SOLUTION OF WORLDWIDE SALES NETWORK 全球經銷據點

綺發沿革




加工廠事業部成立	1976	Established the Metal processing department at MAR.01.
工具機事業部正式成立	1992	Established the Machine Center R&D department.
加工廠事業部連續四年砲塔式銑床月產量平均達1800套	1993	Continually 4th year of Knee-type Milling machine producti--on reached 1800 sets monthly.
於2月1日正式成立美國分公司及銷售倉庫	2003	Established the US branch office & warehouse at Feb.01.
正式成立大陸分公司上海英巨機械	2005	Established China branch as Twinhorn machinery co., Ltd.
中國製造總部河北兆發機電申請通過並正式動工	2008	Started constructing China manufacture & production headq--uarters.
與義大利跨國技術合作開發天車式及動柱式五軸加工機並正式銷售	2009	Invested in the technical cooperation with Italian 5Ax maker on Movingcolumn and Gantry types 5Ax machining centers.
中國製造總部河北兆發機電竣工，為未來大陸市場生產及銷售總部	2010	Completed the construction of China manufacture & production
成為大中華鑽攻機最大製造商	2012	Became the most biggest manufacturer of tapping center in greater China.
台灣總部建立組立四場(廠房面積4000m²)	2014	Expanded the 4th assembly plant(factory area 4000m²) in Taiwan headquarters.

Twinhorn
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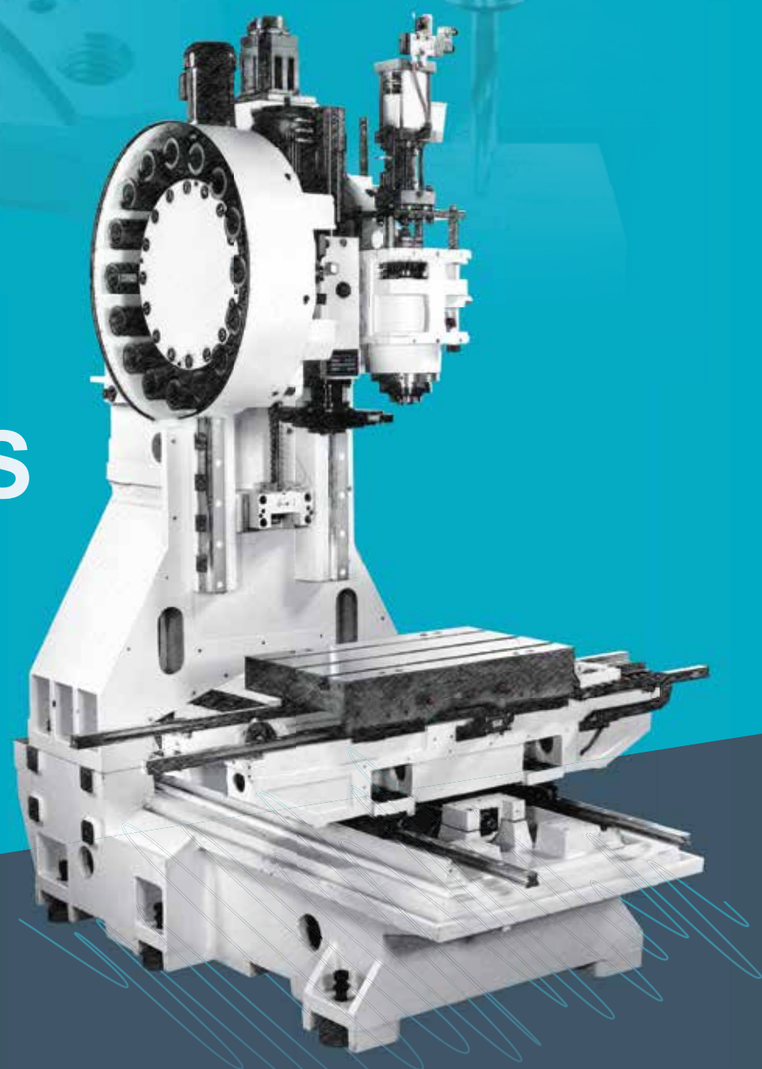
VA SERIES

