

Compact Machining Center  
**SPEEDIO**

**brother**  
at your side

**R450X2**





# Quest for “Wasted Time = Zero”

**A pallet changer is standardly equipped for  
This model of *SPEEDIO* series  
that achieve overwhelming productivity.**

The R450X2 is equipped with the “QT table”,  
Brother’s original high-speed 2-face pallet changer that has been installed on over 15,000 units.

The “22-tool magazine” is also available,  
best suited for column traverse machines. The R450X2 will contribute to improvement of production efficiency  
in our quest for “Wasted Time = Zero”.

# ***SPEEDIO with Pallet Changer***

Achievement of high productivity in our quest for “Wasted Time = Zero”

## **22-tool magazine**

Promotes process integration by using this with a 2-face pallet changer

## **Jig area enlargement**

Improves applicability in response to broader application

## **Brother original NC controller**

Enhances usability through machine/controller integrated development



## ***SPEEDIO*** ***R450X2***

Max. spindle speed (min <sup>-1</sup> )	10,000 / 16,000 (optional) 10,000 high torque (optional)
Stroke of each axis (mm)	X 450 Y 320 Z 305
Tool storage capacity (pcs.)	14 / 22
Rapid traverse rate (m/min)	X / Y / Z 50 / 50 / 50
Required floor space (mm)	1,400 × 2,653
Coolant Through Spindle (CTS)	Optional
BT dual contact spindle (BIG-PLUS)	Optional
Low-floor table	Optional



# Brother's original "QT table" pallet changer



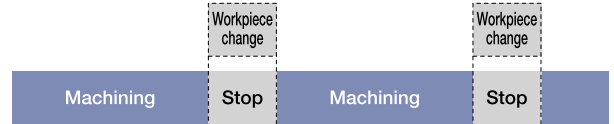
## Non-stop machining

The QT(Quick Turn) table is Brother's original turn table type high-speed 2-face pallet changer. High-speed pallet change is enabled by avoiding lift-up operation while achieving high reliability through a sealed structure. Workpieces on one pallet can be changed while machining workpieces on the other pallet. Therefore, waste in workpiece change time is eliminated, enabling nonstop machining.

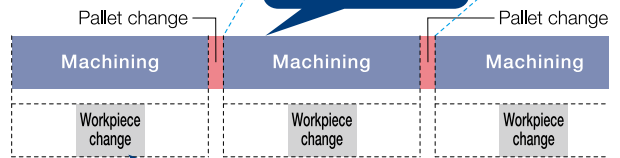
Pallet change time **2.9s**

\* When table loading on one face is 120kg.

### ● Machine without pallet changer



### ● R450X2

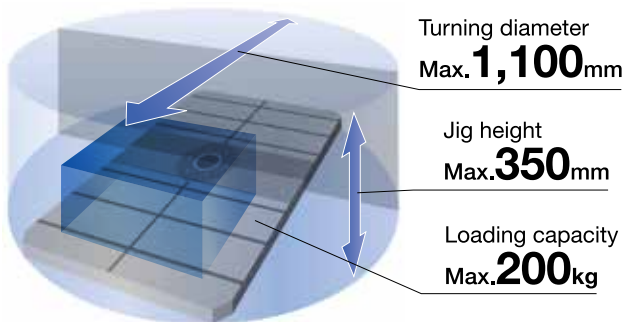


Workpiece change during machining



## Wide jig area

The jig can be mounted on the table even if it extends over the table as long as it is within the turning diameter. The standard jig area is wide, with a 1,020 mm turning diameter and 300 mm jig height, making mounting the index table jig easier. The jig area can be enlarged optionally so that larger jigs can be mounted.

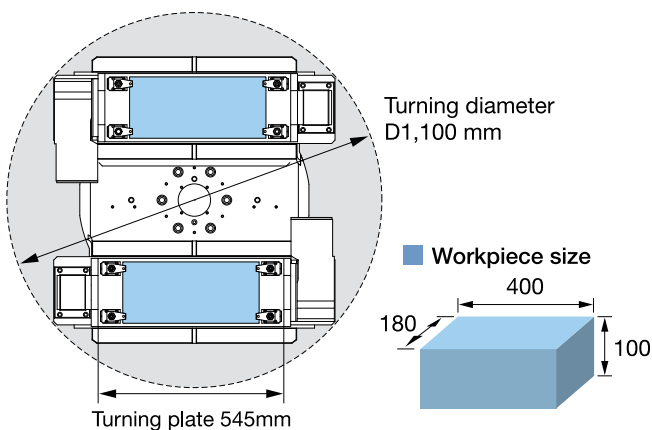


### Jig mounting range and loading capacity

	《 Standard 》	《 Max. 》
Turning diameter	1,020mm	<b>1,100mm</b> <sup>(*)1</sup>
Jig height	300mm	<b>350mm</b> <sup>(*)2</sup>
Loading capacity	120kg	<b>200kg</b> <sup>(*)3</sup>

\*1:When the "turning diameter enlargement" option is selected \*2:When the low-floor table is selected. \*3:The parameter must be changed.

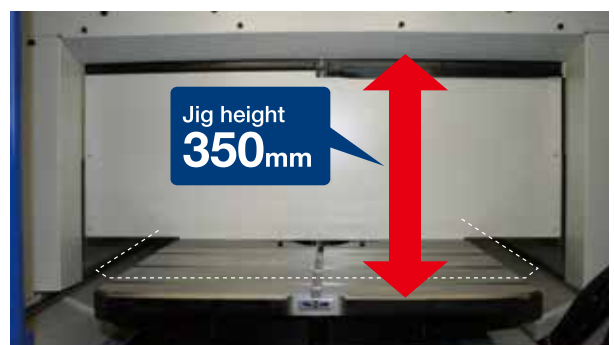
### ■ Example of mounting jig Index table jig (table size D170 mm)



### ■ Low-floor table (optional)

The jig height can be increased up to 350 mm.

\*The distance between the table top and the spindle nose end becomes 250 to 555 mm.



