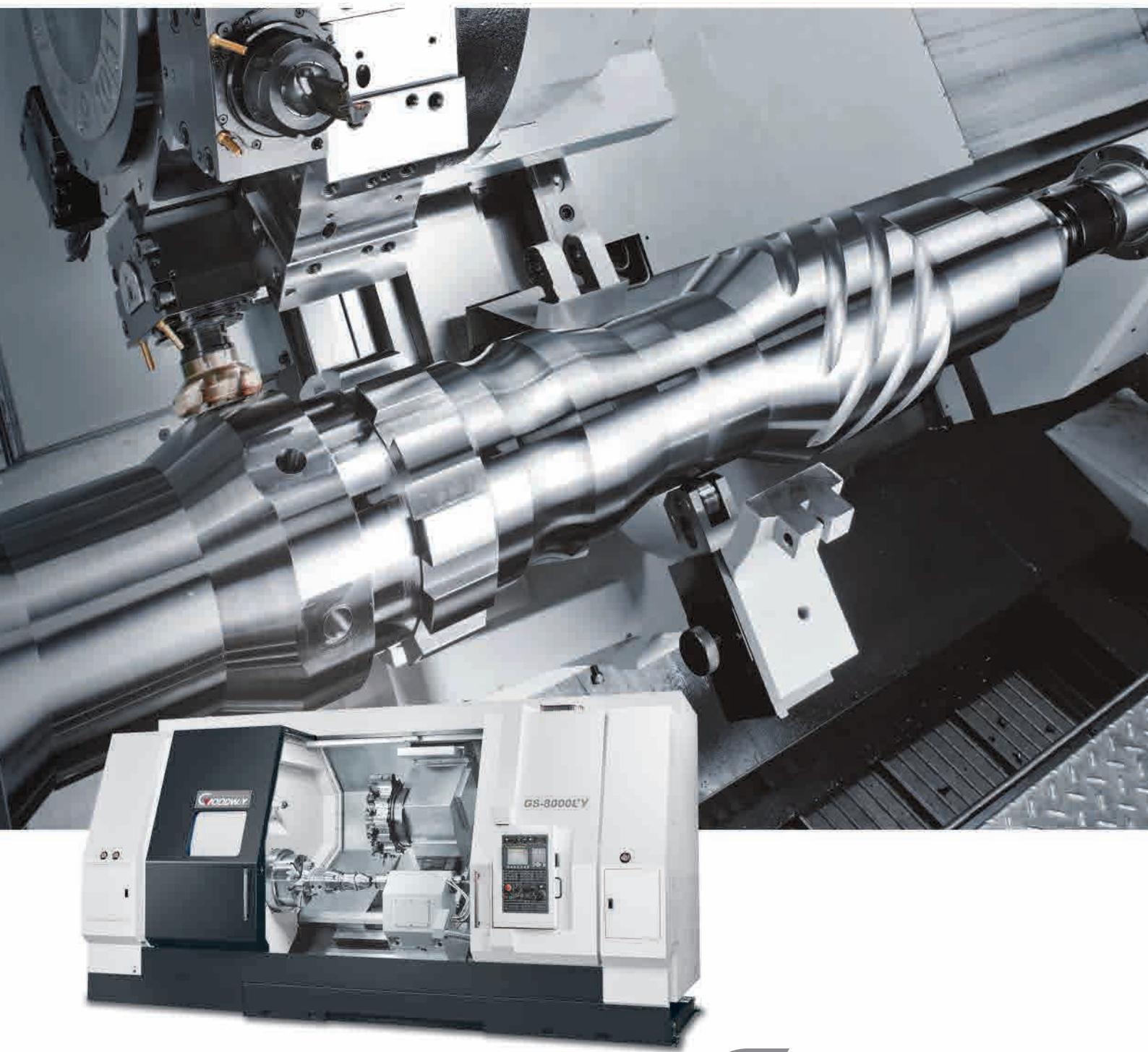


GS-8000 SERIES

Heavy Duty Supersize CNC Turning Centers



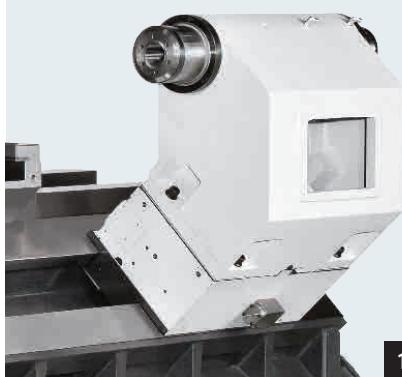
THE ULTIMATE MACHINING POWER
WOODWAY®

HEAVY DUTY SUPERSIZE CNC TURNING CENTERS

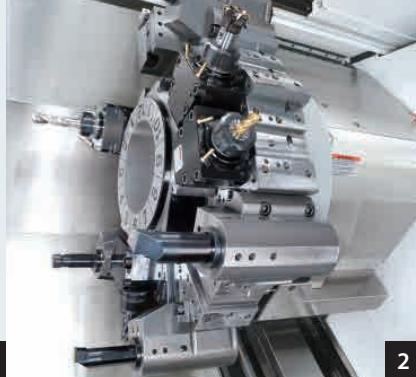
With leading technologies and high quality components, the GS-8000 series heavy duty CNC turning center combines a super rigidity box way bed with extra large diameter servo indexing turret and powerful gear spindle structure to provide you with efficient machining performance for large diameter and 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.





