

SOLUTION OF WORLDWIDE SALES NETWORK



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**



CHI-FA MACHINERY MANUFACTURER CO., LTD.  
No. 44-8, MING-CHUNG RD., SHENG-KANG DIST.,  
TAICHUNG CITY, TAIWAN 42948  
Tel:+886-4-2562-8747(Rep.) Fax:+886-4-2561-4199  
E-mail:inquiry@twinhorn.com.tw  
[www.twinhorn.com.tw](http://www.twinhorn.com.tw)

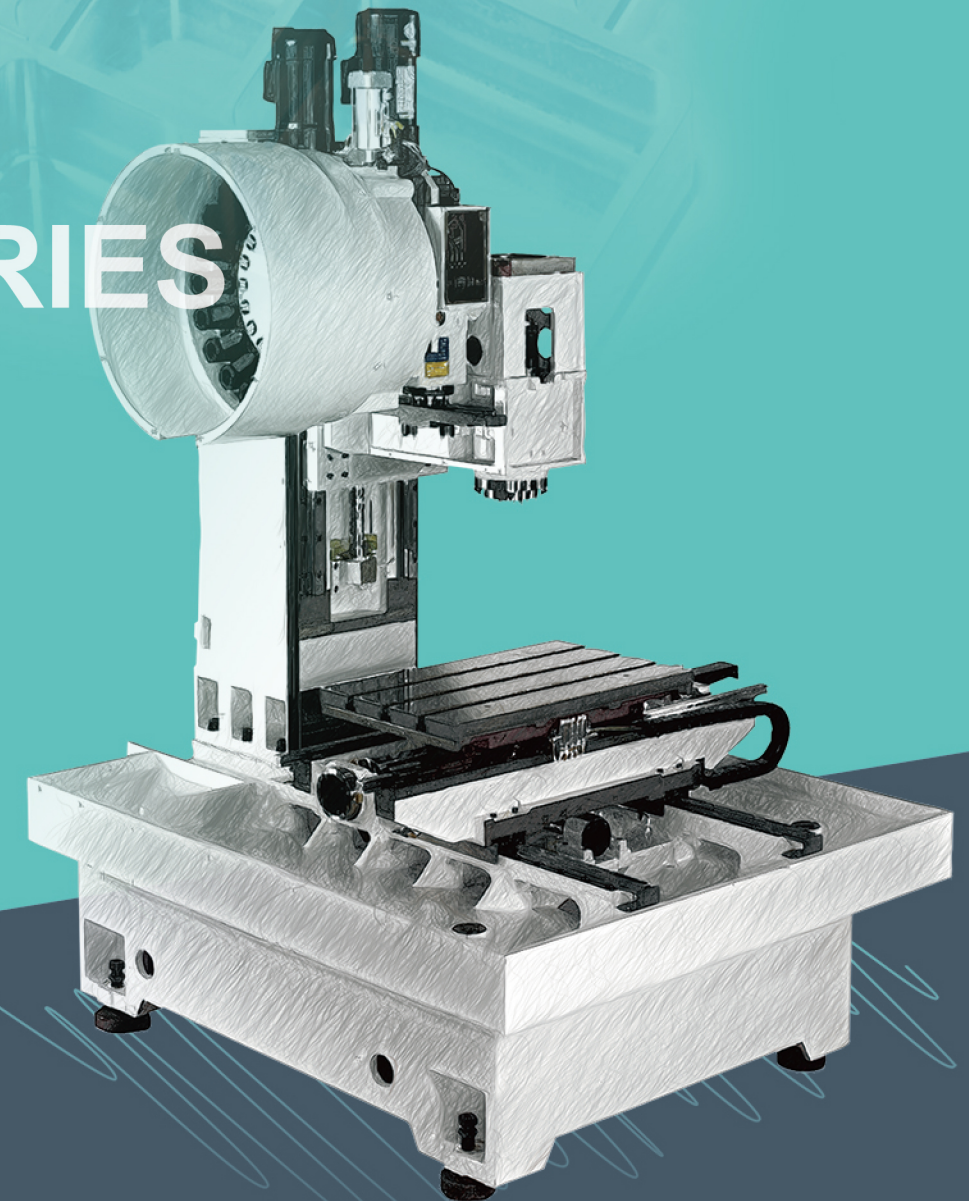
**MTT**  
TECHNOLOGY



MTT Technology S.r.l  
Via Vegri, 29-36047 Montegalda (VI), Italy  
T +39 044 4737371  
M+39 388 0553230  
E-mail:info@mtt-technology.it ; sales@mtt-technology.it  
[www.mtt-technology.it](http://www.mtt-technology.it)

