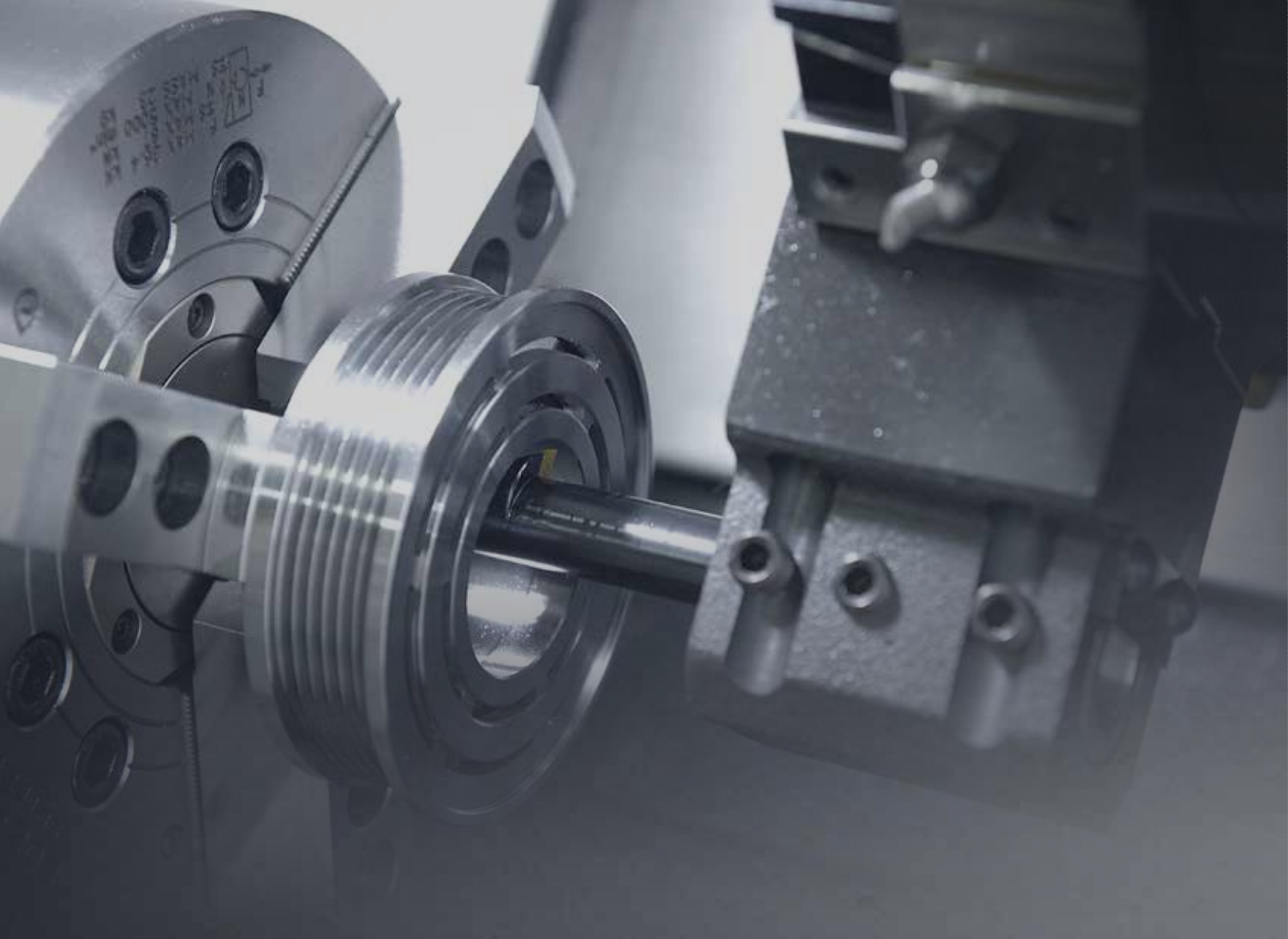


TC16 Series

TC16A | TC16C

SG WIA Efficient Type CNC Turning Center



Technical Leader

The CNC Turning Center TC16 Series, designed by SG WIA with years of expertise and the latest technology, maximizes productivity by enhancing both technical performance and economic efficiency.

		TC16A	TC16C
Max. Turning Dia.	mm(in)	Ø280 (Ø11")	Ø280 (Ø11")
Max. Turning Length	mm(in)	300 (11.8")	280 (11")
Chuck Size	inch	6"	8"
Bar Capacity	mm(in)	Ø45 (Ø1.8")	Ø51 (Ø2")
Sp. Speed	r/min	6,000	4,000 [4,000]
Sp. Motor (Max./Cont.)	kW(HP)	11/7.5 (15/10)	11/7.5 (15/10) [15/11 (20/15)]
Travel (X/Z)	mm(in)	165/330 (6.5"/13")	165/330 (6.5"/13")
No. of Tools	EA	12	10

[] : Option

- 45° slanted one-piece bed structure with high rigidity
- Stabilized unit structure to minimize thermal displacement
- Impressive rapid traverse rate: 30m/min
- The most reliable high speed servo turret : 0.1sec/step
- Environmental friendly design
- Compact design suitable for installation in restricted space
- Ergonomic design for convenient access to chuck and tool



