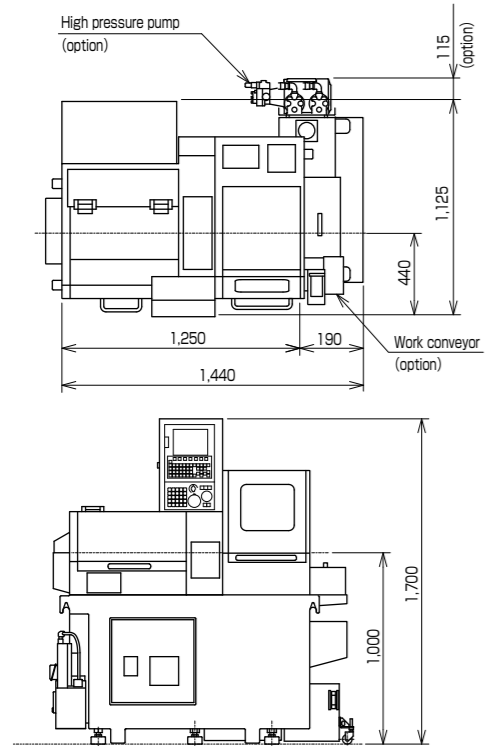
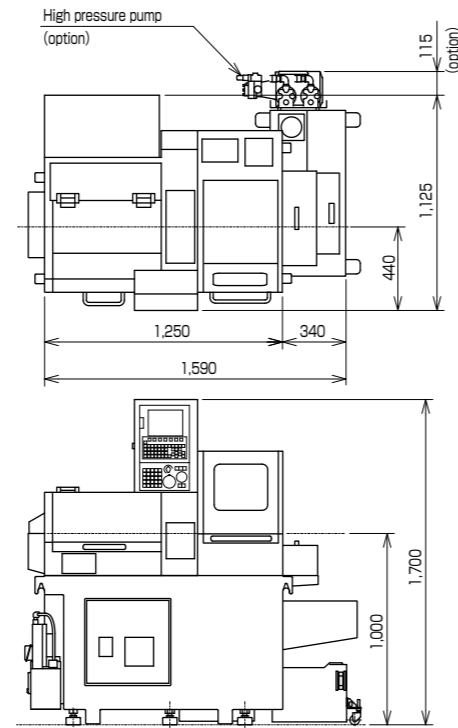


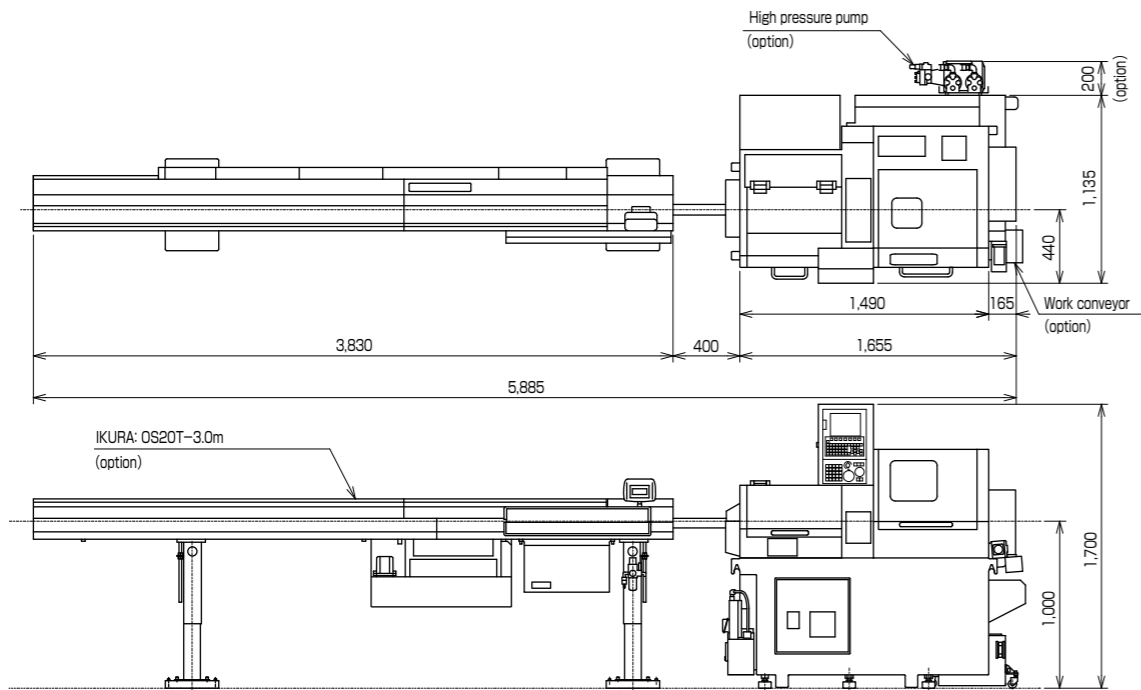
B073-III



B0123-III/203-III



B074-III/75-III/124-III/125-III/126-III/204-III/205-III/206-III



Export permission by the Japanese Government may be required for exporting our products in accordance with the Foreign Exchange and Foreign Trade Law. Please contact our sales office before exporting our products.

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/>

TSUGAMI

CNC Precision Automatic Lathe

BO Series

- B073-III / B0123-III / B0203-III
- B074-III / B0124-III / B0204-III
- B075-III / B0125-III / B0205-III
- B0126-III / B0206-III



Enhanced variation and rich options cover diversified workpieces

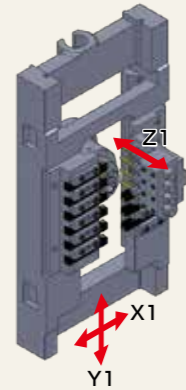


Wide selection of Swissturn lathes best suited to your application

Basic machines provide maximum profits by the minimal investment.

B073-III/123-III/203-III

φ7 mm 3-axis control φ12 mm 3-axis control φ20 mm 3-axis control



Front & back simultaneous machining	—
Back spindle	—
Cross rotary tool	Option
Guide-bush-less kit	Option
Direct-drive guide bushing	Option
C-axis	Option
Cross rigid tap	Option
Number of tools	
OD tool storage capacity	9
Cross-rotary	Option
Front	Fixed 4
Rotary	—
Back	Fixed —
Rotary	—
Total tool storage capacity	13

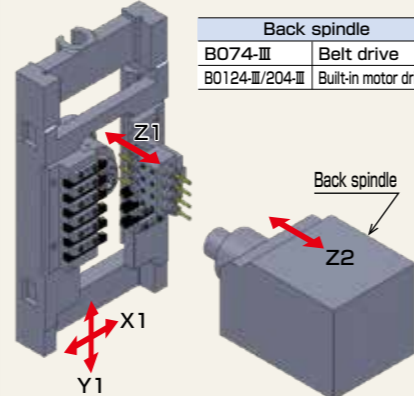


(B0123-III)

With back spindle

B074-III/124-III/204-III

φ7 mm 4-axis control φ12 mm 4-axis control φ20 mm 4-axis control



Back spindle	
B074-III	Belt drive
B0124-III/204-III	Built-in motor drive

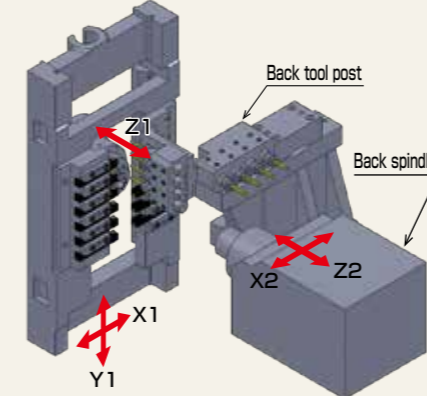
Front & back simultaneous machining	—
Back spindle	○
Cross rotary tool	Option
Guide-bush-less kit	Option
Direct-drive guide bushing	Option
C-axis	Option
Cross rigid tap	Option
Number of tools	
OD tool storage capacity	9
Cross-rotary	Option
Front	Fixed 4
Rotary	—
Back	Fixed 4
Rotary	—
Total tool storage capacity	17



