The Hardinge T-Series turning centers and SUPER-PRECISION® T-Series turning centers set the standard in high-precision and high-performance turning that will take your part quality and manufacturing capabilities to new heights. T-Series machines are designed to exceed your expectations and are ideal for two axis high-precision machining or complex multi-tasking operations that require a high level of precision, delicate part handling and for parts made complete in a single setup. Machine packages are pre-configured with our most popular features allowing you to select the proper machine tool configuration to produce your parts in the most effective and profitable manner.

### Standard Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>M</th>
<th>T</th>
<th>MT</th>
<th>MY</th>
<th>MYT</th>
<th>S</th>
<th>MS</th>
<th>MSY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spindle Nose</td>
<td>A2-5 / 16C (A2-6 / 20C Big Bore Option)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Collet Capacity (in/mm)</td>
<td>1.625 / 42 (2 / 51 Big Bore Option)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Spindle Through Hole (in/mm)</td>
<td>1.890 / 48</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Chuck Size (Chuck not Included) (in/mm)</td>
<td>6 / 150</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle Motor (hp/kW)</td>
<td>15 / 11</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Max Spindle Speed (rpm)</td>
<td>6,000 (5,000 Big Bore Option)</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Number of Turret Stations (BMT-45 / block type)</td>
<td>16 / 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNC Control</td>
<td>Fanuc 31i Control</td>
<td></td>
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</tr>
</tbody>
</table>

Heavy duty wrap around spindle motor design for enhanced thermal stability.

Hardinge’s unique A2-5, 16C collet-ready spindle.

Heavy duty liner roller guides on E-Axis for optimum stiffness, rigidity, accuracy and longer life.

Strategically ribbed HARCRETE® reinforced 45 degree cast base iron base.

Heavy duty FANUC motor and drives.

Independent Y-Axis for superior part accuracy.

High class linear ball guides on X,Y,Z Axes for higher accuracy, faster traverse rates, less wear, and longer life.

16 Station BMT 45 or Hardinge T-Style top plate.
Exclusive collet-ready spindle
Increased concentricity, surface finish capability, superior roundness, and fast job change over

The preferred method of holding a workpiece for precision machining is with a collet. The Hardinge-designed and -built ANSI collet-ready spindle permits the industry’s best part rigidity, since parts are gripped close to the spindle bearings. Ask for “The Hardinge Advantage” Technical Information Bulletin TIB-229.

Heavy-duty linear guideways, ballscrews and axis drives
Faster traverse rates, longer machine life and greater positioning accuracy

Wide-spaced, size 35mm linear guideways provide optimum stiffness with less friction, less heat and less thermal growth. The linear way modules consist of slide members (guide trucks) and linear rails to provide a large load rating, stable accuracy, high rigidity and low friction. The spacing between the rails provides optimum stiffness for the overall machine design. Oversized 36mm (1.417”) ballscrews are featured. Torque limiters are provided as standard equipment.

Rigid machine base
Finer surface finishes and 30% longer tool life

The rugged cast iron base with HARCRETE® polymer composite (synthetic granite) reinforcement offers added stiffness with superior vibration damping characteristics, resulting in extended tool life.

Linear glass scale
High machining accuracy and repeatability

The Heidenhain closed-loop linear scale system on the X,Y,Z axis provide direct measurement to compensate for any ballscrew thermal growth and wear ensuring highest accuracy through the most demanding duty cycles and over the life of the machine.

Heavy duty servo driven tailstock
Maximum flexibility

Our servo tailstock features fully programmable axis speed control, positioning and force, controlled through the part program, allowing fast approach/retract speed, multiple positioning capability and force control. This allows for precise part engagement and applied force. The result is reduced overall operating time when compared to hydraulic tailstock systems by over 20% while increasing part quality.

Hard Turn instead of grind
Reducing manufacturing costs

Hardinge is the recognized market leader in providing “hard turning” machines, workholding and process support. SPC (statistical process control) for size repeatability, surface finish quality and thermal stability is a hallmark for T-Series turning centers which are built and tested to ensure “in-tolerance” parts and surface finishes with predictable tool wear. T-Series machines are also ideally suited for hard milling applications.

