

# NS 2100SY Series

6-8" LM GUIDE TYPE  
HORIZONTAL TURNING CENTER



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**NS 2100SY Series**

- NS 2100AY
- NS 2100ASY
- NS 2100BY
- NS 2100BSY



# NS 2100SY Series

## NS 2100AY/ASY/BY/BSY

### High speed, high productivity Roller Type LM Guide Y-axis Turning Center

- High rigidity bed and Roller Type LM Guides for all feed axes
- Super stable low-center of gravity 30° slant bed with maximized work area
- Significantly reduced non-cutting time for high efficiency machining
- High rigidity torque tubed and ribbed bed design to dampen vibration to allow high precision machining
- Symmetrically designed spindle to minimize thermal growth

Category		NS 2100AY   ASY	NS 2100BY   BSY
Swing over bed	mm	820	820
Max turning length	mm	520	490
Chuck size (Main/Sub)	inch	6"   6"/5"	8"   8"/5"
Spindle bore	mm	61	76
Main spindle speed	rpm	6,000   6,000	4,500   4,500
Sub spindle speed	rpm	-   6,000	-   6,000
Main spindle motor (Cont / Max)	kW	11/18.5	11/18.5
Sub spindle motor (Cont / Max)	kW	-   7.5/11	-   7.5/11
Travels (X / Y / Z / ZB)	mm	205/110(±55)/590/590	205/110(±55)/590/590
No of tool positions	EA	12[24](BMT55)	12[24](BMT55)

### Enhanced Productivity with Minimizing Non-cutting Time

- Roller-type LM guides on all axes for superb traverse speeds (30~40% more rigid than Ball-type LM)
- Wider guideway span improving stability

### Wedge type Y-axis with Superb Cutting Performance

- Side milling, off-center drilling
- Wider off-center work range
- Complex shape machining with a single setup

### High rigidity, fast response sub spindle and servo tailstock

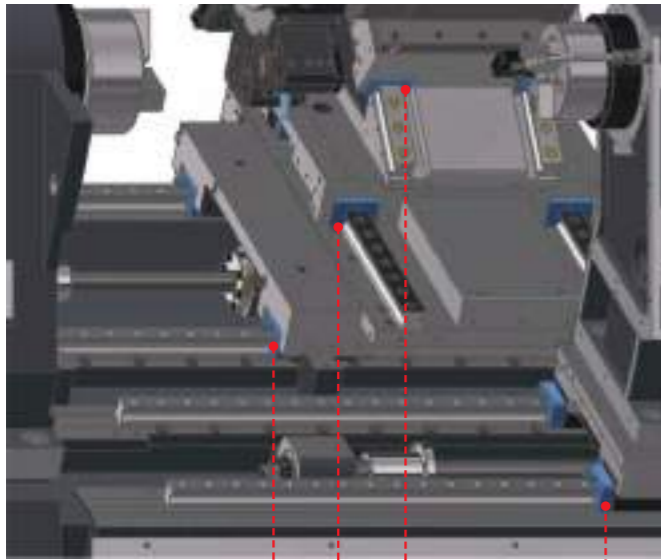
- Servo tailstock or built-in type sub-spindle available
- Spindle oil cooling standard for sub-spindle
- NC controlled servo-tailstock allows for high speed, high precision machining

### User-centric options and convenience features

- 15" large-screen LCD standard
- SMEC HMI and Manual Guide i standard

Enhanced productivity with minimized non-cutting time

Rapid traverse (X / Y / Z / ZB)  
**30/10/36/36** m/min

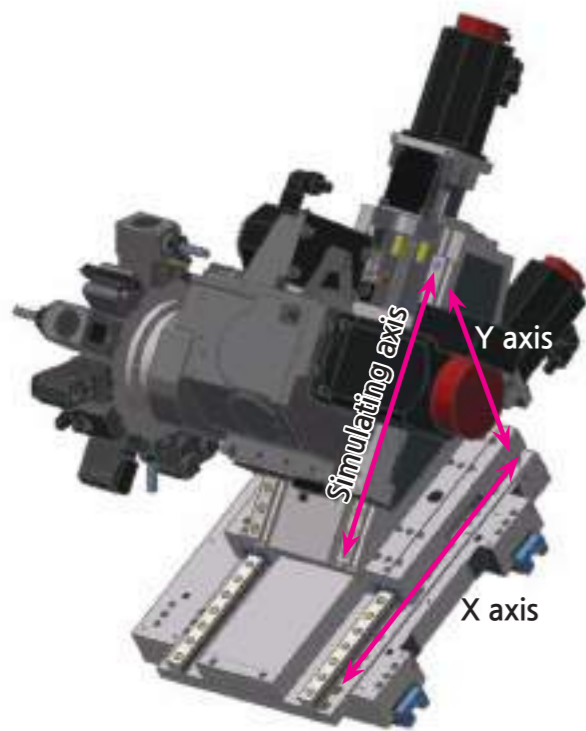


Roller Type LM Guide

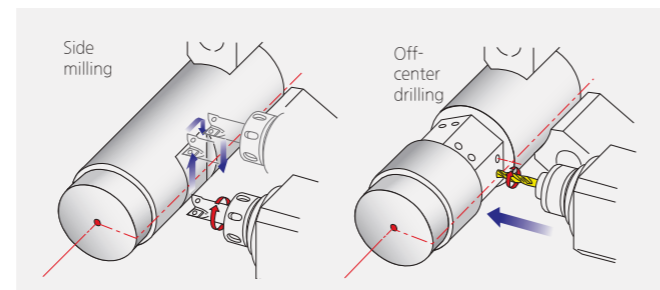
- Roller-type LM guides on all axes (30~40% more rigid than Ball-type LM)
- Wider guideway span improving stability
- Fixed pretension applied to both ends to minimize ballscrew thermal growth
- P4 class high precision angular bearings used for ballscrew support

	X	Y	Z	ZB	
Competitor Model	24	10	30	24	m/min
NS 2100Y Series	30	10	36	36	m/min

Wedge type Y-axis with superb cutting performance



- Side milling, off-center drilling
- Wider off-center work range
- Complex shape machining with a single setup

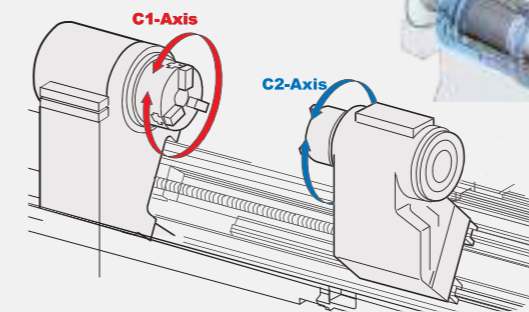


Category	Unit	NS 2100SY
No. of tool positions	ea	12(24)
Turret type		BMT45
SHANK & BORING BAR SIZE	mm	□20×20, Ø32
Turret indexing time (1station/full turn)	sec	0.15/1
Rotary tool speed	rpm	~6,000
Rotary tool motor power (max/cont)	kW	5.5/3.7
Rotary tool torque (max/cont)	N.m	35/17.7

High precision, fast response sub-spindle and servo tailstock

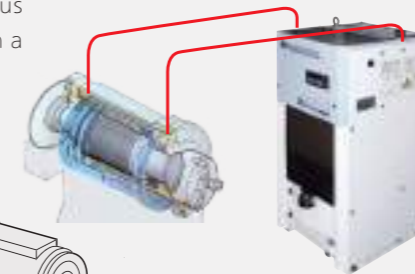
Synchronized C1 and C2-axis indexing

Synchronization of the main spindle (C1) and sub-spindle (C2) indexing allows for machining of a variety of complex shapes. All processes from simple turning and milling to multi-axis simultaneous machining can be completed with a single setup.



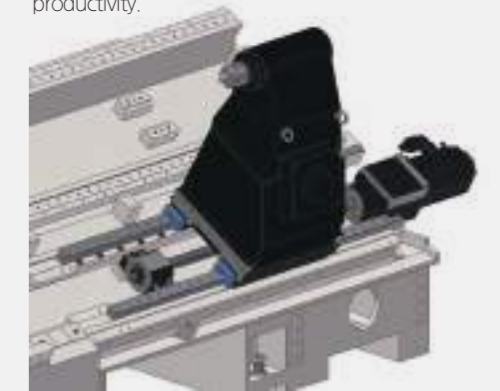
Sub-spindle oil cooling unit

The sub-spindle is wrapped by an oil jacket cooling system to minimize thermal growth and to ensure high speed, high-accuracy machining through various machining conditions.

