

SPEEDIO

S300Xd2

S500Xd2

S700Xd2

Compact Machining Center



S

SPEEDIO's bestselling model further expands the range of application

An extensive range of magazine specifications, including the newly developed 100-tool magazine, spindle specifications, simultaneous 5-axis specifications and enlarged machining area.

A wide range of specifications available to meet a wide variety of machining applications.

Cutting Out the Waste *SPEEDIO*



S300Xd2

S500Xd2

S700Xd2

Various magazine specifications



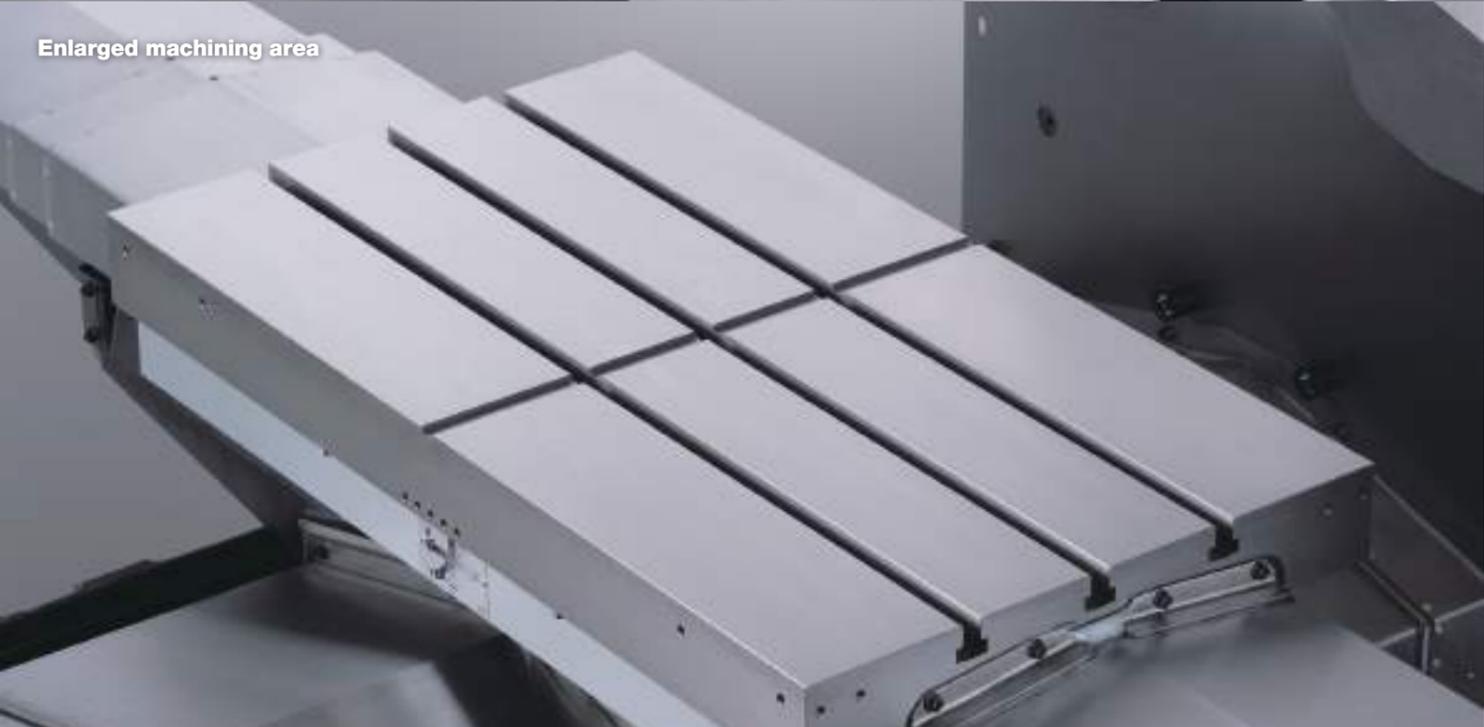
Simultaneous 5-axis machining



Various spindle specifications



Enlarged machining area



Basic specifications

Max. spindle speed (min ⁻¹)	12,000	Required floor space (mm)	S300Xd2	1,080 x 2,161				
	Optional: 10,000 high-torque, 16,000 ^{*3}		S500Xd2	1,560 x 2,081				
	Optional: 27,000 ^{*2}		S700Xd2	2,050 x 2,081				
Travel of each axis (mm)	S300Xd2	X300	Y450	Z300	S700Xd2-100T	2,050 x 2,081		
	S500Xd2	X500	Y450	Z300/380 ^{*1}		Tool storage capacity (pcs.)	S300Xd2	14/21
	S700Xd2	X700	Y450	Z300/380 ^{*1}			S500Xd2/S700Xd2	14/21/28
	S700Xd2-100T	X700	Y450	Z380			S700Xd2-100T	100
	Rapid traverse rate (m/min)	X/Y/Z	50/50/56	Simultaneous 5-axis spec. (5AX)			Available	

^{*1} 380 is for Z-axis 380 mm spec. (optional). ^{*2} Cannot be selected for the Z-axis 380 mm spec. and the S700Xd2-100T.

^{*3} Cannot be selected for the S700Xd2-100T

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: 440 x 280 x 150



Impeller
Aluminum alloy
Size: $\phi 44$ x 21

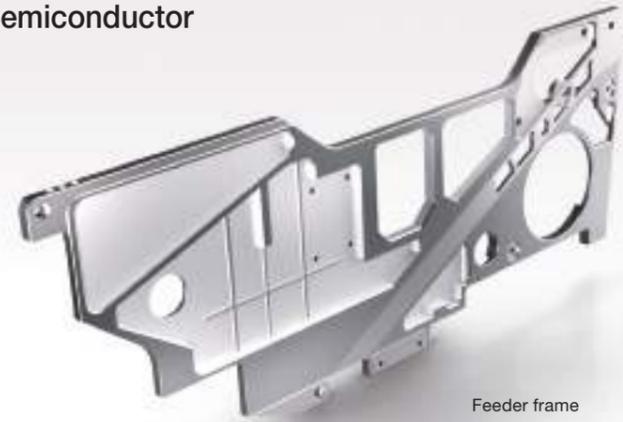


Large valve for thermal management
Aluminum alloy
Size: 230 x 170 x 40



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: $\phi 160$ 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**

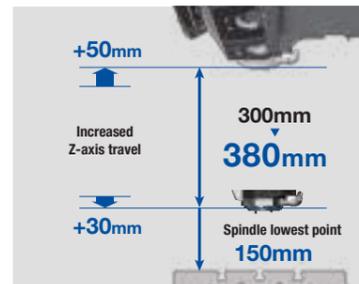


*1. Values of previous model

Z-axis 380 mm spec. (optional)^{*4}

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.
^{*4.} The Z-axis 380 mm spec. cannot be selected for the S300Xd2. Only Z-axis 380 mm spec. available on the S700Xd2-100T

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}

The 28-tool magazine is a compact turret magazine that achieves high-speed tool change. The maximum tool weight is 4 kg. An extensive range of magazine specifications are available, including 14-tool, 21-tool, 28-tool^{*2}, and 100-tool^{*3}.



