

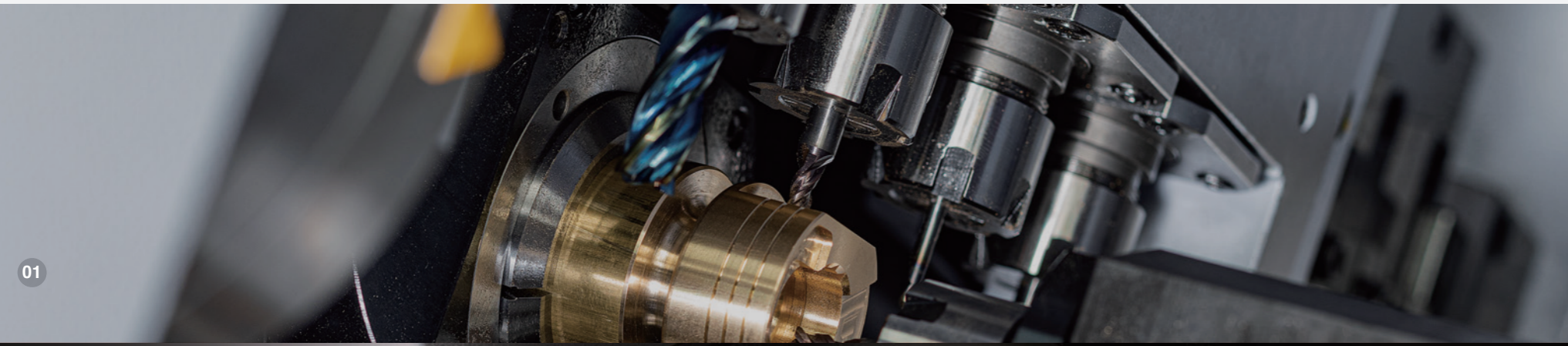


SWISS TYPE AUTOMATIC LATHE equipped with star motion control system 

SX-38



The multi-processing machine to go beyond the norm with novel design concept



Severer cutting conditions require higher rigidity and multi-processing capabilities, and more varied workpiece shapes require higher flexibility. At the same time, space efficiency without sacrificing good operability and workability continues to demand an optimized structural layout.

SX-38 is the latest and most powerful model with a novel concept in every respect to meet all the challenges in today's machining of large-diameter and complex-shaped workpieces. Now, your multi-processing can go beyond the norm.

This latest and most powerful multi-processing machine has raised its level to meet them all—functionality, rigidity, and workability—with its novel design concept.

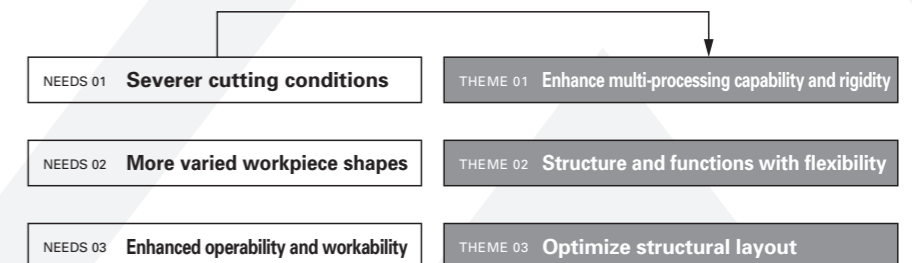
FEATURE

- The gang-type tool post is equipped with the 4-axis face-type milling unit with B-axis control for more complex multi-processing.
- Power tool units can be mounted on all 8-spindle rear-end working unit positions with Y-axis control for enhanced rear-end processability.
- The guide bush employs the switching mechanism (G.B./N.G.B.) for optimized processing of long and short workpieces.
- The turret-type tool post offers a selection between quick-change type^{(*)1} and bolt-mount type^{(*)2}.
- Both software and hardware are focused on operator-friendly functionality and structure for easier setup and maintenance.

