



# C1

6" Chuck Horizontal Turning Center  
with Magazine & Y-Axis



# 6"CHUCKER HORIZONTAL TURNING CENTER WITH MAGAZINE & Y-AXIS

## Multiple Process Turning Center

C1 is an integrated multiplex turning center that combines the processing capability of a turning center with the processing capability of a machining center obtainable through Y and C-axis control. It can completely manufacture parts with complicated shapes with a single chucking operation.

In particular, the standard-fitted magazine's automatic tool change function enables rapid responses during machining of parts that require many tools.

- 1** Motor Case / RC Motor / Titanium    **2** Joint / Tripod / Titanium    **3** Part / Handflash / Aluminium  
**4** Hub / Bicycle / Titanium



2



3



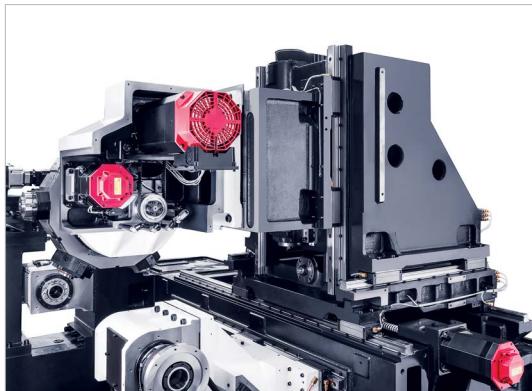
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# PROCESS-INTEGRATED MACHINING WITH MAGAZINE & Y-AXIS

C1 has been designed to minimize thermal displacement, and the arrangement of units in a heat-symmetrical structure achieves superb thermal stability. A notable feature is the rotary tool module inside the turret, which maintains excellent processing quality even during prolonged operation thanks to Hwacheon's unique cooling system that ensures stable heat control.

Along with machining stability, C1 comes with a variety of extra features including independent orthogonal Y-axis, opposing second spindle, and a tool-mountable magazine. These options enable quick production, process integration, reduced turnaround, and low cost, allowing you to respond quickly to the market environment that demands high value-added production.





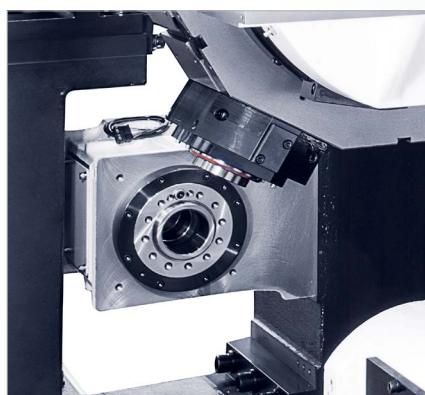
### Orthogonal Y-axis

Independent orthogonal structure of X, Y, and Z-axes reduces feed error to zero, sustaining high rigidity and high precision even during prolonged processing.



### Magazine

The magazine can be mounted with various tools, enabling multiple lathing and milling processes in a single, uninterrupted operation.



### High-speed, high-power spindle

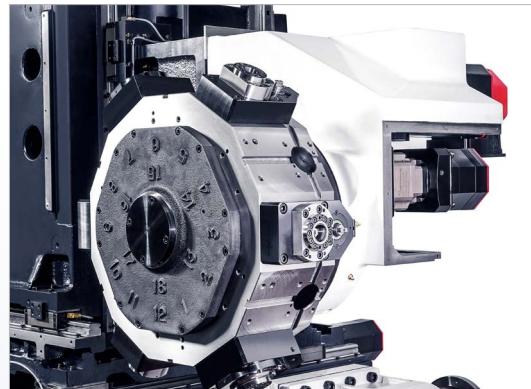
The culmination of Hwacheon's accumulated technical expertise, the high-power spindle enables stable and precise machining during high-speed operations.





