TAKISAWA

TAKISAWA Superb Turning Center

TS-SERIES

Further Evolution
of TAKISAWA Superb Turning Center

TS-SERIES

TS-4000YS

TS-4000 | Main Spindle A2–8

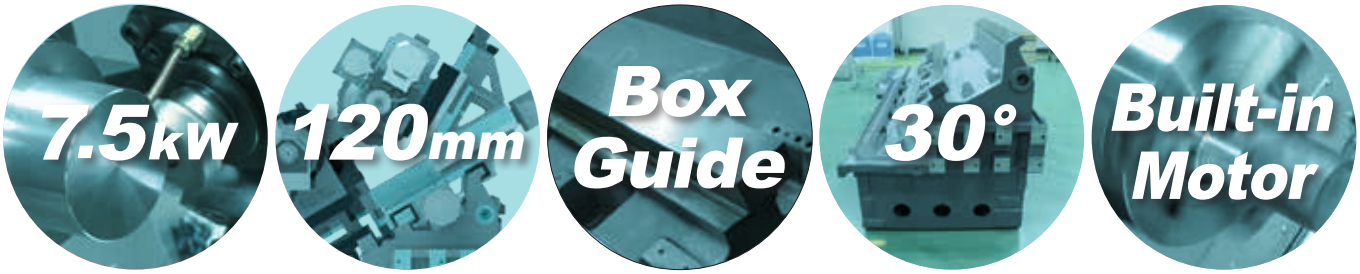
TS-2000 | Main Spindle A2–5

TS-3000 | Main Spindle A2–6

TS-5000 | Main Spindle A2–11

TS-3000YS

Series Standard Specifications



Stronger 7.5kW (10HP) Mill Power	Longer 120mm (−50 ~+70mm) Y-axis	X/Y/Z axis is a highly reliable Box slideway	highly rigid 30° slant bed	High Power Built-in Motor Spindle

YS Type — Left Spindle + Milling Turret + Right Spindle

Y Type — Left Spindle + Milling Turret + NC Servo Tailstock

TS-2000YS

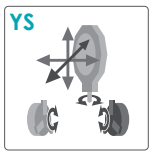
TS-5000Y

Photo includes options.

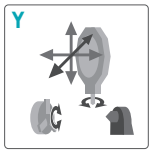
The Definitive Structure

Axis Specifications

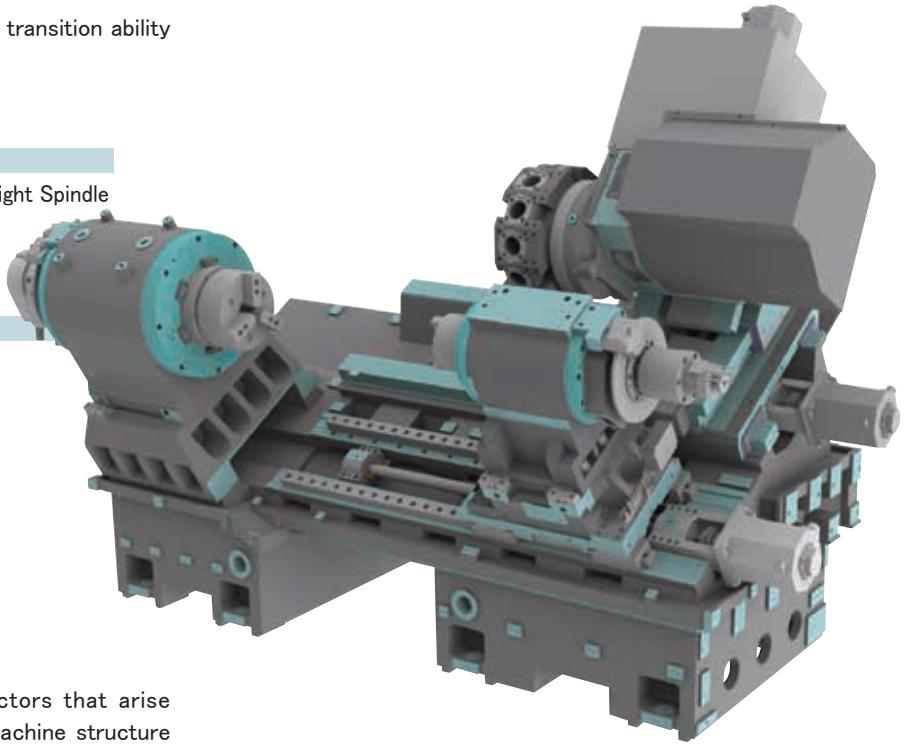
A total of 6 different control axes with smooth transition ability from turning to milling process.



YS (Standard) : 6-Axes
X/Z/Y/C1/C2/A
Left Spindle + Milling Turret + Right Spindle



Y : 5-Axes
X/Z/Y/C/A
Left Spindle + Milling Turret +
NC Servo Tailstock



Best Design with 3D Analysis

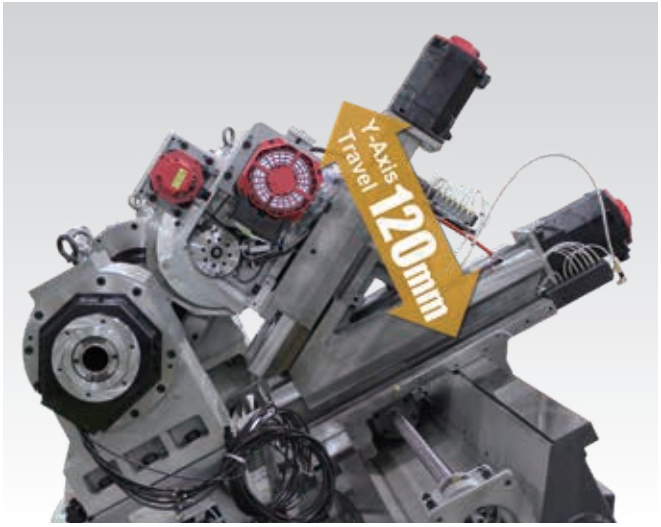
Thorough analysis of the various stress vectors that arise during machine processes has allowed for a machine structure that is crafted to maintain accurate machining by directly addressing such forces.

Sturdy Structure

The highly rigid 30° slant bed and rectangular slideways on the sliding axes (X, Y, Z) ensure stable machining. The cutting load is all directed towards the box ways and sloped saddle, allowing for high power cutting of even hard to cut materials.

120mm Y-Axis Travel

Compared to our earlier model, Y axis travel has increased by 40% in the positive direction. This generous stroke allows for large diameter tools and double holders to be supported. 3.0 kW high powered servo motors are used.



Advantage

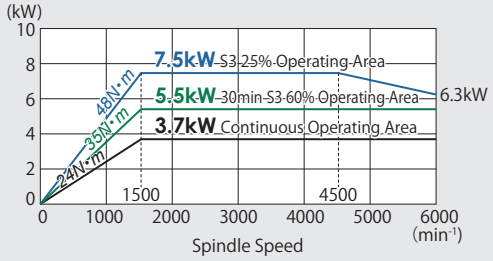
Stronger Milling Power 7.5kW, 12-Station Milling Turret

Powerful holders are able to take full advantage of the 7.5 kW milling motor and achieve great milling capability.
There are several options for turret tool capacity. The standard is 12 (T12) and options for 10 (T10), 15 (T15), or 20 (T20) are available. VDI type 15 station turret is also available.

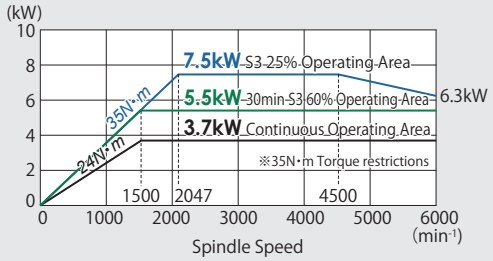
Type of Turret	T12 (STD.)	T10	T15/ T15VDI	T20
Number of Attachable Tools	12	10	15	20
Height of Square Tool Shank	25			20
Diameter of Boring Bar Shank	50		40	32
Diameter of Rotary Tool Shank	26		20	

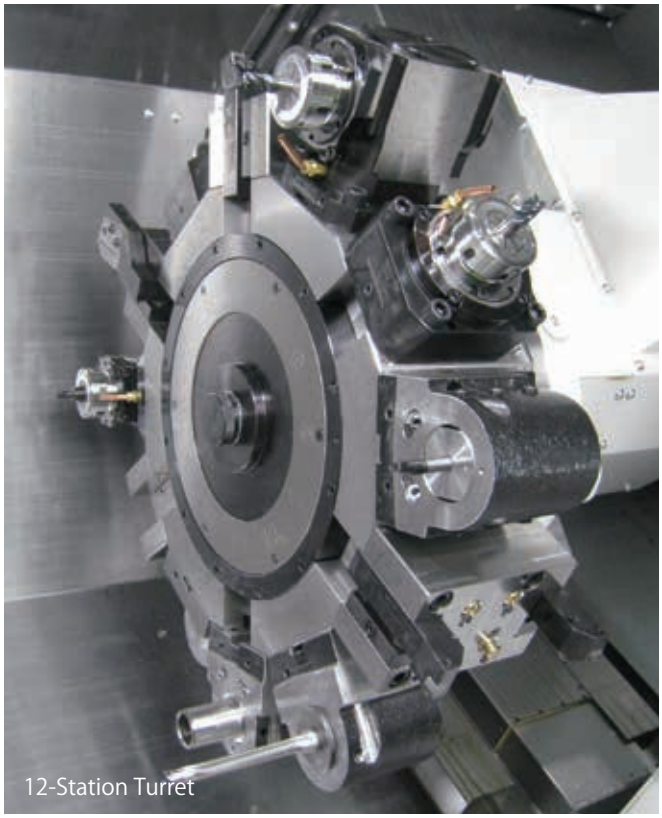
Power Tool

T10/T12/T15 **6000min^{-1}** FANUC : αil3



T15(VDI)/T20 **6000min^{-1}** FANUC : αil3




12-Station Turret

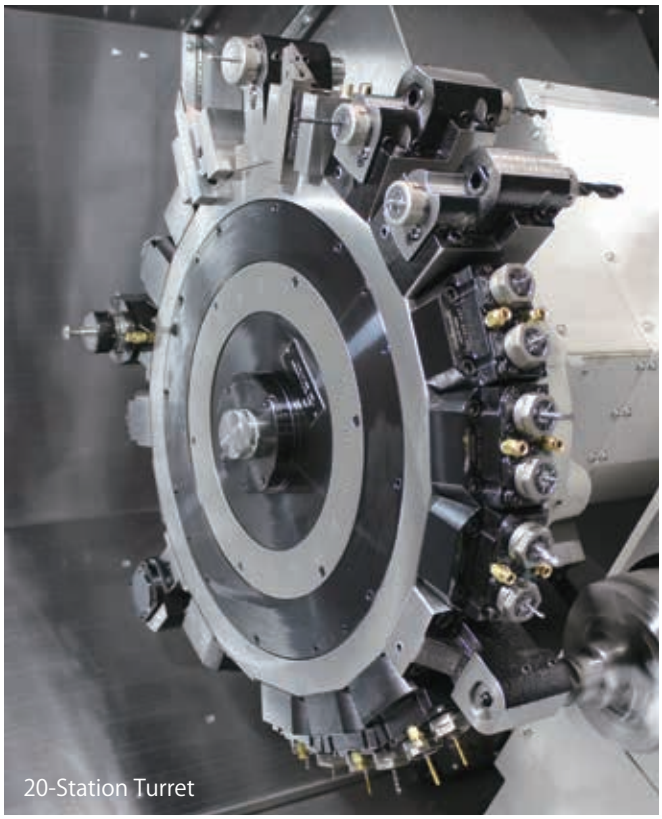
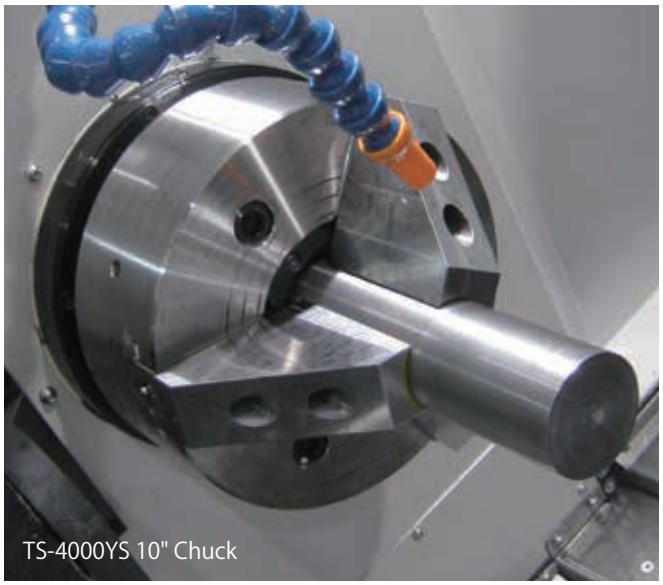
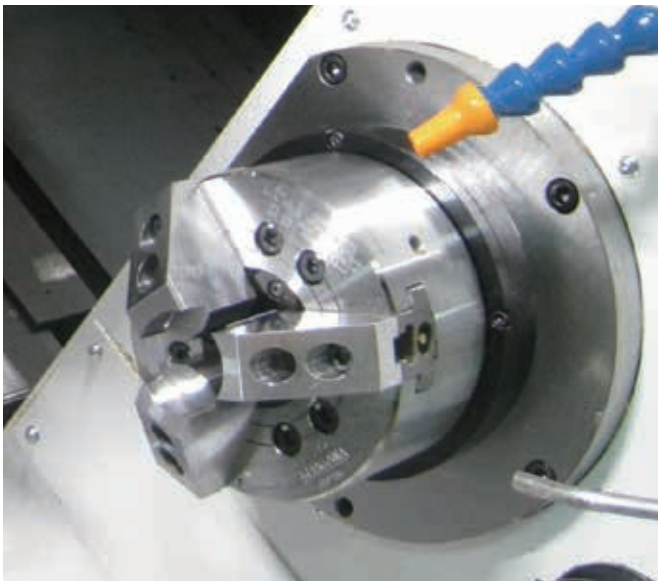

20-Station Turret

Photo includes options.

Capability • Performance

High Power Built-in Motor

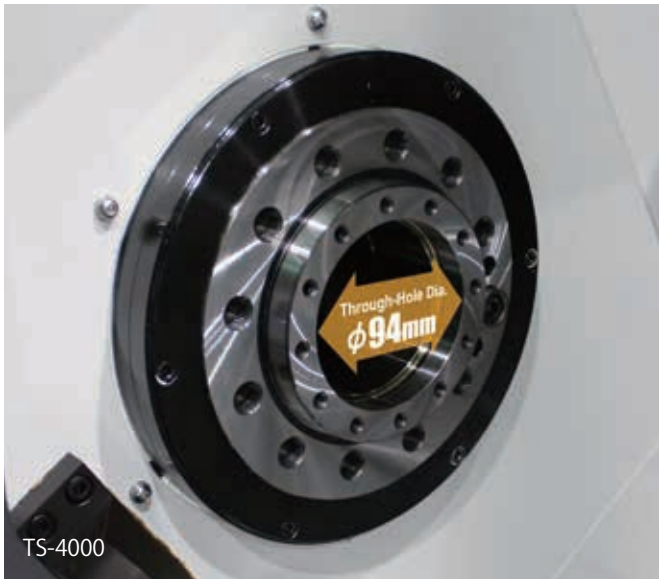

TS-4000YS 10" Chuck



The left and right spindles both use high-power built-in motors to achieve high cutting ability as well as high-speed positioning.
The built-in motor boasts quick spindle acceleration/deceleration times, allowing for faster machining. The absence of a belt also frees up time that would be spent on its maintenance.

		TS-2000	TS-3000	TS-4000	TS-5000
Left Spindle	Motor	11/7.5kW	15/11kW	22/15kW	22/15kW
	Spindle Speed	6000min^{-1}	5000min^{-1}	4200min^{-1}	2500min^{-1} OP.4200min^{-1}
Right Spindle	Motor	11/7.5kW	11/7.5kW	11/7.5kW	11/7.5kW
	Spindle Speed	6000min^{-1}	6000min^{-1}	6000min^{-1}	5000min^{-1} OP.6000min^{-1}

Large Hole Through Spindle



TS-4000

Large spindle-through hole supports bar machining.
Automatic machining can be realized by installing optional bar feeder.

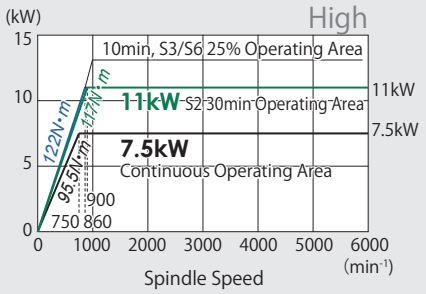
		TS-2000	TS-3000	TS-4000	TS-5000
Left Spindle	Through-Hole Dia.	63mm	77mm	94mm	111mm OP.94mm
	Bar Capacity *	51mm	67mm	82mm	102mm OP.82mm
Right Spindle	Through-Hole Dia.	53mm	53mm	53mm	63mm OP.53mm

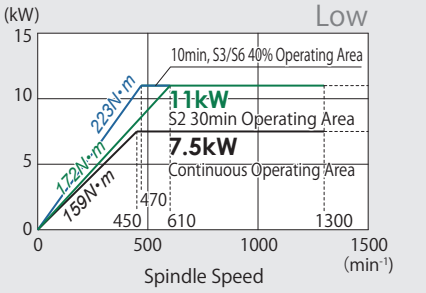
*) Please note the bar capacity follows types of chucks and cylinders.

