Our machines will bring about success to users producing mass-production parts.

Extensive product lineup offers the best solution to suit each production variation.

Two resolutions reflected in machines

#30 spindle taper
- Low inertia and weight reduction
- Fast acceleration / deceleration spindle motor
- Spindle motor’s high torque in the medium- and high-speed range

Original NC
- Achievement of optimal control and operations
- Elimination of any wasted operations and time
- Pursuit of NC suitable for high-speed parts machining

Faster ATC and positioning

High machining capabilities

Excellent environmental performance

Constantly pursuing the possibilities of #30 spindle machines over a quarter of a century

Compact Machining Center
- High-performance model
- S700X1
- S500X1
- S300X1
- Pallet changer machine
- R450X1
- Compact multi-tasking machine
- M140X1

CNC Tapping Center
- Table traverse machine
- TC-22B
- TC-20B
- Column traverse machine
- TC-32BN (FT1)
- TC-31B
Pursuit of High Productivity

High-speed operations and optimized control have been achieved by the #30 spindle taper and original NC, enabling the machine to demonstrate high productivity.

Nonstop ATC
Fastest tool change among #30 spindle machines has been achieved by quick start/stop of the spindle, high acceleration and quick response when the Z-axis moves up and down, and optimized magazine operation.

Simultaneous operation
Using the original nonstop ATC code (G2100) allows the machine to simultaneously position the XY and additional axes while performing a tool change, leading to further reduction of wasted time.

World’s fastest synchronized tapping
World’s fastest highly accurate tapping has been achieved, using our original synchronized tapping control and a fast acceleration/deceleration spindle motor.

Pursuit of Machining Capabilities
The highly rigid structure and high-power spindle motor allow the machine to demonstrate its broad machining capabilities, from high-efficiency machining to heavy-duty machining.

Highly rigid structure
Based on accumulated data using analysis technologies, a highly rigid structure with vibration suppressed has been achieved, allowing the machine to demonstrate excellent machining capabilities.

High-power spindle motor
High-speed, high-efficiency machining has been achieved using a spindle motor with high torque in the medium- and high-speed range. High-torque specifications (optional) greatly improve low-speed range torque, providing excellent heavy-duty machining for steel workpieces.

Medium- and high-speed range enabling high-efficiency machining

Low-speed range suitable for heavy-duty machining

Original NC with emphasis on usability improves work efficiency and operating rate at production sites.

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

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

Network function
High-capacity program data can be transferred via Ethernet at high speed. A simple production monitoring function is also available, allowing you to display the machine’s production monitor screen on a personal computer.

CNC-C00 controller
Production monitor screen

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

System capacity
Standard equipped with PLC. 16 input and 16 output points are standard, and these can be expanded to up to 1024 points each (optional).

Pursuit of Environmental Performance
Reduction in power and air consumption results in a great decrease in CO2 emissions, making the machine more earth-friendly and providing high environmental performance.

Low power consumption
Equipped with a power regeneration system that reuses energy generated when decelerating, high-efficiency motor, energy-saving pump, LED work light and other energy saving functions, achieving low power consumption.

Low air consumption
Chip removal performance has been enhanced by optimizing the air purge path and air blast timing, greatly reducing air consumption.

Pursuit of Usability

High-speed operations and optimized control have been achieved by the #30 spindle taper and original NC, enabling the machine to demonstrate high productivity.

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

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

Network function
High-capacity program data can be transferred via Ethernet at high speed. A simple production monitoring function is also available, allowing you to display the machine’s production monitor screen on a personal computer.

CNC-C00 controller
Production monitor screen

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

System capacity
Standard equipped with PLC. 16 input and 16 output points are standard, and these can be expanded to up to 1024 points each (optional).
High speed, high acceleration, and high response

Z-axis acceleration has been greatly improved, making machining faster. X/Y-axes acceleration has also been improved, achieving 2.0G on the X-axis and 1.3G on the Y-axis when the loading capacity is 150 kg. In addition to this, delay in response has been reduced to almost zero by increasing the responsiveness of the servo motor, leading to a great reduction in cycle time.

Optimized waste elimination control

The original NC drives machine performance to its fullest and optimizes operation with any wasted time eliminated. High productivity is ensured by achieving nonstop ATC where spindle start/stop, Z-axis up/down and magazine operation are optimally controlled, and by simultaneously positioning X/Y- and additional axes while performing a tool change.

