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# GS-2000 GS-3000 SERIES

Maximum Performance CNC Turning Centers

## MAXIMUM PERFORMANCE CNC TURNING CENTERS

With the latest machine tools technology and powerful turning performance, Goodway brings you the new GS-2000 / GS-3000 series maximum performance CNC turning center. Using 2 different lengths of beds and 5 different sizes of bar capacities combined with a powerful spindle, high speed servo indexing turret and high rigidity structure design, the GS-2000 / GS-3000 series becomes the best choice of machine tools for the new generation. Additionally, it can be equipped with an optional precision built-in type spindle, high torque gear type spindle, or a live tooling turret, Y-axis and sub-spindle which can accomplish mutli-tasking applications. With the perfect quality and complete tasking capabilities, the GS-2000 / GS-3000 series can easily various needs of today and tomorrow.

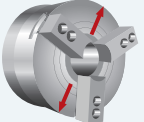
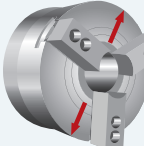
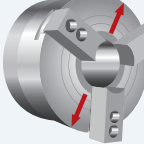
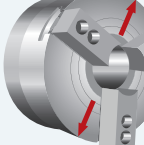
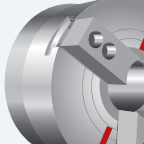
- ▶ The modern 30° slant-bed design ensures outstanding structural rigidity and heavy duty cutting ability.
- ▶ All standard turrets and live tooling turrets are self-developed and assembled by Goodway which ensures high quality of the key components and allows the machine to provide optimal performance.
- ▶ Spindle is driven by the wide-range FANUC  $\alpha$  P series motor which can take heavier cuts in low RPM ranges.
- ▶ Extra large Z-axis servo motors provide the thrust needed to efficiently drill big diameter holes.
- ▶ Coolant system with roll-out coolant tank and high-pressure coolant pump.



(GS-3300 model shown.)



( GS-3600L model shown with optional accessories. )

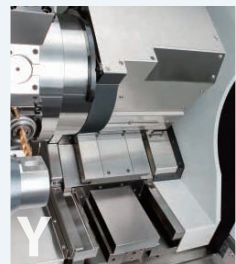
Chuck Size	Max. Turning Length*1	Bar Capacity
 8"	750 mm GS-2000      GS-2000L	1,500 mm Ø 51 mm
 10"	GS-2600      GS-2600L	Ø 65 mm
 10"	GS-2800      GS-2800L	Ø 75 mm
 12"	GS-3300      GS-3300L	Ø 90 mm
 15"	GS-3600      GS-3600L	Ø 105 mm

\*1 Maximum turning length may vary, based on the model chosen.

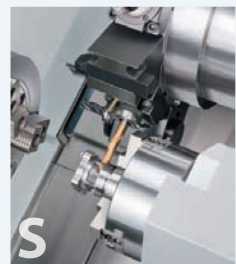
#### Optional Multi-Tasking Accessories



M Live tooling turret



Y-axis



S Sub-spindle



# ULTIMATE TURNING POWER



Workpiece Material : S45C Medium Carbon Steel

Test Model : GS-3600M

## Heavy Cutting

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**7**

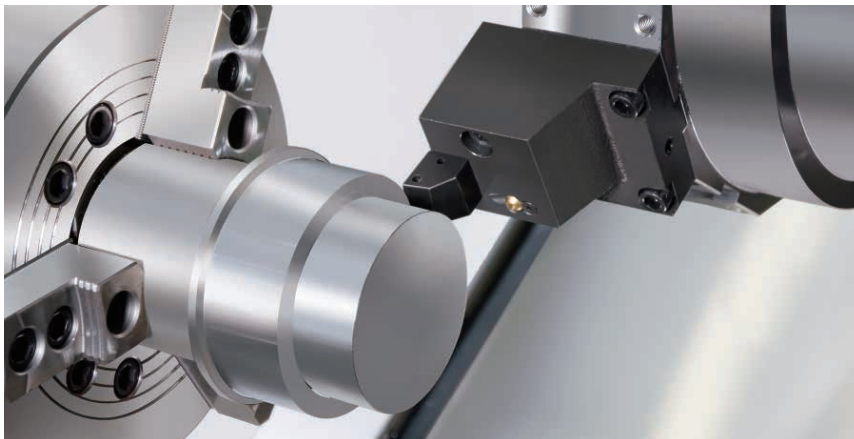
Depth of Cut ( mm )

**0.4**

Feed Rate ( mm/min. )

**417**

Speed ( rpm )



## U-drill

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**50**

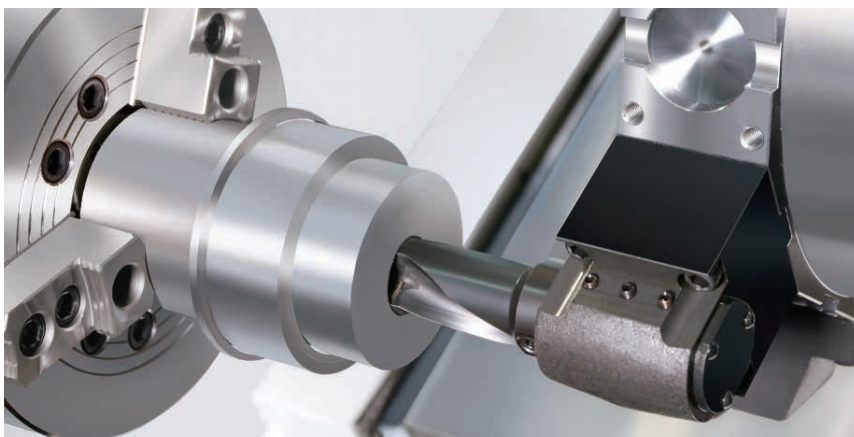
Tools Diameter ( mm )

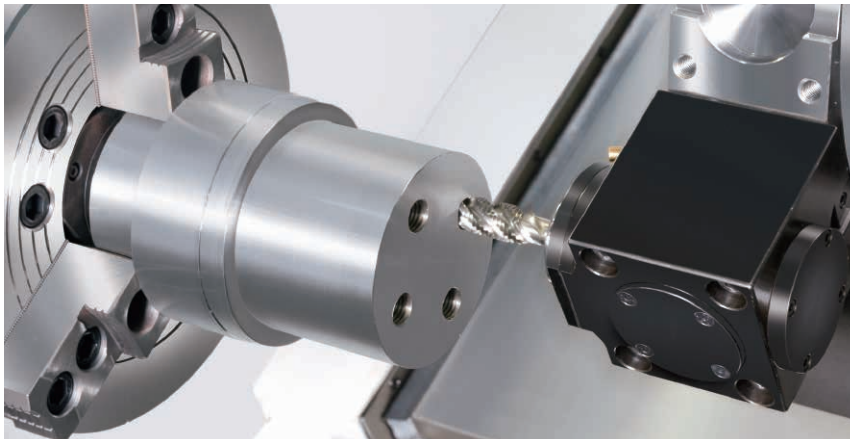
**0.15**

Feed Rate ( mm/min. )

**764**

Speed ( rpm )





### Tapping

# M24 x P2.5

Tools Diameter ( mm )

240

Tool Speed ( r/min. )

530

Feed Rate ( rpm )



### End Mill

# 15

Depth of Cut ( mm )

20

Tool Dia. ( mm )

640

Speed ( rpm )

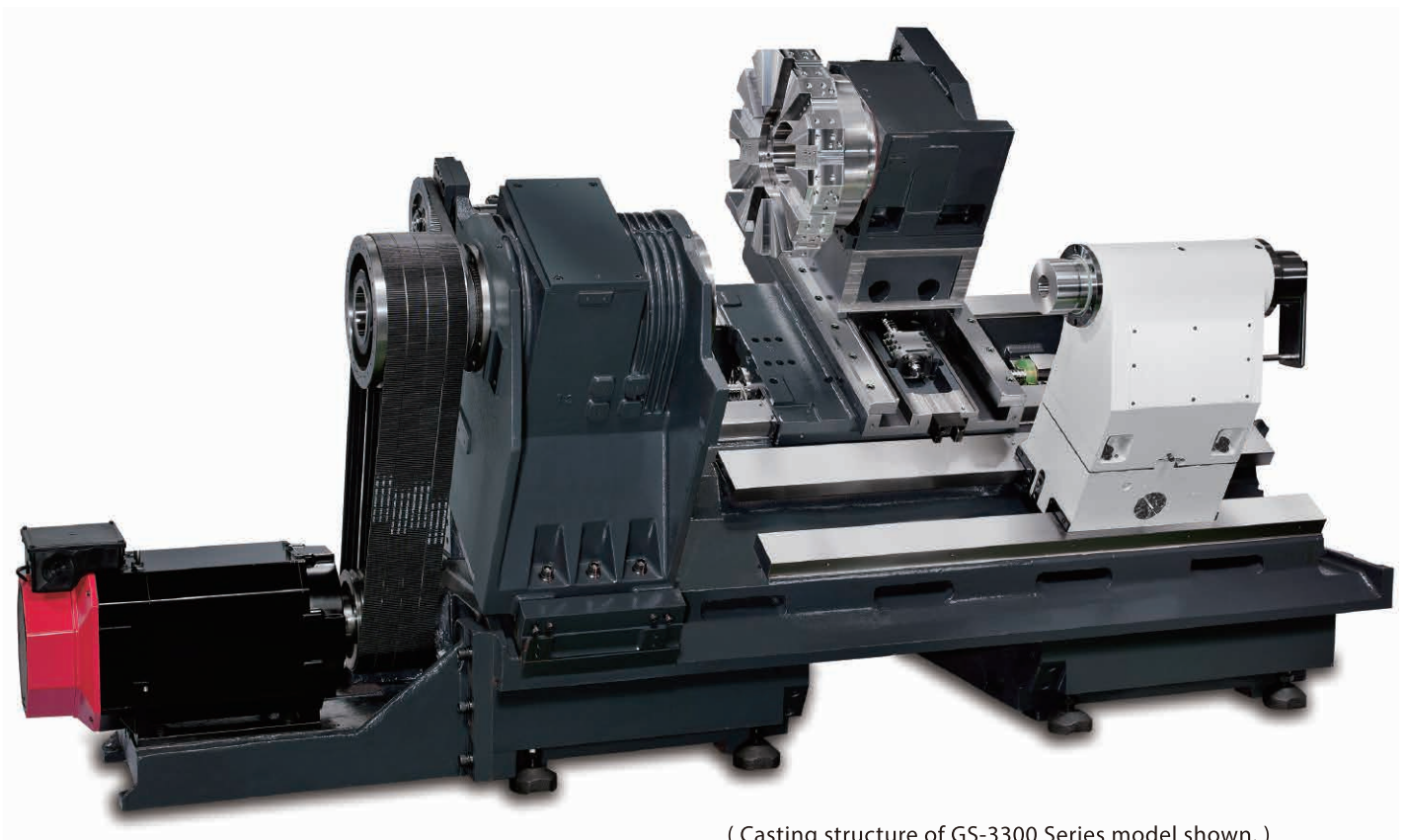
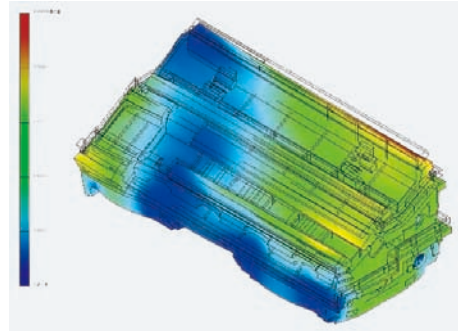
260

Feed Rate ( mm/min. )



## MAXIMUM STRENGTH CONSTRUCTION

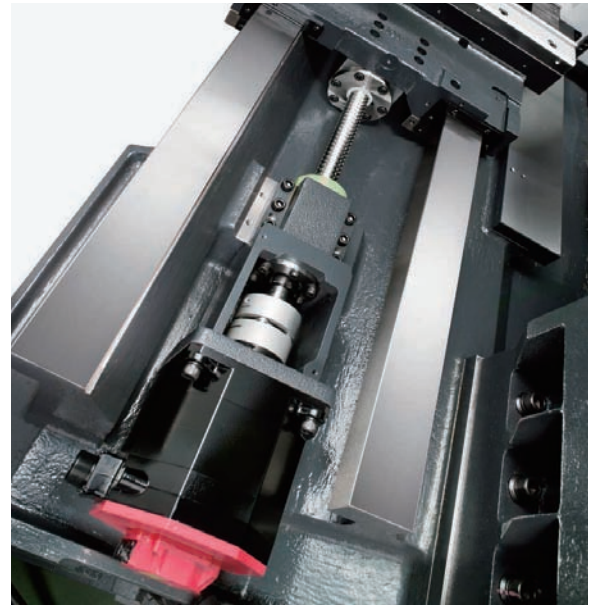
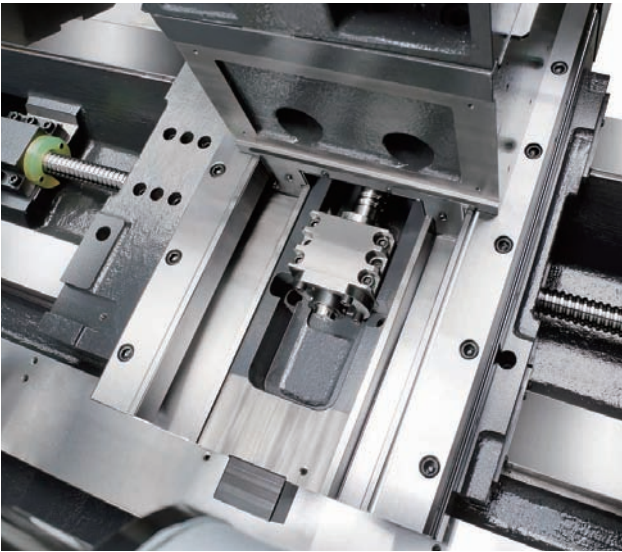
- ▶ By using Finite Element Methods ( FEM ), optimal reinforce ribbings are directly cast into the one-piece bed structure. Mechanical rigidity has been increased by more than 30% when compared to conventional designs. The GS-2000 / GS-3000 series is capable of performing super heavy-duty turning and maintain long-term super high-precision accuracy. More rigidity also means extended tool life.
- ▶ Major structural components have been combined into one solid platform. The low center of gravity 30° slant-bed design provides the most rigid foundation possible for the headstock, turret, and tailstock.
- ▶ Built to endure years and years of rigorous high production turning, the heavily ribbed, one-piece thermally balanced bed and casting components are of FC35-Meehanit casting. FC35 grade cast iron 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.
- ▶ X and Z axes are driven by over-sized FANUC  $\alpha i$  series absolute AC servo motors, providing tremendous thrust outputs with faster acceleration and deceleration. Absolute encoder technology saves time and money by eliminating the use of limit switches, thus, eliminating referencing axes to home positions and replacing broken limit switches.



