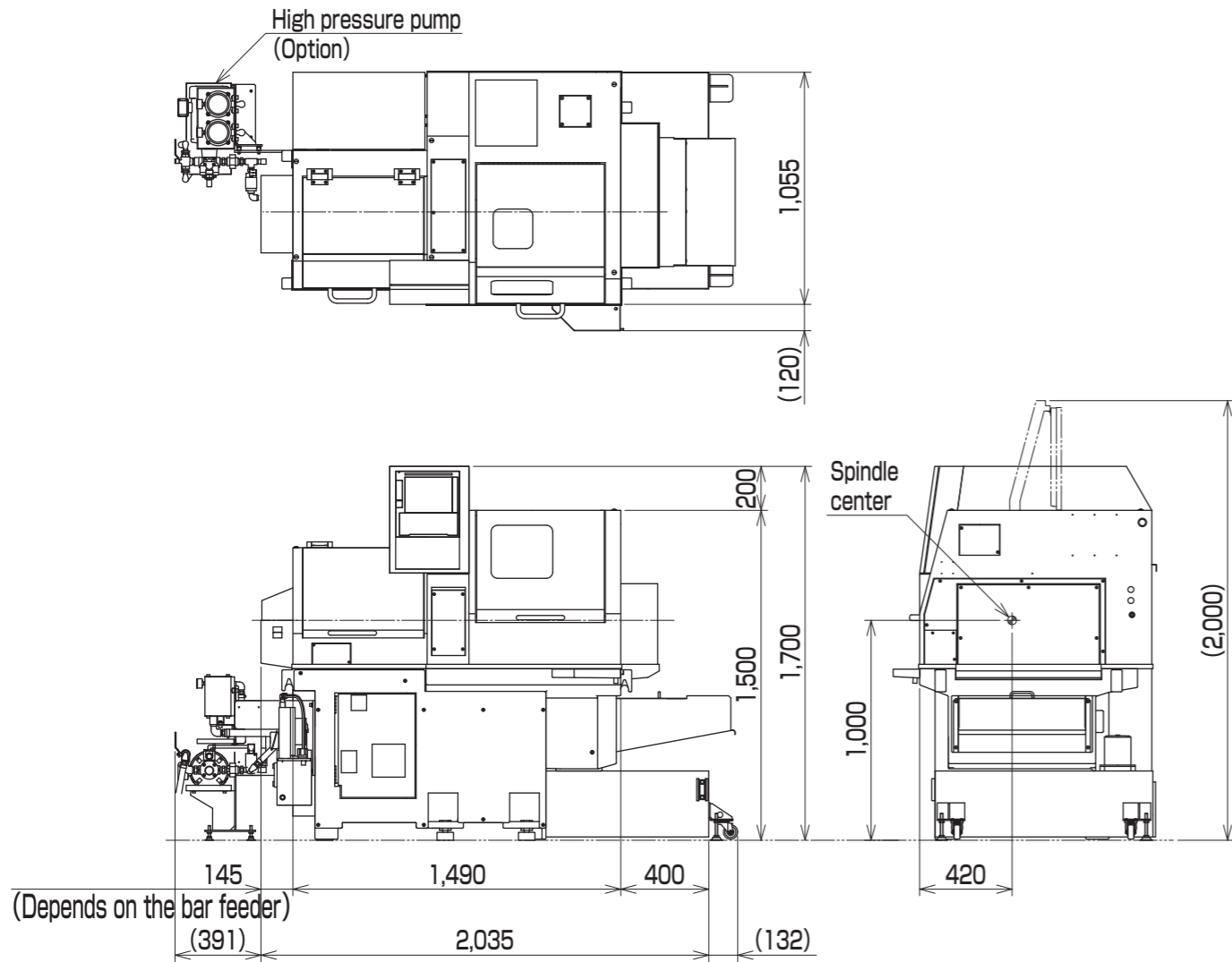


Layout

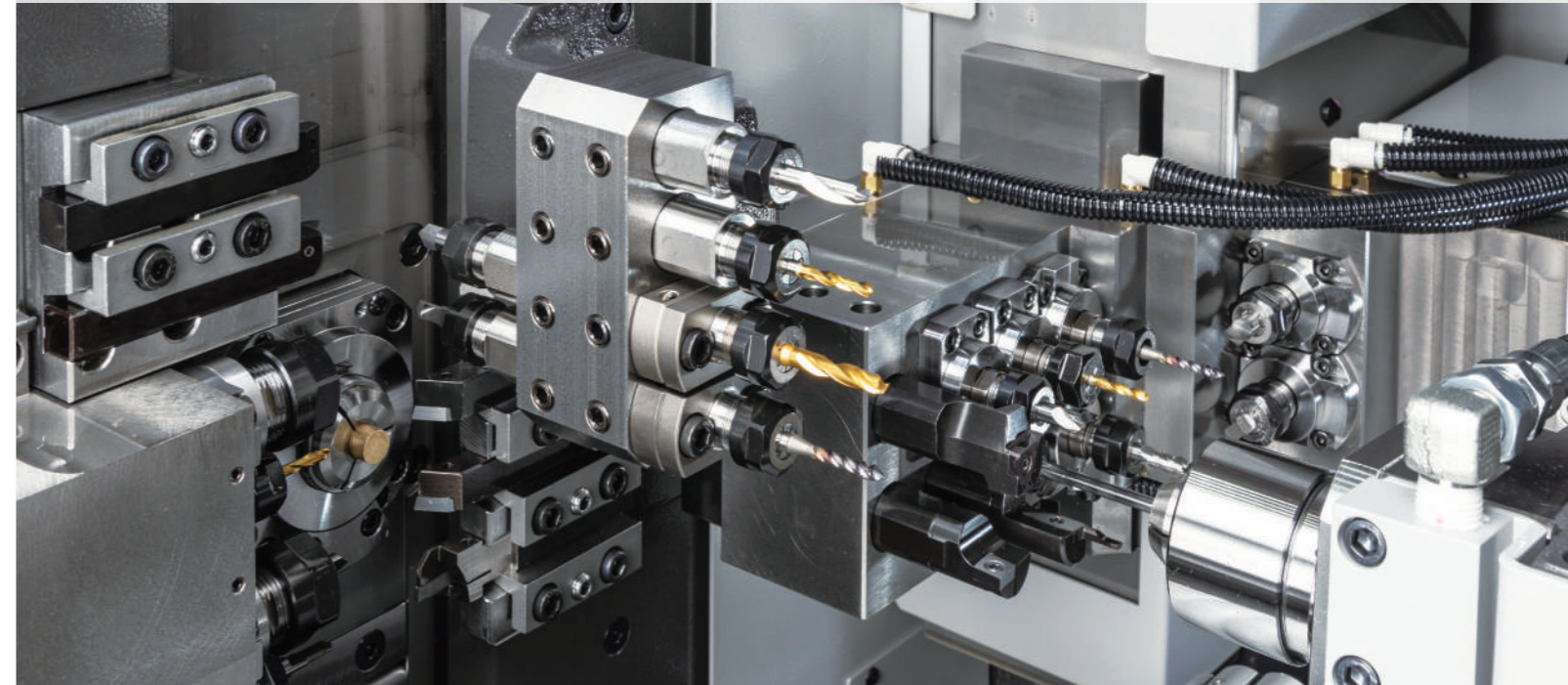
BOi125-VR/BOi126-VR/BOi205-VR/BOi206-VR



CNC Precision Automatic Lathe

BOi series

BOi125-VR/BOi205-VR
BOi126-VR/BOi206-VR



Advanced BOi12/20 series
 Realizes further high-speed, high accuracy, and high rigidity



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The specifications of this catalogue are subject to change without prior notice.

TSUGAMI CORPORATION

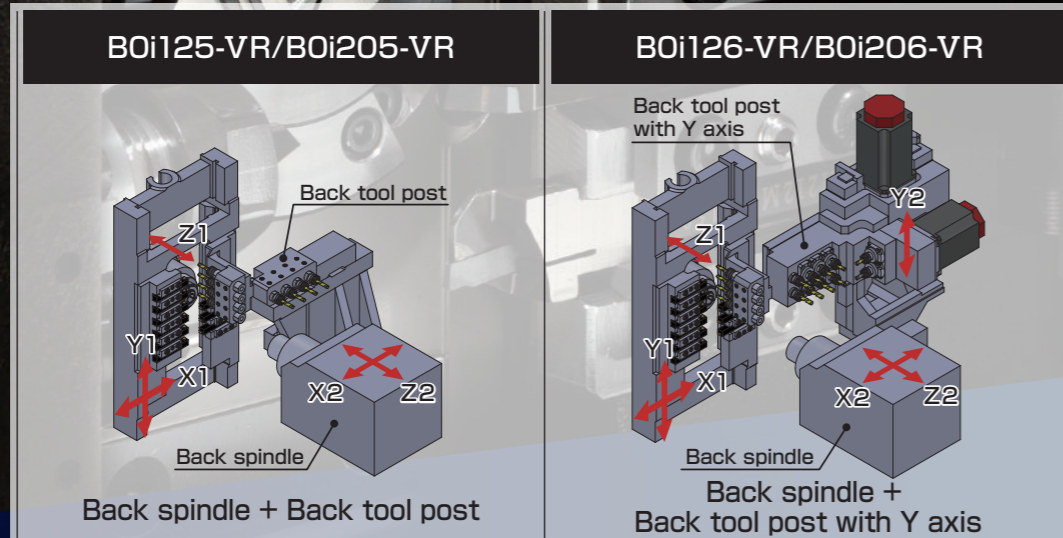
12-20, TOMIZAWA-CHO, NIHONBASHI,
 CHUO-KU, TOKYO 103-0006, JAPAN
 Phone : +81-3-3808-1172
 Facsimile : +81-3-3808-1175
<http://www.tsugami.co.jp/>

Upgraded B0i12/20 series Improved machining capabilities and usability

B0i series

Specifications

	B0i12-VR	B0i20-VR
Bar stock chucking dia.	φ 12 mm	φ 20 mm
Main spindle speed	Max. 12,000 min ⁻¹	Max. 10,000 min ⁻¹
Back spindle speed	Max. 12,000 min ⁻¹	
