

HYUNDAI WIA

Vertical Machining Center



Vertical Machining Center
VX400/500/650



VX400
VX500
VX650

World Top Class Quality

HYUNDAI WIA Machine Tools

High Speed & Productivity Vertical Machining Center

VX400/500/650

Vertical Machining Center

**Advanced Technology, Compact Design -
Next-Generation Vertical Machining Center**

The HYUNDAI-KIA Vertical Machining Center series was developed by applying the company's accumulated know-how and cutting-edge technology.

The series uses an angular contact ball bearing, a high-precision main spindle with heavy duty cutting power and minimal heat distortion, and achieves high accuracy, high rigidity and high precision.



VX400

VX500

VX650

HYUNDAI WIA

That boasts the largest working area,
and the highest speed and power

High-Quality Machining Center

- Gearless and beltless direct drive spindle (8,000 rpm) can perform heavy-duty cutting even during high-speed machining.
- The largest working area (800x600x520mm) in its class
- Energy saving type, easy to service and maintain

VX400

Table Size

1,000 × 460mm (39.4" × 18.1")

Travel (X/Y/Z)

800 × 460 × 520mm (31.5" × 18.1" × 20.5")



High-Rigidity Bed and Column

Ensures high-quality machining and high-speed high-accuracy machining with its rational distribution structure and minimization of displacement divergence due to heat and machining error. Rib forms were symmetrically placed, greatly increasing the structural rigidity with a box structure.

- Tool Changing Time T-T : 18.5sec C-C : 5.9sec
- Rapid Traverse Speed X/Y/Z : 32m/min (1,260ipm)
- Spindle RPM 8,000[12,000]rpm
- Spindle Motor Output 15/11kW(20/15HP) (30min/Cont.)

The Strongest Machine Performance, The Fastest Speed



Ultra-Precision High-Speed Spindle Structure

- Shortens acceleration and deceleration times by the use of a direct drive motor, maintenance free
- Standard spindle speed of 8,000 rpm (12,000 rpm Optional)
- Achieves high speed with spindle acceleration and deceleration time of 1.26 sec (0 → 8,000 rpm)

Increased Reliability with High-Speed, High-Accuracy Feed Drive System



- Stable, high-accuracy operation through minimization of thermal displacement and backlash by the use of a double-anchored ball screw support method in each axis
- Achieves high-accuracy feed even during lengthy operation by the use of an LM guide ways

Wide Table for Machining Work

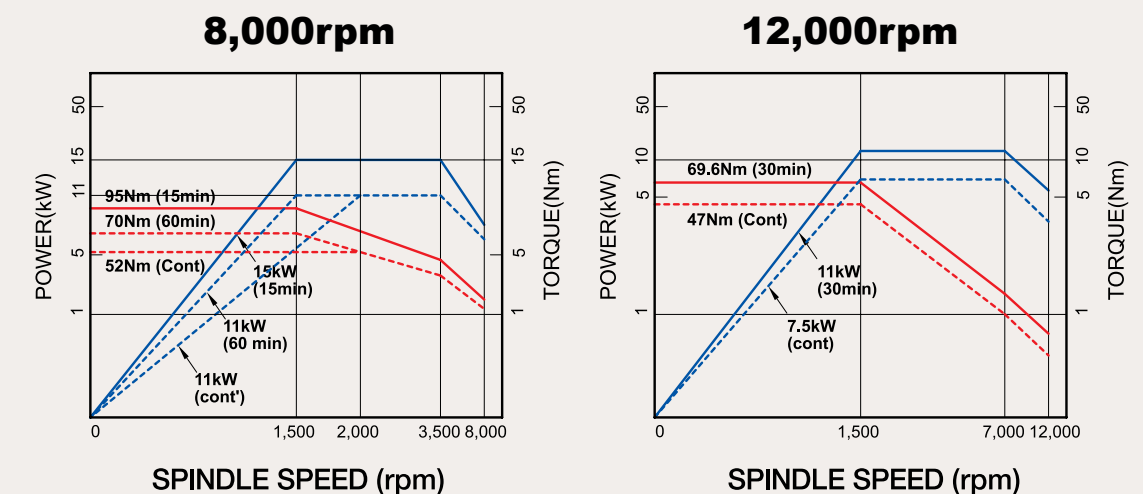
- A wide working area of 1,000 x 460 mm can accommodate installation of devices and work-pieces of a variety of sizes.
- The X-axis and Y-axis have almost no overhang, enabling the same precision machining even for work-pieces installed at the corner of the table.
- A front-opening door with a wide opening is installed, providing more accessibility during crane operation.