Front & back simultaneous machining

B075-III/125-III/205-III

φ7 mm 5-axis control φ12 mm 5-axis control φ20 mm 5-axis control



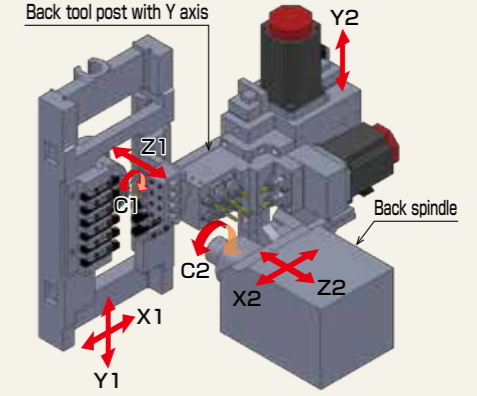
Front & back simultaneous machining	○
Back spindle	○
Cross rotary tool	Option
Back rotary tool	Option
Guide-bush-less kit	Option
Direct-drive guide bushing	Option
C-axis	Option
Cross rigid tap	Option
Back rigid tapping	Option
Number of tools	
OD tool storage capacity	9
Cross-rotary	Option
Front	Fixed 4
Rotary	—
Back	Fixed 8, Option (6)
Rotary	Option (2)
Total tool storage capacity	21



Front and back simultaneous processing including milling thanks to the Y2 axis control

B0126-III/206-III

φ12 mm 6-axis control φ20 mm 6-axis control



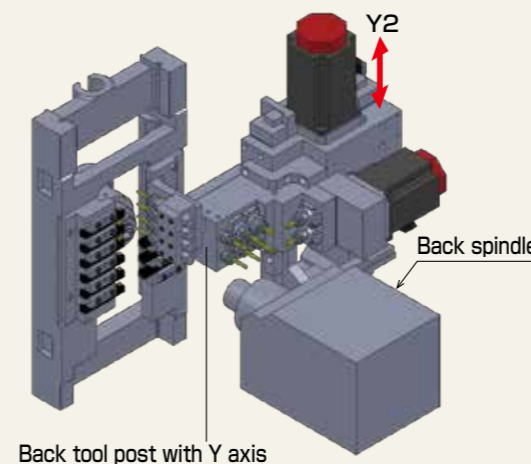
Front & back simultaneous machining	○
Back spindle	○
Cross rotary tool	Option
Back rotary tool	○
Guide-bush-less kit	Option
Direct-drive guide bushing	Option
C-axis	○
Cross rigid tap	Option
Back rigid tapping	Option
Number of tools	
OD tool storage capacity	9
Cross-rotary	Option
Front	Fixed 4
Rotary	—
Back	Fixed 8
Rotary	Front2/Cross2
Total tool storage capacity	25



B0 Series Basic structure

	Z axis on B.S.	X-,Z-axis on B.S.	Back tool post	Back tool post with live tool	Back tool post with Y2 axis	Guide-bush-less	NC unit (FANUC)		Guide-bush		Max. dia. x Max. length (mm)				
							0i-TF	32i-B	Carrier type	Direct-drive	0	100	200	300	350
B073-III	—	—	—	—	—	—	○	—	—	Option	Option	φ7x70mm			
B074-III	○	—	—	—	—	—	—	○	—	Option	Option	φ7x70mm			
B075-III	—	○	○	Option	—	—	—	○	—	Option	Option	φ7x70mm			
B0123-III	—	—	—	—	—	Option	○	—	—	Option	Option	φ12x210mm			
B0124-III	○	—	—	—	—	Option	—	○	—	Option	Option	φ12x210mm			
B0125-III	—	○	○	Option	—	Option	—	○	—	Option	Option	φ12x210mm			
B0126-III	—	○	○	○	○	Option	—	—	○	Option	Option	φ12x210mm			
B0203-III	—	—	—	—	—	Option	○	—	—	Option	Option	φ20x210mm			
B0204-III	○	—	—	—	—	Option	—	○	—	Option	Option	φ20x210mm			
B0205-III	—	○	○	Option	—	Option	—	○	—	Option	Option	φ20x210mm			
B0206-III	—	○	○	○	○	Option	—	—	○	Option	Option	φ20x210mm			

Controllable linear axis and functions



	3-axis	4-axis	5-axis	6-axis
Back spindle	—	○	○	○
Back tool post	—	—	○	—
Back tool post with Y2 axis	—	—	—	○

- 3-axis control:** Dedicated front side machining only, without back spindle
- 4-axis control:** With back spindle, the parted-off side machining is possible. Tool post is mutual use.
- 5-axis control:** By the dedicated tool post for back machining, front & back simultaneous machining is possible and more productive than 4-axis machine.
- 6-axis control:** Thanks to the Y2 axis on back tool post, milling capability is improved on the back side machining.

B07-III Series

φ7



B074-III

B073-III 3-axis control Basic machine

B074-III 4-axis control Built-in back spindle

B075-III 5-axis control Back tool post

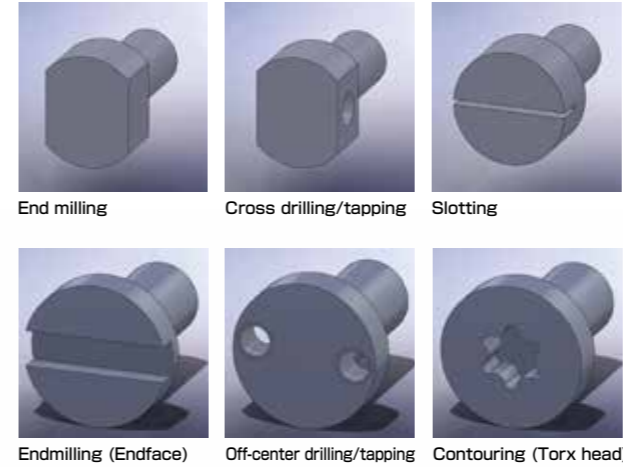
Specialized machine for miniaturizing micro precision IT-related parts Chuck bar stock dia(φ1 to φ7 mm)

- Toggles are replaced with Tsugami's outstanding chuck operation mechanism, which has excellent response and balance characteristics. This contributes to improve roundness in high-speed machining. Ceramic ball bearings contributes to the improvement in the stable surface finish / surface roughness, and tool life in high-speed machining.
- Clearance of the guide bushing can be adjusted from tooling zone side. (Stationary guide bushing) The optimum work catcher for micro workpieces that can be discharged both from the back spindle side (B074-III/B075-III) or cutting-off side is equipped as standard.
- Complete simultaneous machining is possible with back tool post (B075-III)
- Optional direct-drive rotary guide bushing provides high speed and accurate machining.
- Guide-bush type or guide-bushless type is selectable according to workpieces.
- Optional modular live tool provides frontal or back off-center drilling.
- Pursuing operability, improving machining accuracy and reducing cycle time thanks to the newly developed software.
 - Shortening cycle time
Maximum speed of the live tool is increased⇒Maximum speed of the live tool is 8,000 min⁻¹ and reduces cycle time in small hole drilling.
 - Improvement of operability
Adding rapid feedrate override function⇒It is possible to debug part program at actual commanded cutting feed.
Tool post interference prevention⇒Back spindle is positioned after retracting to a position not to interfere. (Back spindle positioning without retraction is also possible.)
- Automatic programming system prepared as standard.
- More rigid bed and tool post realize more improving cutting ability.
- Maximum speed of optional cross live tool is increased. (Max. 8,000 min⁻¹)
- Improving chip disposal ability.

Complex machining is possible on the back side of the workpiece using the back live tool. (Option)

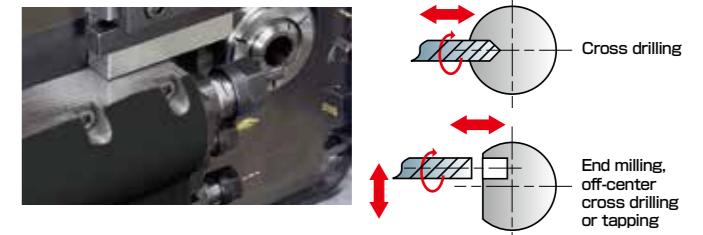
On B075-III back side off-center drilling, off-center tapping or endmilling can be overlapped with the main side machining.

Machining Patterns of back milling



End milling Cross drilling/tapping Slotting
Endmilling (Endface) Off-center drilling/tapping Contouring (Torx head)

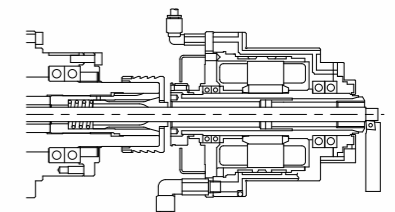
Y-axis milling with cross tool spindle (Option)



Direct-drive rotary guide bushing (Option) assures increase of spindle speed.

Improved geometrical accuracy, dimensional accuracy, and surface roughness with high speed and quiet operation.

	Max. speed	Machining length
B073-III/B074-III/B075-III	12,000 min ⁻¹	70 mm



Direct-drive rotary guide bush unit

Modular type tool spindle (Option)

Cross drill Modular type Option

Rear tool post (3220-Y7063)			
Frontal drilling holder	φ20 x 4 holes		
Turning tool	□12 x 2		

Note: With the modular front live tool, the rear tool post becomes exclusive type.

