brother
at your side

SPEEDIO

S300Xd2
S500Xd2
S700Xd2

Compact Machining Center

S

SPEEDIO's bestselling model further expands the range of application

Enlarged machining area and using a 28-tool magazine expand target workpieces and promote process integration.
Advanced CNC-D00 controller improves environmental performance and productivity.
Extensive range of specifications available to meet a wide variety of machining applications.

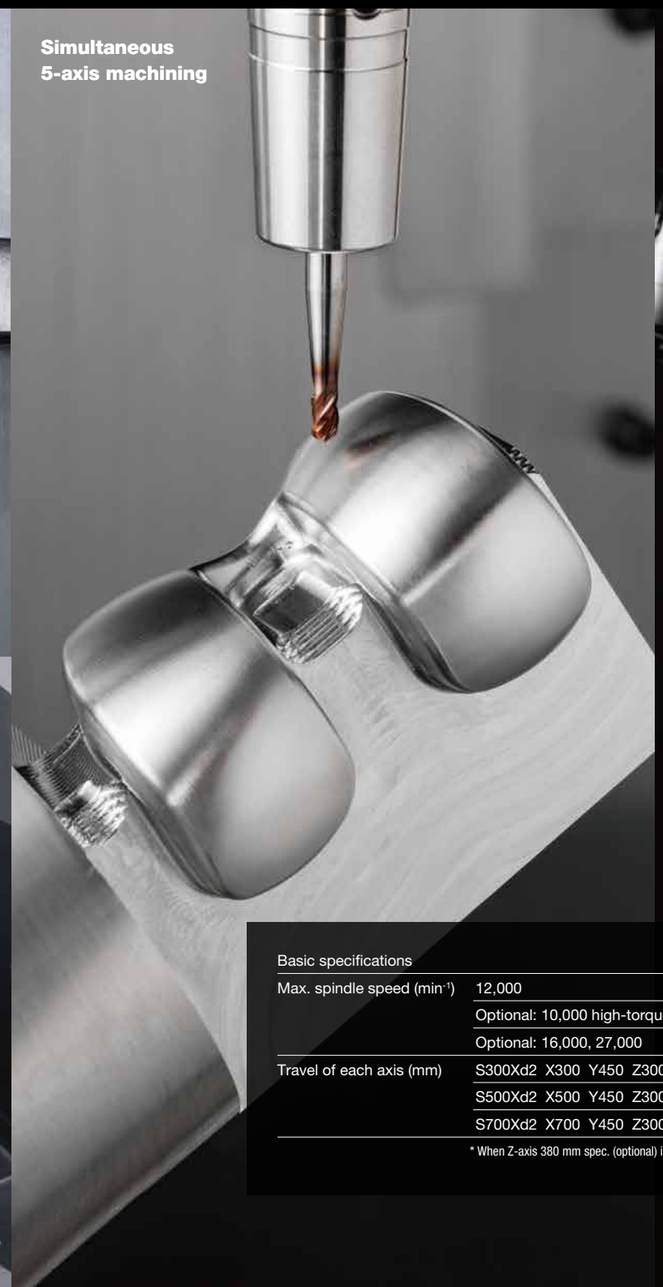
Cutting Out the Waste SPEEDIO

S300 Xd2

S500 Xd2

S700 Xd2

Extensive magazine specifications



Simultaneous 5-axis machining

Extensive spindle specifications

Enlarged machining area

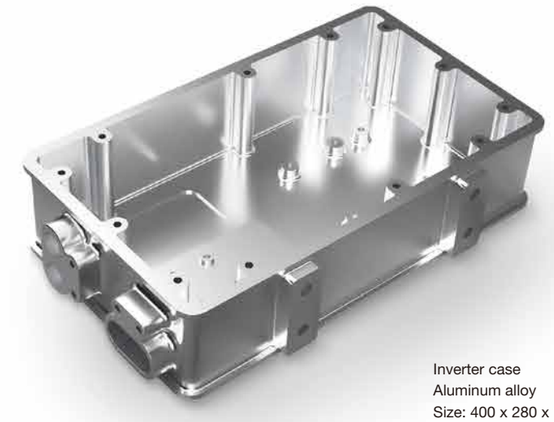
Basic specifications

Max. spindle speed (min^{-1})	12,000	Rapid traverse rate (m/min)	X/Y/Z 50/50/56
	Optional: 10,000 high-torque	Required floor space (mm)	S300Xd2 1,080 x 2,161
	Optional: 16,000, 27,000		S500Xd2 1,560 x 2,081
Travel of each axis (mm)	S300Xd2 X300 Y450 Z300		S700Xd2 2,050 x 2,081
	S500Xd2 X500 Y450 Z300/380*	Tool storage capacity (pcs.)	S300Xd2 14/21
	S700Xd2 X700 Y450 Z300/380*		S500Xd2/S700Xd2 14/21/28
	* When Z-axis 380 mm spec. (optional) is selected	Simultaneous 5-axis spec. (5AX)	Available

Most extensive range in its class provides best-fit solution for any type of application

A range of specifications are available with different X-axis travel, spindle type, or tool storage capacity.
Selecting the best specifications for your application ensures that the SPEEDIO provides incomparable productivity for customers in any industry.

Automobile



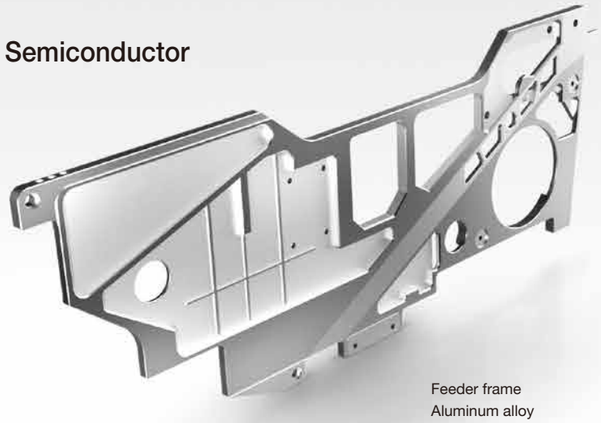
Inverter case
Aluminum alloy
Size: 400 x 280 x 150

Impeller
Aluminum alloy
Size: ø44 x 21

Large valve for thermal management
Aluminum alloy
Size: 230 x 170 x 40

EV gearbox housing
Aluminum alloy
Size: 305 x 260 x 90

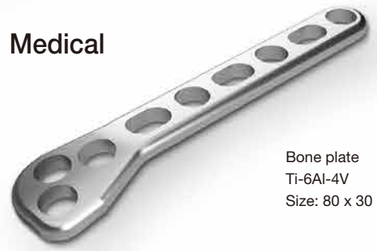
Semiconductor



Feeder frame
Aluminum alloy
Size: 600 x 250 x 12

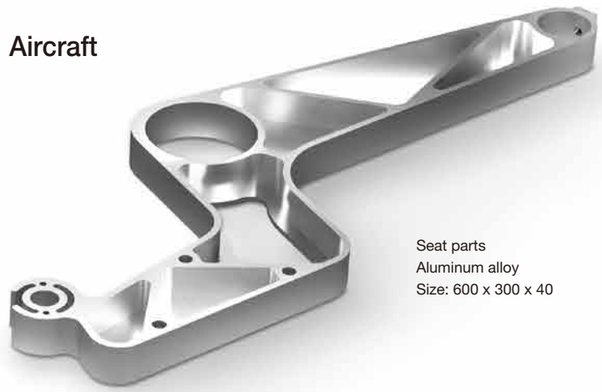
Support bracket
Stainless steel
Size: 133 x 60 x 30

Medical



Bone plate
Ti-6Al-4V
Size: 80 x 30 x 10

Aircraft



Seat parts
Aluminum alloy
Size: 600 x 300 x 40

Construction machinery

Valve plate
Chrome molybdenum steel
Size: ø160 x 25

Increased travels of Y/Z axes and bigger table further expand the range of application

Increased travels of Y/Z axes, bigger table, and using a 28-tool magazine expand the range of application for process integration, such as for multi-face machining, and variable-product variable-volume production.
Together with the extensive range of specifications, the machine responds to a wide variety of machining.

Increased Y-axis travel

Increased Y-axis travel expands the range of target workpieces.

Y-axis travel	400mm*1	▶ 450mm

Bigger table

Bigger table expands the range of jig selection.