Design 201811.VF Series(E1)1000P

# VF SERIES



Vertical High efficiency Machining Center

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

**Twinhorn**





Twinhorn

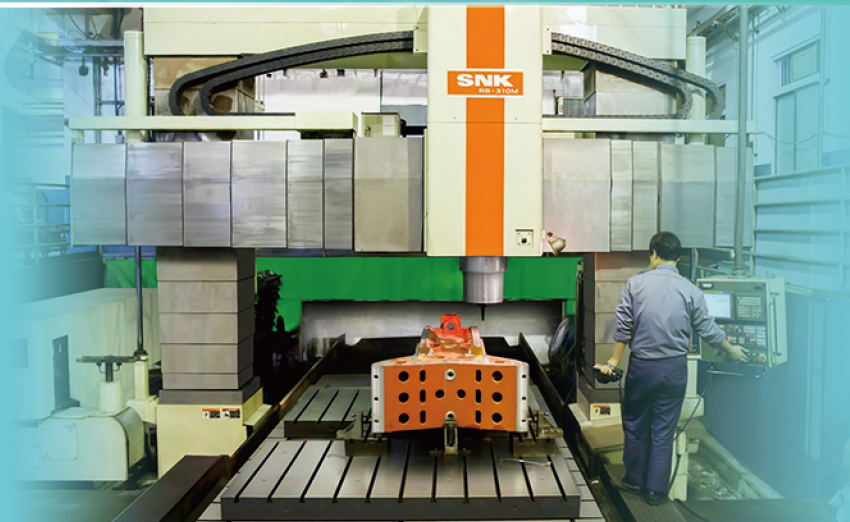
VERTICAL

## Special design

The machine structure is a foundation of the machine's accuracy. In order to ensure a long term accuracy of the machine, all structural parts are machined by SNK five sided machining center. It allows the workpiece to be machined in only one set up. After machining, a large three-dimensional coordinate measuring machine is applied for precision inspection. All structural parts are manufactured from high rigidity Meehanite cast iron, featuring maximum dampening capacity and wear-resistance.



STRUCTURE



# VF SERIES

## High Efficiency Machining Center

The machine is designed specifically for high precision and high productivity machining, and suitable for IT industry, mass production of small automotive parts and 4C components.

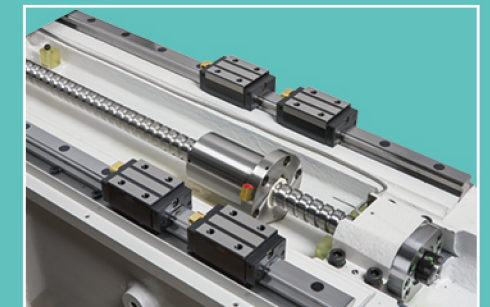
VF500/700	Direct driven	Built-in type
Spindle speed	12000,15000,20000 rpm	24000 rpm
Tool change time	T-T : 1sec C-C : 2.5 sec	
Rapid feed rate	X,Y,Z = 48 M/min	

The structure of the VF series is a symmetrical design, which does not require warm-up running. In addition, it can suppress thermal extension on the spindle head(Z-axis) to keep high accuracy for a long time of machining.

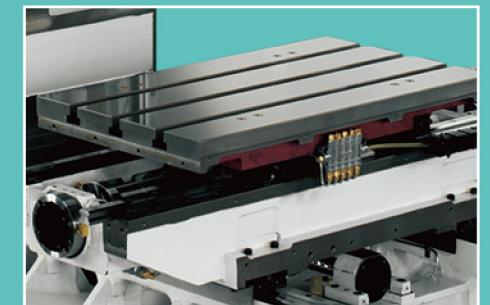
## VF structure —



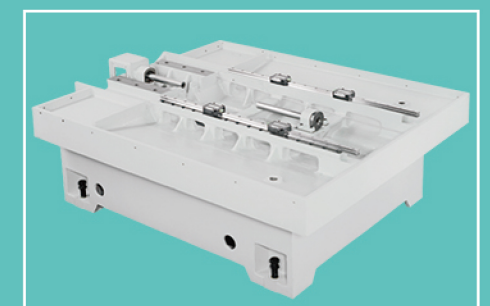
Direct drive of Z-axis motor, no counter balance weight combined with extra long slide blocks make more accurate and sensitive especially in high speed feeds and high cutting speed.



Three axes are transmitted through class C3, ø32mm precision ball screws which are directly driven by servo motors. The motor mounting base and the machine structure are one-piece fabricated, and are machined by five sided machining center in only one set up so as to ensure assembling accuracy on each axis.

