

## SOLUTION OF WORLDWIDE SALES NETWORK



### HISTORY OF CHIFA



- 1976 Established the Metal processing department at MAR.01.
- 1992 Established the Machine Center R&D department.
- 1993 Continually 4th year of Knee-type Milling machine production reached 1800 sets monthly.
- 2003 Established the US branch office & warehouse at Feb.01.
- 2005 Established China branch as Twinhorn machinery co., Ltd.
- 2008 Started constructing China manufacture & production headquarters.
- 2009 Invested in the technical cooperation with Italian 5Ax maker on Movingcolumn and Gantry types 5Ax machining centers.
- 2010 Completed the construction of China manufacture & production
- 2012 Became the most biggest manufacturer of tapping center in greater China.
- 2014 Expanded the 4th assembly plant(factory area 4000m<sup>2</sup>) in Taiwan headquarters.

# Twinhorn

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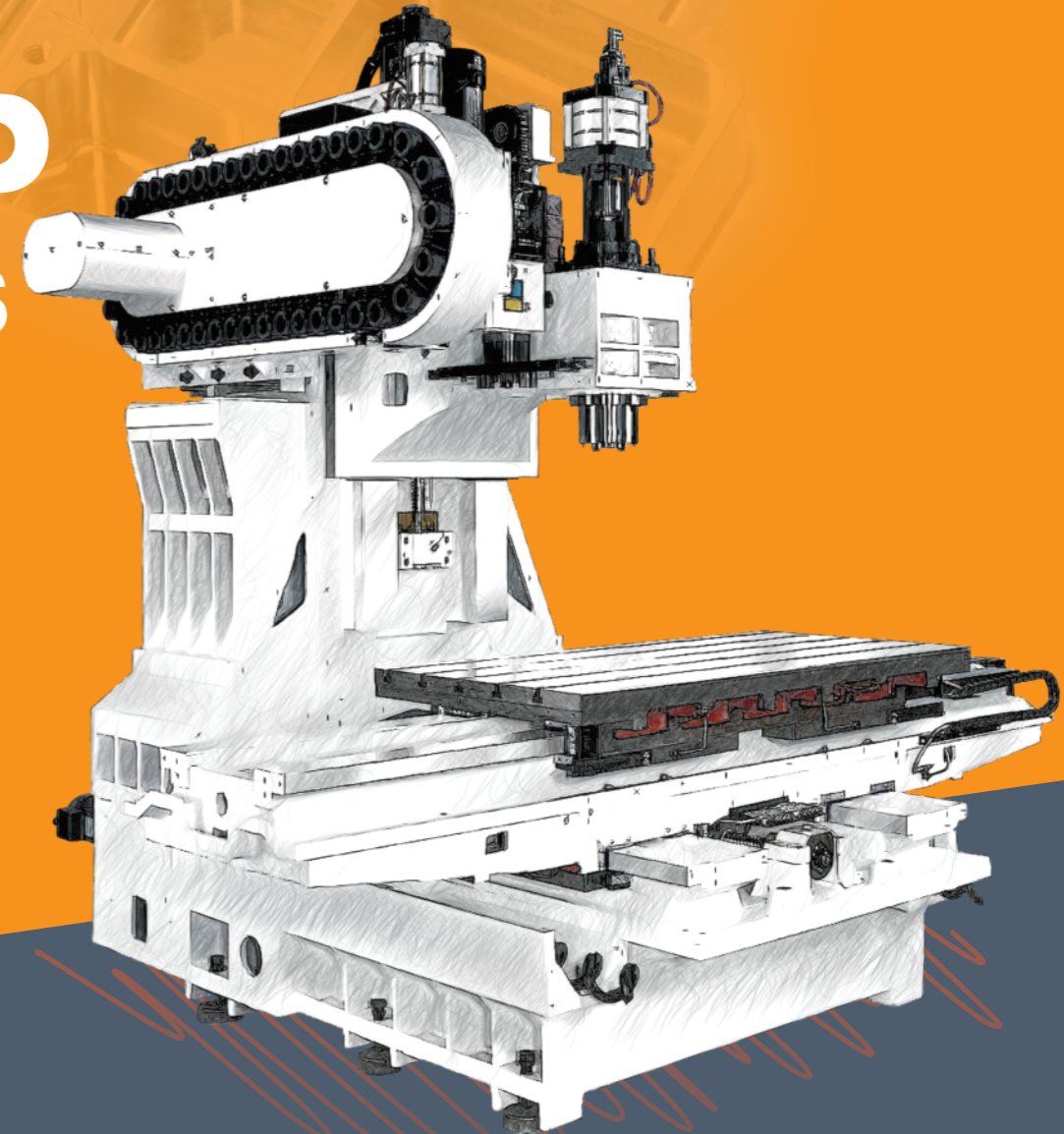
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# VTP SERIES