Front live tool (3220-Y7061)			
Max. speed: 8,000 min ⁻¹			
Modular type	1 hole	Max.drilling diameter	φ6
Collet	ER11 x 2	Max.tapping size	M5
Turning tools	□12 x 3	Motor power	0.75 kW

Attachments for modular type (option)	
Tool spindle (3281-T051)	Double face spindle (3220-Y7065)

Back tool post Modular type Option

Live tool on back tool post (3220-Y7071) (B075-III only)			
Max. speed: 8,000 min ⁻¹			
Drill holder for back machining	φ20 x 2 holes	Max.drilling diameter	φ6
Modular type	2 holes	Max.tapping size	M5
Collet	ER11	Motor power	0.75 kW

Attachments for modular type (option)		
Back tool spindle (3220-Y7072)	Back adapter (3220-Y7073)	Back cross tool spindle (3220-Y7074)



B012-III Series

φ12



B0125-III

- B0123-III** 3-axis control Basic machine
- B0124-III** 4-axis control Built-in back spindle
- B0125-III** 5-axis control Back tool post
- B0126-III** 6-axis control Back tool post with Y-axis

- Complete simultaneous machining is possible with back tool post (B0125-III/B0126-III). Moreover, simultaneous machining including milling is possible by adding Y-axis on the back tool post (B0126-III).
- Optional direct-drive rotary guide bushing provides high speed and accurate machining.
- Guide-bush type or guide-bushless type is selectable according to workpieces.
- Optional modular live tool provides frontal or back off-center drilling.
- Pursuing operability, improving machining accuracy and reducing cycle time thanks to the newly developed software.
 - Shortening cycle time
Maximum speed of the live tool is increased ⇒ Maximum speed of the live tool is 8,000 min⁻¹ and reduces cycle time in small hole drilling.
 - Improvement of operability
Adding rapid feedrate override function ⇒ It is possible to debug part program at actual commanded cutting feed.
Tool post interference prevention ⇒ Back spindle is positioned after retracting to a position not to interfere. (Back spindle positioning without retraction is also possible.)
- Automatic programming system prepared as standard.
- More rigid bed and tool post realize more improving cutting ability.
- Maximum speed of optional cross live tool is increased. (Max. 8,000 min⁻¹)
- Improving chip disposal ability.

Modular type tool spindle (Option)

Cross drill Modular type Option

Rear tool post (3220-Y7063)	
Frontal drilling holder	φ20 x 4 holes
Turning tool	□12 x 2
Note: With the modular front live tool, the rear tool post becomes exclusive type.	
Front live tool (3220-Y7061)	
Max. speed: 8,000 min ⁻¹	
Modular type	1 hole
Max. drilling diameter	φ6
Collet	ER11 x 2
Max. tapping size	M5
Turning tools	□12 x 3
Motor power	0.75 kW
Attachments for modular type (option)	
Tool spindle (3281-T051)	Double face spindle (3220-Y7065)

Back tool post Modular type Option

Live tool on back tool post (3220-Y7071) (B0125-III only)			
Max. speed: 8,000 min ⁻¹			
Drill holder for back machining	φ20 x 2 holes	Max. drilling diameter	φ6
Modular type	2 holes	Max. tapping size	M5
Collet	ER11	Motor power	0.75 kW
Attachments for modular type (option)			
Back tool spindle (3220-Y7072)	Back adapter (3220-Y7073)	Back cross tool spindle (3220-Y7074)	

Y-axis milling with cross tool spindle (Option)

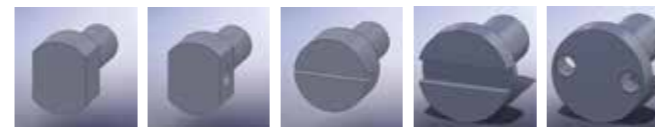
Cross drilling

End milling, off-center cross drilling or tapping

Complex machining is possible on the back side of the workpiece using the back live tool. (Option)

On B0125-III back side off-center drilling, off-center tapping or endmilling can be overlapped with the main side machining. **B0125-III**

Machining Patterns of back milling



End milling, Cross drilling/tapping, Slotting, Endmilling (Endface), Off-center drilling/tapping



Contouring (Torx head)

Specification

Item	Max. speed	Max. drilling dia.	Max. tapping dia.	Motor output	Applicable collet
Specification	8,000 min ⁻¹	φ6	M5	0.75 kW	ER11

*Machining capacity is based on JIS S45C or equivalent.

By adding Y-axis on the back tool post, the milling capability on the back side is improved even on the small size machines.

On B0126-III simultaneous machining including milling such as off-center drilling, off-center tapping, endmilling, or cross drilling on back side is possible by adding Y-axis on the back tool post **B0126-III**

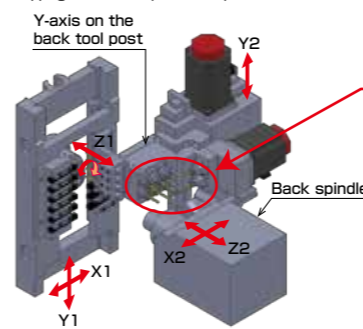
Machining Patterns of back milling



End milling, Cross drilling/tapping, Cross off-center drilling/tapping, Slotting, Endmilling (Endface)



Off-center drilling/Tapping, Contouring (Torx head)



Specification

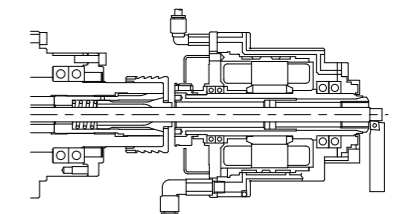
Item	Max. drilling dia.	Max. tapping dia.	Motor output
Specification	φ6	M5	0.75 kW

*Machining capacity is based on JIS S45C or equivalent.

Direct-drive rotary guide bushing (Option) assures increase of spindle speed.

Improved geometrical accuracy, dimensional accuracy, and surface roughness with high speed and quiet operation.

	Max. speed	Machining length
B0123-III/124-III/125-III/126-III	12,000 min ⁻¹	170 mm



Direct-drive rotary guide bush unit

Optional guide-bush type or guide-bushless type is selectable according to workpieces.

- 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 that most suitable operation depend on 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.

Guide bushing type

Guide-bushless type

Remnant length

Remnant length

(Carrier type rotary guide bushing)

Remnant length	Carrier type rotary guide bushing	Direct-drive guide bushing	Guide-bushless
B0123-III/124-III/125-III/126-III	180 mm+α mm	210 mm+α mm	30 mm+α mm

Thread whirling (Option)



Specification for whirling unit

Max. machining dia.	Cutting depth	Inclined angle
φ9	MAX. 2.5 mm	0° to 30°

Max. cutter speed	Number of OD tools
MAX. 4,000 min ⁻¹	6

*Machining capacity is based on JIS S45C or equivalent.

Specification for one spindle cross drill

Max. drilling dia.	Max. tapping dia.
φ6	M5 x 0.8

Max. speed	Applicable collet
MAX. 5,000 min ⁻¹	ER11

*Machining capacity is based on JIS S45C or equivalent.

B020-III Series

φ20



B0206-III

- B0203-III** 3-axis control Basic machine
- B0204-III** 4-axis control Built-in back spindle
- B0205-III** 5-axis control Back tool post
- B0206-III** 6-axis control Back tool post with Y-axis

- Complete simultaneous machining is possible with back tool post (B0205-III/B0206-III). Moreover, simultaneous machining including milling is possible by adding Y-axis on the back tool post (B0206-III).
- Optional direct-drive rotary guide bushing provides high speed and accurate machining.
- Guide-bush type or guide-bushless type is selectable according to workpieces.
- Optional modular live tool provides frontal or back off-center drilling.
- Pursuing operability, improving machining accuracy and reducing cycle time thanks to the newly developed software.
 - Shortening cycle time
 - Maximum speed of the live tool is increased ⇒ Maximum speed of the live tool is 8,000 min⁻¹ and reduces cycle time in small hole drilling.
 - Improvement of operability
 - Adding rapid feedrate override function ⇒ It is possible to debug part program at actual commanded cutting feed.
 - Tool post interference prevention ⇒ Back spindle is positioned after retracting to a position not to interfere. (Back spindle positioning without retraction is also possible.)
- Automatic programming system prepared as standard.
- More rigid bed and tool post realize more improving cutting ability.
- Maximum speed of optional cross live tool is increased. (Max. 8,000 min⁻¹)
- Improving chip disposal ability.

