ISO 9001 ISO 14001 CE

Tongtai

Trust & Technology

2012.10.15 Design by Tongtai Machine & Tool Co., Ltd

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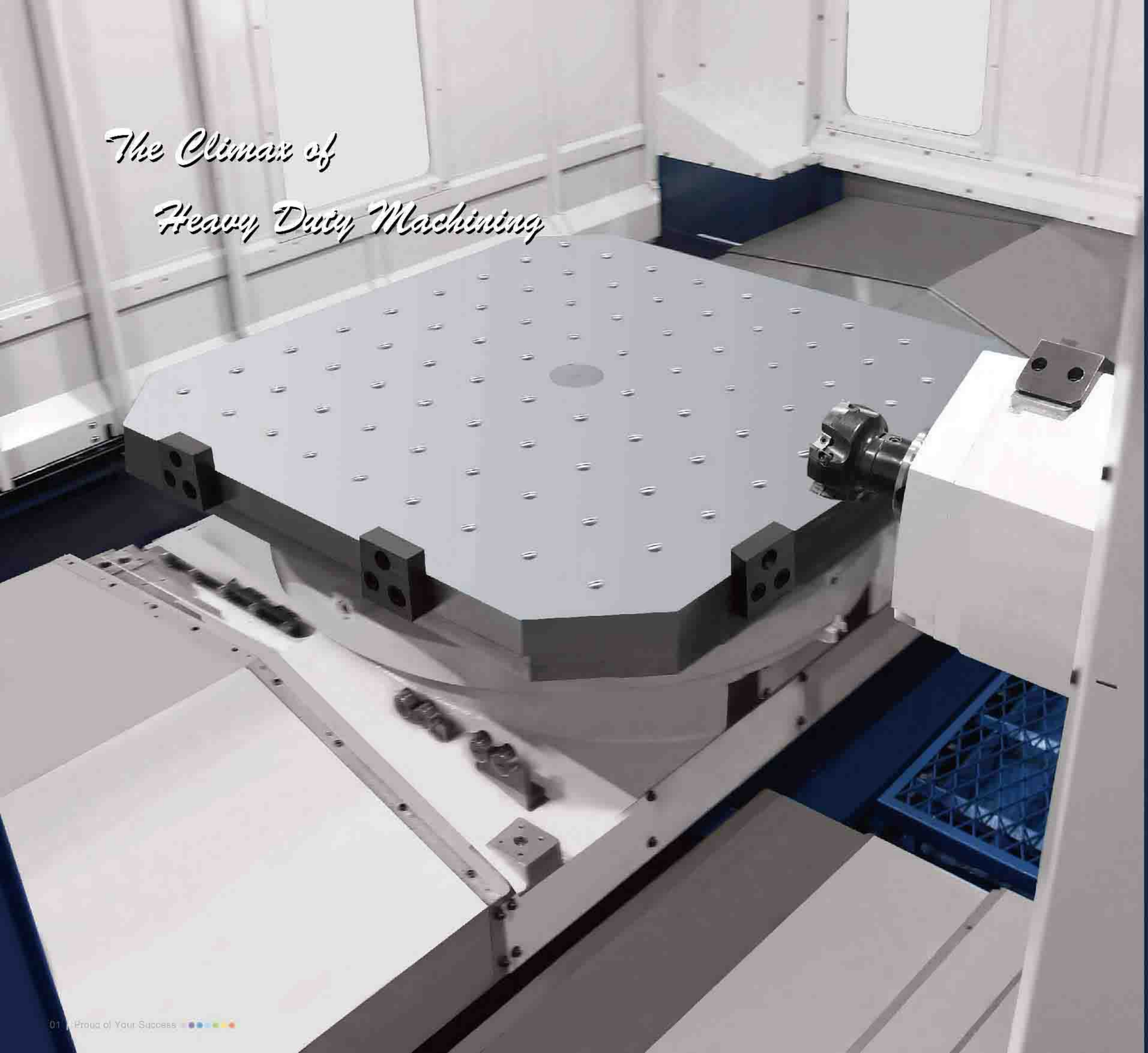


The Climax of Heavy Duty Machining

The HG-1250 is made from high-grade cast iron. It features hardened and ground box ways in all axes, providing high rigidity and excellent precision.

