CNC SWISS TYPE AUTOMATIC LATHE **Type C**

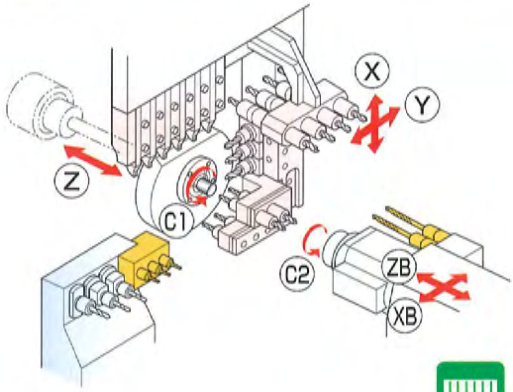
CNC AUTOMATIC LATHE [Non-Guide-Bush Type] **Type N**

SR-20J

ECO

STAR Environmental Standards Conformity models

Upgraded Functions
to Cover the Wider Range of Machining Needs



TOOLING SYSTEM

■ Tool holder	Turning tool	6 tools
■ 4-spindle sleeve holder	Front-end stationary tool	4 tools
	Rear-end stationary tool	4 tools
■ Power-driven tool	Cross machining tool only : 4 tools / Cartridge type : 2Pos	
■ 2-spindle front sleeve holder	Front-end stationary tool	2 tools
■ Back 4-spindle unit		4 tools ~ 6 tools

* : type C　** : type N

SR-20J type C

CNC SWISS TYPE AUTOMATIC LATHE

The 3-spindle back drill unit and back-working cross drill unit broaden the machining range.

❶High-Precision Machining Assured by High-Rigidity Design

High rigidity that supports high accuracy is achieved by employing a rigid tool post of a slanted slideway structure and a rear head stock of a Z/B axis slideway structure.

❷Maximum Six Back-working Tools Additionally Available

By mounting the 3-spindle back drill unit on the 4-spindle back drill unit, a maximum of 4 tools can be additionally mounted on the rear side.

❸Cross Drilling on the Rear Side Optionally Available

The cross drill unit for back-working enables cross drilling on the rear side.

The 4-spindle back-working unit can also be equipped with a variety of rear-end working units.

Slanted slide guideway structure **High rigidity tool post**

Traditional High Accuracy Machining by Rigid Design from this Series

The SR-20J tool post employs a slant-type slide guideway structure. This enables the construction of the X and Y axes guideways radially around the cutting point to improve machine rigidity. The construction also allows a linear line which passes the ball screw center and forms to be close to the cutting point (Fig. a1 on the right), and reduces the moment load by cutting resistance improves the tool post rigidity in the Y and Z axes directions. The Star original rigid tool post structure allows for an extended tool life and stable accuracy even in continuous machining over time.

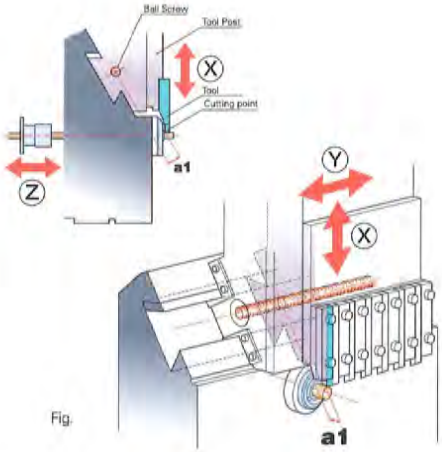


Fig.

Comparison of moment load by cutting force

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

Slant type ● My=1
Vertical type ● My=1.3
Horizontal type ● My=1.9

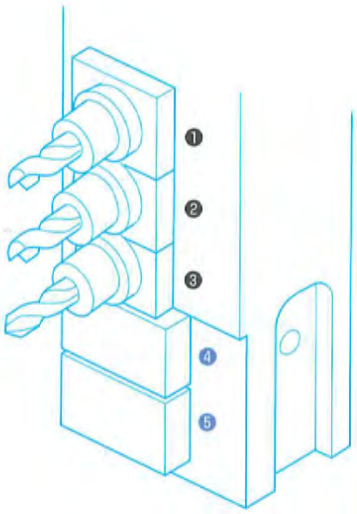
*My (M1+M2)

