If we can be of any assistant or if you have any questions, please don't hesitate to contact us at (847) 360-9170.

You may also visit our website at
https://www.diecastmachinery.com

Thank you!

Item			M140X1
CNC Unit			CNC-C00
Travels	X axis	mm(inch)	200 (7.9)
	Y axis	mm(inch)	440 (17.3)
	Z axis	mm(inch)	305 (12.0)
	A axis	(deg.)	5 ～ −95
	C axis	(deg.)	360
Table	Work area size	mm(inch)	D140 (D5.5)
	Shape of table top		In compliance with table nose No.5 of ISO702-4 (JISB6109-2)
	Max.loading capacity (uniform load)	kg(lbs)	40 (88.2)
	Maximum table load inertia	kg•m²(lb•inch²)	0.32 (1093)
Spindle	Spindle speed	min⁻¹	10～10,000
	Speed during tapping	min⁻¹	MAX. 6,000
	Tapered hole		7/24 tapered No.30
	Coolant Through Spindle(CTS)		Optional
Turning spindle	Max. spindle speed	min⁻¹	2,000
Feed rate	Rapid traverse rate(XYZ-area)	m/min(inch/min)	50 × 50 × 50 (1,969 × 1,969 × 1,969)
	Cutting feed rate	mm/min(inch/min)	X,Y axis：1 ～ 10,000 (0.04 ～ 394) Z axis：1 ～ 20,000 (0.04 ～ 787)
	Indexing feedrate (A and C)	min⁻¹	A axis 60 C axis 200
ATC unit	Tool shank type		MAS-BT30
	Pull stad type *4		MAS-P30T-2
	Tool storage capacity	pcs.	22
	Max. tool length	mm(inch)	200 (7.9)
	Max. tool diameter	mm(inch)	80 (3.1)
	Max. tool weight *1	kg(lbs)	3 (6.6)
	Tool selection method		Random shortcut method
Tool change time *5	Tool To Tool	sec.	0.9
	Chip To Chip	sec.	1.4
Electric motor	Main spindle motor (10min/continuous)*2	kW	10.1／6.7
	Axis feed motor	kW	X,Y axis 1.0 Z axis 1.8 A axis 1.8
	Turning spindle motor	kW	4.2
Power source	Power supply		AC V±10%, 50/60Hz±1Hz
	Power capacity(continuous)	kVA	9.5
	Air supply: Regular air pressure	MPa	0.4～0.6 (recommended value : 0.5MPa) *6
	Air supply: Required flow	L/min	130
Machining dimensions	Height	mm(inch)	2513 (98.9)
	Required floor space	mm(inch)	1,280 × 3,641 (50.4 × 144.7)[including chip conveyor]
	Weight	kg(lbs)	2,370 (5,226)
Accuracy *3	Accuracy of bidirectional axis positioning(ISO230-2:2006)	mm(inch)	0.006～0.020 (0.00024～0.00079) [X,Y,Z] 28 sec or less [A,C]
	Repeatability of bidirectional axis positioning(ISO230-2:2006)	mm(inch)	Less than 0.004 (0.00016) [X,Y,Z] 16 sec or less [A,C]
Standard accessories			Instruction Manual (1 set), anchor bolts (4 pcs.), leveling bolts (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.
*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.

NC unit specifications

CNC model	CNC-C00	
Control axes	5 axes(X,Y,Z,A,C)	
Simultaneously controlled axes	Positioning	5 axes(X,Y,Z,A,C)
	Interpolation	Linear：4 axes(X,Y,Z,C)
		Circular：2 axes Helical/conical：3 axes(X,Y,Z)
Least input increment	0.001mm, 0.0001inch, 0.001 deg.	
Max.programmable dimension	±9999.999mm, ±999.9999inch	
Display	12.1-inch color LCD	
Memory capacity	Approx.100 Mbytes(Total capacity of program and data bank)	
External communication	USB memory interface, Ethernet, RS232C 1ch	
No.of registrable programs	4,000 (Total capacity of program and data bank)	
Program format	NC language * Conversation language not available.	

