Starrett®

PKG08807 - UML1

User Manual

TRUST IS IN THE NAME

READ THIS MANUAL BEFORE USING THE INSTRUMENT

**ANTES DE UTILIZAR EL INSTRUMENTO,
LEA ATENTAMENTE ESTE MANUAL**

LIRE CE MANUEL AVANT D'UTILISER L'INSTRUMENT

**LEIA ATENTAMENTE ESTE MANUAL ANTES
DE UTILIZAR O INSTRUMENTO**

使用仪器前请阅读本操作手册

**DIESES HANDBUCH VOR DER VERWENDUNG
DES MESSGERÄTS LESEN**

**LEGGERE ATTENTAMENTE QUESTO MANUALE PRIMA
DI UTILIZZARE QUESTO STRUMENTO**

Starrett®

L1 SOFTWARE FOR BASIC FORCE MEASUREMENT USER MANUAL

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GENERAL SAFETY PRECAUTIONS

Force measurement systems are potentially hazardous. Prior to operating your testing system, Starrett recommends that you read and understand the instruction manuals for your system and components and that you receive training on the proper use of this equipment from your authorized Starrett representative.

Observe all warnings and cautions identified in this manual for your equipment. A warning identifies a function that may lead to injury or death. A caution identifies a hazard that may lead to damage to equipment or loss of data.

Starrett products, to the best of our knowledge, comply with various national and international safety standards as they apply to material and force measurement testing. This Starrett product has been tested and found to comply with the following recognized standards:

- EN61010-1 Safety Requirements for Electrical Equipment
- EN61000-6-3 EMC Generic Emissions Standard
- EN61000-6-1 EMC Generic Immunity Standard

Starrett also certifies that this product complies with all relevant EU directives and carries the CE mark.

WARNINGS

EMERGENCY STOP SWITCH

Press the emergency stop button whenever you feel there is an unsafe condition during a test. The emergency stop button removes power to the motor drive system causing the crosshead to stop.

FLYING DEBRIS

Eye protection, protective clothing and splinter/safety shields should be used whenever any possibility exists of a hazard from the failure of a sample, assembly or structure under test. Due to the wide range of materials that may be tested and that may result in a failure which may cause bodily injury, the precautions and preventative methods taken prior to testing is entirely the responsibility of the owner and the user of the equipment.

CRUSH HAZARD

Always use caution when installing or removing apparatus and your sample material between the frame's crosshead and the base. A potential pinch/crush hazard exists. Keep clear of the testing fixture, and particularly the jaw faces at all times. Keep clear of the crosshead during movement. If available, always make sure the Pinch Load feature is enabled. This will stop inadvertent crosshead operation if in manual mode. Always ensure that other personnel cannot operate the system while you are working within the test fixture area.

ELECTRICAL HAZARD

Disconnect equipment from the electrical power supply before removing any electrical safety covers. Disconnect power when replacing fuses. Never reconnect power while the covers are removed. Never operate the system with protective covers removed.

ROTATING MACHINERY HAZARD

Always disconnect power before removing covers that protect the user from the internal rotating mechanisms. If maintenance to the drive mechanism is required, and power is needed to perform maintenance to the drive system, maintenance should be performed by an authorized Starrett representative who has received factory training on performing such procedures.

LOAD SENSOR MINIMUM DEADBAND

Your L1 System uses BLC Load Cell Sensors. Starrett recommends using these sensors per ASTM E4, therefore, the sensors should not be used for measurements less than 2% of the sensor's rated full scale capacity.

BLC Sensors are electronic precision instruments. Starrett recommends a warm-up period of 5 minutes prior to use.

L1 SOFTWARE FOR BASIC FORCE MEASUREMENT

THIS IS A STARRETT USER GUIDE FOR THE L1 SOFTWARE FOR BASIC FORCE MEASUREMENT.

ALL SPECIFICATIONS IN THIS DOCUMENT ARE CORRECT AT TIME OF PRODUCTION AND ARE SUBJECT TO CHANGE. PLEASE CONTACT STARRETT FOR FURTHER INFORMATION.

1.0   INTRODUCTION

Thank you for selecting the L1 System for your force measurement testing.

Your L1 System may be used for tension and compression testing including specific test methods such as peak, break, constant hold, flexural, shear, peel, coefficient of friction and more.

Your L1 System should be used with Starrett equipment and accessories only.

For optimum performance, your L1 System should be maintained and serviced annually by an authorized Starrett representative.

1.1   L1 SYSTEM ARCHITECTURE

Your L1 System consists of the FMM Digital Testing Frame, L1 tablet with L1 software, a BLC Load Cell Sensor and test fixtures. Together, these components provide you with a full-featured testing system for most basic force measurement testing applications.

1.1.1   FMM TEST FRAMES

The FMM Test Frames are available in either "Standard" or "Extended" travel formats.

• Standard travel frames have a total crosshead travel of 20" (508mm)

• Extended travel frames have a total crosshead travel of 30" (762mm)

• FMM Test Frames are available in three capacities: 110lbf, 330lbf and 550lbf (500N, 1500N, 2500N)

• FMM Test Frames have been designed exclusively for use with the L1 tablet and L1 software

FMM-330 Test frame-standard travel

BLC Load Cell Sensor

Optional test fixture top

Optional test fixture bottom

L1 Tablet touchscreen
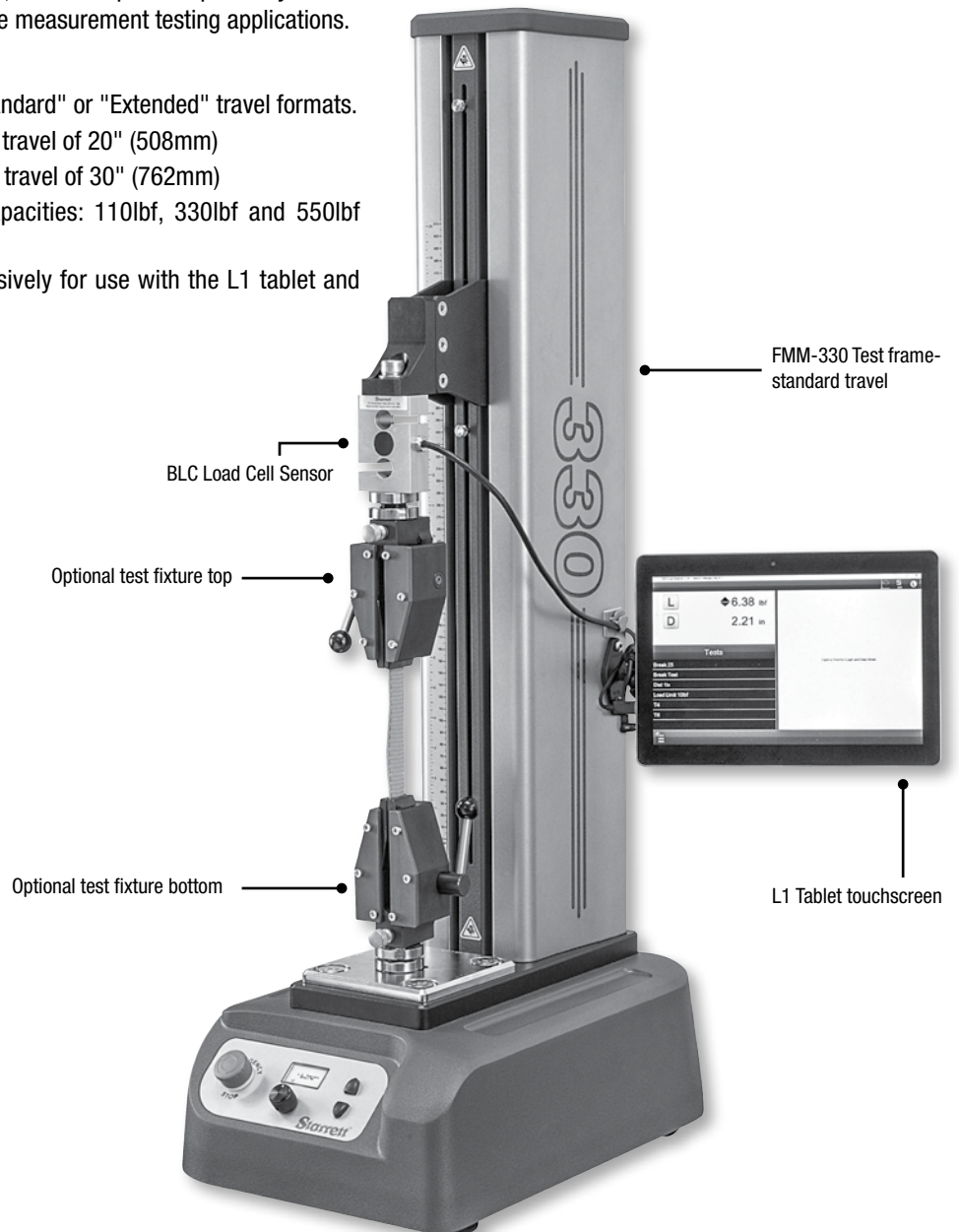
Shown: L1-330 system with tablet touchscreen and keypad module removed

1.1.2   L1 TABLET AND SOFTWARE

Your L1 System is supplied with a compact 2-in-1 computer with L1 software. The L1 software is licensed to the FMM Test Frame to be used with your L1 System.

The computer and software use the Microsoft® Windows® 10 Operating System.

The computer features a high-resolution touchscreen and a removable QWERTY-style keypad.

The computer connects to the FMM Test Frame using the USB cable supplied with your L1 System.

NOTE

1. The L1 software is licensed to one and only one FMM Test Frame. Additional licenses may be purchased from Starrett.
2. Always power ON the FMM Test Frame before powering ON the L1 tablet and software.
3. Never allow the L1 tablet to go into "Sleep Mode". This may cause a communication disconnect with the FMM Test Frame and the L1 software and which may lead to crosshead run-away condition.

Shown: L1-330 system with tablet on desktop

1.1.3   BLC LOAD CELLS

BLC Load Cell Sensors are designed exclusively for use with your L1 System. These load cells are TEDs-compliant (IEEE 1451.4) and are self-identifying once connected to your L1 System.

*   BLC Load Cells feature a 0.1% full scale accuracy.
*   BLC Load Cells mount to your FMM Test Frame using metric threads.

1.1.4   TEST FIXTURES

Starrett can supply a variety of testing fixtures and grips. We can also design and manufacture custom test fixtures to your requirements.

Most of the commonly-used test fixtures are clevis-type fixtures. These fixtures slide over the 15.9mm clevis and are secured using two locking rings and a grip pin.

Your FMM Test Frame was supplied with a stainless steel clevis, locking rings and grip pin.

1.2   PRODUCT SUPPORT

If you require product support for your Starrett system, contact your authorized Starrett representative.

Shown: L1-330 system with tablet and keypad on column mount

2.0   L1 SYSTEM FUNDAMENTALS

This section will discuss some of the basic operating fundamentals of your L1 System.

2.1   COMPUTER REQUIREMENTS

L1 Systems are supplied with a portable, 2-in-1 laptop computer. The computer may be mounted to the FMM Test Frame or may be used on the workbench or desktop. The L1 software for your system has been installed and tested prior to shipment.

NOTE

1. The L1 tablet should not be operated on battery power.
2. Starrett recommends the use of an uninterruptible power supply (UPS) with the L1 System, especially in locations that experience power outages and brownouts.

2.1.1   L1 TABLET OVERVIEW

Your L1 tablet has our L1 software pre-installed and tested. The L1 tablet and software are optimized for touchscreen operation. The L1 tablet is supplied with a full QWERTY-style keyboard which may be removed. The L1 tablet display is 10.1 inches (1280 x 800).

The L1 tablet display has the ON/OFF button on the back panel. Press to power the L1 tablet ON. Use the Windows® OFF function to power the L1 tablet OFF.

The L1 tablet display module has a Micro-USB 2.0 connector. Use the Micro-USB cable supplied with your L1 System to connect the L1 tablet to your FMM Test Frame. The FMM Test Frame USB connection is located on the back panel of the test frame.

The L1 tablet's keyboard has two additional USB 2.0 connectors.

2.1.2   L1 TABLET SETTINGS

Microsoft frequently updates its operating systems, in particular, driver software. Starrett recommends that the L1 tablet be setup to "Install Updates Automatically". If automatic updates are not permitted, it is the responsibility of your network administrator to ensure that the L1 tablet has the correct and most current updates for the operating system and device drivers.

NOTE

Starrett recommends that your L1 tablet is setup to "Install Updates Automatically" from Microsoft.

The Power settings for your L1 tablet should not allow the L1 tablet to go into Sleep mode. Sleep mode interrupts communication to the FMM Test Frame and L1 software.

If the L1 System is not in use, log-off the system and log-in to the system when you are ready to resume testing.

CAUTION

Do not use "Sleep Mode" on your L1 tablet.

NOTE

Use the Log-In and Log-Off procedure to correctly power On or power Off the L1 tablet and software.

Shown: L1 Tablet used on workstation

2.2   L1 DISPLAY LAYOUT

This section will describe the basic layout of your L1 display.

2.2.1   HEADER BAR

The L1 header bar includes the following:
- Main L1 Menu
- Load Cell Status
- Crosshead Speedometer
- Test Frame Operating
- Test Name
- Test Type

2.2.1.1   MAIN MENU

Select the Main L1 Menu target to access the L1 System Settings, to print reports or to Log-In and Log-Out of the system.

2.2.1.2   LOAD CELL STATUS

The Load Cell symbol displays the full scale capacity of the BLC Load Cell that is connected to the system. The full scale value is displayed beneath the system.

Select the Load Cell symbol to view the sensor's model number, serial number, last calibration date and overload history.

2.2.1.3   CROSSHEAD SPEEDOMETER

The crosshead speedometer is used to control crosshead speed when in manual control. The speedometer has two speed sets: Normal and Slow.

When in Normal speed, the pointer points to the right and has a green dot. Normal speed means the crosshead will obey the Motion setting. Pressing the jog key will cause the crosshead to ramp up to the maximum speed set in the Motion setting.

When in Slow speed, the pointer points to the left and has a green dot. Slow speed means that when you press the jog key, the crosshead will only move at the slow speed rate for the FMM digital tester frame. This speed rate is 0.002 in/min (0.05mm/min).

NOTE

The Slow speed rate should be used with setting up the fixtures for your test. It is especially recommended whenever you are manually positioning the crosshead in the compression direction.

2.2.1.4   TEST FRAME MODE

The FMM Test Frame only operates in Normal mode as depicted by the mode symbol.
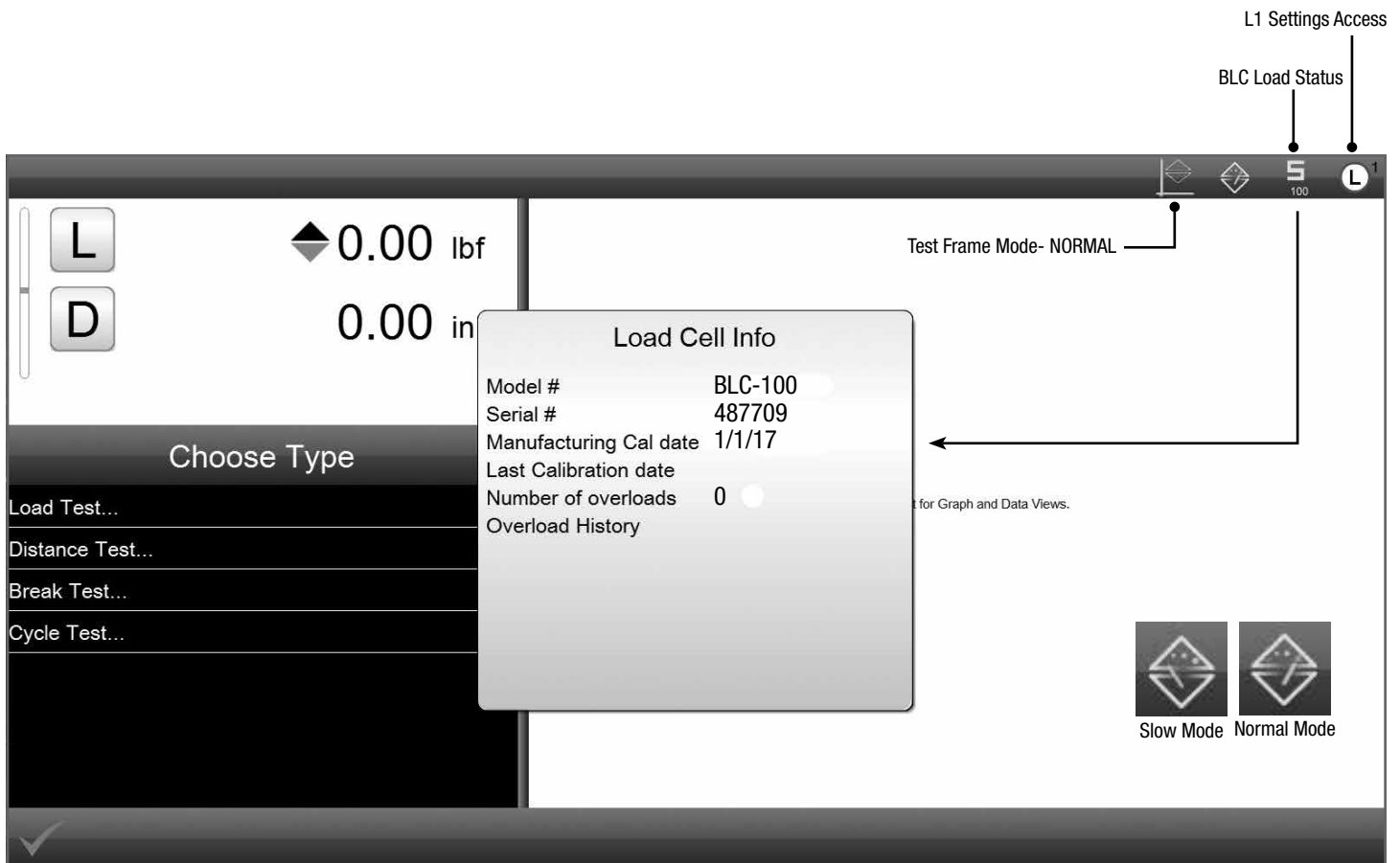
Shown: L1 Main Menu view with BLC Load Cell Status

2.2.1.5   TEST NAME

Each test setup has a unique name, which you create. The Test Name may be up to 24 characters in length. Certain punctuation symbols may not be used in a Test Name.

NOTE

Test Name may only use alpha and numeric characters plus "-" and "_".

