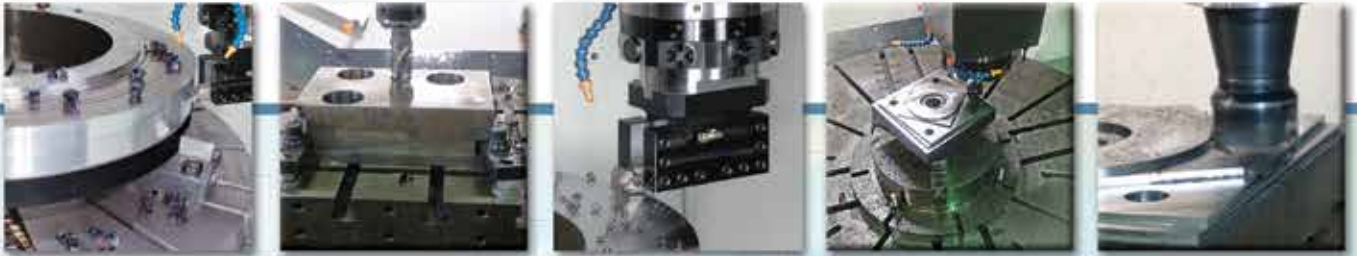


CHEVALIER®

Grinding / Turning / Milling



FVL-VTC Series

Vertical Turning Lathes

FVL-1250 · 1600 · 2000VTC

FVL-1250 · 1600 · 2000VTC+C

FVL-1600VTC+CY



FVL-VTC Series

Vertical Turning Lathe For Heavy-Duty Turning And Multi-Task Machining

High-Precision Vertical Turning Lathe - The series is perfect for heavy-duty turning, milling, boring, grinding, drilling and thread-cutting applications. The Y model is designed for key-slot milling of large-sized and/or heavy workpieces or workpieces made of cast-iron, steel. And with the optional live tooling function, the series offers additional flexible machining capabilities to make more complex workpieces with one machine.

The cross-rail elevation system uses two large ballscrews for positioning and can be locked in any position with four independent hydraulic break systems; consequently, the spindle RAM is able to more closely approach a workpiece, thus eliminating an overhang problem.

The unique patent lock mechanism has eight hydraulic locking cylinders with curvic coupling to assure the turning holder stably fixing on RAM to get high rigidity without vibration or cutting chatter, which reduces the stress transmission on the RAM spindle bearings to substantially prolong spindle life.

It's powerful for example FVL-1600VTC series. The enormous 60HP FANUC digital spindle motor, with a two-speed gearbox, generates up to 13,917NM (10,246 ft.-lbs.) of torque in lower 30rpm. The optional Live Tooling models can easily handle up to M30 tap or 50mm drill with tough material.



FVL-1250 • 1600 • 2000VTC Series

Box Way Structure

Table Size: Up to 1998.9mm (78.7")

Max. Workpiece Weight: Up to 12,000Kg (26,400 lbs.)

Transmission: 2-Speed Gearbox

Table Motor: Up to 75kW (102 HP)

Live Tooling, C-Axis and Y-Axis Available

Tool Capacity: 12, 16, 20 Carousel - VTC Series

16 Carousel - VTC+C Series and 20 Carousel - VTC+CY Series

FVL-1250 • 1600 • 2000(X/Z-Rapid): 10 m/min (393ipm)

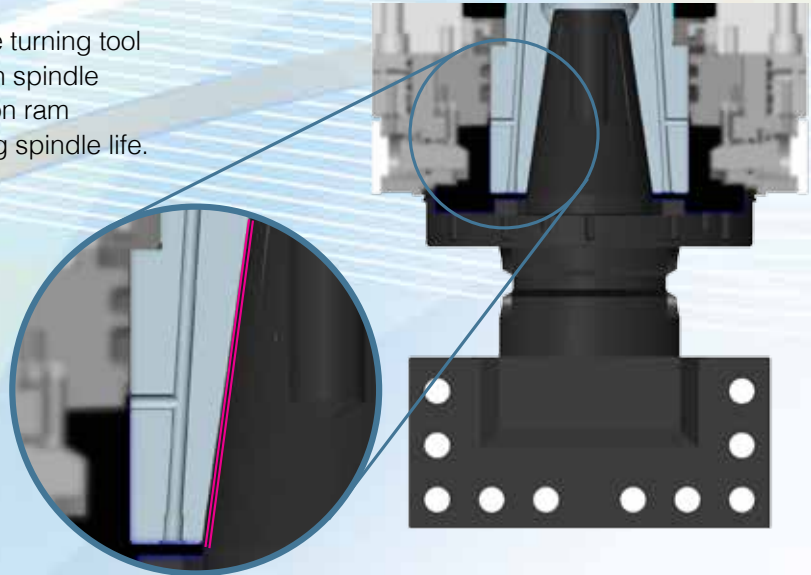
FVL-VTC Series

Machine Construction

Advanced Spindle Design - A patented coupling type clamping system along with 8 hydraulic locking pins keeps the tool in place during heavy stock removal. And clamping force is 3,500 kgf.



Turning Applications - When in use, the turning tool holder holds a 0.5mm (0.02") space between spindle taper and tool taper, eliminating load stress on ram spindle bearings and substantially prolonging spindle life.



For Milling Applications - High rigidity cylindrical bearings, up to 35HP(optional) with a 2-speed gearbox that generates up to 662NM torque. The high torque spindle motor and 2500rpm spindle speed combine delivers a heavy-duty performance for milling, drilling, tapping and grinding applications.



Highly Rigid Column Structure - The heavy duty box type design of the thick body increases the machine's rigidity and vibration dampening characteristics, enabling the machine to perform deeper cuts, achieve higher metal removal rates and reduce tool wear.

The wide square ways with hand-scraped sliding way surfaces distributes the load evenly. The tapered gib sliding surfaces are coated with anti-friction material for consistent accuracy and smooth movement.

The base and column are heavily ribbed to reinforce the machine's rigidity.

	FVL-1250	FVL-1600
H	3,600	3,650
W	1,000	1,240
L	1,850	2,200

Single Column Design for FVL-1250 and 1600 Series



Rotary Table Spindle Design - The rotary table is driven by a powerful spindle motor with a gearbox for low speed high torque machining and higher speed for fine finishing.

C-Axis Design - The C-axis runs with an independent servo motor control with a hydraulic braking system and can turn at 3.33rpm while providing minimum 0.001-degree C-axis indexing. Added to the regular spindle, the CF-axis can perform multiple tasks such as milling, tapping, drilling and profile grinding.

This series includes built-in scales.

Cross Roller Bearing - The rotary table runs with heavy duty cross roller cylindrical bearings, ensuring stable and powerful cutting even when interruptive cutting on heavy and large diameter workpieces. The table load is up to 12,000kgs(26,400lbs) on FVL-2000VTC+C series.

Machine Base - A very rigid machine structure reduces the cutting induced vibration associated with machining hard metals like titanium.

- Drive Gear
- Angular Scale
- CF-Axis Pinion
- C-Axis Clutch



FVL-VTC Series

Machine Structure

Rigid Cross Rail Design - The beam elevation system with a large diameter ballscrew, is designed to lock quickly at any position; the RAM can be placed closer to the workpiece, providing excellent rigidity when machining thin workpieces.

The FVL-1250 • 1600VTC series features a 240mm (9.45") FVL-2000VTC series features a 280mm(11.02") square ram that is made of SCM435 forged steel and securely supported on all four sides.

The cutting capability and accuracy can be kept at optimum level, especially when the cutting tool is close to the rotary table surface.



