SWISS TYPE AUTOMATIC LATHE equipped with star motion control system

CNC SWISS TYPE AUTOMATIC LATHE

SD-26 series



ECO

STAR Environmental Standards Conformity models :



The long-awaited new machine, born from our focus on the needs for the 26-dia. class.

One inch special

The SD-26 series is a special machine focused on the 26-dia. machining range.

We collected the opinions of users from around the world, and thoroughly pursued the ideal machine from every element, such as machine rigidity, machining capability, and machine dimensions.

The machine could be optimized for the 26-dia. class with a special design.

Furthermore, we have a lineup of 4 types that perfectly fit various machining conditions.

The machine the industry has long awaited is now here.

Star's One-inch Special machine provides a new stage for complex machining.

CONCEPT & DESIGN ❶

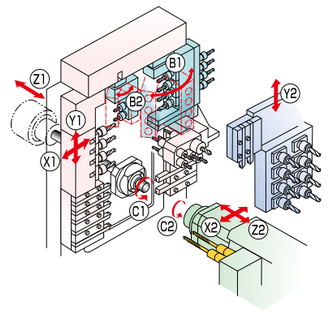
Optimization of the model configuration

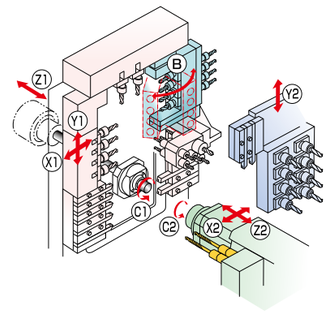
A lineup of 4 models that accurately cover the needs of the 8-dia. to 26-dia. volume zone. Realizes optimal tooling for a variety of machining conditions.

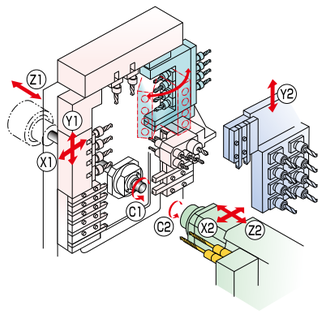
CONCEPT & DESIGN ❷

Optimization of machining capabilities

Machining capabilities are further enhanced with a double B-axis (type S only), high-speed & high-output spindle motor, turning tool of the back-working tool post, deep hole machining support, expansion of the cartridge position, etc.







Functionality, rigidity, workability... With the special design, everything has been leveled up to optimize for the needs of the 26-dia. class.

