

Multi-tasking Turning Center

TD Series



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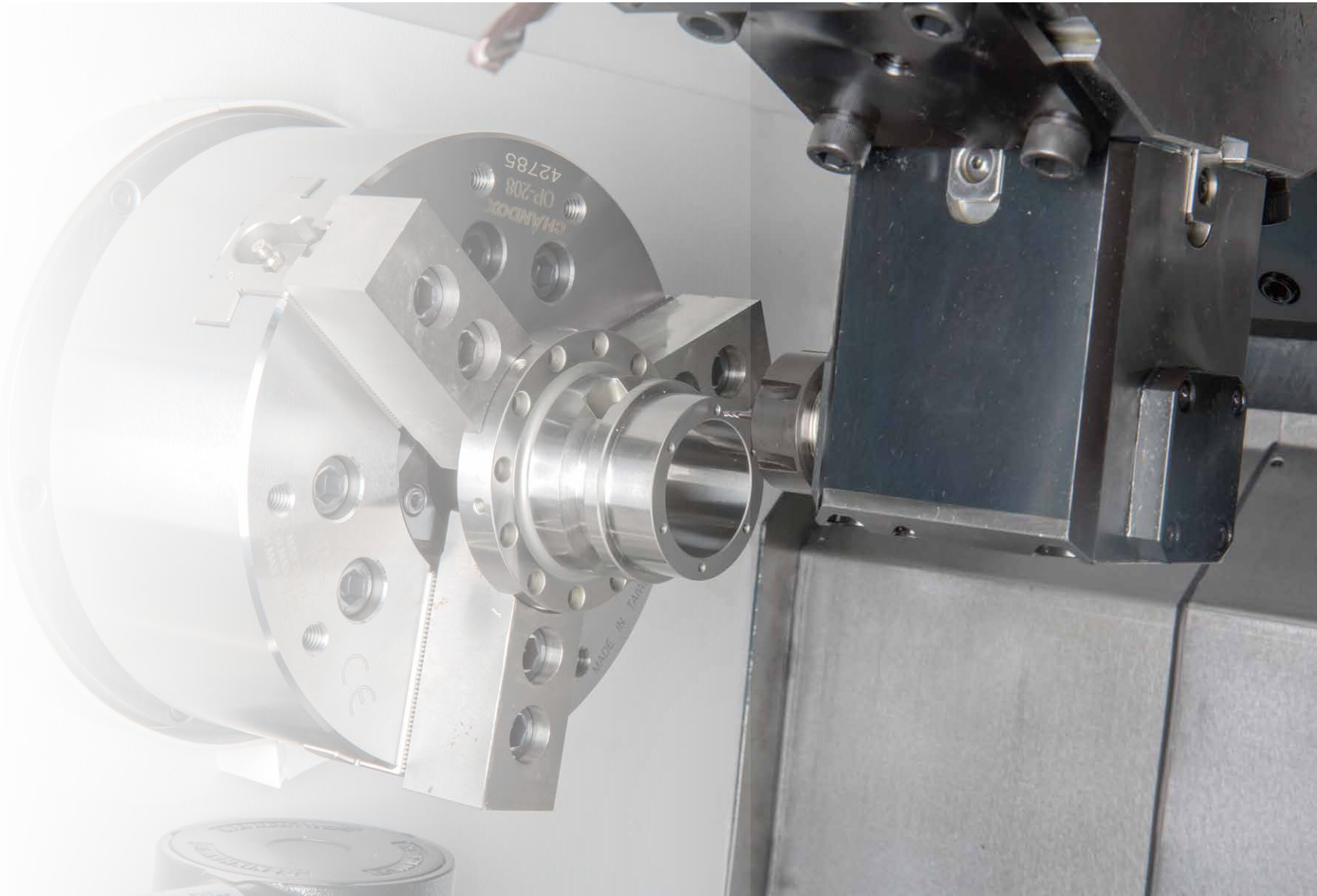
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TD series



Rigidity is better than the past

Inheriting the outstanding machine rigidity from TB series, the TD series is the brand new multi-tasking turning center with single power turret which standard equipped with 12 tool stations and linear Y axis to process milling function. In addition, for customer's needs, the 16 tool stations turret and sub-spindle is also available for more complex machining process, it helps to reduce labor costs and increase floor utility.

75 degree machine bed structure

Different from the 90 degree slant bed on TB series, the TD series adopts a 75 degree slant bed design. It not only keeps the advantages of excellent chip disposal and accessibility, but also lowers the machine's gravity center for enhancing the entire structure rigidity.

Linear Y axis structure

TD series adopts a symmetrically saddle design, the X/Y/Z axis are perpendicular to each other with a real linear Y axis. It allows servo compensation on each axis to optimize the positioning accuracy.



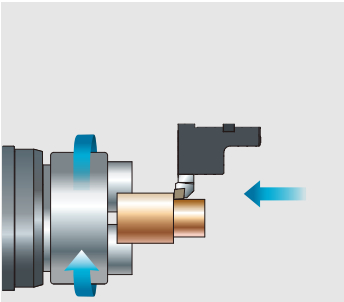
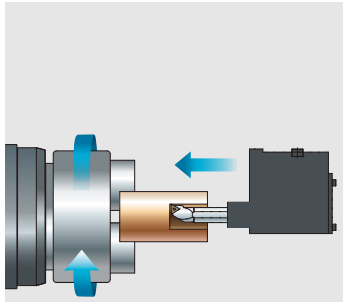
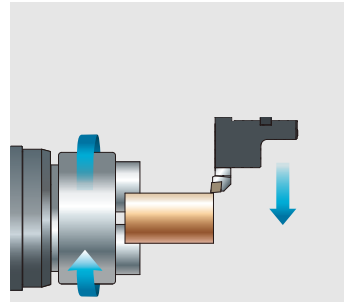
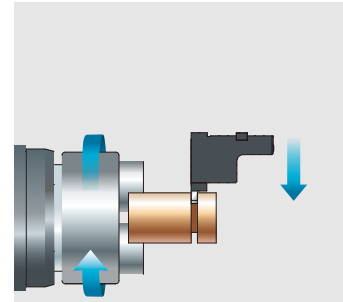
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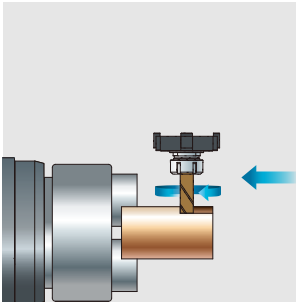
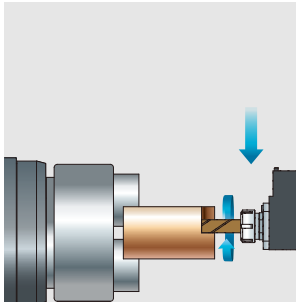
		Spindle diameter	Bar capacity	Tailstock/Sub-Spindle		Model
Chuck size 8"	Ø100 mm		Ø51 mm	Tailstock		TD-2000Y
			Ø51 mm Built in type	Sub-Spindle(without CS axis)		TD-2000YB
				Sub-Spindle(with CS axis)		TD-2000YBC
Chuck size 10"	Ø120 mm		Ø64 mm	Tailstock		TD-2500Y
			Ø51 mm Built in type		Sub-Spindle(without CS axis)	
	Ø130 mm		Ø74 mm	Sub-Spindle(with CS axis)		TD-2500YBC
			Ø64 mm Built in type			

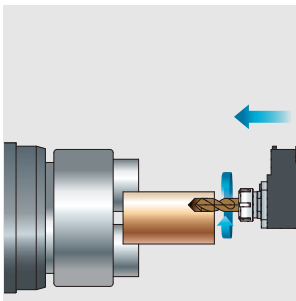
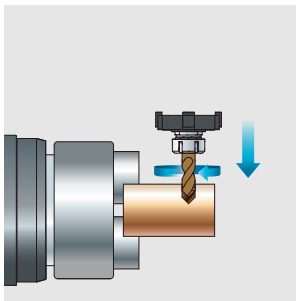
Machining ability

Turning Material:S45C

							
O.D. turning		I.D. turning		Face turning		Grooving	
Material removal rate	360 cm³/min	Material removal rate	360 cm³/min	Material removal rate	360 cm³/min	Material removal rate	6 mm
Cutting depth	6 mm	Cutting depth	6 mm	Cutting depth	6 mm	Feedrate	0.4 mm/rev
Spindle speed	764 rpm	Spindle speed	764 rpm	Feedrate	0.5 mm/rev	Cutting speed	120 m/min
Feedrate	0.5 mm/rev	Feedrate	0.5 mm/rev	Cutting speed	120 m/min		
Cutting speed	120 m/min	Cutting speed	120 m/min				

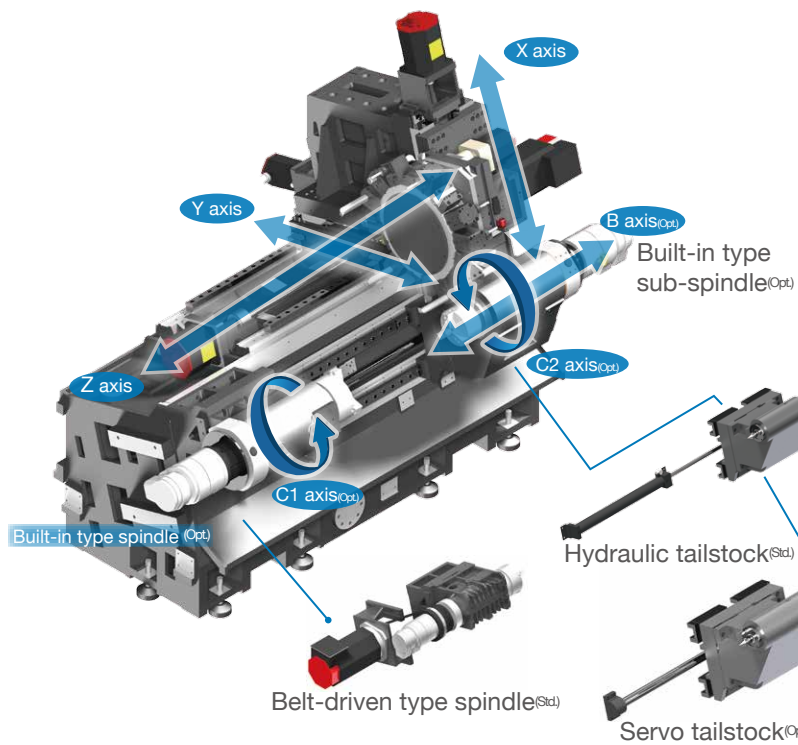
Milling Material:S45C

			
End milling		End milling	
Material removal rate	45 cm³/min	Material removal rate	45 cm³/min
Tool	end mill Ø20 mm (4 teeth)	Tool	end mill Ø20 mm (4 teeth)
Spindle speed	557 rpm	Spindle speed	557 rpm
Cutting feedrate	220 mm/min	Cutting feedrate	220 mm/min
Cutting width	20 mm	Cutting width	20 mm
Cutting depth	10 mm	Cutting depth	10 mm

