



Multi-tasking turning center
TMT2000 Series



Trust & Technology



2011.09.01 Design by Tongtai Machine & Tool Co., Ltd.

The multi-tasking turning center with *modular design*
concept to guarantee high ratio *cost-performance*.

TMT2000 Series

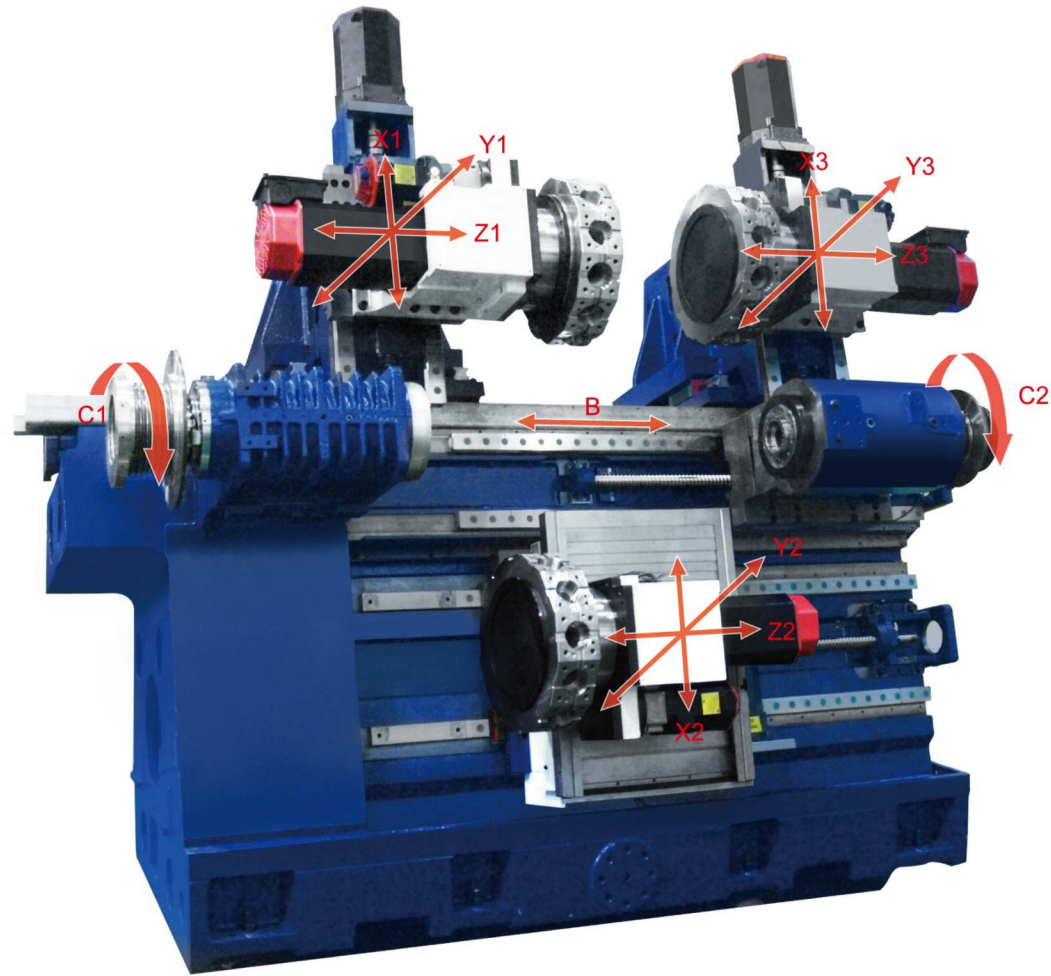
All features including symmetrical saddle design, X/Y/Z axis perpendicular to each other and really linear Y axes, which make servo compensation possible, ensure excellent positioning accuracy.

By basic structure with main spindle and sub-spindle plus two or three turrets with Y axes, most of complex parts are possible to be finished in one machine setup.

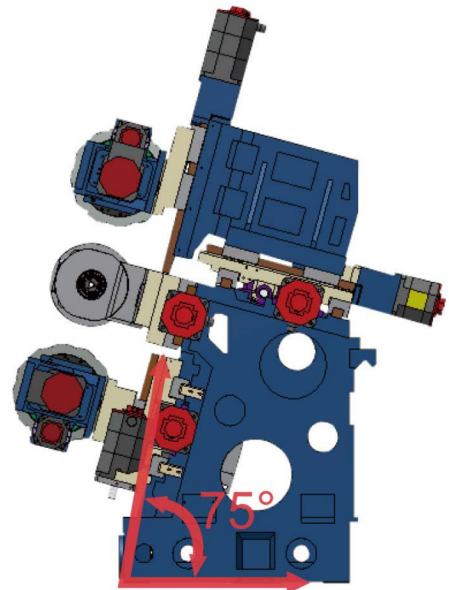
Not only for the different workpieces and lot sizes but also for the mass production, TMT2000 series of modular design concept will create the best machining solution with best investment combination.

The automation is easily fulfilled by a bar feeder or a robotic arm with part storage. The compound machine functions including turning, milling and even off-center machining plus the automation solution make long-term manless operations possible and guarantee the investment income.

Modular design concept

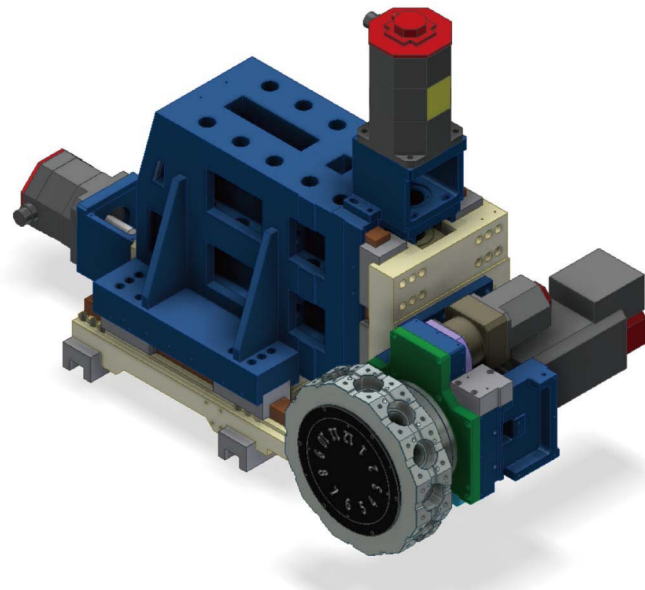


75 degree slant machine bed



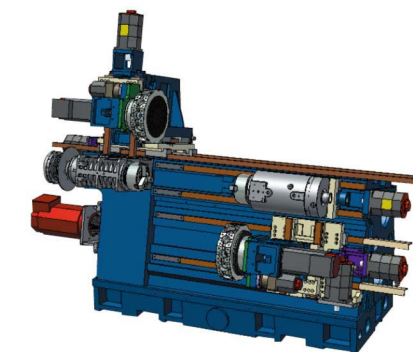
75 degree slant machine bed makes chip flow even easier and allows a more ergonomic operation space. The turrets are close to the operator facilitating tool change.

Linear Y axis design

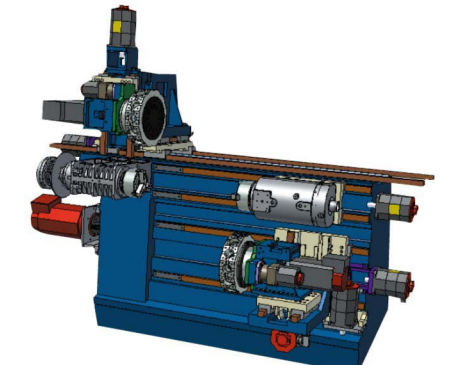


Different from simulated Y axis which could have positioning error without servo compensation, a really linear Y axis provides the high precision machinings not only for off-center holes but linear milling along Y-axis.

