



# GV-500 SERIES

*High Speed Vertical CNC Turning Centers*

**GOODWAY MACHINE CORP.**

## HIGH SPEED VERTICAL CNC TURNING CENTERS

Packed with the latest machine tools technology and high precision turning capabilities, the Goodway GV-500 series high speed vertical CNC turning center combines a high rigidity structure and precision linear guideways with a servo indexing turret and powerful spindle ( max. torque up to 883 N-m ). These series features a compact machine size with heavy duty turning capabilities. In addition to the GV-500 series, the GV-500X series twin spindles & turrets equipped with loading & unloading systems can complete disk-shape work pieces that need multi-processing in one single setup which saves a great amount of time and increases production efficiency to meet your needs of today and tomorrow.

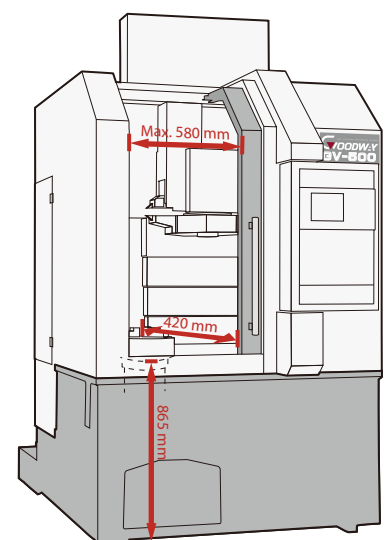


( GV-500 model shown with optional accessories. )

- ▶ The low center of gravity design with 90 degree rotatable control panel provides easy access to load & unload parts and a user friendly operating interface.
- ▶ Super compact machine size ( 3.3m<sup>2</sup> ) equipped with rear discharge chip conveyor increases factory space usage while providing you with a convenient conveyor system planning.



- ▶ Fully enclosed splashguard keep chips and coolant contained for a safe clean working environment.

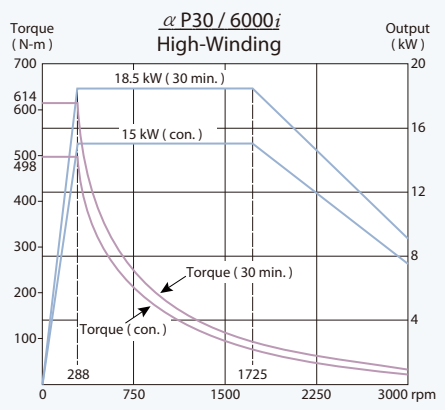
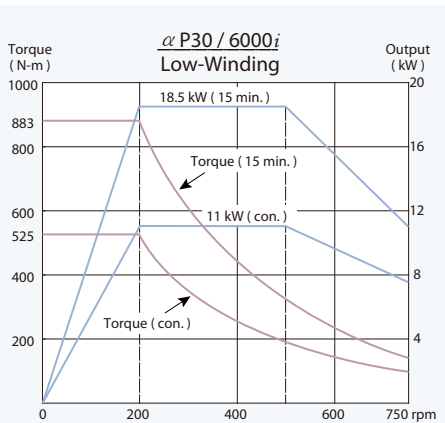




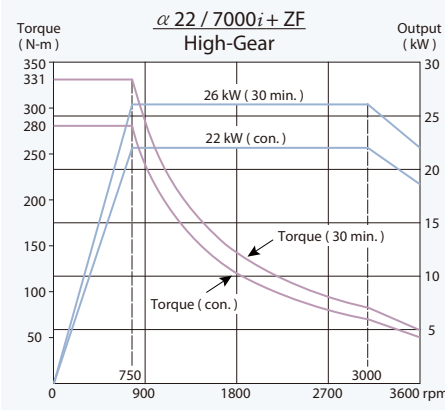
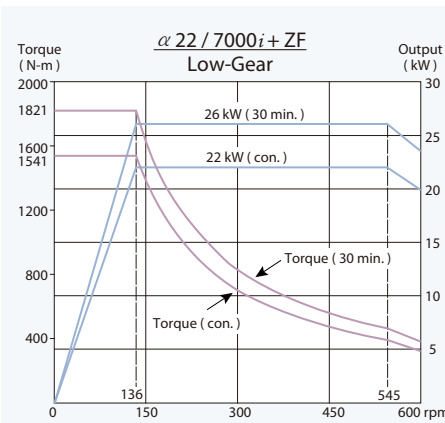
(GV-500 model shown with optional twin spindles & turrets.)

- The wide-range Fanuc  $\alpha$  P30 / 6000i motor driven spindle system can generate twice the torque output of standard motors.