Main spindle motor output	2.2/3.7 kW	3.7/5.5 kW
Back spindle motor output	2.2/3.7 kW	



OD tool	B0i12/20-VR: □12 mm	
Front drill holder	8 tools (Front side: 4 φ20 mm/ Back side: 4 φ20 mm)	
Back drill holder	4 tools (φ20 mm)	—
Back drive	Option (Modular type)	4 fixed tools (φ20 mm)6 live tools (ER11)
Tool storage capacity	21 tools	27 tools



Advanced BOi series

Enhanced machining capability

- High output built-in motor is equipped on the main and back spindle of BOi12-VR and BOi20-VR.

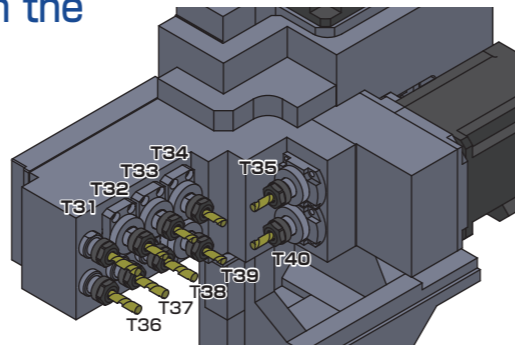
● Main/back spindle capability

		BOi12-VR	BOi20-VR
Main spindle	Output	2.2/3.7 kW	3.7/5.5 kW
	Torque	7.5/12.6 N·m	12.8/19.0 N·m
Back spindle	Output	2.2/3.7 kW	2.2/3.7 kW
	Torque	7.5/12.6 N·m	7.5/12.6 N·m

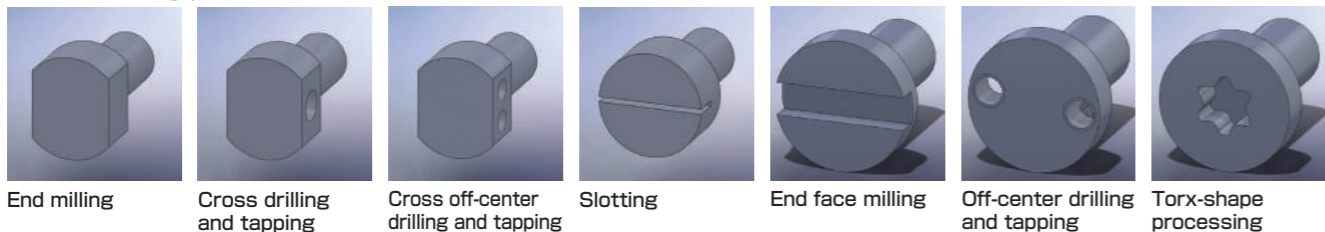
- Maximum of 6 live tools can be mounted on the back tool post, and it can flexibly handle a variety of back machining needs. (BOi126-VR/BOi206-VR)

