

CHEVALIER®

Grinding / Turning / Milling



FVL-CNC VTL Series

CNC Vertical Turning Lathes Box Way

FVL-8 • 12 • 20 • 24



Note: Machine shown above includes optional accessories.

FVL- 8 • 12 • 20 • 24 series

CNC Vertical Turning Lathe with Box Way for Heavy-Duty Machining

High-Precision Vertical Turning Lathe - The FVL-CNC VTL series is perfect for automation or cell manufacturing and the simplified fixture design is excellent for turning irregular shaped workpieces. This series is an extremely versatile box way VTL for machining heavy and hard-to-hold workpieces. The series minimizes workpiece clamping and features easier loading and unloading in a production line.

The rigid ribbed-frame castings minimize distortion during heavy machining. The solid, one-piece high-quality cast iron frame is stress-relieved, high-frequency annealed and closely ribbed for maximum rigidity. The highly rigid alloy-steel box way design and pretensioned ballscrew are excellent for heavy-duty turning with superior part finish and close part tolerances.

Hardened and ground box ways on the X- and Z-axis use high-precision linear roller bearings and specially designed gibs for better preload, friction reduction and more smooth movement. Parallelism, flatness and squareness are within 0.004mm (0.00016"). Optional tailstock system provides long support for long workpiece for maximum clamping rigidity. The series features an AC servo motor drive on the X- and Z-axis for accurate positioning and repeatability.

The sealing system design protects the spindle from chip and coolant contamination. The internal chip anger and external chip conveyor, efficiently removes chips and are standard accessories. Plus the optional oil skimmer prolongs coolant life. The two air counter weight cylinders provide smooth movement during heavy cutting.

The C-axis and live tooling VDI turret can perform multiple operations in one setup. The optional gantry or conveyor type workpiece loading and unloading system are also available.

Controlling the machine is the powerful FANUC 0i-T control that delivers 8.4" color LCD with an optional 3-axis.

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Box Way Structure

Spindle Servo Motor: Up to 40HP

Maximum Swing Diameter: Up to 33.46"

Maximum Spindle Speed: 50~2,000rpm

Chuck Size: Up to 24"

