

NT-2000 SY2

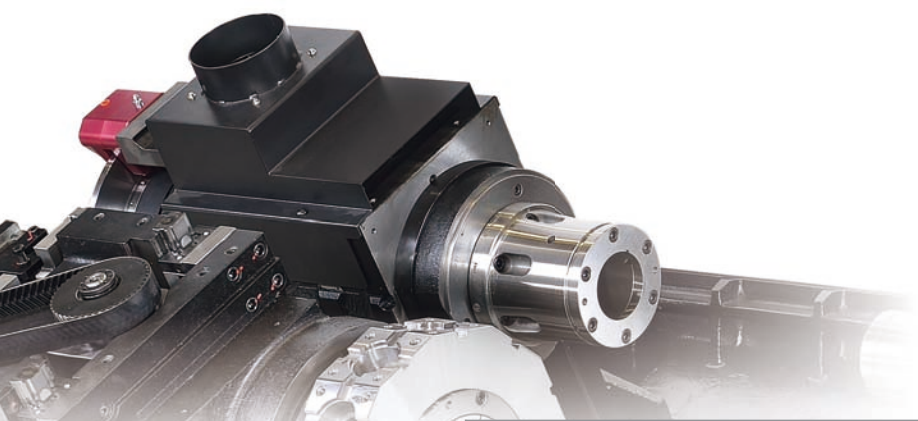
High Efficiency Multi-Axis Mill / Turn Turning Center



NT-2000 SY2

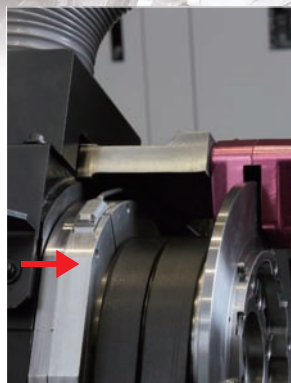
High Efficiency Multi-Axis Mill / Turn Turning Center

Incorporating twin spindles and twin turrets with mill/ turn functionality, NT-2000SY2 is optimal for complex parts machining, best for consumer electronics, automotive and medical industries. NT-2000SY2 is built to satisfy an entire automation system. Combining with bar feeder, parts catcher and parts conveyor, NT-2000SY2 can significantly increase productivity.

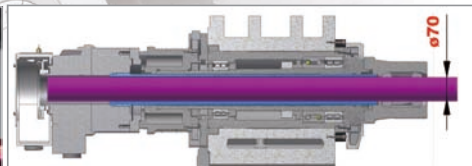


Main Spindle

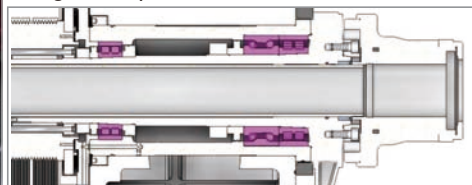
- 8" chuck
- Hole through draw tube: $\varnothing 70\text{mm}$
- Max. speed: 4,000 rpm



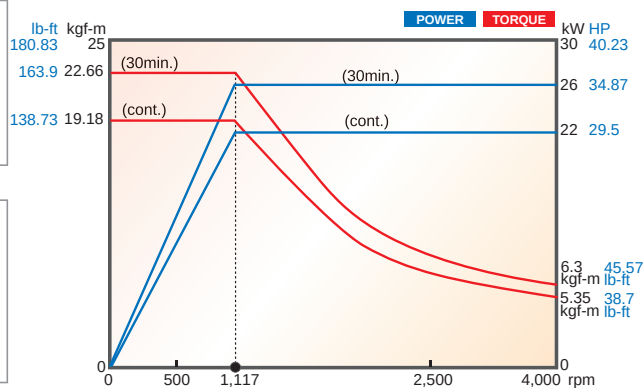
■ C-axis magnetic ring encoder



■ Big bore spindle



■ Double row cylindrical bearings + Angular contact ball bearings



Auto Tool Length Measurement System

Standard measurement system with two sensors that can separately measure T1 and T2 tools.



Sub Spindle

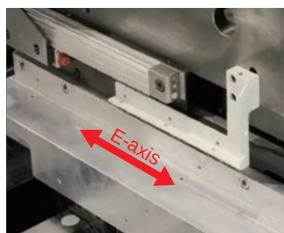
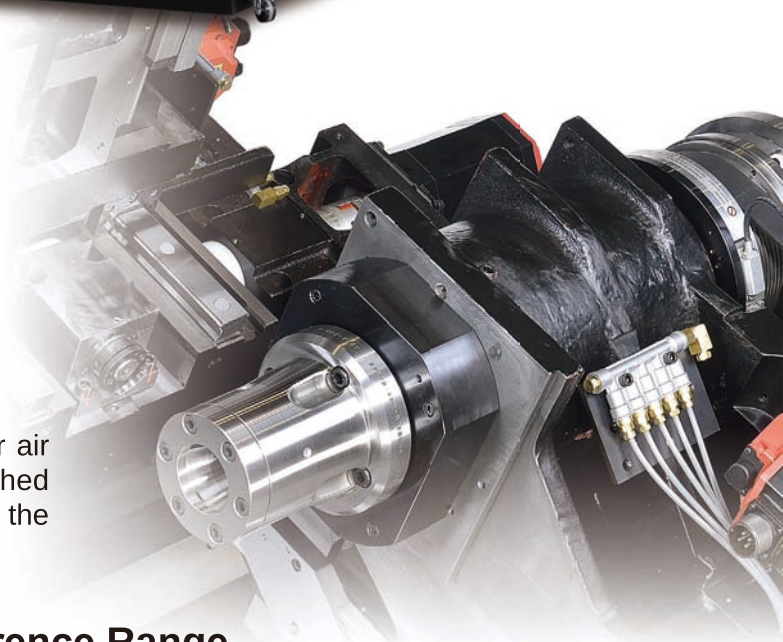
- 6" chuck
- Hole through draw tube: $\varnothing 45\text{mm}$
- Max. speed: 5,000 rpm

Parts Pusher System

To prevent chips from the spindle draw tube, either air or coolant of draw tube can be selected. The finished workpiece can be pushed by parts pusher system to the catcher system and send to finished parts conveyor.