Modular type tool spindle (Option)

Cross drill Modular type Option

Rear tool post (3220-Y7063)	
Frontal drilling holder	φ20 x 4 holes
Turning tool	□12 x 2
Note: With the modular front live tool, the rear tool post becomes exclusive type.	
Front live tool (3220-Y7061)	
Max. speed: 8,000 min ⁻¹	
Modular type	1 hole
Max. drilling diameter	φ6
Collet	ER11 x 2
Max. tapping size	M5
Turning tools	□12 x 3
Motor power	0.75 kW
Attachments for modular type (option)	
Tool spindle (3281-T051)	Double face spindle (3220-Y7065)

Back tool post Modular type Option

Live tool on back tool post (3220-Y7071) (B0205-III only)			
Max. speed: 8,000 min ⁻¹			
Drill holder for back machining	φ20 x 2 holes	Max. drilling diameter	φ6
Modular type	2 holes	Max. tapping size	M5
Collet	ER11	Motor power	0.75 kW
Attachments for modular type (option)			
Back tool spindle (3220-Y7072)	Back adapter (3220-Y7073)	Back cross tool spindle (3220-Y7074)	

Y-axis milling with cross tool spindle (Option)

Cross drilling

End milling, off-center cross drilling or tapping

Complex machining is possible on the back side of the workpiece using the back live tool. (Option)

On B0205-III back side off-center drilling, off-center tapping or endmilling can be overlapped with the main side machining. **B0205-III**

Machining Patterns of back milling

End milling

Cross drilling/tapping

Slotting

Endmilling (Endface)

Off-center drilling/tapping

Contouring (Torx head)

Specification

Item	Max. speed	Max. drilling dia.	Max. tapping dia.	Motor output	Applicable collet
Specification	8,000 min ⁻¹	φ6	M5	0.75 kW	ER11

*Machining capacity is based on JIS S45C or equivalent.

By adding Y-axis on the back tool post, the milling capability on the back side is improved even on the small size machines.

On B0206-III simultaneous machining including milling such as off-center drilling, off-center tapping, endmilling, or cross drilling on back side is possible by adding Y-axis on the back tool post **B0206-III**

Machining Patterns of back milling

End milling

Cross drilling/tapping

Cross off-center drilling/tapping

Slotting

Endmilling (Endface)

Off-center drilling/Tapping

Contouring (Torx head)

Y-axis on the back tool post

Back spindle

Back tool post	
End face	Cross
Live tool	
ER11 x 2	
Max. speed 8,000 min ⁻¹	
Non-modular type	
Fixed tool	
φ20 x 4 holes	

Specification

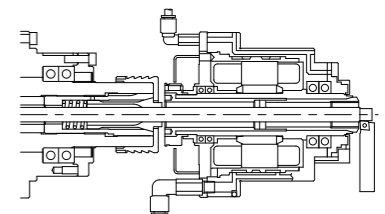
Item	Max. drilling dia.	Max. tapping dia.	Motor output
Specification	φ6	M5	0.75 kW

*Machining capacity is based on JIS S45C or equivalent.

Direct-drive rotary guide bushing (Option) assures increase of spindle speed.

Improved geometrical accuracy, dimensional accuracy, and surface roughness with high speed and quiet operation.

	Max. speed	Machining length
B0203-III/204-III/205-III/206-III	10,000 min ⁻¹	170 mm



Direct-drive rotary guide bush unit

Optional guide-bush type or guide-bushless type is selectable according to workpieces.

- 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 that most suitable operation depend on 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.

Guide bushing type

Guide-bushless type

Remnant length

Remnant length

(Carrier type rotary guide bushing)

Remnant length	Carrier type rotary guide bushing	Direct-drive guide bushing	Guide-bushless
B0203-III/204-III/205-III/206-III	180 mm+α mm	210 mm+α mm	30 mm+α mm

Thread whirling (Option)



Specification for whirling unit

Max. machining dia.	Cutting depth	Inclined angle
φ9	MAX. 2.5 mm	0° to 30°

Max. cutter speed	Number of OD tools
MAX. 4,000 min ⁻¹	6

*Machining capacity is based on JIS S45C or equivalent.

Specification for one spindle cross drill

Max. drilling dia.	Max. tapping dia.
φ6	M5 x 0.8

Max. speed	Applicable collet
MAX. 5,000 min ⁻¹	ER11

*Machining capacity is based on JIS S45C or equivalent.

Options



3-spindle cross drill

Y-axis milling function with cross-tool spindle. This device is used for drilling, tapping or milling from cross side with the combination of the main spindle indexing. The slitting cutter of $\phi 30$ mm ($\phi 25$ mm: B073-III/B074-III/B075-III) can be mounted on the tool position T03.

- B073-III/B074-III/B075-III:3270-Y050
- B012-III/B020-III:3220-Y5150



4-spindle cross drill

This device is used for drilling, tapping or milling from cross side with the combination of the main spindle indexing. The slitting cutter of $\phi 30$ mm can be mounted on the tool position T03 and T05. ($\phi 25$ mm: B073-III/B074-III/B075-III)

- B073-III/B074-III/B075-III:3270-Y060
- B012-III/B020-III:3220-Y5160



WAVY coolant nozzle system

The discharge angle can be adjusted arbitrarily. Swivel angle, moving speed can be adjustable.

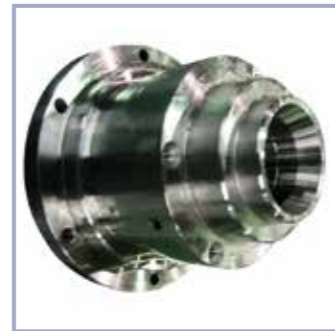
- B012-III/B020-III:3220-Y7050



Front discharge

An ejector ejects the workpiece from inside of the back spindle. (Except 3-axis machines)

- B012-III/B020-III:3220-Y6300
- B074-III/B075-III:3270-Y100



Stationary guide bushing

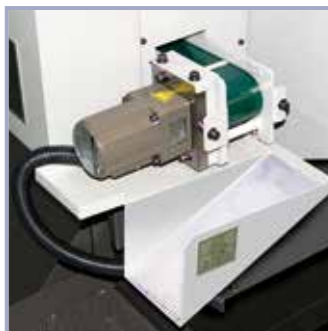
The device to install stationary guide bushing on the guide bush unit. It can correspond to various guide bushing by changing the guide bushing adapter. (Standard on B073-III/B074-III/B075-III)



Guide-bushing-less

When the workpiece length is short compared with the diameter of the bar stock (workpiece length/ bar stock diameter < 3), "Guide-bushing-less Type", which is eliminating the guide bush is practical. The specification has the advantage of short remnant and the use of drawn bar. (Except B073-III/B074-III/B075-III)

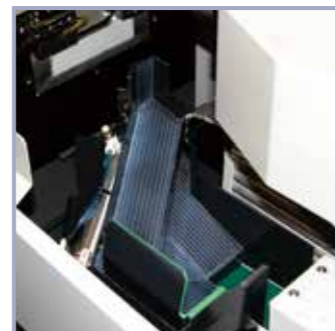
- B012-III/B020-III:3220-Y5120



Work conveyor

After receiving the parted-off workpiece from the main spindle or the ejected workpiece from the back spindle with a catcher, it is carried out with a conveyor to outside of the machine. (Except B073-III/B074-III/B075-III)

- B012-III/B020-III:3220-Y7080



Work catcher

After receiving the parted-off workpiece from the main spindle or the ejected workpiece from the back spindle with a catcher, it is stored inside the receiving bin settled inside of the machine. (Except B073-III/B074-III/B075-III)

- B012-III/B020-III:3220-Y7090



Signal indicator (Triple)

Three-color lamp lights and it informs of the state of the machine.

- B07-III/B012-III/B020-III/3220-U 6250

Easy-to-use software

Cutting-off or facing program is simplified with minimum inputting.

Automatic cutting-off/facing

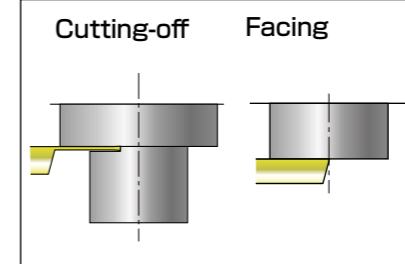
Cutting-off or facing is executed by inputting on the dedicated screen.

