

Opposed Twin-Spindle CNC Lathe

TCY Series

Next Generation Standard for Small Parts Machining



TAKISAWA®



Process Integration for the Combination Machining of Small Precision Components

A superior grade machine, the TAKISAWA TCY incorporates a variety of, "EASY TO USE" machining.

Features for improving the production rate of small high precision components.



TCY-160
TCY-200



L5



L3

TCY-160/TCY-200

The standard model “YS” is equipped with a “Y-Axis” and subspindle enabling the machining of complicated profiles and this also enables facing and back machining when utilising the subspindle. This machine is easily integrated into state of the art gantry loaded and bar feeder systems utilising TAKISAWA's extensive knowledge of full turnkey packages and extended unmanned production solutions. The NC system supports the interactive programming system “TiwaP-1” allowing programmes created by this system to control all the machining directly reducing lead times. The “TCY” series offers effective solutions to meet global manufacturing requirements, proven by excellent performance:

Environment Friendly

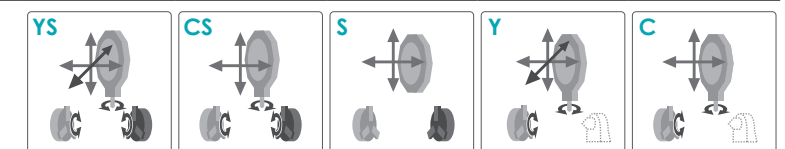


- Highly efficient latest technology servo motors reducing power consumption.
 - Automatic worklight off function used only when operator intervention is required.
 - Control panel cooling system designed for power saving by utilising the natural heat dissipation.
 - With the coolant pump only running when required for use in program unnecessary power consumption is avoided.
 - The built in oil and coolant separator extends the coolant properties and coolant life.
- TCY concerns for the environment.

Composition

		2 Spindle Type			1 Spindle Type	
		YS (Standard Model)	CS	S	Y	C
Items	Right Spindle Stock	●	●	●	—	—
	Tailstock *1	—	—	—	○	○
	Y-Axis	●	—	—	●	—
	C-Axis (Left)	●	●	—	●	●
	C-Axis (Right)	●	●	—	—	—
	Milling	●	●	—	●	●

● : Standard
○ : Optional
— : None



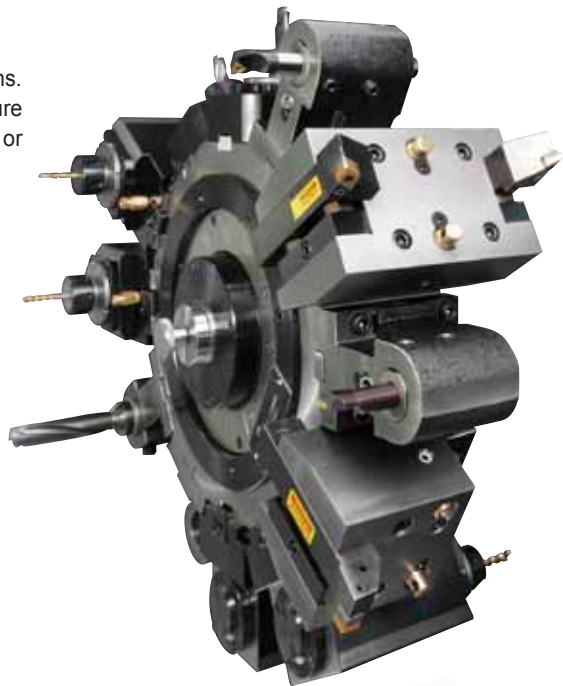
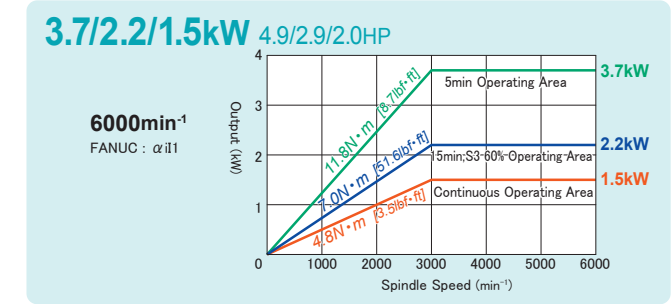
*1) NC Servo Tailstock

TCY-160/TCY-200

Powerful High Performance Milling Turret

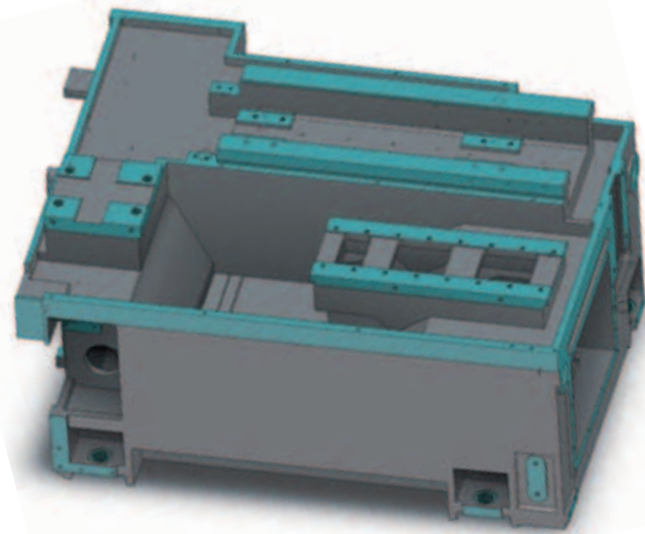
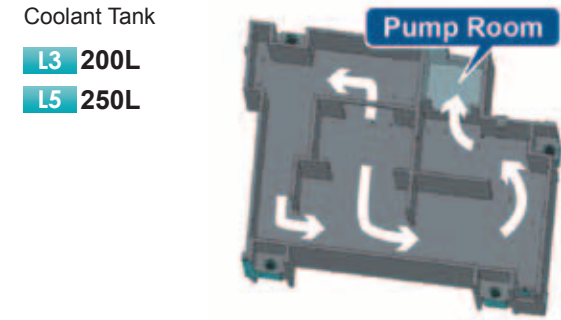
The 12 station turret allows for the milling holders to be mounted in all stations. Each holder is clamped and rigidly bolted in position on the turret to ensure the effective processing of the component by using either milling, drilling, or turning tools.

Rotary Tool Spindle Speed	Height of Square Tool Shank···25mm
6000min⁻¹	Diameter of Boring Bar Shank···32mm
	Tool Spindle Taper Hole···AR20
	Max. Tool Shank Diameter···13mm



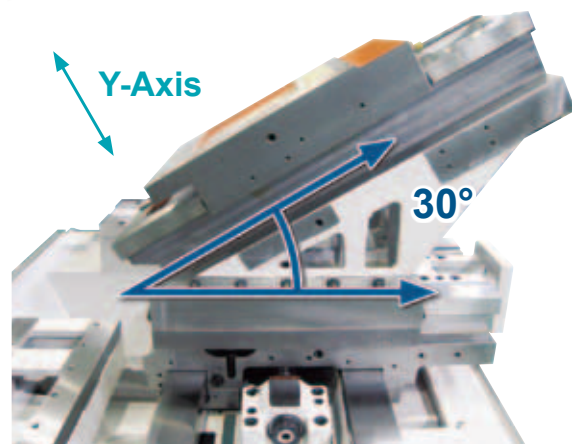
Thermal Balance

This cast machine bed is designed with rigid solid box slideways and incorporates a coolant tank within its base with interconnecting passages allowing the coolant to circulate dissipating any heat and restricting thermal displacement.



Y-Axis

The machine is designed with a low centre of gravity incorporating a 30 degree Y-Axis slideway. This solid box slideway construction ensures maximum durability and rigidity and the “designed in” optimum balanced slideway configuration ensures for high grade machining accuracy.



Tailstock

The high performance servo motor driving the tailstock ensures that the designated. Thrust 1.0 kN - 4.0 kN can be applied and changed in programm to suit the component being machined.

Tailstock Travel	Quill Taper
L3 380mm 15"	TCY-160 MT.3
L5 580mm 22.8"	TCY-200 MT.4

Thrust

1.0kN ~ 4.0kN*

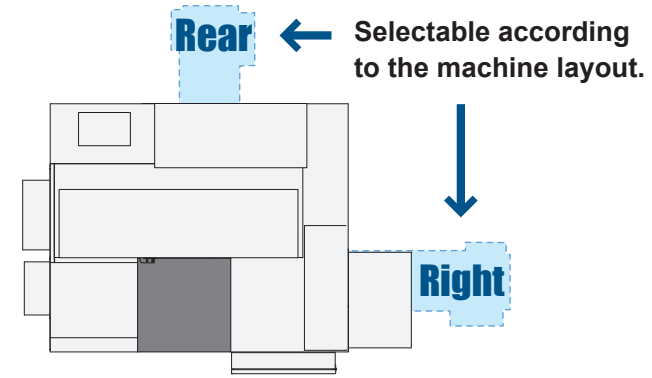
*) Thrust shows a setting range. Actually, it must be adjusted according to the workpiece.



Example of installing Tailstock (TCY-200Y)

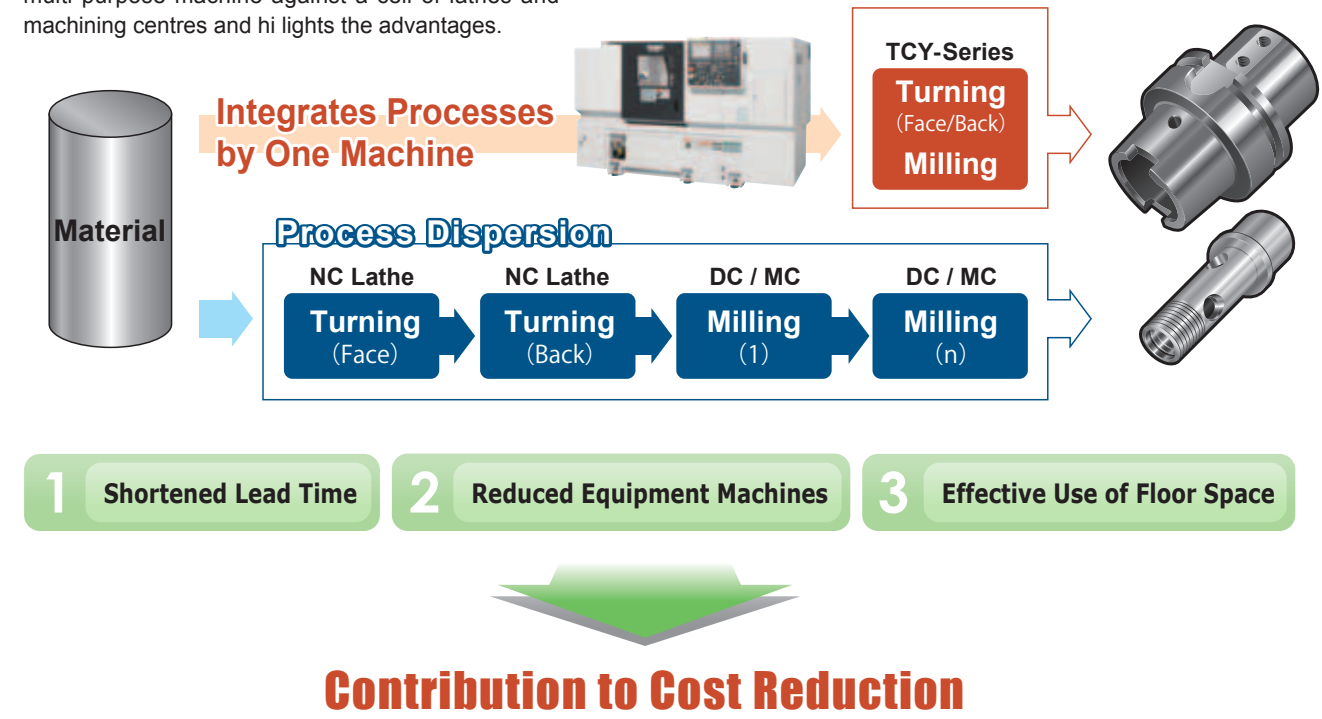
Chip Conveyor

Side entry draw, or rear entry draw chip conveyors for ensuring chip management flexibility. Chip conveyors to suit the customers machine layout and the machine working environment.



