

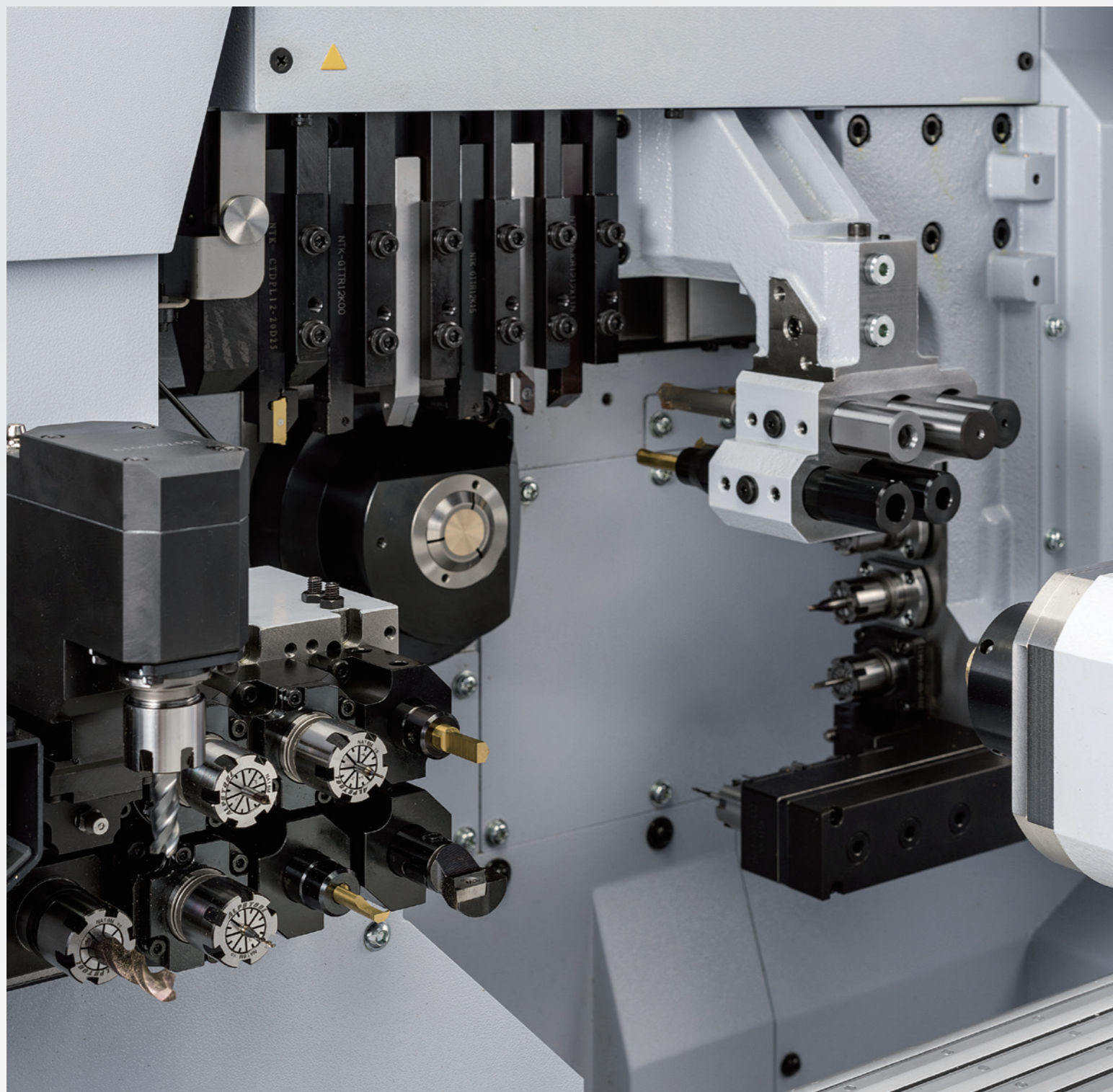


CNC SWISS TYPE AUTOMATIC LATHE 

SR-20JII



SR-20JII, the latest of the ever-evolving lathe series to meet the variety of needs with versatility.



SR-20JII addresses your processing needs with flexibility by offering Type A and Type B depending on the function.

Once again, the machine design of Star Micronics has taken a significant step forward to meet your needs as the global market requires more value-added, more diversely shaped, and more price competitive processing of workpieces. The machines designed for high rigidity and accuracy are what Star Micronics is known for. Now with the new modular design approach, the latest model offers even more flexibility in processing workpieces. SR-20JII, the latest model of the series is available in 2 types for you to choose from. Type A has 4 rear-end working tools, and type B has 8 rear-end working tools with Y-axis control.

SR-20JII

type A

CNC SWISS TYPE AUTOMATIC LATHE

Machine composition :

- Main spindle
- Sub spindle
- Gang type Tool post
- 5-spindle type cross drilling unit
- Backworking 4-spindle unit



type B

CNC SWISS TYPE AUTOMATIC LATHE

Machine composition :

- Main spindle
- Sub spindle
- Gang type Tool post
- 5-spindle type cross drilling unit
- Backworking 8-spindle unit with Y-axis control

