SEM27X100C	80	27	58	100	70	21
C8SEM32X50C	80	32	66	50	20	24
C8SEM32X100C	80	32	66	100	70	24
C8SEM40X60C	80	40	82	60	30	27

Wrench is not included

C-TUNGMAX Power chuck holders



Cat. No.	Dimensions (mm)									
	øD	ød Min.	ød2	øD1	øD2	L	L1	L Min.	L Max.	J
C5TUNGMAX20X100	50	6	20	51	53	100	75	55	67	M16
C6TUNGMAX20X95	63	6	20	51	53	95	73	55	67	M16
C6TUNGMAX32X115	63	6	32	69	70	115	93	70	82	M16
C8TUNGMAX20X95	80	6	20	51	53	95	65	55	67	M16
C8TUNGMAX32X115	80	6	32	69	70	115	85	70	82	M16

Wrench is not included

● : Stocked items

Complete Tightening & Rigid Clamping

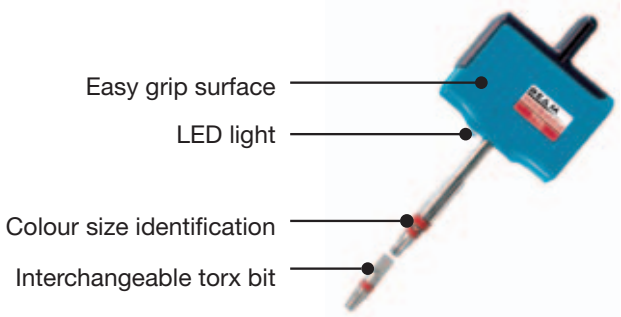
Features and Benefits

LED illuminates at correct torque!

- When reaching the required clamping force, the LED will be activated.
- Enables the operator to set the insert correctly.
- Provides stable and correct clamping forces in any work place.

A range of torque sizes available!

- 5 Torx sizes are available.
- Hardened steel enhances the life of bit.



■ Exchanging the bit:

Unlock the used bit

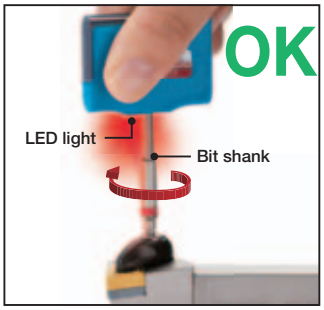
Pull the sleeve to loosen the bit.

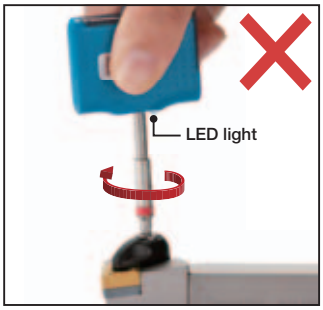
Lock the new bit

After placing the bit in the correct position, push the sleeve to lock the bit.

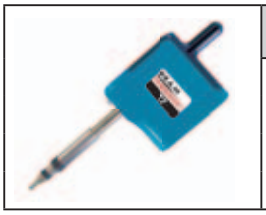
■ Attention when tightening:

- Hold the grip in a position, so the LED can be seen on the left side of bit shank. (See the picture below) Tighten the screw clockwise.





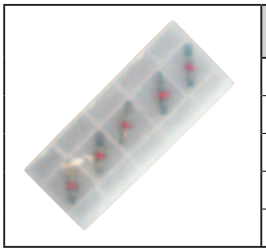
BEAMWRENCH set



Shape	Cat. No.	Torx size	Torque (N·m)	Colour
Single flag	**BW-SF6**	T 6	0.6	White
	BW-SF7	T 7	0.9	Black
	BW-SF8	T 8	1.2	Green
	BW-SF9	T 9	1.4	Blue

Shape	Cat. No.	Torx size	Torque (N·m)	Colour
Double flag	**BW-DF8**	T 8	1.2	Green
	BW-DF9	T 9	1.4	Blue
	BW-DF15	T 15	3.0	Red

BEAMWRENCH torx bits set



Cat. No.	Torx size	Torque (N·m)	Colour
BW-TX6SET5	T 6	0.6	White
BW-TX7SET5	T 7	0.9	Black
BW-TX8SET5	T 8	1.2	Green
BW-TX9SET5	T 9	1.4	Blue
BW-TX15SET5	T 15	3.0	Red

Torx bits set: Packing Quantity = 5 pcs.

Top-Borer Tools

Steel Shank	Carbide Shank
Min.bore dia. ø5.5mm	Min.bore dia. ø5.5mm

Features

- Indexable insert jig boring tools usable for commercially available adjustable boring heads.
- Minimum bore diameter ø5.5 mm.
- Available in three types of SEXP, SWUB and STUP.

Applications by Type

SEXP 	• Minimum bore diameter: ø5.5 mm. • A 75° rhombic insert is used. Stable insert holding assures precision boring.
SWUB 	• Available in two sizes of minimum bore diameters of ø7 and ø8 mm. • Uses an economical trigon insert.
STUP 	• Available in five sizes of minimum bore diameters of ø10, ø12, ø14, ø16 and ø18 mm. • Many standard items make them applicable for a wide range of applications.

Designation system for Top-Borer Tools

Symbol	Material
S	Steel
C	Carbide

① Shank material

Symbol	Min. bore diameter øD_m
055	5.5
07	7
08	8
10	10

③ Min. bore dia.

Symbol	Insert type
04	EPGT0401□□
03	WBGT0301□□
08	TPGT0802□□
11	TPGT1102□□

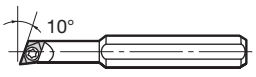
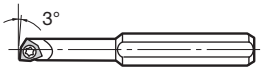
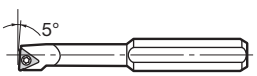
⑥ Applicable insert

S ① **08** ② **055** ③ **SEXP** ④ **R** ⑤ **04** ⑥

② Shank size

Symbol	Shank diameter (mm)
08	8
10	10
12	12
16	16

④ Tool shape

Symbol	Shape
SEXP	
SWUB	
STUP	

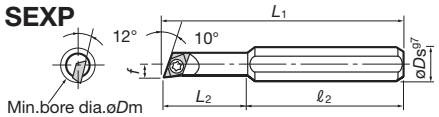
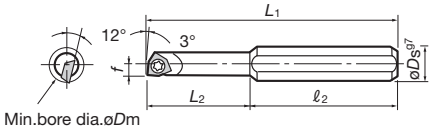
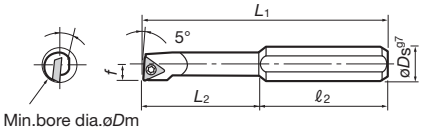
⑤ Hand of cartridge

Symbol	Hand
R	Right
L	Left
N	Neutral

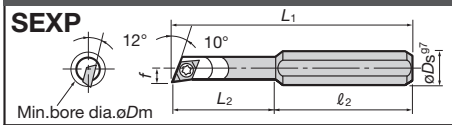
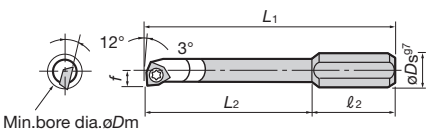
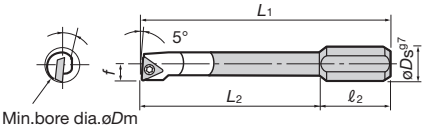
Top-Borer Tools

Steel Shank Min.bore dia. ø5.5mm | Carbide Shank Min.bore dia. ø5.5mm

Steel Shank

Shape (Right hand (R) shown)	Cat. No.	Stock R	Stock L	Applicable Inserts	Min. bore dia. øDm	Std. Corner r_ε	Dimensions (mm) øDs	L_1	L_2	ℓ_2	f	Parts Clamping screw	Parts Wrench
SEXP 	S08055-SEXPR/L04	●		EPGT/W0401□□ 2-111 3-23	5.5	0.4	8	45	19	26	2.75	CSTB-2	T-6F
	S10055-SEXPR/L04	●					10	51		32			
	S12055-SEXPR/L04	●					12						
	S16055-SEXPR/L04						16	54		35			
SWUB 	S0807-SWUBR03		–	WBGT0301□□ 2-132	7	0.4	8	50	24	26	3.6	CSTB-2	T-6F
	S1007-SWUBR03		–				10	56		32			
	S1207-SWUBR03		–				12						
	S1607-SWUBR03		–				16	59		35			
	S0808-SWUBR03		–		8		8	54	28	26	4.1		
	S1008-SWUBR03	●	–				10	60		32			
	S1208-SWUBR03	●	–				12						
	S1608-SWUBR03		–				16	63		35			
STUP 8°(When above ø12, angle is 6°) 	S0810-STUPR/L08	●		TPGT0802□□ 2-124 3-12 ~ 3-22	10	0.4	8	61	–	–		CSTB-2 L040	T-6F
	S1010-STUPR/L08	●					10	67	35	32	5		
	S1210-STUPR/L08	●					12						
	S1610-STUPR/L08						16	70		35			
	S1012-STUPR/L08				12		10	74	–	–		CSTB-2L	
	S1212-STUPR/L08	●					12		42	32	6		
	S1612-STUPR/L08						16	77					
	S1614-STUPR/L08				14			84	49	35	7		
	S1616-STUPR/L08				16			91	56		8		
	S1212-STUPR/L11	●		TPGT1102□□ 2-124 ~ 3-12 ~ 3-22	12		12	74	42	32	6	CSTB-2.5	T-8F
	S1214-STUPR/L11	●			14		12	81	–	–	7		
	S1618-STUPR/L11				18		16	98	–	–	9		

Carbide Shank

Shape (Right hand (R) shown)	Cat. No.	Stock R	Stock L	Applicable Inserts	Min. bore dia. øDm	Std. Corner r_ε	Dimensions (mm) øDs	L_1	L_2	ℓ_2	f	Parts Clamping screw	Parts Wrench
SEXP 	C08055-SEXPR/L04			EPGT/W0401□□ 2-111 3-23 ~	5.5	0.4	8	56	30	26	2.75	CSTB-2	T-6F
	C10055-SEXPR/L04	●					10	62		32			
	C12055-SEXPR/L04	●					12						
	C16055-SEXPR/L04						16	64		34			
SWUB 	C0807-SWUBR03		–	WBGT0301□□ 2-132	7	0.4	8	64	38	34	3.6	CSTB-2	T-6F
	C1007-SWUBR03		–				10	70		40			
	C1207-SWUBR03		–				12						
	C1607-SWUBR03		–				16	73		43			
	C0808-SWUBR03		–		8		8	70	44	26	4.1		
	C1008-SWUBR03	●	–				10	76		32			
	C1208-SWUBR03	●	–				12						
	C1608-SWUBR03		–				16	79		35			
STUP 8°(When above ø12, angle is 6°) 	C0810-STUPR/L08			TPGT/W0802□□ 2-124 3-12 ~ 3-22	10	0.4	8	81	–	–		CSTB-2 L040	T-6F
	C1010-STUPR/L08	●					10	87	55	32	5		
	C1210-STUPR/L08	●					12						
	C1610-STUPR/L08						16	90		35			
	C1012-STUPR/L08				12		10	98	–	–		CSTB-2L	
	C1212-STUPR/L08						12		66	33	6		
	C1612-STUPR/L08						16	101					
	C1614-STUPR/L08				14			119	84	35	7		
	C1616-STUPR/L08				16			123	88		8		
	C1212-STUPR/L11	●		TPGT/W1102□□ 2-124 ~ 3-12 ~ 3-22	12		12	98	66	32	6	CSTB-2.5	T-8F
	C1214-STUPR/L11	●			14			109	84	25	7		
	C1618-STUPR/L11				18		16	134	–	–	9		

Notes: • When using an insert with hand, right hand (R) holders use a left hand (L) insert.
• Left hand (L) holders use a right hand (R) insert.

● : Stocked items.

13 Brazed and Solid Carbide Tools

–Omitted–
Descriptions of some brazed and solid carbide tools are omitted in this catalog.
For these tools, please refer to “Tungaloy Cutting Tools” (Japanese edition).

MEMO

14 Parts for TAC tools

Specifications of parts

■ Parts for TAC tools

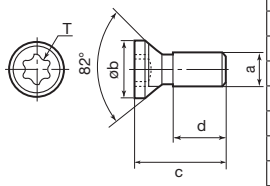
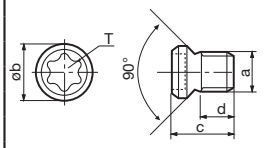
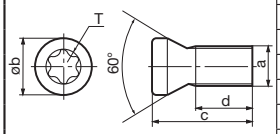
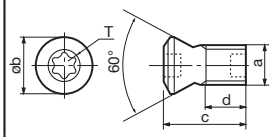
- Screws ····· 14-2
- Shims ····· 14-7
- Clamps ····· 14-13
- Clamp sets ····· 14-15
- Levers ····· 14-16
- Pins ····· 14-17
- Chipbreaker pieces ····· 14-18
- Springs ····· 14-19
- Coolant supply attachments ····· 14-20
- Pistons ····· 14-20
- Nuts ····· 14-20
- Coolant Pipe & Nozzle ····· 14-20
- Sizing plates ····· 14-21
- Washers ····· 14-22
- Wrenches and drivers ····· 14-22
- Locator ····· 14-24
- Insert locking wedge ····· 14-25
- Locator adjusting wedge ····· 14-26
- Fine adjusting screw ····· 14-26

Reference

■ Parts for former TAC tools

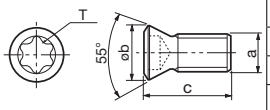
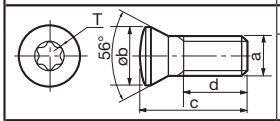
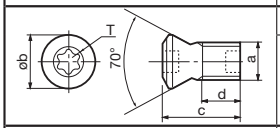
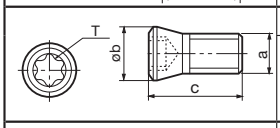
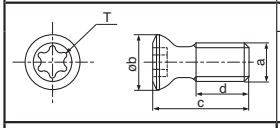
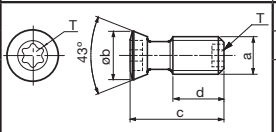
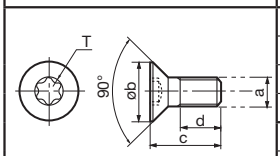
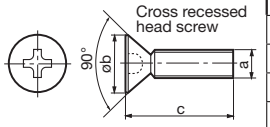
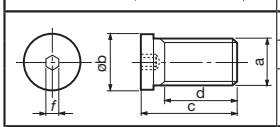
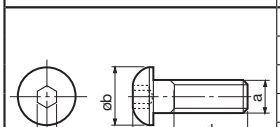
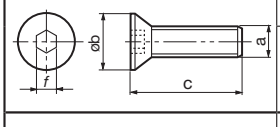
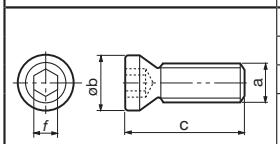
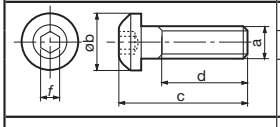
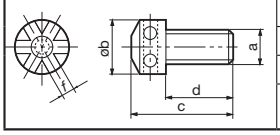
- Parts for former J-series toolholders ····· 14-27
- Parts for former TAC mills ····· 14-28
- Parts for former TAC drills ····· 14-33

Screws

Shape	Part Cat. No.	Stock	Dimensions (mm) a	øb	c	d	T / f		Torque (N·m)	Applicable Tools
	CSTA-NO2	●	#2-56UNC	4	6	4	T8		1.3	**TAC External Toolholders** J series S-type TurnTec Turning A A-type MS-type **TAC Internal Toolholders** DoMiniBore TurnTec Turning A A-type Stream Jet Bar Stream Jet Bar mini S-type **TAC Grooving & Parting Tools** CGW-type SGT-type SNG-type **TAC Threading Tools** ST-type **Tooling Systems** TAC Cartridge SP-type TAC Cartridge A-type TAC Boring Bar Tools "TOP-BORER" Tools **TAC Mills** DoRec TecSlot **TAC Drills**
	CSTA-NO2S	●			5	3				
	CSTA-NO2L	●			8	6				
	CSTA-NO3	●	#3-48UNC	4.3	7	4	T9		2.3	
	CSTA-NO5	●	#5-40UNC	5	8	5				
	CSTA-1.6	●	M1.6x0.35	2.5	3.1	0.9	T6		0.6	
	CSTA-4	●	M4x0.7	7	10	7.7	T15		3.5	
	CSTA-5	●	M5x0.8	7.2	15	11				
	CSTA-5S	●			12	8				
	CSTA-5SS	●			9.5	5.5				
	CSTA-5ST25	●			12	8	T25		5.0	
	CSPA-5	●			15	11	20IP		5.0	
	CSPA-5S	●			12	8				
	CSPA-5IP15	●		7.1	15	11	15IP		3.5	
	CSPA-5SIP15	●			12	8				
	CSPA-5IP20	●			15	11	20IP		5.0	
	CSPA-5SIP30	●			12	8				
 CSP-2L033 type shown	CSP-2L033	●	M2x0.4	2.6	3.3	1.9	6IP		0.7	
	CSTB-2	●		2.7	3.3	1.4	T6		0.7	
	CSTB-2L	●			5.2	3.3				
	CSTB-2L040	●			4	2.1				
	CSTB-2.2	●	M2.2x0.45	3.5	6.1	3.5	T7		1.0	
	CSTB-2.2L038	●			3.8	2.2				
	CSTB-2.2S	●			4.6	2				
	CSTB-2.2R	●		3.1	6.1	3.7				
	CSTB-2.5	●	M2.5x0.45	3.5	6	3.4	T8		1.3	
	CSTB-2.5L080	●			8	5.4				
	CSTB-2.5B	●			5.5	2.6				
	CSTB-2.5S	●			4.8	2.2				
	CSTB-3	●	M3x0.5	4.1	8	4.5	T9		2.3	
	CSTB-3L042	●			4.2	0.7				
	CSTB-3L050	●			5	2				
	CSTB-3S	●			6	2.5				
	CSTB-3.5ST	●	M3.5x0.6	5.5	12.5	4	T15		3.5	
	CSTB-3.5H	●		5.2	6.5	3.1				
	CSTB-3.5	●		5.5	8.4	4.3				
	CSTB-3.5T	●		6.5	10	5.5	T20		5.0	
	CSTB-3.5TS	●			8.5	4				
	CSTB-3.5D	●		4.7	8.4	4.9	T9		2.3	
	CSTB-3.5L110	●		5.5	11	7.5	T15		3.5	
	CSTB-3.5L115	●		4.8	11.5	7.0	T10		2.5	
	CSTB-3.5L115-S	●		4.8	11.5	6.5			3.5	
	CSTB-3.5L	●		5.5	12.5	8.4	T15		3.5	
	CSTB-4	●	M4x0.7		11.4	7.4				
	CSTB-4L060	●			6	2				
	CSTB-4L090	●		5.7	9	5.5				
	CSTB-4L115-S	●		5.5	11.5	6.5			5.5	
	CSTB-4S	●		5.5	8	4			3.5	
	CSTB-4ST	●	M4x0.5	6.4	14.7					
	CSTB-4SD	●	M4x0.7	5.5	8		T8		1.3	
	CSTB-4M	●			9.5	5.5	T15		3.5	
	CSTB-4F	●	M4x0.5	7	14.7	8.7				
 CSTB-4SD shown	CSTB-4TS	●	M4x0.7	6.5	9	4.5	T20		5.0	
	CSTB-5	●	M5x0.8	7	12	7.5				
	CSTB-5S	●			9.5	5				
	CSTB-5L105	●			10.5	6.1				
	CSTB-5L120	●			12	6.5				
	CSTB-5L159	●		7.2	15.9	11.2				
	CSTB-5L163-S	●		6.9	16.3	11.3			6.0	
	CSPB-2L043	●	M2x0.4	2.7	4.3	2.5	6IP		0.7	
	CSPB-2H	●		2.6	3.4	1.6				
	CSPB-2.2	●	M2.2x0.45	3	6	3.9	7IP		1.0	
	CSPB-2.2SH	●			4	2			1.1	
	CSPB-2.5	●	M2.5x0.45	3.5	6	3.5	8IP		1.3	
	CSPB-2.5S	●			4.2	1.7				
	CSPB-2.5SH	●		3.3	5.2	3.3	7IP		1.1	
	CSPB-3.5	●	M3.5x0.6	5.2	9	5.6	15IP		3.5	
	CSPB-3.5S	●			6.5	3.1				
	CSPB-4	●	M4x0.7	5.5	11.6	7.4				
	CSPB-4S	●			8.2	4				
	CSPB-5	●	M5x0.8	7	12	7.5	20IP		5.0	
	SR34-514	●	M2.5x0.45	3.3	5.2	3.2	T7		0.9	
	SR14-591	●	M5x0.8	6.6	13.5	7.6	T20		5.0	
	SM40-143-H0	●	M4x0.7	5.6	14.3	8.4	T15		3.5	

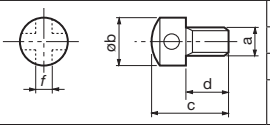
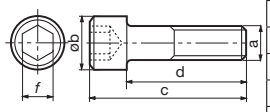
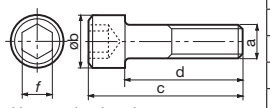
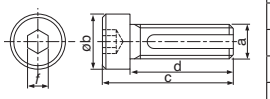
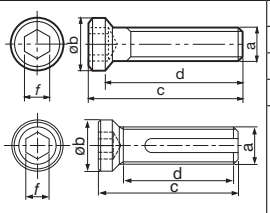
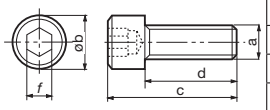
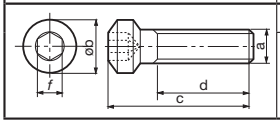
● : Stocked items.

Screws

Shape	Part Cat. No.	Stock	Dimensions (mm) a	øb	c	d	T / f		Torque (N·m)	Applicable Tools
	**CSPD-1.8S**	●	M1.8x0.35	2.4	3.3	1.4	6IP		0.7	**TAC Mills**
	CSTD-3T	●	M3x0.5	4.3	7	4.5	T10		2.5	
	CSPD-3	●				4.2	10IP		2.5	
	**CSTB-4.5L110P**	●	M4.5X0.75	6.6	11.7	7	T15		3.5	**TAC Toolholders** S-type
	**CSPE-5L150**	●	M5X0.8	9.2	15	9.8	20IP		7.5	**TAC Mills** DoOcto DoQuad
	**CSTC-2**	●	M2x0.4	3.1	5.1	-	T6		0.7	**TAC Drills** TDJ (Former products)
	**CSTR-4L100**	●	M4x0.7	5.7	10	5.5	T15		3.5	**TAC Mills** DoPent
	**SR16-212-01397**	●	M5x0.8	6.4	12.5	6.8	T20/ T10		2.5	**TAC Grooving & Parting Tools** TetraCut
	SR16-212-01397L	●								
	**CST-3.5**	●	M3.5X0.6	6	4.8	-	T9		2.3	**TAC Mills**
	CST-3.5S	●			3.5	-				
	CST-5	●	M5x0.8	10	18	13	T25		5.0	
	CST-5S	●			12	7				
	CSTF-2L055-S	●	M2x0.4	2.7	5.5	3.8	T6			**TAC Toolholders** TurnTec
 Cross recessed head screw	**SM2.5×0.45×8**	●	M2.5x0.45	5	8	-	-		-	**TAC External Toolholders** C-type **TAC Internal Toolholders** C-type **Tooling Systems** TAC Cartridge CP-type
	SM2.5×0.5×8	●	M2.5x0.5	5	8	-	-		-	
	SM3×0.5×6	●	M3x0.5	6	6	-	-		-	
	SM3×0.5×8	●			8	-	-		-	
	SM3×0.5×10	●			10	-	-		-	
	**MSP-5**	●	M5x0.8	6.1	7.9	4.9	2		1.5	**TAC Toolholders** M-type
	MSP-6.3	●	M6.3x1	7.7	12.7	9.9	2.5		3.0	
	**BHM3-8**	●	M3x0.5	5.5	10	8	2		1.5	**TAC Grooving & Parting Tools** CGT-type GX-type **TAC Drills**
	BHM4-8	●	M4x0.7	7	10.6		2.5		2.2	
	BHM4-10	●			12.6	10				
	BHM5-14	●	M5x0.8	9	17.6	14	3		3.0	
	BHM6-20-A	●	M6x1.0	10.5	24	20	4		5.0	
	BHM8-25U	●	M8	14	29.3	25	5		8.5	
	BHM8-30U	●			34.3	30				
	**CSHM-3-8**	●	M3	6	8	-	2		1.5	
	**CSHB-4-A**	●	M4	5.5	11		T15		2.0	**TAC Grooving & Parting Tools** CGD-type CGW-type CFGS-type CFGT-type TungCut
	CSHB-6	●	M6	8.5	19	-	4		5.0	
	CSHB-6-A	●	M6	8.5	19				5.0	
	**RT-1**	●	M6	10	22.5	14	4		5.0	**TAC Grooving & Parting Tools** CGD-type GX-type **TAC Mills**
	RT-2	●	M8	13	31	20	5		8.5	
	**ASM6**	●	M6	10	18	12	3		-	**Tooling Systems** TAC Cartridge PN-type TAC Cartridge CP-type **TAC Mills**
	AJM5F	●	M5x0.5	9	13	8	2		-	
	AJM5	●	M5x0.8	9	13	8	2		-	

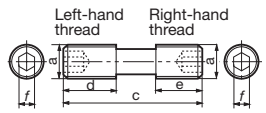
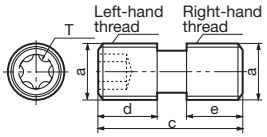
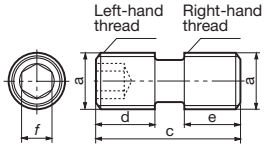
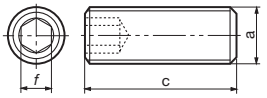
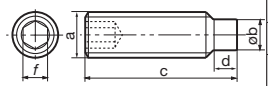
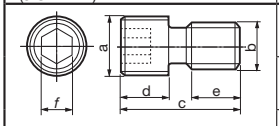
● : Stocked items.

Screws

Shape	Part Cat. No.	Stock	Dimensions (mm) a	øb	c	d	e	f	Torque (N·m)	Applicable Tools
	ASM34S	●	M3	4.8	8	5		2	-	
	ASM34L	●			11	8			-	
	ASM54	●	M5x0.8	9	14	9		3	-	
	CHHM3.5-10	●	M3.5x0.6	6	13.5	10		3	3.0	**TAC Grooving & Parting Tools** CGD-type CGW-type CFGS-type CFGT-type **TAC Drills Tooling Systems** TAC Cartridge PN-type TAC Cartridge CP-type TAC Cartridge CE-type TAC Cartridge SP-type TAC Cartridge PNE-type
	CHHM4-10		M4x0.7	7	14					
	CHHM5-14		M5x0.8	8.5	19	14		4	5.0	
	CHHM5-18	●			23	18				
	CHHM6-15		M6	10	21	15		5	8.5	
	CHHM6-20				–	20				
	CHHM6-25				31	25				
 Hex. socket head screw (JISB1176)	CM3X0.5X6		M3x0.5	5.5	9	6		2.5	2.2	**TAC Mills** TAC Mill PS-series **TAC Grooving & Parting Tools** TungCut
	CM3X0.5X10				13	10				
	CM4X0.7X10		M4x0.7	7	14			3	3.0	
	CM4X0.7X12				16	12				
	CM4X0.7X14	●			18	14				
	CM4X0.7X15				19	15				
	CM4X0.7X20	●			24	20				
	CM4X0.7X20-M0-A	●		6	24	20				
	CM5X0.8X8		M5x0.8	8.5	13	8		4	5.0	
	CM5X0.8X10-A	●			15	10				
	CM5X0.8X12	●			17	12				
	CM5X0.8X12-A	●			17	12				
	CM5X0.8X14	●			18	14				
	CM5X0.8X16				21	16				
	CM5X0.8X16-A	●			21	16				
	CM5X0.8X18				23	18				
	CM5X0.8X20-A	●			25	20				
	CM5X0.8X25-A	●			30	25				
	CM5X15		M5		20	15				
	CM6X1X16-A	●	M6x1.0	10	22	16		5	8.5	
	CM6X1X20-A	●			26	20				
	CM6X1X25-A	●			31	25				
	CM6X1.0X40-A	●			46	40				
	CM6X10		M6		16	10				
	CM6X15				21	15				
	CM6X16				22	16				
	CM6X20				26	20				
	CM6X25				31	25				
	CM6X30-S	●	M6x1.0	10	35.7	28				
	CM8X1.25X20-A	●	M8x1.25	13	28	20		6	25.0	
	CM8X1.25X25-A	●			33	25				
	CM8X30H	●			36	30		5		
	CM10X30		M10x1.5	16	30	20		8	40.0	
	CM10X30H	●		16	38	30		6	40.0	
	CM12X30H	●	M12x1.75	18	40			8	70.0	
	CM16X40H	●	M16x2	24	54	40		10	100.0	
	C0.375X1.125H	●	3/8-24UNF	14.27	38.11	28.58		5.55	35.0	
	C0.500X1.375H	●	1/2-20UNF	19.05	47.63	34.93		7.94	70.0	
	SD06-A3	●	M10x1.5	16	70	60		8	40.0	
	SD08-98	●	M12x1.75	18	77	65		10	70.0	
	FSHM8-30	●	M8x1.25	11	30	27		5	25.0	**TAC Mills**
	FSHM8-30H	●							25.0	
	FSHM10-40	●	M10	14	40	36.5		6	40.0	
	FSHM10-40H	●							40.0	
	SHCM4-10	●	M4x0.7	6	14	10		3	3.0	**TAC Mills**
	SHCM4-12	●			16	12				
	SHCM4-16	●			20	16				
	CTS-M6	●	M6x1	10	25	16.4		4	5.0	**TAC Toolholders** C-type (Be used KNMX inserts) **TAC Grooving & Parting Tools** CTW-type

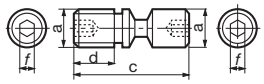
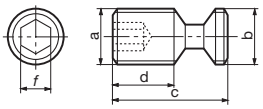
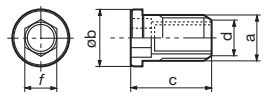
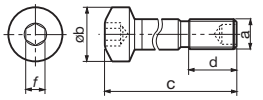
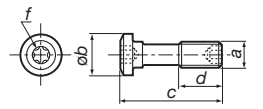
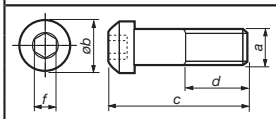
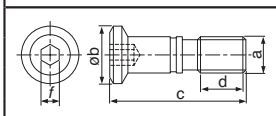
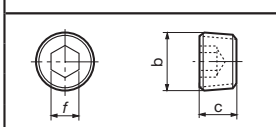
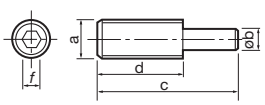
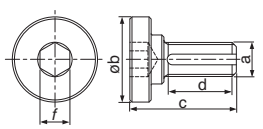
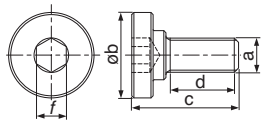
● : Stocked items.

Screws

Shape	Part Cat. No.	Stock	Dimensions (mm) a	øb	c	d	e	T / f	Torque (N·m)	Applicable Tools
	**MCS520-2.5**	●	M5×0.8		20	7	6	2.5	3.0	**TAC External Toolholders** M-type C-type **TAC Internal Toolholders** M-type **TAC Grooving & Parting Tools** CTH-type
	MCS620-3	●	M6×1				7	3	6.0	
	MCS625-3	●			25	10	8			
	MCS825-4	●	M8×1			12.5	6.5	4	8.0	
	MCS828-4	●			28.5	12	10.5			
	NDS-8A	●			30	11.5	11.5			
	NDS-8S	●	M8×1.25		20	8	8			
	**DS-6T**	●	M6		15	6	6		3.5	**TAC Mills**
	DS-6P	●	M6×1		21	7	7	15IP	6.0	
	FDS-8ST	●	M8×1		20	8	8	T27	10.0	
	FDS-8ST-18	●			18		6			
	**DS-6**	●	M6×1		15	6	6	3	6.0	**TAC Grooving & Parting Tools** CTH-type **TAC Threading Tools** TT-type **TAC Mills**
	DS-8	●	M8×1.25		16	7	7	4	8.0	
	DS-8S	●			13	5.5	5.5			
	DS-10	●	M10×1.5		26	10	12	5	8.0	
	FDS-6Z	●	M6×0.75		20.5		5.5	3	6.0	
	FDS-8	●	M8×1		26		10	4	8.0	
	FDS-8S	●			20	8	8			
	FDS-8SS	●			18.5		6.5			
Hex. socket screw (Flat end)(JISB1177) 	**SSHM3-3**		M3		3			1.5	1.0	**TAC External Toolholders** THC-type (former product) **Tooling Systems** TAC Cartridge PN-type TAC Cartridge CP-type TAC Cartridge CE-type TAC Cartridge SP-type TAC Cartridge PNE-type **TAC Internal Toolholders** Stream Jet Bar mini
	SSHM3-6				6					
	SSHM4-4		M4		4			2	1.5	
	SSHM4-6				6					
	SSHM4-8				8					
	SSHM4-10				10					
	SSHM4-14				14					
	SSHM5-6	●	M5		6			2.5	2.0	
	SSHM5-10	●			10					
	SSHM5-16				16					
	SSHM6-12	●	M6		12			3	3.0	
	SSHM6-16				16					
	SSHM6-18	●			18					
	SSHM6-20	●			20					
	SSHM8-8	●	M8		8			4	5.0	
	SSHM8-10	●			10					
	SSHM8-12	●			12					
	SSHM8-14	●			14					
	SSHM8-16	●			16					
	SSHM8-18	●			18		14			
 Hex. socket screw (Cylindrical end) (JISB1177)	**M5×7**	●	M5	3.5	7	1.25	-	2.5	2.0	
	M5×8	●			8		-			
	M5×10	●			10		-			
	M6×30	●	M6	4	30	1.5	-	3	3.0	
	**JDS-3525**	●	M3.5x0.35	M2.5 x0.45	7.5	3	2.5	2	1.0	**TAC Toolholders** JT-type (Back clamping type)
	JDS-5040	●	M5x0.5	M4 x0.7	10	4	4	2.5	1.0	

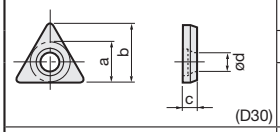
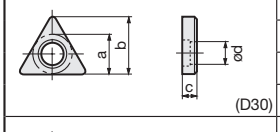
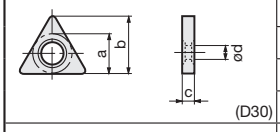
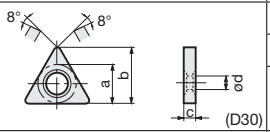
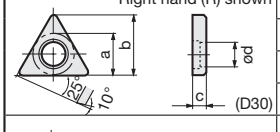
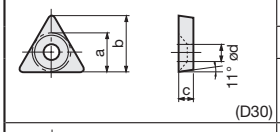
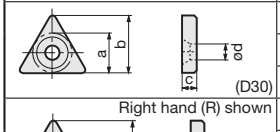
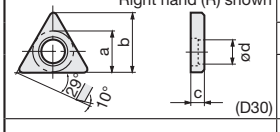
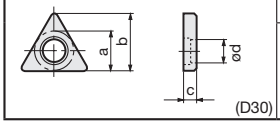
● : Stocked items.

Screws

Shape	Part Cat. No.	Stock	Dimensions (mm) a	b	c	d	e	T / f	Torque (N·m)	Applicable Tools
 LCS2 has a hex. socket in threaded end only.	**LCS2**	●	M5	5	14	6.5		2	1.5	**TAC External Toolholders** P-type MS-type **TAC Internal Toolholders** P-type **Tooling Systems** TAC Cartridge PN-type
	LCS3	●	M6	6	17			2.5	2.0	
	LCS3B	●			15					
	LCS4	●	M8	8	21			3	3.0	
	LCS4K	●				9.6				
	LCS4CA	●			17.5	6.5				
	LCS5	●			25	8.5				
	LCS5CA	●			20.5					
	LCS6	●	M10	9.8	27.2	9.9		4	5.0	
	LCS8	●	M12	11.8	36	12.8		5	8.0	
	LCS8C	●	M10	9.8	30.2	13.3		4	5.0	
	**LCS22**	●	M5	M5	10	4.7		2	1.5	**TAC Toolholders** P-type
	LCS22A	●	M6	M6	10.7					
	LCS33	●	M5	M5	12	6.2				
	LCS43	●	M6	M6	13.5	7.3		2.5	2.0	
	**DTS5-3.5**	●	M5	6.3	8.65	M3.5		3.5	4.0	**TAC External Toolholders** S-type (35° Rhombic) **TAC Internal Toolholders** S-type **TAC Grooving & Parting Tools** CNG-type **TAC Threading Tools** ST-type **Tooling Systems** TAC Boring Bar Tools TAC Mill, TAC Endmill series
	DTS5-3.5SS	●			6.8					
	DTS5-3.5S	●			7					
	DTS6-4	●	M6	7.7	10.2	M4		4	5.0	
	DTS6-4.5	●		7.5	10	M4.5		4.5	6.5	
	**DLCS33**	●	M5	9	31.5	10		3	3.0	
	DLCS43	●	M6	12	34	9.5		4	5.0	
	DLCS54	●	M8x1	14	41	11			7.0	
	DLCS64	●	M10x1	16	50	15		5	8.0	
	**ACS-5W**	●	M5	8	20	8.5		T15	4.0	**TAC Toolholders** D-type
	ACS-6W	●	M6	10	26	12.1		T20	6.4	
	**ACS3**	●	M5x0.8	7.5	25.6	12-15		3	4.0	**TAC Toolholders** Turning A A-type
	ACS4	●	M6x1	9	27.7	14-17		4	7.0	
	**WCS3**	●	M6	9.5	22.5	8		3	3.0	**TAC Toolholders** A-type
		●								
	**PT1/4GN**	●		13.175	10	-		6	9.5	Oil Hole Plugs for **TAC Drills** TAD (Former products) TDX
	1/8-28	●		9.728	7	-		5	8.0	
		●								
	**LS-8**		M8	6	33	20		4	5.0	**TAC Toolholders** H-type
	CCS4-A	●								**TAC Toolholders** C-type for dimple ceramic inserts
	BH5-10-A	●								
	BH4-10-A	●								
	BH-40050-A	●								
 	**TMBA-M10**	●	M10x1.5	27	30	21		8	40.0	
	TMBA-M12	●	M12x1.75	33	36	26		10	70.0	
	TMBA-M12H	●	M12x1.75		34.5			8		
	TMBA-M16	●	M16x2	40	50	40		14	100.0	
	TMBA-M16H	●	M16x2							
	TMBA-M20	●	M20x2.5	50	56	42		17	150.0	
	TMBA-M20H	●	M20x2.5							
	TMBA-M24	●	M24x3	65	69	55		19	150.0	
	TMBA-M24H	●	M24x3							
	TMBA-0.500H	●	1/2-20UNF	33	33.9	25.4		7.94	70.0	
	TMBA-0.750H	●	3/4-16UNF	50	58.28	47.28		12.7	150.0	

● : Stocked items.

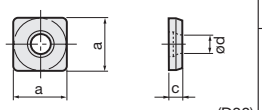
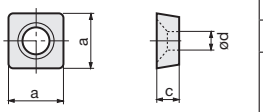
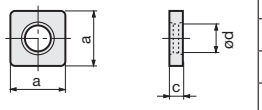
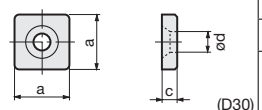
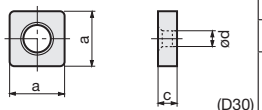
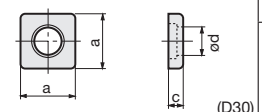
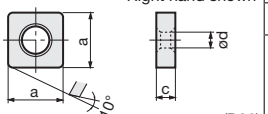
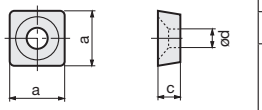
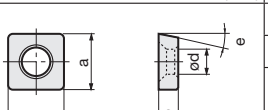
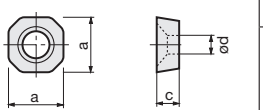
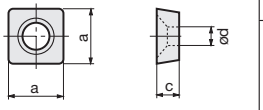
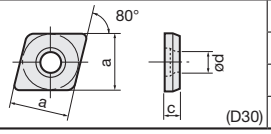
Shims

Shape (Carbide grade)	Part Cat. No.	Stock	Dimensions (mm)					Applicable Tools
			a	b	c	ød		
 (D30)	**AST322**	●	9.3	13.2	3.2	4.4		**TAC Toolholders** Turning A A-type
	AST422	●	12.5	18	3.2	4.4		
 (D30)	**MST-322**	●	9.1	12.9	3.24	5.8		**TAC Toolholders** M-type
	MST-432	●	12.5	17.9	4.8	7.3		
	MST-533		15.6	22.2		9.7		
	MST-644		18.8	26.6	6.4	11.3		
 (D30)	**LST317**	●	9.3	13.2	2.7	5		**TAC Toolholders** A-type D-type P-type MS-type
	LST42	●	12.5	18	3.2	6.7		
	LST53	●	15.7	22.3	4.8	7.7		
	LST42K	●	10.9	15.6	3.2	6.7		
 (D30)	**LST317CA**	●	9.3	13.2	2.7	5		**Tooling Systems** TAC Cartridge P-type (former product) TAC Cartridge PN-type
	LST42CA	●	12.5	18	3.2	6.7		
Right hand (R) shown  (D30)	**ELST42**	●	11.5	16.5	3.2	6.5		**TAC Toolholders** P-type
	ELST317	●	8.5	12	2.7	4.9		
	ELST317BR	●						
	ELST317BL	●						
 (D30)	**PAT-32**	●	8.2	11.7	3.2	3.5		**TAC External Toolholders** C-type (positive) **TAC Internal Toolholders** C-type (positive)
	PAT-53*	●	13.4	19.8	4.8	5		
 (D30)	**NAT-32**	●	9.5	13.4	3.2	3.5		**TAC Toolholders** C-type
	NAT-42E							
Right hand (R) shown  (D30)	**LST317BR**	●	9.3	13.2	2.7	5		**TAC Internal Toolholders** P-type
	LST317BL	●						
 (D30)	**SST32**	●	8.5	11.9	3.2	5.4		**TAC Toolholders** S-type

Note: * marked shims are made of steel.

