T-Series SUPER-PRECISION®
and High-Performance
Horizontal Turning Centers

www.hardinge.com
T-Series Overview

Standard Specifications

**T-42**

- Spindle Nose: A2-5 / 16C (A2-6 / 20C Big Bore Option)
- Collet Capacity (in/mm): 1.625 / 42 (2 / 51 Big Bore Option)
- Spindle Through Hole (in/mm): 1.890” / 48
- Chuck Size (Chuck not Included) (in / mm): 6 / 150
- Spindle Motor (hp / kW): 15 / 11
- Max Spindle Speed (rpm): 6,000 (5,000 Big Bore Option)
- Number of Turret Stations (BMT-45 / block type): 16 / 12
- CNC Control: Fanuc 31i

Standard Specifications

**T-51**

- Spindle Nose: A2-6 / 20C
- Collet Capacity (in / mm): 2 / 51
- Spindle Through Hole (in / mm): 2.378” / 60.04
- Chuck Size (Chuck not included) (in / mm): 8 / 200
- Spindle Motor (hp / kW): 30 / 21
- Max Spindle Speed (rpm): 4,000
- Number of Turret Stations BMT-55 / block type): 12 / 12
- CNC Control: Fanuc 31i

Standard Specifications

**T-65**

- Spindle Nose: A2-6 / 25C
- Collet Capacity (in/mm): 2.5 / 65
- Spindle Through Hole (in/mm): 2.935” / 75
- Chuck Size (Chuck not Included) (in/mm): 10 / 250
- Spindle Motor (hp/kW): 35 / 26
- Max Spindle Speed (rpm): 4,000
- Number of Turret Stations (BMT-55 / block type): 12 / 12
- CNC Control: Fanuc 31i
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.

Heavy duty integral motor spindle design for enhanced thermal stability.

Hardinge's unique 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.

Hardinge BMT or Hardinge T-Style top plate.

Independent Y-Axis for superior part accuracy.

Heavy duty FANUC motor and drives.

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

**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 closest 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 (T-42), 45mm (T-51 and T-65) 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. Torque limiters are provided as standard equipment to prevent damage if a collision were to occur.

**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 axes 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.

* x-axis standard and z-axis optional on HP models

**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 BMT-45 and BMT-55 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. (T-42 includes BMT-45, 16 Station; T-51 and T-65 include BMT-55, 12 Station)

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. The Hardinge BMT-55 has 12 and 24 station respectively.

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 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 live tooling holders provide superior run-out within .00012” (3 micron) making it the overall best in class tooling system.
Main and Sub-Spindle Tooling for Hardinge® T-Series Horizontal Turning Centers

Hardinge collet-ready spindles accept standard 5C, 16C, 20C or 25C tooling to offer a wide range of workholding options. Not to mention other workholding alternatives with either A2-5 or A2-6 spindle adapters, such as chucks and adaptation chucks.