Inputting tool number, offset number, bar diameter, spindle speed and feedrate, and by pressing start soft key:

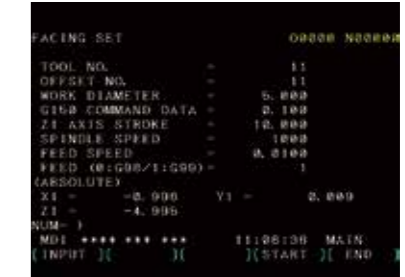
Coolant ON, Spindle rotation ON

Approaching

Cutting-off/facing

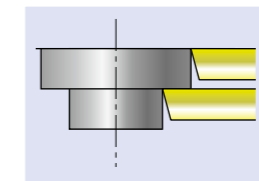


In this manner cutting-off or facing is simply executed. Moreover, same operation can be performed by the dedicated program code.



Tool-height compensation function (Patented)

Execute tryout turning including bigger OD and smaller OD, and measure the both dimensions. On the dedicated screen by inputting the measured value and other data and pressing "CLAC" button, the compensation value is easily created. By pressing "UPDATE" soft key, the tool height offset data will be updated.



Rich information for the maintenance helps the effective operation

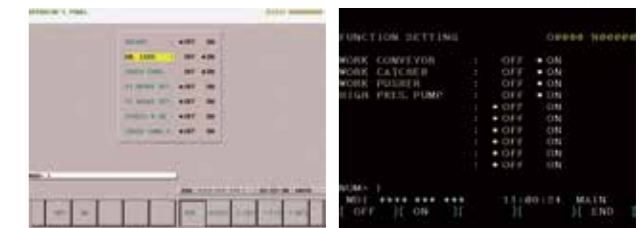
Periodical maintenance

Useful maintenance information such as amount of lubrication oil, cleaning of chuck/guide bush, or battery replacement timing is displayed, contribute to the consistent maintenance. Items or setting period can be customized, and it can be optimized.



Function setting

ON/OFF selection of various options such as work discharge, HP coolant, spindle indexing can be easily set on the dedicated screen.

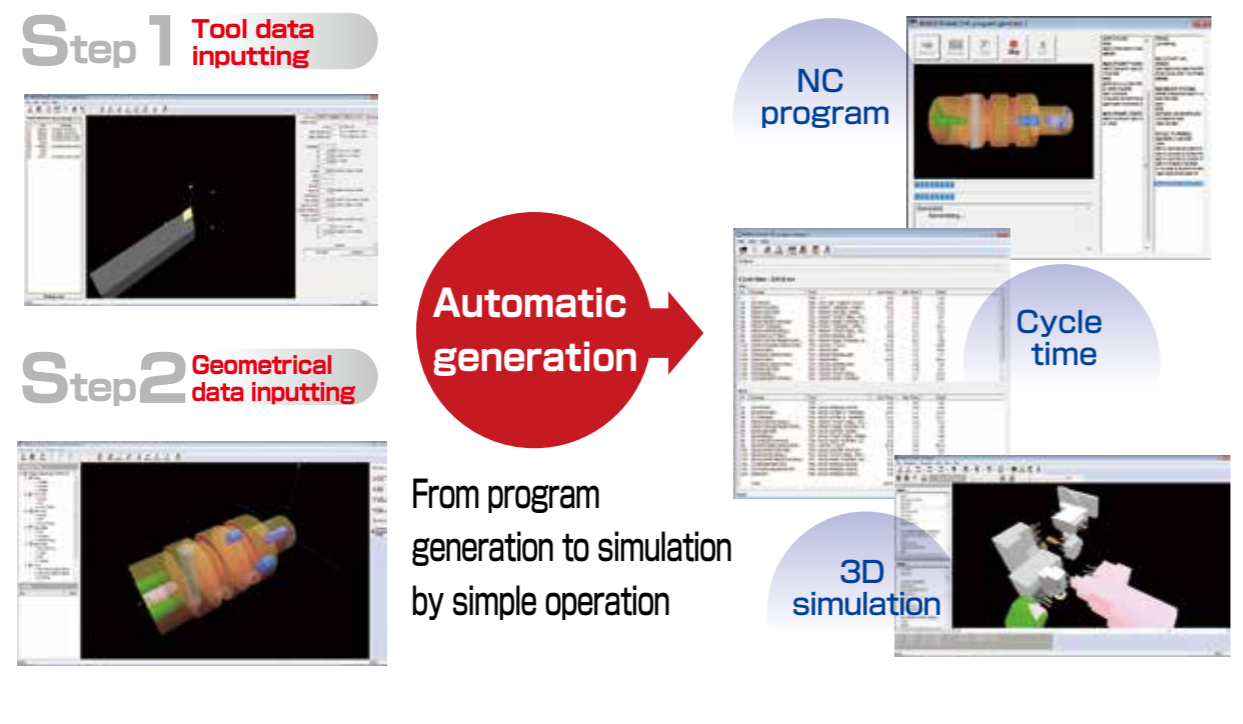


B0 series automatic programming system "Able". (Standard)

B03-III Able B05-III Able B04-III Able B06-III Able

Tsugami's rich know-how such as machining processes, machining conditions, etc. are taken into the software, and any novice programmers can create standardized and high quality programs.

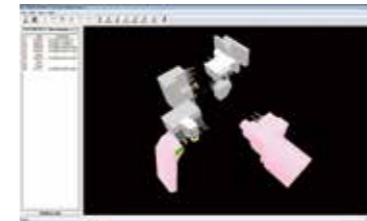
Creating NC program in two steps



Simple inputting

Tool definition

Tool definition as like as an actual mechanical setting, inputting tool type, tool width, drill dia., setting position, etc. for each tool.



Click T number, and select the type of tool to be set. Just input simple data as tool dia. or width is enough.

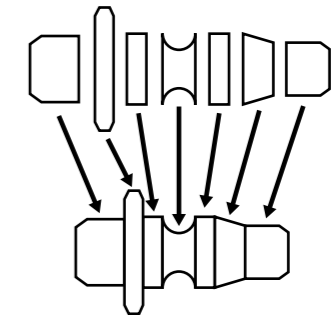


Work geometry definition

No complicated operation like CAD required for work geometry definition. By building up simple shapes (building block method), geometry can be created with ease in a drastically shortened time. Even a novice can quickly learn the input method.



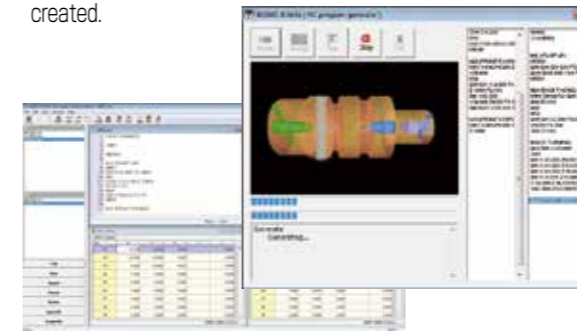
Building block method means dividing work shape into some blocks, and by building the block to define the work piece geometry.



Useful output

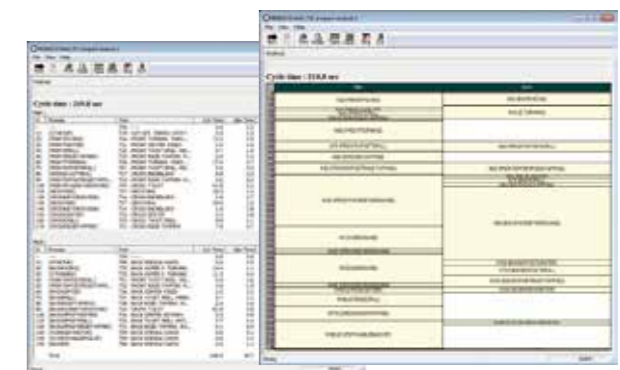
NC program / Offset data

NC program including not only the matching of two path control, but also the exclusive M codes/G codes is automatically created.



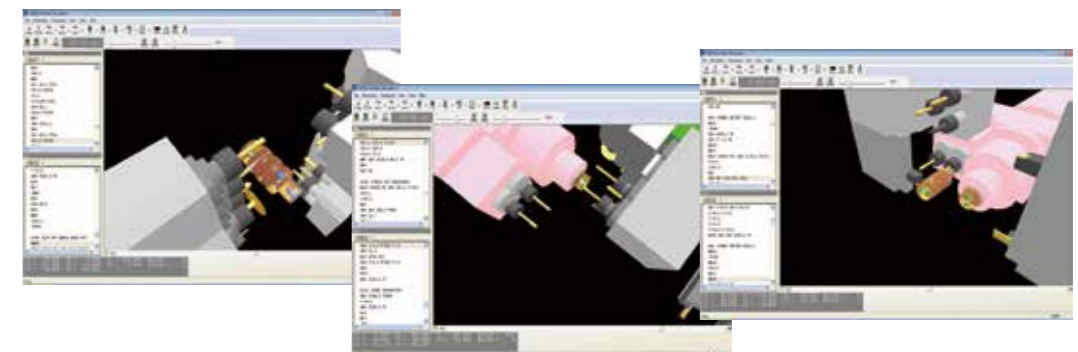
Cycle time

The cycle time is calculated automatically, and cutting time/idle time as well as process time for each path system can be displayed.



