

CNC Multi-Turning Center

XX series

TAKAMAZ



CNC Multi-Turning Center

XY series

From Blank to Finish with a Single Switch!

The answer is here. it's XY series !

From the age of mass production to optimal quantity production
Supporting optimal creation of new things through
intelligent fusion of man and machine,
the XY series is the ideal machine for a new era.

Turning range

Max. turning diameter
Main-spindle side

φ 190mm
(φ 240mm)
φ 170mm



Max. turning diameter
Sub-spindle side

φ 190mm
(φ 240mm)
φ 135mm

Max. bar
diameter

φ 51 (φ 65)
φ 51

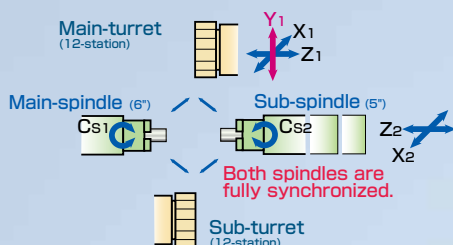
※ The available turning range varies depending on the chuck size or part shape.
※ (): Option

XY-120

PLUS

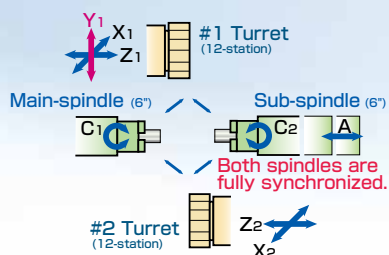
This middle size multi-turning center is equipped with the sub-spindle X2 axis to enable superimposed cutting and can be installed with an optional sub-turret, which further helps shorten turning time. Compared to conventional machines, higher-grade motors are used to achieve an OD turning area of 0.87 mm² (10% increase) on the main-spindle side and 0.5 mm² (13% increase) on the sub-spindle side.

※Cutting amount×Feedrate.



XYT-51

Suited to bar work up to max. $\phi 51$ mm ($\phi 65$ mm), and able to accommodate a maximum of 48 turning tools through half indexing or 24 power tools. Increasing motor output beyond that of the existing machines allows it to handle heavy-duty cutting and compound machining.



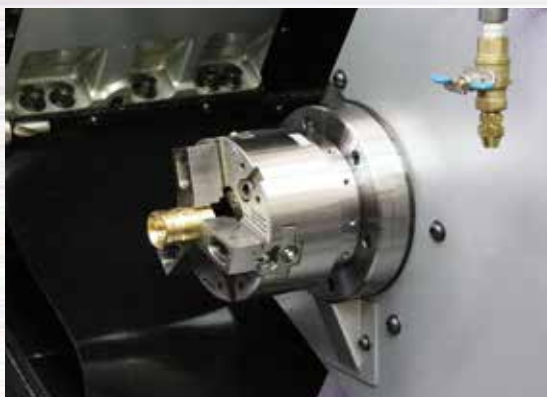
Turning and milling available with the Y axis for power tools



Equipped with a Y axis and milling function, multi-turning operation equivalent to machining centers is possible. By using the Y axis, multi-turning operations such as polar coordinate interpolation and cylindrical interpolation which were conventionally difficult with turning machines are made simpler with high precision.

	Y-axis cutting range	Power tool storage capacity	Power tool capacity
XY-120	± 35mm	12 tools / turret	φ13mm, M8mm
XYT-51	± 35mm	12 tools / #1 turret 12 tools / #2 turret	φ13mm, M12mm φ13mm, M12mm

Sub-spindle provided for shaft work and blank-to-finish cutting on both front and back faces



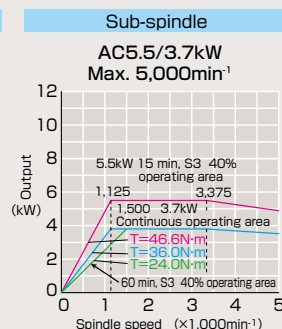
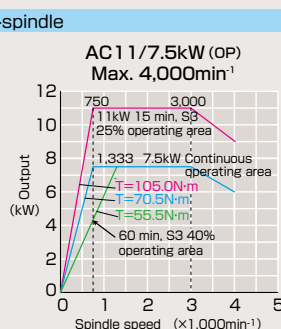
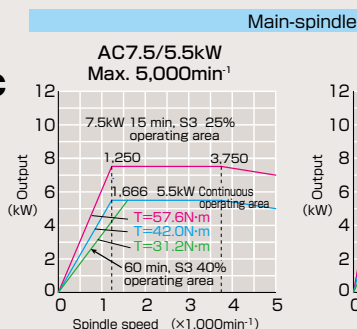
A sub-spindle having the same capability as the main-spindle enables back face cutting of the second process in a single machine structure. Fully synchronized rotation of both spindles offers high precision and uniform finish shaft work.

	Sub-spindle Chuck size	Spindle speed	Stroke
XY-120	5 inches	Max. 5,000min ⁻¹	440mm
XYT-51	6 inches	Max. 5,000min ⁻¹	550mm

XY-120 PLUS

Power Characteristic Curve

A wide range of high performance motors are available according to your needs from high horsepower to high speed rotation.





Cylinder blocks
(car air-conditioners)



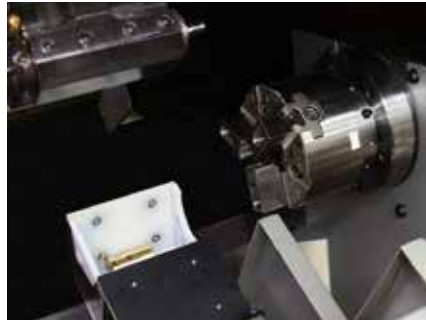
Pistons



Sleeves, body valves



Gear sleeves



Bar work automated with parts catcher

The parts catcher can be configured to the most appropriate part-receiving timing by programming and, if combined with an automatic bar feeder, enables extended unmanned operation of bar work.



Swivable operation panel for good operability

To reduce the operator's burden, a swivable operation panel is employed in consideration of minimizing the operator's motion area. Operations in good posture support a strain-free, efficient and safe working environment.