( Casting structure of GS-3300 Series model shown. )

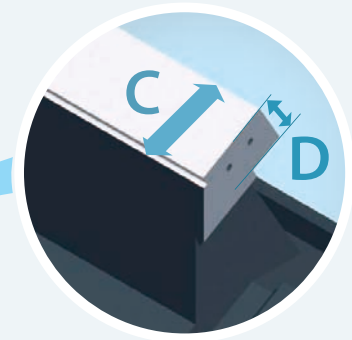
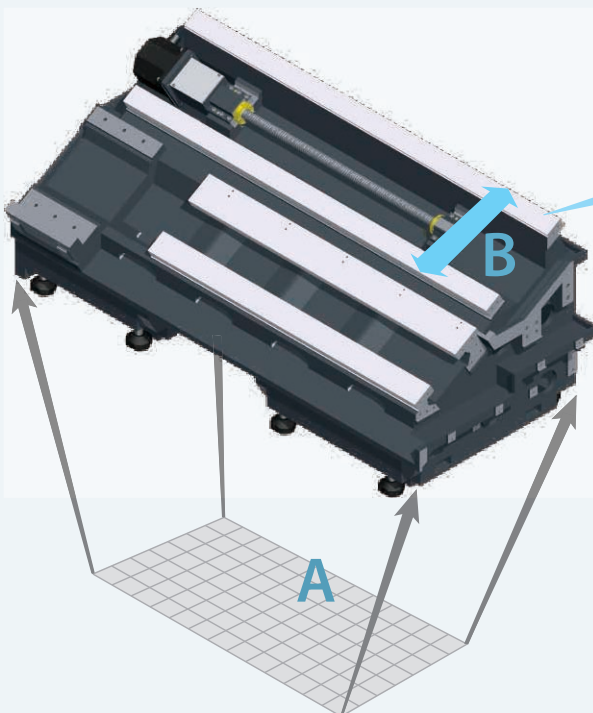
- ▶ Contact surfaces of all slides, headstock, turret, tailstock, and ball screw bearing housings with the machine bed are precision hand scraped to provide maximum assembly precision, structural rigidity, and load distribution.

- ▶ C3 class hardened and precision ground ball screws ensure the highest accuracy and durability possible. Plus, pretension on all axes minimizes thermal distortion.



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

### GS-2000 / GS-3000 Series V.5 Previous Model



**A** 11%  
Bed Floor Space Increased

**C** 14%  
Slideway Width Increased

**B** 23%  
Slideway Span Increased

**D** 25%  
Slideway Thickness Increased

## HIGH PERFORMANCE SPINDLE SYSTEM

- ▶ 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 A/C, constant output, wide-range FANUC  $\alpha$  P series motor can generate twice the torque output of standard motors. This double bind 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.



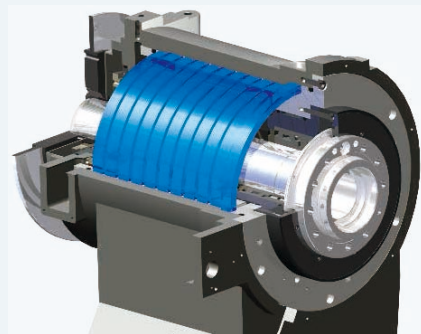
**E** 22%  
Headstock Contact Surface  
Increased



- ▶ The super large headstock is heavily ribbed and of one-piece casting. The contact surfaces between the headstock and bed are greatly increased which provides greater rigidity of the headstock and efficiently dampens vibration, therefore, increasing machining accuracy.

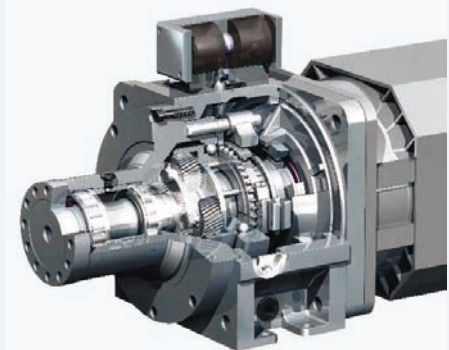
### Built-in Spindle

- ▶ The optional built-in type spindle can provide 100% motor output. It can decrease vibration generated from the spindle while spinning, thus increasing the life span of the spindle and increasing machining accuracy.
- ▶ The built-in spindle is covered with a cooling water jacket and equipped with an external oil cooler which efficiently reduces thermal expansion and ensures long term machining accuracy.



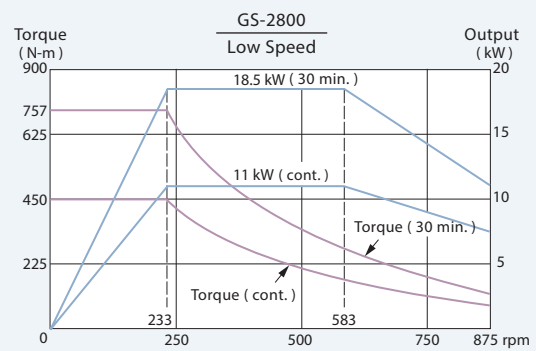
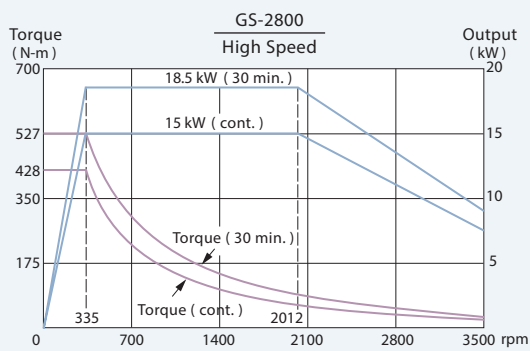
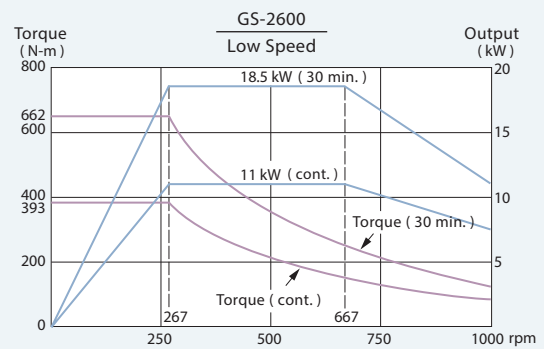
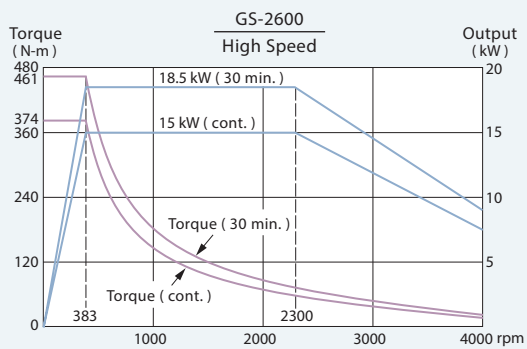
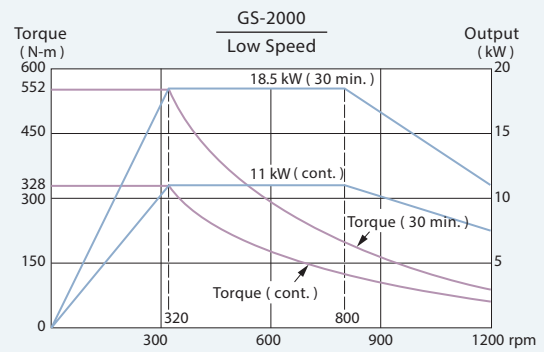
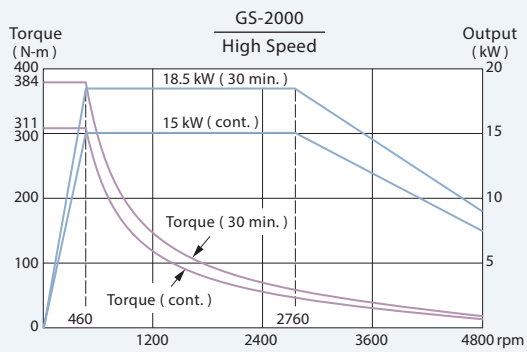
### ZF Gear Box

- ▶ The optional oil bath German made ZF 2-step gear box provides maximum torque up to 1,200 N-m, which can easily meet with heavy cutting requirements.

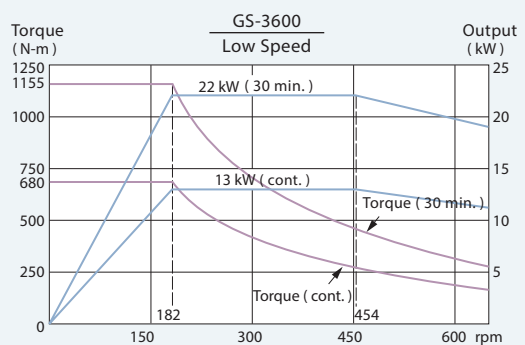
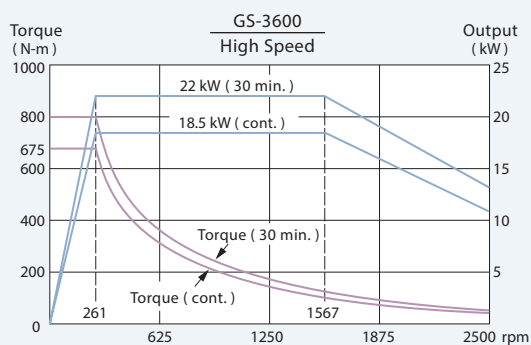
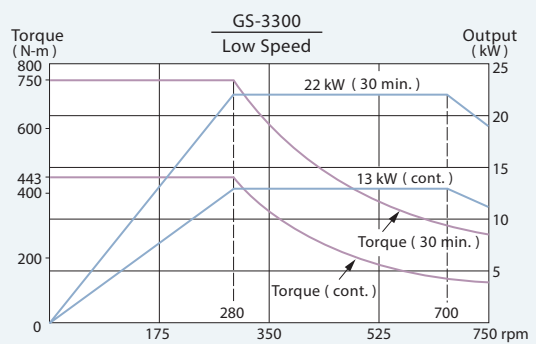
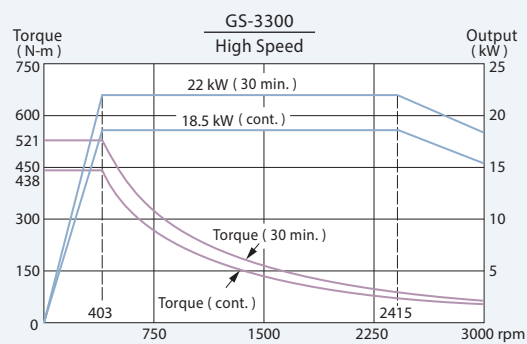




## GS-2000 Series Spindle Output



## GS-3000 Series Spindle Output



## ADVANCED TURRET TECHNOLOGY

- ▶ Goodway all series turrets are equipped with Japan made curvic couplings which is precision assembled under A/C controlled laboratory which ensures powerful cutting performance, outstanding quality and long life span.
- ▶ The heavy-duty servo indexing turret achieves 0.3 second indexing times for adjacent stations and 0.8 second for stations at the opposite end of the disk. Index movements are single step, without pauses, no matter how many stations are skipped.