S300/S500Xd2	600 x 400*1	▶ 600 x 450mm
S700Xd2	800 x 400*1	▶ 800 x 450mm

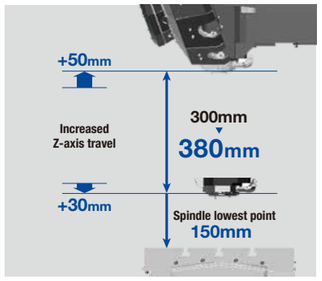
*1: Values of previous model

Z-axis 380 mm spec. (optional)*3

In addition to the standard 300 mm Z-axis travel, the 380 mm Z-axis travel can be selected. The Z-axis travel and the distance between the table top and spindle nose end have been increased to secure ample machining area in the Z-axis direction and improve tool accessibility.
*3: The Z-axis 380 mm spec. cannot be selected for the X300Xd2.

Z-axis travel	
300mm (standard)	380mm (optional)

Distance between table top and spindle nose end	
180~480mm (standard)	150~530mm (optional)



* When Z-axis 380 mm spec. is selected

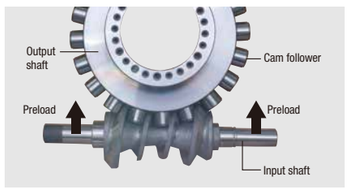
28-tool magazine*2

This is a compact drum type magazine that achieves high-speed tool change. The magazine can be selected from a 14-tool, 21-tool, or 28-tool magazine. The maximum tool weight is 4 kg.
*2: The 28-tool magazine cannot be selected for the S300Xd2.

28-tool magazine	
Max. tool size	110mm
Max. tool weight	4kg
Max. total tool weight	35kg
Tool-Tool	0.7s

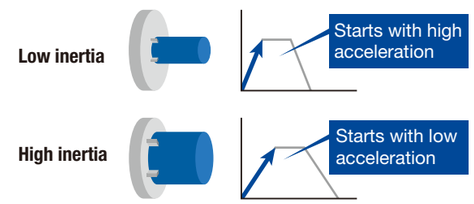
Rotary table T-200Ad (optional)

A roller gear cam mechanism is used. Compared to a worm gear type, faster index machining is possible with higher accuracy. Optimal for process integration on the SPEEDIO.
Equipped with a function that enables indexing at the optimal acceleration based on the estimated inertia.



0 to 180-deg. indexing time

Clamp mode	1.02s
Unclamp mode	0.45s



* Photo shows the S700Xd2 Z-axis 380 mm spec.

Untiring pursuit of high productivity

Reduction in waste by optimized control through machine/controller integrated development

Optimized control by the CNC-D00 controller eliminates waste to the utmost limit in every operation during machining.
This maximizes the performance of the highly reliable machine and ensures high productivity.

Non-stop ATC

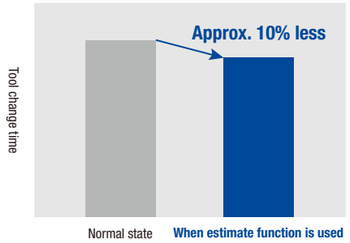
High-speed tool change has been achieved by faster and optimized spindle start/stop, Z-axis up/down, and magazine operation. Tools up to 3 kg can be changed in the shortest time. Tools up to 4 kg can also be changed with minimal increase in time.

	14/21 tools (Standard tools)	28 tools (Standard tools)	28 tools (Heavy tools)
Tool-Tool	0.6s	0.7s	0.8s
Chip-Chip*1	1.2s	1.3s	1.4s

*1: Values for Z-axis 300 mm spec.

Magazine load conditions estimate

Estimates the inertia and unbalanced load of the tool loaded in the magazine, and sets the optimum value for the acceleration of the magazine axis. In addition, automatically updates the value to the estimated optimum acceleration, even during programmed operation.



<Conditions>
Magazine spec.: 28-tool magazine
Total tool weight: 24 kg (equal load)

High acceleration/deceleration spindle

Using a low inertia spindle and high acceleration/deceleration spindle motor has achieved faster spindle start/stop.

Spindle start/stop time **0.15s or less** *High-torque spec.

High acceleration Z-axis

As the Z-axis moves frequently, the highest acceleration in its class has been achieved, contributing to reduction in cycle time.

Z-axis acceleration Max. **2.2G**

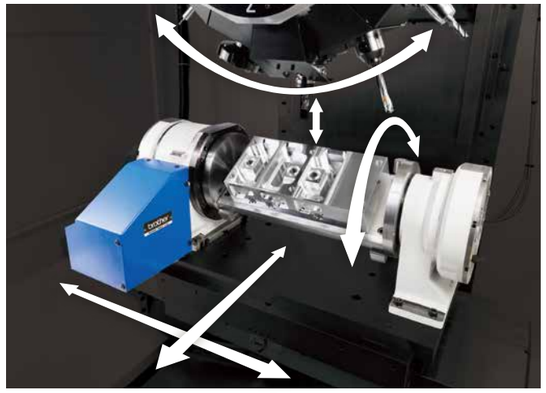
Improved automatic door opening/closing speed

The automatic door opening/closing speed has been improved, enabling significant reduction in setup time.

Automatic door opening/closing time **20% less**

Simultaneous operation

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



Optimal X/Y axes acceleration setting

Load weight Is estimated by moving the table to set the optimal acceleration for the X/Y axes.

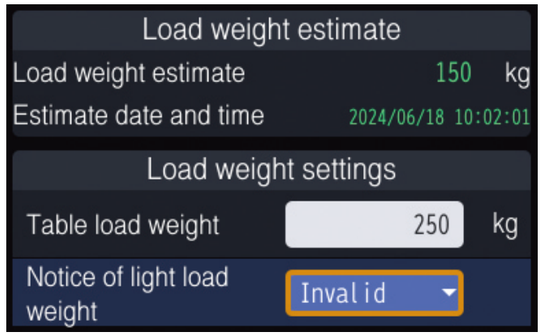
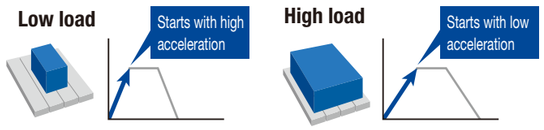
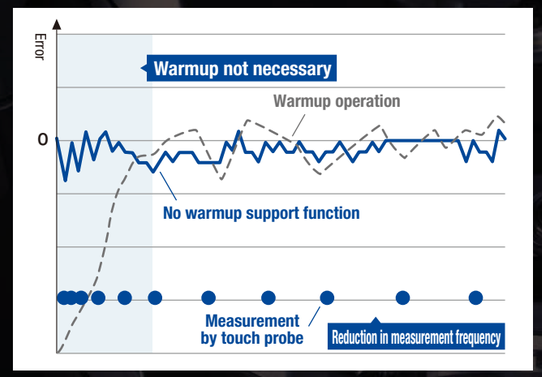


