

Vertical Machining Center

VP-6



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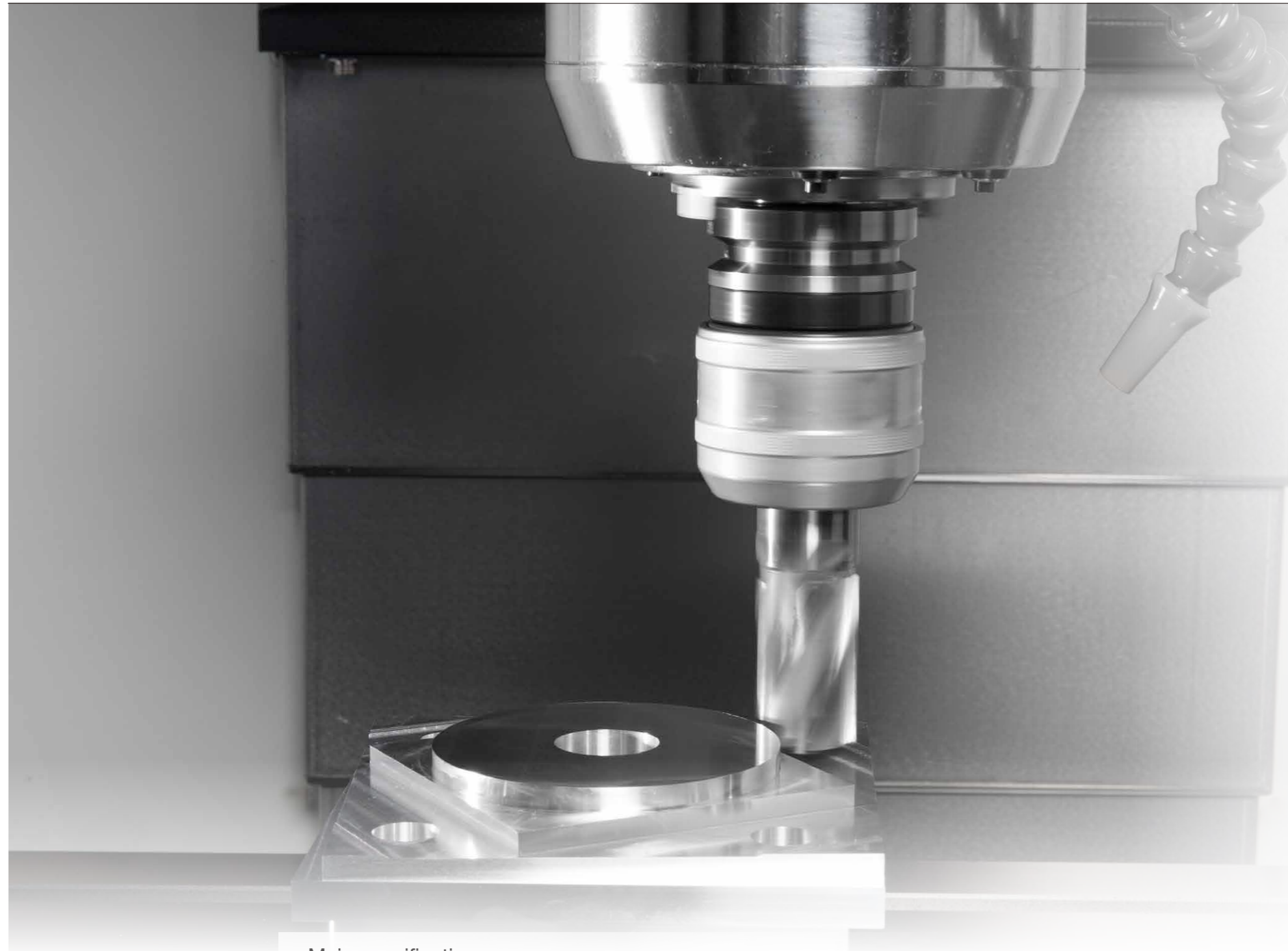
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VP-6