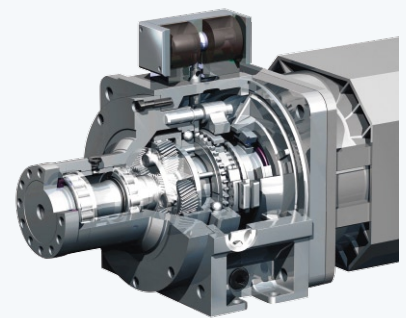
Spindle Output



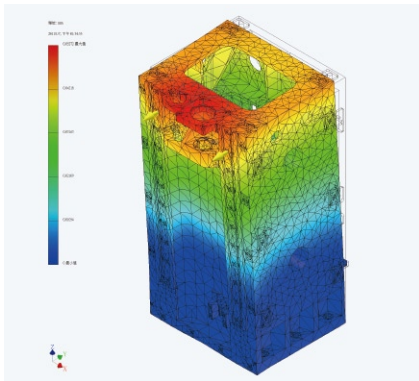
Optional ZF Gear Box Output



- Optional German made oil bath gear box is also available, providing maximum torque of 1,821 N-m.

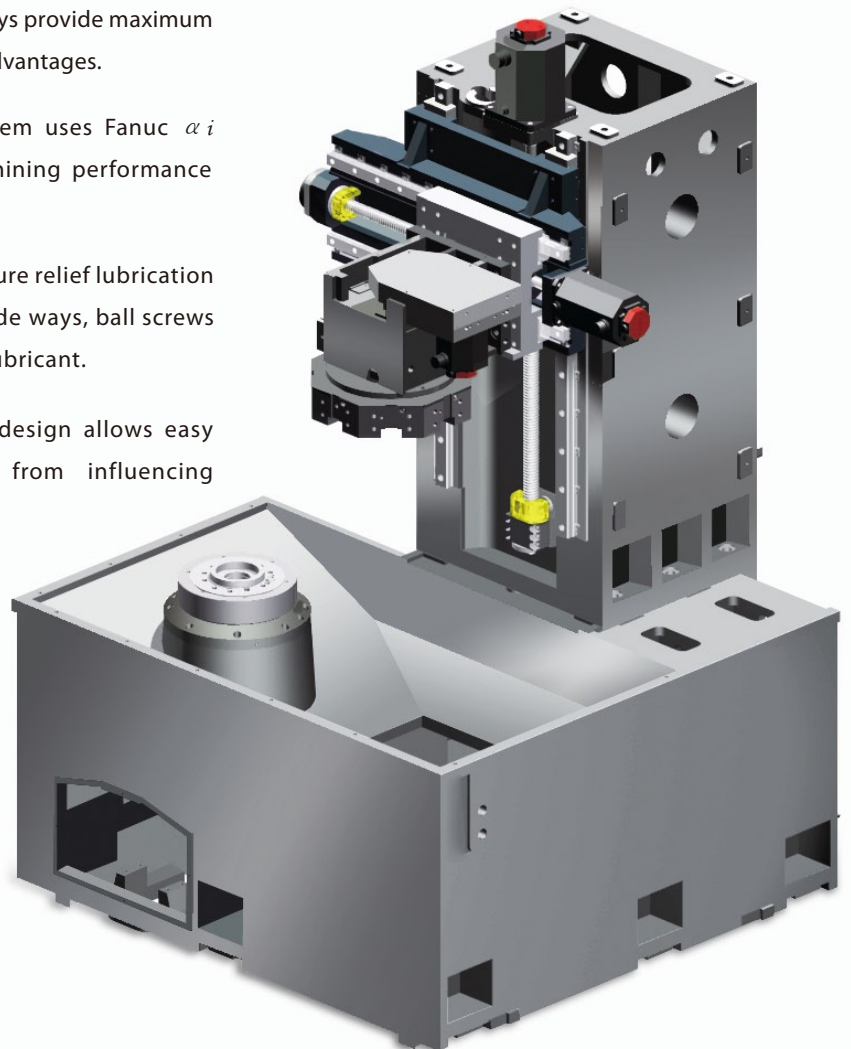


## HIGH RIGID CONSTRUCTION



- ▶ By using Finite Element Methods ( FEM ), optimal reinforced ribbings are directly casted into the one-piece bed and column structure. Mechanical rigidity has been increased by 30% when compared to conventional designs. The GV-500 series is capable of performing heavy-duty turning and maintain long-term high-precision accuracy. More rigidity also means extended tool life.
- ▶ Built to withstand years and years of rigorous high production turning, the heavily ribbed, one-piece thermally balanced bed and column are of " Meehanite " casing.

