



TTC-10

High-productivity
Twin Spindle Turning Center



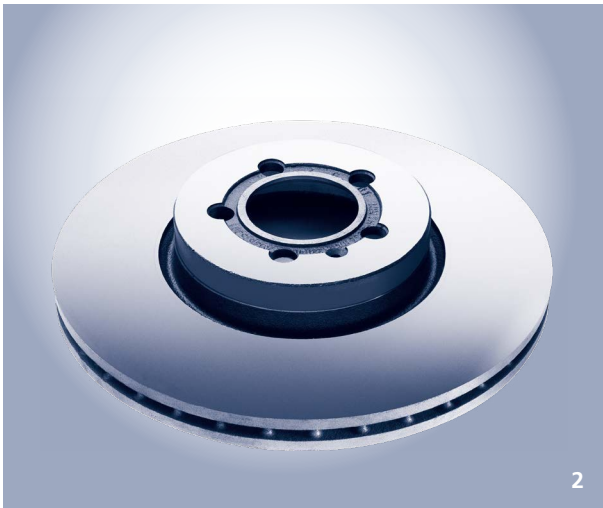


HIGH-PRODUCTIVITY TWIN SPINDLE TURNING CENTER

TTC-10 have demonstrated exceptional capabilities by machining many kinds of Flanges. The machine can operate the two spindles together independently and it realize to easy operation of workpiece from left side to right side. It provide the high efficiency productivity.

1 Wheel / Automobile / GC300 2 Brake Disk / Automobile / GC200

3 Wheel / Automobile / GC300 4 Cover / Automobile / SM45C



HIGH-PRODUCTIVITY TWIN SPINDLE TURNING CENTER

TTC-10 turning center have been the preferred choice for many manufacturers around the world. The one piece machine bed design limits thermal distortion and absorbs vibration effectively and it guarantees high surface quality and precision at high speed. The fast and effective chip disposal design will make your production more efficient and cost effective.



Stable machine construction with high rigidity

- ❶ The Turret Bar structure of Column type
- ❷ High Rigid Box way design

Convenience operating

- ❶ Distance between Spindle: 460mm
- ❷ Distance between machine front to Chuck: 350mm

Minimized Idle-time

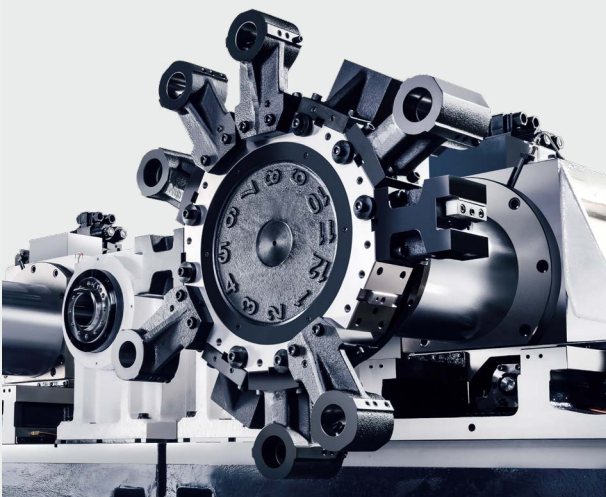
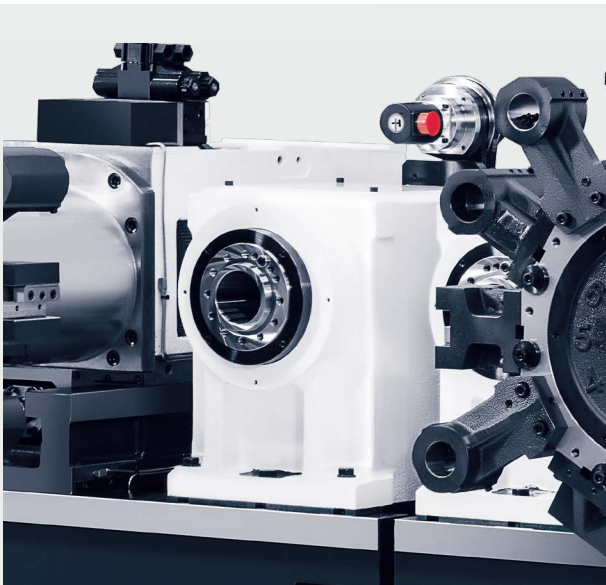
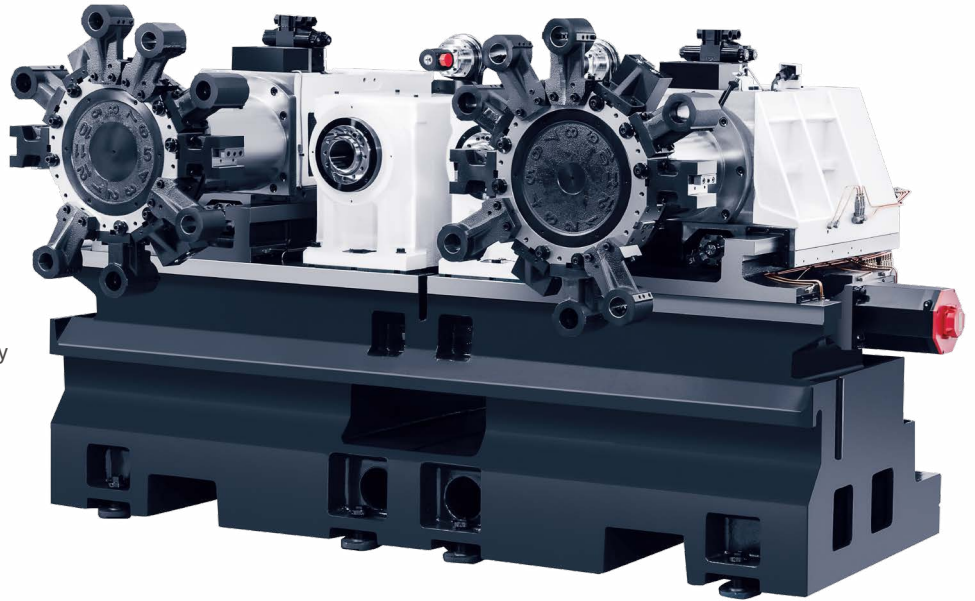
- ❶ Turret indexing time: 0.4sec/1step
- ❷ Max. Spindle speed:
2,000rpm(STD), 3,500rpm(OPT)
- ❸ Rapid Speed(X/Z): 30m/min

