

TS-100 SERIES

High Speed CNC Turning Centers



HIGH SPEED CNC TURNING CENTERS

Packed with industry leading technology and top quality components, the Goodway TS-100 series turning centers combine strength, speed, and flexibility to bring you The Ultimate Machining Power®. These high speed machines will easily accomplish the demanding turning applications of today and tomorrow. Furthermore, with available live tooling and C-axis capabilities; milling, turning applications may be completed in one single machine.

Model	TS-100	TS-150
Max. turning diameter	Ø 200 mm (7.87")	
Max. turning length	290 mm (11.41")	
Bar capacity	Ø 32 mm (1.25")	Ø 45 mm (1.77")
Chuck size	6"	

- ▶ 30° slant design provides smooth chip disposal and easier operator access.
- ▶ 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.



(TS-100 model shown with FANUC control)

- ▶ An adjustable timer on the standard chip conveyor allows the operator to set operation time according to the amount of chips being carried out of the machine. Thus, reducing coolant loss to a minimum.



- ▶ Coolant system with roll-out coolant tank and high-pressure coolant pump.

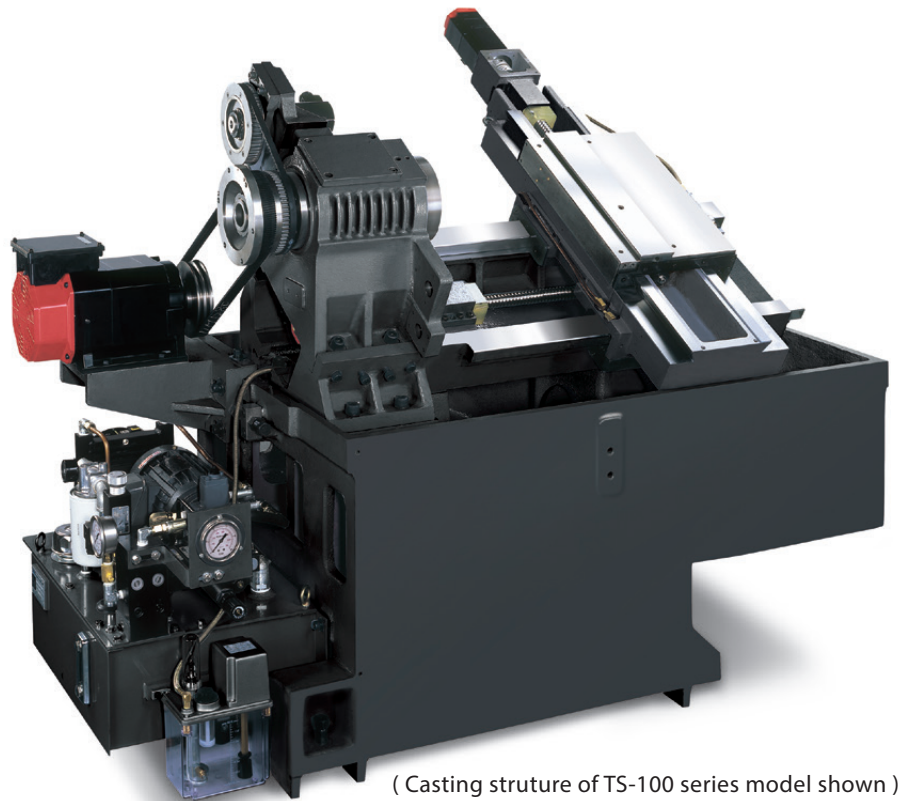


COMPACT AND HIGHLY RIGID STRUCTURES

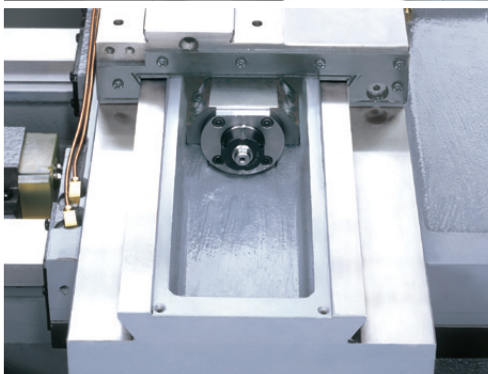
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All the main casting components are structural analyzed by Visual Nastran finite element methods (FEM). The boundary conditions are assigned reasonably and adequately to optimize the structures and rib distribution of the base, saddle and headstock to reach high rigidity and better stability. The headstock is mounted on the same surface of the 30 degrees slanted guide ways. This design shortens the transmission path of cutting force and stabilizes the cutting capability.

