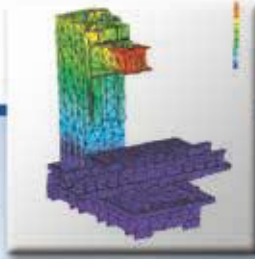


CHEVALIER®

Grinding / Turning / Milling



FTC Series

TRAVELING COLUMN TYPE HIGH SPEED
VERTICAL MACHINING CENTER

FTC-1320V

FTC-1320V

MACHINE FEATURES

Traveling Column / High Speed Type / Vertical Machining Center

This compact and high efficient design with turntable is suitable for high speed drilling, tapping & milling functions. We can also equip grinding attachment for multi-purposes applications. This machine requires very small floor space, during machining, the operator can set up workpiece in the other side of turntable.

To increase the safety during machining, the machine base is one piece casting with slope design and equipped with large volume coolant flow surrounding the machine base for fast chips removal.

■ Spindle Speed

15,000rpm/ 12,000rpm (Optional)

■ X, Y Rapids

36m/min (1,417ipm)

■ Z Rapids

30m/min (1,181ipm)

■ Tool-to-tool

0.8 sec.

■ Table Index

2 sec.



FTC-1320V

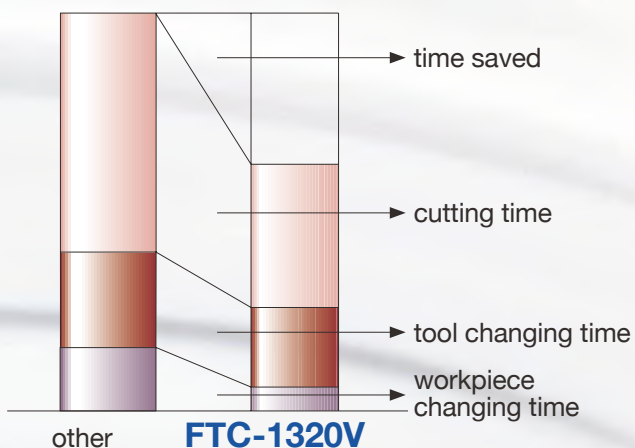
CONTROL FEATURES

FANUC OiMD Control

- ① Minimum increment 0.001mm (0.0001")
- ② Absolute/incremental programming G90/G91
- ③ Decimal point programming
- ④ Automatic recognition on EIA/ISO code
- ⑤ Positioning G00
- ⑥ Linear Interpolation G01
- ⑦ Circular Interpolation & Radius command G02, G03
- ⑧ Cutting feedrate F4-Digit command
- ⑨ Dwell G04
- ⑩ Rapid traverse over ride F0%, 25%, 50%, 100%
- ⑪ Cutting feedrate over ride 0%~150%
- ⑫ Parts program storage 800m
- ⑬ Registered programs 400
- ⑭ Part program editing
- ⑮ Rigid tapping
- ⑯ Canned cycle
- ⑰ Absolute type encoder
- ⑱ Emergency stop
- ⑲ USB interface
- ⑳ Operating Instructions (in CD)



Comparison of cycle time
for Notebook cover



Cycle time: 2 min 12 sec.



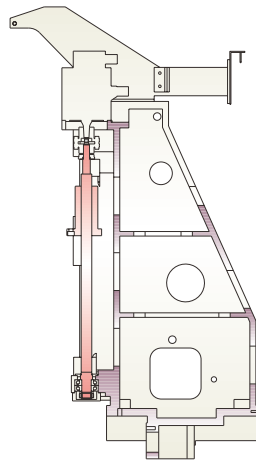
Increase in Productivity!

With special holding fixture, during machining on one side of table, operator can load and unload workpiece on the other side of table.

Thus the machining efficiency can be increased over 50% than traditional type of machine.