Turret No.: Up to 2

Live Tooling and C-Axis Available

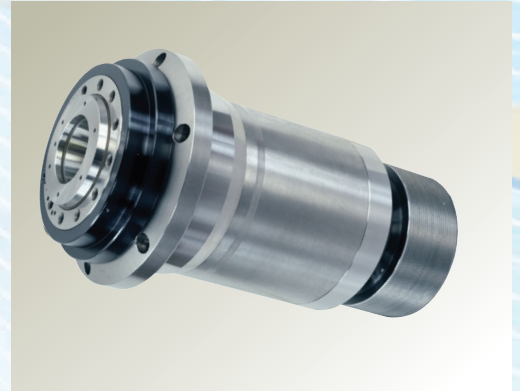
Tailstock Version Available



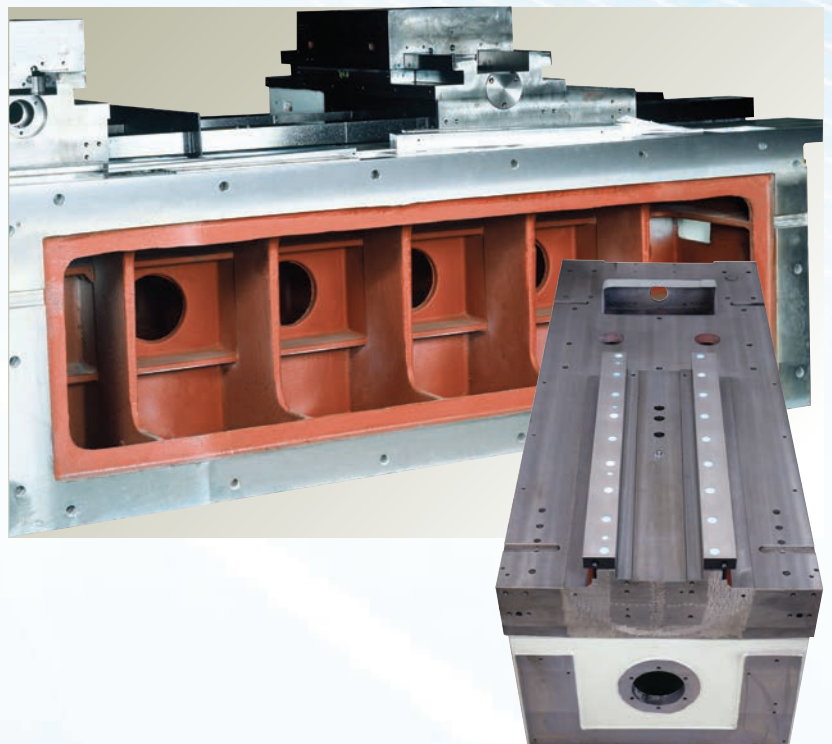
FVL- 8 • 12 • 20 • 24 series

Machine Structure

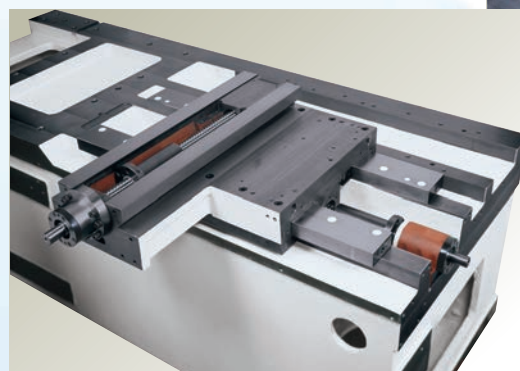
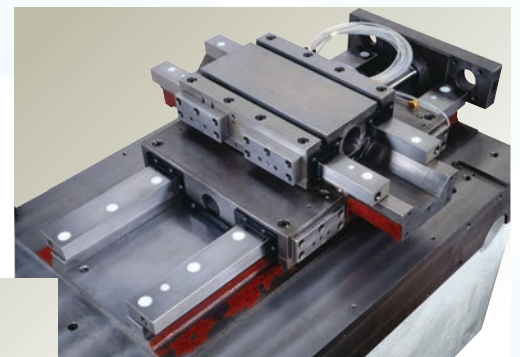
Highly Rigid Spindle - New spindle design uses high precision bearings to maintain accuracy during continuous machining.



Machine Base - The rigid ribbed-frame castings minimize distortion during heavy machining. The solid, one-piece high-quality cast iron base and column with rigid box way construction, is stress-relieved, high-frequency annealed and closely ribbed for maximum rigidity. The highly rigid alloy-steel box way design and pretensioned ballscrew are excellent for heavy-duty turning with superior part finish and close part tolerances.



Steel Alloy Box Way - Hardened and ground box ways on the X- and Z-axis use high precision roller pack bearings and specially designed gibs for better preload, reduced friction and smoother movement. Parallelism flatness and squareness are within 0.004mm (0.00016").



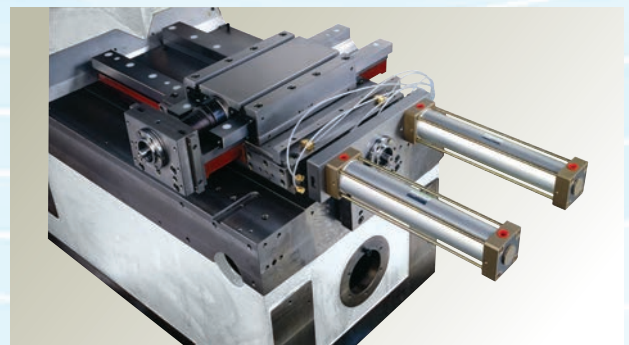
Photos show FVL-8 series above and FVL-12 series on the left.

Tailstock System - Programmable tailstock system employs alloy steel box ways for maximum clamping rigidity.

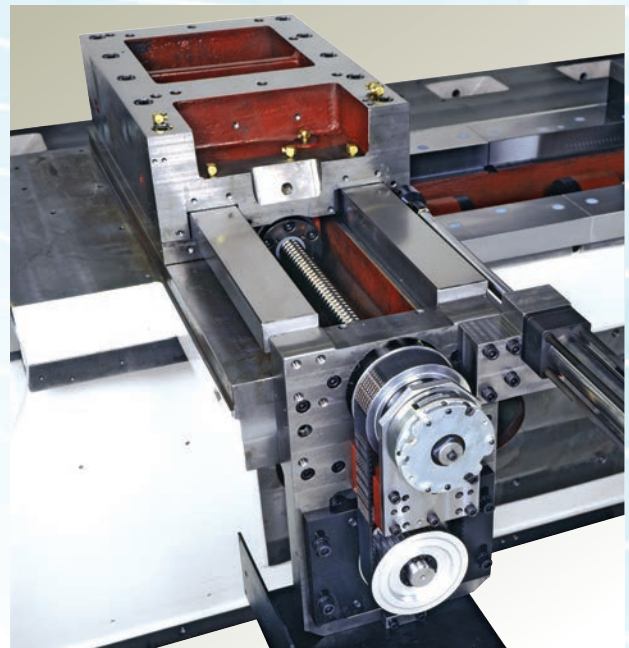
AC Servo Motor - The AC servo motor drive on the X- and Z-axis enables accurate positioning and repeatability. Photo shows FVL-12 series.



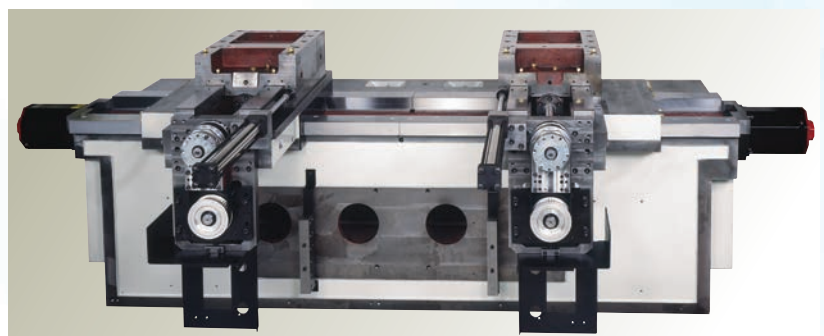
Pneumatic Counterbalance - Spindle head is equipped with a pneumatic counterbalance system that can ensure machining accuracy. (photo shows FVL-8 series.)



Z-axis Brake System – Z-axis brake system separated from servomotor stops movement instantly during power interruption.



Improved Productivity - Two moving heads and four axes work individually or simultaneously to reduce overall cycle times.



