

THL-620 Series

CNC Lathe



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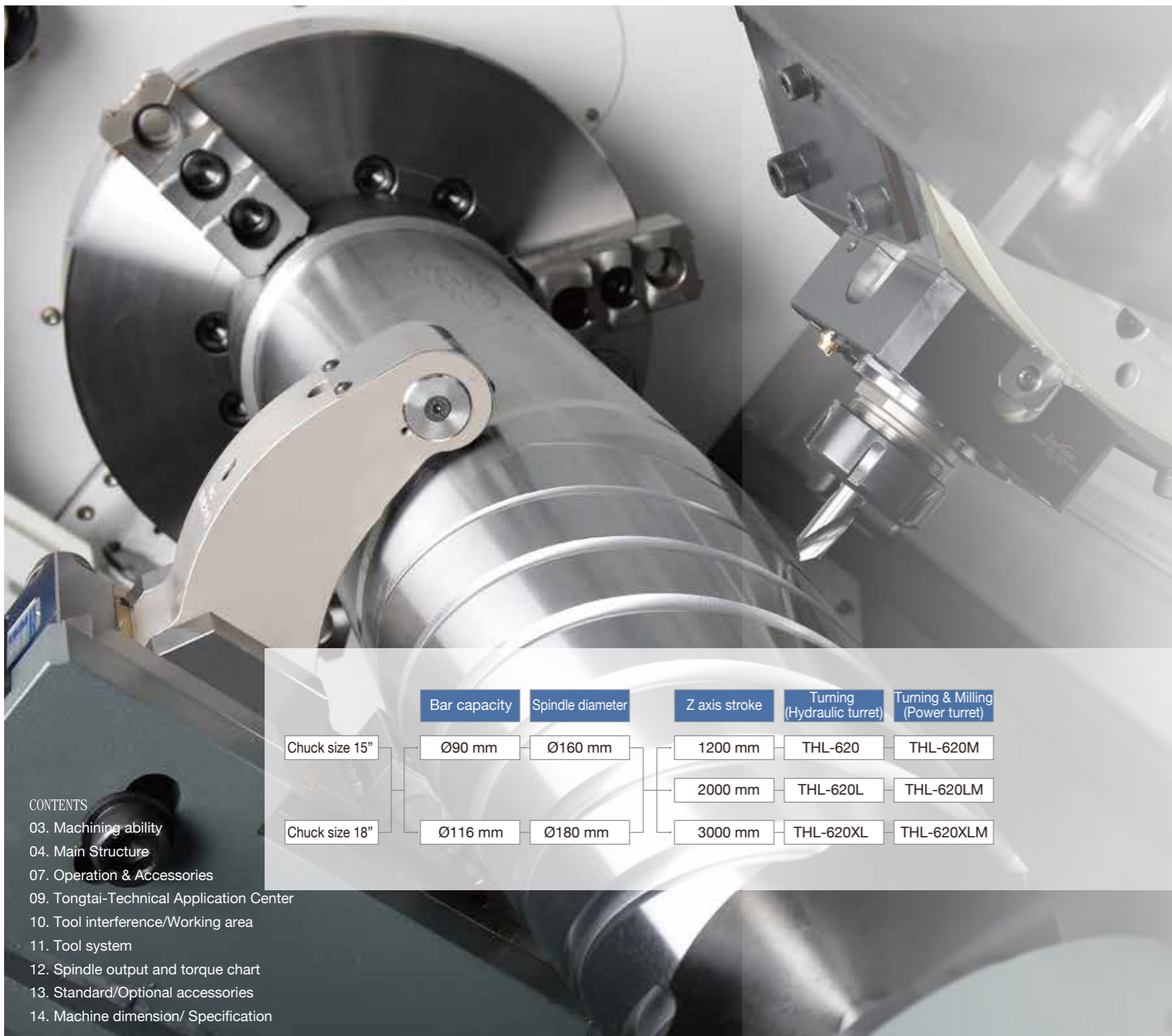
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THL-620 Series



With the optimal structure design, the one-piece machine base is made of high quality cast iron. The box ways are fine machined, well heat treated and finished by grinding with strict inspection. This solid structure builds the best base for high dynamic rigidity and machining performance.

The ball screws are driven directly by high output servo motors with couplings to avoid transmission error. The machining efficiency is raised by the outstanding rapid traverse 20 m/min.

The maximum spindle torque reaches 1477 Nm by using 37 kw spindle motor and dual speed gear box, and it provides more than enough to the maximum turning diameter Ø620 mm. In addition to the standard Ø160 mm headstock, the enhanced Ø180 mm headstock is also available with 37/45 kw spindle motor to expand the applications.

The standard hydraulic turret is installed with 320 mm big curvic couplings inside for high precision positioning and it provides the necessary rigidity for heavyduty cutting. The C axis and the strong power turret with advanced tooling system BMT-75 are also available to give compound turning and milling functions. A rotary encoder is used to feed back the position of C axis for excellent positioning accuracy and repeatability. The live tools are driven by an 11/15 kw spindle motor and surely it allows high output for milling, drilling and tapping.

