ELITE® Series II Performance CNC Lathes

An outstanding machine value...standard live tooling, C-axis and robust tailstock

ELITE Series II lathes are unlike all competitive machine tools in that they include our world-renowned patented jaw chuck/collet-ready spindle, live tooling, C-axis contouring and tailstock as standard equipment. We have also made significant enhancements to the ELITE II-8/51 CNC lathe since it was introduced in 2002, making it an even more outstanding value for the money. Plus we’ve added the ELITE II-6/42 model that features a smaller 1 5/16”, 42mm spindle. Both models are now available with an optional sub-spindle. We have also beefed up the machine base, added a new door design and an improved operator panel. A Hardinge ELITE lathe will allow you to reduce operating expenses, while improving flexibility and throughput—at an astounding price.

Designed for performance
The latest software design platform and FEA (finite element analysis) techniques were used to design and build a rigid, structurally-balanced machine to assure optimum performance and machine life. The FEA software accurately depicts the structural deflection, stress levels, thermal response and vibration response of the assembled components and the assembled machine. Extreme-case loadings are used to verify adverse machining conditions.

ELITE II-6/42
- A2-5 16C spindle
- 15-hp/11-kW spindle drive system
- 6,000-rpm spindle speed
- 6”/150mm jaw chuck capacity

ELITE II-8/51
- A2-6 20C spindle
- 15-hp/11-kW spindle drive system
- 5,000-rpm spindle speed
- 8”/200mm jaw chuck capacity
The best combination of standard features for the machining predictability you need to be more productive and profitable

**VDI-30 top plate—standard**

Bidirectional indexing of the 12-station VDI-30 turret top allows shortest path indexing for reduced non-cut time...non-lift turret indexing ensures contaminant-free operation. And since there are a large number of tool stations, easier processing of part families and fewer setups are realized. Fast setup times are possible by using quick-change VDI tool holders. Coolant is fed through turret ports, allowing tool holders to direct coolant to the cutting operation and enhance chip management. The turret pivot (safety shear) feature and the indexing drive motor torque limiter help prevent damage to the machine.

**5,000-rpm Live tooling—standard**

Every station on the top plate can be equipped with a driven tool for cross- or end-milling/drilling operations in the toughest materials (only one station is actively driven at a time). Live tooling eliminates the need for many milling machine operations and the need for special mill fixturing. Angular operations are easily accomplished using adjustable VDI live tooling attachments. One-degree spindle orient is included.

**C-Axis contouring—standard**

Included on both the main spindle and sub-spindle option, C-axis provides positioning in increments of .001 degree. Three-dimensional contouring, complex round and prismatic machining, square shoulder and lettering are accomplished by synchronizing the spindle with the X and Z axes.

**Rigid tapping—standard**

Rigid tapping is standard capability on the main spindle, as well as cross- and face-working operations with live tooling.

**Robust hydraulic tailstock—standard**

The standard MT No. 3 tailstock offers a robust design for greater stability when machining long components between centers, allowing closer tolerances, better surface finishes, and higher speeds and feeds. Tailstock motions are accomplished on linear guideways. The tailstock is hydraulically-actuated with pressure regulation automatically controlled by the part program or manually using a switch on the operator control panel. A patented breakaway safety feature is included.
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Standard and optional features for enhanced machining performance

Heavy machine base
Our beefed-up cast iron base weighs an impressive 2,998 pounds / 1,360 kilograms with HARCRETE® polymer composite (synthetic granite) added into strategically-located cavities. This greatly adds to the machine’s overall stability and damping characteristics for optimum tolerances and surface finishes. The large 45-degree carriage mounts directly to the base.

Reliable spindle drive
The main spindle drive system features an impressive 15-hp/11-kW power rating with 70 ft-lb/95 Nm torque intermittent ratings for optimum metal removal rates. The drive motor is fan-cooled and permanently sealed and lubricated for minimal maintenance. Power is delivered by four ribbed, solid V-belts—less vibration transfer than “geared” systems.

Polygon turning option
Polygon turning in conjunction with live tooling allows square, hexagon or other polygon shapes to be cut on the outside diameter of the workpiece on the main spindle or sub-spindle—in a fraction of the time associated with traditional live tooling cuts. Either the main spindle or the sub-spindle is synchronized with the live tooling spindle outfitted with special insert cutters.

