CNC Multi-Turning Center

XY series

TAKAMAZ

CNC Multi-Turning Center

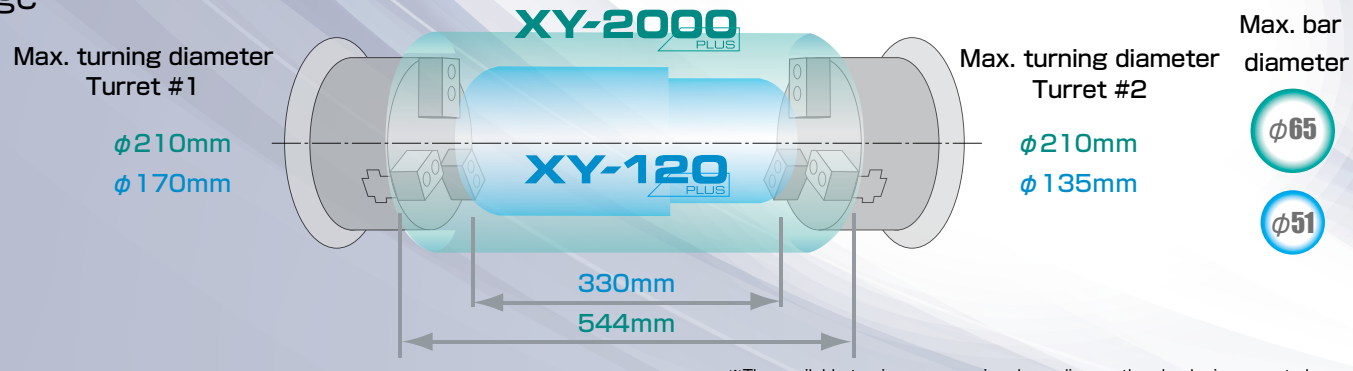
XY series

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



※The available turning range varies depending on the chuck size or part shape.

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.

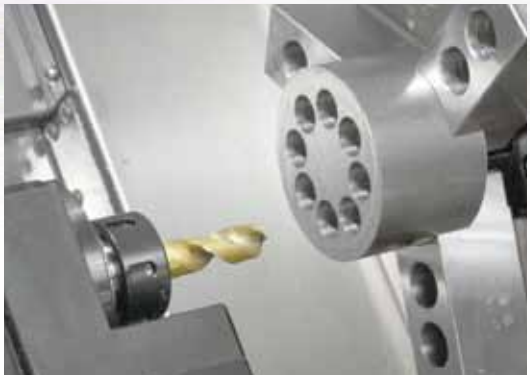
XY-2000 PLUS

Suitable for bar materials of ϕ65 mm maximum. 24 power tools can be installed on turrets #1 and #2, enabling highly efficient multi-turning operation from blank to finish.

VDI tooling systems are also available for European countries, which can shorten setup time.

Machines shown in the photos are in standard color.
Environmentally friendly powder coating is applied.

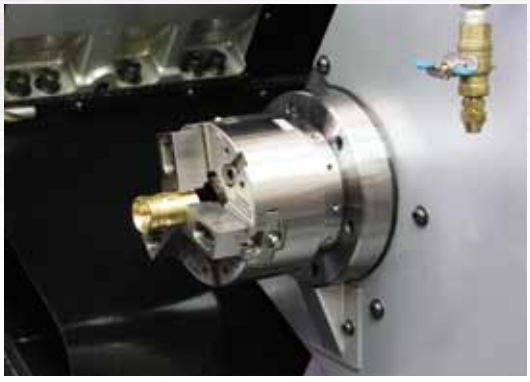
XY series



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 PLUS	± 35mm	12 tools / turret	ϕ13mm,M8mm
XY-2000 PLUS	± 40mm	12 tools / turret #1 12 tools / turret #2	ϕ16mm,M16mm ϕ16mm,M16mm



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 PLUS	5 inches	Max.5,000min^{-1}	440mm
XY-2000 PLUS	8 inches	Max.4,000min^{-1}	570mm

Speedy setup change with VDI turrets

Quick change type tool posts (VDI) can be installed for turrets #1 and #2 as options. Tool setup time will be reduced drastically.

	Turret #1	Turret #2	Tool storage capacity
XY-2000 PLUS	No.40	No.40	12 tools / turret

Indexing time (common): 0.2 sec (1 station), 0.6 sec (6 stations)

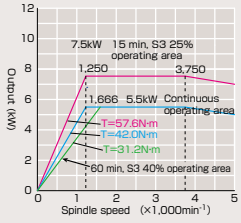
Motor Output Characteristics Diagram

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

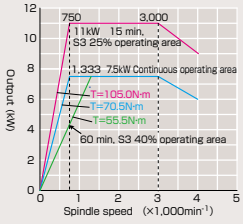
XY-120 PLUS

Main spindle

AC7.5/5.5kW
Max. 5,000min^{-1}

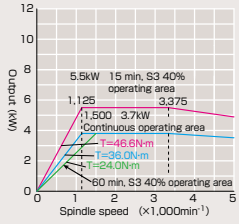


AC11/7.5kW
Max. 4,000min^{-1}



Sub-spindle

AC5.5/3.7kW
Max. 5,000min^{-1}

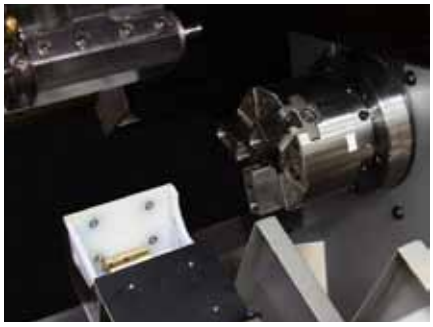


Cylinder blocks
(car air-conditioners)

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.

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.

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.

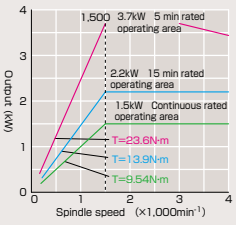
Chip conveyor for chip accumulation prevention

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.