- VP-6 is produced with a high quality direct-drive spindle, a high speed tool changer, and high rapid traverse. With many excellent features that makes an ideal machine for various industrial requirements.
- Direct-drive spindle with dual-contact system provides excellent machining quality and efficiency.
- The frontal width of VP-6 is only 1,900 mm. Furthermore, it adopts rear chip disposal design that allowing machines to be placed closer to each other. It benefits on production line arrangement.
- By Tongtai production system, we check every detail process from design, manufacturing, assembly and QC.
- The new generation exterior design is elegant and easier than ever to operate.



Main specifications

Spindle	12,000 rpm BBT-40 direct-drive type spindle
	12,000 rpm BBT-40 direct-drive type spindle with CTS
X/Y/Z axis	Rapid traverse 48/48/48 m/min
	X/Y/Z axis travel 610/410/510 mm
	X/Y/Z axis adopts high quality linear guideways and ballscrews

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Main structure

- High speed and high stability
- Small frontal width, big working area, and high loading capacity
- Suitable for various parts machining
- Excellent performance/price ratio
- Stable machining precision
- Reliable quality
- High production efficiency and stability

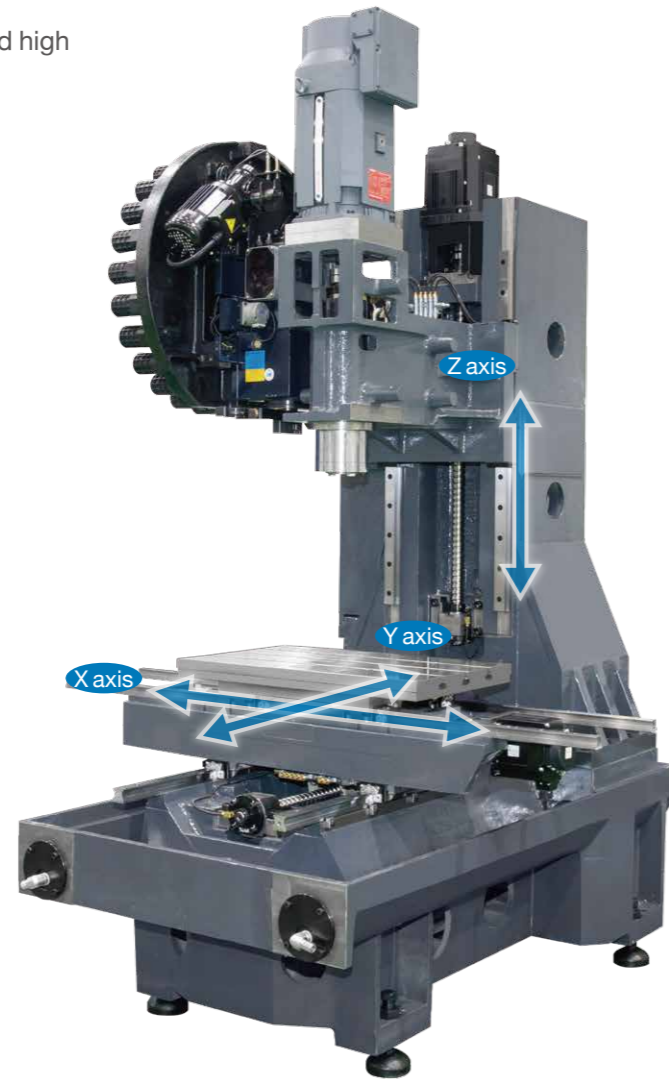
X/Y/Z axis specification

Travels

X/Y/Z axis 610/410/510 mm

Rapid traverse

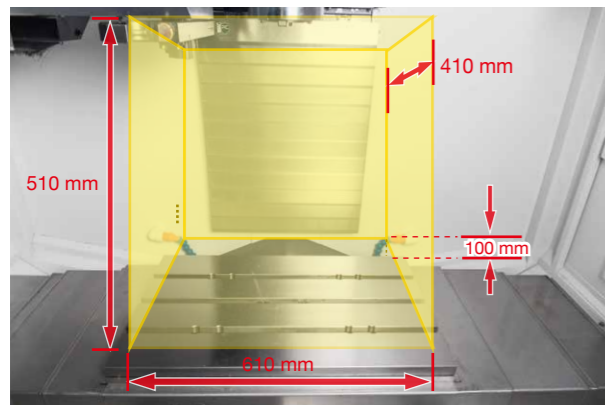
X/Y/Z axis 48/48/48 m/min



Working area

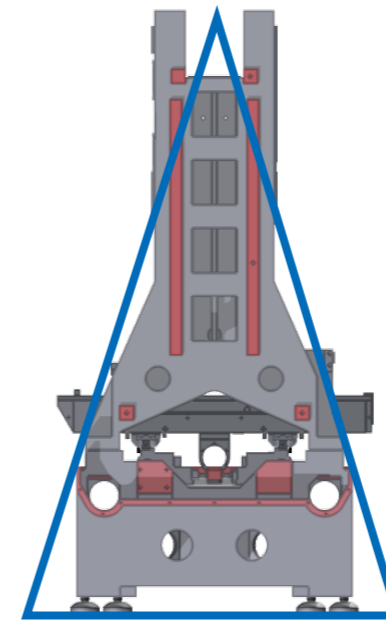
Table size 700 x 410 mm

Max. loading capacity 350 kg



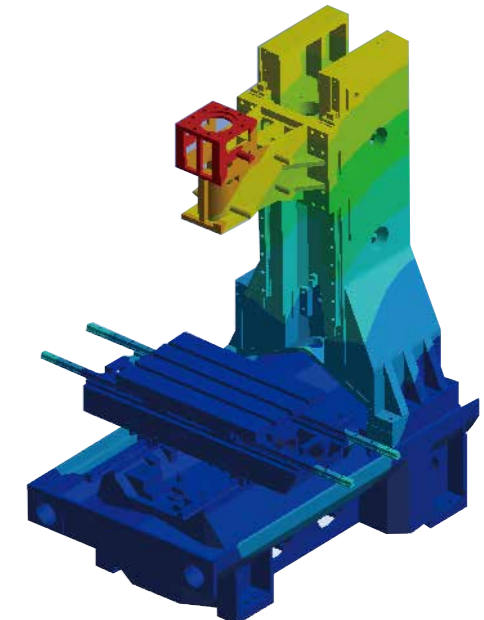
High rigidity frame structure design

Our base and column castings feature vibration-absorbing ribs that transfer vibration away from the cutting area



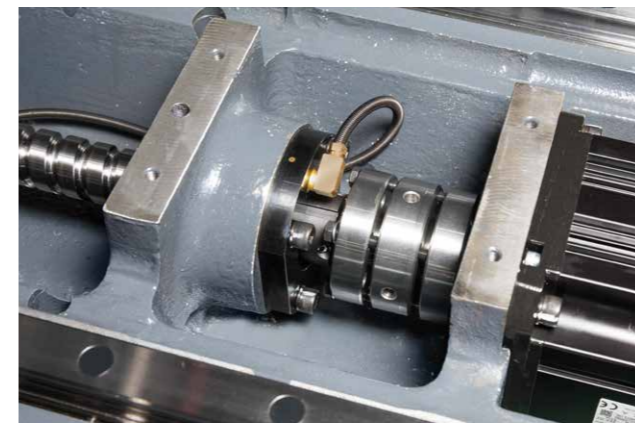
Finite Element Analysis (FEA)

Advanced FEA is used to simulate various cutting loads. The ribs distribution is optimized and alleviates weight on the machine.



Direct-coupled servo motors

Servo motors are coupled directly to the ballscrews with non-backlash steel couplings. This greatly improves positioning accuracy, as well as provides more accurate threading and contouring. Furthermore they don't wear out or less accuracy over time.