<table>
<thead>
<tr>
<th>T-Series Horizontal Turning Centers Spindle</th>
<th>T-42 Primary A2-5 Spindle &amp; Sub</th>
<th>T-51 Primary A2-6 Spindle</th>
<th>T-65 Primary A2-6 Spindle</th>
<th>T-51/65 Sub-Spindle A2-6 Spindle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workholding Options:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collets (maximum capacities)</td>
<td>16C</td>
<td>20C</td>
<td>25C</td>
<td>20C</td>
</tr>
<tr>
<td>Round-smooth &amp; serrated</td>
<td>1/16&quot;, 1/8&quot;</td>
<td>2&quot;</td>
<td>2.559&quot;</td>
<td>2&quot;</td>
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<tr>
<td>Hex-smooth</td>
<td>1/8&quot;</td>
<td>1/4&quot;</td>
<td>2.16&quot;</td>
<td>1/8&quot;</td>
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<tr>
<td>Square-smooth</td>
<td>1/4&quot;</td>
<td></td>
<td>1.808&quot;</td>
<td>1/4&quot;</td>
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<tr>
<td>Collet Stops</td>
<td>Solid, Long, Ejector</td>
<td>Solid, Ejector</td>
<td>Solid</td>
<td>Solid, Ejector</td>
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<tr>
<td>Emergency Collet (pilot hole size)</td>
<td>1/8&quot;, 1/4&quot;, 1/2&quot;, none</td>
<td>1/4&quot; and none</td>
<td>1/4&quot; and none</td>
<td>1/4&quot; and none</td>
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<tr>
<td>Extended-Nose Emergency Collet (ext. length)</td>
<td>1/8&quot; and 1&quot;</td>
<td>1/4&quot; and 1/2&quot;</td>
<td>1/4&quot; and 1/2&quot;</td>
<td>1/4&quot; and 1/2&quot;</td>
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<tr>
<td>FlexC™ Collet Systems (max. capacities)</td>
<td>42mm</td>
<td>65mm</td>
<td>65mm</td>
<td>65mm</td>
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<tr>
<td>Round-Smooth &amp; serrated</td>
<td>1/8&quot;</td>
<td>2/5&quot;</td>
<td>2/5&quot;</td>
<td>2/5&quot;</td>
</tr>
<tr>
<td>Hex-Smooth</td>
<td>1/8&quot;</td>
<td>2/5&quot;</td>
<td>2/5&quot;</td>
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<tr>
<td>Square-Smooth</td>
<td>1/4&quot;</td>
<td>1/8&quot;</td>
<td>1/8&quot;</td>
<td>1/8&quot;</td>
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<tr>
<td>(maximum round capacities)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Sure-Grip® Expanding Collet System (capacity) Collet-Style</td>
<td>1/8&quot; to 4&quot;</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Spindle-Mount Style</td>
<td>1/8&quot; to 4&quot;</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Master Expanding Collets - emergency pads</td>
<td>1/8&quot; to 3&quot;</td>
<td>—</td>
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<tr>
<td>Step Chucks &amp; Closers - Emergency Style *</td>
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<tr>
<td>Regular-Depth Emergency (max. dia./depth)</td>
<td>2&quot; to 6&quot; / 1/2&quot;</td>
<td>3&quot; to 6&quot; / 1/2&quot;</td>
<td>4&quot; - 8&quot; / 1/2&quot;</td>
<td>3&quot; to 6&quot; / 1/2&quot;</td>
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<tr>
<td>Extra-Depth Emergency (max. dia./depth)</td>
<td>2&quot; to 6&quot; / 1/2&quot;</td>
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<td></td>
<td></td>
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<tr>
<td>Force-Limiting Step Chuck</td>
<td>on application</td>
<td>on application</td>
<td>on application</td>
<td>on application</td>
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<tr>
<td>Dead-Length Control - Emergency Style *</td>
<td></td>
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<tr>
<td>Collet (max. diameter bore)</td>
<td>1/16&quot;</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Thru-Hole Collet (max. round capacity)</td>
<td>1/16&quot;</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Step Chuck (max. diameter bore)</td>
<td>2/5&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>—</td>
</tr>
<tr>
<td>Step Chuck (max. diameter bore)</td>
<td>3/4&quot;</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Sure-Grip® 3-Jaw Power Chuck (diameter)</td>
<td>6&quot; std, 5&quot; &amp; 8&quot; opt.</td>
<td>8&quot; std, 6&quot; &amp; 10&quot; opt.</td>
<td>10&quot; std, 8&quot; opt.</td>
<td>8&quot; std, 6&quot; &amp; 10&quot; opt.</td>
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<tr>
<td>Headstock Centers</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
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<tr>
<td>Spindle Adapters</td>
<td>16C to 5C</td>
<td>20C to 16C</td>
<td>25C to 16C</td>
<td>20C to 16C</td>
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<tr>
<td>Fixtures</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Spindle-Mount Style</td>
<td>5/16&quot;, 8/16&quot;</td>
<td>zz</td>
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<td>—</td>
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<tr>
<td>Collet-Style</td>
<td>6/16&quot;</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Angle Plate</td>
<td>8/16&quot;</td>
<td>—</td>
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</tr>
</tbody>
</table>

* also available hardened and ground
Take your Hardinge collet-ready spindle lathe to the limit using flexible workholding options...

