brother
at your side

SPEEDIO

HU550Xd1

Horizontal Universal Compact Machining Center

HU

Horizontal Universal
Compact Machining Center

Equipped with ø680 mm tilting rotary table

Ever-evolving horizontal universal compact machining center

Standard equipped with a ø680 mm tilting rotary table, the machine enables multi-face machining of large or long workpieces beyond the conventional concept of BT30 machines, further accelerating process integration. This new machine delivers both a space-saving design and high productivity through machine/controller integrated development.

Cutting Out the Waste *SPEEDIO*

HU550 Xd1

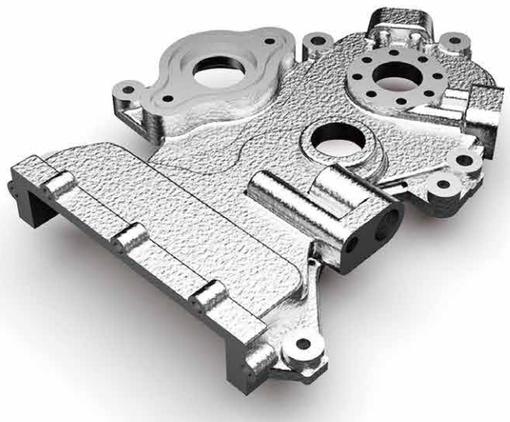
Basic specifications	
Max. spindle speed (min^{-1})	12,000
	Optional: 10,000 high-torque / 20,000
Travels (X, Y, Z) (mm)	X 550 Y 500 Z 400
Travels (A, B) (deg.)	A 30~ -120 B 360
Tool storage capacity (pcs.)	30
Rapid traverse rate (X, Y, Z) (m/min)	X/Y/Z 50/56/56
Indexing feed rate (A, B) (min^{-1})	A/B 50/75
Required floor space (mm)	1,557 x 2,744
Simultaneous 5-axis spec. (5AX)	Available

Multi-face machining of large or long workpieces using BT30 spindle horizontal machining center

A large tilting rotary table is mounted on the highly productive BT30 spindle horizontal machining center, enabling multi-face machining of large or long workpieces.
This machine supports a broad range of applications, including automobile components.

Automobile

Steering rack housing
Aluminum alloy
Size: 520 x 170 x 120



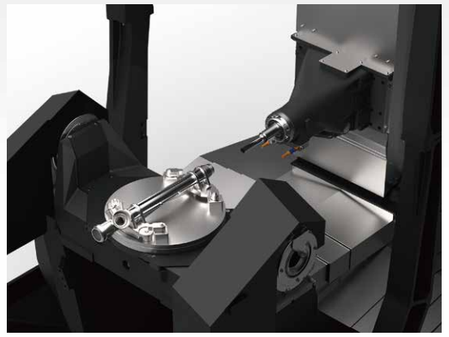
Timing chain cover
Aluminum alloy
Size: 450 x 330 x 80

E-axle case
Aluminum alloy
Size: 290 x 428 x 268

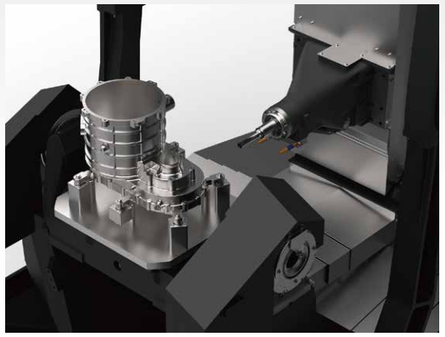
Knuckle
Aluminum alloy
Size: 300 x 255 x 120

Jig mounting examples

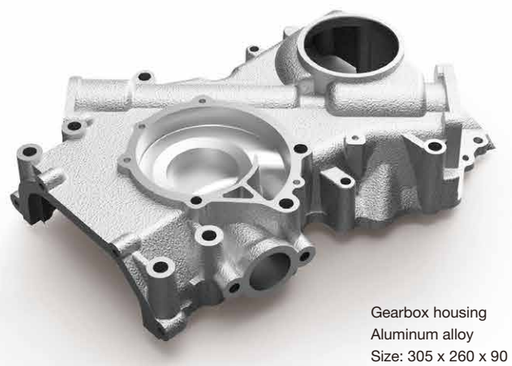
Jigs for multi-face machining of large workpieces (approx. 500 mm x 500 mm) or long workpieces (approx. 600 mm in length) can be mounted. The ample jig area (ø680 mm x 400 mm) enables easy mounting of a wide variety of jigs.



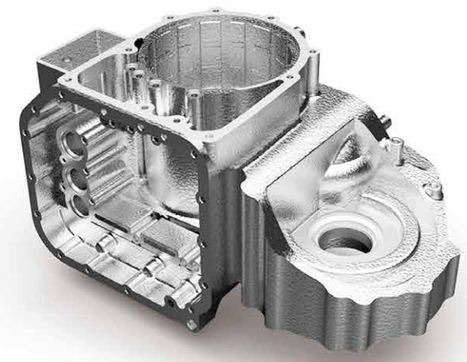
Steering rack housing



E-axle case



Gearbox housing
Aluminum alloy
Size: 305 x 260 x 90



Transmission case
Aluminum alloy
Size: 550 x 300 x 280

Aircraft

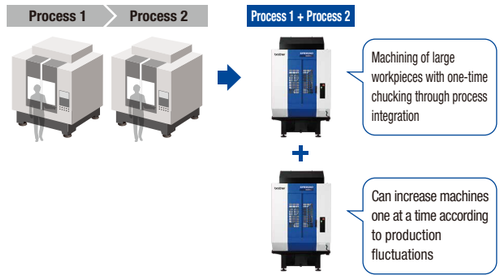
Aircraft parts
Aluminum alloy
Size: 300 x 250 x 100

Turbine blade
Titanium alloy
Size: 140 x 80 x 40

Equipped with ø680 mm tilting rotary table
Achieves process integration for machining of large/long workpieces

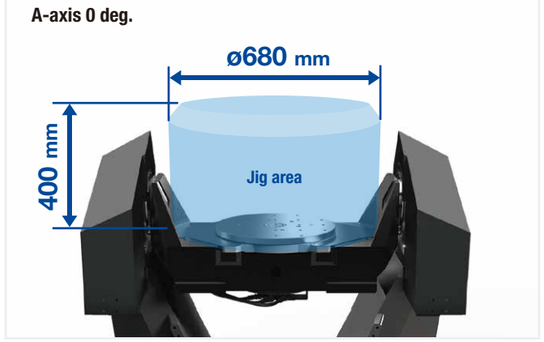
Advantages of utilizing the HU550Xd1

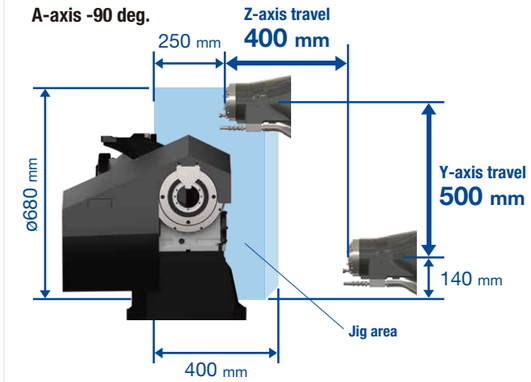
[1] Enables machining of large/long workpieces within less space.
[2] Achieves highly accurate machining with one-time chucking through process integration
[3] Easily adapts to production fluctuations or variations in workpiece geometry.



Jig area

A large tilting rotary table is mounted, providing an ample jig area of ø680 mm x 400 mm.
Even when the A-axis is tilted 90 degrees, sufficient machining range and tool accessibility are ensured.
The combination of the tilting rotary table and ample jig area can easily adapt to future variations in workpiece geometry.
*Interference area is created depending on the tool length or tool diameter.





