



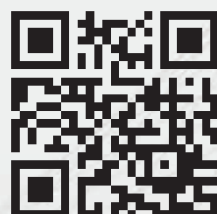
High Speed Fixed Column Horizontal Machining Center

Quality Features Assure Superior Performance.



MASTER AUTOMATIC CO., LTD.

No.285, Dongzhou Rd., Shengang Dist.,
Taichung City 429, Taiwan
TEL: +886-4-2525 0480
FAX: +886-4-2525 7747
E-mail: info@macocnc.com
Http://www.macocnc.com



07.2016/1000

QH Fixed Column Series

MASTER AUTOMATIC CO., LTD.

High Speed Fixed Column Horizontal Machining Center

A Machining Center Designed Specifically for Small Parts

- The column is designed with a symmetrical double-wall structure, in order to prevent from temperature growth which would cause of generating the thermal deformation and affecting the cutting accuracy.
- Adopting the high-intensive base not only prevent the vibration but raise the cutting stability.
- The spindle with short nose design to exhibit exceptional rigidity. The spindle head is designed by Finite Element Analysis to achieve an optimal structure with increased length of locking surface, making it easily for deep hole processing.
- Chips fall down by self-weight into the screw type chip conveyor which is in the base at both sides, and quickly deliver to the coolant tank. Therefore, the machine can remove the chip effective to ensure the accuracy of processing time.



● QH-400

Standard Accessories:

- Controller : Fanuc Oi-MF
- Direct-Drive Spindle : 12,000 rpm
- Spindle Oil Cooler
- ATC : BT40 / 24 tools
- Coolant System
- Automatic Lubrication System
- Roller Type Linear Guideway
- Auger Type Chip Conveyor & Cart
- Full Enclosure
- Air Gun
- Coolant Gun
- Work Light
- Heat Exchanger of Electrical Cabinet
- Leveling Bolts and Adjusting Pad
- Rigid Tapping
- M30 Automatic Power Off

Option Accessories:

- Direct-Drive Spindle : BT40 10,000 / 15,000 rpm
- ATC : 32 tools
- Coolant Through Spindle : 15 / 20 bar
- Chain Type Chip Conveyor & Cart
- Fixture System
- Oil Skimmer
- Auto Tool Length Measurement Device
- Work Piece Measurement Device
- Regulator
- Transformer
- CE Mark

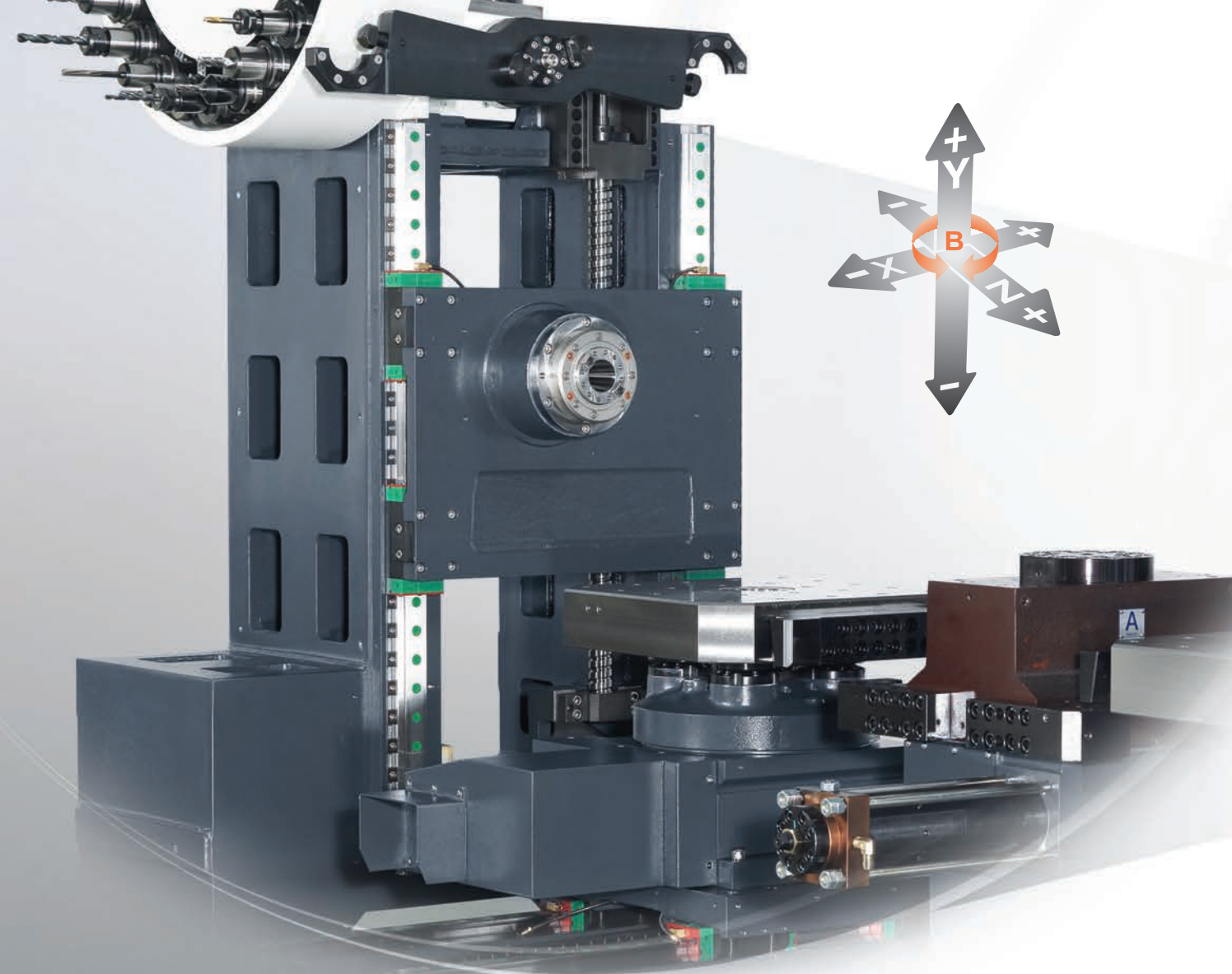
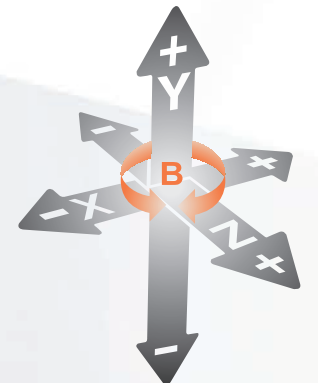