Two spindles/ Two turrets series

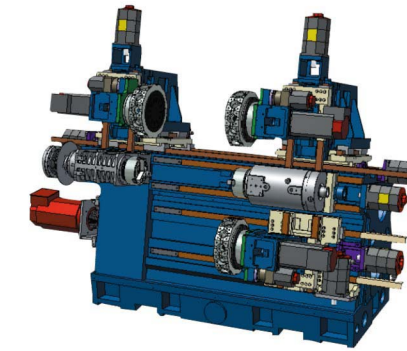


TMT2000-T2Y1

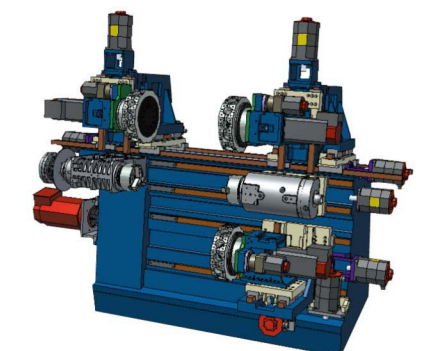


TMT2000-T2Y2

Two spindles/ Three turrets series

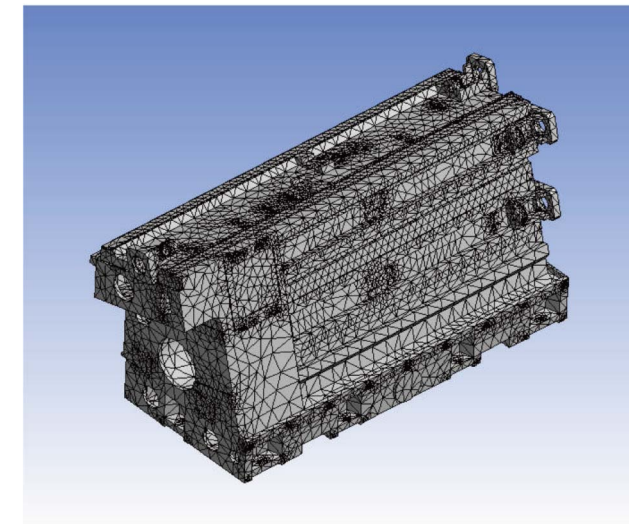


TMT2000-T3Y2



TMT2000-T3Y3

FEM analysis (Finite Element Method)



FEM analysis is utilized to ensure the reliability for the target of powerful cutting capability, excellent accuracy and high productivity.

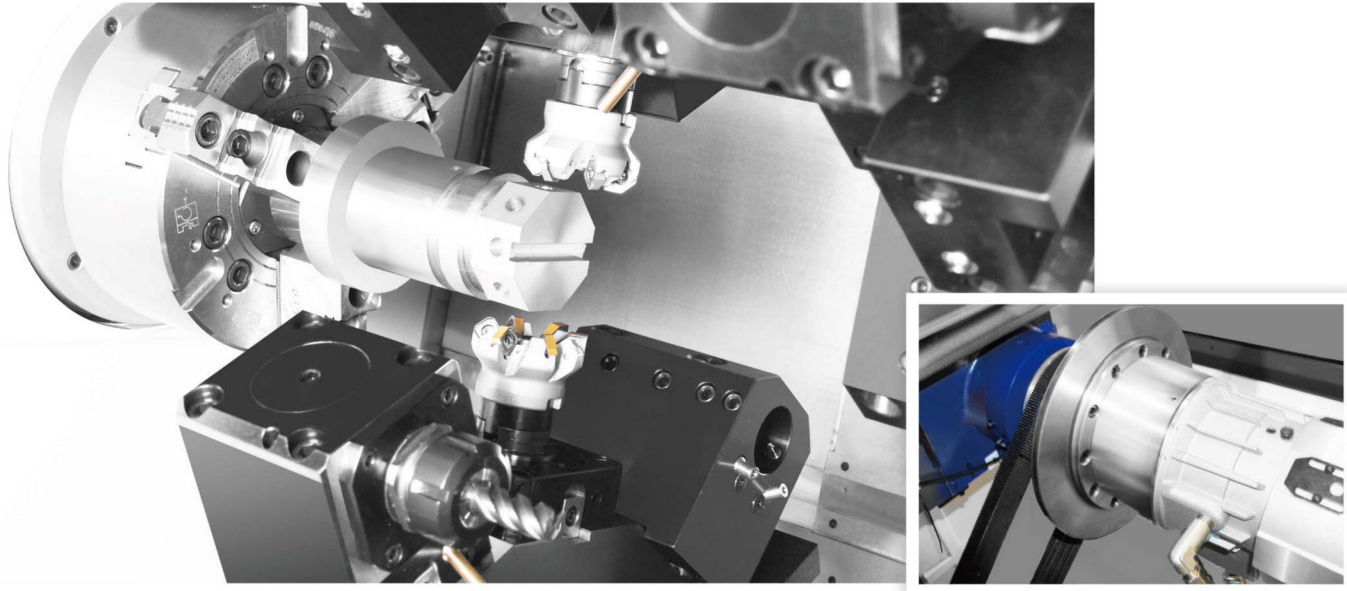
Torque clutch



The torque clutch on Z axis provides the immediate protection against the collisions and minimizes the damages caused.

Spindle

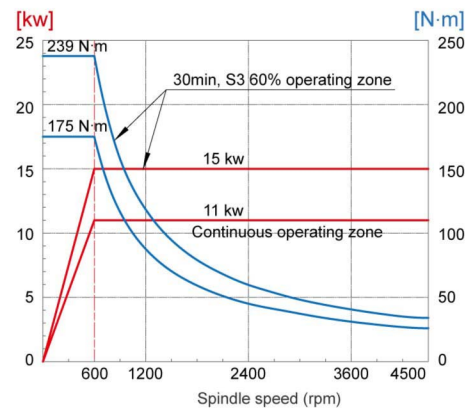
Belt-type spindle



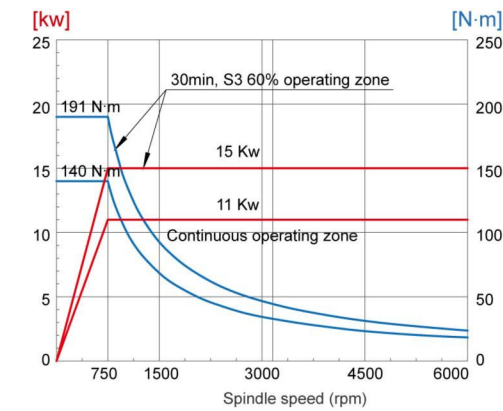
Spindle motor **15/11** kw
 Spindle speed Standard **4500** rpm
 Optional **6000** rpm
 (for collet chuck only)

Hole through spindle **Ø76 (opt. Ø62)** mm
 Bar capacity **Ø65 (opt. Ø51)** mm

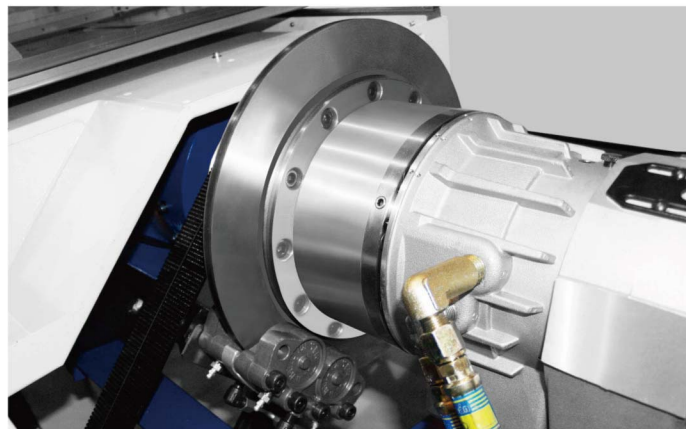
Standard : spindle speed 4500 rpm



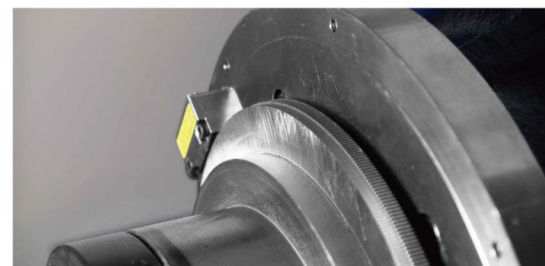
Optional : spindle speed 6000 rpm



Spindle CS axis with brake

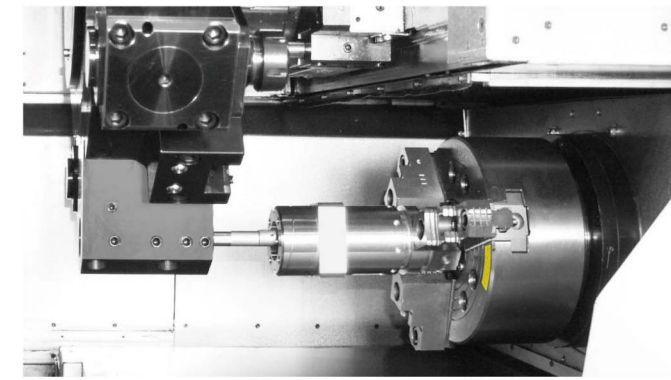


The CS axis is fed back by a rotary encoder with multi-points positioning function. The minimum indexing increment 0.001 degree allows various machining needs with different angles.