Main Spindle (Left Side)

TS-2000

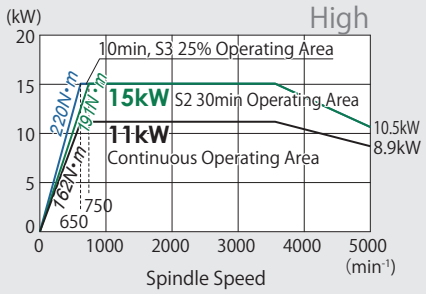
6000min^{-1} FANUC : BiI170S

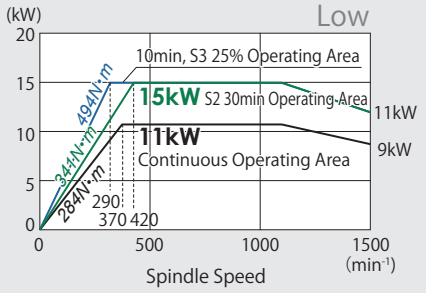




TS-3000

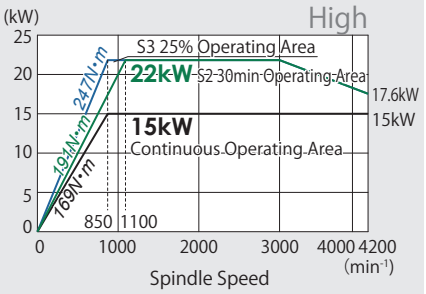
5000min^{-1} FANUC : BiI200S

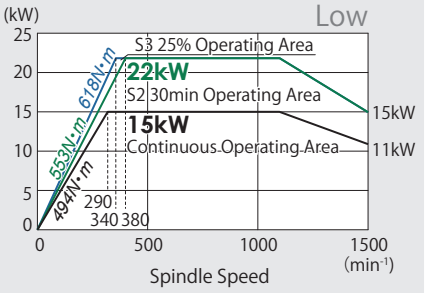




TS-4000/TS-5000(Op.)

4200min^{-1} FANUC : BiI250S

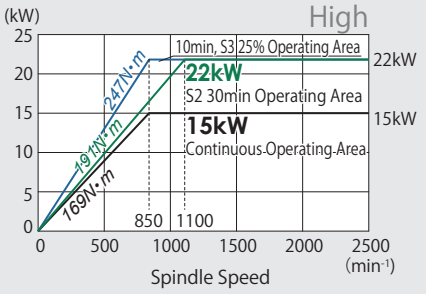


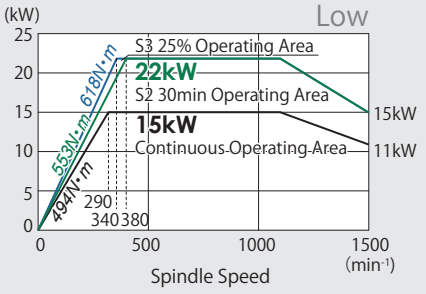


Main Spindle (Left Side)

TS-5000

2500min^{-1} FANUC : BiI250S

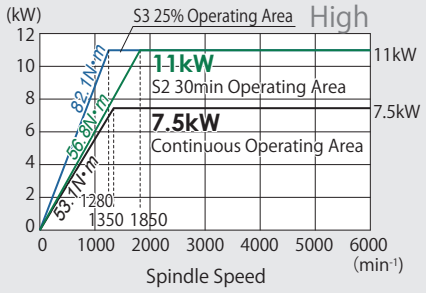


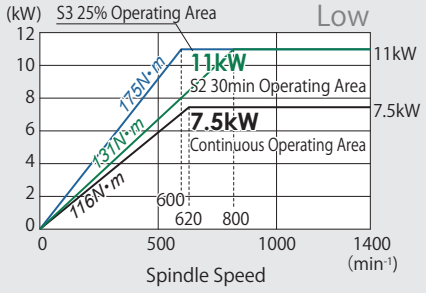


Sub Spindle (Right Side, For YS Type)

TS-2000/TS-3000/TS-4000/TS-5000(Op.)

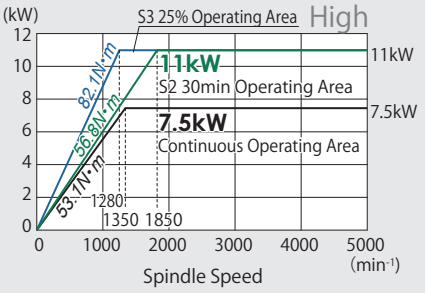
6000min^{-1} FANUC : BiI170S

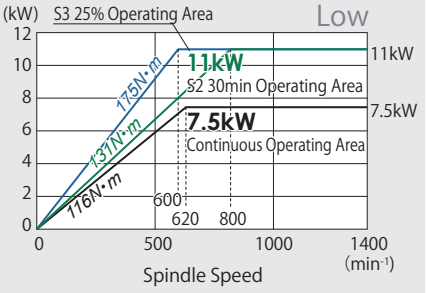




TS-5000

5000min^{-1} FANUC : BiI170S

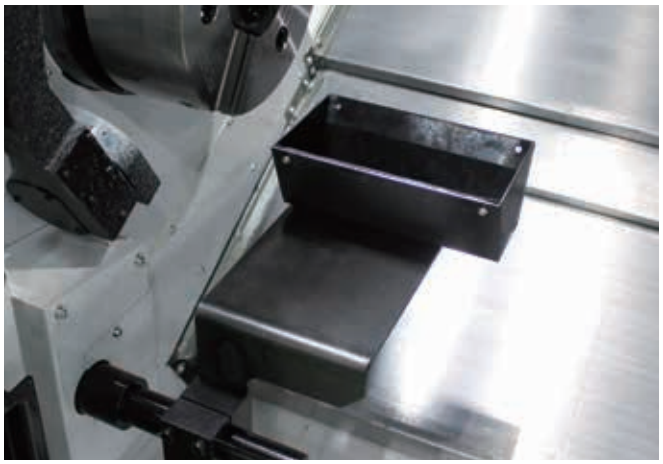




Capability • Performance

Parts Catcher *1

Ability of parts catcher OD ϕ80mm, Length 200mm, Weight 3kg.

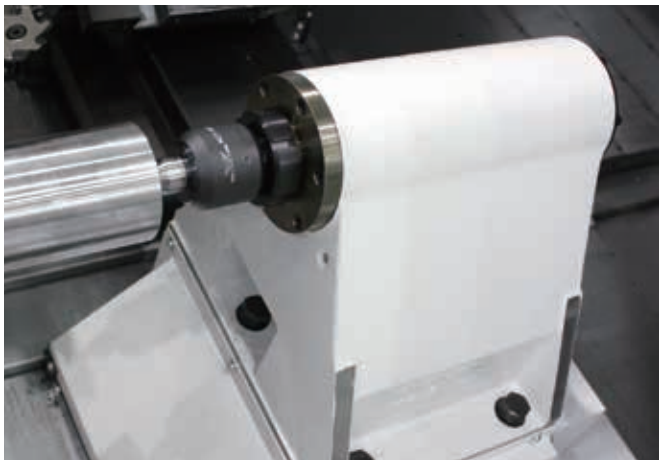


Workpieces cut off during bar machining are safely caught and unloaded to the collection box.

*1) It does not support TS-5000.

NC Servo Tailstock

NC servo tailstock is a standard accessory of Y specification. Even shaft workpieces can be machined cleanly without the need to worry about deviation in runout.



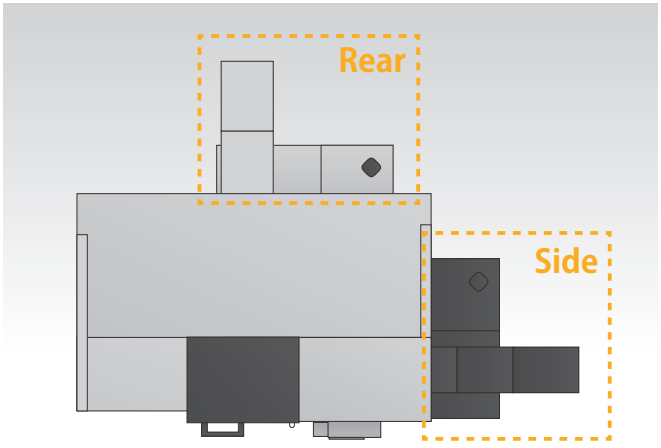
	TS-2000 YS/Y	TS-3000 YS/Y	TS-4000 YS/Y	TS-5000 YS/Y
A-Axis Travel	665mm	665mm	780mm	1480mm
Quill Taper	MT No.4	MT No.4	MT No.5	MT No.6 OP.MT No.5
Thrust Range	1～4kN	1～5kN / 1～8kN	1～6kN / 1～12kN	1～6kN / 1～12kN

*With Ejecting Nut

Selectable Discharge Direction (Optional)

Chip flow allows maximum space efficiency.
Rear discharge*3 or side discharge is selectable according to the machine layout.

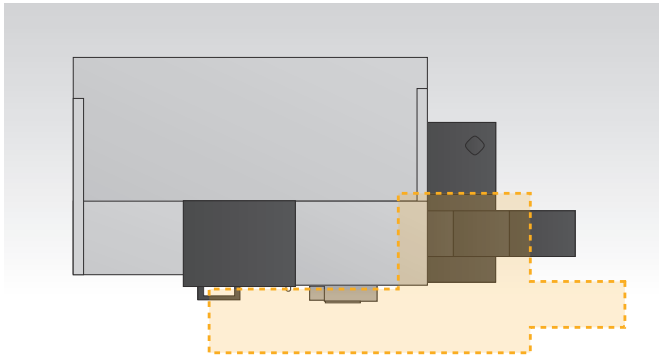
*3) It does not support TS-5000.



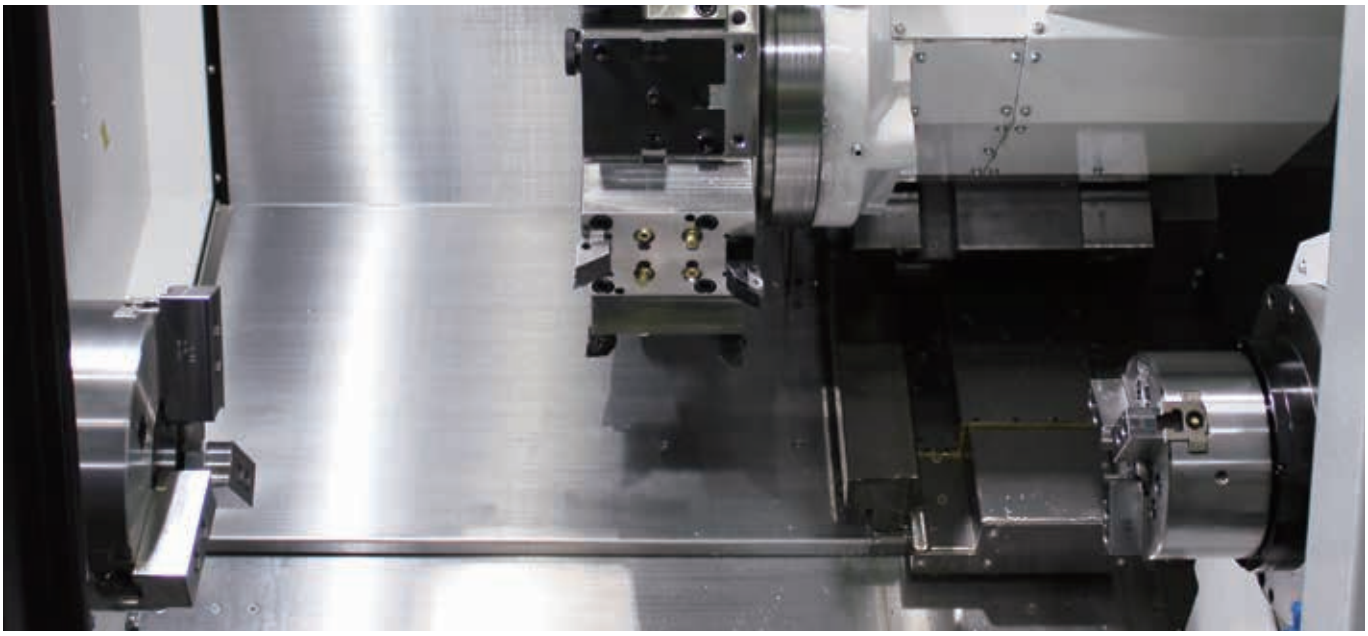
Coolant Tank with Excellent Maintainability

The coolant tank is separate from the machine casting, allowing for easy maintenance and cleaning.

	TS-2000	TS-3000	TS-4000	TS-5000
Coolant Tank	320L	320L	370L	470L

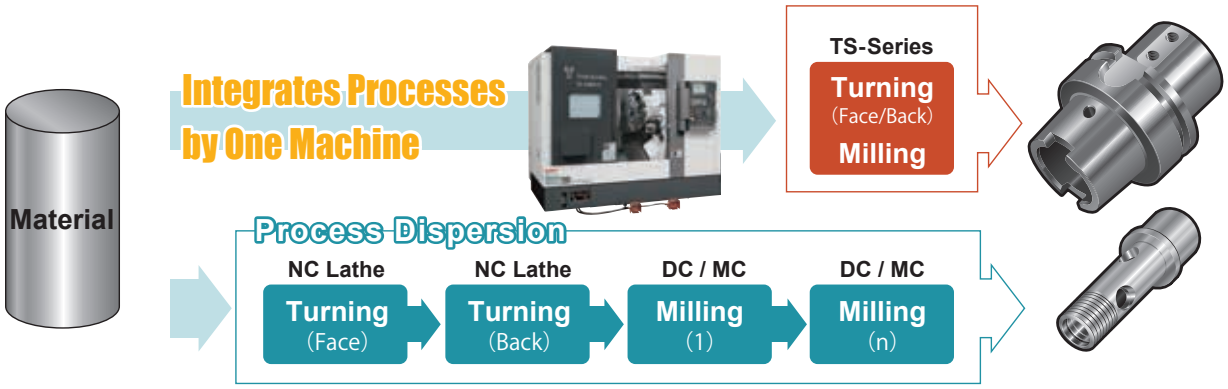


Standard/Maximum Turning Diameter Φ280/Φ370 (T12, OD Tool Overhang 40mm)



Process Integration Flow Chart

Demonstrates the efficiency of a single multi-purpose machine versus a series of lathes and machining centers.



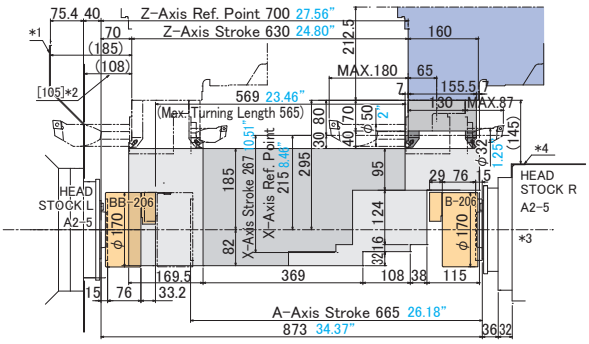
Travel Range TS-2000YS

Unit : mm inch

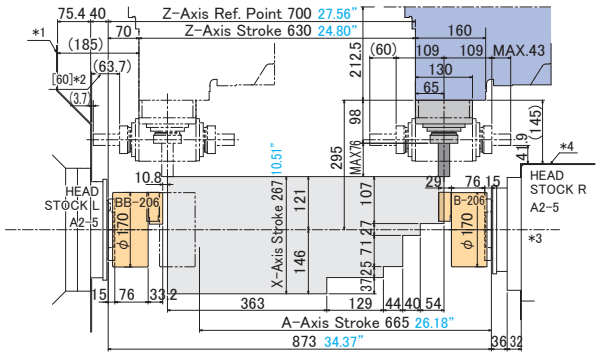
The figure shows operation ranges for both right and left spindle.
Left : BB-206, Right : B-206 / Ranges depends on chuck type.

T10/T12

Turning Tool Attached

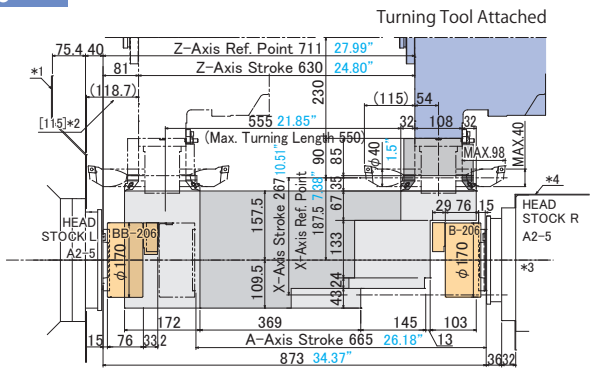


Rotary Tool Attached

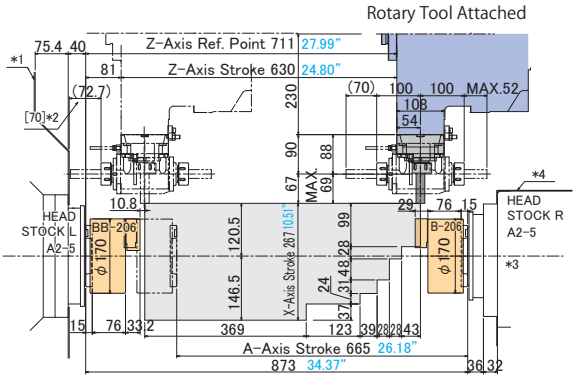


T15

Turning Tool Attached

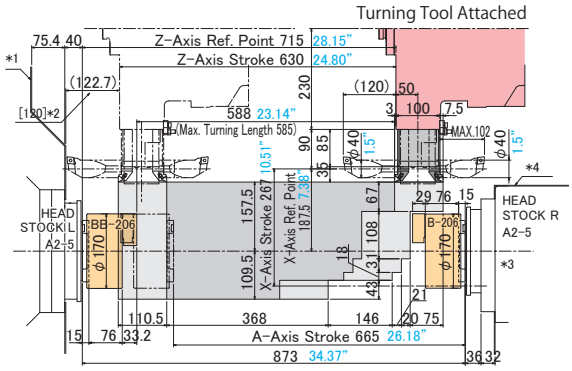


Rotary Tool Attached

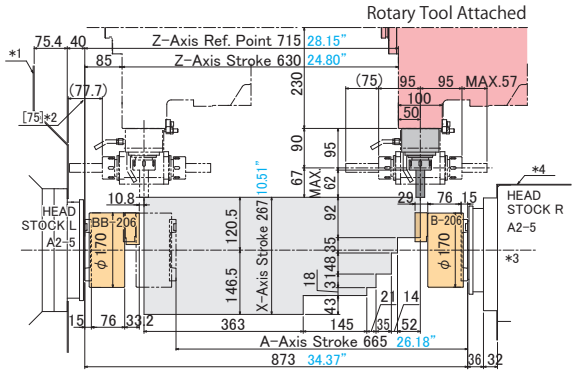


T15 (VDI)

Turning Tool Attached

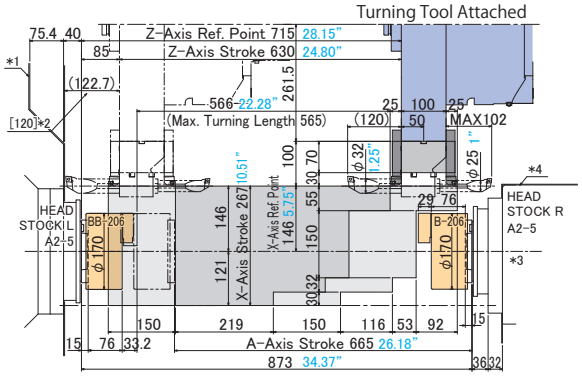


Rotary Tool Attached

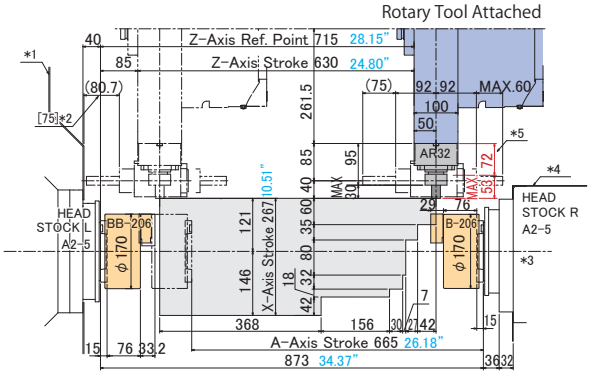


T20

Turning Tool Attached



Rotary Tool Attached



*1) Space for escaping turret near the splash guard.
*2) Tools protruding beyond the dimension in [ ] are indexed to retract position.
*3) The right spindle cannot pass the turret.
*4) Sub spindle cover
*5) Red are AR25.

