

XV Series

HIGH PERFORMANCE VERTICAL MACHINING CENTER

YCM
XV1020A



YCM FANUC

MXP-100FA

ACTUAL POSITION (ABSOLUTE) 04882 N04882

X	20.000
Y	10.000
Z	10.000

64



HIGH PERFORMANCE VERTICAL MACHINING CENTER

at an **Affordable Price**

The XV series is built with state-of-the-art technology in mind and packed with features at price you can afford. With all the features loaded on the new XV series, it will help diversify your machining capabilities and keep your manufacturing costs down. It will be one of the most valuable investments you've ever made.

FEATURES

- Powerful & unique IDD spindle
- AC digital servo & spindle drives
- 10,000rpm max. spindle speed
- AICC with 40 blocks look ahead
- Servo motors with absolute encoder
- High speed rigid tapping
- Custom macro B
- Tool path graphics
- Helical interpolation & 1,280 meters of memory
- 8.4" TFT color display
- PCMCIA slot for flash memory & modem card
- Handheld remote manual pulse generator
- RS-232C interface
- High speed swing-arm ATC system
- Random access & bi-directional tool magazine
- THK linear guideways
- Servo motors directly coupled to ball screws
- Pre-tensioned ball screws
- Handheld coolant & air gun
- Spindle air seal
- Cutting air blast
- Lubrication system
- Heat exchanger for electrical cabinet
- High efficiency coolant equipment system
- Oil skimmer
- Rugged MEEHANITE® castings

XV1020A



■ XV560A / XV1020A / XV1250A ACCURACY			
Standard	ISO 10791-4		JIS B 6338 (1985)
Tolerances			
Axial Travel	Full Length		—
Positioning A	0.010mm (0.00039")	0.003/300mm (0.00012"/12")	
Repeatability R	0.007mm (0.00028")	±0.002mm (±0.00008")	

VDI/DGQ3441 is equivalent to A of ISO10791-4, and PS is equivalent to R.
All values shown above are measured for machine in good air conditioned environments.

Unique IDD Spindle Design

Isolated Direct Drive

1 Direct Coupling

The spindle motor is directly coupled to the spindle. This unique IDD spindle design successfully reduces noises, backlash, and vibration which are found normally from the spindles driven by belt or gears.

2 Powerful Spindle Motor

The spindle is driven by FANUC high torque Vector Drive AC spindle motor.

3 Symmetrical Headstock

The wall of the headstock is symmetrically designed, which allows the entire headstock to homogeneously absorb the thermal expansion and avoids thermal deformation.

4 Unclamping Cushion

Unclamping cushion protects the spindle bearings from the tool unclamping force, which extends the spindle life.

5 Higher Precision Spindle Encoding Feedback

CNC control receives the feedback of spindle speed which can ensure the best performance of rigid tapping.

