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NC/CNC INTERNAL GRINDING MACHINE

JAINNHER

*Precision Engineered for Fast and
Precise Internal Grinding Operations.*

JAINNHER MACHINE CO., LTD.

JAINNHER CNC INTERNAL GRINDER

MACHINE FEATURES

- The structural parts are manufactured from high quality Meehanite cast iron, tempered and precision machined for maximum durability and long service life. The machine design meets human-engineering theorem, and features easy operation and extra high precision.
- Versatile cyclic grinding motions include fully automatic grinding, coarse grinding trimming, fine grinding and spark-free grinding. High accuracy, convenient operation and increased productivity. The machine is ideal for both mass production and small lot flexible grinding operations.
- The spindlehead employs high accuracy roller bearings, featuring high accuracy, high rigidity and quiet running. It can be swiveled $\pm 8^\circ$, making the machine ideal for grinding big taper of workpiece.
- The feed axis employs up and roller type linear guideways combined with servo motor drive. It provides rapid traverse and high positioning accuracy, and is suitable for fully automatic grinding functions, such as blind hole grinding, end face grinding and taper grinding.
- The control system consists of high quality electronic parts that meet European safety regulations. The electrical cabinet features dust-proof and water-proof construction. The control system also features self-diagnostic function with warning lamp indication.
- The machine is equipped with the advanced FANUC control with 8.4" colorful display. The CNC control uses macro machining programs that greatly reduce preparation time while upgrading machining efficiency.
- Forced lubrication system for bed surfaces reduces friction to a minimum. The bed is designed with heat dissipation and outstanding strength, ensuring maximum stability.



JHI-150CNC

- Jainnher self-developed conversational operational interface for maximum operational convenience, and is easy to learn and understand.
- Automatic operation and multiple settings. This allows for selecting coarse grinding, fine grinding, non-sparkle grinding and dressing.
- High precision NC control provides automatic dressing with compensation function.
- Ruggedly constructed throughout assures maximum rigidity and stability.
- Table spindle, X-axis and Z-axis are driven by servomotors.
- Intermittent lubrication on X-axis provides maximum smoothness of movement.



JAINNHER NC INTERNAL GRINDER

End Face Grinding Attachment (Optional)



JHI-150NC

Multiple Machine Type Choice

B Axis

- The high accuracy rotary table is composed by special Aluminum-Nickel, Bronze Worm Wheel, Harding Steel Worm, precise bearing and etc, that maintains precise divided accuracy for long term usage. In addition, the design of double leads and bearings is suitable for heavy grinding procedure and continuous process.
- Occlusion area reaches 35% ~ 45%.
- Good abrasion resistance, no need to adjust backlash within 2 years.
- Keep accuracy within 0.003° .
- Repeated positioning accuracy can be reached 0.001° . It satisfies fast positioning grinding requirement.



JHI-150BCNC

Satisfy Clients' Grinding Requirement!

- The base is made from high quality Meehanite cast iron and formed as high rigidity box structure, after tempered, stress relieving and hardening heat treatment double-V slide, will provide high rigidity, high precision and long service life features.
- Two axes transmission (X · Z). Worktable can be adjusted angle +12 ° at front and -3 ° rear. It is for grinding large workpiece and taper.
- The cartridge spindle in work head is supported by P4-class precision double roller and angular contact ball bearing.
- With 1,200mm stroke on workhead (manual moving), it is suitable for long workpiece.
- X axis adopts high precision roller linear guideway and C1 class pre-tensioned double nut ball screws.
- Z axis uses double-V hardening slide and C1 class pre-tensioned double nut ball screws.
- All sliding and rotating parts adopt automatic forced lubrication, to ensure optimal machine life and accuracy.
- Machine can be applied in transportation, energy and machine tool precision components industries.