			
Drilling		Drilling	
Material removal rate	71 cm³/min	Material removal rate	71 cm³/min
Tool	drill Ø20 mm	Tool	drill Ø20 mm
Spindle speed	1989 rpm	Spindle speed	1512 rpm
Feedrate	0.15 mm/rev	Feedrate	0.25 mm/rev
Cutting speed	95 m/min	Cutting speed	76 m/min

※Note: Above data are the test result of TD-2000YB

Main Structure



Working area

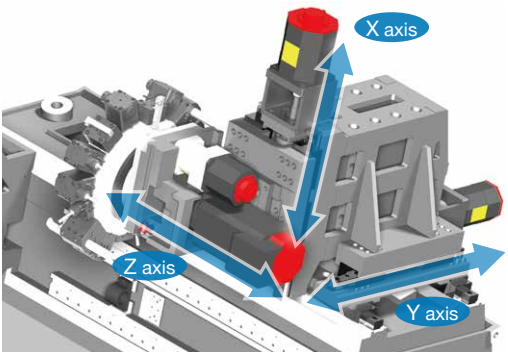
X/Y/Z axis	230/±51/600 mm
B axis(Opt.)	630 mm
Hydraulic tailstock	600 mm
Servo tailstock(Opt.)	600 mm

Rapid traverse

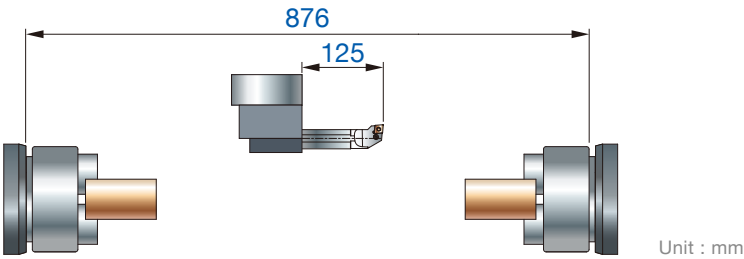
X/Y/Z axis	30/15/30 m/min
B axis(Opt.)	30 m/min
Servo tailstock(Opt.)	30 m/min

Real Y axis structure

Different from the virtual Y axis, the real Y axis has excellent straightness and positioning accuracy which is able to ensure high machining quality. With a highly rigid sliding carrier design, the TD series has outstanding machining capability.



Working area



Sub-spindle type

	Belt-driven type spindle		Built-in type spindle	
	VDI tool system	BMT tool system	VDI tool system	BMT tool system
	12V VDI-40	16V VDI-30	12V BMT-65	16V BMT-55
Max. tool length of reverse tool	125	125	125	125
Max. machining dia.	390	410	360	370
Max. machining length	535 (560)	545 (570)	505 (530)	510 (535)

Tailstock type

	Belt-driven type spindle		Built-in type spindle	
	VDI Tooling system	BMT Tooling system	VDI Tooling system	BMT Tooling system
	12V VDI-40	16V VDI-30	12V BMT-65	16V BMT-55
Max. machining dia.	390	410	360	370
Max. machining length	560 (585)	570 (595)	530 (555)	535 (560)

Unit : mm

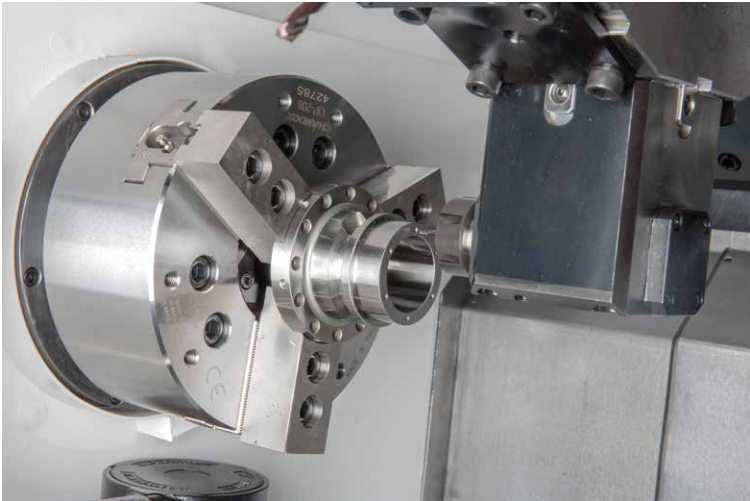
Main structure

Main spindle

Model	TD-2000Y	TD-2500Y	
Bar capacity	Ø51 mm (* Ø51 mm)	Ø64 mm (* Ø51 mm)	Ø74 mm (* Ø64 mm)
Spindle bearing diameter	Ø100 mm	Ø120 mm	Ø130 mm
Chuck size	8"	10"	
Max. spindle speed	4,500 rpm (* 6,000 rpm)	3,500 rpm (* 5,000 rpm)	3,500 rpm (* 3,500 rpm)
Spindle motor	18.5/15/11 kW (* 18.5/11kW)	18.5/15/11 kW (* 25/22kW)	18.5/15/11 kW (* 15/11kW)
(* = Built-in type motor)			

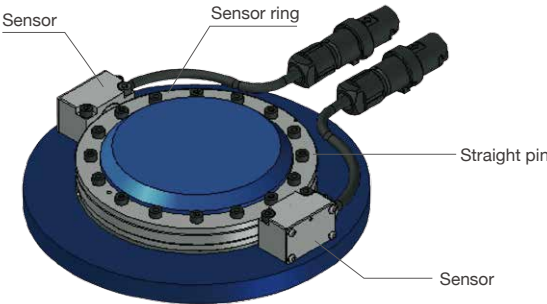
Sub-spindle

Spindle bearing diameter	Ø90 mm
Chuck size	6"
Max. spindle speed	5,000 rpm
Spindle motor	7.5/5.5 kW
Driving method	Built-in type motor



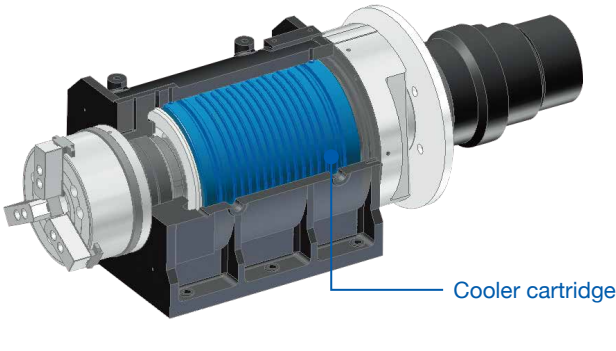
Spindle/Sub-spindle CS axis with brake unit

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

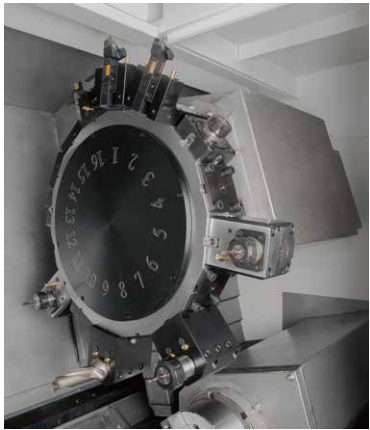


Sub-spindle cooler

With synchronous temperature control, the spindle cooler prevents sub-spindle from thermal distortion. This ensures high precision machining for long-term operation.



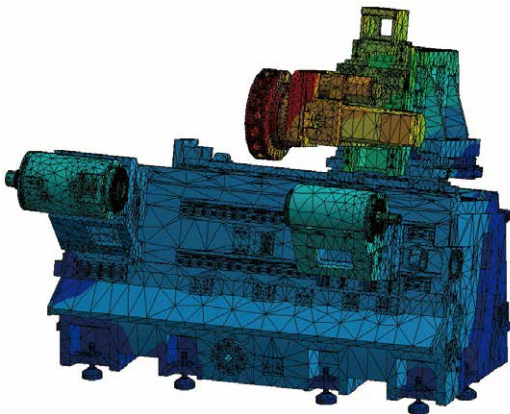
Turret



Tool shank	VDI-40(Opt.)	BMT-65(Std.)	VDI-30(Opt.)	BMT-55(Opt.)
Tool capacity	12	12	16	16
Indexing time (adjacent tool)	0.3 sec		0.25 sec	
Indexing time (opposite tool)	1 sec		1 sec	
Max. live tool speed	6,000 rpm			
spindle output of live tool	5.5/3.7 kW			

Robust structure

All components are made of high quality cast-iron. With excellent design, the structure is able to decrease the influences of distortion and vibration. In addition, with the Finite Element Analysis (FEA), the structure is improved and can satisfy the requirements of high dynamic rigidity and stability.



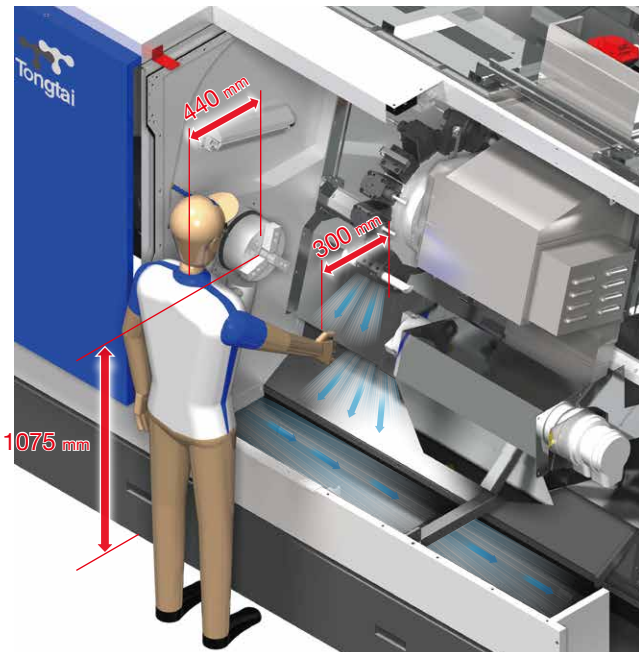
Operation

Sweivel-type operation panel



The swivel panel makes operator easy to operate and inspect during operation.

Accessibility



75 degree machine bed design facilitates the chips disposal and spindle accessibility.