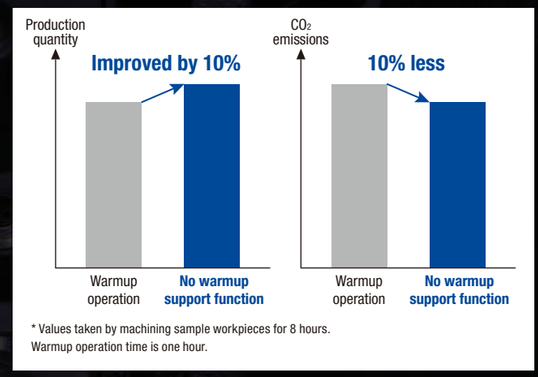
Table load weight estimate screen



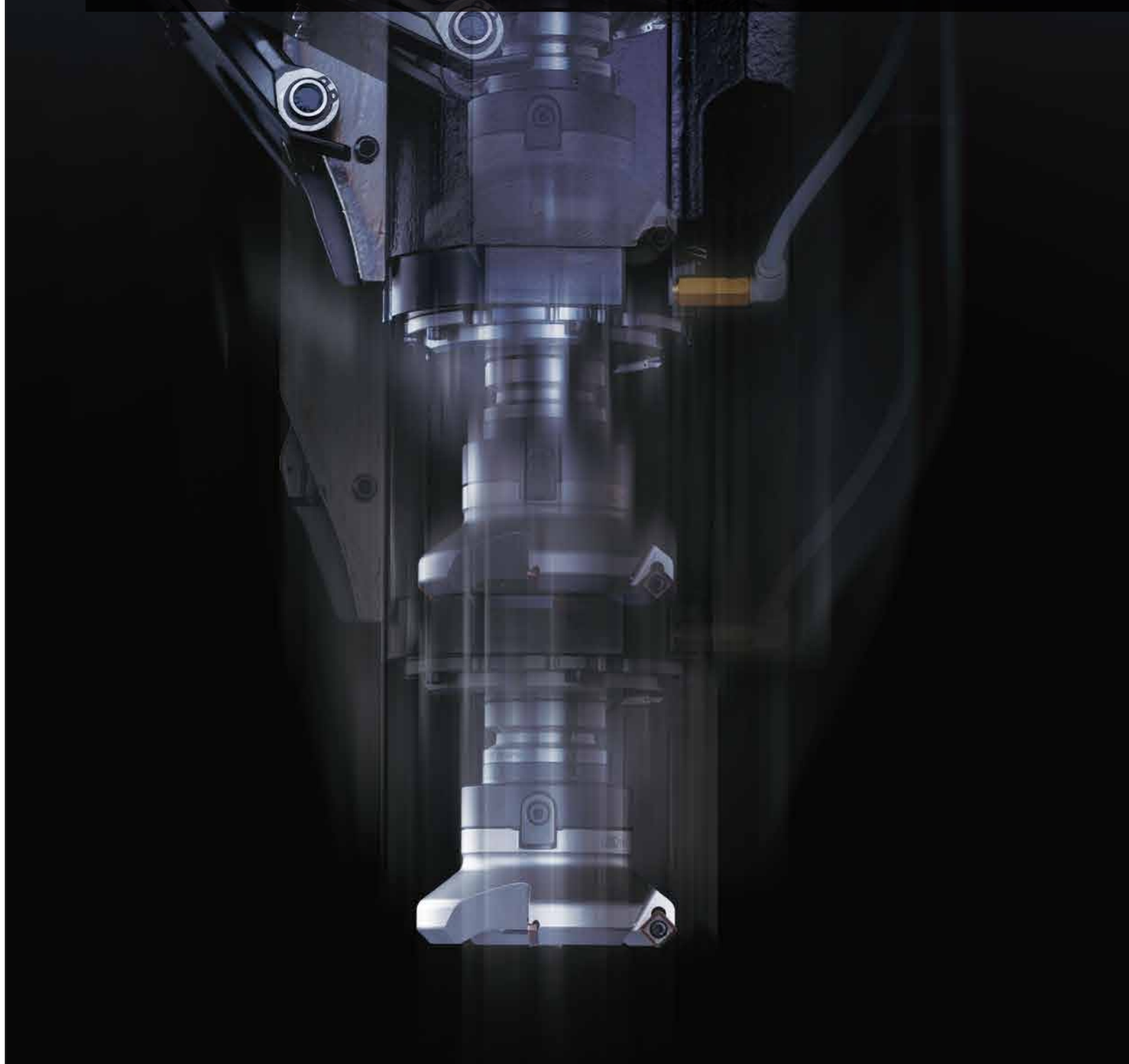
No warmup support function

Equipped with an original measurement processing function that reduces the number of actual measurements by a touch probe according to the size of displacement. This eliminates the need for warmup operation, minimizing effects on productivity to achieve highly accurate machining.





* Values taken by machining sample workpieces for 8 hours.
Warmup operation time is one hour.



Extensive range of spindle specifications and NC functions support a wide variety of machining applications

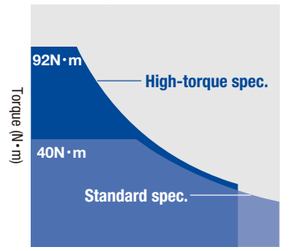
A variety of spindles are available to meet a wide range of industries, from automobile to semiconductor, precision parts, and IT equipment industries. The NC unit achieves high-speed and highly accurate three-dimensional machining or simultaneous 5-axis machining*.

* Simultaneous 5-axis machining is available only on the S300/500/700Xd2-5AX.

Newly developed and highly efficient 12,000 min^{-1} spindle motor

The standard motor specifications have been upgraded from the previous 10,000 min^{-1} to a newly developed 12,000 min^{-1}. As spindle torque is maintained in the medium- and high-speed range, this achieves further reduction in machining time when performing highly efficient machining of aluminum or steel at high speed.

Motor torque characteristics



High-torque spec. (optional)

Max. torque **92N·m**
Max. output **26.2kW**

12,000 min^{-1} spec. (standard)

Max. torque **40N·m**
Max. output **18.9kW**

High-speed and highly accurate three-dimensional machining using high-speed spindle and high accuracy mode

In addition to the highly-responsive servo control, the servo processing speed and resolution have been greatly improved. Enhanced original three-dimensional machining control, including increased look-ahead blocks and improved surface quality by the smooth path offset function, achieves high-speed and highly accurate three-dimensional machining.

High-speed spindle spec. (optional) 27,000min^{-1}

High accuracy mode BI	**Look-ahead 160 blocks**
High accuracy mode BII (optional)	**Look-ahead 1,000 blocks**

Improved spindle rigidity

For 10,000 min^{-1} high-torque specifications (optional), the spindle bearing diameter has been enlarged to enhance rigidity.
The machine demonstrates its capabilities in a wide variety of machining applications, including heavy-duty machining of steel.

Spindle clamp force
Improved by 15%

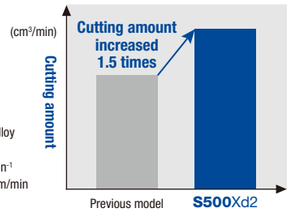
Spindle bearing diameter (high-torque spec.)
Larger by 10%

Side cutting

Enhanced spindle rigidity improves the wall squareness during side cutting and increases the cutting amount.

Wall squareness
10% better than previous model

Material: Aluminum alloy
Tool: ø16 end mill
Conditions: S3950 min^{-1}
F1550 mm/min



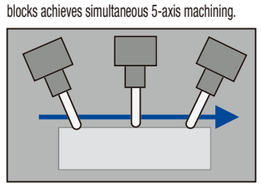
Simultaneous 5-axis machining

Equipped with a variety of functions, including tool center point control and submicron command, to achieve high-speed and highly accurate simultaneous 5-axis machining.

* Changing to the conversation language is not possible for the simultaneous 5-axis specifications (5AX).

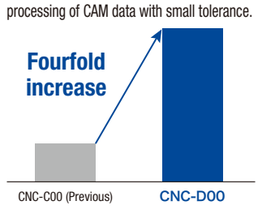
Tool center point control

Equipped with tool center point control where machining is performed by changing the tool direction relative to the workpiece. Optimal acceleration/deceleration by look-ahead up to 1,000 blocks achieves simultaneous 5-axis machining.



Processing speed of minute line segments

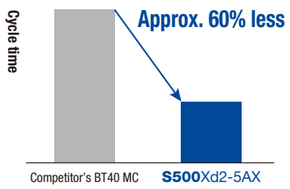
The CPU capacity has been greatly increased to enhance the processing speed of minute line segments by four times the previous controller. This enables high-speed processing of CAM data with small tolerance.



Productivity improvement

In addition to the compactness of the BT30, the original look-ahead acceleration/deceleration processing maximizes the machine's performance (max. speed and acceleration) to achieve high-speed simultaneous 5-axis machining.

Comparison with cycle time by a competitor's BT40 MC
Workpiece: Impeller



Machining video
Scan or Click

Z-axis motor

Acceleration of up to 2.2G contributes to reduction in cycle time.

Magazine load conditions estimate

Sets the optimum value for the acceleration of the magazine axis.

Spindle

Clamp force has been improved to enhance tool retention force.

Column

Topology is used for the column shape.
Reduces the influence of external vibration on the quality of the machined surface.

Machine table

The table size has been expanded up to 450 mm in length.
Jigs up to 400 kg can be loaded.

Telescopic cover

A roof-shape that enhances chip evacuation performance is used to improve reliability.

X/Y-axes motor

Using high resolution encoder and optimal acceleration setting achieves high speed and high accuracy.

Base

The rib structure has been optimized through topology analysis.
The rigidity when affected by external vibration has been improved.

Example of machining difficult-to-cut material

Tool: ø80 face mill

Stainless steel SUS316L	No. of revolutions [n]	597min^{-1}	Feed [vf]	477mm/min (18.8inch/min)
	Width of cut [ae]	**56mm (2.20inch)**	Depth of cut [ap]	**2.5mm (0.10inch)**
Pre-hardened steel NAK80	No. of revolutions [n]	597min^{-1}	Feed [vf]	477mm/min (18.8inch/min)
	Width of cut [ae]	**56mm (2.20inch)**	Depth of cut [ap]	**2.5mm (0.10inch)**

* Values for the high-torque spec. The above machining capability may not be achieved depending on conditions, including usage environment, tools in use, and coolant.
* The machining capability table is provided on page 22.