28-tool magazine

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

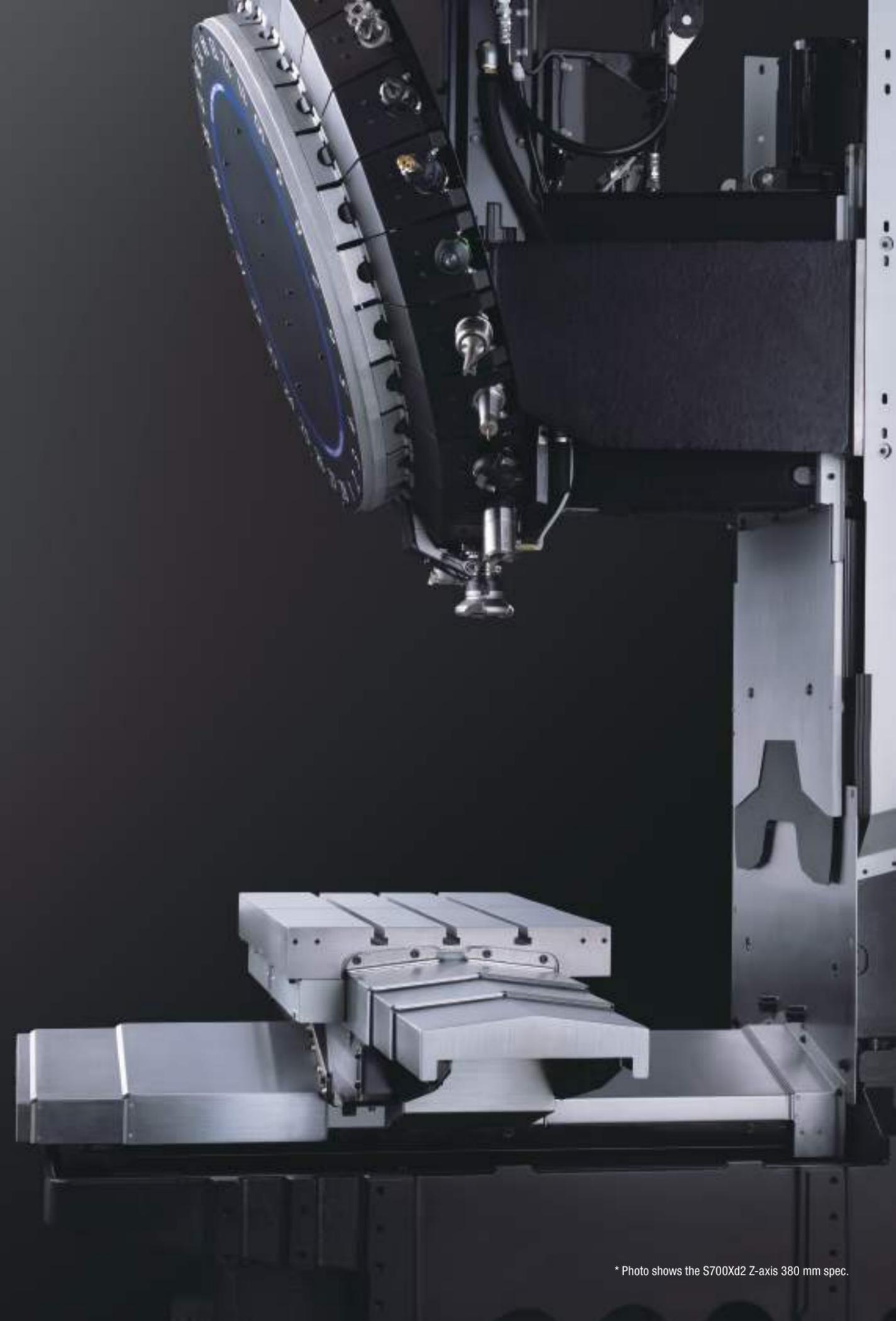
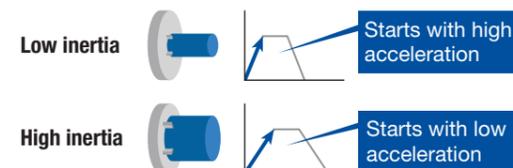
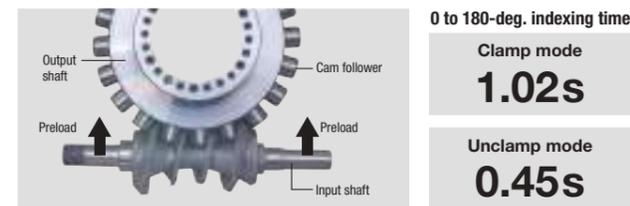
*2. The 28-tool magazine cannot be selected for the S300Xd2.

*3. The 100-tool magazine can only be selected for the S700Xd2-100T. See pages 15 to 18 for details.

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.



* 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.

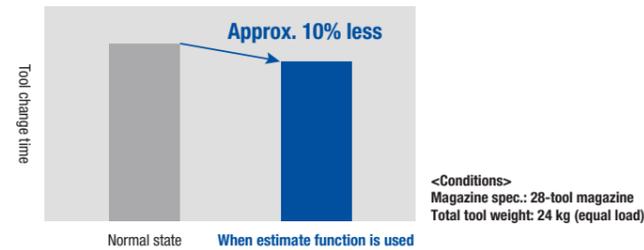
	14/21 tools (Standard tools)	28 tools (Standard tools)	28 tools (Heavy tools)
Tool-Tool	0.6s	0.7s	0.8s
Chip-Chip ^{*1}	1.2s	1.3s	1.4s

^{*1} Values for Z-axis 300 mm spec.

Magazine load conditions estimate^{*2}

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.

^{*2} Cannot be used for tool stockers of the S700Xd2-100T.



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**

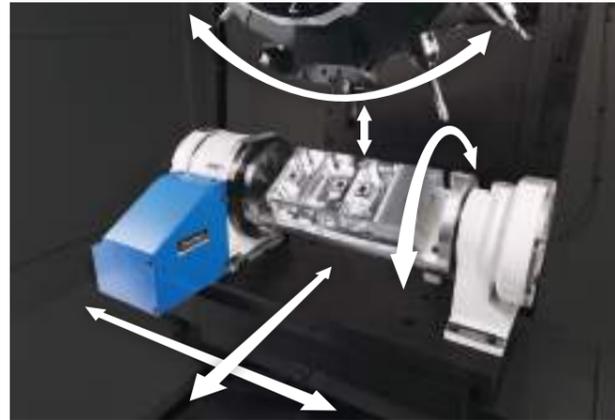
Improved automatic door opening/closing speed

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.

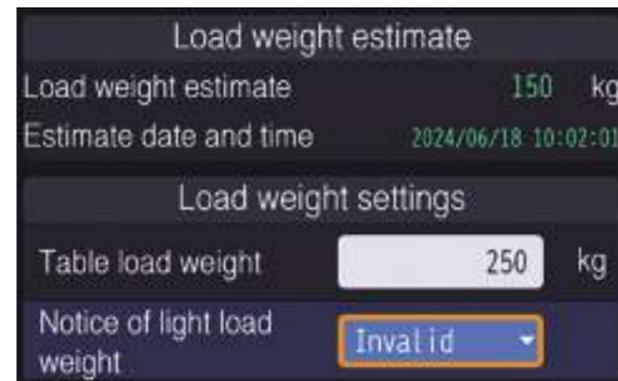
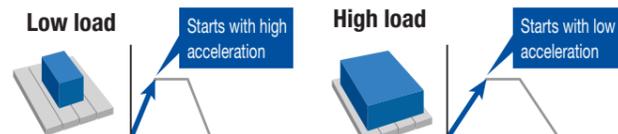
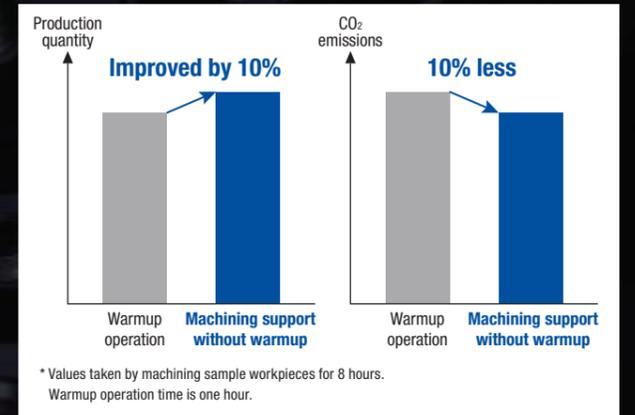
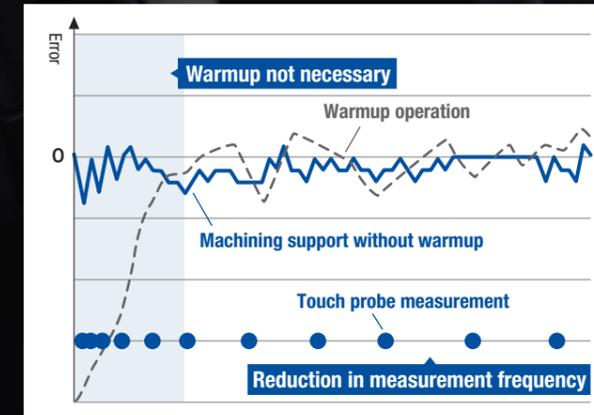


Table load weight estimate screen



Machining support without warmup

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

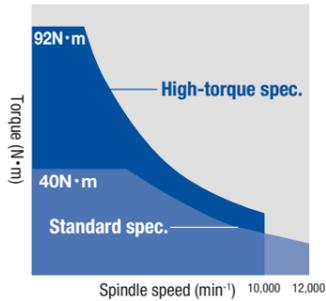
A variety of spindles are available to meet a wide range of industries, from automobile to semiconductor, precision parts, and IT equipment industries. The NC unit achieves high-speed and highly accurate three-dimensional machining or simultaneous 5-axis machining*1.