Process Integration Flow Chart

Demonstrates the efficiency / advantages of one multi purpose machine against a cell of lathes and machining centres and hi lights the advantages.



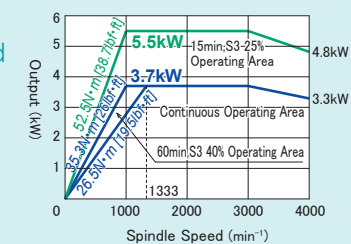


4000min⁻¹
Optional : 6000min⁻¹

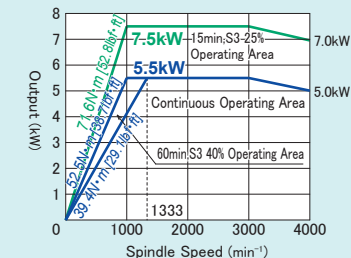
4000min⁻¹
Optional : 6000min⁻¹

Left Spindle

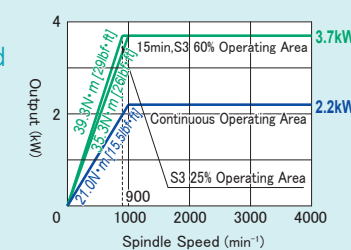
4000min⁻¹
FANUC : β i13



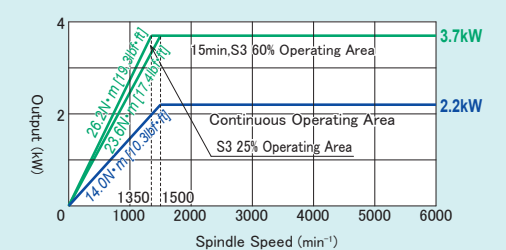
4000min⁻¹
FANUC : β i16



4000min⁻¹
FANUC : α i12



6000min⁻¹
FANUC : αi12



Max. Turning Dia.

ϕ 220mm 8.46"

Max. Turning Length

L3 291mm 11.46"

L5 491mm 19.33"

 **Bar Capacity**
φ42mm 1.65"

Unit : mm [inch](#)

YS/CS/S Type (with Right Spindle) : 390 15.35"
Y/C Type (with Tailstock) : 200 7.87"
Y/C Type (without Tailstock) : 0

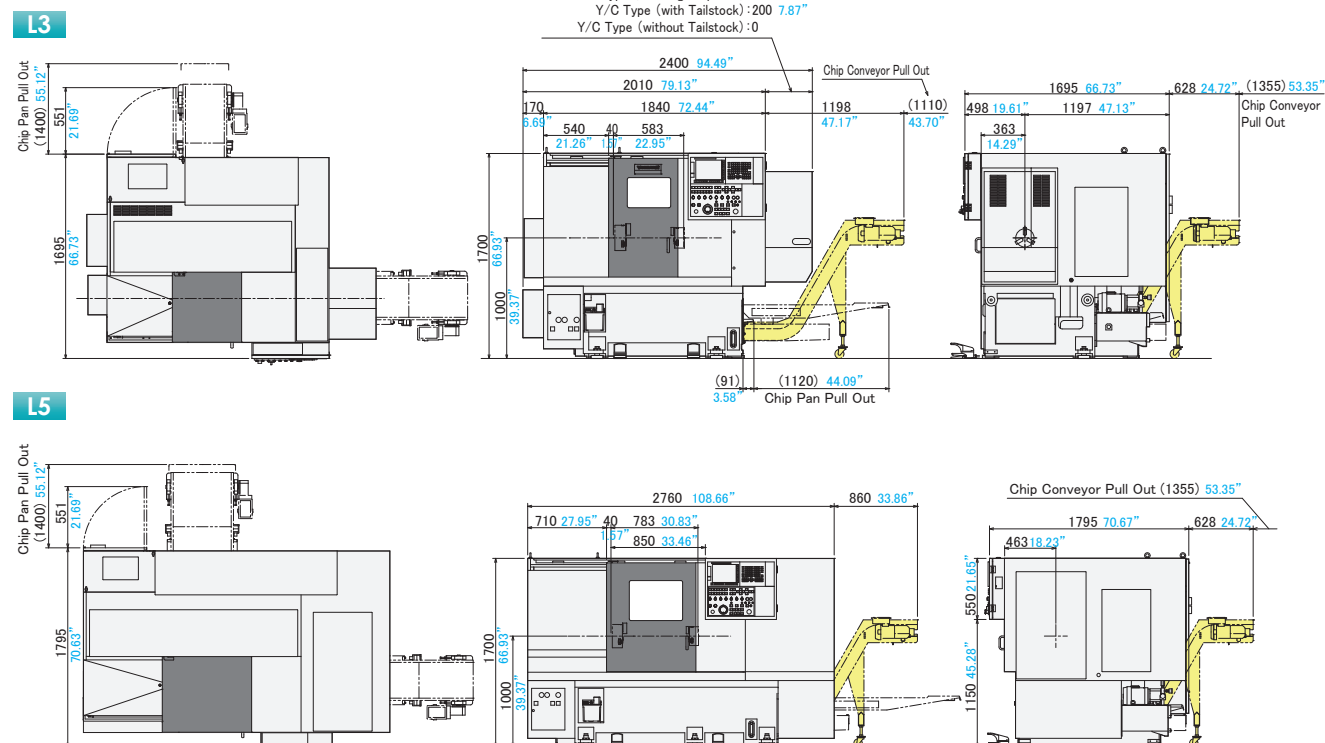




Photo is TCY-200YSL5 "TiwaP-1 Type".

Chuck Size
8in

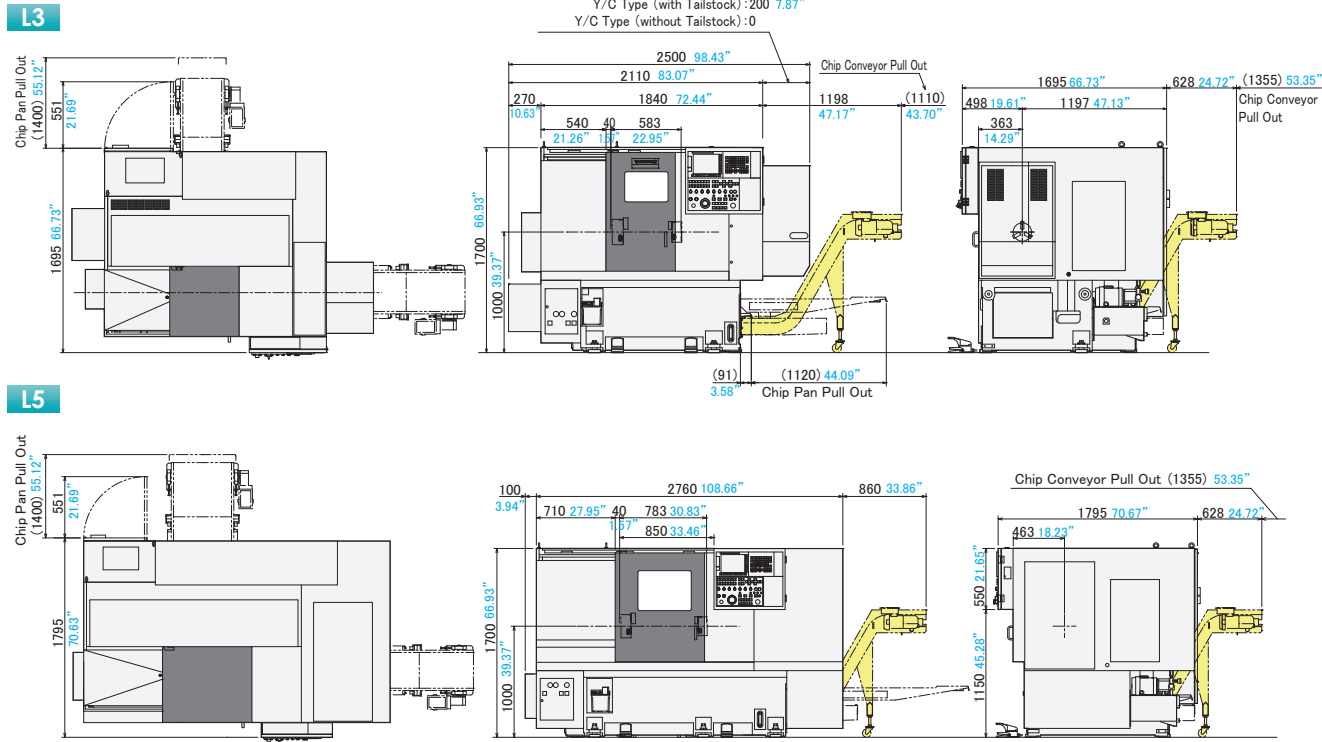
Max. Turning Dia.
φ 220mm 8.46"

Max. Turning Length
L3 254mm 10"
L5 454mm 17.87"

Bar Capacity
φ 51mm 2.01"

Machine Dimensions

Unit : mm inch



Spindle

This FANUC driven high performance spindle, with an inner bearing diameter of 100mm offers excellent rigid support for the combined heavy duty milling and turning forces found when processing a variety of components the spindle has a maximum turning diameter of 220mm dia and a bar capacity of 51mm



8" Left Spindle
Main (A2-6)
Spindle Motor
7.5/5.5kW
Optional : 11/7.5kW
Spindle Speed
3200min⁻¹
Optional : 5000min⁻¹



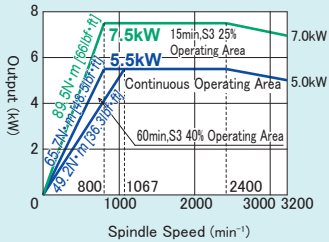
6" Right Spindle
Sub (φ140 Flat)
Spindle Motor
3.7/2.2kW
Spindle Speed
4000min⁻¹
Optional : 6000min⁻¹

The right spindle on YS/CS models is furnished with Cs control to carry out the combined machining processing of the component back face.