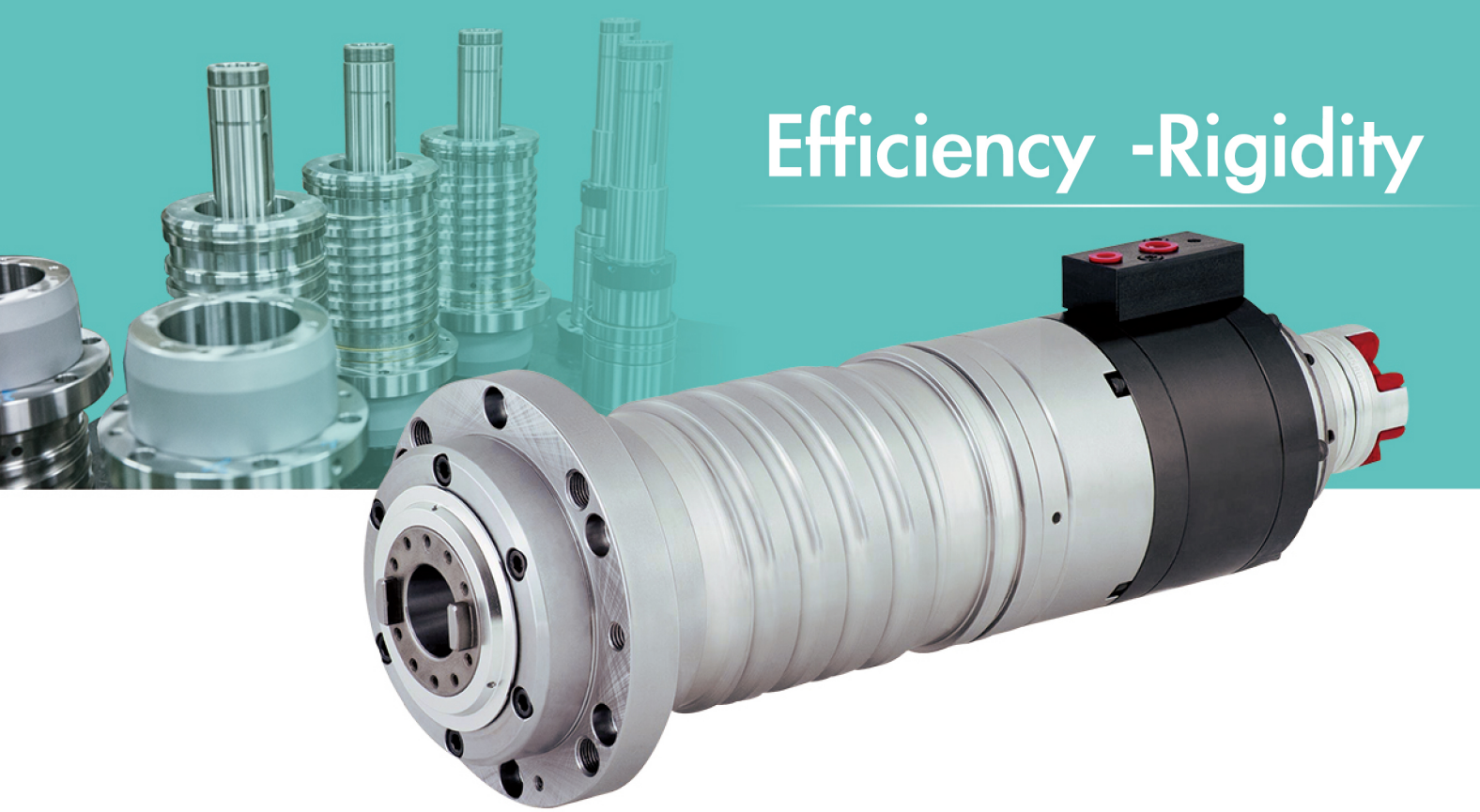


One-piece fabricated massive base is manufactured from high quality Meehanite cast iron, featuring high rigidity and high dampening capacity to ensure machining stability. Great slant rear flushing design keeps machine interior clean.





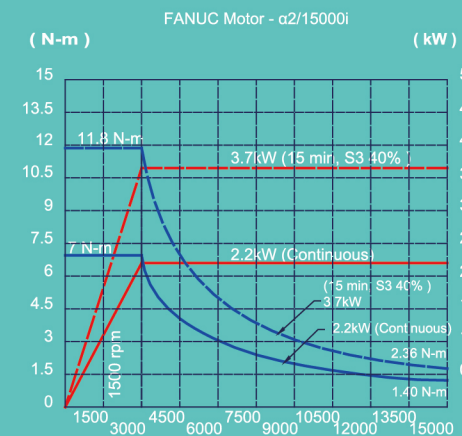
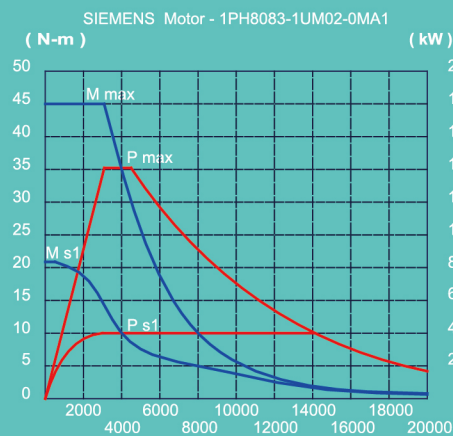
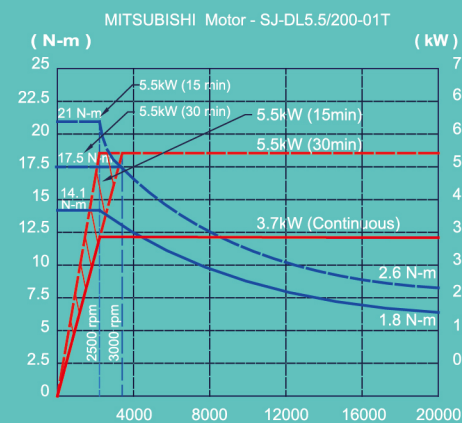
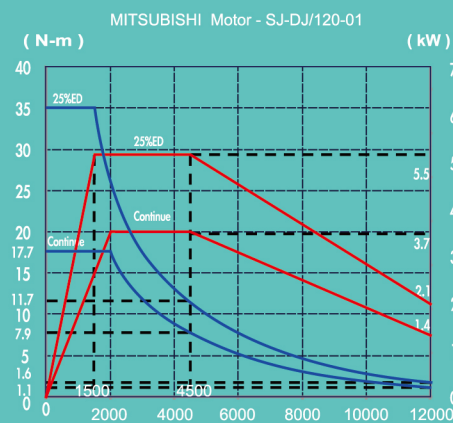
# Efficiency -Rigidity