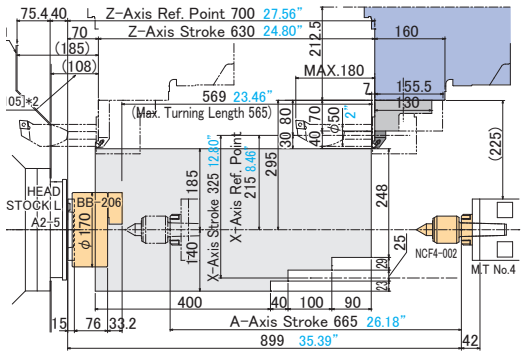
Travel Range TS-2000Y

Unit : mm inch

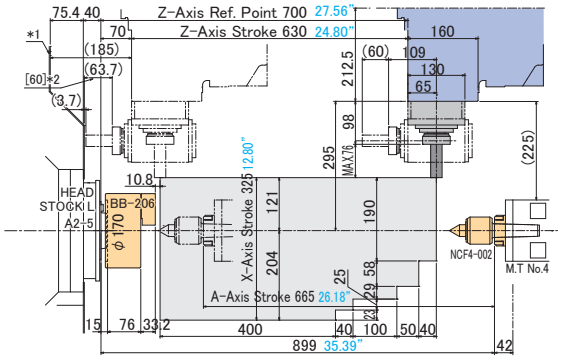
The figure shows operation ranges for left spindle and rolling center.
Left : BB-206, Rolling Center : NCF4-002 / Ranges depends on chuck type.

T10/T12

Turning Tool Attached

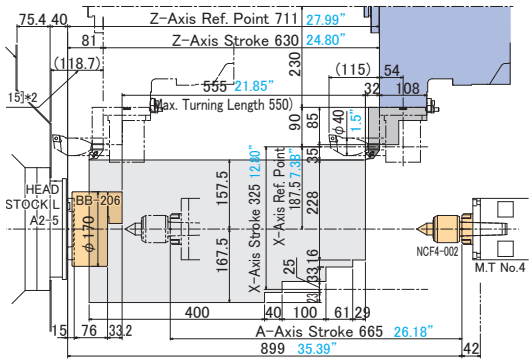


Rotary Tool Attached

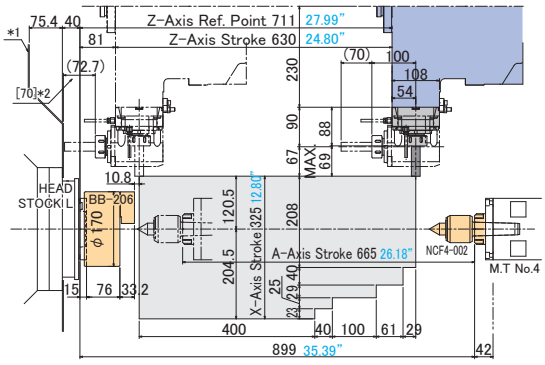


T15

Turning Tool Attached

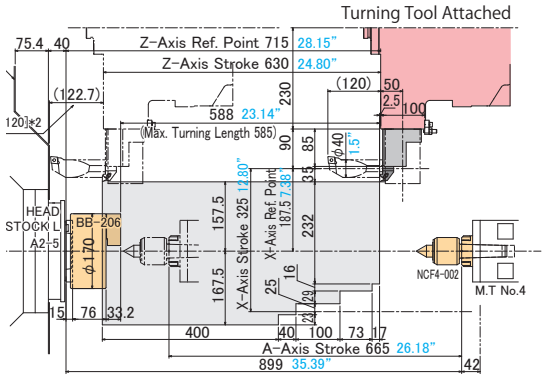


Rotary Tool Attached

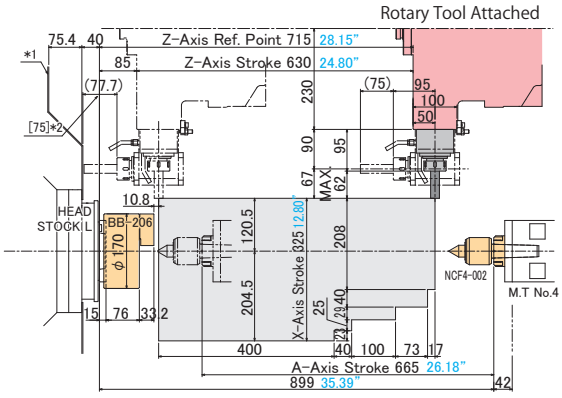


T15 (VDI)

Turning Tool Attached

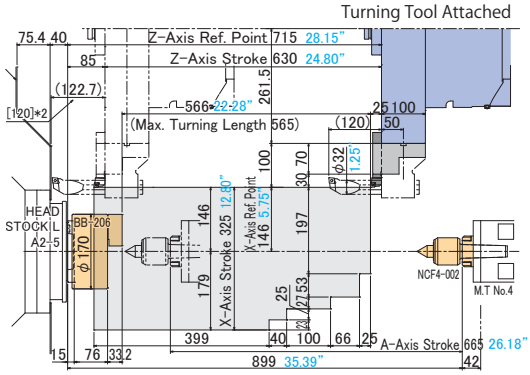


Rotary Tool Attached

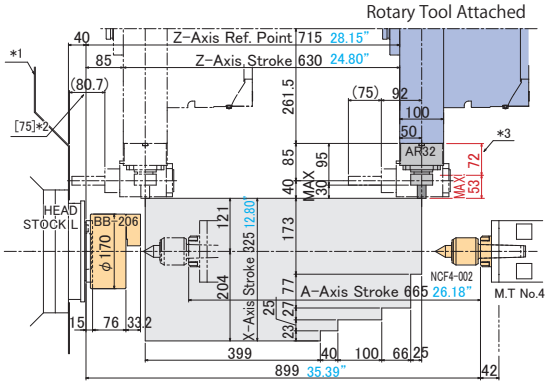


T20

Turning Tool Attached



Rotary Tool Attached



*1) Space for escaping turret near the splash guard.
*2) Tools protruding beyond the dimension in [ ] are indexed to retract position.
*3) Red are AR25.

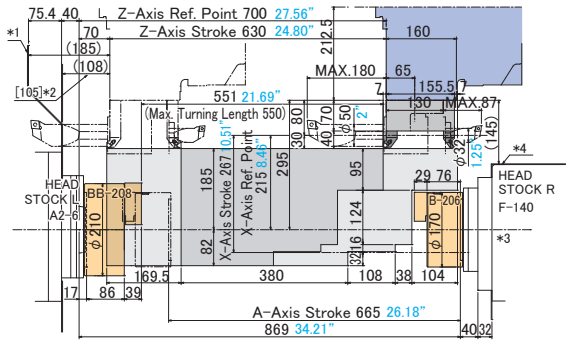
Travel Range TS-3000YS

Unit : mm inch

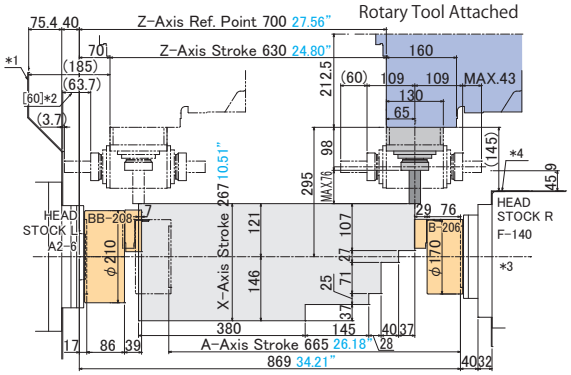
The figure shows operation ranges for both right and left spindle.
Left : BB-208, Right : B-206 / Ranges depends on chuck type.

T10/T12

Turning Tool Attached

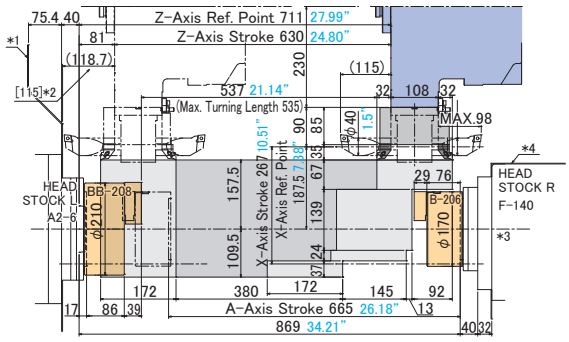


Rotary Tool Attached

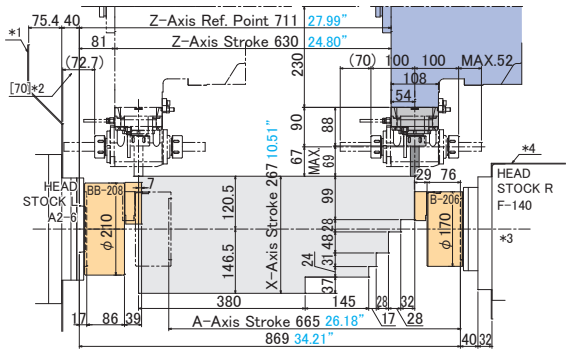


T15

Turning Tool Attached

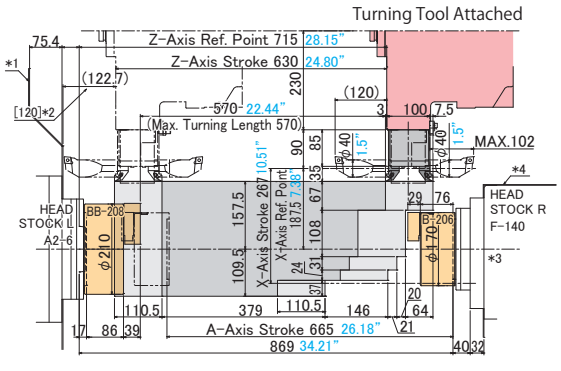


Rotary Tool Attached

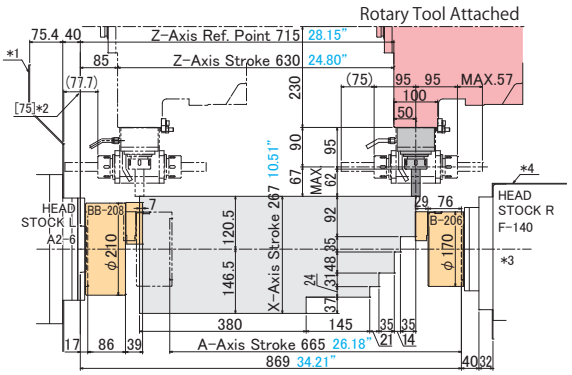


T15 (VDI)

Turning Tool Attached

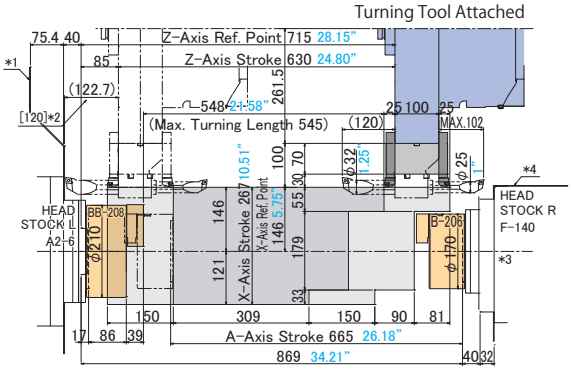


Rotary Tool Attached

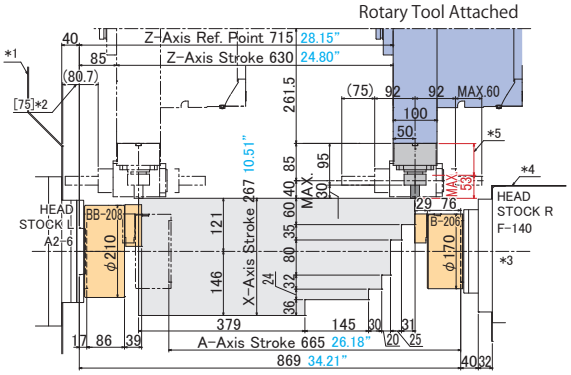


T20

Turning Tool Attached



Rotary Tool Attached



*1) Space for escaping turret near the splash guard.
*2) Tools protruding beyond the dimension in [ ] are indexed to retract position.
*3) The right spindle cannot pass the turret.
*4) Sub spindle cover
*5) Red are AR25.

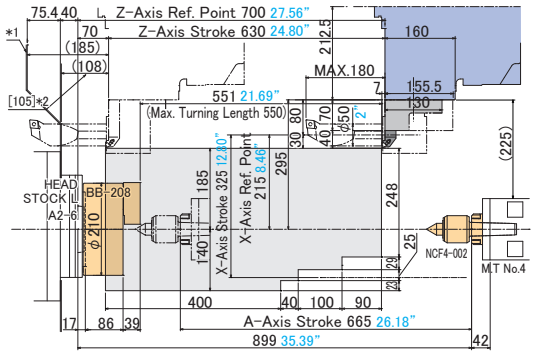
Travel Range TS-3000Y

Unit : mm inch

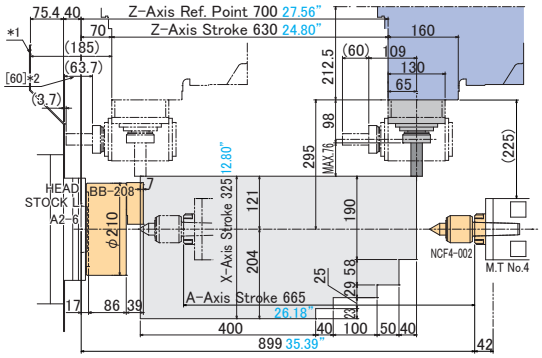
The figure shows operation ranges for left spindle and rolling center.
Left : BB-208, Rolling Center : NCF4-002 / Ranges depends on chuck type.

T10/T12

Turning Tool Attached

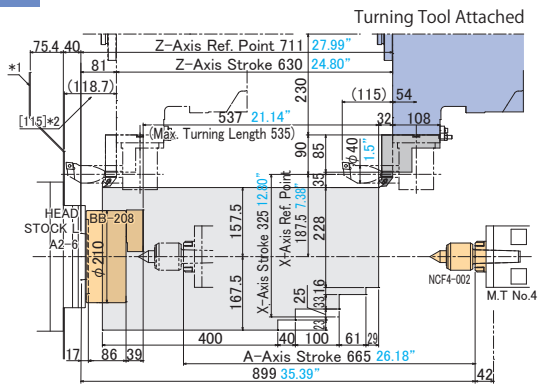


Rotary Tool Attached



T15

Turning Tool Attached



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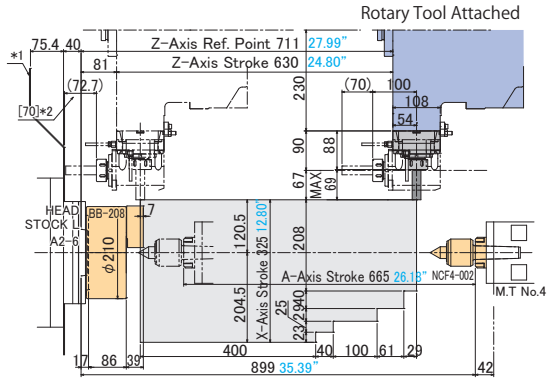
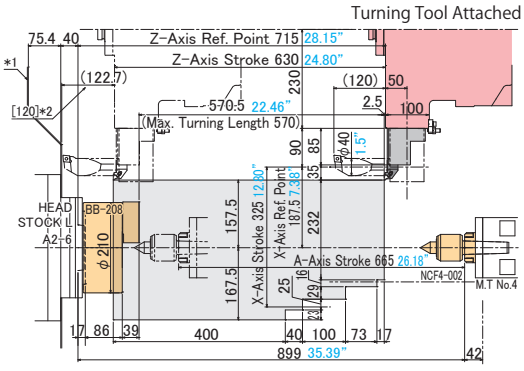
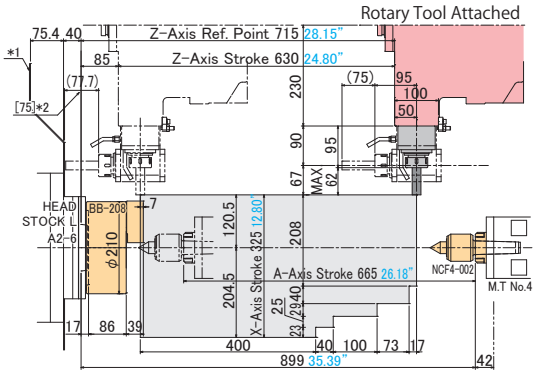


T15 (VDI)

Turning Tool Attached

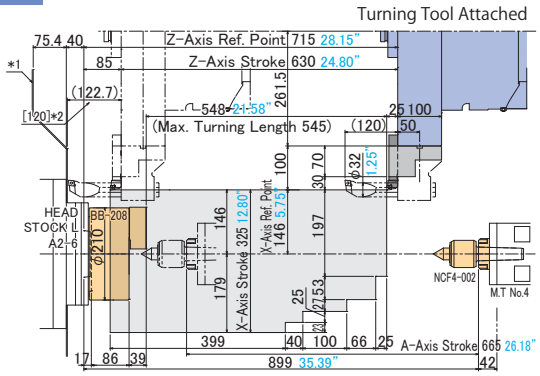


Rotary Tool Attached

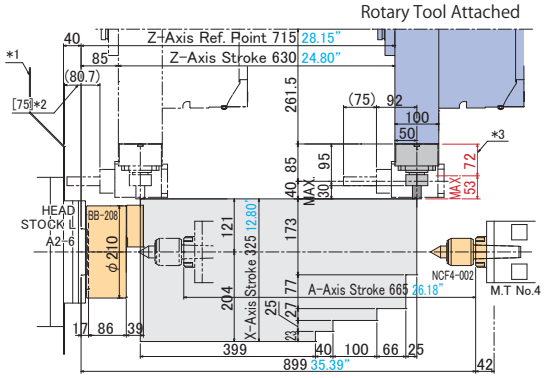


T20

Turning Tool Attached



Rotary Tool Attached



*1) Space for escaping turret near the splash guard.
*2) Tools protruding beyond the dimension in [ ] are indexed to retract position.
*3) Red are AR25.

