

SL 2000 Series

6"- 8" BOX GUIDE TYPE
HORIZONTAL TURNING CENTER



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SL 2000 Series

- SL 2000A
- SL 2000B
- SL 2000AM
- SL 2000BM



SL 2000 Series

SL 2000A/AM/B/BM

Enhanced heavy duty and high precision cutting, increased space efficiency and ease of use

- 6"-8" high rigidity BOX GUIDE TYPE compact turning center
- 45° slant torque tube ribbed bed supporting heavy duty cutting
- Significantly reduced non-cutting time for high efficiency machining
- Servo turret for improved high speed performance
- Low center of gravity design minimizing vibrations and thermal growth to ensure high rigidity

		[]:Option	
		SL 2000A AM	SL 2000B BM
Swing over bed	mm	570	570
Max. turning length	mm	540 520	540 520
Chuck size	inch	6"	8"
Spindle bore	mm	61	76
Max. spindle speed	rpm	6,000	4,500
Spindle motor (cont/max)	kW	15/18.5	15/18.5
Travel (X/Z)	mm	210/560 215/560	210/560 215/560
No. of tool stations	EA	12 12[24](BMT55)	12 12[24](BMT55)

Superior spindle design

The radiator fan design of the spindle minimizes thermal growth and the inclusion of the Bzi sensor improves the accuracy of rotation detection and enables high quality machining

Optimized travels

The pre-tensioned and double anchored travel axis ballscrews and six-points of contact x-axis slideway frame enables high rigidity, heavy duty cutting.

High rigidity design

45° slant bed with torque tube ribbed design suppresses backlash from heavy duty cutting, enabling high precision machining.

Ease of use

Operator convenience enhanced by standard features such as M-code operated programmable tailstock, Manual Guide i, and operator-centric OP Panel

Superior spindle design



Radiator fin spindle
minimizing thermal growth

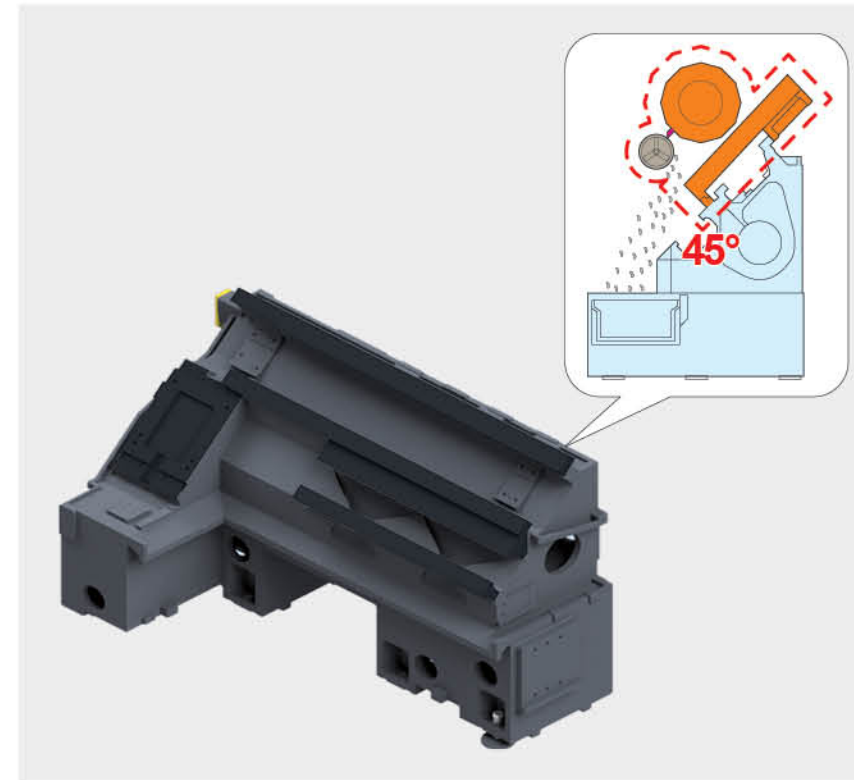
The radiator fin design of the spindle head minimizes thermal growth enabling high precision cutting



Changed spindle rotation detection sensor
eliminating a cause of service issues

By changing the spindle orientation sensor from a position encoder to a Bzi sensor improves overall productivity by improving the accuracy of spindle rotation measurement, removing the need to adjust the timing belt and eliminating a cause of service issues

High rigidity design



45° slant bed providing excellent
stability even during heavy duty cutting

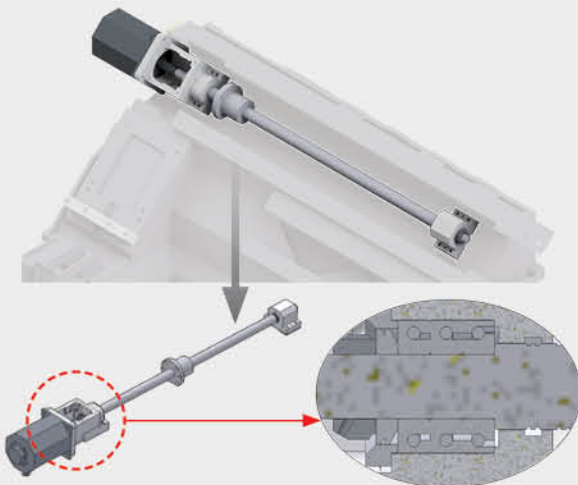
The 45° slant bed with torque tube ribbing design with its excellent torsional and bending resistance, is capable of suppressing backlash while providing high precision even during heavy duty cutting.

Also, the slant bed provides superb access to parts and effective chip removal

Effective chip removal

The 45° slant bed allows easy chip removal while making it easier to change tools and inspect parts

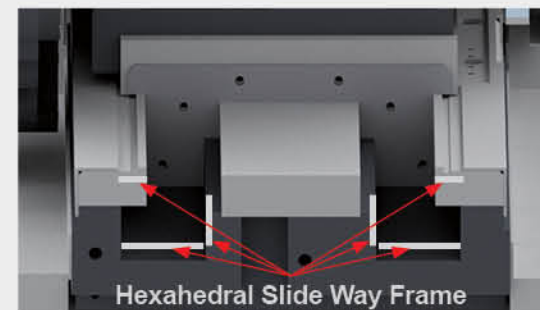
Optimize travel system



Pre-tensioned and Double Anchored Ballscrews

The high precision ballscrews for all axes are pre-tensioned and anchored on both ends using P4 class high precision angular bearings to ensure minimal thermal growth

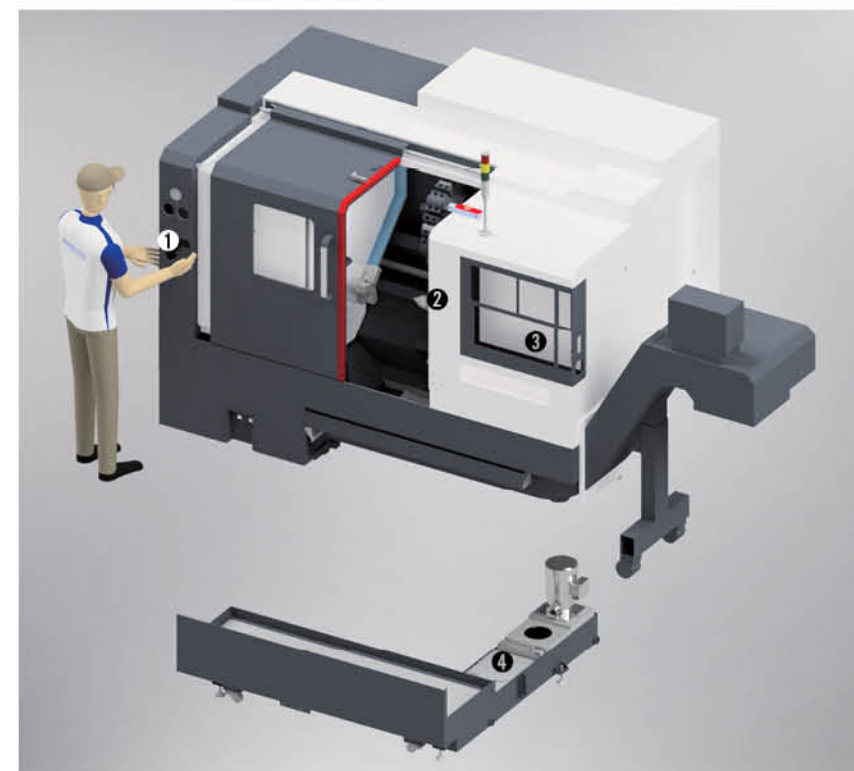
- Pre-tensioned and double anchored ballscrews
- High precision Angular bearing and large diameter high precision ballscrews