Exceptional structure for automation system

- ❶ Perfect chip disposal
- ❷ Easy application of Automation devices
(Gantry/Loader/Robot)

High Rigid single box frame Structure

- Column Type Turret design
- One piece fabricated frame with high rigidity keeps high-accuracy stable under Long processing time and excellent absorption force under heavy duty cutting.



High performance Spindle

The powerful chucking offers the stable cutting and high precision during machining.

All spindle bearings are permanently by grease lubricated.

- Chuck Size (inch) : 10" + 10"
- Type of Spindle Nose (ASA) : A2-8
- Max. Spindle speed (rpm) : 2,000 (OPT : 3,500)
- Spindle Motor power (kW/HP) : 18.5/15 (25/20) [OPT : 22/18.5 (30/25)]

High Rigid Turret

Stable structure and minimized turret indexing time ensures high efficiency

- Turret Type : Hy'd Index Motor Type
- Indexing time : 0.4 sec/step
- Turret Station : 12 + 12
- Tool Size : □25 x Ø50 mm

High precision Axes

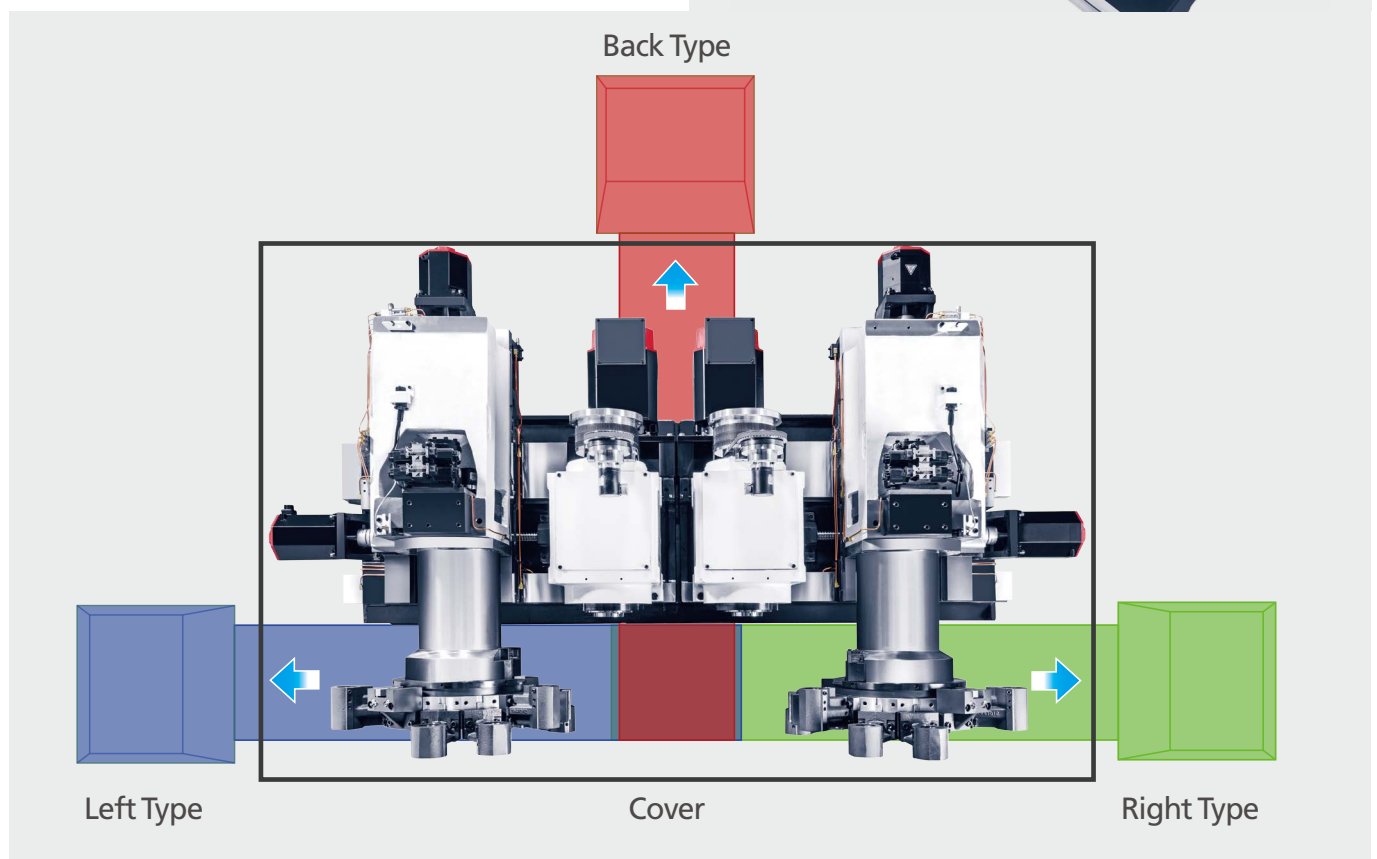
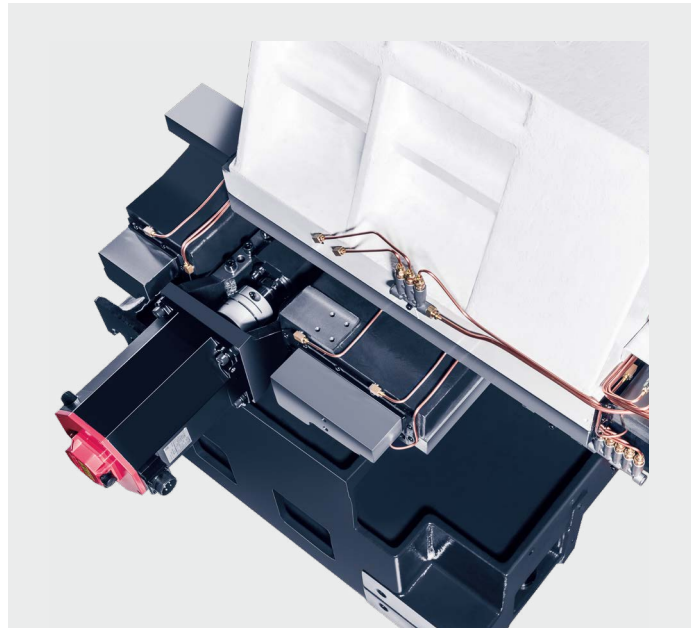
The servo motors are connected to the ball screws without intermediate gears for quiet and responsive slide movement with virtually no backlash