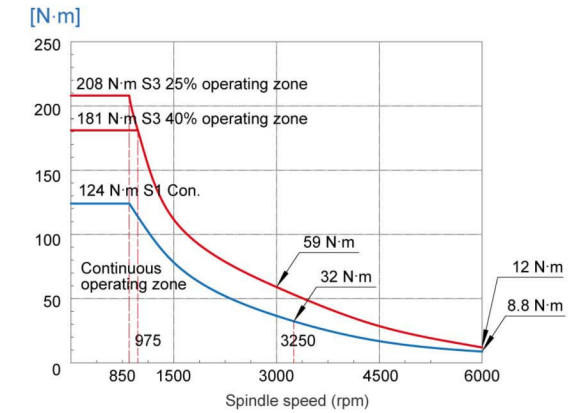
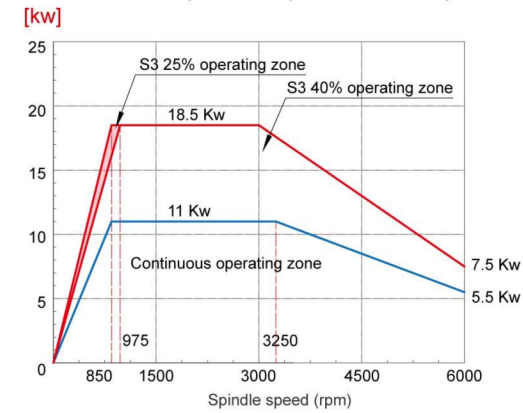
Sub-spindle

Built-in sub-spindle

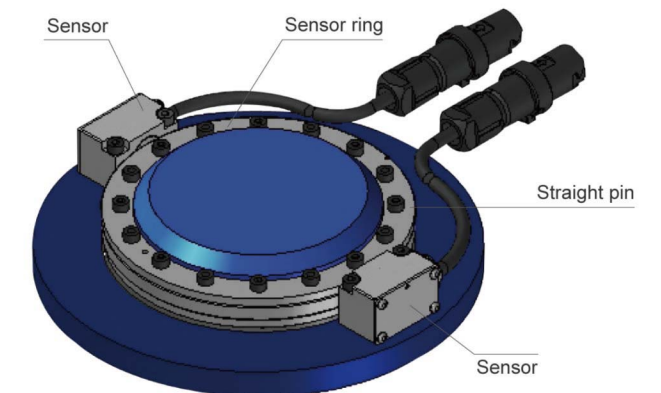


Sub-spindle motor **18.5/11** kw
 Sub-spindle speed **6000** rpm (for collet chuck only)
 Hole through spindle **Ø62** mm
 Bar capacity **Ø51** mm

Standard : spindle speed 6000 rpm



Sub-spindle CS axis with brake



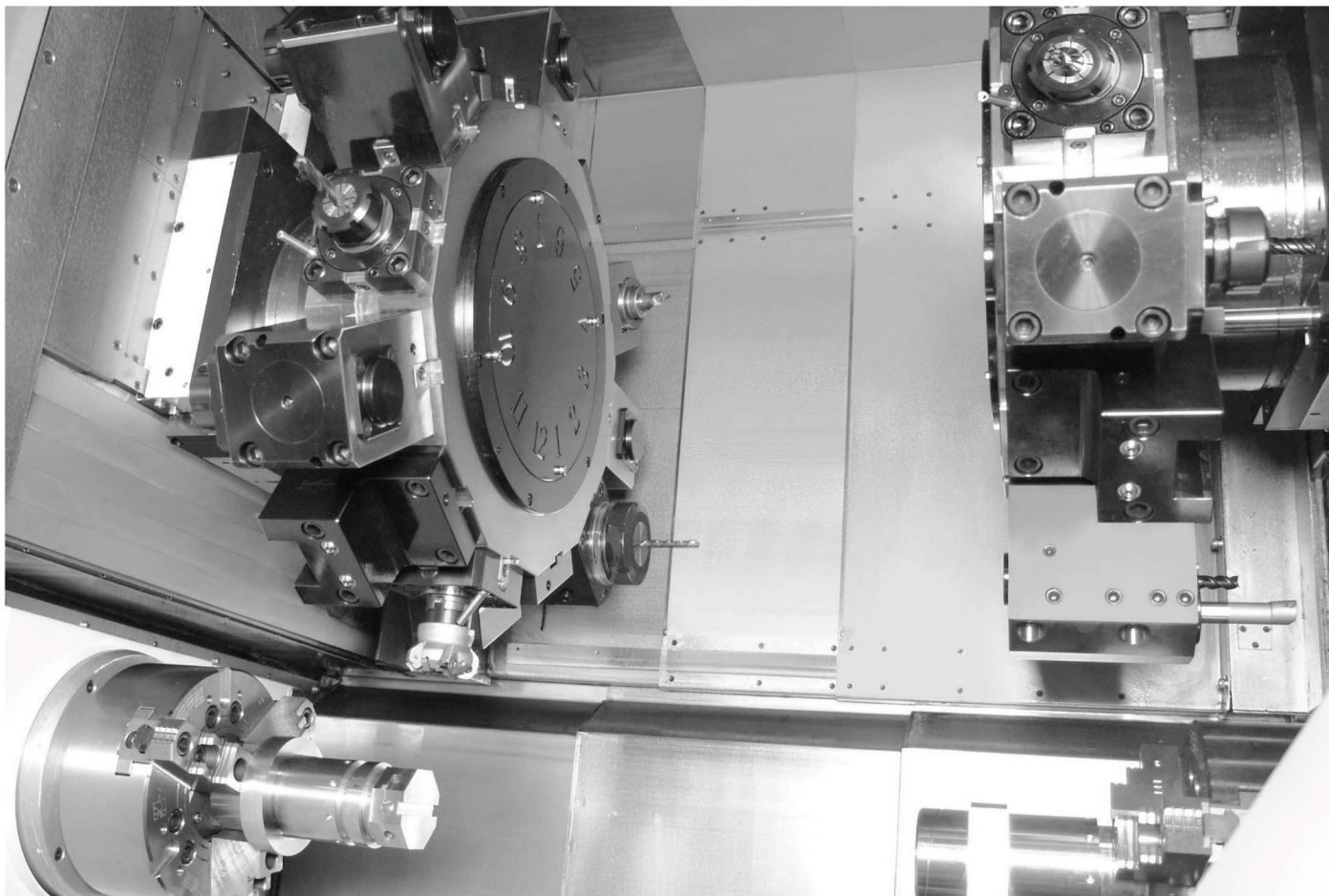
The CS axis is fed back by a rotary encoder with multi-points positioning function. The minimum indexing increment 0.001 degree allows various machining needs with different angles.

Spindle cooler

With synchronous temperature control, the spindle cooler prevents both spindles (for built-in type only) from thermal distortion. This ensures high precision machining for long-term operation.