CONCEPT & DESIGN ❸

Optimization of machine rigidity

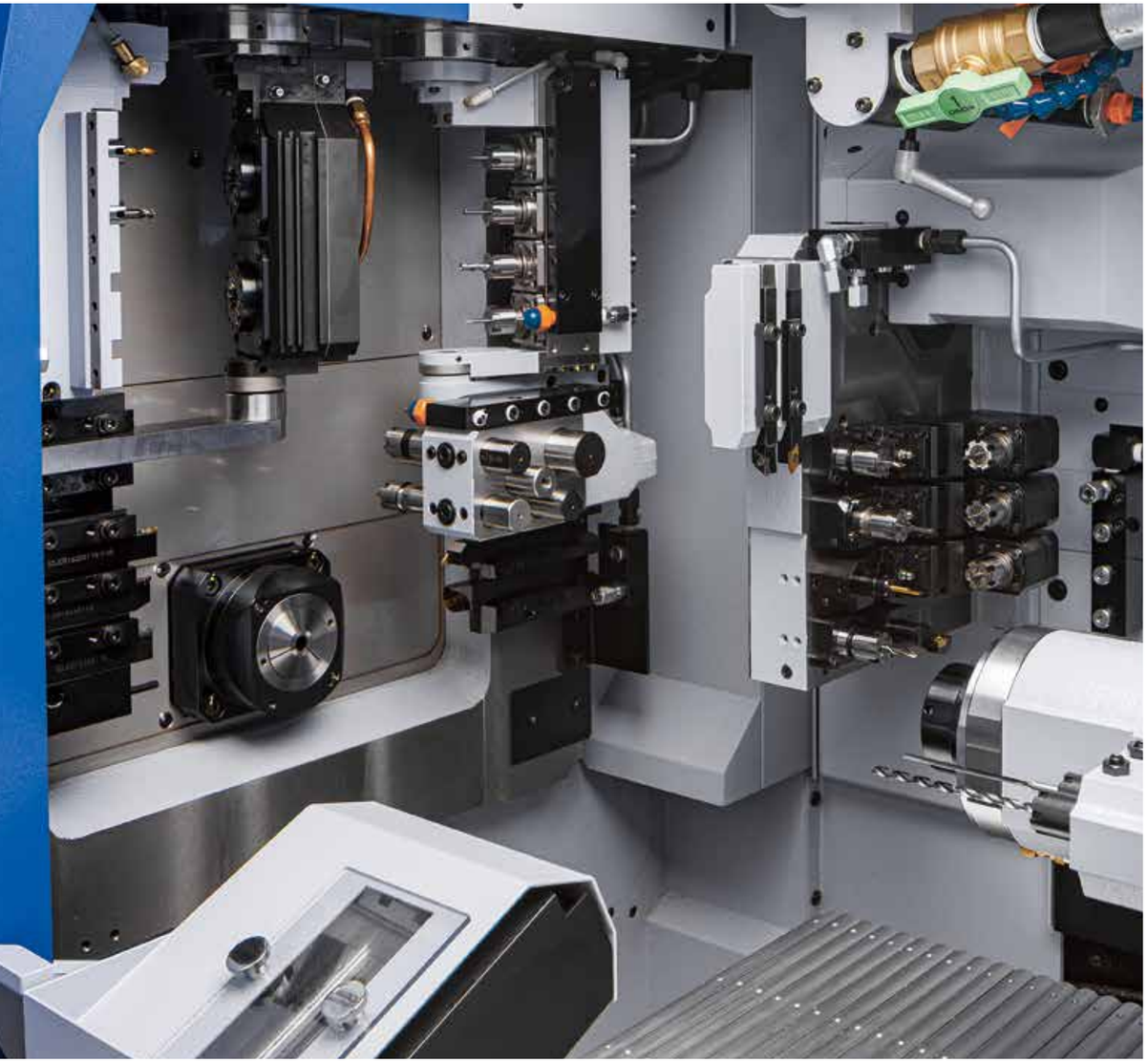
We pursue machine rigidity from every manner of perspectives, such as the platen type tool post employing uniform load cross guide structure, dovetail slide guideway structure of the back-working tool post, strengthening of the drive system of the B-axis, and both ends clamp structure.

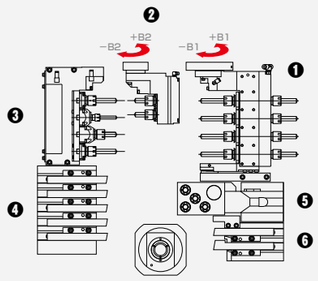
CONCEPT & DESIGN ❹

Optimization of the machine dimensions

With a special design which has the 26-dia. machining range filtered as the target, the pitch between tools and stroke are optimized, and the machine is designed to the required machine dimensions.

Equipped with star motion control system **Type S**





Type S	**Model equipped with double B-axis (simultaneous 5-axes control)**
Control method	Star motion control system (FANUC 31i-B5 Plus)
Machine composition	●Main spindle / sub spindle
	●Gang type tool post (platen type)
	●8-spindle back-working unit with Y-axis control
Control axis	●Main side: X1, Y1, Z1, C1, B1, B2 (synchronized with B1 axis)
	●Back side: X2, Y2, Z2, C2