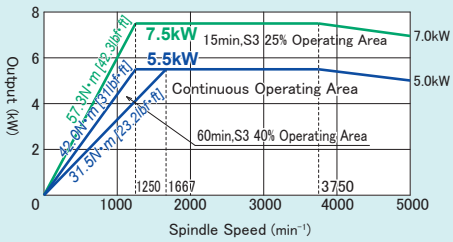
Left Spindle

7.5/5.5kW 10/7.3HP

Standard
3200min⁻¹
FANUC : β i16

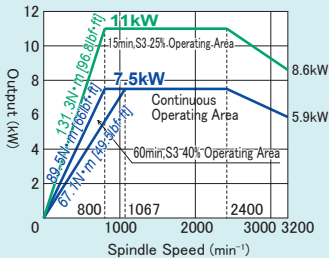


5000min⁻¹
FANUC : β i16

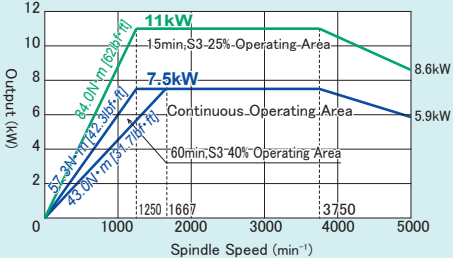


11/7.5kW 14.7/10HP

3200min⁻¹
FANUC : β i18



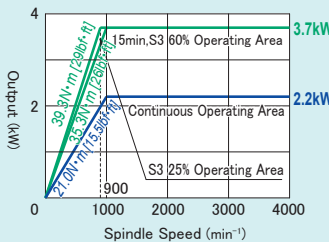
5000min⁻¹
FANUC : β i18



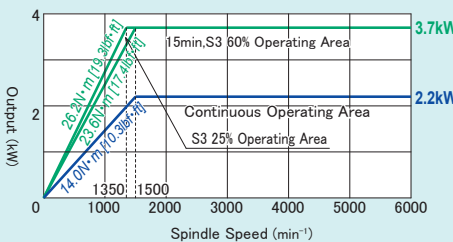
Right Spindle

3.7/2.2kW 4.9/2.9HP

Standard
4000min⁻¹
FANUC : α i12



6000min⁻¹
FANUC : α i12

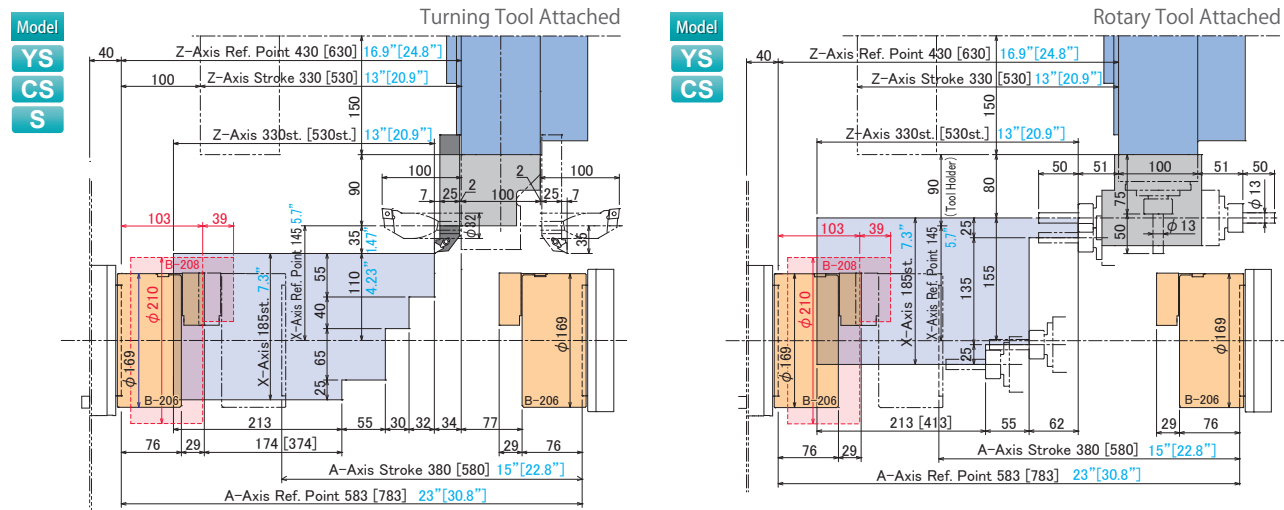


Travel Range

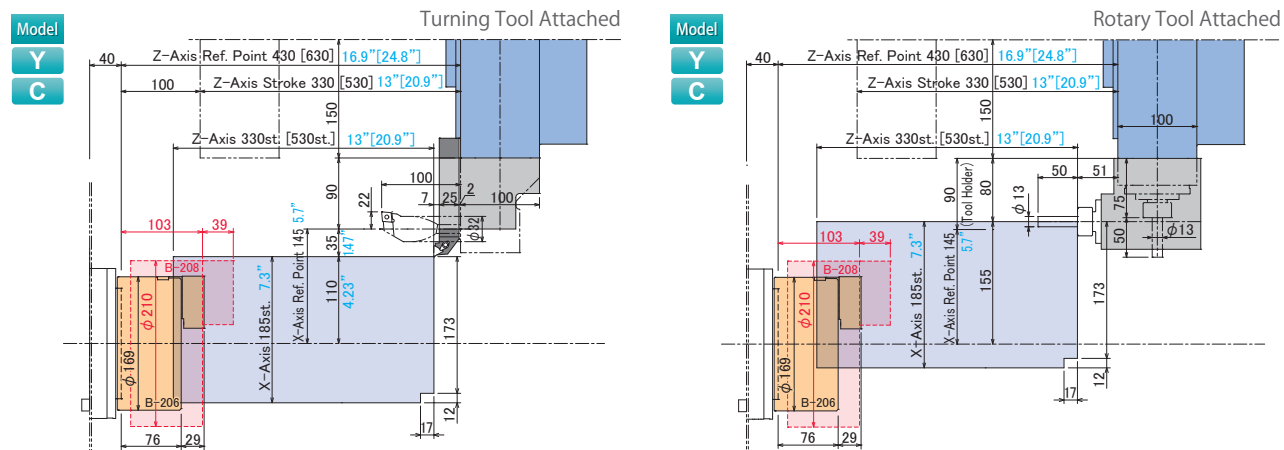
Unit : mm inch

[] dimension are L5. Left Spindle...B206 : TCY-160, B-208 : TCY-200

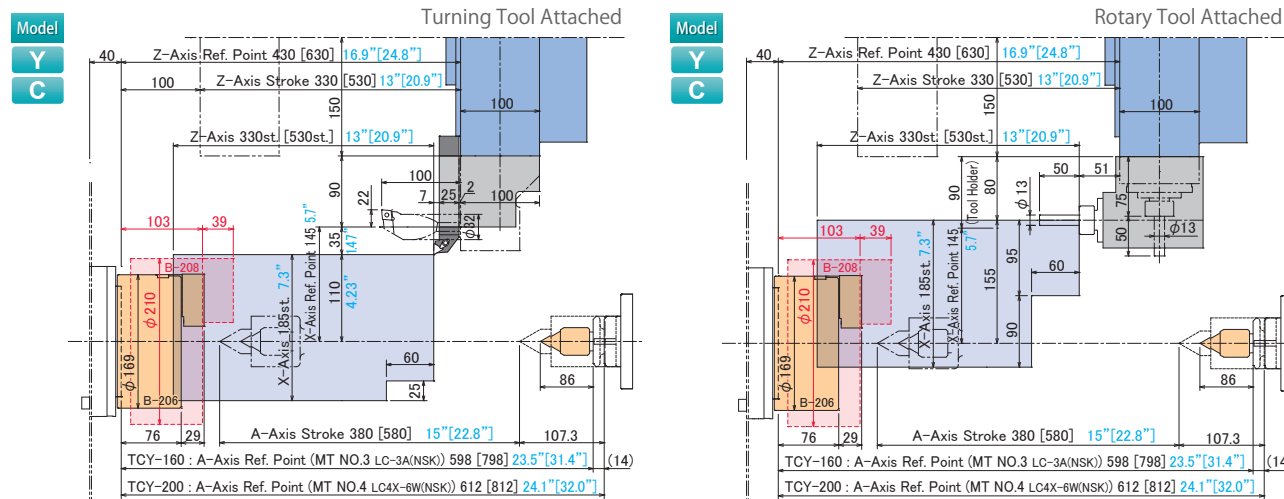
with Right Spindle



without Right Spindle, Tailstock



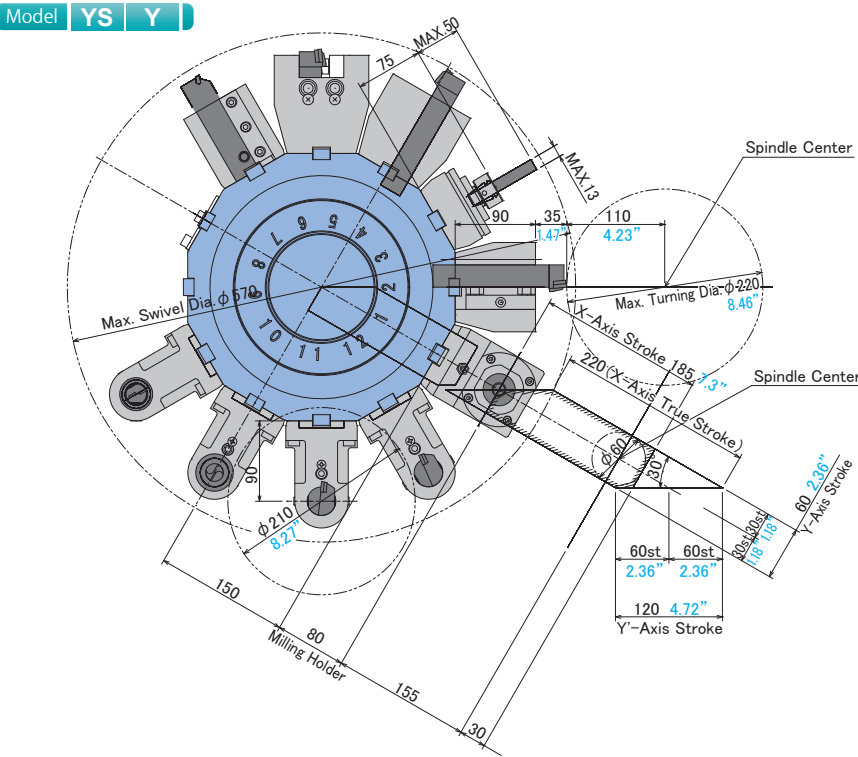
with Tailstock



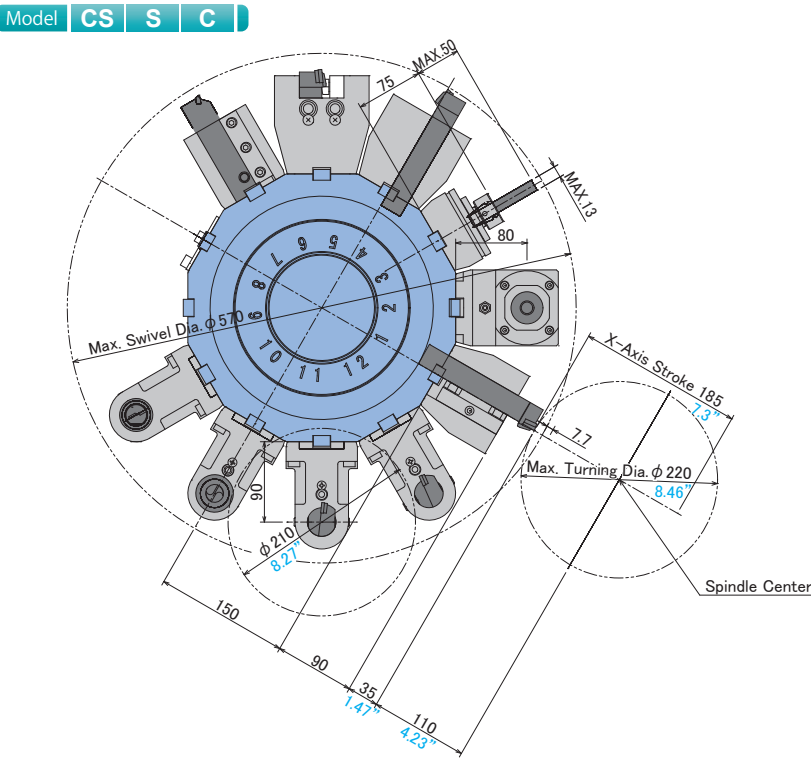
Interference

Unit : mm inch

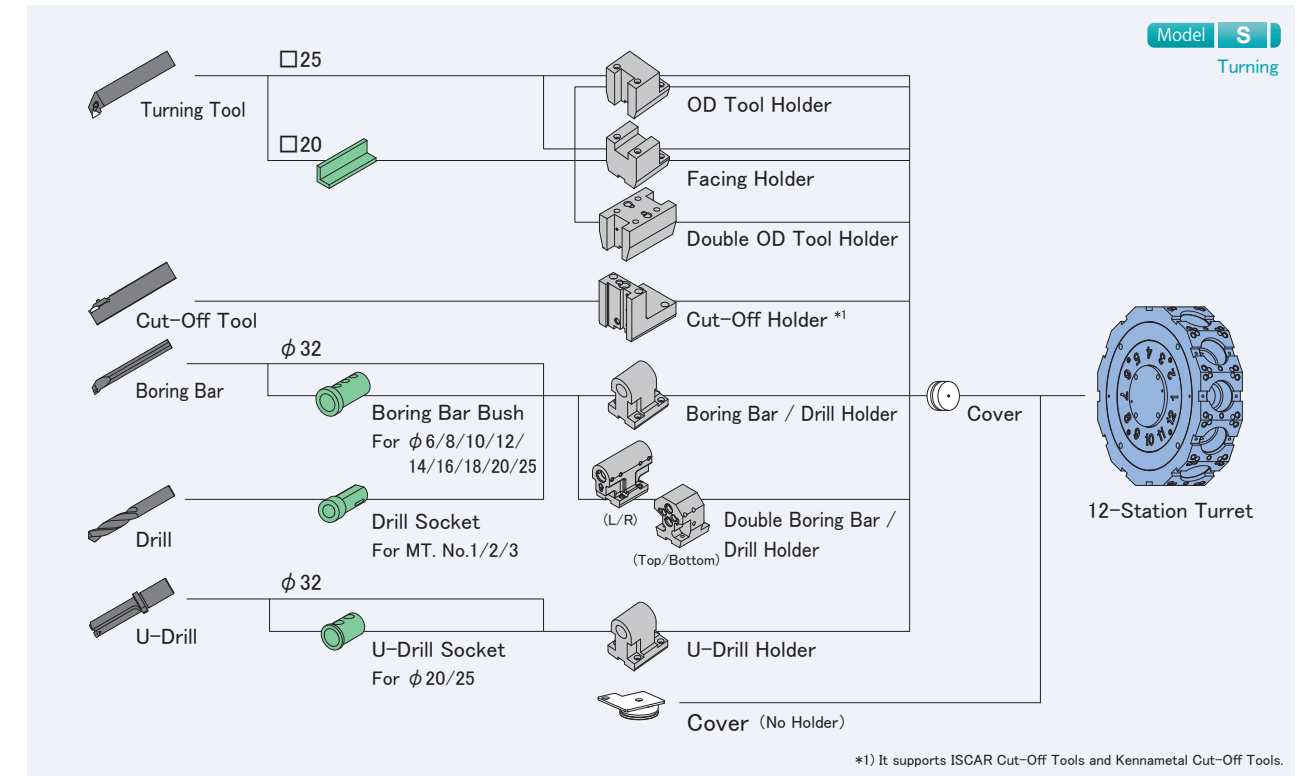
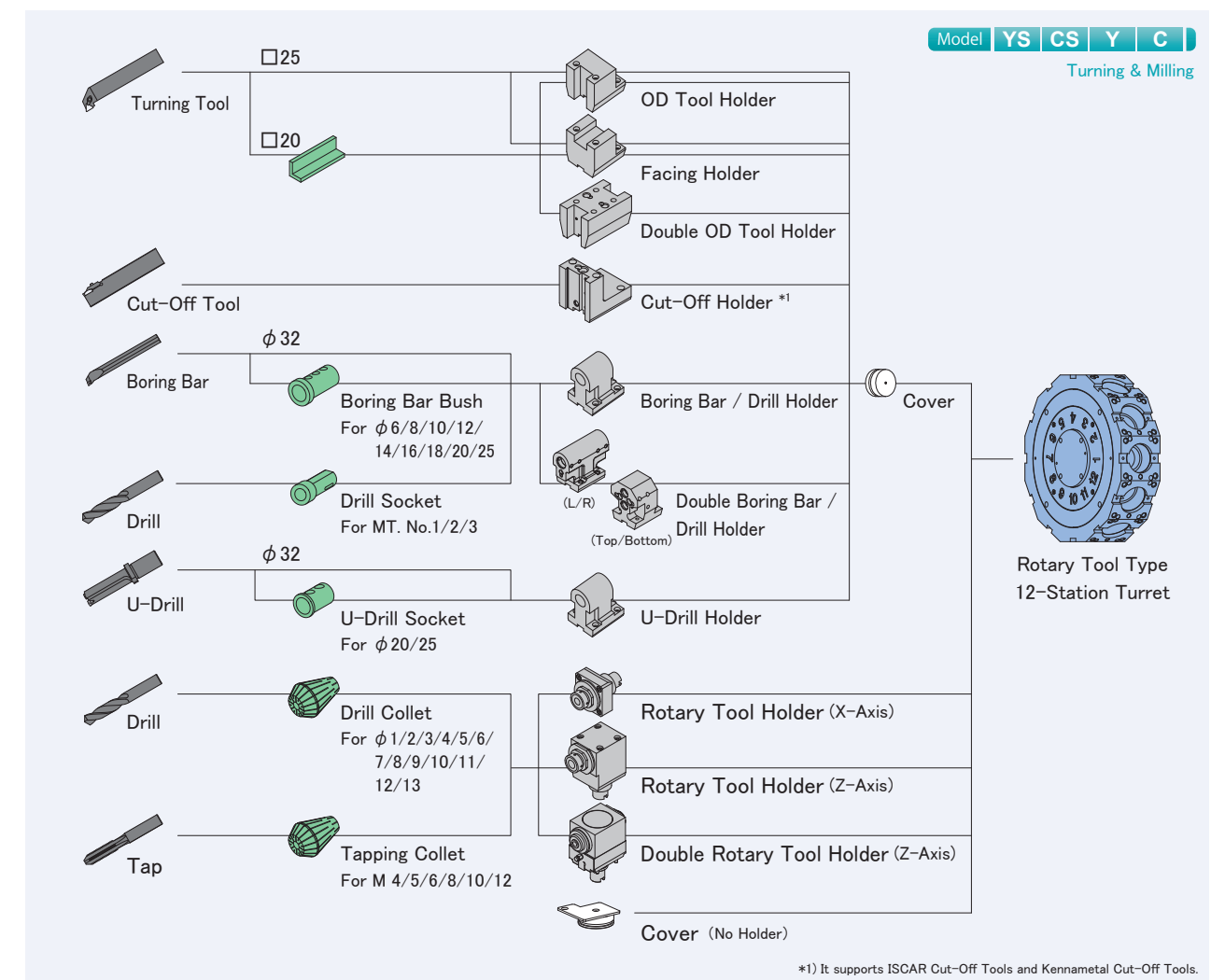
with Y-Axis



without Y-Axis



Tooling System



Automation

The optimum automated production system is easily achievable by using TAKISAWA's technical expertise, gained over many years developing gantry loaded machining solutions from a single gantry loaded cell to multiple units linked in a line for full turnkey solutions of billeted or casting parts for the gantry loaded systems there are three main types available A, B, and C. These consist of one gantry work feeder delivering raw material components to, and finished machined components from the machining platform back for loading into the work stocker type a and b one have work stocker located to the left or right of the machine.

