Brother Earth

Working with you for a better environment
www.brotherearth.com

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

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

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 29-7,Unit 3,Zhengsheng Bailaohui Building ,
No.3 Xijiao Road ,Yangjiaping, Jiulongpo District, Chongqing
PHONE:(86)23-6865-5600 FAX:(86)23-6865-5560

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.
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,
Guangdong Province, China
PHONE:(86)769-2238-1505 FAX:(86)769-2238-1506

Figures in brackets ( ) are the country codes.

Specifications may be subject to change without any notice.

BROTHER INDUSTRIES, LTD.
MACHINERY & SOLUTION COMPANY
1-5, Kitajizoyama, Noda-cho, Kariya-shi,
Aichi-ken 448-0803, Japan
PHONE: 81-566-95-0075
FAX : 81-566-25-3721
http://www.brother.com

The information in this catalogue is current as of December 2014. ver.1412

Compact Machining Center
SPEEDIO

brother
at your side

NEW

S1000X1

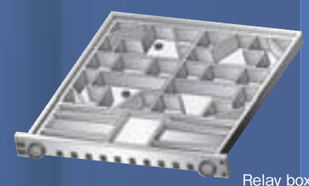
X-axis travel

Y-axis travel

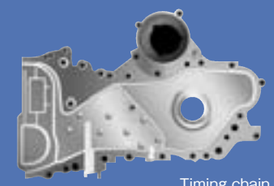
1,000×500

Basic specifications

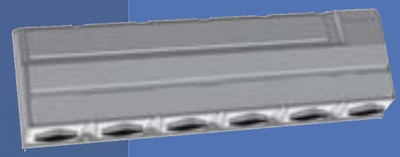
Max. spindle speed(min^{-1})	10,000 10,000 high-torque (optional) 16,000 (optional)
Travels(mm)	X 1,000 Y 500 Z 300
Tool storage capacity(pcs.)	14／21
Rapid traverse rate(m/min)	X／Y／Z 50／50／56
Required floor space(mm)	2,410 × 2,442
BT dual contact spindle(BIG-PLUS)	Optional
Coolant Through Spindle(CTS)	Optional



Relay box



Timing chain cover



Cylinder head cover

Expanding coverage of #30 machine

"Machining larger workpieces using #30 machine"
The release of the S1000X1 machining center sees an override
in the conventional machining areas of #30 machines.
Continuing in the spirit of overwhelming high productivity,
the machine will launch a challenge to new machining areas,
boosting our "Brother also in this process" concept.

SPEEDIO
S1000X1

Photos show machines with a 21-tool magazine.

SPEEDIO S1000X1

Machining Area

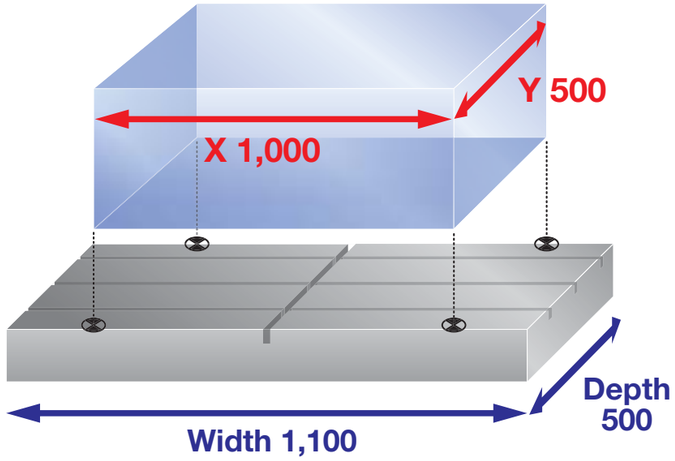
Sufficient travels and table size

Increase in X- and Y-axes travels and expansion of the machining area have enabled large workpiece machining and large jig mounting, which were not possible on conventional #30 machines.