Consideration to maintenance and environment

For ease of maintenance and good operability, the chuck pressure regulating valve and lubrication pump are arranged on the front face of the machine. A periodical inspection notice function notifies the time of battery replacement and hydraulic pump inspection to support control of maintenance and help keep the machine in top condition all the time. In addition, the XY-120plus is equipped with high-performance motors.



FANUC Manual Guide i installed for good and easy-to-use programming

Cutting cycles for milling, turning, inclined cutting and more can be programmed with ease and simulated in realistic graphical representation, which will dramatically shorten programming time.

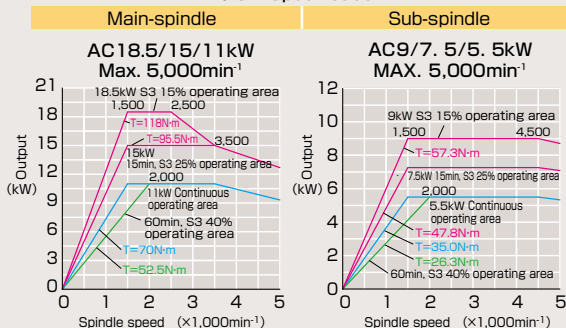


Chip conveyor for chip accumulation prevention

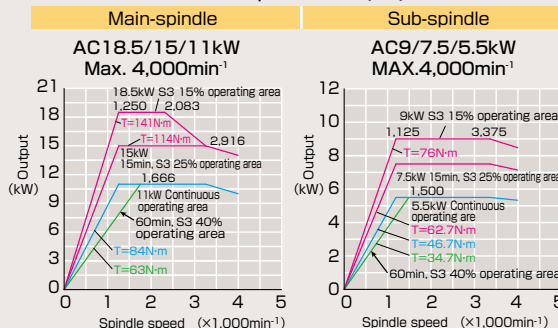
The slant bed structure of the XY series assures a smooth flow of chips. Even if chips have complex shapes depending on cutting conditions, using a chip conveyor in combination can remove such chips smoothly from the machine.

XYT-51

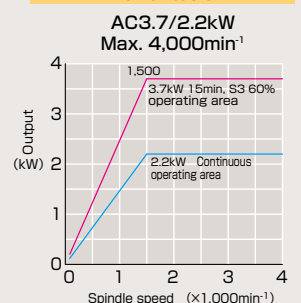
φ51 Specification



φ65 Specification (OP)



Power tools



XY-120 PLUS

Superimposed Cutting



Simultaneous front and back face cutting is available by using the sub-spindle axis.



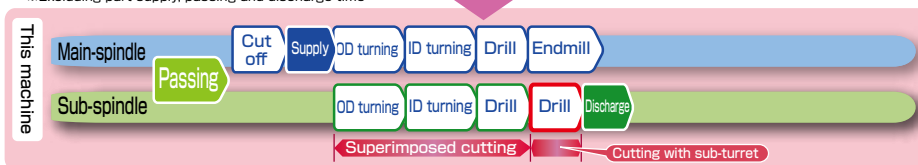
Cycle time shortened with superimposed cutting

X2 axis configuration is added to the sub-spindle slide to enable X- and Z-axis superimposed cutting. An optional sub-turret further enables superimposed cutting simultaneously on the main-spindle and the sub-spindle, which contributes to drastic cycle time reduction. (See the chart below.)



Max. 50% time reduction

*Excluding part supply, passing and discharge time



Sufficient tool storage capacity

The 12-station main-turret with the intermediate indexing function has 24 tool storage positions or if a sub-turret is installed 36 tool storage positions, reducing the number of tool setup times that might be required frequently during various kinds various volumes production.

A maximum of 12 power tools for drilling of up to $\phi 13$ mm can be installed.

XYT-51

BALANCE CUT

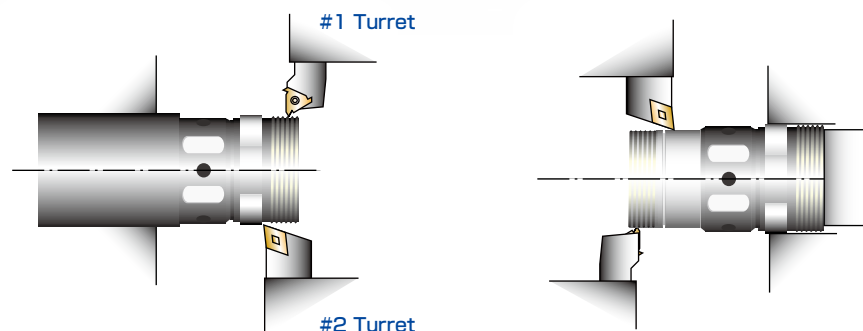


#1 and #2 turrets are synchronized during OD turning for high precision balance cutting.

By applying two synchronized turning tools (for example, a rough turning tool and a finish turning tool) simultaneously from both sides, part deflection can be dampened, achieving high cutting precision and shorter cycle times.

Main-spindle side

On the Sub-spindle side



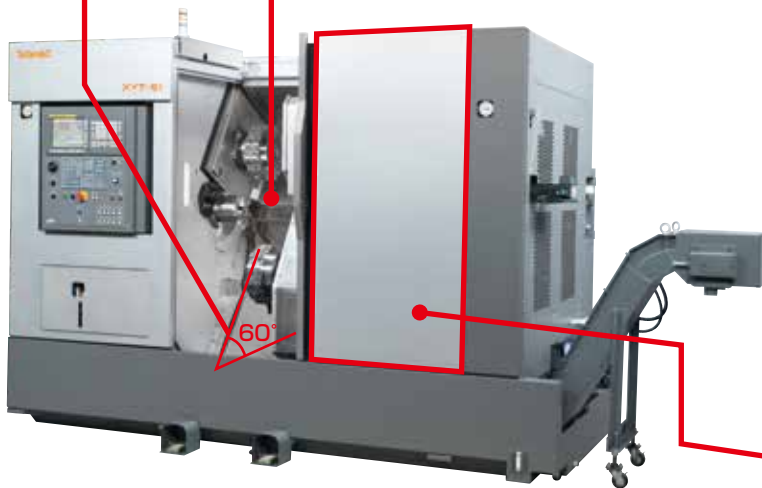
XYT-51

The XY series machines have a spacious cutting chamber which makes in-machine work such as setup changes easier and provides a turning range flexible with varied workpieces.