**Box Way** Vertical Machining Center

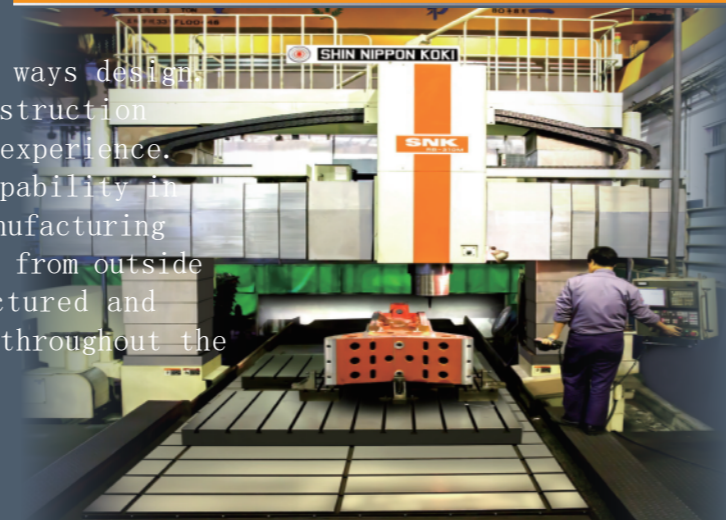
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BOX WAY STRUCTURE

## Special design

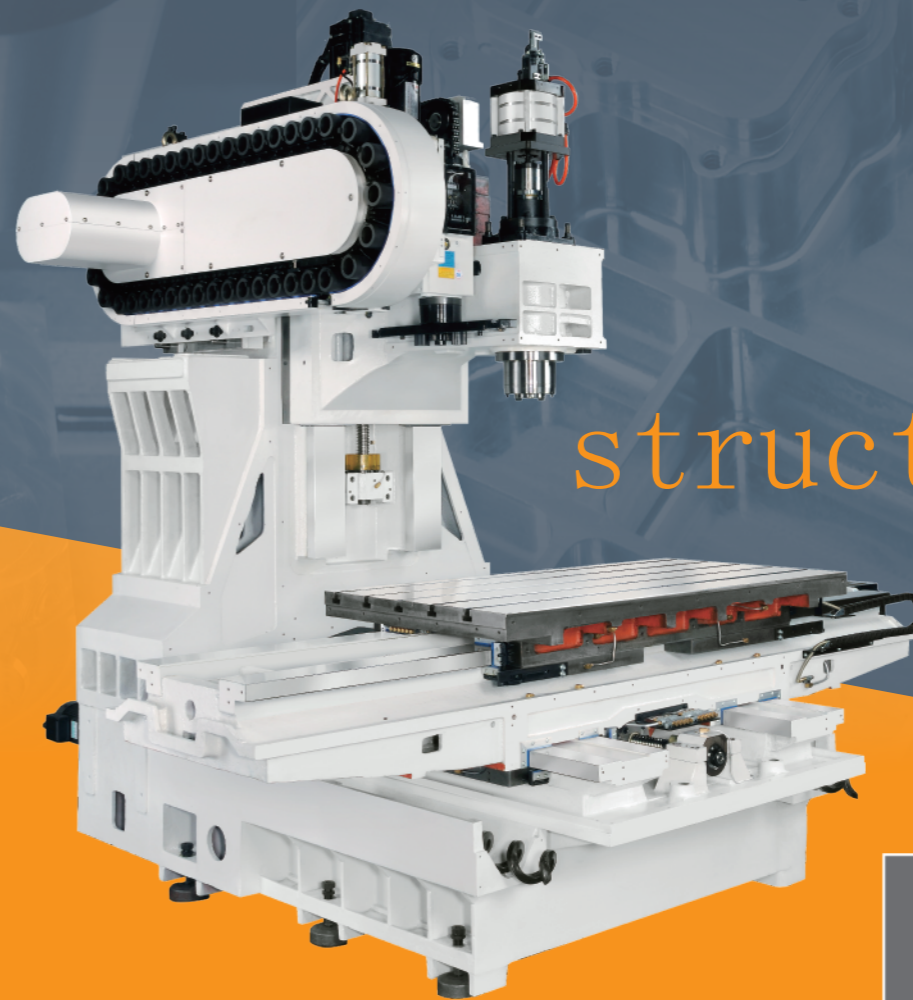
**VTP** series is a one-piece fabricated with box ways design. The manufacturing of a machine with box ways construction require high manufacturing technology as well as experience. At Chi-Fa, we have an integrated manufacturing capability in combination with over 30 years in machine tools manufacturing experience. Unlike competitors procurement of parts from outside suppliers, Chi-Fa machines are designed, manufactured and quality controlled in-house for rigorous control throughout the entire manufacturing process.



### Box Way

To achieve and ensure long term rigidity and accuracy of a box-way type machine, all casting parts need to be stress relieved naturally for a long time. They are machined on a SNK 5-sided machining center with one setup, and a large type three-dimensional coordinate measuring machine is applied for precision inspection. All parts are all manufactured from high quality Meehanite cast iron featuring excellent dampening capacity and maximum rigidity. Each structural part used for a machine has been subject to various manufacturing processes.