*1: type A *2: type B

CONCEPT

THE HIGHEST LEVEL IN EVERY ASPECT TO MEET THE LATEST NEEDS



SWISS TYPE AUTOMATIC LATHE equipped with star motion control system

SX-38

CUTTING EDGE
ALL NEW CONCEPT & DESIGN

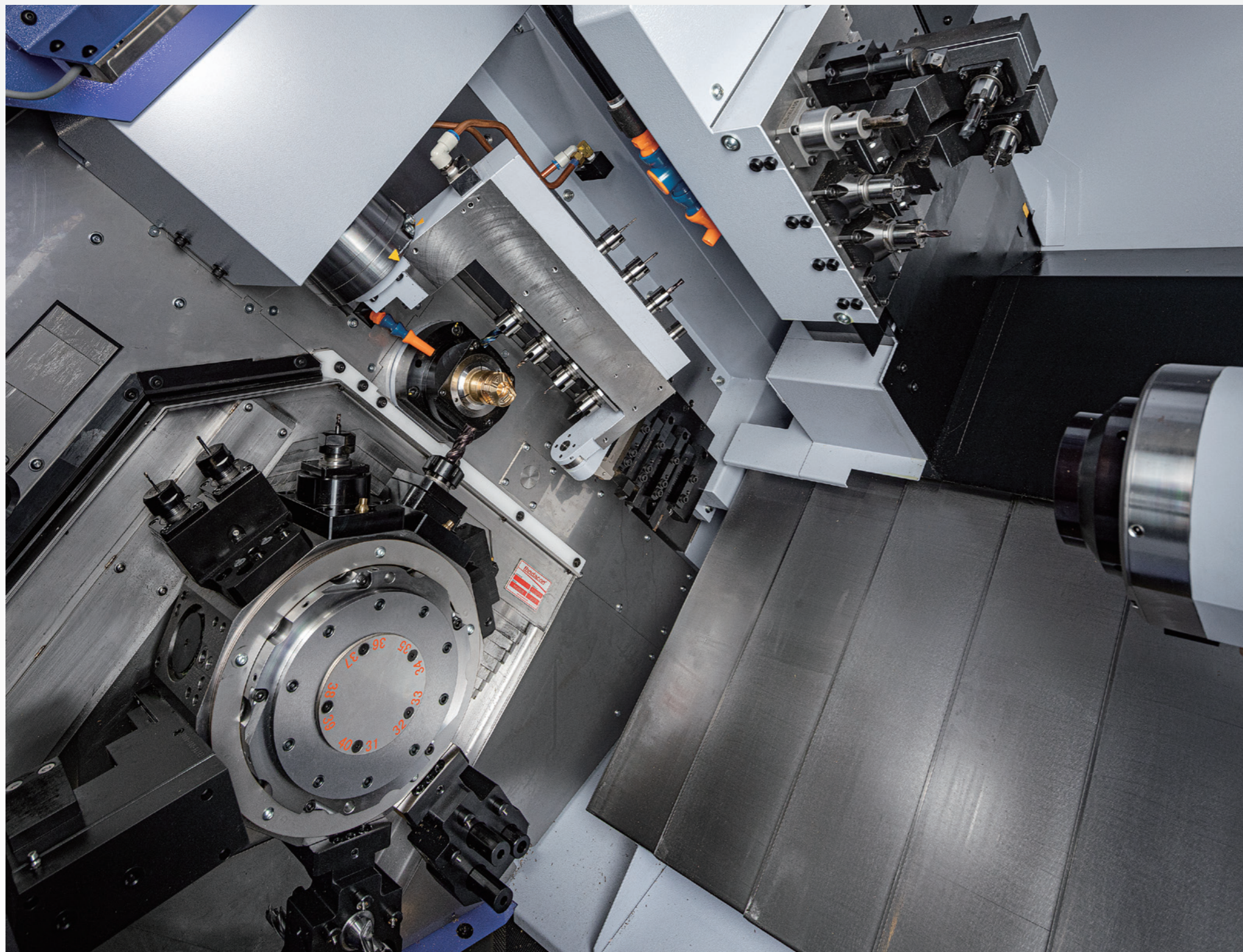


Photo of tool layout : type B

Ideal performance in processing large-diameter and complex-shaped workpieces to meet the latest needs is now available.

The Scalable Configuration Enables the Highest Variety of Multi-Processing Possible with Gang-Type Tool Post, Turret-Type Tool Post, and Backworking Unit.

With a gang-type tool post, 10-station turret-type tool post, and backworking unit with Y-axis control, multi-processing at an even higher level is now possible with overwhelming productivity. The switchable guide bush mechanism (G.B./N.G.B.) allows flexible processing of workpieces of a variety of lengths. Both mechanical design and support software design are augmented for better operability and workability. The performance level to meet all the challenges in machining large-diameter and complex-shaped workpieces was reviewed to bring you the latest and most powerful machine with a novel concept. That's the SX-38. With this machine, your multi-processing moves to a new stage.

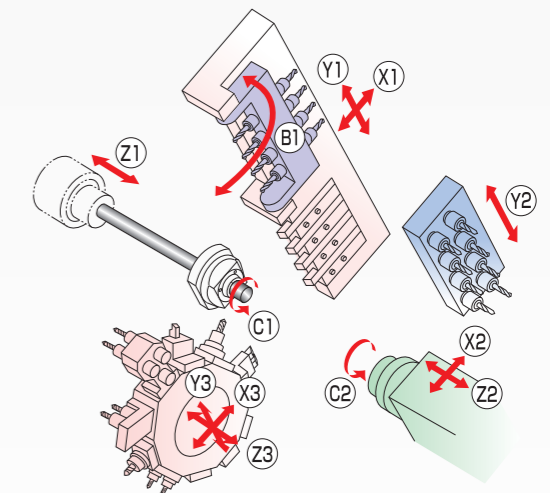
SX-38

CNC SWISS TYPE AUTOMATIC LATHE
equipped with Star motion control system

Control method : CNC control by Star motion control system

Machine composition :

- Main spindle
- Sub spindle
- Gang type Tool post
(With 4-axis face-type milling unit with B-axis control)
- Turret type Tool post (10 stations)
- Backworking 8-spindle unit with Y-axis control



