

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 Ø2,000 mm, maximum weight load up to 8,000 kg, and available live tooling spindle & Cf-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-1100	GV-1200	GV-1600	GV-2000
Max. swing diameter (mm)	Ø 1,400	Ø 1,600	Ø 2,000	Ø 2,050
Max. turning diameter (mm)	Ø 1,200	Ø 1,350	Ø 1,800	Ø 2,000
Max. turning height (mm)	1,000	1,300	1,300	1,280
Max. table load (kg)	4,000	5,000	8,000	5,000 / 8,000

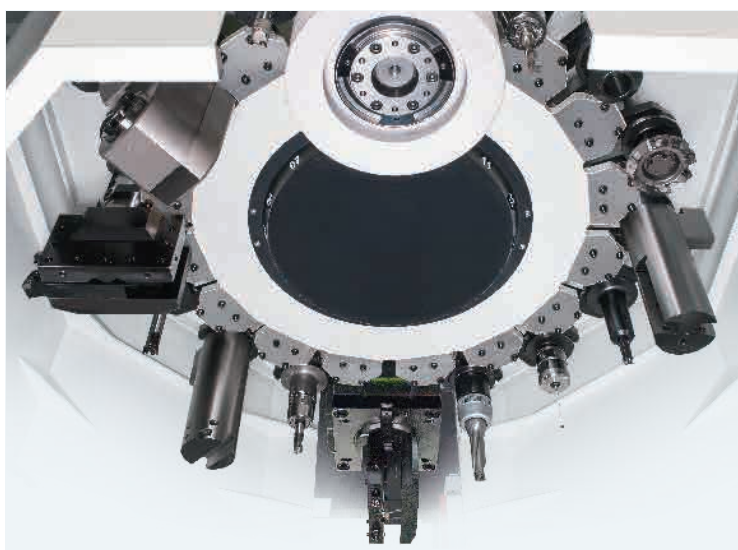
* Live tooling spindle available



(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.



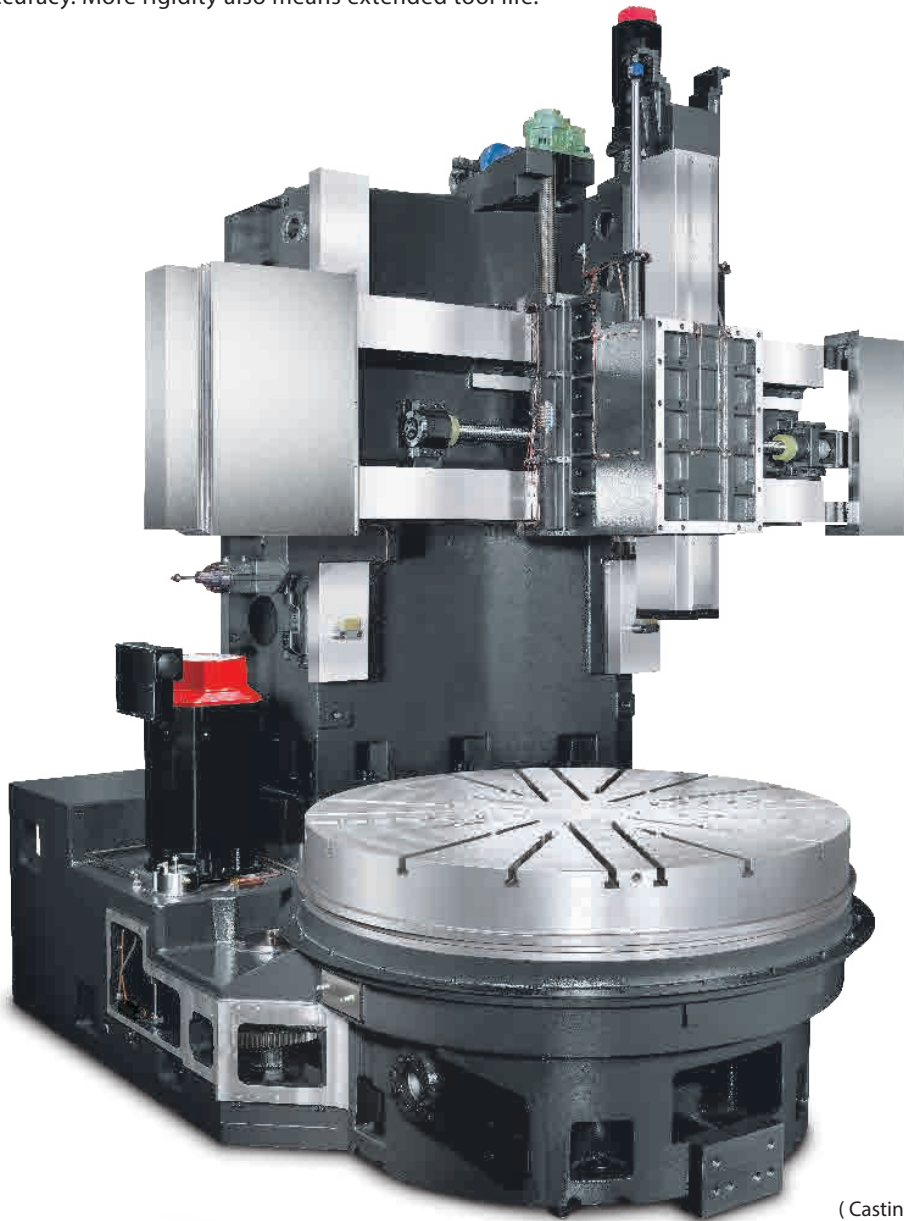
- ▶ High reliable BT50 12 / 16 / 24 umbrella type ATC system which providing 50 kg maximum tool weight and 360 kg maximum magazine loading capability. Fulfill various types of processing needs.