Ballscrews and linear guideways

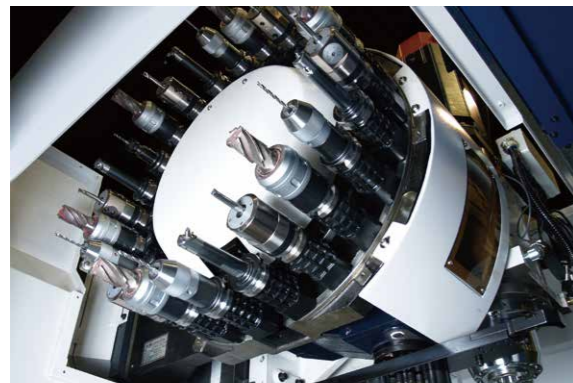
The ballscrews are center mounted and supported on both ends by high precision angular contact thrust bearings. Linear guideways are preloaded to provide zero clearance between the moving surfaces. They have a very low coefficient on friction, which allows faster movements without sacrificing repeatability or positioning accuracy.



Main structure

Tool management

Standard equipped with stable and rapid tool magazine. The time of T to T is 1.9 sec. and C to C is 2.9 sec. ATC is controlled by inverter and the durability and less maintenance are superior than the traditional braking system. (ISO 10791-9)



Adopts encoder in the cam box for ensuring the signal transmission is quick and stabile. With Tongtai PLC logic setting, ATC will re-try which reduces the possibilities of machine stop when errors happened during tool changing.



Direct-drive spindle

Direct-drive spindle that is coupled directly to the motor and provides high accuracy, high acceleration ability, low vibration, long usage life, and easy to maintain. Flexible coupling prevents the spindle from abnormal heat increment and thermal deformation. Moreover, the customer is able to adopt dual-contact tool holders for getting higher precise machining performances (also available for BT-40).



Max. Speed	BBT-40	CTS
12,000 rpm	Std.	Opt.

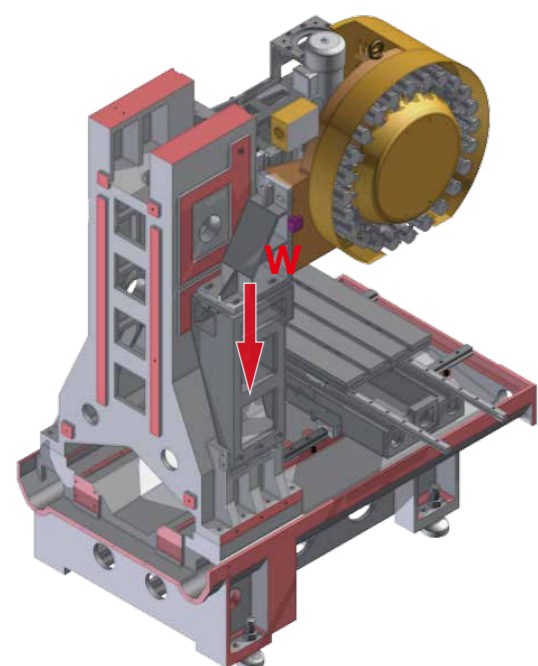
Safety

Safety glass window, which has passed EN12417 standards and certificated by CE, is adopted for providing excellent protection to the operator. The impact strength is 200 times that of tempered glass. Furthermore, the front door uses the multiple safety window (tempered glass mixes with PC), and is able to extend the usage life.