1



2



3

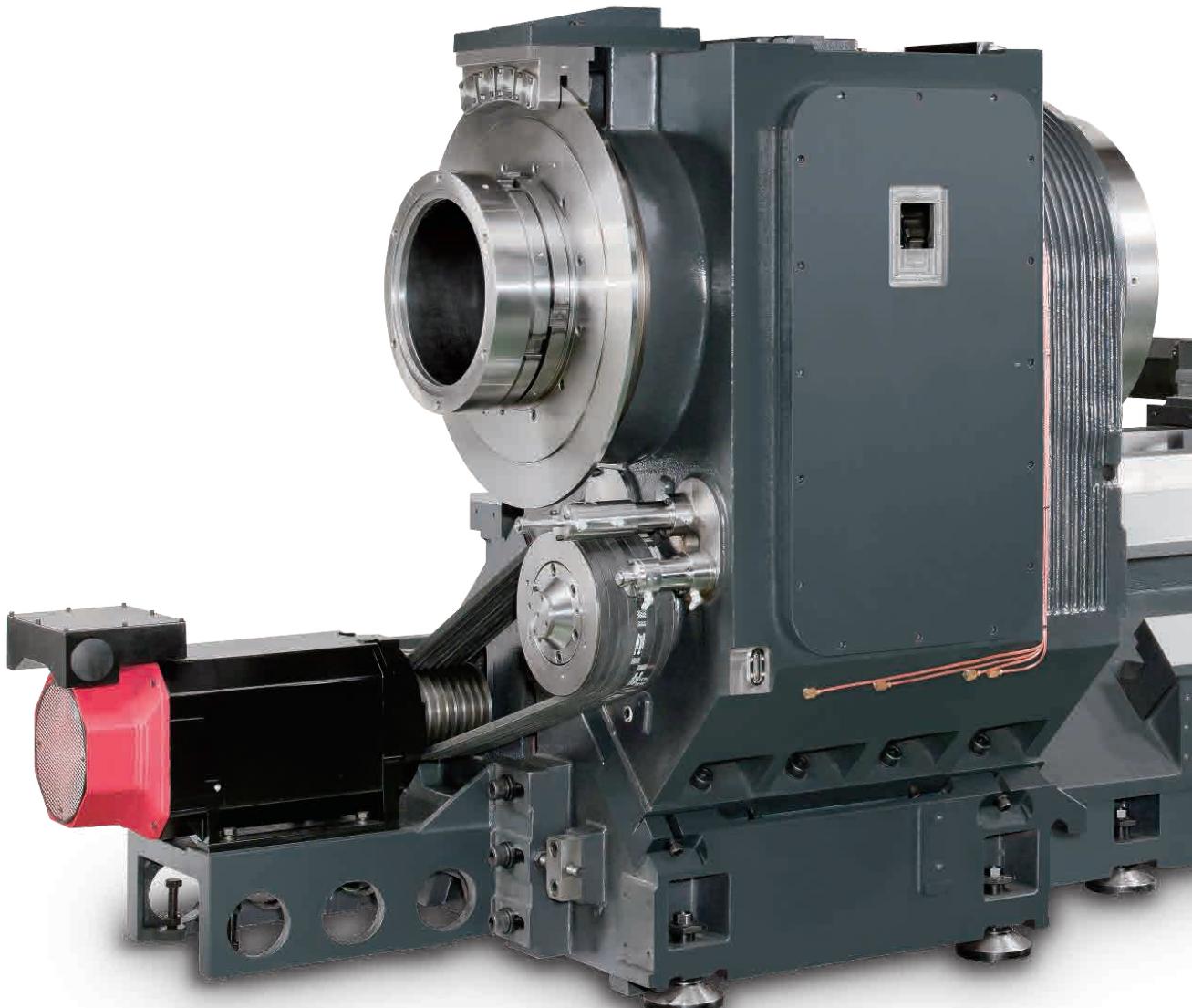
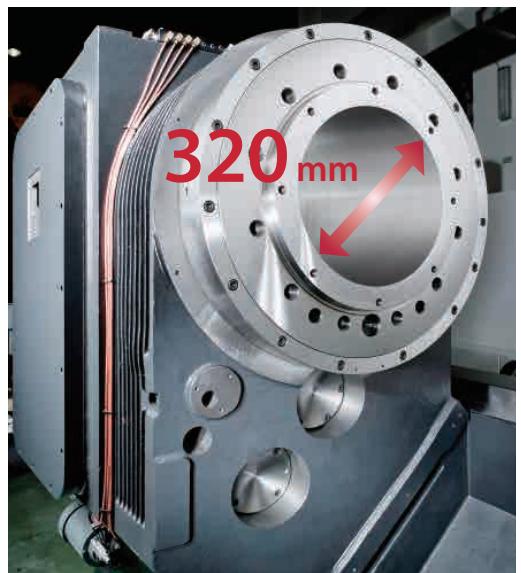
- 1 The MT#6 built-in bearing quill provides greater rigidity for heavy loads. The extension and retraction of the quill is programmable and pressure is adjustable. The software simplifies the positioning procedure of the programmable tailstock.
- 2 Working with the live tooling turret and C-axis control 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 The optional hydraulic steady rest can support work-pieces up to Ø 460 mm diameter, which provides the best support for large work piece.

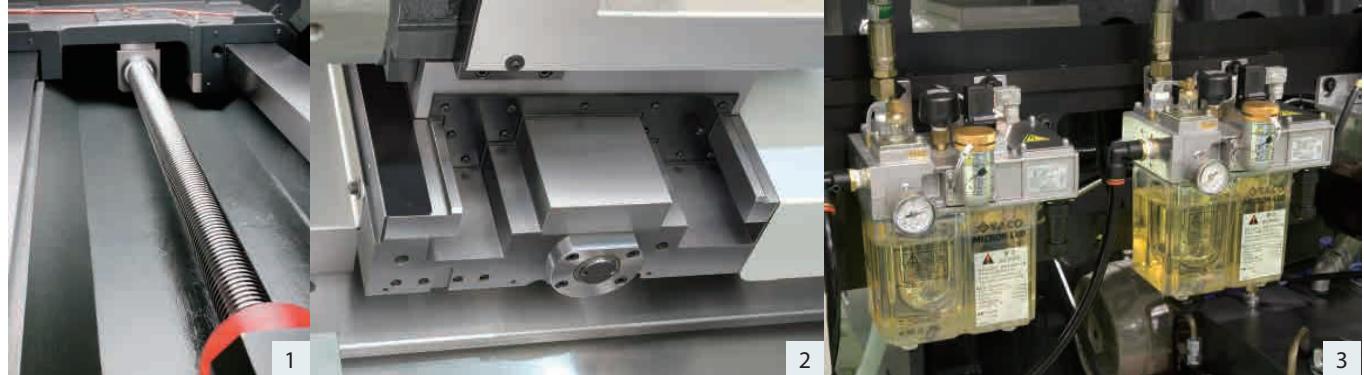


(GS-8000L² series model shown with optional accessories.)