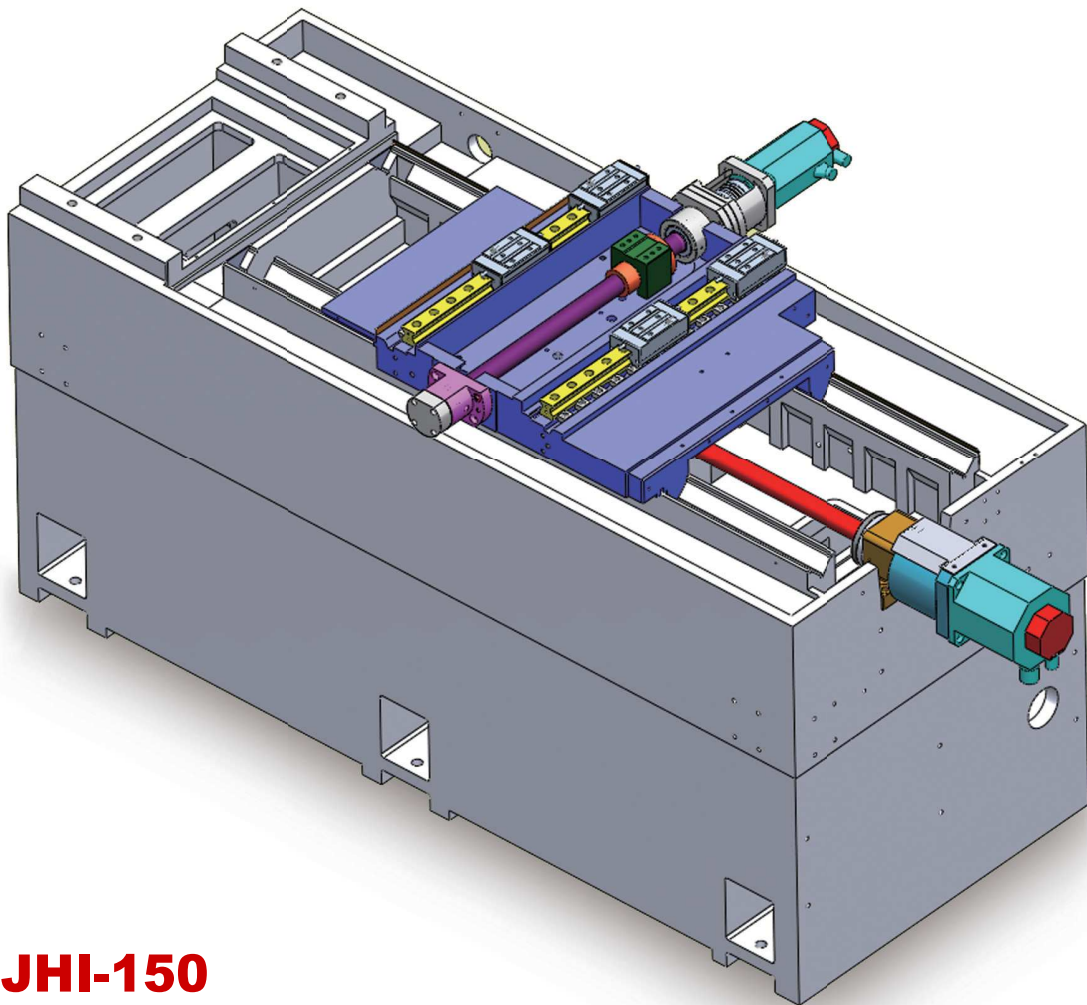


JHI-3012NC

Massive Machine Structure

Optimal Structural Design Guarantees Lifetime Accuracy

- The machine base is manufactured from high quality cast iron (FC30), tempered and stress relieved for maximum stability of material.
- Great span between slideways provides firm support for wheel head assembly.
- Ruggedly constructed throughout for outstanding rigidity and stability.
- Scientific rib reinforcement on the base structure for increased machine rigidity and deformation-free performance.



JHI-150

To maintain the long term accuracy after years of operation, the machine structure of the JAINNHIER Internal Grinding Machine is carefully designed and manufactured.



End Face Grinding Device (Optional)

- When requested, the machine is available to equip with an End Face Grinding Device, allowing the machine to perform internal and end face grinding at one time.
- This not only greatly increases machining efficiency but also achieves high perpendicularity accuracy.