- ▶ The Japanese high precision linear guideways provide maximum precision, rapid movement and low-wear advantages.
- ▶ The servo motor of each axis feed system uses Fanuc  $\alpha i$  series components to ensure peak machining performance and accuracy.
- ▶ The auto lubrication system uses an pressure relief lubrication device and copper oil pipe, providing slide ways, ball screws and other major components abundant lubricant.
- ▶ Extra wide slant surface chip disposal design allows easy chip removal, preventing the heat from influencing machining accuracy.



( The main structure of the GV-500 series. )

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

# ADVANCED TURNING TECHNOLOGY

## Standard Turret

- ▶ The super heavy-duty servo indexing turret features the latest non-lifting turret disk technology, achieving 0.2 second indexing for adjacent stations and 0.5 second for stations at the opposite end of the disk.
- ▶ The Japanese super high precision curvic couplings accurately position the turret disk and 3,620 Kg ( 7,240 lbs. ) of clamping force ensures abundant turret rigidity for all cutting conditions.
- ▶ The curvic couplings features auto-centering, auto-cleaning and a large size tooth flank which are superior to traditional curvic couplings and are greatly used in our products.



## Live Tooling Turret

- ▶ Live tooling turret and C-axis control capabilities on the GV-500 series allows the machine to perform multi-tasks on a work piece, such as turning, milling, drilling and tapping. This eliminates manpower and cycle time, while reducing accuracy lost, which will occur if the part is moved from machine to machine.
- ▶ Each station of the live tooling turret can be equipped with live tooling ( live tooling tools rotate in working position only ) and features a non-lifting turret disk.
- ▶ Goodway's live tooling turret utilizes advanced servo indexing technology to achieve 0.2 second indexing for adjacent stations and 0.5 second for stations at the opposite end of the disk.

## Dual-Face Turning Holder

The Goodway dual-face turning holder allows both sides of a work piece to be machined at the same time while ensuring parallel precision of the surface, which is applicable for disk brakes or automotive related components.

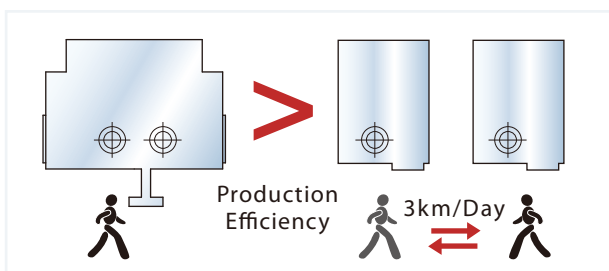
- ▶ The cutting time is 50% shorter than when using regular tools.
- ▶ The servo motor driven dual face tool holder provides more flexibility to various working conditions, overcoming hydraulic driven disadvantages, thus, saving tool adjustment time and increasing production efficiency.