● QH-400A



High Rigidity,

High Precision Structure



High Speed Fixed Column Horizontal Machining Center

● QH-500



Standard Accessories:

- Controller : Fanuc Oi-MF
- Belt-Drive Spindle : 6,000 rpm
- Spindle Oil Cooler
- ATC : BT50 / 24 tools
- Coolant System
- Automatic Lubrication System
- Roller Type Linear Guideway
- Auger Type Chip Conveyor & Cart
- Full Enclosure
- Air Gun
- Coolant Gun
- Work Light
- Heat Exchanger of Electrical Cabinet
- Leveling Bolts and Adjusting Pad
- Rigid Tapping
- M30 Automatic Power Off

Option Accessories:

- Direct-Drive Spindle :
BT40 / 12,000 rpm
BT50 / 12,000 rpm
- ATC :
BT40 : 40/60 tools
BT50 : 40/60 tools
- Coolant Through Spindle :
15 / 20 bar
- Chain Type Chip Conveyor & Cart
- Fixture System
- Oil Skimmer
- Auto Tool Length Measurement Device
- Work Piece Measurement Device
- Regulator
- Transformer
- CE Mark

● Machining Examples:



● QH-630



Standard Accessories:

- Controller : Fanuc Oi-MF
- Belt-Drive Spindle : 6,000 rpm
- Spindle Oil Cooler
- ATC : BT50 / 24 tools
- Coolant System
- Automatic Lubrication System
- Roller Type Linear Guideway
- Auger Type Chip Conveyor & Cart
- Full Enclosure
- Air Gun
- Coolant Gun
- Work Light
- Heat Exchanger of Electrical Cabinet
- Leveling Bolts and Adjusting Pad
- Rigid Tapping
- M30 Automatic Power Off

Option Accessories:

- Direct-Drive Spindle :
BT50 / 12,000 rpm
- ATC : 40/60/120 tools
- Coolant Through Spindle :
15 / 20 bar
- Chain Type Chip Conveyor & Cart
- Fixture System
- Oil Skimmer
- Auto Tool Length Measurement Device
- Work Piece Measurement Device
- Regulator
- Transformer
- CE Mark

Rotary Table (B-axis)

- The rotary table is driven by a servo system.
- With the three-piece clutch ($\pm 5''$ accuracy) to ensure positioning accuracy.