Travels :
X1,000 Y500

Work area size :
X1,100 Y500

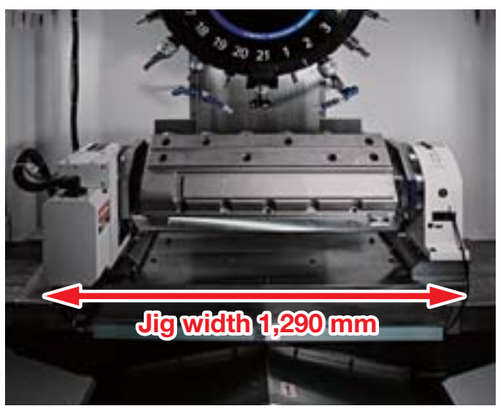
Max. loading capacity :
400kg



Mounting large jigs possible

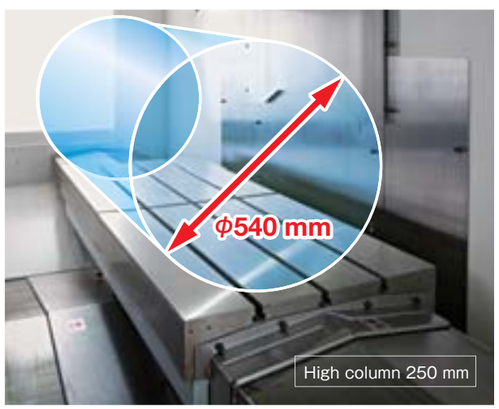
A wider, longer jig area has been secured, enabling mounting of large jigs. 150 mm, 250 mm, and 350 mm high columns (optional) are available to meet customers' needs.

■ Mounting example 1



Rotary table diameter : ø250
Workpiece size : 830×264×135(mm)

■ Mounting example 2



Trunnion-type fixture with a turning diameter of ø540 mm can be mounted.

SPEEDIO S1000X1

Productivity

High-speed and optimal operation control

■ Fast acceleration/deceleration spindle

Using a fast acceleration/deceleration spindle motor enables the spindle to start and stop in an extremely short time.

Spindle start/stop time : **0.15s**

*When using high-torque specs

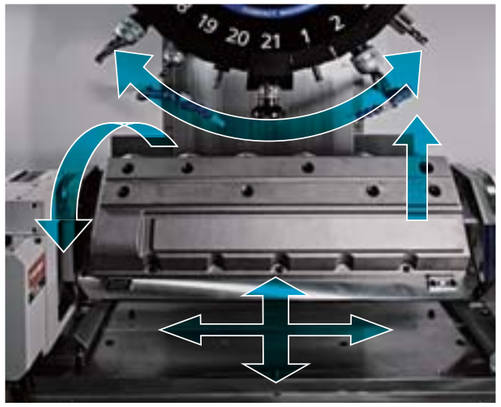
■ Nonstop ATC

High-speed tool change has been achieved by optimizing and increasing the speed of spindle start/stop, Z-axis up/down, and magazine movement.

Chip — Chip : **1.4s**
Tool — Tool : **0.8s**

■ Simultaneous operation control

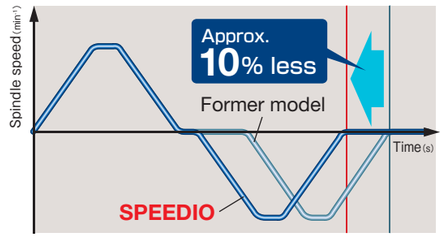
Wasted time has been further reduced by simultaneously performing tool change and positioning X/Y and additional axes.



■ Highly-responsive servomotor

Delay in response has been reduced to almost zero by increasing the responsiveness of the servomotor. High-speed synchronized tapping at the fastest level in the world has been achieved.

Comparison of tapping cycle time



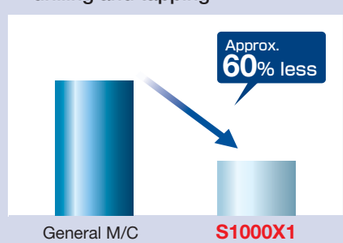
Machining details
○M20 tapping
○Peripheral velocity : 377 m/min
○Material : Aluminum

* Data taken running machining program created by Brother

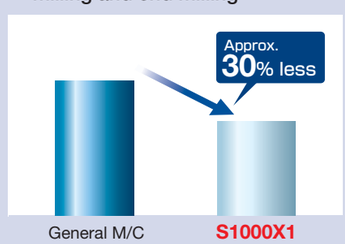
Comparison of cycle time

Compared to a machining center with the same machining area, Brother's original high-speed and optimal operation control results in overwhelming high productivity.

