

● CNC Series

- RHC-620CNC
- RHC-630CNC (Heavy-Duty)
- RHC-650CNC (Heavy-Duty)

● B Series

- RHC-620B

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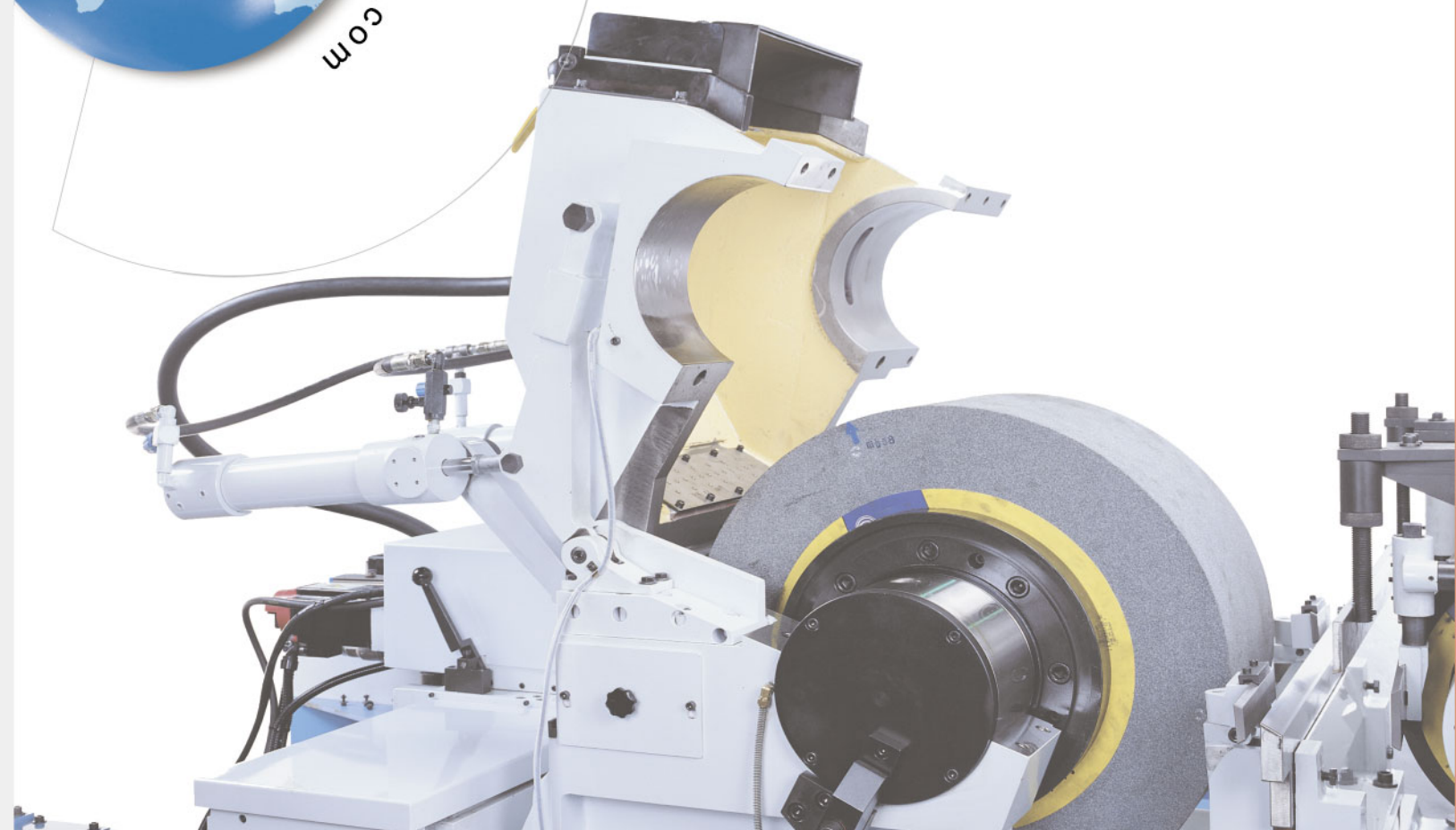
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PARAGON since 1968