Max. loading capacity **200 kg**

Space saving

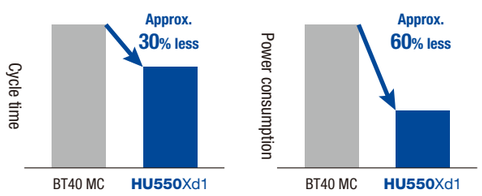
While enabling mounting of large workpieces, the space-saving design makes factory machinery layout easier and maximizes the effective use of installation space.

*1. Dimension including coolant tank
*2. Compared to BT40 horizontal MC with equivalent travels

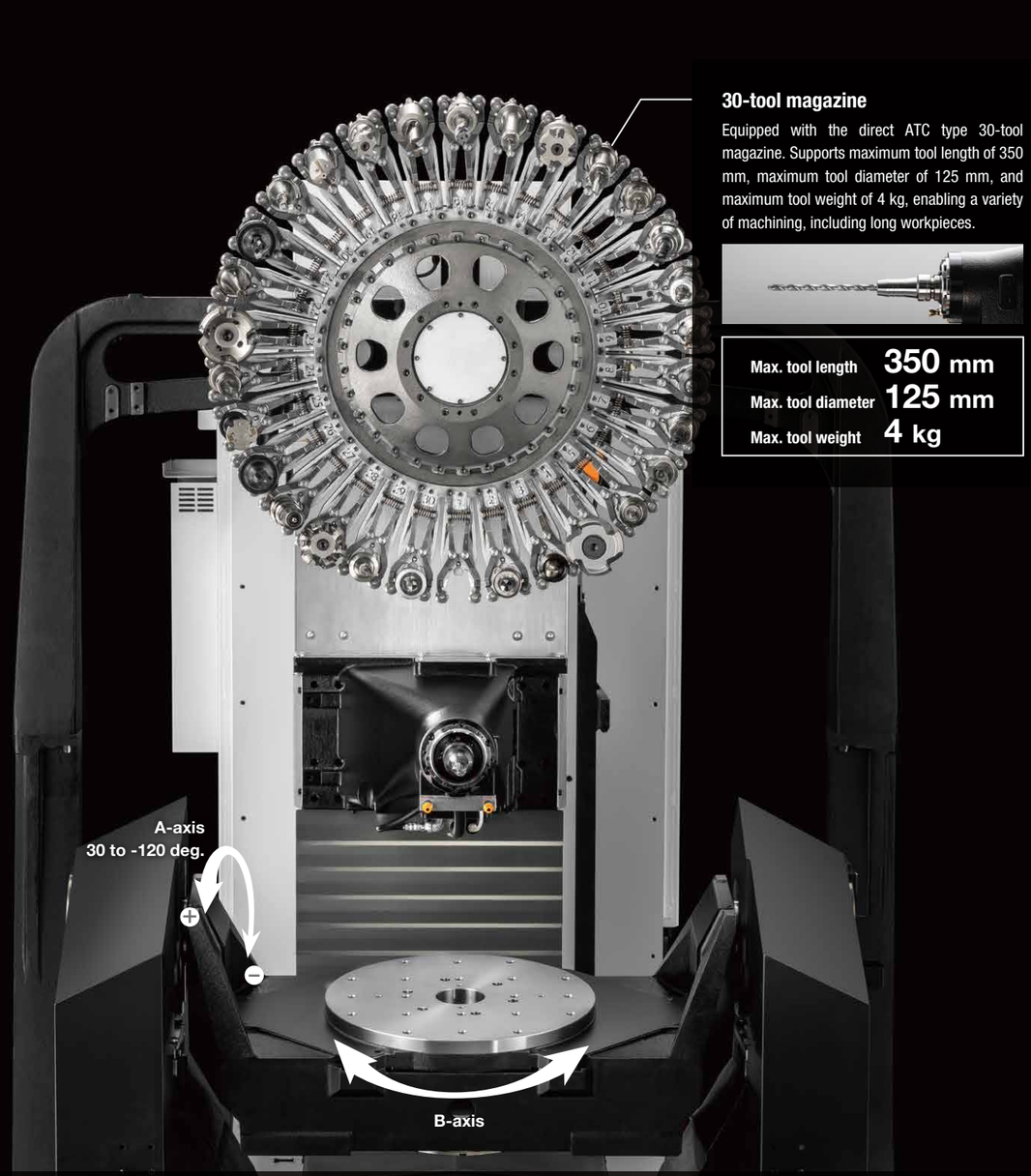
Machining example

Steering rack housing

Material: Aluminum alloy
Size: 520 x 170 x 130



*Compared using a sample program created by Brother



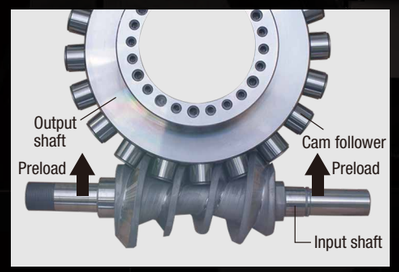
30-tool magazine

Equipped with the direct ATC type 30-tool magazine. Supports maximum tool length of 350 mm, maximum tool diameter of 125 mm, and maximum tool weight of 4 kg, enabling a variety of machining, including long workpieces.

Max. tool length	350 mm
Max. tool diameter	125 mm
Max. tool weight	4 kg

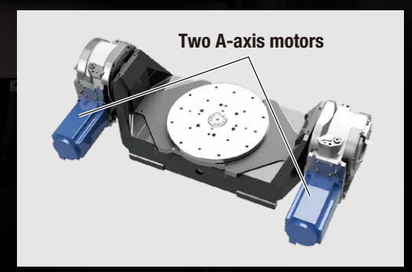
Tilting rotary table

Brother's original large tilting rotary table with a roller gear cam mechanism and tandem control, achieving both high speed and high accuracy.



Rotary gear cam mechanism

A roller gear cam mechanism is used for A and B axes, achieving both high speed and high accuracy. In addition, the maximum loading capacity of the ø400 mm table is 200 kg.



Tandem control

Tandem control using two motors is used for the A-axis. This suppresses distortion in the large tilting rotary table, enabling high-speed indexing.

Max. indexing feed rate	
A-axis	50 min⁻¹
B-axis	75 min⁻¹

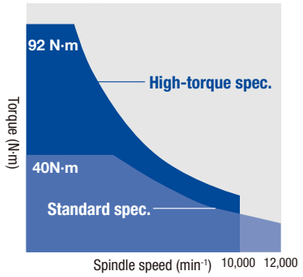
Indexing time (90 deg.)	
A-axis	1.2 s
B-axis	1.2 s

A variety of spindle specifications and optimized machine design enable a broad range of machining

Spindle motors to meet specific applications

A 20,000 min^{-1} spindle motor has been newly developed. Compatible with Coolant Trough Spindle (CTS), it further enhances productivity in small-diameter drilling. Various spindle motor specifications are available for different applications, including the standard 12,000 min^{-1} spec. and high-torque spec.

Motor torque characteristics



High-torque spec. (optional)
Max. torque 92 N·m
Max. output 26.2 kW

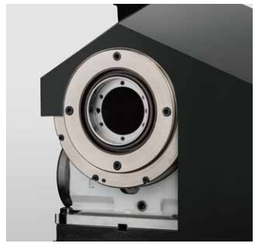
20,000 min^{-1} spec. (optional)
Max. torque 27 N·m
Max. output 15.4 kW

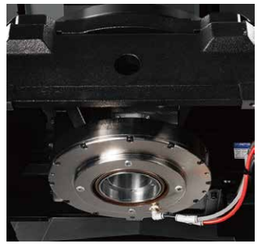
12,000 min^{-1} spec. (standard)
Max. torque 40 N·m
Max. output 18.9 kW

Clamping torque compatible with high-load machining

Both A and B axes are provided with high clamping torque, demonstrating high retention strength even in high-load machining. Machining with more stringent cutting conditions is possible, improving production efficiency.