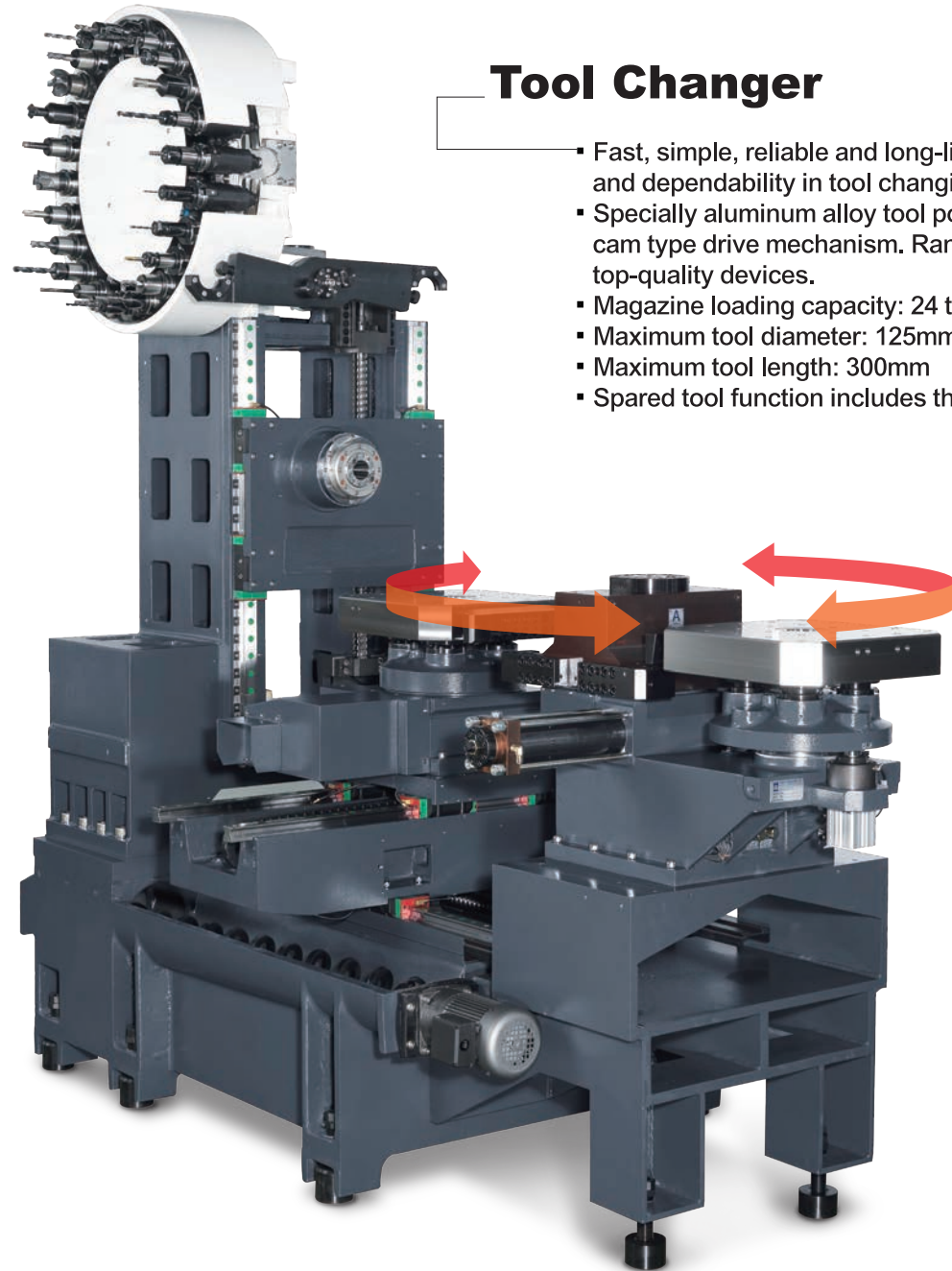


- Single Pallet



High Speed Rigid Direct-Drive Spindle

The direct-drive spindle is mounted with high precision class P4 bearings. The spindle features include light weight, low centrifugal, high rigidity, low expansion coefficient to achieve higher accuracy and longer life of spindle.



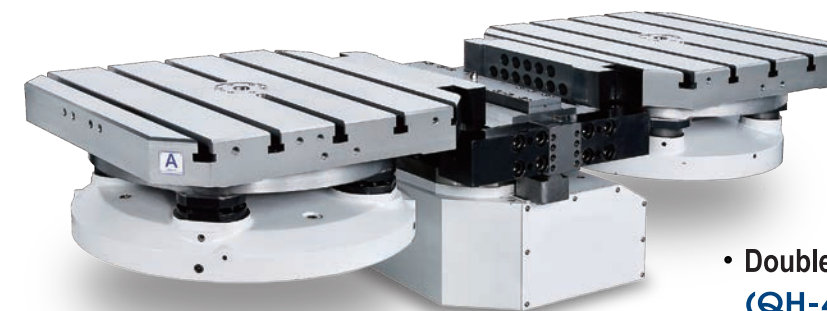
Tool Changer

- Fast, simple, reliable and long-life tool changer offers stability and dependability in tool changing.
- Specially aluminum alloy tool pocket designed and advanced cam type drive mechanism. Random tool selection. Unique top-quality devices.
- Magazine loading capacity: 24 tools
- Maximum tool diameter: 125mm (without adjacent tool).
- Maximum tool length: 300mm
- Spared tool function includes the magazine features.



Coolant Nozzle Around Spindle

The coolant nozzle around spindle device to provide the best cooling effect to the tool and the workpiece resulting in better machining quality.



Automatic Pallet Change (A.P.C.)

- High loading capacity: With hydraulic drive and bear the weight of 350 kg x 2.
- High repeatability accuracy : Designed with high precision positioning cones to ensure stability of table and within $\pm 0.005\text{mm}$ of repeatability.
- Using automatic pallet change may shorten machining time and increase working efficiency.

