

SL Series

Hydraulic Universal
Testing Systems



SL Series

Tinius Olsen’s hydraulic testers have long been recognized as the standard for accuracy, dependability and versatility in universal testing systems. The many thousands of testers currently in use throughout the world attest to this fact.

Now more than ever, the SL Series represents the highest standard in hydraulically powered UTM.

300SL with 1-ft Extended columns [\[09001300-CL1-LV\]](#) and Clam shell Headed holders [\[01027008\]](#), split-type tubular furnace [\[20001107-A2\]](#), HMC3.0 [\[03070501\]](#) and Horizon software [\[21001197\]](#).



It features a patented dual-pressure hydraulic loading system and a rugged four-column construction for exceptional load frame rigidity. In addition, it has a space-saving console with a smaller footprint and comfortable working height design.

A range of user interface options are available, including Bluetooth and/or tethered interfaces, to enable basic tests, comprehensive tests and everything in between, through Tinius Olsen’s Horizon materials testing software.

SL systems are guaranteed to meet ASTM, ISO, and other national and international specifications for accuracy. Accuracy is within +/- 0.2% of the indicated load from 0.2% to 100% of frame capacity. All equipment used to calibrate the weighing and indicating systems of the SL testers is traceable to the National Institute of Standards and Technology (NIST).

For consistent accuracy, robustness, and unparalleled reliability, the Tinius Olsen SL series still sets the standard of excellence.

1 Tooling

A wide variety of tooling is available on the SL series, including in-head pocket wedge grips, external grips, flexural/transverse tooling, compression platens, special application grips and alignment assemblies to ensure accurate and repeatable testing.

2 Accessories

Many kinds of accessories are available for accurate and repeatable testing, including LVDT extensometers, strain gage and optical extensometers, position encoders, video extensometers, deflectometers, temperature cabinets, furnaces etc.

3 Horizon Data Analysis Software

Our Horizon software sets new standards of data analysis by adding a host of report writing for data manipulation capabilities that will make easy work of your materials testing programs, whether they’re for the demanding rigors of R&D or the charting and analysis functions of QC testing.

In addition to powerful reports, Horizon Materials Testing software is networkable and scalable so operators and managers can operate equipment and review test results from multiple sources and locations.

Key Features



1,000SL rack & pinion crosshead[09009400] with Slotted bolt holder [01031003] and Horizon software [21001197]

- 1

Versatile

Suitable for tension, compression, transverse, and other tests on materials and assemblies.
- 2

Rugged Load Frame

Four-column construction provides exceptional load frame rigidity.
- 3

Configurable Load Frame

The SL load frames can be configured according to your application needs. These options include closed, semi-open or fully open crossheads, which can be either motorized or fixed. The top crosshead can also be made ‘adjustable’, meaning it can be raised or lowered on notched support columns. Additionally, the columns and drive screws can be lengthened in increments of 305mm (12in) by up to an additional 914mm (36in).
- 4

Handheld Tethered Interface

The tethered interface is the handheld option, with larger buttons for system and test control. This interface is better suited for operators who wear gloves as part of their testing protocol.

Handheld Wireless Interface

The bluetooth connected interface features easy to operate tactile buttons and a high resolution touchscreen to set up and monitor tests where parameters and results are shown numerically.
- 5

Virtual Interface

The third type of interface is a virtual one and is depicted graphically on a computer screen. This application runs independently of our Horizon software but, if connected, works seamlessly with the software.

Specifications



Standard SL Line

- 1** Model 300SL – 300kN (30,000kgf/60,000lbf) [09001300] with Bluetooth-enabled handheld interface [03070501]
- 2** Model 600SL – 600kN (60,000kgf/120,000lbf) [09002600] with split-type tubular furnace [20001107-A2] and Extensometer 3549 [99-994-1014/1A]
- Model 1,000SL – 1,000kN (100,000kgf/200,000lbf) [09009400/09009410]
- Model 1,500SL – 1,500kN (150,000kgf/300,000lbf) [09010630]
- 3** Model 2,000SL – 2,000kN (200,000kgf/400,000lbf) [09010610] with tethered handheld interface, Horizon software [21001197] shown with console on right providing extra table space for monitor, keyboard etc.

SL models A and AF

- + 300 to 1,000kN (60,000 to 200,000lbf).
- + Open-front crossheads and/or fixed position crossheads.