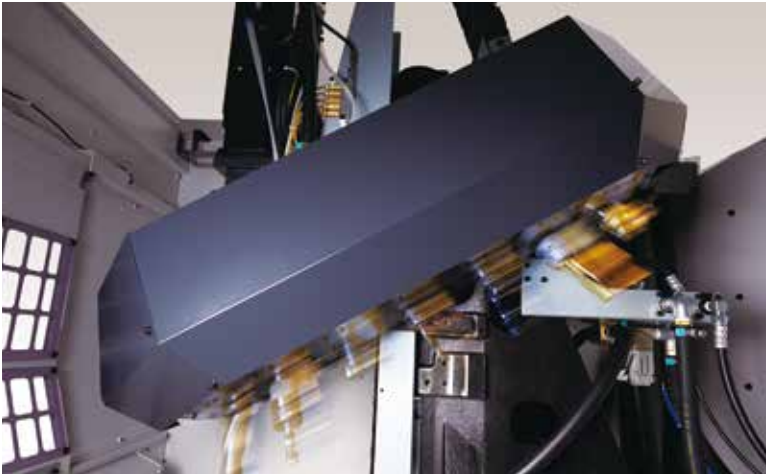




## 22-tool magazine that accelerates process integration



### 22-tool magazine

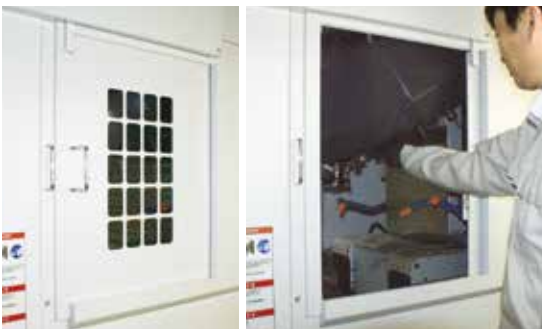


Using both the 22-tool magazine and 2-face pallet changer accelerates process integration, contributing to improvement of production efficiency .

Tool storage capacity **22 tools**

Tool - Tool : **0.8s**

Chip - Chip : **1.6s**



The 22-tool magazine model is standard equipped with a side door and side magazine rotation switch, in consideration of operability.

\* These are not provided for the 14-tool magazine model.

### 14-tool magazine

The 14-tool magazine that features high cost performance can also be selected. Tool change time has been reduced even more than before.

Tool-Tool : **0.7s**

Chip-Chip : **1.4s**

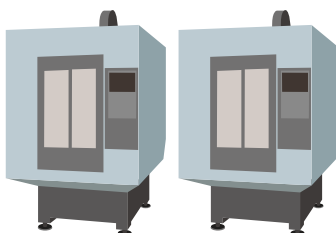


### Process integration using 2-face pallet changer and 22-tool magazine

■ Divided into two machines

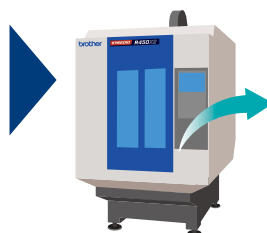
Process 1

Process 2



■ Two processes on one R450X2

R450X2



Pallet 1

Process 1

Process 2

Pallet 2

One R450X2 can perform two processes, making use of the 2-face pallet changer and 22-tool magazine, leading to process integration. This improves the line balance and enables optimal equipment investment.



# Brother's original high productivity technology



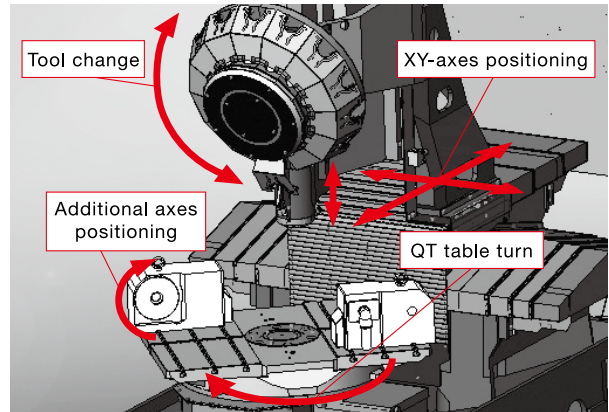
## Simultaneous operation

The machine is equipped with a simultaneous operation function where the XY and additional axes are positioned and tools are changed simultaneously when the QT table turns. This does not waste any pallet change time, enabling non-stop machining in our quest for "Wasted time = Zero".

Without simultaneous operation



With simultaneous operation



## Spindle start / stop

Using a low inertia spindle motor achieves quicker starting and stopping of the spindle. Tool change is completed without stopping the Z-axis.

Spindle start / stop time **0.14s**

\* Date taken using high-torque specifications



\* With spindle nose end washing nozzle.



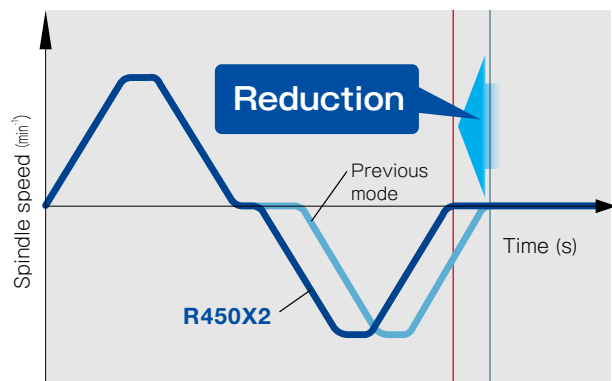
## Highly-responsive servomotor

High-speed synchronized tapping at the fastest level in the world has been tuned further. Tapping can be completed in shorter time at high accuracy.



### Comparison of cycle time in tapping

● Image of tapping cycle



\* Date taken running machining program created by Brother.



# Usability through machine/ controller integrated development



## Operability



### Equipped with tool monitoring functions

#### ■ ATC monitoring

The presence of a spindle tool is detected without using a sensor.

#### ■ Spindle load monitoring

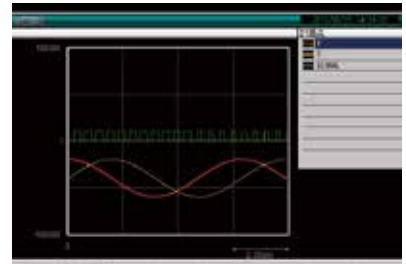
The load on the spindle during machining is monitored, abnormalities in tools and machining can be detected.

#### ■ Waveform output to memory card

Torque waveform data can be output to a memory card (CSV format).

#### ■ Simple setting of high accuracy mode

Parameters used for machining can easily be adjusted.

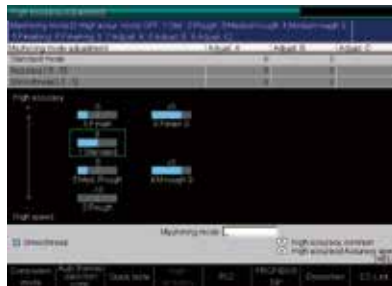


#### ■ PLC function

Standard equipped with PLC. Input and output points can be expanded to up to 1,024 points each (optional).

#### ■ Control box size

Space has been increased for system expansion in case of automation etc.