● : Stocked items.
▲ : Shortly unavailable

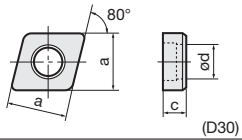
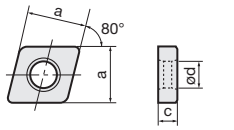
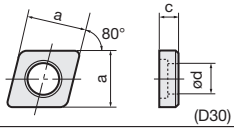
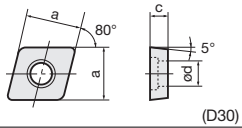
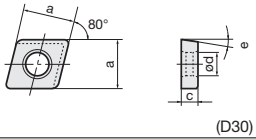
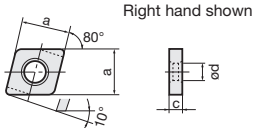
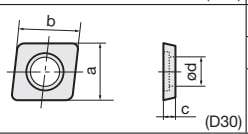
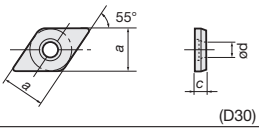
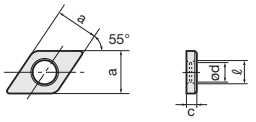
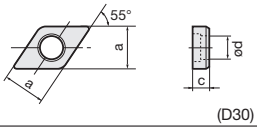
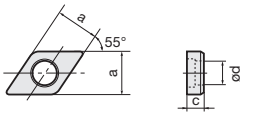
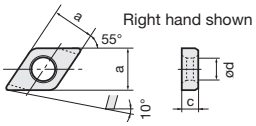
Shims

Shape (Carbide grade)	Part Cat. No.	Stock	Dimensions (mm)					Applicable Tools
			a	b	c	ød	e	
 (D30)	**ASS422**	●	12.5		3.2	4.4		**TAC Toolholders** Turning A A-type
 (D30)	**ASS533**	●	15.7		4.8	5.5		
	ASS634	●	18.9					
 (D30)	**ELSS32**	●	8.5		3.2	4.9		**TAC Toolholders** P-type A-type D-type
	LSS33	●	9.3		4.3	5		
	ELSS42	●	11.7		3.2	6.5		
	LSS42	●	12.5		3.2	6.7		
	ELSS53		14.7		4.8	8		
	LSS53	●	15.7			7.7		
	ELSS63	●	17.9			9.7		
	LSS63	●	18.9					
	ELSS84	●	24.2		6.4	12.9		
	LSS84	●	25.2		6.4	13.1		
 (D30)	**NAS-42**	●	12.7		3.2	3.5		**TAC Toolholders** C-type H-type
	NAS-04	●	31.5		6.4	9.1		
 (D30)	**MSS-432**	●	12.5		4.8	7.3		**TAC Toolholders** M-type
	MSS-442	●			6.4			
 (D30)	**SSS32**		8.5		3.2	5.4		**TAC Toolholders** S-type
Right hand shown  (D30)	**LSS42BR**	●	12.5		3.2	6.7		**TAC Internal Toolholders** P-type
	LSS42BL	●						
 (D30)	**PAS-32**	●	8.2		3.2	3		**TAC External Toolholders** C-type (positive) HP-type (former product) **TAC Internal Toolholders** C-type (positive) **Tooling Systems** TAC Cartridge C-type (former product) TAC Cartridge CP-type
	PAS-42	●	11.4			3.5		
	PAS-63*	●	17		4.8	5		
 (D30)	**LSS42CA**	●	12.5		3.2	6.7	8°	**Tooling Systems** TAC Cartridge P-type (former product) TAC Cartridge PN-type
	LSS53CA	●	15.7		4.8	7.7	10°	
	**FSSA1102**	●	11.6		2	5.5	13°	**TAC Mills** TAW13 / EAW13
	**FSSP1102**	●	11		2	5.5	17°	**TAC Mills** TPW13 / EPW13
 (D30)	**ASC422**	●	12.5		3.2	4.4		**TAC Toolholders** Turning A A-type
	ASC533	●	15.7		4.8	5.5		
	ASC634	●	18.9					

Note: * marked shims are made of steel.

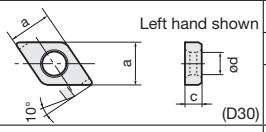
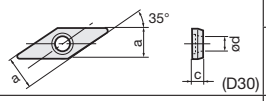
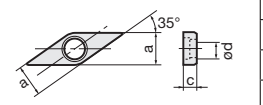
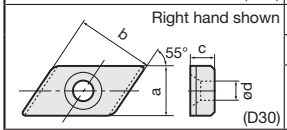
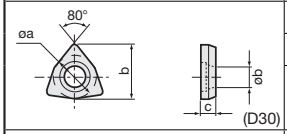
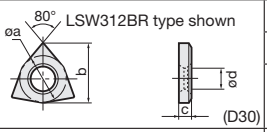
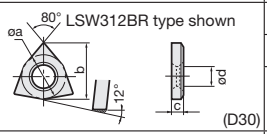
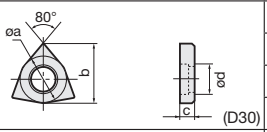
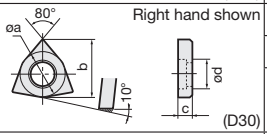
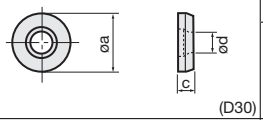
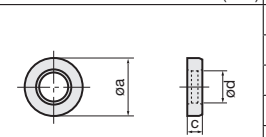
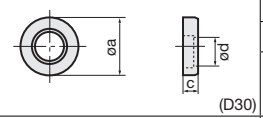
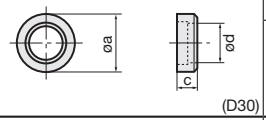
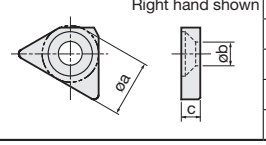
● : Stocked items.

Shims

Shape (Carbide grade)	Part Cat. No.	Stock	Dimensions (mm) a	b	c	ød	e	Applicable Tools
 (D30)	**MSC-432**	●	12.5		4.8	7.3		**TAC Toolholders** M-type
	MSC-442	●			6.4			
	MSC-533	●	15.6		4.8	9.7		
	MSC-543	●			6.4			
	MSC-634	●	18.8			11.3		
 (D30)	**ELSC32**	●	8.5		3.2	6.2		**TAC Toolholders** P-type D-type A-type
	LSC42	●	12.5			6.5		
	ELSC42	●	11.7					
	LSC53	●	15.7		4.8	7.7		
	ELSC53	●	14.7			8.1		
	ELSC63	●	17.9			9.7		
	LSC63	●	18.9					
 (D30)	**SSC32**	●	8.5		3.2	5.4		**TAC Toolholders** S-type
	SSC4T3	●	11.4		4	6.6		
 (D30)	**SSC4T3-P**	●	11.4		4	6.6		**Tooling Systems** TAC Boring Bar Tools
	SSC54-P	●	13.4					
 (D30)	**LSC42CA**	●	12.5		3.2	6.7	8°	**Tooling Systems** TAC Cartridge P-type (former product) TAC Cartridge PN-type
	LSC53CA	●	15.7		4.8	7.7	10°	
Right hand shown  (D30)	**LSC42BR**	●	12.5		3.2	6.7		**TAC Toolholders** P-type
	LSC42BL	●						
 (D30)	**ZSA1102**	●	10.5	11	2	5.475		**TAC Mills**
	ZSA1502	●	15.6	12.4		6		
 (D30)	**ASD423**	●	12.5		3.2	4.4		**TAC Toolholders** Turning A A-type
	ASD432	●	12.5		4.8	4.4		
 (D30)	**ELSD32**	●	8.5		3.2	4.9		**TAC Toolholders** P-type D-type A-type
	ELSD42	●	11.7			6.5		
	LSD42	●	12.5			6.7		
	LSD42A							
	LSD43	●			4.8			
	LSD43A							
 (D30)	**MSD-322**	●	9.3		3.2	5.8		**TAC Toolholders** M-type
	MSD-432	●	12.5		4.8	7.3		
	MSD-442	●			6.4			
 (D30)	**SSD32**	●	8.5		3.2	5.4		**TAC Toolholders** S-type
Right hand shown  (D30)	**ELSD317BR**	●	8.5		2.7	4.9		**TAC Internal Toolholders** P-type
	ELSD317BL	●						
	LSD42BR	●	12.5		3.2	6.7		
	LSD42BL	●						

● : Stocked items.

Shims

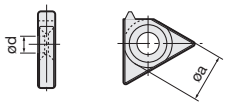
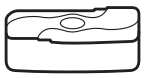
Shape (Carbide grade)	Part Cat. No.	Stock	Dimensions (mm)					Applicable Tools
			øa	b	c	ød		
 Left hand shown (D30)	**LSZ42BR**	●	12.5		3.2	6.7		**TAC Internal Toolholders** P-type
	LSZ42BL	●						
 (D30)	**ASV322**	●	9.3		3.2	4.4		**TAC Toolholders** Turning A A-type
 (D30)	**MSV-322**	●	9.26		3.2	5.8		**TAC External Toolholders** M-type S-type **TAC Internal Toolholders** S-type
	SSV32	●	8.4			5.4		
	SSV42	●	11			6.3		
 Right hand shown (D30)	**CSK54R**	●	9.4	14.8	4.8	3.5		**TAC Toolholders** C-type
	CSK54L	●						
 (D30)	**ASW322**	●	9.33	11.5	3.2	4.4		**TAC Toolholders** Turning A A-type
	ASW422	●	12.5	15.2				
 LSW312BR type shown (D30)	**LSW312**	●	9.33	11.5	2.7	5		**TAC Toolholders** D-type A-type
	LSW42	●	12.5	15.5	3.2	6.7		
 LSW312BR type shown (D30)	**LSW312BR**	●	9.33	11.5	2.7	5		**TAC Internal Toolholders** P-type
	LSW312BL	●						
 (D30)	**MSW-432**	●	12.8	15.8	4.8	7.3		**TAC Toolholders** M-type
	MSW-533	●	16	19.7		9.7		
	MSW-633	●	19.2	23.7		11.3		
 Right hand shown (D30)	**MSW-432BR**	●	12.8	15.8	4.8	7.3		**TAC Internal Toolholders** M-type
	MSW-432BL	●						
 (D30)	**ASR420**	●	12.5		3.2	4.4		**TAC Toolholders** Turning A A-type
 (D30)	**LSR32**	●	8.9		3.2	5		**TAC Toolholders** P-type D-type
	LSR32C	●	8.4					
	LSR42	●	12.1			6.7		
	LSR42C	●	9.9			5		
	LSR53C	●	14		4.8	6.7		
	LSR63C	●	17.2			8.2		
	LSR84C	●	21.9		6.4	9.7		
 (D30)	**MSR-43**	●	12.5		4.8	7.3		**TAC Toolholders** M-type
	MSR-44	●			6.4			
 (D30)	**SSR32**	●	8.7		3.18	5.2		**TAC Toolholders** S-type
 Right hand shown (D30)	**G16EL/IR**	●	9.5	-	3.2	4		**Grooving tools** GTGN
	G16ER/IL	●			3.2			
	G16EL/IR-DT	●			3.97	5.4		
	G16ER/IL-DT	●			3.97			

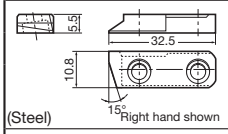
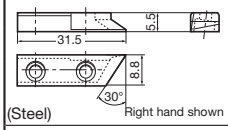
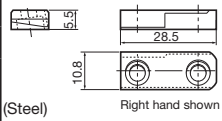
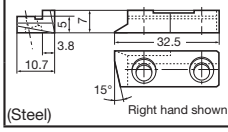
● : Stocked items.

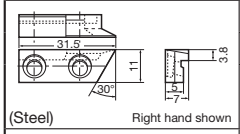
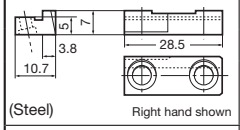
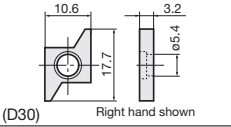
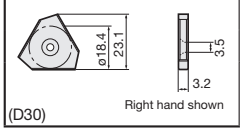
Shims

Shape (Carbide grade)	Part Cat. No.	Stock	Dimensions (mm)			Applicable Tools
			øa	ød	Lead angle	
	AE16-4DT	●	9.5	5.4	4°	**TAC Threading Tools**
	AE16-3DT	●		5.4	3°	ST-type
	AE16-2DT	●		5.4	2°	
	A16-1DT	●		5.4	1°	
	AE16-0DT	●		5.4	0°	
	AE16-99DT	●		5.4	-1°	
	AE16-98DT	●		5.4	-2°	
	AE16-4	●		4	4°	
	AE16-3	●		4	3°	
	AE16-2	●		4	2°	
	A16-1	●		4.3	1°	
	AE16-0	●		4	0°	
	AE16-99	●		4	-1°	
	AE16-98	●		4	-2°	
	AN16-4DT	●	9.5	5.4	4°	
	AN16-3DT	●		5.4	3°	
	AN16-2DT	●		5.4	2°	
	AN16-0DT	●		5.4	0°	
	AN16-99DT	●		5.4	-1°	
	AN16-98DT	●		5.4	-2°	
	AN16-4	●		4	4°	
	AN16-3	●		4	3°	
	AN16-2	●		4	2°	
	AN16-0	●		4	0°	
	AN16-99	●		4	-1°	
	**AN16-98**	●		4	-2°	
	GXE16-98	●	9.5	4.0	−2°	
	GXE16-98DT	●		5.4	−2°	
	GXE16-99	●		4.0	−1°	
	GXE16-99DT	●		5.4	−1°	
	GXE16-0	●		4.0	0°	
	GXE16-0DT	●		5.4	0°	
	GXE16-1	●		4.3	1°	
	GX16-1DT	●		5.4	1°	
	GXE16-2	●		4.0	2°	
	GXE16-2DT	●		5.4	2°	
	GXE16-3	●		4.0	3°	
	GXE16-3DT	●		5.4	3°	
	GXE16-4	●		4.0	4°	
	GXE16-4DT	●		5.4	4°	
	GXE22-98DT	●	12.7	6.6	−2°	
	GXE22-99DT	●			−1°	
	GXE22-0DT	●			0°	
	GX22-1DT	●			1°	
	GXE22-2DT	●			2°	
	GXE22-3DT	●			3°	
	GXE22-4DT	●			4°	
	GXN16-98	●	9.5	4.0	−2°	
	GXN16-98DT	●		5.4	−2°	
	GXN16-99	●		4.0	−1°	
	GXN16-99DT	●		5.4	−1°	
	GXN16-0	●		4.0	0°	
	GXN16-0DT	●		5.4	0°	
	GXN16-1	●		4.3	1°	
	GXN16-2	●		4.0	2°	
	GXN16-2DT	●		5.4	2°	
	GXN16-3	●		4.0	3°	
	GXN16-3DT	●		5.4	3°	
	GXN16-4	●		4.0	4°	
	GXN16-4DT	●		5.4	4°	
	GXN22-98DT	●	12.7	6.6	−2°	
	GXN22-99DT	●			−1°	
	GXN22-0DT	●			0°	
	GXN22-2DT	●			2°	
	GXN22-3DT	●			3°	
(D30)	**GXN22-4DT**	●			4°	

Shims

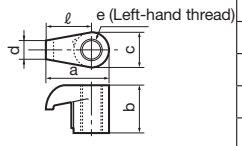
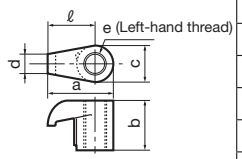
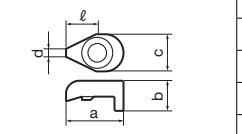
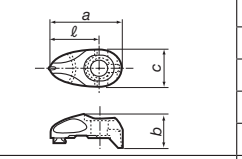
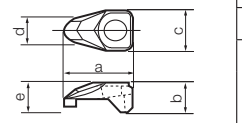
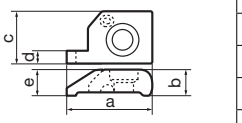
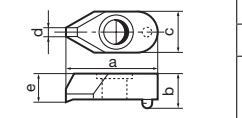
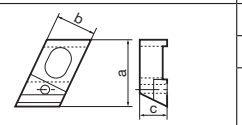
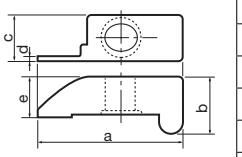
Shape (Carbide grade)	Part Cat. No.	Stock	Dimensions (mm) a	Dimensions (mm) øb	Dimensions (mm) Lead	Applicable Tools
	**NXE22-98**	●	12.7	4.0	−2°	**TAC Threading Tools** ST-type
	NXE22-99	●			−1°	
	NXE22-0	●			0°	
	NXE22-1	●		4.5	1°	
	NXE22-2	●		4.0	2°	
	NXE22-3	●			3°	
	NXE22-4	●			4°	
	NXE27-98		15.9	4	−2°	
	NXE27-99				−1°	
	NXE27-0				0°	
	NXE27-1	●		4.5	1°	
	NXE27-2			4	2°	
	NXE27-3				3°	
	NXE27-4				4°	
	NXN22-98	●	12.7	4	−2°	
	NXN22-99	●			−1°	
	NXN22-0	●			0°	
	NXN22-1	●		4.5	1°	
	NXN22-2	●		4	2°	
	NXN22-3	●			3°	
	NXN22-4	●			4°	
	NXN27-98		15.9	4	−2°	
	NXN27-99				−1°	
	NXN27-0				0°	
	NXN27-1	●		4.5	1°	
	NXN27-2			4	2°	
(D30)	**NXN27-3**				3°	
	NXN27-4				4°	
	**TSL12R**	●				**TAC Toolholders** TurnTec
	TSL12L	●				
	TSL16R	●				
	TSL16L	●				
	TSL24R	●				
	TSL24L	●				
	TSL12RI	●				
	TSL12LI	●				
	TSL16RI	●				
	TSL16LI	●				
	CC44-A	●				**TAC Toolholders** C-type for dimple ceramic inserts
	CS44-A	●				
	CD44-A	●				
	CV34-A	●				
	CH44-A	●				

Shape (grade)	Part Cat. No.	Stock	Applicable Tools
 (Steel) Right hand shown	**SL-1R**	●	**TAC Grooving & Parting Tools** GX-type (for external grooving)
	SL-1L	●	
 (Steel) Right hand shown	**SL-2R**	●	**TAC Grooving & Parting Tools** GX-type (for internal grooving)
	SL-2L	●	
 (Steel) Right hand shown	**SL-3R**	●	**TAC Grooving & Parting Tools** GX-type (for face grooving)
	SL-3L	●	
 (Steel) Right hand shown	**SL-6R**	●	**TAC Grooving & Parting Tools** GX-type (for external grooving)
	SL-6L	●	

Shape (grade)	Part Cat. No.	Stock	Applicable Tools
 (Steel) Right hand shown	**SL-7R**	●	**TAC Grooving & Parting Tools** GX-type (for internal grooving)
	SL-7L	●	
 (Steel) Right hand shown	**SL-8R**	●	**TAC Grooving & Parting Tools** GX-type (for face grooving)
	SL-8L	●	
 (D30) Right hand shown	**SGSR151**	●	**TAC Grooving & Parting Tools** CNG-type (for internal grooving)
	SGSL151	●	
 (D30) Right hand shown	**STN62R**		**TAC Mills**
	STN62L		

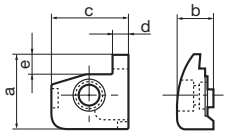
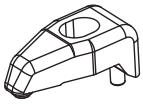
● : Stocked items.

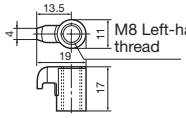
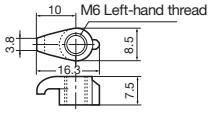
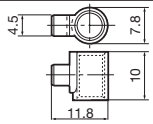
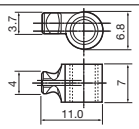
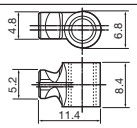
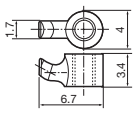
Clamps

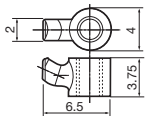
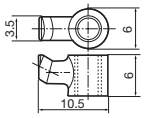
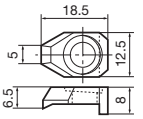
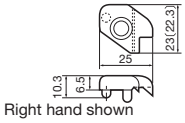
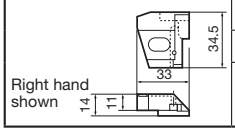
Shape	Part Cat. No.	Stock	Dimensions (mm)						Applicable Tools
			a	b	c	d	e	ℓ	
	**MCL-5M**	●	14.7	11	7.8	4	M5	10.8	**TAC Toolholders** M-type (former product)
	MCL-6	●	18.6	11.5	9.5		M6	13.8	
	MCL-8S	●	19.1	13.5	10.9	5	M8	13.6	
	MCL-8M	●	22.5					17	
	MCL-8L	●	25.5	14.5		4		20	
	**MCPM-6**	●	14.7	11.2	7.9	4	M5	10.8	**TAC External Toolholders** M-type **TAC Internal Toolholders** M-type
	MCPM-9	●	19.1	16.8	10.9	5	M8×1	13.6	
	MCPM-12	●	22.5					17	
	MCPM-20	●	18.6	9.5	9.5	4	M6	13.8	
	MCPM-21	●		12.2					
	MCPM-22	●	21.5	13.2				16.7	
	MCPM-30	●	25.5	16.8	10.9	5	M8×1	20	
	**DCPM-33**	●	16	9.3	10.5	2.4		8.5	**TAC Toolholders** D-type
	DCPM-43	●	21.2	11.5	13.5	3		13.2	
	DCPM-54	●	25.8	15.25	14	3.5			
	DCPM-64	●	28.4	15.5	16	4			
	**ACP3S**	●	22.8	9.5	10			15.0	**TAC Toolholders** Turning A A-type
	ACP3L	●	31.3	12	13			23.3	
	ACP4S	●	25.7	12	13			17.7	
	ACP5S	●	30.1	12.9	15	-	-	20.7	
	ACP6S	●	33.4	12.8	16.5	-	-	24.0	
	**ACP3**	●	17.9	10	10	6.5	6.3		**TAC Toolholders** A-type
	ACP4	●	25.9	13.9	12	7	10.8		
 Right hand shown	**CTC-3R**	●	29	8.8	16	2.2	8		**TAC Grooving & Parting Tools** CTW-type
	CTC-3L	●							
	CTC-4R	●			17	3.2			
	CTC-4L	●							
	CTC-5R	●			18	4.2			
	CTC-5L	●							
	**CP81A**	●	28	10.5	12	3.5	8		**TAC Grooving & Parting Tools** GX-type (Note) CP81A: With pusher "BP-3" (Note) CP81B: With pusher "BP-0"
	CP81B	●							
 TC-3 type shown, TC-4 : Left-hand thread	**TC-3**	▲	19	12.5	8.3	–	–	–	**TAC Toolholders** THC-type (former product)
	TC-4	▲	21.6		8				
	**CCR2**	●	34.7	14.9	10.7	1.2	10.5		**TAC Grooving & Parting Tools** CGD-type
	CCL2	●							
	CCR3	●				2.2			
	CCL3	●							
	CCR4	●				2.8			
	CCL4	●							
	CCR5	●				3.2			
	CCL5	●							
	CCR6	●				3.9			
	CCL6	●							
	CCR8	●				4.9			
	CCL8	●							

● : Stocked items.
▲ : Shortly unavailable

Clamps

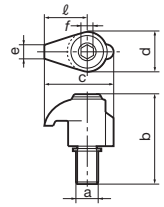
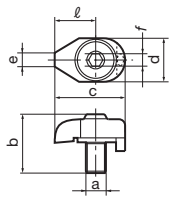
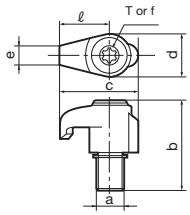
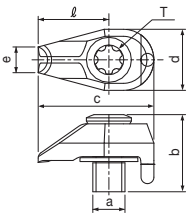
Shape	Part Cat. No.	Stock	Dimensions (mm) a	b	c	d	e		Applicable Tools
 Right hand shown	**CFG-3SR**	●	22	11	23.1	2	6		**TAC Grooving & Parting Tools** CFGS-type CFGT-type
	CFG-3SL	●							
	CFG-4SR	●				3			
	CFG-4SL	●							
	CFG-4DR	●	32				16		
	CFG-4DL	●							
	CFG-5SR	●	22			4	6		
	CFG-5SL	●							
	CFG-5DR	●	32				16		
	CFG-5DL	●							
	CFG-6SR	●	23			5	7		
	CFG-6SL	●							
	CFG-6DR	●	33				17		
	CFG-6DL	●							
	CFG-8SR	●	28		27.1	7	8		
	CFG-8SL	●							
	CFG-8DR	●	38				18		
	CFG-8DL								
	**CCP4-A**	●							**TAC Toolholders** C-type for dimple ceramic inserts

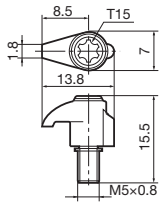
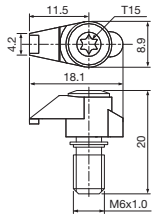
Shape	Part Cat. No.	Stock	Applicable Tools
	**NF-84A**	●	**TAC Toolholders** C-type
	**CP536**	●	**TAC Mills**
	**CP91**	●	**TAC Threading Tools** TT-type
	**CP900**	●	**TAC Grooving Tools** TGTS-type TGTT-type
	**CP910**	●	**TAC Grooving Tools** TGTS-type TGTT-type
	**JCP-1**	●	**TAC Toolholders** JT-type

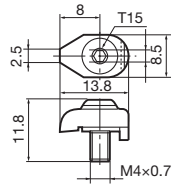
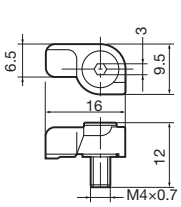
Shape	Part Cat. No.	Stock	Applicable Tools
	**JCP-2**	●	**TAC Toolholders** JT-type
	**JCP-3**	●	
	JCP-3N		
	**CQ-1**	●	**TAC Toolholders** Q-type (Former toolholders for PCD and PCBN)
 Right hand shown	**CPK5R**	●	**TAC Toolholders** C-type (Be used KNMX inserts)
	CPK5L	●	
 Right hand shown	**C11R-5**	●	**TAC Toolholders** HP-type (former product)
	C11L-5	●	

● : Stocked items.

Clamp Sets

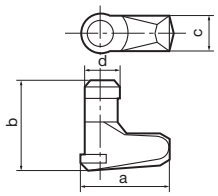
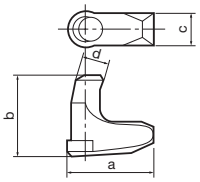
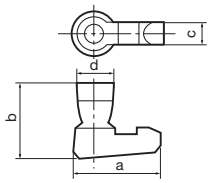
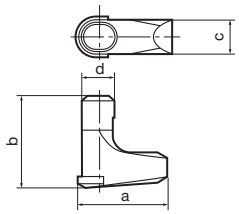
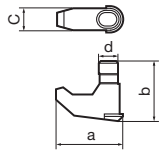
Shape	Part Cat. No.	Stock	Dimensions (mm)							Applicable Tools
			a	b	c	d	e	ℓ	T	
	**CSG-5S**	●	M5×0.8	13.5	13.8	7	1.8	8.5	2.5	**TAC External Toolholders** C-type (positive) **TAC Internal Toolholders** C-type **Tooling Systems** TAC Cartridge CP-type
	CSG-5	●		15.5						
	CSG-6S	●	M6×1		16.3	8.5	2.5	10	3	
	CSG-6	●		18						
	CSG-6L	●		21.5						
	CSG-8S	●	M8×1	21	20.5	11	3.5	12.5	4	
	CSG-8	●		23.5						
	**CSW-00**	●	M4×0.7	11.5	12	8	2	7.5	2.5	**TAC External Toolholders** C-type **TAC Internal Toolholders** C-type **TAC Grooving & Parting Tools** CGX-type **Tooling Systems** TAC Cartridge CE-type
	CSW-1	●	M5×0.8	16.5	16.5	9.5	4	10		
	CSW-0	●	M4×0.7	11.5	13.8	8.5	2.5	8		
	CSW-2	●	M6×1	20	20.5	11	6	13	4	
	CSW-40	●	M4×0.7	12	13.2	8	2	7.5	2.5	
	CSW-50	●	M5×0.8	15	16.9	10		9.5	3	
	**CSP 16**	●	M5×0.8	15.5	14.4	6.9	3.2	9.1	T15	**Threading Tools** ST-type
	CSP 22	●	M6×1	20	18.1	8.9	4.2	11.5	T20	
	CSP 27	●	M8×1	23.5	24.4	11.9	3.9	15.6	4	
	**CSY-15**	●	M4×0.7	11.6	11.5	7	3	6	15IP	
	CSY-20	●	M5×0.8	12	18	9.5	4	11	20IP	

Shape	Part Cat. No.	Stock	Applicable Tools
	**CSG-5T**	●	**TAC Mills**
	**CSX20**	●	**TAC Mills**

Shape	Part Cat. No.	Stock	Applicable Tools
	**CSW-0T**	●	**TAC Mills**
	**CSL-4**	●	**TAC Mills**

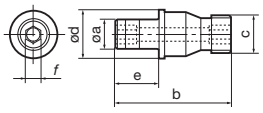
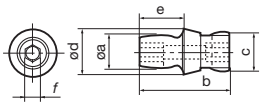
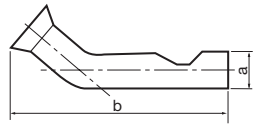
● : Stocked items.

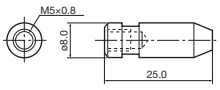
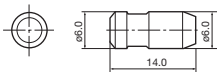
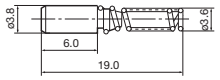
Levers

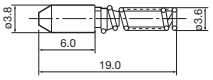
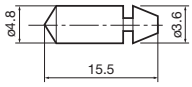
Shape	Part Cat. No.	Stock	Dimensions (mm)					Applicable Tools
			a	b	c	d		
	**LCL3**	●	10	12	3.7	3.6		**TAC External Toolholders** P-type MS-type **TAC Internal Toolholders** P-type **Tooling Systems** TAC Cartridge PN-type
	LCL4	●	14.6	14	4.7	4.7		
	LCL5	●	17.1	17	6	6		
	LCL6	●	20.5	21	7.5	7.5		
	LCL8	●	25.4	25.4	8.6	8.6		
	**LCL3C**	●	10.8	11.8	3.4	3		**TAC Toolholders** P-type
	LCL4C	●	13	13.4	3.7	3.4		
	LCL5C	●	18.6	17.7	4.7	4.5		
	LCL6C	●	20.5	19	6	5.7		
	LCL8C	●	24.2	23.5	7.5	6.2		
	**LCL22N**	●	7.5	6.5	2.6	2.06		**TAC Internal Toolholders** P-type **Tooling Systems** TAC Cartridge PN-type TAC Cartridge PNE-type
	LCL32N	●	10	7.8	3.2	3.2		
	LCL33NL	●	11.5	9.5	3.1	3.6		
	LCL33N	●	10	9.4	3.2	3.2		
	LCL43N	●	13.4	10	4.7	4.7		
	**LCL33**	●	10.1	12.1	3.6	3.7		**TAC External Toolholders** P-type D-type **TAC Internal Toolholders** P-type
	LCL33L	●	12	11.5	3.1	3.6		
	LCL43S	●	13.5	13.2	4.7	4.7		
	LCL43M	●						
	LCL44	●	16.1	14.6	4.7	4.7		
	LCL54	●	16.5	17.2	6.1	6		
	**DLCL43**	●	15.55	14	5	4.7		**TAC Toolholders** D-type
	DLCL54	●	19.1	19.1	6.1	6		
	DLCL64	●	21.5	21	7.5	7.5		

● : Stocked items.

Pins

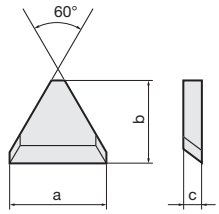
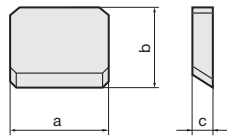
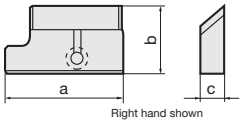
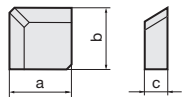
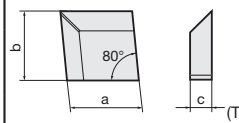
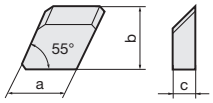
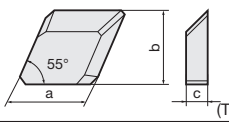
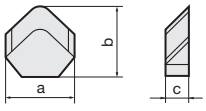
Shape	Part Cat. No.	Stock	Dimensions (mm)						Applicable Tools
			øa	b	øc	ød	e	f	
	**MLP32L**	●	3.9	8.8	M5×0.8	5.6	3.5	2	**TAC External Toolholders** M-type **TAC Internal Toolholders** M-type
	MLP33		3.7						
	MLP34L	●	3.7	13.1		6.2	5.0		
	MLP46	●	5	17.2	M6.3×1	7.8	5.5	2.5	
	MLP46L	●		18.6			6.9		
	MLP58	●	6.2	21.9	M8×1	10.3		3	
	MLP68	●	7.8		M10×1	11.9		4	
	MLP68L			24.1			9.1		
	**MLP44**	●	5	13.2	M6.3×1	7.1	5.5	2.5	**TAC Internal Toolholders** M-type
	MLP33L	●	3.7	10.4	M5×0.8	5.6	5.1	2	
	**SW99**	●	8	47.5					**TAC Toolholders** H-type (for heavy cutting)

Shape	Part Cat. No.	Stock	Applicable Tools
	**SP-8**		**TAC Mills** TAC Mill LS-series
	**SP-6**	●	**TAC Mills** MKS1000 (former product)
	**BP-3**	●	**TAC Grooving & Parting Tools** GX-type

Shape	Part Cat. No.	Stock	Applicable Tools
	**BP-360**	●	**TAC Grooving & Parting Tools** CTW-type
	**BP-490**	●	**TAC Toolholders** C-type (CK□NR/L-type)

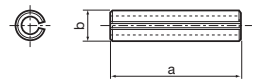
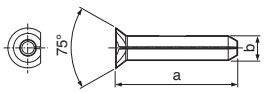
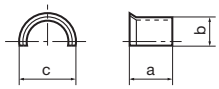
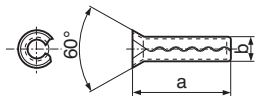
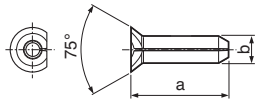
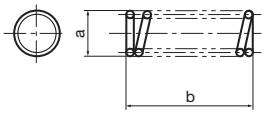
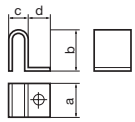
● : Stocked items.

Chipbreaker Pieces

Shape (carbide grade)	Part Cat. No.	Stock	Dimensions (mm) a	b	c			Applicable Tools
 (TX30)	**CBT-2S**	●	8.8	7.6	2			**TAC Toolholders** M-type C-type (negative) C-type (positive) **Tooling Systems** TAC Cartridge CP-type TAC Cartridge CE-type
	CBT-2M	●	7.4	6.6				
	CBT-3S	●	13.3	12.1	2.5			
	CBT-3M	●	12.3	11.1				
	CBT-3L	●	11.3	10.1				
	CBT-4S	●	18.8	16.9				
	CBT-4M	●	17.8	15.9				
	CBT-4L	●	16.8	14.4				
	NCT-2S		14.2	11.8				
	NCT-2M	●	13	10.8				
	NCT-2L		11.9	9.8				
 (TX30)	**CBS-3S**	●	9.5	8.3	2			**TAC Toolholders** M-type C-type (negative) C-type (positive) **Tooling Systems** TAC Cartridge CP-type TAC Cartridge CE-type
	CBS-3M	●		7.3				
	CBS-4S	●	12.7	11.6	2.5			
	CBS-4SN	●						
	CBS-4M	●		10.6				
	CBS-4L	●		9.1				
	NCS-3S			11.2				
	NCS-3M	●		10.2				
	NCS-3L			8.7				
 Right hand shown (TX30)	**B11 R-5**	●	24	13	5			**TAC Toolholders** HP-type (former products)
	B11 L-5	●						
 (TX30)	**CBS-4SN**	●	11.5	11.5	2.5			**TAC Toolholders** M-type C-type (negative)
	CBS-4MN	●	10.5	10.5				
	CBS-4LN	●	9	9				
	NCS-3SN		11.2	11.2				
	NCS-3MN	●	10.2	10.2				
	NCS-3LN		8.7	8.7				
 (TX30)	**CBC-4SN**	●	11.5	11.5	2.5			**TAC Toolholders** M-type
	CBC-4MN	●	10.5	10.5				
	CBC-4LN	●	9.5	9.5				
 Right hand shown (TX30)	**CBD-4SR**	●	12.7	11.5	2.5			**TAC Toolholders** M-type
	CBD-4MR	●		10.5				
	CBD-4ML	●						
	CBD-4LR			9.5				
 (TX30)	**CBD-4SN**	●	11.5	11.5	2.5			**TAC Toolholders** M-type
	CBD-4MN	●	10.5	10.5				
 (TX30)	**CBR-4SN**	●	12.7	11.9	2.5			**TAC Toolholders** M-type
	CBR-4MN	●		10.9				

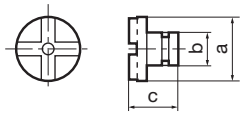
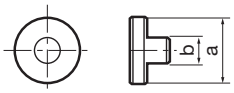
● : Stocked items.

Springs (Springs for Shims)

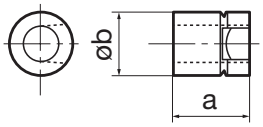
Shape (carbide grade)	Part Cat. No.	Stock	Dimensions (mm)						Applicable Tools
			a	b	c	d			
	**SP-2.5**	●	12	2.7					**TAC Toolholders** Turning A A-type
	**SP-16-L14**	●	13.6	2.85					**TAC Toolholders** TurnTec
	**LSP3**	●	5.5	3	5.9				**TAC External Toolholders** P-type D-type A-type MS-type **TAC Internal Toolholders** P-type **Tooling System** TAC Cartridge PN-type
	LSP3L	●	7						
	LSP4	●		4	7.6				
	LSP4S	●	6						
	LSP5	●	8.5	4.5	8.8				
	LSP6	●	11	5.9	10.9				
	LSP6C	●	8.5	4.8	9.3				
	LSP8	●	12	10	15.4				
	**PSP-2.5**	●	10	2.7					**TAC Toolholders** HP-type (former products) THC-type (former products) C-type (former products)
	PSP-4.0	●	16	4.2					
	PSP301	●	7.6	3					
	**PSP-16**	●	9.75	2.85					**TAC Toolholders** TurnTec
	**BP-0**	●	3.6	13					**TAC Toolholders** C-type (Be used KNMX inserts) D-type A-type C-type for dimple ceramic inserts **TAC Grooving & Parting Tools** CGD-type GX-type CFGS-type CFGT-type
	BP-5-A								
	BP-7	●	7	11					
	BP-8.8	●	8.8	10					
	BP-9	●	8.3						
	BP-10	●	9.1						
	SP913	●	9	13					
	**BSP-1**	●	7.8	7.5	4.8	6			**Adapters for TAC Boring Tools**

● : Stocked items.

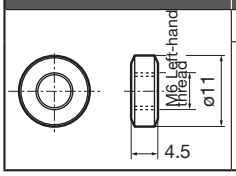
Coolant Supply Attachment

Shape	Part Cat. No.	Stock	Dimensions (mm)						Applicable Tools
			a	b	c	Thread			
	**EA-20**	●	20	10	15				**TAC Internal Toolholders**
	EA-25	●	25						
	EA-32	●	32	16					
	**CA-16**	●	16	8		M6			**TAC Grooving & Parting Tools** TungCut
	CA-20	●	20	8.5		M6			
	CA-25	●	25	11.5		R1/8			
	CA-32	●	32	11.5		R1/8			
	CA-40	●	40	11.5		R1/8			

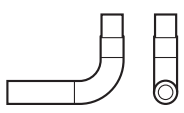
Pistons

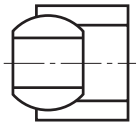
Shape	Part Cat. No.	Stock	Dimensions (mm)					Applicable Tools
			a	øb				
	**DPIS33**	●	12.6	9				**TAC Toolholders** D-type
	DPIS43	●	11.8	10				
	DPIS44	●	13.4	10				
	DPIS54	●	16	13				
	DPIS64	●		15				

Nuts

Shape	Part Cat. No.	Stock	Applicable Tools
	**SRW11**		**TAC Mills** Adjusting wedge for TFP4000I (Former product)

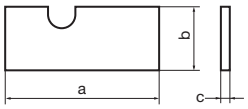
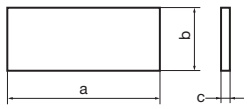
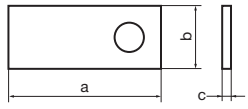
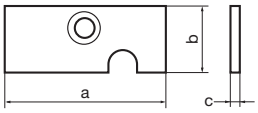
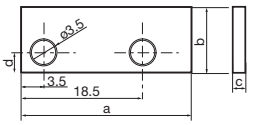
Coolant Pipe & Nozzle

Shape	Part Cat. No.	Stock	Applicable Tools
	**PNZ5**	●	**TAC Grooving & Parting Tools** TungCut

Shape	Part Cat. No.	Stock	Applicable Tools
	**CNZ125**	●	**TAC Grooving & Parting Tools** TungCut

● : Stocked items.

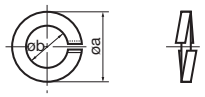
Sizing Plates

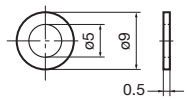
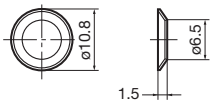
Shape	Part Cat. No.	Stock	Dimensions (mm) a	b	c	d			Applicable Tools
	**S0816A**		55	15.5	0.8				**Tooling Systems** TAC Cartridge PN-type TAC Cartridge CP-type
	S1016A				1				
	S0816B	●	50		0.8				
	S1016B	●			1				
	S0816C		45		0.8				
	S1016C				1				
	S0820A		61	19.5	0.8				
	S1020A				1				
	S0820B	●	54.5		0.8				
	S1020B	●			1				
	SM-00	●	18	8	1				
	**SW04**		25.5	5.8	0.25				**TAC Drills** TDP
		●			0.5				
					1				
	SW05	●	37	8.3	0.25				
	SW06	●	36	10.8	0.5				
					1				
	SW08	●	35.5	12.3	2				
	**S0810**	●	40	11	0.8				**Tooling Systems** TAC Cartridge P-type, C-type (Former products)
	S1010	●			1				
 Attached with fix screw and wrench.	**PSTR08**	●	24	11	1.5				**Tooling Systems** TAC Cartridge PN-type TAC Cartridge CP-type TAC Cartridge CE-type TAC Cartridge SP-type TAC Cartridge PNE-type
	PSTL08	●							
	PSTR10	●	42	16.5	2				
	PSTL10	●							
	PSTR12	●	47	19	2				
	PSTL12	●							
	**AP0801**	●	26	9.5	0.5	3			**TAC Drills** TungDrillBig
	AP0802	●			1				
	AP0803	●			1.5				
	AP0804	●			2				
	AP0805	●			2.5				
	AP1101	●	30	11.5	0.5	5			
	AP1102	●			1				
	AP1103	●			1.5				
	AP1104	●			2				
	AP1105	●			2.5				
	AP1106	●			3				

SW04 is composed of three plates and SW05 to SW08 are composed of four plates.
Note on fixing screws: PSTR/L08 is attached with CSSM2-4 and other types are attached with CSHM3-8.