6 Larger Spindle Diameter

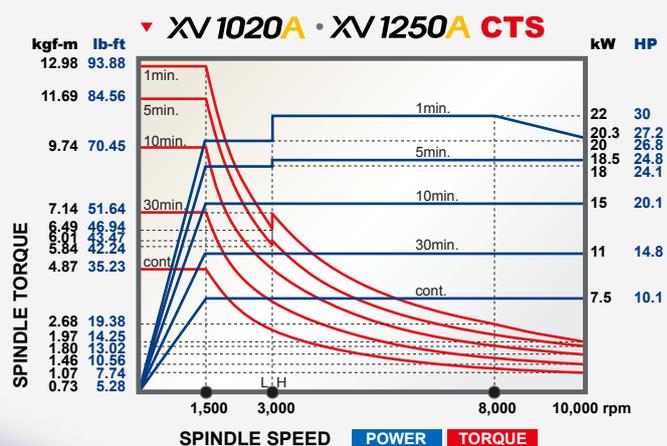
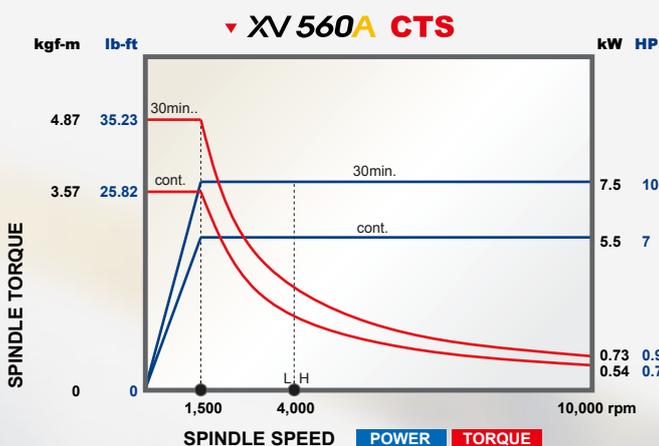
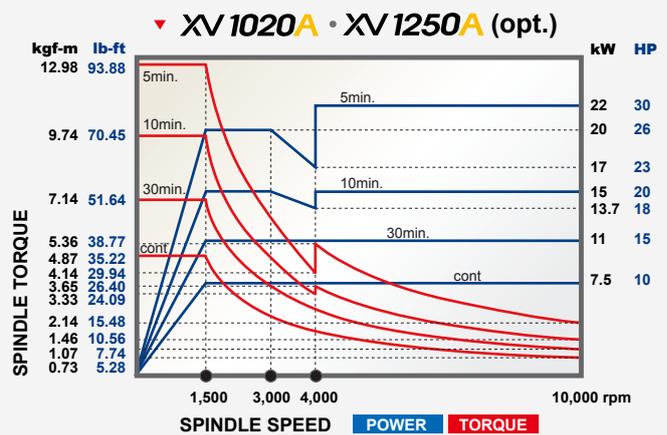
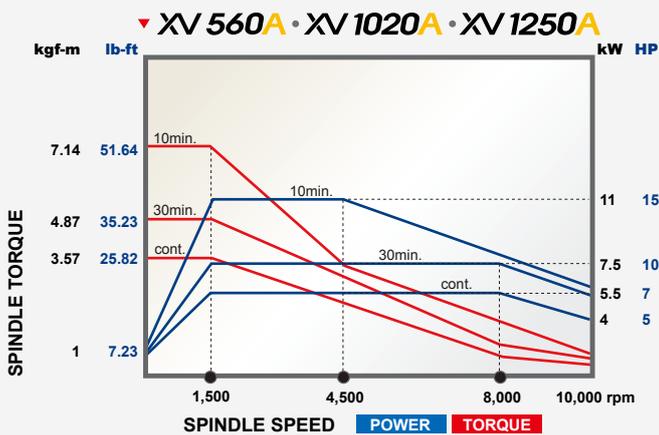
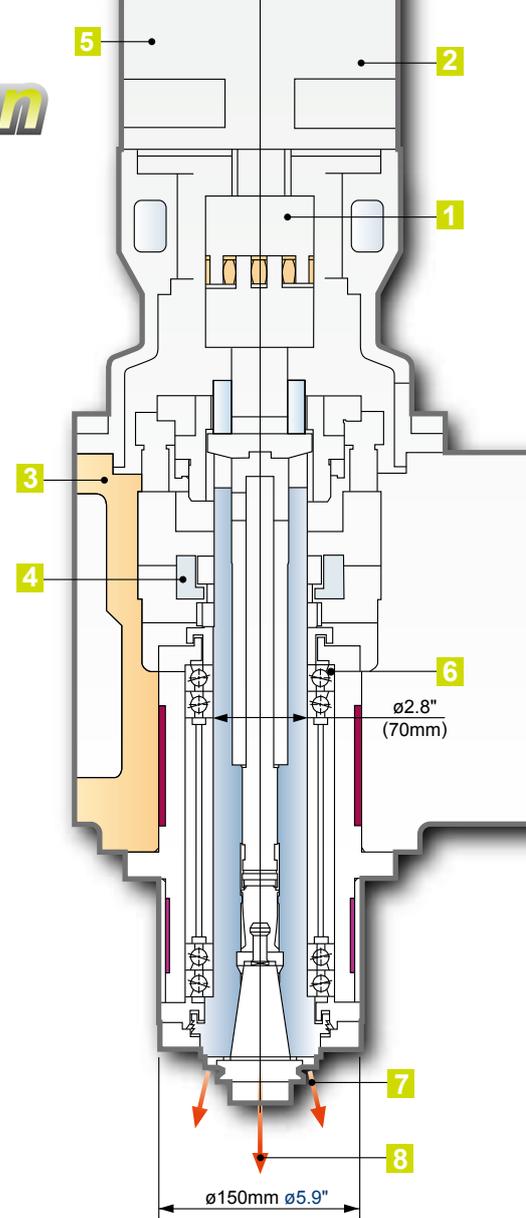
To enhance spindle cutting rigidity, this machine offers large spindle diameter of 70mm and up to 12mm thickness of spindle wall.

7 Spindle Air Curtain

Newly developed technology with positive air flow prevents the spindle bearings from being contaminated by coolant mist and fine chips during high speed cutting.

8 Spindle Air Blast

Every time the machine changes its tool, the standard accessory of spindle air blast will automatically clean the spindle taper.



□ Exceptional Accuracy

- The XV series is built to handle the tight-tolerance work on a 24/7 basis. This is accomplished by using high quality components and no shortcuts are taken through our manufacturing process.
- Every XV machine passes the tests of ball-bar and laser calibration to ensure the highest standard in the industry.

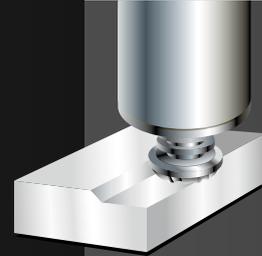
P
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XV560A Cutting Tests

FACE MILL

S45C Steel



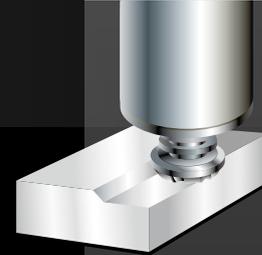
Depth of Cut

3.5mm
0.12"

Tool \varnothing 80mm (\varnothing 3.15")
Blade 5
Spindle speed 650rpm
Feedrate 325mm/min. (12.8ipm)
Width of cut 65mm (2.56")
Depth of cut 3.5mm (1.4")

FACE MILL

S45C Steel



Material Removal Rate

273cc
16.6 in³/min.

