



SWISS TYPE AUTOMATIC LATHE equipped with star motion control system 

SX-38



STAR Environmental Standards Conformity models

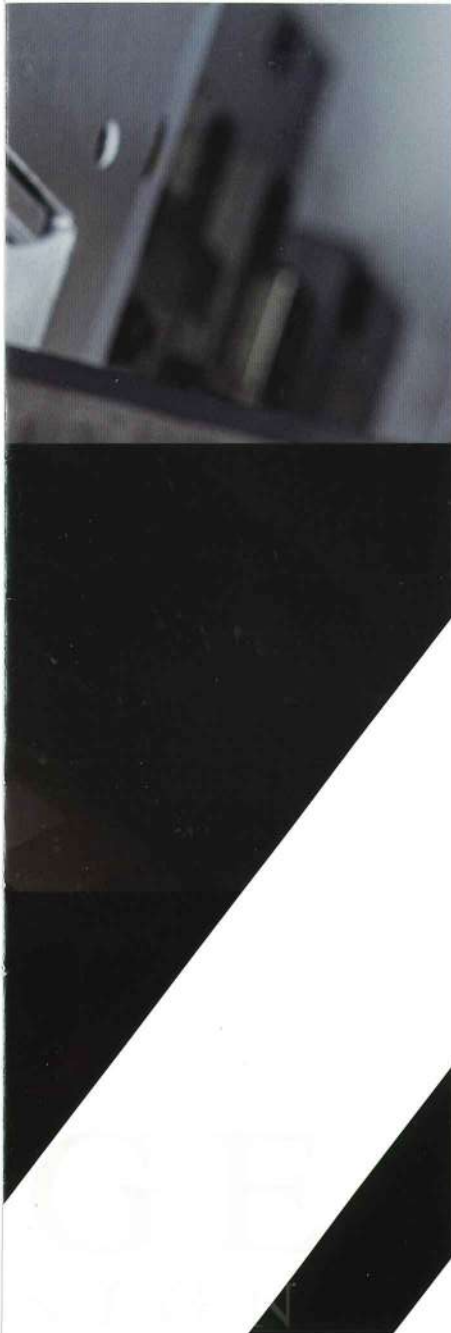
The multi-processing machine to go beyond the norm with novel design concept

01

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.

CUTTING ED
ALL NEW CONCEPT & D



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.

F E A T U R E

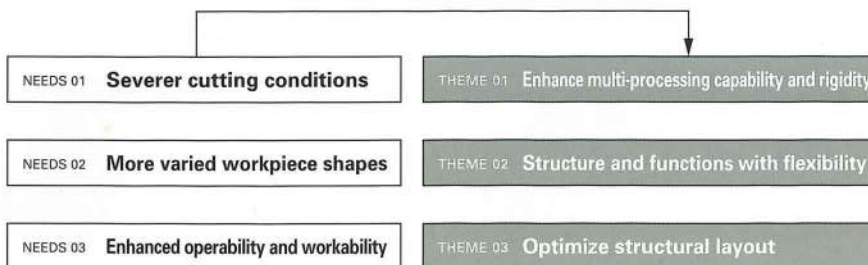
- The gang-type tool post is equipped with the 4-spindle face-type milling unit with B-axis control for more complex multi-processing.
- Power driven tool units can be mounted on all 8-spindle back-working tool post positions with Y-axis control for enhanced rear-end processability.
- The guide bush 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-changeable 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

