

SOLUTION OF WORLDWIDE SALES NETWORK 全球經銷據點



Company Profile



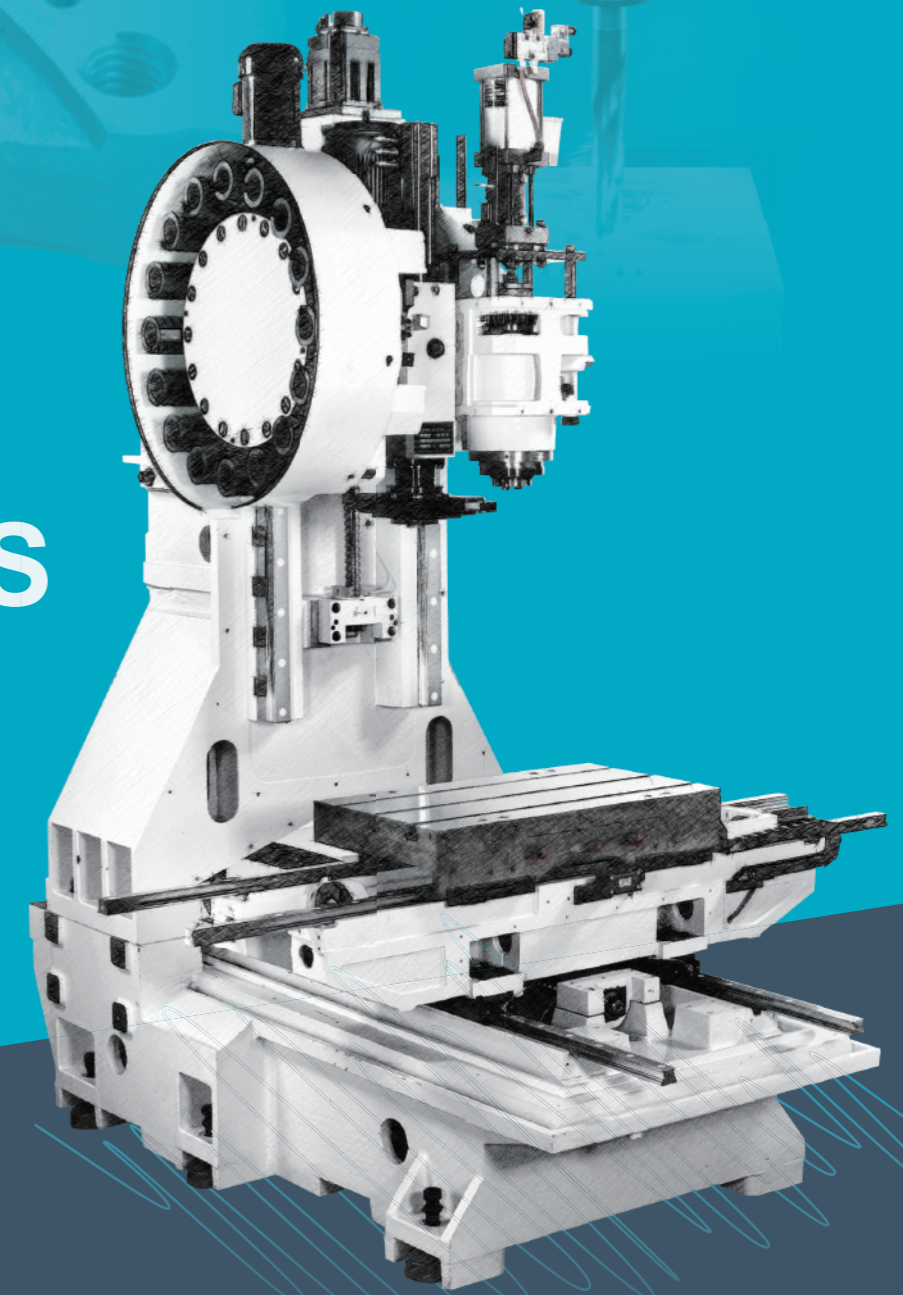
- 1976 Established the Metal processing department at MAR.01.
- 1992 Established the Machine Center R&D department.
- 1993 Continually 4th year of Knee-type Milling machine production reached 1800 sets monthly.
- 2003 Established the US branch office & warehouse at Feb.01.
- 2005 Established China branch 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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**VA  
SERIES**



Vertical High Speed Machining Center

[www.twinhorn.com](http://www.twinhorn.com)

