Tongtai

Trust & Technology

Multi-tasking Turning Center

TB Series

MEMBER OF TTGROUP

www.tongtai.com.tw

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MEMBER OF TTGROUP

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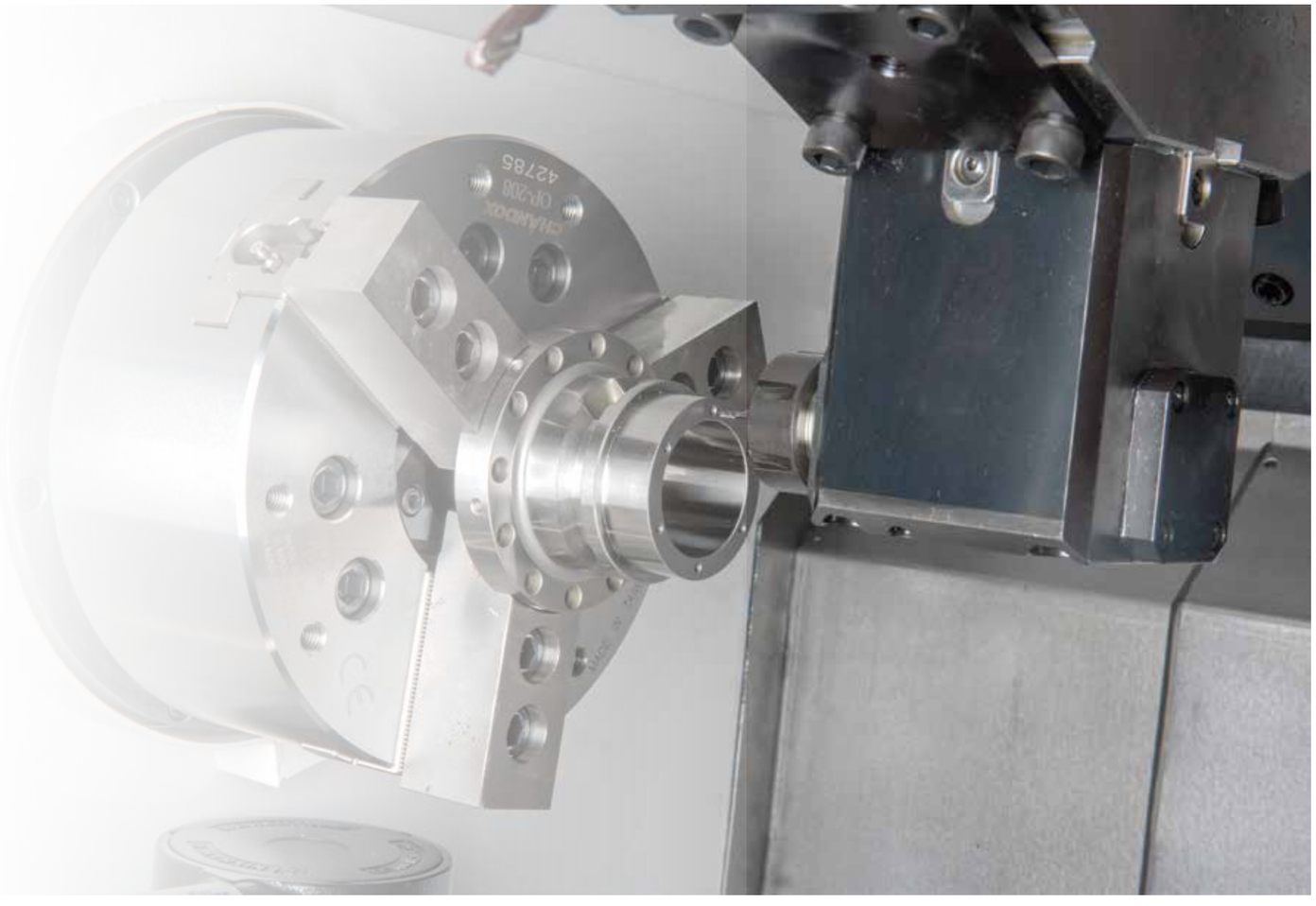
TB series



Rigidity is better than the past

TB series is the outstanding machine rigidity, it's the 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.

90 degree machine bed structure

The TB series adopts a 90 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

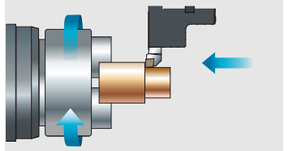
TB series adopts a symmetrically saddle design, the X/Y/Z axis are perpendicular to each other with a real linear Y axis. It allows servo compensation on each axis to optimize the positioning accuracy.