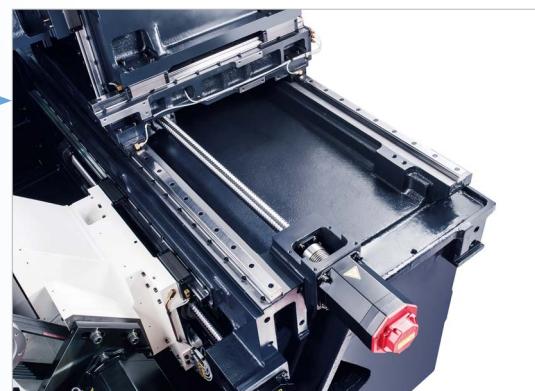
#### Second spindle (YSMC specs)

Using the opposing second spindle allows carrying out two processes with a single chucking operation, maximizing productivity.



#### High-precision, High-rigidity turret

Mounted with up to 18 tools, the turret enables even faster and more stable machining through multiplex operations.



#### High-rigidity LM guide

High-rigidity LM guides are installed on all axes, minimizing noncutting time through rapid feeding to achieve fast and stable machining performance.



#### Servo tailstock

The tailstock, fitted with a servo motor and ball screws, realizes precise machining by providing a stable support for the material on the main spindle through automatic positional determination.



# USER FRIENDLY DESIGN, A WIDE RANGE OF OPTIONAL FEATURES

With a user-centric architecture, C1 offers a user-friendly design and a variety of options. Focusing on actual operators, implementation of various special, highly-utilizable functions helps operators concentrate fully on machining operations and work more safely and efficiently.

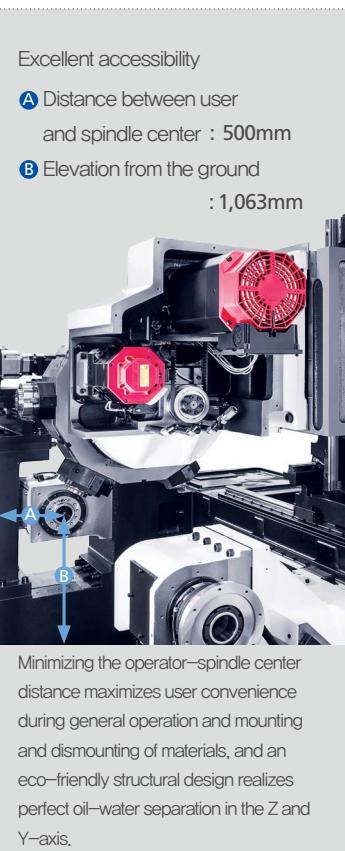
Based on Hwacheon's exceptional technological expertise, a wide range of options are available for upgrading performance, ensuring more powerful, fast and precise results.



Automatic Tool Presetter (Option)



2nd Spindle (Option)



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



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.

