SPEEDIO



Multi-Tasking Machine M200X3 M300X3



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Evolving Process Integration Machine

Brother's competitive high-productivity technologies are fused with process integrated machining where both turning and milling are performed on one machine, achieving great improvement in production efficiency when machining mass production parts.

Two new models have been added that can handle larger workpieces and with an option to install a manpower reduction unit, to become a Series that can handle a variety of machining.

speedio M300X3

speedio M200X3

SPEEDIO M300

brother



SPEC

Basic spe Max. spindle

Max. turning

Travels (X, Y,

Travels (A, C) Tool storage of

Rapid traverse

Indexing feed

Required floo

Coolant Thro BT dual conta



ecifications					
speed (min ⁻¹)	10,000 / 16,000 (Optional)				
spindle speed (min ⁻¹)	M300X3 : 1,500 M200X3 : 2,000				
, Z) (mm)	M300X3 : X 300 Y 440 Z 305 M200X3 : X 200 Y 440 Z 305				
) (deg.)	A 120~-30、 C 360				
capacity (pcs.)	22				
se rate (X, Y, Z) (m/min)	X 50 Y 50 Z 50				
drate (A, C) (min ⁻¹)	M300X3 : A50 C200 M200X3 : A60 C200				
or space (mm)	M300X3 : 1,520 × 3,862 M200X3 : 1,280 × 3,862				
ugh Spindle (CTS)	Optional				
act spindle (BIG-PLUS)	Optional				

Effects of Mass Production Type **Complex Machining**

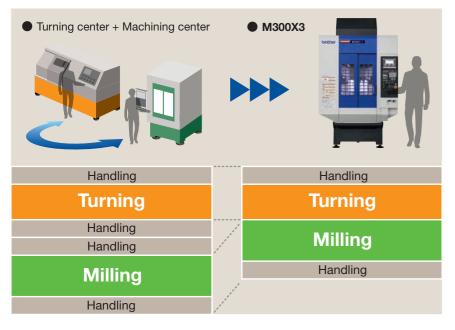
M200X3 M300X3

Machine Structure that Achieves Complex Machining

Features and effects

Process integration in one machine

Workpieces previously machined using a turning center and a machining center can now be machined on a single machine with machining processes integrated. This reduces handling time between machines.





Example of process integration

performed on one M200X3 (automotive

Turning and multi-face milling are

parts).

Workpiece reattachment not necessary between turning center and machining center



Target machining parts

EV motor frame

Hub bearing



Artificial bone parts





Valve cylinder





Air conditioner scroll

Piping parts



Constant-velocity joint



Machine structure

The machine has an original design, including the magazine structure, that keeps the machine compact while maintaining the rigidity of each axis and the balance of rigidity.

Tilt axis (A-axis)



A high-speed and high-output built-in

A roller gear cam is used for the tilt axis (A-axis). High retention force and a backlashless structure achieve highspeed and high-accuracy indexing.

DD motor is used for the turning spindle (C-axis). This achieves efficient turning and high-speed indexing.

Expansion of machining area

Wide machining area has been secured to allow more flexibility for jig design to meet a variety of workpiece machining.

The distance between the table top surface and the spindle nose end has been increased to secure sufficient area for the jig, workpiece and tool in the Z-axis direction.

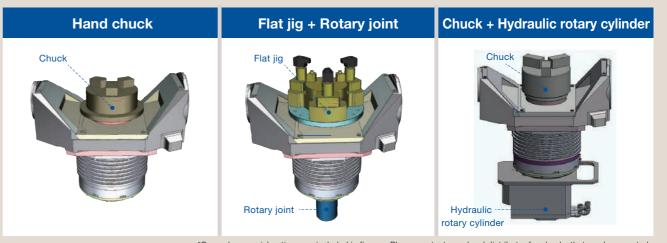
Distance between table top surface and spindle nose end (M300X3): 505 mm

M300X3 Max. jig size **Ø350**mm×H350mm

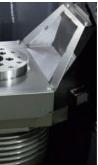


Example of jig configuration

Applicable to a variety of jigs from manual clamping to automatic clamping



Turning spindle (C-axis)



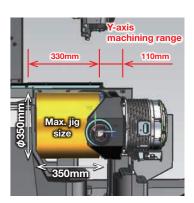
Double plunger lock



M200X3 M300X3

An original double plunger lock is used to secure turning tools, achieving excellent tool change repeatability.