Automatic Tool Changer (ATC) -

FVL-VTC Series Turning tool capacity: 12 pcs

FVL-VTC+C Series Live tooling capacity: 16 pcs
(Milling x8, Turning x7, Protection Cover x1)

FVL-1600VTC+CY tool capacity: 20 pieces
(Milling x10, Turning x9, Protection Cover x1)

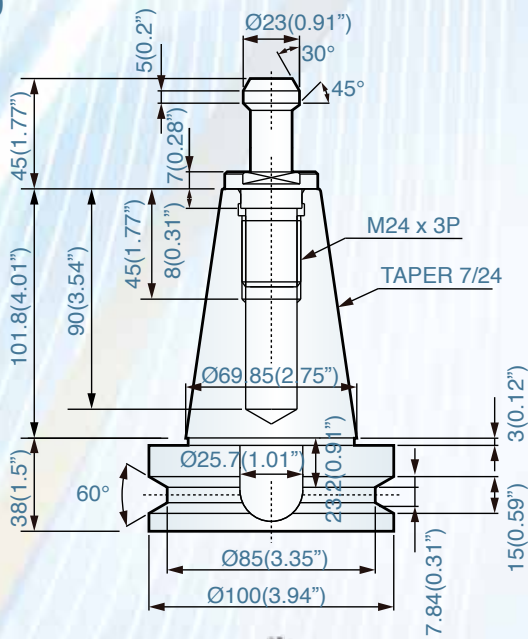


Double Column Design for FVL-2000VTC+C Series

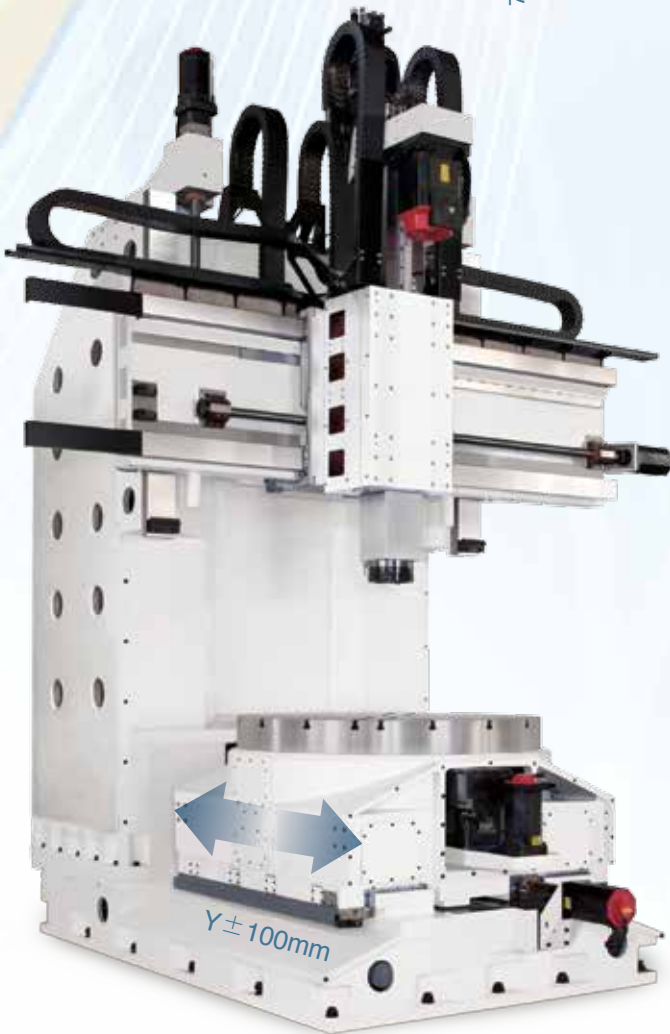
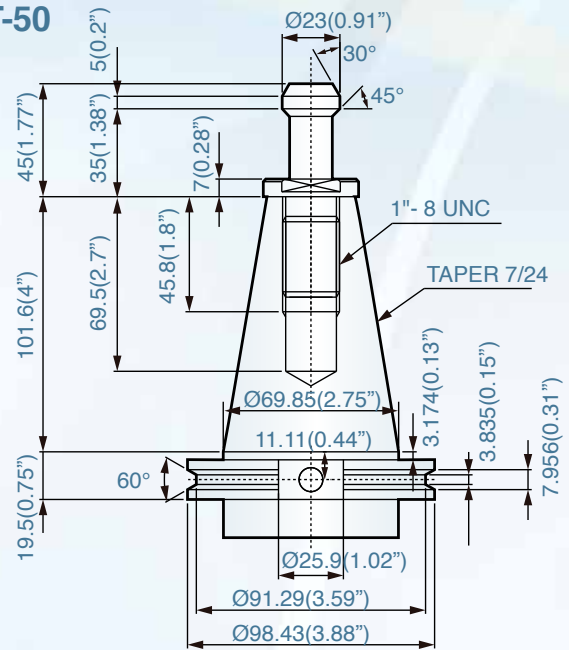
FVL-VTC Series

Tool Shank and Pull Stud

BT-50



CT-50



FVL-1600VTC+CY Machine Frame

Programmable $\pm 100\text{mm}$ (3.94") wide box way Y-axis design is ideally suited for slot milling and multi-task machining applications.



