

GV-1

SERIES

HEAVY-DUTY VERTICAL CNC TURNING CENTERS



THE ULTIMATE MACHINING POWER

WOODWAY

GV-1 series

HEAVY-DUTY VERTICAL TURNING CENTERS

/// EXTREMELY LOAD CAPACITY

/// ABUNDANT PROCESSING AREA

/// FLEXIBLE MOVING CROSS RAIL STRUCTURE

Packed with advanced composition and high class core element to bring GV-1 series with high rigidity and heavy-duty cutting capabilities.

GV-1 series can meet request of every heavy work piece and tough material.

A

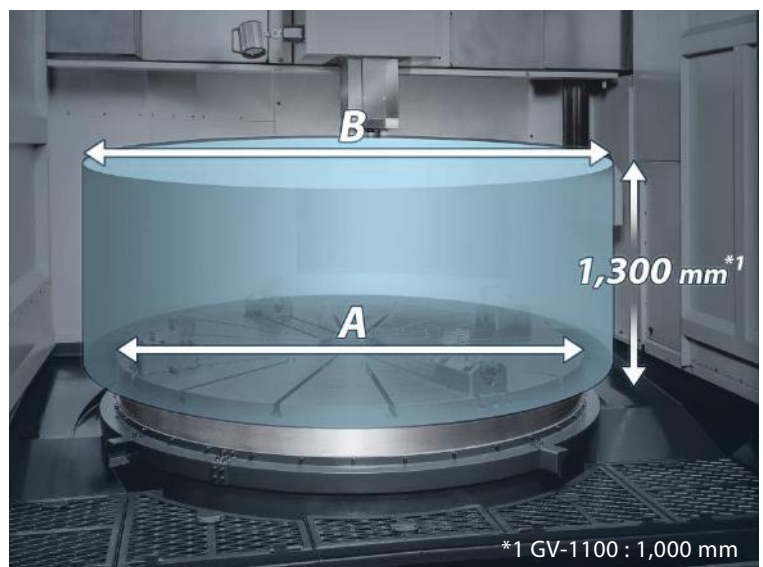
Table Diameter

GV-1100 : 1,100 mm
GV-1200 : 1,250 mm
GV-1600 : 1,600 mm
GV-2000 : 2,000 mm

B

Max. Turning Diameter

GV-1100 : 1,200 mm
GV-1200 : 1,350 mm
GV-1600 : 1,800 mm
GV-2000 : 2,000 mm





(GV-1200M model shown with optional accessories)

MAXIMUM STRENGTH CONSTRUCTION

Finite Element Methods (FEM)

The Finite Element Methods (FEM) provides optimal machine design and light-weight structure advantage while ensuring super rigid of machine.

Super Rigid Casting Structure

The super rigid bed and column are of MEEHANITE casting. It is capable of withstanding much greater stress without deforming and provides maximum vibration dampening.



(Casting structure of GV-1600M model shown)

Reinforced Rib Column

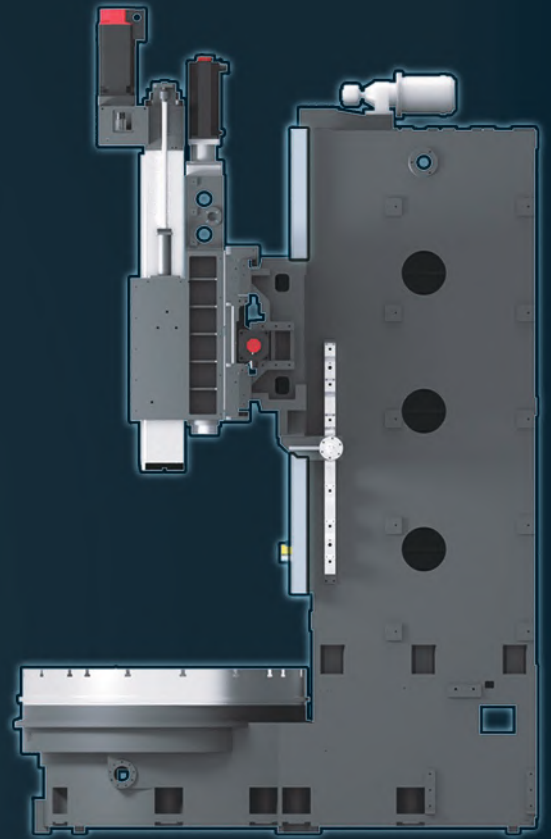
Reinforced rib column integrated with cross rail stay firmly on the machine base that provide spindle head abundant support rigidity, also shorten the distance between tooling to the column and reduce tooling spindle overhang, strengthen processing rigidity.

High Precision Hand Scraping

Contact surfaces of all slides, bed and column are precision hand scraped to provide maximum assembly precision, structural rigidity, and load distribution.

Heavy Duty Ground Box Ways

Extra wide hardened and ground box ways on X, Z and W axes. They are precision machine and widely spaced for maximum strength. The box way design also provides the rigidity needed for heavy duty and interrupted turning applications.