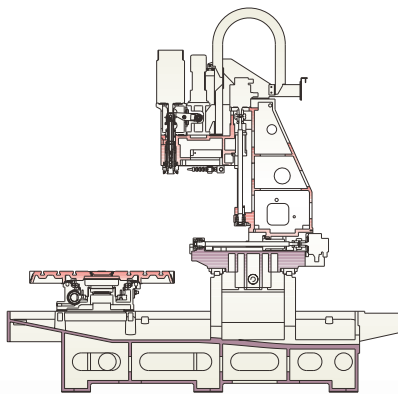
FTC-1320V

MACHINE CONSTRUCTION



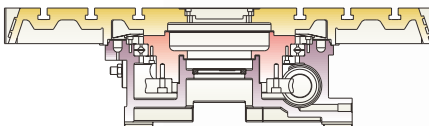
3 Axes Traveling Column Design

- For high speed machining that requires super fine finish. Ballscrews are mounted close to the machining point for maximum rigidity, and to minimize the influence of the ballscrew after long period of operation.



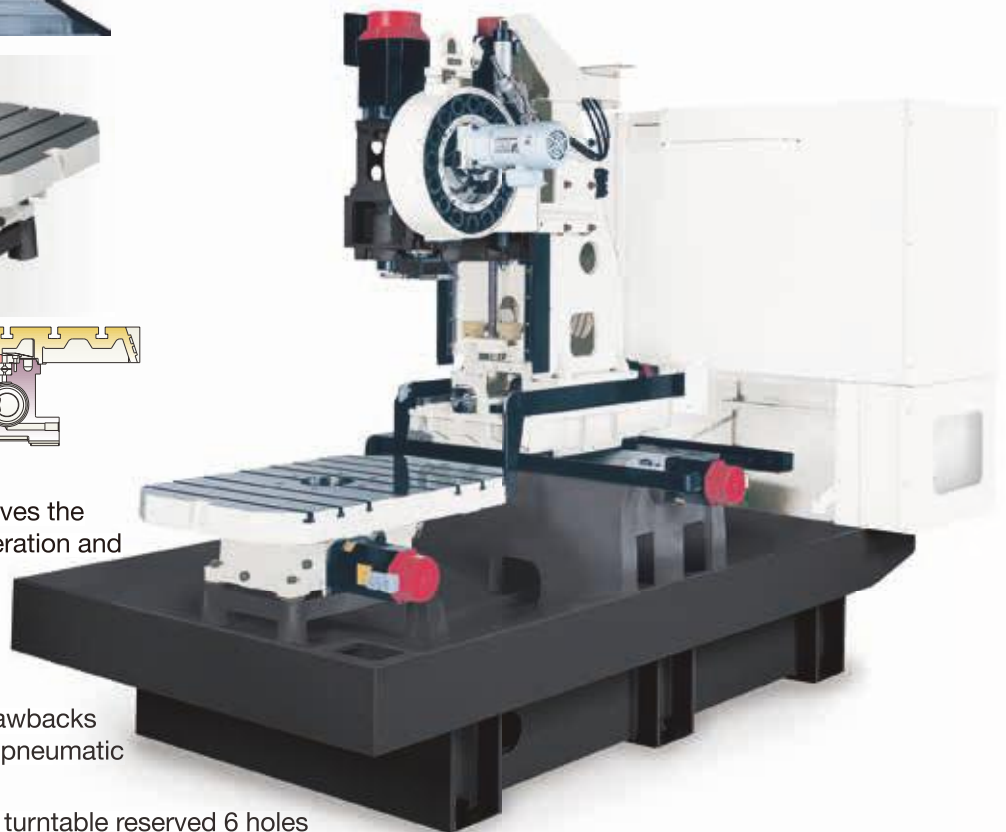
Small Footprint and Rigid Machine Base

- 1,550 x 3,353mm (61" x 132") total floor space requirement perfect for Factory Automation and Machining Cell.
- One piece machine base is designed through 3D-Dynamic Simulation Analysis for highest stability and rigidity.



Turntable

- Servo motor directly drives the turntable, makes acceleration and deceleration smooth.
- Turntable exchange quickly, takes only 2 sec.
- Completely improve drawbacks happened in traditional pneumatic & hydraulic type.
- The center cover of the turntable reserved 6 holes for air connecting. With special holding fixture, operator can load and unload the workpieces, during machining at the other side of table to enhance the working efficiency of manpower and machine.



