

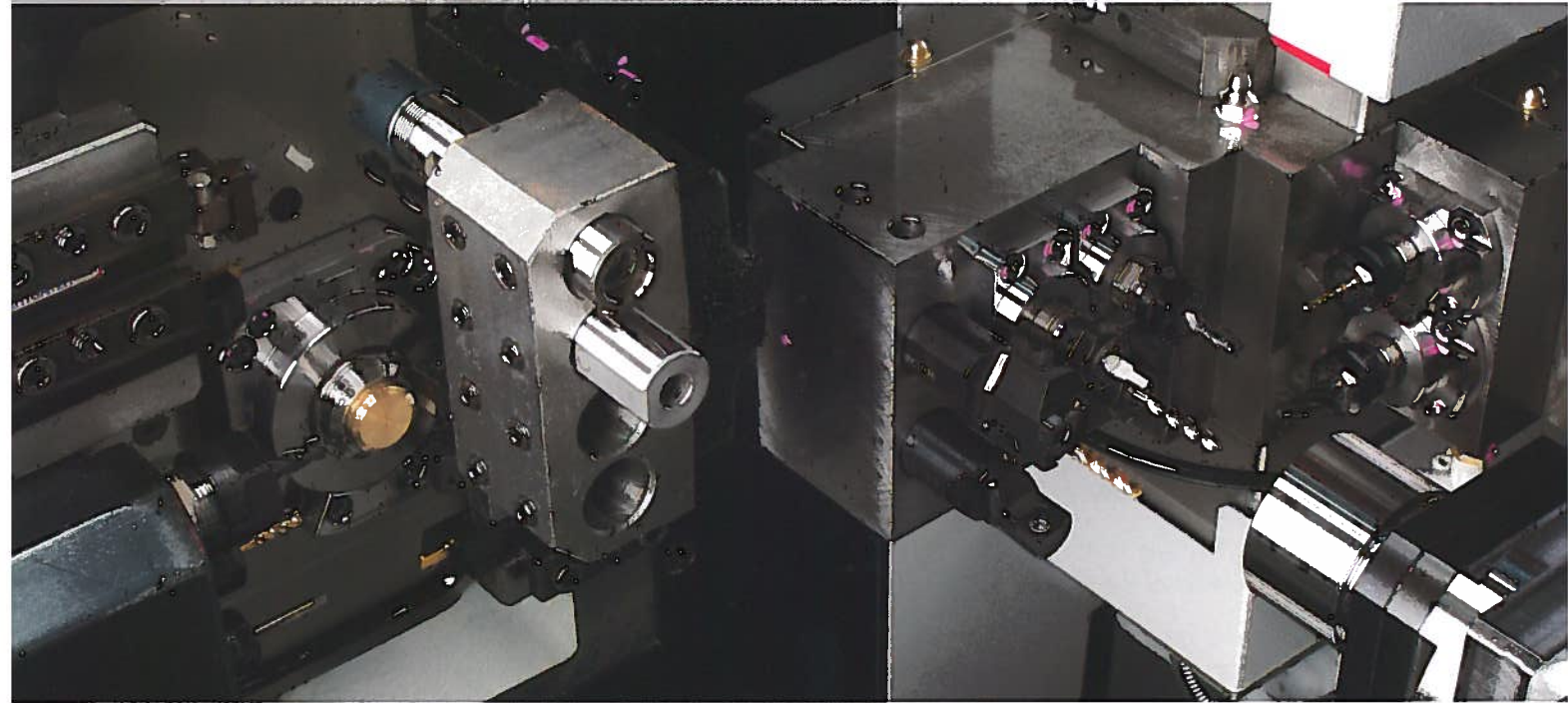
PRECISION TSUGAMI

# TSUGAMI

CNC Precision Automatic Lathe

**B0126-II**

**B0206-II**



Y-axis back milling operation is realized on the small dia. machine

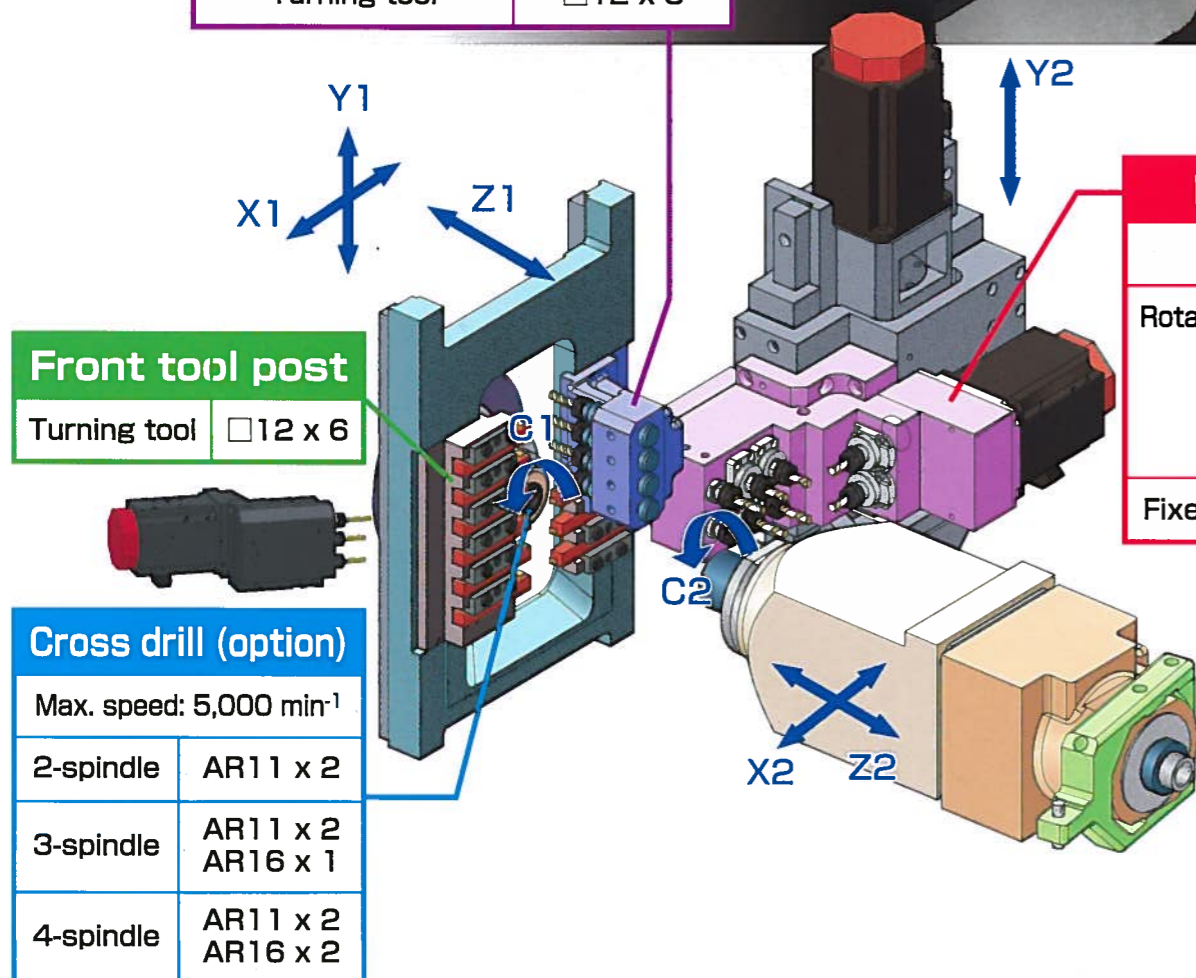


# Realizing front and back simultaneous processing including milling by adopting Y2 axis

- Machine complex parts using the main and back spindle simultaneously with the Y-axis toolpost
- Optional direct-drive rotary guide bushing provides high speed and accurate machining.