Consideration to maintenance and environment

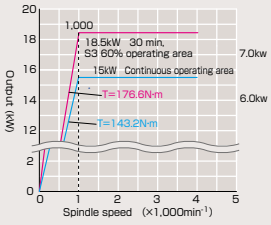
For ease of maintenance and good operability, the chuck pressure regulating valve and lubrication pump are arranged on the front face of the machine. A periodical inspection notice function notifies the time of battery replacement and hydraulic pump inspection to support control of maintenance and help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

Power tools
AC3.7/2.2/1.5kW
Max. 4,000min^{-1}

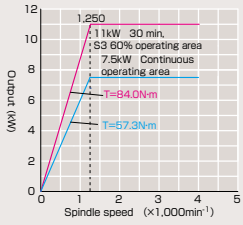


XY-2000 PLUS

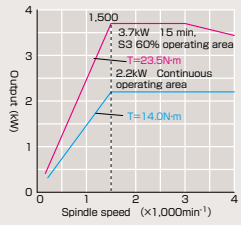
Main spindle
AC18.5/15kW
Max. 4,000min^{-1}



Sub-spindle
AC11/7.5kW
Max. 4,000min^{-1}



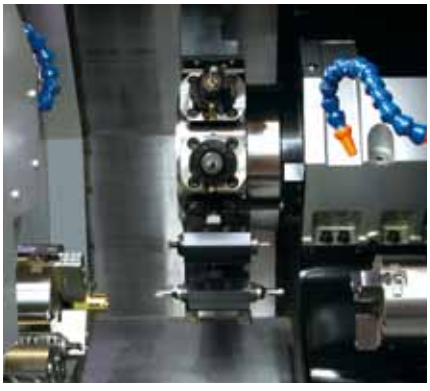
Power tools
AC3.7/2.2kW
Max. 4,000min^{-1}



XY-120 PLUS

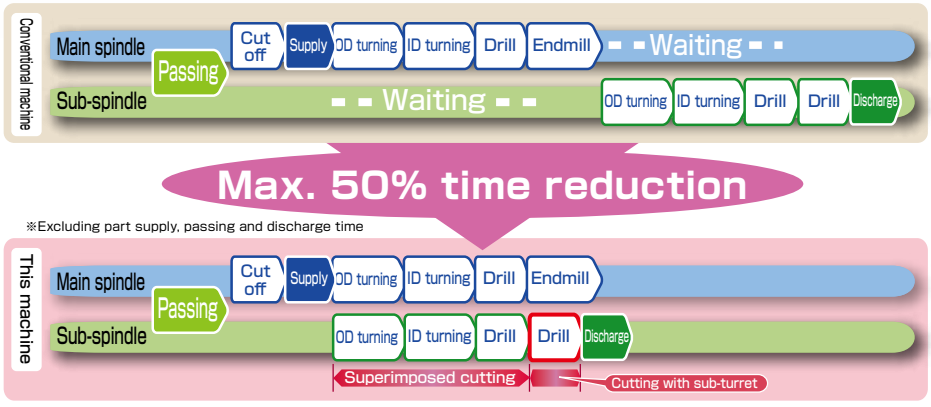
Superimposed Cutting

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.)



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 ϕ13 mm can be installed.

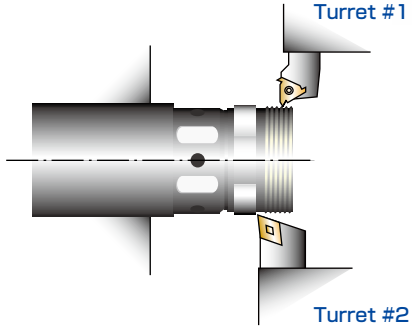
XY-2000 PLUS

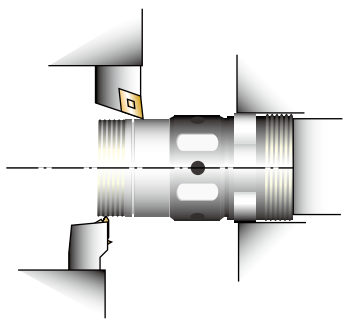
BALANCE CUT

Turrets #1 and #2 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





Reliable workmanship

The XY series machines employ precision scraped square slideways. With excellent rigidity, these slideways ensure stable cutting accuracy at all times. Based on our proven technology from 60 years of experience in machine tool building, our machines have high durability that withstands long-term use, enhancing customer satisfaction.

XY-2000 PLUS (Reference values)

OD turning capacity

Cutting cross-sectional area

Main spindle side	Sub-spindle side
2.35㎟	0.95㎟

Material	S45C
Spindle speed	500~2,000 min^{-1}
Cutting speed	150 m/min
Feed rate	0.2~0.4 mm/rev.
Depth of cut	3.0~5.0 mm

Grooving capacity

Main spindle side	Sub-spindle side
6㎜ (L:114㎜)	5㎜ (L:87㎜)

Material	S45C
Spindle speed	430 min^{-1}
Cutting speed	100 m/min
Feed rate	0.1 mm/rev.
Depth of cut	3.0 mm

Power tool capacity

Drill — Main spindle/sub-spindle

φ25㎜

Material	S45C
Spindle speed	255 min^{-1}
Cutting speed	20 m/min
Feed rate	0.1~0.25 mm/rev.
Depth of cut	25.0 mm

Surface roughness

Main spindle side	Sub-spindle side
0.49μm	0.29μm

Out of roundness

Main spindle side	Sub-spindle side
0.62μm	0.45μm

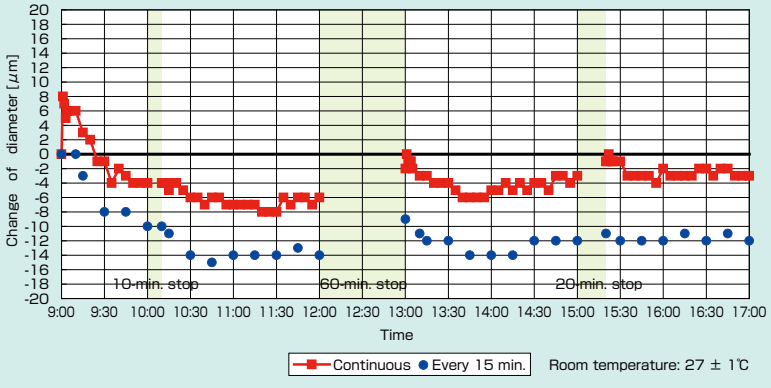
Material	C3604BD
Spindle speed	2,000 min^{-1}
Cutting speed	180 m/min
Feed rate	0.2~0.002 mm/rev.
Depth of cut	0.1 mm

Variation with time (sub-spindle side)