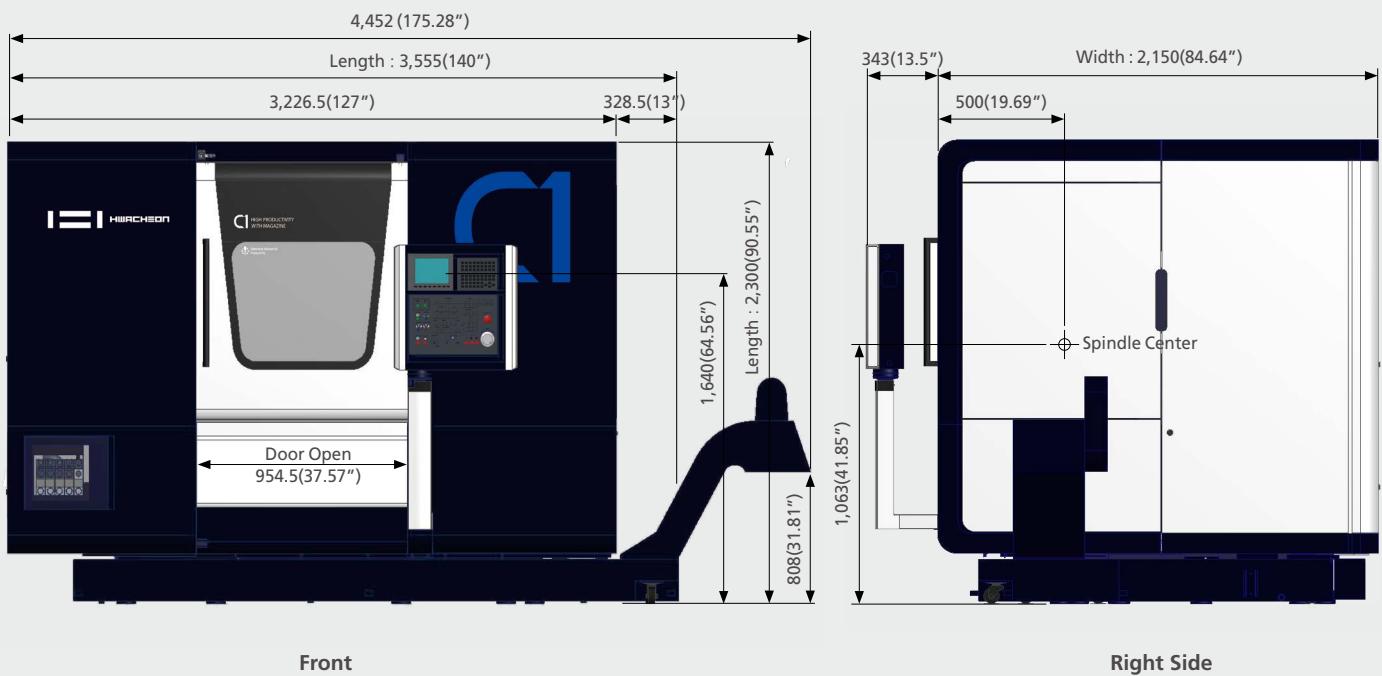
### Load Detection Limit 2

#### Alarm + Machine Stop

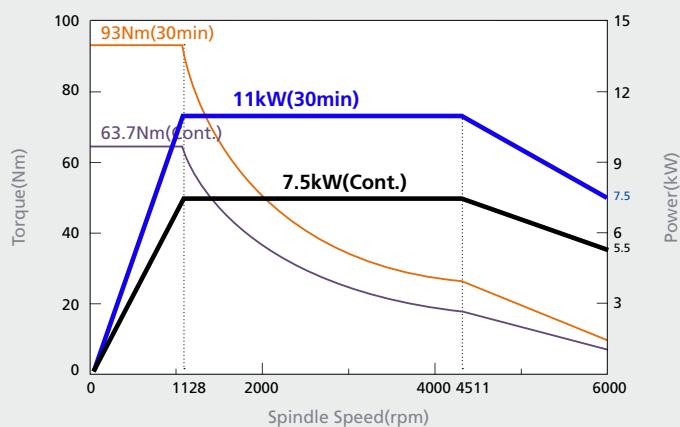
> When the LIMIT 2 Alarm sounds, the system stops the machine, and must be reset to operate it.

**Product Data**

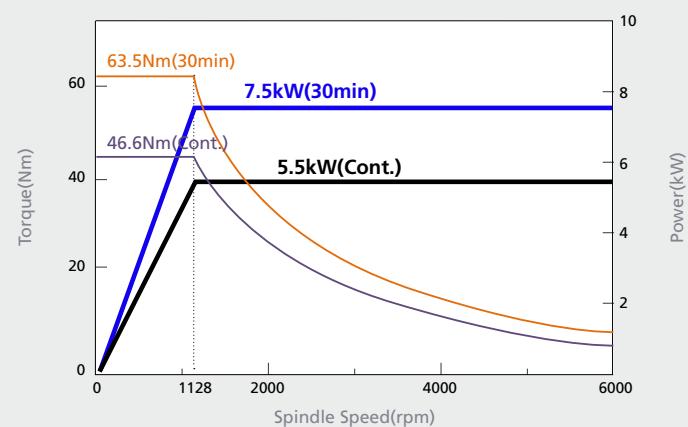
\* Unit: mm(inch)