SL models, for extraordinary testing and special purpose:

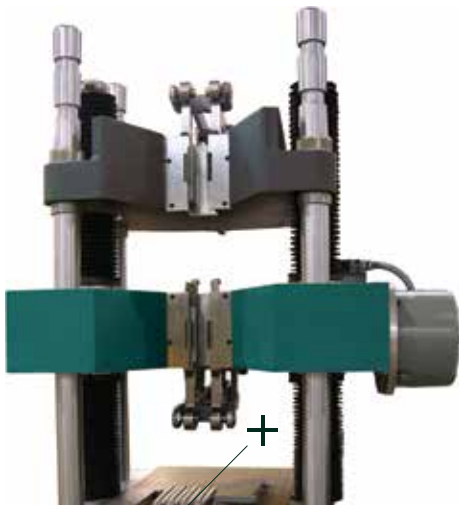
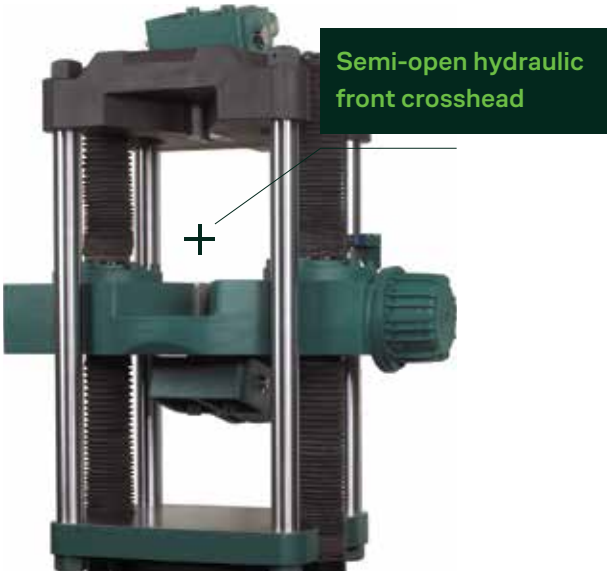
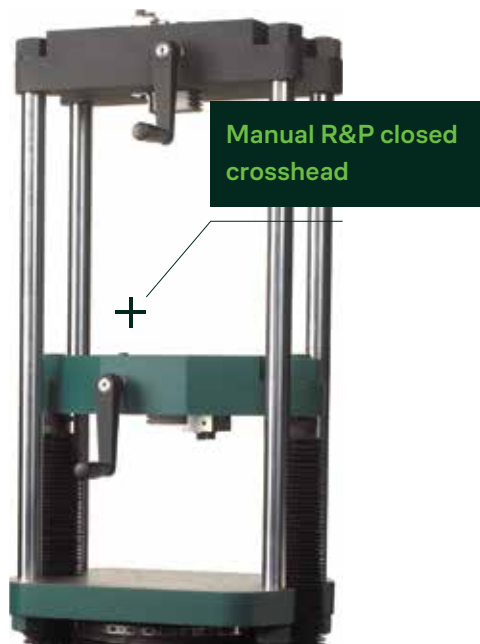
- 4** + 3,000kN (600,000lbf) [09013000/ 09013010/ 09013030]
- + 4,500kN (1,000,000lbf) [09014000]

For all SL models:

- + Extra-length screws and columns, with or without an adjustable upper crosshead, to increase test space for longer test samples.
- + Semi-open front crossheads for easier loading of samples.
- + Hydraulically actuated lever grips to allow rapid loading and unloading of samples.
- + Non-metallic screw covers to protect the screws and increase system life.
- + Tooling for tension, compression, shear, flexure and other tests.
- + Broad range of instrumentation.
- + Tee-slotted table for locating and securing customized tooling.
- + Controlled temperature chambers: -185° to 535°C (-300° to 1000°F).
- + Furnaces for temperatures to 1200°C (2200°F).

