

SWISS TYPE AUTOMATIC LATHE equipped with star motion control system 

SV-20R





SV INNOVATION

Outstanding capability and flexibility for the machining of complex mill turn components. The most advanced $\phi 20$ -class model in the SV series has been upgraded from every angle to enable the user to manufacture even the most complicated components

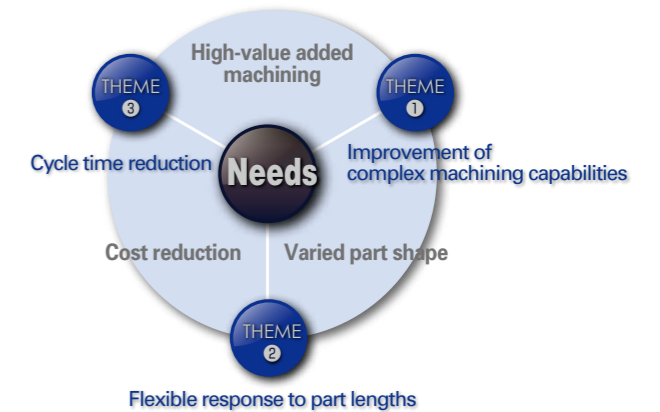
The latest upgrade of the ever popular SV-20 offers even more functionality, capability and productivity for mill turn components.



B axis control + Back working Y axis control
Equipped with the Star Motion Control function,
higher speed and larger variety of complex
machining is achieved.