Tool \varnothing 63mm (\varnothing 2.48")
Blade 6
Spindle speed 1,515rpm
Feedrate 2,273mm/min. (89.5ipm)
Width of cut 60mm (2.36")
Depth of cut 2mm (0.08")

DRILL

S45C Steel



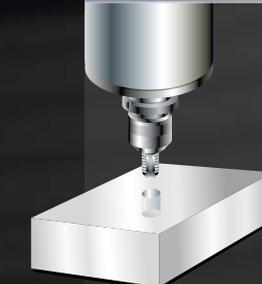
Drill

\varnothing 29mm
 \varnothing 1.14"

Tool \varnothing 29mm (\varnothing 1.14")
Flute 2
Spindle speed 1,317rpm
Feedrate 263mm/min. (10.35ipm)

TAP

S45C Steel



TAP

M20

Tool M20, 2.5 Pitch
Spindle speed 80rpm
Feedrate 200mm/min. (7.87ipm)

Rapid Feedrate XV560A

X 36 m/min. 1,417 ipm

Y 36 m/min. 1,417 ipm

Z 24 m/min. 945 ipm

Machine weight: **3,000kg (6,614 lb)**



□ Optimum Rigidity

- The body structure of the XV series offers the best precision and rigidity.
- FEM analysis is adopted to simulate the structural deformation of the body under various conditions. This analysis ensures the suitable mass arrangement and rib construction of the machine for constant stability under the intensive load of heavy-duty cutting.

1020A

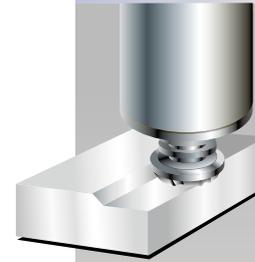
FINITE ELEMENT METHOD



XV1020A/XV1250A Cutting Tests

FACE MILL

S45C Steel



Depth of Cut

8mm

0.31"

Tool Blade $\phi 80\text{mm}$ ($\phi 3.15"$)
 Spindle speed **600rpm**
 Feedrate **300mm/min.** (59.1ipm)
 Width of cut **65mm** (2.6")
 Depth of cut **8mm** (0.31")

FACE MILL

S45C Steel



Material Removal Rate

712cc

43.4 in³/min.

Tool Blade $\phi 63\text{mm}$ ($\phi 2.48"$)
 Spindle speed **1,500rpm**
 Feedrate **3,600mm/min.** (141.7ipm)
 Width of cut **60mm** (2.36")
 Depth of cut **3.3mm** (0.13")

DRILL

S45C Steel



Drill

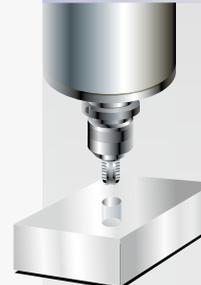
$\phi 44\text{mm}$

1.73"

Tool Flute $\phi 44\text{mm}$ ($\phi 1.73"$)
 Spindle speed **1,207rpm**
 Feedrate **241mm/min.** (9.5ipm)

TAP

S45C Steel



TAP

M30

Tool **M30, 3.5 Pitch**
 Spindle speed **50rpm**
 Feedrate **175mm/min.** (6.9ipm)

Rapid Feedrate XV1020A

X 36 m/min. 1,417 ipm

Y 36 m/min. 1,417 ipm

Z 24 m/min. 945 ipm



Machine weight: **5,350kg (11,795 lb)**

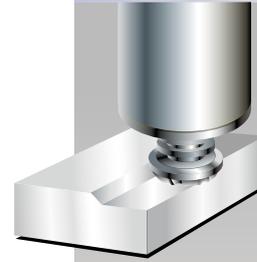
Superb Versatility

- The XV series offers high speed, great accuracy, strong rigidity and added value of multi-application.
- The XV series is designed to meet today's the highest machining requirements.
- The XV series is perfect for automotive, job shops, aerospace, electronics, medical and mold making industries.

XV1020A / XV1250A Cutting Tests (opt.)

FACE MILL

S45C Steel



Depth of cut

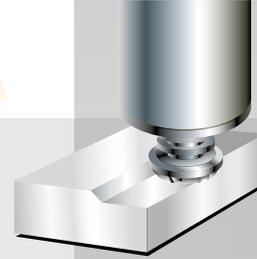
8mm

0.31"

Tool $\varnothing 80\text{mm}$ ($\varnothing 3.15''$)
 Blade 5
 Spindle speed 600rpm
 Feedrate 300mm/min. (59.1ipm)
 Width of cut 65mm (2.6")
 Depth of cut 8mm (0.31")

FACE MILL

S45C Steel



Material Removal Rate

712cc

43.4 in³/min.

Tool $\varnothing 63\text{mm}$ ($\varnothing 2.48''$)
 Blade 6
 Spindle speed 1,500rpm
 Feedrate 3,600mm/min. (141.7ipm)
 Width of cut 60mm (2.36")
 Depth of cut 3.3mm (0.13")

DRILL

S45C Steel



Drill

$\varnothing 44\text{mm}$

1.73"

Tool $\varnothing 44\text{mm}$ ($\varnothing 1.73''$)
 Flute 2
 Spindle speed 1,207rpm
 Feedrate 241mm/min. (9.5ipm)

TAP

S45C Steel



TAP

M30

Tool M30, 3.5 Pitch
 Spindle speed 50rpm
 Feedrate 175mm/min. (6.9ipm)

