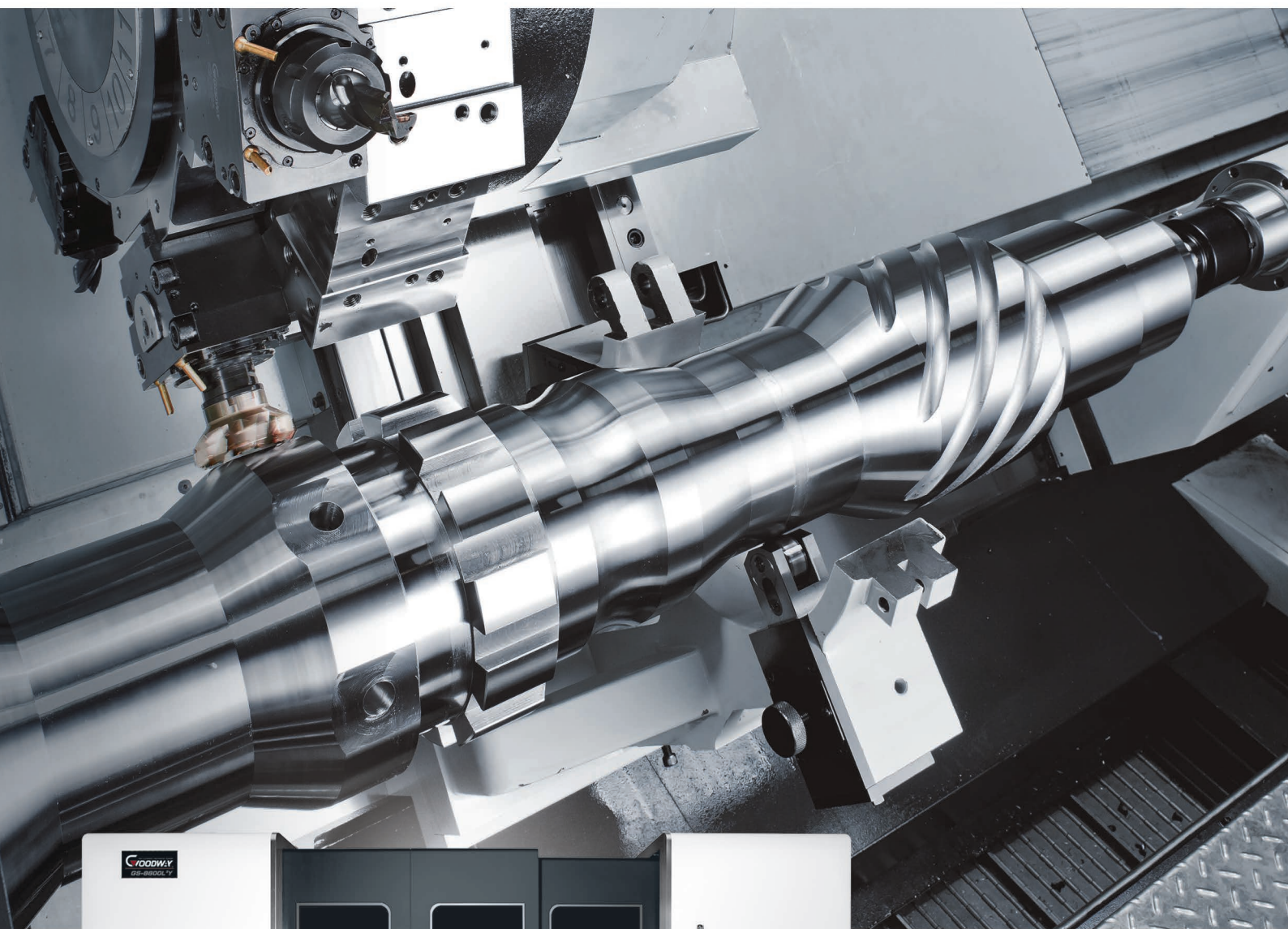


GS-8000

SERIES

HEAVY DUTY SUPERSIZE CNC TURNING CENTERS



THE ULTIMATE MACHINING POWER

WOODWAY

HEAVY DUTY SUPERSIZE CNC TURNING CENTERS

With leading technologies and high quality components, the GS-8000 series heavy duty CNC turning center combines a super rigidity box way bed with extra large diameter servo indexing turret and powerful gear spindle structure to provide you with efficient machining performance for large diameter and extra long work pieces. Meanwhile, with the optional live tooling turret and Y-axis, the GS-8000 series can easily accomplish multi-tasking operations for large and complex work pieces to fulfill various machining needs for today and tomorrow.

- ▶ 3-step gear box is driven by FANUC spindle motor with 45 kW maximum torque to provide excellent heavy duty cutting capability.
- ▶ The low center of gravity slant bed and wedge saddle design provide a super rigid structure.
- ▶ The optional Y-axis travel is of 320 mm which provides high precision and high efficiency machining performance.
- ▶ Fully enclosed splashguards keep chips and coolant contained for a safe clean working environment.



(GS-8800L³Y series model shown with optional accessories.)

1 Tailstock

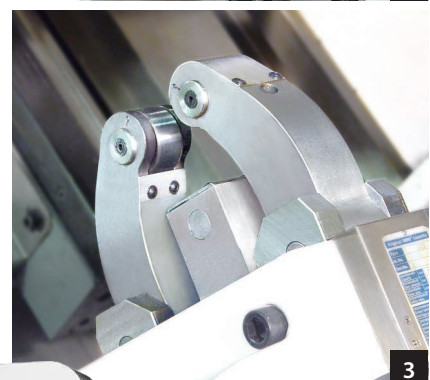
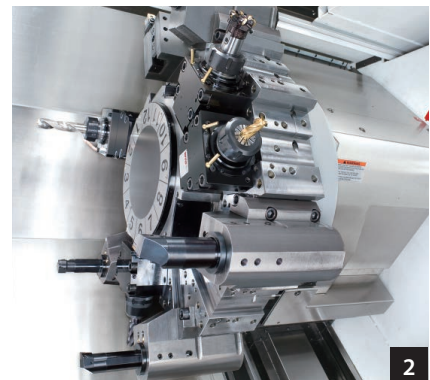
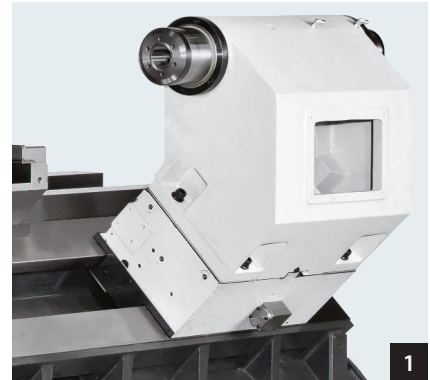
The MT#6 built-in bearing quill provides greater rigidity for heavy loads. The extension and retraction of the quill is programmable and pressure is adjustable. The software simplifies the positioning procedure of the programmable tailstock.

2 Live tooling turret

Working with the live tooling turret and C-axis control enables the machine to perform multiple tasks such as turning, milling, drilling, and tapping. It can prevent machining error causing by moving the work piece from one machine to another thus saving cycle time and manpower.

