

# GV-1 SERIES

Heavy-Duty Vertical CNC Turning Centers



THE ULTIMATE MACHINING POWER  
**WOODWAY**

# HEAVY-DUTY VERTICAL TURNING CENTERS

Packed with industry leading technology and top quality components, the GOODWAY GV-1 series vertical turning centers combine incredible power, strong constructions, and heavy-duty cutting capabilities to bring you The Ultimate Machining Power®. These maximum performance machines will easily accomplish the demanding turning applications of today and tomorrow. With maximum turning diameter up to 1,800 mm, maximum weight load up to 8,000 kg, and available live tooling spindle & C<sub>f</sub>-axis capabilities, turning, milling, contour milling and drilling applications may be completed in one single machine.

- ▶ Enclosed splashguards keep chips and coolant contained for a safe clean working environment.
- ▶ Extra wide door enables large size work-pieces to be loaded onto the work table with a crown block providing easy loading and unloading operations.



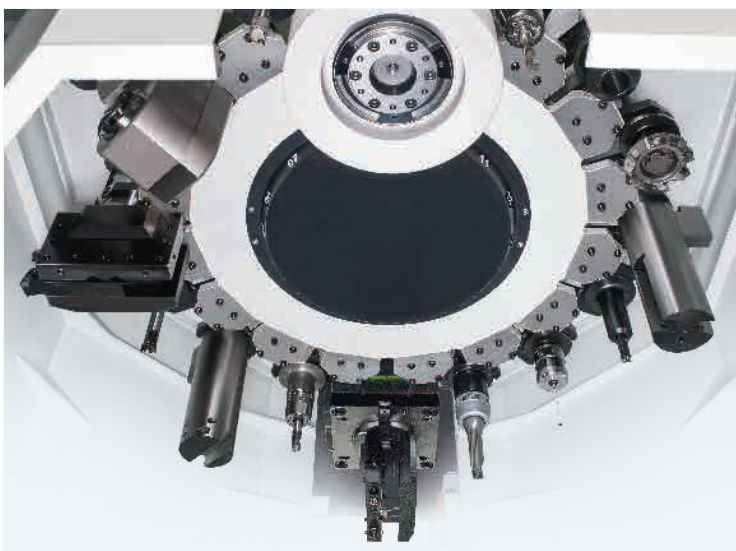
Models	GV-1200	GV-1600
Max. swing diameter	Ø 1,600 mm	Ø 2,000 mm
Max. turning diameter	Ø 1,350 mm	Ø 1,800 mm
Max. turning length	1,300 mm	1,300 mm
Max. table load	5,000 kg	8,000 kg

\* Live tooling spindle available

( GV-1200M model shown with FANUC Oi- TF control )



- ▶ Super rigidity work table with a standard 4-jaws individual manual chuck provides easy operation and outstanding heavy-duty cutting capability.
- ▶ Standard coolant nozzle around spindle function and chip wash down coolant system. Chips can be easily brought out through the coolant tank and providing excellent cooling capability.