■ Program mainly consisting of drilling and tapping



■ Program mainly consisting of milling and end milling



* Data taken running machining program created by Brother

SPEEDIO S1000X1

Machining Capabilities

Highly rigid structure

Backbone parts, such as the base, column, and table, have been specially designed through numerical analysis to secure high rigidity.

Column

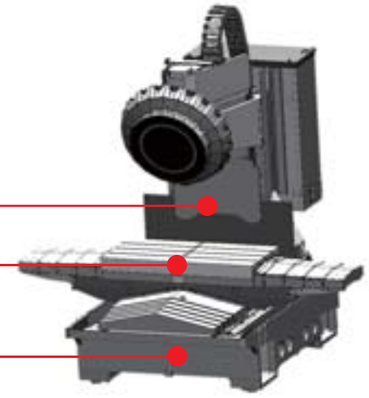
High rigidity achieved through a review of the rib structure and expansion of the column width in response to an increase in the Y-axis travel

Table

Highly rigid to support large jigs, achieved by expanding the guide span and using a structure that suppresses deflection over the entire table

Base

High rigidity achieved through a review of the rib structure and an increase in the distance between base plates



High-power spindle motor

Standard specifications

Torque in the medium- and high-speed range is high, enabling high efficiency machining for aluminum, steel etc.

Grooving using standard specs
Machining details
○Cutting amount : 150 cc/min
○Material : Carbon steel
(for ø16 end mill)

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

High-torque specifications (optional)

Torque in the low-speed range has greatly improved, enabling heavy-duty machining at the highest level among #30 machines.

Large hole drilling using high-torque specs
Machining details
○Hole diameter : ø40 mm
○Material : Carbon steel

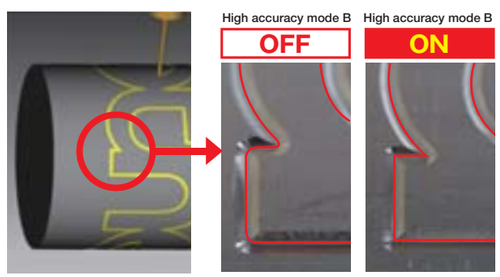
Spindle motor characteristics
Max. torque (momentary) : 92Nm
Max. output : 26.2kW

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 the 200-block look-ahead function and smooth path offset function.

High accuracy mode BⅠ : **Look-ahead 30 blocks**

High accuracy mode BⅡ : **Look-ahead 200 blocks**



SPEEDIO S1000X1

Usability

NC Unit

The machine is equipped with our original NC unit created through machine/controller integrated development. Usability has been further improved by expanding operation and maintenance functions and enhancing the system capacity.

Shortcut keys

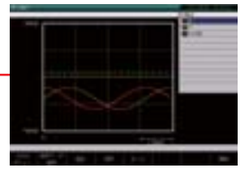
Equipped with a "shortcut" function so you can quickly open the screen you want to view

USB interface

In addition to high-speed file transfer, programs in the USB memory can be run directly or data, such as data measured by the touch probe, can be output.

Machining support functions

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



System capacity

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

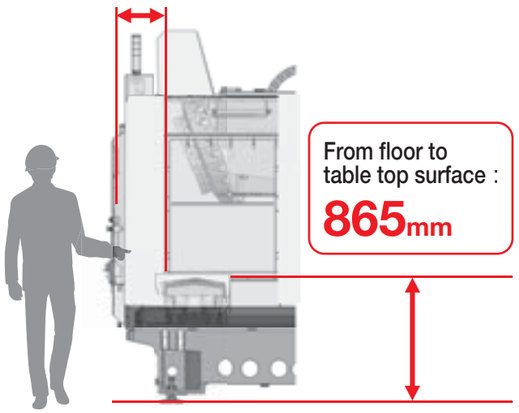
Accessibility

Interlocking double doors are used. This provides a wider door opening width, improving workability.

Door opening width : **1,150mm**

The best table position has been secured so that the operator can perform setup change comfortably.