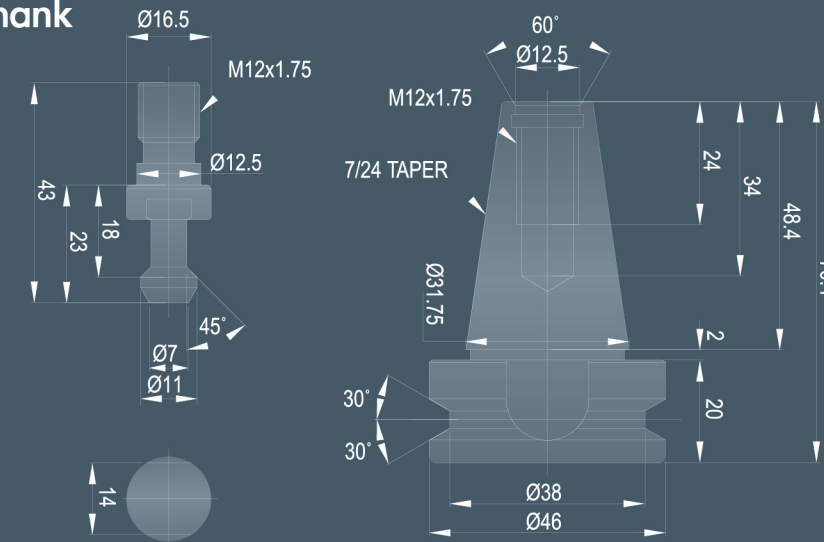
## Rigid, Precise Direct driven Spindle

- Increased diameter of spindle bearing up to 50mm dramatically upgrades cutting rigidity.
- The spindle runs in class P4 high precision angular contact ball bearing in combination with great span of support, which not only provides high running accuracy but also resists higher axial and radial forces.
- The spindle nose is design with labyrinth together with spindle air curtain to effectively prevent dusts from entering, while ensuring the spindle accuracy and service life.
- Standard spindle speed is 12,000rpm. 15,000/20,000rpm are optional. Also, 24,000rpm built-in type spindle is optional.

## Spindle Motor Power-Torque diagram



## Pull Stud & Tool Shank



Unit : mm

## Cutting Ability



### Face Milling

Material	S50C	Aluminum 6061
Spindle speed	2000 rpm	1500 rpm
Cutting feed	1000 mm/min	2600 mm/min
Cutting width	40 mm	40 mm
Cutting depth	3.5 mm	4.2 mm
Chip removal	140 cc/min	437 cc/min



### Drilling

Material	S50C	Aluminum 6061
Spindle speed	1000 rpm	650 rpm
Cutting feed	500 mm/min	300 mm/min
Drill diameter	14 mm	17.5 mm
Chip removal	77 cc/min	72 cc/min



### Tapping

Material	S50C	Aluminum 6061
Spindle speed	800 rpm	250 rpm
Cutting feed	1000 mm/min	625 mm/min
Tap Dimension	M16 × 2.0P	M16 × 2.5P