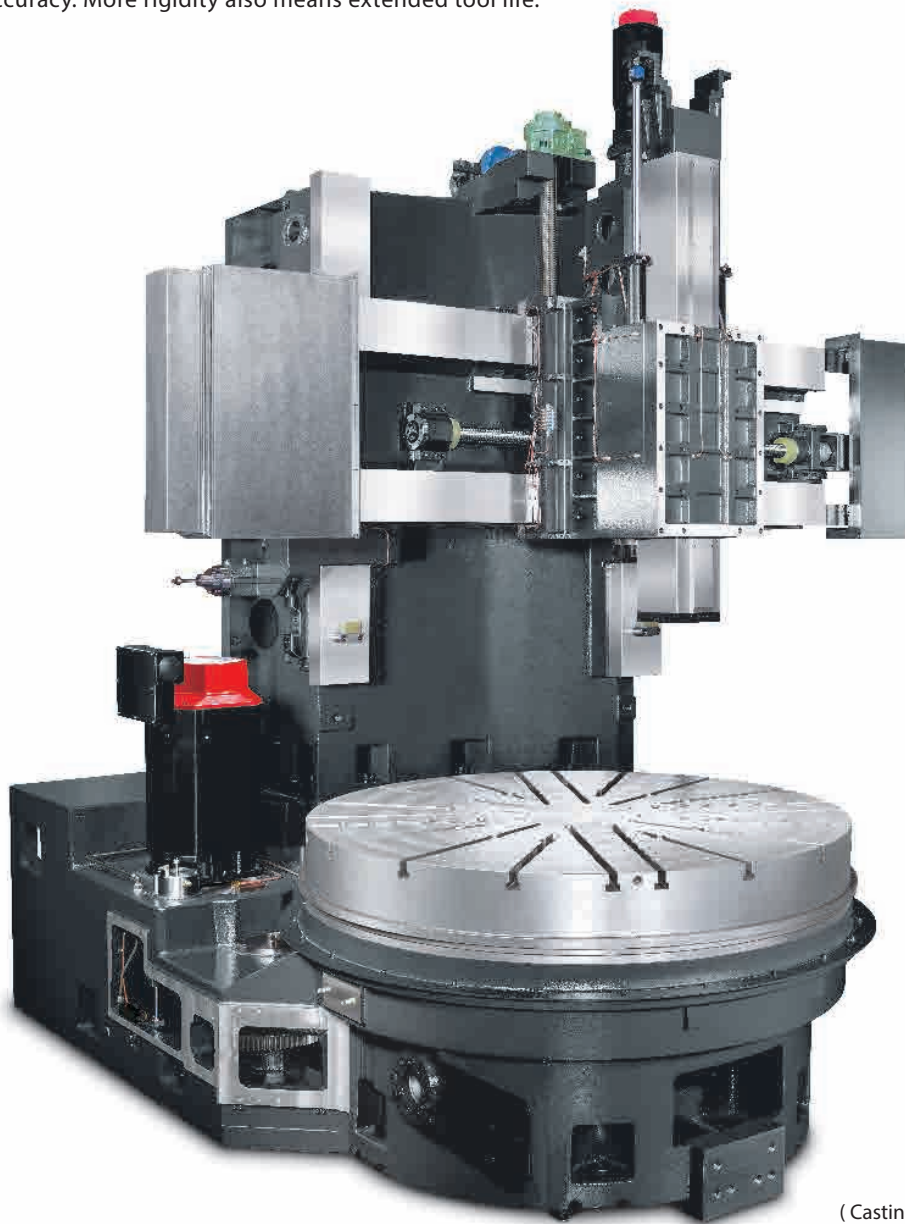
- ▶ High reliable 16T ( 24T opt. ) umbrella type ATC system which providing 50 kg maximum tool weight and 360 kg maximum magazine loading capability. Fulfill various types of processing needs.



- ▶ Super large 900L coolant tank capacity allows smooth coolant circulation which tremendously improves the machine's overall accuracy by lowering thermal expansion effects to a minimum.
- ▶ Right discharge chip conveyor can be equipped with a programmable controller to minimize coolant loss and increase chip disposal efficiency.

# SUPER RIGIDITY CONSTRUCTION

- ▶ Built to endure years and years of rigorous high production turning, the heavily ribbed, thermally balanced, super rigidity bed and column are of MEEHANITE casting. It is capable of withstanding much greater stress without deforming and provides maximum vibration dampening, which result in a machine that will outlast and outperform the competition.
- ▶ By using Finite Element Analysis ( FEA ), optimal reinforce ribbings are directly cast into the bed and column structure. Mechanical rigidity has been increased by more than 30% when compared to conventional designs. The GV-1 series is capable of performing super heavy-duty turning and maintain long-term super high precision accuracy. More rigidity also means extended tool life.



( Casting structure of GV-1600M model shown )

- ▶ Extra wide hardened and ground box ways are directly formed onto the machine bed during the casting process. The box way design provides the rigidity needed for heavy duty and interrupted turning applications.
- ▶ Spindle and servo motors of each axis rapid systems are FANUC  $\alpha i$  series components to ensure peak machining performance and accuracy.

- ▶ The column is adopted with the high-low box way design to firmly support the crossrail while minimizing structural distortion and increasing rigidity.



- ▶ The moving cross rail structure adopts reduction drive mechanism which is driven by servo motor. When cross rail moves to the position, two sets of live locking bolts start to engage with column and cross rail in the first place, and then 4 sets of hydraulic cylinders automatically lock itself which ensure the rigidity of cross rail structure and excellent positioning.