6-point of contact Slide Way Frame (X-axis)

The wide guideway surface and 6-point of contact slideway is heat treated and precision grounded to maintain high rigidity during heavy duty cutting over its long lifetime

Ease of use



1 Easy hydraulic valve adjustment

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

2 Programmable tailstock

Operating automatically using M-codes offering both efficiency and convenience

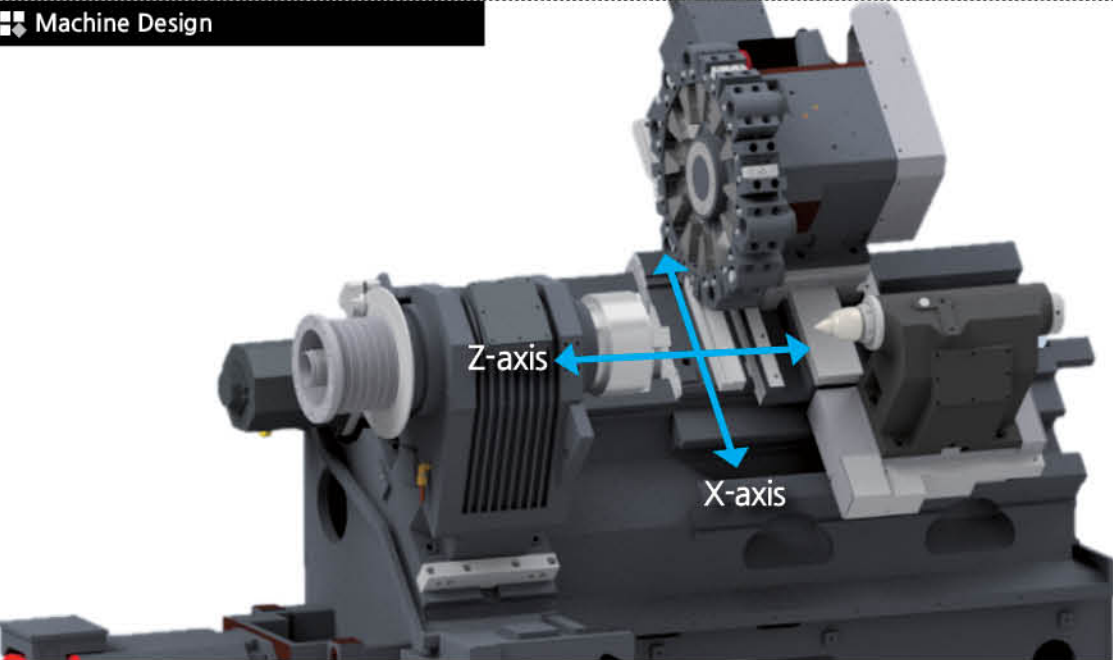
3 User-centric OP Panel

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

4 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

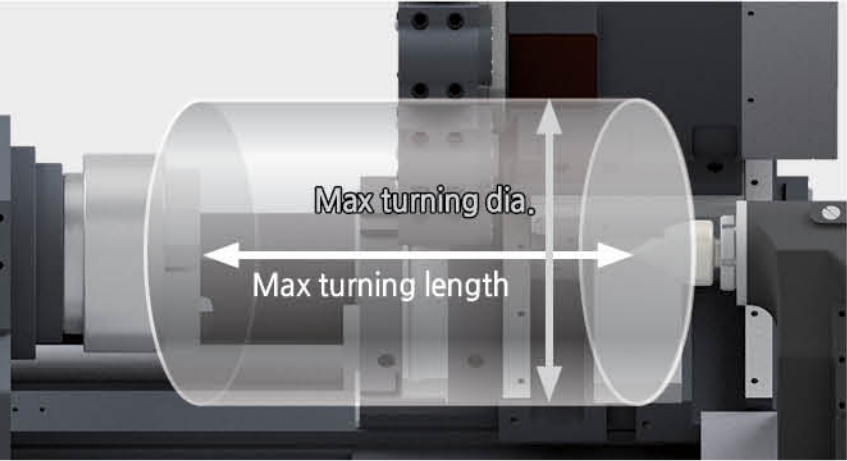
Machine Design



Model	Chuck size	Travel (mm)		Rapid traverse (m/min)	
		X-axis	Z-axis	X-axis	Z-axis
SL2000A	6"	210	560	24	30
SL2000AM	6"	215	560	24	30
SL2000B	8"	210	560	24	30
SL2000BM	8"	215	560	24	30

All travel axes are comprised of high rigidity box guideways enabling heavy duty cutting and superb productivity

Work Range



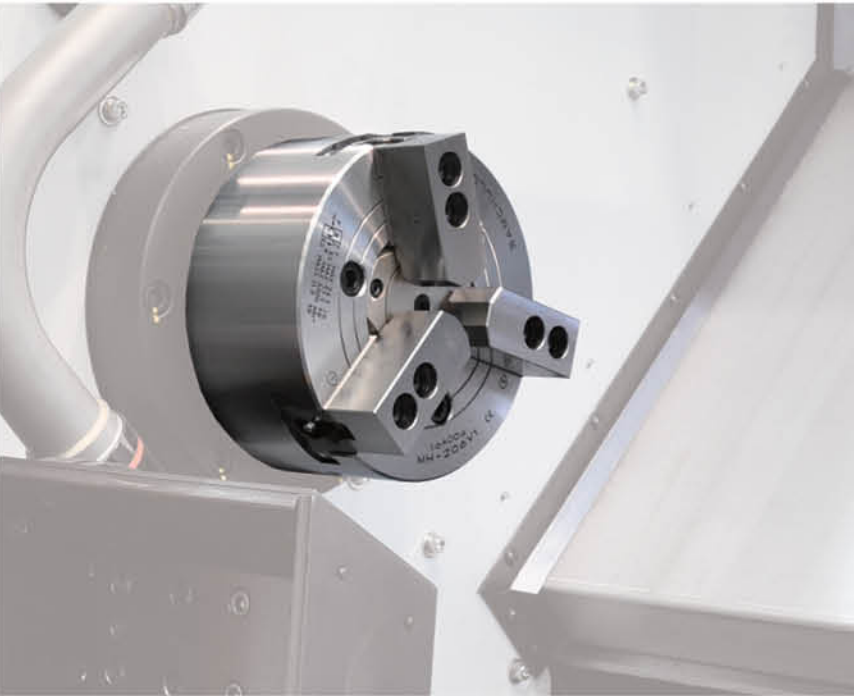
Model	Unit	Max turning dia	Max turning length
SL2000A	mm	Ø360	540
SL2000AM	mm	Ø360	520
SL2000B	mm	Ø360	540
SL2000BM	mm	Ø360	520

Providing a large work envelope, ensuring cost effective productivity

SL 2000A/B
Max turning dia/length
Ø360/540mm

SL 2000AM/BM
Max turning dia/length
Ø360/520mm

Spindle

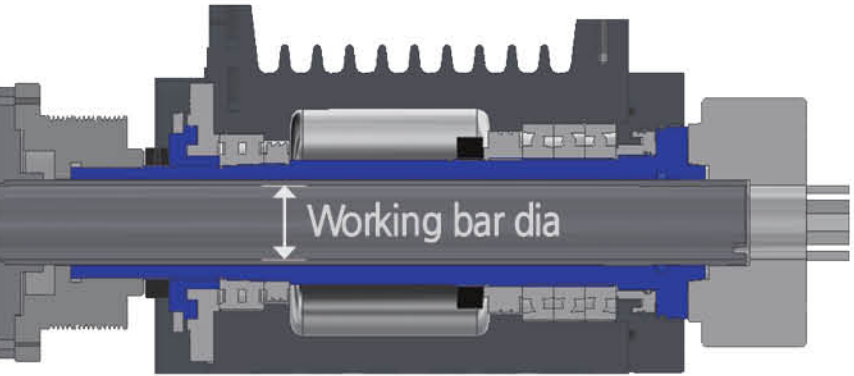


Model	Chuck size	Speed rpm	Power (cont/15min) kW	Torque (cont/15min) N·m
SL 2000A	6"	6,000	15/18.5	143.3/235.6
SL 2000AM	6"	6,000	15/18.5	143.3/235.6
SL 2000B	8"	4,500	15/18.5	249.8/410.1
SL 2000BM	8"	4,500	15/18.5	249.8/410.1

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

SL 2000A/AM
Max spindle speed
6,000rpm
Power(cont/15min)
15/18.5kW
Torque(cont/15min)
143.3/235.6N·m

SL 2000B/BM
Max spindle speed
4,500rpm
Power(cont/15min)
15/18.5kW
Torque(cont/15min)
249.8/410.1 N·m