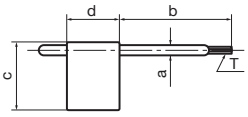
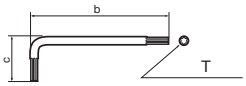
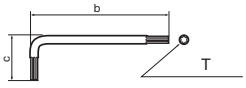
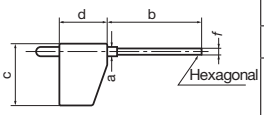
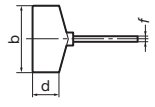
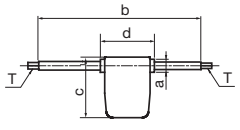
● : Stocked items.

Washers

Shape	Part Cat. No.	Stock	Dimensions (mm)						Applicable Tools
			øa	øb					
	**VA4**	●							**TAC Mills**
	VA5	●							
	VA6	●	10.5	6.1					

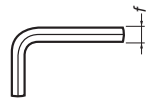
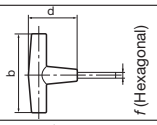
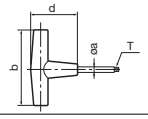
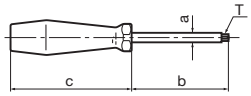
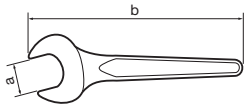
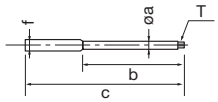
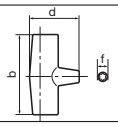
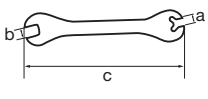
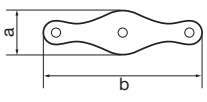
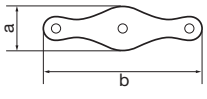
Shape	Part Cat. No.	Stock	Applicable Tools
	**CPW5**	●	**TAC Grooving & Parting Tools** CFGS-type
	**CDW6**	●	**TAC Grooving & Parting Tools** CTW-type

Wrenches and Drivers

Shape	Part Cat. No.	Stock	Dimensions (mm)						Applicable Tools
			a	b	c	d	*f*	T	
	**CRW23**	●							**TAC Grooving & Parting Tools** TungCut
	CRW33	●							
	T-6F	●	1.7	34.5	15	15		T6	**TAC Toolholders** **TAC Grooving & Parting Tools** **TAC Threading Tools** **Tooling systems**
	T-7F	●	2		19	19		T7	
	T-8F	●	2.3	39				T8	
	T-9F	●	2.5	42.5				T9	
	T-15F	●	3.3	45	27	22		T15	
	T-20F	●	3.9	49	30			T20	
	IP-6F	●	1.7	34.5	15	15		6IP	
	**T-6L**	●		48	16			T6	**TAC Toolholders** **TAC Grooving & Parting Tools** **TAC Threading Tools**
	T-8L	●						T8	
	T-9L	●						T9	
	T-15L	●		59	22			T15	
	**KEYV-T20**	●		60	22			T20	**Endmills** TungMeister **TAC Toolholders** TurnTec
	KEYV-T25	●		65	23			T25	
	KEYV-T30L	●		190	37			T30	
	KEYV-T40L	●		208	43			T40	
	KEYV-T50L	●		232	48			T50	
	**P-2F**	●	4	39.5	20	12.5	2		**TAC Toolholders** **Tooling systems**
	P-2.5F	●	5	45	25	20	2.5		
	**P-2.5T**	●		42		15	2.5		**TAC Grooving & Parting Tools**
	**T-2010/5**	●	6.5	85	28	25	-	T10/ T20	TetraCut

● : Stocked items.

Wrenches and Drivers

Shape	Part Cat. No.	Stock	Dimensions (mm)						Applicable Tools
			a	b	c	d	*f*	T	
	**P-2**	●					2		**TAC Grooving & Parting Tools**
	P-2.5	●					2.5		
	P-3	●					3		
	P-3.5	●					3.5		
	P-4	●					4		
	P-4.5	●					4.5		
	P-5	●					5		
	P-6	●					6		
	**TP-3A**	●		70		45.5	3		**TAC Mills**
	TP-4	●		85		53	4		
	TP-5	●					5		
	**T-15T**	●	5	65		45		T15	**TAC Mills**
	T-20T	●						T20	
	T-27T	●		85		42		T27	
	IP-20T	●	5	80		45		20IP	
 Handle shape somewhat varies depending on the type number from the above figure.	**T-6D**	●	2.5	45	70			T6	**TAC Mills**
	T-7D	●	2					T7	**TAC Drills**
	T-8D	●	2.6	61	67.5			T8	
	T-9D	●	3.0	65	80			T9	
	T-10D	●	3.3	70	90			T10	
	T-15D	●	3.65	71	100			T15	
	T-20D	●	4.6	90				T20	
	T-25D	●	4.4	87	86			T25	
	IP-6DB	●		45	70			6IP	
	IP-7D	●	2.6	45	70			7IP	
	IP-8D	●	2.8	56	69			8IP	
	IP-10D	●	3.3	71	89			10IP	
	IP-15D	●	3.9	70	100			15IP	
	IP-20D	●	4.6	90	100			20IP	
	**KS-21**	●	21	195					**TAC Mills**
	KS-24	●	24	215					TMS
	KS-27	●	27	235					
	KS-32	●	32	275					
	KS-36	●	36	305					
	**M-1000**	●							A burn inhibitor
	**BT15S**	●	3.9	50	90		6	T15	**TAC Mills**
	BT15M	●	3.9	50	118		6	T15	
	BT20S	●	4.6	50	90		6	T20	
	BT20M	●	4.6	50	118		6	T20	
	BLD IP15/S7	●	3.9	50	90		6	15IP	
	BLD IP20/S7	●	4.6	50	90		6	20IP	
	BLD IP20/M7	●	4.6	50	118		6	20IP	
	**H-TB**	●		100	37		6		**TAC Mills**
	H-TBS	●		75	37		6		
	**KEYV-S05**	●	4	5.5	100				TungMeister
	KEYV-S06	●	5.4	8	125				**Endmills**
	KEYV-S08	●	6.6	10	150				
	KEYV-S10	●	7.7	13	175				
	KEYV-S12	●	9.4	16	250				
	**KEYV-177**	●	29	110					
	KEYV-217	●	29	110					
	**KGDT-100**	●	32	108.5					TungGun
	KGDT-110	●	32	108.5					
	KGDT-120	●	32	108.5					
	KGDT-130	●	32	108.5					
	KGDT-140	●	32	108.5					
	KGDT-150	●	32	108.5					

● : Stocked items.

Locators

Part Cat. No.	Stock		Applicable Tools
	R	L	
LD150R	●		TXD15125R ~ TXD15315R
LD440R/L	●	●	TMD44 TGD4400R/L-A TFD44
LD442R/L	●		EGD4400R
LD540R/L	●		TMD54
LE302R	●		ESE3050R (RS**) ~ 3063R (RS**)
LE303R/L	●		TSE3003R/LIA ~ 3006R/LIA
LE402AR	●		ESE4050RA ESE4063RA
LE403R/L	●		TSE4003R/LIA TSE4004R/LIA ESE4003RIA-S32
LE405R/L	●		TSE4005R/LIA ~ 4012R/LIA
LE413R/L	●		THE40
LE444R/L	●	●	TME4403R/LI ~ 4405R/LI TME4403R/LB ~ 4405R/LB EME4405R ~ 4404RI
LE446R/L	●	●	TME4406R/LI ~ 4412R/LI TME4406R/LB ~ 4412R/LB
LE540R/L	●	●	TME54
LF440R/L	●	●	THF44
LF540R/L	●		THF54
LF602R	●		ERF6050R ~ ERF6063R
LF602R/L	●		TRF6003R/LI ~ TRF6006R/LI TRF6008R/LI ~ TRF6012R/LI
LMS56R/L			MS08R/L ~ MS12R/L
LN423R/L	●		TGN42
LN645R/L			TPN64
LP403R/L	●		TSP4003R/LIA ~ TSP4004R/LIA TFP4004R/LIA
LP405R/L	●		TSP4005R/LIA ~ TSP4012R/LIA TFP4005R/LIA ~ TFP4012R/LIA
LP413R/L	●		TGP41 TGP42
LP514R/L	●		TGP51
LPP16R	●		TPP16
LR602R/L	●		ERD6050RA ~ ERD6063RA
LR603R/L	●		TRD6003R/L TRD6004R/L ~ TRD6008R/L
LV525R/L	●	●	VSN 1
LV530R/L			VSN 2
LV556R/L			VSN60
LW400R	●		EFP4063R
LW400R/L	●		TFD44 TFP4000 SFP4000
LW402R	●		EFP4050R

● : Stocked items.

Insert locking wedges

Part Cat. No.	Stock		Applicable Tools
	R	L	
FDS-8SST			EDPD09063R EDPD09063RB
FDS-8ST-18	●		EDP09080R EDPD09080RB DPD09100R~DPD09160R DPD09100RB~DPD09160RB
FW-242R/L			ø63
FW-243R/L	●		ø80~100
FW-245R/L			ø125 ~
FW304R/L-D			DAD15 DPD15 EDPD15 QPP15
LE302R	●		ESE3050R (RS**) ~ 3063R (RS**)
WF150R			TXD15125R ~ TXD15315R
WF310R/L	●		TGP4100BA TGP4103R/LIA
WF330N	●		TSE4003R/LIA TSE4004R/LIA ESE4003RIA-S32 TSP4003R/LIA ~ TSP4004R/LIA TFP4004R/LIA
WF330R/L	●		TSE3003R/LIA ~ 3006R/LIA
WF444R/L	●	●	TME4403R/LI ~ 4405R/LI TME4403R/LB ~ 4405R/LB EME4405R ~ 4404RI TME4406R/LI ~ 4412R/LI TME4406R/LB ~ 4412R/LB
WF500R	●		TSE4005R/LIA ~ 4012R/LIA TSP4005R/LIA ~ TSP4012R/LIA TFP4005R/LIA ~ TFP4012R/LIA
WF500R/L	●		TMD54 TGP51 THF54
WF50R/L			TME54
WF602R	●		ERF6050R ~ ERF6063R
WF603R/L	●		TRF6003R/LI ~ TRF600R/LI
WF608R/L	●		TRF6008R/LI ~ TRF6012R/LI
WN645R/L			TPN64
WP193TR/L	●	●	EGD4400R
WP440R/L	●	●	TMD44 TGD4400R/L-A TFD44 TGP4100IA ~ TGP4112R/LIA TGP42 THF44 THE40
WR602R/LW	●		ERD6050RA ~ ERD6063RA
WR603R/L	●		TRD6003R/L TRD6004R/L ~ TRD6008R/L
WT402R	●		ESE4050RA ESE4063RA
WT402R/L			EME4450RB ~ 4404RB

● : Stocked items.

Locator adjusting wedges

Part Cat. No.	Stock		Applicable Tools
	R	L	
FW-305	●		TFD44 TFP40 SFP4000 EFP4063
FW325R/L-D			DAD15 QPP15 DPD15 EDPD15

Fine adjusting screws

Part Cat. No.	Stock		Applicable Tools
	R	L	
AJM5	●		DPD09 EDPD09
ASM34L	●		DPD24

● : Stocked items.

J Series for Small Lathes

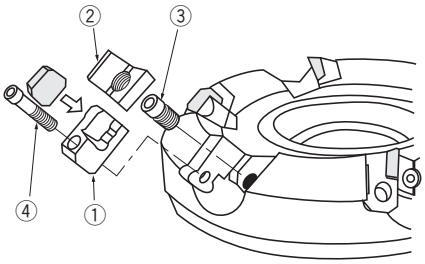
Cat. No.	Fixing screw	Stock	Wrench	Stock	Substitution (page)
JSXGR/L1010K8	CSTB-4SD	●	T-8F	●	JSXGR/L1010K8-C (8-21)
JSXGR/L1212K8					JSXGR/L1212K8-C (8-21)
JSXBR/L1010K8			(T-8L*)	(●)	JSXBR/L1010K8-C (8-22)
JSXBR/L1212K8					JSXBR/L1212K8-C (8-22)
JSVGR/L1010K	CSTB-3S	●	T-9F	●	JSVGR/L1010K-C (8-49)
JSVGR/L1212K			(T-9L*)	(●)	JSVGR/L1212K-C (8-49)

* Parts in parenthesis are optional parts.

● : Stocked items.

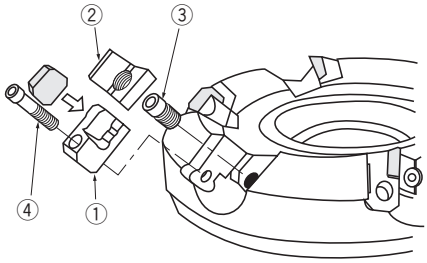
Replacement Parts for Former PS Series TAC Mills

TGD4400



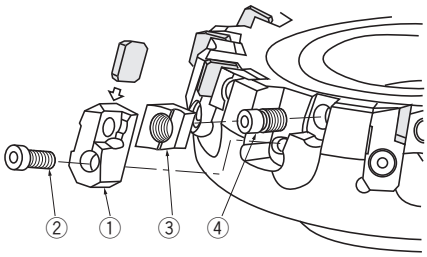
No.	Part Name	Part Cat. No.			
		For TGD4403R/L	Stock	For TGD4404R/L~4412R/L	Stock
①	Locator	LD443R	●	LD443R	●
		LD443L		LD443L	
②	Insert locking wedge	WP193TR	●	WP194TR	●
		WP193TL	●	WP194TL	●
③	Wedge fixing screw	DS-8	●	DS-8	●
④	Locator fixing screw	CM4×0.7×14	●	CM4×0.7×14	●
-	T-handle wrench	TP-4	●	TP-4	●

TGD5400



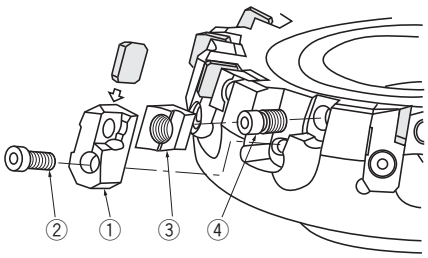
No.	Part Name	Part Cat. No.	Stock
①	Locator	LD544R	●
		LD544L	
②	Insert locking wedge	WP803TR	●
		WP803TL	●
③	Wedge fixing screw	DS-8	●
④	Locator fixing screw	CM4×0.7×14	●
-	T-handle wrench	TP-4	●

TGP4100



No.	Part Name	Part Cat. No.			
		For TGP4103R/L	Stock	For TGP4104R/L~4212R/L	Stock
①	Locator	LP413R	●	LP413R	●
		LP413L		LP413L	
②	Locator fixing screw	CM4×0.7×14	●	CM4×0.7×14	●
③	Insert locking wedge	WP103R	●	WP104RA	●
		WP103L	●	WP104LA	●
④	Wedge fixing screw	DS-8	●	DS-8	●
-	T-handle wrench	TP-4	●	TP-4	●

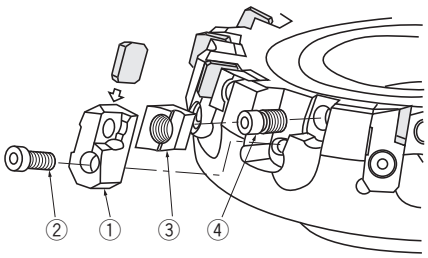
TGP4100B



No.	Part Name	Part Cat. No.	Stock
①	Locator	LP413R	●
		LP413L	
②	Locator fixing screw	CM4×0.7×14	●
③	Insert locking wedge	WP103R	●
		WP103L	●
④	Wedge fixing screw	DS-8	●
-	T-handle wrench	TP-4	●

Note : For TGP4104R/LB ~ TGP4112R/LB

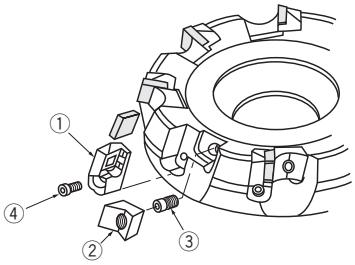
TGP4200



No.	Part Name	Part Cat. No.			
		For TGP4203R/L	Stock	For TGP4204R/L~4212R/L	Stock
①	Locator	LP413R	●	LP413R	●
		LP413L		LP413L	
②	Locator fixing screw	CM4×0.7×14	●	CM4×0.7×14	●
③	Insert locking wedge	WP103R	●	WP104RA	●
		WP103L	●	WP104LA	●
④	Wedge fixing screw	DS-8	●	DS-8	●
-	T-handle wrench	TP-4	●	TP-4	●

● : Stocked items.

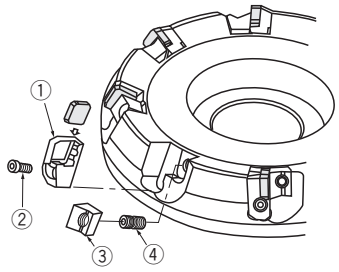
TGP5100 I



No.	Part Name	Part Cat. No.	Stock
①	Locator	LP514R	●
		LP514L	
②	Insert locking wedge	WP374TR	●
③	Wedge fixing screw	DS-8	●
④	Locator fixing screw	CM4×0.7×14	●
-	T-handle wrench	TP-4	●

Note : For TGP5104R/LI ~ TGP5112R/LI

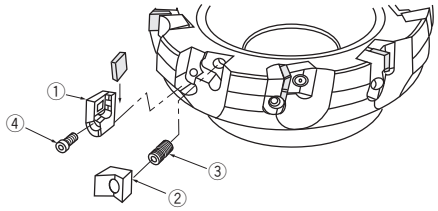
TGN4200



No.	Part Name	Part Cat. No.	Stock
①	Locator	LN423R	●
		LN423L	
②	Locator fixing screw	CM4×0.7×14	●
③	Insert locking wedge	WM104RA	●
		WM104LA	●
④	Wedge fixing screw	DS-8	●
-	T-handle wrench	TP-4	●

Note : For TGN4203R/L ~ TGN4212R/L

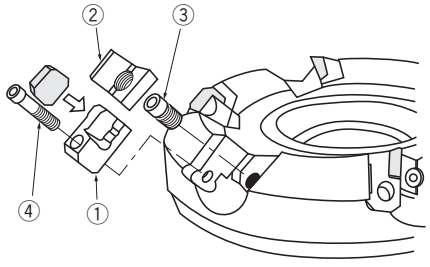
THE4000



No.	Part Name	Part Cat. No.	Stock
①	Locator	LE413R	●
		LE413L	
②	Insert locking wedge	WP813TR	●
		WP813TL	
③	Wedge fixing screw	DS-8	●
④	Locator fixing screw	CM4×0.7×14	●
-	T-handle wrench	TP-4	●

Note : For THE4003R/L ~ THE4006R/L

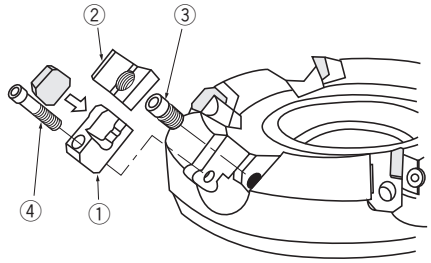
THF4400



No.	Part Name	Part Cat. No.	Stock
①	Locator	LF443R	●
		LF443L	
②	Insert locking wedge	WP813TR	●
		WP813TL	
③	Wedge fixing screw	DS-8	●
④	Locator fixing screw	CM4×0.7×14	●
-	T-handle wrench	TP-4	●

Note : For THF4403R/L ~ THF4412R/L

THF5400



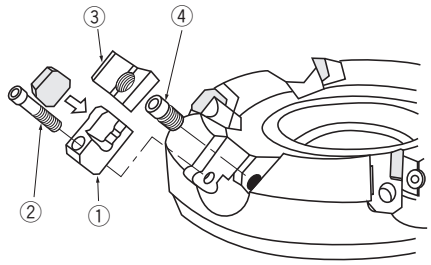
No.	Part Name	Part Cat. No.	Stock
①	Locator	LF543R	
		LF543L	
②	Insert locking wedge	WP803TR	●
		WP803TL	●
③	Wedge fixing screw	DS-8	●
④	Locator fixing screw	CM4×0.7×14	●
-	T-handle wrench	TP-4	●

Note : For THF5403R/L ~ THF5412R/L

● : Stocked items.

Replacement Parts for Former PS Series TAC Mills

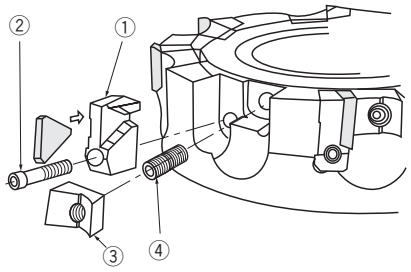
TUD5600



No.	Part Name	Part Cat. No.	Stock
①	Locator	LD563R	●
		LD563L	
②	Insert locking wedge	WP803TR	●
		WP803TL	●
③	Wedge fixing screw	DS-8	●
④	Locator fixing screw	CM5×0.8×18	
-	T-handle wrench	TP-4	●

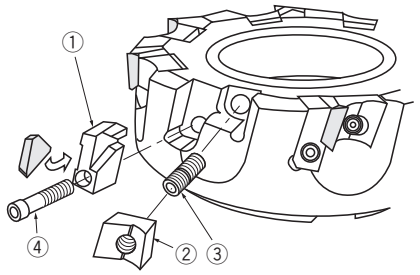
Note : For TUD5603R/L ~ TUD5612R/L

TSP4000 I



No.	Part Name	Part Cat. No.			
		For TGD4403R/L	Stock	For TGD4404R/L~4412R/L	Stock
①	Locator	LP403R	●	LP405R	●
		LP403L		LP405L	
②	Locator fixing screw	CM4×0.7×14	●	CM4×0.7×14	●
③	Insert locking wedge	WP153T	●	WP155T	●
④	Wedge fixing screw	DS-8	●	DS-8	●
-	T-handle wrench	TP-4	●	TP-4	●

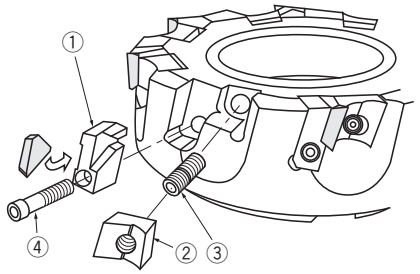
TSE3000



No.	Part Name	Part Cat. No.	Stock
①	Locator	LE303R	●
		LE303L	
②	Insert locking wedge	WP302R	●
		WP302L	
③	Wedge fixing screw	DS-8	●
④	Locator fixing screw	CM4×0.7×12	●
-	T-handle wrench	TP-4	●

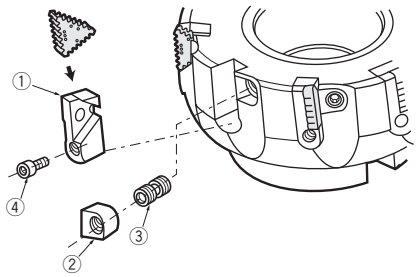
Note : For TSE3003R/L~3006R/L

TSE4000



No.	Part Name	Part Cat. No.			
		For TGD4403R/L	Stock	For TGD4404R/L~4412R/L	Stock
①	Locator	LE403R	●	LE405R	●
		LE403L		LE405L	
②	Insert locking wedge	WP853TR	●	WP855TR	●
③	Wedge fixing screw	DS-8	●	DS-8	●
④	Locator fixing screw	CM4×0.7×14	●	CM4×0.7×14	●
-	T-handle wrench	TP-4	●	TP-4	●

T/ESN4000

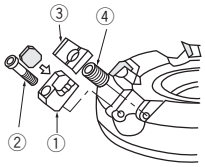


No.	Part Name	Part Cat. No.	Stock	
			R	L
①	Locator	LN403R	●	-
②	Insert locking wedge	WT402R/L	●	-
③	Wedge fixing screw	DS-8	●	
④	Locator fixing screw	SHCM4-10	●	
-	T-handle wrench	TP-4	●	

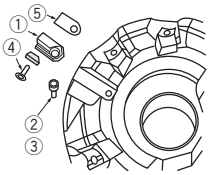
● : Stocked items.

TFD4400

For General Inserts



For Finishing Inserts



● For General Inserts

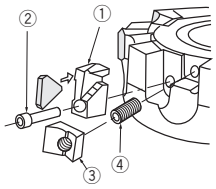
No.	Part Name	Part Cat. No.	Stock
①	Locator	LD443R	●
		LD443L	
②	Locator fixing screw	Hex. socket head screw CM4×0.7×14	●
③	Insert locking wedge	WP194TR	●
		WP194TL	●
④	Wedge fixing screw	DS-8	●
-	T-handle wrench	TP-4	●

● For Finishing Inserts

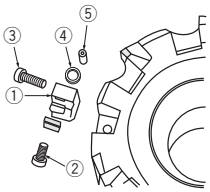
No.	Part Name	Part Cat. No.	Stock
①	Locator	LW444R	●
②	Locator fixing screw	Hex. socket head screw CM5×0.8×16	
③	Spring washer	5 (Nominal size)	
④	Insert locking wedge	CSTA-5S	●
⑤	Shim	SLW1.5	
-	Wrench	T-15D	●
-	Protector	PF-43	●

TFP4000 I

For General Inserts



For Finishing Inserts



● For General Inserts

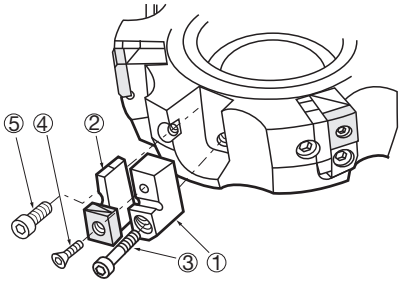
No.	Part Name	Part Cat. No.			
		For TFP4004R/LI	Stock	For TFP4005R/LI~4012R/LI	Stock
①	Locator	LP403R	●	LP405R	●
		LP403L		LP405L	
②	Locator fixing screw	CM4×0.7×14	●	CM4×0.7×14	●
③	Insert locking wedge	WP153T	●	WP155T	●
④	Wedge fixing screw	DS-8	●	DS-8	●
-	T-handle wrench	TP-4	●	TP-4	●

● For Finishing Inserts

No.	Part Name	Part Cat. No.	Stock
①	Locator	LW404R	●
		LW404L	
②	Clamping screw	CSTA-5S	●
③	Locater fixing screw	Hex. socket head screw CM5×0.8×16	
④	Nut	SRW11	
⑤	Adjusting wedge fixing screw	DS-6	●
-	Spring washer	5 (Nominal size)	
-	Wrench	T-15D	●
-	Protector	PF-43	●

Note: Inserts are compatible with LS-series TAC Mills.

VSN6000 I

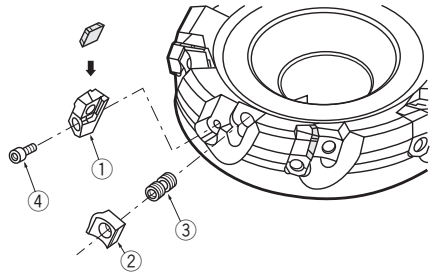


No.	Part Name	Part Cat. No.	Stock
①	Locator	LV556R/L	
②	Insert locking wedge	WV556R/L	
③	Locator fixing screw	CM6×1.0×25	
④	Insert fixing screw	CSTA-5	●
⑤	Wedge fixing screw	CM6×1.0×10	
-	T-handle wrench	T-15D	●

● : Stocked items.

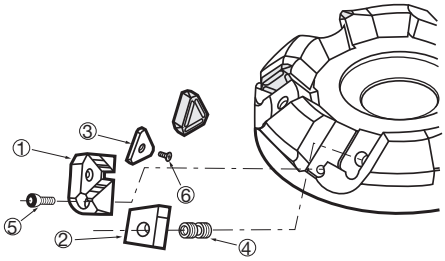
Replacement Parts for Former TAC Mills

TMD4100 I



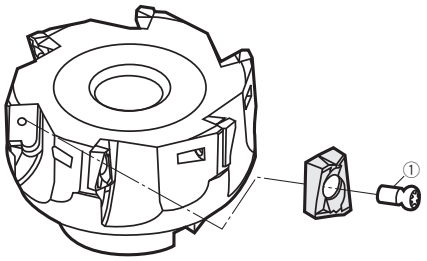
No.	Part Name	Part Cat. No.	Stock
①	Locator	LD413R	●
		LD413L	
②	Insert locking wedge	WP440R	●
		WP440L	●
③	Wedge fixing screw	FDS-8S	●
④	Locator fixing screw	CM4×0.7×12	
-	T-handle wrench	TP-4	●

TPN6400 I



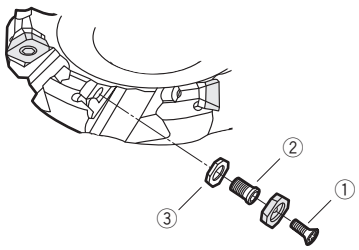
No.	Part Name	Part Cat. No.	Stock
①	Locator	LN645R/L	
②	Insert locking wedge	WN645R/L	
③	Shim	STN62R/L	
④	Wedge fixing screw	DS-10	●
⑤	Locator fixing screw	CM5×0.8×18	
⑥	Shim screw	SM3×0.5×8	●
-	Spring washer	5(Nominal size)	
-	T-handle wrench	TP-5	●

TPN14



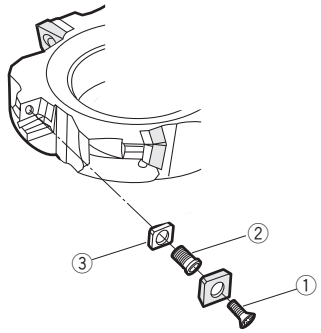
No.	Part Name	Part Cat. No.	Stock
①	Insert fixing screw	CSTB-3	●
-	Wrench	T-9D	●

T/EAD12



No.	Part Name	Part Cat. No.			
		TAD12050R, TAD12050RB TAD12063RI/B EAD12025R EAD12032R, EAD12040R EAD12050R/RB EAD12063RI/B	Stock	TAD12080RI/B TAD12100RI/B TAD12125RI/B EAD12080RI/B	Stock
①	Clamp screw	CSTB-3.5TS	●	CSTB-3.5T	●
②	Shim fixing screw	–		DTS5-3.5	●
③	Shim	–		FSSA42	●
④	Wrench	–		P-3.5	●
-	Wrench	T-20D	●	T-20D	●

T/EPD12(I)(B)



No.	Part Name	Part Cat. No.			
		T/EPD12050R/RB T/EPD12063RI/B EPD12025R EPD12032R EPD12040R	Stock	T/EPD12080RI/B TPD12100RI/B TPD12125RI/B	Stock
①	Clamp screw	CSTB-3.5TS	●	CSTB-3.5T	●
②	Shim fixing screw	–		DTS5-3.5	●
③	Shim	–		FSSP42	●
④	Wrench	–		P-3.5	●
-	Wrench	T-20D	●	T-20D	●

● : Stocked items.

Replacement Parts for Former TAC Endmills

EVP1000

Cat. No.	Clamping screw				Wrench			
								
	For end edge	Stock	For peripheral edge	Stock	For end edge	Stock	For peripheral edge	Stock
EVP1016R	CSTB-3S	●	CSTB-2.2S	●	T-9F	●	T-7F	●
EVP1020R	CSTB-4S	●	CSTB-2.5S	●	T-15D	●	T-8D	●
EVP1025R	CSTB-5S	●	CSTB-3S	●	T-20D	●	T-9D	●

ESD5000

No.	Part Name	Part Cat. No.	Stock
①	Clamping screw	RT-1	●
②	Clamp	CP724	●
③	Wrench	P-4	●

ESD2000

No.	Part Name	Part Cat. No.	Stock
①	Clamp Sets	CSW-0T	●
②	Wrench	T-15F	●

ERD4000

No.	Part Name	Part Cat. No.	Stock
①	Fixing screw	CSTB-4S	●
②	Clamp Sets	CSW-0T	●
③	Wrench	T-15D	●

EPN09/14

Cat. No.	Clamping screw		Wrench	
		Stock		Stock
EPN09010R / EPN09012R	CSTB-2.5S	●	T-8D	●
EPN09016R ~ EPN09050R	CSTB-2.5	●		●
EPN140□□R	CSTB-3	●	T-9D	●

TBF1000

No.	Part Name	Part Cat. No.					
		For TBF1320S	Stock	For TBF1400S	Stock	For TBF15~TBF1600S	Stock
①	Main insert clamping screw	CSTB-4	●	CSTA-4	●	CST-5S	●
②	Clamp	-		CP536	●	CP536	●
③	Clamping screw	-		DS-6	●	DS-6	●
④	Wrench for main insert	T-15D	●	T-15D	●	T-25D	●
⑤	Wrench for peripheral insert	-		P-3	●	P-3	●

Replacement Parts for Former TAC Drills

TDR

Cat. No.	Part Cat. No.			
	Fixing screw	Stock	Wrench	Stock
TDR-180 ~ 190	CSTB-2.2	●	T-7D	●
TDR-195 ~ 285	CSTA-NO3	●	T-9D	●
TDR-290 ~ 345	CSTA-NO5	●	T-9D	●
TDR-350 ~ 540	CSTA-4	●	T-15D	●

TDJ

Cat. No.	Part Cat. No.			
	Fixing screw	Stock	Wrench	Stock
TDJ-140	CSTC-2	●	T-6D	●
TDJ-145				
TDJ-150				
TDJ-155				
TDJ-160				
TDJ-165				
TDJ-170				
TDJ-175				

● : Stocked items.

MEMO

15 Technical reference

Cutting tools

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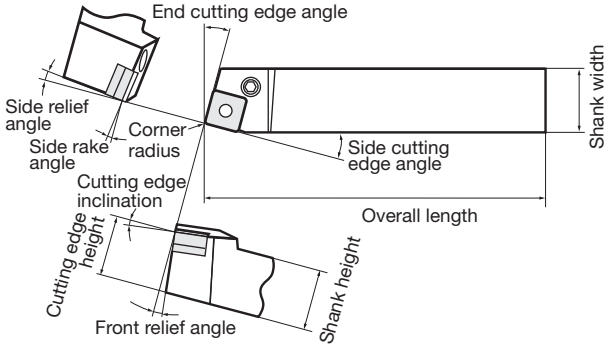
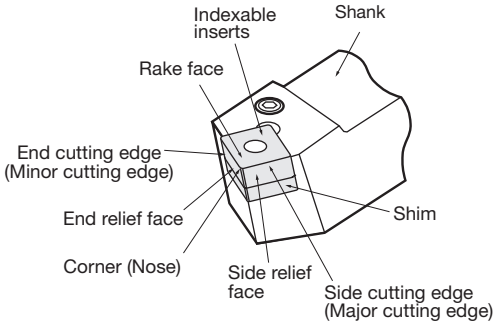
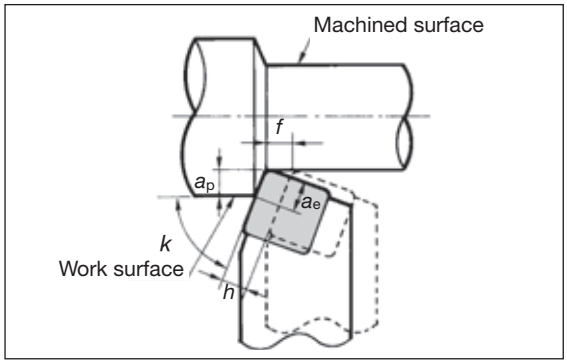
Turning Tools

Name of tools parts





Relating angles between tool and workpiece



a_p … Depth of cut (Distance between work surface and machined surface)

a_e … Length of cutting edge engaging in cutting.

κ … Cutting edge angle (Angle to be made by cutting edge and work surface)

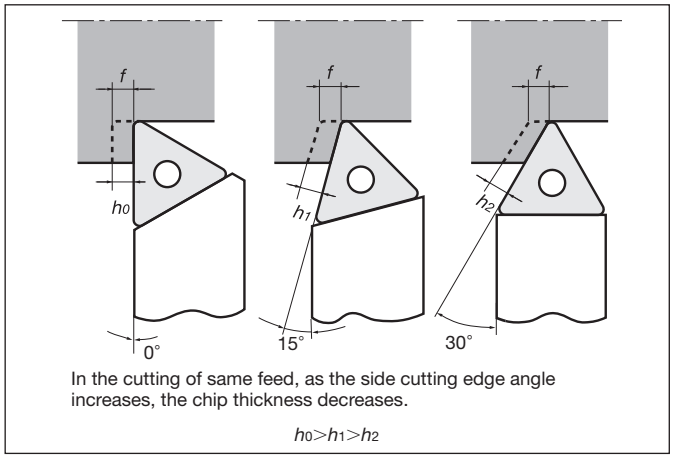
f … Feed per revolution

h … Thickness to be cut per revolution

Machined surface … Workpiece surface after having machined.

Work surface … Workpiece surface to be cut.

●Effect of side cutting edge angle



In the cutting of same feed, as the side cutting edge angle increases, the chip thickness decreases.

$h_0 > h_1 > h_2$

●Honing

TAC indexable inserts of steel cutting grades are honed. Honing specifications are shown in the following table.

