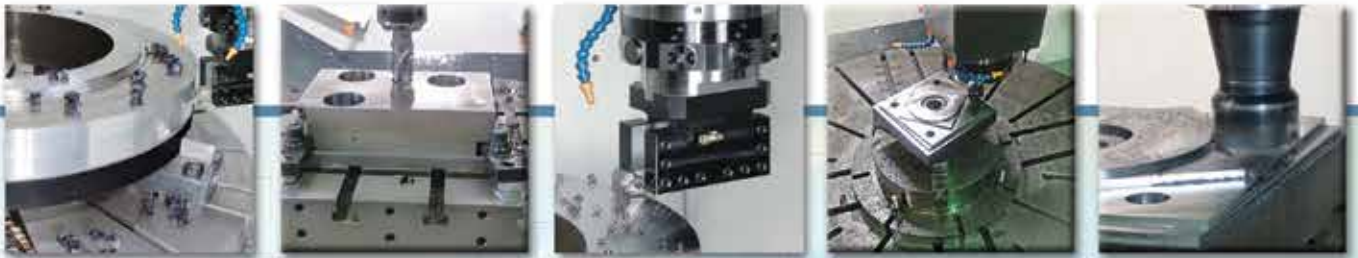


CHEVALIER®

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 (100 HP)

Live Tooling, C-Axis and Y-Axis Available

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

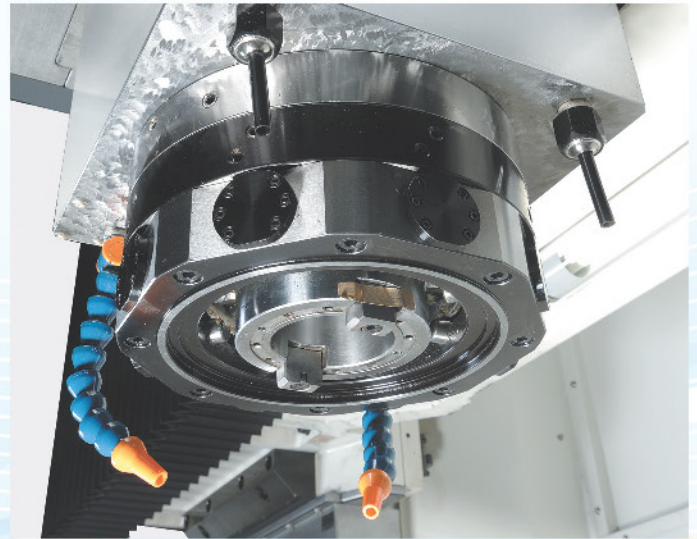
16 Carousel - VTC+C Series and 20 Carousel - VTC+CY Series

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

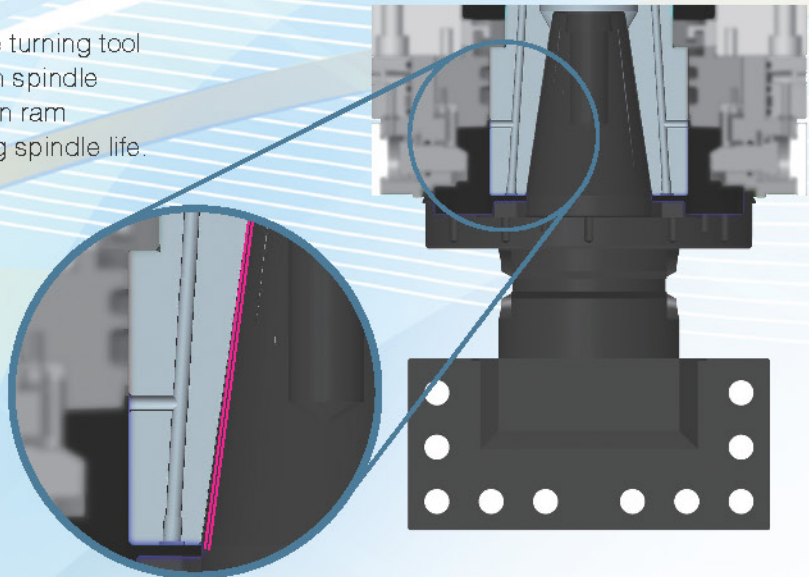
FVL-VTC Series

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.

Item	FVL-1250	FVL-1600
H	3,600mm (141.7")	3,650mm (143.7")
W	1,000mm (39.4")	1,240mm (48.8")
L	1,850mm (72.8")	2,200mm (86.6")

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.

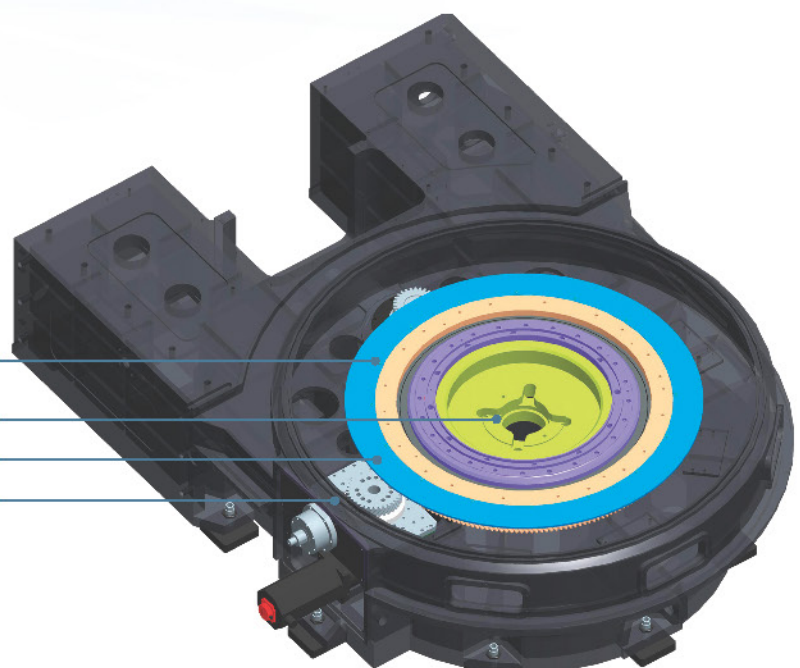
C-Axis Design - The C-axis runs with an independent servo motor control with a hydraulic braking system and can turn at 3.33rpm while providing minimum 0.001-degree C-axis indexing. Added to the regular spindle, the CF-axis can perform multiple tasks such as milling, tapping, drilling and profile grinding.