Category	Unit	SL 2000A / AM	SL 2000B / BM
Spindle bore	mm	Ø61	Ø76
Working bar dia	mm	Ø51	Ø67
Spindle nose	ASA	A2-5	A2-6

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



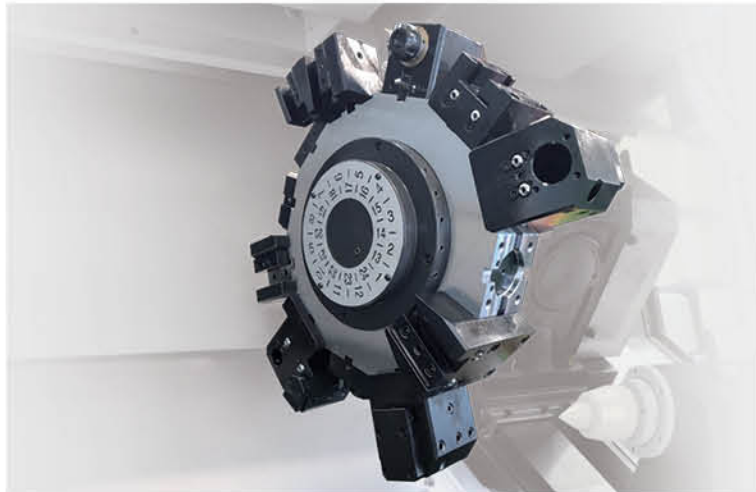
Servo turret

The turret uses a highly reliable, high-power servo motor and the Non-stop Random index method.

2-axis turret

The 0.15 second turret indexing time significantly reduces non-cutting time, while the 3 piece curvic coupling greatly enhances the damping force and index accuracy.

Turret indexing time : **0.15 sec**
No. of tool positions : **12 ea**
(□25×25, Ø40)



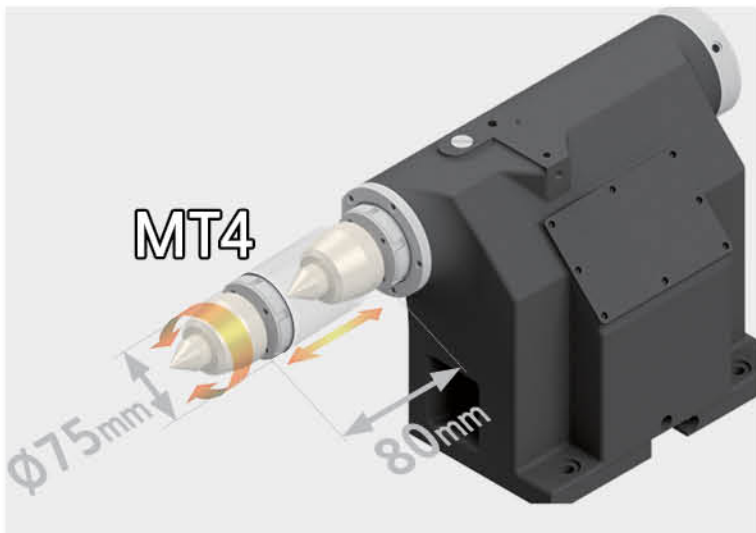
BMT milling turret

This 12 station (BMT55) 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 BMT55 tool holders ensures high rigidity, high precision machining and with non-stop turret indexing in either direction minimizes the turret index time down to 0.2 seconds per station.

Turret indexing time : **0.2 sec**
No. of tool positions : **12 ea**
(□25×25, Ø40)

Tailstock



Programmable tailstock [standard]

The programmable tailstock is capable of automated forward/reverse of the tailstock and quill using M-codes and maintains high precision during heavy duty machining.

Tailstock stroke : **450mm**
Quill stroke : **80mm**
Quill taper : **MT4**

Accessories[Optional]

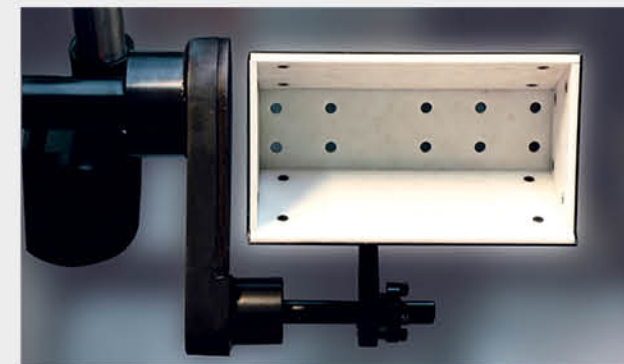


Spindle chiller

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.

Part catcher

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



Tool presetter

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



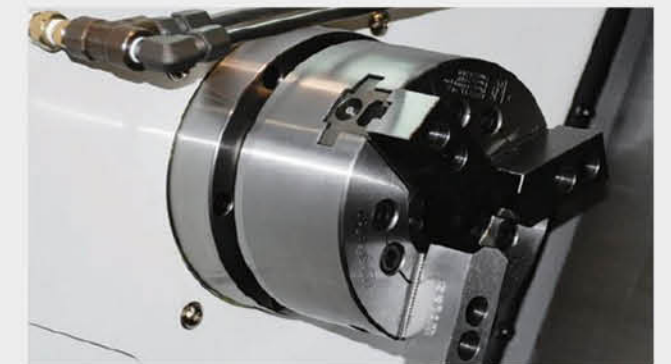
Autodoor

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



Air blow

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



Chip conveyor

Used to remove chips created during the machining process.



SMEC FANUC i series



SL 2000 Series

- 10.4" LCD color display
- High quality designed OP Panel
- Conversational programming, Manual Guide i (SL 2000A/B option, SL 2000AM/BM standard)
- Part program size 2MB
- SMEC Custom S/W

SMEC 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.



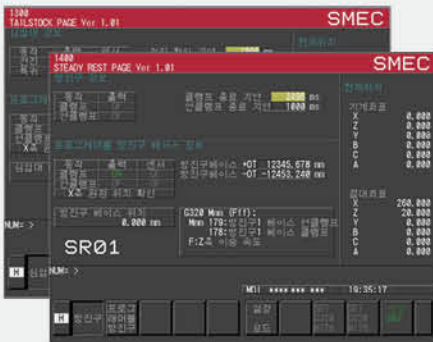
M/G-Code check function

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

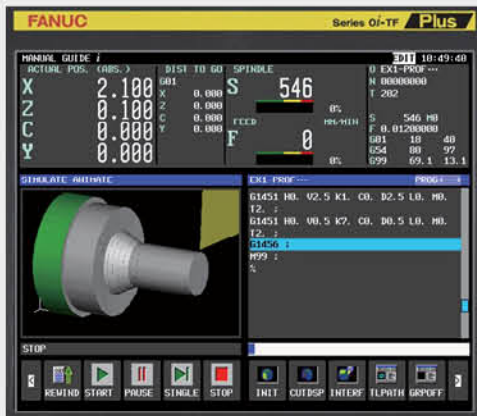
Tool information and setting management mode



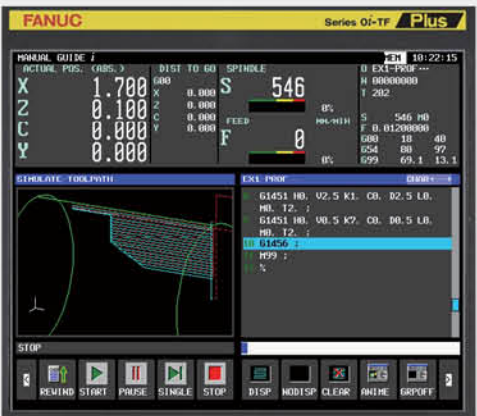
Counter for each T-Code

Manual Guide i

SMEC'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



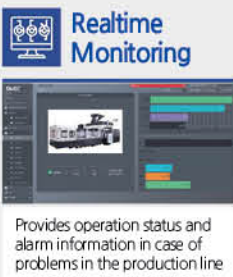
Provides key performance indicators and displays target achievement

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



Provides figures and graphs of overall equipment effectiveness

- Availability, performance, quality, etc.



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 and operation

- Emergency stop switch, program editing, etc.