From front of machine to front of table : **226mm**

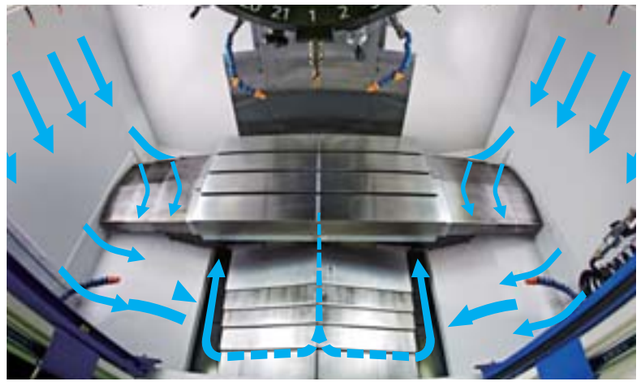


From floor to table top surface : **865mm**

Reliability and Environmental Performance

High reliability

Chip discharge performance has been improved along with the expansion of the machining area. In addition, the machine is equipped with a variety of functions, such as air-assisted tool washing, to improve reliability.



■ Chip shower

■ Roof shape telescopic cover

Through the installation of two chip shower pumps to double the flow rate, and using roof shape telescopic covers for the X/Y-axes, chips are quickly discharged from the machining area.

■ Air-assisted tool washing (optional)

High discharge pressure prevents chips becoming attached to the holder.

■ Top cover (optional)

Separates the machining area from the machine room.

■ Motor insulation resistance measurement function

Detects motor failure in advance.

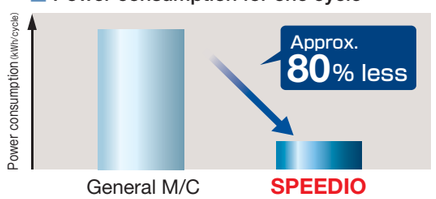
■ Maintenance notice function

Notifies operators of maintenance requirements, such as greasing.

High environmental performance

In addition to low power and air consumption, the machine is equipped with a power regeneration system and a variety of energy saving functions, achieving high environmental performance.

■ Power consumption for one cycle



∗ Data taken running machining program created by Brother

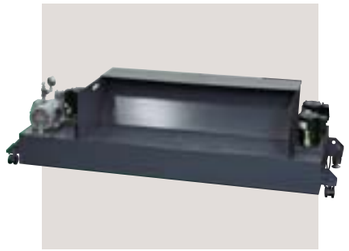
LED type work light (optional)

Energy saving pump

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

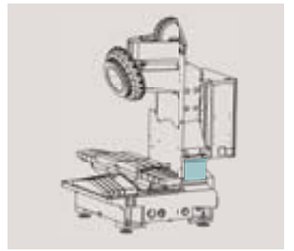
- ○ **Automatic coolant off** : Turns off the coolant pump when the preset time elapses.
- ○ **Standby mode** : Turns off the servomotor when the machine is not operated for the preset time.
- ○ **Automatic work light off** : Turns off the work light when the preset time elapses.
- ○ **Automatic power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

Optional Specifications



Coolant unit

A large 200L tank is available.
(Photo : Tank with CTS)



High column (150 mm, 250 mm, 350 mm)

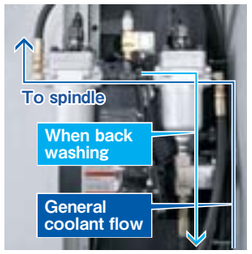
150 mm, 250 mm, and 350 mm high columns are available to meet customers' needs.

Manual pulse generator

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

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.



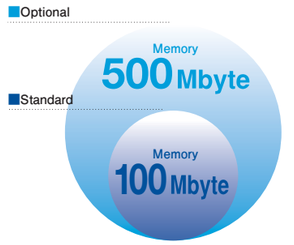
Coolant Through Spindle (CTS)

1.5 MPa CTS is ideal for deep drilling and high-speed machining. The back washing system automatically washes the filter to prevent it from clogging, enabling longer continuous operation without filter replacement.

∗ Please consult Brother separately for 3 MPa CTS.

Automatic door (motor-driven)

Interlocking double doors are used, achieving smooth operation.



Memory expansion

Memory can be expanded to up to 500 Mbytes.