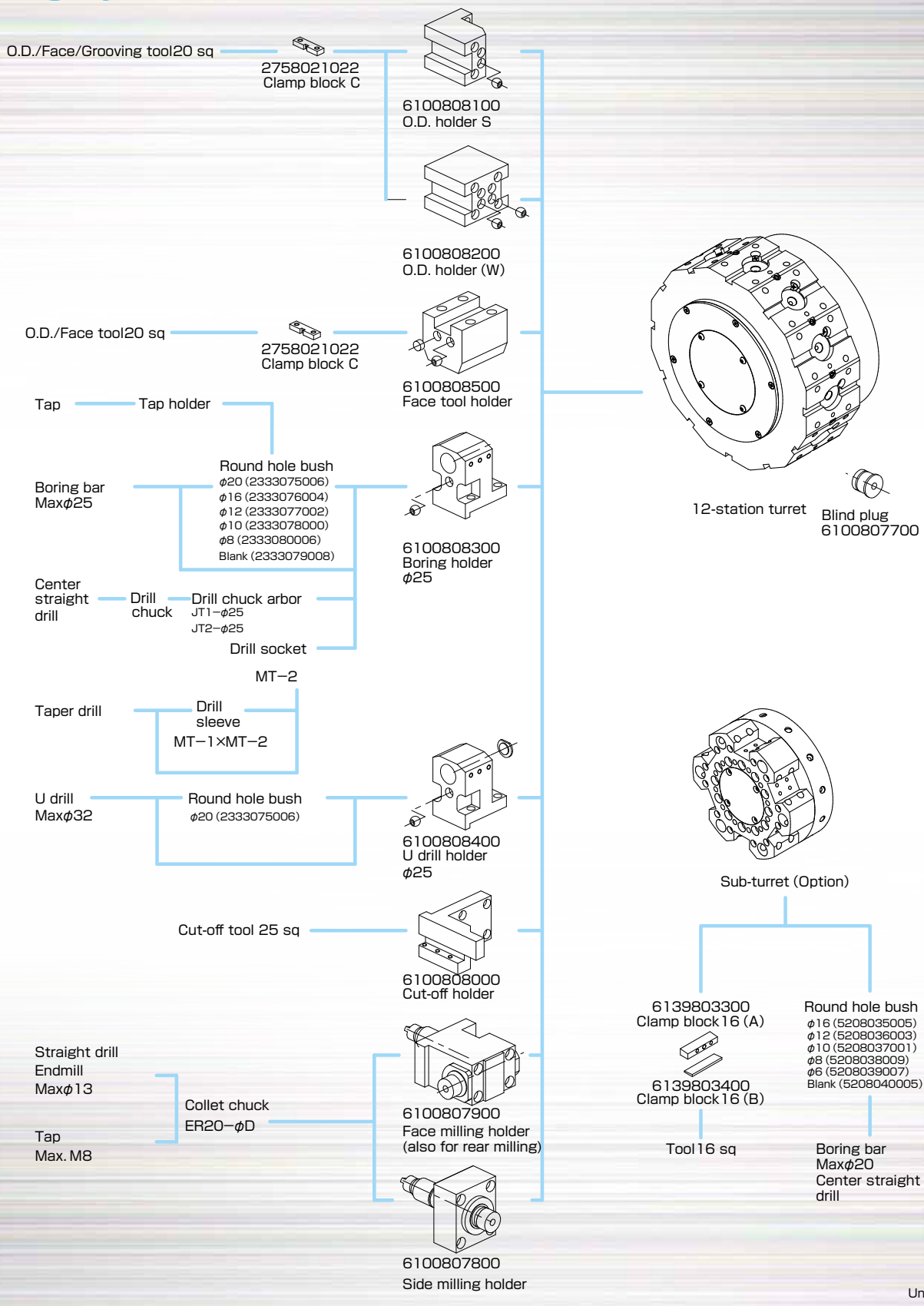
(change in 8 hours)

15μm

Material	S45C	
Spindle speed	Rough 1,600	Finish 2,000 min^{-1}
Cutting speed	Rough 180	Finish 200 m/min
Feed rate	Rough 0.2	Finish 0.08 mm/rev.
Depth of cut	Rough 2.0	Finish 0.1 mm

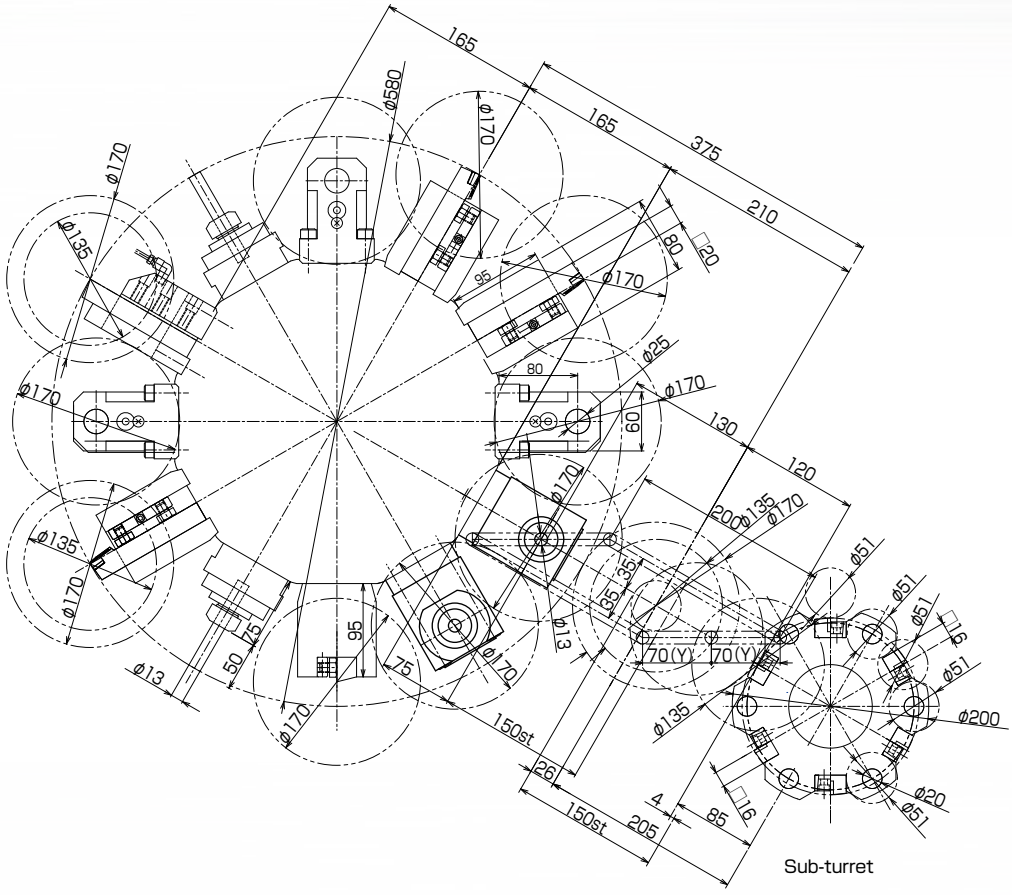


Tooling System



Unit(mm)

