



At your side.  
**brother**®

CNC TAPPING CENTER®  
**TC-32B**


|    |
|----|
| QT |
| FT |



Enlarged Machining Areas



Higher Productivity



Enhanced Reliability



Operation Friendly

# Latest No.30 Spindle Machine that Breaks the Stereotype and Reaches the Ultimate Level in Fast, High-Quality Machining

The TC-32B is our new unbeatable flagship machine, standing at the front of tapping center development. The TC-32B breaks the stereotype of machining with No. 30 spindle machines and provides users from a variety of fields with higher productivity for a wider range of applications, and is ideal in particular for diversified automobile parts machining. Brother is continually developing the capabilities of our tapping centers, so you can depend on our solutions.

## Four Main Features of TC-32B

1 Enlarged Machining Areas

2 Higher Productivity

3 Enhanced Reliability

4 Operation Friendly

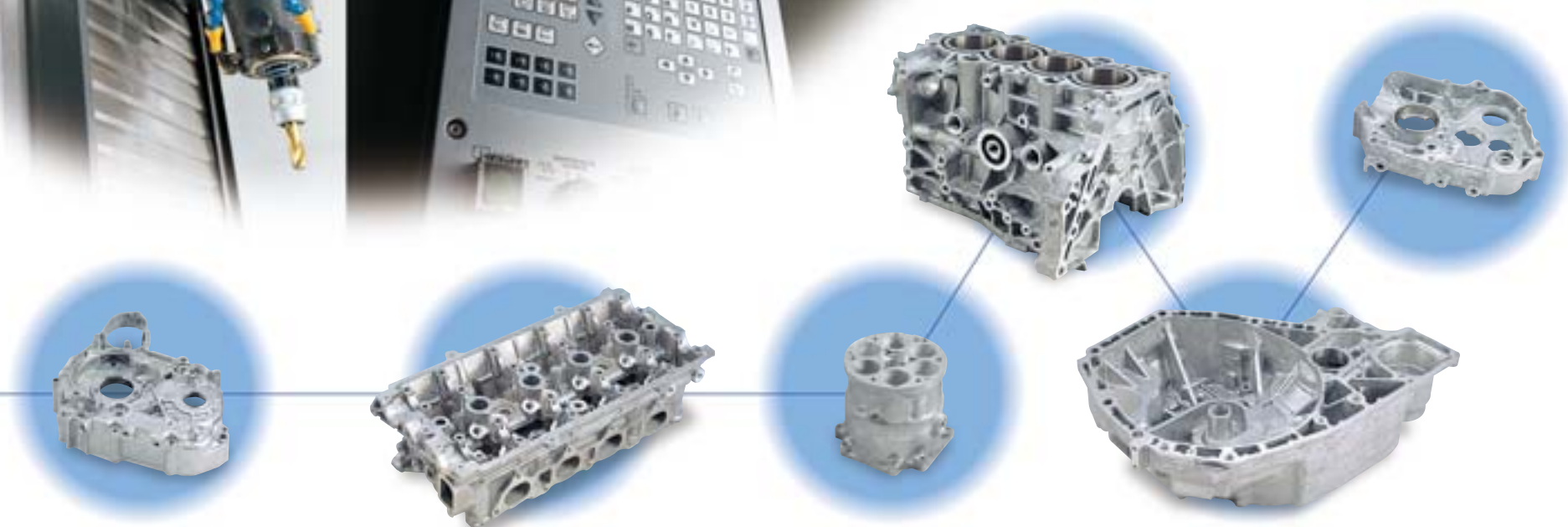
### TC-32B FT



Scheduled to be available in December 2003



### TC-32B QT

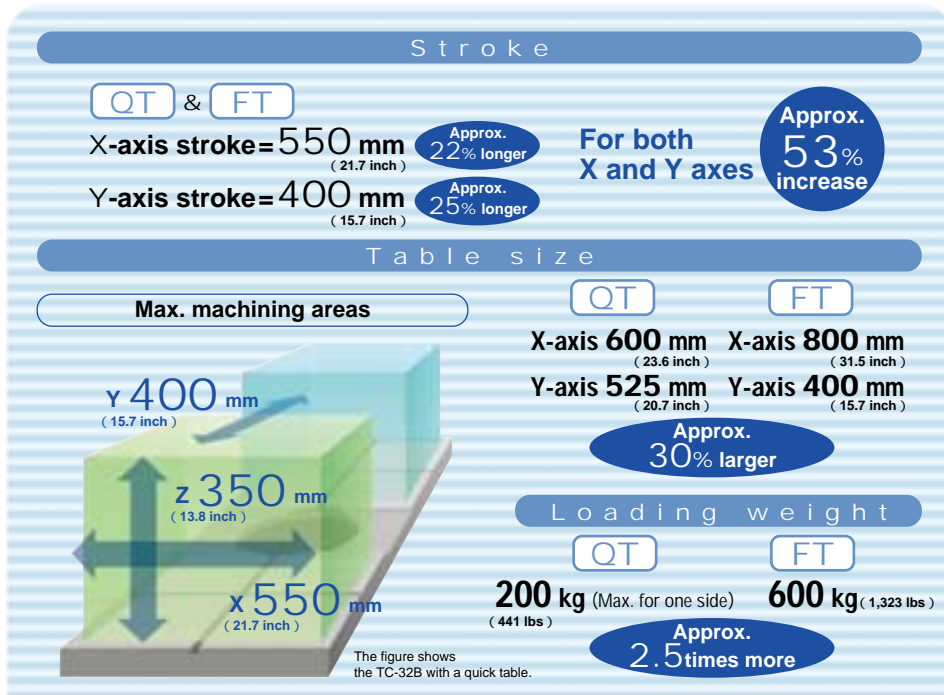


# 1

## Enlarged Machining Areas



New quick table for large workpieces and reliable multiple parts machining. Table rigidity has also been increased significantly.