Unparalleled, Choice CNC Grinding Solutions



High-Speed Centerless Grinding Machines

**CNC Series
B Series**



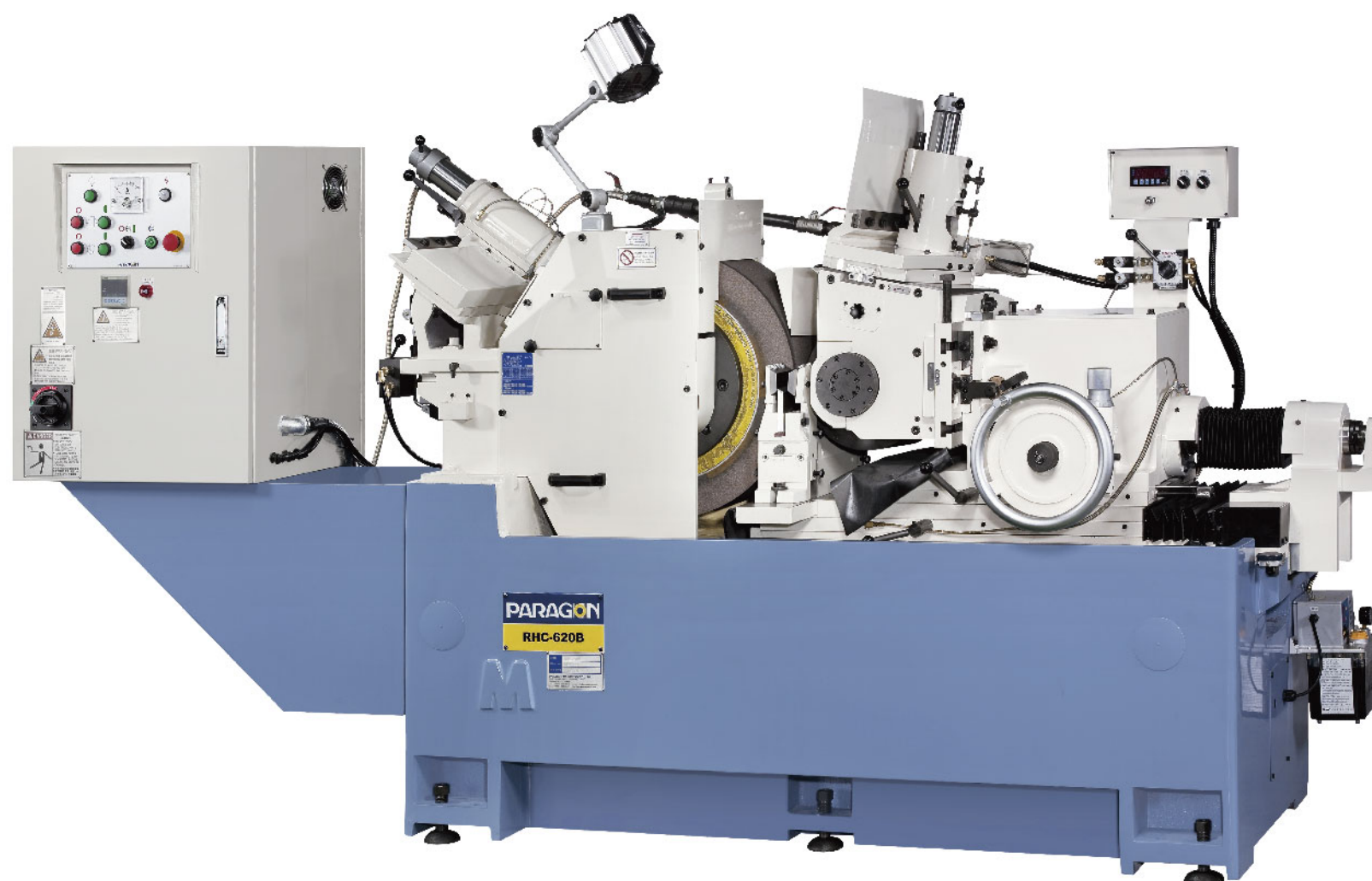
RHC-620 HIGH-SPEED CENTERLESS GRINDING MACHINE

CNC series / B series

Max. peripheral speed up to 3000m/min.
Grinding Wheel ϕ 610 x 205 x 304.8mm

The PARAGON RHC-620 B series high-speed centerless grinding machine have unique designed regulating wheel spindle that combines super precision angular contact ball bearings and cylindrical roller bearings on both sides. They handle both axial and radial loads to compensate for spindle thermal expansion and operate with zero radial clearance rigidity. Within these two bearing types exists multiple variations in design and materials. These bearings work well in higher spindle speeds (>100,000rpm) for massive volume.