- A . Casting parts are stress relieved naturally.
- B . 5-sided machining with only one setup.
- C . Inspection with large type three-dimensional coordinate measuring machine.



## structure of VTP

### VTP Structure



Box ways on X, Y, Z-axis provide ultra-high rigidity and accuracy. They effectively overcome backlash error and vibration. The 610mm of y-axis travel meets most of molds and casting requirements, making the machines excellent for high precision mold machining.



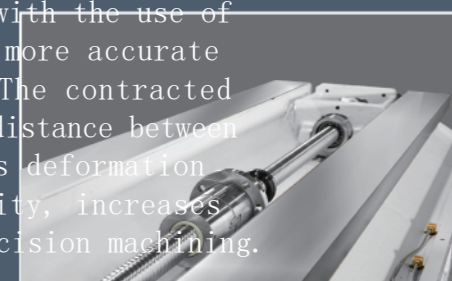
Direct drive of Z-axis motor in combination with the use of extra long sliding blocks allow feeds to be more accurate and sensitive especially in heavy cutting. The contracted simplified headstock dramatically reduces the distance between the headstock and the column, that eliminates deformation caused by a force or deflection due to a gravity, increases rigidity to meet the requirement for high precision machining.



Three axes are transmitted through 40 x P10mm, class C3 ball screws, pretensioned to enhance the axial rigidity and reduce thermal elongation to a minimum.

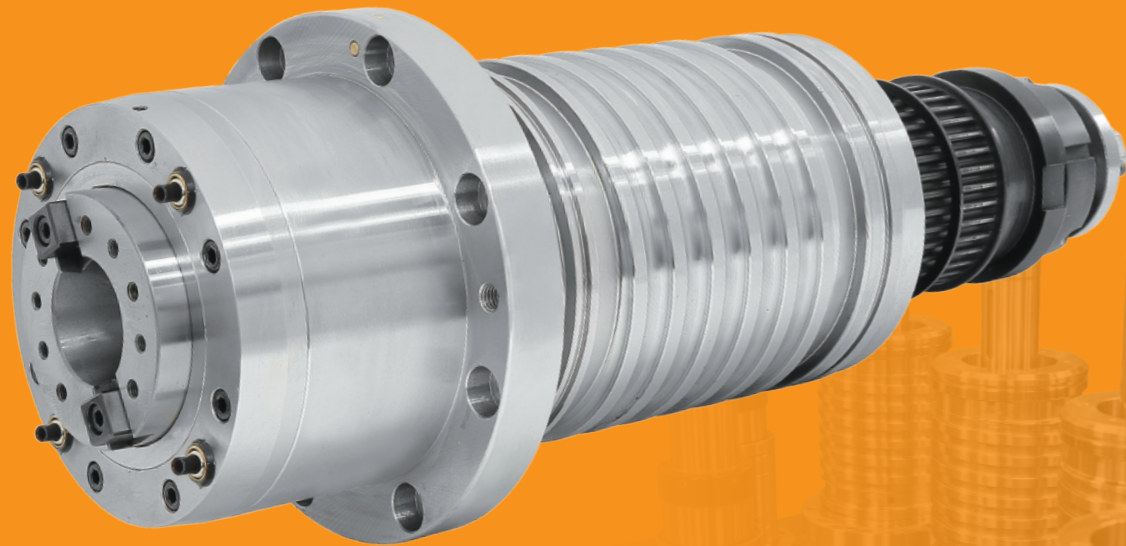


Four box ways on base are one-piece fabricated. Y-axis slide ways design is based on the optimal supporting distance. Four box ways design combined with greater span provide a solid support in the machining range of X-axis. Manufactured from high quality Meehanite cast iron, the base features high rigidity and high dampening capacity to increase cutting stability.



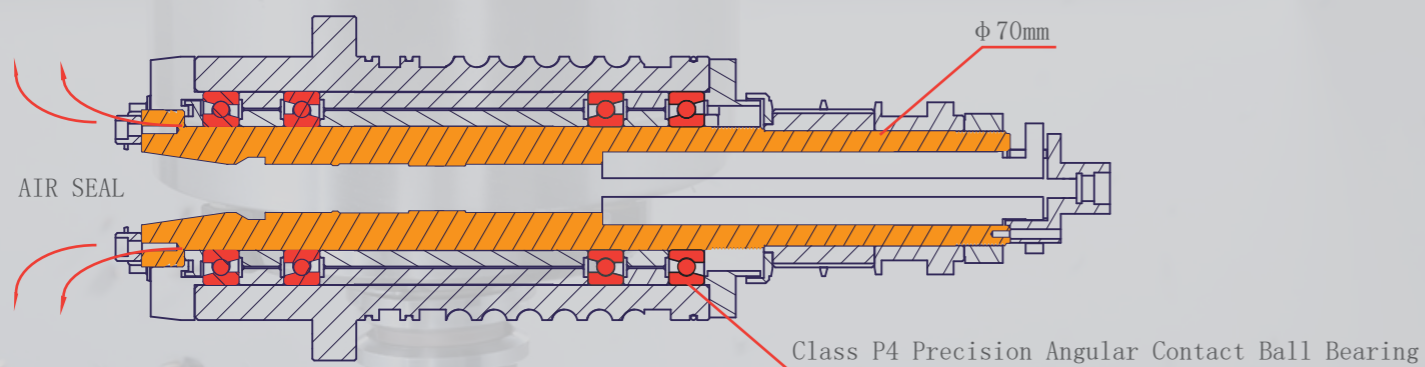
# Powerful-Efficient Spindle Motor Torque