• Double Pallet (QH-400A)



High-Speed Quiet Ball Screw

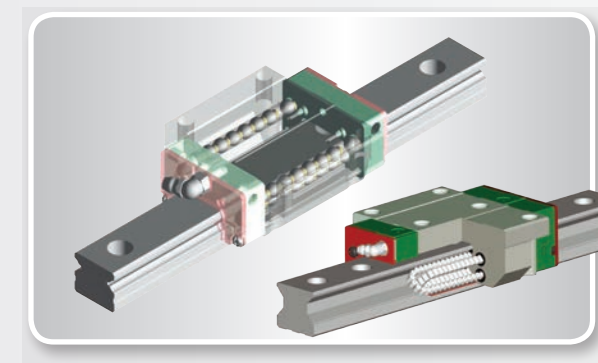
- Quiet Spindle: The design of reflux device can absorb the voice which comes from steel balls' impact, then greatly reduce the noise.
- High acceleration/deceleration velocity: the special reflux device and strength design can reduce the impact force from steel balls. Therefore, it can sustain the operating environment of high Dm-N value and high acceleration/deceleration velocities.



Spindle Cooler



Heat Exchanger of Electrical Cabinet



Roller Type Linear Guideway

- The three axes with roller type linear guideway has more better dynamic load than the same level, due to assure the accuracy of overall machine. Moreover provides the highest rigidity as well as outstanding cutting performance.
- The linear guideway features minimum wear to extend the life-span.
- Especially ideal for high speed movement and dramatically reduce the power requirement of machine.

Fixed Column Horizontal Machining Center

Standard Accessories:

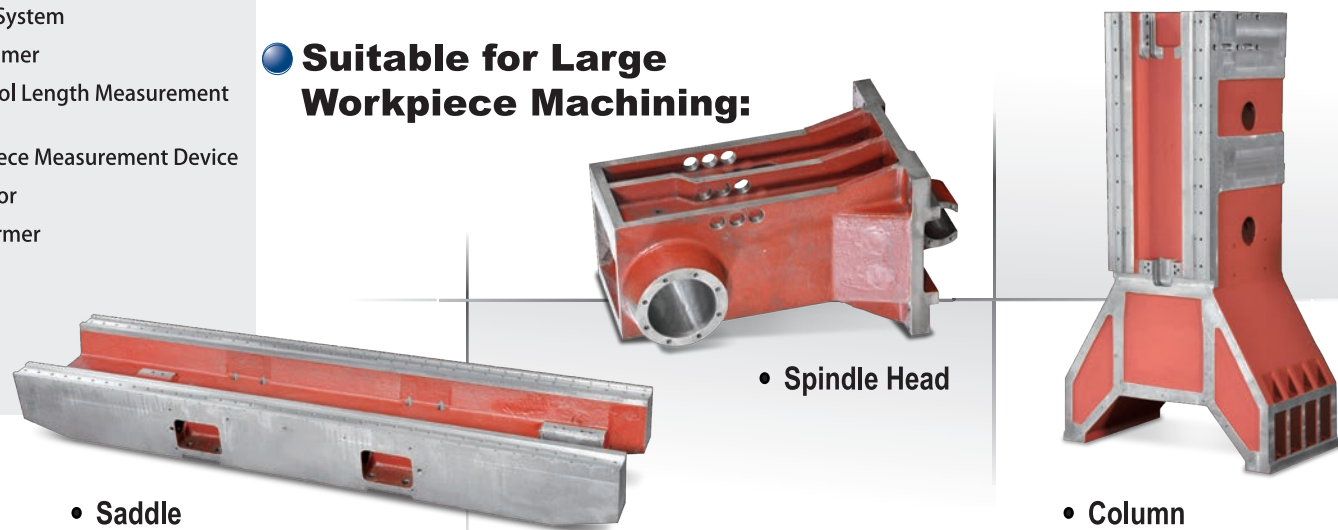
- Controller : Fanuc Oi-MF
- Gear Head(High/Low Gear) : 6,000 rpm
- Spindle Oil Cooler
- ATC : BT50 / 40 tools
- Coolant System
- Automatic Lubrication System
- Roller Type Linear Guideway
- Auger Type Chip Conveyor&Cart
- Semi Guard
- Air Gun
- Coolant Gun
- Work Light
- Heat Exchanger of Electrical Cabinet
- Leveling Bolts and Adjusting Pad
- Rigid Tapping
- M30 Automatic Power Off



Option Accessories:

- Direct-Drive Spindle : BT50 / 12,000 rpm
- ATC : 40/60/120 tools
- Coolant Through Spindle : 15 / 20 bar
- Chain Type Chip Conveyor&Cart
- Fixture System
- Oil Skimmer
- Auto Tool Length Measurement Device
- Work Piece Measurement Device
- Regulator
- Transformer
- CE Mark

• Suitable for Large Workpiece Machining:



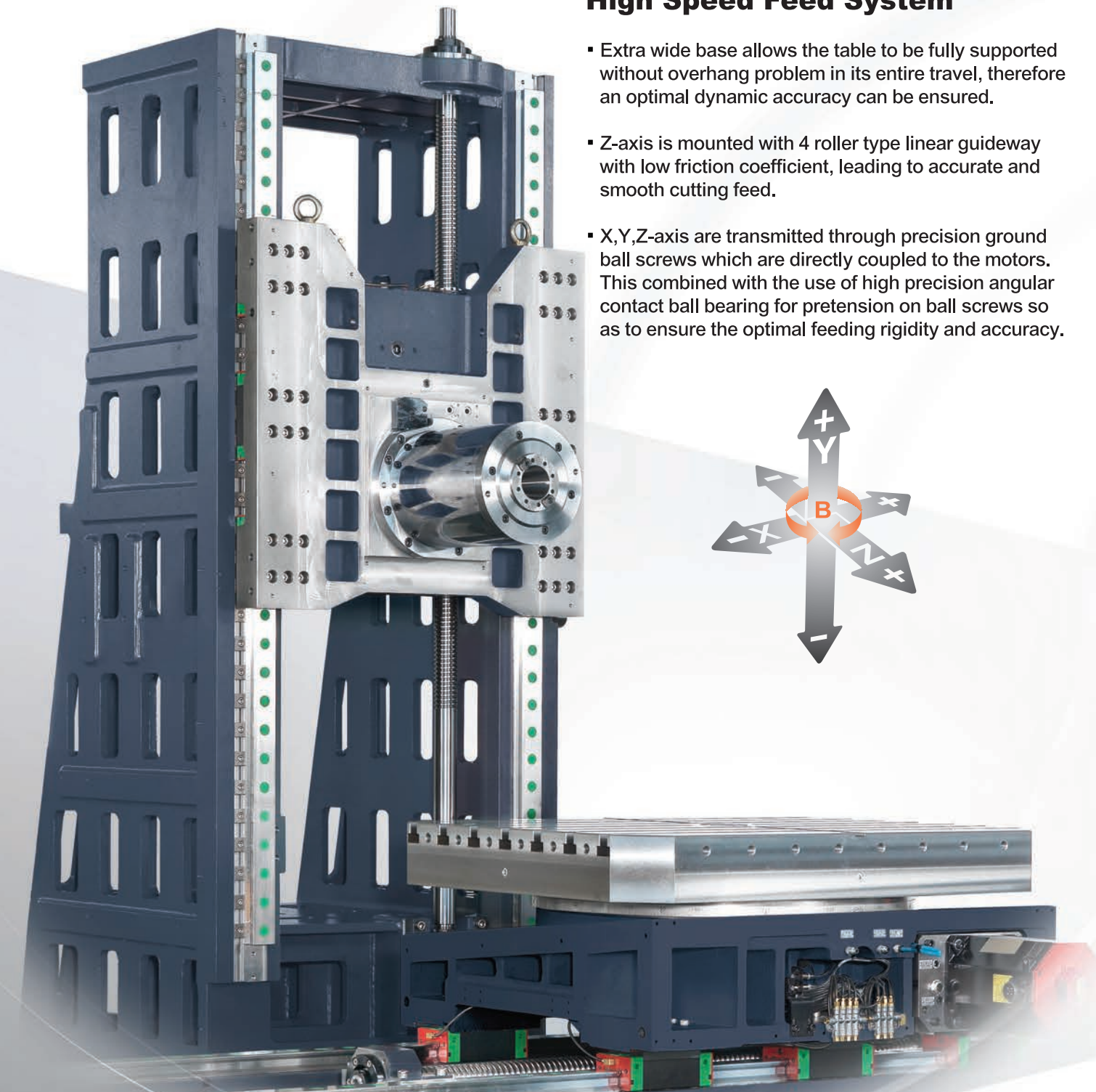
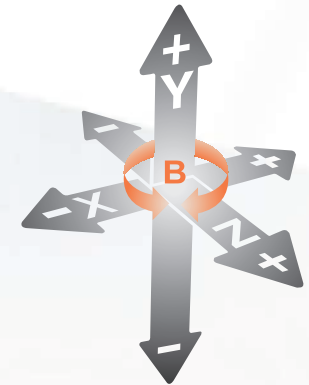
• Saddle