Comparison of moment load by feed force

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

Slant type ● Mz=1
Vertical type ● Mz=1.3
Horizontal type ● Mz=1.5

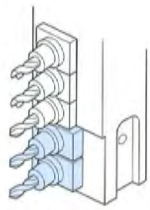
5-Spindle Cross Drill Unit

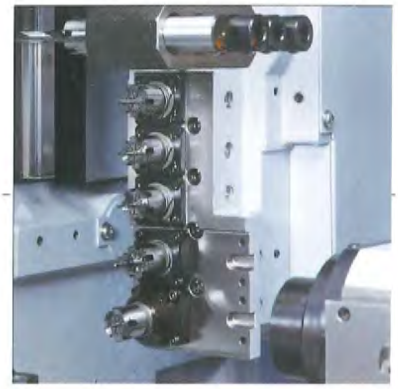


Standard type

POS. ❶ Power cross drill
❷ Power cross drill
❸ Power cross drill
❹ Cartridge position
❺ Cartridge position

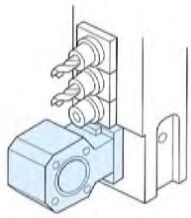
VARIATION 01

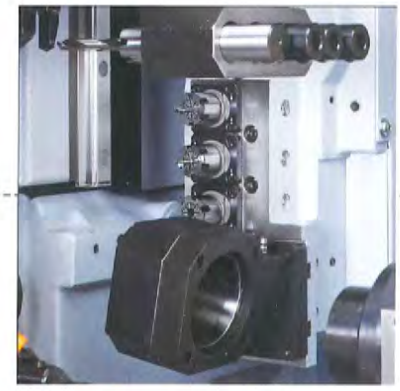




❶ ❷ ❸ Standard type
❹ Cross drill unit
❺ Cross drill unit

VARIATION 03





❶ ❷ Standard type
❸ —
❹ ❺ Thread whirling unit

Milling unit ER16

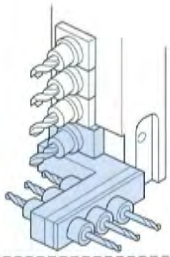
Tool Unit

☐ 2-spindle opposing front drill unit

☐ 3-spindle opposing front drill unit

Diversity of Tooling Layouts by Cartridge System

VARIATION **02**

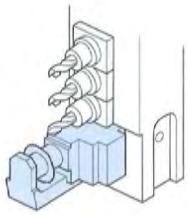


❶ ❷ ❸ Standard type

❹ Cross drill unit

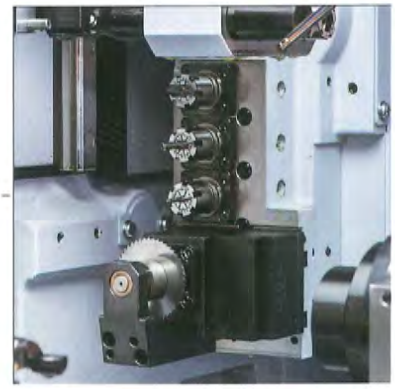
❺ 3-spindle opposing drill unit

VARIATION **04**



❶ ❷ ❸ Standard type

❹ ❺ Slotting unit



Deep Hole Drilling **2-spindle face attachment**

The 2-spindle face attachment is mounted as standard to cope with deep hole drilling.
By combining with the high-pressure coolant unit (optional), deep hole drilling of maximum 100mm is possible using an oil hole drill.