CONTENTS

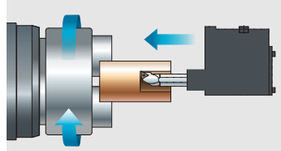
	Spindle diameter	Bar capacity	Tailstock/Sub-Spindle	Model
Chuck size 8"	Ø100 mm	Ø51 mm	Tailstock	TB-2000Y
			Sub-Spindle(with CS axis)	TB-2000YBC
Chuck size 10"	Ø120 mm	Ø64 mm	Tailstock	TB-2500Y
	Ø130 mm	Ø74 mm	Sub-Spindle(with CS axis)	TB-2500YBC

Machining ability

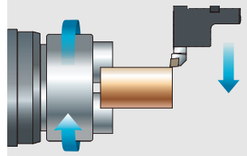
Turning Material:S45C



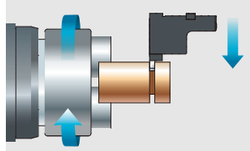
O.D. turning	
Material removal rate	300 cm³/min
Cutting depth	5 mm
Spindle speed	749 rpm
Feedrate	0.5 mm/rev
Cutting speed	120 m/min



I.D. turning	
Material removal rate	303 cm³/min
Cutting depth	5 mm
Spindle speed	700 rpm
Feedrate	0.55 mm/rev
Cutting speed	110 m/min

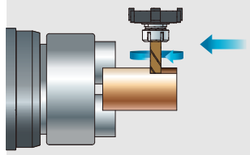


Face turning	
Material removal rate	300 cm³/min
Cutting depth	5 mm
Spindle speed	477-1194 rpm
Feedrate	0.5 mm/rev
Cutting speed	120 m/min

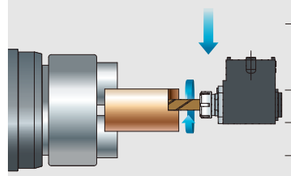


Grooving	
Cutting width	6 mm
Spindle speed	700 rpm
Feedrate	0.1 mm/rev
Cutting speed	100 m/min

Milling Material:S45C



End milling	
Material removal rate	74 cm³/min
Tool	end mill Ø16 mm (4 teeth)
Spindle speed	1293 rpm
Cutting feedrate	517 mm/min
Cutting width	12 mm
Cutting depth	12 mm



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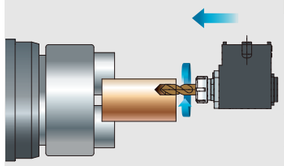
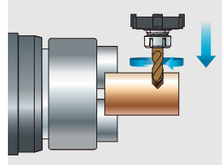


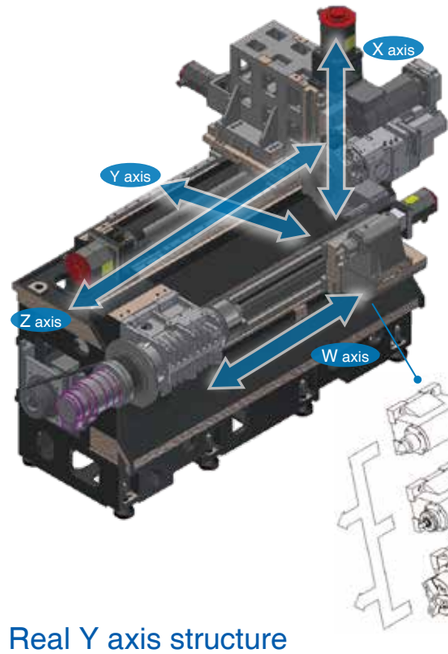
Drilling	
Material removal rate	80 cm³/min
Tool	drill Ø16 mm
Spindle speed	1989 rpm
Feedrate	0.2 mm/rev
Cutting speed	100 m/min



Drilling	
Material removal rate	80 cm³/min
Tool	drill Ø16 mm
Spindle speed	1989 rpm
Feedrate	0.2 mm/rev
Cutting speed	100 m/min

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

Main Structure



Working area

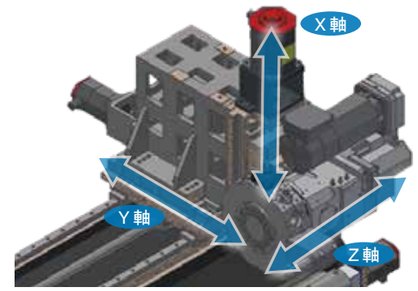
X/Y/Z/W axis	230/±51/700/700 mm
Center travel	30 mm

Rapid traverse

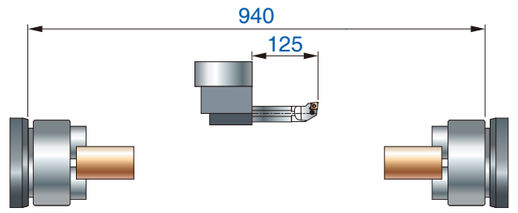
X/Y/Z/W axis	30/15/36/36 m/min

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 TB series has outstanding machining capability.



