



TensileMill CNC XL – Flat Tensile Specimen Preparation Machine

Standards: [ASTM E8](#), [ASTM A370](#), [ISO 6892-1](#), [DIN 50125](#), [JIS Z 2241](#), [ASTM E646](#), [ASTM E345](#), [ISO 6892-2](#), [GB/T 228.1](#)



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Description

The [TensileMill CNC XL](#) – Flat Tensile Specimen Preparation Machine is an advanced and powerful CNC machining system designed for laboratories and production environments that require high-volume, precision sample preparation. As an enhanced version of the classic TensileMill CNC model, the XL system delivers extended table dimensions, greater travel distance, and increased spindle power—making it ideal for processing larger or tougher materials while maintaining exceptional dimensional accuracy.

Equipped with a high-speed spindle and precision servo motors, the TensileMill CNC XL achieves fast material removal rates and consistent surface finishes across steel, aluminum, composite, and polymer specimens. The system operates on the Mach4-based control platform, which supports complex machining programs and allows users to create custom pockets, contours, hole patterns, and engraved markings directly from the touchscreen interface.

Despite its industrial-grade performance, the TensileMill CNC XL maintains a compact footprint, making it suitable for both research facilities and production floors. The intuitive



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TensileSoft™ interface enables users with minimal CNC experience to select or customize ASTM-, ISO-, or DIN-compliant parameters for immediate machining. The result is a fully automated, turnkey solution that prepares flat tensile specimens with repeatable accuracy and minimal operator involvement.

From light sheet metals to heavy-duty alloys, the TensileMill CNC XL offers a scalable solution for any laboratory looking to improve throughput, shorten lead times, and maintain strict compliance with global testing standards such as ASTM E8, ASTM A370, ISO 6892-1, and DIN 50125.



Key Features

The TensileMill CNC XL – Flat Tensile Specimen Preparation Machine combines industrial-grade strength with advanced CNC precision to deliver reliable and repeatable specimen preparation performance. Every component is designed to support stability, speed, and long-term accuracy in demanding laboratory or production environments.

- **Heavy-Duty Construction:** A rigid cast iron frame and linear guideways provide vibration-free operation and stability during high-speed machining.
- **Precision Drive System:** Equipped with 20 mm ball screws on the X and Y axes and a 25 mm ball screw on the Z axis for smooth motion and high repeatability.
- **Powerful Servo Spindle:** A belt-driven 5 hp (3.7 kW) servo spindle running up to 10,000 RPM with BT30 taper delivers efficient material removal on metals and composites.
- **Advanced Tool Control:** Servo spindle with full synchronous position control, disc-spring clamping, collet-style gripper, and air-over-hydraulic release ensure rapid, secure tool changes.
- **Automated Tool Changer:** A 10-station umbrella-style automatic tool changer allows flexible setup, with any tool assignable to any position.
- **Integrated CNC Center:** Designed as a 30 Taper CNC machining center with a simple, ergonomic control panel, large touchscreen interface, and MPG handwheel for precise manual adjustments.
- **Intelligent Mach4 Software:** Powered by Mach4 control software, compatible with Fanuc G-code and Macro B, featuring built-in graphical wizards for on-machine programming.
- **High-Performance Computing:** Runs on an industrial-grade PC with a 5th-generation 64-bit Intel Broadwell processor, 64 GB SSD, and 4 GB RAM for fast program execution.
- **Modern Connectivity:** Includes Wi-Fi and Bluetooth capability for seamless data transfer and remote monitoring.

Advanced Controller and Software System

The TensileMill CNC XL – Flat Tensile Specimen Preparation Machine is powered by an intuitive touchscreen controller integrated with the Carbon™ CNC software suite. Designed for both



precision and usability, this control system delivers professional-grade machining functions while remaining accessible to operators of all experience levels.

The Carbon™ software platform provides a seamless balance between automation and customization. It includes advanced features such as macro B programming, helical interpolation, drilling canned cycles, and dual-mode cutter compensation for complex specimen geometries. Operators can easily access both TensileSoft™ for specimen preparation and Mach4 Industrial CNC Software for general machining operations.

Watch Video



Watch the TensileMill CNC XL – Flat Tensile Specimen Preparation Machine product video.

[WATCH ON YOUTUBE](#)



Service Plan and Support

NextGen Material Testing offers a comprehensive Service Plan for all TensileMill CNC specimen preparation systems, including the TensileMill CNC XL – Flat Tensile Specimen Preparation Machine. This plan is designed to maintain peak system performance, extend equipment life, and preserve long-term testing accuracy through regular Preventive Maintenance (PM) and professional technical support.

Our service plan includes:

- Scheduled preventive maintenance to minimize downtime and detect potential issues early.
- Expert operator training and retraining to help your team stay proficient and fully utilize the system's capabilities.
- Performance verification and calibration checks to maintain compliance with ASTM, ISO, and DIN standards.
- Priority technical assistance for troubleshooting, software updates, and replacement parts.

Whether integrating new operators or optimizing existing workflows, this ongoing support ensures consistent performance and reliability. [Contact our team](#) to discuss a customized service plan that best fits your operational needs and testing schedule.



Technical Specifications

Parameter	Specification
Overall Dimensions (D × W × H)	66.1 × 75.79 × 86.54 in / 1680 × 1925 × 2198 mm
Table Size	31.5 × 10.24 in / 800 × 260 mm
Load Capacity	330 lb / 150 kg
T-Slot Size	0.63 in / 16 mm
Machine Weight	2976 lb / 1350 kg
Working Travel (X / Y / Z)	15.75 / 9.1 / 15.75 in – 400 / 230 / 400 mm

Spindle

Parameter	Specification
Speed	10,000 RPM
Power	5 hp / 3.7 kW
Torque	10.8 lb-ft / 14.6 Nm
Lubrication	High-speed grease
Bearings	Angular contact ball bearings

Auto Tool Changer



Parameter	Specification
Taper	BT30
Pull Stud	MAS P30T-1
Max Tool Diameter	3.14 in / 80 mm
Max Tool Weight	13.2 lb / 6 kg
Tool Change Type	Umbrella style
Tool Numbering	Random pot assignment
Tool Change Time	6 seconds

Servos

Parameter	Specification
Servo Power	1.75 hp / 1.3 kW
Servo Torque	1175.4 / 3299.6 oz-in
Maximum Feedrate	1000 ipm / 25.4 m/min
Ball Screws	PMI double nut: 20 mm (X/Y), 25 mm (Z)

Power

Parameter	Specification
Input Voltage	220 V, 3-phase



Additional Features

Parameter	Specification
Position Repeatability Accuracy	0.01 mm
Motor Drive	Servo
Drive Mechanism	Precision ball screw
Frame	Cast iron
Connection Requirements	Pneumatic (optional)

Control System

Parameter	Specification
Control Type	PC-based Mach4 control
Processor	64-bit, 5th Generation Intel Broadwell
Program Storage	64 GB SSD, unlimited program capacity
Memory	4 GB (upgradable)
Display	Full-color multi-touch (glove compatible)
Operating Modes	Auto / MDI / Jog, automatic switching
Wizards	Built-in graphical wizards for on-machine programming
Units	Inch / Metric
Overrides	Feed: 0-150%, Spindle: 50-150%, Rapid: 0-100% (configurable)



Parameter	Specification
G-Code Compatibility	Fanuc-compatible, Mach3-compatible
Custom Macro Support	Fanuc Macro B
External Communication	TCP Modbus
M-Codes	Unlimited user-defined, 5 inputs & 5 outputs (upgradeable)

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