

GLS-150 SERIES

High Speed CNC Turning Centers

GOODWAY MACHINE CORP.

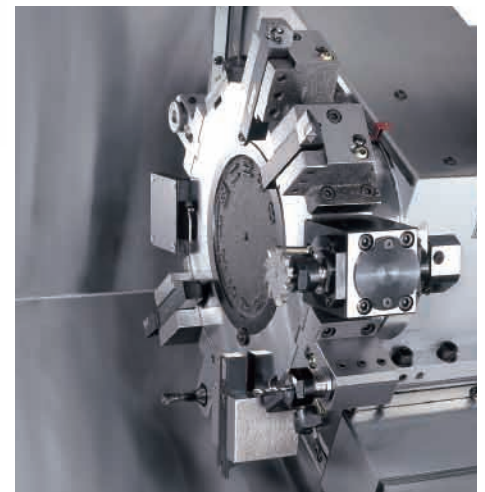
HIGH SPEED CNC TURNING CENTERS

Packed with industry leading technology and top quality components, the Goodway GLS series turning centers combine power, strength, and speed to bring you The Ultimate Machining Power®. These high speed machines will easily accomplish the demanding turning applications of today and tomorrow. Furthermore, with optional live tooling, C-axis, and Y-axis, milling, turning applications can be completed in one single machine.

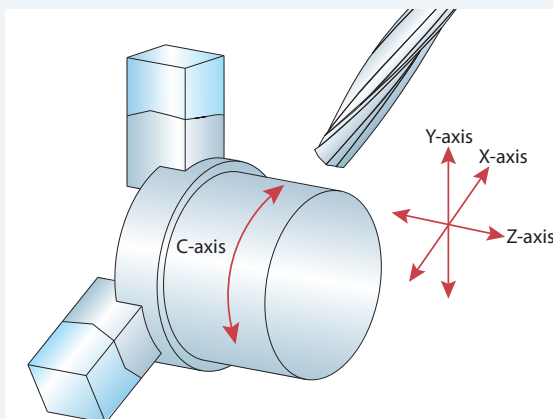


(GLS-150Y model shown with optional accessories)

- ▶ 30° slant-bed design provides smooth chip disposal and easier operator access.
- ▶ Steel way covers and special steel wipers molded with industrial strength rubber are used for durability.
- ▶ Fully enclosed splashguards keep chips and coolant contained for a safe clean working environment.
- ▶ The auto lubrication system delivers metered amounts of lubrication to the slide ways, ball screws, and vital components. Distribution is automatically shut off during idling to prevent waste.



- ▶ Live tooling and C-axis control capabilities on the GLS series allow the machine to perform multiple tasks on a work piece, such as turning, milling, drilling and tapping. This can save manpower and reduce cycle time, while reducing accuracy lost, which will occur if the part is moved from one machine to another.



- ▶ Y-axis models perform virtually the same way as machining centers equipped with 4th-axis rotary tables, but with the benefit of built-in turning capability. The X, Y, Z axes are like that of a machining center, while the C-axis acts as the 4-axis. This configuration replaces a turning center and machining center equipped with 4th-axis with one machine, thus, saving money, time, floor space, manpower and fixture costs, while reducing accuracy lost by eliminating the part from being moved to another machine.

MAXIMUM STRENGTH CONSTRUCTION

1
2

Built to withstand years and years of rigorous high production turning, the heavily ribbed, one-piece, thermally balanced bed and casting parts are of "Meehanite" casting. The 30 degrees true slant bed design further provides superior support for the headstock, turret, and tailstock, thus, creating the rigidity needed for long-term high precision turning and efficient chip removal.



(Casting structure of GLS series shown)

- ▶ 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.
- ▶ 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 GLS series is capable of performing heavy-duty turning and maintaining long-term high-precision accuracy. More rigidity also means extended tool life.

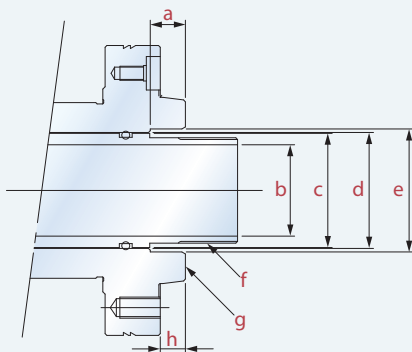


Linear Guide Way & BallScrew

ULTIMATE TURNING POWER

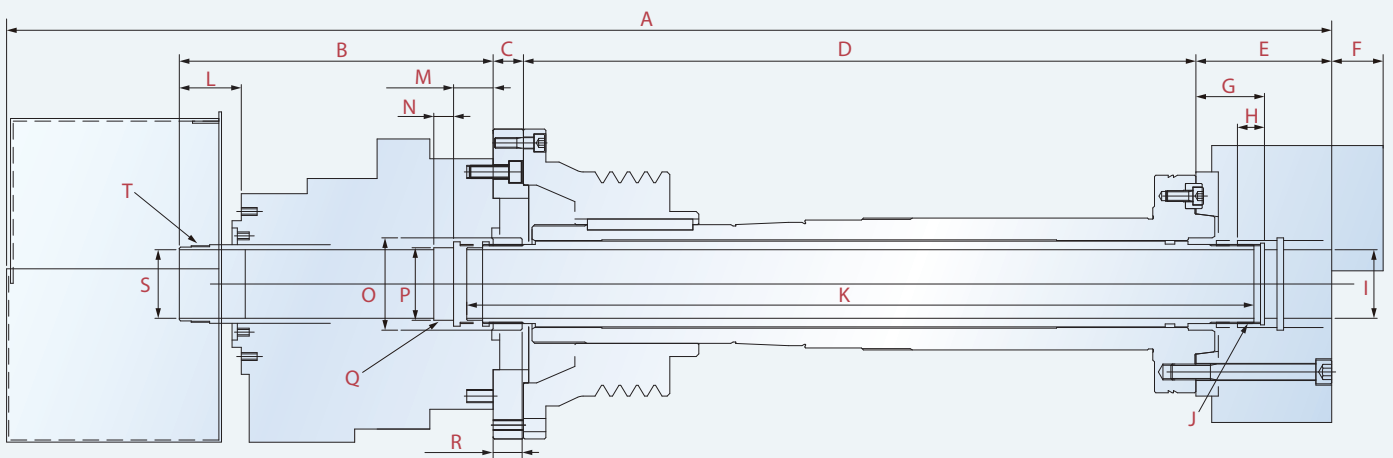
- ▶ The heavy-duty headstock is of one-piece casting reinforced with heat dispending fins.
- ▶ Standard rigid tapping feature provides high-speed precision tapping without the use of floating tap holders. Set-up is easier and depth of thread more accurate, permitting maximum productivity for tapping operations.
- ▶ The precision direct belt drive system provides greater spindle control, flexibility and serviceability. Pulley ratios fine tune the motor's maximum RPM to match the spindle's maximum RPM, which result in full output at the lowest RPM possible. Thus, utilizing the full potential of the spindle motor for maximum cutting power.

Spindle & Nose Dimension Drawing



	Unit: mm							
Model	a	b	c	d	e	f	g	h
GLS-150	22	Ø46	Ø55	Ø56	Ø60	M50xP2.0	A2-5	12.4
GLS-200	20	Ø52	Ø65	Ø66	Ø70	M60xP2.0	A2-6	14.3
GLS-260	20	Ø65.5	Ø75	Ø76	Ø110	M85xP2.0	A2-8	17.5

b: Draw Tube I.D. c: Draw Tube O.D. d: Spindle I.D. e: Spindle I.D. Step



- ▶ P4 grade (Class 7) super-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.

	Unit: mm							
Model	A	B	C	D	E	F	G	
GLS-150	1,008	max: 219 min: 204	32	527.9	91	29	max: 45 min: 33	
GLS-200	1,005	max: 238 min: 216	23	510	103	39	max: 52 min: 36.5	
GLS-260	1,032	max: 275 min: 250	38	506.5	113	43	max: 58.5 min: 39.5	

Model	H	I	J	K	L	M	N	O	P	Q	R	S	T
GLS-150	19	Ø45	M50xP2.0	629	max: 40 min: 25	max: 30 min: 15	15	Ø65	Ø50	M55xP2.0	max: 15 min: 0	Ø46	M52xP1.5
GLS-200	20.5	Ø52	M60xP2.0	597	max: 47 min: 25	max: 30 min: 8	15	Ø70	Ø55	M55xP2.0	max: 22 min: 0	Ø52	M58xP1.5
GLS-260	25	Ø75	M85xP2.0	620	max: 50 min: 25	max: 35 min: 10	15	Ø95	Ø80	M85xP2.0	max: 25 min: 0	Ø75	M84xP1.5

GLS-150 Spindle Acc. / Dec times

Chuck : 6" + hard jaws

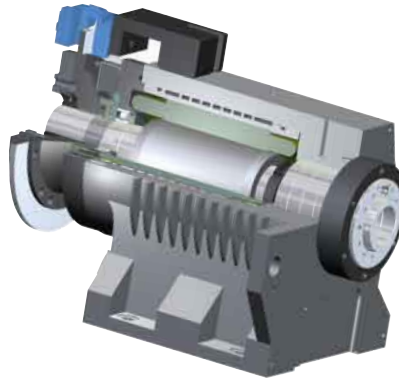
RPM	1000	1500	2000	2500	3000	4000	5000	6000
Acc.	1.3	1.6	1.8	2.2	2.6	3.6	5.2	7.3
Dec.	1.0	1.2	1.6	2.0	2.5	3.1	4.1	4.8

Unit : sec.