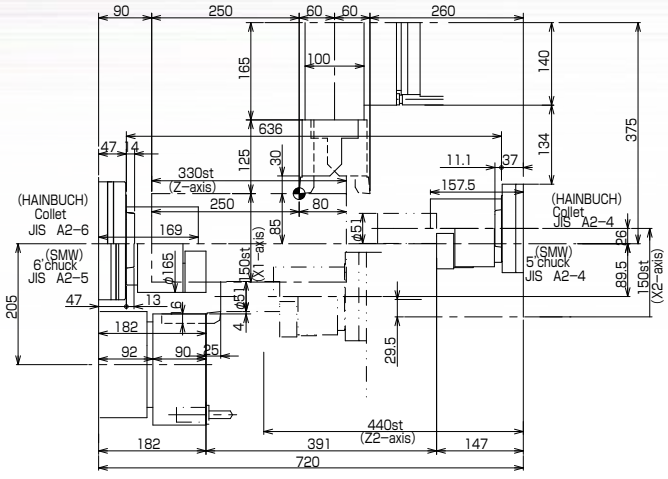
Turret interference



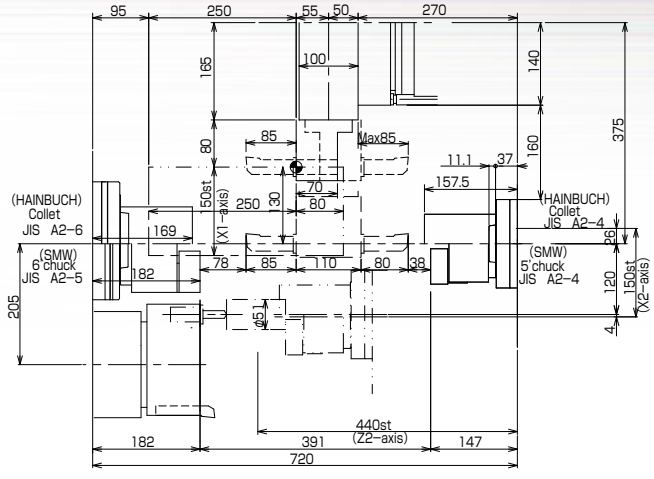
Unit(mm)