Indexing  
Time

0.3

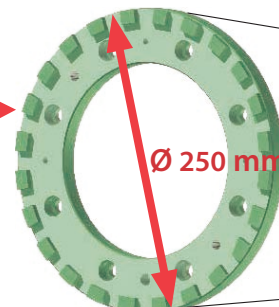
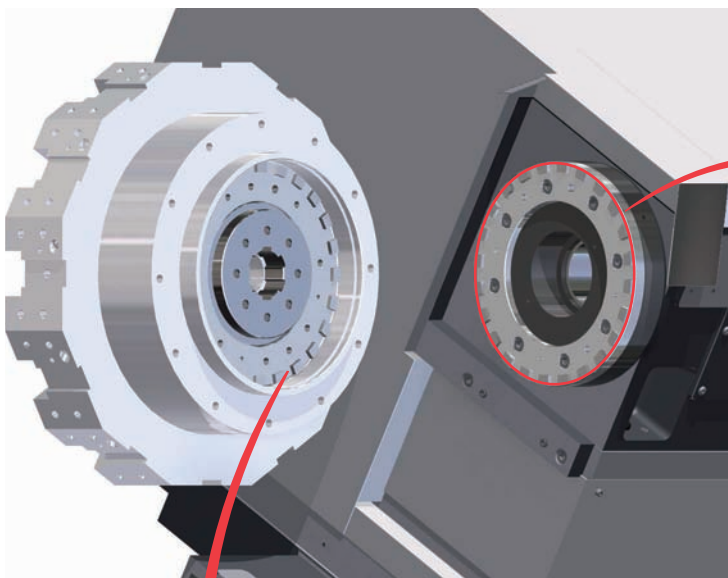
Adjacent ( sec. )

0.8

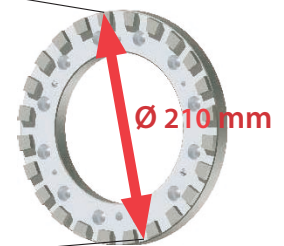
180 degrees ( sec. )



- ▶ The large diameter super high precision curvic couplings accurately position the turret disk and the powerful clamping force ensures abundant turret rigidity for all cutting conditions.



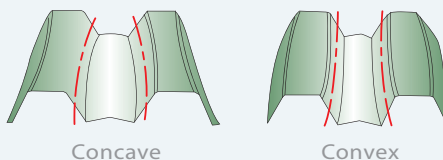
GS-2000 / GS-3000 Series



Previous Model

Curvic  
Coupling

19%  
Diameter Increased



Concave

Convex

Curvic Coupling

- ▶ The curvic coupling provides self-centering, self-cleaning and large contact surface advantages compared to conventional curvic couplings.

## HIGH RIGIDITY TAILSTOCK

- ▶ Programmable/ servo type tailstock combined with a complete software interface can easily accomplish difficult processing tasks while simplifying the tailstock positioning procedure to save manpower.

**S** Standard   **O** Option   — Not Available

Quill Type	MT#3	MT#4		MT#5
	Dead Center	Dead Center	Live Center	Live Center
GS-2000	<b>S</b>	—	<b>O</b>	—
GS-3000	—	<b>S</b>	—	<b>O</b>



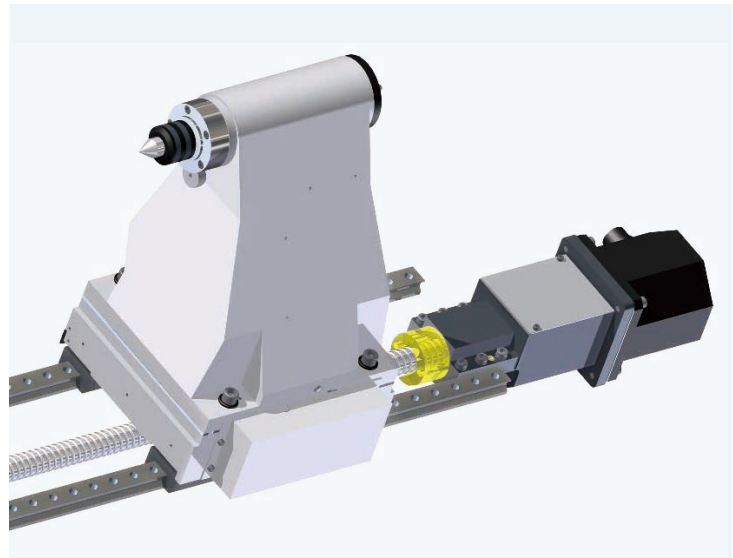
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### Quill Programmable Tailstock

- ▶ The Z-axis carriage automatically locks on to the base of the tailstock and drags it to the desired position.
- ▶ The built-in bearing quill provide greater rigidity for heavy loads. The extension and retraction of the quill is programmable and thrust pressure adjustable.
- ▶ B-axis is adopted with high rigidity box way design.



### Servo Tailstock

- ▶ The tailstock base positioning is driven by a ball screw and direct-drive servo motor.
- ▶ The high rigidity fixed type quill and tailstock is of one piece, combined with a powerful thrust servo motor, can ensure optimal machining accuracy.
- ▶ The B-axis is adopted with high rigidity roller guide ways design.

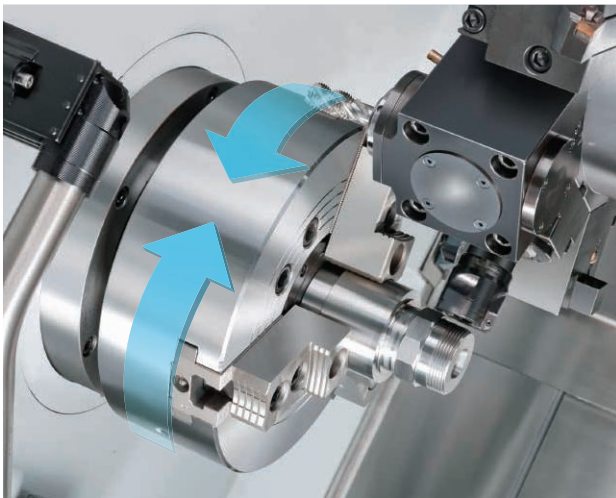


## LIVE TOOLING TURRET

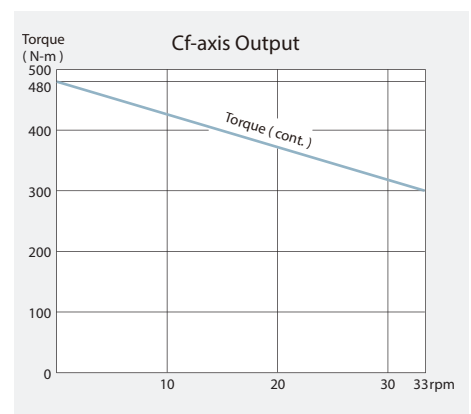
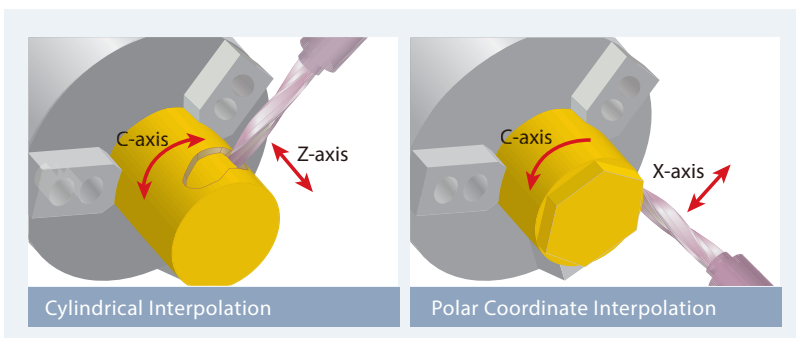
- ▶ Live tooling and C-axis control capabilities on the GS-2000 or GS-3000 series allows the machine to perform multiple tasks on a work piece, such as turning, milling, drilling and tapping. It eliminates manpower and cycle time, while reducing accuracy lost, which will occur if the part is moved from machine to machine.
- ▶ The live tooling turret is mated with a 4.5 kW motor and driven by a transmission mechanism to provide tremendous amount of horsepower which can easily accomplish difficult tasks such as milling, drilling and tapping.
- ▶ 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.



## ULTIMATE C-AXIS SPINDLE



- ▶ The Cf-axis and disk brake system available on the GS-2000 / GS-3000 series provides the most rigid and powerful type of C-axis 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 120 million pulses per spindle rotation and 480 N-m of torque (cont.), machined surface finishes can reach to a higher accuracy level. Plus, dynamic accuracy is within  $\pm 0.02^\circ$ .

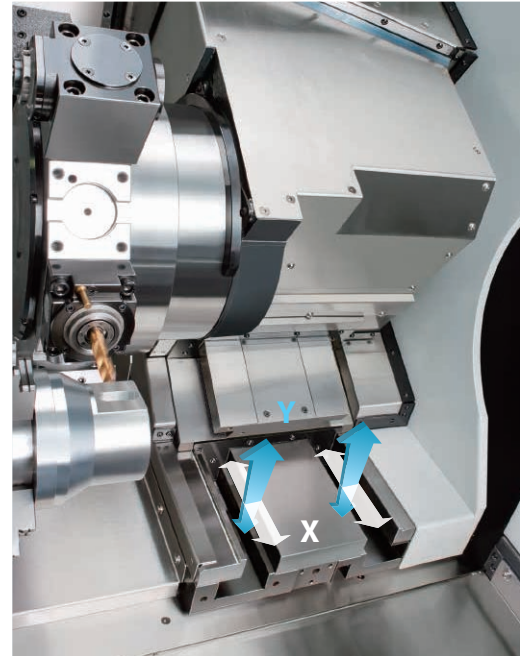
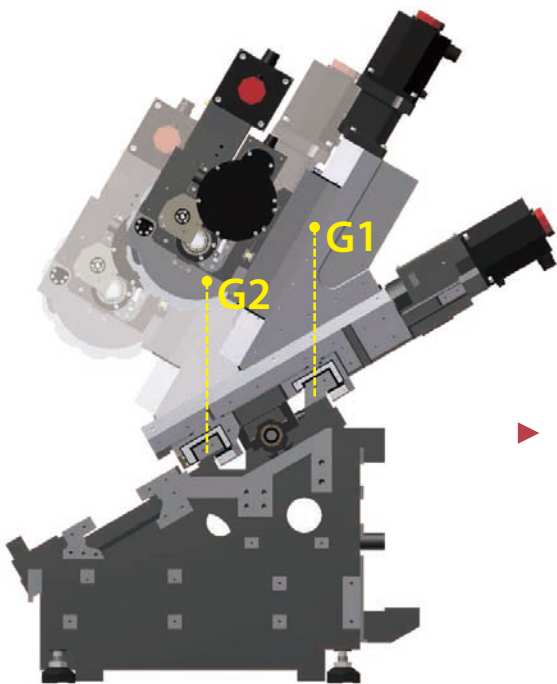


## Y-AXIS MACHINING CAPABILITY

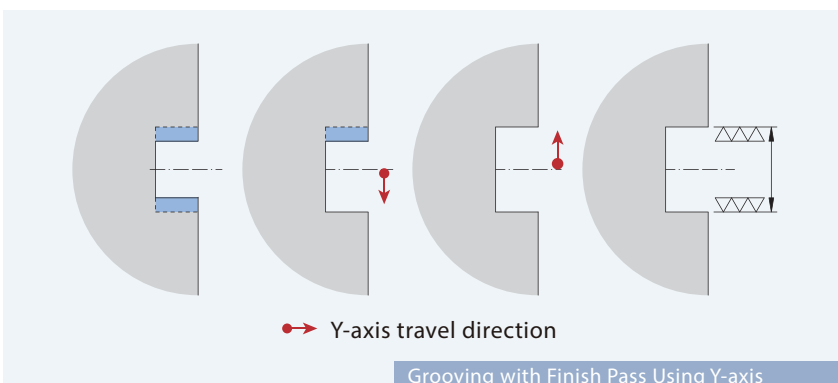
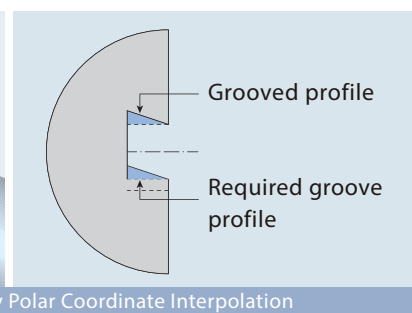
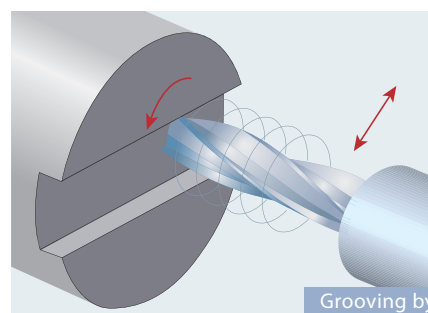
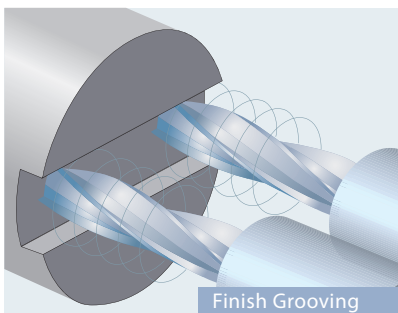
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- ▶ The Y-axis combined with live tooling turret, C-axis and high torque live toolings enhances multi-tasking live tooling capabilities and improves various machining precision. High precision grooving and X-axis off-center drilling are enabled.
- ▶ With an abundant amount of Y-axis travel, 100 mm =  $\pm 50$  mm (3.93" =  $\pm 1.96$ " ), a wide variety of parts may be efficiently machined.
- ▶ The Y-axis is adopted with low gravity, wide span box way design to ensure outstanding machining rigidity.

