

Multi-tasking Turning Center

# TD Series



## Tongtai Tongtai Machine & Tool Co., Ltd.

### Headquarters

No.3, Luke 3rd Rd., Luzhu Dist., Kaohsiung City 82151, Taiwan  
TEL : 886-7-9761588 FAX : 886-7-9761589  
www.tongtai.com.tw

Taoyuan Branch	TEL : 886-3-4551399	FAX : 886-3-4559730
Taichung Branch	TEL : 886-4-23589600	FAX : 886-4-23589993
Japan Branch	TEL : 81-4-71438355	FAX : 81-4-71438360
Europe Branch	TEL : 31-161-454639	FAX : 31-161-454768
Romania Branch	TEL : 40-264-415273	FAX : 40-264-403983
Malaysia Branch	TEL : 603-78597113	FAX : 603-78597115
Vietnam Branch	TEL : 84-4-62766090	
Thailand Branch	TEL : 66-2-7443440	FAX : 66-2-3986518
Indonesia Office	TEL : 62-21-45850875	FAX : 62-21-45850876

### China Operation Center

#### Shuzhou Tong-yu Machine & Tool Co., Ltd.

No.555 Huahong Rd., Economic Development Zone of Wujiang,  
Suzhou City, Jiangsu Province, China  
TEL : 86-512-63430168  
FAX : 86-512-63431622  
E-mail : sales@tong-yu.com.cn

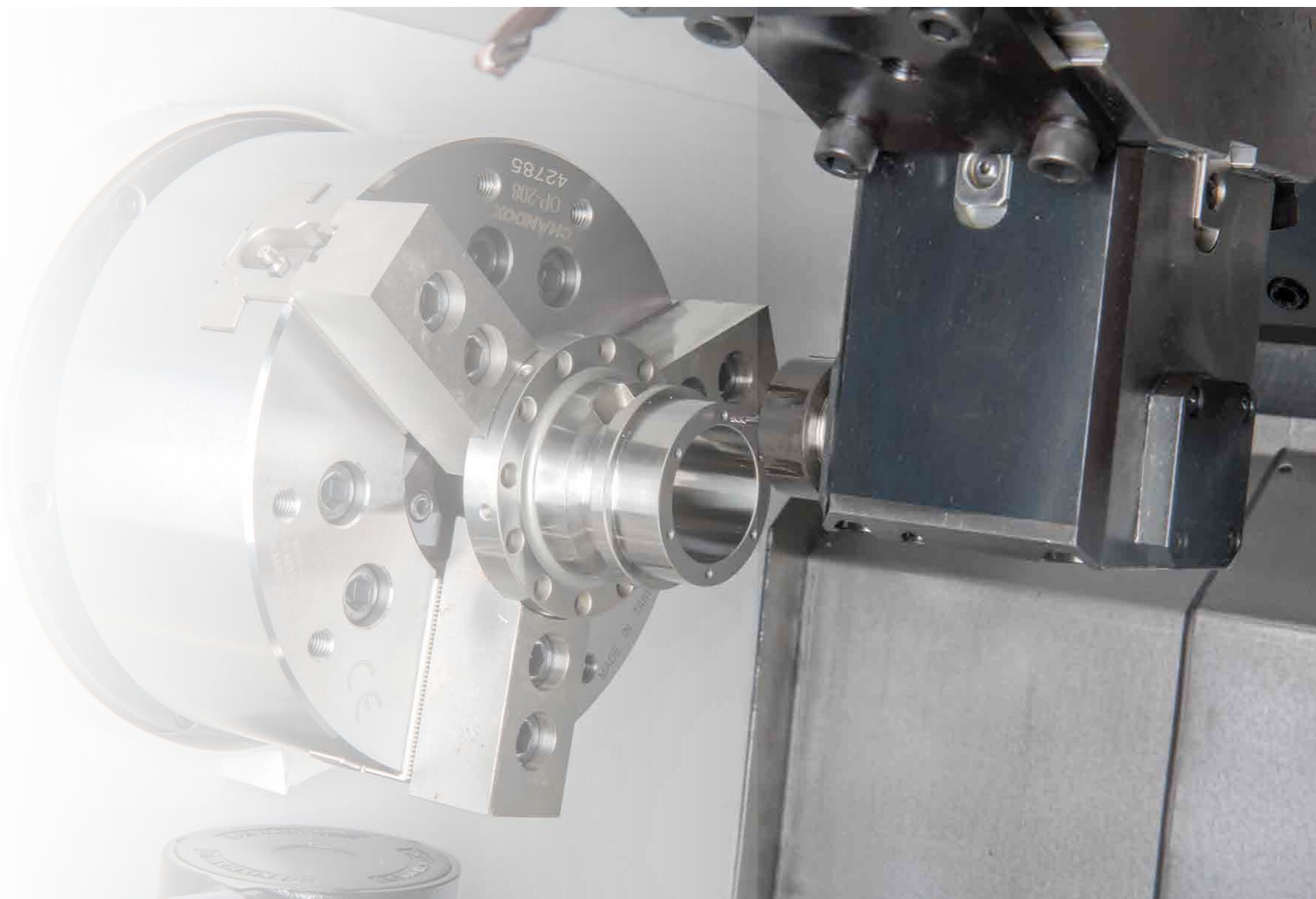
Wuhan Branch	TEL : 86-27-59409109	FAX : 86-27-59409110
Chongqing Branch	TEL : 86-23-67865925	FAX : 86-23-67867717
Guandong Branch	TEL : 86-755-27222119	FAX : 86-755-27222115
Tianjin Branch	TEL : 86-22-24417640	FAX : 86-22-24416738
Shanghai Office	TEL : 86-21-24208138	FAX : 86-21-34073262
Shenyang Office	TEL : 86-24-24142968	FAX : 86-24-24115782