Great Torque Output High Efficiency



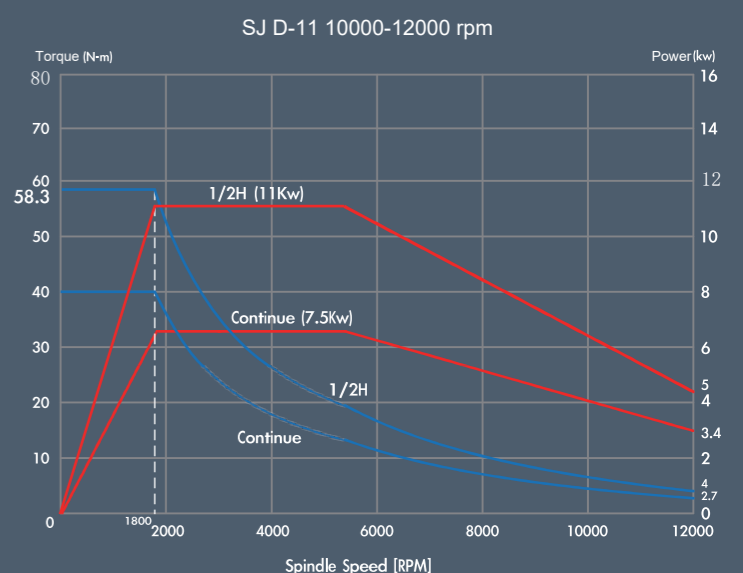
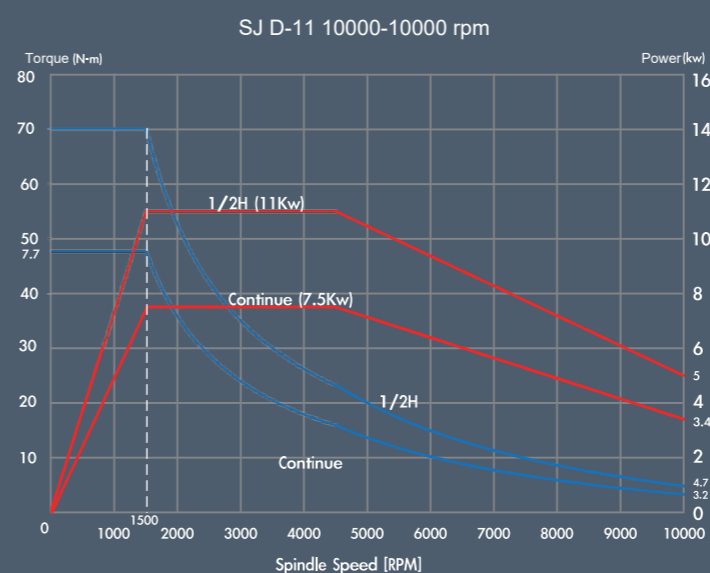
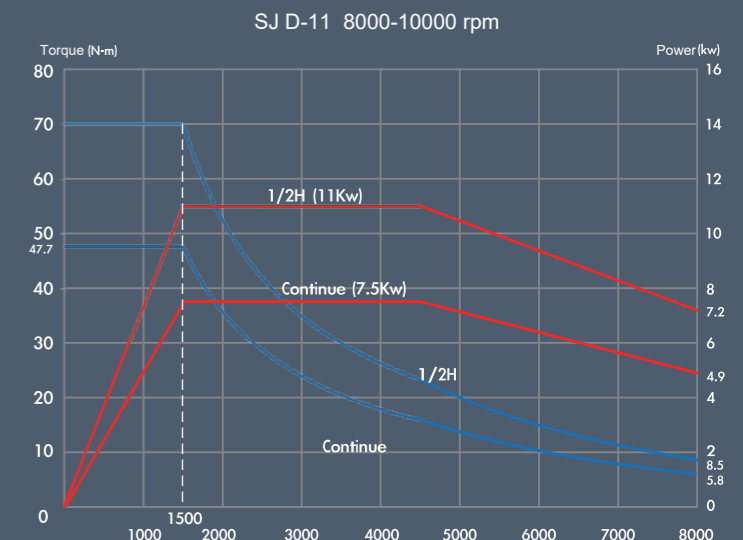