B-axis cord (1 axis, 2 axes)

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

Optional specifications

- Coolant unit
  - ①200L
    With chip shower and valve
    Pump : 250W x 3
  - ②200L for CTS
    With chip shower, CTS, and valve
    Pump : 250W x 3 + 650W
- Coolant Through Spindle (CTS)
- Mesh basket for chips
- Tool washing (air-assisted type)
- Tool breakage detector (touch type)
- Chip shower
- Cleaning gun
- 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, 350 mm)
- Grip cover
- Top cover
- Side cover (transparent board type)
- RS232C (25 pin) for control box
- Expansion I/O board (EXIO board)
  - ①EXIO board assembly ∗2
  - ②Additional EXIO board assembly
- Switch panel (6 holes, 10 holes)
- Memory expansion (approx. 500 Mbytes)
- High accuracy mode BII
  (look-ahead 200 blocks, smooth path offset)
- Submicron command ∗1
- Interrupt type macro
- High-speed processing ∗1
- Rotary fixture offset
- Fieldbus ∗2
  - ① CC-Link (remote device station)
  - ② PROFIBUS DP (slave)
  - ③ DeviceNet (slave)
- PLC programming software
  (For Windows® XP, Vista, and 7)

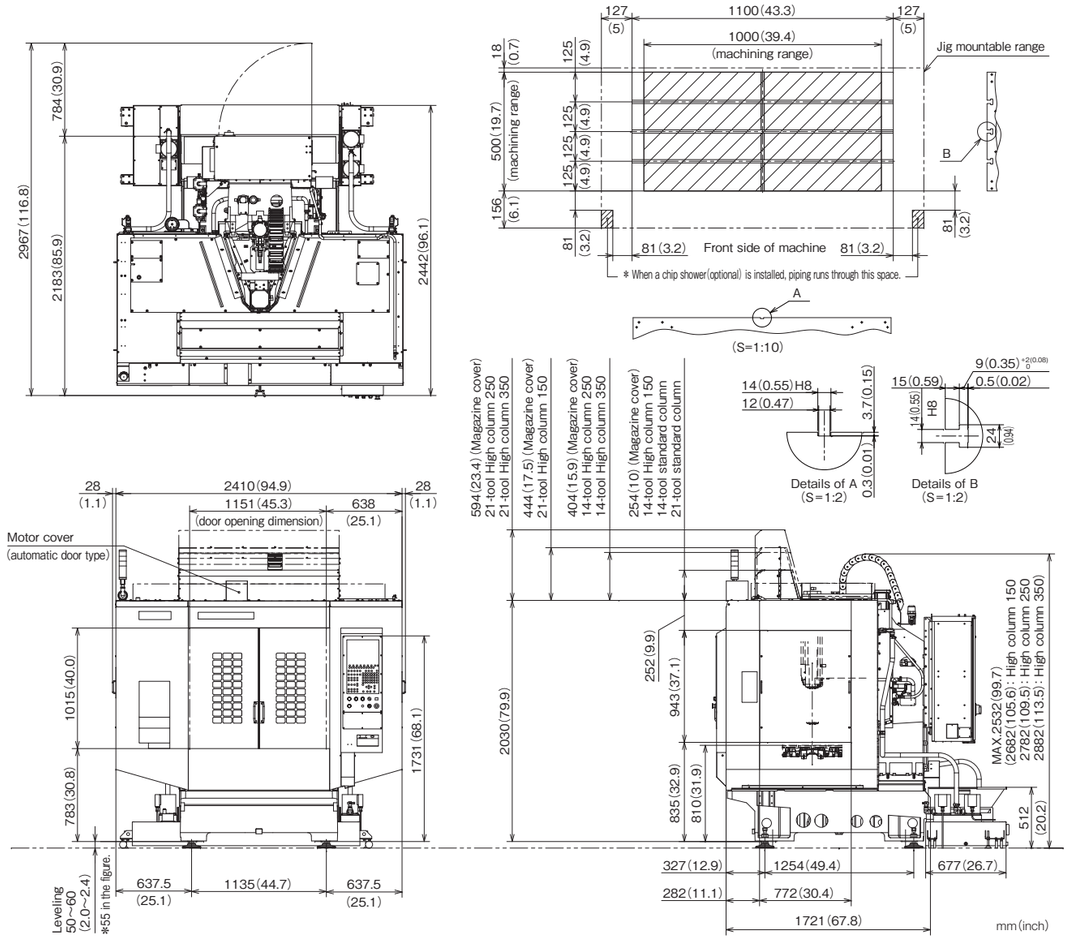
Windows® is a trademark or registered trademark of Microsoft Corporation in the United States and/or other countries.

∗Please contact your Brother dealer for details.

∗1 When the submicron command or high-speed processing is selected, changing to the conversation program is disabled. ∗2 When the fieldbus is selected, the EXIO board assembly cannot be selected.