Axis Driving Motor

- X-axis : 4 kW (5.5 HP)
- Z-axis : 3 kW (4 HP)
- Rapid Speed(X/Z) : 30 m/min

Slide way

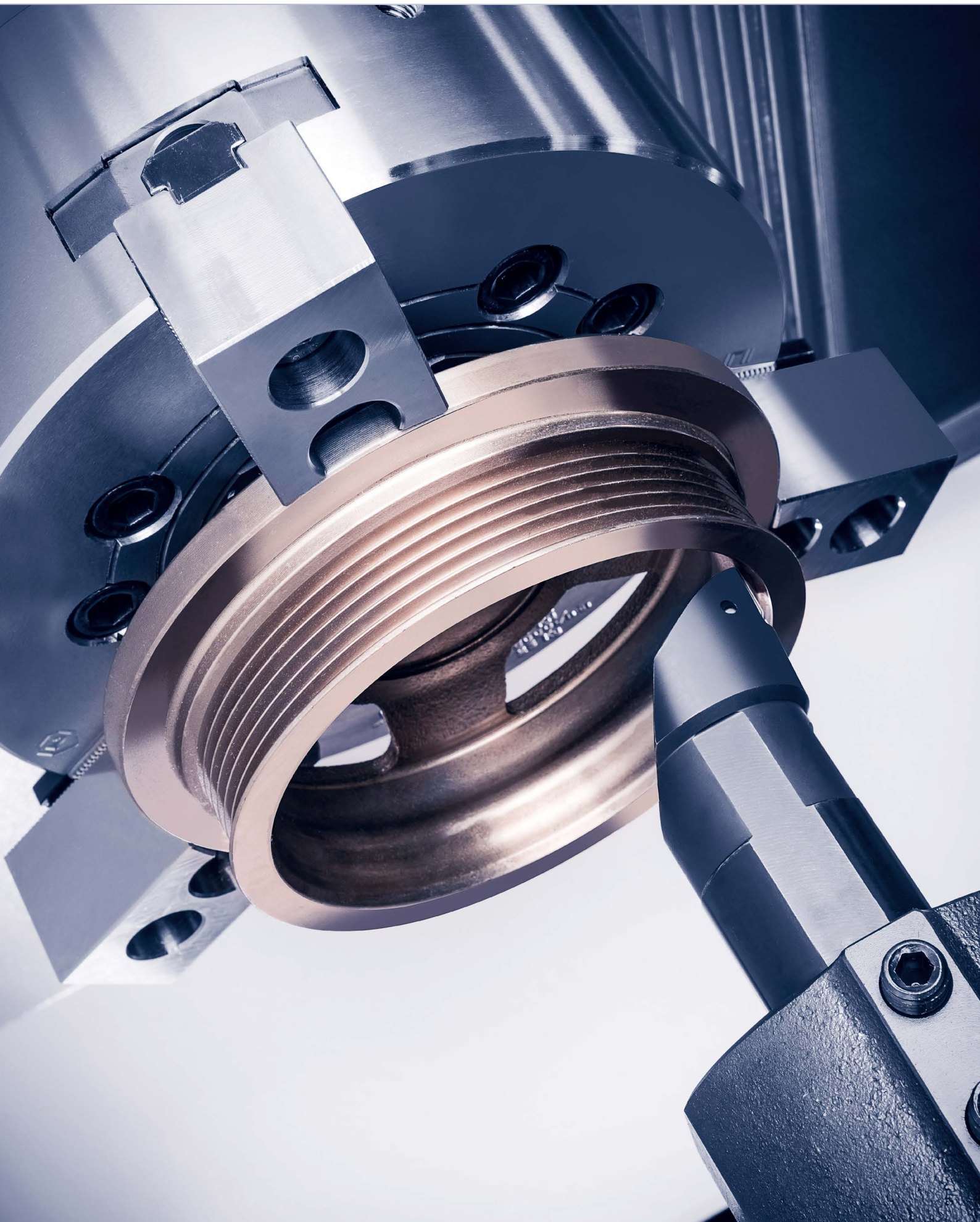
- X, Z-axis : Box way (Turcite)