● Back tool post specifications

	Back	Cross
Fixed tool	∅20 mm × 4 holes (T31, T36 to T38)	
Live tool	ER11 × 4 (T32 to T34, T39)	ER11 × 2 (T35, T40)
	Max. speed: 8,000 min ⁻¹ (Rated speed: 6,400 min ⁻¹)	



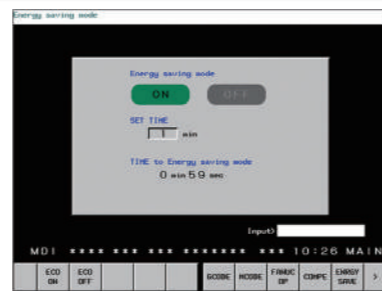
● Processing pattern on back side



Approach for energy efficiency

- Energy saving mode

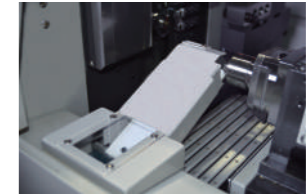
The function turns off servo motors, pumps (coolant, lubrication), fans, lights, and NC screen to reduce power consumption during standby while ensuring machining accuracy.



Shortened cycle time

- Fixed type work chute

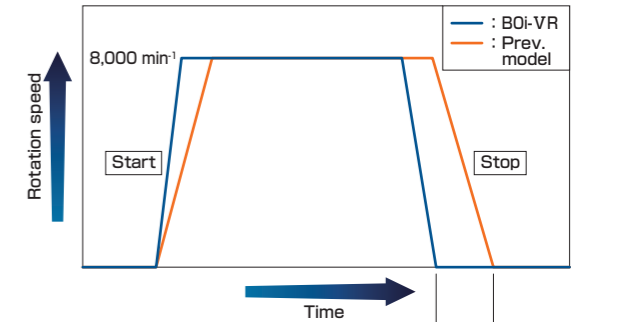
No interference with the front tool post, and it shortens the product collecting time to one second.



Fixed type work chute

- Shortens start and stop time of live tool of front tool post

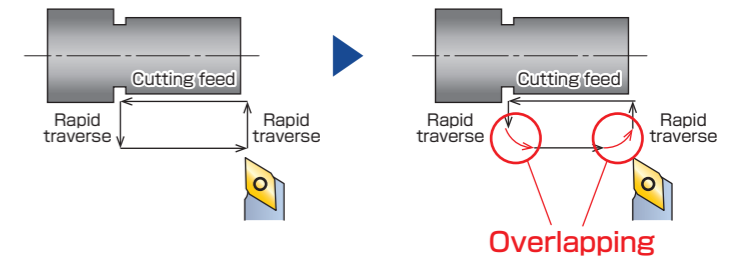
By optimizing the start-up operation, the time required for start/stop is reduced by approximately 50%.



Approx. 50% reduction

- Smart overlap

Overlapping of rapid traverse and cutting feed shortens the machining time.



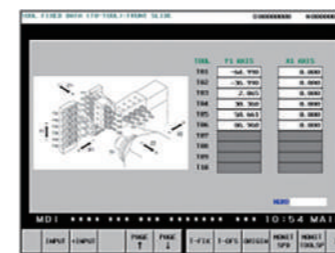
Improved usability

- Built-in coolant (Option)

M-code oil blow to supply coolant from the upper side of the guide bushing to the tool tip

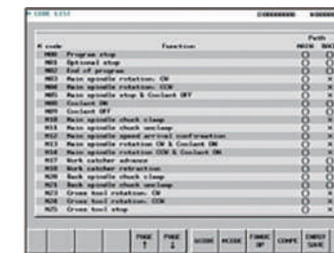


Software for easy-to-use



Offset input screen

Tool numbers are displayed on the screen with easy-to-understand illustrations to assist offset inputting.



M code/G code list screen

Assists in debugging programs.



Shift amount setting for spindle phase synchronization control

Easy phase alignment between the main spindle and the back spindle when using a collet for non-round bar.

Various options cover diversified workpieces

Live tool of front tool post (Option)

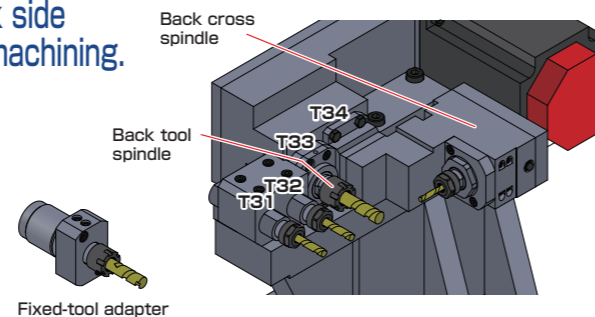
Back drive (BOi125/205-VR: Option)

Off-center drilling, tapping, and end milling on the back side can be performed simultaneously with the front side machining.

● Specifications

Max. speed: 8,000 min ⁻¹ *	
T31, T32	Fixed tool (φ20 mm)
T33, T34	Modular type
Modular type live tools	Back cross spindle, Back tool spindle, Fixed-tool adapter

* Rated speed: 6,400 min⁻¹ When the rotation of the spindle exceeds the rated speed, keep the exceeding speed range within 30% of one cycle of the machining process.



Direct-drive rotary guide bushing (Option)

Direct-drive rotary guide bushing with built-in motor has no belts or other devices which cause vibration during high speed machining. The stable geometrical accuracy, the dimensional accuracy, and the surface roughness are secured.

● Specifications

Model	Rotation speed	Max. machining length
BOi125-VR/BOi126-VR	Max. 12,000 min ⁻¹ *	170 mm
BOi205-VR/BOi206-VR	Max. 10,000 min ⁻¹ *	170 mm

* Rated speed: 8,000 min⁻¹ When the rotation of the spindle exceeds the rated speed, keep the exceeding speed range within 30% of one cycle of the machining process.

