Before using this product, please read the operator's manual carefully and follow all applicable instructions.

●When using our products, safety equipment is required depending on the operational task.

* Specifications, appearance and equipment are subject to change without notice by reason of improvement.
* The example grinding performance data in this catalog can be affected by temperature, grinding materials, grinding tool and grinding conditions etc. Please note that such data is not guaranteed.
* Please use the machine model name with a hyphen such as MEISTER-G3 and MEISTER-V3, when applying for administration applications. Examples: installation report, export, and financing, etc.
* The specifications described in this catalog are for the Japanese domestic market.

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inquiry

AMADA head office is certified and registered of ISO14001.

1GC-29179-A000
Sep. 2017

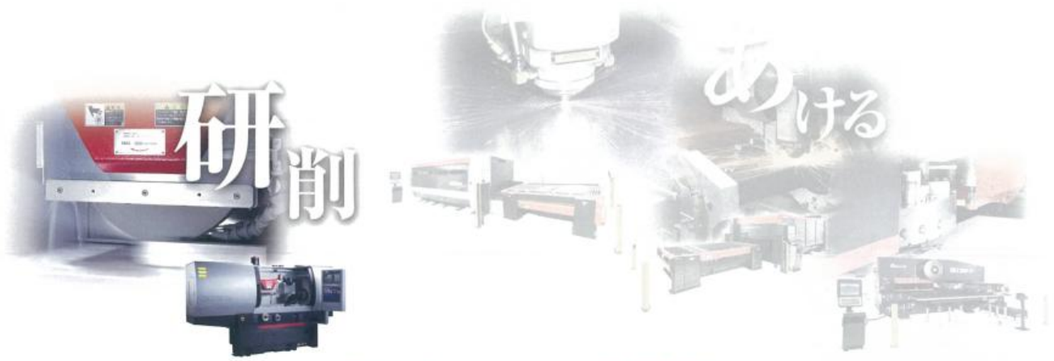
SOLUTION

MEISTER

High precision forming grinder

SERIES

MEISTER-G3/V3



The Engineering AMADA

AMADA

Pioneer of CNC Forming Grinder that exhibits "Craftsmanship"

The requirements for precision ground components continues to intensify each year. The Mold and Die industries are needing to increase precision and surface finish to be able to handle the higher efficiency molding and stamping processes.
Since 1996 the MEISTER series of forming grinders has continuously evolved to meet and exceed the demands of these industries. With over 2,700 machines installed, the MEISTER series are the best-selling form grinding machines.

MEISTER-G3　　MEISTER-V3

* Picture includes options.

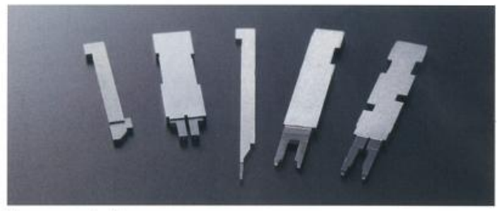
High precision forming grinder

MEISTER SERIES

Introduction of processing examples

Core pin parts

Material: SKD11
Grinding wheel used: 89A400I6V11 (made by TYROLIT)