Excellent Chip Disposal (OPT)

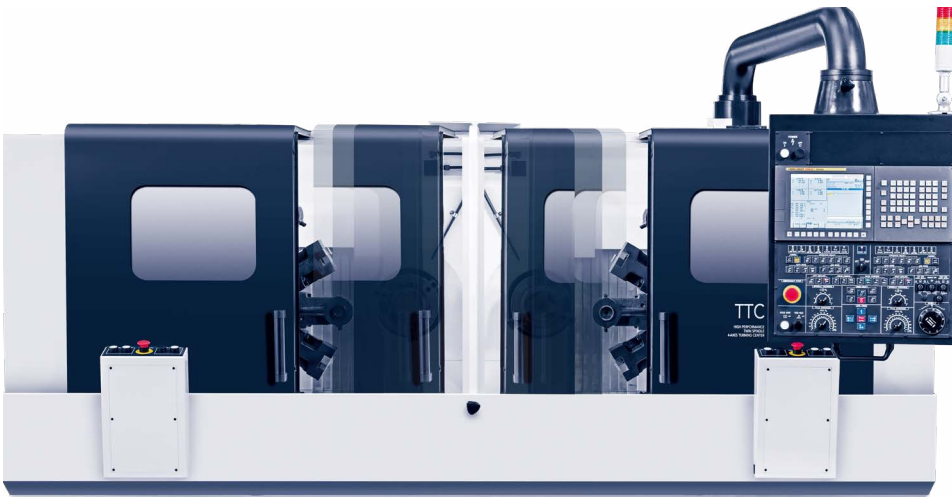
The large capacity coolant tank and chip cover are separate from the machine bed to prevent heat transfer and easy cleaning.

- Good Chip Removal Construction
- Wide Chip Pocket
- Various Chip Conveyor Layout



USER FRIENDLY DESIGN, A WIDE RANGE OF OPTIONAL FEATURES

Hi-TECH 200 is designed to be user friendly, so you can concentrate on what you do best: creating quality products—without losing your valuable time to the worries of machine failure and safety. A wide variety of performance upgrade options are available for faster, more precise machining



Auto Door - 2Set (OPT)

Both doors are automatically opened/closed to reduce worker fatigue and reduce work time, thus allowing efficient operation.

L-HTLD: Hwacheon Lathe Tool Load Detect System (OPT)



The Hwacheon Lathe Tool Load Detect System constantly detects and diagnoses the tool load under a process to prevent tool wear and damage, and to keep your machine and tools in optimal shape.

Load Detection Limit 1

Alarm + Feed Hold

- > When the LIMIT 1 Alarm sounds, the system holds the feed and the machine goes into standby.

Load Detection Limit 2

Alarm + Machine Stop

- > When the LIMIT 2 Alarm sounds, the system stops the machine, and must be reset to operate it.

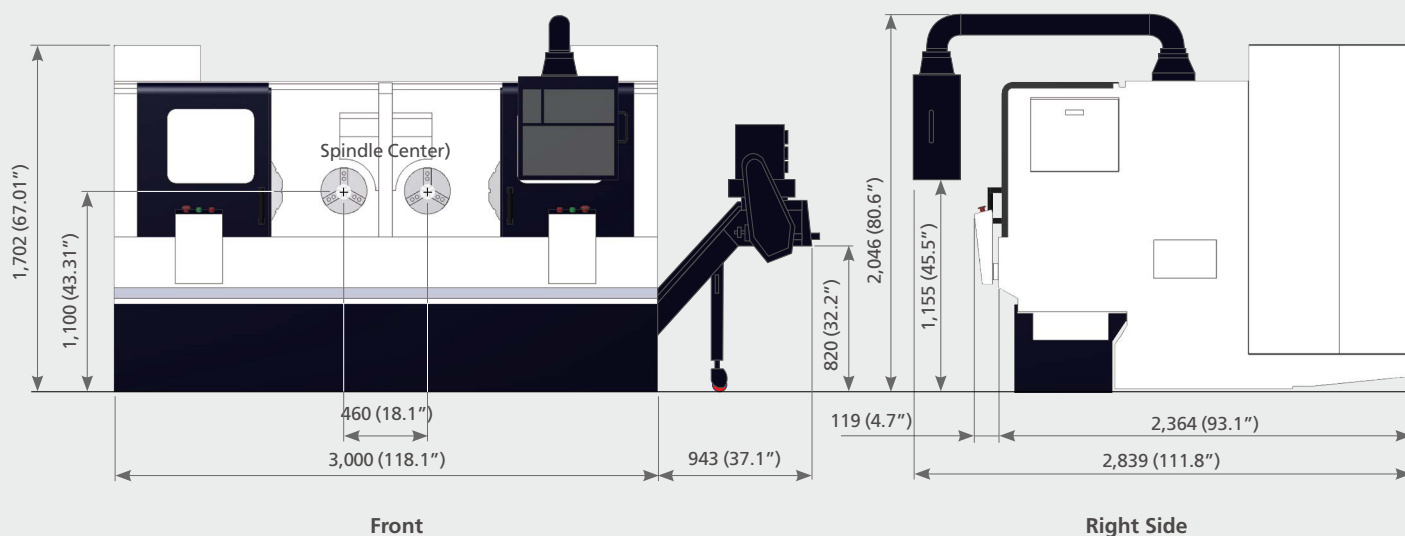


Manual Tool Presetter (OPT)