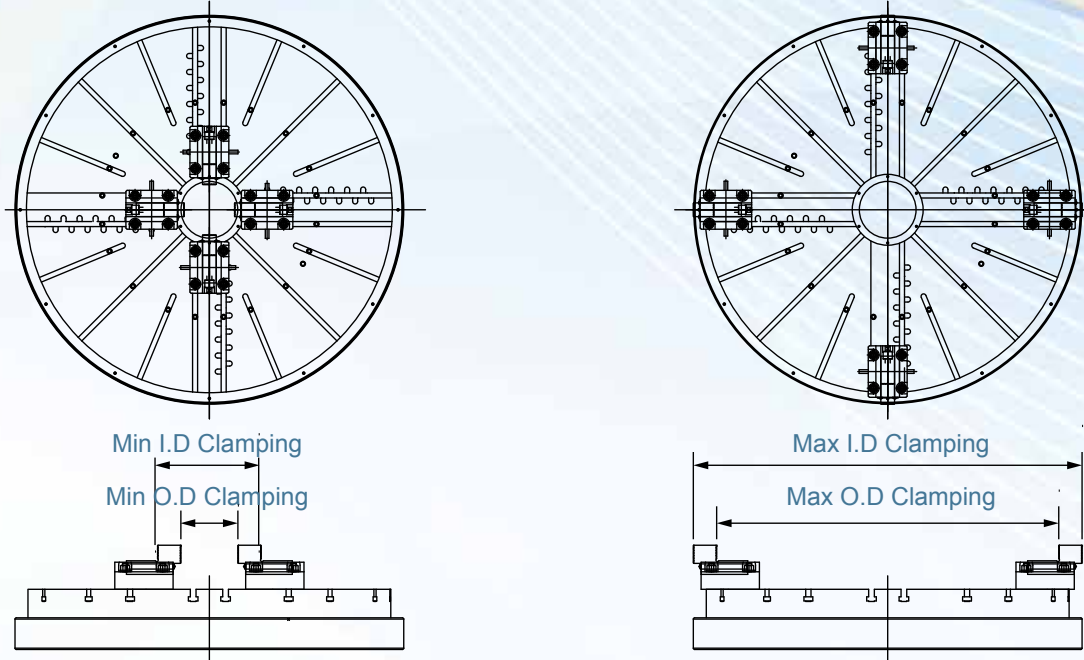
FVL-1600VTC+C Machine Frame

FVL-VTC Series

Capabilities

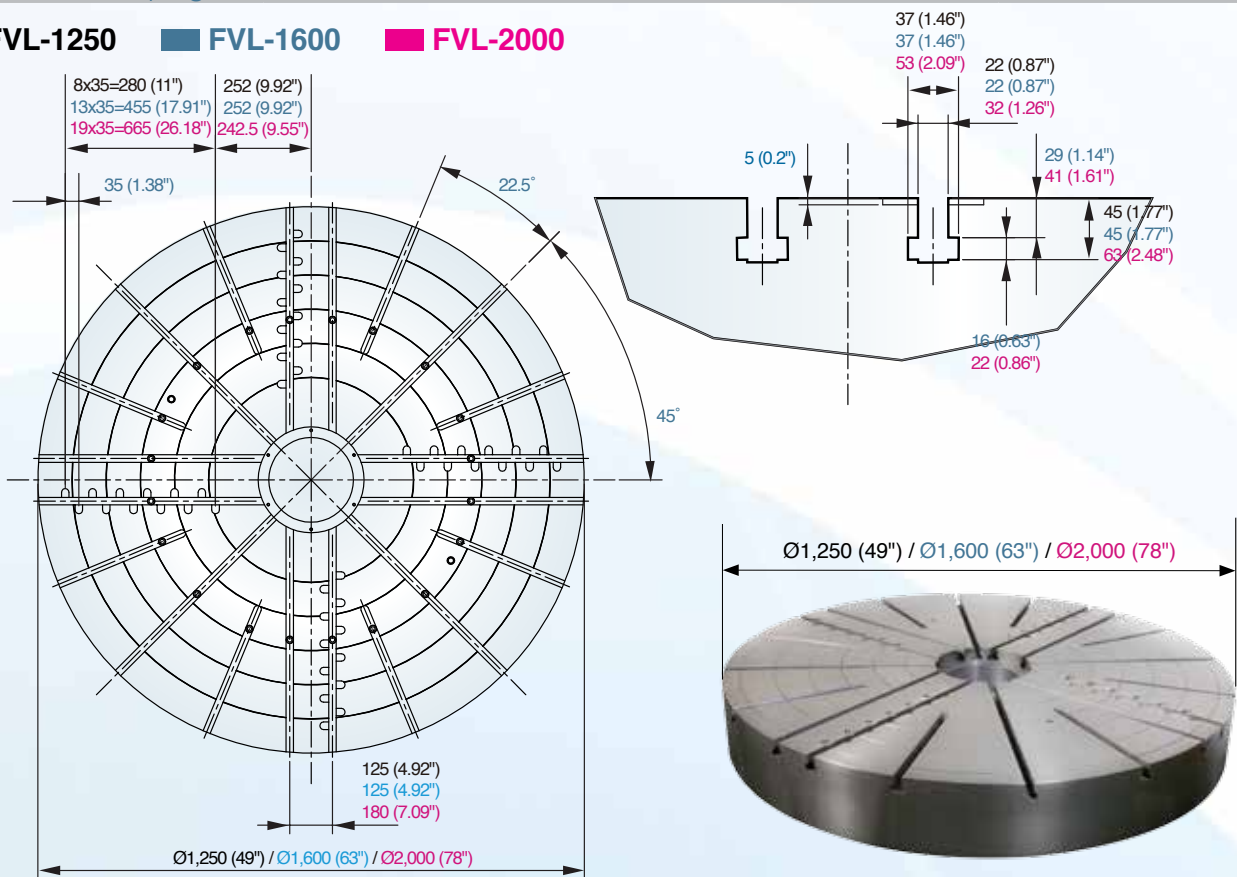
UNIT : mm (")

FVL-1250 • 1600 • 2000 series



ITEM	FVL-1250	FVL-1600	FVL-2000
Min. I.D. Clamping	400 (15.75")	400 (15.75")	380 (14.96")
Max. I.D. Clamping	1,350 (53.15")	1,700 (66.93")	2,100 (82.68")
Min. O.D. Clamping	220 (8.66")	220 (8.66")	220 (8.66")
Max. O.D. Clamping	1,170 (46.06")	1,520 (59.84")	1,920 (75.59")

FVL-1250
 FVL-1600
 FVL-2000



FVL-VTC Series

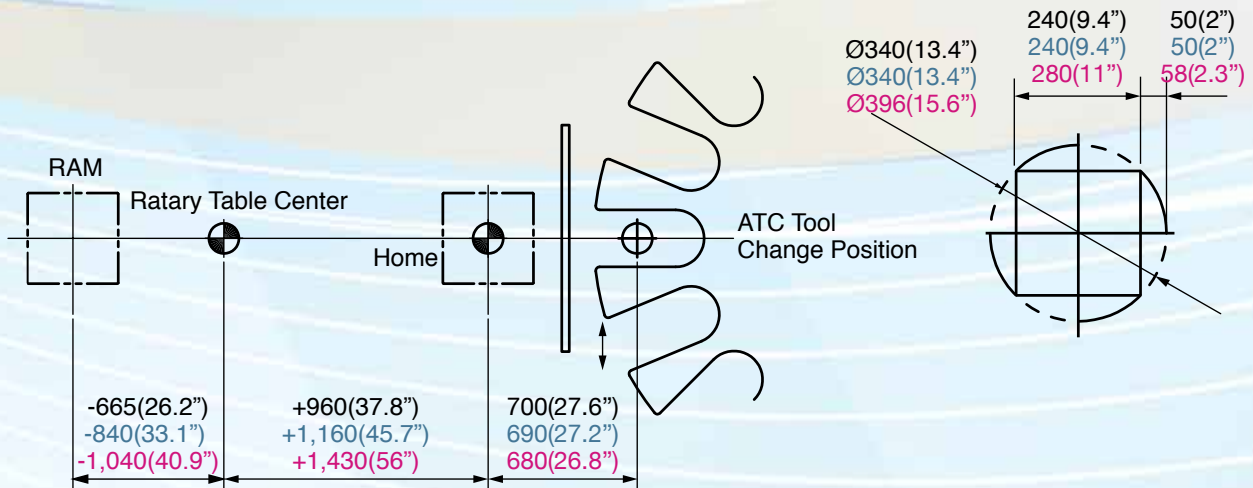
Machining Range

UNIT : mm (")