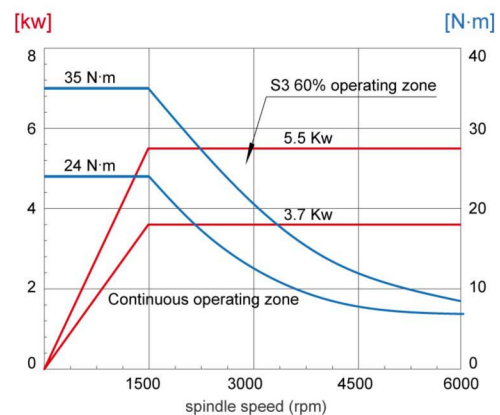
Power turret



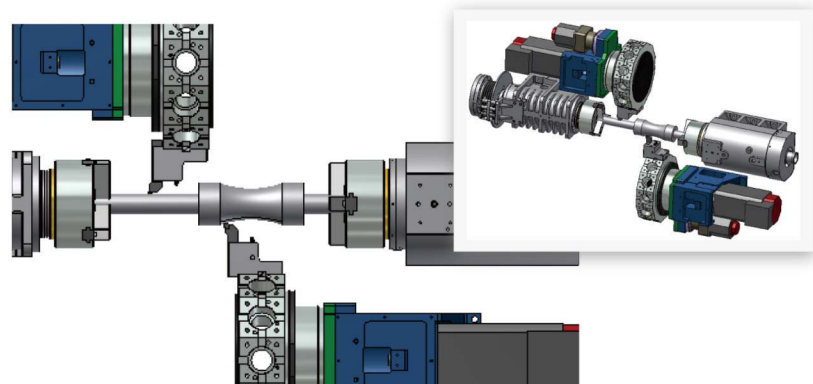
Tool shank **BMT-65 (opt. VDI-40)**

Tool capacity **12** stations
(all positions available with live tools.)

Max. speed **6000** rpm

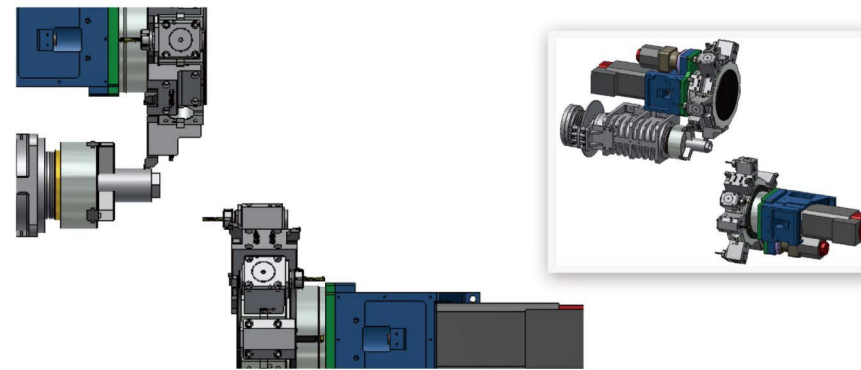


Application features

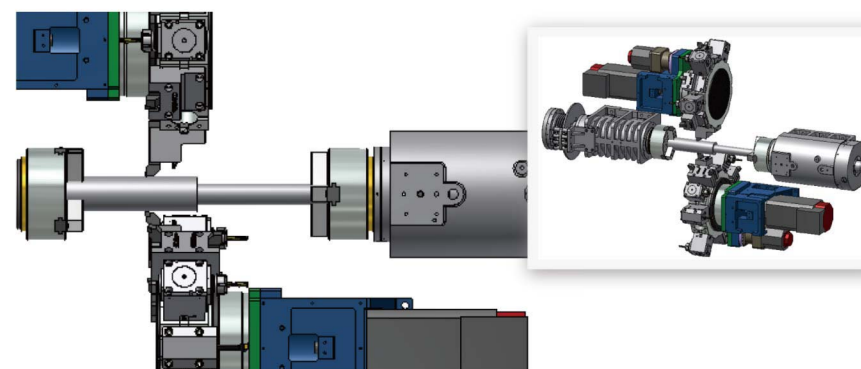


The upper and lower turrets are turning the part together to save the cycle time.

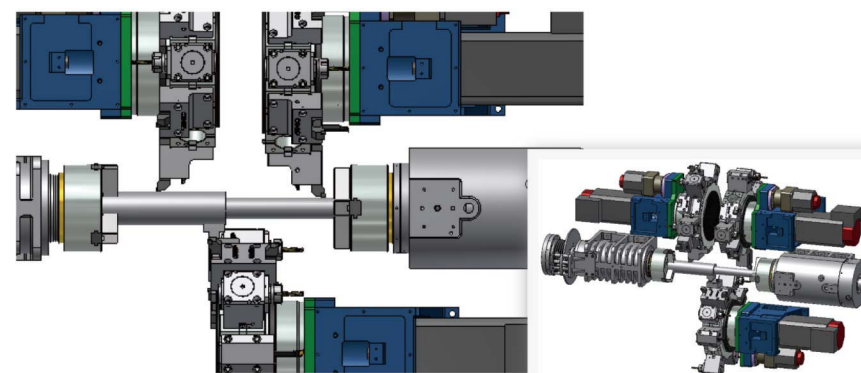
Application features



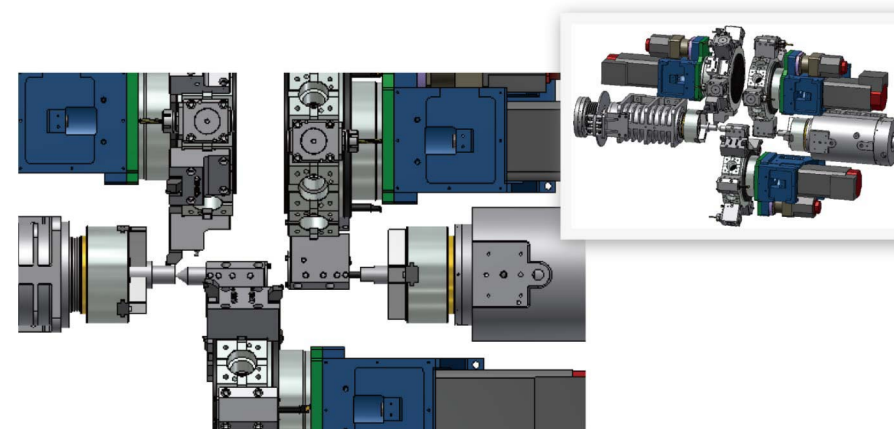
The machining process is continued by one turret after the other to save tool changing time.



The reaction force against each other may reduce the vibration when both upper and lower turrets are processing simultaneously.



The lower turret can be used as a steady rest to avoid vibration for the long shaft machining.



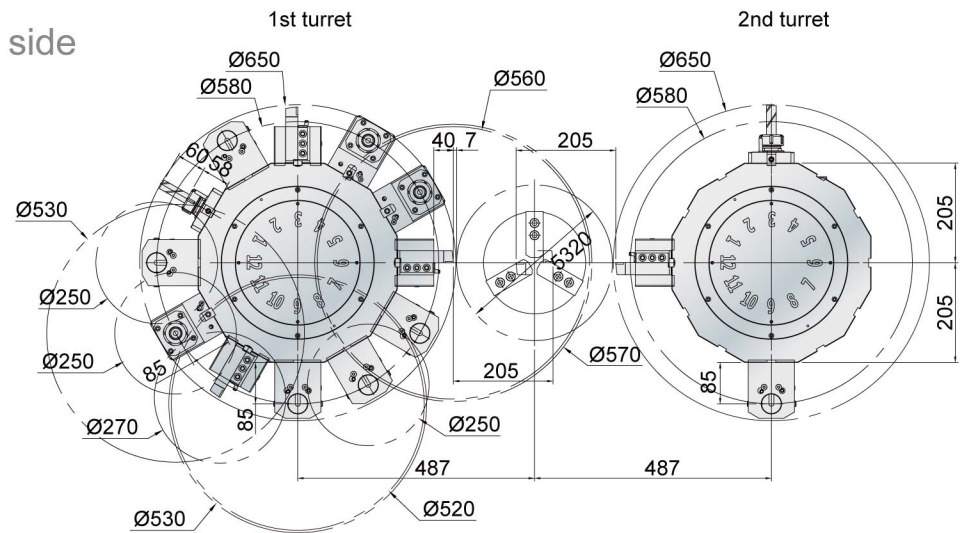
The lower turret can be used as a center to support the shaft.