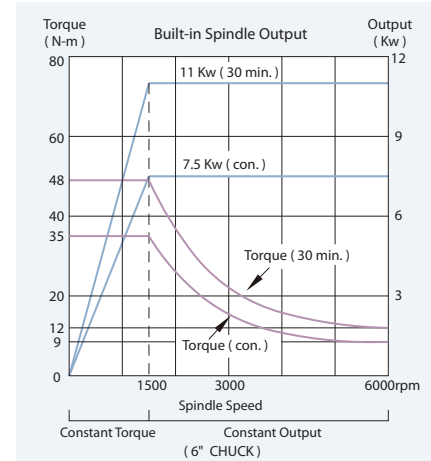
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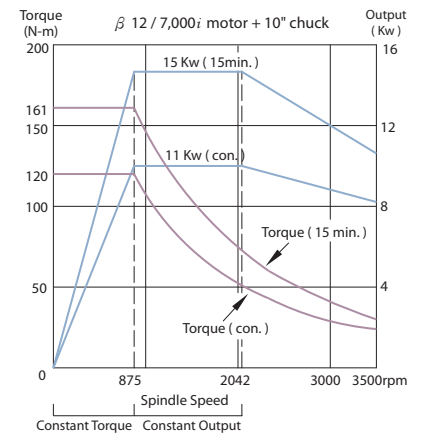
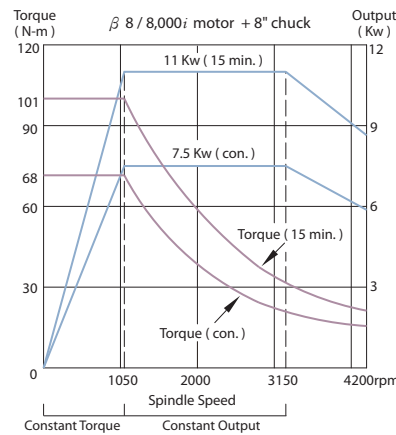
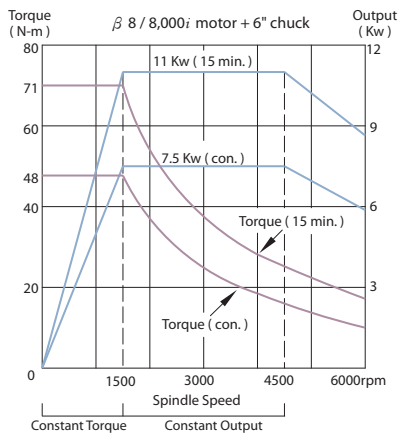
- GLS-150 models are available with built-in spindle motors, which eliminate traditional belts and pulleys. This advanced system provides faster spindle response, reduces vibration and power loss, which translate to faster cycle times, higher accuracy, and lowers maintenance costs.



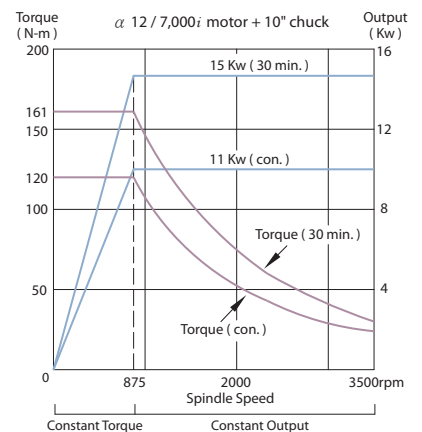
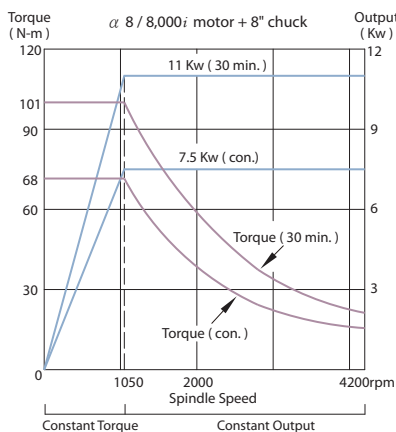
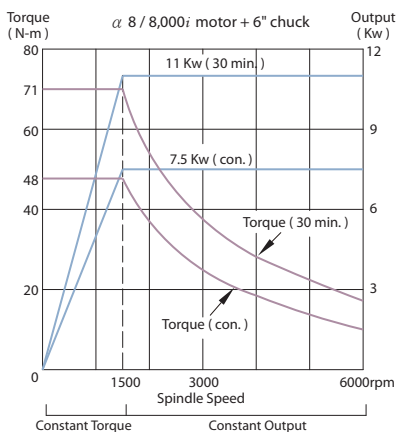
(Built-in spindle construction)



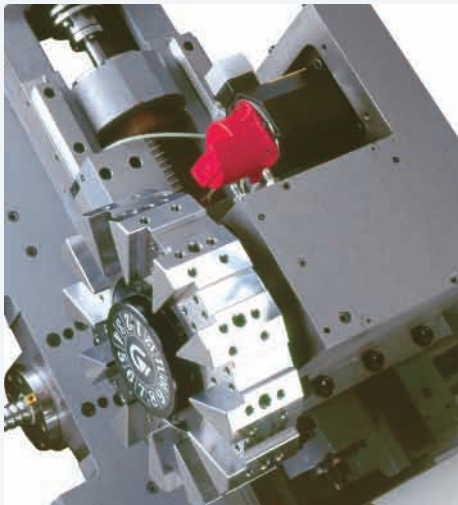
2-Axes models



Live tooling models



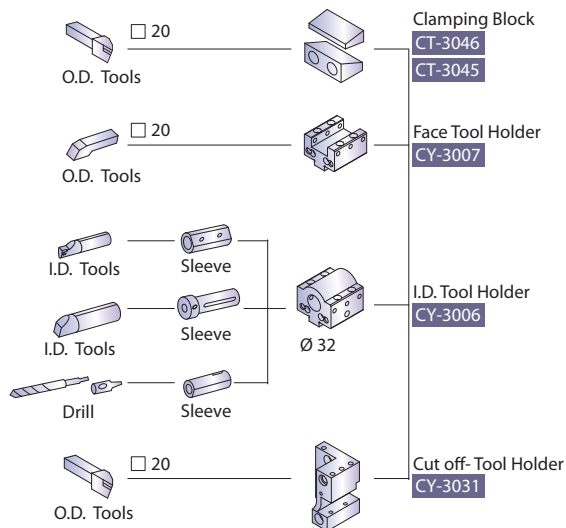
ADVANCED TURRET TECHNOLOGY



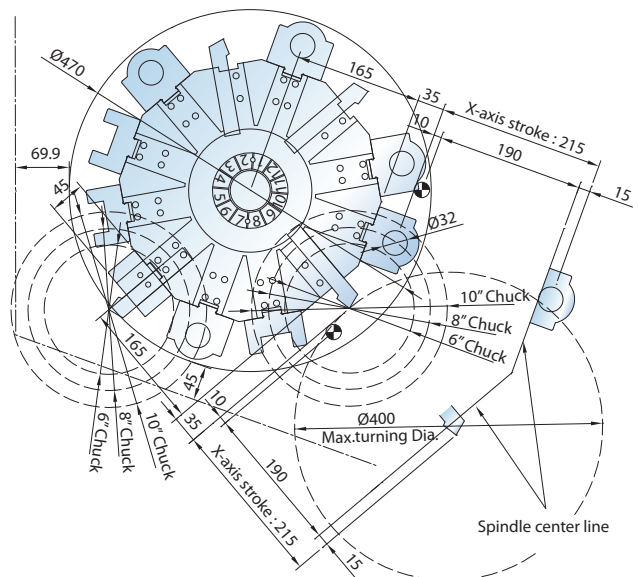
- ▶ A high-speed servo motor indexing system provides the 10 or 12-station turret with a 0.2 sec. indexing time. Large diameter high precision curvic couplings and hydraulic clamping are used to enhance tool indexing accuracy and turret disk rigidity.
- ▶ The standard 10-station turret clears 8" diameter work holding devices without interference while the 12-station turret clears 6" diameter devices.