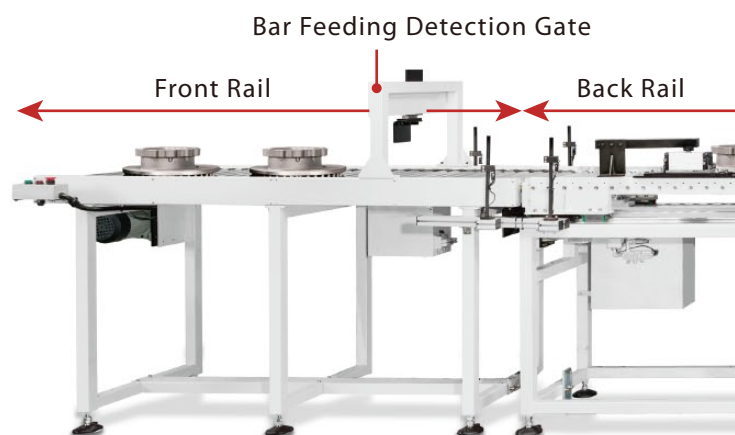
# TWIN SPINDLES & TURRETS VERTICAL TURNING CENTER

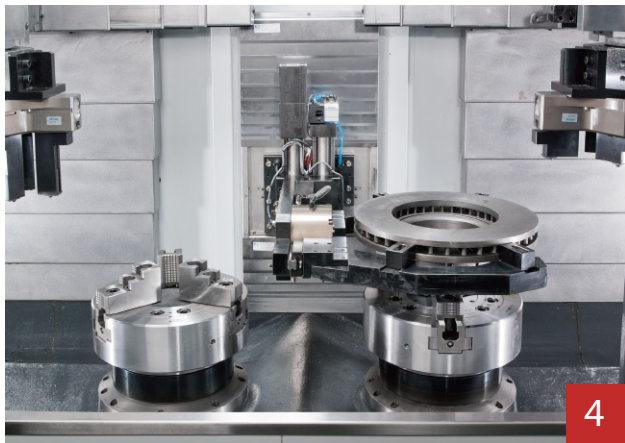


- ▶ The twin spindles & turrets vertical turning center is based on a " combining two operating process into one " concept. Therefore, the 1st spindle and 2nd spindle can work independently on two different work pieces or work on the 1st and 2nd process of one work piece, efficiently lowering the demand on manpower and increasing factory space usage.
- ▶ The GV-500X series can be equipped with optional load & unloading systems and work piece flipping device are also available. From bar feeding, processing, flipping, processing and discharging, can all be completed at once which saves manually flipping time and reduces setting error and increases production efficiency.
- ▶ Work piece flipping device : Max. work piece diameter  $\varnothing$  430 mm  
Max. work piece weight 40 Kg



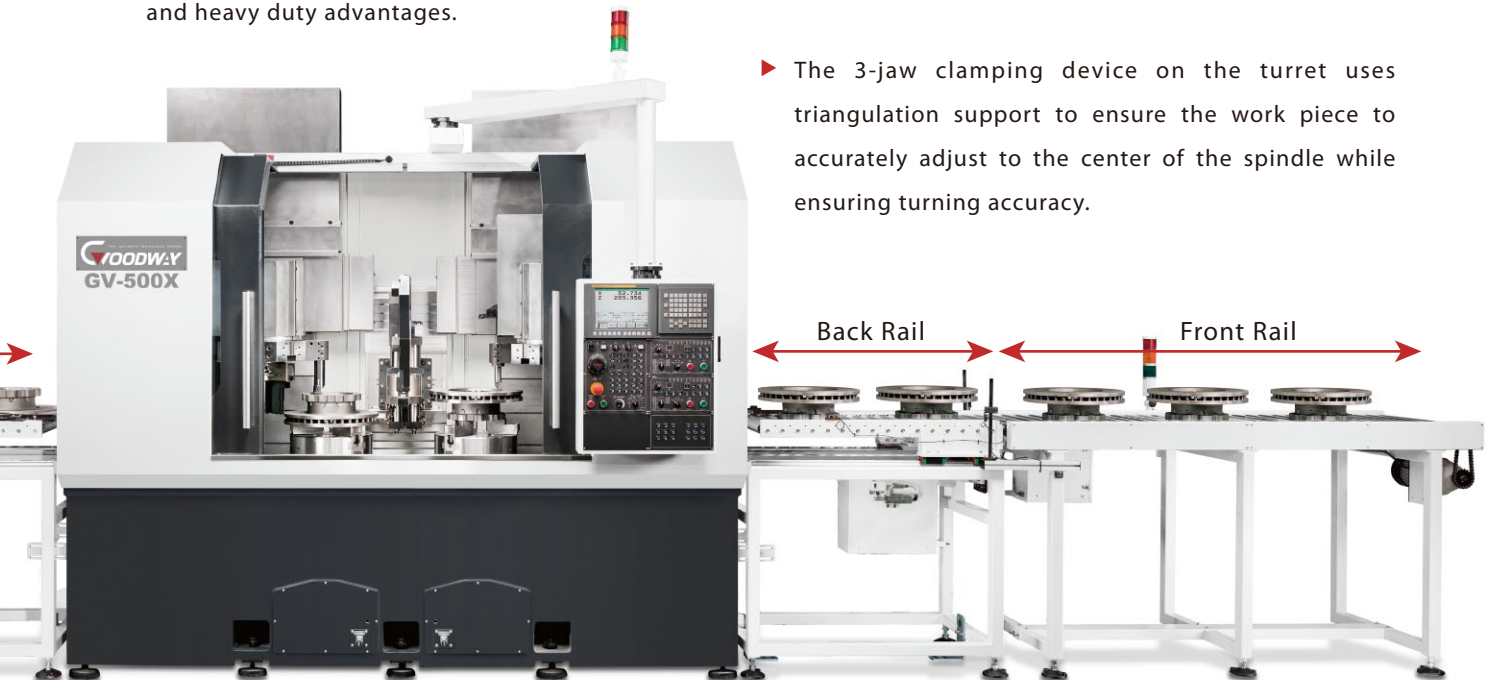
- ▶ The GV-500X series combines two work process into one to reduce operating time ( when working on two machines ) and increase production efficiency.