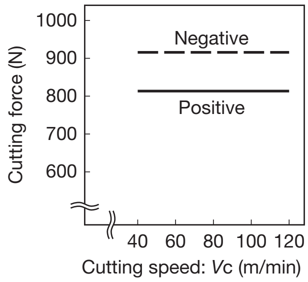
Edge condition	Shape
Sharp edge	
Round honing	
Chamfered honing	

●Effects of tool geometry on cutting phenomena

Phenomena / Increasing	Flank wear	Crater wear	Edge strength	Cutting force	Surface finish	Chattering	Cutting edge temperature	Chip shape and flow
Cutting edge inclination	–	Decrease	Lower	Radial force decrease	–	Less tendency	Lower	Effect on flow direction
Side rake angle	–	Decrease	Lower	Decrease	–	–	Lower	Effect on shape
Relief angle	Decrease	–	Lower	Decrease	–	Likely to occur	Lower	–
End cutting edge angle	Decrease	–	Lower	Radial force decrease	Roughen	Less tendency	Lower	–
Side cutting edge angle	Decrease	Decrease	Increase	Radial force decrease	–	Likely to occur	Increase	Decrease thickness
Nose radius	Decrease to some level		Increase	Increase	Improve	Likely to occur	Increase	Effect on flow direction
Honing width	Increase	–	Increase	Increase	–	Likely to occur	Increase	–

Relations between cutting force and cutting conditions or cutting phenomena

<table>
<tr><th>Conditions</th><th>Grey cast iron (HB130)</th><th>Stainless steel (HB145)</th><th>Carbon steel (HB230)</th></tr>
<tr><td>Cutting speed and cutting force

f = 0.2 mm/rev
a_p = 2 mm
Side cutting edge angle 0°
Corner radius r_ε 0.4</td>
<td> 
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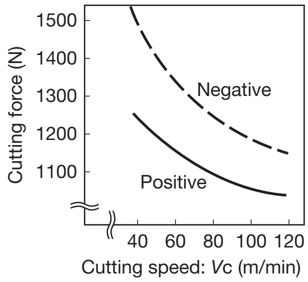
<td> 
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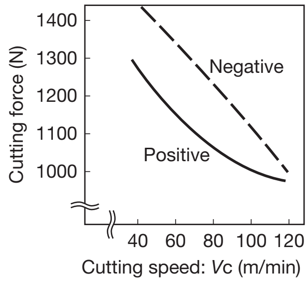
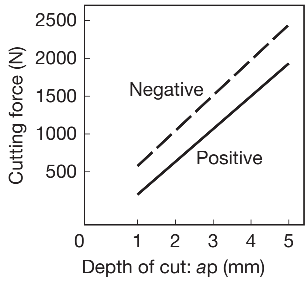
<td> 
</td></tr>
<tr><td>Depth of cut and cutting force

V_c = 100 m/min
f = 0.2 mm/rev
Side cutting edge angle 0°
Corner radius r_ε 0.4</td>
<td> 
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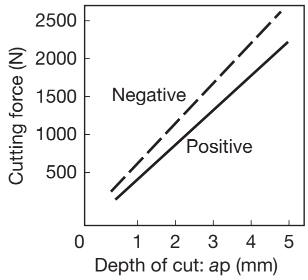
<td> 
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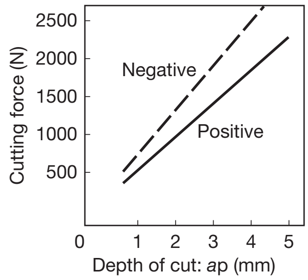
<td> 
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<tr><td>Feed and cutting force
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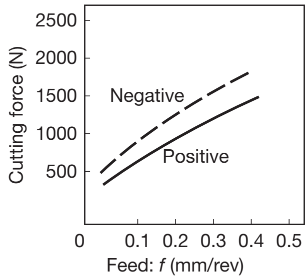
a_p = 2 mm
Side cutting edge angle 0°
Corner radius r_ε 0.4</td>
<td> 
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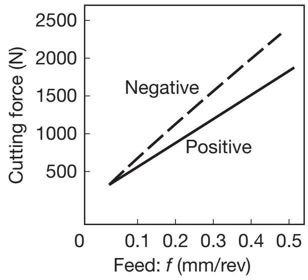
<td> 
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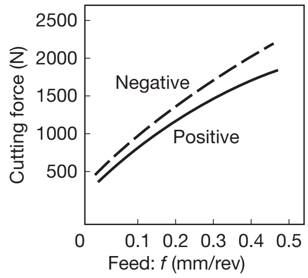
<td> 
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<tr><td>Corner radius and cutting force

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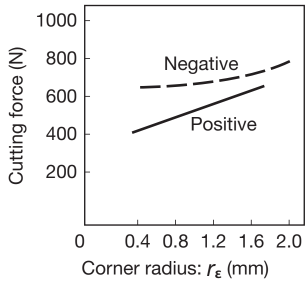
f = 0.2 mm/rev
a_p = 1.2 mm
Side cutting edge angle 0°</td>
<td> 
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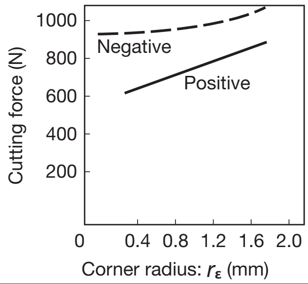
<td> 
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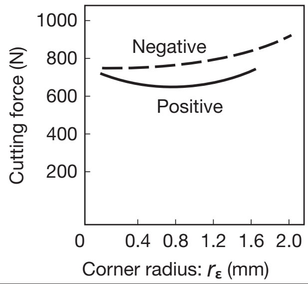
<td> 
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<tr><td>Side cutting edge angle and cutting force

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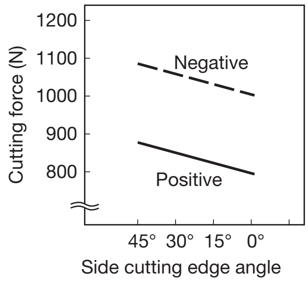
f = 0.2 mm/rev
a_p = 2 mm
Corner radius r_ε 0.4</td>
<td> 
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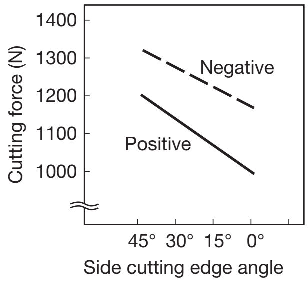
<td> 
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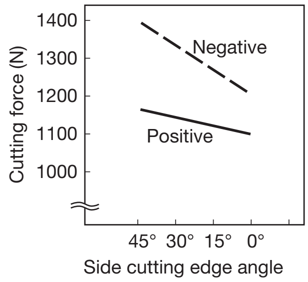
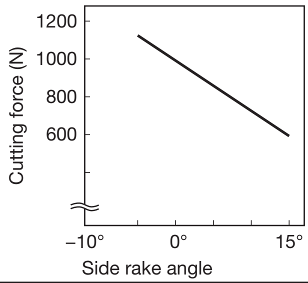
<td> 
</td></tr>
<tr><td>Side rake angle and cutting force

V_c = 100 m/min
f = 0.2 mm/rev
a_p = 2 mm
Side cutting edge angle 0°
Corner radius r_ε 0.2</td>
<td> 
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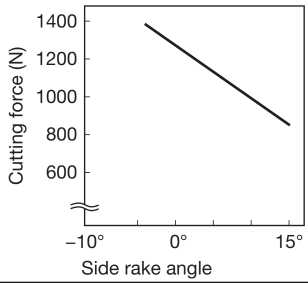
<td> 
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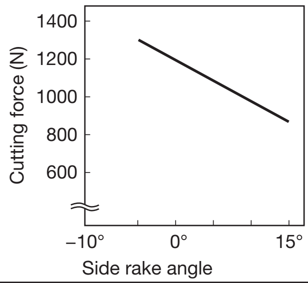
<td> 
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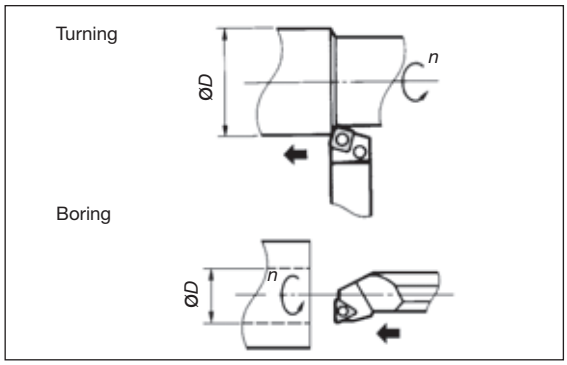
* 9.8N = 1kgf

Turning Tools

Calculation formulas for turning

●Cutting speed



When calculating cutting speed from number of revolutions:

$$Vc = \frac{\pi \times \varnothing D \times n}{1000}$$

V_c : Cutting speed (m/min)
n : Number of revolution (min^{-1})
$\varnothing D$: Diameter of workpiece (mm)
$\pi \approx 3.14$

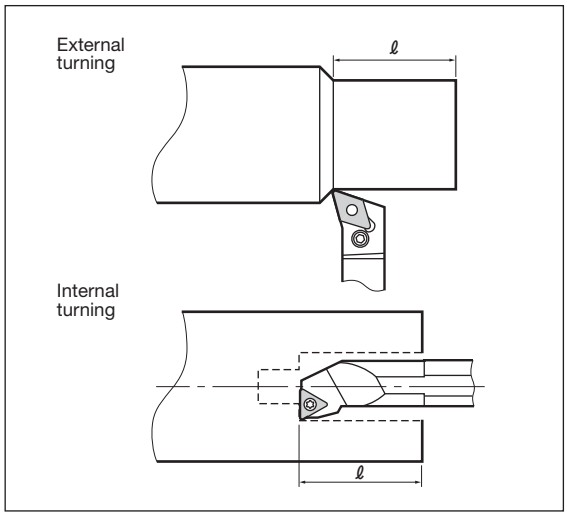
When calculating required number of revolutions from cutting speed:

$$n = \frac{Vc \times 1000}{\pi \times \varnothing D}$$

Example : Calculating the cutting speed when turning a ø150 mm-diameter workpiece at 250 min^{-1}

$$V_c = \frac{3.14 \times 150 \times 250}{1000} = 117 \text{ m/min}$$

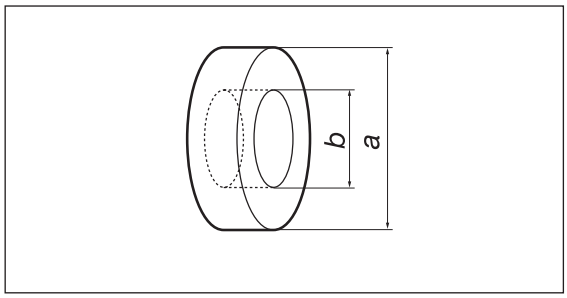
●Cutting time on external and internal turning



$$T_{(min)} = \frac{\ell}{f \times n}$$

T : Cutting time (min)
ℓ : Cutting length (mm)
f : Feed (mm/rev)
n : Number of revolution (min^{-1})

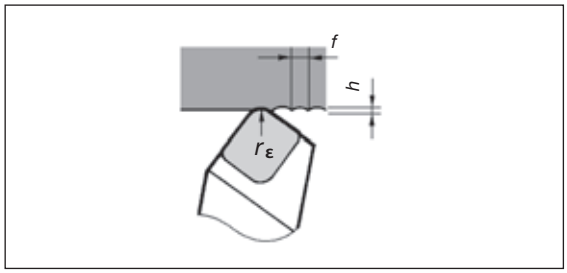
●Cutting time on face turning



$$T_{(min)} = \frac{\pi \times (a^2 - b^2)}{4000 \times v_c \times f}$$

V_c : Cutting speed (m/min)
f : Feed (mm/rev)
T : Cutting Time (min)

●Theoretical surface finish



$$h_{(\mu m)} = \frac{f^2}{8 r_\varepsilon} \times 1000$$

h : Surface finish (µm)
f : Feed (mm/rev)
r_ε : Nose radius (mm)

●Calculation of power consumption (kW)

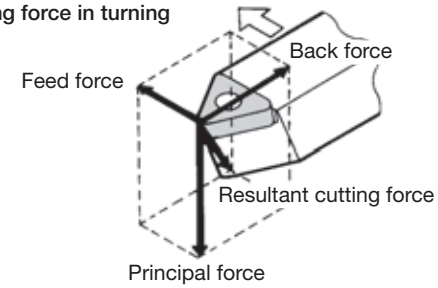
$$P_{c(kW)} = \frac{F \times v_c}{60000}$$

P_c : Power requirement (kW)
F : Cutting force (N)
V_c : Cutting speed (m/min)

●Cutting forces

(1) Finding from the diagram based on experimental data.
(2) In case determining by simplified equation:

Cutting force in turning



$$F = k_c \times a_p \times f \quad (N)$$

F : Cutting force (N)
k_c : Specific cutting force (N/mm²)
[Refer to the Table below]
a_p : Depth of cut (mm)
f : Feed (mm/rev)

Example :
Calculating the cutting force when cutting a high carbon steel (JIS S55C) at f = 0.2 mm/rev and a_p = 3 mm.
$F = 3430 \times 3 \times 0.2 = 2058$N

●Calculating power requirement

$$P_c = \frac{k_c \times a_p \times v_c \times f}{60 \times 1000} \quad (kw)$$

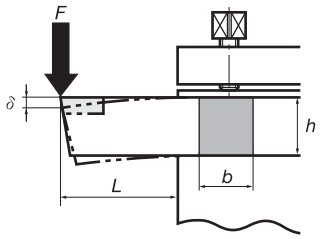
P_c : Net power requirement (kW)
k_c : Specific cutting force (N/mm²)
[Refer to the Table below]
v_c : Cutting speed (m/min)
a_p : Depth of cutting (mm)
f : Feed (mm/rev)

Value of specific cutting force (k_c)

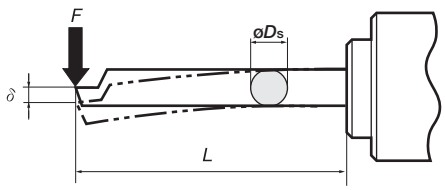
Work material	Tensile strength (Mpa)	Hardness (HB)	Value of specific cutting force on feed k_c (N/mm²)				
			0.04 (mm/rev)	0.1 (mm/rev)	0.2 (mm/rev)	0.4 (mm/rev)	1.0 (mm/rev)
SS400, S15C	390	100	3430	2840	2450	2080	1700
S35C, S40C	590	170	4220	3490	2940	2500	2080
S50C, SCr430	785	230	4900	4020	3430	2940	2400
SCM440, SNCM439	980	300	5390	4410	3780	3240	2650
SDK	1765 (56HRC)	56HRC	8390	6870	5880	5000	4120
FC200	(160HB)	160	2550	1960	1630	1340	1030
FCD600	(200HB)	200	3330	2550	2110	1750	1340
Aluminium alloy	(89HB)	89	1350	1130	950	810	670
Aluminium			1050	870	740	640	520
Magnesium alloy			390	390	390	390	390
Brass			1080	1080	1080	1080	1080

●Bending stress and tool deflection

Square shank



Round shank



Bending stress

(1) Square shank

$$S = \frac{6 \times F \times L}{b \times h^2} \quad (MPa)$$

(2) Round shank

$$S = \frac{32 \times F \times L}{\pi \times \varnothing D_s^3} \quad (MPa)$$

S : Bending stress in shank (MPa)
F : Cutting force (N)
L : Overhang length of tool (mm)
b : Shank width (mm)
h : Shank height (mm)
$\varnothing D_s$: Shank diameter (mm)
E : Modulus of elasticity of shank material (MPa)

Tool defection (mm)

(1) Square shank

$$\delta = \frac{4 \times F \times L^3}{E \times b \times h^3} \quad (mm)$$

(2) Round shank

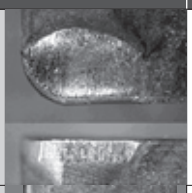
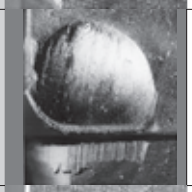
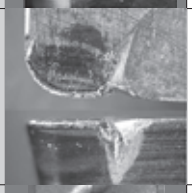
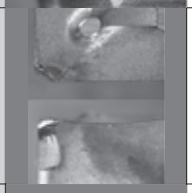
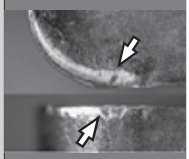
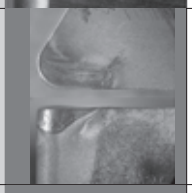
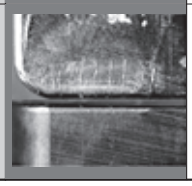
$$\delta = \frac{64 \times F \times L^3}{3 \times \pi \times E \times \varnothing D_s^4} \quad (mm)$$

(Ref.) Values of E

Material	MPa (N/mm²)	{kgf/mm²}
Steel	210,000	21,000
Cemented Carbide	560,000~620,000	56,000~62,000

Turning Tools

Troubleshooting in turning

Typical tool failure	Countermeasures		
	Tool grade	Cutting conditions	Tool geometry
Flank wear 	• Change to more wear resistant grades. **P, M, K30 → 20 → 10**	• Reduce cutting speed. • Change to appropriate feed. • Change to wet cutting.	• Decrease honing width. • Increase relief angle. • Increase end cutting edge angle. • Increase corner radius. • Select free-cutting chipbreaker. • Increase rake angle.
Crater wear 	• Change to more wear resistant grades. **P, M, K30 → 20 → 10**	• Reduce cutting speed. • Reduce feed. • Reduce depth of cut. • Change to wet cutting.	• Increase rake angle. • Select an appropriate chipbreaker. • Increase side cutting edge angle. • Increase corner radius.
Notch wear 	• Change to more wear resistant grades. **P, M, K30 → 20 → 10**	• Reduce cutting speed. • Reduce feed.	• Increase rake angle. • Increase side cutting edge angle.
Fracture 	• Change to tougher grades. • Change to thermal-shock resistant grades. **P, M, K10 → 20 → 30**	• Reduce feed. • Reduce depth of cut • Improve holding rigidity of work and tool. • Reduce overhang length of toolholder. • Improve looseness in machine.	• Reduce rake angle • Select a chipbreaker with high edge strength. • Increase honing width. • Increase side cutting edge angle. • Select larger shank size • Increase corner radius.
Chipping 	• Change to tougher grades. **P, M, K10 → 20 → 30**	• Reduce cutting speed • Reduce feed. • Reduce depth of cut. • Improve holding rigidity of work and tool. • Reduce overhang length of toolholder. • Improve looseness in machine.	• Reduce rake angle • Select a chipbreaker with high edge strength. • Increase honing width. • Increase side cutting edge angle. • Select larger shank size
Flaking 	• Change to tougher grades. **P, M, K10 → 20 → 30**	• Reduce cutting speed • Reduce feed.	• Reduce rake angle • Increase corner radius • Increase honing width.
Plastic deformation 	• Change to more wear resistant grade. **P, M, K30 → 20 → 10**	• Reduce cutting speed. • Change to appropriate feed. • Reduce depth of cut. • Supply cutting fluid in adequate volume.	• Increase relief angle. • Increase rake angle. • Reduce corner radius. • Reduce side cutting edge angle. • Select a free-cutting chipbreaker.
Chip welding  Built-up edge 	• Use a grade which has a low tendency to adhere to work material. **Cemented carbide → Coated carbide or cermet**	• Increase cutting speed. • Increase feed • Change to water-insoluble cutting fluid. • Change to wet cutting.	• Increase rake angle • Select a free-cutting chipbreaker. • Decrease honing width.
Thermal cracking 	• Change to tougher grades. • Change to thermal-shock resistant grades. **P, M, K10→20→30**	• Reduce cutting speed. • Reduce feed. • Change to dry cutting. • Supply cutting fluid in adequate volume. • Reduce depth of cut. • Change to water-insoluble cutting fluid.	• Increase rake angle • Select a free-cutting chipbreaker. • Decrease honing width.

Problem	Cause	Countermeasures	
		Tool	Cutting conditions and others
Deteriorated surface roughness	• Increased tool wear	• Select a more wear resistant grade. • Use an insert with a larger rake angle. • Use an insert with a larger nose radius. • Use a more lightly honed insert. • Use an insert of closer tolerance. (from M class to G class)	• Select a proper feed. • Decrease the cutting speed. • Select a freer-cutting chipbreaker type. • Use a cutting fluid.
	• Edge chipping	• Use a tougher grade. • Select a chipbreaker with strong cutting edges. • Use a largely honed insert. • Increase the side cutting edge angle. • Use a larger shank size.	• Decrease the depth of cut. • Decrease the feed. • Use a more rigid machine. • Improve the holding rigidity of the tool and workpiece. • Shorten the overhang of the toolholder. • Improve the machine looseness.
	• Chip welding • Built-up-edge	• Select a grade with less affinity with the work material. • Use an insert with a larger rake angle. • Select a freer-cutting chipbreaker type. • Use a more lightly honed insert. • Use an insert of closer tolerance. (from M class to G class)	• Increase the cutting speed. • Increase the feed. • Use a water-insoluble cutting fluid. • Use a cutting fluid.
	• Vibration and chatter	• Use a tougher grade. • Use an insert with a larger rake angle. • Select a freer-cutting chipbreaker type. • Use an insert with a smaller nose radius. • Decrease the side cutting edge angle. • Use a more lightly honed insert. • Use a larger shank size.	• Use a proper cutting speed. • Decrease the feed. • Decrease the depth of cut. • Improve the holding rigidity of the tool and workpiece. • Shorten the overhang of the toolholder. • Improve the machine looseness.
Deteriorated dimensional accuracy	• Improper insert accuracy	• Use an insert of closer tolerance. (from M class to G class)	
	• Incomplete engagement of tool and workpiece	• Use an insert with a larger rake angle. • Select a freer-cutting chipbreaker type. • Use an insert with a smaller nose radius. • Use a more lightly honed insert.	• Improve the holding rigidity of the tool and workpiece. • Shorten the overhang of the toolholder. • Improve the machine looseness.
Burr occurrence	• Unsuitable cutting speed		• Decrease the cutting speed. • Increase the feed. • Use a cutting fluid.
	• Worn tool or improper cutting edge geometry	• Use a harder grade. • Use an insert with a larger rake angle. • Select a freer-cutting chipbreaker type. • Increase the relief angle. • Use an insert with a smaller nose radius. • Decrease the side cutting edge angle. • Use a more lightly honed insert.	
Edge breakout	• Improper cutting speed		• Decrease the feed. • Decrease the depth of cut.
	• Worn tool or improper cutting edge geometry	• Use a harder grade. • Use an insert with a larger rake angle. • Select a freer-cutting chipbreaker type. • Increase the side cutting edge angle. • Use an insert with a larger nose radius. • Use a more lightly honed insert. • Use a larger shank size.	• Improve the holding rigidity of the tool and workpiece. • Shorten the overhang of the toolholder. • Improve the machine looseness.
Fuzzy surface finish	• Improper cutting conditions		• Increase the cutting speed. • Select a proper feed. • Use a water-insoluble cutting fluid. • Use a cutting fluid.
	• Worn tool or improper cutting edge geometry	• Use a harder grade. • Select a grade with less affinity with the work material. • Use an insert with a larger rake angle. • Select a freer-cutting chipbreaker type. • Use a more lightly honed insert.	

Chipbreaker

Chip controllability

Necessity of chip control

①Why is chip control needed?
②Effect of improper chip control

Necessity of chip control (Problems and effects)

Problems	Effects
1. Scattering of chips and coolant. 2. Wrapping around the workpiece and the tool. 3. Accumulation on the tool, jig, and machining facilities.	1. Disturbs unmanned and automated machining. 2. Disturbs high-speed and high-efficiency machining. 3. Degrades finished surface. 4. Threatens operator's safety. 5. Reduced operation rate.

Additional problems when chips are not properly controlled

①Why is chip control needed?

What is chip?

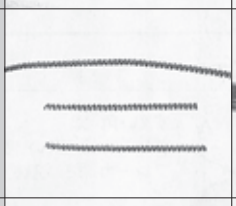
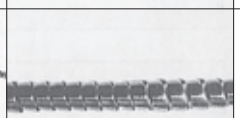
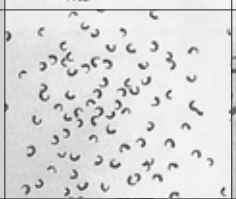
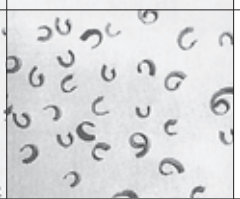
For making a product from a workpiece, removed objects produced by a tool which is set to cut to a specified depth with the relative motion of the tool and the workpiece.

Problems when chips are not properly controlled

②Effect of improper chip control

- Effects on quality
  - Defective work.
  - Defective surface finish
  - Chip entangling
- Effects on operation
  - Increased number of man-hours for handling.
  - Increased tool costs.
  - Troublesome chip handling.
  - Machine stoppage and reduced operation rate.
- Effect on safety and health.
  - Stain and damage on machine caused from improper carrying-out of chips.
  - Dangerous effects on the human body. (Injury and burns on hand, etc.)

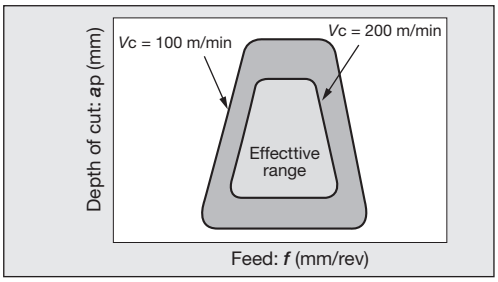
Effective measures → **"Chipbreaker"**

Classification	Chip shape: Depth of cut: small	Chip shape: Depth of cut: large	Description of chip shape	Acceptability	Effect
Shape A			Chips irregularly entangled	Not acceptable	• Wrapping around the tool or workpiece or accumulation around the cutting point, hindering cutting • Possible damage to the machined surface
Shape B			Long continuous spiral chips $\ell > 50$ mm	Acceptable	• Bulky during transport in the automatic line • May be preferred when one operator handles one machine
Shape C			Short spiral chips $\ell < 50$ mm		• Smooth chip flow • Difficult to scatter • Favorable shape
Shape D			"C" or "9" shaped chips (Around one coiling)		• Favorable shape if not scattering • Not bulky and easy to transport
Shape E			Excessively broken chips. Thin pieces or connected in a form of wave as shown in the figure left	Not acceptable	• Readily scattering. If scattering is the only trouble, it may be acceptable because the chip cover, etc. may be used. • Tend to cause chatter, causing harm on the finished surface roughness or tool life.

Factors affecting chip control

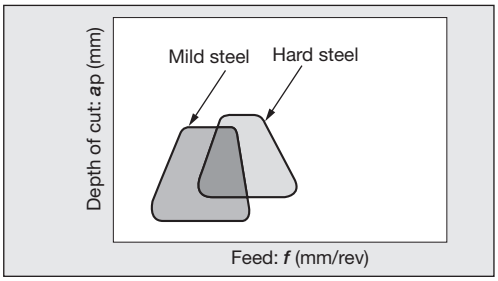
(1) Cutting conditions
1 Feed
2 Depth of cut
3 Cutting speed

- Of these, feed has the greatest effect followed by depth of cut and cutting speed in order listed.
- Feed is proportionate to the thickness of chips.
- Depth of cut is proportionate to the width of chips.
- There are optimum values (effective range) in feed and depth of cut.
- Cutting speed is in inverse proportion to chip thickness. Effective range becomes narrow at high speed.



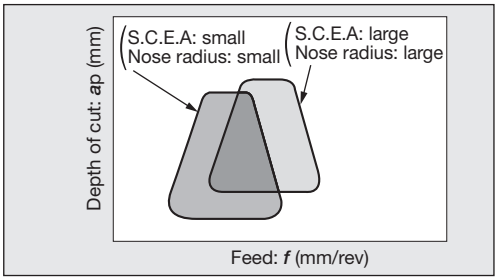
(2) Work material
1 Alloy element
2 Hardness
3 Heat treatment condition

- These are related to thickness of chips and ease of curling.
- Mild steel chips are thicker than those of hard steel.
- Hard steel chips are liable to curl more than those of mild steel.
- Chips that do not curl are thin. As an exception, in case of mild steel even if thick, may not curl.



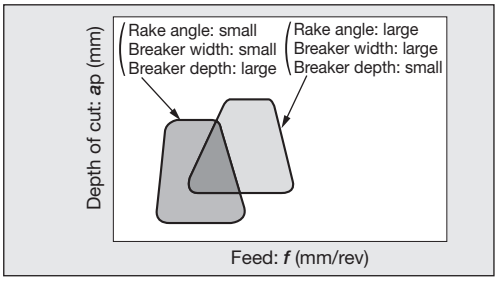
(3) Tool geometry
1 Side cutting edge angle
2 Nose radius

- Side cutting edge angle is relative to chip thickness and width
- Side cutting edge angle is preferably small.
- Nose radius is relative to thickness and width and the direction of flowing out.
- In finishing, small nose radius, whilst for rough cutting, large nose radius is better.



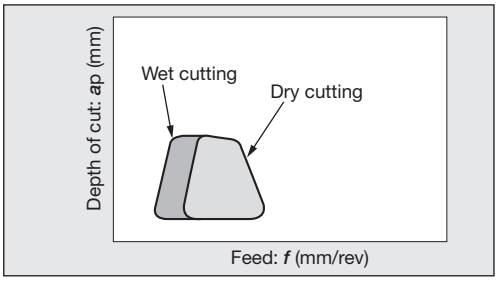
(4) Shape of chipbreaker
1 Rake angle
2 Chipbreaker width
3 Chipbreaker depth

- Rake angle is in inverse proportion to chip thickness.
- Depending on the work material, there is an optimum value.
- Chipbreaker width is selected proportionately to feed.
- Narrow at low feed and wide at high feed.
- Chipbreaker depth is to be selected so as to be inversely proportionate to feed.
- Deep at low feed and shallow at high feed.



(5) Cutting fluid

- Effective range is wider with wet cutting.
- Especially at low feed range is liable to curl.

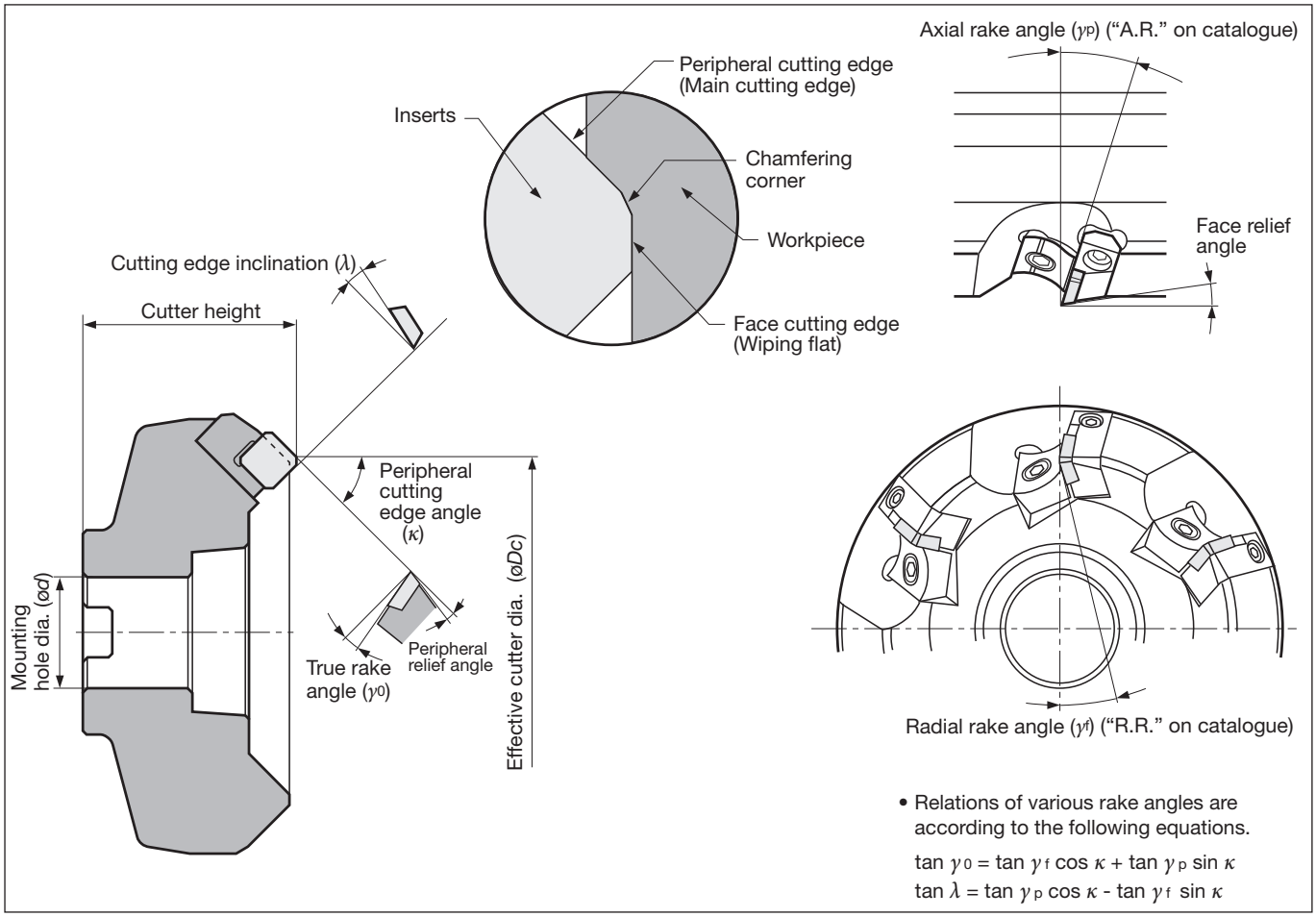


(6) Machine
1 Strength
2 Power limit

- The machine has enough power and mechanical strength.
- Select the machine consistent with the size of work material to be used.

Milling Tools

Nomenclature for face milling cutter



- Relations of various rake angles are according to the following equations.

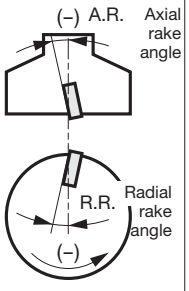
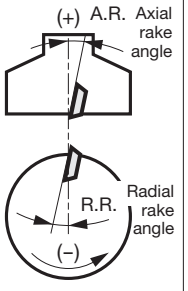
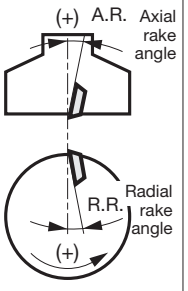
$\tan \gamma_0 = \tan \gamma_f \cos \kappa + \tan \gamma_p \sin \kappa$

$\tan \lambda = \tan \gamma_p \cos \kappa - \tan \gamma_f \sin \kappa$

Cutter geometry and applications

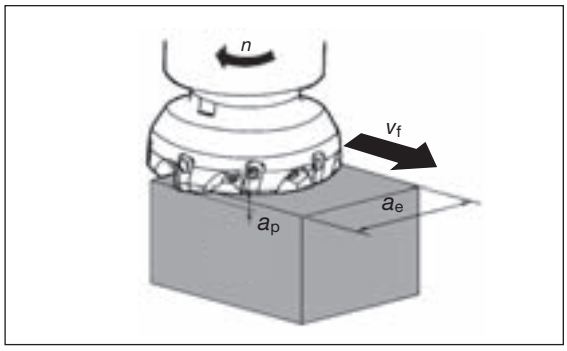
Conditions		Rake angle combination and applicability		
		Negative-Negative	Negative-Positive	Positive-Positive
Shapes of cutting edge	γp (A.R.)	-	+	+
	γf (R.R.)	-	-	+
	γo	-	+	+
Work material	Carbon steels, alloy steels (< 300HB)	△	◎	◎
	Stainless steels (< 300HB)	×	◎	○
	Die steels (< 300HB)	△	◎	○
	Cast irons Ductile cast irons	◎	○	○
	Aluminium alloys	×	○	◎
	Copper and its alloys	×	○	◎
	Titanium and its alloys	×	○	○
	Hardened steels (40 ~ 55HRC)	○	○	×
Features		· Higher cutting edge strength · Many usable corners of inserts	· Excellent chip removal · Higher cutting edge strength and Freer cutting action	· Most excellent cutting action
Typical examples of TAC mills		TGN4200 DoPent	TAW13 TME4400 TMD4400	THF4000 THE4000

Rake angle combination

Negative type (Negative-Negative)	Negative-Positive type	Positive type (Positive-Positive)
		

Calculation formulas for milling

●Cutting speed



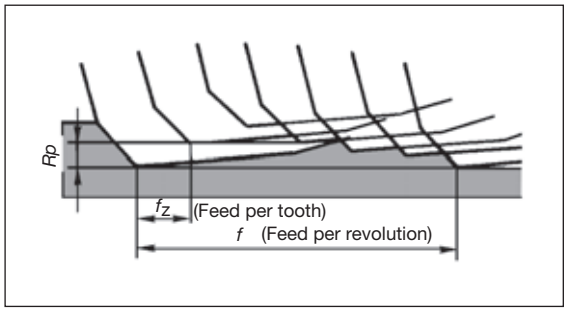
●Cutting speed (Calculated from number of revolutions)

$$v_c = \frac{\pi \times \phi D_c \times n}{1000} \quad (\text{m/min})$$

v_c : Cutting speed (m/min)
ϕD_c: Effective diameter (mm)
n : Number of revolutions (min^{-1})
$\pi \approx 3.14$

●Number of revolution (Calculated from cutting speed)

$$n = \frac{1000 \times v_c}{\pi \times \phi D_c} \quad (\text{min}^{-1})$$



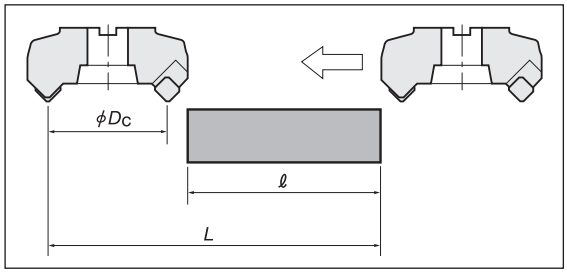
●Feed speed and feed per tooth

$$v_f = f_z \times z \times n \quad (\text{mm/min})$$

v_f : Feed speed (mm/min)
f_z : Feed per tooth (mm/t)
z : No. of teeth of the cutter
n : Number of revolutions (min^{-1})

Feed speed is relative speed of cutter and work material and in the normal milling machine, it is the table speed.
In milling, the feed per tooth is very important. The recommended cutting condition is expressed by v_c and f_z and using the above equation calculate n and v_f and input in the machine.

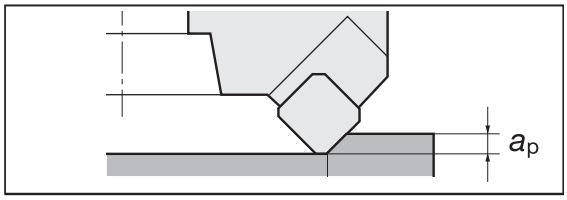
●Cutting time on face milling



$$T = \frac{L}{v_f} \quad (\text{min})$$

T : Cutting time (min)
L : Total table feed length.
(ℓ : Workpieces length (mm) + ϕD_c: Effective cutter diameter (mm))
v_f : Feed speed (mm/min)

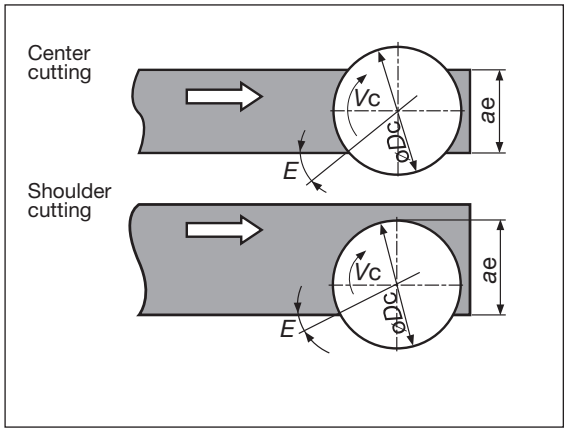
Depth of cut and width of cut



●Depth of cut

Determine by required allowance for machining and capacity of the machine. In case of TAC mill, there are cutting limits according to shape and size of the insert. Please see spec on the catalogue.

a_p : Depth of cut (mm)



●Width of cut and engagement angle

There is an appropriate engage angle depending on the cutter diameter, cutting position, work material, etc., and ordinarily the values in the table below are used as a guide.

ϕD_c: Cutter diameter (mm)
E: Engage angle
a_e: Width of cut (mm)

Center cutting

Work material	Appropriate E	Cutter dia. and a_e
Steel	~ 42°	$a_e \approx \frac{2}{3}\ \phi D_c$
Cast iron	~ 53°	$a_e \approx \frac{4}{5}\ \phi D_c$

Shoulder cutting

Work material	Appropriate E	Cutter dia. and a_e
Steel	~ 30°	$a_e \approx \frac{3}{5}\ \phi D_c$
Cast iron	~ 40°	$a_e \approx \frac{3}{4}\ \phi D_c$

Milling Tools

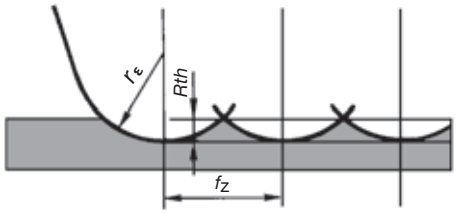
Roughness of finished surface

(1) Theoretical surface roughness

Theoretical roughness as shown below, is the same as for single point turning

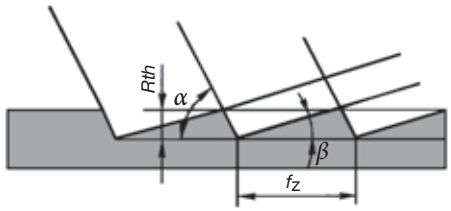
●With corner radius r_ε

$$Rth = \frac{fz^2}{8r_\varepsilon} \times 1000$$

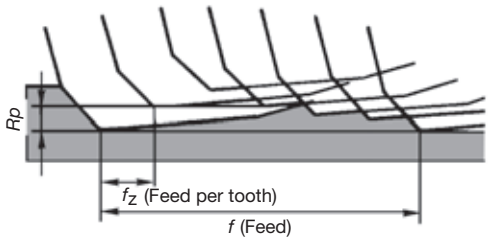


●Without corner radius r_ε

$$Rth = fz\left(\frac{\tan\alpha \cdot \tan\beta}{\tan\alpha + \tan\beta}\right) \times 1000$$



Rth: Theoretical roughness (μm)
f_Z: Feed per tooth (mm/t)
r_ε: Corner radius (mm)
α: Corner angle
β: Face cutting edge angle

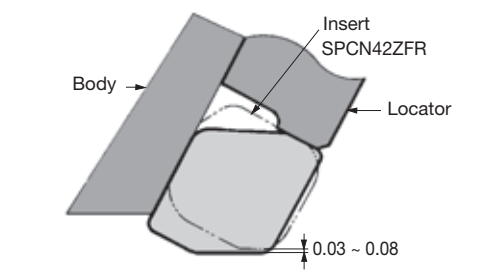


(2) Practical surface roughness

In case of practical milling, there are many teeth and natural differences in levels of edges occur. The maximum difference is called “run out”. (*Rp*)

In the actual face milling, finished surface roughness, as shown left, is worse than the single point cutting. If only one tooth is projecting, it will be similar to the single point shown above but of a large value substituting *f* (mm/rev) for *fz* (mm/t).

Improving surface roughness



Face run out must be minimized and a low feed and high speed should be used. Also, in order to attain good finished surface at high efficiency, there are the following methods:

(1) In case of ordinary TAC mill
Use wiper insert as shown in the figure at left.

(2) Use of TAC super finish mill for finishing.
- Use of combination TAC mills with finishing insert such as TFD4400-A and TFP4000Ⅰ A (a_p < 1.0 mm).
- Use of TAC supe finish mill for finishing such as NMS cutters and SFP4000 etc.

Calculating power requirement

$$P_{c\,(kW)} = \frac{k_c \times a_p \times a_e \times v_f}{60 \times 1000 \times 1000}$$

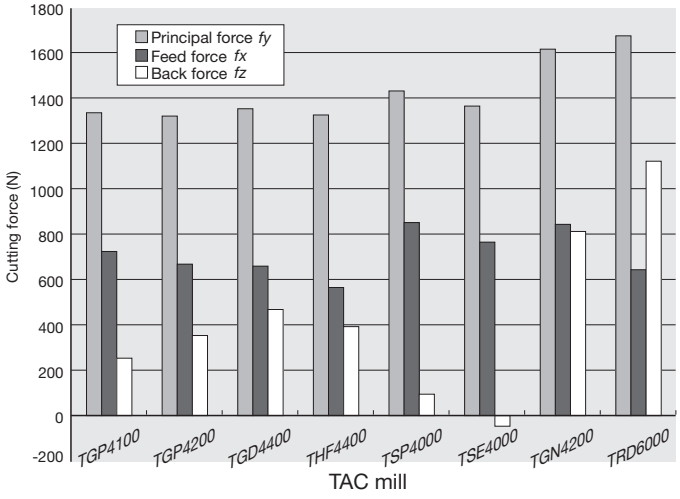
P_c : Net power requirement (kW)
k_c : Specific cutting force (N/mm^2) [Refer to the Table below]
a_p : Depth of cut (mm)
a_e : Width of cut (mm)
v_f : Feed speed (mm/min)

Because practical power requirements depend on the type of TAC mill (proportional to the true rake angle) and the motor efficiency of the machine used, the result calculated from the above formula should be considered as a rough guide.