TOOLING SYSTEM

■ Gang type Tool post	Turning tool	4 tools (□20 x 1 tool, □16 x 3 tool,)
	Power-driven tool	8 tools (Front: ER20 x 4 tools / Rear: ER16 x 4 tools)
■ Turret type Tool post	Turning tool	1 tools / station (□20mm)
		max. 2 tools / station (□16mm)
	Sleeve	max. 3 tools / station
	Power-driven tool	max. 2 tools / station (max. 10 stations)
■ Back 8-spindle unit	Stationary tool	Total 8 tools (Power-driven tool : max. 8 tools)
	Power-driven tool	

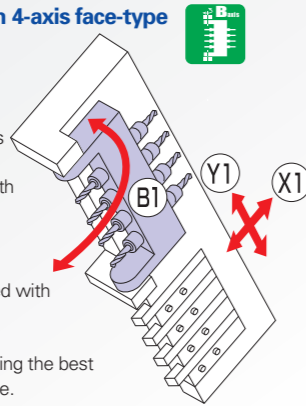
Turret-type tool post	type A	type B
		Quick-change type

Mechanical systems and control systems in pursuit of higher functionality, productivity, and precision

High Functionalities Enhanced multi-processing capability

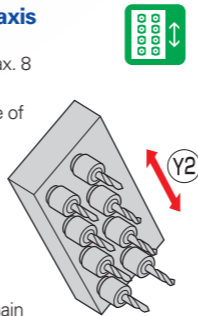
1 Gang-type tool post equipped with 4-axis face-type milling unit with B-axis control

- The gang-type tool post is equipped with a 4-axis face-type milling unit with B-axis control. (Front: ER20 / Rear: ER16)
- Turning angles can be controlled in the ranges of 0 to 90 degrees and 0 to -45 degrees.
- Tilt processing such as tilted holes is possible both on the front-side and rear-side.



3 8-spindle rear-end working unit with Y-axis control for the rear-end processing

- Power tool units can be mounted on all positions (Max. 8 tools).
- Various tool units are available to enable a wide range of multi-processing on the rear-side.
- 3-dimensional processing is made possible in combination with the 2-axis control (X2/Z2) sub spindle.
- The pitch between adjacent tools is expanded to ease the constraints in outer diameter processing.



2 10-stationed turret-type tool post

- A 10-stationed turret-type tool post is mounted with 3-axis (XY/Z) control. Power tool units can be mounted in all positions.
- A wide variety of tool units are available, offering the best tooling layout to fit the shape of the workpiece.

4 High power sub spindle motor

- The sub spindle motor has the same power as the main spindle's (7.5/11 kW) to enhance machining capability on the rear side.

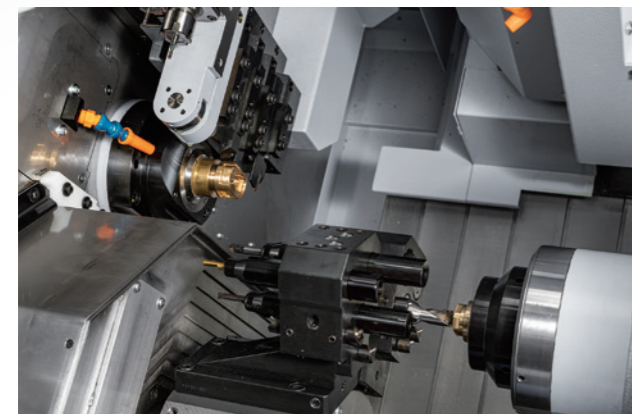
High Productivity Shorter Cycle Time [Mechanical System]

1 Simultaneous machining on the turret-type and the gang-type tool posts

- Simultaneous machining on the turret-type and the gang-type tool posts reduces the cycle time for front-side machining.

2 Overlap processing by 8-spindle rear-end working unit

- A wide variety of rear-end working units are available to optimize the dividing of front-end/rear-end processing.
- The adaptable overlap with front-end processing reduces the cycle time.



High Productivity Shorter Cycle Time [Control System]

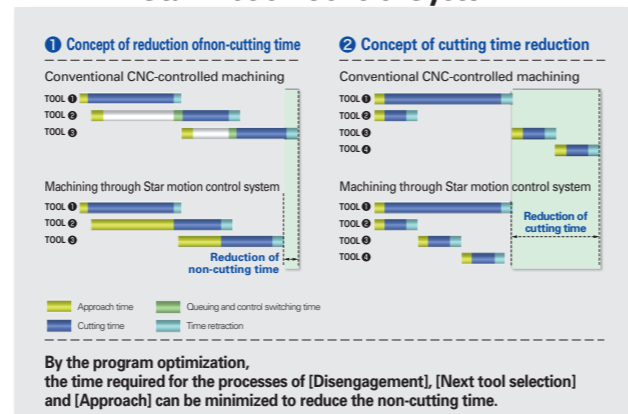
1 Star Motion Control System

- The adoption of the Star Motion Control System reduces the non-cutting time, such as the time for changeover of control systems and the tool exchange.

2 Smart overlap function

- The adoption of the smart overlap function reduces the non-cutting time by overlapping between the NC command blocks.