Test Type Symbol
Shows Compression   User-defined Test Name
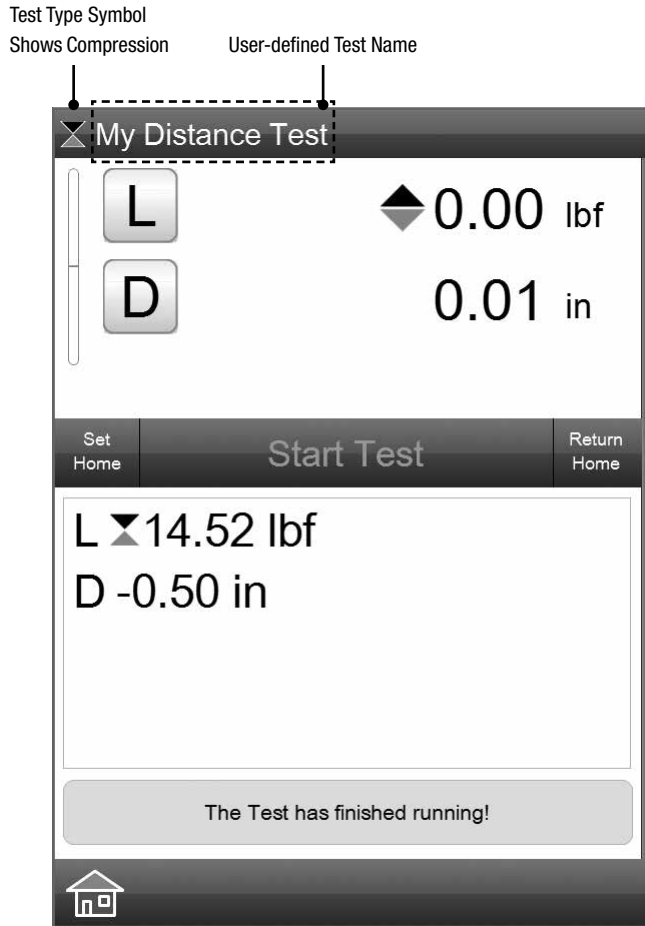
Shown: Unique Test Name in Header Bar

Previous Test Run Results

Current test setup being performed

2.2.1.6   TEST TYPE

A symbol is displayed in front of the Test Name to indicate whether the test is for TENSION or COMPRESSION direction.

2.2.2   DIGITAL READOUT (DRO) WINDOW

The DRO (Digital Readout) window displays the following:

• Active Load
• Load Bargraph
• Active Distance
• Crosshead Speed During a Test
• Results After a Test is Completed
• Test Status During a Test
• Test Control Functions
• DRO Window Bar Adjustment

2.2.2.1   ACTIVE LOAD

The "L" symbol displays the load that is currently being applied to the BLC Load Cell connected to the L1 System. Selecting the "L" symbol will zero the load.

NOTE

1. Load values may use ozf, gf, lbf, kgf or N units of measure.
2. During a test method, do not press the "L" target.

Current Load

Crosshead Velocity

Current Distance

Shown: DRO during active test

2.2.2.2 LOAD BARGRAPH

The Load Bargraph displays the measured load in a graphical format. The bargraph fills from the center (zero) position. Tensile loads fill the bargraph from the center upward, while compressive loads fill the bargraph from the center downward.

The bargraph uses color to indicate the percentage of load being applied to the load cell sensor relative to the sensor's rated load capacity. The bargraph will display green when the measured load is 0 to 75% of the sensor's rated capacity. The bargraph will display yellow when the measured load is 76% to 90%. The bargraph displays red when the measured load is over 90%.

Caution should be exercised when the bargraph is displaying yellow. This indicates that you are operating at the upper range of the load sensor, which is perfectly acceptable.

The red color indicates that you are operating at the extreme high end of the sensor's capacity. You should exercise extreme caution in order to not overload the load cell sensor.
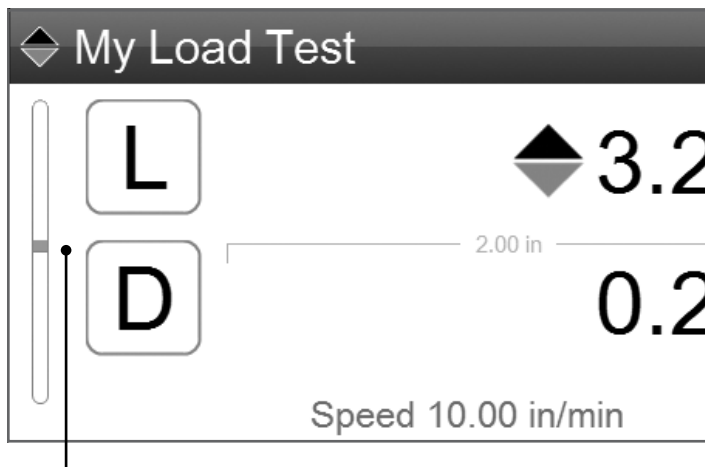
Load status on BLC Sensor
Green is safe operating area

2.2.2.3 ACTIVE DISTANCE

The "D" symbol displays the crosshead travel when the crosshead is moving or where the crosshead stopped relative to the Home position. Selecting the "D" symbol will zero the distance.

NOTE

1. Distance is relative to the Home position you establish.
2. Distance values may use "in" (inches) or "mm" (millimeters).
3. During an active test method, do not press the "D" target.

2.2.2.4 CROSSHEAD SPEED DURING A TEST

During crosshead movement, the DRO will display the current velocity of the crosshead.

If manually operating the crosshead using the jog keys, the DRO will display the crosshead velocity for your jog movement. When you press and hold a jog button, the crosshead will ramp up to the maximum allowed speed you have setup in the MOTIONS setting. The maximum crosshead velocity for an FMM Test Frame is 40 inches per minute (1016 mm/min).

2.2.2.5 RESULTS AFTER A TEST IS COMPLETED

The measured results at the completion of a test are displayed in the Results window. Results, also called coefficients, are displayed in large, easy-to-read text with labels. If tolerances are used, a result that is "outside the tolerance" displays in red text.

2.2.2.6 TEST STATUS DURING A TEST

During an active test, the bottom Results window displays the current test status. With Cyclic and Hold tests, a cycle counter or countdown timer is displayed.
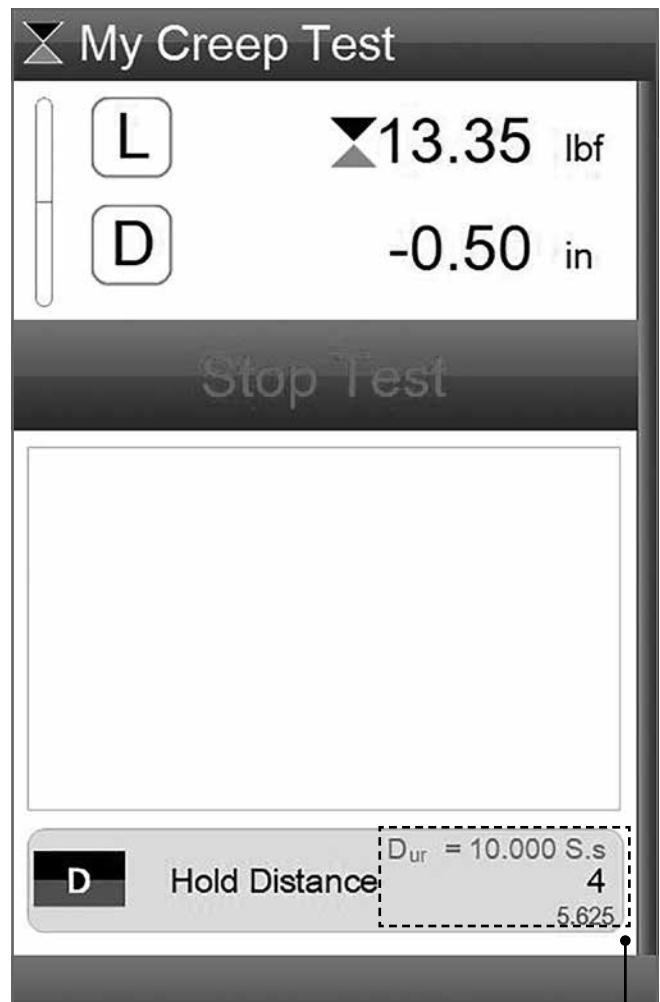
Shows Dwell/Hold Time target and elapsed time remaining

2.2.2.7 TEST CONTROL FUNCTIONS

The DRO window displays essential test control functions. These are described below.

SET HOME

Press the SET HOME target to designate the position where the crosshead currently is positioned as the "Home" location. Once a test run is completed, the crosshead will return to this exact location so that the next sample can be installed in the testing fixture.

NOTE

The SET HOME function can be set manually prior to starting a test, or it can be set in the PRE TEST setup stage, where the home position is automatically set once the test is started.

START TEST

Press the START TEST target to begin your test run.

When a test is active, the START TEST label changes to STOP TEST.

STOP TEST

During an active test run, you may press the STOP TEST target to stop the current test run.

RETURN HOME

When you select the SET HOME function manually, you will select the RETURN HOME target to return the crosshead to the designated Home position.

In the POST TEST stage, you may configure the crosshead to automatically return to the Home position when a test run has finished.

NOTE

If the SET HOME was not set before the test, the RETURN HOME target is inactive since there is no home position to return to.

2.2.2.8 DRO BAR

The bar separating the top portion of the DRO from the bottom portion may be adjusted. Select the bar and mouse up or down to change the upper and lower window size.

Select to set crosshead HOME position. Crosshead will return to this position for loading next sample to be tested

MANUALLY return the crosshead to the HOME position after the test has completed

DRO center bar may be positioned up or down if more room is needed in Results window

Press START TEST to begin the test method

Press STOP TEST during an active test method when you need to abort the test
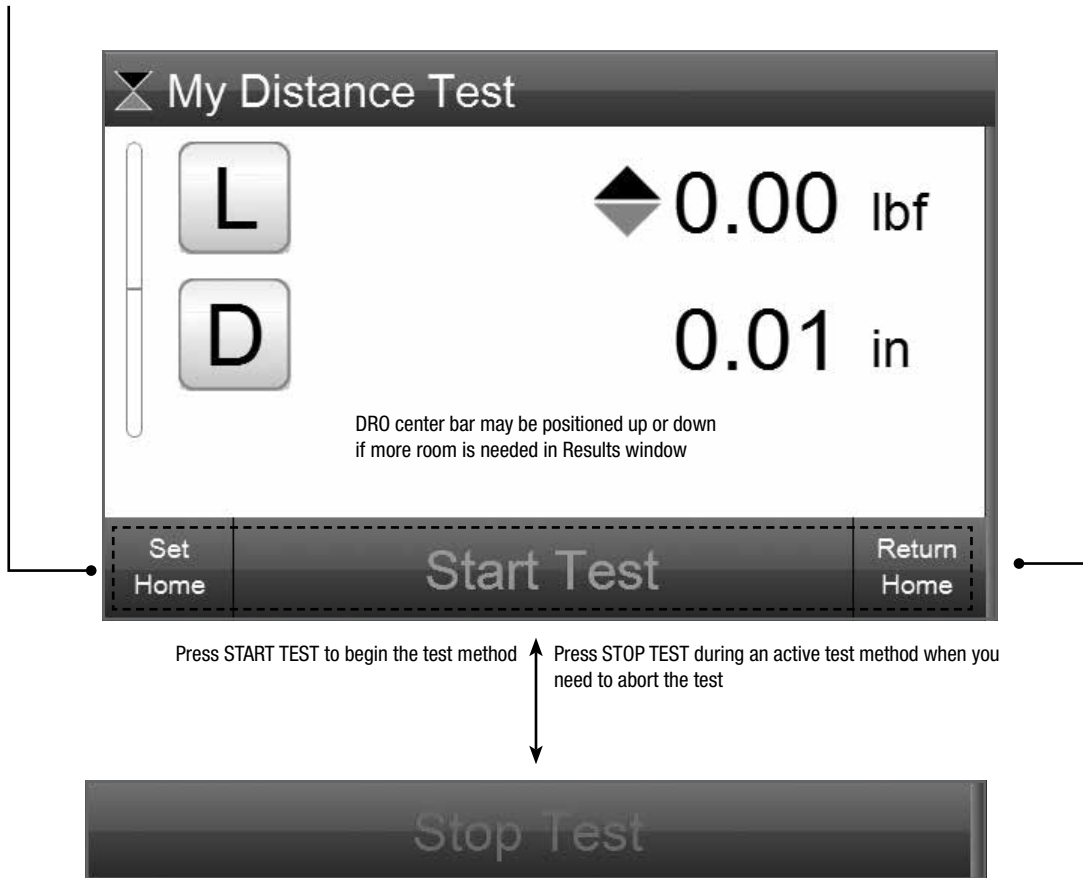
2.2.3 GRAPH WINDOW

The L1 software will display the graph profile for your test. Three graph formats may be used:

- Load x Distance
- Load x Time
- Distance x Time

Select the graph type tabs at the top of the Graph window to display the desired format.

The Graph window will also display the number of test runs performed for the test. A "Runs List", located on the right side of the graph shows the sequential number of runs performed for the test.

You may view the graph for any run in the Runs List. You may also view multiple graph traces simultaneously. When more than one graph is displayed, the graph trace is color coded. The black color designates the "active run" and its results are displayed in the Results window.

NOTE

1. You may display a Load x Distance, Load x Time or Distance x Time graph.
2. You may display multiple graphs in the window.

Runs List
Each test result has a unique and sequential Runs Number for reference.

Select L x D to display the Load versus Distance Graph

Select L x T to display the Load versus Time Graph

Select D x T to display the Distance versus Time Graph

Mouse on to the graph trace to *temporarily* display the Load and Distance result for the selected point
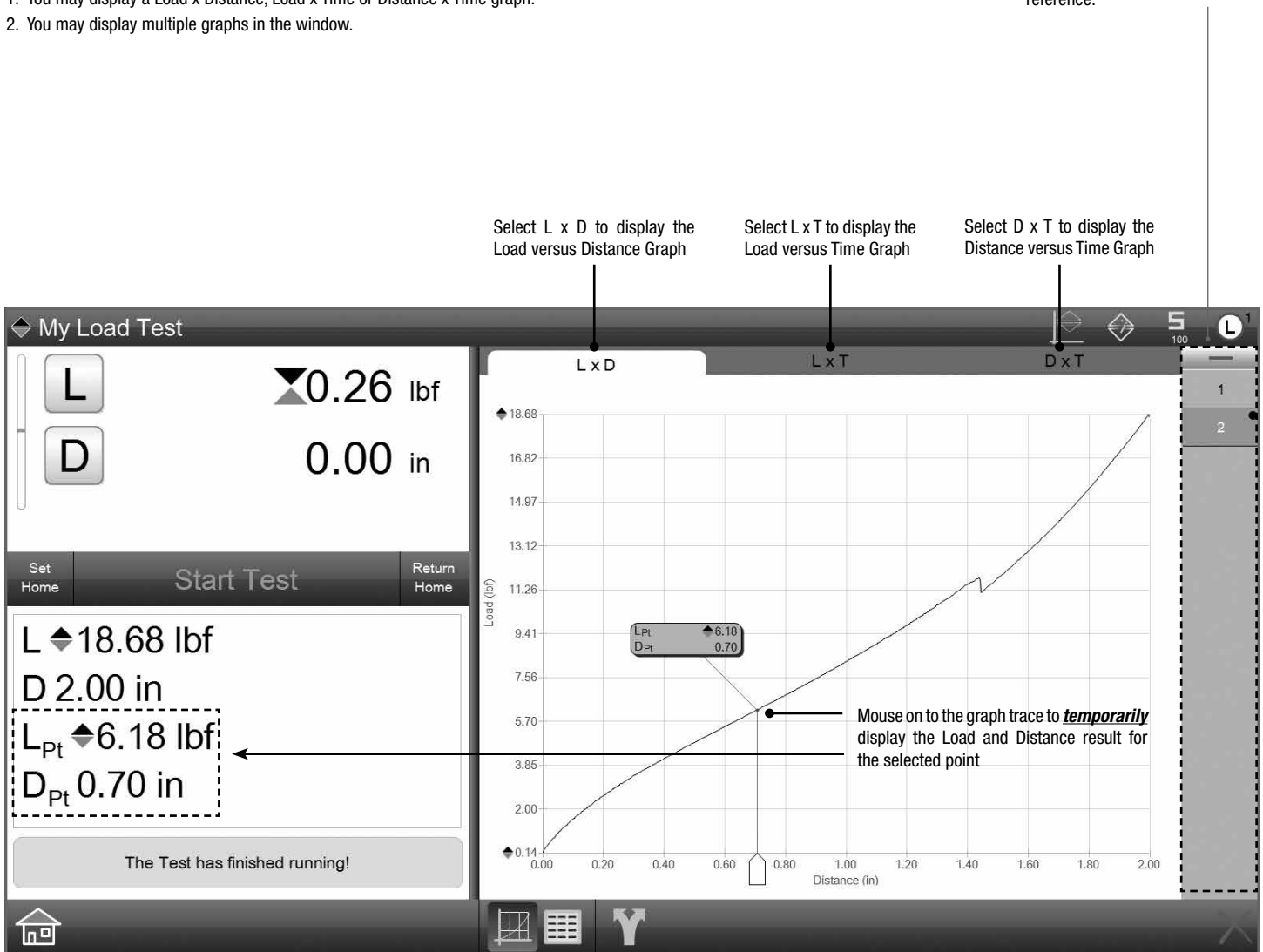
Shown: Graph Result view

2.2.4   DATA WINDOW

Your L1 System lets you display your results in a tabular format. The Data window shows the results for each test run. If tolerances are used, the tolerance limits are also displayed with a tendency bar and a status of either "Pass" or "Fail".

NOTE

The Data view lets you view results in a tabular format. You may select multiple rows of results and view the statistics on those selected rows.

Deviation bar graph shows actual relative to your specified tolerance limits.

Your specified Tolerance Limits

Simple "Pass" or "Fail" indication

Actual Results for Load and Distance

Run	Coef	Units	Actual	Limit 1	Limit 2	Deviation	P/F
1	L	lbf	14.95	14.75	14.25		Fail
1	D	in	-0.50				
2	L	lbf	14.65	14.75	14.25		Pass
2	D	in	-0.50				
3	L	lbf	14.53	14.75	14.25		Pass
3	D	in	-0.50				
4	L	lbf	14.46	14.75	14.25		Pass
4	D	in	-0.50				
5	L	lbf	14.42	14.75	14.25		Pass
5	D	in	-0.50				
6	L	lbf	14.39	14.75	14.25		Pass
6	D	in	-0.50				
7	L	lbf	14.48	14.75	14.25		Pass
7	D	in	-0.50				
8	L	lbf	14.37	14.75	14.25		Pass
8	D	in	-0.50				
9	L	lbf	14.59	14.75	14.25		Pass
9	D	in	-0.50				

My Distance Test

L ◆ 0.00 lbf

D 0.01 in

Set Home   Start Test   Return Home

L 14.52 lbf

D -0.50 in

The Test has finished running!