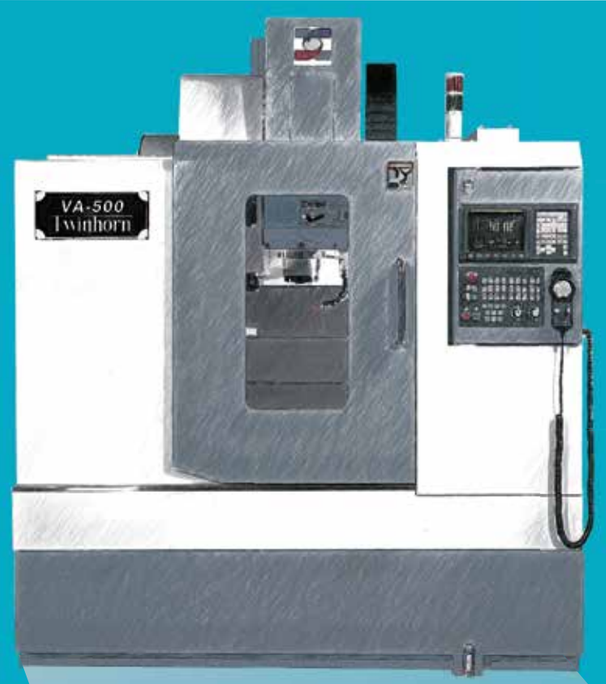


Vertical High Speed Machining Center

www.twinhorn.com.tw

Twinhorn

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

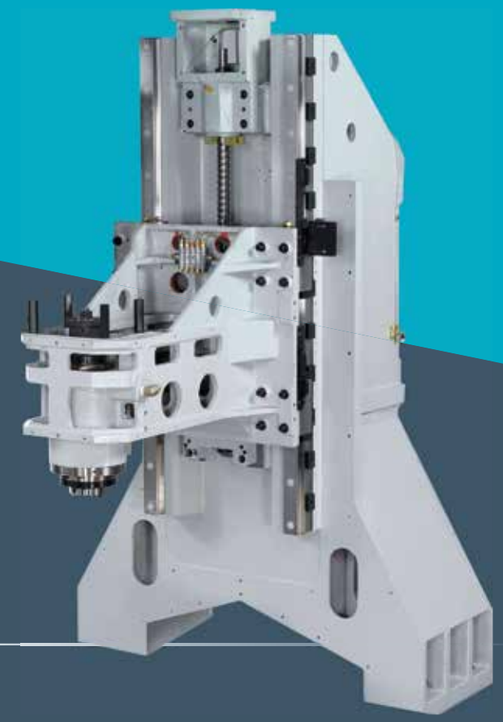
Innovative design concept in combination with high rigidity, high precision and limited foot print machine

Twinhorn

Design Of Structure

VA500L3 / VA750L3

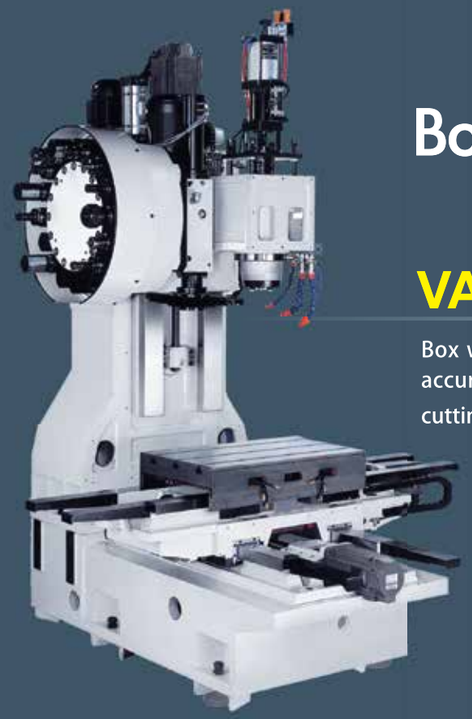
High precision linear guide ways along with great span design provide high feed rates and excellent rigidity as well as high positioning accuracy.



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

c3

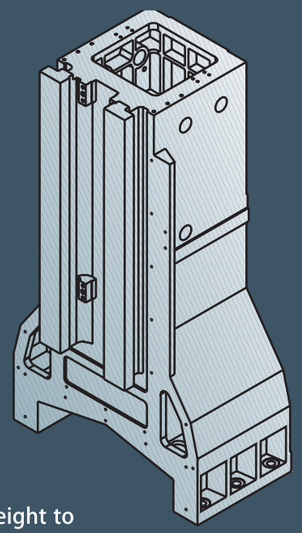
- Pretensioned class C3 ball screws on three axes.
- Three axes move on high precision linear guide ways with superior accuracy and high feed speed.
- Durable, one-piece fabricated base with oil skimmer design.