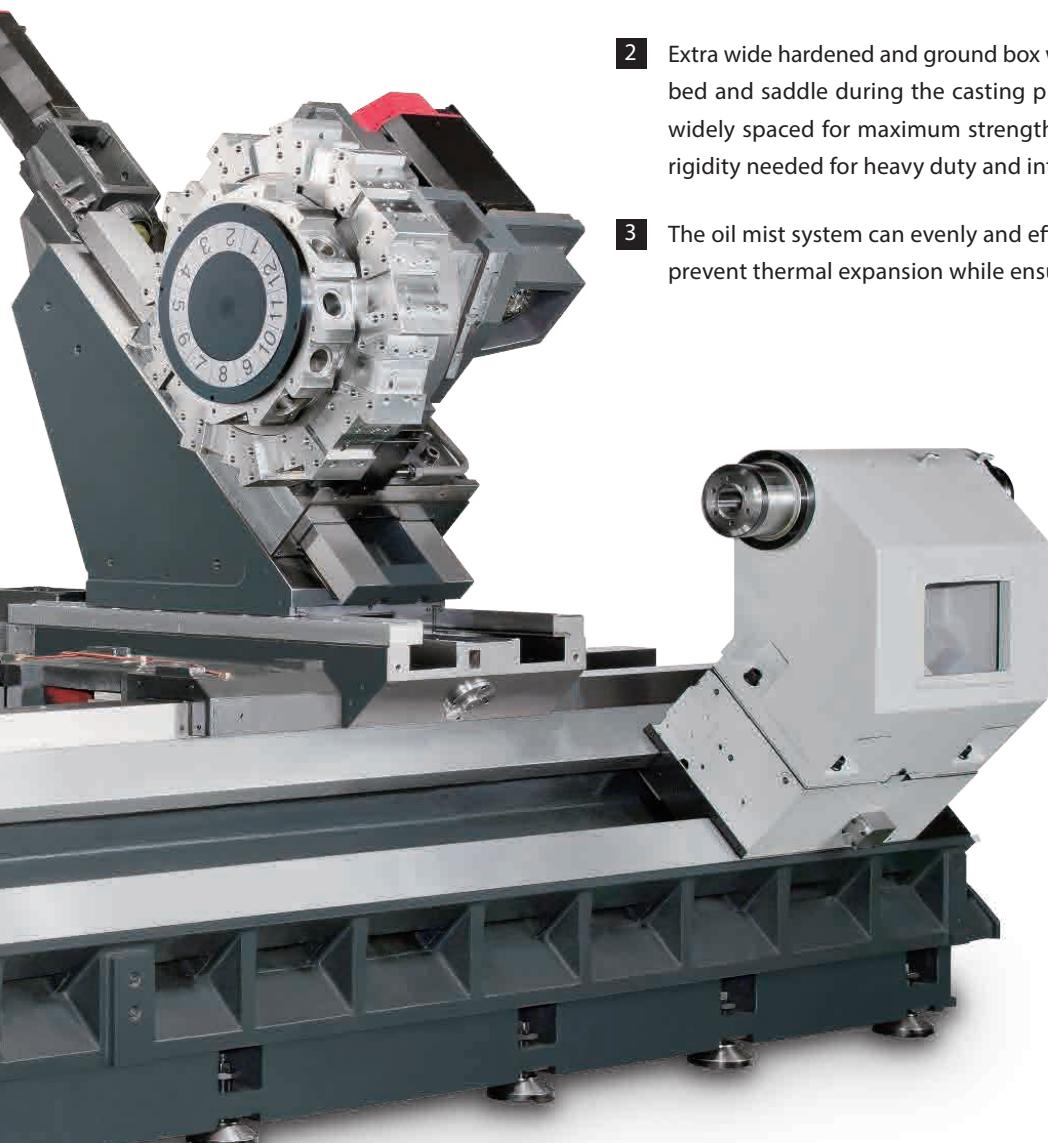
SUPER-RIGIDITY CONSTRUCTION

- ▶ 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 alpha *i* series components to ensure peak machining performance and accuracy.





- 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** 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.
- 3** The oil mist system can evenly and efficiently lubricate the spindle bearings to prevent thermal expansion while ensuring machining accuracy.



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

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.

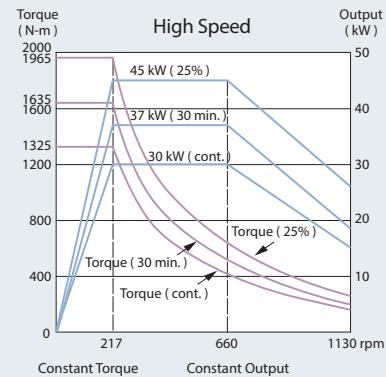
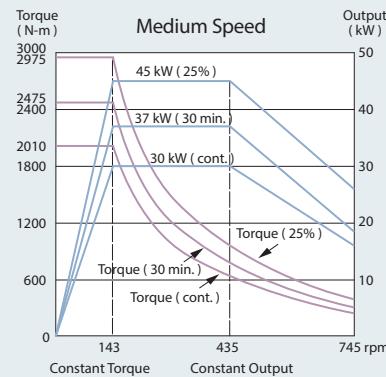
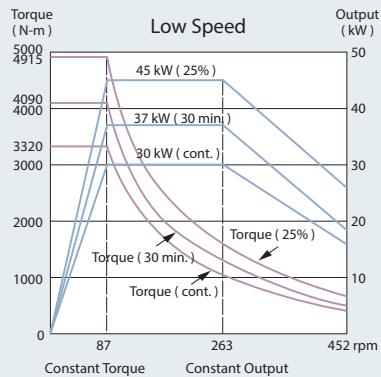


Sample Work-Pieces

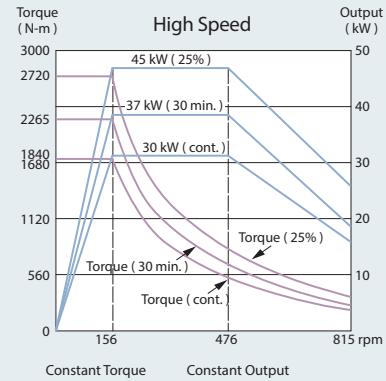
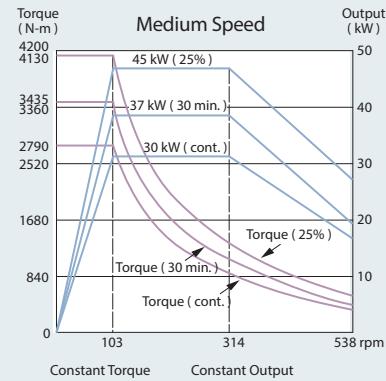
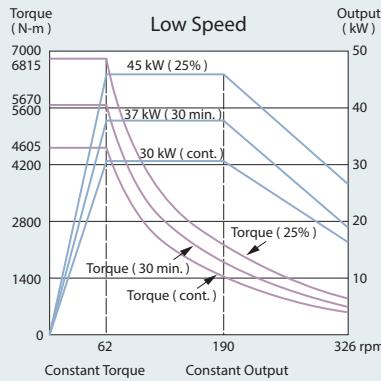


Spindle Output

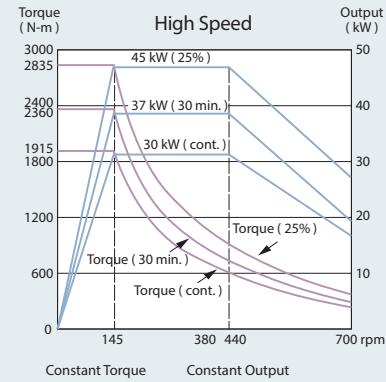
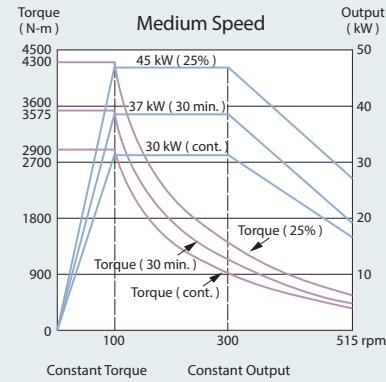
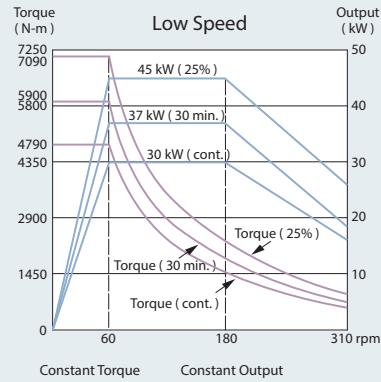
Hole through spindle Ø 205 mm