Shown: Data view with Tolerances

Select to navigate to Graph view

2.2.5 FOOTER BAR

The footer bar displays symbols that are mapped to certain L1 functions and displays. These symbols are displayed in the footer bar.

2.2.5.1 HOME

Selecting the Home symbol will take you to the main menu where your test names are listed. From the Home location, you may select a test to perform.

NOTE

You must be at the Home location in order to access the System Settings.

2.2.5.2 NEW TEST

Select the New Test symbol to start creating a new test method using one of the available test templates.

2.2.5.3 EDIT TEST

From the main menu, select a test method and select the Edit function to make changes to your test method.

NOTE

1. When you edit a test method, the runs collected from the test being edited are deleted. Your runs are deleted because any change to the test will invalidate the previous runs. For example, if you change the target setpoint or change velocity, you will affect the runs information and results.

2. If you want to maintain and keep those results, you should use the COPY test function and edit the new test created by the Copy function.

2.2.5.4 COPY TEST

Choose the Copy symbol to copy and existing test and create a new test with the attributes of the test being copied. The new test can then be edited with new options and attributes.

NOTE

Use the Copy Test function to edit an existing test without affecting the original test setup.

2.2.5.5 DELETE TEST

You can delete a test by selecting the test method and then selecting the red "X" symbol. After pressing the "X", a display will appear where you will acknowledge that you want to delete the selected test method.

NOTE

1. When a test method is deleted, its runs and all associated information are permanently deleted from your L1 System.

2. You may delete a test method from the TESTS directory located in the METLOGIX directory.

2.2.5.6 RENAME TEST

You may rename a test method. Select the test method from your list and select the Rename symbol. You can then enter the new name of your test method.

NOTE

When you rename a test, result and data files from the previously named test method are retained. The new test name is not applied to those files.

Create a New Test
Edit Test
Copy Test
Rename Test
Delete Test
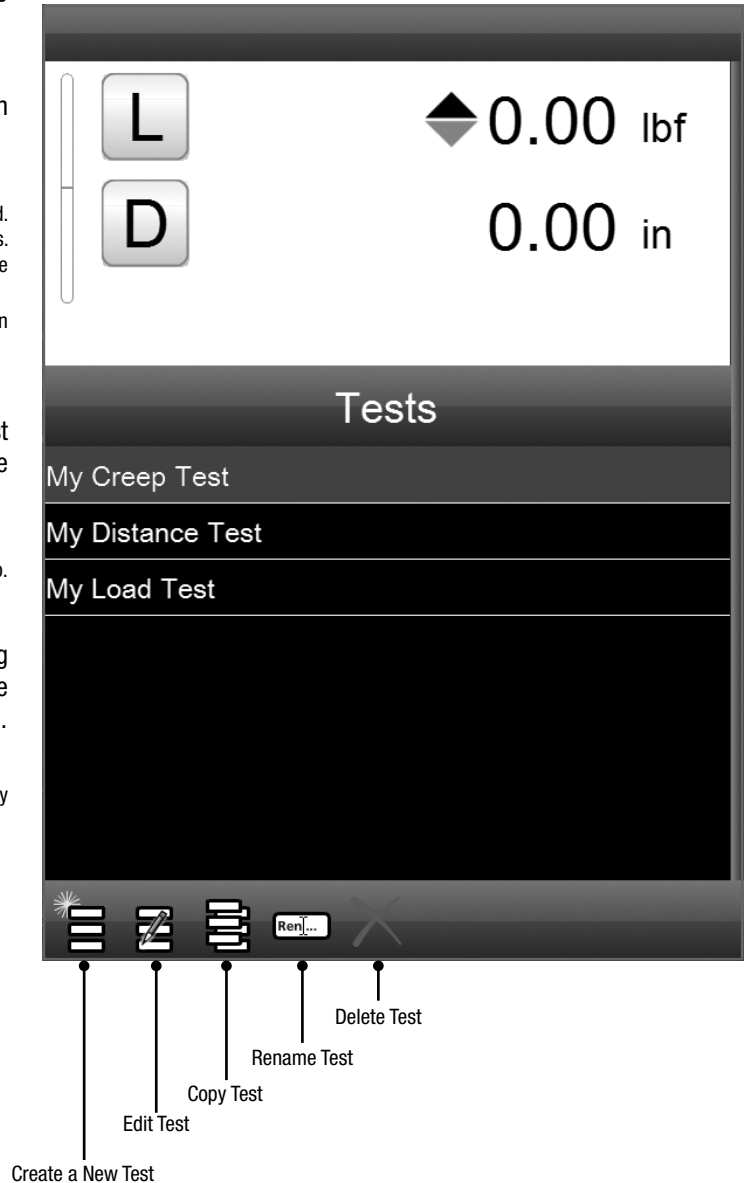
2.2.5.7   GRAPH VIEW

Select the Graph symbol to display the graph window.
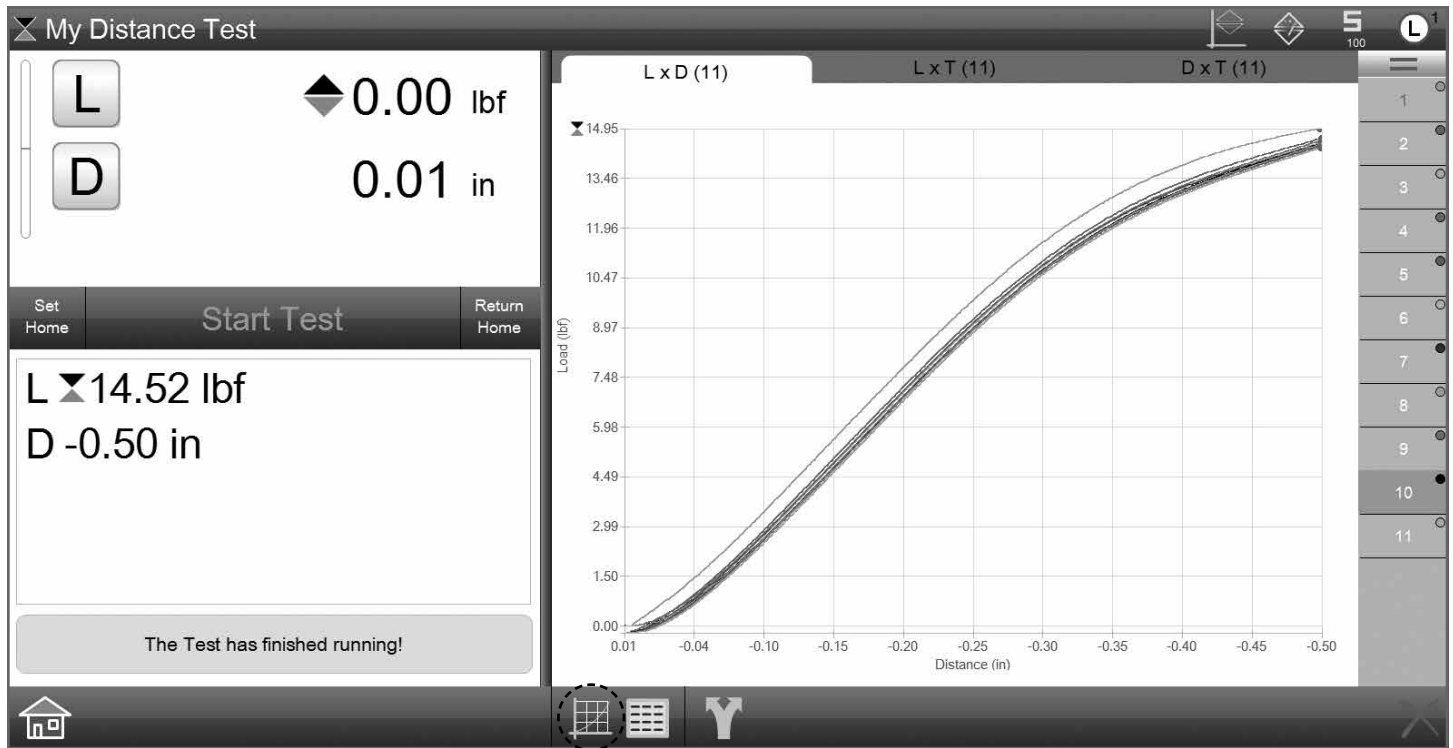
2.2.5.8   DATA VIEW

Select the Data symbol to display the results in a tabular format.

2.2.5.9 STATS VIEW

Select the sigma symbol to display the statistical results for a selected test method.

My Load Test			
L	◆ 0.00 lbf		
D	0.00 in		

Run	L (lbf)	D (in)
1	◆ 10.36	0.75
2	◆ 10.35	0.75
3	◆ 10.34	0.75
4	◆ 10.35	0.75
5	◆ 10.33	0.75
6	◆ 16.05	0.75

Set Home	Start Test	Return Home

Pre Test   1

Max	◆ 16.05	0.75
Min	◆ 10.33	0.75
Range	◆ 5.72	0.00
Average	◆ 11.30	0.75
Std Dev	◆ 2.33	0.00
6 Sigma	◆ 13.97	0.00

2.2.5.10 TOLERANCE VIEW

Select the Tolerance symbol to display the results in a tabular format with the tolerance limits, tendency bargraph and a pass or fail indication.

My Distance Test			
L	◆ 0.00 lbf		
D	0.01 in		

Set Home	Start Test	Return Home

L ⚔ 14.52 lbf
D -0.50 in

The Test has finished running!

Run	Coef	Units	Actual	Limit 1	Limit 2	Deviation	P/F
1	L	lbf	14.95	14.75	14.25	⊢—⟶	Fail
1	D	in	-0.50				
2	L	lbf	14.65	14.75	14.25	⊢—•⊣	Pass
2	D	in	-0.50				
3	L	lbf	14.53	14.75	14.25	⊢—•⊣	Pass
3	D	in	-0.50				
4	L	lbf	14.46	14.75	14.25	⊢—•⊣	Pass
4	D	in	-0.50				
5	L	lbf	14.42	14.75	14.25	⊢•—⊣	Pass
5	D	in	-0.50				
6	L	lbf	14.39	14.75	14.25	⊢•—⊣	Pass
6	D	in	-0.50				
7	L	lbf	14.48	14.75	14.25	⊢—•⊣	Pass
7	D	in	-0.50				
8	L	lbf	14.37	14.75	14.25	⊢•—⊣	Pass
8	D	in	-0.50				
9	L	lbf	14.59	14.75	14.25	⊢—•⊣	Pass
9	D	in	-0.50				

2.2.5.11 EXPORT

The Export symbol is used to export either raw data or results to the Exports directory.

When viewing a graph, selecting the Export symbol will export the raw data collected and used to construct the graph trace.

The Raw Data files displays the Step Number, Time, Load, Units of Load, Distance, Units of Distance, Velocity, Velocity Units and Status for all data points. The number of data points (or rows on your table) correspond to the sampling rate and the duration of your test. Each test run has its own separate file. The file is designated as [Test Name]_RawData_000001. Each test run is numbered sequentially.

When viewing the Data view, selecting the Export symbol with export the results displayed in the table. If, tolerances are used, tolerance limit information is exported. If statistics are being viewed, statistical information is exported.

Select to export the raw data for the test run. Individual points for load and distance are exported. The number of points is determined by your Sampling Rate setting.

Select CSV to export the results using a .csv format. These can be exported directly into an Excel spreadsheet.
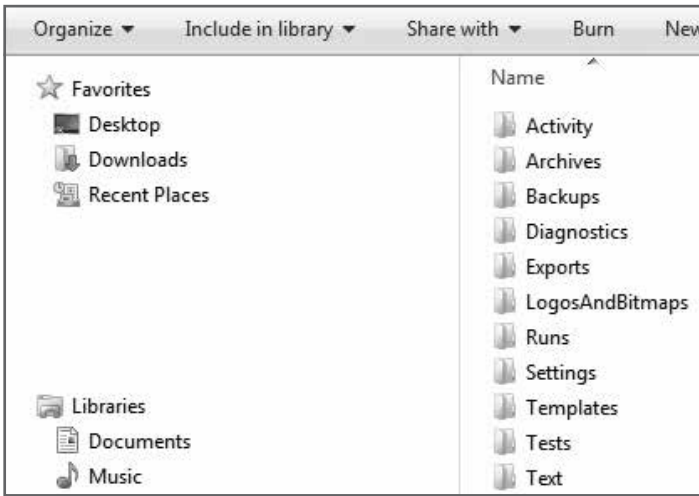
2.3   THE METLOGIX DIRECTORY

The METLOGIX directory is a folder containing critical information for your L1 System's operation.

CAUTION

1. The METLOGIX directory should be kept on a secure server where it can be backed up and accessed by qualified and authorized individuals.

2. The METLOGIX directory contains sub-directories where critical information is saved for the L1 software. The sub-directories are described below.

NOTE

1. The METLOGIX directory should be located on a secure location, preferably a network server where it can be backed up and maintained.

2. The METLOGIX directory should be accessed by authorize personnel only.

Shown: Metlogix Directory

2.3.1   SETTINGS DIRECTORY

The Settings directory is where critical information is filed, including the tuning parameters for the FMM Test Frame.

2.3.2   TESTS DIRECTORY

The Tests directory is where the files that make up your test methods are saved.

2.3.3   RUNS DIRECTORY

The Runs directory are where the individual test run files are saved.

2.3.4   EXPORTS DIRECTORY

The Exports directory is where files that have been exported, including raw data files and result files are saved.

2.3.5   ARCHIVE DIRECTORY

The Archive directory are where "overflow" runs are saved. When you exceed the Runs Limit for your test method, the oldest run file is moved out of the Runs directory and saved to the Archive directory.

2.3.6   BACKUPS DIRECTORY

The Backups directory is used by Metlogix personnel for system maintenance and backup. This directory is also used to store the software license information.

2.3.7   TEXT DIRECTORY

The Text directory houses files created to translate the L1 software's displayed language into a language other than English. A file for a required non-English language is created and saved to this location.

2.3.8   DIAGNOSTICS DIRECTORY

The Activity directory is used by authorized Starrett personnel only for maintenance purposes.

2.3.9   LOGOS AND BITMAPS DIRECTORY

The Logos and Bitmaps directory is used to store your company's logo for use in report headers or footers.

NOTE

If you want to use your company's logo on your report printouts, you must create and save a bitmap image of the logo. The logo must be saved in the Logos and Bitmaps directory.

2.4   L1 SYSTEM LOG-IN/LOG-OUT

The System Login function may be used to require users to login to the L1 System by selecting their User Name and entering their password. This function is ideal for applications requiring audit trails of who is using the system.

If User Names or passwords are not being used, it is not necessary to use the System Login.

The System Logout function is used to exit and terminate your L1 application session.

Select to Log-in with Password

Select to Log-out of the L1 software
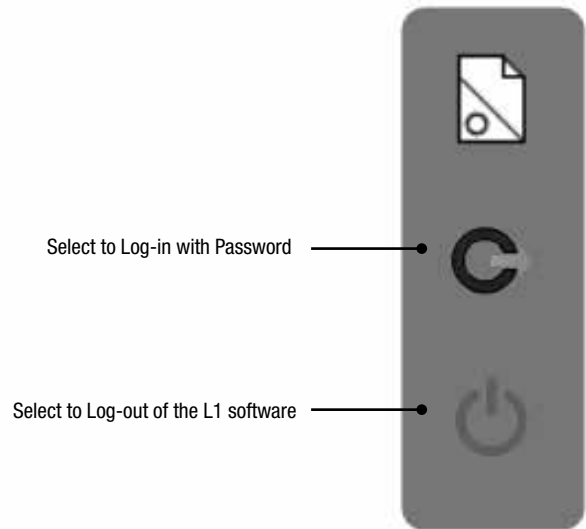
Shown: L1 Main Menu

3.0   L1 TEST METHODS- AN OVERVIEW

Test templates are supplied standard on your L1 System and are designed to let you create a test in as few as two steps. Your L1 System features these) test templates for the most common types of force measurement testing:

• Load Limit Test
• Distance Limit Test
• Break Limit Test
• Cycle Limit Test

3.1   LOAD LIMIT TEST

The Load Limit setup lets you create a load limit test by specifying the limit value and the test speed. Your test will conclude when the load limit is achieved. This test is used when you are interested in determining the amount of deflection/extension the sample exhibits while being pulled or pushed to a load setpoint.

3.2   LOAD HOLD TEST

The Load Limit setup has an option that lets you specify a hold duration at the load limit. This can be used for creep and relaxation testing. The hold duration may be up to 99,999 seconds (27 hours).

NOTE

Long duration tests require a smaller sampling rate. The maximum number of data points that can be collected and saved is 100,000. Therefore, use a sampling rate of 1Hz for tests with a duration of 99,999 seconds.

3.3   DISTANCE LIMIT TEST

The Distance Limit setup lets you create a distance limit test by specifying the limit value and the test speed. Your test will conclude when the distance limit is achieved. This test is used when you are interested in determining the amount of load the sample exhibits while being pulled or pushed to a distance setpoint.

3.4   DISTANCE HOLD TEST

The Load Limit setup has an option that lets you specify a hold duration at the load limit. This can be used for creep and relaxation testing. The hold duration may be up to 99,999 seconds (27 hours).

NOTE

Long duration tests require a smaller sampling rate. The maximum number of data points that can be collected and saved is 100,000. Therefore, use a sampling rate of 1Hz for tests with a duration of 99,999 seconds.

3.5   BREAK/RUPTURE TEST

The Break Limit setup lets you create a break test by specifying the break value and the test speed. Your test will conclude when the load drops by a percentage from a previously measured peak load.

For example, if the user sets a Break % of 10%, the system will continuously measure the load value. When the load drops by 10% from a previously measured peak value, the data point associated with this drop in load is characterized as the "break point" for the sample under test. This test is generally used when you are interested in determining the maximum (peak) load and the distance at the maximum load.

3.6   CYCLE COUNT TEST

The Cycle Count test lets you create a test where the crosshead moves continuously between two setpoint at a specified speed. You will specify the two setpoints and the crosshead velocity. You will also specify the number of cycles or counts to be performed. The test may have a maximum of 99,999 counts or cycles.

3.7   CYCLE DURATION TEST

The Cycle Duration test lets you create a test where the crosshead moves continuously between two setpoints at a specified speed. You will specify the two setpoints and the crosshead velocity. You will also specify the duration of the test, i.e., how long the crosshead will cycle for until the test is completed. The test may have a maximum duration of 99,999 seconds (27 hours).