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 Construction

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)

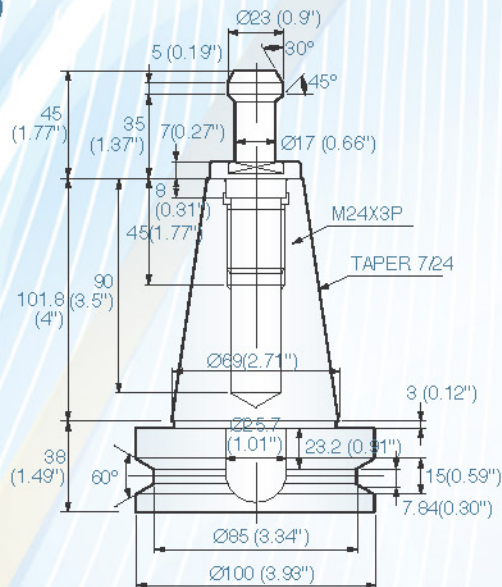


Double Column Design for FVL-2000VTC+C Series

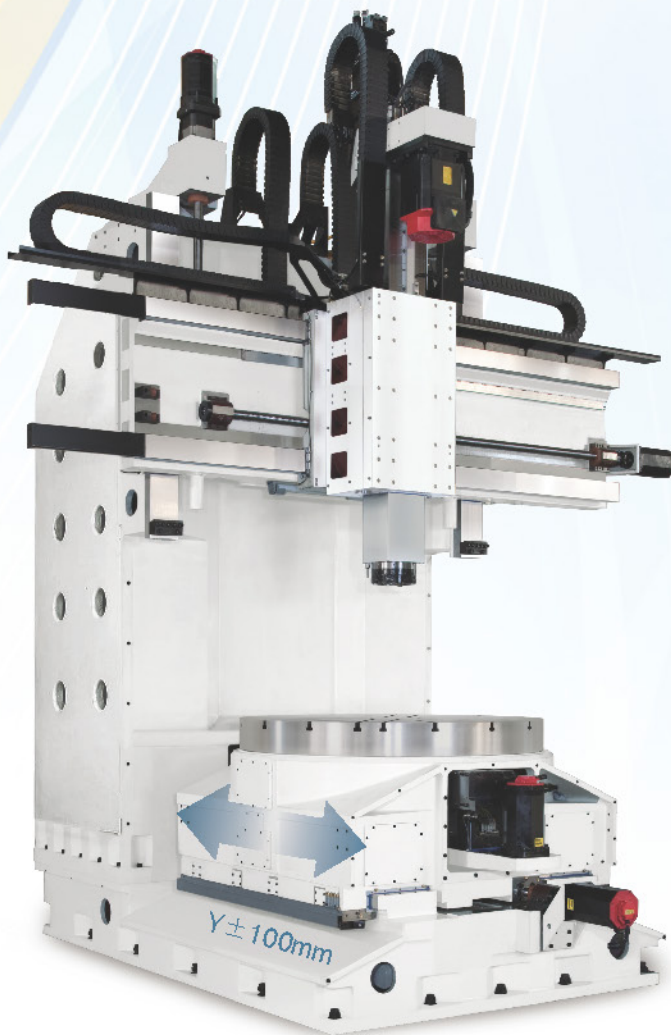
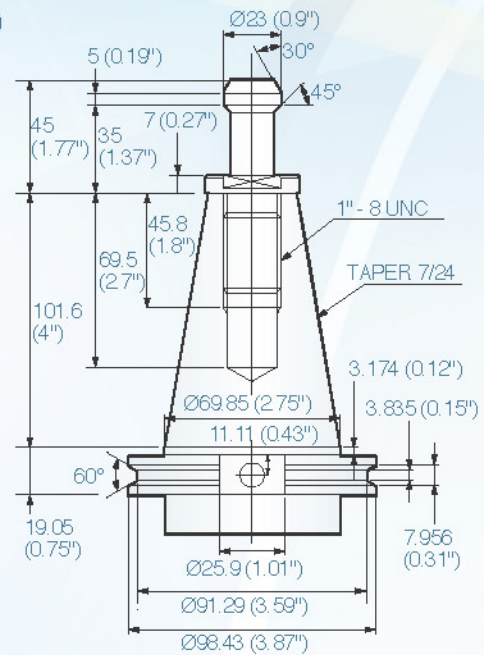
FVL-VTC Series

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.



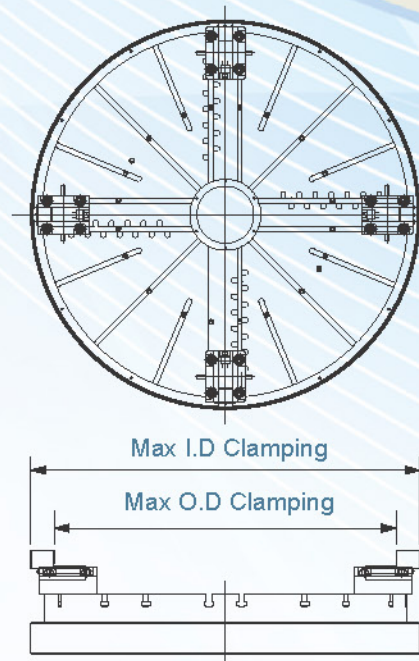
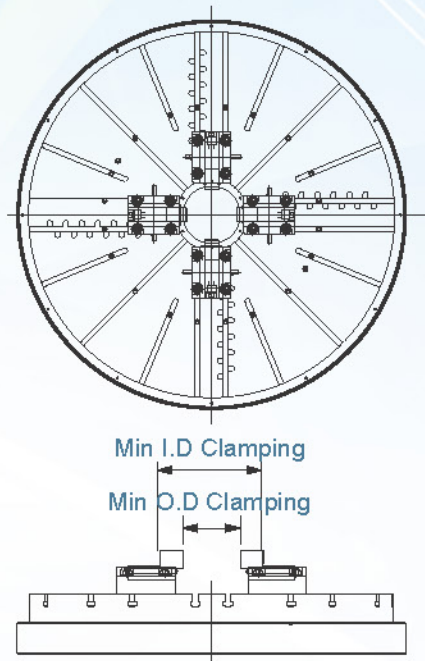
FVL-1600VTC+C Machine Frame

