

Vertical Machining Center

VP Series



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VP Series



- Direct-drive spindle with dual-contact system provides excellent machining quality and efficiency.
- High quality spindle and high rigidity structure design subject to high standards of machine accuracy to achieve good cutting performance.
- 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.



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 - Machining capacity
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Main specifications

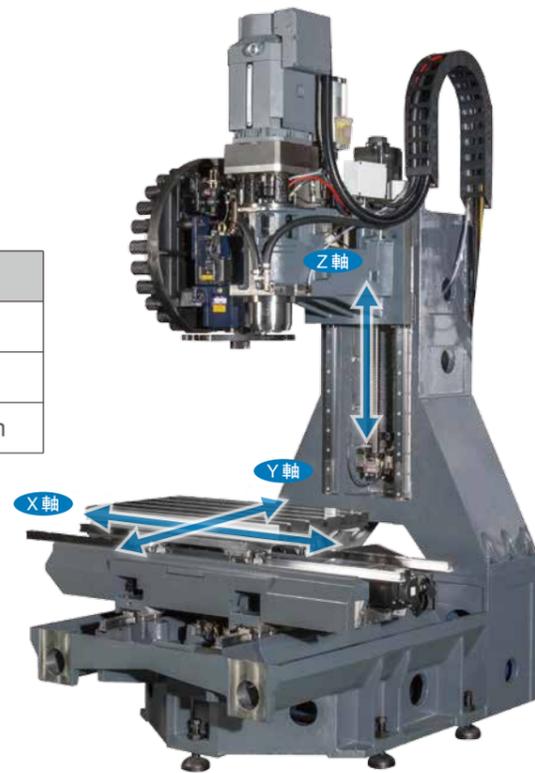
	VP-8	VP-10
Spindle	10,000 (15,000) rpm	
Rapid traverse	48/48/36 m/min	36/36/36 m/min
Travel	820/510/535 mm	1,020/510/600 mm

Main structure

X/Y/Z axis specification

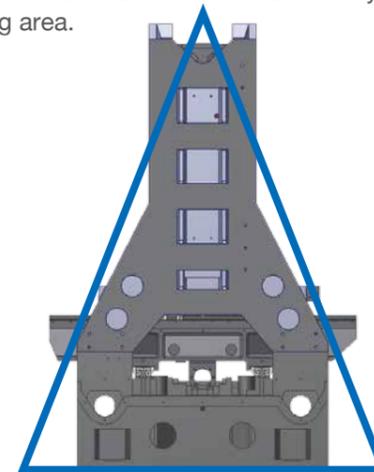
- Excellent performance/price ratio
- Stable machining precision
- Smarter and reliable standard functions
- Reliable quality
- High production efficiency and stability

	VP-8	VP-10
Spindle	10,000 (15,000) rpm	
Rapid traverse	48/48/36 m/min	36/36/36 m/min
Travel	820/510/535 mm	1,020/510/600 mm



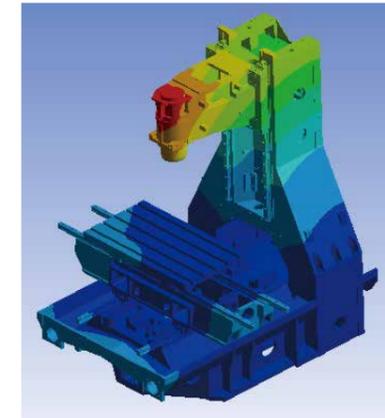
High-rigidity frame structure design

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.



Linear guideways

VP Series use linear guideways for each axis. Linear guideways are preloaded to provide zero clearance between the moving surfaces. They have a very low coefficient of friction, which allows faster movements without sacrificing repeatability or positioning accuracy.