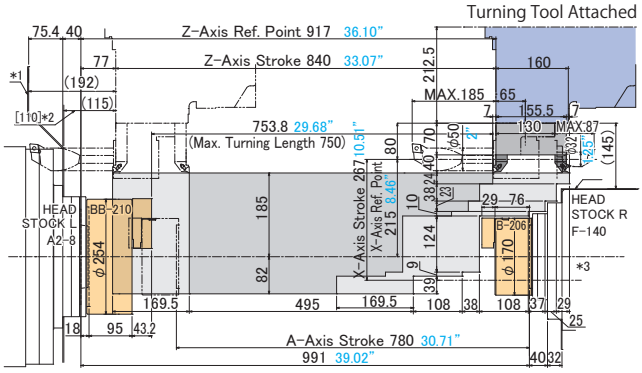
Travel Range TS-4000YS

Unit : mm inch

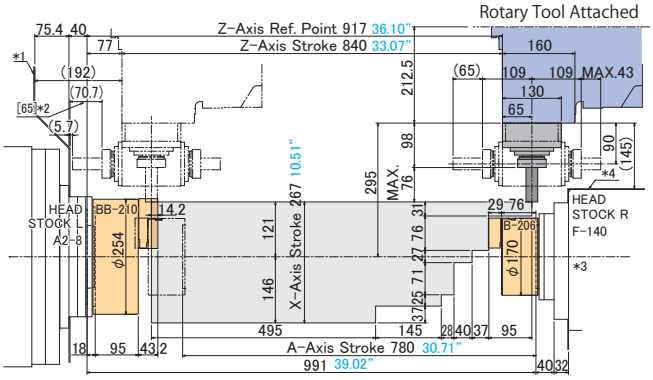
The figure shows operation ranges for both right and left spindle.
Left : BB-210, Right : B-206 / Ranges depends on chuck type.

T10/T12

Turning Tool Attached

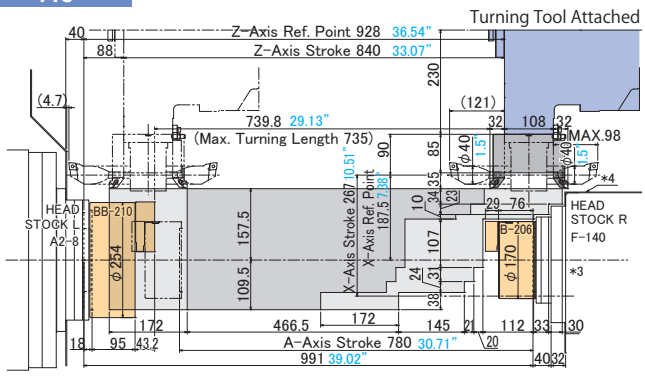


Rotary Tool Attached

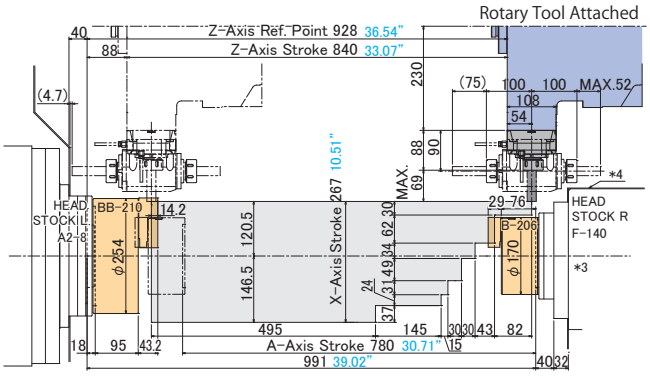


T15

Turning Tool Attached

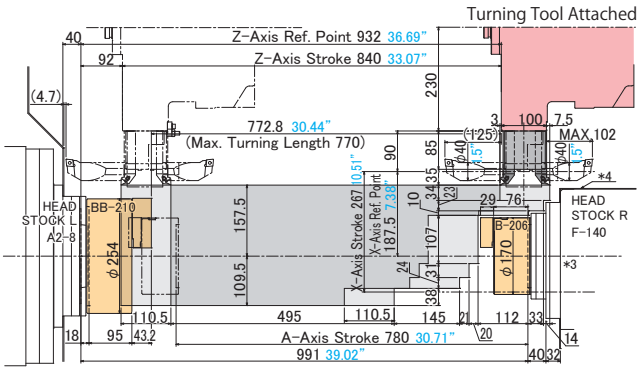


Rotary Tool Attached

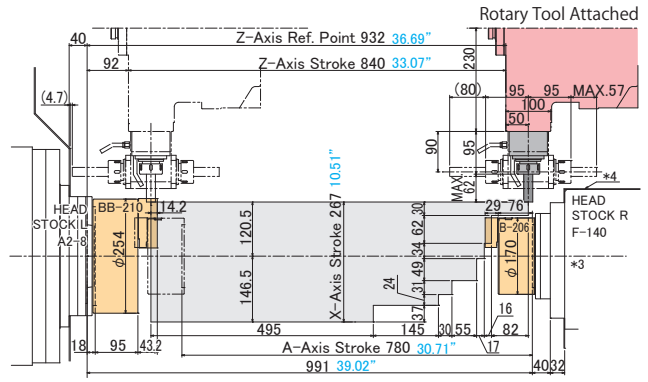


T15 (VDI)

Turning Tool Attached

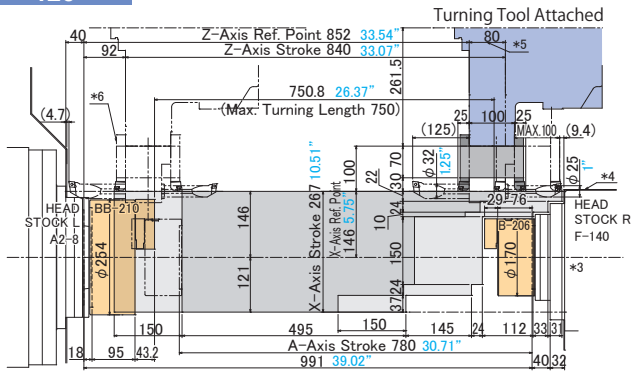


Rotary Tool Attached

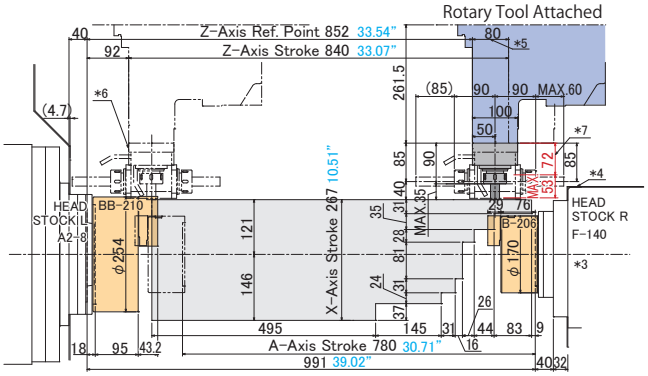


T20

Turning Tool Attached



Rotary Tool Attached



*1) Space for escaping turret near the splash guard.
*2) Tools protruding beyond the dimension in [ ] are indexed to retract position.
*3) The right spindle cannot pass the turret.
*4) Sub spindle cover
*5) In this zone, turret can't be rotated.
*6) Index the holder without interference with left/right spindle or chuck.

*5) Red are AR25.

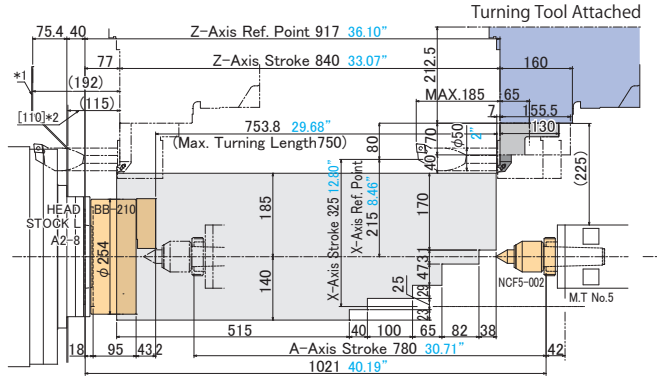
Travel Range TS-4000Y

Unit : mm inch

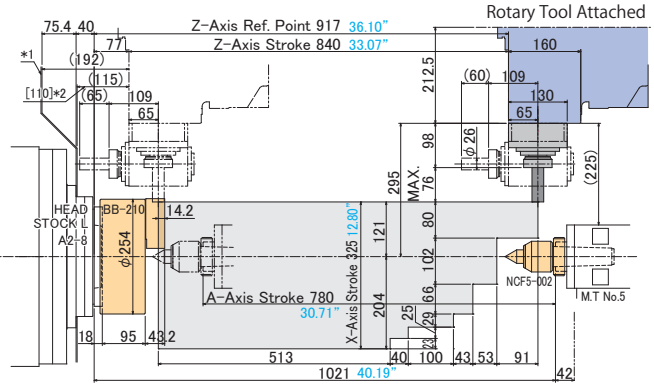
The figure shows operation ranges for left spindle and rolling center.
Left : BB-210, Rolling Center : NCF5-002 / Ranges depends on chuck type.

T10/T12

Turning Tool Attached

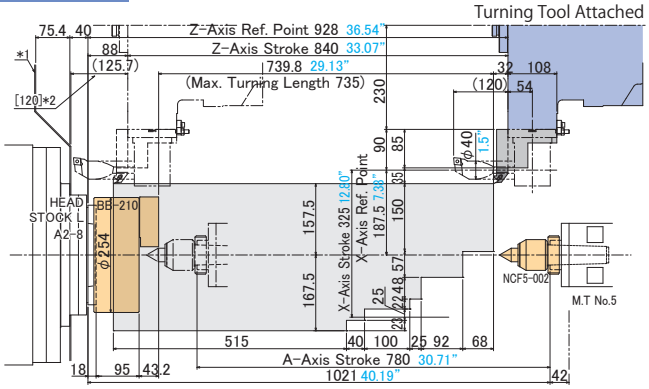


Rotary Tool Attached

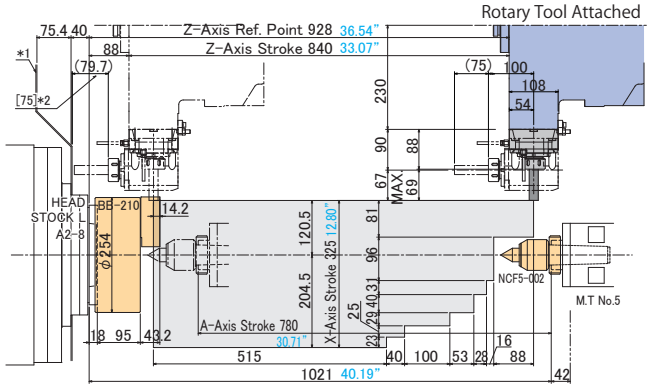


T15

Turning Tool Attached

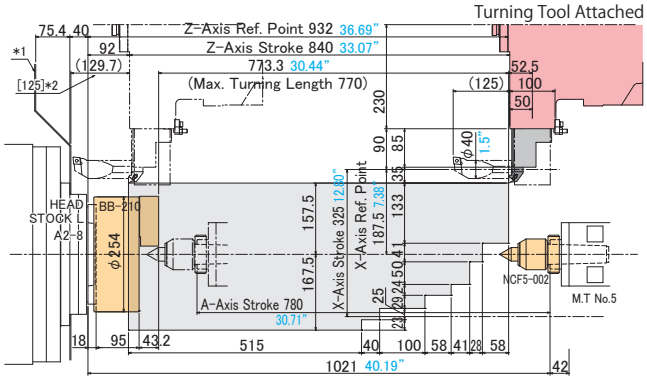


Rotary Tool Attached



T15 (VDI)

Turning Tool Attached



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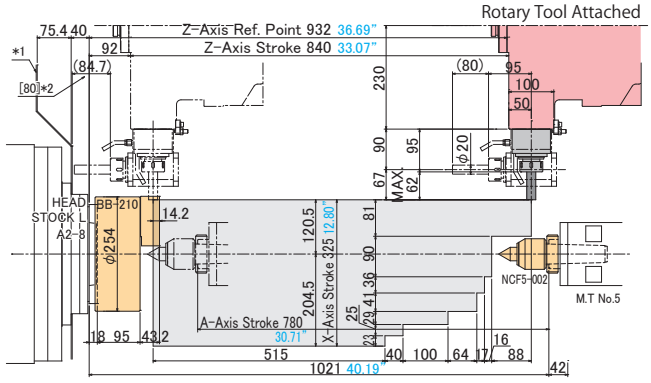
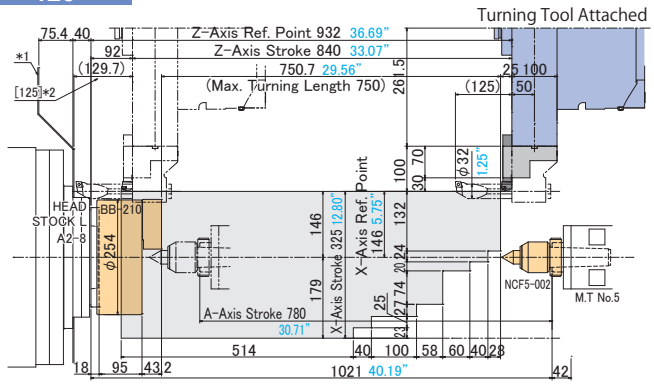
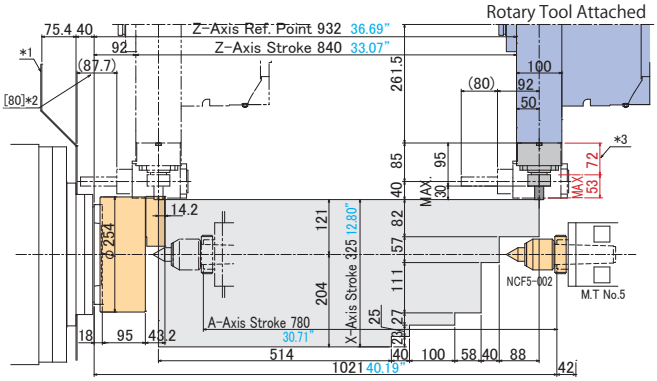


T20

Turning Tool Attached



Rotary Tool Attached



*1) Space for escaping turret near the splash guard.
*2) Tools protruding beyond the dimension in [ ] are indexed to retract position.
*3) Red are AR25.

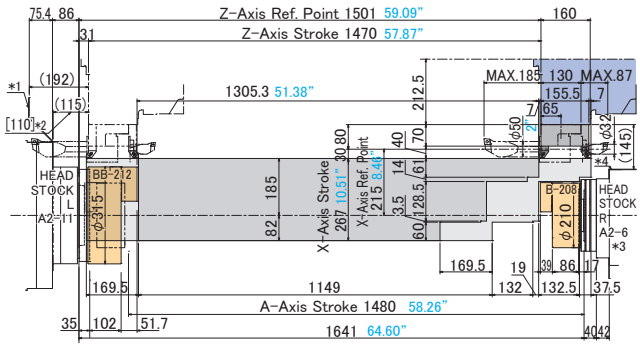
Travel Range TS-5000YS

Unit : mm inch

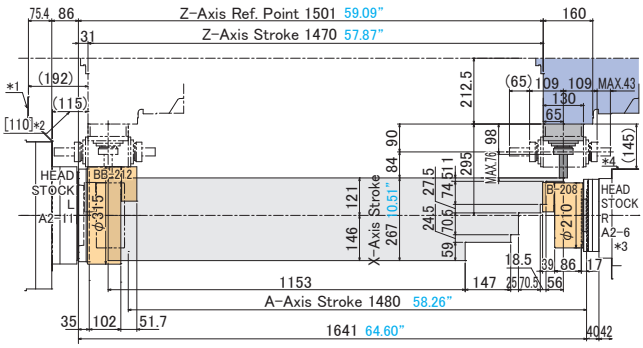
Drawings shows the Spindle Nose : A2-11. The figure shows operation ranges for right and left spindle. Left : BB-212, Right : B-208 / Ranges depends on chuck type.