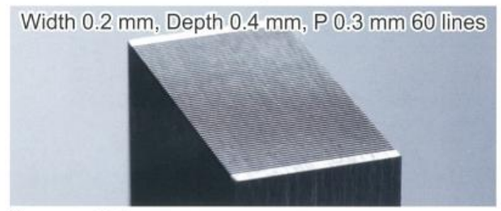


Measurement data

Form error	mm	0.001
Groove bottom R	mm	R0.01 or less

Microgroove grinding

Material: SKD11
Grinding wheel used: JW600J

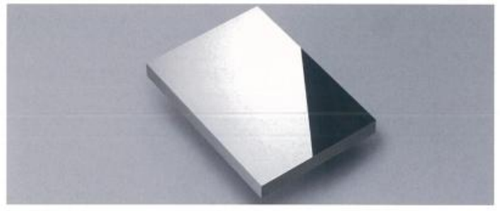


Measurement data

Single pitch error	mm	0.0010 or less
Accumulated pitch error	mm	0.0015 or less

Specular grinding

Material: STAVAX
Grinding wheel used: D2000

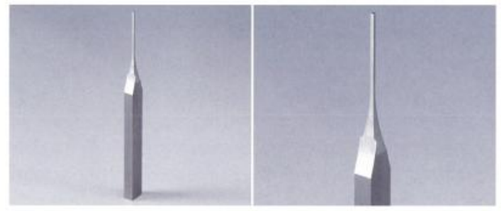


Measurement data

Plane roughness	μm	Rz0.095

Scraping punch

Material: G4 (carbide)
Grinding wheel used: ASD140-R75KV30 (rough)
SD800-100TC30 (finish)



Measurement data

Amount of curvature of workpiece	μm	3 or less
Plane roughness	μm	0.1653

Different shape punches

Material: SKH
Grinding wheel used: B200P100B51

Measurement data

Form accuracy	mm	±0.002

Spline gauge

Material: SKD11
Grinding wheel used: 9GB100J

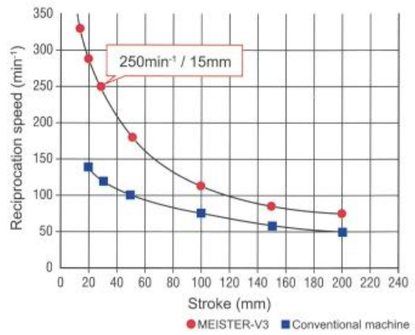
Measurement data

Contour accuracy	mm	0.002
Inter-groove pitch accuracy	mm	±0.002

MEISTER series Core technologies

High speed table reciprocation that increases productivity dramatically

Table reciprocation of MEISTER series realizes high speed reciprocation accuracy of maximum 250 min^{-1}/15 mm with a positioning scale and unique servo system. Grinding efficiency improves significantly, contributing further high precision grinding.

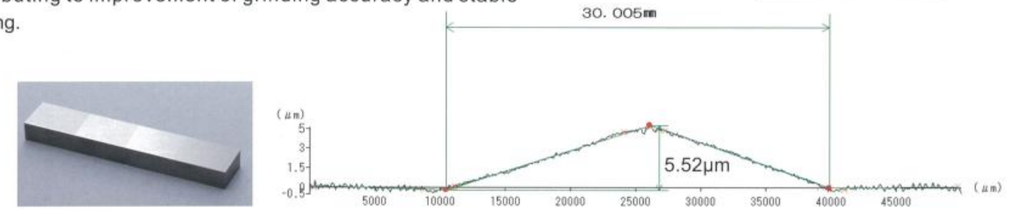


Outstanding mechanical precision that improves grinding accuracy

Mechanical precision has been improved by direct driving of vertical and traverse axes. High positioning accuracy achieved by front and rear scales feedback provided as standard equipment contributing to improvement of grinding accuracy and stable grinding.

MEISTER-G3
V-thread contouring grinding accuracy (height 5 μm)

Noncontact 3-dimensional measuring device NH-3SP (Mitaka Kohki)



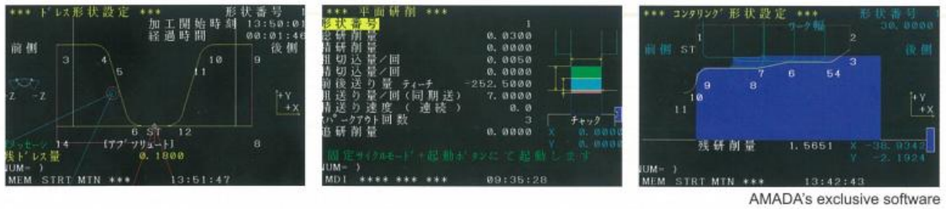
Outstanding versatility

Three large handwheels are provided as standard equipment. The design and layout of the handwheels are very convenient for manual operation of the machine. The teaching function can be used with the large handwheels or with the MPG for very fine positional control.