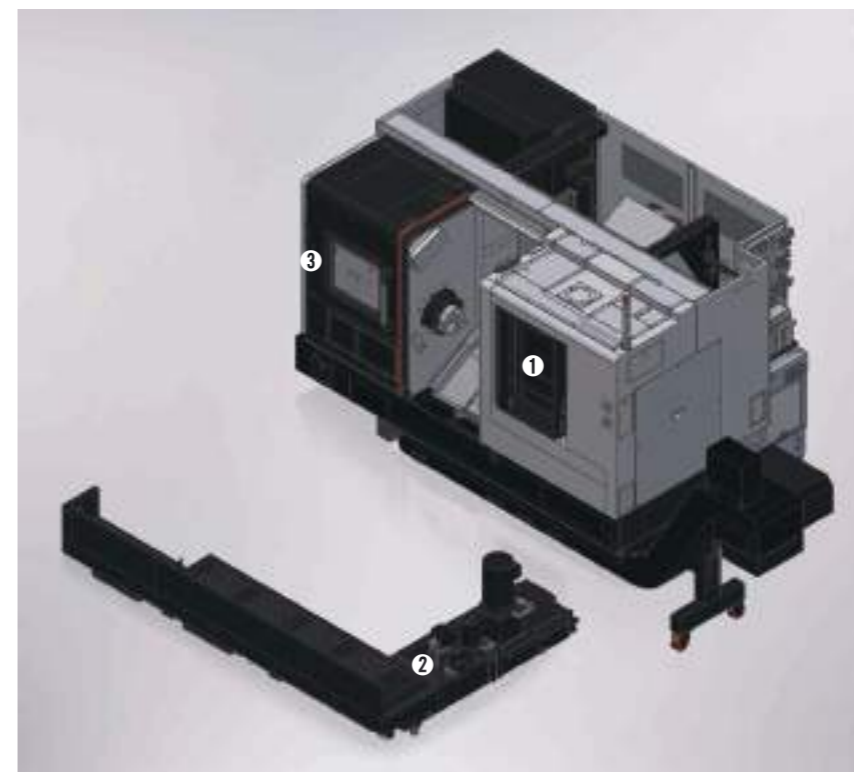


Servo (NC controlled) Tailstock

The servo tailstock supports high-speed, high precision machining where the thrust force is NC controlled. The quill thrust force may be adjusted in accord with the workpiece's length and diameter, reducing the cycle time and increasing the productivity.



Ease of use



1 User-centric OP Panel

The QWERTY-type keyboard and high visibility buttons and effective button placement enhances ease of use.

2 Easy coolant tank maintenance

When cleaning the coolant tank, the coolant tank may be removed while leaving the chip conveyor attached to the machine, making it easier to clean and maintain.

3 Easy hydraulic valve adjustment

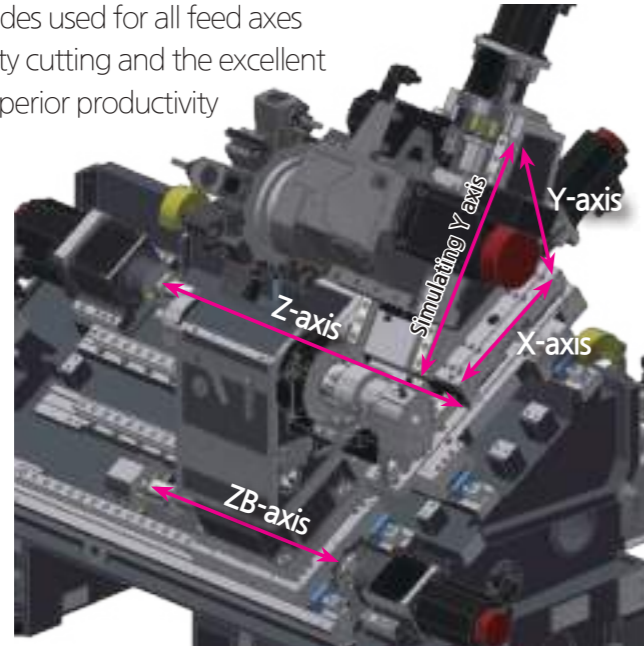
The gauge and hydraulic valves are located at a height that make it easy for the operator to adjust.

# NS 2100SY Series

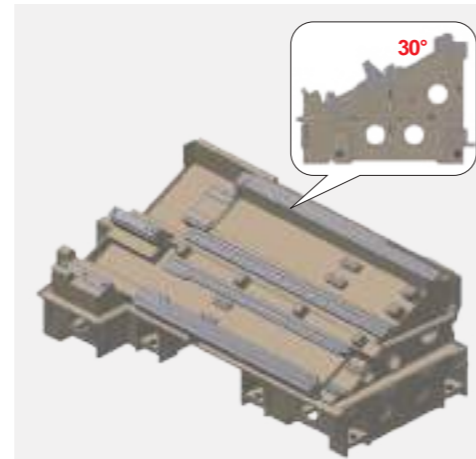
## HORIZONTAL TURNING CENTER

### Machine Design

Roller type LM Guides used for all feed axes supports heavy duty cutting and the excellent rigidity provides superior productivity



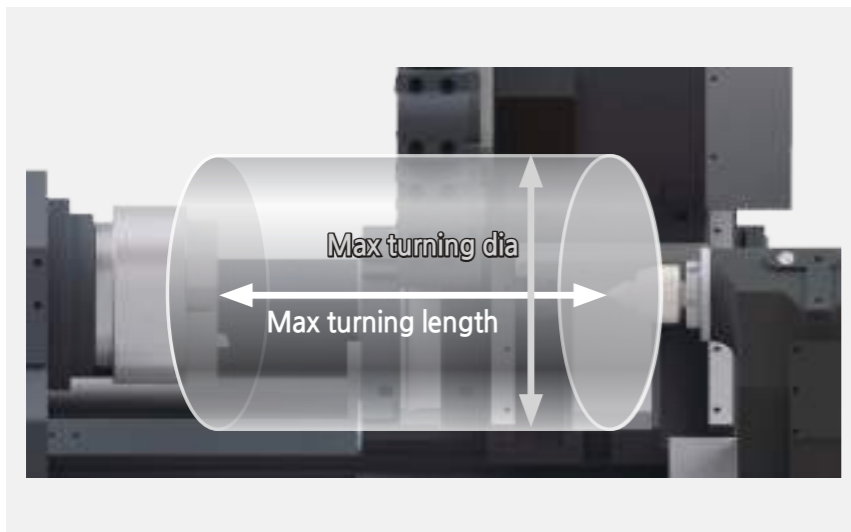
Model	Main chuck size	Travel (mm)				Rapid traverse (m/min)			
		X-axis	Y-axis	Z-axis	ZB-axis	X-axis	Y-axis	Z-axis	ZB-axis
NS 2100AY/ASY	6"	205	110(±55)	590	590	30	10	36	36
NS 2100BY/BSY	8"	205	110(±55)	590	590	30	10	36	36



30° slant bed provides excellent stability during heavy duty cutting

The 30° slant bed with high-torque tubing and ribbed structure provide superb rigidity against twisting and bending, dampening vibration during heavy duty cutting for high precision machining  
The use of a slant bed allows for easier access to the workpiece and excellent chip discharge

### Work Range



Model	Unit	Working bar dia	Max turning dia	Max turning length
NS 2100AY/ASY	mm	Ø51	Ø378	521
NS 2100BY/BSY	mm	Ø67	Ø378	489

Providing a large work envelope, ensuring cost effective productivity

**NS 2100AY/ASY**  
Max turning dia/length  
**Ø378/521 mm**

**NS 2100BY/BSY**  
Max turning dia/length  
**Ø378/489 mm**

### Spindle



The high power motor allows both high precision and high torque machining, improving operator productivity.