Star Motion Control System



Flexibility Optimized Machine Specifications

1 Guide bush switching mechanism (G.B./N.G.B.)

- You can choose the best specifications to fit the overall length of the workpiece. Use the guide bush mode (G.B.) to process long workpieces with high accuracy while preventing deflection. Use the non-guide bush mode (N.G.B.) to process short workpieces while significantly reducing the stock waste. This one-unit-fits-all solution provides flexibility in processing various lengths of workpieces.

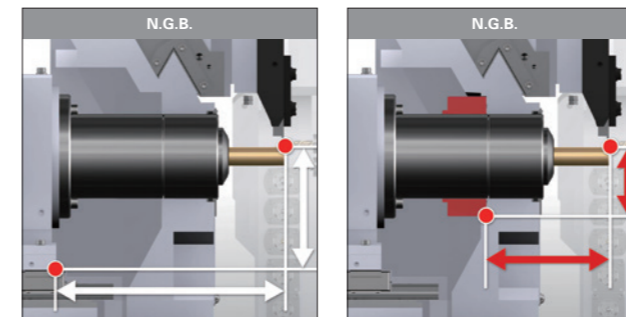
2 Two types of turret-type tool post

- Type A has the quick-changeable turret-type tool post, which enables the use of the existing tool unit.
- Type B has the bolt-mounted turret-type tool post, which is fixed by four bolts.
- Type B bolt-mounted turret-type tool post employs the one-position tool drive mechanism, which extends the service life of the unit by turning the selected tool only.

High Productivity Highly Rigid Design

1 Spindle head slide guideway structure (N.G.B. specification)

- The spindle head of the head stock guides the Z-axis with its outer diameter. This structure supports the cutting load close to the machining point to achieve high head stock rigidity and improve the stability of accuracy during continuous processing.



2 Higher holding rigidity of 4-axis face-type milling unit with B-axis control

- The rotation-type 4-axis face-type milling unit employs the structure for holding the upper and lower ends. The clamp brake mechanism is additionally employed to improve the unit's holding rigidity.

3 Dovetail groove slide guideway structure

- X3-axis and Y3-axis of the turret-type tool post. The dovetail groove guideway is employed on the sliding surface of the Y2-axis of the 8-spindle rear-end working unit to improve the rigidity of the tool post.

4 Chuck gripping force by hydraulic rotary cylinder

- A hydraulic rotary cylinder installed in the main chuck opening and closing mechanism secures stable gripping force regardless of the variation of workpiece diameters.

5 High accuracy indexing by built-in spindle

- The built-in sensor makes the main spindle indexing more accurate.

6 The thermal displacement correction function

- The data from thermal sensors installed on various machine positions achieve highly accurate and flexible automatic thermal displacement correction.

Operability and Workability Designed for Good Operability and Workability

1 Slanted bed frame structure

- The slanted bed frame structure significantly improves accessibility to the guide bush and the tool post.
- The slanted structure significantly reduces the chip accumulation as there is no horizontal surface in the cutting chamber.



2 The wide opening cutting chamber door

- Both the head stock chamber and cutting chamber have three doors. The more expansive opening space greatly improves maintenance workability.

3 The new guide bush switching mechanism (G.B./N.G.B.)

- The new switching mechanism (G.B./N.G.B.) employs locate blocks so that the switchover is easier and highly reproducible.

4 Quick-change-type tool post

- The turret-type tool post (Type A) has a quick-change feature to make the tool mounting and dismounting quick and easy with a bolt.
- The tool units for existing machines can be utilized with no modification.

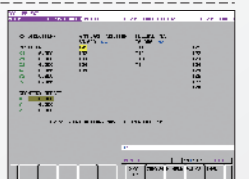
5 Movable operation panel

- The movable operation panel lets you operate the machine in your best position.

Extensive setup support software system

Support function 1 Center height adjustment function

- The tool's center height can be adjusted at the gang post side by a handle to make the adjustment easier.



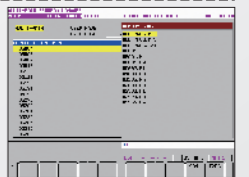
Support function 2 Tool unit number input

- This function supports the setup procedure by providing a review of the tool unit dimensions on screen.



Support function 3 Alarm help function

- The alarm contents can be checked on the screen for faster troubleshooting.



Other features include ● enhanced counter screen function ● "Cutting Overload Detection Screen" to detect wear and an abnormal load of the tool, and ● "Tool Life Management by Tool No. Screen".