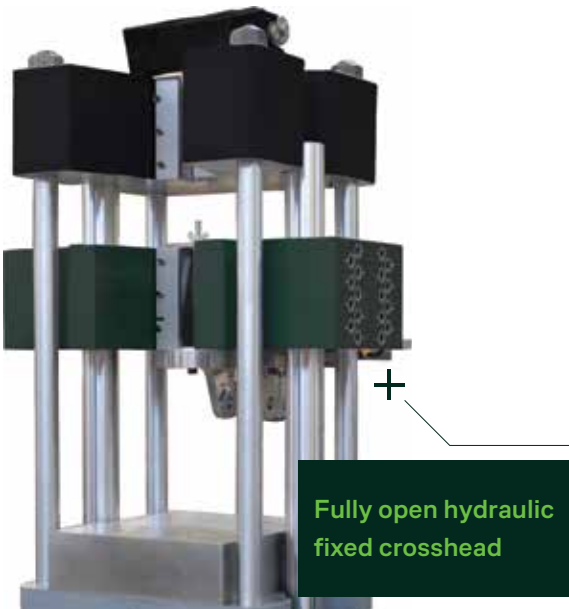
Customization

Tinius Olsen SL systems can be configured to handle nearly any sample. The keys are grips and fixtures properly fitted to hold your sample, as well as crosshead and column designs that enable easy sample loading.



Fully-open front hydraulic crosshead

Notched columns to locate the adjustable top crosshead at different heights.



Fully open hydraulic fixed crosshead

Crosshead and column options

A number of options are available to best suit the needs of your application, including:

- + **Closed.** This is the most common option on lower capacity frames.
- + **Semi-open front.** The crossheads are partially 'opened' to allow easy access for loading specimens.
- + **Fully-open front.** The crossheads have full openings to allow specimens to be directly inserted into the grips. [for 300SL & 600SL only]
- + **Adjustable.** Frames with adjustable columns and crosshead are available.
- + **Fixed.** Frames with fixed, nonmotorized crossheads allow fast specimen insertion and removal and are primarily used for repetitive testing of the same specimen.

Grips

- + Crank-operated rack and pinion type wedge grips with flat and/or vee gripping faces for all closed crosshead SL frames.
- + Hydraulically actuated lever wedge style grips for semi-open and fully open front crossheads.
- + Additional external grips for testing flats, rounds, headed and threaded specimens, fasteners and many other types of products and materials are available.



Customization



Columns and Screws

Columns and screws can be lengthened and crossheads can be made adjustable to meet your specific requirements. The standard options of extensions includes 1ft, 2ft, 3ft.

- 1

On this 300SL frame the columns have been extended to accommodate large test specimens. [\[09001300-CL1-LV\]](#)
- 2

This 600SL frame has the extended columns and standard screws [\[09002600-CL1-LV\]](#). Additionally, the columns are notched to accommodate the adjustable top crosshead and the whole frame is surrounded by a safety enclosure [\[09002642\]](#). The hydraulic grips [\[CA-001-0078\]](#) are mounted on the R&P crosshead.



Tethered Proterm handheld interface

Bluetooth connected interface (HMC3.0)



Virtual interface

System Interfaces

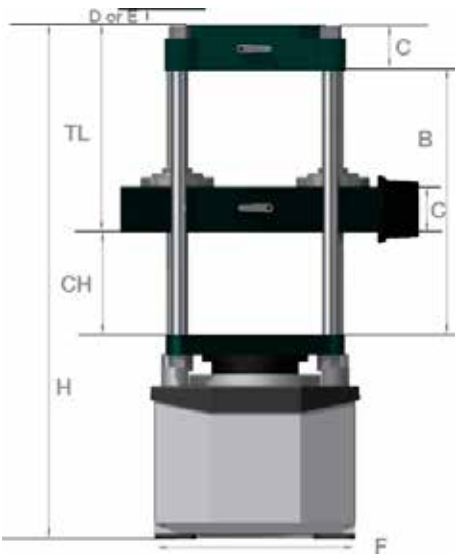
SL systems can be operated by a choice of different interface panels. Choose from tethered, wireless or a virtual interface running on a connected PC.

This **virtual interface**(VMC) runs on a connected PC and can be used to set up and run a test to provide a quick numerical result. The addition of Horizon software with any of these interfaces allows complex tests to be created and recalled, along with sophisticated analysis of all graphical data.

The **Bluetooth connected interface**(HMC3.0) features easy to operate, high resolution touchscreen to set up and monitor tests where parameters and results are shown numerically. The interface also features a 13MP camera and has WiFi connectivity.

The **tethered Proterm interface** option features larger tactile feedback buttons to operate the testing frame; these are ideal for users who need to wear protective gloves while operating the system. The display provides simple numerical display of individual channels used on the testing system.