### Column movement when changing tools

When changing tools manually, the column can be moved to a position tools can be removed easily.



### Outside index rotation switch (Optional)

The index table on the outer pallet can be operated. This makes workpiece removal and attachment easier when workpieces are attached to multiple positions.





# High machining capabilities in response to a variety of applications



## Highly rigid structure

Highly rigid machine structure based on the CAE analysis. The structure of the column and QT table has been reviewed to further improve rigidity.



## High-power spindle motor

In addition to the highly rigid structure, a high-power spindle motor is mounted on the machine, providing high machining capabilities.



**Medium-and high-speed range enabling high-efficiency machining**  
 Grooving using standard specs  
 Machining details Cutting amount : 110 cc/min  
 Material : Carbon steel (using D16 end mill)



**Low-speed range suitable for heavy-duty machining**  
 Large hole drilling using high-torque specs  
 Machining details Hole diameter: D40 mm  
 Material: Carbon steel

### Spindle motor characteristic value

#### Standard specs

Max.torque (momentary) : **40 Nm**

Max.output : **18.9 kW**

#### High-torque specs (optional)

Max.torque (momentary) : **92 Nm**

Max.output : **26.2 kW**



## Pursuit of high accuracy

High-speed and highly accurate three-dimensional machining has been achieved by Brother's original three-dimensional machining control equipped with a 200-block look-ahead function and smooth path offset function..

High accuracy mode BI (standard) :

Look-ahead **40** blocks

High accuracy mode BII (optional) :

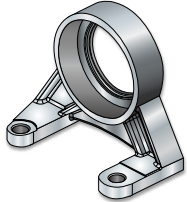
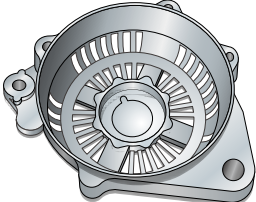
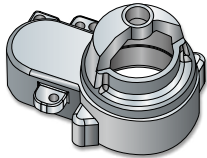
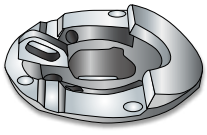
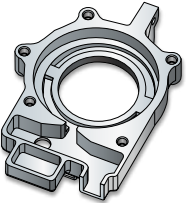
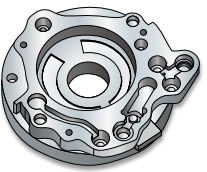
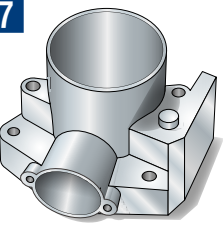
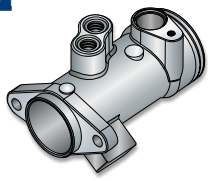
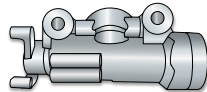
Look-ahead **200** blocks







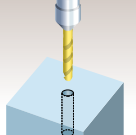
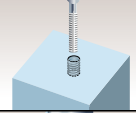

## Examples of target workpieces

Automobile parts	1		2		3		
		4		5		6	
		7		8		9	
	Motorcycle parts						
	General machinery parts						

1 Bearing support  
 2 Balance shaft  
 3 Alternator  
 4 Starter housing  
 5 Air conditioner cam plate  
 6 Cylinder block  
 7 Wiper housing  
 8 Pump housing  
 9 Oil pump body  
 Brake master cylinder  
 Crankcase cover  
 Cylinder  
 Shift fork  
 Cam shaft  
 Crankshaft  
 Hydraulic transmission joint  
 Camera parts  
 Optical element housing  
 Camera case



## Machining capability

Machining	Material	ADC	Cast iron	Carbon steel
<b>Drilling</b>  Tool diameter mm (inch) × Feed mm (inch)/rev	10,000min <sup>-1</sup>	D32(1.26) × 0.2(0.008)	D28(1.1) × 0.15(0.006)	D25(0.98) × 0.1(0.004)
	16,000min <sup>-1</sup>	D24(0.94) × 0.2(0.008)	D22(0.87) × 0.15(0.006)	D18(0.71) × 0.1(0.004)
	10,000min <sup>-1</sup> high-torque	D40(1.57) × 0.2(0.008) D30(1.18) × 0.7(0.03)	D34(1.34) × 0.15(0.006) D26(1.02) × 0.4(0.02)	D30(1.18) × 0.15(0.006) D26(1.02) × 0.25(0.01)
<b>Tapping</b>  Tool diameter mm (inch) × Pitch mm (inch)	10,000min <sup>-1</sup>	M27 × 3.0(1-8UNC)	M24 × 3.0(7/8-9UNC)	M16 × 2.0(5/8-11UNC)
	16,000min <sup>-1</sup>	M22 × 2.5(7/8-9UNC)	M18 × 2.5(5/8-11UNC)	M14 × 2.0(1/2-13UNC)
	10,000min <sup>-1</sup> high-torque	M39 × 4.0(1 1/2-6UNC)	M33 × 3.5(1 1/4-7UNC)	M27 × 3.0(1-8UNC)
<b>Facing</b>  Cutting amount cm <sup>3</sup> /min (inch <sup>3</sup> /min)	10,000min <sup>-1</sup>	960(58.6)	128(7.8)	81(5.0)
	16,000min <sup>-1</sup>	660(40.3)	73(4.5)	48(2.9)
	10,000min <sup>-1</sup> high-torque	1700(102.4)	255(15.6)	186(11.4)

\*The data is Brother's actual test data.



# Environmental performance contributing to global environment



## High environmental performance

Power and air consumption has been reduced by installing various energy saving functions, including a power regeneration system, providing high environmental performance.

**Power regeneration system\***

\*Energy saving system that reuses energy generated when decelerating

**High-efficiency motor**

**Energy saving pump**



**LED work light**



**Various energy saving NC functions**

- Automatic coolant off**  
Turns off the coolant pump when the preset time elapses.
- Automatic work light off**  
Turns off the work light when the preset time elapses.
- Standby mode**  
Turns off the servomotor when the machine is not operated for the preset time.
- Automatic power off**  
Turns off the power at the preset time.

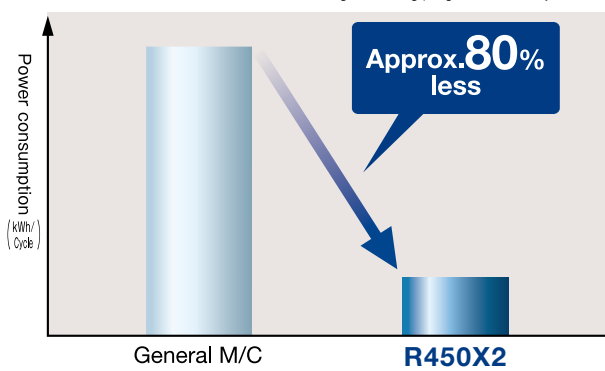


## Low power consumption

As various energy saving functions are included, power consumption has been greatly reduced. Compared to general machining centers, SPEEDIO can achieve incredible low power consumption.