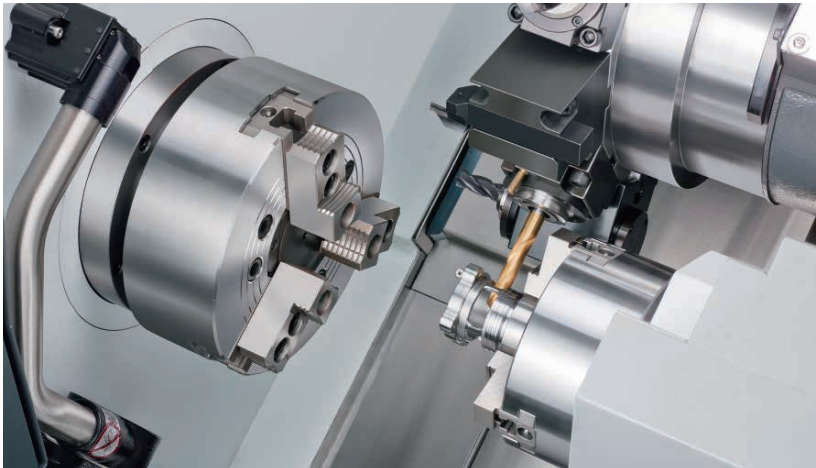


- ▶ On Y-axis equipped machines, the turret is mounted on a secondary 30 degrees wedge saddle on top of the X-axis slide. Both X & Y axes have extra wide hardened and ground box ways, which are directly formed onto the saddles during the casting process. They are precision machined and widely spaced for maximum strength.

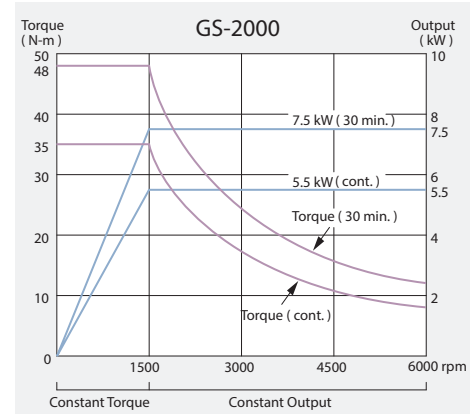


- ▶ Grooving with Y-axis control produces grooves with higher accuracy.

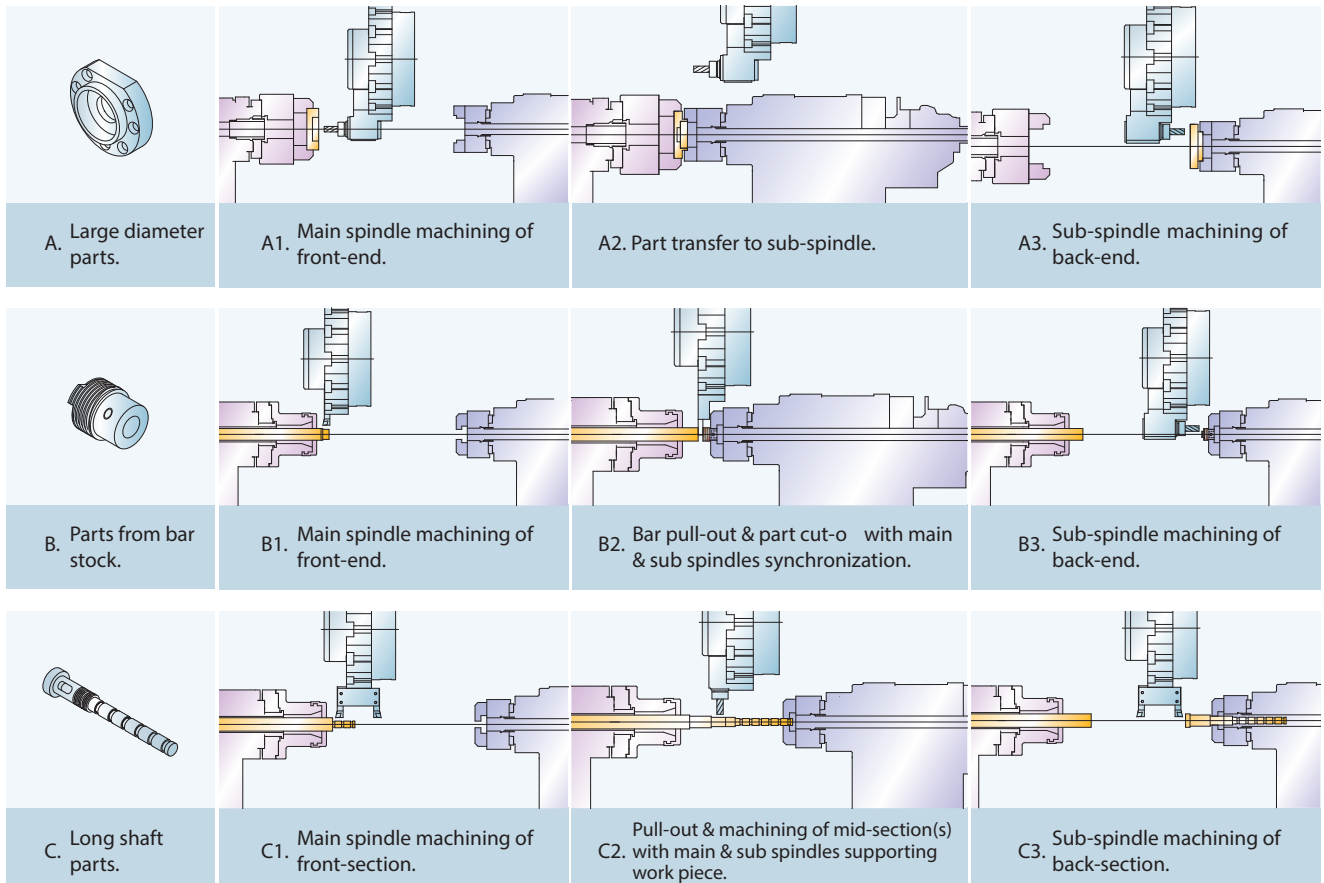
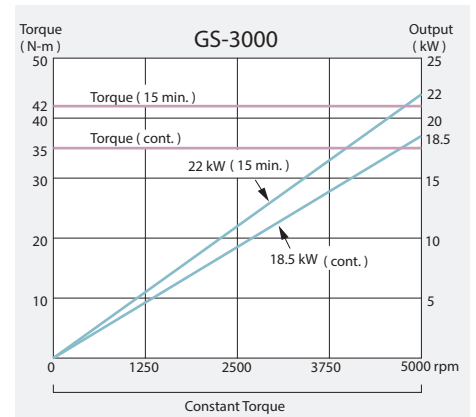
## BACK-END MACHINING CAPABILITY



### Sub-spindle Output



- ▶ With the optional sub-spindle, the working process is done-in-one from input to output, without having to manually flip over the work piece, thus increasing productivity and machining accuracy.
- ▶ The B-axis movement of the sub-spindle is adopted with roller linear guideway design, to provide high rigidity, precision and fast movement ( 30 m/min. ) performance.
- ▶ The sub-spindle can also be equipped with the C-axis function ( same as the main spindle ), to allow the contour positioning accuracy reach up to 0.001°. It can also accomplish back-end milling, drilling and tapping applications when combined with a live tooling turret.

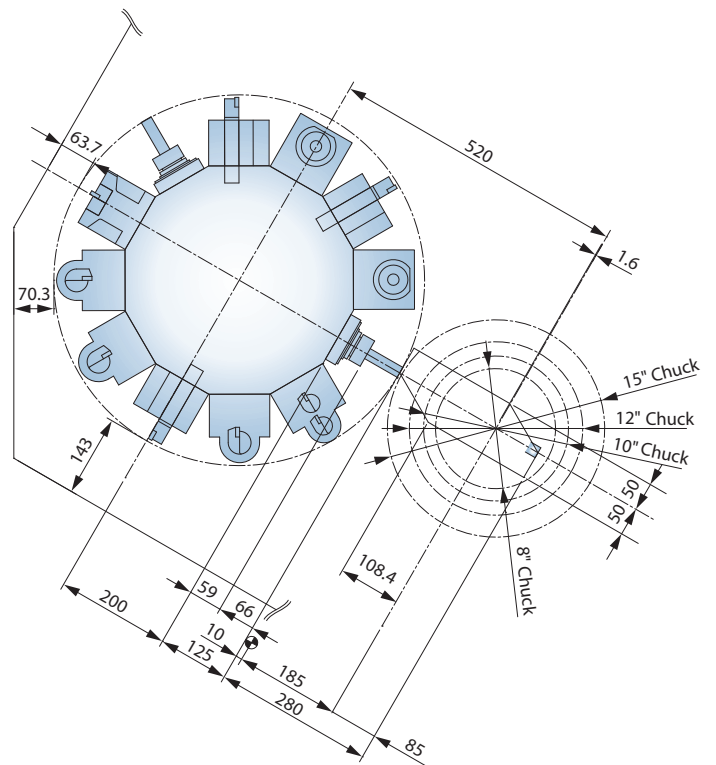
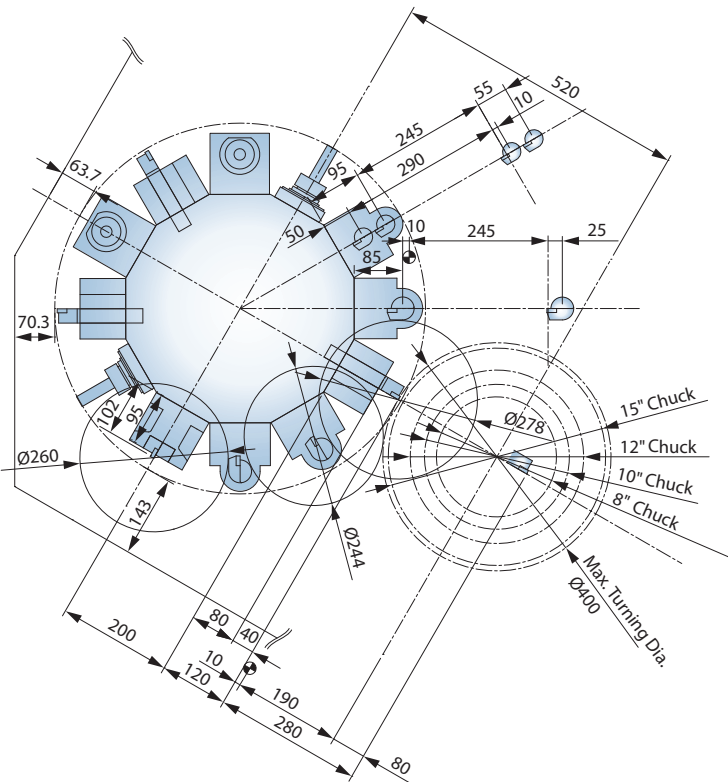




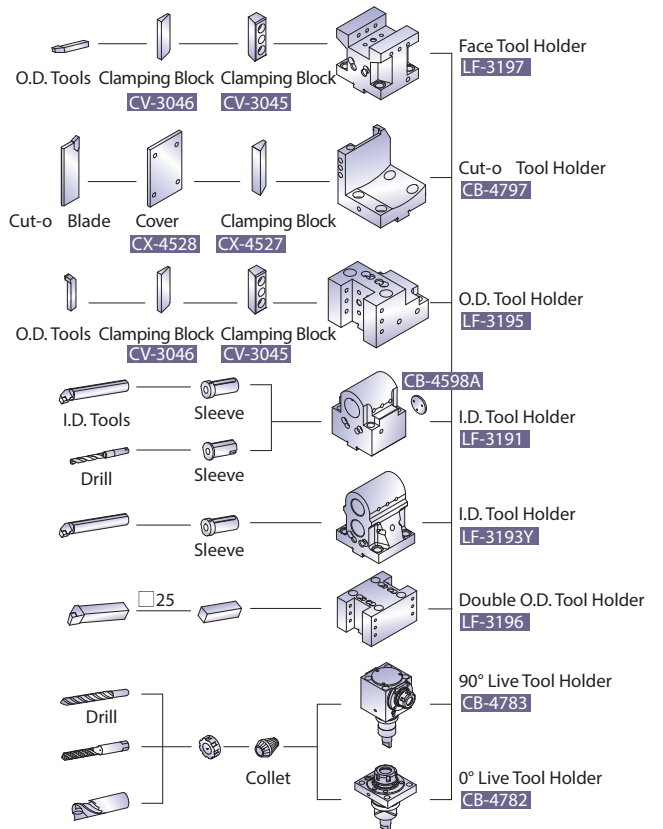
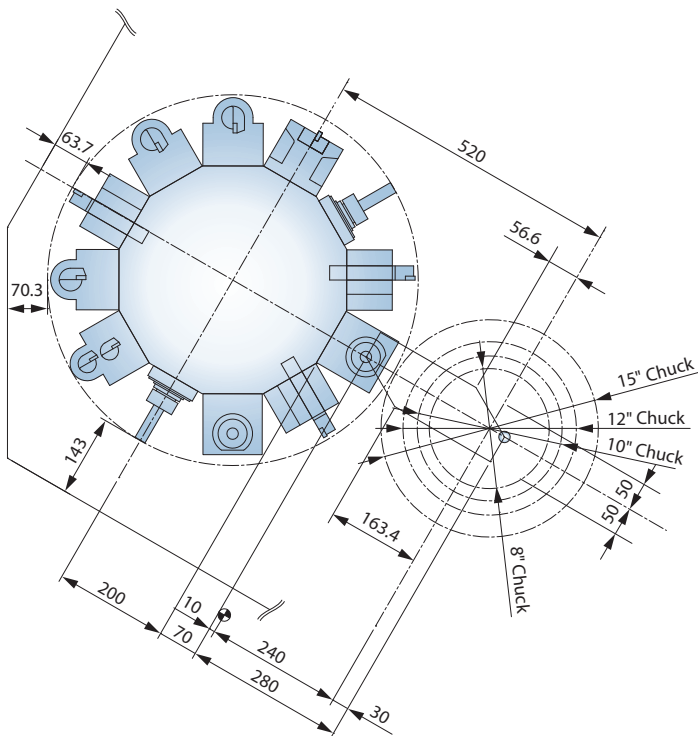