FVL-VTC Series

Capabilities

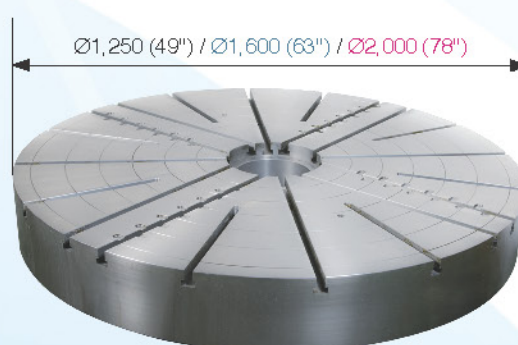
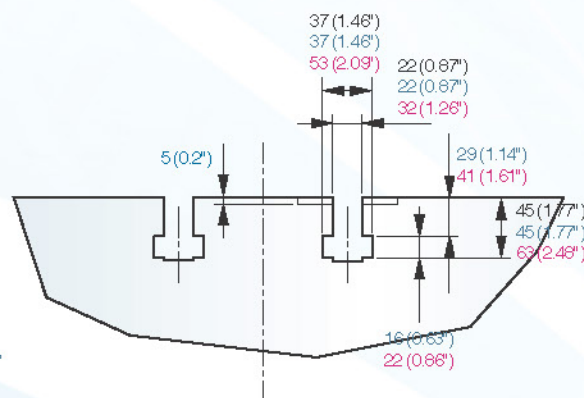
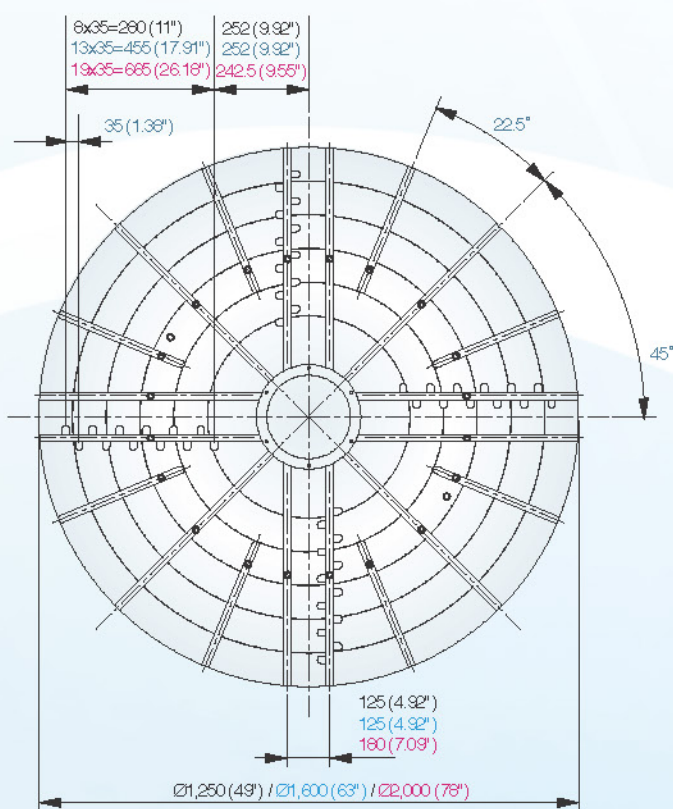
UNIT : mm (")

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

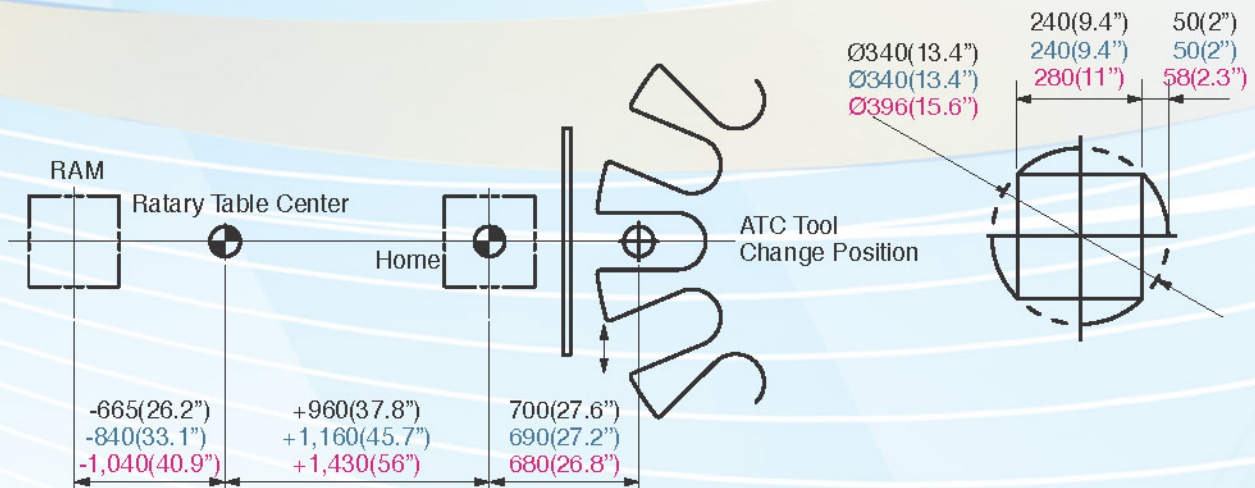
Machining Range

UNIT : mm (")