Operator friendly
Designed with the operator in mind for maximum uptime, ELITE lathes feature the premium Hardinge®/GE Fanuc 21i-T or 18i-T CNC control with Manual Guide i and many standard features other machine tool builders charge extra for (see page 6). Also included is a swing-out CNC control panel for ease of operation, along with an air line with nozzle and tool shelf. Crash protection features are also included.

Heavy-duty linear guideways and ball screws
The X- and Z-axis ball screws, linear guideways and guide trucks feature a large load rating with minimal friction, resulting in low heat and thermal growth, longer machine life, maximum static and dynamic stiffness, and overall machining consistency. The 1.26”/32mm double-nut hardened & ground ball screws and guide trucks are grease lubricated…heavy-duty ball screw supports are featured. Fast traverse rates of 1,181ipm / 30m/min provide reduced cycle times. AC digital drive servomotors feature encoders for optimum axis positioning accuracy.

Sub-spindle option
The 16C, A2-5 sub-spindle offers workpiece capacity up to 1 5⁄8”/42mm with 16C collets and a gripping capacity of 5.65”/144mm with 6”/150mm jaw chucks. Exact synchronization between the main and sub at any rpm can be programmed for part transfer for secondary machining. The 5-hp/3.7-kW drive system provides speeds up to 6,000 rpm. C-axis, threading and rigid tapping are included. A part present sensor is available.

Easy access and serviceability
The inside door configuration provides optimum coolant management, while sporting a large window for machining visibility. The wide door opening allows easy access to the machine interior for tool setting. Removable covers facilitate machine maintenance and convenient access to grease fittings.
Jaw chuck/collet-ready spindles
Hardinge-designed and -built ANSI collet-ready spindles permit bar work up to 1\(\frac{1}{8}\)/42mm on ELITE II-6/42 lathes and 2\(\frac{1}{2}\)/51mm on ELITE II-8/51 lathes. Maximum part rigidity is an added bonus since parts are gripped close to the spindle bearings, resulting in increased concentricity. The patented design of the Hardinge collet seat/A2 spindle mount allows quick changeover from through-spindle bar work using collets to second operation and chucking work using step chucks or jaw chucks—unlike competitive lathes that require a collet adapter.

Hardinge spindle tooling
Hardinge manufactures a full line of collets, jaw chucks and quick-change spindle tooling for the most demanding workholding applications. Request brochure 2353 for a concise overview of the tooling available on Hardinge lathes.

Large machining area
Since ELITE lathes do not require a spindle adapter for using collets, a large machining area is available with a bar length machining capacity of 14"/356mm and a swing diameter of 21"/533mm.

Other optional features:
- Tool Touch Probe
- Part Probe
- Parts Catcher
- Air Blast
- Thru-Spindle Coolant
- Chip Conveyor
- VDI Turret Tooling
- Manual VDI Tool Presetter System
- Mist Collector
- Bar Feed Systems
- Power Transformers

Our patented jaw chuck/collet-ready spindle design permits faster spindle speeds for faster cycle times. Unlike lathes requiring the use of a collet adapter, Hardinge lathes offer a large machining area (up to 14"/356mm between centers) without sacrificing accuracy. Collet adapters create an extreme overhang from the spindle bearings. Any error in the spindle is then multiplied by the overhang distance. The use of a collet adapter on competitive machines is not rigid, is not easily adjusted and creates poor T.I.R. Ask for “The Hardinge Advantage” brochure 2327.
Hardinge ELITE lathes feature a custom-designed, swing-out CNC control with the latest hardware and software technology, providing an operator-friendly, common platform. Many standard features are included that other machine tool builders charge extra for—rigid tapping, tool life management, variable lead thread cutting, run time and parts counter, and Ethernet connection. The operator’s panel is the same style as included on the line of QUEST® CNC lathes, providing an increased level of functionality and ease of use. A 21i-T control is included on machines equipped with the standard tailstock; an 18i-T control is included on machines equipped with the sub-spindle option.
Specifications

**Spindle**
- **Spindle Configuration (ANSI):** A2-5, 16C
  - **Draw Tube Type:** Hydraulic
  - **Round Collet (Through Capacity):** 1.625"/42mm
  - **Jaw Chuck Size (Max):** 6"/150mm
  - **Step Chuck Size (Gripping):** 6"/152.4mm
  - **Turning Length with Collet (Max):** 14"/355.6mm
  - **Machining Diameter (Max):** 2.13"/53.3mm
  - **Hang Weight with Device and Part:** 75lb/34kg
- **Spindle Centerline Height:** 41"/1041mm
  - **Operator’s Reach to Spindle:** 15"/381mm