Control Features



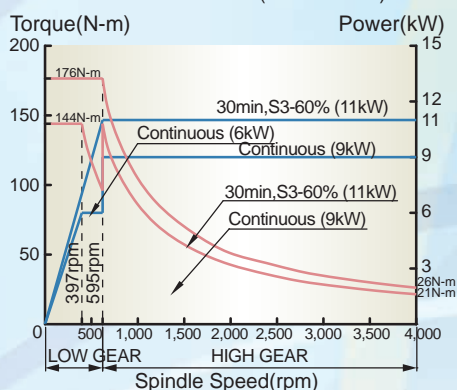
FANUC oi-T Features

- Axis No.: 3 axis
- Min. movement: X axis: 0.001mm
- Min. input unit: 0.001mm
- Auto. acceleration /deceleration: Standard
- HRV control: Standard
- Vertical speed command: Direct S4 digits command
- Vertical axis rpm control: G96,G97
- Spindle rpm adjustment: 50~120%, 10% per scale
- Feedrate adjustment: 0~200%, 10% per scale
- Home return: G27,G28
- Manual pulse generator: 0.001/0.01/0.1mm
- Tool compensation: 64 sets
- Tool nose radius compensation: G40~G42
- Tool compensation type:
 - Tool wear & geometric separate compensation
- Tool function: T4 position code command
- Chamfering and arc angle function: Standard
- Single canned cycle: G90,G92,G94
- Complex canned cycle: G70~G76
- Decimal point input type: Standard
- Graphic conversation function: Standard
- Dynamic graphic display: Standard
- Tool life management: Standard
- Absolute servo motor: Standard
- Background edit: Standard
- Cycle time display: Standard
- Memory length: 640m
- Threading: Standard
- Program No.: 400 sets
- M Function: M2 digits command
- Metric/Inch switching function: G20,G21
- Input code: EIA/ISO auto.read
- Tape input / Output Interface:
 - RS232C 20mA
- Memory card input/Output interface:
 - Standard
- MDI/CRT unit: 8.4" LCD
- Machine lock: Standard
- Stroke limit setting: Standard
- Spindle load detect: Standard
- Chuck lock function: Standard
- Workpiece shift auto. input: Standard
- Auto. Home return: Standard

Spindle Torque Chart

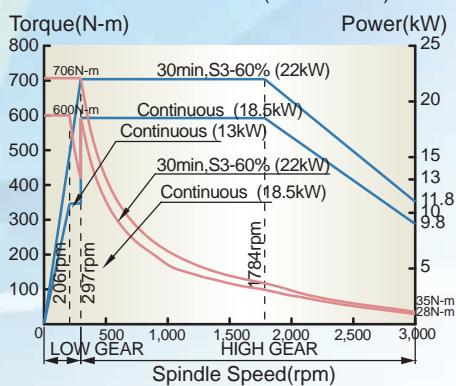
FVL-8

3000RPM SPINDLE (α P18/6000i)



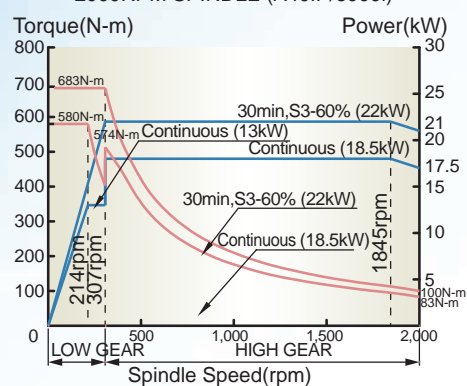
FVL-12

3000RPM SPINDLE (α P40/6000i)



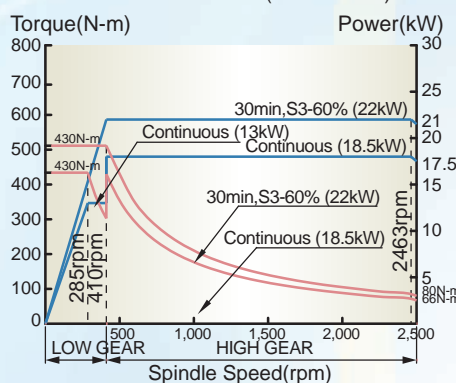
FVL-20HT

2000RPM SPINDLE (A40IP/6000i)



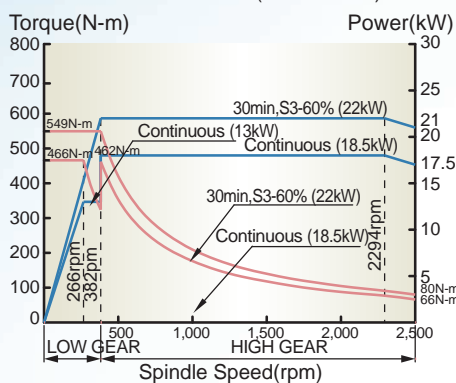
FVL-20DT (Std.)

2500RPM SPINDLE (A40IP/6000i)



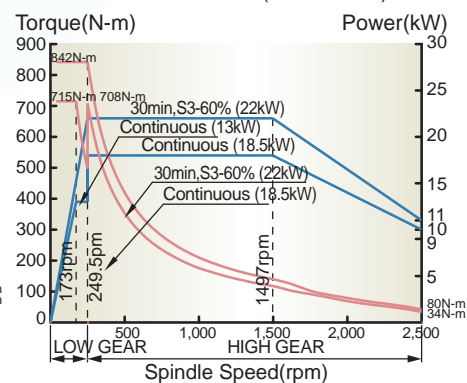
FVL-24DT (Std.)

2500RPM SPINDLE (A40IP/6000i)



FVL-24VT (Std.)