E-axis to Reduce Machining Interference Range

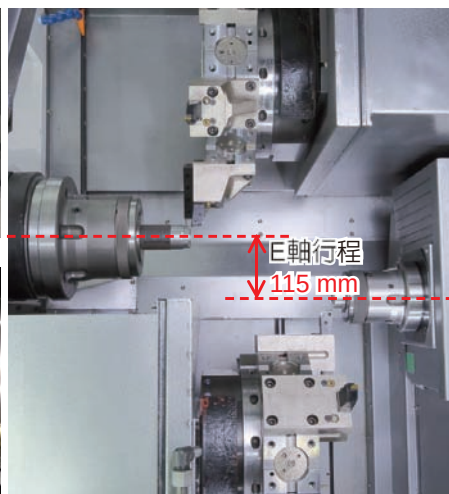
The sub spindle is equipped with adjustable E-axis which increases the machining area when the turret 1 is machining with different tool and workpiece.



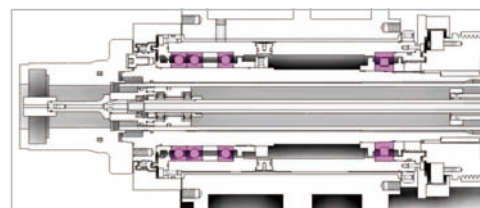
■ E-axis linear encoder



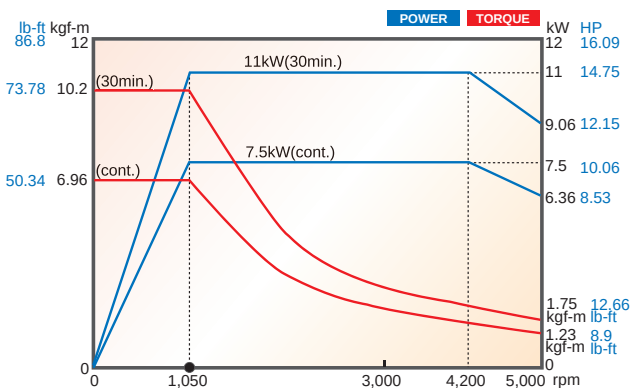
■ C-axis magnetic ring encoder



■ Reducing machining interference range



■ Angular contact ball bearings
+ Single row cylindrical bearings

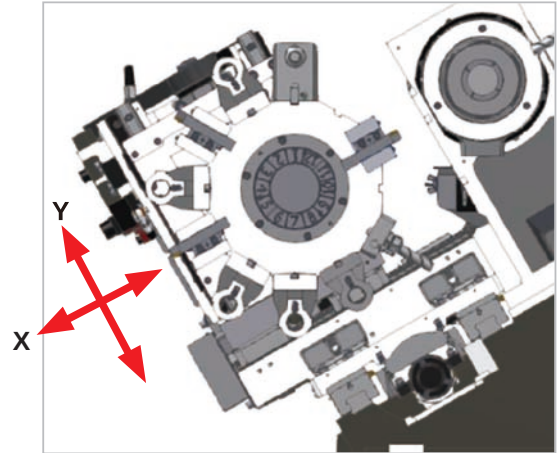
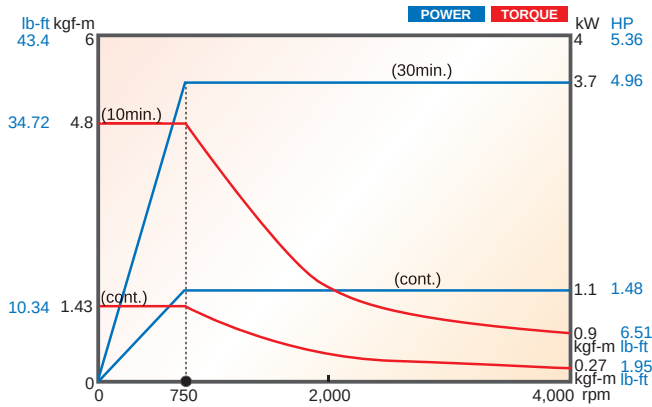


Turrets

- Twin BMT55 live tooling turrets (servo driven, hydraulic clamping).
- 24 live tooling stations.
- Max. speed of live tooling: 4,000 rpm.
- Twin turrets and 3 axes machining simultaneously.

Orthogonal Y-axis

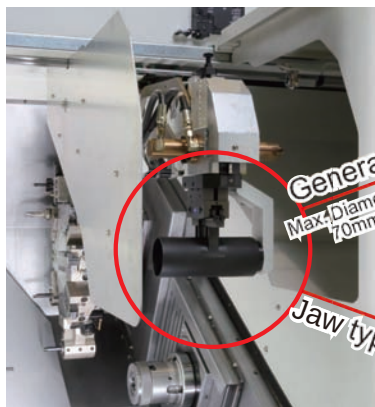
Rigid structure and orthogonal Y-axis for enhancing machining capacity and accuracy.