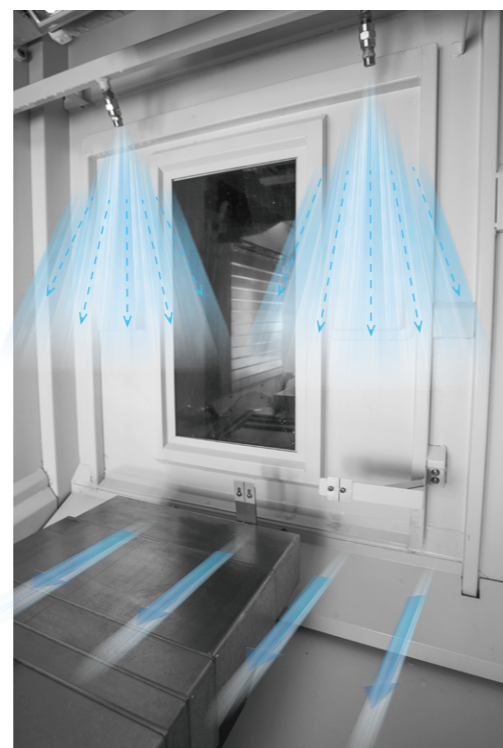


Comprehensive thoughts

VP-6 adopts special magazine supporting frame structure for avoiding the column deformation by side unbalanced weight from tool magazine.



High efficiency flushing system allows the chip removed rapidly, especially suitable for aluminum machining.

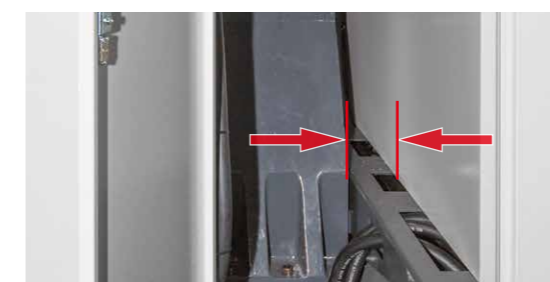


Stability

Ballscrew pretension design provides outstanding positioning repeatability with minimized thermal growth.

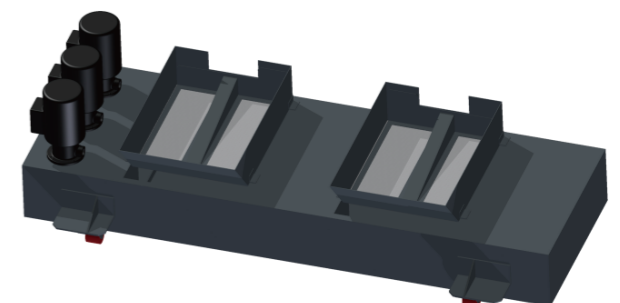


Extra space design between column and electrical cabinet to avoid heat transfer.



Coolant tank

The large-capacity tray and high-mesh filter prevent chips from entering the coolant tank, and easy to maintain. Chip conveyor is also available as optional equipment.



Filter type coolant tank	
Standard	40-mesh filter 220 L

Conveyor type coolant tank	
Optional	40-mesh filter Chain type chip conveyor 320 L

Accessories	
Optional	Coolant level detection Disc type oil skimmer

Operator Friendly · Machining capacity

Ergonomic design

An easy-to-use operation panel which can swivel from 0°-90°.



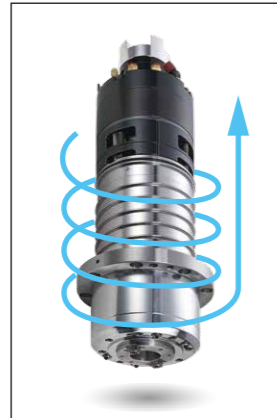
Easy to maintain

Controls are on the side panel to facilitate maintenance.



Spindle cooling system (Opt.)

To reduce the thermal displacement, spindle chiller is available as optional equipment, which could automatically adjusted spindle temperature according to machine temperature.



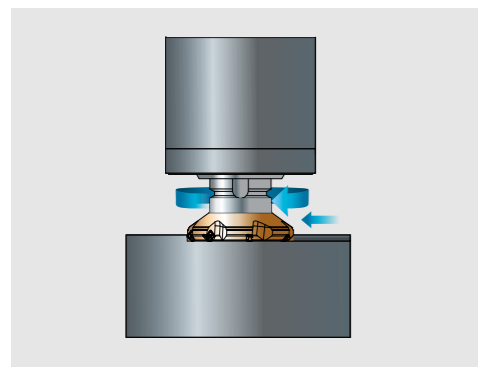
Coolant through spindle (CTS) (Opt.)