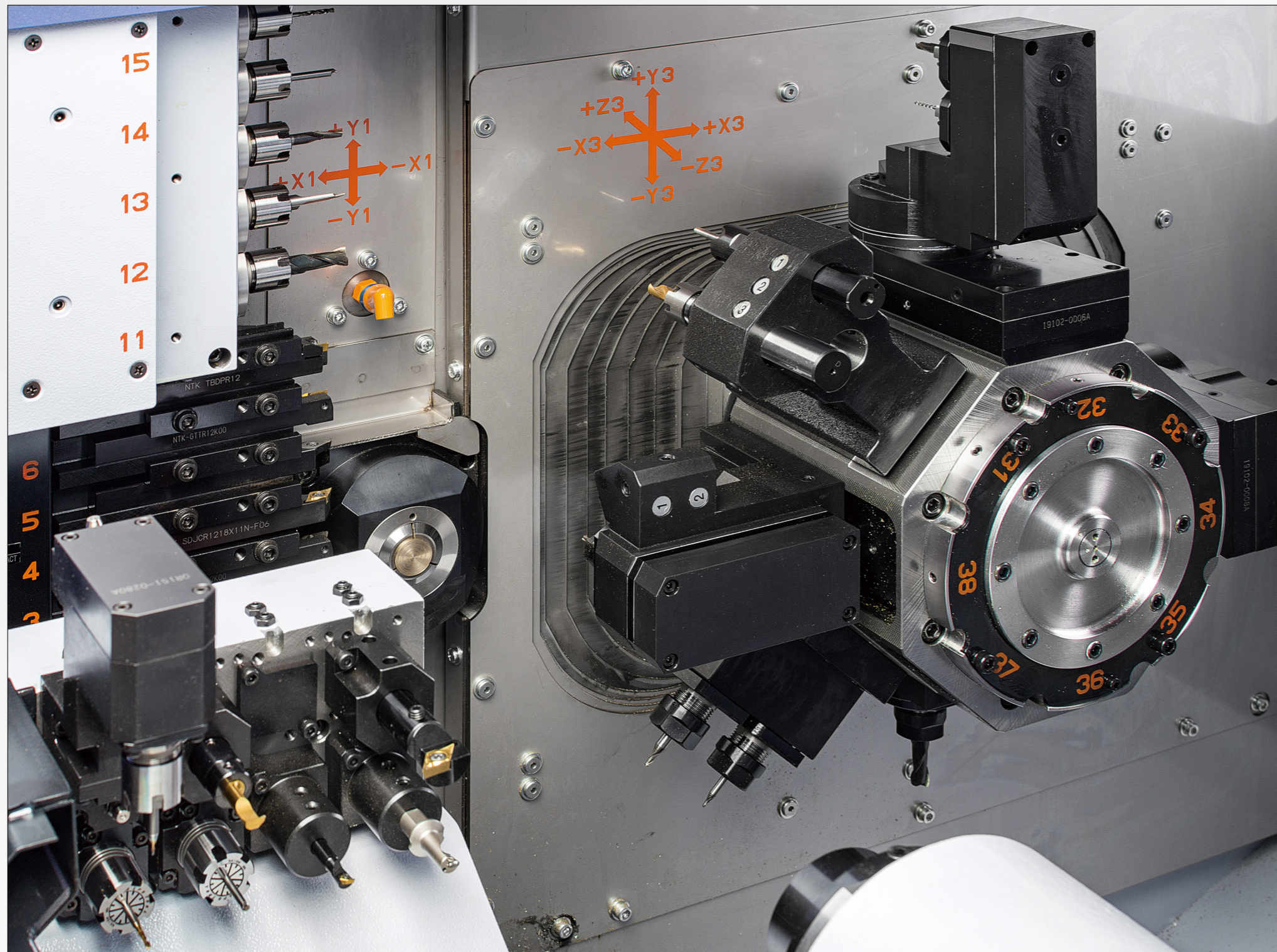
FEATURE

- 8-position turret type tool post equipped with a B axis control mechanism enables simultaneous 5-spindle machining of complicated shape parts and angle hole machining.
- 8-spindle back working unit with additional Y-axis function ensures the maximum overlapping of operations to further improve machine output.
- The G.B./N.G.B. function provides the user with the ability to maximize part manufacture per bar.
- Tool post structure suited for flexible overlap machining and Star Motion Control function contributes to the further reduction of non-cutting time.



SWISS TYPE AUTOMATIC LATHE
 equipped with star motion control system

SV-20R



Gang type + 8-position turret-type + Back working tool post
The layout provides the User with multiple tooling options
and unrivalled overlapping functions.

Gang-type tool post + 8-position turret-type tool post with B axis control + Back working 8-spindle unit with Y axis control and the Star Motion Control for high-level complex machining and superb productivity. The G.B./N.G.B. switching function for flexible response to the varied part shape. The combination of the machine design and expanded support software contributes to improved ease of operation and further increases machine output. Performance required for parts machining today are thoroughly explored from every angle to achieve the latest and the best model in the SV series. SV-20R, the model for the next generation of complex small part machining.

SV-20R

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
 - Turret type Tool post
 - Backworking 8-spindle unit with Y-axis control

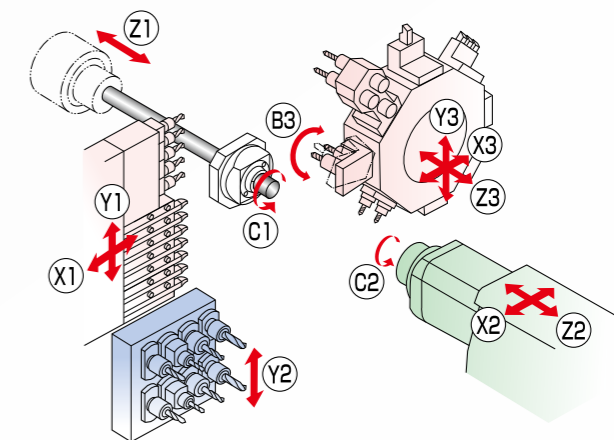


Illustration of tool layout : Guide bush type

Complex machining capability for the manufacture of components for the Medical, Aerospace and Automotive industries.

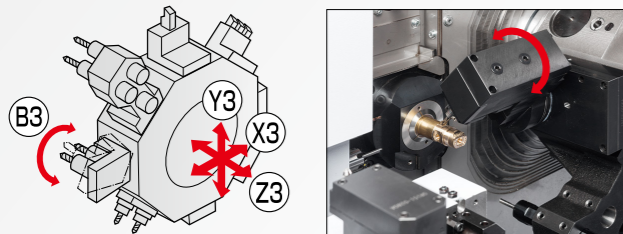
TOOLING SYSTEM

■ Gang type Tool post	Turning tool	6 tools (□16mm), 7 tools (□12mm)
	Power-driven tool	5 tools
■ Turret type Tool post	Turning tool	1 tools / station (□16mm) max. 3 tools / station (□12mm)
	Sleeve	max. 3 tools / station
	Power-driven tool	max. 2 tools / station
	Stationary tool	max. 2 tools / station
■ Back 8-spindle unit	Stationary tool	Total 8 tools (Power-driven tool : max. 8 tools)
	Power-driven tool	