☐ For coolant piping oil hole drill

☐ 3-spindle back drill unit

☐ Single-spindle cross drill unit

☐ Polygon machining unit

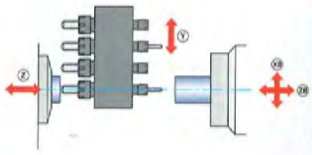
☐ Slotting unit

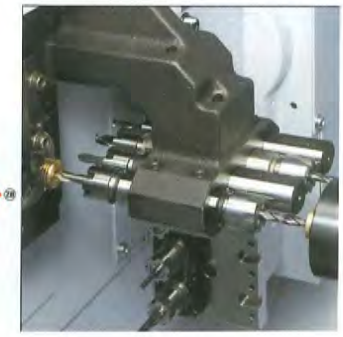
☐ Thread whirling unit

Machining Variations to Cover Many Needs

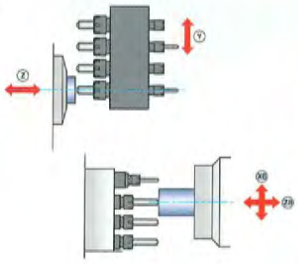
Front-end working

Front / rear-end simultaneous drilling

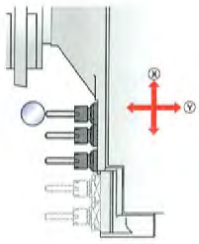




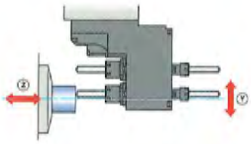
Overlapped machining of main and back machining

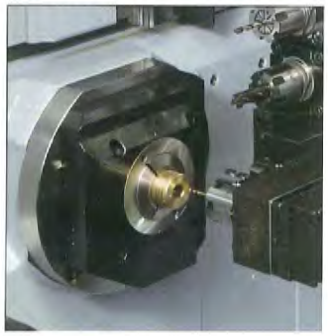


Cross drilling



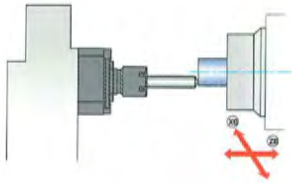
Off-center drilling



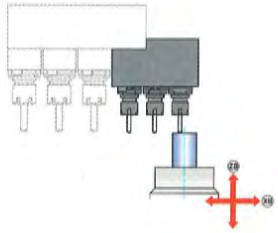


Rear-end working

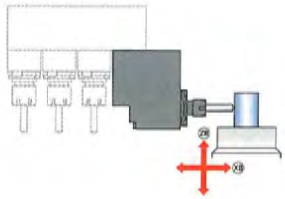
Back off-center machining



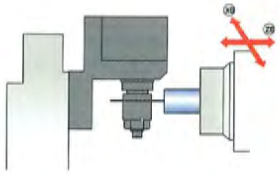
Back off-center drilling by 3-spindle back drill unit



Back cross drilling



Back slotting



Reduction of Remnant Bar Length to 70mm in Response to the Need for Cost Reduction

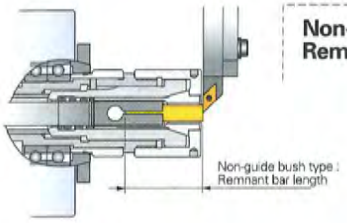
SR-20J type N

CNC AUTOMATIC LATHE [Non-Guide-Bush Type]

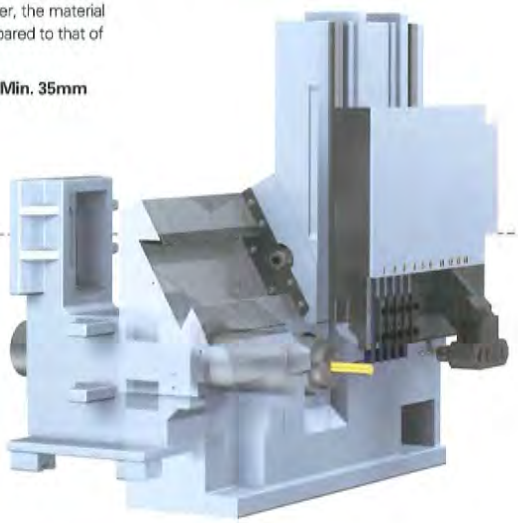
Elimination of a guide bush allows the effective use of materials for short-bar machining.