**Power consumption for one cycle**

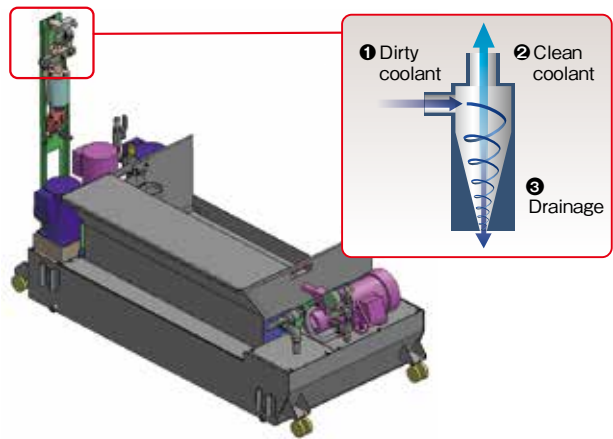
\*Data taken running machining program created by Brother

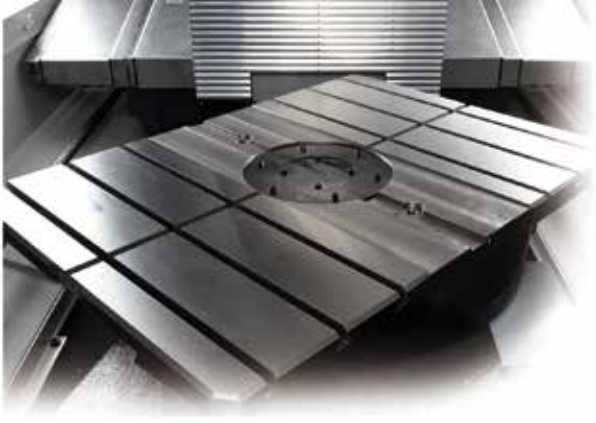


## Improved chip handling

**Tank with cyclone filter (special option for CTS)**

Coolant is returned to a clean tank through a tank with a cyclone filter with fine chips removed. This reduces the filter change frequency and extends the service life of the pump.



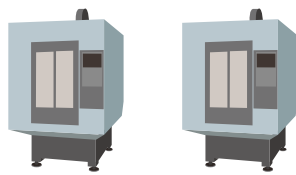


# Examples of highly productive machining using QT table

## Example 1 Process integration ~ Two processes on one machine ~

Processes divided between two machines can be performed on one machine, making use of the 2-face pallet changer. Process integration improves the line balance and enables optimal equipment investment.

Machine without pallet changer



Process 1

Cycle time  
90s

Process 2

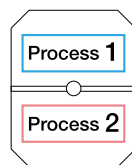
Cycle time  
100s

(Workpiece change time: 15 s)

Depends  
on the slowest  
cycle time.

One workpiece  
completed every  
**115 seconds**

R450X2



(Pallet change time: 3s)

Increases  
productivity by  
improving line  
balance.

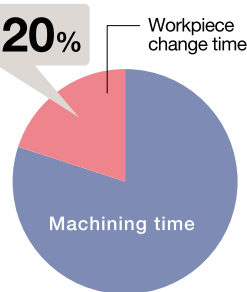
One workpiece  
completed every  
**98 seconds**

## Example 2 When machining time is short ~ Reference machining time: 90 s or shorter ~

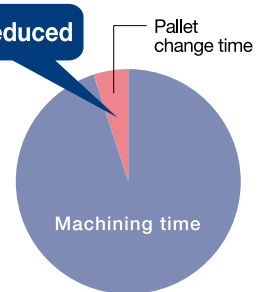
When machining time is short, the percentage of workpiece change time increases. Therefore, productivity lowers when machines are not equipped with a pallet changer. The R450X2 eliminates waste in workpiece change time to provide high productivity.

Machining time ratio  
E.g.) Machining time: 60 s,  
workpiece change time: 15 s

Machine stoppage:  
Approx. **20%**



Greatly reduced

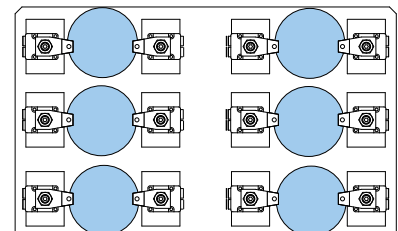


Machine without pallet changer

R450X2

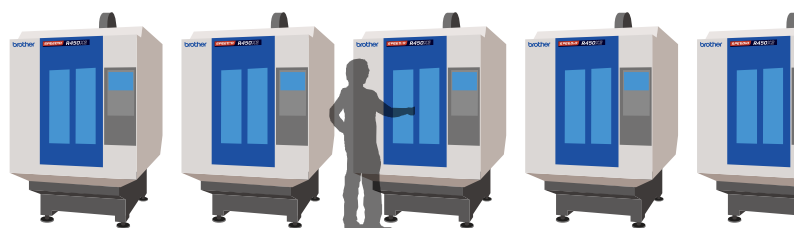
## Example 3 When workpiece change time is long ~ Multiple parts machining ~

Ample time is taken for workpiece change when the number of workpieces to be changed is large, such as when performing multiple parts machining. Time may also be taken for sufficient jig washing to reduce the influence of chips. Even in these situations, the R450X2 can provide high productivity.



## Example 4 Handling multiple machines ~ Promotion of manpower saving ~

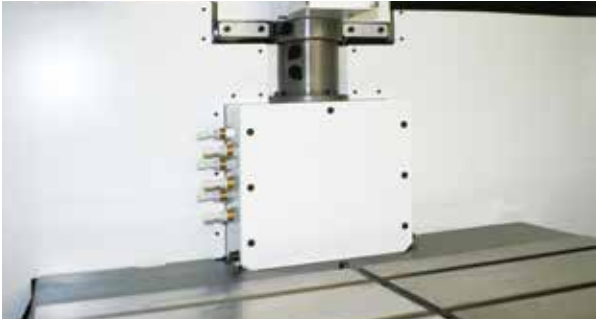
As workpieces on one pallet can be changed while machining workpieces on the other pallet, multiple machines can be handled by one operator, contributing to manpower savings.