T10/T12

Turning Tool Attached

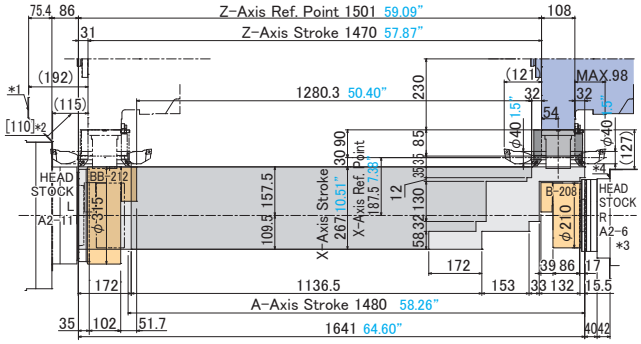


Rotary Tool Attached

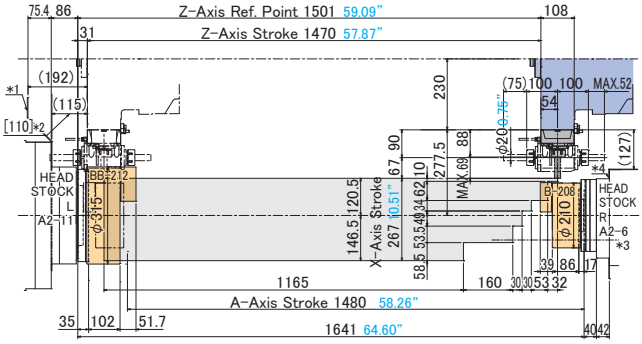


T15

Turning Tool Attached

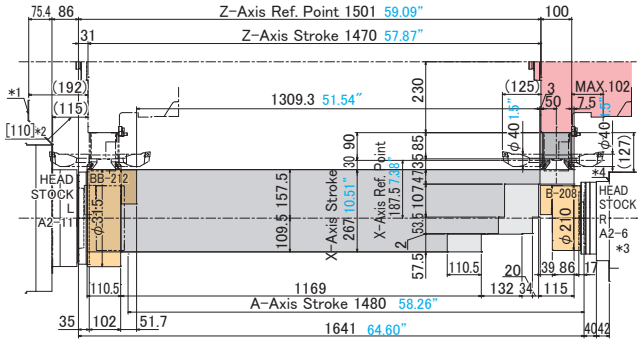


Rotary Tool Attached

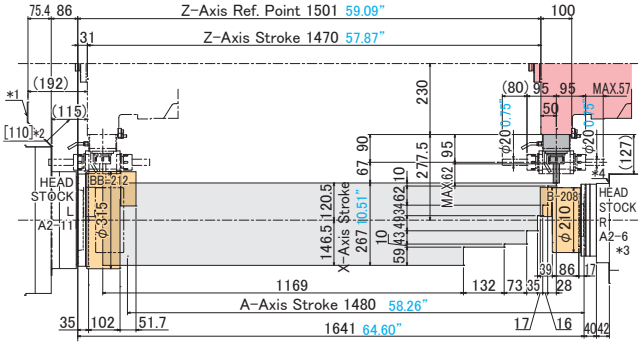


T15 (VDI)

Turning Tool Attached

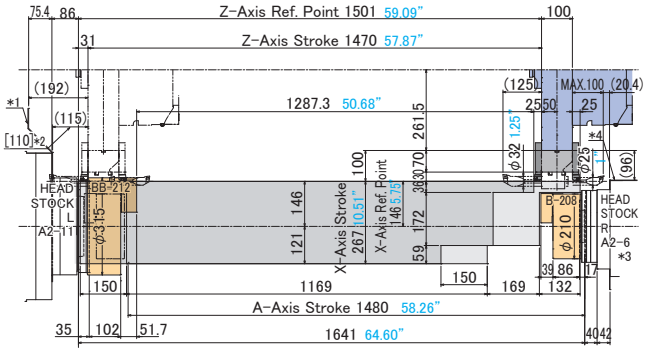


Rotary Tool Attached

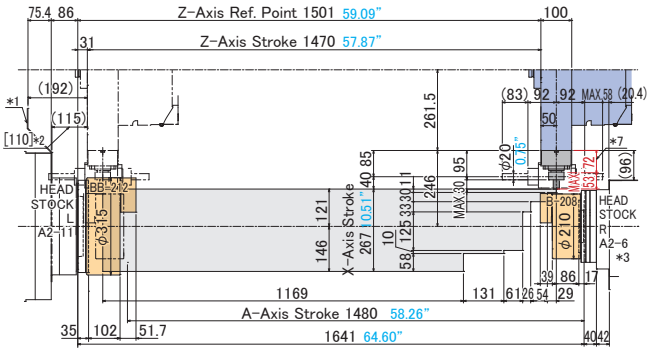


T20

Turning Tool Attached



Rotary Tool Attached



*1) Space for escaping turret near the splash guard.
*2) Tools protruding beyond the dimension in [ ] are indexed to retract position.
*3) The right spindle cannot pass the turret.
*4) Sub spindle cover
*5) In this zone, turret can't be rotated.
*6) Index the holder without interference with left/right spindle or chuck.

*5) Red are AR25.

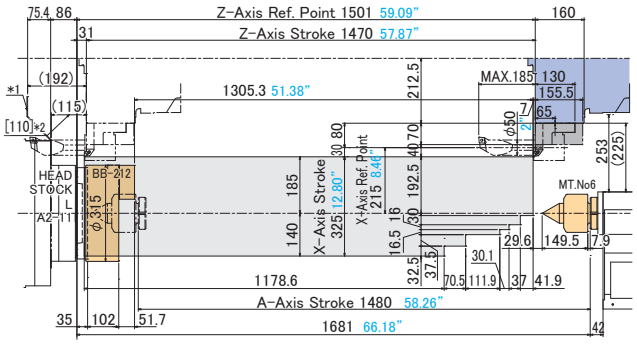
Travel Range TS-5000Y

Unit : mm inch

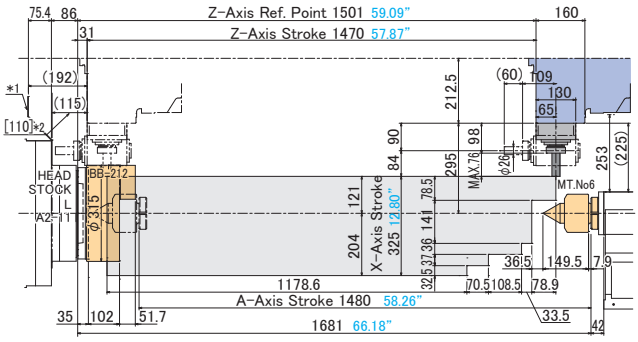
Drawings shows the Spindle Nose : A2-11. The figure shows operation ranges for left spindle and rolling center. Left : BB-212, Rolling Center : LC-6WAUR-00 / Ranges depends on chuck type.

T10/T12

Turning Tool Attached

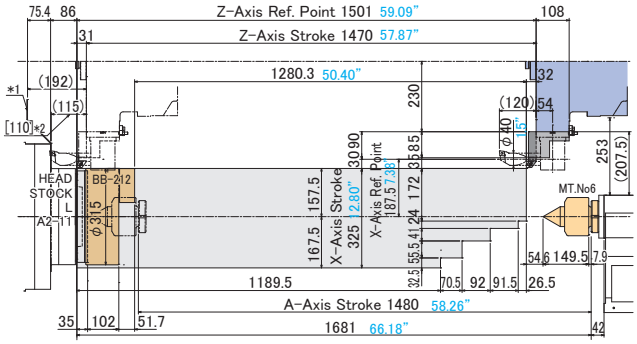


Rotary Tool Attached

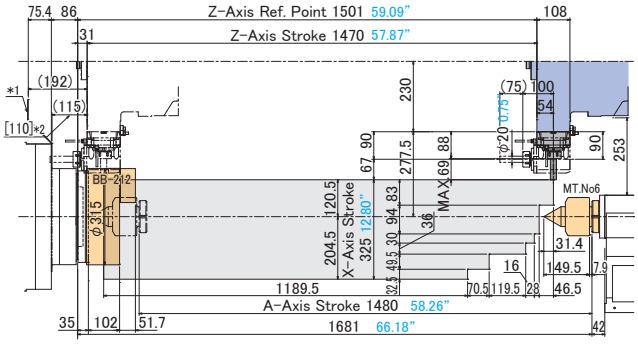


T15

Turning Tool Attached

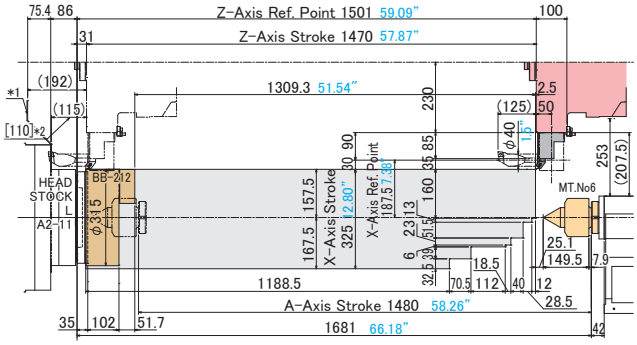


Rotary Tool Attached

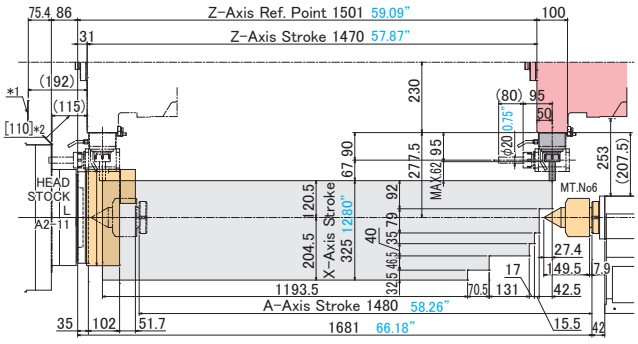


T15 (VDI)

Turning Tool Attached

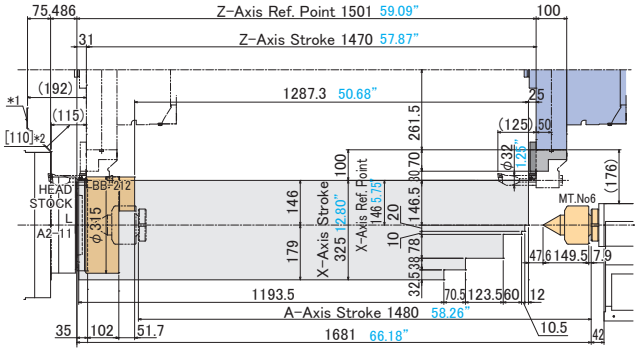


Rotary Tool Attached

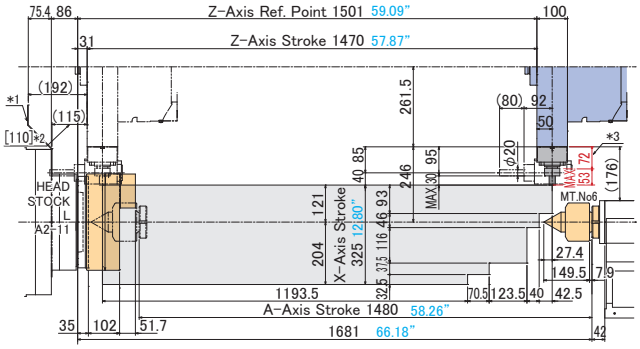


T20

Turning Tool Attached



Rotary Tool Attached



*1) Space for escaping turret near the splash guard.

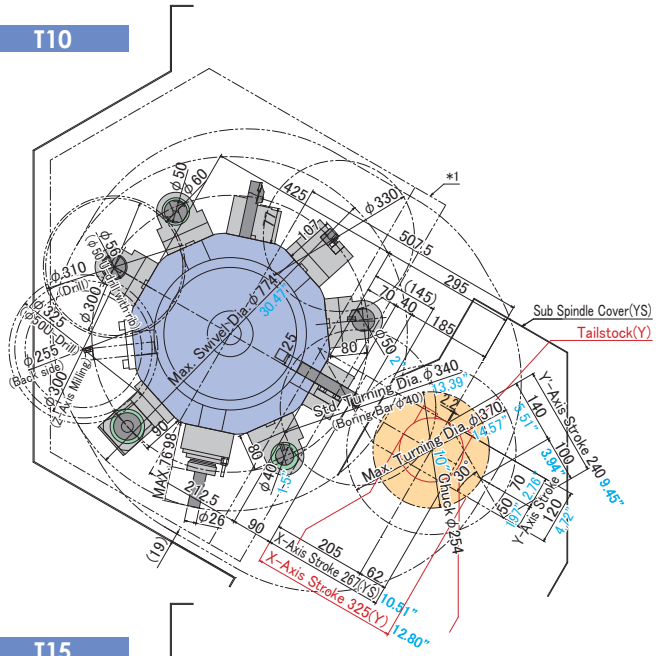
*2) Tools protruding beyond the dimension in [ ] are indexed to retract position.

*3) Red are AR25.

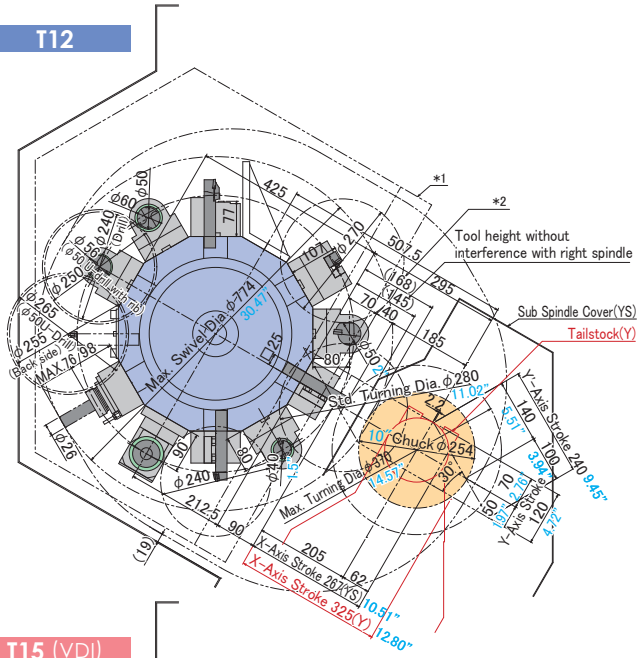
Interference

Unit : mm inch

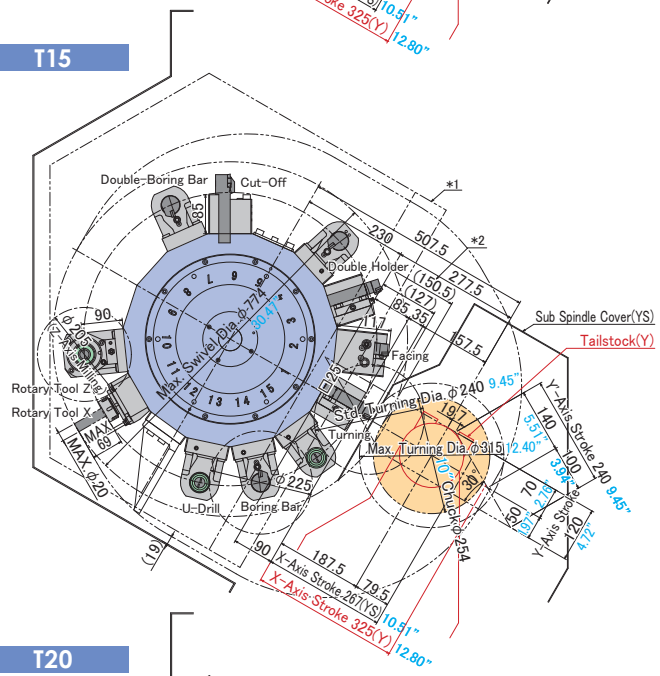
T10



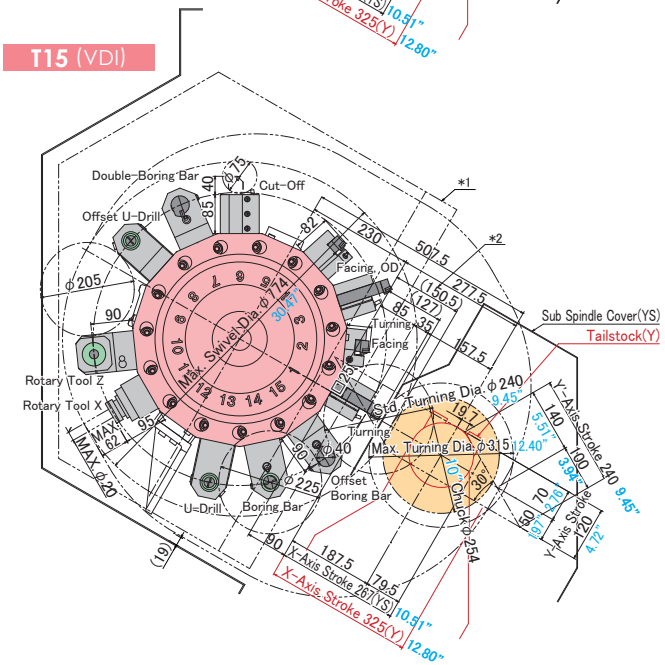
T12



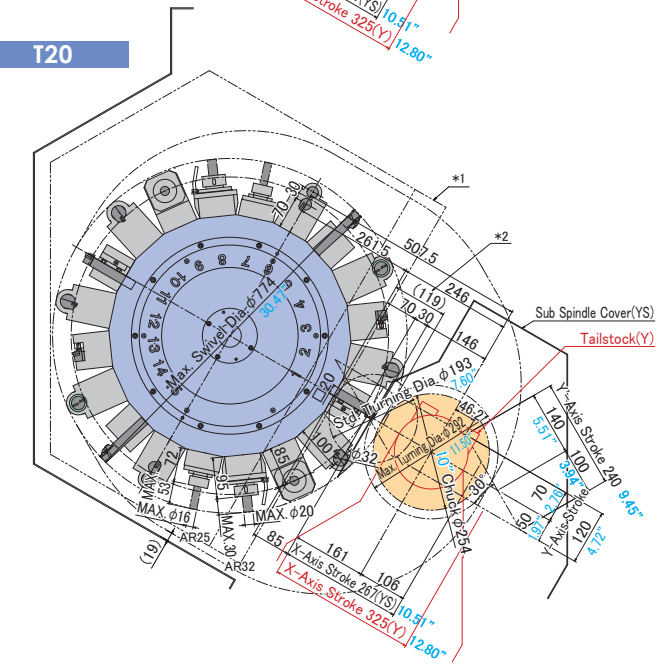
T15



T15 (VDI)