Automation

From parts feeding to reclaiming are done in one; saving cost, manpower, time and space.

Parts Catcher (std.)



Parts Conveyor (std.)

Finished parts can be delivered to machine outside.

Bar Feeder (opt.)

Equipped with bar feeder for processing.



Parts feeding

Machining

→ finished parts

Parts catching

Delivering parts to outside

Engineering Integration

Composite machining upgrading! Greatly increasing productivity and efficiency.

Benefits of Mill / Turn Turning Centers



Turning + Milling

NT-2000SY2



Low utilization rate

Need to convert multiple machining procedures, including loading and unloading materials and work downtime

Enhancing efficiency through twin system/ twin Y-axis/ turning + milling functions, machining can be done in one time process

→ Increasing utilization rate

Difficult storage management

Raw material, semifinished parts, finished parts

Semifinished parts, finished parts

→ Easy inventory management

Difficult to control the accuracy of the finished product

Inaccurate manual clamping position may occur due to machining process conversion

Clamping position by machine control and processing

→ Increase the accuracy of the finished product

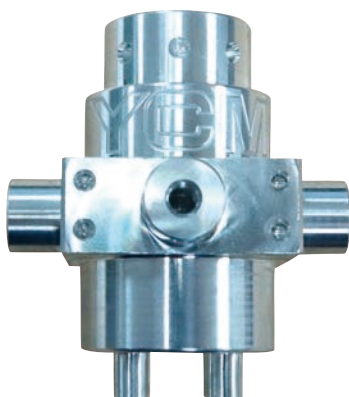
Large floor space required

Two machines need larger area

One machine for small footprint

→ Small footprint

Case Study



NT-2000SY2 machining parts

Machine	Turning + Milling	NT-2000SY2
OP1	74 sec.	490 sec.
OP2	50 sec.	
OP3	350 sec.	-
OP4	170 sec.	-
Labor Loading & Unloading Time	80 sec.	-
Total Machining Time	724 sec.	490 sec.



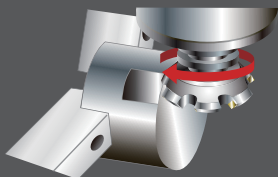
→ Saving 1/2 of floor sapce

CUTTING CAPACITY

NT-2000 **SY2**

RADIAL FACE MILL S45C Steel

Depth of Cut
1
mm

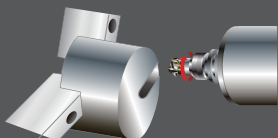


Tool $\varnothing 63$ mm x 5T
Spindle Speed 750 rpm
Feedrate 750 mm/min.
Cutting Speed 148 m/min.



AXIAL END MILL S45C Steel

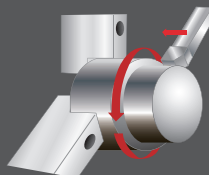
Depth of Cut
5
mm



Tool $\varnothing 16$ mm x 2T
Spindle Speed 1,000 rpm
Feedrate 200 mm/min.
Cutting Speed 50 m/min.

OD-TURNING S45C Steel

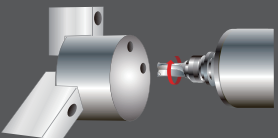
Metal Removal Rate
229
cc/min.



Workpiece Diameter 87 mm
Spindle Speed 550 rpm
Feedrate 220 mm/min.
Cutting Speed 150 m/min.
Depth of Cut 4 mm

AXIAL DRILL S45C Steel

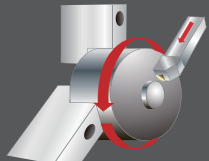
Cutter Diameter
 $\varnothing 16$
mm



Spindle Speed 500 rpm
Feedrate 100 mm/min.
Cutting Speed 25 m/min.
Depth of Cut 24 mm

END TURN S45C Steel

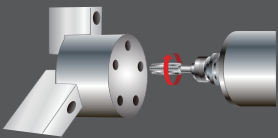
Metal Removal Rate
214
cc/min.



Workpiece Diameter 100 mm
Spindle Speed 550 rpm
Feedrate 220 mm/min.
Cutting Speed 173 m/min.
Depth of Cut 3.1 mm

TAP S45C Steel

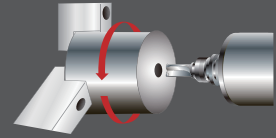
Tapping
M16



Tool M16 x 2P
Spindle Speed 100 rpm
Feedrate 200 mm/min.
Cutting Speed 5 m/min.