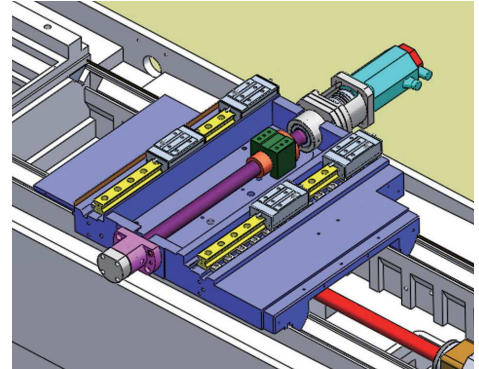
Swiveling Spindle head (for JHI-150 NC and CNC)

- The workhead can be swiveled $\pm 8^\circ$ allowing for grinding tapered parts.



Motor Fixing Bar

Just as the motor starts running, a vibration occurs. The fixing bar is used for holding the motor in place. A micrometric adjustment knob is provided for adjusting the belt tension.



Precise Feed Positioning

The grinding wheel feed is driven by a high performance servo motor, combined with precision ball screw transmission, providing high positioning accuracy.



Spindle Head Driven by Servo Motor

- The spindle head is driven by a high performance servo motor, providing accurate variable speed change.
- The servo motor drive features no speed loss and constant torque output no matter if the spindle is running at high or low speed. It guarantees outstanding grinding surface quality.
- The servo motor drive allows spindle positioning control for convenient workpiece release.



Automatic Belt Tension Control

The belt tension is automatically controlled by the motor weight to assure proper belt tension at all times.

This ensures full power transmission from the motor. The specially designed belt tension eliminates too tight or too loose tension problems that may affect grinding quality. (for JHI-150 NC and CNC)



Hydraulic Power / Lubrication Unit

- The hydraulic power unit consists of two gear pumps, providing hydraulic power to the chuck and wheel dressing device. It also delivers lubrication oil to base slideways.
- The hydraulic power unit consists of high quality parts, featuring low noise running and long service life.
- A fan cooling device is mounted on the hydraulic power unit, providing efficient heat dissipation.

State-of-the-Art NC Control



The NC internal grinding machine is equipped with MITSUBISHI control, with powerful functions and conversational operation interface. The control uses touch-sensing screen, providing words or graphs to replace conventional lamp indications of operation.

Powerful Functions of NC Control

- Chinese/English display conversion.
- Various operational mode selection.
- Parameter setting.
- Motion signals display for various mechanisms.
- Error message display.

State-of-the-Art CNC Control



The CNC internal grinding machine is equipped with FANUC control. It employs macro (macro programs) operation interface combined with the use of an 8.4" colorful LCD screen, greatly upgrading production and providing outstanding grinding accuracy.

AUTOMATIC SENSING DEVICE

It can conduct fine surface grinding of interior radii and end faces, and the device monitors the wheel during operation, protecting it from overloading.

Standard Accessories

- A** Grinding wheel spindle
(alternative 10,000~30,000 rpm)
- B** 3-jaw chuck
- C** Levelling plate
- D** Coolant tank
- E** Tool box and tools
- F** 3-Point center rest (for 3006 series / 3012 series)



A Grinding wheel spindle



B 3-jaw chuck



C Levelling plate



D Coolant tank(NC&CNC)



E Tool box and tools



F 3-Point center rest(for 3006 series / 3012 series)

Optional Accessories

- A** Paper filter **B** Magnetic separator **C** End face grinding attachment
- D** Grinding wheel spindle **E** Hydraulic 3-jaw chuck **F** Hydraulic rotary cylinder
- G** Oil mist lubricator for grinding wheel spindle
(Spindle speed 30,000rpm or above is applicable.)
- H** Oil Skimmer



A Paper filter



B Magnetic separator



C End face grinding attachment (only for JHI-150NC)



D Grinding wheel spindle



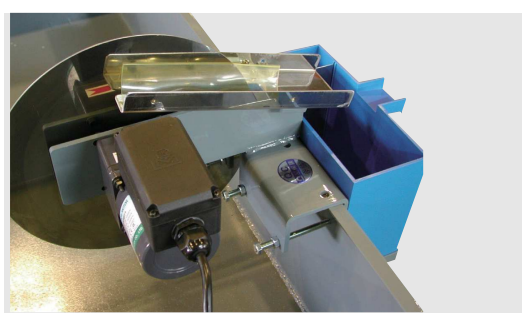
E Hydraulic 3-jaw chuck



F Hydraulic rotary cylinder
(only for JHI-150 series)



G Oil mist lubricator
(Spindle speed 30,000rpm
or above is applicable.)