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

Standard NC functions

- Absolute / incremental
- Inch / metric
- Corner C / Corner R
- Rotational transformation
- Synchronized tap
- Coordinate system setting
- Dry run
- Restart
- Backlash compensation
- Pitch error compensation
- Rapid traverse override
- Cutting feed override
- Alarm history(1,000 pieces)
- Startus log
- Machine lock
- Computer remote
- Built-in PLC
- Motor insulation resistance measurement
- Operation log
- High accuracy mode AⅢ
- Tool length measurement
- Tool life management / spare tool
- Background editing
- Graphic display
- Subprogram
- Herical / conical interpolation
- Tool washing filter with filter clogging detection
- Automatic power off (energy saving function)
- Servomotor off standby mode (energy saving function)
- Chip shower off delay
- Automatic coolant off (energy saving function)
- Automatic work light off (energy saving function)
- Heat expansion compensation systemⅡ(X,Y,Z axes)
- Tap return function
- Automatic workpiece measurement *1
- Waveform display
- Operation level
- External input signal key
- Expanded workpice coordinate system
- Scaling
- Mirror image
- Menu programming
- Program compensation
- Tool length compensation
- Cutter compensation
- Macro function
- Local coordinate system
- One-way positioning
- Opeation in tape mode

(Turning function)

- Constant peripheral speed control
- Feed per revolution control
- Tool position compensation XYZ
- Nose R compensation

Optional NC functions

- Memory expansion (Approx. 500 Mbytes)
- Spindle override
- High accuracy mode BⅡ(look-ahead 200 blocks, smooth path offset)
- Interrupt type macro

*1 Measuring instrument needs to be prepared by users.

Global Service Sites

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

U. S. A.

BROTHER INTERNATIONAL CORP.
MACHINE TOOLS DIV. TECHNICAL CENTER
2200 North Stonington Avenue, Suite 270, Hoffman Estates,
IL 60169, U.S.A.
PHONE:(1)224-653-8415 FAX:(1)224-653-8821

India

BROTHER INTERNATIONAL (INDIA) PVT LTD.
BANGALORE TECHNICAL CENTER
Park Landing, Ground Floor, Municipal No.5AC-709, 2nd Block,
HRBR Extension,
Bangalore - 560 043 Karnataka, India
PHONE:(91)80-6405-7999

Germany

BROTHER INTERNATIONALE INDUSTRIEMASCHINEN GmbH
MACHINE TOOLS DIVISION FRANKFURT TECHNICAL CENTER
Hoechster Str.94, 65835 Liederbach, Germany
PHONE:(49)69-977-6708-0 FAX:(49)69-977-6708-80

China

BROTHER MACHINERY (SHANGHAI) LTD.
(MACHINE TOOLS DIV.) SHANGHAI TECHNICAL CENTER
3F, Haiyi Commercial bldg. No.310 TianShan Road, ChangNing
District, Shanghai 200336, China
PHONE:(86)21-3251-9837 FAX:(86)21-3251-9839

Thailand

BROTHER COMMERCIAL THAILAND LTD.
MACHINE TOOLS TECHNICAL CENTER
1232 Rama 9 Road, Suanluang Sub-District, Suanluang District,
Bangkok 10250, Thailand
PHONE:(66)2-374-6447 FAX:(66)2-374-2706

China

BROTHER MACHINERY (SHANGHAI) LTD.
DONGGUAN BRANCH (MACHINE TOOLS DIV.)
DONGGUAN TECHNICAL CENTER
1F, No.45 North Road Lianfeng, Xianxi Village, Chang'an Town,
Dongguan,Guangdong Province, China
PHONE:(86)769-2238-1505 FAX:(86)769-2238-1506

Figures in brackets ( ) are the country codes.

Specifications may be subject to change without any notice.