- Minimized coordinate setup time by easy touch sensor manipulation (less than 15sec)
- Auto calculation input of shape calibration value of tool coordinate
- Auto tool coordinate correction on work shape change

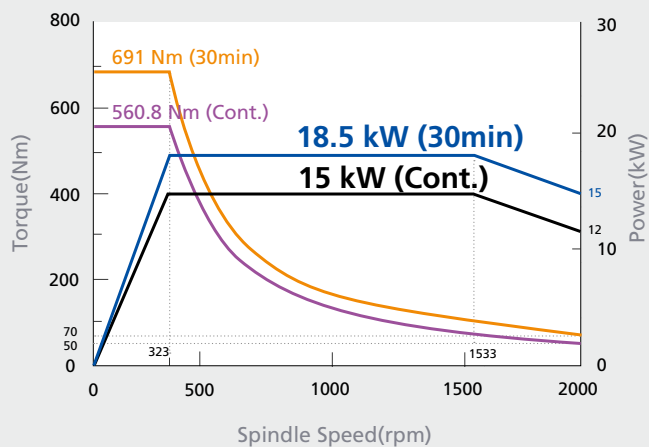
Product Data

* Unit: mm(inch)

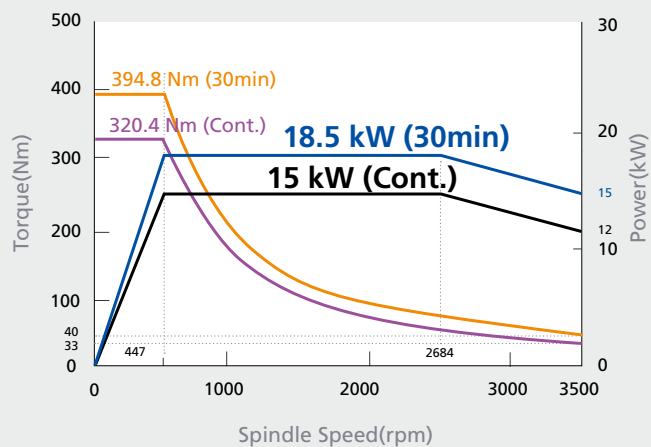


Spindle Power-Torque Diagram

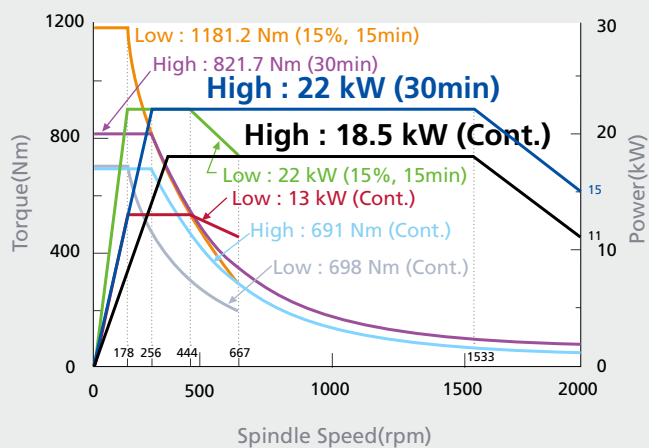
Main Spindle (STD) - 2,000 rpm, 18.5/15 kW



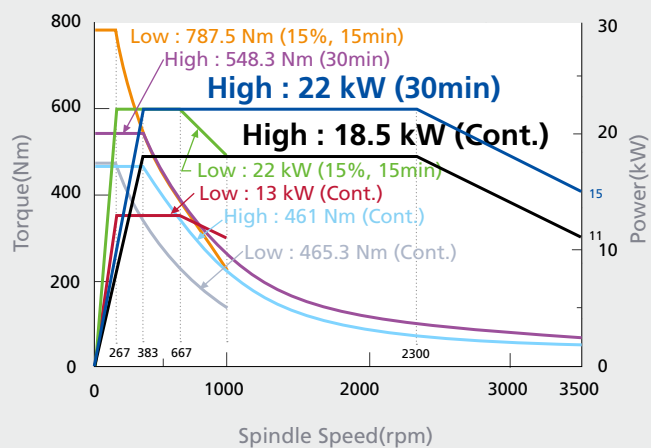
Main Spindle (OPT) - 3,500 rpm, 18.5/15 kW



Main Spindle (OPT) - 2,000 rpm, 22/18.5 kW



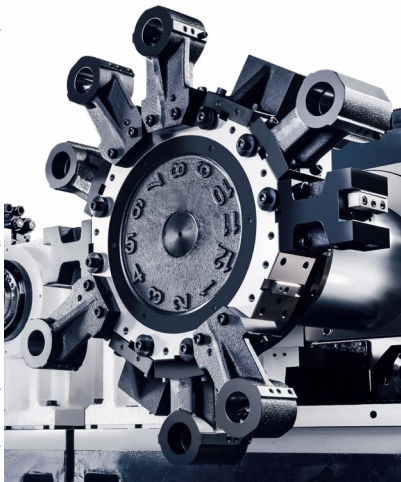
Main Spindle (OPT) - 3,500 rpm, 22/18.5 kW