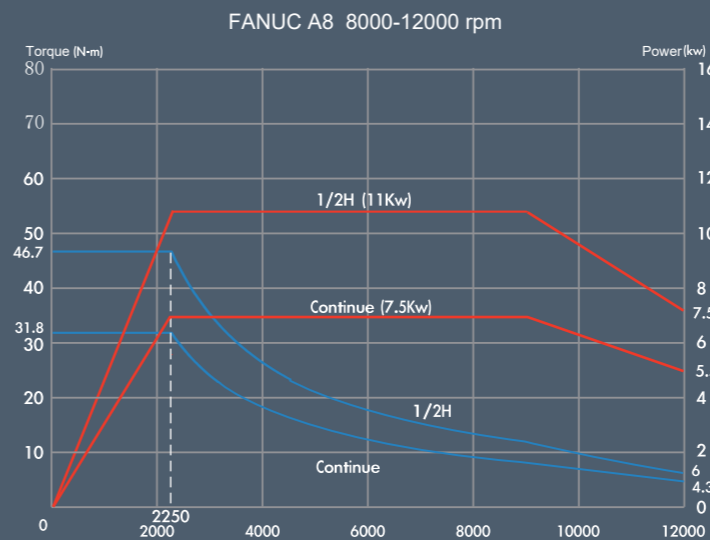
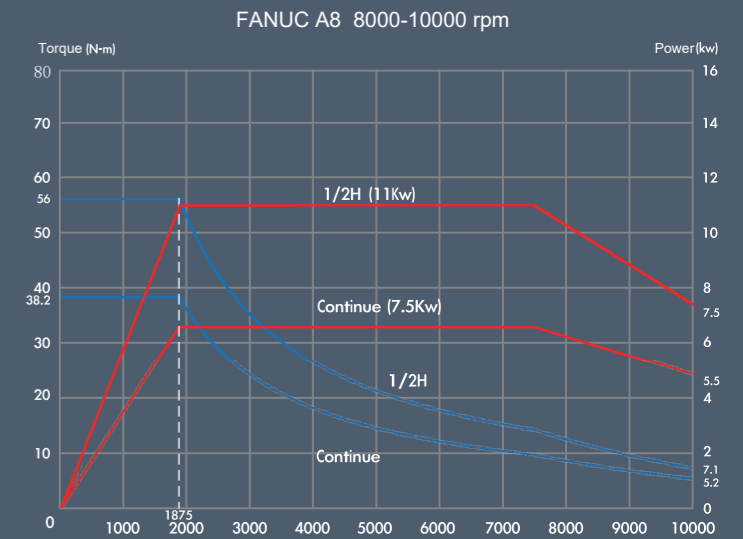
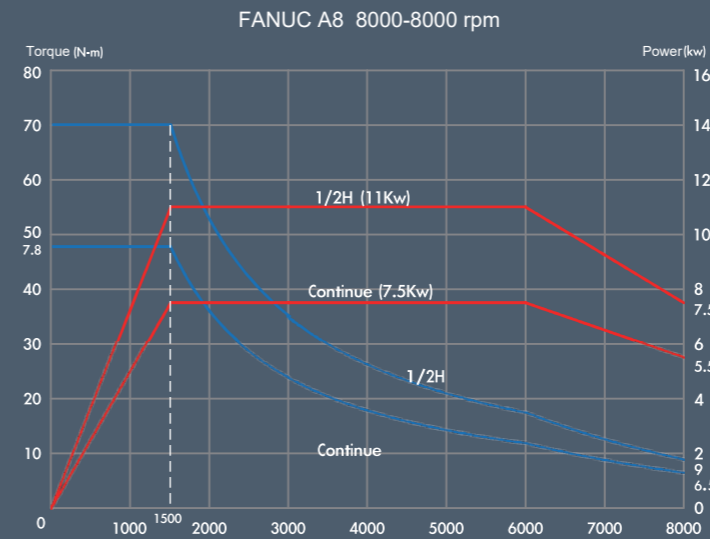
## High Performance Belt-drive Spindle