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

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Compact Machining Center
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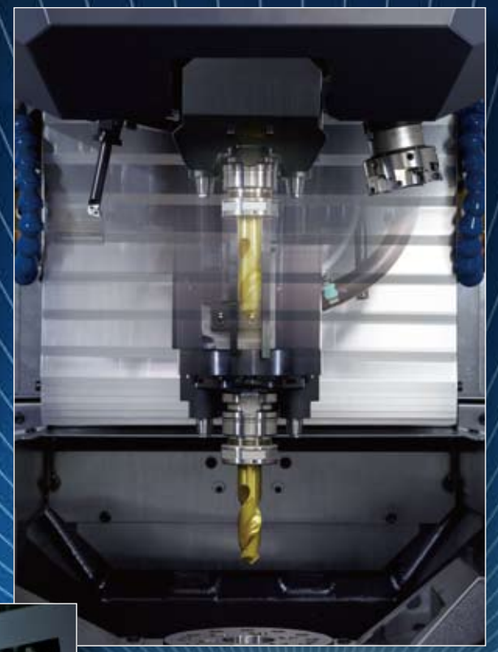
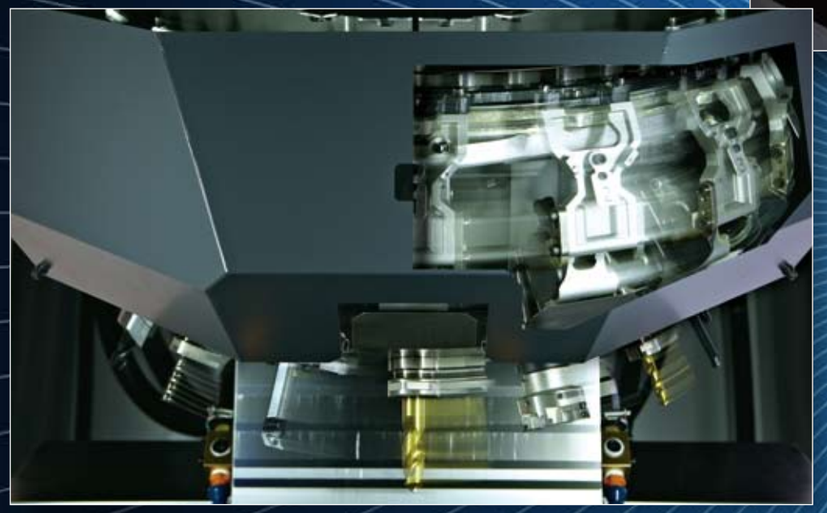
NEW

M140X1



New Choice for Process Integration



“Desire to attain more efficient production”

This strong request from production sites has taken shape.

“Enabling one machine to perform both turning and milling”

Based on the process integration concept,

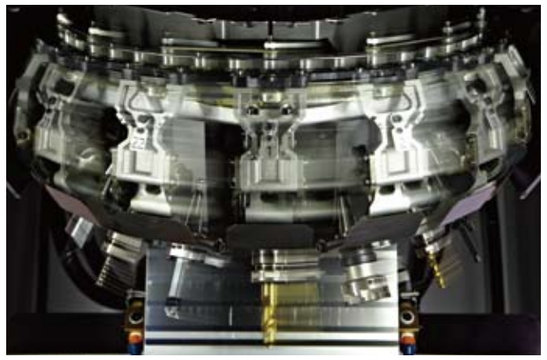
a multi-tasking machine has been developed to strengthen production sites.

SPEEDIO™ M140X1

Basic specifications

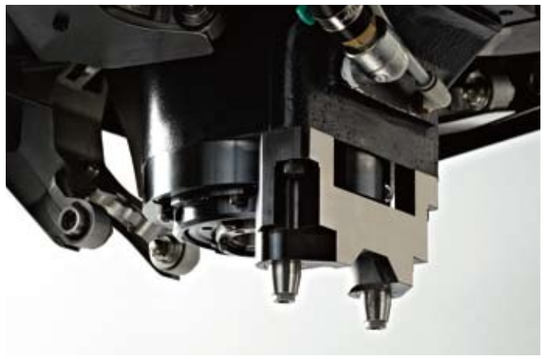
Max. spindle speed (min^{-1})	10,000
Max. turning spindle speed (min^{-1})	2,000
Travel amount (X Y Z) (mm)	X 200 Y 440 Z 305
Travel amount (A C)(deg.)	A 5 ～ −95 C 360
Tool storage capacity (pcs.)	22
Rapid traverse rate (X Y Z area)(m/min)	X 50 Y 50 Z 50
Indexing feedrate (A C) (min^{-1})	A 60 C 200
Required floor space (mm)	1,280 × 3,641
Coolant Thrugh Spindle (CTS)	Option

Newly developed ATC magazine



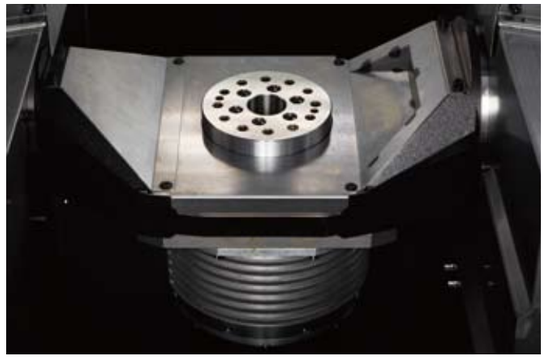
High-speed tool change is possible due to the ATC magazine being mounted around the column. Up to 22 tools can be stored.