Standard 12-Stations Turret

Tooling System

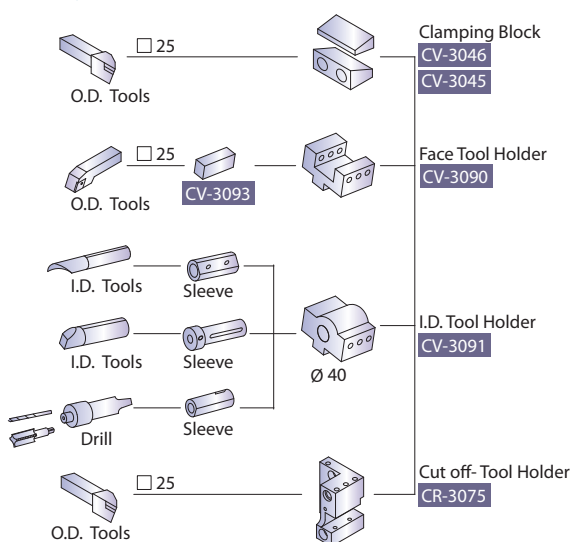


Interference Diagram

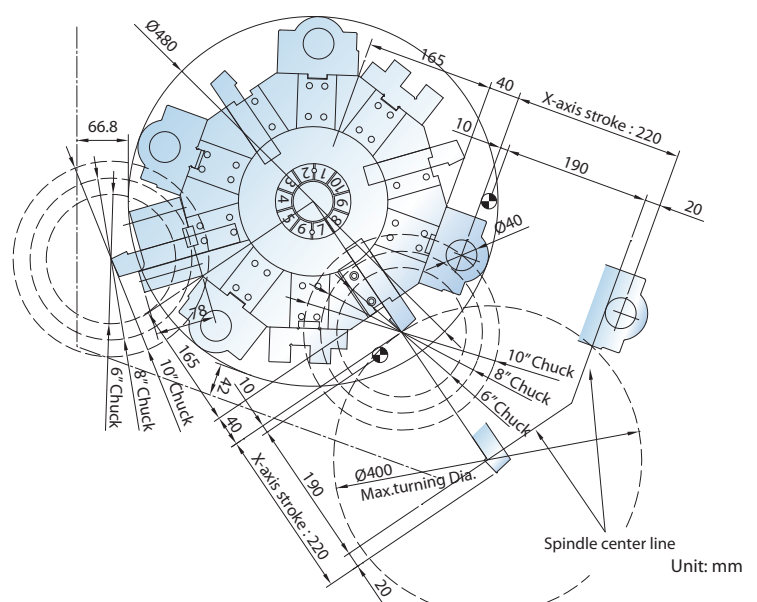


Optional 10-Stations Turret

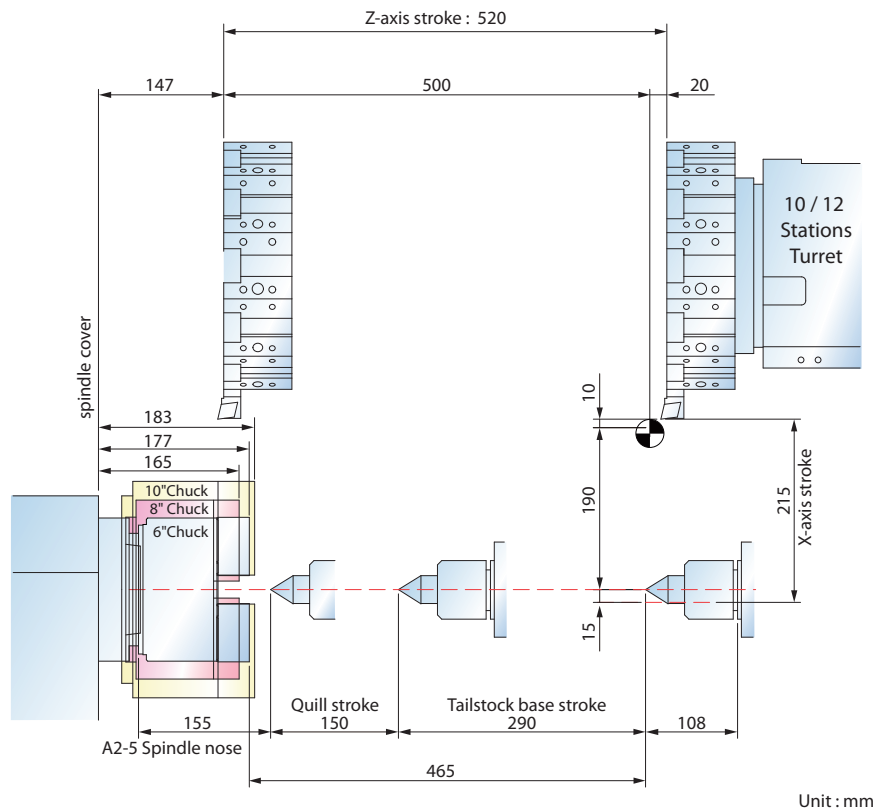
Tooling System



Interference Diagram



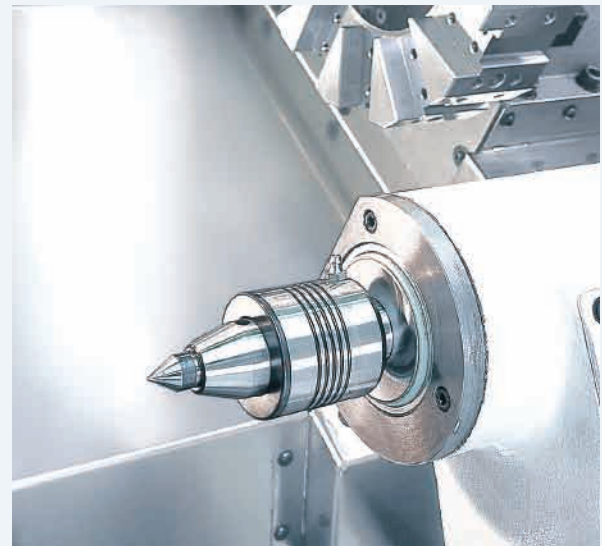
Work Range



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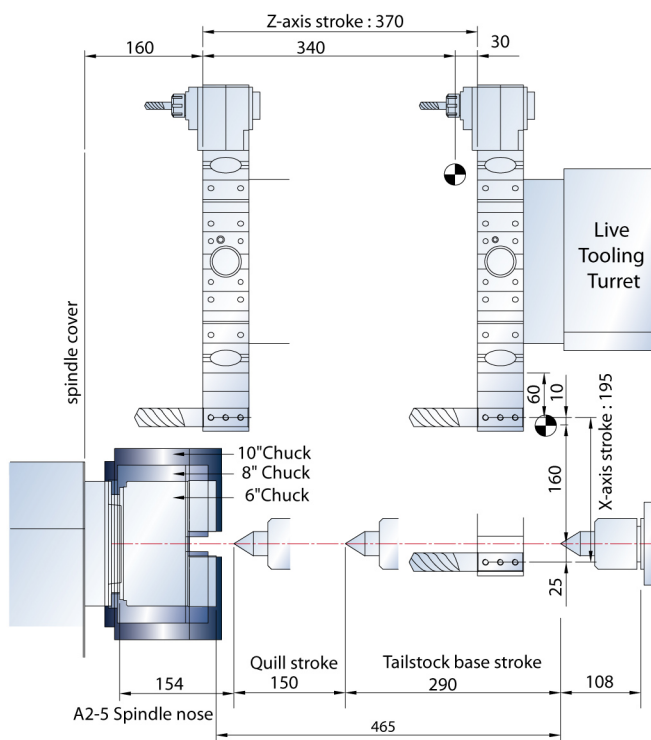
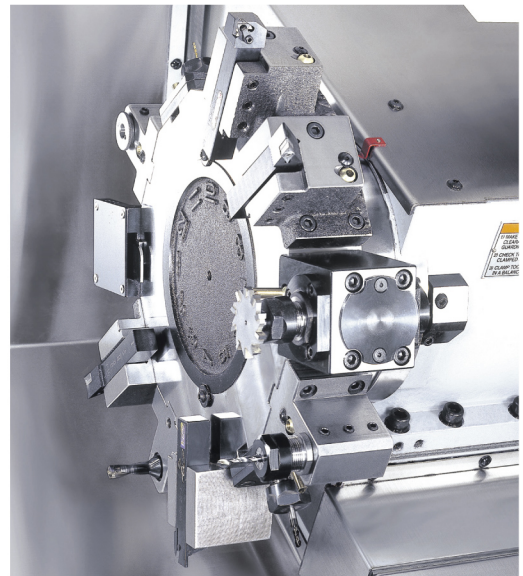
- The standard hydraulic tailstock uses live centers to provide support for long work pieces. Quill pressure is adjustable and movement is programmable.



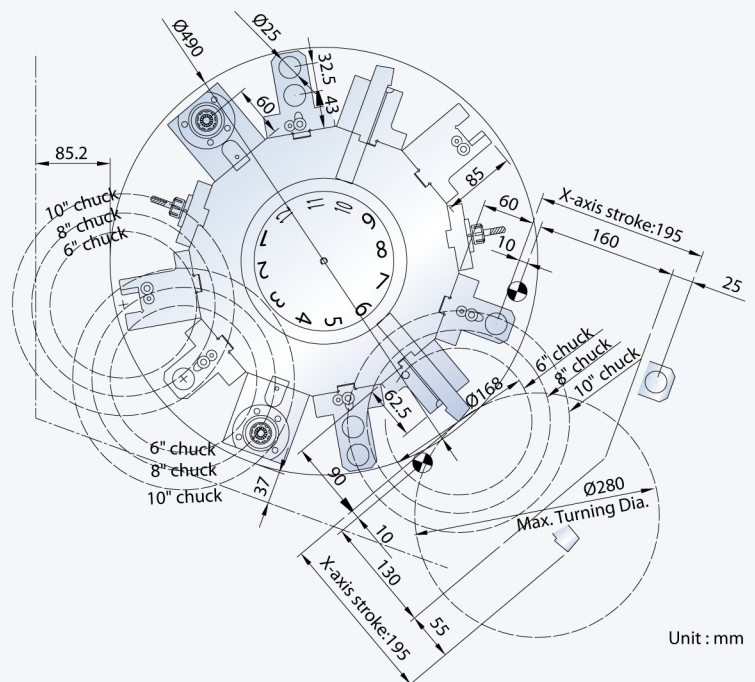
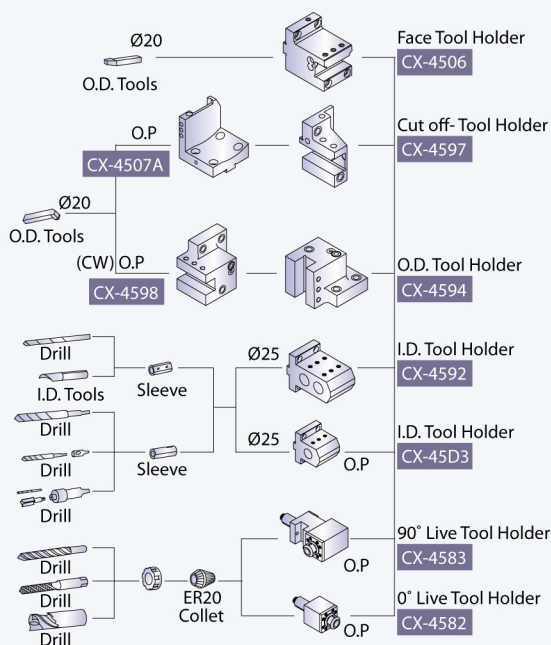
- The optional servo driven tailstock uses a servo motor and ball screw to position the tailstock and generate pressure to support the work piece. Pressure against a work piece is adjustable by increasing or decreasing the load of the servo motor, which can be programmed to provide variable and precise pressure during the machining process. This type of tailstock can also be used to drill the work piece during the OD turning process.