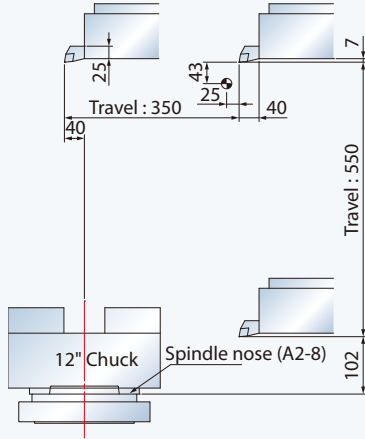
- ▶ When the detection gate on the bar feeding conveyor detects a work piece passing through, it will close immediately to prevent another work piece from entering the back rail, providing high reliability and safety.
- ▶ The flipping device uses a pneumatic clamping and hydraulic rotating mechanic design which features high speed and heavy duty advantages.

- ▶ The 3-jaw clamping device on the turret uses triangulation support to ensure the work piece to accurately adjust to the center of the spindle while ensuring turning accuracy.

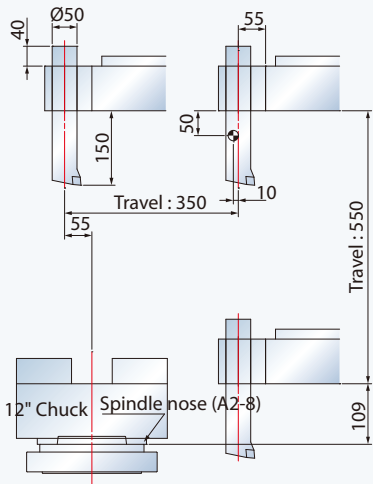


# GENERAL DIMENSION

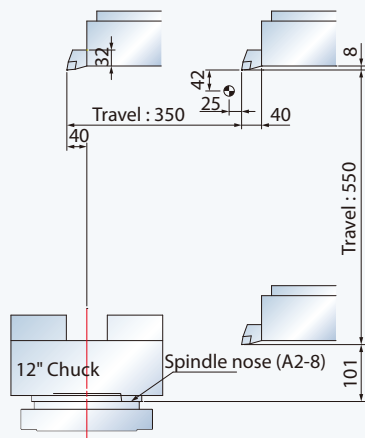
## GV-500 Work Range



O.D. Tool 25mm

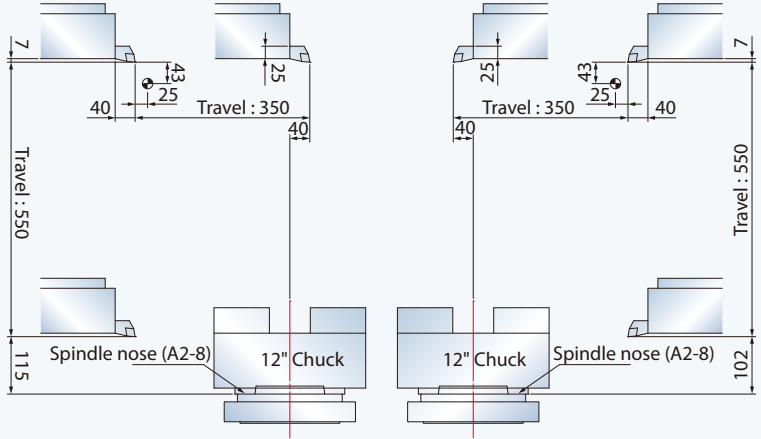


I.D. Tool 50mm

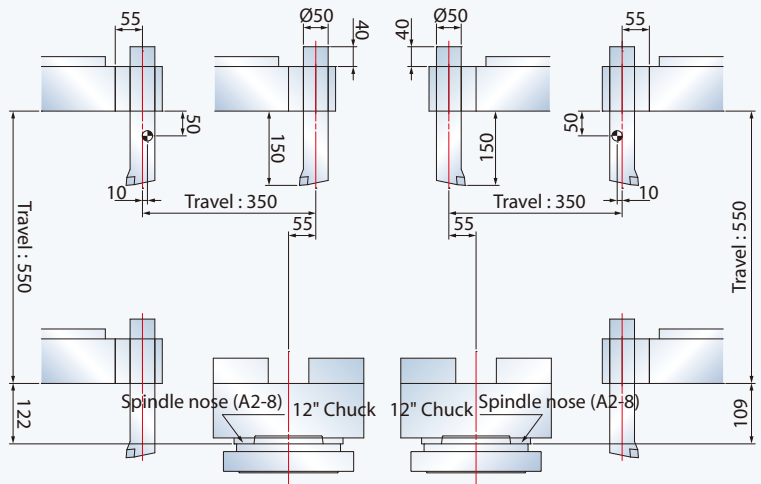


O.D. Tool 32mm (Opt.)