Specifications



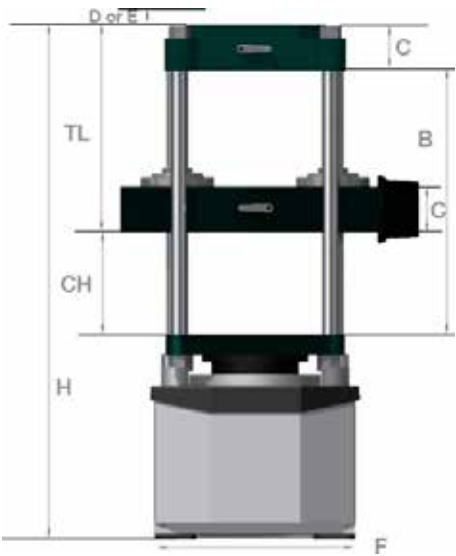
Schematic of the load frame. Refer to the table on page 15 for the Standard Console Dimensions.

Notes

1. Approximate.
2. Additional height clearances can be provided.
3. Dimension of footprint base; overall dimensions will depend on options selected.
4. Add D or E as applicable and add stroke.
5. With full stroke remaining.
6. These frames can be floor- or pit-mounted according to test requirements; pit mounting may require additional components.
7. If wider clearance is required, please consult factory.

Model		300SL	600SL	1000SL ⁶	1500SL ⁶	2000SL ⁶	3000SL ⁶
Capacity	kN	300	600	1,000	1,500	2,000	3,000
	lbf	60,000	120,000	200,000	300,000	400,000	600,000
	kgf	30,000	60,000	100,000	150,000	200,000	300,000
Frame specifications	Stroke						
	in	6	6	9	9	9	9
	mm	152	152	229	229	229	229
	Testing speeds						
	in/min	0-3	0-3	0-3	0-3	0-3	0-3
	mm/min	0-76	0-76	0-76	0-76	0-76	0-76
	Adjustable crosshead speed						
	in/min	20	12	12	12	12	12
	mm/min	508	305	305	305	305	305
Load frame dimensions ¹	(A) Clearance between screws ⁷						
	in	12.5	18	19.5	22.5	22.5	24.5
	mm	317.5	457.2	495.3	571.5	571.5	622.3
	(B) Standard opening						
	in	29	36	42	46.25	46.25	82
	mm	737	914	1,067	1,175	1,175	2,083
	(C) Crosshead thickness						
	in	3.5	5.5	8	8.5	8.5	14
	mm	89	140	203	216	216	356
	(D) Grip guard thickness						
	in	1	2.75	2.75	4.5	4.5	—
	mm	25	70	70	114	114	—
	(E) Lever height						
	in	6	6.375	8.75	8.75	8.75	10
	mm	152	162	222	222	222	254
	(F) Width ³						
	in	29	30	34	37	37	43
	mm	737	762	864	940	940	1,092
	(G) Depth ³						
	in	19	25	26	33.5	33.5	34
	mm	483	635	660	851	851	863
	(H) Height ^{2,4}						
	in	72.5	77	90.125	96.25	96.25	106
	mm	1,842	1,956	2,289	2,445	2,445	2,692

Specifications



Schematic of the load frame. Refer to the table on page 15 for the Standard Console Dimensions.

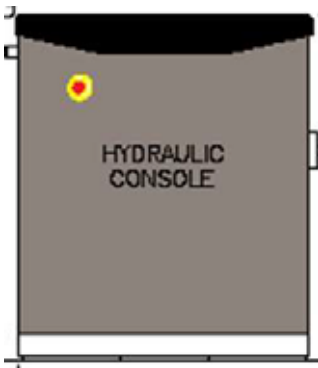
Notes

- 1. Approximate.
- 2. Additional height clearances can be provided.
- 3. Dimension of footprint base; overall dimensions will depend on options selected.
- 4. Add D or E as applicable and add stroke.
- 5. With full stroke remaining.
- 6. These frames can be floor- or pit-mounted according to test requirements; pit mounting may require additional components.
- 7. If wider clearance is required, please consult factory.