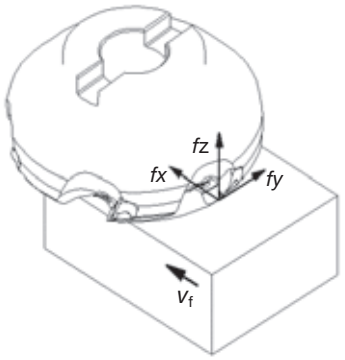
●Values of specific cutting force (k_c)

Work material	Tensile strength	Value of specific cutting force on feed per tooth k_c (N/mm^2)				
	MPa	0.1 (mm/t)	0.15 (mm/t)	0.2 (mm/t)	0.3 (mm/t)	0.4 (mm/t)
SS400	520	2150	2000	1900	1750	1650
S55C	770	1970	1860	1800	1760	1620
SCM3	730	2450	2350	2200	1980	1710
SKT4	(HB352)	2030	2010	1810	1680	1590
SC450	520	2710	2530	2410	2240	2120
FC250	(HB200)	1660	1450	1320	1150	1030
A ℓ (Si)	200	660	580	522	460	410
Brass	500	1090	960	877	760	680

●Values of cutting force (k_c)



Work material : S50C (210HB), Diameter of TAC mill : ø160 mm
Cutting speed : V_c = 150 m/min, Feed per tooth: f_z = 0.20 mm/t
Depth of cut: a_p = 3 mm, Cutting by a single edge, dry



●Conversion from cutting speed to number of revolutions

(unit : min^{-1})

Cutter diameter ØDc (mm)	Cutting speed (v_c) m/min												
	10	30	50	100	125	150	200	300	500	800	1,000	2,000	4,000
10	318	955	1,592	3,184	3,980	4,777	6,369	9,554	15,923	25,477	31,847	63,694	127,388
12	265	796	1,326	2,653	3,317	3,980	5,307	7,961	13,269	21,231	26,539	53,078	106,157
16	199	597	995	1,990	2,488	2,985	3,980	5,971	9,952	15,923	19,904	39,808	79,617
20	159	477	796	1,592	1,990	2,388	3,184	4,777	7,961	12,738	15,923	31,847	63,694
25	127	382	636	1,273	1,592	1,910	2,547	3,821	6,369	10,191	12,738	25,477	50,955
30	106	318	530	1,061	1,326	1,592	2,123	3,184	5,307	8,492	10,615	21,231	42,462
32	99	298	497	995	1,244	1,492	1,990	2,985	4,976	7,961	9,952	19,904	39,808
35	90	272	454	909	1,137	1,364	1,819	2,729	4,549	7,279	9,099	18,198	36,396
40	79	238	398	796	995	1,194	1,592	2,388	3,980	6,369	7,961	15,923	31,847
50	63	191	318	636	796	955	1,273	1,910	3,184	5,095	6,369	12,738	25,477
63	50	151	252	505	631	758	1,011	1,516	2,527	4,044	5,055	10,110	20,220
80	39	119	199	398	497	597	796	1,194	1,990	3,184	3,980	7,961	15,923
100	31	95	159	318	398	477	636	955	1,592	2,547	3,184	6,369	12,738
125	25	76	127	254	318	382	509	764	1,273	2,038	2,547	5,095	10,191
160	19	59	99	199	248	298	398	597	995	1,592	1,990	3,980	7,961
200	15	47	79	159	199	238	318	477	796	1,273	1,592	3,184	6,369
250	12	38	63	127	159	191	254	382	636	1,019	1,273	2,547	5,095
315	10	30	50	101	126	151	202	303	505	808	1,011	2,022	4,044

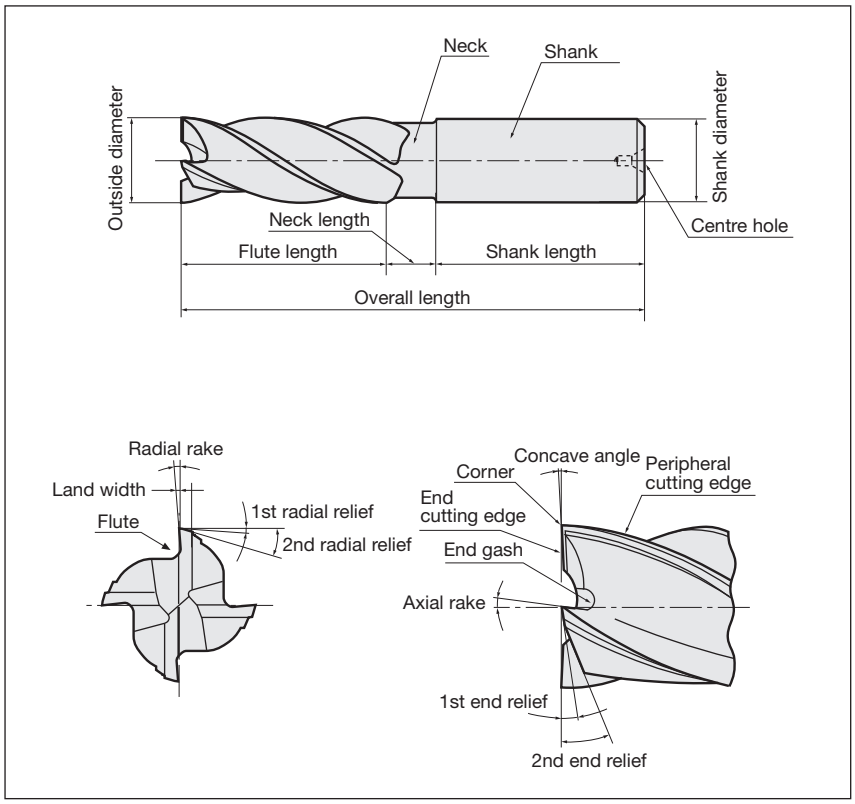
Note: In this table, the effects of centrifugal force on the rotating balance of the tool and the toolholder, flying risk of cutter parts, and limited value of toolholder destruction are not considered. Therefore, when using the tool at high speeds, be sure to observe the specified condition range.

Trouble shooting in face milling

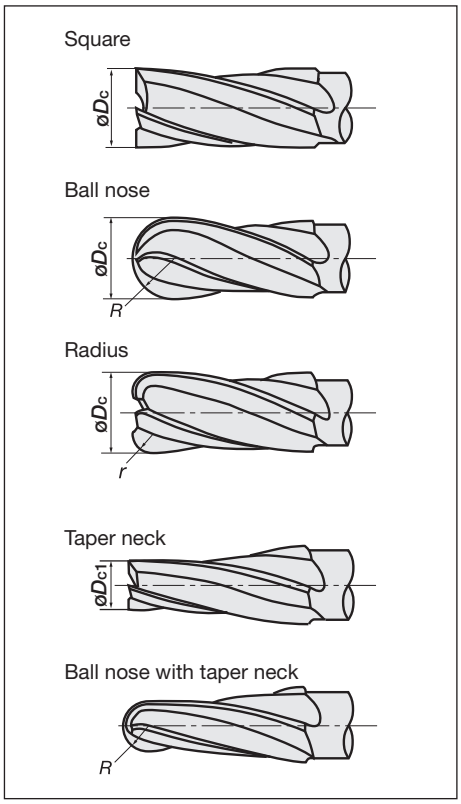
Trouble	Possible causes	Countermeasures
Rapid wear of cutting edge	• Improper insert grade selection (Insufficient wear resistance)	• P30 (Cemented carbide) → Cermet, coated grade (For steels) • K10 (Cemented carbide) → Coated grade (For cast irons)
	• Excessive cutting speed	• Select cutting speed suited for work material and insert grade
	• Inadequate feed	• Use standard cutting condition in catalog as guide
Rapid chipping of cutting edge	• Improper Insert grade selection (Insufficient toughness)	• Cermet → P30 (For steels), K10 → K20 (For cast irons)
	• Cutting hard material and unfavorable surface condition	• Decrease cutting speed • Use cutter with strong cutting edge
	• Excessive feed	• Proper selection of feed conditions, using recommended cutting conditions in catalog as guide
	• Excessive pressure applied on cutting edge	• Proper selection of engaging angle
	• Machining superalloys	• Use a negative-positive type cutter with large corner angle (Examples: T/EAW13, T/EME4400, etc.)
Fracturing	• Cracking due to thermal shock	• Select insert grade of stronger thermal shock resistance such as T3130 • Decrease cutting speed
	• Continuous use of excessively worn insert	• Shorten replacement standard time of insert
	• Cutting hard material	• Use cutter with stronger cutting edge such as T/ERD6000 • Use cutter of larger corner angle such as T/EAW13, T/EME4400, etc.
	• Obstruction to chip flow • Recutting of chips after chip welding	• Use cutter with better chip expulsion such as T/EAW13, etc. • Select insert grades difficult for chips to adhere Cemented carbides → cermets, coated grades • Use air blow
	• Excessively slow cutting, too fine feed	• Select cutting speed and feed optimized for insert grade and work material
Excessive chip welding or build-up on cutting edge	• Cutting soft material such as aluminium, copper, mild steel	• Use cutter with large rake angle such as T/EAW13
	• Cutting stainless steel	• P30 → coated grades (AH140, AH120)
	• Use of cutter with negative rake or too small rake angle	• Use cutter with large rake angle such as T/EAW13, T/EME4400, T/EPW13 or T/ESE4000
Rough finish	• Effect of built-up edge	• Increase cutting speed • Appropriate cutting depth (finish allowance) • Change insert grade For steels: P → coated → cermet For cast irons: K → coated
	• Effect of face cutting edge run out	• Proper installing of inserts • Use insert of high dimensional accuracy • Cleaning of insert pocket
	• Continuous use of excessively worn insert	• Shorten replacement standard time of insert
	• Remarkable feed marks	• Feed per revolution to be set within flatland width • Use wiper insert type cutter such as T/EAW13 • Use cutter exclusively for finishing such as type NMS and S/EFP4000
Chattering	• Unstable clamping of workpiece	• Check clamping method of workpiece
	• Cutting of welded construction of thin steel plate	• Adopt cutter of large rake angle and small corner angle such as T/EPW13 or T/ESE4000
	• Excessive cutting condition	• Re-examine allowable chip removal rate according to motor HP
	• Face milling of narrow width workpiece	• Use cutter of small cutter diameter and with many teeth
	• Too many simultaneous cutting teeth engagement	• Reduce No. of teeth or adopt irregular pitch cutter

Solid Carbide Endmills

Part details

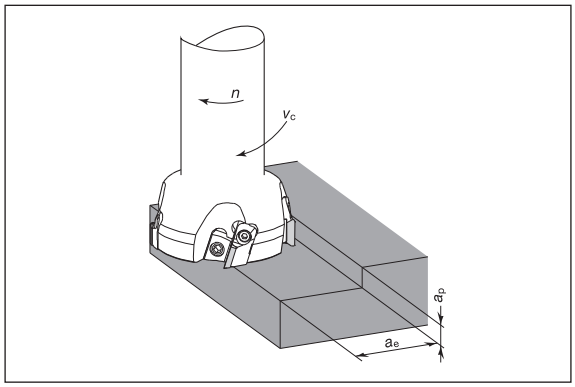


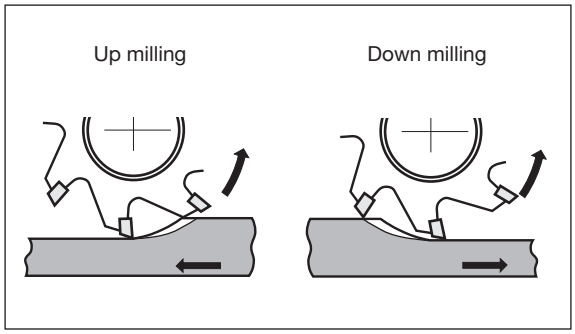
Types



Cutting condition of Endmills

● Cutting speed





● **Cutting speed** (Calculated from number of revolutions)

$$v_c\ (\text{m/min}) = \frac{\pi \times \varnothing D_c \times n}{1000}$$

v_c : Cutting speed (m/min)
$\varnothing D_c$: Effective diameter (mm)
n : Number of revolutions (min^{-1})
$\pi \approx 3.14$

● **Number of revolution** (Calculated from cutting speed)

$$n\ (\text{min}^{-1}) = \frac{1000 \times v_c}{\pi \times \varnothing D_c}$$

● **Feed speed and feed per tooth**

$$v_f\ (\text{mm/min}) = f_z \times z \times n$$

v_f : Feed speed (mm/min)
f_z : Feed per tooth (mm/t)
z : No. of teeth of the endmills
n : Number of revolutions (min^{-1})

● **Cutting**

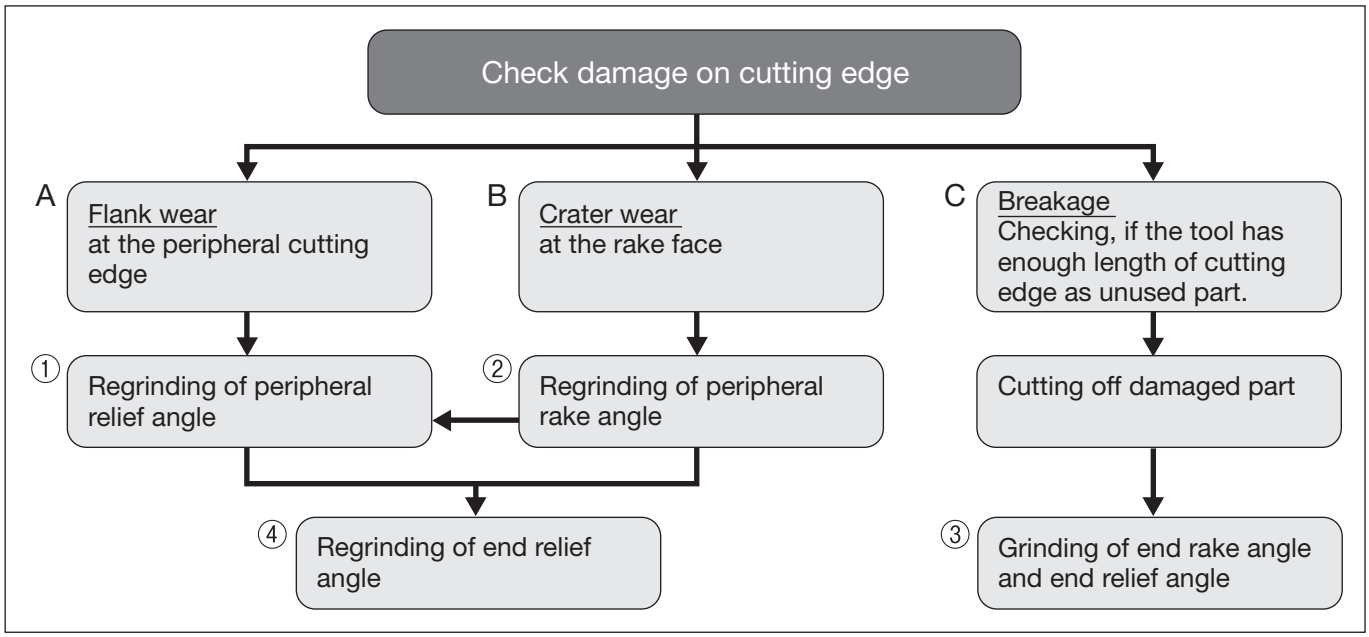
The necessary capacity of the machine is limited by the length of cut edge of the endmill.

● **Up milling and down milling**

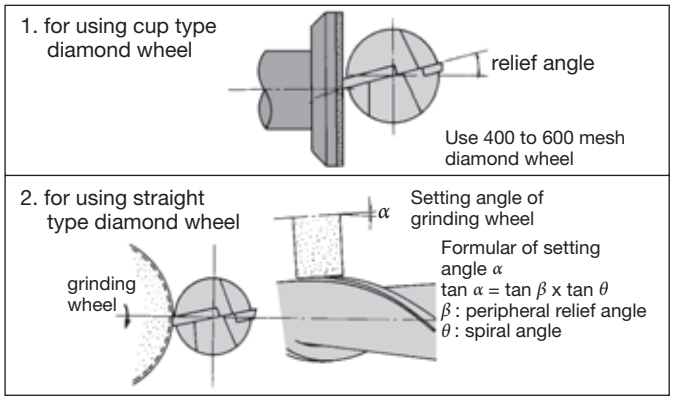
Down milling generally produces better tool life and surface roughness.
In case of cast iron sand inclusion or welding surface, up milling is recommended.

Solid Carbide Endmills

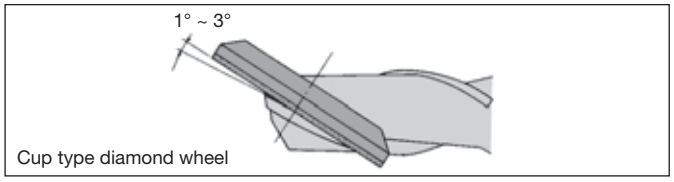
Regrinding procedures of solid carbide endmill



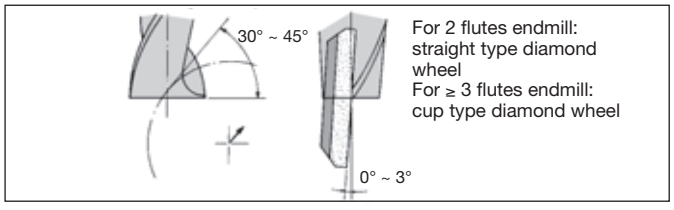
1 Regrinding of end relief angle



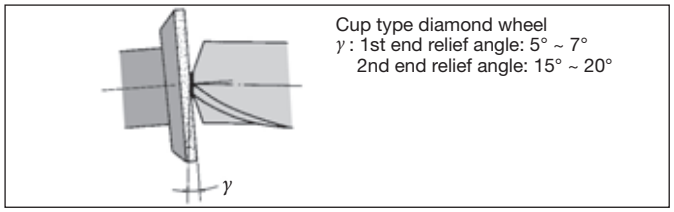
2 Regrinding of peripheral rake angle



3 Regrinding of end rake angle (End gash)



4 Regrinding of end relief angle



Notice of regrinding

(1) If, after checking the damage of the cutting edge, the damage is as case “A” or “B” of the flow chart, the tool must be reground.
Too much damage of the cutting edge requires too much stock removal and thus reduces tool life.

(2) Please use diamond grinding wheel.

(3) Peripheral relief angle must be ground between 18° and 10°.
Relief angle of small diameter cutters for aluminium machining must be a large degree.

(4) First check if “C” in flow chart can be adapted for the case of coated endmill or not.
If procedure “C” can be adapted for regrinding, tool life after the grinding would be more improved than new one. The reason is remaining coated layer of cutting edge and shorter tool length will keep much higher rigidity of the tool than before regrinding.

(5) Please check run out of peripheral cutting edge, face cutting edge, with Vee block after regrinding.
The value of the run out must be controlled within 0.01 mm.

Notice for regrinding of ball nose endmill

- Regrinding of relief angle only is available. The dimension of nose radius will be smaller after grinding.
- Honing of cutting edge is necessary after regrinding.

Trouble shooting in Endmilling

Trouble	Possible causes	Countermeasures
Breakage (In case of solid carbide endmill and brazed endmill with small diameter)	● At the start of machining ● At the end of machining	● Reduce feed. ● Reduce tool overhang length. ● Exchange to short cutting edge tool.
	When usual machining	● Reduce feed. ● Managing tool life → Exchange in shorter time. ● Replace chuck or collet to new one. ● Reduce tool overhang length. ● Make optimum honing on the edge. ● Reduce flutes. E.g. 4 flutes → 3flutes, or 2flutes. ● Use enough coolant. Change direction of supplying coolant.
	When change the direction of feed	● Use the circular interpolation in NC machine. Stop feed shortly before changing. ● Lower feed around changing part. ● Replace chuck or collet to new one.
Fracture on cutting edge	Chipping on corner edge	● Chamfer the corner with hand-stick grinder. ● Down cutting ⇒ Upward milling.
	Chipping on boundary part	● Change cutting direction, Down cutting → Upward milling. ● Reduce cutting speed.
	Chipping on central part or all edges.	● Make slight honing on the edge. Or make honing bigger. ● Change spindle revolution number. ● Increase cutting speed. ● If chattering, increase feed. ● Use coolant or air blast. ● Replace chuck or collet to new one. ● Decrease cutting speed.
	Fracture on cutting edge	● Decrease feed. ● Reduce flutes. E.g. 4 flutes → 3flutes, or 2flutes. ● Make slight honing on the edge. Or make honing bigger. ● Replace chuck or collet to new one. **【For Solid carbide endmill】** ● Decrease cutting speed. ● Use enough coolant. Change direction of supplying coolant. **【For brazed endmill】** ● If wet cutting, change to dry cutting with air-blast. Change direction of supplying air-blast. ● In slot milling of steel, change to optimum cutting condition. (In low cutting speed-chipping or adhesion may cause.) (In high cutting speed-chip packing or thermal crack may cause.)
Large wear in short time		● Decrease cutting speed. ● Change cutting direction, Upward milling → down cutting. ● Increase feed. ● Use coolant or air blast. ● In reground tool, grind flank face with FINER wheel.

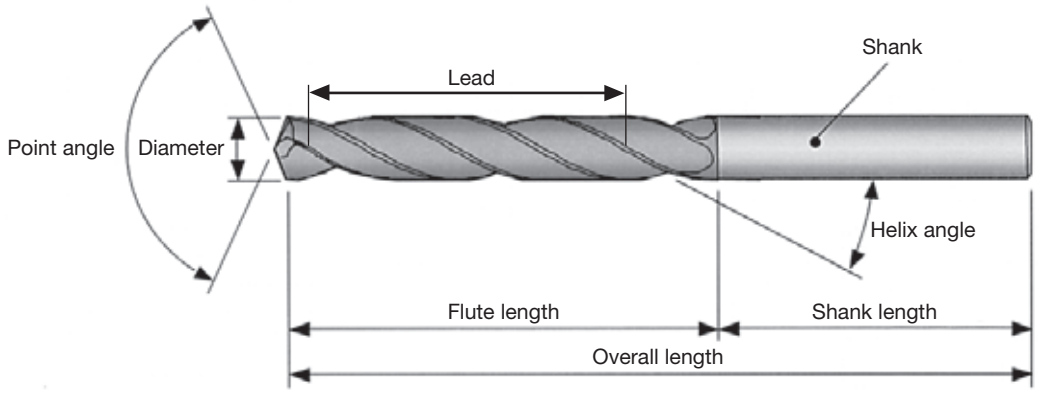
(Continued on next page)

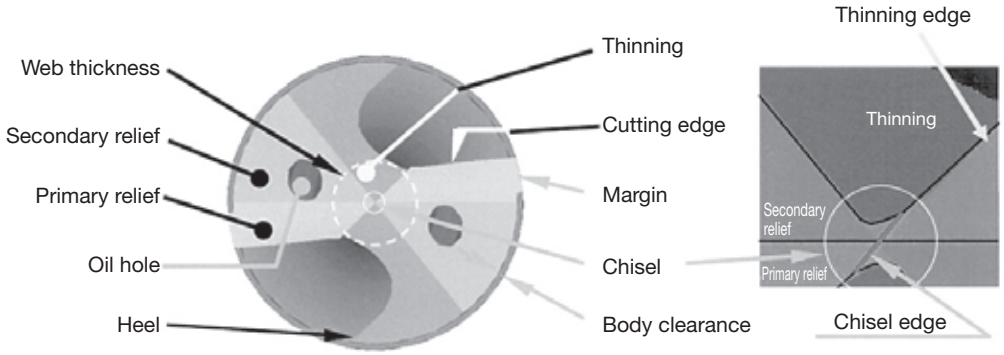
Solid Carbide Endmills

Trouble	Possible causes	Countermeasures
Poor surface finish	Bright, but Wavy surface	● Reduce feed per tooth. ● Increase flutes; E.g. 2 flutes → 3flutes, or 4flutes.
	Small chips are welded on surface.	● Increase cutting speed. ● Use coolant or air blast, or increase coolant. ● Make slight honing on the edge. ● Upward milling → Down cutting. ● Increase feed per tooth. Increase Depth of Cut.
	Scratches on the surface	● Make slight honing on the edge. ● Use non-water soluble coolant. ● Down cutting → Upward milling.
	Poor surface by over cutting	● Reduce depth of cut. ● Increase cutting speed. ● Reduce feed per tooth.
Poor accuracy	Finish size becomes a minus tendency.	● Upward milling → Down cutting. ● Reduce depth of cut. ● Replace chuck or collet to new one. ● Reduce overhang length. ● Increase cutting speed.
	Poor straightness	● Reduce depth of cut. ● Replace chuck or collet to new one. ● Reduce overhang length. ● Increase cutting speed. ● Increase flutes; E.g. 2 flutes → 4flutes. ● Reduce feed per tooth. ● Check the edge. Change tool, when needed.
Chattering		● Increase feed per tooth. Reduce feed per tooth, when current feed is more than 0.07 mm/t. ● Change cutting speed. ● Replace chuck or collet to new one. ● Reduce overhang length. ● Use 2 flutes tool in roughing. Use 4 flutes tool in finishing. ● Down cutting → Upward milling.

Drilling Tools

Nomenclature for drills





Cutting forces and power requirement

● Twist drill

Power requirement

$$P_C = K\varnothing D_C^2 n \quad (0.647 + 17.29f) \times 10^{-6} \ (\text{kW})$$

Thrust force

$$T_C = 570K\varnothing D_C f^{0.85} \ (\text{N})$$

Torque

$$M_C = \frac{K\varnothing D_C^2 \ (0.630 + 16.84f)}{100} \ (\text{N·m})$$

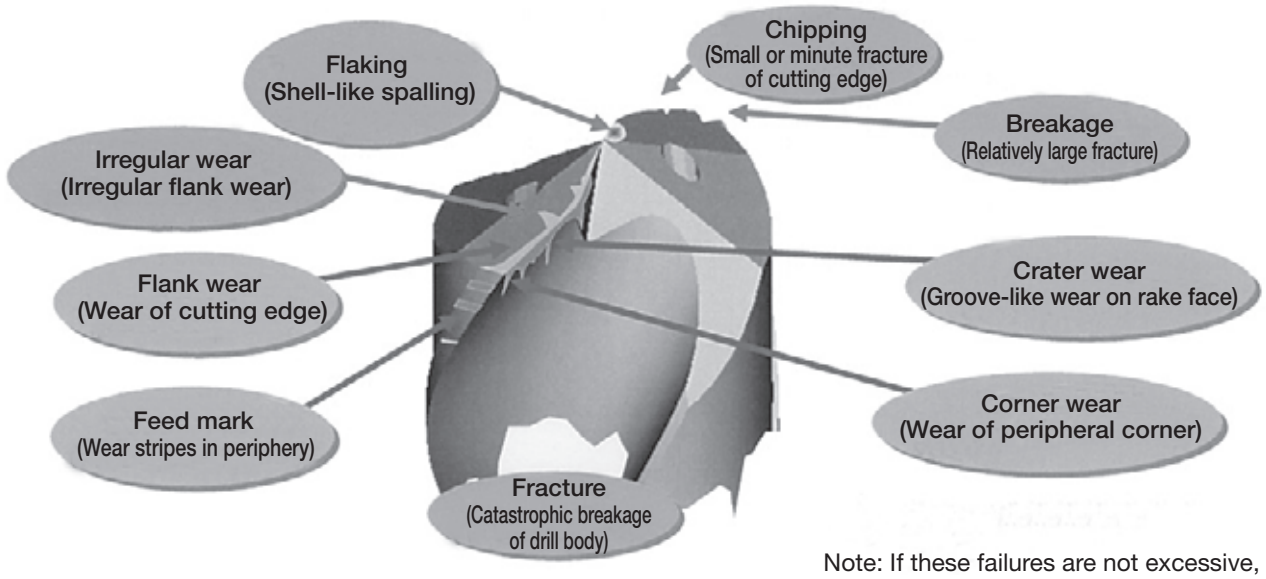
P_C : Power requirement (kW)
T_C : Thrust force (N)
M_C : Torque (N·m)
$\varnothing D_C$: Drill diameter (mm)
f : Feed (mm/rev)
n : No. of revolutions (min^{-1})
K : Material constant···· Refer to the Table at right

●Material constant compensating for power requirement and thrust force

Work material	Tensile strength		Brinell hardness (HB)	Material constant (*K*)
	MPa (N/mm²)	Kgf/mm²		
Cast iron	210	21	177	1.00
Cast iron	280	28	198	1.39
Cast iron	350	35	224	1.88
Aluminium	250	25	100	1.01
Low carbon steel (JIS S20C)	550	55	160	2.22
Free cutting steel (JIS SUM32)	620	62	183	1.42
Manganese steel (JIS SMn438)	630	63	197	1.45
Nickel chromium steel (JIS SNC236)	690	69	174	2.02
4115 steel Cr0.5, Mo0.11, Mn0.8	630	63	167	1.62
Chromium molybdenum steel (JIS SCM430)	770	77	229	2.10
Chromium molybdenum steel (JIS SCM440)	940	94	269	2.41
Nickel chromium molybdenum steel (JIS SNCM420)	750	75	212	2.12
Nickel chromium molybdenum steel (JIS SNCM625)	1,400	140	390	3.44
Chromium vanadium steel				
Cr0.6, Mn0.6, V0.12	580	58	174	2.08
Cr0.8, Mn0.8, V0.1	800	80	255	2.22

Drilling Tools

Cutting edge failure of drilling tools



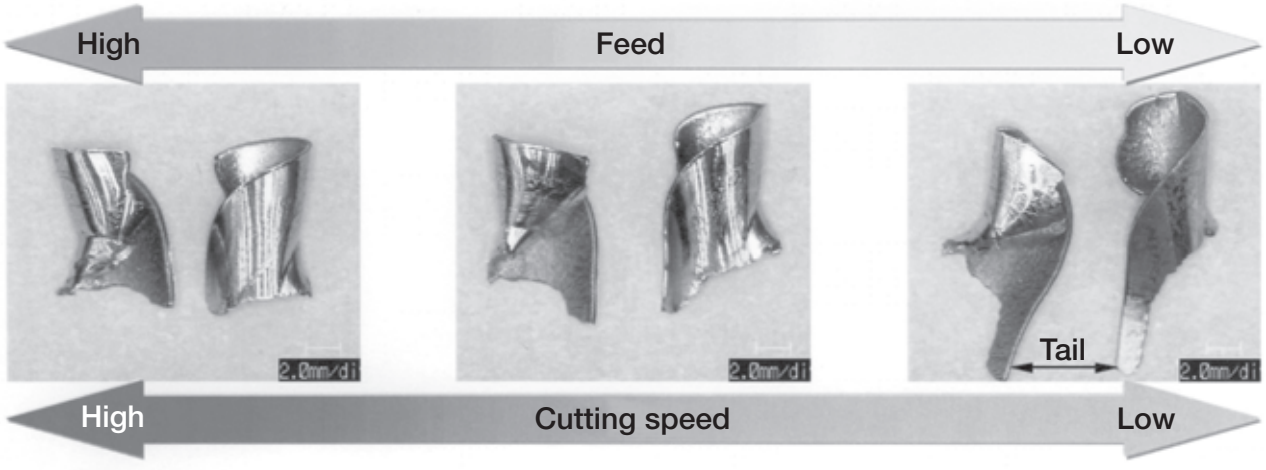
Note: If these failures are not excessive, the tool is in a normal condition.

Change of chip shapes in drilling

● Change of chip shapes relating to cutting conditions

Photographs below show the change of chip shapes relating to change of the feed and the cutting speed. These chip shapes are all well controlled in a proper condition range.

When the speed and feed are low, the chip shows whitish colour and the tail of the chip tends to lengthen gradually. In contrast, as the speed or the feed increases, the chip tends to increase in brightness and becomes a compact shape with a short tail. These changes in the shape depend on the cutting temperature. As the temperature increases, chips tend to be broken.

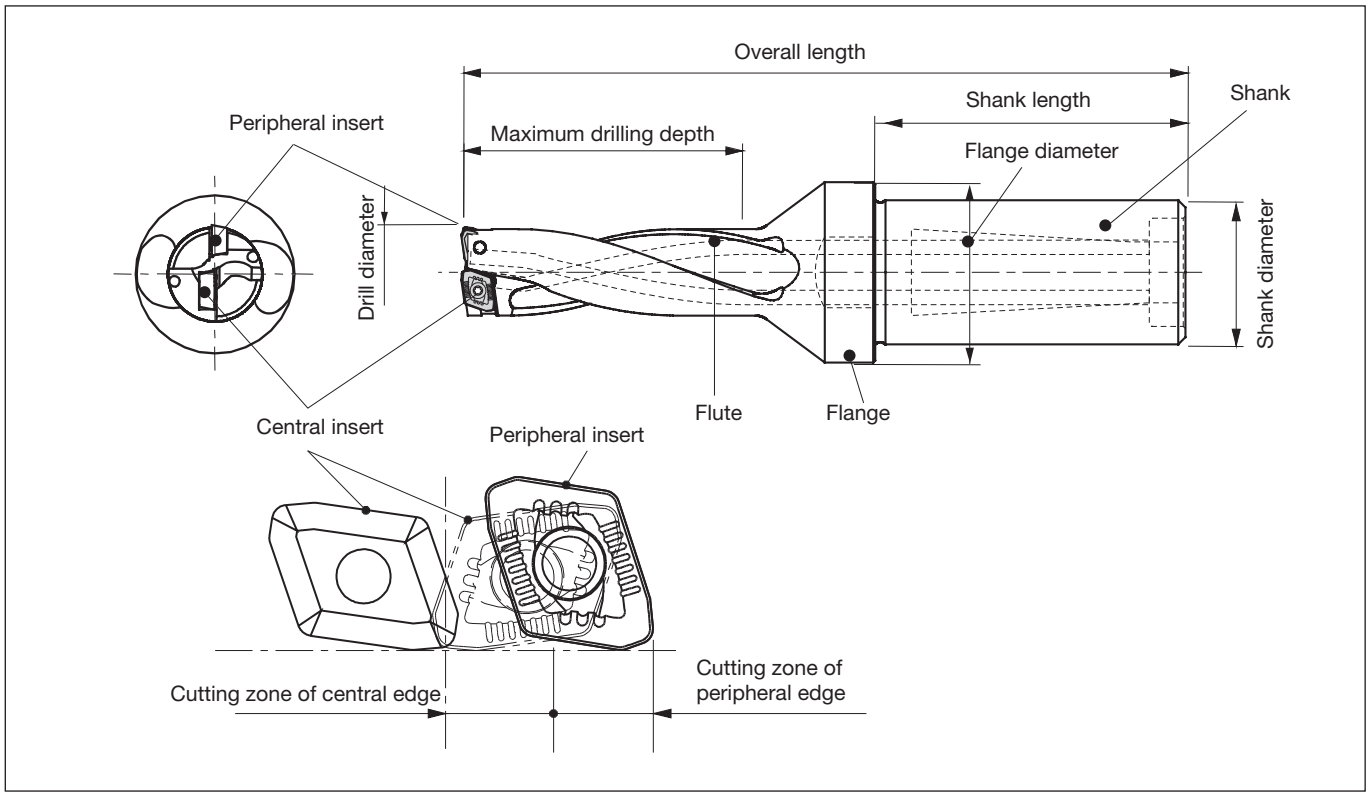


Troubleshooting for solid drills

Problem		Cause	Countermeasure
Abnormal wear	Relief surface	•Inappropriate cutting speed	•Increase the cutting speed by 10 % within standard conditions if abnormal wear is around center. •Lower the cutting speed by 10 % within standard conditions if abnormal wear is on the periphery.
		•Inappropriate cutting fluid	•Check the filter. •Use the cutting fluid superior in lubricity. (Increase the dilution rate)
	Margin	•Inappropriate cutting speed	•Lower the cutting speed by 10 %.
		•Regrinding timing, insufficient reground amount	•Shorten the regrinding timing.
		•Insufficient rigidity of the machine and workpiece	•Change the clamp method to the one with rigidity.
		•Insufficient drill rigidity	•Use smallest possible overhang.
		•Inappropriate cutting fluid	•Check the filter. •Use the cutting fluid superior in lubricity. (increase the dilution rate)
		•Intermittent cutting when entering	•Avoid interruption at entry and exit. •Lower the feed by about 50 % during entering into and leaving from the workpiece.
Chipping and fracture	Chisel section (center of drill cutting edge)	•Insufficient rigidity of the drill	•Reduce the drill overhang as much as possible. •Increase the feed at entry when the low speed feed is selected in standard cutting condition range. •Use a bushing or a center drill.
		•Insufficient rigidity of the machine and workpiece	•Change the clamp method to the one with rigidity.
		•Inappropriate entry into the workpiece	•Avoid interruption at entry into the workpiece. •Lower the feed by 10 % at entry.
		•High workpiece hardness	•Lower the feed by 10 %.
		•Inappropriate honing	•Check if honing has been made to the center of cutting edge.
	Peripheral cutting edge	•Insufficient drill rigidity	•Lower the cutting speed by 10 %. •Increase the feed at entry when the low speed feed is selected in standard cutting condition range.
		•Inappropriate drill mounting accuracy	•Check the run out accuracy after drill installation. (0.03 mm or less)
		•Insufficient machinery and workpiece rigidity	•Change the clamp method to the one with rigidity. •Lower the feed during entering into and leaving from the workpiece.
		•Inappropriate honing	•Check if honing has been made to the cutting edge periphery.
	Margin	•Insufficient machine and workpiece rigidity	•Change the clamp method to the one with rigidity.
		•Insufficient drill rigidity	•Use smallest possible overhang. •Use a bushing or center drill.
		•Regrinding timing and insufficient amount of reground stock	•Shorten the regrinding timing.
		•Intermittent cutting when entering or exiting the cut	•Avoid interruption at entry and exit. •Lower the feed by about 50 % during entering into and leaving from the workpiece.
Breakage		•Tendency to cause chipping or develop abnormal wear	•Check the failure mode condition before breakage and find out the wear and chip countermeasures.
		•Chip packing in the drill flutes	•Review the cutting conditions. •For internal coolant supply, raise the supply pressure of cutting fluid. •Use peck feed for deep holes.
		•Insufficient machine output	•Review the cutting conditions. •Use the machine with high power.
Insufficient hole accuracy		•Insufficient rigidity of the machinery and workpiece	•Change to the clamp method with rigidity
		•Inappropriate drill installation accuracy	•Check the run out accuracy of drill mounting. (0.03 mm or less)
		•Chip packing in the flutes.	•Review the cutting conditions. •Raise the cutting oil supply pressure. •Use peck-feed for deep holes.
		•Inappropriate edge sharpening accuracy	•Check the edge shape accuracy.
Prolonged chips		•Inappropriate cutting conditions	•Increase the feed by 10 % within standard conditions.
		•Inappropriate honing	•Provide the appropriate honing.
		•Cutting edge with chipping or breakage	•Lower the cutting speed by 10 %.

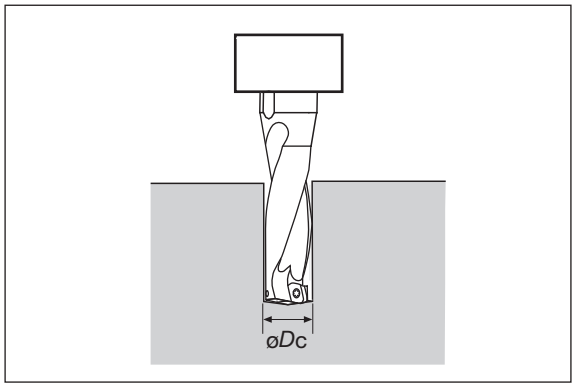
Drilling Tools

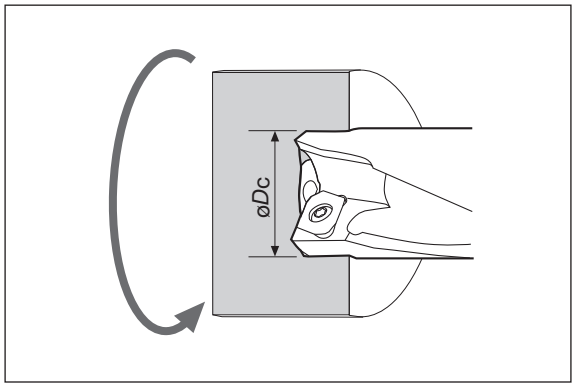
Nomenclature for TAC drill



Calculation formulas for TAC drill

●Cutting speed





●When calculating cutting speed from number of revolutions: (Drilling formulas)

$$v_c = \frac{\pi \times \varnothing D_c \times n}{1000} \quad (\text{m/min})$$

v_c : Cutting speed (m/min)
$\varnothing D_c$: Drill diameter (mm)
n : Number of revolution (min^{-1})
$\pi \approx 3.14$

●When calculating required number of revolutions from cutting speed: (Drilling formulas)

$$n = \frac{1000 \times v_c}{\pi \times \varnothing D_c} \quad (\text{min}^{-1})$$

●When calculating cutting speed from number of revolutions: (Where the workpiece rotates.)

$$v_c = \frac{\pi \times \varnothing D_c \times n}{1000} \quad (\text{m/min})$$

v_c : Cutting speed (m/min)
$\varnothing D_c$: Drilling diameter (mm)
n : Number of revolution (min^{-1})
$\pi \approx 3.14$

●When calculating required number of revolutions from cutting speed: (Where the workpiece rotates.)

$$n = \frac{1000 \times v_c}{\pi \times \varnothing D_c} \quad (\text{min}^{-1})$$

●Calculation of feed speed

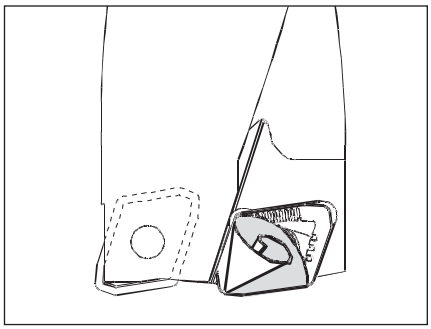
$$v_f = f \times n \quad (\text{mm/min})$$

v_f : Feed speed (mm/min)
f : Feed (mm/rev)
n : Number of revolution (min^{-1})

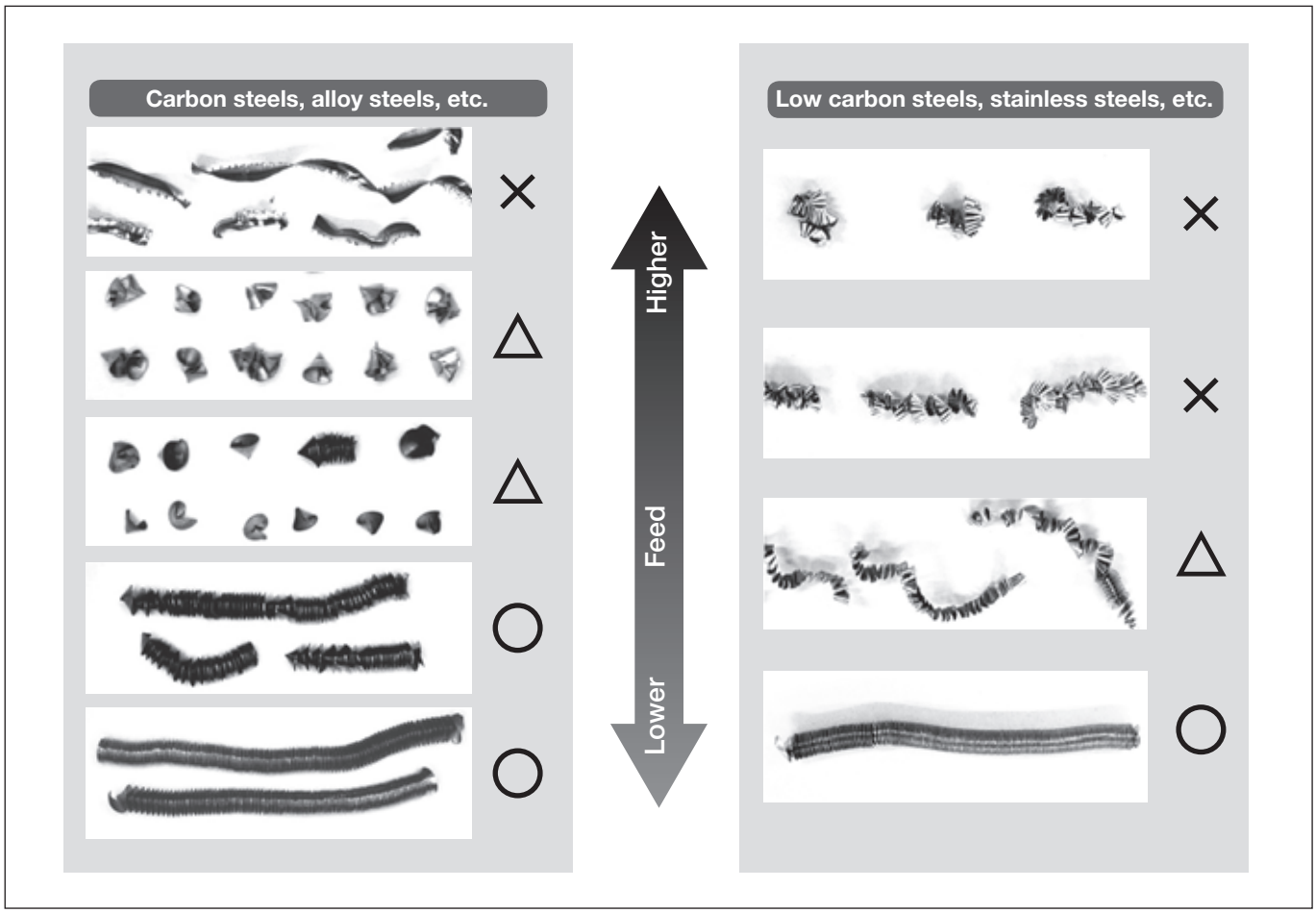
Chip shapes

● Chip shape produced with central insert

- A conical coil shape whose apex point coincides with the rotating center of the drill is the basic shape. The chips are broken into small sections with increases in feed. However, excessively high feed causes the chip to increase in thickness and develops vibration which disturbs stable machining.
- In TDX drills, ○ marked chips shown below are the most preferable shapes. This type of chip is broken into adequate lengths by centrifugal forces when used in tool-rotating condition. On the other hand, when used in work-rotating condition such as on a lathe, a continuously long chip is often produced without entangling.

