

Global Service Sites

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

U. S. A.

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Thailand

BROTHER COMMERCIAL THAILAND LTD.

MACHINE TOOLS TECHNICAL CENTER

1232 Rama 9 Road, Suanluang Sub-District, Suanluang District,

Bangkok 10250, Thailand PHONE:(66)2-374-6447 FAX:(66)2-374-2706

BROTHER MACHINERY (SHANGHAI) LTD. (MACHINE TOOLS DIV.) SHANGHAI TECHNICAL CENTER

3F, Haiyi Commercial bldg. No.310 TianShan Road, ChangNing District, Shanghai 200336, China

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Germany

BROTHER INTERNATIONALE INDUSTRIEMASCHINEN GmbH

MACHINE TOOLS DIVISION FRANKFURT TECHNICAL CENTER Hoechster Str.94, 65835 Liederbach, Germany

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India

BROTHER INTERNATIONAL (INDIA) PVT LTD. BANGALORE TECHNICAL CENTER

Park Landing, Ground Floor, Municipal No.5AC-709, 2nd Block, HRBR Extension,

Bangalore - 560 043 Karnataka, India PHONE:(91)80-6405-7999

China

BROTHER MACHINERY (SHANGHAI) LTD.
DONGGUAN BRANCH (MACHINE TOOLS DIV.) DONGGUAN TECHNICAL CENTER 1F, No.45 North Road Lianfeng, Xianxi Village, Chang'an Town, Dongguan

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Figures in brackets () are the country codes.

Specifications may be subject to change without any notice.



BROTHER INDUSTRIES, LTD. MACHINERY & SOLUTION COMPANY

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PHONE: 81-566-95-0075 FAX: 81-566-25-3721

http://www.brother.com





NEW

S500X1 S700X1





SPEDIO**

The compact machining center SPEEDIO has been released,

achieving overwhelming productivity and excellent environmental performance based on Brother's original technologies.

Our efforts have been focused on releasing a machine that brings about success to users producing mass-production parts, in response to their deep confidence.







SPEEDIO*
S700X1



High Productivity



The machine has achieved overwhelming high productivity as a result of achieving high acceleration and quick response. In particular, Z-axis acceleration has been greatly improved, which is highly effective for improvement of productivity.

Achievement of high acceleration

Z-axis acceleration: 1.1G > SPEEDIO 2.2G

As the Z-axis moves most frequently, Z-axis acceleration has been improved to twice the former model.

Optimal acceleration according to loading capacity (X/Y-axes)*

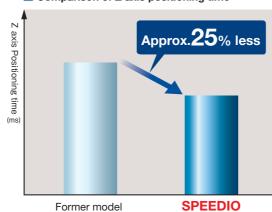
(Max. load): 1.4G/1.1G

(150 kg load): 2.0 G / 1.3 G

The X/Y-axes optimal acceleration setting function sets the most appropriate acceleration according to the table loading capacity.

* Acceleration for the S500X1. The loading capacity needs to be set via parameter.

Comparison of Z axis positioning time



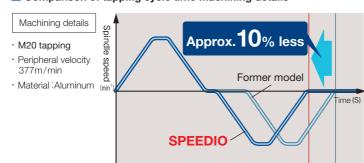
* When moving from Z-axis home position to stroke center

Highly-responsive servo motor

Delay in response has been reduced to almost zero by increasing the responsiveness of the servo motor. For example, high-speed synchronized tapping at the fastest level in the world is completed within much shorter time



■ Comparison of tapping cycle time Machining details



* Data taken by running machining program created by Brother



Brother's original NC unit thoroughly eliminates waste motion and waste time, and drives machine performance to the fullest to demonstrate high productivity.

Nonstop ATC

Tool change time is minimized by optimizing the magazine operation and improving the Z-axis acceleration, in addition to the shorter start and stop time of the spindle.

Chip - Chip: $1.6s \rightarrow 1.4s$

Tool - Tool : $0.9s \rightarrow 0.8s$

Simultaneous operation control

Further reduction of waste time achieved by positioning X/Y and additional axes simultaneously with tool change.



When compared to a general machining center (M/C), the high productivity of the SPEEDIO is outstanding. Brother is constantly pursuing overwhelmingly high productivity.