- Guide-bush type or guide-bushless type is selectable according to workpieces.
- Pursuing operability thanks to enriched standard softwares.
- Automatic programming system prepared as standard

### Rear tool post

Frontal drill holder	φ20 x 4 holes
Turning tool	□12 x 3



### Front tool post

Turning tool	□12 x 6
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### Cross drill (option)

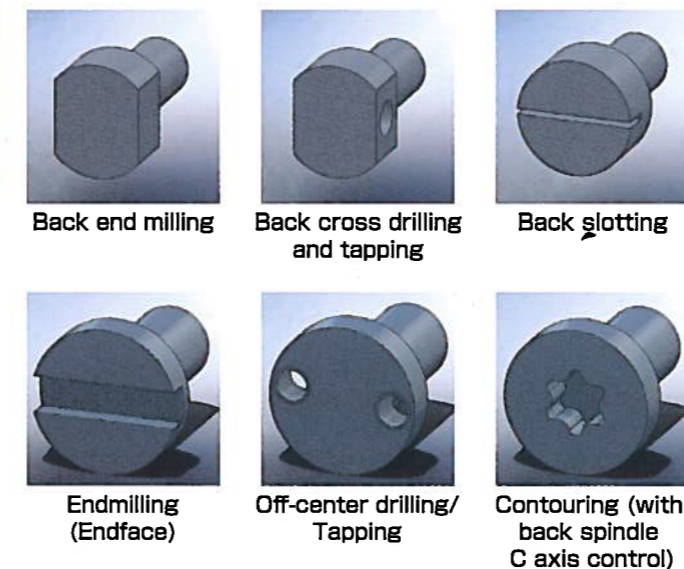
Max. speed: 5,000 min <sup>-1</sup>	
2-spindle	AR11 x 2
3-spindle	AR11 x 2 AR16 x 1
4-spindle	AR11 x 2 AR16 x 2