Superior Chip Disposal

Minimization of material process distortion and flawless chip disposal mechanism through a cover coolant chip disposal using a side flood coolant pump and work washing

Spindle Torque Diagram



Super power Vertical Machining Center

High Speed, High Accuracy, High Rigidity Mechanism

VX 500, VX500/50

Table Size

1,200 × 500mm (47.2" × 19.7")

Travel (X/Y/Z)

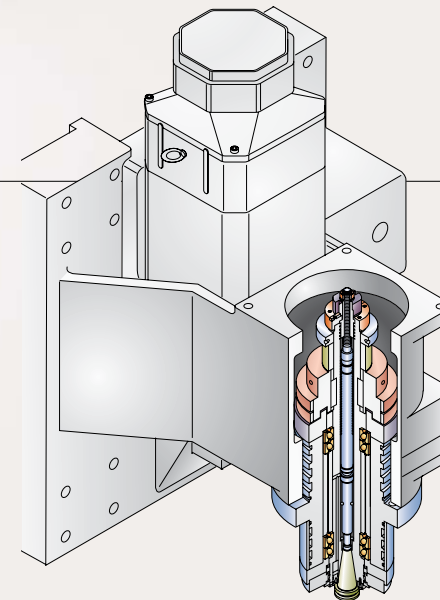
1,060 × 510 × 635mm (41.7" × 20.1" × 25")



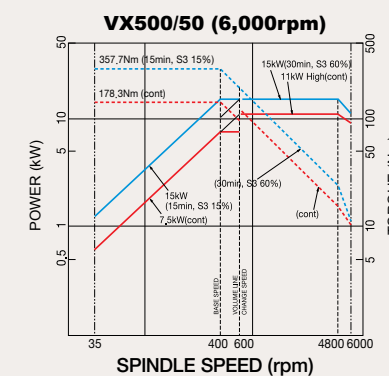
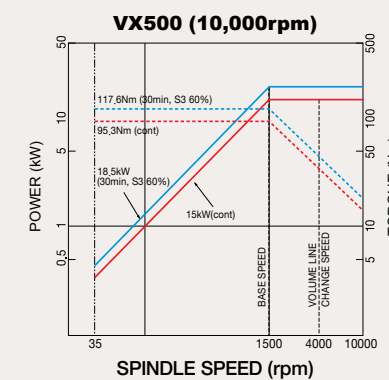
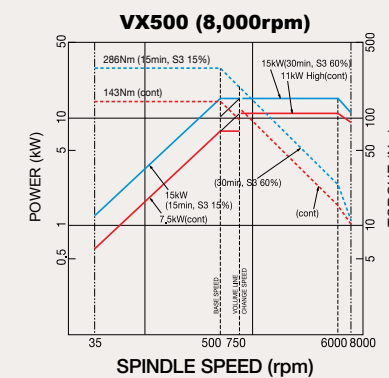
High Accuracy, Highly Rigid Machine Structure

The most optimized design bed, column, saddle, and head maintain high rigidity at any circumstance, so distortion is extremely minimized even during heavy duty cutting.

- Tool Changing Time NT #40 : T-T : 2.6 sec, C-C : 6.6 sec
NT #50 : T-T : 4 sec, C-C : 8 sec
- Rapid Traverse Speed X, Y-axis : 36m/min(1,417ipm)
Z-axis : 30m/min(1,181ipm)
- Spindle RPM NT #40 : 8,000(10,000)rpm
NT #50 : 6,000rpm
- Spindle Motor Output 15/11kW(20/15HP)
[18.5/15kW(25/20HP)] - Option



Spindle Torque Diagram



Super powerful machining center by super precision mechanism

High Power, High Precision Spindle

Accomplishment of powerful spindle with speed of 8,000RPM and motor output 15kW, and torque 286Nm

Accomplishment of Advanced Productivity

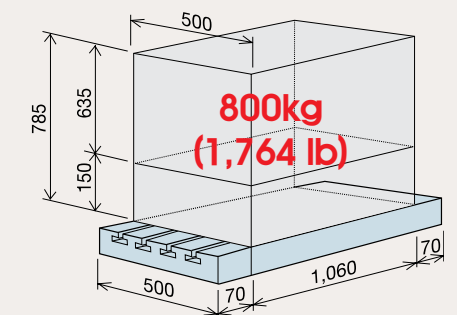
- Accomplishment of advanced productivity by minimizing non-cutting time during axis' movement, feed rate of X and Y axis are 36m/min.
- Long X-axis (1,060mm), Y-axis (510mm), and Z-axis (635mm) travels accomplished economical efficiency and excellent productivity.

Automatic Tool Changer



High precision, multi CAM type ATC

The Biggest Max.Work-Piece Size in its Class



Double Anchors Supported Ball-Screw

Precisely pretension ball-screw minimizes heat growth, also double anchors support system adds more rigidity.