*1. 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

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.



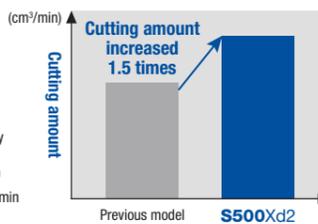
Spindle clamp force
Improved by 15%
Spindle bearing diameter (high-torque spec.)
Larger by 10%

Side cutting

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



Material: Aluminum alloy
Tool: ø16 end mill
Conditions: S3950 min⁻¹
F1550 mm/min



Wall squareness
10% better than previous model

High-speed and highly accurate 3D 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.

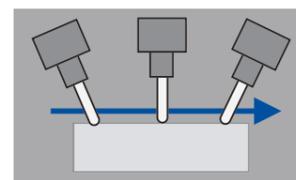
High-speed spindle spec. (optional)	27,000min⁻¹
High accuracy mode BII (optional)	Look-ahead 1,000 blocks

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).

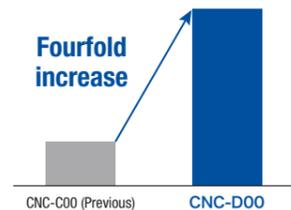
Tool center point control

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

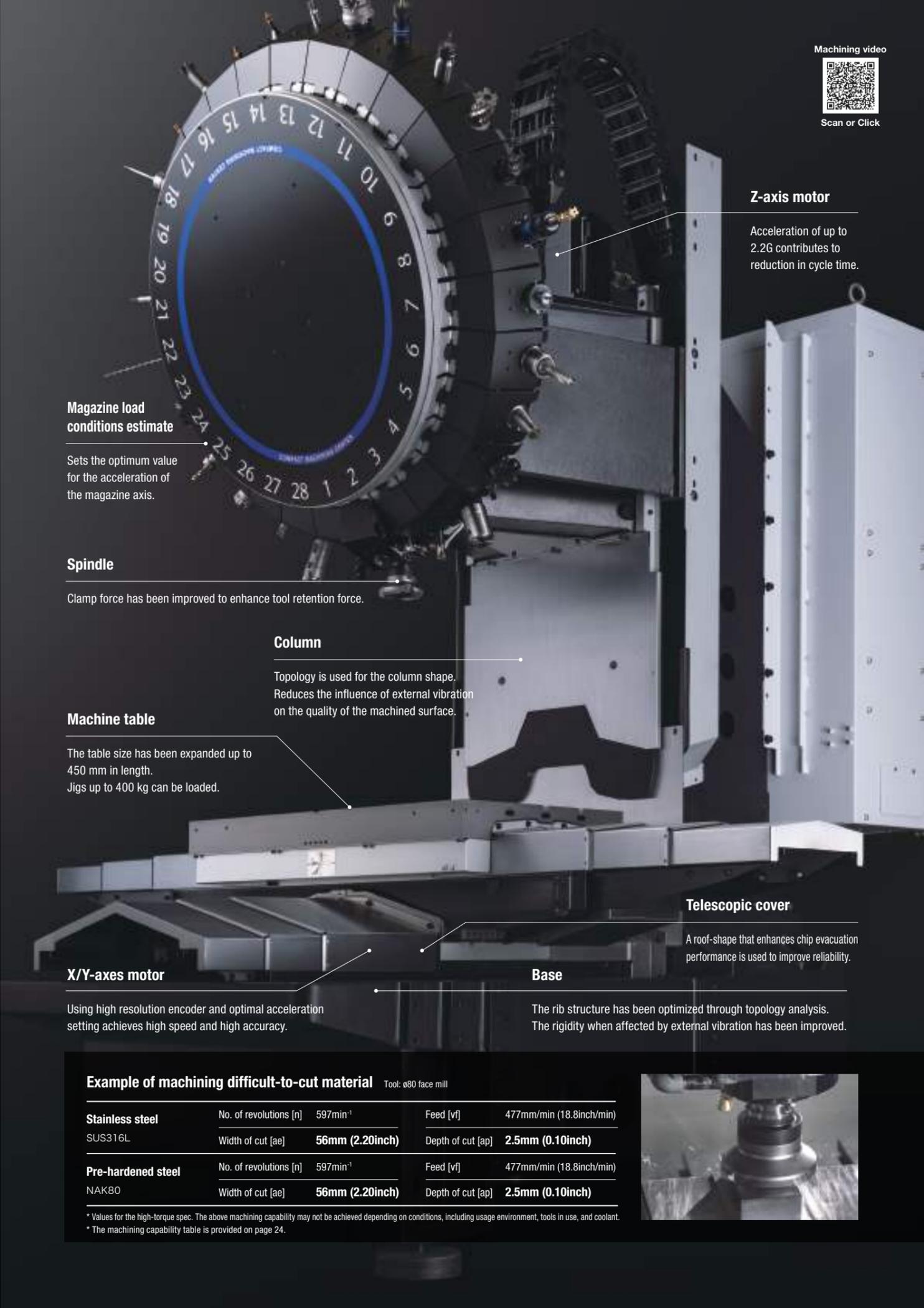
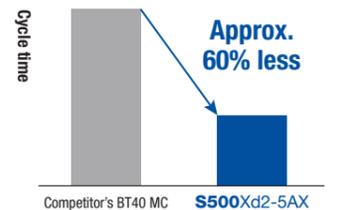
The CPU capacity has been greatly increased to enhance the processing speed of minute line segments by four times the previous controller. This enables high-speed processing of CAM data with small tolerance.



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



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

	No. of revolutions [n]	Feed [vf]	Depth of cut [ap]
Stainless steel SUS316L	597min ⁻¹	477mm/min (18.8inch/min)	2.5mm (0.10inch)
Pre-hardened steel NAK80	597min ⁻¹	477mm/min (18.8inch/min)	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 24.



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)

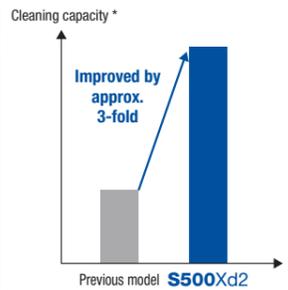
The number of discharge holes and the angle of these holes have been optimized to significantly increase the discharge flowrate. This has resulted in a threefold increase in cleaning capability, compared to the previous model.

CTS specifications allow the direct pump type where coolant is discharged from the CTS pump to be selected, consuming less air than the air-assisted type.

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

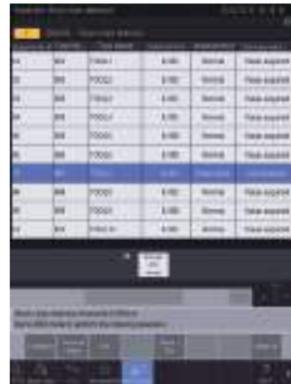


More discharge holes



Stuck chips detection function

Chips caught between the spindle and the holder during ATC are detected without using a sensor. Detecting any stuck chips during ATC prevents the outflow of defects. A retry function is also provided.



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

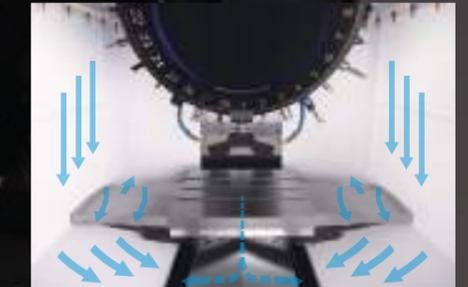
Prevention of chip problems

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.



More nozzles

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.

