

MITSUBI SEIKI



**MACHINE
TOOLS**



MITSUBI SEIKI KOGYO CO., LTD.

Perpetual Quest for High-Precision — Unchanging Insistence Of MITSUI SEIKI.

The predecessor of MITSUI SEIKI was born in Minami-rokugo, Ohta-ku, Tokyo in 1928. From measuring machines such as block gauges and micrometers that were produced around that time, DNA of MITSUI SEIKI is steadily inherited.

In the history of MITSUI SEIKI from initiation to present, "precision" has always been the center. Insistence on high-precision continues to be the core of MITSUI SEIKI.



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Horizontal Machining Center

- Box guide ways realize long term high-precision and high rigidity. Hardened box guide ways are attached to the surface which has high straightness and perpendicularity by scraping.
- The load to the column sliding section is reduced by air support for smooth high-speed feed despite the sliding method.
- Highly rigid Y-shaped integrated three-point support bed is adopted.
- Ball screws of all axes are placed in the center of the sliding surface to minimize the position difference. (In the case of standard main axis of HU63A/HU80A)



HU40A/HU50A



HU63A



HU80A

Item		Unit	HU40A	HU50A	HU63A	HU80A	
Stroke	X-axis	mm	560	720	900 (OP: 1,000)	1,200	
	Y-axis	mm	560	700	800	950	
	Z-axis	mm	560	650	800	900	
Table	Palette size	mm	400×400	500×500	630×630	800×800	
	Table index	°	1 (at 360 position) (OP: 0.001)				
	Maximum workpiece diameter x height	mm	φ 600×800	φ 800×1000	φ 950×1,050	φ 1,170×1,200	
	Maximum loading weight	kg	400	800	1,200	1,600	
Spindle	Taper		ISO 7/24 Taper No. 40		ISO 7/24 Taper No. 50		
	Main axis rotation speed	min ⁻¹	80 ~ 8,000 (OP: 12,000/20,000)		15 ~ 6,000 (OP: 12,000/20,000)		
	Main axis motor power	kW	15/11 (30 min./continuous)		18.5/15 (30 min./continuous)		
Feed rate	Rapid feed rate	m/min	36		24		
	Cutting feed rate (max.)	m/min	20		10		
Position detection	XYZ-axes		Linear scale				
	B-axis		Large diameter coupling (OP: rotary encoder)				
APC			2 APC front side revolution type			2 APC front side boxer type	
ATC	Number of tools to be stored	pcs.	60				
	Maximum tool length	mm	320		450		
	Maximum tool diameter	with contiguity	mm	φ 80		φ 125	
		without contiguity	mm	φ 150 (Whole circle)		φ 216 (Whole circle)	
	Maximum tool weight	kg	8		25		
Positioning precision	XYZ-axes	mm	±0.001			±0.0015	
	B-axis	Sec.	±2				
Repeat precision	XYZ-axes	mm	±0.001				
	B-axis	Sec.	±1.5		±1		
Machine weight	kg	About 10,500	About 12,000	About 17,000	About 20,000		

OP=Option

Horizontal Machining Center

HS6A/HS8A

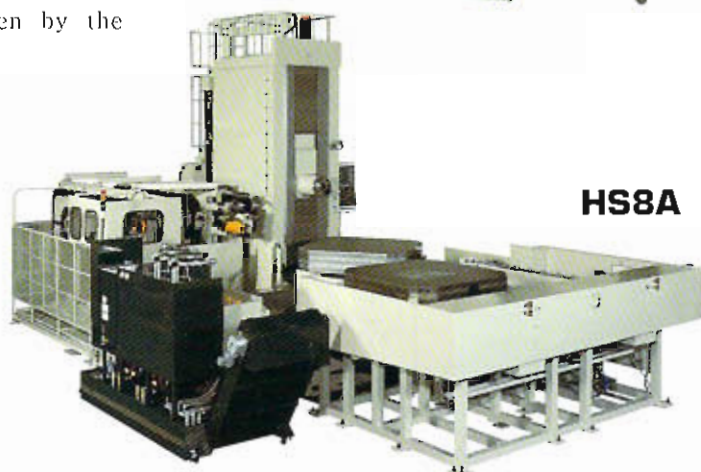
- The only machining center that realizes extremely high rigidity in this class by adopting T-shape integrated bed (HS6A X-axis standard stroke model).
- A wide variety of X-, Y-, and Z-axis strokes are available by options.
- HS8A supports quill spindle by option.
- Various special specifications are also available.

H5D/H6D

- Very thick three-point support bed and sliding surfaces of X-, Y-, and Z-axes are scraped. The supreme technique to make the machining center realizes a mother machine of the most extreme nature that can be exactly called a horizontal jig borer.
- Excellent responsiveness ensures steady operation even by the minimum moving unit of 0.1 μm .