The stroke of Z axis is standard as 1200 mm and optional as 2000/3000 mm according to the customer's demand. The steady rest is possible to be installed for long part machining. The powerful built-in quill type tailstock is programmable and clamped by a hydraulic cylinder for high positioning rigidity.

Chuck size	Bar capacity	Spindle diameter	Z axis stroke	Turning (Hydraulic turret)	Turning & Milling (Power turret)
Chuck size 15"	Ø90 mm	Ø160 mm	1200 mm	THL-620	THL-620M
			2000 mm	THL-620L	THL-620LM
Chuck size 18"	Ø116 mm	Ø180 mm	3000 mm	THL-620XL	THL-620XLM

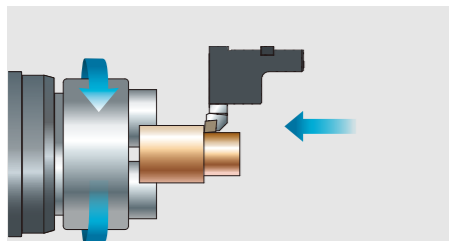
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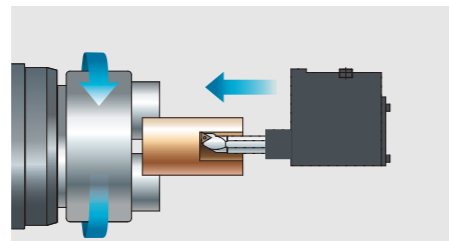
Machining ability

Turning Material: S45C



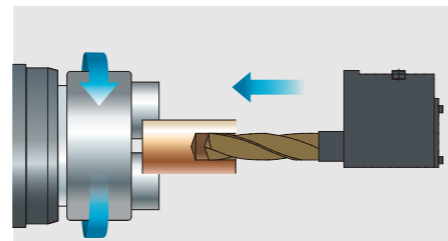
O.D. turning

Material removal rate	733 cm ³ /min
Cutting depth	13 mm
Spindle speed	192 rpm
Feedrate	0.5 mm/rev
Cutting speed	105 m/min



I.D. turning

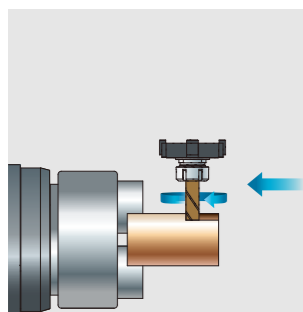
Material removal rate	629 cm ³ /min
Cutting depth	13 mm
Spindle speed	201 rpm
Feedrate	0.5 mm/rev
Cutting speed	120 m/min



Drilling

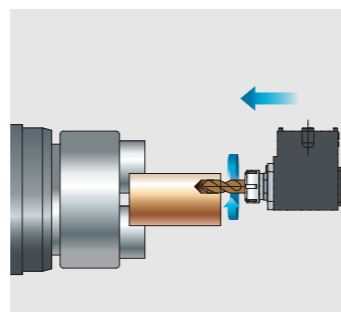
Diameter	Ø50 mm
Spindle speed	191 rpm
Feedrate	0.3 mm/rev
Cutting speed	30 m/min

Milling Material: S45C



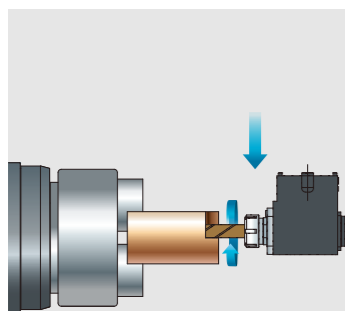
End milling

Material removal rate	224 cm ³ /min
Tool	end mill Ø25 mm (4 teeth)
Spindle speed	800 rpm
Cutting feedrate	320 mm/min
Cutting width	25 mm
Cutting depth	28 mm



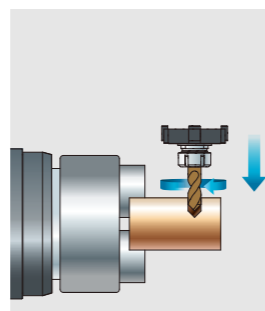
Drilling

Material removal rate	80 cm ³ /min
Tool	drill Ø32 mm (2 teeth)
Spindle speed	249 rpm
Feedrate	0.4 mm/rev
Cutting speed	25 m/min



End milling

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※THL-620LM testing data with gear box type spindle