Tool interference

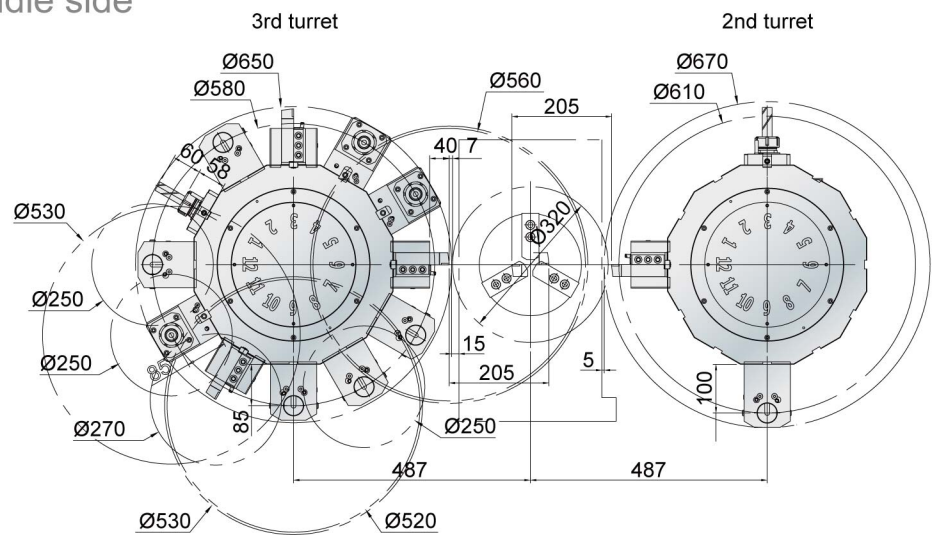
Standard : I.D tool holder with center height 85 mm

unit : mm

Spindle side

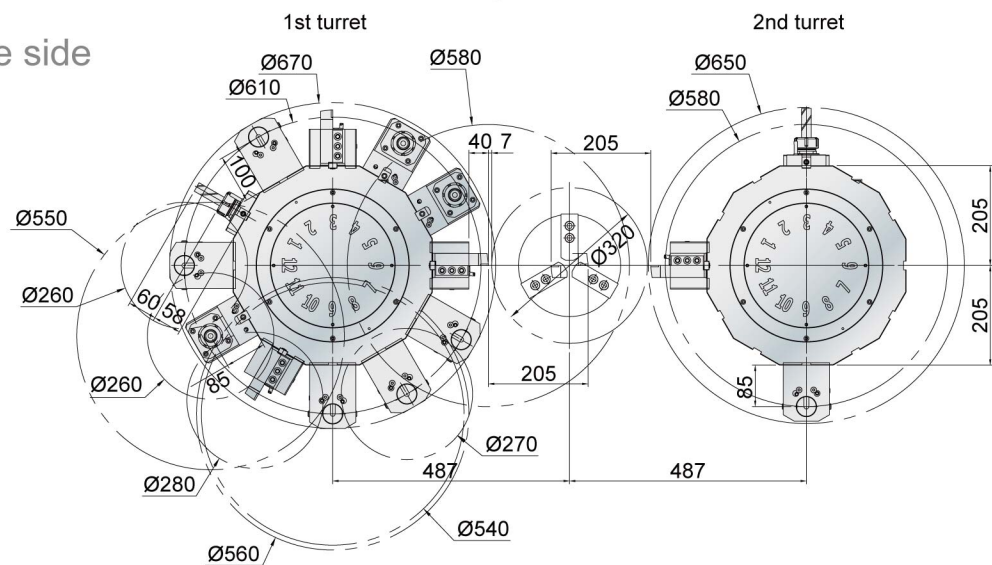


Sub-spindle side



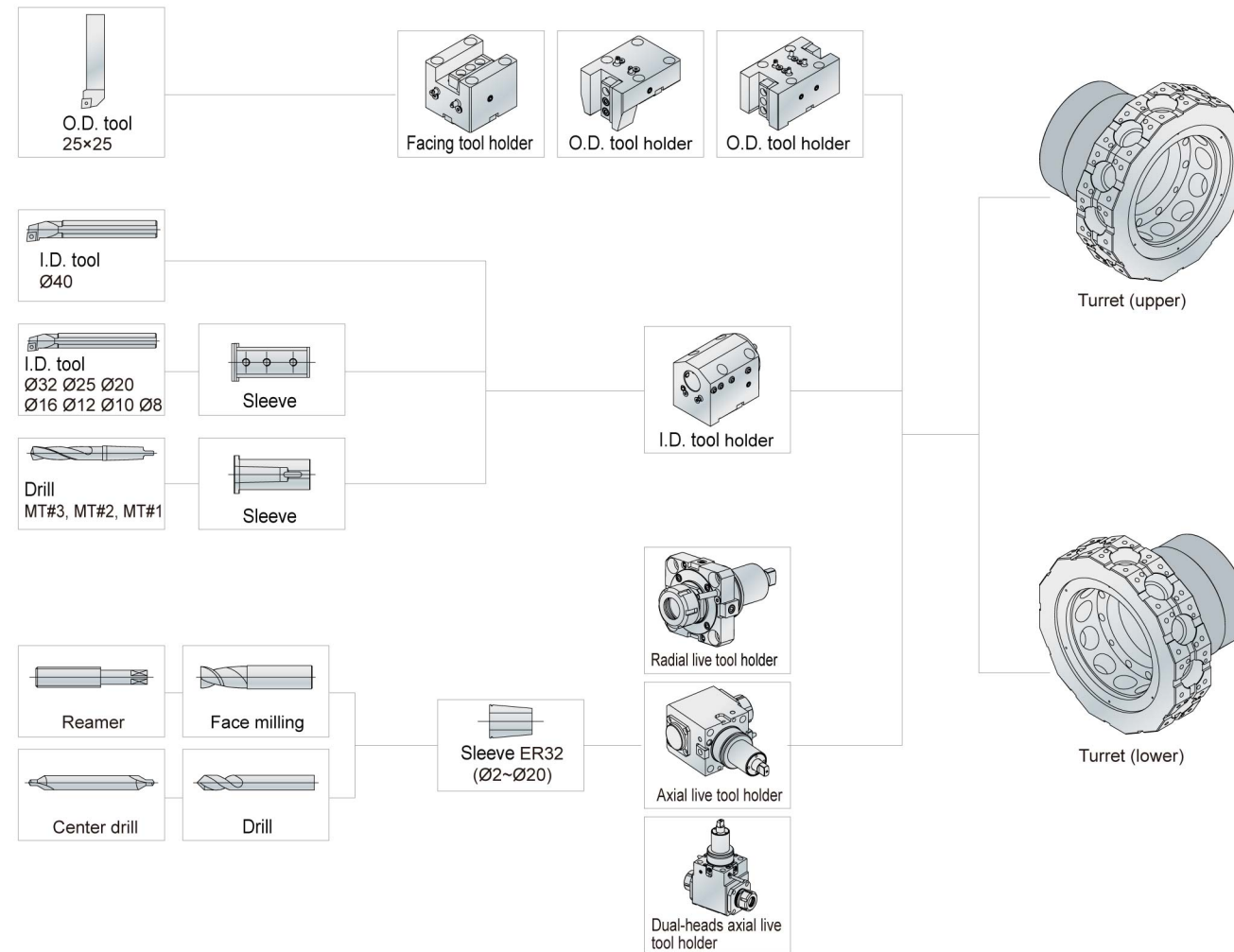
Optional : I.D tool holder with center height 100 mm

Spindle side

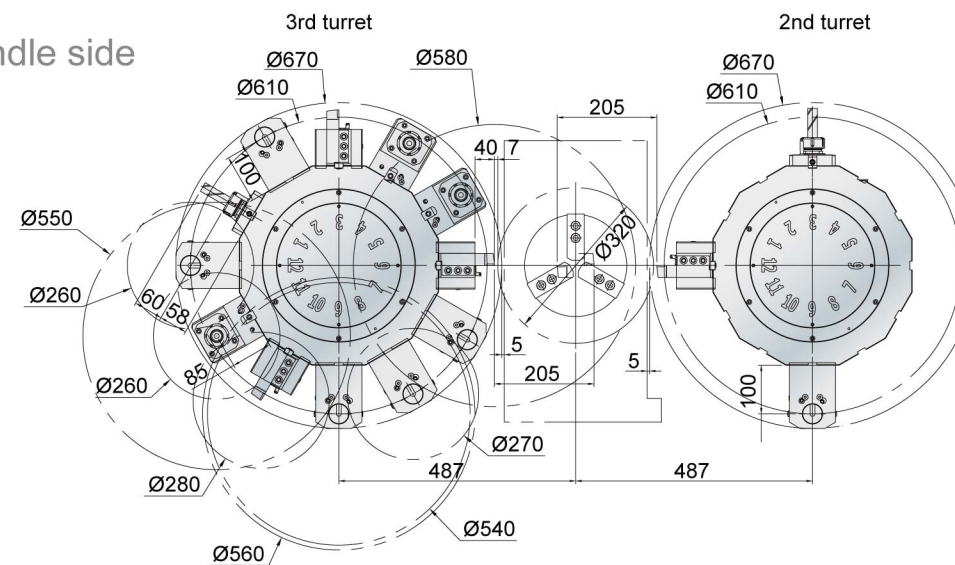


Tooling system (BMT-65)