Chip expulsion and dust-proofing are also improved compared to existing machines, and the 60° angled cover under the turret reduces retention of chips in the machine, and improves the chip removal capability which is required by a multi-turning center. Linear guides with excellent dust-proofing are adopted.

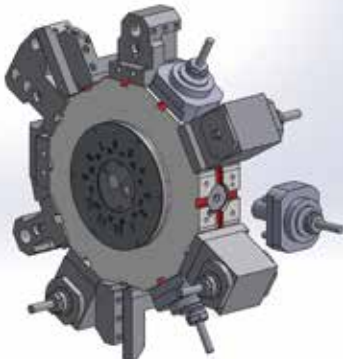
Cover angle 60°

Sliding slideway cover of single-plate construction



Sliding door adopted for ease of maintenance

The right side cover of the machine can be slid as a maintenance door. A large maintenance area can be secured, which facilitates maintenance or inspections and helps to reduce machine failures and trouble.

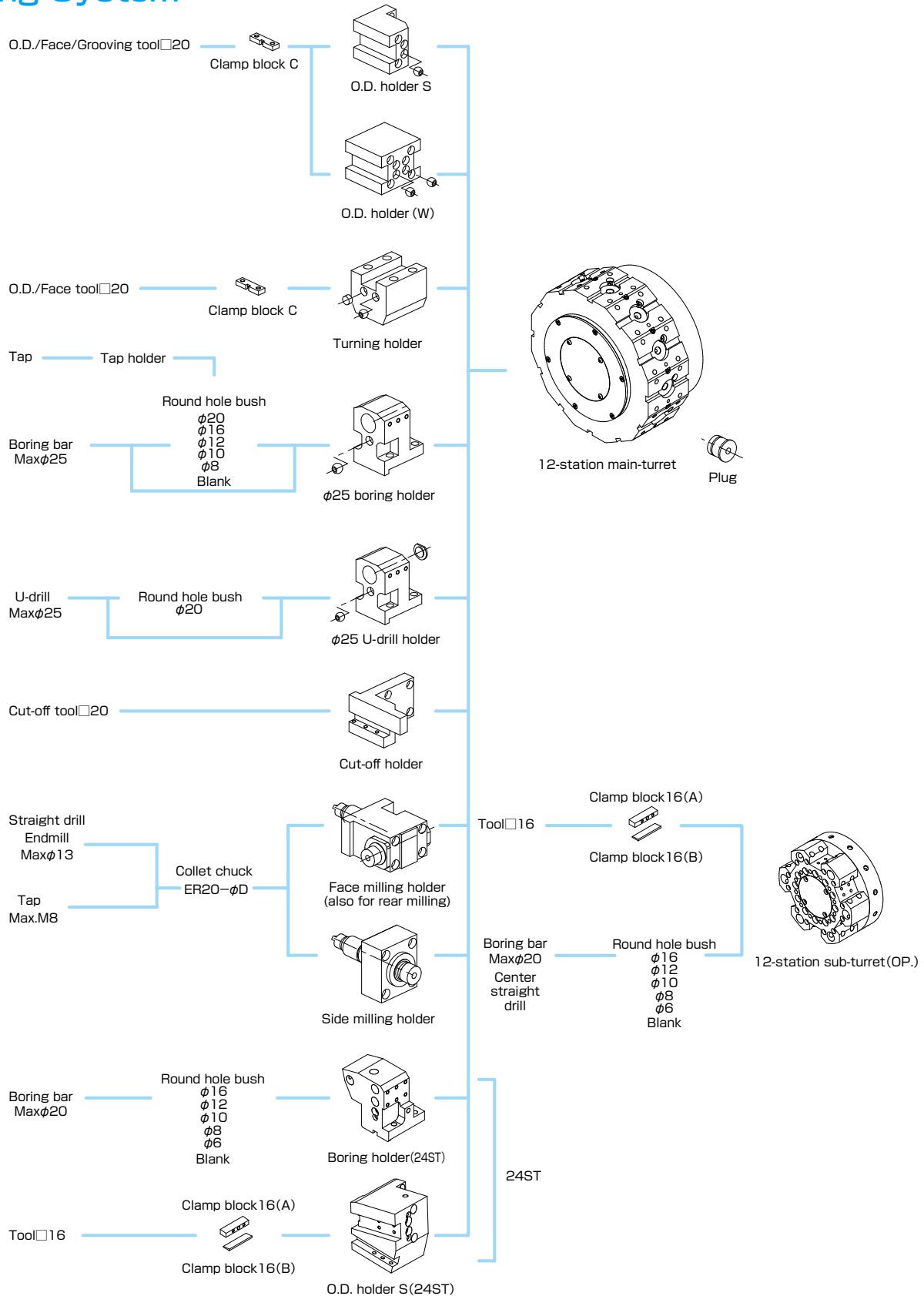


Use of bolt mount system (BMT45, 55)

The XYT-51 adopts the new global standard BMT system. This is a holder securing system using four bolts and key grooves.

It is compatible with a wide range of attachments and a variety of tooling layouts by each holder manufacturer, enabling turning and milling tailored to your needs of production.