2500RPM SPINDLE (A40IP/6000i)

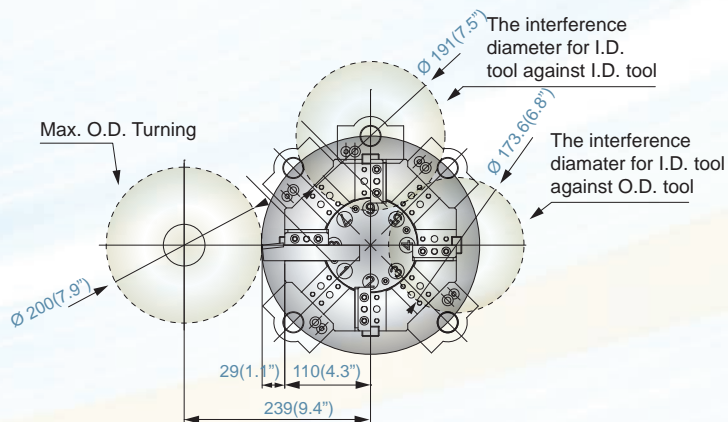


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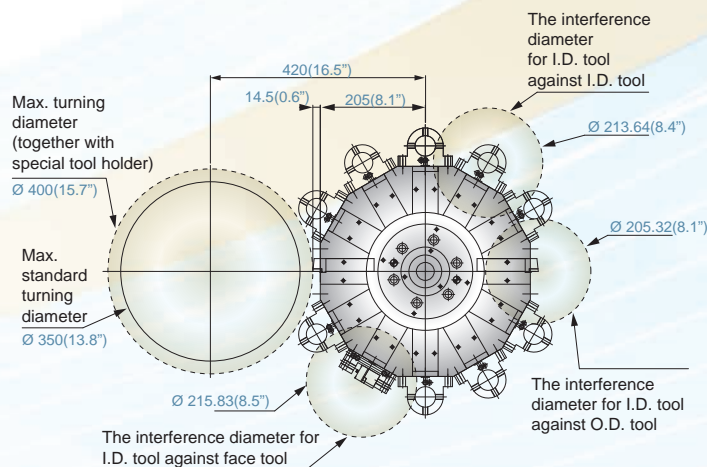
Unit: mm (")