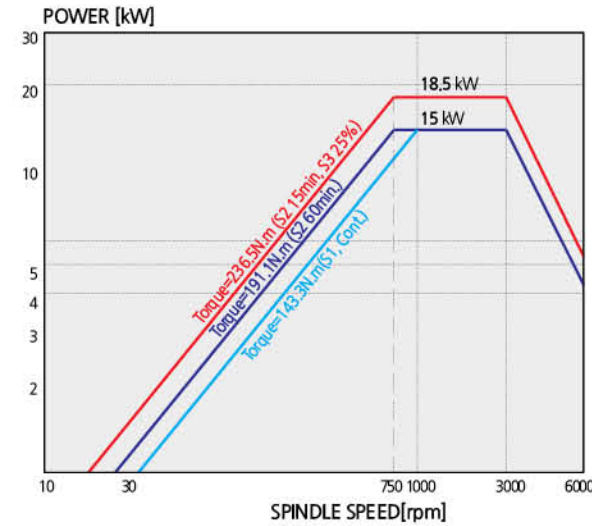
Problem diagnosis via remote control

- Provide remote diagnosis services to users via the IIoT solution

Power-Torque Diagram

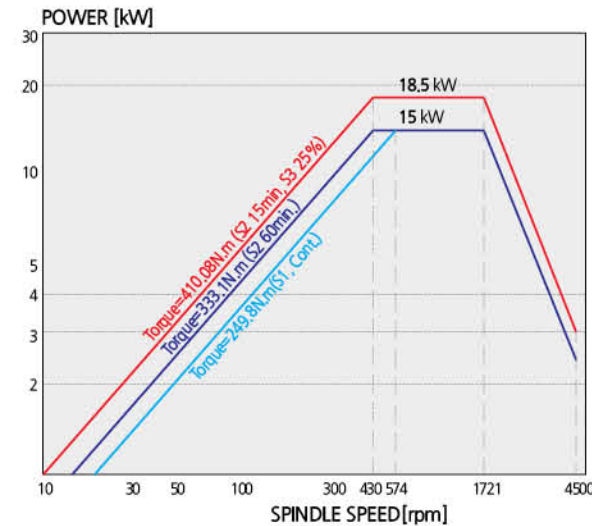
SL 2000A/AM

Max speed
6,000rpm
Power(cont/15min)
15/18.5kW
Torque(cont/15min)
143.3/235.6N·m



SL 2000B/BM

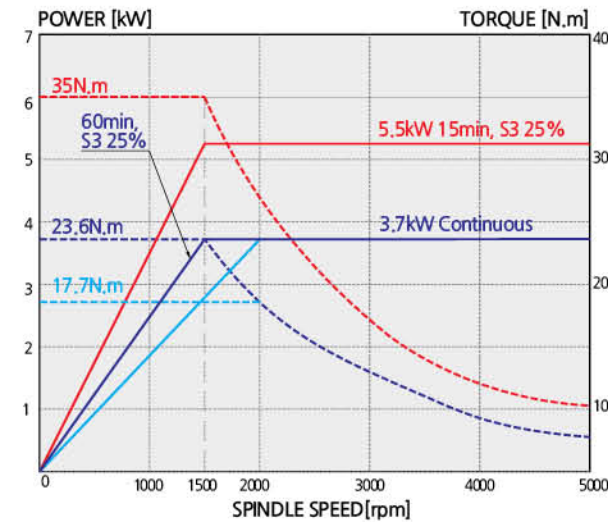
Max speed
4,500rpm
Power(cont/15min)
15/18.5kW
Torque(cont/15min)
249.8/410.1N·m



SL 2000AM/BM

Milling Motor Torque Diagram

Max speed
5,000rpm
Power(cont/15min)
3.7/5.5kW
Torque(cont/15min)
17.7/35N·m

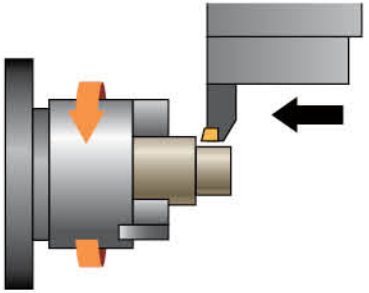


Cutting Performance

Test conditions : : SL 2000B(8")

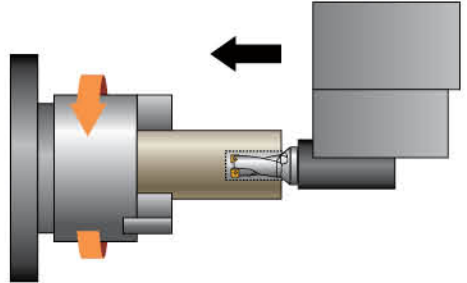
◆ O.D Cutting

Cutting dia.	mm	Ø42
Cutting depth	mm	4.5
Cutting speed	m/min	198
Spindle speed	rpm	1,500
Feedrate	mm/rev	0.55
Chip removal rate	cc/min	490



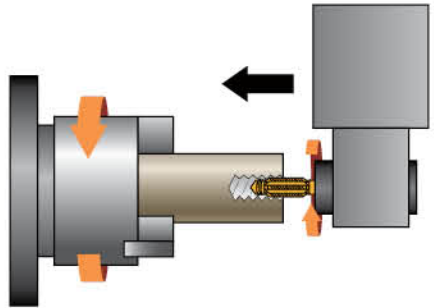
◆ U-Drill Cutting

U-drill dia.	mm	50
Cutting speed	m/min	220
Spindle speed	rpm	1,400
Feedrate	mm/rev	0.15
Chip removal rate	cc/min	413



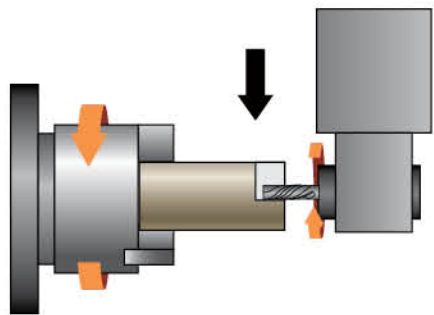
◆ Tap

Tap size	mm	M12×1.75
Cutting depth	mm	20
Cutting speed	m/min	15
Spindle speed	rpm	596
Feedrate	mm/rev	1.75



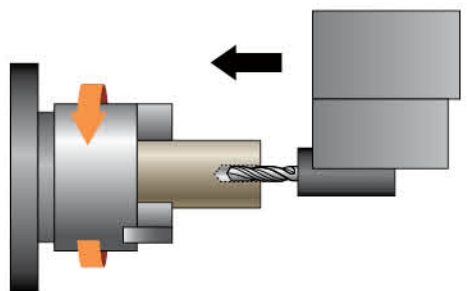
◆ Endmill

Endmill dia.	mm	Ø16
Cutting depth	mm	20
Cutting speed	m/min	75
Spindle speed	rpm	1,500
Feedrate	mm/min	300
Chip removal rate	cc/min	96



◆ Drill

Drill dia.	mm	Ø16
Cutting depth	mm	30
Cutting speed	m/min	75
Spindle speed	rpm	1,500
Feedrate	mm/rev	0.3
Chip removal rate	cc/min	90

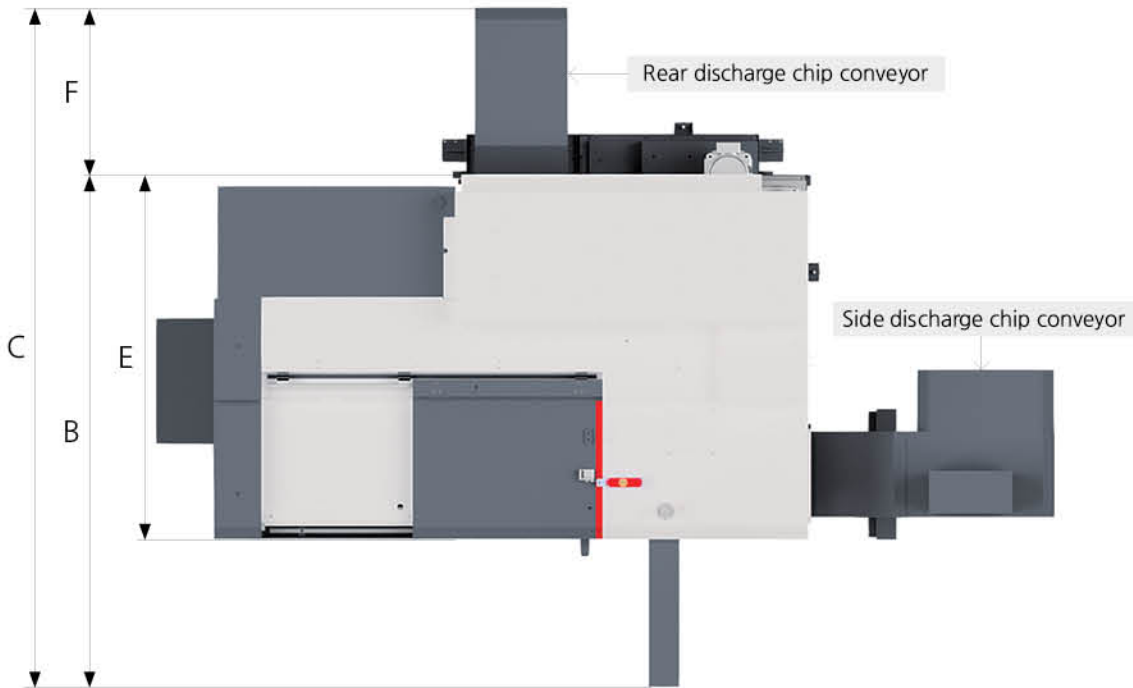


※ The above data is based on internal testing. Values may change depending on cutting conditions.