LIVE TOOLING TURRETS

- ▶ Live tooling and C-axis control capabilities on the GLS series allow the machine to perform multiple 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 one machine to another.
- ▶ The 12-station GOODWAY live tooling turret offers 6 stations available for live tooling.
- ▶ GOODWAY live tooling turret utilizes advanced servo indexing technology to achieve 0.2 second indexing time for adjacent stations and 0.5 second for stations at the opposite end of the disk.



- ▶ With the latest technology, live tooling is driven by an AC servo motor to provide ample power, in the form of torque. Now, even the toughest of jobs may be tackled without a sweat.

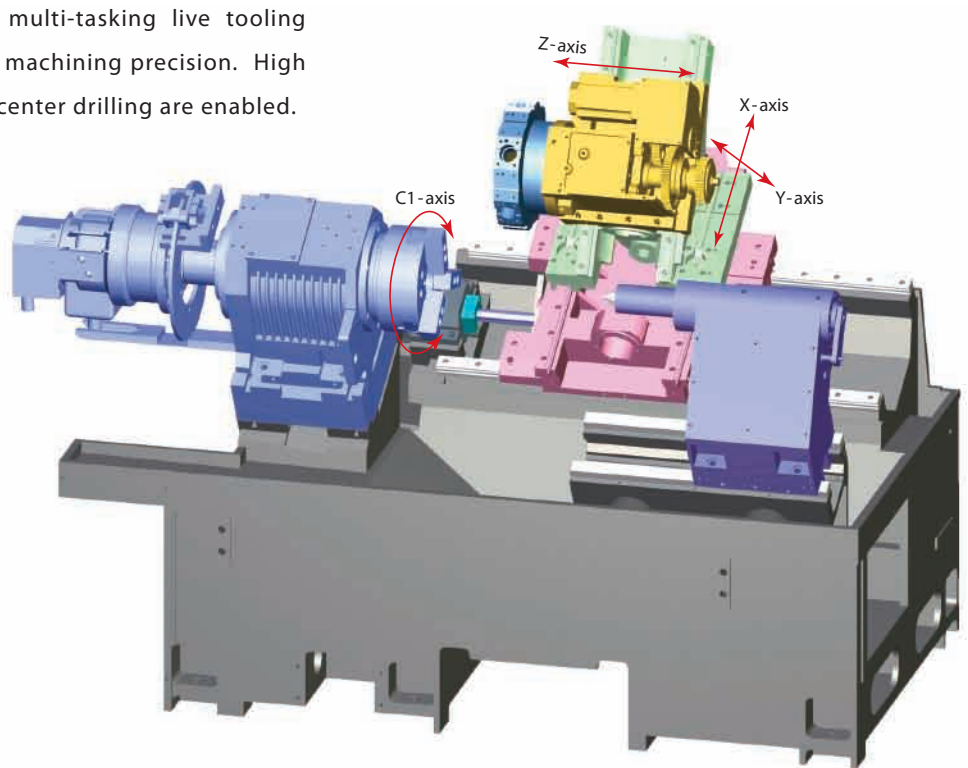


Unit : mm

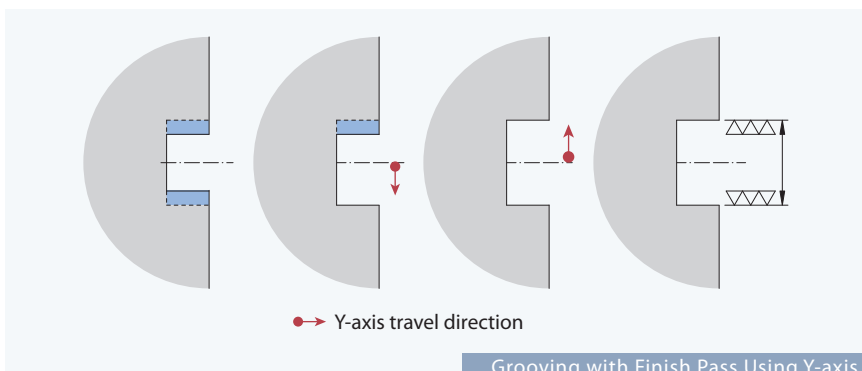
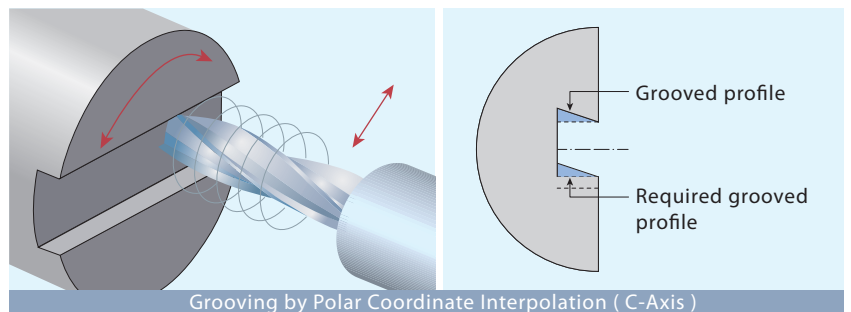
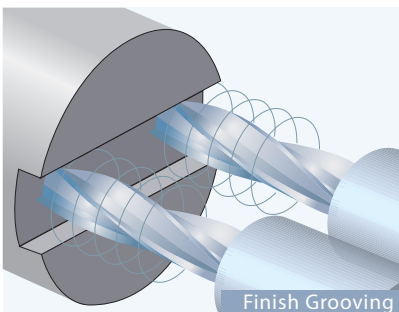
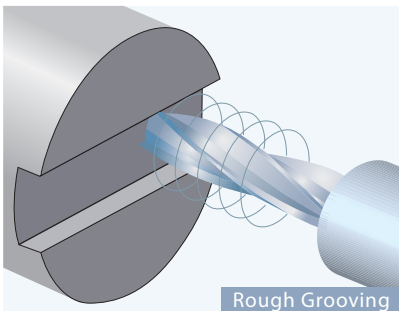
Y-AXIS MACHINING CAPABILITY

► 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.

► With an abundant amount of Y-axis travel, 70 mm= ± 35 mm (2.75" = ± 1.37 "), a wide variety of parts may be efficiently machined.

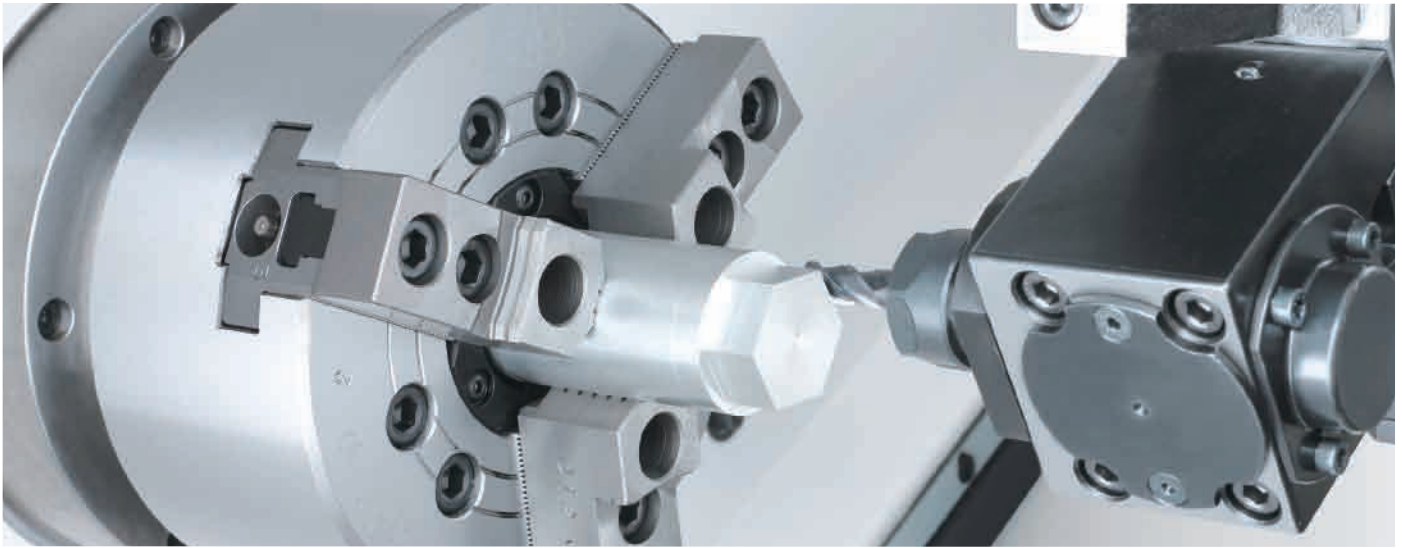


► On Y-axis equipped machines, the turret is mounted on a secondary 30 degrees wedge saddle on top of the X-axis slide. Guide ways are widely spaced for maximum strength.