The PARAGON RHC-620 CNC series high-speed centerless grinding machine includes B model advantages plus unique advance FANUC controller, monochrome screen, standard-operating interface with panel that has easy-to-understand symbols and letters for quick start. Full functionality multi-axes driven by servo motors allow optimized high accuracy.

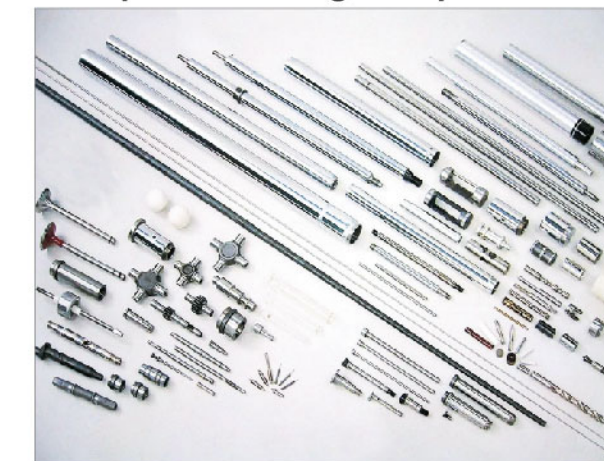


Controller

FANUC(Standard) / SIEMENS / MITSUBISHI

- ✓ PARAGON CNC series high-speed grinding machines have the latest technology and outstanding reliability in digital control that has compact design and is easy to automate, each with a monochrome screen display system.
- ✓ To complete the latest advance in CNC technology, PARAGON provides a unique, convenient operating interface to reduce set-up time and increase efficiency.
- ✓ Automatically memorizes the grinding wheel position in case of power failure.
- ✓ High accuracy is provided by powerful servo Absolute Coordinate System and high servo motor that directly drives ballscrews.
- ✓ Modern CNC control systems are extremely reliable and optimally tuned to the drive elements for high accurate grinding.
- ✓ Emergency stop button.
- ✓ All axes are controlled by Manual Pulse Generator (MPG) hand wheels for easy setting and nimble adjustment.