01 BASIC STRUCTURE

The Best Productivity 6 inch / 8 inch Compact CNC Turning Center

High Precision Spindle

- Angular bearing : P4
- TC16A : 6" / 6,000 r/min
- TC16C : 8" / 4,000 r/min

Turret

- Indexing Time : 0.1 sec
- Tool Size (O.D./I.D.)
TC16A : $\square 20/\varnothing 32$ ($\square 0.8"/\varnothing 1.2"$)
TC16C : $\square 25/\varnothing 32$ ($\square 1"/\varnothing 1.2"$)

OPTION

Tail Stock

- Taper : MT #4
- Quill Travel : 80 mm (3.1")



REDUCTION OF NON-CUTTING TIME BY FAST RAPID SPEED

ALL-IN-ONE TYPE OF BED

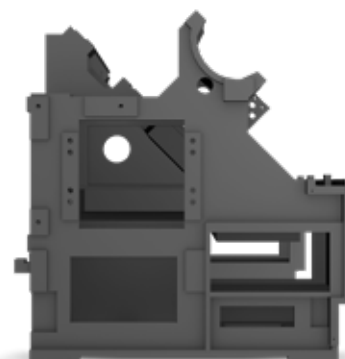
High Precision & Rigidity One-piece Structure

The TC16 Series is designed with a 45 degree slanted bed combined with square type and tube type rib structure. This special design enhances rigidity and vibration absorbing capability, allowing powerful cutting with high precision.

Floor Space (L×W)

1,940×1,660 mm (76.4"×65.4")

45° Bed Slant



GUIDEWAY

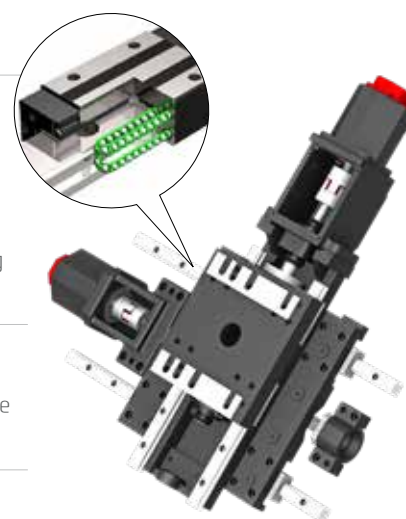
LM Guideway

LM guideway with the rapid traverse rate of 30 m/min (1,181ipm) is installed on TC16 Series.

LM guideway maintains high precision even after a long periods of operation. LM guideway's wide surface minimizes attrition and slipping which can occur often during machining.

Ball Screw

In order to eliminate thermal growth and increase accuracy, all axis are driven by high precision double anchored ballscrews.



Travel (X/Z)

165/330 mm (6.5"/13")

Rapid Traverse Rate (X/Z)

30/30 m/min (1,181/1,181 ipm)

02 HIGH PRECISION

Excellent Performance, High Accuracy Cutting CNC Turning Center

Spindle Specifications

[] : Option

ITEM	Spindle Speed	Motor (Max./Cont.)	Torque (Max.)	Driving Method
TC16A	FANUC : 6,000 r/min	11/7.5 kW (15/10 HP)	70/35.8 N·m (51.6/26.4 lbf·ft)	Belt
TC16C	FANUC : 4,000 r/min	11/7.5 kW (15/10 HP)	126/64.4 N·m (92.9/47.5 lbf·ft)	
	[FANUC : 4,000 r/min]	15/11 kW (20/15 HP)	171.8/126 N·m (126.7/92.9 lbf·ft)	

High-Precision

HIGH ACCURACY & EXCELLENT PERFORMANCE

SPINDLE

High Precision Spindle

The TC16 Series spindle was designed with a precise and highly rigid spindle structure by adopting a high speed angular ball bearing in the DB array.

To ensure good safety in the powerful and heavy cutting, the spindle is designed with an angular bearing structure with P4 class.



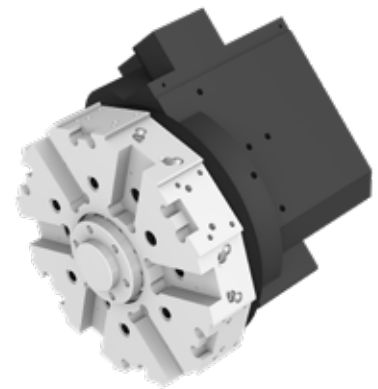
TURRET

Servo Turret

Continued accuracy of the turret indexing position is maintained by a powerful, high speed servo motor. The 3 piece coupling and non-lift method applied design prevents foreign material from getting into the turret.

Turret Specifications

ITEM	No. of Tools	Tool Size (O.D/I.D)	Indexing Time
TC16A	12 EA	□ 20/Ø32 mm (□ 0.8"/Ø1.2")	0.1 sec
TC16C	10 EA	□ 25/Ø32 mm (□ 1"/Ø1.2")	



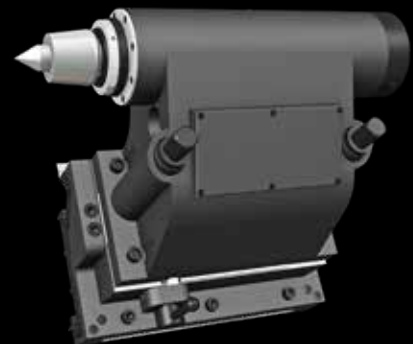
TAIL STOCK

MT#4 Tail Stock

Tailstock enables stable machining of high quality products where quill travels up to 80mm (3").