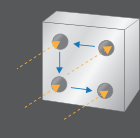
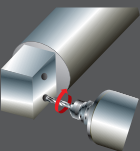
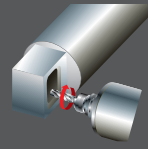
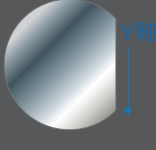
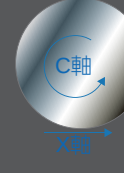
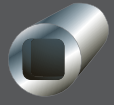
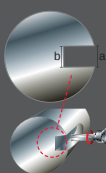
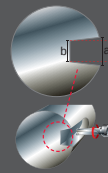
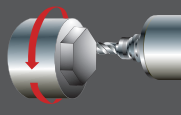
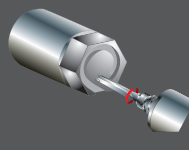
Drill S45C Steel

Cutter Diameter
 $\varnothing 34$
mm



Spindle Speed 1,117 rpm
Feedrate 168 mm/min.
Cutting Speed 119 m/min.
Depth of Cut 20 mm

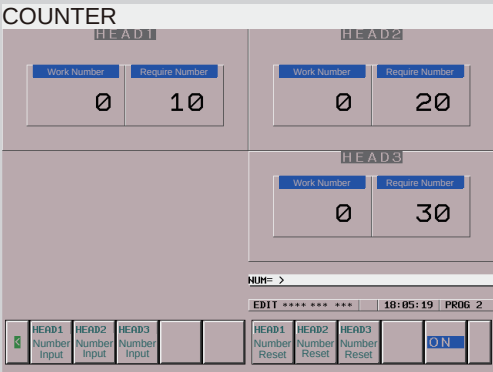
HIGH PERFORMANCE MULTI-AXIS

	Y & C-axis	C-axis
End Face Drilling		
Off-center Drilling		
Off-center Side Grooving		
Large Face Milling		
Contouring		
Grooving Machining		
Polar Interpolation		
Circular Interpolation		

Promote Machines with Added Value

Counter Function

Allow users to keep count of workpieces with the function of overtime cycle alarm provides easy control over machining cycle time; suitable for multiple controllers.



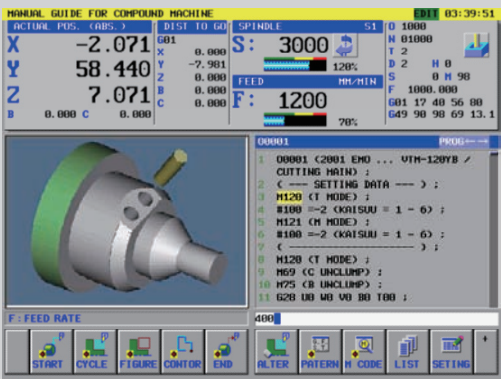
Tool Load Management

Access values of tool wear and breakage loading, monitoring tool loading status, suitable for multiple controllers



FANUC 31i-B series controller standard functions Manual Guide i

1. Displaying machining program animation.
2. For complex machining functions, this can simplify the operations.
3. For multi-system lathes, all instructions can be shown in one screen.



TOOLING CHART

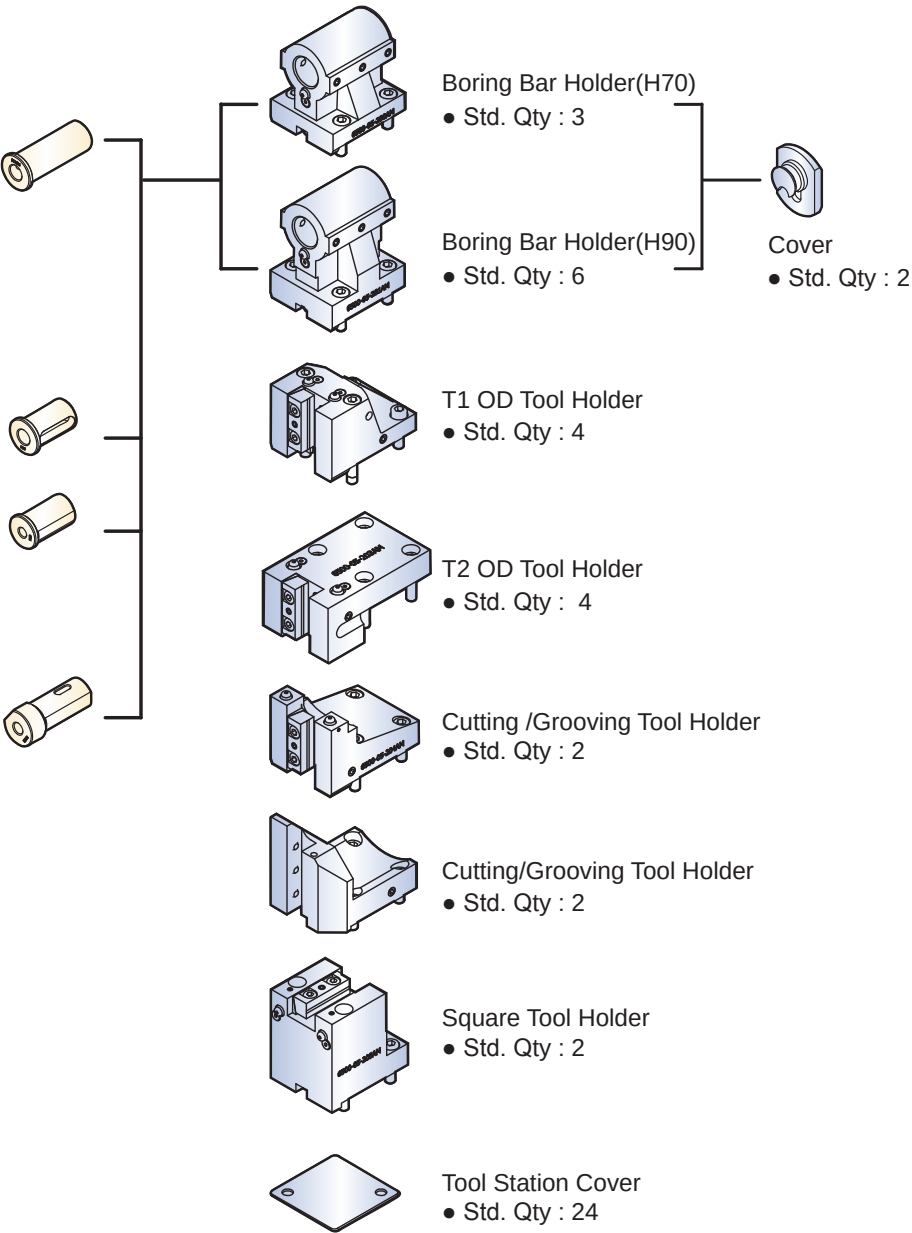
Unit : mm [inch](#)