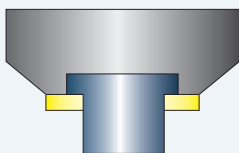
**800 mm** W-axis travel ( cross rail up and down )

**200 mm** Space between each step of the positioning mechanism

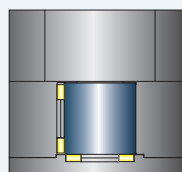
- ▶ Contact surfaces of all slides, spindles, ball screw bearing housings, bed and column are precision hand scraped to provide maximum assembly precision, structural rigidity, and load distribution.



- ▶ The square ram on the tooling spindle is adopted with a closed-type design and fixed with 4 sets of powerful wedges. This gives the GV-1 series with greater structural rigidity and machining accuracy compared to peer models with a semi-closed type square ram structure.



Semi-closed Type Square Ram



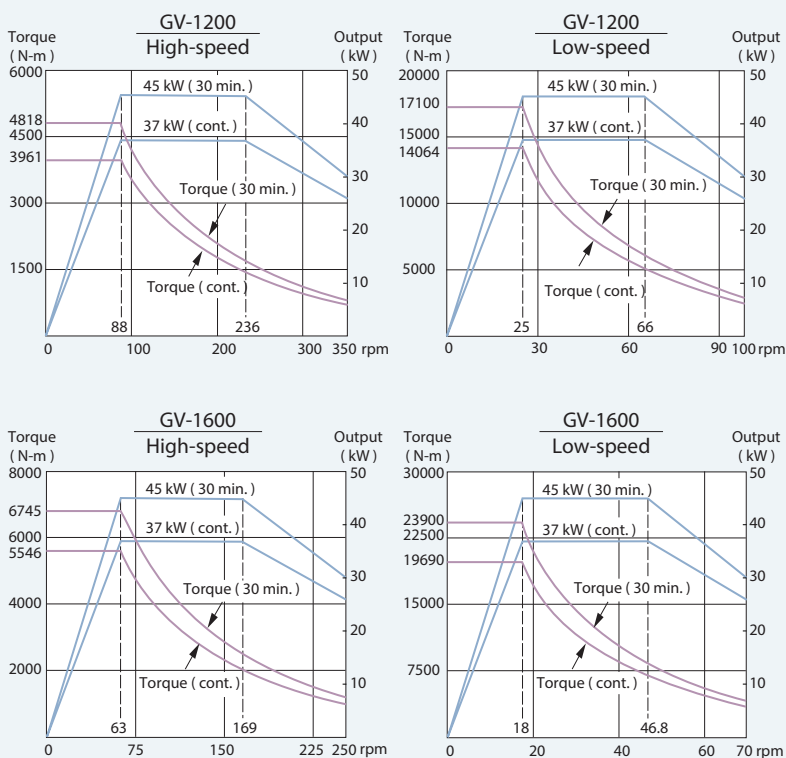
Closed-type Square Ram



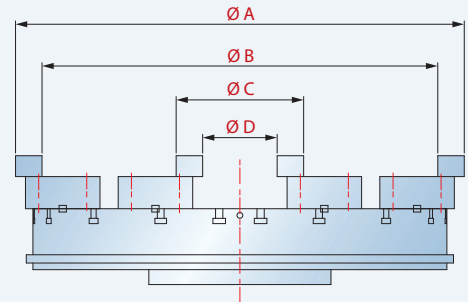
# ULTIMATE TURNING POWER



## Work-Piece Spindle Output



## Clamping Range



Unit : mm

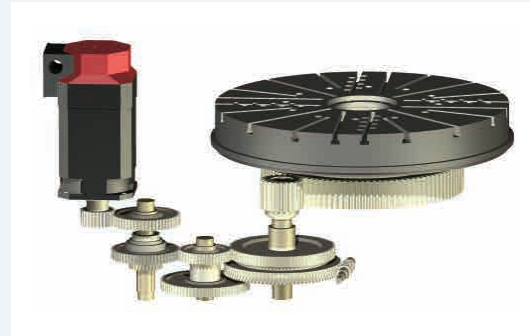
Max. I.D. Clamping Range	A	C
GV-1200	1,355	385
GV-1600	1,675	385