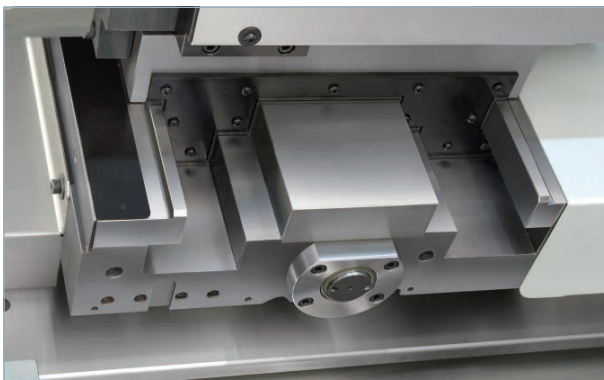
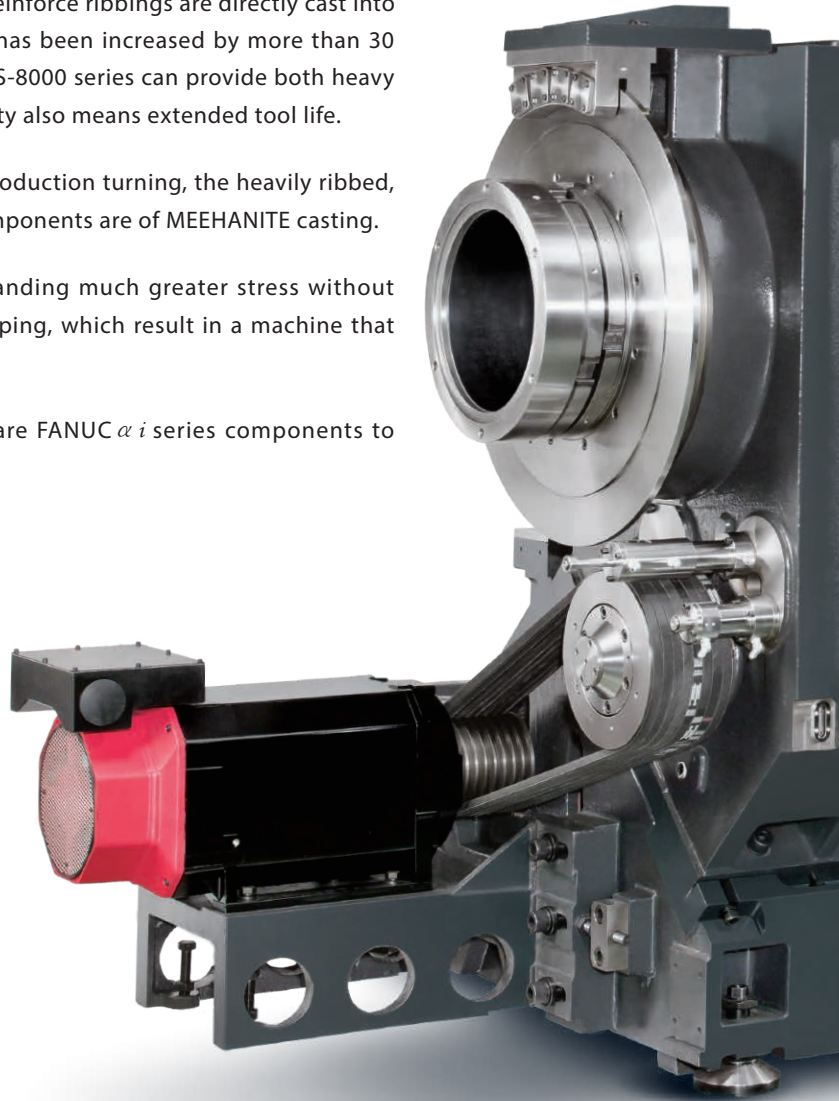
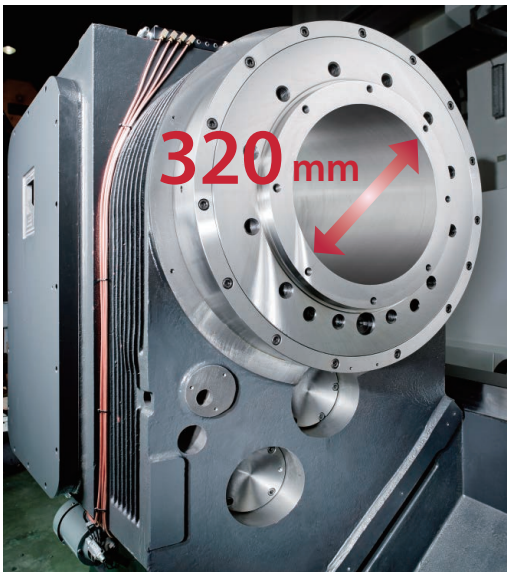
3 Steady rest

The optional hydraulic steady rest can support work-pieces up to Ø 512 mm diameter, which provides the best support for large work-piece.