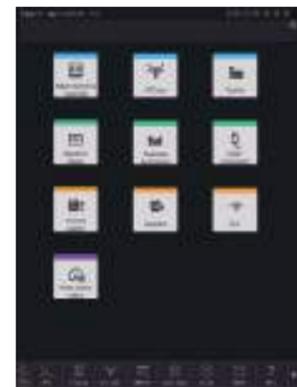
Home screen

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

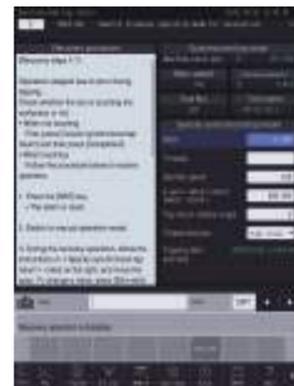
Equipped with functions to improve the operating rate, such as real time tool monitoring to eliminate defects, displaying production performance, power consumption etc. as a graph, and PLC/network functions to meet peripheral equipment and automation requirements.



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



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.

Built-in PLC

Standard equipped with a PLC function. Program memory and object memory have been increased to enhance the capacity for peripheral equipment.
In addition to ladder language, ST language and FBD language can also be used for built-in PLC programming.

Built-in PLC screen



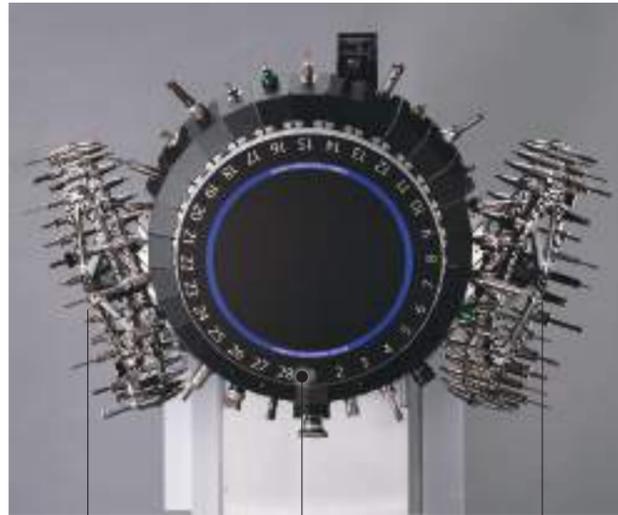
Newly developed 100-tool magazine*1 achieves space saving and high productivity

The new 100-tool magazine, featuring the largest storage capacity in the SPEEDIO series, has been developed.*1

Brother's original mechanism achieves space saving and high productivity.

*1. Mounted only on the S700Xd2-100T. Conversation language not available on the S700Xd2-100T.

Newly developed 100-tool magazine (optional)



Left-side tool stocker Turret magazine Right-side tool stocker

A tool stocker that can store 36 tools is installed on the right and left sides of the 28-tool turret magazine, enabling storage of 100 tools, the largest capacity in the SPEEDIO series.

Brother's original tool handling mechanism achieves stable tool change.

100-tool magazine spec.	
Turret magazine	: 28 tools
Tool stocker (left/right)	: 36 tools each
Total storage capacity	: 100 tools

The stocker shutter separates the tool stocker from the machining chamber, minimizing the effect of chips on tools.



Space-saving design

Tool stockers are installed inside the machine to save space while storing 100 tools.



*2. Does not include coolant tank and chip conveyor

*3. Compared to BT40 vertical MC with equivalent tool storage capacity

High productivity

If the number of tools used in machining is 28 or less, high speed tool change is possible using only the turret magazine, leading to high productivity. Even when using tools in the tool stocker, handling is possible within approximately 5 seconds (1 tool). In addition, all tools in the turret magazine can be easily changed, reducing setup time.

Turret magazine tool change time	
Tool to Tool:	0.7s
Chip to Chip:	1.4s

Tool stocker handling time*4	
Shortest (1 tool)	Approx. 5s
All tool change (28 tools)	Approx. 140s

*4. Handling time varies depending on the tool attachment position.



Tool stocker management function

A function for managing the 100-tool magazine has been added to the ATC tool app. Tool change operation is intuitive, and tools to be used in the machining program can be moved from the tool stocker to the turret magazine in a batch. In addition, data of tools in the tool stocker can be easily changed.



Batch tool change

Tool setting screen

100-tool magazine*1 and ample jig area increase efficiency of high-mix small-lot production and reduce manpower

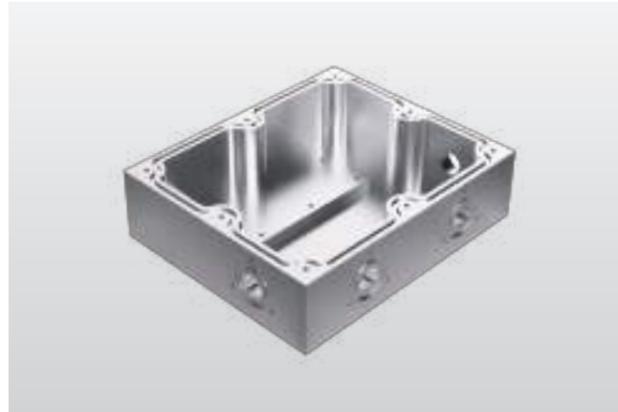
In high-mix small-lot production, the magazine that can store up to 100 tools and ample jig area improve production efficiency and reduce manpower.

*1. Mounted only on the S700Xd2-100T. Conversation language not available on the S700Xd2-100T.

100-tool magazine + Ample jig area

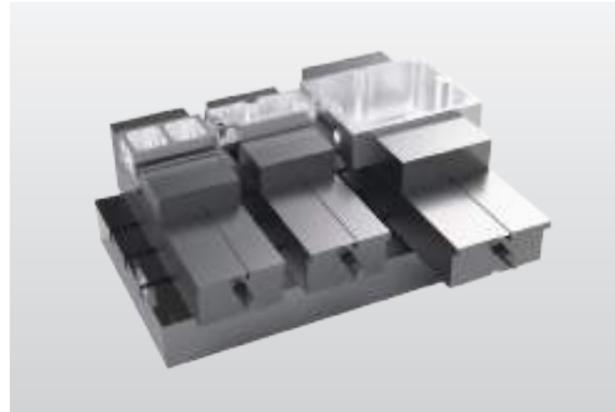
For high-mix small-lot workpieces, the 100-tool magazine eliminates the need for frequent tool changes, and the ample jig area enables multiple jigs to be mounted. These features significantly improve the efficiency of high-mix small-lot production.

Example of high-mix workpieces



Relay box

Example of jig mounting for three types of workpieces



Making automation and manpower saving easier

Side shutter (optional)

Assuming loading/unloading of workpieces from the side by robots, a side shutter has been prepared to make automation easier.