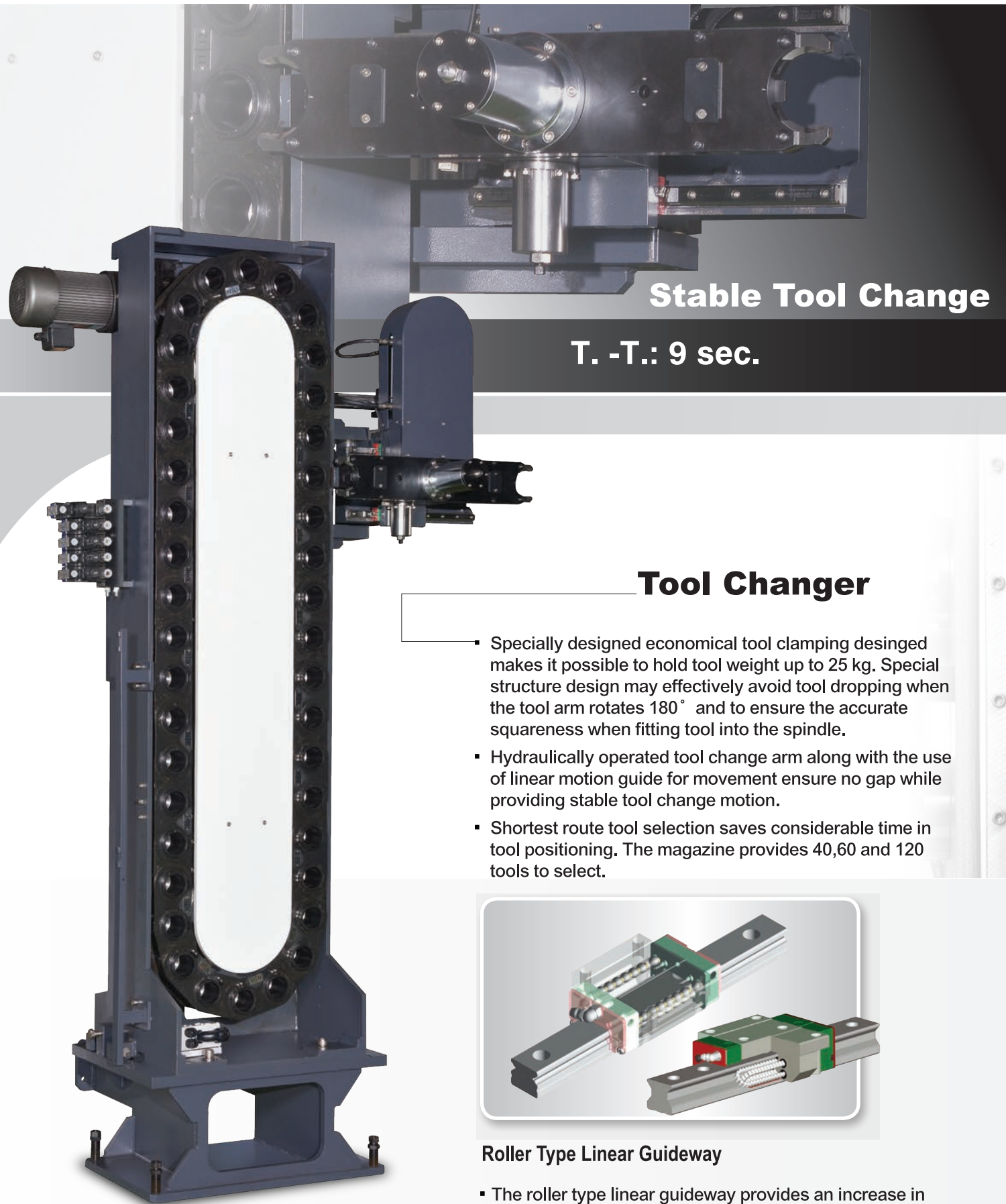
• Spindle Head

• Column

Robust Structure Design, High Loading Capacity, High Precision & High Speed Feed System

- Extra wide base allows the table to be fully supported without overhang problem in its entire travel, therefore an optimal dynamic accuracy can be ensured.
- Z-axis is mounted with 4 roller type linear guideway with low friction coefficient, leading to accurate and smooth cutting feed.
- X,Y,Z-axis are transmitted through precision ground ball screws which are directly coupled to the motors. This combined with the use of high precision angular contact ball bearing for pretension on ball screws so as to ensure the optimal feeding rigidity and accuracy.



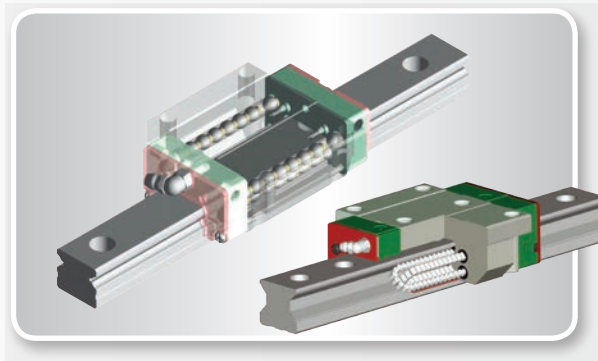


Stable Tool Change

T. -T.: 9 sec.

Tool Changer

- Specially designed economical tool clamping desinged makes it possible to hold tool weight up to 25 kg. Special structure design may effectively avoid tool dropping when the tool arm rotates 180° and to ensure the accurate squareness when fitting tool into the spindle.
- Hydraulically operated tool change arm along with the use of linear motion guide for movement ensure no gap while providing stable tool change motion.
- Shortest route tool selection saves considerable time in tool positioning. The magazine provides 40,60 and 120 tools to select.



Roller Type Linear Guideway

- The roller type linear guideway provides an increase in rigidity especially subjected to a heavy load and also maintains high accuracy of machining.