Max. O.D. Clamping Range	B	D
GV-1200	1,195	225
GV-1600	1,515	225

### Work-Piece Spindle

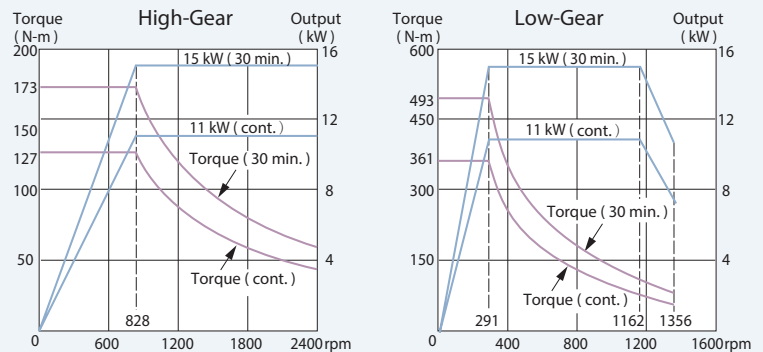
- ▶ Generating twice the torque output of standard motors, the A/C constant output, wide-range, high torque *i* series motor is rated at 45 kW ( 30 min. ).
- ▶ The super rigidity, high rotation accuracy cross roller bearing can sustain radial, axial and torque compound loads to ensure machining accuracy under long-term heavy work loads and extend the service life of the spindle.
- ▶ Standard high-speed ratio, high-torque 2-speed gear box mated with FANUC series spindle motor provides ample power output for heavy-duty cutting.



### Tooling Spindle

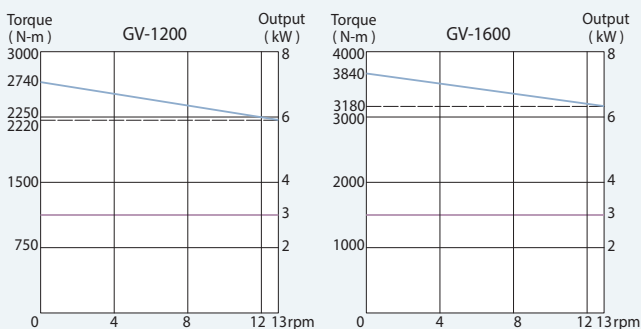
- ▶ The 2-speed super heavy duty gear head incorporates advanced mechanical designs. Mated with a 15 kW ( 30 min. ) motor provides a tremendous amount of low-end torque to handle heavy material removal on large diameter parts.
- ▶ Ø 90 mm big diameter NN TYPE high-precision roller bearings provide super-rigidity and low-wear advantages.