- a. 70mm extra large spindle diameter runs in 4 pieces of class P4 angular contact ball bearings, allowing the spindle to resist axial and radial loads.
- b. The standard spindle features an air curtain to increase dust privation effect, with a blast device to ensure the spindle's cleanliness for extending its service life.

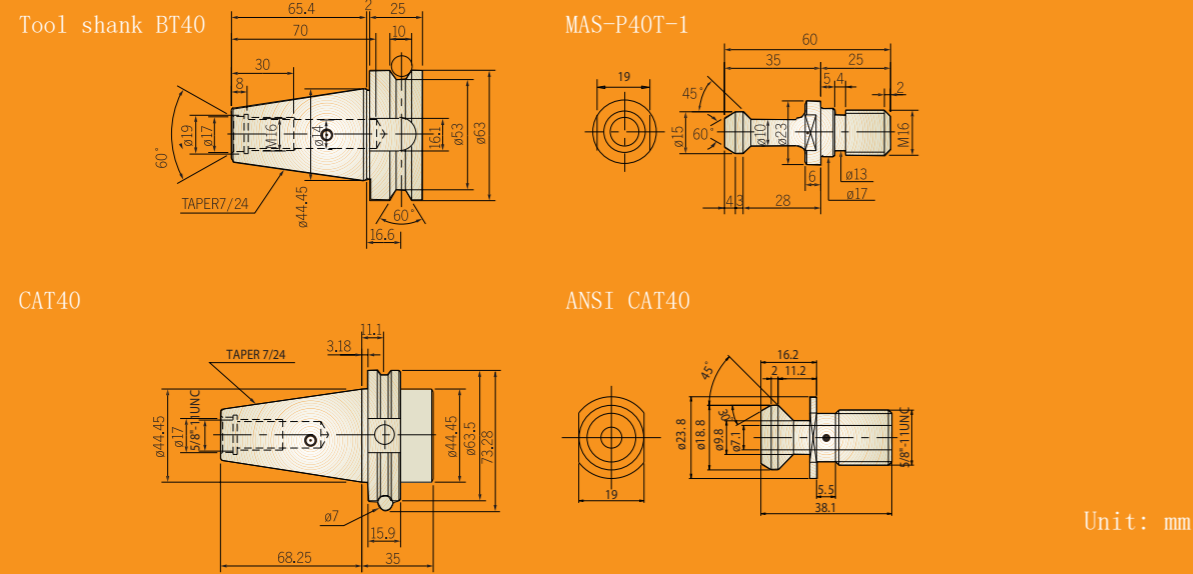


c. 4-nozzle coolant jets around the spindle thoroughly eliminates cutting contamination and two side holes are suitable for various tool lengths and diameters.

d. The belt-drive spindle is transmuted by HTD 8Y timing belts, allowing for effectively transmitting torque, reducing energy consumption, absorbing vibration resulting in high efficiency and high torque output. Stan-



# Spindle Torque Diagrams



# Perfect Configuration

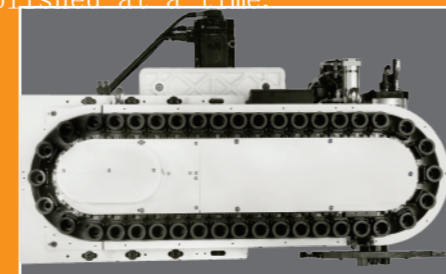
a. Can Drive Arm Type Tool Changer (Std.)

The motor is controlled by a frequency inverter for short tool change time



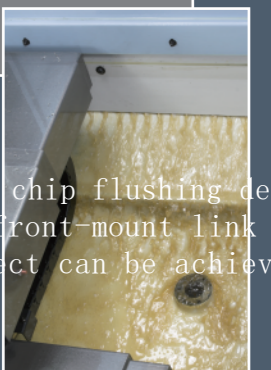
b. 24-Tool (Std.) 40-tool (Opt.)

permitting complex machining to be fast accomplished at a time.



## Smart Operation Interface

The fast pulling door is designed to comply with engineering theorem. Proper handle and tab designs provide smooth door movement and short door open/close time. Upon request, an automatic opening is optional.



## Widened Telescopic Guards on X-axis.

The telescopic guards completely cover the X-axis limit switches and linear scale and ensure the cleanliness of the axial mechanism, maintain machine accuracy and service life.

## Efficiency & Cleanliness

Inclined fully guarded chassis in combination with twin chip augers and chip flushing devices at both right and left side enable most chips to be delivered to the front-mount link chain type chip conveyor(optional). As such, an excellent chip removing effect can be achieved.

# Cutting Ability



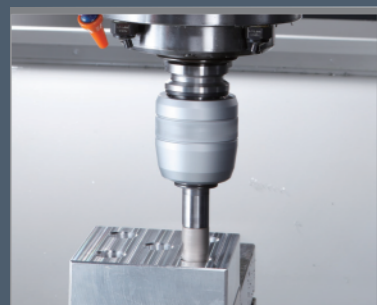
Face Milling

Material	Carbon Steel (S50C)	HRC 18°
Spindle speed	1500rpm	Max. power output 15 kw
Cutting feed	1000 mm/min	Cutting speed 471m/min
Cutting width	75 mm	Torque output 70 N-m = 714 kgf-cm
Cutting depth	4 mm	Face mill 100, 5 teeth, dry square face
Chip removal	300 cc/min	milling cutter



Drilling

Material	Carbon Steel (S50C)	HRC 18°
Spindle speed	200rpm	Max. power output 15 kw
Cutting feed	60mm/min	Cutting speed 21m/min
Feed per	0.3mm/rev	Torque output 70 N-m = 714 kgf-cm
Chip removal	51 cc/min	HSS, ø33 drill



Tapping

Material	Carbon Steel (S50C)	HRC 18°
Spindle speed	117rpm	Max. power output 15 kw
Cutting feed	351mm/min	Cutting speed 10m/min
pitch	3 mm	Torque output 70 N-m = 714 kgf-cm
		M27, helical tap