Working area



Unit : mm

Sub-spindle type

	BMT tool system	
	12V BMT-65	16V BMT-55
Max. tool length of reverse tool	125	125
Max. machining dia.	390	390
Max. machining length	510	510

Tailstock type

	BMT Tooling system	
	12V BMT-65	16V BMT-55
Max. machining dia.	390	390
Max. machining length	610	610

Unit : mm

Main structure

Main spindle

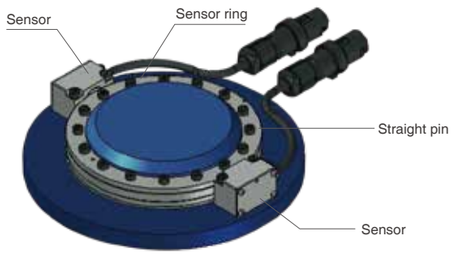
Model	TB-2000Y(BC)	TB-2500Y(BC)	
Bar capacity	Ø51 mm	Ø64 mm	Ø74 mm
Spindle bearing diameter	Ø100 mm	Ø120 mm	Ø130 mm
Chuck size	8”	10” [12”]	
Max. spindle speed	4,500 rpm (3,000 rpm)	3,500 rpm (2,500 rpm)	
Spindle motor	15/11 kW	15/11 kW	

Sub-spindle

Spindle bearing diameter	Ø90 mm
Chuck size	6” [8”]
Max. spindle speed	5,000 rpm
Spindle motor	7.5/5.5 kW
Driving method	Built-in type motor

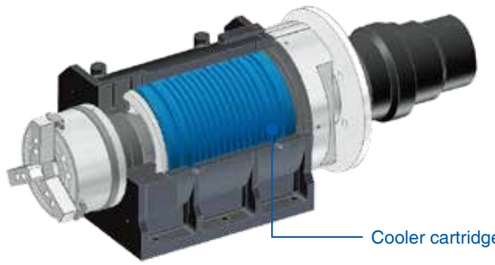
Spindle/Sub-spindle CS axis with brake unit

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.

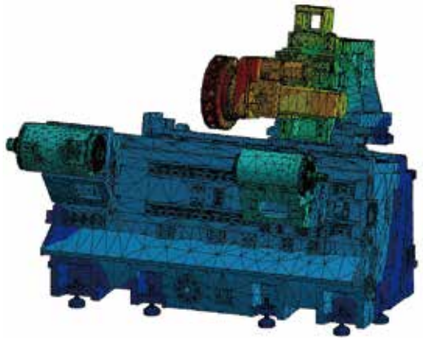


Turret

Tool shank	BMT-65	BMT-55(Opt.)
Tool capacity	12	16
Indexing time (adjacent tool)	0.3 sec	0.3 sec
Indexing time (opposite tool)	1 sec	1 sec
Max. live tool speed	6,000 rpm	
spindle output of live tool	7.5/5.5/3.7 kW(47.8/35/23.6 N m)	

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.

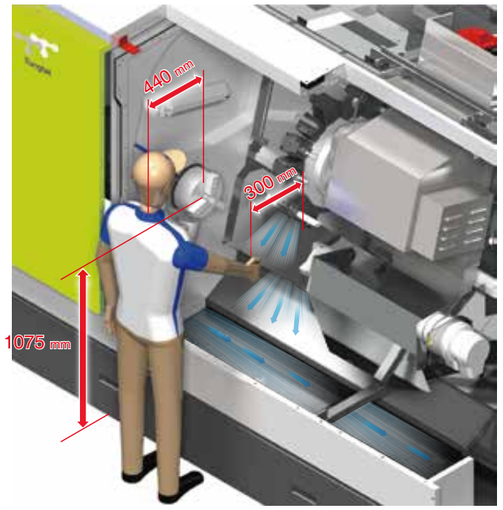


Operation

Swivel-type operation panel

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

Accessibility



90 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 lubrication 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.

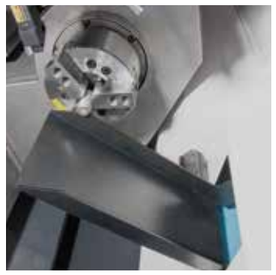
Coolant tank capacity
400 L (80% full)

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)

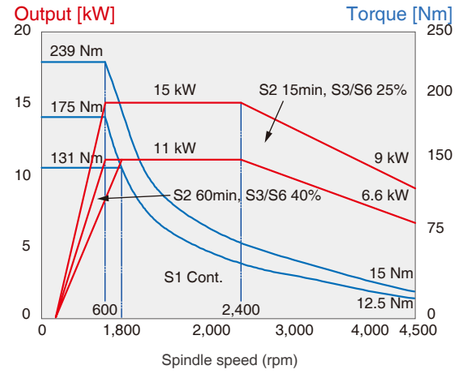
For green future

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.