unit : mm



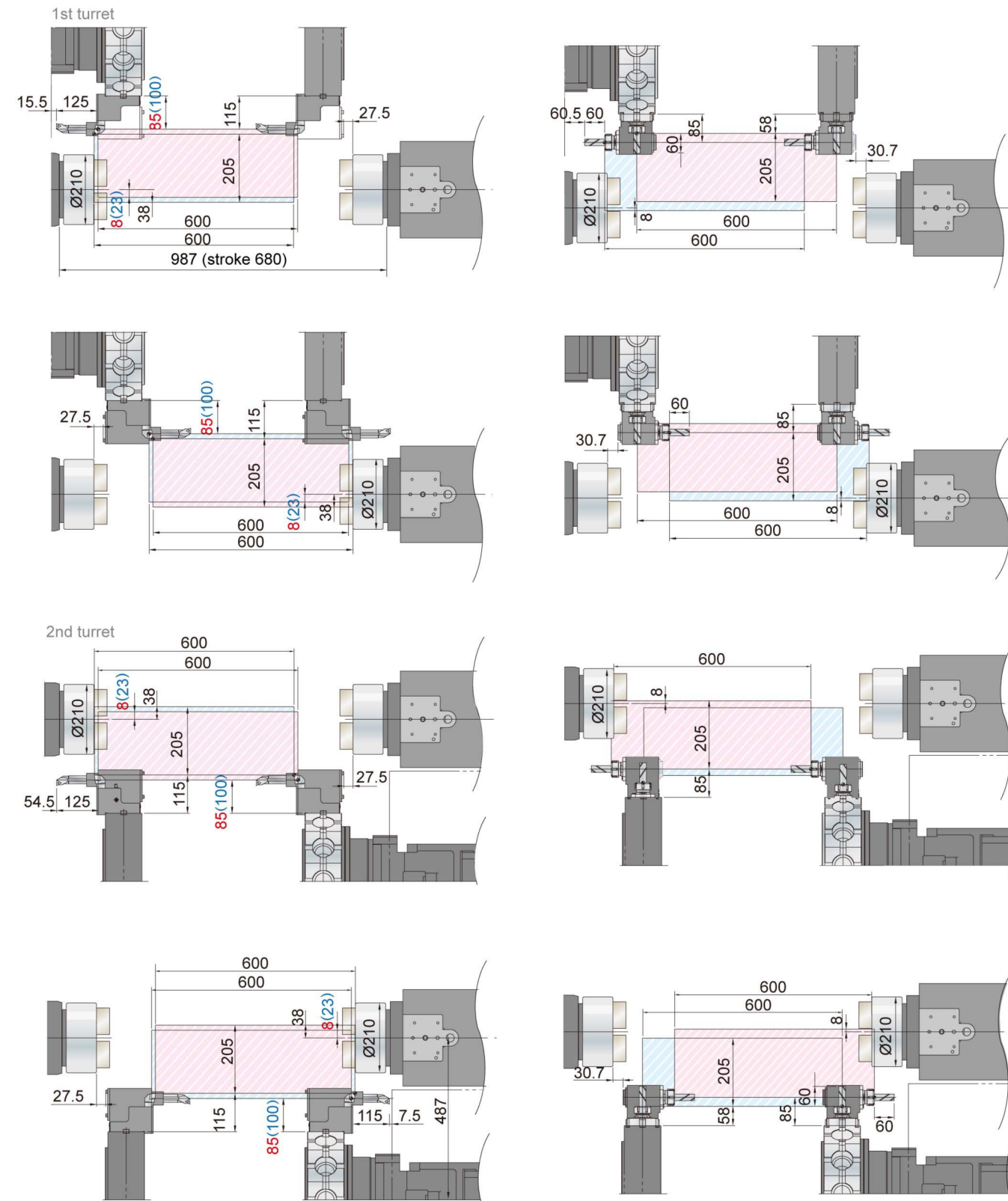
Sub-spindle side



Working area

TMT2000-T2Y1/T2Y2 series

unit : mm

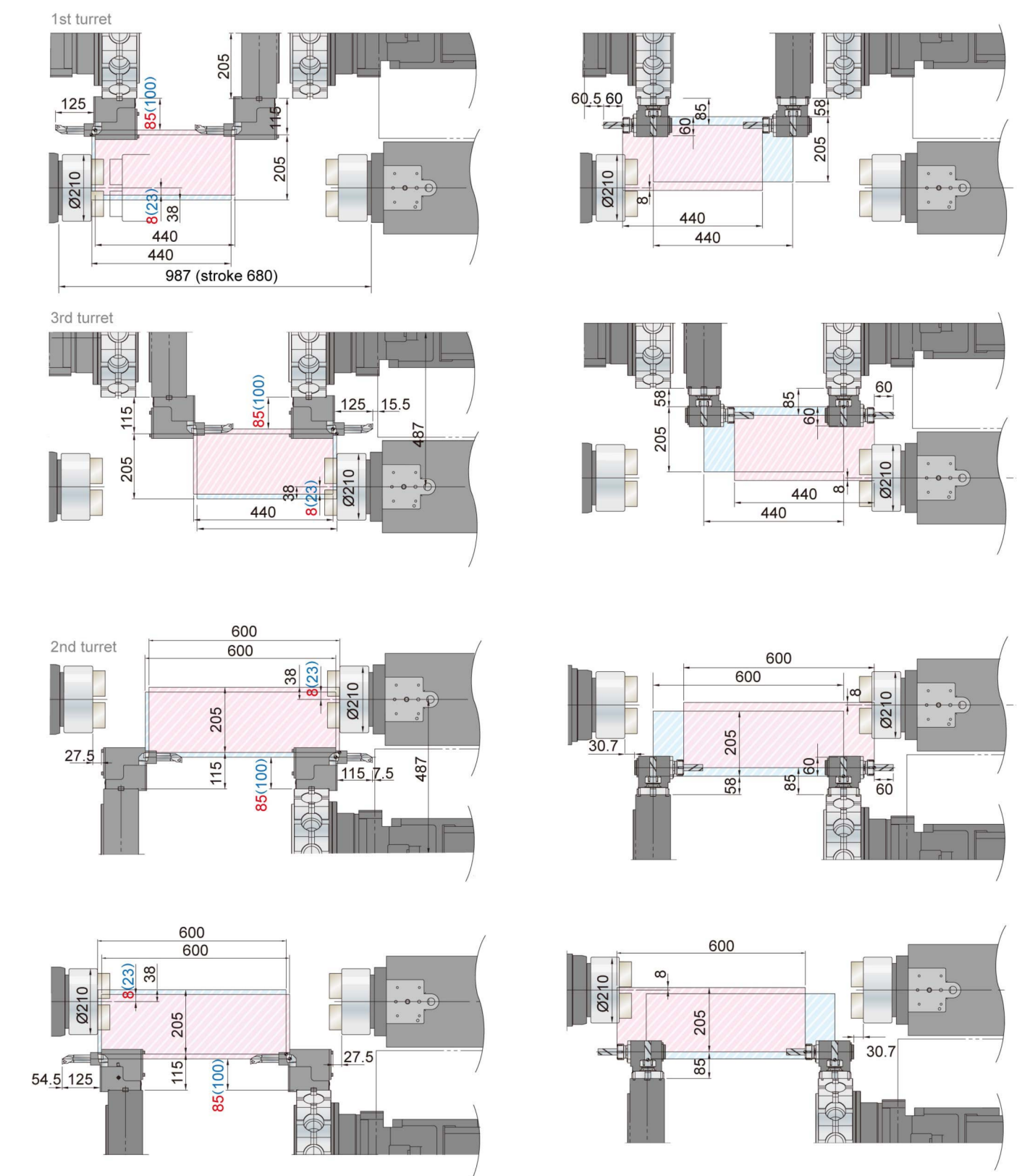


- I.D tool holder with center height 85mm (standard)
- O.D tool holder with center height 100 mm (optional)

