

## INDEX

<b>Field Balancing Equipment</b>	
Balance Keeper DEP-J	470
Fieldmatic DEP-H	470
<b>Horizontal Type Balancing Machines</b>	
FH-G Series	471
FH Series	471
AH Series	472
Examples of Usage	472
<b>Vertical Type Balancing Machines</b>	
FV-B Series	473
FV-BT Series	473
Examples of Usage	474



**Field Balancing  
Equipment Balance  
Keeper**



**Horizontal Type  
Balancing Machines For  
Soft Bearing**



**Vertical Type Balancing  
Machines For Unbalance  
Measurement**

## New Products



DEP-J1

# Balance Keeper DEP-J

## Field Balancing Equipment

### FEATURES

- Accurate Detection of Unbalance in Rotors on Site.

This is an instrument optimal for the correction of unbalance so necessary in maintaining the durability, accuracy and longevity of rotating machinery such as motors, blowers, pumps and compressors found in a typical production facility.



### SPECIFICATIONS

Model No.		DEP-J1
Display		Phase (angle: 0~359.9°, amplitude (mass), real-time vibrations of two planes, revolution speed, and divided unbalance components (3 - 120 equal/unequal angle components)
Functions		Correction (number of measuring planes): Single plane - dual planes (optional vibration pickups need to be added.) Correction plane separate measurement with the coefficient of influence Number of registered workpieces: Max. 60 Number of pieces of measurement data to be stored: Max. 200 for each workpiece
Measuring range	Revolution speed	60-99999min <sup>-1</sup> (Differs depending on the used pickup.)
	Frequency of vibration	10 to 1000Hz (Differs depending on the pickup used.)
	Resolutions	Switching display of displacement, speed, acceleration, and voltage
Panel unit		Displacement: 0.001m, Speed: 0.001cm/s, Acceleration: 0.001cm/s <sup>2</sup> , Voltage: 0.001mV
Input		Touch panel/Color LCD ten-key panel
Output		Pickup input: 2 circuits, Detector input: 1 circuit
Memory function		RS232C
Memory function		A memory card available with one slot for a compact flash memory (Optional accessory: Code No.19DAA007)
Input/Output port		One port
Power supply		100VAC, 50/60Hz, 15W
Operating temperature range		0 to 40C
Dimensions (W x D x H) / Mass		260 x 240 x 130mm, Approx. 3Kg

# Fieldmatic DEP-H

## Field Balancing Equipment

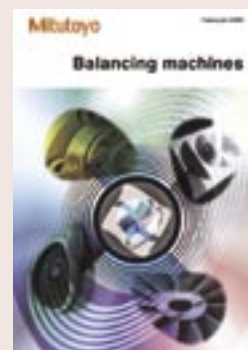
### FEATURES

- Portable unbalance measuring instrument equipped with vibration analysis function.
- Packs many balancing test functions into a compact instrument
- A notebook computer running under Windows is used as a man-machine-interface.



### SPECIFICATIONS

Model No.		DEP-H
Method of measurement		Automatic measurement of phase and amplitude simultaneously by using multiplication method
Measurement range	Revolution speed	60 to 60,000min <sup>-1</sup> (unbalance measurement)
	Max. sensitivity	5mV/FS (at the minimum vibration frequency)
Input terminal		Pickup: Two circuits standard (six circuits optional), Detector: One circuit
Power supply		100VAC 50/60Hz
Method of display		Simultaneous display of phase, amplitude and revolution speed
Correction		1 - 6 planes (No. of measurement planes)
No. of storage and calculation circuits		No limitation (by using external storage media)
Frequency		3 to 20,000Hz
Vibration analysis		Waveform display (1 to 6 channels) Two-dimensional and three-dimensional display (1 to 6 channels) of FFT
Display capability		Amplitude: 0.001μm, Velocity: 0.0001cm/s, Voltage: 0.01mV