This feature improves the machining process more effectively especially with deep hole drilling operations and at the same time, increasing the tool life.



Coolant through spindle	
Optional	20 bar
	50 bar

Machining capacity



Benchmark:
Mitsubishi SJ-D7.5-120-01 5.5/7.5 kW
Please notice the cutting data is just for reference. Different tools and spindle motors will influence the realistic performance results.

Face mill	S45C
Tool	Ø80x6T
Spindle speed	1,150 rpm
Feedrate	377 mm/min
Cutting width	65 mm
Cutting depth	1.5 mm
Chip quantity	263 cc/min

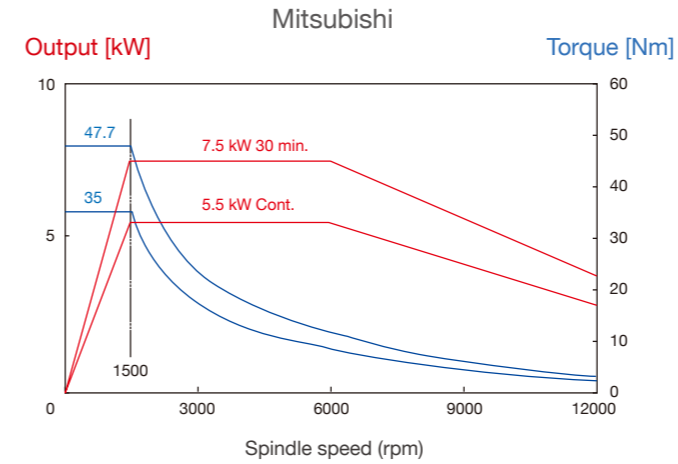
Drill	S45C
Tool	Ø30
Spindle speed	371 rpm
Feedrate	0.15 mm/rev
Hole depth	50 mm

Face mill	ADC12
Tool	Ø80x6T
Spindle speed	5,250 rpm
Feedrate	1,320 mm/min
Cutting width	65 mm
Cutting depth	2.6 mm
Chip quantity	887 cc/min

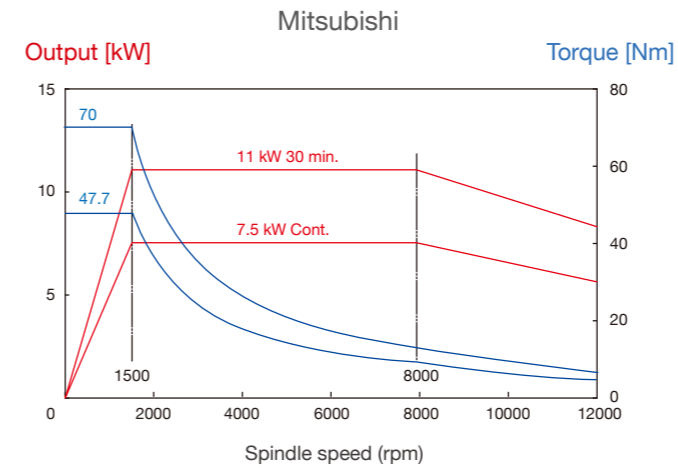
Tap	S45C
Tool	M20x2.5P
Spindle speed	100 rpm
Thread depth	40 mm

Spindle output and torque chart

12,000 rpm (Std.)