Front-pull coolant tank



Coolant tank is able to be pulled from the front of the machine. It saves floor space and facilitates the maintenance.

Easier daily maintenance



Through centralized management of pneumatic solenoid and lubricant pump, it made the daily maintenance easy.

Peripheral accessories

Chip conveyor

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.



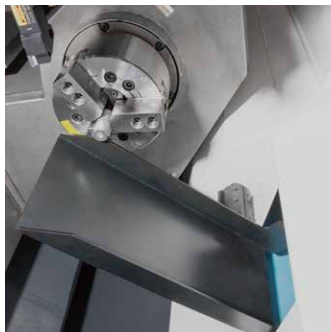
Coolant tank capacity
400 L (80% full)

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	○	X	X	X	○	X	X
Scraper type	X	○	○	○	X	○	○
Magnetic scraper type	X	○	○	○	○	X	X

○ : Suitable × : Non-suitable

Short chips : Chips shorter than Ø60 mm or ball type chips smaller than Ø40 mm.
Curl long chips : Chips' length is longer than short ones.

parts catcher (optional)



Manual tool presetter (optional)



Disc type oil skimmer (optional)



Oil mist collector (optional)



For green future

With rising energy costs and strict international environmental laws, equipment efficiency is a key factor that can influence the production costs. By this trend, the latest machine tools not only need to satisfy the requirements of high speed and high precision, but also need to pursue the goals of high efficiency and environmental protection. In recent years, Tongtai has worked hard on developing the products with the concept of environmentally friendly. Furthermore, energy saving accessory products are the primary concern to us.



