



## Horizontal Tensile Testing Machines



# Horizontal Testers



**Fig. 1.** 150 kN capacity horizontal tensile testing machine shown with optional extensometer and pc

For maximum tensile testing throughput and capability, Tinlus Olsen offers a range of horizontal tensile testing machines in capacities of 5 kN (1,000 lbf), 25 kN (5,000 lbf), 150 kN (30,000 lbf) and 300 kN (60,000 lbf).

These horizontal testing machines offer unique benefits over vertically oriented testers by allowing a range of accessories to be mounted next to the machine that can turn it into a fully automatic testing station.

These horizontal machines are designed primarily for production departments and are typically in constant use; however, the grips can be modified to accommodate different shaped samples and alternate grips can be provided for customers

to interchange when their test requirements change.

The horizontal extensometer that is typically used with the machine has a unique design that incorporates pneumatic controls that automatically lower the arms prior to the test and raise the arms at the end of the test. Air bearings on the extensometer provide accurate strain measurement through fracture.

The operation of the basic machine is sophisticated, providing accurate and repeatable specimen placement against mechanical stops, automatic clamping, extensometer lowering



**Fig. 2.** Basic 25 kN capacity horizontal tensile testing machine, shown with optional extensometer

(if supplied), testing, extensometer removal, and grip return to the starting position, all with a single mouse click.

This advanced operation can be further developed when the pc-based machine control software provided with the machine is upgraded to include data acquisition and data analysis.

Further automation can then be achieved by the addition of a robot and sample racks. In this configuration, the robot will pick a sample from a sample rack and insert it into the machine grips; then wait for the end of test so that the broken sample pieces can be removed from the grips and placed in a suitable disposal bin.

If a sample measuring station and bar code reader are included with the system, the whole testing process is automated with the only operator requirement being the loading of the samples in the sample rack. The test

data that is generated can be included into corporate manufacturing and resource planning software ensuring that quality control data is an integral part of operations.



**Fig. 3.** Close up of unique extensometer that can stay on to sample fracture. The sample is loaded against the mechanical stops and the test started — the rest is automatic

## Key Features

- Rapid, easy specimen loading
- Automatic specimen gripping
- Automatic extensometer placement and removal
- Auto-ranging for both load and strain
- Accurate strain measurement through failure
- Grips return to start position automatically
- Higher throughput of test samples

## Optional Features

- Robotic loading and removal of samples
- Sample dimension and barcode reading
- Instrumentation and determination of r value



Fig. 4. Optional r value instrumentation on computer controlled extensometer allows fast, accurate r value calculations

Fig. 5. Close up of pick-and-place robot and sample racks



## Technical Specifications

MODEL		MHT-1,000	MHT-5,000	MHT-30,000	MHT-60,000
CAPACITY	lbf	1,000	5,000	30,000	60,000
	kN	5	25	150	300
	kg	500	2,500	15,000	30,000
MAXIMUM CROSSHEAD TRAVEL	in	17	17	20	20
	mm	430	430	500	500
GRIP ACTUATION		Pneumatic	Pneumatic	Hydraulic	Hydraulic
TESTING SPEED RANGE	in/min	0.002 to 20	0.002 to 20	0.002 to 10	0.002 to 10
	mm/min	0.05 to 500	0.05 to 500	0.05 to 250	0.05 to 250
DIMENSIONS H x W x D	in	14 x 48 x 28	41 x 61 x 29	50 x 70 x 20	48 x 77 x 21
	mm	356 x 1219 x 711	1041 x 1549 x 737	1257 x 1770 x 514	1229 x 1965 x 533
WEIGHT	lb	2000	2000	2700	2700
	kg	910	910	1225	1225
CONSOLE DIMENSIONS	in	N/A	N/A	40 x 48 x 31	40 x 48 x 31
	mm			1016 x 1219 x 787	1016 x 1219 x 787
CONSOLE WEIGHT	lb	N/A	N/A	880	880
	kg			400	400