## Optional attachments



### Hydraulic rotary joint (4P) / Pneumatic relay box (12P)

12 pneumatic ports and 4 hydraulic ports have been prepared so that jigs that use pneumatic or hydraulic pressure can be mounted easily.

\* When using the hydraulic rotary joint, the Y-axis travel becomes 290 mm.



### Coolant Through Spindle (CTS)

1.5 MPa CTS is ideal for deep drilling and high-speed machining.

\*Please consult Brother separately for 3 MPa CTS.



### Work light (1 or 2 lamps) / Table light (LED)

LED lamps are used for the work light and table light, providing longer life and saving energy.



### Tool washing (air-assisted type)

New air-assisted type tool washing with higher discharge pressure provides higher chip removal capacity. Stable washing power is achieved, without being affected by filter clogging.



### Side door (with transparent window)

This makes setup or tool change from the side easier. It is possible to operate the manual pulse generator through the side door and check the machining room through the lighting window.

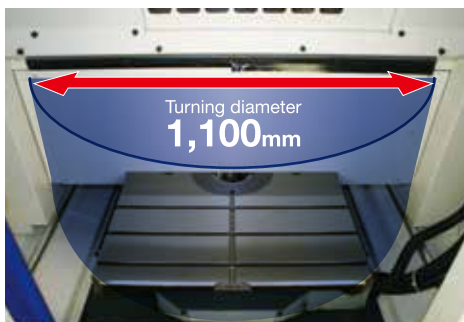
\* Standardly equipped with 22 tool magazine model.



### Automatic oil lubricator / Automatic grease lubricator

Regularly applies oil or grease to all lubricating points on the three axes.

\* Manual greasing applies to the standard specification model.



### Turning diameter enlargement (D1,100mm)

A wider jig area can be secured by enlarging the QT table turning diameter.

\* The column moves to a safe position before the QT table turns.



### Automatic door (motor-driven)

A motor-driven door is used, achieving smooth operation and reducing opening and closing time.



### Coolant unit

Can be selected from 100L or 150L, depending on the purpose.



### Indicator light (1,2, or 3 lamps)

LED lamps are used. There are no bulbs to burn out, making it completely maintenance free.



### Spindle override

Spindle speed can be changed without changing the program.



### Side cover (transparent board type)

External light is drawn in to make the inside of the machine brighter and improve visibility.



### RS232C (25 pin) for control box

A 25-pin RS232C connector can be connected to the side of the control box.



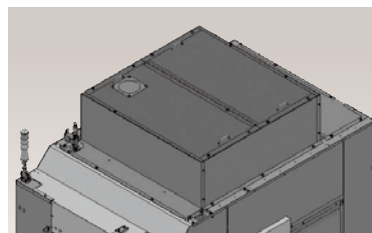
### Manual pulse generator

Manual pulse generator with a cable makes operation through the maintenance window easier.



### Outer index switch

This switch enables operation of the outer index table.



### Top cover

This cover prevents the mist from getting out of the machine. There is also a hole a mist collector.



### Cleaning gun

Helps clean the workpiece or chips inside the machine after machining.

### Optional Specifications

- Coolant unit
  - ① 100L (with valve and 250W pump)
  - ② 150L (with chip shower, valve and 250W+400W pumps)
  - ③ 150L (with chip shower, CTS, valve and 250W + 400W + 650W pumps)
  - ④ 150L (with cyclone filter, chip shower, CTS and valve)
- Coolant Through Spindle (CTS) + Back washing system
- Tool washing (air-assisted type)
- Rotary Table T-200
- Tool breakage detector (touch type)
- Hydraulic rotary joint (4P) + Pneumatic relay box (12P)
- Pneumatic relay box (12P)
- Cleaning gun
- Automatic oil lubricator
- Automatic grease lubricator
- LED type work light (1 or 2 lamps)
- Table light
- Indicator light (1, 2, or 3 lamps)
- Automatic door (motor-driven)
- Area sensor
- Specified color
- Manual pulse generator
- B-axis cord
- Spindle override
- Outside index rotation switch
- Turning diameter enlargement (D1,100mm)
- Top cover
- Side door (with transparent window)
- Side cover (transparent board type)
- Memory expansion (approx. 500 Mbytes)
- RS232C (25 pin) for control box
- Expansion I/O board (EXIO board)
  - ① EXIO board assembly
  - ② Additional EXIO board assembly
- Operation preparation circuit
- Power supply expansion
- 100V outlet (in control box)
- Breaker handle cover
- Switch panel (8 holes, 10 holes)
- Fieldbus
  - ① CC-Link (remote device station)
  - ② PROFIBUS DP (slave)
  - ③ DeviceNet (slave)
- PLC programming software (for Windows XP, Vista, and 7,8.1)
- Jig shower valve unit
- Grip cover
- Mesh basket for chips



### Tool breakage detector(tough type)

A touch switch type tool breakage detector is used. Installed on each pallet.

## Rotary Table T-200



#### Feature 1 High productivity

High acceleration and fast rotation ensure smooth operation even for jigs with a large unbalanced load.

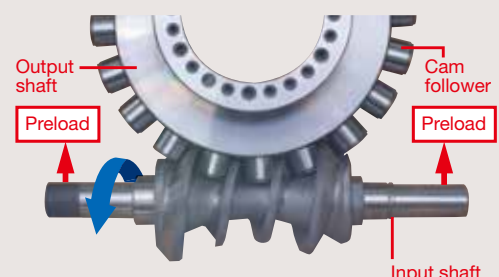
#### Feature 2 High accuracy

Preload applied between the input shaft and the output shaft achieves zero-backlash.

#### Feature 3 Extended service life

As very little abrasion on the input shaft and output shaft occurs due to rolling contact, adjustment is unnecessary for long periods