3-axis manual handle

AMADA's exclusive software that supports advanced form grinding

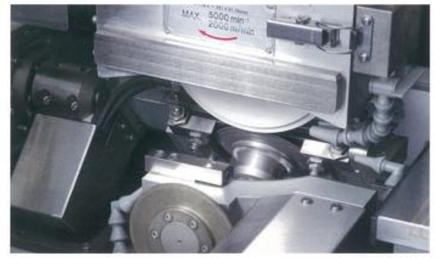
With AMADA's exclusive software, programming and operation is very easy with the simple, interactive input system. Complicated knowledge of CNC programming is not necessary. By "digitizing craftsmanship", grinding efficiency is improved significantly.



AMADA's exclusive software

Dress system that enables various grinding

The accuracy of grinding wheels is indispensable for form grinding and AMADA offers a variety of dressing systems that facilitate high accuracy wheel dressing and geometry. The Dressing systems are comprised of both a software component to program the form and a variety of dresser types.



Dress system

On-board measurement that assures dimensional accuracy

Thanks to the unique on-board measurement technology, on-board measurement and compensation after grinding is automated for anyone to perform high precision grinding easily. The measurement can be made without removing workpiece after grinding, efficiency and accuracy is increased significantly.

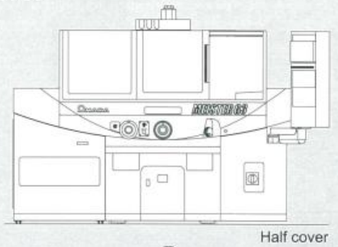
On-board measurement

Abundant cover variation

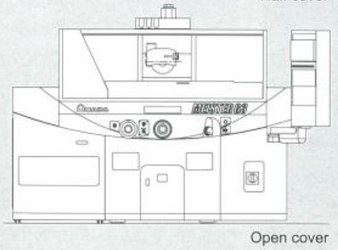
Varied lineup of cover shapes is prepared for customers to choose from in accordance with customers' needs.

- Full cover considering plant environment that does not let grinding fluid go out of the machine.
- Half cover that accommodates both operability and safety.
- Open cover that operators can access easily.

◆MEISTER-G3

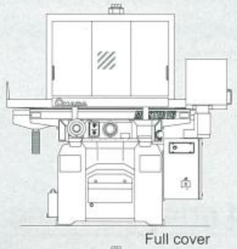


Half cover

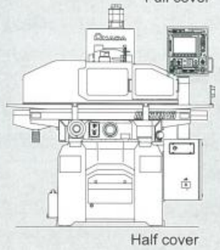


Open cover

◆MEISTER-V3



Full cover



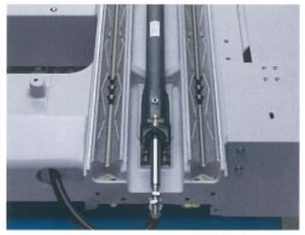
Half cover

MEISTER-G3 Technologies

1 Multifunctional model that deals with varied grinding

"V-V" slideways provide exceptional linear movement and durability

Hand scraped "V-V" slideways provide superior straightness and exceptional durability to assure long life. The scale feedback and servo valve drive system also contributes to the high precision and reciprocation performance.



"V-V" slideways

Operator panel with high durability keypad

The operator panel is designed for easy and comfortable operation. The control features AMADA's exclusive grinding software for ease of operation and programming.

Operator panel

Ample table size and axes travels to accommodate various dressers

With its large table area of 550 × 200 mm, various dressers can be utilized such as: NC Swivel rotary dresser, NC profile dresser, etc. The wide variety of dressers maximize the flexibility and capability of the MEISTER series of grinders.

Table

Separate hydraulic unit with oil cooler

The externally located hydraulic unit features a cooler which controls the temperature to within ±0.1°C to maintain thermal stability. The oil cooler unit is also plumbed to stabilize the temperature of the spindle bracket and electro-magnetic chuck.