*General or special options are included in figures. Please contact your local distributor for chucks that can be mounted.

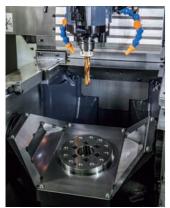
Productivity

M200X3 **M300**X3

Machining Capabilities

Productivity

Fast acceleration/deceleration spindle



Using a fast acceleration / deceleration spindle motor and highly-responsive servo control achieves quicker starting and stopping of the spindle and turning spindle.

Start / stop time Spindle : 0.2s Turning : 0.3s

High-speed synchronized tapping



Original synchronized tapping control enables high-accuracy tapping at the fastest level in the world.

Peripheral speed: 377m/min

^{*} M20, spindle speed 6,000 min⁻

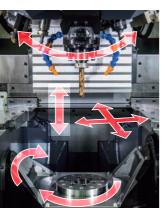
High-speed tool change



Using a compact 22-tool magazine with excellent weight balance and optimal control achieves high-speed tool change, with any wasted operation eliminated.



Simultaneous operation



Wasted time is further reduced by positioning the X/Y/Z axes and A/C axes simultaneously with tool changes.

> **Reduction in** non-cutting time

Loading system for manpower reduction (M200X3)

Simple, compact, and easy installation/startup

Specialized for loading/unloading workpieces

4-axis articulated arm for easy handling

Compactly installed on the side of machine

The loading system is integrated with the machine, requiring less installation space.

Controller incorporated in machine's control box

Wiring connection with NC is not necessary, and signal lines are connected. Piping, wiring, and valves for the hand are stored in the body, and the side door is standard equipped.



Milling capabilities

As the spindle can provide high torque even in the medium- and high-speed range, the machine fully demonstrates its capabilities in high-speed, high-efficiency machining of aluminum or steel.

Max. torque : 40Nm Max. output : 18.9kW

	Drilling Tool diameter mm (inch) × Feed mm (inch)/rev		Tapping Tool diameter mm (inch) × Pitch mm (inch)		Facing Cutting amount cm ³ /min (inch ³ /min)					
		ADC	FC250	S45C	ADC	FC250	S45C	ADC	FC250	S45C
M300X3	10,000min ⁻¹	D28×0.2 (1.1 × 0.008)	D28×0.15 (1.1 × 0.006)	D23×0.1 (0.9 × 0.004)	M22×2.5 (7/8-9UNC)	M22×2.5 (7/8-9UNC)	M16×2.0 (5/8-11UNC)	611 (37.3)	110 (6.7)	54 (3.3)
M200X3	10,000min ⁻¹	D28×0.2 (1.1 × 0.008)	D28×0.15 (1.1 × 0.006)	D23×0.1 (0.9 × 0.004)	M22×2.5 (7/8-9UNC)	M22×2.5 (7/8-9UNC)	M16×2.0 (5/8-11UNC)	489 (29.8)	110 (6.7)	54 (3.3)

* The A axis is 0 degrees and X/Y-axes are at their travel center. The above performance may not be achieved under some conditions, depending on usage environment, tools in use and coolant

Turning capabilities

High-efficiency machining is achieved by the high-output turning spindle with a maximum speed of 2,000min⁻¹(M200X3), and the turning tool secured by the double plunger lock.