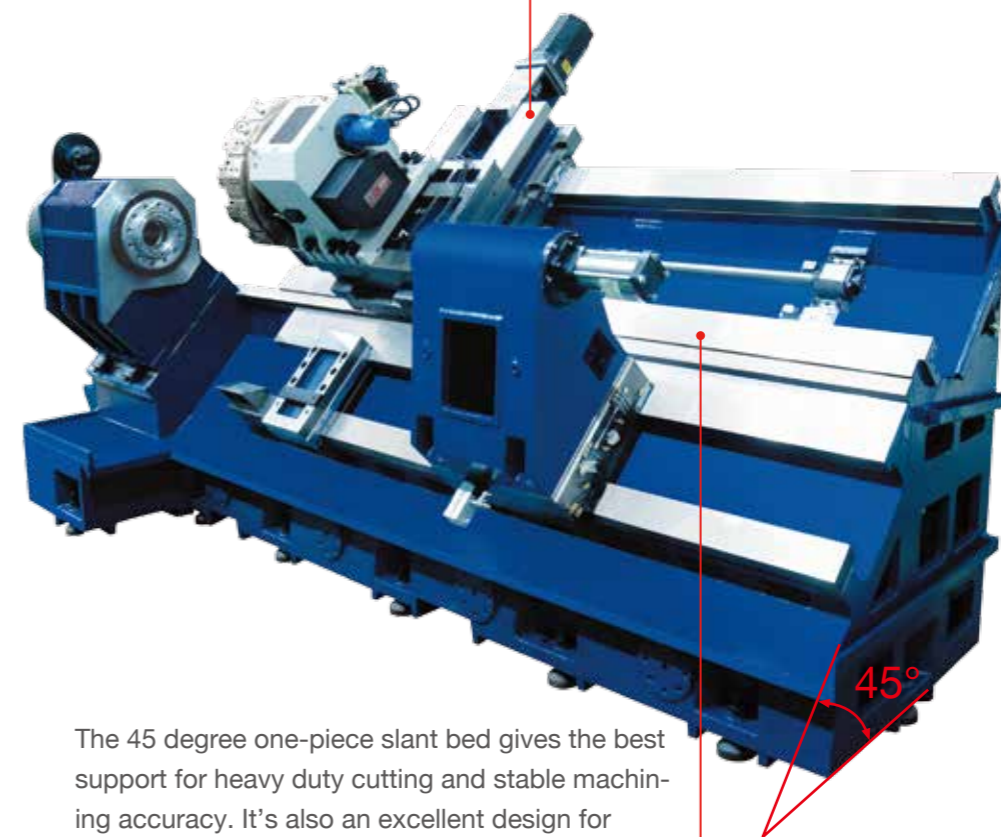
Main Structure

High rigidity box-way structure



Scraping

The high precision scraping is carried out by skillful engineers to obtain the perfect lubrication with correct oilfilm. The machine accuracy and the lifetime of slides are both raised accordingly.



The 45 degree one-piece slant bed gives the best support for heavy duty cutting and stable machining accuracy. It's also an excellent design for easy chip flow.

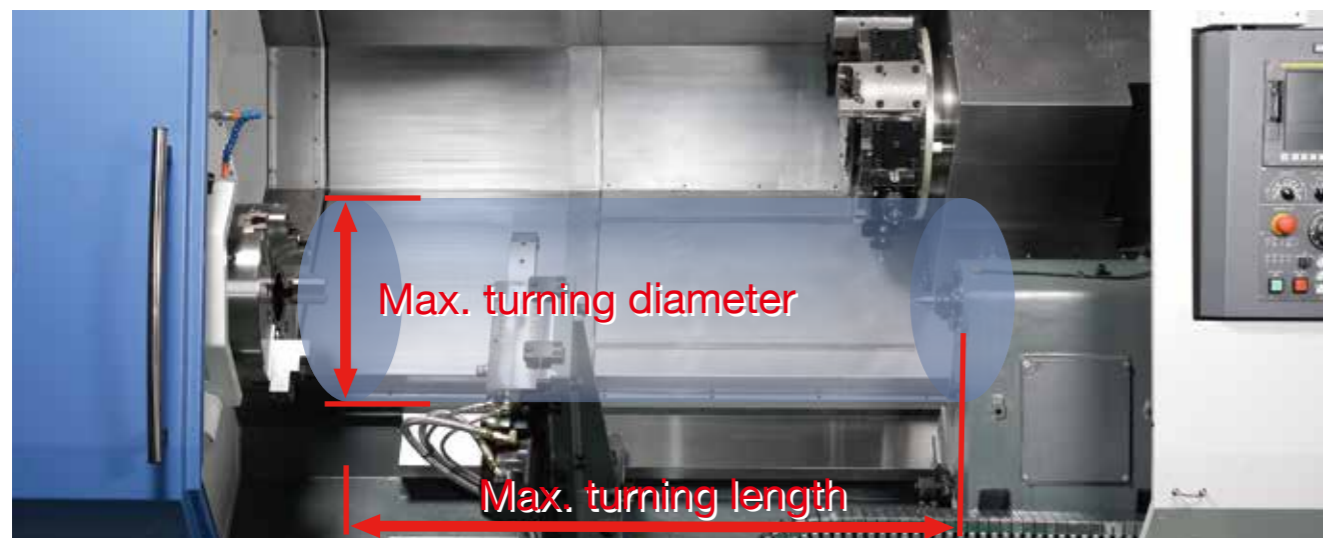


High precision feeding units

Both X and Z axes are designed with box-way structure. With proper heat treatment and grinding process, the high precision feeding units provide the high rigidity for heavy duty or intermittent cutting.