High Accuracy, Highly rigid machine structure, High class Vertical Machining Center

VX 650, VX650/50

Table Size

1,600 × 650mm(63" × 25.6")

Travel(X/Y/Z)

1,400 × 660 × 635mm

(55.1" × 26" × 25")

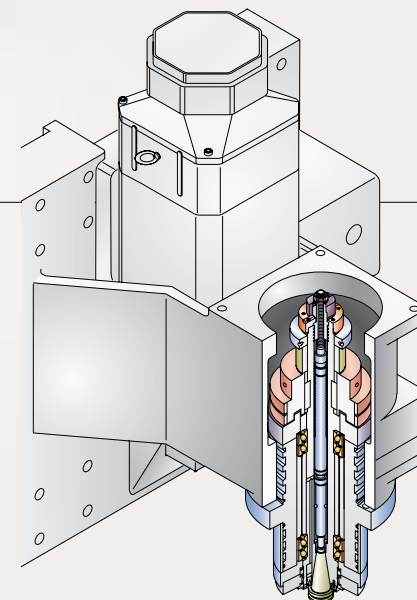


High Accuracy, Highly rigid machine structure

The most optimized design bed, column, saddle, and head maintain high rigidity at any circumstance, so distortion is extremely minimized even during heavy duty cutting.

- Tool Changing Time
- Rapid Traverse Speed
- Spindle RPM
- Spindle Motor Output (30min/Cont.)

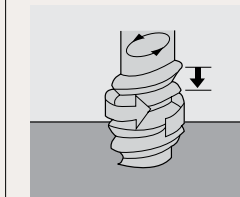
Tool to Tool : 2.6 sec Chip to Chip : 6.6 sec
X, Y-axis : 36m/min (1,417ipm)
Z-axis : 30m/min (1,181ipm)
#40 : 8,000 [10,000]rpm #50 : 6,000rpm
15/11kW (20/15HP) [18.5/15 (25/20HP)]



Accomplishment of wide range machining of **high quality, high performance and high productivity**

High Precision/Speed Spindle Structure

- Accomplishment of wide range machining by maximum 8,000RPM spindle
- Super precision, high speed angular ball bearing spindle was adopted for high speed spindle
- Properly applied bearing pretension strengthened rigidity, and reduced heat growth during spindle rotates, and extended life time of bearing.

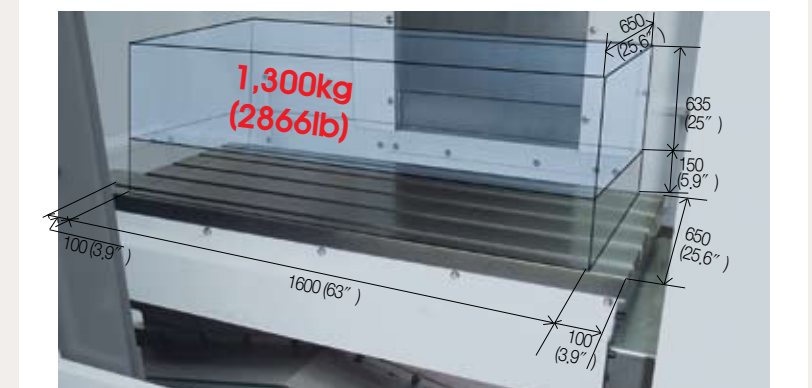


Rigid Tapping (Std.)

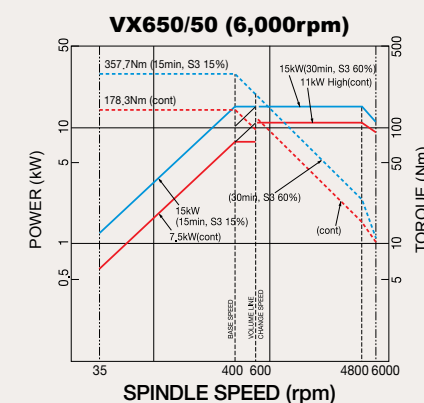
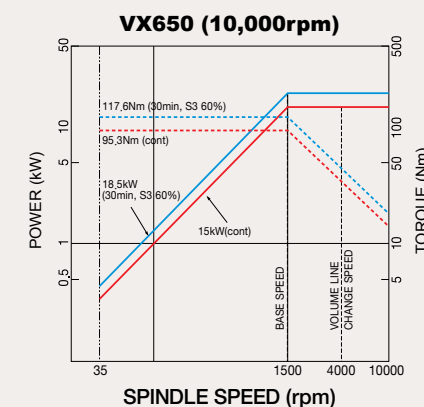
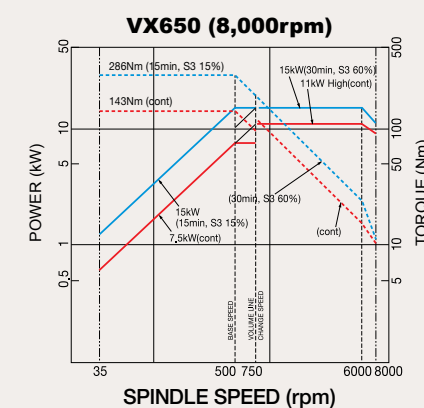
Precise and fast rigid tap function maximizes productivity, allows high machining accuracy and extends life time of tap tool.

Table For Wide Range Machining

1,600x650 wide maximum work-piece size, and 1,300kg heavy load capability makes this machine better than any other in its class.