LHL lubrication system



Variable-frequency hydraulic unit



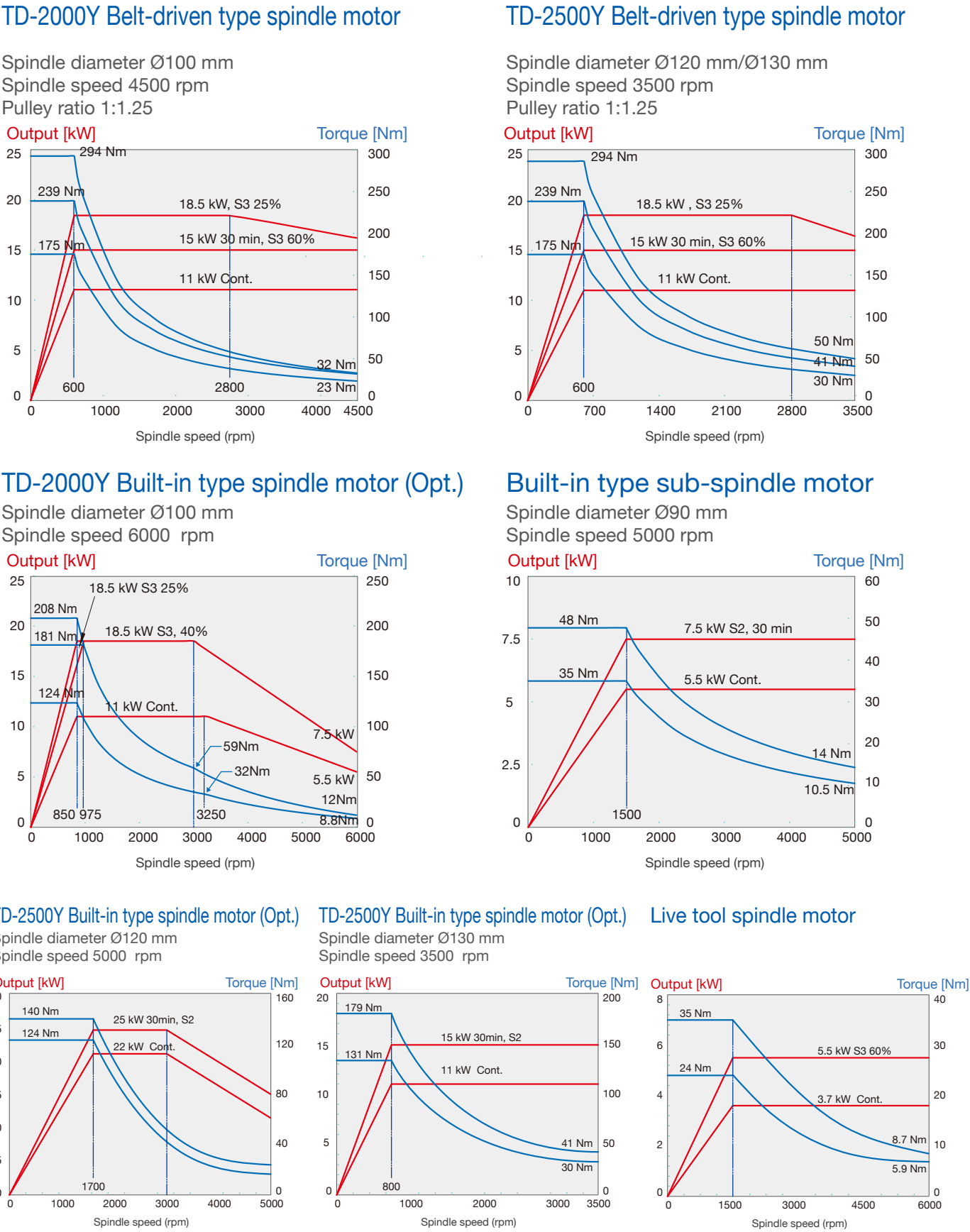
Lubricant
Save 90%

Parts damage
Decrease 50%

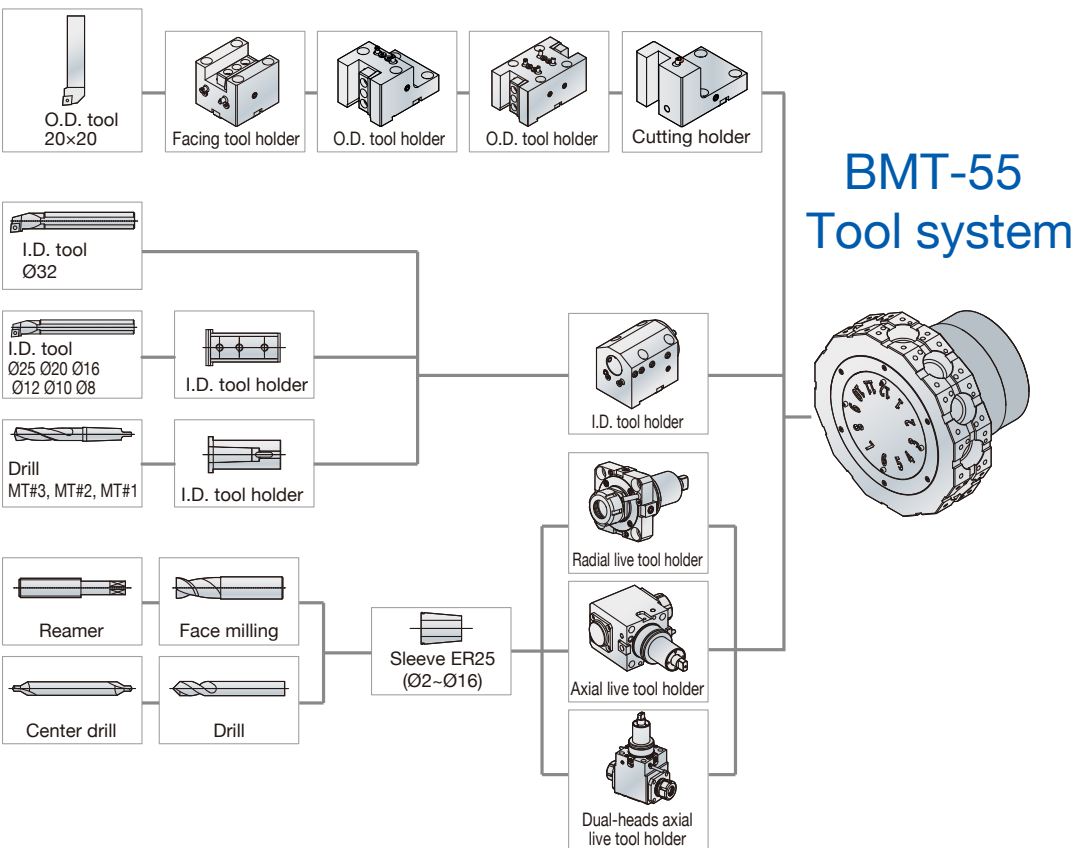
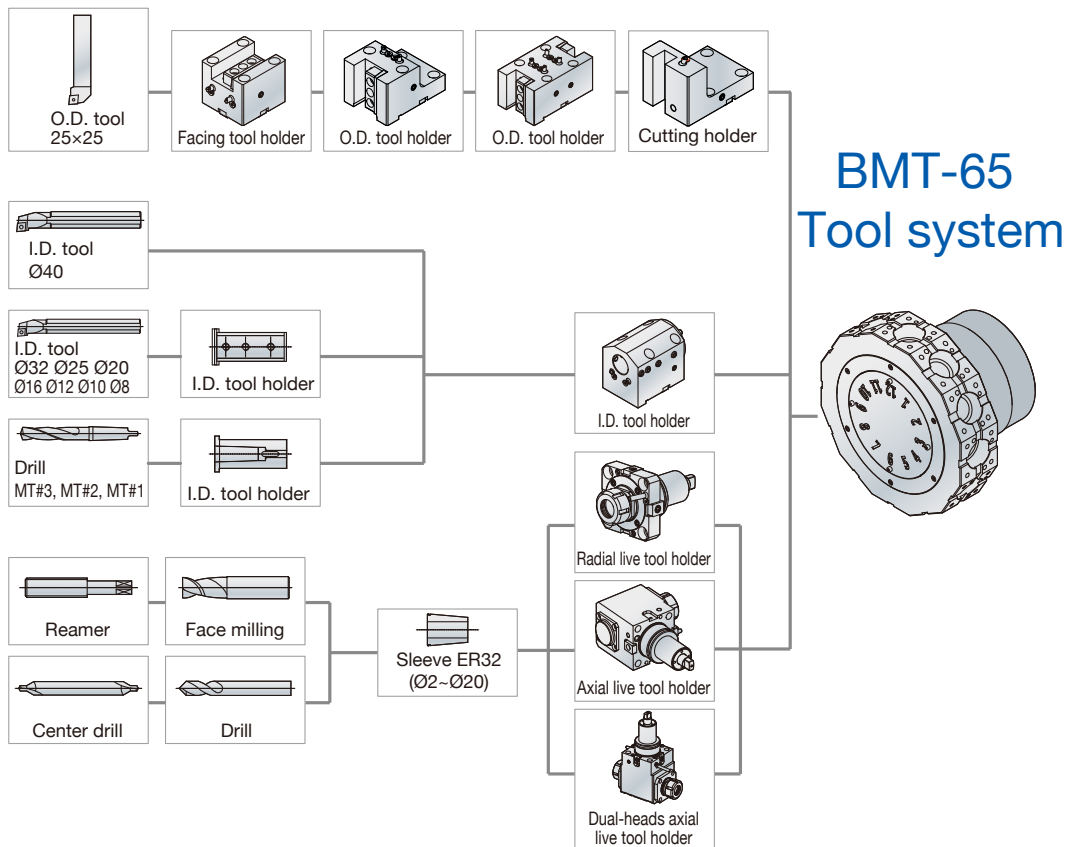
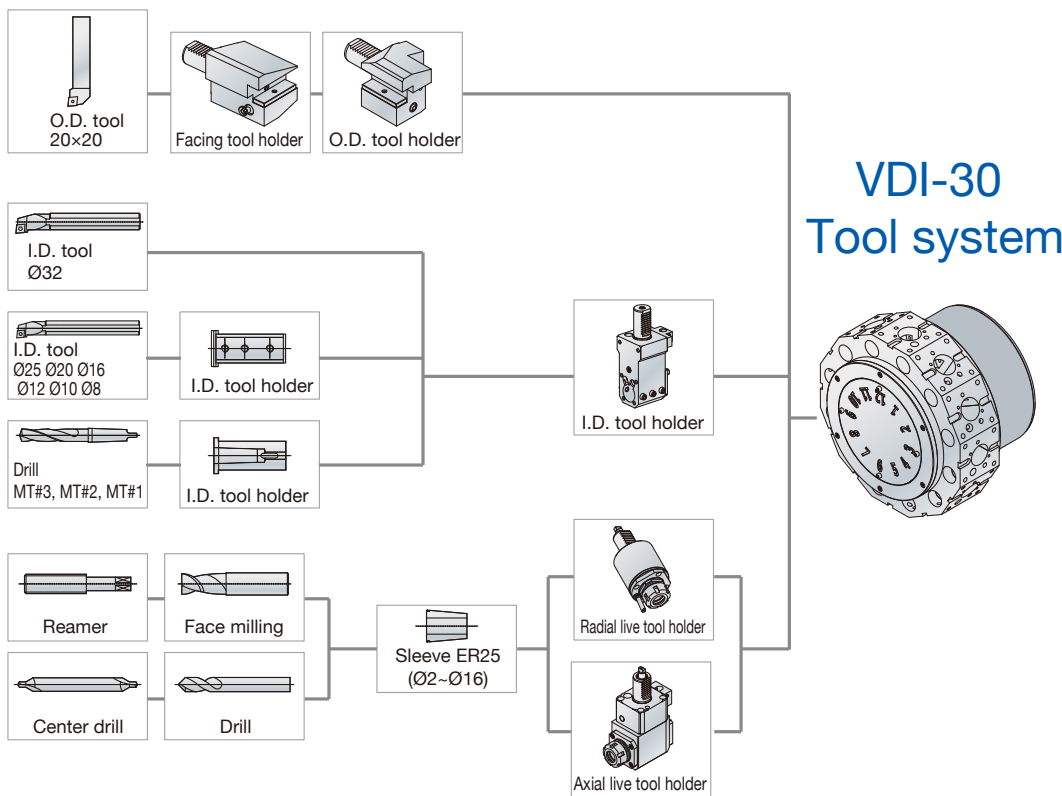
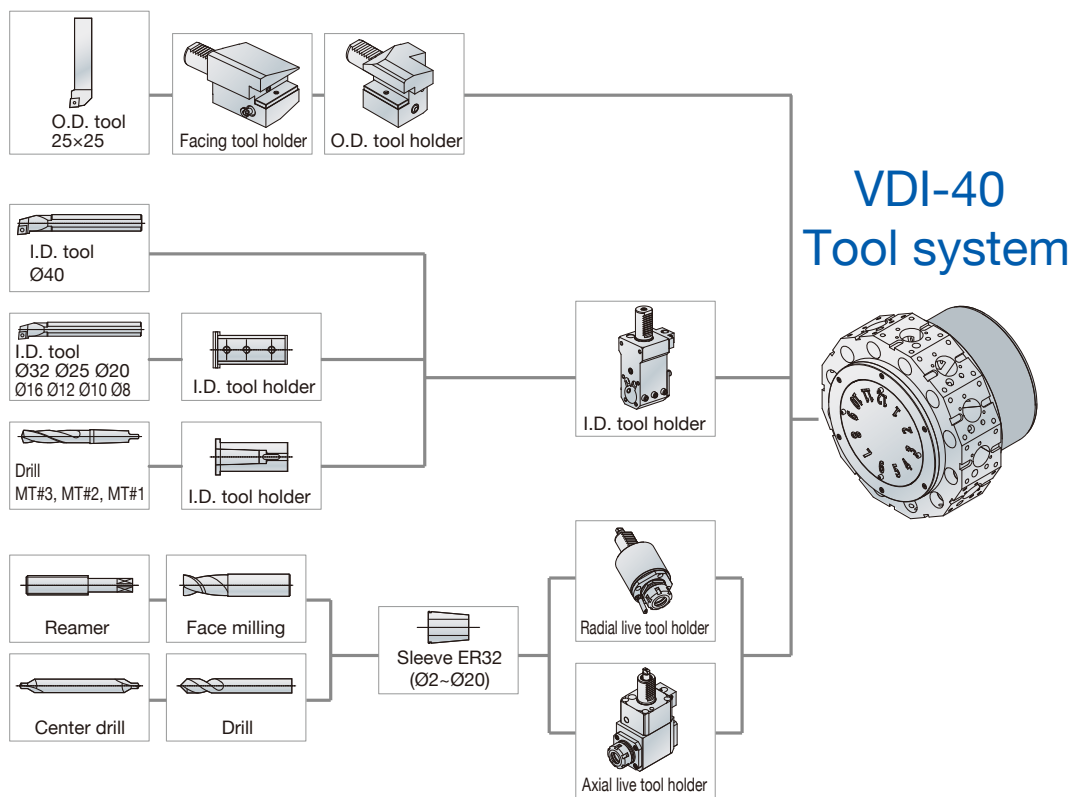
Coolant life
Improve 200%