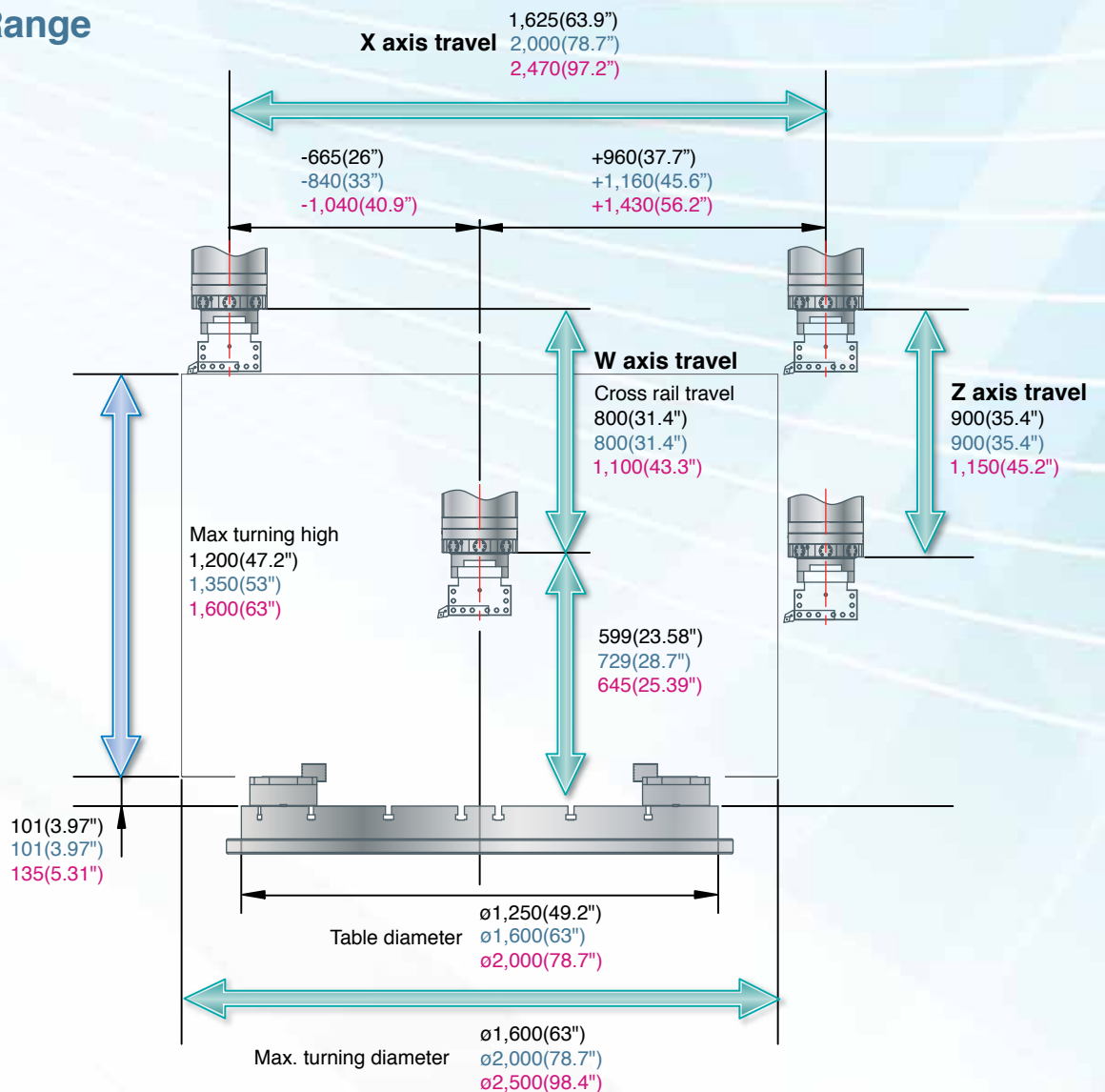
■ FVL-1250 ■ FVL-1600 ■ FVL-2000

X-Axis

Interference



Machining Range

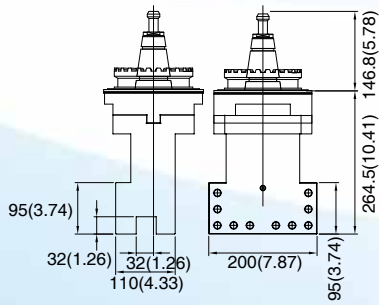


FVL-VTC Series

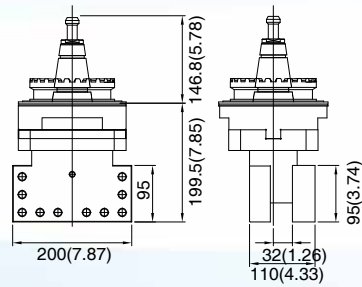
Tool Holder System Drawing

UNIT : mm (")

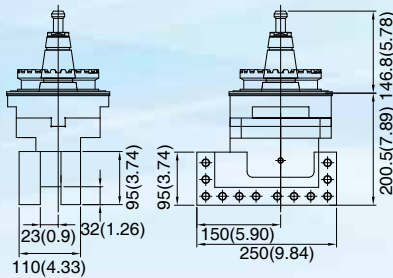
OD Tool Holder



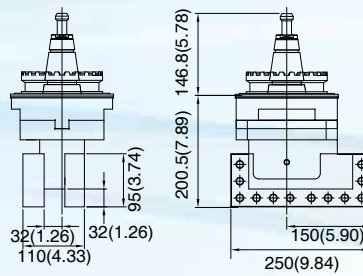
FST 265x32(BT6-0539)



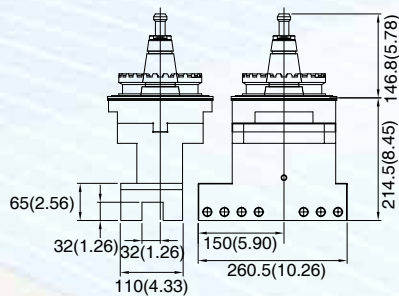
FST 200x32(BT6-0540)



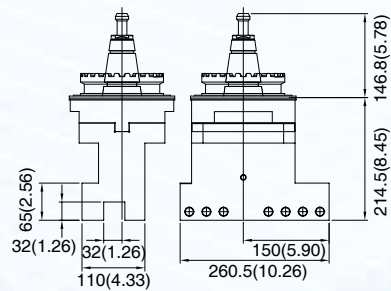
FST 200x32 Left Hand
(BT6-0557)



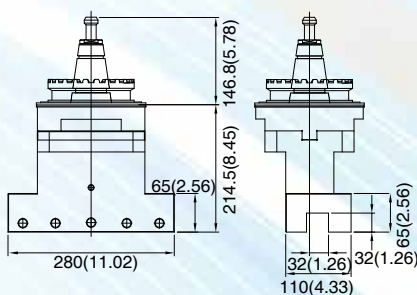
FST 200x32 Right Hand
(BT6-0556)



BT6-0555
FST 215x32 Left Hand



FST 215x32 Right Hand
(BT6-0558)



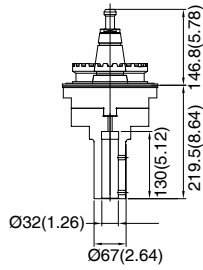
FST 215x32(BT6-0541)

FVL-VTC Series

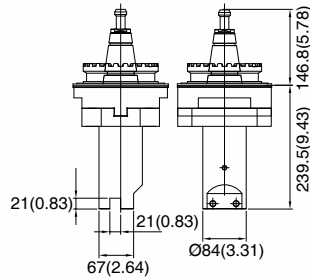
Tool Holder System Drawing

UNIT : mm (")

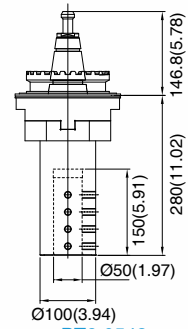
Boring Bar ID Tool Holder



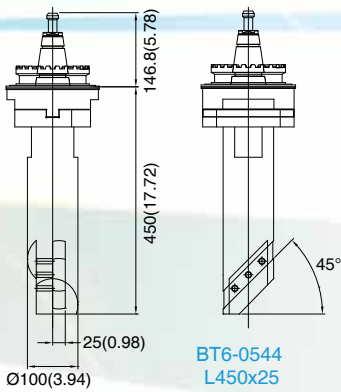
BT6-0542
FL 220xA32



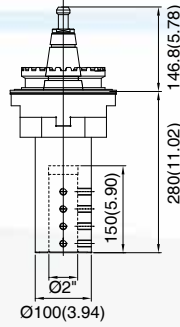
BT6-0545
FL240x20



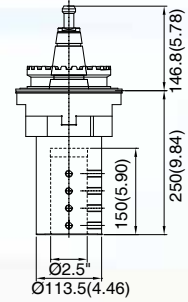
BT6-0543
FL 280xA50



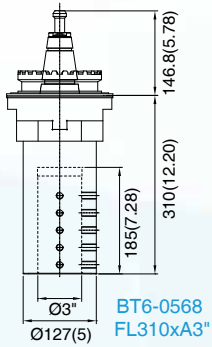
BT6-0544
L450x25



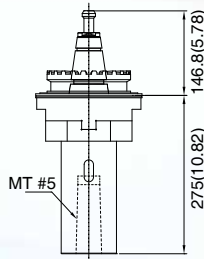
BT6-0566
FL280xA2"



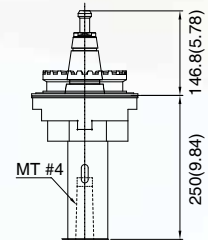
BT6-0567
FL250xA2.5"



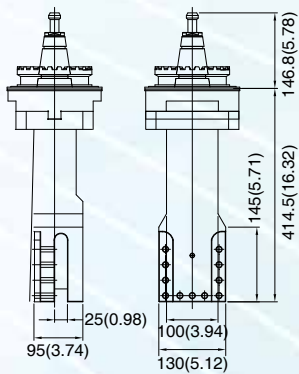
BT6-0568
FL310xA3"