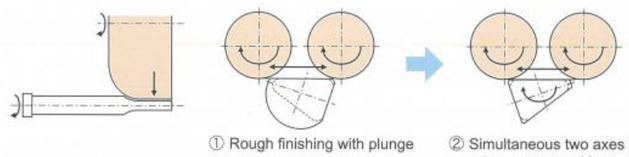
Hydraulic unit

Example of grinding using CNC rotary axis

●Workpiece sample
Material: SKH51
Grinding wheel used: B200P100B51

Different shape punch

●NC rotary grinding process



① Rough finishing with plunge

② Simultaneous two axes grinding with: rotary, upper and lower axes

●Measurement data

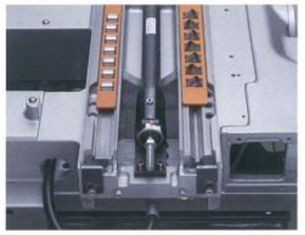
Form accuracy	mm	±0.002

MEISTER-V3 Technologies

1 Simple machine that is superior in cost-performance

Hollow roller guide face

The MEISTER-V3 can be configured with a hollow roller guide face or with a "V-V" slideway. The hollow roller system maintains similar accuracy and reciprocation speed to that of the MEISTER-G3 but at a lower cost.



Hollow roller guide face

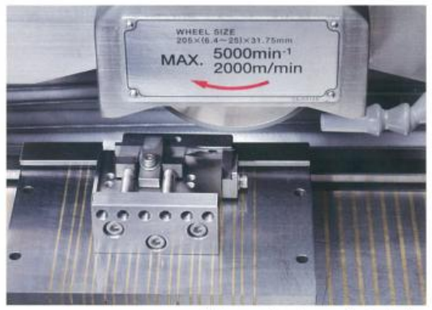
Operator panel that is simple and easy to use

Design emphasis was on simplicity and ease of use for the operator panel. The location of the panel and the position of the buttons were laid out for comfortable use.

Operator panel (including option)

Balanced design and engineering for tough grinding applications

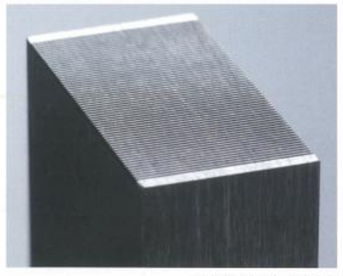
Great care and consideration goes into every aspect of the machine to achieve the highest level of accuracy and performance. Synergism in design is what makes the MEISTER series of grinders so outstanding. The 2.2kW spindle motor with inverter provides great power and speed control. That coupled with the thermally symmetrical structure of the spindle and housing to control thermal displacement results in a superior spindle with regard to precision. The high speed thermally stable spindle coupled with high reciprocation rates yields a highly efficient grinder.



High speed reciprocation grinding

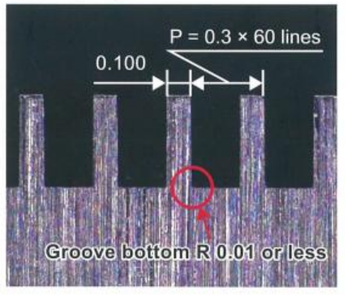
Example of processing with high precision grinding

●Workpiece sample
Material: SKD11
Grinding wheel used: JW600J



Micro groove grinding

●Workpiece sample
Width × depth × pitch: 0.2 × 0.4 × 0.3 mm
Quantity of groove: 60 lines



●Measurement data

Single pitch error	mm	0.0010 or less
Accumulated pitch error	mm	0.0015 or less

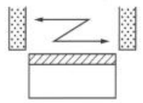
AMADA's exclusive software

Canned cycles are fixed cycles for conversational input. Complicated G-code program knowledge is not necessary. Operators have full command of the technology.