**Twinhorn**

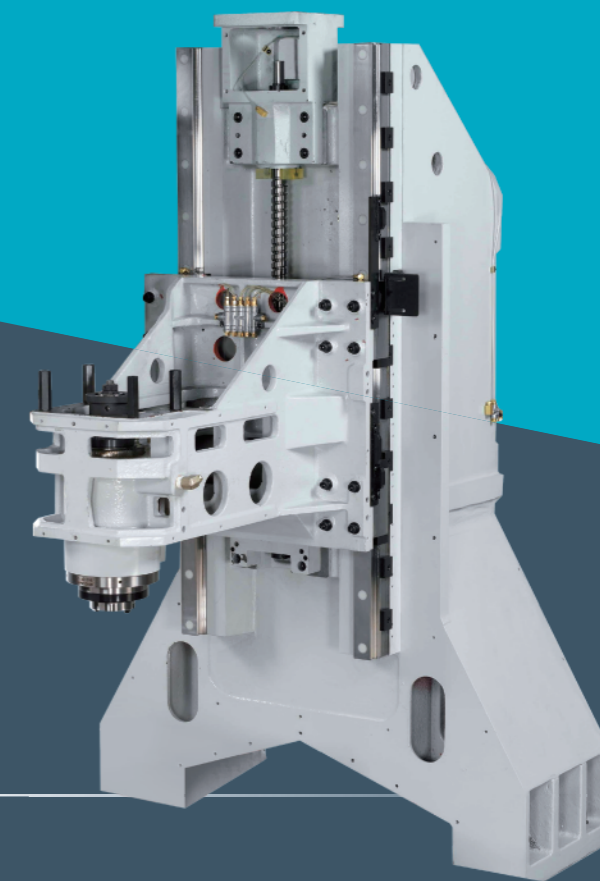


# Design Of Structure



## VA500L3 / VA750L3

High precision linear guide ways along with great span design provide high feed rates and excellent rigidity as well as high positioning accuracy.



## VA SERIES Vertical High Speed Machining Center



### VA500L3 / VA750L3

High efficiency and no counter-weight design. Your best choice in high speed machining as well as mass production.

### VA500

Innovative design concept in combination with high rigidity, high precision and limited foot print machine



Reversed "Y" shape column with extra large span features exceptional rigidity

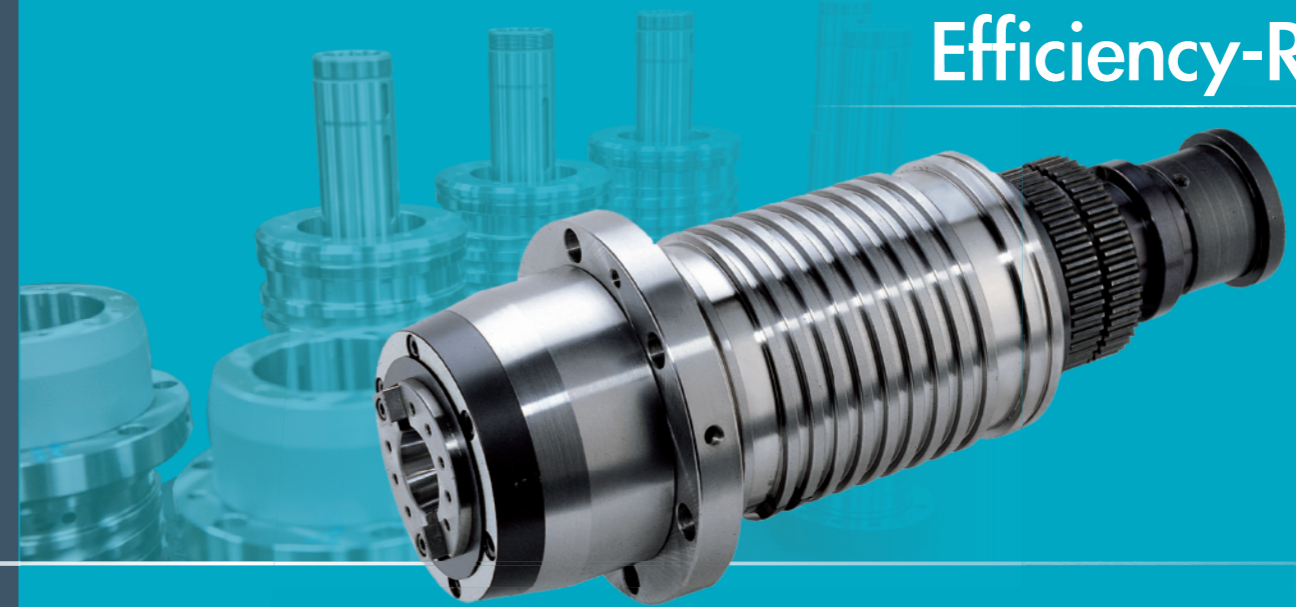


- Pretensioned class C3 ball screws on three axes.
- Three axes move on high precision linear guide ways with superior accuracy and high feed speed.
- Durable, one-piece fabricated base with oil skimmer design.



# Efficiency-Rigidity

Efficiency & Rigidity

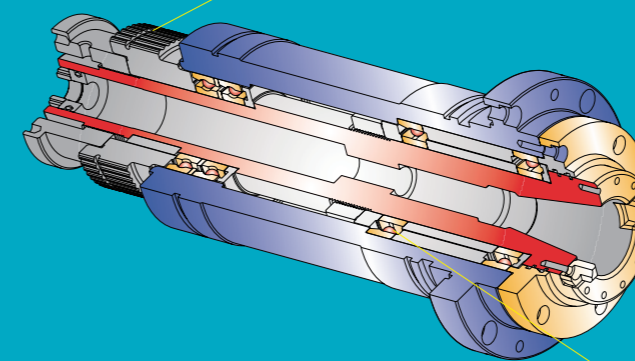


## High Precision, High Rigidity Spindle

The spindle is driven by high speed quiet timing belts.

The spindle nose is a labyrinth design combined with air curtain protected to prevent impurity from entering, while ensuring the accuracy and service life.

