

# CHEVALIER®

Grinding / Turning / Milling



## QP Box Way Series

Heavy-Duty  
Vertical Machining Centers

QP2855 • 3560 • 3572

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## QP2855 • 3560 • 3572 Series

### Heavy-Duty Production VMC with High-Precision Performance

The QP series is a rugged box way VMC. This series features a rigid structure and high precision for high productivity in heavy workpieces. The series includes four box ways on Y-axis, which ensures optimum rigidity and reduces overhang of table. The 50 taper, 30 HP with CHEVALIER 2-speed gear headstock generates over 62 kg/m torque. It would satisfy most cutting condition for tough material application. All high quality cast iron construction with ribbed frame and wide stance machine base provide excellent support and damping character. On three axes, box ways are Turcite-B coated, hardened and ground, which performs great rigidity and high load capacity, and the pre-tensioned Class 3 ballscrews directly driven by servo motors provide smooth and precise traverse feed.

The special design of the floating-type tool release system provides a tool change without extra pressure on the bearings and absorbs the unclamping force generated during each tool release. This design helps prolong bearing life, maintain accuracy and increases speed. Included in the series is a powerful FANUC 0iM control that delivers rigid tapping, AICC high-speed machining mode with a 40-block look-ahead, and front-loading PCMCIA port (standard) for a memory card.

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### QP2855 • 3560 • 3572 Series

Table Size: Up to 1,850W x 835L x 942mmH (72.8" x 32.9" x 37.1")  
Height from Table to Surface: Up to 965mm (38")  
Max. Workpiece Weight: Up to 2,500Kg (5,500 lbs.)  
X/Y/Z Travel: Up to 1,850(X) x 900(Y) x 762mm(Z) (72.8" x 35.4" x 30")  
Spindle Speed: Belt Drive 6,000 (Opt. 8,000rpm)  
Tool Capacity: 24 Arm Type (Opt. 32 Chain Type)  
Spindle Motor: Up to 22kW (35HP)  
Spindle Taper: #40 or #50  
Control: FANUC 0iM / SIEMENS 828D (with ShopMill) /  
HEIDENHAIN TNC640 HSCI





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## Machine Construction

The high quality cast iron construction, with a ribbed frame and wide-stance machine base, provides excellent support and damping qualities.

Pre-tensioned, Class 3 ballscrews are used in all axes. The machine also features Turcite-B coated, hardened and ground box ways.

The table and saddle are fully supported through the entire stroke without overhang problem.

Large inside work area assists workpiece loading and unloading. And oversized column bottom also provides maximum support.

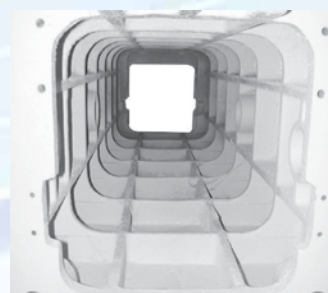
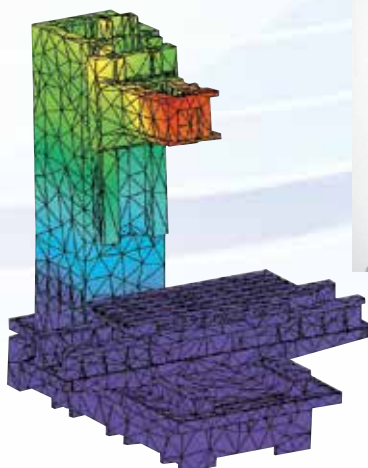


## 3D Integrated Design

The geometric model of the machine was created by using 3D computer software to avoid blind spots. The structure analysis were carried out with the help of the Pro E/MECHANICA (FEM) software to ensure superior stability and rigidity.

## Hand Scraping

- The box way surfaces are coated with Turcite-B and hand scraped for smooth movement.
- Promotes ideal flatness on mated surfaces for tight tolerances.