• “Soft turn” and “hard turn” on the same machine
• Less floor space requirement
• Lower overall investment
• Metal removal rates of 4-to-6 times greater
• Eliminate Operations
• Multiple operations in a single setup
• Finer micro finishes
• Easier Part configuration changes
• Lower cost tooling inventory
• Easier waste management (chips vs.”swarf”)
The exclusive Hardinge 16 Station BMT-45 turret top plate and tooling system is featured on T-Series turning centers. You can also choose a Hardinge T-style top plate for static tooling compatibility with QUEST® and CONQUEST® T42/T51/T65 lathes equipped with a T-style top plate.

The Hardinge BMT-45 Live Tooling Top Plate with Tenon tool drive system provides 16 live tooling stations with ½ station index between each station providing 32 stations.

Both the static and live tool holders are designed to adapt modular add-on tool holder blocks providing the ultimate in overall tooling flexibility.

The unique Hardinge BMT-45 system also allows fine adjustment of tools in the Y-axis plane for machines without a true Y-axis for pinpoint tool alignment. Our tooling system is keyed for precision and provides unparalleled station to station tooling accuracy and repeatability.

Live tool holders start at 8,000-rpm and are capable of up to 16,000 or 32,000-rpm when purchased with ratios of 2:1 or 4:1 when high speeds are required. The Hardinge BMT-45 live tooling holders provide superior run-out within .00012” (3 micron) making it the overall best in class tooling system.
As the world's only SUPER-PRECISION® turning center, Hardinge's T-42 is the industry leader in accuracy.

Summary of SUPER-PRECISION® Results

Machine Model: SUPER-PRECISION® T-42

Test Part: 62 Rc 8620 Steel

<table>
<thead>
<tr>
<th>Condition</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Cylindricity:</td>
<td>0.000025&quot;</td>
</tr>
<tr>
<td>(2) Maintaining a Profile - 3 Small Steps:</td>
<td>0.000050&quot; +/- 0.000010</td>
</tr>
<tr>
<td>(3) Maintaining a Profile - 200&quot; Arc:</td>
<td>+/- 0.000030&quot;</td>
</tr>
<tr>
<td>Surface Finish:</td>
<td>6 micro-inch</td>
</tr>
<tr>
<td>Small Step Test:</td>
<td>.0000080&quot; +/- 2 steps</td>
</tr>
</tbody>
</table>

Continuous Machining Accuracy Cutting Conditions:

- CMA Results: 0.00012"
- Cycle Time: 3min. 20 sec.
- Spindle Speed: 1200 RPM
- Cutting Depth: .005"
- Feedrate: .005 IPR
- Material: Brass
- Coolant Chiller: Yes

*Actual results may be greater or less than those listed due to a number of factors including but not limited to speeds, feeds, tooling, machine maintenance, coolant, material, ambient temperature and type of machine foundation.
Fanuc 31i Control Specifications

General
- Pendant-mounted Full Control
- 10.4” LCD Display
- Graphic Display
- Embedded Ethernet
- RS-232C Communication Ports
- Program Resolution .00001” (.0001mm)
- Tool Offset Capability .00001” (.0001mm)
- Tool Offsets with Geom/Wear (99)
- Tool Offsets with Geom/Wear (200/400)
- Absolute Encoders
- Inch/Metric Selection by G-Code
- 160 Meters (64Kbyte) Part Program Storage
- Part Program Storage (128/256/512KB, 1/2/4MB)