- ◎ Quill Dia. : Ø55 mm (Ø2.2")
- ◎ Quill Travel : 80 mm (3.1")

OPTION



03 FANUC – SMART PLUS

The Compatible All-round Control



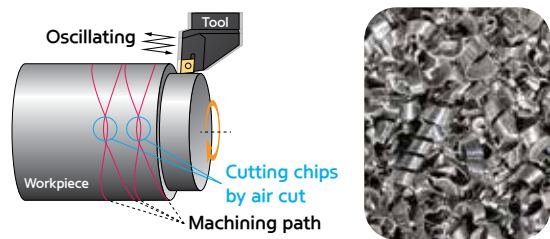
15" Touch-type Monitor as a standard



Fast Cycle Time Technology	Smart Machine Control	Fine Surface Technology
Smart Servo Control Technology	Conversational Program	SmartGuide-i
Machining-aid Function	i-HMI	5120M (2MB)
No. of Registerable Programs 1000 EA	Part Program Storage	

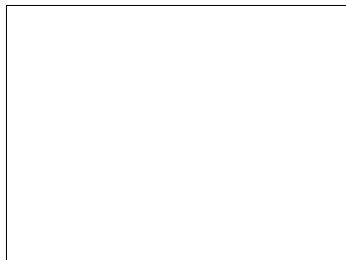
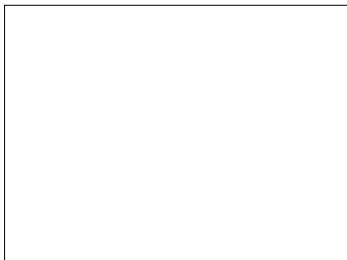
Servo Learning Oscillation Function for Chip Breaking **OPTION**

- Machining Method : he tool cuts the workpiece moving in a zigzag pattern. (Oscillating) → Air cut section occurs → Long chips break
- Advantage : Increase tool life, Enhance surface finishing, Improve chip disposal
- Machine : All turning centers with FANUC controller (Option)



(Developed special screen page for servo learning oscillation function / Even when this function is applied, the cycle time remains same.)

MMS (Machine Monitoring System)



MMS Cloud

A cloud server-based equipment monitoring system for collecting and analyzing facility operation data.

Manufacturing big data solution with design, manufacturing, and intelligence technology of SG-WIA
(Big data collection/Analysis/Visualization)

SMART CNC (FANUC SMART PLUS)



1. Dialogue Program (Smart Guide-i)

This software offers the maximum user convenience through dialogue manipulation from setup to processing. This includes writing processing programs and simulation checks.

2. LAUNCHER

This software offers shortcuts for quick access to specialized features and frequently used features.

SPECIFICATIONS

Standard & Optional

● : Standard ○ : Option ☆ : Prior Consultation - : Non Applicable

Spindle		TC16A	TC16C
Main Spindle	6"	●	-
Hollow Chuck 3 Jaw	8"	○	●
Main Spindle	6"	○	-
Solid Chuck 3 Jaw	8"	-	○
Standard Soft Jaw (1set)		●	●
Chuck Clamp Foot Switch		●	●
2 Steps Hyd. Pressure Device		○	○
Spindle Inside Stopper		☆	☆
5" Index		☆	☆
C-Axis (0.001")		-	-
Chuck Open/Close Confirmation Device		○	○
2 Steps Chuck Foot Switch		☆	☆
Turret			
Tool Holder		●	●
Mill Turret	VDI	-	-
Straight Milling Head	Collet Type, 1ea	-	-
Angular Milling Head	Collet Type, 1ea	-	-
Straight Milling Head	Adapter Type	-	-
Angular Milling Head	Adapter Type	-	-
Boring Sleeve		●	●
Drill Socket		●	●
U-Drill Holder		○	○
U-Drill Holder Sleeve		○	○
O.D Extension Holder	For Outside Diameter	☆	☆
Angle Head		-	-
Tail Stock & Steady Rest			
Quill Type Tail Stock		○	○
Programmable Tail Stock		-	-
Manual Type Hyd. Steady Rest		-	-
Standard Live Center (Tail Stock : Standard)		○	○
High Precision Live Center		☆	☆
2 Steps Tail Stock Pressure System		☆	☆
Quill Forward/Reverse Confirmation Device		○	○
Tail Stock Foot Switch		☆	☆
Coolant & Air Blow			
Standard Coolant (Nozzle)		●	●
Chuck Coolant (Upper Chuck)		○	○
Gun Coolant		○	○
Through Spindle Coolant (Only for Special Chuck)		☆	☆
Thru Coolant for Live Tool		-	-
Chuck Air Blow (Upper Chuck)		○	○
Tail Stock Air Blow (Upper Tail Stock)		☆	☆
Turret Air Blow		☆	☆
Air Gun		○	○
Through Spindle Air Blow (Only for Special Chuck)		☆	☆
High Pressure Coolant	0.4Bar (5.8 psi) 6Bar (87 psi)	● ○	● ○
Power Coolant System (For Automation)		☆	☆
Coolant Chiller		☆	☆
Chip Disposal			
Coolant Tank	130 ℓ (34.3 gal) 150 ℓ (39.6 gal)	● ○	● ○
Chip Conveyor (Hinge/Scraper)	Rear (Rear)	○	○
	Front (Right)	-	-
	Rear (Right)	○	○
Special Chip Conveyor (Drum Filter)		☆	☆
Chip Wagon	Standard (180 ℓ [47.5 gal])	○	○
	Swing (200 ℓ [52.8 gal])	○	○
	Large Swing (290 ℓ [76.6 gal])	○	○
	Large Size (330 ℓ [87.2 gal])	○	○
	Customized	☆	☆
Safety Device			
Total Splash Guard		●	●
Chuck hydraulic pressure maintenance interlock		○	○