### Back tool post

	End face	Cross
Rotary tool	AR11 x 2	AR11 x 2
	Max. speed: 8,000 min <sup>-1</sup>	
	Embedded type	
Fixed tool	φ20 x 4 holes	

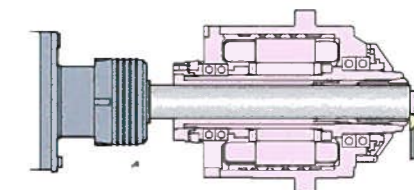
Thanks to back rotary tools, realizing simultaneous machining of milling processes such as off-center drilling, off-center tapping, end-milling and cross drilling with the front processes.

### Machining Patterns of back milling



### Direct-drive rotary guide bushing assures an increased spindle speed.

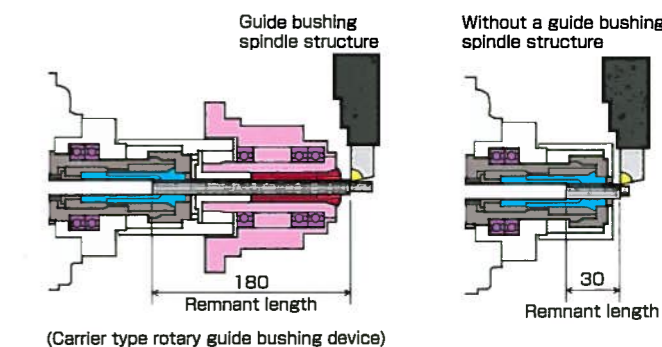
- Maximum spindle speed: 12,000min<sup>-1</sup>
- Improved form accuracy, dimensional accuracy, and surface roughness with high speed and quiet operation.
- The water-soluble coolant is not available.



Direct drive rotary guide bushing

### Guide bushing type or guide-bushing-less type selectable according to the workpiece

- Stationary guide bushing
- Carrier type rotary guide bushing
- Guide-bushing-less kit
- Direct-drive rotary guide bushing
- Possible to switch between the guide bushing type and guide-bushing-less type so the most suitable operation for the workpiece length can be chosen.
- The spindle without a guide bushing does not require ground bar, enabling high speed and high precision machining from cold drawn bars. The shortest possible remnant length is 30 mm.



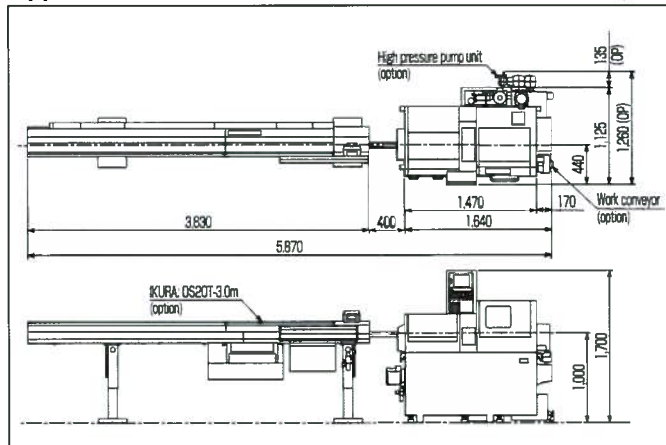
### Automatic programming software

- Machining motion can be checked from all points of view by 3D simulation
- 3D graphic simulator can be checked from all view points.