Tooling Spindle Output



### C-axis Spindle ( Optional )

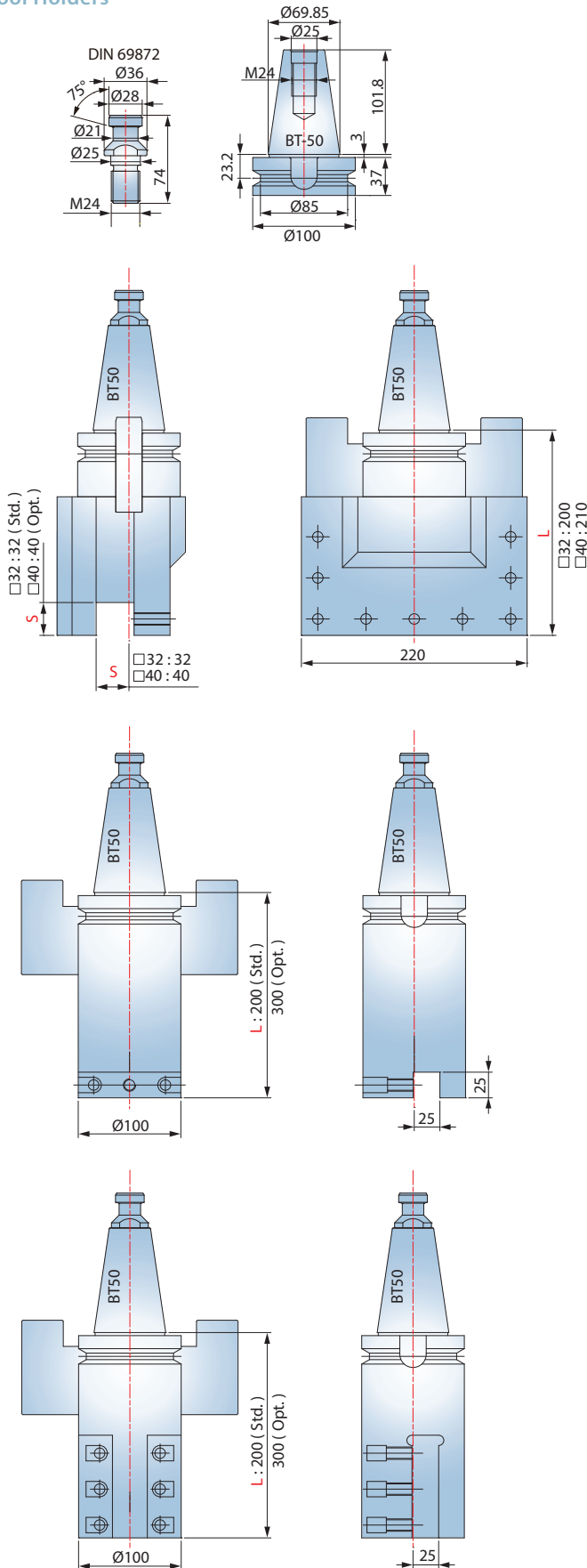
Cf-axis motor output



- ▶ The optional Cf-axis and disk brake system available on the GV-1 series provide the most rigid and powerful type of C-axis on the market today. It is adopted with worm gear drive system for high accuracy transmission and easy backlash adjustment. The indexing accuracy is up to 0.001°.
- ▶ Working with the live tooling spindle, the Cf-axis and disk brake system enables the machine to perform multiple tasks, such as drilling, tapping, and milling operations, including cylindrical and polar coordinate interpolations.
- ▶ With the FANUC servo motor generating an ultra high resolution of 100 million pulses per spindle rotation and 3,840 N-m ( GV-1600 ), 2,740 N-m ( GV-1200 ) of torque, machined surfaces finishes are much superior than Cs-axis ( driven by spindle motor ) equipped machines.

# GENERAL DIMENSION

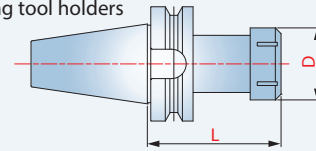
## Tool Holders



## Tool Holders ( Optional )

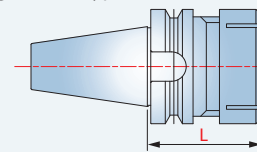
Unit : mm

### Tapping tool holders



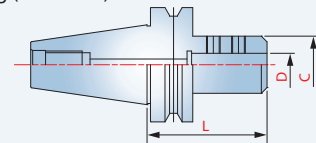
Model	L	D	Tapping Range
BT50-TER16	80	Ø28	M3-M12
BT50-TER40	117	Ø63	M12-M35

### Drilling ( collect type ) tool holders



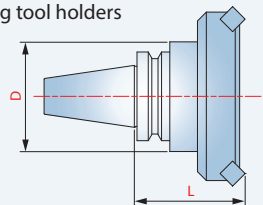
Model	L	Capacity	Collet Type
BT50-ER20-100	100	1-13	ER20
BT50-ER32-100	100	2-20	ER32
BT50-ER40-100	100	3-26	ER40

### Drilling ( side lock ) tool holders



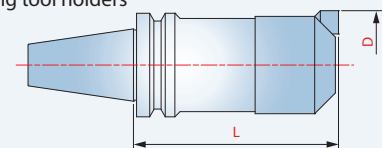
Model	L	C	D
BT50-SLA20-105	105	Ø50	Ø20
BT50-SLA25-105	105	Ø55	Ø25
BT50-SLA32-105	105	Ø60	Ø32
BT50-SLA40-105	105	Ø80	Ø40
BT50-SLA50.8-105	105	Ø95	Ø50.8

### Face milling tool holders



Model	L	D	Cutter Dia.
BT50-FMA25.4-105	125	Ø85	Ø80
BT50-FMA31.75-105	127	Ø85	Ø100
BT50-FMA38.1-75	98	Ø95	Ø125
BT50-FMA50.8-75	99	Ø95	Ø150