The 2 speed geared headstock develops high torque at low rpm for heavy cutting. The 30 HP spindle motor makes 1093 Nm in low gear. The 6,000 rpm spindle is both air/oil mist lubricated and oil cooled for long life and thermal stability.

Large diameter, pre-tensioned ball-screws are directly coupled to oversized servo motors. The axis thrust bearings are automatically lubricated for maintenance free operation. High speed rapid traverse of 20 m/min reduces cycle time while linear scales in X,Y, and Z ensure the highest precision.

Other outstanding performance enhancing features include large capacity servo driven tool changers (60 std., 90/120 opt.), a full B-axis rotary table, chip conveyors, and coolant through the spindle.

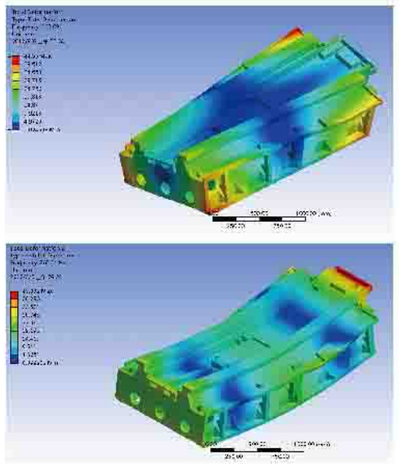
Machine structure

X/Y/Z axis stroke 2000/1400/1250 mm

X/Y/Z axis rapid traverse 20/20/20 m/min

Cutting feedrate 1-10000 mm/min

Finite Element Analysis



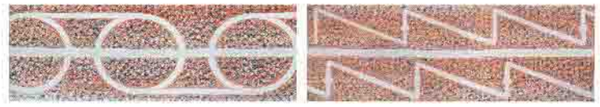
FEA is employed in the machine design to ensure structural integrity. The result is high rigidity, high accuracy, and excellent machine productivity.

Symmetrical column structure

The column is symmetrical box type structure. Utilizing a double wall casting, the column has excellent rigidity to minimize deformation.

Scraping

High precision scraping is carried out by skillful engineers to obtain the perfect lubrication with correct oil-film. The machine accuracy and the lifetime of slides are both raised accordingly.



High precision feeding units

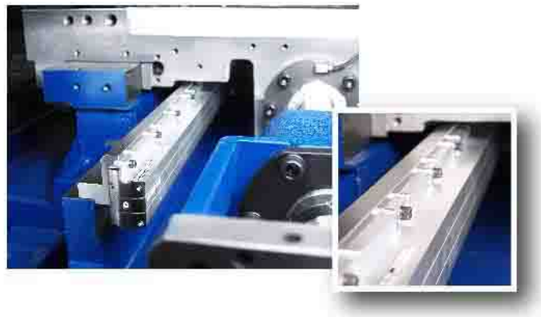
All three linear axes employ rigid box ways. The ways are induction hardened and then finely ground to satisfy both heavy cutting and high accuracy demands.

The preloaded ball screw reduces thermal distortion and ensures the machining performance and precision. Axis thirst bearings are auto lubricated.

Ergonomic design

The ergonomic design facilitates the operator in monitoring the production process during program editing. It reduces mistakes and improves the working efficiency.

Linear scale system



X/Y/Z axis adopts Heidenhain linear scale system for assuring the machining accuracy.

Spindle

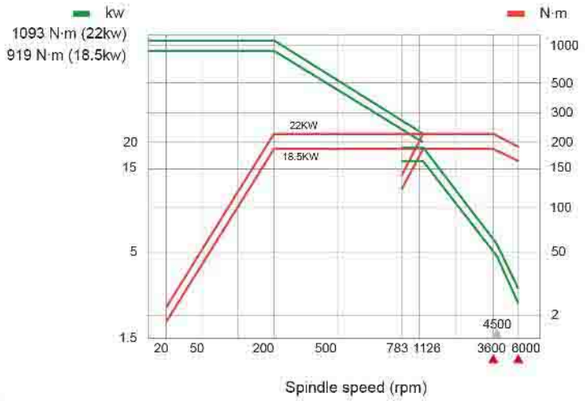
Gear-box type spindle

Standred **3600** rpm (Grease lubrication)