H Oil Skimmer

Automatic Grinding Cycle

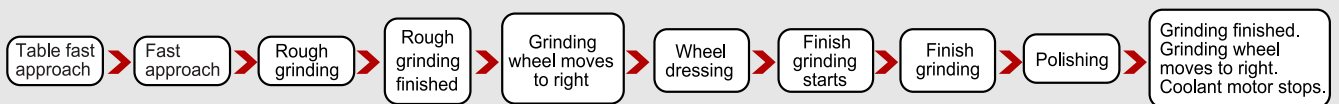
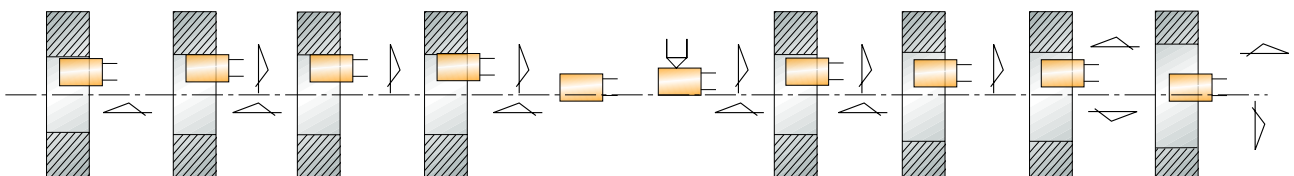


GRINDING TEST REPORT MODEL JHI-150-NC

Grinding Wheel Specifications	WA 80K5V5A
Workpiece Size	Ø27 ± 0.003 mm
Workpiece Material	SNCM220
Total Grinding Amount	0.34 mm
Rough Grinding Feed Rate	40 mm/s
Ratio	100%
Rough Grinding Amount	0.32
Finish Grinding Feed Rate	25 mm/s

GRINDING TEST REPORT MODEL JHI-150-NC

Ratio	100%
Finish Grinding Amount	0.02 mm
Feed for Rough Grinding	0.005 mm
Feed for Finish Grinding	0.002 mm
Polishing Time	30 sec.
Wheel Dressing for Rough Grinding	0.01 mm
Wheel Dressing for Finish Grinding	0.01 mm
Roundness Accuracy	2 µm