# Higher Productivity **2**

## Fast, Powerful, Efficient Machining for High Cost Performance

Rapid feed rate

**70 m/min**  
( 2,756 inch/min )

Z-axis acceleration

**1.5G**

X-axis acceleration

**1.2G**

Rapid feed rate increased to enhance acceleration, resulting in a vast improvement in productivity. The tool breakage detector (optional) is now located in the magazine, eliminating any affect on the machining cycle time.

### Feed

| Previous models                           | TC-32B                                    |
|---|---|
| Rapid feed rate 50 m/min (1,969 inch/min) | Rapid feed rate 70 m/min (2,756 inch/min) |
| X-axis time constant 0.8G                 | X-axis time constant 1.2G                 |
| Y-axis time constant 0.8G                 | Y-axis time constant 0.9G                 |
| Z-axis time constant 1.0G                 | Z-axis time constant 1.5G                 |

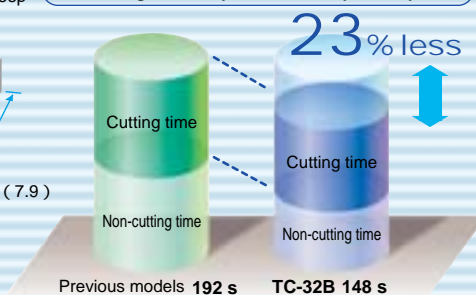
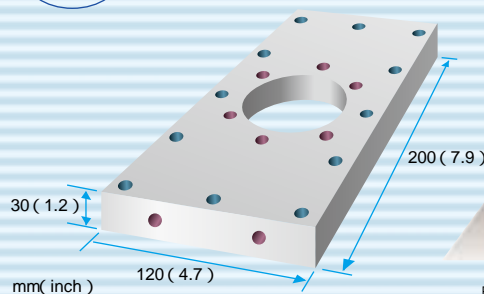
Approx.  
**40%**  
faster

### Productivity improved by faster multiple parts machining

Machining example

- 12 holes 8.8 mm dia., 30 mm deep
- 10 taps M8, 20 mm deep

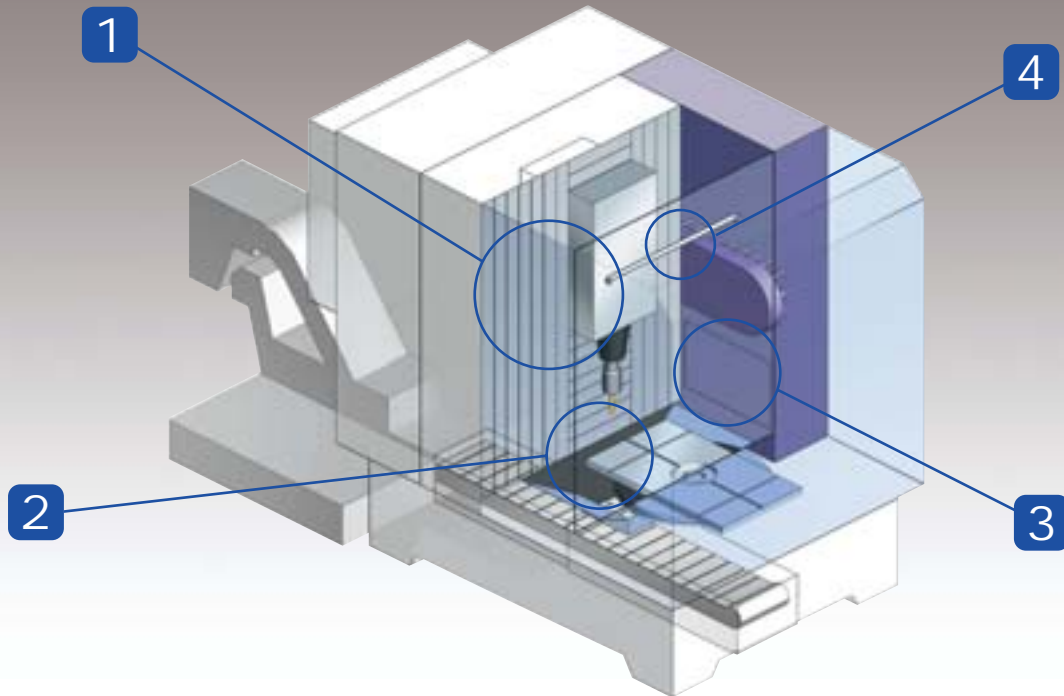
### Machining time comparison for sample workpiece



Previous models: 1-workpiece machining (twice) TC-32B: 2-workpiece machining

# 3 Enhanced Reliability

## Thorough Chip Handling for Higher Productivity



**The machining area, machine area, and tool stoker are completely separated. A center trough and a chip conveyor are used to reliably handle large volumes of chips. These measures prevent machine problems occurring and reduce maintenance work.**

**1** Rigid armor chip covers are used for the X- and Z-axes, and the machining area is completely separated from the machine area. These prevent chips entering the machine area, enhancing the machine's reliability.



**2** A center trough structure is used, and chips are reliably transferred to the chip conveyor from the tilted base (Max. 30°).



**3** The ATC arm and the tool magazine are completely separated from the machining area by a shutter, eliminating operation errors caused by chips.