Rapid Feedrate

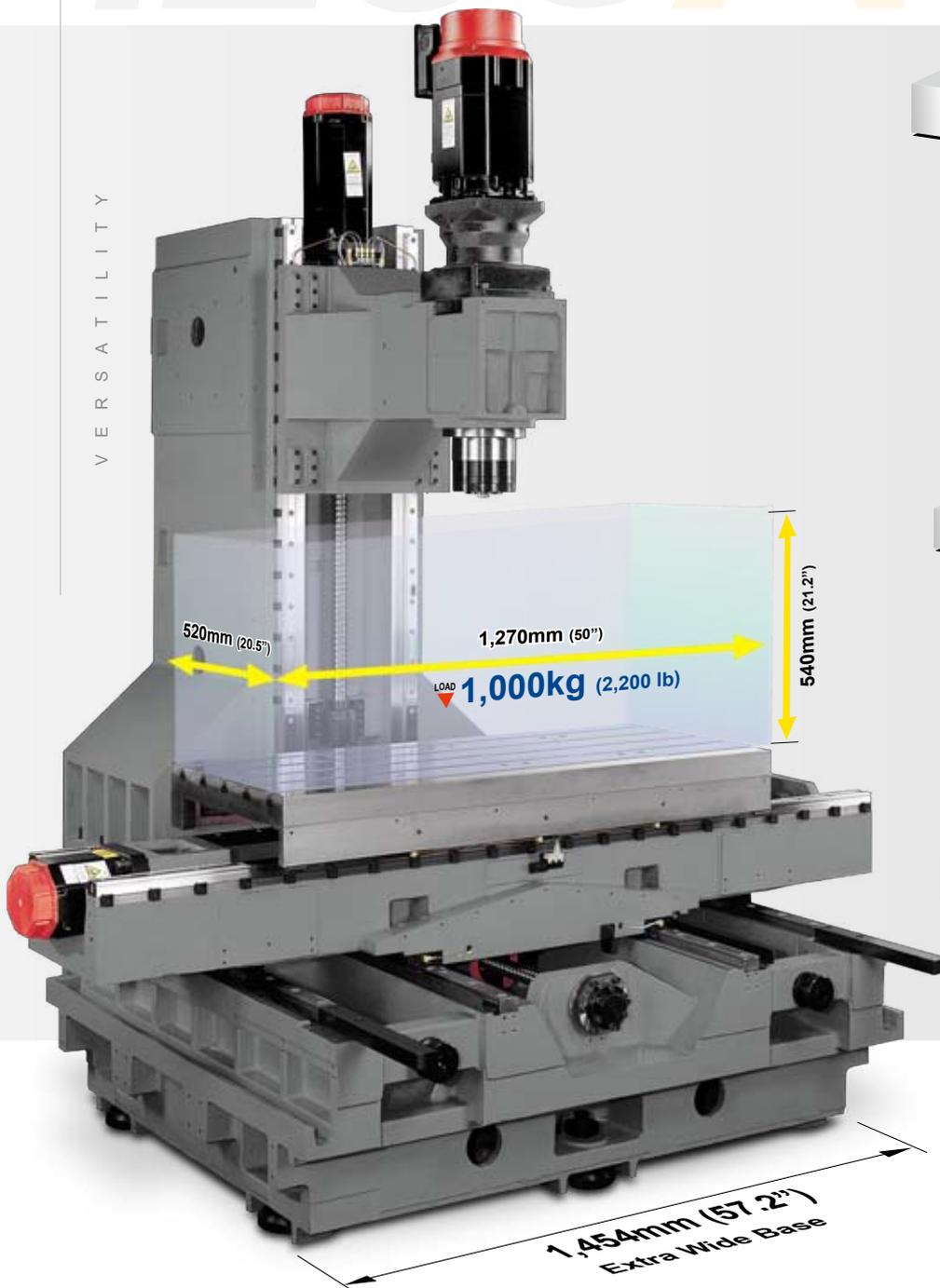
XV1250A

X 24 m/min. 945 ipm

Y 24 m/min. 945 ipm

Z 24 m/min. 945 ipm

VERSATILITY



Machine weight: **6,700kg (14,770 lb)**

ATC Automatic Tool Changer

- Side-mounted tool magazine
20T: XV560A
24T: XV1020A & XV1250A

The dual-arm type ATC is designed to minimize non-machining time for the most demanding applications. A tool-to-tool change cycle takes only 3.5sec.; chip-to-chip changes are accomplished in less than 5.5sec.

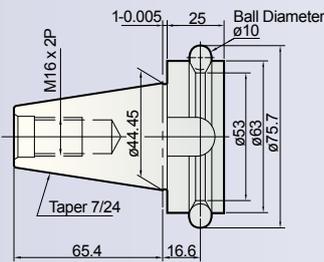
The side-mounted tool magazine holds up to 24 tools; tool selection is bi-directional and takes the shortest random path.

- Dual-arm type ATC

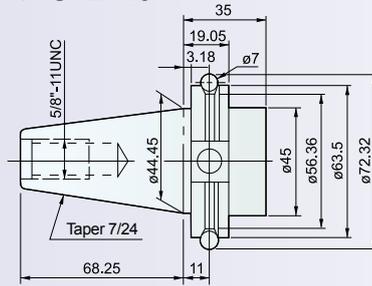


TOOL SHANK

▼ BBT40



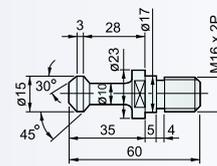
▼ CAT-40



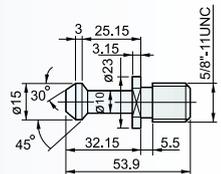
UNIT: mm

PULL STUD

▼ MAS-P40-1



▼ SPECIAL



UNIT: mm

MXP-100FA

CONTROL BY **FANUC**

With YCM Enhanced i-Operation Plus Software

To compliment the rigid construction of the XV series, the advanced MXP-100FA control is integrated to boost up even higher performance of machining capability. The control is packed with the latest and greatest technology, a user-friendly interface, and high productivity arrays of features:

- 8.4" TFT color display
- AICC with 40 blocks look ahead
- 4ms block processing time
- AICC II with 200 blocks look ahead (opt.)
- 2ms block processing time (opt.)
- Jerk control (opt.)
- Helical interpolation
- Rigid tapping
- Custom macro B
- 1,280m program storage length
- 400 pairs tool offset
- 400 total registered programs
- 48 pairs of workpieces coordinate system
- HRV control
- Extended parts program editing (cut, copy, and paste)
- G-menu functions
- Tool data table for easy tool position setup
- Extensive alarm description & troubleshoot instructions
- Calculator function & workpiece coordinate offset setting and more...