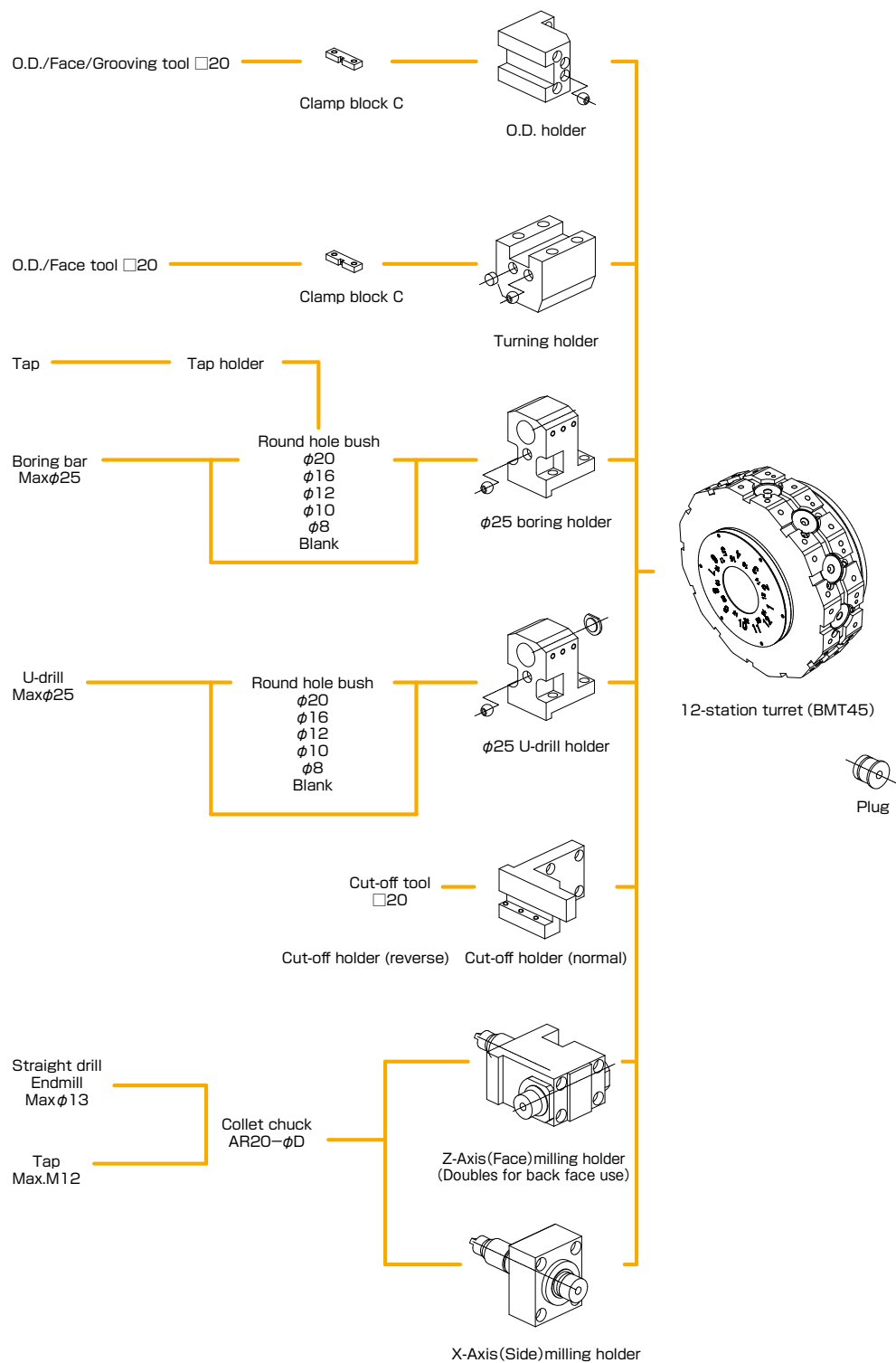
Tooling System



Unit(mm)