Main Structure

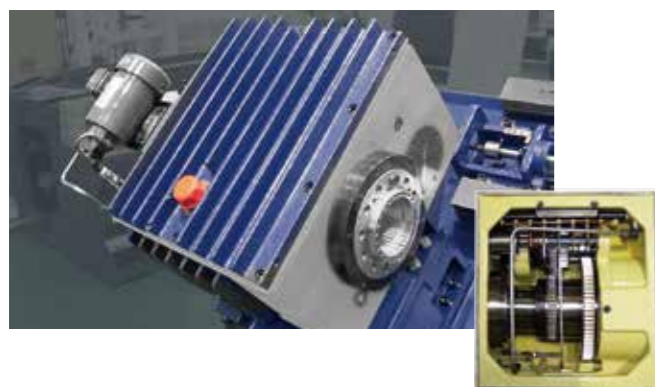
Working area



Model	THL-620	THL-620L	THL-620XL	THL-620M	THL-620LM	THL-620XLM
Max. swing diameter	Ø780					
Max. swing dia. over saddle	Ø620					
Max. turning diameter	Ø620					
Max. turning length	1100	1900	2900	1100	1900	2900

Unit : mm

Spindle with gear box



Spindle diameter Ø160 mm			
	Gear box type	Single axle type	Single axle with external gearbox
Max. speed	2,500 rpm		
Max. torque	1477 Nm	608 Nm	2102 Nm

Spindle diameter Ø180 mm		
	Single axle type	Single axle with external gearbox
Max. speed	2,000 rpm	
Max. torque	659 Nm	2205 Nm

Cs axis with brake and rotary encoder (optional)

The CS axis is fed back by a rotary encoder with multi-points positioning function. The minimum indexing increment 0.001 degree allows various machining needs with different angles.



Turret

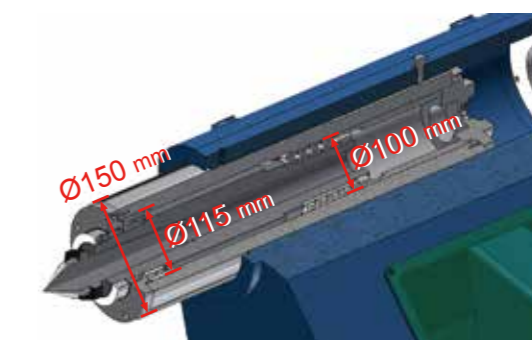
Power turret (optional)



	Hydraulic turret	Power turret
Tool capacity	12	12
Indexing time (1-station)	1.2 sec	1 sec
Indexing time (6-station)	1.75 sec	1.5 sec
Max. speed of live tool	-	3000 rpm
Spindle output of live tool	-	15/11 kW

Tailstock

Travel	990/1790(L)/2790(XL) mm
Quill travel	150 mm
Center taper	MT5
Max. thrust	1000 kgf



Operation & Accessories

Sweivel-type operation panel Door opening width



The swivel panel makes operator easy to operate and inspect during operation. The wide door opening makes parts haning and maintenance more convenient.

Chip conveyoyr

According to different workpiece materials and chips, the clients can to select suitable conveyors for achieving the best chip disposal. Tongtai provides various chip conveyors for our clients' convenience.



	80% full		
Model	THL-620/THL-620M	THL-620L/THL-620LM	THL-620XL/THL-620XLM
Coolant tank capacity	240 L	290 L	400 L

Specification	Steel		Cast iron		Aluminum/ Non-ferrous metal		
	Long/Curl chips	Short chips	Powder chips	Short chips	Long/Curl chips	Short chips	Powder chips
Hinge type	○	×	×	×	○	×	×
Scraper type	×	○	○	○	×	○	○
Magnetic scraper type	×	○	○	○	×	×	×

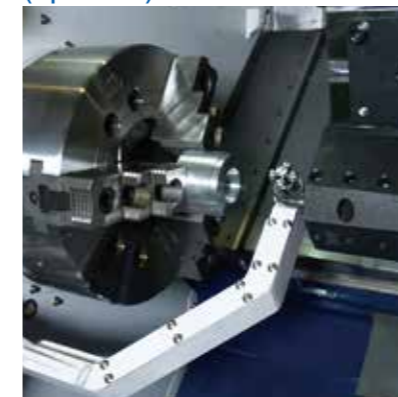
Short chips : Chips shorter than Ø60 mm or ball type chips smaller than Ø40 mm. ○ : Suitable × : Non-suitable
 Curl long chips : Chips' length is longer than short ones.

Steady rest (optional)

The hydraulic steady rest offer stable support for long shaft to ensure turning accuracy.



Manual tool presetter (optional)



Disc type oil skimmer (optional)