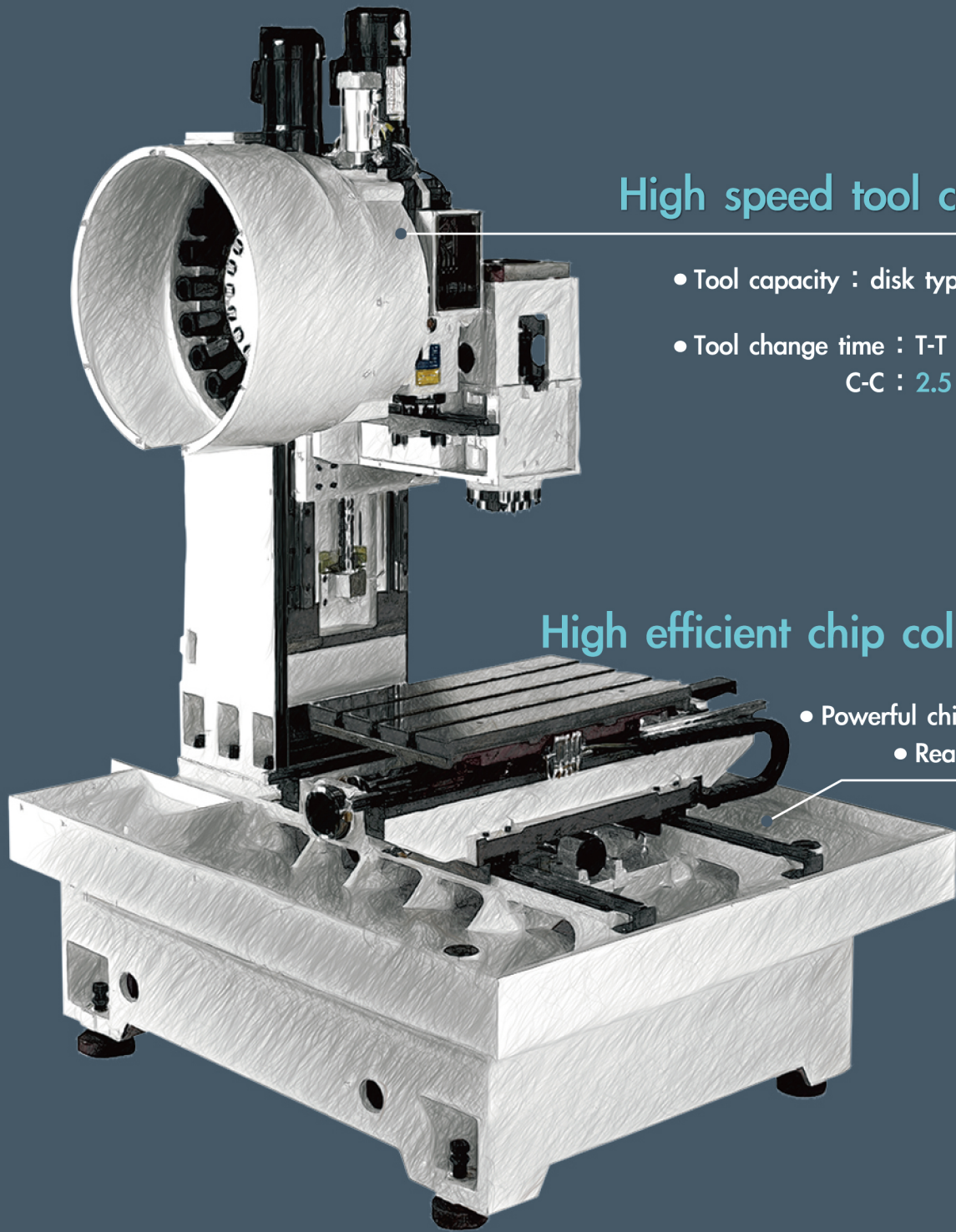


### End Milling

Material	S50C	Aluminum 6061
Spindle speed	1500 rpm	1500 rpm
Cutting feed	600 mm/min	1440 mm/min
Cutting width	4 mm	5 mm
Cutting depth	24 mm	30 mm
Chip removal	57.6 cc/min	216 cc/min



# The perfect match with structure



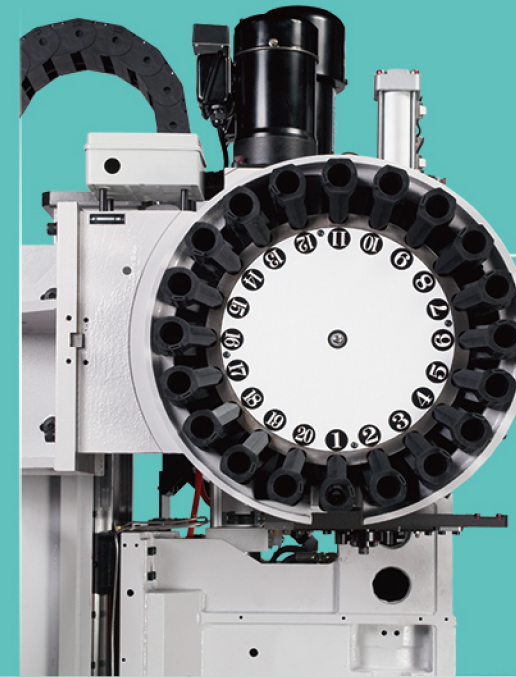
## High speed tool change system

- Tool capacity : disk type 20 tools
- Tool change time : T-T : 1 sec  
C-C : 2.5 sec

## High efficient chip collect and remove

- Powerful chip flush system
- Rear side chip collect system

The structure of the perfect, equipped with more



## Disk Type and Arm Type Tool Changer

- The fast and reliable arm type tool changer machining efficiency.
- The 20 tool magazine(standard) allows for bi-directional tool change with stable and dependable motions.



## Extra Powerful Chip Removing Design



- Three sets of independent great slant telescopic guards make chip removal easier without chip jamming problem.
- These together with one-piece fabricated great slant base combined with right and left powerful flushing devices, provide fast and efficient chip removing, ensuring a clean interior of the machine.