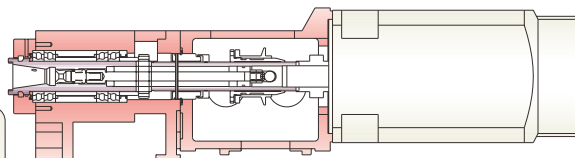
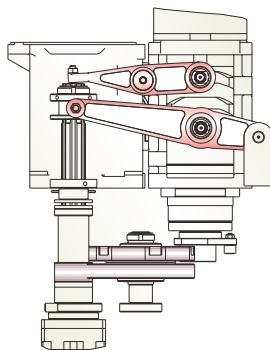
FTC-1320V

MACHINE CONSTRUCTION



Directly Mounted Spindle (15,000rpm/Optional 20,000rpm)

- Spindle is supported by 4pcs angular contact ball bearings mounted at 15° angle for increased rigidity and high speed machining accuracy.
- The DBB type combination increased torque ability. Spindle and spindle motor are directly mounted to eliminate noise and reduce the vibration during high speed operation.



Instant Chip Disposal

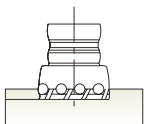
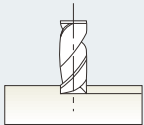
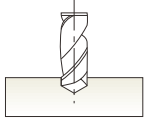
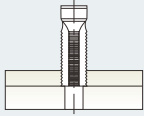
- Cutting chips are disposed by large volume coolant flow around the whole machine base. A Grunfos pump, with 260 L/min (60HZ) coolant flow, is used for chips removal.

Cam Type Tool Changer (patented)

- Bi Directional Access with random tool selection at shortest distance, resulting with 0.8 sec. tool change time in all machining conditions.

FTC-1320V Machining Capacity

Unit: mm(")

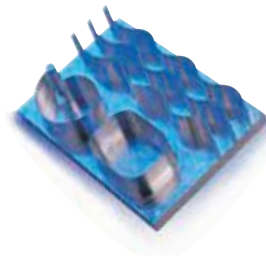
Conditions	Material S45C	
Facing		Cutting amount cm ³ /min (inch ³ /min): 26 (1.7) Cutting width x Cutting depth x Feed rate (mm/min): 40 (1.57") x 2 (0.08") x 325 (12.8")
End mill		Cutting amount cm ³ /min (inch ³ /min): 9 (0.6) Cutting width x Cutting depth x Feed rate (mm/min): 20 (0.79") x 2 (0.08") x 225 (8.86")
Drill		Tool diameter mm(inch) x Feed rate mm (inch)/rev: Ø14 (Ø0.55) x 0.3 (0.01)
Tap		Tool diameter mm(inch) x Feed rate mm (inch)/rev: M12 (0.47") x 1.75 (0.07")

FTC-1320V

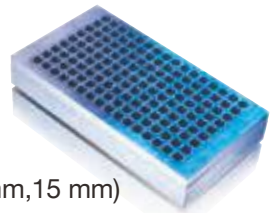
EXAMPLE



Example: **Thin-walled spiral**
 Dimension: 140 x 100 x 32 mm
 Material: Aluminum alloy (A6061-T6)
 Tool: Ø8 End mill
 Spindle speed: 15,000rpm
 Feed rate: 3,000 mm/min



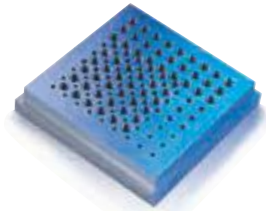
Example: **Boring**
 Dimension: 190 x 100 x 30 mm
 Material: Aluminum alloy (A6061-T6)
 Tool: Ø7.8 Drilling / Ø8 End mill
 Spindle speed: 2,000/3,000 rpm
 Feed rate: 200/150 mm/min
 Holes: 144 holes (Drilling depth 20 mm, 15 mm)
 6.7, 15sec/per hole