Simulation

The 3D simulation function enables the checking the operations from any angle.



Able [B0]Series lineup

Applicable models	Model	Code
	B03-III Able	B073-III/B0123-III/B0203-III/BM163-III
	B04-III Able	B074-III/B0124-III/B0204-III/BM164-III
	B05-III Able	B075-III/B0125-III/B0205-III/BM165-III
	B06-III Able	B0126-III/B0206-III

Hardware requirement

Item	Specifications
OS	Windows Vista Windows 7 Windows 8 Windows 10 Internet Explorer 6.0 or more and Open GL library has installed.
Computer	PC/AT compatibles (DOS/V machines)
CPU	Intel Celeron 2GHz or faster (3GHz or more recommended)
Memory	512MB or more
HDD	100MB or more free space required
CD-ROM drive	Double speed or more (Used at installation)
Display	16.77 million color bit display (Full color) Resolution: 1024 x 768 or higher

The guidance of the machine selection

The machine selection should be defined by the current workpiece demand such as bar diameter or machining area, and expecting workpieces in future.
 BO series can be divided into 4 categories.
 The selection flow is as follows:

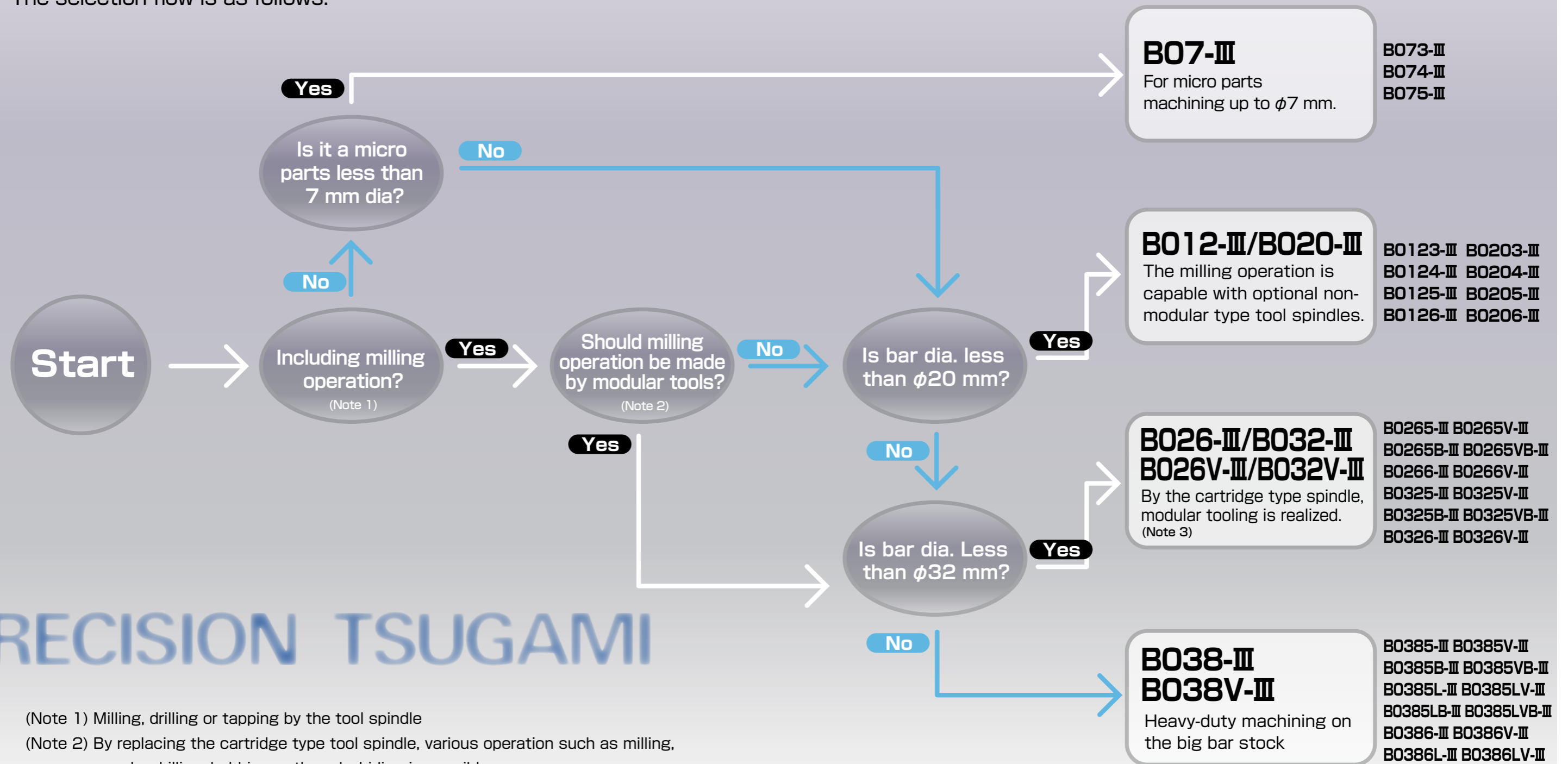
BO Series

B073-III / B0123-III / B0203-III

B074-III / B0124-III / B0204-III

B075-III / B0125-III / B0205-III / B0126-III / B0206-III

Machine Models



(Note 1) Milling, drilling or tapping by the tool spindle

(Note 2) By replacing the cartridge type tool spindle, various operation such as milling, angular drilling, hobbing or thread whirling is possible.