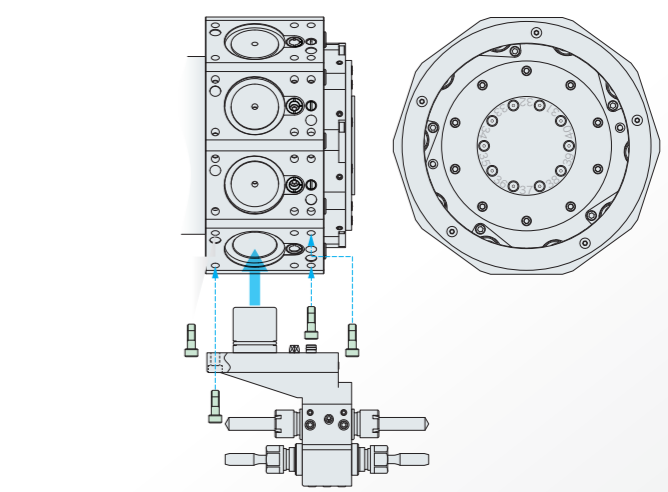
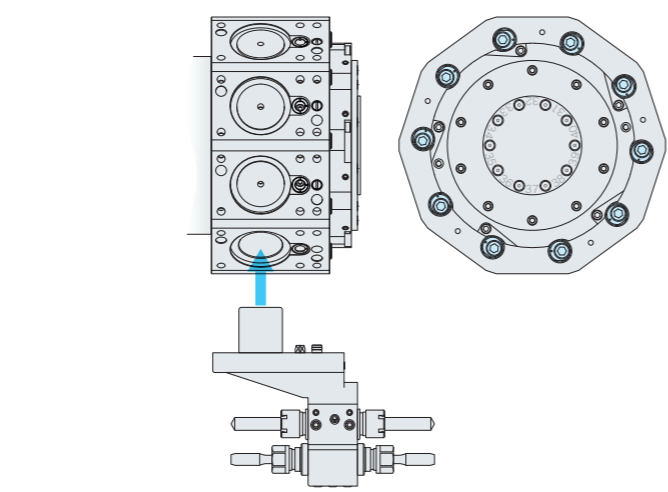
Best tooling system to cover a wide range of machining needs

TOOLING SYSTEM | Turret type Tool post **type A**

TOOLING SYSTEM | Turret type Tool post **type B**

Quick-change type

Bolt-mount type



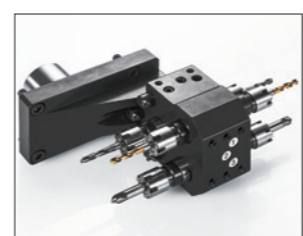
Fixed type tool holder (for 2 tools)



3-spindle sleeve holder



Fixed type tool holder (for 2 tools)



3-spindle sleeve holder



2-spindle angular adjustable drilling unit



Gear hobbing unit



2-spindle cross drilling unit



Milling unit



2-spindle angular adjustable drilling unit



Gear hobbing unit



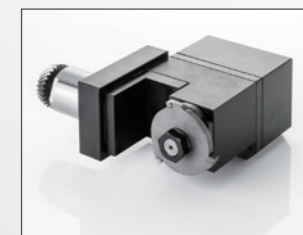
2-spindle cross drilling unit



Milling unit



2-spindle counterface drilling unit



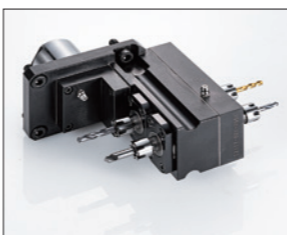
Polygon machining unit



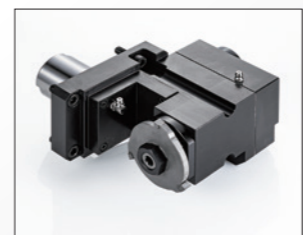
Slotting unit



Thread whirling unit



2-spindle counterface drilling unit



Polygon machining unit



Slotting unit



Thread whirling unit

TOOLING SYSTEM | Backworking 8-spindle unit with Y-axis control

Stationary tools (on the back side)

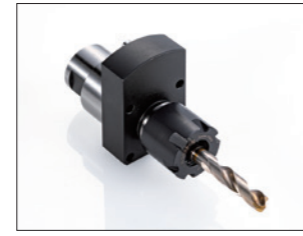
Power driven tools (on the back side)



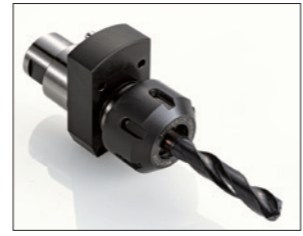
Drill sleeve ER20



Drill sleeve ER25



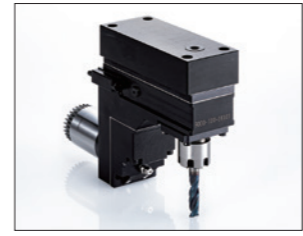
Drill sleeve ER20 (oil-through type)



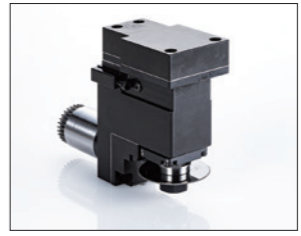
Drill sleeve ER25 (oil-through type)



