



GV-1000 SERIES

Vertical CNC Turning Centers

GOODWAY MACHINE CORP.

HIGH PERFORMANCE VERTICAL CNC TURNING CENTER

With 30 Years of experience in the manufacture of lathes. Goodway are pleased to introduce our GV-1000 CNC Vertical Turning Center, which combined ultra high power performance, super rigid construction and high speed machining. The GV-1000 provides turning and milling capacity for the dynamic demands of todays market and onward into the future.

With a maximum turning diameter of 1,000 mm by 760 mm long, the GV-1000 is ideal for the machining of large parts and heavy cutting conditions. The 'C' Axis and a live tooling turret enable " One Hit Manufacturing" of suitable components.

GV-1000 SERIES

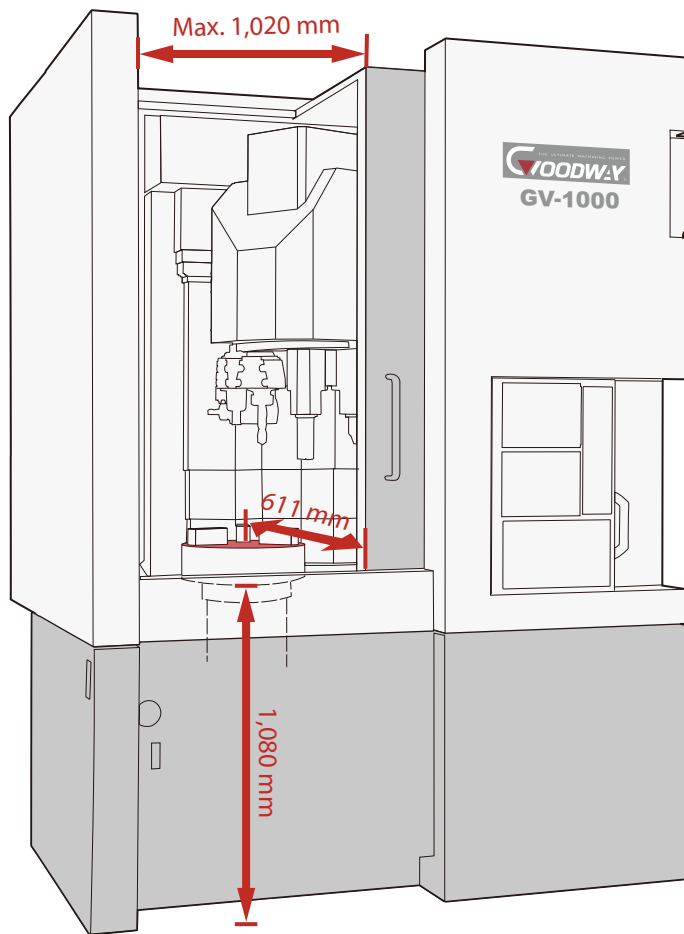
Model	GV-1000	GV-1000M
Max. swing diameter	Ø 1,020 mm	
Max. turning diameter	Ø 1,000 mm	
Max. turning length	760 mm	
Live tooling turret / C-axis	—	Std.

- ▶ Full surrounded guarding for a clean environment.
- ▶ The use of slide-way covers protect all the bed-ways.
- ▶ Environmentally friendly lube system provides the lubrication for the slide-ways and ball-screws.



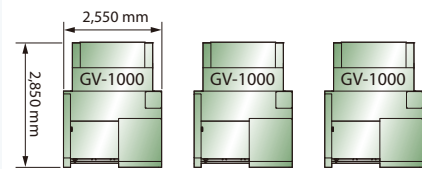
(GV-1000M model shown with optional accessories)

- ▶ Machine Design is based on Ergonomics, all so known as Human Factor Engineering is the science of refining the design of products to optimise machine for human use. This principle has been fully integrated into the design, from the ease of operation to the compact floor space, which gives a floor space saving of up to 50% over a conventional turning center design.