One-class Higher Machining Capabilities

Highly rigid structure

Machine rigidity has been further improved based on data accumulated over years using analysis technologies. For the Z-axis in particular, the stress path is reduced, leading to an improvement in rigidity of approximately 15%.

High-accuracy machining

Machining accuracy has been greatly improved by new servo control and offset functions, and a machine structure that minimizes the effects of thermal deformation. For example, the roundness in circular machining has been improved by approximately 30%.

Three-dimensional machining

High-speed and highly accurate three-dimensional machining has been achieved by high-speed spindle specifications with a maximum speed of 27,000 min⁻¹ (optional) and original three-dimensional machining control with look-ahead function and smooth path offset function.

Achieves overwhelming high productivity and environmental performance

High-performance model applicable to broad range of machining

Overwhelming High Productivity

High-speed, high efficiency machining to heavy-duty machining

Various spindle motor specifications are available to ensure broad machining capabilities, such as the standard specifications with medium- and high-speed properties enabling high-efficiency machining, and the high-torque specifications with low-speed properties suitable for heavy-duty machining.

Chip - Chip: 1.4s  Tool - Tool: 0.8s

Comparison of Z-axis positioning time

Z-axis acceleration: 2.2G

Per revolution

Standard specifications

Max. torque (maximum) : 40Nm
Max. output : 18.9kW

High-torque specifications (optional)

Max. torque (maximum) : 92Nm
Max. output : 26.2kW

From high-speed, high-efficiency machining to heavy-duty machining

Diameter: D80 mm
Material: Aluminum

Circular machining:
Roundness: 30% better

Look-ahead function
(Standard)

30 blocks (optional)

200 blocks

Compact Machining Center

S700X1/S500X1/S300X1

S500X1

S700X1

S300X1
Standard equipped with pallet changer
New 22-tool magazine and jig area enlargement contribute to further improvement of production efficiency.

2-face pallet changer and 22-tool magazine promoting process integration

Brother’s original high-speed 2-face pallet changer, the "QT (Quick Turn) table", avoids lift-up operation and achieves high reliability through a sealed structure. Workpieces on one pallet can be changed while machining workpieces on the other pallet. Therefore, waste in workplace change time is eliminated, enabling non-stop machining.

Non-stop machining

A new 22-tool magazine is available. This is mounted around the column, saving space and providing optimal weight balance, and is best suited for column traverse machines. Use of the turret type and the fast acceleration/deceleration spindle achieves high-speed tool change.

New 22-tool magazine

Processes divided between two machines can be performed on one machine, making use of the 2-face pallet changer and the 22-tool magazine. Process integration improves the line balance and enables optimal equipment investment, leading to further improvement of production efficiency.

Process integration

The standard jig area is quite wide, with a 1,020 mm turning diameter, 300 mm jig height, and 120 kg loading capacity (one face), making mounting the index table jig easier. The jig area can be optionally enlarged so that larger jigs can be mounted.

Wide jig area

A compact high-speed and high-output (max. torque 55 Nm) built-in DD motor is used for the turning spindle. The maximum speed is 2,000 min⁻¹.

A roller gear index unit is used for the tilt axis (A-axis). This clampless index unit enables high-speed (60 min⁻¹) and highly accurate indexing.

New 22-tool magazine

A new 22-tool magazine is mounted around the column, saving space. Using this with the fast acceleration/deceleration spindle achieves high-speed tool change. In addition to promoting process integration, non-cutting time is reduced by simultaneously positioning all axes while performing a tool change.

Process integration on one machine

A compact high-speed and high-output (max. torque 55 Nm) built-in DD motor is used for the turning spindle. The maximum speed is 2,000 min⁻¹.

A roller gear index unit is used for the tilt axis (A-axis). This clampless index unit enables high-speed (60 min⁻¹) and highly accurate indexing.