**Spindle Power-Torque Diagram**

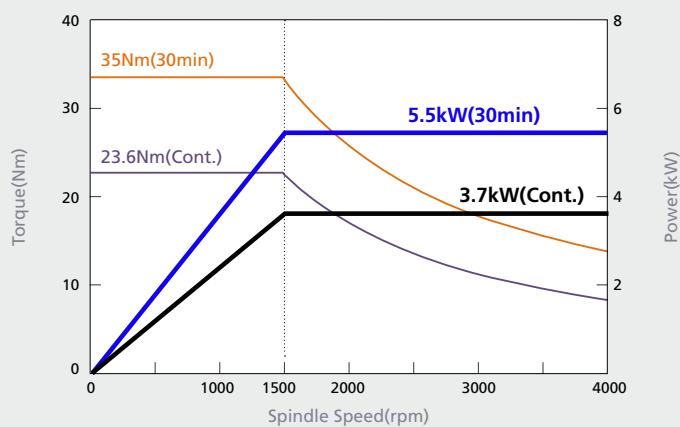
1st Spindle



2nd Spindle (Option)

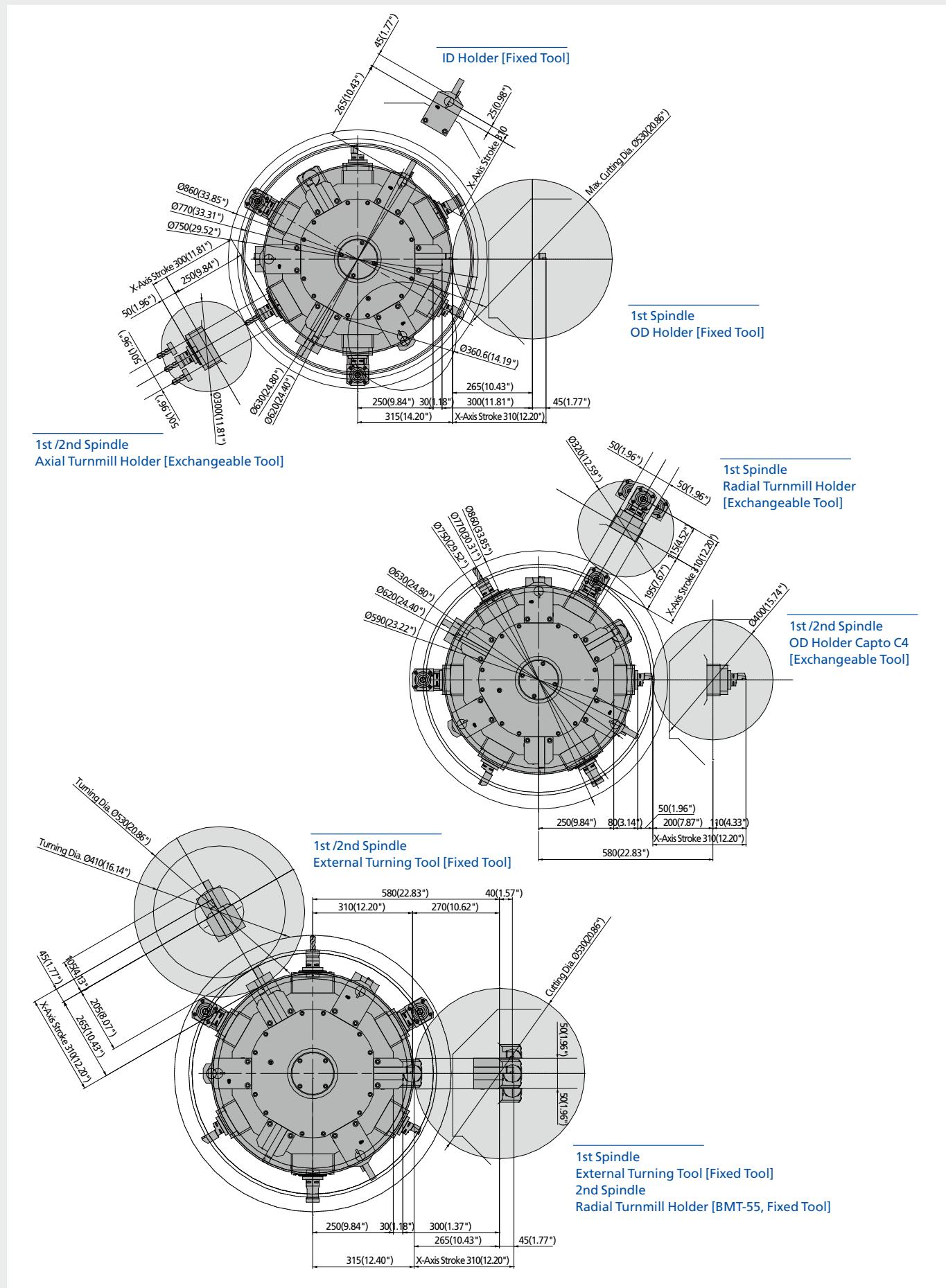


Turnmill



## Tool Interference Diagram

\*Unit:mm(inch)