A-axis clamping torque *2 1,200 N·m
B-axis clamping torque *2 700 N·m





*2. Value of mechanical clamp (at pneumatic 0.5 MPa) plus servo clamp

7 MPa Coolant Through Spindle (CTS) (optional) *1

The CTS option can be selected from 3 MPa or 7 MPa. With this option, the machine can operate to its fullest potential in high-speed drilling or deep-hole drilling.

*1. 3 MPa/7 MPa CTS are compatible with all spindle motor specifications.

Optimal machine design and highly rigid spindle

Both high speed and high rigidity of the machine have been achieved by optimizing the cast geometry utilizing CAE analyses. The high-torque spindle features the SPEEDIO's largest bearing diameter. With these improvements, the machine demonstrates high machining capabilities from highly efficient machining to heavy-duty machining.

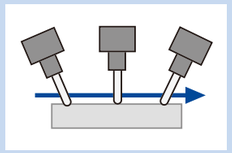
Easy-to-implement simultaneous 5-axis machining function (5AX) *3

Leveraging the standard-equipped tilting rotary table, the simultaneous 5-axis machining function can be easily implemented. Equipped with various functions, including tool center point control, the machine can achieve high-speed and highly accurate simultaneous 5-axis machining, combined with the 20,000 min^{-1} specification.

*3. Available only on the HU550Xd1-5AX

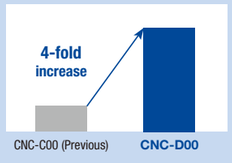
Tool center point control

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



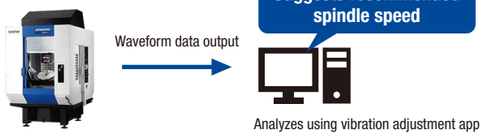
Processing speed of minute line segments

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.

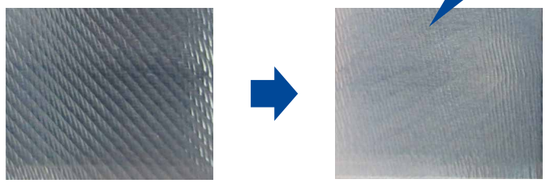


Vibration adjustment (optional) that suggests optimal machining conditions

Vibration adjustment analyzes waveform data using a PC app to suggest the recommended spindle speed. Optimal machining conditions drive machining performance to the fullest.



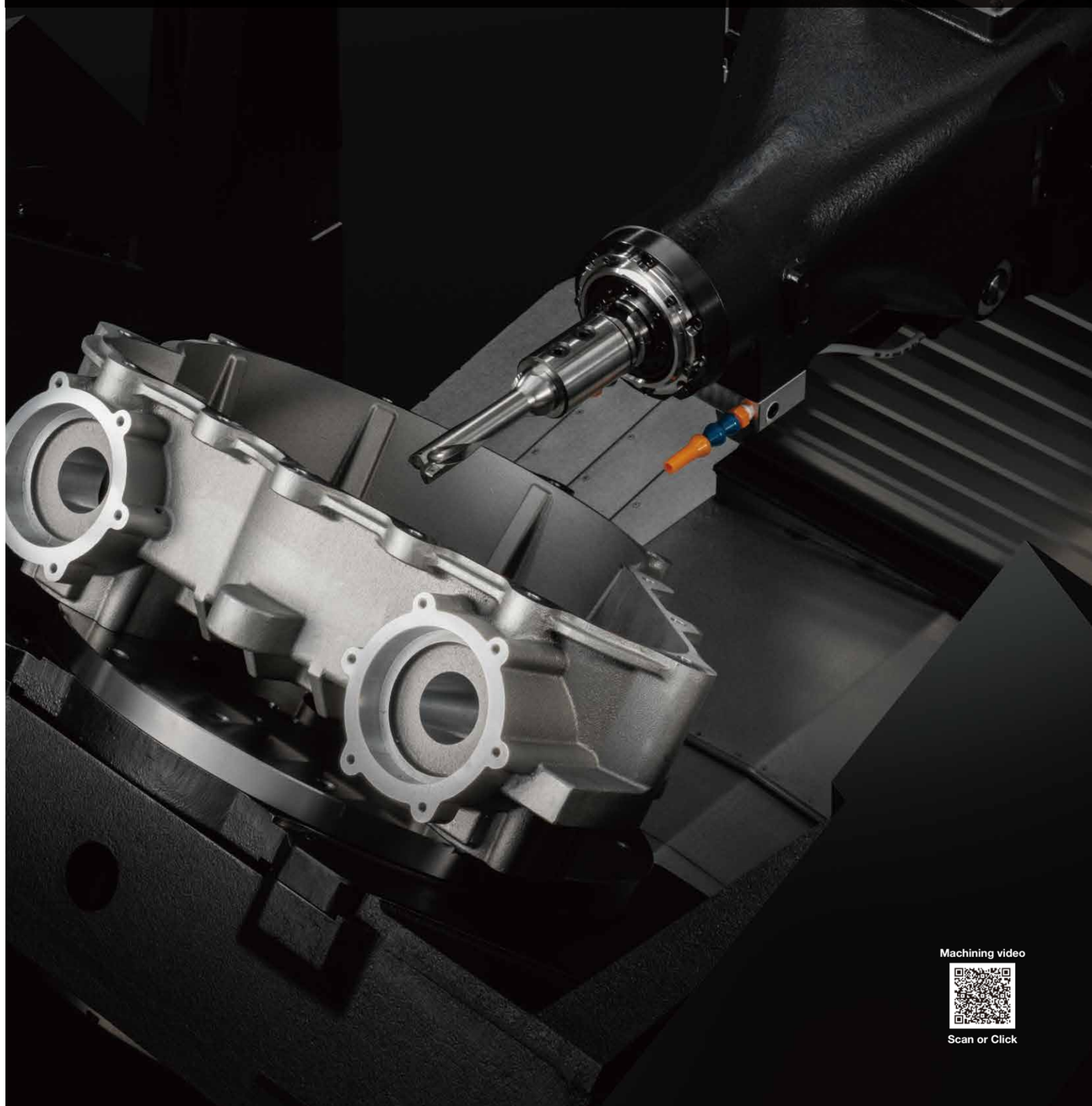
[Conditions] Material: Aluminum
Tool: ø10 end mill



Machining capability

		ADC	Cast iron	Carbon steel
Drilling (Tool diameter mm(inch) x Feed mm(inch)/rev)	12,000min^{-1}	D30 x 0.2 (1.18 x 0.008)	D30 x 0.15 (1.18 x 0.006)	D22 x 0.1 (0.87 x 0.004)
	10,000 min^{-1} high-torque	D33 x 0.2 (1.30 x 0.008)	D33 x 0.15 (1.30 x 0.006)	D24 x 0.1 (0.94 x 0.004)
	20,000min^{-1}	D23 x 0.2 (0.91 x 0.008)	D23 x 0.15 (0.91 x 0.006)	D19 x 0.1 (0.75 x 0.004)
Tapping (Tool diameter mm(inch) x Pitch mm(inch))	12,000min^{-1}	M27 x 3.0 (1-8UNC)	M24 x 3.0 (7/8-9UNC)	M20 x 2.5 (3/4-10UNC)
	10,000 min^{-1} high-torque	M36 x 4.0 (1 3/8-6UNC)	M33 x 3.5 (1 1/4-7UNC)	M27 x 3.0 (1-8UNC)
	20,000min^{-1}	M22 x 2.5 (7/8-9UNC)	M22 x 2.5 (7/8-9UNC)	M16 x 2.0 (5/8-11UNC)
Facing (Cutting amount cm^3/min (inch^3/min): Cutting width mm(inch) x Cutting depth mm(inch) x Feed rate mm(inch)/min)	12,000min^{-1}	1,200: 100 x 4.0 x 3,000 (73.2: 3.94 x 0.16 x 118.1)	101: 40 x 4.4 x 1,492 (6.2: 1.57 x 0.17 x 22.6)	77: 40 x 4.0 x 484 (4.7: 1.57 x 0.16 x 19.1)
	10,000 min^{-1} high-torque	1,920: 100 x 6.4 x 3,000 (117.2: 3.94 x 0.25 x 118.1)	358: 40 x 6.0 x 1,492 (21.8: 1.57 x 0.24 x 58.7)	232: 40 x 6.0 x 967 (14.2: 1.57 x 0.24 x 38.1)
	20,000min^{-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)