Tooling System

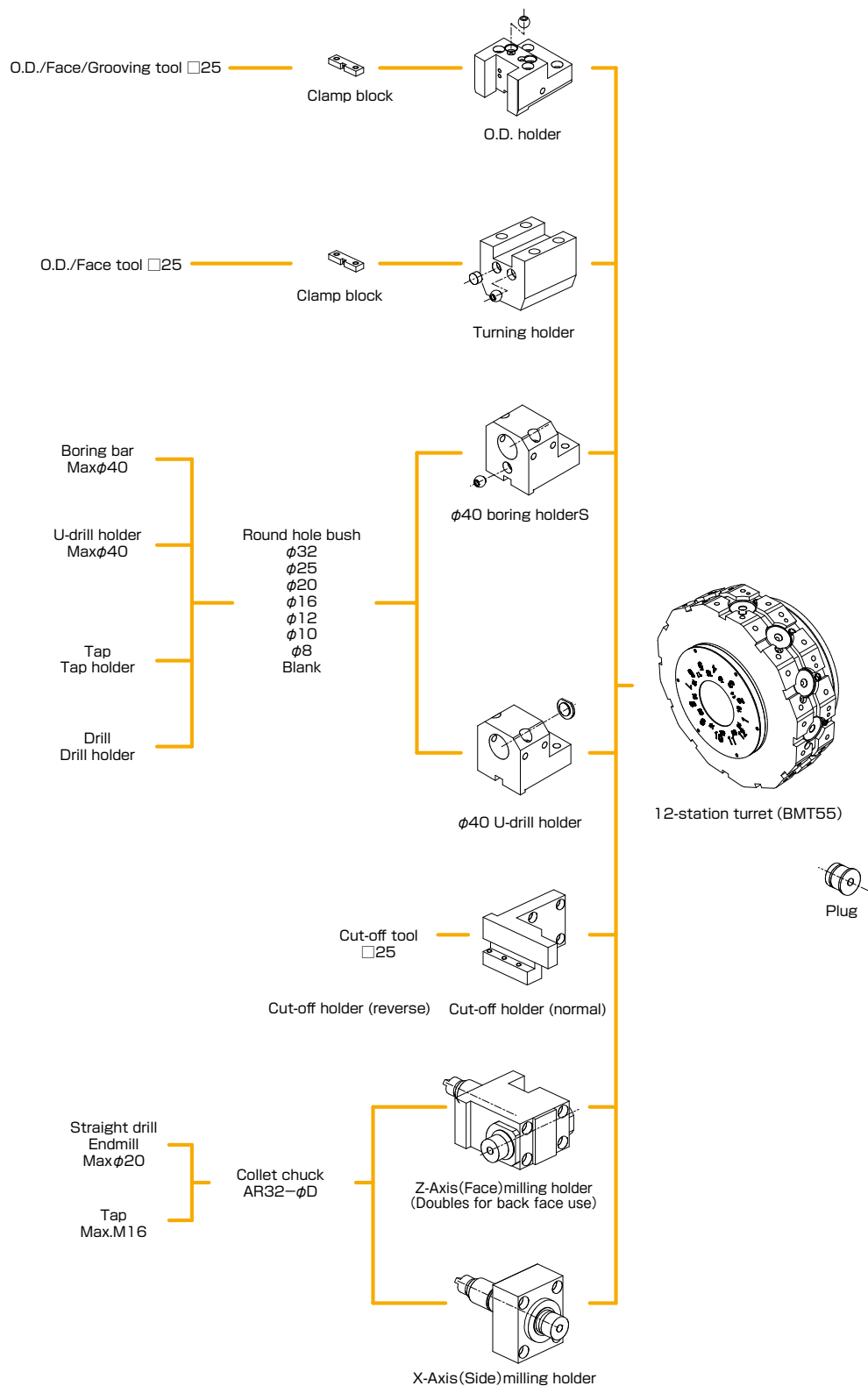
BMT45



Unit(mm)

Tooling System

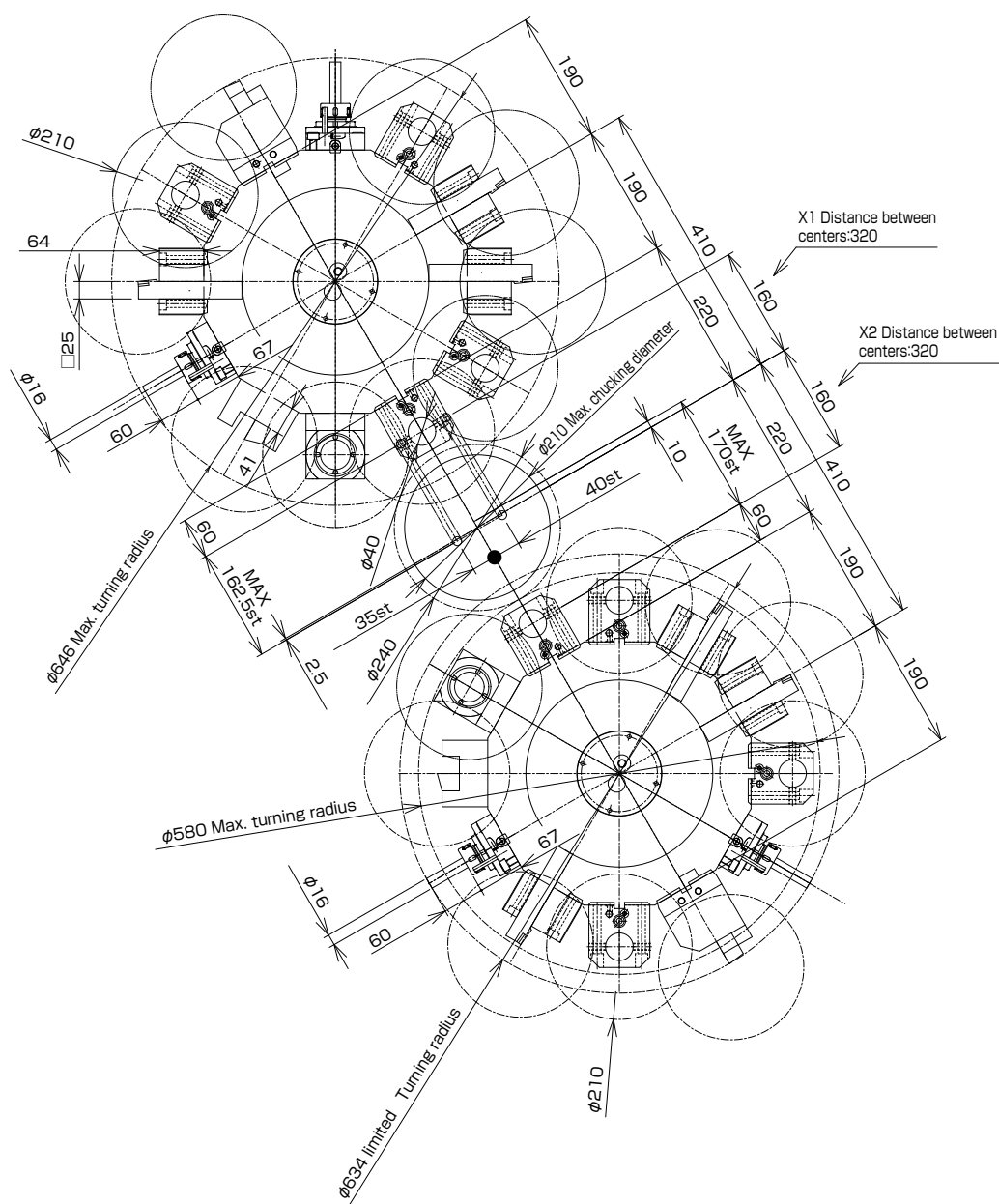
BMT55



単位(mm)

Turret interference

BMT55

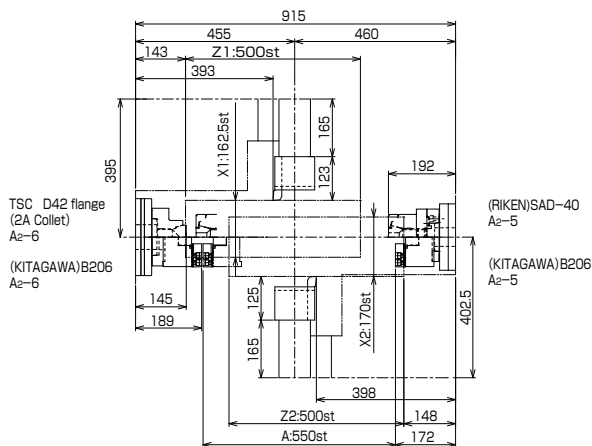


単位 (mm)