Innovative machine that incorporates turning

Handling time between machines can be reduced by integrating the turning process and milling process on one machine. Process integration enables improved machining accuracy through one-time chucking, reduction in operators, and optimal equipment investment.
# Machine Specifications

## CNC-UX8

<table>
<thead>
<tr>
<th>Item</th>
<th>S700</th>
<th>S500</th>
<th>S300</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CNC Units</strong></td>
<td>CNO-00</td>
<td>CNO-00</td>
<td>CNO-00</td>
</tr>
<tr>
<td><strong>Tooling</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X axis</td>
<td>new (new)</td>
<td>700 (270)</td>
<td>500 (195)</td>
</tr>
<tr>
<td>Y axis</td>
<td>new (new)</td>
<td>400 (160)</td>
<td>200 (85)</td>
</tr>
<tr>
<td>Z axis</td>
<td>new (new)</td>
<td>500 (200)</td>
<td>300 (120)</td>
</tr>
<tr>
<td>Minimum distance to tool tip and spindle nose end</td>
<td>180±0.010 (15.8±0.010)</td>
<td>180±0.010 (15.8±0.010)</td>
<td>180±0.010 (15.8±0.010)</td>
</tr>
<tr>
<td>Work area size</td>
<td>new (new)</td>
<td>900×450 (35.4×17.7)</td>
<td>500×216 (19.7×8.5)</td>
</tr>
<tr>
<td>Spindle diameter</td>
<td>3.94 (0.10)</td>
<td>1.58 (0.05)</td>
<td>1.06 (0.04)</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>μm/min</td>
<td>500 (200)</td>
<td>300 (120)</td>
</tr>
<tr>
<td>Accuracy of bidirectional axis positioning (±0.003 inch)</td>
<td>Less than 0.003 (0.0001)</td>
<td>Less than 0.003 (0.0001)</td>
<td>Less than 0.003 (0.0001)</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy of tool tip positioning (±0.003 inch)</td>
<td>Less than 0.003 (0.0001)</td>
<td>Less than 0.003 (0.0001)</td>
<td>Less than 0.003 (0.0001)</td>
</tr>
<tr>
<td><strong>Grinding accessories</strong></td>
<td>Instruction Manual (1 net), aircraft-style bit (6 pcs), leveling block (6 pcs), machine cover (2 pcs)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

## Machine Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>R450</th>
<th>M140</th>
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<tbody>
<tr>
<td><strong>CNC Units</strong></td>
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<td>CNO-00</td>
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<tr>
<td><strong>Tooling</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X axis</td>
<td>new (new)</td>
<td>500 (17.7)</td>
</tr>
<tr>
<td>Y axis</td>
<td>new (new)</td>
<td>300 (11.8)</td>
</tr>
<tr>
<td>Z axis</td>
<td>new (new)</td>
<td>200 (7.8)</td>
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<tr>
<td>A axis</td>
<td>new (new)</td>
<td>2 (0.079)</td>
</tr>
<tr>
<td>C axis</td>
<td>new (new)</td>
<td>2 (0.079)</td>
</tr>
<tr>
<td>Minimum distance to tool tip and spindle nose end</td>
<td>500 (200)</td>
<td>200 (85)</td>
</tr>
<tr>
<td>Work area size</td>
<td>new (new)</td>
<td>600×350 (23.6×13.8)</td>
</tr>
<tr>
<td>Spindle diameter</td>
<td>9.5 (0.374)</td>
<td>3.94 (0.10)</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>μm/min</td>
<td>400 (15.8)</td>
</tr>
<tr>
<td>Accuracy of tool tip positioning (±0.003 inch)</td>
<td>Less than 0.003 (0.0001)</td>
<td>Less than 0.003 (0.0001)</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td></td>
<td></td>
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<tr>
<td>Accuracy of tool tip positioning (±0.003 inch)</td>
<td>Less than 0.003 (0.0001)</td>
<td>Less than 0.003 (0.0001)</td>
</tr>
<tr>
<td><strong>Grinding accessories</strong></td>
<td>Instruction Manual (1 net), aircraft-style bit (6 pcs), leveling block (6 pcs)</td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
### NC unit specifications

**SPEEDIO**

<table>
<thead>
<tr>
<th>Model</th>
<th>Standard functions</th>
<th>Machining capability</th>
</tr>
</thead>
<tbody>
<tr>
<td>S700X1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S500X1</td>
<td></td>
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<tr>
<td>S300X1</td>
<td></td>
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<tr>
<td>R450X1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M140X1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**S700X1 / S500X1 / S300X1**

