

PARAGON

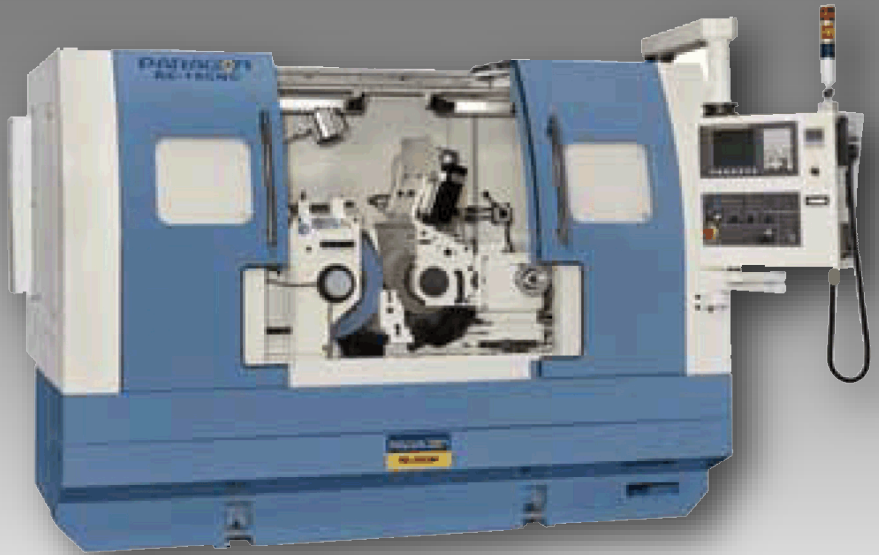
Centerless Grinding Machines

Advanced Design Concept

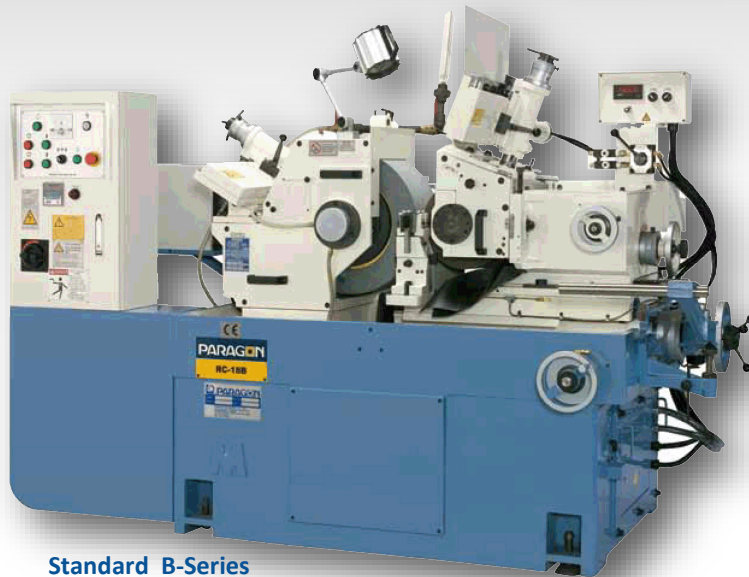
CNC/NC Centerless Grinding Machines

FANUC - MITSUBISHI

The CNC series centerless grinding machines can be used for infeed grinding and thrufeed grinding to ensure accuracy and high productivity in workpieces with diameters between 1mm and 50mm.



CNC with Full Enclosure



Standard B-Series

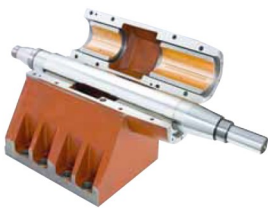
Machine Base

The machine base is manufactured from high quality **Meehanite** cast iron, low center of gravity, vibration stress relieved, featuring rigidity over 10^8 M/m and natural frequency over 150-Hz.

Guide Ways

The machine base has extra wide V guideways with great span and high frequency hardened surfaces, exhibiting outstanding stability during grinding operation with high accuracy and maximum durability.

Hydrodynamic Bearing



Hydrostatic Bearing



Precision Spindles

Both grinding wheel and regulating wheel spindles are made of high quality alloy steel (SNCM-439) and treated through: normalized, tempered, carburized hardening and then sub-zero treatment.

Grinding Wheel Spindle

All standard USA models use Hydrodynamic spindle bearings except for optional H-series Hydrostatic bearing.

Roundness: < 1.0 μ m **Cylindricity:** < 1.5 μ m

Regulating Wheel Spindle

Utilizes precision angular contact bearings and ball and roller bearings with dual-end supports that firmly maintain precision rotation and rigidity.