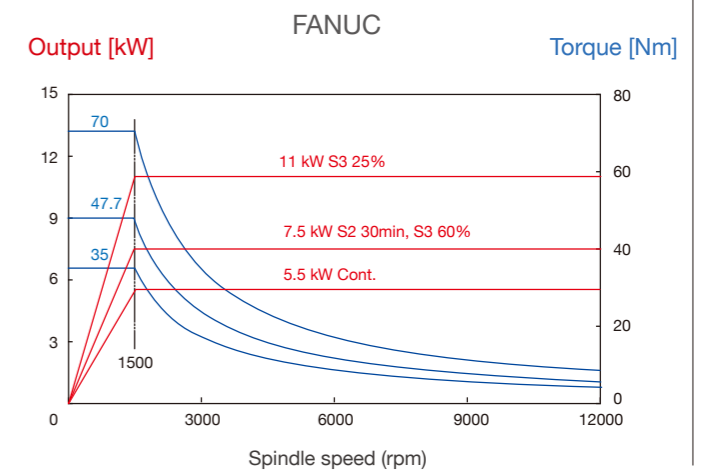
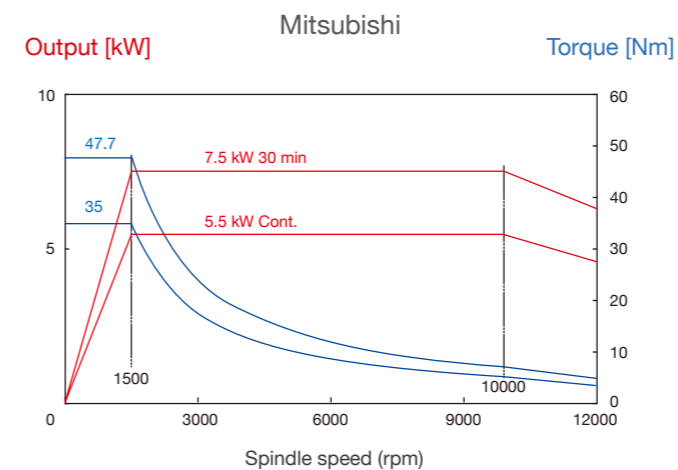
12,000 rpm (Opt.)



● CTS (Std.)

● Automatic high or low-speed winding switch (Std.)

○ CTS (Opt.)