Guide-bushing type or guide-bushless type is selectable. (Option)

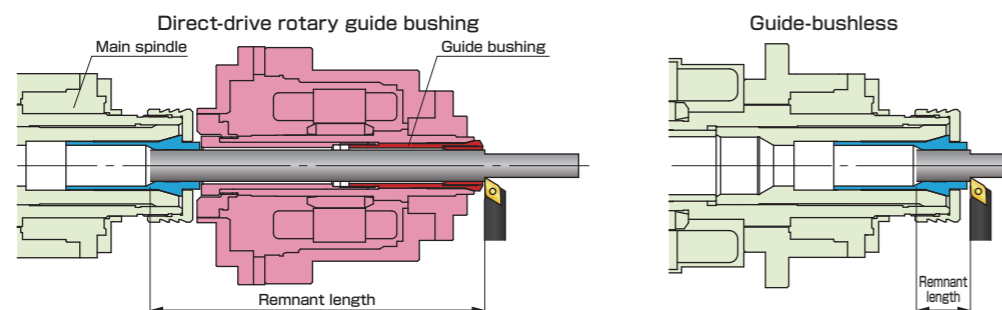
Guide bushing and guide-bushless are switchable by user. Optimal machining is possible according to product accuracy or length. The guide-bushless does not require ground bars, and enables high precision machining from cold-drawn bars.

- Stationary guide bushing
- Carrier type rotary guide bushing
- Direct-drive rotary guide bushing
- Guide-bushless

● Remnant length

Model	Stationary guide bushing	Carrier type rotary guide bushing	Direct-drive rotary guide bushing	Guide-bushless
BOi125-VR/BOi126-VR	120 mm+α mm	180 mm+α mm	210 mm+α mm	30 mm+α mm
BOi205-VR/BOi206-VR				

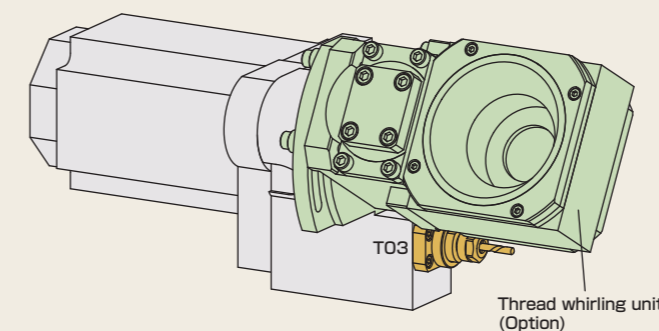
α: Workpiece length



Live tool with max. speed of 10,000 min⁻¹ reduces the cycle time for small hole drilling.

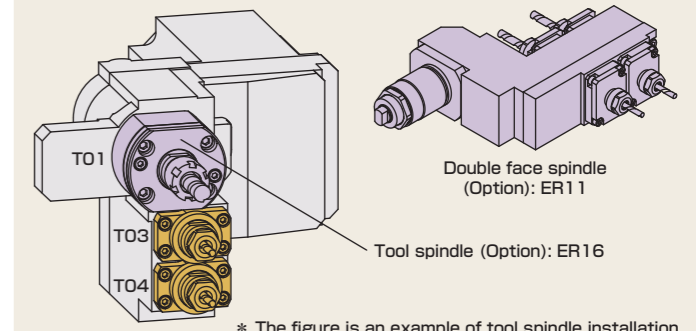
Parallel type, 2 tools	Shift type, 2 tools	Shift type, 3 tools	Shift type, 4 tools																																																
<table border="1"> <tr><td colspan="2">Front tool post</td></tr> <tr><td>Turning tool: 3 tools</td><td>□12 mm</td></tr> <tr><td>Live tool: 2 tools</td><td>T04, T05 ER11</td></tr> <tr><td colspan="2">Rear tool post</td></tr> <tr><td>Front drill holder: 4 holes</td><td>φ20 mm</td></tr> <tr><td>Turning tool: 3 tools</td><td>□12 mm</td></tr> </table>	Front tool post		Turning tool: 3 tools	□12 mm	Live tool: 2 tools	T04, T05 ER11	Rear tool post		Front drill holder: 4 holes	φ20 mm	Turning tool: 3 tools	□12 mm	<table border="1"> <tr><td colspan="2">Front tool post</td></tr> <tr><td>Turning tool: 3 tools</td><td>□12 mm</td></tr> <tr><td>Live tool: 2 tools</td><td>T04 ER16 T05 ER11</td></tr> <tr><td colspan="2">Rear tool post</td></tr> <tr><td>Front drill holder: 4 holes</td><td>φ20 mm</td></tr> <tr><td>Turning tool: 3 tools</td><td>□12 mm</td></tr> </table>	Front tool post		Turning tool: 3 tools	□12 mm	Live tool: 2 tools	T04 ER16 T05 ER11	Rear tool post		Front drill holder: 4 holes	φ20 mm	Turning tool: 3 tools	□12 mm	<table border="1"> <tr><td colspan="2">Front tool post</td></tr> <tr><td>Turning tool: 2 tools</td><td>□12 mm</td></tr> <tr><td>Live tool: 3 tools</td><td>T03 ER16 T04, T05 ER11</td></tr> <tr><td colspan="2">Rear tool post</td></tr> <tr><td>Front drill holder: 4 holes</td><td>φ20 mm</td></tr> <tr><td>Turning tool: 3 tools</td><td>□12 mm</td></tr> </table>	Front tool post		Turning tool: 2 tools	□12 mm	Live tool: 3 tools	T03 ER16 T04, T05 ER11	Rear tool post		Front drill holder: 4 holes	φ20 mm	Turning tool: 3 tools	□12 mm	<table border="1"> <tr><td colspan="2">Front tool post</td></tr> <tr><td>Turning tool: 2 tools</td><td>□12 mm</td></tr> <tr><td>Live tool: 4 tools</td><td>T03, T05 ER16 T04, T06 ER11</td></tr> <tr><td colspan="2">Rear tool post</td></tr> <tr><td>Front drill holder: 4 holes</td><td>φ20 mm</td></tr> <tr><td>Turning tool: 3 tools</td><td>□12 mm</td></tr> </table>	Front tool post		Turning tool: 2 tools	□12 mm	Live tool: 4 tools	T03, T05 ER16 T04, T06 ER11	Rear tool post		Front drill holder: 4 holes	φ20 mm	Turning tool: 3 tools	□12 mm
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Thread whirling type*



Front tool post		Rear tool post	
Thread whirling unit: 1	Max. machining dia. φ9 mm	Turning tool: 4 tools	□12 mm
Thread whirling unit speed	Max. 4,000 min ⁻¹		
Live tool: 1 tool	T03 ER11		
Live tool speed	Max. 5,000 min ⁻¹		
Turning tool: 2 tools	□12 mm		