Spindle output and torque chart

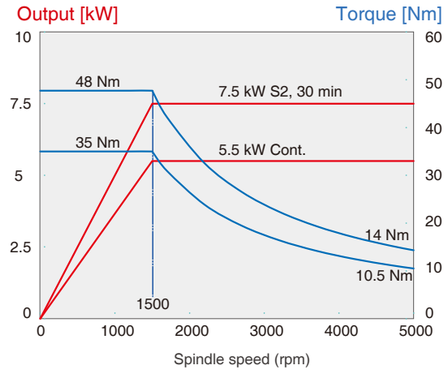
TB-2000Y Belt-driven type spindle motor

Spindle diameter Ø100 mm
Spindle speed 4,500 rpm / 3,000 rpm
Pulley ratio 1:1.25
Spindle motor BilP22/8000-B



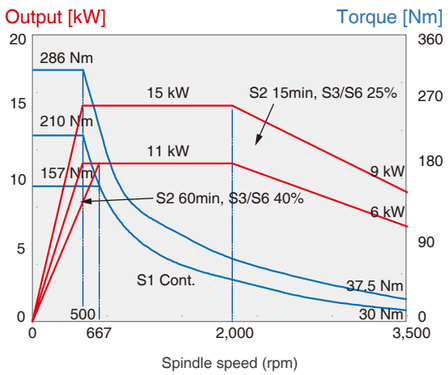
Built-in type sub-spindle motor

Spindle diameter Ø90 mm
Spindle speed 5000 rpm

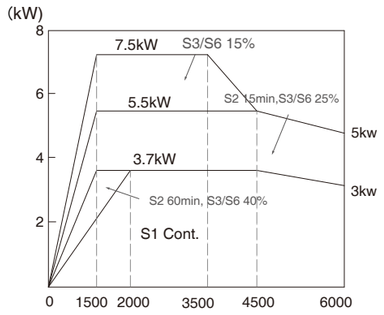


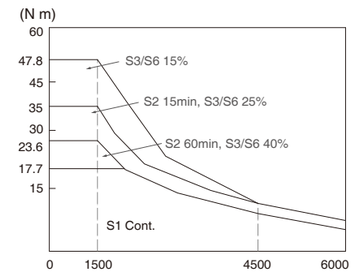
TB-2500Y Belt-driven type spindle motor

Spindle diameter Ø120 mm/Ø130 mm
Spindle speed 3,500/2,500 rpm
Pulley ratio 1:1.5
Spindle motor BilP22/8000-B