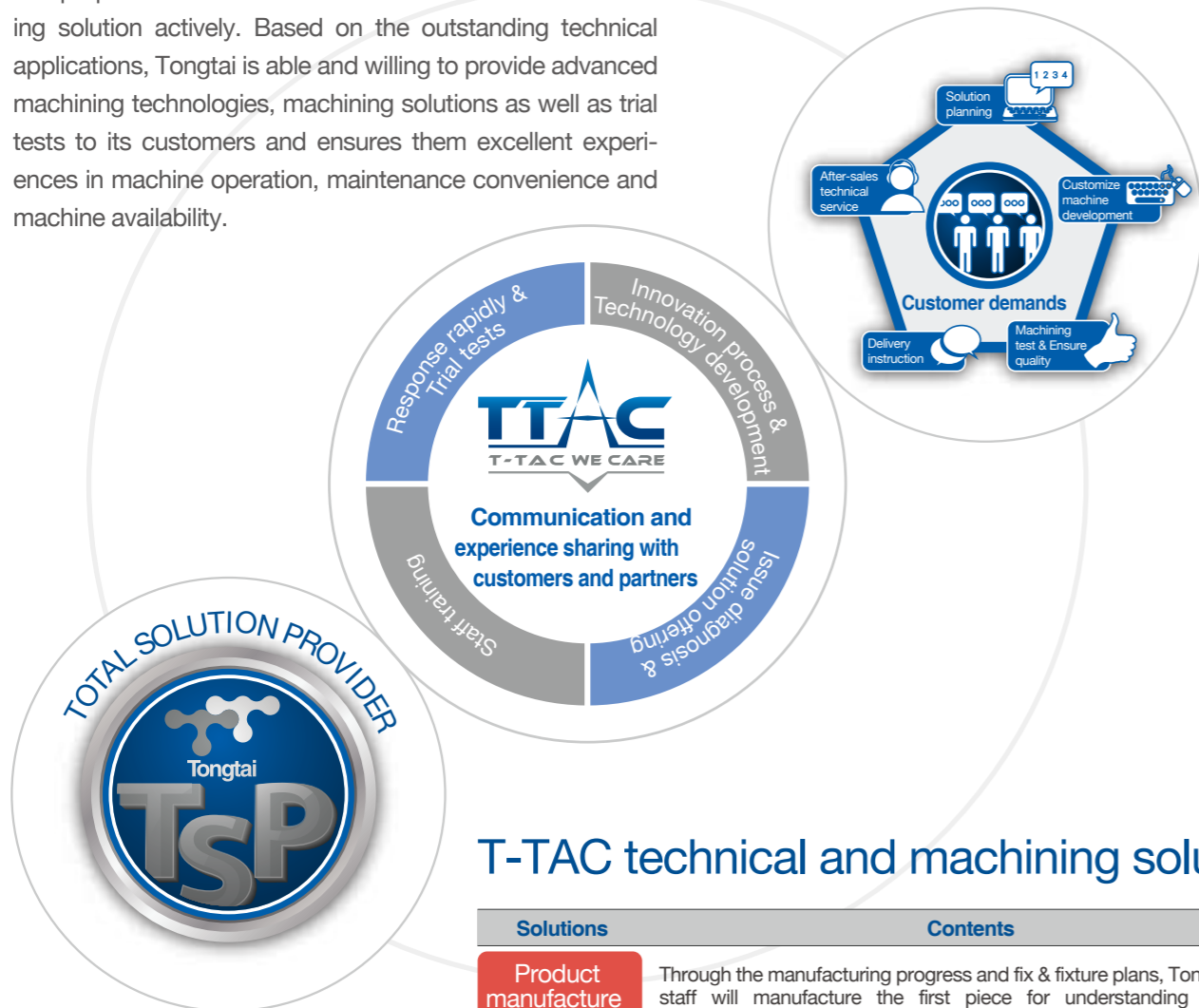


Oil mist collector (optional)



Tongtai-Technical Application Center

The purpose of T-TAC is to take care of customer's machining solution actively. Based on the outstanding technical applications, Tongtai is able and willing to provide advanced machining technologies, machining solutions as well as trial tests to its customers and ensures them excellent experiences in machine operation, maintenance convenience and machine availability.