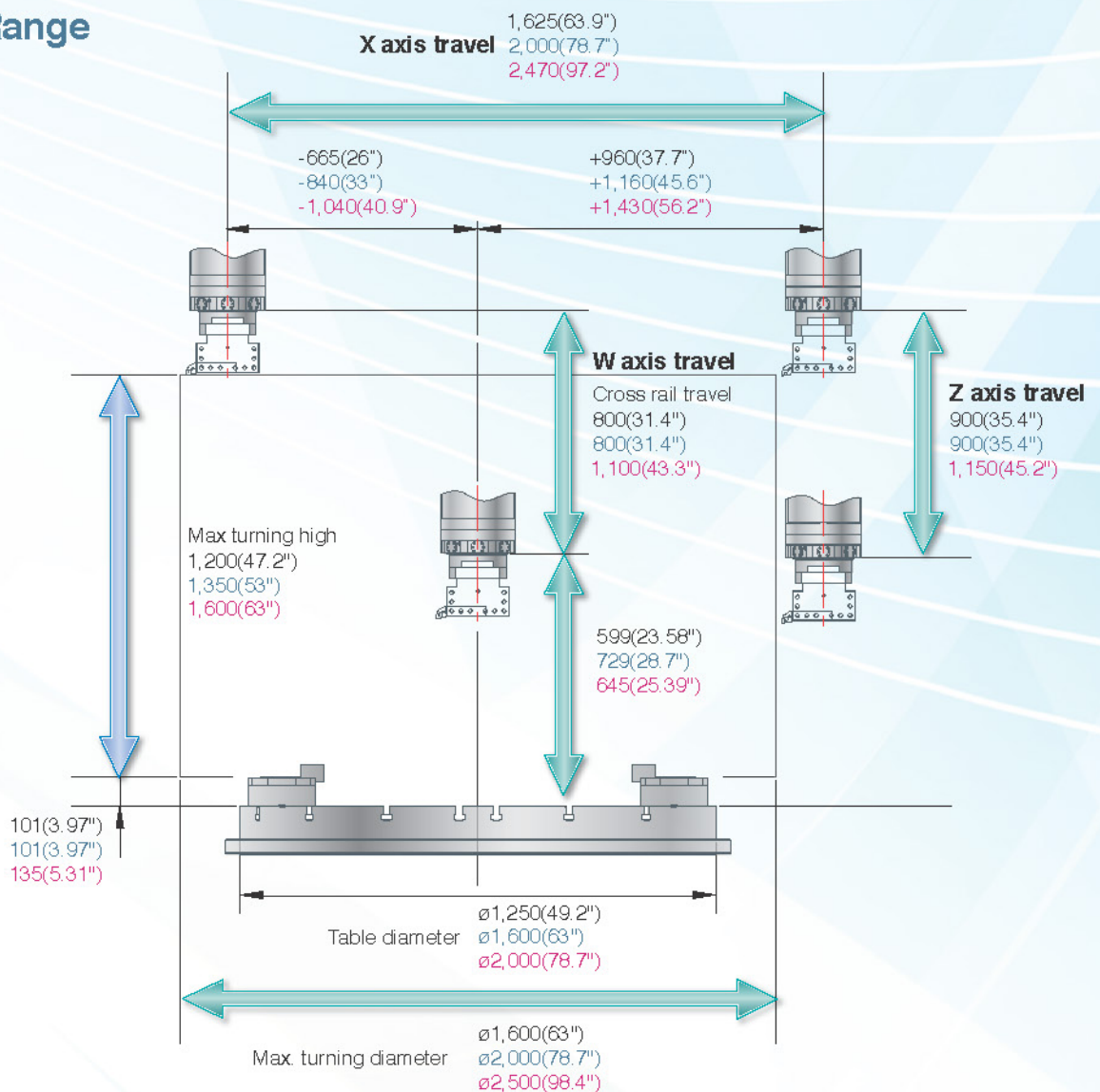
■ FVL-1250 ■ FVL-1600 ■ FVL-2000

X-Axis

Interference



Machining Range



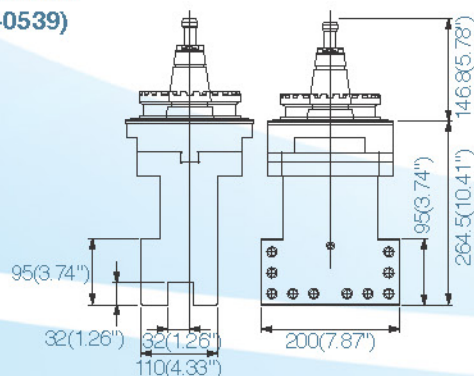
FVL-VTC Series

Tool Holder System Drawing

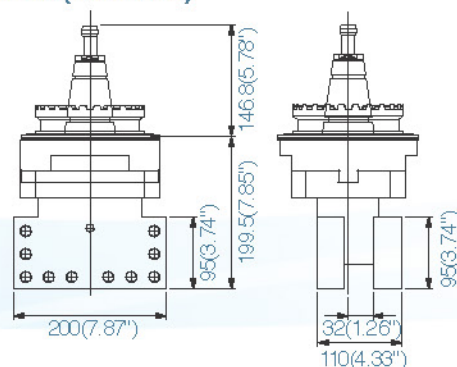
UNIT : mm (")

OD Tool Holder

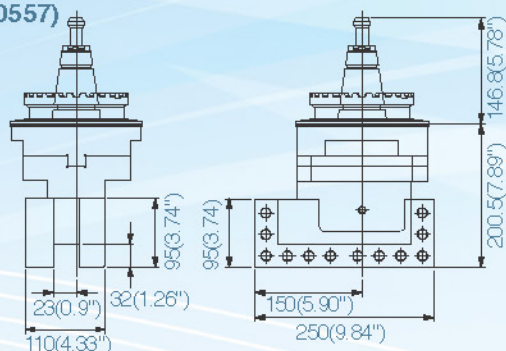
FST 265x32
(BT6-0539)



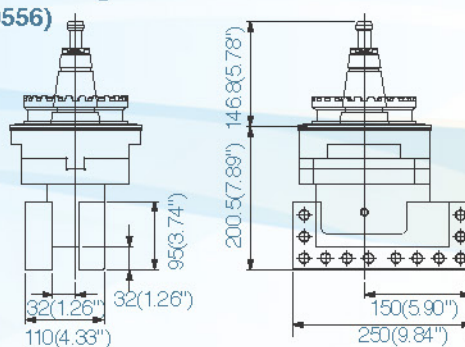
FST 200x32(BT6-0540)



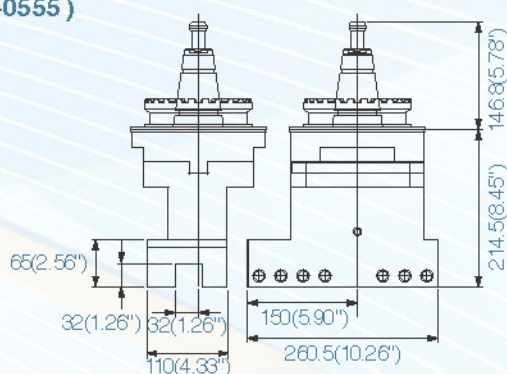
FST 200x32 Left Hand
(BT6-0557)



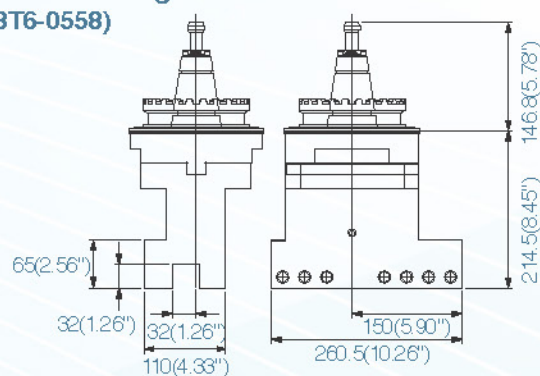
FST 200x32 Right Hand
(BT6-0556)



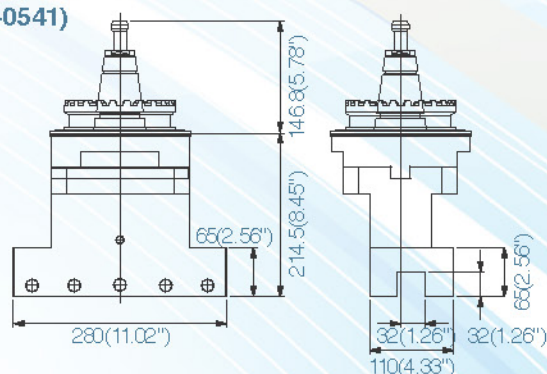
FST 215x32 Left Hand
(BT6-0555)



FST 215x32 Right Hand
(BT6-0558)



FST 215x32
(BT6-0541)



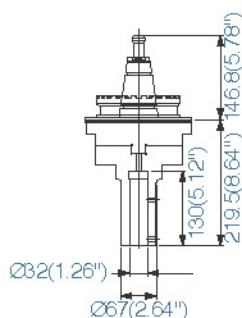
FVL-VTC Series

Tool Holder System Drawing

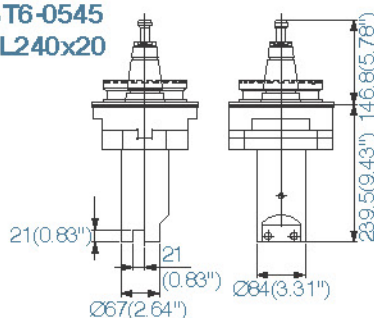
UNIT : mm (")