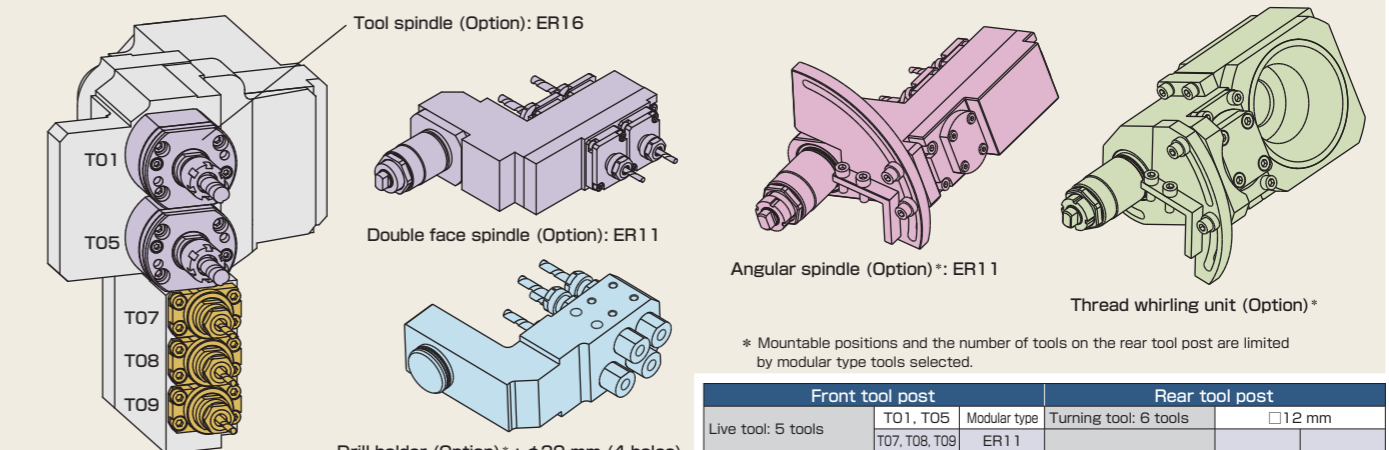
Modular type 1



* The figure is an example of tool spindle installation.

Front tool post		Rear tool post	
Live tool: 3 tools	T01 Modular type T03, T04 ER11	Front drill holder: 4 holes	φ20 mm
Live tool speed	Max. 8,000 min ⁻¹	Turning tool: 2 tools	□12 mm
Turning tool: 3 tools	□12 mm		

Modular type 2



* The figure is an example of tool spindle installation.

Front tool post		Rear tool post	
Live tool: 5 tools	T01, T05 Modular type T07, T08, T09 ER11	Turning tool: 6 tools	□12 mm
Live tool speed	Max. 8,000 min ⁻¹		
Thread whirling unit speed	Max. 4,000 min ⁻¹		

* Mountable positions and the number of tools on the rear tool post are limited by modular type tools selected.

Increased operability with dedicated software

B0i series automatic programming software "Abile" (Standard) B05-V Abile B06-V Abile

Safety setting by interference check function

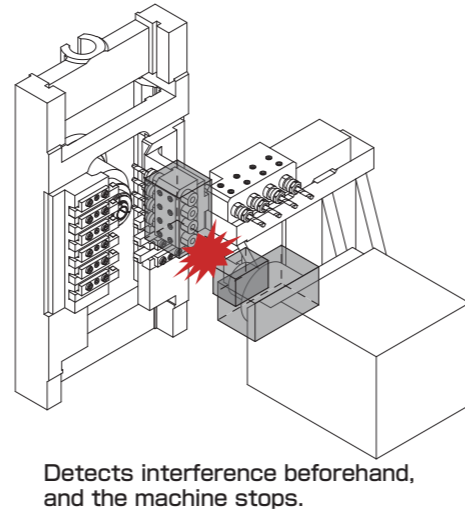
Interference check function for SWISS type automatic lathe

Defines the component shapes as models with rectangular blocks, such as back spindle and tool posts.

Detects interference beforehand in 3D space, and the machine stops.

Features

- Each component is formed by simplified model with up to 10 rectangular blocks.
- Effective for all modes (JOG, HANDLE, MDI, MEM).



Simplified operation for efficient setup

Automatic cut-off function/ Automatic facing function

Setting the condition of cut-off or facing on the dedicated screen.

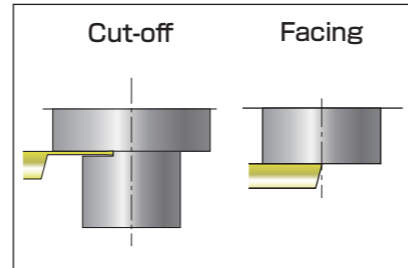
Input tool number, offset number, bar diameter, spindle speed, and feedrate, then press the soft key START.

Cut-off and facing can be performed easily. It is possible to command cut-off or facing with the dedicated M codes as well.

Coolant ON, Spindle rotation ON

Tool approach

Cut-off / Facing



Tool height compensation function (Patented)

Accurate alignment of tool height with the spindle centerline is the important factor for turning of fine parts. Setting of the tool height compensation amount and update of offset data are achieved by simple turning process and inputting the measured data to the dedicated screen.

Efficient operation with extensive maintenance information

Periodical maintenance screen

Maintenance information, such as lubrication amount, collet chuck/guide-bushing cleaning, and battery replacement, can be checked on the screen.

Items or setting period can be customized, and the selection can be arranged according to the working condition.

Function setting screen

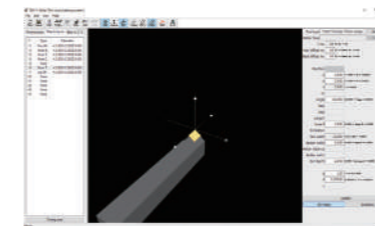
Use/non-use of options, such as workpiece discharge device and high-pressure coolant, can be set on the dedicated screen.

Setting related to options can be added or rearranged easily.

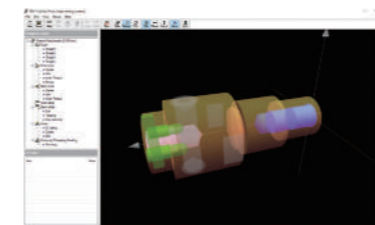
- With TSUGAMI's know-how (machining process and cutting conditions), high quality and standardized programs can be created.