Improvement in High Functionality and Machining Capability

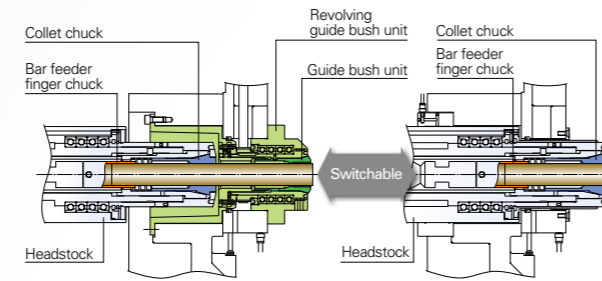
8-position turret-type tool post with B axis control mechanism

2-spindle power tool unit for B axis control can be mounted on a maximum of 4 positions on the turret-type tool post. Machining of inclined surfaces including angular holes on both the front and the back side is possible. Simultaneously controlled 5-spindle machining is possible.



G.B./N.G.B. switching function

The type best suited to any size of workpiece is selectable from the G.B. and the N.G.B.



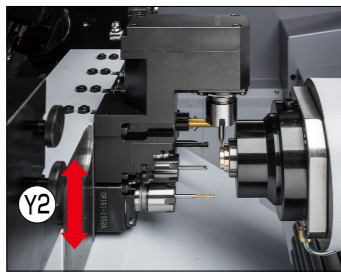
Guide bush type
Highly accurate machining of motor shafts and other long parts by suppressing material deflection with the G.B. type.

Non-guide bush type
The N.G.B. type for machining nuts and other short parts with less residual materials to reduce material costs and increase output.

Back working 8-spindle unit with Y axis control function specially for back machining

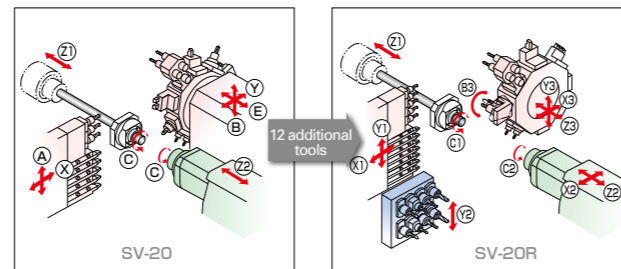
Back working tool post with Y axis control to mount a power tool unit to accommodate a maximum of 8 tools.

A back working 8-spindle unit is mounted as standard. Various power tool units are also available for versatile complex machining on the rear side. By combining with the sub spindle with 2-axis (X, Y) control function, three dimensional machining is possible.



Tool stations maximum of 28 pos.

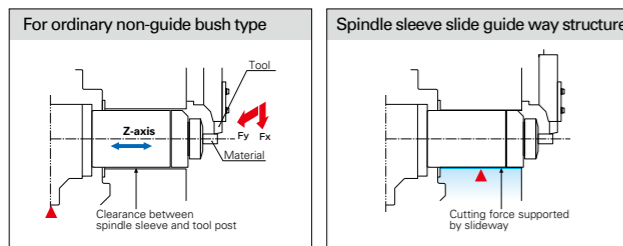
Compared with SV-20, the number of tools to mount is increased by max. 12 to allow a larger variety of tooling layouts.



Achievement in High Rigidity and High Accuracy

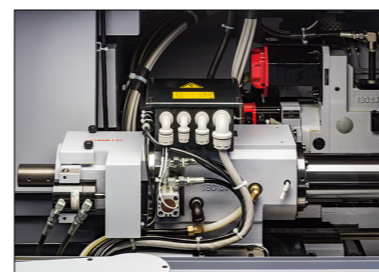
A high rigid spindle sleeve slide guideway structure for N.G.B. type

The N.G.B type employs a spindle sleeve slide guideway structure to support the cutting force on the guideway, thus suppressing spindle deflection and realizing accurate machining. Rigidity of the headstock is ensured and continuous machining with stable accuracy is achieved.



A built-in spindle for high indexing accuracy

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



Suppression of thermal displacement

The X2, X3 and Y3 axes are equipped with a thermal displacement correction switch each for correcting thermal displacement based on the measurement results.