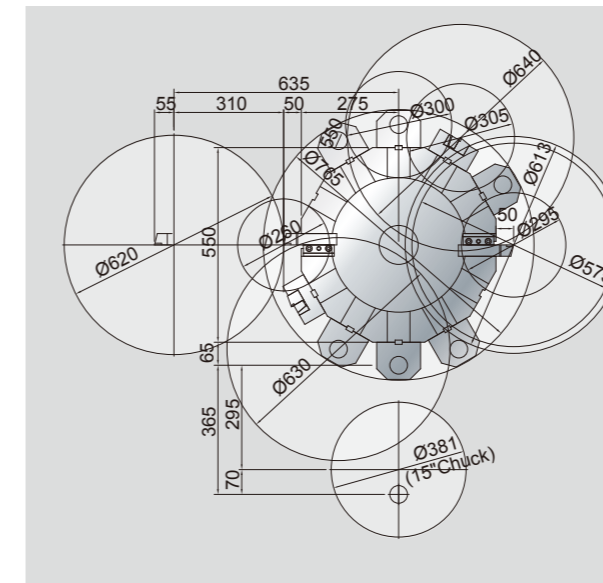


T-TAC technical and machining solutions

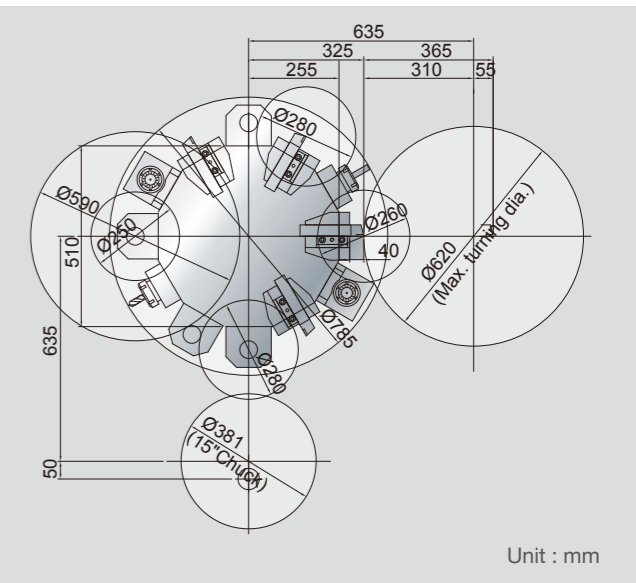
Solutions	Contents
Product manufacture test	Through the manufacturing progress and fix & fixture plans, Tongtai's skilled staff will manufacture the first piece for understanding the client's corresponding demands.
Machining technologies	By introducing innovative technologies and adding the extra functions, T-TAC is available to provide the brand-new solutions.
Machine technology	Our technical staff will test current problems, which clients have, in the same machine model for processing problem diagnosis and providing possible solutions. Furthermore, our skilled staff is able to provide the services at the client's factory.
Training	T-TAC is open to train current clients, potential customers, agents, teachers / students, and employees and to strengthen their abilities.
Technology exhibits	T-TAC is also an excellent platform to launch new products/technologies by cooperation with software/hardware suppliers. With presentation of highly reliable products/technologies, it's possible to provide higher efficiency and availability solutions than existing ones.

Tool interference/Working area

Hydraulic turret



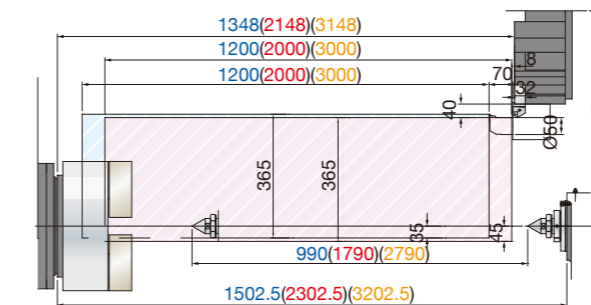
Power turret(BMT75)



Unit : mm

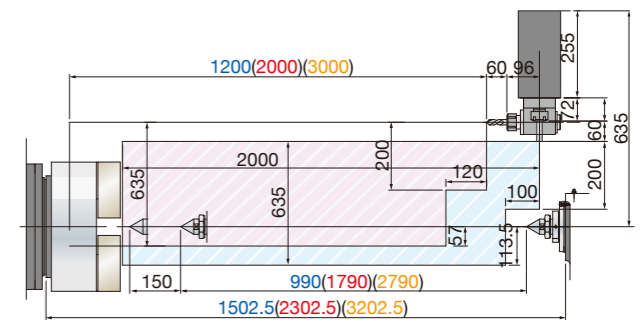
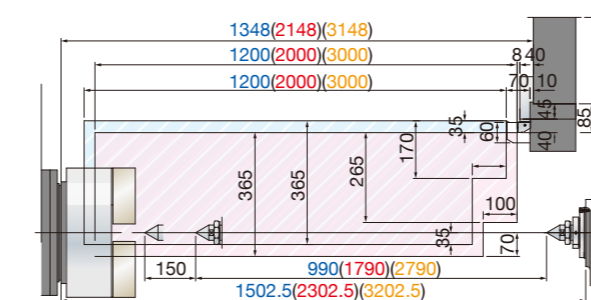
Working area