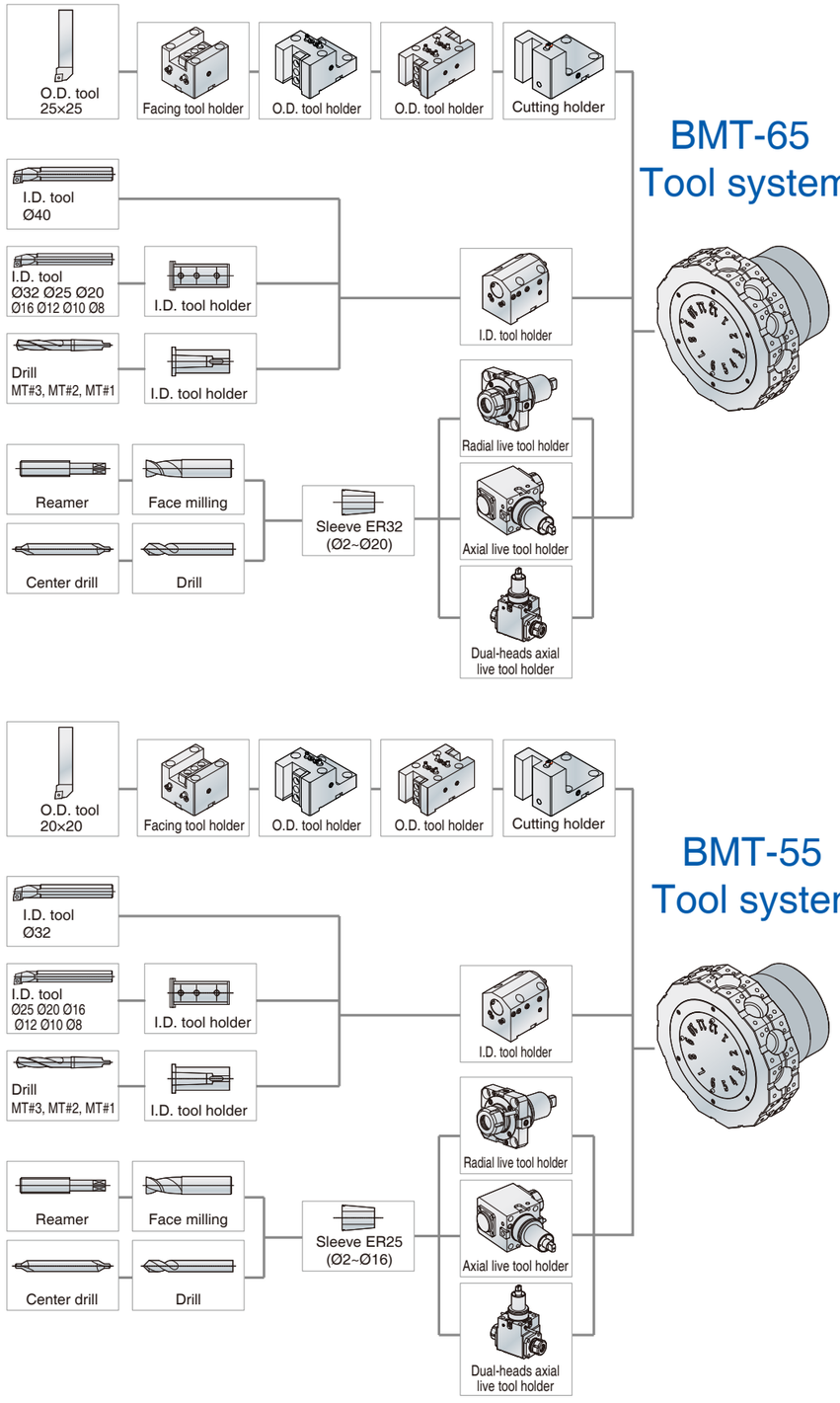


Live tool output & Torque chart



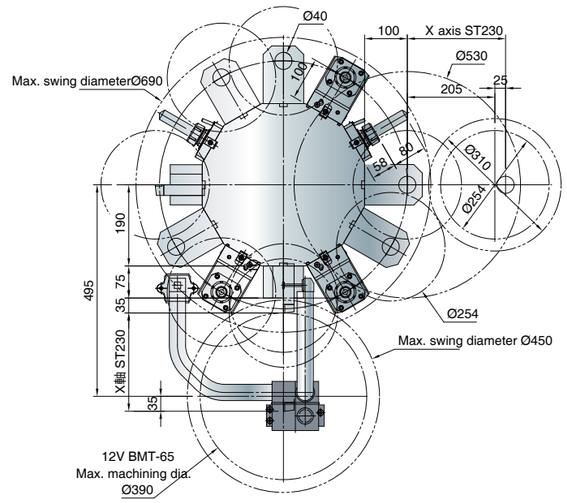


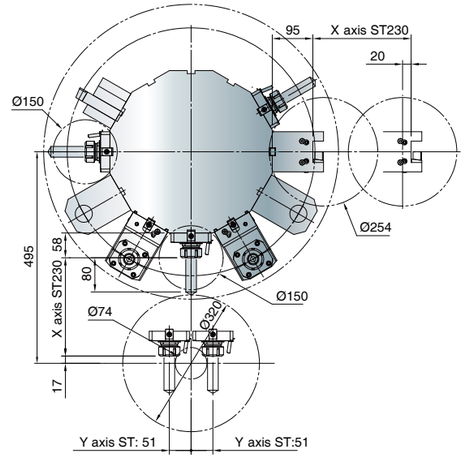
Tool system



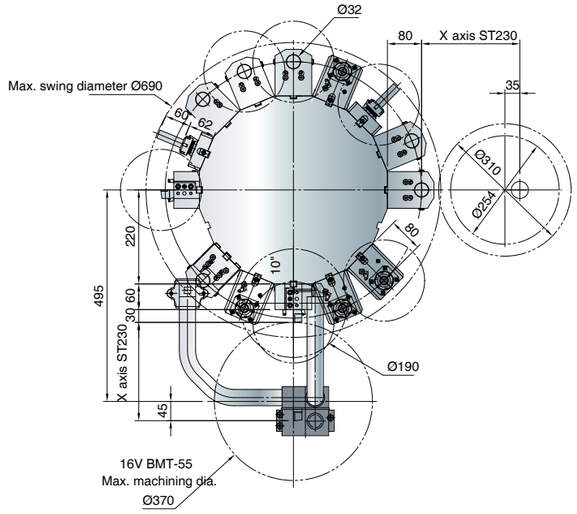
Tool interference

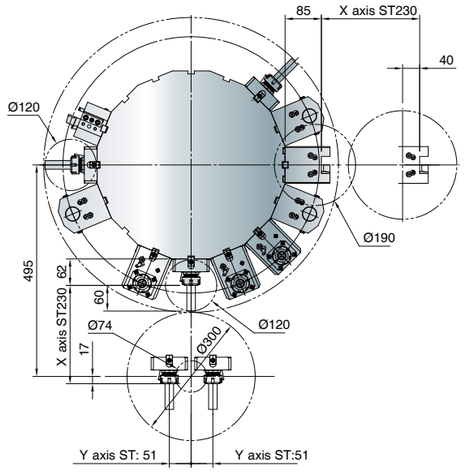
12V BMT65 tool





16V BMT55 tool



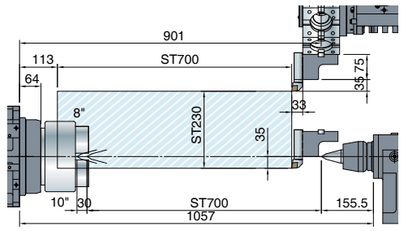


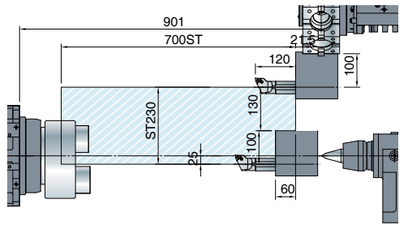
Unit：mm

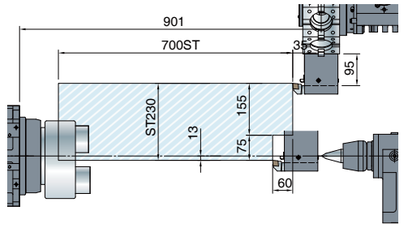
Unit：mm

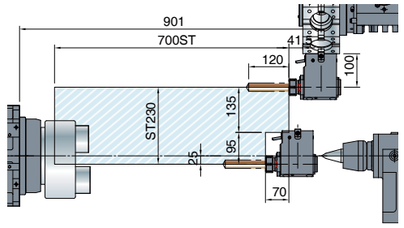
Working area

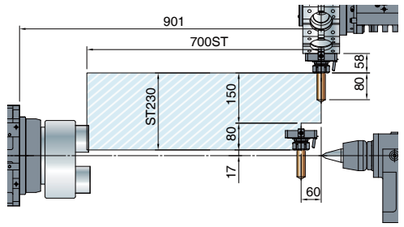
TB-2000Y / TB-2500Y
12V BMT-65 tool



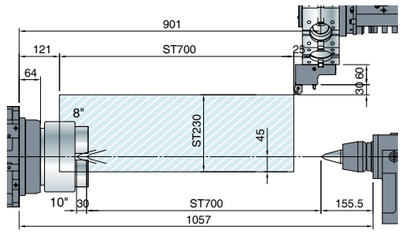


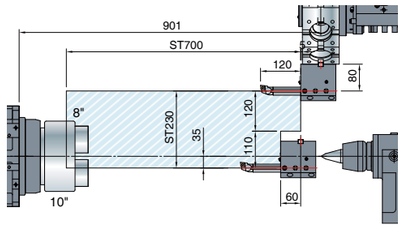


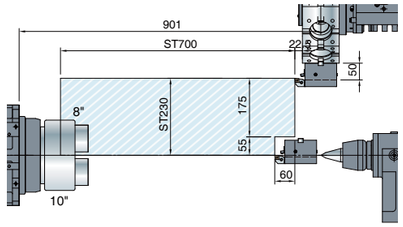


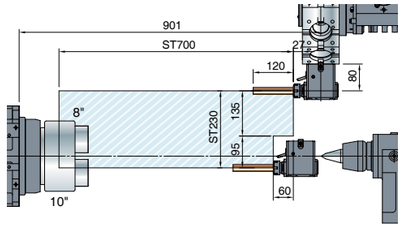


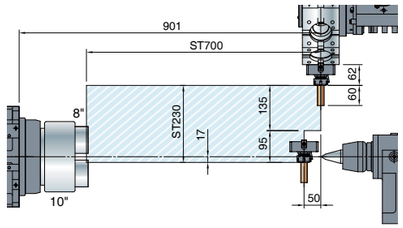
TB-2000Y / TB-2500Y
16V BMT-55 tool



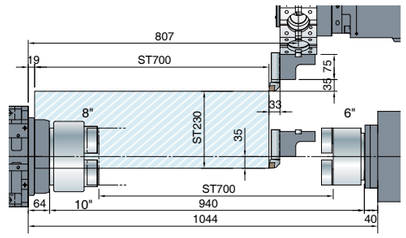


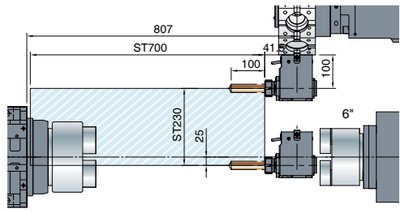


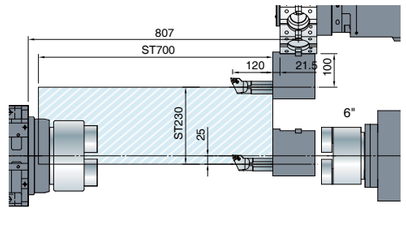


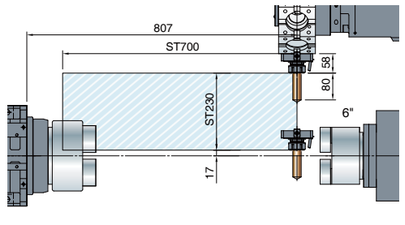


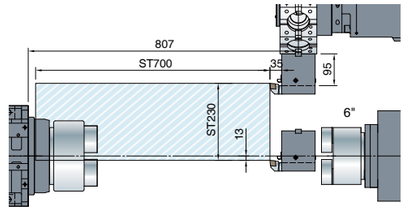
TB-2000YBC / TB-2500YBC
12V BMT-65 tool