Power consumption
Save 55%

Spindle output and torque chart



Tool system

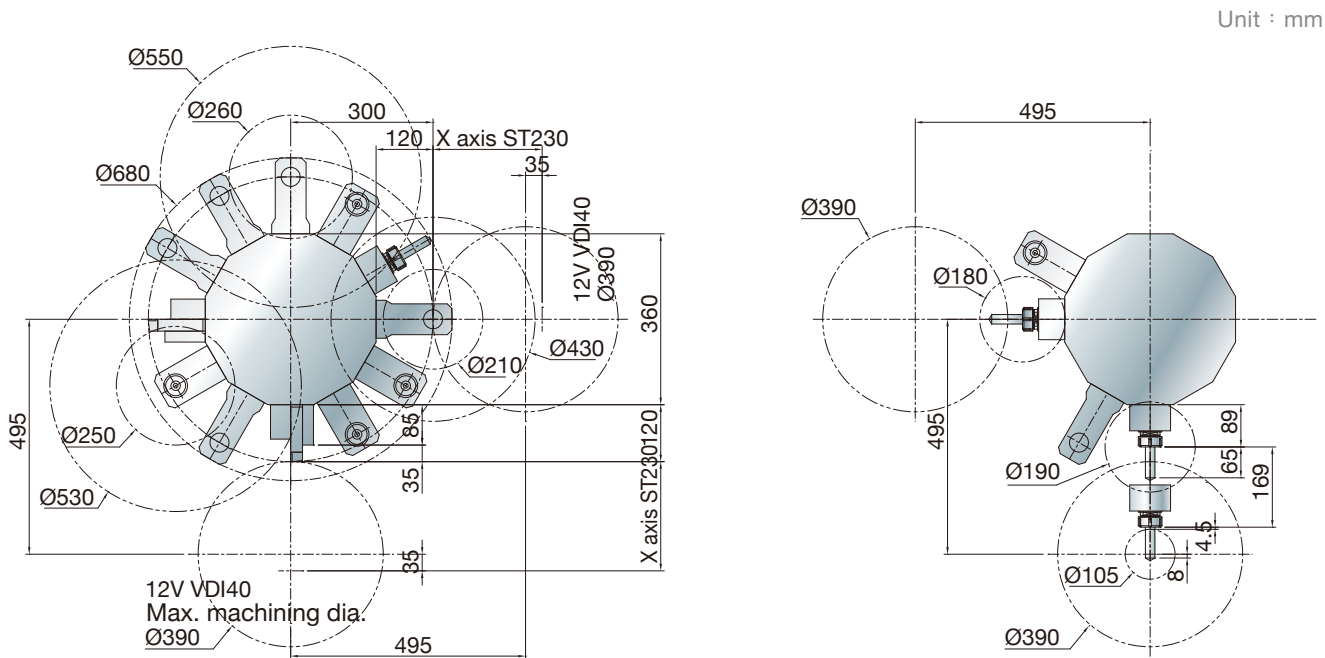


Unit : mm

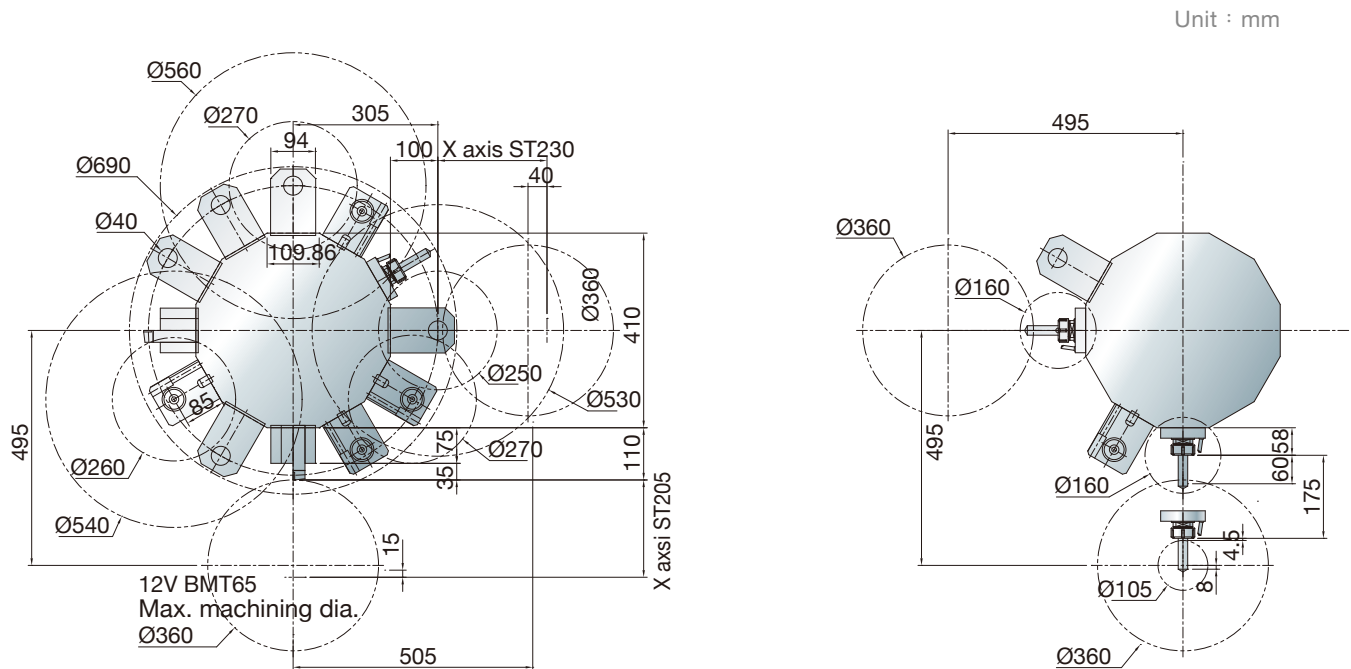
Unit : mm

Tool interference

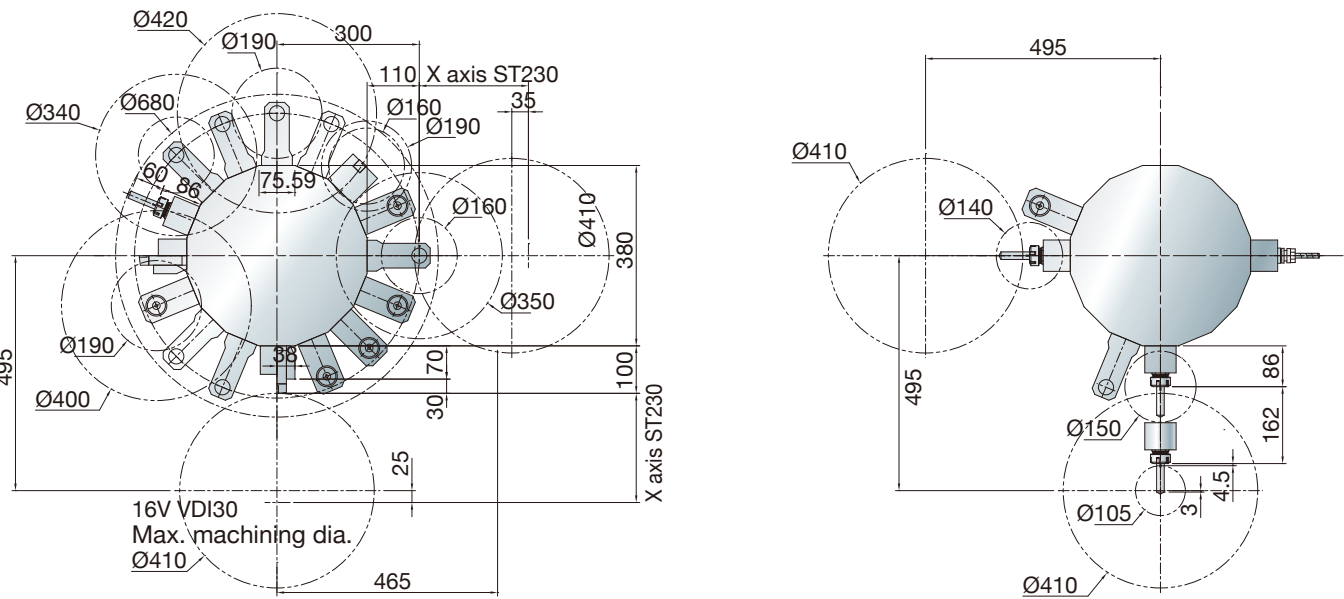
12V BMT-65 tool



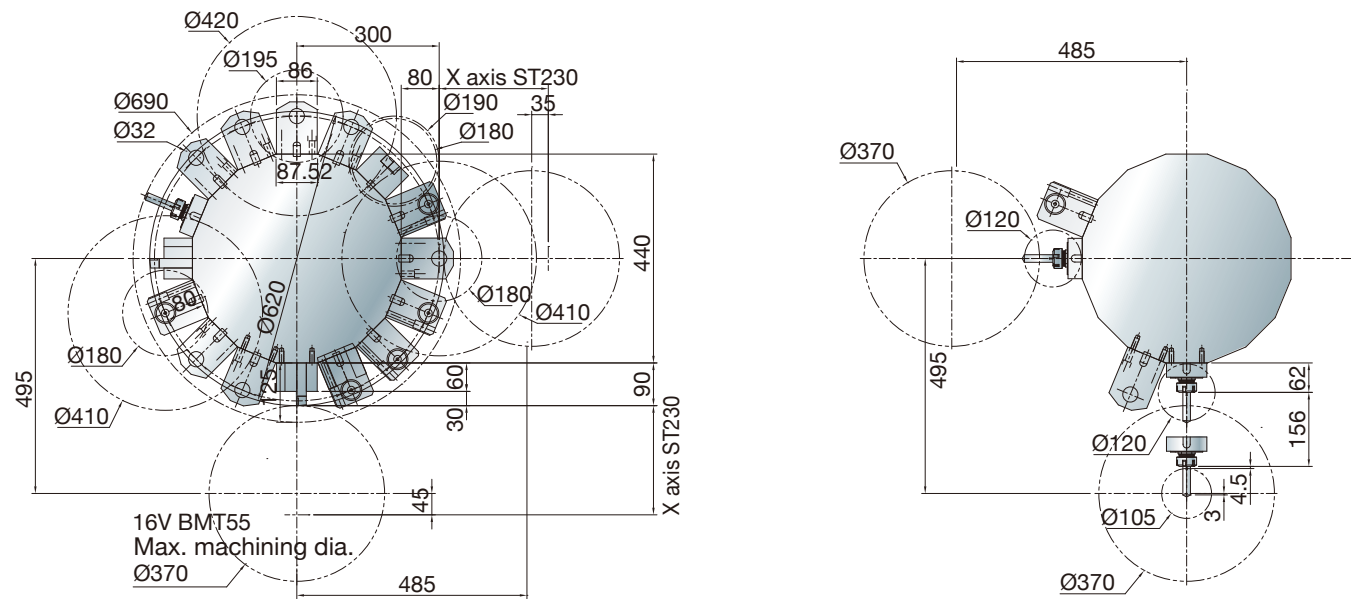
12V VDI-40 tool



16V VDI-30 tool

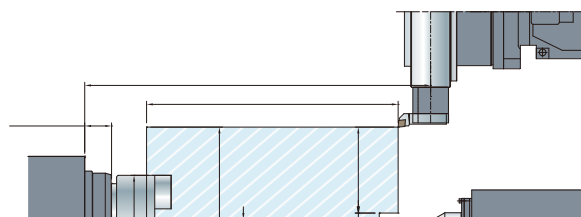
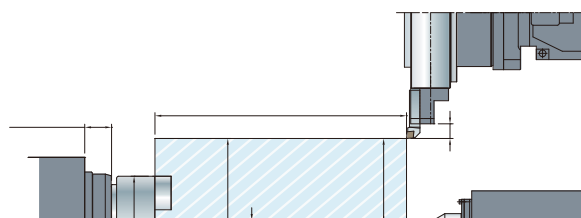
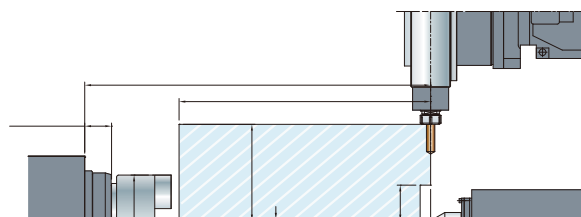
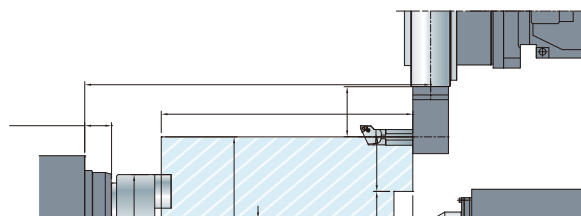
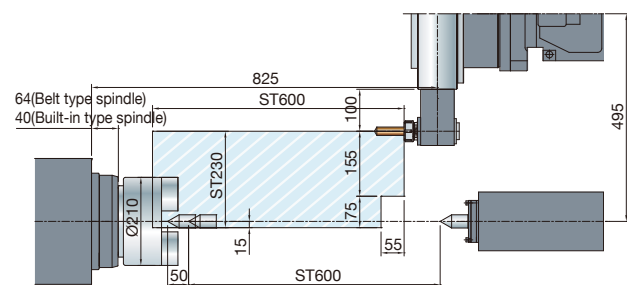


16V BMT-55 tool

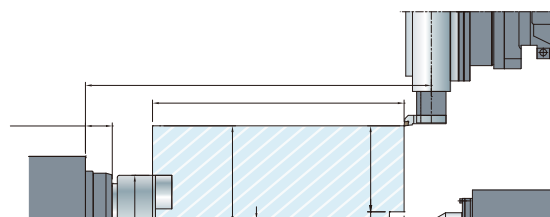
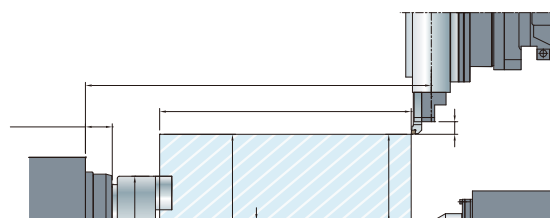
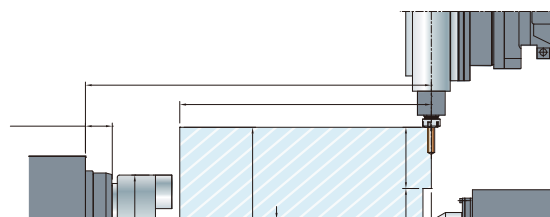
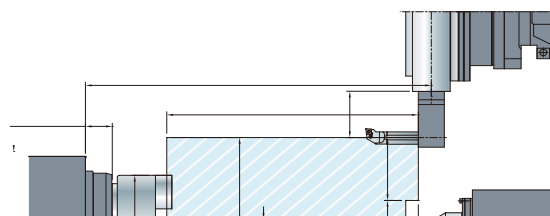
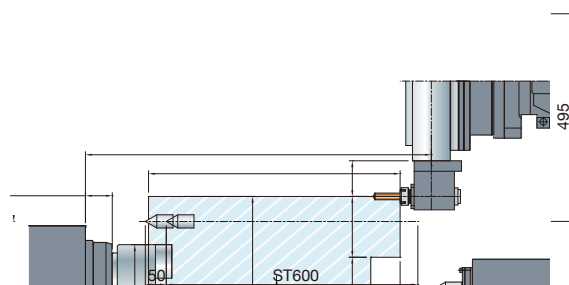