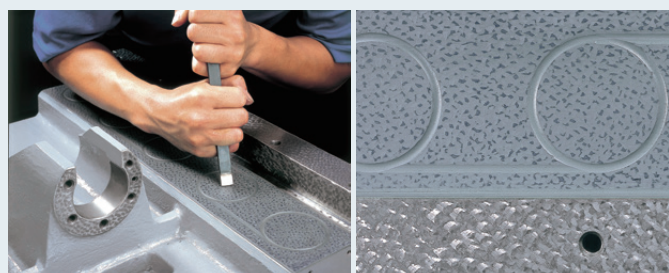
- ▶ X and Z axes are driven by over-sized FANUC / MITSUBISHI series absolute servo motors, providing tremendous thrust outputs with faster acceleration and deceleration. Absolute encoder technology eliminates the use of limit switches, thus, eliminating referencing axes to home positions and broken limit switches.
- ▶ High precision hardened and ground box ways are directly formed onto the machine bed and saddle during the casting process. They are precision machined and widely spaced for maximum strength.



(Casting struture of TS-100 series model shown)



- ▶ Slide ways are bonded with "Turcite B" to eliminate stick-slip, minimize wear and maintain long term accuracy.
- ▶ C3 class hardened and precision ground ball screws ensure the highest accuracy and possible. Plus, pretension on all axes minimizes thermal distortion.
- ▶ Contact surfaces of all slides, headstock and ball screw bearing housings with the machine bed are precision hand scraped to provide maximum assembly precision, structural rigidity, and load distribution.

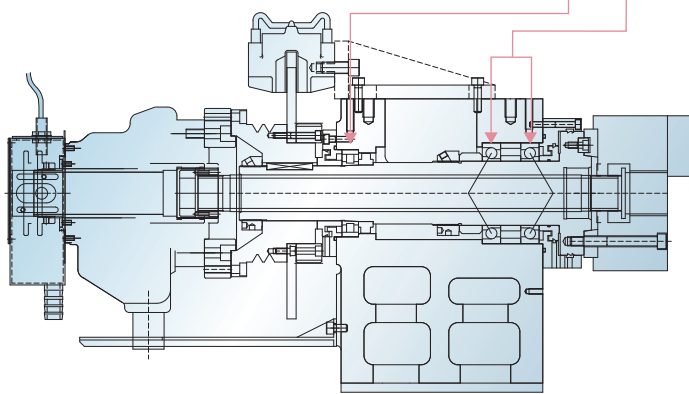


PRECISION CUTTING CAPABILITY

The headstock is analyzed by FEM to reach high rigidity and stability. The spindle inside the headstock is supported by two high precision angular contact ball bearings and a single row roller bearing. The span between bearings is optimized to sustain radial, axial and varying compound loads. All these features make it meet the requirements of high speed and precision cutting. The bar capacity is available with 32 and 45 mm two options.

Bearing configuration : Front - angular contact × 2

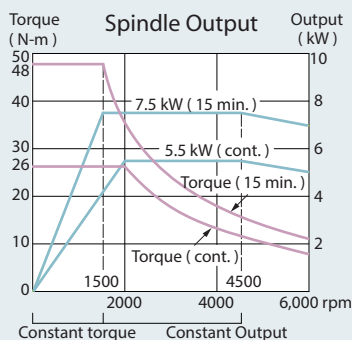
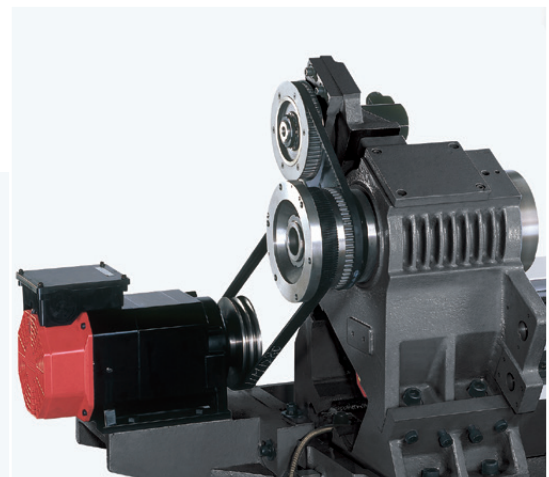
Rear - Single roller × 1



Spc.	A	B	C
Model			
TS-100	41 mm (1.61")	40 mm (1.57")	33 mm (1.29")
TS-150	56 mm (2.20")	55 mm (2.17")	46 mm (1.81")

A: Spindle ID B: Draw tube OD C: Draw tube ID

- ▶ 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.
- ▶ 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.