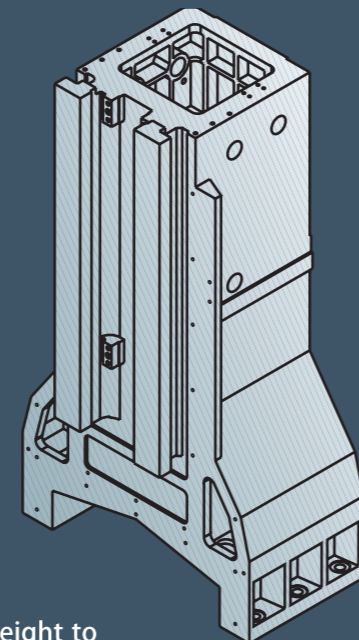
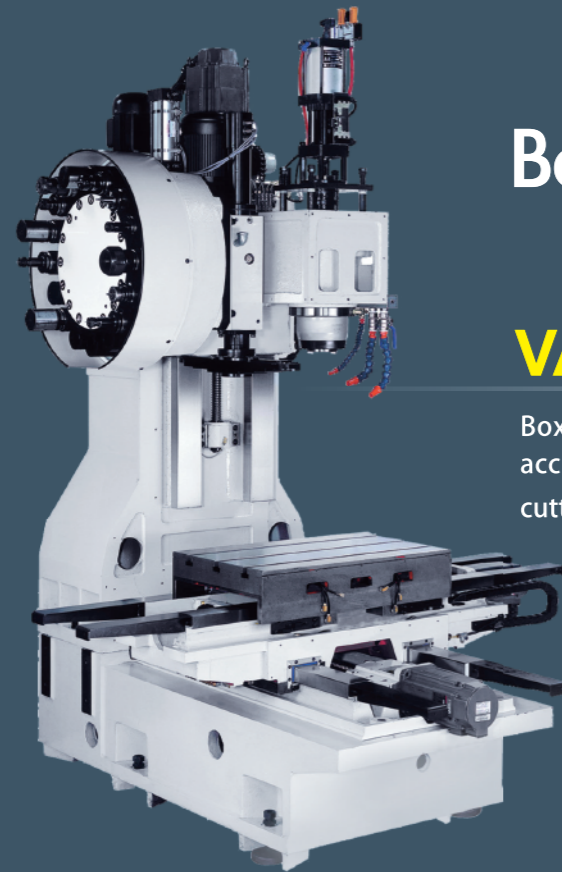
The spindle uses ABEC class 7(P4) super high precision angular contact ball bearings with large span support. The feature enables the spindle to resist heavy thrust force in both radial and axial directions.



# Box Way Structure

## VA500

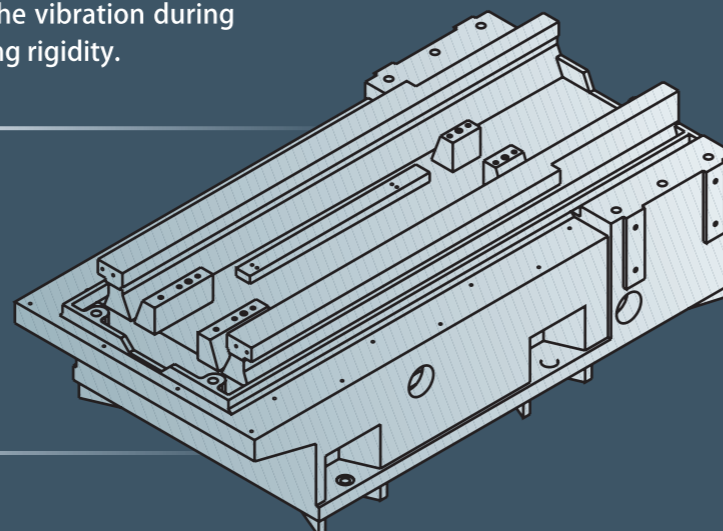
Box ways on three axes have excellent rigidity, high stability accuracy. The machine is excellent for heavy and high quality cutting.



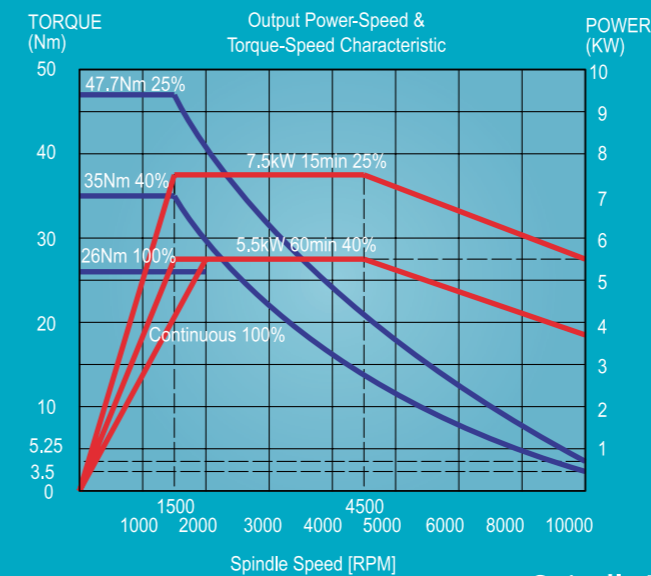
High rigidity structure design allows the head stock weight to be distributed evenly on the base. This combined with one-piece fabricated box ways on Z-axis to achieve higher rigidity.