Model		300SL	600SL	1000SL ⁶	1500SL ⁶	2000SL ⁶	3000SL ⁶
Frame weight ¹	Net						
		lbs	2,600	4,700	9,000	12,000	23,000
		kg	1,180	2,132	4,082	5,444	10,433
		Gross					
		lbs	3,100	5,700	9,900	13,300	23,000
		kg	1,406	2,586	4,490	6,034	10,433
Nominal maximum specimen sizes ²	Tension length ⁵	Max. TL. Rack & pinion					
		in	24	32	34	38	NA
		mm	610	813	837	965	NA
		Max. TL. Lever grips					
		in	22	29.5	30	32	32
		mm	559	749	762	813	813
		Width					
		in	2	2.5	3	3.5	3.5
		mm	51	64	76	89	89
		Thickness					
		in	1	1.75	2.125	2.125	2.125
		mm	25	44	54	54	54
		Diameter					
		in	1.125	2.25	2.375	2.625	2.625
		mm	29	57	60	67	67
	Compression height	Max. CH. Rack & pinion					
		in	22	24	28	32	32
		mm	559	610	711	813	813
		Max. CH. Lever grips					
		in	20	24	30	36	36
		mm	508	609	762	914	914

- + Load measurement meets or surpasses the following standards: ASTM E4, BS 1610, DIN 51221, EN 10002-2, ISO 7500-1.
- + Strain measurement meets or surpasses the following standards: ASTM E83, BS 3846, ISO 10002-4, ISO 9513.
- + These systems conform to all relevant European directives and carry a CE mark.
- + Specifications subject to change without notice.

Standard Console Dimensions



SL Model		300 to 600	1,000 to 3,000
Width	mm	750	1,010
	in	29.5	39.75
Depth	mm	698	831
	in	27.5	32.72
Height	mm	865	865
	in	34	34
Weight	kg	317	400
	lb	700	880

SL-RB Series



The RB Series is specifically designed for extraordinary testing requirements. Typical applications include testing reinforcing bars, standard plate and rod specimens, concrete cylinders, and other critical materials and products.

Features and benefits

- + Suitable for tension, compression, transverse, shear and other tests to a maximum force of 3000kN to 4500kN / 600,000lbf to 1,000,000 lbf.
- + Four column rugged design underpins the frame stiffness and power.
- + The unique friction-free piston operation gives exacting control of movement be it under constant speed, stress or strain.
- + Different system interface options are available, from a familiar tethered handheld interface - Proterm, a wireless Bluetooth interface (HMC3.0) panel running an Android application, or virtual machine controller (VMC) application running on a PC. All interfaces work with Horizon Data Analysis software.
- + Meets or exceeds the requirements of national and international standards for materials testing systems