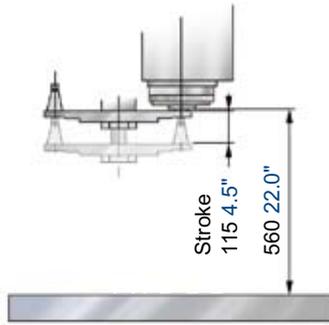
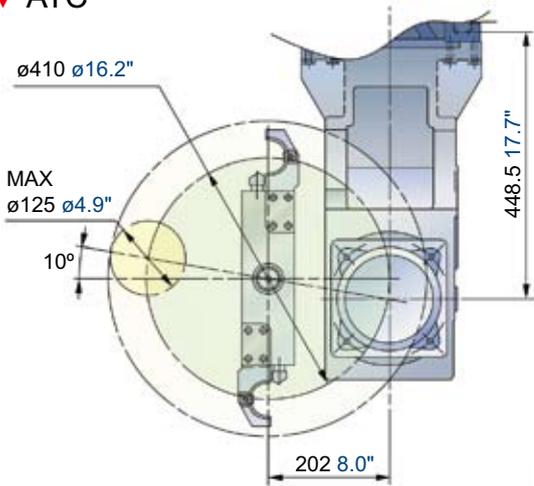


- PCMCIA interface for future expansion

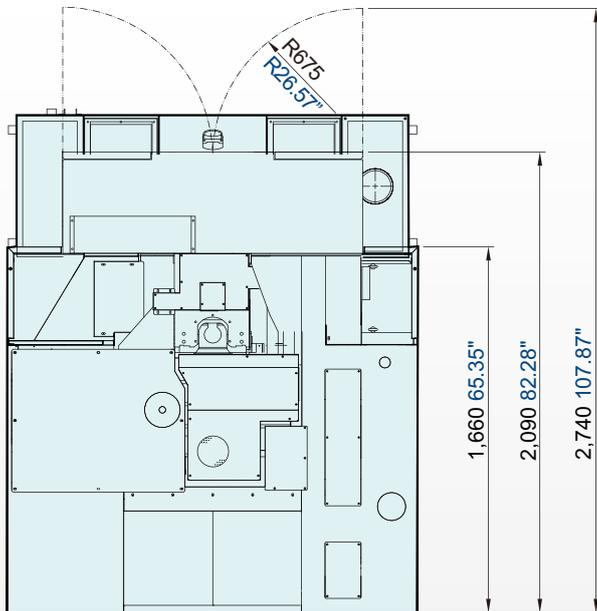


- G-menu
- Pop-up alarm display
- High speed machining mode
- Calculator function
- High performance machining mode
- Solid graphic simulation