Double plunger lock



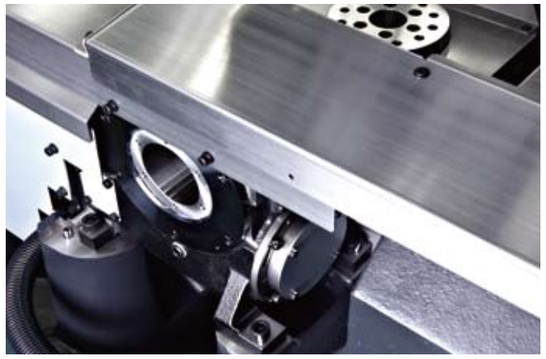
A double plunger lock is used to secure the turning tool to the tool spindle, achieving stable machining.

High-performance built-in DD motor



The newly developed high-speed and high-output built-in DD motor produces more efficient turning. The maximum speed is 2,000 min^{-1}.

Roller cam index unit

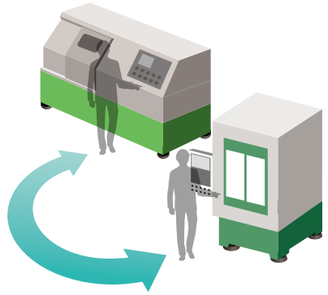


A roller drive mechanism is used for the tilt axis (A-axis). As the index unit is clampless, high-speed and highly accurate indexing is possible.

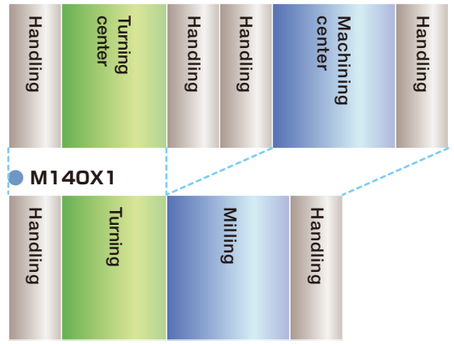
Process integration in one machine

Workpieces previously machined using a turning center and a machining center can now be machined on one machine with machining processes integrated.
This reduces handling time between machines.

● Turning center + Machining center　　● M140X1



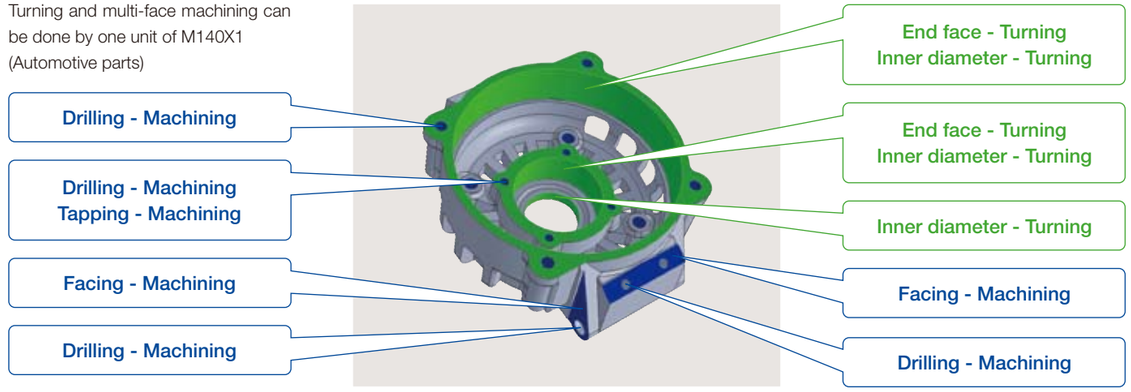
● Turning center + Machining center



● M140X1

■ Example of process integration

Turning and multi-face machining can be done by one unit of M140X1 (Automotive parts)



Advantages

Integration of the turning process and milling process brings various advantages, and contributes to high-efficiency machining expected by customers.