Spindle Torque Diagram

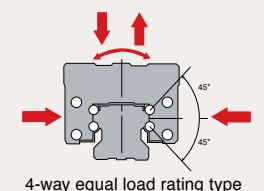


4 Slide Ways



Wide four Y-axis slide ways were adopted to eliminate accuracy deviation due to overhang, so high precision machining is possible even during heavy duty cutting.

highly rigid linear guide



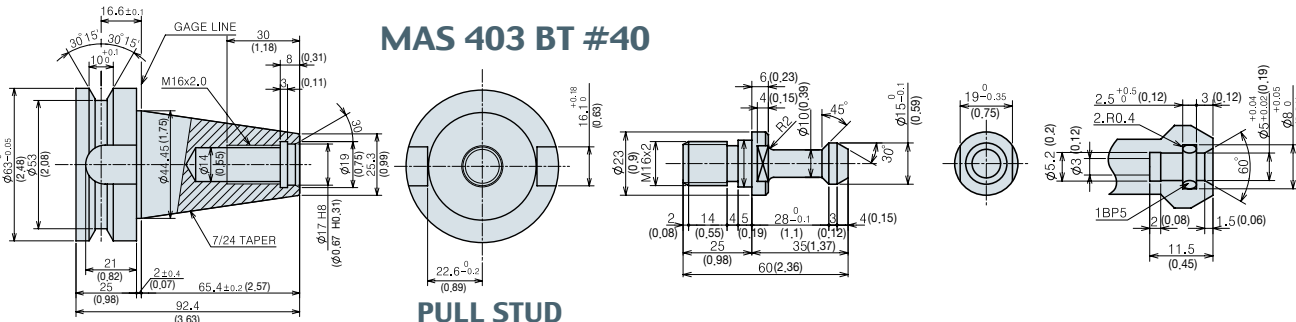
4-way equal load rating type

Specification

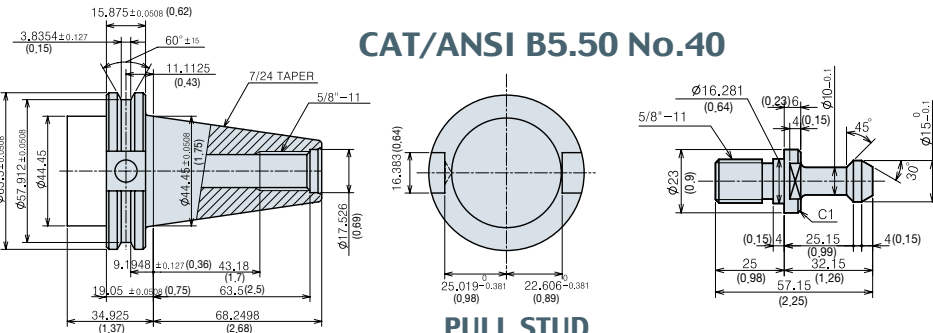
Vertical Machining Center **VX400/500/650**

Tool Shank & Pull Stud Bolt

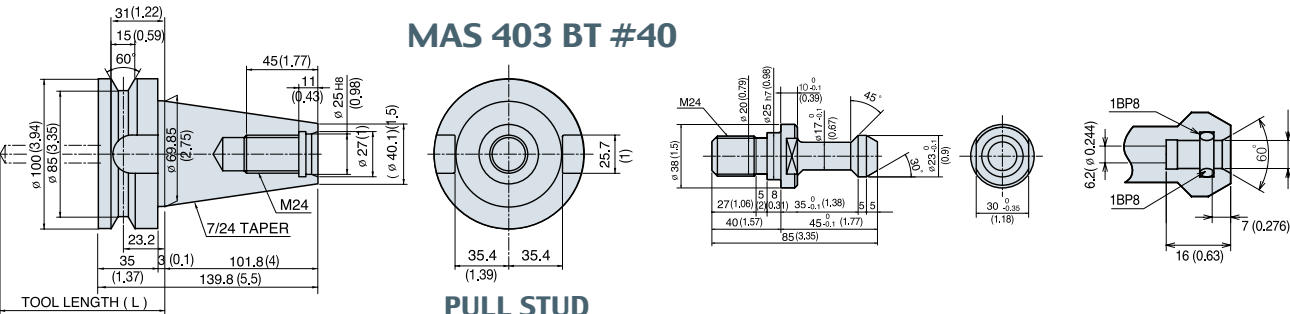
Unit : mm(in)