- **Optional NC functions**
  - Machining capability
    - 0.001 mm, 0.0001 inch, 0.001 deg.
    - 5 axes
    - ±9999.999 mm, ±999.9999 inch
  - Least input increment
    - 0.001 mm, 0.0001 inch, 0.001 deg.
    - 5 axes
  - Display
    - Memory capacity
    - Approx 512 Mb (48GB)
    - Total capacity of program and data bank
    - 4,600 (Total capacity of program and data bank)
  - Program language
    - NC language (Pre-Rapid7 program conversion to NC language program available)
  - Coolant unit
    - Coolant tank
      - 200 liters
      - 400 liters
  - Chip recovery system
    - Chip hopper
  - Communication
    - USB memory interface
    - Ethernet
    - RS232C
  - Expansion I/O board
    - CC-Link remote device station
    - PROFIBUS DP (Master, DeviceNet master, DeviceNet)
    - PLC programming software for Windows®, Linux, and Unix

**Machining capability**

- Drilling
  - Through hole drill
  - Drill diameters (inch) (mm)
  - 0.100
  - 0.200
  - 0.300

- Tapping
  - Tap diameters (inch) (mm)
  - 0.100
  - 0.200
  - 0.300

- Facing
  - Cutting amount (mm/min)
  - 400
  - 500

**Standard NC functions**

- Absolute / incremental
- Inch / metric
- Corner C / Corner R
- Interpolation
- Synchronous tap
- Coordinate system setting
- Chip out
- Restart
- Blankout compensation
- Pitch error compensation
- Rapid traverse speed
- Cutting feed override
- Thrust bearing (6000-series)
- Start key
- Machine tools
- Computer remote
- Motorization of resistance measurement
- Operation log
- High accuracy mode
- Tool length measurement
- Tool life management / tool life
- Graphical display
- Subprogram
- Vertical / horizontal interpolation
- Device mode type (250K)
- Chip discharge off delay
- Tag return function
- Automatic tool runout monitoring
- Automatic tool runout measurement
- Linear expansion compensation
- Screw thread operation
- Local coordinate system
- Drawing paper
- Operation in tape mode
- Waveform display
- Operation level
- External input signal key
- High accuracy mode B1 ~ B4 (least significant bit)
  - (NCI)
  - Expected accuracy coordinate system
  - Scaling
  - Mirror image
  - Motion programming
  - Program compensation
  - Tool length compensation
  - Cutter compensation
  - Manual function
  - Local coordinate system
  - Drawing paper
  - Operation in tape mode

**Optional NC functions**

- Memory expansion
  - Approx. 512 Mb (48GB)
  - Spindle override
  - High accuracy mode
  - Pre-Rapid7 program conversion to NC language program
  - Extension function
  - Constant peripheral speed control
  - Feed per revolution override
  - Machining order control
  - Turning function
  - Constant peripheral speed control
  - Fixturing function
  - Local coordinate system
  - Drawing paper
  - Operation in tape mode

**Installation options**

- Coolant unit
  - 50L with valve and 100L pump
  - 150L with valve and 200L pump
  - with chip shower, valve and 500L + 300L pumps
  - with chip shower, valve and 400L + 500L pumps
  - with chip shower, CTS, valve and 200L + 400L + 500L + 600L pumps

**Coolant unit**

- Remote chip carousel
- Coolant tank with brush

**FT dust contact system (N5-PUS)**

- Coolant Through Spindle (CTS)
- Black washing system (for CTS)
- Tool washing (oil/acetate type)
- Tool breakage detector (touch type)
- Chip shower
- Hydraulic rotary part (4P + Pneumatic relay box (1P))
- Pneumatic relay box (1P)

**Cleaning unit**

- Spindle coolant

**Specified color**

- Milling color

**Manual pulse generator**

- B-axis control
  - 1 axis, 2 axis

**Axis control**

- Spindle control
  - Side door

**Specification**

- User's Manual

**Standard function**

- Full-size cutout

**Specifications**

- 24 holes

**Applicable standard**

- 12,000 min-1

**Software**

- PLC programming software
  - Windows®
  - Linux
  - Unix

**Note**

- *Note: Some specifications are not available for 21,000 min-1 specifications.
- *Note: Coolant unit is not available for S300X1 21 ATC specifications.
- *Note: Specifications are subject to change without notice.
CNC TAPPING CENTER

**TC-22B**

High-end table traverse model suitable for machining large workpieces
- Largest machining area among Tapping Centers
- Highly accurate large boring achieved by improved machine rigidity and rigidity balance
- The machining room is separated from the tool stocker, reducing problems caused by chips.