NOTE

Long duration tests require a smaller sampling rate. The maximum number of data points that can be collected and saved is 100,000. Therefore, use a sampling rate of 1Hz for tests with a duration of 99,999 seconds.
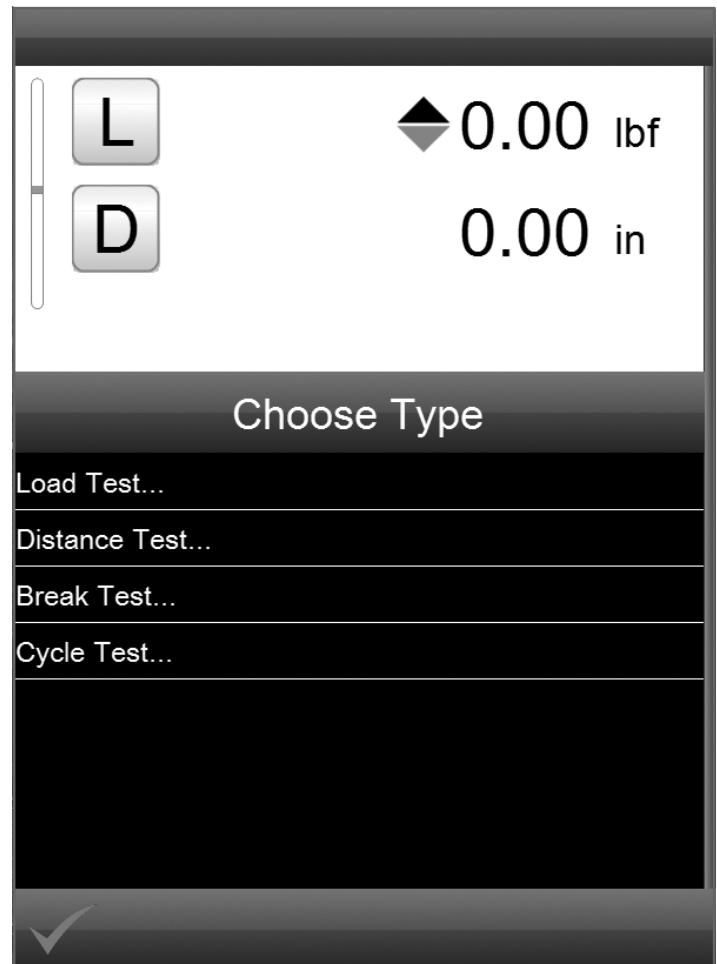
Shown: L1 Test Methods (Templates)

4.0   L1 TEST TEMPLATES

The L1 test templates are designed to help anyone create common test methods for basic force measurement. Using templates, users with very little knowledge of force measurement can create a test in seconds. Tests options are selected from pull-down menus and only relative options to the test method are available for selection.

4.1   COMMON OPTIONS

The L1 test templates use common options, methods and features to help users with a very basic understanding of force measurement, to be able to create and perform a force test. These common options are described below.

4.1.1   NAMING YOUR TEST

Every test method created requires a unique test name. Your L1 test method may have up to 24 characters. The name may be created using alpha- and numeric characters.
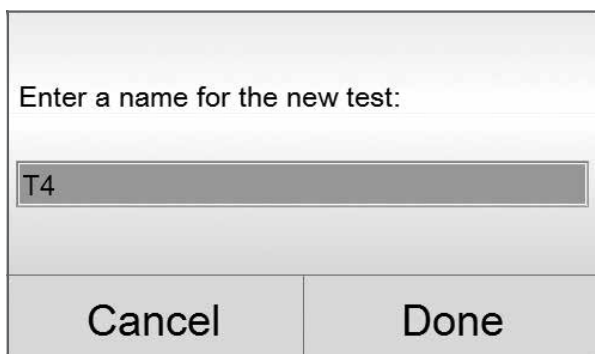

Shown: New Test Name dialog

4.1.2   TEST TYPES

Your L1 test method may be either a Tension or Compression Test Type. When a cyclic test is created, the direction on which you want the crosshead to move first is defined by the Test Type selected. If you choose Tension as the Test Type, the first cycle will start with the crosshead moving upwards in the tensile direction. If you choose Compression as the Test Type, the first cycle will start with the crosshead moving downwards in the compression direction.

NOTE
The Test Type may be Tension or Compression.
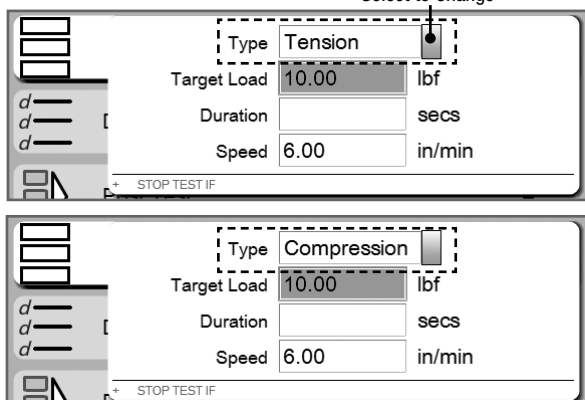
4.1.3   USING EXCEPTIONS (+STOP IF)

Exceptions may be optionally applied to your L1 test method. Exceptions are events, that if they occur, cause the test method to stop.

EXAMPLE 1

You want to perform a Distance Limit test in order to determine whether a load is achieved prior to the distance limit. During the test, the measured load is exceeding the expected load for the specified distance. In a compression test method, this could mean that something has happened and you are applying too high a load, which could cause damage to the sample under test or the apparatus used in the test. The test stops before the distance setpoint is achieved.

EXAMPLE 2

You want to determine the maximum load and distance at maximum load after the sample breaks. The sample has slipped out of the test fixture, therefore, the crosshead is continually moving upwards, but there is no change in load. The test stops since no break load can be detected.
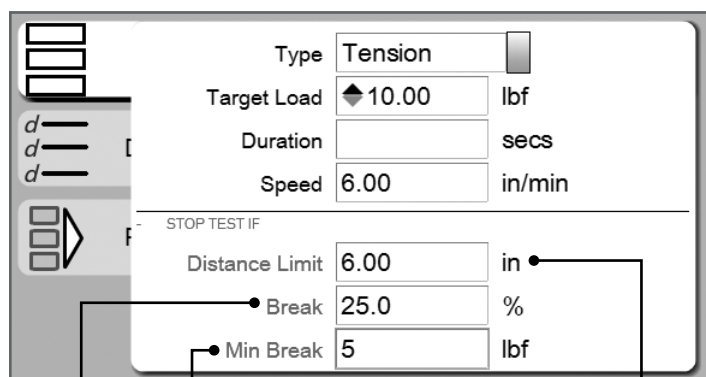
The Min Break setting is when you first start looking for a percentage drop in load. It is a precondition- get to 5 lbf first, then starting looking for a 25% drop in load. That indicates a break.

The Break setting is a percentage drop in the measured load after the Min Break was achieved. The software looks for a percentage decrease in the measured load from a maximum value.

Should the crosshead travel to the Distance Limit before it achieved 10 lbf, the test will abort.

4.1.4 TEST SPEED

All test methods require a test Speed. The Speed setting is the crosshead velocity during the test.

NOTE

When Return Home occurs, the crosshead will move at the maximum allowed velocity, up to 40 in/min (1016 mm/min).

The Speed setting is the velocity for the test. It is the velocity at which the crosshead will travel once the test is started.

4.2 PRE TEST STAGE

The Pre Test step provides you with options that may be performed before the test is actually conducted. The Pre Test options are common to all template types.
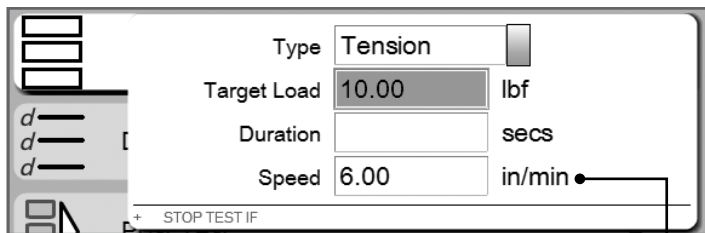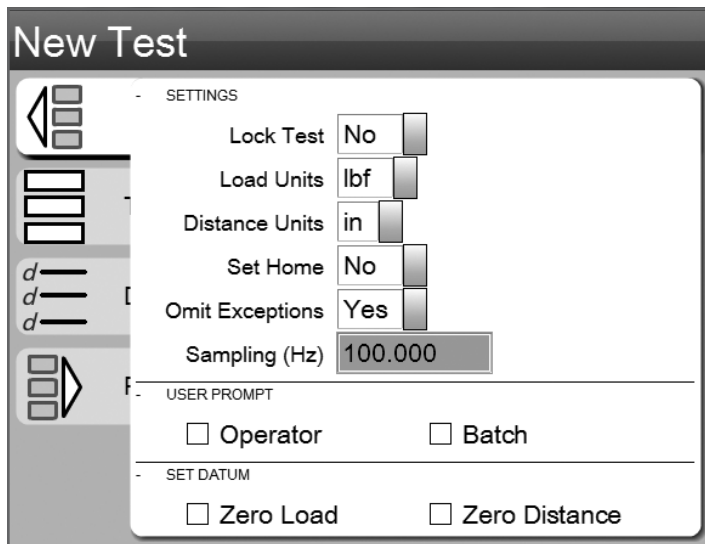
The Pre Test step consists of three sections: Settings, User Prompts and Set Datum.

Shown: L1 Pre Test Stage options

4.2.1 LOCK TEST OPTION

When the Lock Test option is set to YES, an unauthorized user is prevented from making changes to the test setup. This option also prevents the test setup from being deleted. The default value for Lock Test is NO. NO means that you can make changes to the test setup once it has been created.

NOTE

If a test method is Locked, it can only be edited, copied or deleted by the user that created the test. It is a "good practice" to maintain a copy of all tests on a secure server. Use this copy as the master where you can control access and editing.

4.2.2 LOAD UNITS OPTION

Load Units let you specify the units of measure that represent your load result and load measurement. Available units of measure for load are N (newton), LBF (pound-force), KGF (kilogram-force) , GF (gram-force) and OZF (ounce-force).

4.2.3 DISTANCE UNITS OPTION

Distance Units let you specify the units of measure that represent your distance result and distance measurement. Available units of measure for distance are IN (inch) and mm (millimeter).

4.2.4 SET HOME OPTION

Set Home may be YES or NO. If Set Home = YES, the home position, which is the starting position for your crosshead prior to you selecting START TEST, is automatic. If the Set Home option = NO, the operator is required to manually select the SET HOME touch target located to the left of the START TEST touch target.

CAUTION

You should exercise caution when using Set Home = YES. Damage can occur to your load cell sensor if your Set Home position is incorrect and the crosshead automatically returns to an erroneous position once a test is completed.

4.2.5 SAMPLING RATE (HZ) OPTION

Your L1 Series system has a maximum Sampling (Hz) rate of 1000 samples per second.

The factory setting is 100 Hz and is usually more than sufficient for capturing peak load, etc.

If you need a higher sampling rate, you can change the rate using the numeric keypad.

NOTE

The L1 software will save up to 100,000 data points for a test run. When using durations for holds or for cycling, make sure to adjust the Sampling Rate (Hz) to a value much lower than 100Hz. At 100 Hz, your test duration cannot exceed 1000 seconds (15 minutes).

4.2.6 USER PROMPT OPTIONS

Pre Test settings include the ability to use prompting. Two prompts are available:

• Operator Prompt
• Batch Prompt

4.2.6.1   OPERATOR PROMPT

The Operator Prompt requires the operator performing the test to enter their name when the START TEST touch target is touched. Use this prompt so that the name of the operator performing the test is recorded in the test data.

The Operator Prompt provides an audit trail for each test run by operator name.

The Operator Prompt default is OFF (the combo box is not highlighted).

Shown: L1 Pre Test Operator Prompt setup

Shown: L1 Pre Test Batch Number Prompt setup

4.2.6.2   BATCH PROMPT

The Batch Prompt requires the operator performing the test to enter the name of the batch or the sample being tested. When the Batch Prompt is used, the operator is required to enter the name of the sample being tested prior to the test being able to be performed.

The Batch Prompt default is OFF (the combo box is not highlighted).

4.2.7   SET DATUM OPTION

The Set Datum option lets you configure your test setup to automatically zero the Load and/or Distance when the test is started- when START TEST is pressed.

4.2.7.1   ZERO LOAD

If you select the combo box for Zero Load, the load measurement in the display is automatically set to a 0 value at the start of the test- when START TEST is pressed.

4.2.7.2   ZERO DISTANCE

If you also select the combo box for the Zero Distance, your distance measurement in the display is automatically set to a 0 value at the start of the test- when START TEST is pressed.

4.3   TEST AND DATA STAGES

The Test stage is where you specify your limits and crosshead velocity for your test method. This section will describe the options and attributes of the Test stage for each test template type in your L1 software.

The Data stage is where you specify your results, i.e., what you want to measure and display.

This section will describe how to setup your test method and select or modify the results.

Open the TEST stage to setup your test method.
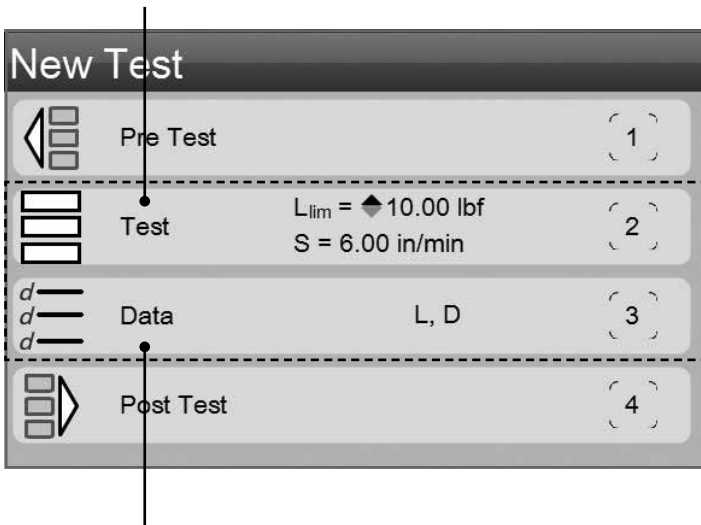
Once the TEST stage is completed, use the DATA stage to setup which additional results you want to display and where you want to apply a tolerance for "pass" or "fail" status.

Shown: L1 Test Stages
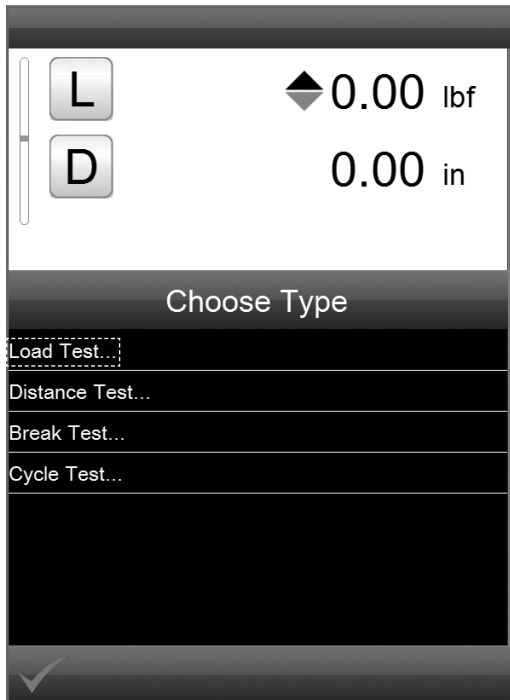
4.3.1   LOAD LIMIT TEST

The Load Limit Test is used to measure and report the Distance result at the Load Limit.

When you launch the Load Limit test template, the test template menu has these basic attributes:

• Type
• Target Load
• Hold Duration
• Speed
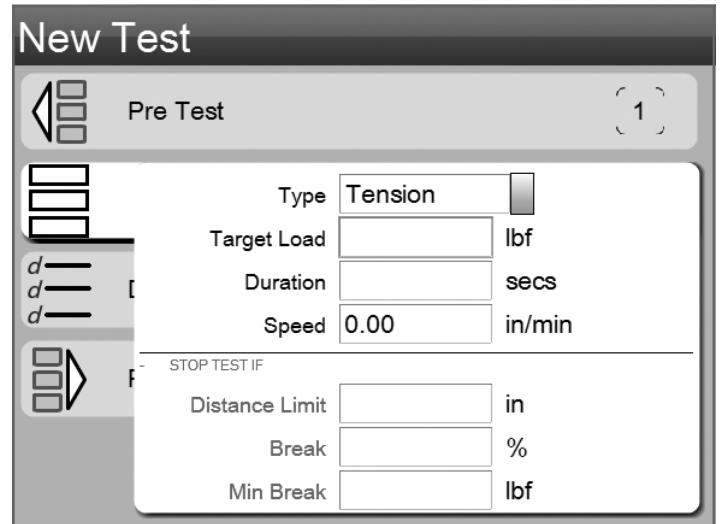
Shown: L1 LOAD LIMIT Test Method setup

4.3.1.1   TEST TYPE

The Test Option launches with the Type = Tension. Tension means you want to perform a Pull test, e.g. you want the crosshead to move in an upward direction.

If you want to perform a Compression test (also called a Push test), change the Type to Compression.

4.3.1.2   TARGET LOAD

The Target Load value is the load limit setpoint. You want the crosshead to pull your sample until the measured load = your specified Target Load value. Load units may be newtons (N), pounds-force (lbf), kilogram-force(kgf) and for lighter load sensors additionally gram-force (gf) and ounce-force (ozf). You may specify the units of measure for Load using the Pre Test options.

Enter numerical data using the keypad at the bottom of the display or using the keyboard supplied with your L1 tablet.

4.3.1.3 HOLD DURATION

Use the Hold Duration when you are performing a constant load hold test for creep and relaxation testing. You may specify a duration of up to 99,999 seconds. When a Hold Duration is specified, the Load Limit test will finish once this duration has finished.

The default value for the Hold Duration option is null. This means there is no hold at the limit.

NOTE

Long duration tests require a smaller sampling rate. The maximum number of data points that can be collected and saved is 100,000. Therefore, use a sampling rate of 1Hz for tests with a duration of 99,999 seconds.

4.3.1.4 TEST SPEED

The Speed value is your test speed. This is the velocity you want your crosshead to travel at from when you start your test to your Target Load setpoint.

Speed units may be either in/min (inch per minute) or mm/min (millimeter per minute). You may specify the units of measure for speed using the Pre Test options.

Your L1 System has a speed range from 0.001 to 40.0 inch per minute (0.02 to 1016 mm per minute).