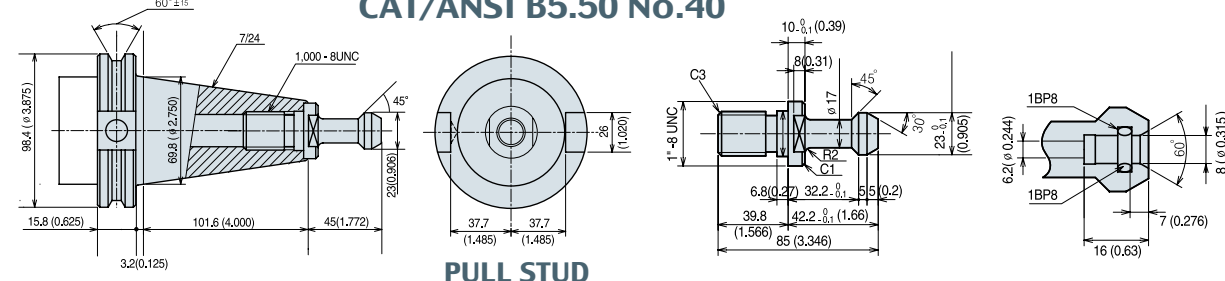
CAT/ANSI B5.50 No.40



MAS 403 BT #40



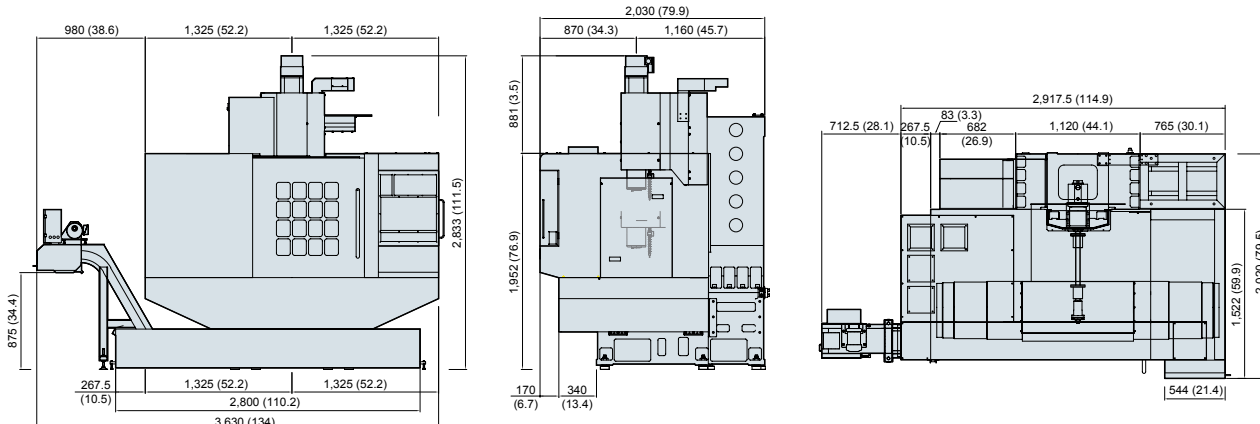
CAT/ANSI B5.50 No.40



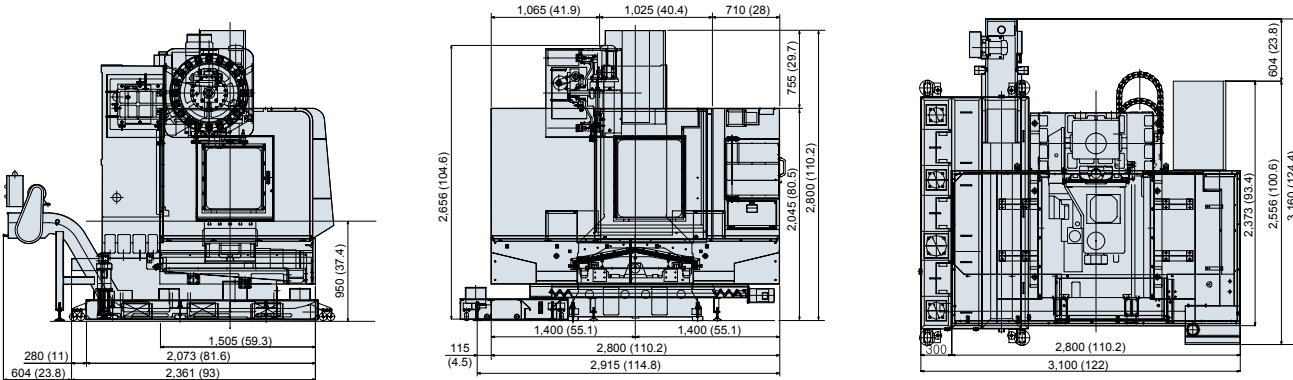
External Dimensions

Unit : mm(in)