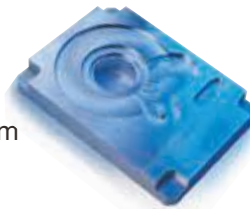
Example: **Watch case**
 Dimension: 37 x 32 x 13 mm
 Material: Brass (C1100 1/2H)
 Tool: Ø6 End mill (rough milling),
 R0.5 Ball-nosed end mill (finishing)
 Spindle speed: 15,000rpm
 Feed rate: 500 mm/min



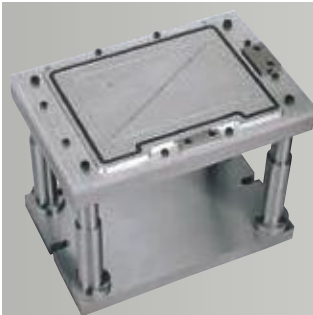
Example: **Tapping**
 Dimension: 80 x 80 x 15 mm
 Material: Aluminum
 Tool: M6
 Spindle speed: alloy (A6061-T6)
 Spindle speed: 6,000rpm
 Feed rate: 6,000 mm/min



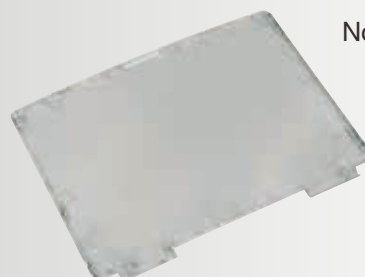
Example: **Hard disk**
 Dimension: 146 x 101.5 x 20 mm
 Material: Aluminum alloy (A6061-T6)
 Tool: Ø20 End mill, Ø10 Boring tool
 Spindle speed: 3,000, 6,000, 18,000rpm
 Feed rate: 900, 1,800, 80 mm/min