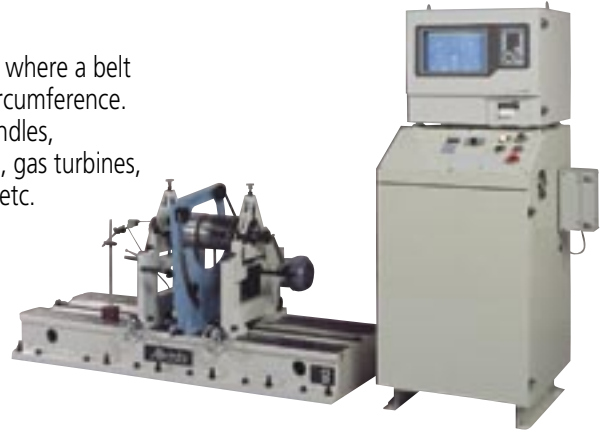
Refer to the Balancing machines leaflet (E4289) for more details.

# FH-G Series

## SERIES 856 — Horizontal Type Balancing Machines for Hard Bearing

### FEATURES

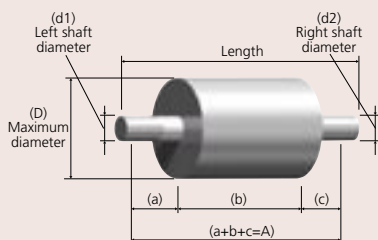
- Suitable for cylindrical rotors where a belt can be fitted on the outer circumference.
- Applications: high-speed spindles, magnetic drums, air spindles, gas turbines, steam turbines, gyroscopes, etc.



### SPECIFICATIONS

Model No. (PC type)	FH-218G-C1	FH-228G-C1	FH-318G-C1	FH-328G-C1	FH-418G-C1	FH-428G-C1	FH-518G-C1	FH-528G-C1	FH-618G-C1	FH-628G-C1	FH-718G-C1	FH-728G-C1
Model No. (analog type)	FH-218G-A1	FH-228G-A1	FH-318G-A1	FH-328G-A1	FH-418G-A1	FH-428G-A1	FH-518G-A1	FH-528G-A1	FH-618G-A1	FH-628G-A1	FH-718G-A1	FH-728G-A1
Rotor mass	0.1 - 14kg	0.2 - 20kg	0.5 - 45kg	0.7 - 75kg	1 - 140kg	2 - 200kg	2.5 - 420kg	4 - 700kg	5 - 1400kg	10 - 2500kg	15 - 4200kg	30 - 7000kg
Rotor diameter (D)	400mm		600mm		800mm		1200mm		1600mm		2000mm	
Rotor shaft diameter (d1), (d2)	Standard	5 - 22mm	10 - 50mm		10 - 70mm		20 - 100mm		20 - 140mm		30 - 160mm	
	Large	20 - 40mm	50 - 75mm		70 - 120mm		100 - 180mm		140 - 250mm		160 - 300mm	
	Extra-large	over 40mm	over 75mm		Over 120mm		over 180mm		over 250mm		over 300mm	
Distance (L / R frames)	400mm		700mm		1000mm		1400mm		1900mm		2400mm	
Dia. range for fitting belt	20 - 150mm		25 - 200mm		40 - 240mm		50 - 300mm		80 - 400mm		120 - 450mm	
Test rotational speed	900 - 3600min		600 - 2500min		600 - 2000min		450 - 1800min		350 - 1600min		250 - 1400min	
Drive motor	0.2kW	0.2kW	0.4kW	0.4kW	0.75kW	0.75kW	1.5kW	2.2kW	2.2kW	3.7kW	5.5kW	7.5kW
Measurement sensitivity	0.05g•mm	0.1g•mm	0.15g•mm	0.3g•mm	0.35g•mm	0.7g•mm	1.5g•mm	2g•mm	3g•mm	5g•mm	7g•mm	10g•mm

### Schematic view of a rotor



Maximum distance between left and right bearings

a = distance between the center of the left bearing and the left correction plane  
b = distance between the left correction plane and the right correction plane  
c = distance between the right correction plane and the center of the right bearing

Note 1: As an option, all types of machines can handle larger dimensions of either D, d1, d2 or a+b+c provided the rotor mass is within the range indicated in the specifications of the respective machine type.