Box Way Structure

VA500

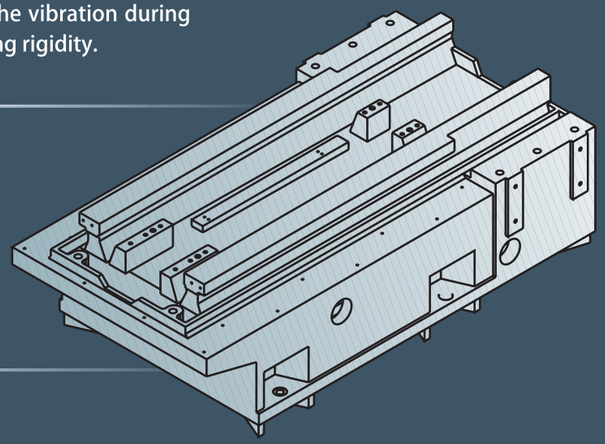
Box ways on three axes have excellent rigidity, high stability accuracy. The machine is excellent for heavy and high quality cutting.



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.

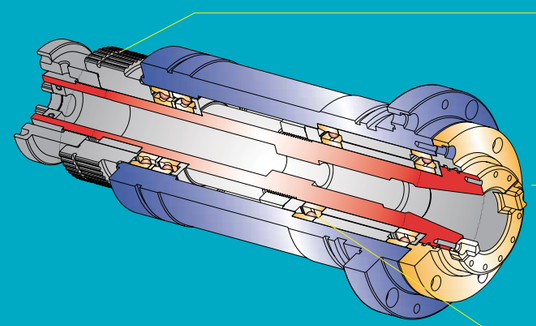


Efficiency-Rigidity

BEfficiency & Rigidity

High Precision, High Rigidity Spindle

High Precision, High Rigidity Spindle

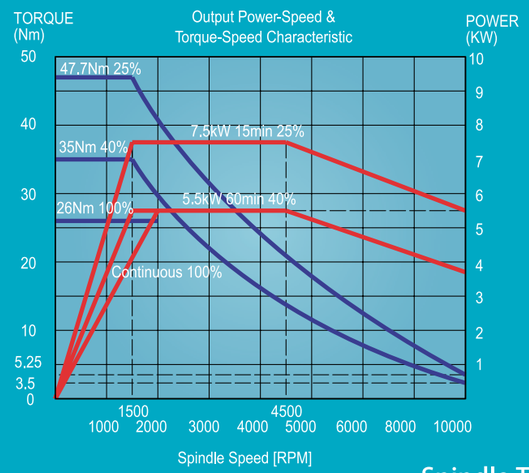


The spindle is driven by high speed quiet timing belts.

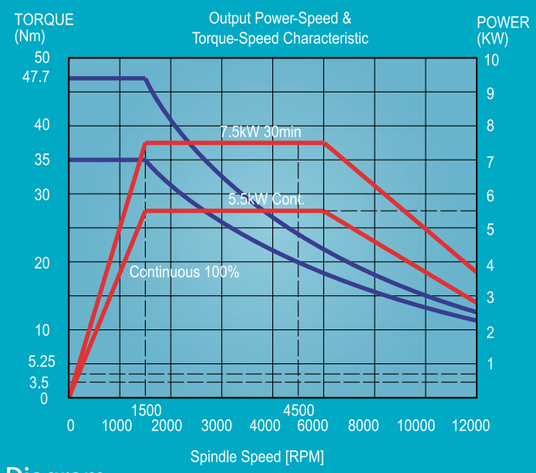
The spindle nose is a labyrinth design combined with air curtain protected to prevent impurity from entering, while ensuring the accuracy and service life.

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.

Fanuc β8i 10000 rpm



Mitsubish M70 10000 rpm



Spindle Torque Diagram

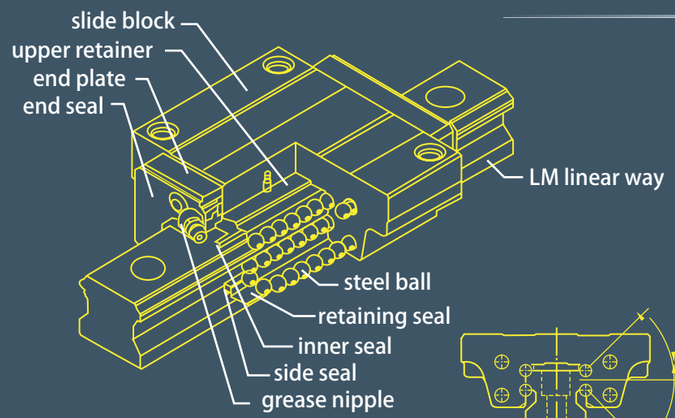
Optimal Structure Design

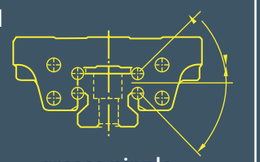
Efficiency and Positioning Accuracy

- 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 employs 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

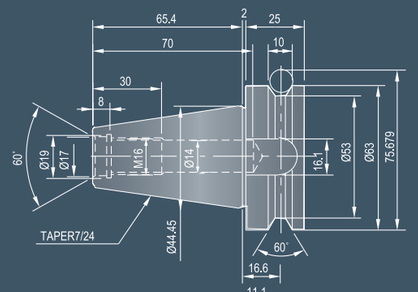
- Spindle cooling system is used to control spindle temperature rise within a stable range to ensure machining accuracy.