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

MACHINING PERFORMANCE



Machining Capability

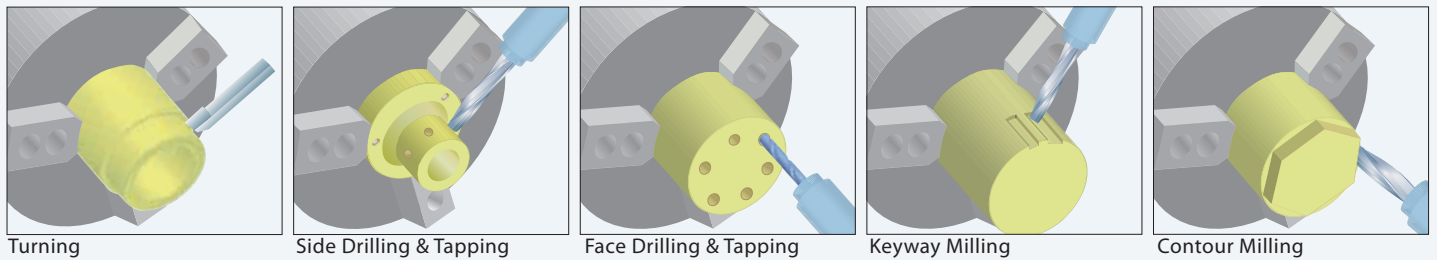
	Tools	Spindle Speed (rpm)	Feedrate (mm/min)	Cutting Speed (m/min)	Cutting Depth (mm)
Drill	Ø13 HSS	650	65	26.5	N/A
End mill	Ø12 HSS end drill	600	60	N/A	10
Tapping	M8 * P1.25	600	750	15	N/A

Raw Material : S45C Testing Model : GLS-150M

Live Tooling Turret Specification

Drive Motor Power	1.2 kw (1.6 HP)
Drive Motor	FANUC β 8 / 3000 is
Max. Tapping Capacity	M8 * P1.25
Max. Milling Capacity	Ø12 * 10
Gear Ratio	22 : 15

GOODWAY Multi-tasking machine can perform the functions below in one setup :



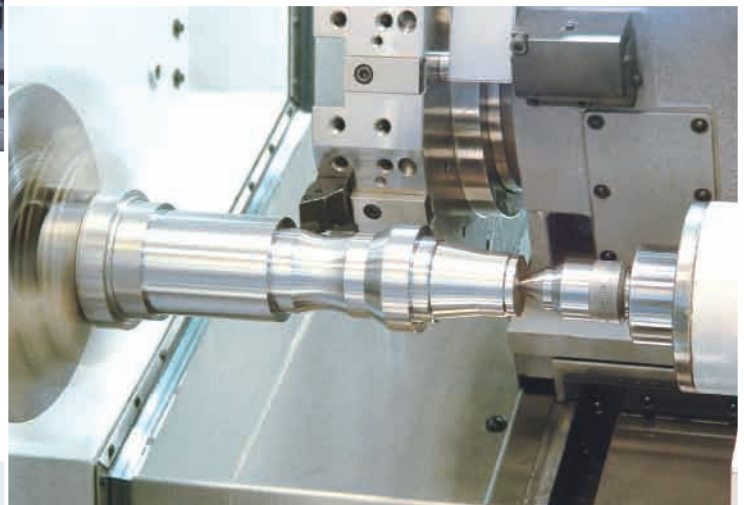
Sample Work Pieces



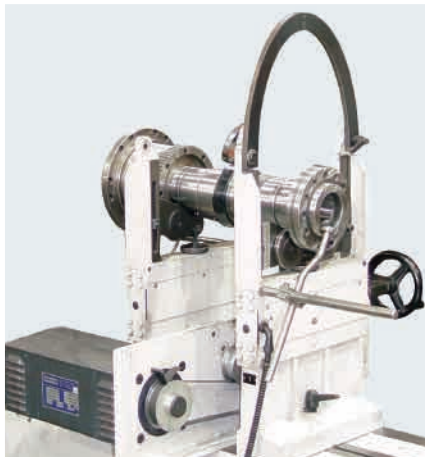
PEAK QUALITY ASSURANCE



- ▶ Before leaving the assembly line, all machines must pass critical testing including actual cutting, laser inspection and more.
- ▶ All machines are built with strict factory ISO 9001 Q/C regulations.



- ▶ For top component precision, Goodway utilizes top-end measuring and balancing equipment such as ZEISS 3D measuring system, BL high precision dynamic balancer and many more.
- ▶ All machines undergo preprogrammed test runs of 100 hours or more before shipment.



FEATURES

Chip Conveyor



- ▶ The standard chip conveyor features adjustable timers that allow the operator to set operation intervals according to the amount of chips generated by the machine. Thus, reducing coolant loss to a minimum.

Built-in lub. oil collection system



Tri-color status light



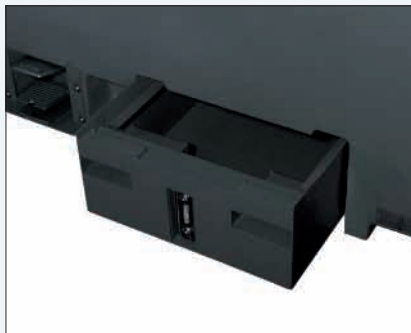
3-Jaw chuck w/ Soft Jaws x 1 set



Coolant Pump



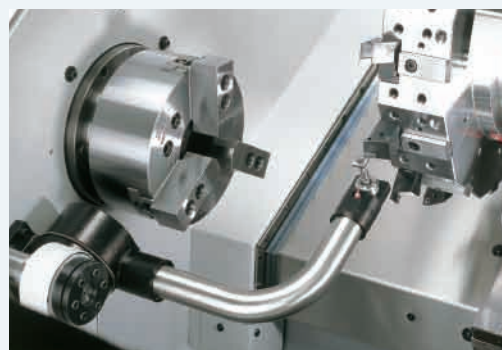
Coolant Tank



- ▶ Coolant system features a roll-out coolant tank for easy maintenance and high-pressure coolant pump for increased cooling power.

Tool Setter

- ▶ The optional Renishaw HPMA tool presetter utilizes a motorized arm to lower the tool probe into position. An auto tool check function further increases tool touch-off efficiency.



Load Monitoring

- ▶ The optional load monitoring function is used to detect abnormal load of tools by monitoring the variation in spindle motor and servo motor loads during the cutting process. When abnormal loads are detected, the machine will stop at program end (M30) or immediately (feed hold status) according to tool life value or tool break value respectively.

LOAD MONITOR SETTING						1/4	UNIT: %
Tcode	AXIS	INITIAL	CURRENT	LIFE	BREAK		
1	SP	0	0	0	0		
	Z	0	0	0	0		
2	SP	0	0	0	0		
	Z	0	0	0	0		
3	SP	0	0	0	0		
	Z	0	0	0	0		

NUM=

{ TECH } { MONI } { CAN } { } { }

STANDARD & OPTIONAL FEATURES

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

		GI-S-150	GI-S-200	GI-S-260
SPINDLE				
Main spindle motor configuration	Single-speed	S	S	S
Rigid tapping & spindle orientation		S	S	S
Main spindle disk brake		O	O	O
Cs-axis & disk brake for main spindle		O	O	O
Sub-spindle & 6" hydraulic cylinder		-	-	-
WORK HOLDING				
Hydraulic hollow cylinder for chuck	6"	S	-	-
	8"	-	S	-
	10"	-	-	S
Hollow 3-jaws chuck & 1 set soft jaws	6"	O	-	-
	8"	-	O	-
	10"	-	-	O
Hard jaws		O	O	O
Collet chuck		O	O	O
Special work holding chuck		C	C	C
In spindle work stopper		O	O	O
Spindle liner (guide bushing)		O	O	O
Foot switch for chuck operation		S	S	S
Programmable quill hydraulic tailstock		O	O	O
Servo driven tailstock		O	O	O
MT#4 live center		O	O	O
Foot switch for tailstock operation		O	O	O
Self-centering hydraulic steady rest		-	-	-
Foot switch for steady rest operation		-	-	-
Two-stage programmable pressure	Chuck clamping	O	O	O
	Tailstock thrust	O	O	O
TURRET				
10-station turret		O	S	S
12-station turret		S	O	O
12-station live tooling turret		O	O	O
Tool holder & sleeve package		S	S	S
Live tooling tool holders (0°x2, 90°x2)		O	O	O
MEASUREMENT				
Renishaw HPMA tool presetter	Motorized arm	O	O	O
COOLANT				
Coolant pump	3 Kg/cm ²	S	S	S
	5 Kg/cm ²	O	O	O
	10 Kg/cm ²	O	O	O
High-pressure coolant system	20 Kg/cm ²	O	O	O
Roll-out coolant tank		S	S	S
Oil skimmer		O	O	O
Coolant flow switch		O	O	O
Coolant level switch		O	O	O
Coolant intercooler system		O	O	O
CHIP DISPOSAL				
Chip conveyor with auto timer	Right discharge	S	S	S
	Rear discharge	C	C	C
Chip cart with coolant drain		O	O	O
Chuck air blow		O	O	O
Tailstock air blow		O	O	O
Coolant gun		O	O	O
Oil mist collector		O	O	O
AUTOMATIC OPERATION SUPPORT				
Parts catcher		O	O	O
Work piece transport conveyor		O	O	O
Bar feeder		O	O	O
Bar feeder interface		O	O	O
Gantry-type loader / unloader		O	O	O
Auto door		O	O	O
External M-code output	4 sets (8)	O	O	O
	8 sets (16)	O	O	O

Above standard & optional features also apply to L models.