*These values are based on our actual performance data.
*These values are when the A-axis is at -90 degrees and X/Y axes are at their travel center. The above machining capability may not be achieved under some conditions, including usage environment, tools in use, and coolant.



Machining video
Scan or Click

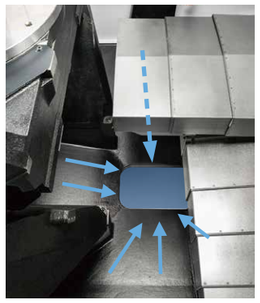
High chip evacuation and robust reliability/maintenance functions achieve stable, high productivity

High chip evacuation with horizontal machining center features

Utilizing horizontal machine features and various other functions, the machine demonstrates high chip evacuation.

Center trough structure

The inclined base and the center trough structure effectively evacuate chips that fall on the base to the outside of the machine.



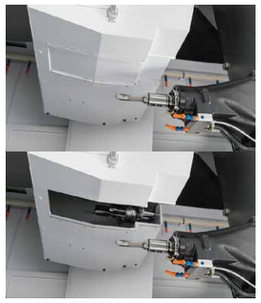
Head shower (optional) *1

A head shower is available to remove chips from the spindle head.

*1. Included with the coolant nozzle (optional).

Magazine cover ATC shutter

The magazine is separated from the machining chamber by a shutter to minimize the effect of chips on tools.



Chip conveyor (optional)

The hinge and scraper type chip conveyor with drum filter evacuates chips in a variety of sizes and shapes.

Various functions of our original NC enhance reliability and maintainability

Numerous maintenance functions are provided to help prevent possible defects in production sites, and assist with recovery if problems occur.

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.

Machining load monitoring

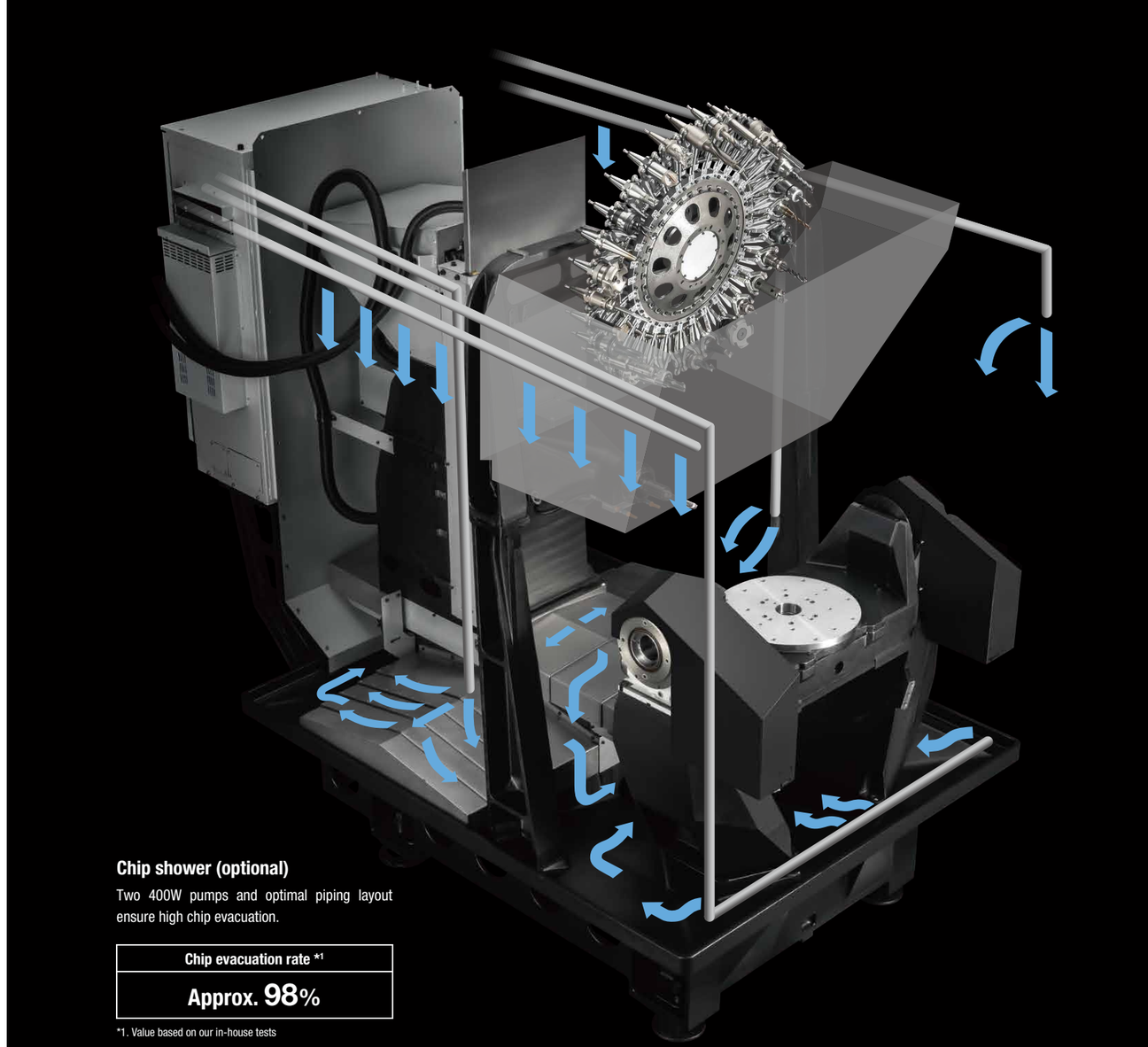
Machining load applied to the spindle is monitored to issue an alarm when the load is not within the preset value.

Maintenance notice

Notifies operators of maintenance related issues in advance, such as greasing time.

Alarm log

Displays alarm log details to help identify the cause.



Chip shower (optional)

Two 400W pumps and optimal piping layout ensure high chip evacuation.

Chip evacuation rate *1
Approx. 98%

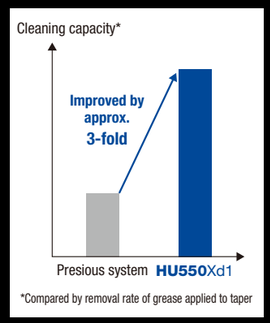
*1. Value based on our in-house tests

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.