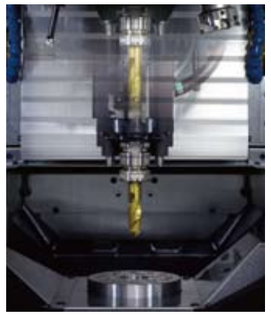
High accuracy through one-time chucking
As multiple processes can be performed through one-time chucking, workpiece attachment errors are eliminated, improving machining accuracy.

Reduction of handling time
As turning and milling can be performed on one machine, there is no setup change between machines.

Improving line balance
Machining processes can be divided more flexibly, improving the line balance.

High-efficiency machining

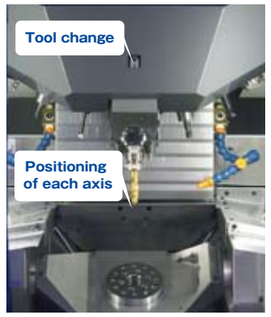
Fast acceleration/deceleration spindle



Using a fast acceleration/deceleration spindle motor and highly-responsive servo control achieves quicker starting and stopping of the spindle.

Start / stop time : 0.2s

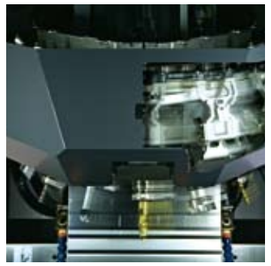
Simultaneous operation



Wasted time is further reduced by positioning the X/Y/Z axes and A/C axes simultaneously with tool changes.

Reduction in non-cutting time

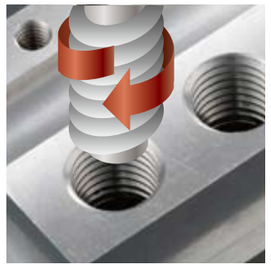
High-speed tool change (nonstop ATC)



High-speed tool change achieved by optimal control for spindle start/stop, Z-axis up/down, and magazine operation.

Chip to Chip : 1.4s

High-speed synchronized tapping



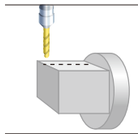
Original synchronized tapping control enables high-accuracy tapping at the fastest level in the world.

Peripheral velocity : 377m/min

Milling capabilities

As the spindle torque is high in the medium- and high-speed range, the machine fully demonstrates its capabilities in high-speed, high-efficiency machining for aluminum or steel.

Max. torque : 40Nm Max. output : 18.9kW



	ADC	
	Drill Tool diameter mm (inch) × Feed mm (inch)/rev	Tap Tool diameter mm (inch) × Pitch mm (inch)
	D 22 × 0.2	M22 × 2.5

* Values measured when the A-axis is at 90 degrees, X-axis is at the stroke center, and Y-axis is at the stroke end.

Turning capabilities

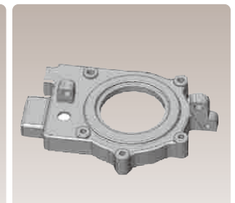
The machine provides excellent turning capabilities due to the high-output turning spindle and the double plunger lock for the turning tool. The time taken for the turning spindle to reach the maximum speed of 2,000 min^{-1} is 0.3 seconds or less, leading to reduction in machining time.

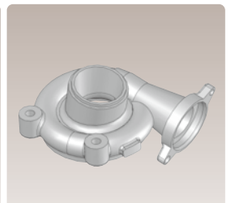
Max. torque : 55Nm Max. output : 8.7kW

Mass production parts requiring turning and milling

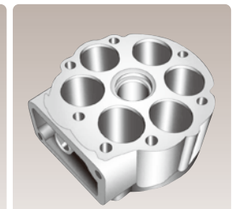
Processes can be integrated for mass production parts that are currently machined using a turning center and a machining center. Our machine eliminates any imbalance between the turning cycle and milling cycle, and improves machining accuracy through one-time chucking.