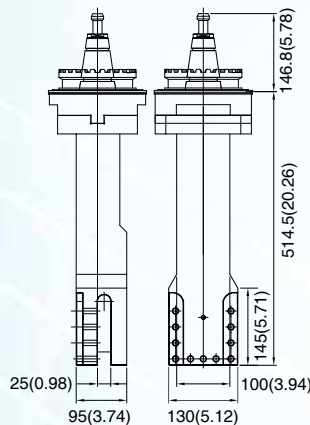
BT6-0569
FL275xMT #5



BT6-0570
FL250xMT #4



BT6-0546
L415x25



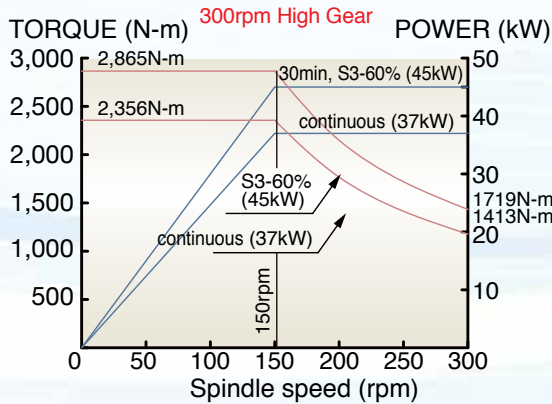
BT6-0547
L515x25

FVL-VTC Series

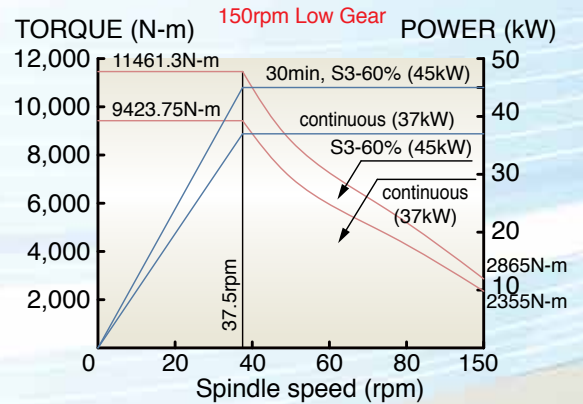
Rotary Table Motor Torque Chart

FVL-1250VTC

FANUC α 40/6000i Spindle

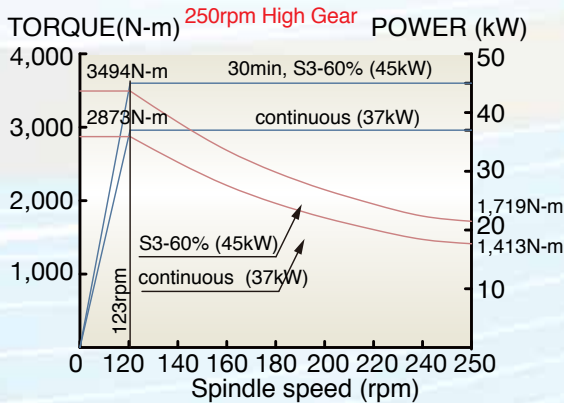


FANUC α 40/6000i Spindle

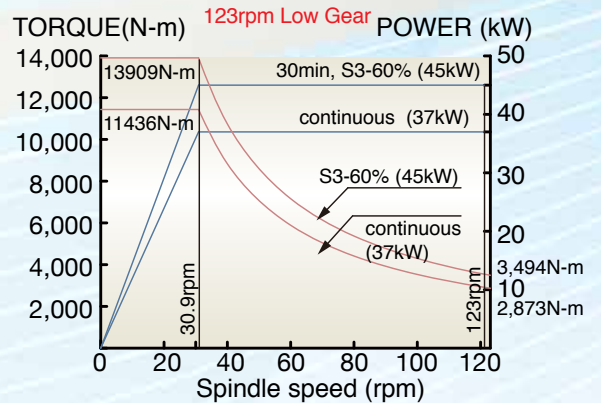


FVL-1600VTC

FANUC α 40/6000i Spindle

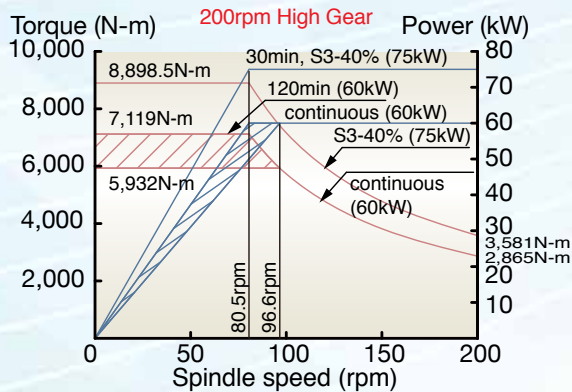


FANUC α 40/6000i Spindle

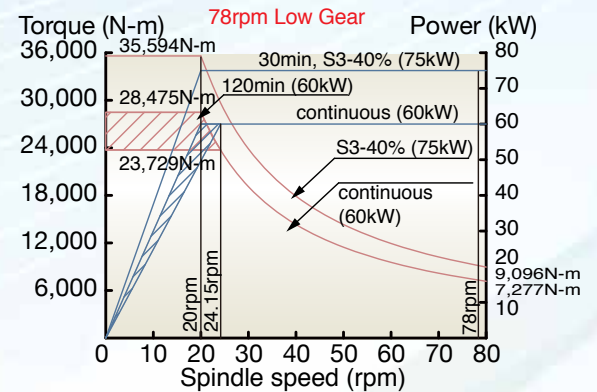


FVL-2000VTC

FANUC α 60/4500HV Spindle



FANUC α 60/4500HV Spindle



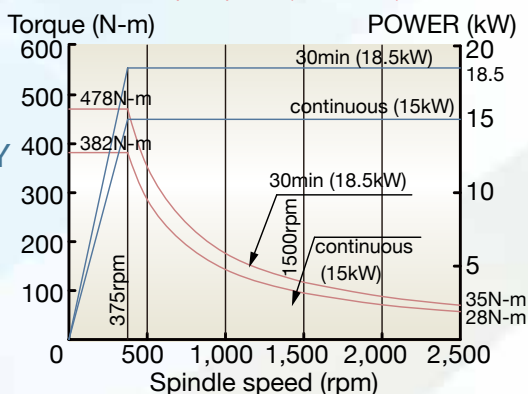
Live Tooling Torque Chart

Standard 18.5kW +
Optional Gearbox 2500rpm Maximum

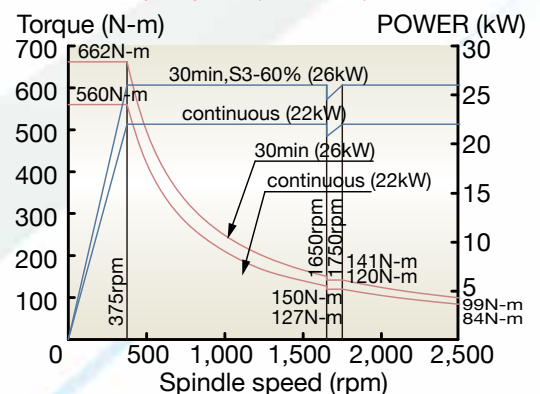
Optional 26kW +
Gearbox 2500rpm Maximum

FVL-1250VTC+C
FVL-1600VTC+C
FVL-2000VTC+C
FVL-1600VTC+CY

2500rpm Spindle (α 15/7000i)



2500rpm Spindle (α 22/7000i)



FVL-VTC Series

Control Features

FANUC 0i-T Control Features

- Simultaneously controllable Axes: 4
- Minimum Programmable increment: 0.001mm (0.0001")
- Program storage length: 1280m (512k)
- Registerable programs: 400
- Backlash compensation
- Pitch error compensation
- Constant surface speed control

Programming Features

- Tool nose radius compensation(G40~G42)
- Combined use of absolute/incremental command
- Inch/metric programming
- Chamfering, corner R
- Multiple repetitive cycles (G70~G76)
- Canned cycles (G90, G92, G94)
- Decimal point programming
- 8.4" (Opt. 10.4") color LCD
- Absolute position encoders (no zero return required)
- Geometry and wear offsets
- 64 pairs of tool offsets
- Run hour display
- Automatic tool offset
- Input/output interface RS232
- Keyboard type manual data input (MDI FULL KEY)
- Program protect key
- Rapid travel override
- Spindle speed override
- Program Code: EIA, ISO automatic recognition
- CF card