Hardinge is unique as a machine tool builder — we manufacture our own workholding products. Precision and accuracy is yours when you use Hardinge perfectly-mated workholding products.

Collets
Hardinge hardened and ground collets are inspected and measured in a Hardinge Super-Precision® spindle. Collets are available in fractional round, hex and square sizes and round metric, as well as round serrated fractional and metric sizes. Use adjustable, machinable collet stops for accurate part positioning.

Emergency Collets
Emergency collets have a soft face with a pilot hole for customer drilling, boring and stepping out to the exact size required. An optional extended nose permits deeper counterbores when required and tool clearance for extended work.

FlexC™ Quick-Change Vulcanized Collet Systems
Interchangeable quick-change vulcanized collet heads have a working range of ±0.020" (0.5mm) to accept bar stock variation. Collets change in seconds, while accuracy is maintained at .0004" (.010mm).

Style "S" Master Collets and Pads
Pads can be changed much quicker than solid collets can. Pads cost less and use less storage space when compared to a standard solid collet. Choose from hardened and ground, semi-hard and emergency pads. Styles S16, S20 and S26 require a collet closer.

Sure-Grip® Expanding Collet Systems
The Hardinge Sure-Grip expanding collet provides high-precision, internal gripping solutions with true parallel gripping. Collet-style and spindle-mount styles are available, depending on the machine model.

Master Expanding Collets are a lower-cost alternative to Sure-Grip Expanding Collet Systems and include a dead-length feature.

Step Chucks and Closers
Step Chucks and closers are used to accurately hold larger diameter parts.

Force-Limiting Step Chuck
The Hardinge force-limiting step chuck has built-in force control to safely grip thin-wall parts. Maintain inside and outside concentricity in a fail-safe process while eliminating the nuisance of manually tweaking the draw bar.

Dead-Length® Systems
Maintain part-length control by using Hardinge dead-length systems. Choose from dead-length collet assemblies, thru-hole collets, step chucks and spider-stop step chucks. 16C to #22 B&S adapter shown on A2-5 sub-spindle.

3-Jaw Power Chucks
Hardinge power chucks are lever operated, counter-centrifugal and dynamically balanced. Quick-change chucks are also available.
As the world’s only SUPER-PRECISION® turning center, Hardinge’s T-Series is the industry leader in accuracy.

Summary of SUPER-PRECISION® Results

Machine Model: SUPER-PRECISION® T-42

Test Part 62 Rc 8620 Steel

(1) Cylindricity:
   Results: 0.000025″

(2) Maintaining a Profile - 3 Small Steps:
   Results: 0.000050″ +/- 0.000010

(3) Maintaining a Profile - 200″ Arc:
   Results: +/- 0.000030″

Surface Finish:
   6 micro-inch

Small Step Test:
   Results: .0000080″ +/- 2 steps

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 warm up cycles, speeds, feeds, tooling, machine maintenance, coolant, material, ambient temperature and type of machine foundation.
Fanuc 31i Control Specifications

General
• Pendent-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)
  o Tool Offsets with Geom/Wear (200/400)
• Absolute Encoders
• Inch/Metric Selection by G-Code
• 160 Meters (64Kbyte) Part Program Storage
  o Part Program Storage (128/256/512KB, 1/2/4MB)

Programming Functions
• Absolute/Incremental Programming
  o Additional Custom Macro Variables
• Alarm Display
• Auto Acceleration/Deceleration
• Auto Coordinate System Setting
• Background Editing
• Canned Cycles (Drilling)
• Chamfer/Cornet 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)
  o 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)
  o Multiple Repetitive Cycles II (Pocketing)
• Multi Spindle Control
• Program Number Search
• Programmable Parameter Input
• Reference Point Return
• Registered Part Program Storage (125)
• Rigid Tapping

  o 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)
  o Thread Cutting Retract
  • Thread Cutting
  • Tool Life Management (32 Pair)
  o Tool Life Management Offset Pair (64/240)
  • Tool Nose Radius Compensation (Geom/Wear)
  o Variable Lead Thread Cutting
  • Workpiece Coordinate System (G52-G59)