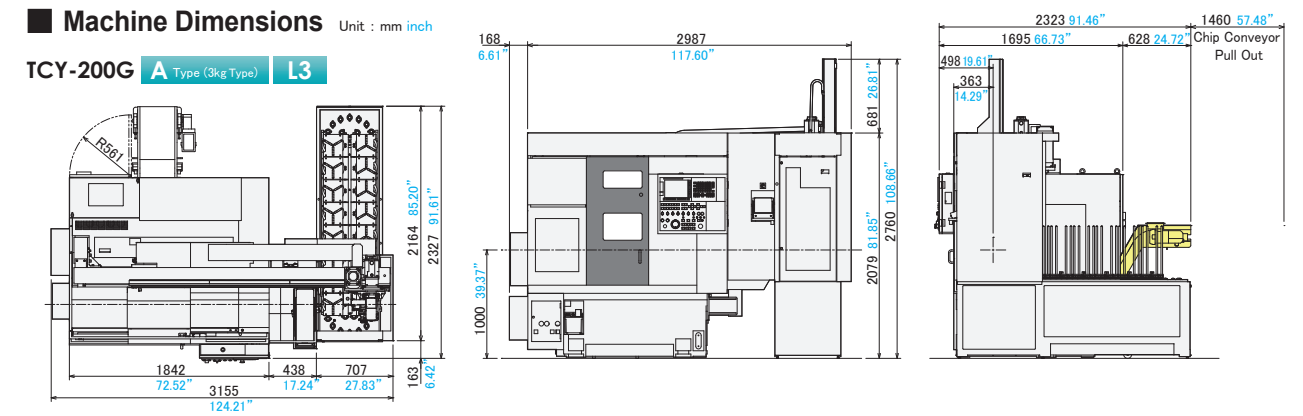
In the case of the C type one work feeder has a work stocker located either side of the machine to facilitate the extended unmanned working hours available.

In process gauging systems and also quality checking can be programmed in to select samples for quality auditing delivered to a chute whilst the machine is running by program for example every 20 parts.

Loader Specification			TCY-160	TCY-200	
				0.7kg Type	3kg Type
Target Workpiece	Outside Diameter	mm	100	100	160
	Length	mm	60	45/60	50/100
	Weight	kg	0.7	0.7	3
Running Speed	Vertical	m/min ⁻¹	150	150	150
	Longitudinal	m/min ⁻¹	150	150	180

*) Target workpiece dimensions may vary depending on the chuck specifications and workpiece shape. Please contact our sales representatives for details.

Work Feeder Specifications			TCY-160	TCY-200	
				0.7kg Type	3kg Type
Number of Pallets			14	14	16
Loading Capacity (Per Pallet)			kg 25	25	40
Maximum Height			mm 450	450	450



Bar Feeder Automation

The bar capacities of TCY-160 42mm and TCY-200 51mm can be fully utilized by using various bar feeder manufacturers products which can easily be interfaced into the machine control this can be enhanced by using magazine bar feeder equipment which will extend the unmanned hours that the machine can run.

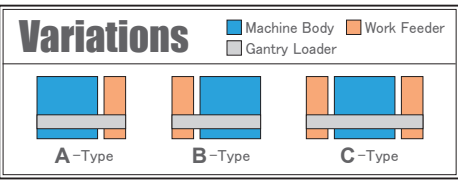
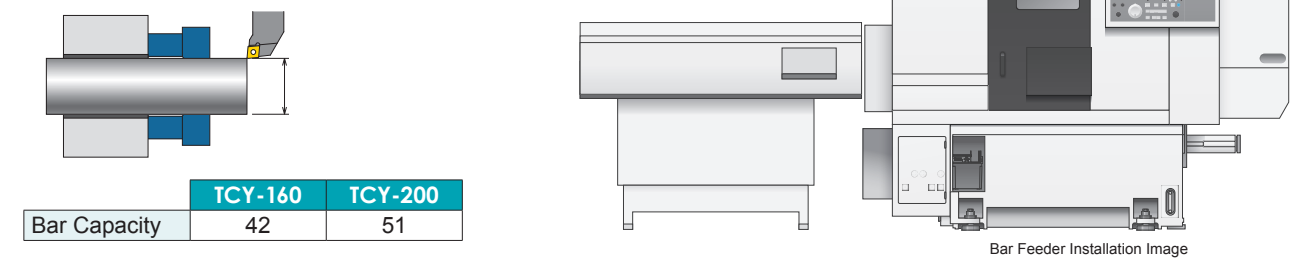


Photo is "TCY-160SL3 A Type".