### Affiliates

<b>Honor Seiki Co., Ltd.</b>	<b>Asia Pacific Elite Corp.</b>	<b>Quick-Tech Machinery Co., Ltd</b>	<b>PCI-SCHEM - rue Copernic</b>	<b>ANGER Machining GmbH</b>
TEL : 886-7-9759888	TEL : 886-4-23589313	TEL : 886-6-3841155	TEL : 33-4-77426161	TEL : 43-7229-71041-0
FAX : 886-7-9759999	FAX : 886-4-23588913	FAX : 886-6-3841177	FAX : 33-4-77426023	FAX : 43-7229-71041-199
www.honorseiki.com.tw	www.apecnc.com	www.quicktech.com.tw	www.pci.fr	www.anger-machining.com



# 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.



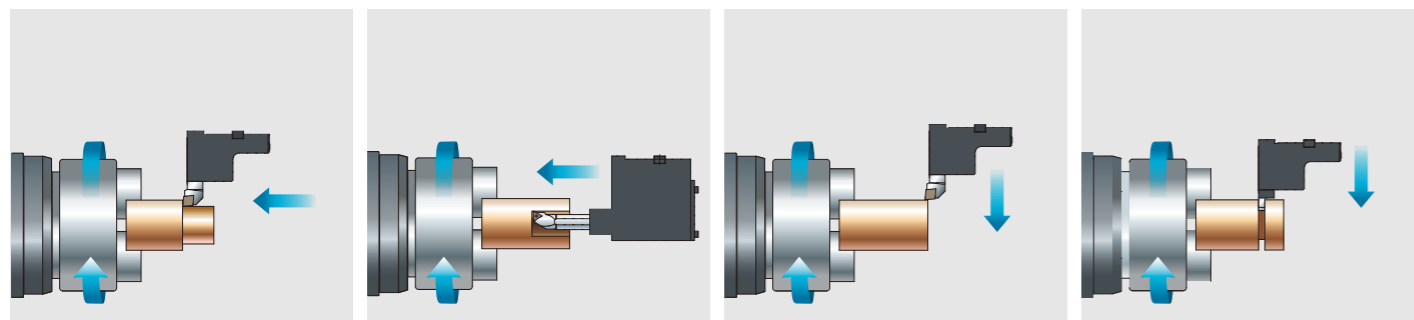
CONTENTS

- 03 Machining ability
- 04 Main Structure
- 07 Operation
- 08 Peripheral accessories
- 09 Tongtai Intelligence Manufacturing System
- 12 Spindle output and torque chart
- 13 Tool system
- 14 Tool interference
- 15 Working area
- 21 Standard/optional accessories
- 22 Machine dimension · Specifications

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

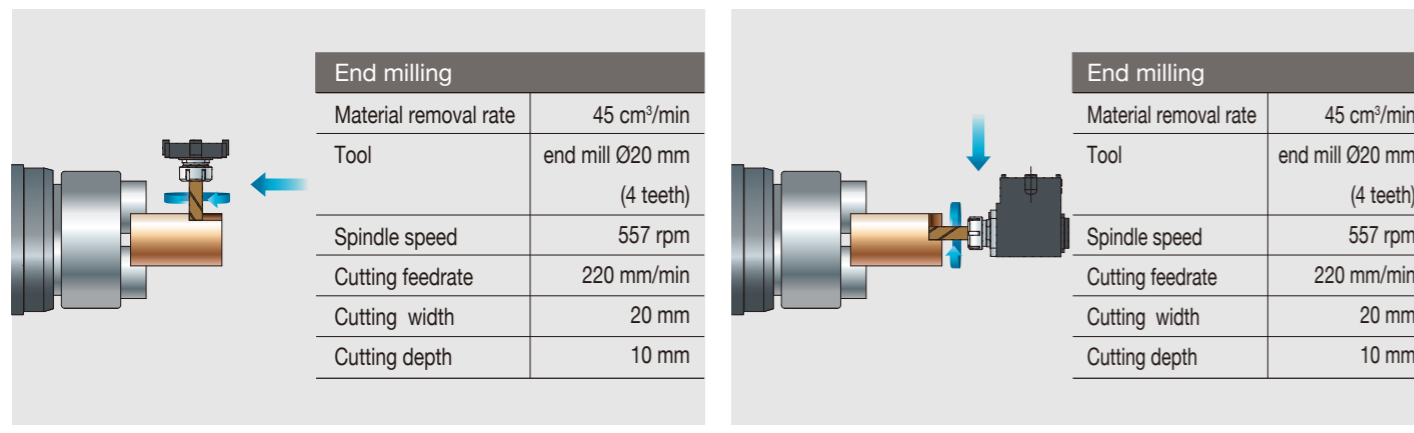
# Machining ability

## Turning Material:S45C



O.D. turning		I.D. turning		Face turning		Grooving	
Material removal rate	360 cm <sup>3</sup> /min	Material removal rate	360 cm <sup>3</sup> /min	Material removal rate	360 cm <sup>3</sup> /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