APPLICATION SAMPLE



Fixture for notebook case
 (Vacuum attachment)
 Patented



Notebook case

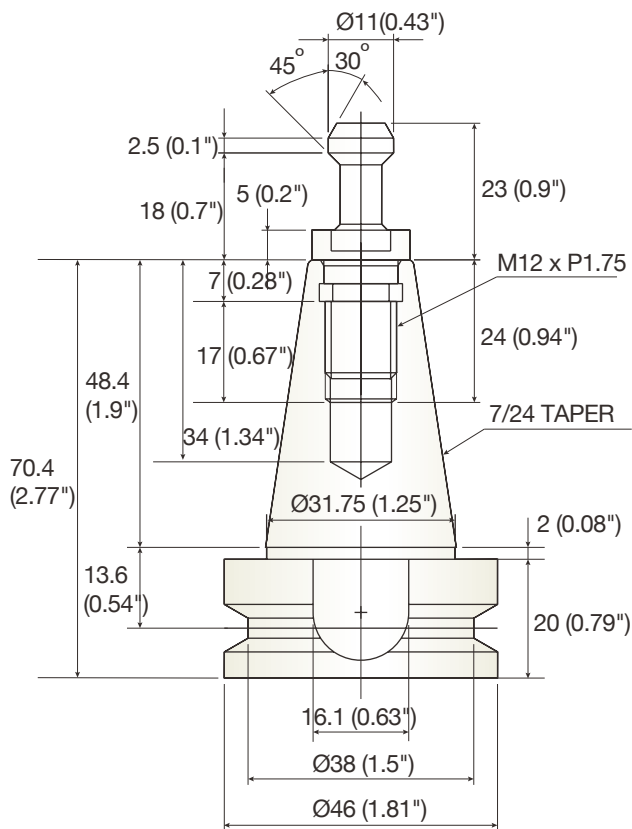
TOOL SHANK & PULL STUD

SPINDLE TORQUE

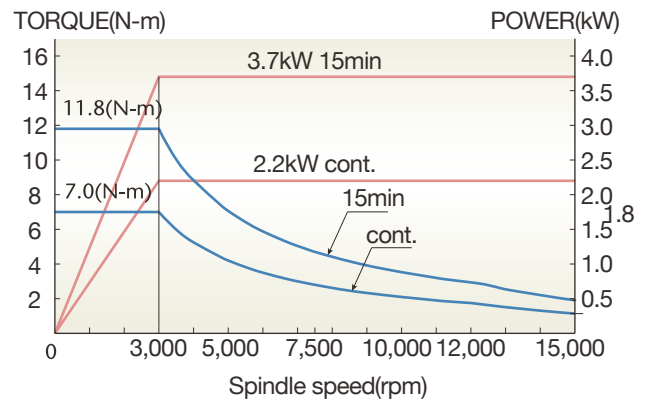
FTC-1320V

BT-30

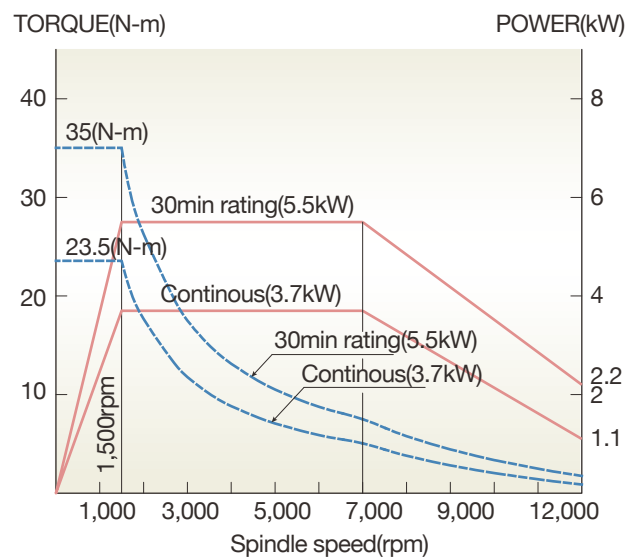
Unit: mm(")



15,000rpm FANUC $\alpha 2$ Spindle Motor



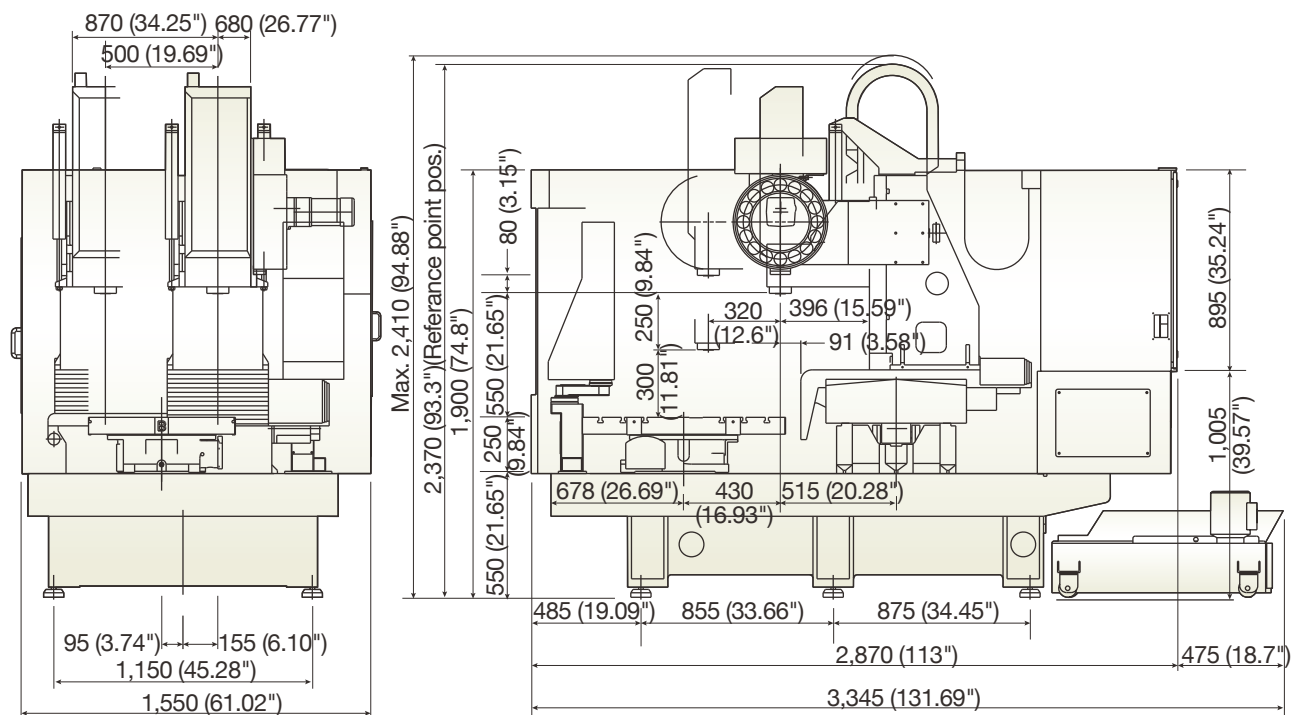
12,000rpm FANUC $\alpha 3$ Spindle Motor (Optional)