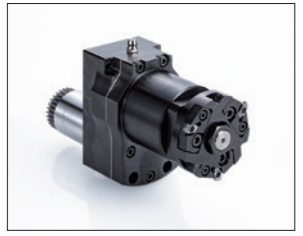
Milling unit ER16



Cross drill unit ER16



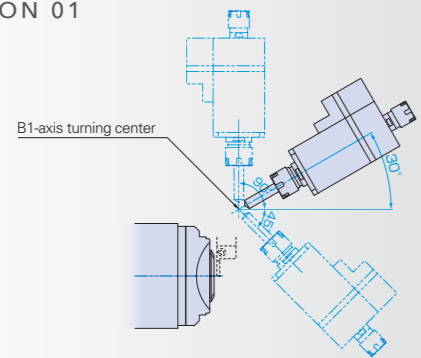
Slotting unit



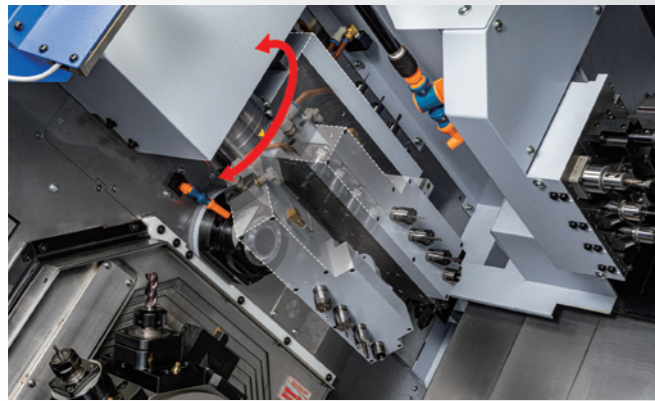
Thread whirling unit

Machining capabilities to meet diversified needs for parts machining.

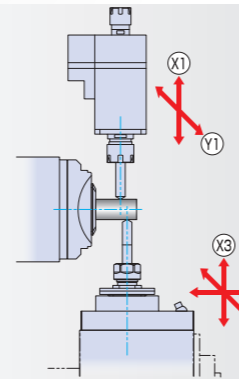
VARIATION 01



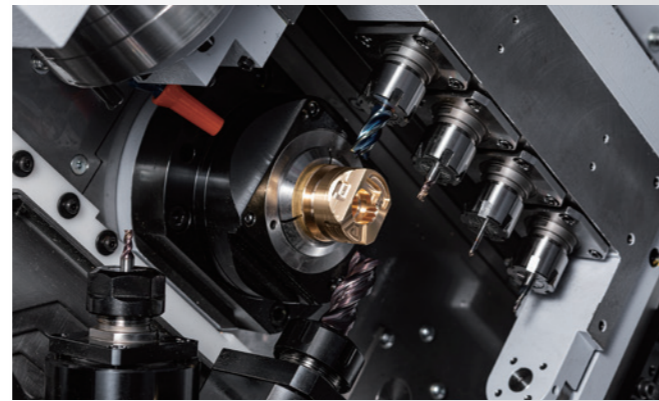
Front and Rear Processing with B-axis control



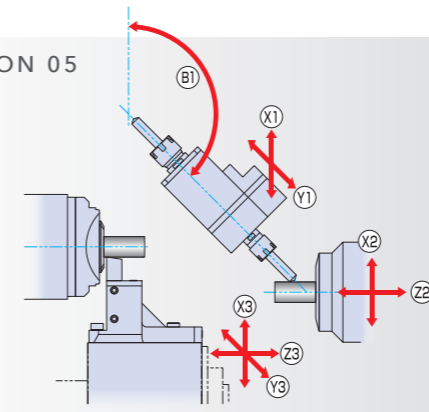
VARIATION 02



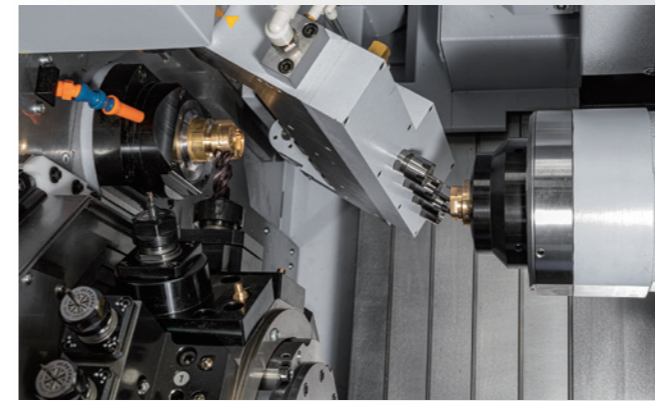
Front Balance-cut



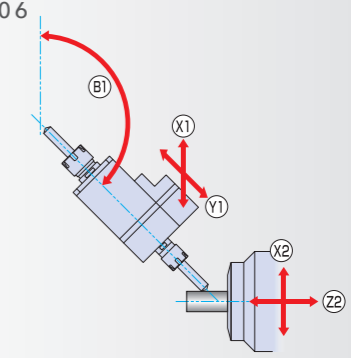
VARIATION 05



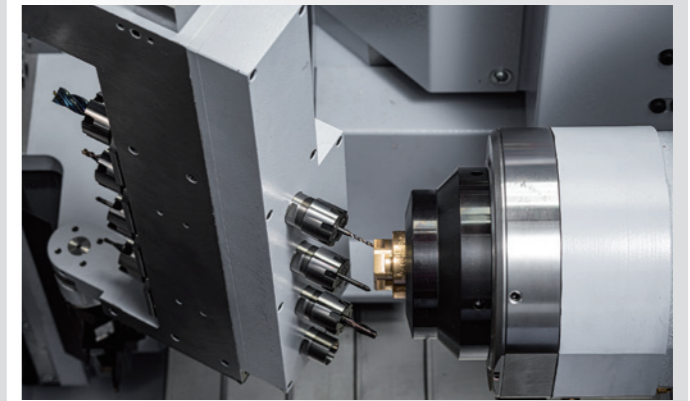
Front and Rear Front cross processing and rear slant processing