Working area

TD-2000Y 12V/VDI-40 tool

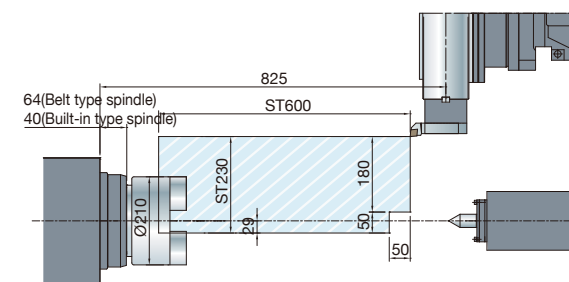
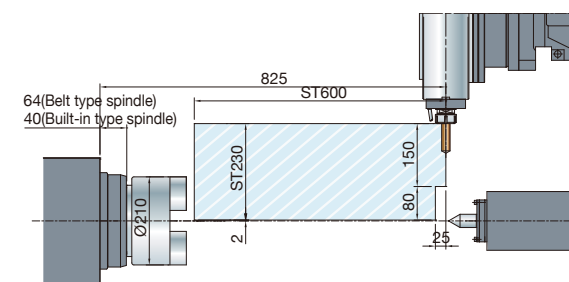
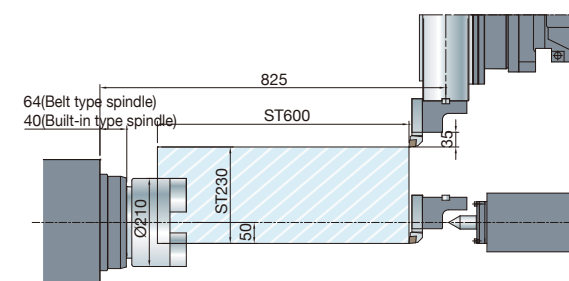
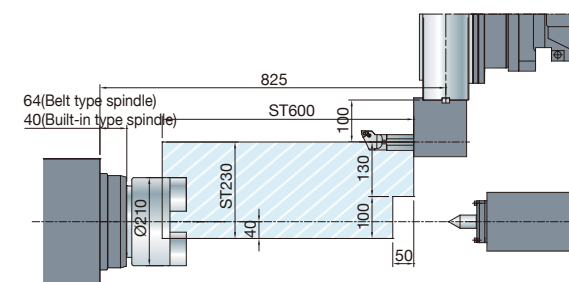
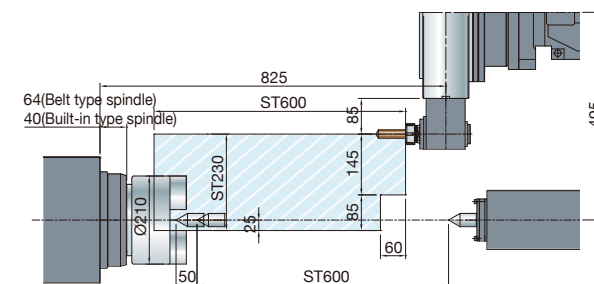


TD-2000Y 16V/VDI-30 tool

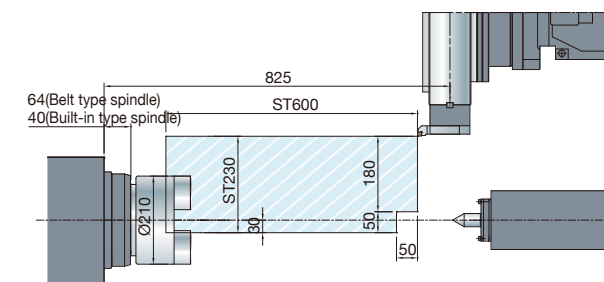
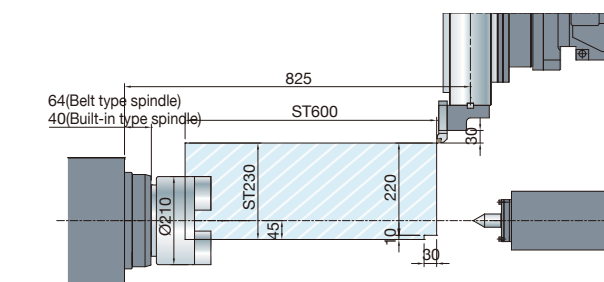
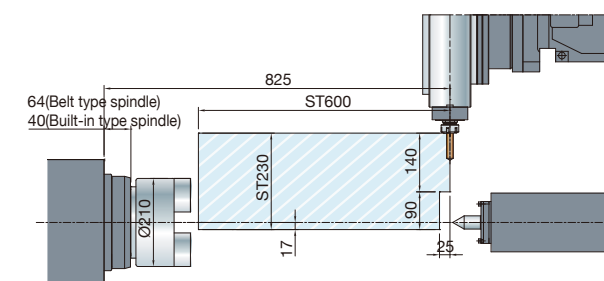
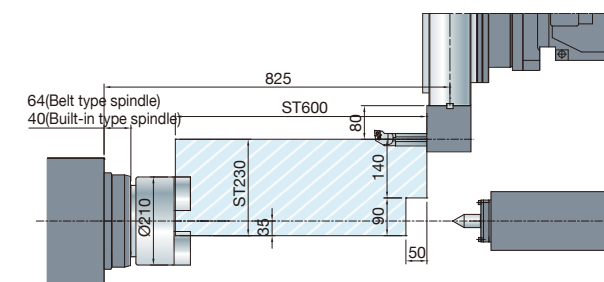
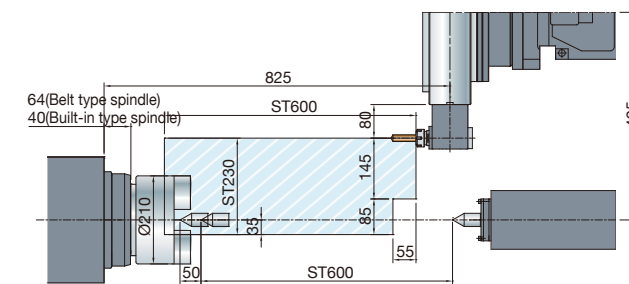