Electric Device		TC16A	TC16C
Call Light	1 Color : ●	●	●
Call Light & Buzzer	3 Color : ●●●B	○	○
Electric Cabinet Light		○	○
Remote MPG		○	○
Work Counter	Digital	○	○
Total Counter	Digital	○	○
Tool Counter	Digital	○	○
Multi Tool Counter	Digital	○	○
Electric Circuit Breaker		○	○
AVR (Auto Voltage Regulator)		☆	☆
Transformer	20kVA	○	○
Auto Power Off		○	○
Measurement			
Q-Setter		○	○
Automatic Q-Setter		○	○
Work Close Confirmation Device (Only for Special Chuck)	TACO SMC	○	○
Work Setter		☆	☆
Linear Scale	X axis	-	-
	Z axis	-	-
Coolant Level Sensor (Only for Chip Conveyor)		☆	☆
Environment			
Air Conditioner		○	○
Oil Mist Collector		☆	☆
Oil Skimmer (Only for Chip Conveyor)		○	○
MQL (Minimal Quantity Lubrication)		☆	☆
Fixture & Automation			
Auto Door		○	○
Auto Shutter (Only for Automatic System)		☆	☆
Sub Operation Pannel		☆	☆
Bar Feeder Interface		○	○
Bar Feeder		☆	☆
Extra M-Code 4ea		○	○
Automation Interface		☆	☆
I/O Extension (IN & OUT)	16 Contact	○	○
	32 Contact	○	○
Parts Catcher	Main SP.	○	○
Turret Work Pusher (For Automation)		☆	☆
Parts Conveyor		☆	☆
Semi Automation System		☆	☆
Hyd. Device			
Standard Hyd. Cylinder	Hollow	●	●
Standard Hyd. Unit	35bar (507.6 psi)/ 15 ℓ (4 gal)	●	●
S/W			
Dialogue Program (HW-DPRO)		○	○
DNC software (HW-eDNC)		○	○
Machine Monitoring System (HW-MMS Cloud)		☆	☆
Smart Guide-i : FA/UC		●	●
Smart S/W		☆	☆
ETC			
Tool Box		●	●
Customized Color	Need Munsel No.	☆	☆
CAD & CAM		☆	☆

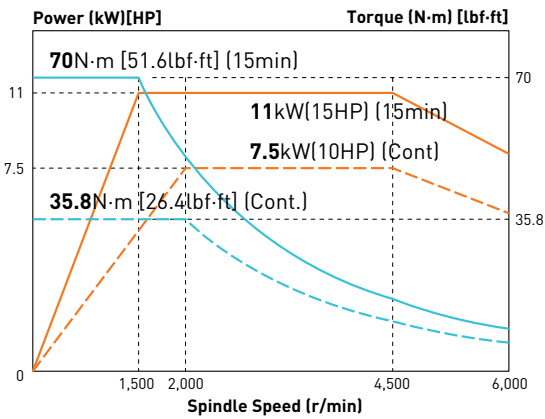
❖ Thermal Displacement Compensation device is recommended, when more than 6 bar of high pressure coolant is applied, for the high quality machining.

Specifications are subject to change without notice for improvement. / Please refer to the S/W catalog (iRIS) for details by S/W product.

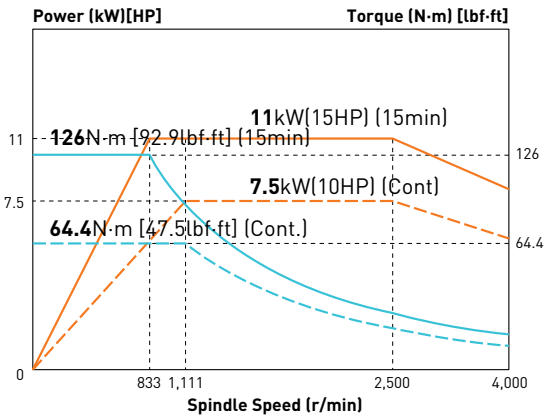
SPECIFICATIONS

Spindle Output/Torque Diagram

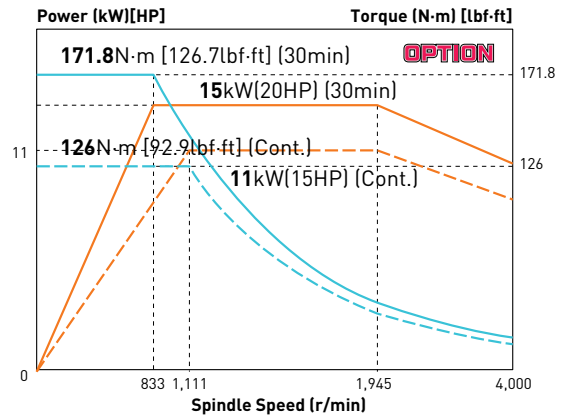
TC16A (FANUC)



TC16C (FANUC)



TC16C (FANUC)