## User-friendly Design



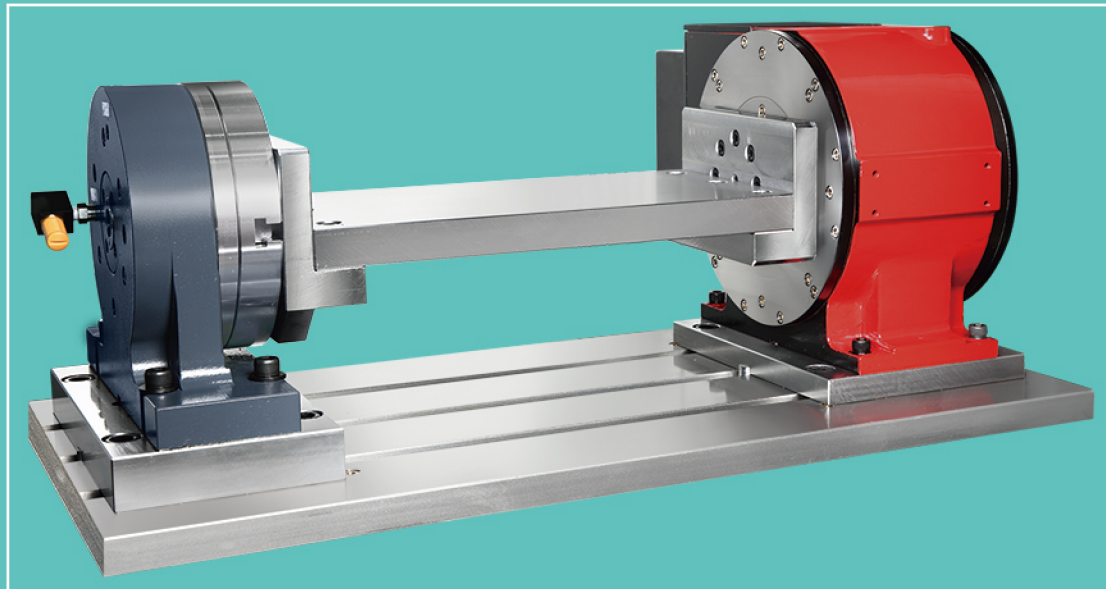
- The fast opening single door is designed to meet human engineering theorem with appropriate handle and table height. Smooth door slide and shortened door opening/closing times. An automated door opening is optional.
- Oversized operation panel in combination with movable M.P.G. handwheel make operation more convenient.

Model	VF-500	VF-700
Width	542mm	672mm





# VF series solutions



A. DD rotary table

## DD Rotary Table

High Speed, No Backlash, High Accuracy

Direct drive rotary units are incredibly quick, precise, and low-maintenance. There is no worm gear or mechanical gearing, eliminating wear and backlash error.

## Efficient Compensation Inspection System

With the use of workpiece inspection and tool length compensation system, and error can be detected during automata machining process so as to avoid repetitive defect. This not only reduces defect percentage but upgrades the overall production efficiency.