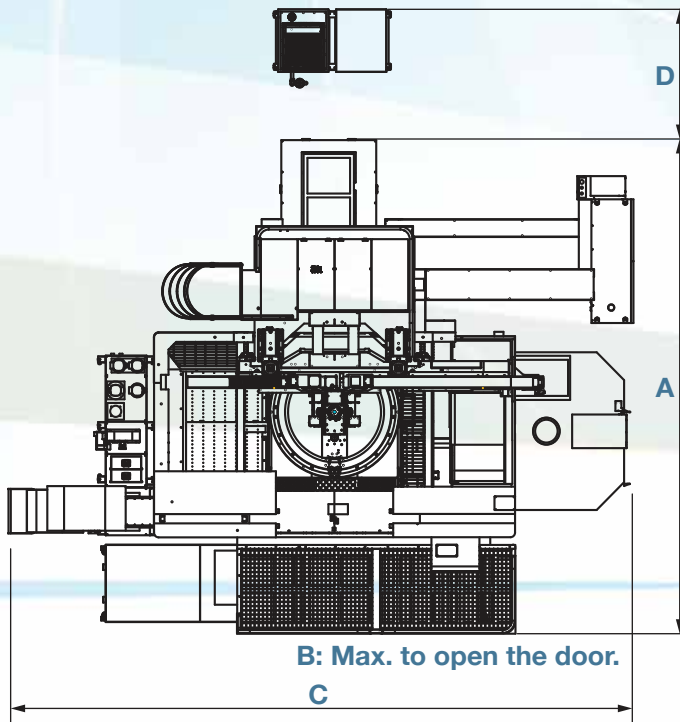


FVL-VTC Series

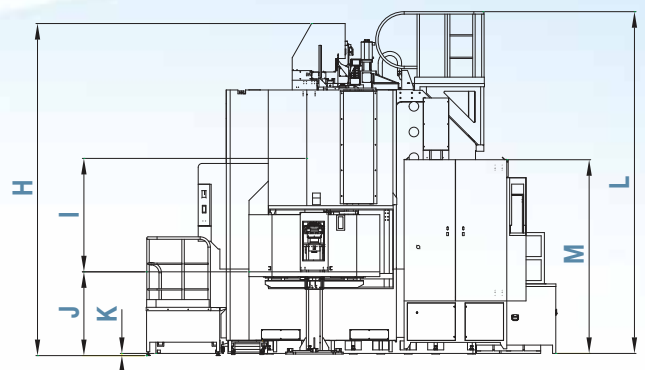
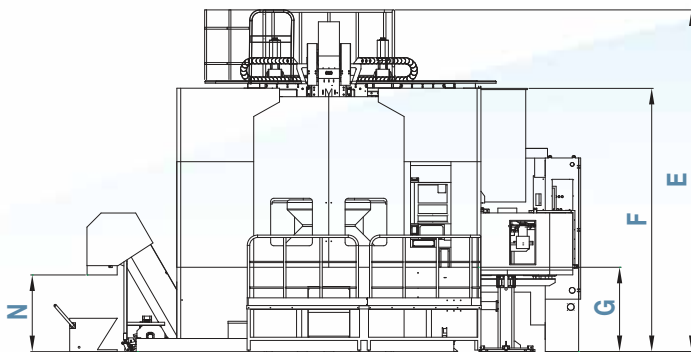
Dimensional Drawings

FVL-VTC+CY

UNIT: mm (")



ITEM	FVL-1600VTC+CY
A	6,290 (247.6)
B	2,000 (78.7)
C	8,430 (331.9)
D	800 (31.5)
E	5,550 (218.5)
F	3,135 (123.4)
G	1,350 (53.1)
H	6,160 (242.5)
I	1,629 (64.1)
J	1,415 (55.7)
K	40 (1.6)
L	5,550 (218.5)
M	2,980 (117.3)
N	1,040 (40.9)

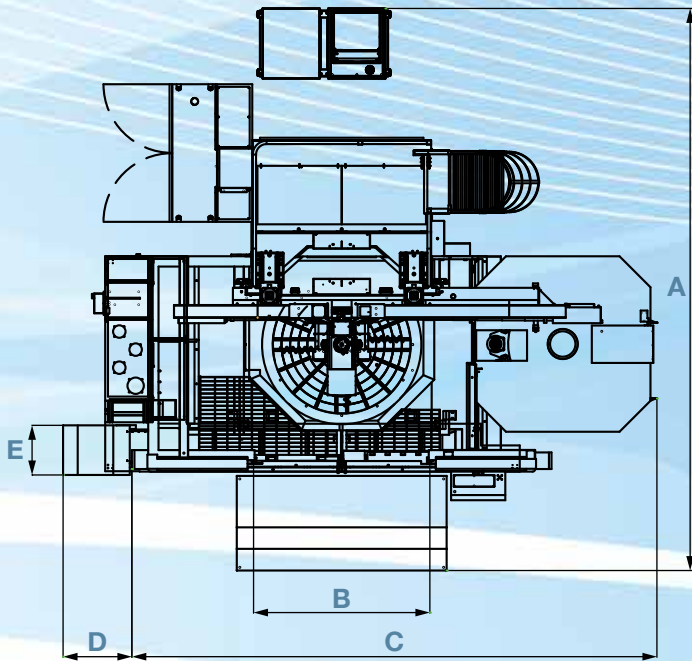


FVL-VTC Series

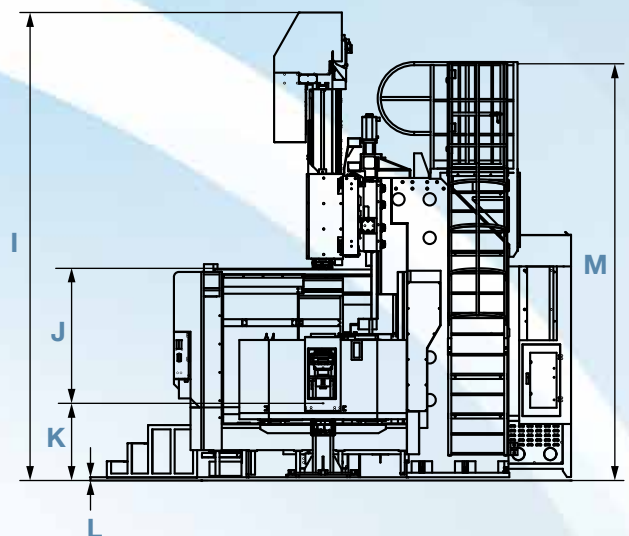
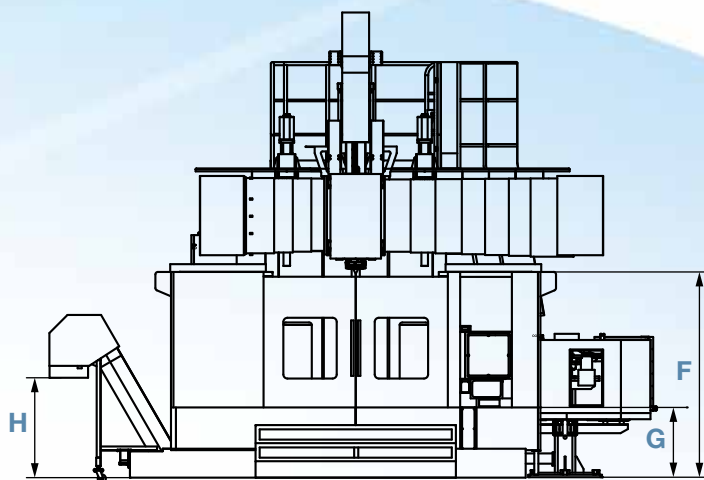
Dimensional Drawings

FVL-VTC
FVL-VTC+C

UNIT: mm (")



ITEM	1250VTC 1250VTC+C	1600VTC 1600VTC+C	2000VTC 2000VTC+C
A	5,710 (224.8)	6,250 (246.1)	6,300 (248)
B	1,600 (63)	2,000 (78.7)	2,500 (98.4)
C	5,100 (200.8)	5,800 (228.3)	6,990 (275.2)
D	2,100 (82.7)	1,420 (55.9)	955 (37.6)
E	600 (23.6)	600 (23.6)	600 (23.6)
F	2,835 (111.6)	2,540 (100)	2,515 (99)
G	835 (32.9)	935 (36.8)	835 (32.9)
H	1,000 (39.4)	1,000 (39.4)	1,000 (39.4)
I	5,625 (221.5)	5,650 (222.4)	6,215 (244.7)
J	1,499 (59)	1,629 (64.1)	1,795 (70.7)
K	940 (37)	960 (37.8)	1,005 (39.6)
L	40 (1.6)	55 (2.2)	55 (2.2)
M	5,140 (202.4)	5,180 (203.9)	5,545 (218.3)