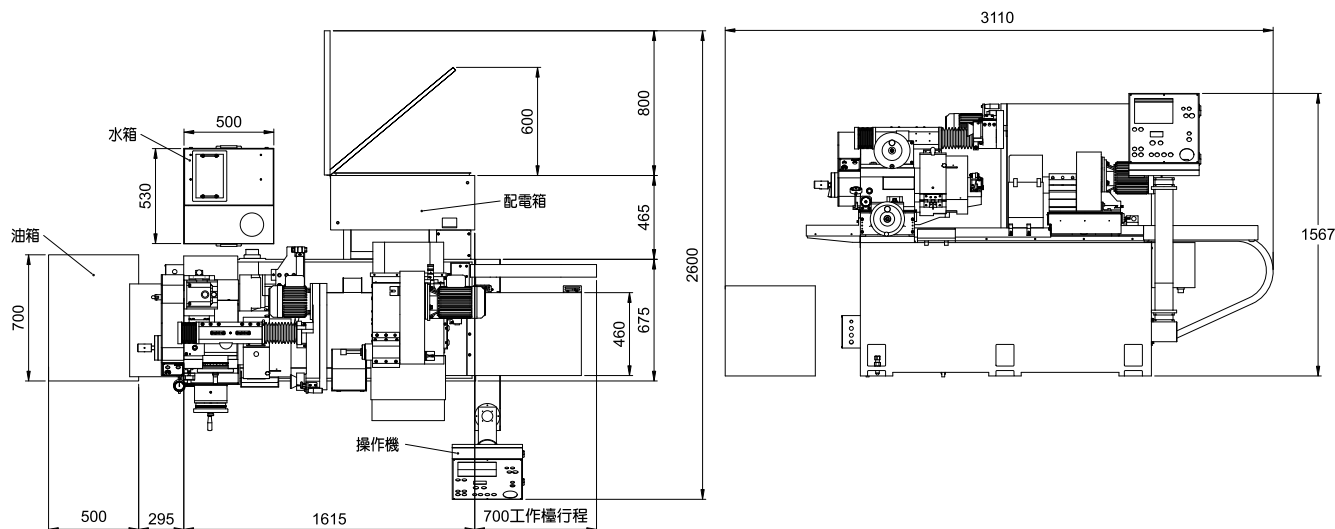
Machine Specifications

ITEM		MODEL	JHI-150NC	JHI-3006NC /CNC	JHI-3012NC/CNC	JHI-150CNC	JHI-150BCNC
Capacity	Range of I.D. grinding	Ø6 -150 mm	Ø20 –300 mm			Ø6 -150 mm	
	Max grinding depth	150 mm	300 mm			150 mm	
	Max holding length	200 mm	600 mm	1200 mm		200 mm	
	Swing over bed	500 mm	480 mm			500 mm	
	Swing in chuck guard	280 mm	350 mm			280 mm	
Wheel feeding (X axis)	Rapid feed speed	5 m/min	5 m/min			8 m/min	
	Max. stroke	100 mm	200 mm			100 mm	
	Min. setting unit	0.001 mm	0.001 mm			0.001 mm	
Wheel feeding (Z axis)	Rapid feed speed	8 m/min	8 m/min			8 m/min	
	Max. stroke	450 mm	800 mm			450 mm	
	Min. setting unit	0.001 mm	0.001 mm			0.001 mm	
Work head	Spindle speed	10 -1000 rpm	10 -1000 rpm			10 -1000 rpm	
	Spindle	standard A2-5 Optional cylindrical type	Cylindrical type			standard A2-5 Optional cylindrical type	
	Swivel angle	±8°	---	---		±8°	±15°
Work table	Swivel angle	---	−3°+15°(f)	−3°+12°(f)		---	---
Rotary table	Rpm	---	---	---		---	0-20 rpm
	Min. unit	---	---	---		---	0.001°
	Swivel angle	---	---	---		---	±90°
Motor	G / W spindle motor	Standard 3HP 2P Optional 5HP 2P	Standard 5HP 2P Optional 7.5HP 2P			Standard 3HP 2P Optional 5HP 2P	Build-in type 7.5 KW/10HP
	Spindle head motor	Servo 1.5KW	Servo 3.5KW(NC) Fanuc Servo 2.5KW(CNC)			Fanuc Servo 1.8KW	
	Z-axis servo motor	Servo 1.5KW	Servo 2KW(NC) Fanuc Servo 1.8KW(CNC)			Servo 1.2 KW	
	X-axis servo motor	Servo 0.75 KW	Servo 1 KW(NC) Fanuc Servo 1.2KW(CNC)			Servo 0.75 KW	
	Coolant	1/4HP 2P					
	Hydraulic lubrication	1/4HP 4P					
	Hydraulic system	1HP 4P					
	Rotary table	---	---	---		---	Servo 1.2 KW
General specification	Machine size	2900x1900 x2100 mm	3900x2200x2150 mm (NC/CNC semi-splash guard) 4150x2200x2150 (CNC fully splash guard)	4400x2200x2150 mm (NC/CNC semi-splash guard) 4150x2200x2150 (CNC fully splash guard)		3200x2100 x2200 mm	2900x1900 x2100 mm
	Net weight	2500 Kgs	5200 Kgs	6300 Kgs		2500 Kgs	3100 Kgs
	Gross weight	2700 Kgs	5500 Kgs	6700 Kgs		2700 Kgs	3300 Kgs

* The above specifications are for reference only, we reserve the right to alter them without further notice.



Dimensional Drawings JHI-150NC



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