The base is manufactured with Meehanite cast iron in one-piece design, in order to absorb the vibration during machining, and provides optimal cutting rigidity.

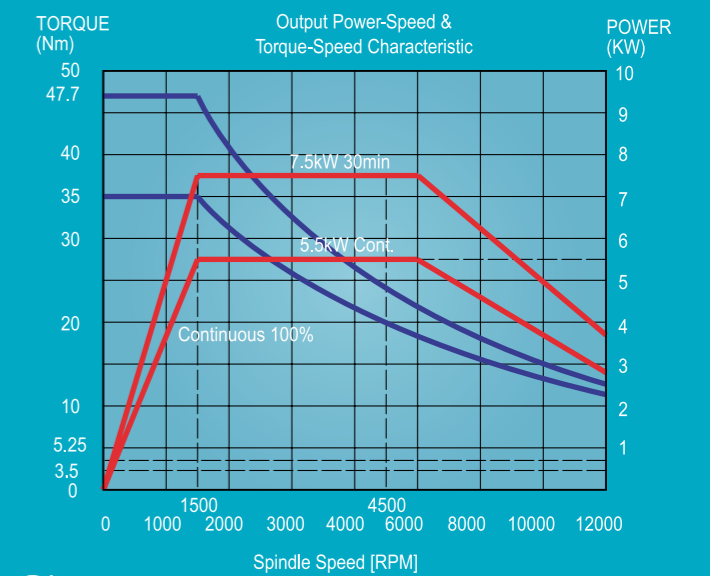
Three axes guide ways are one-piece fabricated with structures, and scraping precisely after heat treatment curing. Way surfaces are coated with TURCITE -B seal combined with automatic lubrication system to upgrade slide way accuracy and lifetime.



## Fanuc β8i 10000 rpm



## Mitsubishi M70 10000 rpm



Spindle Torque Diagram

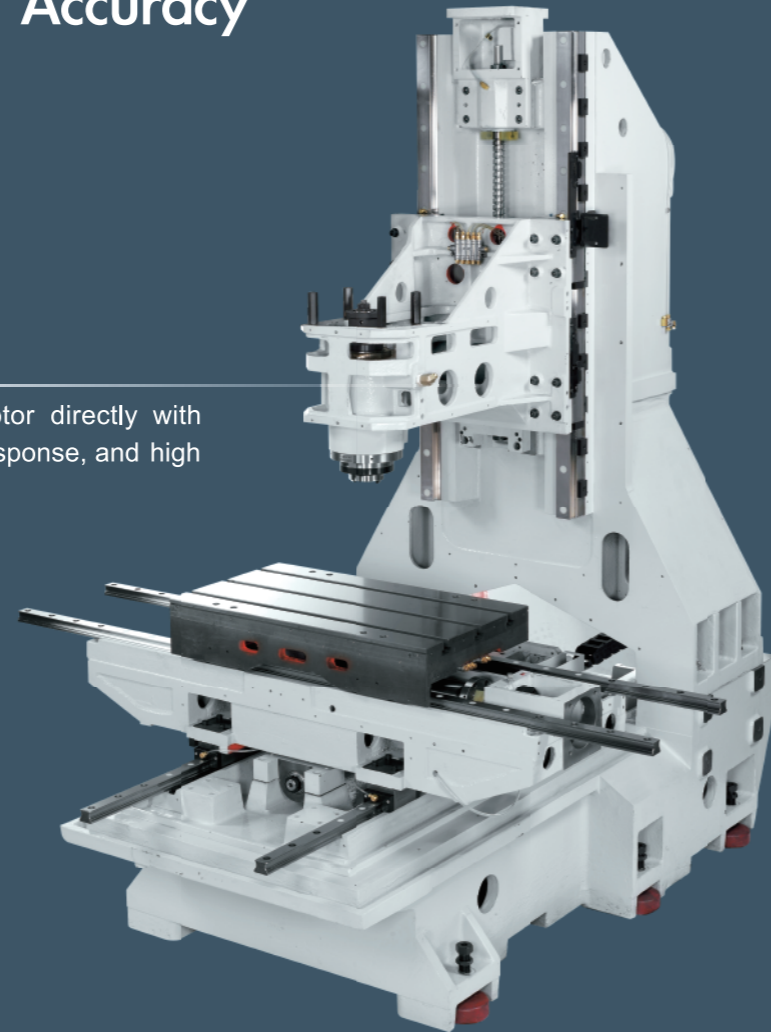
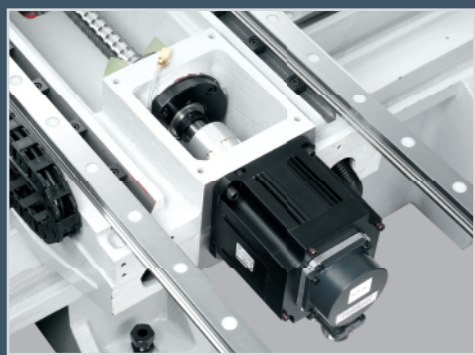