TS-100 spindle Acc./Dec. times
Chuck : 6" + hard jaws

RPM	ACC.	DEC.
0 ~ 1,000	1.6	1.2
0 ~ 2,000	2.2	1.7
0 ~ 3,000	2.7	2.4
0 ~ 4,000	3.6	2.9
0 ~ 5,000	5.0	4.2
0 ~ 6,000	6.8	5.1

Unit : Sec.

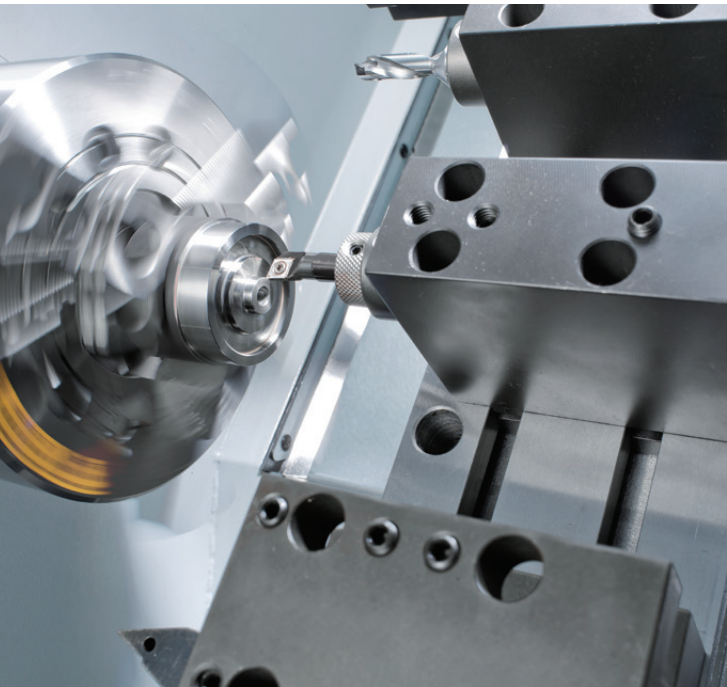
- ▶ The precision direct belt drive system provides greater spindle control, flexibility and serviceability. Pulley ratios fine tune the motor's maximum RPM to match the spindle's maximum RPM, which result in full output at the lowest RPM possible. Thus, utilizing the full potential of the spindle motor for maximum cutting power.

- ▶ The spindle is driven by the FANUC β 6/10,000i spindle motor. This motor features maximum 7.5 kW (10 HP) power output, and can provide higher torque than ordinary motors.

ADVANCED TURRET TECHNOLOGY

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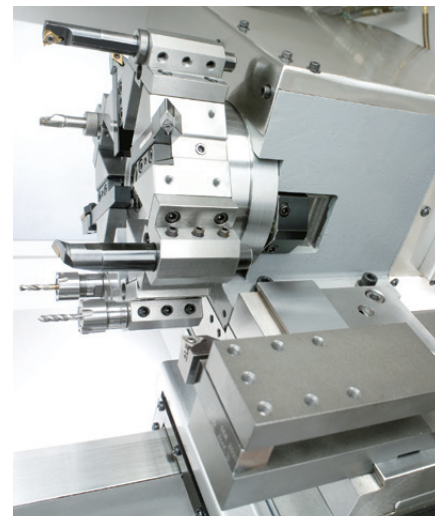
Gnag type turret

- ▶ Standard gang type tool holding device flexibly increases machining applications. The maximum capacity is 8 inner-diameter cutting tools at the same time.



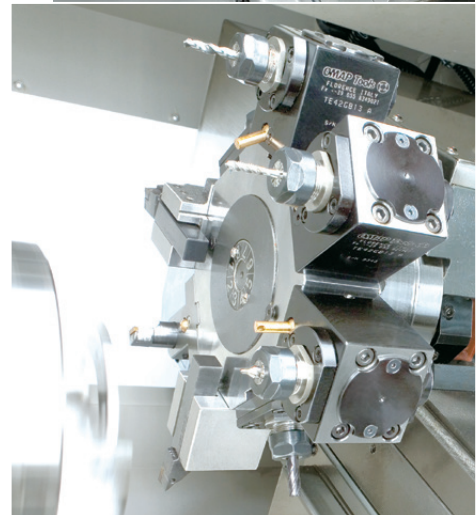
8-Station turret (Opt.)