W-axis Moving Cross Rail Mechanism

By W-axis moving ram to reduce the distance between tooling and beam, this can decrease square ram overhang, suitable for heavy cutting or disc type parts request.

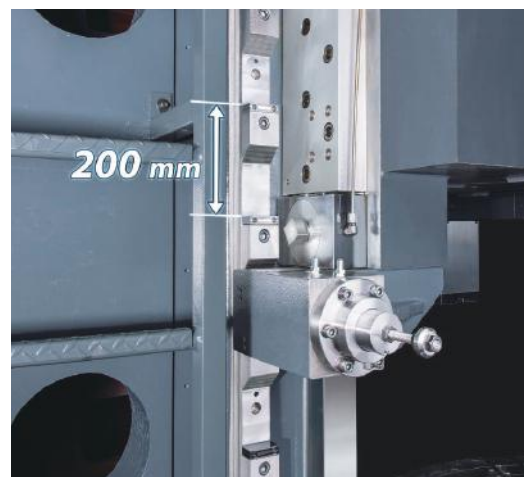
W-axis travel : 600 mm (GV-1100)
800 mm (GV-1200 ~ GV-2000)

Positioning & Clamping Mechanism

Positioning fixed device is composed of two sets of live locking bolts and four sets of hydraulic clamping devices which can provide abundant clamping force, decrease vibration when cutting, ensure processing accuracy.

High-Low Guide Way Design

Not only W-axis rail integrated with column, also use high-low guide way design to provide good anti-vibration capability, construction not deformed during heavy cutting.

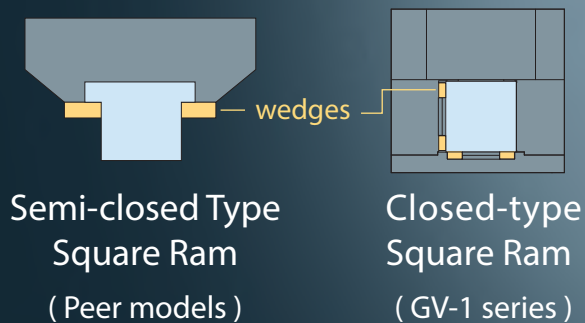


ULTIMATE TURNING POWER

Super-sized Square Ram

The square ram on the tooling spindle is adopted with a closed-type and fixed with 8 sets of powerful wedges. This offer the GV-1 series with greater structural rigid and machining accuracy compared peer models with a semi-closed type square ram structure.

Z-axis is balanced by dual counterweight hydraulic cylinder, this can avoid unbalanced torque and make sure GV-1 excellent processing accuracy.

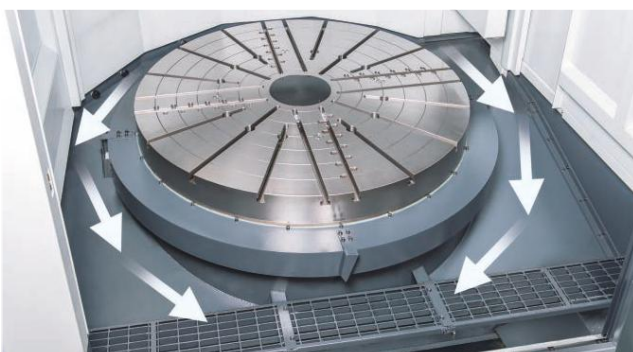


Unit : mm

Coolant & Chip Removal Capacity

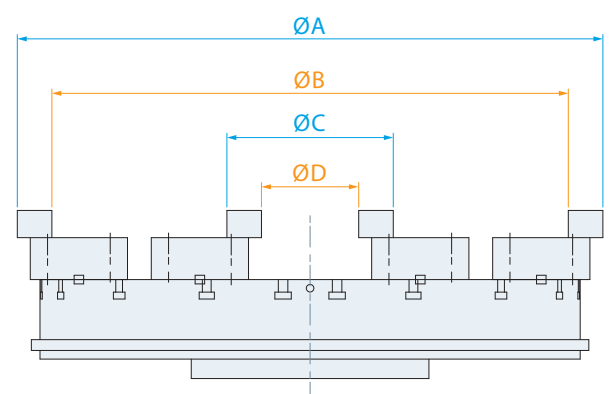
Machine standard include coolant through spindle and coolant around spindle. High pressure coolant system (70 bar ~120 bar) is optional function.

Wide chip trough is designed by large angle of inclination, by working with chips wash down coolant system, chips can be easily brought out through cutting area.



Max. Clamping Range

Standard 4-jaws individual manual chuck.