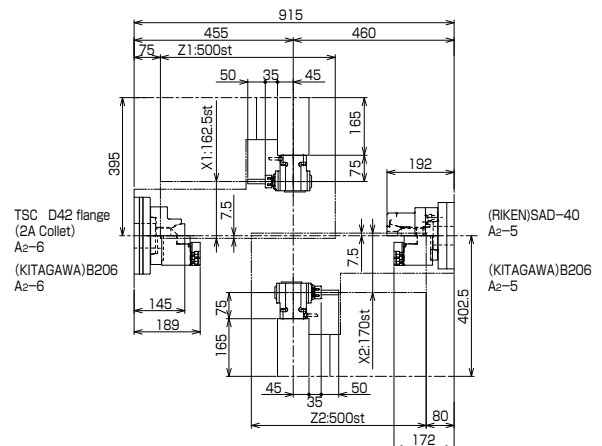
Stroke-Related Drawing

BMT45

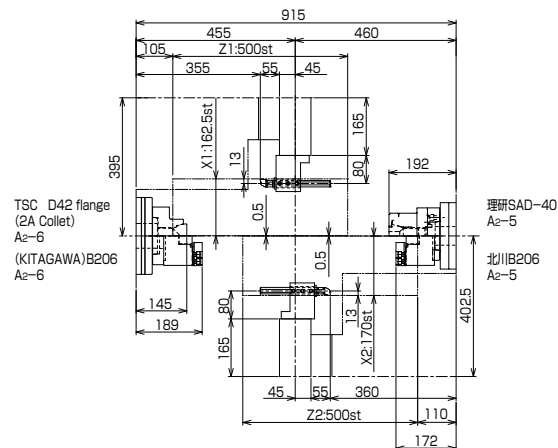
O.D. holder



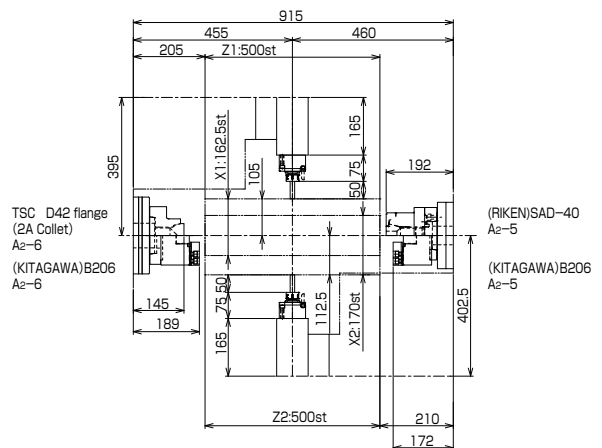
Z-Axis (Face) milling holder



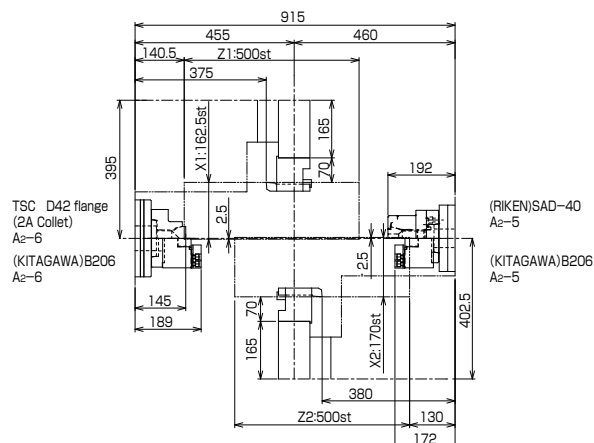
Boring holder, U-drill holder



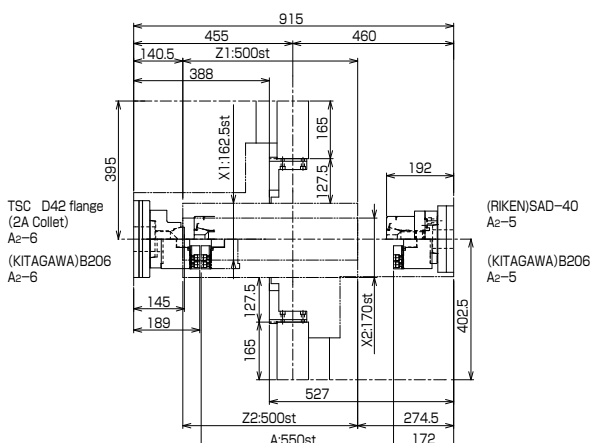
X-Axis (Side) milling holder



Turning holder

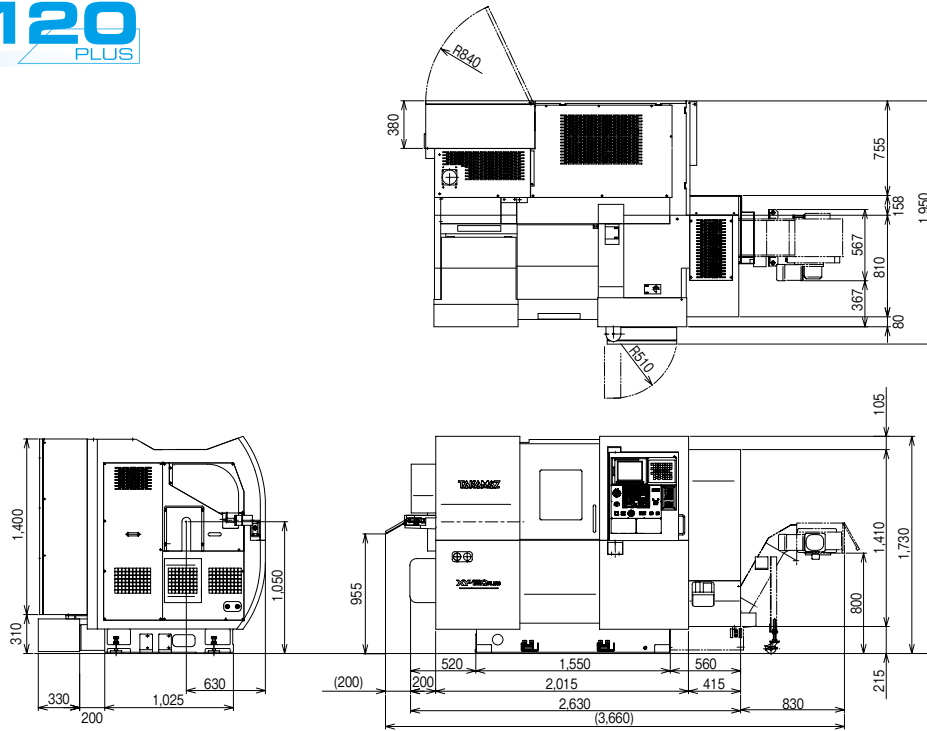


Cut-off holder



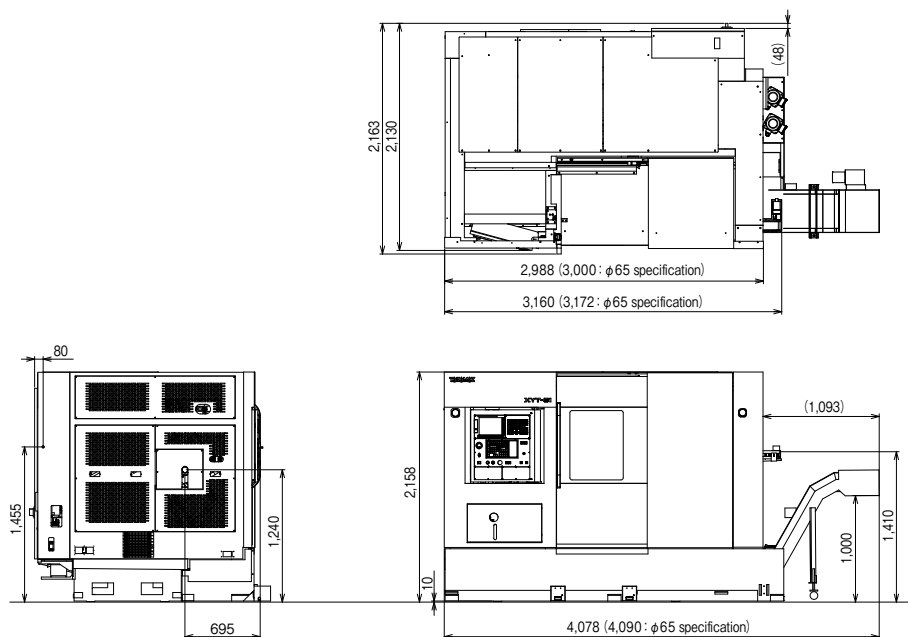
Floor Space Drawing

XY-120 PLUS



Unit(mm)

XYT-51



Unit(mm)

Machine Specifications

			XY-120 PLUS		XYT-51			
Item		Unit	Main-spindle		φ51 THRU.BMT45 Specification		φ65 THRU.BMT55 Specification (OP)	
					Main-spindle	Sub-spindle	Main-spindle	Sub-spindle
Capacity	Max. turning diameter	mm	φ170		φ190		φ240	
	Max. turning length	mm	330		150 (440 : One-side operation)		150 (440 : One-side operation)	
	Max. bar diameter	mm	φ42	(φ51)	φ51	φ42	φ65	φ51
	Chuck size	Inch	Collet, 6		Collet, 6		8	
Spindle	Spindle nose	JIS	A2-5	(A2-6)	A2-6	A2-5	A2-8	A2-6
	Spindle bearing I.D.	mm	φ85	(φ100)	φ100	φ85	φ120	φ100
	Through-hole on spindle	mm	φ52	(φ61)	φ52	φ43	φ66	φ52
	Spindle speed	min ⁻¹	Max.5,000	(Max.4,000)	Max.5,000		Max.4,000	
Tool post	Type		12-station turret 24st.		12-station turret 24st. BMT45		12-station turret 24st. BMT55	