Loader Hand

Machine Composition

		TCY-160YS (Standard Model)	TCY-160CS	TCY-160S	TCY-160Y	TCY-160C
Items	Right Spindle Stock	●	●	●	—	—
	Tailstock	—	—	—	○	○
	Y-Axis	●	—	—	●	—
	C-Axis (Left)	●	●	—	●	●
	C-Axis (Right)	●	●	—	—	—
	Milling	●	●	—	●	●

● : Standard ○ : Optional — : None

Machine Specifications

			TCY-160YS	TCY-160CS	TCY-160S	TCY-160Y	TCY-160C
Capability・Capacity	Max. Swing	mm <i>inch</i>	340 13.39"				
	Max. Turning Diameter	mm <i>inch</i>	220 8.46"				
	Max. Turning Length *1	mm <i>inch</i>	L3 : 291 11.46" L5 : 491 19.33"				
	Spindle Nose to Nose Maximum Distance	mm <i>inch</i>	L3 : 583 23" L5 : 783 30.83"				-
	Bar Capacity (Left Spindle)	mm <i>inch</i>	42 1.65"				-
	Bar Capacity (Right Spindle)	mm <i>inch</i>	42 1.65"				-
Travel	X-Axis Travel (Turret)	mm <i>inch</i>	185 7.3"				
	Z-Axis Travel (Turret)	mm <i>inch</i>	L3 : 330 13" L5 : 530 20.9"				
	Y-Axis Travel (Turret)	mm <i>inch</i>	±30 1.18"	-		±30 1.18"	-
	A-Axis Travel (Right Spindle Stock)	mm <i>inch</i>	L3 : 380 15" L5 : 580 22.8"				
Left Spindle (6")	Maximum Speed	min ⁻¹	4000 6000				
	Minimum Indexing Angle	deg	0.001		-		0.001
	Type of Spindle Nose (Nom, Code)		φ140 Flat				
	Spindle-Through Hole Diameter	mm <i>inch</i>	53 2.09"				
	Bearing Inside Diameter	mm <i>inch</i>	90 3.54"				
Right Spindle (6")	Maximum Speed	min ⁻¹	4000 6000				-
	Minimum Indexing Angle	deg	0.001		-		-
	Type of Spindle Nose (Nom, Code)		φ140 Flat				-
	Spindle-Through Hole Diameter	mm <i>inch</i>	53 2.09"				-
	Bearing Inside Diameter	mm <i>inch</i>	90 3.54"				-
Turret	Number of Turrets		1				
	Type of Turret		12-Station Drum Turret, All-Holder Type				
	Number of Tools		12				
	Height of Square Tool Shank	mm <i>inch</i>	25 1"				
	Diameter of Boring Bar Shank	mm <i>inch</i>	32 1.25"				
Rotary Tool	Number of Rotary Tools		12		-		12
	Maximum Speed	min ⁻¹	6000		-		6000
	Tool Shank Maximum Diameter	mm <i>inch</i>	φ13 0.51", M8		-		φ13 0.51", M8
	Tool Spindle Taper Hole (Type, Number)		AR20		-		AR20
	Bearing Inside Diameter of Tool Spindle	mm <i>inch</i>	30 1.8"		-		30 1.8"
Feedrate	Rapid Traverse (Turret)	m/min <i>ipm</i>	X:20 / Z:24 / Y:10 X:787.40" / Z:944.88" / Y:393.70"	X:20 / Z:24 X:787.40" / Z:944.88"		X:20 / Z:24 / Y:10 X:787.40" / Z:944.88" / Y:393.70"	X:20 / Z:24 X:787.40" / Z:944.88"
	Rapid Traverse (Right Spindle Stock/Tailstock)	m/min <i>ipm</i>	A : 20 787.40"				
	Rapid Traverse (Left & Right Spindle Stock)	min ⁻¹	C : 100 (L/R)				
	Jog Feedrate	m/min <i>ipm</i>	X, Z, Y, A : 0 ~ 1260 49.61"	X, Z, A : 0 ~ 1260 49.61"		X, Z, Y, A : 0 ~ 1260 49.61"	X, Z, A : 0 ~ 1260 49.61"
Tailstock	Travel of Tailstock	mm <i>inch</i>	-			L3 : 380 15" L5 : 580 22.8"	
	Type of Taper Hole in Quill		-			MT3	
Motor	Spindle Motor for Left Spindle (15 min/cont.)	kW <i>HP</i>	5.5/3.7 7.5/5.5 7.3/4.9 10/7.3				
	Spindle Motor for Right Spindle (15 min/cont.)	kW <i>HP</i>	3.7/2.2 4.9/2.9				-
	Rotary Tool Spindle Motor (5 min/15 min/cont.)	kW <i>HP</i>	3.7/2.2/1.5 4.9/2.9/2.0			3.7/2.2/1.5 4.9/2.9/2.0	
	Axis Feed Motor	kW <i>HP</i>	X, Y, A, T:1.2 / Z:1.4 X, Y, A, T:1.6 / Z:1.9	X, A, T:1.2 / Z:1.4 X, A, T:1.6 / Z:1.9		X, Y, A, T:1.2 / Z:1.4 X, Y, A, T:1.6 / Z:1.9	X, A, T:1.2 / Z:1.4 X, A, T:1.6 / Z:1.9
	Hydraulic Pump Motor	kW <i>HP</i>	0.75 1.0				
	Coolant Pump Motor	kW <i>HP</i>	0.25 0.3				
Power Sources Required	(NC Unit : 0i-TD)	kVA	11 13		13 16	10 12	
	(NC Unit : 32i-B)	kVA	11 13		11 13	8 10	
	Air Pressure Source	MPa, L/min ⁻¹	0.4, 100				
Tank Capacity	Hydraulic Unit Tank	L <i>gal</i>	19 5.02				
	Lubricant Tank	L <i>gal</i>	1.8 0.48				
	Coolant Tank	L <i>gal</i>	L3 : 200 52.8 L5 : 250 66				
Machine Size	Machine Height	mm <i>inch</i>	1700 66.93"				
	Height From Floor to Spindle Centerline	mm <i>inch</i>	1000 39.37"				
	Floor Space Required	mm <i>inch</i>	L3 : 2400×1695 94.49"×66.73" L5 : 2760×1795 108.66"×70.67"				L3 : 2010×1695 79.13"×66.73" 2210×1695 *2 87.01"×66.73" L5 : 2760×1795 108.66"×70.67"
	Machine Weight	kg <i>lbs</i>	L3 : 3500 7700 L5 : 4100 9020				

Red is Optional.
*1) Dimensions are B-206(KITAGAWA)
*2) It is dimensions at the time of the tailstock wearing.

Machine Composition

		TCY-200YS (Standard Model)	TCY-200CS	TCY-200S	TCY-200Y	TCY-200C
Items	Right Spindle Stock	●	●	●	—	—
	Tailstock	—	—	—	○	○
	Y-Axis	●	—	—	●	—
	C-Axis (Left)	●	●	—	●	●
	C-Axis (Right)	●	●	—	—	—
	Milling	●	●	—	●	●

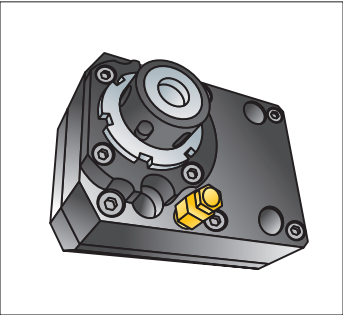
● : Standard ○ : Optional — : None

Machine Specifications

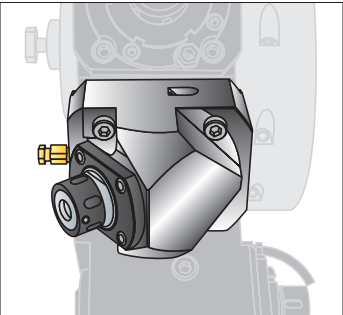
			TCY-200YS	TCY-200CS	TCY-200S	TCY-200Y	TCY-200C		
Capability - Capacity	Max. Swing	mm <i>inch</i>	340 13.39"						
	Max. Turning Diameter	mm <i>inch</i>	220 8.46"						
	Max. Turning Length *1	mm <i>inch</i>	L3 : 254 10.0" L5 : 454 17.87"						
	Spindle Nose to Nose Maximum Distance	mm <i>inch</i>	L3 : 583 23" L5 : 783 30.83"				-		
	Bar Capacity (Left Spindle)	mm <i>inch</i>	51 2.01"						
	Bar Capacity (Right Spindle)	mm <i>inch</i>	42 1.65"				-		
Travel	X-Axis Travel (Turret)	mm <i>inch</i>	185 7.3"						
	Z-Axis Travel (Turret)	mm <i>inch</i>	L3 : 330 13" L5 : 530 20.9"						
	Y-Axis Travel (Turret)	mm <i>inch</i>	±30 1.18"	-			±30 1.18"	-	
	A-Axis Travel (Right Spindle Stock)	mm <i>inch</i>	L3 : 380 15" L5 : 580 22.8"						
Left Spindle (8")	Maximum Speed	min ⁻¹	3200 5000						
	Minimum Indexing Angle	deg	0.001		-		0.001		
	Type of Spindle Nose (Nom, Code)		A2-6						
	Spindle-Through Hole Diameter	mm <i>inch</i>	63 2.48"						
	Bearing Inside Diameter	mm <i>inch</i>	100 3.94"						
Right Spindle (6")	Maximum Speed	min ⁻¹	4000 6000				-		
	Minimum Indexing Angle	deg	0.001		-		-		
	Type of Spindle Nose (Nom, Code)		φ140 Flat				-		
	Spindle-Through Hole Diameter	mm <i>inch</i>	53 2.09"				-		
	Bearing Inside Diameter	mm <i>inch</i>	90 3.54"				-		
Turret	Number of Turrets		1						
	Type of Turret		12-Station Drum Turret, All-Holder Type						
	Number of Tools		12						
	Height of Square Tool Shank	mm <i>inch</i>	25 1"						
	Diameter of Boring Bar Shank	mm <i>inch</i>	32 1.25"						
Rotary Tool	Number of Rotary Tools		12		-		12		
	Maximum Speed	min ⁻¹	6000		-		6000		
	Tool Shank Maximum Diameter	mm <i>inch</i>	φ13 0.51", M8		-		φ13 0.51", M8		
	Tool Spindle Taper Hole (Type, Number)		AR20		-		AR20		
	Bearing Inside Diameter of Tool Spindle	mm <i>inch</i>	30 1.8"		-		30 1.8"		
Feedrate	Rapid Traverse (Turret)	m/min <i>ipm</i>	X:20 / Z:24 / Y:10 X:787.40" / Z:944.88" / Y:393.70"	X:20 / Z:24 X:787.40" / Z:944.88"		X:20 / Z:24 / Y:10 X:787.40" / Z:944.88" / Y:393.70"		X:20 / Z:24 X:787.40" / Z:944.88"	
	Rapid Traverse (Right Spindle Stock/Tailstock)	m/min <i>ipm</i>	A : 20 787.40"						
	Rapid Traverse (Left & Right Spindle Stock)	min ⁻¹	C : 100 (L/R)			-			C : 100 (L)
	Jog Feedrate	m/min <i>ipm</i>	X, Z, Y, A : 0 ~ 1260 49.61"	X, Z, A : 0 ~ 1260 49.61"		X, Z, Y, A : 0 ~ 1260 49.61"		X, Z, A : 0 ~ 1260 49.61"	
Tailstock	Travel of Tailstock	mm <i>inch</i>	-			L3 : 380 15" L5 : 580 22.8"			
	Type of Taper Hole in Quill		-			MT4			
Motor	Spindle Motor for Left Spindle (15 min/cont.)	kW <i>HP</i>	7.5/5.5 11/7.5 10/7.3 14.7/10						
	Spindle Motor for Right Spindle (15 min/cont.)	kW <i>HP</i>	3.7/2.2 4.9/2.9			-			
	Rotary Tool Spindle Motor (5 min/15 min/cont.)	kW <i>HP</i>	3.7/2.2/1.5 4.9/2.9/2.0		-		3.7/2.2/1.5 4.9/2.9/2.0		
	Axis Feed Motor	kW <i>HP</i>	X, Y, A, T:1.2 / Z:1.4 X, Y, A, T:1.6 / Z:1.9	X, A, T:1.2 / Z:1.4 X, A, T:1.6 / Z:1.9		X, Y, A, T:1.2 / Z:1.4 X, Y, A, T:1.6 / Z:1.9		X, A, T:1.2 / Z:1.4 X, A, T:1.6 / Z:1.9	
	Hydraulic Pump Motor	kW <i>HP</i>	0.75 1.0						
	Coolant Pump Motor	kW <i>HP</i>	0.25 0.3						
Power Sources Required	Electric Power (NC Unit : 0i-TD)	kVA	13 15		16 18		12 15		
	(NC Unit : 32i-B)	kVA	13 15		13 15		10 13		
	Air Pressure Source	MPa, L/min ⁻¹	0.4, 100						
Tank Capacity	Hydraulic Unit Tank	L <i>gal</i>	19 5.02						
	Lubricant Tank	L <i>gal</i>	1.8 0.48						
	Coolant Tank	L <i>gal</i>	L3 : 200 52.8 L5 : 250 66						
Machine Size	Machine Height	mm <i>inch</i>	1700 66.93"						
	Height From Floor to Spindle Centerline	mm <i>inch</i>	1000 39.37"						
	Floor Space Required	mm <i>inch</i>	L3 : 2500×1695 98.43"×66.73" L5 : 2860×1795 112.60"×70.67"				L3 : 2110×1695 83.07"×66.73" 2310×1695 *2 90.94"×66.73" L5 : 2860×1795 112.60"×70.67"		
	Machine Weight	kg <i>lbs</i>	L3 : 3500 7700 L5 : 4100 9020						