**4** Coolant flows from the upper section of the partition to wash away chips stuck to the partition and the table. This prevents chips accumulating on the table.



# 4 Operation Friendly

## New Multi-Function NC for Maximum Usability

Display

12.1-inch color display

Control axes

4 axes

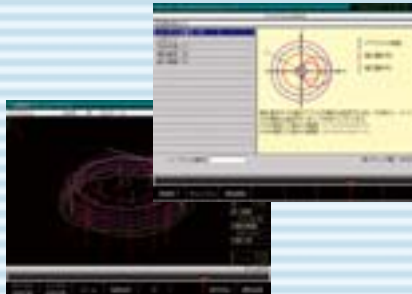
Machining accuracy

High accuracy mode **A**

Our new NC's full utilization of the integrated mechanical and electrical features maximizes the capability of the tapping center. It also has a user-friendly operation panel and screens, with G and M codes that allow further reductions in machining time.

User-friendly screen configuration, including menu screens for graphic drawing and program creation, alarm recovery screens, etc.

4 axes can be controlled simultaneously.  
A tilt indexer can be installed on both pallets.



High accuracy mode A ensures accurate finishing of minute lines. Vibration control prevents the vibration generated during axis movement.

(The figure on the right shows an example when machined at F10,000 mm/min (F394 inch/min)).

High-accuracy mode OFF

High-accuracy mode ON

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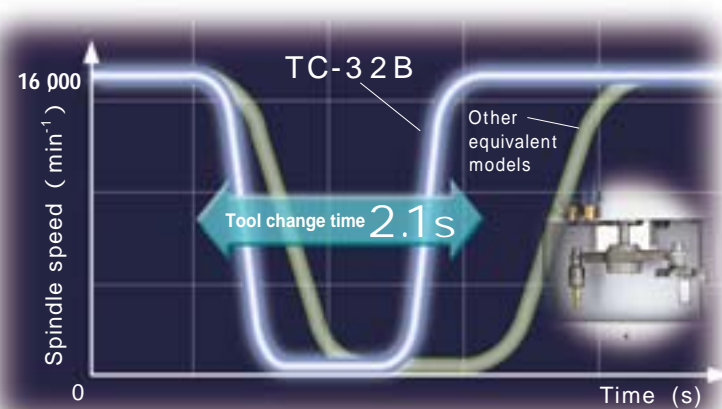
# Versatile Functions Support Fast, High -Quality Machining and Energy Saving

## Shorter tool change time enhances productivity

### Outstanding speed 2.1 seconds

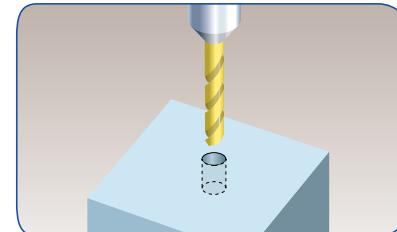
Time taken from start of ATC after the spindle speed reaches 16,000 min<sup>-1</sup> until the spindle speed returns to 16,000 min<sup>-1</sup> (from the table center for XY)

Tool change time of 2.1 seconds after the spindle reaches the maximum speed (16,000 min<sup>-1</sup>) has been achieved through improvement of rapid feed rate, spindle acceleration/deceleration, spindle orientation, and ATC operation.



## Machining capacity achieves fast machining

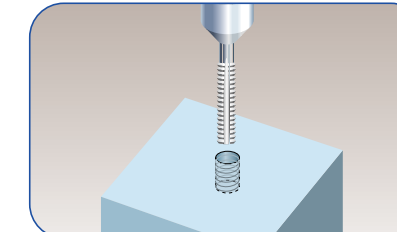
### Drilling



Max. **D38 mm (1.5 inch)**

Material: ADC  
Spindle speed 418 min<sup>-1</sup> Feed rate 125 mm/min (4.9 inch/min)  
Material: S45C Max. D23 mm (0.9 inch)  
Spindle speed 249 min<sup>-1</sup> Feed rate 24 mm/min (0.94 inch/min)

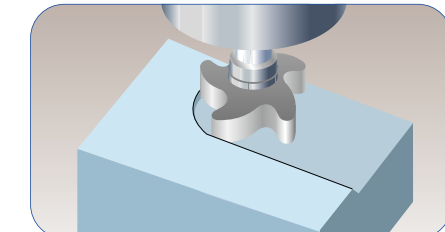
### Tapping



Max. **M30 × P3.5**

Material: ADC  
Spindle speed 424 min<sup>-1</sup>  
Material: S45C Max. M16 × P2  
Spindle speed 298 min<sup>-1</sup>

### Facing



Max. **Q1 800 cm<sup>3</sup>/min (Q109.8 inch<sup>3</sup>/min)**

Material: ADC  
Spindle speed 8 000 min<sup>-1</sup> Feed rate 4 000 mm/min (157.5 inch/min)  
Material: S45C Max. Q48 cm<sup>3</sup>/min (2.9 inch<sup>3</sup>/min)  
Spindle speed 1 209 min<sup>-1</sup> Feed rate 483 mm/min (19.0 inch/min)