Hole through spindle Ø 260 mm



Hole through spindle Ø 320 mm



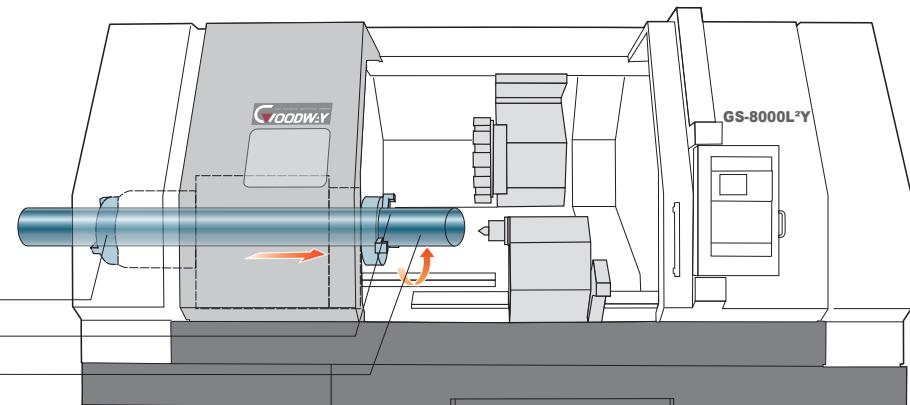
Front + Rear Chuck

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

Rear chuck

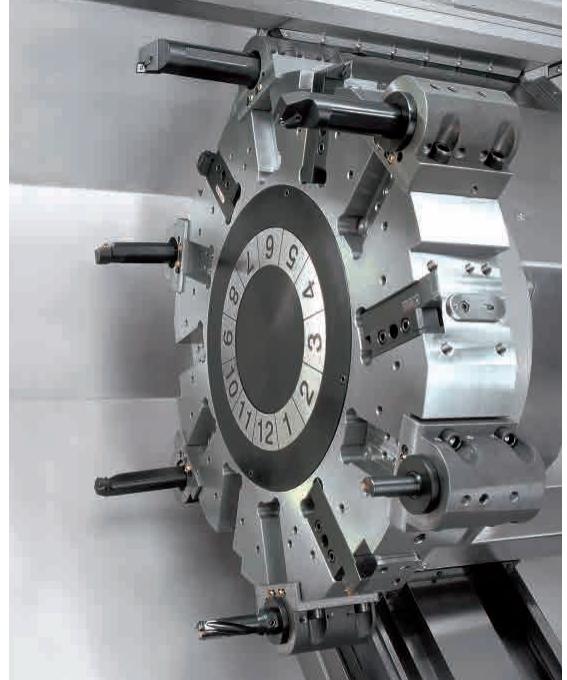
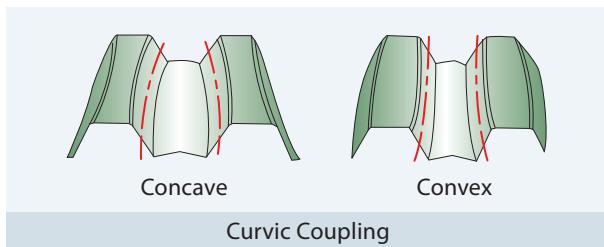
Work-piece

Front chuck



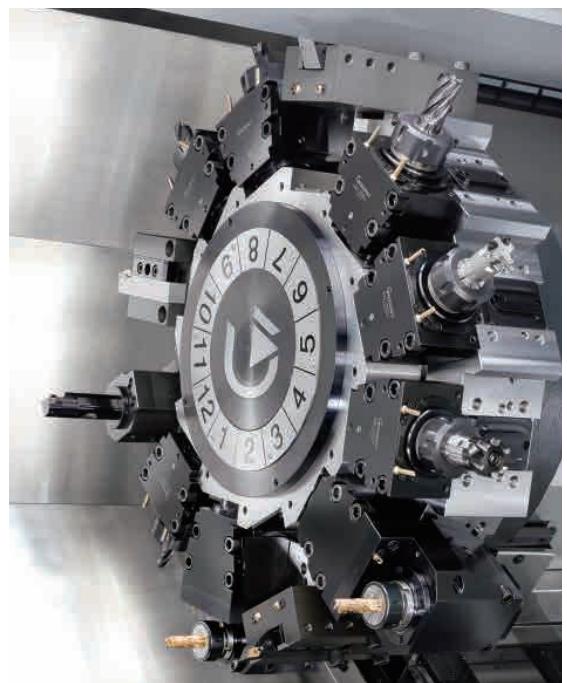
ADVANCED TURRET TECHNOLOGY

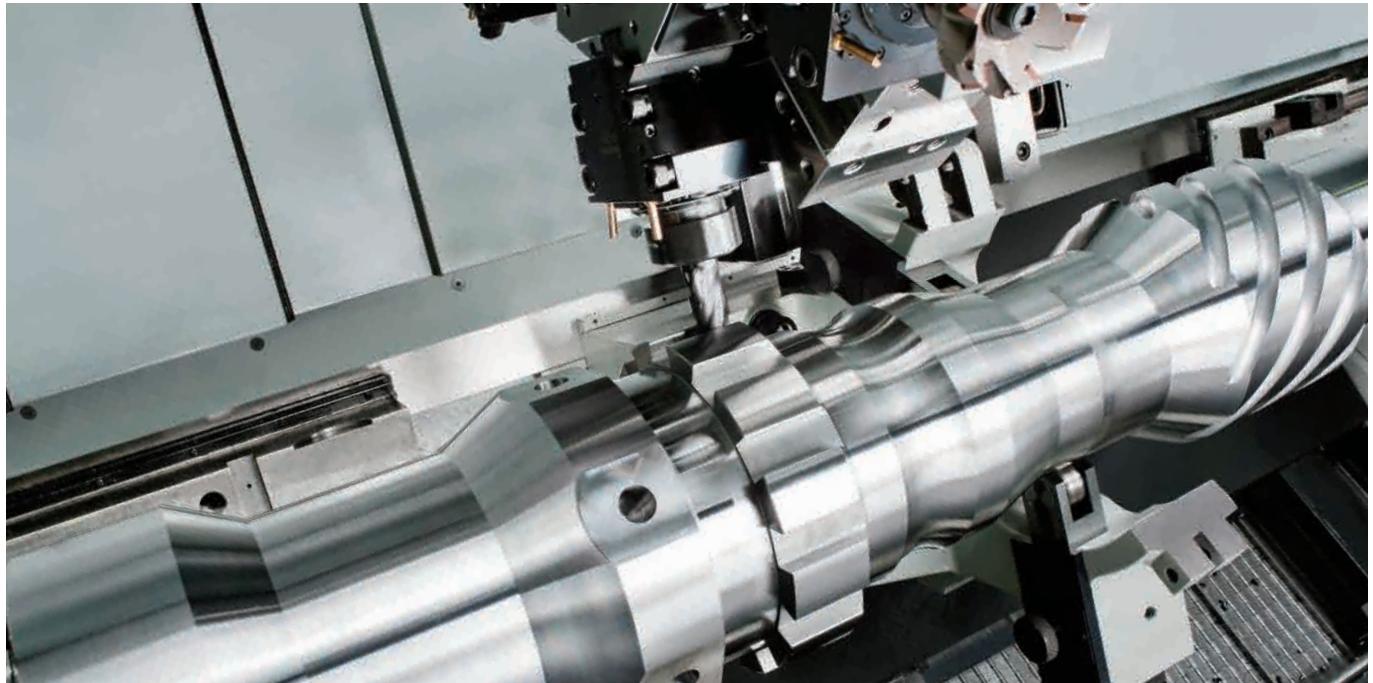
- ▶ The curvature of the CURVIC teeth provides a very unique self-centering feature and wider uniform tooth contact throughout all the teeth. The CURVIC teeth are hardened to HRC 58, which ensures the coupling retains its high accuracy characteristics over long periods of use.
- ▶ Ø 450 mm diameter super 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 1.5 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 1.5 second for stations at the opposite end of the disk.