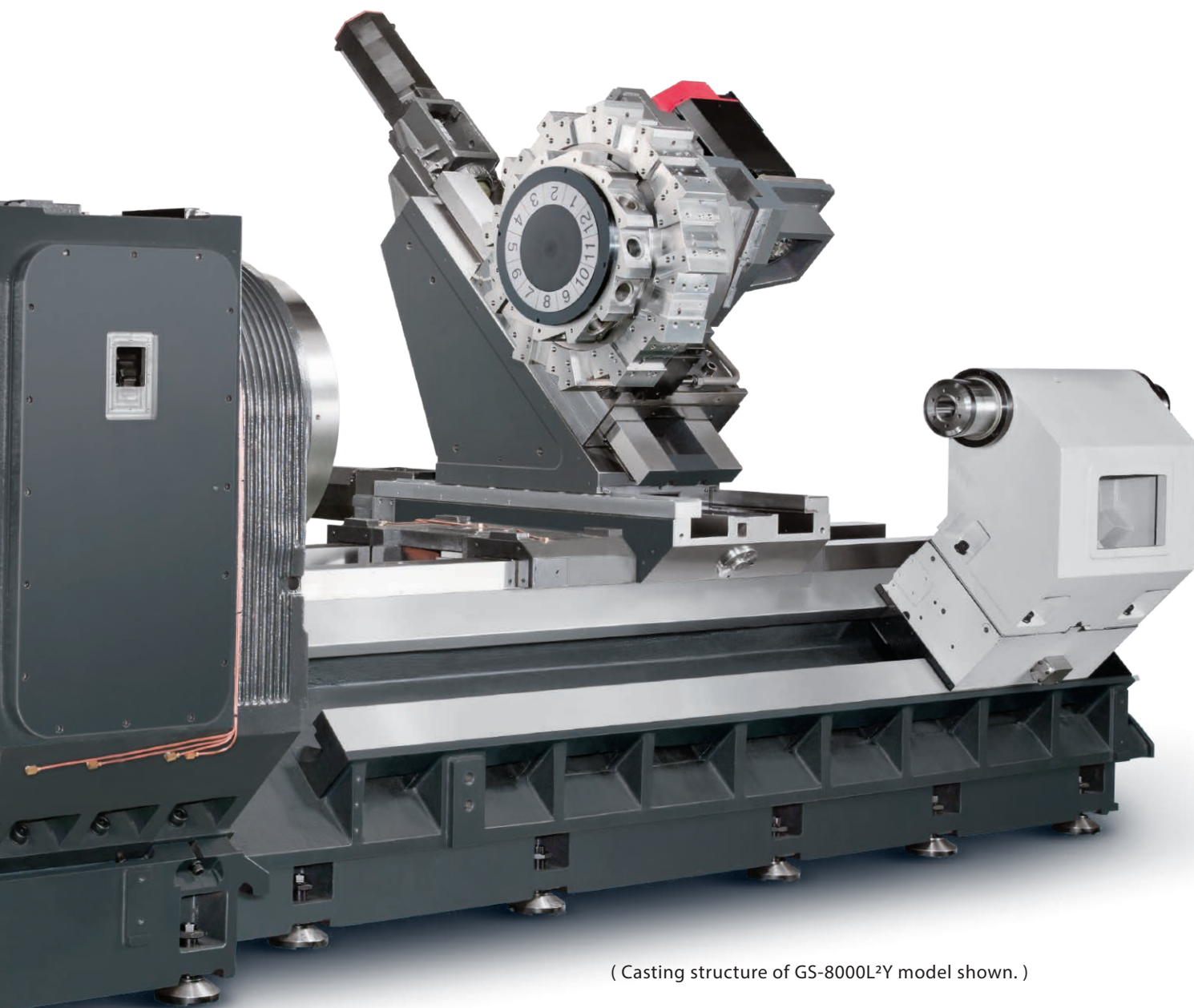
SUPER-RIGIDITY CONSTRUCTION

- ▶ The low center of gravity heavy duty slant bed design provide a super rigid foundation for the headstock, turret, and tailstock.
- ▶ By using Finite Element Methods (FEM), optimal reinforce ribbings are directly cast into the one-piece bed structure. Mechanical rigidity has been increased by more than 30 % when compared to conventional designs. The GS-8000 series can provide both heavy cutting and high precision capabilities. More rigidity also means extended tool life.
- ▶ Built to endure years and years of rigorous high production turning, the heavily ribbed, one-piece thermally balanced bed and casting components are of MEEHANITE casting.
- ▶ MEEHANITE grade cast iron is capable of withstanding much greater stress without deforming and provides maximum vibration damping, which result in a machine that will outlast and outperform the competition.
- ▶ All spindle and servo motors, including drives, are FANUC α i series components to ensure peak machining performance and accuracy.



Super rigidity box ways

Extra wide hardened and ground box ways are directly formed into the machine bed and saddle during the casting process. They are precision machined and widely spaced for maximum strength. The box way design also provides the rigidity needed for heavy duty and interrupted turning applications.



(Casting structure of GS-8000L²Y model shown.)



1

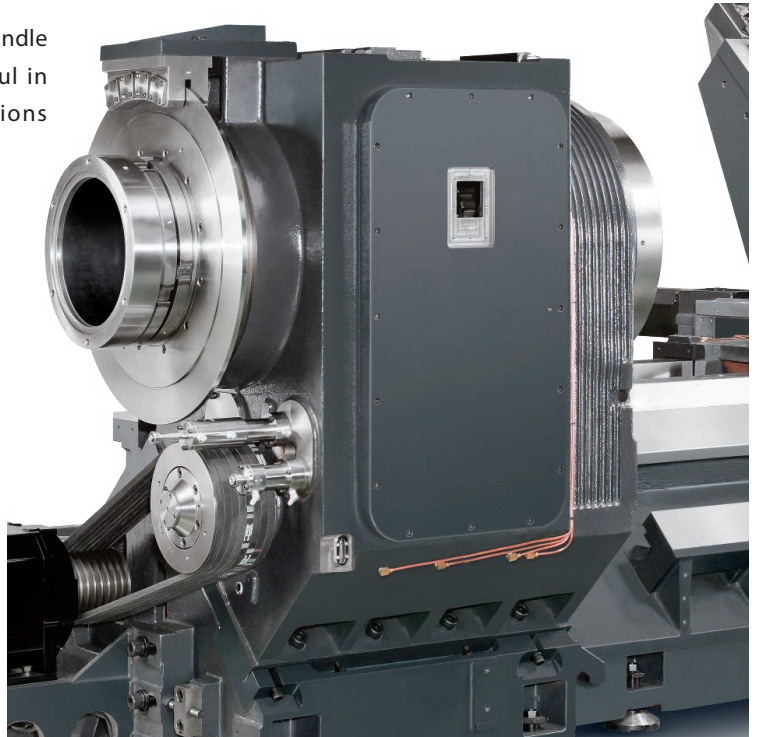
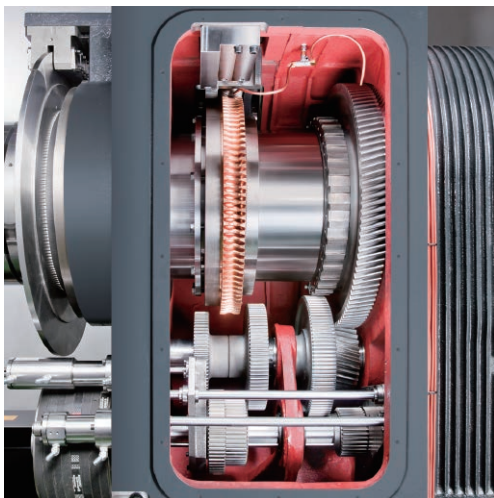


2

- 1** C3 class hardened and precision ground ball screws ensure the highest accuracy and durability possible. Plus, pretension on all axes minimizes thermal distortion.
- 2** The oil mist system can evenly and efficiently lubricate the spindle bearings to prevent thermal expansion while ensuring machining accuracy.

ULTIMATE TURNING POWER

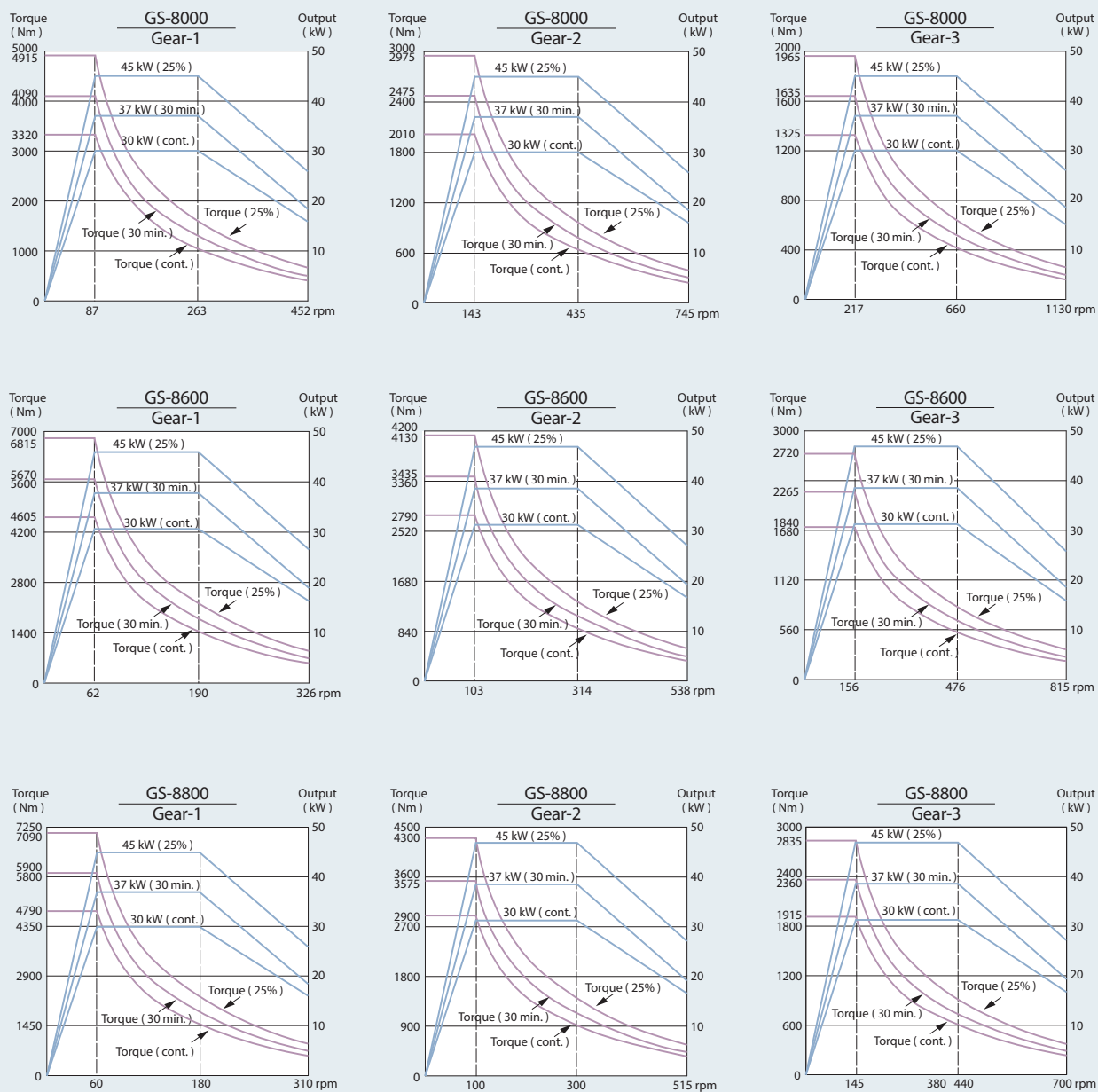
- ▶ High precision bearings are directly assembled for maximum level of support and precision. Bearing configuration is designed for heavy-duty cutting with ultra-smooth performance and long term durability with a higher level of accuracy.
- ▶ With over 7,090 N-m of torque available on the low speed of the 3-speed gear box, turning tough material with big diameter is now a simple task.
- ▶ 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.