End Milling

Material	Carbon Steel (S50C)	HRC 18°
Spindle speed	1500rpm	Max. power output 15 kw
Cutting feed	660 mm/min	Cutting speed 151m/min
Cutting width	15 mm	Torque output 70 N-m = 714 kgf-cm
Cutting depth	30 mm	Helical mill 32, 2 teeth, dry helical
Chip removal	297 cc/min	water

# VTP series solutions Machining Parts

Efficient Manufacturing Strategy



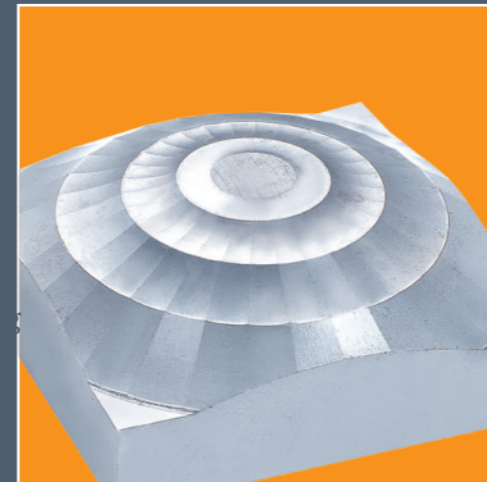
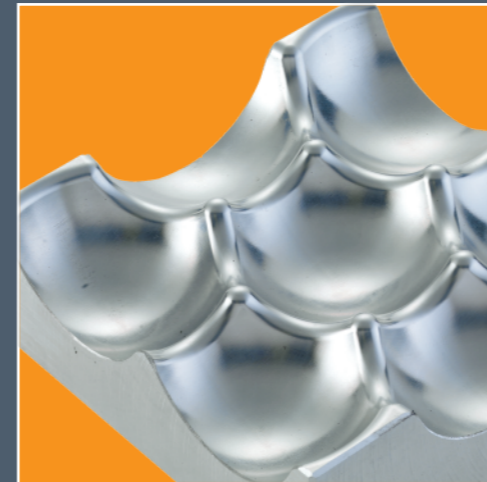
## High Efficiency Complex Machining

The use of the 4th axis and the tailstock make it possible to perform complex machining. It permits complicated machining to be performed efficiently and even a complicated



## DD Direct Driven Rotary Table

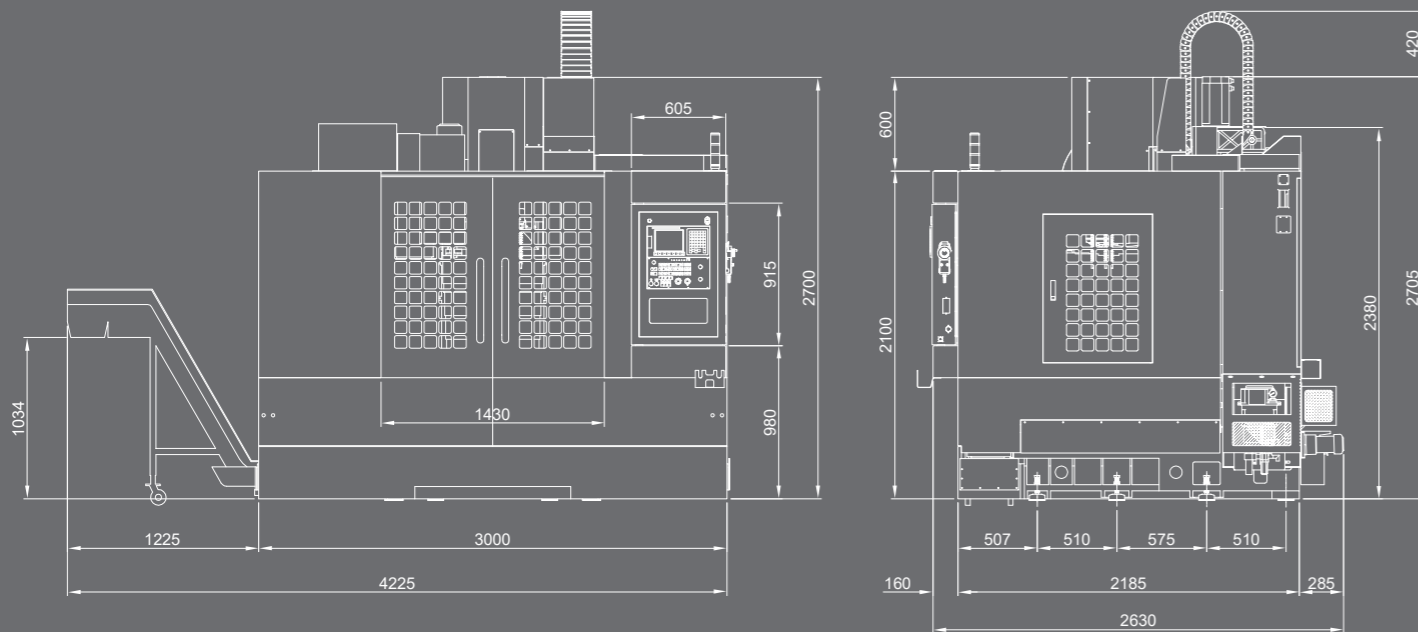
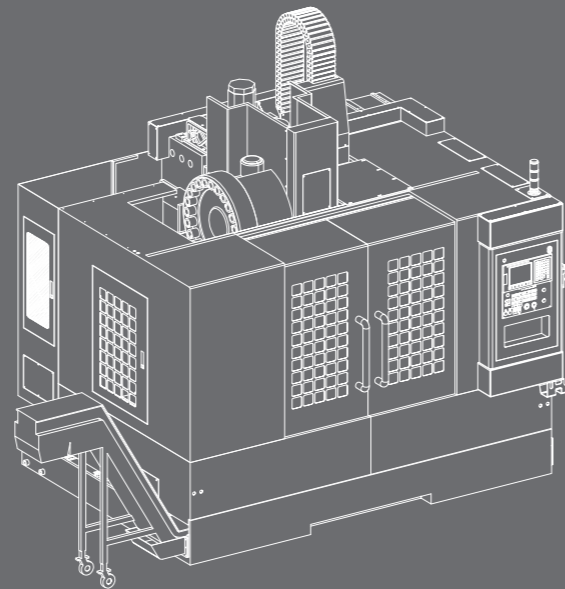
High Speed, No Backlash, High Accuracy Direct drive rotary units are incredibly quick, precise, and low-maintenance. There is no worm gear