Example of Grinding Workpieces



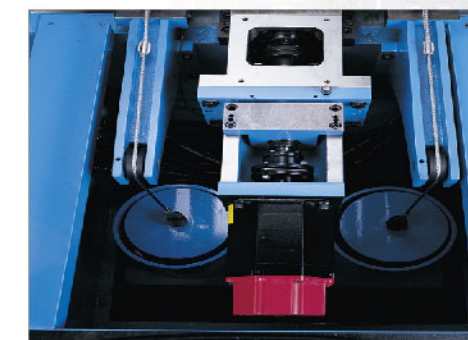
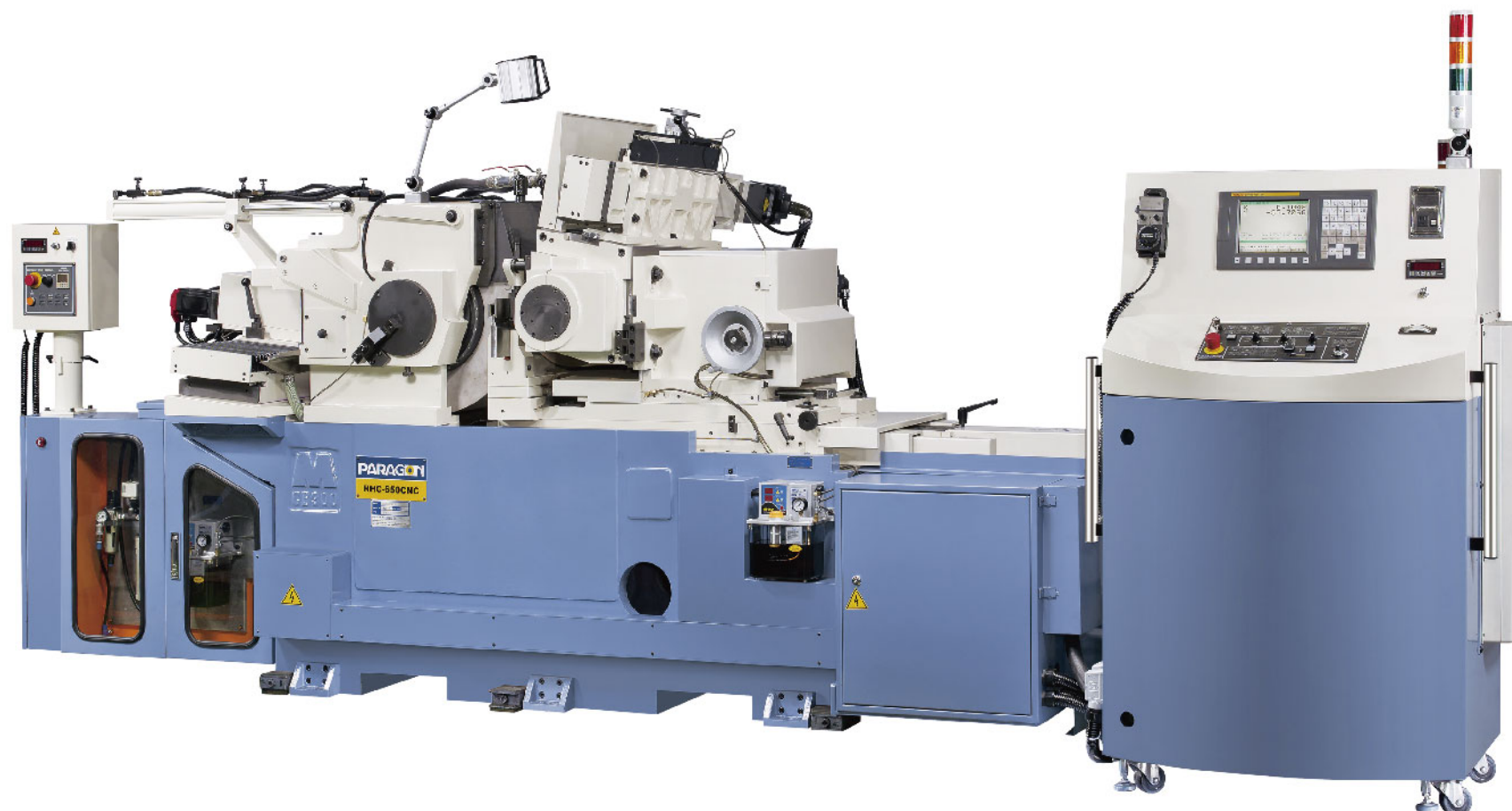
RHC-630, RHC-650 HIGH-SPEED CENTERLESS GRINDING MACHINE (HEAVY-DUTY) CNC series

Designed for large workpieces up to $\phi 200\text{mm}^*$
Extra Large Grinding Wheel $\phi 610 \times 500 \times 304.8\text{mm}$

The PARAGON RHC-630, RHC-650 CNC series high-speed centerless grinding machine (heavy-duty) features the innovative grinding wheel and regulating wheel which do not require flanges and utilize precision angular contact bearings, and ball and roller bearings with dual-end supports that firmly maintain spindle super precision rotation and rigidity. Unique and advanced FANUC controller is provided to offer simplified solutions for complex procedures.

Applicable Industries:

- Aerospace parts
- High precision machine parts
- Hydraulic & pneumatic parts
- Automotive and motorcycle parts, etc.
- Precision bearings
- Medical applications
- Electrical / Electronic equipments
- Cutting tools



Eliminate Backlash Device

The regulating wheel lower slide has weights combined with counter weight on the side of track to reduce the backlash between ballscrews to increase micro feed accuracy.



Grinding Wheelhead

Grinding wheelhead cover can be lifted by hydraulic cylinders that can easily and quickly change grinding wheel. Features new drive technology, the grinding wheel spindle and pulley rotation are synchronized by coupler to eliminate the influence of belt axial force. Double supporter that firmly maintain grinding wheel spindle offer super precision rotation and accuracy during heavy cutting.