■ Sleeve Std. Qty: Each one of each size

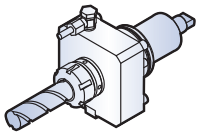
Boring Bar Sleeve	
M3225(ø25)	M3225E(ø1")
M3220(ø20)	M3220E(ø3/4")
M3216(ø16)	M3216E(ø5/8")
M3212(ø12)	M3212E(ø1/2")
M3210(ø10)	M3210E(ø3/8")
M3208(ø 8)	M3208E(ø5/16")
M3206(ø 6)	M3206E(ø1/4")

Oil-feed Tool Sleeve	
EH3225(ø25)	EH3225E(ø1")
EH3220(ø20)	EH3220E(ø3/4")
EH3216(ø16)	EH3216E(ø5/8")
EH3212(ø12)	EH3212E(ø1/2")
EH3210(ø10)	EH3210E(ø3/8")
EH3208(ø 8)	EH3208E(ø5/16")
EH3206(ø 6)	EH3206E(ø1/4")

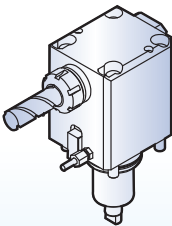
Drill Socketrill Socket	
32MT1(MT1)	32MT1E(MT1)
32MT2(MT2)	32MT2E(MT2)
32MT3(MT3)	32MT3E(MT3)



■ Option



Axial Milling Drilling Head
DW230-DA55-25_external
DW230-CW-DA55-25_interior



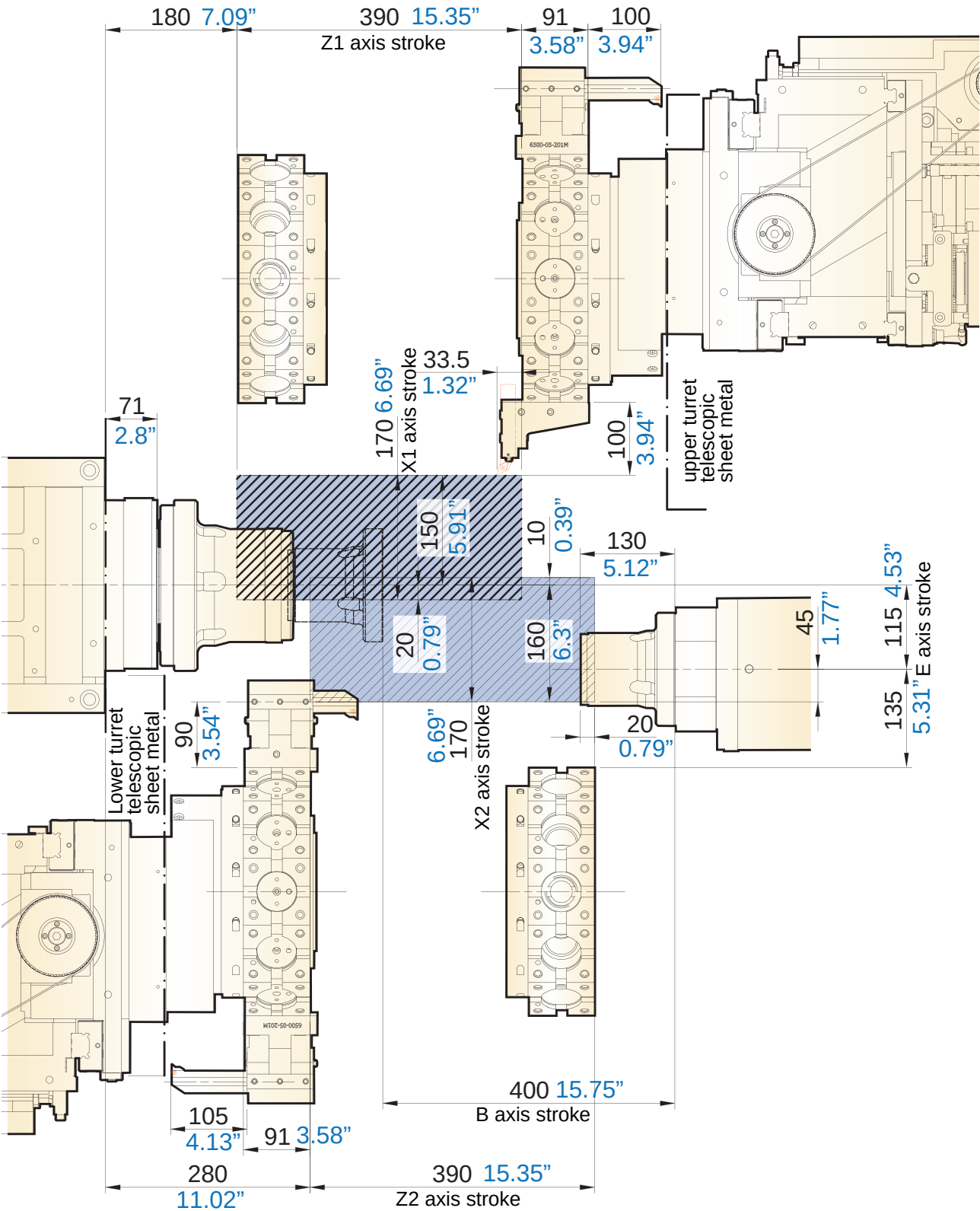
90° Radial Milling Drilling Head
DW230-DF-25-85_external
DW230-CW-DF-25-85_interior