Chip Flushing System

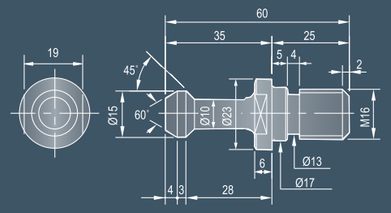
- Both sides are designed with greatly tilted sheet metal to facilitate chip remove and features no blocking problem.
- Chip flushing system provides an excellent chip removing.

Spect of Pull Stud and Tool Shank

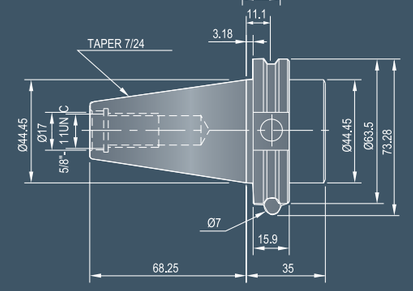
Tool shank BT40



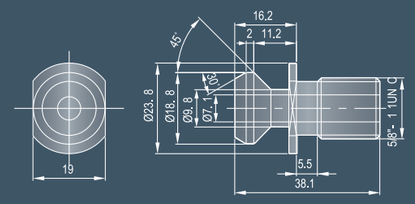
MAS-P40T-1



CAT40



ANSI CAT40



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

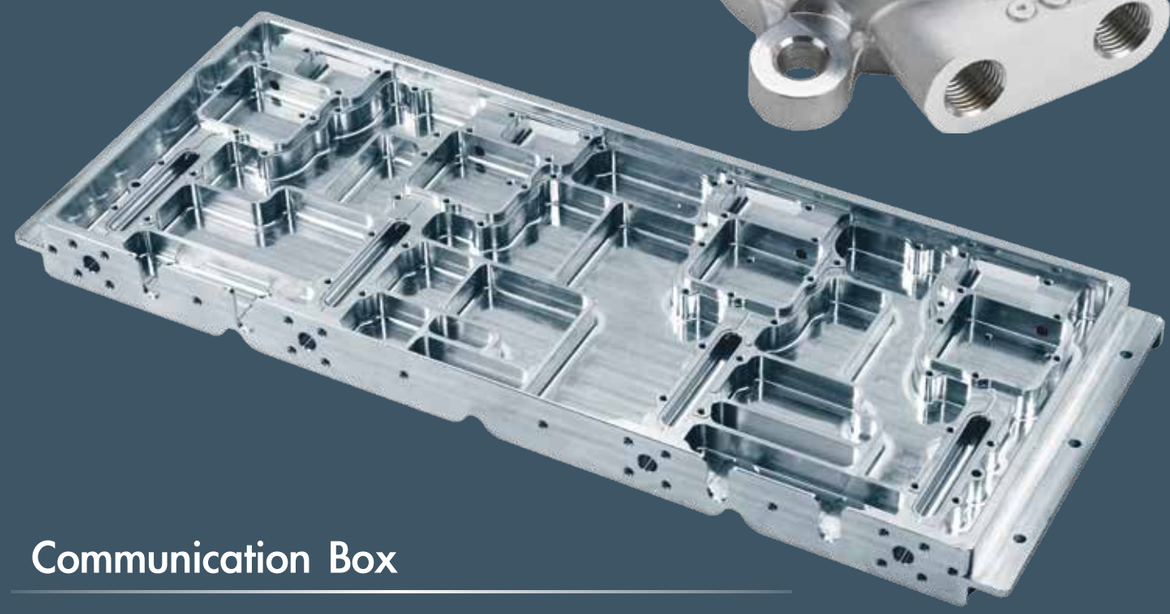
Drilling

Workpiece material	Medium carbon steel (S50C)
Spindle speed	315 rpm
Feed rate	67 mm/min
Drill diameter	⌀26.5
Material removal rate	37cc/min