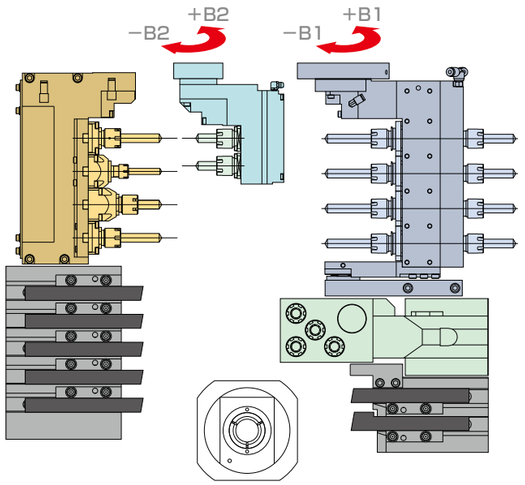
❶ 1st.B-axis 4-spindle counter face unit : ER16 (90 to -45°)
❷ 2nd.B-axis cartridge : 1 pos. (90 to -45°)
❸ Cartridge-type : 4 pos.
❹ Tool holder : 5-tools type (□16 mm)
❺ Sleeve holder : 22-dia. 4 tools / 32-dia. 1 tool
❻ Tool holder : 2-tools type (□16 mm)





Unprecedented high-accuracy complex machining using the double B-axis

- The 4-spindle counter face unit with B-axis control allows for 135° swivel control
- Drives the various tool units for the 2nd.B-axis, which is controlled simultaneously with the 4-spindle counter face unit, realizing high-accuracy complex machining.



Tool unit for the 2nd.B-axis



Twin thread whirling unit



Gear hobbing unit



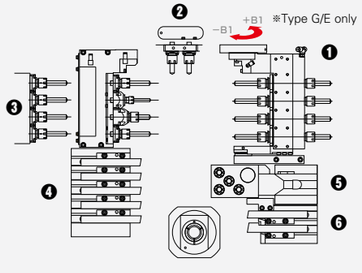
Thread whirling unit



2-spindle cross drilling unit

Equipped with star motion control system **Type G**
CNC control **Type E / C**





Type G **Model equipped with B-axis (simultaneous 5-axes control)**
Type E **Model equipped with B-axis (simultaneous 4-axes control)**
Type C **Model with angle-adjustable unit**

Control method	Type G	Star motion control system (FANUC 31i-B5 Plus)
	Type E	CNC control (FANUC 32i-B Plus)
	Type C	CNC control (FANUC 0i-TF Plus)
Machine composition		●Main spindle / sub spindle
		●Gang type tool post (platen type)
		●8-spindle back-working unit with Y-axis control
Control axis		●Main side: X1, Y1, Z1, C1, B1
		●Back side: X2, Y2, Z2, C2

❶ B-axis 4-spindle counter face unit : ER16 (90° to -45°)
Manually adjustable 4-spindle counter face unit : ER16 (90° to -45°)
❷ Cartridge-type : 2 pos.
❸ Cross milling 4 tools / Cartridge-type : 4 pos. (selectable ✻)
❹ Tool holder : 5-tools type (□16 mm)
❺ Sleeve holder : 22-dia. 4 tools / 32-dia. 1 tool
❻ Tool holder : 2-tools type (□16 mm)

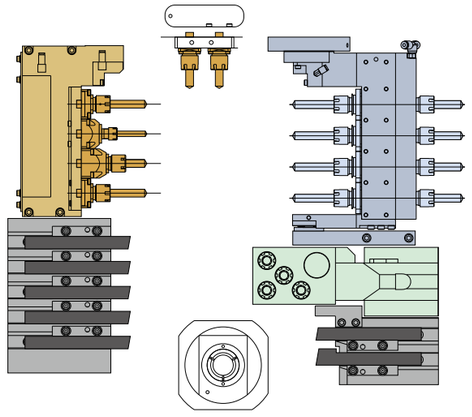
✻4-spindle cross milling unit (ER16) / Cartridge-type 4-spindle cross drilling unit

Design that takes machining capabilities to the limit

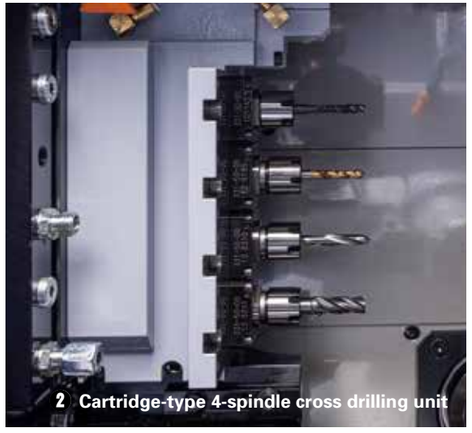
Diverse cross machining using a wealth of tool units

Diverse cross machining ❶❷

- Equipped with 4-spindle cross-drilling unit in front side of the gang-type tool post
  Type S : Cartridge-type 4-spindle cross drilling unit
  Type G/E/C : 4-spindle cross milling unit
  or, Cartridge-type 4-spindle cross drilling unit
- Can mount a cartridge-type unit on the gang-type tool post
  Type S : 2nd.B-axis unit 1 pos.
  Type G/E/C : Cartridge-type unit 2 pos.