4.3.1.5 EXCEPTIONS

The optional exception rules for the Load Limit test are:

• Distance
• Break % and Minimum Break

DISTANCE EXCEPTION

Enter a Distance value. If the measured distance equals this value, and the load limit has not been achieved, the test will stop.

BREAK EXCEPTION

Enter the % Drop value and Minimum Break value to define a break event. Requires entering a Minimum Break also. If a break condition occurs, before the load limit is measured, the test will stop.

4.3.1.6 DATA STAGE

The Data stage displays the default results for the test template type. And you may select optional results from a list, also based on the test template type.
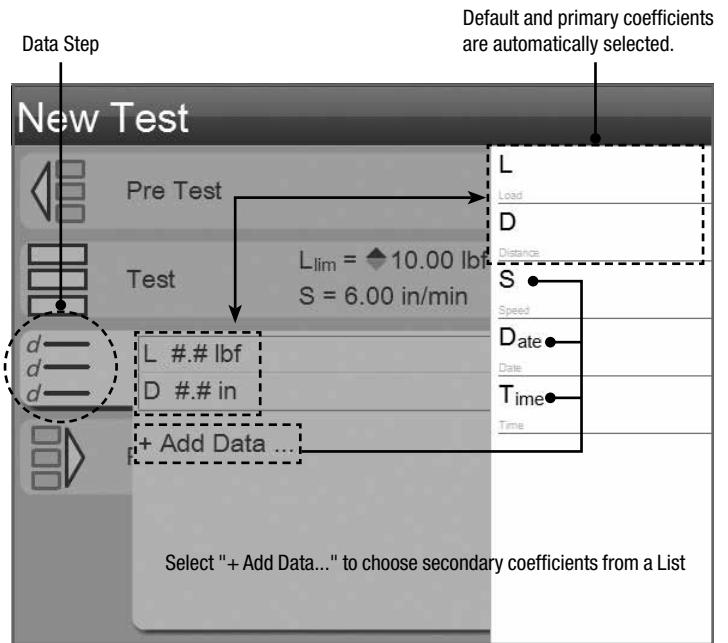
Shown: L1 LOAD LIMIT Test Data setup

The table shows the test method type and its associated primary and secondary results. The primary results are the default results always displayed. The secondary results are results that may be selected using the +Add Coefficient feature.

LOAD LIMIT COEFFICIENTS

LOAD LIMIT TEST TEMPLATE	
PRIMARY RESULTS	SECONDARY RESULTS
D (Distance @ Load Limit)	S (Speed)
L (Load Limit Setpoint)	D (Date)
	T (Time)
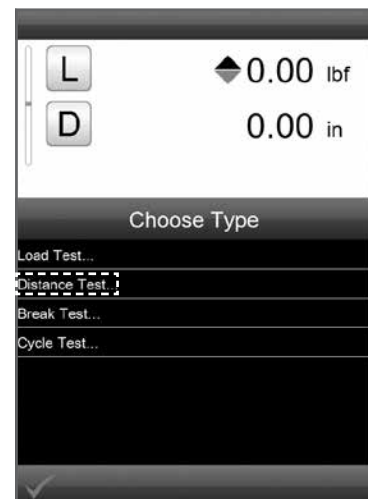
4.3.2 DISTANCE LIMIT TEST

The Distance Limit Test is used to measure and report the LOAD result at the Distance Limit.

When you launch the Distance Limit test template, the test template menu has these basic attributes:

• Type
• Target Distance
• Hold Duration
• Speed
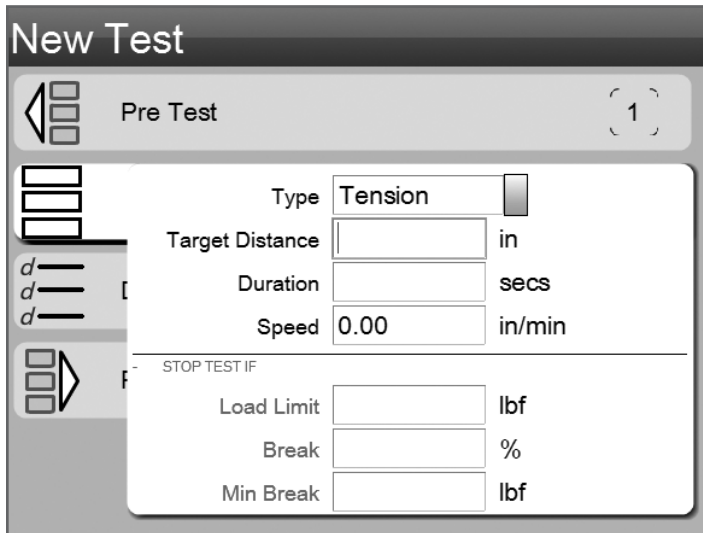
Shown: L1 DISTANCE LIMIT Test Method setup

4.3.2.1 TEST TYPE

The Test Option launches with the Type = Tension. Tension means you want to perform a Pull test, e.g. you want the crosshead to move in an upward direction.

If you want to perform a Compression test (also called a Push test), change the Type to Compression.

4.3.2.2 TARGET DISTANCE

The Target Distance value is the distance limit setpoint. You want the crosshead to pull your sample until the measured distance = your specified Target Distance value. Distance units may be inches (in) or millimeters (mm). You may specify the units of measure for Distance using the Pre Test options.

Enter numerical data using the keypad at the bottom of the display or using the keyboard supplied with your L1 tablet.

4.3.2.3 HOLD DURATION

Use the Hold Duration when you are performing a constant distance hold test for creep and relaxation testing. You may specify a duration of up to 99,999 seconds. When a Hold Duration is specified, the Distance Limit test will finish once this duration has finished.

The default value for the Hold Duration option is null. This means there is no hold at the limit.

NOTE

Long duration tests require a smaller sampling rate. The maximum number of data points that can be collected and saved is 100,000. Therefore, use a sampling rate of 1Hz for tests with a duration of 99,999 seconds.

4.3.2.4 TEST SPEED

The Speed value is your test speed. This is the velocity you want your crosshead to travel at from when you start your test to your Target Load setpoint.

Speed units may be either in/min (inch per minute) or mm/min (millimeter per minute). You may specify the units of measure for speed using the Pre Test options.

Your L1 System has a speed range from 0.001 to 40.0 inch per minute (0.02 to 1016 mm per minute).

4.3.2.5 EXCEPTIONS

The optional exception rules for the Distance Limit test are:

• Load
• Break % and Minimum Break

LOAD EXCEPTION

Enter a Load value. If the measured load equals this value, and the distance limit has not been achieved, the test will stop.

BREAK EXCEPTION

Enter the % Drop value and Minimum Break value to define a break event. Requires entering a Minimum Break also. If a break condition occurs, before the load limit is measured, the test will stop.
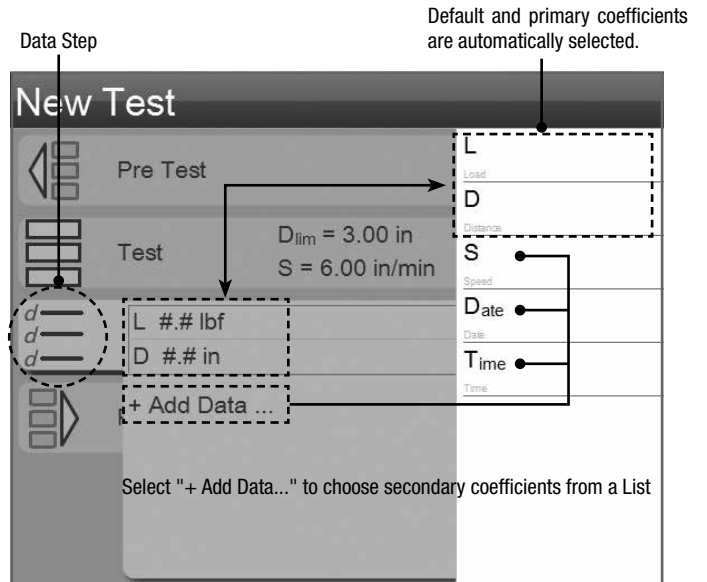
Shown: L1 DISTANCE LIMIT Test Data setup

4.3.2.6 DATA STAGE

The Data stage displays the default results for the test template type. And you may select optional results from a list, also based on the test template type.

The table shows the test method type and its associated primary and secondary results. The primary results are the default results always displayed. The secondary results are results that may be selected using the +Add Coefficient feature.

DISTANCE LIMIT COEFFICIENTS

DISTANCE LIMIT TEST TEMPLATE	
PRIMARY RESULTS	SECONDARY RESULTS
L (Load @ Distance Limit)	S (Speed)
D (Distance Limit Setpoint)	D (Date)
	T (Time)
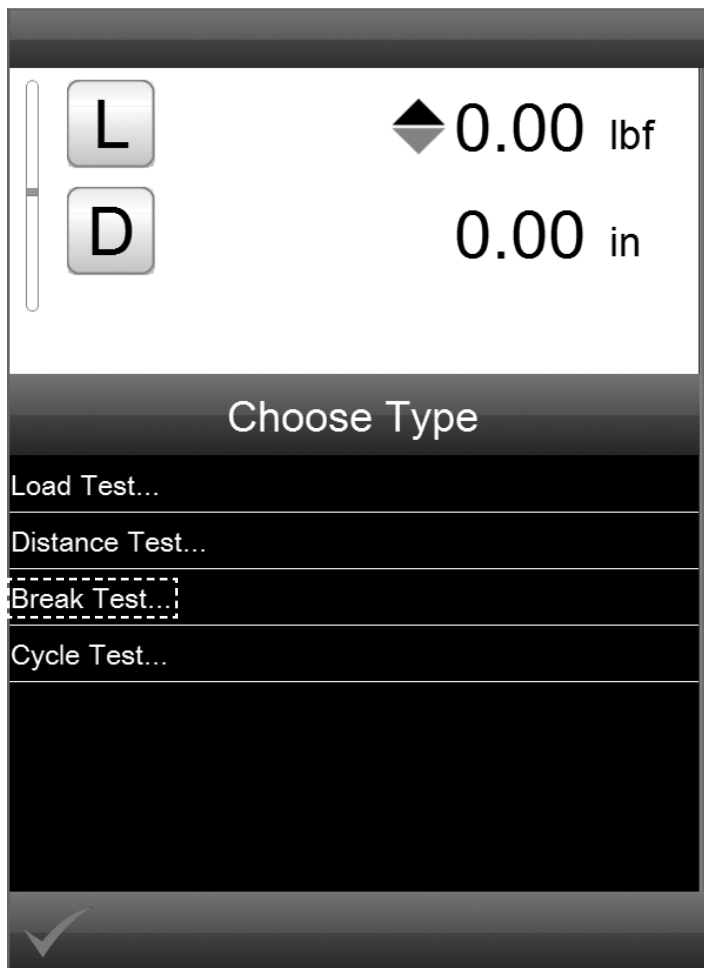
4.3.3 BREAK LIMIT TEST

The Break Limit Test is used when you want a test for the maximum (peak) load and the distance at the maximum (peak) load. In a Break Limit test, the L1 software determines a break using the maximum load after a minimum load has been reached. Once the minimum load is reached, the L1 software continuously monitors the measured load and finishes the test when the maximum measured load drops by a percentage value you set. The percentage drop in load is called the % Drop value.

For example, you specify the % Drop value as 10% meaning that a break is defined when the measure load drops by 10% from a previously measured peak load.

The Break Limit Test reports the Maximum Load and the Distance at Maximum Load.

The Break Test menu has three basic attributes:

- Type
- Minimum Break Target
- % Drop Target
- Speed
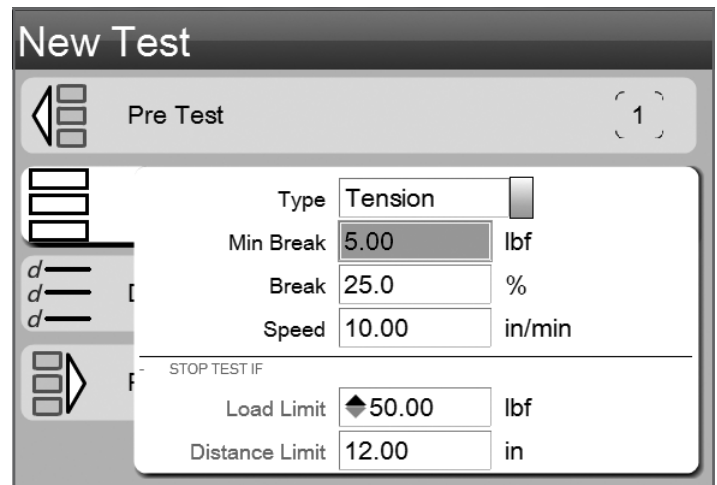
Shown: L1 BREAK LIMIT Test Method setup

4.3.3.1 TEST TYPE

The Test Option launches with the Type = Tension. Tension means you want to perform a Pull test, e.g. you want the crosshead to move in an upward direction.

If you want to perform a Compression test (also called a Push test), change the Type to Compression.

4.3.3.2 MINIMUM BREAK LOAD

The Minimum Break Load is a precondition step. This is the load that must first be measured before the L1 Controller begins to look for a Peak Load and a % Drop from Peak Load. The Minimum Break Load must always occur before the Peak Load otherwise a break will never be determined.

The Minimum Break Load is used to counter samples that exhibit a high degree of noise in their load characteristic. This noise can result in a "noisy" load measurement where the load drastically swings from high to low values. This normally occurs at the initial stages of a sample being pulled/pushed to a break.

4.3.3.3 % DROP

The % Drop is the percentage drop in load from the measured maximum (peak) load value. If the % Drop =5%, the break occurs when the measured load is a 5% drop from the measured maximum load after the Minimum Break value. If the Break % = 25%, the break occurs when the measured load is a 25% drop from the measured maximum load after the Minimum Break value.

EXAMPLE

• If the Minimum Break = 10 lbf

• If the % Drop =25%

The L1 software will monitor the measured load when the test starts. Once the measured load equals and exceeds the 10 lbf Minimum Break target, the L1 software will begin to monitor the load while looking for a reduction in load by 25%. If the maximum measured load is 100 lbf and when the load drops to 75 lbf, the test will finish. The maximum load is 100 lbf and the distance result is the distance the crosshead moved to get to the 100 lbf maximum.

4.3.3.4 TEST SPEED

The Speed value is your test speed. This is the velocity you want your crosshead to travel at from when you start your test to your Target Load setpoint.

Speed units may be either in/min (inch per minute) or mm/min (millimeter per minute). You may specify the units of measure for speed using the Pre Test options.

Your L1 System has a speed range from 0.001 to 40.0 inch per minute (0.02 to 1016 mm per minute).

4.3.3.5 EXCEPTIONS

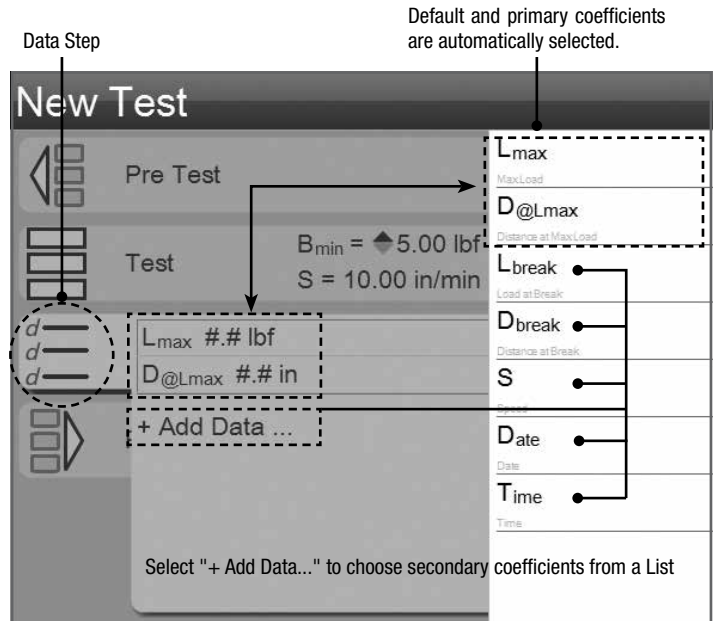The optional exception rules for the Break Limit test are:

• Load

• Distance

LOAD EXCEPTION

Enter a Load value. If the measured load equals this value, and the distance limit has not been achieved, the test will stop.

DISTANCE EXCEPTION

Enter a Distance value. If the measured distance equals this value, and the load limit has not been achieved, the test will stop.

Shown: L1 BREAK LIMIT Test Data setup

4.3.3.6 DATA STAGE

The Data stage displays the default results for the test template type. And you may select optional results from a list, also based on the test template type.

The table shows the test method type and its associated primary and secondary results. The primary results are the default results always displayed. The secondary results are results that may be selected using the +Add Coefficient feature.

BREAK TEST COEFFICIENTS

BREAK LIMIT TEST TEMPLATE	
PRIMARY RESULTS	SECONDARY RESULTS
Lmax (Maximum Load)	Lbrk (Break Load)
D@Lmax (Distance @ Maximum Load)	Dbrk (Break Distance)
	S (Speed)
	D (Date)
	T (Time)
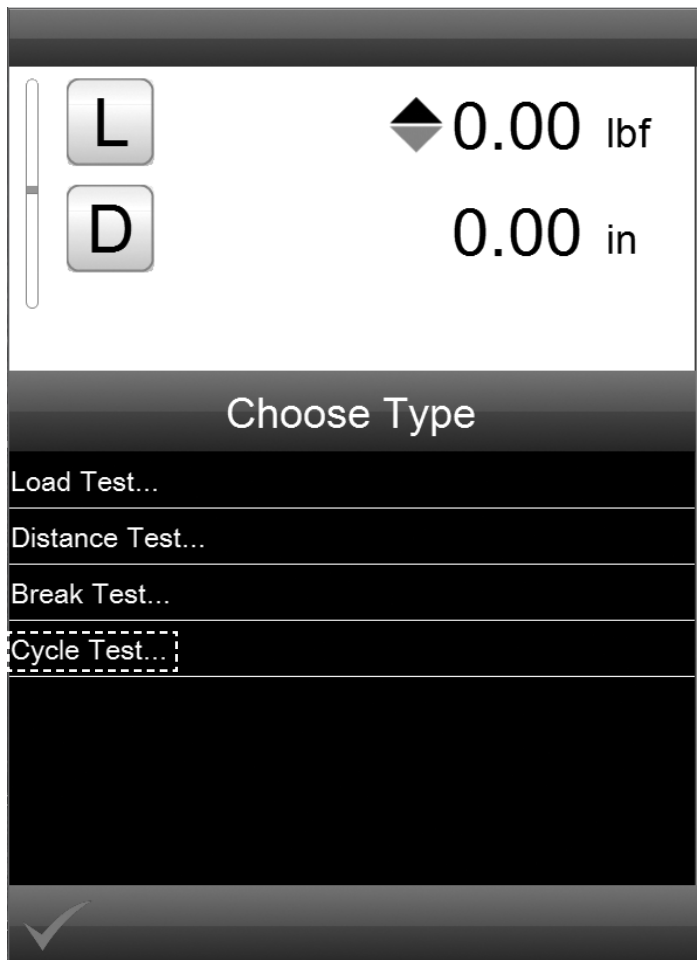
4.3.4 CYCLE LIMIT TEST

The L1 System lets you perform two types of Cycle Limit testing:

- Cycle for a Count
- Cycle for a Duration

You may create a test using two limit values. These values may be either load-based or distance-based.

