



# CROSSRAIL MOVABLE TYPE DOUBLE COLUMN SURFACE GRINDING MACHINE

Crossrail Movable Type Considerably Increases Grinding Stability

## KEEPING OUR CUSTOMERS IN THE LEAD

Top-One Machinery Co., Ltd. is an internationally recognized manufacturer of vertical machining centers, double column machining centers and double column grinding machines. Based on our outstanding R&D capabilities, we are capable of designing and manufacturing high quality products with greater machining capacity, high accuracy and stability. Our objective is to offer the best machines to help customers stay competitive.

GL SERIES

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TOP-ONE MACHINERY CO., LTD

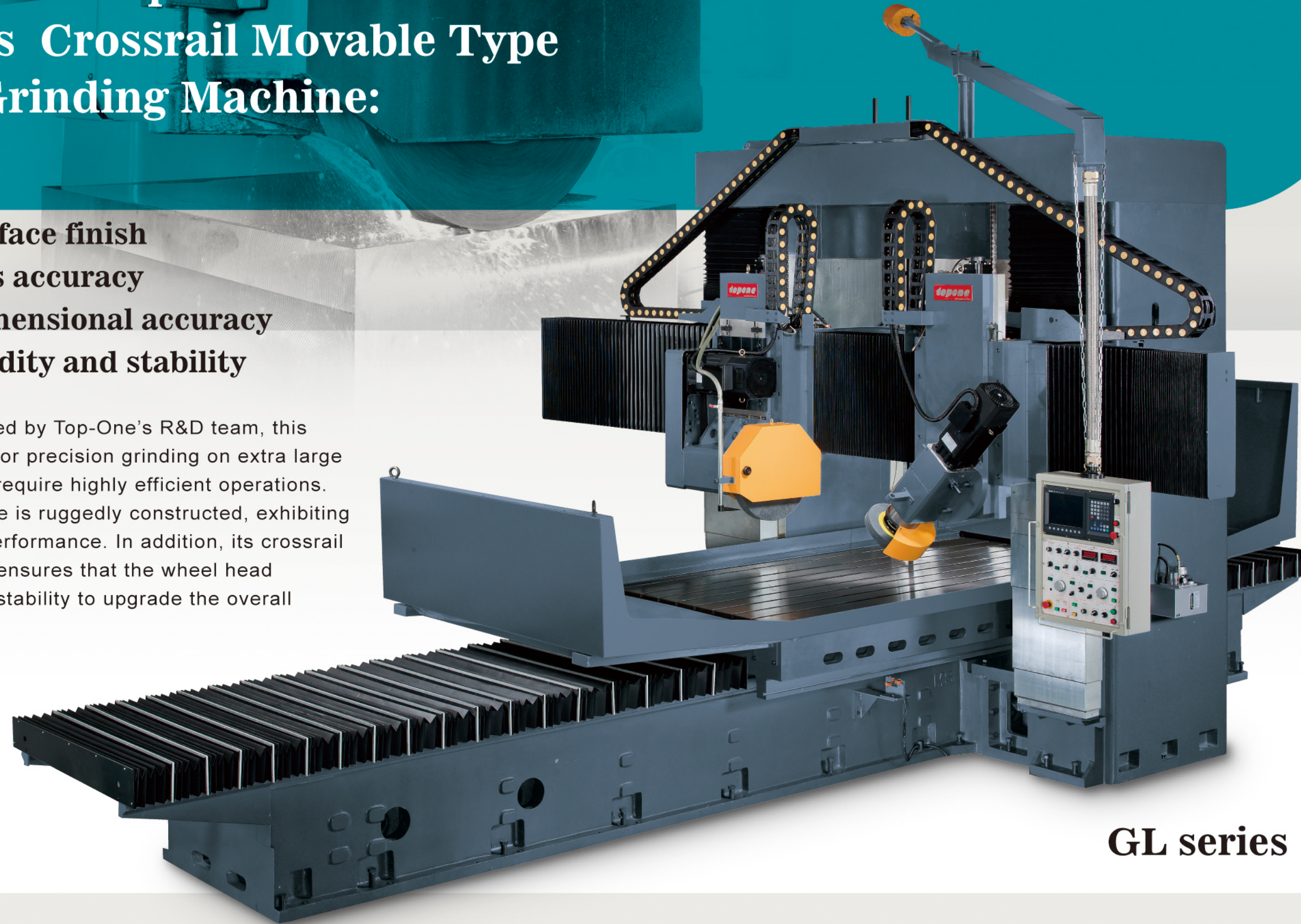


# What you can expect from Top-One's Crossrail Movable Type Surface Grinding Machine:

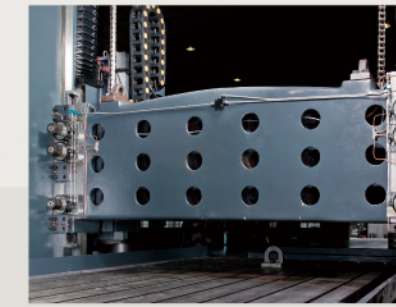
- Superior surface finish
- High flatness accuracy
- Supreme dimensional accuracy
- The best rigidity and stability

Successfully developed by Top-One's R&D team, this machine is excellent for precision grinding on extra large workpieces that also require highly efficient operations. This series of machine is ruggedly constructed, exhibiting unmatched precise performance. In addition, its crossrail movable type design ensures that the wheel head achieves the highest stability to upgrade the overall grinding quality.

Every Top-One machine is manufactured with the tradition of Top-One's quality excellence.

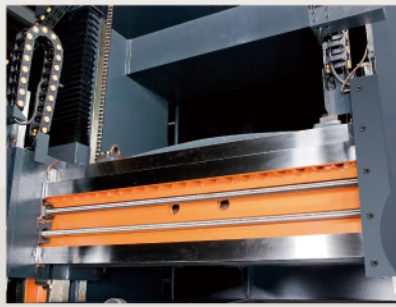


GL series



## BEAM CLAMPING

The beam is clamped securely by hydraulic force in combination with the use of disc springs. This fully prevents the beam from slipping down to eliminate any loss in grinding accuracy. The slideways on the crossrail is a combination of linear way and box way. The main roller type linear ways and the auxiliary box way may upgrade wear-resistance and durability. In case the linear way is worn out, it can be replaced conveniently.