- ▶ 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 RIGID 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 αi 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.



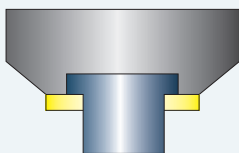
- ▶ The moving cross rail structure adopts reduction drive mechanism which is driven by servo motor. When cross rail moves to the position, two sets of live locking bolts start to engage with column and cross rail in the first place, and then 4 sets of hydraulic cylinders automatically lock itself which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

800 / 600 mm (GV-1100) W-axis travel (cross rail up and down)
200 mm Space between each step of the positioning mechanism

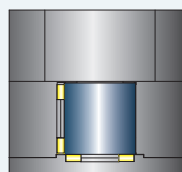
- ▶ Contact surfaces of all slides, spindles, ball screw bearing housings, bed and column are precision hand scraped to provide maximum assembly precision, structural rigidity, and load distribution.



- ▶ 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.



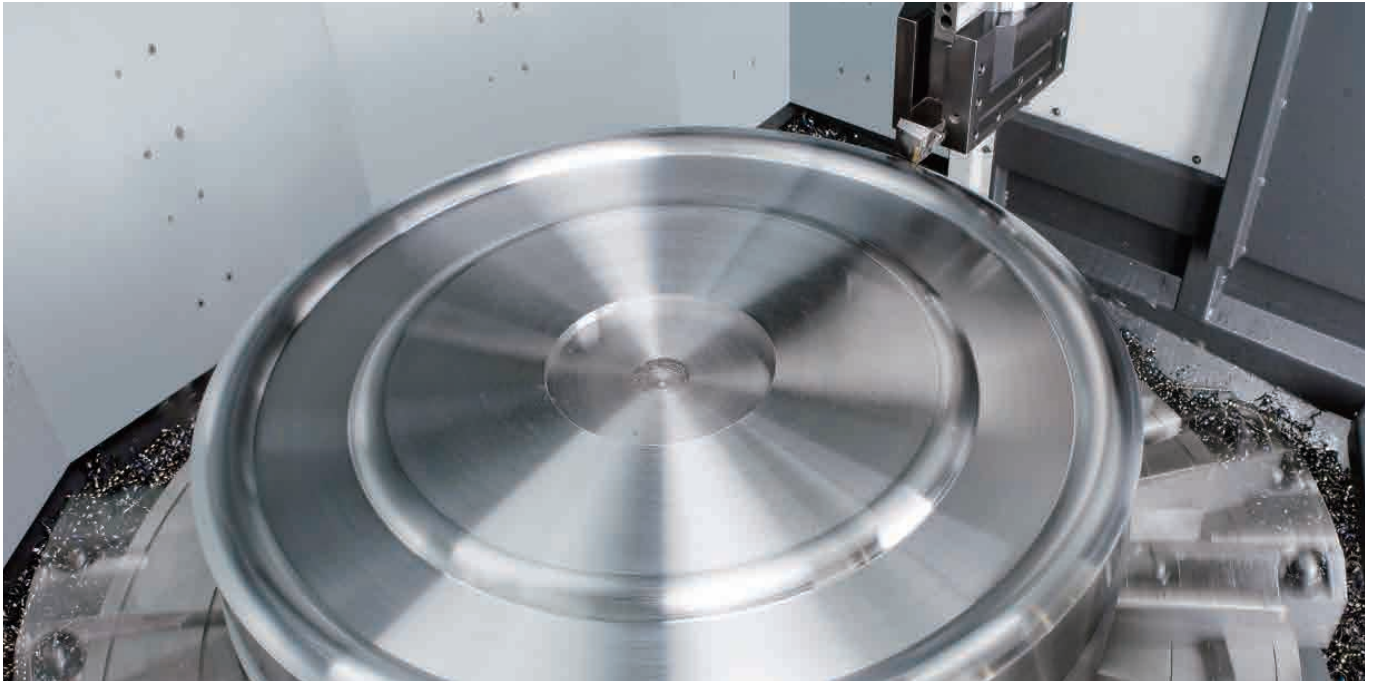
Semi-closed Type Square Ram



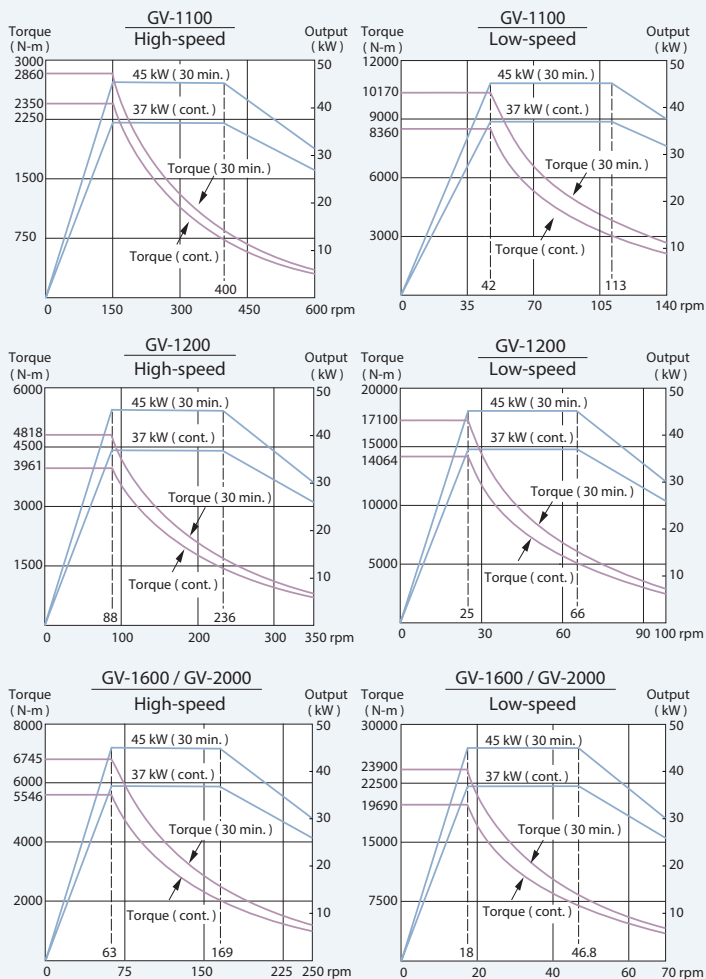
Closed-type Square Ram



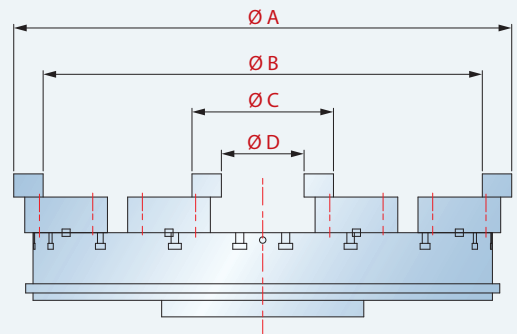
ULTIMATE TURNING POWER



Work-Piece Spindle Output



Clamping Range



Unit : mm

Max. I.D. Clamping Range	A	C
GV-1100	1,165	355
GV-1200	1,355	385