Grinding cycle patterns

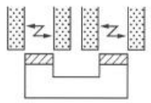
GRINDING CYCLES

Surface grinding



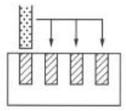
Standard

Traverse jump grinding



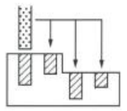
Standard

Equal depth slot grinding



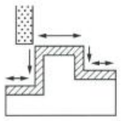
Standard

Unequal depth slot grinding



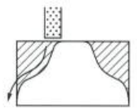
Standard

Pattern grinding



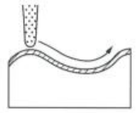
Optional

Pattern contouring



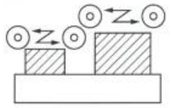
Optional

Contouring grinding



Optional

Multi workpiece function

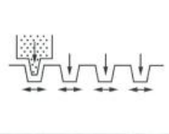


Optional

Table stroke

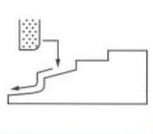
Optional

Trapezoidal groove grinding



Optional

Terraced grinding



Optional

Air vent grinding

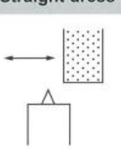
Optional

Other functions including ●Hydraulic creep grinding (optional) and ●Rotary axis grinding (optional) are available.

Dressing cycle patterns

DRESSING CYCLES

Straight dress



Optional

Pattern dress

Optional

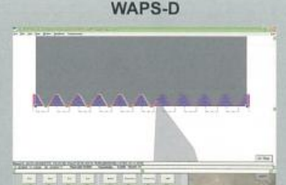
Profile dress

Optional

WAPS-WIN

Optional

WAPS-D



Optional

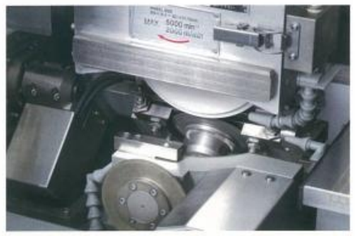
Two off-line programming systems are available. WAPS-WIN is for programming grinding operations and WAPS-D is for programming dressing operations. Many years of form grinding know-how has been incorporated into this software to help users get even more out of their machine.

Wide variety of options

G3

NC swivel rotary dresser

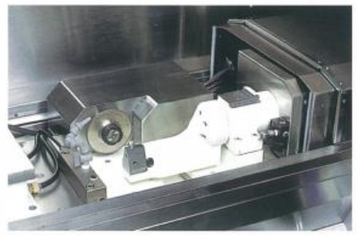
- Dressing is performed on the wheel with a rotary disc dresser which swivels to maintain normalized contact with the wheel with three axes simultaneous motion. Form accuracy is drastically improved with this dressing system.



G3

NC profile dresser

- Dressing is performed on the wheel while the diamond point is swiveled by NC control. With the swivel motion, the diamond point is aligned to the wheel with simultaneous 3-axis motion.



G3/V3

High precision rotary dresser

- High efficiency, bi-directional rotary dresser with 3000 min^{-1} (max). Choice of either single or dual diamond roll.

G3/V3

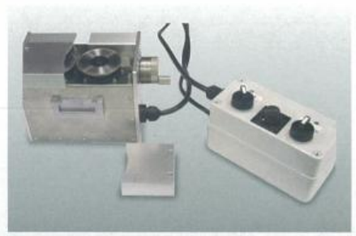
Simple profile dresser

- Supports two chisel point diamonds at pre-set angles and an additional diamond point for straight dressing.

G3/V3

Twin dresser

- Dramatically simplifies the side dressing of thin vitrified grinding wheels. Wheel thickness as small as 0.1 mm is possible.



G3/V3

Touch probe type on-board measurement

- Measurement is performed after grinding and is compared to desired size. Automatic compensation with automatic regrind is performed as needed.

G3/V3

Centerless cylindrical grinding attachment

- In addition to through-feed grinding and plunge grinding, taper grinding is possible with a sign bar base.
- Assures easy and consistent reloading of parts onto the attachment for high accuracy grinding.