Sample Work-Pieces



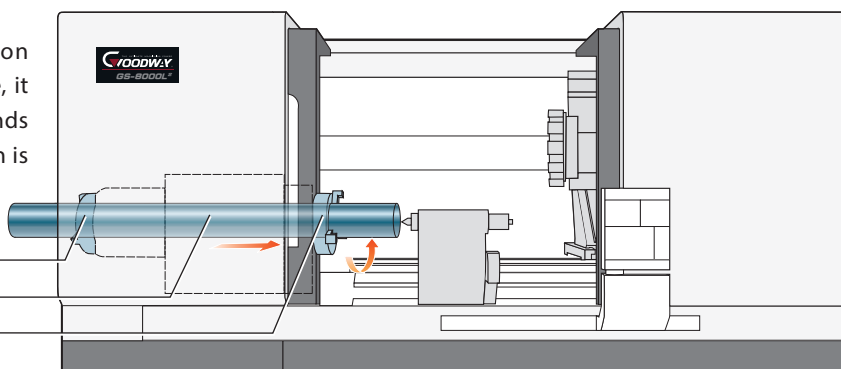
Spindle Output



Front + Rear Chuck

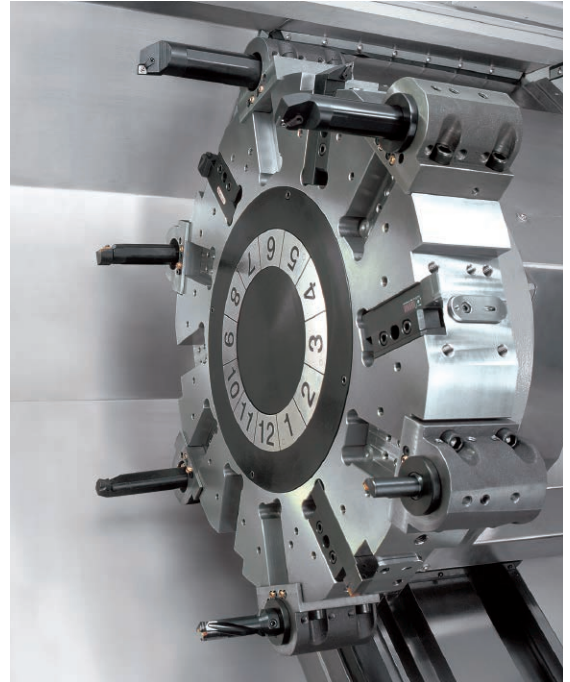
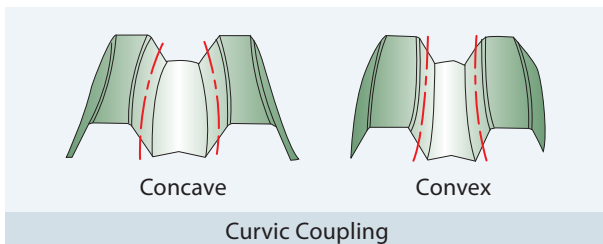
- By installing air or manual chucks on both the front and rear of the spindle, it becomes possible to machining the ends of long work-pieces. This configuration is especially useful in threading pipes.