Std. / Opt. accessories·Machine dimension

Specification

Standard / Optional accessories

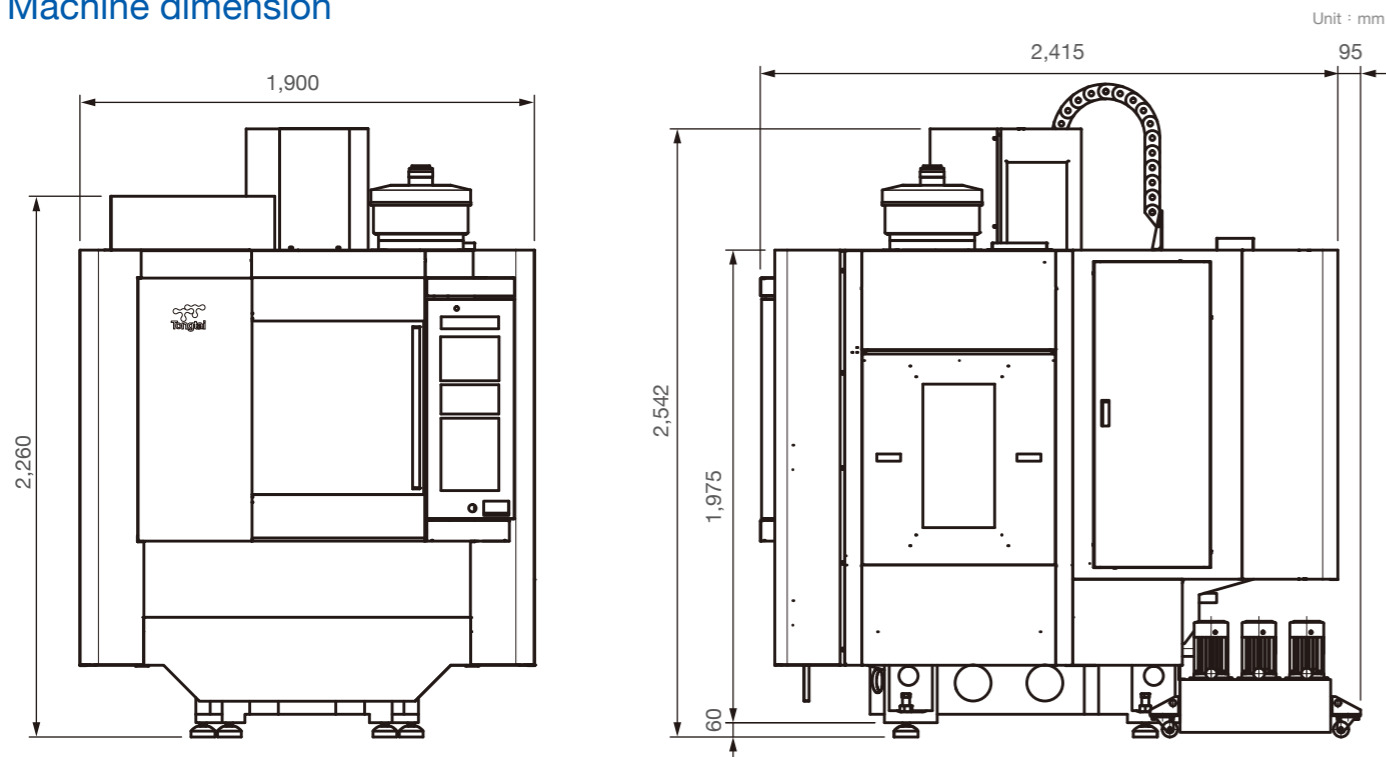
Standard ● Optional ○

Item	Std.	Opt.
LED lighting	●	
Manual pulse generator	●	
Workpiece counter(CNC)	●	
Tool magazine cover	●	
Tri-color warning light	●	
Tool magazine (24 tools)	●	
Bed flushing system	●	
Air blow system	●	
Interlock	●	
High speed and high precision control mode II (Only for Mitsubishi system)	●	
Blocks in pre-read buffer (Mitsubishi M70VA)	●	
Automatic low- or high-speed winding switch(※)	●	
Nozzle coolant	●	
Air gun set	●	
Coolant gun set		○
220L coolant tank		○

Item	Std.	Opt.
320L coolant tank with chip conveyor		○
Disc type oil skimmer		○
Chip shower		○
Auger-style chip conveyor		○
Automatic door		○
Mist collector		○
Spindle oil cooler		○
Transformer/ Stabilizer		○
Tool length/breakage measurement system		○
NC rotary table		○
Hydraulic units and interface		○
FANUC fine mold machining package (AI contour control II、blocks in pre-read buffer...)		○
Linear scale		○
Automatic power off system		○
Electrical cabinet cooler		○
CE standards		○

※ Suitable for FANUC αi16 and αi16 spindle motor.

Machine dimension



Item	Unit	VP-6
Type of spindle taper hole		7/24 Taper No.40
X/Y/Z axis travel	mm	610/410/510
Distance from table surface to spindle gauge plane	mm	100-610
X/Y/Z axis rapid traverse rate	m/min	48/48/48
X/Y/Z axis cutting feedrate	mm/min	1-10,000
Table loading capacity	kg	350
Table size (LxW)	mm	700×410
T-slot		18×3
Controller		Mitsubishi M70V TYPE A
		FANUC 0i-F
Tool storage capacity	pc	24
Max. tool diameter	mm	Ø75
Max. tool diameter (without adjacent tool)	mm	Ø150
Max. tool length	mm	250
Max. tool weight	kg	7
Machine size (W x D x H)	mm	1,900×2,510×2,542
Positioning accuracy	mm	±0.005
Repeatability	mm	±0.003
Machine weight	kg	3,600 ±200

©Specifications may be changed without prior notice.