1 4-spindle cross milling unit


2 Cartridge-type 4-spindle cross drilling unit

Tool unit for cartridge-type position


Milling unit


Quad-speed milling unit


2-spindle face drilling unit／
2-spindle counterface drilling unit


3-spindle face drilling unit／
3-spindle counterface drilling unit


2-spindle front drilling adaptor


Slotting unit


Polygon machining unit


Thread whirling unit



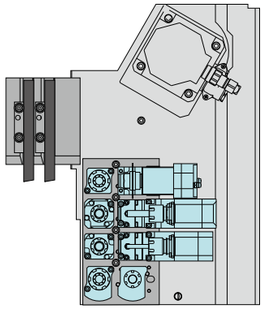


❶



Design that takes machining capabilities to the limit

Versatile back-working tool post



Supports outer diameter turning on the back side ❶
2-station type tool holder available as an option for the back-working tool post. Supports needs for outer diameter turning on the back side in large diameter part machining scenarios.

Diverse complex machining on the back side
The power-driven tool unit can be mounted on all positions of the Y2-axis controlled back-working tool post (8-spindle type). Various power-driven tools such as cross drilling and slotting are available for expanded machining capability.



Drill sleeve



Bowling sleeve



Quad-speed milling unit



Oil-through type
back working drill unit



Milling unit



Cross drilling unit

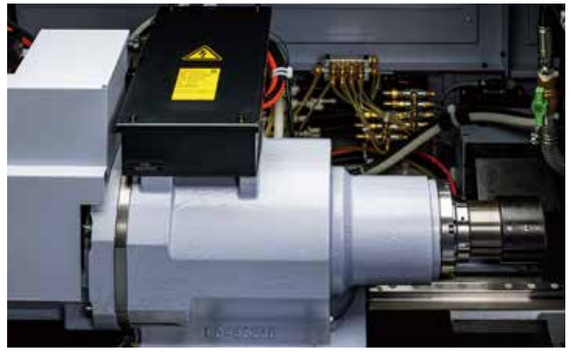


Slotting unit

High-spec spindle

High-output spindle motor
Equipped with high-output spindle on both the main and back sides, obtaining power equivalent to 30-dia. class. This realizes drilling capability of 13-dia. and tapping capability of M12.

High-speed rotation of 10,000 min^{-1}
Realizes main spindle speed of up to 10,000 min^{-1}.
Achieves high-speed, high-precision large-diameter machining with a well-balanced design that does not cause rotational runout even for large-diameter workpieces with a large moment of inertia.



Supports needs for high-pressure coolant and deep-hole machining

Product lengths of up to 160 mm are possible.
Optional product separator available for long product support.
Can discharge products up to 160 mm (*) inside the machine.
*Standard specification : Max. 80 mm

G.B./N.G.B. switching mechanism
Use the guide bush specification (G.B.) to process long workpieces with high accuracy while preventing deflection. Use the non-guide bush specification (N.G.B.) to process short workpieces while significantly reducing the stock waste. By switching the guide bush//non-guide bush, you can select the optimal specification for full-length dimensions of machining parts on a single unit.

Coolant through tool holder
The coolant through type tool holder is optionally available. Support for chip removal using high-pressure coolant.

High-capacity coolant tank
Even when using a high-pressure coolant unit where a large amount of cutting oil is discharged, secure sufficient coolant capacity that can supply sufficient circulation.

High-pressure coolant piping
Various optional piping for the coolant for high pressure is available as a measure for high-pressure, and ultra-high pressure coolant.