**AC Digital Spindle Drive System**
- **Horsepower Rating—Intermittent:** 5hp/3.7kW
  - **Torque Rating:** 17.5 ft-lb/23.7Nm
  - **Base Speed:** 1,500 rpm
  - **Speed Range (1-rpm Steps):** 50 to 5,000 rpm

**Carriage and Cross Slide**
- **Swing Dia. Over Way Cover (Max):** 21.0"/533.4mm
- **Travel (Max):**
  - **X-Axis:** 1,181 ipm / 30m/min
  - **Z-Axis:** 1,181 ipm / 30m/min
  - **Z-Axis Thrust (Max):** 1,500lb/6673N

**Standard VDI 30 Turret (Bidirectional)**
- **Number of Stations:** 12
- **Square Shank Tool Size (Max):**
  - ½" or 1": 20 or 25mm
  - ½" or 1½": 32mm or 40mm
  - **Indexing Time (Station-to-Station):** .3 Second

**Live Tooling—Standard**
- **Tool Shank Diameter:** .079 to .625"/2 to 16mm
- **Power Rating at Tool Tip:** 5hp/3.7kW
- **Torque Rating at Tool Tip:** 17.7 ft-lb/24Nm
  - **Speed Range (1-rpm Steps):** 50 to 5,000

**Sub-Spindle—Option**
- **Spindle Configuration (ANSI):** A2-5, 16C
  - **Draw Tube Type:** Hydraulic
  - **Round Collet (Through Capacity):** 1.625"/42mm
  - **Jaw Chuck Size:** 6"/150mm
  - **Step Chuck Size (Gripping):** 6"/152.4mm
  - **Horsepower Rating—Intermittent:** 5hp/3.7kW
  - **Torque Rating:** 17.5 ft-lb/23.7Nm
  - **Base Speed:** 1,500 rpm
  - **Speed Range (1-rpm steps):** 50 to 5,000 rpm
  - **Travel (Max):** 15.50"/393.7mm
  - ** Traverse Rate (Max):** 945ipm / 24m/min

**Tailstock—Standard**
- **Positioning:** Hydraulic
  - **Morse Taper Center MT No. 3:**
  - **Travel of Tailstock Base:** 11.50"/292.1mm
  - **Part Length (Max):** 8"/203.2mm
  - **Feedrate (Max):** 2740ipm / 724m/min
  - **Thrust (Max):** 700lb/3114N

**Parts Catcher—Option**
- **Workpiece Dia. x Length (Max):**
  - 2" x 4"/51 x 101.6mm
  - 2" x 4"/51 x 101.6mm

**Machine Dimensions**
- **Length:** 89.75"/2279.7mm
  - **Length w/Chip Conveyor Option:** 126.13"/3203.6mm
  - **Depth:** 66.00"/1676.4mm
  - **Depth w/Control Unit at Max. Swivel:** 86.50"/2191.7mm
  - **Height:** 70.50"/1790.7mm
  - **Approx. Floor Area:** 40ft²/37.37m²

**Inspection Specifications**
- **Part Surface Finish:** .30 micron
  - **Axis Repeatability (X and Z):** .000050"/1.27 micron
  - **Turret Indexing Repeatability:** .000050"/1.27 micron

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1—Adjacent tool clearance limitations may exist depending on tooling arrangement.
2—Cutting limitations exist at this diameter.
3—30-minute intermittent ratings used for power and torque specifications.
4—Index only—does not include clamp and unclamp time.
5—15-minute rating.
6—Available as original equipment only.
7—10-minute intermittent ratings used for power and torque specifications.
8—Dependent on type of live center used.
9—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 base.

NOTE: A supplementary power transformer is required for all voltages other than 230v, 50/60Hz.
Over the past 10 years Hardinge steadily diversified both its product offerings and operations. Today, the company has grown into a globally diversified player with manufacturing operations in the U.S., Switzerland, China and Taiwan. In addition to designing and building turning centers and collets, Hardinge is a world leader in grinding solutions with the addition of the Kellenberger, Hauser, Tripet 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.