## Machine specifications

Item	B0126-II	B0206-II
Machine capacity, Machining range	Chucking barstock dia. $\phi 12$ mm $\phi 20$ mm	
	Max. machining length 210 mm (Stationary guide bushing) 170 mm (Direct-drive guide bush) 80 mm (Carrier type rotary guide bushing) 45 mm (Guide bushless)	
	Max. drilling dia. $\phi 7$ mm $\phi 10$ mm	
	Max. tapping dia. M6 x 1 M10 x 1.5	
	Max. back spindle chucking dia. $\phi 12$ mm $\phi 20$ mm	
	Max. back spindle drilling dia. $\phi 8$ mm	
	Max. back spindle tapping dia. M8 x 1.25	
	Live tools (front tool post/ back tool post) max. drilling dia. $\phi 6$ mm	
	Live tools (front tool post/ back tool post) max. tapping dia. M5 x 0.8	
	Front cross tool spindle max. slotting cutter dia. $\phi 30$ mm	
Machine	Main spindle speed 200 to 12,000 min <sup>-1</sup> 200 to 10,000 min <sup>-1</sup>	
	Back spindle speed 200 to 12,000 min <sup>-1</sup>	
	Front cross tool spindle speed 200 to 5,000 min <sup>-1</sup>	
	Back rotary tool speed 200 to 8,000 min <sup>-1</sup>	
	Total tool storage capacity (Standard) 25	
	Tool size $\square 12$ mm x 85 mm	
Rapid traverse rate 32 m/min (X1: 24 m/min, Y2: 15 m/min)		
Motors	Main spindle 1.5/2.2 kW 2.2/3.7 kW	
	Back spindle 1.5/2.2 kW	
	Cross drill of front tool post 0.5 kW (Option)	
	Rotary tool of back tool post 0.75 kW	
	X1, Z1, Y1, X2, Z2, Y2 0.5 kW	
	Coolant pump 0.18 kW	
Lubricating pump 3 W		
Power supply, etc	Compressed air requirement 0.4 MPa or above	
	Air discharge rate 40 NL/min	
	Power source requirement 14 KVA	
	Coolant tank capacity 115 L	
	Width x depth x height 1,640 x 1,125 x 1,700	
Machine weight 1,750 kg		

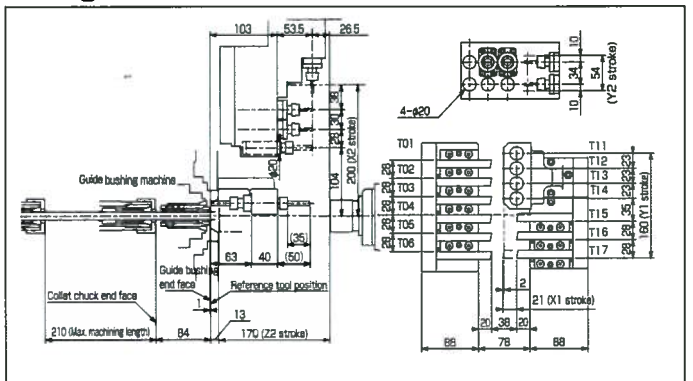
## Appearance



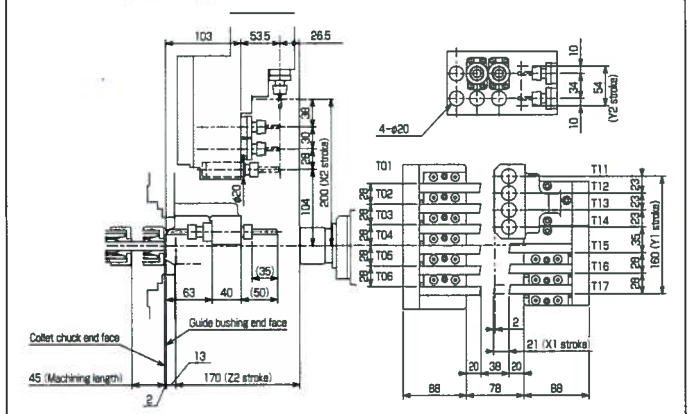
## NC specifications

Item	B0126-II	B0206-II
NC unit	FANUC 32i-B	
Controllable axes	X1, Z1, Y1, X2, Z2, Y2, C1, C2	
Least input increment	0.001 mm (Diametrical designation for X1, X2 axis)	
Least command increment	X1, X2 axes: 0.0005 mm, Other axes: 0.001 mm	
Maximum commandable value	$\pm 8$ digits	
Interpolation method	Linear/circular	
Rapid traverse rate	32 m/min (X1: 24 m/min, Y2: 15 m/min)	
Cutting feed rate	1 to 6,000 mm/min	
Feed rate override	0 to 150%, 10% step	
Dwell	G04 0 to 99999.999	
Absolute/incremental command	X, Z, Y, C, : Absolute U, W, V, H: Incremental	
Amount of tool offset	$\pm 6$ digits	
No. of registerable programs	99	
LCD/MDI	10.4" color LCD	
Display language	English	
Part program storage size	64 kbytes (equivalent to 80 m tape length for each path system)	
No. of registerable programs	63	
Miscellaneous function	Main: M 5 digits, Back: M3 digits	
Spindle function	S 5 digits	
Tool function	T 4 digits	

## Tooling zone



## (Guide bushless machine)



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