HS6A



HS8A



H5D/H6D

Item		Unit	HS6A	HS8A	H5D	H6D	
Stroke	X-axis	mm	1,300 (OP: 1,600/2,000)	1,800 (OP: 2,400/3,000)	850	1,300	
	Y-axis	mm	1,000 (OP: 1,200/1,500)	1,500 (OP: 1,800)	700	900	
	Z-axis	mm	1,000 (OP: 1,200/1,500)	1,200 (OP: 1,500)	750	900	
Table	Palette size	mm	1,000×1,000 (OP: 1,200×1,200)	1,500×1,500	630×630	800×800	
	Table index	°	1 (at 360 position) (OP: 0.001)	0.001	0.0001		
	Maximum workpiece diameter x height	mm	ϕ 1,290×1,400	ϕ 1,790×1,800	ϕ 950	ϕ 1,420	
	Maximum loading weight	kg	2,000 (OP: 3,500/5,000)	8,000	1,200	1,600	
Spindle	Taper		ISO 7/24 Taper No. 50				
	Main axis rotation speed	min ⁻¹	15 ~ 4,500 (OP: 6,000/12,000)	8 ~ 3,150 (OP: 6,000/12,000)	60 ~ 6,000 (OP: 80 ~ 8,000)		
	Main axis motor power	kW	18.5/15 (30 min./continuous)	37/30 (30 min./continuous)	22/18.5 (30 min./continuous)		
Feed rate	Rapid feed rate	m/min	XY: 15 Z: 12	X: 7 YZ: 10	5		
	Cutting feed rate (max.)	m/min	4				
Position detection	XYZ-axes		Linear scale				
	B-axis		Large diameter coupling (OP: rotary encoder)	Rotary encoder	Rotary Inductosyn		
APC			OP: 2/4/6/8/10	OP: 2/4/6	OP: 2/4/6/8/10		
ATC	Number of tools to be stored	pcs.	60 (OP: 90/120/180/240/360)				
	Maximum tool length	mm	470		400	470	
	Maximum tool diameter	with contiguity	mm	ϕ 125			
		without contiguity	mm	ϕ 216 (Whole circle)			
Maximum tool weight	kg	25					
Positioning precision	XYZ-axes	mm	\pm 0.003	\pm 0.004	\pm 0.001		
	B-axis	Sec.	\pm 4		\pm 3		
Repeat precision	XYZ-axes	mm	\pm 0.001				
	B-axis	Sec.	\pm 1.5		\pm 1		
Machine weight	kg	About 30,000	About 35,000	About 18,000	About 21,000		

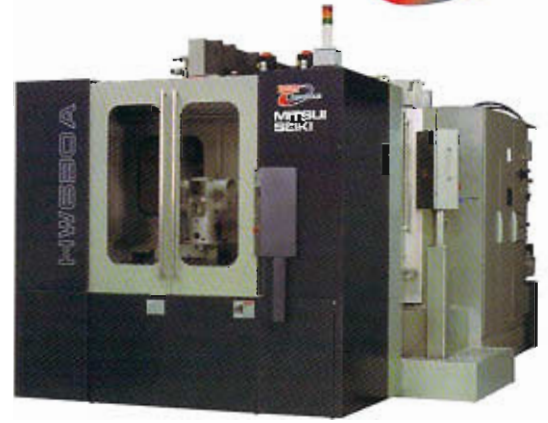
OP=Option

Horizontal Machining Center



FH550R/FH630R/HW550A/HW630A

- Box guide ways realize long term high-precision and high rigidity. Hardened box guide ways are attached to the surface which has high straightness and perpendicularity by scraping.
- Twin ball screw is adopted for driving all axes (X, Y, and Z) to realize the feed rate of 48 m/min and acceleration of 0.5 G, which is the highest in this class.
- Center trough eliminates troubles caused by cutting dust.
- In addition, HW550A/HW630A is equipped with an access door that opens wide up to the ceiling and swing type operation board that enables a user to face parallel to the workpiece in the machine for improved workability at presetting.



HW550A
HW630A

FH550S/FH630S

- The highest performance in this class including fast feed rate of 60 m/min, acceleration of 1 G, ATC time (chip to chip) of 2.7 sec., and indexing speed (B-axis) of 2 sec./90, etc.
- Ball screw heat displacement correction function is included as standard equipment. Stable positioning is possible eliminating the effect of heat displacement of screws.
- Center trough eliminates troubles caused by cutting dust.



FH550R
FH630R



FH550S
FH630S

Item		Unit	FH550R/HW550A	FH550S	FH630R/HW630A	FH630S
Stroke	X-axis	mm	750		1,000	
	Y-axis	mm	FH: 800 HW: 850			
	Z-axis	mm	850			
	Distance between the main axis center and the top side of the pallet	mm	FH: 100 ~ 900 HW: 100 ~ 950			
Table	Palette size	mm	550×550		630×630	
	Table index	-	1 (at 360 position) (OP: 0.0001)			
	Maximum workpiece diameter x height	mm	FH: φ 850×1,000 HW: φ 850×1,050		FH: φ 1,000×1,000 HW: φ 1,000×1,050	
	Maximum loading weight	kg	800		1,000	800
Spindle	Taper		ISO 7/24 Taper No. 50 (OP: HSK-A100)	ISO 7/24 Taper No. 40 (OP: HSK-A63)	ISO 7/24 Taper No. 50 (OP: HSK-A100)	ISO 7/24 Taper No. 40 (OP: HSK-A63)
	Main axis rotation speed	min ⁻¹	50 ~ 6,000 (OP: 15,000)	50 ~ 15,000	50 ~ 6,000 (OP: 15,000)	50 ~ 15,000
	Main axis motor power	kW	30/22 (30 min./continuous)	22/18.5 (15 min./continuous)	30/22 (30 min./continuous)	22/18.5 (15 min./continuous)
Feed rate	Rapid feed rate	m/min	48	60	48	60
	Cutting feed rate (max.)	m/min	20	30	20	30
Position detection	XYZ-axes		FH: Pulse coder HW: Linear scale			
	B-axis		Large diameter coupling (OP: rotary encoder)			
APC			2 APC front side revolution type			
ATC	Number of tools to be stored	pcs.	FH: 40 HW: 60			
	Maximum tool length	mm	470			
	Maximum tool diameter	mm	φ 120	φ 75	φ 120	φ 75
		mm	φ 216 (Whole circle)	φ 220	φ 216 (Whole circle)	φ 220
	kg	27	8	27	8	
Positioning precision	XYZ-axes	mm	FH: ±0.003 HW: ±0.001			
	B-axis	Sec.	±3			
Repeat precision	XYZ-axes	mm	FH: ±0.0015 HW: ±0.001	±0.002	FH: ±0.0015 HW: ±0.001	±0.002
	B-axis	Sec.	±3			
Machine weight	kg	About 18,000	About 16,000	About 20,000	About 18,000	

OPTION

5-Axes Control Horizontal Machining Center (Table on Table)

- This is a built-in type horizontal 5-Axes machining center where C-axis table is placed on the B-axis.
- HU40-T and HU50-T have $\phi 360$ palette four APC as standard specifications. Other specifications including 400 palette APC models, $\phi 360$ fixed table models, automatic workpiece change by 50T taper tool shank are available.
- HU63-T has $\phi 600$ large fixed table and loading weight is 300 kg, which makes it suitable for 5-axes machining of large workpieces.
- By adopting integrated B-axis and C-axis and three-roller bearing, rigidity is improved.
- Indexing speed of B-axis/C-axis is unprecedented (Rapid feed /cutting feed rate of 30 min⁻¹ at both B-axis and C-axis). In addition, rapid rising is realized.