Stroke-Related Drawing

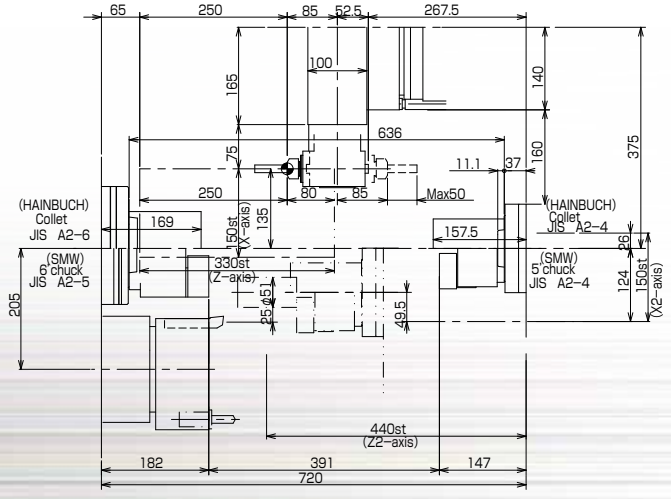
O.D.machining range



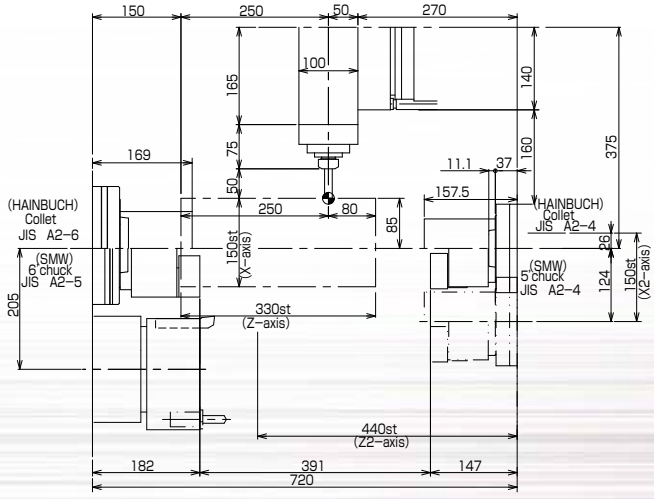
Boring range



Face milling range

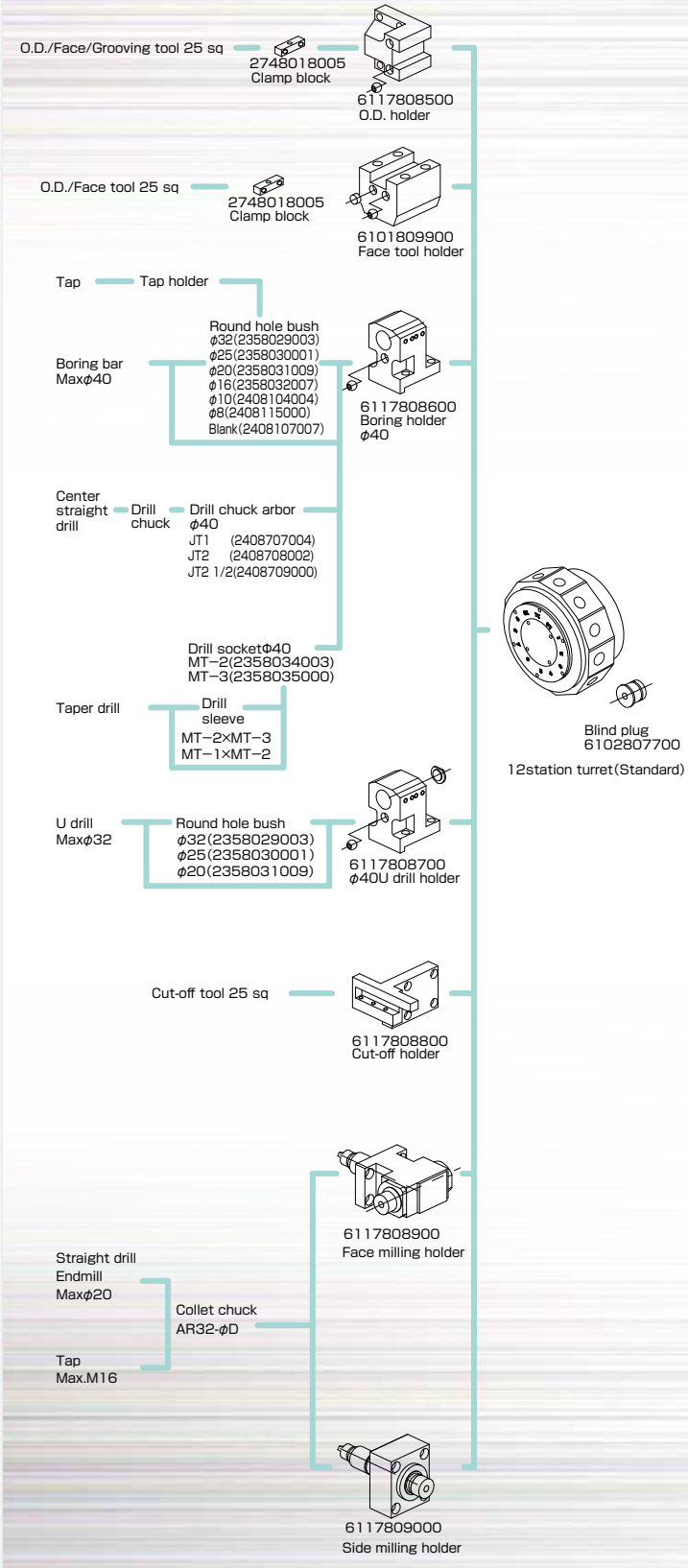


Side milling range

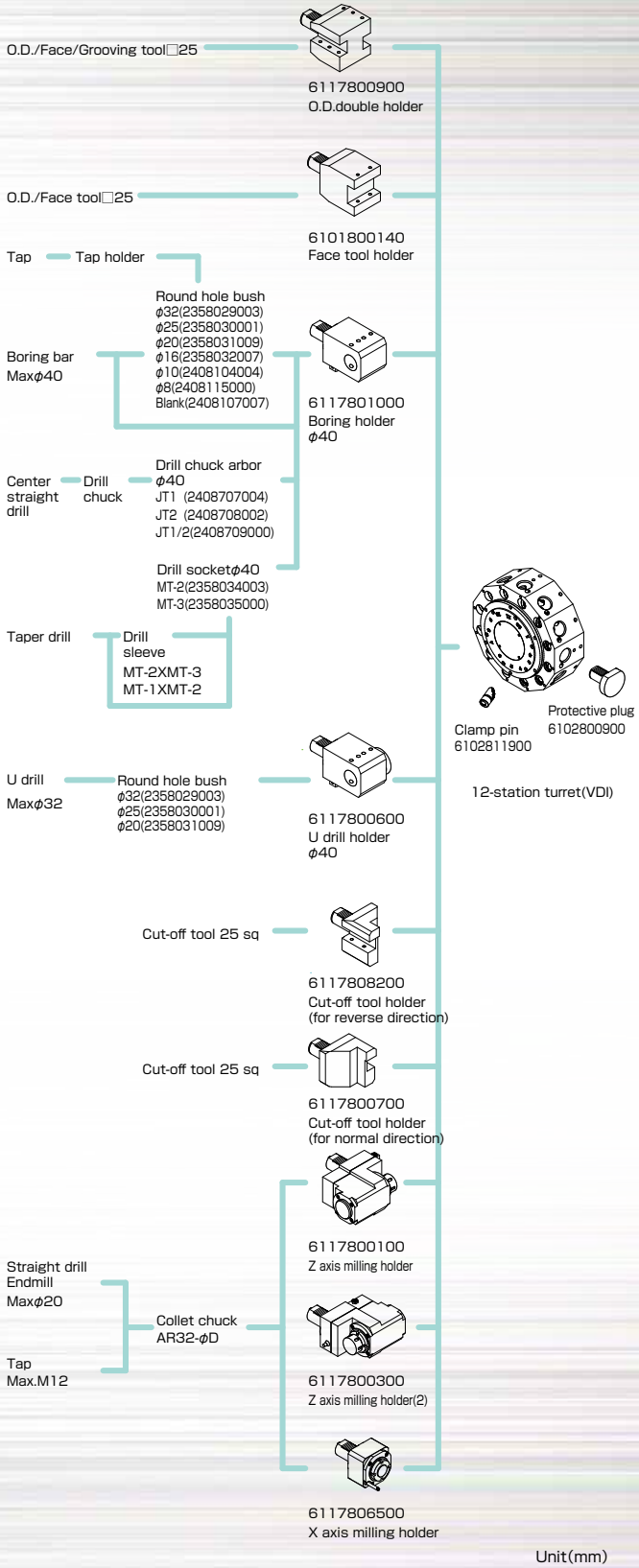


Unit(mm)

Tooling System [Standard]



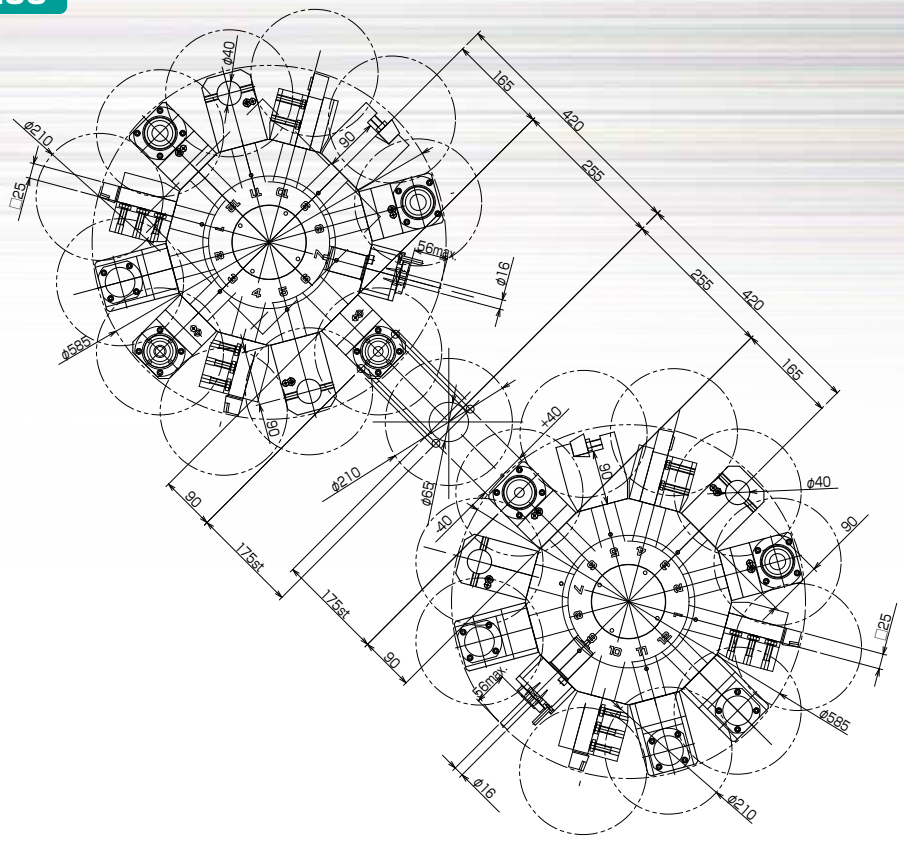
Tooling System [VDI] (Option)