Brother's actual achievement

## Tables suitable for various production systems

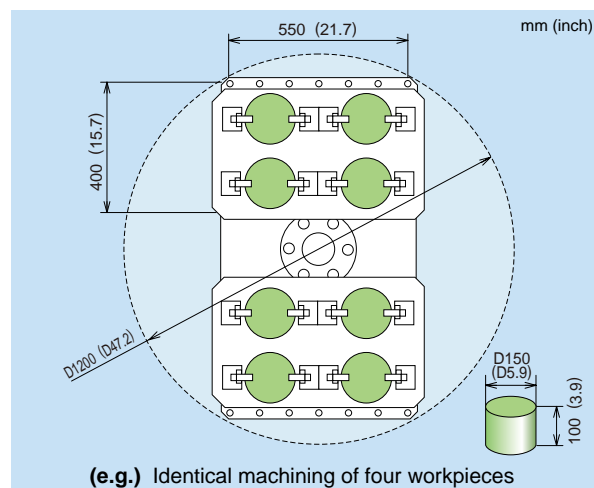
### Turn table QT



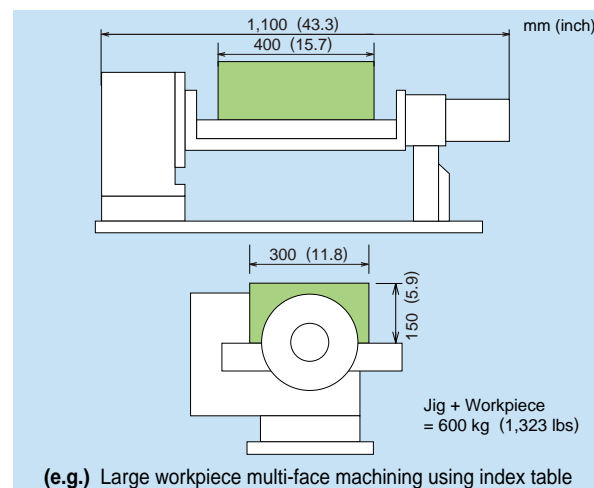
### Fixed table FT



### Multiple parts machining and multiple jobs



### Automated line for heavy jigs and workpieces



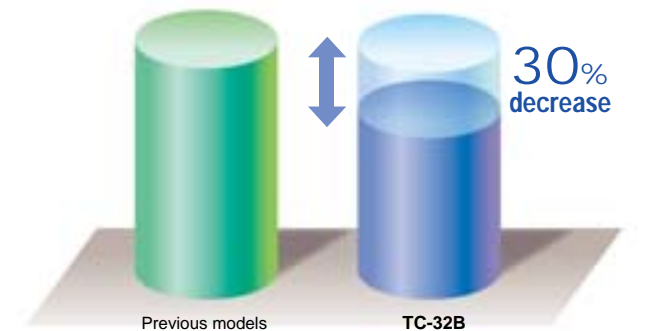
## Tool breakage detector (optional)

The tool breakage detector is located inside the tool magazine to eliminate any effect on the cycle time. The detection position is automatically set according to the tool length. (80 to 200 mm (3.1 to 7.9 inch))



## 30% less power consumption

The power regenerative converter reduces power consumption by 30%. (Example when using our sample program)



## Chip conveyor (optional)

The chip conveyor has a two-step structure (hinged plate and scraper) that can accommodate a wide variety of workpieces. The drum filter makes the chip conveyor maintenance-free, and it can be integrated with the high-pressure unit to save space.