HU40-T/HU50-T



HU63-T

Item		Unit	HU40-T	HU50-T	HU63-T	
Stroke	X-axis	mm	610	770	900	
	Y-axis	mm	560	700	800	
	Z-axis	mm	560	650	800	
	B-axis	°	-90 ~ +180 (0.001° index)			
	C-axis	°	360 (0.001° index)			
Table	Palette size	mm	$\phi 360$		$\phi 600$ (fixed table)	
	Maximum workpiece diameter x height	mm	$\phi 500 \times 350$		$\phi 800 \times 550$	
	Maximum loading weight	kg	100		300	
Spindle	Taper		ISO 7/24 Taper No. 40	ISO 7/24 Taper No. 40 (OP: 50T (12,000))	ISO 7/24 Taper No. 50	
	Main axis rotation speed	min ⁻¹	80 ~ 8,000 (OP: 12,000/20,000)	80 ~ 8,000 (OP: 12,000 (40T/50T)/20,000)	15 ~ 6,000 (OP: 12,000/20,000)	
	Main axis motor power	kW	15/11 (30 min./continuous)		18.5/15 (30 min./continuous)	
Feed rate	Rapid feed rate	XYZ-axes	m/min		24	
		B-axis	min ⁻¹		15	
		C-axis	min ⁻¹		15	
	Cutting feed rate (max.)	XYZ-axes	m/min		20	
		B-axis	min ⁻¹		15	
C-axis		min ⁻¹		15		
Position detection	XYZ-axes		Linear scale			
	BC-axes		Rotary encoder			
APC			4		Not available	
ATC	Number of tools to be stored	pcs.	60		60	
	Maximum tool length	mm	320		400	
	Maximum tool diameter	with contiguity	mm	$\phi 80$		$\phi 125$
		without contiguity	mm	$\phi 150$ (Whole circle)		$\phi 216$ (Whole circle)
Maximum tool weight	kg	8		20		
Positioning precision	XYZ-axes	mm	± 0.001			
	BC-axes	Sec.	B: ± 3 C: ± 8			
Repeat precision	XYZ-axes	mm	± 0.001			
	BC-axes	Sec.	B: ± 1.5 C: ± 4			
Machine weight		kg	About 13,000	About 15,000	About 18,000	

SP-Option

5-Axes Control Horizontal Machining Center (Trunnion)

- We have the No. 1 delivery record of trunnion type horizontal 5-axes machining centers.
- A wide variety of palette sizes from 500 to 1000 are available.
- The center of rotation of A-axis is higher than the palette, so rigidity against processing thrust is high and effect of index precision is low.
- B-axis sliding surfaces adopts hybrid method of sliding and rolling, which has both the rigidity of sliding and smooth motion of rolling.
- A fastest A- and B- axes indexing speed in the class reduces process time.

HU63A-5X



HU50A-5X



HU80A-5X



HS6A-5X



Item		Unit	HU50A-5X	HU63A-5X	HU80A-5X	HS6A-5X	
Stroke	X-axis	mm	720	900	1,200	1,300	
	Y-axis	mm	850	900	1,000	1,200	
	Z-axis	mm	850	900	1,050	1,200	
	A-axis	°	+5 ~ -95 (indexing of 0.001°) (OP: +20 ~ -110)				
	B-axis	°	360 (indexing of 0.001°)				
Table	Palette size	mm	500×500	630×630	800×800	1,000×1,000	
	Maximum workpiece diameter x height	mm	φ 750×700	φ 950×900	φ 1,200×800	φ 1,500×1,000	
	Maximum loading weight (with horizontal A-axis)	kg	650	800	1,200	2,000	
Spindle	Taper		ISO 7/24 Taper No. 50				
	Main axis rotation speed	min ⁻¹	120 ~ 12,000 (OP: 20,000)	15 ~ 6,000 (OP: 12,000/20,000)		15 ~ 4,500 (OP: 12,000)	
	Main axis motor power	kW	30/25 (30 min./continuous)	18.5/15 (30 min./continuous)		18.5/15 (30 min./continuous)	
Feed rate	Rapid feed rate	XYZ-axes	m/min	X: 24 YZ: 36	X: 12 YZ: 24	X: 12 YZ: 15	
		A-axis	min ⁻¹		6	2	
		B-axis	min ⁻¹	11.1	10	4	
	Cutting feed rate (max.)	XYZ-axes	m/min	20	10	12	
		A-axis	min ⁻¹		6	2	
B-axis	min ⁻¹	11.1	10	4			
Position detection	XYZ-axes		Linear scale				
	AB-axes		Rotary encoder				
APC			2APC machine front shuttle (OP: 6/8/10)	OP: 2/4/6/8/10			
ATC	Number of tools to be stored	pcs.		60 (OP: 90/120/180/240/330)			
	Maximum tool length	mm	400	420	450	500	
	Maximum tool diameter	with contiguity	mm	φ 125			
		without contiguity	mm	φ 216 (Whole circle)			
Maximum tool weight	kg	20	25				
Positioning precision	XYZ-axes	mm	±0.001			±0.0015	
	AB-axes	Sec.	A: ±6 B: ±3	A: ±8 B: ±3		A: ±8 B: ±4	
Repeat precision	XYZ-axes	mm	±0.001				
	AB-axes	Sec.	A: ±3 B: ±1.5	A: ±4 B: ±1.5			
Machine weight	kg	About 18,000	About 26,000	About 28,000	About 40,000		

OP=Optional

Vertical Machining Center

VU50A

- ▣ 12,000 min⁻¹ main axis, which is standard equipment, is directly driven and heat displacement is minimal because the motor and the main axis are heat insulated.
- ▣ X- and Y-axes realize smooth movement by the sliding surfaces of the rolling guide ways and Z-axis sliding surfaces realize rigidity by sliding guide ways.
- ▣ The surface to which guide ways are attached has high straightness and perpendicularity by scraping. Precision can be maintained for a long time, not to mention the initial precision.
- ▣ Machine temperature uniformization device that realizes stable processing without effects of ambient temperature is available by option.