FVL-VTC Series

Standard and Optional Accessories

Standard Accessory	FVL-1250VTC	FVL-1250VTC+C	FVL-1600VTC
Table mount 4 jaw chuck	●	●	●
Air conditioned electric cabinet	●	●	●
Auto. lubrication system	●	●	●
Auto. power shutoff	●	●	●
Work lamp	●	●	●
Electric cabinet work lamp	●	●	●
Chip conveyor with cart	●	●	●
Hydraulic system	●	●	●
Floor type ATC	● 12ATC	● 16ATC	● 12ATC
Oil skimmer	●	●	●
Polit light	●	●	●
Rear chip flash system	●	●	●
Coolant system	●	●	●
Tools & tool box	●	●	●
Leveling bolts and pads	●	●	●
Instruction manuals	●	●	●
Gearbox for milling spindle	-	○	-
2500rpm milling spindle	-	●	-
Clean gun	○	○	○
Optional Accessory			
SIEMENS 840D Control	○	○	○
Linear scales for X, Z axis	○	○	○
Linear scale for Y axis	-	-	-
Automatic tool length measurement	○	○	○
Workpiece measurement	○	○	○
Upgrade 35HP Live Spindle	-	○	-
20/30/50/70Bar Cartridge type filter system for CTS	○	○	○
20/30/50/70Bar Paper type filter system for CTS	○	○	○
Grinding Function	-	○	-
CE Conformity with higher splash guard and Dual check safety	○	○	○
Workpiece cleaning gun (air or water)	○	○	○
Operator platform	○	○	○
Coolant through spindle (CTS)	○	○	○
Arbor for grinding	-	○	-
Auto Front Door (Pneumatic)	○	○	○
OD tool holder FST265x32 (200X95)	○	○	○
OD Tool Holder FST 265x32 (BT6-0539)	○	○	○
OD Tool Holder FST 200x32 (BT6-0540)	○	○	○
OD tool holder FST200x32 (200X95)	○	○	○
OD tool holder FST215x32 (280X65)	○	○	○
Boring Bar ID Tool Holder BT6-0542 FL 220xA32	○	○	○
Boring Bar ID Tool Holder BT6-0545 FL 240x20	○	○	○
Boring Bar ID tool holder FL220xA32	○	○	○
Boring Bar ID tool holder FL280xA50	○	○	○
Boring Bar ID tool holder L450x25	○	○	○
Boring Bar ID tool holder FL240x20	○	○	○
Boring Bar ID tool holder L415x25	○	○	○
Boring Bar ID tool holder L515x25	○	○	○
OD tool holder FST215x32 (260x65) (L) or (R)	○	○	○
OD tool holder FST200x32 (250x95) (L) or (R)	○	○	○
90° right angle milling head BT/CT40	-	○	-
4 jaw manual chuck BT6-1217	○	○	○
Soft jaw BT6-1219	○	○	○

* The symbol meaning indicated on the above list: ● for standard accessory ○ for optional accessory