Unit : mm

Max. clamping range	A	B	C	D
GV-1100	1,165	1,005	355	195
GV-1200	1,355	1,195	385	225
GV-1600	1,675	1,515	385	225
GV-2000	1,995	1,835	385	225

High Torque Work-piece Spindle

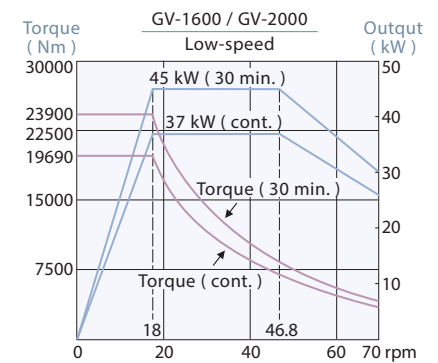
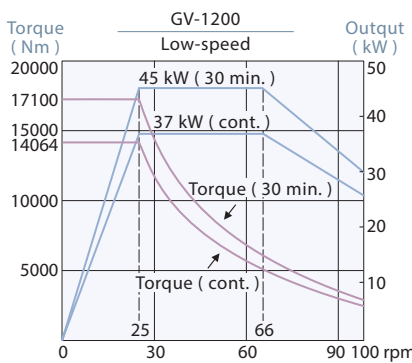
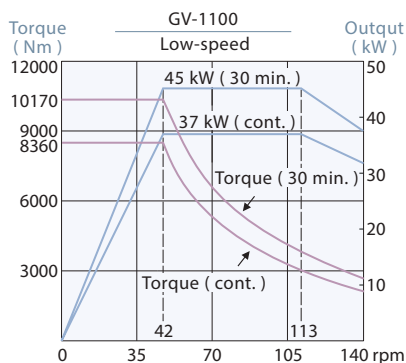
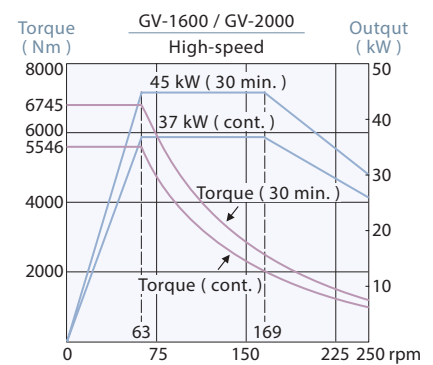
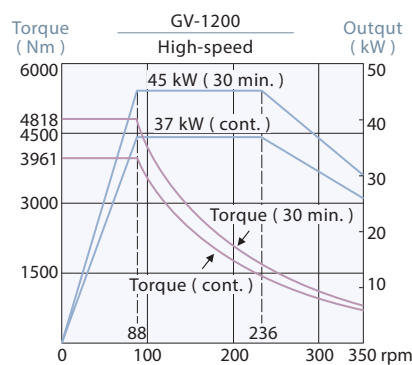
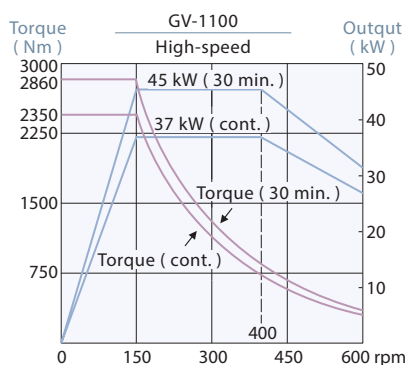
The high torque work-piece spindle is equipped with a powerful FANUC 45 kW spindle motor that delivers a maximum torque output of 23,900 Nm^{*1} at 18 rpm, ideal for heavy-duty cutting conditions.

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.

*1 : GV-1600 / GV-2000 series



Work-piece Spindle Output



POWERFUL MACHINING CAPACITY

Optional live tooling spindle and C-axis can provide turning, milling, drilling, tapping and other complex processing capacity. This can increase production efficiency, also can avoid setting error when parts moving between machines.

Live Tooling Spindle

High power FANUC spindle motor and two-step gear box design, max. turning speed 2,400 rpm can provide high torque output in low speed to satisfy heavy cutting request.

High accuracy, high rigidity P4 class NN type dual roller bearing design, this can bear high load from axial and radial, even spindle working long time can also keep best accuracy.

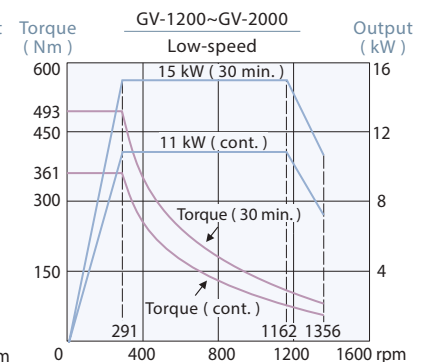
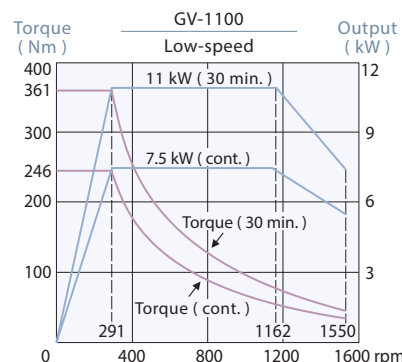
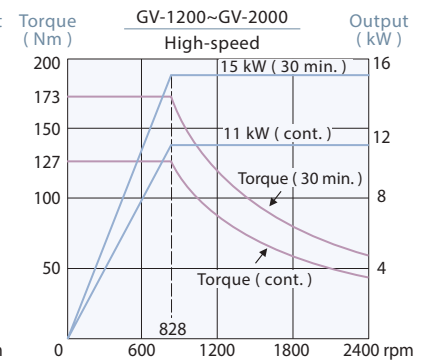
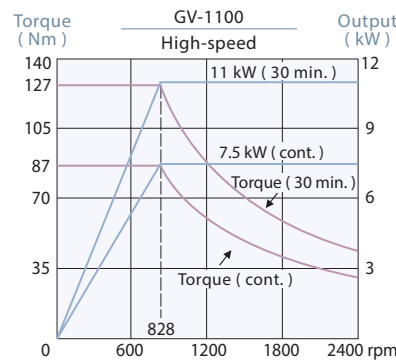