Tool cleaning system (optional)

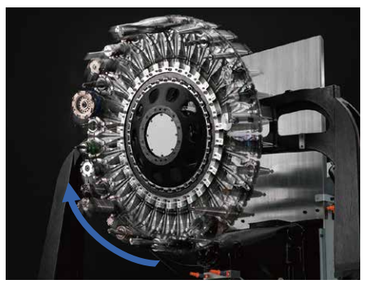
The number of discharge holes and the angle of these holes have been optimized to significantly increase the discharge flowrate. This has resulted in a threefold increase in cleaning capacity, compared to the previous system. When CTS is selected, coolant for tool cleaning is discharged from the CTS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



High productivity, made possible through machine/controller integrated development that thoroughly eliminates unnecessary movements

High-speed tool change

By utilizing the advantages of machine/controller integrated development, high-speed tool change has been achieved by fast acceleration/deceleration and optimized operation.



Tool change time	
T-T	1.3 s
C-C	2.5 s

Fast acceleration/deceleration spindle

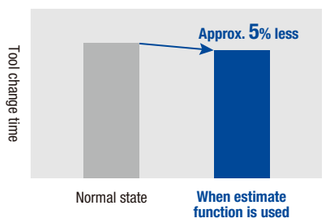
Using a low inertia spindle and high acceleration/deceleration spindle motor has achieved faster spindle start/stop.

Spindle start/stop time
0.15 s or less *1

*1. Value of high-torque spec.

Magazine load conditions estimate

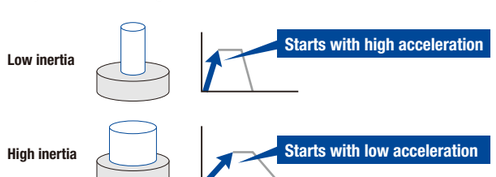
Estimates the inertia and unbalanced load of the tool loaded in the magazine, and sets the optimum value for the acceleration of the magazine axis. In addition, automatically updates the value to the estimated optimum acceleration, even during programmed operation.



<Conditions>
Total tool weight: 26 kg (equal load)

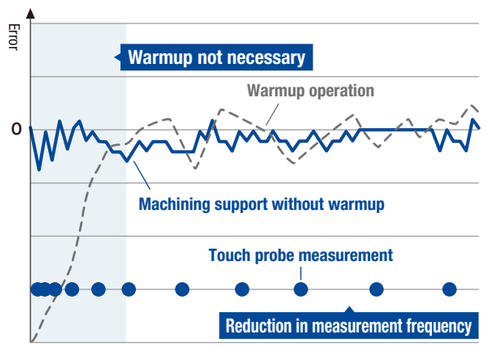
Optimized A/B-axes indexing feed rate

Based on the estimated A/B-axes inertia, the A/B-axes start with optimal acceleration until they reach the indexing feed rate.



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.



Reduced setup time with high-speed automatic door

The servo-controlled automatic door enables high-speed door opening and closing, shortening setup time.

Automatic door opening/closing time: 1.4 s / 1.6 s

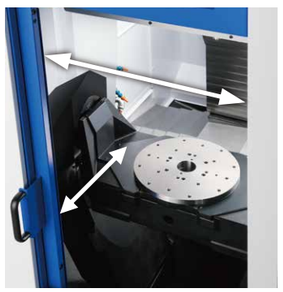
Pursuit of easy setup and workpiece change Enhanced operability with a controller equipped with support functions

High visibility and easy workpiece change

The operation panel is located on the side of the machine to improve visibility into the machining chamber, making setup easier. With a wider front door opening, the table can be tilted toward the operator to enhance accessibility, allowing them to change workpieces in a comfortable posture.

Operation panel on side of machine

Workpiece change from front of machine



Front door opening width
656 mm

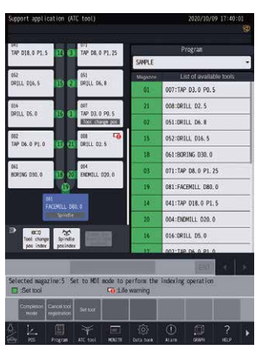
From front of machine to center of table
550 mm

A variety of convenient support functions

Intuitive operation is possible with apps and the 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. Streamlined operation is possible in setup, machining adjustment, production, and recovery processes, leading to improved work efficiency and operating rate.

Setup support

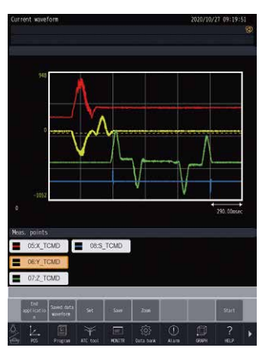
Equipped with functions to easily perform setup, such as an ATC tool app that enables all magazine tool settings to be performed on one screen, menu programming that enables you to create NC programs by following instructions on the screen, and an on-screen help function.



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

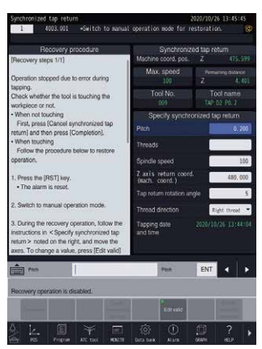
Production support

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

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.

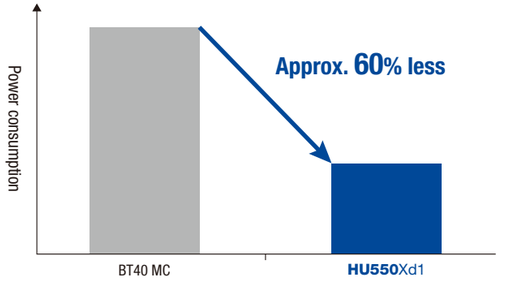
Wasted installation space reduction

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

Wasted energy reduction

Saving power

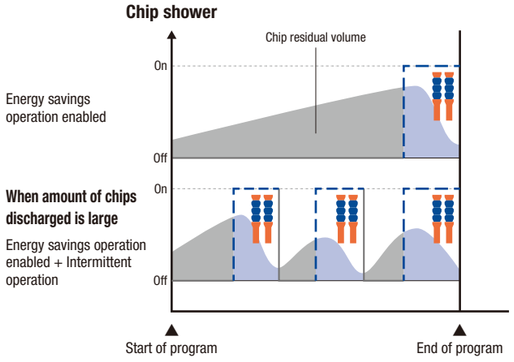
New functions, including chip shower energy savings operation, energy savings mode, and machining support without warmup, have been incorporated to significantly reduce power consumption, compared to the previous model.
Together with various energy-saving technologies, such as power regeneration and highly efficient spindle motors, power consumption is overwhelmingly low.



*Compared using a sample program created by Brother

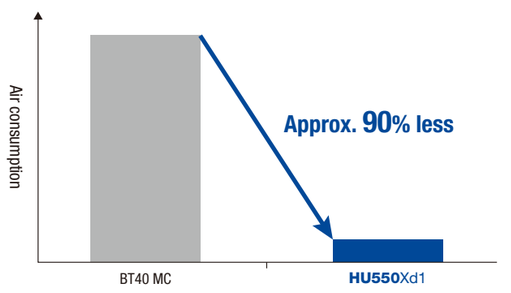
Chip shower energy savings operation

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

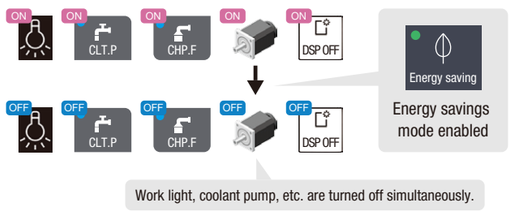
Air purge, spindle air blow, and other air-related functions have been reviewed and optimized to eliminate any waste. Compared to the previous model, air consumption is significantly reduced while maintaining reliability.



*Compared using a 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.

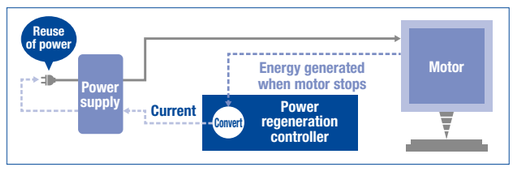


- Standby mode
- Coolant pump
- Chip shower
- Work light
- Display off

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.