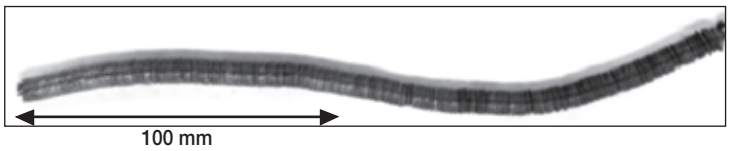


● Relation between chip shapes and feeds (In the case of central insert)



● Example of chip shape in work-rotating applications (In the case of central insert)

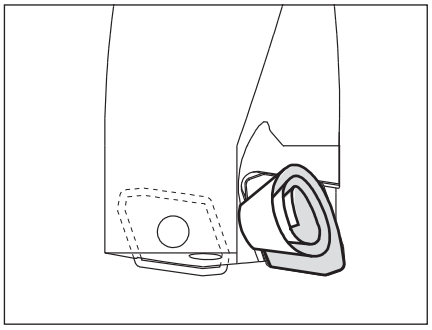
(ø26, S45C, V_c = 100 m/min, f = 0.1 mm/rev)



Drilling Tools

● Chip shape produced with peripheral insert

- Chip problems such as entangling are mainly caused by chips produced with the peripheral insert. These problems are dependent on the types of work material and the cutting conditions.
- As shown below, when the feed is extremely low, the chips jump over the chipbreaker groove and the continuously long chips may wrap around the drill body.
- When the feed is too high, the chips increase in thickness and can not be curled.
- Therefore, it is important to select proper cutting conditions to suit the machining so that well controlled chips will be formed.

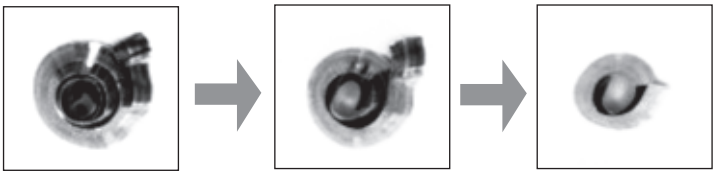


Medium to high carbon steels, alloy steels, etc.

As shown below, several turns of coil are an ideal shape.
As the feed increases, the curl radius and the number of turns tend to decrease.

● Typical chip shapes of general steels

● Variation of chip shapes relating to feeds

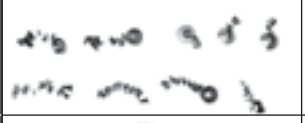
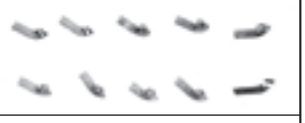
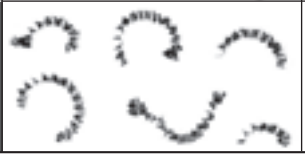
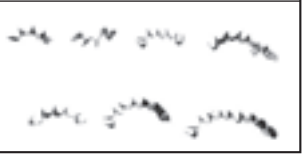


f = 0.07 mm/rev　　*f* = 0.1 mm/rev　　*f* = 0.13 mm/rev

Stainless steels, low-carbon steels, low-alloy steels, etc.

- When machining long-chip materials such as stainless steels and mild steels, the wrong selection of cutting conditions results in chip entangling and tool breakage at worst. Therefore, cutting conditions should be carefully selected.
- "C" shaped, continuous coils of several to ten turns having adequately divided lengths are the ideal shape.

● Ideal chip shapes

	Stainless steel (JIS SUS 304) (ø22, *V*c = 100 m/min, *f* = 0.1 mm/rev)	**Mild steel (JIS SS400)** (ø22, *V*c = 160 m/min, *f* = 0.08 mm/rev)
DS chipbreaker		
DJ chipbreaker		

For machining stainless steels or low carbon steels, DS chipbreaker is recommended.
When using a TDX drill in tool-rotating condition, DS chipbreaker produces compact chips and allows more stable machining than DJ chipbreaker. When using it in work-rotating condition, DS chipbreaker provides outstanding affect on chip control.

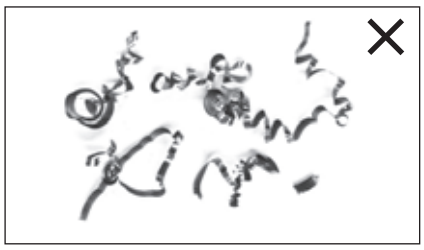
● Chip shapes which tend to entangle and remedies against them

① Apple-peel-like chips

These chips are often produced in machining mild steels or low-carbon steels at low-speeds and low-feeds.

Remedies

Increase the cutting speed in stages by 20% within the range of standard cutting conditions. If there is no effect, increase the feed by about 10 % as the cutting speed is raised by 20%.



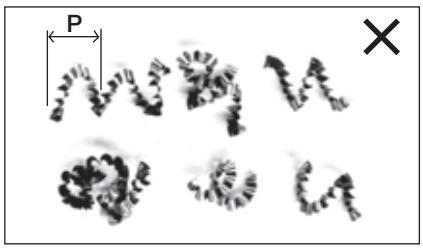
Apple-peel-like chips (Without curling)

② Short-lead chips

These chips are often produced in machining stainless steels at low-feeds and tend to entangle to the tool in spite of short length.

Remedies

Increase the feed by about 10 %. If there is no effect, increase the cutting speed in stages by 10% within the range of standard cutting conditions.



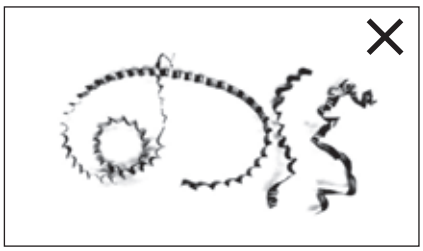
Continuously curled "C" shape chips with short lead (P).

③ Very long chips

Often produced in machining mild steels or low-carbon steels under improper cutting conditions.

Remedies

Increase the cutting speed in stages by 20% within the range of standard cutting conditions. If there is no effect, decrease the feed by about 10 % as the cutting speed is raised by 20%.

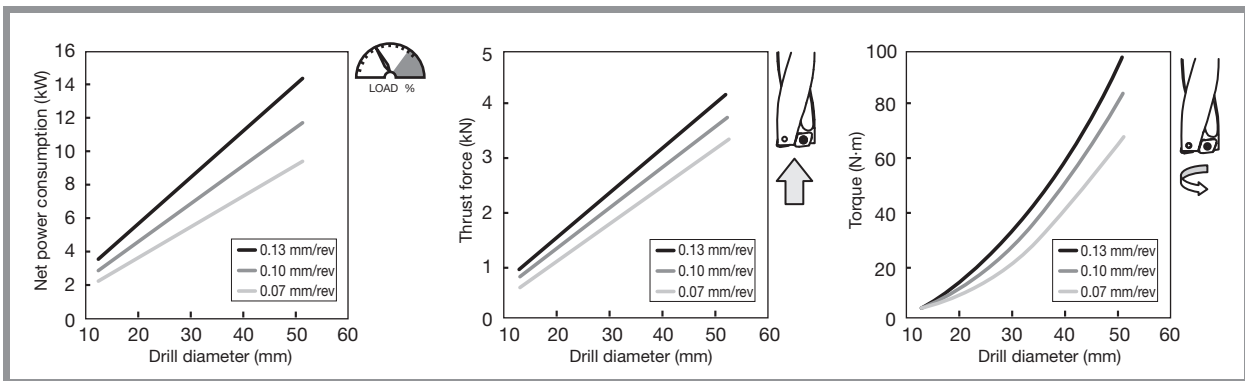


Continuously coiled long chips

Cutting forces

The charts below show a guideline for cutting forces. Use TDX drills on a machine with ample power and sufficient rigidity.

● Guidelines for cutting forces



Cutting speed: v_c = 100 m/min
Work material: Alloy steel (JIS SCM440), 240HB
Cutting fluid: Used

Drilling Tools

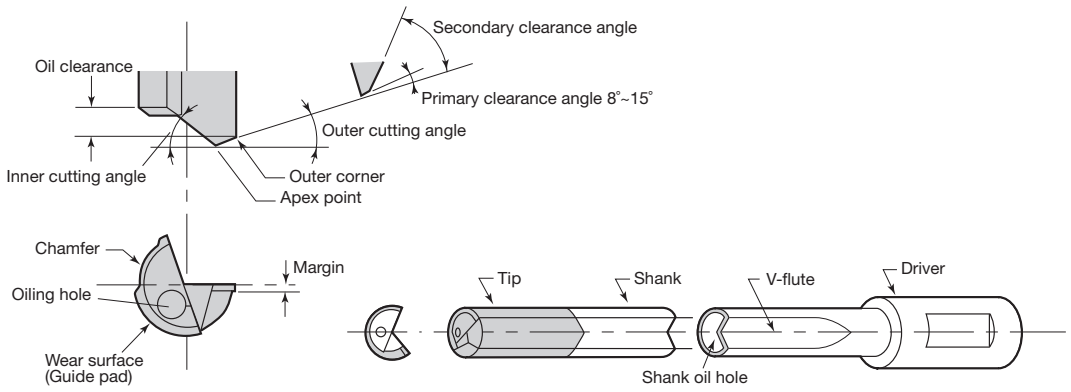
Troubleshooting for indexable drills

Problem			Cause	Countermeasure
Abnormal wear	Central cutting edge	Relief surface	Inappropriate cutting conditions	● Increase the cutting speed by 10 % within standard conditions. ● Lower the feed by 10 %.
	Peripheral cutting edge	Relief surface	Inappropriate cutting conditions	● Increase the cutting speed by 10 % within standard conditions. ● When the feed is extremely low or high, set up it within standard conditions.
	Common	Relief surface	Varieties and supply of cutting fluid	● Confirm that the cutting fluid flow is higher than 7 liter/min. ● The concentration of cutting fluid must be higher than 5 %. ● Use the cutting fluid superior in lubricity. ● Change to internal cutting fluid supply from external one.
			Vibration in drilling	● Change to the machine with higher torque. ● Change to the clamp method with rigidity. ● Change the drill setting method.
			Unsuitable for selection of grade	● Change the grade to high wear resistant.
			Looseness of screws	● Tighten the screw.
		Crater	Cutting heat is too high	● Change to internal cutting fluid supply from external one. ● Increase the supply rate of the cutting fluid. (Higher than 10 liter/min.) ● Lower the feed by 20 % within standard conditions. ● Lower the cutting speed by 20 % within standard conditions.
			Excessive chip welding	● Lower the feed by 20 % within standard conditions. ● Lower the cutting speed by 20 % within standard conditions.
		Chipbreaker	Chip packing	● Increase the cutting speed by 20% and lower the feed by 20% within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
Chipping and fracture	Central cutting edge	The rotation center of drill	Misalignment for workpiece rotation	● Set the misalignment to 0 ~ 0.2 mm.
			Large offset	● Check the manual and use the tool in the allowable offset range.
			No flatness of machined surface	● Flatten the entry surface in pre-machining. ● Set the feed for lower than 0.05 mm/rev in rough surface area.
			High feed	● Lower the feed by 20 ~ 50 % within standard conditions.
			Using a chipping corner	● Confirm the corner when exchanging inserts.
	Peripheral cutting edge	Peripheral corner area	Using inserts in excess of tool-life	● Exchange the corner or the insert before the nose wear reaches 0.3 mm.
			No flatness of machined surface	● Flatten the entry surface in pre-machining. ● Set the feed for lower than 0.05 mm/rev at rough surface area.
			The existence of interrupted area	● Set the feed for lower than 0.05 mm/rev in interrupted area.
			Using a chipped corner	● Confirm the corner when exchanging inserts.
	Common	The unused corner area and cutting edge	High hardness of workpiece	● Increase the cutting speed by 20 % and lower the feed by 20 % within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
			Chip packing	● Lower the feed by 20 % within standard conditions.
			Machinery impact	● Change to continuous feed in case of pick feeding.
		Contact boundary	Using inserts in excess of tool-life	● Exchange the corner or the insert before the nose wear reaches 0.3 mm.
			Vibration in drilling	● Change to the machine with higher rigidity. ● Change to the clamp method with rigidity. ● Change the drill setting method.
		Flaking	High hardness of workpiece	● Set the feed for lower than 0.05 mm/rev.
			Thermal impact	● Change to internal cutting fluid supply from external one. ● Lower the feed by 20 % within standard conditions.
		Common	Unsuitable for selection of grade	● Change the grade to toughress.
			Looseness of screws	● Tighten the screw.

Problem		Cause	Countermeasure
Scratch marks on the tool	The tool periphery	Misalignment of workpiece rotation	● Set the misalignment to 0 ~ 0.2 mm.
		Offset machining in excess of allowable range	● Use the tool in the allowable offset range.
		Offset direction reduced diameter of workpiece	● Set offset direction extended diameter of workpiece
		No flatness of the entry surface	● Flatten the entry surface in pre-machining. ● Set the feed for lower than 0.05 mm/rev in rough surface area.
		Chipping of peripheral cutting edge	● Exchange the insert.
		Bend of workpiece	● Change to the clamp method with rigidity.
		Chip packing	● Increase the cutting speed by 20 % and lower the feed by 20 % within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
Inappropriate hole accuracy	Hole diameter	Misalignment for workpiece rotation	● Set the misalignment to 0 ~ 0.2 mm.
		Inappropriate offset contents	● Adjust offset contents.
		No flatness of the entry surface	● Flatten the entry surface in pre-machining. ● Set the feed for lower than 0.05 mm/rev at rough surface area.
		Bend of workpiece	● Change to the clamp method with rigidity.
	Roughness	Varieties and supply of cutting fluid	● The concentration of cutting fluid must be higher than 5 %. ● Use the cutting fluid superior in lubricity. ● Change to internal cutting fluid supply from external one.
		Inappropriate cutting conditions	● Increase the cutting speed by 20 % within standard conditions. ● Lower the feed by 20 % within standard conditions.
	Common	Failures of inserts	● Exchange the insert.
		Chip packing	● Increase the cutting speed by 20 % and lower the feed by 20 % within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
		Looseness of screws	● Tighten the screw.
Chip control	Prolonged and twisted of chips	Inappropriate cutting conditions	● Work within standard conditions. ● Increase the cutting speed by 10 % within standard conditions. ● Increase the feed by 10 % within standard conditions.
		Failures of inserts	● Exchange inserts.
		Machining by external fluid supply	● Change to internal cutting fluid supply from external one. ● Work by step feed. ● Use dwell function for 0.1 sec approximately.
		Chips around the central cutting edge	● There is a tendency to shorten the chips when shifting to higher speed and feed.
	Chip packing	Fluid supply	● Change to internal cutting fluid supply from external one. ● Raise the fluid pressure (for higher than 1.5 MPa).
		Inappropriate cutting conditions	● Increase the cutting speed by 20 % and lower the feed by 20 % within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
	Common	Large failure of drill holders	● Exchange the drill holder.
		Looseness of screws	● Tighten the screw.
Others	Chatter	Inappropriate cutting conditionss	● Lower the cutting speed by 20 % within standard conditions. ● Increase the feed by 10 % within standard conditions.
		Large wear of inserts	● Exchange the insert.
		Vibration in drilling	● Change to the machine with higher torque rigidity. ● Change to the clamp method with rigidity. ● Change the drill setting method.
		Looseness of screws	● Tighten the screw.
	Machine stop	Insufficient machine power and torque	● Use the range of number of revolutions suited machine spec. Lower the feed by 20 ~ 50%.
		Burned inserts	● Exchange inserts before the failure becomes larger. ● Check the oil-hole plug screw is tightly screwed in place. ● Check that the fluid flows powerfully from the drill. ● Lower the cutting speed and the feed by 20 % within standard conditions.
	Large burr	Failures of inserts	● Exchange the insert.
		Inappropriate cutting conditions	● Lower the feed by 20 ~ 50% just before leaving from the workpiece.

Drilling Tools

Nomenclature for gun drill



Troubleshooting in gun drilling

Trouble		Possible causes	Countermeasures
Breaking of drill	At entry into workpiece	Cause in machine	Is workpiece clamp loose?
			Is the guide bushing not separated from entry surface?
			Is machining under rapid feed?
			Is alignment of bushing set correctly?
			Is the shape of bushing correct?
		Cause in drill	Is the gun drill set properly?
			Is regrinding in order?
		Inappropriate cutting condition	Is the feed too high?
		Cause in workpiece	Is engaging not slanted?
	During drilling	Cause in machine	Is workpiece clamp loose?
			Is the shape of bushing correct?
			Is the feed speed (v_f) uniform?
			Is number of revolutions uniform?
		Cause in drill	Is there an abnormal failure?
		Inappropriate cutting condition	Is the feed (f) set properly?
		Cause in workpiece	Change to standard gun drill.
		Others	Is there chip packing?
	At exit from workpiece	Cause in drill	Is tip length too long?
			Is selection of guide pad appropriate?
			Is fluid hole clearance excessive?
		Inappropriate cutting condition	Is the feed too high at breaking-through?
		Cause in workpiece	Is there inclined surface?
	During retracting	Cause in machine	Is workpiece clamp loose in machining?
		Inappropriate cutting condition	Is there increase of burnishing torque due to small hole diameter?

Troubleshooting in gun drilling

Trouble		Possible causes	Countermeasures
Short tool life	Abnormal wear	Cause in machine	Is selection of cutting fluid correct?
			Carry out through filtration of cutting fluid.
			Is clearance between guide bushing and drilling excessive?
			Is alignment of bushing set correct?
			Check concentricity of spindle and guide bushing.
			In case fluid temperature too high, increase tank capacity.
		Cause in drill	Appropriate selection of guide pad.
			Is regrinding correct?
			Is drill overall length excessive?
			In case wear too large, regrind the gun drill (or check tool life criterion).
		Inappropriate cutting condition	Is the cutting speed too high?
			Is the feed (f) too high?
			Is the fluid pressure too high?
		Cause in workpiece	Is material quality uniform?
Chip control	Chip packing	Cause in machine	Is the shape of bushing correct?
			Is the feed speed (v_f) uniform?
			Is number of revolutions uniform?
			Enlarge chip box.
		Inappropriate cutting condition	Correct selection of the feed (f).
			Correct selection of fluid amount.
		Cause in workpiece	Change to machining with standard gun drill.
			Change the shape of cutting edge so that cores become small .
			Is material quality uniform?
	Chip entanglement	Cause in drill	Is cutting edge broken or chipped?
			Is outer corner wear excessive?
		Inappropriate cutting condition	Correct selection of the feed (f).
		Cause in workpiece	Make center hole as large as drilling diameter or smaller than it. Lower fluid pressure.

Drilling Tools

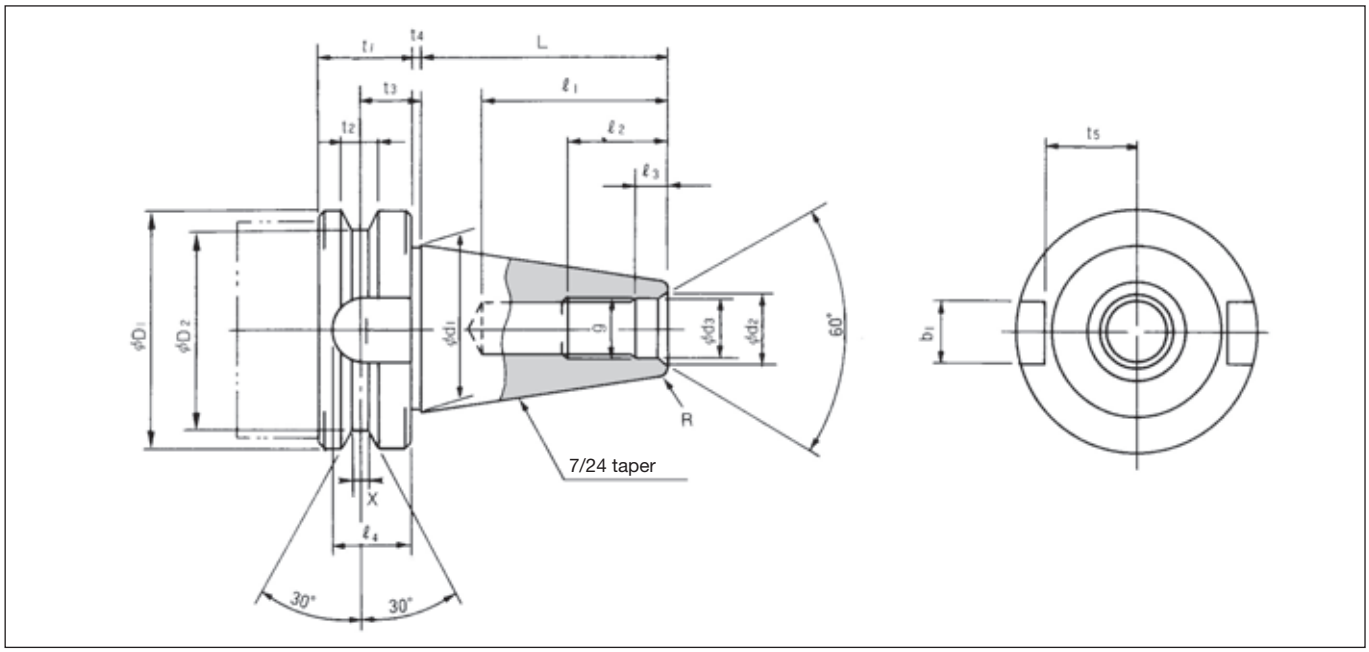
Troubleshooting in gun drilling

Trouble		Possible causes	Countermeasures
Hole accuracy	Rough finish	Cause in machine	Is workpiece clamp loose?
			Use non-water soluble cutting fluid.
			Carry out through filtration of cutting fluid.
			Is spindle run out too large?
			Is clearance between guide bushing and drilling excessive?
			Is the feed speed (v_f) uniform?
			Is number of revolutions uniform?
		Cause in drill	Is there an abnormal failure?
			Is regrinding correct?
		Inappropriate cutting condition	Is the feed (f) too high?
		Others	Is there chip packing?
	Unacceptable roughness, cylindricity, and oversize	Cause in machine	Is clearance between guide bushing and drilling excessive?
			Is the guide bushing not separated from entry surface?
			Use non-water soluble cutting fluid.
			Decrease concentrity of guide bushing and spindle.
		Cause in drill	Is there an abnormal failure?
			Is regrinding correct?
		IInappropriate cutting condition	Correct selection of the feed (f).
		Cause in workpiece	Change to machining with standard gun drill.
		Others	Is there chip packing?
	Bending of hole	Cause in machine	Is workpiece clamp loose?
			Is the guide bushing not separated from entry surface?
			Decrease concentrity of guide bushing and spindle.
			Is clearance between guide bushing and drilling excessive?
		Cause in drill	Change the shape of guide pad.
			Is regrinding correct?
		Inappropriate cutting condition	Is the feed (f) too high?
		Cause in workpiece	Are there faults and unevenness?
			Is engaging not slanted?
			Change to machining with standard gun drill.

MEMO

Standards on Tapers

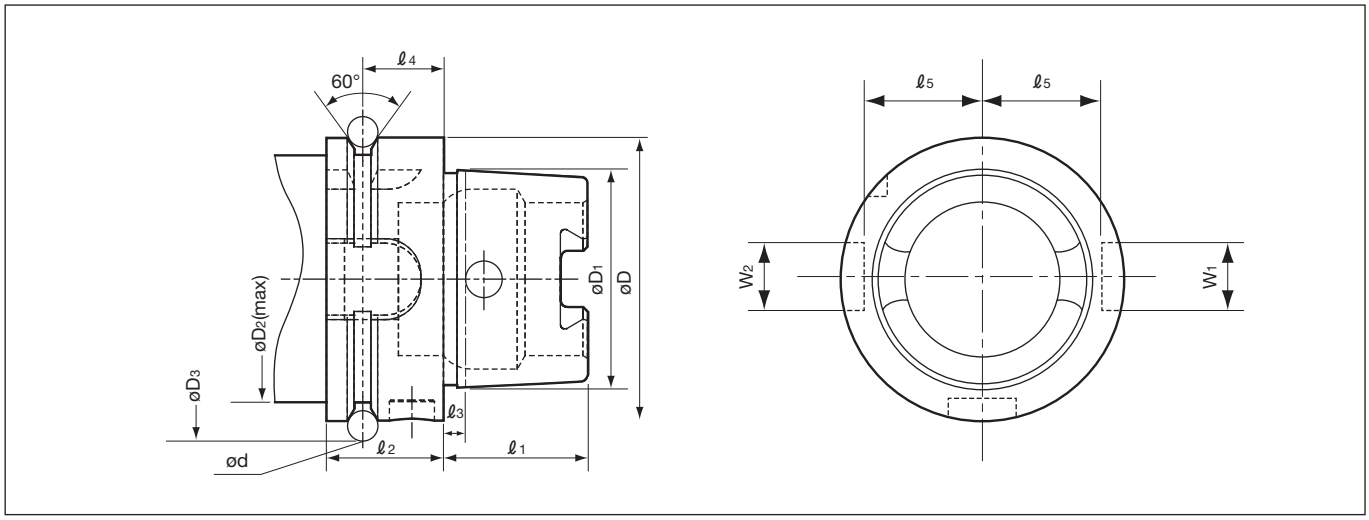
Taper shank for machining center (Japan Machine-Tool Builder's Association Standard)



(unit : mm)

Code	øD1	øD2	t1	t2	t3	t4	ød1	ød2	ød3	L	ℓ1 (min.)	ℓ2 (min.)	ℓ3	g	ℓ4 (min.)	b1	t5
BT30	46	38	20	8	13.6	2	31.75	14	12.5	48.4	34	24	7	M12	17	16.1	16.3
BT40	63	53	25	10	16.6	2	44.45	19	17	65.4	43	30	9	M16	21	16.1	22.6
BT45	85	73	30	12	21.2	3	57.15	23	21	82.8	53	38	11	M20	26	19.3	29.1
BT50	100	85	35	15	23.2	3	69.85	27	25	101.8	62	45	13	M24	31	25.7	35.4

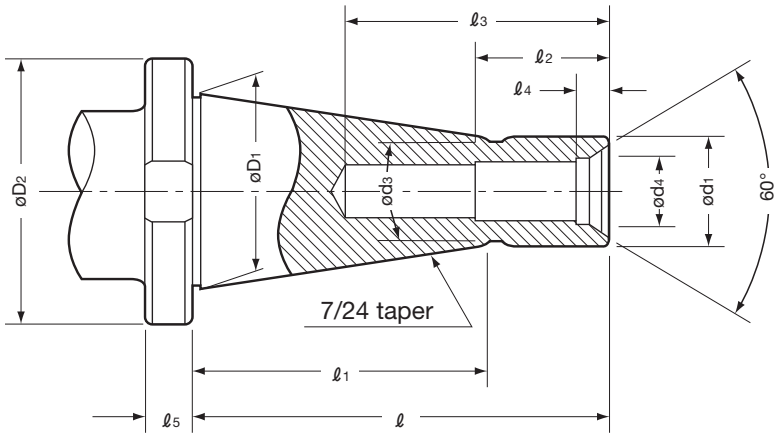
HSK Taper Shank (Hollow taper interface with flange contact surface. ISO12164-1:2001(E))



(unit : mm)

Style A	øD	øD1	øD2	øD3	ød	ℓ1	ℓ2	ℓ3	ℓ4	ℓ5	W1	W2
HSK-A32	32	24	26	37	4	16	20	3.2	16	13	9	7
HSK-A40	40	30	34	45		20		4		17	11	9
HSK-A50	50	38	42	59.3	7	25	26	5	18	21	14	12
HSK-A63	63	48	53	72.3		32		6.3		26.5	18	16
HSK-A80	80	60	67	88.8		40		8		34	20	18
HSK-A100	100	75	85	109.75		50	29	10	20	44	22	20

7/24 taper arbor (Conformed to JIS)

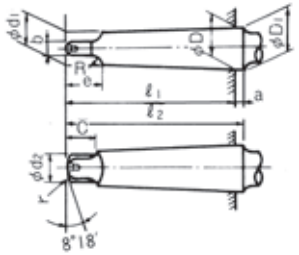


(unit : mm)

NT No.	øD1	ød1	ℓ	ℓ1	g ISO	ℓ2	ℓ3	ød3	ød4 ISO	ℓ4
30	31.75	17.4	70	50	M12	24	34	16.5	13	6
40	44.45	25.3	95	67	M16	30	43	24	17	8
45	57.15	32.4	110	86	M20	40	53	30	21	10
50	69.85	39.6	130	105	M24	45	60	38	26	11.5

Morse taper shank (Conformed to JIS)

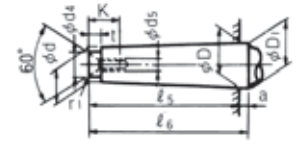
●With tang



(unit : mm)

MT. No	øD	a	øD1 (approx)	ød1 (approx)	ℓ1 (max.)	ℓ2 (max.)	ød2 (max.)	b	c (max.)	e (max.)	R (max.)	r
0	9.045	3	9.2	6.1	56.5	59.5	6.0	3.9	6.5	10.5	4	1
1	12.065	3.5	12.2	9.0	62.0	65.5	8.7	5.2	8.5	13.5	5	1.2
2	17.780	5	18.0	14.0	75.0	80.0	13.5	6.3	10	16	6	1.6
3	23.825	5	24.1	19.1	94.0	99.0	18.5	7.9	13	20	7	2
4	31.267	6.5	31.6	25.2	117.5	124.0	24.5	11.9	16	24	8	2.5
5	44.399	6.5	44.7	36.5	149.5	156.0	35.7	15.9	19	29	10	3
6	63.348	8	63.8	52.4	210.0	218.0	51.0	19	27	40	13	4

●With thread



(unit : mm)

MT. No	øD	a	øD1 (approx)	ød (approx)	ℓ5 (max.)	ℓ6 (max.)	ød4 (max.)	ød5	K (max.)	t (max.)
0	9.045	3	9.2	6.4	50	53	6	-	-	4
1	12.065	3.5	12.2	9.4	53.5	57	9	M 6	16	5
2	17.780	5	18.0	14.6	64	69	14	M 10	24	5
3	23.825	5	24.1	19.8	81	86	19	M 12	28	7
4	31.267	6.5	31.6	25.9	102.5	109	25	M 16	32	9
5	44.399	6.5	44.7	37.6	129.5	136	35.7	M 20	40	9
6	63.348	8	63.8	53.9	182	190	51	M 24	50	12

International Tolerance (IT Grades)

International Tolerance (IT Grades)

IT grades shows a tolerance allowable for difference of the diameters of a hole and a shaft. As the number added after IT increases, the tolerance becomes rough. Depending on the basic size, the tolerance value in each grade varies.
In the catalog, IT grades are shown as a guide of dimensional dispersion in the diameters of holes machined with the drill. For information, H8 tolerance for a ø8.0 hole is 0 to + 0.022 mm, the width of the value is the same as that of IT 8.
In the Table shown below, tolerance areas attainable with typical drilling tools are distinguished by using different colours. Solid drills are generally used for machining holes of IT 9 to 12. For machining a hole of better than IT 8, finishing process such as reaming is required. For a hole better than IT 5, high-precision finishing is required. Above description is based on machining of general steel. In practice, the IT grade attained with the tool varies widely depending on the hardness and the composition of the work material.

● IT (International Tolerance) Grades

Basic sizes (mm)		International Tolerance Grades																	
		IT1	IT2	IT3	IT4	IT5	IT6	IT7	IT8	IT9	IT10	IT11	IT12	IT13	IT14	IT15	IT16	IT17	IT18
>	≤						(μm)									(mm)			
-	3	0.8	1.2	2	3	4	6	10	14	25	40	60	0.1	0.14	0.25	0.4	0.6	1	1.4
3	6	1	1.5	2.5	4	5	8	12	18	30	48	75	0.12	0.18	0.3	0.48	0.75	1.2	1.8
6	10	1	1.5	2.5	4	6	9	15	22	36	58	90	0.15	0.22	0.36	0.58	0.9	1.5	2.2
10	18	1.2	2	3	5	8	11	18	27	43	70	110	0.18	0.27	0.43	0.7	1.1	1.8	2.7
18	30	1.5	2.5	4	6	9	13	21	33	52	84	130	0.21	0.33	0.52	0.84	1.3	2.1	3.3
30	50	1.5	2.5	4	7	11	16	25	39	62	100	160	0.25	0.39	0.62	1	1.6	2.5	3.9
50	80	2	3	5	8	13	19	30	46	74	120	190	0.3	0.46	0.74	1.2	1.9	3	4.6
80	120	2.5	4	6	10	15	22	35	54	87	140	220	0.35	0.54	0.87	1.4	2.2	3.5	5.4
120	180	3.5	5	8	12	18	25	40	63	100	160	250	0.4	0.63	1	1.6	2.5	4	6.3
180	250	4.5	7	10	14	20	29	46	72	115	185	290	0.46	0.72	1.15	1.85	2.9	4.6	7.2
250	315	6	8	12	16	23	32	52	81	130	210	320	0.52	0.81	1.3	2.1	3.2	5.2	8.1
315	400	7	9	13	18	25	36	57	89	140	230	360	0.57	0.89	1.4	2.3	3.6	5.7	8.9
400	500	8	10	15	20	27	40	63	97	155	250	400	0.63	0.97	1.55	2.5	4	6.3	9.7
500	630	9	11	16	22	32	44	70	110	175	280	440	0.7	1.1	1.75	2.8	4.4	7	11
630	800	10	13	18	25	36	50	80	125	200	320	500	0.8	1.25	2	3.2	5	8	12.5
800	1000	11	15	21	28	40	56	90	140	230	360	560	0.9	1.4	2.3	3.6	5.6	9	14
1000	1250	13	18	24	33	47	66	105	165	260	420	660	1.05	1.65	2.6	4.2	6.6	10.5	16.5
1250	1600	15	21	29	39	55	73	125	195	310	500	780	1.25	1.95	3.1	5	7.8	12.5	19.5
1600	2000	18	25	35	46	65	92	150	230	370	600	920	1.5	2.3	3.7	6	9.2	15	23
2000	2500	22	30	41	55	78	110	175	280	440	700	1100	1.75	2.8	4.4	7	11	17.5	28
2500	3150	26	36	50	68	96	135	210	330	540	860	1350	2.1	3.3	5.4	8.6	13.5	21	33

Tolerance area requiring finishing process such as with a reamer.

Tolerance area attainable with a solid drill.

Tolerance area attainable with an indexable drill.

Deviations of Shafts to be Used in Commonly Used Fits.

Deviations of Shafts to be Used in Commonly Used Fits. (JIS B0401 extrac)

Basic size step (mm)		Tolerance zone class of shaft (μm)															
>	≤	e9	f6	f7	f8	g5	g6	h5	h6	h7	h8	h9	js5	js6	js7	k5	k6
–	3	−14 −39	−6 −12	−6 −16	−6 −20	−2 −6	−2 −8	0 −4	0 −6	0 −10	0 −14	0 −25	±2	±3	±5	+4 0	+6 0
3	6	−20 −50	−10 −18	−10 −22	−10 −28	−4 −9	−4 −12	0 −5	0 −8	0 −12	0 −18	0 −30	±2.5	±4	±6	+6 +1	+9 +1
6	10	−25 −61	−13 −22	−13 −28	−13 −35	−5 −11	−5 −14	0 −6	0 −9	0 −15	0 −22	0 −36	±3	±4.5	±7	+7 +1	+10 +1
10	14	−32 −75	−16 −27	−16 −34	−16 −43	−6 −14	−6 −17	0 −8	0 −11	0 −18	0 −27	0 −43	±4	±5.5	±9	+9 +1	+12 +1
14	18																
18	24	−40 −92	−20 −33	−20 −41	−20 −53	−7 −16	−7 −20	0 −9	0 −13	0 −21	0 −33	0 −52	±4.5	±6.5	±10	+11 +2	+15 +2
24	30																
30	40	−50 −112	−25 −41	−25 −50	−25 −64	−9 −20	−9 −25	0 −11	0 −16	0 −25	0 −39	0 −62	±5.5	±8	±12	+13 +2	+18 +2
40	50																
50	65	−60 −134	−30 −49	−30 −60	−30 −76	−10 −23	−10 −29	0 −13	0 −19	0 −30	0 −46	0 −74	±6.5	±9.5	±15	+15 +2	+21 +2
65	80																
80	100	−72 −159	−36 −58	−36 −71	−36 −90	−12 −27	−12 −34	0 −15	0 −22	0 −35	0 −54	0 −87	±7.5	±11	±17	+18 +3	+25 +3
100	120																

In every step given in the table, the value on the upper side shows the upper deviation and the value on the lower side, the lower deviation.

Deviations of Holes to be Used in Commonly Used Fits. (JIS B0401 extrac)

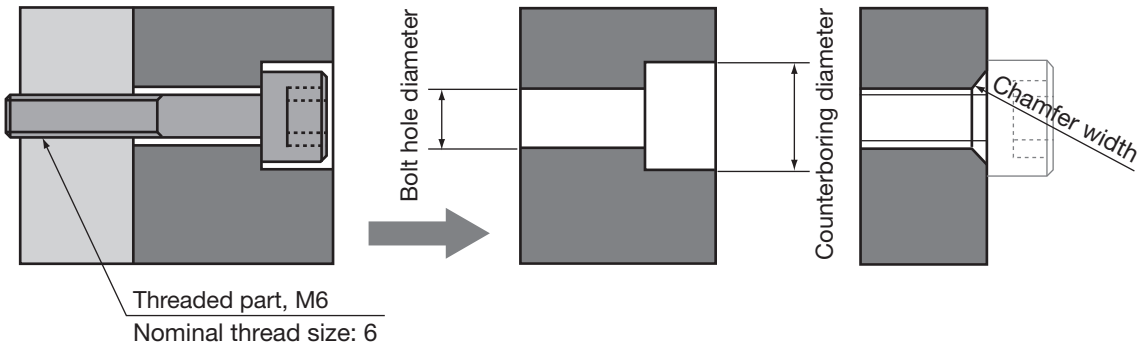
Basic size step (mm)		Tolerance zone class of hole (μm)															
>	≤	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10	JS6	JS7	K6	K7
–	3	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0	+14 0	+25 0	+40 0	±3	±5	0 −6	0 −10
3	6	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0	+18 0	+30 0	+48 0	±4	±6	+2 −6	+3 −9
6	10	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0	+22 0	+36 0	+58 0	±4.5	±7	+2 −7	+5 −10
10	14	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+17 +6	+24 +6	+11 0	+18 0	+27 0	+43 0	+70 0	±5.5	±9	+2 −9	+6 −12
14	18																	
18	24	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+20 +7	+28 +7	+13 0	+21 0	+33 0	+52 0	+84 0	±6.5	±10	+2 −11	+6 −15
24	30																	
30	40	+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+25 +9	+34 +9	+16 0	+25 0	+39 0	+62 0	+100 0	±8	±12	+3 −13	+7 −18
40	50																	
50	65	+90 +60	+106 +60	+134 +60	+49 +30	+60 +30	+76 +30	+29 +10	+40 +10	+19 0	+30 0	+46 0	+74 0	+120 0	±9.5	±15	+4 −15	+9 −21
65	80																	
80	100	+107 +72	+126 +72	+159 +72	+58 +36	+71 +36	+90 +36	+34 +12	+47 +12	+22 0	+35 0	+54 0	+87 0	+140 0	±11	±17	+4 −18	+10 −25
100	120																	

In every step given in the table, the value on the upper side shows the upper deviation and the value on the lower side, the lower deviation.

Bolt Hole Diameters

Guideline for bolt hole diameters

A bolt hole diameter is determined as a thread diameter plus some clearance.



● Bolt hole diameter

(Unit: mm)

Nominal thread size	Bolt hole diameter			Chamfer width	Counterboring diameter
	Class 1	Class 2	Class 3		
1	1.1	1.2	1.3	0.2	3
1.2	1.3	1.4	1.5	0.2	4
1.4	1.5	1.6	1.8	0.2	4
1.6	1.7	1.8	2	0.2	5
1.7	1.8	2	2.1	0.2	5
1.8	2	2.1	2.2	0.2	5
2	2.2	2.4	2.6	0.3	7
2.2	2.4	2.6	2.8	0.3	8
2.3	2.5	2.7	2.9	0.3	8
2.5	2.7	2.9	3.1	0.3	8
2.6	2.8	3	3.2	0.3	8
3	3.2	3.4	3.6	0.3	9
3.5	3.7	3.9	4.2	0.3	10
4	4.3	4.5	4.8	0.4	11
4.5	4.8	5	5.3	0.4	13
5	5.3	5.5	5.8	0.4	13
6	6.4	6.6	7	0.4	15
7	7.4	7.6	8	0.4	18
8	8.4	9	10	0.6	20
10	10.5	11	12	0.6	24
12	13	13.5	14.5	1.1	28
14	15	15.5	16.5	1.1	32
16	17	17.5	18.5	1.1	35
18	19	20	21	1.1	39
20	21	22	24	1.2	43
22	23	24	26	1.2	46
24	25	26	28	1.2	50
27	28	30	32	1.2	55

Symbols of Metals

● Carbon steel and alloy steels for structural use

Type	Japan	International	Other countries				
			U.S.A.	Great Britain	Germany	France	Russia
	JIS	ISO	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Carbon steel	S10C	C10	1010	C10 C10E C10R	C10E C10R	C10E C10R	–
	S15C	C15E4 C15M2	1015	C15 C15E C15R	C15E C15R	C15E C15R	–
	S20C	–	1020	C22, C22E C22R	C22 C22E C22R	C22 C22E C22R	–
	S25C	C25 C25E4 C25M2	1025	C25 C25E C25R	C25 C25E C25R	C25 C25E C25R	–
	S30C	C30 C30E4 C30M2	1030	C30 C30E C30R	C30 C30E C30R	C30 C30E C30R	30Г
	S35C	C35 C35E4 C35M2	1035	C35 C35E C35R	C35 C35E C35R	C35 C35E C35R	35Г
	S40C	C40 C40E4 C40M2	1039 1040	C40 C40E C40R	C40 C40E C40R	C40 C40E C40R	40Г
	S43C	–	1042 1043	080A42	–	–	40Г
	S45C	C45 C45E4 C45M2	1045 1046	C45 C45E C45R	C45 C45E C45R	C45 C45E C45R	45Г
	S48C	–	–	–	–	–	45Г
	S50C	C50 C50E4 C50M2	1049	C50 C50E C50R	C50 C50E C50R	C50 C50E C50R	50Г
	S53C	–	1050 1053	–	–	–	50Г
	S55C	C55 C55E4 C55M2	1055	C55 C55E C55R	C55 C55E C55R	C55 C55E C55R	–
	S58C	C60 C60E4 C60M2	1059 1060	C60 C60E C60R	C60 C60E C60R	C60 C60E C60R	60Г

Type		Japan	International	Other countries				
				U.S.A.	Great Britain	Germany	France	Russia
		JIS	ISO	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Alloy steel	Nickel chromium steel	SNC236	–	–	–	–	–	40XH
		SNC415(H)	–	–	–	–	–	–
		SNC631(H)	–	–	–	–	–	30XH3A
		SNC815(H)	15NiCr13	–	15NiCr13	15NiCr13	15NiCr13	–
		SNC836	–	–	–	–	–	–
	Nickel chromium molybdenum steel	SNCM220	20NiCrMo2 20NiCrMoS2	8615 8617(H) 8620(H) 8622(H)	20NiCrMo2-2 20NiCrMoS2-2	20NiCrMo2-2 20NiCrMoS2-2	20NiCrMo2-2 20NiCrMoS2-2	–
		SNCM240	41CrNiMo2 41CrNiMoS2	8637 8640	–	–	–	–
		SNCM415	–	–	–	–	–	–
		SNCM420(H)	–	4320(H)	–	–	–	20XH2M(20XHM)
		SNCM431	–	–	–	–	–	–
		SNCM439	–	4340	–	–	–	–
		SNCM447	–	–	–	–	–	–
		SNCM616	–	–	–	–	–	–
		SNCM625	–	–	–	–	–	–
		SNCM630	–	–	–	–	–	–
		SNCM815	–	–	–	–	–	–

Note: The above chart is based on published data and not authorized by each manufacturer.