Rear chuck
Work-piece
Front chuck



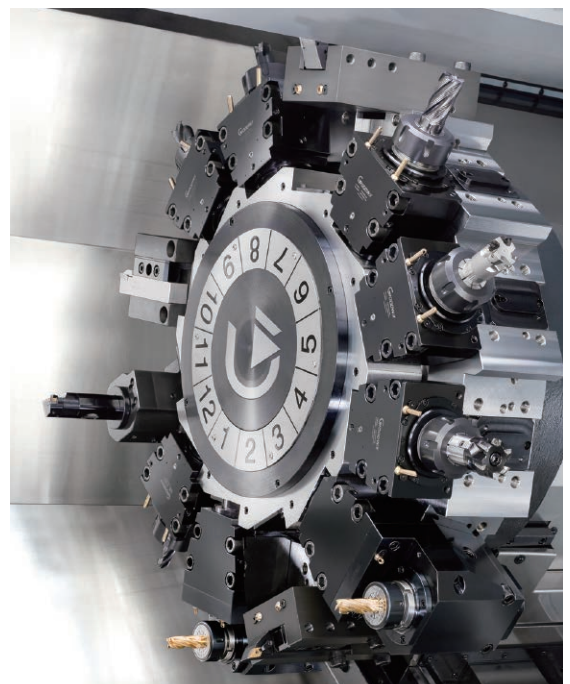
ADVANCED TURRET TECHNOLOGY

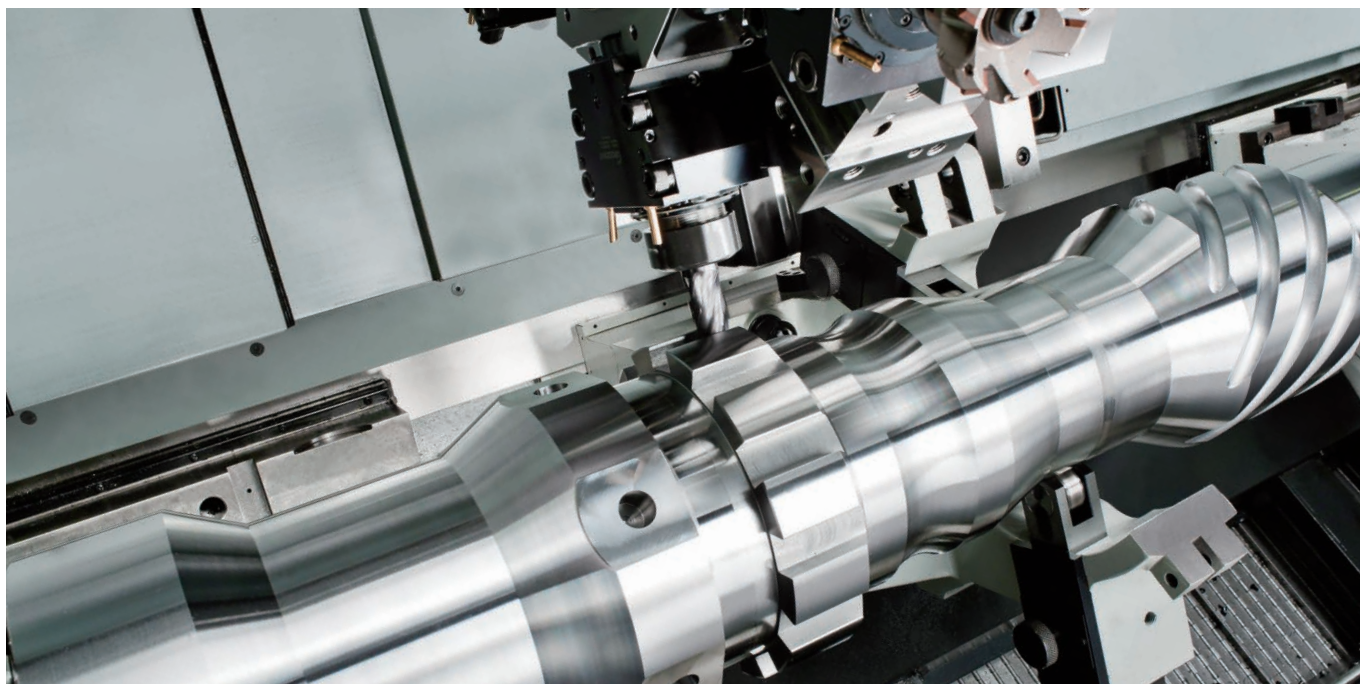
- ▶ The curvature of the CURVIC teeth provides a very unique self-centering feature and wider uniform tooth contact throughout all the teeth. The CURVIC teeth are hardened to HRC 58, which ensures the coupling retains its high accuracy characteristics over long periods of use.
- ▶ Ø 450 mm diameter super high precision CURVIC couplings with 12,000 Kg of clamping force ensures abundant turret rigidity for all cutting conditions.
- ▶ The 12-station heavy-duty servo indexing turret achieves 0.5 second indexing times for adjacent stations and 1 second times for stations at the opposite end of the disk turret.
- ▶ The standard 12-station turret is capable of turning Ø 380 mm diameter work pieces without causing interference even when using boring tools.



LIVE TOOLING TURRETS

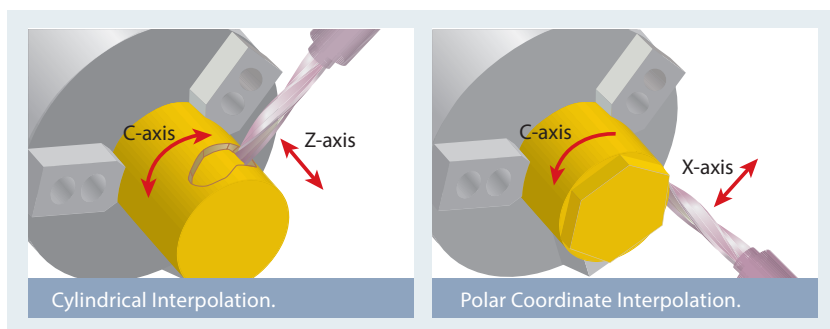
- ▶ Working with the live tooling turret and C-axis control enables the machine to perform multiple tasks such as turning, milling, drilling, and tapping. It can prevent machining error causing by moving the work-piece from one machine to another thus saving cycle time and manpower.
- ▶ More powerful than a standard 40-taper machining center, the live tooling turret is driven by a 9 kW (30 min.) AC double wound high torque spindle motor to provide ample power, now, even the toughest of jobs may be tackled without a sweat.
- ▶ The 12-station live tooling turret offers 12 stations available for live tooling, live tools rotate in working position only to reduce power loss and heat.
- ▶ GOODWAY live tooling turret utilizes advance servo indexing technology to achieve 0.5 second indexing times for adjacent stations and 1 second for stations at the opposite end of the disk.



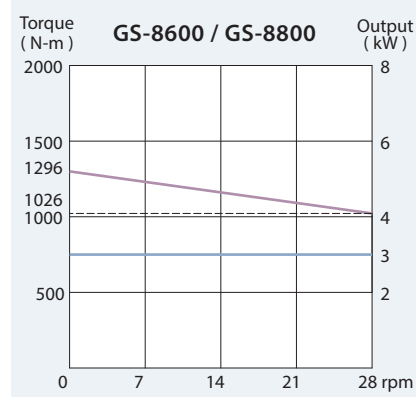
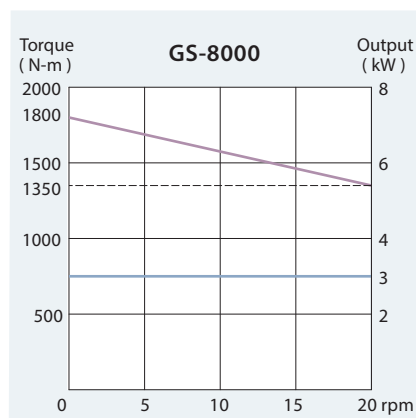


ULTIMATE C-AXIS SPINDLE

- ▶ The Cf-axis and disk brake system provide the most rigid and powerful type of C-axis control on the market today.
- ▶ 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 1,000,000 pulses per spindle rotation and high torque, 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.