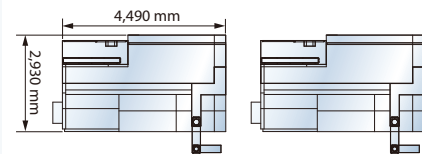


- ▶ Designed for the easy loading of parts, the spindle nose to floor = 1,080 mm & the spindle center line to the operator door = 611 mm

The compact body design and working area make the GV-1000 Foot Print one of the smallest in its class.



Vertical turning centers



Horizontal turning centers



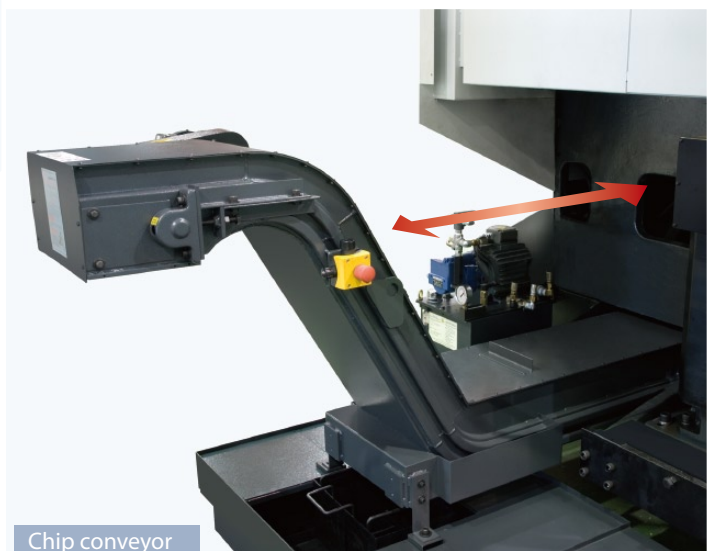
Coolant tank

- ▶ Easy maintenance independent coolant system and chip conveyor.

- ▶ The spindle gear box lubrication integrity is monitored by flow.