Symbols of Metals

● Stainless steel, heat resistant steel

Type		Japan	International	Other countries				
				U.S.A.	Great Britain	Germany	France	Russia
		JIS	ISO	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Alloy steel	Chromium steel	SCr415(H)	–	–	17Cr3 17CrS3	17Cr3 17CrS3	17Cr3 17CrS3	15X 15XA
		SCr420(H)	20Cr4(H) 20CrS4	5120(H)	–	–	–	20X
		SCr430(H)	34Cr4 34CrS4	5130(H) 5132(H)	34Cr4 34CrS4	34Cr4 34CrS4	34Cr4 34CrS4	30X
		SCr435(H)	34Cr4 34CrS4 37Cr4 37CrS4	5132	37Cr4 37CrS4	37Cr4 37CrS4	37Cr4 37CrS4	35X
		SCr440(H)	37Cr4 37CrS4 41Cr4 41CrS4	5140(H)	530M40 41Cr4 41CrS4	41Cr4 41CrS4	41Cr4 41CrS4	40X
		SCr445(H)	–	–	–	–	–	45X
	Chromium molybdenum steel	SCM415(H)	–	–	–	–	–	–
		SCM418(H)	18CrMo4 18CrMoS4	–	18CrMo4 18CrMoS4	18CrMo4 18CrMoS4	18CrMo4 18CrMoS4	20XM
		SCM420(H)	–	–	708M20(708H20)	–	–	20XM
		SCM430	–	4130	–	–	–	30XM 30XMA
		SCM432	–	–	–	–	–	–
		SCM435(H)	34CrMo4 34CrMoS4	4137(H)	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	35XM
		SCM440(H)	42CrMo4 42CrMoS4	4140(H) 4142(H)	42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	–
		SCM445(H)	–	4145(H) 4147(H)	–	–	–	–
	Manganese steel and manganese chromium steel	SMn420(H)	22Mn6(H)	1522(H)		–	–	–
		SMn433(H)	–	1534	–	–	–	30Г2 35Г2
		SMn438(H)	36Mn6(H)	1541(H)	–	–	–	35Г2 40Г2
		SMn443(H)	42Mn6(H)	1541(H)	–	–	–	40Г2 45Г2
		SMnC420(H)	–	–	–	–	–	–
		SMnC443(H)	–	–	–	–	–	–
	Aluminium chromium molybdenum steel	SACM645	41CrAlMo74	–	–	–	–	–

● Stainless steel, heat resistant steel

Type		Japan	International	Other countries					
				U.S.A.		Great Britain	Germany	France	Russia
		JIS	ISO	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Stainless steel	Austenitic	SUS201	X12CrMnNiN17-7-5	S20100	201			Z12CMN17-07Az	
		SUS202	X12CrMnNiN18-9-5	S20200	202	284S16			12X17Г9AH4
		SUS301	X10CrNi18-8	S30100	301	301S21	X12CrNi17-7	Z11CN17-08	07X16H6
		SUS301L	X2CrNiN18-7				X2CrNiN18-7		
		SUS301J1					X12CrNi17-7		
		SUS302		S30200	302	302S25		Z12CN18-09	12X18H9
		SUS302B	X12CrNiSi18-9-3	S30215	302B				
		SUS303	X10CrNiS18-9	S30300	303	303S21	X10CrNiS18-9	Z8CNF18-09	
		SUS303Se		S30323	303Se	303S41			12X18H10E
		SUS303Cu							
		SUS304	X5CrNi18-9	S30400	304	304S31	X5CrNi18-10	Z7CN18-09	08X18H10
		SUS304L	X2CrNi18-9	S30403	304L	304S11	X2CrNi19-11	Z3CN19-11	03X18H11
		SUS304N1	X5CrNiN18-8	S30451	304N			Z6CN19-09Az	
		SUS304N2		S30452					
		SUS304LN	X2CrNiN18-9	S30453	304LN		X2CrNiN18-10	Z3CN18-10Az	
		SUS304J1							
		SUS304J2							
		SUS304J3		S30431	S30431				
		SUS305	X6CrNi18-12	S30500	305	305S19	X5CrNi18-12	Z8CN18-12	06X18H11

Note: The above chart is based on published data and not authorized by each manufacturer.

● Stainless steel, heat resistant steel

Type		Japan	International	Other countries					
				U.S.A.		Great Britain	Germany	France	Russia
		JIS	ISO	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Stainless steel	Austenitic	SUS305J1							
		SUS309S		S30908	309S			Z10CN24-13	
		SUS310S	X6CrNi25-21	S31008	310S	310S31		Z8CN25-20	10X23H18
		SUS315J1							
		SUS315J2							
		SUS316	X5CrNiMo17-12-2 X3CrNiMo17-12-3	S31600	316	316S31	X5CrNiMo17-12-2 X5CrNiMo17-13-3	Z7CND17-12-02 Z6CND18-12-03	
		SUS316F							
		SUS316L	X2CrNiMo17-12-2 X2CrNiMo17-12-3 X2CrNiMo18-14-3	S31603	316L	316S11	X2CrNiMo17-13-2 X2CrNiMo17-14-3	Z3CND17-12-02 Z3CND17-12-03	03X17H14M3
		SUS316N		S31651	316N				
		SUS316LN	X2CrNiMoN17-11-2 X2CrNiMoN17-12-3	S31653	316LN		X2CrNiMoN17-12-2 X2CrNiMoN17-13-3	Z3CND17-11Az Z3CND17-12Az	
		SUS316Ti	X6CrNiMoTi17-12-2	S31635			X6CrNiMoTi17-12-2	Z6CNDT17-12	08X17H13M2T
		SUS316J1							
		SUS316J1L							
		SUS317		S31700	317	317S16			
		SUS317L	X2CrNiMo19-14-4	S31703	317L	317S12	X2CrNiMo18-16-4	Z3CND19-15-04	
		SUS317LN	X2CrNiMoN18-12-4	S31753				Z3CND19-14Az	
		SUS317J1							
		SUS317J2							
		SUS317J3L							
		SUS836L		N08367					
		SUS890L	X1CrNiMoCu25-20-5	N08904	N08904	904S14		Z2NCDU25-20	
		SUS321	X6CrNiTi18-10	S32100	321	321S31	X6CrNiTi18-10	Z6CNT18-10	08X18H10T
		SUS347	X6CrNiNb18-10	S34700	347	347S31	X6CrNiNb18-10	Z6CNNb18-10	08X18H12Б
		SUS384	X3NiCr18-16	S38400	384			Z6CN18-16	
		SUSXM7	X3CrNiCu18-9-4	S30430	304Cu	394S17		Z2CNU18-10	
		SUSXM15J1		S38100				Z15CNS20-12	
	Austenitic Ferritic	SUS329J1		S32900	329				
		SUS329J3L	X2CrNiMoN22-5-3	S31803	31803			Z3CNDU22-05Az	08X21H6M2T
		SUS329J4L	X2CrNiMoCuN25-6-3	S32250	32250			Z3CNDU25-07Az	
	Ferritic	SUS405	X6CrAl13	S40500	405	405S17	X6CrAl13	Z8CA12	
		SUS410L						Z3C14	
		SUS429		S42900	429				
		SUS430	X6Cr17	S43000	430	430S17	X6Cr17	Z8C17	12X17
		SUS430F	X7CrS17	S43020	430F		X7CrS18	Z8CF17	
		SUS430LX	X3CrTi17 X3CrNb17	S43035			X6CrTi17	Z4CT17	
		SUS430J1L	X2CrTi17				X6CrNb17	Z4CNb17	
		SUS434	X6CrMo17-1	S43400	434	434S17	X6CrMo17-1	Z8CD17-01	
		SUS436L	X1CrMoTi16-1	S43600	436				
		SUS436J1L							
		SUS444	X2CrMoTi18-2	S44400	444			Z3CDT18-02	
		SUS445J1							
		SUS445J2							
		SUS447J1		S44700					
		SUSXM27		S44627				Z1CD26-01	
	Martensitic	SUS403		S40300	403				
		SUS410	X12Cr13	S41000	410	410S21	X10Cr13	Z13C13	
		SUS410S	X6Cr13	S41008	410S	403S17	X6Cr13	Z8C12	08X13
		SUS410F2							
		SUS410J1		S41025					
		SUS416	X12CrS13	S41600	416	416S21		Z11CF13	
		SUS420J1	X20Cr13	S42000	420	420S29	X20Cr13	Z20C13	20X13
		SUS420J2	X30Cr13	S42000	420	420S37	X30Cr13	Z33C13	30X13
		SUS420F	X29CrS13	S42020	420F			Z30CF13	
		SUS420F2							
		SUS429J1							
		SUS431	X19CrNi16-2	S43100	431	431S29	X20CrNi17-2	Z15CN16-02	20X17H2
		SUS440A	X70CrMo15	S44002	440A			Z70C15	
		SUS440B		S44003	440B				
		SUS440C	X105CrMo17	S44004	440C			Z100CD17	95X18
		SUS440F		S44020	S44020				
	Precipitation hardening type	SUS630	X5CrNiCuNb16-4	S17400	S17400			Z6CNU17-04	
		SUS631	X7CrNiAl17-7	S17700	S17700		X7CrNiAl17-7	Z9CNA17-07	09X17H7Ю
		SUS631J1							

Note: The above chart is based on published data and not authorized by each manufacturer.

Symbols of Metals

Type		Japan	International	Other countries					
				U.S.A.		Great Britain	Germany	France	Russia
		JIS	ISO	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Heat resistant steel	Austenitic	SUH31				331S42		Z35CNWS14-14	45X14H14B2M
		SUH35		S63008		349S52		Z52CMN21-09Az	
		SUH36				349S54	X53CrMnNi21-9	Z55CMN21-09Az	55X20Г9 AH4
		SUH37		S63017		381S34			
		SUH38							
		SUH309		S30900	309	309S24		Z15CN24-13	
		SUH310		S31000	310	310S24	CrNi2520	Z15CN25-20	20X25H20C2
		SUH330		N08330	N08330			Z12NCS35-16	
		SUH660		S66286				Z6NCTV25-20	
		SUH661		R30155					
	Ferritic	SUH21					CrAl1205		
		SUH409	X6CrTi12	S40900	409	409S19	X6CrTi12	Z6CT12	
		SUH409L	X2CrTi12					Z3CT12	
		SUH446		S44600	446			Z12C25	15X28
	Martensitic	SUH1		S65007		401S45	X45CrSi9-3	Z45CS9	
		SUH3						Z40CSD10	40X10C2M
		SUH4				443S65		Z80CSN20-02	
		SUH11							40X9C2
		SUH600							20X12BHMБФР
		SUH616		S42200					

● Tool steel

Type	Japan	International	U.S.A.
	JIS	ISO	AISI ASTM
Carbon tool steel	SK140	–	–
	SK120	C120U	W1-11 1/2
	SK105	C105U	W1-10
	SK95	–	W1-9
	SK90	C90U	–
	SK85	–	W1-8
	SK80	C80U	–
	SK75	–	–
	SK70	C70U	–
	SK65	–	–
	SK60	–	–
High speed steel	SKH2	HS18-0-1	T1
	SKH3	–	T4
	SKH4	–	T5
	SKH10	–	T15
	SKH40	HS6-5-3-8	–
	SKH50	HS1-8-1	–
	SKH51	HS6-5-2	M2
	SKH52	HS6-6-2	M3-1
	SKH53	HS6-5-3	M3-2
	SKH54	HS6-5-4	M4
	SKH55	HS6-5-2-5	–
	SKH56	–	M36
	SKH57	HS10-4-3-10	–
	SKH58	HS2-9-2	M7
	SKH59	HS2-9-1-8	M42
Alloy tool steel	SKS11	–	F2
	SKS2	–	–
	SKS21	–	–

Type	Japan	International	U.S.A.
	JIS	ISO	AISI ASTM
Alloy tool steel	SKS5	–	–
	SKS51	–	L6
	SKS7	–	–
	SKS81	–	–
	SKS8	–	–
	SKS4	–	–
	SKS41	–	–
	SKS43	105V	W2-9 1/2
	SKS44	–	W2-8 1/2
	SKS3	–	–
	SKS31	–	–
	SKS93	–	–
	SKS94	–	–
	SKS95	–	–
	SKD1	X210Cr12	D3
	SKD2	X210CrW12	–
	SKD10	X153CrMoV12	–
	SKD11	–	D2
	SKD12	X100CrMoV5	A2
	SKD4	–	–
	SKD5	X30WCrV9-3	H21
	SKD6	–	H11
	SKD61	X40CrMoV5-1	H13
	SKD62	X35CrWMoV5	H12
	SKD7	32CrMoV12-28	H10
	SKD8	38CrCoWV18-17-17	H19
	SKT3	–	–
	SKT4	55NiCrMoV7	–
	SKT6	45NiCrMo16	–

● Special use steels

Type	Japan	International	U.S.A.
	JIS	ISO	AISI ASTM
Free cutting carbon steels	SUM11	–	1110
	SUM12	–	1109
	SUM21	9S20	1212
	SUM22	11SMn28	1213
	SUM22L	11SMnPb28	–
	SUM23	–	1215
	SUM23L	–	–
	SUM24L	11SMnPb28	12L14
	SUM25	12SMn35	–
	SUM31	–	1117
	SUM31L	–	–

Type	Japan	International	U.S.A.
	JIS	ISO	AISI ASTM
Free cutting carbon steels	SUM32	–	–
	SUM41	–	1137
	SUM42	–	1141
	SUM43	44SMn28	1144
High carbon chromium	SUJ1	–	–
	SUJ2	B1	52100
	SUJ3	B2	ASTM A 485 Grade 1
	SUJ4	–	–
	SUJ5	–	–

Note: The above chart is based on published data and not authorized by each manufacturer.

Symbols of Metals

● Casting or forging steels

Type		Japan	International	Other countries				
				U.S.A.	Great Britain	Germany	France	Russia
		JIS	ISO	AISI ASTM	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Casting steel	Carbon steel casting	SC	200-400, 230-450, 270-480	U-	A1, A2	GS-	GE230, GE280, GE320	–
	Steel casting for welded structure	SCW	200-400W, 230-450W, 270-480W, 340-550W	WCA, WCB, WCC	A4	–	GE230, GE280	–
	Heat resisting steel casting	SCH	GX40CrSi24, GX40CrNiSi22-10, GX40NiCrSi38-19	Grade HC, HD, HF	309C30, 310C45, 330C12	–	GX40NiCrNb45-35, GX50NiCrCoW35-25-15-5	–
	Steel casting for high temperature and high pressure service	SCPH	–	Grade WC1, WC6, WC9	A1, A2, B1, B2, B3, B4, B5, B7	G20Mo5, G17CrMo5-5, G17CrMo5-10	G17CrMo9-10, GX15CrMo5, GP240GH, GP280GH	–
	Steel casting for low temperature and high pressure service	SCPL	–	Grade LCB, LC1, LC2, LC3	AL1, BL2	–	FB-M, FC1-M, FC2-M,FC3-M	–
Casting iron	Grey iron casting	FC	100,150,200,250, 300,350	No.20,25,30,35, 40,45,50	EN-GJL-	EN-GJL-	EN-GJL-	–
	Spheroidal graphite iron casting	FCD	700-2, 600-3, 500-7, 450-10, 400-15, 400-18, 350-22	60-40-18, 65-45-12, 8-55-06, 100-70-03, 120-90-02	EN-GJS-	EN-GJS-	EN-GJS-	ВЧ
	Austempered spheroidal graphite iron casting	FCAD	–	–	EN-GJS-	EN-GJS-	EN-GJS-	–
	Austenitic iron casting	FCA- FCDA-	L-, S-	Type 1, 2, Type D-2, D-3A Class 1, 2	F1, F2, S2W, S5S	GGL-, GGG-	L-, S-	–
Forging steel	Carbon steel forging for general use	SF	–	Class A, B, C, D, E, F	C22, C25, C30, C35, C40, C45, C50, C55, C60	P285, P355	P245, P280, P305	–
	Chromium molybdenum steel forgings for general use	SFCM	–	Class E, F, G, I Grade 3A, 4 Class G, J, K, L, M	–	–	–	–
	Nickel Chromium molybdenum steel forgings for general use	SFNCM	–	Class G, H, I, J Class 3A, 4, 5, 6 Class K, L, M	–	–	–	–

● Non-ferrous alloys

Type		Japan	International	Other countries			
				U.S.A.		Great Britain	Germany
		JIS	ISO	ASTM SAE		BS BS/EN	DIN DIN/EN
Copper alloy, Nickel alloy	Copper alloy casting	CAC101	–	–	–	–	
		CAC102	–	–	–	Cu-C(CC040AgrodeC)	
		CAC103	–	–	–	Cu-C(CC040AgrodeA,B)	
	Brass casting	CAC201	–	–	–	CuZn15As-C(CC760S)	
		CAC202	–	C85400	–	CuZn33Pb2-C(CC750S)	
		CAC203	–	C85700	–	CuZn39Pb1-C(CC754S)	
	High strength brass casting	CAC301	–	C86500	–	CuZn35Mn2Al1Fe-C(CC765S)	
		CAC302	–	C86400	–	CuZn34Mn3Al2Fe1-C(CC764S)	
		CAC303	–	C86200	–	CuZn25Al5Mn4Fe3-C(CC762S)	
		CAC304	–	C86300	–	CuZn25Al5Mn4Fe3-C(CC762S)	
	Bronze casting	CAC401	–	C84400	–	CuSn3Zn8Pb5-C(CC490K)	
		CAC402	–	C90300	–	–	
		CAC403	–	C90500	–	–	
		CAC406	–	C83600	–	CuSn5Zn5Pb5-C(CC490K)	
		CAC407	–	C92200	–	–	
	Phosphor bronze casting	CAC502A	–	C90700 C90800	–	CuSn10-C(CC480K) CuSn12-C(CC483K)	
		CAC502B	–		–		
		CAC503A	–		–		
		CAC503B	–		–		
	Aluminium bronze casting	CAC701	–	C95200	–	CuAl10Fe2-C(CC331G)	
		CAC702	–	C95400	–	CuAl10Ni3Fe2-C(CC332G)	
			–	C95410	–		
		CAC703	–	C95800	–	CuAl10Fe5Ni5-C(CC333G)	
		CAC704	–	C95700	–	–	
	Silicon bronze castings	CAC801	–	–	–	–	
		CAC802	–	C87500	–	–	
		CAC803	–	C87400	–	CuZn16Si4-C(CC761S)	

Note: The above chart is based on published data and not authorized by each manufacturer.

Symbols of Metals

Type		Japan	International	Other countries			
				U.S.A.	Great Britain	Germany	France
		JIS	ISO	ASTM SAE	BS BS/EN	DIN DIN/EN	NF NF/EN
Aluminium alloy	Aluminium alloy ingots for casting	AC1B	Al-Cu4MgTi	204.0	EN AC-2100		
		AC2A	–	–	–		
		AC2B	–	319.0	–		
		AC3A	–	–	EN AC-44100		
		AC4A	–	–	–		
		AC4B	Al-Si8Cu3	333.0	EN AC-46200		
		AC4C	Al-Si7Mg(Fe)	356.0	EN AC-42000		
		AC4CH	Al-Si7Mg0.3	A356.0	EN AC-42100		
		AC4D	–	355.0	EN AC-45300		
		AC5A	Al-Cu4Ni2Mg2	242.0	–		
		AC7A	–	514.0	–		
		AC8A	Al-Si12CuNiMg	–	EN AC-48000		
		AC8B	–	–	–		
		AC8C	–	332.0	–		
		AC9A	–	–	–		
		AC9B	–	–	–		
	Aluminium alloy die casting	ADC1	–	A413.0	–		
		ADC3	–	A360.0	–		
		ADC5	–	518.0	–		
		ADC6	–	–	–		
		ADC10	–	–	–		
		ADC10Z	–	A380.0	–		
		ADC12	–	–	–		
		ADC12Z	–	383.0	–		
		ADC14	–	B390.0	–		
Magnesium alloy	Magnesium alloy casting	MC5	–	AM100A	–		
		MC6	–	ZK51A	–		
		MC7	–	ZK61A	–		
		MC8	MgRE3Zn2Zr	EZ33A	EN MC65120		
		MC9	MgAg3RE2Zr	QE22A	EN MC65210		
		MC10	MgZn4RE1Zr	ZE41A	EN MC35110		
	Magnesium alloy die casting	MD1A	–	AZ91A	G-A9Z1Y4		
		MDC1B	–	AZ91B	–		
		MDC1D	MgAl9Zn1(A)	AZ91D	EN MC21120		
		MDC2B	MgAl6Mn	AM60B	EN MC21320		

Type		Japan	International	Other countries			
				U.S.A.	Great Britain	Germany	France
		JIS	ISO	ASTM AA	BS BS/EN	DIN DIN/EN	NF NF/EN
Aluminium alloy	Aluminium alloy extruded shapes	A5052S	–	5052	EN AW-5052		
		A5454S	–	5454	EN AW-5454		
		A5083S	AlMg4.5Mn0.7	5083	EN AW-5083		
		A5086S	–	5086	EN AW-5086		
		A6061S	AlMg1SiCu	6061	EN AW-6061		
		A6063S	AlMg0.7Si	6063	EN AW-6063		
		A7003S	–	–	EN AW-7003		
		A7N01S	–	–	–		
		A7075S	AlZn5.5MgCu	7075	EN AW-7075		

Note: The above chart is based on published data and not authorized by each manufacturer.

Approximate Conversion Table of Hardness

● Approximate conversion value for Brinell hardness.

(The source: JIS HB Ferrous Materials and Metallurgy I -2005)

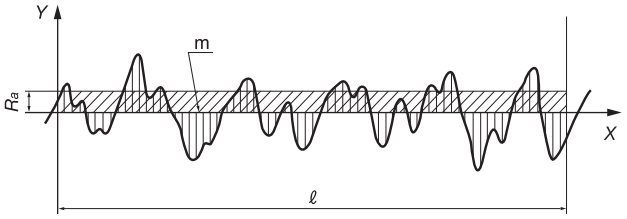
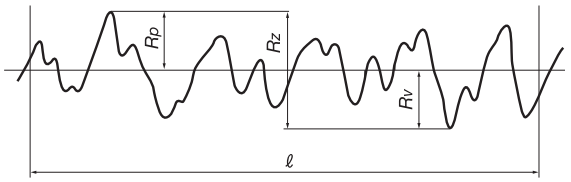
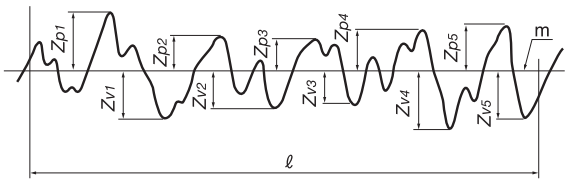
HB		HV	Rockwell				HS	Approx. tensile strength (Mpa)
Brinell, 10mm ball, Load 3000kg		Vickers	HRA	HRB	HRC	HRD	Shore	
Standard ball	Tungsten carbide ball		A Scale, Load 60kg, Brale Diamond	B Scale, Load 100kg, Diameter 1/16 in. Steel ball	C Scale, Load 150kg, brale diamond	D Scale, Load 100kg, Brale Diamond		
–	–	940	85.6	–	68.0	76.9	97	–
–	–	920	85.3	–	67.5	76.5	96	–
–	–	900	85.0	–	67.0	76.1	95	–
–	(767)	880	84.7	–	66.4	75.7	93	–
–	(757)	860	84.4	–	65.9	75.3	92	–
–	(745)	840	84.1	–	65.3	74.8	91	–
–	(733)	820	83.8	–	64.7	74.3	90	–
–	(722)	800	83.4	–	64.0	73.8	88	–
–	(712)	–	–	–	–	–	–	–
–	(710)	780	83.0	–	63.3	73.3	87	–
–	(698)	760	82.6	–	62.5	72.6	86	–
–	(684)	740	82.2	–	61.8	72.1	–	–
–	(682)	737	82.2	–	61.7	72.0	84	–
–	(670)	720	81.8	–	61.0	71.5	83	–
–	(656)	700	81.3	–	60.1	70.8	–	–
–	(653)	697	81.2	–	60.0	70.7	81	–
–	(647)	690	81.1	–	59.7	70.5	–	–
–	(638)	680	80.8	–	59.2	70.1	80	–
–	630	670	80.6	–	58.8	69.8	–	–
–	627	667	80.5	–	58.7	69.7	79	–
–	–	677	80.7	–	59.1	70.0	–	–
–	601	640	79.8	–	57.3	68.7	77	–
–	–	640	79.8	–	57.3	68.7	–	–
–	578	615	79.1	–	56.0	67.7	75	–
–	–	607	78.8	–	55.6	67.4	–	–
–	555	591	78.4	–	54.7	66.7	73	2055
–	–	579	78.0	–	54.0	66.1	–	2015
–	534	569	77.8	–	53.5	65.8	71	1985
–	–	553	77.1	–	52.5	65.0	–	1915
–	514	547	76.9	–	52.1	64.7	70	1890
(495)	–	539	76.7	–	51.6	64.3	–	1855
–	–	530	76.4	–	51.1	63.9	–	1825
–	495	528	76.3	–	51.0	63.8	68	1820
(477)	–	516	75.9	–	50.3	63.2	–	1780
–	–	508	75.6	–	49.6	62.7	–	1740
–	477	508	75.6	–	49.6	62.7	66	1740
(461)	–	495	75.1	–	48.8	61.9	–	1680
–	–	491	74.9	–	48.5	61.7	–	1670
–	461	491	74.9	–	48.5	61.7	65	1670
444	–	474	74.3	–	47.2	61.0	–	1595
–	–	472	74.2	–	47.1	60.8	–	1585
–	444	472	74.2	–	47.1	60.8	63	1585

HB		HV	Rockwell				HS	Approx. tensile strength (Mpa)
Brinell, 10mm ball, Load 3000kg		Vickers	HRA	HRB	HRC	HRD	Shore	
Standard ball	Tungsten carbide ball		A Scale, Load 60kg, Brale Diamond	B Scale, Load 100kg, Diameter 1/16 in. Steel ball	C Scale, Load 150kg, brale diamond	D Scale, Load 100kg, Brale Diamond		
429	429	455	73.4	–	45.7	59.7	61	1510
415	415	440	72.8	–	44.5	58.8	59	1460
401	401	425	72.0	–	43.1	57.8	58	1390
388	388	410	71.4	–	41.8	56.8	56	1330
375	375	396	70.6	–	40.4	55.7	54	1270
363	363	383	70.0	–	39.1	54.6	52	1220
352	352	372	69.3	(110.0)	37.9	53.8	51	1180
341	341	360	68.7	(109.0)	36.6	52.8	50	1130
331	331	350	68.1	(108.5)	35.5	51.9	48	1095
321	321	339	67.5	(108.0)	34.3	51.0	47	1060
311	311	328	66.9	(107.5)	33.1	50.0	46	1025
302	302	319	66.3	(107.0)	32.1	49.3	45	1005
293	293	309	65.7	(106.0)	30.9	48.3	43	970
285	285	301	65.3	(105.5)	29.9	47.6	–	950
277	277	292	64.6	(104.5)	28.8	46.7	41	925
269	269	284	64.1	(104.0)	27.6	45.9	40	895
262	262	276	63.6	(103.0)	26.6	45.0	39	875
255	255	269	63.0	(102.0)	25.4	44.2	38	850
248	248	261	62.5	(101.0)	24.2	43.2	37	825
241	241	253	61.8	100.0	22.8	42.0	36	800
235	235	247	61.4	99.0	21.7	41.4	35	785
229	229	241	60.8	98.2	20.5	40.5	34	765
223	223	234	–	97.3	(18.8)	–	–	–
217	217	228	–	96.4	(17.5)	–	33	725
212	212	222	–	95.5	(16.0)	–	–	705
207	207	218	–	94.6	(15.2)	–	32	690
201	201	212	–	93.8	(13.8)	–	31	675
197	197	207	–	92.8	(12.7)	–	30	655
192	192	202	–	91.9	(11.5)	–	29	640
187	187	196	–	90.7	(10.0)	–	–	620
183	183	192	–	90.0	(9.0)	–	28	615
179	179	188	–	89.0	(8.0)	–	27	600
174	174	182	–	87.8	(6.4)	–	–	585
170	170	178	–	86.8	(5.4)	–	26	570
167	167	175	–	86.0	(4.4)	–	–	560
163	163	171	–	85.0	(3.3)	–	25	545
156	156	163	–	82.9	(0.9)	–	–	525
149	149	156	–	80.8	–	–	23	505
143	143	150	–	78.7	–	–	22	490
137	137	143	–	76.4	–	–	21	460
131	131	137	–	74.0	–	–	–	450
126	126	132	–	72.0	–	–	20	435
121	121	127	–	69.8	–	–	19	415
116	116	122	–	67.6	–	–	18	400
111	111	117	–	65.7	–	–	15	385

Note : Figures in ( ) are not commonly used.

Surface Roughness

(According to JIS B 0601, 2001 and its explanation.)

Type	Symbol	How to determine	Example (Fig.)
Arithmetic mean roughness	***Ra***	*Ra* means the value obtained by the following formula and expressed in micrometer (μm) when sampling only the reference length from the roughness curve in the direction of mean line, taking X-axis in the direction of mean line and Y-axis in the direction of longitudinal magnification of this sampled part and the roughness curve is expressed by *y- f (x)*: $Ra = \frac{1}{\ell}\int_0^1 \lvert f(x) \rvert \, dx$ where, ℓ : reference length	
Maximum height	***Rz***	*Rz* shall be that only the reference length is sampled from the roughness curve in the direction of mean line, the distance between the top of profile peak line and the bottom of profile valley line on this sampled portion is measured in the longitudinal magnification direction of roughness curve and the obtained value is expressed in micrometer (μm). $Rz = Rp + Rv$	
Ten point mean roughness	***RzJIS***	*RzJIS* shall be that only the reference length is sampled from the roughness curve in the direction of its mean line, the sum of the average value of absolute values of the heights of five highest profile peaks (*Zp*) and the depths of five deepest profile valleys (*Zv*) measured in the vertical magnification direction from the mean line of this sampled portion and this sum is expressed in micrometer (μm) $RzJIS = \frac{\lvert Zp1+Zp2+Zp3+Zp4+Zp5 \rvert + \lvert Zv1+Zv2+Zv3+Zv4+Zv5 \rvert}{5}$	 where, $Zp1, Zp2, Zp3, Zp4, Zp5$: altitudes of the heights of five highest profile peaks of the sampled portion corresponding to the reference length l where, $Zv1, Zv2, Zv3, Zv4, Zv5$: altitudes of the depths of five deepest profile valleys of the sampled portion corresponding to the reference length l

Grade Comparison Charts

●CVD Coated Grades

Application code		Tungaloy	Mitsubishi Material	Sumitomo Electric Hard Metal	Sandvik	Kyocera	Hitachi Tool	Dijet	NTK	Seco Tool	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
P Steel	P01	**T9105**	UE6105	AC810P ACP100	GC4205 GC3005	CA5505	HG8010	JC110V JC5003	CP7	TP0500 TP1500	KC9105 KCP05	IC8150 IC9150 IC9015		TT1500	TN10P TN20K	WPP01 WPP05	
	P10	**T9105** **T9115**	UE6105 UE6110 FH7020	AC810P AC820P ACP100	GC1525 GC4205 GC4215 GC1515 GC3005 GC4220 GC4230	CA5505 CA5515	HG8010 GM8020	JC110V JC215V	CP7 CP5	TP0500 TP1500 TP2500 MP1500	KC9110 KC9125 KC9105 KCP10 KCP25	IC8150 IC9150 IC428 IC5005 IC8080 IC9080 IC9015	IN5015	TT1500 TT3500	TN10P TN20K HC-10P WP15CT	WPP01 WPP05 WPP10 WAK20	CTC1110 CTC1115 CTC3110 TCC410
	P20	**T9115** **T9125**	UE6110 UE6020 FH7020 F7030	AC820P AC830P ACP100	GC1525 GC4215 GC1515 GC3005 GC4220 GC4230 GC3020	CA5515 CA5525	HG8010 GM8020 GM8025 GM25	JC110V JC215V	CP7 CP5	TP1500 TP2500 TP3500 TP200 MP1500 MP2500	KC9110 KC9215 KC9225 KC9325	IC8150 IC9150 IC9015 IC8250 IC9250 IC4100 IC5100	IN5015 IN6515	TT3500 TT5100	TN10P TN15M WP10CT HC-P25 WP15CT	WPP10 WPP20 WKP25 WPP30	CTC1110 CTC1115 CTC1125 CTC1130 CTC1425 CTCP125
	P30	**T9125** **T9135** **T3130**	UE6020 UE6035 UH6400 F7030	AC820P AC830P ACP100	GC4225 GC4235 GC4230 GC4240 GC2135	CA5525 CA5535 CR9025	GM8020 HG8025 GM25 GM8035	JC215V JC325V	CP5	TP2500 TP3500 TP200 MP2500	KC9125 KU30T KC935M KCP30	IC8080 IC656 IC9350 IC4050	IN5015 IN6515 IN6530	TT3500 TT5100 KT450	TN30P TN30M WP25CT WP35CT	WPP20 WPP30 WAK10 WKP35S WKP26 WKP35	CTC1125 CTC1130 CTC1135 CTC1425 CTCP125
	P40	**T9135**	UE6035 UH6400	AC830P	GC4235 GC4230 GC4240	CA5535	GM8035 GX30	JC325V JC450V		TP3500 TP40 CP500T350M	KC9140 KC9240 KC9245 KC935M	IC9350 IC635 IC4050 IC635	IN6530	TT5100 KT450	TN30P TN30M WP35CT	WPP30 WAK30 WKP35S WKP35	CTC1135 CTC1435 CTC2135 GM246
M Stainless	M10	**T9115**		AC610M	GC2015	CA6515	HG8025	JC5003 JC110C	CP2 CP5	TP2500		IC8250 IC9250 IC520M			TN15M WM15CT		CTC1110 CTC1115 CPCT125
	M20	**T6120** **T9125** **T6020**	US7020 F7030	AC610M AC630M	GC2015 GC2025	CA6525	HG8025 GM25 GM8035	JC110V	CP2 CP5	TP2500 TP3500 TP200 MP2500	KC8050 KC9225 KC925M	IC8080 IC9054 IC9025 IC9350 IC4050	IN6530	TT5100	TN15M WP25CT WM15CT		CTC1115 CTC1125 CTC1130 CTC1135 CTC1425 CPCT125
	M30	**T6130** **T3130** **T6030**	US735 F7030	AC630M AC830P AC520U	GC2025 GC235 GC2040 GC2135		GM25 GM8035 GX30	JC525X		TP3500 TP200 T350M	KC8050 KC9240 KU30T KC935M	IC635 IC656 IC4050	IN6530	TT5100	TN30M WP25CT WM25CT WM35CT		CTC1125 CTC1135 CTC1425 CTC1435 CTC2135
	M40		US735	AC520U AC530U ACP300	GC235 GC2040		GX30	JC525X		TP40 TM4000 MM4500	KC9240 KC9245	IC635 IC656	IN6530	TT5100	TN30M		CTC2135 GM246
K Cast Iron	K01	**T5105**	UC5105 MC5020	AC410K ACK200	GC3205 GC3005	CA4010 CA4505 CA5505	HG3305	JC050W JC105V JC5003	CP1	TH1500		IC9150 IC4028 IC5010		TT1300		WAK10	
	K10	**T5105** **T5115** **T1115**	UC5105 UC5115 MC5020	AC410K AC420K ACK200	GC1690 GC3205 GC3210 GC3215 GC3005 GC3115 GC3220	CA4010 CA4115 CA4505 CA4515 CA5505	HG3305 HG3315 HG8010	JC105V JC110V	CP1 CP5	TP0500 TK1500 MK1500	KC9315	IC9150 IC4028 IC5010 IC9007 IC4100 IC5100	IN5015	TT1300 TT1500	TN20K WK05CT	WPP01 WAK10 WAK15	CTC1110 CTC1115 CTC3110 TCC410 CTC3215 SR216
	K20	**T5115** **T5125**	UC5115 MC5020	AC420K AC820P ACK200	GC3210 GC3215 GC3005 K20W GC3040 GC3220	CA4115 CA4120 CA4515	HG3315 HG8010 GM8020 HG8025	JC110V JC215V	CP1 CP5	TP0500 TP1500 TP2500 MK1500 T350M	KC9110 KC9315 KC9325 KC915M T250M T200M	IC418 IC4010 IC9015 IC4100 IC5100 IC9150	IN5015 IN6510 IN6515 IN6530	TT1300 TT1500	TN10P TN20K WP10CT WK05CT WK20CT	WPP10 WAK10 WAK20 WKP25 WAK15	CTC1115 CTC1125 CTC1130 CTC1425 CTC3215 TSC30
	K30	**T5125**	MC5020	AC820P	K20W GC3040	CA4120	GM8020 HG8025 GX2030	JC215V	CP5	TP2500 TP200 MK3000	KC8050 KC9125 KC9325 KU30T KC935M	IC520M IC4050	IN5015 IN6515 IN6530		TN20P WP25CT	WPP20 WAK20 WAK30 WKP35S WKP35 WKP25	TSC30 CTCP125

Note: The above chart is based on published data and not authorized by each manufacturer.

Grade Comparison Charts

●PVD Coated Grades

Application code		Tungaloy	Mitsubishi Material	Sumitomo Electric Hard Metal	Sandvik	Kyocera	Hitachi Tool	Dijet	NTK	Seco Tool	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
P Steel	P01					PR915 PR1005	ATH80D PTH08M PCA08M PCS08M	JC8003				IC903	IN0560 IN2006		TN10U	WXN10	
	P10	**AH710**	VP10RT VP15TF	ACP200		PR915 PR930 PR1005 PR1025 PR1115 PR1225 PR730 PR830	IP2000 ACS05E PCA12M PC20M JX1005 JX1020 JP4020 CY9020	JC730U JC8015 JC5015 JC5030 JC5118	TM1 VM1 TAS	TS2000 CP200	KC5010 KC5510 KU10T KC715M	IC507 IC903 IC950	IN0560 IN2006	TT7010	TN10U TN6505	WSM10 WSM21	
	P20	**AH120** **AH725** **AH730** **SH730**	VP10RT VP15TF VP20MF VP20RT UP20M	ACP200 ACP300	GC1030 GC1145	PR930 PR1025 PR1115 PR1225 PR730 PR830 PR1225 PR1230	IP2000 JX1015 CY150 CY15	JC730U JC5030 JC8015 JC5015 JC5040 JC5118	TM1 VM1 TAS	TS2500 CP200 MP3000 F25M	KC5020 KC5525 KU25T KC522M	IC807 IC507 IC907 IC808 IC908 IC950 IC4100	IN1030 IN1540 IN2006 IN2030 IN2040	TT7010 TT9030 TT7220	TN10U WU10PT TN6505	WSM20 WSM21 WHH15 WXM15	SR226 GM127
	P30	**AH120** **AH725** **AH740** **GH330** **AH130** **GH130** **AH9030** **AH3035**	VP15TF VP20MF VP20RT UP20M	ACP200 ACP300	GC1030	PR660 PR1230	IP3000 JS4060 JX1045 CY250 CY25 HC844 PTH30E	JC5015 JC5030 JC5040 JC5118	QM3 TM4	CP500 MP3000 F30M	KC5025 KC5525 KU25T KC725M	IC250 IC350 IC354 IC508 IC950 IC900	IN1030 IN1540 IN2030 IN2040	TT7010 TT8010 TT9030 TT8020	WU25PT	WSM30	GM40 CTP1235 CTP2235 SR226 GM127 CTP1625
	P40	**AH140**	VP30RT	ACP300	GC1030		IP3000 JS4060 JX1060 GF30	JC5040 JC5118 JC8050	QM3	CP500 F40M T60M	KC735M	IC830 IC928 IC1008 IC1028 IC300 IC330	IN1540 IN2040	TT8020 TT8010 TT9030		WSP45 WSP46	CTP2440 GM40 CTP1235 CTP2235 GM127 CM45
M Stainless	M01						IP050S PCM08M		TAS			IC520 IC807	IN0560			WXM10	
	M10	**AH710**	VP10RT VP15TF	ACP200	GC1025 GC1125 GC1115 GC1030	PR915 PR1025 PR1225 PR730	IP050S IP100S PCS08M	JC730U	TAS TM1 VM1	TS2000 TS2500 CP200	KC5010 KC5510 KU10T	IC520 IC807 IC507 IC907	IN2006	TT5030 TT9030	TN10U WS10PT	WSM10 WSM20 WSM21 WXM15	
	M20	**AH630** **AH725** **AH730** **GH330** **SH730** **GH730**	VP10RT VP15TF VP20MF VP20RT UP20M	ACP200 AC520U	GC1025 GC2015 GC1125 GC1115 GC1030 GC2030	PR915 PR930 PR1025 PR1125 PR1225 PR660 PR730	IP100S JX1015 CY150 CY15	JC8015 JC730U JC5118	QM3 TM4 ZM3	TS2500 CP200 CP500 F25M	KC5010 KC5025 KC5510 KC5525 KC715M	IC354 IC3028 IC330 IC308 IC508 IC808 IC908	IN1030 IN2005 IN2006 IN2505	TT5030 TT8820 TT9030	TN10U WU10PT WU25PT WS10PT WS25PT	WSM10 WSM20 WSM30 WSM21 WXM15	CTP2120 CTP1235 SR226 GM127
	M30	**AH120** **AH645** **AH725** **AH130** **GH130**	VP15TF VP20MF VP20RT UP20M	ACP300 AC520U AC530U	GC1125 GC2035 GC1040 GC2030 GC1145	PR1125 PR660	IP100S JX1045 CY250 CY25 HC844	JC5015 JC8015 JC5118 JC8050	QM3 TM4	CP500 F30M F40M	KC5025 KC5525 KU25T KC552M	IC3028 IC330 IC250 IC300 IC830 IC928 IC1008 IC1028	IN1030 IN1530 IN2005 IN2505 IN2030	TT8020 TT9030	WU25PT WS25PT	WSM20 WSM30 WSM21 WSM35 WSM36	CTP2240 CTP1235 CTP2235 SR226 GM127
	M40	**AH140**	VP30RT	AC520U AC530U ACP300	GC2035 GC1040		JX1060 GF30	JC8050	QM3 TM4	F40M	KC725M KC735M	IC250 IC300 IC328 IC330	IN1030 IN2005 IN2505 IN2030	TT8020 TT9030		WSM30 WSP45 WSM35 WSP46 WSP36	CM40 CM45 CTP2440 CTP2235
K Cast Iron	K01	**AH110**			GC4014			JC8003	CP1			IC910					
	K10	**GH110** **AH110**			GC1210 GC1020	PR905 PR1210	PTH08M PCA08M PCS08M	JC600 JC605X JC605W JC610	CP1	CP200	KC5010 KC5510 KU10T KC510M	IC910 IC4100 IC810 IC900	IN2004 IN2010 IN2015	TT9030	TN10U TN5515 TN6505 TN6510	WHH15 WXM15	SR216 SR226 CTP4115 AMZ
	K20	**AH120**	VP10RT VP20RT VP15TF	ACK300	GC1210 GC1220 GC1020 K20	PR905 PR1210	JX1020 CY100H CY9020 JX1015	JC600 JC610 JC8015 JC5015	CP1	CP200 CP250	KC5025 KC5525 KU25T KC520M	IC910 IC308 IC508 IC350 IC380	IN1030 IN1510 IN2010 IN2015 INDD15	TT9030	TN10U WU10PT WU25PT TN6505 TN6520	WSM10 WKK25	CTP2120 CTP2440 SR216 SR226 CTP3220
	K30	**GH130**	VP10RT VP20RT VP15TF	ACK300	GC1220 GC1020 P20		JX1045 CY250 CY25	JC5015 JC5080		CP500	KC5025 KC5525 KU25T	IC350 IC830 IC828 IC1008	IN1030 IN1510 IN1530 IN2010 IN2015	TT9030	WU25PT	WSM10 WKK25	CTP2440

Note: The above chart is based on published data and not authorized by each manufacturer.