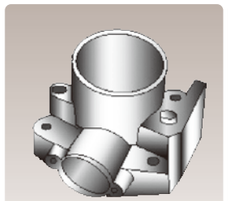

Oil pump body

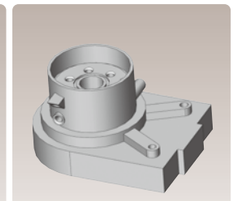

Pump housing

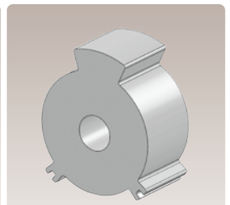

Turbine housing

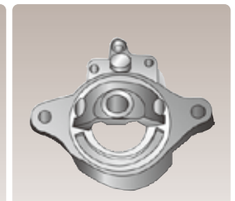

Rear housing

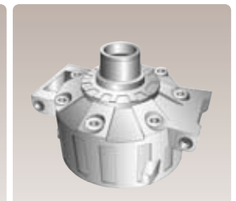

Cylinder brock

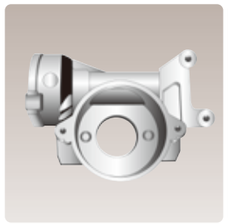

Throttle body

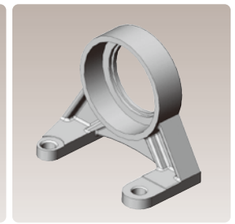

Bracket

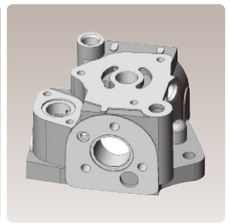

VTC vane

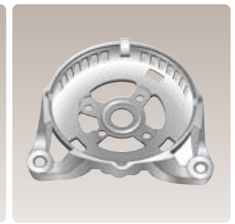

Starter housing

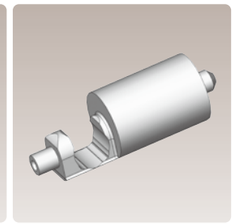

Front housing


Gear housing

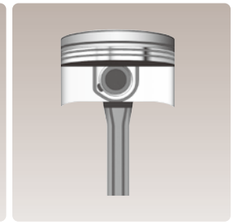

Bearing support

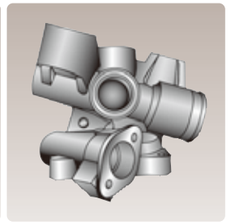

Pump housing

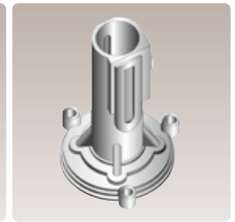

Front cover

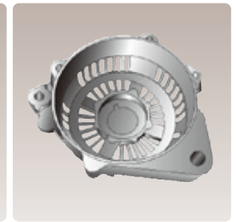

Piston


Drive


Engine piston


EPS housing


Column cover


Alternator

Pursuit of visibility and accessibility

A convex shape is used for the front door to improve accessibility when the door is open.

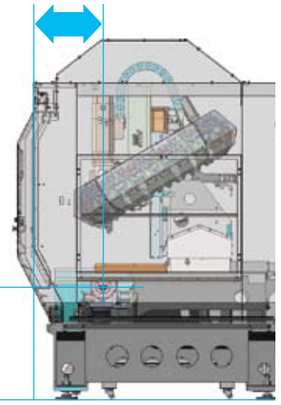
Door opening width
555mm

The A-axis tilts forward to improve visibility from the front of the machine.

The turning spindle table is at a position where the operator can change workpieces comfortably in a natural posture.

From front opening to table center
490mm

From floor to table
795mm



Advanced Usability

The machine is equipped with the new CNC-C00 controller, greatly improving processing capabilities and enhancing functions and usability.

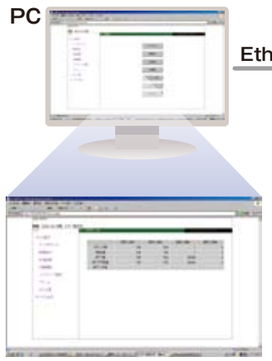
Operability

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

Shortcut keys

Network function

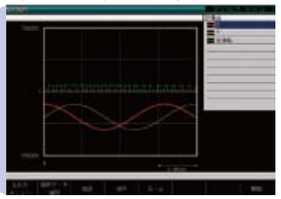
High capacity program data can be transferred via Ethernet at high speed. The simple production monitoring function is also available allowing you to monitor the machine's status.



(Production monitor screen)

Machining support functions

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



Maintenance functions

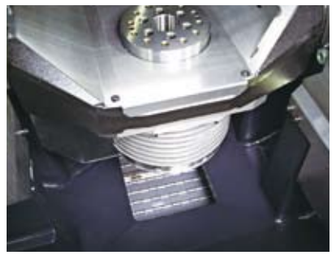
Equipped with motor insulation resistance measurement, operation log, and maintenance notice function.