Tooling System Interference

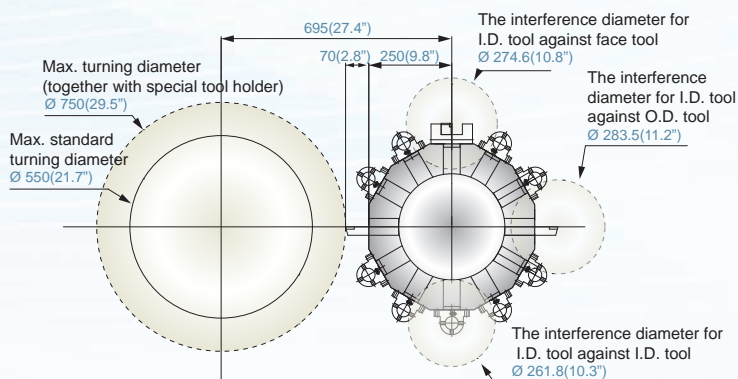
FVL-8 Series / FVL-8HT Series



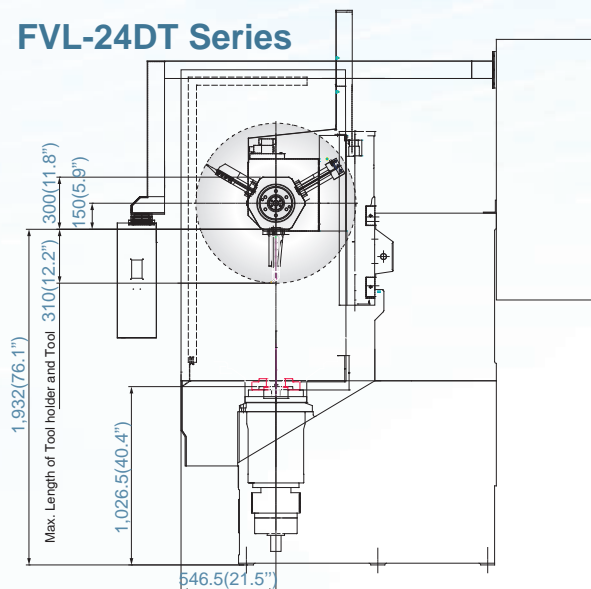
FVL-12HT Series



FVL-20HT Series

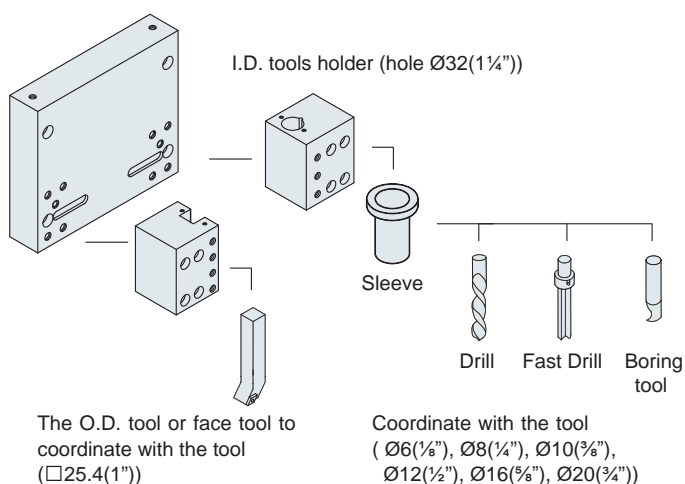


FVL-24DT Series

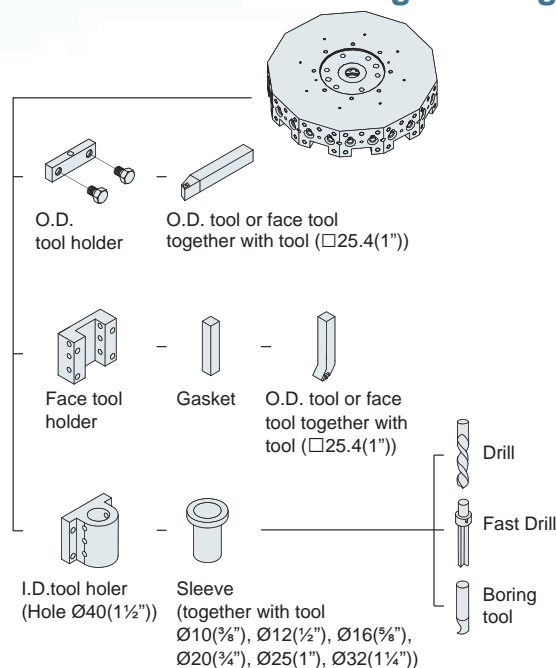


Tooling System Drawing

FVL-8 Gang Type Tool Holder and Tooling Drawing



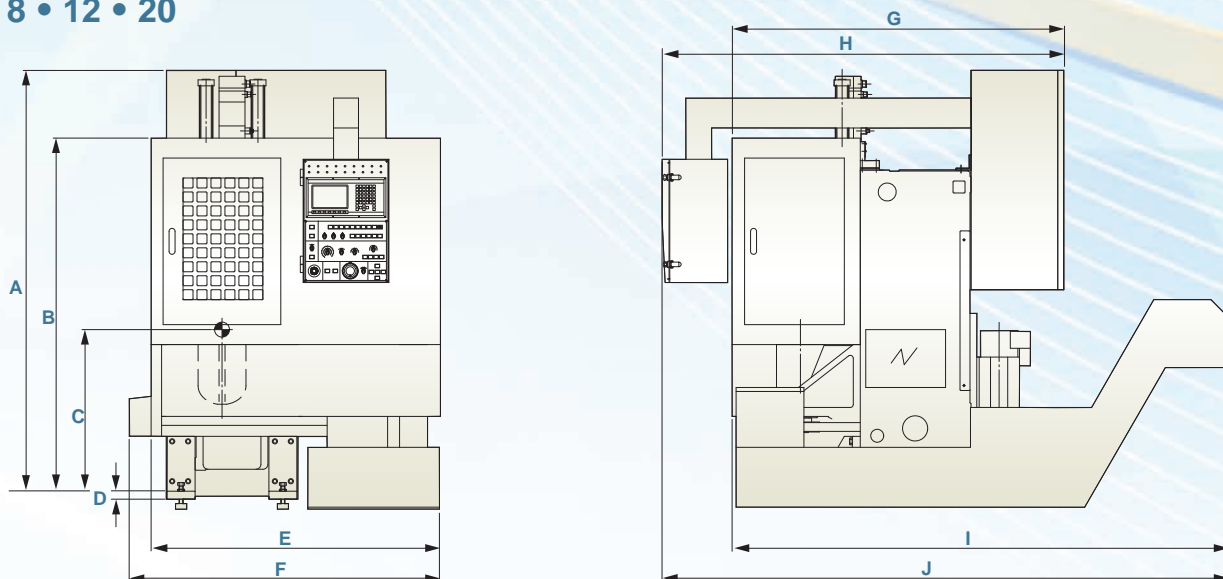
FVL-12 Servo Turret Tooling Drawing



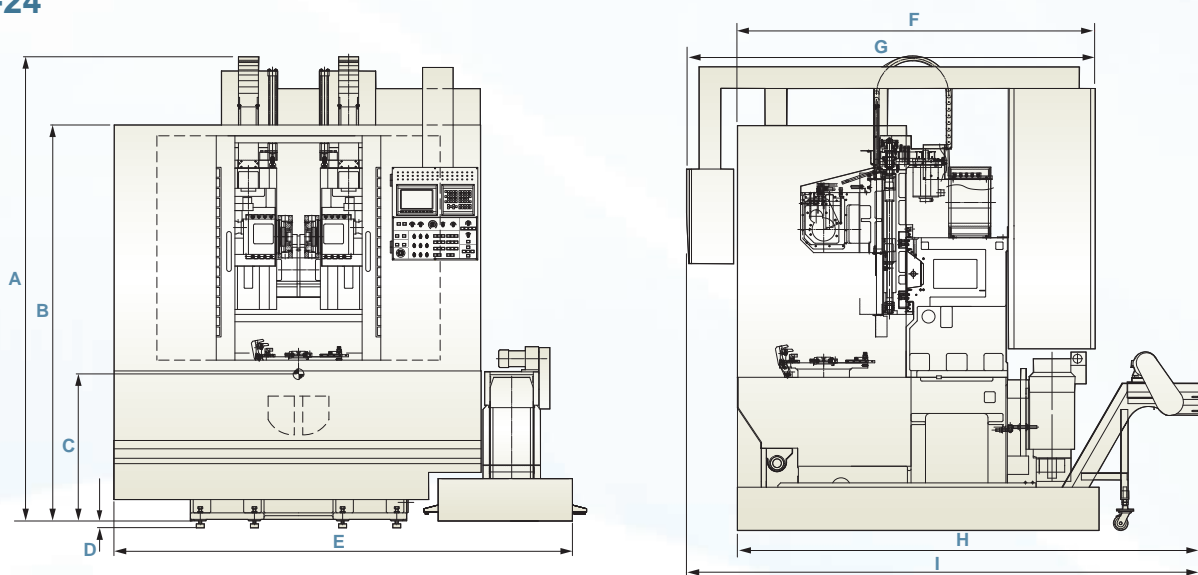
FVL- 8 • 12 • 20 • 24 series

Machine Dimension

FVL- 8 • 12 • 20



FVL-24



Unit: mm (")