Tooling Diagram

※Unit : ea

Tool	Part name	Q'ty		Shape
		R	L	
 □25 mm (1 inch)	OD Holder	4	4	
	Face Holder	2	2	
 Ø50 mm (2 inch)	I.D Holder	4	4	
	I.D Holder (Side mounting)	2	2	
	Sleeve (Ø12, 1/2")	1	1	
	Sleeve (Ø16, 5/8")	1	1	
	Sleeve (Ø20, 3/4")	1	1	
	Sleeve (Ø25, 1")	1	1	
	Sleeve (Ø32, 1 1/4")	1	1	
	Sleeve (Ø40, 1 1/2")	1	1	
	Socket (MT#1)	1	1	
	Socket (MT#2)	1	1	
	Socket (MT#3)	1	1	
 	Socket (MT#4)	1	1	
	U-Drill Holder	OPT	OPT	
	U-Drill Sleeve (Ø20, 3/4")	OPT	OPT	
	U-Drill Sleeve (Ø25, 1")	OPT	OPT	
	U-Drill Sleeve (Ø32, 1 1/4")	OPT	OPT	
	U-Drill Sleeve (Ø40, 1 1/2")	OPT	OPT	



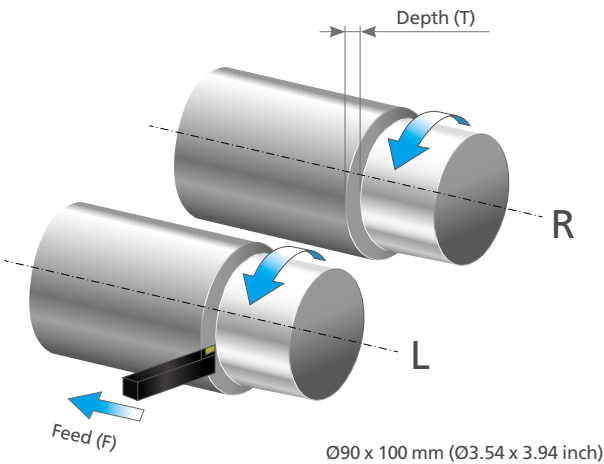
Cutting Ability [Simultaneous Cutting Test]

Ru & Fn Simultaneous Cutting

Roundness : 1.5 μ m

- Fn Cutting (BC3)
 - V : 350 m/min (13,780 ipm)
 - T : 0.5 mm (0.02 inch)
 - F : 0.05 mm/rev (0.002 inch/rev)

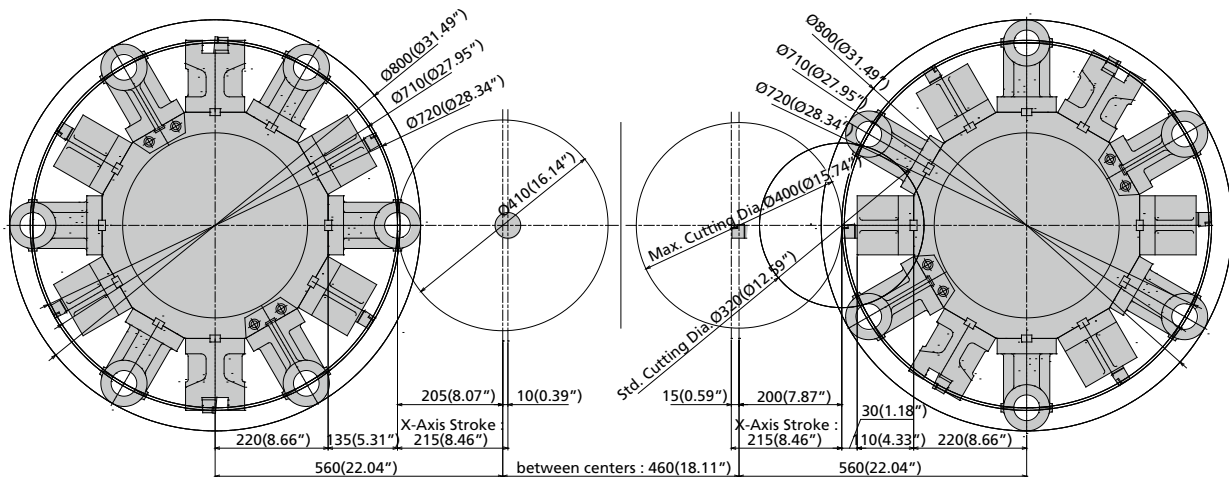
- Ru Cutting (SM45C)
 - V : 150 m/min (5,906 ipm)
 - T : 5 mm (0.2 inch)
 - F : 0.2 mm/rev (0.00787 inch/rev)