G3/V3

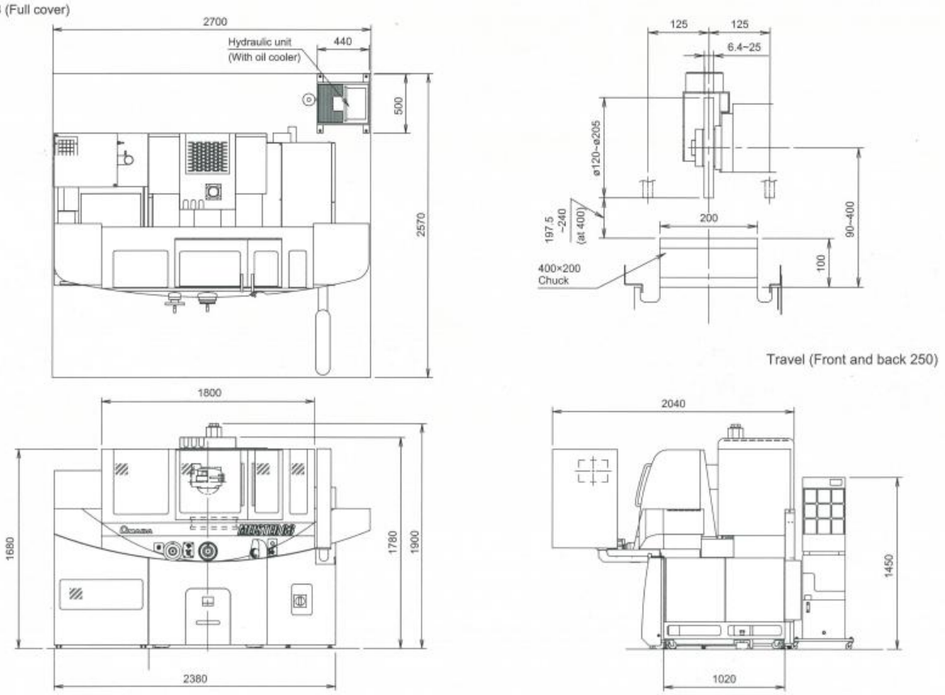
CNC rotary axis

- Provides the ability of workpiece indexing or coordinated rotational motion with other axis of motion.
- Allows for full perimeter grinding of workpieces in a single setup.

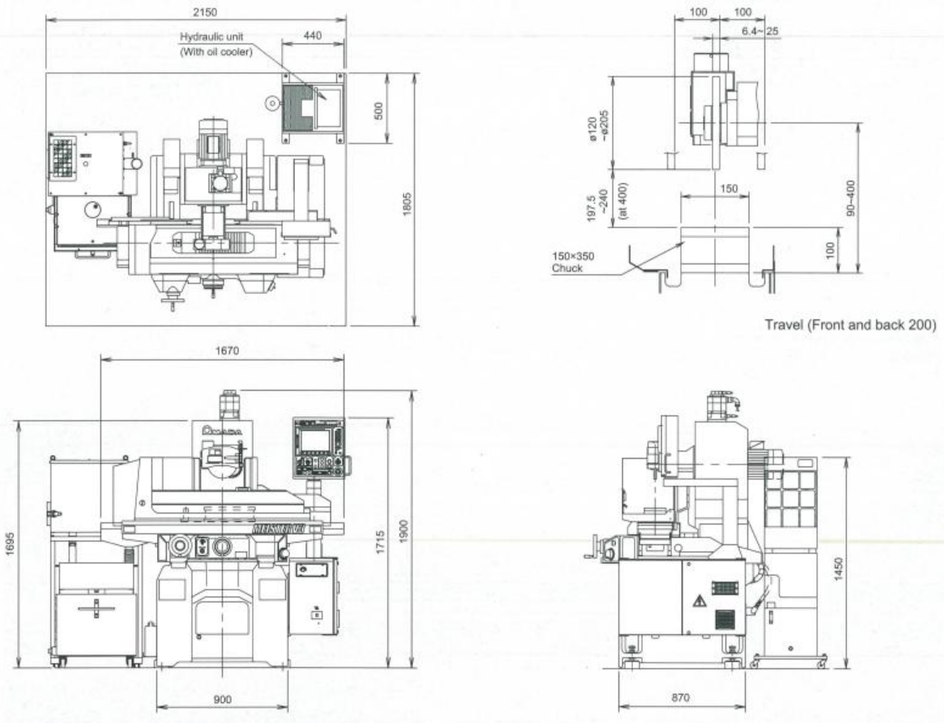
■Dimensions

Unit : mm

● MEISTER-G3 (Full cover)