### Specifications:

**Load measurement accuracy:** +/- 0.5% of applied load from 0.2% to full capacity

**Position measurement accuracy:** 0.1% of reading

**Speed accuracy:** 0.1% of set speed

**Operating temperature range:** 32 to 100° F (0 to 38° C)

**Storage temperature range:** 14 to 115° F (-10 to 45° C)

**Humidity range:** 10% to 90% non-condensing, web bulb method

**Power:** standard optional voltages 110/240VAC, 50-60 Hz, 1  $\theta$  for small machines, 3  $\theta$  for high capacity machines; power must be free of spikes and surges exceeding 10% of the nominal voltage

**Clean Air:** dry air filtered to 50 microns at up to 85 psi (5.9 bar) min

**Notes:** 1. Load weighing system meets or exceeds the requirements of the following standards: ASTM E4, EN 10002-2, BS 1610, DIN 51221, ISO 7500-1. Tinius Olsen recommends that systems are verified at installation in accordance with ASTM E4 and ISO 75001. 2. Alternate, lower capacity load measurement cells can be supplied for these frame capacities. 3. Strain measurement system meets or exceeds the requirements of the following standards: ASTM E83, EN 10002-4, BS 3846 or ISO 9513. 4. Specifications are subject to change without notice

Fig. 6. Detail showing the pick-and-place robot, sample racks, laser barcode reader, and sample dimension measuring station, broken sample bin, and another test station. This second test station could be a flexure test, a hardness test, or another kind of physical test



# Software

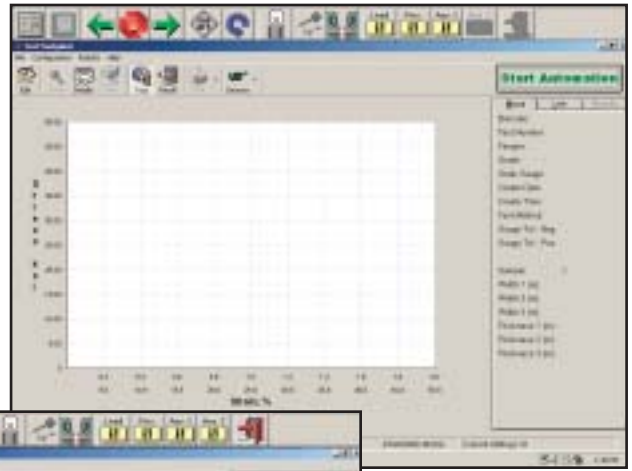
Building on our long history of providing solutions to an enormous variety of different testing problems, Tinius Olsen offers a comprehensive range of software products, each designed to make testing simple, precise, and efficient, no matter whether the material is metal, paper, composite, polymer, rubber, textile, or micro components. Tinius Olsen software goes far beyond basic module changes for unique applications. Instead, specific and focused application software products have been developed in close cooperation with our customers around the world.

There are several valuable features that are common to all. Perhaps the most important is the ability to further customize the testing parameters that are used to collect and document testing data, as well as control the testing machine. Specifically, our range of application software is for data acquisition, data analysis, and closed loop control of Tinius Olsen testing machines that have a compatible servo system or four-quadrant drive.

All versions of our focused application software are rich with standard features that improve productivity and enable you to build, access, and use a powerful materials testing database:

- Use of modern databases.
- Generation of user customized reports.
- Standard SPC programs for X-bar, r, and frequency distributions/histograms.
- Ability to recall, replot, and rescale curves.
- Recall of data that spans different test modules.
- User-configurable machine parameter and control settings.

**Contact Your Local Representative:**



**Fig. 7.** This screen indicates that the testing machine is ready to start testing



**Fig. 8.** Completed test with a complete test result, with r value; note that the extensometer stays on the sample until break



**Fig. 9.** Robotic set-up for the tester



**Fig. 10.** There are many screens behind the robotic set-up — as an example, this shows the sample rack set-up



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