VU50A



VU65A

- ▣ Box guide ways realize long term high-precision and high rigidity. Hardened box guide ways are attached to the surface which has high straightness and perpendicularity by scraping.
- ▣ Four guide ways for Y-axis. It will not overhang even when the X-axis moves to the stroke end.
- ▣ As for the main axis, high rigidity gear-driven 50T 6,000 min⁻¹ is available as standard specification, as well as optional 50T 12,000 min⁻¹ and 40T 20,000 min⁻¹.

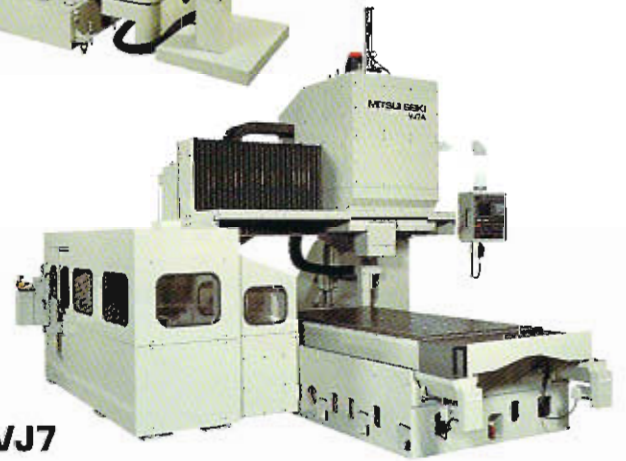


VU65A

VJ7

- ▣ A gate shaped high precision vertical machining center.
- ▣ Box guide ways realize long term high-precision and high rigidity. Hardened box guide ways are attached to the surface which has high straightness and perpendicularity by scraping.
- ▣ A wide variety of X- and Y-axes strokes are available by option to respond to every request of customers. In addition, up to 20,000 min⁻¹ main axis rotation rate is available.

VJ7



Item		Unit	VU50A	VU65A	VJ7	
Stroke	X-axis	mm	700	1,280	1,500 (OP: 2,000)	
	Y-axis	mm	500	650	1,000 (OP: 1,250)	
	Z-axis	mm	450	610	500	
Table	Table size	mm	1,100×580	1,500×600	2,000×1,000 (OP: 2,500×1,250)	
	Maximum loading weight	kg	600	1,500	2,000 (OP: 4,000)	
Spindle	Taper		ISO 7/24 Taper No. 40		ISO 7/24 Taper No. 50	
	Main axis rotation speed	min ⁻¹	120 ~ 12,000 (OP: 20,000)	15 ~ 6,000 (OP: 12,000/20,000)		
	Main axis motor power	kW	7.5/5.5 (30 min. /continuous)	18.5/15 (30 min. /continuous)		
Feed rate	Rapid feed rate	m/min	XY: 36 Z: 24	24	20	
	Cutting feed rate (max.)	m/min	20	10	5	
Position detection			Linear scale			
ATC	Number of tools to be stored	pcs.	20 (OP: 30/40/60)		20 (OP: 40/60)	
	Maximum tool length	mm	280	320	350	
	Maximum tool diameter	with contiguity	mm	φ 90		
		without contiguity	mm	φ 125 (Whole circle)	φ 125	
Maximum tool weight	kg	10	15	20		
Positioning precision		mm	±0.001	±0.0015	±0.003	
Repeat precision		mm	±0.001			
Machine weight		kg	About 9,400	About 13,000	About 20,000	

OP=Option

Vertical Machining Center/5-Axes Control Vertical Machining Center

- Common platforms for three-, four-, and five-axes respectively are adopted. Five-axes models, especially, have realized the maximum processing area with most compact machine space in the class.
- The basic architecture of the machine is "cube on architecture" that has both high rigidity and high precision. As the table is fixed, cutting dust can be swept very easily and closer work access is realized. In addition, various functions can be easily built on the table for future expansibility.
- Index table and tail stock can be built in the machine architecture, realizing a wider processing area for the same machine space in four-axis models.
- Complete making by scraping, linear scale, and main axis heat displacement correction function realize high precision.



Vertex550



Vertex550-5X

The operation board in the picture is in special specification.
The one in the standard specification is on the right.

Item		Unit	Vertex550	Vertex550-5X	
Stroke	X-axis	mm	550		
	Y-axis	mm	600		
	Z-axis	mm	500		
	A-axis	°	—	+15 ~ -105 (every 0.001°)	
	C-axis	°	—	360 (every 0.001°)	
Table	Table size	mm	700×600	φ 400	
	Maximum workpiece diameter x height	mm	—	φ 500×325	
	Maximum loading weight	kg	800	350 (A軸水平時)	
Spindle	Taper		ISO 7/24 Taper No. 40		
	Main axis rotation speed	min ⁻¹	250 ~ 25,000 (OP: 15,000)		
	Main axis motor power	kW	18.5/15 (30 min./continuous)		
Feed rate	Rapid feed rate	XYZ-axes	48		
		AC-axes	—	A: 40 C: 50	
	Cutting feed rate (max.)	XYZ-axes	48		
		AC-axes	—	A: 30 C: 50	
Position detection	XYZ-axes		Linear scale		
	AC-axes		—	Rotary encoder	
ATC	Number of tools to be stored	pcs.	24 (OP: 40)	40	
	Maximum tool length	mm	300		
	Maximum tool diameter	with contiguity	mm	φ 90	
		without contiguity	mm	φ 125 (Whole circle)	
Maximum tool weight	kg	10			
Positioning precision	XYZ-axes	mm	±0.001		
	AC-axes	Sec.	—	A: ±6 C: ±4	
Repeat precision	XYZ-axes	mm	±0.001		
	AC-axes	Sec.	—	A: ±3 C: ±2	
Machine weight		kg	About 8,800	About 9,500	