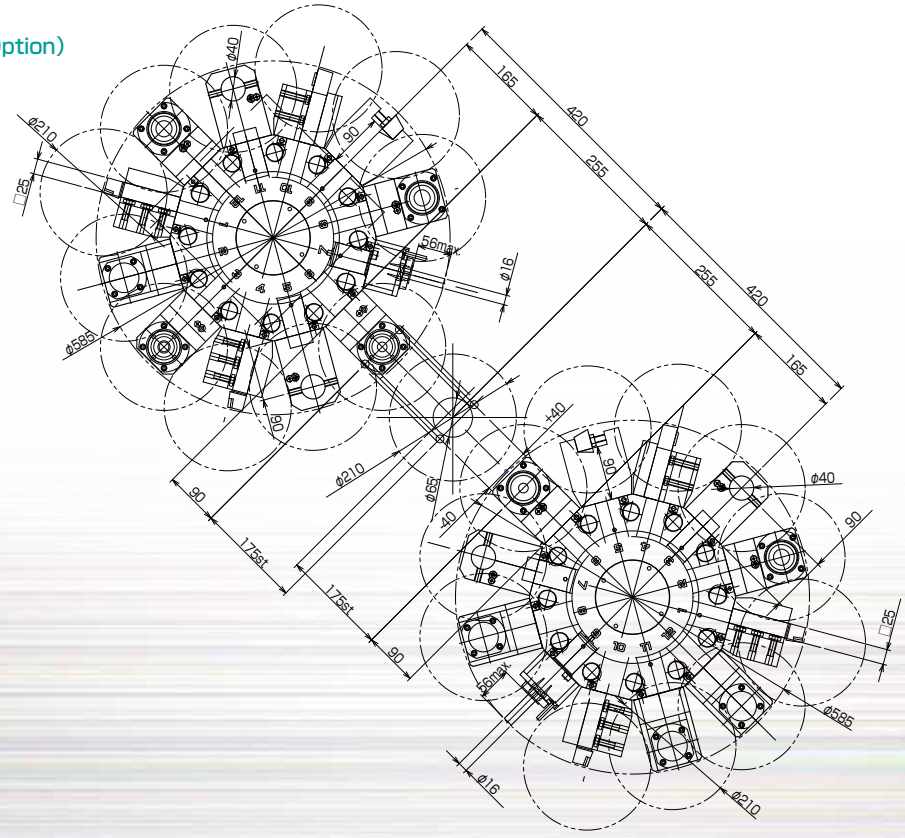
Unit(mm)

Turret interference

Standard



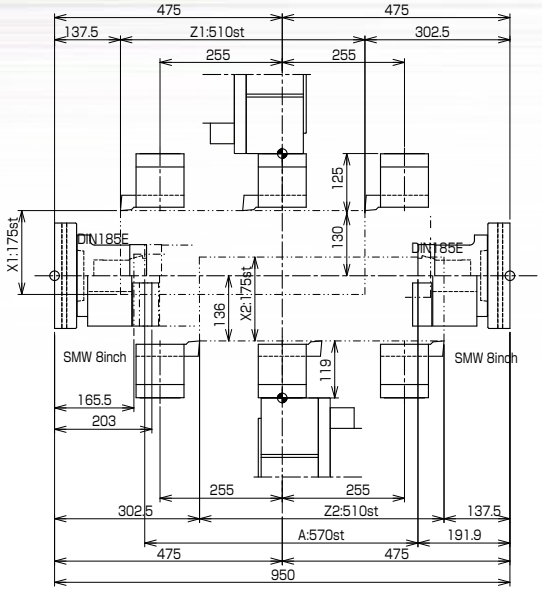
VDI40 turret (Option)



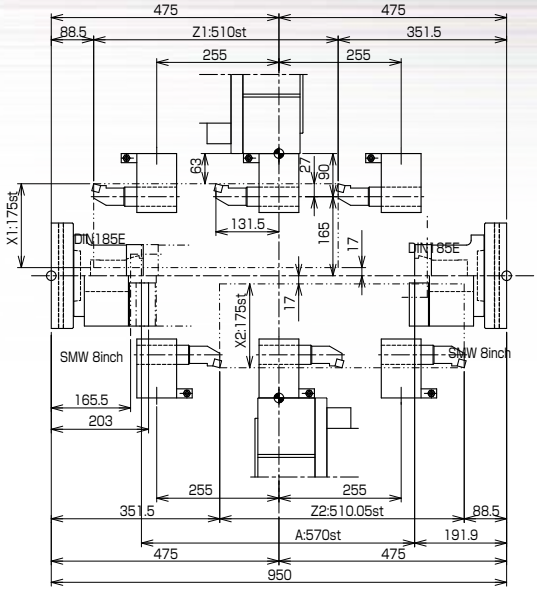
Unit(mm)

Stroke-Related Drawing

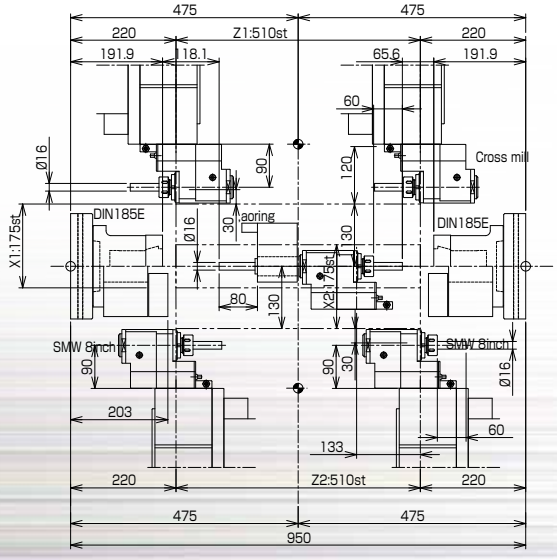
Turning holder
[VDI holder : Option]



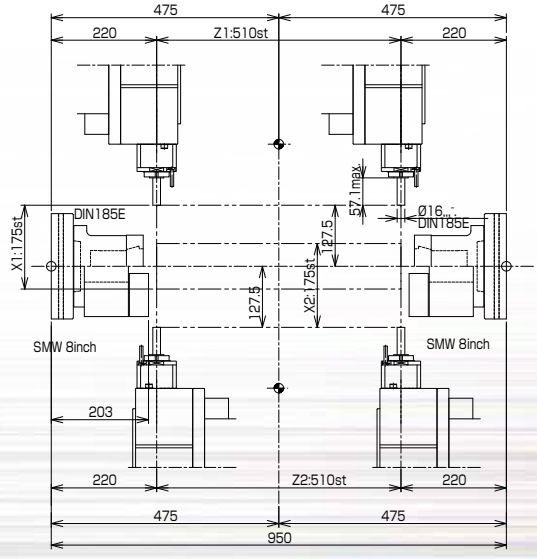
Boring holder
[VDI holder : Option]



Face milling holder
[VDI holder : Option]



Side milling holder
[VDI holder : Option]



Unit(mm)