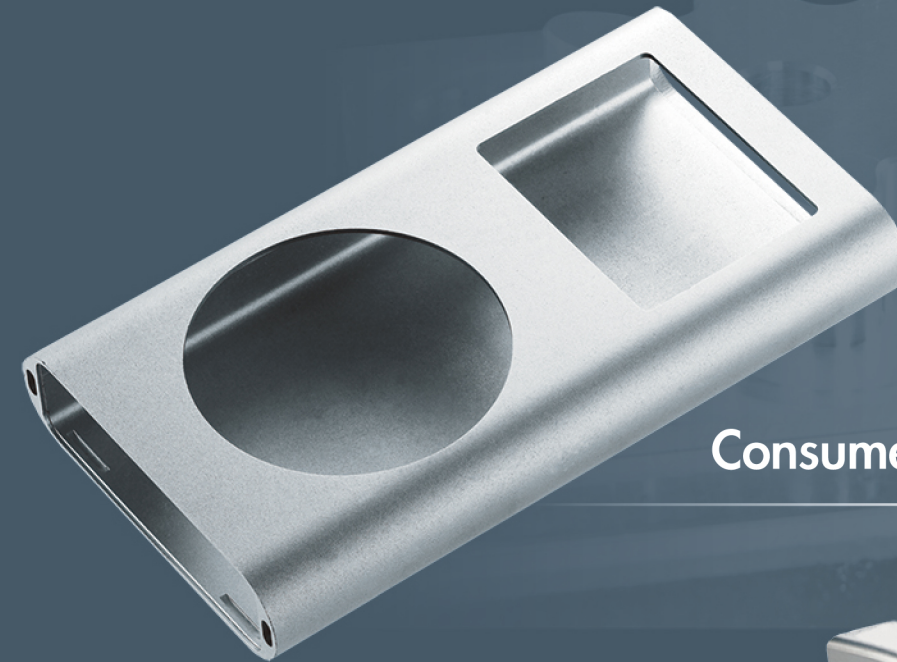


B. Auto work piece measurement device



C. Auto tool length measurement device

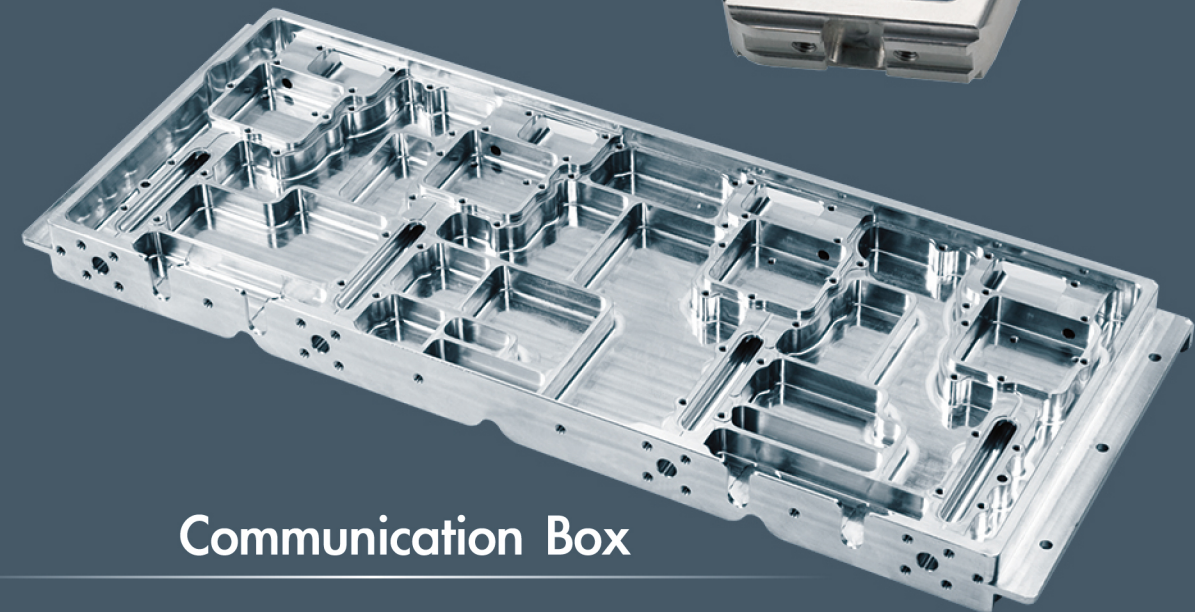
# Machining Parts



Consumer electronics shell



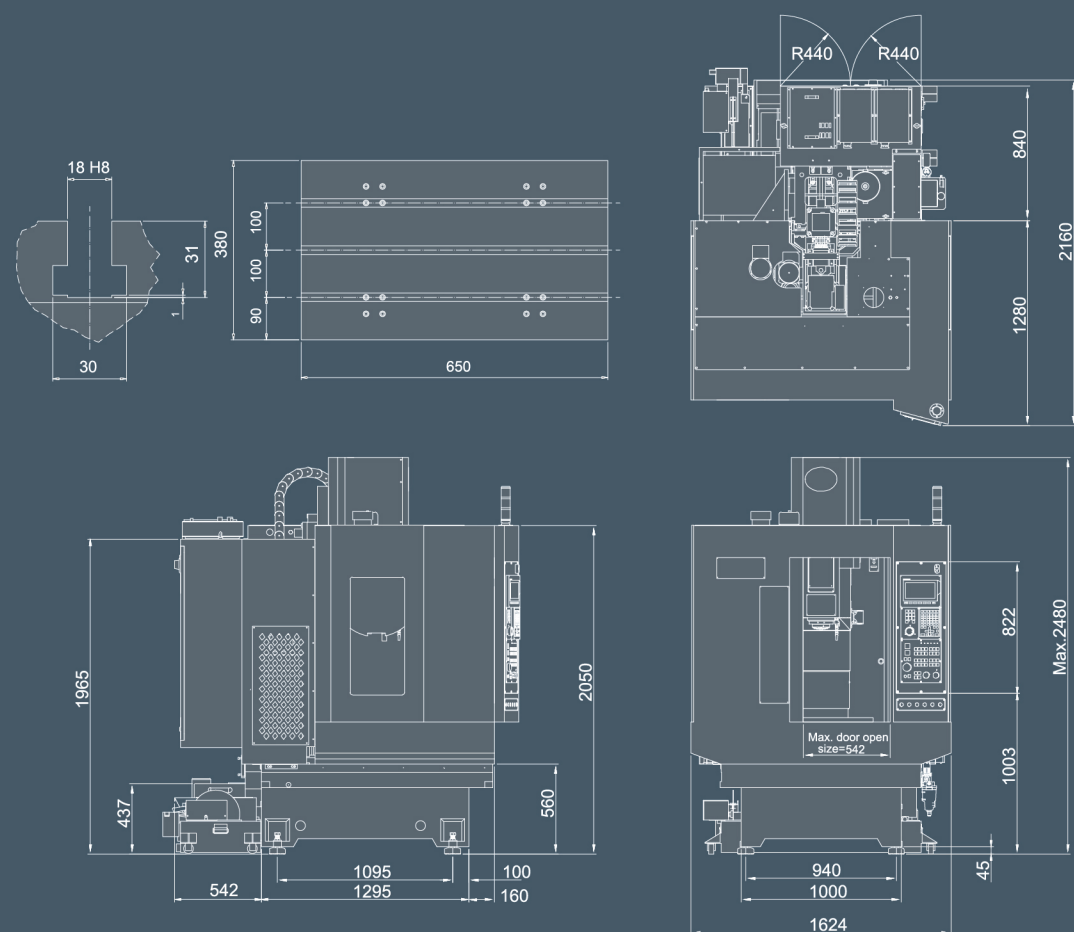
Paintball gun handle



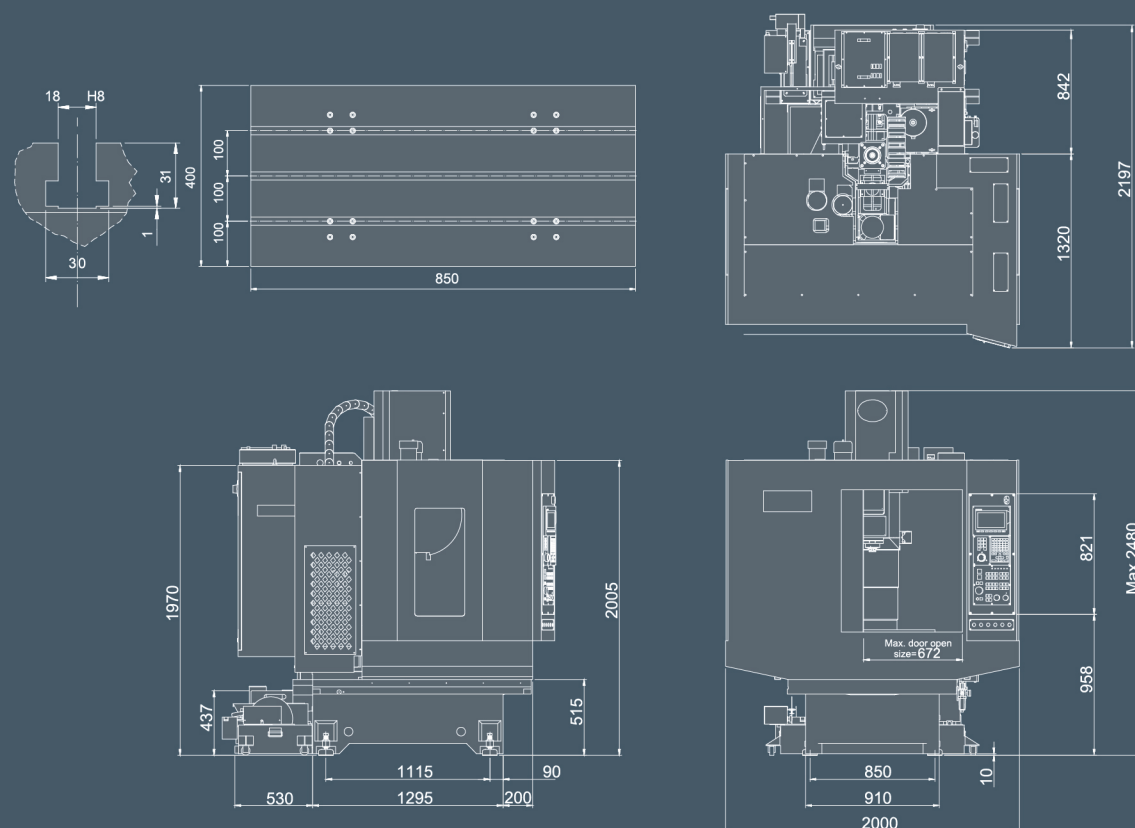
Communication Box



VF-500 Machine Dimension



VF-700 Machine Dimension



Item	VF -500	VF -700
<b>Travel</b>		
X-axis	500mm	700mm
Y-axis	380mm	400mm
Z-axis	400mm	400mm
<b>Table</b>		
table size	650 X 380mm	850 X 400mm
T-slot (number X Width X Pitch)		3 X 18mm X 100mm
Loading capacity	200kg	300kg
<b>Spindle</b>		
Spindle end to the work surface		150 - 550mm
Spindle center front distance to the fuselage	430mm	427mm
Spindle taper		7/24 No.30
Spindle speed		Direct driven spindle 12000rpm (optional 15000/20000/Built-in type 24000rpm)
Spindle diameter		50mm
<b>Axial</b>		
Fast moving speed (X/Y/Z)		48/48/48m/min (Opt. 36/36/36m/min)
Cutting speed		10m/min
Z- axis counter weight		<del>No</del>
Ballscrew diameter & pitch		32mm, <del>P16</del>
precision VDI 3441 (JIS B6338)		
Positioning		P0.014mm (±0.004/300mm)
Repeatability		PS 0.010 (±0.003mm)
<b>Atc System</b>		
Tool shank		BT30
Tool capacity		Arm type 20 tools
Tool change time		60Hz : T-T 1sec, C-C 2.5sec
Pull stud		MAS 403 P30T-1
Max. tool diameter		60mm
Max. tool diameter (no adjacent tool)		100mm