Cutting Condition	Roundness
Ru + Fn	1.5 μ m
Ru + Ru	Good

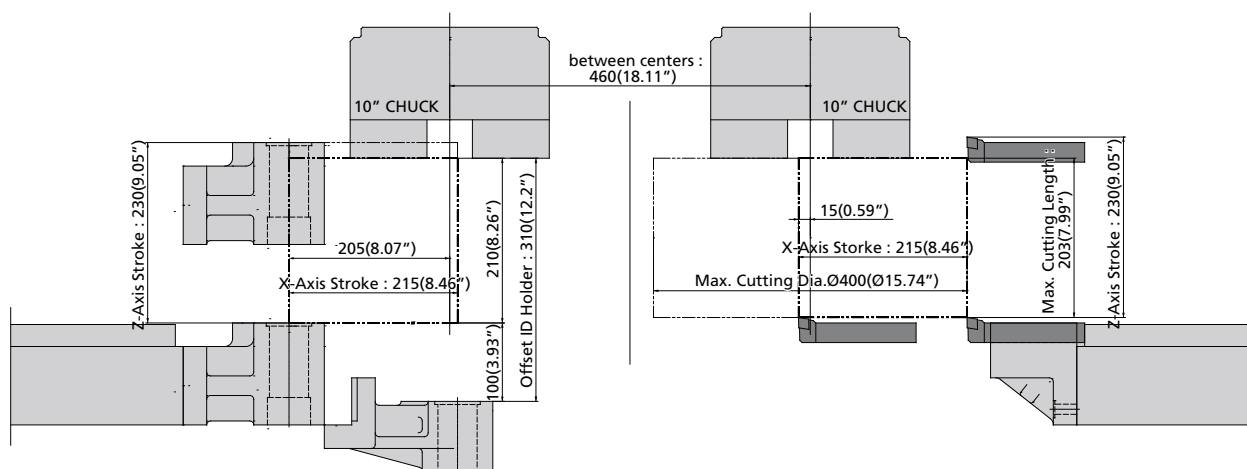
Turret Interference Diagram

※Unit: mm(inch)

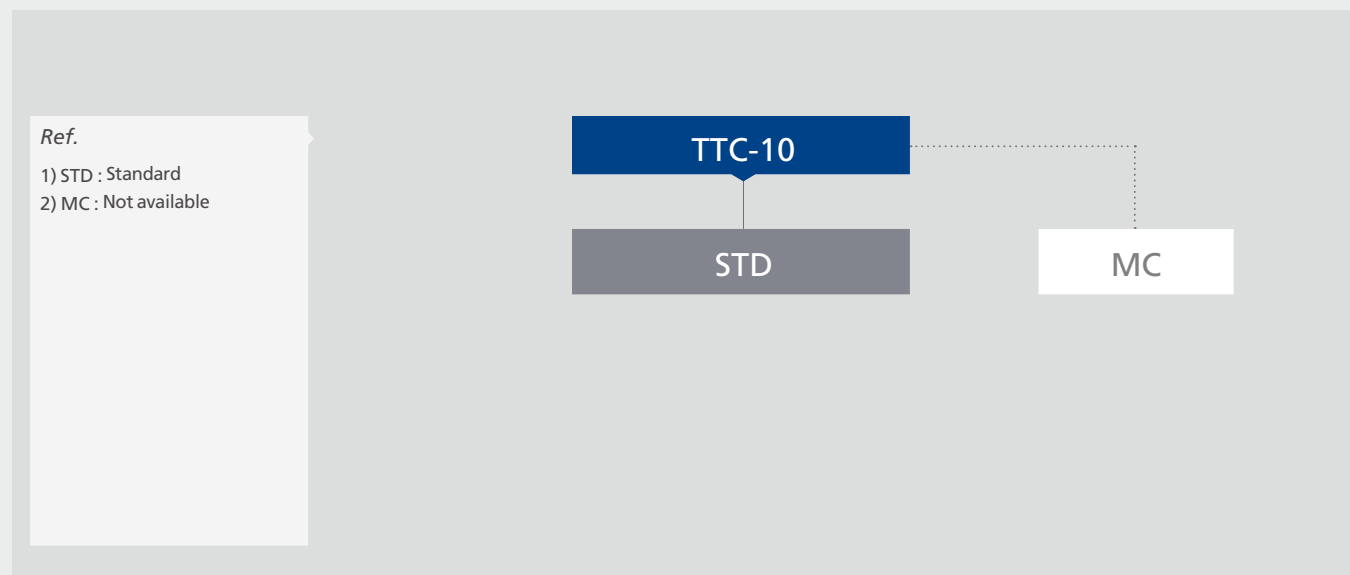


Moving Range

※Unit: mm(inch)



Product Configuration



Machine Specifications

ITEM		TTC-10
Capacity		
Swing over Bed	mm (inch)	Ø500 (Ø19.69")
Max. Cutting Diameter	mm (inch)	Ø400 (Ø15.75")
Standard Cutting Diameter	mm (inch)	Ø320 (Ø12.59")
Max. Cutting Length	mm (inch)	203 (7.99")
Chuck Size	inch	10" + 10"
Spindle		
Type of Spindle Nose	ASA	A2 - 8
Max. Spindle Speed	rpm	2,000
Through Spindle Hole Diameter	mm (inch)	Ø77 (Ø3.03")
Max. Bar Size	mm (inch)	Ø59 (Ø2.32")
Spindle Bearing Inner Diameter	mm (inch)	Ø120 (Ø4.74")
Spindle Motor	kW(HP)	18.5/15 (25/20) [선택 : 22/18.5 (30/25)]
Turret		
Number of Tool Station	ea	12 + 12
Tool Size	mm (inch)	□25 x Ø50 (□1" x Ø2")
Turret Indexing Time	sec/step	0.4
Axes		
Rapid Speed (X/Z)	m/min (ipm)	30 / 30 (1,181 / 1,181)
Max. Stroke (X/Z)	mm (inch)	215 / 230 (8.46" / 9.06")
Feed Motor (X/Z)	kW	4.0 / 3.0 (5.5 / 4)
Tank		
Lubrication	ℓ (gal)	12 (3.17)
Hydraulic	ℓ (gal)	50 (13.21) + 50 (13.21)
Coolant	ℓ (gal)	380 (100.4)
Power Sources		
Electrical Power Supply	kVA	75
Dimension		
Height	mm (inch)	2,046 (80.55")
Floor Space (LxW)	mm (inch)	3,000 x 2,840 (118.11" x 111.81")
Weight	kg, (lb _t)	9,500 (20,944)
NC Controller		Fanuc 0i-TF (2paths)

