

TNIseries





High Efficiency Proven Reliability



Excellent Thermal Displacement Properties

With improvements to thermal displacement properties - Higher cutting accuracy can be achieved with minimum programming and setup times.





> Small Footprint

TNI Series helps to optimize shop floor space with it's compact size and high rigidity.

Enhance Productivity

1	

Process Enhancements

Optional equipment for the TNII series will improve machine flexibility and provide customers with an optimum production system.







Operational Efficiency

FUJI new HMI designed for ease of use and operation.

Designed with Efficiency in Mind

With improvements to thermal displacement properties - Higher cutting accuracy can be achieved with minimum programming and setup times.



The above-mentioned data is actual values, but not a performance guarantee.



Zero-center Type Headstock



The zero-center type headstock has a thermally symmetrical design, which keeps thermal displacement to the absolute minimum. The air purge mechanism of the headstock completely protects the headstock against cutting oil and chips. This mechanism, along with grease lubrication, assures long-term processing accuracy.

Optimal Bed Configuration

Fuji engineered bed is designed to be highly rigid while minimizing thermal displacement. In this design, both the feedback of the latest CAE analysis and the actual result are optimized.



Thermal cover

Air space in left in the thermal cover to prevent the sudden temperature change of the bed caused by the air outside, and minimize the deformation of the bed.



Space Utilization

TNII Series helps to optimize shop floor space with it's compact size and high rigidity.



The above-mentioned data is actual values, but not a performance guarantee.

High speed indexing turret



Cam type turret by servo motor for high speed indexing to reduce cycle time.

	Number of tool stations	Index time
TN300II	10	0.3
TN400II	12	0.4

The above-mentioned data is actual values, but not a performance guarantee.

High rigidity slide



Box way slide for long term operation with and high reliability.

The bearing rigidity has been improved by up to 140% with the design upgrade to 3 rows of X-axis support bearings. More stable machining for a long term and heavy duty cutting is possible.

TN300II		
Machine size (A×B×C)	mm	1600×1766×1699
Max. swing	mm	φ580
X-axis stroke	mm	205
Z-axis stroke	mm	385
TN400II		
Machine size (A×B×C)	mm	1900×2001×1827
Max. swing	mm	φ620
X-axis stroke	mm	265
Z-axis stroke	mm	465



Material	Cutting speed	Feed speed
	(m/min)	(mm/rev)
S45C	150	0.3
Material	Cutting speed	Feed speed
Material	Cutting speed (m/min	Feed speed (mm/rev)
Material S45C	Cutting speed (m/min 100	Feed speed (mm/rev) 0.1

Tailstock

Shaft machining is available with tailstock

TN300II

Quill stroke	180 or 230mm
Center type	Live Center MT.4
	Built-in Center MT.3
TN400II	
Quill stroke	180 or 230mm
Center type	Live Center MT.5
	Built-in Center MT.4







Process Enhancement

Optional equipment for the TNII series will improve the machine flexibility and provide customers with an optimum production system.



Confirms that the part is securely up against the locator. If air confirmation is not made, the cutting process does not begin.

Auxiliary loader



Mounted on the Z axis slide, the auxiliary loader unloads the processed work from the spindle chuck, which allows the cleaning of the work holding (option) prior to a raw part being loaded into the work holding.

* Can't mount tailstock at the same time.



Work pusher device can be installed on the turret to push the part into the chuck utilizing z-axis on the turret slide. This ensures that the workpiece is up against the locator. When used in conjunction with air confirmation, a stable process is achieved.



SWS type loading/unloading device

the device. The mechanism which all motions are actuated by one cylinder is simple and reliable.



Other options

○ Spindle coolant ○ Control panel cooler ○ Bar Feeder & I/F OMist collector OVarious chip conveyor

Ease of use and operation has been improved by controlling NC and robots with FANUC control. Workpieces can be loaded and unloaded faster than ever resulting in reduced cycle times and increased efficiency.