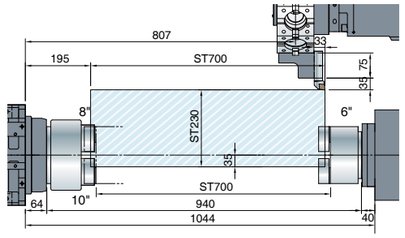






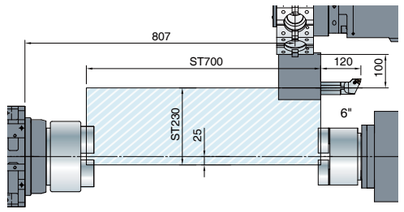


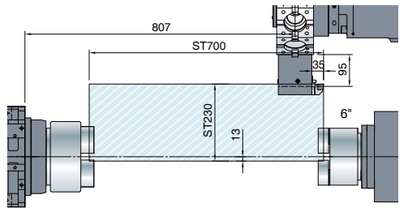


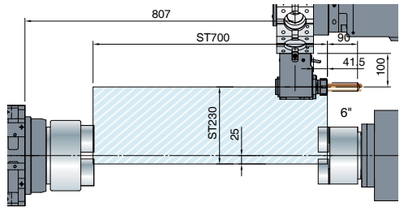


Working area

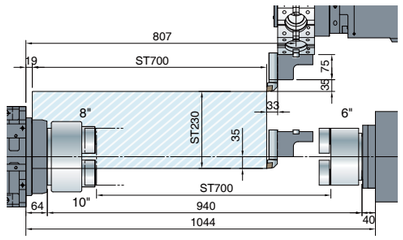
TB-2000YBC / TB-2500YBC
12V BMT-65 tool

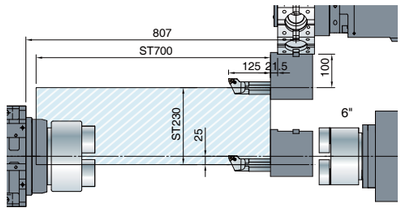


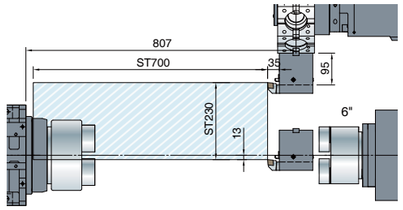




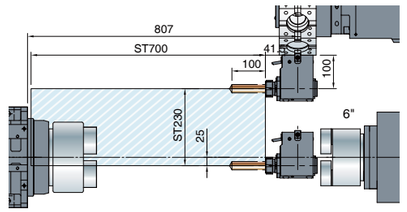
TB-2000YBC / TB-2500YBC
16V BMT-55 tool

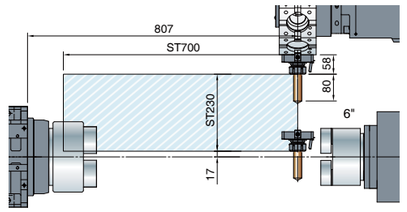


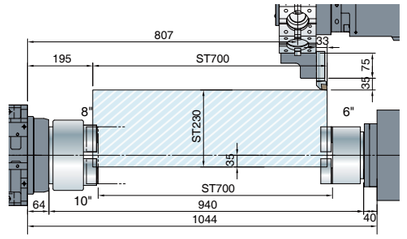


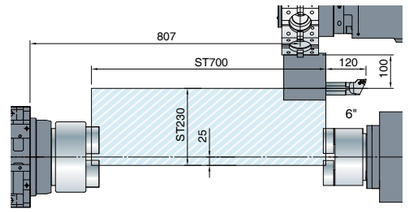


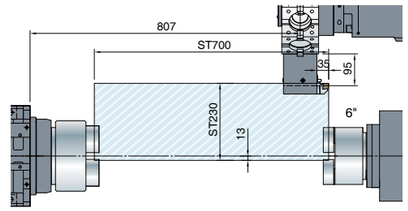
TB-2000YBC / TB-2500YBC
16V BMT-55 tool

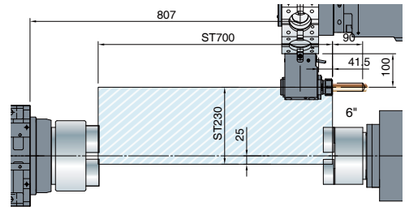












Unit：mm

Unit：mm

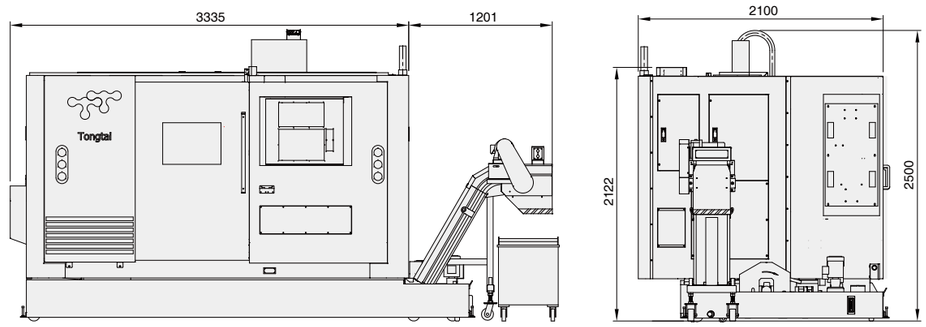
Standard/optional accessories

Standard：● Optional：○ Non-support：-

		TB-2000		TB-2500	
		Y	YBC	Y	YBC
Spindle	Belt-driven spindle, spindle bearing dia. Ø100 mm,4500 rpm (3,000 rpm)	●	●	–	–
	Belt-driven spindle, spindle bearing dia. Ø120/Ø130 mm, 3,500 rpm (2,500 rpm)	–	–	●	●
Sub spindle	Built-in spindle, spindle bearing dia. Ø90 mm, 5000 rpm	–	●	–	●