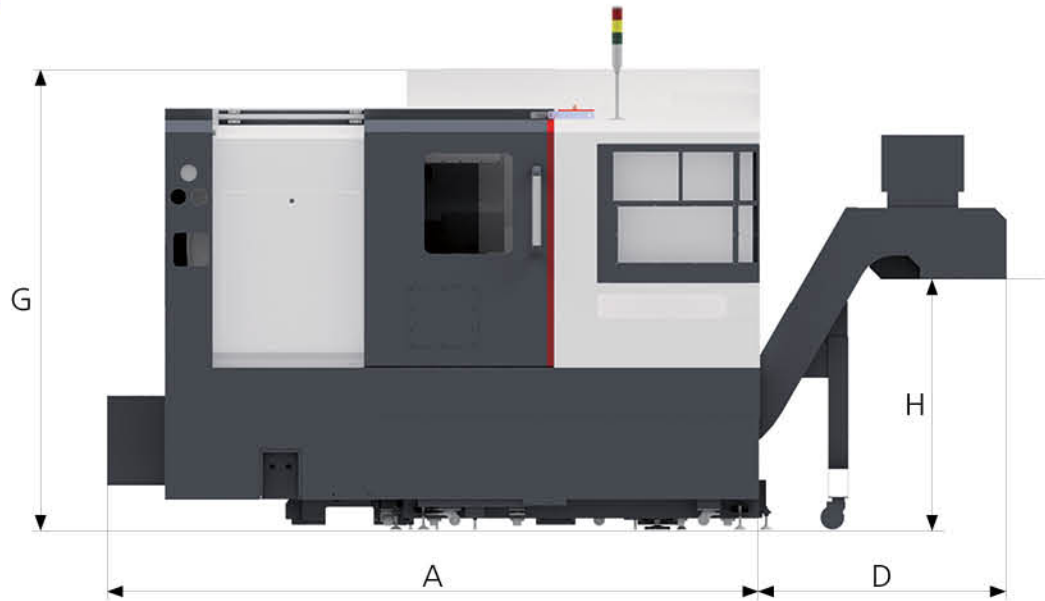
Machine Dimensions

Unit: mm

Top view



Front view

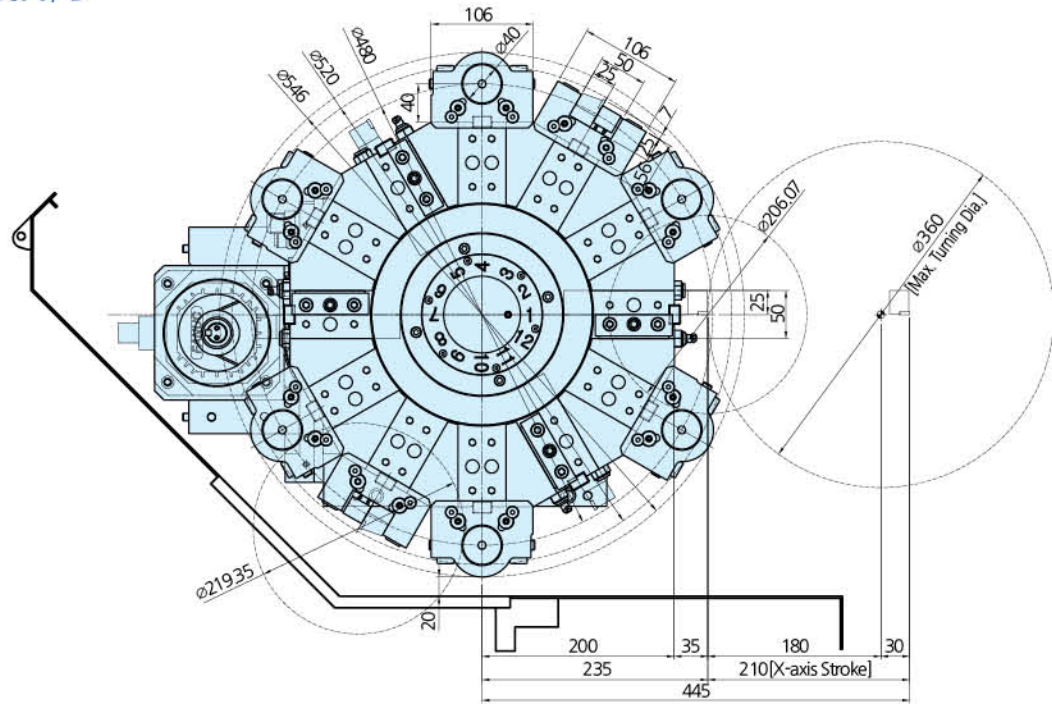


Model	A (Length)	B (Width ind OP Panel)	C (Max width)	D (Add length from side C/C)	E (Machine width)	F (Add width from rear C/C)	G (Machine height)	H (C/C discharge height)
SL 2000 Series	2,738	2,150	2,331	1,035	1,530	801	1,922	1,055