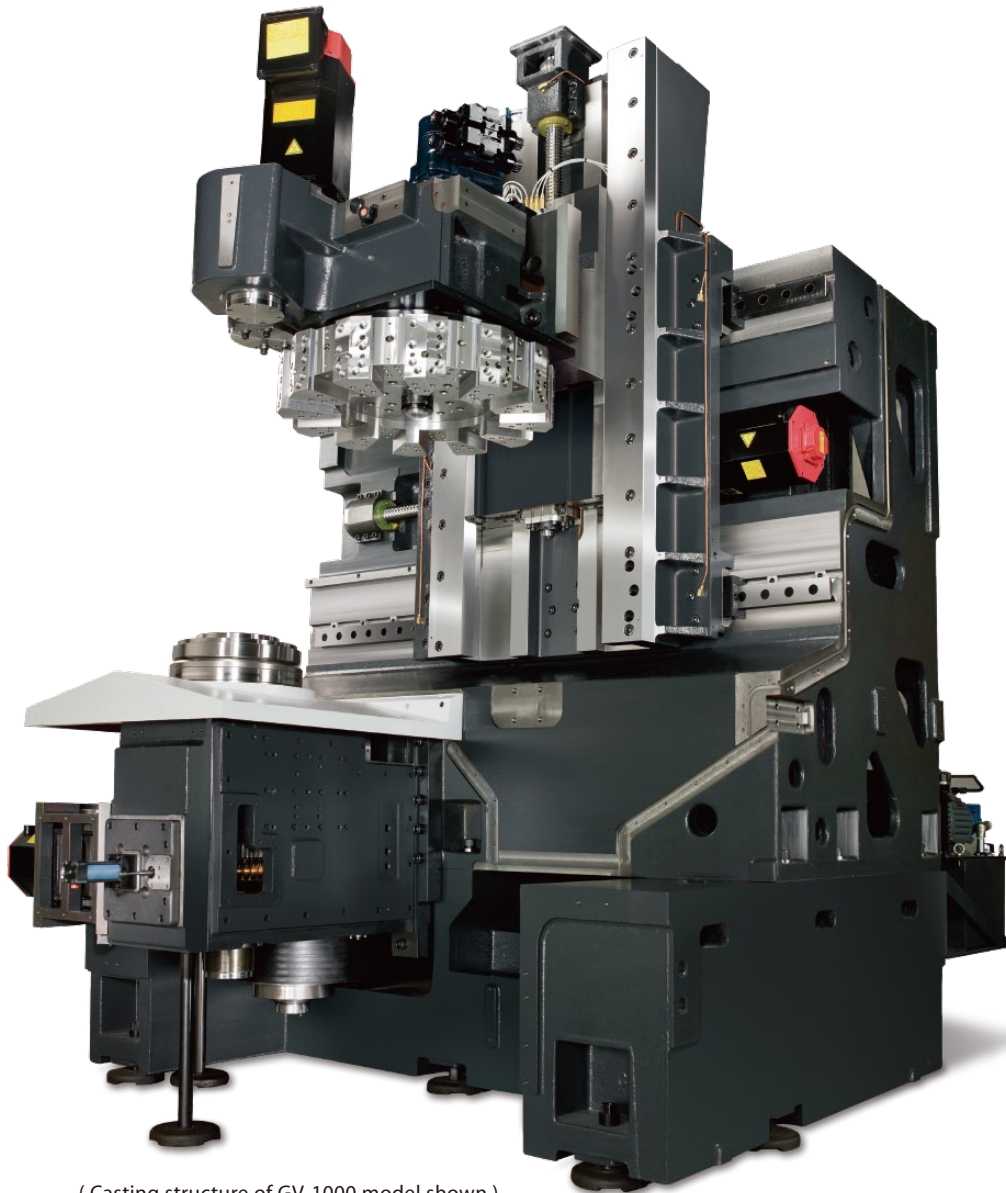
Flow Detector



Chip conveyor

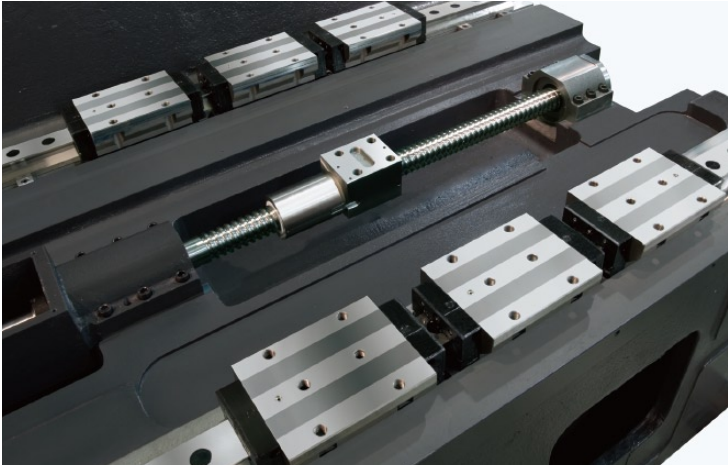
HIGH RIGID CONSTRUCTION

- ▶ The base and column construction has been made by computer generated design which has increased the stability by 30% over traditional design.
- ▶ Meehanite grade castings, rib and reinforced provide excellent stability, good thermal expansion and performance for the vertical column.



(Casting structure of GV-1000 model shown)

- ▶ Fanuc alpha *i* series AC servo motors are fitted to all axes. The alpha *Pi* intelligent servo motor with its compact size and super high resolution αi series pulsecoder (standard 1,000,000/rev) are the perfect partner in this machine tool.
- ▶ X & Z axes motors are fitted with absolute encoders thus eliminating the need for reference returning the axis before machining.

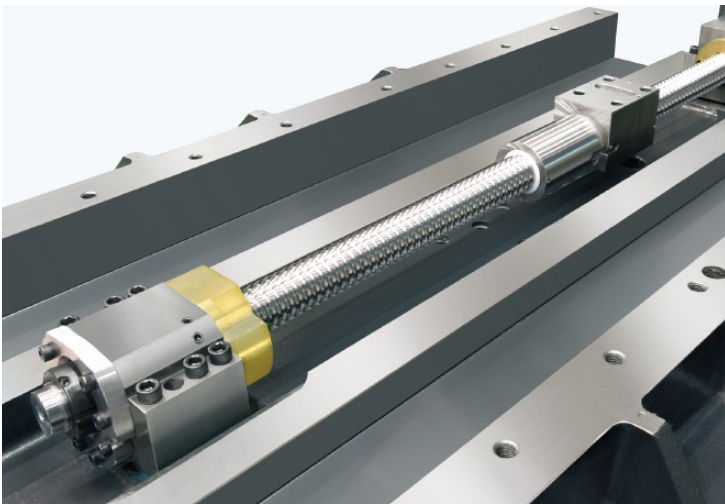


X Axis Linear Rails

- ▶ Japan made linear rails (roller type) provide excellent stability in operation.