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## Axes

### Big Diameter Precision Ballscrew and Solid Bearing Seat Design

- All 3 axes employ C3 high precision ballscrews with a big diameter of Ø50mm (Ø2"), which is associated with preloaded double nuts to ensure the least backlash.
- Ballscrews are supported by Class 7 (P4) 60° angular contact thrust ball bearings, which ensures high accuracy.
- Pre-tensioned ballscrews reduce thermal deflection.
- Ballscrews and a servomotor are connected by flexible couplings, which ensure high transmission efficiency and minimum backlash.



### Floating Type Tool Release System

Floating-type configuration is employed in the tool unclamping mechanism, so the unclamping force of 5,000kg (11,000 lbs.) is supported by the main structure of the spindle, not by the bearing, to increase the bearing's life.



### Tool Change System



Arm Type



Chain Type

ATC System	Arm Type	Chain Type
<b>Tool Shank</b>	BT40 / CT40 / DIN40 (for QP2855 Belt-drive 8,000rpm)	
	BT50 / CT50 / DIN50 (for QP2855 / QP3560 / QP3572)	
<b>Tool Capacity</b>	24	32 (Opt.)
<b>Tool Selection</b>	Random	
<b>Tool Access</b>	Bi-Directional	

# QP2855 • 3560 • 3572 Series

## Machine Construction

### Heavy-Duty Gear Type Headstock (Opt.)

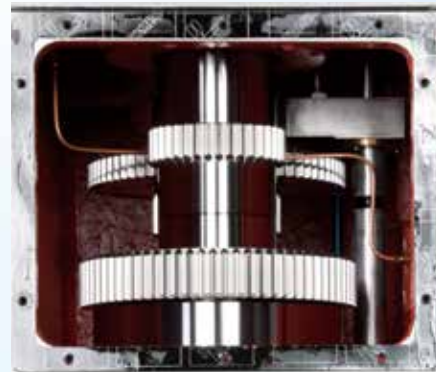
The spindle is supported by P4 class high precision angular contact ball bearings. The whole spindle unit is heat-treated, precision-ground, dynamic-balanced, as well as carefully assembled and tested to ensure superior dynamic running accuracy. Especially designed for heavy-duty machining, two-step gear drive provides up to 6,000rpm high spindle power and torque output. Two-speed gearbox provides high torque output for heavy-duty machining, as well as high-speed for surface finishing.



**Gear-Drive Spindle**

### Great Cutting Capability

The two-speed 6,000rpm gearbox generates a maximum torque of 609NM at a lower RPM to satisfy tough cutting conditions. An optional 10,000rpm direct drive spindle is available in this model for high-speed machining applications.