#### NS 2100ASY

Max spindle speed : **6,000rpm**

Power (cont/max)  
**11/18.5kW**

Torque (cont/max)  
**70/157.3N·m**

#### NS 2100BSY

Max spindle speed : **4,500rpm**

Power (cont/max)  
**11/18.5kW**

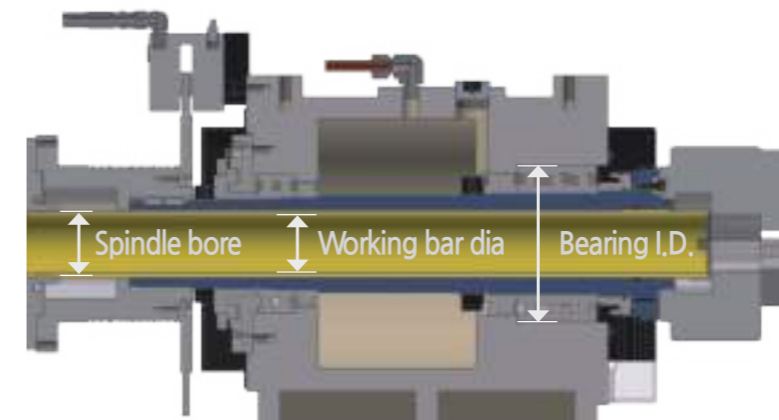
Torque (cont/max)  
**93.4/209.8N·m**

#### NS 2100ASY/BSY\_Sub Spindle

Max spindle speed : **6,000rpm**

Power (cont/max)  
**7.5/11kW**

Torque (cont/max)  
**23.9/40.4N·m**



Category	Unit	NS 2100AY/ASY	NS 2100BY/BSY
Spindle bore	mm	Ø61	Ø76
Working bar dia	mm	Ø51	Ø67
Spindle nose	ASA	A2-5	A2-6
Bearing I.D. [FRONT]	mm	Ø90	Ø110

The high precision Double Row of Cylindrical Roller Bearings and Angular Ball Bearings on the front end of the spindle and the Double Row of Cylindrical Roller Bearings on the back end of the spindle ensure high precision, high speed machining performance

Turret



BMT milling turret

This 12 station (BMT45) turret with the largest in class curvic coupling and power hydraulic clamping force is capable of accepting a rotary tool in every tool position and allows a variety of machining operations with a single set-up

The best in class BMT45 tool holders ensures high rigidity, high precision machining and with non-stop turret indexing in either direction minimizes the turret index time down to 0.15 seconds per station.

Turret indexing time : **0.15sec**

No. of tool positions :  
**12 (□20×20, Ø32)**

Coolant System



Tank capacity : **250ℓ**

Coolant pump (STD) : **4.5bar(1.1kW)**

Coolant pump (OPT) :  
**7, 10, 14.5, 20bar-60Hz  
(Submerged)**

**30~70bar-60Hz  
(Independent)**

Accessories[Optional]

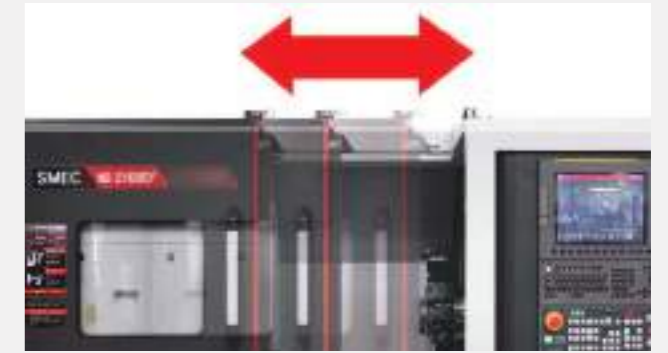


Spindle chiller

For long-term high-speed continuous operation, a spindle oil chiller may be installed to circulate chilled oil around the spindle bearings to prevent thermal growth in the spindle and ensure high precision machining.

Autodoor

Used to quickly open/close the operator door via program to increase productivity in an automation line.



Tool presetter

Used for setting of tools and for quick and accurate tool length compensation for worn tools.



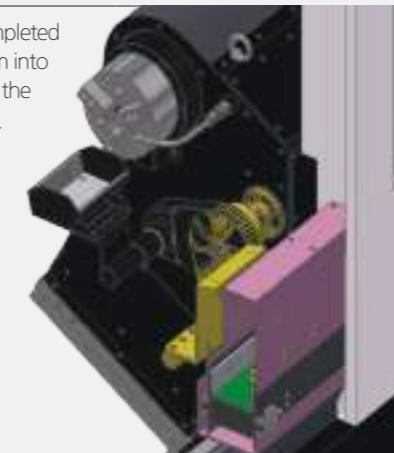
Air blow

Used to automatically remove chips from the chuck after machining and used for safe loading of the chuck in an automated line.



Part catcher & conveyor

Used to receive the completed part and discharge them into a container attached to the exterior of the machine.



Chip conveyor

Used to discharge chips created during machining



SMC FANUC i series



- 15" LCD color display
- Part program size 2MB
- Conversational programming, Manual Guide i
- SMC Custom S/W

SMC Custom S/W displayed using MDI's button or OP Panel's button

**CUSTOM** : Provide operator convenience and improve productivity using the support function for tool management and additional device setting.



M/G-Code check function

Allows the operator to directly read the M/G-Code on the machine for easy application programming



PMC alarm check function

When a PMC alarm occurs, the cause and countermeasures are described in detail, making operation and maintenance more convenient



Easy tailstock setting

Easily configure a variety of functions such as travel limiting, origin setting and signal check



Display only the necessary tools and offsets and check the configured counter at the same time

Tool information and setting management mode



Counter for each T-Code

Manual Guide i (STD)

SMC's Manual Guide i system enables advanced part program creation and more efficient and faster machining with conversational programming



Check cutting result using cutting simulation



Check cutting path using cutting simulation

Easy program creation and editing

Program creation using advanced part program editing and extensive cutting cycles

Check program using cutting simulations

Program pre-check using realistic cutting simulation

Effective cutting setup

Tool and cutting condition offset data setup based on measurement cycle

Advanced cutting capabilities

Check cutting status such as cutting cycle name and tool icon during the cutting process

Measurement

Feedback of cutting results and tool offset values after cutting

IoT Solution (OPT)

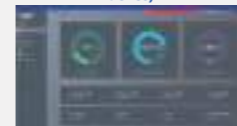


NC-Gate / IoT-Gate

The NC-Gate / IoT-Gate that was developed in-house with our ICT technology is a universal gateway that not only interworks with our machine tools, but machine tools from other manufacturers, robots, automation equipment, and analog / digital sensors as a network device capable of bi-directional communication.

Supported drivers : Fanuc / Mitsubishi / Siemens NC, Modbus TCP, DeviceNet, Profibus, Ethernet, AI/DI/DO

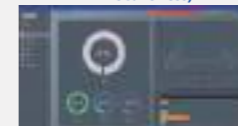
KPI (Key Performance Indexes)



Provides key performance indicators and displays target achievement

Indicators : achievement rate, productivity, process defect rate, equipment and factory usage, quality defect rate, lead time, and average cycle time

OEE (Overall Equipment Effectiveness)



Provides figures and graphs of overall equipment effectiveness

Availability, performance, quality, etc.

Realtime Monitoring



Provides operation status and alarm information in case of problems in the production line

Provides information about the operation status, speed, production alarms, etc. of each machine

Remote Control/Management



Remote control and operation

Emergency stop switch, program editing, etc.

Remote A/S



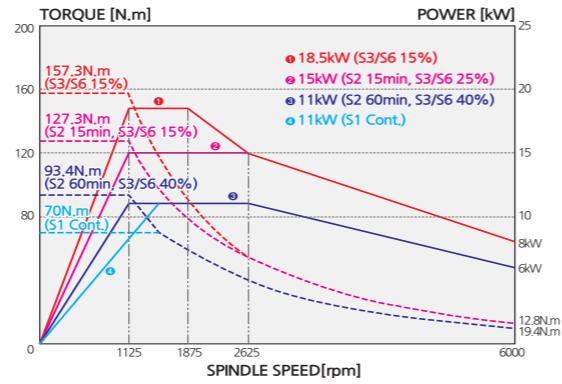
Problem diagnosis via remote control

Provide remote diagnosis services to users via the IIoT solution

Power-Torque Diagram

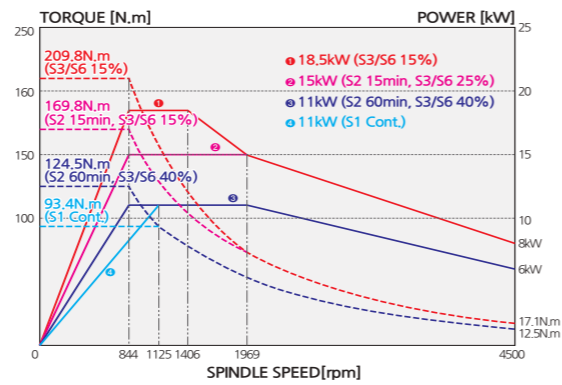
NS 2100AY/ASY

Max speed  
**6,000**rpm  
Power (cont/max)  
**11/18.5**kW  
Torque (cont/max)  
**70/157.3**N·m



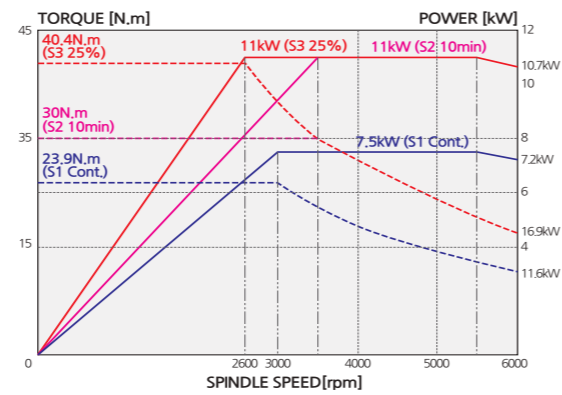
NS 2100BY/BSY

Max speed  
**4,500**rpm  
Power (cont/max)  
**11/18.5**kW  
Torque (cont/max)  
**93.4/209.8**N·m