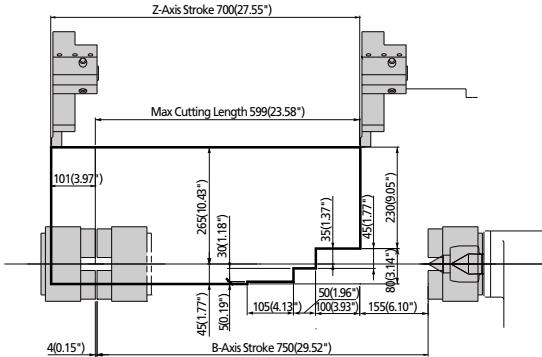


## Moving Range

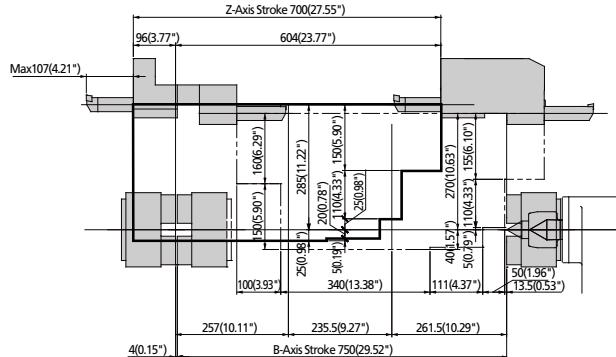
\*Unit:mm(inch)

## 1st Spindle

## OD Holder [Fixed Tool]

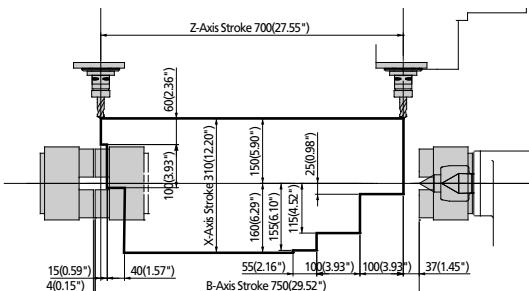


## ID Holder [Fixed Tool]



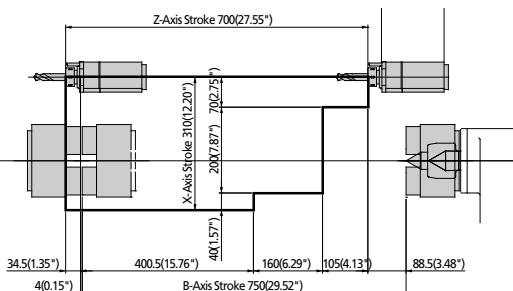
## 1st / 2nd Spindle

## Axial Turnmill Holder [Exchangeable Tool]



## 1st Spindle

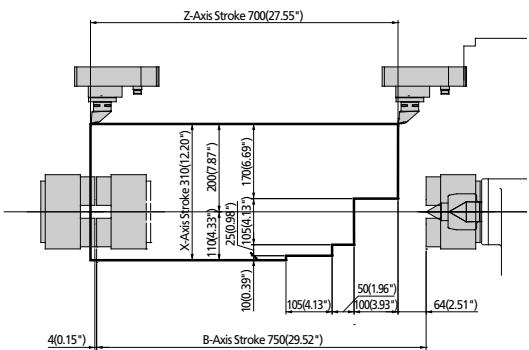
### Radial Turnmill Holder [Exchangeable Tool]