**Two-Speed Gearbox**

### Belt-Type Spindle Headstock

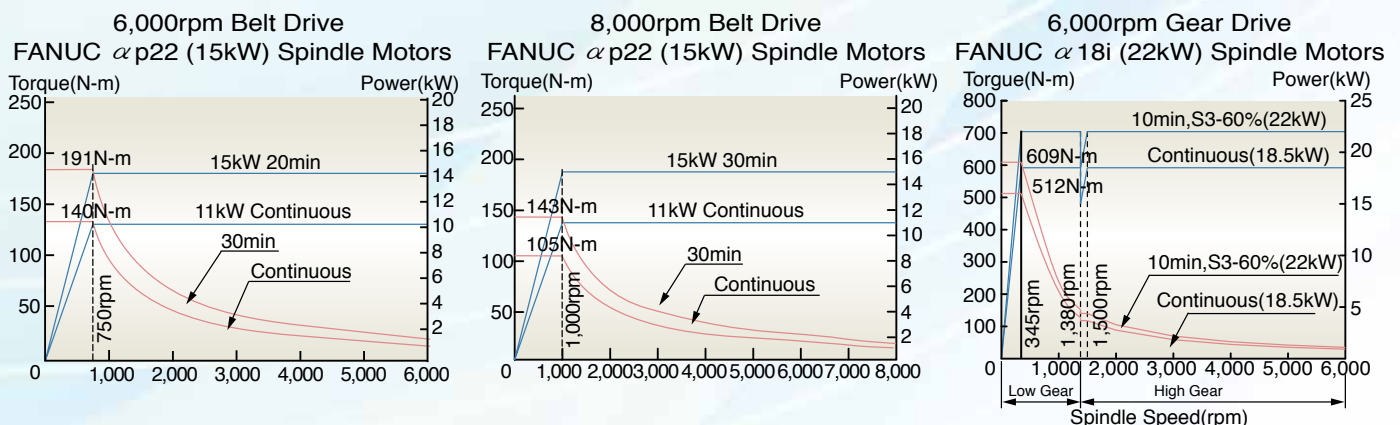
- The spindle is supported by 4 Class 7 (P4) angular contact ball bearings, inner diameter  $\varnothing 90\text{mm}$  ( $\varnothing 3.54''$ ) in the front and 2 Class 7 (P4) angular contact ball bearings inner diameter  $\varnothing 80\text{mm}$  ( $\varnothing 3.15''$ ) in the back.
- With a high torque 25HP AC spindle motor, the spindle speed is up to 6,000 rpm and 8,000 rpm (opt.), which allows heavier machining at low speeds and light machining at high speeds.
- A highly efficient oil chiller is installed in the spindle to control the temperature and reduce the thermal deformation.
- Enforced timing belts are used for transmission, which results in high efficiency, slip-free movement, and easy maintenance.



### Spindle Air Purge Design

This spindle air system purges positive air pressure through the spindle to prevent the spindle from contaminations by coolant and swarf.

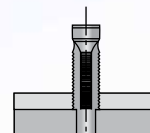
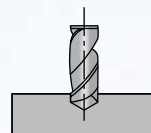
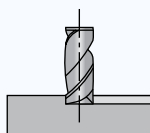
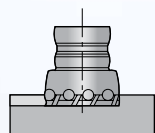
## Spindle Torque Chart





# QP2855 • 3560 • 3572 Series

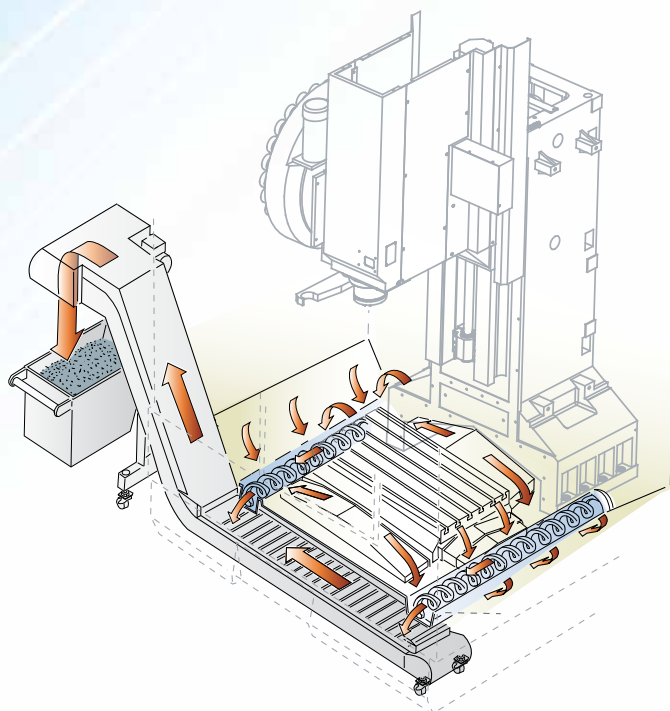
## Machining Capacity



Item	Face Mill	End Mill	Drill	Tapping
Material	S45C	S45C	S45C	S45C
Tool Edges	8	6	2	4
Tool Dia.	150 mm	32 mm	50 mm	M42 x 4.5P
Spindle	375 rpm	375 rpm	200 rpm	120 rpm
Cutting Speed	176.6 M/min	37.7 M/min	31.4 M/min	15.8 M/min
Cutting (W x H)	120 x 7 mm	25 x 25 mm	30 Deep	35 Deep
Feed Rate	900 mm/min	750 mm/min	100 mm/min	540 mm/min
Cutting Capacity	756 c.c.	468.75 c.c.	196 c.c.	-