Hydraulic turret



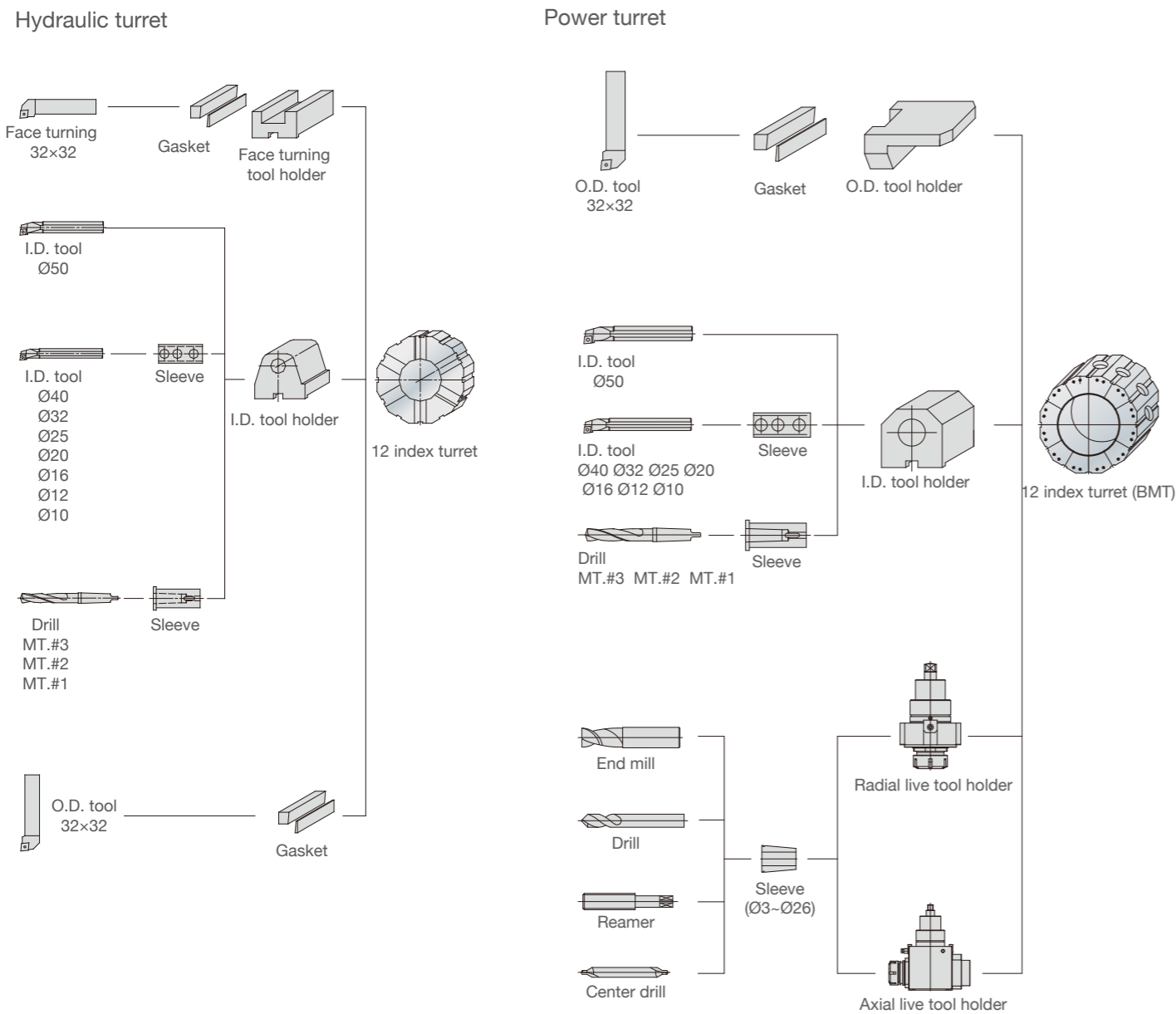
— THL-620/THL-620M
— THL-620L/THL-620LM
— THL-620XL/THL-620XLM