## BEAM ELEVATION

The beam elevation is driven by an inverter controlled motor that drives a connecting shaft to transmit the two elevation screws at the left and right sides. This elevation driving system allows the beam to elevate synchronously at both ends, so as to ensure outstanding leveling accuracy of the beam.

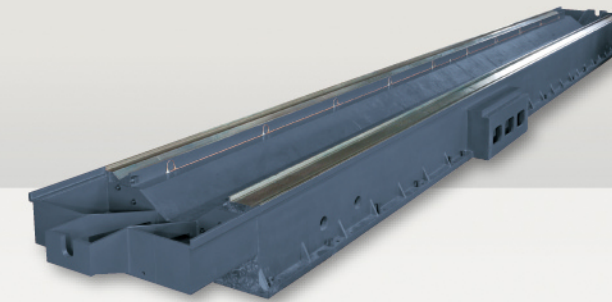


## DOUBLE HYDRAULIC CYLINDERS' COUNTER-BALANCE

The beam elevation (W-axis) is counter-balanced by two hydraulic cylinders, ensuring exceptionally smooth motion and the best travel accuracy.

## MASSIVE BASE

- The base is a one-piece fabrication from high quality Meehanite cast iron, tempered to relieve internal stress for eliminating thermo deformation.
- Two extra-long, wide and deep vee slideways on the base provide outstanding load-resisting capabilities.
- The double V slideway surfaces are precision scrapped in combination with forced lubrication, ensuring smooth table feed.



## V & FLAT SLIDEWAYS (standard)

## DOUBLE V SLIDEWAYS (optional)

## RIGID TABLE

- The box-type table is a one-piece fabrication made from Meehanite cast iron, and tempered to relieve stress.
- The table slideways are coated with Turcite-B for outstanding wear-resistance.
- Extra-large span between slideways provides an increase in rigidity. In addition, the table is capable of resisting heavy loads without deformation.
- The reduced table weight allows the machine to increase loading capacity. Besides, it also saves loading of the hydraulic cylinder for saving power consumption, saving cost and increasing efficiency.