GV-1600	1,675	385
GV-2000	1,995	385

Max. O.D. Clamping Range	B	D
GV-1100	1,005	195
GV-1200	1,195	225
GV-1600	1,515	225
GV-2000	1,835	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.

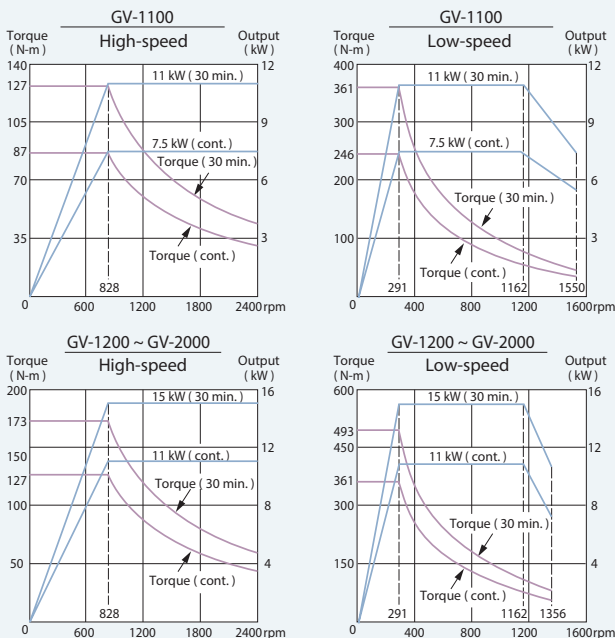
- GV-1100 Max. spindle torque : 10,170 N-m
- GV-1200 Max. spindle torque : 17,100 N-m
- GV-1600 Max. spindle torque : 23,900 N-m
- GV-2000 Max. spindle torque : 23,900 N-m



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 large diameter NN TYPE high-precision roller bearings provide super-rigidity and low-wear advantages.

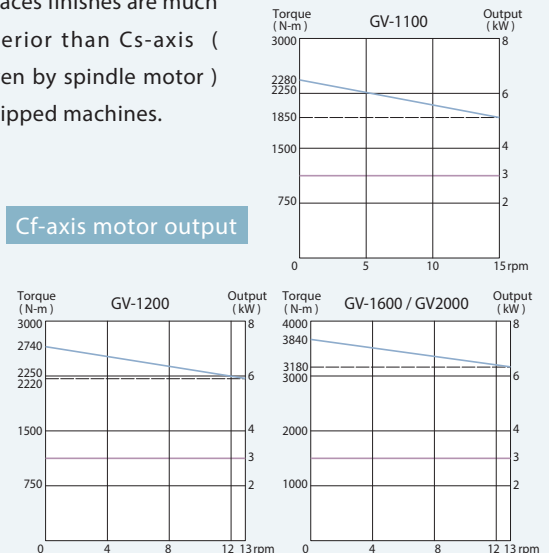
Tooling Spindle Output



C-axis Spindle (Optional)