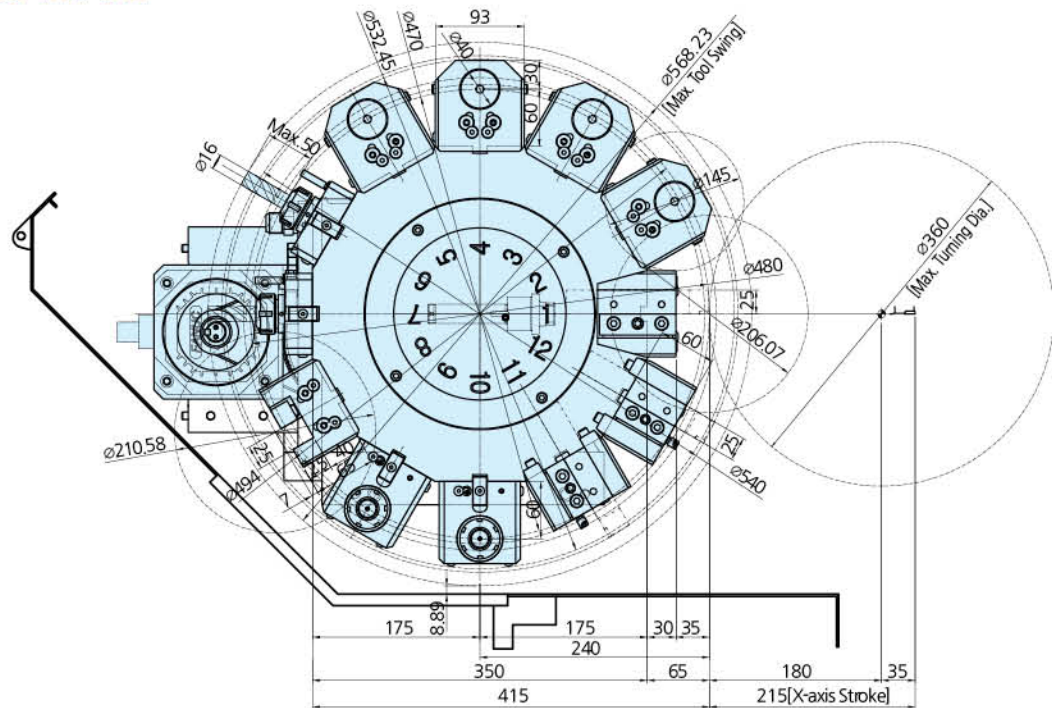
Turret Interference

Unit: mm

SL 2000A / B



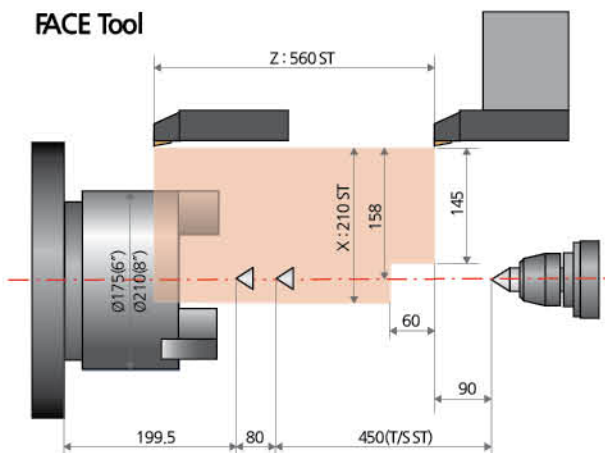
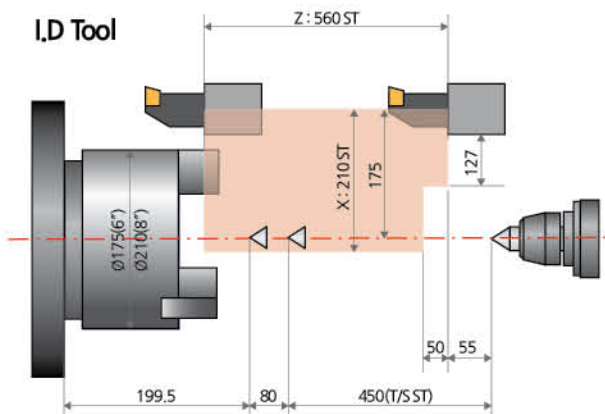
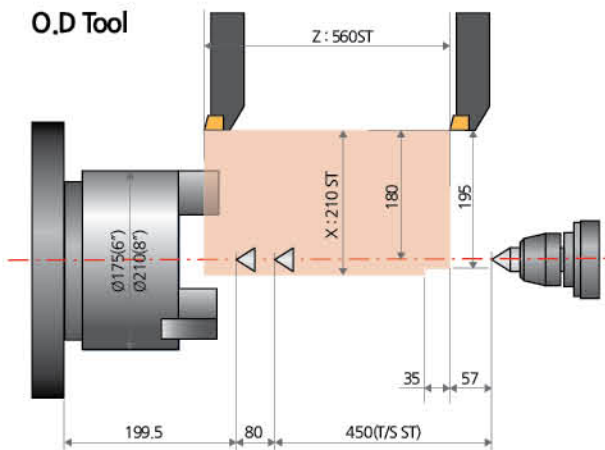
SL 2000AM / BM



Work Range

SL 2000A / B

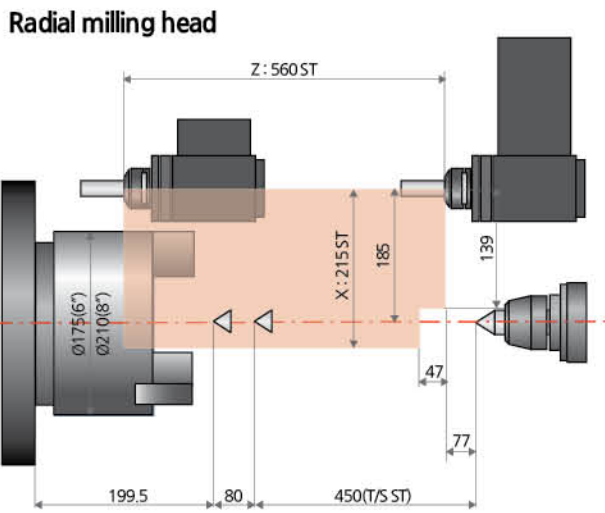
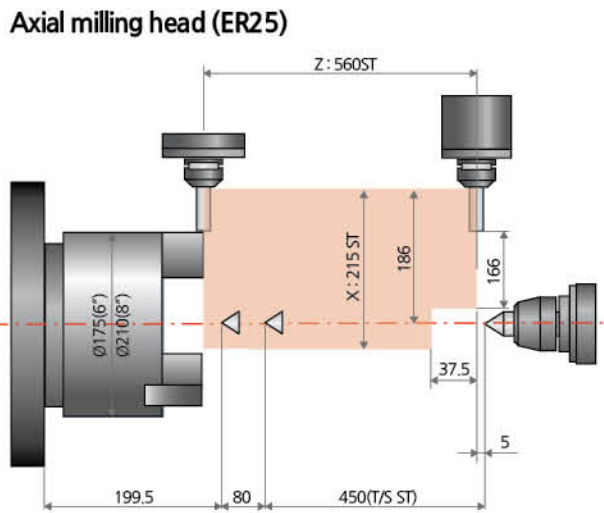
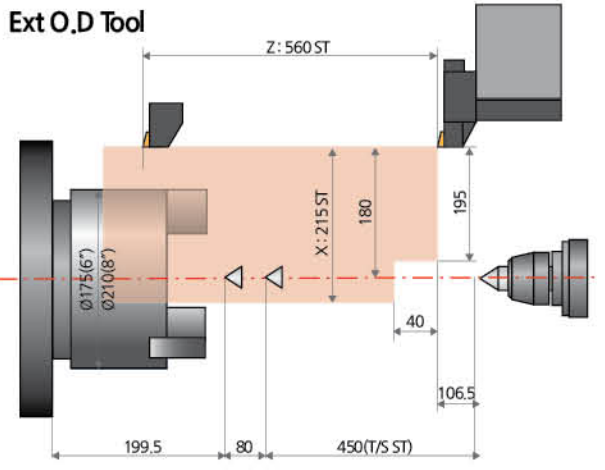
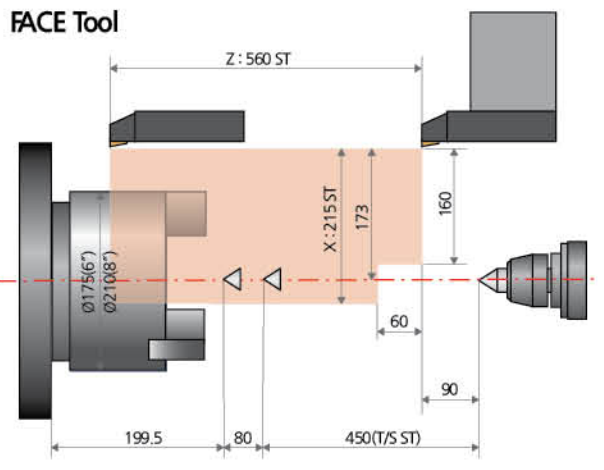
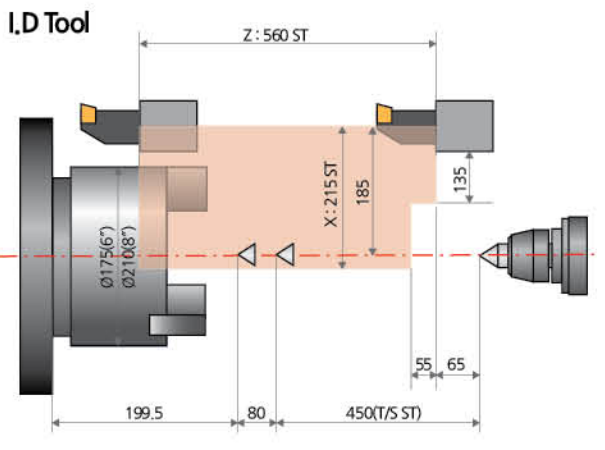
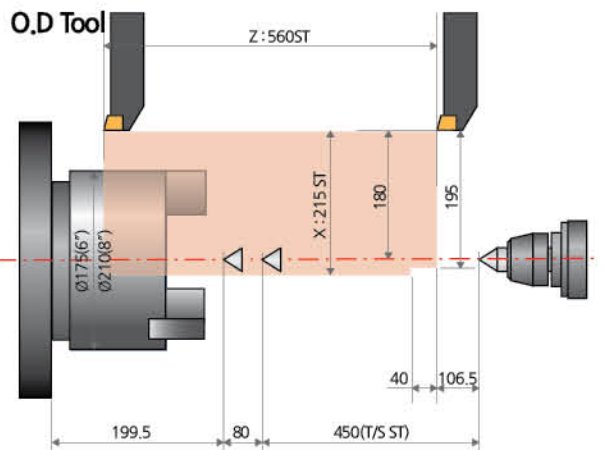
Unit : mm