*1 2-axes models only.

*2 Standard on M (live tooling) models.

*3 Standard on Y (live tooling) models.

SAFETY

		GI-S-150	GI-S-200	GI-S-260
SAFETY				
Fully enclosed guarding		S	S	S
Door interlock (incl. Mechanical lock)		S	S	S
Impact resistant viewing window		S	S	S
Tailstock stroke out - end check		S	S	S
Chuck cylinder stroke out - end check		S	S	S
Chuck cylinder check valve		S	S	S
Low hydraulic pressure detection switch		S	S	S
Over travel (soft limit)		S	S	S
Load monitoring function		O	O	O
OTHERS				
Tri-color machine status light tower		S	S	S
Work light		S	S	S
External work light		O	O	O
Electrical cabinet	Heat exchanger	S	S	S
	A/C cooling system	O	O	O
Complete hydraulic system		S	S	S
Advanced auto lubrication system		S	S	S
Foundation leveling & maintenance tool kit		S	S	S
Emergency maintenance electrical part package		S	S	S
Operation & maintenance manuals		S	S	S
CONTROL				
Fanuc Oi Mate-TD control*1		S	S	-
Fanuc Oi-TD control*2		O	O	S
Fanuc 18i-TB control*3		O	O	O

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

		Oi-Mate-TD	Oi-TD	18i-TB
FANUC CONTROL FUNCTIONS*4				
PMC system	SA1: 5 μ sec/step	S	-	-
	SB7: 0.033 μ sec/step	-	S	S
	7.2" monochrome LCD	S	-	-
Display	8.4" color LCD	-	S	-
	10.4" color LCD	-	O	S
Graphic function	Standard	S	S	S
	Dynamic	O	O	O
Full keypad	Small - 44 keys	S	S	-
	Large -56 keys	-	O	S
Part program storage length	640m	S	S	-
	1,280m	-	-	S
Registerable programs	2,560m	-	-	O
	400	S	S	S
Tool offset pairs	1,000	-	-	O
	64	S	S	S
	99	-	-	O
Servo control	400	-	-	O
	999	-	-	O
Conversational programming	HRV1	S	-	-
	HRV2 (3)	-	S	S
Servo motors	Manual Guide Oi	S	S	-
	Manual Guide i	-	O	S
Spindle motors	CAP i-T	-	-	O
	Beta i	S	S	-
Run hour & parts counter	Alpha i	-	-	S
	Beta i	S	S	-
Auto power off function	Alpha i	-	-	S
Custom macro B	Beta i	S	S	-
RS-232 port	Alpha i	-	-	S
Memory card input/output	Beta i	S	S	-
Ethernet	Alpha i	-	-	S
Fast ethernet		-	O	O

*4 Please contact GOODWAY for complete control specification list.

ENHANCED AUTOMATIONS

Loading / Unloading Systems

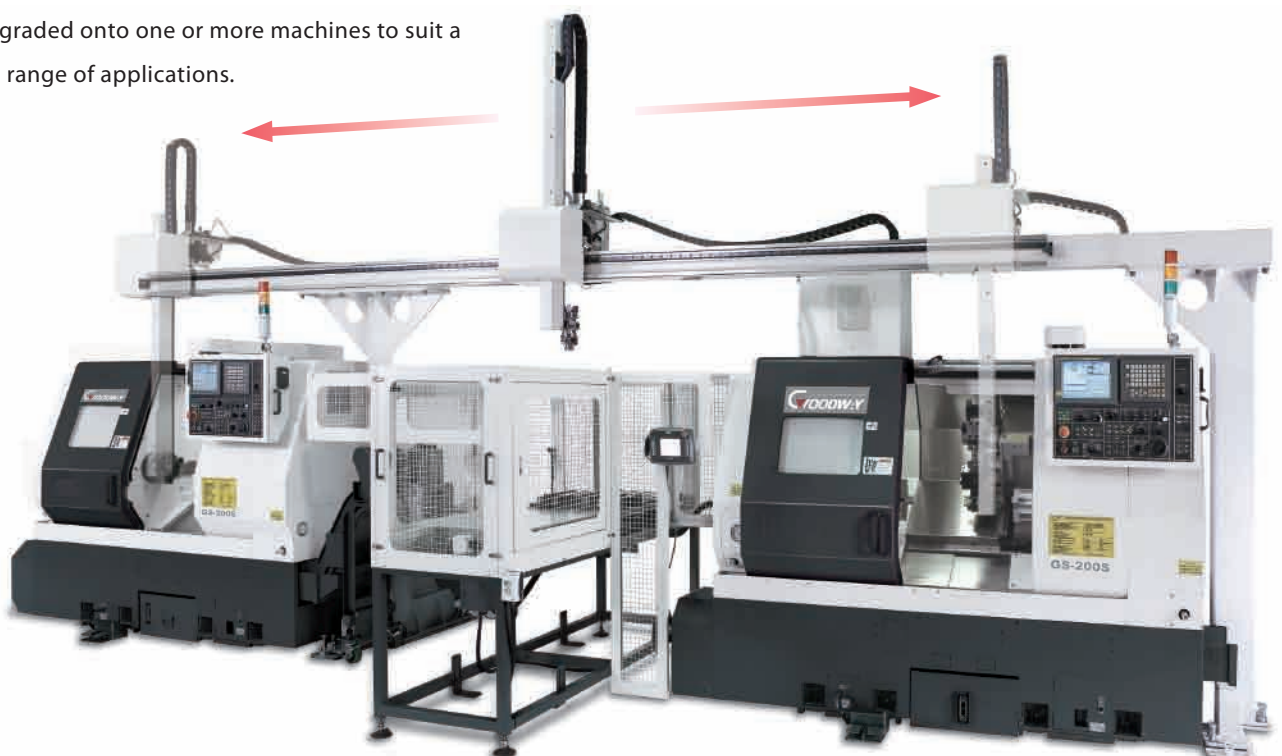
- ▶ Fully automated custom long shaft loading & unloading system mated with GTS-150MMX CNC turning center.



(Loading / Unloading systems with GTS-150MMX Series)

Gantry Loading Systems

- ▶ Available standardized or custom gantry loading / unloading systems provide automatic operation for chucking operations. These flexible systems can be intergraded onto one or more machines to suit a wide range of applications.



(Gantry Loading with GS-200S Series)

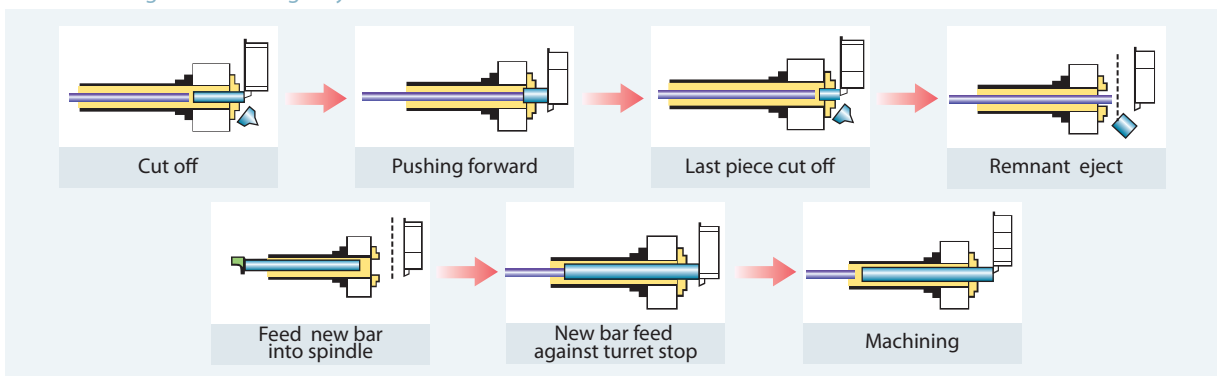


Bar Feeder

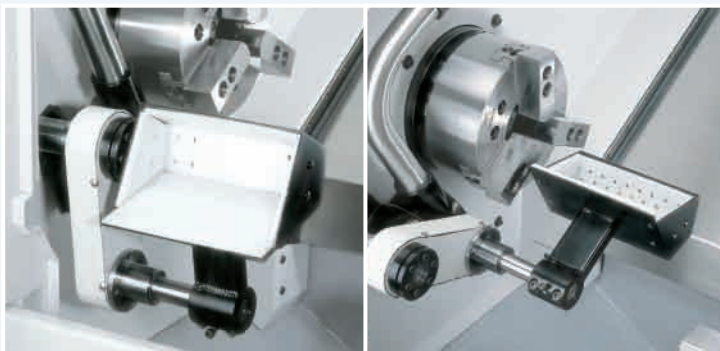
Model	BF-65	BF-80
Bar diameters	5 ~ 65 mm (0.19"~2.55")	6 ~ 80 mm (0.23"~3.14")
Maximum bar lengths* ¹	1,220 mm (48")	1,525 mm (60")
Magazine capacity	65 mm (2.55") x 10 bars	80 mm (3.14") x 7 bars
Control / drive type	Mitsubishi / Pneumatic	Mitsubishi / Servo
Foot print	L 63" x D 44"	L 87" x D 57"
Weight	250 Kg (550 lb)	500 Kg (1,100 lb)

*1 Actual bar length limited by total spindle + work piece length (work piece + chuck + spindle + cylinder + rear spindle cover lengths). A bar supporting device must be used if bar extends past the rear spindle cover, otherwise, the bar may bend during machining causing serious machine damage and injury or death to operator.