02

C O N C E P T

THE HIGHEST LEVEL IN EVERY ASPECT TO MEET THE LATEST NEEDS



SWISS TYPE AUTOMATIC LATHE
equipped with star motion control system

SX-38



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

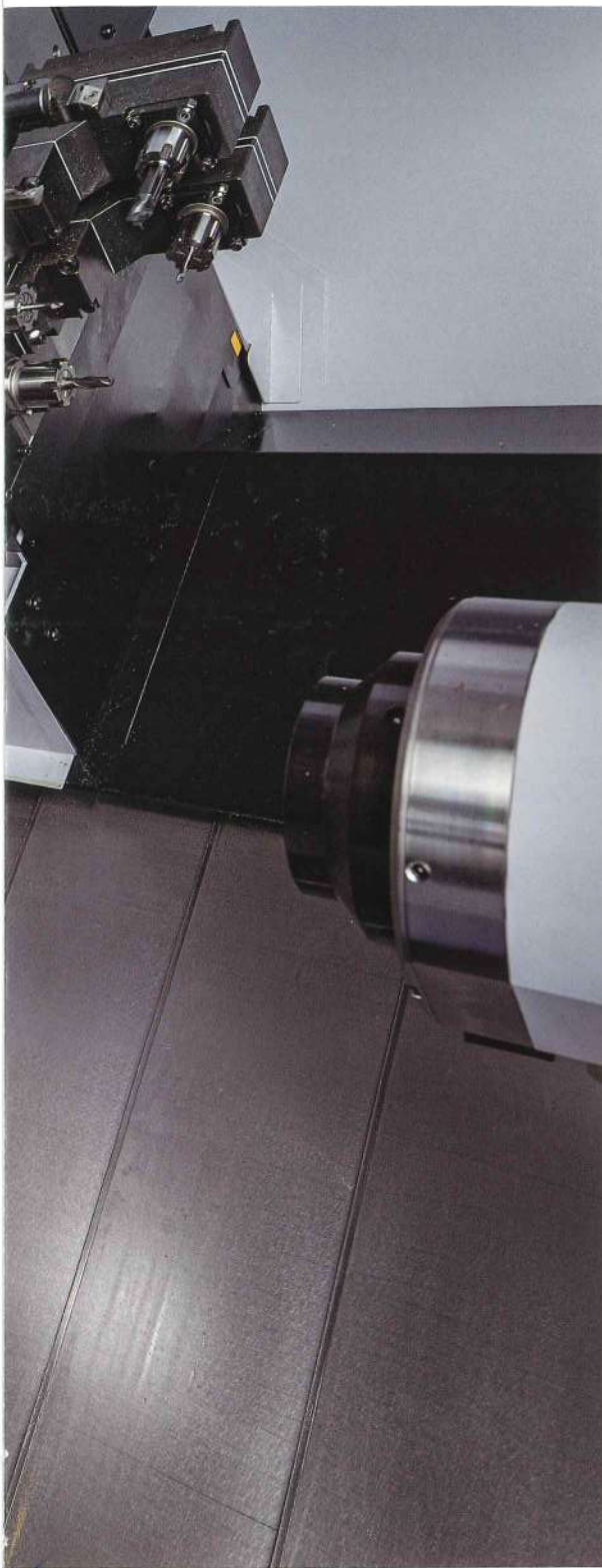


Photo of tool layout : type B

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.

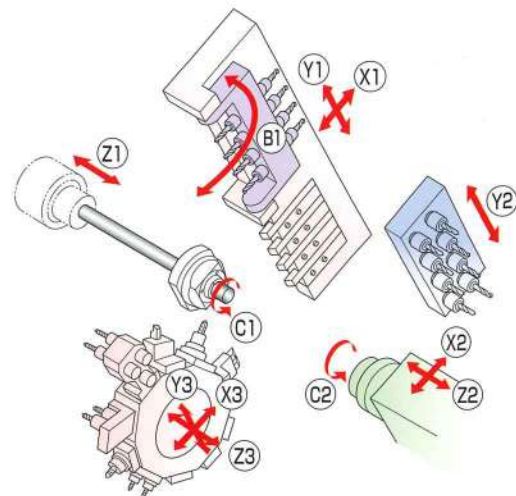
SX-38

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-spindle face-type milling unit with B-axis control)
- Turret type tool post (10 stations)
- 8-spindle back-working tool post 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-changeable type

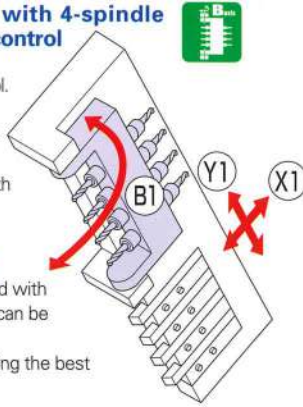
now available.

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-spindle face-type milling unit with B-axis control

- The gang-type tool post is equipped with 4-spindle face-type milling unit with B-axis control. (Front: ER20 / Rear: ER16)
- Rotation 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.

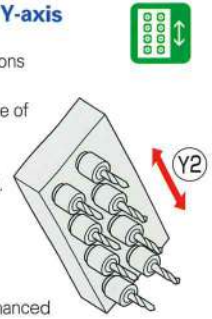


2 10-stationed turret-type tool post

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

3 8-spindle back-working tool post with Y-axis control for the rear-end processing

- Power driven 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.