Conditions for productivity comparison

Major machining

- ightharpoonup · D5.1 drilling × 12 · Boring × 2
- · Spot facing × 7

Workpiece change time:15s 1day (10hours) × 85% operating rate * Data taken by running machining program created by Brother

Approx.60% higher

200

General M/C SPEEDIO

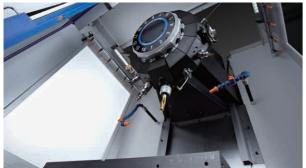
3

Machining Capabilities



Technologies accumulated over years to enhance machine rigidity, and use of a high-power spindle motor allow the machine to demonstrate its broad machining capabilities from high-speed, high-efficiency machining to heavy-duty machining.

Highly rigid structure



Based on accumulated analysis technology data, the machine uses a structure that effectively further improves its rigidity.

Z-axis rigidity 15% increase For the Z-axis in particular, the stress path is reduced, leading to improvement of rigidity by approximately 15%.

High-power spindle motor

Medium-and high-speed range enabling high-efficiency machining



■ Grooving using standard specs

Cutting amount: 150cc/min Machining details Material: Carbon steel

Low-speed range suitable for heavy-duty machining



Large hole drilling using high-torque specs Machining details Hole Grant Carbon steel Hole diameter: ø40mm

Spindle motor torque

Standard specs

Max. torque (momentary): 40 Nm Max. output: 18.9kW

High-torque specs (Optional)

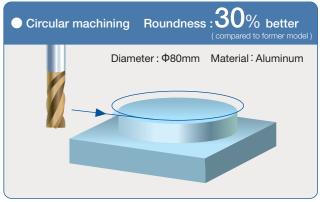
Max. torque (momentary): 92Nm

Max. output: 26.2kW

High-accuracy machining has been achieved by improving machine rigidity, renewing the control system using a new NC unit, and adding new functions. Stable accuracy for circular machining and three-dimensional machining has also been achieved.

Pursuit of high accuracy

Resolution of the encoder has greatly improved and various offset functions have been added. These improvements achieve high accuracy for circular machining and pitch machining. The machine structure used is not easily affected by heat expansion due to coolant.



 * This accuracy may not be obtained under some machining conditions, machine installation conditions etc

High-speed three-dimensional machining

High-speed and highly accurate three-dimensional machining has been achieved by high-speed spindle specifications and Brother's original three-dimensional machining control, such as the 200-block look-ahead function and smooth path offset function.

High-speed spindle specs: 27,000min⁻¹

Look-ahead function

High accuracy mode BI (Standard):





(for ø16 end mill)



The machine is equipped with the CNC-C00 series next generation NC unit with greatly improved processing capabilities and functions, and enhanced usability.

Operability

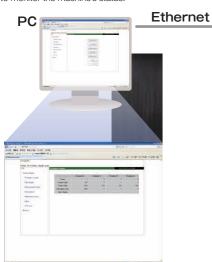
Equipped with 'shortcut' keys to quickly open the desired screen and 'sub folder' to make program management easier, in addition to the USB memory interface, menu programming and tap return function.

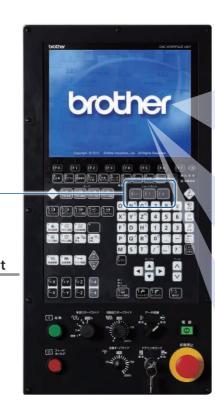


Shortcut keys

Network function

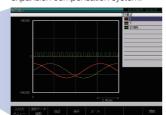
High capacity program data can be transferred via Ethernet at high speed. The simple production monitoring function is also available allowing you to monitor the machine's status.





Machining support functions

Equipped with machining support functions, such as torque waveform display,high accuracy mode, and heat expansion compensation system



Maintenance functions

Equipped with motor insulation istance measurement, operation log, and maintenance notice function.



System capacity

Standard equipped with PLC. Input and output points can be extended to up to 1024 points each (Optional).

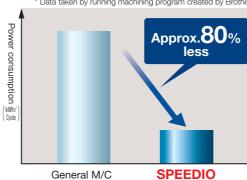


Lower power and air consumption ensures high environmental performance. A power regeneration system that effectively lowers power consumption is used for all models.

Low power consumption is achieved by using an energy saving pump etc. in addition to a low-inertia spindle and high-efficiency motor.

Power consumption for one cycle

Data taken by running machining program created by Brother







LED type work light (Optional)

The SPEEDIO is an earth-friendly machine equipped with a variety of energy-saving functions

Automatic coolant off -Turns off the coolant pump when the preset time elapses.