Robot operation setting function



Standard operation of the robots - loading from the entrance unit to the main machine, and unloading to the exit unit - can now be changed easily by selecting buttons on the operation panel. Additionally it is also possible to support a wide range of process flows such as when setting the unloading destination when a chute is installed as optional specifications and when quality checks are performed while leaving a workpiece in the machine.

Automatic point display function



It is possible to reduce the time taken to search for points in the program by searching for points that are being used from the program and displaying these points in the screen.

Tool Detector



This single unit performs three tasks : automatic tool compensation, tool damage and tool setting. An air blow off is provided near the sensor to prevent inaccuracies due to cutting chips or coolant.

		L672H <u>I</u> I	L673H <u>I</u> I	L672BII
model		TN300II	TN400II	TN400IIR
e speed	m/min	100	100	66
n speed	m/min	73	73	30
	kg	5+5	5+5	10+10
	mm	ø200 × 80	ø200 × 80	ø300 × 120
e(dia)	mm	ø25 [OP:40]	ø25 [OP:40]	ø30 [OP:50]



The hydraulic robot chuck enables stable clamping and workpiece handling with minimum space is possible by the thin type double hand.

Compact teach pendant



The conventional robot teach pendant and manual pulse generator are integrated into one, and the main machine and robot can be operated easily by just changing the screen on the pendant. Ease of operation is further improved by the graphical user interface and compact design that fits in one hand.

Smooth ECO



In addition to faster robot speed, an added benefit is it's energy saving operation. Electric consumption of the robot can be reduced by up to 35% automatically by the speed of the robot matching the tact time of the line.

System Layout

Streamline your process flow with various peripheral options designed to increase efficiency and maximize production.

Auxiliary loader The auxiliary loader installed on the z axis slide, combined with the gantry loader serve as a part turn over device. Safety fence The auxiliary loader unloads The robot loads the The robot unloads the processed the processed work. unprocessed work to the work from the auxiliary loader. chuck TRABOOK TNIOCE

Work Chute

The robot periodically takes out the workpiece and puts it in the quality check chute. This chute is also used to discharge auto gauging and seating confirmation NG parts.



Parts Turn Over / Parts Shift Device

Parts shift device to automatically transfer parts to the next robot, or Parts turn over device to present the parts in the correct orientation for the next process.

Work Stocker

Optional 10/12/20 station work stockers can be utilized as inlet, outlet or in/out style and greatly contribute to unmanned automation.



		MP5-20	MP5-30	MP5-40
Palette quantity	pcs	20	12	10
Work size	mm	φ120	φ203	φ300
Max. stacking height	mm	345	325	315
Max.load (palette)	kg	25	40	50



Auto Gauge

Placed on the side of the machine, this device ensures part quality by gauging specific process dimensions and automatically feeding back this information to the NC for dimension compensation.



Conveyor

Transfer the work between machines in a fully automated way.

User Friendly Operation

The operation panel has been redesigned to improve ease of use and operation.

The easy-to-use tool management screen, and various tools and screens that assist operation are provided in screens on the touchscreen panel.

FANUC 0i-TF Plus

Enhanced productivity with version up NC.

Improved program process speeds up to 57% results in faster parts cycle times.

	0i-TD		0i-TF Plus
Program memory	512K byte	\Rightarrow	2M byte
Program quantity	400	\Rightarrow	1000
Tool offset quantity	64	\Rightarrow	128

15 inch monitor

Fuji designed operation panel and HMI that promotes ease of use for the machine operator



Reduces searching

Intuitive and easy operation is possible from integrating lamps and buttons.

Auto operation possible lamps



Reduces steps

The number of times moving to an external screen is minimized by a layout based on workability.

Gathers the conditions for automatic operation



Conditions that are not met are displayed at the top of the list, eliminating the need to search for conditions across screens. In addition, it is easy to move to the necessary screens to meet conditions with a single button press.



By displaying error details of the machine robots and peripheral devices in the same screen users can check the location of the error at a glance without having to go back and forth between different screens

Fuji's original operation panel with outstanding ease of use New Control Panel and Design improves operator efficiency. Multi language system : 7 available languages.