### Boring tool holders

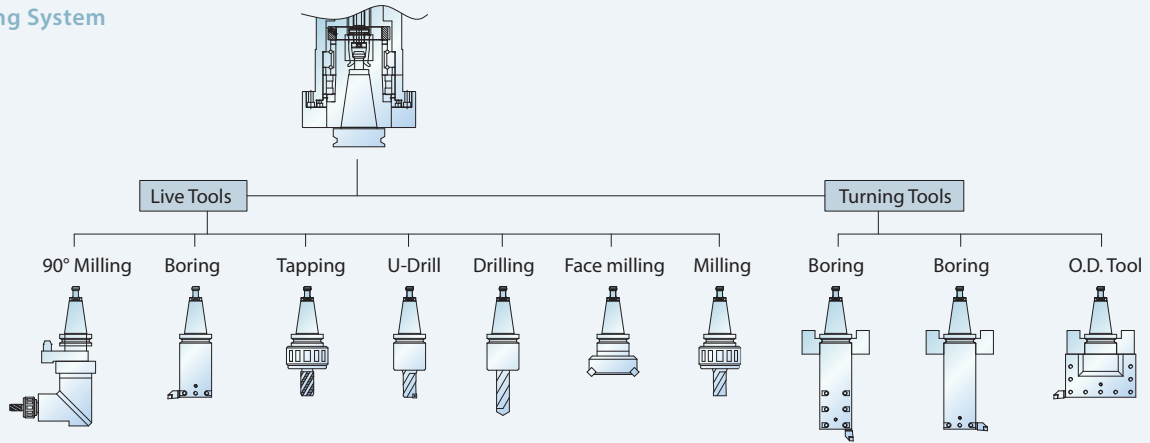


Model	L	D
BT50-BSA62-300	300	Ø62~90
BT50-BSA72-320	320	Ø72~110
BT50-FMA105-195	195	Ø105~160

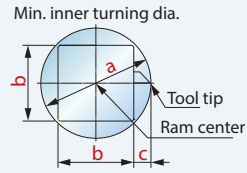
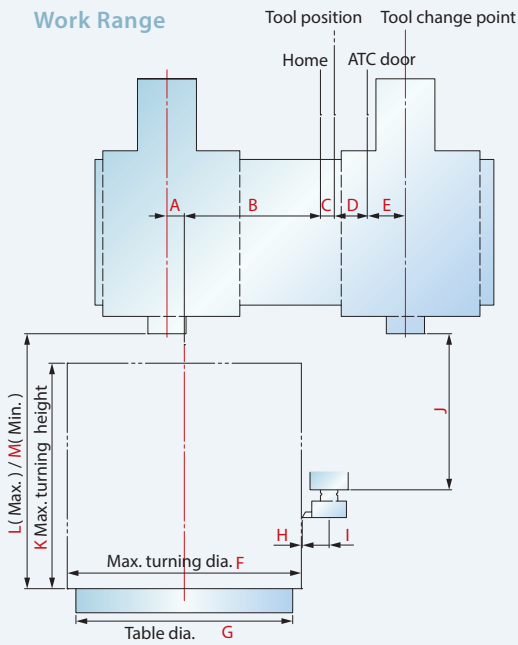
Specifications are subject to change without notice.