Miscellaneous
• Actual Cutting Speed and T-Code Display
• Dual Check Safety (Spindle Speed)
• English
  o French/German/Italian/Spanish Language
  o Chinese in Fanuc menus only
• Flash Card Capability PCMICA (up to 1-GB)
  o Floating Reference Point Return
• Full Keyboard
• Ladder Diagram Display
• Mechanical Run Meter

  o Standard
  o Option
## Specifications

### Swing Diameter

<table>
<thead>
<tr>
<th>Model</th>
<th>T-42</th>
<th>T-51</th>
<th>T-65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Swing Over Way Covers</td>
<td>27” (685.8mm)</td>
<td>26.5” (673mm)</td>
<td>26.5” (673mm)</td>
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### Work Capacities

<table>
<thead>
<tr>
<th>Parameter</th>
<th>T-42</th>
<th>T-51</th>
<th>T-65</th>
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</thead>
<tbody>
<tr>
<td>Chuck Size</td>
<td>6” (150mm)</td>
<td>8” (200mm)</td>
<td>10” (250mm)</td>
</tr>
<tr>
<td>Maximum Bar Capacity</td>
<td>1,623” (42mm)</td>
<td>2” (51mm)</td>
<td>2.5” (65mm)</td>
</tr>
<tr>
<td>Maximum Machining Diameter (BMT)</td>
<td>8.91” (226.3mm)</td>
<td>12.35” (313.7mm)</td>
<td>12.35” (313.7mm)</td>
</tr>
<tr>
<td>Maximum Machining Diameter (T-Style)</td>
<td>12.4” (315mm)</td>
<td>15.245” (387.2mm)</td>
<td>5.245” (387.2mm)</td>
</tr>
<tr>
<td>Max. Machining Length w/ Tailstock BMT</td>
<td>12.97” (329.7mm)</td>
<td>22.47” (570.7mm)</td>
<td>22.47” (570.7mm)</td>
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<tr>
<td>Max. Machining Length w/ Tailstock Hardinge T-style</td>
<td>13.63” (346.2mm)</td>
<td>23” (584.2mm)</td>
<td>23” (584.2mm)</td>
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<tr>
<td>Max. Machining Length w/ Chuck BMT</td>
<td>8.475” (215.3mm)</td>
<td>16.85” (428mm)</td>
<td>15.70” (398.65mm)</td>
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<tr>
<td>Max. Machining Length w/ Chuck Hardinge T-Style</td>
<td>9.125” (231.8mm)</td>
<td>17.99” (456.8mm)</td>
<td>16.83” (427.36mm)</td>
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### Main Spindle

<table>
<thead>
<tr>
<th>Parameter</th>
<th>T-42</th>
<th>T-51</th>
<th>T-65</th>
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</thead>
<tbody>
<tr>
<td>Maximum Speed (Continuous)</td>
<td>6000-rpm</td>
<td>5000-rpm</td>
<td>4000-rpm</td>
</tr>
<tr>
<td>Maximum Torque (Continuous)</td>
<td>108 ft-lb (146.3 Nm)</td>
<td>256 ft-lb (347 Nm)</td>
<td>256 ft-lb (347 Nm)</td>
</tr>
<tr>
<td>Base Speed</td>
<td>750-rpm</td>
<td>420-rpm</td>
<td>590-rpm</td>
</tr>
<tr>
<td>Spindle Bore</td>
<td>A2-5 / 16 C</td>
<td>A2-6 / 20 C</td>
<td>A2-6 / 20 C</td>
</tr>
<tr>
<td>Chuck Size (Chuck Not Included)</td>
<td>6” (150 mm)</td>
<td>8” (200 mm)</td>
<td>10” (250 mm)</td>
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<tr>
<td>Spindle Bore (not bar capacity)</td>
<td>1.89” (48mm)</td>
<td>2.378” (60.4mm)</td>
<td>2.395” (75mm)</td>
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<tr>
<td>Spindle Center Height</td>
<td>42” (1066.8mm)</td>
<td>42” (1066.8mm)</td>
<td>42” (1066.8mm)</td>
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<tr>
<td>Spindle Reach</td>
<td>16” (406.4mm)</td>
<td>17.5” (444.5mm)</td>
<td>17.5” (444.5mm)</td>
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<td>Spindle Orient (optional)</td>
<td>1.0 degree</td>
<td>1.0 degree</td>
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<td>Closer Type</td>
<td>Hydraulic</td>
<td>Hydraulic</td>
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### Sub Spindle