# Optimal Structure Design

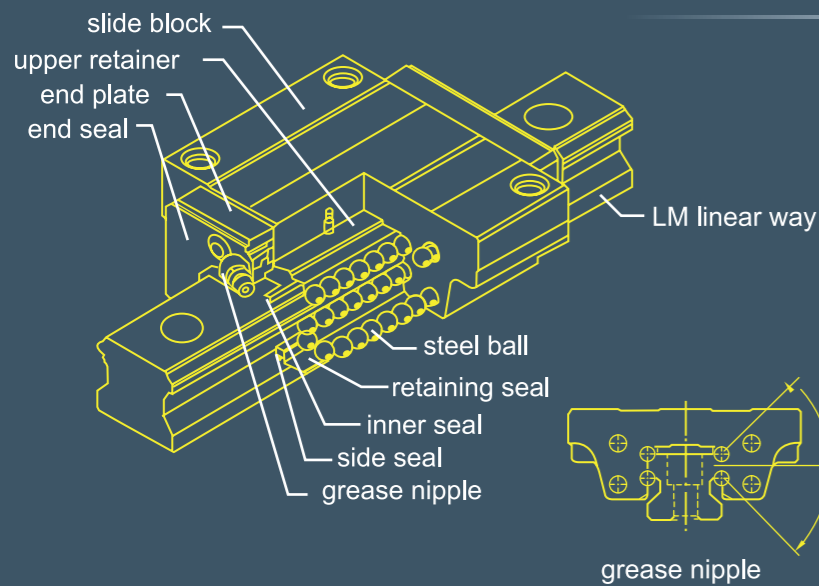
## Efficiency and Positioning Accuracy

- Three axes are driven by high speed axial servomotor directly with high precise ball screw, so that there have rapid response, and high precision.

Model	Feed
VA-500L3: Three axes linear ways VA-750L3: Three axes linear ways	48-48-32 M/min
VA-500: Three axes box ways	24-24-20 M/min



High Precise Linear Way (VA-500L3/VA-750L3)



- Three axes use high precise linear way with auto-lubrication system to ensure the service time.
- X, Y, Z axis adopt 30-35-45 mm HRS extra large precise linear, that provides high accuracy and high rigidity.



- The ATC features a cam type quick tool changer, which substantially shortens tool change time and increases efficiency making the machine suitable for mass production.

Tool change time

T-T	1.5 sec
C-C	4 sec



## Friendly Interface

- Embedded rotatable control box: You can change angle of operation panel when you change your position. This design makes you more convenient and suitable and not occupies space; simultaneously it is artistic and practical.
- Convenience groove: You can put small tool here, it is easy to put and take, immediate and convenience.
- Fast opening single door: Makes you watching cutting state clearly. It has smooth door slide easy to opening/closing.

## Spindle Cooling System

- Spindle cooling system is used to control spindle temperature rise within a stable range to ensure machining accuracy.



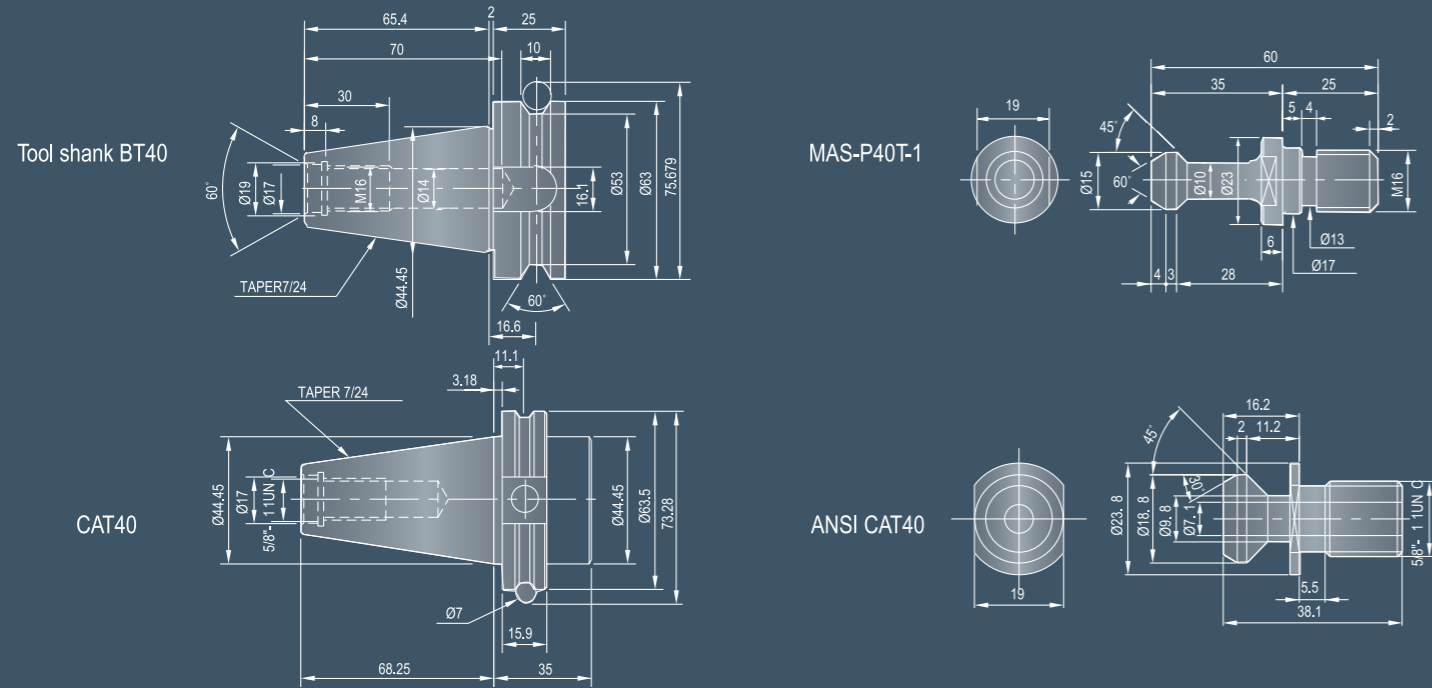
## Chip Flushing System

- Both sides are designed with greatly tilted sheet metal to facilitate chip remove and features no blocking problem.
- Chip flushing system provides an excellent chip removing.