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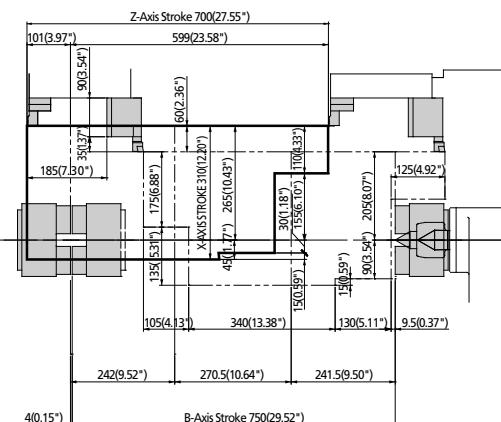
## 1st / 2nd Spindle

OD Holder Capto C4 [Exchangeable Tool]



## 1st /2nd Spindle

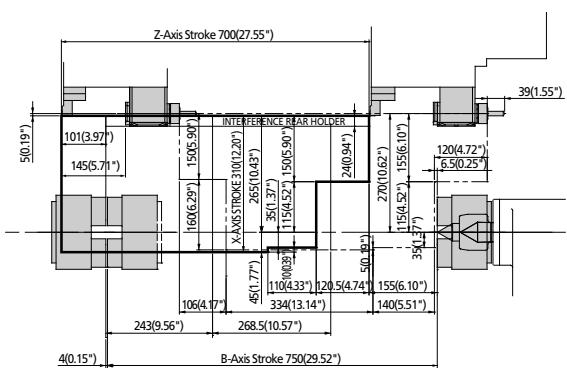
## External Turning Tool [Fixed Tool]



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## 1st Spindle

#### External Turning Tool [Fixed Tool]



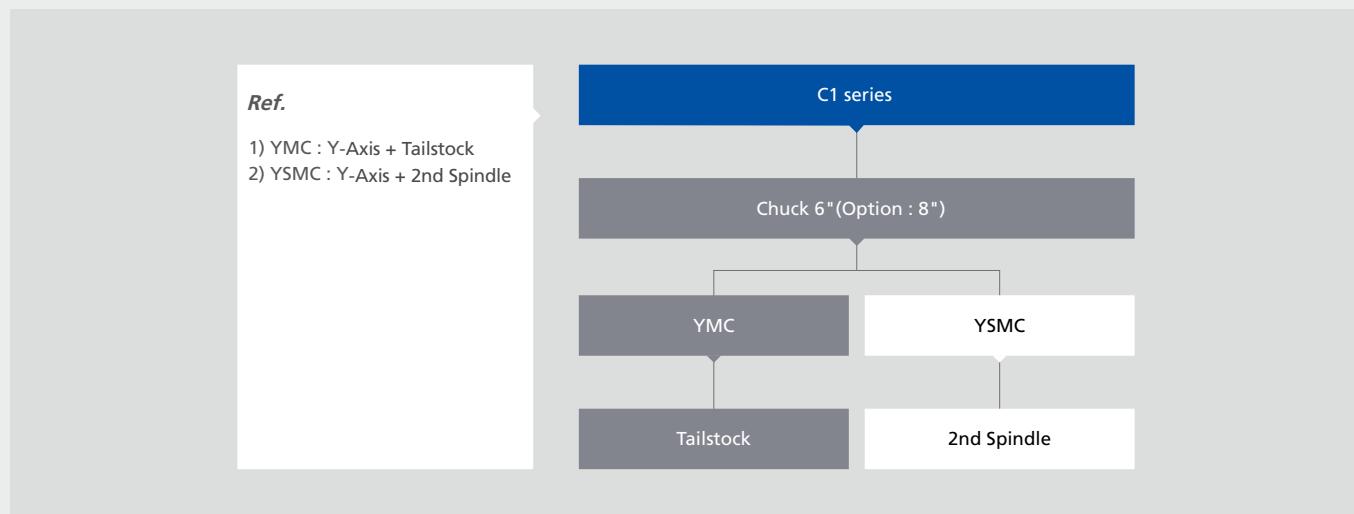
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2nd Spindle

## Radial Turnmill Holder [BMT-55, Fixed Tool]

## Product Configuration

Each product can be configured to fit your application.