Machine Specifications and Accessories

Items	YS (Std.)	CS	S	Y	C
Right Spindle Stock (Sub Spindle)	●	●	●	-	-
Tailstock (NC Servo Type)	-	-	-	○	○
Y-Axis	●	-	-	●	-
Left C-Axis	●	●	-	●	●
Right C-Axis	●	●	-	-	-
Milling	●	●	-	●	●
Sware Wash Away	●	●	●	●	●
Chuck Footswitch (Left Spindle)	●	●	●	●	●
Chuck Footswitch (Right Spindle)	●	●	●	-	-
Chuck Airblow (Right Spindle)	●	●	●	-	-
Oil-Water Separator (Box Type)	●	●	●	●	●
Chuck Open/Close M-Function	●	●	●	●	●
Disk Brake (Left Spindle)	●	●	-	●	●
Disk Brake (Right Spindle)	●	●	-	-	-
Safety Window (Polycarbonate + Tempered Glass)	●	●	●	●	●
Door Interlock + Lamp	●	●	●	●	●
Chuck OT	●	●	●	●	●
Hollow Cylinder for Hydraulic Chuck (with Check Valve)	Left Spindle		●	●	●
	• TCY-160		SS1246		
	• TCY-200		SS1452		
	Right Spindle		●	●	●
Coolant Pump (250W)	• TCY-160		SS1246		
	• TCY-200		SS1246		
Lighting Apparatus	●	●	●	●	●
Working Tool Set	●	●	●	●	●
Instruction Manual	●	●	●	●	●



[Optional] Offset Rotary Tool Holder (X-Axis)



[Optional] 45° Angle Milling Holder

Items	YS (Std.)	CS	S	Y	C
Hydraulic Chuck	○	○	○	○	○
Soft Jaws	○	○	○	○	○
Collet Chuck (Standstill Type)	○	○	○	○	○
Collet	○	○	○	○	○
Hydraulic Main Pressure Check	○	○	○	○	○
Pneumatic Main Pressure Check	○	○	○	○	○
Footswitch with a Locking Mechanism	○	○	○	○	○
Seating Control	○	○	○	○	○
Spindle Outside Airblow	○	○	○	○	○
Spindle Through Airblow	○	○	○	○	○
Spindle Above Coolant	○	○	○	○	○
Spindle Through Coolant	○	○	○	○	○
OD Tool Holder	○	○	○	○	○
Facing Holder	○	○	○	○	○
Double OD Tool Holder	○	○	○	-	-
Cut-Off Holder *1	○	○	○	○	○
Spacer (Stopper for □20 Holder)	○	○	○	○	○
Boring Bar / Drill Holder	○	○	○	○	○
Double Boring Bar / Drill Holder (Top/Bottom)	○	○	○	○	○
Double Boring Bar / Drill Holder (L/R)	○	○	○	-	-
U-Drill Holder	○	○	○	○	○
Boring Bar Bush	○	○	○	○	○
Drill Socket	○	○	○	○	○
U-Drill Socket	○	○	○	○	○
Rotary Tool Holder (X-Axis)	○	○	-	○	○
Rotary Tool Holder (Z-Axis)	○	○	-	○	○
Double Rotary Tool Holder (Z-Axis)	○	○	-	-	-
35° Angle Rotary Tool Holder	○	○	-	○	○
45° Angle Rotary Tool Holder	○	○	-	○	○
Angle Adjusting Type Rotary Tool Holder	○	○	-	○	○
Gear Hobbing Holder	○	○	-	○	○
Milling Collet	○	○	○	○	○
Tool Setter (Manual Type) *2	○	○	○	○	○
Tool Setter (Removable Type)	○	○	○	○	○
RAKU-RAKU Monitor 3	○	○	○	○	○
Total Counter	○	○	○	○	○
Preset Counter (with M-Function)	○	○	○	○	○
Multi Tool Counter (with M-Function)	○	○	○	○	○
Rotary Beacon Light (1-Color)	○	○	○	○	○
Signal Tower Light (1-Color / Lighting)	○	○	○	○	○
Signal Tower Light (3-Color / Lighting)	○	○	○	○	○
Auto Power-Off System	○	○	○	○	○
Circuit Breaker	○	○	○	○	○
Lighting Apparatus (10W)	○	○	○	○	○
100V Outlet (Single Socket)	○	○	○	○	○
Air Conditioner in Control Panel	○	○	○	○	○
Chip Conveyor (Side Discharge)	○	○	○	○	○
Chip Conveyor (Rear Discharge)	○	○	○	○	○
Chip Conveyor Interface	○	○	○	○	○
Chip Bucket	○	○	○	○	○
Auto Door	○	○	○	○	○
Coolant Pump (520W)	○	○	○	○	○
Gantry Loader System	○	○	○	○	○
Robot Interface	○	○	○	○	○
Bar Feeder System	○	○	○	○	○
Bar Feeder Interface (Left Spindle)	○	○	○	○	○
Parts Catcher (Left Spindle)	○	○	○	○	○
Parts Catcher (Right Spindle)	○	○	○	-	-
Integrated Parts Un-loader (for L5)	○	○	○	-	-
User Special Color	○	○	○	○	○

● : Standard ○ : Optional - : None

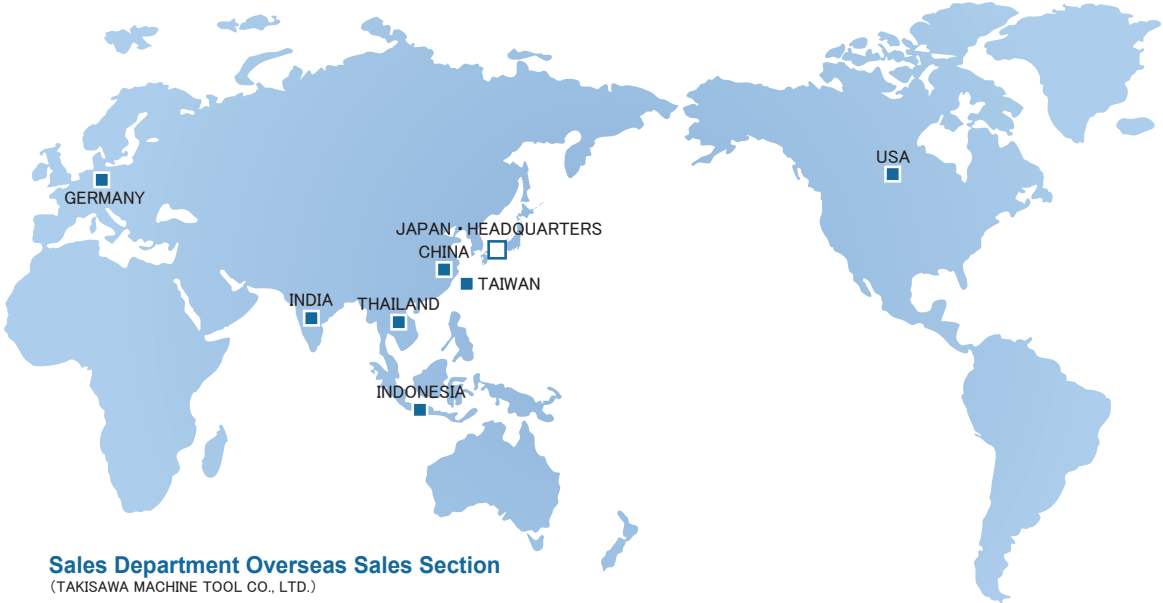
*1) I It supports ISCAR Cut-Off Tools and Kennametal Cut-Off Tools.
*2) The tool setter (manual rotation type) is applicable only to the tools for the left spindle.

Network

The TAKISAWA Technology and Network Services the World.

Please feel free to contact us to your nearest sales representatives.

Overseas Network



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Nagano Office	TEL : 0263-53-5866 FAX : 0263-53-5870



TiwaP-1

TiwaP-1 is Takisawa Original Software Which is Easy for

"Input"

Easy Programming by Dialogue Conversation

TiwaP-1 is based on Process Registration type Programming involving step by step Process

"Confirmation"

Machining Simulation

Cutting Detail will be Simulated by "3D Animated Cartoon" or "Tool Trace display"

"Operation"

Automatic Operation

The arrangement of machining spindles and processes is automatically recognized to execute the spindle control and C-axis zero point return operation efficiently.

Stored Number of Program — **99**

Available for max 999 Process on each program (incl. last process) and available max 99 Cutting Configurations.

Knowledge of G-codes is not required to make programs.

Anybody can make the Program easily.

Utilizing G code knowledge, **TiwaP-1** creates a program of complicated processes.

Further, **TiwaP-1** enables the interactive program to perform machining in cooperation with an NC program¹.