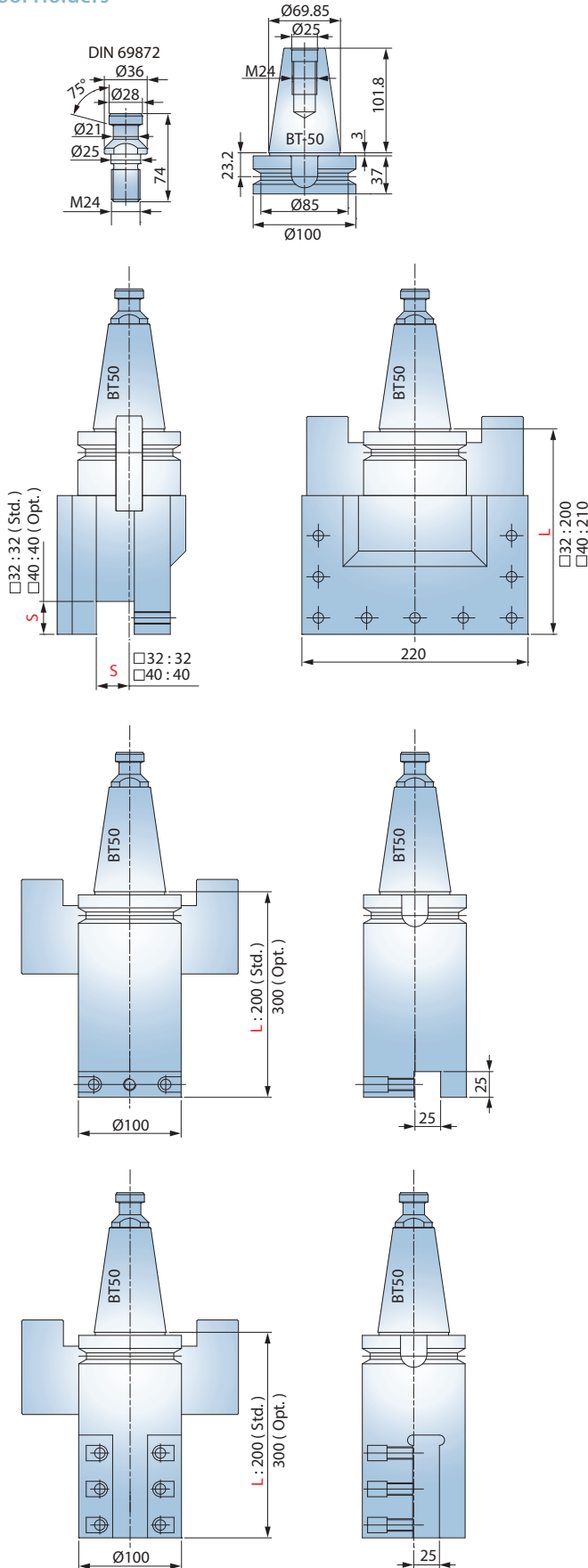
- ▶ The optional Cf-axis and disk brake system available on the GV-1 series provide the most rigid and powerful type of C-axis on the market today. It is adopted with worm gear drive system for high accuracy transmission and easy backlash adjustment. The indexing accuracy is up to 0.001°.
- ▶ Working 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 / GV-2000) of torque, machined surfaces finishes are much superior than Cs-axis (driven by spindle motor) equipped machines.

Cf-axis motor output



GENERAL DIMENSION

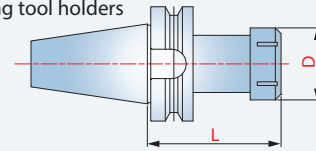
Tool Holders



Tool Holders (Optional)

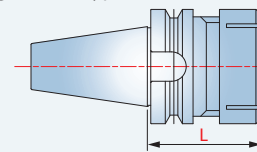
Unit : mm

Tapping tool holders



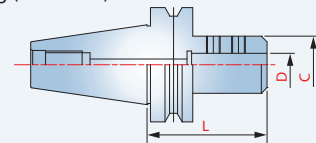
Model	L	D	Tapping Range
BT50-TER16	80	Ø28	M3-M12
BT50-TER40	117	Ø63	M12-M35