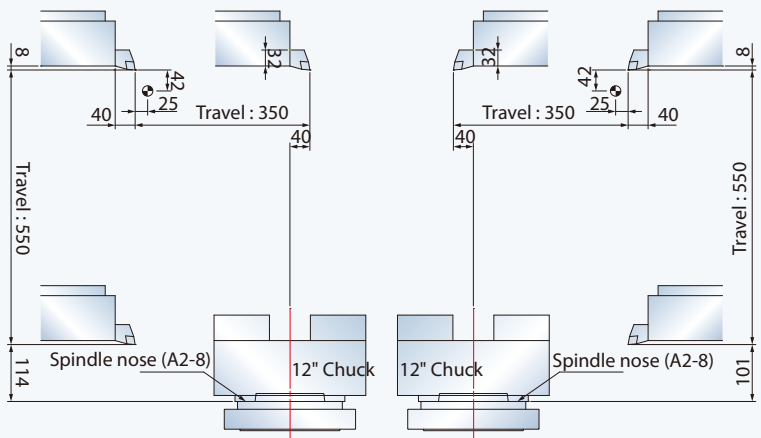
## GV-500X Work Range



O.D. Tool 25mm



I.D. Tool 50mm

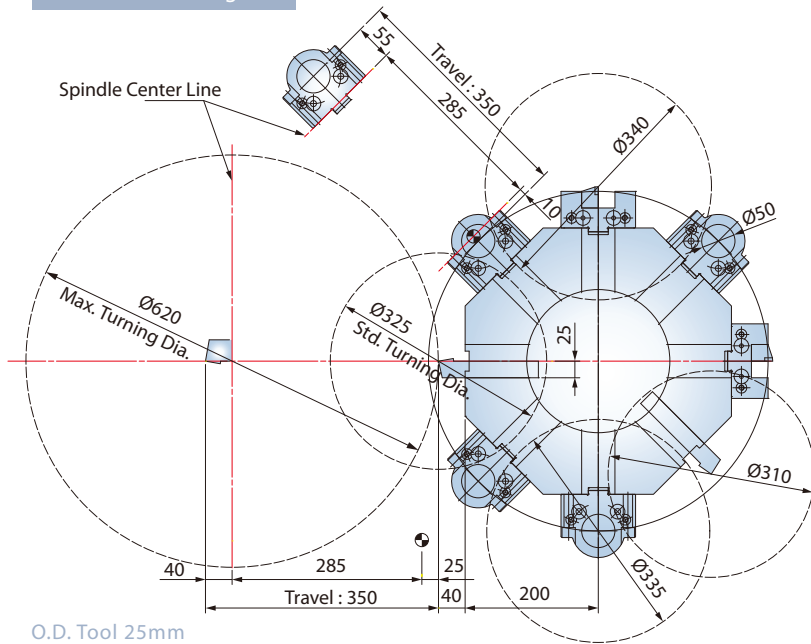


O.D. Tool 32mm (Opt.)