Item	FVL-8	FVL-12	FVL-20HT	FVL-24DT	FVL-20DT	FVL-24VT
A	2,548 (100.3")	3,100 (122")	3,447 (135.7")	3,345 (131.6")	3,345 (131.6")	3,345 (131.6")
B	1,977 (77.8")	2,300 (90.5")	2,872 (113")	2,850 (112.2")	2,850 (112.2")	2,850 (112.2")
C	864 (34")	886 (34.8")	949.5 (37.4")	1,026.5 (40.4")	1026.5 (40.4")	1026.5 (40.4")
D	50 (1.9")	100 (3.9")	10 (0.4")	100 (3.9")	100 (3.9")	100 (3.9")
E	1,520 (59.8")	1,890 (74.4")	NA	3,780 (148.8")	3,630 (142.9")	3,145 (123.8")
F	1,623 (63.9")	1,980 (77.9")	2,078.5 (81.8")	2,512 (98.9")	2,512 (98.9")	2,512 (98.9")
G	1,800 (70.9")	2,030 (79.9")	2,015 (79.3")	2,895 (113.9")	2,895 (113.9")	2,895 (113.9")
H	2,025 (79.7")	2,250 (88.6")	2,370 (93.3")	4,465 (175.8")	4,465 (175.8")	4,465 (175.8")
I	2,930 (115.3")	2,630 (103.5")	2,780 (109.4")	4,765 (187.6")	4,765 (187.6")	4,765 (187.6")
J	2,955 (116.3")	2,850 (112.2")	3,067 (120.7")	NA	NA	NA

FVL- 8 • 12 • 20 • 24 series

Standard Accessories and Optional Accessories

FVL	8	8HT	12	12HT	12HTL	12MC	20HT	20DT	24DT	24VT
3 jaw hydraulic chuck	●	● (8")	● (12")				● (15")		● (15")	
Tool holder(I.D. tool holder x2, O.D. tool holder x2)	●	●	-				-		-	
Tool holder(I.D. tool holder x3, Facing tool holder x3)	-	-	-	●	◎		●	-	-	
Tool holder(I.D. tool holder x2, O.D. tool holder x1)	-		-				-		-	●
Tool holder(I.D. tool holder x4, O.D. tool holder x2)	-		-				-	●	●	-
I.D. Sleeve(6 pieces)(YC32-A,8A,10A,12A,16A,20A)	●		-				-		-	
I.D. Sleeve(YC40-10A,12A,16A,20A,25A,32A)	-		●				●	-	-	
Drill Sleeve(2 pieces)(MT2,MT3)	●		●				● (MT3,MT4)	-	-	
Chip conveyor with coolant tank	●		●				●		●	
Work lamp	●		●				●		●	
Hydraulic unit	●		●				●		●	
Electric cabinet with heat exchanger	●		●				●		●	
Automatic lubrication system	●		●				●		●	
Oil skimmer	●		●				●		●	
FANUC controller	●		●				●		●	
Levelling adjust screw and pads	●		●				●		●	
Ground bolt	●		●				●		●	
Operation and maintenance manual	●		●				●		●	
Tool box with tools	●		●				●		●	
3 jaw hydraulic jaw	◎ (10")		◎ (15")				◎ (18")		◎ (18")	◎ (21")
2 step speed gear box(ZF-made in Germany)	◎		◎				◎		◎	
Air conditioner for electric box	◎		◎				◎		◎	
Heavy cutting spindle(1,500rpm)	-		-				-		◎	
Coolant through type of the tool holder	◎		◎				◎		◎	
V.D.I. tool holder	-		-			◎	-		-	
90 degree V.D.I. tool holder	-		-			◎	-		-	
Dust collector	◎		◎				◎		◎	
Oil mist collector	◎		◎				◎		◎	
Clean gun device for workpiece	◎		◎				◎		◎	
Clean water gun for working area(shared pump)	◎		◎				◎		◎	
Clear water gun for working area(independent pump)	◎		◎				◎		◎	
Transformer	◎		◎				◎		◎	
Air clean gun	◎		◎				◎		◎	
Automation device	◎		◎				◎		◎	
Other type controller	◎		◎				◎		◎	
Roller-type chip conveyor(include water machine)	◎		◎				◎		◎	
Crane	◎		◎				◎		◎	
Color designated by customer	◎		◎				◎		◎	
CE specification	◎		◎				◎		◎	
Chuck used for aluminium wheel	-		-				-	◎	◎	
Chip cart	●		●				●	◎	◎	
Multiple chip conveyor for aluminium chip	-		-				◎		◎	