Creating NC program in two steps

Step 1 Input tool data



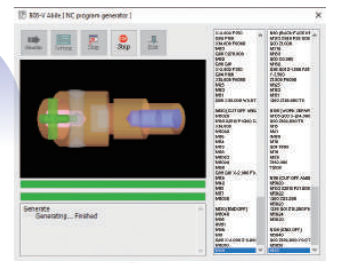
Step 2 Input workpiece geometrical data



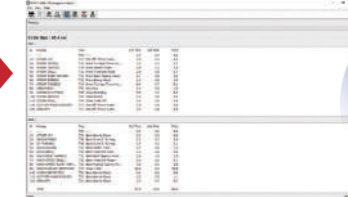
Automatic creation

Automatic execution from program creation to simulation with simple operation

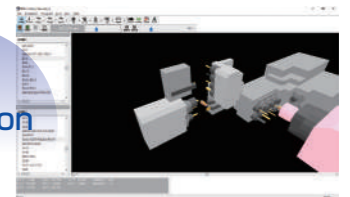
NC program creation



Cycle time calculation



3D simulation



"Abile" B0 series

Applicable models	B05-V Abile	B0i125-VR/B0i205-VR
	B06-V Abile	B0i126-VR/B0i206-VR

Hardware requirement

Item	Specification
OS	Windows 10 Windows 11 (Installation of Open GL library is required.)
Computer	PC/AT compatible (DOS/V)
CPU	Intel Celeron 2 GHz or faster (3 GHz or above is recommended.)
Memory	512 MB or more
HDD	400 MB or more free space is required
CD-ROM drive	Double speed or more (Used for installation)
Display	16.77 million color bit display (Full color) Resolution: 1,024×768 or higher

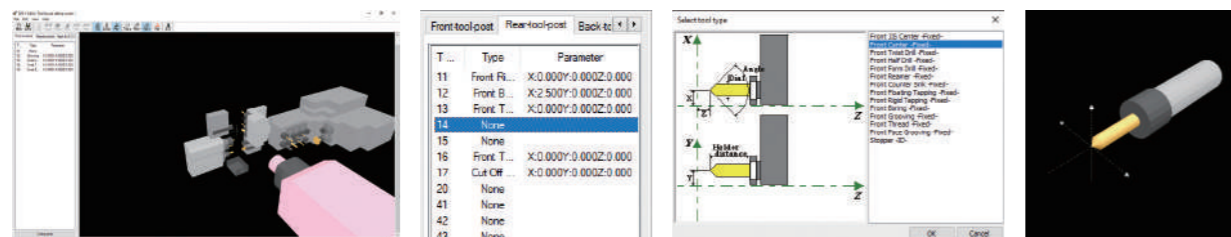
B0i series automatic programming software "Afile" (Standard)

B05-V Afile B06-V Afile

Easy input

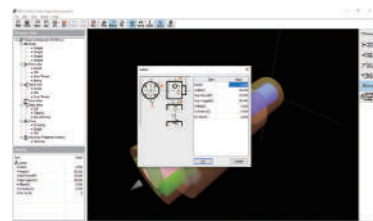
Input tool data

Tool definition can be implemented like actual tool setting on the machine. Operator simply sets the tool type, tool dimensions, mounting position, etc.

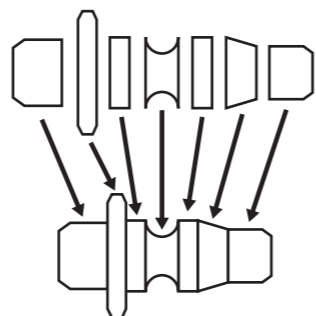


Input workpiece geometrical data

The stacking method does not require complicated operation like CAD. Even a beginner can quickly learn the shape definition process and minimize the input time.



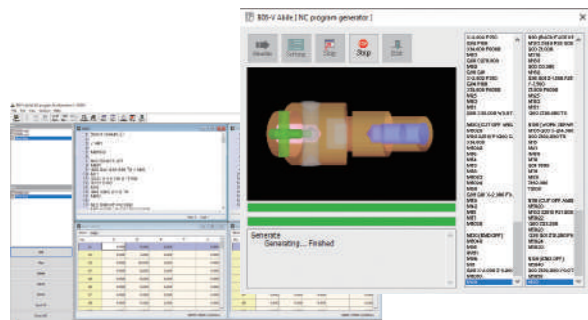
The stacking block method divides the OD of the workpiece into several blocks, then stacks all of them to form the shape of the workpiece.



Output a variety of information

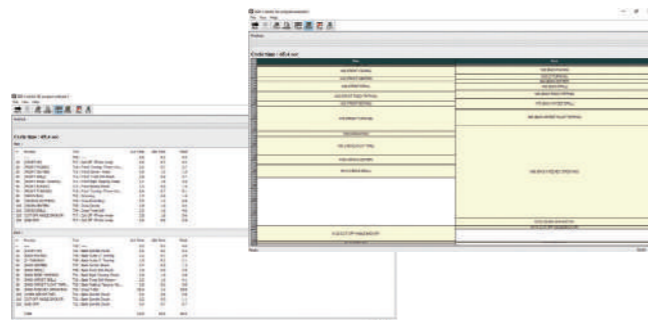
NC program / Offset data creation

Not only waiting codes in two-path programs but also NC programs with machine-specific M codes/G codes are automatically created.



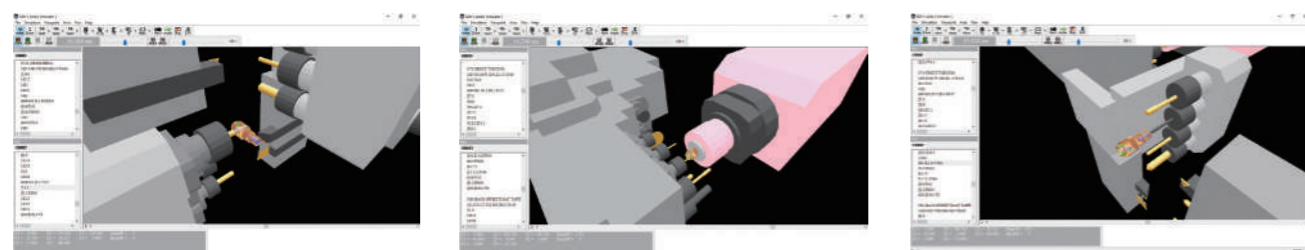
Cycle time calculation

The cycle time is automatically calculated, and the followings are displayed clearly: cutting/non-cutting time, process time of each path, relation between paths.



Simulation

The 3D simulation enables the operation check from any angle.