Grade Comparison Charts

●PVD Coated Grades

Application code		Tungaloy	Mitsubishi Material	Sumitomo Electric Hard Metal	Sandvik	Kyocera	Hitachi Tool	Dijet	NTK	Seco Tool	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
N Non-ferrous	N01						PCS08M									WXN10	
	N10	**DS1100 DS1200**		DL1000			SD5010 HD7010 CY100H CY10H	JC10000 JC20000		F15M F17M	KC5010 KC5410 KC5510 KU10T	IC520		TT9030	TN10U	WXN10 WXN15	
	N20		LC15TF	DL1000						F15M F17M	KC5025 KC5525 KU25T	IC808 IC908	IN2005	TT9030	TN10U WU10PT WU25PT	WXN10 WXN15	CTP2120 CTP2440
S Superalloys	S01	**AH110 AH710 AH905**	VP05RT	ACK300	GC1010	PR915		JC8003				IC507 IC907			WS1-PT	WSM10	
	S10	**AH120 AH905**	VP10RT VP20RT VP15TF MP9030	AC510U AC520U ACK300	GC1105 GC1005 GC1025 S30T GC1030 GC1010	PR915	PCS08M PTH13S JS1025	JC8015 JC5015 JC5118	QM3 ZM3	TS2000 TS2500 CP200 CP500	KC5010 KC5510 KU10T KC510M	IC507 IC903 IC907	IN2006	TT5030 TT9030	TN10U WS10PT	WSM10 WSM20 WSM21	CM40 SR226
	S20	**AH730 SH730**	VP10RT VP20RT VP15TF MP9030	AC520U ACP300	GC1105 GC1115 GC1005 GC1025 S30T	PR915	CY100H CY10H	JC5118 JC5015 JC8050	QM3 ZM3	TS2000 TS2500 CP200 CP500 F40M	KC5025 KC5525 KU25T KC522M	IC300 IC808 IC908 IC830 IC928	IN2005 IN2006 IN1030	TT5030 TT9030	TN10U WU10PT WU25PT WS25PT	WSM10 WSM20 WSM30 WSM21	CM45 CTP2440 GM127 CTP5110
	S30		VP15TF VP20RT MP9030	ACP300				JC8050	QM3 ZM3	CP500 F40M	KC5025 KC5525 KU25T	IC839 IC928	IN2005 IN1030	TT8020 TT9030	WU25PT WS25PT	WSM20 WSM30 WSM21 WSM35 WSM36	CTP2135 CTP2235 CTP5115
H Hard Materials	H01	**AH710**	MP8010					JC8003		TH1000		IC903					
	H10	**AH110 AH120 SH730**	MP8010 VP15TF					JC8003 JC8008 JC8015		TH1000 MH1000 F15M	KC5010 KC5510 KU10T KC635M	IC507 IC903 IC907	IN2006	TT9030	TN10U	WHH15	
	H20	**AH120**	VP15TF				ATH80D PTH08M PCA08M JX1005	LC8015		TS2000 MP3000 F30M	KC635M	IC808 IC908 IC1008	IN2005 IN1530	TT7010 TT9030	WU10PT	WHH15	
	H30									F30M		IC808 IC908 IC1008		TT7010			

●Cermet/Coated Cermet Grades

Application code		Tungaloy	Mitsubishi Material	Sumitomo Electric Hard Metal	Sandvik	Kyocera	Hitachi Tool	Dijet	NTK	Seco Tool	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
P Steel	P01	**NS520**	AP25N VP25N	T110A T1500A T2000Z T250A	CT5015	TN30 PV30 TN6010 PV7010	MZ1000 CH550	LN10	Q15 C7Z		KT315 KT1120		IN0560	PV3010 PV3030 CT3000			
	P10	**GT730 GT530**	AP25N VP25N NX55 NX2525	T2000Z T3000Z T1500A T250A	CT5015	TN60 TN6010 TN6020 PV7010 PV7020	MZ1000 CH350 CH550	LN10 CX50 PX75	C7Z Z15	TP1030 TP1020 C15M	KT315 KT5020	IC75T IC20N IC520N IC30N	IN0560 IN60C	PV3010 PV3030 CT3000	TT115 TT125	WCE10	TCC410 TCM10 TCM407
	P20	**GT730 NS730 GT530 NS530**	AP25N VP25N VP45N NX2525 NX3025	T2000Z T3000Z T1500A T250A	CT5015	TN90 TN6020 PV7020 TN100M	CZ25 CH550 CZ1025 CH7030 MZ1000 MZ2000	CX50 CX75 PX75 CX90 SC30 PX90	C7Z T15	TP1030 TP1020 C15M	KT530M KT605M KT5020	IC20N IC520N IC30N IC530N	IN60C	PV3010 CT3000 CT5000	TT125	WCE10	TCM10
	P30	**NS740**	VP45N NX4545	T3000Z			CZ25 CH570 CH7035 MZ3000	CX75 PX75 PX90 SC30	N40 C7X		KT5020	IC530N IC30N	IN60C	CT5000			
M Stainless	M10	**NS520**	AP25N VP25N NX2525	T250A T1500A		TN60 TN6020 PV7020	MZ1000 CH550	LN10 CX75 PX75	C7Z	TP1030 TP1020	KT315 KT5020	IC520N IC530N IC20N IC30N	IN0560	PV3010 CT3000 PV3030			TCC410 TCM10 TCM407
	M20	**GT730 NS730 NS530**	NX2525 AP25N VP25N	T250A T1500A		TN90 TN6020 PV7020 TN100M	MZ1000 CZ25 CH7030	CX75 PX75 PX90 SC30	C7X	C15M	KT530M KT605M KT5020	IC530N IC30N		PV3010 CT3000 PV3030 CT5000			
	M30	**NS740**	NX4545				CZ25 CH7035 MZ3000	PX90 SC30			KT5020			CT5000			
K Cast Iron	K01	**NS520**	AP25N VP25N	T110A		TN30 PV30 PV7005	CZ25 MZ1000 CH550	LN10			KT315 KT5020			PV3010 PV3030 CT3000			TCC410
	K10	**GT730 NS730 NS530**	AP25N VP25N NX2525	T110A		TN60 TN6010 PV7005 PV7010	CZ25 MZ1000 MZ2000 CH550	LN10 CX75			KT315 KT5020			PV3030 CT3000			TCC410 TCM10 TCM407
	K20		AP25N VP25N NX2525				CZ25 MZ2000 MZ3000 CH7030				KT530M KT5020			CT5000			TCM407

Note: The above chart is based on published data and not authorized by each manufacturer.

Grade Comparison Charts

●Ceramics Grades

Application code		Tungaloy	Mitsubishi Material	Sumitomo Electric Hard Metal	Sandvik	Kyocera	Hitachi Tool	Dijet	NTK	Seco Tool	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
K Cast Iron	K01	**LX11** **LX21**		NB90S NB90M	CC6190 CC650	KA30 A65 KT66 PT600M			HC1 HW2 SE1 HC2		KY1310 KY1615			AW20 AB30 AS10	CW2015		CTN3105 CTS3105
	K10	**CX710** **FX105**			CC6190 CC650	A65 KT66 A66N PT600M			HC1 HW2 SE1 WA1 WA5		KY1310 KY1320 KY1615 KY3400		IN70N	AB30 AS10	CW2015 CW5025	WSN10	CTN3105 CTM3110 CTI3105 CTN3110 CTS3105
	K20	**FX105** **CX710**			CC6190	KS6000			SP9 SX1 SX6 SX9		KY1320 KY3400 KY3500 KY4300		IN70N	AS10	CW5025	WSN10	CTM3110 CTN3110
S Superalloys	S01										KY1525 KY2100						
	S10			WX120	CC670 CC6060	CF1			WA1 WA5 SX9		KY1525 KY1540 KY2100 KY4300			AS20	CW3020		
H Hard Materials	H01	**LX11**		NB100C	CC6050 CC650	A65 KT66 A66N PT600M			ZC4 ZC7		KY4400			AW20	CW2015		CTS3105
	H10			NB100C	CC6050 CC650 CC6190	A65 KT66 A66N PT600M			HC4 HC7		KY1615 KY4400			AB2010 AB20 AB30	CW2015		CTS3105

Note: The above chart is based on published data and not authorized by each manufacturer.

●PCBN and PCD Grades

Application code		Tungaloy	Mitsubishi Material	Sumitomo Electric Hard Metal	Sandvik	Kyocera	Hitachi Tool	Dijet	NTK	Seco Tool	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
K Cast Iron	K01	**BX930** **BX910** **BX870**	MB710 MB730 MB5015	BNS800 BN7000 BN7500 BN500 BNC500	CB7525 CB7050 CB50	KBN60M			B23 B30 B52		KB9610 KD120 KB1630			KB90	WBH10C	WCB80	TA100 CTL3215
	K10	**BX470** **BX480** **BX950**	MB710 MB730	BNS800 BN7000 BN7500 BN500 BNC500	CB7525 CB7925 CB50	KBN60M KBN900	BH200	JBN795	B23 B30 B52	CBN200 CBN300 CBN300P CBN400C	KB9640 KD120 KB1630	IB05S IB10S		KB90A	WBK40U	WCB80 WCB50	TA120 TA201 CTL3215
	K20	**BXC90** **BX90S**	MB730 MBS140	BNS800	CB50	KBN900	BH250		B23 B30 B52	CBN200 CBN300 CBN300P CBN400C	KB9640	IB90			WBK45U		CTL3215
	K30	**BXC90** **BX90S**	MBS140	BNS800		KBN900			B16	CBN500	KB9640 KB1340 KB1345						
S Superalloys	S01	**BX950**	MB730	BN7000 BN350		KBN65B KBN65M		JBN795						KB90			
	S10	**BX470** **BX480**	MB4020	BNS800						CBN170	KB1630	IB05S IB10S		KB90A	WBK45U		TA201
H Hard Materials	H01	**BXM10** **BX310**	MBC010 MB810	BNC100 BNC160 BNX10 BN1000	CB20	KBN510 KBN10C KBN05M KBN10M			B52	CBN10 CBN100 CBN050C	KB9610	IB50 IB10HC		KB50	WBH10C	WCB30	
	H10	**BXM10** **BX330** **BX530**	MBC020 MB8025	BNC160 BNC200 BN250 BN1000	CB7015 CB7025 CB20 CB50	KBN525 KBN25C KBN25M	BH200	JBN245	B36	CBN10 CBN100 CBN150 CBN200 CBN300 CBN050C CBN160C CBN300P CBN400C	KB9610 KB1610 KB5610	IB50 IB55 IB10H IB10HC IB20H IB25HA		KB50 TB650	WBH10C WBH10P WBH10U	WCB30 WCB50	CTL3215 TA100
	H20	**BXM20** **BX360**	MBC020 BC8020 MB8025 MB825	BNC200 BN250 BNX20 BNX25 BN2000	CB7025 CB20 CB7035	KBN30M KBN35M KBN900	BH250	JBN300 JBN330	B22 B36 B40	CBN150 CBN200 CBN300 CBN350 CBN160C CBN300P CBN400C	KB5625 KB1625	IB20H IB25HC		TB650	WBH25P	WCB50 WCB80	CTL3215 TA120
	H30	**BXM20** **BXC50** **BX380**	MBC020 BC8020 MB835	BNC300 BN350 BNX25		KBN35M KBN900		JBN300 JBN330	B22 B40	CBN500	KB5625 KB9640 KD120	IB25HC			WBH40C		TA201
N Non-ferrous	N01	**DX160** **DX180**	MD205	DA90	CD10	KPD001		JDA30 JDA735			KD1400 KD1405 KD100	ID5				WCD10	CTD4125
	N10	**DX140**	MD205 MD220	DA150	CD10	KPD001 KPD010 KPD230		JDA715	PD1	PCD05 PCD10	KD100 KD1400 KD1425	ID5	IN90D	KP500	WDN25U	WCD10	CTD4125 CTD4110
	N20	**DX120**	MD220 MD230	DA2200 DA1000	CD10	KPD001 KPD010 KPD230		JDA715	PD1	PCD05 PCD20	KD1425		IN90D	KP300	WDN25U	WCD10	CTD4205
	N30	**DX110**	MD230	DA2200 DA1000				JDA10		OVD20 PCD30 PCD30M				KP100			

Note: The above charts are based on published data and not authorized by each manufacturer.

Grade Comparison Charts

●Uncoated Cemented Carbide Grades

Application code		Tungaloy	Mitsubishi Material	Sumitomo Electric Hard Metal	Sandvik	Kyocera	Hitachi Tool	Dijet	NTK	Seco Tool	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
P Steel	P01																
	P10	**TH10**		ST10P			WS10	SRT			P10	IC70		P10	TN15U		
	P20	**KS20**	UTi20T	ST20E	SMA H10F		EX35	SRT SR20	KM1	S10M	K125M TTM	IC70	P40	P20	TN15U		
	P30	**KS15F** **UX30**	UTi20T	A30 A30N	SM30 H10F	PW30	EX40	DX30 SR30	KM3	S25M	GK K600 TTR	IC28 IC54	P40	P30			S40T
	P40			ST40E			EX45	SR30		S60M	G13	IC28 IC54		P40			S40T
M Stainless	M01																
	M10	**TH10**		U10E EH510	H10A		WA10B	UMN	KM1	890	K313	IC20		M10	TN15U WU10HT		
	M20	**KS20**	UTi20T	U2 EH520	H13A		EX35	DX25 UMS		HX 883	K68 KMF K125M TTM	IC20	IN30M	M20	TN15U WU10HT		CTW7120 H210T
	M30	**UX30**	UTi20T	A30 A30N	H10F SM30		EX45	UMS			GK K600 TTR	IC28	IN30M				
	M40							UM40			G13	IC28	IN30M	M40			S40T
K Cast Iron	K01	**KS05F**	HTi05T	H2 H1			WH01 WH05	KG03			K605			UF1	TN15U WU10HT		
	K10	**TH10**	HTi10	H1 EH10 EH510	H10	KW10	WH10	KG10 KT9 CR1	KM1	890	K313 K110M THM THM-U	IC20 IC09T	IN05S	K10	TN15U WU10HT		H210T H216T H10T
	K20	**KS15F** **KS20**	UTi20T	G10E EH20 EH520	H13A H10F	KW10 GW25	WH20	KT9 CR1 KG20 FB15		890 HX 883	K715 KMF K600	IC20 IC09T	IN05S IN10K IN15K IN30M	K20	TN15U WU10HT		CTW7120 H210T H216T H10T
	K30		UTi20T	G10E	H13A H10F	GW25		KG30		883	THR	IC28	IN10K IN15K IN30M	K30			
	K40										G13		IN30M				
N Non-ferrous	N01	**KS05F**		H1	H10	KW10					K605	IC20					
	N10	**TH10** **KS05F**	HTi10	H1	H10 H10F	GW15	WH10	KT9 CR1	KM1	890 HX KX H15	K313 K110M THM THM-U	IC20 IC28	IN05S IN10K	K10	TN15U WU10HT	WK1 WK10	H210T H216T H10T
	N20	**KS15F**			H10F H13A		WH20	KT9 CR1	KM1	890 HX KX 883	K715 KMF K600	IC20 IC28	IN10K IN15K	K20	TN15U WU10HT	WK1 WK10	CTW7120 H210T H216T H10T
	N30									883 H25	G13 THR		IN15K IN30M			WK40 WMG40	
S Superalloys	S01		RT9005									IC20					
	S10	**KS05F** **TH10**	RT9005 RT9010	EH510	H10 H10A	KW10	WH10	KG10	KM1	890 883	K10 K313 THM	IC20	IN05S IN10K	K10	TN15U WU10HT	WK1	H210T H216T H10T
	S20	**KS15F** **KS20**	RT9010 TF15	EH520	H10F H13A	GW25	WH20	KG20	KM1	890 883 H25	K715 KMF	IC20 IC28	IN10K IN15K	K20	TN15U WU10HT	WK1 WMG40	CTW7120 H210T H216T H10T
	S30		TF15							883	G13 K600 THR		IN15K IN30M			WMG40	
H Hard Materials	H01							KG03				IC20					
	H10	**TH10**			H13A			FZ05				IC20	IN10K	K10			
	H20							FZ15		890 HX 883			IN15K				

Note: The above chart is based on published data and not authorized by each manufacturer.

Chipbreaker Comparison Charts

●Negative inserts

Application code		Tungaloy	Mitsubishi Material	Sumitomo Electric Hard Metal	Kyocera	Sandvik	Hitachi Tool	Kenna-metal	Dijet	Iscar	TaeguTec	Widia	Walter	Ceratizit
P Steel	Precision finishing	**TF, 01**	PK	FA	DP,XP CF		FE	FF	PF	SF	FA			
	Finishing and light cutting	**TS, TSF ZF 11, NS AS** **AFW, ASW** **NM CB** **C**	FH, SY, FY FS,C SH SW, MW SA R/L-1G, R/L-K R/L-F, R/L-FS	FP, FL, SE LU, SU, SK LUW, GUW SP ST, C	HQ, GP VF XQ CJ WP, WQ CQ	PF,QF LC MF WF, WM, WR, WMX	AB, CT, BH CE BE	FN FW,MW, RW	UA, FT UR, UT	NF No sign WF, WG C, R/LF	FG EA,SF WS, WT EA	4 AP FW, MW	NF3 NF4 NF NM	TFQ CF
	Medium cutting	**TM** **DM ZM** **All-round**	MV, MZ, MA, MP MH MP All-round	UG, UU, GE UX, GU, GE UA UM, UZ, MC	GS, HS, PS CS, HK, XS All-round GC, All-round	PM, QM SM R/L-K	AE, AY, AH AH Y, V	P MN	PG,UB, GN GNP	TF, PP, GN	MT	48	NM6, NS8	TMF
	Medium to heavy cutting	**TH** **THS**	GH	MU,MX UZ	GT, HT, PT, PH	PR(P) MR	RE AR	RN, RP MG	GG,UD	TNM, NR	ET	49	NM6, NM9 NM5, NM9	TMQ
	Heavy cutting	**TU TRS** **TUS**	HZ, HX, HV, HA HAS, HBS, HCS HDS, HXD	MP, HG, HP	HX, PX	PR (P) MR HR,QR	TE, UE H HX,HE	RM RH	UC	NM, HR Without chipbreaker	HT		NR5, NR6 NR7	TR
M Stainless	Finishing and light cutting	**SF SS**	MS FS	SU	GU MQ	MF(M) 23	SE	FP	SF				NF4	
	Medium cutting	**S** **SM**	ES, 2G MA	EX, UP, UG MU, MM, GU	ST MS, HU, MU	MM, QM	DE AH	MP, P	SG	TF, PP	VF MP		NM4	M42
	Heavy cutting	**TH, SH TU**		MP, HG, HP		MR (M) QR, HR					ET HT	SR	NR4 NR5, NM9	
K Cast Iron	Finishing	**CF**	SH	FX, FY	All-round, C	KF Without chipbreaker	Y, V	FN			MT			
	Medium cutting	**CM, All-round,**	All-round	UM, UX, GZ	ZS	KM QM	AE	UM, P			MG		NM5	TMR
	Heavy cutting	**CH** **Without chip-breaker**	Without chipbreaker	MU, UZ, MM	GC Without chipbreaker	KR (K) MR QR	RE Without chipbreaker	RP, MG RM	GG Without chipbreaker	GN	RT		Without chipbreaker	
N Non-ferrous	Cutting of non-ferrous metals	**P**		UP, FY, GX	A3 AH	23 QM	R/L	MS, MP MG		PP	MP, SU			
S Superalloys	Cutting of heat resisting alloy	**HMM, SA SM**	MS ES FJ, MJ, GJ	FY, FX, SU EX, UP MU	SU	23 MF, SR SM (NMX)		FS, LF K, GP, P MG-MS, UP		PP	SU MP	SM	NM4	M52

Note: The above chart is based on published data and not authorized by each manufacturer.

Chipbreaker Comparison Charts

●Positive inserts

Application code		Tungaloy	Mitsubishi Material	Sumitomo Electric Hard Metal	Kyocera	Sandvik	Hitachi Tool	Kenna-metal	Dijet	Iscar	TaeguTec	Widia	Walter	Ceratizit
P Steel	Precision finishing	**01**		FC, FW	CF		No sign	UF		SF		2		
	Finishing and light cutting	**PSF, PF** **PS, PSS** **W08 ~ 20**	FV, SQ, SV MV R/L, R/L-FD R/L-FS, R/L-MV R/L-F, R/L-L	FP, FZ, LU FK, SS, SC SU, SK, SF US W, SD FX, FY	XP, GP, DP HQ, XQ, VF R/L A, B, C, H, Y	UF, PF, WF PF(MF) PM(MM) UM R/L-K	JQ JE JQ	11, GM LF	FT	PF SM, 14, 17 19, XL R/L RF, LF No sign	FA FG GF	41	PF4 PS5	FN SMF, SF
	Medium cutting	**PM** **23** **24** **All-round** **RS**	No sign RR, RBS No sign	SU, MU UJ SC (except for G-class inserts) RP	HQ GP, DP All-round (No sign) G	PM, PR UM, UR WM 53 No mark No mark	J JE All-round RG	MF FW, MW	GG	DT, HQ	MT MT	43	PM5	SMQ
	High-feed, small depth of cut cutting	**61**	No sign			No mark	WE			No sign 14	No sign	No sign		
	Turning on small lathes	**J08 ~ 10** **JRP, JSP, JPP** **JS**	R/L-SR, R/L-SN R/L-SS SMG		F, J, U, CK FSF, USF, JSF CF, GF GQ	R/L-F			MF, MM ALU, MM1 ASF FT, ACB		GF, GW			
M Stainless	Finishing	**PSF, SS** **PSS**	FV			KF, WF KM, WN Without chipbreaker KR		GM, LF MF			FG	41	PF4	F23
K Cast Iron	Cutting of cast irons	**CM** **Without chipbreaker**	Without chipbreaker	Without chipbreaker	Without chipbreaker	KF, R/L-K. KM Without chipbreaker UM, KR	Without chipbreaker	Without chipbreaker	Without chipbreaker	19	MT Without chipbreaker		PS5, PM5 Without chipbreaker	SM
N Non-ferrous	Cutting of non-ferrous metals	**AL** **Read type**	AZ R/L-F R/L	AG, AW FY	AH A3	AL		GT-HP		AS	FL	AL1, AL2, AL3	PM2	23P, 25Q

Note: The above chart is based on published data and not authorized by each manufacturer.

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WORLDWIDE NETWORK

Tungaloy
Member IMC Group

Tungaloy Germany GmbH
An der Alten Ziegelei 1
D-40789 Monheim, Germany
Phone: +49-2173-90420-0 Fax: +49-2173-90420-19
www.tungaloy.de

Tungaloy France S.A.S.
ZA Courtaboeuf - Le Rio, 1 rue de la Terre de Feu
F-91952 Courtaboeuf Cedex, France
Phone: +33-1-6486-4300 Fax: +33-1-6907-7817
www.tungaloy.fr

Tungaloy Italia S.r.l.
Via E. Andolfato 10
I-20126 Milano, Italy
Phone: +39-02-252012-1 Fax: +39-02-252012-65
www.tungaloy.it

Tungaloy Czech s.r.o
Turanka 115
CZ-627 00 Brno, Czech Republic
Phone: +420-532 123 391 Fax: +420-532 123 392
www.tungaloy.cz

Tungaloy Ibérica S.L.
C/Miquel Servet, 43B, Nau 7, Pol. Ind. Bufalvent
ES-08243 Manresa (BCN), Spain
Phone: +34 93 113 1360 Fax: +34 93 876 2798
www.tungaloy.es

Tungaloy Scandinavia AB
S:t Lars Väg 42A
SE-22270 Lund, Sweden
Phone:+46-462119200 Fax:+46-462119207
www.tungaloy.se

Tungaloy UK Ltd
The Technology Centre, Wolverhampton Science Park
Glaisher Drive, Wolverhampton, West Midlands WV10 9RU, UK
Phone: +44 121 309 0163 Fax: +44 121 270 9694
www.tungaloy.co.jp/uk salesinfo@tungaloyuk.co.uk

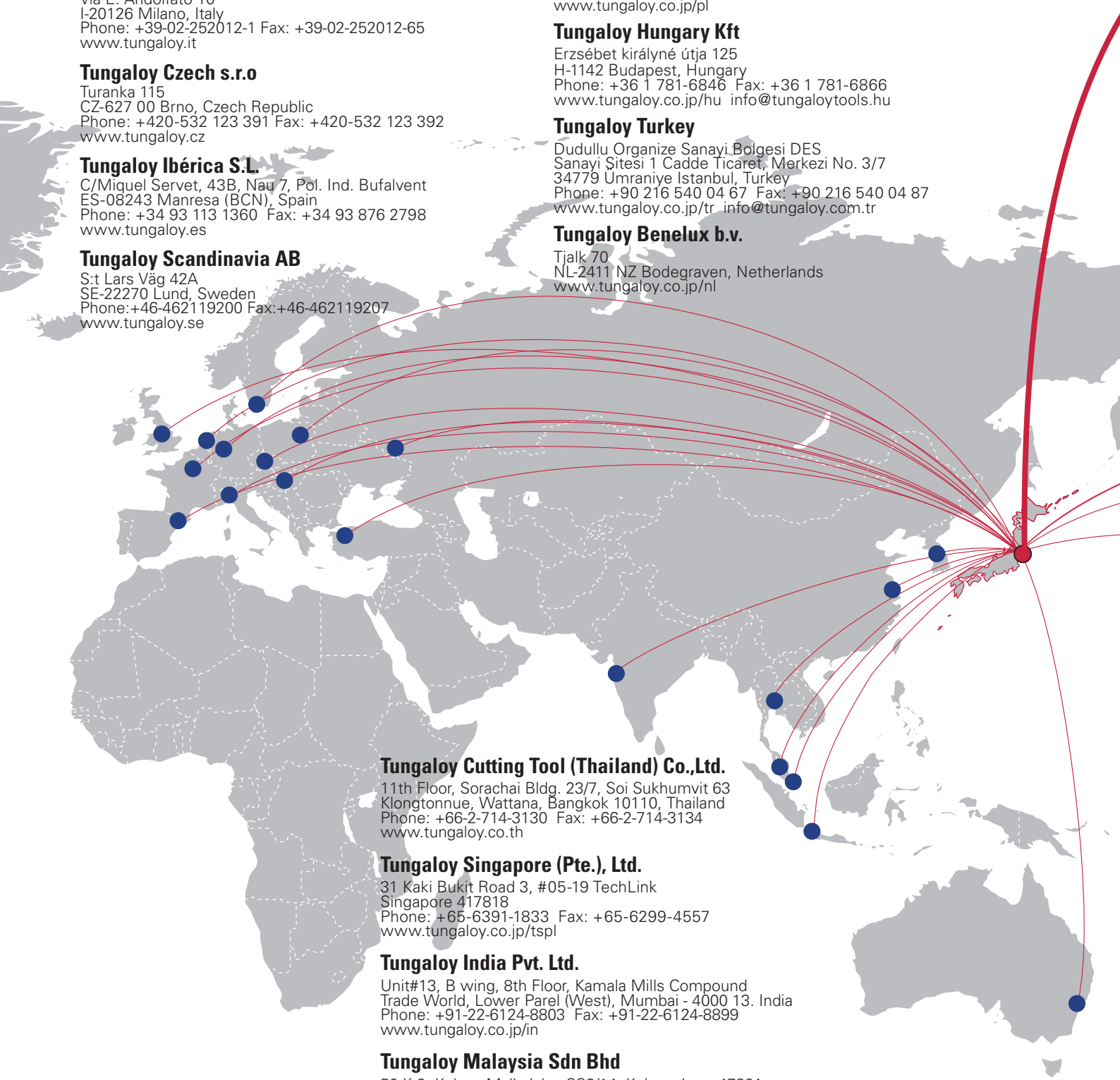
Tungaloy Rus, LLC
36-G Kostukova str.
308012 Belgorod, Russia
Phone: +7 4722 58 57 57 Fax: +7 4722 58 57 83
www.tungaloy.co.jp/ru

Tungaloy Polska Sp. z o.o.
ul. Genewska 24
PL-03-963 Warszawa, Poland
Phone: +48-22-617-0890 Fax: +48-22-617-0890
www.tungaloy.co.jp/pl

Tungaloy Hungary Kft
Erzsébet királyné útja 125
H-1142 Budapest, Hungary
Phone: +36 1 781-6846 Fax: +36 1 781-6866
www.tungaloy.co.jp/hu info@tungaloytools.hu

Tungaloy Turkey
Dudullu Organize Sanayi Bolgesi DES
Sanayi Sitesi 1 Cadde Ticaret, Merkezi No. 3/7
34779 Umraniye Istanbul, Turkey
Phone: +90 216 540 04 67 Fax: +90 216 540 04 87
www.tungaloy.co.jp/tr info@tungaloy.com.tr

Tungaloy Benelux b.v.
Tjalk 70
NL-2411 NZ Bodegraven, Netherlands
www.tungaloy.co.jp/nl

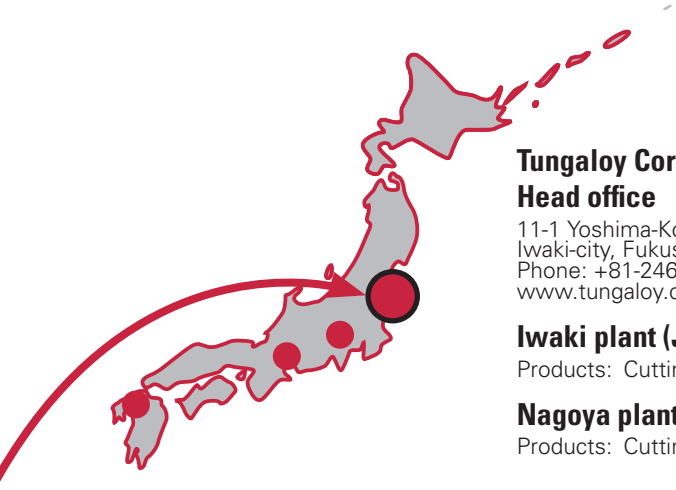


Tungaloy Cutting Tool (Thailand) Co.,Ltd.
11th Floor, Sorachai Bldg. 23/7, Soi Sukhumvit 63
Klongtonnue, Wattana, Bangkok 10110, Thailand
Phone: +66-2-714-3130 Fax: +66-2-714-3134
www.tungaloy.co.th

Tungaloy Singapore (Pte.), Ltd.
31 Kaki Bukit Road 3, #05-19 TechLink
Singapore 417818
Phone: +65-6391-1833 Fax: +65-6299-4557
www.tungaloy.co.jp/tspl

Tungaloy India Pvt. Ltd.
Unit#13, B wing, 8th Floor, Kamala Mills Compound
Trade World, Lower Parel (West), Mumbai - 4000 13. India
Phone: +91-22-6124-8803 Fax: +91-22-6124-8899
www.tungaloy.co.jp/in

Tungaloy Malaysia Sdn Bhd
50 K-2, Kelana Mall, Jalan SS6/14, Kelana Jaya, 47301
Petaling Jaya, Selangor Darul Ehsan, Malaysia
Phone: +603-7805-3222 Fax: +603-7804-8563
www.tungaloy.co.jp/my



Tungaloy Corporation (Japan)
Head office

11-1 Yoshima-Kogyodanchi
Iwaki-city, Fukushima, 970-1144 Japan
Phone: +81-246-36-8501 Fax: +81-246-36-8542
www.tungaloy.co.jp

Iwaki plant (Japan)

Products: Cutting tools

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Products: Cutting tools

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Products: Cutting tools

Tungaloy America, Inc.

3726 N Ventura Drive, Arlington Heights, IL 60004, U.S.A.
Phone: +1-888-554-8394 Fax: +1-888-554-8392
www.tungaloyamerica.com

Tungaloy Canada

432 Elgin St. Unit 3, Brantford, Ontario N3S 7P7, Canada
Phone: +1-519-758-5779 Fax: +1-519-758-5791
www.tungaloyamerica.com

Tungaloy Cutting Tool (Shanghai) Co.,Ltd.

Rm No 401 No.88 Zhabei, Jiangchang No.3 Rd
Shanghai 200436, China
Phone: +86-21-3632-1880 Fax: +86-21-3621-1918
www.tungaloy.co.jp/tcts

Tungaloy Korea Co., Ltd

#1312, Byucksan Digital Valley 5-cha
60-73 Gasan-dong, Geumcheon-gu
153-788 Seoul, Korea
Phone: +82-2-6393-8930 Fax: +82-2-6393-8952
www.tungaloy.co.jp/kr

Tungaloy Australia Pty Ltd

Unit 308/33 Lexington Drive
Bella Vista NSW 2153, Australia
Phone: +61-2-9672-6844 Fax: +61-2-9672-6866
www.tungaloy.co.jp/au

PT. Tungaloy Indonesia

Kompleks Grand Wisata Block AA-10, No.3-5 Cibitung
Bekasi 17510, Indonesia
Phone: +62-21-8261-5808 Fax: +62-21-8261-5809
www.tungaloy.co.jp/id

Tungaloy de Mexico S.A.

C Los Arellano 113, Parque Industrial Siglo XXI
Aguascalientes, AGS, Mexico 20290
Phone: +52-449-929-5410 Fax: +52-449-929-5411
www.tungaloy.co.jp/mx

Tungaloy do Brasil Comércio de Ferramentas de Corte Ltda.

Rua dos Sabias N.104
13280-000 Vinhedo, São Paulo, Brazil
Phone: +55-19-38262757 Fax: +55-19-38262757
www.tungaloybrasil.com.br

Tungaloy
Member IMC Group

Tungaloy Corporation (Head office)
11-1 Yoshima-Kogyodanchi
Iwaki-city, Fukushima, 970-1144 Japan
Phone: +81-246-36-8501 Fax: +81-246-36-8542
www.tungaloy.co.jp

Tungaloy America, Inc.
3726 N Ventura Drive, Arlington Heights, IL 60004, U.S.A.
Phone: +1-888-554-8394 Fax: +1-888-554-8392
www.tungaloyamerica.com

Tungaloy Canada
432 Elgin St. Unit 3, Brantford, Ontario N3S 7P7, Canada
Phone: +1-519-758-5779 Fax: +1-519-758-5791
www.tungaloyamerica.com

Tungaloy de Mexico S.A.
C Los Arellano 113, Parque Industrial Siglo XXI
Aguascalientes, AGS, Mexico 20290
Phone:+52-449-929-5410 Fax:+52-449-929-5411
www.tungaloyamerica.com

Tungaloy do Brasil Comércio de Ferramentas de Corte Ltda.
Rua dos Sabias N.104
13280-000 Vinhedo, São Paulo, Brazil
Phone:+55-19-38262757 Fax:+55-19-38262757
www.tungaloy.co.jp/br

Tungaloy Germany GmbH
An der Alten Ziegelei 1
D-40789 Monheim, Germany
Phone: +49-2173-90420-0 Fax: +49-2173-90420-19
www.tungaloy.de

Tungaloy France S.A.S.
ZA Courtaboeuf - Le Rio, 1 rue de la Terre de feu
F-91952 Courtaboeuf Cedex, France
Phone: +33-1-6486-4300 Fax: +33-1-6907-7817
www.tungaloy.fr

Tungaloy Italia S.r.l.
Via E. Andolfato 10
I-20126 Milano, Italy
Phone: +39-02-252012-1 Fax: +39-02-252012-65
www.tungaloy.it

Tungaloy Czech s.r.o
Turanka 115
CZ-627 00 Brno, Czech Republic
Phone: +420-532 123 391 Fax: +420-532 123 392
www.tungaloy.cz

Tungaloy Ibérica S.L.
C/Miquel Servet, 43B, Nau 7, Pol. Ind. Bufalvent
ES-08243 Manresa (BCN), Spain
Phone:+34 93 113 1360 Fax:+34 93 876 2798
www.tungaloy.es

Tungaloy Scandinavia AB
S:t Lars Väg 42A
SE-22270 Lund, Sweden
Phone:+46-462119200 Fax:+46-462119207
www.tungaloy.se

Tungaloy Rus, LLC
36-G Kostukova str.
308012 Belgorod, Russia
Phone:+7 4722 58 57 57 Fax:+7 4722 58 57 83
www.tungaloy.co.jp/ru

Tungaloy Polska Sp. z o.o.
ul. Genewska 24
03-963 Warszawa, Poland
Phone: +48-22-617-0890 Fax: +48-22-617-0890
www.tungaloy.co.jp/pl

Tungaloy U.K. Ltd
The Technology Centre, Wolverhampton Science Park
Glaisher Drive, Wolverhampton, West Midlands WV10 9RU, UK
Phone:+44 121 309 0163 Fax: +44 121 270 9694
www.tungaloy.co.jp/uk salesinfo@tungaloyuk.co.uk

Tungaloy Hungary Kft
Erzsébet királyné útja 125
H-1142 Budapest, Hungary
Phone: +36 1 781-6846 Fax: +36 1 781-6866
www.tungaloy.co.jp/hu info@tungaloytools.hu

Tungaloy Turkey
Dudullu Organize Sanayi Bolgesi DES
Sanayi Sitesi 1 Cadde Ticaret, Merkezi No.3/7
34779 Umraniye Istanbul, TURKEY
Phone: +90 216 540 04 67 Fax: +90 216 540 04 87
www.tungaloy.co.jp/tr info@tungaloy.com.tr

Tungaloy Benelux b.v.
Tjalk 70
NL-2411 NZ Bodegraven, Netherlands
www.tungaloy.co.jp/nl

Tungaloy Cutting Tool (Shanghai) Co.,Ltd.
Rm No 401 No.88 Zhabei, Jiangchang No.3 Rd
Shanghai 200436, China
Phone: +86-21-3632-1880 Fax: +86-21-3621-1918
www.tungaloy.co.jp/tcts

Tungaloy Cutting Tool (Thailand) Co.,Ltd.
11th Floor, Sorachai Bldg. 23/7, Soi Sukhumvit 63
Klongtonnue, Wattana, Bangkok 10110, Thailand
Phone: +66-2-714-3130 Fax: +66-2-714-3134
www.tungaloy.co.th

Tungaloy Singapore (Pte.), Ltd.
31 Kaki Bukit Road 3, #05-19 TechLink
Singapore 417818
Phone:+65-6391-1833 Fax:+65-6299-4557
www.tungaloy.co.jp/tspl

Tungaloy India Pvt. Ltd.
Unit#13, B wing, 8th Floor, Kamala Mills Compound
Trade World, Lower Parel (West), Mumbai - 4000 13. India
Phone: +91-22-6124-8804 Fax: +91-22-6124-8899
www.tungaloy.co.jp/in

Tungaloy Korea Co., Ltd
#1312, Byucksan Digital Valley 5-cha
Beotkkot-ro 244, Geumcheon-gu
153-788 Seoul, Korea
Phone:+82-2-2621-6161 Fax:+82-2-6393-8952
www.tungaloy.co.jp/krr

Tungaloy Malaysia Sdn Bhd
50 K-2, Kelana Mall, Jalan SS6/14, Kelana Jaya, 47301
Petaling Jaya, Selangor Darul Ehsan, Malaysia
Phone:+603-7805-3222 Fax:+603-7804-8563
www.tungaloy.co.jp/my

Tungaloy Australia Pty Ltd
Unit 308/33 Lexington Drive
Bella Vista NSW 2153, Australia
Phone:+612-9672-6844 Fax:+612-9672-6866
www.tungaloy.co.jp/au

PT. Tungaloy Indonesia
Kompleks Grand Wisata Block AA-10 No.3-5 Cibitung
Bekasi 17510, Indonesia
Phone:+62-21-8261-5808 Fax:+62-21-8261-5809
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