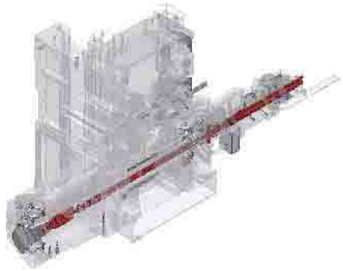
Optional **6000** rpm (Oil-mist lubrication)

- Spindle cooler system is standard
- Coolant through spindle is available

Spindle output and torque chart

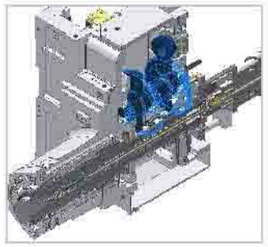


Coolant through spindle (C.T.S)



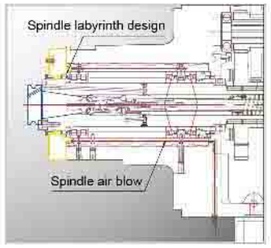
The coolant through spindle is standard. It improves machining speed and extends the tool life. Moreover, it allows efficient metal chip removal during deep hole machining and improves the workpieces' precision.

Spindle with gear box



The two speed geared spindle is designed using precisely ground angular gears. The torque is multiplied through the transmission producing 1093 Nm for heavy cutting. The gearbox is both force lubricated and oil cooled.

Spindle structure



The spindle employs precision angular thrust ball bearings. The bearings are air/oil mist lubricated to extend spindle life. To prevent contamination, the spindle is constantly air purged and utilizes a double labyrinth seal in the spindle nose.

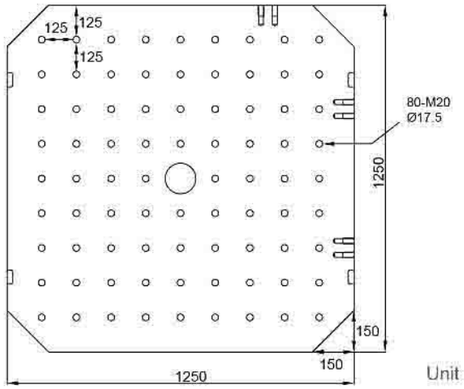
The large capacity spindle oil chiller provides synchronous temperature control to prevent spindle thermal distortion.

Pallet

Fine ground table surface with excellent flatness

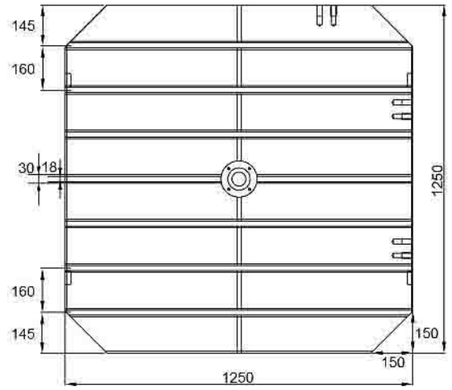
Pallet size	1250×1250 mm
Max. workpiece size	Ø1970×H1500 mm
Max. pallet load	4000 kg