SPECIFICATION

Machine Specifications

Item			Unit	XY-120/PLUS Main-spindle	XY-120/PLUS Sub-spindle	XY-2000/PLUS Main-spindle	XY-2000/PLUS Sub-spindle
Capacity	Max. turning diameter		mm	ϕ170	ϕ135	ϕ240	
	Max. turning length		mm	330		544	
	Max. bar diameter		mm	ϕ42 (ϕ51)	ϕ20	ϕ51 (ϕ65)	ϕ51
	Chuck size		Inch	Collet／6	Collet／5	8	
Spindle	Spindle nose		JIS	A2-5 (A2-6)	A2-4	A2-6 (A2-8)	A2-6
	Spindle bearing I.D.		mm	ϕ85 (ϕ100)	ϕ65	ϕ100 (ϕ120)	ϕ100
	Through-hole on spindle		mm	ϕ52 (ϕ61)	ϕ36	ϕ51 (ϕ65)	ϕ51
	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 (VDI：40)	
	Tool shank		mm	□20		□25 (VDI：40)	
	Boring holder I.D.		mm	ϕ25		ϕ40 (VDI：40)	
	Max. stroke		mm	X1: 150 Y: ±35 Z1: 330 X2: 150 Z2: 440		X1：175 Y：±40 Z1：510 A：570 X2：175 Z2：510	
	Rapid traverse rate		m/min	X1: 18 Y: 12 Z1: 24 X2: 18 Z2: 18		X1：18 Y：12 Z1：24 A：30 X2：18 Z2：24	
Motors	Spindle motor		kW	AC7.5/5.5 (AC11/7.5)	AC5.5/3.7	AC18.5/15	AC11/7.5
	Feed motor		kW	X1: AC1.2 Y: AC0.75 Z1: AC1.8 X2: AC0.75 Z2: AC1.2		X1：AC2.5 Y：AC2.5 Z1：AC2.7 A：AC2.7 X2：AC2.7 Z2：AC2.7	
	Coolant motor		kW	AC0.25／0.25		AC0.339	
	Hydraulic motor		kW	AC1.5		AC0.75/0.75	
Power tools	Tool storage capacity		pcs.	12		12	
	Spindle speed		min⁻¹	Max.4,000		Max.4,000	
	Power tools motor		kW	AC3.7/2.2/1.5		AC3.7/2.2	
	Capacity	Drill	mm	ϕ13		ϕ16	
		Endmill	mm	ϕ13		ϕ16	
		Tap	mm	M8		M16	
Cs-axis	Rapid traverse rate		deg/min⁻¹	21,600		24,000	
	C axis motor		kW	Cs-axis		AC0.75	
Size	Spindle center height		mm	1,050		1,220	
	L×W×H		mm	2,630 × 1,950 × 1,730		3,050×2,125×2,365	
	Machine weight		kg	4,500		8,100	
Total electric capacity			KVA	27(31)		73	

( ) : Option

Standard Accessories

	XY-120/PLUS	XY-2000/PLUS
□O.D. holder	2 sets	4 sets
□Boring holder	2 sets	4 sets
□Cut-off holder	1 set	1 set
□Hydraulic chuck	Option	1set ea. (Main, Sub)
□Collet flange	1 set ea. (Main, Sub)	—
□Sub-spindle	1 set	1 set
□Y-axis function	1 set (Main)	1 set (Primary turret)
□Indexing function	Cs-axis 1 set ea. (Main, Sub)	C-axis 1 set ea. (Main, Sub)
□Power tools drive unit	1 set (Main)	1 set (For both turrets)
□Coolant unit	1 set (200lit.)	1 set (405lit.)
□Service tool kit	1 set	1 set
□TAKAMAZ Instruction manual	1 set	1 set

Optional Accessories

	XY-120/PLUS	XY-2000/PLUS
□Tool holders	○	○
□Power tools (Face／Side milling)	○	○
□Stroke adjusting cylinder	○	○
□Hydraulic chucks	○(Main：6 Inch Sub：5Inch)	○
□Collet chucks	○	—
□Chuck clamp detector	○	○
□Sub-spindle parts ejector	○	○
□VDI 12-station turret	—	○
□Sub turret (□16, ϕ20)	○(12)	—
□TAKAMAZ loader system	○	—
□Bar feeder system	○	○
□Unloader unit (Out-conveyor)	○	○
□Work set detector	○	○
□Cut-off check device	○	○
□Chip conveyor (Right)	○	○
(Floor type/Spiral type) □Air blow unit (Front／Rear)	○	○
□Rear coolant unit	○	○
□Signal light (1-color／2-color／3-color)	○	○
□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

Item	XY-120/PLUS TAKAMAZ&FANUC 0i-TD	XY-2000/PLUS TAKAMAZ & FANUC 31i-A
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	Simultaneous 4 axes
Least input increment	0.001mm (X in diameter)	0.001mm (X in diameter)
Least command increment	X: 0.0005mm Z, Y: 0.001mm	X:0.0005mm Y, Z, A:0.001mm
Auxiliary function	M3 digits	M3 digits
Spindle function	S4 digits	S4 digits
Tool function	T4 digits	T4 digits
Tape code	EIA(RS232C) ／ ISO(840)automatic recognition	EIA(RS232C) ／ ISO(840)automatic recognition
Cutting feedrate	1～5,000mm/min	1～5,000mm/min
Command system	Incremental ／ Absolute	Incremental ／ Absolute
Linear interpolation	G01	G01
Circular interpolation	G02, G03	G02, G03
Cutting feedrate override	0～150%	0～150%
Rapid traverse override	F0, 100%	F0, 50, 100%
Program number	4 digits	32 characters
Backlash compensation	0～9999μm	0～9999μm
Program memory capacity	1Mbyte (2,560m) (Dual systems total)	64KB(160m) (Dual systems total)
Tool offsets	128 sets(Dual systems total)	32 sets (Dual systems total)
Registered programs	800 pcs.(Dual systems total)	63 pcs. (Dual systems total)
Tool geometry ／ Wear offset	Standard	Standard
Canned cycle	G90, G92, G94	G90, G92, G94
Radius designation on arc	Standard	Standard
Tool offset measurement input	Standard	Standard
Background editing	Standard	Standard
Direct drawing dimension programming	Standard	Option
Custom macro	Standard	Standard
Additional custom macro common variables	#100～#199, #500～#999	Option
Pattern data input	Standard	—
Nose R compensation	G40, G41, G42	G40, G41, G42
Inch ／ Metric conversion	G20 ／ G21	Option
Programmable data input	G10	G10
Run hour ／ Parts count display	Standard	Option
Extended part program editing	Standard	Standard
Multiple repetitive cycle	G70～G76	G70～G76
Multiple repetitive cycleⅡ	Pocket-shaped	Option
Spindle synchronous control	Standard	Standard
Sub-spindle torque skip	Standard	Standard
Y-axis offset	Standard	Standard
Rigid tapping	For Power Tool only	For Power Tool only
Polar coordinate interpolation	Standard	Standard
Cylindrical interpolation	Standard	Standard
Canned drilling cycle	Standard	Standard
Constant surface speed control	G96, G97	G96, G97
Continuous thread cutting	G32	G32
Variable lead thread cutting	G34	Option
Thread cutting retract	Standard	—
Clock function	Standard	Standard
Help function	Standard	Standard
Alarm history display	50 pcs.	60 pcs.
Self-diagnosis function	Standard	Standard
Self-diagnosis function	Up to 10 loops	Up to 10 loops
Decimal point input	Standard	Standard
2nd reference point return	G30	G30
Work coordinate system setting	G50, G54～G59	G50, G54～G59
Stored stroke check 1	Standard	Standard
Stored stroke check 2,3	Standard	Standard
Input ／ Output interface	USB Flash Memory, Memory card, Ethernet	RS232C, Memory card, Ethernet
Alarm message	Standard	Standard
Graphic display	Standard	Standard
Conversational programming with graphic function	Standard	Standard
Abnormal load detection	Standard	Standard
Overlap Cutting Process	Standard	Standard
Manual handle trace	Standard	Standard
Automatic data backup	Max.3	Standard
Automatic screen deletion function	Standard	—
Spindle orientation	Standard	Standard
TAKAMAZ option functions	Work ／ Tool counter, Tool load monitor, Others	Work ／ Tool counter, Tool load monitor, Others
TAKAMAZ maintenance function	Standard	Standard
FANUC set of manuals	CD-ROM	Bound