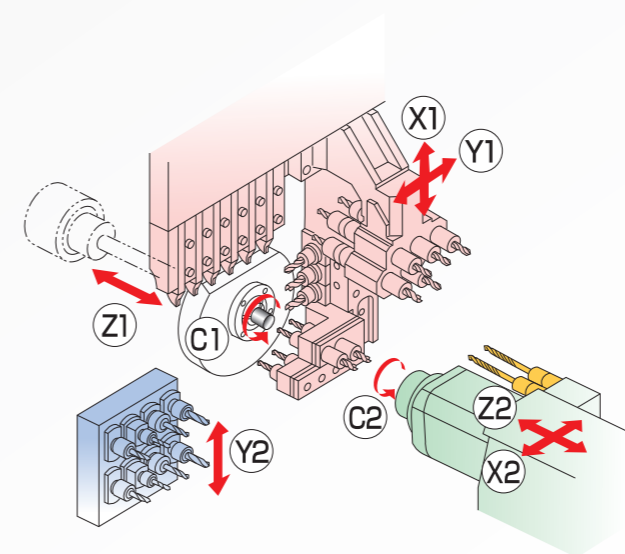


Illustration of tool layout : type B

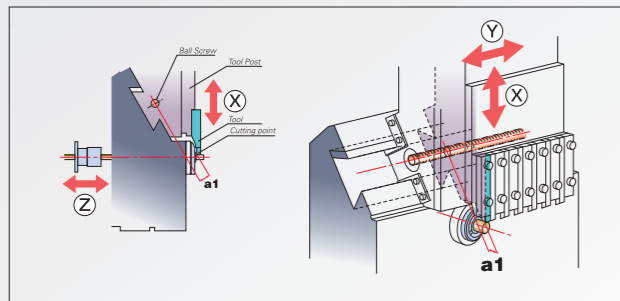
TOOLING SYSTEM

■ Tool holder	Turning tool	6 tools
■ 5-spindle sleeve holder	Front-end stationary tool	5 tools
	Rear-end stationary tool	5 tools
■ Deep hole sleeve holder	Deep hole stationary tool	2 tools
■ Power driven tool	Special tool for cross drilling	3 tools + Cartridge type 2pos*
■ Tool post specially designed for back working unit	typeA	4 tools
	typeB	8 tools(with Y-axis control)

* The 3 tools of cross machining are selectable between ER20 x 1 + ER16 x 2 or ER16 x 3.

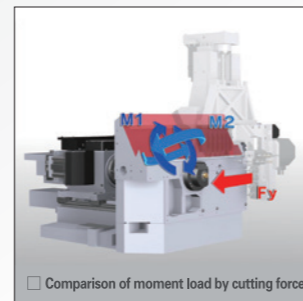
High Rigidity and High Accuracy

Front-end machining tool post with Slanted Dovetail Slideway Structure

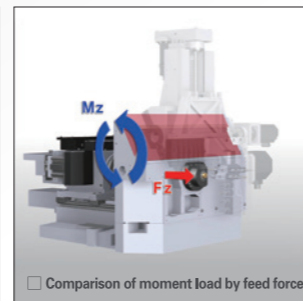


The front end machining tool post is gang-type with a Slanted Slideway Structure for high rigidity. Further, both Y1 and X1 axes have a dovetail slideway to add rigidity to the sliding area.

The slanted dovetail structure of the Y-axis slideway of the tool post allows the slideways of the X and Y axes to be radially configured close to the cutting point, increasing the machine rigidity. Since this also enables the cutting point to be located near the line through the center of the ball screw in parallel with the Y-axis slideway (a1), the moment load from the cutting resistance is reduced to improve tool post rigidity in the directions of the Y-axis and Z-axis, thus extending the tool life and assuring highly accurate machining.



The moment load applied to the guideway surface by cutting force is the combined radial and axial load M_y . The M_y of the slant type is the smallest when compared to that of the vertical type and horizontal type.

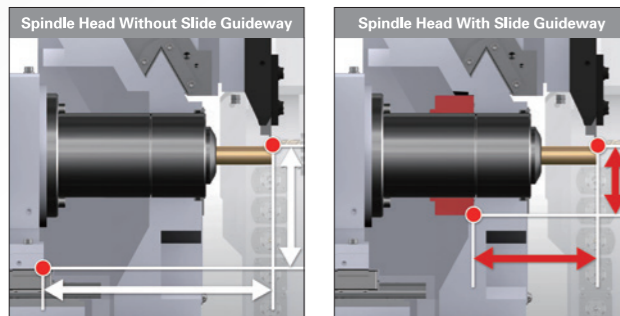


As for the feed force F_z , the moment load M_z of the slant type is the smallest when compared to that of the vertical type and horizontal type.

Slant type ● $M_y=1$	Slant type ● $M_z=1$
Vertical type ● $M_y=1.3$	Vertical type ● $M_z=1.3$
Horizontal type ● $M_y=1.9$	Horizontal type ● $M_z=1.5$

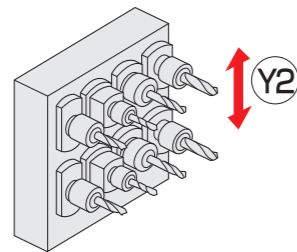
A highly rigid spindle sleeve structure when using N.G.B. mode

The N.G.B type introduces a spindle sleeve slide guideway structure. By supporting the cutting force on the guideway, the headstock rigidity is maximized and therefore spindle deflection is minimized to ensure machining accuracy is maintained.



Independent Rear-end Tool Post with High Rigidity

The independent rear-end tool post of Type B incorporates the dovetail slideway on its Y2-axis to improve the tool post rigidity, restraining the deflection and vibration of the tool post caused by a load of processing to achieve highly accurate processing.