Drilling (collect type) tool holders



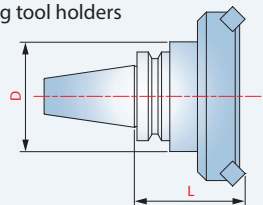
Model	L	Capacity	Collet Type
BT50-ER20-100	100	1-13	ER20
BT50-ER32-100	100	2-20	ER32
BT50-ER40-100	100	3-26	ER40

Drilling (side lock) tool holders



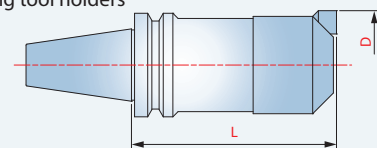
Model	L	C	D
BT50-SLA20-105	105	Ø50	Ø20
BT50-SLA25-105	105	Ø55	Ø25
BT50-SLA32-105	105	Ø60	Ø32
BT50-SLA40-105	105	Ø80	Ø40
BT50-SLA50.8-105	105	Ø95	Ø50.8

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

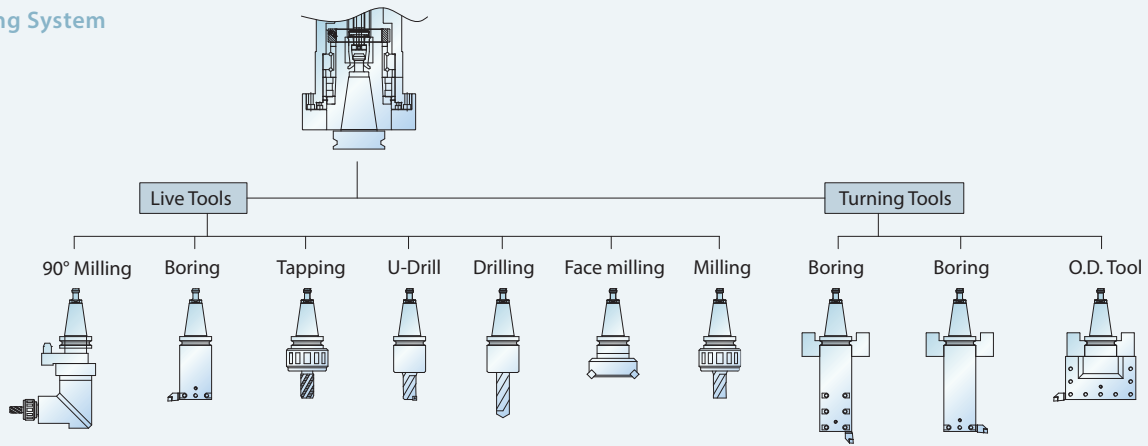
Boring tool holders



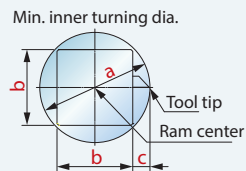
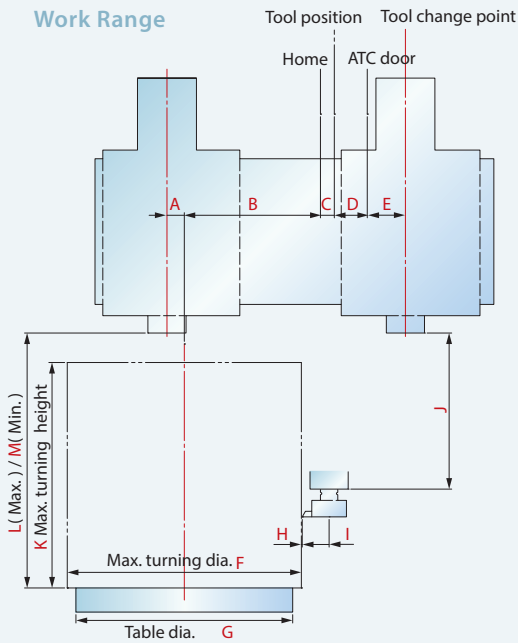
Model	L	D
BT50-BSA62-300	300	Ø62~90
BT50-BSA72-320	320	Ø72~110
BT50-FMA105-195	195	Ø105~160

Specifications are subject to change without notice.