	Tool shank	mm	□20		□20		□25	
	Boring holder I.D.	mm	φ25		φ25		φ40	
	Max. stroke	mm	X1:150 Z1:330 Y:±35 X2:150 Z2:440		X1:162.5 Z1:500 Y:±35 X2:170 Z2:500 A:550		X1:162.5 Z1:500 Y:±40-35 X2:170 Z2:500 A:550	
Power tools	Rapid traverse rate	m/min	X1:18 Z1:24 Y:12 X2:18 Z2:18		X:18 Z:30 Y:12 A:30		X:18 Z:30 Y:12 A:30	
	Tool storage capacity	pcs.	12		12		12	
	Rotation speed	min ⁻¹	Max.4,000		Max.4,000		Max.4,000	
	Capacity	mm	φ13		φ13		φ20	
C-axis	Drill	mm	φ13		φ13		φ20	
	Endmill	mm	φ13		φ13		φ20	
	Tap	mm	M8		M12		M16	
	Rapid traverse rate	deg./min	21,600		24,000		24,000	
Motors	C axis motor	kW	Cs-axis		AC 0.75		—	
	Spindle motor	kW	AC 7.5/5.5 (AC 11/7.5)	AC 5.5/3.7	AC 18.5/15/11	AC 9/7.5/5.5	AC 18.5/15/11	AC 9/7.5/5.5
	Feed motor	kW	X1:AC 1.2 Z1:AC 1.8 Y:AC 0.75 X2:AC 0.75 Z2:AC 1.2		X:1.8 Z:1.8 Y:1.4 A:1.2		X:1.8 Z:1.8 Y:1.4 A:1.2	
	Coolant motor	kW	AC 0.25/0.25		AC 0.4		AC 0.4	
Size	Hydraulic motor	kW	AC 1.5		AC 0.75		AC 0.75	
	Power tools motor	kW	AC 3.7/2.2/1.5		AC 3.7/2.2		AC 3.7/2.2	
	Spindle center height	mm	1,050		1,240		1,240	
	LxWxH	mm	2,630 × 1,950 × 1,730		2,988×2,163×2,158 (3,490*1)		3,000×2,163×2,158	
		kg	4,500		7,400 (8,250*1)		7,500	
Total electric capacity		KVA	27 (31)		44		44	