The size of tapped holes type pallet

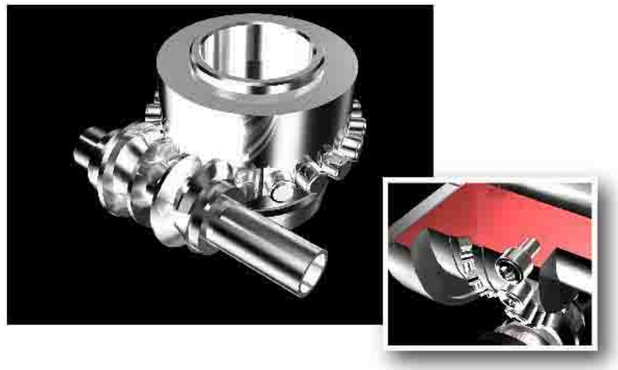


Unit : mm

The size of T-slots type pallet



B axis cam type transmission device

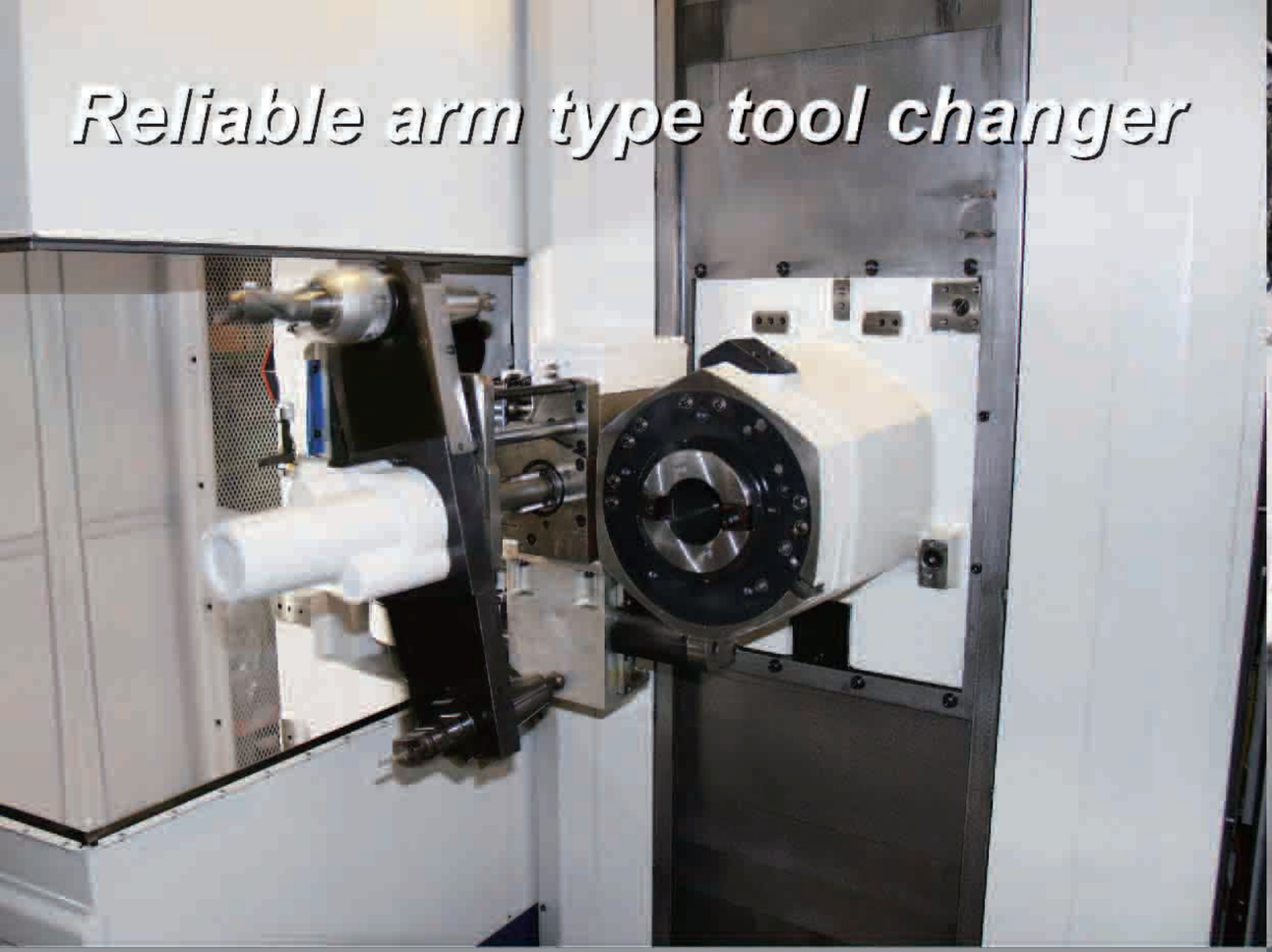


Cam type transmission device has the advantages of zero-backlash, accurate deceleration, and high rigidity. In addition, compare with the traditional worm gear and wheel, its high speed positioning is two times faster. Furthermore, it performs well in both heavy duty machining as well as complicated workpieces.

B axis positioning and clamping device

The full B axis utilizes a high pressure brake system for heavy cutting. Minimum positioning increment is 0.001 degrees.