Unparalleled Quality Assurance and Control

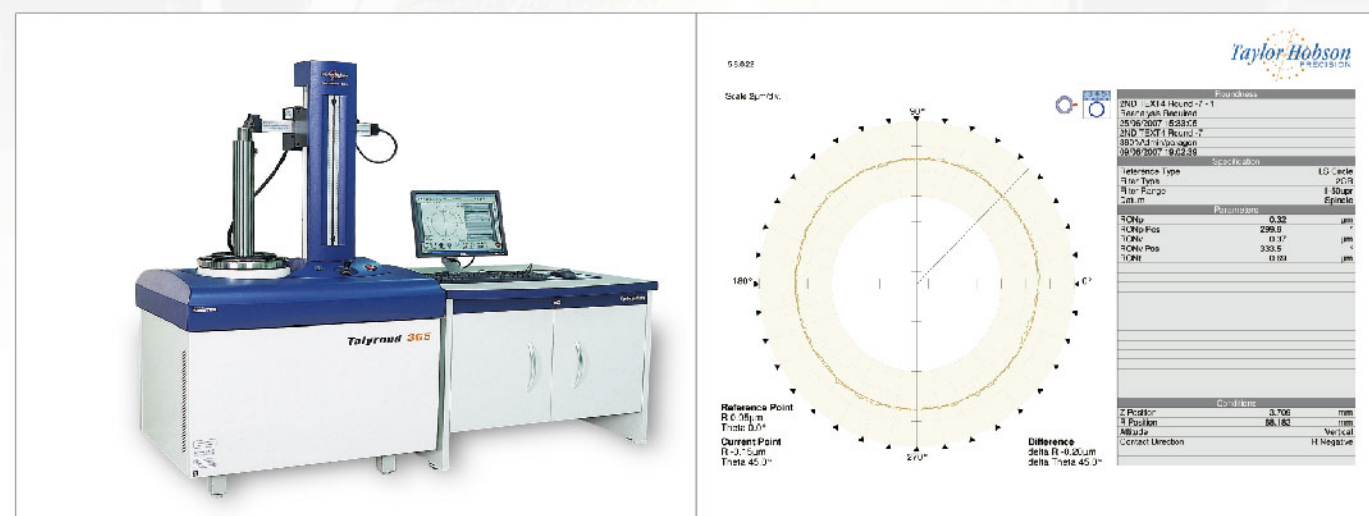
The systematic development, production and assembly are carried out in a process oriented manner and in strict compliance with **ISO 9001** directives.

PARAGON's Q.C. staff conducts rigorous quality control throughout the entire manufacturing process before shipment. Our quality control process includes: **a)** Strict Incoming Materials Inspection; **b)** Geometric Accuracy Inspection; **c)** Unloaded Spindle Test and **d)** Grinding Test.

Quality Assurance

Over and Over Again, PARAGON's Dedication to Quality Wins Customer's Satisfaction and Trust.

In order to produce the highest quality and value-added products, PARAGON has invested a great amount in purchasing up-to-date and sophisticated automatic manufacturing equipments and measuring devices, including CNC Horizontal Machining Center, Roundness Measuring Instrument, Roughness Measuring Instrument, Coordinate Measuring Machine, etc., and nearly 23,000 square meter air conditioned plant, all of which to provide a controlled environment and to improve the quality assurance.



Roundness Measuring Instrument



Contour / Roughness

CMM

New Structural Design Concepts



RHC-620

The RHC-620 grinding wheel spindle features fine hand scrapped hydrodynamic bearings made of steel and phosphor bronze alloy with oil lubrication, firmly maintains grinding spindle high precision rotation and rigidity to stand heavy grinding in a minimum gap.



RHC-630 / 650

The RHC-630 grinding wheel spindle utilizes super precision angular contact ball bearings and cylindrical roller bearings, they are preloaded on the axial and radial direction to achieve zero clearance rigidity and are automatically lubricated



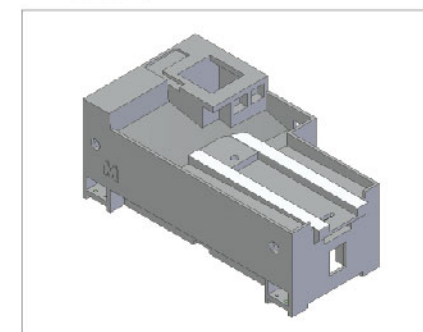
Regulating Wheel Spindle

On RHC-620 and RHC-630, the regulating wheel is driven directly by worm shaft, worm gear and powerful servo motor, infinite variable speed change to improve torque output and to get reliability with rotation speed.