Interference Diagram

[ Y-axis ]



Tooling System

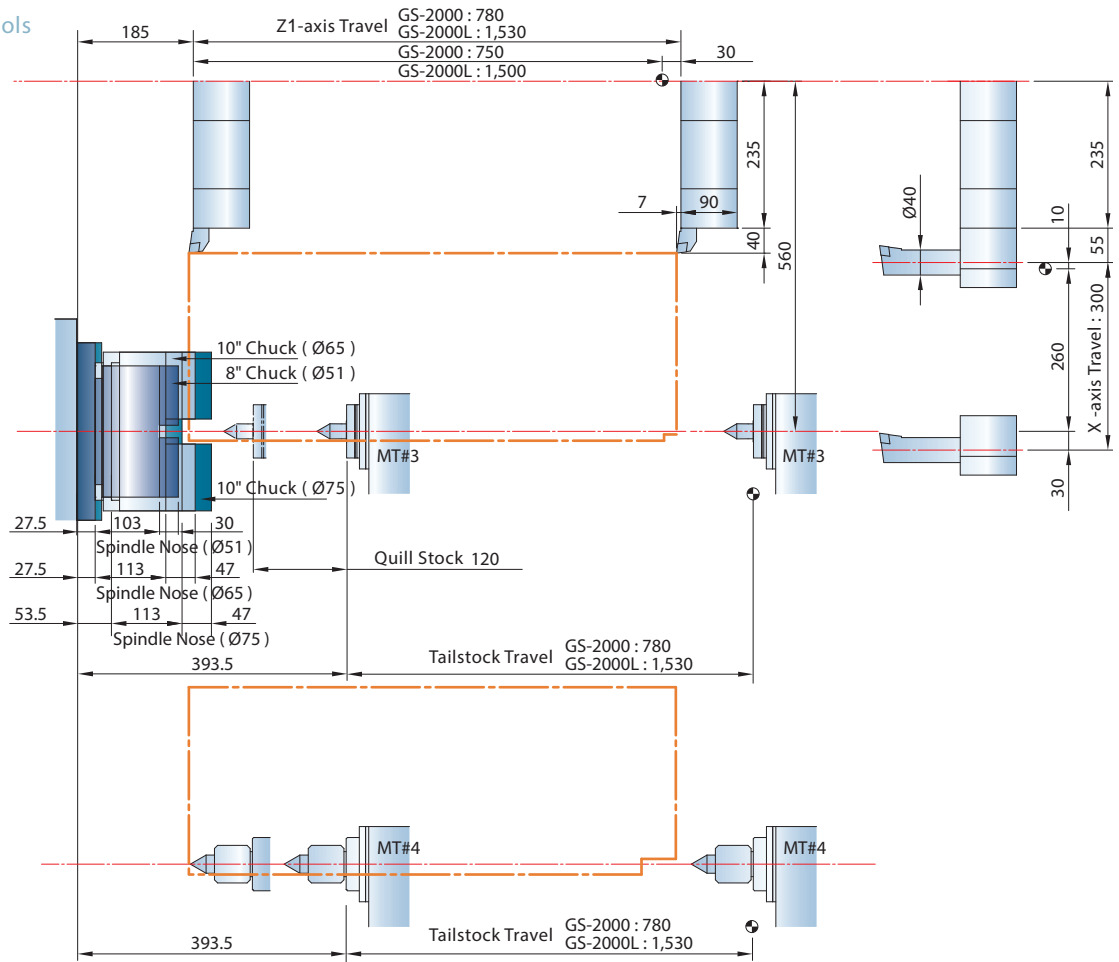


Unit : mm

## GS-2000 Series Work Range

## [ 12-Stations Turret ]

## I.D. / O.D. Tools

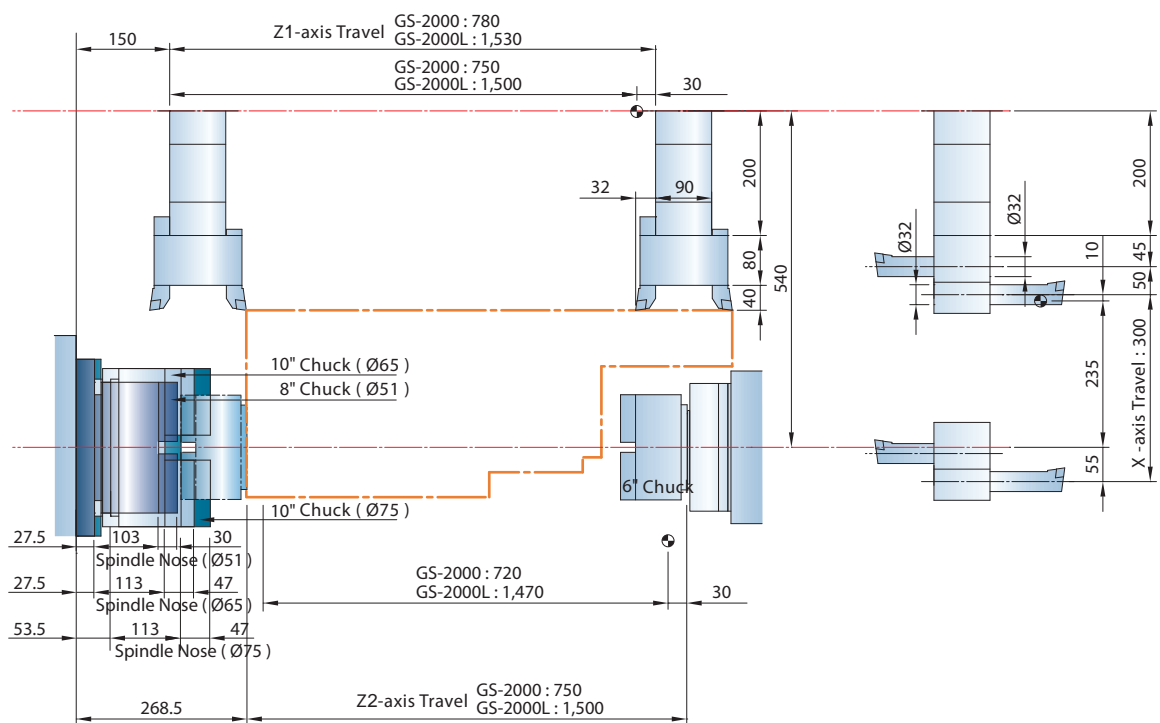


15

16

## [ Sub-spindle ]

## I.D. / O.D. Tools



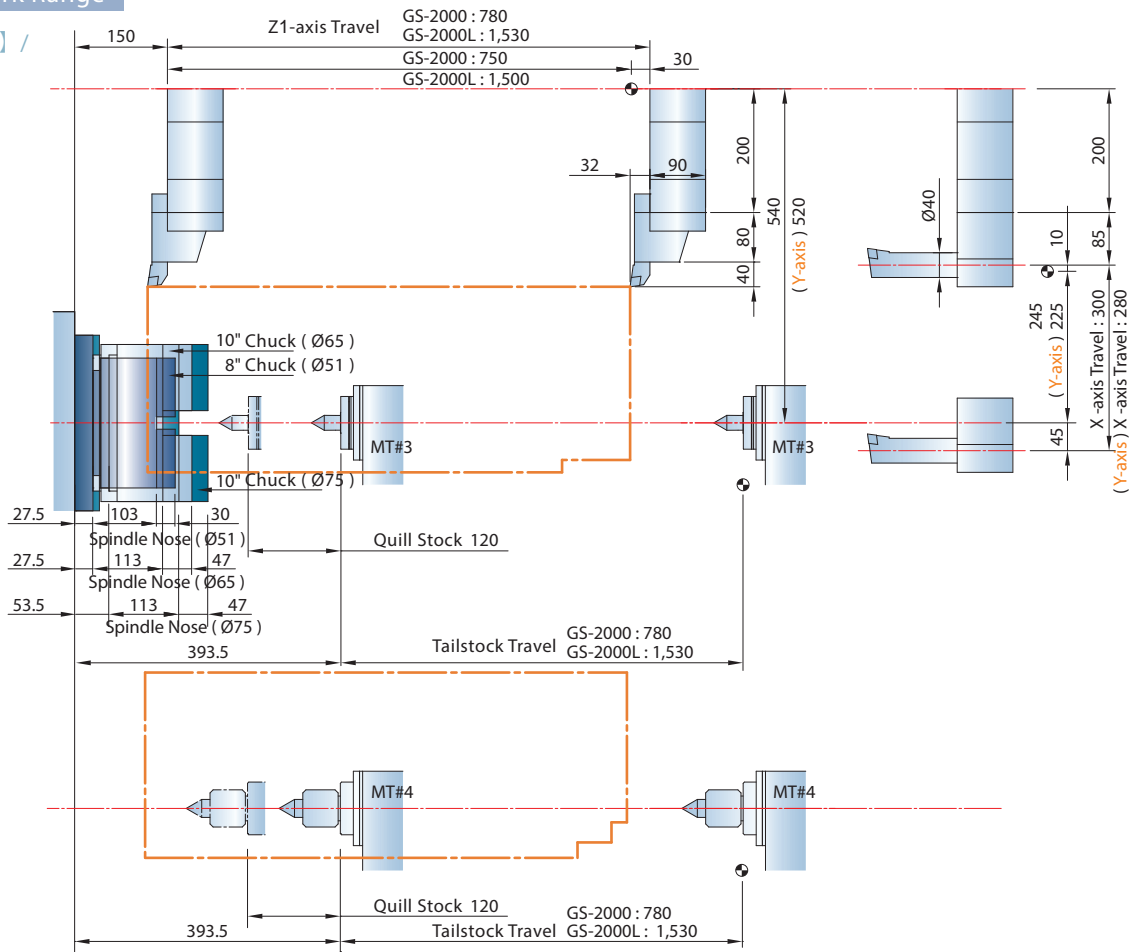
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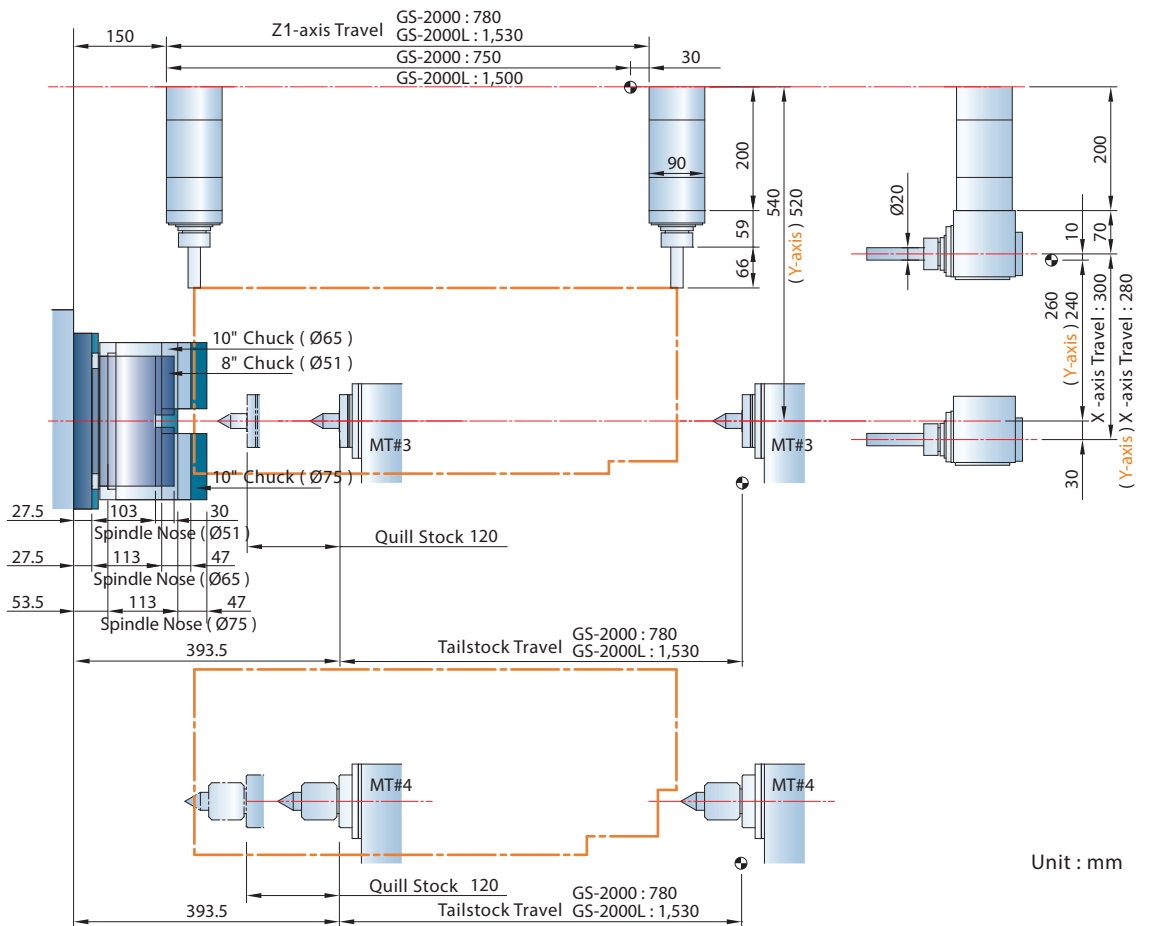
**GS-2000 Series Work Range**