The pallet is clumped to the B axis with four locking cones, achieving 25.7 tons of clamping force. Excellent performance and stability is achieved.



Reliable arm type tool changer

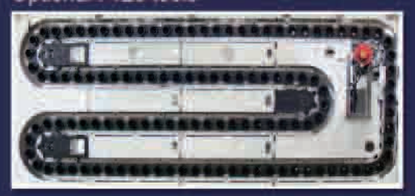
High speed cam structure

Tool capacity

Strandrad : 60 tools

Optional : 90 tools

Optional : 120 tools



High capacity tool magazine and modular structure de sign allow the customer to select the suitable tool magazine. The maximum capacity is 120 tools.

Tool shank	BT-50 / CAT / DIN	
Tool capacity	60 (Opt. 90 / 120)	tools
Max. tool diameter	Ø125	mm
Max. tool diameter (w/o adjacent tool)	Ø250	mm
Max. tool length	610	mm
Max. tool weight	25	kg

Automatic tool changer

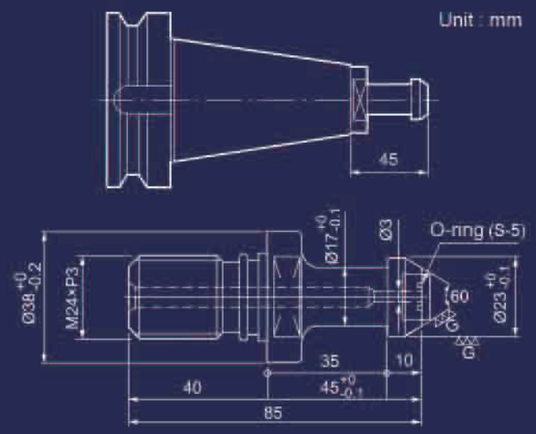
Highly reliable arm type tool changer makes the long-term stability during tool changing. It not only ensures the machining ability but also keeps the machining performance during long-term operation.