### Roller Gear Cam Mechanism

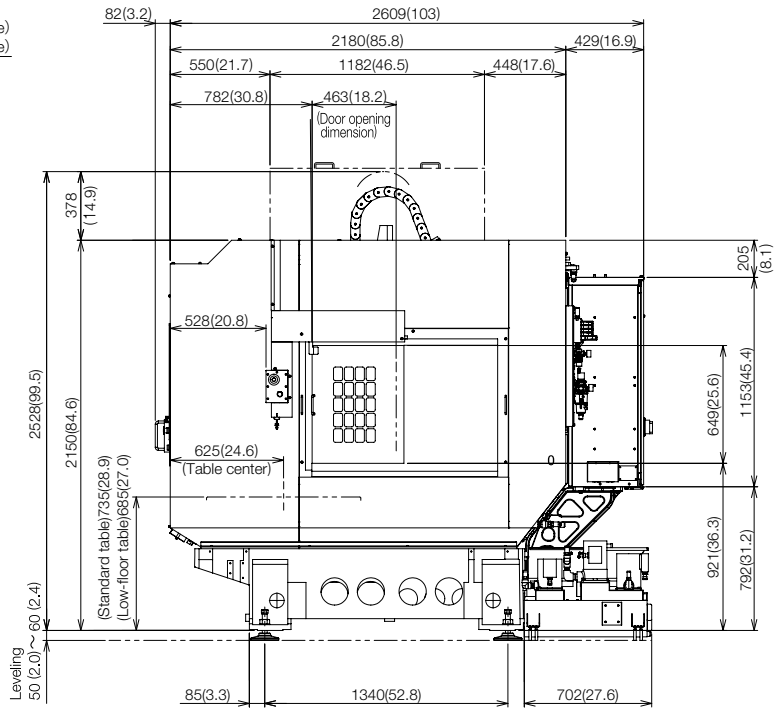
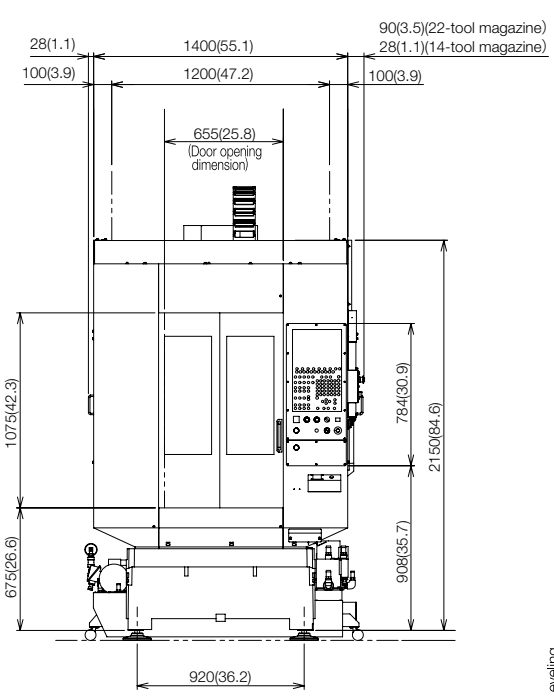
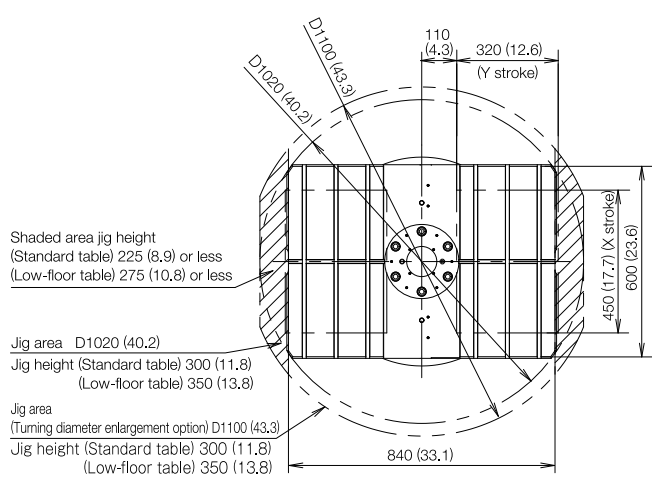
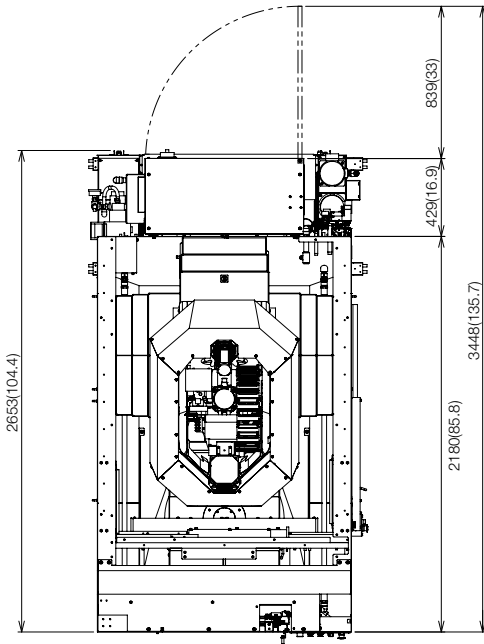
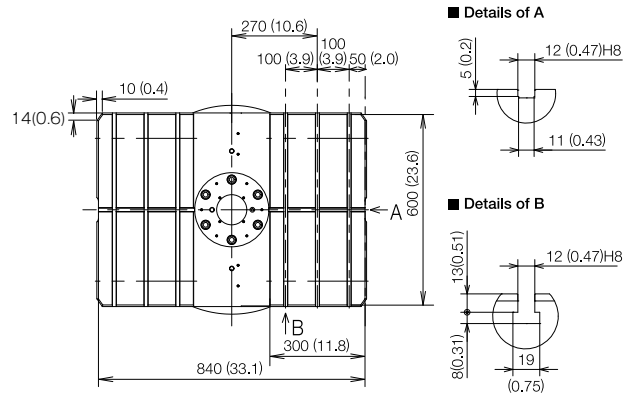


\* Depending on the type of coolant, it may have a significant influence on the machine lifecycle. It is recommended to use the coolant which is commercially designated as high lubricity, for example Emulsion type. Especially, the coolant of chemical solution type (ex. Synthetic type) is prohibited to use, because it may cause machine damages.  
 \* When using CTS (Coolant Through Spindle) function, usage of the coolant of combustible type (ex. Oil-based type) is prohibited.