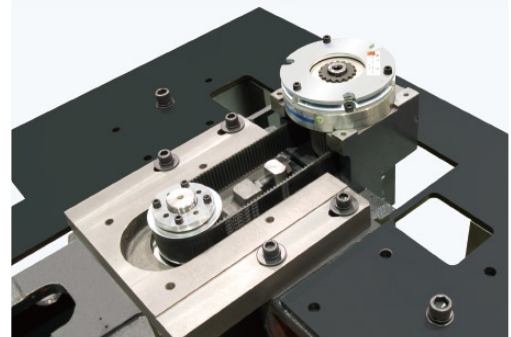
Ball Screws

- ▶ C3 class ball screws (with a pitch accuracy of $12.7\mu / 300 \text{ mm}$) are fitted with pre-load to X and Z axes.

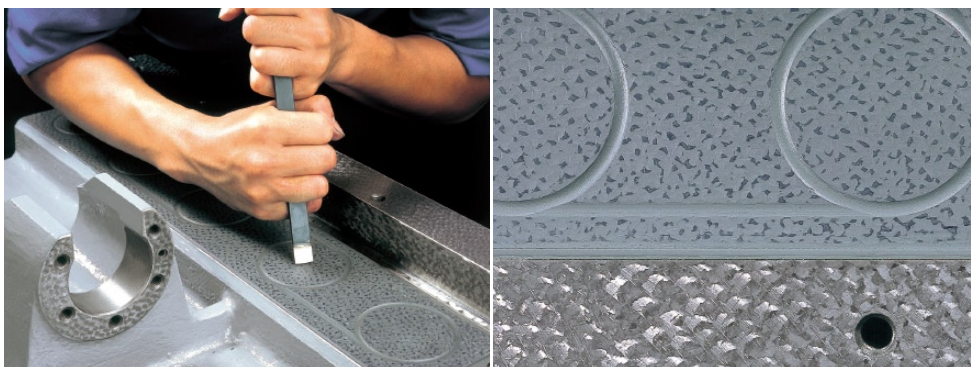


Built for Safety

- ▶ The Z axis is fitted with an independent Japan made brake system.

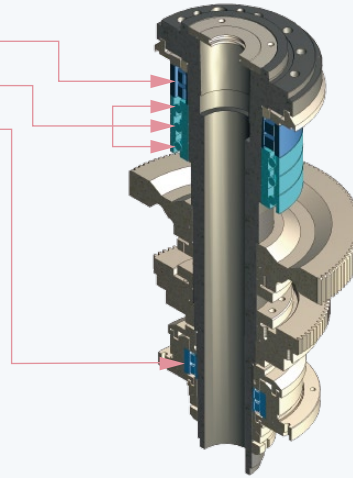


- ▶ Contact surfaces of all slide, turret and ball screw bearing housings with the machine bed are precision hand scraped to provide maximum assembly precision, structural rigidity, and load distribution.

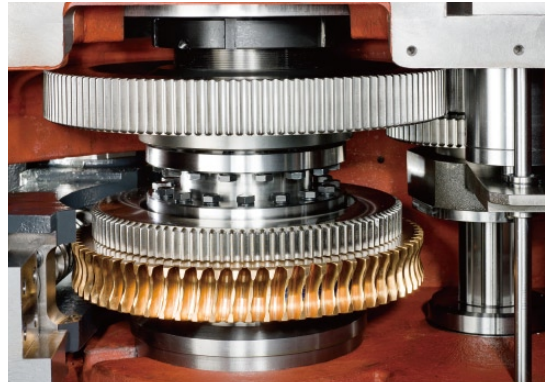
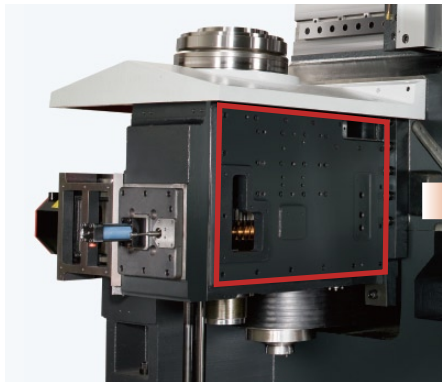