Boring Bar ID Tool Holder

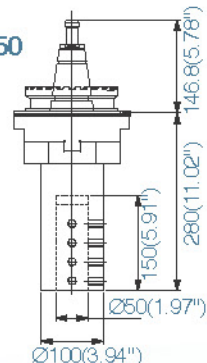
BT6-0542
FL 220xA32



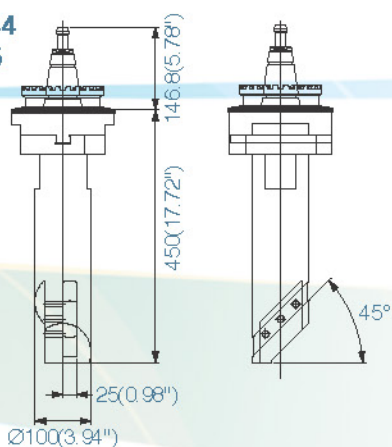
BT6-0545
FL240x20



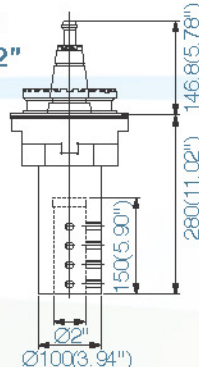
BT6-0543
FL 280xA50



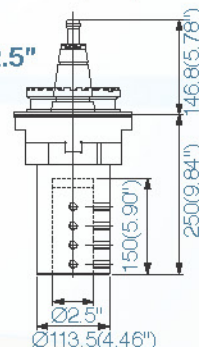
BT6-0544
L450x25



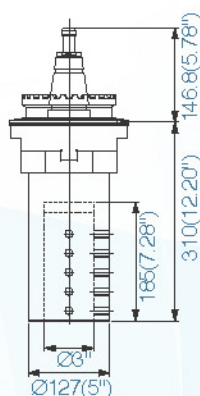
BT6-0566
FL280xA2"



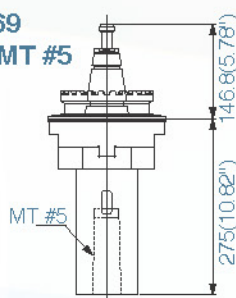
BT6-0567
FL250xA2.5"



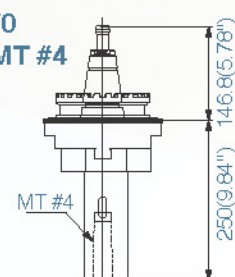
BT6-0568
FL310xA3"