Collet (DIN6499)
34403(3~2mm)
34404(4~3mm)
34405(5~4mm)
34406(6~5mm)
34407(7~6mm)
34408(8~7mm)
34409(9~8mm)
34410(10~9mm)
34411(11~10mm)
34412(12~11mm)
34413(13~12mm)
34414(14~13mm)
34415(15~14mm)
34416(16~15mm)

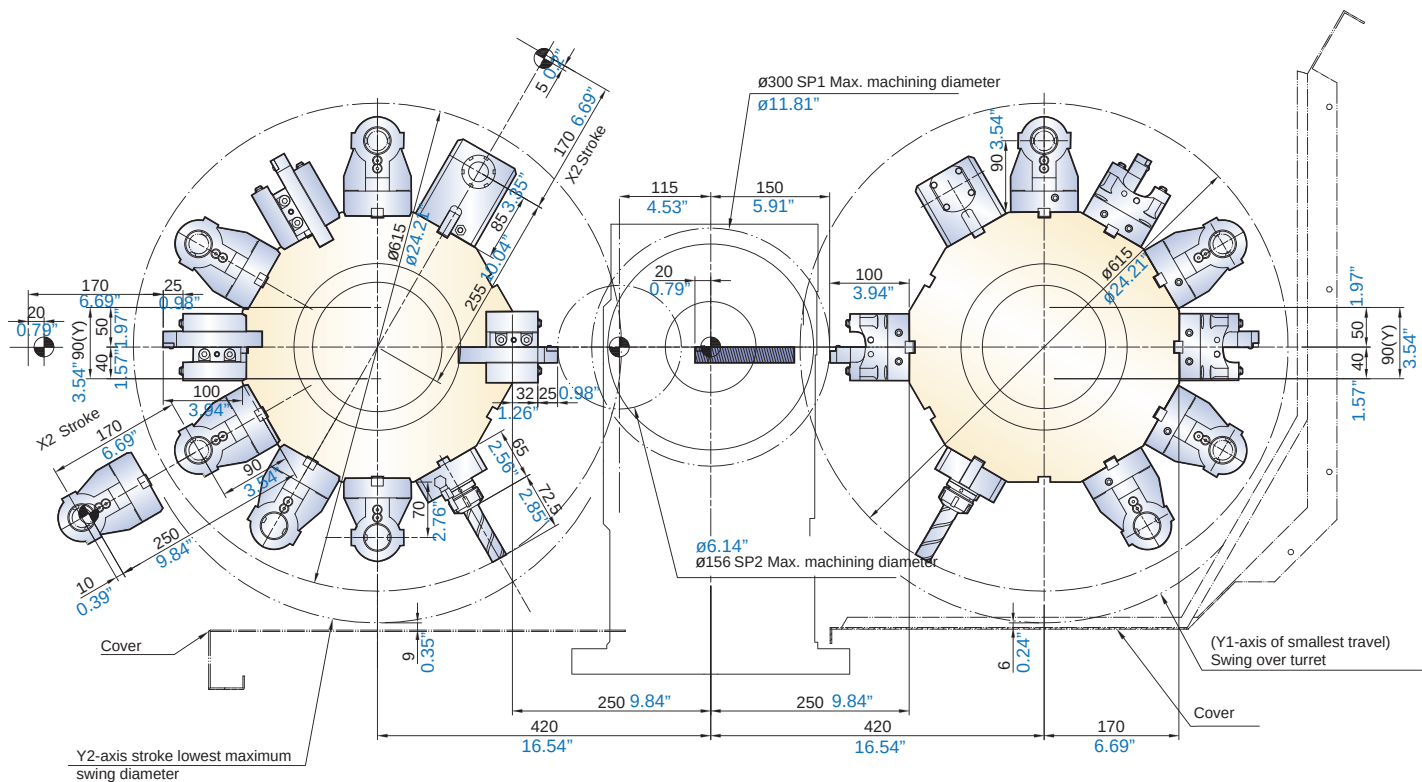
WORKING CAPACITY

Unit : mm inch



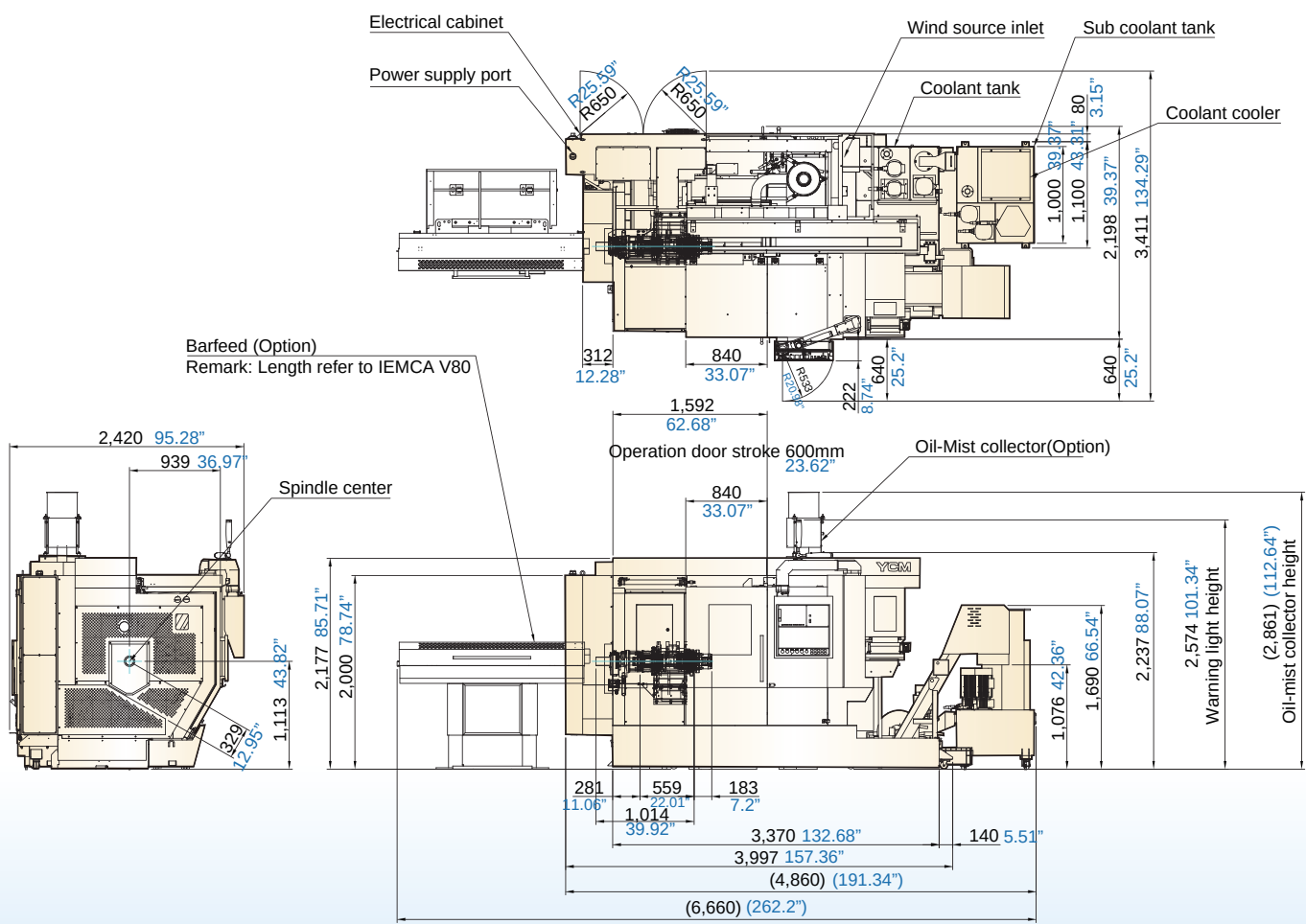
TOOL INTERFERENCE

Unit : mm inch



DIMENSIONS

Unit : mm inch



SPECIFICATION

NT-2000SY2			
MACHINING CAPACITY		Turret 1	Turret 2
Swing Over Bed		ø615 mm ø24.21" (90 mm 3.54" end-milling cutter)	
Swing Over Carriage		ø520 mm ø20.47"	
Max. Turning diameter		ø300 mm ø11.81"	ø300 mm ø11.81" (SP1-T2) / ø156 mm ø6.14" (SP2-T2)
Max. Turning length		390 mm 15.35"	
Distance between end face of the spindle		709 mm 27.91"	
SPINDLE		Main Spindle	Sub Spindle
Height From The Ground to Spindle		1118 mm 44.02"	-
Chuck Size		8"	6"
Spindle Nose Type		A2-6	A2-5
Front Bearing Inner Diameter		ø110 mm ø4.33"	ø90 mm ø3.54"
Hole Through Spindle		ø80 mm ø3.15"	ø55 mm ø2.17"
Hole Through Draw Tube		ø71 mm ø2.8"	ø45 mm ø1.77"
Spindle Speed		100~4,000 rpm	100~5,000 rpm
Max. Spindle Torque		22.7 kg-m 164.19 lb-ft	10.2 kg-m 73.78 lb-ft