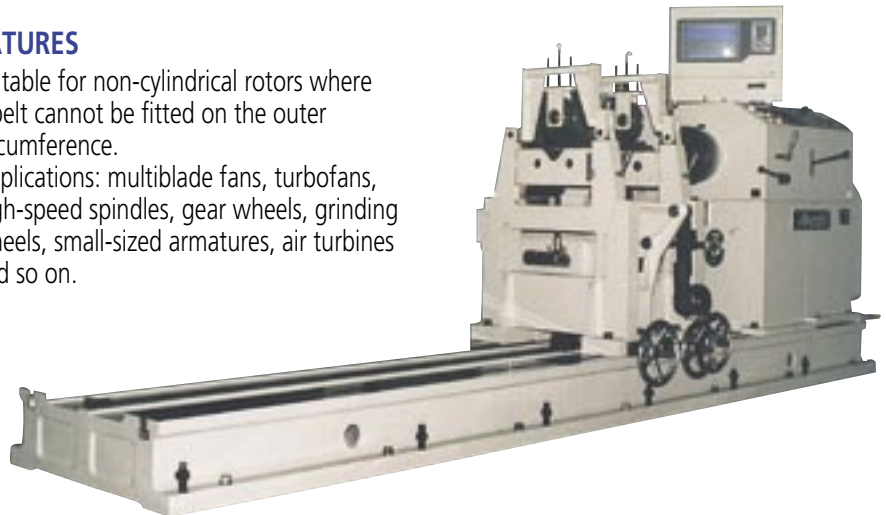
Note 2: As an option, all types of machines can handle rotor shapes that are different from the schematic view, such as a rotor having no bearings.

# FH Series

## SERIES 856 — Horizontal Type Balancing Machines for Hard Bearing

### FEATURES

- Suitable for non-cylindrical rotors where a belt cannot be fitted on the outer circumference.
- Applications: multiblade fans, turbofans, high-speed spindles, gear wheels, grinding wheels, small-sized armatures, air turbines and so on.



### SPECIFICATIONS

Model No. (PC type)	FH-418G-C1	FH-428G-C1	FH-518G-C1	FH-528G-C1	FH-618G-C1	FH-628G-C1	FH-718G-C1	FH-728G-C1	FH-818G-C1	FH-828G-C1
Model No. (analog type)	FH-418G-A1	FH-428G-A1	FH-518G-A1	FH-528G-A1	FH-618G-A1	FH-628G-A1	FH-718G-A1	FH-728G-A1	FH-818G-A1	FH-828G-A1
Rotor mass	1 - 140kg	2 - 200kg	2.5 - 420kg	4 - 700kg	5 - 1400kg	10 - 2500kg	15 - 4200kg	30 - 7000kg	100 - 14000kg	200 - 20000kg
Rotor diameter (D)	800mm		1200mm		1600mm		2000mm		2400mm	
Rotor shaft diameter (d1), (d2)	Standard	10 - 70mm	20 - 100mm		20 - 140mm		30 - 160mm		50 - 200mm	
	Large	70 - 120mm	100 - 180mm		140 - 250mm		160 - 300mm		200 - 400mm	
	Extra-large	Over 120mm	over 180mm		over 250mm		over 300mm		over 400mm	
Distance (universal coupling flange edge / left frame center)	900mm		1500mm		2000mm		2500mm		5000mm	
Test rotational speed	450 / 900 / 1800min		360 / 720 / 1440min		300 / 490 / 760 / 1230min		250 / 410 / 615 / 1010min		215 / 360 / 600 / 890 / 1370min	
Drive motor	0.75kW	0.75kW	1.5kW	2.2kW	5.5kW	7.5kW	11kW	22kW	30kW	45kW
Measurement sensitivity	0.5g•mm	2.75g•mm	1.5g•mm	2.75g•mm	3g•mm	5g•mm	7g•mm	10g•mm	15g•mm	20g•mm

# AH Series

## SERIES 850 — Horizontal Type Balancing Machines for Soft Bearing

### FEATURES

- In pursuit of easy handling and convenient operation Suitable for balancing rotors that require testing at high speed and with

high accuracy, such as small motors, turbo molecular pumps, spindles, turbo chargers and small fans.