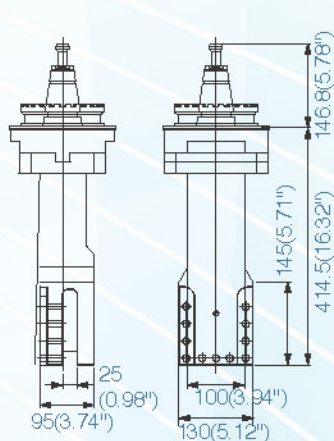
BT6-0569
FL275xMT #5



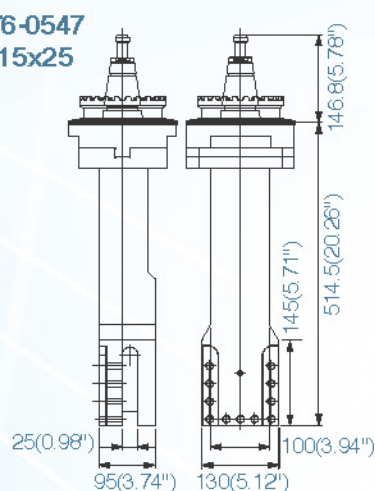
BT6-0570
FL250xMT #4



BT6-0546
L415x25



BT6-0547
L515x25

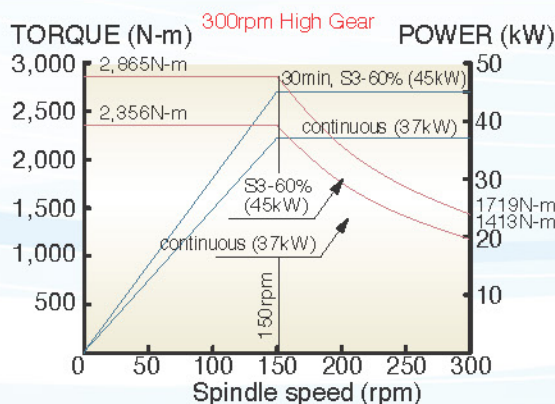


FVL-VTC Series

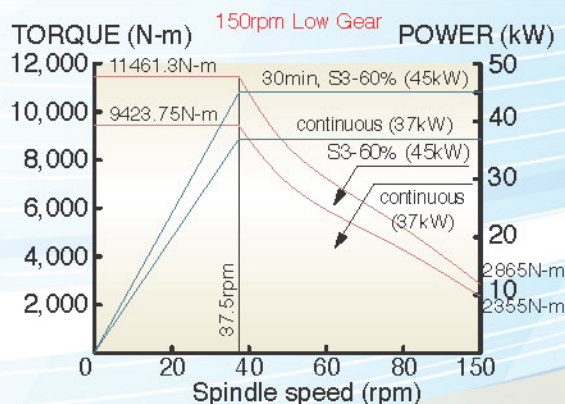
Rotary Table Motor Torque Chart

FVL-1250VTC

FANUC α 40/6000i Spindle

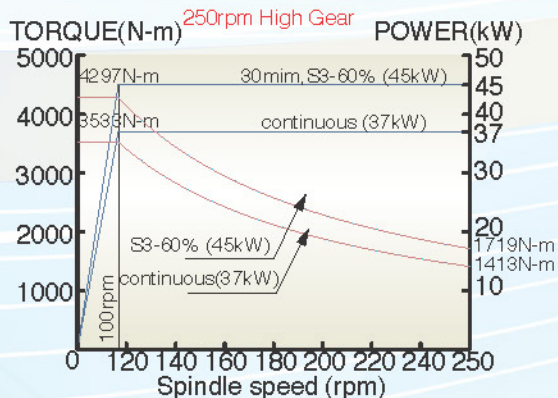


FANUC α 40/6000i Spindle

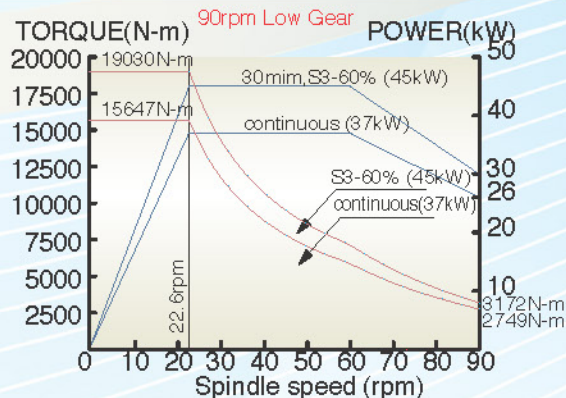


FVL-1600VTC

FANUC α 40/6000i Spindle

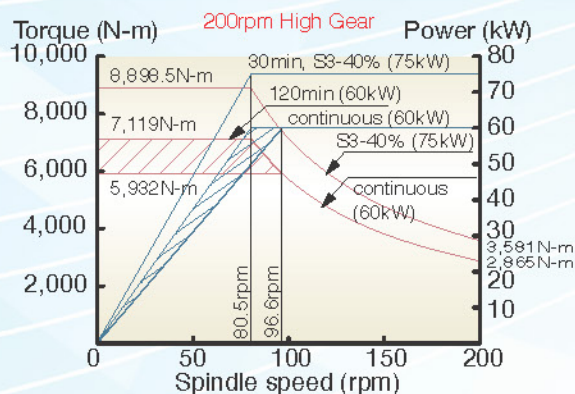


FANUC α 40/6000i Spindle

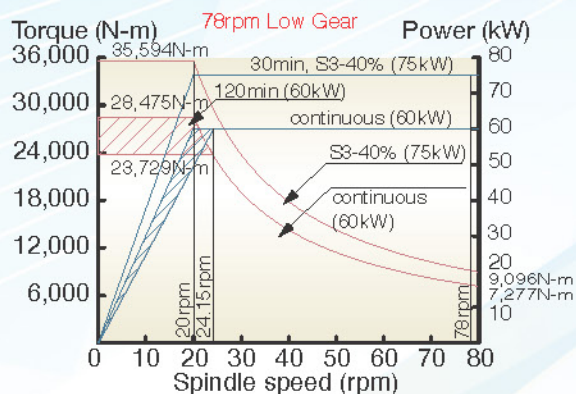


FVL-2000VTC

FANUC α 60/4500HV Spindle



FANUC α 60/4500HV Spindle



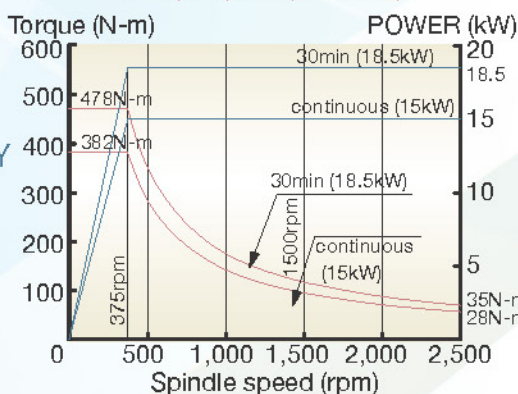
Live Tooling Torque Chart

Standard 18.5kW +
Optional Gearbox 2500rpm Maximum

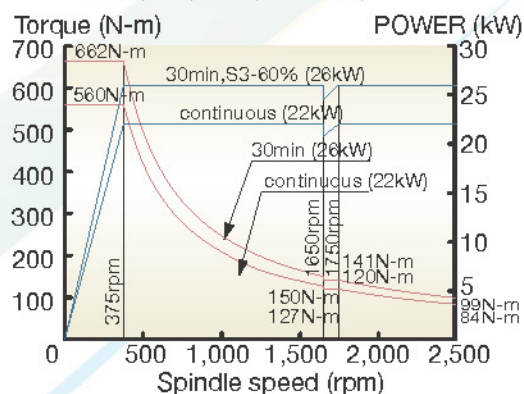
Optional 26kW +
Gearbox 2500rpm Maximum

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

FANUC 0i-T Control Features

- Simultaneously controllable Axes: 4
- Minimum Programmable increment: 0.001mm (0.0001")
- Program storage length: 512K
- Registerable programs: 400
- Backlash compensation
- Pitch error compensation
- Constant surface speed control
- 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
- 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
- Keyboard type manual data input (MDI FULL KEY)
- Program protect key
- Rapid travel override
- Spindle speed override
- Program Code: EIA, ISO automatic recognition

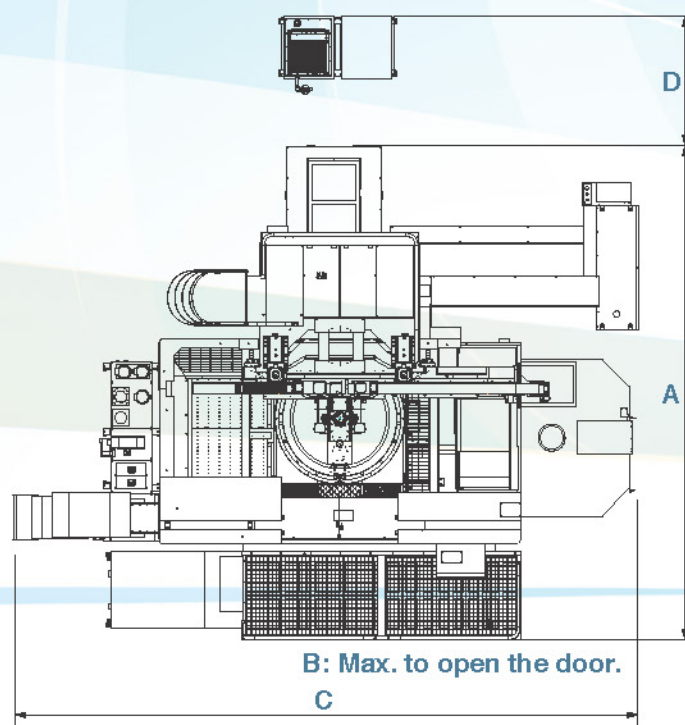


FVL-VTC Series

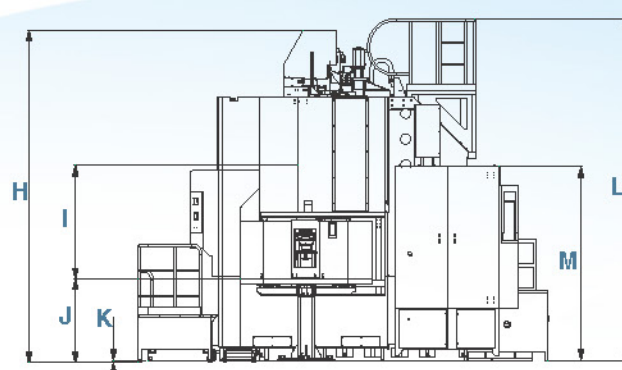
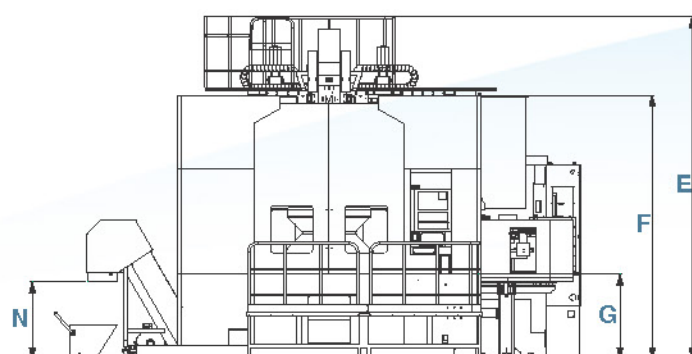
Dimensional Drawings

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")