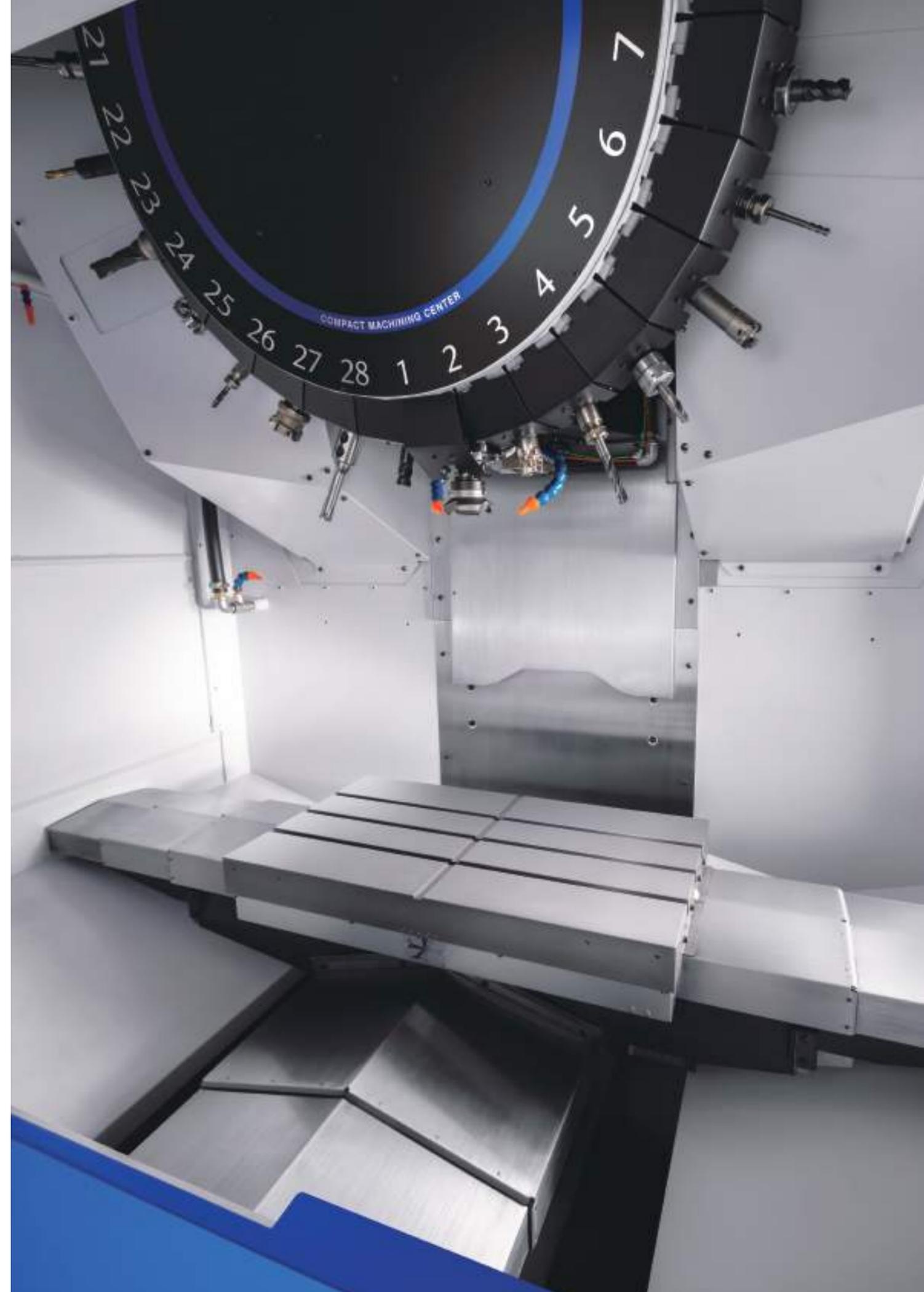
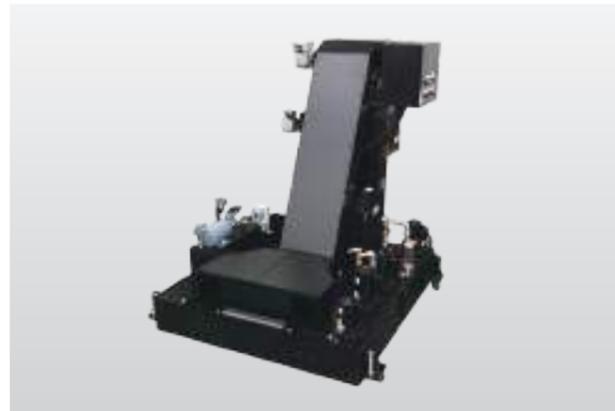
* A safety fence is required. Cannot be selected for the S300Xd2.



Chip conveyor (optional)

Two types of chip conveyors are available: scraper type and hinge + scraper type.

* Chip conveyors can only be selected for the S700Xd2-100T.



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 energy reduction

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

Wasted resource reduction

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

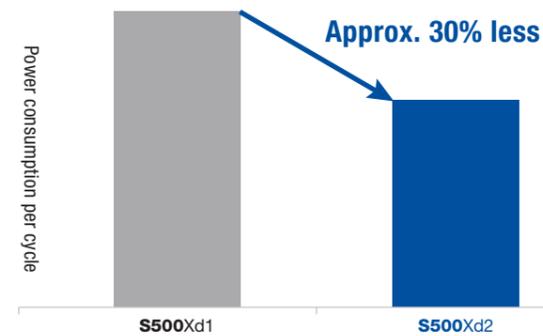
Wasted installation space reduction

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 machining support without warmup, 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.

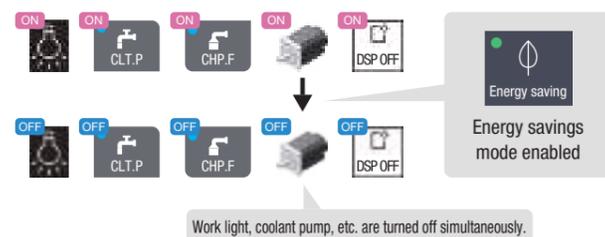


Power consumption 30% less than previous model

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

Energy savings mode

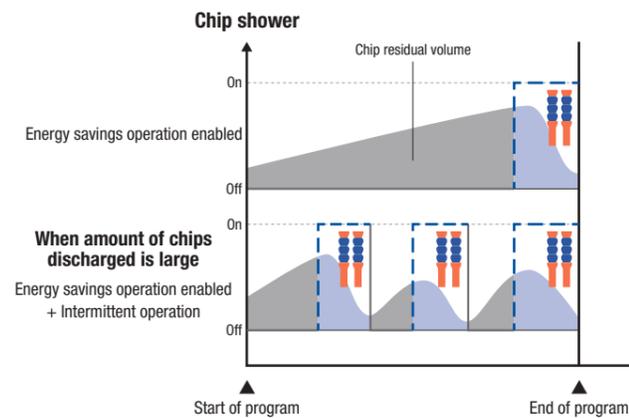
Added a function to turn on/off energy-saving functions simultaneously. Items to be turned on/off can be customized.



- Standby mode
 - Coolant pump
 - Chip shower
 - Work light
 - Display off
- Can be customized

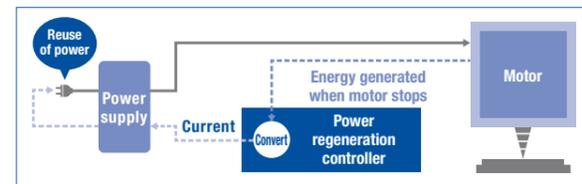
Chip shower energy savings operation

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.



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.



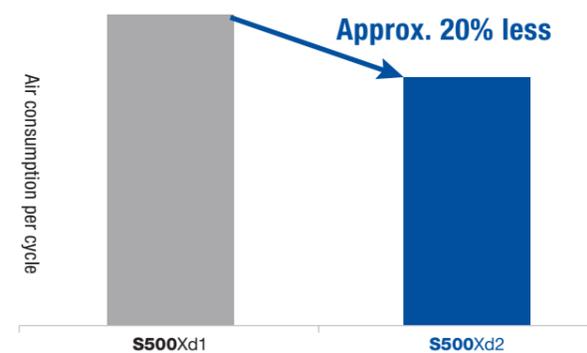
Highly efficient spindle motor

Energy-saving pump

LED work light

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.

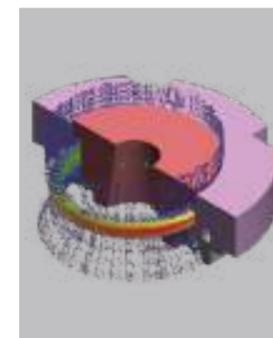


Air consumption 20% less than previous model

* Values taken by running sample program created by Brother

Air purge

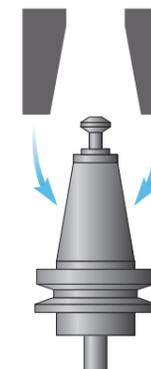
Reinforced the labyrinth structure on the spindle end face to reduce air consumption.



Air flowrate analysis of spindle end face

Spindle air blow

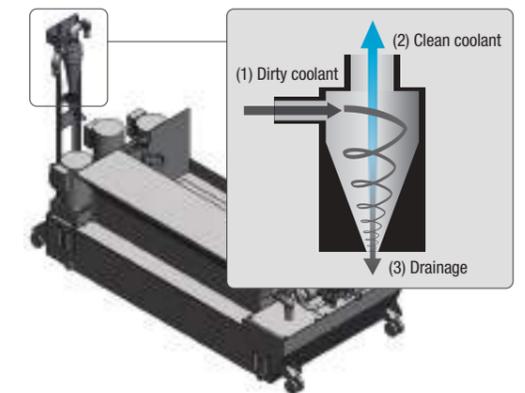
Optimized the air blow start/stop timing during tool change to reduce air consumption.