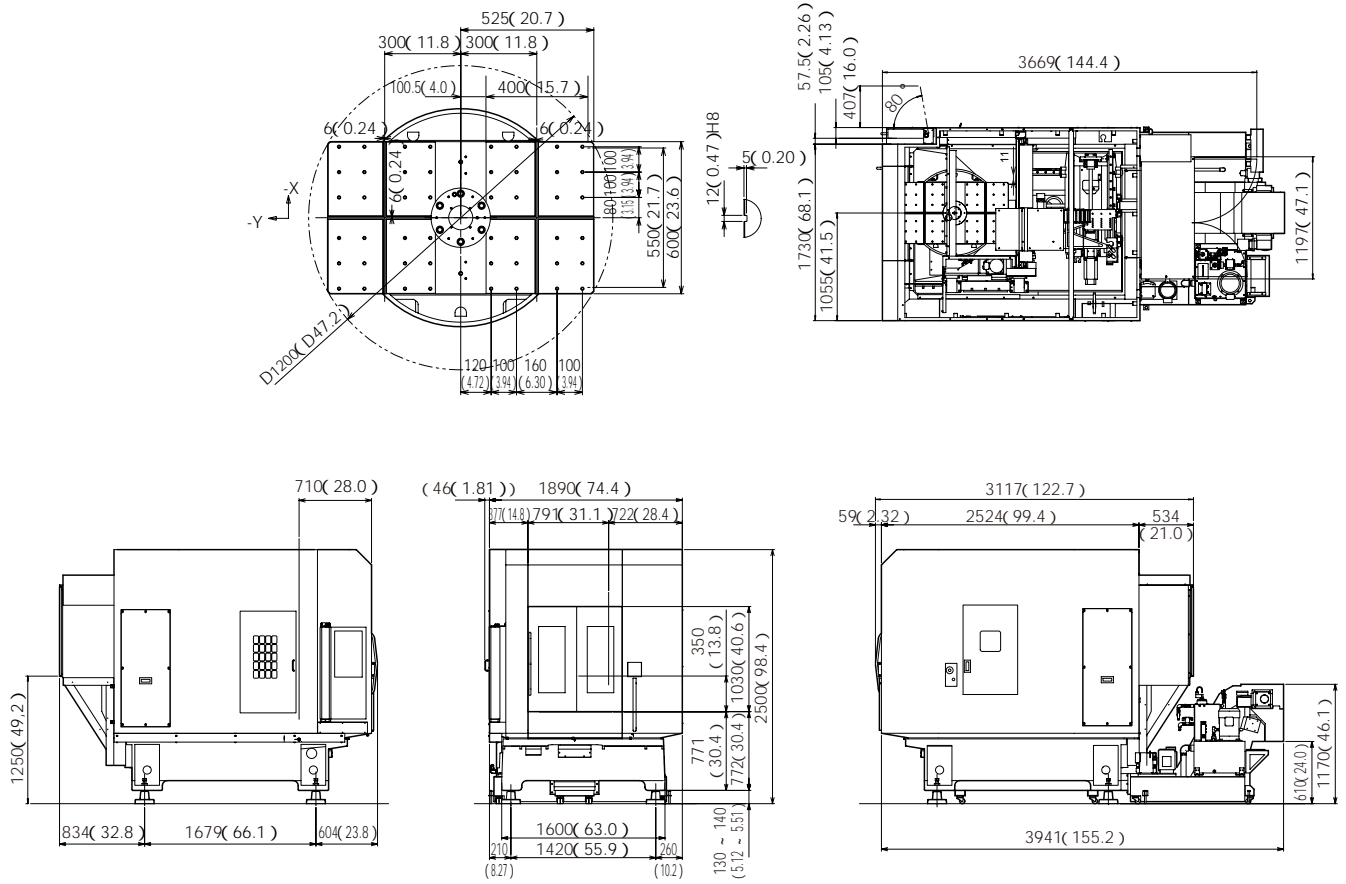


## CTS high-pressure unit (optional)

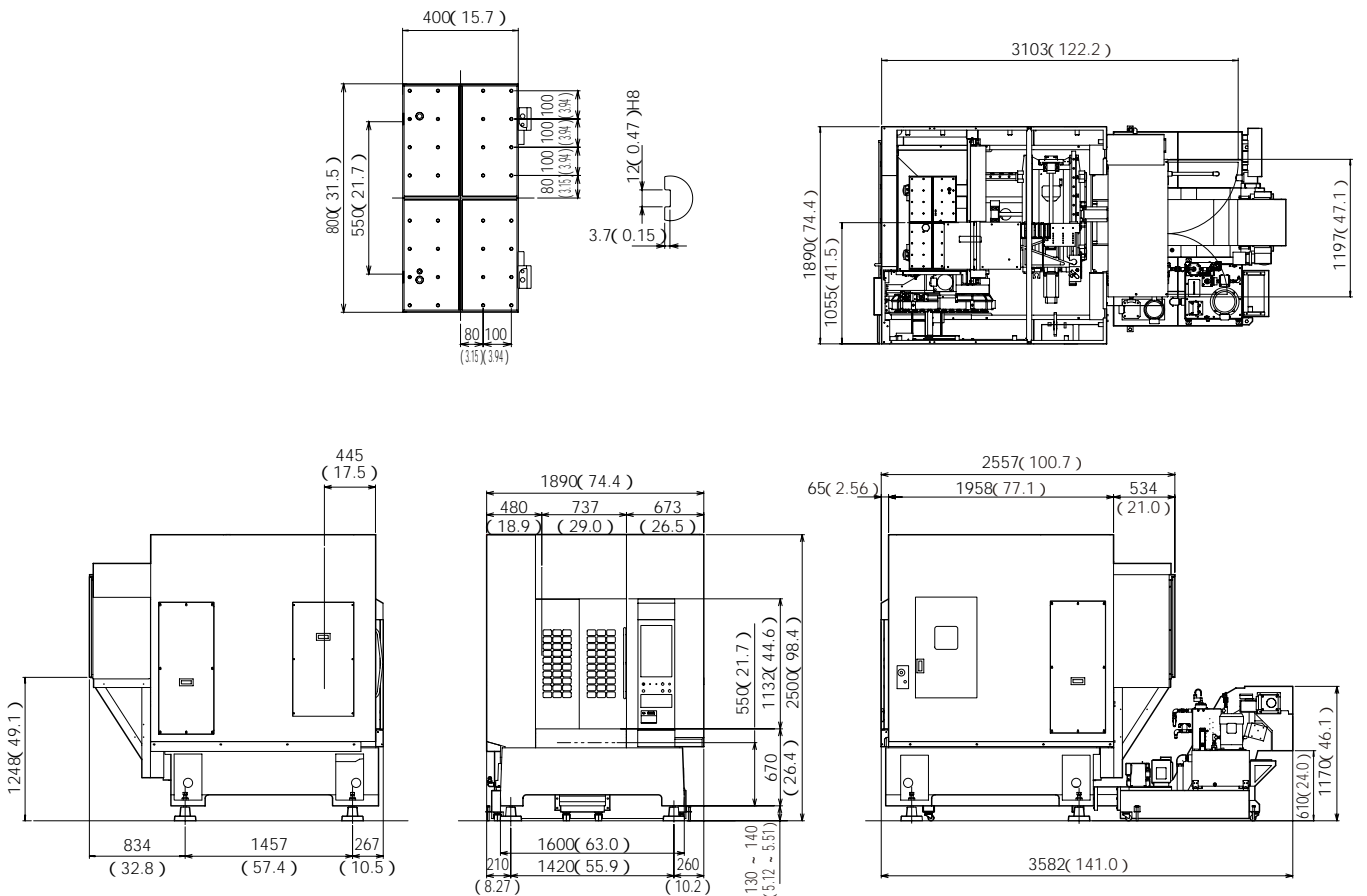
This low noise high-pressure unit enables machining using the max. 7 MPa CTS (Coolant Through Spindle). The pressure unit's back wash system prevents filters clogging, making it maintenance-free.