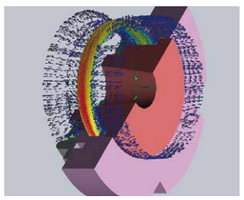
Highly efficient spindle motor

Energy-saving pump

LED work light

Air purge

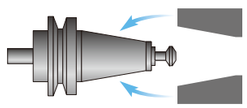
Reinforced the labyrinth structure on the spindle end face to reduce air consumption.



Air flowrate analysis of spindle end face

Spindle air blow

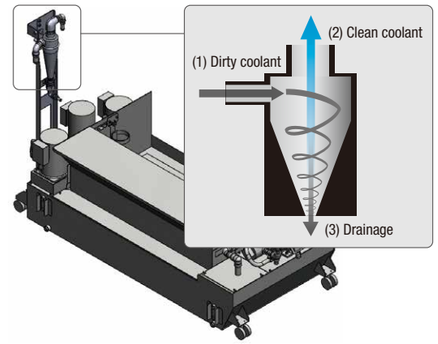
Optimized the air blow start/stop timing during tool change to reduce air consumption.



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

Chip conveyor

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

Coolant tank with chute

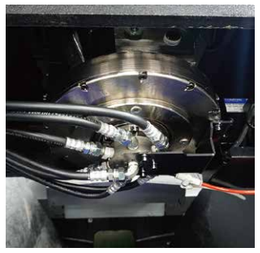
Coolant flows through the chute to evacuate chips. The chute can be separated from the coolant tank, making maintenance easier.

Coolant Through Spindle (CTS)

Can be selected from 3 MPa or 7 MPa. Pump and tank are not included.

Head coolant nozzle with head shower

Coolant can reliably be applied to the machining section as the tool and nozzles are set in place. In addition, a head shower is provided to remove chips from the head.



Rotary joint

Provided with 6+1 ports and built into the B-axis table, making jig mounting easier.
6 ports: Hydraulic (7 MPa) / Pneumatic (1 MPa)
1 port (center): Coolant (0.3 MPa)

Chip shower

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

Fixture shower valve unit

Consists of jig washing valves and pipes to the ceiling of the machine. Pipes 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.

Tool cleaning system

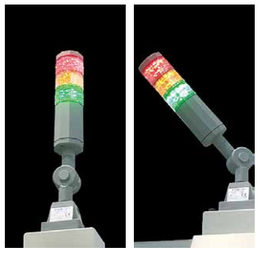
High discharge pressure and flowrate powerfully removes chips stuck to the holder. Two types are available: air-assisted type and direct pump type where coolant is discharged directly from the CTS pump.
* The direct pump type can only be selected for CTS specifications.

Side cover with transparent window

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

Work light (2 lamps)

LED lamps are used to extend lamp life and save energy. Locating two lamps at optimal positions helps work from the front or side of the machine.
*Work light (1 lamp) can be selected.



Signal light (1, 2, or 3 lamps)

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

- 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 local distributor.
- Leave 700 mm between machines as maintenance space.
- When exporting our machine, the machine is deemed to be included in the "applicable listed items" controlled by the Foreign Exchange and Foreign Trade 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, as a machine conforming to Row 2 of Appended Table 1 of Export Trade Control Order, a relocation detection device is installed on the machine depending on the destination country.
  After relocating the machine with the detection device, the machine is locked and any operation is temporarily impossible.
  Please inform your local distributor of machine relocation in advance and apply to perform the release operation of relocated machine.

*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).
*Dry machining may not be possible on 20,000 min^{-1} CTS machines for some workpiece materials. For detailed conditions, please contact our local distributor.

Automatic oil lubricator

Regularly applies oil to all lubricating points on the three axes.
*Automatic oil lubricator or automatic grease lubricator must be selected. Manual greasing is not available.

Automatic grease lubricator

Regularly applies grease to all lubricating points on the three axes.
*Automatic oil lubricator or automatic grease lubricator must be selected. Manual greasing is not available.

Automatic door with switch panel 10 holes

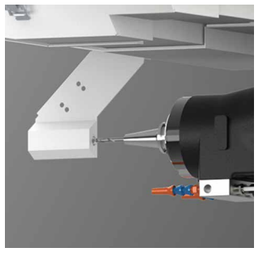
A motor-driven door is used, achieving smooth operation.

Area sensor

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

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.
*Refer to the interference drawings when choosing this option.

Rotary table switch

The A-axis or B-axis table can be operated from the front of the machine, making workpiece change easier.

Spindle override

Spindle speed can be changed without changing the program.

Front switch panel (10 holes)

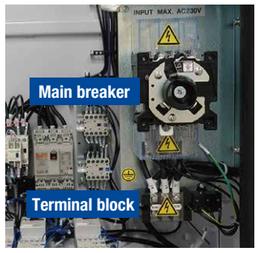
A 10-hole switch panel is available so that various switches, including automatic door open/close switches, can be located on the front of the machine.

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.



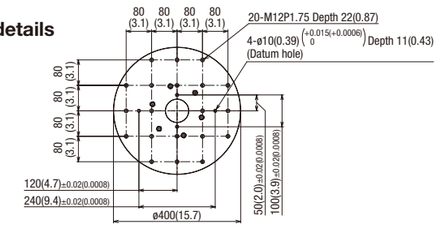
Power supply expansion 50A

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.

- Coolant tank
  1) Coolant tank with chute, 250L
  2) Coolant tank with chute, 250L for 1.5 MPa CTS pump with cyclone filter
  3) Chip conveyor tank, 350L
  4) Chip conveyor tank, 350L with oil skimmer
  5) Chip conveyor tank, 350L for 1.5 MPa CTS pump with cyclone filter
  6) Chip conveyor tank, 350L for 1.5 MPa CTS pump with cyclone filter and oil skimmer
- Coolant through spindle (CTS) piping, Max. 3 MPa
- Coolant through spindle (CTS) piping, Max. 7 MPa
- Head coolant nozzle with head shower
- Rotary joint, 6+1 ports
- Chip shower
- Tool cleaning system
- Fixture shower valve unit
- Cleaning gun
- Mesh basket for collecting chips
- Side cover with transparent window, one side
- Work light (1 or 2 lamps)
- Signal light (1, 2, or 3 lamps)
- Automatic oil lubricator
- Automatic grease lubricator
- Switch panel (8 holes or 10 holes)
- Automatic door with switch panel 10 holes
- Area sensor
- Front switch panel (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 switch (for A-axis, B-axis)
- RS232C 25-pin connector at control box
- Spindle override
- Master on circuit
- Data protection switch, key type
- Folding door (two-door)
- Parts name sticker set
- 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
- Interrupt type macro
- Rotary fixture offset
- Feature coordinates setting *1
- Involute interpolation
- Vibration adjustment

*1. Standard on the HU550Xd1-5AX.

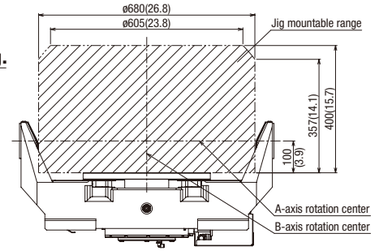
■Table details



■Jig area*1

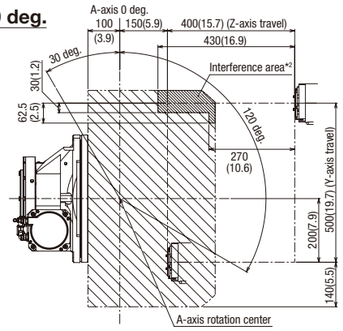
A-axis 0 deg.