Direct-coupled servo motors

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

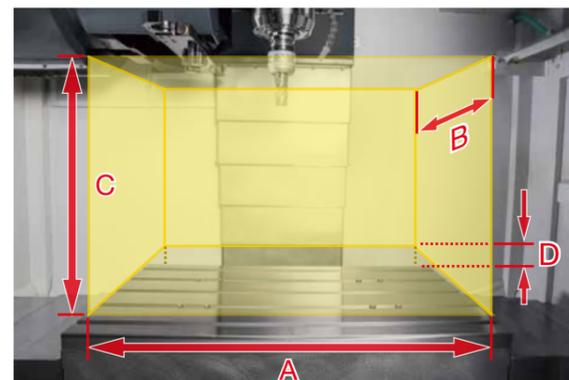


Working area

	A	B	C	D
VP-8	820	510	535	100
VP-10	1,020	510	600	100

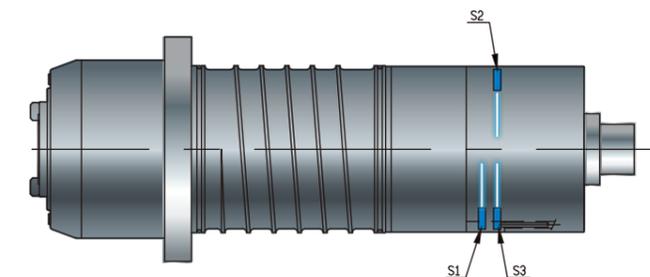
Unit : mm

	E	F
VP-8	900 mm	500 kg
VP-10	980 mm	500 kg



High quality spindle

- Clamping position sensors send the signals to the machine controller based on the position. (Tool Unclamping / Tool Clamping / Without Tool)
- By employing winding switching, a wider rate output range require for the spindle driving motor of a machine tool is achieved.



Main structure

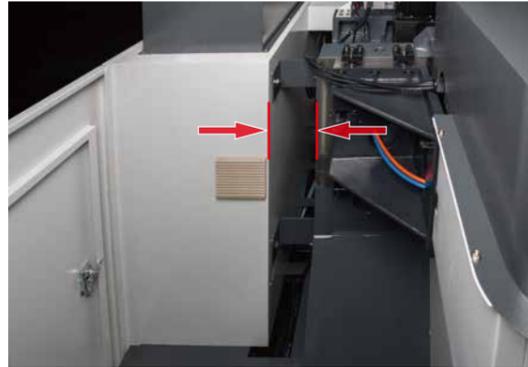
Ballscrew

The ballscrews are center mounted and supported on both ends by high precision angular contact thrust bearings. This single pre-tension design provides outstanding positioning repeatability with minimized thermal growth.



Stability

A gap design between column and electrical cabinet to avoid heat transfer.



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.



Tool management

Standard equipped with stable and rapid tool magazine. The time of T to T is 2.0 sec. and C to C is 3.6 sec. ATC is controlled by inverter, durability and less maintenance are superior than the traditional braking system. (ISO 10791-9)



Thanks to absolute encoder, cam box signal transfer faster and stable. 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 provides high accuracy, high acceleration ability, low vibration, long usage life, and easy to maintain. Flexible coupling prevent 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
VP-8/VP-10	Std.	10,000 rpm	●	X
	Opt.	10,000 rpm	●	●
	Opt.	15,000 rpm	●	X
	Opt.	15,000 rpm	●	●

Dual-contact (BIG-PLUS)

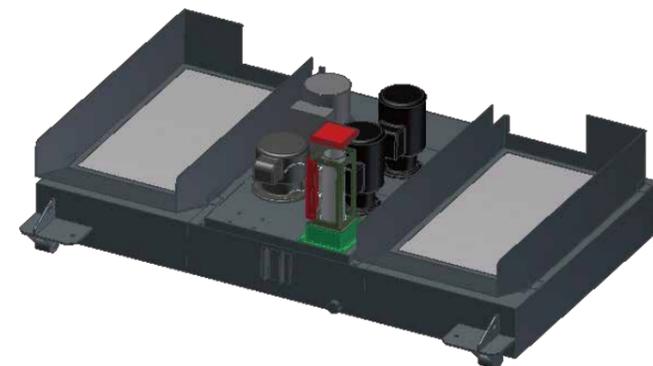
Spindle cooling system (Opt.)

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



Coolant 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.