4 High power sub spindle motor

- The powerful 7.5/11kW sub spindle motor gives enhanced machining capability on the rear side.

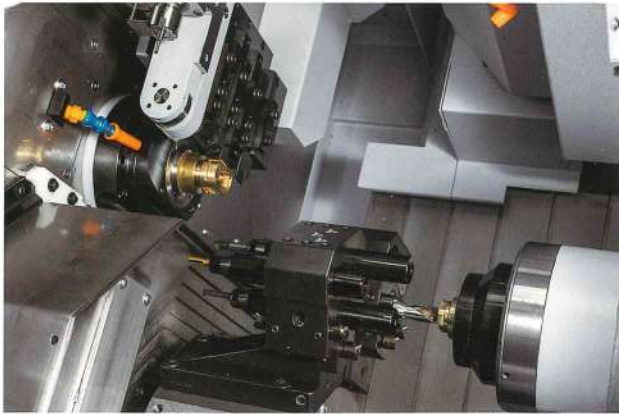
High Productivity Shorter Cycle Time [Mechanical System]

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 back-working tool post

- A wide variety of back-working tool post 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

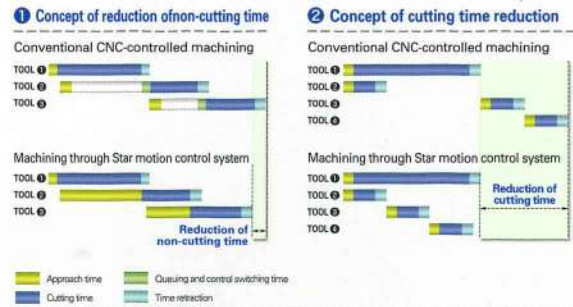
- The adoption of the Star Motion Control System reduces the non-cutting time, such as the time for changeover of control systems and the tool exchange.



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



By the program optimization, the time required for the processes of [Disengagement], [Next tool selection] and [Approach] can be minimized to reduce the non-cutting time.

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

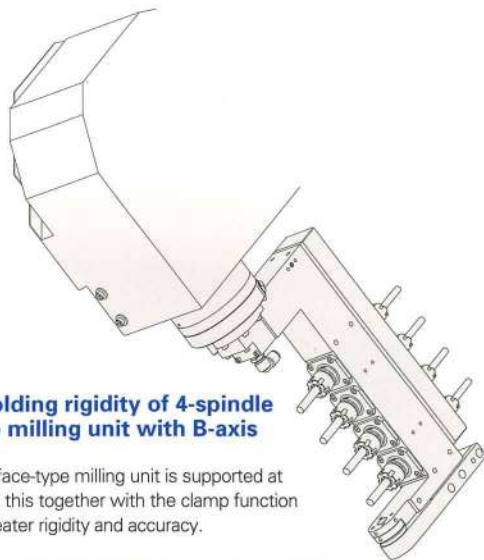
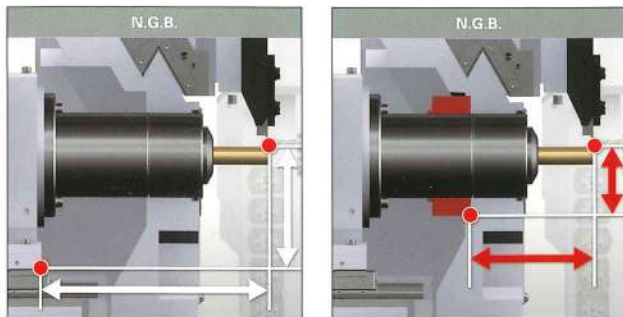
- Type A has the quick-changeable turret-type tool post, which enables the use of the existing Star tool unit.
- Type B has the bolt-mounted turret-type tool post, which is fixed by four bolts.
- Type B bolt-mounted turret-type tool post employs the one-position tool drive mechanism, which extends the 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-spindle face-type milling unit with B-axis control

- The 4-spindle face-type milling unit is supported at both ends and this together with the clamp function gives even greater rigidity and accuracy.

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 back-working tool post 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-changeable 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-type tool post side by a handle to make the adjustment easier.