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

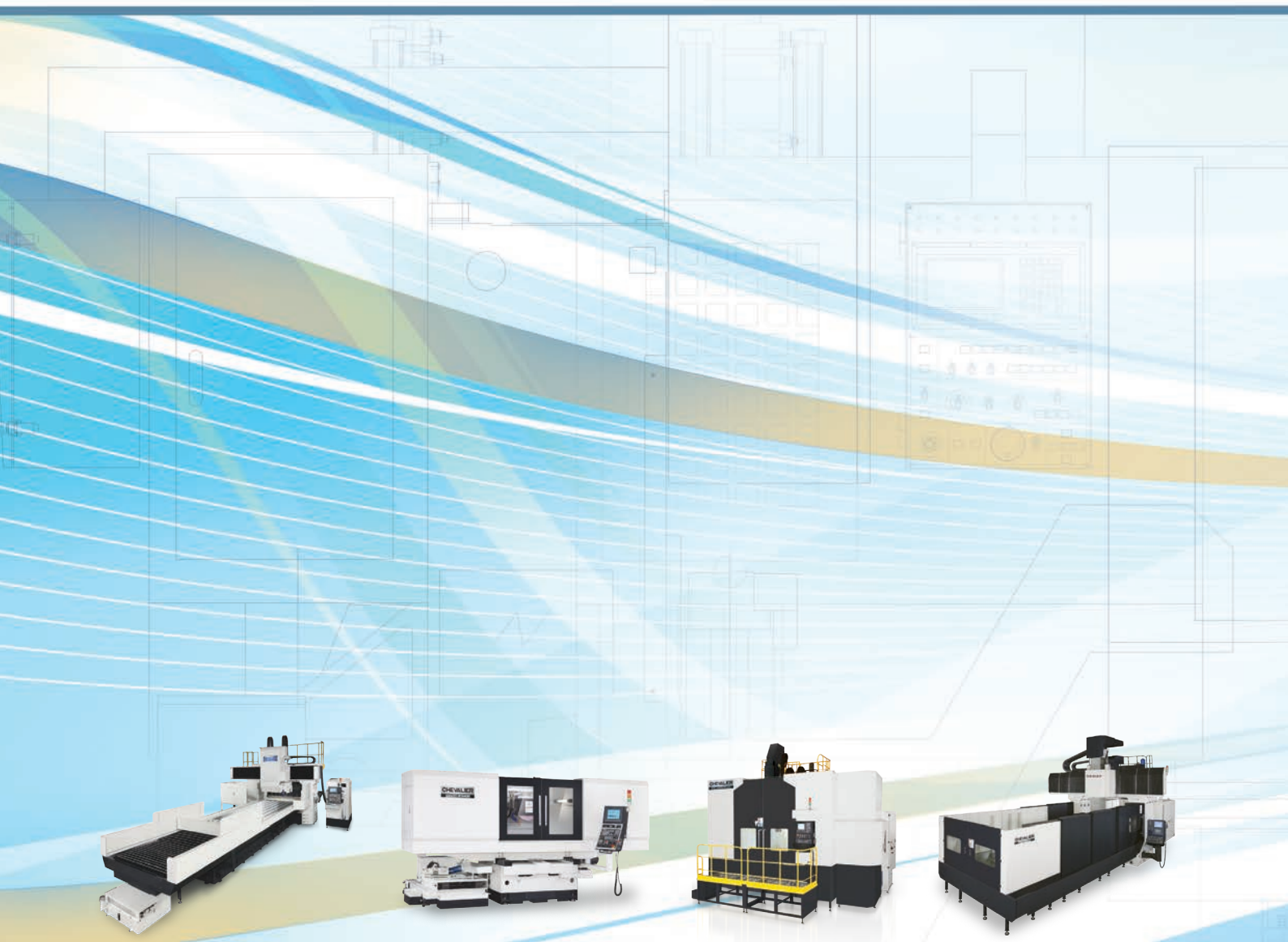
FVL- 8 • 12 • 20 • 24 series

Specifications

Item			FVL-8	FVL-8HT	FVL-12	FVL-12HT	FVL-12HTL	
Cutting Capabilities	Max. Swing Dia.		Ø400mm (15.74")		Ø550mm (21.65")			
	Max. Cutting Dia.		Ø220mm (8.66")	Ø200mm (7.87")	Ø350mm (13.77")			
	Max. Turning Height		430mm (16.92")		550mm (21.65")			
Spindle	Spindle Speed		4,000rpm		50~3,000rpm			
	Chuck Size (Standard Accessories)		8"		12"			
	Spindle Nose		A2-6		A2-8			
	Spindle Bearing I.D.		Ø100mm (3.93")		Ø130mm (5.11")			
	The distance from spindle nose to floor		864mm (34.01")		886mm (34.88")			
	The distance from center of spindle to the front cover of machine		340mm (13.38")		400mm (15.74")			
	V.D.I spindle speed		NA					
Turret	Turret type		Gang	Horizontal	Gang	Horizontal		
	Tool Amount		2	8	2	12		
	Turret Amount		NA	1	NA	1		
	O.D.Tool Shank Size		19.05 x 19.05mm (0.8" x 0.8")		25.4 x 25.4mm (1" x1 ")			
	I.D. Tool Shank Size		Ø31.75mm (1.3")	Ø25.4mm (1")	Ø31.75mm (1.3")	Ø38.1mm (1.5")		
Stroke	X-axis Stroke		235mm (9.25")		190mm (7.48")			
	Z-axis Stroke		430mm (16.92")		550mm (21.65")			
Feeding Speed	The balancing device for vertical axis		Pneumatic balance					
	X-axis rapid speed		20 m/min.		20 m/min.			
	Z-axis rapid speed		20 m/min.		20 m/min.			
	Ball Screw Dia. / Lead Pitch		Ø28mm / 6mm (Ø1.1"/ 0.23")		Ø36mm / 10mm (Ø1.41" / 0.39")			
Motor	Spindle motor		9/11kW(αP18)		18.5/22kW(αP40)			
	V.D.I. spindle motor		NA		NA			
	Feeding motor (X/Z)		1.6kW(α8i) / 1.6kW(α8i)		3kW(α12i) / 3kW(α12i)			
	Drilling and tapping motor		NA		NA			
	Turret motor		NA	0.4 kW	NA	1.2kW(β8i)		
	Lubrication motor		0.08kW(0.11HP)					
	Hydraulic motor		1.5kW(2HP)					
	Coolant motor		NA					
	Chip disposal motor		1.1kW(1.5HP)					
Water gun motor		0.75kW(1HP)						
Tailstock	Tailstock stroke		NA				444mm (17.48")	
	Quill stroke		NA				120mm (4.72")	
	Quill taper		NA				MT5	
	Quill driving system		NA				Hydraulic	
	The indexing way of tailstock		NA				Manual	
Power	Power capacity		20kVA		35kVA			
	Voltage		220 V					
	Penumatic (pressure)		5.5kg / cm²					
Storage tank	Hydraulic tank capacity		30L (7.9 gals.)					
	Lubrication tank capacity		3L (0.79 gals.)					
	Coolant tank capacity		300L (79.25 gals.)					
Machine Size	Height		2,548mm (103.3")		3,100mm (122")			
	Length x Width		1,623 x 2,955mm (63.9" x 116.3")		1,980 x 2,850mm (77.9" x 112.2")			
	Net Weight		3,600kg(7,920 lbs)		5,000kg(11,000 lbs)	5,650kg(12,430 lbs)		
Accuracy	Positioning	X	0.007mm (0.00027")		0.01mm (0.00039")			
	Accuracy	Z	0.007mm (0.00027")		0.01mm (0.00039")			
	Repeat Accuracy	X	0.005mm (0.00019")		0.007mm (0.00027")			
		Z	0.005mm (0.00019")		0.007mm (0.00027")			
	Accuracy Inspection		ISO3655					