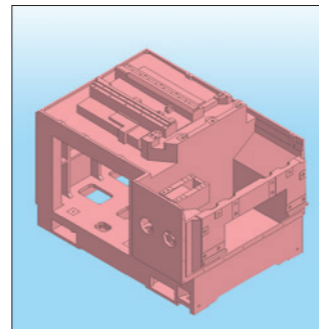


A built-in spindle for high indexing accuracy

The main and sub spindle employ a built-in structure to enhance spindle indexing speed and accuracy with a built-in sensor.

Stronger casting implemented

The base casting thickness is increased by 25% compared to the previous model SR-20J. This improves the frame rigidity and demonstrates remarkable effect on suppression of vibration during machining and thermal displacement during continuous operation.



Heat Suppression and Thermal Displacement Correction

Oil mist cooling to the drive gearbox and the cooling fan mounted on the drive motor suppress heat generation. Further, impact on the dimensional changes are restrained by the X2-axis Thermal Displacement Correction Switch linked with actual thermal displacement amount measurements. The machine is also mounted with the Measurement Assistance Function which automatically corrects dimensional changes caused by the thermal displacements when the machine is restarted after its stoppage.

Accuracy, functionality and productivity upgraded from every angle

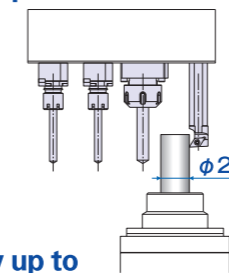
Improvement in High Functionality and Machining Ability

The G.B. / N.G.B. switching mechanism

The guide bush type and non-guide bush type are switched over according to the total length of machining parts to realize most suitable machining.

Enlarged tool-to-tool pitch of the back working tool post

The back working tool post has an increased pitch between two tools for OD turning so that large-diameter (max. $\phi 20$ mm) turning is possible without restriction of neighboring tools.



Machining capability up to $\phi 23$ mm

Up to $\phi 23$ mm of material can be machined using options such as a collet for $\phi 23$ mm.

Independent Rear-end Working Tool Post for a Wider Variety of Multi-Processing

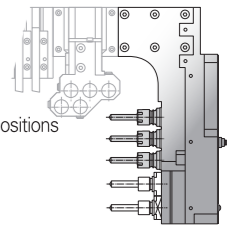
Type A and B mount 4-spindle rear-end working unit and 8-spindle rear-end working unit with the Y-axis control respectively. Since the power tool unit can be mounted on all positions, both models can meet the multi-processing needs such as slotting and milling with power tools at the rear-end.

Selectable 5-spindle Cross Drilling Unit

There are two types of 5-spindle Cross Drilling Units.

Details in page 5 and 6

- ① 3 cross machining tools (ER16) + 2 cartridge positions
- ② 3 cross machining tools (ER20 x 1, ER16 x 2) + 2 cartridge positions



Increased Power for Sub Spindle and Drive Motors (vs. SR-20J)

Sub spindle 1.5/2.2 kW → 2.2/3.7 kW

Power tool For cross machining : 1.2 kW → 2.2 kW
For rear-end machining : 0.5 kW → 1.0 kW

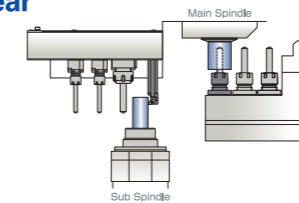
Pursuit of High Productivity

Machining time reduction (mechanical)

Machining time reduction (control system)

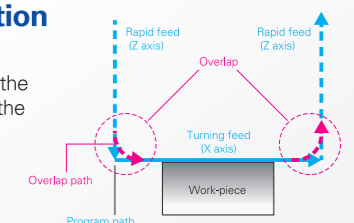
Optimized Splitting of the Processes Between Front and Rear

The 8-spindle rear-end working unit with Y-axis control (type B) offers a broader variety of rear-end working which also contributes to the reduction of total cycle time by optimizing the overlapping processes at the front and rear ends.



Smart Overlap Function

The smart overlap function equipped in this series overlaps the NC command blocks to reduce the non-cutting time.



Improvement in Operability and Workability

Movable Control Panel

A movable control panel facilitates operation at the optimum position all the time.

Software Enhancement for Operation and Assistance

- ① Enhanced counter function screen to show production information including :
 - amount of materials needed
 - time to finish, and
 - estimated time of finish based on the quantity to be processed.
- ② Maintenance timer extended with the addition of maintenance counter which shows messages during the count up mode.
- ③ Guide bush (G.B.) and non-guide bush (N.G.B.) switching assistance showing the procedure step by step in blinking messages.
- ④ Cutting tool monitor function to detect wear, tear, and abnormal load.

Flip-up Door

The headstock chamber and cutting chamber use flip-up doors to provide wide opening and ample workspace.

Workpiece Ejection During Machine Stoppage

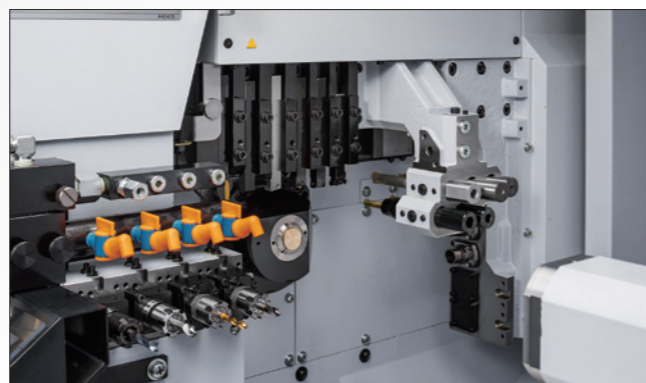
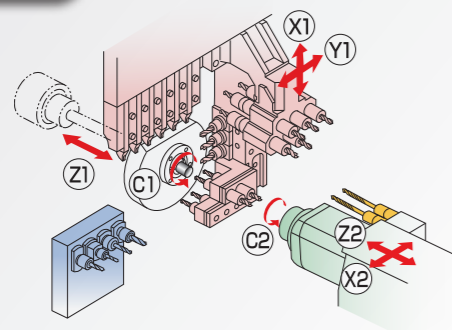
The ON/OFF switch of the workpiece conveyor located outside of the machine enables the workpiece to be ejected even during the machine stoppage.