Programming Functions
- Absolute/Incremental Programming
- Additional Custom Macro Variables
  - Alarm Display
  - Auto Acceleration/Deceleration
  - Auto Coordinate System Setting
  - Background Editing
  - Canned Cycles (Drilling)
  - Chamfer/Corner Rounding
  - Circular Interpolation by R Programming
  - Constant Surface Speed Programming
  - Continuous Thread Cutting
  - Coordinate System Setting (G50)
  - Custom Macro B
  - Decimal Point Programming
  - Diameter/Radius Programming
  - Direct Drawing Dimension Programming
  - Display Position, Program, Alarm, History
  - Extended Part Program Edit (copy/replace)
  - External/Workpiece Number Search
  - Hardinge Safe Start Format
  - Helical Interpolation (for Y-Axis)
  - Helical Interpolation (for Non-Y-Axis)
  - Help Screen
  - Input of Offset Values by (G10)
  - Interpolation (Linear/Circular)
  - MPG Manual Pulse Generator
  - Manual Guide i with full color display
  - Multiple Repetitive Cycles I (Turning)
  - Multi Spindle Control
  - Program Number Search
  - Programmable Parameter Input
  - Reference Point Return
  - Registered Part Program Storage (125)
  - Rigid Tapping
  - Spindle Orient Main & Sub (Std. on Live Tooling Models)
  - Spindle Synchronization (Main & Sub)
  - Sequence Number Search
  - Single Block Operation
  - Skip Function G31
  - Stored Stroke Check 2 & 3
  - Sub Program Call (10 fold nested)
  - Thread Cutting Retract
  - Thread Cutting
  - Tool Life Management (32 Pair)
  - Tool Life Management Offset Pair (64/240)
  - Tool Nose Radius Compensation (Geom/Wear)
  - Variable Lead Thread Cutting
  - Workpiece Coordinate System (G52-G59)

Miscellaneous
- Actual Cutting Speed and T-Code Display
- Dual Check Safety (Spindle Speed)
- English
  - French/German/Italian/Spanish Language
  - Chinese in Fanuc menus only
- Flash Card Capability PCMICA (up to 1-GB)
- Floating Reference Point Return
- Full Keyboard
- Ladder Diagram Display
- Mechanical Run Meter
Swing Diameter
Maximum Swing Over Way Covers 27” (685.8mm)

**Work Capacities**

- **Chuck Size** 6” (150mm)
- **Maximum Bar Capacity** 1.625” (42mm)
- **Maximum Machining Diameter (BMT-45)** 8.91” (226.3mm)
- **Maximum Machining Diameter (Block Type)** 12.4” (315mm)
- **Max. Machining Length w/Tailstock BMT** 12.97” (329.7mm)
- **Max. Machining Length w/Tailstock Hardinge T-style** 13.63” (346.2mm)
- **Max. Machining Length w/Chuck BMT** 8.475” (215.3mm)
- **Max. Machining Length w/Chuck Hardinge T-style** 9.125” (231.8mm)

**Main Spindle**

- **Maximum Speed** 6000-rpm
- **Maximum Power Rating (Continuous)** 15-hp (11 kW)
- **Maximum Torque (Continuous)** 108 ft-lb (146.3 Nm)
- **Base Speed** 750-rpm
- **Spindle Nose** A2-5 / 16 C
- **Spindle Bore (not bar capacity)** 6” (150 mm)
- **Chuck Size (Chuck Not Included)** 1.89” (48mm)
- **Spindle Center Height** 42” (1066.8mm)
- **Spindle Reach** 16” (406.4mm)
- **Spindle Orient (optional)** 1.0 degree
- **Closer Type** Hydraulic

**Sub Spindle**

- **Maximum Speed** 6000-rpm
- **Maximum Power Rating (Continuous)** 15-hp (11 kW)
- **Maximum Torque (Continuous)** 108 ft-lb (146.3 Nm)
- **Base Speed** 1100-rpm
- **Spindle Nose** A2-5 / 16 C
- **Spindle Bore (not bar capacity)** 6” (150 mm)
- **Chuck Size (Chuck Not Included)** 1.89” (48mm)
- **Spindle Center Height** 42” (1066.8mm)
- **Spindle Reach** 16” (406.4mm)
- **Spindle Orient (optional)** 1.0 degree
- **Closer Type** Pneumatic

**Travels and Feedrates**

- **Maximum X-Axis Travel** 6.37” (161.8mm)
- **Maximum Z-Axis Travel** 16” (406.4mm)
- **Maximum Y-Axis Travel (+2.25” -1.0”) 3.25” (82.55mm)
- **Continuous X-Axis Thrust** 1,695 lbs. (7,540N)
- **Continuous Z-Axis Thrust** 1,500 lbs (6,672N)
- **Continuous Y-Axis Thrust** 1,100 lbs (4,893N)
- **X-Axis Rapid Traverse Rates** 945-ipm (24m/min)
- **Y-Axis Rapid Traverse Rates** 1,000-ipm (25.48m/min)
- **Z-Axis Rapid Traverse Rates** 236-ipm (6m/min)