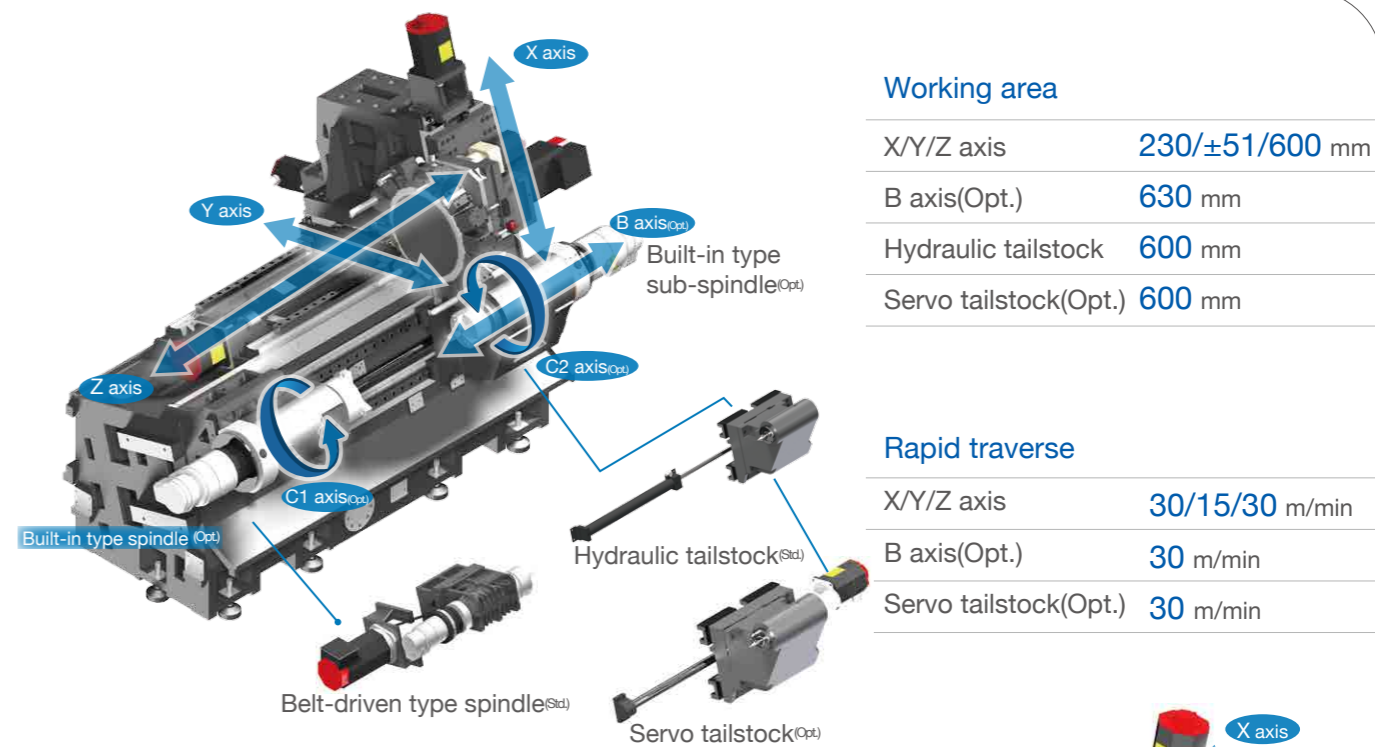
End milling		End milling	
Material removal rate	45 cm <sup>3</sup> /min	Material removal rate	45 cm <sup>3</sup> /min
Tool	end mill Ø20 mm (4 teeth)	Tool	end mill Ø20 mm (4 teeth)
Spindle speed	557 rpm	Spindle speed	557 rpm
Cutting feedrate	220 mm/min	Cutting feedrate	220 mm/min
Cutting width	20 mm	Cutting width	20 mm
Cutting depth	10 mm	Cutting depth	10 mm

Drilling		Drilling	
Material removal rate	71 cm <sup>3</sup> /min	Material removal rate	71 cm <sup>3</sup> /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**

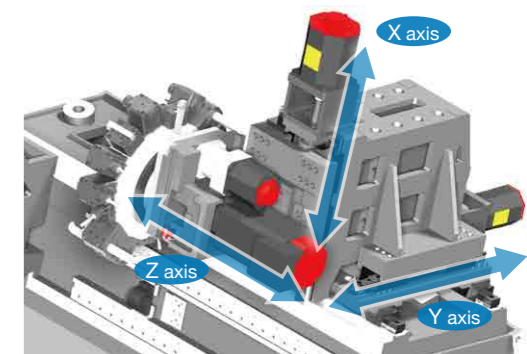
X/Y/Z axis	230/±51/600 mm
B axis(Opt.)	630 mm
Hydraulic tailstock	600 mm
Servo tailstock(Opt.)	600 mm

**Rapid traverse**

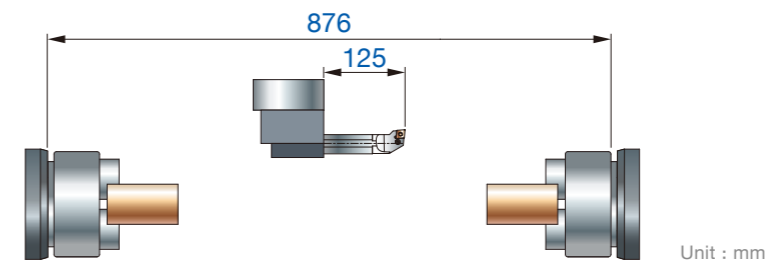
X/Y/Z axis	30/15/30 m/min
B axis(Opt.)	30 m/min
Servo tailstock(Opt.)	30 m/min