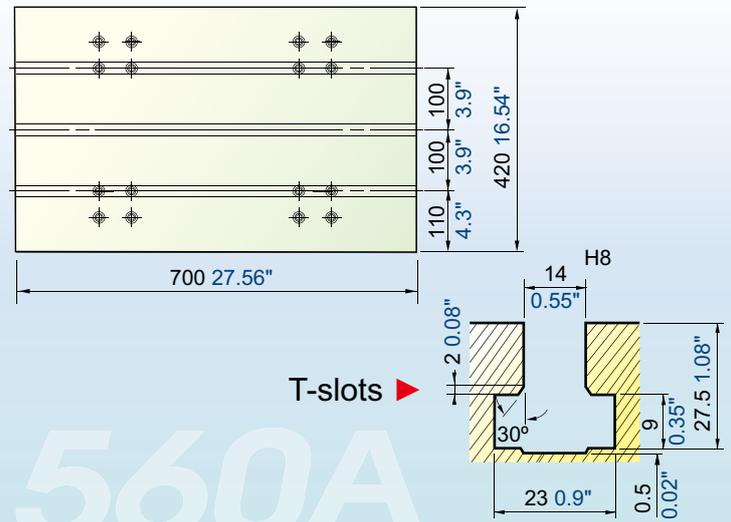
▼ ATC



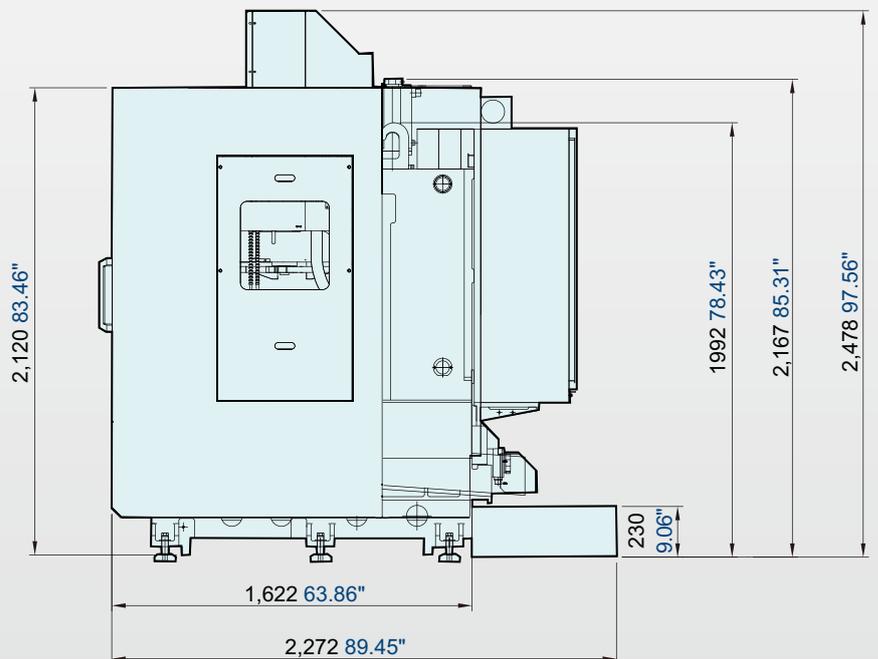
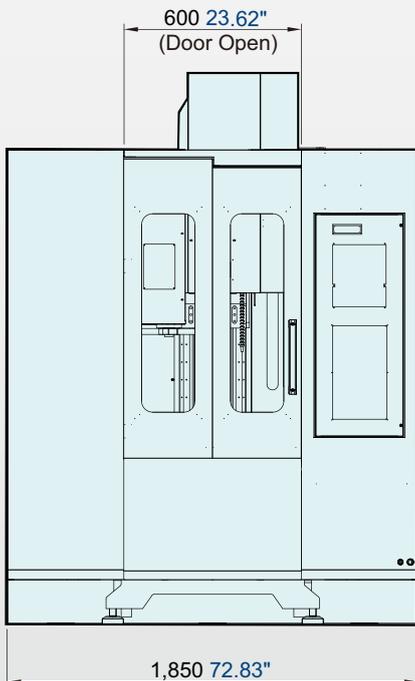
The appearance of the machines will be diverse due to different model and selectivity of controllers.