- ▶ Ø 120 mm (4.72") diameter super high precision curvic couplings accurately position the turret disk and clamping force ensures abundant turret rigidity for all cutting conditions.
- ▶ The 8-station turret clears 6" diameter work holding devices without interference, even when loaded with tooling at maximum shank size.
- ▶ The heavy-duty servo indexing turret achieves 0.2 second indexing times for adjacent stations and 0.5 second for stations at the opposite end of the disk. Index movements are single step, without pauses , no matter how many stations are skipped.



8-Station live tooling turret (Opt.)

- ▶ Living tooling capabilities on the TS-100 series allows a work-piece to be turned, milled, drilled and tapped without moving it to another machine.
- ▶ The 8-station Goodway live tooling turret offers 8 stations available for line tooling.
- ▶ 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.



HIGH SPEED CONTROL TECHNOLOGY

GOODWAY utilizes the latest in control technology, the FANUC Oi Mate-TD or Mitsubishi E68L as the standard control for the TS-100 series (Opt. FANUC Oi -TD control). This control provides many features as standard that are not available or costly options found on other controls.



FANUC Oi mate-TD shown



Mitsubishi E68L shown

Mitsubishi E68L

- ▶ Adopt the thin & colorful display unit 8.4" LCD, small type servo motor, high analysis encoder and 64 bites CPU.
- ▶ Use the servo motor for the automatic adjustable setting to make the machine obtain the best performance. It not only saves the data fast via the hardware of the card type but also shortens the maintenance time.
- ▶ Adopt the control panel one-piece CNC unit and 2 axes unit for the driven unit (MDS-R series) to save the space for the electrical cabinet.

FANUC Oi mate-TD

- ▶ User-friendly control panel allows direct operator access to most of the machine's setup functions without the hassle of flipping through pages in the control screen. High-grade push buttons and toggle switches are used to ensure durability. The control panel and housing is coolant, oil, and dirt resistant.
- ▶ Standard 8.4" LCD screen , small half keypad MDI, graphic display.

ENHANCED AUTOMATIONS

Part Conveyor & Parts Catcher

- ▶ The optional parts catcher can be programmed to catch finished parts after cut-off. A part conveyor system is also available.



Parts Conveyor



Parts Catcher

Bar Feeders

- ▶ Optional bar feeders save manpower and provide greater productivity by automatically feeding bar stock into the machine after each part is completed. BF-65 bar feeding systems fed bars up to Ø 65 mm (2.5") diameter.

FEATURES

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

		TS-100	TS-150
SPINDLE			
Main spindle motor configuration	Single-speed	S	S
Rigid tapping & spindle orientation		S	S
Disk brake for main spindle		O	O
Cs-axis & disk brake for main spindle		O	O
Sub-spindle		-	-
WORK HOLDING			
Hydraulic hollow 3-jaw chuck & cylinder		S	S
Hard jaws		O	O
Soft jaws	1 set	S	S
Collet chuck		O	O
Special work holding chuck		C	C
In spindle work stopper		O	O
Spindle liner (guide bushing)		O	O
Foot swith for chuck operation	Single	S	S
	Double	O	O
TURRET			
8-station turret		O	O
8-station live tooling turret		O	O
Tool holder & sleeve package		S	S
Live tooling tool holders*1		O	O
MEASUREMENT			
Renishaw HPRA tool presetter		O	O
COOLANT			
Coolant pump	3 Bar	S	S
	5 Bar	O	O
High-pressure coolant system	20 Bar	C	C
Roll-out coolant tank		S	S
Oil skimmer		O	O
Coolant flow switch		O	O
Coolant level swich		O	O
Coolant intercooler system		O	O
CHIP DISPOSAL			
Chip conveyor with auto timer	Rear discharge	S	S
Chip cart with coolant drain		O	O