C-axis Speed		100 rpm	
C-axis Index Accuracy		0.001°	
MAIN TRAVEL			
X/Z/Y-axis Travel		170 / 390 / 90 (+50 / -40) mm 6.69" / 15.35" / 3.54" (+1.97" / -1.57")	
B/E-axis Travel		-	400 / 115 mm 15.75" / 4.53"
FEEDRATE			
Rapid Feedrate (X/Z/Y)		18 / 30 / 9 m/min. 709 / 1,181 / 354 ipm	
Rapid Feedrate (B/E)		-	30 / 18 m/min. 1,181 / 709 ipm
Cutting Feedrate (X, Z, Y, B)		1~10,000 mm/min. 0.04~394 ipm	
MOTOR			
Main Spindle Power		22 / 26 kW 29.5 / 34.9 HP	
Sub Spindle Power		7.5 / 11 kW 10.1 / 14.8 HP	
Axis Power (X/Z/Y/B/E)		2.7 / 2.7 / 2.5 / 2.7 / 2.7 kW 3.6 / 3.6 / 3.4 / 3.6 / 3.6 HP	
Turret Power		2.5 kW 3.4 HP	
Live Tool Power		1.1 / 3.7 kW 1.5 / 5 HP	
TURRET			
Turret Type		Live Tooling Servo Turret Hydraulic Clamping	
Turret Capacity		12T	
Tool Standard		BMT55	
Standard Tool	Square tool	□20 mm □ 3/4"	
	Boring bar	ø32 mm ø1&1/4"	
Max. Swing Diameter		ø615 mm ø24.21" (90mm 3.54" end-milling cutter)	
Max. Live Tool Rotation Speed		100~4,000 rpm	
Torque of Milling Tool Motor		4.8 kgf-m 34.72 lb-ft	
GENERAL			
Power Consumption (Transformer Capacity)		71 (80) kVA	
Machine Weight		7,500 kg 16,535 lb	