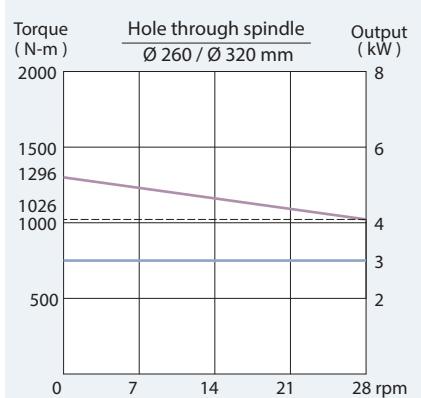
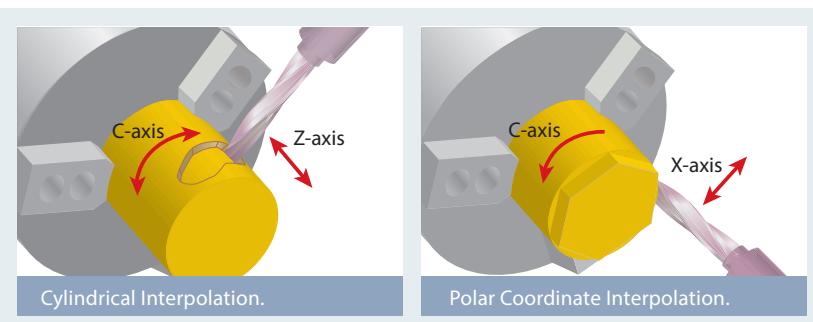
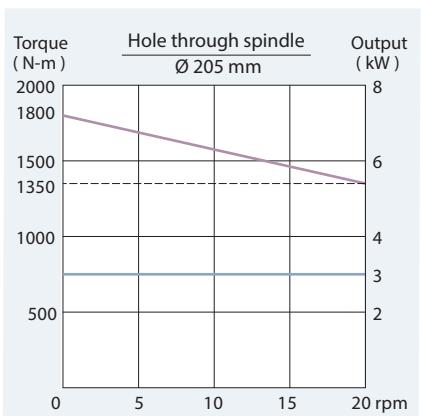




ULTIMATE C-AXIS SPINDLE

- ▶ 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

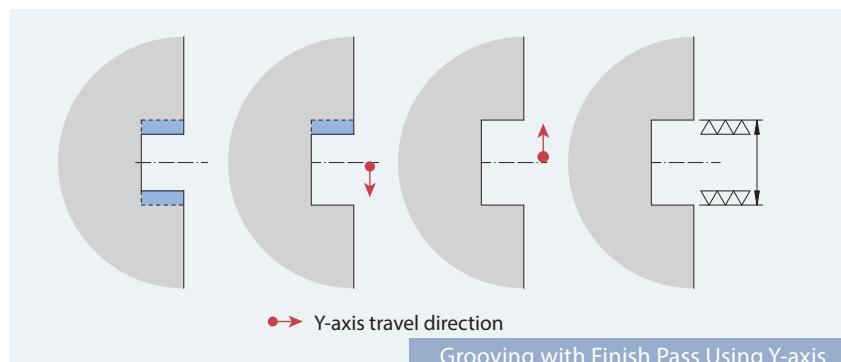
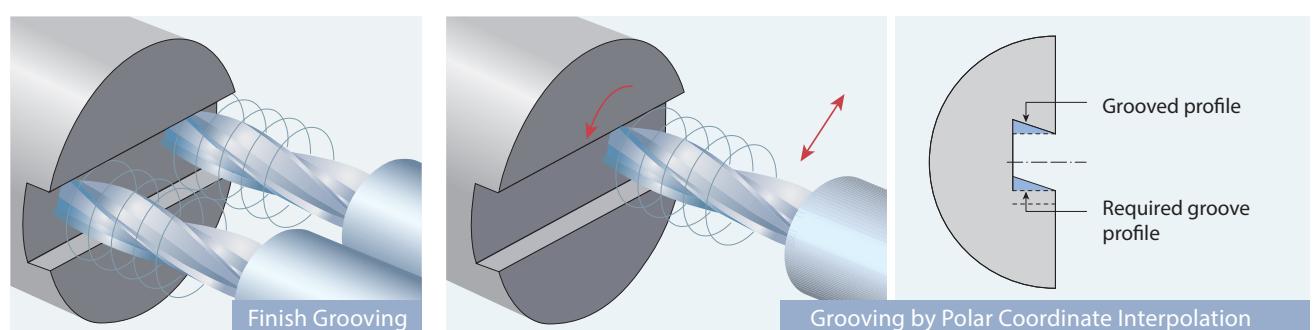
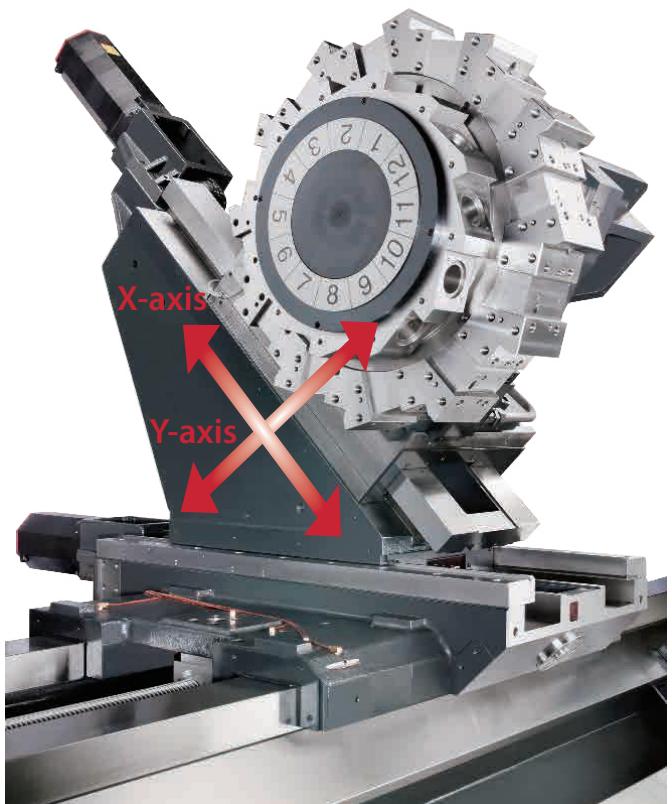


Y-AXIS MACHINING CAPABILITY

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.