(Note 3) Replaceable tool spindle

PRECISION TSUGAMI

Standard Specifications of Machine

Item	B073-III	B074-III	B075-III	B0123-III	B0124-III	B0203-III	B0204-III	B0125-III	B0205-III	B0126-III	B0206-III		
Machine capacity, Machining range	Working barstock diameter	φ1 to φ7 mm			φ3 to φ12 mm		φ3 to φ20 mm		φ3 to φ12 mm	φ3 to φ20 mm	φ3 to φ12 mm	φ3 to φ20 mm	
	Max. machining length	70 mm (40 mm (Carrier type rotary guide bushing)/ 70 mm (Direct-drive rotary guide bushing))			210 mm (80/170 mm: (Rotary guide bushing)/ 45 mm (Guide bush less))*2		210 mm (80/170 mm: (Rotary guide bushing)/ 45 mm (Guide bush less))*2						
	Max. main spindle drilling diameter	φ4			φ7		φ10		φ7	φ10	φ7	φ10	
	Max. main spindle tapping diameter	M4 x 0.7			M6x1		M10		M6x1	M10	M6x1	M10	
	Max. back spindle chucking dia.	φ7			—		φ20		φ12	φ20	φ12	φ20	
	Max. back spindle drilling diameter	—			φ4		—		φ7	φ8	φ7	φ8	
	Max. back spindle tapping diameter	—			M4 x 0.7		—		M8	φ8	φ7	φ8	
	Max. cross drilling diameter	φ4 (Option)			φ6 (Option)		φ6 (Option)		M8		M8		
	Max. cross tapping diameter	M4 x 0.7 (Option)			M5 x 0.8 (Option)		M5 x 0.8 (Option)		M5 x 0.8 (Option)		M5 x 0.8 (Option)		
	Max. tool spindle slotting cutter dia.	φ25 (Option)			φ30 (Option)		φ30 (Option)		φ30 (Option)		φ30 (Option)		
Max. back drilling diameter	—			—		—		φ6 (Option)		φ6			
Max. back tapping diameter	—			—		—		M5 (Option)		M5			
Machine	Main spindle speed	200 to 15,000 min ⁻¹			200 to 12,000 min ⁻¹		200 x 10,000 min ⁻¹		200 x 12,000 min ⁻¹	200 x 10,000 min ⁻¹	200 x 12,000 min ⁻¹	200 x 10,000 min ⁻¹	
	Back spindle speed	—			200 to 10,000 min ⁻¹		200 to 12,000 min ⁻¹		200 x 12,000 min ⁻¹		200 x 12,000 min ⁻¹		
	Rotary guide bushing speed	200 to 8,000 min ⁻¹ : Carrier type rotary guide bushing/ 200 to 12,000 min ⁻¹ : Direct-drive rotary guide bushing			200 to 8,000 min ⁻¹ : Carrier type rotary guide bushing/ 200 to 12,000 min ⁻¹ : Direct-drive rotary guide bushing		200 to 8,000 min ⁻¹ : Carrier type rotary guide bushing/ 200 to 10,000 min ⁻¹ : Direct-drive rotary guide bushing		200 to 8,000 min ⁻¹ : Carrier type rotary guide bushing/ 200 to 12,000 min ⁻¹ : Direct-drive rotary guide bushing	200 to 8,000 min ⁻¹ : Carrier type rotary guide bushing/ 200 to 10,000 min ⁻¹ : Direct-drive rotary guide bushing	200 to 8,000 min ⁻¹ : Carrier type rotary guide bushing/ 200 to 12,000 min ⁻¹ : Direct-drive rotary guide bushing	200 to 8,000 min ⁻¹ : Carrier type rotary guide bushing/ 200 to 10,000 min ⁻¹ : Direct-drive rotary guide bushing	
	Tool spindle speed	200 to 8,000 min ⁻¹ (Option) *1 (Rated speed: 7,000 min ⁻¹)			200 to 8,000 min ⁻¹ (Option) *1 (Rated speed: 7,000 min ⁻¹)		200 to 8,000 min ⁻¹ (Option) *1 (Rated speed: 7,000 min ⁻¹)						
	Total tool storage capacity (Standard)	13			17		21		25				
	Tool size	8 mm x 8 mm x 85 mm			12 mm x 12 mm x 85 mm		12 mm x 12 mm x 85 mm				12 mm x 12 mm x 85 mm		
	Rapid traverse rate	32 m/min (X1: 24 m/min)			32 m/min (X1: 24 m/min)		32 m/min (X1: 24 m/min)				32 m/min (X1: 24 m/min Y2: 15 m/min)		
Motors	Controlled axes (linear axes)	3-axis		4-axis		5-axis		3-axis		4-axis		5-axis	
	Main spindle	1.1/1.5 kW			1.5/2.2 kW		2.2/3.7 kW		1.5/2.2 kW	2.2/3.7 kW	1.5/2.2 kW	2.2/3.7 kW	
	Back spindle	—			0.55/1.1 kW		1.5/2.2 kW		—		1.5/2.2 kW		
	Axis	0.5 kW (X1,X2,Y1,Z1,Z2)			0.5 kW (X1,X2,Y1,Z1,Z2)		0.5 kW (X1,X2,Y1,Z1,Z2)						
	Cross drill	0.75 kW (Option)			0.75 kW (Option)		0.75 kW (Option)						
	Coolant pump	0.18 kW			0.25 kW		0.25 kW						
	Lubricating oil pump	3 W			3 W		3 W						
Power supply and others	Net weight	1,400 kg		1,700 kg		1,500 kg		1,950 kg		2,000 kg		2,050 kg	
	Power source requirement	6 kVA		9 kVA		7 kVA		10 kVA		11 kVA		11 kVA 12 kVA	
	Compressed air requirement	0.4 MPa or above			0.4 MPa or above		0.4 MPa or above						
	Air discharge rate	50 NL/min			50 NL/min		50 NL/min						
	Coolant tank capacity	115 L		120 L		115 L		120 L		120 L		120 L	
Width x depth x height	1,440 x 1,125 x 1,700		1,655 x 1,135 x 1,700		1,590 x 1,135 x 1,700		1,655 x 1,135 x 1,700		1,655 x 1,125 x 1,700		1,655 x 1,125 x 1,700		

Note *1 When this device is used at rated speed 7,000 min⁻¹, or above, the operation time has to be short.
 Note *2 Stationary guide bushing, carrier type rotary guide bushing and direct-drive rotary guide bushing and guide-bushless are optional.
 * Machining capacity is based on JIS S45C or equivalent.

NC Specifications

Item	B073-III/B0123-III/B0203-III	B074-III/B0124-III/B0204-III	B075-III/B0125-III/B0205-III	B0126-III/B0206-III
NC unit	FANUC Oi-TF			FANUC 32i-B
Controlled axes	X1,Z1,Y1		X1,Z1,Y1,Z2	X1,Z1,Y1,X2,Z2,Y2,C1,C2
Least input increment	0.001 mm (X in diameter) (B073-III/74-III/75-III: 0.0001 mm)			
Least command increment	X: 0.0005 mm, other axes: 0.001 mm (B073-III/74-III/75-III: 0.00005 mm, other axes: 0.0001 mm)			
Maximum programmable value	±8 digits			±8 digits
Interpolation method	Linear, circular			Linear, circular
Feedrate	1 to 6,000 mm/min			1 to 6,000 mm/min
Feedrate override	0 to 150 % in 10 % increments			0 to 150 % in 10 % increments
Dwell	G04 0 to 99999.99			G04 0 to 99999.99
ABS/INC command	X,Y,Z: absolute, U,V,W: Incremental			X,Y,Z,C: absolute, U,V,W,H: Incremental
Tool offset pairs	Main: 64, Back: 64 (B073-III, B0123-III, B0203-III Main only)			99
LCD/MDI	8.4" color LCD			10.4" color LCD
Display language	Japanese/English			Japanese/English
Part program storage size	512 k byte (equivalent to 1,280 m tape length)		1 Mbyte (equivalent to 2,560 m tape length) *sum of main and back spindle NCs	64 kbyte (equivalent to 80m for each path system)
Registerable programs	400		800 *sum of main and back spindle NCs	63 *sum of main and back spindle NCs
Miscellaneous functions	M5-digits			M5-digits
Spindle function	S5-digits			S5-digits
Tool function	T4-digits			T4-digits

Standard Accessories

Item	B073-III B0123-III B0203-III	B074-III B0124-III B0204-III	B075-III B0125-III B0205-III	B0126-III B0206-III
Automatic programming system	○	○	○	○
Tool height compensation	○	○	○	○
Tool life counter	○	○	○	○
Periodic maintenance screen	○	○	○	○
Main spindle adapter	○	○	○	○
Back spindle adapter	—	○	○	○
Guide bushing adapter	(B073-III: standard)	(B074-III: standard)	(B075-III: standard)	—
Door interlock	○	○	○	○
Coolant level detector	○	○	○	○
Spindle cooling unit	○	○	○	○
Standard tools	○	○	○	○
Transit clamps	○	○	○	○
4-hole drill bracket	○	○	○	○
Retractable coolant nozzle	○	○	○	○
Automatic power shut off	○	○	○	○
Front tool post: 4-spindle cross drill	—	—	—	—
Deep hole drill holder(φ25mm×2)	—	—	—	—
Automatic cut-off function/Automatic facing function	○	○	○	○
Main spindle/back spindle air purge	—	—	—	—
Cross drill air purge	—	—	—	—
Main spindle brake	—	—	—	—
C-axis control for main/back spindles	—	—	—	○
Drill holder (Single head)	○(4)	○(3)	○(7)	○(7)
Double heads drill holder(Adjustable drill holder)	—	○(1)	○(1)	○(1)
Illumination light	○	○	○	○

NC standard accessories

Item	B073-III B0123-III B0203-III	B074-III/124-III/125-III B075-III/204-III/205-III	B0126-III B0206-III
Chasing function	○	○	○
Continuous thread cutting	○	○	○
Manual pulse generator	○	○	○
Memory card input/output interface	○	○	○
Back ground editing	○	○	○
Run time & parts number display	○	○	○
Custom macro	○	○	○
Constant surface speed control	○	○	○
Spindle synchronous control (rotation/phase/tracing)	—	○	○
Tool geometry/wear offset	○	○	○
Programmable data input	○	○	○
Chamfering & corner R	○	○	○
Tool nose radius compensation	○	○	○
HRV control	○	○	○
Multiple repetitive cycle	○	○	○
Extended program editing	○	○	○
Canned drilling cycle	○	○	○
Rigid tap (Main spindle, back spindle)	○*	○	○
Spindle speed fluctuation detection	—	○	○
Cut-off detection (Speed Differential type)	—	○	○
Manual handle retrace function	—	—	—
Stored stroke check 2,3	—	—	—
Part program storage size	512Kbyte	1Mbyte(sum of main and back spindle NCs)	64Kbyte(sum of main and back spindle NCs)
Registerable programs	400	800(sum of main and back spindle NCs)	63(sum of main and back spindle NCs)