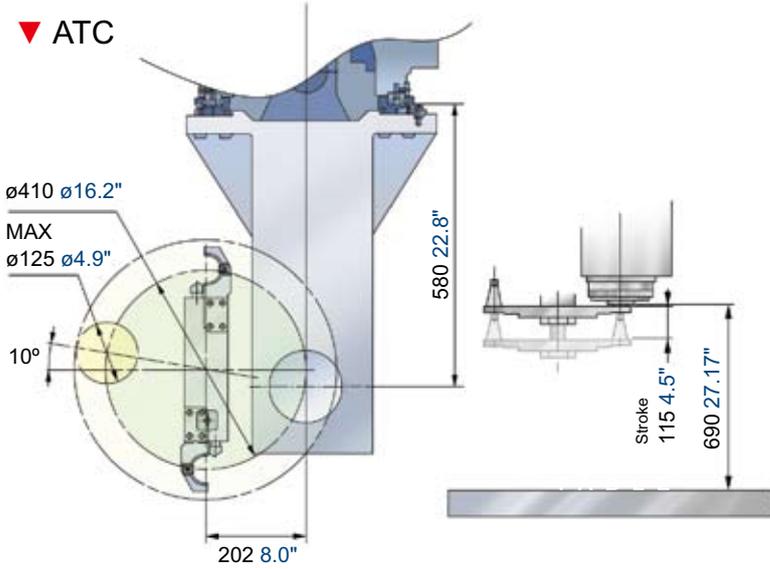
▼ Table size



560A

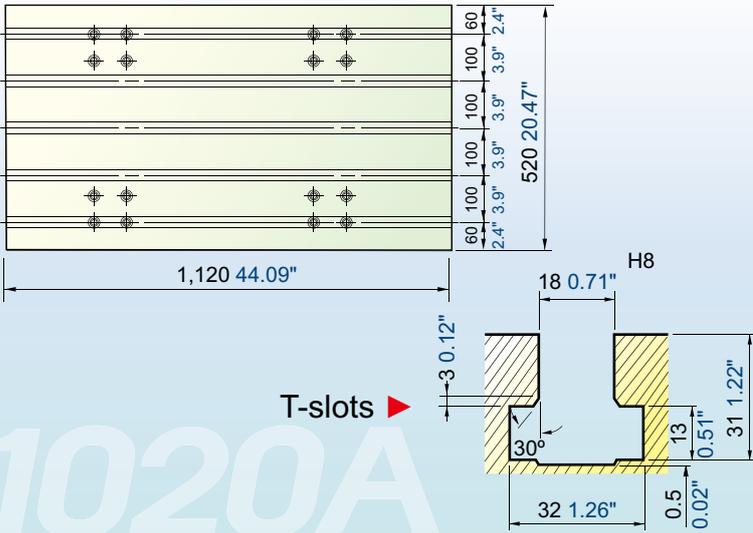


▼ ATC

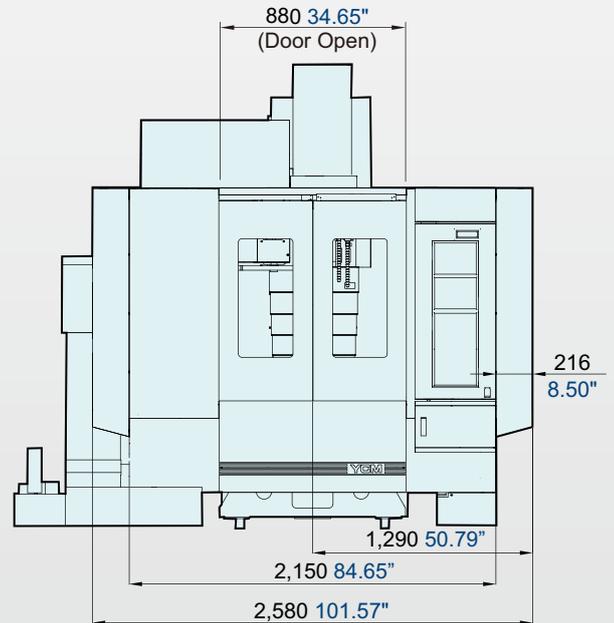
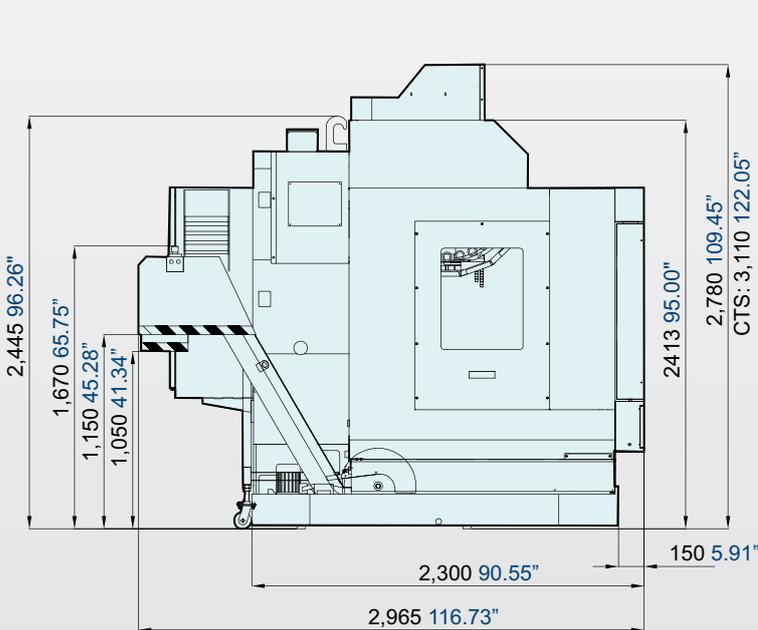
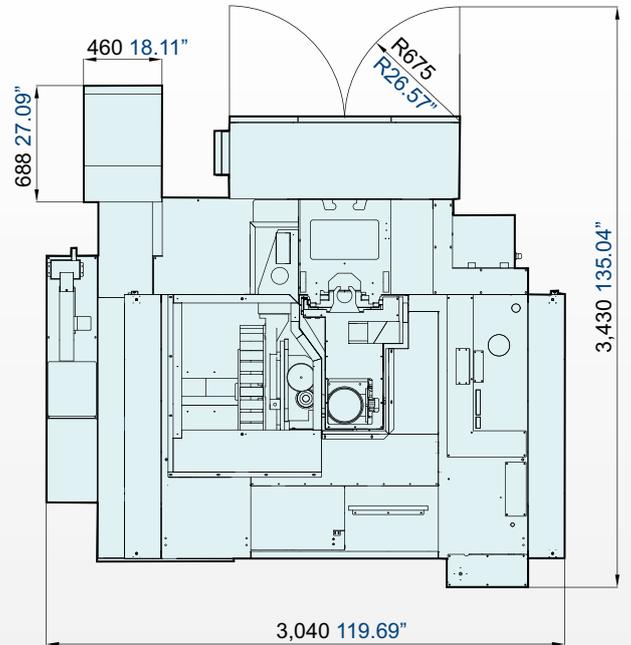


The appearance of the machines will be diverse due to different model and selectivity of controllers.

▼ Table size



1020A



SPECIFICATIONS

	XV560A	XV1020A	XV1250A
SPINDLE			
Spindle Speed	45~10,000rpm		
Spindle Power (std.)	5.5/7.5/11kW 7.4/10/15HP (cont./30min./10min.)	5.5/7.5/11kW 7.4/10/15HP (cont./30min./10min.)	
Spindle Power (opt.)	-	7.5/11/15/22kW 10/15/20/30HP (cont./30min./10min./5min.)	
Spindle Taper	BBT40		
TRAVEL			
X-axis Travel	560mm 22.0"	1,020mm 40.2"	1,270mm 50.0"
Y-axis Travel	410mm 16.1"	520mm 20.5"	
Z-axis Travel	450mm 17.7"	540mm 21.3"	
Distance Between Spindle Nose & Table Top	110~560mm 4.3"~22.0"	150~690mm 5.9"~27.2"	105~645mm 4.1"~25.4"
TABLE			
Table Size	700 x 420mm 27.6" x 16.5"	1,120 x 520mm 44.1" x 20.5"	1,350 x 520mm 53.1" x 20.5"
No. T-slots x Size x Pitch	3 x 14mm x 100mm 3 x 0.55" x 3.9"	5 x 18mm x 100mm 5 x 0.7" x 3.9"	
Max. Load on Table	300kg 660 lb	500kg 1,100 lb	1,000kg 2,200 lb
FEEDRATE			
Rapid Feedrate (X/Y/Z)	36/36/24m/min. 1,417/1,417/945ipm		24/24/24m/min. 945/945/945ipm
Cutting Feedrate	1~10,000mm/min. 0.04~394ipm		
ATC			
Tool Magazine Capacity (opt.)	20T	24 (30T)	
Max. Tool Weight (Per Piece)	6kg 13.2 lb		
Max. Tool Dimensions (opt.)	ø90 x 250mm ø3.54" x 9.84"	ø90 x 300mm (ø76 x 300mm) ø3.54" x 11.81" (ø2.99" x 11.81")	
ACCURACY (Linear)	ISO 10791-4		JIS B 6338 (1985)
Positioning A	0.010mm 0.00039"	0.003/300mm 0.00012"/12"	
Repeatability R	0.007mm 0.00028"	±0.002mm ±0.00008"	
GENERAL			
Pneumatic Supplier	5.5kg/cm ² 78.2psi		
Power Consumption (Transformer)	24kVA (30kVA)	27.4kVA (30kVA)	
Machine Weight	3,000kg 6,614 lb	5,350kg 11,795 lb	6,700kg 14,770 lb