### Chip Management

The rear chip flushing system washes the chips into the chip auger, then moves the chips to the front of the lift-up chip conveyor.



### Inspection



#### Laser Calibration

After assembling, all machines are measured and calibrated by state-of-the-art laser calibration equipment. This ensures precise verification and compensation of the machines, resulting in increased accuracy and repeatability.



#### Ball Bar Testing

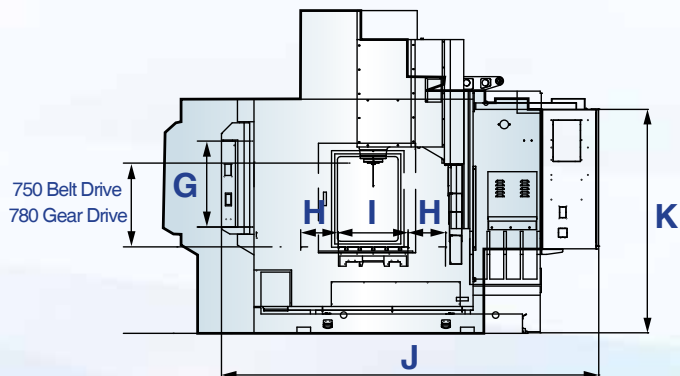
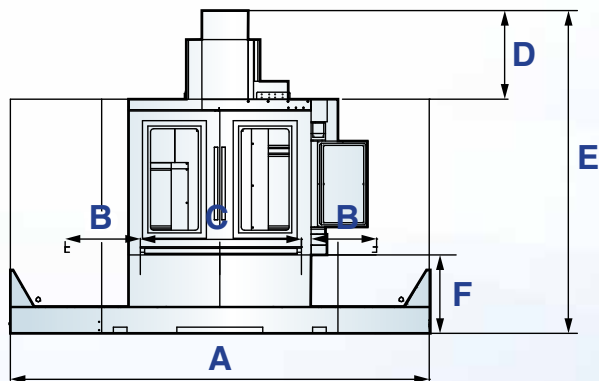
The machine is put through a series of circular moves in the X / Y plane, and 1/2 circle moves in the X / Z and Y / Z plane. Encoder data from the bar is fed into a computer, which outputs a chart of machine accuracy. Any deviations in squareness or length show up as distorted circles that are very easy for a technician to spot. This chart assures that the machine be accurate and properly aligned.

# QP2855 • 3560 • 3572 Series

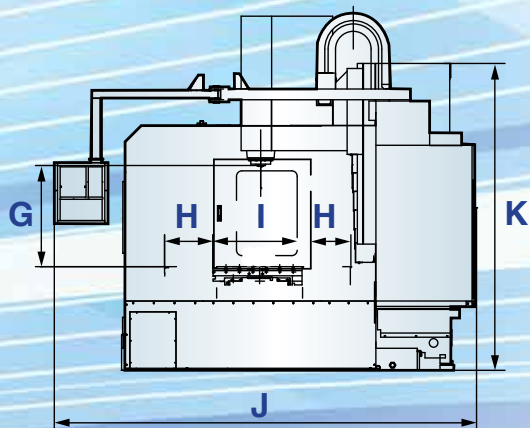
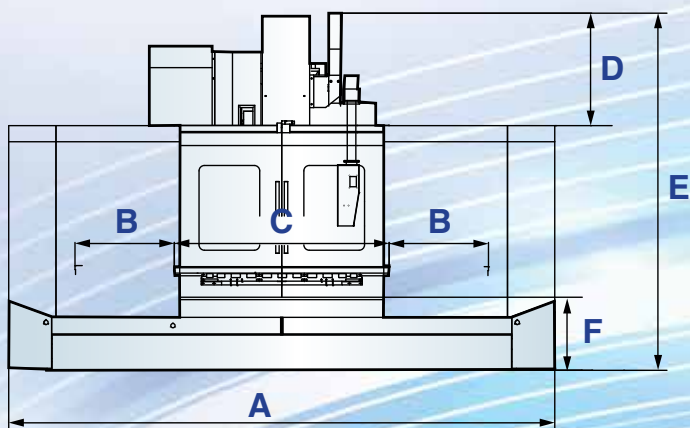
## Dimensional Drawings