- ① NC program¹ can be called (set) in the interactive (TiwaP-1) program.
- ② NC program² converted into NC statements by interactive operation (TiwaP-1) can be called (set) in the NC program edited manually.

*1: File name to which NC programs edited manually or created by CAD/CAM have been registered.
*2: O number call.

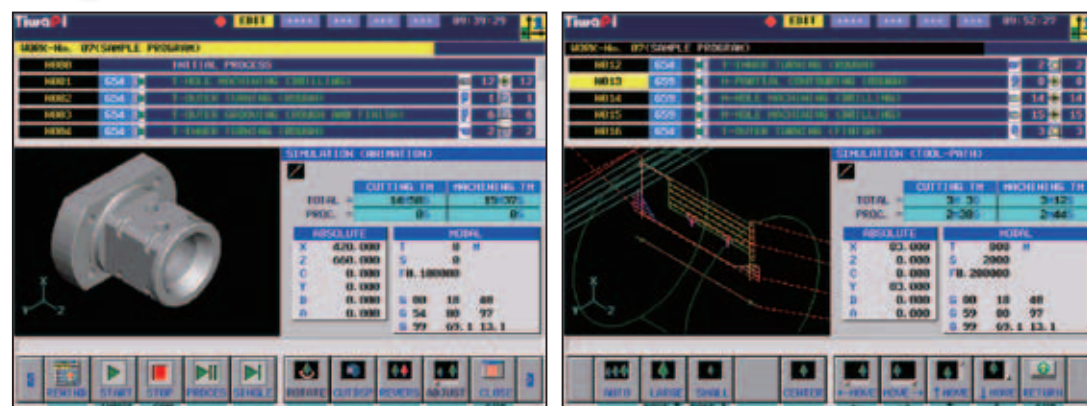
▼ NC Program Edit Screen

▼ Interactive Program Edit Screen



Machining Simulation

Tool passes can be certainly checked before test cuttings by "3D Animation" or "Tool Tracking".



Feature of TiwaP-1

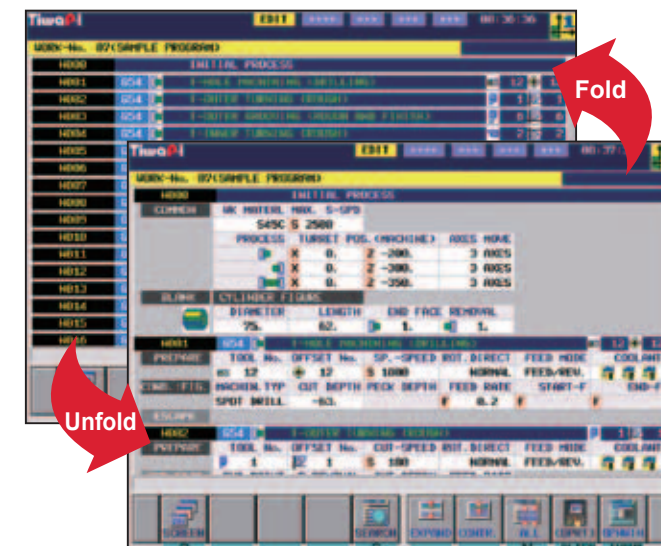
Easy to See

Takisawa's original "Process fold /unfold function" and lucid icons improve visibility.

Operator-friendly and easy to see screen is realized.

▼ 【Folder Display for all Process】

All the flows of Process can be checked on the screen.



▲ 【Elaborate Process display function】

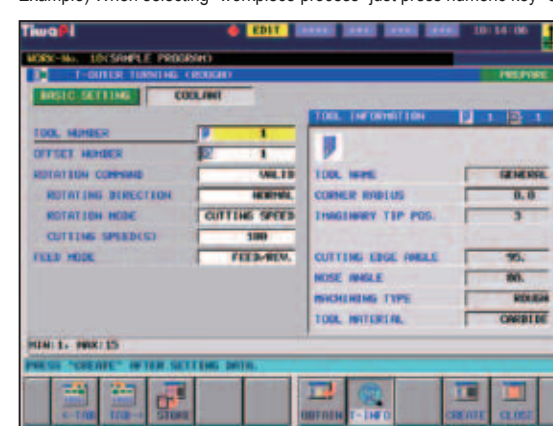
All processing data can be checked and seen on the screen.

Speed Up

When inserting a new processing data through interactivity, there is much less items to enter due to Takisawa Standard Initial Value & Tooling/Material Data.



Example) When selecting "workpiece process" just press numeric key "5".



In case of new workpiece programming, the number of input items is decreased due to automatic cutting data setting.

Easy to Use

During preparing Program, "Reliable Guide Function" provides support

► "Reliable Guide Function"

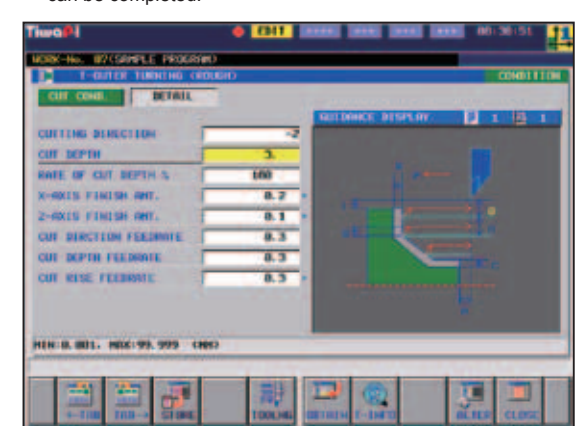
The tag will be arranged in the optimum order automatically by interacting with the machine and selecting the required program.

It is easy for beginners to use interactive data inputting with guiding Figures & Icons. Symbolic soft key on the exclusive window helps inputting complicated arbitrary shapes.

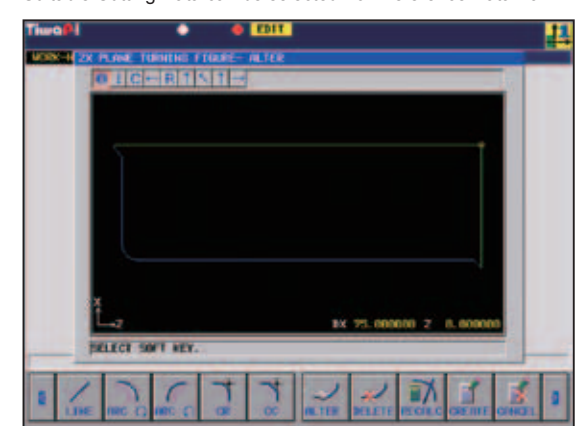
▼ By "Reliable Guide Function" Process Tag will be made automatically



▲ By just inserting Cutting data on each process Tag, the Process can be completed.



Suitable Cutting Data can be selected from reference Data Bank



A certain shaped window with a built-in intersection point that contains an automatic calculation.

Takisawa Standard Initial Value can be customized with your know-how.

► 【Tooling Data & Cutting Parameter】

Cutting parameters (cutting speed, feed rate, and depth of cut) are automatically selected and suggested to the operator by the combination of work piece and the material of inserted tool.

It is a great assist for set-up programs.

TCY-Series

NC Unit Specifications

FANUC : 32i-B, 0i-TD

※ Please contact our sales persons for further information.

Composition

[NC Unit]

Model	Standard Type	Tiwap-1 Type	Optional Type
YS	FANUC 32i-B 8.4" Color LCD Horizontal Soft Keys	FANUC 32i-B 10.4" Color LCD Vertical/Horizontal Soft Keys with TiwaP-I	-
CS			-
S			FANUC 0i-TD *22 8.4" Color LCD/MDI Horizontal Soft Keys
Y	FANUC 0i-TD 8.4" Color LCD/MDI Horizontal Soft Keys		-
C			

Specifications・Contents	YS	CS	S	Y	C
-------------------------	----	----	---	---	---

[Control Axes]

Number of Control Axes	6	5	3	4	3
Simultaneous Number of Control Axes	4	4	3	4	3

[Operation Panel]

Data Input/Output (PC Card, RS-232C)	●
--------------------------------------	---

[Software]

TiwaP-I	Tiwap-1 Type Standard
RAKU-RAKU Monitor 3	○
Measurement Monitor 3	◎

[Safety Devices]

Front Door Interlock	●
Front Door Locking Mechanism	○
Safety Relay	●
Control Panel Breaker with Tripper	○

Main Function List

Specifications・Contents	32i-B			0i-TD		
	YS, CS	Y, C	S	Y, C	S	*22

[Controlled Axes]

Least Input Increment *1	●	●	●	●	●
Max. Programmable Dimension (±999999.999)	●	●	●	●	●
Cs Contouring Control	●	●	-	●	-
Increment System C *2	○	○	○	○	○
Inch/Metric Conversion	○	○	○	●	●
Interlock	●	●	●	●	●
Machine Lock *3	○	○	○	○	○
Emergency Stop	●	●	●	●	●
Stored Stroke Check 1	●	●	●	●	●
Stored Stroke Check 2, 3 *5	○	○	○	○	○
Stored Limit Check Before Move	○	○	○	○	○
Chuck and Tail Stock Barrier *5	○	○	○	○	○
Mirror Image (Each Axis)	▲	▲	▲	▲	▲
Chamfering ON/OFF	●	●	●	●	●
Unexpected Disturbance Torque Detection Function *6	○	○	○	○	○
Position Switch	◎	◎	◎	◎	◎

[Operation]

Automatic Operation (Memory)	●	●	●	●	●
MDI Operation	●	●	●	●	●
DNC Operation *7	◎	◎	◎	◎	◎
DNC Operation with Memory Card *7 *8	◎	◎	◎	◎	◎
Program Number Search	●	●	●	●	●
Sequence Number Search	●	●	●	●	●
Sequence Number Comparison and Stop	○	○	○	●	●
Wrong Operation Prevention	▲	▲	▲	▲	▲
Buffer Register	●	●	●	●	●
Dry Run	●	●	●	●	●
Single Block	●	●	●	●	●
Manual Continuous Feed (JOG)	●	●	●	●	●
Manual Reference Position Return	●	●	●	●	●
Reference Position Setting without DOG	●	●	●	●	●
Manual Handle Feed, 1 Unit	●	●	●	●	●
Handle interruption	◎	◎	◎	◎	◎
Jog and Handle Simultaneous Mode	▲	▲	▲	▲	▲

Specifications・Contents	32i-B			0i-TD		
	YS, CS	Y, C	S	Y, C	S	*22

[Interpolation Functions]

Nano Interpolation	●	●	●	●	●
Positioning (G00)	●	●	●	●	●
Exact Stop Mode (G61)	●	●	●	●	●
Tapping Mode (G63)	●	●	●	●	●
Cutting Mode (G64)	●	●	●	●	●
Exact Stop (G09)	●	●	●	●	●
Linear Interpolation (G01)	●	●	●	●	●
Circular Interpolation (G02/G03)	●	●	●	●	●
Dwell (G04)	●	●	●	●	●
Polar Coordinate Interpolation	●	●	-	●	-
Cylindrical Interpolation	●	●	-	●	-
Helical Interpolation	○	○	-	○	-
Thread Cutting, Synchronous Cutting	●	●	●	●	●
Multi Threading	●	●	●	●	●
Continuous Threading	●	●	●	●	●
Variable Lead Thread Cutting	○	○	○	●	●
Circular Thread Cutting	○	○	○	-	-
Polygon Machining with Two Spindles	○	○	-	▲	-
Skip (G31)	◎	◎	◎	◎	◎
Torque Limit Skip	●	◎	●	◎	●
Reference Position Return (G28)	●	●	●	●	●
Reference Position return Check (G27)	●	●	●	●	●
2nd Reference Position Return (G30)	●	●	●	●	●
3rd, 4th Reference Position Return	◎	◎	◎	◎	◎