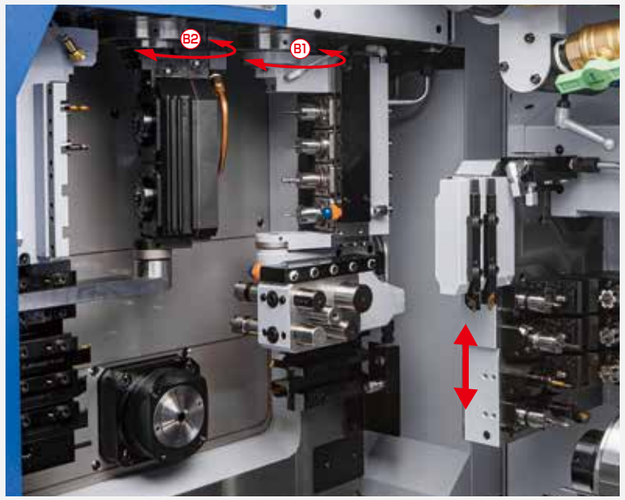
Deep-hole machining-compatible sleeve holder
Equipped with 2-spindle sleeve holder for deep hole processing alongside the sub spindle. Realizes deep-hole drilling of up to 10-dia. and depth of 100 mm.



Highly rigid and precision design

Tool post structure with high rigidity

Platen type tool post employing uniform load cross guide structure
The platen type tool post incorporates a tool post with 8 linear bearings arranged uniformly around the point (= guide bush) where a cutting load is applied. By distributing the cutting load to 8 guide bearings at all times, the moment load applied to each guide bearing is minimized and rigidity of the tool post is improved.
Thanks to high dynamic stability, continuous operation is possible for a long time with stable accuracy and longer service life of the linear guide bearing is ensured.



B-axis holding rigidity

Rigidity of the 4-spindle counter face unit (Type S/G/E)
The 4-spindle counter face unit employs a structure for holding the upper and lower ends, together with a motor and decelerator for B-axis control on one grade.

Holding rigidity of the 2nd.B-axis unit (Type S)
A brake mechanism is employed on the 2nd.B-axis side unit of Type S to secure sufficient holding rigidity when swivel machining.

Dovetail guide surface of Y2-axis sliding
A dovetail guide surface is employed for the sliding section of the Y2-axis of the back tool post. This greatly improves tool post rigidity and suppresses deflection and vibration due to the cutting load.

Measure for thermal displacement

Thermal displacement correction feature
In the thorough pursuit of structural machine accuracy, equipped with the thermal displacement feature, which provides for even higher precision machining at a higher dimension. Flexible automatic thermal displacement correction is realized based on real time thermal expansion data fed back from the thermal sensors arranged on each part of the machine, including the pedestal frame.

Back tool post arranged at the rear
By arranging the back tool post at the rear of the machine,machining is possible with a short X2-axis ball screw.
This improves the rigidity when machining at the back side, and minimizes the impact of thermal displacement.

Indexing accuracy

Built-in spindle
A built-in spindle is employed on both the main and sub spindles. The main axis indexing accuracy is greatly improved by using a built-in sensor.



Arrangement for improved workability of the cutting chamber
The machine has been reconfigured for improved accessibility to the guide bush and tool post. Furthermore, the workability of setup has been greatly improved, such as by vertically laying out the spindle arrangement on the back tool post at the rear of the cutting chamber.

Front-side arrangement of the maintenance device
Realizes more simplified day-to-day tasks by arranging maintenance equipment such as the main breaker, lubrication device, and pneumatic device at the front of the machine.

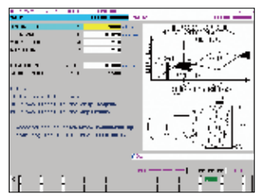
Design with excellent workability

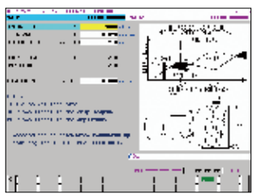
Control system design that changes productivity

Eco mode feature
Use eco mode to reduce power consumption by interrupting the Fanuc Amp power, etc., which is not needed during standby. In addition to the display of power consumption and cumulative power consumption for the machine as a whole, including peripherals, you can also check CO2 emissions, on the power consumption screen.power consumption screen.