## 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)

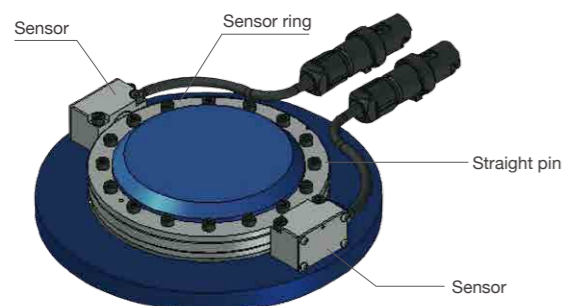
## Sub-spindle

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



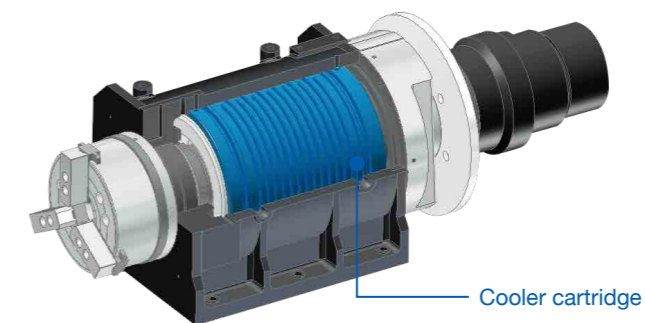
## Spindle/Sub-spindle CS axis with brake unit

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.



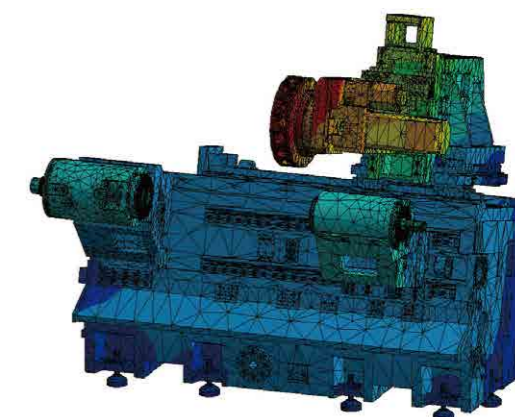
## Turret



Tool shank	VDI-40(Std.)	BMT-65(Opt.)	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.



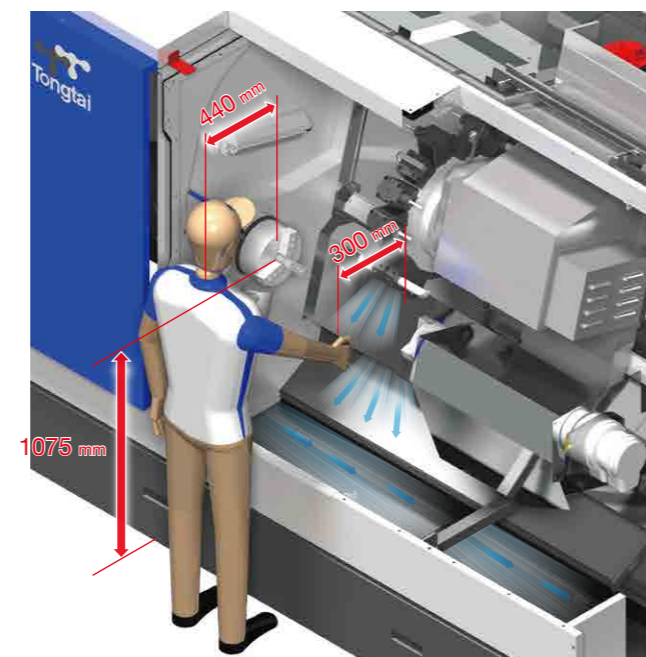
# Operation

## 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  
660 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 x : 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)



# TIMS Tongtai Intelligent Manufacturing System(Opt.)

Considering productivity improvement, better machining precision, operating facilitation, as well as protection and maintenance assistance, TIMS includes four management functions: production management, intelligent monitoring, tool management, and workpiece management. These provide customers a comprehensive intelligence manufacturing system and a friendly human-machine interface.



## Production management

- Cutting Load Monitoring**  
 The spindle and feeding axis motor loads are able to be monitored from the operation panel directly. The tool number is also shown during machining.
- APC Information**  
 The operator is able to assign the program codes of A/B pallet in the operating interface directly and the system will call the corresponding programs of workpiece automatically.
- Machine Alarm Messages Record**  
 Alarm messages will be recorded in detail during machine processing.
- Troubleshooting and Maintenance Support**  
 Graphical display interface assists operators to understand detailed alert and warning information.

## Intelligent monitoring

- Motor Load Monitoring**  
 Monitoring and retrieving the motor load data during machining from the operation panel. In addition, according to the setting values, the system will show the alarm messages or shut down the machine.
- Machining Adaptive Control**  
 Monitoring the spindle loads and the system enables automatic feeding adjustment to protect tools and ensure machining efficiency.
- Crush Protection**  
 With the real-time detection of servo loads during feeding, the electrical brake is activated when a crash happens to minimize the damage.