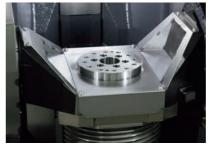
Max. torque		Max. output
M300X3:	102Nm	мзоохз:9.9kW
M200X3:	55Nm	м200x3: 8.7kW

Improved clamp force

C-axis clamp force

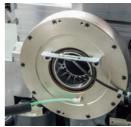
The C-axis clamp force has almost doubled (compared to previous model). This enables more stringent cutting conditions to be set for machining that results in load being applied in the C-axis rotation direction, improving production efficiency.

C-axis clamp force мзоохз:450Nm м200X3:345Nm



□ A-axis clamp (optional)

A-axis clamp force



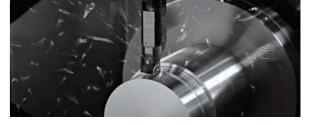
A-axis clamp (M300X3)

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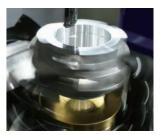
The A-axis clamp enables the machine to demonstrate high machining capabilities even in high-load machining. In addition, stable rotation and less vibration during lathe turning have been achieved, improving machining accuracy.







Improves machining accuracy and capabilities when the A-axis is tilted or machining is performed in a full machining range.



Vibration caused by imbalance of the jig or workpiece during C-axis rotation has been minimized, achieving stable rotation to prevent the decrease in machining accuracy.

Reliability and Operability

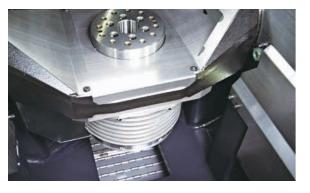
Optional Specifications

Reliability

Chip discharge performance and handling capability have been improved along with the expansion of the machine area. In addition, the machine is equipped with functions to improve reliability, such as chip shower and air-assisted tool washing.

Center trough structure

Chip discharge performance has been improved by the tilted base and the center trough structure.

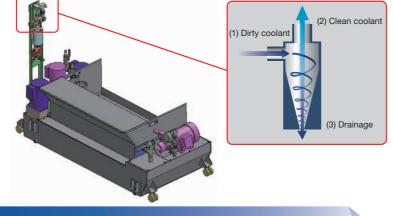


Tank with cyclone filter (special option for CTS)

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.

M200X3

M300X3



Operability

The machine is equipped with our original "CNC-C00 Series" controller, created through machine/controller integrated development.



monitoring functions

Equipped with tool

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

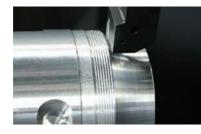
Machining load

monitoring function

The machining load applied to the spindle is monitored to detect an abnormality of the tool or machining.

□ Thread cutting function

Straight thread cutting and tapered-thread cutting are possible.

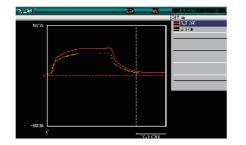


Control box size

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

USB interface

In addition to file input/output, various data in the CNC, including waveform data, can be output.



PLC function

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

100 1054 KES KES 1 1054 1053 1053 1051 8 105A 1059 1058 10 10 1054 KE9 KS9 KE9 854 -



Chip conveyor A two-step structure (hinged plate and scrapper) is used, enabling discharge of chips in a variety of sizes and shapes. An oil skimmer can be added.



Coolant tank with chute Coolant flows through the chute to discharge chips. The chute can be separated from the coolant tank, making maintenance easier. *****1





Manual pulse generator A cable is provided for the manual pulse generator, making setup easier.

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

Automatic door



Automatic oil lubricator / Automatic grease lubricator Regularly applies oil or grease to all lubricating points on the three axes. *Manual greasing is required for the standard specification model.

*1 Chips may not be discharged correctly depending on the shape of chips. When you select the coolant tank with chute, you must also select the chip shower. Please contact your local distributor for details.

*2 The rotary joint must be used with hydraulic oil supplied. If hydraulic oil is not supplied, only conduct indexing operation or remove the rotary joint from the turning spindle motor.