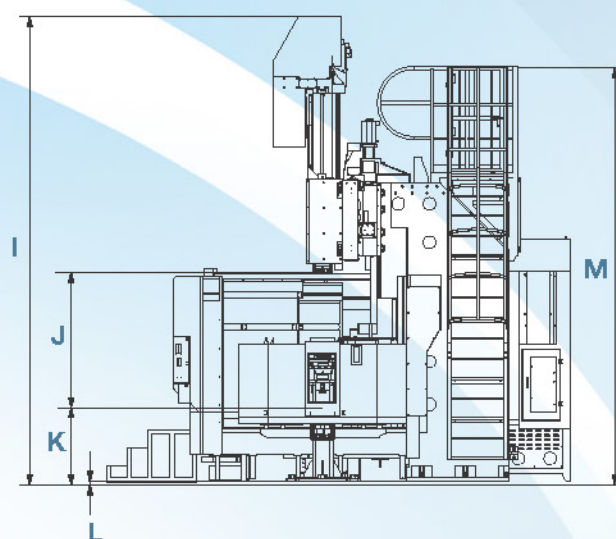
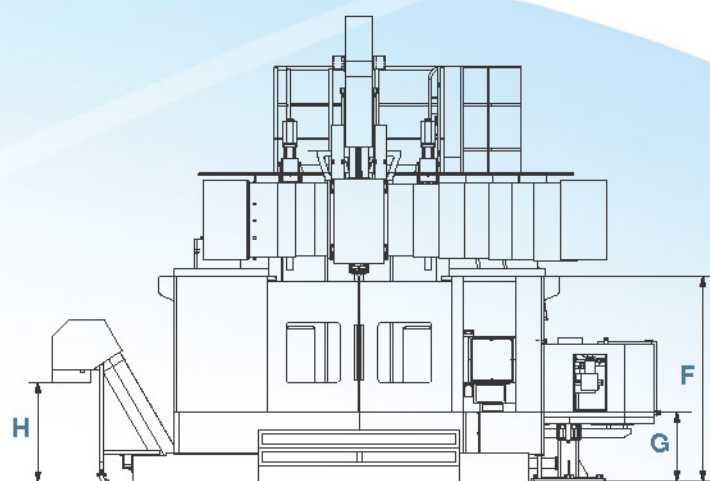
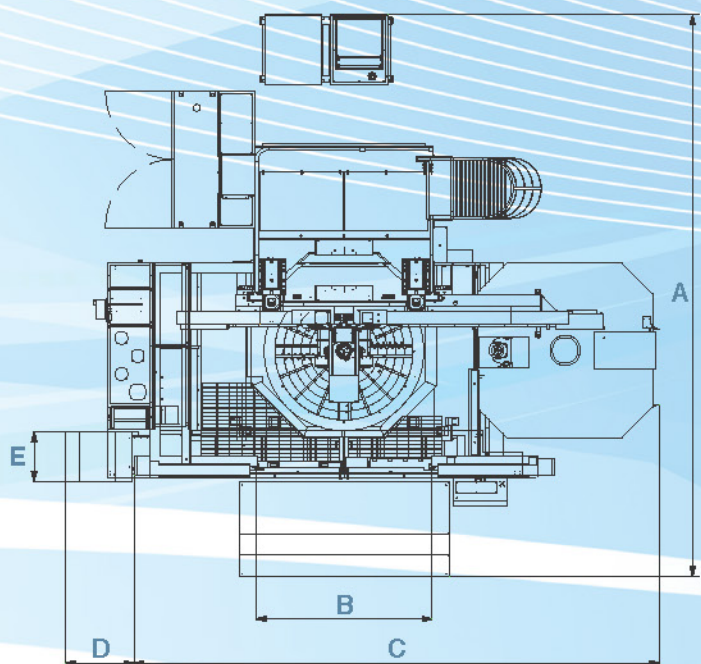
FVL-VTC Series

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

Item	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	⊙	⊙	⊙	
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	⊙	⊙	⊙	

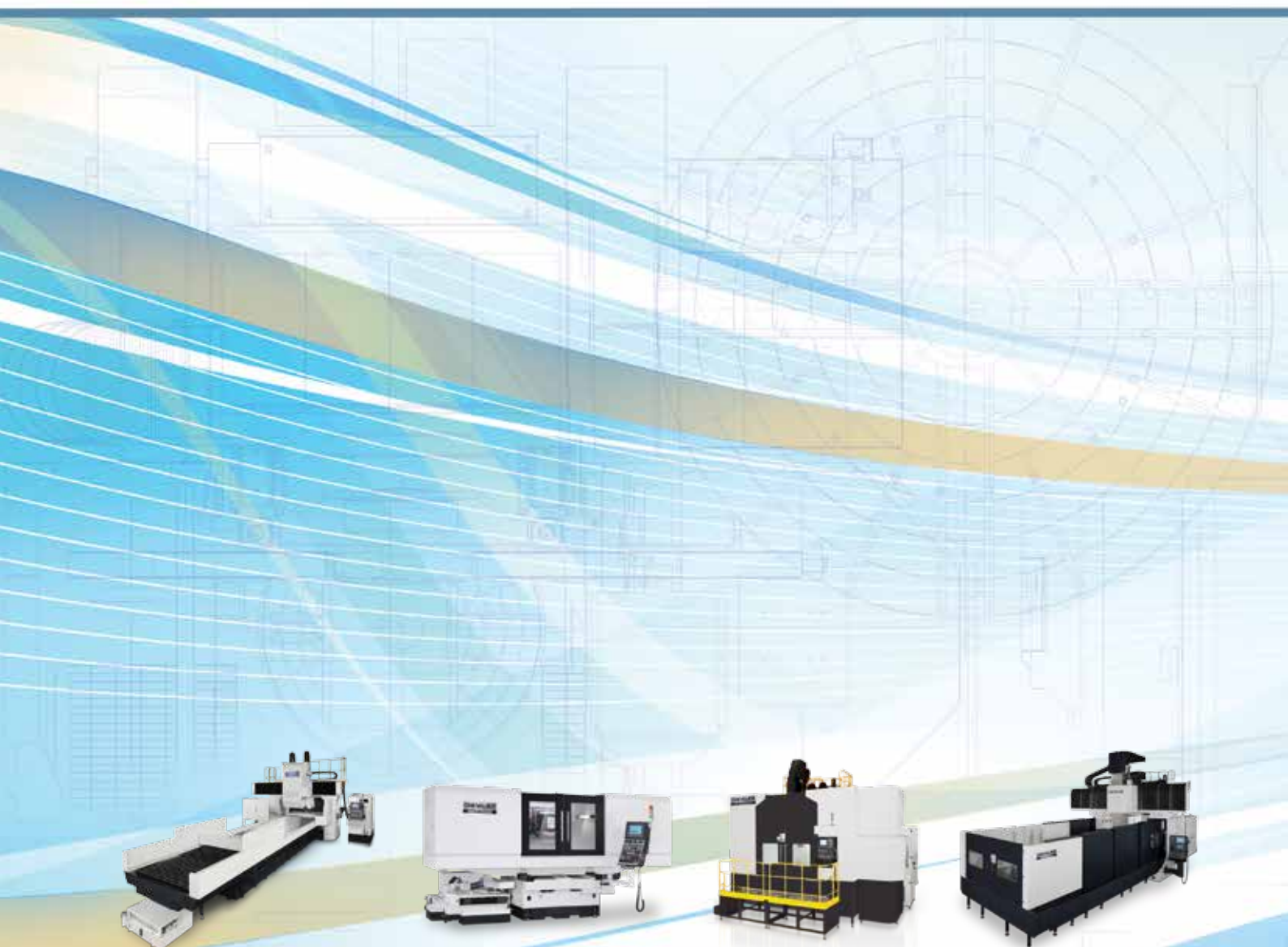
* The symbol meaning indicated on the above list: ● for standard accessory ⊙ for optional accessory