OP—Option

Linear Motor Driven High-speed Precision Center

- By adopting linear motors for all axes, backlash and lost motion that are inevitable in traditional feeding mechanism are eliminated. High speed and high precision cutting are enabled.
- Rapid feed, cutting feed (X, Y, Z) of 40 m/min and acceleration of 1 G are realized at 0.1 μm control.
- To realize acceleration of 1 G, movable parts are lighter and immovable parts are heavier for high rigidity.
- High-speed responsiveness of micro feed is excellent and precise processing according to directives from minute hole processing to three-dimensional minute block processing is realized.
- DD (direct drive) motors are adopted to rotary axis (C-axis) and tilt axis (A-axis) to achieve prodigious rotation rate (VL30-5X).



VL30



VL50



VL30-5X

Item			Unit	VL30	VL30-5X	VL50
Stroke	X-axis	mm		200		400
	Y-axis	mm		300		
	Z-axis	mm		200		
	A-axis	°		—	-40 ~ +110 (every 0.001°)	—
	C-axis	°		—	360 (every 0.001°)	—
Table	Table size	mm		300×400	φ 180	500×400
	Maximum loading weight	kg		200	20	400
Feed rate	Rapid feed rate	XYZ-axes	m/min		40	
		AC-axes	min ⁻¹	—	A: 100 C: 150	—
	Cutting feed rate (max.)	XYZ-axes	m/min			40
		AC-axes	min ⁻¹	—	A: 50 C: 100	—
	Maximum acceleration (XYZ-axes)	m/sec ²			9.8 (1G)	
Position detection	XYZ-axes				Linear scale	
	AC-axes		—		Rotary encoder	—
ATC	Number of tools to be stored	pcs.		12		16
Positioning precision	XYZ-axes	mm			±0.001	
	AC-axes	Sec.		—	A: ±6 C: ±4	—
Repeat precision	XYZ-axes	mm			±0.001	
	AC-axes	Sec.		—	A: ±3 C: ±2	—
Machine weight			kg	About 5,800	About 6,500	About 6,500

* The spindle can be selected from the following 3 types.

Item			Unit	type I	type II	type III
Spindle	Taper			HSK-E25	HSK-E32	HSK-E40
	Main axis rotation speed	min ⁻¹		500 ~ 50,000	300 ~ 30,000	250 ~ 25,000
	Main axis motor power	kW		5.5/1.5 (30 min./continuous)	4.0/1.5 (30 min./continuous)	3.7/1.5kW (30 min./continuous)
ATC	Maximum tool length	mm		100	120	120
	Maximum tool diameter	mm		φ 25	φ 32	φ 40
	Maximum tool weight	kg		0.5	1.0	1.0

Jig Grinder

- V-F sliding surfaces of X- and Y-axes, spindle head, top and bottom sides of horizontal bridges are scraped for extremely high geometric precision (all models).
- Z-axis is NC-controlled and two types of control (Z-axis as cutting feed and Z-axis as chopping cycle) are available (all models except 3GB).
- As for Z-axis chopping cycle, the ball screw drive has realized the high speed of 200 cycles/min (at 25 mm stroke). Even at this speed, the bottom dead center precision is 2 μm (300G, 4GDN, 6GCN).
- In 3GEN, the linear motor is adopted to the Z-axis (first practical application for machine tools). Z-axis chopping cycle of 400 cycles/min (at 25 mm stroke), which was impossible for traditional models, has been realized to drastically reduce the process time of contouring cutting.
- Low thermal expansion casting is adopted for the head material. Error due to heat displacement is extremely small (all models).

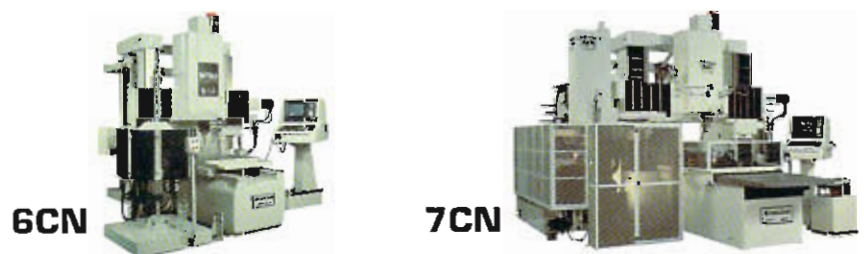


Item		Unit	3GB	300G	3GEN	4GDN	6GCN
Stroke	X-axis	mm	400		500	610	1,020
	Y-axis	mm	250		300	410	760
Table	Table size	mm	600×320		700×350	790×600	1,280×960
	maximum loading weight	kg	200		300	750	1,200
Rapid feed rate	X,Y-axes/Z-axis	m/min	—			X,Y: 2,000 Z: 3,000	
	C-axis	°/min	—			2,600	
	Planetary gear rotation rate	min ⁻¹	5 ~ 300		5 ~ 500		5 ~ 300
Main axis	Wheel cut micro feed (diameter)	mm	4			4	
	Stroke	mm	—		100		140
Quill (Z-axis)	Chipping stroke	mm	—		95		135
	Number of chipping cycles (at 25 mm stroke)	cycle/min	—	200	400		200
Cutting head	High-frequency motor for low speed	min ⁻¹	9,000 ~ 45,000			9,000 ~ 45,000	
	High-frequency motor for high speed	min ⁻¹	18,000 ~ 90,000			18,000 ~ 90,000	
	OP: High-frequency motor for heavy cutting	min ⁻¹	—			4,500 ~ 22,500	
	OP: High-frequency motor for ATC	min ⁻¹	—			9,000 ~ 30,000	
	OP: High-frequency motor for ATC	min ⁻¹	—			18,000 ~ 60,000	
Position detection			Linear scale			Linear scale	
Positioning precision		mm	±0.001		±0.0007		±0.001
Machine weight		kg	About 1,950	About 3,200	About 3,300	About 4,300	About 9,000

OP=Option

Jig Borer

- A mother machine in a million that has the ultimate space precision.
- V-F sliding surfaces of X- and Y-axes are scraped for extremely high straightness and perpendicularity.
- Optional ATC device can be attached.
- 50T specification can be selected as the main axis taper by option (6CN and 7CN).