Working area

TMT2000-T3Y2/T3Y3 series

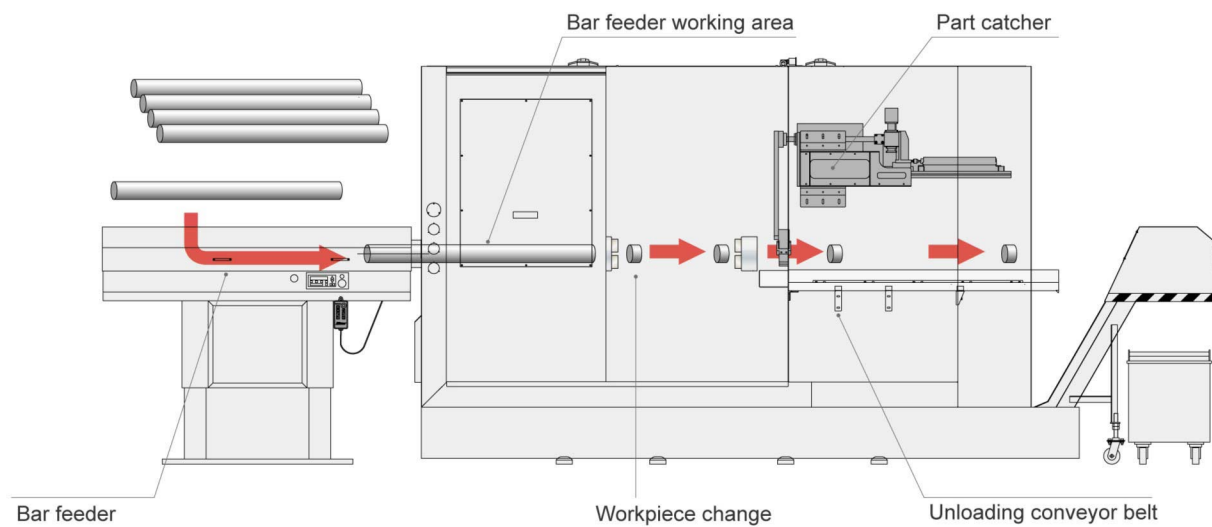
unit : mm



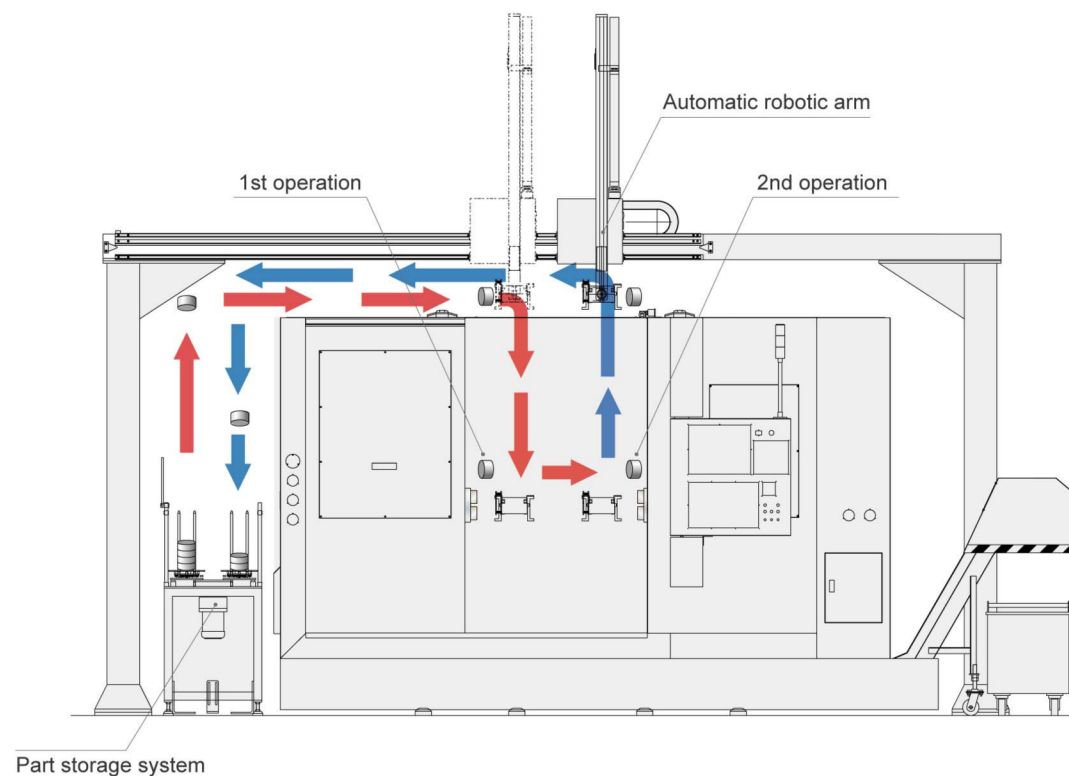
- I.D tool holder with center height 85 mm (standard)
- O.D tool holder with center height 100 mm (optional)

Automation solution (optional)

Bar feeder & part catcher



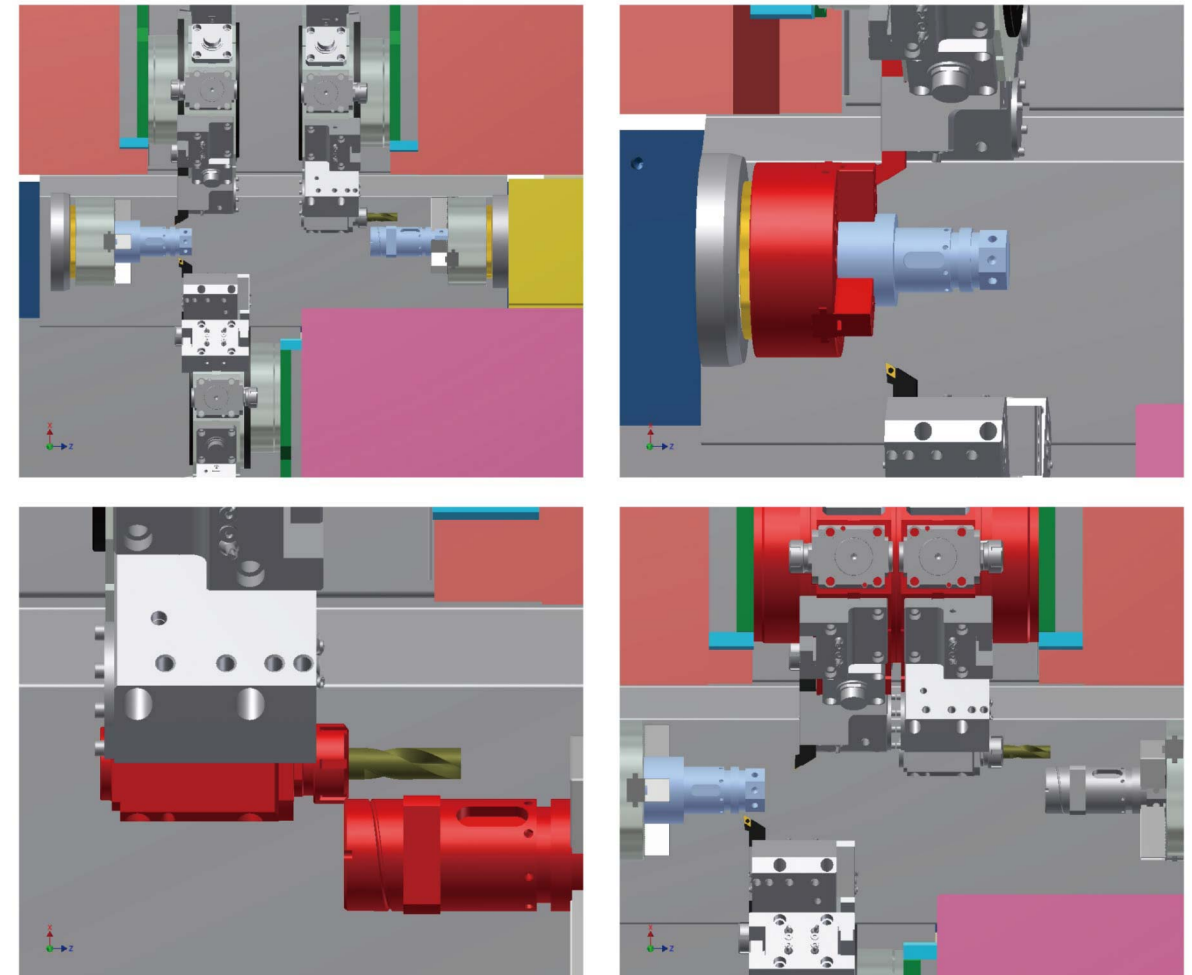
Gantry type robot system & part storage system



Item		Unit	Specification
Robotic arm	Max. load	kg	5(x2)
	Rapid traverse	X-axis (equipped in the up side and the down side of arm)	m/min 120
		Z-axis (equipped in the right and the left side of machine)	m/min 120
Gripper	Type		Rotary gripper
	Workpiece size	Outer diameter	mm Ø30~200
		Length	mm 10~150
		Weight	kg 5

Interference protection system (optional)

Without interference protection system, complex machine configurations operated in manual mode can result in collisions with tools and workpieces. With Tongtai's 3D interference protection system and cutting simulation function, operators can guarantee collision free setups by verifying through prerun testing.