Reliability maintains high productivity

Maintenance functions have been enhanced to prevent machine failure, with measures for chips taken to reduce machining defects.
Thorough avoidance of machine stoppage maintains high productivity at production sites.

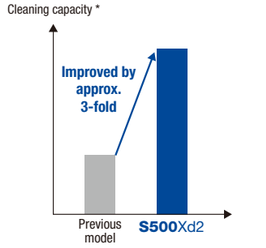
Enhanced maintenance functions

The machine is equipped with many functions that can prevent possible defects in daily production sites, such as chip problems, tool abrasion, omission of tool attachment, and re-machining of the same workpiece. These functions contribute to the reduction in wasted resources at production sites.

Tool cleaning system (optional)

The number of discharge holes and the angle of these holes have been optimized to significantly increase the discharge flowrate. This has resulted in a threefold increase in cleaning capacity, compared to the previous model.
When CTS is selected, coolant for tool cleaning is discharged from the CTS pump, consuming less air than air-assisted tool cleaning.

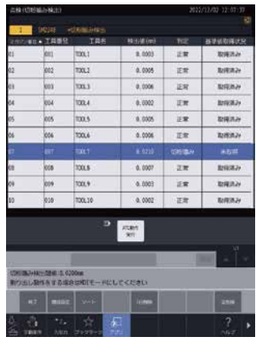
* When CTS is not selected, air-assisted tool cleaning is used

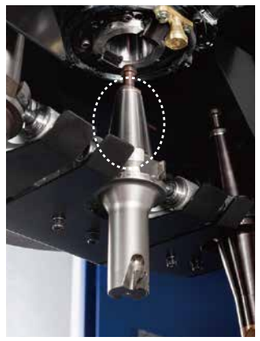


* Compared by removal rate of grease applied to taper

Chip detection function

Chips caught between the spindle and the holder during ATC are detected without using a sensor. Detecting any chips caught during ATC prevents the outflow of defects.





ATC tool monitoring

Checks the presence of a spindle tool before and after tool change, tool over spindle, positional shift of tool key etc. without using a sensor.

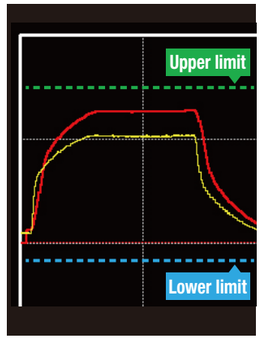
Spindle tool check

Key position deviation

Machining load monitoring

Machining load applied to the spindle is monitored to issue an alarm when the load is not within the preset value.

Setting screen



Setting image

Prevention of chip problems

Thorough chip evacuation/removal prevents chip problems, improving reliability.
Increasing the number of chip shower nozzles and reviewing the diameter of the piping have improved chip evacuation performance.

Image of chip evacuation flow

Equipped with “CNC-D00” controller
Enhanced usability with 15-inch LCD touch panel

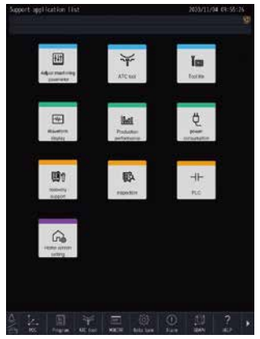
Intuitive operation is possible with apps and vertical touch panel screen. Relevant functions are grouped according to purpose, such as setup and machining, leading to efficient operation. Production and operation states are visualized, allowing faster understanding. Waste-free operation is possible in setup, machining adjustment, production, and recovery process, leading to improved work efficiency and operating rate.

Home screen

Information required for production, such as workpiece counter and tool life, is collected on the home screen. Shortcut keys are provided for screens frequently used so you can open them by one touch.

User interface

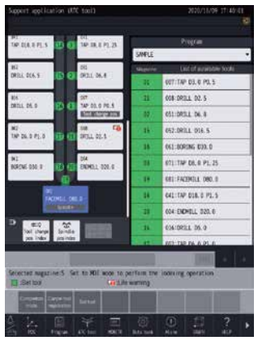
Equipped with support apps with improved operability and visibility by grouping relevant functions and an easy-to-view display, in addition to several useful accessories (calculator, notebook, file viewer etc.). Operation on conventional screens is possible on the touch panel. With these, usability has been greatly improved.


List of support apps


Conventional screen (position screen)

Setup support

Equipped with functions to easily perform setup, such as an ATC tool app that enables all magazine tool settings to be performed on one screen, menu programming that enables you to create NC programs by following instructions on the screen, and an on-screen help function.


ATC tool app

Machining adjustment support

Equipped with functions to easily perform optimal machining adjustment to improve productivity, such as a machining parameter adjustment app that enables you to easily adjust parameters according to machining details and a machining load waveform display/saving function.


Waveform display app

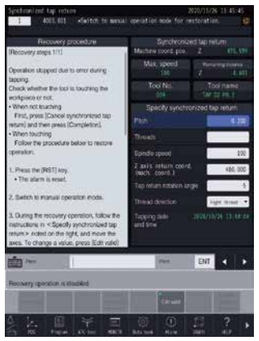
Production support

Equipped with functions to improve the operating rate, such as real time tool monitoring to eliminate defects, displaying production performance, power consumption etc. as a graph, and PLC/network functions to meet peripheral equipment and automation requirements.


Production performance app

Recovery support

Equipped with functions to prevent failure or ensure quick recovery, such as maintenance time notice, displaying details when an alarm occurs, and guidance for recovery/check work.


Recovery support app

DESIGN AWARD 2021

NC function video

Scan or Click

Equipped with functions that support connection with various peripheral equipment or automation

Network

Sending/receiving files or monitoring via FTP or HTTP.
Compatible with OPC UA, a data exchange standard for industrial communication.
In addition to the conventional field bus, data communication is possible via Industrial Ethernet, such as EtherNet/IP and PROFINET.
Production/operation results screens on the machine can be viewed from a PC's browser.

Side shutter (optional)

Assuming loading/unloading of workpieces from the side by robots, a side shutter has been prepared to make automation easier.
* A safety fence is required. In addition, this option may not be available depending on the machine specifications or shipping destination.

The iF Design Award is an international design award established in 1953 by iF International Forum Design GmbH of Germany.

SPEEDIO Blue Technology

Eliminating waste elements at production sites leads to reduction in greenhouse gas emissions, such as carbon dioxide and methane. Brother's optimal and compact design reduces wasted time, resources, and energy during parts machining.

We are striving to reduce environmental impact by conducting product life cycle assessment, which quantitatively evaluates environmental impact at each stage of production, transportation, use, disposal, and recycling.

SPEEDIO Blue Technology Solves Four Waste Elements at Production Sites

Wasted time reduction

Wasted time is reduced by minimizing non-cutting time in the machining cycle time and reducing setup time and downtime.

Wasted resource reduction

Wasted recourses are reduced by using machining adjustment support that prevents cutting defects and production support such as real-time monitoring.

Wasted energy reduction

Optimal design eliminates all waste, including excessive power consumption and air flowrate, achieving industry-leading energy-saving performance.

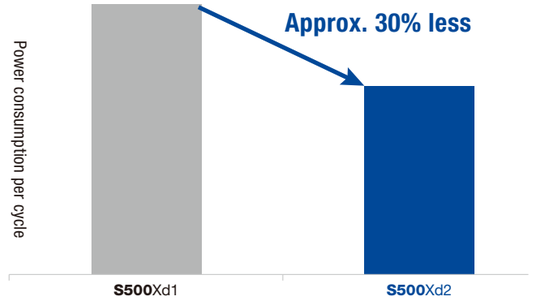
Wasted installation space reduction

Compact design reduces wasted space with less restrictions on installation locations.

Wasted energy reduction

Saving power

New functions, including chip shower energy savings operation, energy savings mode, and no warmup support function, have been incorporated to significantly reduce power consumption, compared to the previous model. Together with various energy-saving technologies, such as power regeneration and highly efficient spindle motors, power consumption is overwhelmingly low.