## X-AXIS DRIVEN BY HYDRAULIC CYLINDER

- The table feed (X-axis) is driven by a double-acting hydraulic cylinder.
- The cylinder stroke speed can be adjusted on the control panel.
- The hydraulic system has a buffering function, which may suppress serious impact at both ends of the cylinder stroke. This function provides a protection for the cylinder while extending its service life.





PC BASE CONTROL SYSTEM (standard)  
 MITSUBISHI / FANUC CNC CONTROL SYSTEM (optional)

Top-One GL series double column grinding machine is equipped with an advanced PC BASE control system.



#### HANGED CONTROL BOX

- The hanged control box can be moved to any position. This excellent accessibility makes it easy for the operator to check during grinding test and idling.
- The hanged control box is equipped with a counter-balance weight to facilitate control box movement.

#### TABLE IS SELF-FINISHED BY THE MACHINE

When assembling the table on the machine, our technicians use the machine to finish the table surface. The self-finishing of the table ensures better geometric accuracy.



#### OIL COOLER

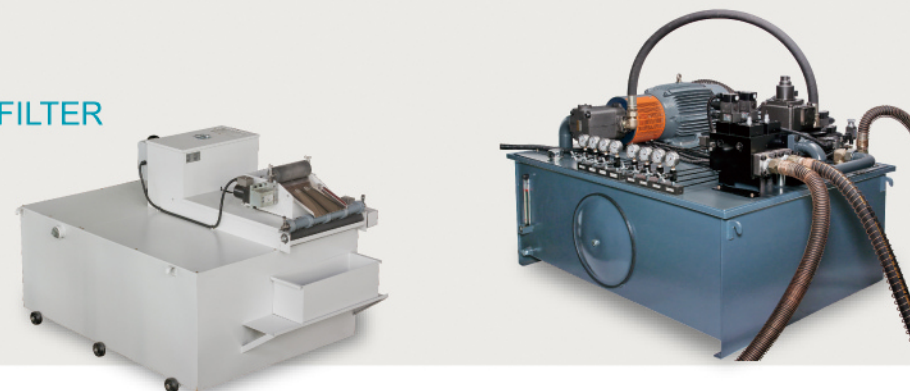
The hydraulic oil in the oil tank is cooled through a high efficiency oil cooler to keep a constant temperature. The oil cooler allows the hydraulic system to actuate normally and extends the service life of the oil.

#### HYDRAULIC UNIT

- The hydraulic circuit is specially designed, providing smooth movement on the X-axis and eliminating jerks at both ends of the X-axis travel in order to ensure superior grinding quality.
- Powerful feed motion is maintained even when X-axis feeds at a low speed.
- The hydraulic system is consisted of high quality hydraulic parts, which results in longer service life, low noise and stable motion.