Screen for tools



Displaying counters and wear offsets in the same screen makes it possible to input offsets while checking the count-up values during operation.

Digital type seating screen



The digital type seating screen can be selected in addition to the conventional type. Threshold values can be specified on the screen by using the digital type, and the attachment position of seating sensors can be flexible, leading to improvements in responsiveness.

■iHMI standard feature

Interactive programming enhances productivity and supports flexible parts production. Understanding the operation by simulation in advance reduces reworking during actual machining. Comparison of setup work time 2D drawing

3D simulation





Alarm message screen



Quick recovery for the machine is supported just by the screen display without checking instruction manuals because operation navigation is guided when an error occurs.



Abnormal loads due to tool damage during machining can be detected. It is possible to specify threshold values by referring to the maximum load and average load based on each cutting path instance displayed on the screen.



			Įunio
	NC program	Machining adjustment	Total
НМІ	2	2	4
iHMI	0.25	0.5	0.75

Note: Based on Fuji's proven results

Drastically reduces the setup work time

TN300I (Manual lathe)

●Chuck size : 8~10inch





TN300II (Automatic lathe)

Chuck size : 8~10inch Gantry robot

TN400I (Manual lathe) ●Chuck size : 10~12inch





Machine specifications

				TN300II					Robot
	Chuck size	Chuck size inch		8~10		Model type			L672HI
_	Spindle bearing I.D.		mm	Φ100		Object work	Work size (mm)	Φ200×80
	Spindle nose			A2-6			Max. load (I	kg)	5+5
-	Spindle bore		mm	Φ56		Axis	Servo axis		2-axis
	Spindle speed		min ⁻¹	Max.4000			Other		1-axis
	Spindle motor		kW	11/7.5/7.5 (15 Min / 60 Min / Cont.)		Tarveling axis	Driving sour	rce	Servo Motor
	Turret type	F	Position	10			Max. speed	m/min	100
	Tool type		mm	Square shank : 25				m/sec	1.66
				Boring bar : Φ32 (Option : Φ40)		Vertical axis	Driving sour	rce	Servo motor
	NC control			FANUC 0i-TF Plus			Max. speed	m/min	73
	Slide travel	X-axis	mm	205				m/sec	1.21
_		Z-axis mm		385		Index	Driving sour	rce	Inverter
	Rapid traverse	X-axis	m/min	24			180° Motion	sec	1.0
		Z-axis	m/min	24		Stroke	Traveling a	kis (mm)	2425
	Feed setup Unit	X-axis	mm	0.001			Vertical axis	s (mm)	660
		Z-axis	mm	0.001		Chuck stroke	Diameter (n	nm)	Φ25 (Option : Φ40)
	Servo motor	X-axis	kW	1.2					
		Z-axis	kW	1.2					
	Power capacity		KVA	22 (Automatic : 29)					
	Machine size								
	Floor space	mm x mm	160	00 x 1607 (Automatic : 1600 x 1757) (W X D)					
_	Center height	mm		1050					
	Machine height	mm		1710 (Automatic : 2578)					
	Machine weight	kg		2500 (Automatic : 3000)					
	Tailstock spec.								
	Work length	mm		Max.290					
	Tailstock	mm		Quill travel : 180 (Option : 230)					
	Quill taper			Live Center MT.4					
				Built-in Center MT 3					

Machine specifications

			TN400II/TN400IIR	
Chuck size		inch	10~12	
Spindle bearing I.D.	mm		Φ120	
Spindle nose			A2-8	
Spindle bore		mm	Φ67	
Spindle speed		min ⁻¹	Max. 2540	
			OP: Max. 3250	
Spindle motor		kW	18.5/15/15 (15 Min / 60 Min / Cont.)	
Turret type	P	osition	12	
Tool type		mm	Square shank : 25	
			Boring bar : Φ32 (Option : Φ40)	
NC control			FANUC 0i-TF Plus	
Slide travel	X-axis	mm	265	
	Z-axis	mm	465/430	
Rapid traverse	X-axis m/min		24	
	Z-axis	m/min	24	
Feed setup unit	X-axis mm		0.001	
	Z-axis	mm	0.001	
Servo motor	X-axis	kW	1.8	
	Z-axis	kW	1.8	
Power capacity		KVA	30 (Automatic : 35)	
Machine size				
Floor space	mm x mm	190	0 x 1807 (Automatic : 1900 x 1971) (W X D)	
Center height	mm		1110	
Machine height	mm		1837 (Automatic : 2683)	
Machine weight	ght kg		3500 (Automatic : 4000)	
Tailstock spec.				
Work length	mm		Max.360	
Tailstock mr	n		Quill travel : 180 (Option : 230)	
Quill taper			Live Center MT.5	
			Built-in Center MT.4	