Standby mode Turns off the servomotor when the machine is not opreated for the preset time.

Automatic work light off - Turns off the work light when the preset time

— Turns off the power at the preset time. Automatic power off

Reliable functions that enhance productivity, minimizing defects and preventing failure

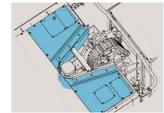
Productivity can also be enhanced from the following viewpoints: "prevent dimensional defects" and "prevent machine failure with minimal maintenance to minimize machine down time". The SPEEDIO is equipped with functions to achieve these.



Air-assisted tool washing (Optional)

High discharge pressure prevents Separates the machining area from the Detects motor failure in advance.

chips becoming attached to the holder. machine room



Top cover (Optional)

Motor insulation resistance Maintenance notice measurement function



function

Notifies operators of when greasing is required etc.

Optional Specifications



Coolant unit

Can be selected from 50L,100L, or 150L, depending on the purpose. (Photo:Tank with 150L chip shower)



Tool washing (air-assisted type)

High discharge pressure and flow rate efficiently remove chips attached to the holder. Equipped with a filter clog warning function.



Cleaning gun

Helps clean the workpiece or chips inside the machine after machining



Side cover (transparent board type)

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



Coolant Through Spindle (CTS)

1.5 MPa CTS used for BT spindle.

* Please consult Brother for use of 3 MPa CTS. * CTS option is not available for 27,000min⁻¹ specifications.



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.



LED type work light (1or 2 lamps)

LED lamps are used to extend lamp life and save energy.



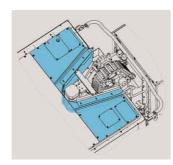
Automatic door (motor-driven)

A motor-driven door is used, achieving smooth operation.



Back washing system (for CTS)

This prevents the filter from clogging, enabling long continuous operation without filter replacement.



Top cover

Shutting the opening on the top prevents coolant or chips splashing outside of the machine, and reduces the effect of there on the spindle motor.



Indicator light (1,2, or 3 lamps)

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



Automatic grease lubricator

Regularly greases all greasing points on the three axes.

* Manual greasing applies to the standard specification model.



High accurancy mode BII (look-ahead 200 blocks)

The 200-block look-aheard function enables high-speed and highly accurate three-dimensional machining.

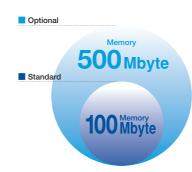
Also equipped with a smooth path offset

function to improve machining quality.



Spindle override

Spindle speed can be changed without changing the program.



Memory expansion

Memory can be expanded to up to 500 Mbvtes.

Optional Specifications Coolant unit

① 50L (with valve and 180W pump)

②100L

(with chip shower, valve and 250W + 250W pumps) ③150L (with chip shower, valve and 250W + 400W pumps)

④150L (with chip shower, CTS, valve and 250W + 400W + 650W

pumps)

- Coolant Through Spindle (CTS)
- Mesh basket for chips
- Tool washing (air-assisted type)
- Tool breakage detector (touch type)
- Chip shower
- Cleaning gun

* When the submicron command is used, changing to the conversation program is disabled.



Tool breakage detector (touch type)

A touch switch type tool breakage detector is used.



B-axis cord (for 1 axis, 2 axis)

Multi-face machining is possible by adding one or two axes.



The position of the manual pulse generator can be changed using the switch hole, avoiding the generator being positioned behind the roller conveyor or similar.



- Jig shower valve unit Back washing system (for CTS)
- Automatic oil lubricator
- Automatic grease lubricator
- LED type work light (1 or 2 lamps) Indicator light (1, 2, or 3 lamps)
- Automatic door (motor-driven)
- Area sensor
- Specified color
- Manual pulse generator
- B-axis cord (1 axis, 2 axes) Spindle override
- High column (150 mm, 250 mm) Grip cover
- Top cover



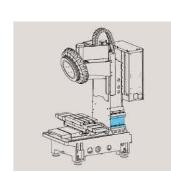
Manual pulse generator

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



RS232C(25 pin)

Conventional 25-pin connector can be attached to the side of the control box.