Work Range

SL 2000AM / BM

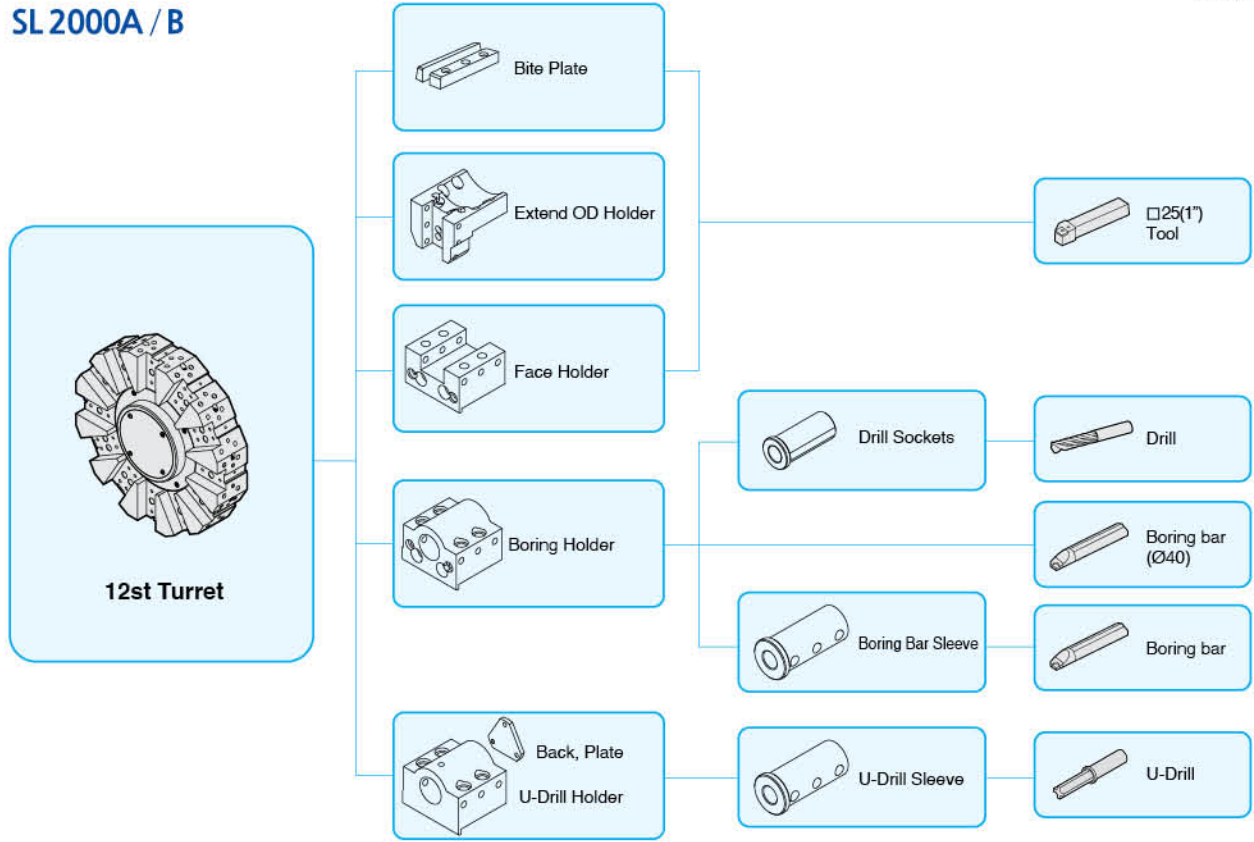
Unit : mm



Tooling System

SL 2000A / B

Unit : mm



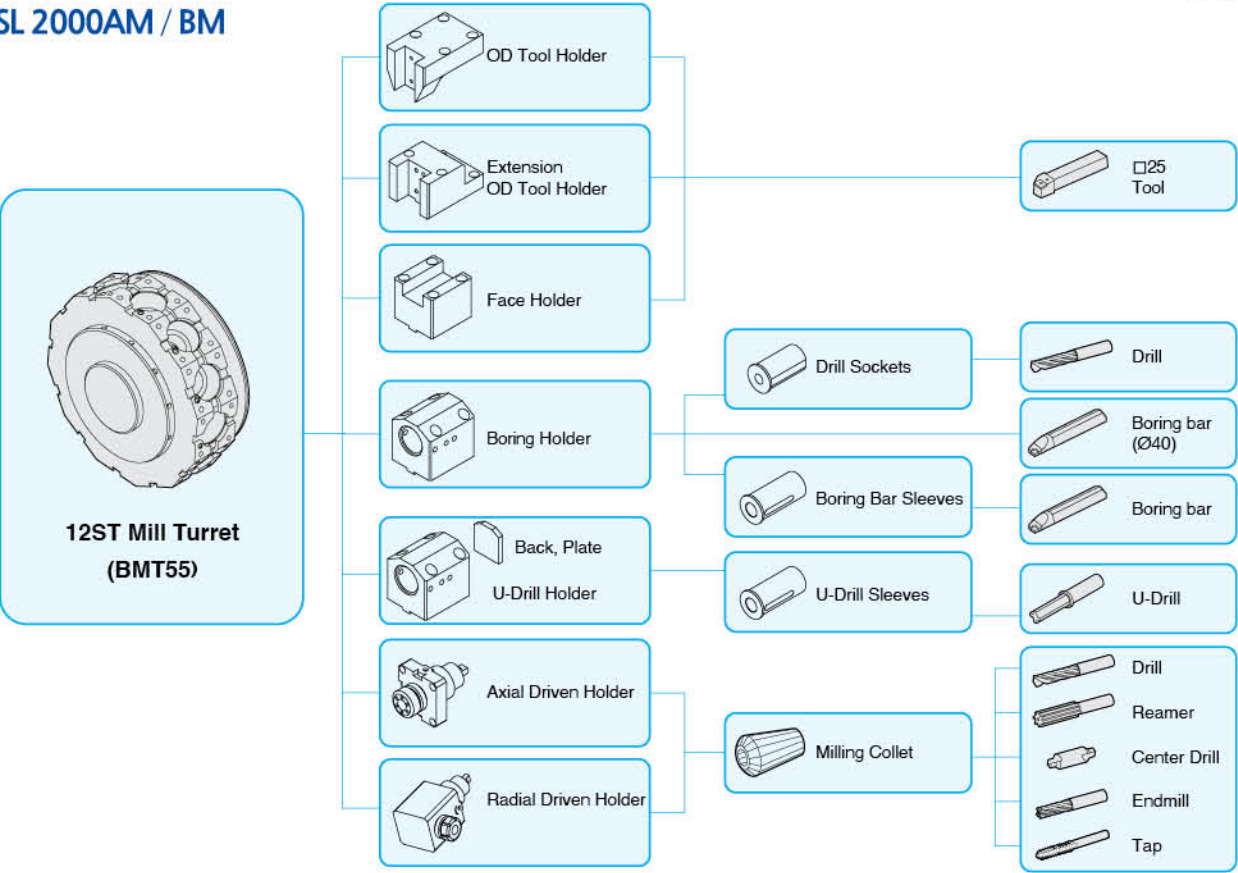
Standard Tooling (SL 2000A/B)

Item / Description			6 Inch	8 Inch
Static Holder	Bite Plate		4	4
	OD Holder	Extension	-	-
	Face Holder		2	2
Boring Holder	ID Holder	Single (Ø40, Ø1 1/2")	-	-
	U-Drill Holder	Cap	6	6
Milling Holder	Axial Milling Holder (Straight)	Standard	-	-
		T.T.C	-	-
	Radial Milling Holder (Angular)	Standard	-	-
Socket	Boring	Ø8	1	1
		Ø10	1	1
		Ø12	1	1
		Ø16	1	1
		Ø20	1	1
		Ø25	1	1
		Ø32	1	1
	Drilling	MT2	1	1
		MT3	1	1
	ER Collet		-	-

Tooling System

SL 2000AM / BM

Unit : mm



Standard Tooling (SL 2000AM/BM)

Item / Description			6 Inch	8 Inch
Static Holder	Bite Plate		-	-
	OD Holder		1	1
	OD Holder	Extension	2	2
	Face Holder		1	1
Boring Holder	ID Holder	Single (Ø40, Ø1 1/2")	-	-
	U-Drill Holder	Cap	4	4
Milling Holder	Axial Milling Holder (Straight)	Standard	2	2
		T.T.C	-	-
	Radial Milling Holder (Angular)	Standard	2	2
Socket	Boring	T.T.C	-	-
		Ø8	1	1
		Ø10	1	1
		Ø12	1	1
		Ø16	1	1
		Ø20	1	1
		Ø25	1	1
		Ø32	1	1
	Drilling	MT2	1	1
		MT3	1	1
	ER Collet		-	-