	0.001°	–	●	–	●
Tailstock taper	MT#5	●	–	●	–
	Hydraulic driving	●	–	●	–
	Servo driving	○	–	○	–
Power turret	12V BMT-65	●	●	●	●
	16V BMT-55	○	○	○	○
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-TF	●			

◎Specifications May Be Changed Without Prior Notice.

Specifications · Machine dimension



Unit：mm

Item	Specification	Unit	TB-2000Y[BC]		TB-2500Y[BC]	
Turning capacity	Max. swing diameter	mm	Ø450		Ø450	
	Max. swing diameter over saddle	mm	Ø450		Ø450	
	Max. turning diameter	mm	Ø390		Ø390	
	Max. turning lenght	mm	610[510]		610[510]	
Spindle	Spindle nose		A2-6		A2-8	
	Spindle speed	rpm	4,500 (3,000)		3,500 (2,500)	
	Chuck size	inch	8"		10" (12")	
	Through-spindle hole diameter	mm	Ø62		Ø77 (Ø86)	
	Bar capacity	mm	Ø51		Ø64 (Ø74)	
	Spindle bearing diameter	mm	Ø100		Ø120/Ø130	
	Spindle center to floor	mm	1,020		1,020	
	Min. CS axis indexing increment	deg	0.001°		0.001°	
Sub-spindle	Spindle nose		- [A2-5]		- [A2-5]	
	Spindle speed	rpm	- [5,000]		- [5,000]	
	Chuck size	inch	- [6"] (8")		- [6"] (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-55	BMT-65	BMT-55