*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.

		Optional Specifica
Coolant unit	Chip shower	Specified color
①Two-step chip conveyor	Cleaning gun	Manual pulse generator
②Coolant tank with chute	Jig shower valve unit	Spindle override
*For (1) and (2), standard type or the	A-axis clamp	Grip cover
following options can be selected. • With chip shower	Automatic oil lubricator	Side cover (transparent
With cyclone filter, chip shower and CTS	Automatic grease lubricator	Side door
Coolant Through Spindle (CTS)	LED work light (1 or 2 lamps)	(with transparent window, r
Tool washing (air-assisted type)	Indicator light (1, 2, or 3 lamps)	Switch pane (8 holes, 1
Rotary joint (4P)	Area sensor	RS232C (25 pin) for cor
Tool breakage detector (touch type)	 Automatic door (motor-driven) 	Operation preparation of the second secon

M200X3 M300X3



Chip shower

Chip shower pipes are located at the upper section inside the machine for more efficient flow, and flexible shower nozzles can be directed to the side of the machine cover or sections where chips tend to accumulate.



Side cover (transparent board type)

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



Tool breakage detector (touch type)

A touch switch type tool breakage detector is used.



Coolant Through Spindle (CTS)

1.5 MPa CTS used for BT spindle. *Please consult your local distributor for use of 3 MPa CTS.



Side door (with transparent window)

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



Rotary joint

A rotary joint with four ports (two hydraulic, one pneumatic, and one common for hydraulic, coolant, and pneumatic) has been prepared, which is attached to the bottom of the turning spindle motor. *****2

cations

ent board type)

v, right side only , 10 holes) control box n circuit

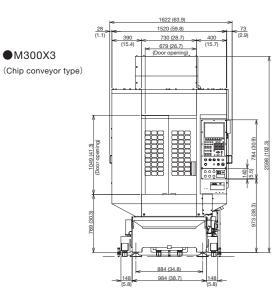
- 100V outlet (in control box)
 Power supply expansion
 Breaker handle cover
 Memory expansion (approx. 500 Mbytes)
 Expansion I/O board (EXIO board)
 ①EXIO board assembly
 ②Additional EXIO board assembly
- Fieldbus
- ①CC-Link (remote device station) ②PROFIBUS DP (slave) ③DeviceNet (slave)
- PLC programming software
- (For Windows® XP, Vista, 7, and 8.1)

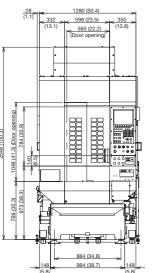
Windows[®] is a trademark or registered trademark of Microsoft Corporation in the United States and/or other countries.

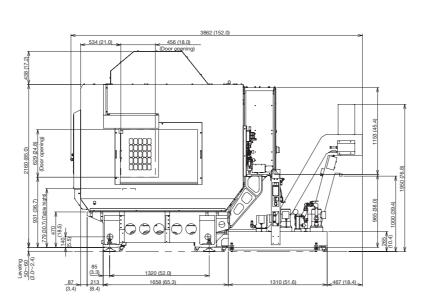
*Please contact your Brother dealer for details

External Dimensions

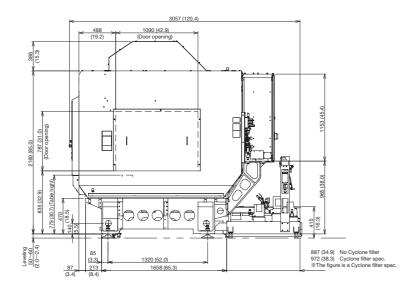
Outline drawing







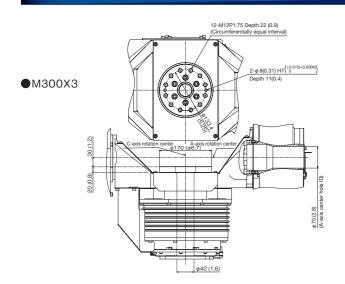
M200X3 M300X3

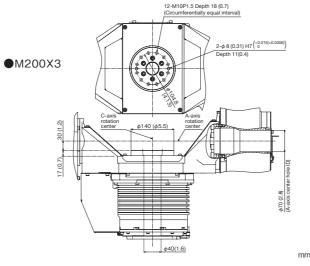


Secure 700 mm (27.6 inch) between machines as maintenance space.