<table>
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<th>T-51</th>
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</thead>
<tbody>
<tr>
<td>Maximum Speed (Continuous)</td>
<td>6000-rpm</td>
<td>5000-rpm</td>
<td>5000-rpm</td>
</tr>
<tr>
<td>Maximum Torque (Continuous)</td>
<td>108 ft-lb (146.3 Nm)</td>
<td>256 ft-lb (347 Nm)</td>
<td>256 ft-lb (347 Nm)</td>
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<tr>
<td>Base Speed</td>
<td>1100-rpm</td>
<td>420-rpm</td>
<td>420-rpm</td>
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<tr>
<td>Spindle Bore</td>
<td>A2-5 / 16 C</td>
<td>A2-6 / 20 C</td>
<td>A2-6 / 20 C</td>
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<tr>
<td>Chuck Size (Chuck Not Included)</td>
<td>6” (150 mm)</td>
<td>8” (200 mm)</td>
<td>8” (200 mm)</td>
</tr>
<tr>
<td>Spindle Bore (not bar capacity)</td>
<td>1.89” (48mm)</td>
<td>2.378” (60.4mm)</td>
<td>2.378” (60.4mm)</td>
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<tr>
<td>Spindle Center Height</td>
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<td>42” (1066.8mm)</td>
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<tr>
<td>Spindle Reach</td>
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<td>17.5” (444.5mm)</td>
<td>17.5” (444.5mm)</td>
</tr>
<tr>
<td>Spindle Orient (optional)</td>
<td>1.0 degree</td>
<td>1.0 degree</td>
<td>1.0 degree</td>
</tr>
<tr>
<td>Closer Type</td>
<td>Pneumatic</td>
<td>Pneumatic</td>
<td>Pneumatic</td>
</tr>
<tr>
<td>Maximum Travel</td>
<td>16” (406.4mm)</td>
<td>25.125” (638mm)</td>
<td>25.125” (638mm)</td>
</tr>
<tr>
<td>Maximum Traverse Rate</td>
<td>1200-ipm (30.5m/min)</td>
<td>1500-ipm (38m/min)</td>
<td>1500-ipm (38m/min)</td>
</tr>
<tr>
<td>Maximum Distance from Sub to Main Spindle Face</td>
<td>16.5” (419.1mm)</td>
<td>25.75” (654.1mm)</td>
<td>25.75” (654.1mm)</td>
</tr>
<tr>
<td>Minimum Distance from Sub to Main Spindle Face</td>
<td>.5” (12.7mm)</td>
<td>.625” (15.8mm)</td>
<td>.625” (15.8mm)</td>
</tr>
</tbody>
</table>

### Travels and Federates

<table>
<thead>
<tr>
<th>Parameter</th>
<th>T-42</th>
<th>T-51</th>
<th>T-65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum X-Axis Travel</td>
<td>6.37” (161.8mm)</td>
<td>7.76” (197mm)</td>
<td>7.76” (197mm)</td>
</tr>
<tr>
<td>Maximum Z-Axis Travel</td>
<td>16” (406.4mm)</td>
<td>25” (635mm)</td>
<td>25” (635mm)</td>
</tr>
<tr>
<td>Continuous Z-Axis Thrust</td>
<td>3.25” (82.55mm)</td>
<td>3.5” (88.90mm)</td>
<td>3.5” (88.90mm)</td>
</tr>
<tr>
<td>X-Axis Rapid Traverse Rates</td>
<td>1,500 lbs. (6672N)</td>
<td>2,250 lbs (10008N)</td>
<td>2,250 lbs (10008N)</td>
</tr>
<tr>
<td>Z-Axis Rapid Traverse Rates</td>
<td>945-ipm (24m/min)</td>
<td>1,100-ipm (28m/min)</td>
<td>1,100-ipm (28m/min)</td>
</tr>
<tr>
<td>Y-Axis Rapid Traverse Rates</td>
<td>1200-ipm (30.5m/min)</td>
<td>1,500-ipm (38m/min)</td>
<td>1,500-ipm (38m/min)</td>
</tr>
</tbody>
</table>