**Hardinge BMT-45 Live Tooling Top Plate**

- **BMT-45 bi-directional** 16-station + ½ station index
- **Round Shank Tooling** 3/4” (20mm)
- **Index Time (rotation/including clamp-unclamp)** .04 - .625” (1mm - 16mm)
- **Live Tooling Power Rating (15 Min Rating)** 5-hp (3.7 kW)
- **Live Tooling Torque Rating (15 Min Rating)** 25 ft-lb (33 Nm)
- **Live Tooling Max Speed** 8,000-rpm

**Hardinge Block Type (T-style) Static Top Plate**

- **Block Type (Static) bi-directional** 12-station
- **Round Shank Tooling** 3/4” (20mm)
- **Index Time (rotation/including clamp-unclamp)** .35/1.0 Seconds

**Servo Driven Tailstock**

- **MT # 4** Morse Taper (no quill needed)
- **Maximum Cutting Length** 16.5” (419.1mm)
- **Maximum Tailstock Travel** 16” (406.4mm)
- **Maximum Traverse Rate** 1,000-psp (25.48 liters)
- **Minimum Applied Force** 350 lb. (1.536kN)
- **Maximum Applied Force** 1500 lb. (6.7kN)

**Coolant Facilities**

- **Coolant Capacity** 55 gallon (208 liter)
- **Maximum Pressure** 187 psi (12.9 bar)
- **Coolant Flow Rate (Per-Minute)** 6.75 gallon (25.48 liters)
- **High Pressure Through Turret (Option)** 1,000 psi (68.95 bar)

**HIGH-PERFORMANCE Accuracy and**

**Surface Finish Specifications**

- **Part Surface Finish** 12 micro-inch / .30 micron
- **Overall Axis Repeatability** .00005” / .127 micron
- **Program Resolution (non-SP)** .00001” (.0001mm)
- **Turret Indexing Repeatability** .000060” / 1.52 micron

**SUPER-PRECISION® Accuracy and**

**Surface Finish Specifications**

- **Part Surface Finish** 6 micro-inch (.15 micron)
- **Overall Axis Repeatability (X, Z)** .000030” (.76 micron)
- **Part Surface Finish** 6 micro-inch (.15 micron)
- **Part Roundness** .0001” (25 micron)
- **Total Variation on Diameter** .00012” (3 micron)
- **Program Resolution** .0001” (.0001mm)
- **Turret Indexing Repeatability** .000060” / 1.52 micron

**Power Requirements (MSY Configuration)**

- **Maximum kVA Rating** 81.5 kVA
- **Volts/Maximum Full Load Amps** 460 volt/102.4 FLA
- **Phase/Hertz** 3-phase/50-60 Hz

**Miscellaneous**

- **Machine Lubrication** Grease
- **Machine Communication** RS-232-C, Ethernet
- **Machine Length** 98” (2489.2mm)
- **Machine Depth** 83.25” (2121mm)
- **Machine Height** 82.25” (2089mm)
- **Approx. Machine Weight** 12,600 lb (5715kg)
- **Approx. Shipping Weight** 13,200 lb (5987kg)
- **Air Requirement** 70 - 90 psi (4.8-6.2 bar)
Over the years, The Hardinge Group™ steadily diversified both its product offerings and operations. Today, the company has grown into a globally diversified player with manufacturing operations in North America, Europe and Asia. In addition to designing and building turning centers and collets, Hardinge is a world leader in grinding solutions with the addition of the Kellenberger, Jones & Shipman, Hauser and Tschudin brands to the Hardinge family. The company also manufactures Bridgeport machining centers and other industrial products for a wide range of material cutting, turnkey automation and workholding needs.

Expect more from your Hardinge products. Choose Hardinge precision and reliability for increased productivity and value!

Call us today, we’ve got your answer.