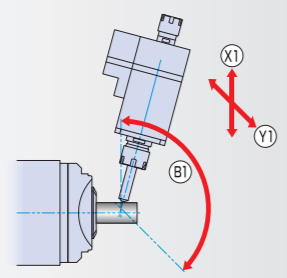
VARIATION 06



Rear Rear-end slant milling



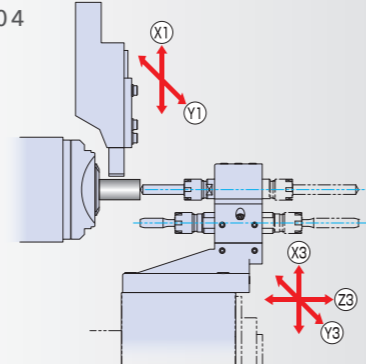
VARIATION 03



Front Slant milling



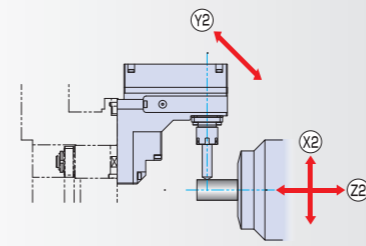
VARIATION 04



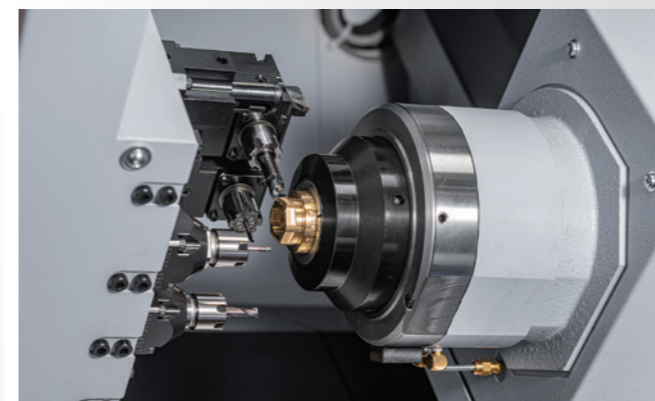
Front and Rear Superimposition processing



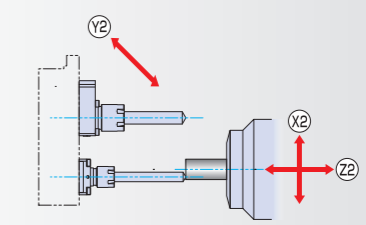
VARIATION 07



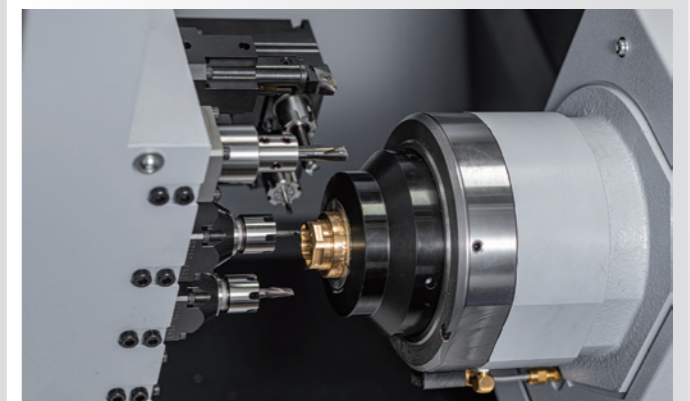
Rear Cross processing with backworking 8-spindle unit