Setup and Maintenance Workability

Attention is paid to the distance from the machine front to the guide bush and the height of the oil pan to improve the workability of setups and maintenance.

Two types of models, A and B, so the User can choose the optimum functions to meet their requirements

type A



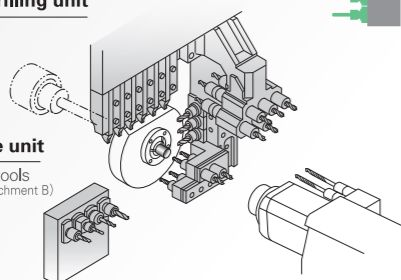
01 MODEL VARIATION

Gang type Tool post
5-spindle type cross drilling unit

ER16x3 tools
Cartridge type 2Pos

Tool post specially designed for back working unit
Backworking 4-spindle unit

Power-driven tool : Max. 4 tools
(OP : Drive unit for power-driven attachment B)



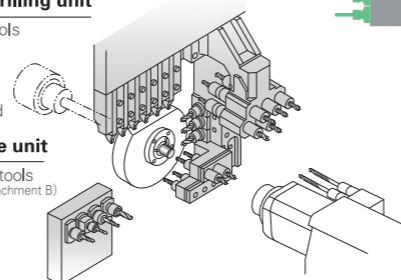
02 MODEL VARIATION

Gang type Tool post
5-spindle type cross drilling unit

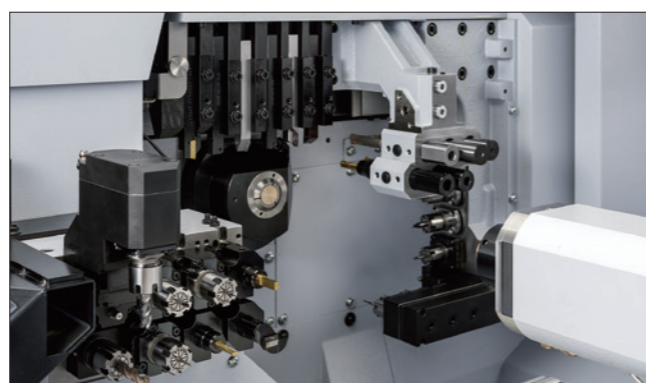
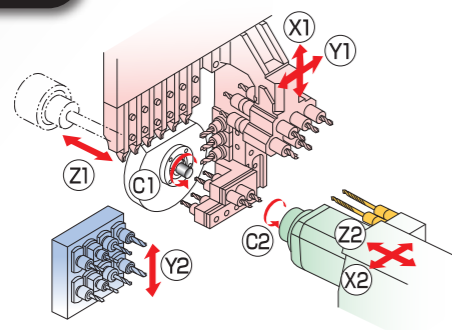
ER20x1 tools+ER16x2 tools
Cartridge type 2Pos

Tool post specially designed for back working unit
Backworking 4-spindle unit

Power-driven tool : Max. 4 tools
(OP : Drive unit for power-driven attachment B)



type B



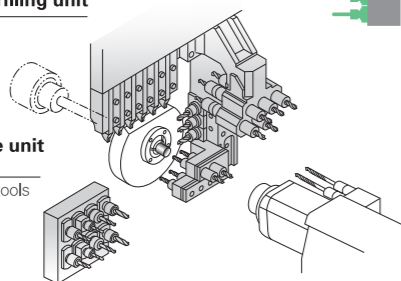
03 MODEL VARIATION

Gang type Tool post
5-spindle type cross drilling unit

ER16x3 tools
Cartridge type 2Pos

Tool post specially designed for back working unit
Backworking 8-spindle unit with Y-axis control

Power-driven tool : Max. 8 tools



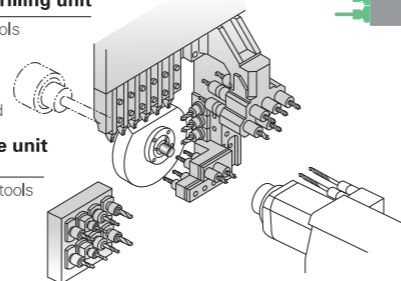
04 MODEL VARIATION

Gang type Tool post
5-spindle type cross drilling unit

ER20x1 tools+ER16x2 tools
Cartridge type 2Pos

Tool post specially designed for back working unit
Backworking 8-spindle unit with Y-axis control

Power-driven tool : Max. 8 tools



type A

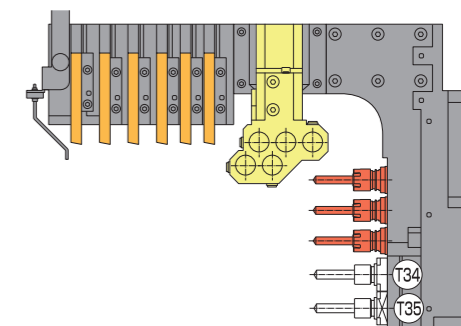
type B

TOOLING SYSTEM Cross drilling unit 5-spindle type

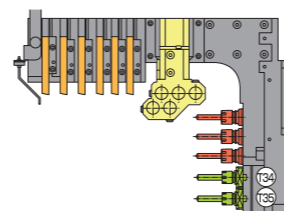
Station for mounting tools for more evolved complex machining.