### TC-32B QT External dimensions



### TC-32B FT External dimensions



mm (inch)



## Machine specifications

| Item                    |   | TC-32B QT                               |  | TC-32B FT                               |   |
|-------------------------|---|---|--|---|---|
|                         |   | 12,000min <sup>*-1</sup> specifications | 16,000min <sup>*-1</sup> specifications  | 12,000min <sup>*-1</sup> specifications | 16,000min <sup>*-1</sup> specifications |
| Travels                 | X axis  | mm (inch)                               | 550 (21.7)   | 550 (21.7)                              |   |
|                         | Y axis  | mm (inch)                               | 400 (15.7)   | 400 (15.7)                              |   |
|                         | Z axis  | mm (inch)                               | 415 (16.3)   | 415 (16.3)                              |   |
|                         | Distance between table top / spindle nose end           | mm (inch)                               | 645 (25.4)   | 645 (25.4) (standard), 865 (34.1) (low) |   |
| Table                   | Work area size  | mm (inch)                               | 600 x 425 (23.6 x 16.7) (one side)   |   | 800 x 400 (31.5 x 15.7)                 |
|                         | Max. loading capacity (uniform load)                    | kg (lbs)                                | 200 (441) (one side)   |   | 600 (1323)                              |
|                         | Max. turning diameter                                   | mm (inch)                               | 1,200 (47.2)   |   |   |
|                         | Table positioning time                                  | sec.                                    | 3.4/180°   |   |   |
|                         | Table change repeatability                              | mm (inch)                               | 0.01 (0.0004) (table center)   |   |   |
| Spindle                 | Spindle speed   | (min <sup>-1</sup> )                    | 12 ~ 12,000  | 16 ~ 16,000                             | 12 ~ 12,000   16 ~ 16,000               |
|                         | Speed during tapping                                    | (min <sup>-1</sup> )                    | Max. 8,000   |   | Max. 8,000                              |
|                         | Tapered hole  |   | Depends on specifications selected   |   | Depends on specifications selected      |
| Feed rate               | Rapid traverse rate XYZ-area                            | m/min (inch/min)                        | 70 x 70 x 70 (2.756 x 2.756 x 2.756)   |   | 70 x 70 x 70 (2.756 x 2.756 x 2.756)    |
|                         | Cutting feed rate                                       | mm/min (inch/min)                       | 1 ~ 20,000 (0.04 ~ 787.4)  |   | 1 ~ 20,000 (0.04 ~ 787.4)               |
| ATC unit                | Tool shank type   |   | Depends on specifications selected   |   | Depends on specifications selected      |
|                         | Pull stud type  |   | Depends on specifications selected   |   | Depends on specifications selected      |
|                         | Tool storage capacity <sup>*-1</sup>                    | pcs.                                    | 18 (+1)/26 (+1)  |   | 18 (+1)/26 (+1)                         |
|                         | Max. tool diameter <sup>*-2</sup>                       | mm (inch)                               | 0 - 30 (0 - 1.2) / D46 (1.8), 30 - 200 (1.2 - 7.9) / D55 (2.2) (Large tool D125 (4.9)) |   |   |
|                         | Max. tool length  | mm (inch)                               | 200 (7.9)  |   | 200 (7.9)                               |
|                         | Max. tool weight <sup>*-3</sup>                         | kg (lbs)                                | 3.5 (7.7)  |   | 3.5 (7.7)                               |
| Tool change time        | Tool to Tool  | sec.                                    | 0.9 (BT-NC5, small dia.), 1.1 (HSK, small dia.)  |   |   |
|                         | Chip to Chip  | sec.                                    | 2.0 (BT-NC5, small dia.), 2.2 (HSK, small dia.)  |   |   |
| Electric motor          | Main spindle motor (10 min / continuous) <sup>*-4</sup> | kW                                      | 11 / 6   | 10 / 7.3                                | 11 / 6   10 / 7.3                       |
|                         | Feed spindle motor                                      | kW                                      | 1.3 (X, Y, Z)  |   | 1.3 (X, Y, Z)                           |
| Power source            | Power supply  |   | 200 VAC ±10%, 50/60Hz ±1Hz   |   | 200 VAC ±10%, 50/60Hz ±1Hz              |
|                         | Power capacity <sup>*-6</sup>                           | kVA                                     | 16 (Max. 32)   18 (Max. 37)  | 16 (Max. 32)   18 (Max. 37)             | 16 (Max. 32)   18 (Max. 37)             |
|                         | Air supply  | Working air pressure                    | MPa  | 0.4 ~ 0.6                               |   |
| Required flow           |   | L/min                                   | 100 (at atmospheric pressure)  |   | 100 (at atmospheric pressure)           |
| Machining dimensions    | Machine height  | mm (inch)                               | 2,360 (92.9)   |   | 2,360 (92.9)                            |
|                         | Required floor space (with control unit door open)      | mm (inch)                               | 1,890 x 3,669 (74.4 x 144.4)   |   | 1,890 x 3,103 (74.4 x 122.2)            |
|                         | Machine weight (including control unit splash guard)    | kg (lbs)                                | 4,500 (9,920)  |   | 4,300 (9,479)                           |
| Accuracy <sup>*-5</sup> | Positioning accuracy                                    | mm (inch)                               | 0.005 / 300 (0.0002 / 11.8)  |   | 0.005 / 300 (0.0002 / 11.8)             |
|                         | Repeatability   | mm (inch)                               | ±0.003 (±0.00012)  |   | ±0.003 (±0.00012)                       |
| CNC unit                | Model   |   | CNC-B00  |   | CNC-B00                                 |

\*<sup>-1</sup> When all tools are small tools (D 55 mm or less) \*<sup>-2</sup> The tools storage capacity, tool change time, etc., will vary when using large tools. The tool change time varies depending on the spindle type. \*<sup>-3</sup> Actual tool weight varies according to the configuration and center of gravity. The figures shown here are for reference only. \*<sup>-4</sup> Spindle motor output differs depending on the spindle speed. \*<sup>-5</sup> Measured in compliance with JIS B6201-1987. \*<sup>-6</sup> The values include 0.9 KVA for chip conveyor and 4.2 KVA for high-pressure coolant.