UNIT : mm (")

### QP2855 (Full cover)



### QP3572 (Full cover) / QP3560 (Full cover)



Item	QP2855	QP3560	QP3572
A	3,900 (153.5")	4,300 (169.3")	5,084 (200.2")
B	700 (27.6")	765 (30.1")	925 (36.4")
C	1,500 (59.1")	1,700 (66.9")	2,000 (78.7")
D	825 (32.5")	1,047 (41.2")	
E	3,005 (118.3")	3,325 (130.9")	
F	730 (28.7")	680 (26.8")	
G	800 (31.5")	962 (37.9")	942 (37.1")
H	350 (13.8")	450 (17.7")	
I	650 (25.6")	835 (32.9")	
J	3,513 (138.3")	3,931 (154.8")	
K	2,080 (81.9")	2,857 (112.5")	



# QP2855 • 3560 • 3572 Series

## Control

### FANUC OiM Control



- 4-axes simultaneous control
- Linear interpolation
- Circular interpolation
- Helical interpolation
- Exact stop G09
- Skip function G31
- Automatic acceleration / deceleration
- Plane select G17, G18, G19
- Polar coordinate command G15 / G16
- Workpiece coordinate system G52~G59
- Scaling G50 / G51
- Automatic override for inner corners G62
- Coordinate system rotation G68 / G69
- Rigid tapping M29
- Program data input G10
- Canned cycles for drilling
- Tool function
- Tool length compensation
- Tool offset memory 400 pieces
- Art program storage length: 512K (OiM)
- Number of registerable program: 400 (OiM)
- Background editing
- Manual guide Oi
- OiM color 10.4" LCD
- USB interface

### Standard Control

#### FANUC OiM

10.4" TFT LCD color monitor

### Optional Controls

#### FANUC 31i

10.4" TFT LCD color monitor

#### HEIDENHAIN TNC640 HSCI

15" TFT LCD color monitor

#### SIEMENS 828D Control

10.4" TFT LCD color monitor and "ShopMill" software

### HEIDENHAIN TNC640 HSCI Control



- Contouring control for machines with up to 18-axes and controlled spindle
- HEIDENHAIN inverter systems and motors recommended
- Uniformly digital with HSCI interface
- TFT color flat-panel display, 15-inch
- Storage medium: SSDR solid state disk with 32 GB
- Programming in HEIDENHAIN conversational format, with according to DIN / ISO
- Standard milling, drilling and boring cycles
- Touch probe cycles
- FK free contour programming
- Special functions for fast 3-D machining
- Short block processing time (0.5ms)
- Automatic calculation of cutting data
- Pallet management

### SIEMENS 828D Control



- LCD color
- Linear interpolation
- Circular interpolation
- Helical interpolation
- Skip function
- Plane select
- Workpiece coordinate system
- Coordinate system rotation
- Rigid tapping
- Mirror image, scaling, rotation
- Canned cycles for drilling / milling
- Tool function
- Tool length / radius compensation
- Part program storage length: 21GB
- Background editing