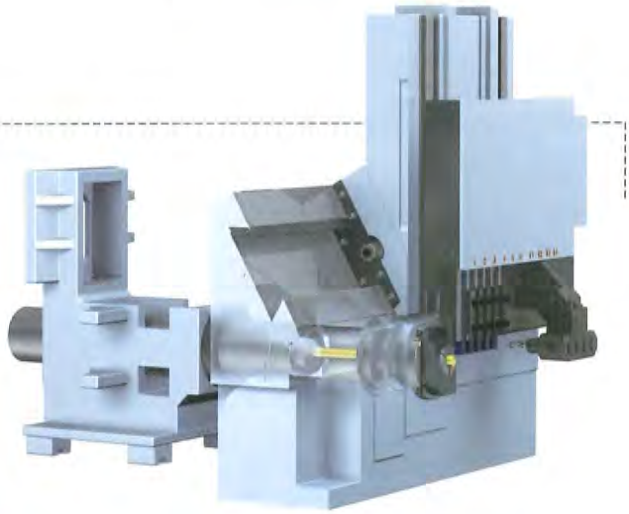
With the ordinary CNC Swiss type automatic lathe, a material equivalent to a length of passing through the guide bush from the material rear end becomes a remnant to be discarded. With the non-guide bush type, however, the material is clamped close to the machining position so that the remnant bar length is reduced by one third compared to that of the Swiss type. The latest N series reduces this remnant bar length to 70mm.

※ **Remnant bar length when the bar feeder used is a forward discharge type SR-20J type N : Min. 35mm**

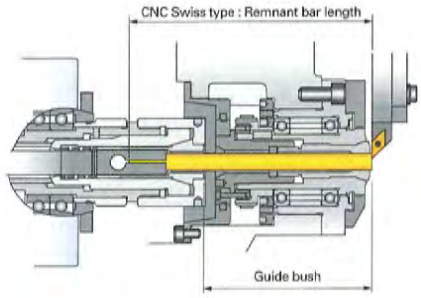


Non-guide bush type : Remnant bar length



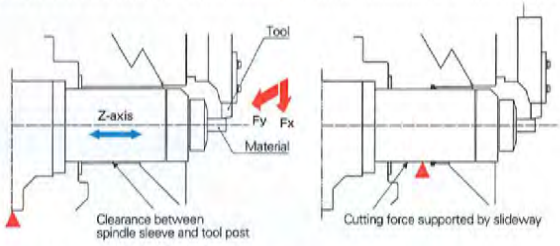


CNC Swiss type : Remnant bar length



High rigidity head stock for Type N

● Ordinary non-guide bush type ● For Type N series



Type N incorporates a spindle sleeve slideway structure.
This slideway supports the cutting force to realize highly rigid head stock.

Standard Machine Specifications

Item		SR-20J type C	SR-20J type N
Max. machining diameter		φ20mm(25/32in)	
Max. headstock stroke	Standard	205mm(8in)	Bar diameter×2.5
	With R.M.G.B. unit	172mm(6-25/32in)	(Max.55mm) (Max.2-11/64in)
Tool	Number of tools	6 tools	
	Tool shank	□12mm	
4-Spindle sleeve holder	Number of tools	Front 4 tools	
		Rear 4 tools	
	Max. drilling capability	φ10mm(25/64in)	
	Max. tapping capability	M8×P1.25	
2-spindle front sleeve holder	Number of tools(sleeve)	2 tools	
	Max. drilling capability	φ8mm(5/16in)	
	Max. depth of hole	100mm(3-15/16in)	
Power driven attachment	Number of tools	Cross milling : 3 tools	
		Cartridge type : At 2 position	
	Max. drilling capability	φ8mm(5/16in)	
	Max. tapping capability	M6×P1.0	
	Spindle speed	Max.8,000min^{-1}	
	Drive motor	1.2kw	
Rapid feed rate		35m/min(X,Y,Z,XB,ZB)	
Main spindle indexing angle		C-axis control	
Main spindle speed		Max.10,000min^{-1}	
Main spindle motor		2.2kw(continuous)／3.7kw(15min./60%ED)	
Coolant tank capacity		170ℓ	
Dimensions (W×D×H)		2,250×1,200×1,700mm	
Weight		2,200kg	
Power consumption		5.2KVA	
A-weighted sound pressure : note-1		Max. 69dB	