TN400I (Automatic lathe)

●Chuck size : 10~12inch

Gantry robot

Live tool specification

-	
Max. clamping tool dia.	Ф20 [mm]
Number of station	12 [position]
Spindle speed	Max.4000 [min-1]
Spindle motor	4.5kw [6.0HP]

Performance (Drill/Tapping)

	Dril	Tapping
Max. Cut dia (Φ)	Ф20 [mm]	M16×2.0 [mm]
Spindle speed	65 [m/min]	9 [m/min]
Cutting speed	1035 [min-1]	179 [min-1]
Cutting feed	0.22 [mm/rev]	358 [mm/min]

			Robot	Robot
Model Type		L673HI	L672BI	
Object work	Work size (mm)	Ф200×80	Ф300×120
	Max. load (I	kg)	5+5	10+10
Axis	Servo axis		2-axis	2-axis
	Other		1-axis	1-axis
Traveling axis	Driving sour	rce	Servo motor	Servo motor
	Max. speed	m/min	100	66
		m/sec	1.66	1.1
Vertical axis	Driving source		Servo motor	Servo motor
	Max. speed	m/min	73	30
		m/sec	1.21	0.5
Index	Driving source		Inverter	Inverter
	180° Motion	sec	1.0	1.5
Stroke	Traveling a	kis (mm)	2953	3160
	Vertical axis	s (mm)	660	880
Chuck stroke	Diameter (mm)		Φ25 (Option : Φ40)	Ф30 (Option : Ф50)

TN300II

Tailstock spec. (TS)



Auxiliary loader spec. (T)



TN400I





TN400IIR



Auxiliary loader spec. (T)



Tailstock spec. (TS)

Auxiliary loader spec. (T)





Tooling system

10-position (TN300II) SM-37R



12-position (TN400II) SM-38R







Spindle output characteristics >



Standard spec. (Max. speed 2540min-1)

Optional spec. (Max. speed 3250min⁻¹)

200

150

100

50



12-position turret (TN400IIR)









TN300II (Manual lathe)





TN400II (Manual lathe)





FULL Spindle Chuck

Besides the machine tools, FUJI offers the chuck and tooling solution too. Special customized chucks are also available. Please feel free to contact us.

Standard chuck

FUJI provides with self-designed and self-produced chuck in standard specification.

Wedge type 3-jaw chuck

Pin arbor chuck

Ball lock chuck

Compensating Chuck

I.D. collet chuck

O.D. collet chuck











Special chuck

FUJI's experienced technical team offers customers the best chuck solution with rich know-how.

I.D. collet chuck with anti-vibration clamps



For the O.D. machining of the deep bowl type work piece, clamp the depth of internal diameter of the work piece securely with I.D. collet, and fasten the work piece with anti-vibration clamps. Work piece wrap can be avoided by the compensation from the anti-vibration clamps.

S collet chuck with fingers



Perform the end face clamping basing on the internal diameter of the work piece.

Hold the internal diameter with collet, and clamp the end face of the work piece with fingers. Then the collet unclamps and moves back for I.D. machining.

O.D. collet chuck with chips outlet



Fix a chips outlet in the O.D. collet chuck, for disposing the chips which interferes with the clamping for long shaft work piece.

By clamping the work piece securely with double taper, the chuck can ensure the rigidity of the work piece.