# Specification of Pull Stud and Tool Shank



## Machining Parts



Bicycle Stem

## Cutting Ability

Spindle Motor Specification Fanuc β 8i (15HP/8000rpm)



Face Milling

Material	Medium carbon steel (S50C)
Spindle speed	1500 rpm
Feed rate	1350 mm/min
Cutter dia.	40 mm
Cutting depth	4 mm
Material removal rate	216 cc/min



End Milling

Material	Medium carbon steel (S50C)
Spindle speed	1500 rpm
Feed rate	650 mm/min
Cutter dia.	16 mm
Cutting depth	20 mm
Material removal rate	208 cc/min



Drilling

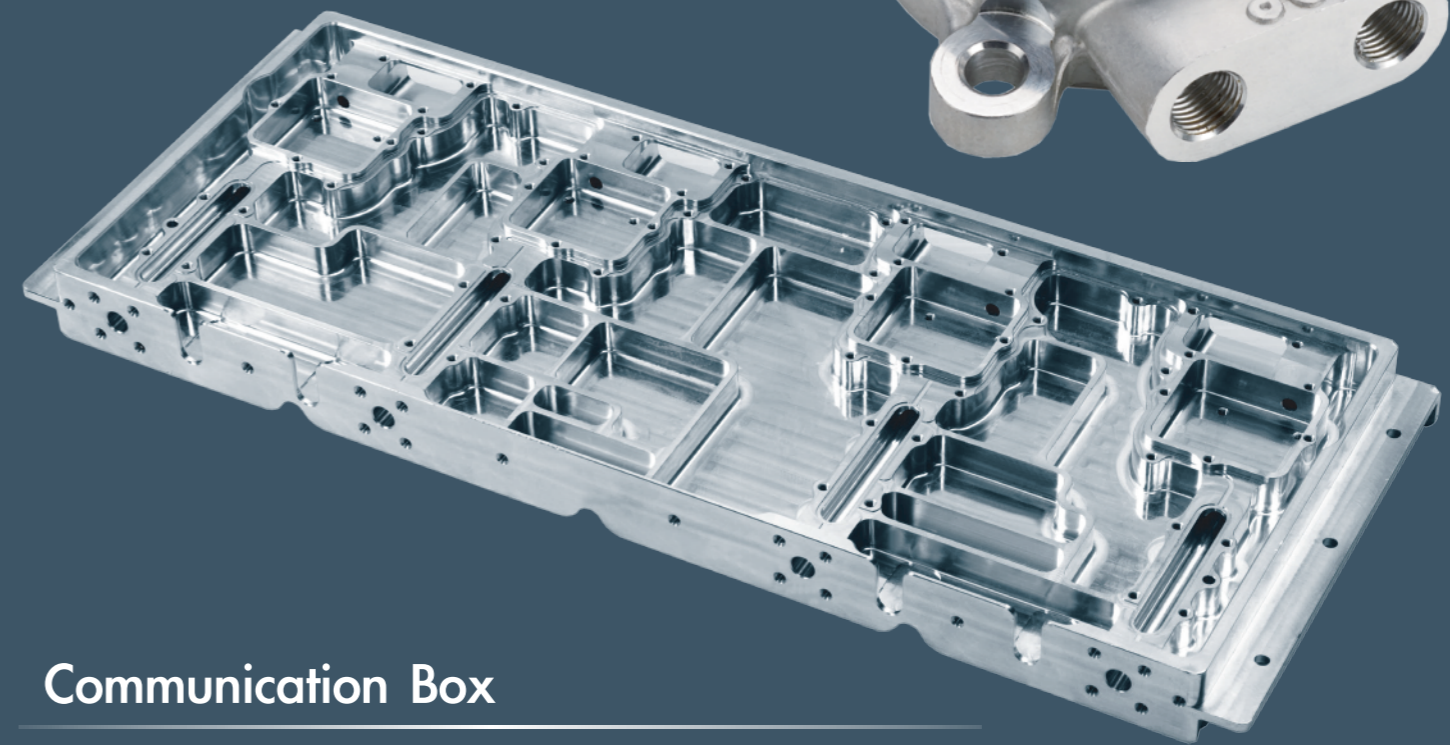
Workpiece material	Medium carbon steel (S50C)
Spindle speed	315 rpm
Feed rate	67 mm/min
Drill diameter	ø26.5
Material removal rate	37cc/min



Tapping

Workpiece material	Medium carbon steel (S50C)
Spindle speed	160 rpm
Feed rate	400 mm/min
Tapping	M20xP2.5