Improvement in Operability and Workability

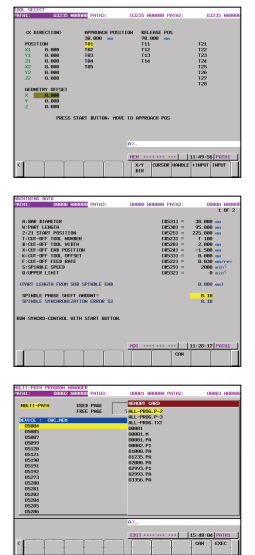


Machine design in consideration of setup & maintenance works

- 1 A cutting chamber uses a large-opening (1,154mm), flip-up door. SV-20 : 463mm ⇒ SV-20R : 1,154mm
- 2 The headstock chamber employs a link-type door which opens upward of the machine to realize a larger opening. SV-20 : 390mm ⇒ SV-20R : 772mm

Fulfilling operation support software

- 1 "Center height adjustment function" to enable measurement of the tool center height on the gang edge side by handle operation.
- 2 "Spindle synchro phase adjustment function" for simple operation by only following the guidance displayed on the NC screen.
- 3 "Multi-path program control function" for reduction of input/output operation by putting 3-path programs into one file.

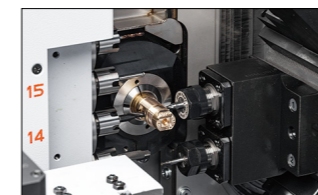


Pursuit of High Productivity

Machining time reduction (mechanical system)

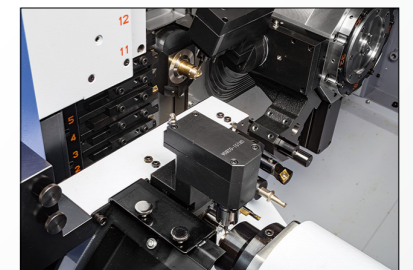
Simultaneous machining on gang type and turret type

Simultaneous machining of turning, milling, etc. by combining the gang type and turret type tool posts to realize reduced cutting time.



Flexible overlap machining

The 8-spindle unit with Y-axis control for back working can accommodate a maximum of eight power tools of various kinds. A wider variety of back working allows efficient front-/rear-end overlap machining. Cutting time is also reduced by optimized process division.



Higher output power of power tool motor

The power tool motor used for the gang-type tool post has high output power. (SV-20 : 0.5kW ⇒ SV-20R : 2.2kW)

Improvement in rapid feed

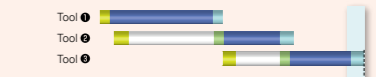
Improvement in rapid feed; Z axis feed on the main and sub spindle: 30m/min, X/Y axis on the gang-type tool post: 30m/min, X/Z axis on the turret-type tool post: 30m/min, Y axis: 15m/min.

Machining time reduction (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.

Concept of reduction of non-cutting time

Conventional CNC-controlled machining



Machining through Star motion control system

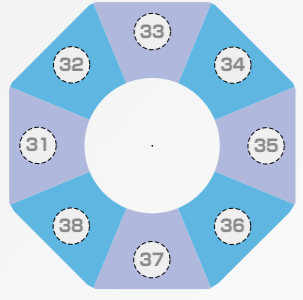
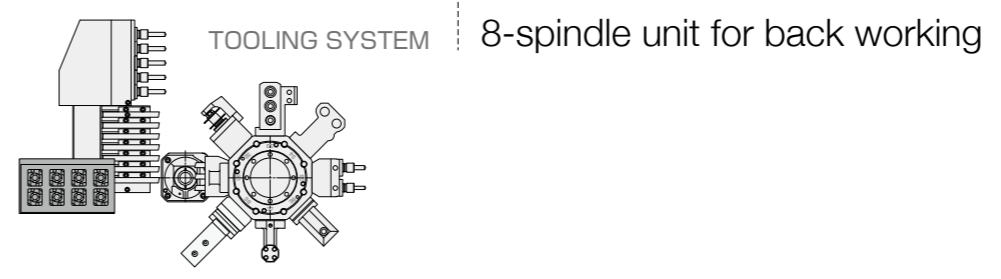
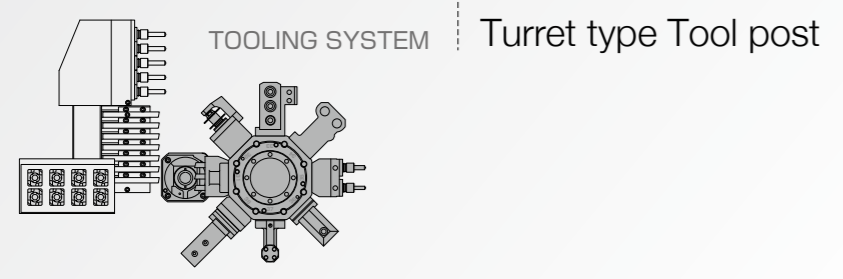


Star motion control system on board

Reduction of non-cutting time for switching the control system, changing tools, etc.