Machine specifications

Item		B0i125-VR	B0i126-VR	B0i205-VR	B0i206-VR	
Machining range, Machining capacity	Bar stock chucking dia.	φ3 mm to φ12 mm		φ3 mm to φ20 mm		
	Max. back spindle chucking dia.	φ12 mm		φ20 mm		
	Max. machining length	210 mm (Stationary guide bushing*) 170 mm (Direct-drive rotary guide bushing*)		80 mm (Carrier type rotary guide bushing*) 45 mm (Guide-bushless*)		
	Max. main spindle drilling dia.	φ7 mm		φ10 mm		
	Max. main spindle tapping dia.	M6		M10		
	Max. back spindle drilling dia.	φ10 mm				
	Max. back spindle tapping dia.	M10				
	Max. live tool drilling dia.	φ6 mm (Front tool post*/Back tool post*)				
	Max. live tool tapping dia.	M5 (Front tool post*/Back tool post*)				
	Max. live tool slotting cutter dia.	φ30 mm (Front tool post*)				
Machine	Main spindle speed	Max. 12,000 min ⁻¹ (Rated speed: 10,000 min ⁻¹)* ³		Max. 10,000 min ⁻¹ (Rated speed: 8,000 min ⁻¹)* ³		
	Back spindle speed * ⁴	Max. 12,000 min ⁻¹ (Rated speed: 8,000 min ⁻¹)* ³				
	Rotary guide bushing speed	Carrier type* ¹ : Max. 8,000 min ⁻¹ (Rated speed: 6,000 min ⁻¹)* ³		Carrier type* ¹ : Max. 8,000 min ⁻¹ (Rated speed: 6,000 min ⁻¹)* ³		
	Live tool speed	Direct-drive type* ¹ : Max. 12,000 min ⁻¹ (Rated speed: 8,000 min ⁻¹)* ³		Direct-drive type* ¹ : Max. 10,000 min ⁻¹ (Rated speed: 8,000 min ⁻¹)* ³		
		Front tool post* ¹ : Max. 10,000 min ⁻¹ (Rated speed: 6,800 min ⁻¹)* ³		Back tool post* ² : Max. 8,000 min ⁻¹ (Rated speed: 6,400 min ⁻¹)* ³		
	Tool storage capacity (Standard)	21	27	21	27	
	Tool size	12 mm × 12 mm × 85 mm				
	Rapid traverse rate	36 m/min(X2, Z2) 32 m/min(Y1, Z1) 24 m/min(X1) 15 m/min(Y2)(only for 6-linear axis machine)				
	Motors	Main spindle	2.2 / 3.7 kW		3.7 / 5.5 kW	
		Back spindle	2.2 / 3.7 kW			
Linear axes		0.5 kW (Z1: 0.75 kW)				
Live tool		1.0 kW (Front tool post* ¹)		0.75 kW (Back tool post* ²)		
		0.25 kW				
Coolant pump		0.25 kW				
Lubricating oil pump		3.0 W				
Power supply and others * ⁵	Weight	1,800 kg	1,850 kg	1,800 kg	1,850 kg	
	Power source requirement	10.7 kVA	10.9 kVA	12.9 kVA	13.1 kVA	
	Compressed air requirement	0.4 MPa or more				
	Air discharge rate	100 NL/min				
	Coolant tank capacity	210 L				
	Width x Depth x Height	2,035 mm × 1,055 mm × 1,700 mm				

Note for chucking: Do not perform chucking without bar stock on the main spindle and the back spindle.

*1 Option
 *2 5-linear axis machine: Option
 *3 When the rotation of the spindle exceeds the rated speed, keep the exceeding speed range within 30% of one cycle of the machining process.
 *4 There are restrictions by options such as front discharge.
 *5 Listed specifications may change depending on the mounted options.

NC specifications

Item	B0i125-VR/B0i205-VR	B0i126-VR/B0i206-VR
Controlled axes	X1, Z1, Y1, X2, Z2	X1, Z1, Y1, X2, Z2, Y2, C1, C2
Least input increment	0.001 mm (X-axis in diameter) /0.001 deg	
Max. programmable value	±8 digits	
Interpolation method	Linear, Circular	
Feedrate	1 to 6,000 mm/min	
Feedrate override	0 to 150% in 10% increments	
Dwell	G04 0 to 99999.999	
Absolute/incremental command	X, Z, Y: Absolute U, W, V: Incremental	X, Z, Y, C: Absolute U, W, V, H: Incremental
Number of tool offset	Main: 64 Back: 64	
LCD/MDI	10.4" color LCD	
Display language	English	
Part program storage size	2 Mbyte (sum of main and back)	
Number of registerable programs	1,000 (sum of main and back)	
Miscellaneous functions	Main: M5-digit Back: M3-digit	
Spindle functions	S5-digit	
Tool functions	T4-digit	

Machine standard accessories

Item	BOi125-VR BOi205-VR	BOi126-VR BOi206-VR
Automatic programming software (Abile)	○	○
Tool height compensation function	○	○
Tool counter	○	○
Periodic maintenance screen	○	○
Main/back spindle adapter	○	○
Door interlock (Tooling zone/Headstock area)	○	○
Coolant level switch	○	○
Spindle cooling unit	○	○
Automatic power shut off	○	○
Main/back spindle air purge	○	○
Shut-off valve for air purge	○	○
Automatic cut-off function/ Automatic facing function	○	○
Internal light (Tooling zone/Headstock area)	○	○
Dimensional compensation function	○	○
Tool tray	○	○
Front drill holder	○	○
Back drill holder	○	—
Back drive (4 fixed + 6 non-modular type)	—	○
Drill holder (ER11)	○ (7 pcs.)	○ (7 pcs.)
Center-adjustable double heads drill holder (ER11)	○ (1 pc.)	○ (1 pc.)
Main spindle brake	○	○
Main spindle 1 deg index	○	—

○: Standard —: Not available

NC standard accessories

Item	BOi125-VR BOi205-VR	BOi126-VR BOi206-VR
Chasing function	○	○
Continuous threading	○	○
Manual pulse generator	○	○
Memory card I/O interface	○	○
Background editing	○	○
Run time & parts number display	○	○
Custom macro	○	○
Constant surface speed control	○	○
Spindle synchronous control (rotation/phase)	○	○
Tool geometry/wear offset	○	○
Chamfering & corner R	○	○
Tool nose radius compensation	○	○
Multiple repetitive cycle	○	○
Extended program editing	○	○
Canned drilling cycle	○	○
Rigid tap (Main spindle, Back spindle)	○	○
Cut-off detection (Speed differential type)	○	○
Spindle speed fluctuation detection	○	○
Fixed data setting screen	○	○
Direct drawing dimension programming	○	○
Threading retract	○	○
Polar coordinate interpolation	○ *	○
Cylindrical interpolation	○ *	○
Offset input screen	○	○
M code/G code list screen	○	○
Shift amount setting for spindle phase synchronization control	○	○
Interference check function	○	○
High-speed CPU	○	○
Energy saving mode	○	○
Power consumption monitor	○	○
ECO operation mode	○	○

* Main/back spindle C-axis control (option) is additionally required.