Tooling System



Work Range



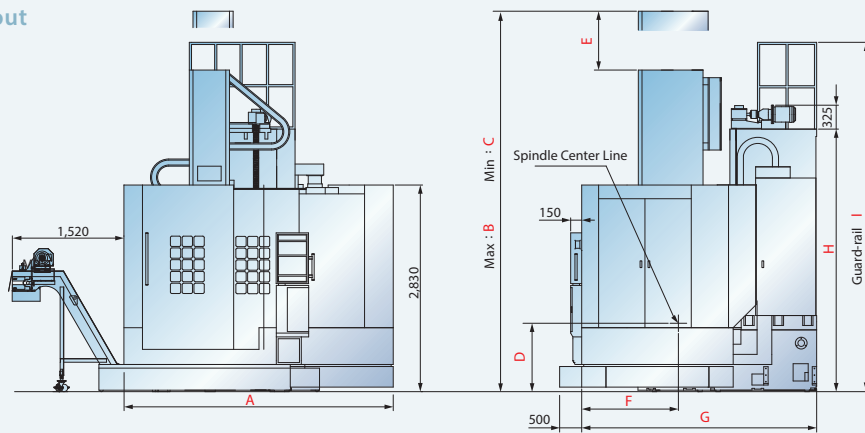
Unit : mm

Model	a	b	c
GV-1100	Ø320	220	50
GV-1200	Ø320	220	50
GV-1600	Ø320	220	50
GV-2000	Ø320	220	50

Model	A	B	C	D	E	F
GV-1100	100	760	40	180	220	Ø1,200
GV-1200	100	835	40	180	220	Ø1,350
GV-1600	100	1,060	40	180	220	Ø1,800
GV-2000	100	1,160	40	180	220	Ø2,000

Model	G	H	I	J	K	L	M
GV-1100	Ø1,000	5	155	900	1,300	1,400	800
GV-1200	Ø1,250	5	155	900	1,300	1,550	750
GV-1600	Ø1,600	5	155	900	1,300	1,550	750
GV-2000	Ø2,000	5	155	900	1,280	1,530	730

Machine Layout



Unit : mm

Model	A	B	C	D	E	F	G	H	I
GV-1100	3,485	5,050	4,450	910	600	1,265	3,530	3,310	4,460
GV-1200	3,540	5,300	4,500	930	800	1,315	3,195	3,580	4,730
GV-1600	3,790	5,300	4,500	910	800	1,350	3,450	3,560	4,750
GV-2000	4,400	5,300	4,500	930	800	1,500	3,600	3,560	4,750

FEATURES

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

		GV-1100	GV-1200	GV-1600	GV-2000
WORK PIECE SPINDLE					
Main spindle		S	S	S	S
Rigid tapping		S	S	S	S
Cf-axis		O	O	O	O
Disk brake for main spindle		O	O	O	O
Lubrication system		S	S	S	S
WORK HOLDING					
4-jaws manual chuck		S	S	S	S
TOOLING SPINDLE					
BT50 spindle		S	S	S	S
Spindle Coolant		S	S	S	S
Coolant through spindle (CTS)		S	S	S	S
Drilling & milling function		O	O	O	O
12T magazine		S	-	-	-
16T magazine		O	S	S	S
24T magazine		O	O	O	O
MRASUREMENT					
Tool presetter		O	O	O	O
X & Z axes linear scales		O	O	O	O
Part presence check		O	O	O	O
COOLANT					
Coolant pump	10 Kg/cm ²	S	S	S	S
High-pressure coolant system	20 Kg/cm ²	O	O	O	O
Oil skimmer		O	O	O	O
Coolant flow switch		O	O	O	O
Coolant level switch		O	O	O	O
Coolant intercooler system		O	O	O	O
Paper tape filter		O	O	O	O
CHIP DISPOSAL					
Chip conveyor with auto timer		O	O	O	O
Chip cart		O	O	O	O
SAFETY					
Fully enclosed splash guard		S	S	S	S
Door interlock (incl. Mechanical lock)		S	S	S	S
Impact resistant viewing window		S	S	S	S
Low hydraulic pressure detection switch		S	S	S	S
Over travel (soft limit)		S	S	S	S
Auto power-off device		S	S	S	S
OTHERS					
Tri-color operation status signal light tower		S	S	S	S
Florescent work light		S	S	S	S
Electrical cabinet	Heat exchanger	S	S	S	S
	A / C cooling system	O	O	O	O
Complete hydraulic system		S	S	S	S
Advanced auto lubrication system		S	S	S	S
Emergency maintenance electrical part package		S	S	S	S
Operation & maintenance manuals		S	S	S	S