T20



*1) Space for escaping turret near the splash guard

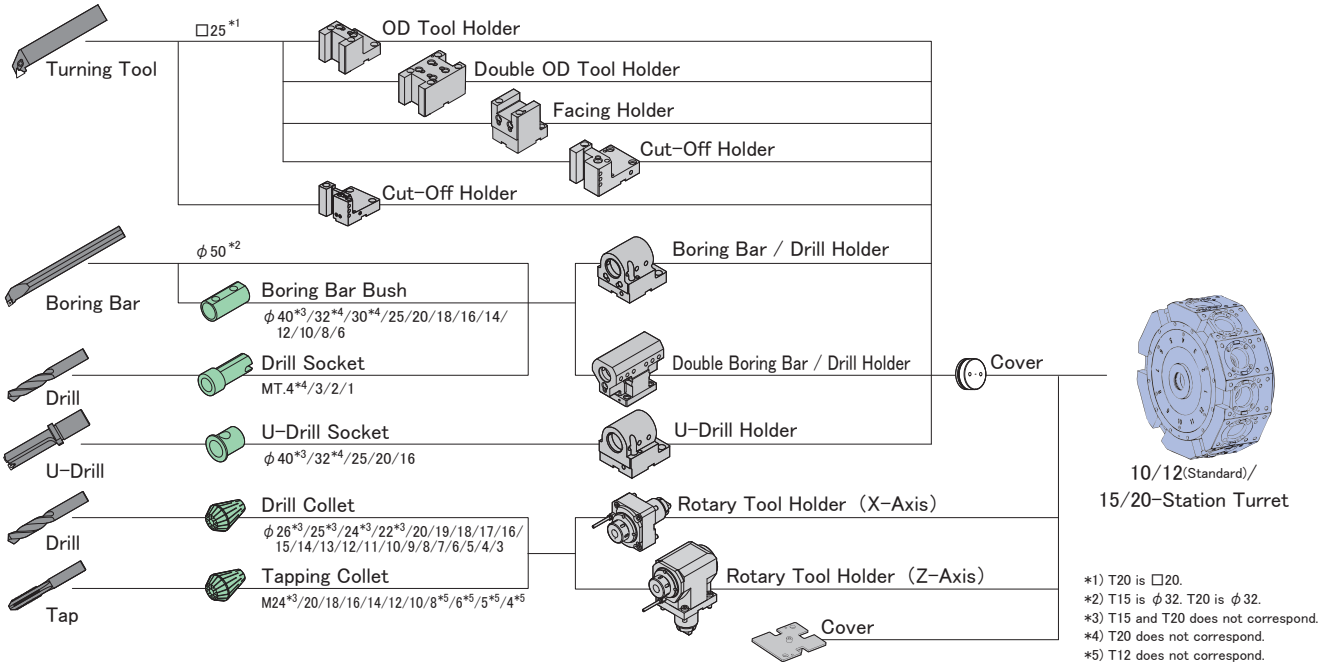
*2) Tool height without interference with Chuck

Turret	T12	T15	T15VDI	T20
10″Chuck	168	150.5	150.5	119
12″Chuck	138	127.4	120	88.5

Tooling System

T10/T12/T15/T20

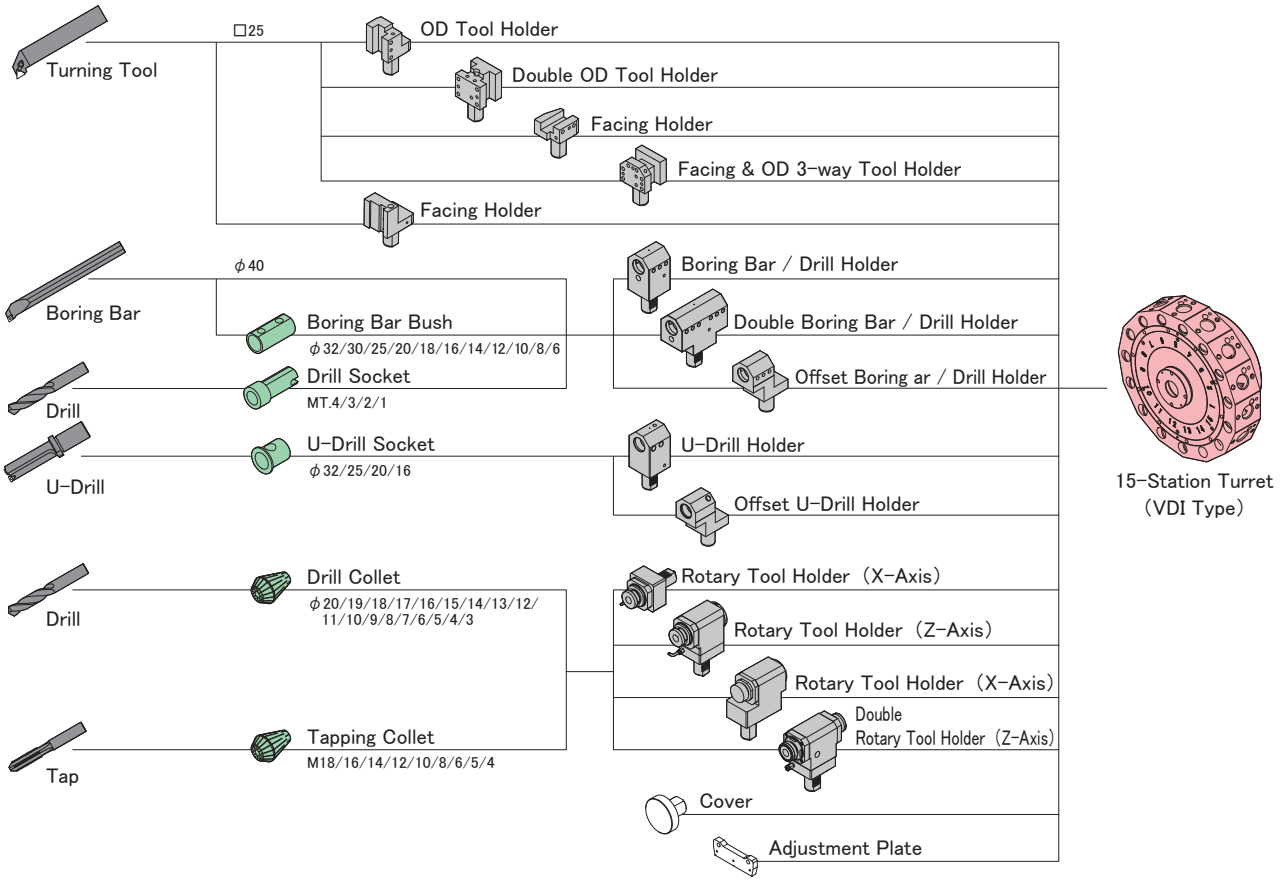
Side Holder Type (Bolted)



*1) T20 is □20.
*2) T15 is ϕ32. T20 is ϕ32.
*3) T15 and T20 does not correspond.
*4) T20 does not correspond.
*5) T12 does not correspond.

T15 (VDI)

VDI Type



Perfect Dialogue Program Processor

Optional for US Specification

TiwaP-I

Knowledge of G-code is not necessary to create programs.

Anyone can do it with ease.

TiwaP-I 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 details will be simulated by "3D Animation" or "Tool Trace Display"

"Operation"

Automatic Operation

Spindle control as well as C-axis reference return operations are automatically optimized based on arrangement of machining processes and the involved spindles.

Program Capacity: 99 Programs

Up to 999 Processes (including final process) and 99 cutting configurations per program

TiwaP-I creates G-code programs from individual processes.

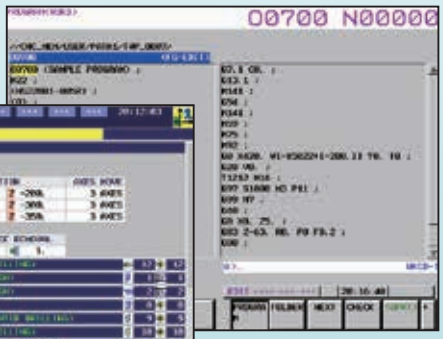
COOPERATION

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

① NC program*1 can be called (set) in the interactive (TiwaP-1) program.
② NC program*2 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

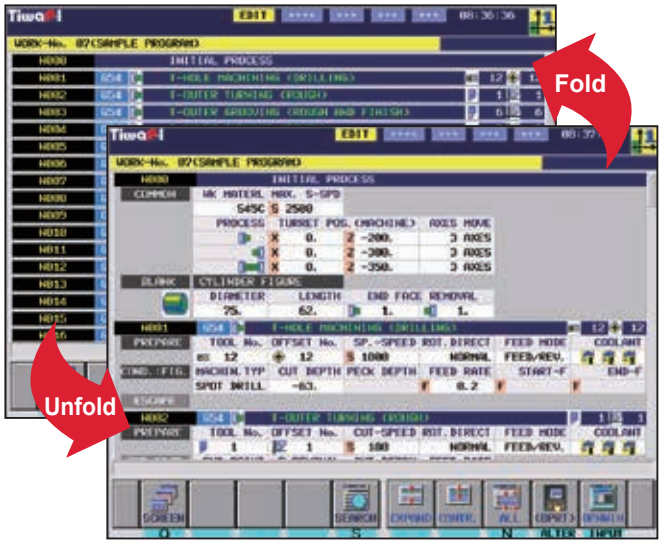
Tool passes can be checked for accuracy before test cutting using "3D Animation" or "Tool Tracking" features.

Features of TiwaP-I

Easy to See

Takisawa's original "Process Fold/Unfold Function" and easy to understand icons improve readability, making it operator friendly.

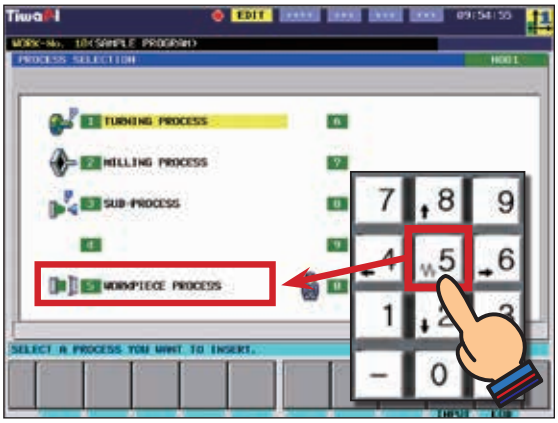
▼【Folder Display for all Process】
The flow of each process can be checked on these screens.



▲【Elaborate Process display function】
All processing data can be checked and seen on the screen.

Speed Up

Takisawa Standard Initial Values and Tooling/Material Data saved on the machine allows for faster data input. Automatic cutting data settings allow for programs for similar workpieces to be written more efficiently. These values can be customized to suit the customer's needs.



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

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

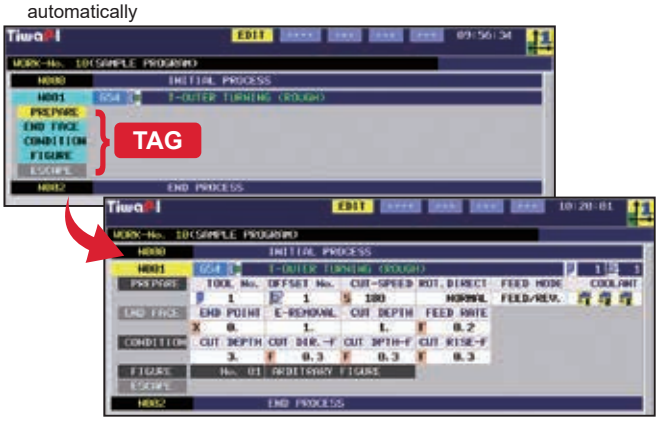
Easy to Use

The "Reliable Guide" Function helps with preparing a program.

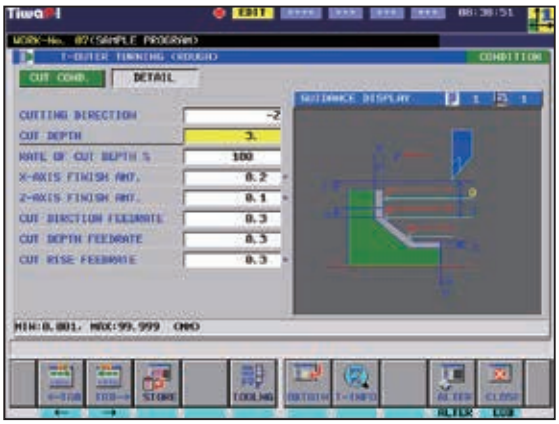
▶ "Reliable Guide Function"
The tag will be arranged in the optimum order automatically by interacting with the machine and selecting the required program.

Informative figures and icons help make it easy for beginners to use and simplifies the process of creating complex workpiece shapes.

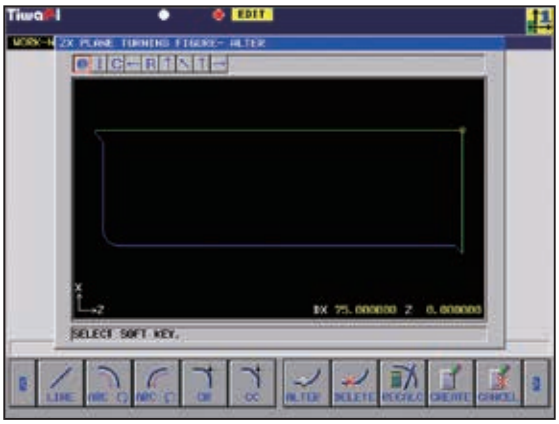
▼ By "Reliable Guide Function" Process Tag will be made automatically



▲ 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.

Machine Specifications

Items			TS-2000YS				TS-2000Y			
	Turret Type		T12 (STD.)	T10	T15	T20	T12 (STD.)	T10	T15	T20
Capability・Capacity	Max. Swing	mm inch	600 23.62″				600 23.62″			
	Standard Turning Diameter	mm inch	280 11.02″	340 13.39″	240 9.45″	193 7.60″	280 11.02″	340 13.39″	240 9.45″	193 7.60″
	Max. Turning Diameter	mm inch	370 14.57″		315 12.40″	292 11.54″	370 14.57″		315 12.40″	292 11.54″
	Max. Turning Length	mm inch	565 22.24″		550 21.65″	565 22.28″	565 22.24″		550 21.65″	565 22.28″
	Bar Capacity *1	mm inch	51 2.01″				51 2.01″			
Travel	X-Axis Travel	mm inch	267 10.51″				325 12.80″			
	Z-Axis Travel	mm inch	630 24.80″				630 24.80″			
	Y-Axis Travel	mm inch	−50 ～ +70 −1.97″ ～ +2.76″				−50 ～ +70 −1.97″ ～ +2.76″			
	A-Axis Travel	mm inch	665 26.18″				665 26.18″			
Left Spindle	Spindle Speed	min^{-1}	6000				6000			
	Spindle Nose		A2-5				A2-5			
	Through-Hole Diameter	mm inch	63 2.48″				63 2.48″			
	Bearing Inside Diameter	mm inch	100 3.94″				100 3.94″			
Right Spindle	Spindle Speed	mm inch	6000				–			
	Spindle Nose		A2-5				–			
	Through-Hole Diameter	mm inch	53 2.09″				–			
	Bearing Inside Diameter	mm inch	90 3.54″				–			
Turret	Type of Turret	mm inch	Side Holder (Bolted)		Side Holder (Bolted) / VDI	Side Holder (Bolted)	Side Holder (Bolted)		Side Holder (Bolted) / VDI	Side Holder (Bolted)
	Number of Attachable Tools		12	10	15	20	12	10	15	20
	Turret Opposite Side	mm inch	425 16.73″		460 18.11″	523 20.59″	425 16.73″		460 18.11″	523 20.59″
	Height of Square Tool Shank	mm inch	25 1″		25 1″	20 0.75″	25 1″		25 1″	20 0.75″
	Diameter of Boring Bar Shank	mm inch	L:50, R:32 L:2″, R:1.25″		40 1.5″	L:32, R:25 L:1.25″, R:1″	50 2″		40 1.5″	32 1.25″
Rotary Tool	Number of Rotary Tools		12	10	15	20	12	10	15	20
	Spindle Speed	min^{-1}	6000				6000			
	Max. Tool Shank Diameter	mm inch	26 1″		20 0.75″	20 16 0.75″ 0.625″	26 1″		20 0.75″	20 16 0.75″ 0.625″
	Tool Spindle Taper Hole		AR40		AR32	AR32 AR25	AR40		AR32	AR32 AR25
	Tool Spindle Bearing Inside Diameter	mm inch	45 1.77″		35 1.38″		45 1.77″		35 1.38″	
Feedrate	Rapid Traverse Rate (X/Z/Y/A)	m/min ipm	30/30/10/30 1181.10″/1181.10″/393.70″/1181.10″				30/30/10/13 1181.10″/1181.10″/393.70″/511.81″			
Tailstock	Quill Taper		–				Rolling Center (MT. No.4)			
Motors	Spindle Motor (30 min/continuous)	kW HP	11/7.5 14.7/10				11/7.5 14.7/10			
	Right Spindle Motor (30 min/continuous)	kW HP	11/7.5 14.7/10				–			
	Rotary Tool Motor (S3 25%/continuous)	kW HP	7.5/3.7 10/4.9				7.5/3.7 10/4.9			
	Feed Axis Motor (X/Z/Y/A)	kW HP	3.0/3.0/3.0/2.5 4/4/4/3.3				3.0/3.0/3.0/2.5 4/4/4/3.3			
	Hydraulic Pump Motor	kW HP	1.5 2				1.5 2			
	Coolant Pump Motor	kW HP	0.52 0.7				0.52 0.7			
Required Power	Electric Power	kVA	21.0				21.0			
Tank Capacity	Coolant Tank	L gal	320 84.48				320 84.48			
Machine Size	Machine Height	mm inch	2300 90.55″				2300 90.55″			
	Height form Floor to Spindle Centerline	mm inch	1140 44.88″				1140 44.88″			
	Required Floor Space *1	mm×mm inch×inch	2800 × 2140 110.24″ × 84.58″				2800 × 2070 110.24″ × 81.50″			
	Machine Weight	kg lbs	6200 13640				6000 13200			

Red is optional.