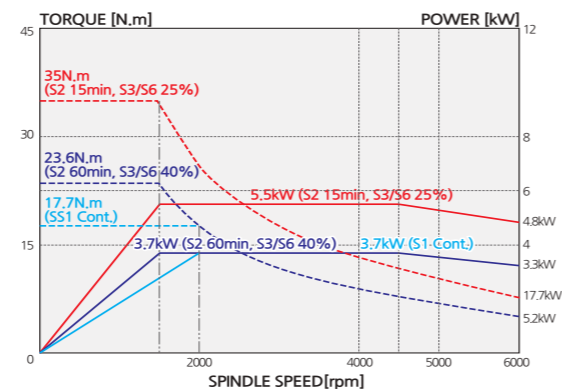
NS 2100Y Series\_SUB Spindle

Max speed  
**6,000**rpm  
Power (cont/max)  
**7.5/11**kW  
Torque (cont/max)  
**23.9/40.4**N·m



NS 2100Y Series\_MILL Motor

Max speed  
**6,000**rpm  
Power (cont/max)  
**3.7/5.5**kW  
Torque (cont/max)  
**17.7/35**N·m

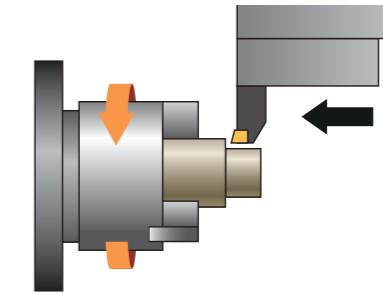


Cutting Performance

Test conditions : NS 2100ASY(6")

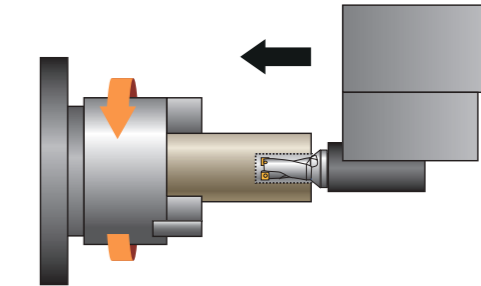
◆ O.D Cutting

Cutting dia.	mm	Ø81
Cutting depth	mm	4
Cutting speed	m/min	286
Spindle speed	rpm	1,125
Feedrate	mm/rev	0.38
Chip removal rate	cc/min	435



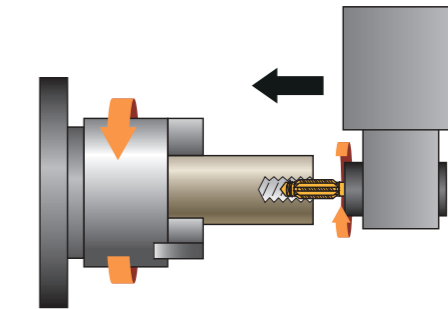
◆ U-Drill Cutting

U-drill dia.	mm	35.5
Cutting speed	m/min	125
Spindle speed	rpm	1,125
Feedrate	mm/rev	0.18
Chip removal rate	cc/min	200



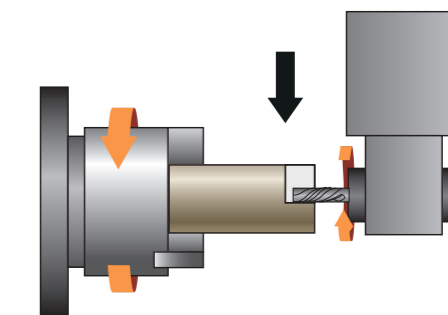
◆ Tap

	Cutting fluid	Tapping fluid	
Tap size	mm	M12×1.75	M18×2.5
Cutting depth	mm	20	35
Cutting speed	m/min	15	18
Spindle speed	rpm	398	318
Feedrate	mm/rev	1.75	2.5



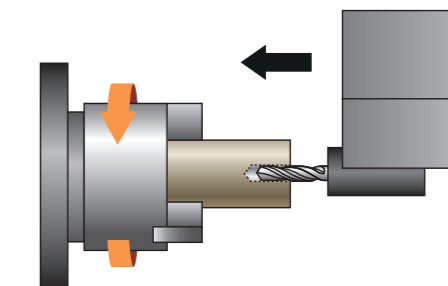
◆ Endmill

Endmill dia.	mm	Ø16
Cutting depth	mm	6
Cutting speed	m/min	76
Spindle speed	rpm	1,512
Feedrate	mm/min	151
Chip removal rate	cc/min	15



◆ Drill

Drill dia.	mm	Ø16
Cutting depth	mm	32
Cutting speed	m/min	120
Spindle speed	rpm	2,387
Feedrate	mm/min	239
Chip removal rate	cc/min	48

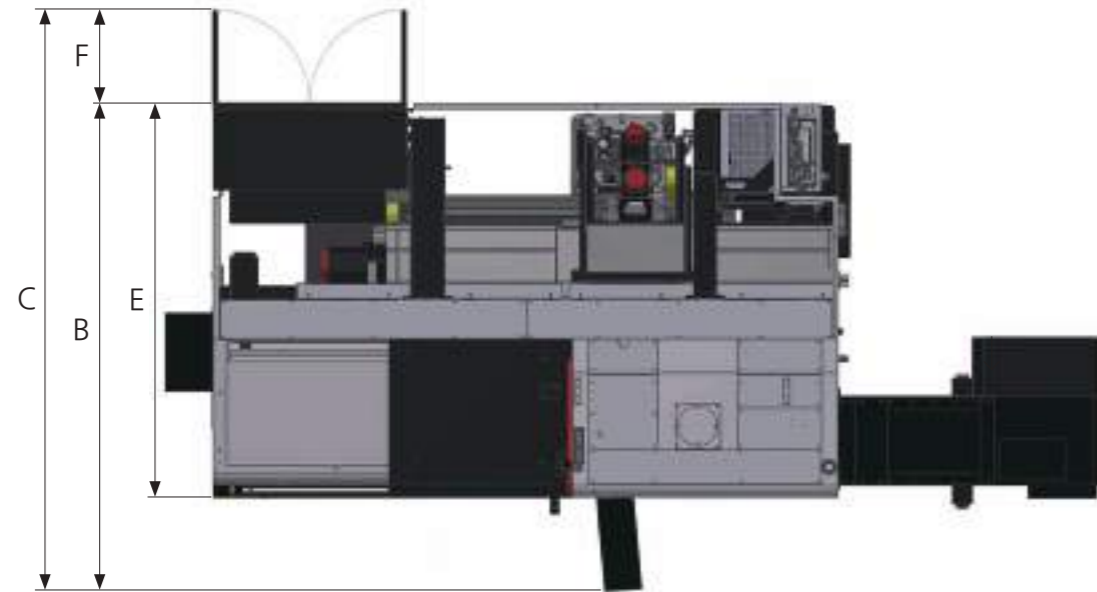


※ The above data is based on internal testing. Values may change depending on cutting conditions.