## Tool management

- Tool Usage Time Tracking**  
 Record the information of last machining date, time, and accumulated machining time in each tool.
- Tool Compensation**  
 When the machining process needs tool length compensation, the operator is able to key in the compensation data for the tools.
- Tool Life Management**  
 Display the tool life information and reminds the operator to check workpiece before tool life almost approaching its maximum.
- Tool Overload Protection**  
 Display the information tool loads, spindle loads, machining time, abnormal data, and overload value of tools. When overload value reached, system will shut down the machine and show the alarm message.

## Workpiece management

- Workpiece positioning**  
 The CCD camera is used to monitor the characteristics of workpiece, and then the system will calculate and compensate program coordinates for increasing machining precision.



# 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

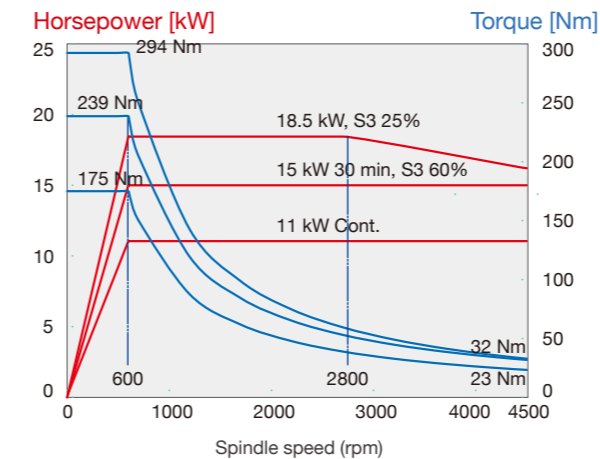
Variable-frequency hydraulic unit



# Spindle output and torque chart

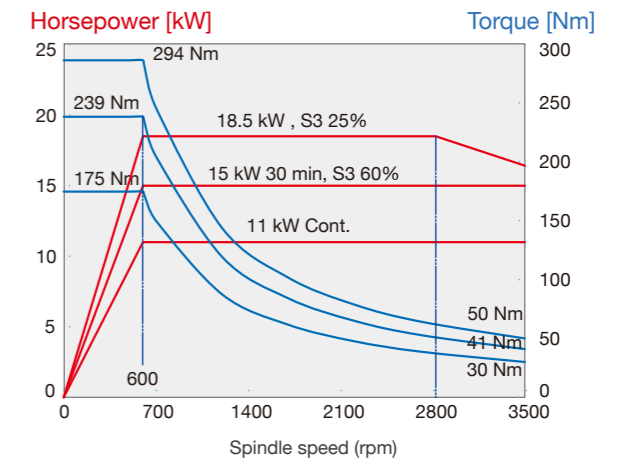
**TD-2000Y Belt-driven type spindle motor**

Spindle diameter Ø100 mm  
Spindle speed 4500 rpm  
Pulley ratio 1:1.25



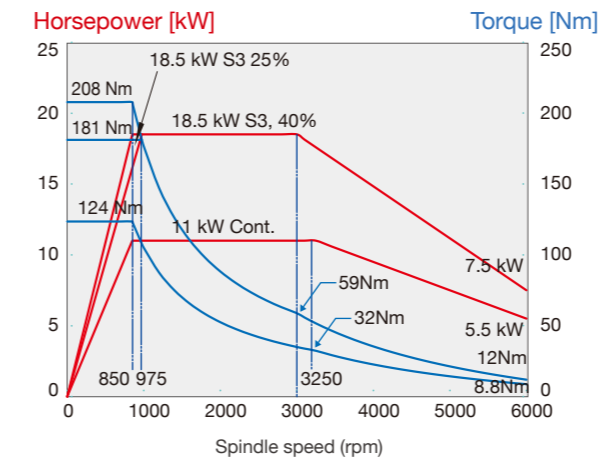
**TD-2500Y Belt-driven type spindle motor**

Spindle diameter Ø120 mm/Ø130 mm  
Spindle speed 3500 rpm  
Pulley ratio 1:1.25



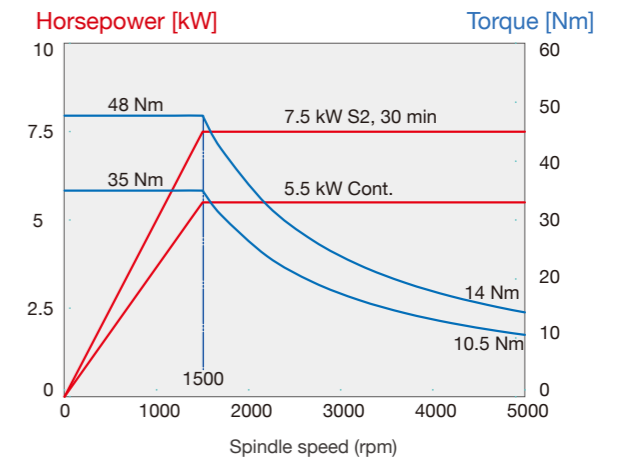
**TD-2000Y Build-in type spindle motor (Opt.)**