### Tooling System



### Work Range



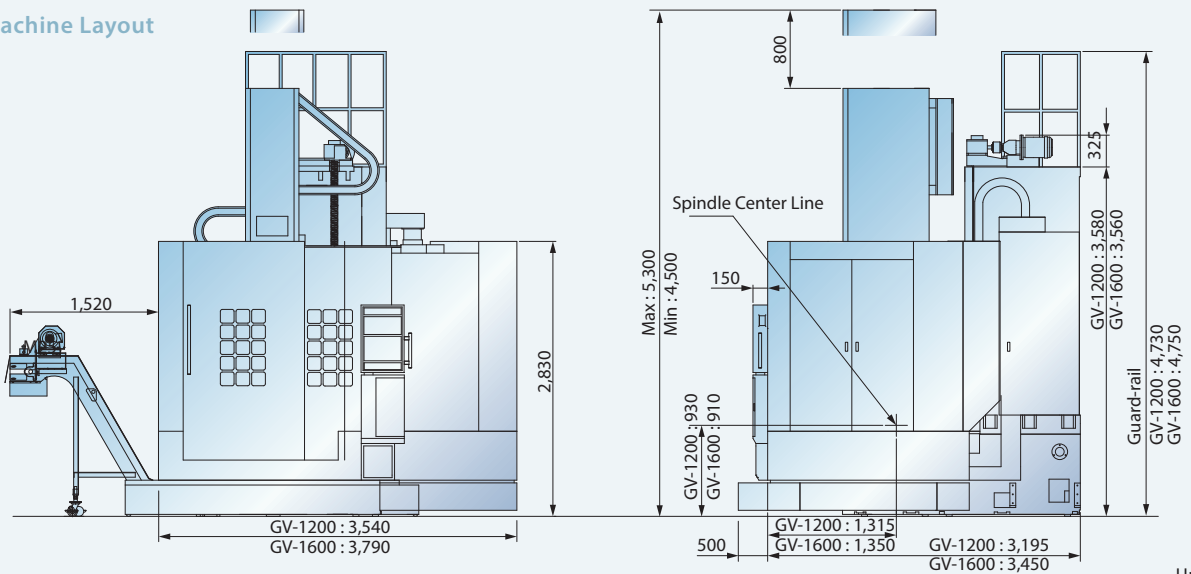
Unit : mm

Model	a	b	c
GV-1200	Ø320	220	50
GV-1600	Ø320	220	50

Model	A	B	C	D	E	F
GV-1200	100	835	40	180	220	Ø1,350
GV-1600	100	1,060	40	180	220	Ø1,800

Model	G	H	I	J	K	L	M
GV-1200	Ø1,250	5	155	900	1,300	1,550	750
GV-1600	Ø1,600	5	155	900	1,300	1,550	750

### Machine Layout



Specifications are subject to change without notice.

Unit : mm

# FEATURES

S : Standard      O : Option  
 - : Not available    C : Contact GOODWAY

		GV-1200	GV-1600
<b>WORK PIECE SPINDLE</b>			
Main spindle		S	S
Rigid tapping		S	S
Cf-axis		O	O
Disk brake for main spindle		O	O
Lubrication system		S	S
<b>WORK HOLDING</b>			
4-jaws manual chuck		S	S
<b>TOOLING SPINDLE</b>			
BT50 spindle		S	S
Spindle Coolant		S	S
Coolant through spindle ( CTS )		S	S
Drilling & milling function		O	O
16T magazine		S	S
24T magazine		O	O
<b>MRASUREMENT</b>			
Tool presetter		O	O
X & Z axes linear scales		O	O
Part presence check		O	O
<b>COOLANT</b>			
Coolant pump	10 Kg/cm <sup>2</sup>	S	S
High-pressure coolant system	20 Kg/cm <sup>2</sup>	O	O
Oil skimmer		O	O
Coolant flow switch		O	O
Coolant level switch		O	O
Coolant intercooler system		O	O
Paper tape filter		S	S
<b>CHIP DISPOSAL</b>			
Chip conveyor with auto timer		O	O
Chip cart		O	O
<b>SAFETY</b>			
Fully enclosed splash guard		S	S
Door interlock ( incl. Mechanical lock )		S	S
Impact resistant viewing window		S	S
Low hydraulic pressure detection switch		S	S
Over travel ( soft limit )		S	S
Auto power-off device		S	S
<b>OTHERS</b>			
Tri-color operation status signal light tower		S	S
Florescent work light		S	S
Electrical cabinet	Heat exchanger	S	S
	A / C cooling system	O	O
Complete hydraulic system		S	S
Advanced auto lubrication system		S	S
Emergency maintenance electrical part package		S	S
Operation & maintenance manuals		S	S