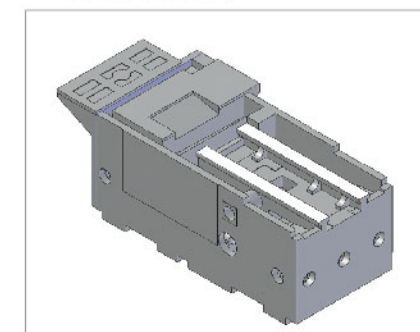
Also, the angular contact ball bearings and cylindrical roller bearings combined with double supporter offer improved stiffness and assure the stability of the spindle.

MACHINE BASE

RHC-620



RHC-630 / 650



The machine base is analyzed by advanced Finite Element Method (FEM) to achieve outstanding structural features assure high stiffness, manufactured from high quality GB-300 and GD-250 Meehanite cast iron which is a good tensile strength, wear resistance, maximum damping capability and long service life.

The H-type great span guideways are hardened and precised featuring spacing-less surface contact, low friction and high stiffness.

Spindle

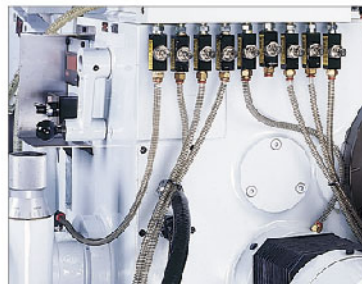
On RHC-620 and RHC-630, both grinding wheel and regulating wheel spindles are made of high quality alloy steel (SNCM-439) and treated through: normalized, tempered, carburized hardening and then sub-zero treatment. Then follows the precision grinding process: rough grinding, semi-finish grinding, finish grinding and lapping. The lapping process assures superior surface finish and greatly enhances spindle life and stability guaranteeing deformation free performance throughout its durable service life.



Automatic Lubricators

Automatic lubricators oil-mist type for grinding wheel spindle and pressure-relief type for grinding wheel dresser unit slides, reduces metal to metal friction, prevents overheating and deformation, which extends service life and steadiness of accuracy.

Photo from RHC-630CNC



Lubrication Oil Distributor

Lubrication oil distributor supplies fixed amount of oil feeding for grinding wheel spindle, guideways, dresser units and bearings to reduce metal to metal friction, prevent overheating and deformation, which guarantees constant high accuracy. (Standard)

Photo from RHC-620B



Dressing Device For CNC Series

Dressing device using FANUC servo motor to control position correctly, during the thrufeed grinding also can perform dressing with auto compensate and keep grinding workpiece accuracy (CNC series). G.W. dressing are conducted separately to avoid resonance.

Photo from RHC-630CNC



Dressing Device For Standard Series

Dressing unit is hydraulic traversed, with adjustable speed. Dressing slides are made of special alloy cast iron and hand scrapped (Standard). According to CE regulation, the electrical cabinet should be placed 80cm above the floor to prevent water and vapor pollution and enhance life-expectancy.

Photo from RHC-620B



Inverter for Grinding Wheel Spindle

Multi-step variable speed change in the G.W. allows easy testing to enhance grinding efficiency and precision level. When G.W. is wearing out, it maintains constant peripheral speed, cutting efficiency and surface precision through the controller. Gradual activation and halt avoid affecting life-expectancy of hydrostatic spindle and eliminate strident noise caused by belt.