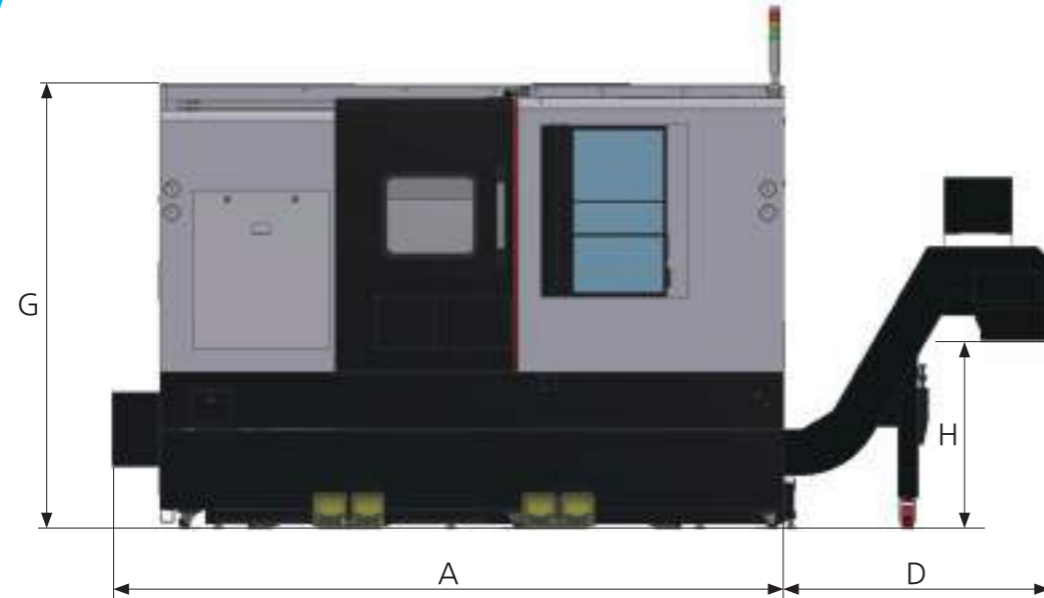
Machine Dimensions

Unit : mm

Top view



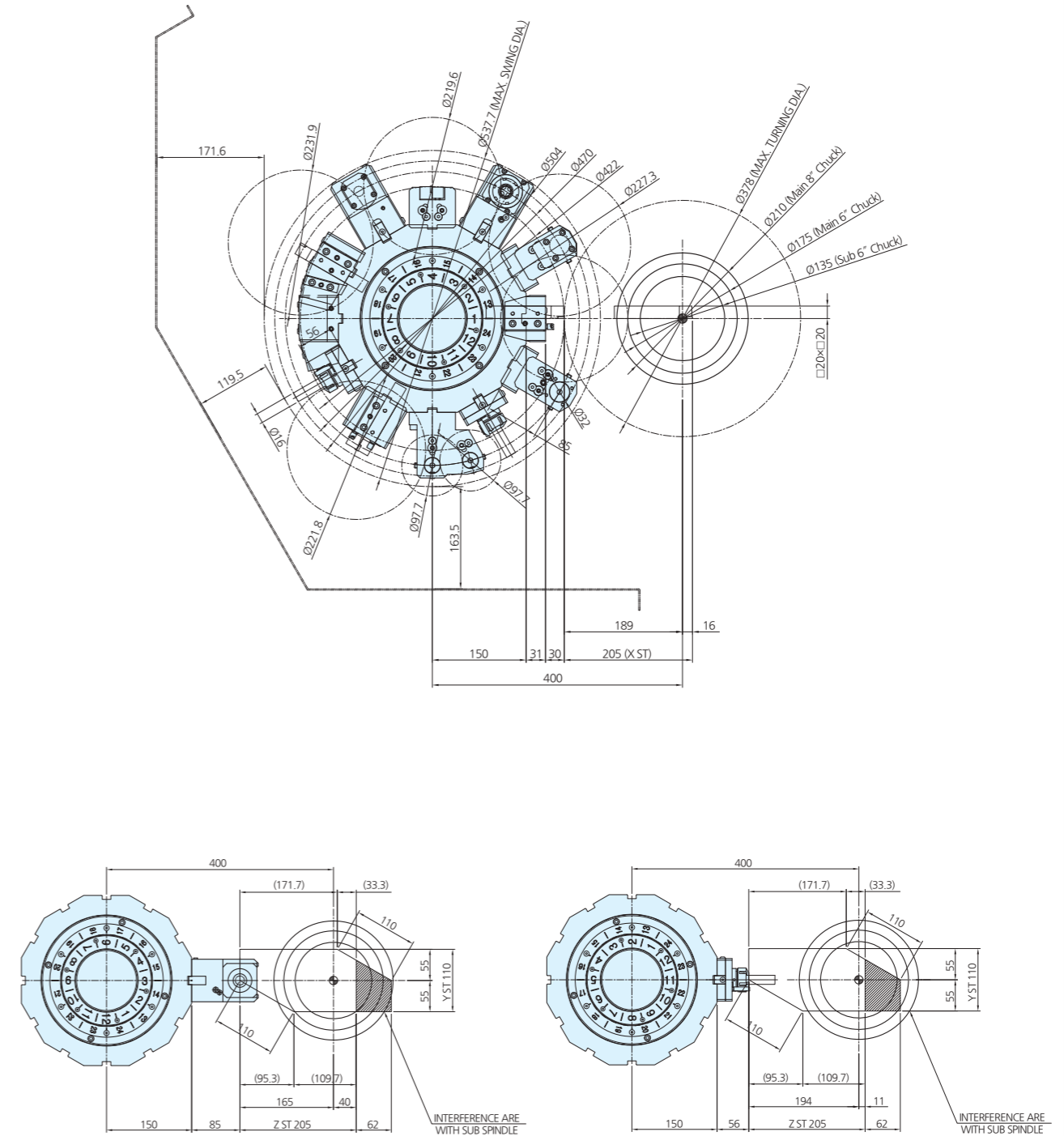
Front view



Model	A (Machine front)	B	C	D	E (Machine side)	F	G (Machine height)	H
NS 2100SY Series	2,955	2,144	2,549	1,165	1,730	405	1,950	813

Turret Interference

Unit : mm

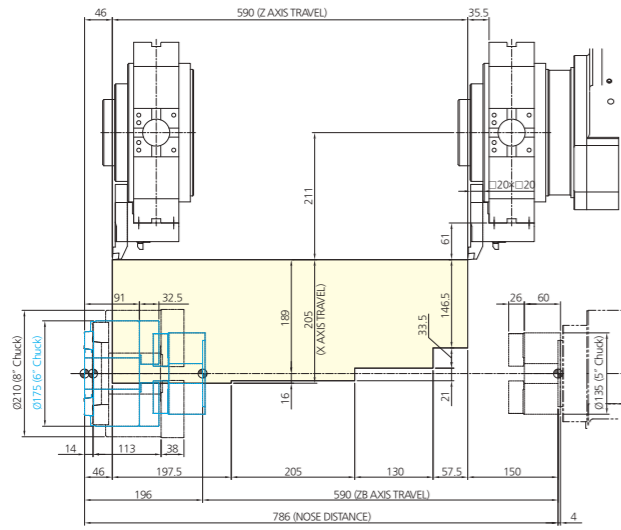




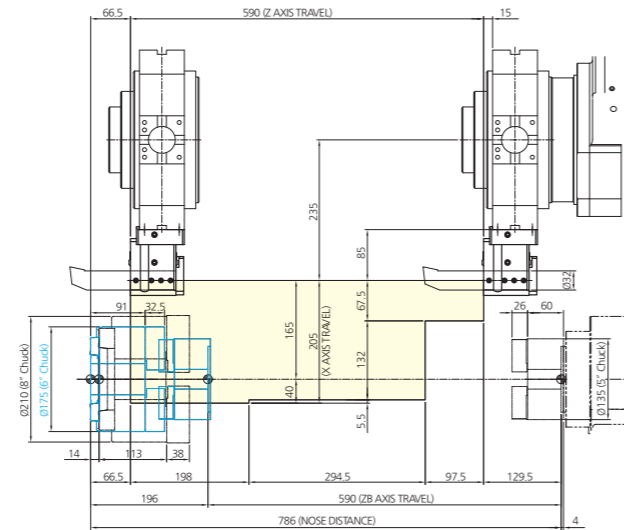
Work Range

Unit : mm

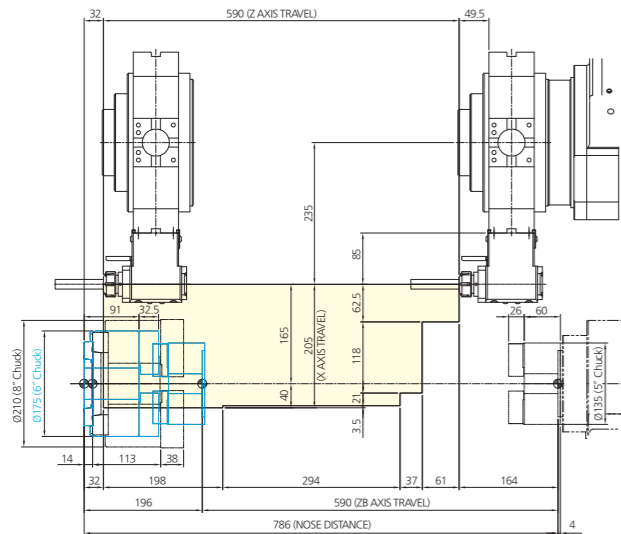
O.D TOOL HOLDER (MAIN)



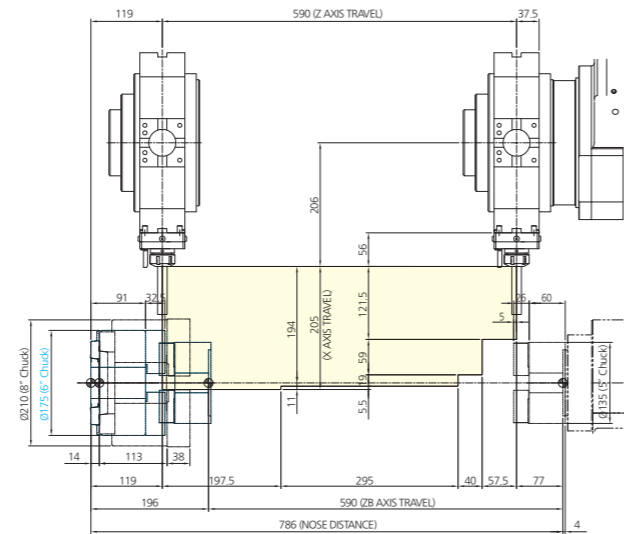
U-DRILL HOLDER (MAIN)