The 2 cartridge stations accommodate tools for milling, front drilling, thread whirling, slotting, polygon machining, etc. These positions further increase the flexibility of the machine.

Basic type

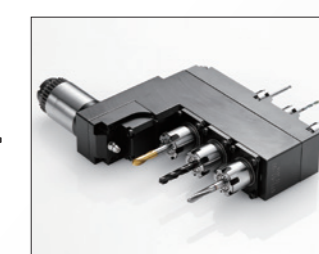
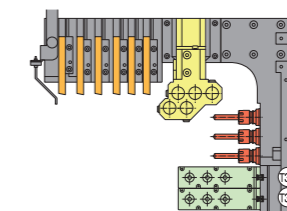


- Tool
- Cross drilling only
- Sleeve holder
- Milling unit
- 3-spindle front drill unit
- Quad-speed milling unit
- 2-spindle front drilling adaptor
- Special unit



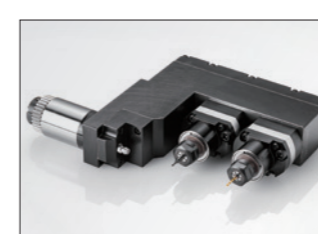
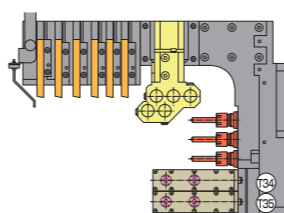
Milling Unit for ER16 [T34 / T35]

VARIATION 01
Cartridge (2 pos.)



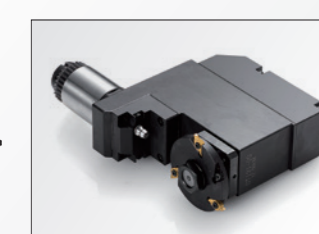
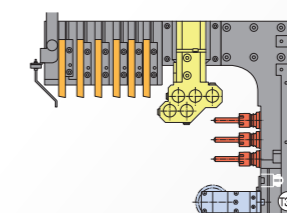
3-spindle front drilling unit [T34 / T35]

VARIATION 02
Cartridge (2 pos.)



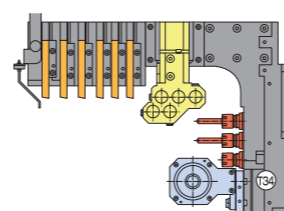
2-spindle front drilling adaptorx2 [T34, T35]
Quad-speed milling unitx4

VARIATION 03
Cartridge (2 pos.)



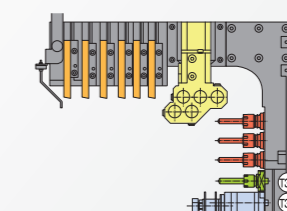
Idler
Polygon machining unit [T35]

VARIATION 04
Cartridge (1 pos.)



Thread whirling unit [T34]

VARIATION 05
Cartridge (1 pos.)

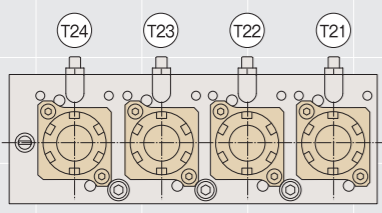


Milling Unit for ER16 [T34]
Slotting unit [T35]

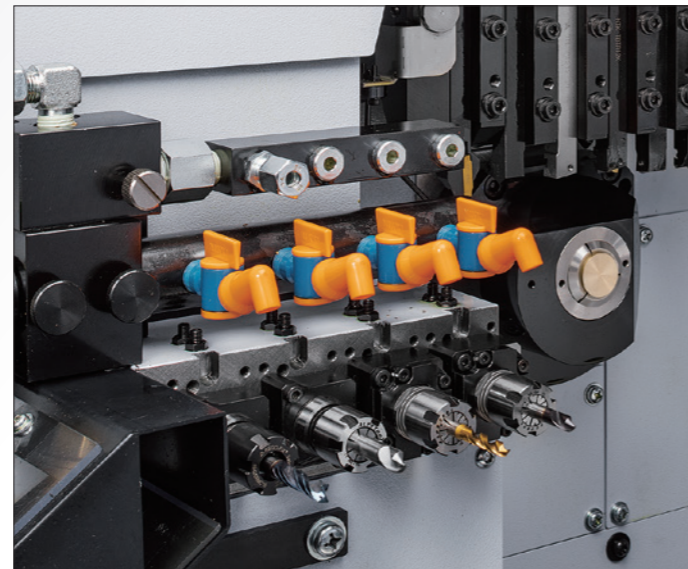
VARIATION 06
Cartridge (2 pos.)