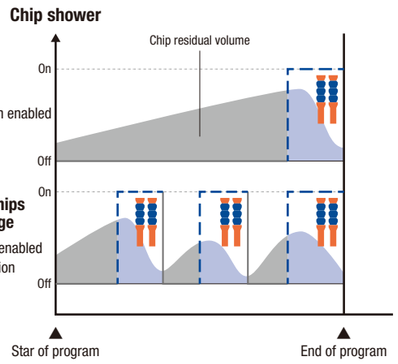


Power consumption 30% less than previous model

* Values taken by running sample program created by Brother with "chip shower energy savings operation" enabled

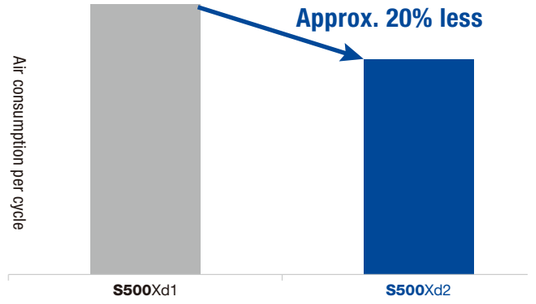
Chip shower energy savings operation

This function controls the on/off timing of the chip shower pump. Operation is switched via parameters according to the amount of chips discharged, contributing to energy saving for chip shower pumps that consume significant amounts of power.



Saving air

Air purge, spindle air blow, and other air-related functions have been reviewed and optimized to eliminate any waste. Compared to the previous model, air consumption is significantly reduced while maintaining reliability.

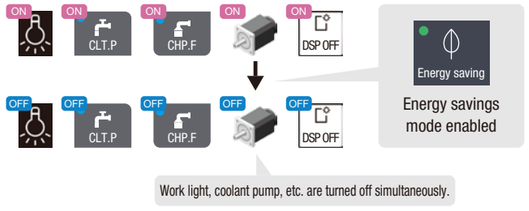


Air consumption 20% less than previous model

* Values taken by running sample program created by Brother

Energy savings mode

Added a function to turn on/off energy-saving functions simultaneously.
Items to be turned on/off can be customized.

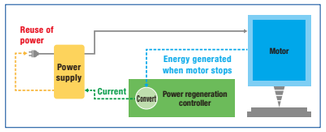


- Standby mode
- Coolant pump
- Chip shower
- Work light
- Display off

Can be customized

Power regeneration system

Equipped with a power regeneration system that recycles energy generated when a servo motor decelerates.



Power consumption app

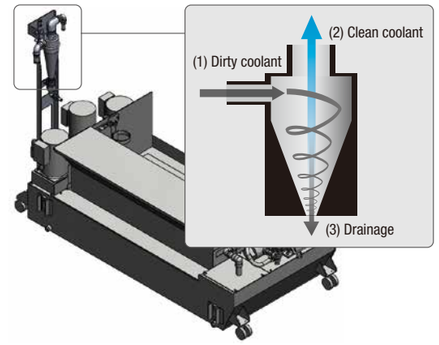
Servomotors, pumps, and other equipment are grouped and displayed according to purpose. Calculation is possible for each cycle.

Highly efficient spindle motor
Energy-saving pump
LED work light

Wasted resource reduction

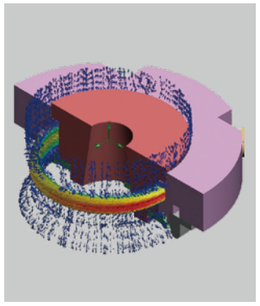
Tank with cyclone filter and no consumables (special option for CTS)

Clean coolant is returned to the clean tank through another tank with a cyclone filter that removes fine chips.
Coolant is kept clean this way to reduce the filter change frequency and extend the service life of the pump.



Air purge

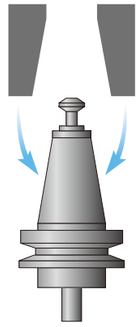
Reinforced the labyrinth structure on the spindle end face to reduce air consumption.



Air flowrate analysis of spindle end face

Spindle air blow

Optimized the air blow start/stop timing during tool change to reduce air consumption.



Automatic oil/grease lubricator that optimizes consumption (optional)

Consumption amount and timing are optimized by the automatic oil/grease lubricator.
Oil mixing with coolant can be minimized.

Automatic oil lubricator

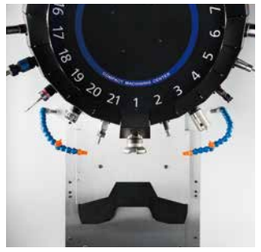
Automatic grease lubricator

Coolant tank

Can be selected from 50L, 100L, 150L, or 200L according to the purpose.
If you need a CTS spec. higher than 1.5 MPa, this will be custom-built.

Coolant Through Spindle (CTS)

Can be selected from 3.0 MPa or 7.0 MPa. Pump and tank are not included.



Column coolant nozzle

Powerfully removes chips on and around the workpiece to prevent chips building up.

Head coolant nozzle

Coolant can reliably be applied to the machining section as the tool and nozzles are set in place.

Chip shower

Chip shower piping is 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.

Tool cleaning system

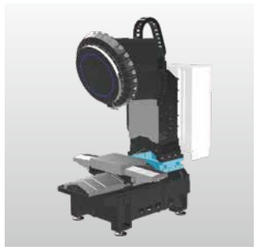
High discharge pressure and flowrate powerfully removes chips stuck to the holder.
When CTS is selected, direct pump tool cleaning is used, where coolant is discharged directly from the CTS pump. For other specifications, air-assisted tool cleaning is used.

Fixture shower valve unit

Consists of jig washing valves and piping to the ceiling of the machine. Piping from the machine to the required location must be prepared by customers.

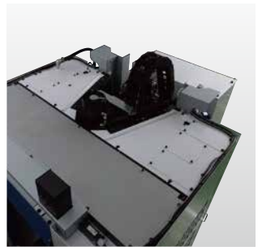
Cleaning gun

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



High column (150 mm, 250 mm)

150 mm and 250 mm high columns are available to meet customer's needs.



Top cover

Shutting the opening on the top prevents coolant or chips splashing outside of the machine. A hole for the mist collector is provided.

Side cover with transparent window, single side

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

Work light (1 or 2)

LED lamps are used to extend lamp life and save energy.
*Installed on the right or left side of the machine.

Signal light (1, 2, or 3 lamps)

LED lamps are used. No maintenance required. Can be tilted to improve visibility.

Automatic oil lubricator

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

Automatic grease lubricator

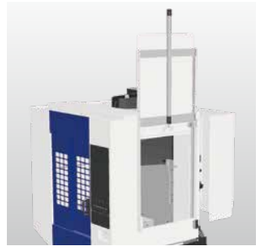
Regularly applies grease to all lubricating points on the three axes.
*Manual greasing is required for the standard specification model.

Automatic door with switch panel 10 holes

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

Area sensor

Optical area sensors are used. Use area sensors to prevent operators being caught in the automatic door.



Side shutter

Assuming loading/unloading of workpieces from the side by robots, a side shutter has been prepared to make automation easier.
* A safety fence is required. In addition, this option may not be available depending on the machine specifications or shipping destination.

Switch panel (8 holes or 10 holes)

Various switches, such as automatic door open/close switches, are set in specific locations. The switch panel (8 holes) is also available so that the position of the manual pulse connector can be changed.

Manual pulse generator

A cable is provided for the manual pulse generator, making setup easier. Equipped with emergency stop and enable switches.

Tool breakage detector, touch type

A touch switch type tool breakage detector is available.
* Cannot be used for tool length measurement.

Rotary table T-200Ad

Reduction in the body width secures a wider jig area. Use of the roller gear cam mechanism achieves high productivity, high accuracy, and extended service life.

Spindle override

Spindle speed can be changed without changing the program.

Master on circuit

Master on circuit and switch can be attached.
* A switch panel (8 holes or 10 holes) is required separately.

Data protection switch, key type

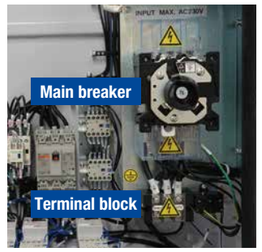
Changing the operation level is enabled or disabled by the key.

Origin alignment mark

Aligning X/Y/Z-axes origin alignment marks clearly indicates home positions.

100 V outlet in control box

100V outlet is provided on the right inside the control box.



Power supply expansion 50A

The capacity of the main breaker can be increased from 30A to 50A. The size of the relevant wiring increases accordingly. A terminal block for external equipment power supply is provided under the main breaker.