Cf-axis Output

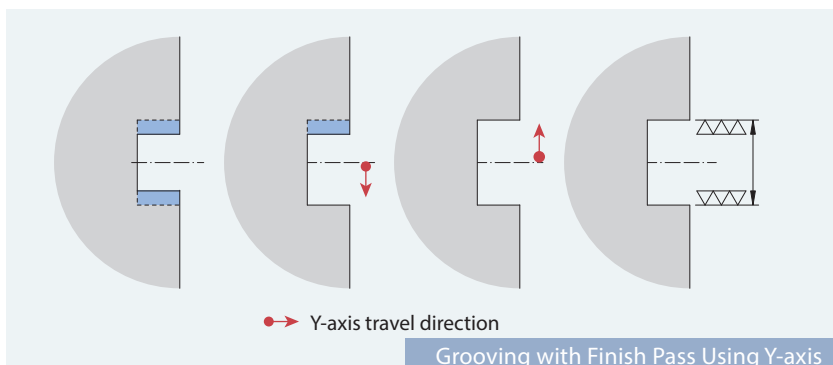
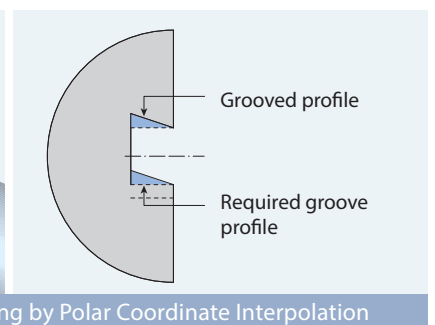
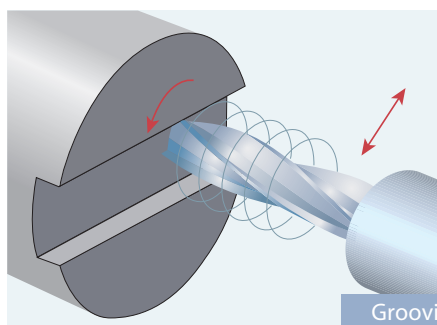
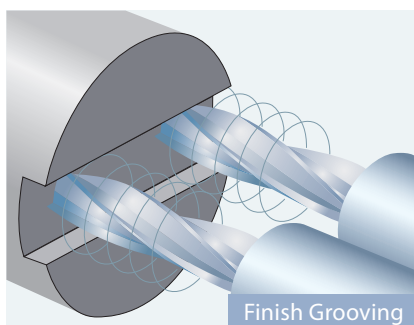
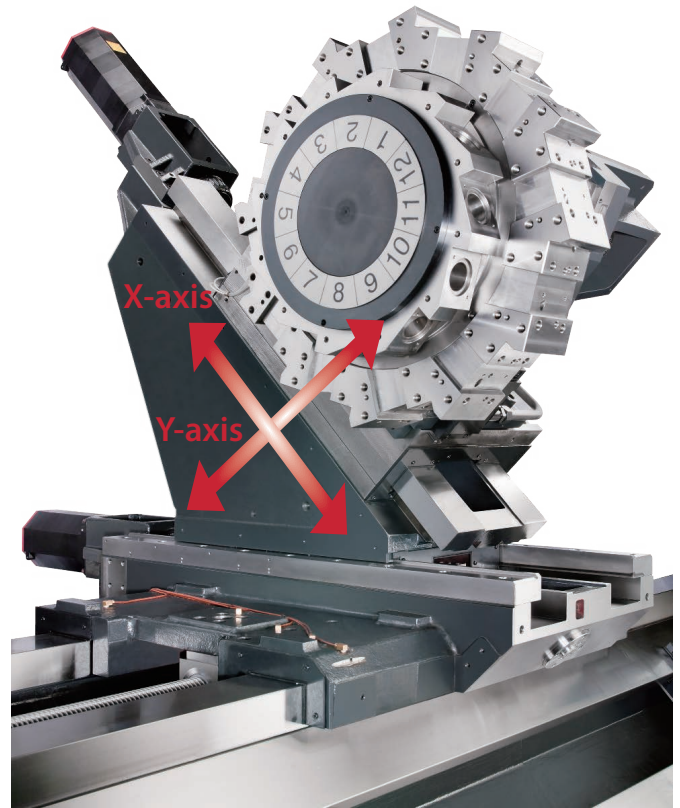


Y-AXIS MACHINING CAPABILITY

Super large Y-axis travel is of 320 mm, which can easily fulfill machining conditions for large size work pieces in aerospace, shipbuilding and energy industries.

Super large Y-axis travel
320 mm = ± 160 mm

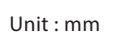
- ▶ Y-axis control further enhances multi-tasking live tooling capabilities and improves various machining precision. High precision grooving and X-axis off-center drilling are enabled.
- ▶ The low center of gravity box way is designed with a wide span structure to increase overall rigidity.
- ▶ The 45° angle of X and Y axes allows the center of gravity of the turret to remain in the saddle guide way to ensure machining accuracy and decrease distortion.



- ▶ Grooving with Y-axis control produces grooves with higher accuracy.