Unit : mm

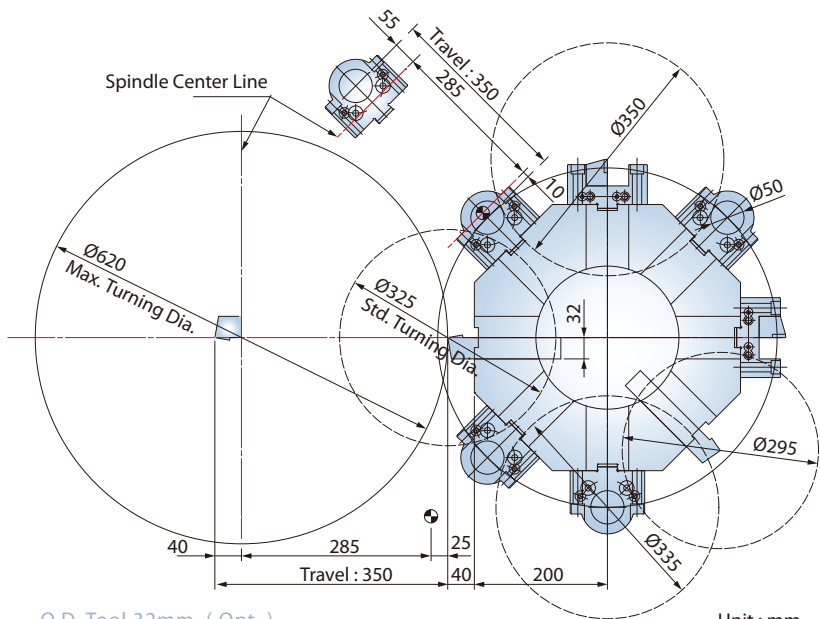
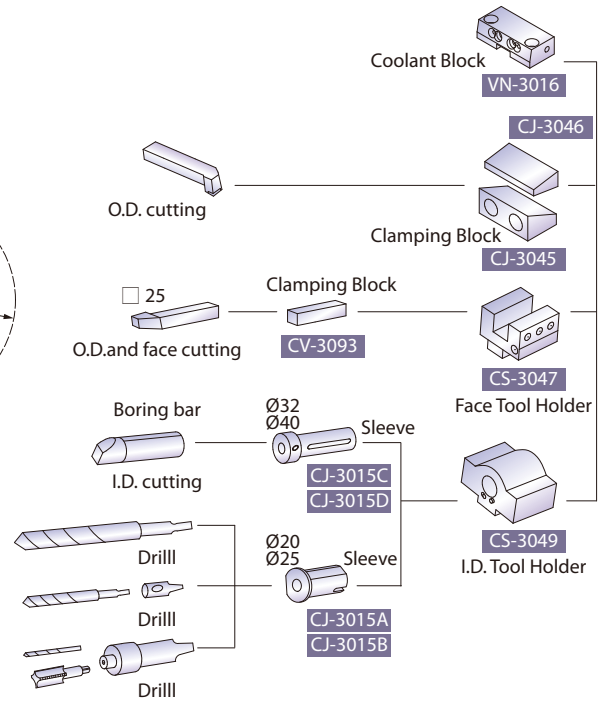


Interference Diagram



O.D. Tool 25mm

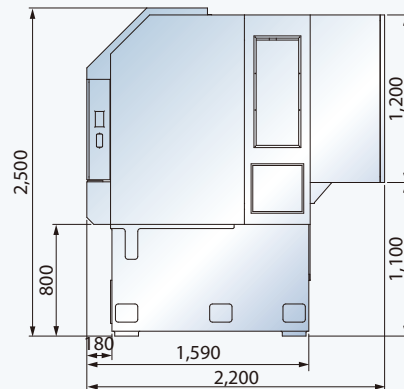
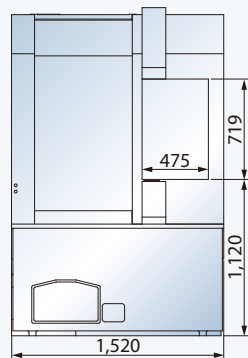
Tooling System



O.D. Tool 32mm ( Opt. )

Unit : mm

Machine Layout



Unit : mm

# FEATURES

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

		GV-500	GV-500X
<b>SPINDLE</b>			
Main spindle configuration	Two-speed	S	S
ZF gear box		O	O
Rigid tapping		S	S
Cs-axis & disk brake for main spindle		O	O
<b>WORK HOLDING</b>			
Solid 3-jaws chuck & hydraulic solid cylinder for chuck	12"	S	S
	15"	O	O
Manual chuck		O	O
Hard jaws	1 set	O	O
Soft jaws	1 set	S	S
Special work holding chuck		C	C
Foot switch for chuck operation	Single	S	S
	Double	O	O
<b>TURRET</b>			
8-station turret		S	S
12-station turret		O	O
12-station live tooling turret		O	O
Tool holder & sleeve package		S	S
Dual-Face Turning Holder		O	O
Live tooling tool holders		O	O
<b>MEASUREMENT</b>			
Tool presetter		O	O
<b>COOLANT</b>			
Coolant pump	5 Kg/cm <sup>2</sup>	S	S
High-pressure coolant system	20 Kg/cm <sup>2</sup>	O	O
Roll-out coolant tank		S	S
Oil skimmer		O	O
Coolant level switch		S	S
Coolant intercooler system		O	O
<b>CHIP DISPOSAL</b>			
Chip conveyor with auto timer		O	O
Chip cart with coolant drain	Rear discharge	O	O
Coolant gun		O	O
Oil mist collector		O	O
<b>AUTOMATIC OPERATION SUPPORT</b>			
Auto door		O	O
Automatic load & unloading system		-	O
Parts flipping device		-	O
<b>SAFETY</b>			
Fully enclosed guarding		S	S
Door interlock ( incl. Mechanical lock )		S	S
Impact resistant viewing window		S	S
Chuck cylinder check valve		S	S
Low hydraulic pressure detection switch		O	O
Over travel ( soft limit )		S	S
Load monitoring function		S	S