SL 2000 Series

HORIZONTAL TURNING CENTER

Standard / Optional

Category		SL 2000A/B	SL 2000AM/BM
Spindle	3 jaw open-center chuck	●	●
	3 jaw closed-center chuck	○	○
	Soft jaw (3set)	●	●
	Hard jaw (1set)	○	○
	Chuck clamp footswitch	●	●
	Dual pressure chucking	○	○
	C-axis control (0.001°)	X	●
	Chuck clamp confirmation	●	●
	Chuck dual footswitch	○	○
Turret	Tool holder	●	●
	Rotary holder type	BMT	X
	Rotary holder (axial)	Collet-type, 2EA	X
	Rotary holder (radial)	Collet-type, 2EA	X
	Rotary holder (axial)	Adapter-type	X
	Rotary holder (radial)	Adapter-type	X
	Boring bar sleeve (same as U-drill holder sleeve)	●	●
	Drill socket	●	●
	U-drill holder	●	●
	U-drill cap	●	●
	Swivel head holder	○	○
	Programmable tailstock	●	●
Tailstock	Live center (standard with tailstock)	○	○
	High precision live center	○	○
	Dual pressure tailstock	○	○
	Quill forward/reverse confirmation	○	○
	Tailstock footswitch	○	○
Coolant & Air Blow	Standard coolant (nozzle)	○	○
	Chuck coolant	○	○
	Coolant gun	○	○
	TSC for chuck (for special coolant)	△	△
	Bed flushing	○	○
	Chuck air blower	○	○
	Rotary tool holder TSC	○	○
	Tailstock air blower	X	X
	Turret tool air blower	X	X
	Air gun	○	○
	Through spindle air blower (for special chuck)	○	○
	Coolant pump	4.5Bar	●
		6Bar	○
		10Bar	○
		14.5Bar	○
		20Bar	○
	Power coolant system (for automation solutions)	△	△
	Coolant chiller	○	○
Category		SL 2000A/B	SL 2000AM/BM
Chip Disposal	Coolant tank	140L	●
	Chip conveyor (Hinge/ Screper)	Right-side	○
		Rear	○
	Special chip conveyor (Drum Filter)		△
	Chip bucket	Fixed 380L	○
		Rotate 275L	○
Safety Features	Door interlock		●
	Backspin torque limiter(BST)		X
	Torque limiter		X
	Full splash guard		●
	Chuck hyd. pressure interlock		X
Electrical	3 step patrol lamp and buzzer		●
	Lamp for electrical cabinet		X
	Remote MPG		X
	Work counter	Digital	△
	Total counter	Digital	△
	Tool counter	Digital	△
	Multi counter	6EA	△
		9EA	△
	Grounded circuit breaker		△
	AVR(Auto Voltage Regulator)		X
	Transformer	25kVA	○
		30kVA	△
	Auto Power Off		○
Measurement	Tool Presetter	Manual	○
	Tool Presetter	Auto	○
	Air zero measuring device	TACO	△
		SMC	△
	Linear scale	X-axis	○
		Z-axis	○
	Coolant level gauge (requires chip conveyor)		○
Environmental	Air conditioner for electrical cabinet		○
	Dehumidifier		△
	Oil mist collector		○
	Oil skimmer		○
	MQL(Minimal Quantity Lubrication)		○
Automation	Auto door		○
	Auto shutter (for automation solution)		○
	Sub controller		△
	Barfeeder interface		△
	Additional M-codes (4 pairs)		△
	Automation interface		△
	I/O expansion (including both IN and OUT)	16 contacts	△
		32 contacts	△
	Parts catcher		○
Hydraulic Supply	Standard hydraulic cylinder	Open-center	●
		35Bar / 14L	●
	Standard hydraulic unit	35Bar / 15L	X

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

Machine Specifications

[] : Optional

Category			SL 2000		SL 2000M	
			A type	B type	A type	B type
Chuck	Chuck Size	inch	6"	8"	6"	8"
Capacity	Swing over Bed	mm	570	570	570	570
	Swing over Cross-slide	mm	460	460	460	460
	Max. Turning Dia.	mm	360	360	360	360
	Max. Milling Dia.	mm	-	-	372	372
	Max. Turning Length	mm	540	540	520	520
Spindle	Spindle Speed	rpm	6,000	4,500	6,000	4,500
	Spindle Nose	ASA	A2-5	A2-6	A2-5	A2-6
	Draw Tube I.D.	mm	52	68	52	68
	Spindle Bore	mm	61	76	61	76
	Spindle Motor (Cont./Max)	kW	15/18.5	15/18.5	15/18.5	15/18.5
Travels	X-axis Stroke	mm	210	210	215	215
	Z-axis Stroke	mm	560	560	560	560
	X-axis Rapid Traverse	m/min	24	24	24	24
	Z-axis Rapid Traverse	m/min	30	30	30	30
Turret	No. of Tool Positions	ea	12	12	12[24] (BMT55)	12[24] (BMT55)
	Shank Size for Square Tool	mm	25	25	25	25
	Boring Bar Dia.	mm	40	40	40	40
	Indexing Time	sec	0.15	0.15	0.20	0.20
	Rotary Tool Speed	rpm	-	-	5,000	5,000
	Rotary Tool Motor (Cont./Max)	kW	-	-	3.7/5.5	3.7/5.5
Tailstock	Quill diameter	mm	75	75	75	75
	Quill stroke	mm	80	80	80	80
	Quill taper	MT	MT4	MT4	MT4	MT4
Machine	Size (with SIDE chip conveyor) L×W×H	mm	2,738(3,733) × 1,530 × 1,920		2,738(3,733) × 1,530 × 1,920	
	Size (with REAR chip conveyor) L×W×H	mm	2,738 × 1,750(2,331) × 1,920		2,738 × 1,750(2,331) × 1,920	
	Weight	kg	3,700	3,900	3,800	4,000
	Coolant tank capacity	liter	200	200	200	200
Electric power supply		kVA/V	31/220	31/220	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		0i-TF+	
		SL 2000A/B	SL 2000AM/BM
Controlled axis	Controlled axes	X, Z	X, Z, C
	Max. simultaneously controlled axes	4	
	Least command increment	0.001mm / 0.0001°	
	Stored stroke check	Soft overtravel 1, 2, 3	
	Machine lock	●	
Operation functions	Pulse handle feed	X1, X10, X100	
	Dry run	●	
	Single block	●	
	Feedrate per minute	G94	
	Feedrate per revolution	G95	
	DNC operation	Ethernet, CF card	
	Retraction for rigid tapping	○	
Interpolation functions	Linear interpolation	G01	
	Circular interpolation	G02, G03	
	Dwell	G04	
	Cylindrical interpolation	G70.1	
	Skip	G31	
	Nano smoothing	X	
	Polar coordinate interpolation	●	
	Reference position return	G28	
	Reference position return check	G27	
	2nd/3rd/4th reference position return	G30	
	Variable lead thread cutting	●	
	Thread Repair	Manual guide i (required)	
Feed function	Rapid traverse rate override	F0, 25%, 50%, 100%	
	Feedrate override	0~200%	
	Jog Override	●	
	AI advanced preview control	X	
	AI contour control II	OPT(200 block)	
Spindle function	Spindle orientation	●	
	Rigid tapping	M29	
	Spindle override	S0 ~ 150%	
	Arbitrary speed threading	○	
Tool functions	Tool number command	T4-Digt Tool number	
	Tool nose radius compensation	G40 ~ G42	
	Tool offset pairs	128-pairs	
	Tool geometry/wear offset	●	
	Tool length offset	●	
	Tool life management	●	
	Tool path graphic display	●	

NC Specification / FANUC

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



Category		0i-TF+	
		SL 2000A/B	SL 2000AM/BM
Program input	Absolute/incremental programming	G90/G91	
	Multiple repetitive cycle	●	
	Multiple repetitive cycle II	●	
	Canned cycles	●	
	Canned cycle for drilling	●	
	Decimal point programming	●	
	Inch/metric conversion	G20 / G21	
	Program restart	●	
	Sub program call	●	
	Max. programmable dimension	±99999.999mm/±9999.9999°	
	M function	3 digit	
	Custom macro	●	
	Addition of custom macro common variables	#100~#199, #500~#999	
	Direct drawing dimension programming	●	
	Programmable data input	G10	
	Tape code	ISO / EIA	
	Optional block skip	●	
	Workpiece coordinate system	G52 ~ G59	
	Addition of workpiece coordinate system	X	
Interface function	Embedded ethernet	●	
	Fast ethernet	X	
Setting and display	Alarm & Operator histor display	●	
	Run hour and parts count display	●	
	Display spindle & servo overload	●	
	Self-diagnosis function	●	
	Extended part program editing	●	
	Machining condition selecting function	○	
	Machining quality level adjustment	X	
	Display screen	10.4" color LCD	
	Multi-language display	25 language	
Data input/output	Fast data server	X	○
	RS232C interface	●	
	Memory card input/output	●	
	USB memory input/output	●	
Editing operation	Part program storage size	512Kbyte(2Mbyte)	
	Number of registerable programs	400(1,000) EA	
	Manual guide 0i	○	X
	Manual guide i	○	●