### Hardinge BMT Live Tooling Top Plate

<table>
<thead>
<tr>
<th>Parameter</th>
<th>T-42</th>
<th>T-51</th>
<th>T-65</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMT-45 bi-directional</td>
<td>16-station + ½ station index</td>
<td>12-station + ½ station index</td>
<td>12-station + ½ station index</td>
</tr>
<tr>
<td>Tool Shank Boring Tooling</td>
<td>3/4” (20mm)</td>
<td>1” (25mm)</td>
<td>1” (25mm)</td>
</tr>
<tr>
<td>Tool Shank Diameter w/ER 25 Collets</td>
<td>1.25” (32mm)</td>
<td>1.5” (38mm)</td>
<td>1.5” (38mm)</td>
</tr>
<tr>
<td>Index Time (rotation/including clamp-unclamp)</td>
<td>.35/1.35 Seconds</td>
<td>.35/1.35 Seconds</td>
<td>.35/1.35 Seconds</td>
</tr>
<tr>
<td>Live Tooling Power Rating (30 Min Rating)</td>
<td>7.5-hp (5.5 kW)</td>
<td>10-hp (7.5 kW)</td>
<td>10-hp (7.5 kW)</td>
</tr>
<tr>
<td>Live Tooling Torque Rating (30 Min Rating)</td>
<td>25 ft-lb (33 Nm)</td>
<td>31 ft-lb (42 Nm)</td>
<td>31 ft-lb (42 Nm)</td>
</tr>
<tr>
<td>Live Tooling Max Speed</td>
<td>8,000-rpm</td>
<td>8,000-rpm</td>
<td>8,000-rpm</td>
</tr>
</tbody>
</table>

### Hardinge Block Type (T-Style) Static Top Plate

<table>
<thead>
<tr>
<th>Parameter</th>
<th>T-42</th>
<th>T-51</th>
<th>T-65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block Type (Static) bi-directional</td>
<td>12-station</td>
<td>12-station</td>
<td>12-station</td>
</tr>
<tr>
<td>Tool Shank Boring Tooling</td>
<td>3/4” (20mm)</td>
<td>1” (25mm)</td>
<td>1” (25mm)</td>
</tr>
<tr>
<td>Tool Shank Diameter w/ER 25 Collets</td>
<td>1.25” (32mm)</td>
<td>1.5” (38mm)</td>
<td>1.5” (38mm)</td>
</tr>
<tr>
<td>Index Time (rotation/including clamp-unclamp)</td>
<td>.35/1.2 Seconds</td>
<td>.35/1.2 Seconds</td>
<td>.35/1.2 Seconds</td>
</tr>
</tbody>
</table>
**Specifications**

### Servo Driven Tailstock
- **Morse Taper (no quill needed)**: MT # 4
- **Maximum Cutting Length BMT**: T-42: 16.5" (419.1mm)  
  T-51: 22.5" (571.5mm)  
  T-65: 22.5" (571.5mm)
- **Maximum Tailstock-Travel**: T-42: 16" (406.4mm)  
  T-51: 23.3" (590.6mm)  
  T-65: 23.3" (590.6mm)
- **Maximum Traverse Rate**: T-42: 1,200-ppm (30.5m/min)  
  T-51: 1,500-ppm (38m/min)  
  T-65: 1,500-ppm (38m/min)
- **Minimum Applied Force**: T-42: 350 lb. (1.55kN)  
  T-51: 370 lb. (1.66kN)  
  T-65: 370 lb. (1.66kN)
- **Maximum Applied Force**: T-42: 1,500 lb. (6.7kN)  
  T-51: 1,599 lb. (7.1kN)  
  T-65: 1,599 lb. (7.1kN)