Item		Unit	6CN	7CN
Stroke	X-axis	mm	1,020	1,530
	Y-axis	mm	760	1,020
	Z-axis	mm		300
Table	Horizontal bridge travel distance	mm	750	920
	Table size	mm	1,280×960	1,830×1,200
	Maximum loading weight	kg	1,200	2,000
Spindle	Taper		ISO 7/24 Taper No. 45 OP: ISO 7/24 Taper No. 50	
	Main axis rotation rate	min ⁻¹	40 ~ 3,200	
	Main axis motor/power (30 min./continuous)	kW	7.5/5.5	
Feed rate	Rapid feed rate	m/min	XY: 5 Z: 3	
	Cutting feed rate (max.)	m/min	2	
Position detection			Linear scale	
Positioning precision/Repeat precision		mm	±0.001/±0.0005	
Machine weight		kg	About 9,000	About 14,000

OP=Option

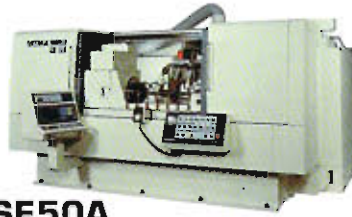
External Thread Grinder

GSE-A series

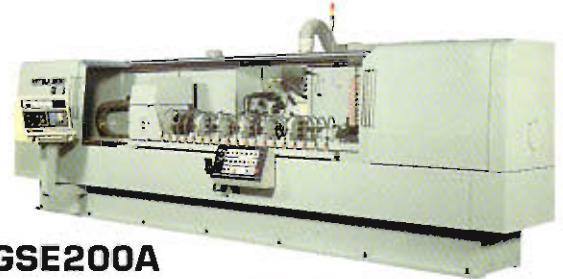
- High-precision, high-efficiency cutting of all kinds of screws including triangular screws, trapezoidal screws, ball screws, screw gauges, and worm is available.
- We have the world's No. 1 delivery record of grinders for ball screw processing.
- You can input the elements of the workpieces in an interactive way to process virtually all kinds of screws (No programming is necessary).
- The temperature of the entire machine is controlled through coolant in sync with the room temperature, so slow temperature change can be tracked to realize high precision process stably.
- Lubricant in sync with the coolant temperature (room temperature) is circulating at the center of axle of the master screw for table feed to control the temperature to realize high precision process of long screws.
- Dressers best suited for the thread grooves of workpieces are available.



GSE30A



GSE50A



GSE200A

Item		Unit	GSE30A	GSE50A	GSE100A	GSE200A	GSE320A	GSE500A
Capability/ capacity	Swing over table	mm	φ 270			φ 480		
	Distance between centers	mm	450	750	1,250	2,250	3,650	5,400
	Max. screw length that can be cut	mm	300	500	1,000	2,000	3,200	5,000
	Max. workpiece diameter that can be cut	mm	φ 80			φ 200		
Wheel axis	Wheel size (outer diameter x width x inside diameter)	mm	φ 355×10 ~ 32× φ 152.4			φ 510×10 ~ 50× φ 228.6		
	Max. rotation rate of the wheel axis	min ⁻¹	2,420			1,685		
	Highest frequency of the wheel axis	m/min				2,700		
	Tilt angle of the wheel axis	°	±30			±45		
Table feed	Wheel axis motor	kW	2.2		3.7		7.5	
	Total distance	mm	360	650	1,150	2,150	3,300	5,100
	Rapid return rate (Main axis is stopped.)	mm/min	1,000			2,400		
Workpiece main axis	Penetrating hole diameter	mm	φ 35		φ 76 (OP: φ 103)		φ 172	
	Rotation rate	min ⁻¹			100		80	
Machine weight		kg	About 4,500	About 9,500	About 11,000	About 13,000	About 18,500	About 20,000

OP=Option

GSE-B series

- Dynamical pressure wheel axis and three-axis NC square column rotary dresser are standard equipment. CBN wheel is available.
- Suitable for mass production of ball screws whose ball groove shape is the same.
- CBN wheel can reduce the number of dresses and prolongs wheel life to a large degree.



GSE320B

Item		Unit	GSE50B	GSE100B	GSE200B	GSE320B
Capability/ capacity	Swing over table	mm			φ 480	
	Distance between centers	mm	750	1,250	2,250	3,650
	Max. screw length that can be cut	mm	500	1,000	2,000	3,200
	Max. workpiece diameter that can be cut	mm			φ 200	
Wheel axis	Wheel size (outer diameter x width x inside diameter)	mm		φ 450×10 ~ 26× φ 152.4 (CBN wheel) φ 510×10 ~ 50× φ 228.6 (Standard wheel)		
	Max. rotation rate of the wheel axis	min ⁻¹		3,395 (CBN wheel)	1,685 (Standard wheel)	
	Highest frequency of the wheel axis	m/min		4,800 (CBN wheel)	2,700 (Standard wheel)	
	Tilt angle of the wheel axis	°			±45	
Table feed	Wheel axis motor	kW			11	
	Total distance	mm	650	1,150	2,150	3,300
	Rapid return rate (Main axis is stopped.)	mm/min			2,400	
Workpiece main axis	Penetrating hole diameter	mm		φ 76 (OP: φ 103)		φ 172
	Rotation rate	min ⁻¹		100		80
Machine weight		kg	About 9,500	About 11,000	About 13,000	About 18,500

OP=Option

Screw Heavy Grinder

GSE-H series

- Best for high-efficiency processing of injection screws, screws for extruders, large diameter/high-load ball screws.
- Although it is a grinder, its processing efficiency is threading machine level. Processing time can be reduced to 1/3 or less compared to traditional grinding process. In addition, running cost is several orders of magnitude lower than threading machines.
- With two-axis NC rotary dresser (optional), the wheel can be cut and shaped to any shape. Because of the disk type diamond, the diamond is wear-free, groove shape can be easily controlled and man-hour of the succeeding rubbing process can be reduced by a large margin.
- Equipped with the large capacity (2485 L) tank and 2000 L/min. processing separator device (optional), cutting dust generated by heavy grinding can be processed without fail. In addition, bed shape is fully worked-out, so the cutting dust does not accumulate inside of the machine.