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.



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.



Chip conveyor
Two types of chip conveyors are available: scraper type and hinge + scraper type.



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.



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.



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.



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. Two types are available: air-assisted type and direct pump type where coolant is discharged directly from the CTS pump. * The direct pump type can only be selected for CTS specifications.



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.



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.



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.



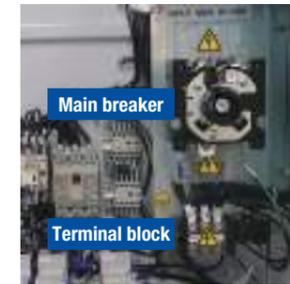
Side cover with transparent window
External light is drawn in to make the inside of the machine brighter and improve visibility. * Order two covers when needed for both sides.



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.



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.



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



Work light (1 or 2 lamps)
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.

- Coolant tank
 - 1) Coolant tank, 50L *4
 - 2) Coolant tank, 100L *4
 - 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 *5
 - 6) Chip conveyor tank, 360L scraper type *6
 - 7) Chip conveyor tank, 360L scraper type for 1.5 MPa CTS pump with cyclone filter *6
 - 8) Chip conveyor tank, 415L hinge + scraper type *6
 - 9) Chip conveyor tank, 415L hinge + scraper type for 1.5 MPa CTS pump with cyclone filter *6
- Coolant through spindle (CTS) piping, Max. 3.0 MPa
- Coolant through spindle (CTS) piping, Max. 7.0 MPa
- Column coolant nozzle *4
- 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 *5
- 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
- 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
- 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
 - Memory expansion 3 Gbytes *1
 - High accuracy mode Bll (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.
 *4. Cannot be selected for the S700Xd2-100T.
 *5. Cannot be selected for the S300Xd2.
 *6. Can only be selected for the S700Xd2-100T.

* 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).

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		S700Xd2-100T S700Xd2-100T RD *9 S700Xd2-5AX/100T S700Xd2-5AX/100T RD *9	
	《S300/S500/S700Xd2》 CNC-D00				《S300/S500/S700Xd2-5AX》 CNC-D00v (DB)			
CNC unit								
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)		380 (15.0)		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)	
Table	Work area size	mm(inch)	600 x 450 (23.4 x 17.7)				800 x 450 (31.4 x 17.7)	
	Max. loading capacity (uniform load)	kg(lbs)	250 [300 *6] (551 [661 *6])		250 [400 *6] (551 [881 *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 (BIG-PLUS)		Optional					
	Coolant through spindle (CTS)		Optional (CTS cannot be selected for 27,000min ⁻¹ specification models)					
Feed rate	Rapid traverse rate(XYZ axes)	m/min(inch/min)	50 x 50 x 56 (1,969 x 1,969 x 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		100 *12	
	Max. tool length	mm(inch)	160 (6.3) [21 tool] 250 (9.8) [14 tool]		250 (9.8)		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 21 or 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 high-torque 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 high-torque specifications (optional): 10.4, 27,000min ⁻¹ specifications (optional): 9.5					
	Air supply	Regular air pressure MPa Required flow L/min	0.4-0.6 (recommended value 0.5MPa *8) 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)		2,568 (101.1)	
	Required floor space *11 (with control unit door open)	mm(inch)	1,080 x 2,161 [2,999] (42.5 x 85.1 [118.1])		1,560 x 2,081 [2,919] (61.4 x 81.9 [114.9])		2,050 x 2,081 [2,919] (80.7 x 81.9 [114.9])	
	Weight [with BV7-870AD]	kg(lbs)	2,350 (5,181) [2,650 (5,843)]		2,400 (5,292) [2,700 (5,953)]		2,550 (5,622) [2,700 (5,953)]	
Accuracy *3	Accuracy of bidirectional axis positioning (ISO230-2:1988)	mm(inch)	0.006-0.020 (0.00024-0.00079)					
	Repeatability of bidirectional axis positioning (ISO230-2:2014)	mm(inch)	Less than 0.004 (0.00016)					
Front door	2doors							
Standard accessories	Instruction Manual (DVD 1 set), leveling bolts (4 pcs.), leveling plates (4 pcs.)							

*1. Actual tool weight differs depending on the configuration and center of gravity. The figures shown here are for reference only. *2. Spindle motor output differs depending on the spindle speed. *3. Measured in compliance with ISO standards and Brother standards. Please contact your local distributor for details. *4. Brother specifications apply to the pull studs for CTS. *5. Measured in compliance with JIS B6336-9 and MAS011-1987. *6. 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 indexing time will change.) Max. tool weight 4.0 kg cannot be available for the 27,000 min⁻¹ specifications. *11. The value does not include the coolant tank. *12. Value for turret magazine plus tool stocker *13. Value for turret magazine

- 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》		《S300Xd2-5AX/S500Xd2-5AX/S700Xd2-5AX》	
CNC model	CNC-D00	CNC model	CNC-D00v (DB)
Control axes	5 axes (X, Y, Z, 2 additional axes)	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 (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)	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	0.001 mm, 0.0001 inch, 0.001 deg.	Least input increment	0.0001 mm, 0.00001 inch, 0.0001 deg.
Max. programmable dimension	±999999.999 mm, ±99999.9999 inch	Max. programmable dimension	±999999.9999 mm, ±99999.99999 inch
Display	15-inch color LCD touch display	Display	15-inch color LCD touch display
Memory capacity	500 Mbytes, 3 Gbytes (optional) (Total capacity of program and data bank)	Memory capacity	3 Gbytes (Total capacity of program and data bank)
External communication	USB memory interface, Ethernet, RS232C (optional)	External communication	USB memory interface, Ethernet, RS232C (optional)
No. of registrable programs	4,000 (Total capacity of program and data bank)	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 * Only NC language available on the S700Xd2-100T. Conversation language not available	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	Monitoring	Machining load monitoring	Standby mode	External sub program call
Programming	Machining lock		ATC tool monitoring	Automatic coolant off	Macro
	Program restart		Overload prediction	Automatic work light off	Tape operation / FTP load operation
	Rapid traverse override		Waveform display / Cutting feed override	Chip shower off delay	Multiple skip function
	Cutting feed override		Waveform output to memory card	Chip shower energy savings operation	<Optional>
	Background editing		Automatic thermal distortion compensation (X, Y, and Z axes)	Energy savings mode	Submicron command *2 *5
	Screen shot		Production performance display	Adjust machine parameters	Interrupt type macro
	Operation level		Tool life / Spare tool	ATC tool	Rotary fixture offset
	External input signal key		Stuck chips detection function	Tool life	Feature coordinates setting *3 *5
	Shortcut key		Tap return function	Waveform display	Involute interpolation
	<Optional>		Status log	Production performance	Functions limited to conversation language *6
Measurement	Absolute / Incremental		Alarm log	Power consumption	Schedule program
	Inch / Metric		Operation log	Recovery support	Automatic tool selection
	Coordinate system setting		Maintenance notice	Inspection	Automatic cutting condition setting
	Corner C / Corner R		Motor insulation resistance measurement	PLC	Automatic tool length compensation setting
	Rotational transformation		Tool cleaning filter with filter clogging detection	Machining support without warmup	Automatic cutter compensation setting
	Synchronized tap		Subprogram	File viewer	Automatic calculation of unknown number input
	Subprogram		Battery-free encoder	Notebook	Machining order control
	Graphic display		Brake load test	Calculator	
	Automatic workpiece measurement *1		Computer remote	Register shortcut	
	Tool length measurement		OPC UA	Display off	
High speed and high accuracy	Machining parameter adjustment		Auto notification	Menu programming	
	High accuracy mode All		Built-in PLC (LD/ST/FBD)	Local coordinate system	
	High accuracy mode BI (look-ahead 160 blocks)		<Optional>	Expanded workpiece coordinate system	
	Backlash compensation		CC-Link, master station	One-way positioning	
	Tool center point control *3 *4 (Look-ahead 1,000 blocks)		CC-Link, remote device station	Inverse time feed	
	<Optional>		PROFIBUS DP, slave	Programmable data input	
	High accuracy mode BII (Look-ahead 1,000 blocks, smooth path offset)		DeviceNet, slave	Tool length compensation	
			PROFINET, slave	Cutter compensation	
			EtherNet/IP, slave	Scaling	
			Energy saving	Mirror image	