Spindle diameter Ø100 mm  
Spindle speed 6000 rpm



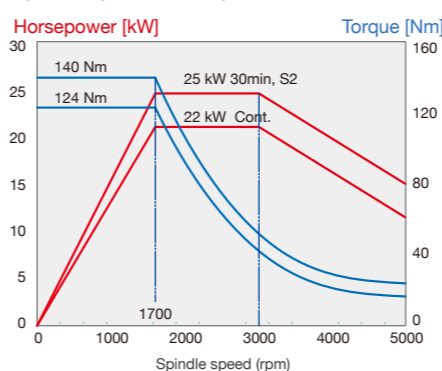
**Build-in type sub-spindle motor**

Spindle diameter Ø90 mm  
Spindle speed 5000 rpm



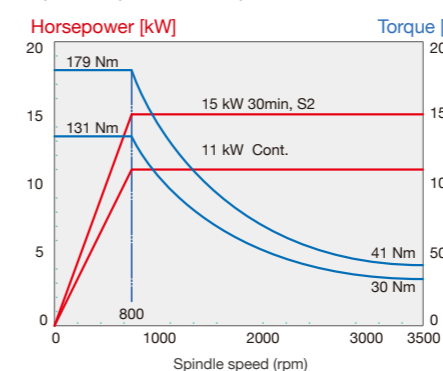
**TD-2500Y Build-in type spindle motor (Opt.)**

Spindle diameter Ø120 mm  
Spindle speed 5000 rpm



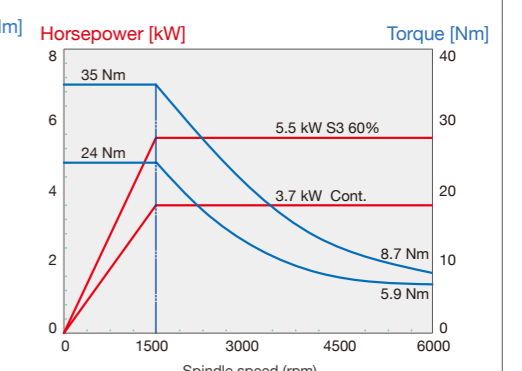
**TD-2500Y Build-in type spindle motor (Opt.)**