GSC-H series

- Screw rotors for compressors and screws for vacuum pumps and fluid pressure feed pumps can be processed with high precision and high efficiency.
- As the wheel can be cut and shaped to any shape using two-axis NC rotary dresser (optional), trial and error to find the best screw groove shape is easy and the possibility of leak of groove shape know how is virtually zero.



GSE100H



GSC100H

Item		Unit	GSE100H	GSE200H	GSC100H
Capability/ capacity	Swing over table	mm	φ 480		
	Distance between centers	mm	1,250	2,250	1,250
	Max. screw length that can be cut	mm	1,000	2,000	1,000
	Max. workpiece diameter that can be cut	mm	φ 360		
Wheel axis	Wheel size (outer diameter x width x inside diameter)	mm	φ 510×10 ~ 50× φ 228.6		
	Minimum available wheel diameter	mm	φ 410		
	Max. rotation rate of the wheel axis	min ⁻¹	2,250		
	Highest frequency of the wheel axis	m/min	3,600		
	Tilt angle of the wheel axis	°	±45		
	Wheel axis motor	kW	OP: 45		
Table feed	Total distance	mm	1,440	2,440	1,440
	Rapid return rate (Main axis is stopped.)	mm/min	2,400		
Workpiece main axis	Penetrating hole diameter	mm	φ 76 (OP: φ 103)		
	Rotation rate	min ⁻¹	100		
Coolant tank capacity	L	2,485			
Machine weight	kg	About 13,000	About 15,000	About 13,000	

OP=Option

Internal Thread Grinder

- This is a grinder exclusively for grinding internal thread such as ball screw nuts.
- You can input the elements of the workpieces in an interactive way to process virtually all kinds of screws (No programming is necessary).
- Dressers best suited for the thread grooves of workpieces are available.
- Optional high lead wheel spindle enables processing of high lead screws.



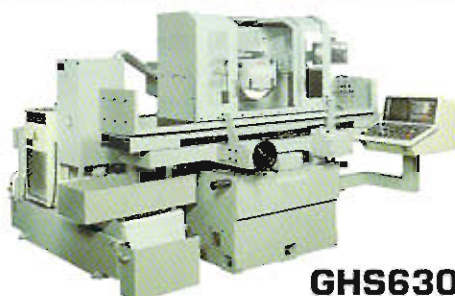
GSN180iS

Item		Unit	GSN180iS	
Capability/ capacity	Swing over table	mm	φ 480	
	Workpiece inside diameter that can be cut	mm	φ 6# ~ 100	
	Max. screw length that can be cut	mm	180	
Wheel table	Screw lead that can be cut	mm	0.25 ~ 50	
	Max. tilt angle of the wheel axis	°	±10	
	Wheel axis rotation rate and power	Low speed (OP)	min ⁻¹	3,600 ~ 8,000 (5.5kW)
		High rigidity (OP)	min ⁻¹	8,000 ~ 15,000 (3Kw)
		Standard	min ⁻¹	15,000 ~ 24,000 (4.5Kw)
		High speed (OP)	min ⁻¹	24,000 ~ 45,000 (3.7Kw)
Ultra high speed (OP)	min ⁻¹	45,000 ~ 70,000 (5.5Kw)		
Wheel size (outer diameter)	mm	φ 5 ~ 50		
Table feed	Total distance	mm	400	
	Rapid return rate (Main axis is stopped.)	mm/min	1,000	
Workpiece main axis	Penetrating hole diameter	mm	φ 76	
	Rotation rate	min ⁻¹	100	
Machine weight	kg	About 7,000		

OP=Option

CNC Ultraprecision Flat-Surface Grinding Machine

- The sliding surfaces of all axes are V-V and scraped for complete precision.
- Standard accessory NC dresser enables free shaping of the wheel shape.



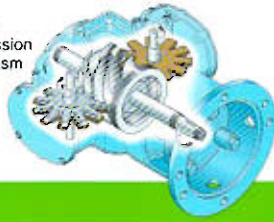
GHS630

Item		Unit	GHS630
Capability/ capacity	Table work space size	mm	600×300
	Table left and right travel distance	mm	650
	Table forward and backward travel distance	mm	330
	Maximum loading weight on the table	mm	300
Table	Feed rate	m/min	max 10 (NC feed)
Saddle support	Cutting feed rate	mm/min	1,000
Wheel head	Cutting feed rate	mm/min	500
Wheel axis	Wheel size (outer diameter x width x bore diameter)	mm	φ 305×50× φ 76.2
	Number of revolutions of the wheel axis	min ⁻¹	500 ~ 3,600
	Wheel axis motor	kW	7.5
Machine weight	kg	About 3,500	

Screw Compressor



Z screw compression mechanism



Oil Lubrication Type

ZVi, ZV series 7.5 kW - 75 kW

Screw type inverter compressor

▣ZVi: Inverter compressor equipped with IPM motor

▣ZV: Inverter compressor

Optimum pressure operation, variable pressure, auto start/stop, power-saving, direct drive without power loss, fixed pressure control, and low noise