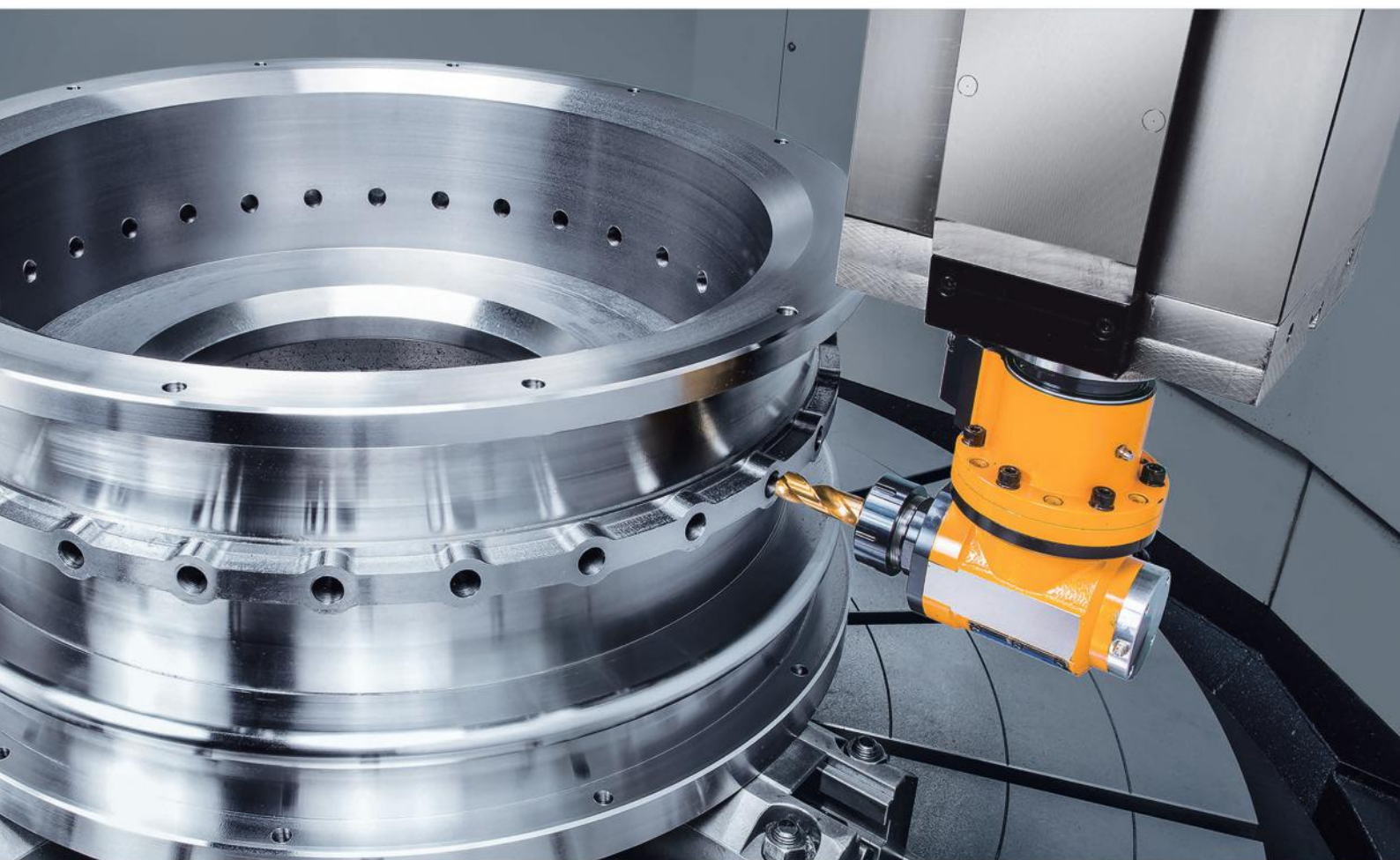
90° Milling Head



Universal Milling Head

Live Tooling Spindle Output



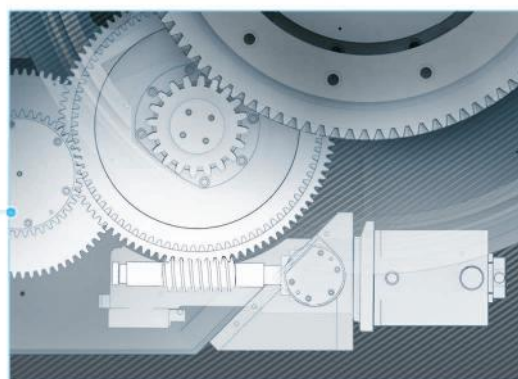


Ultimate C-axis Spindle

Cf-axis is driven by ultra high resolution servo motor. It is adopted with worm gear drive system for high accuracy transmission and easy backlash adjustment. The indexing accuracy is up to 0.001° .