Tool changing time and tool size

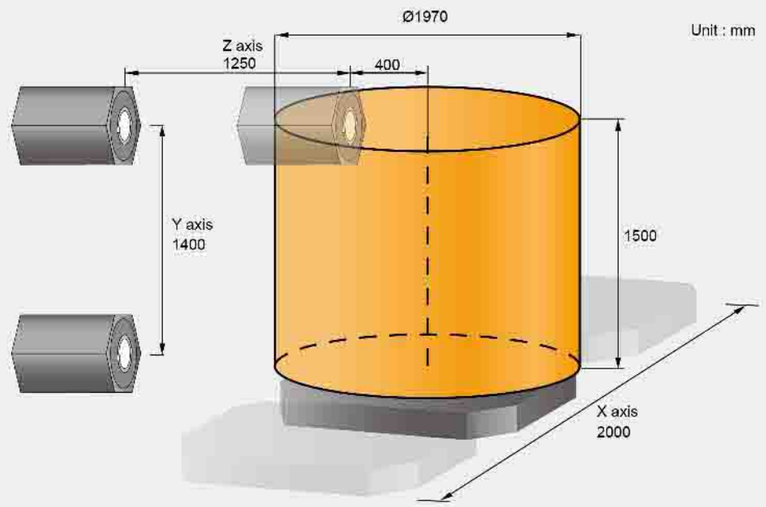
T to T : 24 sec

C to C : 30 sec

Unit : mm



Working area



Unit : mm

X/Y/Z axis stroke

2000/1400/1250 mm

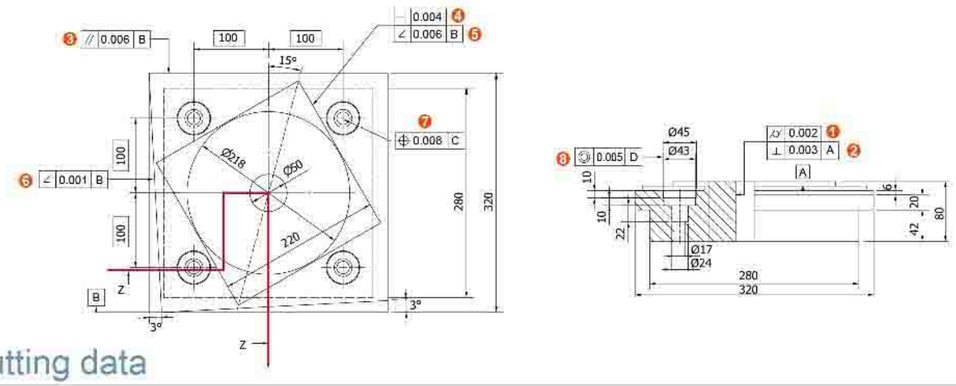
Max. workpiece size

Ø1970 × H1500 mm

Table height from floor

1300 mm

Standard block measurement



Cutting data

Item	Testing items	ISO10791-7	HG-1250
Central hole	❶ Cylindricity	0.015	0.004
	❷ Concentricity of A datum and central hole	0.015	0.004
Square	❸ Parallel of B datum with opposite face	0.02	0.01
Rhombus	❹ Exact straightness of four sides	0.015	0.005
	❺ Angle precision of 75° slant for B datum	0.02	0.008
Slant	❻ Angle precision for B datum	0.02	0.006
Four bores	❼ Position of four bores to central hole C	0.05	0.02
	❽ Concentricity of small diameter to big	0.02	0.008

Testing items		
Positioning accuracy	mm	0.005
Repeatability accuracy	mm	0.003

◎ Accuracy data are the actual results obtained under static conditions in a temperature controlled environment per jis-standard.

Mechanical high speed performances	
Item	HG-1250
Rapid traverse (X/Y/Z)	20 m/min
Cutting feedrate (Max.)	10 m/min
ATC (C-C)	30 sec.

Cutting abilities	Material : S45C			
Item	Face milling Ø160×11	Drilling Ø50	Tapping M48×P5	Tapping Rcl 1/4
Cutting capacity (cc/min)	557	110		
Cutting width × depth (mm)	110×8	Ø50×70		
Spindle speed (min^{-1})	320	160	66	78
Cutting feedrate (mm/min)	633	56		

APC - Automatic pallet changer (Optional)

The process of pallet changing


Machining


After the machining is finished, the door opens


Pallet slides forward for unloading


Pallet change


Door closes and machining again

Safety light curtain device

APC pallet and ladder design provides the best safety protection for the operator during loading and unloading the workpiece. The light curtain safety device is available for detecting the safety area, avoiding careless operator activity, and providing a safe environment for the operator.

90 degrees pallet design

Pallets are driven by servo transmission devices. Each pallet allows 90 degrees rotation for facilitating the operator in loading and unloading workpieces and achieving the goal of rapid workpiece change.

Specification

HG-1250

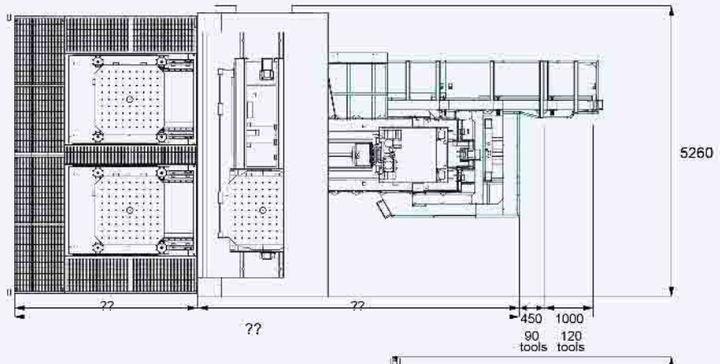
Item	Specification	Unit	HG-1250
Table	Table size (L×M)	mm	1250×1250
	Max. loading capacity	kg	4000
	Table height from floor	mm	1300
	Max. workpiece dimension (Diameter×height)	mm	Ø1970×H1500
	B axis min. indexing increment	deg	0.001°
Spindle	Spindle taper		7/24 Taper No.50
	Spindle speed	rpm	3600 (Opt. 6000)
Stroke	X/Y/Z axis stroke	mm	2000/1400/1250
	Spindle center to table	mm	0-1400
	Spindle nose to table	mm	400-1650
Feed	X/Y/Z axis rapid traverse	m/min	20
	Cutting feedrate	m/min	1-10000
ATC	Tool shank		BT-50
	Tool capacity	pc	60 (Opt. 90/120)
	Max. tool diameter	mm	Ø125
	Max. tool diameter (w/o adjacent tool)	mm	Ø250
	Max. tool length	mm	610
	Max. tool weight	kg	25
Motor	Spindle motor (50%ED)	kw	22/18.5
	X/Y/Z axis servo motor	kw	6/6/6
	Coolant motor	kw	0.55×1/1.1×2
Controller			FANUC 31i-M
Machine size	L×W×H	mm	OOOO ×5260×4040
	Weight	kg	40850