ULTIMATE TURNING POWER

- ▶ Bearing configuration : Front – Double roller × 1
Angular contact × 3
Rear – Double roller × 1
- ▶ P4 grade (Class 7) super-high precision bearings are directly assembled for maximum level of support and precision. Bearing configuration is designed for super heavy-duty cutting with ultra-smooth performance and long term durability with a higher level of accuracy.



- ▶ The 2-step gear box produces 30 kW of output.
- ▶ With over 3,138 N-m of torque available on the low speed of the 3-speed gear head, turning tough material with big diameter is now a simple task.



- ▶ Generating twice the torque output of standard motors, the A/C, constant output, wide-range FANUC α P60 high-torque *i* series motor is rated at 30 kW (40 HP). This doublewound motor is designed to reach full output at 1/2 the RPM of standard motors, providing the ability to take heavier cuts in the lower RPM ranges.

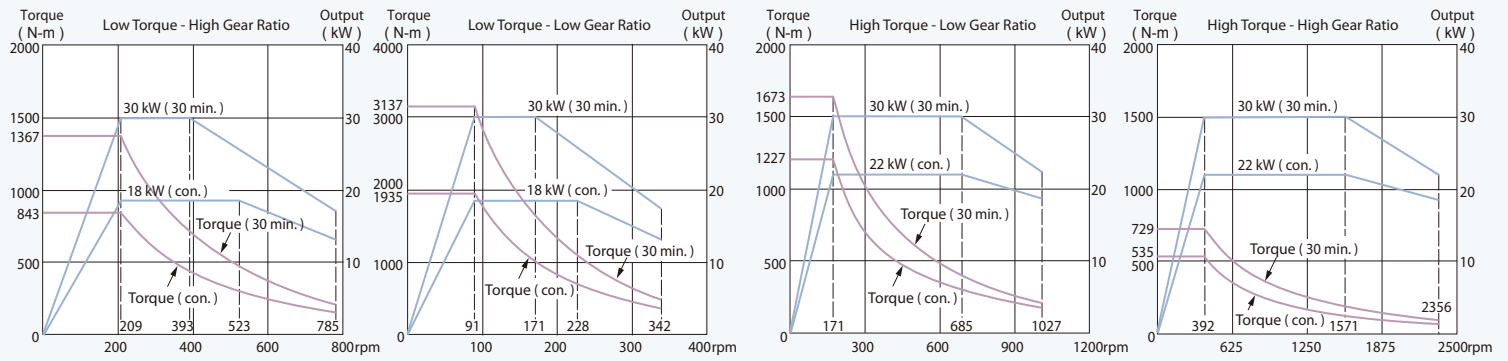


- ▶ Standard spindle orientation feature allows the spindle to stop at desired programmed position. Useful in broaching and manual part loading applications where a fixed spindle position is required.