*1) Please note the bar capacity follows types of chucks and cylinders.

*2) Without Oil Pan and Chip Conveyor

TS-3000YS				TS-3000Y			
T12 (STD.)	T10	T15	T20	T12 (STD.)	T10	T15	T20
600 23.62″				600 23.62″			
280 11.02″	340 13.39″	240 9.45″	193 7.60″	280 11.02″	340 13.39″	240 9.45″	193 7.60″
370 14.57″		315 12.40″	292 11.54″	370 14.57″		315 12.40″	292 11.54″
550 21.65″		535 21.06″	545 21.46″	550 21.65″		535 21.06″	545 21.46″
67 2.64″				67 2.64″			
267 10.51″				325 12.80″			
630 24.80″				630 24.80″			
−50 ～ +70 −1.97″ ～ +2.76″				−50 ～ +70 −1.97″ ～ +2.76″			
665 26.18″				665 26.18″			
5000				5000			
A2-6				A2-6			
77 3.03″				77 3.03″			
120 4.72″				120 4.72″			
6000				–			
F140				–			
53 2.09″				–			
90 3.54″				–			
Side Holder (Bolted)		Side Holder (Bolted) / VDI	Side Holder (Bolted)	Side Holder (Bolted)		Side Holder (Bolted) / VDI	Side Holder (Bolted)
12	10	15	20	12	10	15	20
425 16.73″		460 18.11″	523 20.59″	425 16.73″		460 18.11″	523 20.59″
25 1″		25 1″	20 0.75″	25 1″		25 1″	20 0.75″
L:50, R:32 L:2″, R:1.25″		40 1.5″	L:32, R:25 L:1.25″, R:1″	50 2″		40 1.5″	32 1.25″
12	10	15	20	12	10	15	20
6000				6000			
26 1″		20 0.75″	20 16 0.75″ 0.625″	26 1″		20 0.75″	20 16 0.75″ 0.625″
AR40		AR32	AR32 AR25	AR40		AR32	AR32 AR25
45 1.77″		35 1.38″		45 1.77″		35 1.38″	
30/30/10/30 1181.10″/1181.10″/393.70″/1181.10″				30/30/10/13 1181.10″/1181.10″/393.70″/511.81″			
–				Rolling Center (MT. No.4)			
15/11 20/14.7				15/11 20/14.7			
11/7.5 14.7/10				–			
7.5/3.7 10/4.9				7.5/3.7 10/4.9			
3.0/3.0/3.0/2.5 4/4/4/3.3				3.0/3.0/3.0/2.5 4/4/4/3.3			
1.5 2				1.5 2			
0.52 0.7				0.52 0.7			
29.0				29.0			
320 84.48				320 84.48			
2300 90.55″				2300 90.55″			
1140 44.88″				1140 44.88″			
2800 × 2140 110.24″ × 84.58″				2800 × 2070 110.24″ × 81.50″			
6200 13640				6000 13200			

Machine Specifications

Items		TS-4000YS				TS-4000Y			
	Turret Type	T12 (STD.)	T10	T15	T20	T12 (STD.)	T10	T15	T20
Capability・Capacity	Max. Swing mm inch	600 23.62″				600 23.62″			
	Standard Turning Diameter mm inch	280 11.02″	340 13.39″	240 9.45″	193 7.60″	280 11.02″	340 13.39″	240 9.45″	193 7.60″
	Max. Turning Diameter mm inch	370 14.57″		315 12.40″	292 11.54″	370 14.57″		315 12.40″	292 11.54″
	Max. Turning Length mm inch	750 29.53″		735 28.94″	750 29.53″	750 29.53″		735 28.94″	750 29.53″
	Bar Capacity *1 mm inch	82 3.23″				82 3.23″			
Travel	X-Axis Travel mm inch	267 10.51″				325 12.80″			
	Z-Axis Travel mm inch	840 33.07″				840 33.07″			
	Y-Axis Travel mm inch	−50 ～ +70 −1.97″ ～ +2.76″				−50 ～ +70 −1.97″ ～ +2.76″			
	A-Axis Travel mm inch	780 30.71″				780 30.71″			
Left Spindle	Spindle Speed min^{-1}	4200				4200			
	Spindle Nose	A2-8				A2-8			
	Through-Hole Diameter mm inch	94 3.70″				94 3.70″			
	Bearing Inside Diameter mm inch	140 5.51″				140 5.51″			
Right Spindle	Spindle Speed mm inch	6000				–			
	Spindle Nose	F140				–			
	Through-Hole Diameter mm inch	53 2.09″				–			
	Bearing Inside Diameter mm inch	90 3.54″				–			
Turret	Type of Turret mm inch	Side Holder (Bolted)		Side Holder (Bolted) / VDI	Side Holder (Bolted)	Side Holder (Bolted)		Side Holder (Bolted) / VDI	Side Holder (Bolted)
	Number of Attachable Tools	12	10	15	20	12	10	15	20
	Turret Opposite Side mm inch	425 16.73″		460 18.11″	523 20.59″	425 16.73″		460 18.11″	523 20.59″
	Height of Square Tool Shank mm inch	25 1″		25 1″	20 0.75″	25 1″		25 1″	20 0.75″
	Diameter of Boring Bar Shank mm inch	L:50, R:32 L:2″, R:1.25″		40 1.5″	L:32, R:25 L:1.25″, R:1″	50 2″		40 1.5″	32 1.25″
Rotary Tool	Number of Rotary Tools	12	10	15	20	12	10	15	20
	Spindle Speed min^{-1}	6000				6000			
	Max. Tool Shank Diameter mm inch	26 1″		20 0.75″	20 16 0.75″ 0.625″	26 1″		20 0.75″	20 16 0.75″ 0.625″
	Tool Spindle Taper Hole	AR40		AR32	AR32 AR25	AR40		AR32	AR32 AR25
	Tool Spindle Bearing Inside Diameter mm inch	45 1.77″		35 1.38″		45 1.77″		35 1.38″	
Feedrate	Rapid Traverse Rate (X/Z/Y/A) m/min ipm	30/30/10/30 1181.10″/1181.10″/393.70″/1181.10″				30/30/10/13 1181.10″/1181.10″/393.70″/511.81″			
Tailstock	Quill Taper	–				Rolling Center (MT. No.5)			
Motors	Spindle Motor (30 min/continuous) kW HP	22/15 29.3/20				22/15 29.3/20			
	Right Spindle Motor (30 min/continuous) kW HP	11/7.5 14.7/10				–			
	Rotary Tool Motor (S3 25%/continuous) kW HP	7.5/3.7 10/4.9				7.5/3.7 10/4.9			
	Feed Axis Motor (X/Z/Y/A) kW HP	3.0/3.0/3.0/2.5 4/4/4/3.3				3.0/3.0/3.0/2.5 4/4/4/3.3			
	Hydraulic Pump Motor kW HP	1.5 2				1.5 2			
	Coolant Pump Motor kW HP	0.52 0.7				0.52 0.7			
Required Power	Electric Power kVA	33				33			
Tank Capacity	Coolant Tank L gal	370 97.68				370 97.68			
Machine Size	Machine Height mm inch	2300 90.55″				2300 90.55″			
	Height form Floor to Spindle Centerline mm inch	1140 44.88″				1140 44.88″			
	Required Floor Space *2 mm×mm inch×inch	3000 × 2140 118.11″ × 84.58″				3000 × 2070 118.11″ × 81.50″			
	Machine Weight kg lbs	6200 13640				6000 13200			

Red is optional.

[ ] are the specification when the left spindle A2-8 is selected.

《 》are the specification when the right spindle F140 is selected.

*1) Please note the bar capacity follows types of chucks and cylinders.

*2) Without Oil Pan and Chip Conveyor

TS-5000YS				TS-5000Y			
T12 (STD.)	T10	T15	T20	T12 (STD.)	T10	T15	T20
600 23.62″				600 23.62″			
280 11.02″	340 13.39″	240 9.45″	193 7.60″	280 11.02″	340 13.39″	240 9.45″	193 7.60″
370 14.57″		315 12.40″	292 11.54″	370 14.57″		315 12.40″	292 11.54″
1300 51.18″		1285 50.59″	1300 51.18″	1300 51.18″		1285 50.59″	1300 51.18″
102 [82] 4.02″ 3.23″				102 [82] 4.02″ 3.23″			
267 10.51″				325 12.80″			
1470 57.87″				1470 57.87″			
−50 ～ +70 −1.97″ ～ +2.76″				−50 ～ +70 −1.97″ ～ +2.76″			
1480 58.26″				1480 58.26″			
2500 [4200]				2500 [4200]			
A2-11 [A2-8]				A2-11 [A2-8]			
111 [94] 4.37″ 3.70″				111 [94] 4.37″ 3.70″			
160 [140] 6.30″ 5.51″				160 [140] 6.30″ 5.51″			
5000 《6000》				–			
A2-6 《F140》				–			
63 《53》 2.48″ 2.09″				–			
100 《90》 3.94″ 3.54″				–			
Side Holder (Bolted)		Side Holder (Bolted) / VDI	Side Holder (Bolted)	Side Holder (Bolted)		Side Holder (Bolted) / VDI	Side Holder (Bolted)
12	10	15	20	12	10	15	20
425 16.73″		460 18.11″	523 20.59″	425 16.73″		460 18.11″	523 20.59″
25 1″		25 1″	20 0.75″	25 1″		25 1″	20 0.75″
L:50, R:32 L:2″, R:1.25″		40 1.5″	L:32, R:25 L:1.25″, R:1″	50 2″		40 1.5″	32 1.25″
12	10	15	20	12	10	15	20
6000				6000			
26 1″		20 0.75″	20 16 0.75″ 0.625″	26 1″		20 0.75″	20 16 0.75″ 0.625″
AR40		AR32	AR32 AR25	AR40		AR32	AR32 AR25
45 1.77″		35 1.38″		45 1.77″		35 1.38″	
30/30/10/30 1181.10″/1181.10″/393.70″/1181.10″				30/30/10/13 1181.10″/1181.10″/393.70″/511.81″			
–				Rolling Center (MT. No.6) Rolling Center (MT. No.5)			
22/15 29.3/20				22/15 29.3/20			
11/7.5 14.7/10				–			
7.5/3.7 10/4.9				7.5/3.7 10/4.9			
3.0/3.0/3.0/2.5 4/4/4/3.3				3.0/3.0/3.0/2.5 4/4/4/3.3			
1.5 2				1.5 2			
0.52 0.7				0.52 0.7			
33.0				33.0			
470 124.08				470 124.08			
2300 90.55″				2300 90.55″			
1140 44.88″				1140 44.88″			
4105 × 2165 161.61″ × 85.24″				4105 × 2165 161.61″ × 85.24″			
8700 19140				8500 18700			

Other Main Specifications • Accessories

Items		YS	Y
Hollow Hydraulic Chuck *1	Main Spindle	○	○
	Sub Spindle	○	–
Hydraulic Chuck Cylinder *1	Main Spindle	○	○
	Sub Spindle	○	–
Chuck Auto Open/Close M-Function		● (L/R Each 1)	● (L 1)
Chuck Open/Close Footswitch		●	●
Spindle Cooler		●	●
Tool Setter	Main Spindle	● (Turn Type)	● (Turn Type)
	Sub Spindle	● (Removable Type)	–
Air Purge (L/R Spindle, Turret)		●	●
Parts Catcher *2	Main Spindle	●	● *3
Unloader *11		○	–
Sub Spindle Work Extruder (Spring Type) *2 *4		●	–
Coolant Pump	520W : 1 Unit	●	●
Spindle Through Coolant	Main Spindle	○	○
Chuck Airblow	Main Spindle	○	○
	Sub Spindle	●	–
Spindle Through Airblow	Sub Spindle	○	–
Spindle Above Coolant		●	●
Lubricant Collection Box *5		●	●
NC Servo Tailstock *6		–	●
Rolling Center		–	○
Turret *7	T12	●	●
	T10	○	○
	T15	○	○
	T15/VDI	○	○
	T20	○	○
OD Tool Holder (for Main Spindle)		● (2 Piece)	● (4 Piece)
Double OD Tool Holder (for Main/Sub Spindle)		● (2 Piece)	–
Boring Bar / Drill Holder	Includes 1 piece of self-boring	● (4 Piece)	● (4 Piece)
Boring Bar Bush		● (4 Piece)	● (4 Piece)
Cut-Off Holder		● (1 Piece)	–
Facing Holder		○	● (1 Piece)
Work Pusher	Sub Spindle	○	–

Items		YS	Y
Rotary Tool Holder for X-Axis Milling (ϕ26, 6000min^{-1})		○	○
Rotary Tool Holder for X-Axis Face Mill (FMC22, 3500min^{-1})		○	○
Rotary Tool Holder for Z-Axis Milling (ϕ26, 6000min^{-1})		○	○
Collet		○	○
Bar Feeder Interface		○	○
Robot Interface		○	○
Filler Tube		○	○
Chip Conveyor *8	Rear *2/Side Discharge	○	○
Chip Bucket		○	○
Signal Tower Light	3-Color, LED	○	○
	1-Color, Rotary	○	○
	1-Color, LED	○	○
Front Door Interlock		●	●
Auto Door	Left Open, Double Doors *9	○	○
Powered Door		○	○
Counter	Total, Preset, Multi	○	○
19″ Touch Panel Monitor		○	○
Tiwap-I *10		●	●
Lighting Apparatus	LED	●	●
Lighting Inside the Panel		○	○
Hydraulic Pressure Switch		●	●
Auto Power-Off System		●	●
Instruction Manual		●	●

* For other optional accessories, please contact us.

Special Specification Example

Work Discharging Unloader *11

Discharging Partscatcher (Sub Spindle) *2

*1) Please note the bar capacity follows types of chucks and cylinders.
By default, the following hydraulic chuck/cylinder are provided.

	TS-2000		TS-3000		TS-4000		TS-5000	
Spindle	Main	Sub	Main	Sub	Main	Sub	Main	Sub
Hollow Hydraulic Chuck	BB-206	B-206	BB-208	B-206	BB-210	B-206	BB-212	B-208
Hydraulic Chuck Cylinder	SS1452K	SIN-S100 (Solid cyl.)	SS1666K	SIN-S100 (Solid cyl.)	SS1881K	SIN-S100 (Solid cyl.)	SS2110K	SIN-S125 (Solid cyl.)
ID of Draw Tube	52	–	66	–	81	–	103	–
Bar Capacity	51	–	65	–	80	–	102	–

*2) Not compatible with TS-5000. Sub spindle parts catcher is compatible only for TS-2000YS/TS-3000YS.

*3) Standard only for Europe, North America and Russia.

*4) Installation is allowed only when hollow type hydraulic chuck/cylinder are provided.

*5) Lubricant mixing in water soluble coolant is separated, and only the coolant is returned to the coolant tank. The lubricant collected in the lubricant collection box must be drained periodically.

*6) With ejecting nut.

*7) US spec does have T20 as standard.

*8) Rear or side discharge chip conveyor must be selected and installed.

*9) TS-2000/3000/4000 : Left Open, TS-5000 : Double Doors

*10) Option in US spec.

*11) Compatible with TS-4000.

US Special Spec

TS-2000 is Turret T20/AR25 Standard.

3-Keys Turret Type Standard.

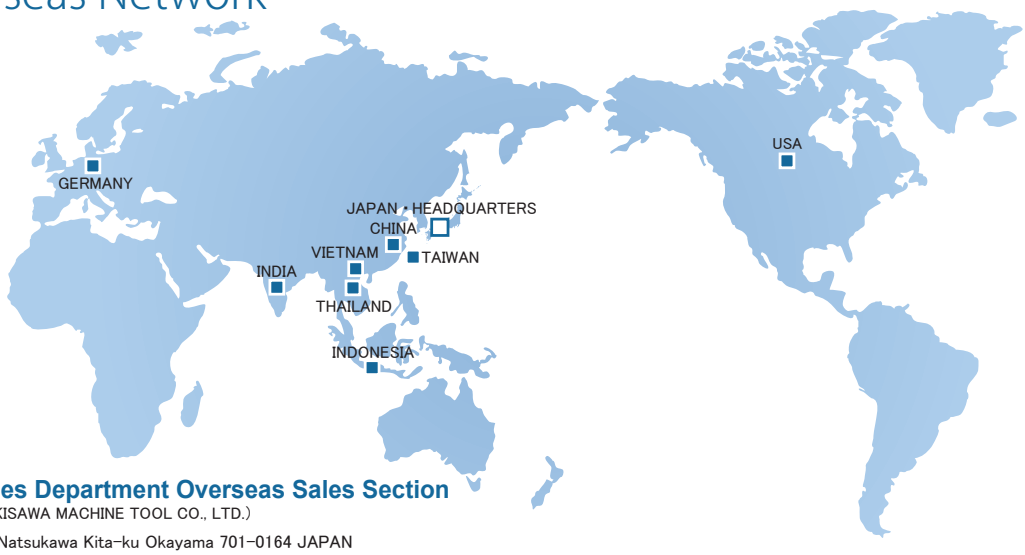
Optional for US Specification

Network

The TAKISAWA Technology and Network Services the World.

Please feel free to contact our sale representatives nearest you.