TOOLING SYSTEM 4-spindle backworking unit

type A

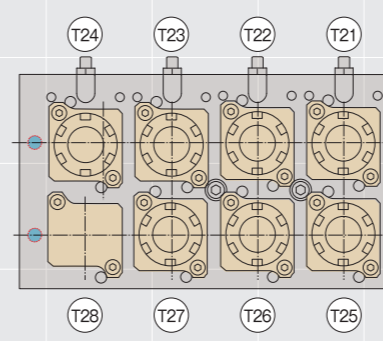


- Max. 4 power tools accommodated
- Various power tool units available
- Coolant-through tool compliant

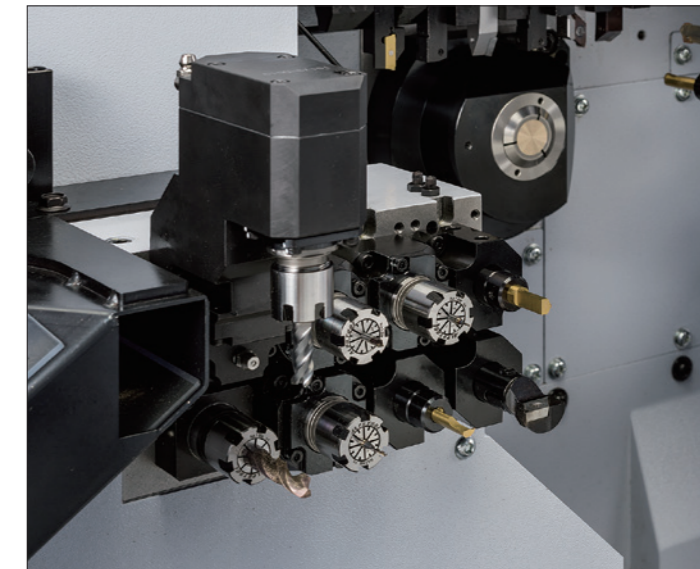


TOOLING SYSTEM 8-spindle backworking unit with Y-axis control

type B

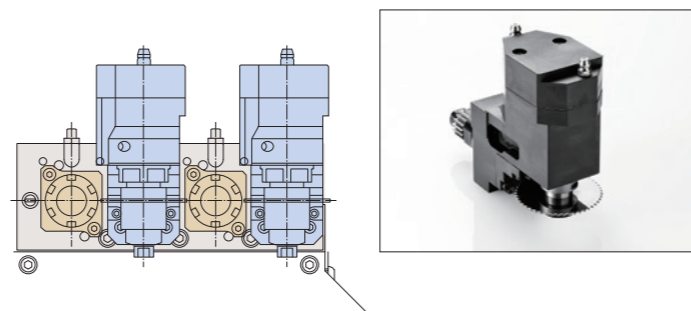


- Max. 8 power tools accommodated
- Various power tool units available
- Coolant-through tool compliant



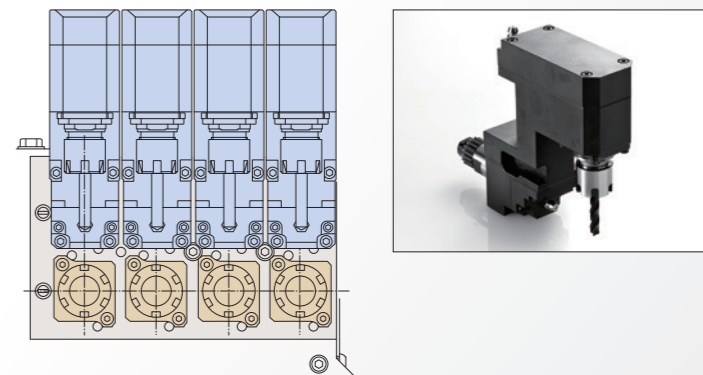
case01 Mounting of adjustment type slotting unit

- Mountable on positions from T21 to T24
- Not continuously mountable on adjacent position



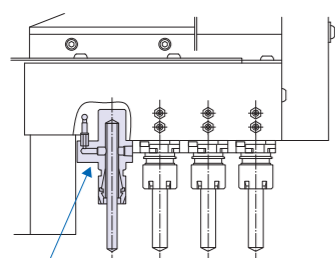
case01 Mounting of cross drilling unit for ER16

- Mountable on positions from T21 to T24
- Continuous mounting to neighboring positions



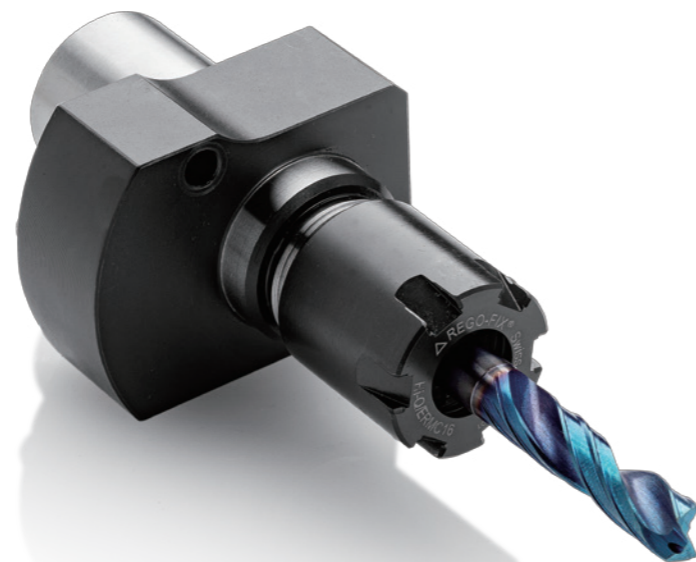
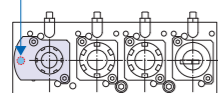
07