## NC Unit specification

|                                |   |  |  |  |
|--------------------------------|---|--|--|--|
| CNC model                      | CNC-B00   |  |  |  |
| Control axes                   | 7 axes (X, Y, Z, 4 additional axes)   |  |  |  |
| Simultaneously controlled axes | Positioning   | 5 axes (X, Y, Z, A, B)   |  |  |
|                                | Interpolation   | Linear : 4 axes (X, Y, Z, one additional axis) Circular : 2 axes Helical / conical interpolation : 3 axes (X, Y, Z) optional |  |  |
| Least input increment          | 0.001 mm, 0.0001 inch, 0.001 deg.   |  |  |  |
| Max. programmable dimension    | ±9999.999 mm 999.9999 inch  |  |  |  |
| Display                        | 12.1-inch color LCD   |  |  |  |
| Program capacity               | Approx. 5,000 m (Approx. 2 Mbytes)  |  |  |  |
| External communication         | RS232C 1ch, Ethernet  |  |  |  |
| No. of registrable programs    | 1,024   |  |  |  |
| Program format                 | NC language, conversation (changed by parameter), conversion from conversation program to NC language program available |  |  |  |
| NC function                    | Absolute/Incremental  | Alarm history  | Mirror image (NC)                                  | Machining order control (conv.)        |
|                                | Inch/metric   | Status log   | Menu programming (NC)                              | Macro function (system variables) (NC) |
|                                | Corner C / Corner R   | Machine lock   | Program compensation (NC)                          | Automatic power off                    |
|                                | Rotational transformation   | Computer remote  | Tool length compensation (NC)                      | Servomotor off standby mode            |
|                                | Synchronized tap  | High-accuracy mode A   | Cutter compensation (NC)                           | Chip shower off display                |
|                                | Coordinate system setting   | Tool length measurement  | Operation program (conv.)                          | Automatic coolant off                  |
|                                | Dry run   | Tool life management / spare tool  | Schedule program (conv.)                           | Automatic work light off               |
|                                | Restart   | Background editing   | Automatic tool selection (conv.)                   | Local coordinate system (NC)           |
|                                | Backlash compensation   | Graphic display  | Automatic cutting condition setting (conv.)        | One-way positioning (NC)               |
|                                | Pitch error compensation  | Subprogram   | Automatic tool length compensation setting (conv.) | Operation in tape mode (NC)            |
| Rapid traverse override        | Expanded workpiece coordinate system (NC)   | Automatic cutter compensation setting (conv.)  |  |  |
| Cutting feed override          | Scaling (NC)  | Automatic calculation of unknown number input (conv.)  |  |  |

\*Functions with (NC) and (conv.) are available only for NC language programming and conversational programming respectively.

## Option

Chip conveyor  
 High-pressure coolant unit (spindle-through)  
 Tool breakage detector  
 Cleaning gun  
 Automatic lubricator  
 Work light (1 lamp)  
 Table light (for QT machine only)  
 Indication light (1, 2, or 3 lamps)  
 Ceiling cover  
 Automatic door  
 Area sensor  
 Specified color  
 Automatic Z-axis thermal distortion compensation system  
 Expansion I/O board  
 Manual pulse generator  
 Expansion memory (Approx. 120 Mbytes)  
 Simple rotary joint (for QT machine only)  
 B-axis connection unit  
 Outer index turn switch (for QT machine only)  
 Helical / conical interpolation  
 Automatic workpiece measurement software  
 Spindle override  
 Floppy disk drive unit  
 Built-in PLC  
 PLC Function, ladder editing, expansion I/O board  
 Ladder editing PC software  
 Windows® 2000, XP  
 Switch panel  
 D22 mm hole x 9, spindle override x 1 (Former already used in QT model)  
 Windows® is a trademark or registered trademark of Microsoft Corporation in the United States and / or other countries.  
 \* Please contact your Brother dealer for details.