Overseas Network



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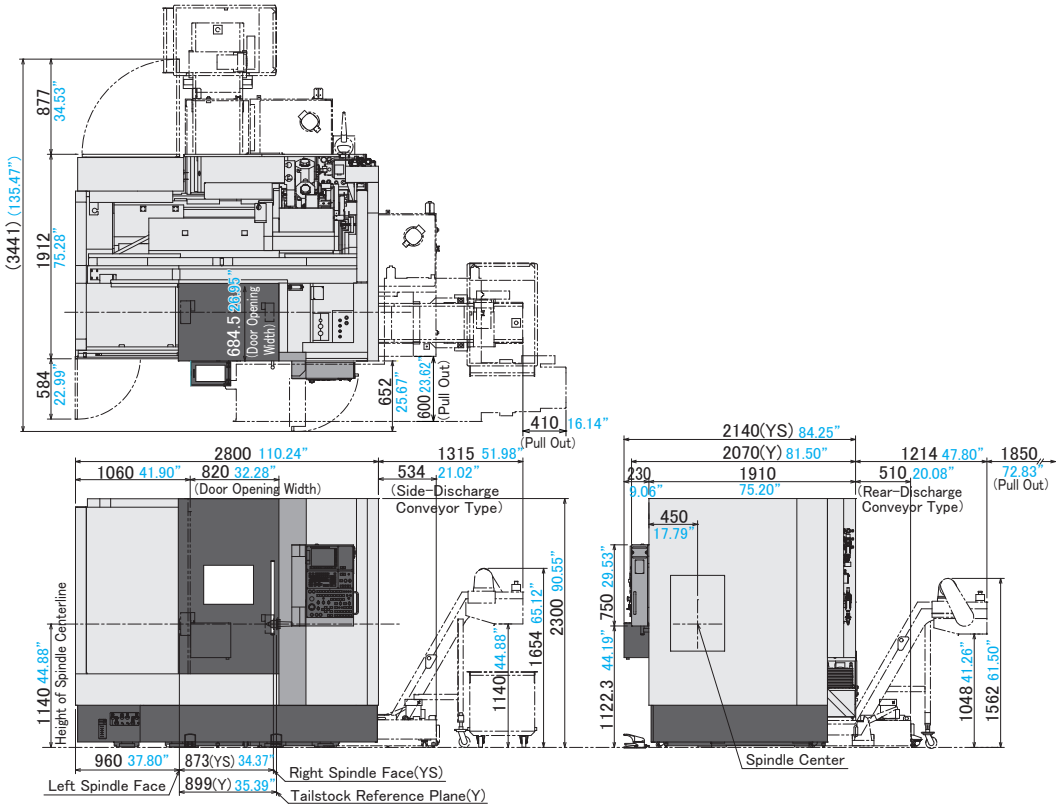
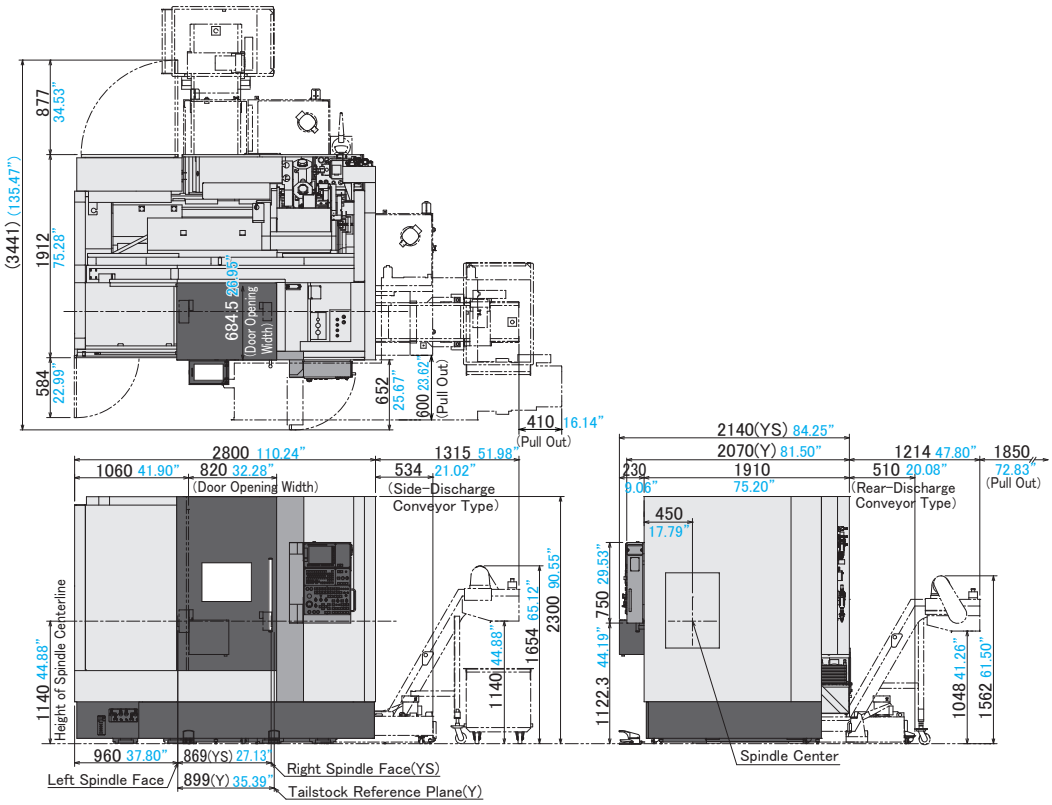
Machine Dimensions

Unit : mm inch

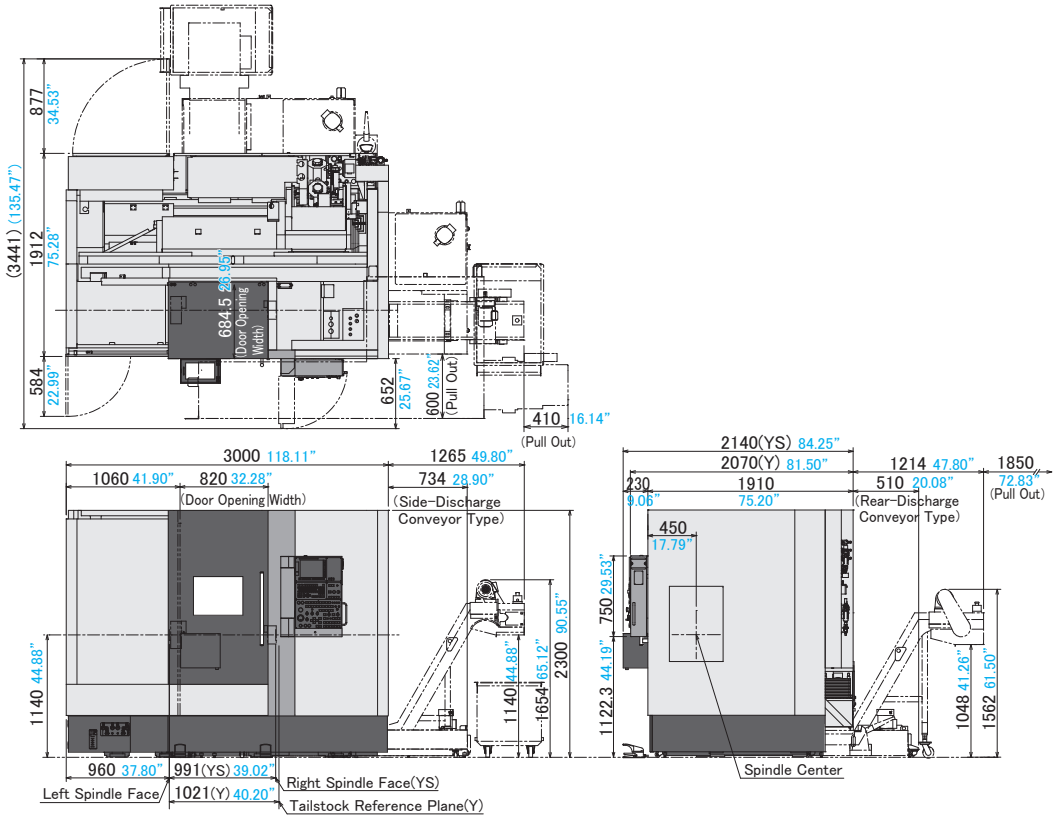
TS-2000



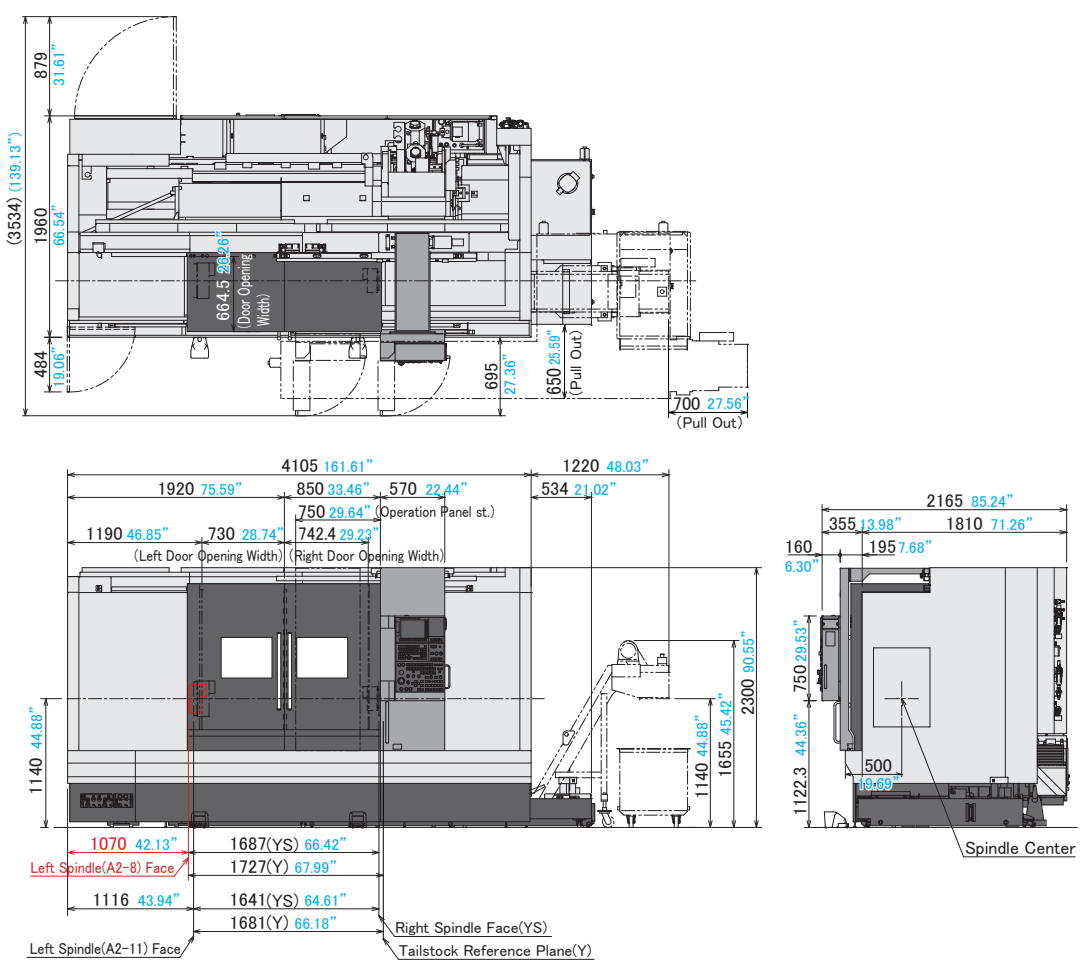
TS-3000



TS-4000



TS-5000



TS-SERIES

NC Unit Specifications

FANUC : 32i-B

※ Please contact our sales persons for further information.

Composition

Specifications・Contents	YS	Y
【NC Unit】		
Number of Control Axes	6	5
Simultaneous Number of Control Axes	4	
【Operation Panel】		
Screen (10.4″ color LCD/MDI)	●	
【Software】		
Tiwap-1	● *17	
RAKU-RAKU Monitor 3	○	
Measurement Monitor 3 *1	◎	
【Safety Devices】		
Front Door Interlock	●	
Front Door Locking Mechanism	○	
Dual Check Safety	CE	
Control Panel Breaker with Tripper	●	

Main Function List

Specifications・Contents	YS	Y
【Controlled Axes】		
Least Input Increment *2	●	●
Max. Programmable Dimension (±999999.999)	●	●
Cs Contouring Control	● L + R	●
Increment System C *3	○	○
Inch/Metric Conversion	●	●
Interlock	●	●
Machine Lock	○	○
Emergency Stop	●	●
Stored Stroke Check 1	●	●
Stored Stroke Check 2, 3 *4	○	○
Stored Limit Check Before Move	○	○
Chuck and Tail Stock Barrier *5	○	○
Mirror Image (Each Axis)	▲	▲
Follow-Up	●	●
Chamfering ON/OFF	●	●
Unexpected Disturbance Torque Detection Function *6	○	○
Position Switch	◎	◎
【Operation】		
Automatic Operation (Memory)	●	●
MDI Operation	●	●
DNC Operation with Memory Card *7 *8	◎	◎
Program Number Search	●	●
Sequence Number Search	●	●
Sequence Number Comparison and Stop	○	○
Program Restart	◎	◎
Tool Retract and Recover	○	○
Wrong Operation Prevention	▲	▲
Buffer Register	●	●
Dry Run	●	●
Single Block	●	●
Manual Continuous Feed (JOG)	●	●

Specifications・Contents	YS	Y
Manual Reference Position Return	●	●
Reference Position Setting without DOG	●	●
Manual Handle Feed, 1 Unit	●	●
Handle interruption	◎	◎
Jog and Handle Simultaneous Mode	▲	▲
【Interpolation Functions】		
Nano Interpolation	●	●
Positioning (G00)	●	●
Linear Interpolation (G01)	●	●
Circular Interpolation (G02/03)	●	●
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%,F0,10%,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	●	●
Bell-shaped Acceleration/Seceleration After Cutting Feed Interpolation	○	○
Feedrate Override (21 Steps)	●	●
Jog Override (21 Steps)	●	●
Override Cancel	●	●
Manual per Revolution Feed	▲	▲
Linear Acceleration/Deceleration After Cutting Feed Interpolation	●	●
【Program Input】		
Program Code	●	●
Label Skip	●	●
Parity Check	●	●
Control In/Out	●	●
Optional Block Skip, 1 Piece	●	●
Optional Block Skip (2 to 9 Pieces)	◎	◎
Program Number O4 Digits	●	●
Program File Name 32 Characters	●	●
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)	●	●
Automatic Coordinate System Setting	○	●
Workpiece Coordinate System	Tiwap *17	○
Workpiece Coordinate System Preset	Tiwap *17	○
Direct Drawing Dmension Programming *9	○	○
G-Code System A	●	●
G-Code System B/C *10	○	○
Chamfering/Corner R *11	●	●
Programmable Data Input (G10)	●	●
Sub Program Call (10 Levels)	●	●
Custom Macro	●	●
Additional Custom Macro Common Variables	○	○
Canned Cycle	●	●
Multiple Repetitive Cycles	●	●
Multiple Repetitive Cycles Ⅱ	●	●
Canned Cycle for Drilling	●	●

Specifications・Contents	YS	Y
Circular Dnterpolation by R Programming	●	●
Automatic Corner Override	○	○
Coordinate System Shift	●	●
Direct Input of Coordinate System Shift	●	●
Program Coordinate System Changing Function	●	–
【Auxiliary/Spindle Speed Function】		
M Function (M8 Digits)	●	●
2nd Auxiliary Functionn (B8 Digits)	◎	◎
High-Speed MSTB Interface	●	●
Multiple Command of Auxiliary Function (3 Pieces)	●	●
Spindle Speed Function (S5 Digits)	●	●
Constant Surface Speed Control	●	●
Spindle Override	●	●
Number of Spindle Controls	3	2
Spindle Orientation Expansion (Max. 3)	●	●
Spindle Synchronous Control	●	–
Simple Spindle Synchronous Control *12	●	–
Multi Spindle Control	●	●
Rigid Tap (Spindle Center)	●	●
Rigid Tap (Rotary Tool)	●	●
【Tool Functions / Tool Compensation】		
Tool Function (T2+2 Digits)	●	●
Tool Function (T2+3 Digits)	○	○
Tool Offset Pairs 64-pairs	●	●
Tool Offset Pairs 99-pairs	○	○
Tool Offset Pairs 200-pairs	○	○
Tool Offset Pairs 400-pairs	○	○
Tool Offset	●	●
Y-Axis Offset	●	●
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 *13	●	●
Tool Life Management *14	○	○
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 128Kbyte	●	●
Part Program Storage Size 256Kbyte	○	○
Part Program Storage Size 512Kbyte	○	○
Part Program Storage Size 1Mbyte	Tiwap *17	Tiwap *17
Part Program Storage Size 2Mbyte	○	○
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 Display (32 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	◎	◎
Data Protection Key, 1 Kind	●	●
Erase CRT Screen Display	●	●
System Configuration Screen	●	●
Help Function	●	●
Self-diagnosis Function	●	●
Periodic Maintenance Screen	●	●

Specifications・Contents	YS	Y
【Multi-language Display】		
English *15	●	●
Japanese (Kanji) *15	▲	▲
Other Language *15 *16	○	○
Dynamic Display Language Switching	▲	▲
【Data I/O】		
RS-232C Interface for 1ch	○	○
External Tool Offset	◎	◎
External Message	●	●
Memory Card I/O	●	●
USB Memory I/O	●	●
Screen Hard Copy	●	●
Automatic Data Backup (1 Piece)	●	●
【Other】		
Status Output Signal	●	●

● : 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.)

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

*1) I/O addition and the PC change are necessary.
*2) 0.001mm、0.0001inch、0.001deg
*3) IS-C 0.0001mm 0.001deg 0.00001inch
*4) Not coexistent with chuck and tail stock 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) Not coexistent with chamfering/corner R.
*10) Cannot be used on Tiwap-1.
*11) Not coexistent with direct drawing dmension programming.
*12) Included in spindle synchronous control.
*13) Tool setter is required.
*14) Cannot be used when RAKU-RAKU Monitor 3 is installed.
*15) Cannot be simultaneous display the other languages.
*16) German, French, Spanish, Italian, Chinese (traditional), Chinese (simplified), Korean, Portuguese, Dutch, Danish, Swedish, Hungarian, Czech, Polish, Russian, Turkish, Romanian, Bulgarian
*17) US spec does not have Tiwap-1 as standard. Carried with Tiwap-1.

TS-SERIES

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