- Coolant tank
  1) Coolant tank, 50L
  2) Coolant tank, 100L
  3) Coolant tank, 150L
  4) Coolant tank, 150L for 1.5 MPa CTS pump with cyclone filter
  5) Coolant tank, 200L for 1.5 MPa CTS pump with cyclone filter
- Coolant through spindle (CTS) piping, Max. 3.0 MPa
- Coolant through spindle (CTS) piping, Max. 7.0 MPa
- Column coolant nozzle
- Head coolant nozzle
- Chip shower
- Tool cleaning system
- Fixture shower valve unit
- Cleaning gun
- Mesh basket for collecting chips (2 pcs.)
- High column (150 mm, 250 mm)
- Top cover
- Side cover with transparent window, single side
- Folding door (two-door)
- Work light (1 lamp for right side, 1 lamp for left side)
- Signal light (1, 2, or 3 lamps)
- Automatic oil lubricator
- Automatic grease lubricator
- Automatic door with switch panel 10 holes
- Area sensor
- Side shutter
- Switch panel (8 holes or 10 holes)
- Manual pulse generator with enable switch
- Connector and hook for manual pulse generator with enable switch
- Tool breakage detector, touch type
- Rotary table T-200Ad
- Additional axis cable (for 1 axis or 2 axes)
- RS232C 25-pin connector at control box
- Spindle override
- Master on circuit
- Data protection switch, key type
- Grip cover for 14/21/28-tool magazine
- Parts name sticker set
- Breaker handle cover
- Origin alignment mark
- 100V outlet in control box
- Power supply expansion 50A
- Transformer box
- Specified color
- EXIO board assembly
  1) EXIO board, input 32/output 32, additional #1
  2) EXIO board, input 32/output 32, additional #2
- PLC programming software for D00
- Industrial network
  1) CC-Link, master station
  2) CC-Link, remote device station
  3) PROFIBUS DP, slave
  4) DeviceNet, slave
  5) PROFINET, slave
  6) EtherNet/IP, slave
- Memory expansion 3 Gbytes *1
- High accuracy mode BII
  (Look-ahead 1,000 blocks, smooth path offset)
- Submicron command *1 *2
- Interrupt type macro
- Rotary fixture offset
- Feature coordinates setting *1 *3
- Involute interpolation

*1. Standard on the S300/S500/S700Xd2-5AX.
*2. When the submicron command is used, changing to the conversation language program is disabled.
*3. There are restrictions on the axis configuration.

Machine specifications

Item			S300Xd2 S300Xd2 RD *9 S300Xd2-5AX S300Xd2-5AX RD *9	S500Xd2 S500Xd2 RD *9 S500Xd2-5AX S500Xd2-5AX RD *9		S700Xd2 S700Xd2 RD *9 S700Xd2-5AX S700Xd2-5AX RD *9	
CNC unit			《S300/S500/S700Xd2》 CNC-D00 《S300/S500/S700Xd2-5AX》 CNC-D00v(DB)				
Travels	X axis	mm(inch)	300 (11.8)	500 (19.7)		700 (27.6)	
	Y axis	mm(inch)	450 (17.7)				
	Z axis	mm(inch)	300 (11.8)	300 (11.8)	380 (15.0)	300 (11.8)	380 (15.0)
	Distance between table top and spindle nose end	mm(inch)	180~480 (7.1~18.9)	180~480 (7.1~18.9)	150~530 (5.9~20.9)	180~480 (7.1~18.9)	150~530 (5.9~20.9)
Table	Work area size	mm(inch)	600 × 450 (23.4 × 17.7)			800 × 450 (31.4 × 17.7)	
	Max. loading capacity (uniform load)	kg(lbs)	250[300 *6] (551[661 *6])	250[400 *6] (551[881 *6])			
Spindle	Spindle speed	min^{-1}	12,000min^{-1} specifications: 1~12,000, 16,000min^{-1} specifications (optional): 1~16,000 10,000min^{-1} high-torque specifications (optional): 1~10,000, 27,000min^{-1} specifications (optional): 1~27,000 (27,000min^{-1} specifications cannot be selected for Z-axis 380 mm specifications models)				
	Speed during tapping	min^{-1}	MAX. 6,000 (27,000min^{-1} specifications: MAX. 8,000)				
	Tapered hole		7/24 tapered No.30				
	BT dual contact spindle (BIGPLUS)		Optional				
	Coolant through spindle (CTS)		Optional (CTS cannot be selected for 27,000min^{-1} specification models)				
Feed rate	Rapid traverse rate (XYZarea)	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 stud type *4		MAS-P30T-2				
	Tool storage capacity	pcs.	14 / 21	14 / 21 / 28			
	Max. tool length	mm(inch)	160 (6.3) [21 tool] 250 (9.8) [14 tool]	250 (9.8)			
	Max. tool diameter	mm(inch)	110 (4.3)				
	Max. tool weight *1	kg(lbs)	3.0 (6.6) [4.0 (8.8)*10]/tool, (TOTAL TOOL WEIGHT: 25 (55.1) for 14 tools, 35 (77.2) for 21or 28 tools)				
	Tool selection method		Random shortcut method				
Tool change time *5	Tool To Tool	sec	0.6 / 0.7 (14 or 21 tools / 28 tools)				
	Chip To Chip	sec	Z-axis 300 mm specifications : 1.2 / 1.3 (14 or 21 tools / 28 tools) Z-axis 380 mm specifications : 1.3 / 1.4 (14 or 21 tools / 28 tools)				
Electric motor	Main spindle motor (10min/continuous) *2	kW	12,000min^{-1} specifications: 10.1/7.0, 16,000min^{-1} specifications (optional): 7.4/5.1				
			10,000min^{-1} hightorque specifications (optional): 12.8/9.2, 27,000min^{-1} specifications (optional): 8.9/6.3				
	Axis feed motor	kW	X,Y axis: 1.0 Z axis: 2.0				
Power source	Power supply		AC 200 to 230 V±10%, 3phase, 50/60Hz±2%				
	Power capacity (continuous)	kVA	12,000min^{-1} specifications: 9.5, 16,000min^{-1} specifications (optional): 9.5				
			10,000min^{-1} hightorque specifications (optional): 10.4, 27,000min^{-1} specifications (optional): 9.5				
	Air supply — Regular air pressure	MPa	0.4~0.6 (recommended value 0.5MPa *8)				
	Air supply — Required flow	L/min	40 (27,000min^{-1} specifications: 115)				
Machine dimensions	Height	mm(inch)	Z-axis 300 mm specifications: 2,529 (99.6) Z-axis 380 mm specifications: 2,568 (101.1)				
	Required floor space *11 [with control unit door open]	mm(inch)	1,080 × 2,161 [2,999] (42.5 × 85.1[118.1])	1.560 × 2,081 [2,919](61.4 × 81.9[114.9])		2,050 × 2,081 [2,919] (80.7 × 81.9[114.9])	
	Weight [with BV7-870Ad]	kg(lbs)	2,350 (5,181) [2,650(5843)]	2,400 (5,292) [2,700(5953)]		2,550 (5,622)	
Accuracy *3	Accuracy of bidirectional axis positioning (ISO2302: 1988)	mm(inch)	0.006~0.020 (0.00024~0.00079)				
	Repeatability of bidirectional axis positioning (ISO2302: 2014)	mm(inch)	Less than 0.004 (0.00016)				
Front door			2doors				
Standard accessories			Instruction Manual (DVD 1 set), leveling bolts (4 pcs.), leveling plate (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 your local distributor for details. *4. Brother specifications apply to the pull studs for CTS. *5. Measured in compliance with JIS B63369 and MAS0111987. *6. Parameter adjustment is required. (Acceleration adjustment and positioning speed are also changed according to the weight.) *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 recommend value. *9. 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. *10. Parameter setting must be changed. (Tool magazine indexing time will change.) Max. tool weight 4.0kg cannot be available for the 27,000min^{-1} specifications.
*11. The value does not include the coolant tank.

- Please read the instruction manuals and safety manuals before using Brother products for your own safety.
  When using oil-based coolant or when machining materials which can cause a fire (ex. magnesium, resin), customers are requested to take thorough safety measures against fire.
  The types of cutting material, cutting tools, coolant, or lubrication oil may have an influence on the machine's lifecycle.
  For further questions, please contact our sales representative.
- Leave 700 mm between machines as maintenance space.
- When exporting our machine together with additional 1-axis rotary table or compound rotary table (including cases where a rotary table is scheduled to be installed overseas), or exporting the S300/S500/S700Xd2-5AX, the machine is deemed to be included in the "applicable listed items" controlled by the Foreign Exchange and Foreign Trade Act 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 cases where 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, or exporting the S300/S500/S700Xd2-5AX, 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, a procedure to activate the axis of the 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 some countries and regions other than "Group A countries", it is not possible to install a compound rotary table separately overseas after exporting the machine. Please make sure you obtain an export license for the machine together with compound rotary table before shipment.