ACCESSORIES

	RHC-620B	RHC-620CNC	RHC-630CNC	RHC-650CNC
CNC Controller (FANUC/SIEMENS/MITSUBISHI)	X	O	O	O
Inverter (Grinding Wheel)	△	△	△	△
Linear Scale for Upper Slide Feed	△	△	△	△
Linear Scale for Lower Slide Feed	△	△	△	△
Coolant Tank with Pump	O	O	O	O
Work Lamp	O	O	O	O
Tools + Kits	O	O	O	O
Wheel Flange Extractor	O	O	X	X
Oil Mist Separator	△	△	△	△
Paper Filter	△	△	△	△
Magnetic Coolant Separator	△	△	△	△
Hydrocyclone Coolant Separator	△	△	△	△
Automatic Lubricator	O	O	O	O
Electrical Cabinet Air Cooler	△	△	△	△
Electrical Cabinet Heat Exchanger	△	O	O	O
Grinding Wheel Balancing Stand & Arbor	△	△	X	X
Servo Motor for Regulating Wheel	O	O	O	O
Automatic Infeed Attachment	△	X	X	X
Automatic Loading / Unloading Attachment for Infeed Grinding	△	△	△	△
Manual Workpiece Feeder for Infeed Grinding	△	△	△	△
Workpiece Ejector (Hydraulic / Air)	△	△	△	△
Unloading Attachment for Thrufeed Grinding	△	△	△	△
Automatic Loading Attachment for Thrufeed Grinding (Hopper Type)	△	△	△	△
Automatic Loading Attachment for Thrufeed Grinding (Vibratory Feeder)	△	△	△	△
Automatic Loading Attachment for Thrufeed Grinding (Magazine Type)	△	△	△	△
Supporter for Long Bar Grinding	△	△	△	△
Vibration Meter	△	△	△	△
Grinding Wheel Trolley	X	X	△	△
Grinding Wheel	O	O	O	O
Grinding Wheel Flange	O	O	X	X
Regulating Wheel	O	O	O	O
Jig Crane for Grinding Wheel	△	△	△	△
Jig Hook for Grinding Wheel	△	△	△	△
Jig Hook for Regulating Wheel	△	△	△	△
Diamond Dresser	O	O	O	O
Hydraulic Tank with Pump	O	O	O	O
Hydraulic Oil Cooler	O	O	X	X
Infeed Work Rest + Carbide Blade	O	O	O	O
Thrufeed Work Rest + V shape Front Supporter + Carbide Blade	O	O	O	O
Profile template (Grinding Wheel)	△	X	X	X
Profile template (Regulating Wheel)	△	△	△	△

O Standard Equipment △ Optional Equipment X Not Applicable

OPTIONAL ACCESSORIES



Automatic Loading
Attachment for Infeed Grinding



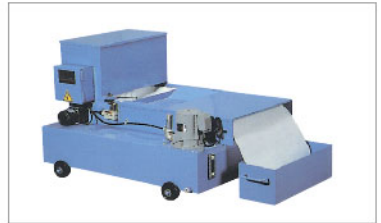
Automatic Unloading
Attachment for Infeed Grinding



Jig Crane with Hook for Grinding Wheel



Hydrocyclone Coolant Filter



Paper Filter



Magnetic Coolant Separator



Automatic Loading Attachment for
Thrufeed Grinding (Magazine Type)



Unloading Attachment for Thrufeed
Grinding



Automatic Loading Attachment for
Thrufeed Grinding (Hopper Type)



Oil Cooler



Vibratory Feeder for Thrufeed Grinding



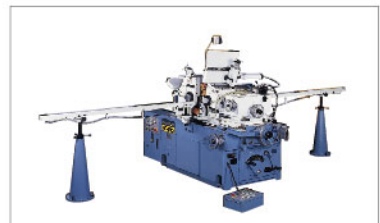
Wheel Balancing Stand & Arbor



Oil Mist Separator



Air Conditioner for Elec. Control Cabinet



Supporter for Long Bar Grinding



Vibration Meter

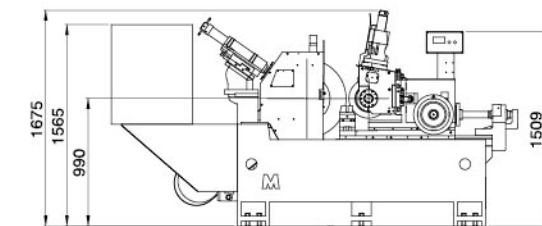
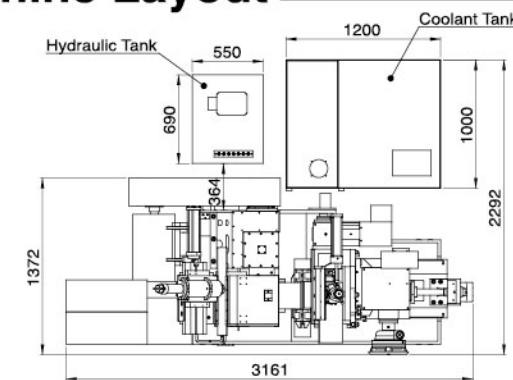
SPECIFICATIONS