Tapping

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

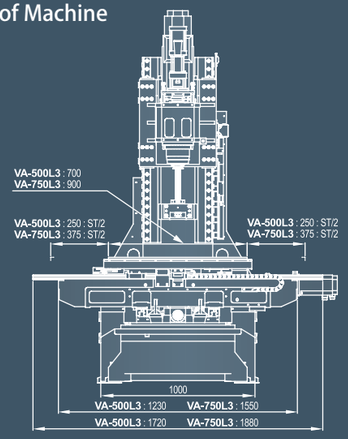
Oil Distribution Block

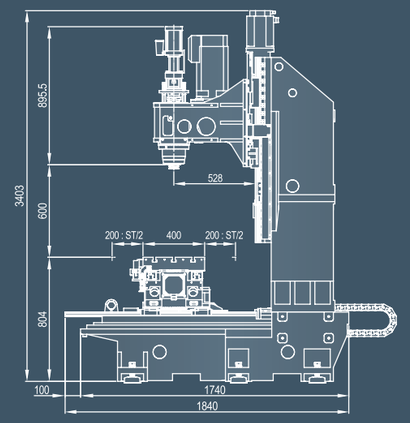


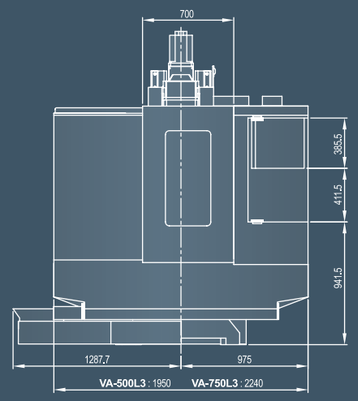
Communication Box

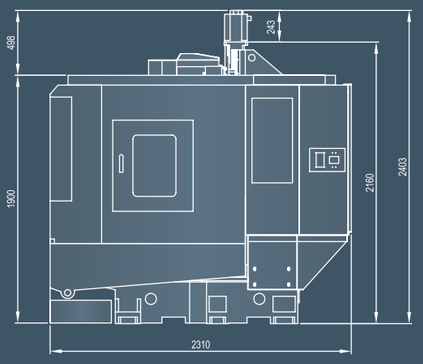
VA-500L3 / VA-750L3

Dimensional Drawing of Machine



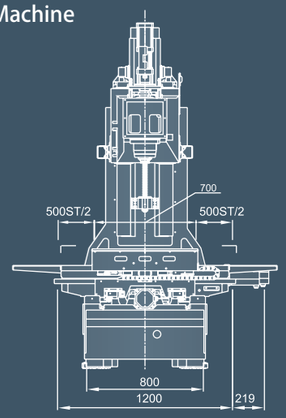


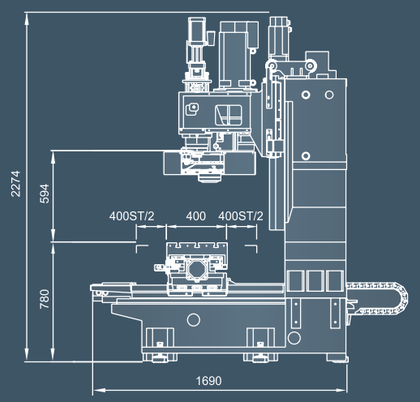


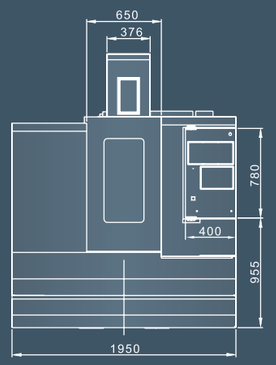


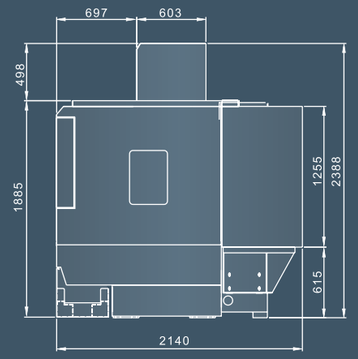
VA-500

Dimensional Drawing of Machine









Specification

Item	VA-500	VA-500L3	VA-750L3
Travel			
X-axis	500 mm	500 mm	750 mm
Y-axis	400 mm	400 mm	400 mm
Z-axis	450 mm	450 mm	450 mm
Table			
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
Spindle			
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
Feedrate			
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
ATC			
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
Motor			
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		
Other			
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

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

Optional Accessories

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

CONTROLLER

1. Fanuc 0I-MF
2. Mitsubishi M720
3. Siemens 828D

Twinhorn