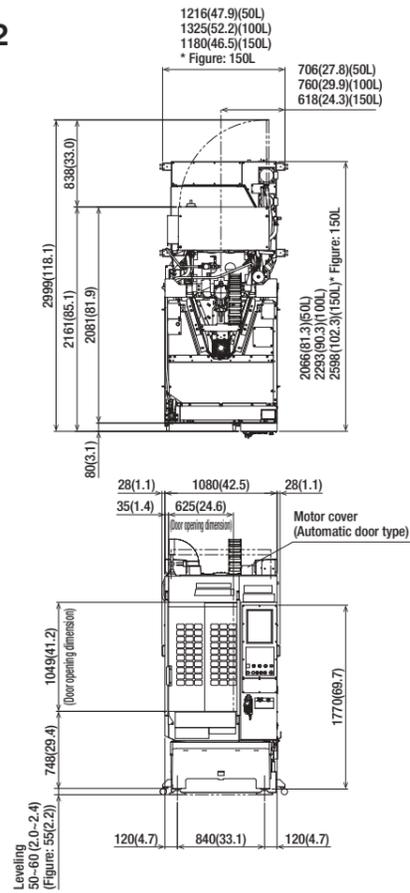
*1. Measuring instrument needs to be prepared by users. *2. When the submicron command is used, changing to the conversation language program is disabled. *3. There are restrictions on the axis configuration. *4. Available only on the S300/S500/S700Xd2-5AX. *5. Standard on the S300/S500/S700Xd2-5AX.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

Machining capability

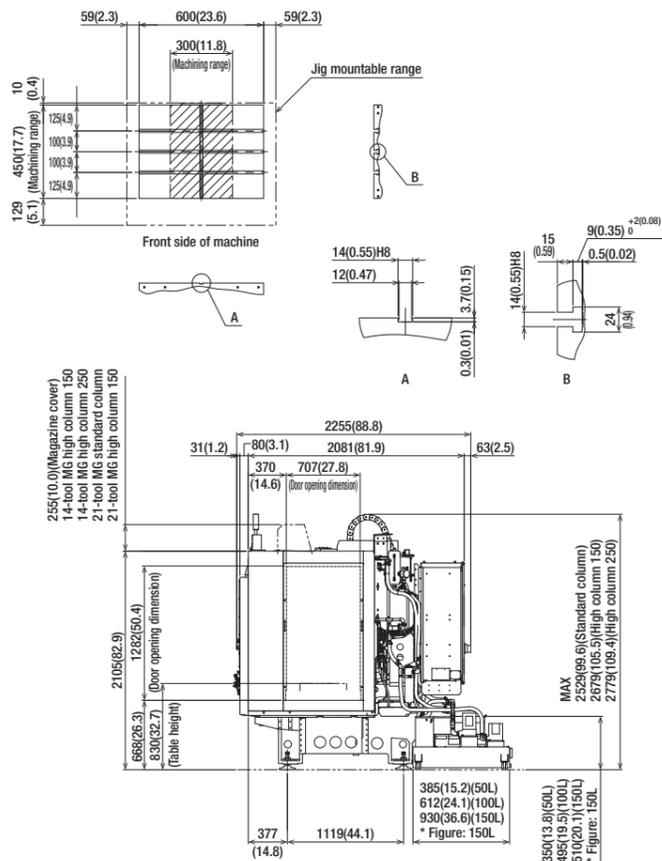
	ADC	Cast iron	Carbon steel
Drilling	12,000min ⁻¹	D32 x 0.2 (1.26 x 0.008)	D28 x 0.15 (1.10 x 0.006)
	10,000min ⁻¹ high-torque	D40 x 0.2 (1.57 x 0.008) D30 x 0.7 (1.18 x 0.028)	D34 x 0.15 (1.34 x 0.006) D26 x 0.4 (1.02 x 0.016)
	16,000min ⁻¹	D24 x 0.2 (0.94 x 0.008)	D23 x 0.15 (0.91 x 0.006)
Tapping	12,000min ⁻¹	M27 x 3.0 (1-8UNC)	M27 x 3.0 (1-8UNC)
	10,000min ⁻¹ high-torque	M39 x 4.0 (11/2-6UNC)	M33 x 3.5 (11/4-7UNC)
	16,000min ⁻¹	M22 x 2.5 (7/8-9UNC)	M22 x 2.5 (7/8-9UNC)
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)
	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)
	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)
Cutting amount cm ³ /min (inch ³ /min)	12,000min ⁻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)
	10,000min ⁻¹ high-torque	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)
	16,000min ⁻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)

* Data obtained from tests conducted by Brother.

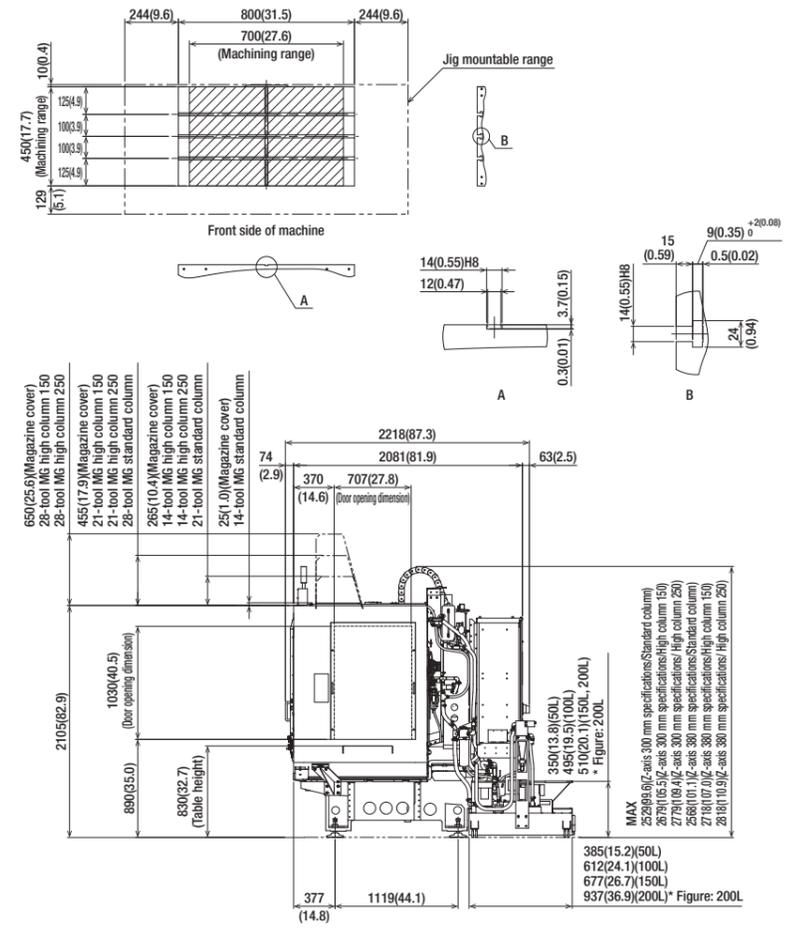
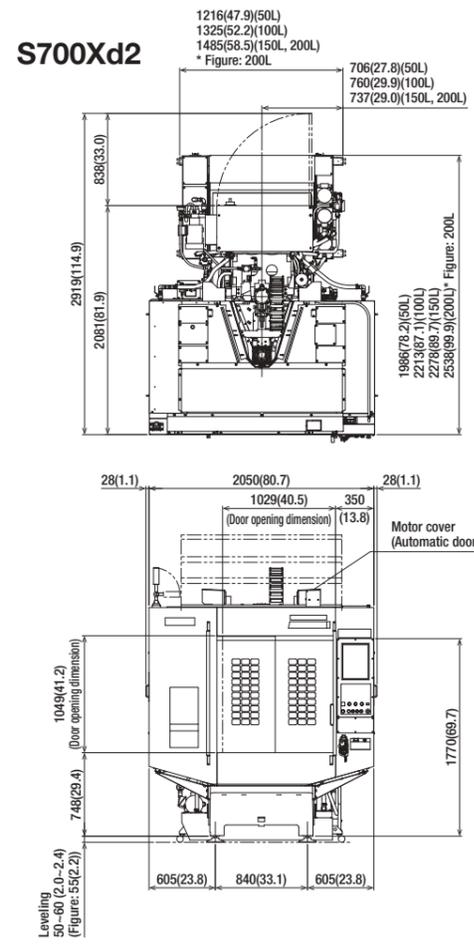
S300Xd2