NC unit specifications

	《S300Xd2/S500Xd2/S700Xd2》
CNC model	CNC-D00
Control axes	5 axes (X, Y, Z, 2 additional axes)
Simultaneously controlled axes (Positioning)	5 axes (X, Y, Z, 2 additional axes)
Simultaneously controlled axes (Interpolation)	Linear: 4 axes (X, Y, Z, 1 additional axis)
	Circular: 2 axes
	Helical/Conical: 3 axes (X, Y, Z)
Least input increment	0.001 mm, 0.0001 inch, 0.001 deg.
Max. programmable dimension	±999999.999 mm, ±99999.9999 inch
Display	15-inch color LCD touch display
Memory capacity	500 Mbytes, 3 Gbytes (optional) (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 language (changed by parameter)
	Conversion from conversation language program to NC language program available

	《S300Xd2-5AX/S500Xd2-5AX/S700Xd2-5AX》
CNC model	CNC-D00v (DB)
Control axes	5 axes (X, Y, Z, 2 additional axes)
Simultaneously controlled axes (Positioning)	5 axes (X, Y, Z, 2 additional axes)
Simultaneously controlled axes (Interpolation)	Linear: 5 axes (X, Y, Z, 2 additional axes)
	Circular: 2 axes
	Helical/Conical: 4 axes (3 linear axes + 1 additional axis, 2 linear axes + 2 additional axes)
Least input increment	0.0001 mm, 0.00001 inch, 0.0001 deg.
Max. programmable dimension	±999999.9999 mm, ±99999.99999 inch
Display	15-inch color LCD touch display
Memory capacity	3 Gbytes (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 language not available

* "Control axes" and "Simultaneously controlled axes" indicate the maximum number of axes, which will differ depending on the shipping destination or machine specifications.
* Ethernet is a registered trademark of Xerox Corporation in the United States.

NC functions

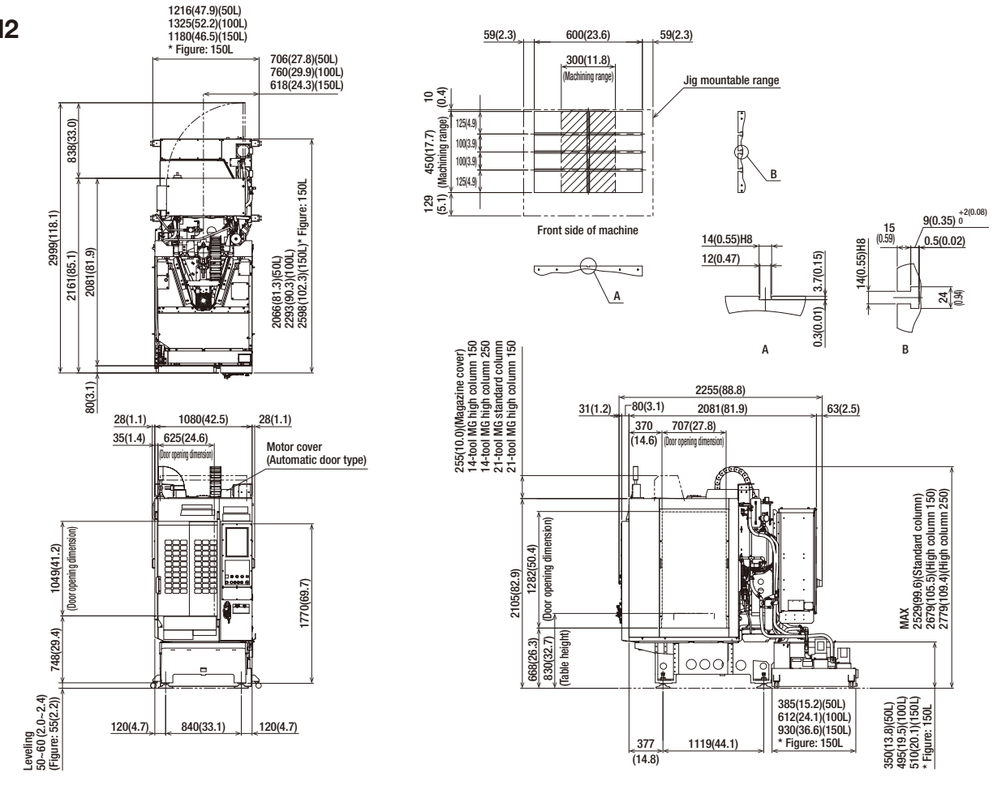
Operation	Dry run	Maintenance	Tap return function		Calculator
	Machine lock		Status log		Register shortcut
	Program restart		Alarm log		Display off
	Rapid traverse override		Operation log	Functions limited to NC language	Menu programming
	Cutting feed override		Maintenance notice		Local coordinate system
	Background editing		Motor insulation resistance measurement		Expanded workpiece coordinate system
	Screen shot		Tool washing filter with filter clogging detection		One-way positioning
	Operation level		Battery-free encoder		Inverse time feed
	External input signal key		Brake load test		Programmable data input
	Shortcut key	Automatic / Network	Computer remote		Tool length compensation
	<Optional>		OPC UA		Cutter compensation
	Spindle override		Auto notification		Scaling
Programming	Absolute / Incremental		Built-in PLC (LD/ST/FBD)		Mirror image
	Inch / Metric		<Optional>		External sub program call
	Coordinate system setting		CC-Link, master station		Macro
	Corner C / Corner R		CC-Link, remote device station		Tape operation / FTP load operation
	Rotational transformation		PROFIBUS DP, slave		Multiple skip function
	Synchronized tap		DeviceNet, slave		<Optional>
	Subprogram		PROFINET, slave		Submicron command *2 *5
	Graphic display		EtherNet/IP, slave		Interrupt type macro
Measurement	Automatic workpiece measurement *1	Energy saving	Automatic power off		Rotary fixture offset
	Tool length measurement		Standby mode		Feature coordinates setting *3 *5
High speed and high accuracy	Machining parameter adjustment		Automatic coolant off		Involute interpolation
	High-accuracy mode AIII		Automatic work light off	Functions limited to conversation language *6	Operation program
	High-accuracy mode BI (look-ahead 160 blocks)		Chip shower off delay		Schedule program
	Backlash compensation		Chip shower energy savings operation		Automatic tool selection
	Tool center point control *3 *4		Energy savings mode		Automatic cutting condition setting
	(Look-ahead 1,000 blocks, smooth path offset)	Support apps	Adjust machine parameters		Automatic tool length compensation setting
	<Optional>		ATC tool		Automatic cutter compensation setting
	High accuracy mode BII		Tool life		Automatic calculation of unknown number input
	(Look-ahead 1,000 blocks, smooth path offset)		Waveform display		Machining order control
Monitoring	Machining load monitoring		Production performance		
	ATC tool monitoring		Power consumption		
	Overload prediction		Recovery support		
	Waveform display / Waveform output to memory card		Inspection		
	Heat expansion compensation system II (X, Y, and Z axes)		PLC		
	Production performance display		No warmup support function		
	Tool life / Spare tool	Accessories	File viewer		
	Chip detection function		Notebook		

*1. Measuring instrument needs to be prepared by users. *2. When the submicron command is used, changing to the conversation language program is disabled. *3. There are restrictions on the axis configuration.
*4. Available only on the S300/S500/S700Xd2-5AX. *5. Standard on the S300/S500/S700Xd2-5AX. *6. Conversation language not available on the S300/S500/S700Xd2-5AX.