Support function 2

Tool unit number input

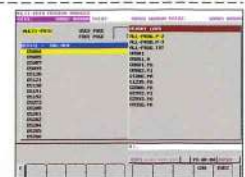
- This function supports the setup procedure by providing a review of the tool unit dimensions on the NC screen.



Support function 3

Alarm help function

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



Other features include ● enhanced counter screen function ● "Machining Load Detection Screen" to detect wear and an abnormal load of the tool, and ● "Tool Life Management by Tool Number Counter Screen".

Best tooling system to cover a

TOOLING SYSTEM

Turret type Tool post

type A

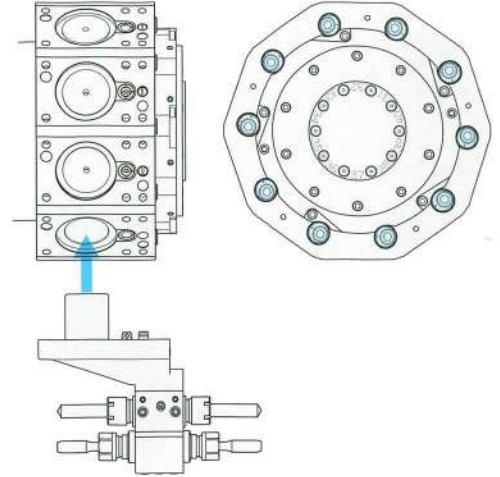
Quick-changeable type



Fixed type tool holder (for 2 tools)



3-spindle sleeve holder



2-spindle angular adjustable drilling unit



Gear hobbing unit



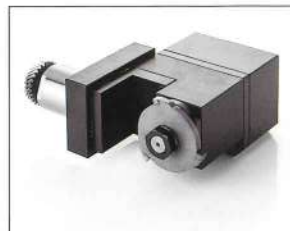
2-spindle cross drilling unit



Milling unit



2-spindle counterface drilling unit



Polygon machining unit



Slotting unit



Thread whirling unit

07

TOOLING SYSTEM

8-spindle back-working tool post with Y-axis control

Stationary tools (on the back side)



Drill sleeve ER20



Drill sleeve ER25



Drill sleeve ER20 (oil-through type)



Drill sleeve ER25 (oil-through type)

wide range of machining needs

TOOLING SYSTEM

Turret type Tool post

type B

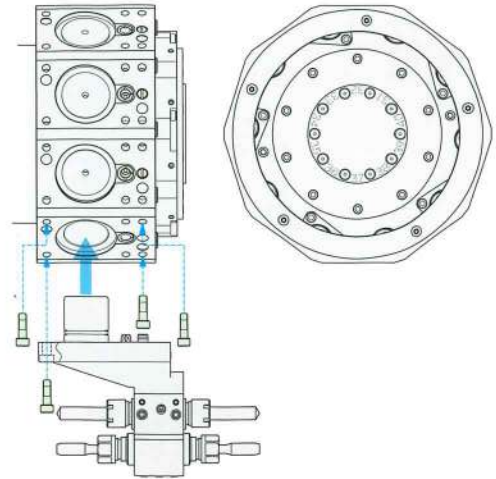
Bolt-mount type



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 counterface drilling unit



Polygon machining unit



Slotting unit



Thread whirling unit

08

Power driven tools (on the back side)



Milling unit ER16



Cross drilling unit ER16



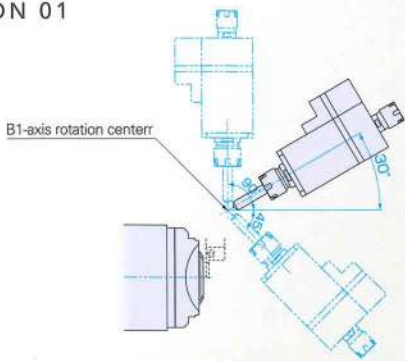
Slotting unit



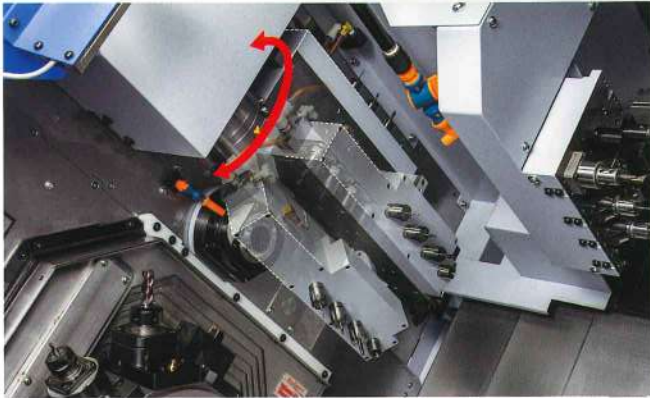
Thread whirling unit

Machining capabilities to meet diversified needs for parts machining.