[ Live Tooling Turret ] / [ Y-axis ]

I.D. / O.D. Tools



Live Tooling



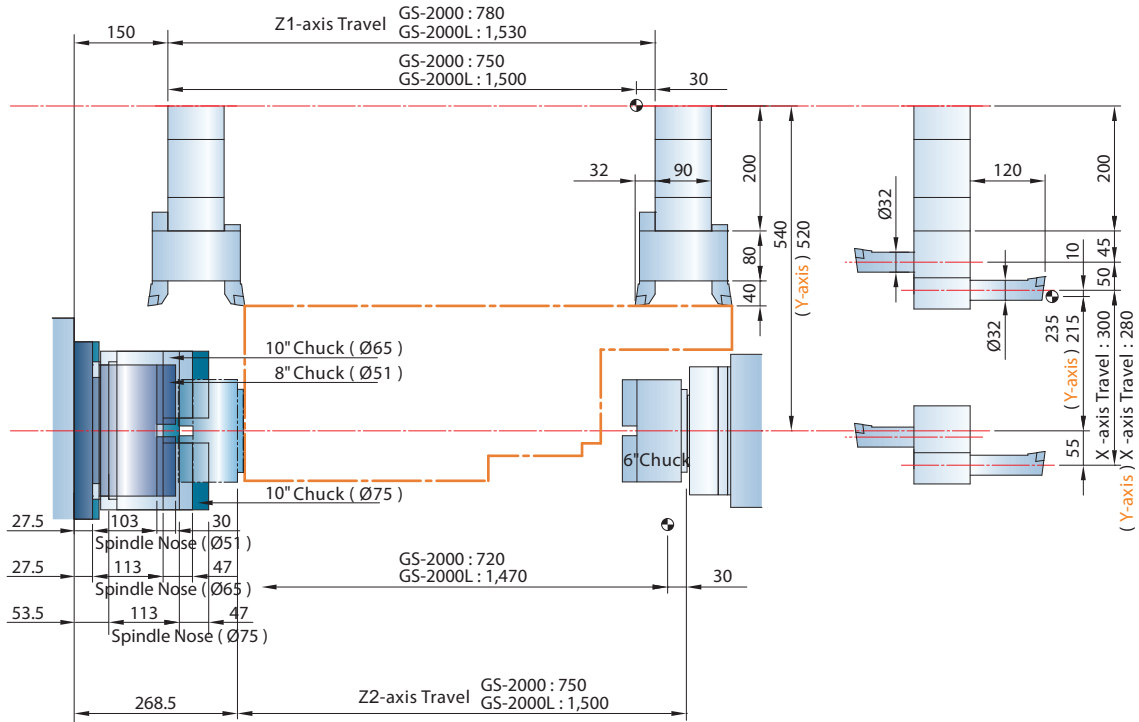
Unit : mm

[ Live Tooling Turret & Sub-spindle ] / [ Y-axis & Sub-spindle ]

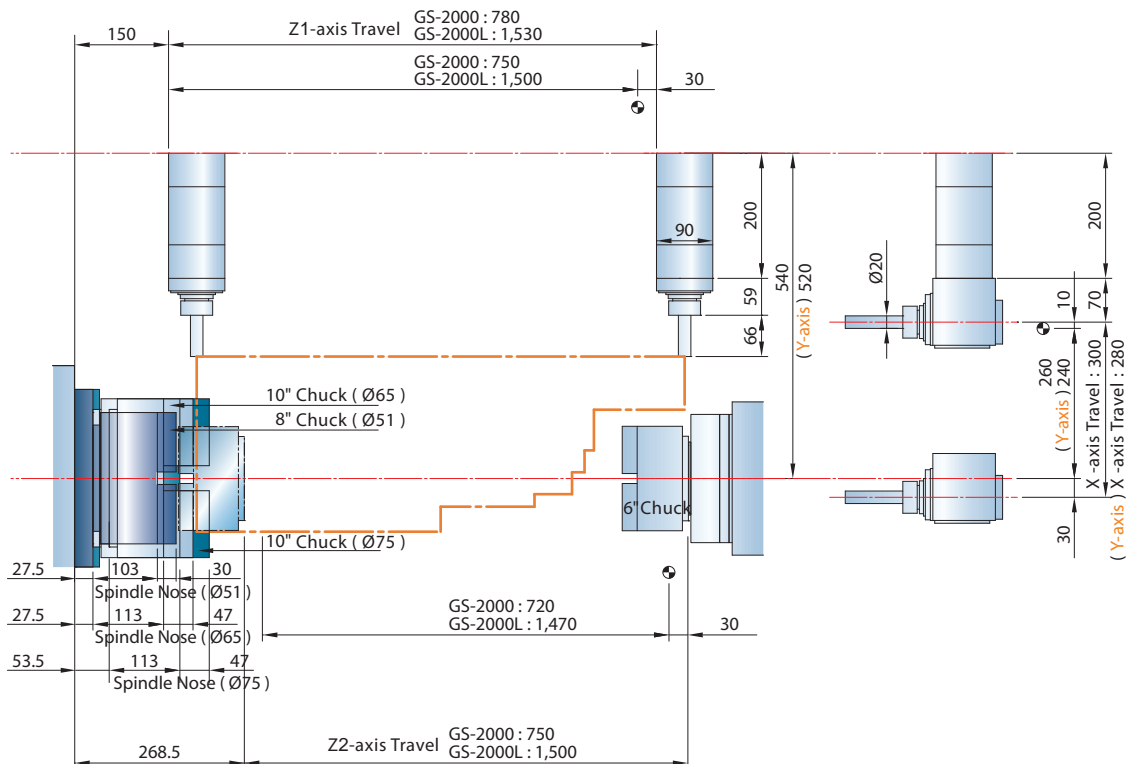
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I.D. / O.D. Tools