Model	Unit	RHC-620CNC / B	RHC-630CNC	RHC-650CNC
Grinding range (dia.)	mm	Ø 10-100	Ø 10-125 (200 optional)	Ø 10-125 (200 optional)
Grinding wheel size (dia. x width x hole)	mm	Ø 610 x 205 x 304.8	Ø 610 x 305 x 304.8	Ø 610 x 500 x 304.8
Regulating wheel size (dia. x width x hole)	mm	Ø 305 x 205 x 177.8	Ø 330 x 305 x 203.2	Ø 330 x 500 x 203.2
Grinding wheel peripheral speed	m/s	50	50	50
Regulating wheel speed	rpm	15~300	10~200	10~200
Regulating wheel swivel angle	deg	±2.5	±2.5	±2.5
Regulating wheel tilt angle	deg	±5	±5	±5
Grinding wheel motor	HP	20	30	75
Hydraulic pump motor	kw	1	1	0.75
Coolant pump motor	kw	1/2	1	0.75
Regulating wheel servo motor	kw	3	3.89	0.4
Regulating wheel lower slide auto. Infeed servo motor	kw	1.2	1.2	1.4
Grinding wheel auto. Dressing infeed servo motor	kw	0.67	0.67	0.75
Machine dimension	mm	3,000 x 1,900 x 1,700	3,750 x 2,100 x 2,350	4,120 x 3,080 x 2,100
Machine weight	kg	5,200	12,800	8,500

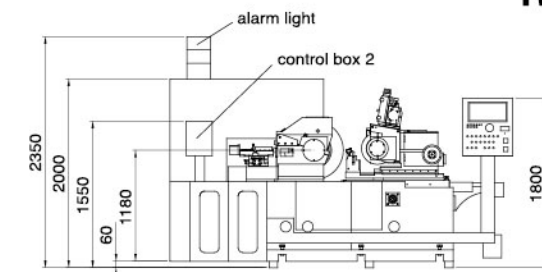
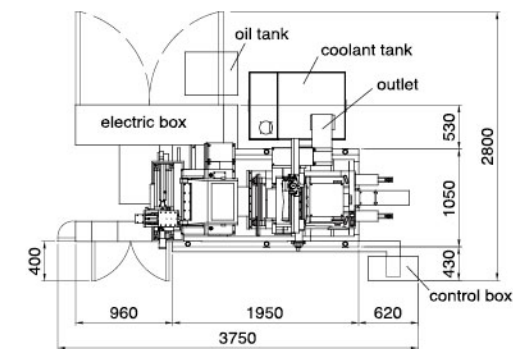
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Machine Layout

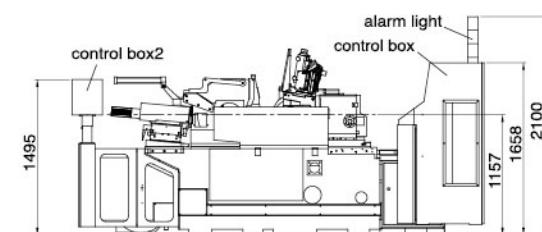
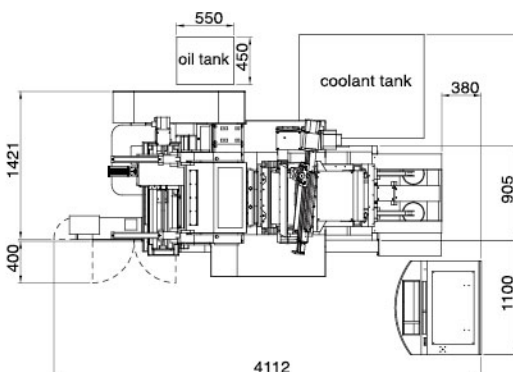
Unit: mm



RHC-620



RHC-630



RHC-650

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