Table details

•M200X3 (Chute type)





	Item		M300X3 / M300X3 RD *8	M200X3 / M200X3 RD *8		
CNC Unit			CNC	-C00		
	X axis	mm(inch)	300 (11.8)	200 (7.9)		
Travels	Y axis	mm(inch)	440 (17.3)	440 (17.3)		
	Z axis mm (inch)		305 (12.0)	305 (12.0)		
	A axis	(deg.)	120 ~ -30	120 ~ -30		
	C axis	(deg.)	360	360		
	Distance between table top and spindle		200 ~ 505 (7.9 ~19.9)	150 ~ 455 (5.9 ~ 17.9)		
	Work area size	mm(inch)	Φ170 (Φ6.7) Φ140 (Φ5.5)			
	Shape of table top		In compliance with table nose No.5 of ISO702-4 (JISB6109-2)			
Table	Max. loading capacity(uniform loa	d) kg(lbs)	Table side 75 (165.3) / Tale side 11 (24.3)	Table side 40 (88.2) / Tale side 11 (24.3)		
	Max. table load inertia	kg•m² (lb•inch²)	Table side 0.58 (1982) / Tale side 0.04 (137)	Table side 0.29 (991) / Tale side 0.04 (137		
	Spindle speed	min ⁻¹	10,000min ⁻¹ specifications : 1~10,000 16,00			
Spindle	Speed during tapping	min ⁻¹	MAX.			
	Tapered hole					
	BT dual contact spindle(BIG-PLU	S)	7/24 tapered No.30 Optional			
	Coolant Through Spindle(CTS)	,	Optional			
Turning spindle	Max. spindle speed	min ⁻¹	1.500	2.000		
3 1	Rapid traverse rate(XYZ-area)	m/min(inch/min)	50 × 50 × 50 (1.969 × 1.969 × 1.969)			
eed rate	Cutting feed rate	mm/min(inch/min)	X, Y, Z axis : 1 ~ 30,000 (0.04 ~ 1,181) *7			
000 1010	Indexing feedrate(A and C)	min ⁻¹	A axis : 50 C axis : 200	A axis : 60 C axis : 200		
	Tool shank type		MAS-BT30			
	Pull stad type *4		MAS-P30T-2			
	Tool storage capacity	pcs.		2		
ATC unit	Max. tool length	mm(inch)	200			
ino unic	Max. tool diameter	mm(inch)	80 (()		
	Max. tool weight *1	kg (lbs)	3 (6			
	Tool selection method	Ng (103)	Bandom shortcut method			
*5	Tool To Tool	sec.	0.8	0.8		
Fool change time	Chip To Chip	sec.	1.6	1.4		
	Main spindle motor(10min/continu		10,000min ⁻¹ specifications : 10.1/7.0 16,			
Electric motor	Axis feed motor	kW	X.Y axis : 1.0 Z axis : 1.8 A axis : 1.35	X,Y axis : 1.0 Z axis : 1.8 A axis : 0.8		
Electric motor	Turning spindle motor	kW	4.6	3.6		
	Power supply	AVV	AC V±10%, 50/60Hz±1Hz			
	Power capacity(continuous)	kVA	AC $V \pm 10\%$, 50/00H2 $\pm 1H2$ 10,000min ⁻¹ specifications : 9.5 16,000min ⁻¹ specifications (Optional) : 9.5			
Power source	Regular air pressure		0.4~0.6 (recommended value : 0.5MPa) *6			
	Air supply Required flow	L/min	0.4 °0.6 (recommended value : 0.5)vira) *6			
	Height	mm(inch)	2.653 (104.4)	2,603 (102.5)		
Machining	Required floor space	mm(inch)	1,520 × 3,862 (59.8 × 152.0)	1,280 × 3,862 (59.8 × 152.0)		
dimensions	Weight	kg (lbs)	2,880 (6,349)	2,750 (6,063) [3,050 (6,724) with BV7-870]		
	Accuracy of bidirectional axis positioning(ISO		2,880 (6,349) 2,750 (6,063) [3,050 (6,724) with BV7-870] X, Y, Z axis : 0.006~0.020 (0.00024~0.00079) A, C axis : 28 sec or less			
Accuracy *3	Repeatability of bidirectional axis positioning(IS	, , ,	X, Y, Z axis : 0.000~0.020 (0.00024~0.00079) A, C axis : 28 sec or less X, Y, Z axis : Less than 0.004 (0.00016) A, C axis : 16 sec or less			
Standard accessories			Instruction Manual (1 set), anchor bolts (4 pcs.), leveling plates (4 pcs.)			