External Dimensions and Machining capability

External Dimensions



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

Machining capability

		ADC	Cast iron	Carbon steel
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)
Tool diameter mm(inch)× Feed mm(inch)/rev	16,000min⁻¹	D24(0.94) × 0.2(0.008)	D22(0.87) × 0.15(0.006)	D18(0.71) × 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)
Tool diameter mm(inch)× Pitch mm(inch)	16,000min⁻¹	M22 × 2.5(7/8-9UNC)	M18 × 2.5(5/8-11UNC)	M14 × 2.0(1/2-13UNC)
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(inch³/min): Cutting width mm(inch)× Cutting depth mm(inch)× Feed rate mm/min(inch/min)	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)

* The data is Brother's actual test data.

Machine Specifications and NC Unit Specifications

Item			S1000X1
CNC Unit			CNC-C00
Travels	X axis	mm (inch)	1,000 (39.4)
	Y axis	mm (inch)	500 (19.7)
	Z axis	mm (inch)	300 (11.8)
	Distance between table top and spindle nose end	mm (inch)	180～480 (7.1～18.9)
Table	Work area size	mm (inch)	1,100 × 500 (43.3 × 19.7)
	Max.loading capacity (uniform load)	kg (lbs)	300 [400 *6] (661 [881 *6])
Spindle	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
	Speed during tapping	min⁻¹	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 × 50 × 56 (1,969 × 1,969 × 2,205)
	Cutting feed rate	mm/min (inch/min)	X, Y, Z : 1～30,000 (0.04～1,181) *7
ATC unit	Tool shank type		MAS-BT30
	Pull stad type *4		MAS-P30T-2
	Tool storage capacity	pcs.	14／21
	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 change time *5	Tool To Tool	sec.	0.8
	Chip To Chip	sec.	1.4
	Cut To Cut	sec.	1.2
Electric motor	Main spindle motor (10min/continuous) *2	kW	10,000min⁻¹ specifications : 10.1／6.7 16,000min⁻¹ specifications (optional) : 7.4／4.9 10,000min⁻¹ high-torque specifications (optional) : 12.8／8.8
	Axis feed motor	kW	1.0 (X,Y), 2.0 (Z)
Power source	Power supply		AC V±10%、50/60Hz±1Hz
	Power capacity (continuous)	kVA	10,000min⁻¹ specifications : 9.5 16,000min⁻¹ specifications (optional) : 9.5 10,000min⁻¹ high-torque specifications (optional) : 10.4
	Air supply — Regular air pressure	MPa	0.4～0.6 (recommended value : 0.5MPa *8)
	Air supply — Required flow	L/min	45
Machining dimensions	Height	mm (inch)	2,532 (99.7)
	Required floor space [with control unit door open]	mm (inch)	2,410×2442 [2,692] (94.9×96.1 [106.0])
	Weight	kg (lbs)	3,300 (7,275)
Accuracy *3	Accuracy of bidirectional axis positioning (ISO230-2:2006)	mm (inch)	0.006～0.020 (0.00024～0.00079)
	Repeatability of bidirectional axis positioning (ISO230-2:2006)	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 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 (optional)
No.of registrable programs		4,000 (Total capacity of program and data bank)
Program format		NC language, conversation (changed by parameter), conversation from conversation program to NC language program available

*When program size is bigger than 2 Mbytes, machine works with extended memory operation.
*Ethernet is a trademark or registered trademark of XEROX in the United States.

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

Standard NC functions

- Absolute / incremental
- Inch / metric
- Corner C / Corner R
- Rotational transformation
- Synchronized tap
- Coordinate system setting
- Dry run
- Restart
- Backlash compensation
- Pitch error compensation
- Rapid traverse override
- Cutting feed override
- Alarm history (1,000 pieces)
- Startus 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
- Herical / 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 work light 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 30blocks)

(NC)
- Expanded workpice coordinate system
- Scaling
- Mirror image
- Menu programming
- Program compensation
- Tool length compensation
- Cutter compensation
- Macro function
- Local coordinate system
- One-way positioning
- Opeation in tape mode

(Conversation)
- Operation program
- Schedule program
- Automatic tool selection
- Automatic cutting condition setting
- Autmatic tool length compensation setting
- Autmatic 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

(NC)
- Submicron command *2
- Interrupt type macro
- Rotary fixture offset
- High-speed processing *3