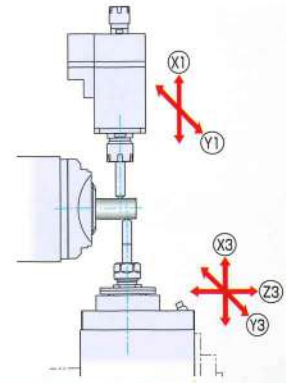
VARIATION 01



Front and Rear Processing with B-axis control



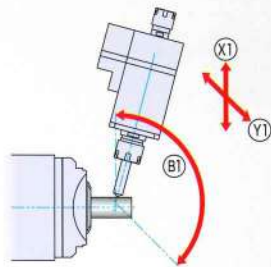
VARIATION 02



Front Balance-cutting



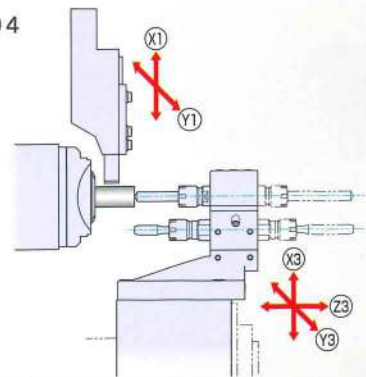
VARIATION 03



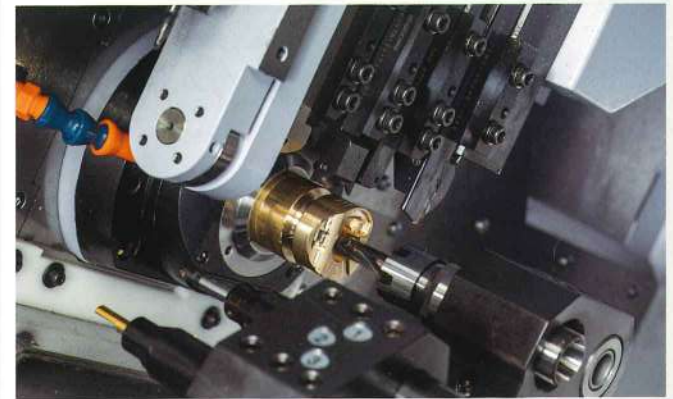
Front Slant milling



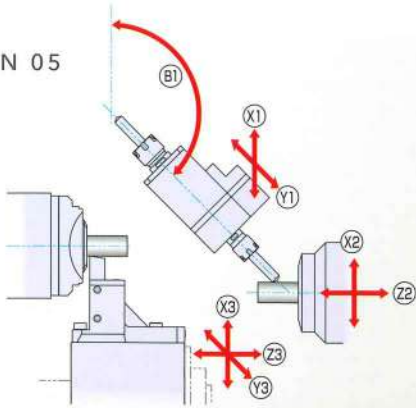
VARIATION 04



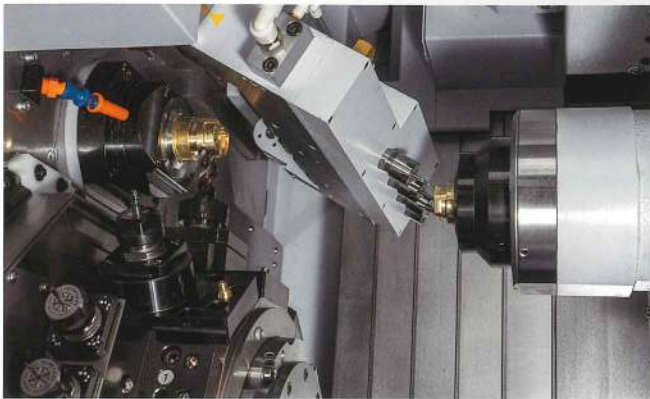
Front and Rear Superimposition processing