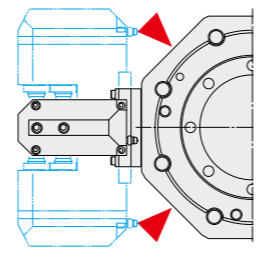
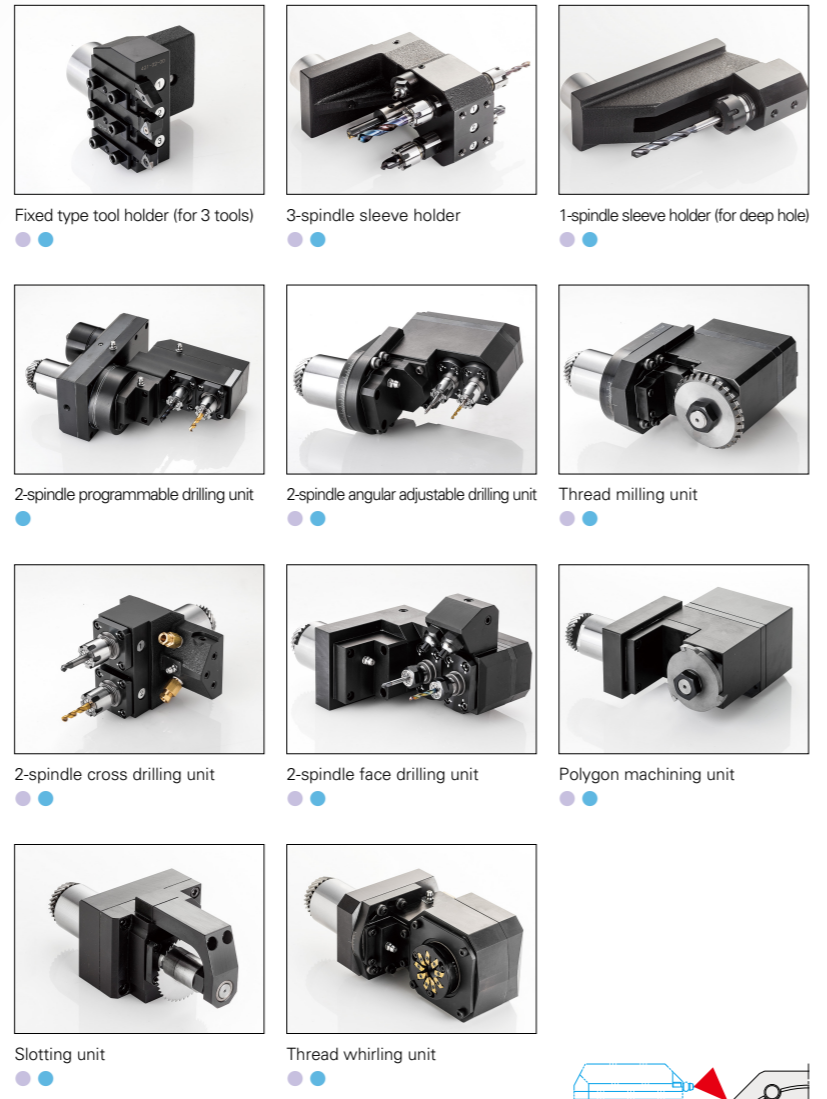
In search of high functionality, accuracy and productivity from every angle



Best tooling system to cover a wide range of machining needs

Tool unit (turret side)

	On-board unit	Mountable positions
Fixed type tool holder	●	●
Fixed type tool holder (for 3 tools)	●	●
Center adjustable tool holder	●	●
3-spindle sleeve holder	●	●
1-spindle sleeve holder	●	●
1-spindle sleeve holder (for deep hole)	●	●
2-spindle programmable drilling unit	●	●*
1-spindle face drilling unit	●	●
2-spindle face drilling unit	●	●
Opposing type face drilling unit	●	●
2-spindle opposing type face drilling unit	●	●
Cross drilling unit	●	●
2-spindle cross drilling unit	●	●
2-spindle rapid feed cross drilling unit	●	●
Slotting unit	●	●
Angular adjustable drilling unit	●	●*
2-spindle angular adjustable drilling unit	●	●*
Polygon machining unit	●	●
Thread milling unit	●	●
Thread whirling unit	●	●



* When mounting a unit on both neighboring positions, the swivel angle is limited.