Unit : mm

TD-2000Y 12V/BMT-65 tool



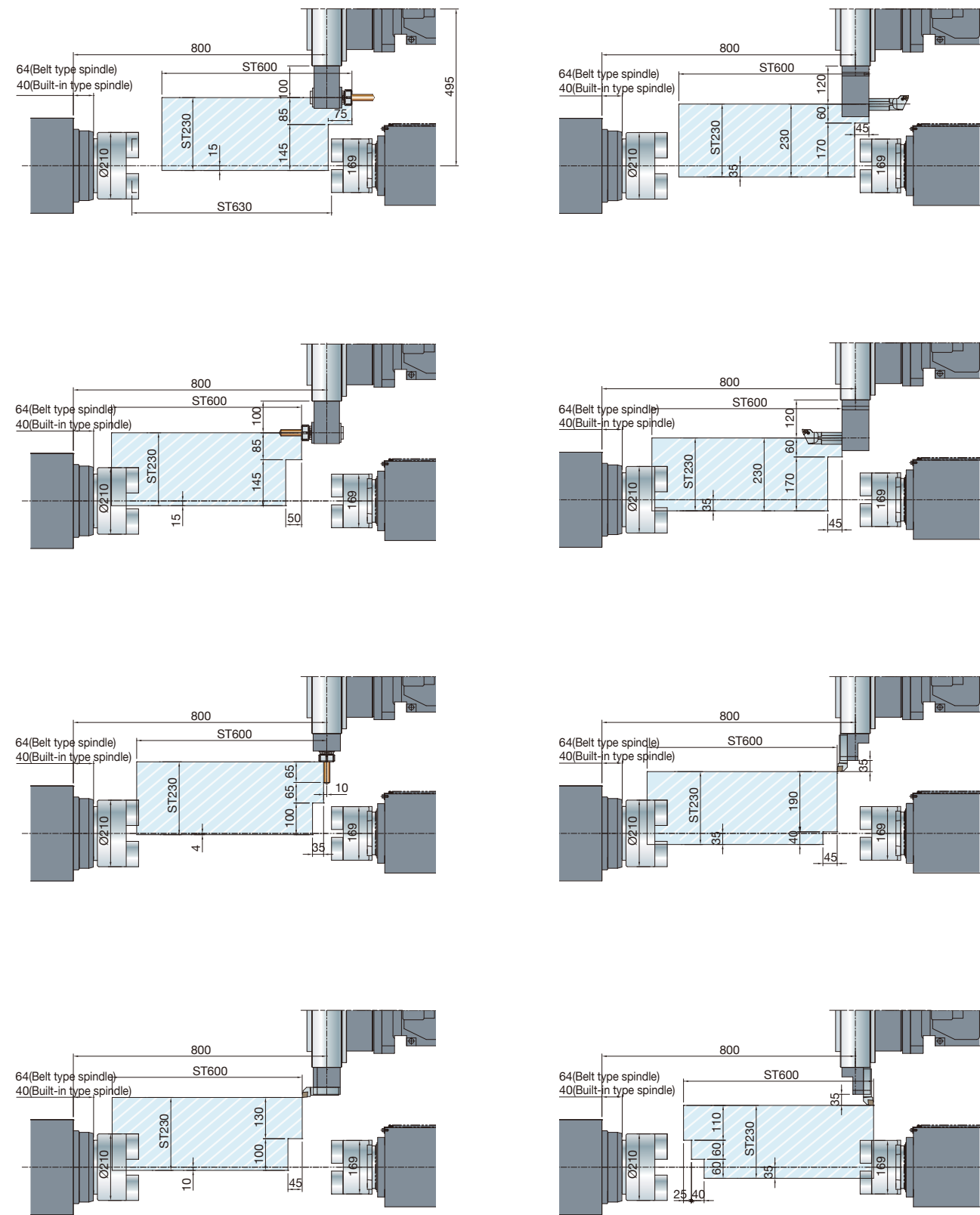
TD-2000Y 16V/BMT-55 tool



Unit : mm

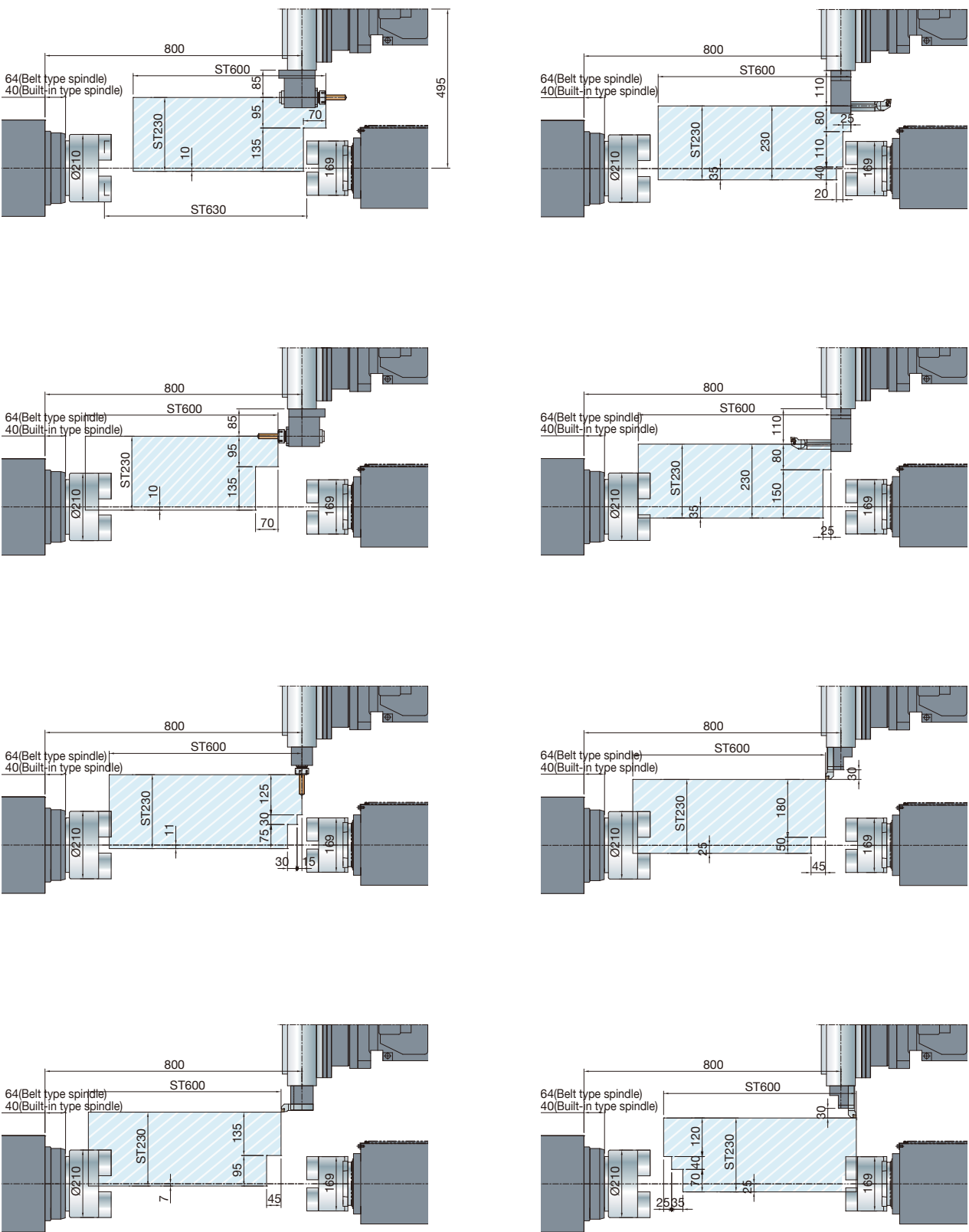
Working area

TD-2000YB(C) 12V/VDI-40 tool



Unit : mm

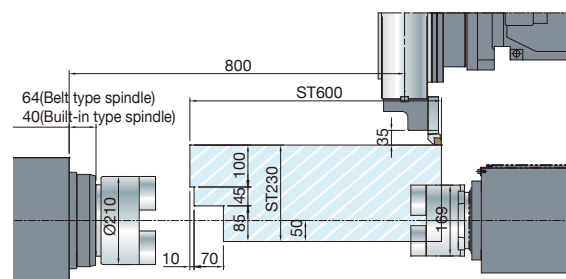
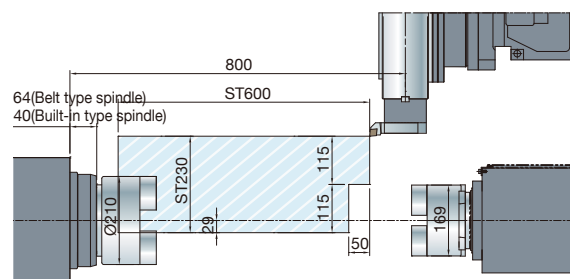
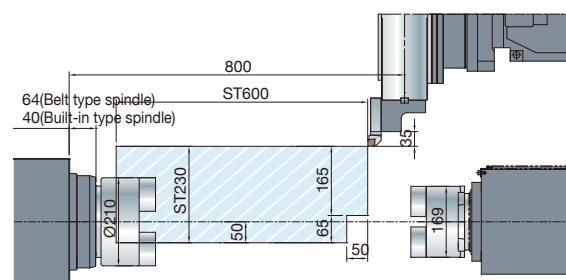
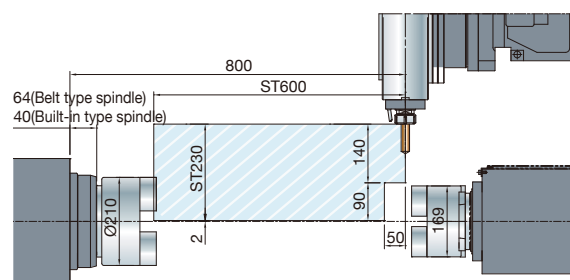
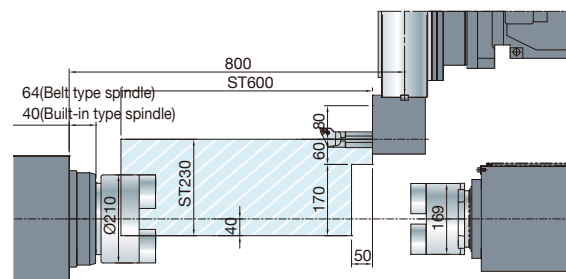
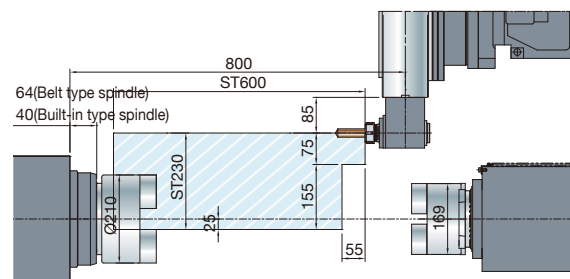
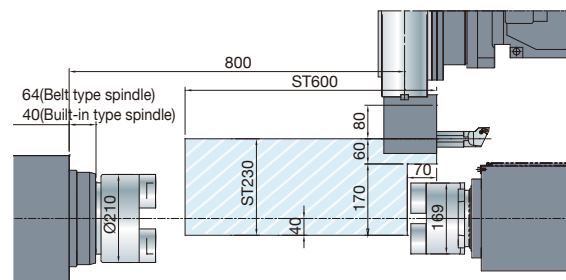
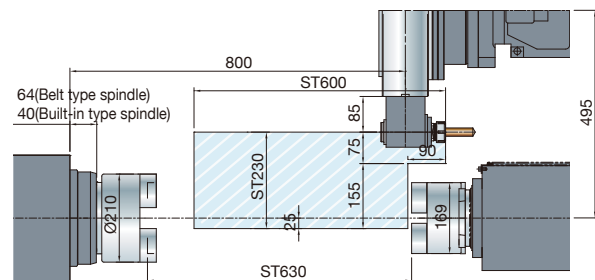
TD-2000YB(C) 16V/VDI-30 tool