[Feed Functions]

Rapid Traverse Override (0%, F0.25%, 50%, 100%)	●	●	●	●	●
Feed Per Minute	●	●	●	●	●
Feed Per Revolution	●	●	●	●	●
Constant Tangential Speed Control	●	●	●	●	●
Cutting Feedrate Clamp	●	●	●	●	●
Automatic Acceleration/Deceleration	●	●	●	●	●
Rapid Traverse Bell-Shaped Acceleration/Deceleration	●	●	●	●	●
Linear Acceleration/Deceleration After Cutting Feed Interpolation	●	●	●	●	●
Bell-shaped Acceleration/Seceleration After Cutting Feed Interpolation	○	○	○	-	-
Feedrate Override (15 Steps)	●	●	●	●	●
Jog Override (15 Steps)	●	●	●	●	●
Override Cancel	●	●	●	●	●
Manual per Revolution Feed	▲	▲	▲	▲	▲

[Program Input]

Program Code (EIA/ISO Auto Recognition)	●	●	●	●	●
Label Skip	●	●	●	●	●
Parity Check	●	●	●	●	●
Control In/Out	●	●	●	●	●
Optional Block Skip, 1 Piece	●	●	●	●	●
Optional Block Skip (2 to 9 Pieces)	◎	◎	◎	◎	◎
Program Number 04 Digits	●	●	●	●	●
Program File Name 32 Characters	●	●	●	-	-
Sequence Number N5 Digits	-	-	-	●	●
Sequence Number N8 Digits	●	●	●	-	-
Absolute/Incremental Programming	●	●	●	●	●
Decimal Point Programming/Pocket Calculator Type Decimal Point Programming	●	●	●	●	●
Diameter/Radius Programming	●	●	●	●	●
Rotary Axis Designation	●	●	●	●	●
Rotary Axis Rollover	●	●	●	●	●
Coordinate System Setting (G50) *9	●	●	●	●	●
Automatic Coordinate System Setting *10	○	●	○	●	○
Workpiece Coordinate System (G54-G59)	●	○	●	▲	●
Workpiece Coordinate System Preset	●	○	●	▲	●
Direct Drawing Dmension Programming *11	○	○	○	▲	▲
G-Code System A	●	●	●	●	●
G-Code System B/C *9	○	○	○	▲	▲
Chamfering/Corner R *12	●	●	●	●	●
Programmable Data Input	●	●	●	●	●
Sub Program Call (10 Levels)	●	●	●	●	●
Custom Macro	●	●	●	●	●
Additional Custom Macro Common Variables	○	○	○	●	●
Canned Cycle	●	●	●	●	●
Multiple Repetitive Cycles	●	●	●	●	●
Multiple Repetitive Cycles II (Pocket Profile)	○	○	○	●	●
Canned Cycle for Drilling	●	●	●	●	●
Circular Dnterpolation by R Programming	●	●	●	●	●
Macro Executor *13	Tiwap	Tiwap	Tiwap	○	○
C Language Executor	Tiwap	Tiwap	Tiwap	-	-
Coordinate System Shift	●	●	●	●	●

Specifications・Contents	32i-B			0i-TD		
	YS, CS	Y, C	S	Y, C	S	*22

Direct Input of Coordinate System Shift ● ● ● ● ● ●

Program Coordinate System Changing Function ● - ● - -

[Auxiliary/Spindle Speed Function]

M Function (M8 Digits)	●	●	●	●	●
High-Speed MSTB Interface	●	●	●	●	●
Multiple Command of Auxiliary Function (3 Pieces)	●	●	●	●	●
Spindle Speed Function (S5 Digits)	●	●	●	●	●
Constant Surface Speed Control	●	●	●	●	●
Spindle Override *14	●	●	●	●	●
Number of Spindle Controls	3	2	2	2	2

Spindle Orientation	L + Rotary Tool + R	L + Rotary Tool	L + R	L + Rotary Tool	L + R
Spindle Synchronous Control	●	-	●	-	●
Simplified Spindle Synchronous Control	●	-	●	-	-
Multi Spindle Control	●	●	●	●	●
Rigid Tap (Spindle Center)	●	●	●	●	●
Rigid Tap (Rotary Tool)	●	●	-	●	-

[Tool Functions / Tool Compensation]

Tool Function (T2+2 Digits)	●	●	●	●	●
Tool Offset Pairs 32-pairs	●	●	●	-	-
Tool Offset Pairs 64-pairs	○	○	○	●	●
Tool Offset Pairs 99-pairs	○	○	○	○	○
Tool Offset Pairs 128-pairs	-	-	-	○ *15	○ *15
Tool Offset Pairs 200-pairs	○	○	○	○ *15	○ *15
Tool Offset Pairs 400-pairs	○	○	○	-	-
Tool Geometry Size Data, 100 Pieces	Tiwap	Tiwap	Tiwap	-	-
Tool Geometry Size Data, 300 Pieces	○	○	○	-	-
Tool Offset	●	●	●	●	●
Y-Axis Offset	YS	Y	-	Y	-
Tool Radius・Tool Nose Radius Compensation	●	●	●	●	●
Tool Geometry/Wear Compensation	●	●	●	●	●
Tool Offset Value Counter Input	●	●	●	●	●
Direct Input of Tool Offset Value Measured	●	●	●	●	●
Direct Input of Tool Offset Value Measured B *16	○	○	○	○	○
Tool Life Management *17	○	○	○	●	●
Tool Offset Memory Switching Function	●	-	●	-	-

[Accuracy Offset Functions]

Backlash Compensation	▲	▲	▲	▲	▲
Backlash Compensation for Each Rapid Traverse and Cutting Feed	▲	▲	▲	▲	▲
Smooth Backlash Compensation	▲	▲	▲	○	○

[Editing]

Part Program Storage Size 512Kbyte (1280m)	-	-	-	●	●
Part Program Storage Size 1Mbyte	●	●	●	○ *15	○ *15
Part Program Storage Size 2Mbyte	○	○	○	-	-
Part Program Storage Size 4Mbyte	○	○	○	-	-
Part Program Storage Size 8Mbyte	○	○	○	-	-
Number of Registerable Programs, 400 Programs	-	-	-	●	●
Number of Registerable Programs, 800 Programs	-	-	-	○ *15	○ *15
Number of Registerable Programs, 1000 Programs	●	●	●	-	-
Part Program Editing	●	●	●	●	●
Program Protect	●	●	●	●	●
Extended Part Program Editing	●	●	●	●	●
Machining Time Stamp	○	○	○	-	-
Multi Part Program Editting	●	●	●	-	-

[Setting / Display]

Status Display	●	●	●	●	●
Clock Function	●	●	●	●	●
Current Position Display	●	●	●	●	●
Program Comment Display (31 Characters)	●	●	●	●	●
Parameter Setting and Display	●	●	●	●	●
Alarm Display	●	●	●	●	●
Alarm Log Display	●	●	●	●	●
Operation History Display	▲	▲	▲	▲	▲
Run Hours and Parts Count Display	●	●	●	●	●
Actual Cutting Feedrate Display	●	●	●	●	●
Display of Spindle Speed and T Code at All Screens	●	●	●	●	●
Servo Setting Screen	●	●	●	●	●
Maintenance Information Screen	●	●	●	●	●
Software Operator's Panel	◎	◎	◎	◎	◎
Machine Operation Menu *19	Tiwap	Tiwap	Tiwap	-	-
Data Protection Key, 1 Kind	●	●	●	●	●
Erase CRT Screen Display	●	●	●	●	●
Help Function	●	●	●	●	●
Self-diagnosis Function	●	●	●	●	●

Specifications・Contents	32i-B			0i-TD		
	YS, CS	Y, C	S	Y, C	S	*22

Periodic Maintenance Screen	●	●	●	●	●
Display of Hardware and Software Configuration	●	●	●	●	●
Graphic Function	Tiwap	Tiwap	Tiwap	●	●
Dynamic Graphic Display	○	○	○	○	○

[Multi-language Display]

English *20	●	●	●	●	●
Japanese (Kanji) *20	▲	▲	▲	▲	▲
Other Language *20 *21	○	○	○	▲	▲
Dynamic Display Language Switching	▲	▲	▲	▲	▲

[Data I/O]

RS-232C Interface for 1ch	●	●	●	●	●
Fast Data Server	◎	◎	◎	◎	◎
External Tool Offset	◎	◎	◎	◎	◎
External Message	●	●	●	●	●
External Workpiece Number Search	◎	◎	◎	◎	◎
Memory Card I/O	●	●	●	●	●
Screen Hard Copy	●	●	●	●	●
Automatic Data Backup (1 Piece)	●	●	●	○	○

● : Standard ○ : Optional ◎ : Special - : None

▲ : Parameter setting is required.

(Note: Normally, the parameters need not to be changed. If the parameters are to be set or changed, understand completely the functions of such parameters. Wrong setting could cause the machine to be moved unexpectedly, resulting in machine or workpiece damage or personal injury.)

Tiwap : Tiwap-1 standard specification. YS : YS type standard specification.

Y : Y type standard specification.

- *1) 0.001mm, 0.0001inch, 0.001deg (C-Axis, B-Axis)
*2) IS-C 0.0001mm 0.00001inch 0.0001deg
*3) Addition of switch is required.
*4) Not coexistent with chuck tailstock barrier.
*5) Not coexistent with Stored Stroke Check 2, 3.
*6) Required when RAKU-RAKU Monitor 3 is used.
*7) DNC run mode transfer switch is required.
*8) CF card and adaptor is required.
*9) Cannot be used when Tiwap-1.
*10) Not coexistent with workpiece coordinate system (G54-G59).
*11) Not coexistent with chamfering/corner R.
*12) Not coexistent with drawing dimension direct input.
*13) Required when RAKU-RAKU Monitor 3 is used.
*14) Spindle 50% ~ 150%, Rotary Tool 70% ~ 120%
*15) Gantry loader type [0i-TD(2)] standard specification.
*16) Tool setter is required. (YS/CS/S : Removable Type 2 Pieces, Y/C : Removable Type or Swing Type)
*17) Cannot be used when RAKU-RAKU Monitor 3 is installed.
*19) Display size exceeding 10.4" required.
*20) Cannot be simultaneous display the other languages.
*21) German, French, Spanish, Italian, Chinese (traditional), Chinese (simplified), Korean, Portuguese, Dutch, Danish, Swedish, Hungarian, Czech, Polish, Russian, Turkish, Bulgarian, Romanian
*22) 0i-TD is incompatible with "Program Coordinate System Switching Function".

Software

* The software specifications are subject to change for improvement without notice.

RAKU-RAKU Monitor 3

[Optional Accessories]

Easy and convenient multi-functional softwares that can perform the tool life management, cutting load monitoring, group control, and also run information collection, Cp (process capability) calculation, and periodic offset addition.

RAKU-RAKU Monitor 3 *

Measurement Monitor 3

TCY-Series

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ISO 9001 Certified
JQA-2010
(Head Office)



JAB
CM007



ISO 14001
12ER-865

(Head Office)

Japanese laws prohibit this machine from being used to develop or manufacture "weapons of mass destruction" or "conventional arms", as well as from being used to process parts for them.

Export of the product may require the permission of governmental authorities of the country from where the product is exported.

Should you wish to resell, transfer or export the product, please notify Takisawa Machine Tool Co., Ltd. or our distributor in advance.

*The appearance, specifications, and relevant software of the product are subject to change for improvement without notice.

*Please make an inquiry to our sales representatives for details of the product.

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