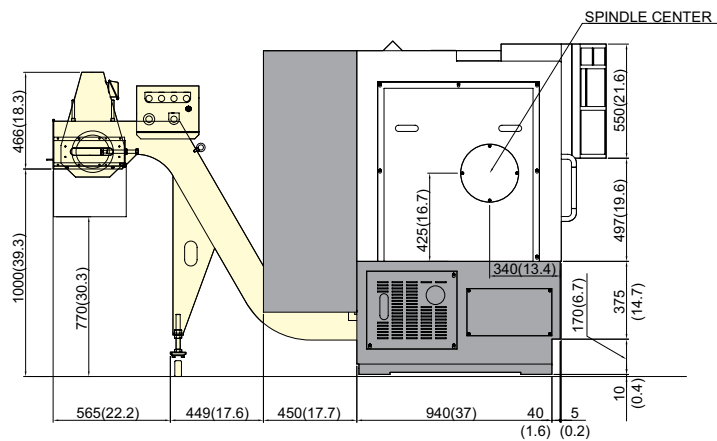
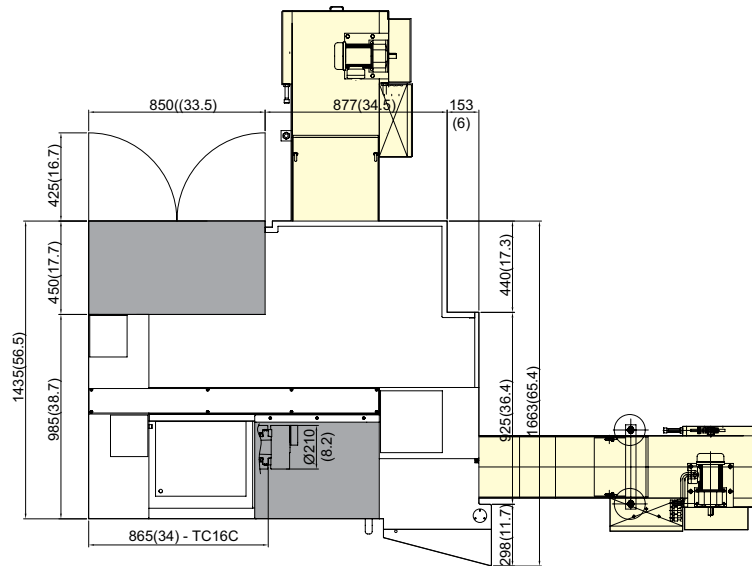


SPECIFICATIONS

External Dimensions

unit : mm(in)

TC16C/A

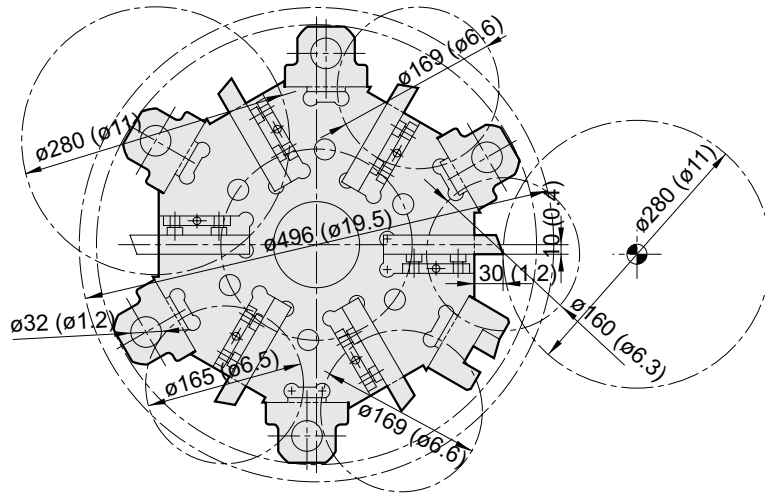


SPECIFICATIONS

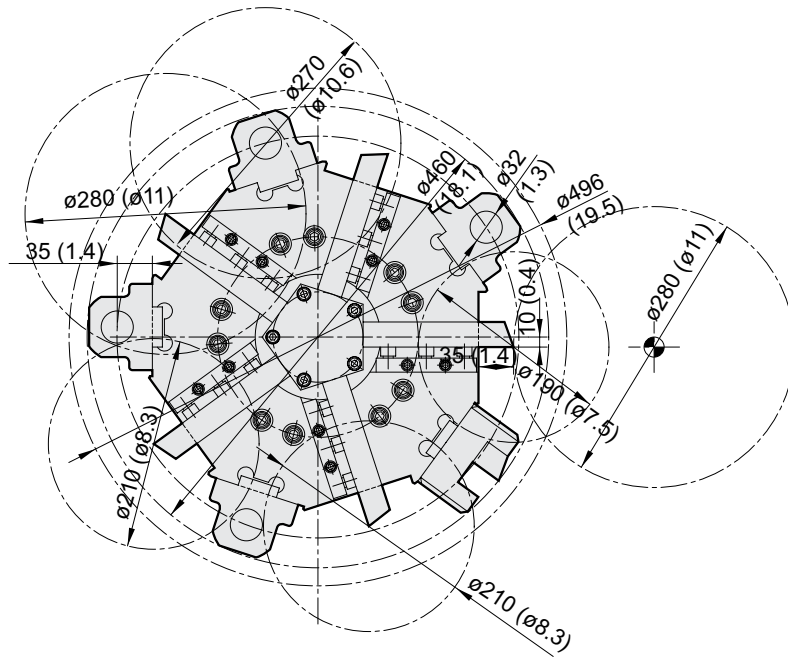
Interference

unit : mm(in)