In a Cycle Count test, you specify the number of cycles to be completed by the crosshead continuously moving to each of the two limits for a specified number of cycles. The maximum number of cycle counts is 99,999.

The Cycle Duration test, specifies two limits and the crosshead will continuously move to each of the two limits for a specified time duration. The maximum time duration for a cycle duration test is 99,999 seconds (27 hours).

NOTE

Long duration tests require a smaller sampling rate. The maximum number of data points that can be collected and saved is 100,000. Therefore, use a sampling rate of 1Hz for tests with a duration of 99,999 seconds.

4.3.4.1 CYCLE TYPE

The Cycle Type may be either tension or compression. If the Type=Tension, when the test starts, the crosshead will move upwards to the first Limit.

If the Type=Compression, when the test starts, the crosshead will move downward to the first Limit.

4.3.4.2 LIMIT TYPE

The Limit Type defines whether you are cycling between two load limits or distance limits.

If Limit Type=Load, the Target 1 and Target 2 values are both load value limits.

If Limit Type=Distance, the Target 1 and Target 2 values are both distance value limits.

NOTE

The Limit Type must be the same. You cannot have one limit as a load and the other as a distance using L1 software.
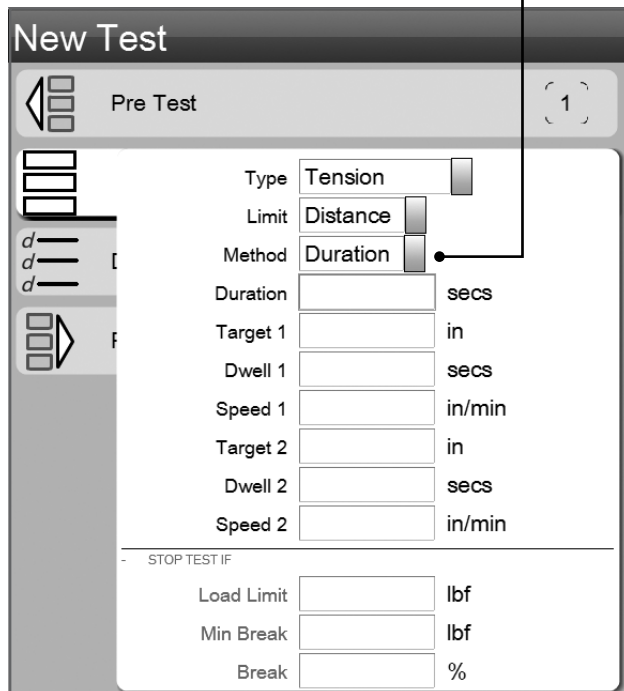
4.3.4.3 METHOD TYPE

There are two cycle methods: Count or Duration.

If the Method Type=Count, the test will cycle continuously for the number of counts, up to 99,999 cycles.

If the Method Type=Duration, the test will cycle continuously for a time duration, up to 99,999 seconds.
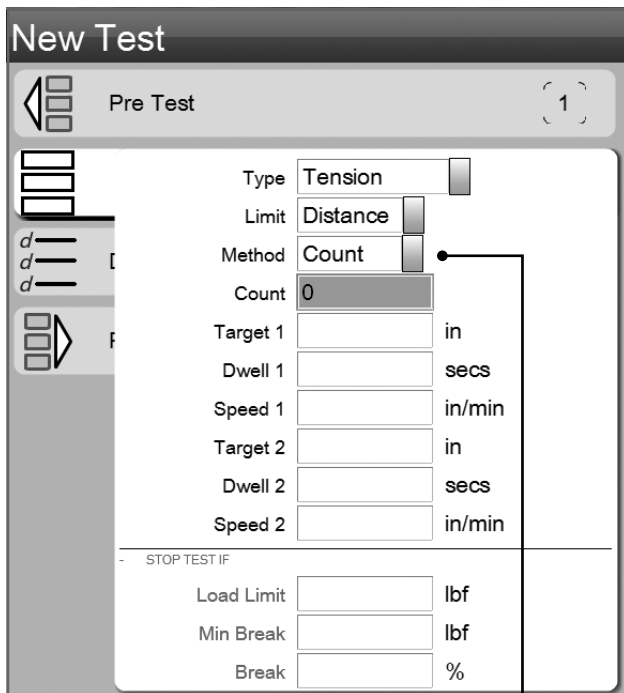
Shown: L1 CYCLE COUNT Test Method setup

Shown: L1 CYCLE DURATION Test Method setup

4.3.4.4 TARGET 1

Target 1 represents the first target. It may be either Load or Distance based on the Limit Type setup.

If the Type=Tension, the crosshead will move upward until it achieves the Target 1 value. It will then move next to Target 2.

If the Type=Compression, the crosshead will move downward until it achieves the Target 1 value. It will then move next to Target 2.

4.3.4.5 DWELL 1

You may configure a "pause duration", called a dwell for each Target 1 and Target 2.

Dwell 1 is the amount of time, in seconds, that the crosshead will hold at the Target 1 limit. Dwell time may be set to up to 3600 seconds (60 minutes). When the crosshead moves to the target, the crosshead will hold at this position for the dwell duration. At the conclusion of the dwell duration, the crosshead will move next to Target 2.

The default for Dwell is null. When null, there is no pause. The crosshead will move to Target 1, then reverse direction to Target 2.

NOTE

The L1 system can save up to 100,000 data points for a Test Run. When using any type of hold or cycle duration, you must use an appropriate Sampling Rate (Hz) so that the entire data collection for the Test Run doesn't exceed 100,000.

4.3.4.6 SPEED 1

The Speed 1 is the crosshead velocity to Target 1.

4.3.4.7 TARGET 2

Target 2 represents the second target. It may be either Load or Distance based on the Limit Type setup.

If the Type=Tension, the crosshead will move upward until it achieves the Target 1 value. It will then move next to Target 2.

If the Type=Compression, the crosshead will move downward until it achieves the Target 1 value. It will then move next to Target 2.

4.3.4.8 DWELL 2

You may configure a "pause duration", called a dwell for each Target 1 and Target 2.

Dwell 2 is the amount of time, in seconds, that the crosshead will hold at the Target 2 limit. Dwell time may be set to up to 3600 seconds (60 minutes). When the crosshead moves to the target, the crosshead will hold at this position for the dwell duration. At the conclusion of the dwell duration, the crosshead will move next to Target 1.

The default for Dwell is null. When null, there is no pause. The crosshead will move to Target 2, then reverse direction to Target 1.

NOTE

The L1 system can save up to 100,000 data points for a Test Run. When using any type of hold or cycle duration, you must use an appropriate Sampling Rate (Hz) so that the entire data collection for the Test Run doesn't exceed 100,000.

4.3.4.9 SPEED 2

The Speed 2 is the crosshead velocity to Target 2.

4.3.4.10 EXCEPTIONS (+ STOP IF)

The optional exception rules for the Cycle Limit test are:

- Load
- Distance
- Break %

LOAD EXCEPTION

Enter a Load value. If the measured load equals this value, and the distance limit has not been achieved, the test will stop.

DISTANCE EXCEPTION

Enter a Distance value. If the measured distance equals this value, and the load limit has not been achieved, the test will stop.

BREAK % EXCEPTION

Enter the % Drop value and Minimum Break value to define a break event. Requires entering a Minimum Break also. If a break condition occurs, before the load limit is measured, the test will stop.

4.3.4.11 DATA STAGE

The Data stage displays the default results for the test template type. And you may select optional results from a list, also based on the test template type.

The table shows the test method type and its associated primary and secondary results. The primary results are the default results always displayed. The secondary results are results that may be selected using the +Add Data feature.

CYCLE TEST COEFFICIENTS

CYCLE LIMIT TEMPLATE LOAD	
PRIMARY RESULTS	**SECONDARY RESULTS**
ΔDp (Delta Distance Peaks)	Cnt (Cycle Count)
ΔDv (Delta Distance Valleys)	Dur (Cycle Duration)
	S1 (Speed 1)
	S2 (Speed 2)
	D (Date)
	T (Time)

CYCLE LIMIT TEMPLATE DISTANCE	
PRIMARY RESULTS	**SECONDARY RESULTS**
ΔLp (Delta Load Peaks)	Cnt (Cycle Count)
ΔLv (Delta Load Valleys)	Dur (Cycle Duration)
	S1 (Speed 1)
	S2 (Speed 2)
	D (Date)
	T (Time)
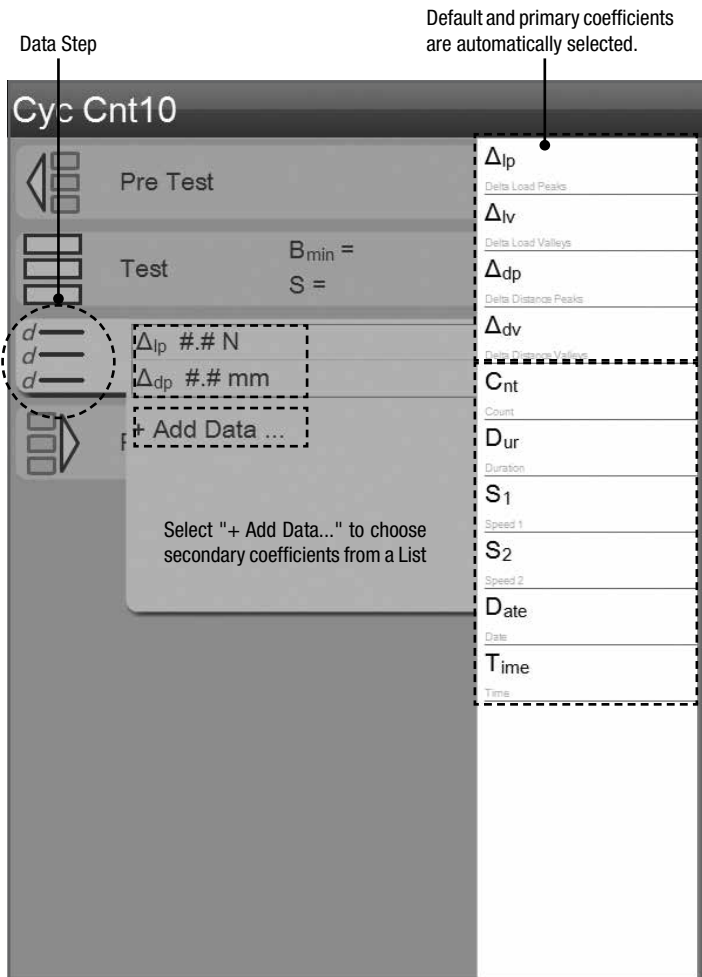
Shown: L1 CYCLE LIMIT Test Data setup

4.4 POST TEST STAGE

The Post Test stage has functions that may be used to manage your results and data:

• Export Raw
• Export Results
• Print Results
• Runs Limit

The Pre Test stage also effects how data is collected. The Sampling Rate (Hz) is used to specify the frequency that data is collected during a test run. The Sampling Rate (Hz) may be set from 1 to 1000 Hz.
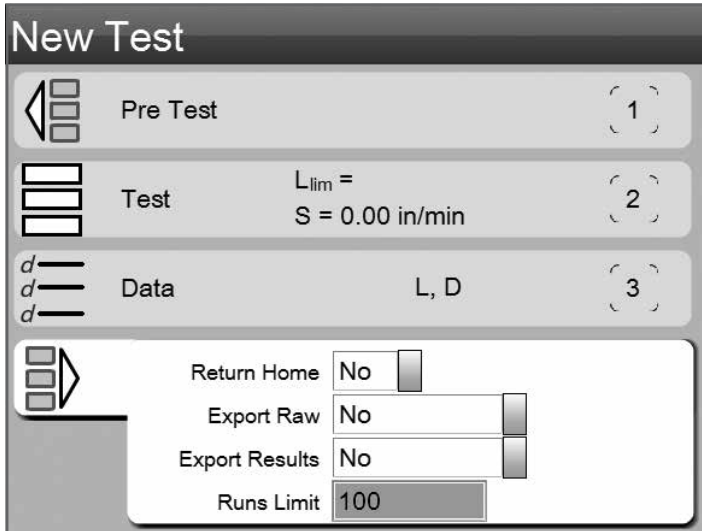
Shown: L1 POST TEST default

Shown: L1 POST TEST options

4.4.1 RETURN TO HOME

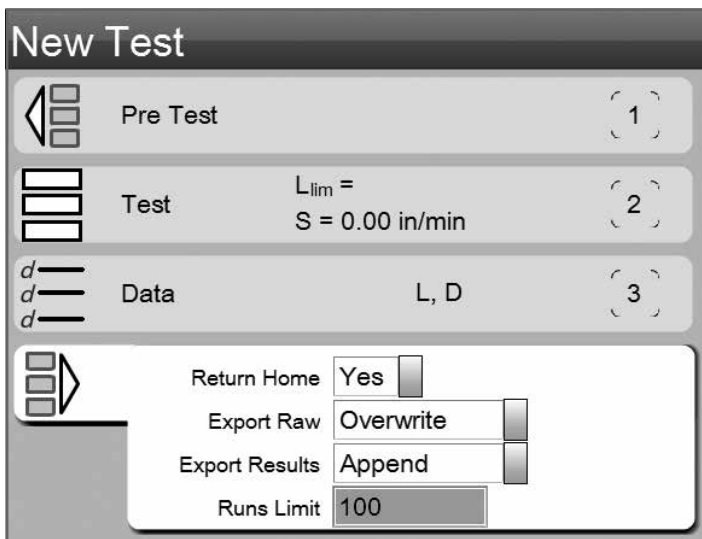Use the Return Home option to automatically return the crosshead to the Home position once a test run is completed. When the option is YES, the crosshead will automatically return to the Home position when the test is completed.

When the option is NO, the user will return to the Home position by selecting the SET HOME and the RETURN HOME touch targets on the DRO view.

4.4.2 EXPORT RAW DATA

The Export Raw option lets you specify how your raw data for a test run is saved. You have the following options:

• No
• Overwrite
• Auto Number

When Export Raw = No, data is not exported to the Exports subdirectory. No .csv file of your raw data for a test run is saved.

4.4.2.1 EXPORT RAW DATA OVERWRITE

When Export Raw = Overwrite, a .csv file is created for each test run.

The .csv file has a row based on the Sampling Rate that was setup in Pre Test for this test setup. "Overwrite" means that the current .csv file for this test is over-written with new data at the completion of each test run, e.g. there is only one (1) .csv file for this test.

The .csv file is named [Test Name]_RawData and is saved to the EXPORTS directory.

NOTE

When Overwrite is selected, there is always only one (1) .csv file for the test setup. At the completion of a test run, the data from the previous run is replaced by the new data.

4.4.2.2 EXPORT RAW AUTO-NUMBER

When Export Raw = Auto Number, a new .csv file is created at the completion of each test run. If there were ten (10) test runs, there would be ten (10) .csv files, e.g. one .csv file for each test run.

The .csv naming convention is [Test Name]_RawData[Run Number].

NOTE

When Auto Number is selected, a .csv file is created for each test run within the batch.

4.4.3 EXPORT RESULTS

The Export Results option is used when you want to create a .csv file of only the results (coefficients) measured and reported in each test run.

When using Export Results, you have the following options:

• No
• Overwrite
• Auto Number
• Append

When Export Results = No, results are not exported to the Exports subdirectory. No .csv file of your results for a test run is saved.

4.4.3.1 EXPORT RESULTS APPEND

When Export Results = Append, a .csv file is created at the completion of the first test run with the results displayed on a single row. If there were ten (10) test runs, there would be ten (10) rows, e.g. one .csv file with a row added at the completion of each test run.

The .csv naming convention is [Test Name]_Results.

NOTE
When Append is selected, a .csv file is created for the test with a unique row for each test run within the batch.

4.4.3.2 EXPORT RESULTS OVERWRITE

When Export Results = Overwrite, a .csv file is created for each test run. The .csv file has a row containing the results. "Overwrite" means that the current .csv file for this test is over-written with new results at the completion of each test run, e.g. there is only one (1) .csv file for this test. The .csv file is named [Test Name]_Results and is saved to the EXPORTS directory.

NOTE
When Overwrite is selected, there is always only one (1) .csv file for the test setup. At the completion of a test run, the data from the previous run is replaced by the new data.

4.4.3.3 EXPORT RESULTS AUTO-NUMBER

When Export Results = Auto Number, a new .csv file is created at the completion of each test run. If there were ten (10) test runs, there would be ten (10) .csv files, e.g. one .csv file for each test run.

The .csv naming convention is [Test Name]_Results[Run Number].

NOTE
When Auto Number is selected, a .csv file is created for each test run within the batch.

4.4.4 RUNS LIMIT

The Runs Limit is the number of test runs that will appear on the Data View until the runs are overwritten.

When the Runs Limit = 3, each run will be shown with a sequential number that represents the Runs Number. When test Run 4 is conducted, Run 4 will display at the completion of the test, and Run 1 will be moved to the ARCHIVE folder in the METLOGIX directory.

5.0 PERFORMING YOUR L1 TEST

Select the test method you want to perform by choosing the test from the test method main menu. Selecting opens the test method.

5.1 STARTING YOUR TEST

Verify that you have a SET HOME (if required), zero the load (L) and zero the distance (D). Press START TEST to begin the test method.
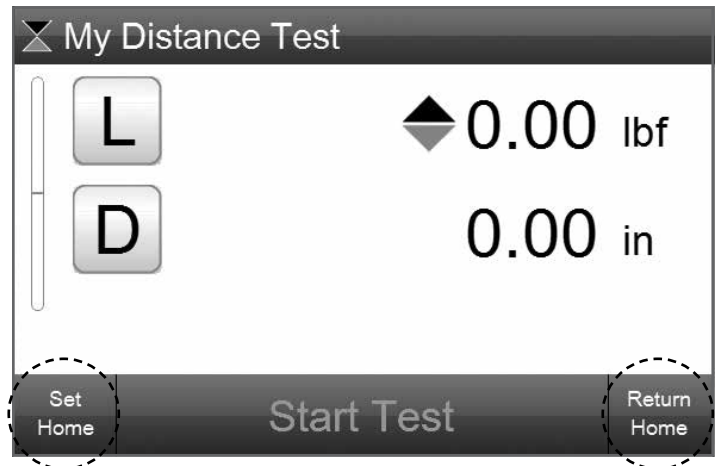
5.2 FINISHING YOUR TEST

When the test method is completed, if a RETURN HOME was configured, the crosshead will automatically return to its original home position so that the next sample can be loaded and tested.