DIMENSION DRAWING

Unit: mm(")

FTC-1320V



GENERAL SPECIFICATION

Description	FTC-1320V
Travels	
X axis	500mm (19.7")
Y axis	320mm (12.6")
Z axis	250mm (9.8") + 80mm (3.1")(ATC)
Spindle Nose to Table	300~630mm (11.8"~24.8")
Spindle Center to Column	397mm (15.6")
Feed rate	
Rapid traverse rate	X/Y: 36m/min (1417 IPM) Z: 30m/min (1181 IPM)
Cutting Feed rate Feed-rate servo motor	1~10m/min (39.4~393.7 IPM) 1.2kW (1.6HP)
Spindle	
Spindle dia° - taper	Ø40mm (Ø1.57") x BT30
Spindle speed	150~15,000rpm/ Optional 12,000rpm
Spindle speed change	S5-5digit
Max. tapping rpm	6,000rpm
Spindle motor (Continuous/15 min.)	2. 2/3. 7kW (3.0/5.0HP)
ATC/ MG	
Tool magazine capacity	16+1
Max. tool length x dia	200 x Ø60mm (7.87" x Ø2.36")
Max. tool weight	2kg (4.4 lbs)
Tool Shank / Pull stud	MAS BT30/P30T-1
Tool load / unload	Double arm swing type
Tool selection	Random
ATC motor	0.2kW (1/4HP)
Tool Magazine (MG) motor	0.2kW (1/4HP)
Table	
Table Size	650mm x 365mm (25.6" x 14.4")
Max. table load	129kg (264 lbs) for each surface
Motor	
Servo motor	1kW (1.34HP)
Machine size	
Floor space	1,550mm x 3,345mm (61" x 131.7")
Machine height	2,410mm (94.9")
Machine weight	3,700kg (8157 lbs)
Power	
Power required	15kVA
Air pressure	59~73.5lb/in², 95 gal/min 4~5kgf/cm², 360cm³/min
Accuracy (ISO 230-2 / VDI3441)	
Positioning	0.007mm (0.0003")
Repeatability	0.005mm (0.0002")

Standard Accessory

- 1 FANUC OiMD control
- 2 16 stations ATC
- 3 Turntable
- 4 Semi enclosed splash guard
- 5 Safety switch of automatic door
- 6 Coolant system
- 7 Pilot lamp
- 8 Alarm lamp
- 9 Standard tools
- 10 Leveling bolts & pads

Optional Accessory

- 1 12,000 rpm spindle
- 2 Portable MPG instead of fixed MPG
- 3 Hydraulic turntable
- 4 Fully enclosed splash guard
- 5 4th axis preparation Ø125mm/Ø170mm
- 6 Chip conveyor
- 7 Coolant gun
- 8 Oil skimmer
- 9 Oil mist collector
- 10 Pull stud
- 11 Riser block



Grinding Machine



Grinding Machine



Turning Machine



Milling Machine

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