Live Tooling

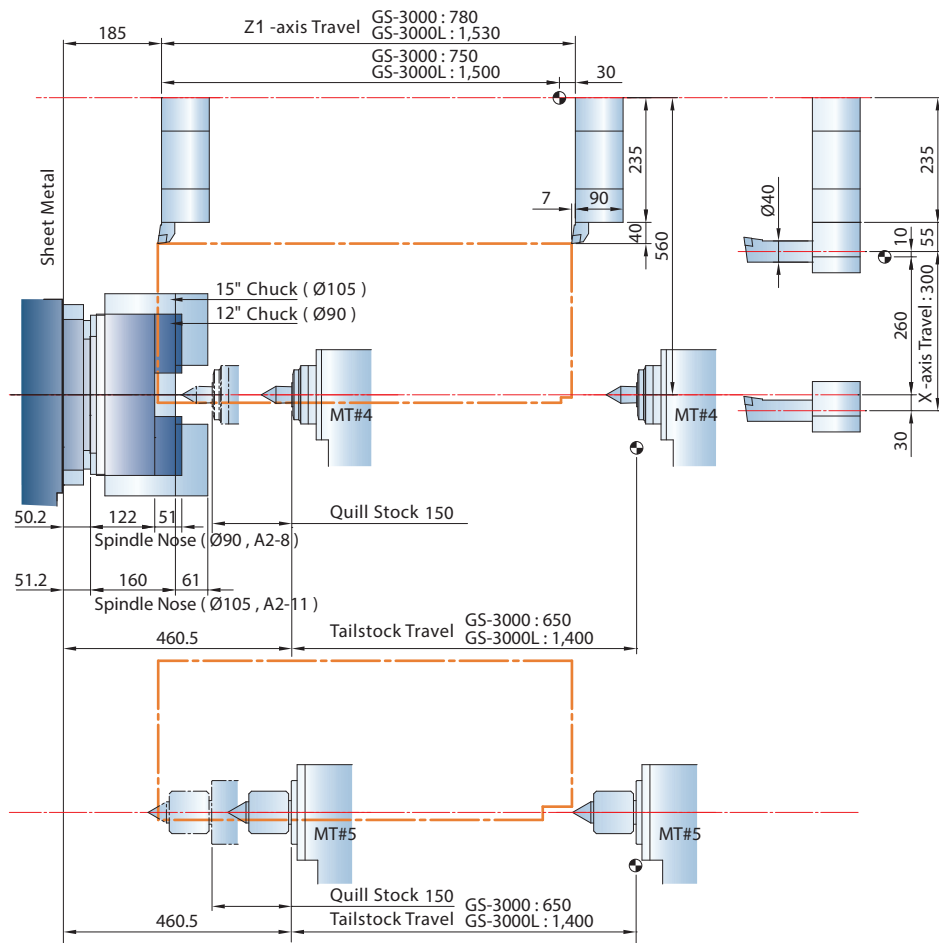


Unit : mm

**GS-3000 Series Work Range**

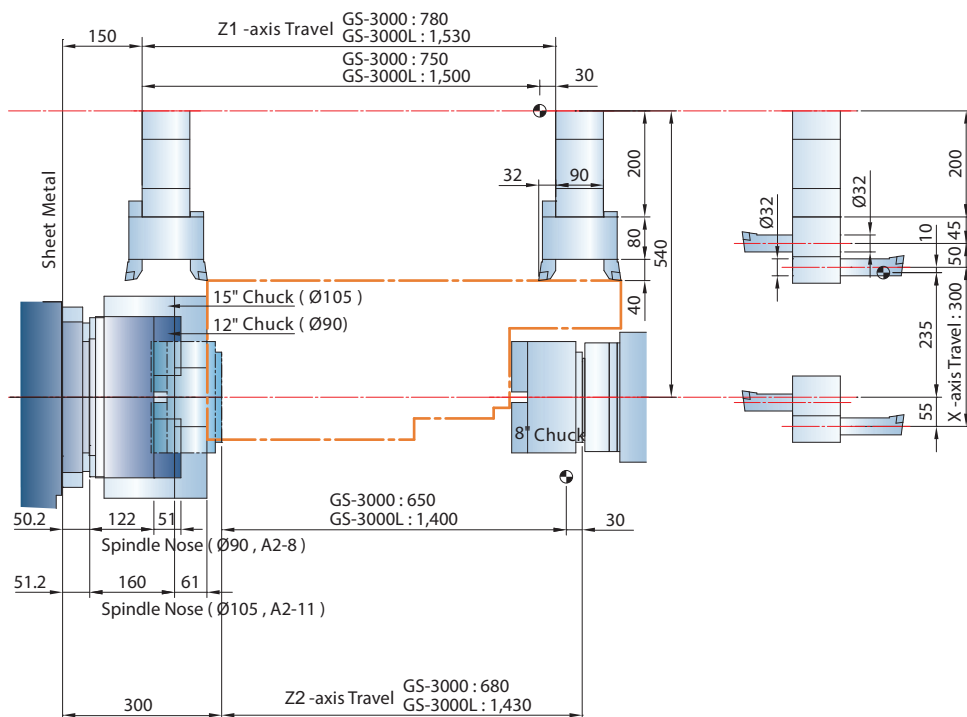
**[ 12-Stations Turret ]**

I.D. / O.D. Tools



**[ Sub-spindle ]**

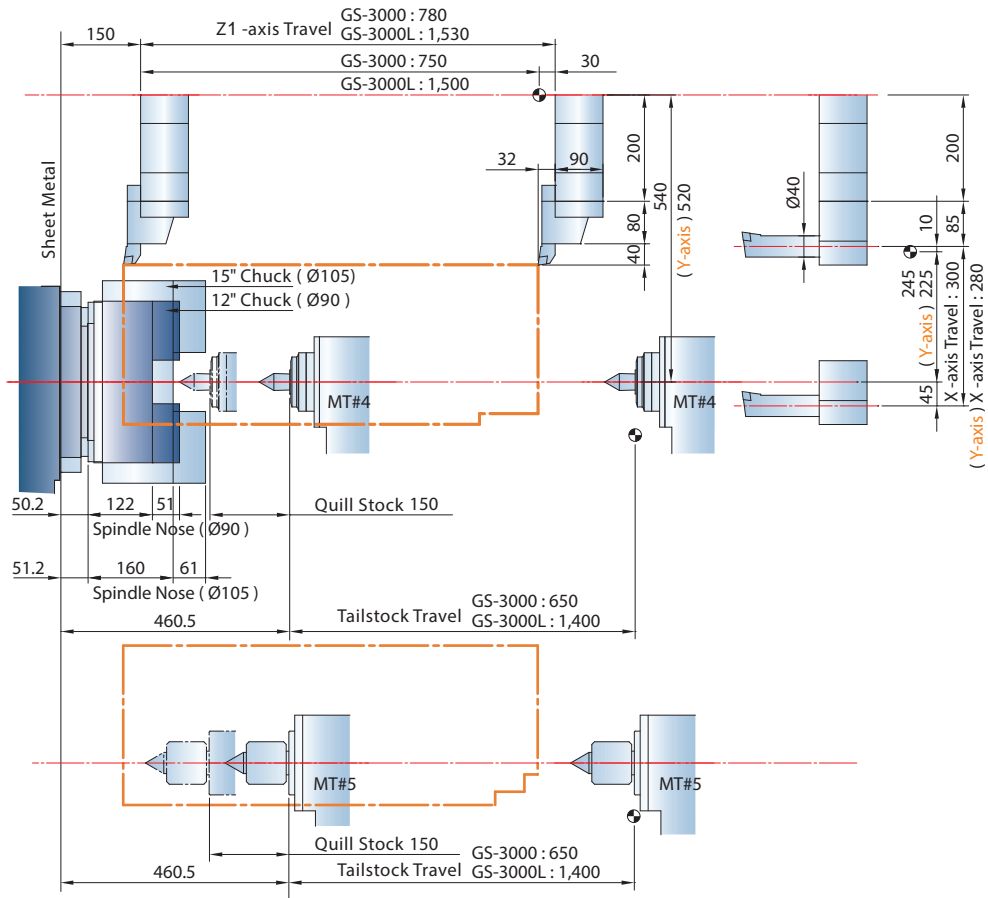
I.D. / O.D. Tools



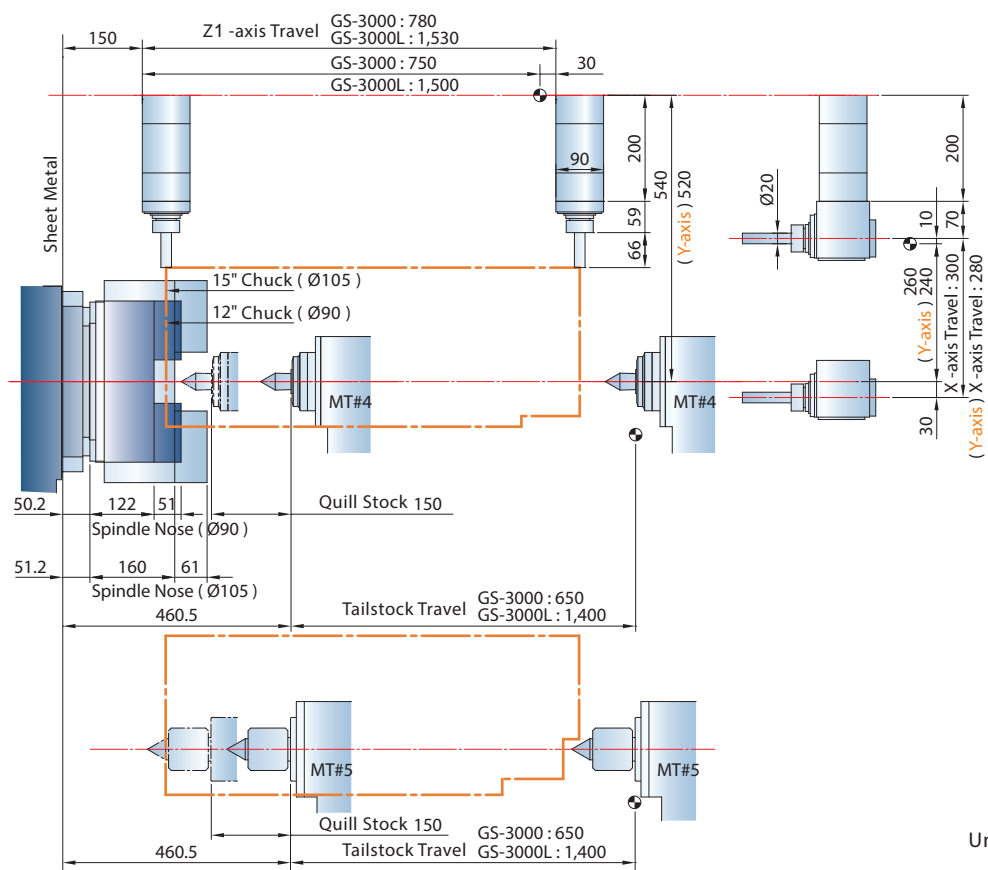


[ Live Tooling Turret ] / [ Y-axis ]

I.D. / O.D. Tools



Live Tooling

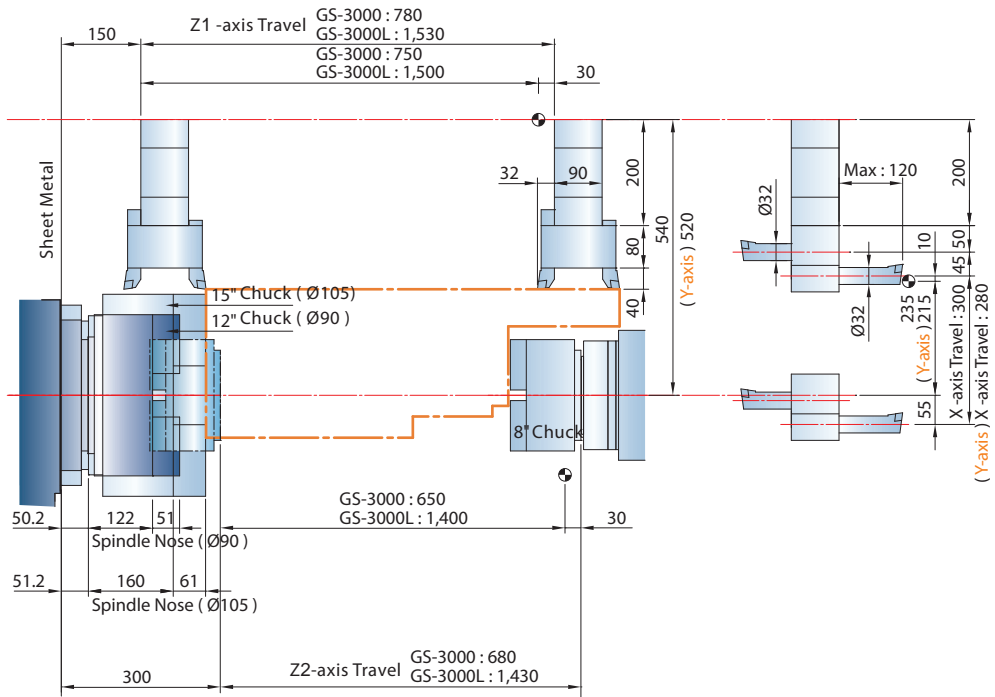


Unit : mm

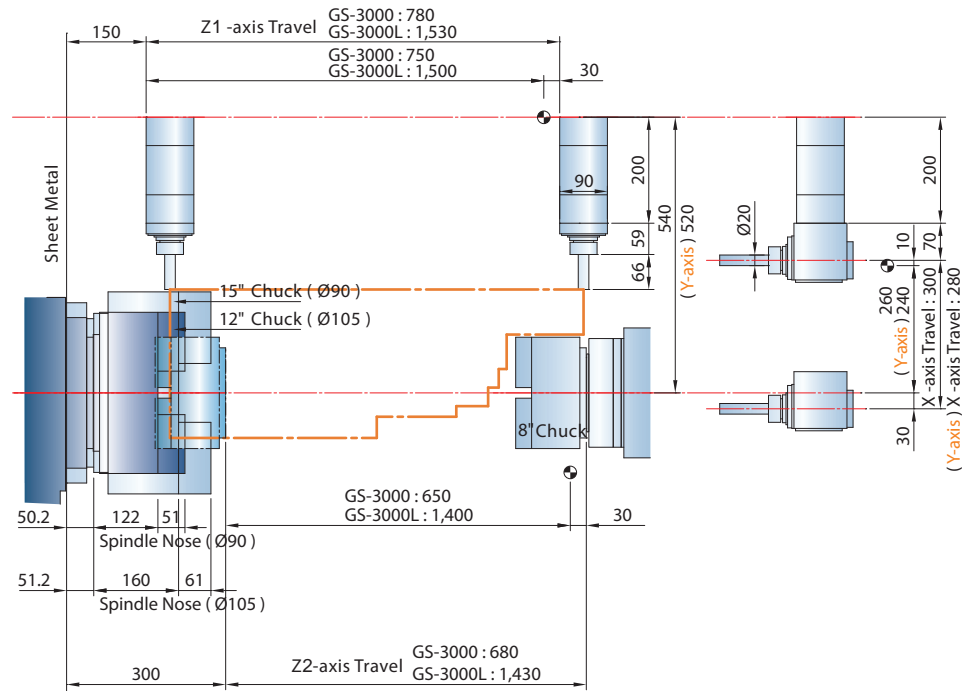
GS-3000 Series Work Range

[ Live Tooling Turret & Sub-spindle ] / [ Y-axis & Sub-spindle ]

I.D. / O.D. Tools



Live Tooling



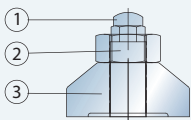
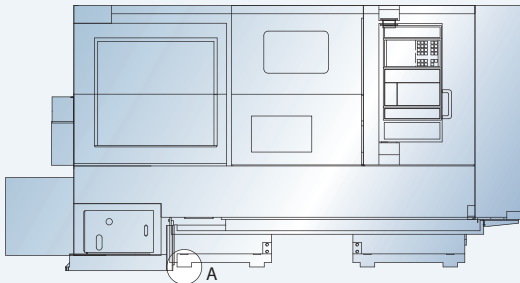




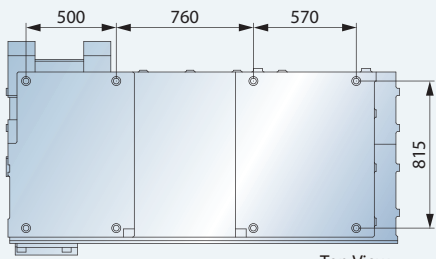
# GENERAL DIMENSION

## Foot-Print

GS-2000 / GS-3000

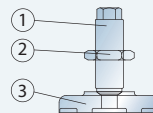
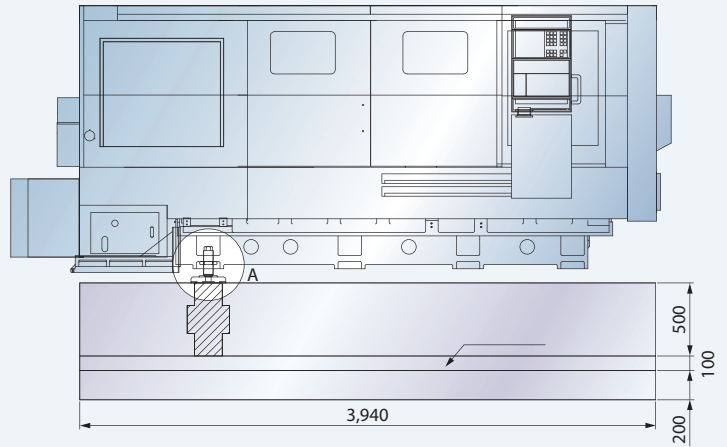


N.O.	Part NO.	Part Name
1	LG-1022	Leveling Bolt
2	NA3000BA	Hex. Nut M30
3	LG-1021	Leveling Block