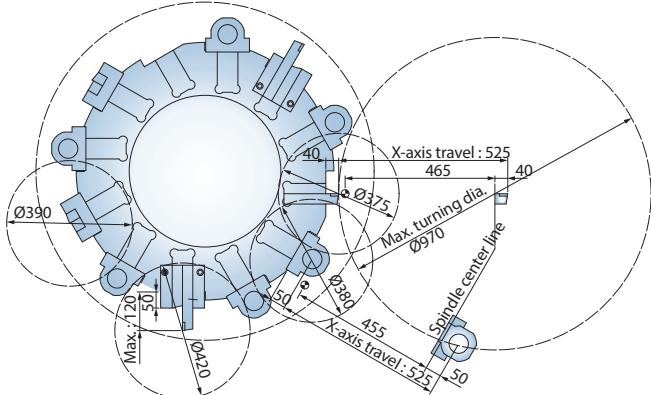


- ▶ Grooving with Y-axis control produces grooves with higher accuracy.

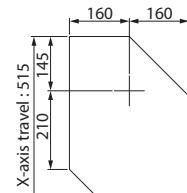
GENERAL DIMENSION

Interference Diagram

【 12-Station Turret 】



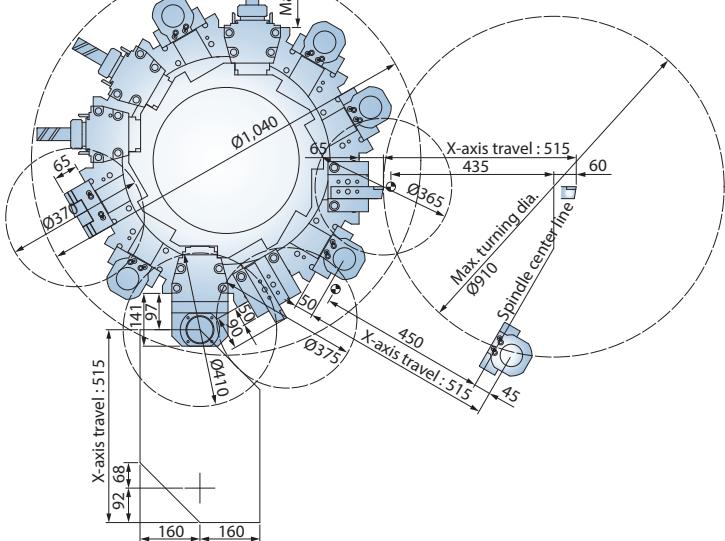
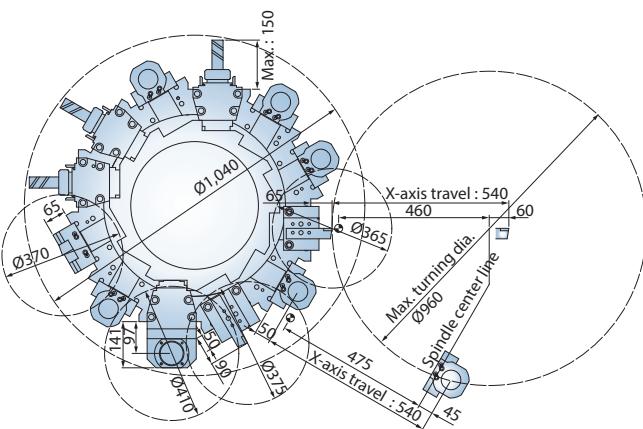
【 Y-axis 】



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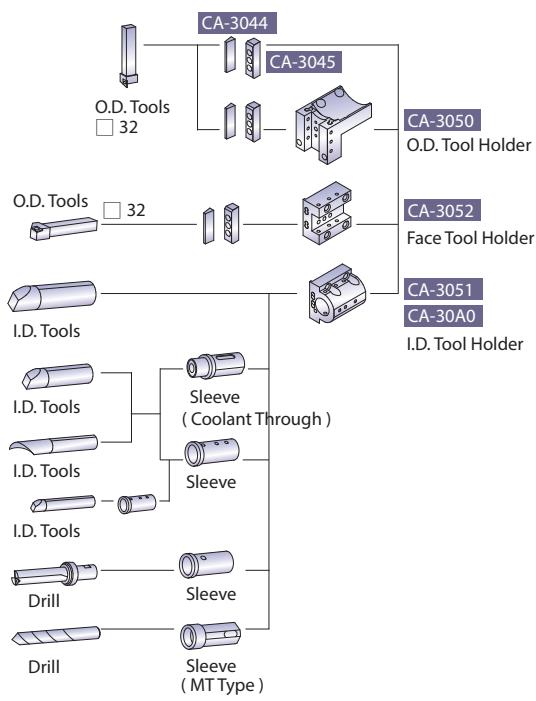
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【 12-Station Live Tooling Turret 】