TC16A



TC16C

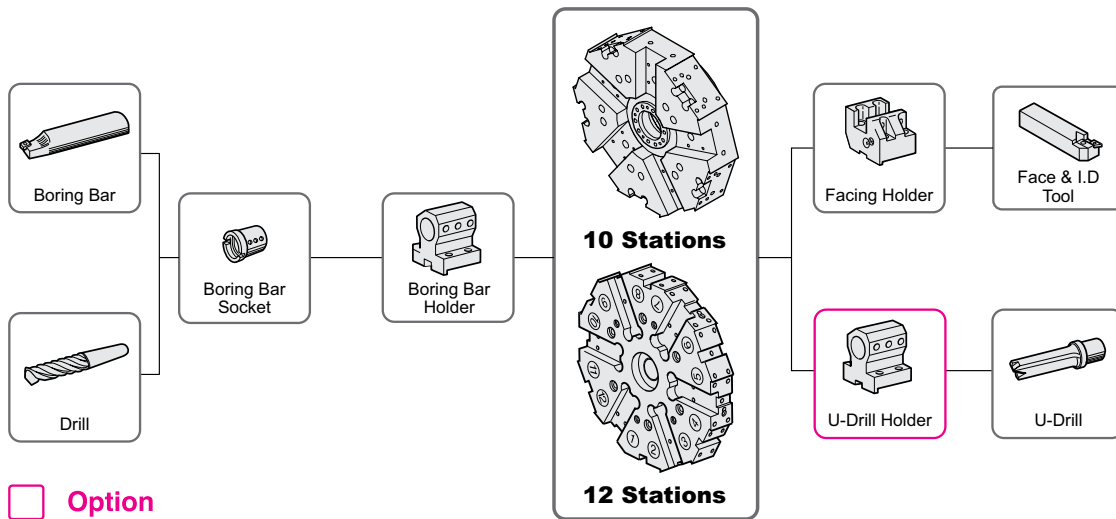


SPECIFICATIONS

Tooling System

unit : mm(in)

TC16A/C



Tooling Parts Detail

ITEM			TC16A		TC16C	
			mm Unit	inch Unit	mm Unit	inch Unit
Turning Holder	O.D Holder	Right/Left	-	-	-	-
		Extension	Opt.	-	-	-
	Facing Holder		1	1	1	1
Boring Holder	I.D Holder	Single	5	5	4	4
		Single : $\varnothing 40$ ($\varnothing 1\ 1/2''$)	-	-	Opt.	-
	U-Drill Holder	$\varnothing 20$ ($\varnothing 3/4''$)	-	-	Opt.	-
		$\varnothing 25$ ($\varnothing 1''$)	-	-	Opt.	-
		$\varnothing 32$ ($\varnothing 1\ 1/4''$)	-	-	-	Opt.
Socket	Boring	$\varnothing 8$ ($\varnothing 5/16''$)	1	1	1	1
		$\varnothing 10$ ($\varnothing 3/8''$)	1	1	1	1
		$\varnothing 12$ ($\varnothing 1/2''$)	1	1	1	1
		$\varnothing 16$ ($\varnothing 5/8''$)	1	1	1	1
		$\varnothing 20$ ($\varnothing 3/4''$)	1	1	1	1
		$\varnothing 25$ ($\varnothing 1''$)	Opt.	1	Opt.	1
	Drill	MT 1	1	-	1	-
	ER Collet		-	-	-	-

SPECIFICATIONS

Tooling Travel Range

unit : mm(in)

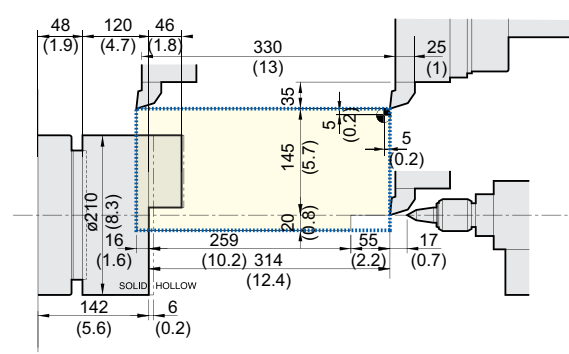
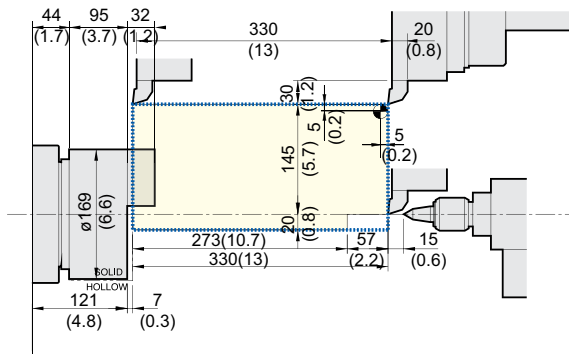
With Tail Stock
 Without Tail Stock