Bar Feeding & Bar Change Cycle



Parts Catchers



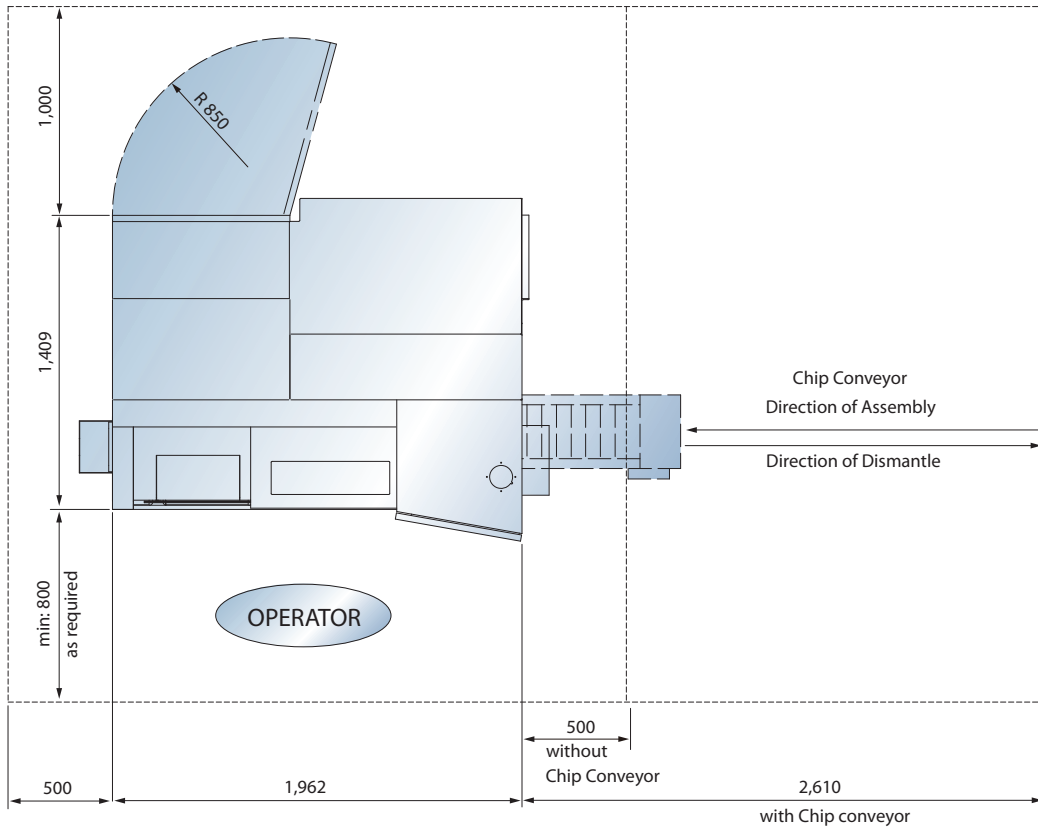
- Optional hydraulic parts catchers can be programmed to catch finished parts after cut-off. Parts conveyor systems are also available.

Parts Conveyor



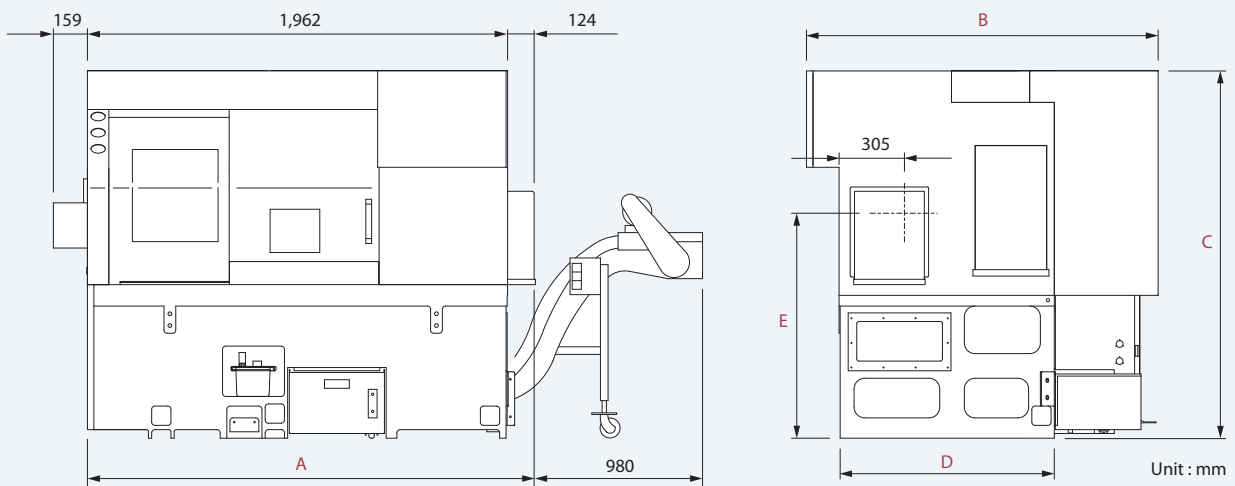
GENERAL DIMENSION

Foot - Print



Unit : mm

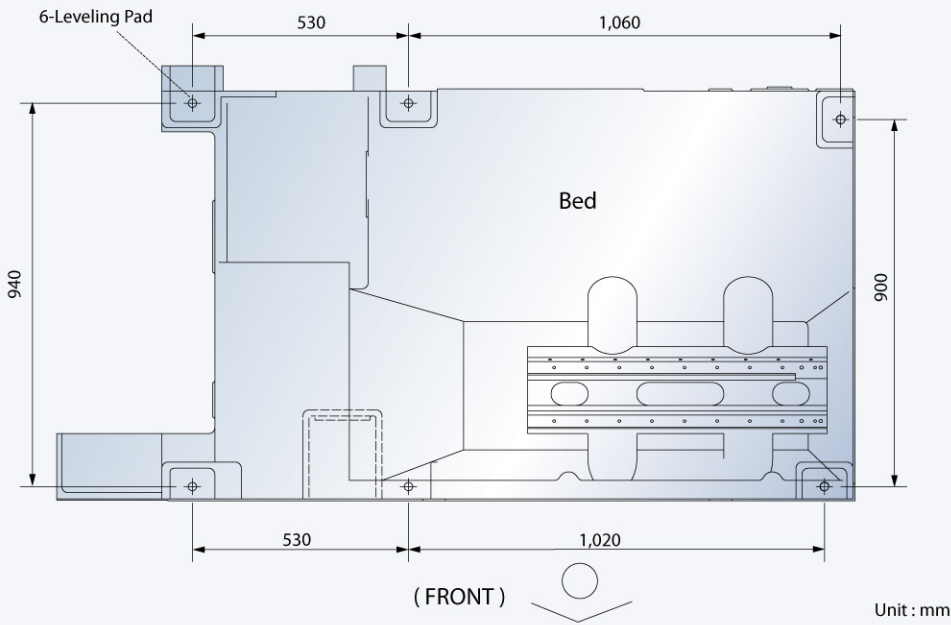
Machine Layout



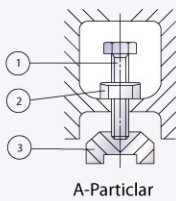
Unit : mm

Model	A	B	C	D	E
GLS-150 / 200 / 260	2,095	1,495	1,672	1,000	940
GLS-150 / 200 / 260 (Y-axis)	2,288	1,652	2,057	1,010	1,053

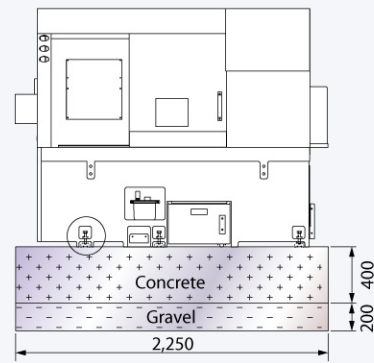
Foundation



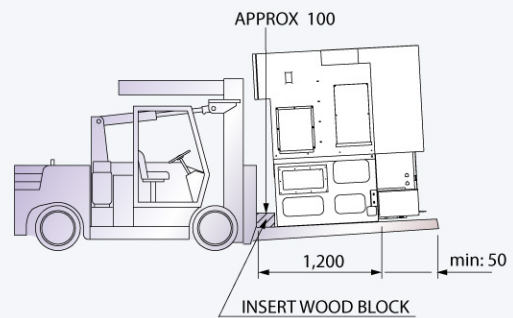
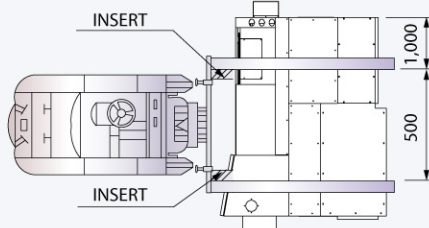
Requirements of the Foundation