Backworking Attachment Specifications

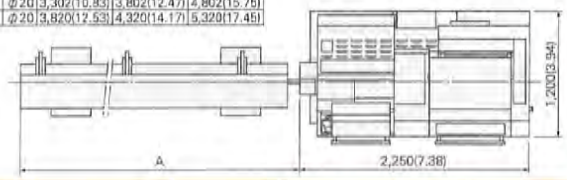
Item			Specifications
Max. chucking diameter			φ20mm(25/32in)
Max. length for front ejection			80mm(3-5/32in)
Max. parts projection length			30mm(1-3/16in)
Back 4-Spindle unit	Number of tools		4 tools
	Max. drilling capability	Stationary tool	φ8mm(5/16in)
		Power driven tool	φ5mm(3/16in)
	Max. tapping capability	Stationary tool	M8×P1.25
		Power driven tool	M4×P0.7
Power-driven attachment spindle speed			Max.8,000min-1
Power-driven attachment drive motor			0.5kw
Sub spindle indexing angle			C-axis control
Sub spindle speed			Max.8,000min-1
Sub spindle motor			1.5kw(continuous)/2.2kw(15min./50%ED)

External Dimensions and Floor Space

unit : mm(ft)

●Bar Feede

Type		Max. dia.	Length 2.5M	3.0M	4.0M
SR20S	type C	φ20	3,383(11.10)	3,883(12.74)	4,883(16.02)
	type N		3,315(10.87)	3,815(12.51)	4,815(15.79)
OS203E	type C	φ20	3,493(11.46)	3,943(12.93)	4,798(15.74)
	type N		3,434(11.26)	3,884(12.74)	4,739(15.54)
Z-16		φ20	3,302(10.83)	3,802(12.47)	4,802(15.75)
ASR X-20P		φ20	3,820(12.53)	4,320(14.17)	5,320(17.45)



Overall height : 1,700mm(5.58ft)

Standard Accessories and Functions

1. CNC unit FANUC 31i-B
2. Operation panel 10.4-inch color LCD display
3. Pneumatic unit
4. Automatic centralized lubrication unit
5. Coolant level detector
6. Door interlock system
7. Broken cutoff tool detector
8. Parts ejection detector
9. Drive unit for revolving guide bush ※
10. Revolving guide bush unit ※
11. Main／Sub collet
12. C-axis control (Main／Sub)
13. Spindle clamp unit (Main／Sub)
14. 6-station tool holder □12mm
15. Drive system for power-driven attachment (including the 3-spindle cross-milling unit)
16. 4-spindle sleeve holder
17. 2-spindle sleeve holder
18. Back 4-spindle unit
19. Drive unit for power-driven attachment B
20. Parts ejector (Spring type)
21. Parts conveyor
22. Air purge for revolving guide bush ※
23. Main spindle air purge unit ※※
24. Sub spindle air purge unit
25. Sub spindle air blow unit
26. Work light
27. Leakage breake

Optional Accessories and Functions

1. Coolant flow detector
2. Water removal unit
3. Beacon
4. Parts separator unit A
5. Main spindle inner tube ＊＊
6. Rotary magic guide bush unit ※
7. Parts ejector (Air cylinder type)
8. Parts ejector with guide tube ※
9. Parts stopper unit ※
10. Coolant unit 1.5MPa
11. Coolant unit 6.9MPa
12. Coolant pipings
13. Spindle 15° indexing unit
14. Stopper ※※
15. Automatic bar feeder interface
16. Compliant with the RS-232C interface
17. Transformer
18. Safety relay module version
19. Transformer CE marking version
20. Transformer CE marking specifications

※ type C only ※※ type N only
Units with ＊＊ mark differ to type C and type N

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.

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

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

9001 ISO 14001 CERTIFIED

Star CNC Machine Tool Corporation
123 Powerhouse Road, Roslyn Heights,NY11577,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 Neuenbürg,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 Allee de Glaisy,ZI,74300 Thyez 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

2017.05_Ver1.1_2