(Front of machine)



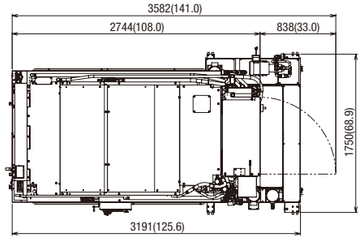
A-axis -90 deg.

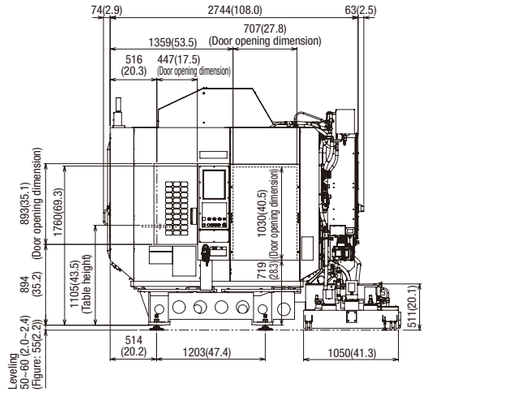
(Side of machine)



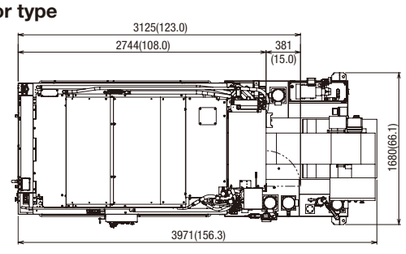
*1. Refer to the appearance and interference drawings provided by Brother when designing jigs or checking for interference.
*2. Interference area when changing largest tool (When tool dia. is 125 mm or tool length is 350 mm)

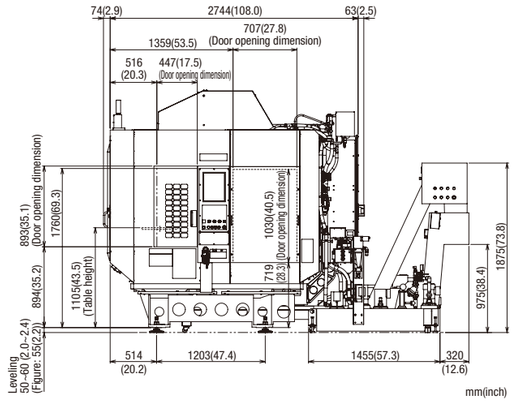
■Chute type

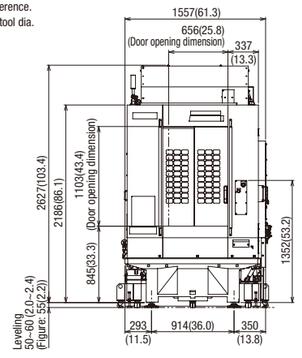




■Chip conveyor type







mm(inch)

NC unit specifications

<HU550Xd1>

CNC model	CNC-D00
Control axes	5 axes (X, Y, Z, A, B)
Simultaneously controlled axes (Positioning)	5 axes (X, Y, Z, A, B)
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. 0.0001 mm, 0.00001 inch, 0.0001 deg. (optional)
Max. programmable dimension	±999999.999 mm, ±99999.9999 inch ±999999.9999 mm, ±99999.99999 inch (optional)
Display	15-inch color LCD touch display
Memory capacity	500 Mbytes, 3 Gbytes (optional) (Total capacity of programs and data bank)
External communication	USB memory interface, Ethernet, RS232C (optional)
No. of registrable programs	4,000 (Total capacity of programs and data bank)
Program format	NC language *Conversational language not available

<HU550Xd1-5AX>

CNC model	CNC-D00v (DB)
Control axes	5 axes (X, Y, Z, A, B)
Simultaneously controlled axes (Positioning)	5 axes (X, Y, Z, A, B)
Simultaneously controlled axes (Interpolation)	Linear: 5 axes (X, Y, Z, 2 additional axis)
	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 programs and data bank)
External communication	USB memory interface, Ethernet, RS232C (optional)
No. of registrable programs	4,000 (Total capacity of programs and data bank)
Program format	NC language *Conversational 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.

Machine specifications

Item			HU550Xd1 HU550Xd1 RD *8	HU550Xd1-5AX HU550Xd1-5AX RD *8
CNC Unit			CNC-D00	CNC-D00v (DB)
Travels	X axis	mm(inch)	550 (21.7)	
	Y axis	mm(inch)	500 (19.7)	
	Z axis	mm(inch)	400 (15.7)	
	A axis	deg.	30~-120	
	B axis	deg.	360	
	Distance between table top and spindle center	mm(inch)	-100~400 (-3.9~15.7) (A axis 0 deg)	
	Distance between table center and spindle nose end	mm(inch)	150~550 (5.9~21.7) (A axis 0 deg)	
Table	Work area size	mm(inch)	ø400 (15.7)	
	Max. loading capacity	kg(lbs)	200 (441) *12	
	Max. table load inertia	kg·m²(lb·inch²)	4.1 (14,010) [8.8 (30,071) *10]	
Spindle	Spindle speed	min⁻¹	12,000min⁻¹ spec.: 1~12,000 10,000min⁻¹ high-torque spec. (optional): 1~10,000 20,000min⁻¹ spec. (optional): 1~20,000	
	Speed during tapping	min⁻¹	MAX. 6,000	
	Tapered hole		7/24 tapered No.30	
	BT dual contact spindle (BIG-PLUS)		Optional	
	Coolant Through Spindle (CTS)		Optional	
Feed rate	Rapid traverse rate (XYZ axes)	m/min(inch/min)	50 x 56 x 56 (1,969 x 2,205 x 2,205)	
	Cutting feed rate	mm/min(inch/min)	X, Y, Z axis: 1~30,000 (0.04~1,181) *7	
	Indexing feed rate (A and B)	min⁻¹	A axis: 50 B axis: 75 (60 *10)	
ATC unit	Tool shank type		MAS-BT30	
	Pull stud type *4		MAS-P30T-2	
	Tool storage capacity	pcs.	30	
	Max. tool length *1	mm(inch)	350 (13.7)	
	Max. tool diameter *1	mm(inch)	125 (4.9) *11	
	Max. tool weight *1	kg(lbs)	4.0 (8.8) / tool, <TOTAL TOOL WEIGHT: 50 (110.2)>	
	Tool selection method		Random shortcut method	
Tool change time *5	Tool To Tool	sec.	1.3	
	Chip To Chip	sec.	2.5	
Electric motor	Main spindle motor (10min/continuous) *2	kW	12,000min⁻¹ spec.: 10.1/7.0 10,000min⁻¹ high-torque spec. (optional): 12.8/9.2 20,000min⁻¹ spec. (optional): 7.4/5.1	
	Axis feed motor	kW	X,Z axis: 1.0 Y axis: 1.8 A axis: 1.35+1.35 B axis: 0.9	
Power source	Power supply		200 to 230 VAC ±10%, 3-phase, 50/60Hz±2%	
	Power capacity (continuous)	kVA	12,000min⁻¹ spec.: 9.5 10,000min⁻¹ high-torque spec. (optional): 10.4 20,000min⁻¹ spec.(optional): 9.5	
	Air supply Regular air pressure	MPa	0.4~0.6 (recommended value 0.5MPa *6)	
	Air supply Required flow	L/min	45	
Machine dimensions	Height	mm(inch)	2,682 (105.6)	
	Required floor space*9 [with control unit door open]	mm(inch)	1,557 x 2,744 [3,582] (61.3 x 108.0 [141.0])	
	Weight	kg(lbs)	3,150 (6,945)	
Accuracy *3	Accuracy of bidirectional axis positioning (ISO230-2:1988) (ISO230-2:2014)		X, Y, Z axis: 0.006~0.020 mm (0.00024~0.00079 inch) A, B axis: 28 sec or less	
	Repeatability of bidirectional axis positioning (ISO230-2:2014)		X, Y, Z axis: Less than 0.004 mm (0.00016 inch) A, B axis: 16 sec or less	
Standard accessories			Instruction Manual (DVD 1 set), leveling bolts (4 pcs.), leveling plates (4 pcs.)	