FVL-VTC Series

Specifications

Item	Description	FVL-1250VTC	FVL-1250VTC+C	FVL-1600VTC	
Controller	Controller Brand	Fanuc 0i-T			
Table	Table Diameter	1,250mm (49.2")		1,600mm (63")	
	Speed Range	Low Speed: 3 ~ 150 rpm, High Speed: 150 ~ 300 rpm		Low Speed: 1 ~ 90 rpm, High Speed: 91 ~ 250 rpm	
	No. Of Range	Auto. 2-step			
Capacity	Max. Swing Dia.	1,600mm (63")		2,000mm (78.7")	
	Max. Cutting Dia.	1,600mm (63")		2,000mm (78.7")	
	Max. Turning Height	1,200mm (47.2")		1,350mm (53.1")	
	Max. Torque	11,461.3 Nm (8458.4 ft.-lbs.)		19,030 Nm (14044.1 ft.-lbs.)	
	Max. Workpiece Weight	8,000kg (17,600 lbs.)		10,000kg (22,000 lbs.)	
Machining Spindle	Spindle Speed	NA	25 ~ 2,500rpm	NA	
	Spindle Taper	NA	JIS50P-1	NA	
	Max. Spindle Torque	NA	478Nm (352 ft.-lbs.)	NA	
Stroke	X-Axis Stroke	-665mm/+960mm (-22.2"/37.8")		-840mm/+1,160mm (-33"/45.6")	
	Y-Axis Stroke	NA			
	Z-Axis Stroke	900mm (35.4")			
	W-Axis Beam Stroke	800mm (31.4")			
C-Axis	Min. Index Angle	NA	0.001°	NA	
	Rotation Speed	NA	3.33 rpm	NA	
	Cutting Federate	NA	0~1,200 deg/min	NA	
Feed Rates and Rapids	Vertical Axis Equalizer	Hydraulic counter balance device			
	X,Z axis Rapid Traverse	10/10 m/min (393/393ipm)			
	Y-axis Rapid Traverse	NA			
	Cutting Feed Rate X-, Z-Axis	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	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	220mm (8.7")			
	Max. Tool Length	500mm (19.7")			
	Max. Tool Weight	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)	30 sec		40 sec	
Motors	Milling Spindle Motor (continuous/30min)	NA	15/18.5kW (20/25HP)	NA	
	Turning Table Spindle Motor (continuous/30min)	37/45kW (50/60HP) α40			
	X/Z-Axis Drive Motors	7/7kW (9/9HP)			
	Y-Axis Drive Motors	NA			
	Hydraulic Motor	7.5kW (10HP)			
Power Requirement	Power Required	220V, 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	6L (1.6 gal)			
	Hydraulic Tank Capacity	150L (39.6 gal)			
Machine Dimensions	Machine Height(H)	5,625mm (221.5")		5,650mm (222.4")	
	Machine Weight	22,000kg (48,400 lbs.)		32,000kg (70,400 lbs.)	

	FVL-1600VTC+C	FVL-1600VTC+CY	FVL-2000VTC	FVL-2000VTC+C
	Fanuc Oi-T			
	1,600mm (63")		2,000mm (78.7")	
	Low Speed: 1 ~ 90 rpm, High Speed: 91 ~ 250 rpm	Low Speed: 2 ~ 123 rpm, High Speed: 123 ~ 250 rpm	Low Speed: 3 ~ 78 rpm, High Speed: 78 ~ 200 rpm	
	Auto. 2-step			
	2,000mm (78.7")		2,500mm (98.4")	
	2,000mm (78.7")		2,500mm (98.4")	
	1,350mm (53.1")		1,600mm (63")	
	19,030 Nm (14044.1 ft.-lbs.)	13,917 Nm (10270.7 ft.-lbs.)	35,594 Nm (26268.3 ft.-lbs.)	
	10,000kg (22,000 lbs.)		12,000kg (26,400 lbs.)	
	25 ~ 2,500rpm		NA	25 ~ 2,500rpm
	JIS50P-1		NA	JIS50P-1
	478Nm (352 ft.-lbs.)		NA	478Nm (352 ft.-lbs.)
	-840mm/+1,160mm (-33"/45.6")		-1,040mm/+1,430mm (-41"/56.2")	
	NA	±100mm (3.94")	NA	NA
	900mm (35.4")		1,050mm (41.3")	
	800mm (31.5")		1,100mm (43.3")	
	0.001°		NA	0.001°
	3.33 rpm		NA	3.33 rpm
	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)		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)			
	BT 50			
	JMBTA Standard 45°			
	Carousel			
	16★★	20★★★	12★	16★★
	220mm (8.7")			
	500mm (19.7")			
	Turning: 50kg (110 lbs.) Milling: 25kg (55 lbs.)		Turning: 50kg (110 lbs.)	Turning: 50kg (110 lbs.) Milling: 25kg (55 lbs.)
	Absolute Tool selection			
	40 sec		50 sec	
	15/18.5kW (20/25HP)		NA	15/18.5kW (20/25HP)
	37/45kW (50/60HP) α40		60/75kW (80/100HP) α60HVI	
	7/7kW (9/9HP)		5.5/5.5kW (7/7HP) α30HVIS	
	NA	7kW (9HP)	NA	
	7.5kW (10HP)			
	220V, 50/60Hz		460V, 50/60Hz	
	90 kVA			
	5.5 kg/cm ² (79psi) / 200 NL/min			
	6L (1.6 gal)			
	150L (39.6gal)			
	5,650mm (222.4")	5,550mm (218.5")	6,215mm (244.7")	6,215mm (244.7")
	32,000kg (70,400 lbs.)	35,000kg (77,000 lbs.)	45,000kg (99,000lbs.)	45,000kg (99,000 lbs.)



Grinding Machines

Grinding Machines

Turning Machines

Milling Machines

Headquarters

FALCON MACHINE TOOLS CO., LTD.

No. 34, Hsing Kong Road, Shang Kang, Chang Hua
TAIWAN 50971

Tel: +886 4 799 1126 Fax: +886 4 798 0011

www.chevalier.com.tw

overseas@chevalier.com.tw

U.S.A. Headquarters

CHEVALIER MACHINERY INC.

9925 Tabor Place, Santa Fe Springs, CA 90670 U.S.A.

Tel: (562) 903 1929 Fax: (562) 903 3959

www.chevalierusa.com

info@chevalierusa.com