		GV-500	GV-500X
<b>OTHERS</b>			
Tri-color machine status light tower		S	S
Work light		S	S
Electrical cabinet	Heat exchanger	S	S
	A/C cooling system	O	O
Complete hydraulic system		S	S
Advanced auto lubrication system		S	S
Emergency maintenance electrical part package		S	S
Operation & maintenance manuals		S	S
S: Standard      O: Option -: Not available      C: Contact Goodway			
		Oi-TD	31i
<b>FANUC CONTROL FUNCTIONS</b>			
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 key	S	-
	Large - 56 key	O*1	S
Part program storage length	512 K bytes	S	-
	1M bytes	-	S
	2M bytes	-	O
	4M bytes	-	O
Registerable programs	8M bytes	-	O
	400	S	-
	1,000	-	S
	4,000	-	O
Tool offset pairs	64	S	-
	99	O	S
	400	-	O
	499	-	O
Servo HRV Control	999	-	O
	2000	-	O
	HRV2 ( 3 )	S	S
	Manual Guide Oi	S	-
Conversational programming	Manual Guide i	O*1	S
	$\alpha$ i	S	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 ( 10 BASE )		S	S
Fast ethernet ( 100 BASE )		O	O

Specifications are subject to change without notice.

\*1 10.4" LCD option needed.

# MACHINE SPECIFICATIONS

<b>CAPACITY</b>		<b>GV-500</b>
Max. swing diameter		Ø 650 mm
Swing over saddle		Ø 520 mm
Max. turning diameter		Ø 620 mm
Std. turning diameter		Ø 325 mm
Max. turning length		520 mm
Hydraulic chuck size		12" ( Opt. 15" )
<b>SPINDLE</b>		
Spindle bearing diameter		Ø 130 mm
Spindle nose		A2-8
Spindle motor type		$\alpha$ P30 / 6,000i
Motor output ( Con. / 30 min. )		15 / 18.5 kW
Motor full output speed		400 rpm
Gear Step		Belt
Spindle speed range		3,000 rpm
Spindle full output speed		200 rpm
Spindle torque ( Con. / 30 min. )		525 N-m / 883 N-m
<b>X &amp; Z AXES</b>		
Max. X-axis travel		350 mm
Max. Z-axis travel		550 mm
X / Z axes rapids		20 m/min.
Slide way type		Linear guide way
Feed rates		5 m/min.
X-axis servo motor		1.6 kW
Z-axis servo motor		3.0 kW
X-axis ball screw Ø / pitch		Ø 32 / 8 mm
Z-axis ball screw Ø / pitch		Ø 36 / 8 mm
X / Z axes thrust		644 / 958 Kgf
<b>TURRET</b>		
Stations		8 ( Opt. 12 )
Indexing drive		Servo motor
Indexing speed		1.5 sec. ( Adjacent )
OD tool / ID tool shank size		<input type="checkbox"/> 25 ( Opt. <input type="checkbox"/> 32 ) mm / Ø 50 mm
<b>LIVE TOOLING TURRET ( OPTIONAL )</b>		
Stations		12
Live tooling drive motor		4.5 kW
Live tooling torque		22 N-m ( Intermittent ) AC Servo motor
Index speed		0.2 sec. Adjacent / 0.5 sec. 180 degrees ( Single step )
OD tool / ID tool shank size		<input type="checkbox"/> 25 mm / Ø 40 mm
Live tooling shank size		ER 32
Live tooling RPM range		40 ~ 4,000 rpm
<b>GENERAL</b>		
Control		Fanuc Oi-TD
Voltage / Power requirement		AC 200 / 220 + 10% to -15% 3phase / 40 KVA
Hydraulic / Coolant tank capacity		20 / 250 L
Coolant pump / pressure		Cutting Coolant : 0.7 kW / 10 Kg/cm <sup>2</sup> ; Washing Coolant : 1.17 kW / 5 Kg/cm <sup>2</sup>
Machine weight		5,600 Kg
Dimensions ( L x W x H )		1,520 x 2,200 x 2,500 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](http://www.goodwaycnc.com)  
E-mail : [goodway@goodwaycnc.com](mailto: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](http://www.goodwaycnc.com.cn)  
E-mail : [goodway.suzhou@goodwaycnc.com.tw](mailto: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