High column (150mm, 250mm)

High column of 150mm and 250mm used in response to customers' needs

- Side cover (transparent board type)
- RS232C (25 pin) for control box Expansion I/O board (EXIO board)
- ①EXIO board assembly ②Additional EXIO board assembly
- Switch panel (6 holes, 10 holes)
- Memory expansion (approx. 500 Mbytes)
- High accuracy mode B II
- (look-ahead 200 blocks, smooth path offset)
- Submicron command *
- Interrupt type macro
- PLC programming software (for Windows®XP, Vista, and 7)

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.

10



Machine Specifications and NC Unit Specifications

		Item		S500X1	S700X1	
CNC Unit				CNC-C00		
	X axis		mm (inch)	500(19.7)	700(27.6)	
	Y axis		mm (inch)	400(15.7)		
Travels	Z axis m		mm (inch)	300(11.8)		
	Distance between table top and spindle nose end mr		d mm(inch)	180~480(7.1~18.9)		
Table	Work area size		mm(inch)	600×400(23.6×15.7) 800×400(31.5×15.7)		
	Max.loading capacity (uniform load)		kg (lbs)	250[300 *6] (551[661 *6])		
	Spindle speed		min ⁻¹	10,000min ⁻¹ specifications: 10~10,000 16,000min ⁻¹ specifications(Optional): 16~16,000		
				10,000min ⁻¹ high-torque specifications (Optional): 10~10,000 27,000min ⁻¹ specifications (Optional): 27~27,000		
Spindle	Speed during tapping		min ⁻¹	MAX. 6,000 (27,000min ⁻¹ specifications: MAX. 8,000)		
	Tapered h			7/24 tapered No.30		
		ontact system (BIG-PLUS)		Optional		
	Coolant Through Spindle (CTS)			Optional (CTS option is not available for 27,000min 'spec.)		
Feed rate			m/min(inch/min)	·	(9 × 1,969 × 2,205)	
	Cutting feed rate mm/mi		m/min(inch/min)	· · · · · · · · · · · · · · · · · · ·	(0.04~1,181) *7	
_	Tool shan	k type		MAS-BT30		
	Pull stad type *4			MAS-P30T-2		
ATC unit	Tool storage capacity		pcs.	14/21		
ATC UTIL	Max. tool length		mm(inch)	250(9.8)		
_	Max. tool diameter		mm(inch)	110(4.3)		
	Max. tool weight *1		kg (lbs)	3.0(6.6) / Tool (TOTAL TOOL WEIGHT: 25(55.1) for 14 tools, 35(77.2) for 21 tools)		
	Tool selection method			Random shortcut method		
	Tool To Tool		sec.	0.8		
Tool change time *5	Chip To Chip		Sec.	1.4		
	Cut To Cut		sec.	1.2		
	Main spindle motor (10min/continuous)*2		kW	10,000min ⁻¹ specifications: 10.1/6.7 16,000min ⁻¹ specifications(Optional): 7.4/4.9		
Electric motor				10,000min ⁻¹ high-torque specifications(Optional): 12.8/8.8 27,000min ⁻¹ specifications(Optional): 8.9/6.3		
	Axis feed motor		kW		'), 2.0(Z)	
-	Power supply			AC V±10%、50/60Hz±1Hz		
Power source	Power capacity (continuous)		kVA		000min ⁻¹ specifications (Optional): 9.5	
-				<u> </u>	10.4 27,000min ⁻¹ specifications (Optional):9.5	
	Air	Regular air pressure	MPa		ded value: 0.5MPa *8)	
	supply Required flow		L/min	45(27,000min ⁻¹ specifications:115)		
-	Height mm		mm (inch)	-	(98.3)	
Machining dimensions	Required floor space[with control unit door open]			1,560×2,220 [2,692](61.4×87.4 [106.0])	2,050×2,220 [2,692] (80.7×87.4 [106.0])	
	Weight (including control unit, machine cover)		kg (lbs)	2,250(4,960) 2,400(5,291)		
Accuracy *3	Accuracy of bidirectional axis positioning (ISO230-2:2006)) mm(inch)	0.006~0.020 (0.00024~0.00079)		
, toodrady 5	Repeatability of bidirectional axis positioning (ISO230-2:2006) mm) mm(inch)	Less than 0.004 (0.00016)		
Front door	2doors					
Standard accessories	Instruction Manual (1 set), anchor bolts (4 pcs.), leveling bolts (4 pcs.), machine cover (manual door)					

^{*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. *4. Brother specifications apply to the pull studs for CTS. *5. Measured in compliance with JIS B6336-9 and MAS011-1987. *6. Acceleration must be adjusted for X and Y axes. *7. When using high accuracy mode B. *8. 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.