### SPECIFICATIONS

Model No.	AH-104G-C2	AH-114G-C2	AH-204G-C2	AH-214G-C2
Rotor mass	0.01 - 0.3kg	0.03 - 1kg	0.05 - 3kg	0.1 - 10kg
Rotor maximum barrel diameter	80mm	140mm	200mm	240mm
Rotor distance between bearings	80mm	110mm	300mm	360mm
Rotor shaft diameter	2 - 9mm	2 - 14mm	5 - 20mm	6 - 25mm
Test revolution speed	3000 - 6000min <sup>-1</sup>	2000 - 5000min <sup>-1</sup>	1000 - 3000min <sup>-1</sup>	1000 - 3000min <sup>-1</sup>
Driving motor	0.04kW	0.04kW	0.09kW	0.09kW
Minimum achievable residual unbalance	0.05μm (under designated conditions)			
Drive mechanism for rotation	Belt drive, self drive			
Power supply	100VAC, 500VA		100VAC, 1kVA	
Installation area	600 x 675mm		720 x 765mm	800 x 850mm
Machine height	1660mm		1760mm	1800mm

\* The above figures are valid for balancing machines manufactured by Mitutoyo Corporation as its standard models.

particular application.

## Examples of Usage

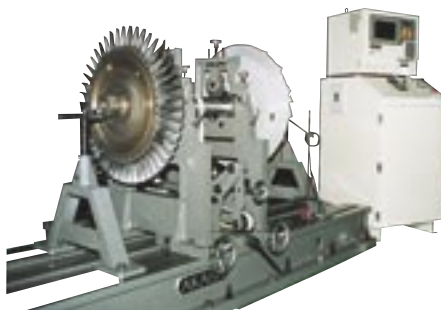
### FH-318G-C1, universal model

- Belt drive type, universal model Ideal for remodeling and development of four-cylinder crankshafts.



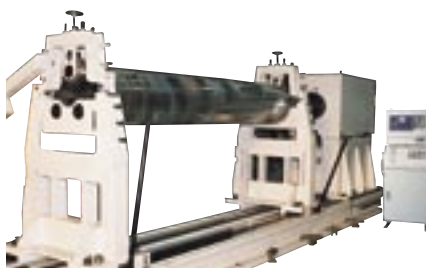
### FH-518G-C1, universal model

- Belt drive type, universal model Stable measurement is possible for rotors having large windage loss such as turbines.



### FH-828C-C1, universal model

- End drive type, universal model Suitable for rotors having both long length and large diameter such as reduction rolls.



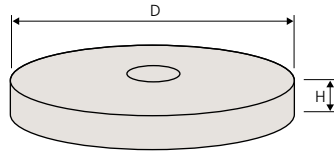
Refer to the Balancing machines leaflet (E4289) for more details.

# FV-B Series

## SERIES 851 — Vertical Type Balancing Machines

### FEATURES

- Basic model for measurement of unbalance only.  
Vertical rotor dimensions (see Specifications)



### SPECIFICATIONS

Model No.	FV-116B-C4	FV-216B-C4	FV-226B-C4	FV-316B-C4
Rotor mass*	0.03 - 0.4kg	0.1 - 3kg	0.1 - 10kg	1 - 30kg
Rotor diameter** (D)	200mm	250mm	300mm	500mm
Rotor height** (H)	50mm	100mm	100mm	100mm
Test rotational speed	1800min <sup>-1</sup>	900min <sup>-1</sup>	900min <sup>-1</sup>	900min <sup>-1</sup>
Drive motor	0.06kW	0.2kW	0.75kW	1.5kW
Measurement sensitivity	0.5g•mm	0.1g•mm	0.1g•mm	0.5g•mm