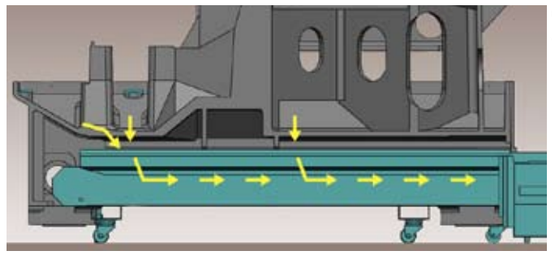
System capacity

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

Reliability ～Center trough structure～

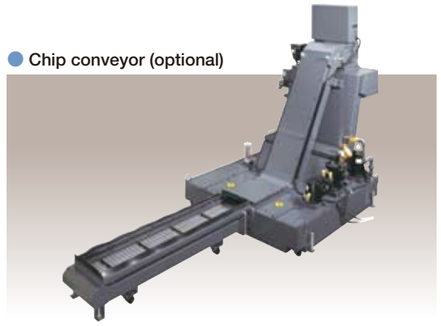
Considering chips generated by turning, a center trough structure is used so that chips are caught directly below the turning spindle table to improve discharging efficiency.





Chips are reliably discharged via the tilted base (Max. 30°).

● Chip conveyor (optional)



A two-step structure (hinged plate and scrapper) is used, enabling discharge of chips in a variety of sizes and shapes.

● Tool washing (optional)

Powerful spray removes chips stuck to the holder and double plunger.

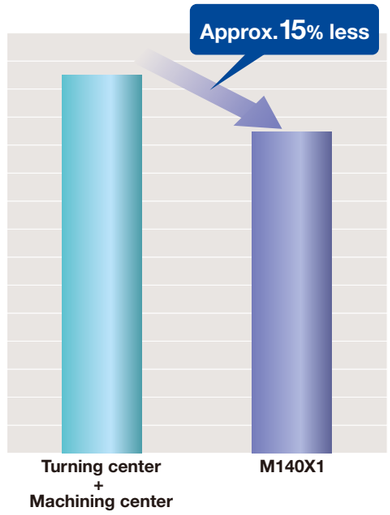
● Chip shower (optional)

Enhances the effect of chip discharge by orienting the nozzles as desired from the upper section of the machine.

Environmental performance ～Low power consumption～

Low power consumption is achieved by using a high-efficiency spindle motor and energy saving pump, and providing a power regeneration system and energy-saving functions.

■ **Power consumption per workpiece**



* Comparison of calculation based on the time taken to produce one alternator

LED type work light (Optional)

Energy saving pump

An earth-friendly machine equipped with a variety of energy-saving functions

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

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

Automatic work light off ····· Turns off the work light when the preset time elapses.

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

Coolant Through Spindle (CTS)

1.5 MPa CTS used for BT spindle.
* Please consult Brother for use of 3 MPa CTS.

Manual pulse generator

Manual pulse generator with a cable makes operation through the maintenance window easier.
* A-axis cannot be used.

Automatic grease lubricator

Regularly greases all greasing points on the three axes.
* Manual greasing applies to the standard specification model.

LED type work light (1or2 lamps)

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

Tool washing (air-assisted type)

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

Tool breakage detector (touch type)

A touch switch type tool breakage detector is used.

Indicator light (1,2, or 3 lamps)

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

Side cover (transparent board type)

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

Automatic door (motor-driven)

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

Optional Specifications

- Coolant unit
  - ①Two-step chip conveyor
- Coolant Through Spindle (CTS)
- Tool washing (air-assisted type)
- Tool breakage detector (touch type)
- Chip shower
- Cleaning gun
- Jig shower valve unit
- Automatic grease lubricator
- LED type work light (1 or 2 lamps)
- Indicator light (1, 2, or 3 lamps)
- Automatic door (motor-driven)
- Specified color
- Manual pulse generator
- Spindle override
- Grip cover
- Side cover (transparent board type)
- Side door (with transparent window, right side only)
- Switch panel (6 holes, 10 holes)
- RS232C (25 pin) for control box
- Memory expansion (approx. 500 Mbytes)
- High accuracy mode B II
  (look-ahead 200 blocks, smooth path offset)
- Expansion I/O board (EXIO board)
  - ①EXIO board assembly
  - ②Additional EXIO board assembly
- Interrupt type macro
- Fieldbus
  - ①CC-Link (remote device station)
  - ②PROFIBUS DP (slave)
  - ③DeviceNet (slave)
- PLC programming software
  (for Windows® XP, Vista, and 7)

Windows® is a trademark or registered trademark of Microsoft Corporationin the United States and/or other countries.
* Please contact your Brother dealer for details.