		O _i -TF	31 _i
FANUC CONTROL FUNCTIONS			
Display	8.4" color LCD	S	O
	10.4" color LCD	O	S
Graphic function	Standard	S	S
	Dynamic* ¹	O	O
	512K bytes	S	-
Part program storage size	1M bytes	O	S
O _i -TF : each path	2M bytes	O	O
31 _i : total	4M bytes	-	O
	8M bytes	-	O
	Registerable programs	400	S
O _i -TF : each path	1,000	O	S
31 _i : total	4,000	-	O
	99	-	S
	128	S	-
	200	O	O
	Tool offset pairs	400	-
	499	-	O
	999	-	O
	2000	-	O
Servo HRV control	HRV 3	S	S
Automatic data backup		S	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* ²		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-1100	GV-1200	GV-1600	GV-2000
Table diameter	Ø 1,100 mm	Ø 1,250 mm	Ø 1,600 mm	Ø 2,000 mm
Max. swing diameter	Ø 1,400 mm	Ø 1,600 mm	Ø 2,000 mm	Ø 2,050 mm
Max. turning diameter	Ø 1,200 mm	Ø 1,350 mm	Ø 1,800 mm	Ø 2,000 mm
Max. turning height	1,000 mm	1,300 mm		1,280 mm
Max. table load	4,000 Kg	5,000 Kg	8,000 Kg	5,000 / 8,000 Kg
WORK PIECE SPINDLE				
Spindle bearing diameter	Ø 350 mm	Ø 423 mm	Ø 580 mm	Ø 580 mm / Ø 690 mm (opt.)
Motor output (Cont.)	37 kW			
Motor output (30 min.)	45 kW			
Gear step	2-speed			
Spindle speed range	1 ~ 600 rpm	2 ~ 350 rpm	2 ~ 250 rpm	2 ~ 200 rpm
Max. spindle torque	10,170 N-m	17,100 N-m	23,900 N-m	23,900 N-m
TOOLING SPINDLE (OPTIONAL)				
Motor output (Cont.)	7.5 kW	11 kW		
Motor output (30 min.)	11 kW	15 kW		
Spindle speed range	2 ~ 2,400 rpm			
Cf-AXIS (OPTIONAL)				
Motor output	3 kW			
Cf-axis speed range	15 rpm	13 rpm	9 rpm	9 rpm
Cf-axis torque output	2,280 N-m	2,740 N-m	3,840 N-m	3,840 N-m
X & Z AXES				
Max. X-axis travel	1,300 (-100 ~ 1,200) mm	1,375 (-100 ~ 1,275) mm	1,600 (-100 ~ 1,500) mm	1,700 (-100 ~ 1,600) mm
Max. Z-axis travel	900 mm			
Max. W-axis travel	600 mm	800 mm		
X / Z axes rapids	12 / 10 m/min.			
X-axis servo motor output	7 kW	6 kW		
Z-axis servo motor output	9 kW			
ATC				
Magazine capacity	12	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	20,000 kg	23,500 kg	25,500 kg	27,000 kg
Dimensions L × W × H	3,485 x 3,930 x 5,050 mm	3,540 x 3,695 x 5,300 mm	3,790 x 3,950 x 5,300 mm	4,400 x 4,100 x 5,700 mm

Specifications are subject to change without notice .



GOODWAYCNC.com

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