ACCESSORIES

●: Standard ○: Option

NT-2000SY2		
Tool Kit		●
Work Lamp		●
Pilot Lamp		●
Automatic Door		○
Safety Door		●
Hydraulic System		●
Holder	BMT Non-Power Tool Holder	●
	BMT Power Milling Tool Holder	○
Rotary Hydraulic Hollow Cylinder		●
Hydraulic Chuck & Hard Jaws and Soft Jaws 1 Set		○
Soft Jaws, Hard Jaws		○
Soft Jaw Former	Main Spindle	○
	Sub Spindle	○
Collet Chuck (Main, Sub Spindles)		●
Chuck Switch Pedal (Main Spindle)		●
Full Chip Enclosure		●
Leveling Blocks and Bolts		●
Air Gun		●
Coolant System	MTH2-110/5 (Working Area)	●
	MTH2-110/6 (Turrent)	
Coolant Gun		○
Oil Skimmer		○
Paper Filter		○
Oil-mist Collector		○
Central Lubrication System (Volume Type)		●
Chip Conveyor (Right Side)		●
Electrical Cabinet (A/C Cooler)		●
Workpiece Length Setter		○
E-axis Linear Encoder		●
AutoTool Length Measurement System		●
Bar Feeder (Software+Hardware)		○
Parts Catcher System + Parts Pusher System (Sub Spindle) + Coolant Through Sub Spindle System (Air)		●
Part Conveyor		●
CNC Controller	FANUC 31i-B	●
Mechanical, Electrical & Operating Manuals		●

Note: The manufacturer reserves the right to modify the design, specifications, mechanisms, etc., to improve the performance of the machine without notice. All the specifications shown above are just for reference.

VMC

Vertical Machining Center

FP Series High Precision High Performance Die Mold Vertical Machining Center / High Precision Graphite Vertical Machining Center
FP66 A, FP100A / FP66G

NXV Series High Performance Vertical Machining Center
NXV560A, NXV1020A/AM, NXV1380A, NXV1680A/B

TV Series Heavy Duty Vertical Machining Center
TV116B, TV146B, TV158B, TV188B, TV2110B, TV2610B, TV850B

NTV Series High Efficiency T-base Vertical Machining Center
NTV158A/B

NMV Series High Performance High Rigidity Vertical Machining Center
NMV76A, NMV106A

WV Series Ultra Wide High Performance Vertical Machining Center
WV108A/B

FX Series High Performance 5-axis Vertical Machining Center
FX380A

NSV Series Ultra High Performance Vertical Machining Center
NSV66A, NSV102A, NSV102AM, NSV156A

NDV Series High Precision Die Mold Vertical Machining Center
NDV66A, NDV85A, NDV102A

TCV Series High Performance Traveling Column Vertical Machining Center
TCV2000A, TCV3000A, TCV3000A-5AF, TCV3000A-5AX

DCV Series Advanced Double Column Vertical Machining Center

DCV2012A/B, DCV3016B, DCV4016B, DCV3021B, DCV4021B, DCV5021B, DCV6021B, DCV3025B, DCV4025B, DCV5025B, DCV4030B, DCV5030B, DCV6030B, DCV4035B, DCV5035B, DCV6035B, DCV2018A-5AX, DCV4030B-5AX, DCV5030B-5AX, DCV6030B-5AX, DCV4030B-5AF

NDC Series High Performance Double Column Vertical Machining Center
NDC2016B, NDC3016B, NDC4016B, NDC2018B-AHC, NDC3018B-AHC, NDC4018B-AHC

HMC

Horizontal Machining Center

H Series High Production Horizontal Machining Center
H500A/B, H630B, H2612B

NH Series High Speed High Precision Horizontal Machining Center
NH450A, NH630B, NH800B

HBM

Horizontal Boring Milling Machining Center

BMP Series High Accuracy Heavy Duty Boring Machine
BMP1416B

CNC LATHES

CNC Turning Center

NT Series High Performance Mill/Turn Center
NT-2000Y/SY/SY2, NT-2500Y/SY, NT-2000SY2

GT Series High Performance Geo Turning Center
GT-200A/B/MA, GT-250A/B/MA/MB, GT-300A/B/LA/LB/MA/MB/LMA/LMB, GT-380A/B/LA/LB

TC Series High Performance High Precision CNC Lathe
TC-16A/B/LA/LB/MA/MB/LMA/LMB, TC-26, TC-26L, TC-36, TC-36W, TC-46, TC-46M

INTEGRATION AND SOLUTIONS

Integrated Operation Control System **iOPERATION**

Spindle Thermal Compensation System **STC PLUS**

Remote Monitoring System **iDirect**

Automation Solutions



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