I.D. collet chuck with anti-vibration clamps



Equipped with anti-vibration clamps, this special chuck can prevent the vibration during the O.D. machining of thin sheet type work piece. Clamp the internal diameter of the work piece with collet securely, and fasten the periphery with the anti-vibration clamps. Work piece wrap can be avoided by the compensation from the anti-vibration clamps, which are driven by built-in air cylinder.

The order-to-delivery of special chuck Chuck determination Chuck selection Inspection Work piece Delivery production Chuck type Clamping position In-company Inspection in real machine Clamping method production/assembly Real machining Fitting check needed or not Coolant needed or not

NC specifications

Controled systems : 1 Controled axes : 2 : 3*1 Simultaneously controled axes : 2 (X : 3 (X,2 Controled spindle axes : 1 : 2*1 Least input increment (X-ais dia.) : 0.001 Flexible feed gear HRV2 control Inch/metric conversion Interlock Machine lock Emergency stop Overtravel Stored stroke check 1 Mirror image Follow-up Servo OFF/mechanical handle Chamfering ON/OFF Backlsh compensation	Feed Function 2)*1 Programming	Rapid traverse rate Feed per minute Feed per revolution Tangential speed constant control Cutting feedrate clamp Automatic acceleration/deceleration Rapid traverse bell-shaped deceleration Feedrate override Jog override Override cancel Manual per revolution feed Tape code : EIA/ISO Auto recognition Label skip Parity check Control in/out Optional block skip : 1 block Max. programmable value : ±8-digit Program number : O4-digit Sequence number : N5-digit Absolute/incremental programming Partity check	Tool Functions	Tool offset counts : 128 Tool position offset Tool geometry/wear offset Tool life management Tool offset value counter input Radius/tool nose R offset Direct input of tool offset value measured Part program storage : 2Mbyte Number of registerable programs : 1000 Part program protect Extended part program editing Background editing Status display Clock function Current position display Program comment display Parameter setting and display Self-diagnosis function
Backlsh compensation for each rapid traverse and cuttin Position switch	feed	Decimal point programming/ pocket calculator type decimal point programming		Alarm display Alarm history display
Unexpected disturbance detection Automatic operation MDI operation Program number search Sequence number search Prevention of operator errors Buffer register Dry run Single block JOG feed Manual reference position return Reference position setting without DU Reference position setting with mechanical str Reference position return speed sett Reference position shift Manual handle feed 1 machine	G per g	pocket calculator type decimal point programming Input unit 10 times multiply Diameter/radius programming Rotary axis designation Rotary axis designation Rotary axis roll-over Coordinate system setting Automatic coordinate system setting Coordinate system shift Direct input of coordinate system shift Workpiece coordinate system G code systemA/B/C Optional chamfering/corner R Programmable data input : G10 Programmable parameter input Sub program call : 10 folds nested Custom macro Addition of custom macro common variables:600 Interruption type custom macro		Operator message history display Operator history display Help funtion Run hour and parts count display Actual cutting feedrate display Actual spindle speed and T code display Operating monitor screen System configuration screen Servo information screen Servo information screen Servo adjustment screen Servo adjustment screen Servo waveform display Periodic maintenance screen Maintenance information screen Multi-language (Standard) : English and 6 more languages Dynamic language selection
Interpolation Resitioning	_	Canned cycles Multiple repetitive cycles		Data protection key 4 types
Positioning : G00 Exact stop mode : G61 Tapping mode : G66 Cutting mode : G66 Exact stop : G00 Linear interpolation : G00 Circular interpolation : G00 Dwell : G00 Polar coordinate interpolation : G02 Cylindrical interpolation : G32 Multiple threading : G32 Continuous threading : G31 Reference position return : G22 Reference position return : G22	Auxiliary and Spindle Functions	Canned cycles for drilling Circular interpolation by R programming M Function : M3-digit S Function : S4-digit T Function : T4-digit High-speed M/S/T/B interface Multiple command of auxiliary function Spindle serial output Spindle override Spindle override Spindle orientation Rigid Tapping *1 CS Contour Control *1	Data Input/Output Communications Display	Reader/Punch Interface : ch1 External data input Memory card input/output USB memory input/output Embedded ethernet 15" color LCD with touch panel
	Controled systems : 1 Controled axes : 2 :3*1 Simultaneously controled axes : 2 (X, :3 (X,Z, Controled spindle axes : 1 :2*1 Least input increment (X-ais dia.) : 0.001n Flexible feed gear HRV2 control Inch/metric conversion Interlock Machine lock Emergency stop Overtravel Stored stroke check 1 Mirror image Follow-up Servo OFF/mechanical handle Chamfering ON/OFF Backlsh compensation Backlsh compensation Backlsh compensation MD1 operation Program number search Sequence number search Prevention of operator errors Buffer register Dry run Single block JOG feed Manual reference position return Reference position setting without DO Reference position setting with achanical stop Reference position setting without DO Reference position setting Si Reference position return Casa Reference position return check : G27 2nd reference position return check : G27	Controled systems:1FeedControled axes:2:3'1Simultaneously controled axes:2 (X,Z):3 (X,Z)1:3 (X,Z)1Controled spindle axes:1:2'1:2'1Least input increment (X-ais dia.):0.001mmFlexible feed gear	Controlled systems :1 Feed Rapid traverse rate Feed per minule Simultaneously controled axes :2 (X,Z) (X,Z) (Y,Z) Feed per minule Feed per minule Controled spindle axes :1 Tangential speed constant control Cultimatic coleration (Acceleration) Laast input increment (X-ais dia) :0.01mm Rapid traverse bell-shaped deceleration Feed per revolution feed Jog override Overfravel Machine lock Feed per revolution feed Manual per revolution feed Interlock Feed per revolution feed Manual per revolution feed Machine lock Feed per minute Second (Control inota) Emergency stop Overtravel Solar distroken et al andie Cohamtering ONOFF Backsh compensation Feed per animuber : 8-Gigit Pastion commutants Freed per animuber : 8-Gigit Absolute/incremental programming Deschartion Feed per animuber : 8-Gigit Absolute/incremental programming Deschartion Feed per animuber : 8-Gigit Absolute/incremental programming Deschartion Feed per animuber : 8-Gigit Absolute/incremental programming Destain top	Controled systems :1 Feed Rapid traverso rate Feed primitule Simultaneously controled axes :2 Simultaneously controled axes :2 Function Tragential speed constant control Tragential speed constant control Tragential speed constant control Poil Controled spindle axes :1 :1 Simultaneously controled axes :2 Function Tragential speed constant control Tragential speed constant control Poil Plackbie feed peri :2 Programming Trage code :EIA/ISO Auto recognition Feed peri revolution feed Feed peri revo