# QP2855 • 3560 • 3572 Series

## Specifications

Item	Description	QP2855			QP3560	QP3572
Capacity	Max. workpiece weight	1,600kg (3,250 lbs.)			2,500kg (5,500 lbs.)	
	Machining capacity (L x W x H)	1,400 x 690 x 750mm (55.1" x 27.2" x 29.5")	1,400 x 690 x 780mm (55.1" x 27.2" x 30.7")		1,530 x 835 x 962mm (60.2" x 32.9" x 37.9")	1,850 x 835 x 942mm (72.8" x 32.9" x 37.1")
	Height from the table to surface ground	850mm (33.5")			965mm (38")	
Table	Table size	1,500 x 650mm (59.1" x 25.6")			1,700 x 800mm (66.9" x 31.5")	2,000 x 800mm (78.7" x 31.5")
	T-slots (wid x dis x no.)	18mm x 125mm x 5 (0.7" x 4.9" x 5)			18mm x 125mm x 6 (0.7" x 4.9" x 6)	
Stroke	X-axis stroke	1,400mm (55.1")			1,530mm (60.2")	1,850mm (72.8")
	Y-axis stroke	700mm (27.6")			900mm (35.4")	
	Z-axis stroke	600mm (23.6")			762mm (30")	
Spindle	Spindle speed	8,000rpm Belt Drive (Opt. 10,000 / 1,2000rpm)	6,000rpm Belt Drive (Opt. 8,000rpm)	6,000rpm Gear Drive	6,000 rpm Belt Drive (Opt. 8,000rpm)	
					6,000rpm Gear Drive	
	Spindle taper	#40	#50		#50	
	Spindle nose to table surface	150~750mm (5.9"~29.5")		180~780mm (7.1"~30.7")	200~962mm (7.9"~37.9")	180~942mm (7.1"~37.1")
Feed Rates	X-axis rapid traverse	15m/min (590ipm)				
	Y-axis rapid traverse	15m/min (590ipm)				
	Z-axis rapid traverse	15m/min (590ipm)			12m/min (472ipm)	
	Cutting teed (X / Y / Z)	1~7m/min (275ipm)				
	X / Y / Z axis ballscrew diameter	Ø50 / Ø50 / Ø40mm (Ø2" / Ø2" / Ø1.6")		Ø50 / Ø50 / Ø45mm (Ø2" / Ø2" / Ø1.8")	Ø50mm (Ø2")	
Automatic Tool Changer	Tool shank	BT40 / CT40 / DIN40	BT50 / CT50 / DIN50			
	Pull stud	P40T-1	P50T-1			
	Tool storage capacity	24 tools, Opt. 32 tools				
	Max. tool dia. with adjacent tool	80mm (3.1")	127mm (5"), Opt. 32T 125mm (4.9")		105mm (4.1"), Opt. 32T 127mm (5")	
	Max. tool dia. without adjacent tool	150mm (5.9")	150mm (5.9"), Opt. 32T 250mm (9.8")		200mm (7.9"), Opt. 32T 229mm (9")	
	Max. tool length	300mm (11.8")	300mm (11.8"), Opt. 32T 300mm (11.8")		300mm (11.8")	
	Max. tool weight	7kg (15.4 lbs.)	15kg (33 lbs.)			
	Tool selection system	Random tool selection mode				
	Tool change time (tool-to-tool)	1.8 sec.	5 sec.			
	Tool change time (chip-to-chip)	5 sec.	8 sec.			
Motors	Spindle motor	7.5 / 11 kW (15/20HP)	11 / 15 kW (20/25HP)	18.5 / 22 kW (30/35HP)	Belt Drive: 11 / 15 kW (20/25HP)	
					Gear Drive: 18.5 / 22 kW (30/35HP)	
	Axis motor (X / Y / Z)	3 / 3 / 4 kW	4 / 4 / 4 kW		4 / 4 / 4 kW	
Power & Air Requirements	Power required		35 kVA			
	Compressed air supply	Pressure	5.5 kg/cm²			
		Flow	200 NL/min.			
Tank Capacity	Coolant tank capacity	350L			300L (Half cover) / 400L (Full cover)	
Machine Dimensions	Machine height (H)	3,005mm (118.3")			3,325mm (130.9")	
	Required floor space (W x L)	3,900 x 3,513mm (153.5" x 138.3")			4,300 x 3,931mm (169.3" x 154.8")	5,084 x 3,931mm (200.2" x 154.8")
	Machine weight	9,100kg (20,020 lbs.)			14,790kg (32,538 lbs.)	15,290 (33,638 lbs.)