Chip cutting system **Stepcycle Pro. (option)**
A new generation chip cutting system that can be operated with ease with simple NC operations. The use of vibration cutting to finely cut and dispose of chips during machining prevents chips from becoming tangled up with the workpiece.



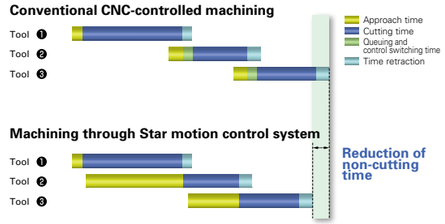


Star Motion Control System

Type S/G

This control system converts the NC program through “optimization” and finishes processing related to switching of the control system in order to enable “tool selection for the next process and approach during cutting” and “tool disengagement and next cutting at the same time”.
By this control method, the non-cutting time, which is considered to be a disadvantage for NC-controlled machines, is largely reduced and contributes to improved productivity. - Furthermore, this control system moves each axis while taking the shortest way, utilizing the previous cutting process time to minimize excessive vibration caused by axis feed and contributes to the maintenance of stable machining accuracy.

Concept of reduction of non-cutting time



Standard Machine Specifications

Item			Specifications			
			type S	type G	type E	type C
Max. machining diameter			φ26mm (1-1/64 inch)			
Max. headstock stroke		Standard	260mm(10-15/64 inch)			
		R.M.G.B. unit	223.5mm(8-51/64 inch)			
		N.G.B. type	Bar diameter×2.5 (Max.65mm(2-35/64inch))			
Tool			5 tools on the front + 2 tools on the rear (□16mm)			
5-spindle sleeve holder		Number of tools	Front 5 tools			
			Rear 5 tools			
		Max. drilling capability	φ13mm(33/64 inch)			
		Max. tapping capability	M12×P1.75			
2-spindle sleeve holder		Number of tools	2 tools			
		Max. drilling capability	φ10mm(25/64 inch)			
		Max. drilling depth	Max.100mm(3-15/16 inch)			
Power driven attachment	Number of tools	Tilting head unit	Front 4 tools / Rear 4 tools			
			B-axis control			Angle adjustable type
		Front	Cartridge type 4 pos.	Cross milling 4 tools		
				OP : Cartridge type 4 pos.		
		Upper	Cartridge type 1 pos. B-axis control	Cartridge type 2 pos.		
	Max. drilling capability	Tilting head unit	φ8mm(5/16 inch)			
		Front / Upper	φ10mm(25/64 inch)			
	Max. tapping capability	Tilting head unit	M8×P1.25			
		Front / Upper	M8×P1.25			
	Spindle speed		Max.8000min^{-1}			
	Drive motor		2.2kW (CONT.) / 3.0kW (5min / 30%ED)			
Rapid feed rate			36m/min (X1,Y1,Z1,X2,Y2,Z2)			
Main spindle indexing angle			C-axis control			
Main spindle speed			Max.10000min^{-1}			
Main spindle motor			5.5kW (CONT.) / 7.5kW (10min / 25%ED)			
Coolant tank capability			228ℓ			
Dimensions(W×D×H)			2550×1300×2000mm			
Weight			3600kg			
Power consumption			11.98kVA		9.58kVA	

Backworking Attachment Specifications

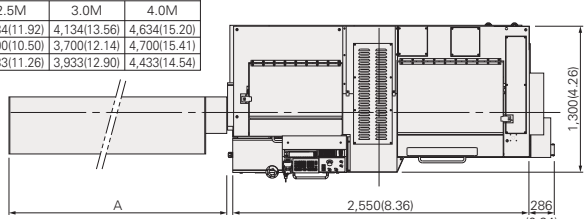
Item			Specifications
Max. chucking diameter			φ26mm(1-1/64 inch)
Max. length for front ejection			160mm(6-19/64 inch)
Max. parts projection length			40mm(1-9/16 inch)
Back 8-spindle unit	Number of tools		8 tools
	Max. drilling capability	Stationary tool	φ13mm(33/64 inch)
		Power driven tool	φ8mm(5/16 inch)
	Max. tapping capability	Stationary tool	M12×P1.75
		Power driven tool	M6×P1.0
Power driven att. spindle speed			Max.6000min^{-1}
Power driven att. spindle motor			1.0kW (CONT.) / 1.2kW (5min / 30%ED)
Sub spindle indexing angle			C-axis control
Sub spindle speed			Max.10000min^{-1}
Sub spindle motor			3.7kW (CONT.) / 5.5kW (10min / 40%ED)