	Tool capacity	pc	12	16	12	16
	O.D. tool	mm	25x25	20x20	25x25	20x20
	I.D. tool	mm	Ø40	Ø32	Ø40	Ø32
	Max. speed	rpm	6,000		6,000	
	Spindle motor	kW	7.5/5.5/3.7 kW(47.8/35/23.6 N m)		7.5/5.5/3.7 kW(47.8/35/23.6 N m)	
	Max. tool diameter		Dia. 20/M16	Dia. 16/M14	Dia. 20/M16	Dia. 16/M14
Feed	X/Y/Z/W axis travel	mm	230/±51/700/700		230/±51/700/700	
	X/Y/Z/W axis rapid traverse	m/min	30/15/36/36		30/15/36/36	
	X/Z axis cutting feedrate	mm/mi	0.001-5000		0.001-5000	
Servo tailstock	Tailstock travel	mm	700		700	
	Center travel	mm	30		30	
	Center taper		MT#5		MT5	
	Center diameter	mm	Ø90		Ø90	
Hydraulic unit	Hydraulic tank capacity	L	30		30	
	Hydraulic motor	kW	1.5		1.5	
Coolant unit	Coolant tank capacity	L	400		400	
	Coolant pump motor	kW	0.55		0.55	
Motor	Spindle motor	kW	15/11		15/11	
	Sub-spindle motor	kW	- [7.5/5.5]		- [7.5/5.5]	
	X/Y/Z/B axis servo motor	kW	2.5/1.8/2.5/1.8		2.5/1.8/2.5/1.8	
Machine size	Width×depth×height	mm	3,335x2,100x2,500		3,335x2,100x2,500	
	Weight	kg	5,200 [5,600]		5,400 [5,700]	
Controller			Fanuc 0i-TF		Fanuc 0i-TF	

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