*1. Maximum tool length, diameter, and weight are subject to limitations depending on the spindle speed, geometry, or center of gravity. The figures provided are for reference only. For details, please contact our local distributor. *2. Spindle motor output differs depending on the spindle speed. *3. Measured in compliance with ISO standards and Brother standards. For details, please contact our local distributor. *4. Brother specifications apply to the pull studs for CTS. *5. Measured in compliance with JIS B6336-9 and MAS011-1987. *6. Regular air pressure varies depending on the machine specifications, machining program details, or use of peripheral equipment. Set the pressure higher than the recommended value. *7. Value when using high accuracy mode B *8. 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. *9. Dimensions not including the coolant tank and chip conveyor *10. Value in high inertia mode. Parameter setting needs to be changed. *11. When attaching an adjacent tool, the total diameter of a tool and its adjacent tool must be less than 130 mm.

NC functions

Operation	Dry run		<Optional>		<Optional>
	Machine lock		High accuracy mode BII		CC-Link, master station
	Program restart		(Look-ahead 1,000 blocks,		CC-Link, remote device station
	Rapid traverse override		smooth path offset)		PROFIBUS-DP, slave
	Cutting feed override	Monitoring	Machining load monitoring		DeviceNet, slave
	Background editing		ATC tool monitoring		PROFINET, slave
	Screen shot		Overload prediction		EtherNet/IP, slave
	Operation level		Waveform display / Waveform	Energy saving	Automatic power off
	External input signal key		output to memory card		Standby mode
	Shortcut keys		Automatic thermal distortion		Automatic coolant off
	<Optional>		compensation (X, Y, and Z axes)		Automatic work light off
	Spindle override		Production performance display		Chip shower off delay
Programming	Absolute / Incremental		Tool life / Spare tool		Chip shower energy savings operation
	Inch / Metric		Stuck chips detection function		Energy savings mode
	Coordinate system setting	Maintenance	Tap return function	Support apps	Adjust machine parameters
	Corner C / Corner R		Status log		ATC tool
	Rotational transformation		Alarm log		Tool life
	Synchronized tap		Operation log		Waveform display
	Subprogram		Maintenance notice		Production performance
	Graphic display		Motor insulation resistance		Energy saving/Power consumption
Measurement	Automatic workpiece measurement *1		measurement		Recovery support
	Tool length measurement		Tool washing filter with filter		Inspection
High speed and high accuracy	Machining parameter adjustment		clogging detection		PLC
	High-accuracy mode AIII		Battery-free encoder		Machining support without warmup
	High-accuracy mode BI		Brake load test		Software control panel
	(look-ahead 160 blocks)	Automatic / Network	Computer remote	Accessories	File viewer
	Backlash compensation		OPC UA		Notebook
	Tool center point control *2		Auto notification		Calculator
	(look-ahead 1,000 blocks)		Built-in PLC (LD/ST/FBD)		Register shortcut

NC language functions	Display off
	Menu programming
	Local coordinate system
	Expanded workpiece coordinate system
	One-way positioning
	Inverse time feed
	Programmable data input
	Tool length compensation
	Cutter compensation
	Scaling
	Mirror image
	External sub program call
	Macro
	Tape operation / FTP load operation
	Multiple skip function
	<Optional>
	Submicron command *3
	Interrupt type macro
	Rotary fixture offset
	Feature coordinates setting *3
	Involute interpolation
	Vibration support

*1. Measuring instrument must be prepared by users. *2. Available only on the HU550Xd1-5AX. *3. Standard on the HU550Xd1-5AX.

Global Service Sites

Brother Technology Center Chicago
BROTHER INTERNATIONAL CORP.
2200 North Stonington Avenue, Suite 270, Hoffman Estates, IL 60169, U.S.A.
PHONE:(1)224-653-8415 FAX:(1)224-653-8821

Brother Technology Center Frankfurt
BROTHER INTERNATIONALE INDUSTRIEMASCHINEN GmbH
Hoechster Str.94, 65835 Liederbach, Germany
PHONE:(49)69-977-6708-0 FAX:(49)69-977-6708-80

Brother Technology Center Bengaluru
BROTHER MACHINERY INDIA PVT LTD.
SB-111-112, 1st Stage, 2nd Cross, Peenya Indl Estate, Bengaluru - 560058 Karnataka, India
PHONE:(91)80-4705-3355

Brother Technology Center Pune
BROTHER MACHINERY INDIA PVT LTD.
Plot No. J 20, M.I.D.C, Bhosari, Pimpri Chinchwad, Pune, Maharashtra, India
PHONE:(91)020-69148000

Brother Technology Center Dongguan
BROTHER MACHINERY SHANGHAI LTD.
Room 103, Building 1, No.2 Nanbo Road,
Songshan Lake District, Dongguan City, Guangdong Province, China
PHONE:(86)769-2238-1505 FAX:(86)769-2238-1506

Brother Technology Center Ningbo
BROTHER MACHINERY SHANGHAI LTD.
1F, Building 1, No. 102, Hongtang South Road West Section, Jiangbei District, Ningbo City, Zhejiang Province, China
PHONE:(86)574-87781232 FAX:(86)574-88139792

Brother Technology Center Tianjing
BROTHER MACHINERY SHANGHAI LTD.
Room 102, Door 1, Building 2, (Xinhua International University Science and Technology Park)
No.1 Huixue Road, Jingwu Town, Xiqing District, Tianjin, China
PHONE:(86)22-5803-2395

Brother Technology Center Queretaro
BROTHER INTERNATIONAL DE MÉXICO, S.A. DE C.V.
Calle 1 No.310 Int 15, Zona Industrial Jurica, Parque Industrial Jurica,
Queretaro, QRO C.P. 76100 México
PHONE:(52)55-8503-8760 FAX:(52)442-483-2667

Brother Technology Center Bangkok
BROTHER COMMERCIAL (THAILAND) LTD.
317 Pattanakarn Road, Pravet Sub-District, Pravet District, Bangkok 10250, Thailand
PHONE:(66)2321-5910 FAX:(66)2321-5913

Brother Technology Center Gurugram
BROTHER MACHINERY INDIA PVT LTD.
Plot No. 60, Sector 34, HSIIDC, Gurugram, Haryana 122001, India
PHONE:(91)0124-4449900

Brother Technology Center Shanghai
BROTHER MACHINERY SHANGHAI LTD.
Unit 01, 5/F., No.799, West Tianshan Rd., ChangNing District Shanghai 200335, China
PHONE:(86)21-2225-6666 FAX:(86)21-2225-6688

Brother Technology Center Chongqing
BROTHER MACHINERY SHANGHAI LTD.
Room 30, 31, NO.104 Cuibai Road, Dadukou District, Chongqing Province, 400084, China
PHONE:(86)23-6865-5600 FAX:(86)23-6865-5560

Brother Technology Center Nanjing
BROTHER MACHINERY SHANGHAI LTD.
Room 106, Building 02, Tian An Cyber Park, No.36, Yongfeng Avenue, Qinhuai District,
Nanjing City, Jiangsu Province, China
PHONE:(86)25-87185503 FAX:(86)25-8718-5503

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BROTHER INDUSTRIES, LTD.

Machinery Business Division

1-5, Kitajizoyama, Noda-cho, Kariya-shi, Aichi-ken 448-0803, Japan
https://www.brother.co.jp

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