External Dimensions and Floor Space

unit : mm(ft)

●Bar Feeder

Type \ Length	Amm(ft)			
	Max.Bar dia	2.5M	3.0M	4.0M
ASR X-32PN3	Φ26	3,634(11.92)	4,134(13.56)	4,634(15.20)
OS26RE	Φ26	3,200(10.50)	3,700(12.14)	4,700(15.41)
GT342	Φ26	3,433(11.26)	3,933(12.90)	4,433(14.54)



Overall height : 1,995mm(6.54ft)

Standard Accessories and Functions

1. CNC unit FANUC 31i−B5 Plus (type S/G)
   FANUC 32i−B Plus (type E)
   FANUC 0i−TF Plus (type C)
2. 10.4-inch color LCD display
3. Pneumatic unit
4. Coolant level detector
5. Automatic centralized lubrication unit
6. Door Interlock unit with Locking System (except for Europe)
   Door Interlock unit with Individual Coding (only for Europe)
7. Cs contour control (Main/Sub)
8. Spindle clamp unit (Main/Sub)
9. Cooling unit (Main spindle/ Drive unit for gang tool post)
10. Revolving guide bush unit
11. Drive unit for revolving guide bush
12. Air purge unit for revolving guide bush
13. Main/Sub collet sleeve
14. Gang-type 5 station tool holder □16 mm
15. Gang-type 2 station tool holder □16 mm
16. 4 Spindle cross drilling unit cartridge (type S)
    4 Spindle cross drilling unit ER16 (type G/E/C)
17. 4 Spindle opposing unit with B axis control function (type S/G/E)
    Angle adjustable 4 spindle opposing unit (type C)
18. Second B-axis unit clamp unit (type S)
19. 5 spindle sleeve holder
20. 2 spindle sleeve holder
21. Broken cut-off tool detector
22. Back attachment
23. 8 spindle back working unit with Y axis control function
24. Drive unit for 8 spindle back working unit
25. Parts separator
26. Parts conveyor
27. Sub spindle air purge unit
28. Coolant pump 400W ver. (Main/Sub)
29. Work light
30. Earth leakage breaker

Optional Accessories and Functions

1. Gang-type tool holder Coolant thru (5 station/2 station)
2. 4-Spindle cross drilling unit cartridge (type G/E/C)
3. Non-Guide Bush Version
4. Revolving magic guide bush unit
5. Coolant flow detector
6. Coolant flow detector interface
7. Coolant pump with de-aeration function
8. Coolant chiller
9. Water separator
10. Beacon
11. Beacon interface
12. Parts ejector with Spring
13. Parts ejection detector
14. Parts ejector with air cylinder
15. Parts separator unit long parts ver.
16. Parts ejector with guide tube
17. Parts stopper unit
18. Coolant unit (6.9MPa/2.5MPa/0.7MPa)
19. Coolant unit signal cable 46 contacts Ver.
20. Coolant unit power cable
21. Coolant valve
22. Coolant piping
23. Expanded I/O module unit
24. Terminal base
25. Reducing valve
26. Main spindle inner tube
27. Steady rest for feed rod
28. Automatic bar feeder interface
29. Steady rest unit cover
30. Safety cover
31. LAN ／ RS232C interface
32. Transformer
33. Transformer CE marking version 20kVA
34. CE/UKCA marking version

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
TEL.+81-537-36-5594 FAX.+81-537-36-5607
https://star-m.jp/eng/

New England Tool Corporation
161 San Rico Dr, Manchester, CT 06042 T
1.860.783.5555 sales@netoolcorp.com
https://netoolcorp.com

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

2023.02_Ver1.0_1