## Oil Distribution Block

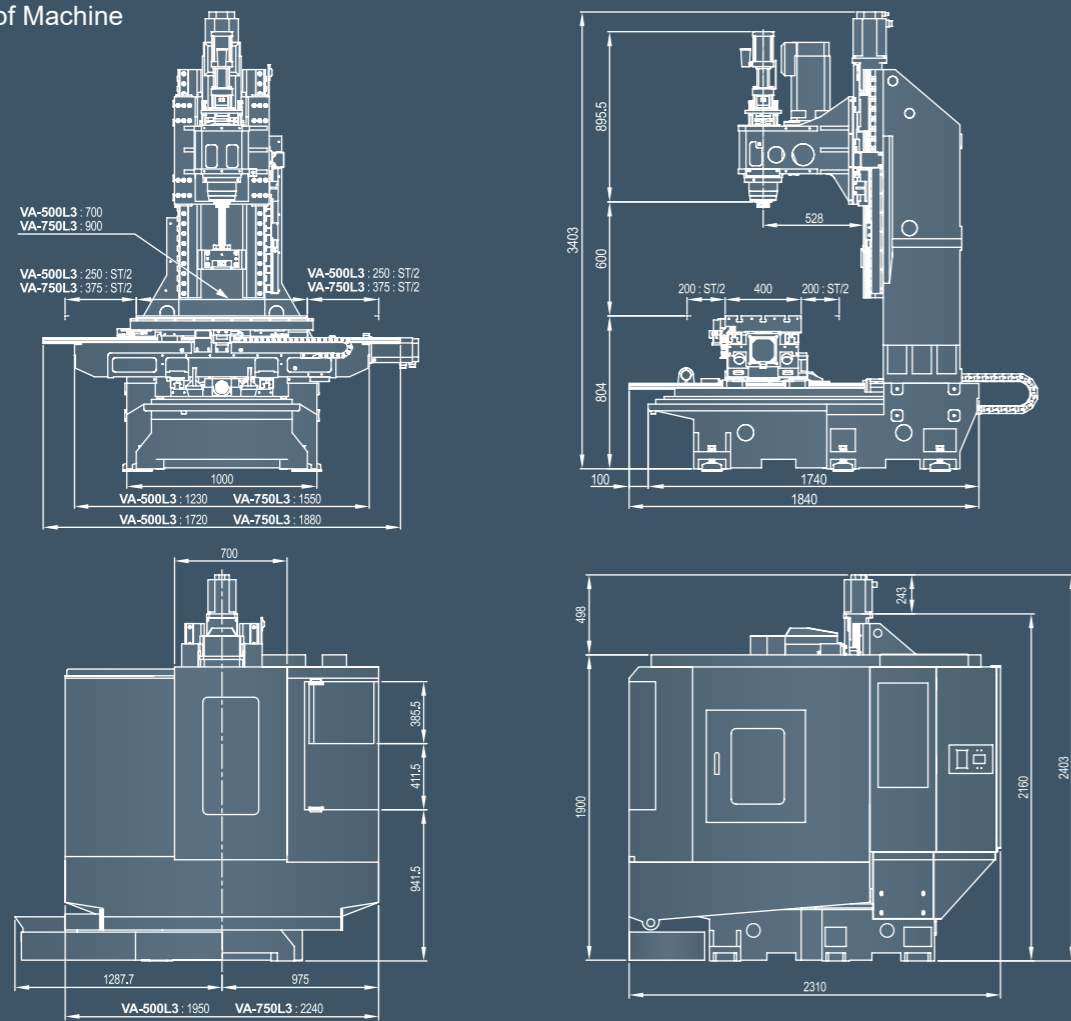


Communication Box



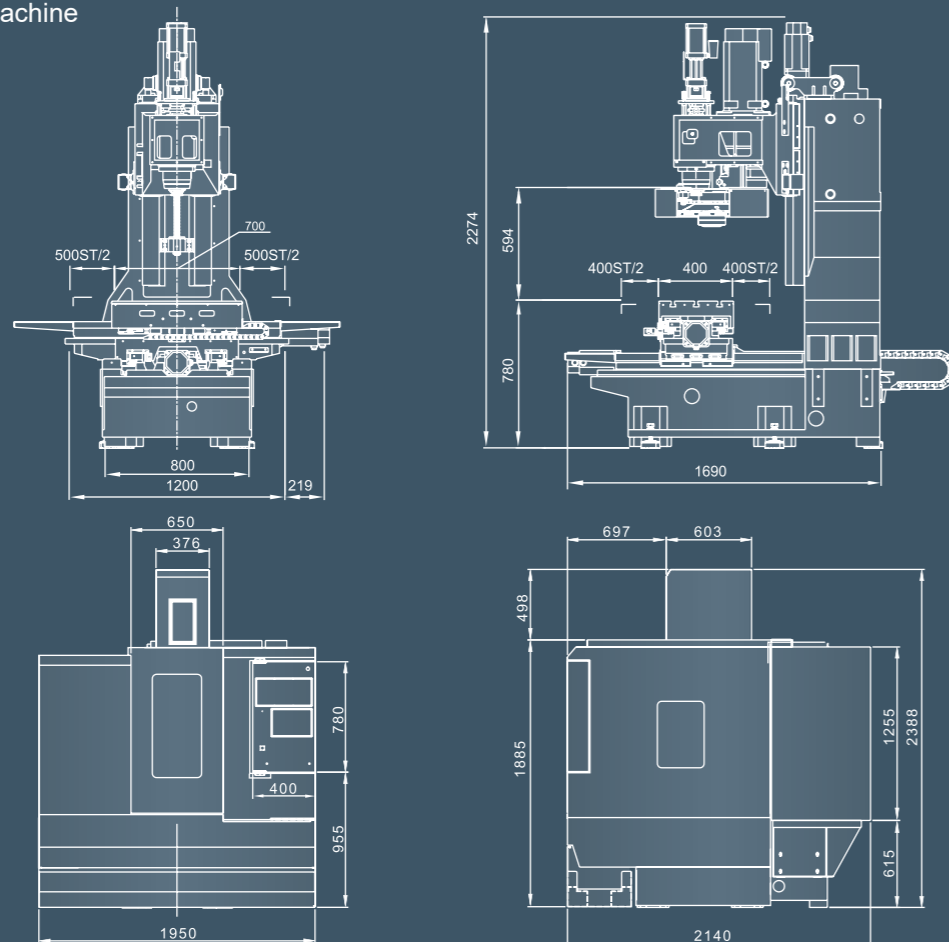
# VA-500L3 / VA-750L3

Dimensional Drawing of Machine



# VA-500

Dimensional Drawing of Machine



# Specification

Item	VA-500	VA-500L3	VA-750L3
<b>Travel</b>			
X-axis	500 mm	500 mm	750 mm
Y-axis	400 mm	400 mm	400 mm
Z-axis	450 mm	450 mm	450 mm
<b>Table</b>			
Table Dimension	700×400 mm	700×400 mm	900×400 mm
T-slot quantity	3	3	3
T-slot distance	125 mm	125 mm	125 mm
T-slot size	18 mm	18 mm	18 mm
The maximum load of working table	300 kg	300 kg	500 kg
<b>Spindle</b>			
Distance from spindle nose to table surface	120~570 mm	150~600 mm	150~600 mm
Distance from spindle center to Z-axis surface	480 mm	495 mm	495 mm
Spindle nose taper	BT40	BT40	BT40
Spindle speed	8000 rpm (Opt.10000/12000 rpm)	10000 rpm ( Opt.12000 rpm)	10000 rpm ( Opt.12000 rpm)
Spindle diameter	65 mm	60 mm	60mm
<b>Feedrate</b>			
Rapid traverse (X/Y/Z)	24/24/20 m/min	48/48/32 m/min	48/48/32 m/min
Cutting speed	8 m/min	10 m/min	10 m/min
Z-axis counterweight	NA	NA	NA
Ball screw diameter & pitch	32 mm,P8/ P8/ P8	32 mm,P16/ P16/ P12	32 mm,P16/ P16/ P12
Positioning accuracy	0.005/300 mm	0.005/300 mm	0.005/300 mm
Repeatability accuracy	± 0.003 mm	± 0.003 mm	± 0.003 mm
<b>ATC</b>			
Shank	BT 40	BT40	BT40
Amount of tools	24 T	24 T	24 T
Tool change time	Arm T-T 1.5 sec C-C 4 sec	Arm T-T 1.5 sec C-C 4 sec	Arm T-T 1.5 sec C-C 4 sec