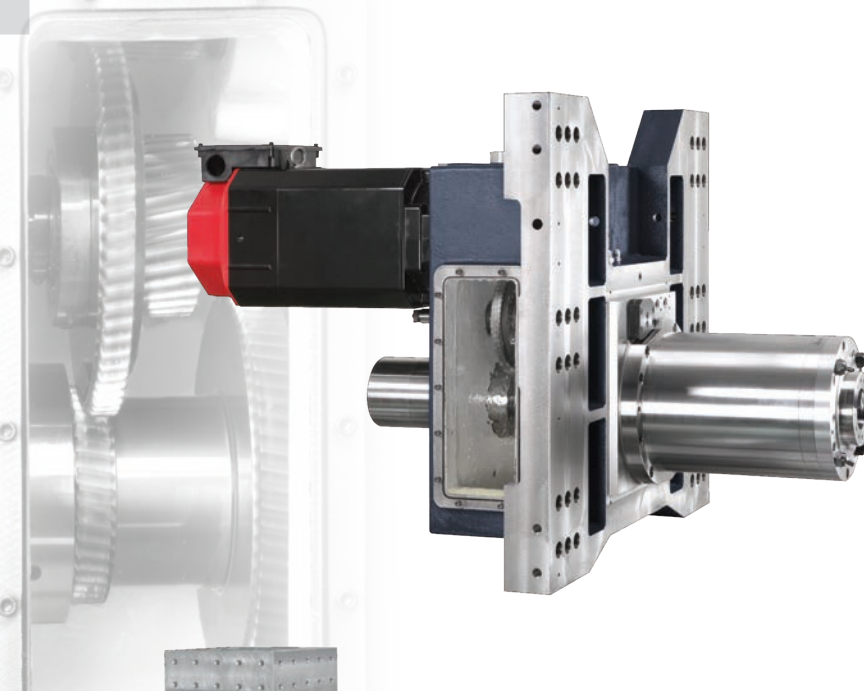
• Chip conveyor



• Spindle cooler



• Heat exchanger of electrical cabinet



**High Precision, High Rigidity
Two-Step Speed Gear-Drive Spindle**

- The #50 spindle runs in high precision bearings with high rigidity. Maximum spindle speed reaches 6,000 rpm combined with two-step speed change makes the machine suitable for various cutting conditions.
- The spindle oil cooler with coolant circulated quill may effectively control spindle temperature growth at a constant condition. This not only suppresses thermal deformation but also ensure the cutting accuracy of the spindle.
- The spindle is driven by an extra powerful motor with 15 / 18.5 Kw(22 / 26 Kw optional) in combination with 2-step gears for speed change, that produces great torque output up to 489 Nm (718 Nm) for heavy cutting.
- Long spindle nose design with less interference range makes it suitable for deep hole machining.

Rotary Table



- The high precision, powerful clamping 4th axis contributes to increase flexible processing and productivity effect.
- The 4th axis is driven by a motor and transmitted through worm gear/worm shaft to achieve higher speed and stability.
- The table measures 800x800 mm with extra high clamping force up to 5 tons. It resists heavy load up to 3,000 kg and without affection by heavy cutting. The rotary table indexing is made through a big diameter of teeth clutch, and provides 1° or 0.001° indexing to select for high accuracy and high stability. With long nose spindle can achieve flexible processing.
- An optional 0.001° rotary table is available for continuous processing, creating extra high production efficiency.

Specification :

QH-400

QH-400A

Travel	X/Y/Z axis travel	600 / 500 / 500 mm	600 / 430 / 500 mm
	Spindle center to table face	0~500 mm	0~430 mm
	Spindle nose to table center	100~600 mm	100~600 mm
B Axis Table	Table size	400 x 400 mm	400 x 400 mm
	Number of table	Single Pallet	Double Pallet
	Table loading capacity	350 kgs	
	Table screw	M12 x 1.75P	
	Table indexing angle	1° / 0.001° (OPT.)	0.001° / 1° (OPT.)
	Servo motor	1.4 Kw	
	Height from table surface to ground	1040mm	1150mm
	Drive system for table switch	None	Hydraulic
	Max. rotation diameter of work piece	500 mm	500 mm
	Max. work piece height	600 mm	500 mm
Spindle	Spindle speed	12,000 / 10,000 / 15,000(OPT.) rpm	
	Spindle transmission	Direct Drive	
	Spindle motor	11 Kw	
Feed rate	Rapid traverse (X/Y/Z axis)	48 / 48 / 48 M/min.	
	Cutting feed rate (X/Y/Z axis)	1-10,000 mm/min.	
ATC	Tool Shank	BT-40	
	Tool magazine capacity	24T / 32T(OPT.)	
	Max. tool length	300mm	
	Max. tool weight	7 kgs	
	Max. tool diameter (without adjacent tool)	80 / 125 (OPT.) mm	
	ATC changing time	2.8 sec. (50 Hz)	
Power Supply	Power requirement	25 KVA	
	Air pressure	6 kgs/cm ²	
Miscellaneous	Max. machine weight	4,500 kgs	5,100 kgs
	Machine size (LxW)	1,860 x 2,540 mm	1,860 x 2,540 mm
	Machine height	2,560mm	

• Design and specification are subject to change without prior notice.