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



Filter type coolant tank	
Standard	40-mesh filter
	280 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 convenience·Machining capacity

Ergonomic design

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

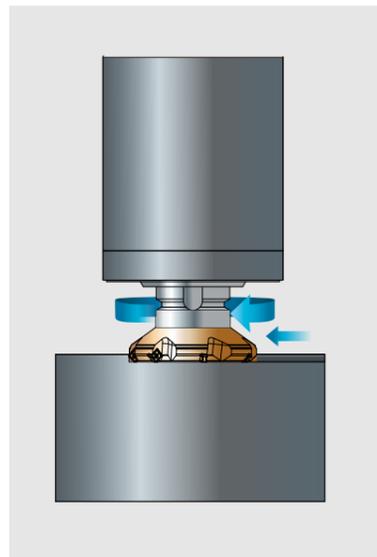


Easy to maintain

Controls are on the side panel to facilitate maintenance.



Machining capacity



Face mill	S45C
Tool	Ø80x6T
Spindle speed	1,493 rpm
Feedrate	2,240 mm/min
Cutting width	65 mm
Cutting depth	3.2 mm
Chip quantity	465 cc/min

Face mill	ADC12
Tool	Ø80x6T
Spindle speed	4,478 rpm
Feedrate	6,178 mm/min
Cutting width	65 mm
Cutting depth	3.8 mm
Chip quantity	1,659 cc/min

Drill	S45C
Tool	Ø32
Spindle speed	248 rpm
Feedrate	0.3 mm/rev
Hole depth	50 mm

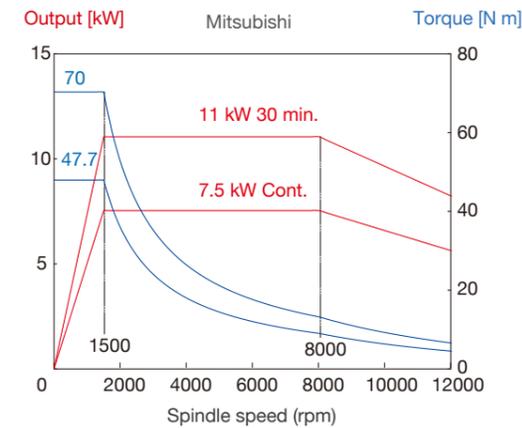
Tap	S45C
Tool	M24x3P
Spindle speed	133 rpm
Thread depth	45 mm

Benchmark:
Mitsubishi: SJ-VK15-28FZT(F) 11/15 kW
FANUC: ail12/10000 11/15 kW

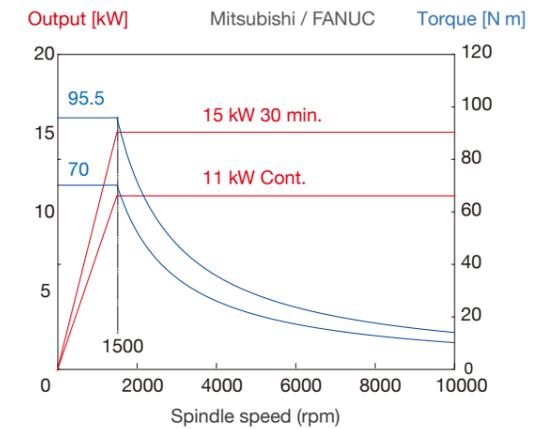
Spindle output and torque chart

VP-8/VP-10 ■ Std. ▲ Opt.

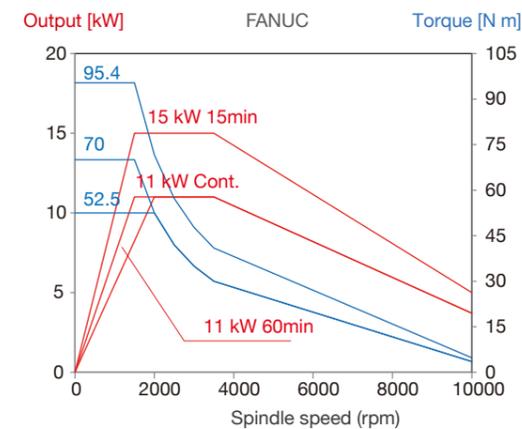
10,000 rpm



10,000 rpm (Automatic high or low-speed winding switch)