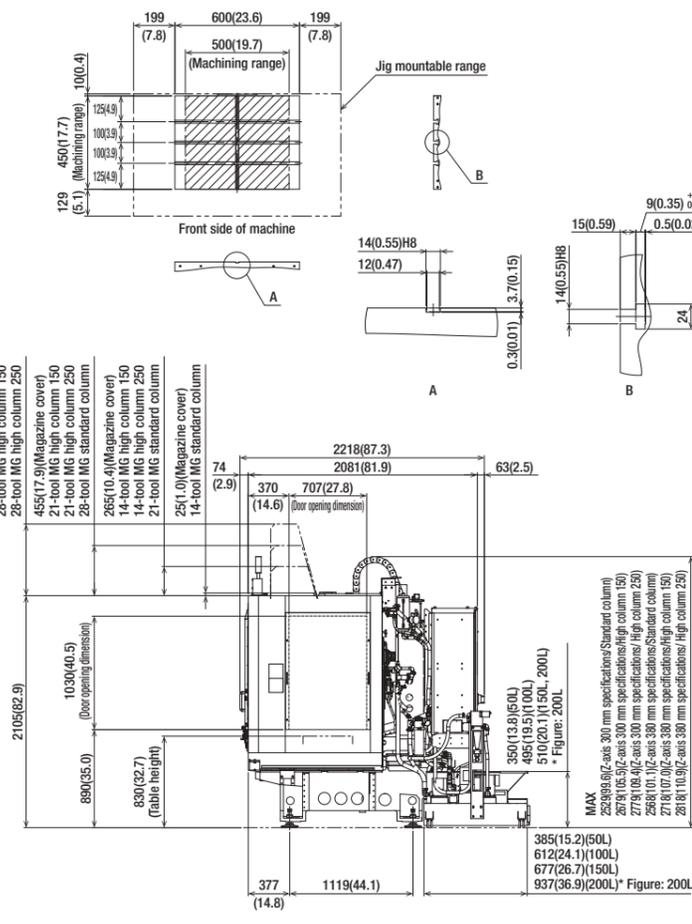
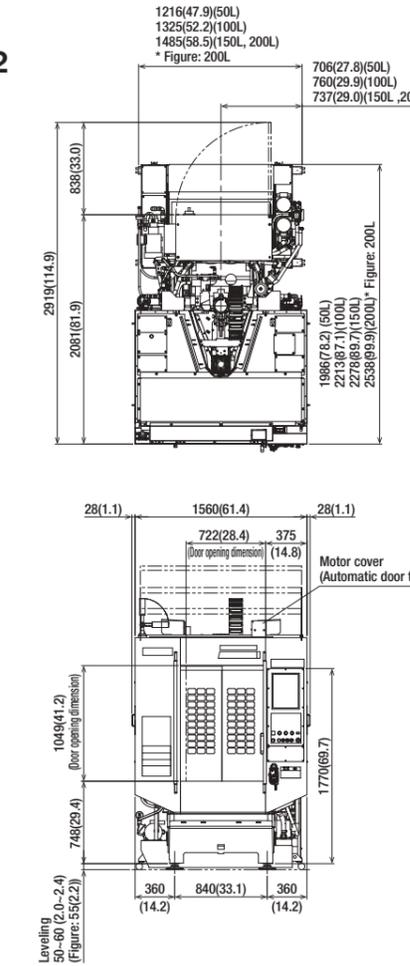
* Please check the external views or interference diagrams provided by Brother when designing jigs or checking for interference.
* Chip conveyors can be selected only for the S700Xd2-100T.
* 150L and 200L coolant tanks can be selected for the S700Xd2-100T, but 50L and 100L cannot be selected.



S700Xd2

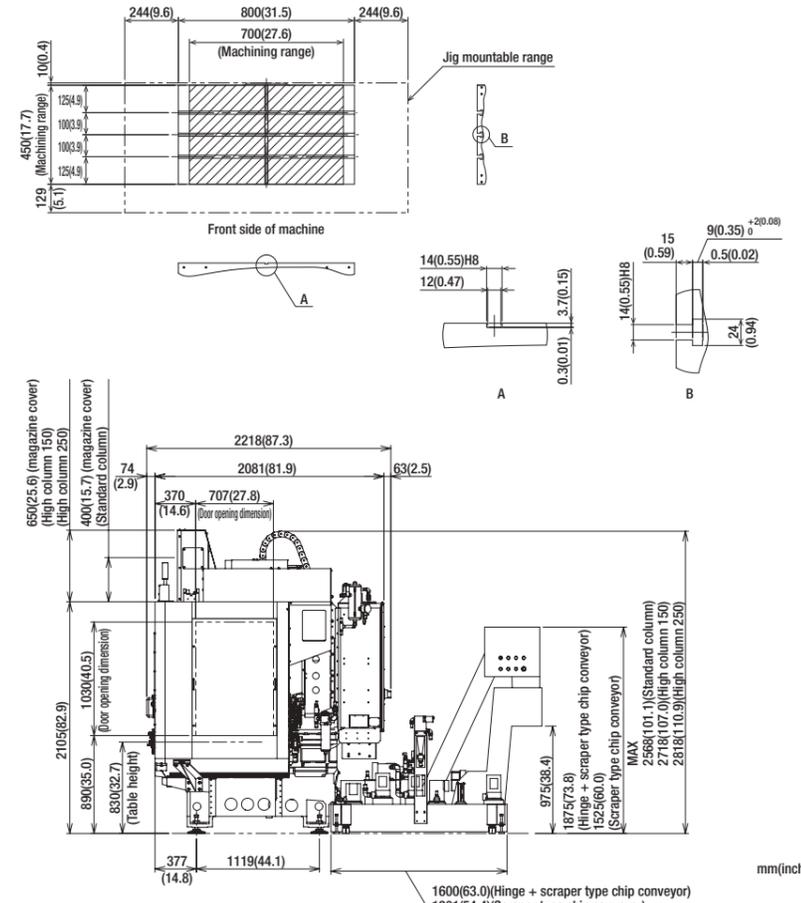
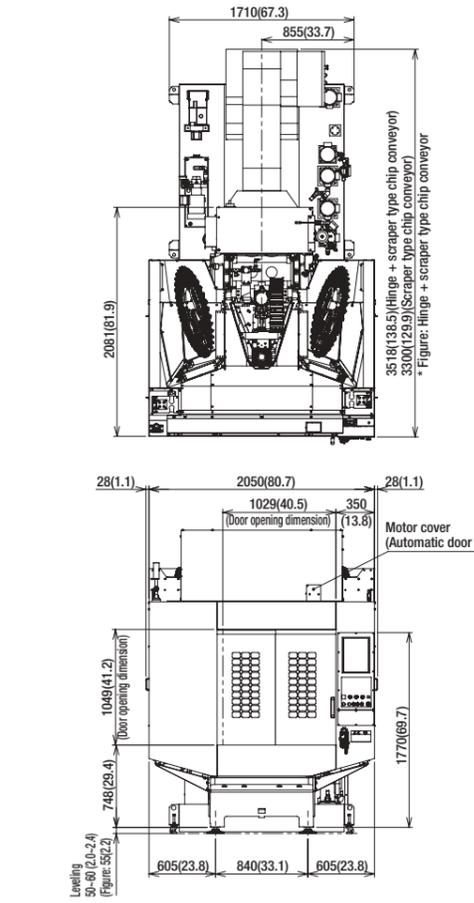


S500Xd2



S700Xd2-100T

* Figure shows when chip conveyor is used.



mm(inch)

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Figures in brackets () are the country codes.

Specifications may be subject to change without any notice.

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Please check here for detailed information
and the latest information of the base.

<https://machinetool.global.brother/>