*1 Gantry Loader type

() : Option

Standard Accessories

	XY-120 PLUS	XYT-51
☐ Boring holder		2 sets
☐ O.D. holder		2 sets
☐ Cut-off holder		1 set
☐ Collet flange		1 set ea. (Main, Sub)
☐ Hydraulic chuck		Option
☐ Hydraulic chucking cylinder	—	1 set ea. (Main, Sub)
☐ Y-axis function	1 set (Main)	1 set (#1 Turret)
☐ Spindle indexing device	Cs-axis 1 set ea. (Main, Sub)	Cs-axis 1 set ea. (Main, Sub)
☐ Power tools drive unit	1 set (Main)	1 set (For both turrets)
☐ Sub-spindle		1 set
☐ Coolant unit	1 set (200lit.)	1 set (360lit.)
☐ Service tool kit		1 set
☐ TAKAMAZ Instruction manual		1 set

Optional Accessories

	XY-120 PLUS	XYT-51
☐ Tool holders		○
☐ Stroke adjusting cylinder		○
☐ Collet chucks		○
☐ Hydraulic chucks	○ (Main : 6 Inch Sub : 5 Inch)	○
☐ Chuck clamp detector	○	(Standard)
☐ Sub-spindle parts ejector	○	(Standard)
☐ Sub turret (□16, φ20)	○ (12-station)	—
☐ TAKAMAZ loader system	○	—
☐ Bar feeder system		○
☐ Unloader unit (Out-conveyor)	○	(Standard)
☐ Work set detector		○
☐ Cut-off check device		○
☐ Power tools (Face / Side milling)	○	—
☐ Chip conveyor (Floor type/Spiral type)		○ (Right)
☐ Front air blower		○
☐ Rear air blower	○	—
☐ Rear coolant unit		○
☐ Signal light (1-tier / 2-tier / 3-tier)		○
☐ Automatic fire extinguisher		○
☐ Automatic power shut-off device		○
☐ Automatic door system	○	—
☐ Special color		○
☐ Others*		○

*For more information on attachments, consult our sales representative.

Controller Specifications

	XY-120 _{PLUS}	XYT-51
Item	TAKAMAZ&FANUC Oi-TD	TAKAMAZ & FANUC 32i-B
Controlled axes	7 axes (X1, Z1, C1, Y, X2, Z2, C2)	8 axes (X1, Z1, C1, Y, X2, Z2, C2, A)
Simultaneously controllable axes	Simultaneous 4 axes	
Least input increment	0.001mm (X in diameter)	
Least command increment	X: 0.0005mm Z, Y: 0.001mm	X: 0.0005mm Z, Y, A: 0.001mm C: 0.001deg.
Auxiliary function	M3 digits	
Spindle function	S4 digits	
Tool function	T4 digits	
Tape code	EIA(RS232C) / ISO(840)automatic recognition	
Cutting feedrate	1 ~ 5,000mm/min	1 ~ 7,000mm/min
Command system	Incremental / Absolute	
Linear interpolation	G01	
Circular interpolation	G02, G03	
Cutting feedrate override	0 ~ 150%	
Rapid traverse override	FO, 100%	FO, 25%, 50%, 100%
Program number	4 digits	Program file name 32 characters
Backlash compensation	0 ~ 9,999 μ m	
Program memory capacity	1Mbyte (2,560m) (Dual systems total)	64Kbyte(160m) (Dual systems total)
Tool offsets	128 sets(Dual systems total)	99 sets (Dual systems total)
Registered programs	800 pcs.(Dual systems total)	63 pcs. (Dual systems total)
Tool geometry / Wear offset	Standard	
Canned cycle	G90, G92, G94	
Radius designation on arc	Standard	
Tool offset measurement input	Standard	
Background editing	Standard	
Direct drawing dimension programming	Standard	Option
Custom macro	Standard	
Custom macro common variables	#100 ~ #199, #500 ~ #999	Option
Pattern data input	Standard	—
Nose R compensation	G40, G41, G42	
Inch / Metric conversion	G20 / G21	Option
Programmable data input	G10	
Run hour / Parts count display	Standard	Option
Extended part program editing	Standard	
Multiple repetitive cycle	G70 ~ G76	
Multiple repetitive cycleII	Pocket-shaped	Option
Spindle synchronous control	Standard	
Sub-spindle torque skip	Standard	
Y-axis offset	Standard	
Canned drilling cycle	Standard	
Constant surface speed control	G96, G97	
Continuous thread cutting	G32	
Variable lead thread cutting	G34	Option
Thread cutting retract	Standard	Option
Clock function	Standard	
Help function	Standard	
Alarm history display	50 pcs.	
Self-diagnosis function	Standard	
Sub-program call	Up to 10 loops	
Decimal point input	Standard	
2nd reference point return	G30	
Work coordinate system setting	G50, G54 ~ G59	
Rigid tapping	For Power Tool only	
Polar coordinate interpolation	Standard	
Cylindrical interpolation	Standard	
Stored stroke check 1	Standard	
Stored stroke check 2,3	Standard	
Input / Output interface	USB Flash Memory, Memory card, Ethernet	
Alarm message	Standard	
Graphic display	Standard	
Spindle orientation	Standard	
Conversational programming with graphic function	Standard	—
Abnormal load detection	Standard	
Overlap Cutting Process	Standard	
Balance cut	—	G68, 69
Manual handle trace	Standard	
Automatic data backup	Max.3	
Automatic screen deletion function	Standard	
TAKAMAZ management support function	Work / Tool counter, Tool load monitor, Others	
TAKAMAZ maintenance function	Standard	
FANUC set of manuals	CD-ROM	DVD-ROM

Optional Specifications

	XY-120 _{PLUS}	XYT-51
Item	TAKAMAZ&FANUC Oi-TD	TAKAMAZ & FANUC 32i-B
Tool life management	Max. 3	
Multiple M codes in one block		
Dynamic graphic display*		
Manual guide i*		
Helical interpolation		
RS232C		
FANUC instruction manuals	Bound	

※These cannot be used together.



XY series

TAKAMAZ

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The user must not export, sell, or relocate the product, to any country with different regulations or standards.