Coolant-through type compliant

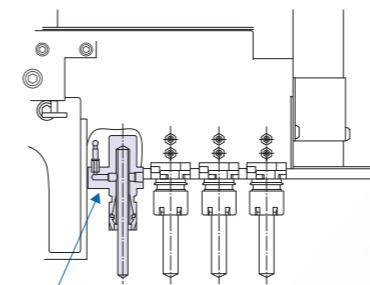


Tool unit only for coolant-through tools

Discharge port: 1 section

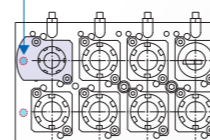


Coolant-through type compliant



Tool unit only for coolant-through tools

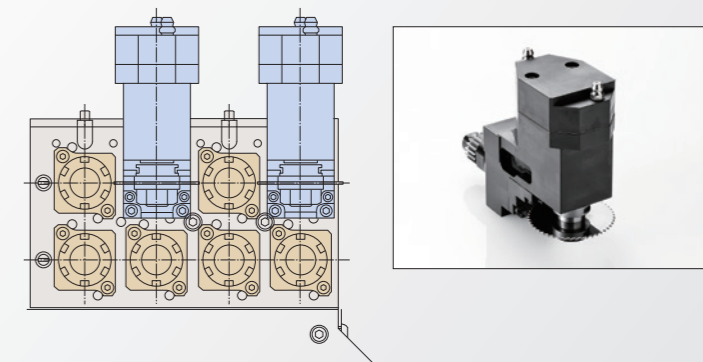
Discharge port: 2 section



08

case02 Mounting of slotting unit

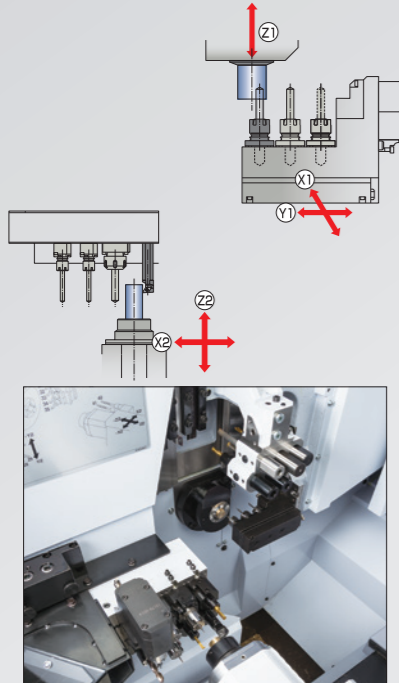
- Mountable on positions from T21 to T24
- Not continuously mountable on adjacent position



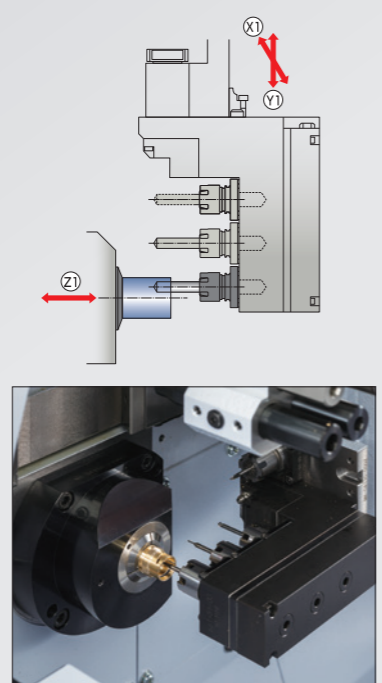
Machining variations for wider needs

Front working variation

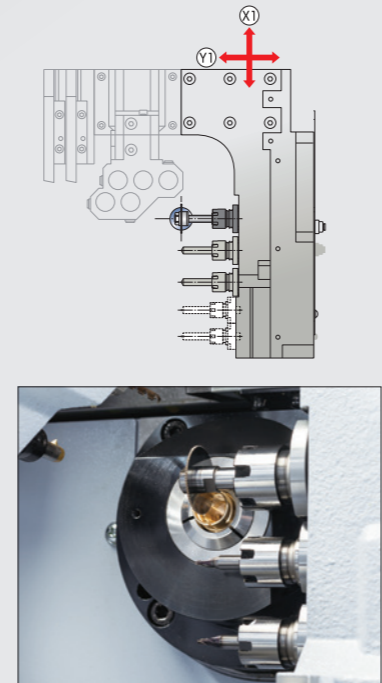
VARIATION 01
Overlapped machining of main and back machining



VARIATION 02
Front eccentric drilling

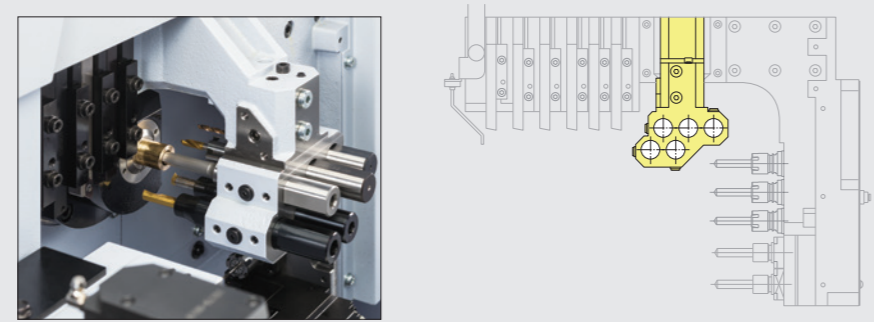


VARIATION 03
T-slot cutter machining



Slitting by T-slot cutter

VARIATION 04
5-spindle drilling process at front-end



Whereas SR20J is equipped with 4-spindle sleeve holders, SR20JII is equipped with 5-spindle sleeve holders