Standard disk brake system provide quick reacting and adequate locking force to satisfy rigid request when heavy cutting.

Model	Cf-axis torque output
GV-1100	2,280 Nm
GV-1200	2,740 Nm
GV-1600	3,840 Nm
GV-2000	3,840 Nm

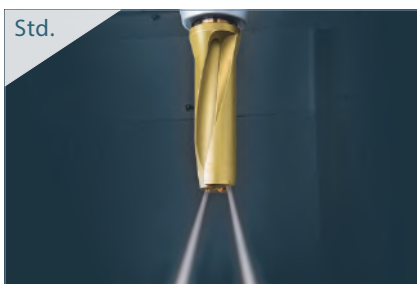


OPTIMIZED EQUIPMENT

ATC System

High reliable BT50 12 / 16 / 24 T umbrella type ATC system which providing 50 kg maximum tool weight and 360 kg maximum magazine loading capability.

Fully enclosed ATC door only opened when tool change. ATC won't be damaged by cutting chips that can make sure tool changing reliability.



Coolant Through Spindle



Automatic Tool Length Measurement



Workpiece Inspection Probe

High Pressure Coolant System Option

Max. Pressure : 70 ~ 100 bar (1,000 ~ 1,500 PSI)

Max. Flow Rate : 30 ~ 53 LPM (8 ~ 14 GPM)

Coolant Type : Water or Oil

- ▶ Pressure output monitoring system
- ▶ Filter replacement checking
- ▶ Super large capacity coolant tank
- ▶ Patented diaphragm pump (made in USA.)
- ▶ Touch screen of human machine interface



Intelligent Automatic Pressure Control

- Pressure controlled by programmable valve control, no need to be adjusted by manual, more accurate pressure output.
- It is controlled by closed loop of inverted motor, it can be adjusted to proper flow automatically by pressure to save power and decrease heat raising of coolant.*1

- Use Ethernet to connect*2 with machine, easy wiring and setting, save cost of purchasing hardware.

*1 Traditional manual adjusting way is constant frequency full flow output.

*2 Only FANUC / SIEMENS controller

G.LINC 350 Option

Makes Your Machine Smarter

- ▶ Advanced Hardware
- ▶ Outstanding Operability
- ▶ Streamlined Programming
- ▶ High Security and Shortened Machining Setting
- ▶ Reliable Continuous Operation
- ▶ Shortened Troubleshooting Time
- ▶ Improved Utilization Rate
- ▶ 3D cutting simulation preview