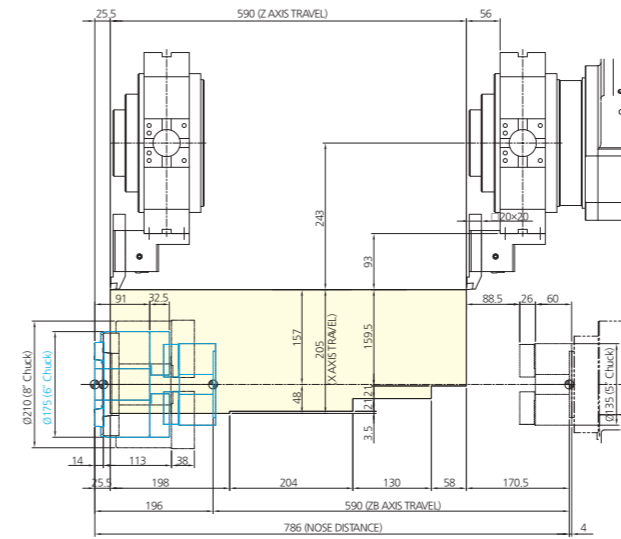
RADIAL HOLDER (MAIN)



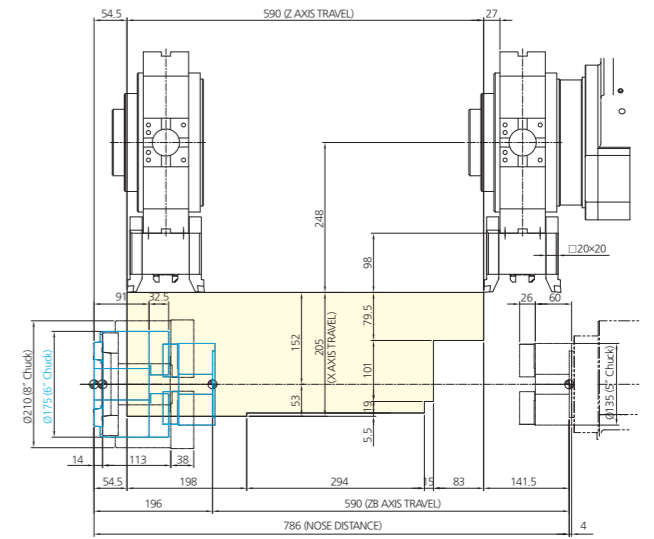
AXIAL HOLDER (MAIN)



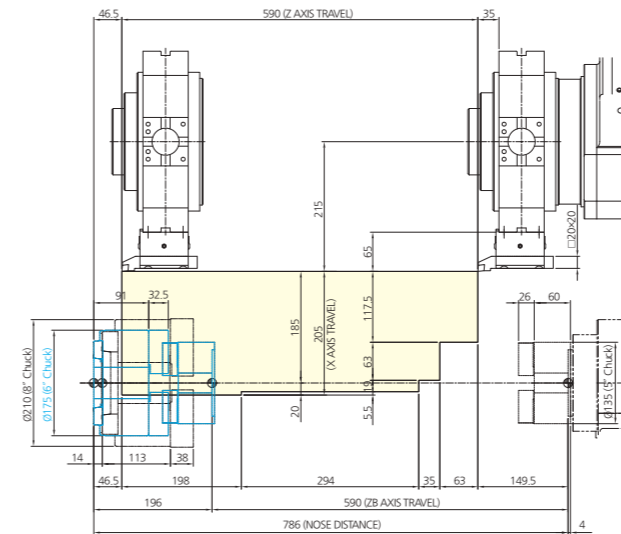
DOUBLE O.D HOLDER\_FRONT (MAIN)



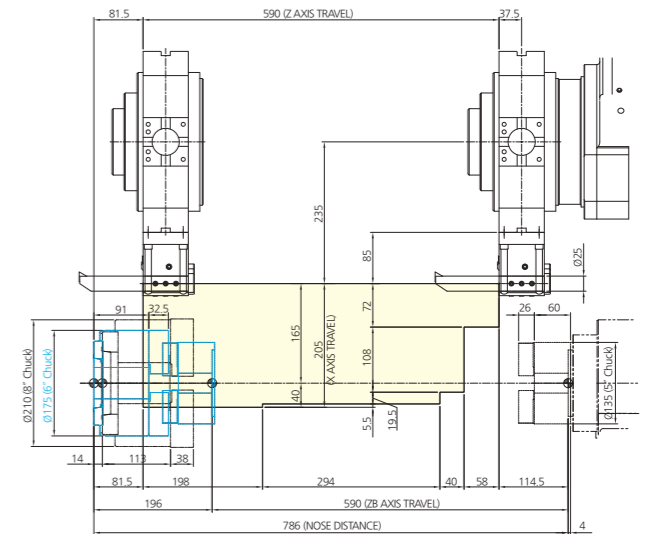
DOUBLE O.D HOLDER\_BOTH SIDE (MAIN)



FACE HOLDER (MAIN)

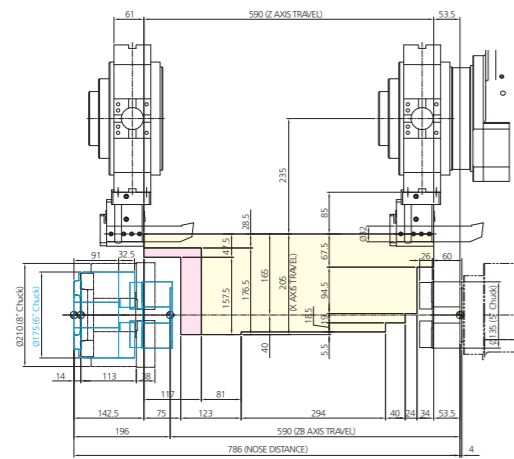


DOUBLE U-DRILL HOLDER (MAIN)