VARIATION 08



Rear Eccentric processing with backworking 8-spindle unit



□ Standard Machine Specifications

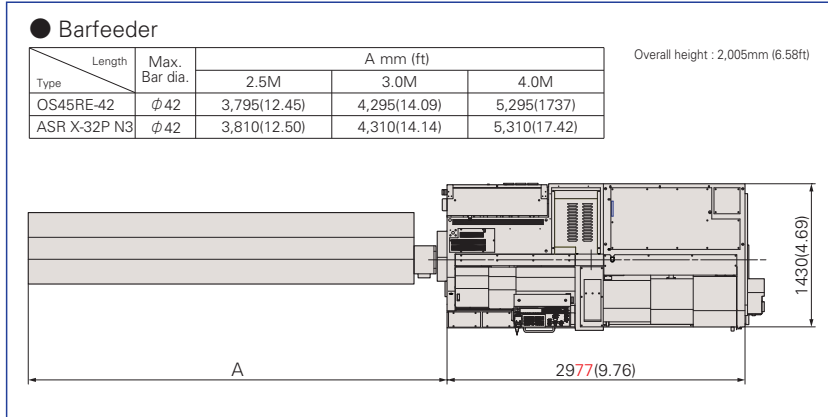
Item		Specifications	
Max. machining diameter		φ38mm(1-1/2in)	
Max. headstock stroke	Standard	320mm(13-19/32in)	
	R.M.G.B. type	289mm(11-3/8in) : OP	
	N.G.B. type	95mm(3-47/64in)	
Tool post configuration	Gang type	Turning tool + Power-driven tool	
	Turret type	10 stations	
Tool	Gang type	4 tools	
	Turret type	Max.2tools / station	
Sleeve	Number of tools	Max.3tools / station	
	Max. drilling capability	φ23mm(29/32in)	
	Max. tapping capability	M16×P2.0	
Power driven attachment	Number of tools	Gang type	B-axis controlled power-driven tool unit (Front : 4 tools, rear : 4 tools)
		Turret type	Max.2tools / station
	Max. drilling capability	Gang type	φ10mm(25/64in)
		Turret type	φ10mm(25/64in)
	Max. tapping capability	Gang type	M8×P1.25
		Turret type	M8×P1.25
Spindle speed	Gang type	Max.6,000min ⁻¹	
	Turret type	Max.5,700min ⁻¹	
Drive motor	Gang type	2.2kW(continuous) / 3.0kW(5min. / 30%ED)	
	Turret type	2.7kW(continuous) / 4.0kW(5min. / 30%ED)	
Rapid feed rate		30m/min(X1,X2,X3,Y1,Z1,Z2,Z3) 24m/min(Y2), 15m/min(Y3)	
Main spindle indexing angle		C-axis control	
Main spindle speed		Max.7,000min ⁻¹	
Main spindle motor		7.5kW(continuous) / 11kW(10min. / 25%ED)	
Coolant tank capability		284 ℓ	
Dimensions (W×D×H)		2,977×1,430×2,005mm	
Power consumption		14.4kVA	

□ Backworking Attachment Specifications

Item		Specifications	
Max. chucking diameter		φ38mm(1-1/2in)	
Max. length for front ejection		150mm(5-7/8in)	
Max. parts projection length		75mm(2-61/64in)	
Back 8-Spindle unit	Number of tools	Stationary tool	Max.8 tools
		Power driven tool	Max.8 tools
	Max. drilling capability	Stationary tool	φ23mm(29/32in)
		Power driven tool	φ10mm(25/64in)
Max. tapping capability	Stationary tool	M16×P2.0	
	Power driven tool	M8×P1.25	
Power-driven att. spindle speed		Max.5,000min ⁻¹	
Power-driven att. drive motor		1.2kW(continuous) / 2.2kW(5min./30%ED)	
Sub spindle indexing angle		C-axis control	
Sub spindle speed		Max.7,000min ⁻¹	
Sub spindle motor		7.5kw(continuous) / 11kw(10min. / 25%ED)	

□ External Dimensions

Unit : mm(ft)



□ Standard Accessories and Functions

- CNC unit FANUC 31i-B5
- Operation panel 10.4-inch color LCD display
- Manual pulse generator
- Hydraulic unit
- Pneumatic unit
- Automatic lubrication unit
- Coolant level detector
- Door interlock system
- Broken cutoff tool detector
- Drive unit for revolving guide bush
- Revolving guide bush unit
- Air purge for revolving guide bush
- Main / Sub collet
- C-axis control (Main / Sub)
- Spindle clamp unit
- Gang-type tool holder for fixed 4 tools (□ 20 mm : 1 tool, □ 16 mm : 3 tools)
- 4-spindle counter face milling unit with B-axis control function
- B-axis clamp unit
- 10-position turret-type tool post
- Turret-type tool post tool drive unit (type B : one-position tool drive mechanism)
- Sub spindle air purge unit
- Drive system for power-driven attachment (8-spindle back working unit)
- 8-spindle back working unit tool drive unit
- spindle cooling unit
- Parts conveyor
- Automatic bar feeder interface
- LAN/RS-232C interface
- Work light

□ Optional Accessories and Functions

- Coolant flow detector
- Parts ejection detector
- Water removal unit
- Beacon
- Non-guide bush type
- Rotary magic guide bush unit
- For pneumatic unit rotary magic guide bush
- Parts receptacle in the machine
- Parts ejector (Spring type rotary ver.)
- Parts ejector (Air cylinder type)
- Parts ejector with guide tube
- Parts catcher
- Product separator
- Parts receptacle
- Chip conveyor, hinge-type
- Coolant tank, large-capacity type
- Coolant unit (6.9MPa / 2.5MPa / 0.7MPa)
- Coolant unit signal cable
- Coolant unit power cable
- Coolant valve(6.9MPa / 2.5MPa)
- Coolant pipings
- Relocation detection device
- I / O module extension unit
- Transformer CE marking version
- CE marking
- Tool Presetter

(Note)

The machining capacities apply to SUS303 material. The machining capacities may differ from listed values depending on the machining conditions, such as the material to be machined or the tools to be used.

※Design features, specifications and technical execution are subject to change without prior notice.

※This product is an export control item subject to the foreign exchange and foreign trade laws. Thus, before exporting this product, or taking it overseas, contact your STAR MICRONICS dealer.

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