Standard and Optional Product Components

Standard Accessories	Optional Accessories	
• Coolant System	• Air Blower 2 Set	• Oil Mist
• Door Interlock	• Air Gun	• Set of Hard Jaws
• Foot Switch	• Auto Door 2 Set	• Spindle 3500 rpm Upgrade
• Hydraulic Chuck & Cylinder (10" +10" Hollow)	• Chip Conveyor & Bucket (Left / Right / Back Type)	• Tool & Work Counter, External / Internal
• Hydraulic Unit 40kg/cm ²	• Chuck Clamp/Undamp Confirm Switch (2set)	• Tool Life Management
• Leveling Bolt & Plate	• Chuck Pressure Check Switch (2set)	• Tool Presetter (2set), Manual type
• Lubrication Unit	• Chuck Pressure Compensation (2set)	• Transformer
• Operation Manual & Parts List	• Coolant Gun	• U-Drill Holder
• Set of Soft Jaws(10")	• Dual Pressure (Chuck) (2set)	• 15" Color LCD (Only FANUC)
• Signal lamp with 3 Colors (R, G, Y)	• Dual Pressure (C-axis brake) (2set)	
• Sub Operator panel	• High Pressure Coolant (2set), 0.6 / 1.5 MPa	
• Tool Kit & Box	• L-HTLD (Hwacheon Tool Load Detect)	
• Tooling System	• Main Spindle Motor Upgrade (22/18.5kW)	
• Turret 12Station	• Manual Guide i	
• Work Light	• Mist Collector	
• 10.4" Color LCD	• NC Cooler (2set)	

NC Specifications [Fanuc Oi-TF]

※ - : Not available S : Standard O : Option

ITEM	SPECIFICATION	STD	ITEM	SPECIFICATION	STD
Controlled axis			Program input		
Controlled axis (Cs axis)	2-Axes	4-Axes	Tape code	EIA / ISO	S
Simultaneously controlled axes	2-Axes	4-Axes	Optional block skip	9ea	S
Least input increment	0.001 mm, 0.0001 deg, 0.0001 inch	S	Program number	O4-Digits	S
Least input increment 1/10	0.0001 mm, 0.00001 inch	O	Sequence number	N8-Digits	S
inch/metric conversion	G20, G21	S	Decimal point programming		S
Stored stroke check 1,2,3		S	Coordinate system setting	G50	S
Chamfering on/off		S	Coordinate system shift		S
Backlash compensation		S	Workpiece coordinate system	G54-G59	S
Operation			Workpiece coordinate system preset	G92.1	S
Automatic & MDI operation		S	Direct drawing dimension programming		S
Program number search		S	G code system	A	S
Sequence number search		S	Programmable data input	G10	S
Dry run, single block		S	Sub program call	10 folds nested	S
Manual handle feed	1Unit	S	Custom macro B		S
Manual handle feed rate	x1, x10, x100	S	Addition of custom macro common variables	#100-#199, #500-#999	S
Interpolation function			Canned cycles		S
Positioning	G00	S	Multiple repetitive cycle		S
Linear interpolation	G01	S	Multiple repetitive cycle II		S
Circular interpolation	G02, G03	S	Canned cycles for drilling		S
Dwell (Per seconds)	G04	S	Manual Guide i		S
Polar coordinate interpolation	G12.1 / G13.1	-	Spindle speed function		
Cylindrical interpolation	G7.1	-	Constant surface speed control	G96 / G97	S
Threading	G32	S	Spindle override	50 - 120 %	S
Multiple threading		S	Spindle orientation		S
Threading retract		S	Rigid tapping		O
Continuous threading		S	Spindle synchronous control		-
Variable lead threading	G34	S	Editing operation		
Reference position return 1st	G28	S	Part program storage length	1,280m (512kB)	S
Reference position return check	G27	S	Number of register able programs	400ea	S
2,3,4th reference position return	G30	S	Background editing		S
Arbitrary speed threading		O	Extended part program editing		S
Feed function			Play back		S
Rapid traverse override	F0, F25, F50, F100	S	Clock function		S
Feed per minute (mm/min)	G98	S	Self - diagnosis function / Alarm history display		S
Feed per revolution (mm/rev)	G99	S	Help function		S
Rapid traverse bell-shaped acceleration/deceleration		S	Run hour and parts count display		S
Feedrate override	0-150%	S	Graphic function		S
Jog feed override	0-1,260 mm / min	S	Dynamic graphic display		O
Tool function / compensation			Multi-language display	English, German, French, Italian, Chinese, Spanish, Korean, Portuguese, Polish, Hungarian, Swedish,Russian	S
Tool function	T4-Digits	S			
Tool offset pairs	128 Pairs	S			
Tool nose radius compensation		S			
Tool geometry / wear compensation		S	Data input/output		
Tool life management		O	Reader/Puncher interface CH1	RS232C	S
Automatic tool offset	Tool presetter option is required	S	Reader/Puncher interface CH2	RS232C	S
Direct input tool offset value measured B	Tool presetter option is required	S	Ethernet interface		S
Others			Memory card interface		S
Display unit	10.4" Color LCD	S	USB card interface		S

Hwacheon Global Network

 Hwacheon Headquarter  Hwacheon America  Hwacheon Europe  Hwacheon Asia



HWACHEON

Please contact us for product inquiries.

www.hwacheon.com

The product design and specifications may change without prior notice.
Read the operation manual carefully and thoroughly before operating the product,
and always follow the safety instructions and warnings labels attached on the surfaces of the machines.

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