Characteristics

- Improves user interface with simple parameter setting procedures for tools, workpiece, chucks, jaws and fixtures.
- Checks for interference in 3D for machine cover, turrets, spindles, tools, workpieces, chucks, jaws and fixtures.
- Model data for machine is installed as standard.
- The machine will stop before collision when interference is detected in manual or in automatic mode.
- Advanced preview of turning/milling simulation and collision protection.
- Work piece change from main spindle to second spindle can be simulated and checked.
- During 3D interference check, cutting simulation shows how material is removed as machining proceeds.
- When the tool position is set accurately, the 3D cutting simulated machine part can be checked with theoretical 3D model without machining a real workpiece for process verification.
- Supported controller manufacturer : FANUC, HEIDENHAIN, SIEMENS.

Specification



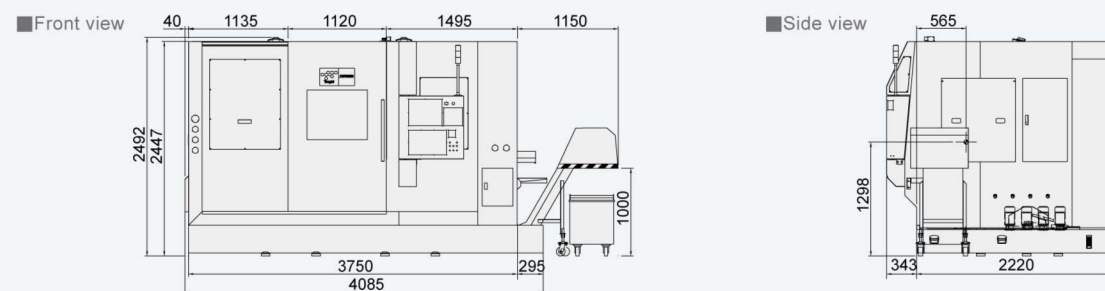
TMT2000 series

Item	Specification	Unit	TMT2000-T2Y1	TMT2000-T2Y2	TMT2000-T3Y2	TMT2000-T3Y3
Turning capacity	Max. swing diameter	mm	Ø720	Ø720	Ø720	Ø720
	Max. swing diameter over saddle	mm	Ø310	Ø310	Ø310	Ø310
	Max. turning diameter	mm	Ø320	Ø320	Ø320	Ø320
	Max. turning length	mm	600	600	600	600
Spindle	Spindle nose		A2-6	A2-6	A2-6	A2-6
	Spindle speed	rpm	4500 (opt. 6000)	4500 (opt. 6000)	4500 (opt. 6000)	4500 (opt. 6000)
	Chuck size	inch	8	8	8	8
	Through-spindle hole diameter	mm	Ø76 (opt. Ø62)	Ø76 (opt. Ø62)	Ø76 (opt. Ø62)	Ø76 (opt. Ø62)
	Bar capacity	mm	Ø65 (opt. Ø51)	Ø65 (opt. Ø51)	Ø65 (opt. Ø51)	Ø65 (opt. Ø51)
	Spindle bearing diameter	mm	Ø100	Ø100	Ø100	Ø100
	Spindle center to floor	mm	1300	1420	1300	1420
Sub-spindle	Min. CS axis indexing increment	deg	0.001	0.001	0.001	0.001
	Spindle nose		A2-6	A2-6	A2-6	A2-6
	Spindle speed	rpm	6000	6000	6000	6000
	Chuck size	inch	8	8	8	8
	Through-spindle hole diameter	mm	Ø62	Ø62	Ø62	Ø62
	Bar capacity	mm	Ø51	Ø51	Ø51	Ø51
	Spindle bearing diameter	mm	Ø100	Ø100	Ø100	Ø100
Power turret	Min. CS axis indexing increment	deg	0.001	0.001	0.001	0.001
	Tool shank		BMT-65 (opt. VDI-40)	BMT-65 (opt. VDI-40)	BMT-65 (opt. VDI-40)	BMT-65 (opt. VDI-40)
	Tool capacity	pc	12×2	12×2	12×3	12×3
	O.D. tool	mm	25×25	25×25	25×25	25×25
	I.D. tool	mm	Ø40	Ø40	Ø40	Ø40
	Max. speed	rpm	6000	6000	6000	6000
	Spindle motor	kw	5.5/3.7	5.5/3.7	5.5/3.7	5.5/3.7
	Max. tool diameter	mm	Dia. 20/M16	Dia. 20/M16	Dia. 20/M16	Dia. 20/M16
	Index time	sec	0.3	0.3	0.3	0.3
	Driving system		Servo	Servo	Servo	Servo
Feed	X1/X2/X3 axis stroke	mm	205/205/-	205/205/-	205/205/205	205/205/205
	Y1/Y2/Y3 axis stroke	mm	±51/-	±51/+20-51/-	±51/-±51	±51/+20-51±51
	Z1/Z2/Z3/B axis stroke	mm	600/600/-/680	600/600/-/680	440/600/440/680	440/600/440/680
	X/Y/Z/B axis rapid traverse	m/min	30/15/36/30	30/15/36/30	30/15/36/30	30/15/36/30
	Cutting feedrate	mm/rev	0.001-500	0.001-500	0.001-500	0.001-500
Hydraulic unit	Hydraulic tank capacity	L	40	40	40	40
	Hydraulic motor	kw	3HP×4P	3HP×4P	3HP×4P	3HP×4P
Coolant unit	Coolant tank capacity	L	700	700	700	700
	Coolant motor	kw	0.55×3	0.55×3	0.55×4	0.55×4
Motor	Spindle motor (50% ED)	kw	15/11	15/11	15/11	15/11
	Sub-spindle motor (50% ED)	kw	18.5/11	18.5/11	18.5/11	18.5/11
	X/Z/B axis servo motor	kw	4/3/4/3	4/3/4/3	4/3/4/3	4/3/4/3
Controller			FANUC 31i			
Machine size	L×W×H	mm	4100×2600×2450	4100×2800×2600	4100×2600×2450	4100×2800×2600
	Weight	kg	8200	8500	9000	10000

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Machine dimensions

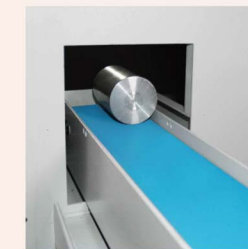
unit : mm



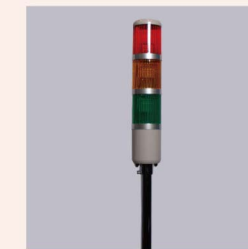
Optional accessories



Part catcher



Part conveyor



Tri-color warning light



Oil mist collector



Transformer



Sub-operation box



Bar feeder



A/C for electrical cabinet



Oil skimmer

Your best partner for metal-cutting total solutions



Tongtai emphasizes providing an excellent investment strategy to our clients with high cost-performance. We give our customers supreme machine performance with reasonable prices.

Our management team and the members of all five of its departments will ceaselessly search for innovative solutions for your processing needs. All your sales and after sales concerns will be satisfied! That means, when you purchase our machines, the service never stops!

Our company slogan "Trust & Technology" is always backed with passion for our product improvements and responsibility for our service to you.

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