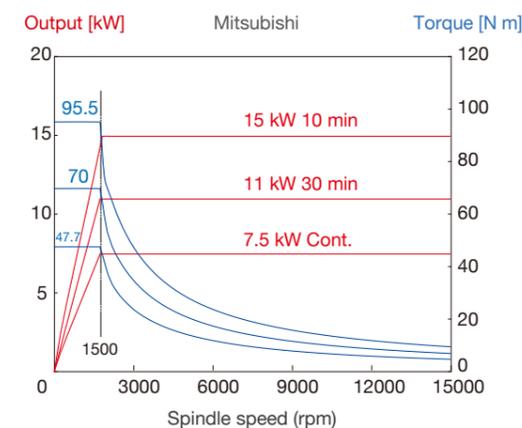


10,000 rpm



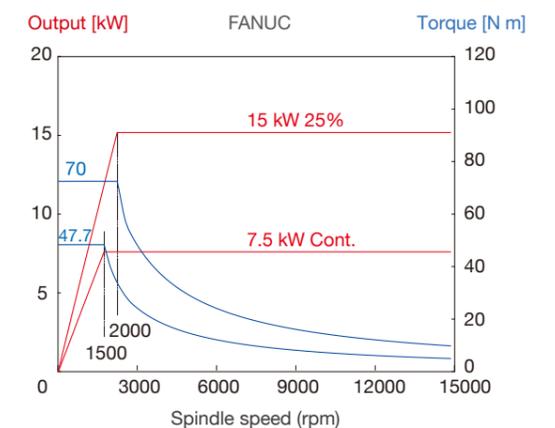
15,000 rpm (Automatic high or low-speed winding switch)

15,000 rpm (Automatic high or low-speed winding switch, CTS)



15,000 rpm (Automatic high or low-speed winding switch)

15,000 rpm (Automatic high or low-speed winding switch, CTS)