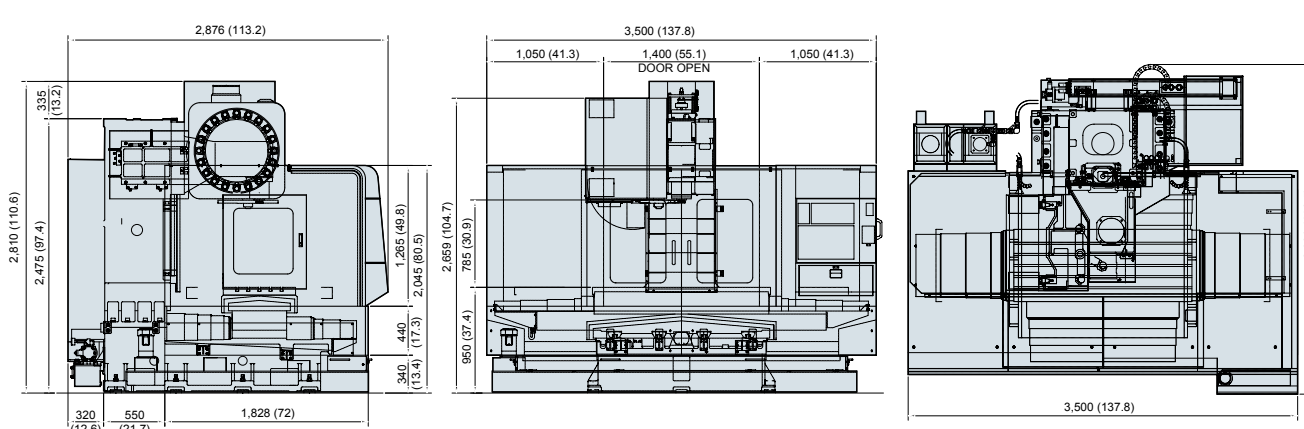
VX400



VX500



VX650

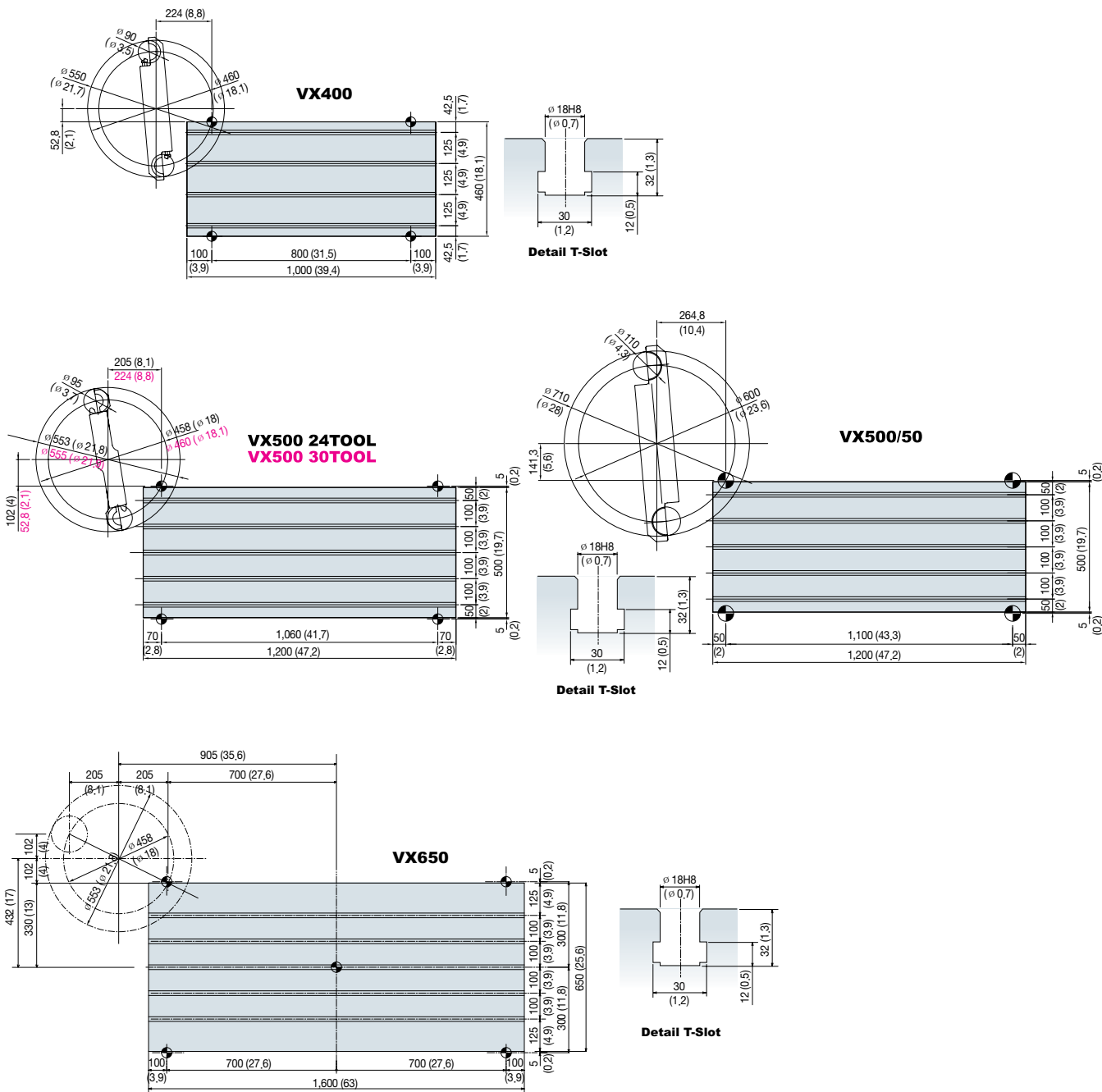


Specification

Vertical Machining Center **VX400/500/650**

Table Dimensions

Unit : mm(in)