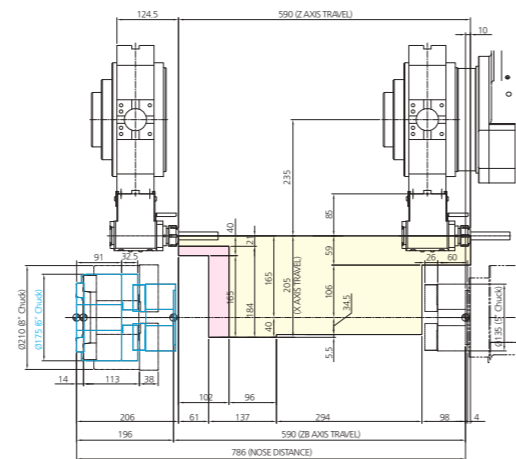


**Work Range**

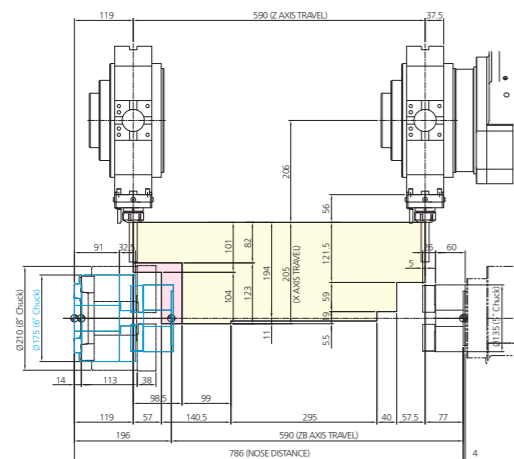
**U-DRILL HOLDER (SUB)**



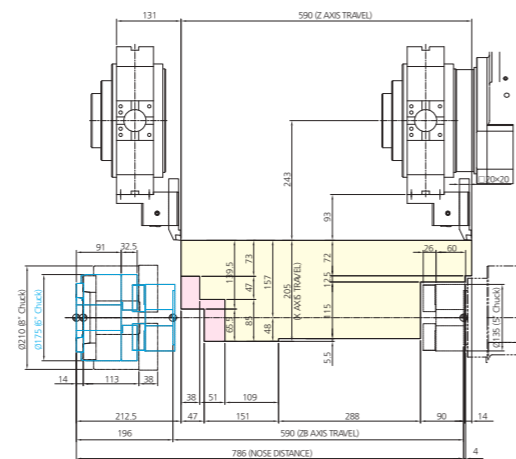
**RADIAL HOLDER (SUB)**



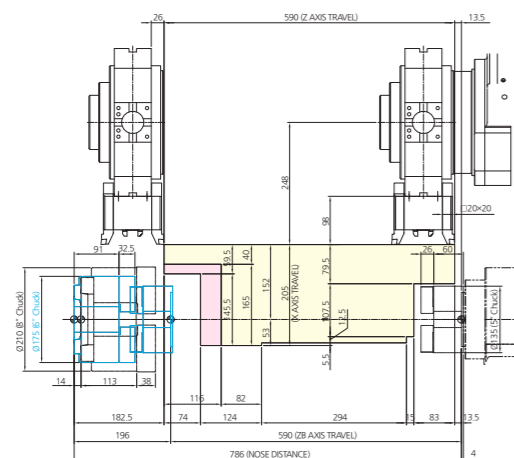
**AXIAL HOLDER (SUB)**



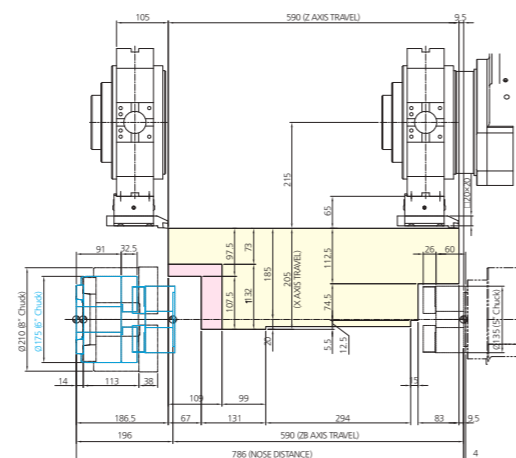
**DOUBLE O.D HOLDER\_FRONT (SUB)**



**DOUBLE O.D HOLDER\_BOTH (SUB)**



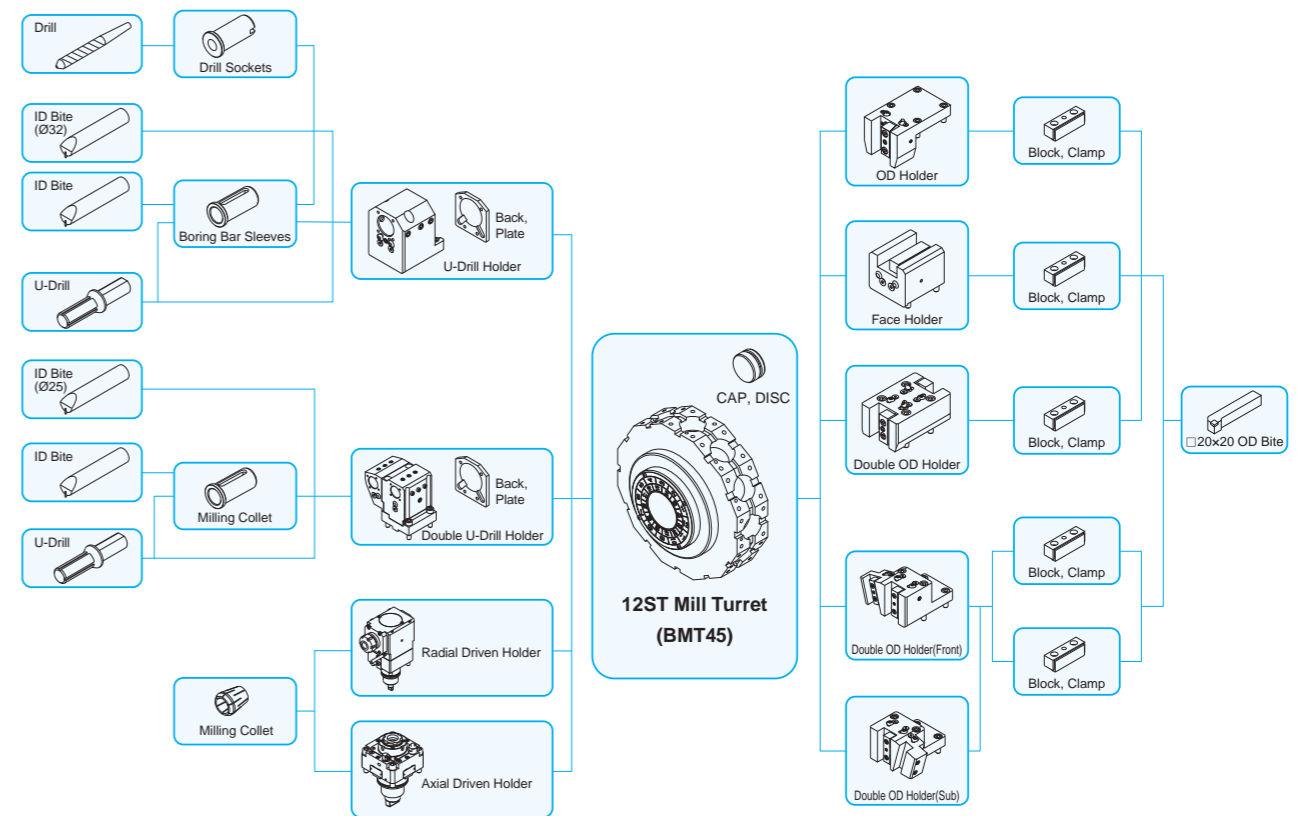
**FACE HOLDER (SUB)**



Unit : mm

**Tooling System**

Unit : mm



**Standard Tooling**

Item / Description		6 inch	8 inch	
Static Holder	Bite Plate	-	-	
	OD Holder	1	1	
	OD Holder Double	1	1	
	OD Holder Double(Front)	1	1	
	OD Holder Double(Sub)	1	1	
Boring Holder	Face Holder	1	1	
	ID Holder	2	2	
Milling Holder	U-Drill Holder Double	1	1	
	Axial Milling Holder	2	2	
	Radial Milling Holder	2	2	
Socket	Boring	Ø8	1	1
		Ø10	1	1
		Ø12	1	1
		Ø16	1	1
		Ø20	1	1
	Drilling	MT1	1	1
		MT2	1	1
		ER Collet	1	1

# NS 2100SY Series

## HORIZONTAL TURNING CENTER

### Standard / Optional

● : Standard ○ : Optional △ : To be discussed X : N/A

Category		NS 2100Y	NS 2100SY	Category		NS 2100Y	NS 2100SY		
Spindle	3 jaw open-center chuck	●	●	Chip Disposal	Coolant tank	250L	●	●	
	3 jaw closed-center chuck	X	X		Chip conveyor (Hinge/ Screper)	Right-side		●	●
	Soft jaw (3set)	●	●			Rear		△	△
	Hard jaw (1set)	○	○		Special chip conveyor (Drum Filter)		△	△	
	Chuck clamp footswitch	●	●	Chip bucket	Fixed 380L	○	○		
	Dual pressure chucking	○	○	Safety Features	Door interlock		●	●	
	C-axis control (0.001")	●	●		Backspin torque limiter(BST)		○	○	
	Chuck clamp confirmation	●	●		Torque limiter		○	○	
	Chuck dual footswitch	○	○		Full splash guard		●	●	
			Chuck hyd. pressure interlock			△	△		
Turret	Tool holder	●	●	Electrical	3 step patrol lamp and buzzer		●	●	
	Rotary holder type	BMT	●		●	Lamp for electrical cabinet		○	○
	Rotary holder (axial)	Collet-type, 2EA	●		●	Remote MPG		○	○
	Rotary holder (radial)	Collet-type, 2EA	●		●	Work counter	Digital	○	○
	Rotary holder (axial)	Adapter-type	X		X	Total counter	Digital	○	○
	Rotary holder (radial)	Adapter-type	X		X	Tool counter	Digital	○	○
	Boring bar sleeve (same as U-drill holder sleeve)		●		●	Multi counter	6EA	○	○
	Drill socket		●		●	9EA	○	○	
	U-drill holder		●		●	Grounded circuit breaker		○	○
	U-drill cap	X	X		AVR(Auto Voltage Regulator)		○	○	
	Swivel head holder	△	△	Transformer	35kVA	○	○		
				50kVA	○	○			
	Tailstock	NC(Servo Motor) tailstock	●	X	Auto Power Off		○	○	
Live center (standard with tailstock)		●	X	Measurement	Tool Presetter	Manual	○	○	
High precision live center		X	X		Tool Presetter	Auto	○	○	
Dual pressure tailstock		X	X		Air zero measuring device (for special chuck)	TACO	△	△	
Quill forward/reverse confirmation		X	X		SMC	△	△		
Tailstock footswitch		X	X		Linear scale	X-axis	○	○	
			Y-axis		○	○			
Coolant & Air Blow	Standard coolant (nozzle)	○	○	Z-axis	○	○			
	Chuck coolant	○	○	Coolant level gauge (requires chip conveyor)		○	○		
	Coolant gun	○	○	Environmental	Air conditioner for electrical cabinet		○	○	
	TSC for chuck (for special coolant)	△	△		Dehumidifier		△	△	
	TSC for sub-spindle (with work ejector)	X	○		Oil mist collector		○	○	
	Bed flushing	○	○		Oil skimmer		○	○	
	Air blower	○	○		MQL(Minimal Quantity Lubrication)		△	△	
	Rotary tool holder TSC	○	○		Automation	Auto door		○	○
	Tailstock air blower	○	X	Auto shutter (for automation solution)			△	△	
	Turret tool air blower	△	△	Sub controller			△	△	
	Air gun	○	○	Barfeeder interface			○	○	
	Through spindle air blower (for special chuck)	△	△	Additional M-codes (4 pairs)			○	○	
	Through sub-spindle air blower (with work ejector)	X	○	Automation interface			○	○	
	Coolant pump	4.5Bar	●	●		I/O expansion (including both IN and OUT)	16 contacts	○	○
		7Bar	○	○		32 contacts	○	○	
		10Bar	○	○		Parts catcher		○	○
		14.5Bar	○	○		Part conveyor (requires part catcher)		X	○
20Bar		○	○	Hydraulic Supply	Standard hydraulic cylinder	Open-center	○	○	
Power coolant system (for automation solutions)	△	△	Standard hydraulic unit		35Bar	○	○		
Coolant chiller	○	○							