**VTP series** is designed with box ways and features high speed and high torque output. The series of machines is especially ideal for complex machining such as molds.



# Machine Dimension



(The machine specifications, accessories and appearance are subject to change without prior notice.)

## Standard Equipment

1. 8,000 rpm belt-drive spindle
2. Dist type 24-tool ATC System
3. Coolant system
4. Fully enclosed splash guard
5. Work light (fluorescent)
6. Automatic lubrication system
7. Operation indication lamp
8. Spindle air blast device
9. Automatic flushing device
10. Cutting air blast device

## Optional Equipment

1. BT40 pull stud
2. 10,000/12,000 rpm spindle, belt drive
3. Ready for 4th axis installation
4. Full set of 4th axis rotary table
5. Automatic tool length measurement
6. Coolant through spindle device
7. Oil fluid separation device
8. Air gun
9. Coolant gun
10. Linear optical scale

# Specification

(The machine specifications, accessories and appearance are subject to change without prior notice.)

MODEL	VTP-1061	VTP-1261
<b>TABLE</b>		
Table sizes	1200 X 600mm (47.2" x 23.6" )	1400 X 680mm (55.12" x 26.7" )
T-slot(no. x size x pitch)	5 X 18mm X 125mm (5x0.71" x 4.92" )	
Max. table load	1000kg (2200lbs)	1200kg (2640lbs)
<b>TRAVEL</b>		
X-axis travel	1020mm (40.1" )	1250mm (49.21" )
Y-axis travel	610mm (24" )	
Z-axis travel	610mm (24" )	
<b>SPINDLE</b>		
Dist. from spindle nose to table	125~735mm (4.92" ~28.94" )	
Dist. from spindle center to column from	895mm (35.23" )	
Spindle nose taper	7/24 No. 40	
Spindle speeds	Belt drive: 8000rpm (opt. 10000.12000rpm)	
Spindle diameter	70mm (2.75" )	
<b>FEED</b>		
Rapid traverse rates (X/Y/Z)	24/24/20m/min (945/787.4 ipm)	
Cutting feed rates	10 m/min (394 ipm)	
Z-axis counter-balance	with	
Ball screw diameter & pitch	40mm,P10	
<b>Accuracy</b>		
Positioning accuracy	P0.014mm (± 0.004/300mm )	
Repeatability	PS 0.010 ( ± 0.003mm )	
<b>AUTO TOOL CHANGER</b>		
Tool shank specif.	BT40	
Magazine loading capacity	Arm 24T	
Tool change time	Arm T-T 1.5 sec, C-C 5 sec	
Pull stud	MAS 403 P40T-1	
Max. tool diameter(with adj. tool)	80mm (3.15" )	
Max. tool diameter(without adj. tool)	125mm (4.92" )	
Max. tool length	300mm (11.8" )	
Max. tool weight	7kg (15.4lbs)	
<b>MOTOR</b>		
Spindl motor	(F) : 11 (cont.) /15kW (30min)	
Feed motor (X/Y/Z)	X: 3kW (A12i), Y: 4kW (A22i) ,Z: 4kW (A22i With Brake)	
Cutting fluid pump motor	1 HP	
Side flushing pump motor	1.5 HP	
<b>OTHER</b>		
Power required	25kVA	
Air supply required	5 - 6 kg/cm <sup>2</sup> , 300L/min	
Machine dimensions (WxDxH)	3000 X 2650 X 2750mm (118.1" x 104.33" x 108.3" )	3500 X 2650 X 2750mm (137.8" x 104.33" x 108.3" )
Machine weight	8000kg (17600 lbs)	8500kg (18700 lbs)