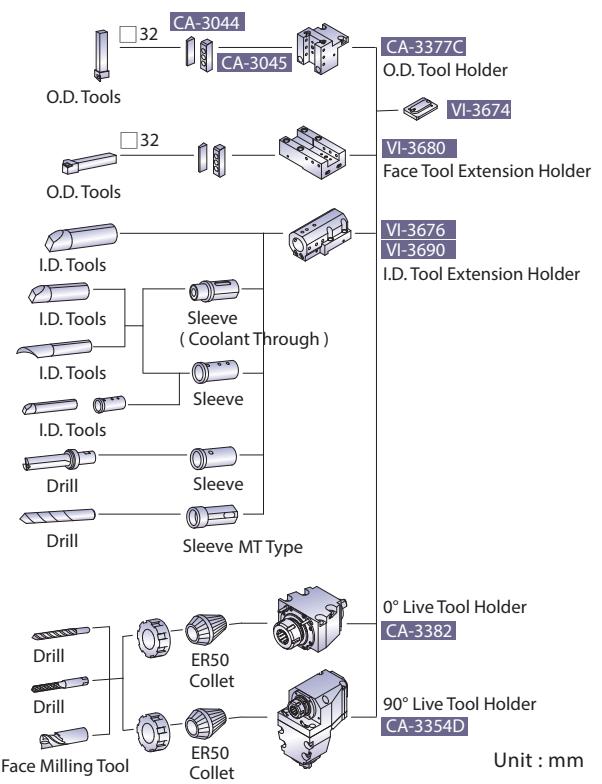


Tooling System

【 12-Station Turret 】



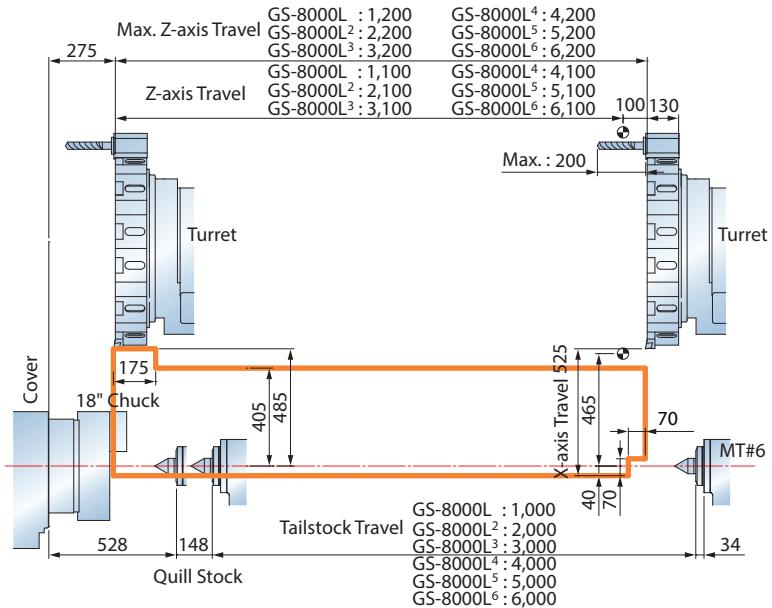
【 12-Station Live Tooling Turret 】



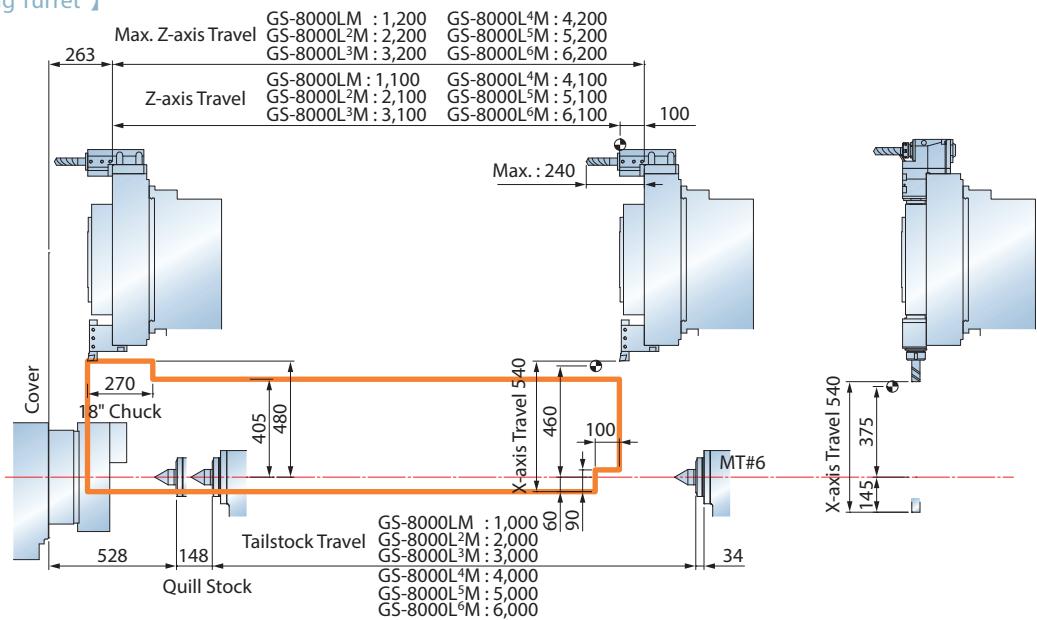
Unit : mm

Work Range

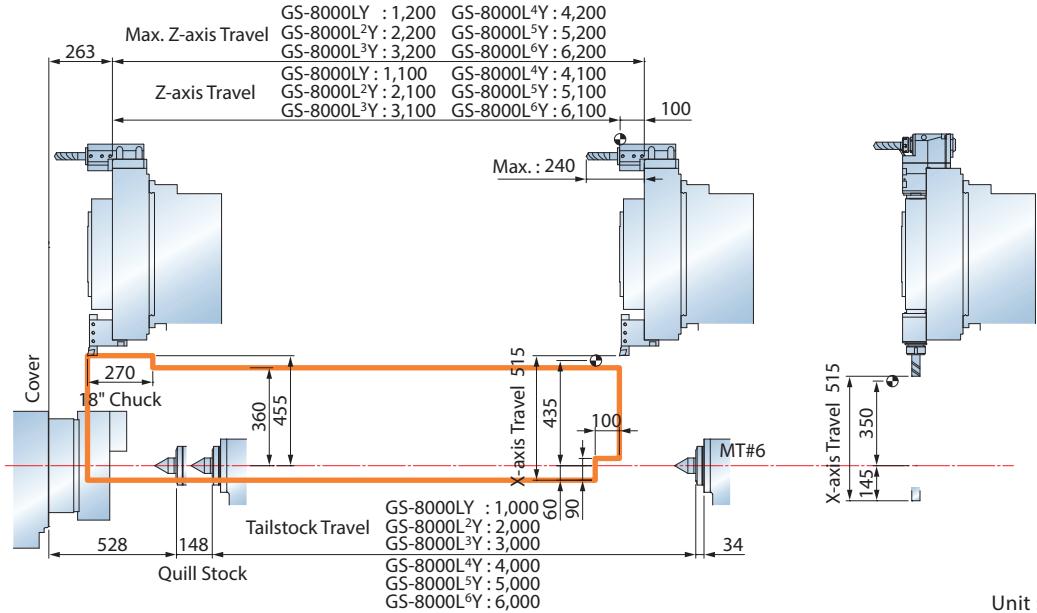
【 12-Station Turret 】



【 12-Station Live Tooling Turret 】



【 Y-axis 】



Unit : mm

STANDARD & OPTIONAL FEATURES

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

SPINDLE

Main spindle configuration	3-Speed Gear	S
Rigid tapping & spindle orientation		S
Main spindle disk brake		O
Cs-axis & disk brake for main spindle*1		O

WORK HOLDING

Hydraulic hollow cylinder for chuck	205 mm ID.	S
	21"	S
Hollow 3-jaws chuck & 1 set soft jaws	24" ^{*2}	O
	32" ^{*2}	O
	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		S
MT#6 dead center quill		S
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 2, 90° x 2)*1		O

MEASUREMENT

RENISHAW HPRA tool presetter	Removeable	O
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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

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

GS8000

GS8000

OTHERS

Tri-color machine status light tower	S
Work light	S
External work light	O
Electrical cabinet	Heat exchanger
	A/C cooling system
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

Display	8.4" color LCD	S	-
	10.4" color LCD	O	S
Graphic function	Standard	S	-
	Dynamic	O	S
Full keypad	Small - 44 key	S	-
	Large - 56 key	O	S
Part program storage length	512 K bytes	S	-
	1 M bytes	-	S
	2 M bytes	O	O
	4 M bytes	-	O
	8 M bytes	-	O
Registerable programs	400	S	-
	800	-	-
	1,000	O	S
	4,000	-	O
	99	-	S
Tool offset pairs	128	S	-
	200	O	-
	400	-	O
	499	-	O
	999	-	O
Servo HRV Control	2000	-	O
	HRV 3	S	S
Conversational programming	Manual Guide Oi	S	-
	Manual Guide i* ³	O	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	S
Variable Lead Thread Cutting		S	S
Polygon Turning		S	S ⁴
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
RS-232 port		S	S
Memory card input / output		S	S
USB memory input/output		S	S
Ethernet		S	S

Oi-TF
31i

Specifications are subject to change without notice.

Above standard & optional features also apply to L models.