Significant Production Efficiency

General Production Process

Setting

Test-Run

Actual Production

Using 3D Simulation Inspection

Setting

Test-Run

Actual Production

Utilization Rate **↑ 30 %**

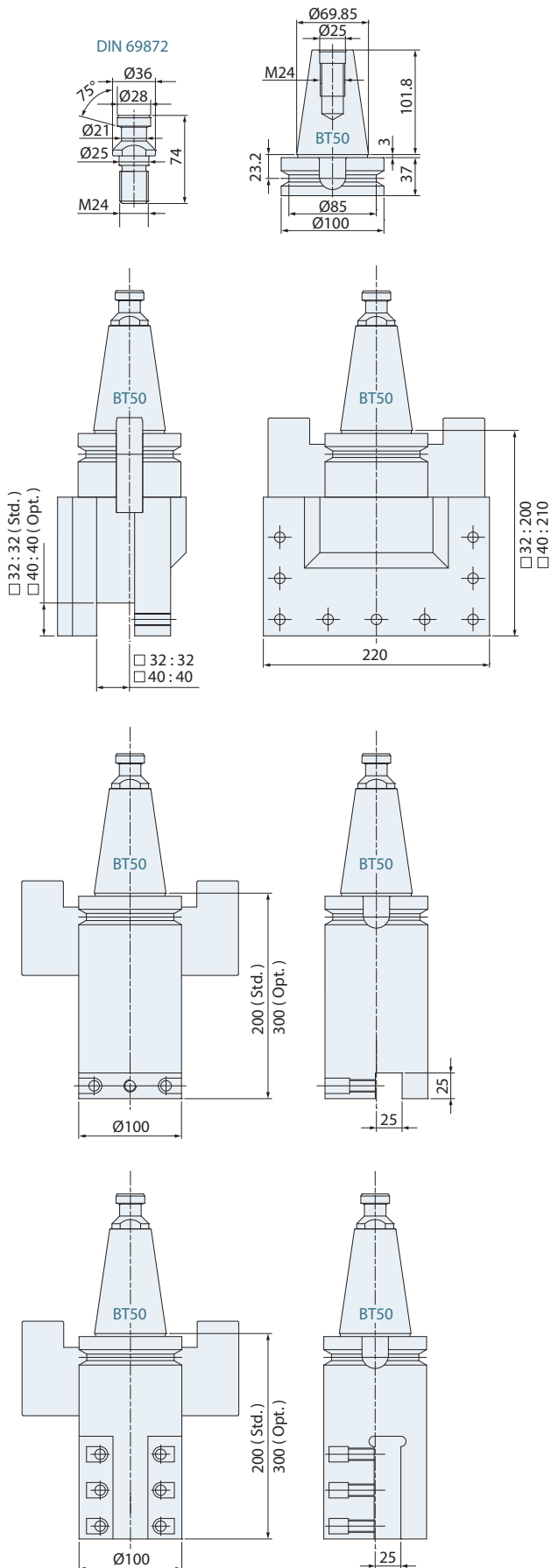
Comprehensive Functions

Programming	Setting	Test-Run	Actual Production	Daily Used
Dynamic graphic display Program management Friendly programming environment Programming auxiliary Manual Guide <i>i</i> Embedded E-manual	3D advance tool path and cutting simulation	Tool load monitor Program check Smart balance detection 3D Real-time cutting simulation and interference check	Tool load monitor 3D Real-time cutting simulation and interference check load monitoring	Safety signal viewer Fast alarm check productivity Productivity management Twin operation system switch Maintenance management NFC apply authority management and record

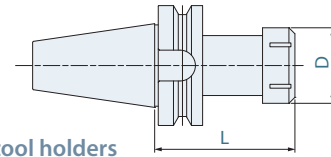


GENERAL DIMENSION

Tool Holders

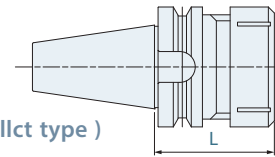


Tool Holders (Optional)