#### PAPER FILTER

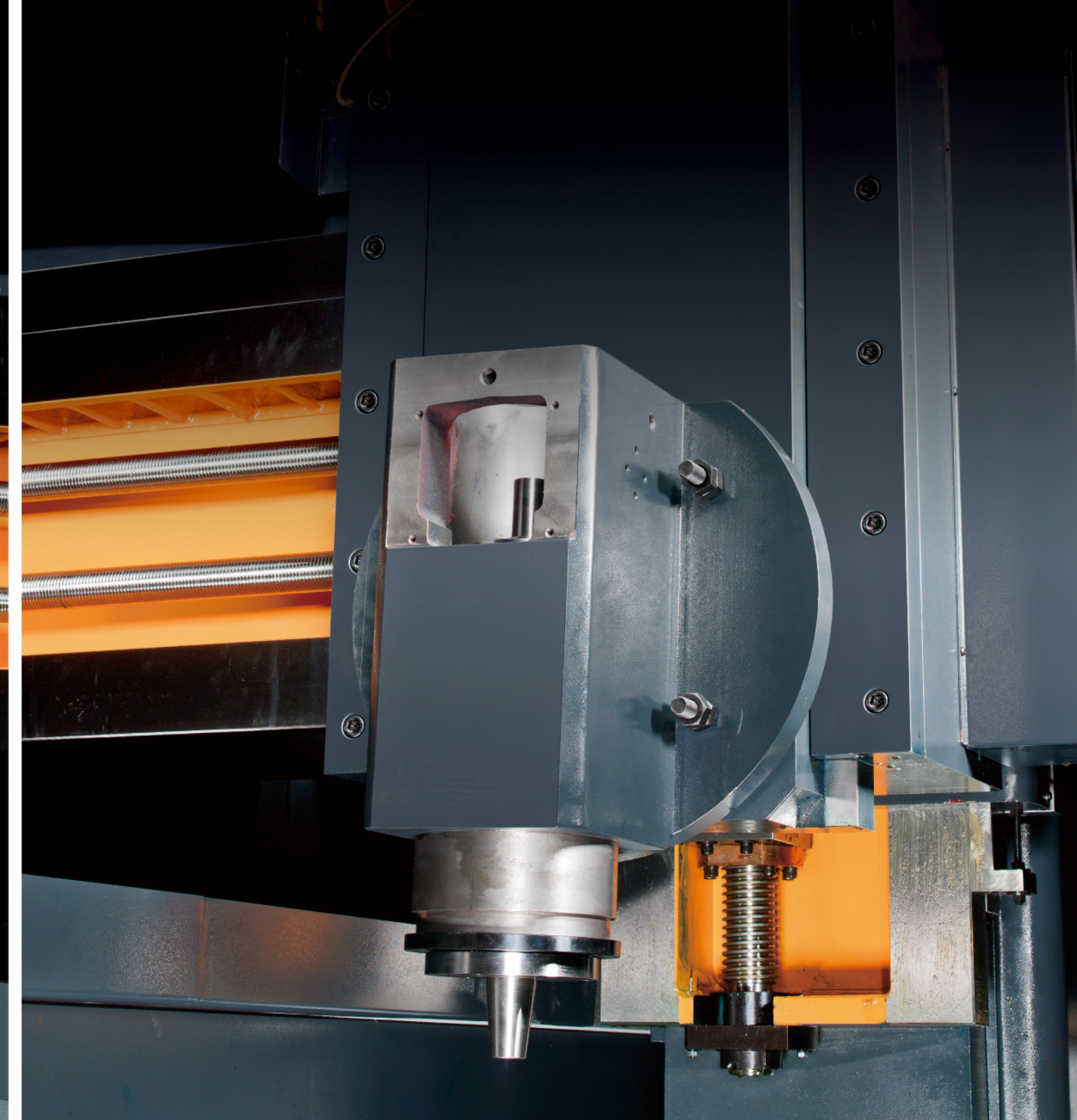


## PRECISION GRINDING HEADS

Horizontal Grinding Head (standard)

Vertical Grinding Head (optional)

The Top-One GL series Double Column Surface Grinding Machine can be mounted with a horizontal grinding head and a vertical grinding head, allowing surface grinding and angular grinding to be accomplished at a time. With both grinding heads, the increased grinding accuracy and efficiency can be achieved.



### HORIZONTAL GRINDING HEAD (STANDARD)

- The horizontal grinding head is driven by a powerful 20HP (30HP optional) servo motor, enable the heavy duty grinding with increased efficiency.
- The grinding head accommodates the maximum of  $\varnothing 510$  mm grinding wheel (610mm for GL-2500 or larger models) for performing precision surface grinding.
- Precision spindle construction allows the machine to operate for a long time with minimum thermal growth.
- Available to equip with automatic wheel dressing device (optional)