A previous arrangement may be necessary depending on the specifications. *1 TN400IIR

Reading trends and nurturing trust.

FUJI opened its doors in 1959 in the midst of Japan's transition from light to heavy industry, and since then has been meeting market needs for high precision manufacturing equipment. Embracing the rapid advances in motorization, Fuji was quick to recognize the window of opportunity existing in machine tools for the automotive industry, and established a reputation for providing durable and reliable machines to the industry. Presently, Fuji continues to develop space and labor saving production lines, integrating unprecedented technology to meet the demands of the industry.



(FS single purpose hydraulic lathe)

Headquarters

At Fuji's Headquarters, Electronic assembly equipment and the new field products are developed and designed.



Toyota plant

At Toyota Plant, Machine tool equipment is designed and manufactured.



Okazaki plant

At Okazaki Plant, Electronic assembly equipment is manufactured.







(Machine Tools Division)

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Brazil	Fuji Do Brasil Maguinas Industriais Ltda.

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Europe	FUJI EUROPE CORPORATION GmbH		
Korea	DONGWOO TRADING CO., LTD		

SARA E&T CO., LTD. Fuji Machine (Thailand) Co.,Ltd Thailand

India Proteck Machinery Pvt. Ltd.

The mentioned data on this catalog is actual value, but not a performance guarantee.

- Specifications are subject to change without notice.
- The photos include options.

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