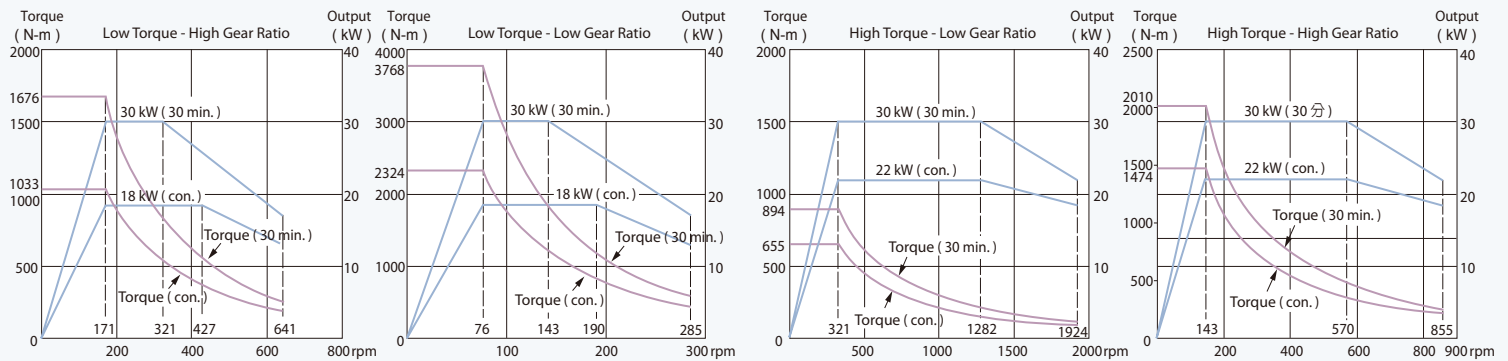


Spindle motor output

Spindle bearing diameter : Ø 160 mm

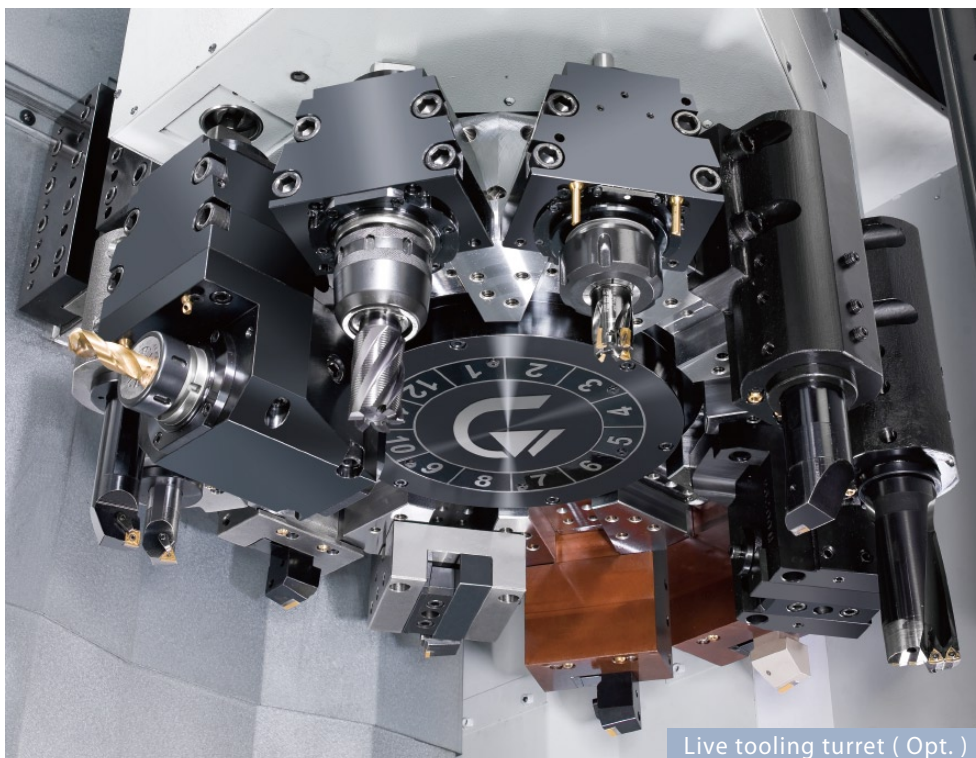
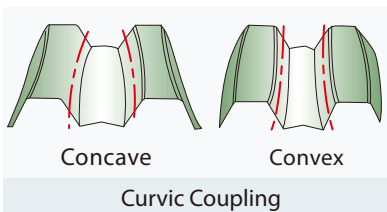


Spindle bearing diameter : Ø 200 mm



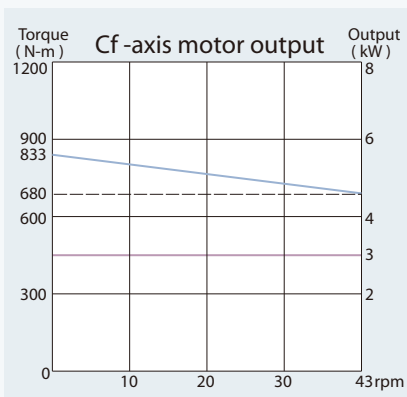
ADVANCED TURRET TECHNOLOGY

- ▶ The index position of the turret is by the large 320mm Diameter Curvic Coupling.
- ▶ Available with straight and 90° Live Tooling Tool Holder.
- ▶ Live tooling drive by Fanuc Servo Motor.