$$\frac{9}{10}$$

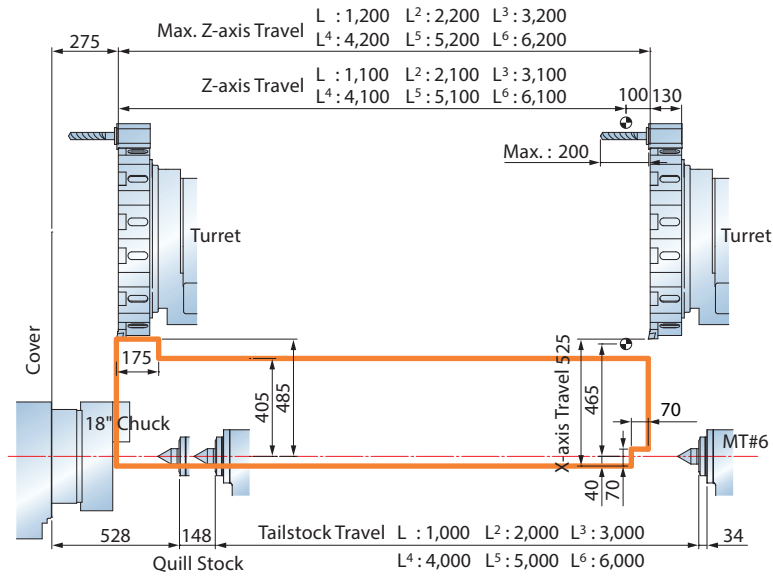
【 12-Station Turret 】



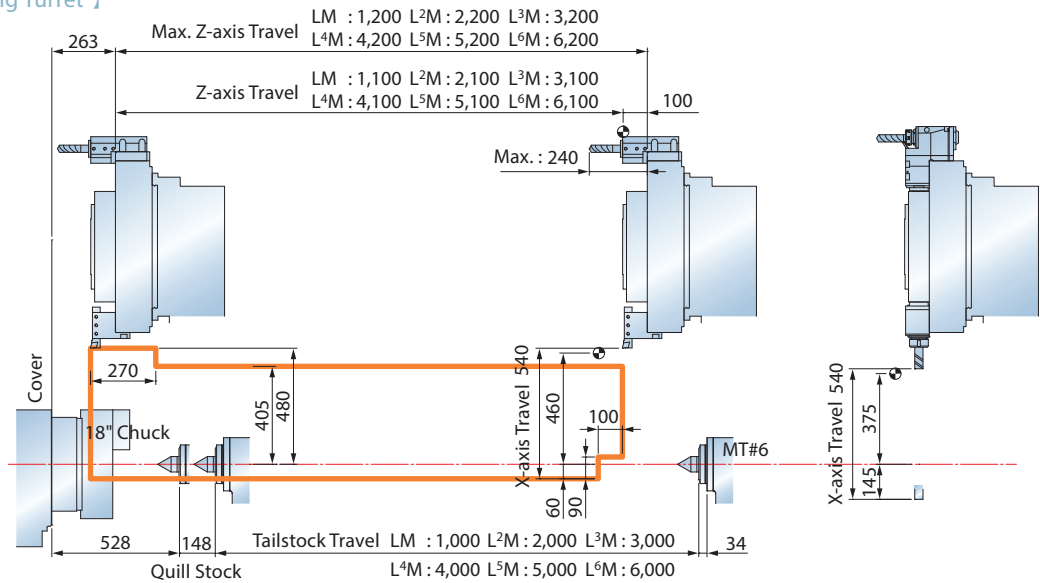
Unit : mm

Work Range

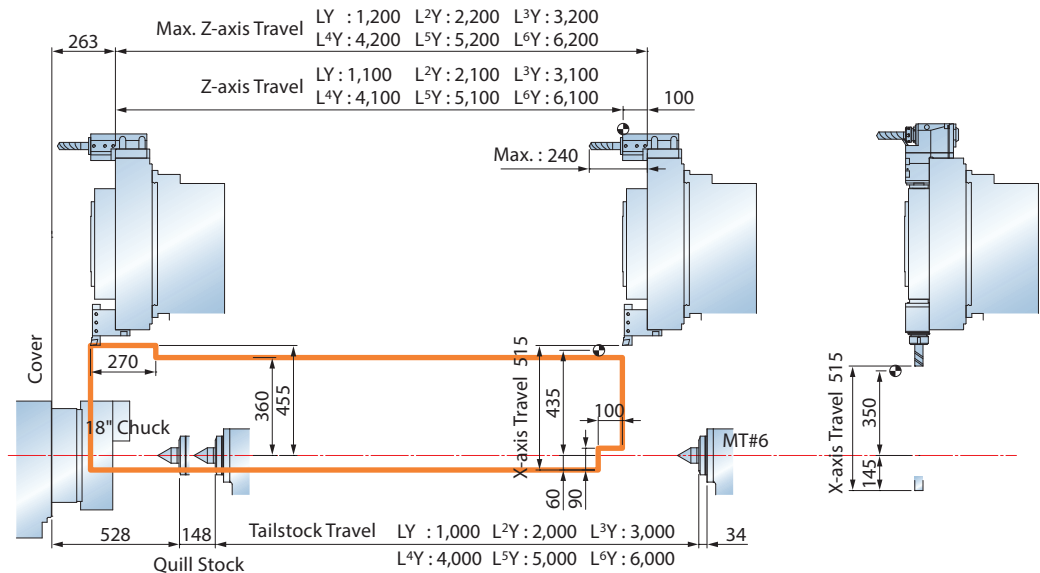
【 12-Station Turret 】



【 12-Station Live Tooling Turret 】



【 Y-axis 】



Unit : mm

STANDARD & OPTIONAL FEATURES

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

SPINDLE		GS-8000
Main spindle configuration	3-Speed Gear	S
Rigid tapping & spindle orientation		S
Main spindle disk brake		O
Cf-axis & disk brake for main spindle		O
WORK HOLDING		
Hydraulic hollow cylinder for chuck	205 mm ID.	S
	18"	S
	21"	O
	24"	O
	32"*1	O
Hollow 3-jaws chuck & 1 set soft jaws	Air Chuck	O
Hard jaws		O
Special work holding chuck		C
In spindle work stopper		O
Spindle liner (guide bushing)		O
Foot switch for chuck operation		S
Programmable base & quill hydraulic tailstock		O
MT#6 dead center quill		O
Foot switch for tailstock operation		O
Manual steady rest		O
Self-centering hydraulic steady rest		O
Foot switch for steady rest operation		O
Two-stage programmable pressure	Chuck clamping	O
	Tailstock thrust	O
TURRET		
12-station turret		S
12-station live tooling turret		O
Tool holder & sleeve package		S
Live tooling tool holders (0° x 1 , 90° x 1)*2		O
MEASUREMENT		
RENISHAW HPRA tool presetter	Removeable	O
COOLANT		
Coolant pump	3 Kg/cm ²	S
	5 Kg/cm ²	O
High-pressure coolant system	20 Kg/cm ²	C
Roll-out coolant tank		S
Oil skimmer		O
Coolant flow switch		O
Coolant level switch		O
Coolant intercooler system		O
CHIP DISPOSAL		
Chip conveyor with auto timer	Right discharge	S
Chip cart with coolant drain		O
Chuck air blow		O
Coolant gun		O
Oil mist collector		O
AUTOMATIC OPERATION SUPPORT		
Gantry-type loader / unloader		O
Auto door		O
External M-code output	4 sets (8)	O
	8 sets (16)	O
SAFETY		
Fully enclosed guarding		S
Door interlock (incl. Mechanical lock)		S
Impact resistant viewing window		S
Tailstock stroke out - end check		S
Chuck cylinder stroke out - end check		S
Chuck cylinder check valve		S
Low hydraulic pressure detection switch		S
Over travel (soft limit)		S
Load monitoring function		S

Specifications are subject to change without notice.
 Above standard & optional features also apply to L models.

*1 Tool setter must be deleted.

*2 Standard on M (live tooling) models.

*3 For servo motor driven power turret only.

OTHERS		GS-8000
Tri-color machine status light tower		S
Work light		S
External work light		O
Electrical cabinet	Heat exchanger	S
	A/C cooling system	O
Complete hydraulic system		S
Advanced auto lubrication system		S
Foundation leveling & maintenance tool kit		S
Emergency maintenance electrical part package		S
Operation & maintenance manuals		S

FANUC CONTROL FUNCTIONS		Oi-TF	31i
Display	10.4" color LCD	S	S
	Standard	S	S
Graphic function	Dynamic	O	O
	512K bytes	S	-
Part program storage size	1M bytes	O	S
	Oi-TF : each path	O	O
	31i : total	4M bytes	-
	8M bytes	-	O
Registerable programs	400	S	-
	Oi-TF : each path	O	S
	31i : total	4,000	-
	99	-	S
Tool offset pairs	128	S	-
	200	O	O
	400	-	O
	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*3		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