○: Standard —: Not available

Options

Item	BOi125-VR BOi205-VR	BOi126-VR BOi206-VR	
Guide bushing	Stationary guide bushing	○	
	Carrier type rotary guide bushing	○	
	Direct-drive rotary guide bushing	○	
	Guide-bushless	○	
Spindle functions	Main spindle C-axis control	○	
	Back spindle C-axis control	○	
	Back spindle brake	○	
	Back spindle 1 deg index	○	
High accuracy functions	0.1 μm resolution	○	
	Coolant temperature controller	○	
Live tools (Front tool post)	Parallel type, 2 tools	○	
	Shift type, 2 tools	○	
	Shift type, 3 tools	○	
	Shift type, 4 tools	○	
	Thread whirling	○	
	Modular type 1 *2	○	
	Modular type 2 *3	○	
	Tool spindle *4	○	
	Double face spindle *4	○	
	Angular spindle *4	○	
	Thread whirling unit *4	○	
	Drill holder *4	○	
	Live tools (Back tool post)	Back drive (2 fixed + 2 modular type)	○
		Back tool spindle *4	○
Back cross spindle *4		○	
Fixed-tool adapter *4		○	
Coolant	High pressure pump	○	
	M code oil blow	○	
	Built-in coolant	○	
	Wavy nozzle	○	
Work discharge	Work conveyor	○	
	Work catcher	○	
	Work tray	○	
	Front discharge	○	
Chip disposal	Chip conveyor	○	
	Chip carrier	○	
Machine maintenance and Monitoring functions	Cut-off detection (Touch switch type)	○	
	Signal indicator	○	
	MT-LINK i	○	
Tooling	AI servo monitor *5	○	
	Adapter for non-round bar (main spindle/back spindle)	○	
	Spindle liner	○	
NC functions	Tool set gauge	○	
	Multi-language display	○	
	Manual handle retrace	○	
	Inch/metric conversion	○	
	Helical interpolation	○ *6	
	3-dimensional coordinate conversion	○	
	Automatic setting of pick-up position (G430-G431)	○	
Torque limit skip for Z2 axis (G432)	○		
Safety and other	Coolant flow switch	○	
	Bar feeder interface	○	
	Rigid tap (live tool)	○	
	RS232C interface	○	
Abnormal load detection	○		

*1 Brake is an option.

*2 2 non-modular type + 1 modular type

*3 3 non-modular type + 2 modular type

*4 Selectable for modular type.

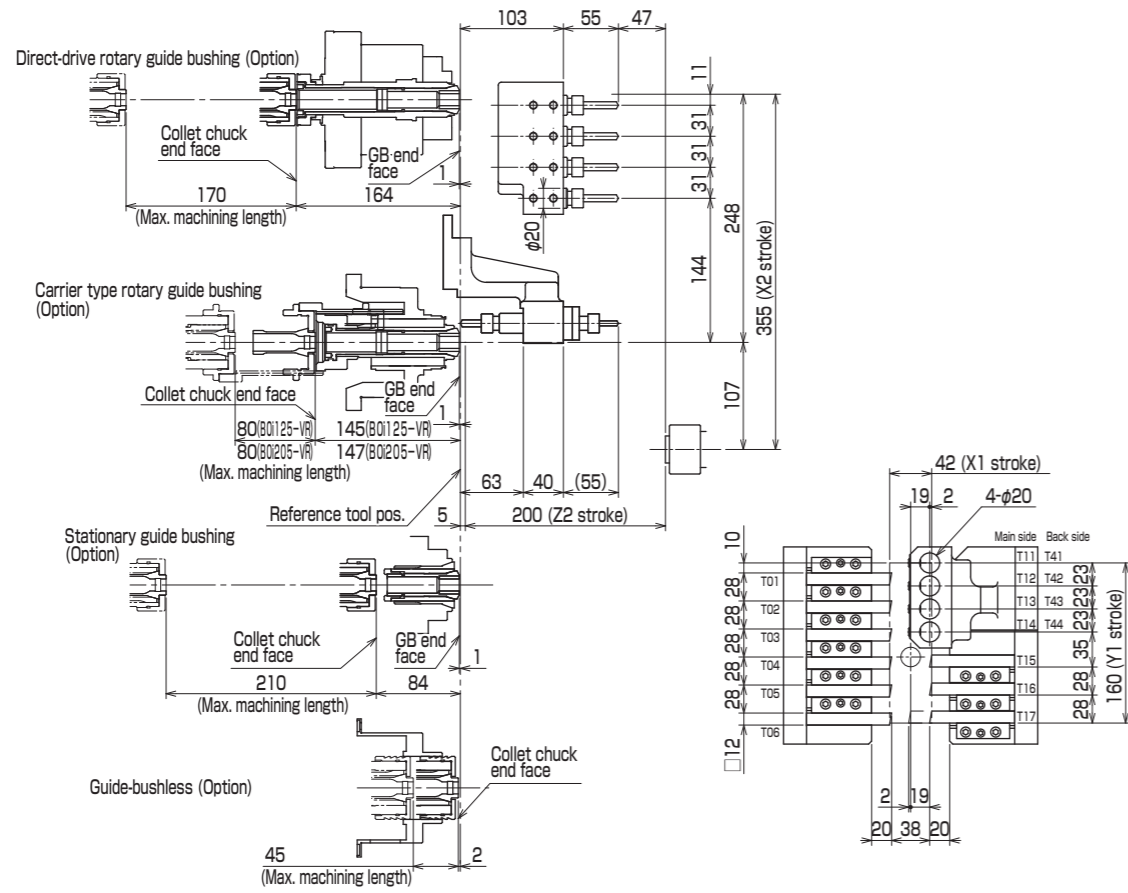
*5 MT-LINK i (option) is additionally required.

*6 Main/back spindle C-axis control (option) is additionally required.

○: Available —: Not available

Tooling zone

BOi125-VR/BOi205-VR



Tooling zone

BOi126-VR/BOi206-VR