ADVANCED TURRET TECHNOLOGY

- ▶ GV-1000 Cf-axis with Fanuc αi Servo Motor with Fanuc 1.0 million pulse super high resolution αi series pulsecoder provides ultimate performance for the C axis and with worm-gear drive an accuracy of 0.001° can be attained.
- ▶ Working with the live tooling turret, 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, resembling a 4th-axis rotary table on a machining center.



- ▶ With the Fanuc servo motor generating an ultra high resolution of 1.0 million pulses per spindle rotation and 833 N-m (614 ft-lb.) of spindle torque (Con.), machined surface finishes are much superior than Cs-axis (driven by spindle motor) equipped machines. Plus, dynamic accuracy is within $\pm 0.02^\circ$ even under heavy cutting loads.

FEATURES

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

SPINDLE		GV-1000
Main spindle configuration	Two-speed	S
Rigid tapping		S
Cf-axis & disk brake for main spindle		O
WORK HOLDING		
Solid 3-jaws chuck & hydraulic solid cylinder for chuck	15"	S
	18"	O
	24"	O
Manual chuck		O
Hard jaws	1 set	O
Soft jaws	1 set	S
Collect chuck		O
Special work holding chuck		O
Foot switch for chuck operation	Single	S
	Double	O
TURRET		
12-station turret		S
12-station live tooling turret		O
Tool holder & sleeve package		S
Live tooling tool holders		O
MEASUREMENT		
Goodway tool presetter	Hydraulic drive arm	O
COOLANT		
Coolant pump	5 Kg/cm ²	S
High-pressure coolant system	20 Kg/cm ²	O
Roll-out coolant tank		S
Oil skimmer		O
Coolant flow switch		O
Coolant level switch		S
Coolant intercooler system		O
CHIP DISPOSAL		
Chip conveyor with auto timer		O
Chip cart with coolant drain	Rear discharge	O
Coolant gun		O
Oil mist collector		O
AUTOMATIC OPERATION SUPPORT		
Auto door		O
SAFETY		
Fully enclosed guarding		S
Door interlock (incl. Mechanical lock)		S
Impact resistant viewing window		S
Chuck cylinder check valve		O
Low hydraulic pressure detection switch		O
Over travel (soft limit)		S
Load monitoring function		S

Specifications are subject to change without notice.

*1 Please contact Goodway for complete control specification list.

*2 10.4" LCD option needed.

*3 The milling axis is servo motor which available when equip with live tooling turret

OTHERS		GV-1000
Tri-color machine status light tower		S
Work light		S
Electrical cabinet	Heat exchanger	S
	A/C cooling system	O
Complete hydraulic system		S
Advanced auto lubrication system		S
Emergency maintenance electrical part package		S
Operation & maintenance manuals		S

FANUC CONTROL FUNCTIONS*1		Oi-TD	31i
PMC system	Oi-TD PMC : 25n sec/step	S	-
	31i PMC : 25n sec/step	-	S
Display	8.4" color LCD	S	-
	10.4" color LCD	O	S
Graphic function	Standard	S	S
	Dynamic	O	O
Full keypad	Small - 44 keys	S	-
	Large - 56 keys	O*2	S
Part program storage length	512 K bytes	S	-
	1M bytes	-	S
	2M bytes	-	O
	4M bytes	-	O
	8M bytes	-	O
Registerable programs	400	S	-
	1,000	-	S
	4,000	-	O
Tool offset pairs	64	S	-
	99	O	S
	400	-	O
	499	-	O
	999	-	O
Servo control	HRV2 (3)	S	S
	Manual Guide Oi	S	-
Conversational programming	Manual Guide i	O*2	S
Servo motors	α i	S	S
Spindle motors	α i	S	S
Tool Life Management		S	S
Tool Nose Radius Compensation		S	S
Background editing		S	O
Variable Lead Thread Cutting		S	S
Polygon Turning		S	S*3
Unexpected disturbance torque detection function		S	S
Polar coordinate & cylindrical interpolation		-	O
Multiple Threading		S	S
Run hour & parts counter		S	S
Auto power off function		S	S
Custom macro B		S	S
RS-232 port		S	S
Memory card input /output		S	S
Ethernet		S	S
Fast ethernet		O	O