Roundness: < 0.5 μ m **Cylindricity:** < 1.0 μ m

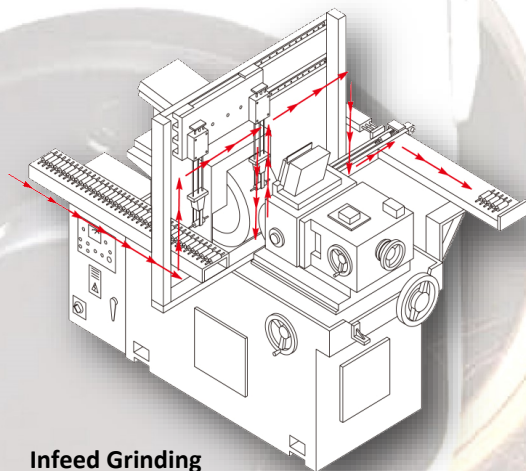
Regulating Wheel Spindle

Friction coefficient 0.001 - 0.003mm



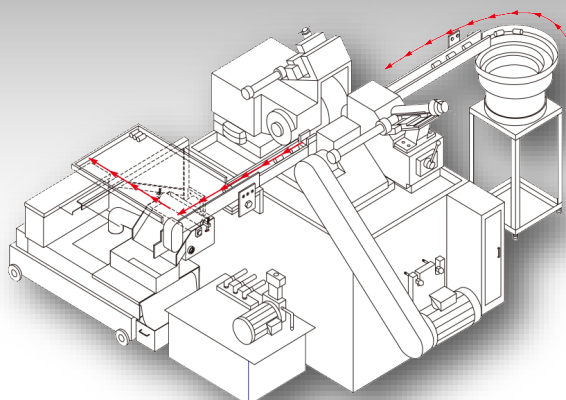
Automatic Grinding Process

Loading and unloading attachments can be designed for thrufeed and infeed for mass production parts.



Infeed Grinding

For components with heads, shoulders and multi diameters



Thrufeed Grinding

For round tubes, shafts and bars

CNC Axes Combinations

1-Axis

C: Regulating wheel upper slide or lower slide auto infeed.

2-Axis

X: Grinding wheel auto dressing (vertical)

Y: Regulating wheel lower slide auto infeed and compensation.

3-Axis

X: Grinding wheel auto dressing (vertical)

Z: Grinding wheel auto dressing (horizontal)

Y: Regulating wheel lower slide auto infeed and compensation.

4-Axis

X: Grinding wheel auto dressing (vertical)

Z: Grinding wheel auto dressing (horizontal)

C: Regulating wheel upper slide auto feed

Y: Regulating wheel lower slide auto infeed and compensation.

5-Axis:

X: Grinding wheel auto dressing (vertical)

Z: Grinding wheel auto dressing (horizontal)

A: Regulating wheel auto dressing (horizontal)

C: Regulating wheel upper slide auto feed

Y: Regulating wheel lower slide auto infeed and compensation.

6-Axis:

X: Grinding wheel auto dressing (vertical)

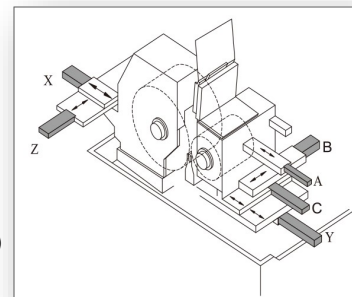
Z: Grinding wheel auto dressing (horizontal)

A: Regulating wheel auto dressing (vertical)

B: Regulating wheel auto dressing (horizontal)

C: Regulating wheel upper slide auto feed

Y: Regulating wheel lower slide auto infeed and compensation.



Model	RC-12	RC-16	RC-18	RC-1812	RC-20
Grinding Diameter (mm)	1 ~ 30mm	2 ~ 40mm	2 ~ 50mm	2 ~ 50mm	2 ~ 50mm
Grinding Wheel (dia. x width x hole)	305 x 150 x 120	405 x 205 x 203.2	455 x 205 x 228.6	455 x 305 228.6	510 x 205 x 304.8
Regulating Wheel (dia x width x hole)	230 x 150 x 127	280 x 205 x 139.7	280 x 205 x 139.7	305 x 205 x 177.8	305 x 205 x 177.8
Grinding Speed (peripheral speed)	2000 m/min.	2000 m/min.	2000 m/min.	2000 m/min.	2000 m/min.
Regulating Wheel Speed (RPM)	10 ~ 300	10 ~ 300	10 ~ 300	10 ~ 300	10 ~ 300
Grinding Wheel motor	5.63-kw	7.5-kw	11.3-kw	15-kw	15-kw
Regulating Wheel Motor	Servo Motor	Servo Motor	Servo Motor	Servo Motor	Servo Motor
Regulating Wheel Tilt Angle	+/- 5°	+/- 5°	+/- 5°	+/- 5°	+/- 5°
Regulating Wheel Swivel Angle	+/- 5°	+/- 5°	+/- 5°	+/- 5°	+/- 5°
Upper Slide Feed Graduation	3.5 (rev.) 0.05 (gra.)	3.5 (rev.) 0.05 (gra.)	3.5 (rev.) 0.05 (gra.)	3.5 (rev.) 0.05 (gra.)	3.5 (rev.) 0.05 (gra.)
Upper Slide Micro Feed Graduation	0.1 (rev.) 0.001 (gra.)	0.1 (rev.) 0.001 (gra.)	0.1 (rev.) 0.001 (gra.)	0.1 (rev.) 0.001 (gra.)	0.1 (rev.) 0.001 (gra.)
Lower Slide Feed Graduation	10 (rev.) 0.05 (gra.)	10 (rev.) 0.05 (gra.)	10 (rev.) 0.05 (gra.)	10 (rev.) 0.05 (gra.)	10 (rev.) 0.05 (gra.)
Lower Slide Micro Feed Graduation	0.2 (rev.) 0.001 (gra.)	0.2 (rev.) 0.001 (gra.)	0.2 (rev.) 0.001 (gra.)	0.2 (rev.) 0.001 (gra.)	0.2 (rev.) 0.001 (gra.)
Machine Dimensions (w x d x h)	1900 x 1550 x 1420mm	2000 x 1590 x 1450mm	2300 x 2050 x 1600mm	2300 x 2100 x 1600mm	2500 x 2150 x 1600mm
Machine Weight (kg)	1,700-kg	2,500-kg	3,200-kg	3,800-kg	3,900-kg