※ For detailed information, please contact your local SMEC dealer.

### Machine Specifications

Category			NS 2100Y	
			A type	B type
Chuck	Chuck size	inch	6"	8"
Capacity	Swing over bed	mm	820	820
	Swing over cross-slide	mm	540	540
	Max turning diameter	mm	378	378
	Max turning length	mm	521.3	489
	Working bar diameter	mm	51	67
Spindle	Spindle speed	rpm	6,000	4,500
	Spindle nose	ASA	A2-5	A2-6
	Draw tube ID	mm	52	68
	Spindle bore	mm	61	76
	Spindle motor	kW	11/18.5	11/18.5
	Sub-spindle motor (cont/max)	kW	-	-
	Travels	X-axis stroke	mm	205
Y-axis stroke		mm	110(±55)	110(±55)
Z-axis stroke		mm	590	590
ZB-axis stroke		mm	590	590
X-axis rapid traverse		m/min	30	1.8
Y-axis rapid traverse		m/min	10	1.8
Z-axis rapid traverse		m/min	36	3
ZB-axis rapid traverse		m/min	36	1.8
Turret	No of tool positions	ea	12[24] (BMT45)	12[24] (BMT45)
	OD tool size	mm	20	20
	Boring bar diameter	mm	32	32
	Indexing time	sec	0.15	0.15
	Rotary tool speed	rpm	6,000	6,000
	Rotary tool motor (cont/max)	kW	3.7/5.5	3.7/5.5
	Tailstock	Quill diameter	mm	65
Quill stroke		mm	590	590
Quill taper		MT	MT#4(LIVE CENTER)	MT#4(LIVE CENTER)
Machine	Size (with SIDE chip conveyor) L×W×H	mm	2,955(4,121) × 1,730 × 1,950	
	Weight	kg	4,200	4,210
	Coolant tank capacity	Liter	250	250
Electric power supply	kVA/V		31/220	31/220
Controller			FANUC Oi-TF+	

※ Design and specifications are subject to change without notice.

# NS 2100SY Series

## HORIZONTAL TURNING CENTER

### Machine Specifications

Category			NS 2100SY	
			A type	B type
Chuck	Chuck size	inch	6"/5"	8"/5"
Capacity	Swing over bed	mm	820	820
	Swing over cross-slide	mm	540	540
	Max turning diameter	mm	378	378
	Max turning length	mm	521.3	489
	Working bar diameter	mm	51	67
Spindle	Spindle speed	rpm	6,000/6,000	4,500/6,000
	Spindle nose	ASA	A2-5/Flat $\phi$ 110	A2-6/Flat $\phi$ 110
	Draw tube ID	mm	52/36	68/36
	Spindle bore	mm	61/43	76/43
	Spindle motor	kW	11/18.5	11/18.5
	Sub-spindle motor (cont/max)	kW	7.5/11	7.5/11
Travels	X-axis stroke	mm	205	205
	Y-axis stroke	mm	110( $\pm$ 55)	110( $\pm$ 55)
	Z-axis stroke	mm	590	590
	ZB-axis stroke	mm	590	590
	X-axis rapid traverse	m/min	30	1.8
	Y-axis rapid traverse	m/min	10	1.8
	Z-axis rapid traverse	m/min	36	3
	ZB-axis rapid traverse	m/min	36	1.8
Turret	No of tool positions	ea	12[24] (BMT45)	12[24] (BMT45)
	OD tool size	mm	20	20
	Boring bar diameter	mm	32	32
	Indexing time	sec	0.15	0.15
	Rotary tool speed	rpm	6,000	6,000
	Rotary tool motor (cont/max)	kW	3.7/5.5	3.7/5.5
Tailstock	Quill diameter	mm	-	-
	Quill stroke	mm	-	-
	Quill taper	MT	-	-
Machine	Size (with SIDE chip conveyor) LxWxH	mm	2,955(4,121) x 1,730 x 1,950	
	Weight	kg	4,500	4,510
	Coolant tank capacity	Liter	250	250
Electric power supply	kVA/V		31/220	31/220
Controller			FANUC Oi-TF+	

\* Design and specifications are subject to change without notice.

### NC Specification / FANUC

● : Standard ○ : Optional ( ) : Option X : N/A

Category		Oi-TF+	Category		Oi-TF+
Controlled axis	Controlled axes	X, Z, Y, B, C, A	Program input	Absolute/incremental programming	G90/G91
	Max. simultaneously controlled axes	4		Multiple repetitive cycle	●
	Least command increment	0.001mm / 0.0001"		Multiple repetitive cycle II	●
	Built-in stroke limit	Soft overtravel 1, 2, 3, 4		Canned cycles	●
	Machine lock	●		Drilling canned cycle	●
Operation functions	Pulse handle feed	X1, X10, X100		Decimal point input	●
	Dry run	●		Inch/metric conversion	G20 / G21
	Single block	●		Program restart	●
	Feedrate per minute	G94		Sub program call	●
	Feedrate per revolution	G95		Max programmable value	$\pm$ 99999.999mm/ $\pm$ 9999.9999"
	DNC operation	Ethernet, CF card		M function	3 digit
	Thread cutting pause	○		Custom macro	●
Interpolation functions	Linear interpolation	G01		Addition of custom macro common variables	#100~#199, #500~#999
	Circular interpolation	G02, G03	Direct drawing dimension programming	●	
	Dwell	G04	Programmable data input	G10	
	Cylindrical interpolation	G70.1	Tape code	ISO / EIA	
	Skip	G31	Optional block skip	●	
	Nano smoothing	X	Workpiece coordinate system	G52 ~ G59	
	Polar coordinate interpolation	●	Addition of workpiece coordinate system	X	
	Reference position (zero) return	G28	Interface function	Embedded ethernet	●
	Reference position (zero) return check	G27		Fast ethernet	X
	2nd/3rd/4th reference position return	G30	Setting and display	Alarm & Operator histor display	●
	Variable lead thread cutting	●		Run hour and parts count display	●
Thread Repair	●	Loadmeter display		●	
Feed function	Rapid traverse rate override	F0, 25%, 50%, 100%		Self-diagnosis function	●
	Feedrate override	0~200%		Extended part program editing	●
	Jog Override	●		Machining condition selecting function	○
	AI look ahead	X	Machining quality level adjustment	X	
	AI contour control II	○ (200 block)	Display screen	15" color LCD	
Spindle function	Spindle orientation	●	Multi-language display	25 language	
	Rigid tapping	M29	Data input/output	Fast data server	X
	Spindle override	S0 ~ 150%		RS232C interface	●
Arbitrary speed threading	○	Memory card input / output		●	
Tool functions	Tool number command	T4-Digt Tool number	USB memory input / output	●	
	Tool nose radius compensation	G40 ~ G42	Editing operation	Part program storage size	512Kbyte(2Mbyte)
	Tool offset pairs	128-pairs		Number of registerable programs	400(1,000) EA
	Tool geometry / wear offset	●		Manual guide Oi	○
	Tool length compensation	●		Manual guide i	●
	Tool life management	●			
Tool path graphic display	●				