MACHINE SPECIFICATIONS

CAPACITY		GV-1000
Max. swing diameter		Ø 1,020 mm
Max. turning diameter		Ø 1,000 mm
Std. turning diameter		Ø 330 mm
Max. turning length		760 mm
Hydraulic chuck size		21" ~ 24" (Opt.)
SPINDLE		
Spindle bearing diameter		Ø 160 mm (Opt. Ø 200 mm)
Spindle nose		A2-11 (Opt. A2-15)
Spindle motor type		Fanuc α P60 / 4,500i (AC / Wide-range)
Motor output (Cont. / 30 min.)		22 kW / 30 kW
Motor full output speed		400 rpm
Spindle drive system		Belt + Gear
Gear Step		3
Spindle speed range		20 ~ 2,000 rpm (15" , 18" chuck) 15 ~ 1,500 rpm (21" , 24" chuck)
Spindle full output speed		91 rpm (Opt. 76 rpm)
Spindle torque (Con.)		1,935 N-m (Opt. 2,324 N-m)
Spindle torque (30 min.)		3,138 N-m (Opt. 3,768 N-m)
X & Z AXES		
X / Z axes travel		525 mm / 780 mm
X / Z axes rapids		24 / 20 m/min.
X / Z axes cutting feed rate		0.001-500 mm/rev
Feed rates		5 m/ min.
X / Z axes servo motor		4.0 kW / 6.0 kW
TURRET		
Stations		12
Indexing speed		1.5 sec. Adjacent
OD tool shank size		□ 32 mm
ID tool shank size		Ø 60 mm
LIVE TOOLING TURRET (OPTIONAL)		
Stations		12
Live tooling stations		12 (rotate in working position only)
Live tooling drive motor		3.7 kW / 5.5 kW
Index speed		1.5 sec. (Adjacent)
OD tool shank size		□ 32 mm
ID tool shank size		Ø 60 mm
Live tooling shank size		ER 50 / ER 40 (0°/ 90°)
Live tooling RPM range		3,000 rpm
Cf AXIS		
Cf-axis drive motor		3.0 Kw
Cf-axis drive ratio		1 : 70
Cf speed range		30 rpm
Cf-axis torque output (Con.)		833 N-m
Indexing angle		± 0.02°
Dynamic accuracy		± 0.01°
GENERAL		
Control		Fanuc Oi-TD
Voltage / Power requirement		AC 200 / 220 + 10% to -15% 3 phase / 58 KVA
Hydraulic / Coolant tank capacity		20 / 300 L
Hydraulic motor		1.5 kW
Coolant pump / pressure		Cutting Coolant : 0.48 kW / 10 Kg/cm ² ; Washing Coolant : 0.76 kW / 5 Kg/cm ²
Machine weight		13,500 Kg
Dimensions L x W x H		2,550 x 2,850 x 3,100 mm

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GOODWAY MACHINE CORP.

Headquarters :

No.13, 5Th Road,
Taichung Industrial Park,
Taichung City, 407, Taiwan, R.O.C.
TEL : + 886-4-2359-1226
Website : www.goodwaycnc.com
E-mail : goodway@goodwaycnc.com

GOODWAY (SUZHOU) MACHINE CORP.

No.589, Chengyang Road,
Xiang Cheng Economic Development District
Suzhou City, Jiangsu, China
TEL : + 86-512-6576-3699
FAX : + 86-512-6576-7299
Website : www.goodwaycnc.com.cn
E-mail : goodway.suzhou@goodwaycnc.com.tw

Central Taiwan Science Park Branch :

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