		Oi-TF	31i	
<b>FANUC CONTROL FUNCTIONS</b>				
Display	8.4" color LCD	S	O	
	10.4" color LCD	O	S	
Graphic function	Standard	S	S	
	Dynamic <sup>*1</sup>	O	O	
	512K bytes	S	-	
Part program storage size	1M bytes	O	S	
Oi-TF : each path	2M bytes	O	O	
31i : total	4M bytes	-	O	
Registerable programs	8M bytes	-	O	
	400	S	-	
	Oi-TF : each path	1,000	O	S
	31i : total	4,000	-	O
Tool offset pairs	99	-	S	
	128	S	-	
	200	O	O	
	400	-	O	
	499	-	O	
Servo HRV control	999	-	O	
	2000	-	O	
Servo HRV control	HRV 3	S	S	
Automatic data backup		-	S	
Synchronous / Composite control		O	O	
Inch / metric conversion		S	S	
Polar coordinate interpolation		S	S	
Cylindrical interpolation		S	S	
Multiple repetitive cycle		S	S	
Rigid tapping		S	S	
Unexpected disturbance torque detection function		S	S	
Spindle orientation		S	S	
Spindle speed fluctuation detection		S	S	
Embedded macro		O	O	
Spindle synchronous control		S	S	
Tool radius / Tool nose radius compensation		S	S	
Multi-language display		S	S	
Polygon turning		S	S	
Helical interpolation		O	O	
Direct drawing dimension programming		S	S	
Thread cutting retract		S	S	
Variable lead threading		S	S	
Multiple repetitive cycle II		S	S	
Canned cycles for drilling		S	S	
Tool nose radius compensation		S	S	
Chamfering / Corner R		S	S	
AI contour control I		O	S	
Multi part program editing <sup>*2</sup>		S	S	
Manual handle retrace		O	O	
Manual intervention and return		S	O	
External data input		S	S	
Addition of custom macro		S	S	
Increment system C		S	S	
Run hour & parts counter		S	S	
Auto power-off function		S	S	
RS-232 port		S	S	
Memory card input / output ( CF + USB )		S	S	
Ethernet		S	S	

\*1 Cannot coexist with MANUAL GUIDE *i*

\*2 10.4" LCD option needed

Specifications are subject to change without notice .

# MACHINE SPECIFICATIONS

CAPACITY	GV-1200	GV-1600
Table diameter	Ø 1,250 mm	Ø 1,600 mm
Max. swing diameter	Ø 1,600 mm	Ø 2,000 mm
Max. turning diameter	Ø 1,350 mm	Ø 1,800 mm
Max. turning height	1,300 mm	
Max. table load	5,000 Kg	8,000 Kg
WORK PIECE SPINDLE		
Spindle bearing diameter	Ø 423 mm	Ø 580 mm
Motor output ( Cont. )	37 kW	
Motor output ( 30 min. )	45 kW	
Gear step	2-speed	
Spindle speed range	1 ~ 350 rpm	1 ~ 250 rpm
Max. spindle torque	17,100 N-m	23,900 N-m
TOOLING SPINDLE ( OPTIONAL )		
Motor output ( Cont. )	11 kW	
Motor output ( 30 min. )	15 kW	
Spindle speed range	1 ~ 2,400 rpm	
CF-AXIS		
Motor output	3 kW	
Cf-axis speed range	13 rpm	9 rpm
Cf-axis torque output	2,740 N-m	3,840 N-m
X & Z AXES		
Max. X-axis travel	935 mm	1,160 mm
Max. Z-axis travel	900 mm	
Max. W-axis travel	800 mm	
X / Z axes rapids	12 / 10 m/min.	
X-axis servo motor output	6 kW	
Z-axis servo motor output	9 kW	
ATC		
Magazine capacity	16	
Spindle taper	BT50	
Max. tool size	280 x 150 x 400 mm	
Max. tool weight	50 Kg	
Max. magazine load	360 Kg	
GENERAL		
Positioning accuracy ( JIS B 6338 )	± 0.007 / 500 mm ( X & Z axes ), ± 7.5 arc.sec / 360° ( C-axis )	
Repeatability ( JIS B 6338 )	± 0.005 mm ( X & Z axes ), ± 4 arc.sec / 360° ( C-axis )	
Standard CNC control	FANUC Oi -TF	
Voltage / Power requirement	AC 200 / 220 + 10 % to -15 % 3 phase /100 KVA	
Hydraulic capacity	50 L	
Coolant tank capacity	900 L	
Machine weight	23,500 Kg	25,500 Kg
Dimensions L × W × H	3,540 x 3,695 x 5,300 mm	3,790 x 3,950 x 5,300 mm

Specifications are subject to change without notice .



GOODWAYCNC.com

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