TC16A

TC16C

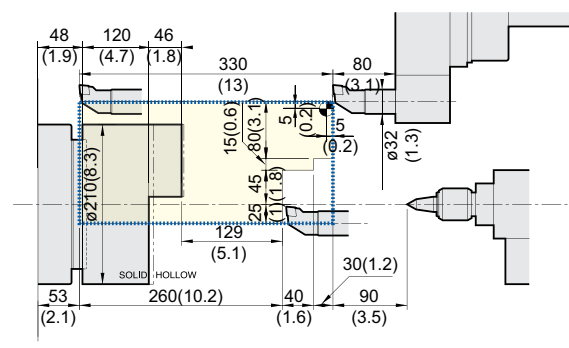
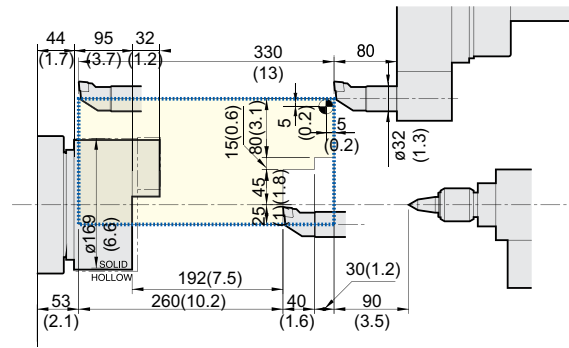
OD tool

OD tool



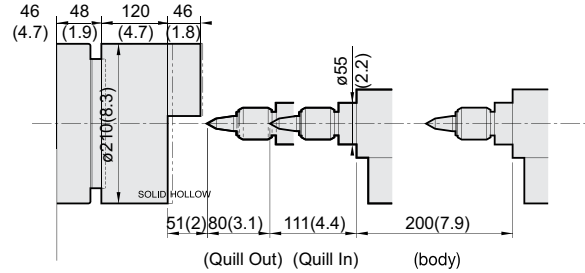
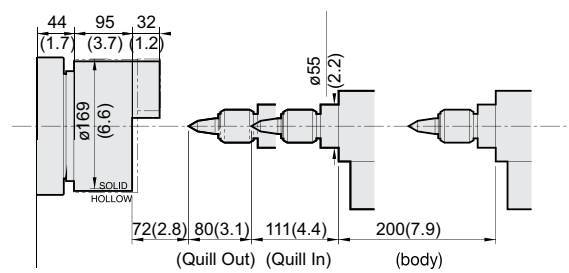
ID tool

ID tool



Tail stock (Opt.)

Tail stock (Opt.)



SPECIFICATIONS

Specifications

[] : Option

ITEM		TC16A	TC16C	
CAPACITY	Swing Over the Bed	Ø480 (18.9")		
	Swing Over the Carriage	Ø285 (11.2")		
	Max. Turning Dia.	Ø280 (11")		
	Max. Turning Length	300 (11.8")	280 (11")	
	Bar Capacity	Ø45 (1.8")	Ø51 (2")	
SPINDLE	Chuck Size	6"	8"	
	Spindle Bore	Ø55 (2.2")	Ø62 (2.4")	
	Spindle Speed (rpm)	6,000	4,000 [4,000]	
	Motor (Max/Cont.)	11/7.5 (15/10)	11/7.5 (15/10) [15/11 (20/15)]	
	Torque (Max/Cont.)	70/35.8 (51.6/26.4)	126/64.4 (92.9/47.5) [171.8/126 (126.7/92.9)]	
	Spindle Type	BELT		
	Spindle Nose	A2-5	A2-6	
	C-axis Indexing	deg		
FEED	Travel (X/Z)	165/330 (6.5"/13")		
	Rapid Traverse Rate (X/Z)	30/30		
	Slide Type	LM GUIDE		
TURRET	No. of Tools	12	10	
	Tool Size	OD	Ø20 (0.8")	Ø25 (1")
		ID	Ø32 (1.2")	
	Indexing Time	sec/step		
LIVE TOOL	Motor (Max/Cont.)	kW(HP)		
	Milling Tool Speed (rpm)	r/min		
	Torque (Max/Cont.)	N·m(lbf·ft)		
	Collet Size	mm(in)		
	Type	-		
TAIL STOCK	Taper	[MT4]		
	Quill Dia.	[Ø55 (2.2")]		
	Quill Travel	[80]		
	Travel	[200 (3.1")]		
TANK CAPACITY	Coolant Tank	ℓ (gal)		
	Lubricating Tank	ℓ (gal)		
POWER SUPPLY	Electric Power Supply	kVA		
	Thickness of Power Cable	mm ²		
	Voltage	V/Hz		
MACHINE	Floor Space (L×W)	mm(in)		
	Height	mm(in)		
	Weight	2,400 (5,291)	2,500 (5,511)	
PC	Controller	-		
		FANUC i Series - Smart Plus		

*) Using 50Hz voltage instead of 60Hz may lower the output of motors. (excluding servo motors and inverter motors)
Specifications are subject to change without notice for improvement.