Outline Drawing

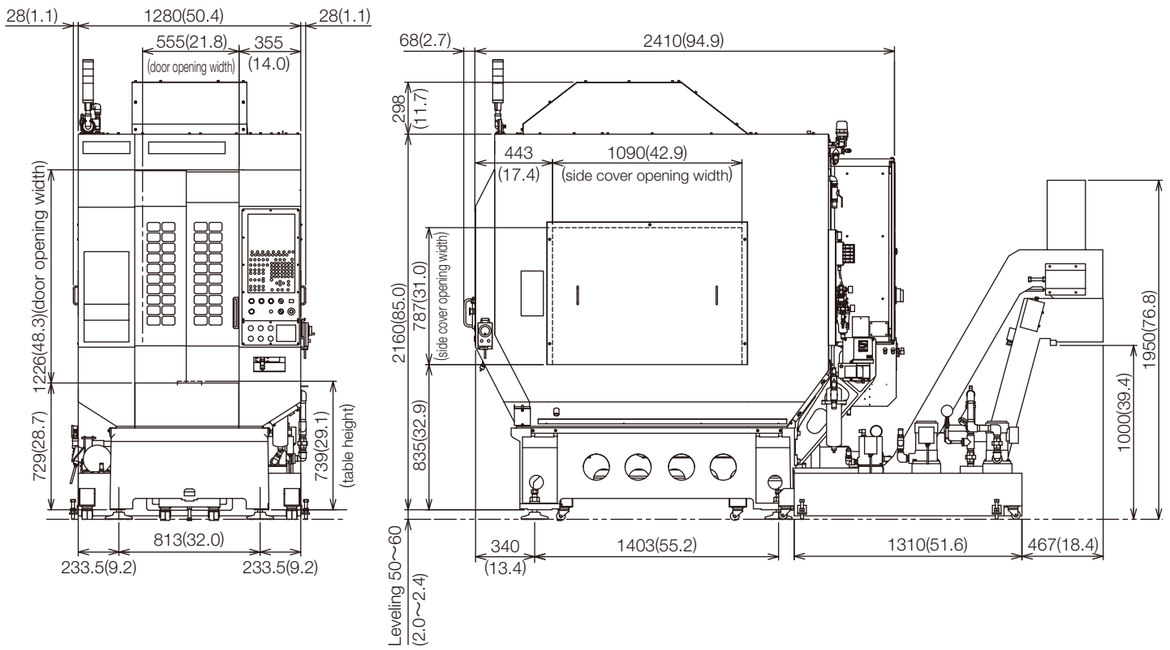
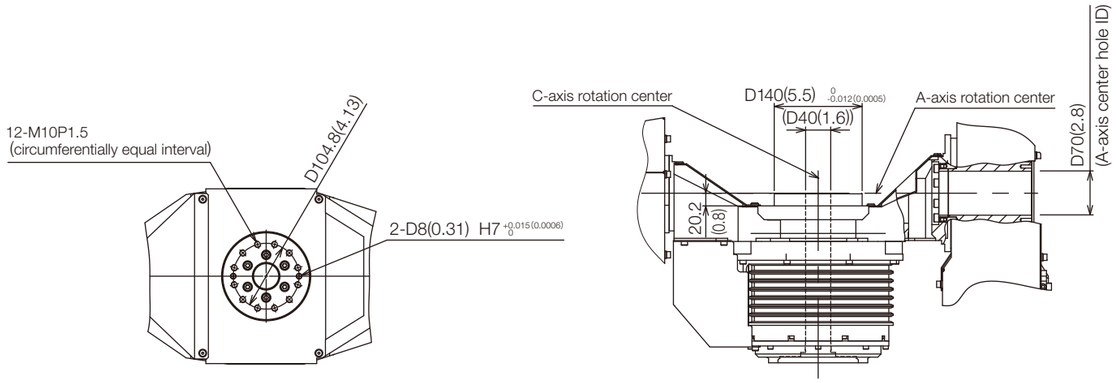


Table details



mm(inch)

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