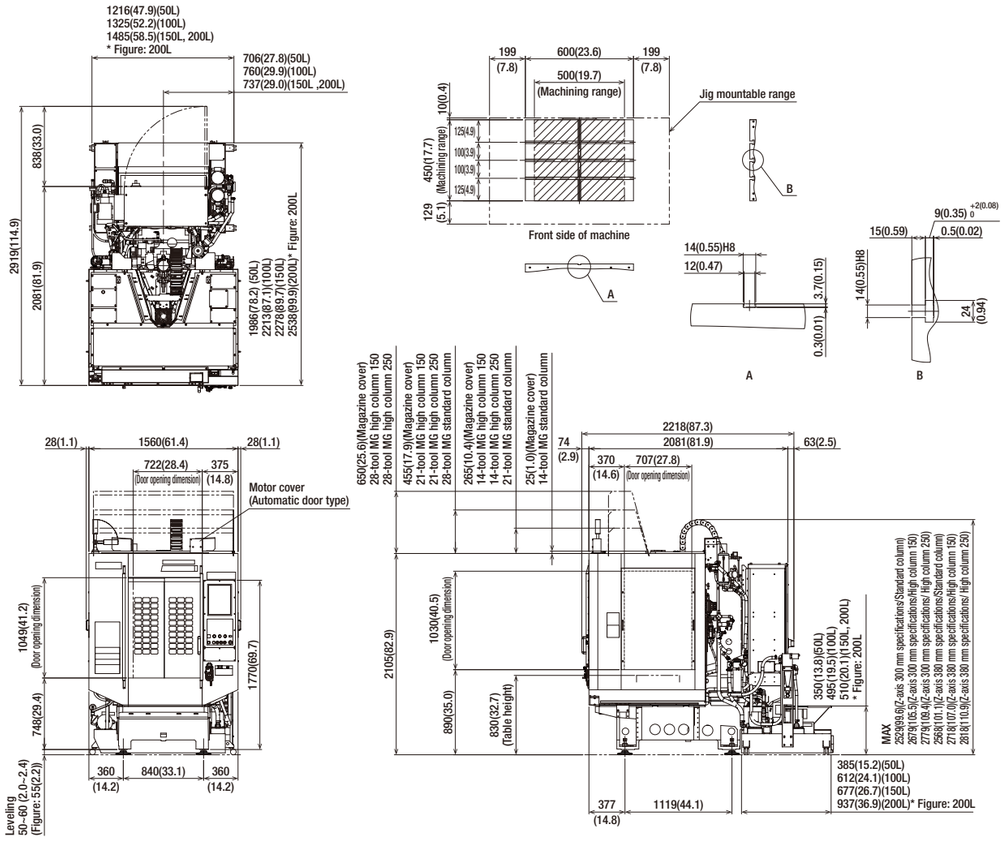
* The type of coolant may have a significant influence on the machine's lifecycle. It is recommended to use high-lubricity (emulsion type) coolant.
Do not use chemical solution type (synthetic type) coolant, as it may cause damage to the machine.
* When using CTS (Coolant Through Spindle) function, do not use flammable coolant (ex. oil-based type).

*Please check the external views or interference diagrams provided by Brother when designing jigs or checking for interference.

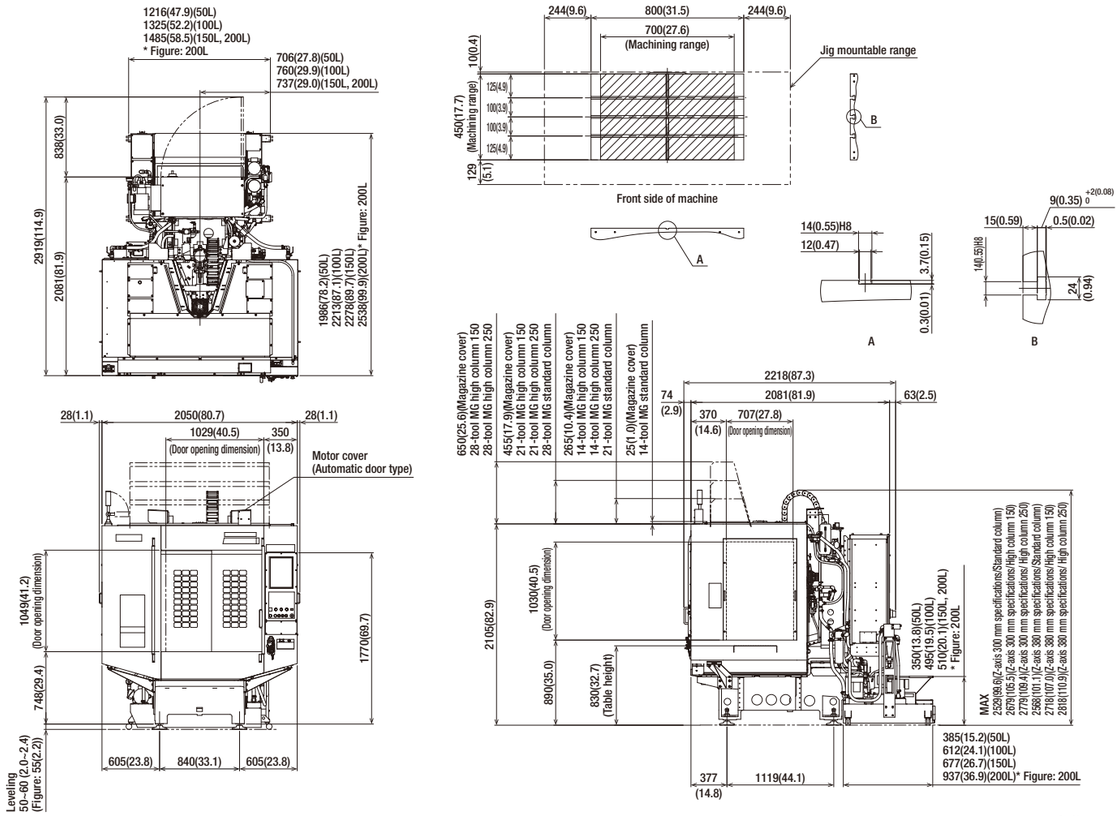
S300Xd2



S500Xd2



S700Xd2



mm(inch)

Machining capability

		ADC	Cast iron	Carbon steel
Drilling	12,000min^{-1}	D32 x 0.2 (1.26 x 0.008)	D28 x 0.15(1.10 x 0.006)	D25 x 0.1 (0.98 x 0.004)
	10,000min^{-1} high-torque	D40 x 0.2 (1.57 x 0.008) D30 x 0.7 (1.18 x 0.028)	D34 x 0.15 (1.34 x 0.006) D26 x 0.4 (1.02 x 0.016)	D30 x 0.15 (1.18 x 0.006) D26 x 0.25 (1.02 x 0.010)
	16,000min^{-1}	D24 x 0.2 (0.94 x 0.008)	D23 x 0.15 (0.91 x 0.006)	D18 x 0.1 (0.71 x 0.004)
	27,000min^{-1}	D20 x 0.2 (0.79 x 0.008)	D19 x 0.15 (0.75 x 0.006)	D18 x 0.1 (0.71 x 0.004)
Tapping	12,000min^{-1}	M27 x 3.0 (1-8UNC)	M27 x 3.0 (1-8UNC)	M22 x 2.5 (7/8-9UNC)
	10,000min^{-1} high-torque	M39 x 4.0 (11/2-6UNC)	M33 x 3.5 (11/4-7UNC)	M27 x 3.0 (1-8UNC)
	16,000min^{-1}	M22 x 2.5 (7/8-9UNC)	M22 x 2.5 (7/8-9UNC)	M16 x 2.0 (5/8-11UNC)
	27,000min^{-1}	M22 x 2.5 (7/8-9UNC)	M20 x 2.5 (3/4-10UNC)	M12 x 1.75 (7/16-14UNC)
Facing	12,000min^{-1}	1,200: 100 x 4.0 x 3,000 (73.2: 3.94 x 0.16 x 118.1)	137: 40 x 6.0 x 573 (8.4: 1.57 x 0.24 x 22.6)	100: 40 x 5.2 x 484 (6.1: 1.57 x 0.20 x 19.1)
	10,000min^{-1} high-torque	1,920: 100 x 6.4 x 3,000 (117.2: 3.94 x 0.25 x 118.1)	303: 40 x 6.0 x 1,263 (18.5: 1.57 x 0.24 x 49.7)	256: 40 x 6.0 x 1,067 (15.6: 1.57 x 0.24 x 42.0)
	16,000min^{-1}	960: 100 x 3.2 x 3,000 (58.6: 3.94 x 0.13 x 118.1)	83: 40 x 3.6 x 573 (5.1: 1.57 x 0.14 x 22.6)	54: 40 x 2.8 x 484 (3.3: 1.57 x 0.11 x 19.1)
	27,000min^{-1}	600: 100 x 2.0 x 3,000 (36.6: 3.94 x 0.08 x 118.1)	45: 40 x 2.0 x 573 (2.7: 1.57 x 0.08 x 22.6)	30: 40 x 1.6 x 484 (1.8: 1.57 x 0.06 x 19.1)

Tool diameter mm(inch) x Feed mm(inch)/rev

Tool diameter mm(inch) x Pitch mm(inch)

Cutting amount cm^3/min (inch3/min)
Cutting width mm(inch) x Cutting depth mm(inch) x Feed rate mm(inch)/min

* Data obtained from tests conducted by Brother.

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Figures in brackets ( ) are the country codes.

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