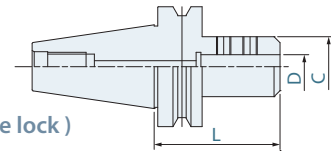
Tapping tool holders

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



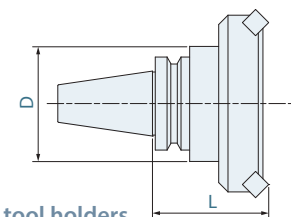
Drilling (collet type) tool holders

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



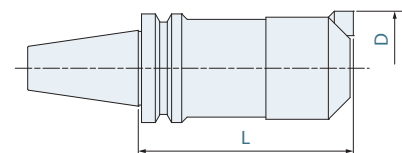
Drilling (side lock) tool holders

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

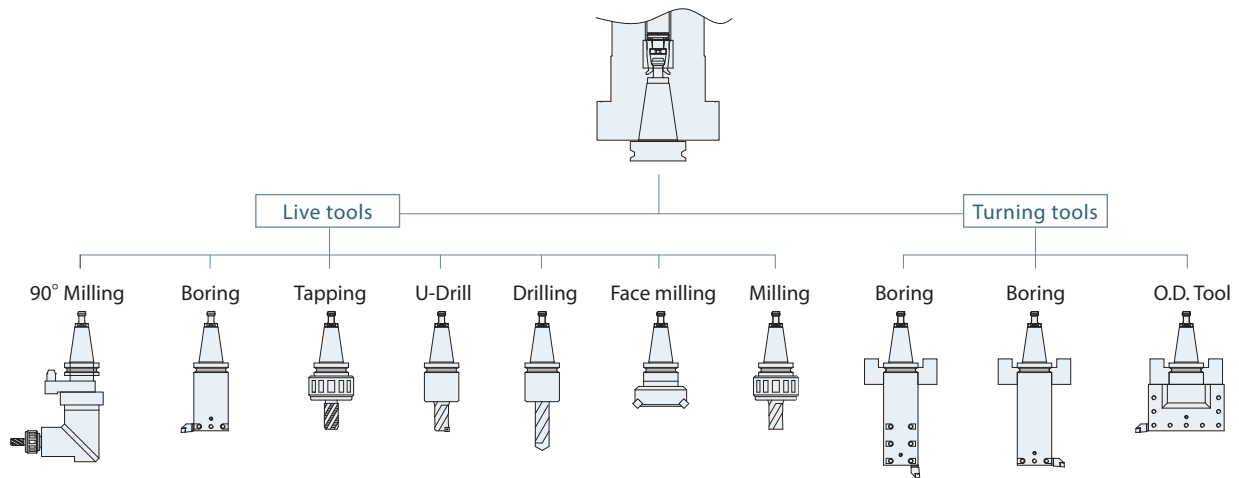


Boring tool holders

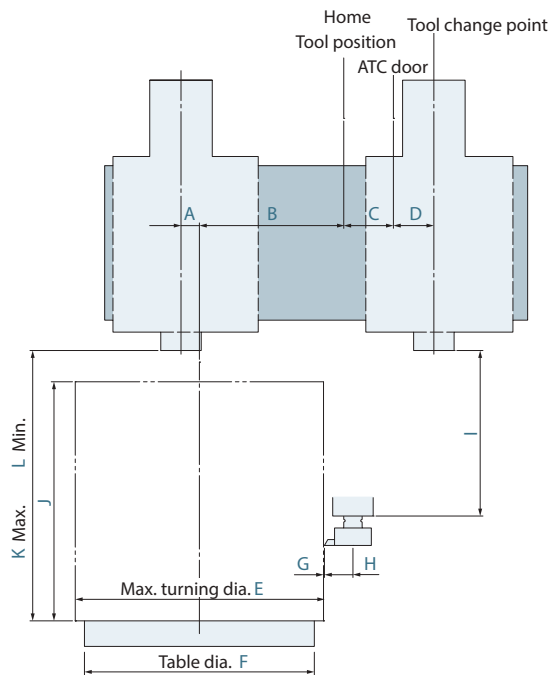
Model	L	D
BT50-BSA62-300	300	Ø62~90
BT50-BSA72-320	320	Ø72~110
BT50-FMA105-195	195	Ø105~160

Unit : mm

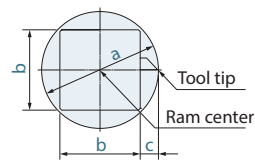
Tooling System



Work Range



Min. inner turning dia.



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	220	220	Ø1,200	Ø1,100
GV-1200	100	835	220	220	Ø1,350	Ø1,250
GV-1600	100	1,060	220	220	Ø1,800	Ø1,600
GV-2000	100	1,160	220	220	Ø2,000	Ø2,000

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

Unit : mm

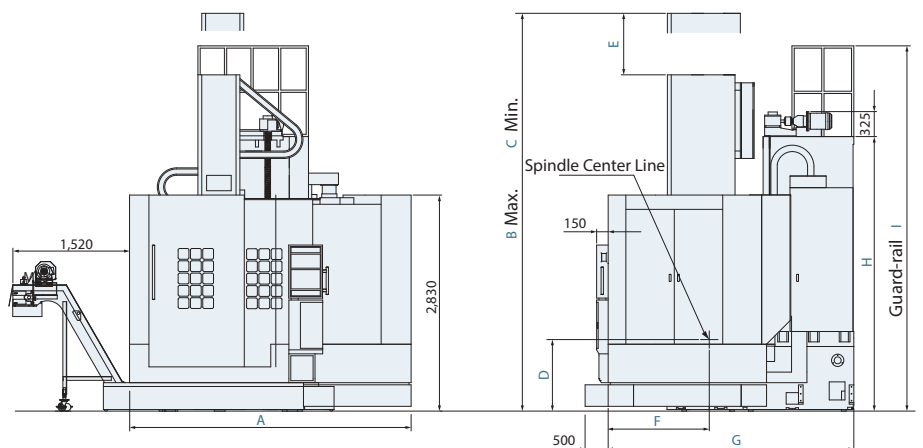
Machine Layout

Model	A	B	C
GV-1100	3,485	5,050	4,450
GV-1200	3,540	5,300	4,500
GV-1600	3,790	5,300	4,500
GV-2000	4,400	5,300	4,500

Model	D	E	F
GV-1100	910	600	1,265
GV-1200	930	800	1,315
GV-1600	910	800	1,350
GV-2000	930	800	1,500

Model	G	H	I
GV-1100	3,530	3,310	4,460
GV-1200	3,195	3,580	4,730
GV-1600	3,450	3,560	4,750
GV-2000	3,600	3,560	4,750

Unit : mm



Specifications are subject to change without notice.

STANDARD & OPTIOANL FEATURES

S : Standard O : Option
 – : Not Availabl 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
LIVE 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 *1	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		S	S	S	S
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		O	O	O	O
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

*1 Higher pressure request please see page 9 or contact with Goodway.

		Oi-TF	31i
Display	10.4" color LCD	S	S
	Standard	S	–
Graphic function	Dynamic *2	O	S
	512K bytes	S	–
Part program storage size	1M bytes	–	S
	Oi-TF : each path	O	O
	2M bytes	–	O
	31i : total	–	O
Registerable programs	4M bytes	–	O
	8M bytes	–	O
	400	S	–
	Oi-TF : each path	O	S
31i : total	1,000	O	S
	4,000	–	O
	99	–	S
	128	S	–
Tool offset pairs	200	O	O
	Oi-TF : each path	–	O
	400	–	O
	31i : total	–	O
Servo HRV control	499	–	O
	999	–	O
	2000	–	O
	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
Run hour and parts count display		S	S
Tool radius / Tool nose radius compensation		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		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

*2 Dynamic graphic display conflict to MANUAL GUIDE *i*, only can choose one to have.

MANUAL GUIDE *i* is standard on 31i controller.

Specifications are subject to change without notice.