# External Dimension



## SPEEDIO R450X2



mm(inch)



# Machine Specifications and NC Unit Specifications

## Machine specifications

Item		R450X2 / R450X2 RD *13	
CNC Unit		CNC-C00	
Travels	X axis	mm (inch)	450 (17.7)
	Y axis	mm (inch)	320 (12.6) *7
	Z axis	mm (inch)	305 (12.0)
	Distance between table top and spindle nose end	mm (inch)	200~505 (7.9~19.9) [ 250~555 (9.8~21.9) ] *8
Table	Work area size	mm (inch)	One face 600x300 (23.6x11.8)
	Max.loading capacity (uniform load)	kg (lbs)	One face 120(265) [ 200 (441) ] *6
Spindle	Spindle speed	min <sup>-1</sup>	10,000min <sup>-1</sup> specifications:1~10,000 16,000min <sup>-1</sup> specifications(optional):1~16,000 10,000min <sup>-1</sup> high-torque specifications (optional) :1~10,000
	Speed during tapping	min <sup>-1</sup>	MAX. 6,000
	Tapered hole		7 / 24 tapered No.30
	BT dual contact system (BIG-PLUS)		Optional
	Coolant Through Spindle (CTS)		Optional
Feed rate	Rapid traverse rate (XYZ-area)	m/min (inch/min)	50 x 50x50 ( 1,969 x 1,969 x 1,969 )
	Cutting feed rate	mm/min (inch/min)	X, Y, Z axis : 1~30,000 ( 0.04~ 1,181 ) *9
ATC unit	Tool shank type		MAS-BT30
	Pull stud type *4		MAS-P30T-2
	Tool storage capacity	pcs.	14 / 22
	Max. tool length	mm (inch)	200 (7.9)
	Max. tool diameter	mm (inch)	80 (3.1)
	Max. tool weight *1	kg (lbs)	3.0 (6.6) (total tool weight : 25 (55.1) for 14 tools, 40 (88.2) for 22 tools )
Tool change time *5	Tool To Tool	sec.	0.7 / 0.8 (14tool / 22 tool)
	Chip To Chip	sec.	1.4 / 1.6 (14tool / 22 tool)
Electric motor	Main spindle motor ( 10min / continuous)*2	kW	10,000min <sup>-1</sup> specifications:10.1 / 7.1 16,000min <sup>-1</sup> specifications:7.4 / 5.1 10,000min <sup>-1</sup> high-torque specifications :12.8 / 9.2
	Axis feed motor	kW	X, Y axis : 1.0 Z axis : 1.8
Power source	Power supply		AC V±10%, 50/60Hz±1Hz
	Power capacity (continuous)	kVA	10,000min <sup>-1</sup> specifications:9.5 16,000min <sup>-1</sup> specifications:9.5 10,000min <sup>-1</sup> high-torque specifications : 10.4
	Air supply	Regular air pressure Required flow	MPa L/min
Machining dimensions	Height	mm (inch)	2,588 (101.9)
	Required floor space [with control unit door open]	mm (inch)	1,400x2,653 [3,448] (55.1x104.5 [135.7])
	Weight	kg (lbs)	14tool : 2,670 (5,886) 22tool : 2,700 (5,954)
Accuracy *3	Accuracy of bidirectional axis positioning (ISO230-2:1988)	mm (inch)	0.006~0.020 (0.00024~0.00079)
	Repeatability of bidirectional axis positioning (ISO230-2:2014)	mm (inch)	Less than 0.004 (0.00016)
Standard accessories		Instruction Manual (1 set), anchor bolts (4 pcs.), leveling plates (4 pcs.)	

\*1. Actual tool weight differs depending on the configuration and center of gravity. The figures shown here are for reference only. \*2. Spindle motor output differs depending on the spindle speed. \*3. Measured in compliance with ISO standards and Brother standards. Please contact Brother for details. \*4. Brother specifications apply to the pull studs for CTS. \*5. Measured in compliance with JIS B6336-9 and MAS011-1987. \*6. Can be increased up to 200 kg (one face) by changing the parameter. Please consult us separately. \*7. When using the hydraulic rotary joint, the Y-axis travel becomes 290 mm. \*8. Values when the low-floor table is selected. \*9. When using high accuracy mode B. (Non high accuracy mode B) X,Y axis : 1~10,000mm/min. Z axis:1~20,000mm/min. \*10. Regular air pressure varies depending on the machine specifications, machining program details, or use of peripheral equipment. Set the pressure higher than the recommended value \*11/ When the turning diameter enlargement option is selected. \*13/ The machine needs to be equipped with a relocation detection device depending on the destination. Machines equipped with a relocation detection device come with "RD" at the end of the model name.

## NC unit specifications

Item	
CNC model	CNC-C00
Control axes	7axes (X,Y,Z, 4 additional axes)
Simultaneously controlled axes	Positioning 5 axes (X,Y,Z,A,B)
	Interpolation Linear: 4 axes (X,Y,Z one additional axis) Circular: 2 axes Helical/conical: 3 axes (X,Y,Z)
Least input increment	0.001mm, 0.0001inch, 0.001 deg.
Max. programmable dimension	±9999.999mm, ±999.9999inch
Display	12.1-inch color LCD
Memory capacity	Approx. 100 Mbytes (Total capacity of program and data bank)
External communication	USB memory interface, Ethernet, RS232C
No. of registrable programs	4,000 (Total capacity of program and data bank)
Program format	NC language, conversation (changed by parameter) conversion from conversation program to NC language program available

\* Number of "control axes" and/or "simultaneously controlled axes" are the maximum number of axes, which will differ depending on the destination country and the machine specifications.  
\* Ethernet is a trademark or registered trademark of XEROX in the United States.

## Quick turn table specifications

Type	0 deg./180 deg. turntable system	
Table dimension	mm (inch)	One face 600 x 420 (23.6 x 16.5)
Max. turning diameter	mm (inch)	D1,020 (40.2) [ D1,100 (43.3) ] *11
Max. jig height	mm (inch)	300 (11.8) [350 (13.8)] *8
Table work area size	mm (inch)	One face 600 x 300 (23.6 x 11.8)
Max. loading capacity	kg (lbs)	One face 120 (265) [200 (441)] *6
Rated table load inertia for turning axis	kg · m <sup>2</sup>	One face 14.2 [23.5] *6
Table turning system	AC servo motor (1kW) Worm gear (total speed reduction ratio:1/50)	
Table position time	sec	2.9 *12
Table change repeatability	mm (inch)	0.01 (0.0004) (in the X,Y, and Z axes directions 270(10.6) from the center of rotation)

\*12/ When table loading on one face is 120kg.

\* Quick turn table is a turntable type 2-face pallet changer.