Back working variations

VARIATION 01
Outer diameter processing at rear-end




VARIATION 02
Cross processing at rear-end
*Type B



VARIATION 03
Rear eccentric drilling





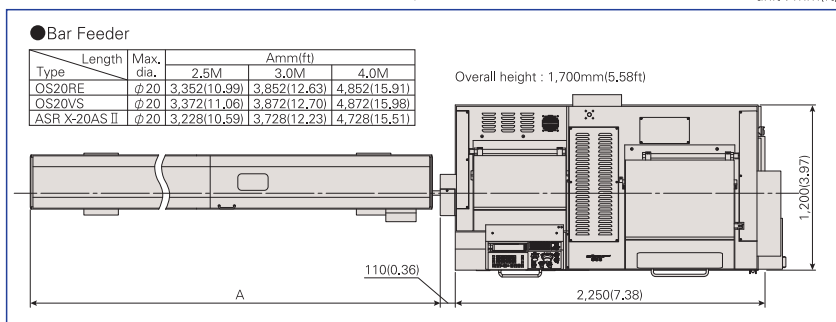
□ Standard Machine Specifications

Item	Specifications	
Max. machining diameter	φ20mm(25/32in) OP : φ23mm(29/32in)	
Max. headstock stroke	Standard	205mm(8in)
	R.M.G.B. type	160mm(6-19/64in)
	N.G.B.type	Bar diameter×2.5(Max.50mm) (Max.1-31/32in)
Tool	Number of tools	6 tools
	Tool shank	□12mm
5-spindle sleeve holder	Number of tools	Front 5 tools Rear 5 tools
	Max. drilling capability	φ12mm(1/2in)
	Max. tapping capability	M10×P1.5
	Number of tools(sleeve)	2 tools
2-spindle front sleeve holder	Max. drilling capability	φ10mm(25/64in)
	Max. depth of hole	100mm(3-15/16in)
	Number of tools	Cross milling 3 tools(ER16) + Cartridge type 2Pos. Cross milling 3 tools(ER20×1, ER16×2) + Cartridge type 2Pos.
Power driven attachment	Max. drilling capability	φ10mm(25/64in)
	Max. tapping capability	M8×P1.25
	Spindle speed	Max.8,000min ⁻¹
	Drive motor	2.2kW
Rapid feed rate	35m/min(X1, X2, Y1, Z1, Z2), 24m/min(Y2) : type B only	
Main spindle indexing angle	C-axis control	
Main spindle speed	Max.10,000min ⁻¹	
Main spindle motor	2.2kW(continuous) / 3.7kW(10min./25%ED)	
Coolant tank capacity	202ℓ	
Dimensions (WxDxH)	2,250×1,200×1,700mm	
Weight	2,750kg	
Power consumption	4.8kVA	
A-weighted sound pressure : note-1	Max.74.0dB	

□ Backworking Attachment Specifications

Item	Specifications	
Max. chucking diameter	φ20mm(25/32in) OP : φ23mm(29/32in)	
Max. length for front ejection	100mm(3-15/16in)	
Max. parts projection length	30mm(1-3/16in)	
Number of tools	4 tools(type A)	
	8 tools(type B)	
Unit especially for backworking	Max. drilling capability	Stationary tool φ12mm(1/2in) Power driven tool φ6mm(15/64in)
	Max. tapping capability	Stationary tool M10×P1.5 Power driven tool M5×P0.8
	Power-driven att. spindle speed	Max.8,000min ⁻¹
	Power-driven att. drive motor	1.0kW
Sub spindle indexing angle	C-axis control	
Sub spindle speed	Max.10,000min ⁻¹	
Sub spindle motor	2.2kW(continuous) / 3.7kW(10min./25%ED)	

□ External Dimensions and Floor Space



□ Standard Accessories and Functions

- CNC unit FANUC 32i-B
- Operation panel 10.4-inch color LCD display
- Pneumatic unit
- Coolant level detector
- Automatic centralized lubrication unit
- Door interlock system
- Cs contouring control (Main/Sub)
- Spindle clamp unit (Main / Sub)
- Revolving guide bush unit
- Drive unit for revolving guide bush
- Air purge for revolving guide bush
- Main / Sub collet
- 6-station tool holder □12mm
- Cross drilling unit (Gang type tool post)
- 5-spindle sleeve holder
- Broken cutoff tool detector
- Backworking attachment
- 4-spindle backworking unit ※Type A
- 8-spindle backworking unit with Y-axis control function ※Type B
- Parts conveyor
- Sub spindle air purge unit
- Sub spindle air blow unit
- Drive unit for power-driven attachment (8-spindle backworking unit) ※Type B
- Work light
- Leakage brake

□ Optional Accessories and Functions

- Coolant flow detector
- Water removal unit
- Oil mist filter
- Beacon
- Main spindle inner tube
- Feed arrow steady rest
- Rotary magic guide bush unit
- Non-guide bush type
- Drive unit for power-driven attachment B (4-spindle backworking unit) ※Type A
- Parts ejector (Spring type)
- Parts ejector (Air cylinder type)
- Parts ejector with guide tube
- Parts stopper unit
- Coolant unit (6.9MPa/2.5MPa/0.7MPa)
- Coolant unit signal cable
- Coolant unit power cable
- Coolant valve
- Coolant pipings
- Automatic bar feeder interface
- LAN/RS232C interface
- Transformer
- Transformer CE marking version
- CE marking specifications

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.

- note-1 : ● Measures conforming to ISO standard.
● A-weighted sound pressure is a general assessment standard characteristic that corrected the sound level to human acoustic sense.

※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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