Std. / Opt. accessories·Machine dimension

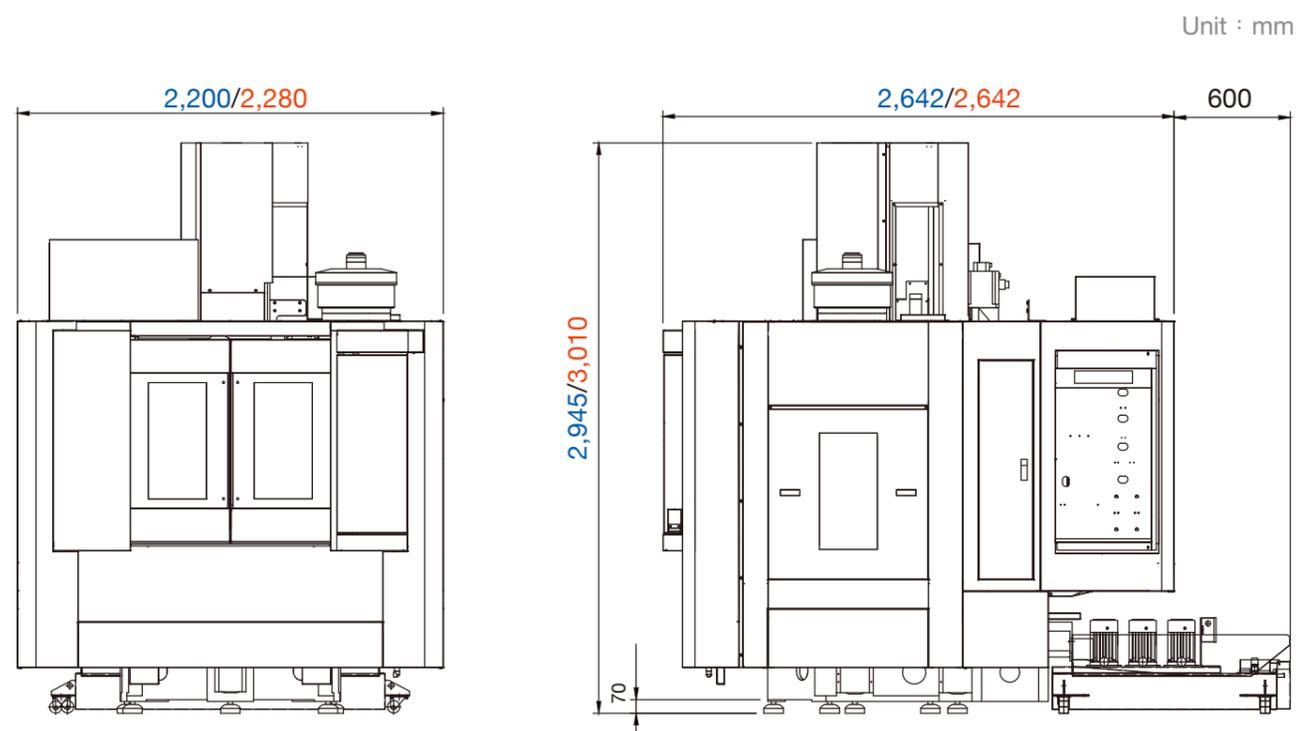
Item	Standard ● Optional ○		Item	Standard ● Optional ○	
	Std.	Opt.		Std.	Opt.
LED lighting	●		Disc type oil skimmer		○
Manual pulse generator	●		Chip shower		○
Workpiece counter (CNC)	●		Auger-style chip conveyor		○
Tool magazine cover	●		Automatic door		○
Tri-color warning light (LED)	●		Mist collector		○
Tool magazine (24 tools)	●		Spindle oil cooler		○
Bed flushing system	●		Transformer/ Stabilizer		○
Air blow system	●		Tool length/breakage measurement system		○
Interlock	●		NC rotary table		○
High speed and high precision control mode II (Mitsubishi M70VA)	●		Hydraulic units and interface		○
Blocks in pre-read buffer (Mitsubishi M70VA)	●		FANUC fine mold machining package (AI contour control II · blocks in pre-read buffer...)		○
Automatic low- or high-speed winding switch(※)	●		Linear scale		○
Nozzle coolant	●		Automatic power off system		○
Air gun set	●		Tool magazine (30 tools) (VP-8/VP-10)		○
280L coolant tank (VP-8/VP-10)	●		Electrical cabinet cooler		○
320L coolant tank with chip conveyor		○	CE standards		○
Coolant gun set		○			

(※ For the specification of spindle motor, please refer to the information in Page 8)

Specification

Item	Specification	Unit	VP-8	VP-10
Table	Table size (L×W)	mm	900×510	1,070×510
	Max. loading capacity	kg	500	
	Table height from floor	mm	900	
	T-slot (size×No.)	mm	18×5	
Spindle	Spindle taper		7/24 Taper No. 40	
	Spindle speed	rpm	10,000 (15,000)	
Travel	X/Y/Z axis travel	mm	820/510/535	1,020/510/600
	Distance from table surface to spindle gage line	mm	100-635	100-700
Feed	X/Y/Z axis rapid traverse	m/min	48/48/36	36/36/36
	Cutting feedrate	mm/min	1-10,000	
ATC	Tool shank		BBT-40	
	Tool capacity	pc	24 (30)	
	Max. tool diameter	mm	Ø75	
	Max. tool diameter (w/o adjacent tool)	mm	Ø150	
	Max. tool length	mm	300	
	Max. tool weight	kg	7	
Motor	Spindle motor	kW	11/7.5 (15/11/7.5)	
	X/Y/Z axis servo motor	kW	1.8/1.8/3 [1.5/2.2/3]	1.8/1.8/3 [2.2/2.2/3]
Machine size	Width×depth×height	mm	2,200×2,642×2,945	2,280×2,642×3,010
	Weight	kg	5,000	5,200
Controller			Mitsubishi M70VA [Fanuc Oi-MF]	

VP-8/VP-10 Machine dimension



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