Specification

ITEM		VX400	VX500	VX500/50	VX650	VX650/50
TABLE	Table Size	mm(in)	1,000×460 (39.4×18.1)	1,200×500 (47.2×19.7)	1,600×650 (63×25.6)	
	Maximum Load Capacity	kg(lb)	600 (1,323)	800 (1,764)	1,300 (2,866)	
FEED	X Axis	mm(in)	800 (31.5)	1,060 (41.7)	1,400 (55.1)	
	Y Axis	mm(in)	460 (18.1)	510 (20.1)	660 (26)	
	Z Axis	mm(in)	520 (20.5)	635 (25)		
	Distance from table surface to Sp. nose	mm(in)	130~650 (5.1~25.6)	150~785 (5.9~30.9)		
	Distance column to SP. center	mm(in)	475 (18.7)	615 (24.2)	765 (30.1)	
SPINDLE	Spindle Taper	-	NT #40	NT #50	NT #40	NT #50
	Spindle RPM	rpm	8,000 [12,000]	8,000 [10,000]	6,000	8,000 [10,000]
	Spindle Power Output (Max./Cont.)	kW	15/11 [11/7.5]	15/11 [18.5/15]	20/15	15/11 [18.5/15]
		HP	20/15 [15/10]	20/15 [25/20]	25/20	20/15 [25/20]
	Torque	kgf.m	9.7/7.14 [7.1/4.8]	29.2 [12]	36.5/26.8	29.2 [12]
		lbf.ft	70.4/51.4 [51.4/34.7]	211.2 [86.8]	264/193.8	211.2 [86.8]
FEED RATE	Spindle Driving Method	-	Direct Driven	Belt Driven		
	Cutting Feed Rate (X/Y/Z)	m/min(ipm)	10/10/10 (394)	15/15/15 (591)		
	Rapid Feed Rate (X/Y/Z)	m/min(ipm)	32 (1,260)	36/36/30 (1,417/1,417/1,181)		
ATC	Number of Tools	EA	24 [30]	24	24 [30]	24
	Tool Type	-	MAS403 BT#40	BT40 (CAT40)	BT50 (CAT50)	BT40 (CAT40)
	Max. Tool Dia.	(W/T Adjacent Tool) mm(in)	ø 90 (ø 3.5)	ø 110 (ø 4.3)	ø 90 (ø 3.5)	ø 110 (ø 4.3)
		(W/O Adjacent Tool) mm(in)	ø 150 (ø 5.9)	ø 200 (ø 7.9)	ø 150 (ø 5.9)	ø 200 (ø 7.9)
	Max. Tool Length	mm(in)	300 (11.8)			
	Max. Tool Weight	kg(lb)	8 (17.6)	15 (33.1)	8 (17.6)	15 (33.1)
	Tool Selection Method	-	Random			
COOLANT	Tool Change Time (T-T/C-C)	sec	1.8/5.9	2.6/6.6	4/8	2.6/6.6
	Tank Capacity	ℓ (Gal)	320 (84.5)	350 (92.5)		
POWER SOURCE	Hydraulic Tank Capacity	ℓ (Gal)	20 (5.3)	15 (4)		
	Air Consumption (5kgf/cm2) ℓ /min (gal/min)		110 (29)	125 (33)	110 (29)	
	Required Power Capacity (220V/60Hz)	KVA	30			
MACHINE SIZE	Floor Plan (L×W)	mm (in)	3,050×2,100 (120.1×8.3)	2,800×2,860 (114.6×110.2)	3,500×2,960 (137.8×116.5)	4,710×2,960 (185.4×116.5)
	Machine Height	mm(in)	2,833 (111.5)	2,815 (110.8)	3,040 (119.7)	2,800 (110.2)
	Machine Weight	kg(lb)	5,100 (11,244)	7,700 (16,975)	9,500 (20,944)	
CONTROLLER	Memory Capacity	m	1,280			
	CNC	-	FANUC Oi-MD			

❖ For quality and performance improvement, these specifications are subject to change without notice

[] : Option

VX400

Standard

- Splash Guard
- Rigid Tapping
- Door Interlock
- Coolant System
- Std. Tool Kit & Box

Option

- Cooling System
- Spindle Through Coolant (20, 30, 70 bar)
- Total Splash Guard
- External ATC (30EA)
- Chip Conveyor (Rear)
- Chip Box
- Bed Flushing Coolant
- Gun Coolant
- Jet Coolant
- Tool Broken Detection Device
- Work Measuring Device
- NC Rotary Table
- Load Meter

VX500 / VX650

Standard

- Splash Guard
- Rigid Tapping
- Door Interlock
- Coolant System
- Std. Tool Kit & Box
- Bed Flushing Coolant