Unit : mm

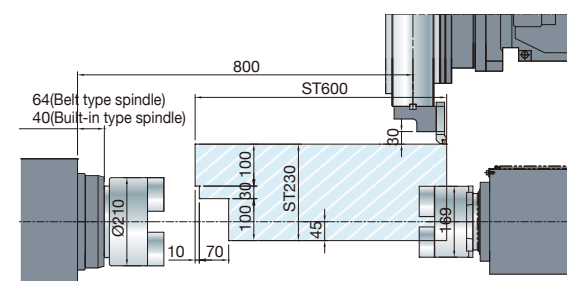
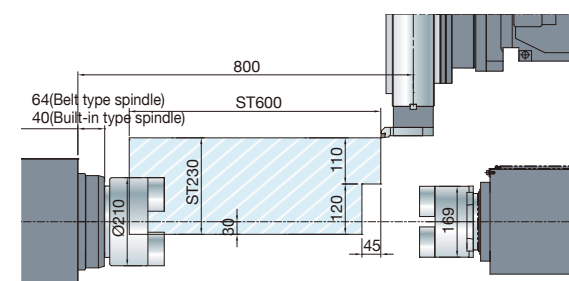
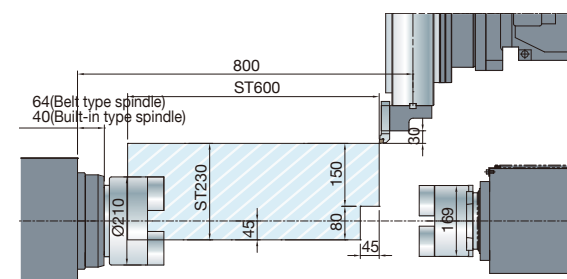
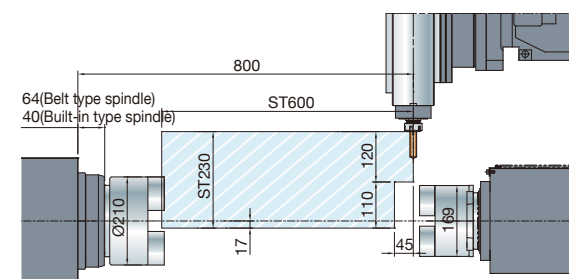
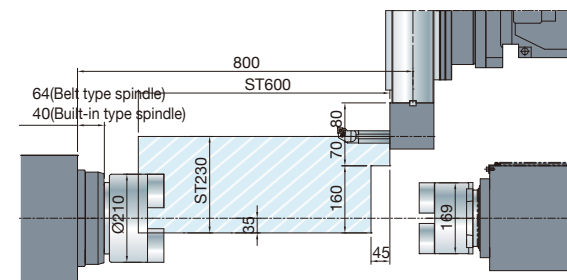
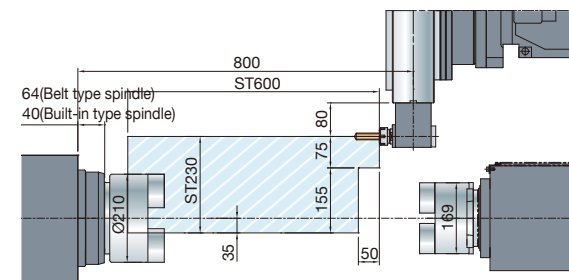
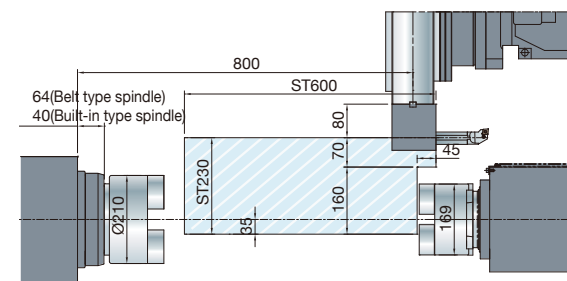
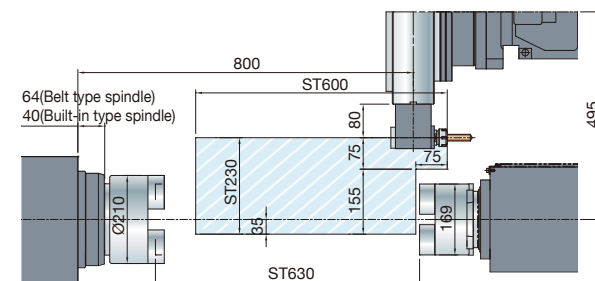
Working area

TD-2000YB(C) 12V/BMT-65 tool



Unit : mm

TD-2000YB(C) 16V/BMT-55 tool

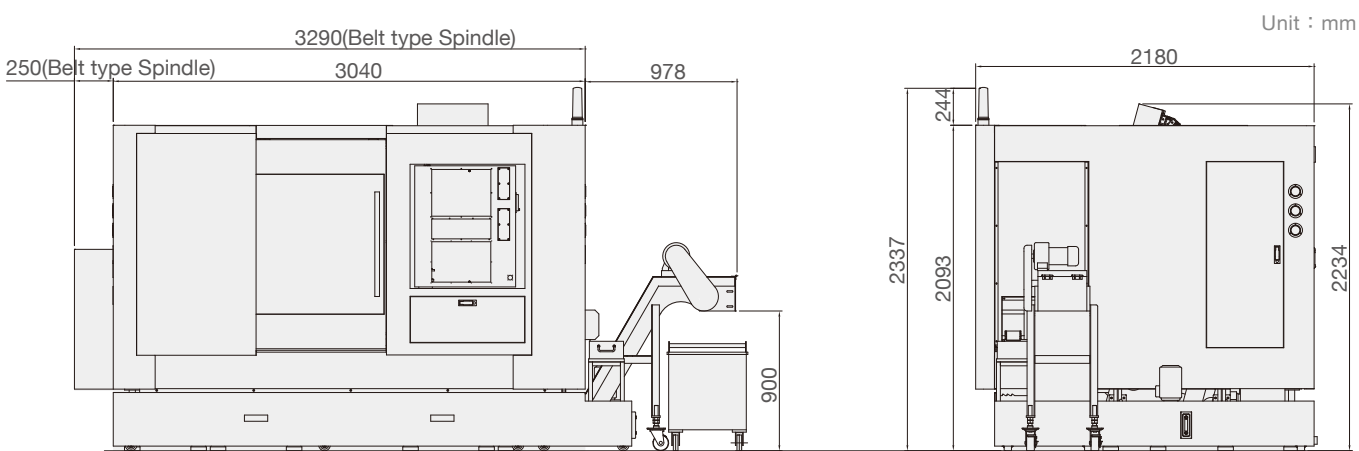


Unit : mm

Standard/optional accessories

		Standard : ● Optional : ○ Non-support : -						
		TD-2000			TD-2500			
		Y	YB	YBC	Y	YB	YBC	
Spindle	Belt-driven spindle, spindle bearing dia. Ø100 mm,4500 rpm (3500 rpm)	●	●	●	-	-	-	
	Built-in spindle, spindle bearing dia. Ø100 mm, 6000 rpm	○	○	○	-	-	-	
	Belt-driven spindle, spindle bearing dia. Ø120/Ø130 mm, 3500 rpm (2500 rpm)	-	-	-	●	●	●	
	Built-in spindle, spindle bearing dia. Ø120 mm, 5,000 rpm	-	-	-	○	○	○	
	Built-in spindle, spindle bearing dia. Ø130 mm, 3,500 rpm	-	-	-	○	○	○	
Sub spindle	Built-in spindle, spindle bearing dia. Ø90 mm, 5000 rpm	-	●	●	-	●	●	
	0.001°	-	-	●	-	-	●	
Tailstock taper	MT#4	●	-	-	●	-	-	
	Hydraulic driving	●	-	-	●	-	-	
	Servo driving	○	-	-	○	-	-	
Power turret	12V BMT-65	●	●	●	●	●	●	
	12V VDI-40	○	○	○	○	○	○	
	16V BMT-55	○	○	○	○	○	○	
	16V VDI-30	○	○	○	○	○	○	
Chuck	3 Jaws through hole chuck			●				
	Collet type through hole chuck			○				
Tool holder	I.D. tool holder			○				
	Face turning tool holder			○				
	O.D. tool holder			○				
	Axial live tool holder			○				
	Radial live tool holder			○				
	Axial face milling tool holder			○				
	I.D. tool holder for sub-spindle			○				
	Face turning tool holder for sub-spindle			○				
	O.D. tool holder for sub-spindle			○				
	Axial live tool holder for sub-spindle			○				
	Radial live tool holder for sub-spindle			○				
	Cutting tool holder for sub-spindle			○				
	I.D. tool sleeve Ø8, Ø10, Ø12, Ø16, Ø20, Ø25			○				
	Drilling tool sleeve MT#1, MT#2, MT#3			○				
Chip conveyor	Hinge type conveyor			●				
	Scraper type conveyor			○				
	Magnetic scraper type conveyor			○				
Lubrication system	General lubrication system			●				
	LHL integrated lubrication system			○				
Hydraulic unit	General type oil pump			●				
	variable-frequency oil pump			○				
Automatic loading/ unloading unit	Bar feeder			○				
	Parts catcher			○				
	Parts conveyor			○				
	Automatic door			○				
	Parts unloading device for sub-spindle			○				
Coolant & airblow	Coolant through spindle			○				
	Air blow through spindle			○				
	Coolant on spindle side			○				
	Air blow on spindle side			○				
Others	Air conditioner for electrical cabinet			○				
	Air gun / Coolant gun			○				
	Oil skimmer			○				
	Oil mist collector			○				
Controller	FANUC 0i-T			●				

Specifications · Machine dimension



Item	Specification	Unit	TD-2000Y	TD-2000YBC	TD-2500Y	TD-2500YBC
			12V BMT-65 Tool		12V BMT-65 Tool	
Turning capacity	Spindle bearing diameter	mm	Ø100		Ø120/130	
	Max. swing diameter	mm	Ø700		Ø700	
	Max. swing diameter over saddle	mm	Ø310		Ø310	
	Max. turning diameter	mm	Ø360		Ø360	
	Max. turning lenght	mm	530		530	
Spindle	Spindle nose		A2-6		A2-8	
	Spindle speed	rpm	4500 (Opt. 3000)		3500 (Opt. 2500)	
	Chuck size	inch	8"		10"	
	Through-spindle hole diameter	mm	Ø62		Ø77/Ø86	
	Bar capacity	mm	Ø51(Opt. built-in type Ø51)		Ø74	
	Min. CS axis indexing increment	deg	0.001°		0.001°	
Sub-spindle	Spindle nose		-	A2-5	-	A2-5
	Spindle speed	rpm	-	5000	-	5000
	Chuck size	inch	-	6"	-	6" (Opt.8")
	Through-spindle hole diameter	mm	-	Ø35	-	Ø35
	Spindle bearing diameter	mm	-	Ø90	-	Ø90
	Min. CS axis indexing increment	deg	-	0.001°	-	0.001°
Power turret	Tool shank		BMT-65		BMT-65	
	Tool capacity	pc	12		12	
	O.D. tool	mm	25×25		25×25	
	I.D. tool	mm	Ø40		Ø40	
	Max. speed	rpm	6000		6000	
	Spindle motor	kW	5.5/3.7		5.5/3.7	
	Max. tool diameter	mm	Dia. 20/M16		Dia. 20/M16	
Feed	X/Z axis travel	mm	230/±51/600	230/±51/600/630	230/±51/600	230/±51/600/630
	X/Z axis rapid traverse	m/min	30/15/30	30/15/30/30	30/15/30	30/15/30/30
	Cutting feedrate	mm/min	0.001-5,000		0.001-5,000	
Hydraulic tailstock	Tailstock travel	mm	600	-	600	-
	Center taper		MT4	-	MT4	-
	Center diameter	mm	100	-	100	-
Servo type tailstock (Opt.)	Tailstock travel	mm	600	-	600	-
	Center travel	mm	80	-	80	-
	Center taper		MT4	-	MT4	-
	Center diameter	mm	100	-	100	-
Hydraulic unit	Hydraulic tank capacity	L	30		30	
	Hydraulic motor	kW	1.5		1.5	
Coolant unit	Coolant tank capacity	L	400		400	
	Coolant motor	kW	0.55		0.55	
Motor	Spindle motor	kW	18.5/15/11		18.5/15/11	
	Sub-spindle motor	kW	-	7.5/5.5	-	7.5/5.5
	X/Y/Z/B axis servo motor	kW	4.5/2.7/4.5	4.5/2.7/4.5/2.7	4.5/2.7/4.5	4.5/2.7/4.5/2.7
Machine size	Width×depth×height	mm	3290×2180×2337		3290×2180×2337	
	Weight	kg	5,900	6,400	6,100	6,600