*1 Standard on M (live tooling) models.

*2 Tool setter must be deleted.

*3 10.4" color LCD option needed.

*4 For servo motor drivern power turret only.

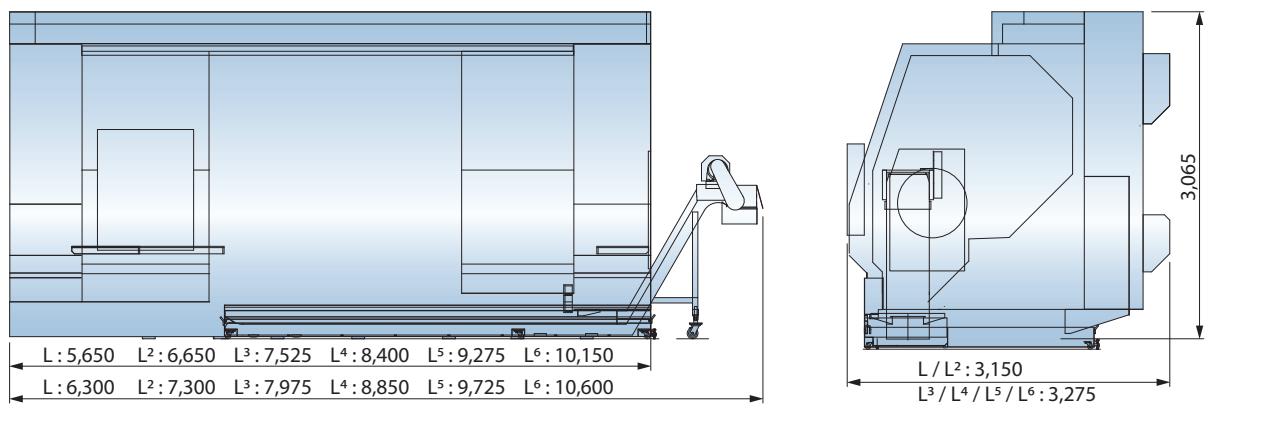
MACHINE SPECIFICATIONS

CAPACITY	GS-8000L ~ L ⁶	GS-8300L ~ L ⁶	GS-8600L ~ L ⁶
Max. swing diameter		Ø 1,030 mm	
Swing over saddle		Ø 810 mm	
Max. turning diameter		Ø 970 mm	
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		
Max. weight of the work piece		5,000 Kg	
Chuck size		18" (Opt. 24")	
SPINDLE			
Hole through spindle	Ø 205 mm	Ø 260 mm	Ø 320 mm
Spindle bearing diameter	Ø 260 mm	Ø 340 mm	Ø 400 mm
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	Low speed : 87 rpm Medium speed : 143 rpm High speed : 217 rpm	Low speed : 62 rpm Medium speed : 103 rpm High speed : 156 rpm	Low speed : 60 rpm Medium speed : 100 rpm High speed : 150 rpm
Spindle torque (cont.)	Low speed : 3,320 N·m Medium speed : 2,010 N·m High speed : 1,325 N·m	Low speed : 4,605 N·m Medium speed : 2,790 N·m High speed : 1,840 N·m	Low speed : 4,790 N·m Medium speed : 2,900 N·m High speed : 1,915 N·m
Spindle torque (30 min.)	Low speed : 4,090 N·m Medium speed : 2,475 N·m High speed : 1,635 N·m	Low speed : 5,670 N·m Medium speed : 3,435 N·m High speed : 2,265 N·m	Low speed : 5,900 N·m Medium speed : 3,575 N·m High speed : 2,360 N·m
Spindle torque (25%)	Low speed : 4,915 N·m Medium speed : 2,975 N·m High speed : 1,965 N·m	Low speed : 6,815 N·m Medium speed : 4,130 N·m High speed : 2,720 N·m	Low speed : 7,090 N·m Medium speed : 4,300 N·m High speed : 2,835 N·m
Cf-AXIS (OPT.)			
Cf-axis drive motor		AC 3.0 kW	
Cf-axis rapids	20 rpm	28 rpm	28 rpm
Cf-axis torque output (cont.)	1,296 N·m	1,800 N·m	1,800 N·m
X & Z AXES			
Max. X-axis travel		525 mm	
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		
X / Z axes rapids		10.5 / 12 m/min.	
Slide way type		Box Way	
Feed rates	1~ 4,800 mm/min.		
X / Z axes servo motor		AC 9 kW / AC 7 kW	
X / Z axes ball screw diameter		Ø 45 / 63 mm	
X / Z axes thrust (cont.)		2,832 / 3,204 Kgf	
TURRET			
Stations		12	
Indexing drive		Servo motor	
Indexing speed		0.5 sec. (Adjacent) / 1.5 sec. (180° Single step)	
O.D. tool shank size		□ 32 mm	
I.D. tool shank size		Ø 60 mm	

LIVE TOOLING TURRET (OPT.)	GS-8000L ~ L ⁶	GS-8300L ~ L ⁶	GS-8600L ~ L ⁶
Max. turning diameter		Ø 960 mm	
Live tooling stations		12	
Live tooling motor output		AC 7.5 / 9 kW (cont. / 30 min.)	
Indexing drive type		FANUC AC spindle motor	
Indexing speed	0.5 sec. (adjacent) / 1.5 sec. (180° Single step)		
O.D. / I.D. tool shank size		□ 32 mm / Ø 60 mm	
Live tooling shank size		0° : ER 50 / 90° : ER 40	
Live tooling RPM range		3,000 rpm	
Y-AXIS (OPT.)			
Swing over saddle		Ø 720 mm	
Max. turning diameter		Ø 910 mm	
Max. X / Y axes travel		515 / ± 160 mm	
Y-axis rapids		16 m/min.	
Y-axis servo motor		AC 7 kW	
Y-axis ball screw diameter		Ø 45 mm	
Y-axis thrust (cont.)		1,602 Kgf	
TAILSTOCK			
Quill center taper		MT#6 (Dead center)	
Quill diameter / travel		Ø 160 mm / 150 mm	
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		
Programmable quill / base		Yes / Yes	
GENERAL			
CNC controller		FANUC Oi-TF (Opt. 31i)	
Voltage / Power requirement		AC 220 V / 80 kVA	
Hydraulic tank capacity		40 L	
Coolant tank capacity		590 L	
Coolant pump	0.5 kW (0.75 HP , 60 Hz) rated at 3 bar (44 PSI)		
Machine weight	L : 17,300 / L ² : 19,400 / L ³ : 21,400 / L ⁴ : 23,400 / L ⁵ : 25,400 / L ⁶ : 27,400 Kg		
Dimensions L × W × H	L : 5,650 x 3,150 x 3,060 mm / L ² : 6,650 x 3,150 x 3,060 mm / L ³ : 7,525 x 3,275 x 3,065 mm L ⁴ : 8,400 x 3,275 x 3,065 mm / L ⁵ : 9,570 x 3,575 x 3,065 mm / L ⁶ : 10,150 x 3,275 x 3,065 mm		

Specifications are subject to change without notice.

Machine Layout





GOODWAY MACHINE CORP.

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