All content is for reference only and may be subject to change without notice or obligation.

# QP2855 • 3560 • 3572 Series

## Standard Accessories and Optional Accessories

Item	QP2855	QP3560	QP3572
FANUC 0iM controller 8.4 LCD	●	●	●
24 tool ATC	●	●	●
32-station chain type tool magazine	◎	◎	◎
Spindle air curtain system	●	●	●
Spindle air blast	●	●	●
Air blast chip blower	●	●	●
Chain type chip conveyor on Y-axis	◎		
Lift-up chip conveyor for fully enclosed splash guard		◎	◎
Screw type chip conveyor on X-axis	◎	◎	◎
Rear chip flash system	●	●	●
Work light	●	●	●
Pilot light	●	●	●
Fully enclosed splash guard	●	◎	◎
Table splash guard		●	●
High semi-enclosed splash guard			
Water tank	●	●	●
Auto lubrication system	●	●	●
MPG handwheel	●	●	●
Leveling bolts and pads	●	●	●
Bolt kit with tools for foundation	●	●	●
Tool box with tools	●	●	●
Operation manual	●	●	●
Rigid tapping	●	●	●

Item	QP2855	QP3560	QP3572
RS232 interface	●	●	●
Air gun	●	●	●
Heat exchanger for electric cabinet	●	●	●
Oil skimmer	◎	◎	◎
BT-40,CT-40 or DIN-40 pull studs	◎	◎	◎
BT-50, CT-50 or DIN-50 pull studs	◎	◎	◎
#40 10,000 / 12,000rpm belt drive spindle	◎		
#50 8,000rpm belt drive spindle	◎	◎	◎
#50 6,000rpm gear type spindle	◎	◎	◎
Spindle / gear head oil chiller	◎(40#) ●(50#)	●	●
Through spindle coolant system (20Bar~70Bar)	◎	◎	◎
Linear scale	◎	◎	◎
4th axis preparation	◎	◎	◎
4th axis CNC rotary table	◎	◎	◎
Auto tool length measurement system	◎	◎	◎
Auto workpiece measurement system	◎	◎	◎
Automatic power off	◎	◎	◎
Water gun	◎	◎	◎

● Standard Assessories ◎ Optional Assessories

## Machine Accessories

### Workpiece Measurement System (Opt.)

The auto workpiece measurement system can precisely detect workpiece position and provide correct workpiece orientation. Moreover, the system can be applied for thermal compensation and performs contour measurement.



### Tool Length Measurement System (Opt.)

The linear working principle of the tool setting probe can monitor the smallest tools in micro-machining applications. The system prevents the tool from breakage and can be applied for machine axes and temperature compensations.



### Coolant-Through-Spindle

High pressure coolant efficiently takes out chips and heat from deep hole machining and greatly enhancing tool cutting performance and longevity as well as parts accuracy.



### Spindle Oil Chiller

- A highly efficient oil chiller system is installed for the spindle to control the temperature and reduce the thermal deformation.
- A forced circulation cooling system is applied to bearings and gears in the gearbox. This outstanding cooling system reduces thermal strain to a minimum and upgrades machining accuracy.







Grinding Machines



Grinding Machines



Turning Machines



Milling Machines

#### Headquarters

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