## Specifications selected

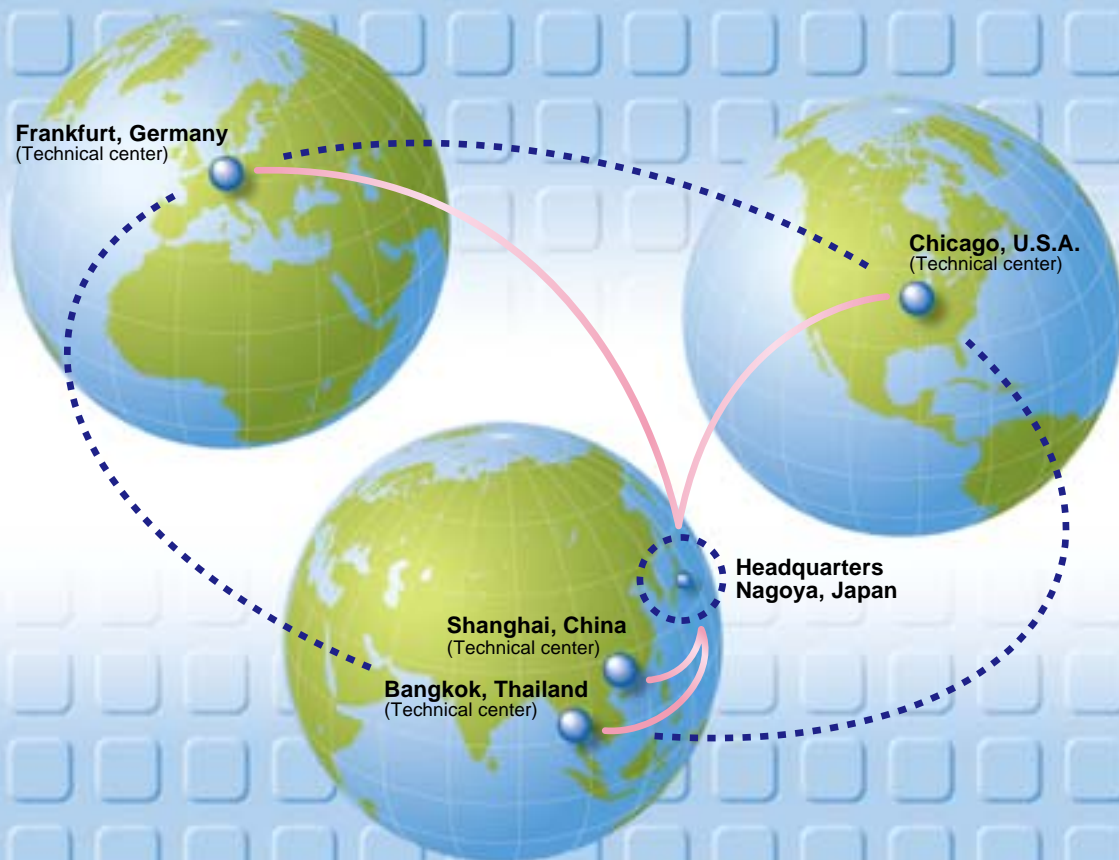
| Item                    | Specifications   |                      |  |
|-------------------------|------------------|----------------------|--|
| Spindle taper           | 7/24 taper No.30 | 1/10 taper           | 1/10 taper                                       |
| Tool shank taper        | MAS-BT30         | HSK-A40              | NC5-46   |
| Pull-stud type          | MAS-P30T-2       | —                    | PS-N46A (standard)<br>PS-N46AE (spindle through) |
| Spindle-through-coolant | Not available    | Optionally available | Optionally available                             |
| Tool magazine           | 18 pcs./26 pcs.  |                      |  |

## Quick table (two-surface pallet changer) specifications

| Type                                      | 0°/180° turntable system   |
|---|--|
| Table dimension                           | mm (inch) 600 x 525 (23.6 x 20.7) (two surfaces)   |
| Max. turning diameter                     | mm (inch) D1,200 (D47.2)   |
| Max. loading capacity                     | kg (lbs) 200 (441) (one side)  |
| Rated table load inertia for turning axis | (kgm <sup>2</sup> ) 20.49 (one side)   |
| Table turning system                      | AC servo motor (350W)<br>HR gear (total speed reduction ratio:1/90)  |
| Table position time                       | 3.4s /180° when loading weight is 150 kg   |
| Table change repeatability                | mm (inch) 0.01 (0.0004) (table center on each side (in the X, Y, and Z axes directions 300 from the center of rotation)) |

# Overseas service organization

In addition to our bases shown below, Brother's local dealers provide dedicated service.



|                 |   |  |   |
|-----------------|---|--|---|
| <b>U.S.A.</b>   | <b>BROTHER INTERNATIONAL CORP.</b><br>MACHINE TOOLS DIV. TECHNICAL CENTER                       | 1300 REMINGTON ROAD SUITE D<br>SCHAUMBURG, IL, 60173, U.S.A.                               | <b>PHONE: (1) 847-718-9500</b><br><b>FAX : (1) 847-718-9503</b>     |
| <b>Germany</b>  | <b>BROTHER SALES, LTD.</b><br>MACHINE TOOLS DIV.<br>FRANKFURT TECHNICAL CENTER                  | OTTO-VOLGER-STR. 9b, 65843<br>SULZBACH / TAUNUS, GERMANY                                   | <b>PHONE: (49) 6196-76192-15</b><br><b>FAX : (49) 6196-76192-80</b> |
| <b>Thailand</b> | <b>BROTHER COMMERCIAL THAILAND LTD.</b><br>MACHINE TOOLS TECHNICAL CENTER                       | 9/9 M003, ON-NUCH ROAD,<br>PRAVET SUB-DISTRICT,<br>PRAVET DISTRICT BANGKOK 10250, THAILAND | <b>PHONE: (66) 2-726-0266</b><br><b>FAX : (66) 2-726-0269</b>       |
| <b>China</b>    | <b>BROTHER SEWING MACHINE XIAN CO., LTD.</b><br>MACHINE TOOLS DIV.<br>SHANGHAI TECHNICAL CENTER | NO.2201 YONGSHENG RD, JIADING INDUSTRIAL<br>ESTATE SHANGHAI 201821, CHINA                  | <b>PHONE: (86) 21-5916-9351</b><br><b>FAX : (86) 21-5916-9359</b>   |

Figures in brackets ( ) are the country codes.



# brother®

**BROTHER INDUSTRIES, LTD.**  
MACHINERY & SOLUTION COMPANY  
MACHINE TOOLS FIELD

**BROTHER SALES, LTD.**  
MACHINE TOOLS DIV.

1-1, 1-CHOME, KAWAGISHI, MIZUHO-KU,  
NAGOYA 467-8562, JAPAN  
PHONE: (052) 824-2235  
FAX : (052) 811-0469

<http://www.brother.com>

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