● MEISTER-V3 (Open cover)



■Specifications

Model					MEISTER-G3	MEISTER-V3
Capacity	NC control axis				Simultaneous 2-axis + traverse 1-axis	
	Table working surface (length × width)			mm	550 × 200	450 × 150
	Standard chuck size (L × W × H)			mm	400 × 200 × 100	350 × 150 × 100
	Stroke (Traverse/Cross)			mm	600/250	500/200
	Spindle height (spindle C/L to table)			mm	Max. 400	
	Table height to floor			mm	1000	
	Maximum mass (chuck included)			kg	150	70
Reciprocation (right to left)	Manual	Handle feed / rotation	Normal	mm	100	
			Slight	mm	5	
		Drive system			Hydraulic servo / Mechanical manual pulse handle	
	Automatic	Feedrate	Normal	m/min	1 - 40 *1	
			Creepfeed (OP)	mm/min	Hydraulic creep Low speed: 10 - 200 / High speed: 10000	—
		Drive system			Servo valve + scale / Hydraulic cylinder	
		Reciprocation speed (15 mm stroke)		min^{-1}	250 *1	
	Position detection / Scale resolution			mm	Magnetically guided scale / 0.001	
	Guide surface				VV turcite	Hollow roller
Cross	Manual	Handle feed	One rotation	mm	0.001, 0.1, 1.0, 4.0	
			One scale	mm	0.0001, 0.001, 0.01, 0.04	
		Drive system			Ball screw / Mechanical manual pulse handle	
	Automatic	Feedrate	Jog feed	mm/min	0 - 400, 500, 1000	
			Rapid traverse	mm/min	2000	
			Grinding feed	mm/min	0.1 - 2000	
		Drive system			Ball screw / Servo motor	
	Minimum setting units			mm	0.0001	
	Position detection / Scale resolution			µm	Linear scale 0.05	
	Guide surface				Linear roller guide	
Longitudin	Manual	Handle feed	One rotation	mm	0.01, 0.1, 1.0, 4.0	
			One scale	mm	0.0001, 0.001, 0.01, 0.04	
		Drive system			Ball screw / Mechanical manual pulse handle	
	Automatic	Feedrate	Jog feed	mm/min	100, 1000	
			Rapid traverse	mm/min	2000	
			Grinding feed	mm/min	0.1 - 500	
		Drive system			Ball screw / Servo motor	
	Minimum setting units			mm	0.0001	
	Position detection / Scale resolution			µm	Linear scale 0.05	Linear scale 0.05 (OP)
	Guide surface				Linear ball guide	
Wheel	Outer diameter × width × bore diameter			mm	ϕ205 × 6.4 - 25 × ϕ31.75	
	Spindle speed			min^{-1}	500 - 5000	
Hydraulic / Lubrication	Hydraulic oil			L	40	
	Lubrication oil			L	20	
	Mass of Hydraulic unit (hydraulic oil not included)			kg	120	
Motor	Wheel spindle			kW-P	2.2-2	
	Hydraulic pump			kW-P	1.5-4	
	Cross feed			kW	1.0	
	Longitudin feed			kW	1.0	
	Automatic lubrication pump			W	5	
Power requirement				kVA	11	
Air pressure source				MPa	0.5 (Amount of air 40NL/min) (OP)	0.4 (Amount of air 20NL/min) (OP)
Mass of machine				kg	2400	2200

*1 Table speed varies depending on table loading mass.