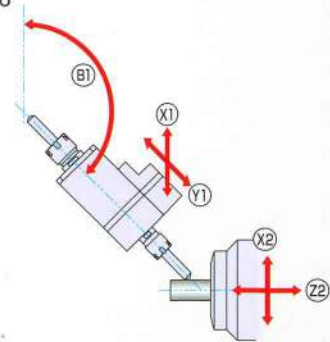
VARIATION 05



Front and Rear Front cross processing and rear slant processing



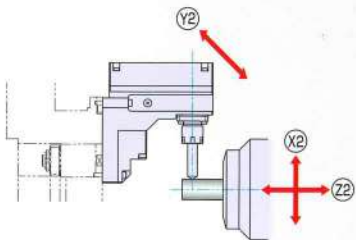
VARIATION 06



Rear Rear-end slant milling



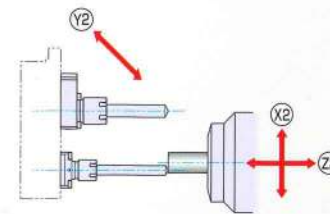
VARIATION 07



Rear Cross processing with 8-spindle back-working tool post



VARIATION 08



Rear Eccentric processing with 8-spindle back-working tool post



□ Standard Machine Specifications

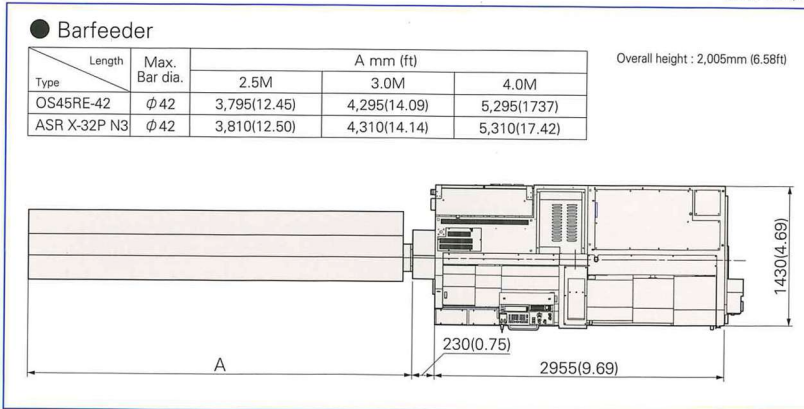
Item		Specifications
Max. machining diameter		φ38mm(1-1/2in)
Max. headstock stroke	Standard	320mm(13-19/32in)
	R.M.G.B. type	288mm(11/32in) : OP
	N.G.B. type	Bar diameter×2.5(Max.95mm)(Max.3-47/64in)
Tool post configuration		Turning tool + Power-driven tool
Tool	Gang type	10 stations
	Turret type	4 tools
Sleeve	Number of tools	Max.2tools / station
	Max. drilling capability	Max.3tools / station
Power driven attachment	Max. tapping capability	φ23mm(29/32in)
		M16×P2.0
Rapid feed rate	Number of tools	B-axis controlled power-driven tool unit (Front : 4 tools, rear : 4 tools)
	Gang type	Max.2tools / station
Main spindle indexing angle	Max. drilling capability	φ10mm(25/64in)
	Turret type	φ10mm(25/64in)
Main spindle speed	Max. tapping capability	M8×P1.25
		M8×P1.25
Coolant tank capacity	Spindle speed	Max.6,000min ⁻¹
		Max.6,000min ⁻¹
Dimensions (W×D×H)	Drive motor	2.2kW(continuous) / 3.0kW(5min. / 30%ED)
		2.7kW(continuous) / 4.0kW(5min. / 30%ED)
Power consumption	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 capacity		284 ℓ / 375 ℓ
Dimensions (W×D×H)		2,955×1,430×2,005mm
Power consumption		13.3kVA

□ 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)
Power-driven att. spindle speed	Max. tapping capability	Stationary tool M16×P2.0
		Power driven tool M8×P1.25
Power-driven att. drive motor		Max.5,000min ⁻¹
Sub spindle indexing angle		1.2kW(continuous) / 1.8kW(5min./30%ED)
Sub spindle speed		C-axis control
Sub spindle motor		Max.7,000min ⁻¹
		7.5kw(continuous) / 11kw(10min. / 25%ED)

□ External Dimensions

Unit : mm(ft)



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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. Please refer to the export control regulations.

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