* Two cross drilling units and two slotting units can be mounted. (on positions not adjoining).
 * By mounting a quad-speed unit, the maximum rotation speed of other power tool units is clamped at 5000min⁻¹.

● Power driven tools (on the back side) / Stationary tools (on the back side)

Power driven tools (on the back side)

	On-board unit	Mountable positions
Drill sleeve ER16	●	● 24 ● 23 ● 22 ● 21 ● 28 ● 27 ● 26 ● 25
Oil hole drilling type back working unit	●	● 24 ● 23 ● 22 ● 21
Cross drilling unit *	●	● 24 ● 23 ● 22 ● 21
Slotting unit *	●	● 24 ● 23 ● 22 ● 21

Stationary tools (on the back side)

	On-board unit	Mountable positions
Drill sleeve ER20	●	● 24 ● 23 ● 22 ● 21 ● 28 ● 27 ● 26 ● 25
Bowling sleeve	●	● 24 ● 23 ● 22 ● 21 ● 28 ● 27 ● 26 ● 25
Quad-speed milling unit	●	● 24 ● 23 ● 22 ● 21

An abundant line-up of tooling units for milling, cross drilling and slotting as 8-spindle back working units is available. This expands the availability of machining variations by allowing selection of the most appropriate tooling layout suited to user needs.

Machining Capabilities to Meet Diversified Needs for Parts Machining.

VARIATION 01

Front-end working
Oposing cross machining

VARIATION 04

Rear-end working
Back cross machining

VARIATION 02

Front-end working
Back slanting machining with B-axis power tools

VARIATION 05

Rear-end working
Back eccentric drilling

VARIATION 03

Front-end working + Rear-end working
Main / back simultaneous machining

VARIATION 06

Rear-end working
Back slanting machining with B-axis power tools

□ Standard Machine Specifications

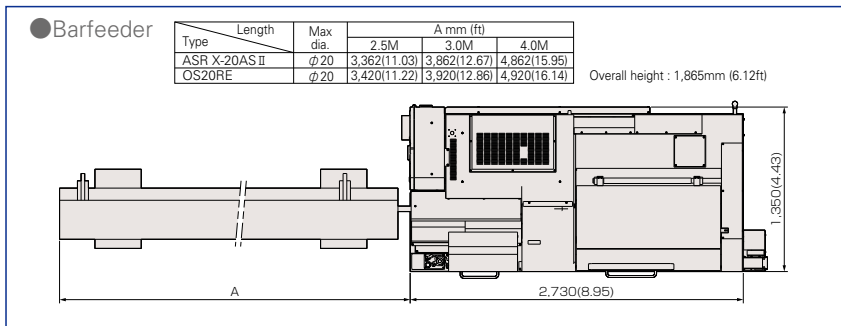
Item		Specifications	
Max. machining diameter		φ20mm(25/32in)OP: φ23mm(29/32in)	
Max. headstock stroke	Standard	205mm(8in)	
	R.M.G.B. type	160mm(6-19/64in) : OP	
	N.G.B. type	Bar diameter×2.5(Max.50mm)(Max.1-31/32in)	
Tool post configuration	Gang type	Turning tool + Power-driven tool	
	Turret type	8 stations	
Tool	Gang type	6 tools(□16mm), 7 tools(□12mm)	
	Turret type	1tool / station(□16mm), Max.3tools / station(□12mm)	
Sleeve	Number of tools	Max.3tools / station	
	Max. drilling capability	φ14mm(35/64in)	
	Max. tapping capability	M12×P1.75	
Power driven attachment	Number of tools	Gang type	5 tools
		Turret type	Max.2tools / station(mountable at each 8 positions)
	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.8,000min ⁻¹
Turret type		Max.5,750min ⁻¹	
Drive motor	Gang type	2.2kW	
	Turret type	2.7kW(continuous) / 4.0kW(5min. / 30%ED)	
Rapid feed rate		30m/min(X1,X2,X3,Y1,Z1,Z2,Z3)	
		20m/min(Y2),15m/min(Y3)	
Main spindle indexing angle		C-axis control	
Main spindle speed		Max.10,000min ⁻¹	
Main spindle motor		3.7kW(continuous) / 5.5kW(10min. / 60%ED)	
Coolant tank capability		220ℓ	
Dimensions (W×D×H)		2,730×1,350×1,865mm	
Center height		1,125mm	
Weight		4,150kg	
Power consumption		6.3kVA	