Power turret

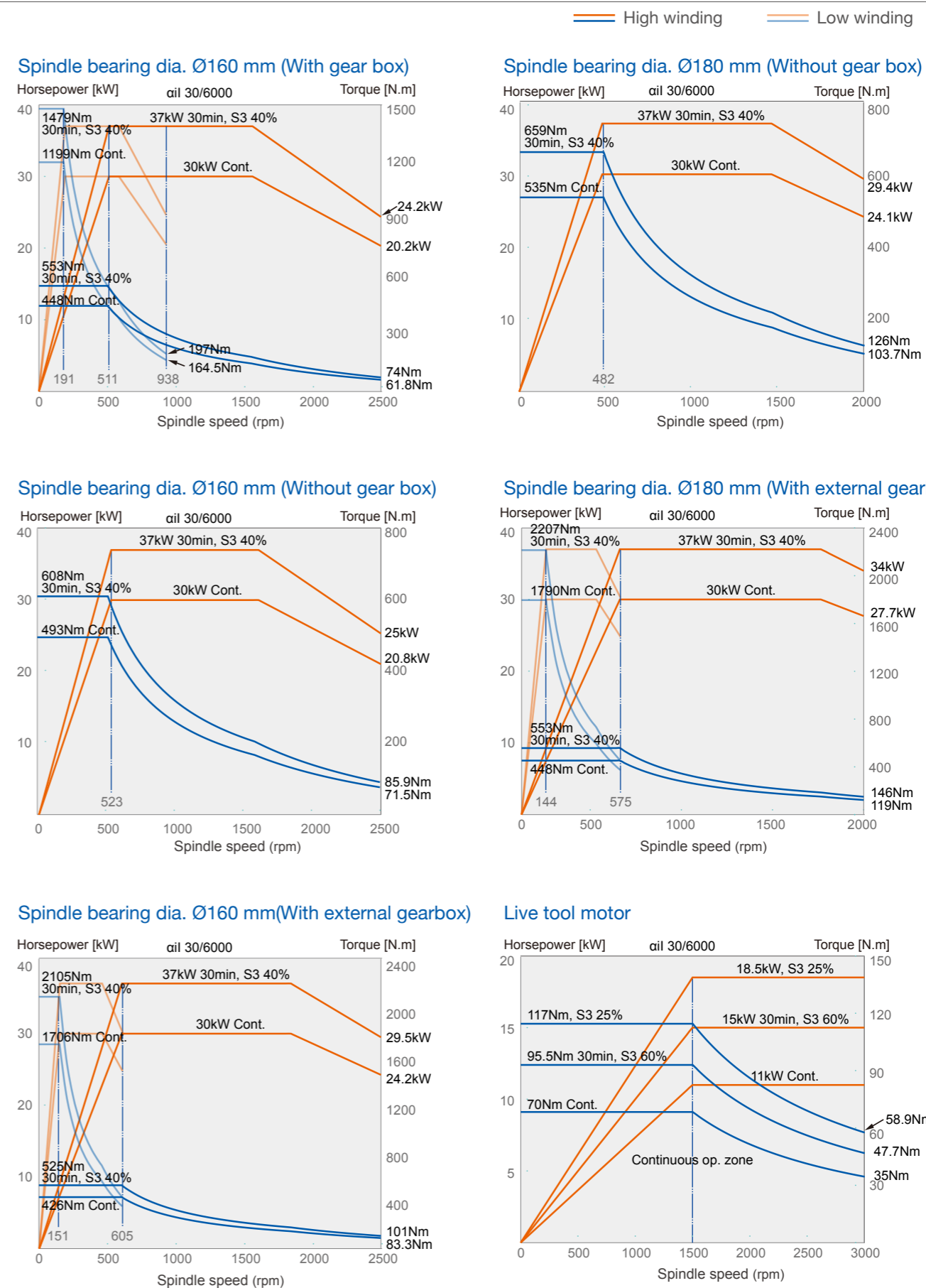


Unit : mm

Tool system



Spindle output and torque chart

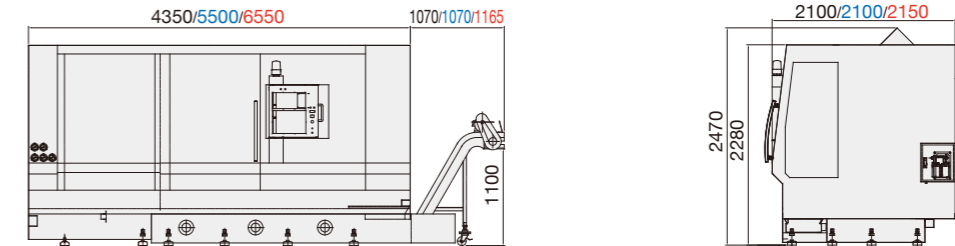


Standard/Optional accessories

		Standard	Optional
Spindle	Ø160 mm Gear box type	●	
	Ø160 mm Single axle type		○
	Ø160 mm Single axle with external gearbox		○
	Ø180 mm Single axle type		○
	Ø180 mm Single axle with external gearbox		○
Chuck	15" Through hole chuck	●	
	15" Non through hole chuck		○
	18" Through hole chuck		○
	18" Non through hole chuck		○
Turret	Hydraulic turret	●	
	Power turret (BMT75)		○
Chip conveyor	Hinge type	●	
	Scraper type		○
	Magnetic scraper type		○
Linear scale	5µm resolution		○
	3µm resolution		○
Coolant & air blow	Coolant through spindle		○
	Air blow through spindle		○
	Coolant on spindle side		○
	Air blow on spindle side		○
Automation equipment	Bar feeder		○
	Automatic door		○
Protection devices	Z axis torque coupler		○
Others	Oil skimmer		○
	Oil mist collector		○
	Air conditioner for electrical cabinet		○
	Manual tool presetter		○
	Steady rest		○
	Air gun		○
	Coolant gun		○

Machine dimension · Specification

Unit : mm



— THL-620/THL-620M
 — THL-620L/THL-620LM
 — THL-620XL/THL-620XLM

Specification

Item	Specification	Unit	THL-620[L/XL]	THL-620M[LM/XLM]
Capacity	Max. swing diameter	mm	Ø780	
	Max. swing diameter over saddle	mm	Ø620	
	Max. turning diameter	mm	Ø620	
	Max. turning length	mm	1,100[1,900/2,900]	
Spindle	Spindle nose		A2-11	
	Spindle speed	rpm	2,500 (opt. 2,000)	
	Chuck O.D.	inch	15" (opt. 18")	
	Through-spindle hole diameter	mm	Ø105 (opt. Ø125)	
	Bar capacity	mm	Ø90 (opt. Ø116)	
	Spindle bearing diameter	mm	Ø160 (opt. Ø180)	
Turret	Tool capacity	pcs	12	-
	O.D. tool	mm	32×32	-
	I.D. tool	mm	Ø50	-
Power turret	Tool capacity	pcs	-	12 (BMT-75)
	Motor	kW	-	15/11
	O.D. tool	mm	-	32×32
	I.D. tool	mm	-	Ø50
	Max. speed	rpm	-	3,000
Travel	X/Z axis travel	mm	365/1,200 [2,000/3,000]	
Feed	X/Z axis rapid traverse	m/min	20/20	
	Cutting feedrate	mm/rev	0.001-5,000	
Tailstock (optional)	Tailstock travel	mm	990/1,790/2,790	
	Quill travel	mm	150	
	Tailstock taper		MT#5	
	Quill diameter	mm	Ø150	
	Driving system		Programmable	
Hydraulic unit	Hydraulic tank capacity	L	40	
	Hydraulic motor	kW	2.2	
Coolant unit	Coolant tank capacity	L	240 [290/400]	
	Coolant motor	kW	1.1×1/1.3×1	
Motor	Spindle (50% ED)	kW	37/30 (opt. 45/37)	
	X/Z axis servo motor	kW	4.0/7.0	
Controller			FANUC Oi-T	
Dimension	L×W×H	mm	4,350[5,500/6,550]×2,100[2,100/2,150]×2,280	
	Weight	kg	8,500 [12,000/17,000]	