**TC-20B**

#15 spindle model ideal for machining small precision parts
- High productivity achieved by the fastest spindle speed and shortest ATC time among Tapping Centers
- Super space-saving machine at a size of 0.9 m x 1.7 m
- Highest environmental performance in its class

**TC-32BN**

High-end column traverse machine applicable to a wide range of machining
- Equipped with a 26- or 40-tool magazine, enabling expansion of target workpieces
- QT type: Uses a large QT table*, which enables large workpiece machining or multiple parts machining
- FT type: Uses a large fixed table, where large jigs can be loaded
- Improved chip discharge efficiency using the center trough structure and chip conveyor (optional)

**TC-31B**

Compact, high productivity machine enabling nonstop small parts machining
- Slim body, equipped with a QT table
- Enhanced machining capabilities through improved rigidity, in spite of the compact body
- Equipped with a 26-tool magazine to handle various types of machining

Examples of target workpieces

Brother’s machine tools improve production efficiency in a broad range of mass-production parts machining.

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*For safe use of our products, please read the Instruction Manual and Safety Manual before commencing operation. When using oil-based coolant or machining workpieces made of metals that may ignite (e.g., magnesium, resin), additional safety measures must be taken. Please consult our sales personnel if you have any questions.

When ordering this product, be sure to check if the end use and the purpose of use fall under a category needing approval. Approval from regulatory authorities may be required prior to export due to revisions of laws and regulations or other reasons. Please check with us before exporting the product.

Secure 700 mm between machines as maintenance space.

When exporting this product with the compound rotary table, the Ministry of Economy, Trade and Industry has deemed this export item to be “applicable listed items”. Please obtain required export permission from the Ministry of Economy, Trade and Industry prior to export.
### CNC TAPPING CENTER

#### Machine Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>TC-22B</th>
<th>TC-22B-B</th>
<th>TC-20B</th>
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</thead>
<tbody>
<tr>
<td><strong>CNC Unit</strong></td>
<td>CNC-600</td>
<td>CNC-600</td>
<td>CNC-600</td>
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<tr>
<td><strong>Travels</strong></td>
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<td></td>
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</tr>
<tr>
<td>X axis</td>
<td>520(19.7)</td>
<td>780(30.7)</td>
<td>200(7.9)</td>
</tr>
<tr>
<td>Y axis</td>
<td>450(17.7)</td>
<td>1,060(41.3)</td>
<td>410(16.1)</td>
</tr>
<tr>
<td>Z axis</td>
<td>410(16.1)</td>
<td>570(22.5)</td>
<td>250(9.9)</td>
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<tr>
<td>Minimum retractable travel (mm)</td>
<td>±200(7.9) ±260(10.2)</td>
<td>±200(7.9) ±250(9.9)</td>
<td>±120(4.7) ±140(5.5)</td>
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<tr>
<td>Working area size</td>
<td>650 x 650 x 650(x,y,z)</td>
<td>400 x 400 x 450(x,y,z)</td>
<td>400 x 200 x 170(x,y,z)</td>
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<tr>
<td>Table position tolerance</td>
<td>±20(0.8) ±2(0.08)</td>
<td>±10(0.4) ±5(0.2)</td>
<td>±10(0.4) ±5(0.2)</td>
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<tr>
<td><strong>Spindle</strong></td>
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<tr>
<td>Spindle speed</td>
<td>15,000 rpm</td>
<td>15,000 rpm</td>
<td>15,000 rpm</td>
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<td>Speed during tapping</td>
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<td>1,200 rpm</td>
<td>1,200 rpm</td>
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<tr>
<td>Spindles</td>
<td>T10</td>
<td>T10</td>
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<tr>
<td><strong>Coolant Through Spindle (GTS)</strong></td>
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<tr>
<td>Fluid type</td>
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<tr>
<td>Cutting fluid rate</td>
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<tr>
<td>Cutting fluid rate</td>
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<tr>
<td><strong>Tapered hole</strong></td>
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<td>Coolant Through Tapered hole</td>
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<td><strong>AC Unit</strong></td>
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<td>Max. max. power</td>
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<td><strong>Electric Motor</strong></td>
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<td>Max. spindle motor (1500rpm)</td>
<td>15.0 hp</td>
<td>15.0 hp</td>
<td>15.0 hp</td>
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<td>Max. spindle motor (600rpm)</td>
<td>30.0 hp</td>
<td>30.0 hp</td>
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<td>Max. spindle motor (1500rpm)</td>
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<td>15.2 hp</td>
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<td>Max. spindle motor (600rpm)</td>
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<td>30.4 hp</td>
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<td>Air supply</td>
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<td>Vacuum pump</td>
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<td>Required flow rate</td>
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<td>12m3/minute</td>
<td>12m3/minute</td>
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<tr>
<td>Ac voltage</td>
<td>380V ±10%</td>
<td>380V ±10%</td>
<td>380V ±10%</td>
</tr>
<tr>
<td>Ac power</td>
<td>5.4kW</td>
<td>5.4kW</td>
<td>5.4kW</td>
</tr>
<tr>
<td>Electric motor (1500rpm)</td>
<td>11.0 kW</td>
<td>11.0 kW</td>
<td>11.0 kW</td>
</tr>
<tr>
<td>Electric motor (600rpm)</td>
<td>22.0 kW</td>
<td>22.0 kW</td>
<td>22.0 kW</td>
</tr>
<tr>
<td>Electric motor (1500rpm)</td>
<td>15.2 kW</td>
<td>15.2 kW</td>
<td>15.2 kW</td>
</tr>
<tr>
<td>Electric motor (600rpm)</td>
<td>30.4 kW</td>
<td>30.4 kW</td>
<td>30.4 kW</td>
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</tbody>
</table>