Outlet pressure (MPa)	Pressure adjustment range (MPa)	Outlet air capacity (m ³ /min)	Model name	Voltage (V)
0.85	0.54 ~ 0.93	1.2	ZV08AS3-R	200/ 200 · 220
		1.8	ZV11AS3-R	
		2.6	ZV15AS3-R	
3.8		ZV22AS3i-R		
6.4		ZV37AS3i-R		
9.5		ZV55AS3i-R		
9.5		ZV55WS3i-R		
13.0		ZV75AS3i-R		
13.0		ZV75WS3i-R		

Z series 7.5 kW - 150 kW

Screw type compressor

▣Z Simple high efficiency compressor (Standard type)

Environmentally friendly and maintenance saving direct series



Outlet pressure (MPa)	Pressure adjustment range (MPa)	Outlet air capacity (m ³ /min)	Model name		Voltage (V)	
			50Hz	60Hz		
0.83	-	1.2	Z085AS2-R	Z086AS2-R	200/ 200 · 220	
		1.8	Z115AS2-R	Z116AS2-R		
		2.6	Z155AS2-R	Z156AS2-R		
3.8		Z225AS2-R	Z226AS2-R			
6.5		Z375AS2-R	Z376AS2-R			
6.4		Z375WS2-R	Z376WS2-R			
0.69		9.5	Z555AS-R	Z556AS-R		3,000/3,300
			Z555WS-R	Z556WS-R		
			Z755AS-R	Z756AS-R		
			Z755WS-R	Z756WS-R		
		Z755ASH-R	Z756ASH-R			
		Z755WSH-R	Z756WSH-R			
0.7	19.0/18.2		Z1005AS	Z1006AS	400/440	
			Z1005WS	Z1006WS		
	27.0/26.0		Z1005ASH	Z1006ASH	3,000/3,300	
			Z1005WSH	Z1006WSH		
			Z1505WS	Z1506WS		400/440
			Z1505WSH	Z1506WSH		

ZS series 3.7 kW - 7.5 kW

Scroll type compressor

▣Low noise and high efficiency compressor (compact type)

Easy maintenance, largest outlet air capacity in the class. High pressure 1.37 MPa (14 kg/cm²) type is also available as standard specifications.



Outlet pressure (MPa)	Pressure adjustment range (MPa)	Outlet air capacity (m ³ /min)	Model name		Voltage (V)	
			50Hz	60Hz		
0.83 - 0.64	-	490	ZS045A3-R	ZS046A3-R	200/ 200 · 220	
		750	ZS065A3-R	ZS066A3-R		
		330	ZS045AH3-R	ZS046AH3-R		
500		ZS065AH3-R	ZS066AH3-R			
1.37 ~ 1.08				ZS085AHR		ZS086AHR

Water Lubrication Type (Oil-free)

ZUVi, ZUV series 15 kW - 75 kW

Screw type oil-free inverter compressor

▣ZUVi: Inverter compressor equipped with IPM motor

▣ZUV: Inverter compressor

Optimum pressure operation, variable pressure, auto start/stop, power-saving, direct drive without power loss, fixed pressure control, low noise, environmentally friendly clean specification, and optimum energy-saving.



Outlet pressure (MPa)	Pressure adjustment range (MPa)	Outlet air capacity (m ³ /min)	Model name	Voltage (V)
0.69	0.54 ~ 0.93	2.3	ZUV15AS-R	200/ 200 · 220
		3.5	ZUV22AS-R	
		6.0	ZUV37AS-R	
		6.0	ZUV37WS-R	
0.7		9.5	ZUV55AS3i-R	
		9.5	ZUV55WS3i-R	
		13.0	ZUV75AS3i-R	
		13.0	ZUV75WS3i-R	

ZU series 7.5 kW - 120 kW

Screw type oil-free inverter compressor

▣ZU: Water circulating compressor

Direct drive without power loss, low noise, environmentally friendly clean specification, and optimum energy-saving



Outlet pressure (MPa)	Pressure adjustment range (MPa)	Outlet air capacity (m ³ /min)	Model name		Voltage (V)	
			50Hz	60Hz		
0.69	-	0.9	ZU085A3-R	ZU086A3-R	200/ 200 · 220	
		1.4	ZU115A3-R	ZU116A3-R		
		2.3	ZU155AS-R	ZU156AS-R		
		3.5	ZU225AS-R	ZU226AS-R		
		6.0	ZU375AS-R	ZU376AS-R		
0.7				ZU375WS-R		ZU376WS-R
		9.5	ZU555AS-R	ZU556AS-R		
			ZU555WS-R	ZU556WS-R		
		13.0	ZU755AS-R	ZU756AS-R		
			ZU755WS-R	ZU756WS-R		
	16.0/15.0	ZU905WS	ZU906WS			
	18.2/17.4	ZU1005WS	ZU1006WS			
	21.3/20.6	ZU1205WS	ZU1206WS			

ZD series 160 HP / 220 HP

Engine-driven screw compressor

▣Regular-use engine compressor

High durability and high performance. Used fuel: Bunker A, diesel oil, or kerosene



Outlet pressure (MPa)	Pressure adjustment range (MPa)	Outlet air capacity (m ³ /min)	Model name	Power (PS)
0.69	-	15.0	ZD150A	160
		15.0	ZD150W	
		25.0	ZD250A	
		25.0	ZD250W	

Description of models and symbols

Z 2 2 5 A S - R

① ② ③ ④ ⑤ ⑥

- 1 Series name
- 2 Electric energy (kW)
- 3 Frequency (5:50Hz 6:60Hz)
- 4 Cooling method (A: air cooling, W: water-cooling)
- 5 Type name
- 6 R: built-in drier

All the specifications indicated in the brochure are subject to change without prior notice.



MITSUI SEIKI KOGYO CO., LTD.

SPHERE TOWER TENNOZ

2-2-8, HIGASHI-SHINAGAWA, SHINAGAWA-KU, TOKYO, 140-0002 JAPAN

TEL: +81-3-5715-4022 FAX: +81-3-5715-3919

URL: <http://www.mitsuseiki.co.jp>