NC unit specifications							
CNC model	CNC-C00						
Control axes	5 axes(X,Y,Z, two additional axes)						
Simultaneously	Positioning	5 axes(X,Y,Z,A,B)					
controlled axes	Interpolation	Linear: 4 axes (X,Y,Z one additional axis)					
oor in one a axee		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, ±999.9999 inch							
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)						
Dragram format	NC language, conversation (changed by parameter)						
Program format	conversion from conversation program to NC laguage program available						

^{*}When program size is bigger than 2 Mbytes. machine works with extended

11

^{*}Ethernet is a trademark or registered trademark of XEROX in the United States.

Absolute / incremental	High-accuracy mode Alll	(NC)
Inch / metric	 Tool length measurement 	 Expanded workpice coordinate system
Corner C / Corner R	Tool life management / spare tool	Scaling
 Rotational transformation 	 Background editing 	Mirror image
 Synchronized tap 	Graphic display	Menu programming
 Coordinate system setting 	Subprogram	Program compensation
Dry run	 Herical / conical interpolation 	 Tool length compensation
Restart	 Tool washing filter with filter clogging detection 	Cutter compensation
 Backlash compensation 	 Automatic power off (energy saving function 	Macro function
 Pitch error compensation 	 Servomotor off standby mode (energy saving function) 	 Local coordinate system
 Raid traverse override 	Chip shower off delay	One-way positioning
 Cutting feed override 	 Automatic coolant off (energy saving function) 	Opeation in tape mode
Alarm history(1,000 pieces)	 Automatic work light off (energy saving function) 	(Conversation)
Startus log	Heat expansion compensation system!	Operation program
Machine lock	(X,Y,Z axes)	 Schedule program
 Computer remote 	Tap return function	Automatic tool selection
Built-in PLC	Automatic workpiece measurement *1	 Automatic cutting condition setting
 Motor insulation resistance measurement 	Waveform display	 Autmatic tool length compensation setting
Operation log	 Operation level 	 Autmatic cutter compensation setting
High accuracy mode BI	 External input signal key 	 Autmatic calculation of unknown number input
(look-ahead 30blocks)		 Machining order control
	Optional NC functions	
Memory expansion (Approx. 50)	00 Mbytes)	(NC)
 High accuracy mode BII (look- 	Submicron command *2	
 Spindle override 		 Interrupt type macro

^{*1.} Measuring instrument needs to be prepared by users. *2. 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.