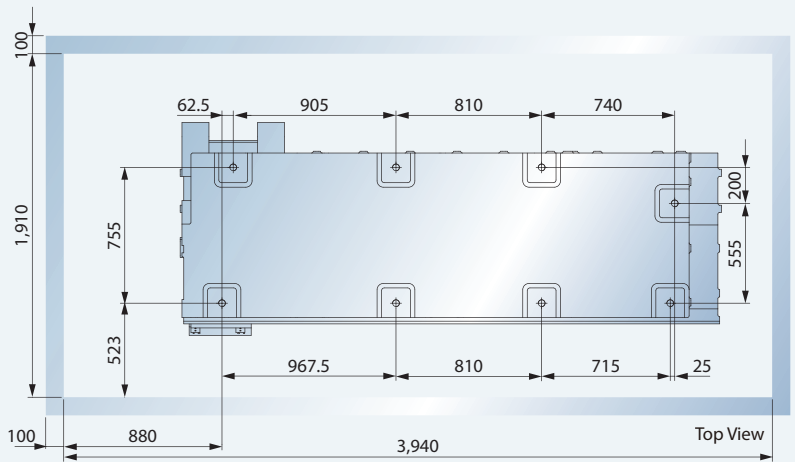


Operator Top View

GS-2000L / GS-3000L

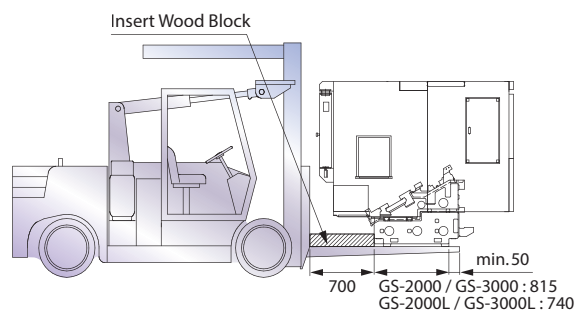
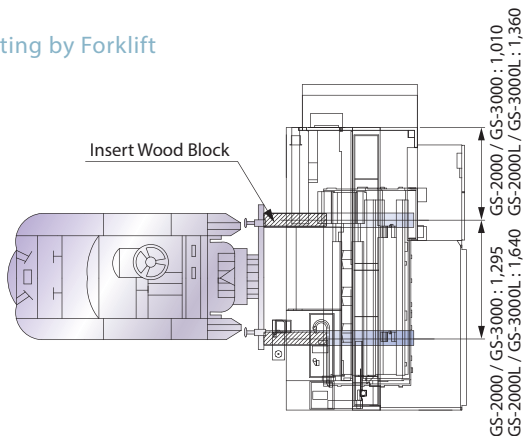


N.O.	Part NO.	Part Name
1	CA-1029Z	Leveling Bolt
2	CA-1026	Hex. Nut M30
3	CA-1030	Leveling Block



Operator Top View

## Lifting by Forklift



Unit : mm

# STANDARD & OPTIONAL FEATURES

S: Standard

O: Option

-: Not available

C: Contact Goodway

		GS-2000	GS-3000
<b>SPINDLE</b>			
Main spindle motor configuration	Belt-drive	S	S
	Built-in	O	-
	Gear ( GS-3600 )	-	C
Rigid tapping & spindle orientation		S	S
Disk brake for main spindle		O	O
Cf-axis & disk brake for main spindle*1		O	O
Sub-spindle		O	O
<b>WORK HOLDING</b>			
Hydraulic hollow cylinder for chuck	8"	S*2	-
	10"	S*2	O
	12"	O	S
	15"	-	S*2
Hollow 3-jaws chuck & 1 set soft jaws	8"	S*2	-
	10"	S*2	O
	12"	O	S
	15"	-	S*2
Hard jaws		O	O
Collet chuck		O	O
Special work holding chuck		C	C
In spindle work stopper		O	O
Spindle liner ( guide bushing )		O	O
Foot switch for chuck operation		S	S
Hydraulic quill & tailstock		O	O
Dead center	MT#3	S	-
	MT#4	-	S
	MT#5	-	O
Live center		O	-
Foot switch for tailstock operation		O	O
Two-stage programmable pressure	Chuck clamping	O	O
	Tailstock thrust	O	O
<b>TURRET</b>			
10-station turret		O	O
12-station turret		S	S
12-station live tooling turret		O	O
Tool holder & sleeve package		S	S
Live tooling tool holders ( 0°x2, 90°x2 )*1		O	O
<b>MEASUREMENT</b>			
Renishaw HPMA tool presetter		O	O
<b>COOLANT</b>			
Coolant pump	3 Kg/cm <sup>2</sup>	S	S
	5 Kg/cm <sup>2</sup>	O	O
	10 Kg/cm <sup>2</sup>	O	O
High-pressure coolant system	20 Kg/cm <sup>2</sup>	C	C
Roll-out coolant tank		S	S
Oil skimmer		O	O
Coolant flow switch		O	O
Coolant level switch		O	O
Coolant intercooler system		O	O
<b>CHIP DISPOSAL</b>			
Chip conveyor with auto timer	Right discharge	S	S
Chip cart with coolant drain		O	O
Chuck air blow		O	O
Tailstock air blow		O	O
Coolant gun		O	O
Oil mist collector		O	O
<b>AUTOMATIC OPERATION SUPPORT</b>			
Parts catcher		O	O
Work piece transport conveyor		O	O
Bar feeder		O	O
Bar feeder interface		O	O
Gantry-type loader / unloader		O	O
Auto door		O	O
External M-code output	4 sets (8)	O	O
	8 sets (16)	O	O

## SAFETY

		GS-2000	GS-3000
Fully enclosed guarding		S	S
Door interlock ( incl. mechanical lock )		S	S
Impact resistant viewing window		S	S
Tailstock stroke out-end check*3		S	S
Chuck cylinder stroke out-end check		S	S
Chuck cylinder check valve		S	S
Low hydraulic pressure detection switch		S	S
Over travel ( soft limit )		S	S
Load monitoring function		O	O
<b>OTHERS</b>			
Tri-color operation status signal light tower		S	S
Work light		S	S
External work light		O	O
Electrical cabinet	Heat exchanger	S	S
	A/C cooling system	O	O
Complete hydraulic system		S	S
Advanced auto lubrication system		S	S
Foundation leveling & maintenance tool kit		S	S
Emergency maintenance electrical part package		S	S
Operation & maintenance manuals		S	S
<b>CONTROL</b>			
FANUC Oi-TD		S	S
FANUC 31i*4		O	O

S: Standard

O: Option

-: Not available

C: Contact Goodway

## FANUC CONTROL FUNCTIONS\*6

		Oi-TD	31i
PMC systeme	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*6	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	2000	-	O
	HRV2 ( 3 )	S	S
Conversational programming	Manual Guide Oi	S	-
	Manual Guide i	O*6	S
Servo motors	$\alpha$ i	S	S
Spindle motors	$\alpha$ i	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

\*1 For M ( live tooling turret ) or Y ( Y-axis ) models.

\*2 Individual models may vary.

\*3 For Oi-TD controller.

\*4 For Y ( Y-axis ) models.

\*5 Please contact Goodway for complete control specification list.

\*6 10.4" LCD option needed.

# MACHINE SPECIFICATIONS

CAPACITY	GS-2000 / L	GS-2600 / L	GS-2800 / L	GS-3300 / L	GS-3600 / L
Max. swing diameter	Ø 630 mm				
Swing over saddle	Ø 800 mm				
Max. turning diameter	Ø 570 mm				
Std. turning diameter	Standard turret : Ø 250 / Live tooling turret : Ø 278 mm				
Max. turning length*1	780 / 1,530 mm	780 / 1,530 mm	780 / 1,530 mm	780 / 1,530 mm	746 / 1,496 mm
Chuck size	8"	10"	10"	12"	15"
Bar capacity	Ø 51 mm	Ø 65 mm	Ø 75 mm	Ø 90 mm	Ø 105 mm
<b>SPINDLE</b>					
Hole through spindle	Ø 65 mm	Ø 76 mm	Ø 90 mm	Ø 101 mm	Ø 121 mm
Spindle bearing diameter	Ø 100 mm	Ø 120 mm	Ø 130 mm	Ø 140 mm	Ø 160 mm
Hydraulic cylinder	8"	10"	10"	12"	15"
Spindle nose	A2-6	A2-8			A2-11
Motor output ( Cont. / 30 min. )	15 / 18.5 kW		15 / 18.5 kW ( Opt. 18.5 / 22 kW )	18.5 / 22 kW	
Spindle drive system	Belt-drive				
Spindle speed ranges	4,800 rpm	4,000 rpm	3,500 rpm	3,000 rpm	2,500 rpm
Spindle full output speed	460 rpm	383 rpm	335 rpm	403 rpm	261 rpm
Spindle torque ( Cont. / 30 min. )	311 / 384 N-m	374 / 461 N-m	428 / 527 N-m	638 / 521 N-m	677 / 805 N-m
<b>C-AXIS SPINDLE ( OPTIONAL )</b>					
Drive type	Cf				
C-axis rapids	33 rpm				
<b>X &amp; Z AXES</b>					
Max. X-axis travel	300 mm				
Max. Z-axis travel	780 / 1,530 mm				
X / Z axes rapids	30 m/min.				
Slide way type	Hardened & Ground Box Ways				
Feed rates	1 ~ 4,800 mm/min.				
X / Z axes servo motor	2.7 / 4.5 kW				
X-axis ball screw Ø [ pitch ]	Ø 36 mm [ 10 mm ]				
Z-axis ball screw Ø [ pitch ]	Ø 36 mm [ 10 mm ] / Ø 40 mm [ 12 mm ]				
X-axis thrust ( Cont. )	769 Kgf				
Z-axis thrust ( Cont. )	1,409 / 1,174 Kgf				
<b>TURRET</b>					
Stations	12				
Indexing speed	0.3 sec. Adjacent / 0.8 sec. ( Single step )				
Accuracy	Positioning : ± 0.00069°, Repeatability : ± 0.00027°				
OD tool shank size	□ 25 mm				
ID tool shank size	Ø 40 mm				
<b>LIVE TOOLING TURRET ( OPTIONAL )</b>					
Max. turning diameter	Ø 440 mm				
Max. turning length	750 / 1,517 mm	750 / 1,507 mm	731 / 1,480 mm	725 / 1,475 mm	686 / 1,436 mm
Live tooling stations	12				
Live tooling drive motor	4.5 kW				
Index speed	0.3 sec. Adjacent / 0.8 sec. ( Single step )				
OD tool shank size	□ 25 mm				
ID tool shank size	Ø 40 mm				
Live tooling shank size	ER 32 ( Ø 20 mm )				
Live tooling RPM range	4,000 rpm				

Specifications are subject to change without notice.

\*1 Maximum turning length may vary, based on the chuck size chosen.

Y-AXIS ( OPTIONAL )		GS-2000 / L	GS-2600 / L	GS-2800 / L	GS-3300 / L	GS-3600 / L
Max. turning diameter				400 mm		
Max. Y-axis travel				± 50 mm		
Y-axis rapids				10 m/min.		
Feed rates				1 ~ 4,800 mm/min.		
X / Y axes servo motor				4.5 / 4 kW		
X-axis ball screw Ø / pitch				Ø 36 mm [ 10 mm ]		
Y-axis ball screw Ø / pitch				Ø 32 mm [ 8 mm ]		
X / Y axes thrust ( Cont. )				1,409 / 1,761 Kgf		
TAILSTOCK						
Quill center taper	Quill programmable tailstock	MT#3 ( Dead center \ Quill diameter Ø 85 mm ) MT#4 ( Live center \ Quill diameter Ø 85 mm )			MT#4 ( Dead center \ Quill diameter Ø 110 mm ) MT#5 ( Live center \ Quill diameter Ø 120 mm )	
	Servo tailstock ( Opt. )	MT#3 ( Dead center \ Quill diameter Ø 80 mm ) MT#4 ( Live center )				
Quill travel	Quill programmable tailstock	120 mm			150 mm	
	Servo tailstock ( Opt. )	—				
Tailstock base travel	Quill programmable tailstock	780 / 1,530 mm			650 / 1,400 mm	
	Servo tailstock ( Opt. )	740 / 1,490 mm			700 / 1,450 mm	
Programmable quill / base		Quill programmable tailstock : Yes / Yes Servo tailstock : — / Yes				
SUB-SPINDLE ( OPTIONAL )						
Chuck size		6"			8"	
Hole through spindle		Ø 46 mm			Ø 55 mm	
Spindle bearing diameter		Ø 80 mm			Ø 100 mm	
Spindle nose		A2-5			A2-6	
Motor output		Cont. / 30 min. : 5.5 / 7.5 kW			Cont. / 15 min. : 18.5 / 22 kW	
Spindle drive system		Built-in motor			Built-in motor	
Spindle speed range		6,000 rpm			5,000 rpm	
Spindle torque		Cont. / 30 min. : 35 / 48 N-m			Cont. / 15 min. : 35 / 42 N-m	
Z2-axis travel		750 / 1,500 mm			680 / 1,430 mm	
Z2-axis rapid		30 m/min.				
Slide way type		Linear guide way				
Z2-axis servo motor		3 kW				
Z2-axis ball screw Ø [ pitch ]		Ø 36 mm [ 10 mm ] / Ø 40 mm [ 12 mm ]				
Z2-axis thrust ( Cont. )		769 / 640 Kgf				
GENERAL						
Positioning accuracy / Repeatability		± 0.005 mm / ± 0.003 mm				
Standard CNC control		FANUC Oi-TD ( Opt. 31 i )				
Voltage / Power requirement		AC 200/220 / 40 KVA				
Hydraulic tank capacity		45 L				
Coolant tank capacity		300 / 360 L				
Coolant pump		0.7 kW ( 60 Hz ) rated at 3 bar ( 44 PSI )				
Machine weight		6,500 / 8,500 Kg				
Dimensions L × W × H		3,550 × 2,120 × 1,800 / 4,520 × 2,200 × 1,870 mm Y-axis model : 3,550 × 2,120 × 2,260 / 4,520 × 2,200 × 2,260 mm				

Specifications are subject to change without notice.





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