### Machine Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>TC-32Bx DT</th>
<th>TC-32Bx FI</th>
<th>TC-31B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CNC Unit</strong></td>
<td>CNC-600</td>
<td>CNC-600</td>
<td>CNC-600</td>
</tr>
<tr>
<td><strong>Travels</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X axis</td>
<td>520(19.7)</td>
<td>520(19.7)</td>
<td>520(19.7)</td>
</tr>
<tr>
<td>Y axis</td>
<td>450(17.7)</td>
<td>450(17.7)</td>
<td>450(17.7)</td>
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<tr>
<td>Z axis</td>
<td>410(16.1)</td>
<td>410(16.1)</td>
<td>410(16.1)</td>
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<tr>
<td>Minimum retractable travel (mm)</td>
<td>±200(7.9) ±260(10.2)</td>
<td>±200(7.9) ±250(9.9)</td>
<td>±120(4.7) ±140(5.5)</td>
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<tr>
<td>Working area size</td>
<td>650 x 650 x 650(x,y,z)</td>
<td>400 x 400 x 450(x,y,z)</td>
<td>400 x 200 x 170(x,y,z)</td>
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<tr>
<td>Table position tolerance</td>
<td>±20(0.8) ±2(0.08)</td>
<td>±10(0.4) ±5(0.2)</td>
<td>±10(0.4) ±5(0.2)</td>
</tr>
<tr>
<td><strong>Spindle</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle speed</td>
<td>20,000 rpm</td>
<td>20,000 rpm</td>
<td>20,000 rpm</td>
</tr>
<tr>
<td>Speed during tapping</td>
<td>2,000 rpm</td>
<td>2,000 rpm</td>
<td>2,000 rpm</td>
</tr>
<tr>
<td>Spindles</td>
<td>T10</td>
<td>T10</td>
<td>T10</td>
</tr>
<tr>
<td><strong>Coolant Through Spindle (GTS)</strong></td>
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<td></td>
</tr>
<tr>
<td>Fluid type</td>
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<tr>
<td>Cutting fluid rate</td>
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<td></td>
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<tr>
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</tr>
<tr>
<td><strong>Tapered hole</strong></td>
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<tr>
<td>Coolant Through Tapered hole</td>
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</tr>
<tr>
<td><strong>AC Unit</strong></td>
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<td></td>
</tr>
<tr>
<td>Max. max. power</td>
<td>20kW</td>
<td>20kW</td>
<td>20kW</td>
</tr>
<tr>
<td>Max. max. power</td>
<td>0.6kW</td>
<td>0.6kW</td>
<td>0.6kW</td>
</tr>
<tr>
<td><strong>Electric Motor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. spindle motor (1500rpm)</td>
<td>15.0 hp</td>
<td>15.0 hp</td>
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</tr>
<tr>
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<td>30.0 hp</td>
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<td>30.4 hp</td>
<td>30.4 hp</td>
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</tr>
<tr>
<td>Air pressure</td>
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<td>0.41 ± 0.05</td>
<td>0.41 ± 0.05</td>
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<tr>
<td>Air supply</td>
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<td>Vacuum pump</td>
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<tr>
<td>Required flow rate</td>
<td>12m3/minute</td>
<td>12m3/minute</td>
<td>12m3/minute</td>
</tr>
<tr>
<td><strong>Power Source</strong></td>
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</tr>
<tr>
<td>Ac frequency</td>
<td>50Hz</td>
<td>50Hz</td>
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**NC unit specifications**