### Coolant Facilities
- **Coolant Capacity**: T-42: 55 gallon (208 liter)  
  T-51: 67 gallon (254 liter)  
  T-65: 67 gallon (254 liter)
- **Maximum Pressure**: T-42: 200 psi (1.38 bar)  
  T-51: 200 psi (1.38 bar)  
  T-65: 200 psi (1.38 bar)
- **Coolant Flow Rate (Per-Minute)**: T-42: 6.75 gallon (25.48 liters)  
  T-51: 6.7 gallon (25.4 liters)  
  T-65: 6.7 gallon (25.4 liters)
- **High Pressure Through Turret (Option)**: T-42: 1,000 psi (68.95 bar)  
  T-51: 1,000 psi (68.95 bar)  
  T-65: 1,000 psi (68.95 bar)

### HIGH-PERFORMANCE Accuracy and Surface Finish Specifications
- **Part Surface Finish**
  - Overall Axis Repeatability: T-42: .00005" (.127 micron)  
    T-51: .00005" (.127 micron)  
    T-65: .00005" (.127 micron)
  - Program Resolution (non-SP): T-42: .0001" (.00254 mm)  
    T-51: .0001" (.00254 mm)  
    T-65: .0001" (.00254 mm)
  - Turret Indexing Repeatability: T-42: .000060" (.152 micron)  
    T-51: .000060" (.152 micron)  
    T-65: .000060" (.152 micron)

### SUPER-PRECISION® Accuracy and Surface Finish Specifications
- **Part Surface Finish**
  - Overall Axis Repeatability (X, Z): T-42: .000030" (.076 micron)  
    T-51: .000030" (.076 micron)  
    T-65: .000030" (.076 micron)
  - Program Resolution: T-42: .000012" (.3 micron)  
    T-51: .000012" (.3 micron)  
    T-65: .000012" (.3 micron)
  - Turret Indexing Repeatability: T-42: .000060" (.152 micron)  
    T-51: .000060" (.152 micron)  
    T-65: .000060" (.152 micron)

### Power Requirements (MSY Configuration)
- **Maximum kVA Rating**: T-42: 81.5 kVA  
  T-51: 87 kVA  
  T-65: 87 kVA
- **Volts/Maximum Full Load Amps**: T-42: 460 volt/102.4 FLA  
  T-51: 460 volt/98 FLA  
  T-65: 460 volt/98 FLA
- **Phase/Hertz**: T-42: 3-phase/50-60 Hz  
  T-51: 3-phase/50-60 Hz  
  T-65: 3-phase/50-60 Hz

### Miscellaneous
- **Machine Lubrication**: Grease
- **Machine Communication**: RS-232-C, Ethernet
- **Machine Length**: T-42: 98" (2489.2mm)  
  T-51: 128.23" (3257mm)  
  T-65: 128.23" (3257mm)
- **Machine Depth**: T-42: 83.5" (2112mm)  
  T-51: 91.04" (2312mm)  
  T-65: 91.04" (2312mm)
- **Machine Height (no stack light)**: T-42: 82.25" (2089mm)  
  T-51: 83.6" (2123mm)  
  T-65: 83.6" (2123mm)
- **Approx. Machine Weight**: T-42: 12,300 lb (55.1kg)  
  T-51: 17,900 lb (81.1kg)  
  T-65: 17,900 lb (81.1kg)
- **Approx. Shipping Weight**: T-42: 18,800 lb (8527kg)  
  T-51: 18,800 lb (8527kg)  
  T-65: 18,800 lb (8527kg)
- **Air Requirement**: T-42: 70 - 90 psi (486.2 bar)  
  T-51 & T-65: 70 - 90 psi (486.2 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.

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