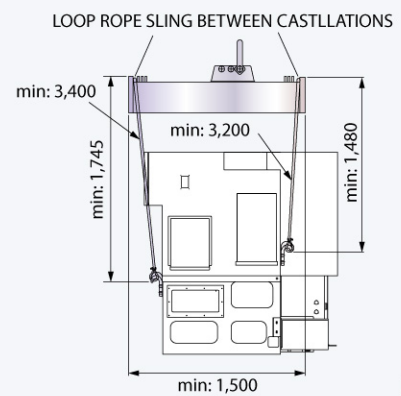
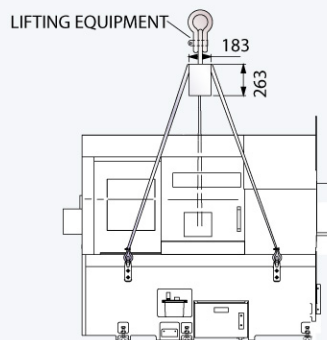
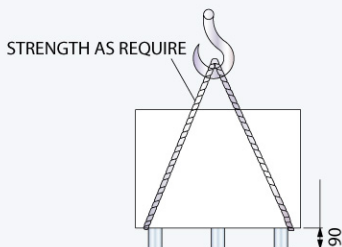
N0.	Part No	Part name
1	CF-1048	Levelling Bolt
2	NA2200BA	Hex.Nut M22
3	CF-1047	Levelling Pad



Lifting by Forklift



Lifting by Overhead Crane



MACHINE SPECIFICATIONS

CAPACITY	GLS-150	GLS-200	GLS-260
Max. swing diameter	Ø 500 mm (19.68")		
Swing over saddle	Ø 380 mm (14.96")		
Max. turning diameter*1	Ø 400 mm (15.74") / Ø 280 mm (11.02")*2		
Standard turning diameter*1	Ø 165 mm (6.49")	Ø 204 mm (8.00")	Ø 254 mm (10.00")
Max. turning length*1	500 mm (19.68") / 340 mm (13.38")*2		
Max. weight load*3	85 kg (187 lbs)		
Chuck size	Ø 6"	Ø 8"	Ø 10"
Bar capacity	Ø 45 mm (1.77")	Ø 51 mm (2.00")	Ø 65 mm (2.55")
SPINDLE			
Hole through spindle	Ø 56 mm (2.20")	Ø 66 mm (2.59")	Ø 76 mm (2.99")
Spindle bearing diameter	Ø 80 mm (3.14")	Ø 100 mm (3.93")	Ø 120 mm (4.72")
Hydraulic cylinder	Ø 6"	Ø 8"	Ø 10"
Spindle nose	A2-5	A2-6	A2-8
Spindle motor type	β 8 / 8,000 <i>i</i>	β 8 / 8,000 <i>i</i>	β 12 / 7,000 <i>i</i>
Motor output (Con.)	7.5 Kw (10 HP)		11 Kw (15 HP)
Motor output (30 min.)	11 Kw (15 HP)		15 Kw (20 HP)
Motor full output speed	1,500 rpm	1,500 rpm	1,500 rpm
Spindle drive system	Direct Belt Drive	Direct Belt Drive	
Spindle drive ratio	1:1	7:10	7:12
Spindle speed range	60 ~ 6,000 rpm	42 ~ 4,200 rpm	35 ~ 3,500 rpm
Spindle full output speed	1,500 rpm	1,050 rpm	875 rpm
BUILT-IN SPINDLE MOTOR (OPTIONAL)			
Spindle motor type	α B112M / 15,000 <i>i</i>	—	—
Motor output (Con.)	5.5 Kw (7.4 HP)	—	—
Motor output (30 min.)	7.5 Kw (10 HP)	—	—
Cs-AXIS SPINDLE (OPTIONAL)			
Cs-axis drive motor	Spindle motor + Bz-sensor Ø125 / MPC1-9051A		
Min. spindle indexing angle	0.001°		
Dynamic accuracy	+/-0.02°		
X & Z AXES			
Max. X-axis travel*1	220 / 215 mm (8.66" / 8.46") ; [10-St. / 12-St.]		
Max. Z-axis travel*1	520 mm (20.47")		
X / Z axes rapids	24 m / min. (945 IPM) / 30m/min. (1,182 IPM)		
Slide way type	Linear Guide Way		
Feed rates	1~4,800 mm / min. (1~189 IPM)		
X-axis servo motor	AC 1.2 Kw (1.6 HP , Fanuc β 8 / 3,000 <i>i</i> , Absolute encoder, 1,000,000/rev.)		
Z-axis servo motor	AC 1.2 Kw (1.6 HP , Fanuc β 8 / 3,000 <i>i</i> , Absolute encoder, 1,000,000/rev.)		
X-axis ball screw Ø / pitch	Ø 32 mm (1.26") / Pitch 10		
Z-axis ball screw Ø / pitch	Ø 32 mm (1.26") / Pitch 10		
X / Z axes thrust (Con.)	448 Kg (985 lbs.)		

Specifications are subject to change without notice.

*1 Individual models may vary, please see interference drawings.

*2 For M (Live-tooling turret) models only.

*3 Work piece supported by chuck & tailstock.

TURRET	GLS-150	GLS-200	GLS-260
Stations	12-St. Std. (10- St. Opt.)	10-St. Std. (12- St. Opt.)	
Indexing drive	Fanuc AC Servo motor		
Indexing speed	0.2 sec. Adjacent / 0.5 sec. 180 degrees (Single step)		
Accuracy	Positioning : ± 0.00069°, Repeatability: ± 0.00027°		
OD tool shank size	12-Station □ 20 mm	10-Station □ 25 mm	
ID tool shank size	12-Station Ø 32 mm	10-Station Ø 40 mm	
LIVE TOOLING TURRET (OPTIONAL)			
Max. turning length	340 mm (13.38")		
Stations	12		
Live tooling stations	6 (Live tooling tools rotate together)		
Live tooling drive motor	AC 1.2 Kw (1.6 HP , Fanuc β 8/3,000i, Absolute encoder, 1,000,000 / rev.)		
Live tooling torque	7 N-m (5 ft-lbs.) [Con.]		
Indexing drive type	Fanuc AC Servo motor		
Index speed	0.2 sec. Adjacent / 0.5 sec. 180 degrees (Single step)		
OD tool shank size	□ 20 mm		
ID tool shank size	Ø 25 mm		
Live tooling shank size	1 ~ 13 mm (0.04" ~ 0.51") ER 20 collets		
Live tooling RPM range	10 ~ 4,400 RPM		
Y-AXIS (OPTIONAL)			
Max. turning diameter	280 mm (Ø 11.02")		
Max. X-axis travel	195 mm (7.67")		
Max. Y-axis travel	70 mm = ± 35 mm (2.75" = ± 1.37")		
X / Y axes rapids	24 m/min. (945 IPM) / 10 m/min. (393 IPM)		
Slide way type	Linear Guide Way		
Feed rates	1 ~ 4,800 mm/min. (1 ~ 189 IPM)		
X-axis servo motor	AC 1.6 Kw (2.2 HP , Fanuc α 8/3,000i, Absolute encoder, 1,000,000 / rev.)		
Y-axis servo motor	AC 1.6 Kw (2.2 HP , Fanuc α 8/3,000i, Absolute encoder, 1,000,000 / rev.)		
X-axis ball screw Ø / pitch	Ø 32 mm (1.26") / Pitch 6		
Y-axis ball screw Ø / pitch	Ø 32 mm (1.26") / Pitch 6		
X / Y axes thrust (Con.)	513 Kg (1,026 lbs.) / 513 Kg (1,026 lbs.)		
TAILSTOCK			
Quill center taper	MT#4 (Live center required.)		
Quill diameter / travel	Ø 70 mm (2.75") / 150 mm (5.90")		
Tail stock base travel	290 mm (11.41")		
Programmable quill / base	Yes / No		
Programmable base type	Servo motor + Ball screw		
GENERAL			
Positioning accuracy (X/Y/Z)	+/- 0.005 mm (+/- 0.0002")		
Repeatability (X/Y/Z)	+/- 0.003 mm (+/- 0.0001")		
Standard CNC control	Fanuc Oi- Mate TD (Oi-TD)		
Voltage / Power requirement	AC 200 / 220 +10% to -15% 3 phase / 26 KVA		
Hydraulic tank capacity	50 L (11gal.)		
Coolant tank capacity	120 L (26 gal.)		
Coolant pump	0.5 Kw (3/4 HP , 60 Hz) rated at 4.2 bar (60 PSI)		
Machine weight	3,200 Kg (7,040 lbs.)		
Machine weight (Y models)	3,500 Kg (7,700 lbs.)		
Dimensions L × W × H	Machine: 2,260 x 1,490 x 1,675 mm (89" x 59" x 66") Machine w/Y-axis: 2,450 x 1,655x 2,060 mm (97" x 65" x 81")		

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GOODWAY MACHINE CORP.

Headquarters :

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

GOODWAY (SUZHOU) MACHINE CORP.

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

Central Taiwan Science Park Branch :

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