Spindle diameter Ø130 mm  
Spindle speed 3500 rpm

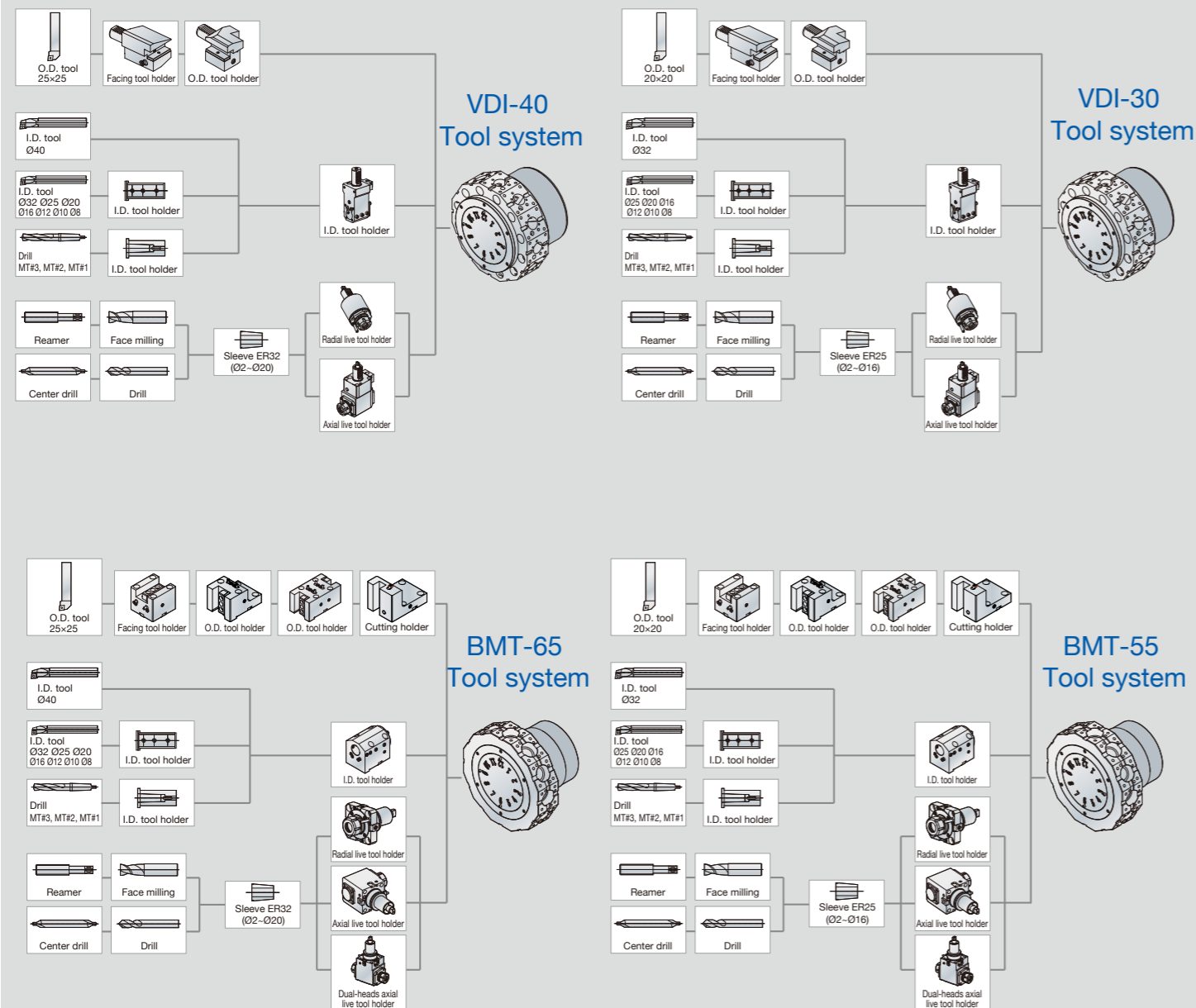


**Live tool spindle motor**

Spindle diameter Ø130 mm  
Spindle speed 6000 rpm



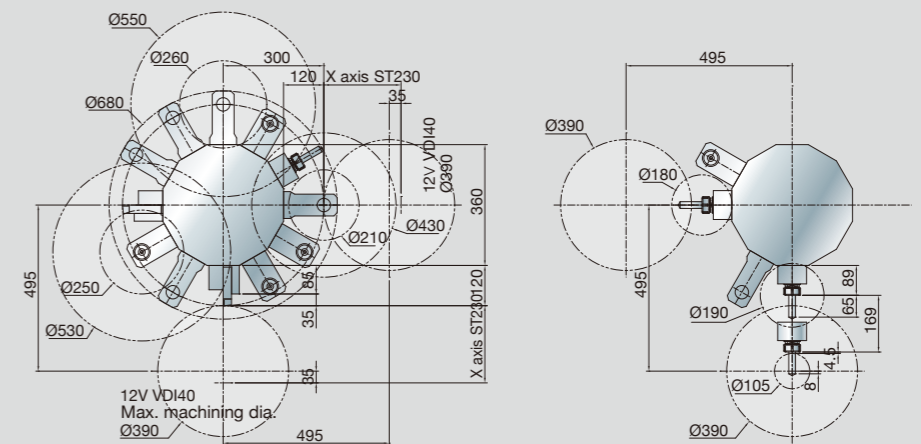
# Tool system



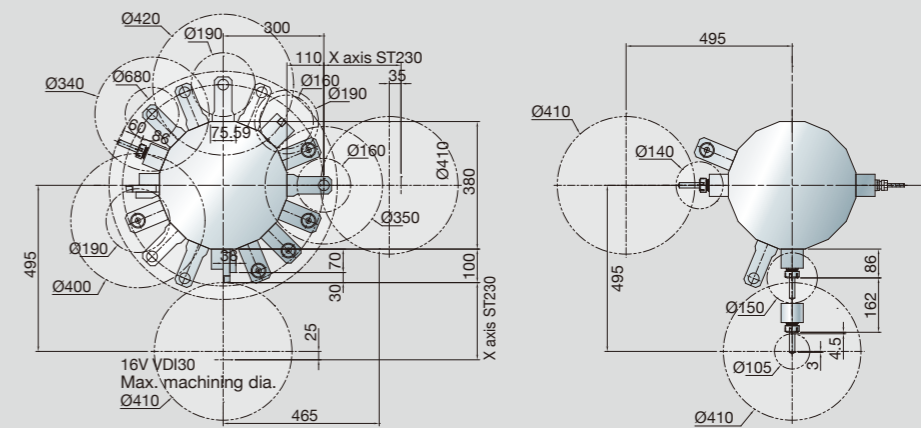
Unit : mm

# Tool interference

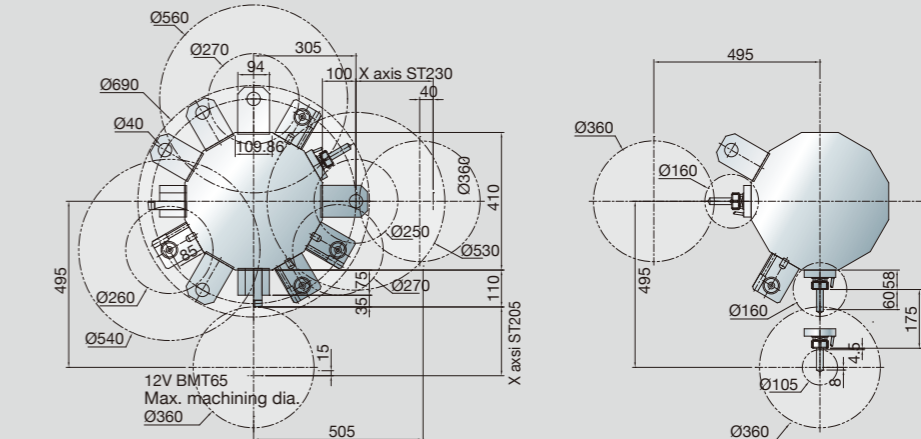
12V VDI-40 tool



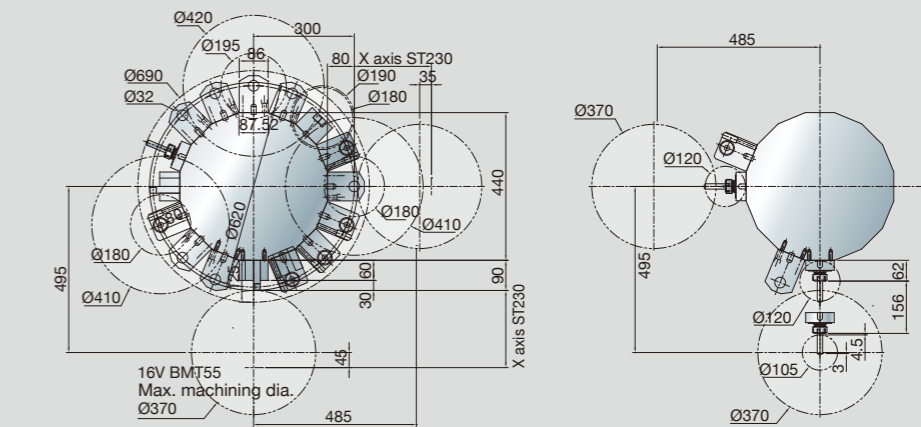
16V VDI-30 tool



12V BMT-65 tool



16V BMT-55 tool



單位 : mm









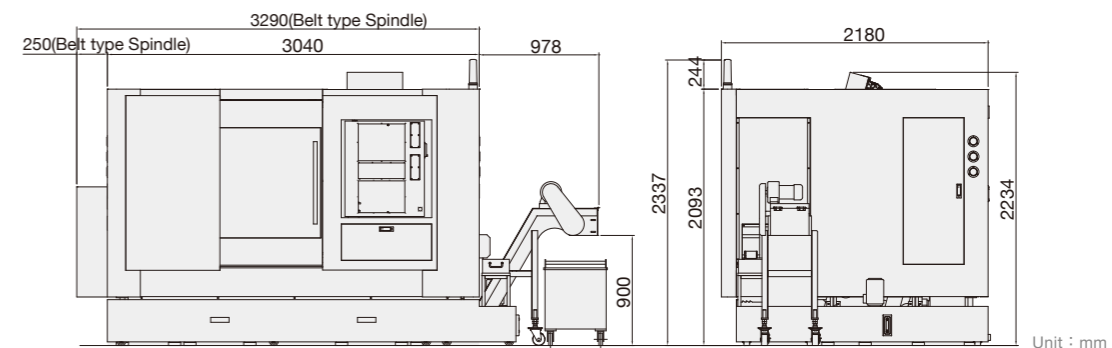
# Standard/optional accessories

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	○					
Coolant & airblow	Parts unloading device for sub-spindle	○					
	Coolant through spindle	○					
Others	Air conditioner for electrical cabinet	○					
	Air gun / Coolant gun	○					
	Oil skimmer	○					
	Oil mist collector	○					
Controller	FANUC 0i-T	●					

©Specifications May Be Changed Without Prior Notice.

# Machine dimension/Specifications



## Specifications

Item	Specification	Unit	TD-2000Y[BC]				TD-2500Y[BC]			
			12V VDI-40 Tool	16V VDI-30 Tool	12V BMT-65 Tool	16V BMT-55 Tool	12V VDI-40 Tool	16V VDI-30 Tool	12V BMT-65 Tool	16V BMT-55 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	Ø390	Ø410	Ø360	Ø370	Ø390	Ø410	Ø360	Ø370
	Max. turning length	mm	560	570	530	535	560	570	530	535
Spindle	Spindle nose		A2-6				A2-8			
	Spindle speed	rpm	4500 (Opt. 3000) (Opt. built-in type 6000)				3500 (Opt. 2500) (Opt. built-in type 5000, 3500)			
	Chuck size	inch	8" (Opt.10")				10" (Opt.12")			
	Through-spindle hole diameter	mm	Ø62				Ø77/Ø86			