## Standard NC functions

- Absolute / incremental
- Inch / metric
- Corner C / Corner R
- Rotational transformation
- Synchronized tap
- Coordinate system setting
- Dry run
- Restart
- Backlash compensation
- Rapid traverse override
- Cutting feed override
- Alarm history (1,000 pieces)
- Startup log
- Machine lock
- Computer remote
- Built-in PLC
- Motor insulation resistance measurement
- Operation log
- High-accuracy mode AIII
- Tool length measurement
- Tool life management / spare tool
- Background editing
- Graphic display
- Subprogram
- Helical / conical interpolation
- Standby mode (energy saving function)
- Chip shower off delay
- Tap return function
- Automatic work light off (energy saving function)
- Automatic workpiece measurement \*1
- Heat expansion compensation system II (X,Y,Z axes)
- Automatic power off (energy saving function)
- Automatic coolant off (energy saving function)
- Tool washing filter with filter clogging detection
- Waveform display
- Operation level
- External input signal key
- High accuracy mode BI (look-ahead 30blocks)
- Waveform output to memory card
- Screen shot
- Auto notification
- Inverse time feed
- Spindle load monitoring function
- Expanded workpiece coordinate
- Scaling
- Mirror image
- Menu programming
- Programmable data input
- Tool length compensation

### NC

- Cutter compensation
- Macro function
- Local coordinate system
- One-way positioning
- Operation in tape mode

### Conversation

- Operation program
- Schedule program
- Automatic tool selection
- Automatic cutting condition setting
- Automatic tool length compensation setting
- Automatic cutter compensation setting
- Automatic calculation of unknown number input
- Machining order control

## Optional NC functions

- Memory expansion (Approx. 500 Mbytes)
- High accuracy mode BII (look-ahead 200 blocks, smooth path offset)
- Spindle override
- High-speed processing \*2

### NC

- Submicron command \*3
- Interrupt type macro
- Rotary fixture offset

\*1. Measuring instrument needs to be prepared by users.  
\*2. Minute block processing time can be changed.  
\*3. When the submicron command is used, changing to the conversation program is disabled.  
\*Functions listed under (NC) and (Conversation) are available only for NC programs and conversation programs respectively.

## Global Service Sites

Local dealers are available to provide services in each region, in addition to the sites below.

### U. S. A.

**BROTHER INTERNATIONAL CORP.**  
**MACHINE TOOLS DIV. TECHNICAL CENTER**  
2200 North Stonington Avenue, Suite 270, Hoffman Estates, IL 60169, U.S.A.  
PHONE:(1)224-653-8415 FAX:(1)224-653-8821

### Germany

**BROTHER INTERNATIONALE INDUSTRIEMASCHINEN GmbH**  
**MACHINE TOOLS DIVISION FRANKFURT TECHNICAL CENTER**  
Hoechst Str.94, 65835 Liederbach, Germany  
PHONE:(49)69-977-6708-0 FAX:(49)69-977-6708-80

### India

**BROTHER INTERNATIONAL (INDIA) PVT LTD.**  
**Machine Tools Bengaluru Technical Center**  
Park Landing, Ground Floor, Municipal No.5AC-709, 2nd Block, HRBR Extension,  
Bengaluru - 560 043 Karnataka, India  
PHONE:(91)80-6405-7999

### China

**BROTHER MACHINERY (SHANGHAI) LTD.**  
**(MACHINE TOOLS DIV.) SHANGHAI TECHNICAL CENTER**  
Room B, 3/F., No.567, West Tianshan Rd., ChangNing District, Shanghai 200335, P.R.China  
PHONE:(86)21-2225-6666 FAX:(86)21-2225-6688

### China

**BROTHER MACHINERY (SHANGHAI) LTD.**  
**CHONGQING BRANCH (MACHINE TOOLS DIV.) CHONGQING TECHNICAL CENTER**  
Room 105, No.51 Xuefudadao, Nan'an District, Chongqing Province, 400074, P.R.China  
PHONE:(86)23-6865-5600 FAX:(86)23-6865-5560

### Mexico

**BROTHER INTERNATIONAL DE MÉXICO, S.A. DE C.V.**  
**División de Maquinaria Industrial Centro Técnico Querétaro**  
Calle 1 No.310 Int 15, Zona Industrial Jurica, Parque Industrial Jurica,  
Queretaro, QRO C.P. 76100 México  
PHONE:(52)55-8503-8760 FAX:(52)442-483-2667

### Thailand

**BROTHER COMMERCIAL (THAILAND) LTD.**  
**MACHINE TOOLS TECHNICAL CENTER**  
317 Pattanakarn Road, Pravet Sub-District, Pravet District, Bangkok 10250, Thailand  
PHONE:(66)2321-5910 FAX:(66)2321-5913

### India

**BROTHER INTERNATIONAL (INDIA) PVT LTD.**  
**Machine Tools Gurugram Technical Center**  
Level 20, Tower C, Building No 5, DLF Epitome, DLF Cyber City Phase III,  
Gurugram - 122002 Haryana - India  
PHONE:(91)80-6405-7999

### China

**BROTHER MACHINERY (SHANGHAI) LTD.**  
**DONGGUAN BRANCH (MACHINE TOOLS DIV.) DONGGUAN TECHNICAL CENTER**  
1F, Fuyuan Business Center Building, No.1 Lane 13, Maiyuan Road, Xin'an community,  
Chang'an Town, Dongguan City, Guangdong Province, 523008, P.R.China  
PHONE:(86)769-2238-1505 FAX:(86)769-2238-1506

Figures in brackets ( ) are the country codes.

- Please read the instruction manuals and safety manuals before using Brother products for your own safety. When using oil-based coolant oil or when machining the materials which can cause a fire (ex. Magnesium, resin material), customers are requested to take thoroughgoing safety measures against fire. Depending on the types of cutting material, cutting tools, coolant oil, lubrication oil, it may have an influence on the machine lifecycle. Further questions, please contact our sales representative in charge.
- Leave 700 mm between machines as a maintenance space.
- When exporting our machine together with additional 1-axis rotary table or compound rotary table (including case that a rotary table is scheduled to be installed overseas), the machine is deemed to be included in the "applicable listed items" controlled by the Foreign Exchange and Foreign Trade Law of Japan. When exporting the machine, please obtain required permissions, including an export license, from the Ministry of Economy, Trade and Industry (METI) or Regional Bureaus of Economy, Trade and Industry before shipment. When re-selling or re-exporting the machine, you may need to obtain permissions from METI, and the government of the country where the machine is installed.
- When exporting our machine together with compound rotary table (including case that a rotary table is scheduled to be installed overseas), as a machine conforming to Row 2 of Appended Table 1 of Export Trade Control Order, a relocation detection device is installed on the machine depending on the destination country. After relocating the machine with the detection device, the machine is locked and any operation is temporarily impossible. Please inform your local distributor of machine relocation in advance and apply to perform the release operation of relocated machine.
- In order to operate our machine with an additional axis rotary table installed separately overseas after exporting the machine, the procedure to activate the axis of rotary table is needed. Please inform your local distributor of these processes in advance, because the predetermined procedure is required to perform the activation. In addition, for export to "non-white countries (excluding some countries and regions)", it is not possible to install a compound rotary table separately overseas after exporting the machine. Please make sure to obtain the export license of the machine together with compound rotary table before shipment.

Specifications may be subject to change without any notice.

**brother**

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