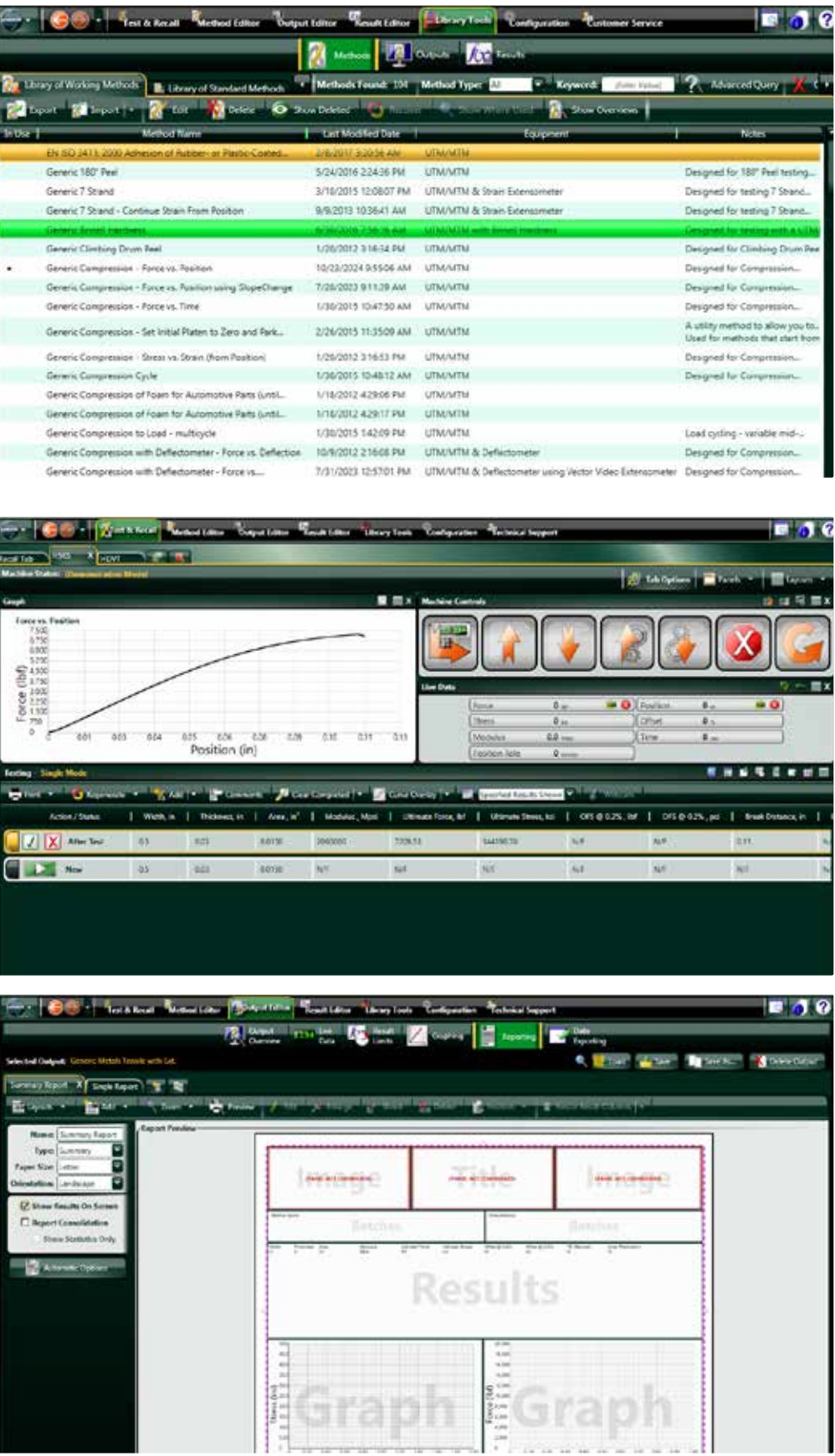
Options

- + Grips to accomodate flat or round tensile specimens.
- + Extended height columns/screws are available options.

Accessories

- + Full range of precision extensometers.
- + Safety enclosures with interlocks to protect operators from violent specimen breaks.
- + Tinius Olsen's Horizon control, analysis and reporting software on a single PC station and/or a PC station in network deployment.

Software



Horizon makes testing simple, precise and efficient.

Tinius Olsen has built upon its long history of providing solutions to an enormous variety of testing problems to develop Horizon, a comprehensive software program that makes testing simple, precise and efficient.

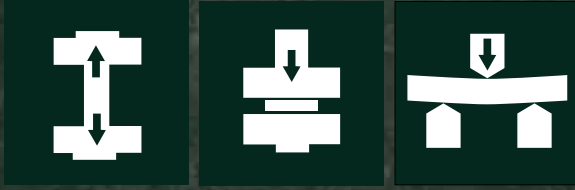
Whether the test sample is metal, paper, composite, polymer, rubber, textile, or a micro-component, Tinius Olsen's Horizon software goes far beyond data collection and presentation. It automates system operation and data analysis from R&D to QC testing.

Horizon software sets new standards of data analysis by adding a host of report writing and data manipulation capabilities that will make easy work of your materials testing programs. As with most features of Horizon, flexibility is key; reports can be customized by operators, as can all user screens, allowing operators to focus on features that are most important to them.

In addition to powerful reports, Horizon Materials Testing software is networkable and scalable so operators and managers can operate equipment and review test results from multiple sources and locations. Horizon provides a library of standard, specific and application-focused test routines that have been developed in close co-operation with customers and international standards.

Among the many valuable features offered by Horizon are: a test routine library; simultaneous multiple machine control; test, output, method and result editors; and multilayered security. This software is designed for data acquisition, data analysis, and closed loop control of nearly all Tinius Olsen testing systems.

Horizon is rich with capabilities that improve productivity and enable the operator to build, access and use a modern, powerful materials testing database. It employs the latest Windows environments, running on touchscreen-enabled monitors, to create an intuitive user experience. Built-in tutorials, online help, and help desk access provide additional user support.



Hydraulic Universal Testing System

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