*1. The maximum 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 your local distributor for details. *4. Brother specifications apply to the pull studs for CTS. *5. Measured in compliance with JIS B6336-9 and MAS011-1987. *6. 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. *7. When high accuracy mode B is used (When not used, 1 ~ 10,000 mm/min for X/Y axes and 1 ~ 20,000 mm/min for Z/Y axes.) *8. The machine needs to be equipped with a relocation detection device depending on the destination. Machines equipped with a relocation device come with "RD" at the end of the model name.

CNC model CNC-C00					
Control axes	Control axes 5 axes (X,Y,Z,A,C)				
	Positioning	5 axes(X,Y,Z,A,C)			
Simultaneously controlled axes	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 1ch				
No.of registrable programs	4,000 (Total capacity of program and data bank)				
Program format	NC language	*Conversation language not available			

Specifications

- Memory expansion (Application) High-speed process
- Rotary fixture offset
- Involute interpolation

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) Status log Machine lock Computer remote Built-in PLC Motor insulation resistance measurement Operation log High accuracy mode AIII Tool length measurement / spare tool Backcround editing	Graphic display Subprogram Helical / conical interpolation Tool washing filter with filter clogging detection Automatic power off (energy saving function) Servomotor off standby mode (energy saving function) Chip shower off delay Automatic coolant off (energy saving function) Automatic coolant off (energy saving function) Heat expansion compensation systemII (X, Y, Z axes) Tap return function Automatic workpiece measurement *1 Waveform display Operation level External input signal key High accuracy mode BI(look-ahead 40 blocks)	 Screen shot Auto notification Inverse time feed Spindle load monitoring function ATC monitoring function Expanded workpiece coordinate system Scaling Mirror image Menu programming Programmable data input Tool length compensation Cutter compensation Local coordinate system One-way positioning Operation in tape mode (Turning function) Constant peripheral speed control Feed per revolution control Fool position compensation XYZ Nose R compensation Thread cutting function 			
Optional NC functions					
 Memory expansion (Approx. 500 Mbytes High-speed processing *2 	 High accuracy mode BII (look-ahead 200 blocks, smooth path offset) 	 Feature coordinate setting function Spindle override 			

- Submicron command *3

Interrupt type macro

M200X3 M300X3

*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.

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 Hoechster 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 Cente

Park Landing, Ground Floor, Municipal No.5AC-709, 2nd Block, HRBR Extension, Bengaluru - 560 043 Karnataka, India PHONE:(91)80-43721645

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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

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India

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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 guestions, please contact our sales representative in charge.

Leave 700 mm between machines as a maintenance space.

• When exporting our machine, 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, 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.

Specifications may be subject to change without any notice.



BROTHER INDUSTRIES, LTD. Machinery Business Division

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