## Machine Specifications

ITEM	C1 YMC	C1 YSMC
<b>Capacity</b>		
Swing over Bed	mm(inch)	0730 (028.74")
Max. Cutting Diameter (S1 / S2)	mm(inch)	Ø530 (Ø20.86")
Max. Cutting Length (S1 / S2)	mm(inch)	599 (23.58")
Chuck Size (S1 & S2)	inch	6" (Opt. 8")
<b>Spindle</b>		
Type of Spindle Nose	ASA	A2-5
Max. Spindle Speed	rpm	6,000
Through Spindle Hole Diameter (S1 / S2)	mm(inch)	Ø62 (Ø2.44")
Max. Bar Size (S1 / S2)	mm(inch)	Ø51 (Ø2.01")
Index Angle (S1 & S2)	°(deg)	0.0001°
Spindle Motor (S1, S2)	kW(HP)	11 / 7.5 (15 / 10)
<b>Turret</b>		
Number of Tool Station	ea	18
Tool Size / Type	mm(inch) / -	□25 x Ø40 (1" x Ø1.57") / Capto C4
Turret Indexing Time	sec/step	0.467
<b>Axes</b>		
Rapid Speed (X / Z / Y / B)	m/mm(ipm)	30 / 30 / 15 / 30
Max. Stroke (X / Z / Y / B)	mm(inch)	310 / 700 / ±50 / 750 (12.2" / 27.55" / ±1.96" / 29.52")
Feed Motor (X / Z / Y / B)	kW(HP)	7.0 / 2.2 / 2.2 / 2.2 (9.3 / 3 / 3 / 3)
<b>Tailstock</b>		
Quill Dia. / Tailstock Body Stroke	mm(inch)	Ø80 (3.14") / 750 (29.5")
Quill Taper	MT	#4
<b>Magazine</b>		
Type of Tool Shank	-	Capto C4
Tool Storage Capacity	ea	12
Max. Tool Diameter	mm(inch)	Ø40 (1.57")
Max. Tool Length (X / Z)	mm(inch)	100 (3.93") / 145 (5.71") (from Tool shank center)
Max. Tool Weight	kg(lb.)	5 (11)
<b>Turnmill</b>		
Spindle Motor	kW(HP)	5.5 / 3.7 (7.5 / 5)
Max. Spindle Speed	rpm	4,000
Min. Spindle Indexing Angle	°(deg)	0.0001°
BMT specifications / Turn mill tools	-	BMT 55 / Capto C4 + BMT 55
<b>Tank Capacity</b>		
Lubrication / Hydraulic	ℓ (gal)	12 (3.17) / 50 (13.21)
Coolant	ℓ (gal)	200 (52.83)
<b>Power Source</b>		
Electrical Power Supply	kVA	40
<b>Dimension</b>		
Height / Floor Space (L x W)	mm(inch)	2,300(90.55") / 3,555 (140") x 2,150 (84.64")
Weight	kg(lb.)	10,500 (23,149)
NC Controller		Fanuc Oi-TF

## Standard and Optional product components

Standard Accessories		Optional Accessories	
• Air Blower (YSMC)	• Servo Tailstock - MT#4 (YMC)	• Air Blower (YMC)	• Oil Skimmer
• Chuck Pressure Compensation	• Tooling System	• Air Gun	• Parts Catcher
• Door Interlock	• Tool Kit & Box	• Auto Door	• Set of Hard Jaw
• Foot Switch	• Turnmill Function Including(0.0001°)	• Bar Feeder Interface	• Tool & Work Counter (External / Internal)
• High Pressure Coolant Pump 6Bar	• Work Light	• Chuck Pressure Check Switch	• Tool Life Management
• Hydraulic Chuck & Cylinder	• Y-axis Addition ( $\pm 50$ mm)	• Chip Conveyor (Side Type)	• Tool Presetter (Automatic)
• Hydraulic Unit 50kg/cm <sup>2</sup>	• 10.4" Color LCD	• Coolant gun	• Transformer
• Leveling Bolt & Plate		• C-axis Brake Dual Pressure	• Turn Mill Holder, Axial / Radial (BMT-55)
• Lubrication Unit		• Differential Pressure Device	• Turn Mill Holder Radial (Cproto C4)
• Magazine (12 tools)		• High Pressure Coolant Pump 15bar	• Turning Holder for Cproto (C4)
• Manual & Parts List		• L-HTLD (Lathe-Hwacheon Tool Load Detect)	• U-Drill Holder
• Manual Guide i		• Linear Scale (X/Y/Z)	• 15" Color LCD (only FANUC)
• Signal Lamp with 3 Colors (R, G, Y)		• NC Cooler	
• Set of Soft Jaws			