	Bar capacity	mm	Ø51(Opt. built-in type Ø51)				Ø64(Opt. built-in type Ø51) / Ø74 (Opt. built-in type Ø64)			
	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"] (Opt.8")				- [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		VDI-40	VDI-30	BMT-65	BMT-55	VDI-40	VDI-30	BMT-65	BMT-55
	Tool capacity	pc	12	16	12	16	12	16	12	16
	O.D. tool	mm	25×25	20×20	25×25	20×20	25×25	20×20	25×25	20×20
	I.D. tool	mm	Ø40	Ø32	Ø40	Ø32	Ø40	Ø32	Ø40	Ø32
	Max. speed	rpm	6000				6000			
	Spindle motor	kW	5.5/3.7				5.5/3.7			
	Max. tool diameter	mm	Dia. 20/M16	Dia. 16/M14	Dia. 20/M16	Dia. 16/M14	Dia. 20/M16	Dia. 16/M14	Dia. 20/M16	Dia. 16/M14
	Feed	X/Z axis stroke	mm	230/±51/600/-[630]				230/±51/600/-[630]		
	X/Z axis rapid traverse	m/min	30/15/30/-[30]				30/15/30/-[30]			
	Cutting feedrate	mm/min	0.001-5,000				0.001-5,000			
Hydraulic tail stock	Tailstock stroke	mm	600 [-]				600 [-]			
	Center taper		MT4 [-]				MT4 [-]			
	Center diameter	mm	100 [-]				100 [-]			
Servo type tail stock (Opt.)	Tailstock stroke	mm	600 [-]				600 [-]			
	Center stroke	mm	80 [-]				80 [-]			
	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, (Opt. Opt. built-in type 18.5/11)				18.5/15/11, (Opt. Opt. built-in type 25/22, 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/-[2.7]				4.5/2.7/4.5/-[2.7]			
Machine size	Width×depth×height	mm	3290×2180×2337[3040×2180×2337 built-in type spindle]				3290×2180×2337[3040×2180×2337 built-in type spindle]			
	Weight	kg	5,900 [6,400]				6,100 [6,600]			

©Specifications May Be Changed Without Prior Notice.