MACHINE SPECIFICATIONS

■ : Metric ■ : Inch

CAPACITY	GV-1100	GV-1200	GV-1600	GV-2000	
Table diameter	Ø 1,100 mm 43.3"	Ø 1,250 mm 49.2"	Ø 1,600 mm 62.9"	Ø 2,000 mm 78.7"	
Max. swing diameter	Ø 1,400 mm 55.1"	Ø 1,600 mm 62.9"	Ø 2,000 mm 78.7"	Ø 2,050 mm 80.7"	
Max. turning diameter	Ø 1,200 mm 47.2"	Ø 1,350 mm 53.1"	Ø 1,800 mm 70.8"	Ø 2,000 mm 78.7"	
Max. turning height	1,000 mm 39.3"	1,300 mm 51.1"		1,280 mm 50.39"	
Max. table load	4,000 kg 8,800 lb	5,000 kg 11,000 lb	8,000 kg 17,600 lb	5,000 kg 11,000 lb	8,000 kg ^{*1} 17,600 lb
WORK PIECE SPINDLE					
Spindle bearing diameter	Ø 350 mm 13.77"	Ø 423 mm 16.65"	Ø 580 mm 22.83"	Ø 580 mm 22.83"	Ø 690 mm ^{*1} 27.16"
Motor output (Cont.)	37 kW 50 HP				
Motor output (30 min.)	45 kW 60 HP				
Gear step	2-speed				
Spindle speed range	1 ~ 500 rpm	2 ~ 350 rpm	2 ~ 250 rpm	2 ~ 200 rpm	
Max. spindle torque	10,170 Nm 7,500 lb-ft	17,100 Nm 12,600 lb-ft	23,900 Nm 17,600 lb-ft	23,900 Nm 17,600 lb-ft	
Cf-AXIS (OPTIONAL)					
Motor output	3 kW 4 HP				
Cf-axis speed range	15 rpm	13 rpm	9 rpm	9 rpm	
Cf-axis torque output	2,280 Nm 1,680 lb-ft	2,740 Nm 2,000 lb-ft	3,840 Nm 2,800 lb-ft	3,840 Nm 2,800 lb-ft	
LIVE TOOLING SPINDLE (OPTIONAL)					
Motor output (Cont.)	7.5 kW 10 HP	11 kW 15 HP			
Motor output (30 min.)	11 kW 15 HP	15 kW 20 HP			
Spindle speed range	2 ~ 2,400 rpm				
X & Z AXES					
Max. X-axis travel	1,300 (-100 ~ 1,200) mm 51.18" (- 3.93" ~ 47.24")	1,375 (-100 ~ 1,275) mm 54.13" (- 3.93" ~ 50.19")	1,600 (-100 ~ 1,500) mm 62.99" (- 3.93" ~ 59.05")	1,700 (-100 ~ 1,600) mm 66.92" (- 3.93" ~ 62.99")	
Max. Z-axis travel	900 mm 35.43"				
Max. W-axis travel	600 mm 23.62"	800 mm 31.49"			
X / Z axes rapids	12 / 10 m/min. 472 / 393 IPM				
X-axis servo motor output	7 kW 9.3 HP	6 kW 8 HP			
Z-axis servo motor output	9 kW 12 HP				
ATC					
Magazine capacity	12	16			
Spindle taper	BT50 (CAT50)				
Max. tool size (L × W × H)	280 x 150 x 400 mm 11" x 5.9" x 15.7"				
Max. tool weight	50 kg 110 lb				
Max. magazine load	360 kg 790 lb				
GENERAL					
Positioning accuracy	± 0.007 / 500 mm ± 0.0003" / 19.7" (X & Z axes), ± 7.5 arc.sec / 360° (C-axis)				
Repeatability	± 0.005 mm ± 0.0002" (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 13 gal				
Coolant tank capacity	900 L 237 gal				
Machine weight	20,000 kg 44,100 lb	23,500 kg 51,900 lb	25,500 kg 56,300 lb	27,000 kg 59,600 lb	
Dimensions (L × W × H)	3,485 x 3,930 x 5,050 mm 138" x 155" x 199"	3,540 x 3,695 x 5,300 mm 140" x 146" x 209"	3,790 x 3,950 x 5,300 mm 150" x 156" x 209"	4,400 x 4,100 x 5,700 mm 174" x 162" x 225"	

*1 Optional

Specifications are subject to change without notice.



GOODWAYCNC.com

GOODWAY MACHINE CORP.

HEADQUARTERS

No.13, 5th Road,
Taichung Industrial Park,
Taichung City, 407, Taiwan
E-mail : goodway@goodwaycnc.com

CENTRAL TAIWAN SCIENCE PARK BRANCH

No. 38, Keyuan Road,
Central Taiwan Science Park.Taichung,
Taichung City, 407, Taiwan
TEL : + 886-4-2463-6000
FAX : + 886-4-2463-9600

GOODWAY MACHINE (WUJIANG) CO.,LTD

No. 4888, East Lake Taihu Avenue, Wujiang
Economic and Technological Development Zone,
Jiangsu, China
Sales Hotline : + 86-512-8286-8068
Service Hotline : + 86-512-8286-8066
FAX : + 86-512-8286-8620
E-mail : goodway@goodwaycnc.cn