QH-500

Travel	X/Y/Z axis travel	800 / 700 / 700mm	
	Spindle center to table face	120~850mm	
	Spindle nose to table center	120mm	
B Axis Table	Table size	500 x 500mm	
	Number of table	Single Pallet	
	Table loading capacity	500 kgs	
	Table screw	24-M16 x 2.0mm	
	Table indexing angle	1° / 0.001° (OPT.)	
	Servo motor	3 Kw	
	Height from table surface to ground	1090mm	
	Drive system for table switch	None	
	Max. rotation diameter of work piece	840mm	
	Max. work piece height	900mm	
Spindle	Spindle speed	BT-50 : Belt Drive 6,000 / Direct Drive 12,000(OPT.) rpm BT-40 : Direct Drive 12,000(OPT.) rpm	
	Spindle transmission	Belt Drive / Direct Drive (OPT.)	
	Spindle motor	18.5 / 22 Kw	
Feed rate	Rapid traverse (X/Y/Z axis)	36 / 36 / 36 M/min.	
	Cutting feed rate (X/Y/Z axis)	1-10,000 mm/min.	
ATC	Tool Shank	BT-50 / BT-40(OPT.)	
	Tool magazine capacity	STD : 24T / OPT : 40T, 60T	
	Max. tool length	350mm	
	Max. tool weight	18 kgs	
	Max. tool diameter (without adjacent tool)	115 / 200mm(OPT.)	
	ATC changing time	9 Sec.	
Power Supply	Power requirement	40 KVA	
	Air pressure	6 kgs/cm ²	
Miscellaneous	Max. machine weight	8,500 kgs	
	Machine size (LxW)	4,500 x 3,900 mm	
	Machine height	3,050 mm	

• Design and specification are subject to change without prior notice.

● **Specification :**

QH-630

Travel	X/Y/Z axis travel	1000 / 700 / 700mm
	Spindle center to table face	120~850mm
	Spindle nose to table center	120mm
B Axis Table	Table size	630 x 630mm
	Number of table	Single Pallet
	Table loading capacity	1200 kgs
	Table screw	24-M16 x 2.0mm
	Table indexing angle	1° / 0.001° (OPT.)
	Servo motor	3.5 Kw
	Height from table surface to ground	1160mm
	Drive system for table switch	None
	Max. rotation diameter of work piece	950mm
	Max. work piece height	1000mm
Spindle	Spindle speed	6,000 / 12,000 rpm (OPT.)
	Spindle transmission	Belt Drive / Direct Drive (OPT.)
	Spindle motor	18.5 / 22 Kw
Feed rate	Rapid traverse (X/Y/Z axis)	36 / 36 / 36 M/min.
	Cutting feed rate (X/Y/Z axis)	1-10,000 mm/min.
ATC	Tool Shank	BT-50
	Tool magazine capacity	STD : 24T / OPT : 40T, 60T, 120T
	Max. tool length	350mm
	Max. tool weight	25 kgs
	Max. tool diameter (without adjacent tool)	115 / 200 mm (OPT.)
	ATC changing time	9 sec.
Power Supply	Power requirement	40 KVA
	Air pressure	6 kgs/cm ²
Miscellaneous	Max. machine weight	9,500 kgs
	Machine size (LxW)	5,290 x 4,250 mm
	Machine height	3,180 mm

• Design and specification are subject to change without prior notice.

QH-800

QH-810

Travel	X/Y/Z axis travel	1200 / 1000 / 1000 mm	1600 / 1000 / 1000 mm
	Spindle center to table face	0~1000mm	
	Spindle nose to table center	150~1150mm	
B Axis Table	Table size	800 x 800 mm	800 x 1000 mm
	Number of table	Single Pallet	
	Table loading capacity	3000 kgs	
	Table T-slot	100 x 100 x 22mm	
	Table indexing angle	1° / 0.001° (OPT.)	
	Servo motor	3.5 Kw	
	Height from table surface to ground	1287mm	
	Drive system for table switch	None	
	Max. rotation diameter of work piece	1200mm	
	Max. work piece height	1200mm	
Spindle	Spindle speed	6,000 rpm	
	Spindle transmission	Gear Type (High - Low Gear)	
	Spindle motor	15 / 18.5 Kw	
Feed rate	Rapid traverse (X/Y/Z axis)	15 / 15 / 15 M/min.	
	Cutting feed rate (X/Y/Z axis)	1-8,000 mm/min.	
ATC	Tool Shank	BT-50	
	Tool magazine capacity	STD : 40T / OPT : 24T, 60T, 120T	
	Max. tool length	450mm	
	Max. tool weight	25 kgs	
	Max. tool diameter (without adjacent tool)	115 / 200(OPT.) mm	
	ATC changing time	9 sec.	
Power Supply	Power requirement	50 KVA	
	Air pressure	6 kgs/cm ²	
Miscellaneous	Max. machine weight	13,000 kgs	
	Machine size (LxW)	5,170 x 3,310 mm	5,170 x 3,710 mm
	Machine height	3,500mm	

• Design and specification are subject to change without prior notice.