If the RETURN HOME is not automatic, press the RETURN HOME target to return the crosshead to its original home position.

5.3 STOPPING YOUR TEST

During an active test your test can be stopped due to the following:

- You press the STOP TEST target
- The crosshead made contact with a travel limit
- An exception was met during the test
- The Emergency Stop button was pressed
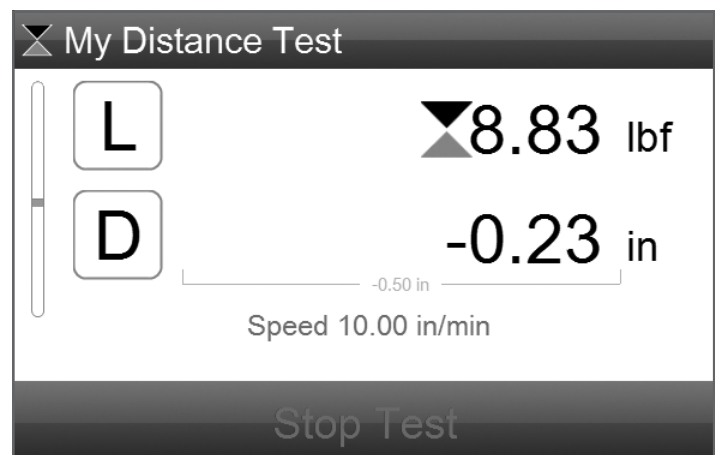
5.4   VIEW RESULTS

When a test run is complete, you may view the measured results in multiple formats.

5.4.1   RESULT VIEW

At the completion of a test run, the results for your test are immediately displayed in the Results window. The result label, result value and units of measure are displayed. If tolerance is used, results that were measured "outside-the-tolerance-range", display in red text.

5.4.2   GRAPH VIEWS

When the test is active, the graph begins to draw the graph trace as soon as the START TEST is pressed. The graph is self-scaling as more test runs are performed.

5.4.2.1   LOAD X DISTANCE GRAPH

This view displays a load and distance graph where load is on the y-axis and distance is on the x-axis. The graph trace is load versus distance. You can view the load and distance result by selecting a point on the graph. A marker will temporarily display the load, distance result pair.

5.4.2.2   LOAD X TIME GRAPH

Similar to the Load x Distance graph except the Time occupies the x-axis. The graph trace shows the relationship of the measured load to the time from when the test started.

5.4.2.3   DISTANCE X TIME GRAPH

Similar to Load x Time except load is replaced by distance values.

Load x Distance Graph type
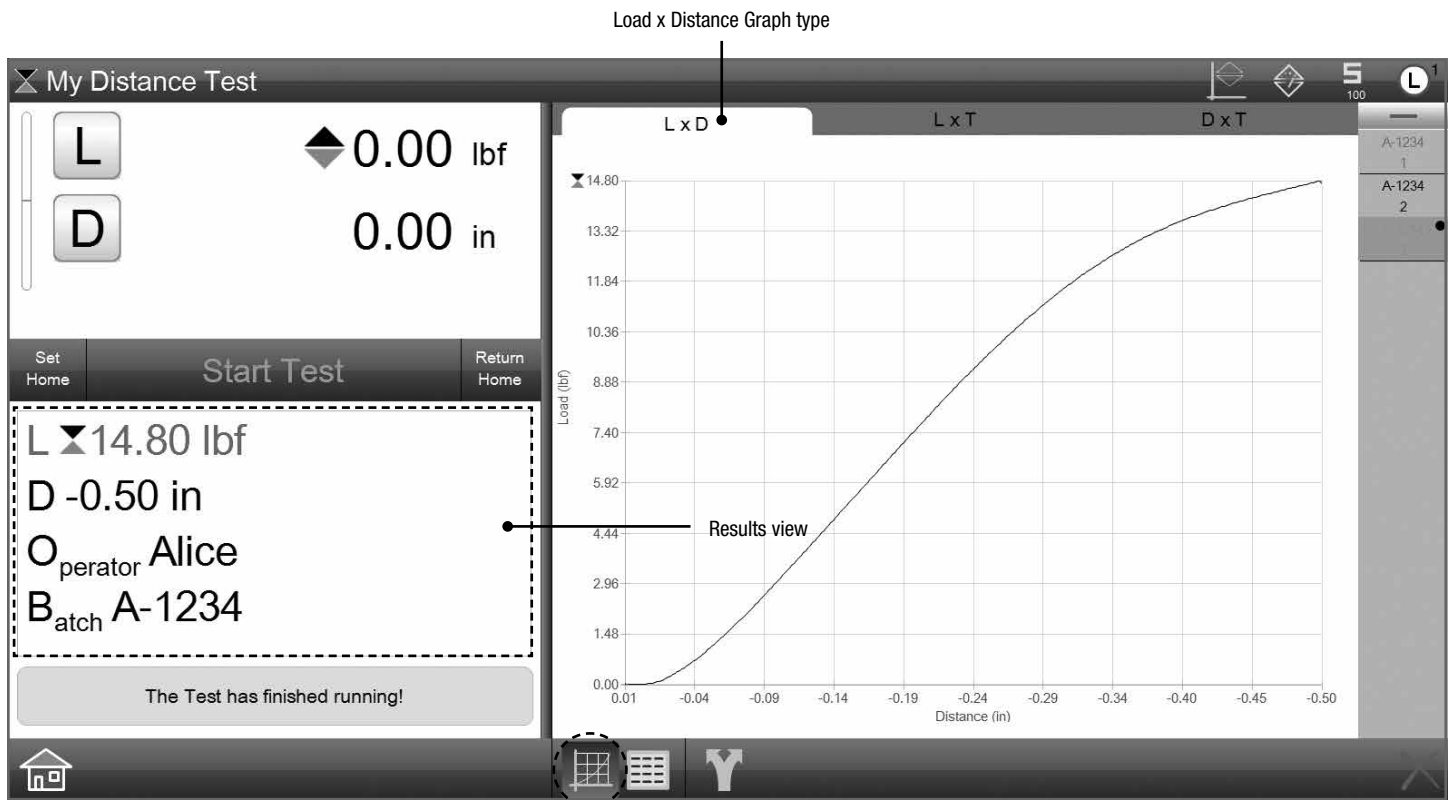
Shown: Graph View Load x Distance format

Load x Time Graph type
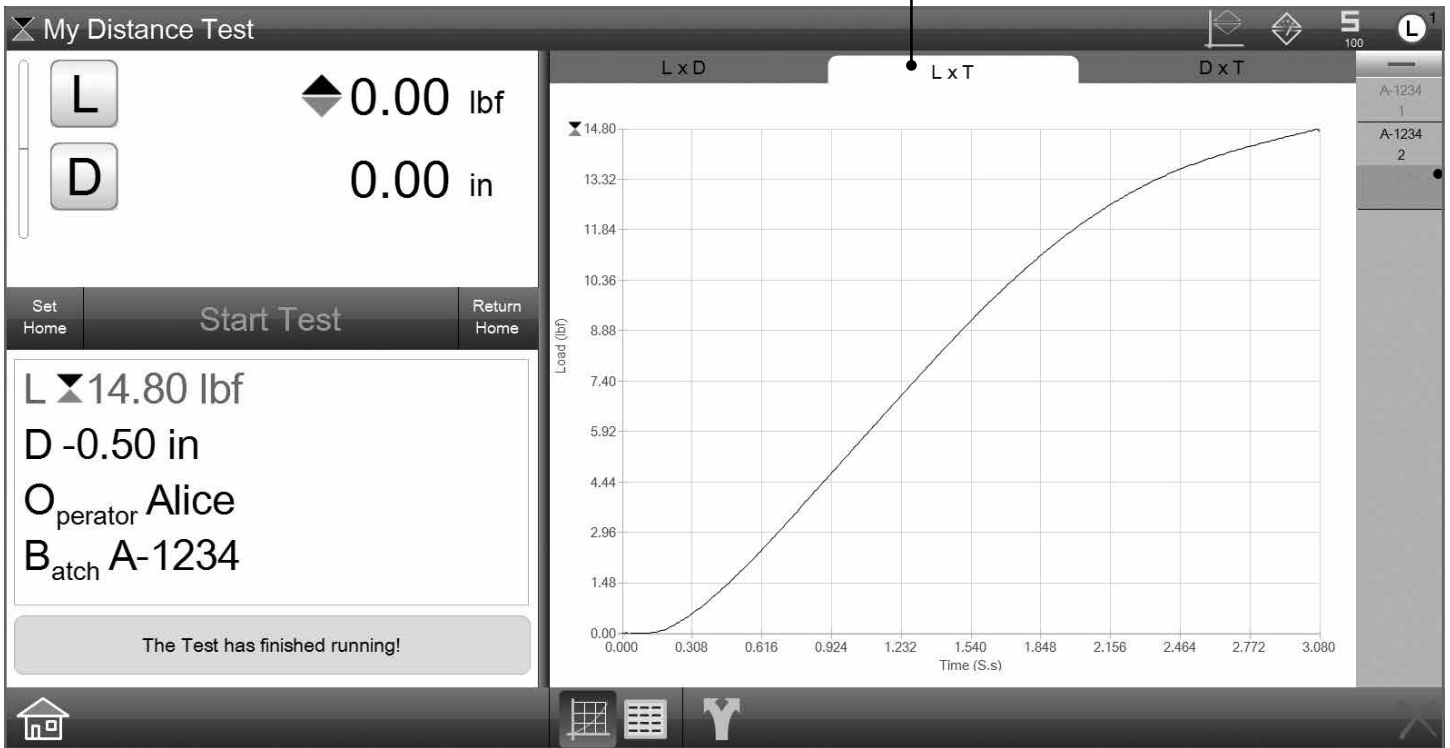
Shown: Graph View Load x Time format

Distance x Time Graph type
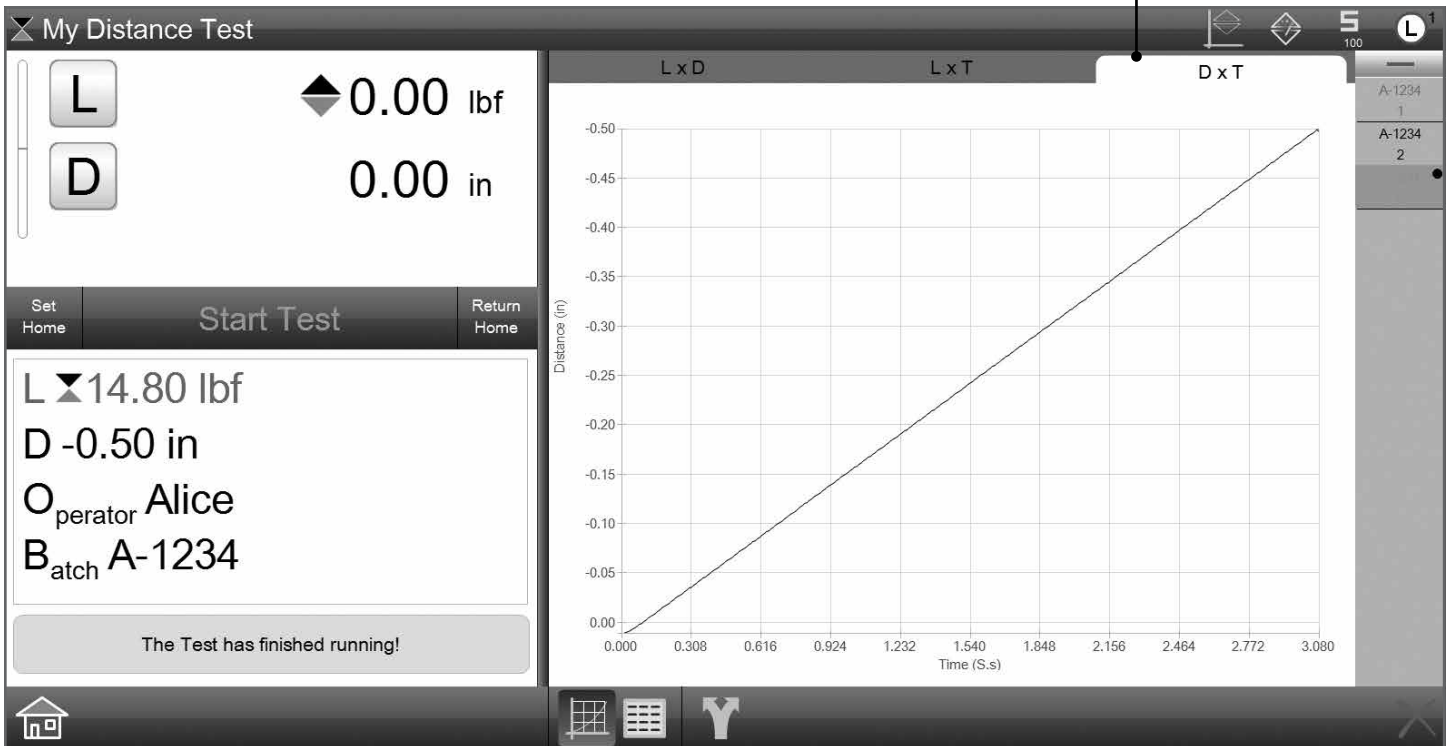
Shown: Graph View Distance x Time format

5.4.2.4   MULTI-GRAPH VIEW

Selecting the green single bar above the Runs List will change the symbol to a double green bar. The double green bar signifies Multi-Run mode. When the double green bar is displayed, you may select multiple runs from the Runs List and display overlaid graphs for profile comparison.

Select the single green line to display a double green line to get into Multi-graph view. Select the runs from the Runs List that you want to view together.

The run with the black reference dot is the currently displayed result.
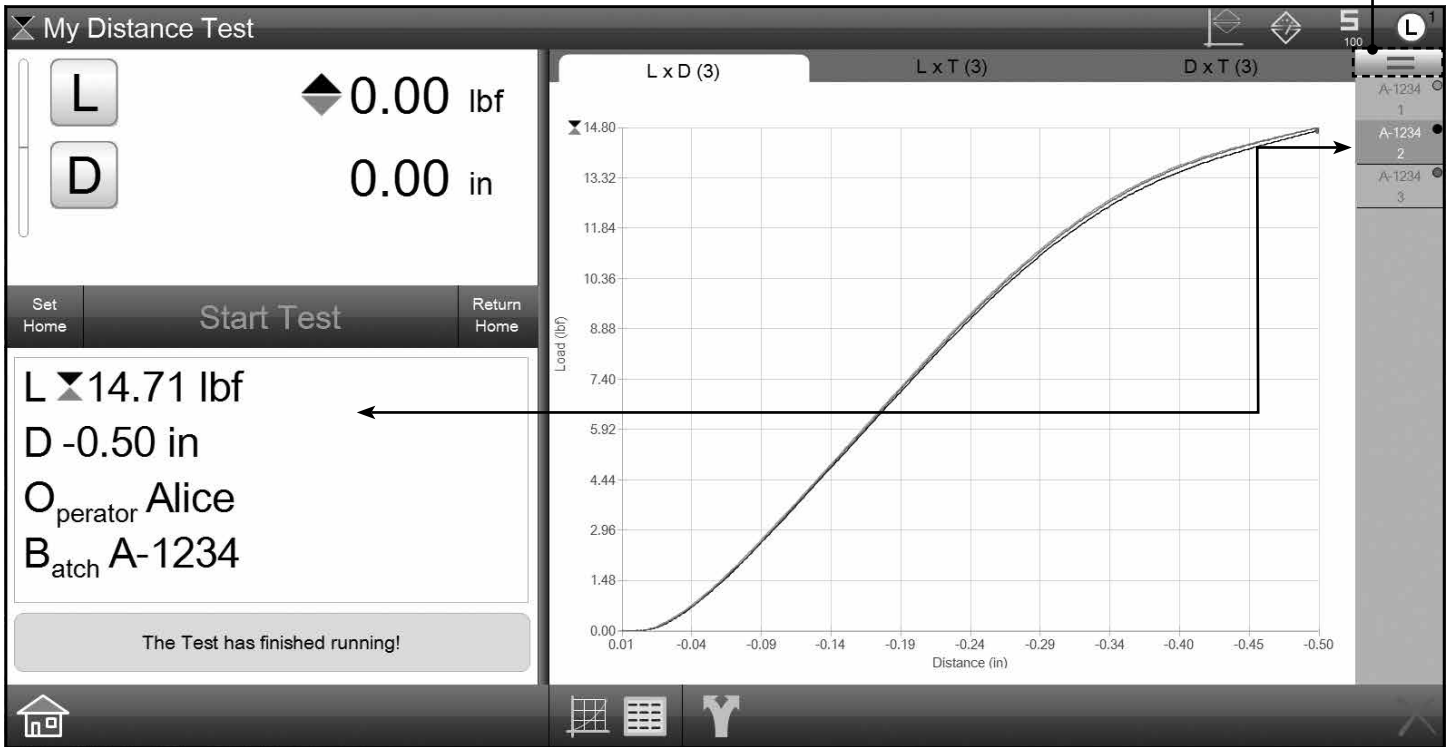
Shown: Multi-Graph View Load x Distance format

5.4.3   DATA VIEWS

Data views display information and results in a tabular format. Two types of Data view displays are supported: Normal and Tolerance.

5.4.3.1   NORMAL VIEW

The Data view in Normal mode, displays the run number reference and results in a tabular format. The results are the coefficients you selected in the Data stage setup.