Option

- Spindle 10,000 rpm
- Cooling System
- Spindle Through Coolant (20, 30, 70 bar)
- Auto Door
- Total Splash Guard
- High Column (300 mm)
- External ATC (30EA)
- Chip Conveyor (Side or Rear)
- Chip Box
- Gun Coolant
- Jet Coolant
- Oil Skimmer
- Tool Broken Detection Device
- Work Measuring Device
- NC Rotary Table
- Load Meter

Specification

Vertical Machining Center **VX400/500/650**

Controller

FANUC 0i–MD

Controller

Axis control / Display unit	
Controlled axes	3 (X/Y/Z) axes
Simultaneous controllable axes	3 axes (G00 & G01:3 axes, G02 & G03:2 axes)
Least input increment	X axis:0.001mm (0.0001°)
	Y axis:0.001mm (0.0001°)
	Z axis:0.001mm (0.0001°)
Least command increment	X axis:0.001mm (0.0001°)
	Y axis:0.001mm (0.0001°)
	Z axis:0.001mm (0.0001°)
Inch/Metric conversion	G20 / G21
Interlock	Each axis / All axes
Machine lock	All axis
Emergency stop	
Stored stroke check	1,2,3
Mirror image	
Follow-up	
Servo off	
Backlash compensation	+/- 0~9999 pulse (rapid traverse & cutting feed)
Position switch	
Stored pitch error compensation	
LCD/MDI	8.4" color LCD
Operation	
Automatic operation (memory)	
MDI operation	
Search function	sequence, program
Program restart	
Dry run	
Single block	
Buffer register	
Handle interrupt	
Feed functions	
Manual jog feed	Rapid, Jog, handle
Manual handle feed-rate	x1, x10, x100
Feed command	F code feedrate direct command
Feedrate override	0~200% (10% Unit)
Jog feed	0~5,000 mm/min (197 ipm)
Rapid traverse override	F0, F25%, F50%, F100%
Override cancel	
Rapid traverse bell-shaped acceleration/deceleration	
Auto corner override	

- Figures in inch are converted from metric values.
- Design and specifications subject to change without notice.

Program input & Interpolation functions	
Label Skip	
Control in/out	
Interpolation functions	Positioning/Linear/Circular (G00/G01/G02/G03)
Exact stop mode/Exact stop	G61 / G09
Dwell	G04, 0~9999.9999sec
Helical interpolation	
Threading/synchronous feed	
Manual reference point return	
Reference point return	G28
Reference point return check	G27
2nd Reference point return	G30
3rd, 4th Reference point return	
Program stop/end	M00, M01 / M02, M30
Tape code	EIA RS-244/ISO 840 (Automatic recognition)
Optional block skip	1 ea
Max, programmable dimensions	+/- 9999.9999 (+/- 8digits)
Program number	O4 digit
Absolute/incremental command	G90 / G91
Decimal point input	
Plane selection	G17,G18,G19
Work coordinate system setting	G52~G59
Work coordinate preset	
Additional work coordinate system	48 pairs
Manual absolute	"On" fixed
Programmable data input	G10
Sub program call	4 levels of nesting
Custom macro	
Addition to custom macro common variables	#100~#199, #500~#999
Circular interpolation	
Canned cycle	G73, G74, G76, G80~G89
Optional chamfering/corner R	
Skip function	G31
Automatic coordinate system setting	
Coordinate system rotation	
Programmable mirror image	
Single direction positioning	G60
External data input	Tool offset/message/machine zero point shift
Cylindrical interpolation	
AI advanced preview control	G5.1
Polar coordinate command	

Auxiliary / Spindle functions	
Miscellaneous function	M2 digits
Miscellaneous function lock	
Spindle speed command	S5 digits, binary output
Spindle speed override	50%~120% (10% unit)
Spindle orientation	
Rigid tapping	
Tool functions / Tool compensation	
Tool function	Max. T8 digits
Cutter compensation C	G40 ~ G42
Tool length measurement	
Tool length compensation	G43, G44, G49
Tool offset amount	+/- 6 digits
Tool offset pairs	400 pairs
Tool life management	
Data input / Output & Editing functions	
Reader/Puncher interface	RS232C
Memory card input/output	
Part program storage length	1280m (512Kbyte)
Registered programs	400 ea
Memory lock	
Back ground editing	
Extended part program editing	Copy, move, change of NC program
Setting, display, diagnosis	
Self-diagnosis function	
History display	Alarm & operator message
Help function	
Run hour/Parts count display	
Actual cutting feedrate display	
Spindle/Servo setting screen	
Multi-language display	
Erase LCD screen display	Screen saver

Option	
Additional 1 Axis	
Manual Guide i	With 10.4" color LCD
Dynamic graphic display	
Optional block skip add	9 ea (Application can be limited)
AI contour control (AICC)	
Data server	
FAST Ethernet	
DNC operation	



Head Office



Namsan Plant



Jungdong Plant



Banwol Plant



Gwangju Plant



FA Plant



Posung Plant



Seosan Plant



China Plant

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