Max. tool length		200mm
Max. tool weight		3kg
<b>Motor</b>		
Spindle motor		3.7kW / 5.5kW (15min)
Axis motor (X/Y/Z)		(F) XY:1.2kW, Z:1.8kW / (M) X,Y:1.5kW, Z:2kW
Coolant pump		1HP
<b>Others</b>		
Power source		10kVA
Air supply		5~6kg/cm2 , 150L/min
Machine dimension (WxDxH)	1624 X 2160 X 2370mm	2100X 2400X 2370mm
Machine weight	2800kg	3100kg

PS. The company retains the mechanical specifications, fittings and appearance of the right to change, without prior notice

Standard Accessories		Optional Accessories	
12000rpm direct driven spindle (Mitsubishi)	Auto lubrication system	20000rpm direct driven spindle	Oil skimmer
15000rpm direct driven spindle (Fanuc.Siemens)	Fully enclosed splash guard	24000rpm built-in type spindle	Water gun / Air gun
ATC system (arm type 20T)	Auto power off (M30)	Spindle oil cooler	Transformer
Coolant system	RS 232 Interface	Coolant through spindle (built-in spindle)	CE safety norms
High efficient chip collect and remove	Heat exchanger for elec. cabinet		<b>Controller</b>
Work lamp	Warming lamp	Coolant through tool holder	Mitsubishi <del>M70</del>
Auto lubrication system	Tool box with adjustment tools	4th axis system	Fanuc <del>0iMD</del>
Warming lamp	Leveling bolts & pads	Auto tool length measurement device	Siemens 828D
Spindle air blast	Operation & maintenance manual	Auto workpiece measurement device	