Optional Attachments

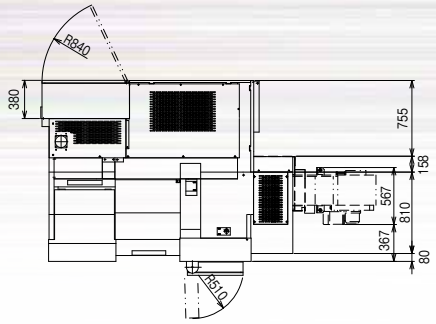
Item	XY-120/PLUS TAKAMAZ&FANUC 0i-TD	XY-2000/PLUS TAKAMAZ & FANUC 31i-A
Tool life management		
Multiple M codes in one block	Max. 3	Max. 3
Helical interpolation		
Manual guide i※		
Dynamic graphic display※		—
FANUC instruction manuals	Bound	(Standard)

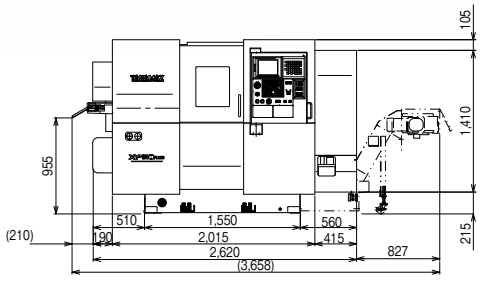
※These cannot be used together.

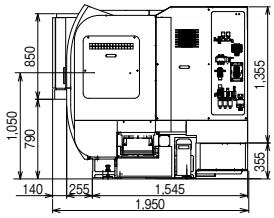
XY series

FLOOR SPACE

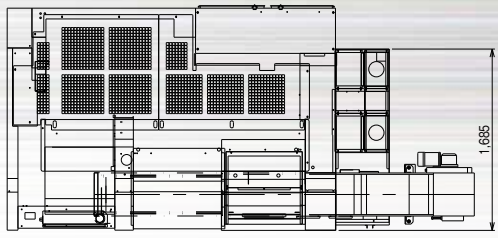
XY-120 PLUS

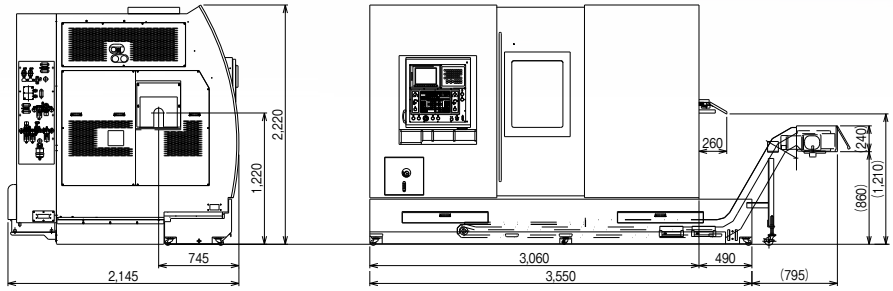






XY-2000 PLUS





Unit(mm)

TAKAMAZ

TAKAMATSU MACHINERY CO.,LTD.
■HEAD OFFICE & PLANT
1-8 ASAHIGAOKA HAKUSAN-CITY ISHIKAWA JAPAN. 924-8558 TEL +81-(0)76-274-1403 FAX +81-(0)76-274-8530
■EUROPE OFFICE
INDUSTRIEGEBIET, DIEPENBROICH 27 D-51491 OVERATH, GERMANY
TEL +49-(0)2206-866-150 FAX +49-(0)2206-865-123

TAKAMAZ TRADING (HANG ZHOU) CO.,LTD.
■HANGZHOU HEAD OFFICE
120 SHINXIN NORTH ROAD, XIAOSHAN ECONOMY AND TECHNOLOGY DEVELOPMENT AREA,
HANGZHOU, ZHEJIANG PROVINCE, CHINA TEL +86-(0)571-8287-9709 FAX +86-(0)571-8286-5311
■GUANGZHOU OFFICE

TAKAMATSU MACHINERY USA INC.
■CHICAGO HEAD OFFICE
1320 LANDMEIER ROAD ELK GROVE VILLAGE, IL 60007 USA TEL +1-(0)847-981-8577 FAX +1-(0)847-981-8599
■CINCINNATI OFFICE
5233 MUHLHAUSER ROAD. WEST CHESTER TOWNSHIP, OH 45011 USA TEL +1-(0)513-870-9777 FAX +1-(0)513-870-0325

TAKAMATSU MACHINERY (THAILAND) CO.,LTD.
■THAILAND HEAD OFFICE
888/17 MOO 19 BANGPLEE-DAMRU ROAD., BANGPLEEYAI, BANGPLEE, SAMUTPRAKARN 10540
TEL +66-(0)2-382-5372 FAX +66-(0)2-382-5373

TAKAMAZ MACHINERY EUROPE GmbH
■EUROPEAN HEAD OFFICE
INDUSTRIEGEBIET, DIEPENBROICH 27 D-51491 OVERATH, GERMANY
TEL +49-(0)2206-919-3960 FAX +49-(0)2206-865-123

http://www.takamaz.co.jp/

●Distributed by:

12.10.3B (O)