Specifications are subject to change without notice

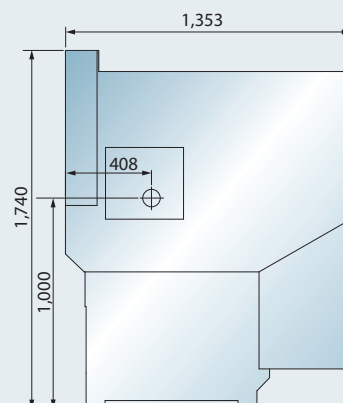
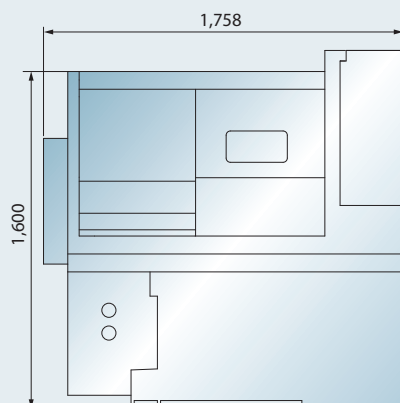
*1 For M models only.

*2 10.4" color LCD option needed.

FANUC CONTROL FUNCTIONS

		O _i Mate-TD	O _i -TD
PMC system	O _i Mate-TD PMC : 1 μ sec/step	S	-
	O _i D PMC 0.025 μ sec/step	-	S
Display	8.4" color LCD	S	S
	10.4" color LCD	-	O
Graphic function	Standard	S	S
	Dynamic	O	O
Full keypad	Small - 44 keys	S	S
	Large - 56 keys	-	O*2
Part program storage length	512K byte	S	S
	1M byte	-	-
Registerable programs	400	S	S
	64	S	S
Tool offset pairs	99	O	O
Servo control	HRV2 (3)	S	S
Conversational programming	Manual Guide O _i	S	S
	Manual Guide i	-	O*2
Servo motors	β i	S	-
	α i	-	S
	β i	S	-
Spindle motors	α i	-	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
Unexpected disturbance torque detection function		S	S
Polar coordinate & cylindrical interpolation		-	-
Multiple Threading		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
Fast ethernet		-	O

Machine Layout



Unit : mm

MACHINE SPECIFICATIONS

CAPACITY	TS-100		TS-150
Max. swing diameter / Swing over saddle	Ø 330 mm / Ø 75 mm		
Max. / Std. turning diameter	Ø 200 mm / Ø 165 mm		
Max. turning length	290 mm		
Max. weight load	50 Kg		
SPINDLE			
Chuck size	6" or 42 collet chuck		
Spindle nose	A2-5		
Hole through spindle	Ø 41 mm	Ø 56 mm	
Bar capacity	Ø 32 mm	Ø 45 mm	
Front / Rear spindle bearing diameter	Ø 70 mm / Ø 60 mm	Ø 80 mm / Ø 70 mm	
Spindle speed range	60 ~ 6,000 rpm		
Spindle motor output (Cont. / 15 min.)	5.5 kW / 7.5 kW		
Spindle drive system	Direct Belt Drive		
X & Z AXES			
Max. X / Z axes travel	305 mm / 320 mm		
X / Z axes rapids	24 m/min		
Slide way type	Box way		
X-axis servo motor	0.75 kW / 1 kW*1		
Z-axis servo motor	0.75 kW / 1 kW*1		
GANG TYPE TOOLING			
Shank size	<input type="checkbox"/> 20 mm / Ø 25 mm		
Cs-AXIS (OPTIONAL)			
Cs-axis dirve motor	BZ-sensor Ø 82 (Opt. HEIDENHAIN ERM280-120)		
Min. spindle indexing angle	± 0.001°		
Dynamic accuracy	± 0.002°		
TURRET (OPTIONAL)			
Stations	8		
Shank size	<input type="checkbox"/> 20 mm (Gang type <input type="checkbox"/> 20 mm) / Ø 25 mm (Gang type Ø 25 mm)		
LIVE TOOLING TURRET (OPTIONAL)			
Stations	8		
Shank size	<input type="checkbox"/> 20 mm (Gang type <input type="checkbox"/> 20 mm) / Ø 25 mm (Gang type Ø 25 mm)		
Live tooling shank size	ER 20 (Ø 13 mm)		
GENERAL			
Control	FANUC Oi-mate TD (Opt. FANUC Oi-TD)(MITSUBISHI E68L)		
Coolant / Hydraulic tank capacity	80 L / 30 L		
Machine weight	1,750 Kg		
Dimensions (L x W x H)	1,758 x 1,353 x 1,740 mm		

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GOODWAY MACHINE CORP.

Headquarters

No.13, 5th Road,
Taichung Industrial Park,
Taichung City, 407, Taiwan, R.O.C.
Website : www.goodwaycnc.com
E-mail : goodway@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