### MANUAL / SEMI AUTOMATIC / AUTOMATIC VERTICAL SWIVELING GRINDING HEAD (OPTIONAL)

- The vertical grinding head can swiveled up to 45° for both left and right side, which allows grinding the angular surfaces.
- The oblique angle of vertical grinding head can be adjusted manually.
- The automatic swiveling head is powered by servo motor with fine-adjustment and hydraulic braking functions, guaranteeing high accuracy in angular positioning.
- The semi-automatic swiveling of the grinding head is transmitted through dual head worm with depth of teeth and big module.
- The worm is supported by RN type axial bearing and wear-resistant sleeve, which combined with high concentricity of worm to achieve high positioning accuracy.
- The automatic swiveling head is driven by a servo motor with hydraulic brake, assuring high accuracy angular adjustment and positioning (optional)



# SPECIFICATIONS

MODEL	UNIT	GL-1500	GL-1800	GL-2000	GL-2500	GL-3000	GL-3500	GL-4000
Max. grinding surface (LxW)	M	2/3/4 M x 1.2 M	2/3/4 M x 1.5 M	3/4/5/6 M x 1.6 M	3/4/5/6 M x 2.0 M	4/5/6 M x 2.5 M	4/5/6 M x 3.0 M	4/5/6 M x 3.5 M
Grinding height	mm	750 / 1,000 / 1,250						
Machining height	mm	1,000~2,000						
X axis travel	mm	2,000~4,000		3,000~6,000		4,000~6,000		
Y axis travel	mm	1,500	1,800	2,000	2,500	3,000	3,500	4,000
W axis travel	mm	1,000~2,000						
Z axis travel	mm	400						
Distance between columns	mm	1,700	2,000	2,200	2,700	3,200	3,700	4,200
Table size (length)	mm	2,000~4,000		3,000~6,000		4,000~6,000		
Table size (width)	mm	1,200	1,500	1,600	2,000	2,500	3,000	3,500
T slot	mm	□22			□24		□28	
Max. table load	Ton	2m:2 3m:4 / 4m:6	2m:2 3m:4 / 4m:6	3m:6 / 4m:8 5m:12 / 6m:15	3m:8 / 4m:10 5m:12-15 / 6m:15-20	4m:15*20 5m:20-25 / 6m:25-30	4m:20-25 5m:20-30 / 6m:30-35	4m:25-30 5m:30-35 / 6m:35-40
Double V slide distance	mm	700		900	1,100	1,400		
X axis grinding speed	mm/min	5,000~30,000						
Y axis rapid feed	mm/min	3,000						
Z axis rapid feed	mm/min	2,000						
Z axis feeding travel	mm	400						
Min. Z axis feeding	mm	0.002						
M.P.G. feeding increment	mm	0.002/X1X10X100						
Y-axis motor		Depending on machine dimensions						
Z-axis motor		Depending on machine dimensions						
Vertical spindle motor	HP	12(6P)						
Horizontal spindle motor	HP	20(4P)(30HP optional)						
Grinding wheel	inch x mm	Vertical 14" x 50 mm x 203 bore Horizontal 20" x 50 mm x 175 bore			Vertical 16" x 75 mm Horizontal 24" x 80 mm			
Horizontal spindle speed	rpm	300~2,000						

## STANDARD ACCESSORIES

- Grinding wheel calibrating device (Balancing Stand)
- Diamond dresser
- Magnetizer
- Wheel balancing arbor
- Horizontal/Vertical grinding wheel
- Flange (1 set)
- Heat exchanger for electrical cabinet
- Hydraulic oil cooler
- Paper filter (including filtrating paper and coolant tank)
- Voltage stabilizer
- Tool box with tools
- Operation and maintenance manual

## OPTIONAL ACCESSORIES

- Automatic angle positioning device for vertical grinding head
- Grinding wheel
- Increased spindle speed
- Increased spindle horsepower
- Automatic wheel dresser for horizontal grinding head
- Automatic wheel dresser for vertical grinding head
- Movable swiveling function
- Fanuc control
- Mitsubishi control
- Spared wheel flange set for vertical grinding head
- Spared wheel flange set for horizontal grinding head
- Transformer

## CONTROL SYSTEM

- PC BASE control
- Portable manual pulse generator
- Monochromatic LCD display
- X axis hydraulic control system
- Hanged control box
- Y,Z axes servo motor

Note: The machine specifications, dimensions and design characteristics are subject to change without prior notice.