Model No.	FV-214B-C3	FV-314B-C3	FV-324B-C3	FV-414B-C3
Rotor mass*	0.3 - 3kg	1 - 30kg	2 - 40kg	3 - 100kg
Rotor diameter** (D)	250mm	400mm	500mm	600mm
Rotor height** (H)	100mm	100mm	100mm	100mm
Test rotational speed	900min <sup>-1</sup>	750min <sup>-1</sup>	450min <sup>-1</sup>	450min <sup>-1</sup>
Drive motor	0.75kW	1.5kW	2.2kW	3.7kW
Measurement sensitivity	1g•mm	1g•mm	10g•mm	10g•mm

\* Rotor mass is the sum of the mass of the adapter and the workpiece.

\*\* Consult your local agent when the dimensions of the rotor are out of the range of the above specifications.

# FV-BT Series

## SERIES 851 — Vertical Type Balancing Machines

### FEATURES

- A model capable of providing machining and correction functions in addition to unbalance measurement.

### SPECIFICATIONS

Model No.	FV-216BT-C4	FV-226BT-C4	FV-316BT-C4
Rotor mass	0.1 - 3kg	0.1 - 10kg	1 - 30kg
Rotor diameter (D)	80 - 250mm	80 - 300mm	8 - 400mm
Rotor height (H)	100mm	100mm	100mm
Test rotational speed	900min	900min	900min
Drive motor	0.2kW	0.75kW	1.5kW
Measurement sensitivity	0.1g•mm	0.1g•mm	0.5g•mm

Model No.	FV-214BT-C3	FV-314BT-C3	FV-324BT-C3	FV-414BT-C3
Rotor mass	0.3 - 3kg	1 - 30kg	2 - 40kg	3 - 100kg
Rotor diameter (D)	80 - 250mm	80 - 400mm	80 - 400mm	120 - 500mm
Rotor height (H)	100mm	100mm	100mm	100mm
Test rotational speed	900min	750min	450min	450min
Drive motor	0.75kW	1.5kW	2.2kW	3.7kW
Measurement sensitivity	1g•mm	1g•mm	10g•mm	10g•mm

\* Rotor mass is the sum of the mass of the adapter and the workpiece.

\*\* Consult your local agent when the dimensions of the rotor are out of the range of the above specifications.

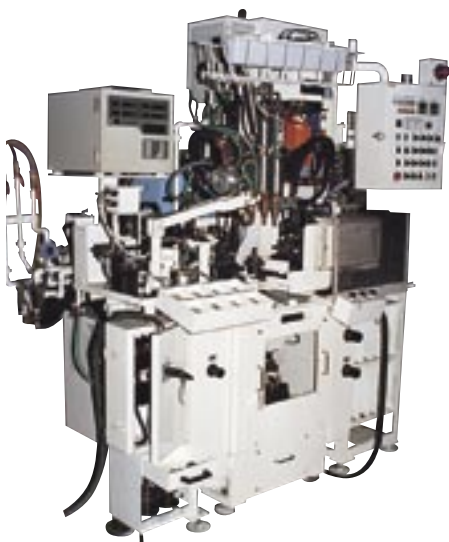




# Examples of Usage

## **FV-214BS, single-purpose model**

- Correction type single-purpose model Semi-automatic model dedicated to torque converter parts for automobiles, and equipped with an unbalance correction function.



## **FV-314BT-C3, universal model**

- Correction type universal model Basic model of correction type equipped with a manual correction tool.



## **FV-314BST, single-purpose model**

- Correction type universal model Universal model for flywheel assemblies of automobiles, and equipped with a manual correction function.



Refer to the Balancing machines leaflet (E4289) for more details.