**Standard NC functions**

- Machining capability
- CNC TAPPING CENTER

### NC unit specifications

**CNC model**
- CNC-800

**Controller axes**
- Maximum command value: ±999.9999 inch
- Additional axes: X, Y, Z, 2 additional axes

**Simultaneously controlled axes**
- Positioning: 5 axes (X, Y, Z, A, B)
- Interpolation: Linear: 4 axes (X, Y, Z, B)

**Memory capacity**
- Approx. 10 Mbytes (Total capacity of program and data bank)

**External communication**
- USB Interface x 1, RS-232C 1 x (RS-232C in the United States), Ethernet

**Program format**
- NC language: Compliant with the NC language specification

### Standard NC functions

- Absolute / Incremental
- Inch / metric
- Coordinate rotation
- Coordinate system setting
- Dry run
- Mist / coolant
- Backlash compensation
- Pitch error compensation
- Rigid traverse override
- Cutting feed override
- Alarm history
- Status log
- Machine lock
- Chip evacuation
- Coolant control
- Tool washing
- Automatic tool selection
- Graphic display
- Operation program
- Automatic tool selection
- Operation in tape mode
- PLC programming software
- Machine lock
- Automatic tool selection
- Graphic display
- Operation program
- Automatic tool selection
- Operation in tape mode
- PLC programming software

### Machining capability

**Drilling**

- Tool diameter: mm (inch)/Face width (inch)

**Tapping**

- Tool diameter: mm (inch)/Face width (inch)

**Facing**

- Cutting radius: mm (inch)/Feed rate: mm/inch (mm/rev)

### Option list

- TC-22B
- TC-22B-O
- TC-20B
- TC-32Bn
- TC-31B

- Coolant unit
  - 50L with valve and HPM pump
  - 100L with chip shaver, valve and 500W + 200W pumps
  - 150L with chip shaver, valve and 500W + 400W pumps
  - 200L with chip shaver, valve and 5000W pumps

- Coolant tank
  - 200L: with valve and 500W + 400W pumps

- Coolant through spindles
  - TC-11

- Cooling pipe
  - Manual pulse generator

- Automatic door
  - Area sensor for automatic door

- Tool light (one lamp)
  - (two lamps)

- Tail stock

- Indicator light (red)/lamp (red)/lamp (white)

- Tool breakage detector

- Automatic lubricator

- Gear lubrication (manual)

- High-voltage spindles (100V/50kV)

- Tail cover

- Side cover (transparent cover type)

- Chip evacuation

- Automatic tool selection

- Graphic display

- Operation program

- Automatic tool selection

- Operation in tape mode

- PLC programming software

- Windows® 2000, XP, VISTA

- Switch panel

- RGISC (9-pole to 20-pin conversion/ QVector control board)

- Manual tool unlocking unit

- Magnetite turn switch

- Built-in PLC (FPI-LG function, ladder wiring, automatic tooling board)

- PLC programming software: Windows XP, VISTA

- Switch panel

**Note:** The TC-22B is not equipped with the external expansion system compensation function.

### Machine specifications

- Spindle air blast cleaning and air purge are standard equipped for all models.
- High pressure specifications for TC-32Bn and TC-22B-O: A 38 psi connection is provided on the operation panel.
- When using the capabilities in the table, make sure to consult your local machine tool dealer.