MACHINE SPECIFICATIONS

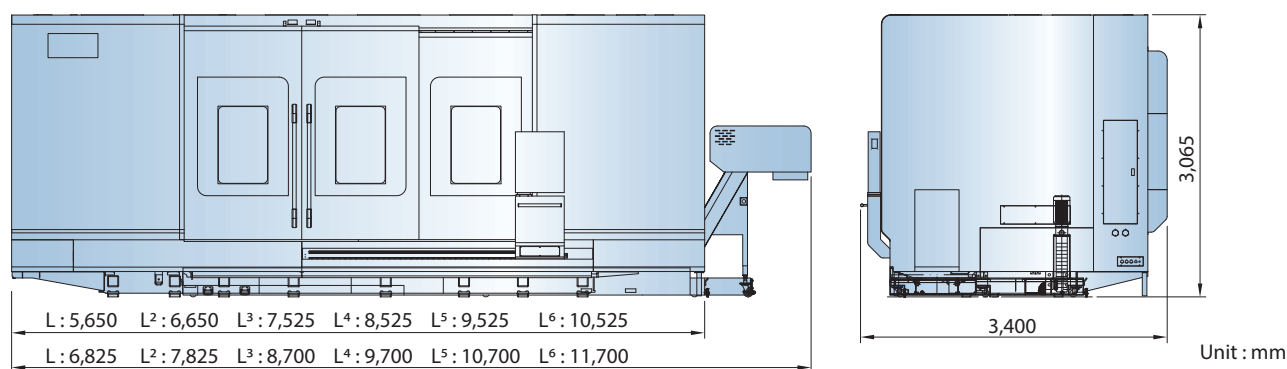
■ : Metric ■ : Inch

CAPACITY		GS-8000L ~ L ⁶	GS-8600L ~ L ⁶	GS-8800L ~ L ⁶
Max. swing diameter		Ø 1,030 mm 40.55"		
Swing over saddle		Ø 810 mm 31.88"		
Max. turning diameter		Ø 970 mm 38.18"		
Max. turning length		L : 1,200 / L ² : 2,200 / L ³ : 3,200 / L ⁴ : 4,200 / L ⁵ : 5,200 / L ⁶ : 6,200 mm L : 47.24" / L ² : 86.61" / L ³ : 125.9" / L ⁴ : 165.3" / L ⁵ : 204.7" / L ⁶ : 244"		
Max. weight of the work piece		5,000 Kg 11,023 lb		
Chuck size		18" (Opt. 24")		
SPINDLE				
Hole through spindle		Ø 205 mm 8.07"	Ø 260 mm 10.23"	Ø 320 mm 12.59"
Spindle bearing diameter		Ø 260 mm 10.23"	Ø 340 mm 13.38"	Ø 400 mm 15.74"
Spindle nose		A2-15	A2-15	A2-20
Motor output (cont. / 15 min.)		30 / 45 kW		
Motor full output speed		1,150 rpm		
Spindle drive system		3-Speed Gear		
Spindle speed		5 ~ 1,100 rpm	5 ~ 800 rpm	5 ~ 700 rpm
Spindle full output speed	Gear-1	87 rpm	62 rpm	60 rpm
	Gear-2	143 rpm	103 rpm	100 rpm
	Gear-3	217 rpm	156 rpm	150 rpm
Spindle torque (cont.)	Gear-1	3,320 N-m 2,448 lb-ft	4,605 N-m 3,396 lb-ft	4,790 N-m 3,533 lb-ft
	Gear-2	2,010 N-m 1,482 lb-ft	2,790 N-m 2,057 lb-ft	2,900 N-m 2,139 lb-ft
	Gear-3	1,325 N-m 977 lb-ft	1,840 N-m 1,357 lb-ft	1,915 N-m 1,412 lb-ft
Spindle torque (30 min.)	Gear-1	4,090 N-m 3,016 lb-ft	5,670 N-m 4,182 lb-ft	5,900 N-m 4,351 lb-ft
	Gear-2	2,475 N-m 1,825 lb-ft	3,435 N-m 2,533 lb-ft	3,575 N-m 2,636 lb-ft
	Gear-3	1,635 N-m 1,205 lb-ft	2,265 N-m 1,670 lb-ft	2,360 N-m 1,740 lb-ft
Spindle torque (25%)	Gear-1	4,915 N-m 3,625 lb-ft	6,815 N-m 5,026 lb-ft	7,090 N-m 5,229 lb-ft
	Gear-2	2,975 N-m 2,194 lb-ft	4,130 N-m 3,046 lb-ft	4,300 N-m 3,171 lb-ft
	Gear-3	1,965 N-m 1,449 lb-ft	2,720 N-m 2,006 lb-ft	2,835 N-m 2,091 lb-ft
Cf-AXIS (OPT.)				
Cf-axis drive motor		AC 3.0 kW 4 HP		
Cf-axis rapids		20 rpm	28 rpm	28 rpm
Cf-axis torque output (cont.)		1,800 N-m 1,327 lb-ft	1,296 N-m 955 lb-ft	1,296 N-m 955 lb-ft
X & Z AXES				
Max. X-axis travel		525 mm 20.66"		
Max. Z-axis travel		L : 1,200 / L ² : 2,200 / L ³ : 3,200 / L ⁴ : 4,200 / L ⁵ : 5,200 / L ⁶ : 6,200 mm L : 47.24" / L ² : 86.61" / L ³ : 125.9" / L ⁴ : 165.3" / L ⁵ : 204.7" / L ⁶ : 244"		
X / Z axes rapids		10.5 / 12 m/min. 413 / 472 IPM		
Slide way type		Box Way		
Feed rates		1~ 4,800 mm/min. 1 ~ 189 IPM		
X / Z axes servo motor		AC 9 kW / AC 7 kW 12 / 10 HP		
X / Z axes ball screw diameter		Ø 45 / 63 mm 1.77" / 2.48"		
X / Z axes thrust (cont.)		2,832 / 3,204 Kg 6,243 / 7,063 lbf		
TURRET				
Stations		12		
Indexing drive		Servo motor		
Indexing speed		0.5 sec. (Adjacent) / 1 sec. (180° Single step)		
O.D. tool shank size		□ 32 mm 1-1/4"		
I.D. tool shank size		Ø 60 mm 2-1/4"		

LIVE TOOLING TURRET (OPT.)	GS-8000L ~ L ⁶	GS-8600L ~ L ⁶	GS-8800L ~ L ⁶
Max. turning diameter	Ø 960 mm 37.79"		
Live tooling stations	12		
Live tooling motor output	AC 7.5 / 9 kW 10 / 12 HP (cont. / 30 min.)		
Indexing drive type	FANUC AC spindle motor		
Indexing speed	0.5 sec. (adjacent) / 1 sec. (180° Single step)		
O.D. / I.D. tool shank size	□ 32 mm 1-1/4" / Ø 60 mm 2-1/4"		
Live tooling shank size	0° : ER 50 / 90° : ER 50		
Live tooling RPM range	3,000 rpm		
Y-AXIS (OPT.)			
Swing over saddle	Ø 720 mm 28.34"		
Max. turning diameter	Ø 910 mm 35.82"		
Max. X / Y axes travel	515 / ± 160 mm 20.27" / ± 6.29"		
Y-axis rapids	16 m/min. 630 IPM		
Y-axis servo motor	AC 7 kW 9 HP		
Y-axis ball screw diameter	Ø 45 mm 1.77"		
Y-axis thrust (cont.)	1,602 Kgf 3,531 lbf		
TAILSTOCK			
Quill center taper	MT#6 (Dead center)		
Quill diameter / travel	Ø 160 mm / 150 mm 6.29" / 5.9"		
Tailstock base travel	L : 1,000 / L ² : 2,000 / L ³ : 3,000 / L ⁴ : 4,000 / L ⁵ : 5,000 / L ⁶ : 6,000 mm L : 39.37" / L ² : 78.74" / L ³ : 118.1" / L ⁴ : 157.4" / L ⁵ : 196.8" / L ⁶ : 236.2"		
Programmable quill / base	Yes / Yes		
GENERAL			
CNC controller	FANUC Oi-TF (Opt. 31i)		
Voltage / Power requirement	AC 220 V / 50 kVA (L / LM) 80 kVA (LY)		
Hydraulic tank capacity	40 L 10 gal		
Coolant tank capacity	L : 660 L / L ² : 770 L / L ³ : 880 L / L ⁴ : 990 L / L ⁵ : 1,100 L / L ⁶ : 1,210 L L : 174 gal / L ² : 203 gal / L ³ : 232 gal / L ⁴ : 261 gal / L ⁵ : 290 gal / L ⁶ : 319 gal		
Coolant pump	0.5 kW (0.75 HP , 60 Hz) rated at 3 bar (44 PSI)		
Machine weight	L : 17,300 kg / L ² : 19,400 kg / L ³ : 21,400 kg / L ⁴ : 23,400 kg / L ⁵ : 25,400 kg / L ⁶ : 27,400 kg L : 39,000 lb / L ² : 43,000 lb / L ³ : 48,000 lb / L ⁴ : 52,000 lb / L ⁵ : 56,000 lb / L ⁶ : 61,000 lb		
Dimensions L × W × H	L : 5,650 x 3,400 x 3,065 mm / L ² : 6,650 x 3,400 x 3,065 mm / L ³ : 7,525 x 3,400 x 3,065 mm L : 223" x 134" x 121" / L ² : 262" x 134" x 121" / L ³ : 297" x 134" x 121" L ⁴ : 8,525 x 3,400 x 3,065 mm / L ⁵ : 9,525 x 3,400 x 3,065 mm / L ⁶ : 10,525 x 3,400 x 3,065 mm L ⁴ : 336" x 134" x 121" / L ⁵ : 375" x 134" x 121" / L ⁶ : 415" x 134" x 121"		

Specifications are subject to change without notice.

Machine Layout





GOODWAYCNC.com

GOODWAY MACHINE CORP.

HEADQUARTERS

No.13, 5th Road,
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