Max. tool diameter(without gap)	80 mm	80 mm	80 mm
Max. tool diameter(with gap)	125 mm	125 mm	125 mm
Max. tool length	225 mm	225 mm	300 mm
Max. tool weight	7 kg	5 kg	7 kg

<b>Motor</b>	
Spindle motor	FANUC :5.5 / 7.5 kW 7.5 / 11 kW MITSUBISHI :7.5 / 11 kW
Feed motor X/Y/Z	X : 3.0 kW, Y: 3.0 kW,Z : 3.5 kW (MISTUBISHI)
Coolant pump motor	1 HP
Side chip flush pump	1.5 HP
<b>Other</b>	
Machine weight	3800kg      4500kg      5000kg
Machine dimension (W x D x H)	1955×2290×2390 mm      2035×2310×2410 mm      2210x2310x2410
Pressure required	6 kg/cm2      6 kg/cm2      6 kg/cm2

※ Machine specifications, accessories and appearance dimensions are subject to change without notice by CHI-FA

Standard Accessories	Optional Accessories	CONTROLLER
1. Belt type spindle VA-500:8000 rpm VA-500L3:10000 rpm VA-750L3:10000 rpm 2. 24 -tool arm type ATC system 3. Coolant system 4. Work lamp 5. RS-232transmission interface 6. Spindle air blast 7. External air blast 8. Auto power off 9. Spindle oil cooler 10.Leveling adjustment bolts and blocks 11. Tools & tool box 12. Heat exchanger for electrical cabinet 13. Fully enclosed splash guard 14 Air gun 15 Coolant gun	1. 10000/12000 rpm spindle 2.Transformer 3.Preparation for 4th axis 4.Set of 4th axis rotary table 5.Automatic tool length measurement device 6.Chain type chip conveyor & cart 7.spiral type chip conveyor & cart 8.Oil fluid separator 9.Linear scale	1.Fanuc 0I-MF 2.Mitsubishi M720 3.Siemens 828D