□ Backworking Attachment Specifications

Item		Specifications	
Max. chucking diameter		φ20mm(25/32in)OP: φ23mm(29/32in)	
Max. length for front ejection		105mm(4-9/64in)	
Max. parts projection length		75mm(2-61/64in)	
Back 8-spindle unit	Number of tools	Stationary tool	8 tools
		Power driven tool	Max.8 tools
	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(continuous) / 1.2kW(5min. / 30%ED)	
Sub spindle indexing angle		C-axis control	
Sub spindle speed		Max.10,000min ⁻¹	
Sub spindle motor		2.2kW(continuous) / 3.7kW(10min. / 40%ED)	

□ External Dimensions and Floor Space

Unit : mm(ft)



□ Standard Accessories and Functions

- CNC unit FANUC 31i-B5
- Power electric & Operation panel & 10.4-inch color LCD
- Pneumatic unit
- Hydraulic unit
- Spindle cooling unit
- Automatic centralized lubrication system (with level detecting function)
- Cutting oil level (lower limit) detecting unit
- Door interlock system
- Broken cutoff tool detector
- C-axis control (Main / Sub)
- Spindle clamp unit (Main / Sub)
- Drive unit for revolving guide bush
- Revolving guide bush unit
- Main/Sub collet
- Air purge for revolving guide bush
- Sub spindle air purge unit
- Tool holder (Gang-type tool post)
- 5-spindle milling unit (Gang-type tool post)
- Drive system for power-driven attachment (Turret-type tool post)
- Back 8-spindle unit
- Drive system for power-driven attachment B (Back 8-spindle unit)
- Parts conveyor
- Automatic bar feeder interface
- RS232C interface
- Work light (for cutting chamber and headstock chamber)
- Leakage breaker

□ Optional Accessories and Functions

- Coolant flow detector
- Parts ejection detector
- Water removal unit
- Oil mist filter
- Beacon
- Non-guide bush type
- Rotary magic guide bush unit
- For pneumatic unit rotary magic guide bush
- Main spindle inner tube
- Parts ejector (Air cylinder type)
- Parts ejector (Spring 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
- Manual pulse generator
- Transformer CE marking version
- CE marking version
- Tool Presetter

STAR MICRONICS CO., LTD.

Machine Tools Division

1500-34 Kitanoya, Misawa, Kikugawa, Shizuoka, 439-0023 Japan

America, Europe Sales TEL.+81-537-36-5594 FAX.+81-537-36-5607

Asia Sales TEL.+81-537-36-5574 FAX.+81-537-36-5607

Star CNC Machine Tool Corporation
123 Powerhouse Road, Roslyn Heights, NY 11577, U.S.A.
TEL.+1-516-484-0500 FAX.+1-516-484-5820

Star Micronics GB Limited
Unit 1 Riverlands Business Park Raynesway DERBY DE21 7BZ
TEL.+44-1332-86-44-55 FAX.+44-1332-86-40-05

Star Micronics GmbH
Robert-Grob-Str.1,D-75305 Neuenburg,Germany
TEL.+49-7082-7920-0 FAX.+49-7082-7920-20

Star Micronics AG
Lauetstrasse3,CH-8112 Otelfingen,Switzerland
TEL.+41-43-411-60-60 FAX.+41-43-411-60-66

Star Machine Tool France
90 Allée de Glaisy,ZI 74300 Theyez Haute Savoie,France
TEL.+33-450-96-05-97 FAX.+33-450-96-91-54

Shanghai Xingang Machinery Co.,Ltd.
2F, 229 Fute Rd.N. The China (Shanghai) Pilot Free Trade Zone
TEL.+86-21-5868-2100 FAX.+86-21-5868-2101

Star Micronics (Thailand) Co.,Ltd.
289/23 M.13 Soi Kingkaew 25/1, Kingkaew Rd.,T.Rachathewa A.Bangplee Samutprakarn 10540,Thailand
TEL.+66-2-186-8945-47 FAX.+66-2-183-7845

<http://www.star-m.jp/eng/>

9001 ISO 14001
CERTIFIED

2018.07_Ver1.0_1

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.