All content is for reference only and may be subject to change without notice or obligation.

	FVL-12MC	FVL-20HT	FVL-20DT	FVL-24DT	FVL-24VT
	Ø550mm (21.65")	Ø750mm (29.52")	Ø670mm (26.37")	Ø850mm (33.46")	
	Ø350mm (13.77")	Ø550mm (21.65")	Ø558mm (21.96")	Ø750mm (29.52")	
	400mm (15.74")	600mm (23.62")	400mm (15.74")		
	50~3,000rpm	20~2,000rpm	50~2,500rpm		
	12"	15"			
	A2-8	A2-11			
	Ø130mm (5.11")	Ø160mm (6.29")			
	886mm (34.88")	950mm (37.4")		1,026.5mm (40.4")	
	400mm (15.74")	430mm (16.92")	550mm (21.65")	620mm (24.4")	
	4,000rpm	NA			
	V.D.I	Horizontal	Vertical		
	8	12	6+6		6
	1	1	2		1
	Opt.	31.75 x 31.75mm (1.3" x 1.3")			
	Opt.	Ø38.1mm (1.5")			
	300mm (11.81")	-30mm(-1.1"), +405mm(+15.9")	L:+75.5mm(+2.97"), -312mm(-12.2") R:-75.5mm(-2.97"),+ 312mm(+12.2")	L: +60mm(+2.3"), -400mm(-5.7") R: -60mm(-2.3"), +400mm(+15.7")	-60mm(-2.3"), +400mm(+15.7")
	550mm (21.65")	600mm (23.62")	415mm (16.33")		
	Pneumatic balance	Hydraulic balance			
	20 m/min.				
	20 m/min.				
	Ø36mm / 10mm (Ø1.41" / 0.39")				
	18.5/22kW (αP40)		18.5/22kW (αP40), Optional 30/37kW (α30)	18.5/22 kW (αP40), Optional 45/55kW (α50)	18.5 / 22 kW(αP40), Optional 30/37kW(α30)
	3.7/5.5kW(α3)	NA			
	3kW(α12i) / 3kW(α12i)	3kW(α12i) / 4kW(α22i)	4kW(α22i) / 4kW(α22i)		
	Ø16 / M14	NA			
	α3kW (5.5kW)	1.6kW (α8i)			
	0.08kW (0.11HP)				
	1.5kW (2HP)	3.7kW (5HP)	5.5kW (7.5HP)		3.7kW (5HP)
	NA	0.75kW (1HP)			
	1.1kW (1.5HP)		1.1kW (1.5HP) / 4.0kW (5.5HP)		
	0.75kW (1HP)				
	NA				
	NA				
	NA				
	NA				
	NA				
	35 kVA	50 kVA	60 kVA	75 kVA	50 kVA
	220V				
	5.5 kg/cm²				
	30L (7.9 gals)	50L (13 gals.)	100L (26 gals.)		60L (15.8 gals.)
	3L (0.79 gals.)				
	300L (79.25 gals.)		1,050L (277 gals.)		
	3,100mm (122")	3,447mm (135.7")	3,345mm (131.6")		
	1,980 x 2,850 mm (77.9" x 112.2")	2,078.5 x 3,067 mm (81.8" x 120.7")	3,630 x 4,765 mm (142.9" x 187.5")	3,780 x 4,765 mm (98.9" x 187.6")	3,145 x 4,765 mm (123.8" x 187.5")
	5,950kg (13,090 lbs)	9,000kg (19,800 lbs)	12,500kg (27,500 lbs)	13,000kg (28,600 lbs)	11,000kg (24,200 lbs)
	0.01mm (0.00039")				
	0.01mm (0.00039")				
	0.007mm (0.00027")				
	0.007mm (0.00027")				
	ISO3655				



Grinding Machine

Grinding Machine

Turning Machine

Milling Machine

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



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