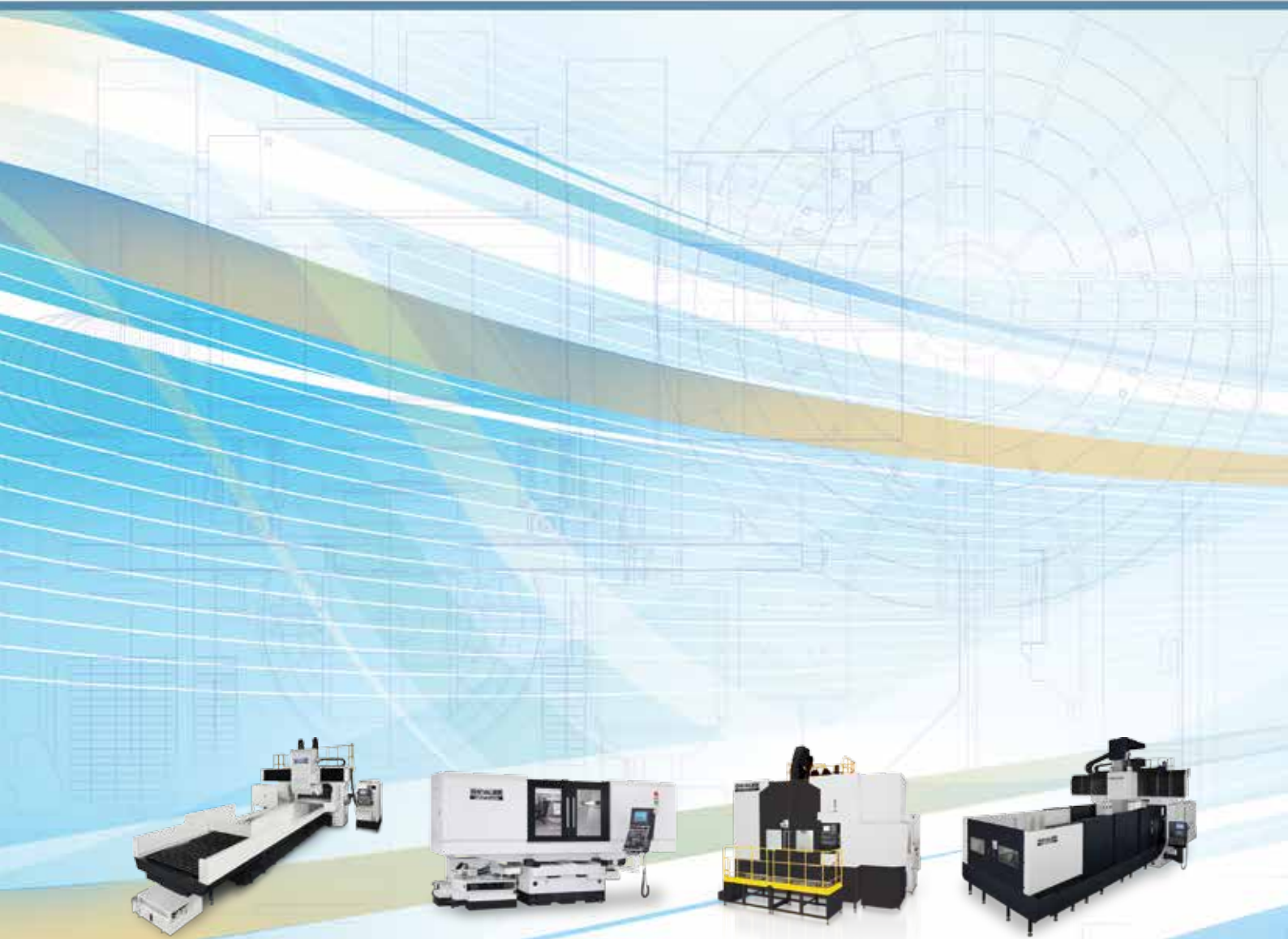
FVL-VTC Series

Specifications

Item	Description	Unit	FVL-1250VTC	FVL-1250VTC+C	FVL-1600VTC
Controller	Controller Brand		Fanuc 0i-T		
Table	Table Diameter	mm(")	1,250 (49.2)	1,250 (49.2)	1,600 (63)
	Speed Range	rpm	Low Speed: 3 ~ 150 rpm, High Speed: 150 ~ 300 rpm	Low Speed: 3 ~ 150 rpm, High Speed: 150 ~ 300 rpm	Low Speed: 2 ~ 123 rpm, High Speed: 123 ~ 250 rpm
	No. Of Range	mm(")	Auto. 2-step		
Capacity	Max. Swing Dia.	mm(")	1,600 (63)	1,600 (63)	2,000 (78.7)
	Max. Cutting Dia.	mm(")	1,600 (63)	1,600 (63)	2,000 (78.7)
	Max. Turning Height	mm(")	1,200 (47.2)	1,200 (47.2)	1,350 (53.1)
	Max. Torque	NM(ft.-lbs.)	11,461.3 NM (8458.4 ft.-lbs.)	11,461.3 NM (8458.4 ft.-lbs.)	13,917 NM (10,270.7 ft.-lbs.)
	Max. Workpiece Weight	kg(lbs.)	8,000 (17,600)	8,000 (17,600)	10,000 (22,000)
Machining Spindle	Spindle Speed	rpm	NA	25 – 2,500	NA
	Spindle Taper		NA	JIS50P-1	NA
	Max. Spindle Torque	NM(ft.-lbs.)	NA	478 (352 ft.-lbs.)	NA
Stroke	X-Axis Stroke	mm(")	-665/+960 (-22.2"/37.8")	-665/+960 (-22.2"/37.8")	-840/+1,160 (-33"/45.6")
	Y-Axis Stroke	mm(")	NA		
	Z-Axis Stroke	mm(")	900 (35.4)		
	W-Axis Beam Stroke	mm(")	800 (31.4)		
C-Axis	Min. Index Angle	degree	NA	0.001°	NA
	Rotation Speed	rpm	NA	3.33 rpm	NA
	Cutting Federate	deg/min	NA	0~1,200 deg/min	NA
Feed Rates and Rapids	Vertical Axis Equalizer		Hydraulic counter balance device		
	X,Z axis Rapid Traverse	m/mim(ipm)	10/10 m/min (393/393ipm)		
	Y-axis Rapid Traverse		NA		
	Cutting Feed Rate X-, Z-Axis	mm(")	Turning: 0.01-500 mm/rev (0.0001"-19"/rev)	Milling: 1-3,000 mm/min (0.04"-118"/rev) Turning: 0.01-500 mm/rev (0.0001"-19"/rev)	Turning: 0.01-500 mm/rev (0.0001"-19"/rev)
	W-axis Beam Rapid Traverse	m/mim(ipm)	0.72 m/min (28ipm)		
Automatic Tool Changer	Tool Shank		BT50		
	Pull Stud		JMBTA Standard 45°		
	Tool Changer System		Carousel		
	Tool Storage Capacity		12★	16★★	12★
	Max. Tool Diameter	mm(")	220 (8.7)		
	Max. Tool Length	mm(")	500 (19.7)		
	Max. Tool Weight	kg(lbs.)	Turning: 50kg (110 lbs.)	Turning: 50kg (110 lbs.) Milling: 25kg (55 lbs.)	Turning: 50kg (110 lbs.)
	Tool Selection System		Absolute Tool selection		
	Tool Change Time (chip-to chip)	sec.	30	30	40
Motors	Milling Spindle Motor (continuous/30min)	kW (HP)	NA	15/18.5 (20/25)	NA
	Turning Table Spindle Motor (continuous/30min)	kW (HP)	37/45 a40 (50/60 a40)		
	X/Z-Axis Drive Motors	kW (HP)	7/7 (9/9)		
	Y-Axis Drive Motors	kW (HP)	NA		
	Hydraulic Motor	kW (HP)	7.5 (10)		
Power Requirement	Power Required		220 V, 50/60Hz		
	Voltage		75KVA	90 KVA	75 KVA
	Compressed Air Supply		5.5 kg/cm ² (79psi)/200 NL/min		
Tank Capacities	Oil/Grease Tank Capacity	L (gal.)	6 (1.6)		
	Hydraulic Tank Capacity	L (gal.)	150 (39.6)		
Machine Dimensions	Machine Height(H)	mm(")	5,625 (221.5)	5,625 (221.5)	5,650 (222.4)
	Machine Weight	kg(lbs.)	22,000 (48,400)	22,000 (48,400)	32,000 (70,400)

★Turning x12, ★★Milling x8, Turning x7, Protection Flange x1, ★★★Milling x10, Turning x9, Protection Flange x1

FVL-1600VTC+C	FVL-1600VTC+CY	FVL-2000VTC	FVL-2000VTC+C
Fanuc Oi-T			
1,600 (63)	1,600 (63)	2,000 (78.7)	2,000 (78.7)
Low Speed: 2 ~ 123 rpm, High Speed: 123 ~ 250 rpm	Low Speed: 2 ~ 123 rpm, High Speed: 123 ~ 250 rpm	Low Speed: 3 ~ 78 rpm, High Speed: 78 ~ 200 rpm	Low Speed: 3 ~ 78 rpm, High Speed: 78 ~ 200 rpm
Auto. 2-step			
2,000 (78.7)	2,000 (78.7)	2,500 (98.4)	2,500 (98.4)
2,000 (78.7)	2,000 (78.7)	2,500 (98.4)	2,500 (98.4)
1,350 (53.1)	1,350 (53.1)	1,600 (63)	1,600 (63)
13,917 NM (10,270.7 ft.-lbs.)	13,917 NM (10,270.7 ft.-lbs.)	35,594 NM (26,268.3 ft.-lbs.)	35,594 NM (26,268.3 ft.-lbs.)
10,000 (22,000)	10,000 (22,000)	12,000 (26,400)	12,000 (26,400)
25 – 2,500	25 – 2,500	NA	25 – 2,500
JIS50P-1	JIS50P-1	NA	JIS50P-1
478 (352 ft.-lbs.)	478 (352 ft.-lbs.)	NA	478 (352 ft.-lbs.)
-840/+1,160 (-33"/45.6")	-840/+1,160(-33"/45.6")	-1,040/+1,430 (-41"/56.2")	-1,040/+1,430 (-41"/56.2")
NA	±100 (3.94")	NA	NA
	900 (35.4)		1,050 (41.3)
	800 (31.5)		1,100 (43.3)
0.001°	0.001°	NA	0.001°
3.33 rpm	3.33 rpm	NA	3.33 rpm
0~1,200 deg/min	0~1,200 deg/min	NA	0~1,200 deg/min
Hydraulic counter balance device			
10/10 m/min (393/393ipm)			
NA	6 m/min (236ipm)	NA	NA
Milling: 1-3,000 mm/min (0.04"-118"/rev) Turning: 0.01-500 mm/rev (0.0001"-19"/rev)	Milling: 1-3,000 mm/min (0.04"-118"/rev) Turning: 0.01-500 mm/rev (0.0001"-19"/rev)	Turning: 0.01-500 mm/rev (0.0001"-19"/rev)	Milling: 1-3,000 mm/min (0.04"-118"/rev) Turning: 0.01-500 mm/rev (0.0001"-19"/rev)
0.72 m/min (28ipm)			
BT50			
JMBTA Standard 45°			
Carousel			
16★★	20★★★	12★	16★★
220 (8.7)			
500 (19.7)			
Turning: 50kg (110 lbs.) Milling: 25kg (55 lbs.)	Turning: 50kg (110 lbs.) Milling: 25kg (55 lbs.)	Turning: 50kg (110 lbs.)	Turning: 50kg (110 lbs.) Milling: 25kg (55 lbs.)
Absolute Tool selection			
40	40	50	50
15/18.5 (20/25)	15/18.5 (20/25)	NA	15/18.5 (20/25)
37/45 α40 (50/60 α40)	37/45 α40 (50/60 α40)	60/75 α60HVI (80/100 α60HVI)	60/75 α60HVI (80/100 α60HVI)
7/7 (9/9)	7/7 (9/9)	5.5/5.5 α30HVIS (7/7 α30HVIS)	5.5/5.5 α30HVIS (7/7 α30HVIS)
NA	7 (9)	NA	NA
7.5 (10)			
220 V, 50/60Hz	220 V, 50/60Hz	460 V, 50/60Hz	460 V, 50/60Hz
90 KVA			
5.5 kg/cm ² (79psi)/200 NL/min			
6 (1.6)			
150 (39.6)			
5,650 (222.4)	5,550 (218.5)	6,215 (244.7)	6,215 (244.7)
32,000 (70,400)	35,000 (77,000)	45,000 (99,000)	45,000 (99,000)



Grinding Machines

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Turning Machines

Milling Machines

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