## NC Specifications [Fanuc 0i-TF]

ITEM	SPECIFICATION	YMC	YSMC	※ — : Not available S : Standard O : Option
<b>Controlled axis</b>				
Controlled axis (Cs axis)	-	4 - Axes	6 - Axes	
Simultaneously controlled axes	-	4 - Axes	4 - Axes	
Least input increment	0.001mm, 0.0001deg, 0.0001inch	S	S	
Least input increment 1 / 10	0.0001mm, 0.00001inch	O	O	
inch/metric conversion	G20, G21	S	S	
Store Stroke Check 1		S	S	
Store Stroke Check 2, 3		S	S	
Chamfering on / off		S	S	
Backlash compensation		S	S	
<b>Operation</b>				
Automatic & MDI operation		S	S	
Program number search		S	S	
Sequence number search		S	S	
Dry Run, Single Block		S	S	
Manual handle feed / feed rate	1Unit / x1, x10, x100	S	S	
<b>Interpolation function</b>				
Positioning / Linear interpolation / Circular interpolation	G00 / G01 / G02, G03	S	S	
Dwell (Per seconds)	G04	S	S	
Polar coordinate interpolation	G12.1 / G13.1	S	S	
Cylindrical interpolation	G7.1	S	S	
Threading	G32	S	S	
Multiple threading		S	S	
Continuous threading		S	S	
Threading retract		S	S	
Variable lead threading	G34	S	S	
Reference position return 1st	G28	S	S	
Reference position return check	G27	S	S	
2,3,4th reference position return	G30	S	S	
Arbitrary Speed Threading	O	O		
<b>Feed function</b>				
Rapid traverse override	F0, F25, F50, F100	S	S	
Feed per minute (mm/min)	G98	S	S	
Feed per revolution (mm/rev)	G99	S	S	
Rapid traverse bell-shaped acceleration / Deceleration		S	S	
Feedrate override	0 ~ 150%	S	S	
Jog feed override	0 ~ 1,260mm/min	S	S	
<b>Program input</b>				
Tape code	EIA / ISO	S	S	
Optional block skip	9ea	S	S	
Program number	O4 - Digits	S	S	
Sequence number	N8 - Digits	S	S	
Decimal point programming		S	S	
Coordinate system setting	G50	S	S	
Coordinate System Shift		S	S	
Workpiece coordinate system	G54 ~ G59	S	S	
Workpiece coordinate system preset	G92.1	S	S	
Direct drawing dimension programming		S	S	
<b>Tool function / Compensation</b>				
Tool function		T4-digits	S	S
Tool offset pairs		128 pairs	S	S
Tool nose radius compensation			S	S
Tool geometry / Wear compensation			S	S
Tool life management			O	O
Automatic tool offset		Tool presetter option is required	O	O
Direct input tool offset value measured B		Tool presetter option is required	O	O
<b>Editing operation</b>				
Part program storage length	1,280m (512kB)	S	S	
Number of register able programs	400ea	S	S	
Background editing		S	S	
Extended part program editing		S	S	
Play Back		S	S	
<b>Operation / Display</b>				
Clock function			S	S
Self-diagnosis function			S	S
Alarm history display			S	S
Help function			S	S
Run hour and parts count display			S	S
Dynamic graphic display			O	O
Multi-language display	Korean, English, German, French, Italian, Chinese, Spanish, Portuguese, Polish, Hungarian, Swedish, Russian	S	S	
<b>Data input / Output</b>				
Reader / Puncher interface CH1	RS232C	S	S	
Reader / Puncher interface CH2	RS232C	S	S	
Ethernet interface		S	S	
Memory card interface		S	S	
USB card interface		S	S	
Others				
Display unit	10.4" Color LCD	S	S	

## Hwacheon Global Network

■ Hwacheon Headquarter ■ Hwacheon America ■ Hwacheon Europe ■ Hwacheon Asia



**HWACHEON**

Please call us for product inquiries.

[www.hwacheon.com](http://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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