Note: The manufacturer reserves the right to modify the design, specifications, mechanisms, etc. to improve the performance of the machine without notice. All the specifications shown above are just for reference.

ACCESSORIES

● std. ○ opt. — none

	560A	1020A	1250A		560A	1020A	1250A
Tool Kit	●	●	●	Mechanical, Electrical, and Operating Manuals	●	●	●
Work Lamp	●	●	●	Heat Exchanger for Electrical Cabinet	●	●	●
Pilot Lamp	●	●	●	Single Chip Auger	—	●	—
Oil Skimmer	●	●	●	Dual Chip Augers	—	○	—
Heavy Duty Coolant Pump	○	○	○	Safety Door	●	●	●
Circular Coolant Nozzle	○	○	○	CE	○	○	○
Full Chip Enclosure	●	●	●	Coolant Through Spindle System	○	○	○
Coolant Gun	●	●	●	Chip Conveyor	—	○	○
Air Gun	●	●	●	Spindle Cooling System	○	○	○
Spindle Air Blast	●	●	●	4th Axis Rotary Table	○	○	○
Cutting Air Blast	●	●	●	Automatic Power Off Device	○	○	○
Spindle Air Seal	●	●	●	Auto Tool Length Measurement System	○	○	○
Central Lubrication System	●	●	●	Data Server	○	○	○
Guideway Cover (X/Y/Z)	●	●	●	CNC Control: FANUC MXP-100FA	●	●	●
Oil-mist Collector	○	○	○				
Leveling Blocks and Bolts	●	●	●				



■ M.P.G. Handwheel



■ Spindle Air Seal



■ Cutting Air Blast



■ Air Gun & Coolant Gun



■ Oil Skimmer



■ Spindle Cooling System (opt.)

VMC

Vertical Machining Center

FP Series High Precision High Performance Die Mold Vertical Machining Center
FP55A, FP66A, FP100A

FV Series High Speed High Performance Vertical Machining Center
 / High Speed High Performance Drilling & Tapping Center
FV56T, FV56A, FV85A, FV102A, FV125A / FV50T

XV Series High Performance Vertical Machining Center
XV560A, XV1020A, XV1250A

EV Series High Efficiency Vertical Machining Center
EV1020A

TV Series Heavy Duty Vertical Machining Center
TV116B, TV146A/B, TV158B, TV188B, TV2110B, TV2610B

NTV Series High Efficiency T-base Vertical Machining Center
NTV158A/B

MV Series High Performance High Rigidity Vertical Machining Center
MV66A, MV76A, MV86A, MV106A

WV Series Ultra Wide High Performance Vertical Machining Center
WV108A/B

FX Series High Performance 5-axis Vertical Machining Center
FX380A

NSV Series Ultra High Performance Vertical Machining Center
NSV66A, NSV85A, NSV102A, NSV156A

NDV Series High Precision Die Mold Vertical Machining Center
NDV66A, NDV85A, NDV102A

NBX Series High Performance Swivel Head 5-axis Vertical Machining Center
NBX102A

TCV Series High Performance Traveling Column Vertical Machining Center
TCV2000A, TCV3000A, TCV3000A-5AF

DCV Series Advanced Double Column Vertical Machining Center
DCV2012A/B, DCV3016B, DCV4016B, DCV3021B, DCV4021B, DCV3025B, DCV4025B, DCV4035B, DCV4035B-5AX



HMC

Horizontal Machining Center

H Series High Production Horizontal Machining Center
H500A/B, H630B, H800B, H2612B



HBM

Horizontal Boring Milling Machining Center

BMP Series High Accuracy Heavy Duty Boring Machine
BMP1416B

CNC LATHES

CNC Turning Center

NT Series High Performance Mill-axis Mill/Turn Center
NT-2000Y/SY, NT-2500Y/SY

GT Series High Performance Geo Turning Center
GT-200A/B/MA, GT-250A/B/MA/MB, GT-300A/B/LA/LB/MA/MB/LMA/LMB, GT-380A/B/LA/LB

TC Series High Performance High Precision CNC Lathe
TC-16A/B/LA/LB, TC-26, TC-26L, TC-36, TC-36W, TC-46/1000/1650/2300/3200



INTEGRATION AND SOLUTIONS

Integrated Operation Control System **iOPERATION**

Spindle Thermal Compensation System **STC PLUS**

Remote Monitoring System **iDirect**

Automation Solutions



YEONG CHIN MACHINERY INDUSTRIES CO., LTD.
 888 HOMU RD., HSINCHUANG, SHENGANG, TAICHUNG, TAIWAN

Web Page: www.YCMCNC.com ■ Email: sales@YCMCNC.com



Tel : +886-4-2562-3211
 Fax: +886-4-2562-6479