SPECIFICATIONS MAY BE CHANGED WITHOUT PRIOR NOTICE

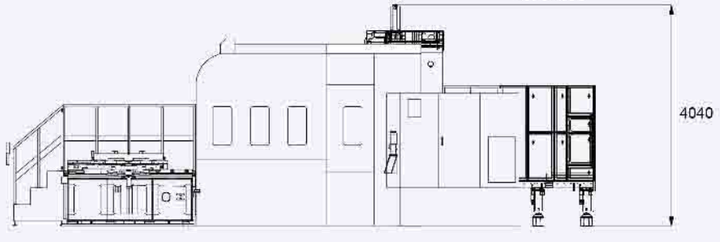
Machine dimensions

Unit : mm

Vertical view



Sind view



Optional accessories

Standard ★ Optional □

Stroke
- X axis long stroke 2000 mm ★
- Y axis long stroke 1400 mm ★
- Z axis long stroke 1250 mm ★

Box way
- Airfloat design ★
- Oil hydraulic design ★

X axis optical linear scale
- Accuracy ±5 um ★
- Accuracy ±3 um □

Y axis optical linear scale
- Accuracy ±5 um ★
- Accuracy ±3 um □

Z axis optical linear scale
- Accuracy ±5 um ★
- Accuracy ±3 um □

Chip auger
- X axis direction×2 ★
- Z axis direction×2 ★

Others
- Rapid traverse 20 m/min ★
- Cutting feedrate 10 m/min ★

B axis
- 0.001 degree ★
- Rotary scale ±2.5" □
- Rotary scale ±5" □
- Pallet size 1250 mm×1250 mm □
- T-slot - 7×18H7 ★
- M20×80 ★
- Brake 50 kg/cm² hydraulic □
- Loading 4000 kg ★

Spindle
- Grease 3500 rpm ★
- Oil-mist 6000 rpm □
- Coolant through spindle 15 bar ★
- Coolant through spindle 35 bar □
- Coolant through spindle 70 bar □
- Circle type coolant device×8 ★
- Labyrinth air blow ★
- 2-step machinery type ★
- 90 degree pull stud ★
- 60 degree pull stud □
- 45 degree pull stud □
- Spindle cooler ★

ATC (Automatic tool changer)
- BT ★
- CAT □
- DIN □
- Automatic tool cleaning ★

Tool magazine
- 60 tools ★
- 90 tools □
- 120 tools □
- Max. tool weight 25 kg ★
- Servo motor driven ★
- Max. tool length 610 mm ★
- Max. tool diameter Ø125 mm ★
- Max. tool diameter w/o adjacent tool Ø250 mm ★

Automatic pallet changer (APC)
- Fixed type APC □
- Automatic four index APC □
- APC side guards □

Chip conveyor
- Scrape type ★
- Drum type with filter □
- Chain type □
- Magnet scraper conveyor □

Accessories
- Hydraulic tank cooling system □
- Coolant tank cooling system □
- Oil skimmer □
- Overhead coolant device □
- Coolant gun □
- Air gun □
- APC safety light curtains device □

Your best partner for metal-cutting total solutions

Tongtai emphasizes providing an excellent investment strategy to our clients with high cost-performance ratio. We give our customers supreme machine performance with reasonable prices.

Our management team and the members of all five of its departments will ceaselessly search for innovative solutions for your processing needs. All your sales and after sales concerns will be satisfied! That means, when you purchase our machines, the service never stops!

Our company slogan “Trust & Technology” is always backed with passion for our product improvements and responsibility for our service to you.

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