*: B073-III/B0123-III /B0203-III:Main spindle only

Options

○: Mountable options

Item	B073-III B074-III B075-III	B0123-III/203-III B0124-III/204-III B0125-III/205-III	B0126-III B0206-III
Guide bushing	Stationary guide bushing	standard	○
	Carrier type rotary guide bushing	○	○
	Direct-drive guide bushing	○	○
	Guide-bushing-less kit	—	○
Advanced function system	Main spindle C axis control	○	standard*4
	Back spindle C axis control(Brake is optional)	○*6	○*1
	Spindle 1°index	○	○
	Spindle 15°index	○	○
	Main spindle brake	○	○
	Back spindle 15°index	○*1	○*1
	Back spindle 1°index	○*1	○*1
	Back spindle brake	○*1	○*1
	Live tool beside the back spindle	—	—
	Cross drill(Modular type:1)	—	○
	2-spindle cross drill	—	○
	3-spindle cross drill	○	○
4-spindle cross drill	○	○	
High precision system	0.1 μm resolution	standard	○
	Coolant oil temperature controller	○	○
	X2-axis touch switch	○*3	○*3
Live tools (Rear tool post)	Rear drive	—	—
	Tool spindle	—	—
	Double face spindle	—	—
	Angular drilling head	—	—
	Thread whirling head	—	—
Live tools (Back tool post)	Hobbing head	—	—
	Back drive	○*3	○*3
	Tool spindle	○*3	○*3
	Back cross tool spindle	○*3	○*3
	Back tool adapter	○*3	○*3
Coolant related	Mist collector	○	○
	High pressure pump unit	○	○
	M code oil blow	○	○
	WAVY coolant nozzle	○	○
Workpiece discharge system	Work catcher	standard	○*2
	Work conveyor	○*3	○*1
	Front discharge	○*1	○*1
	Rear discharge	○*1	○*1
Chip disposal	Chip conveyor	○*1	○*1
Machine maintenance and monitoring functions	Cut-off detection (Touch switch type)	○	○
	Signal indicator	○	○
Tooling related	Adapter for non-round bar (main spindle)	○	○
	Adapter for non-round bar (back spindle)	○*1	○*1
	Collet chuck with carbide lining	○	○
	Tool set gauge	○	○
	Spindle liner	○	○
	Drill holder	standard	standard
NC functions	Part program storage size 128 kbytes	—	○
	Part program storage size 256 kbytes	—	○
	Part program storage size 512 kbytes	—	○
	Part program storage size 1 Mbyte	—	○
	Storage size 64 kbyte (Registerable programs: 120)	—	○
	Storage size 128 kbyte (Registerable programs: 250)	—	○
	Storage size 256 kbyte (Registerable programs: 500)	—	○
	Storage size 512 kbyte (Registerable programs: 1000)	—	○
	Direct drawing dimension program	standard	standard
	Variable-lead thread cutting	standard	standard
	Thread cutting cycle retract	standard	standard
	Polar coordinate interpolation	standard*5	standard*5
Cylindrical interpolation	standard*5	standard*5	
Safety and other	Display language	○	○
	Coolant flow switch	○	○
	Automatic fire extinguisher	○	○
	Illumination lamp	standard	standard
	Bar feeder interface	○	○
	Manual handle retrace function	○	○
	Live tool rigid tapping	○	○
	RS232C input/output interface	○	○
	Inch/metric conversion	○	○
	Abnormal load detection	○	○
Correspondence for water soluble coolant	—	○	

*1: Can not be mounted on B0123-III and B0203-III. *2: Standard for 3-axis machine (without back spindle) *3: B0125-III/B0205-III only *4: Brake is optional. *5: Main spindle C axis control are required (option). *6: Can not be mounted on B073-III and B074-III.

Collet chucks and guide bushing for Tsugami's standard specification

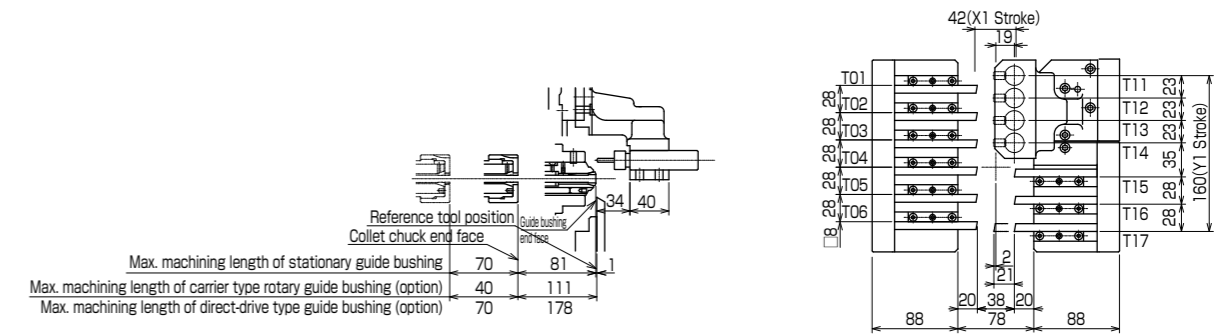
		B073-III	B074-III B075-III	B0123-III	B0124-III B0125-III B0126-III	B0203-III	B0204-III B0205-III B0206-III
Main spindle collet chuck		2601-1132	2601-1132	2601-1185	2601-1185	2601-1192	2601-1192
Back spindle collet chuck		—	2601-1132	—	2601-1185	—	2601-1147
Guide bushing	Carrier type	2601-1132	2621-1132	2621-1185	2621-1185	2621-1147	2621-1147
	Directdrive type	2621-1132	2621-1132	2621-1185	2621-1185	2621-1226 (exclusive)	2621-1226 (exclusive)

Selection of live tool (option)

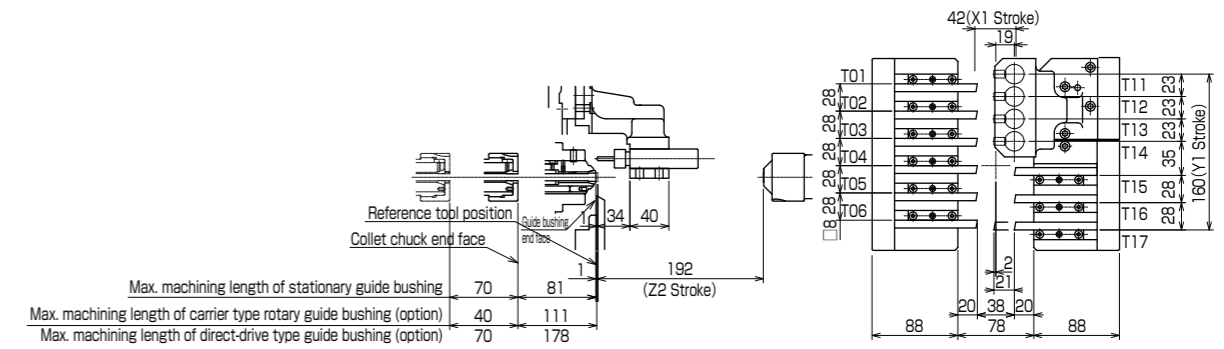
			B073-III B074-III B075-III	B0123-III B0203-III	B0124-III B0204-III	B0125-III B0205-III	B0126-III B0206-III	
Front tool post	Cross drill	2 spindles parallel (Cross drill: 2, Turning(Front): 3, Turning(Rear): 3, Frontal drilling holde: $\phi 20 \times 4$)	3270-Y030	3220-Y5130				
		2 spindles shifted (Cross drill: 2, Turning(Front): 3, Turning(Rear): 3, Frontal drilling holde: $\phi 20 \times 4$)	3270-Y040	3220-Y5140				
		3 spindles (Cross drill: 3, Turning(Front): 2, Turning(Rear): 3, Frontal drilling holde: $\phi 20 \times 4$)	3270-Y050	3220-Y5150				
		4 spindles (Cross drill: 4, Turning(Front): 2, Turning(Rear): 3, Frontal drilling holde: $\phi 20 \times 4$)	3270-Y060	3220-Y5160				
Thread whirling head	Thread whirling head	(Turning(Front): 2, Turning(Rear): 4, Frontal drilling holde: —)	—	3220-Y6540				
	Cross: one spindle		—	3220-Y6540				
Front live tools	Front live tools: 3 (Modular type:1)		3270-Y310	3220-Y7060				
	Tool spindle	In conjunction with front live tools (3220-Y7060)	3281-T051					
	Double face spindle		3220-Y7065					
Back tool post	Back live tools	Live tool on back tool post (Modular type: 2 holes)	—	—	—	3220-Y7070	—	
		Double face spindle	—	—	—	3220-Y7072	—	
		Back tool adapter	In conjunction with back live tools (3220-Y7070)	—	—	—	3220-Y7073	—
		Back cross tool spindle		—	—	—	3220-Y7074	—
Fixed tools		2 tools	—	—	—	3220-Y7070	—	
Y2 axis tool post	Live tools	Front: 2 / Cross: 2 (Non-modular type)	—	—	—	—	Standard	
		Fixed drill holders	4 tools					

Tooling zone

B073-III



B074-III



B075-III