CONTROLLER

FANUC i Series – Smart Plus

[] : Option

Controlled axis / Display / Accuracy Compensation	
Control axis	2 axis (X, Z) / 3 axis (X, Z, C) / 4 axis (X, Z, Y, C) 5 axis (X, Z, B, C, A) / 6 axis (X, Z, Y, B, C, A) 7 axis (X1/Z1, X2/Z2, B2, C1/C2)
Simultaneously controlled axis	2 axis [Max. 4 axis]
Designation of spindle axis	3 axis [Max. 4 axis]
Least setting Unit	X, Z, Y, B axis : 0.001 mm (0.0001 inch) C, A axis : 0.001 deg
Least input increment	X, Z, Y, B axis : 0.001 mm (0.0001 inch) C, A axis : 0.001 deg
Inch / Metric conversion	G20 / G21
High response vector control	
Interlock	All axis / Each axis
Machine lock	All axis
Backlash compensation	± 0~9999 pulses (exc. Rapid traverse / Cutting feed)
Position switch	
LCD / MDI	15 inch LCD unit (with Touch Panel)
Feedback	Absolute motor feedback
Stored stroke check 1	Over travel
Stored stroke check 2, 3	
PMC axis control	
Operation	
Automatic operation (Memory)	
MDI operation	
DNC operation	Needed DNC software / CF card
Program restart	
Wrong operation prevention	
Program check function	Dry run
Single block	
Search function	Program Number / Sequence Number
Interpolation functions	
Nano interpolation	
Positioning	G00
Linear interpolation	G01
Circular interpolation	G02, G03
Exact stop mode	Single : G09, Continuous : G61
Dwell	G04, 0 ~ 9999.9999 sec
Skip	G31
Reference position return	1st reference : G28, 2nd reference : G30 Ref. position check : G27
Thread synchronous cutting	G33
Thread cutting retract	
Variable lead thread cutting	
Multi / Continuous threading	
Feed function / Acc. & Dec. control	
Manual feed	Rapid traverse Jog : 0~2,000 mm/min (79 ipm) Manual handle : x1, x10, x100 pulses Reference position return
Cutting Feed command	Direct input F code
Feedrate override	0 ~ 200% (10% Unit)
Rapid traverse override	1%, F25%, 50%, 100%
Override cancel	
Feed per minute	G98
Feed per revolution	G99
Look-ahead block	1 block
Program input	
Tape Code	EIA / ISO
Optional block skip	9 ea
Program stop / end	M00, M01 / M02, M30
Maximum command unit	± 999,999.999 mm (± 99,999.9999 inch)
Plane selection	X-Y : G17 / Z-X : G18 / Y-Z : G19
Workpiece coordinate system	G52, G53, 6 pairs (G54 ~ G59)
Manual absolute	Fixed ON
Programmable data input	G10
Sub program call	10 folds nested
Custom macro	#100 ~ #199, #500 ~ #999
G code system	A, B/C
Programmable mirror image	G51.1, G50.1
G code preventing buffering	G4.1
Direct drawing dimension program	Including Chamfering / Corner R
Conversational Program	SmartGuide-i

Program input	
Multiple repetitive cycles	I, II
Canned cycle for turning	
Auxiliary function / Spindle speed function	
Auxiliary function	M & 4 digit
Level-up M Code	High speed / Multi / Bypass M code
Spindle speed function	S & 5 digit, Binary output
Spindle override	0% ~ 150% (10% Unit)
Multi position spindle orientation	M19 (S##)
FSSB Rigid tapping	
Constant surface speed control	G96, G97
Tool function / Tool compensation	
Tool function	T & 2 digit + Offset 2 digit
Tool life management	
Tool offset pairs	128 pairs
Tool nose radius compensation	G40, G41, G42
Geometry / Wear compensation	
Direct input of offset measured B	
Editing function	
Part program storage size	5,120m (2MB)
No. of registerable programs	1,000 ea
Program protect	
Background editing	
Extended part program editing	Copy, move and change of NC program
Memory card program edit	
Data input / output & Interface	
I/O interface	CF card, USB memory Embedded Ethernet interface
Screen hard copy	
External message	
External key input	
External workpiece number search	
Automatic data backup	
Setting, display and diagnosis	
Self-diagnosis function	
History display & Operation	Alarm & Operator message & Operation
Run hour / Parts count display	
Maintenance information	
Actual cutting feedrate display	
Display of spindle speed / T code	
Graphic display	
Operating monitor screen	Spindle / Servo load etc.
Power consumption monitoring	Spindle & Servo
Spindle / Servo setting screen	
Multi language display	Support 24 languages
Display language switching	Selection of 5 optional Languages
LCD Screen Saver	Screen saver
Unexpected disturbance torque	BST (Back spin torque limit)
Function for machine type	
Cs contour control (C & A axis)	Mill, MS, Y, SY, LF-Mill, TTMS, TTSY
Polar coordinate interpolation	Mill, MS, Y, SY, LF-Mill, TTMS, TTSY
Cylindrical interpolation	Mill, MS, Y, SY, LF-Mill, TTMS, TTSY
Polygon turning (2 Spindles)	Mill, MS, Y, SY, LF-Mill, TTMS, TTSY
Canned cycle for drilling	Mill, MS, Y, SY, LF-Mill, TTMS, TTSY
Spindle orientation expansion	MS, SY, TTS, TTMS, TTSY
Spindle synchronous control	MS, SY, TTS, TTMS, TTSY
Torque control	MS, SY, TTS, TTMS, TTSY
Y axis offset	Y, SY, TTSY
Arbitrary angular control	Y, SY, TTSY
Composite / Superimposed control	MS, SY, TTS, TTMS, TTSY
Balance cutting	TTS, TTMS, TTSY
Option	
Fast ethernet	Needed option board
Data server	Needed option board
Protection of data at 8 levels	
Tool offset pairs	200 pairs
Helical interpolation	
Optional block skip	40 ea, 200 ea (AICC II)

Figures in inch are converted from metric values.

The FANUC controller specifications are subject to change based on the policy of company CNC supplying.