Machining capability • Examples of target workpieces

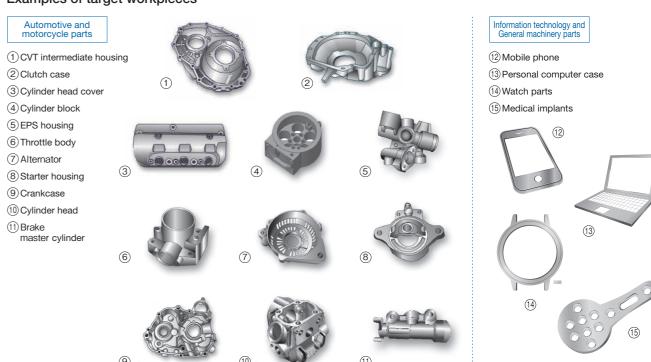
Machining capability

		ADC	FC200	S45C
■ Drilling	10,000min ⁻¹	D32(1.26)×0.2(0.008)	D28(1.1)×0.15(0.006)	D25(0.98)×0.1(0.004)
	10,000min ⁻¹ 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)
	16,000min ⁻¹	D24(0.94)×0.2(0.008)	D22(0.87)× 0.15(0.006)	D18(0.71)×0.1(0.004)
Tool diameter mm(inch) × Feed mm(inch)/rev	27,000min ⁻¹	D20(0.79)×0.2(0.008)	D19(0.75)× 0.15(0.006)	D17(0.67)×0.1(0.004)
■ Tapping	10,000min ⁻¹	M27 × 3.0(1-8UNC)	M24 × 3.0(7/8-9UNC)	M16×2.0(5/8-11UNC)
	10,000min ⁻¹ high-torque	M39×4.0(1 1/2-6UNC)	M33×3.5(1 1/4-7UNC)	M27×3.0(1-8UNC)
	16,000min ⁻¹	M22×2.5(7/8-9UNC)	M18×2.5(5/8-11UNC)	M14×2.0(1/2-13UNC)
Tool diameter mm(inch) × Pitch mm(inch)/rev	27,000min ⁻¹	M22×2.5(7/8-9UNC)	M18×2.5(5/8-11UNC)	M12×1.75(7/16-14UNC)
■ Facing	10,000min ⁻¹	960:100×3.2×3,000 (58.6:3.94×0.13×118.1)	137:40×6.0×573 (8.4:1.57×0.24×22.6)	100 : 40 × 5.2 × 484 (6.1 :1.57×0.2×19.1)
	10,000min ⁻¹ high-torque	1,700:100× 5.7×3,000 (102.4:3.94×0.22×118.1)	137:40×6.0×573 (8.4:1.57×0.24×22.6)	100 : 40 × 5.2 × 484 (6.1 :1.57×0.2×19.1)
Cutting amount cm³/min(inch²/min): Cutting width mm(inch) ×	16,000min ⁻¹	660:100×2.2×3,000 (40.3:3.94×0.09×118.1)	73:40×3.2×573 (4.5:1.57×0.13×22.6)	48: 40 × 2.5 × 484 (2.9:1.57×0.1×19.1)
Cutting depth mm(inch) × Feed rate mm/min(inch/min)	27,000min ⁻¹	600:100×2.0×3,000 (36.6:3.94×0.08×118.1)	45:40×2.0×573 (2.7:1.57×0.08×22.6)	24:40 × 1.2 × 484 (1.5:1.57×0.05×19.1)

*The data is Brother's actual test data.

12

Examples of target workpieces



- Be sure to read the instruction manual and safety manual before using the produst safely. If you use oil-based coolant or machine materials that may ignite, such as magnesium and resin, take thorough safety measures to prevent fire. Please contact the sales personnel for any inquiries.
 When exporting this product, carefully check the customer and their purpose of use from the viewpoint of security assurance. You may have to obtain permission from the
- supervisory authorities prior to export due to revisions of laws and regulations etc. Please contact Brother before exporting the machine.

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

 When exporting our product with tilting rotary table, "list control" is applicable, according to view of Ministry of Economy, Trade and Industry(METI) in Japan. Therefore, please apply for export license in advance of export. If necessary, please contact METI,

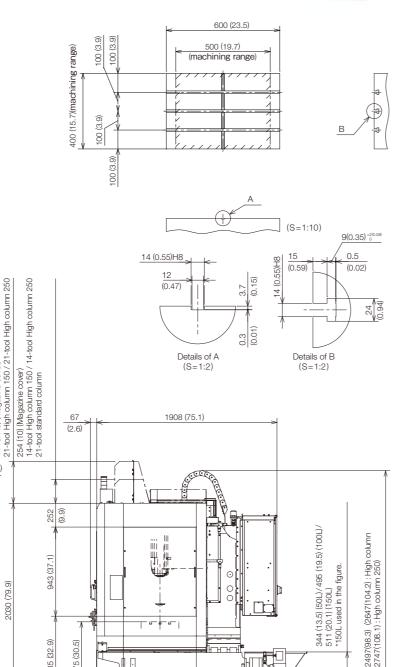


SPEEDIO S500X1



SPEEDIO[™] S700X1





1119 (44.1)

1615 (63.6)

772 (30.4)

385 (15.2) (50L) 612 (24.1) (100L) 677 (26.7) (150L)

*150L used in the figure

mm(inch)

800 (31.5) 700 (27.6) (machining range) (S=1:10) 9(0.35) +2(0.08) 0.5 14 (0.55)H8 (0.02) Details of A Details of B (S=1:2)(S=1:2)32 (1.3) 2050 (80.7) L32 (1.3) 1908 (75.1) 1065.5 (2.6) (41.9) (door opening Motor cover (automatic door type) (98.3) (2647 (104.2): High (108.1): Hgh column 250) 385 (15.2) (50L) 612 (24.1) (100L) 677 (26.7) (150L) *150L used in the figure. 1119 (44.1) 840 (33.1) 605 (23.8) 605 (23.8) (12.8) 772 (30.4) 1615 (63.6)

mm(inch)

Secure 700 mm(27.6 inch) between machines as maintenance space. 14

840 (33.1)

360

360

(14.2)

1560 (61.4)

(29.1) (door opening

(13.8)

Motor cover (automatic door type)

32 (1.3)