5.4.3.2   STATISTICS VIEW

From the Data view in Normal mode, you may display statistical calculations by selecting the Stats symbol in the footer. The Stats view should be used with the Multi-run symbol so you can calculate Min, Max, Mean, Standard Deviation and Six Sigma for your selected rows.
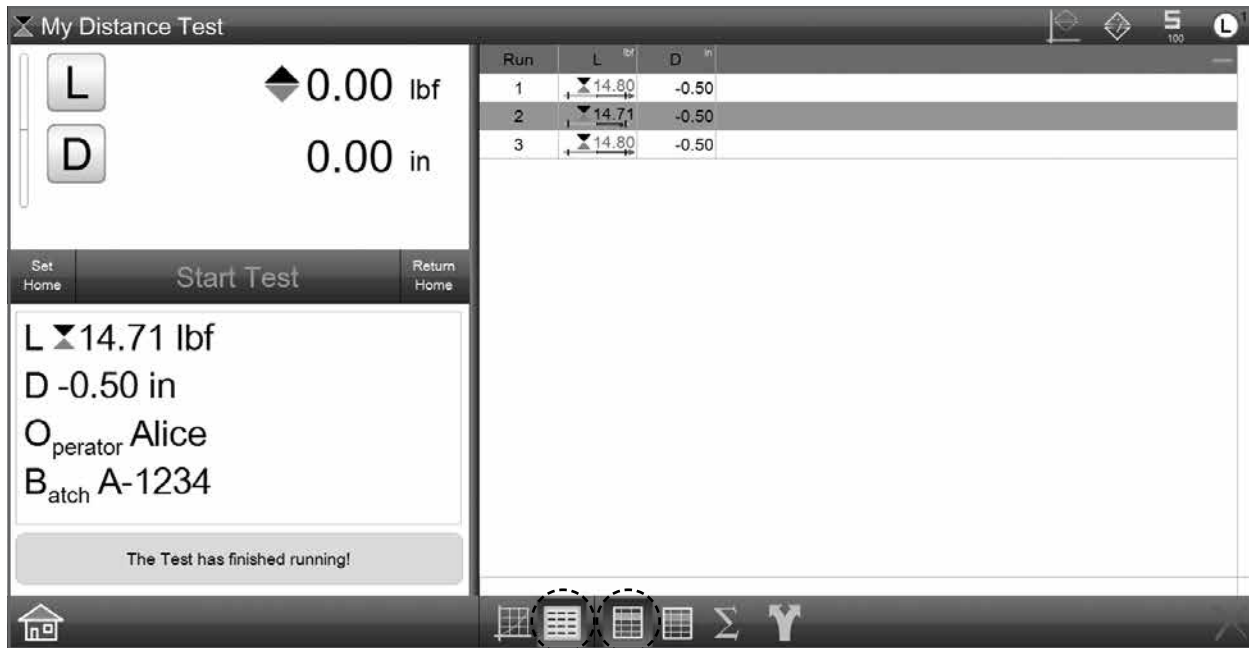
Shown: DATA View
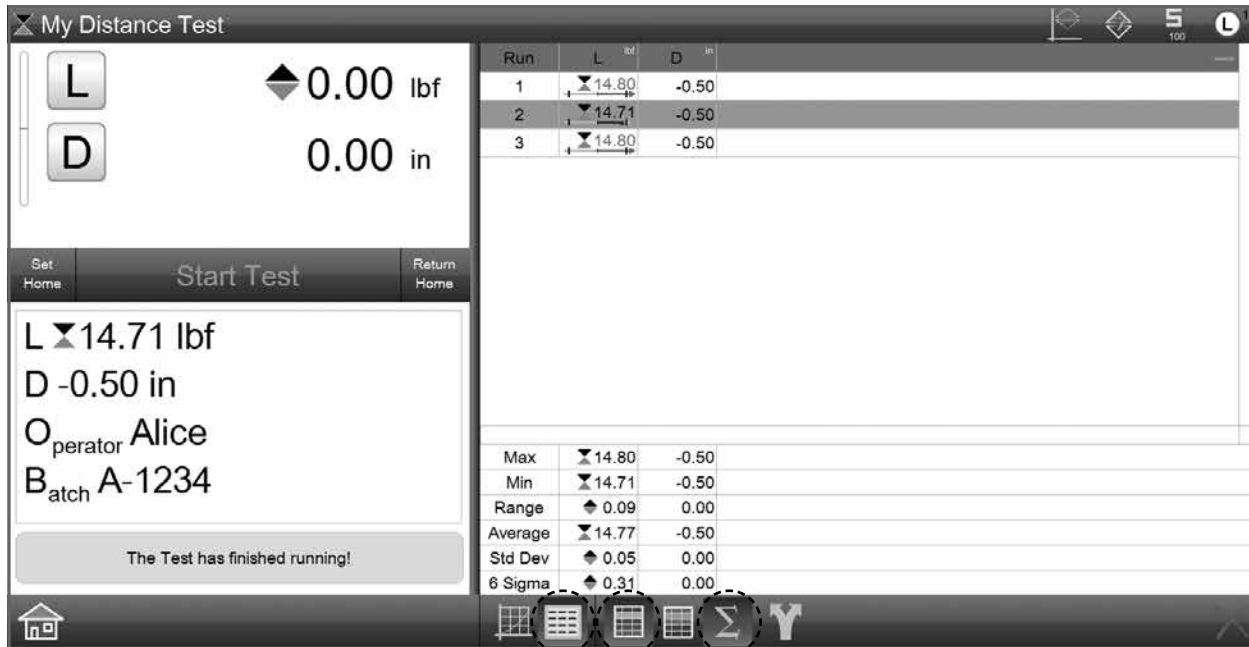
Shown: STATISTICS View

5.4.3.3   TOLERANCE VIEW

Selecting the Tolerance symbol in the footer displays your results plus the tolerance limits you set for each coefficient. A tendency bargraph shows an indication of where the result measures relative to the tolerance range created by your Limit 1 and Limit 2 tolerance. A "Pass" or "Fail" indicator is also displayed.

NOTE

You must have setup tolerance limits in the Data Stage in order to display tolerance results.

Apply tolerance limits to any result. A tolerance range is created. Results equal to or within the tolerance range are a "pass". Results outside the range are a "fail" and displayed in red characters.

Shown: TOLERANCE View

6.0 MANAGING YOUR DATA

Data management is the collecting and saving of data from your test runs and the reporting of result using printouts.

L1 software is designed to allow data to be managed easily. Files of raw data from a test run or files of your results are saved in a .csv format. This makes it easy to convert into Microsoft® Excel®, Word® or Access® for advanced data management and reporting, and the ability to interface your data and result into 3rd-party statistical process control applications.

• L1 Systems can save up to 100,000 rows of data for a test run.

• The maximum test run duration is 27 hours. This would include a cyclic test or a creep test.

6.1 EXPORTING DATA

The Exports directory is where all exported .csv files are saved to by default. Raw data files and result files are saved to the Exports directory either automatically at the completion of a test run, or on-demand when the operator selects the Share function.

Using Settings-File Locations, you have the ability to map your .csv files to another location other than the Exports directory. For example, you can map your .csv files to a network server or to a secondary hard disk device connected via USB to your L1 System.

NOTE

Exported .csv files are saved to the default Exports directory. You may change where your exported files are saved using the File Locations Setting.

6.1.1 RUNS DIRECTORY

The Runs Directory stores individual files for each test run. These Run files, when supplied with the Test file, may be analyzed by another user on another L1 System. The other user must copy the Test file into their Tests directory and then copy all of the Run files into their Runs directory. When they open the test, each of the test runs will be listed in the Runs List.

Run files are saved as [Test Name]_[Run Number].mlxrundata.

Using Settings-File Locations, you have the ability to map your Runs files to another location other than the Exports directory. For example, you can map your Run files to a network server or to a secondary hard disk device connected via USB to your L1 tablet, or to another directory accessible by another L1 System.

6.1.2 EXPORT DIRECTORY

The Exports directory is where all exported .csv files are saved to by default. Raw data files and result files are saved to the Exports directory either automatically at the completion of a test run, or on demand when the operator selects the Share function.

Using Settings-File Locations, you have the ability to map your .csv files to another location other than the Exports directory. For example, you can map your .csv files to a network server or to a secondary hard disk device connected via USB to your L1 tablet.

NOTE

Exported .csv files are saved to the default Exports directory. You may change where your exported files are saved using the File Locations Setting.

Exported Results are saved to Export Directory.
A .csv file is created that may be automatically formatted to Microsoft Excel.
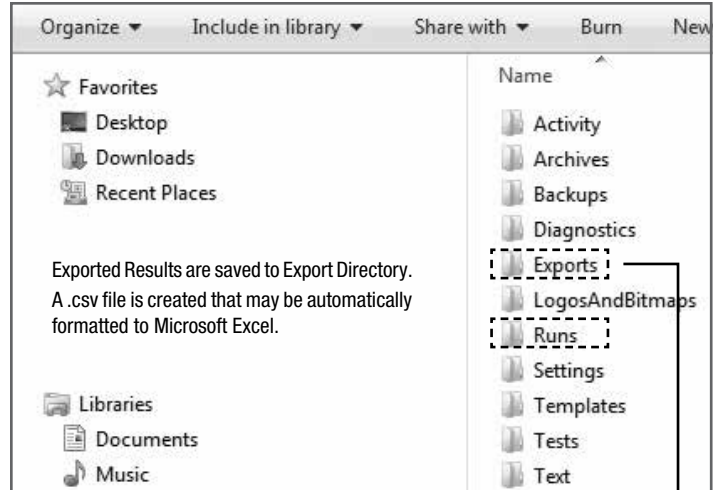
Shown: METLOGIX Directory

Shown: Export File for My Distance Test

Shown: Excel Formatted Export file for My Distance Test

6.2   AUTOMATIC EXPORTING

Data and Result files may be exported automatically by configuring the Post Test options for your test setup. When Export Raw or Export Results are set to any option other than No, export files are exported automatically to the designated file location.

6.3   ON-DEMAND EXPORTING

The Share function appears on the footer of the views used to display your graphs or data tables. Selecting the Export function will display an option menu. The menu options will change based on the view you are looking at.

If you are looking at a full graph view, the options on the menu are:

Export Raw Data

NOTE

Use your Windows Print Screen function if you want to capture an image of your graph.

If you are viewing one of the data view displays, the options are:
• Export Results
• Export Raw Data

6.3.1   EXPORT RAW DATA

Selecting the Export + Raw Data target will export the raw data points from the currently displayed data table or from the graph, e.g. for a single test run. The export is identical to exporting as a "Overwrite Export" had you used the Post Test Export Raw option.

6.3.2   EXPORT CSV

Selecting the Export + .csv target will export the results from the currently displayed data table, e.g. for a single test run. The export is identical to exporting as a "Overwrite Export" had you used the Post Test Export Results option.
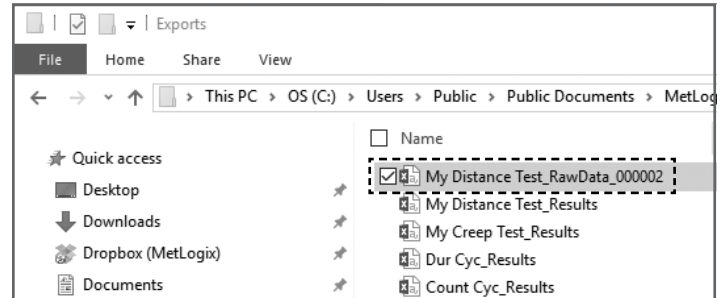
Shown: Export RAW DATA file
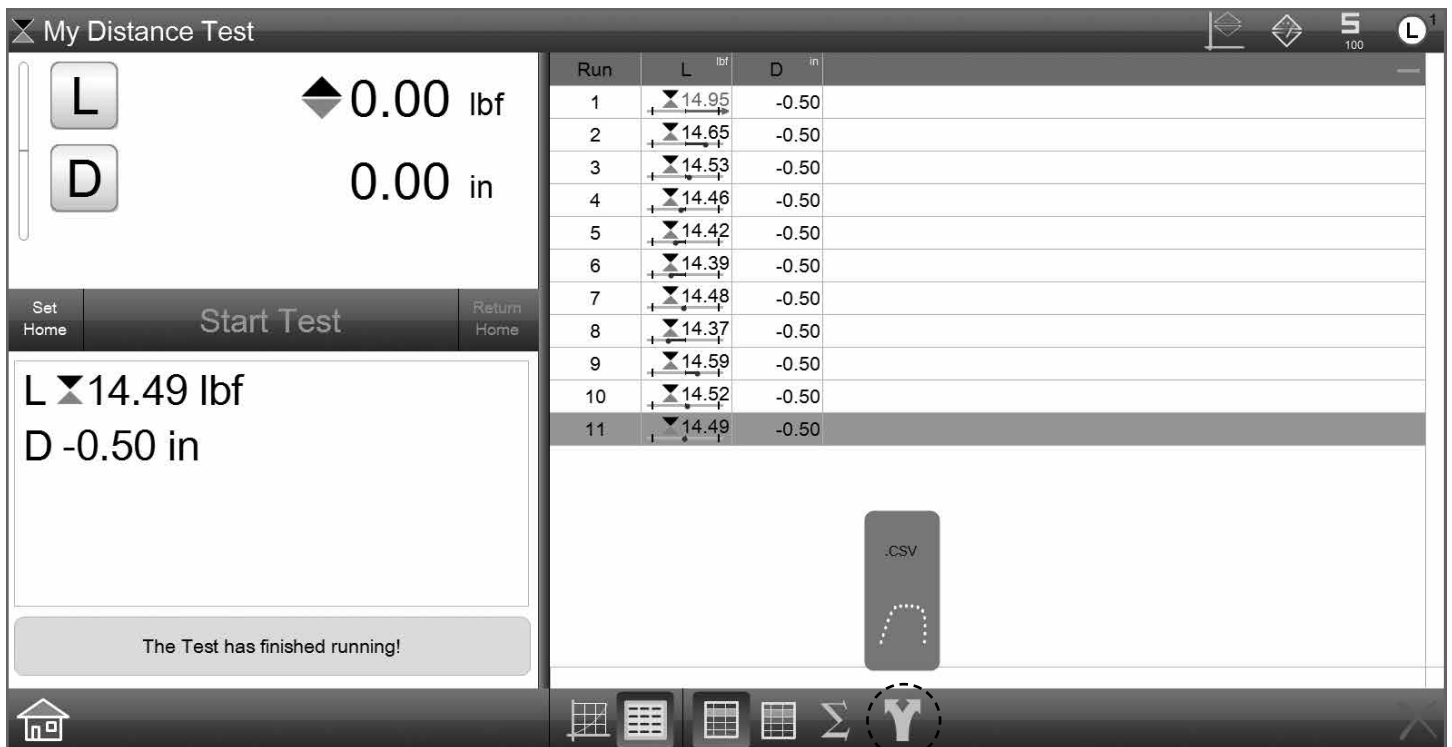
Shown: Export Manually

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	step	time	raw load		load		raw distance		distance		distance used		velocity	
2	4	0	0.85	lbf	0	lbf	-2.97	in	0	in	0	in	0	in
3	4	0.01	0.85	lbf	0	lbf	-2.97	in	0	in	0	in	0	in
4	4	0.02	0.82	lbf	-0.02	lbf	-2.97	in	0	in	0	in	-2.66	in
5	4	0.03	0.84	lbf	-0.01	lbf	-2.97	in	0	in	0	in	-6.02	in
6	4	0.04	0.83	lbf	-0.01	lbf	-2.97	in	0	in	0	in	-7.56	in
7	4	0.05	0.84	lbf	-0.01	lbf	-2.97	in	0	in	0	in	-8.98	in
8	4	0.06	0.83	lbf	-0.01	lbf	-2.98	in	-0.01	in	-0.01	in	-9.51	in
9	4	0.07	0.82	lbf	-0.03	lbf	-2.98	in	-0.01	in	-0.01	in	-9.69	in
10	4	0.08	0.81	lbf	-0.03	lbf	-2.98	in	-0.01	in	-0.01	in	-9.74	in
11	4	0.09	0.8	lbf	-0.05	lbf	-2.98	in	-0.01	in	-0.01	in	-9.8	in
12	4	0.1	0.78	lbf	-0.06	lbf	-2.98	in	-0.01	in	-0.01	in	-9.8	in
13	4	0.11	0.76	lbf	-0.08	lbf	-2.98	in	-0.01	in	-0.01	in	-9.86	in
14	4	0.12	0.74	lbf	-0.11	lbf	-2.99	in	-0.02	in	-0.02	in	-9.98	in
15	4	0.13	0.71	lbf	-0.13	lbf	-2.99	in	-0.02	in	-0.02	in	-9.98	in
16	4	0.14	0.68	lbf	-0.16	lbf	-2.99	in	-0.02	in	-0.02	in	-10.04	in
17	4	0.15	0.65	lbf	-0.19	lbf	-2.99	in	-0.02	in	-0.02	in	-9.92	in
18	4	0.16	0.62	lbf	-0.23	lbf	-2.99	in	-0.02	in	-0.02	in	-9.92	in
19	4	0.17	0.58	lbf	-0.26	lbf	-2.99	in	-0.02	in	-0.02	in	-10.04	in
20	4	0.18	0.55	lbf	-0.3	lbf	-3	in	-0.03	in	-0.03	in	-9.98	in
21	4	0.19	0.5	lbf	-0.34	lbf	-3	in	-0.03	in	-0.03	in	-10.04	in
22	4	0.2	0.47	lbf	-0.38	lbf	-3	in	-0.03	in	-0.03	in	-9.98	in
23	4	0.21	0.43	lbf	-0.42	lbf	-3	in	-0.03	in	-0.03	in	-9.98	in
24	4	0.22	0.38	lbf	-0.46	lbf	-3	in	-0.03	in	-0.03	in	-10.04	in
25	4	0.23	0.34	lbf	-0.51	lbf	-3	in	-0.03	in	-0.03	in	-10.04	in
26	4	0.24	0.29	lbf	-0.55	lbf	-3.01	in	-0.04	in	-0.04	in	-9.98	in
27	4	0.25	0.24	lbf	-0.6	lbf	-3.01	in	-0.04	in	-0.04	in	-9.98	in

Shown: Export RAW DATA in Excel Format

7.0   PRINTING REPORTS

Reports may be printed out from the display view. Reports are associated with the current view being displayed.

Print reports by selecting the Printer symbol from the main menu.

PRINT REPORT METHODS

FROM DISPLAY VIEW	PRINTS THIS REPORT TYPE
Graph View	Graph report
Data View	Batch report
Data View with Statistics	Statistics report
Data View with Tolerance Limit	Tolerance report

Report layouts print landscape. You may change to a portrait layout by selecting the Page Format symbol from the L1 main menu.

Your L1 System provides a set of common report formats. These are described in the following sections.

User may also use the .csv files to create more complex reports using Microsoft® Word®, Excel® and Access®.

7.1   GRAPH REPORT

The Graph report prints from the full graph view. The Graph report prints the full graph with the result markers - WYSIWYG (What You See Is What You Get).

You may print the Graph report with multiple graph traces using the Multi-run function, however, the only marker displayed is for the "active" test run. The "active" test run always displays with a black trace line.

Graphs may include selected coefficients when you add a coefficient into any of the Custom Text entry boxes in Printout Settings.

Coefficients can be printed in the header boxes or in the single footer box.

To print a coefficient on a graph report, enter the coefficient label into the Custom Text entry box using the Printout Settings from the main Settings.
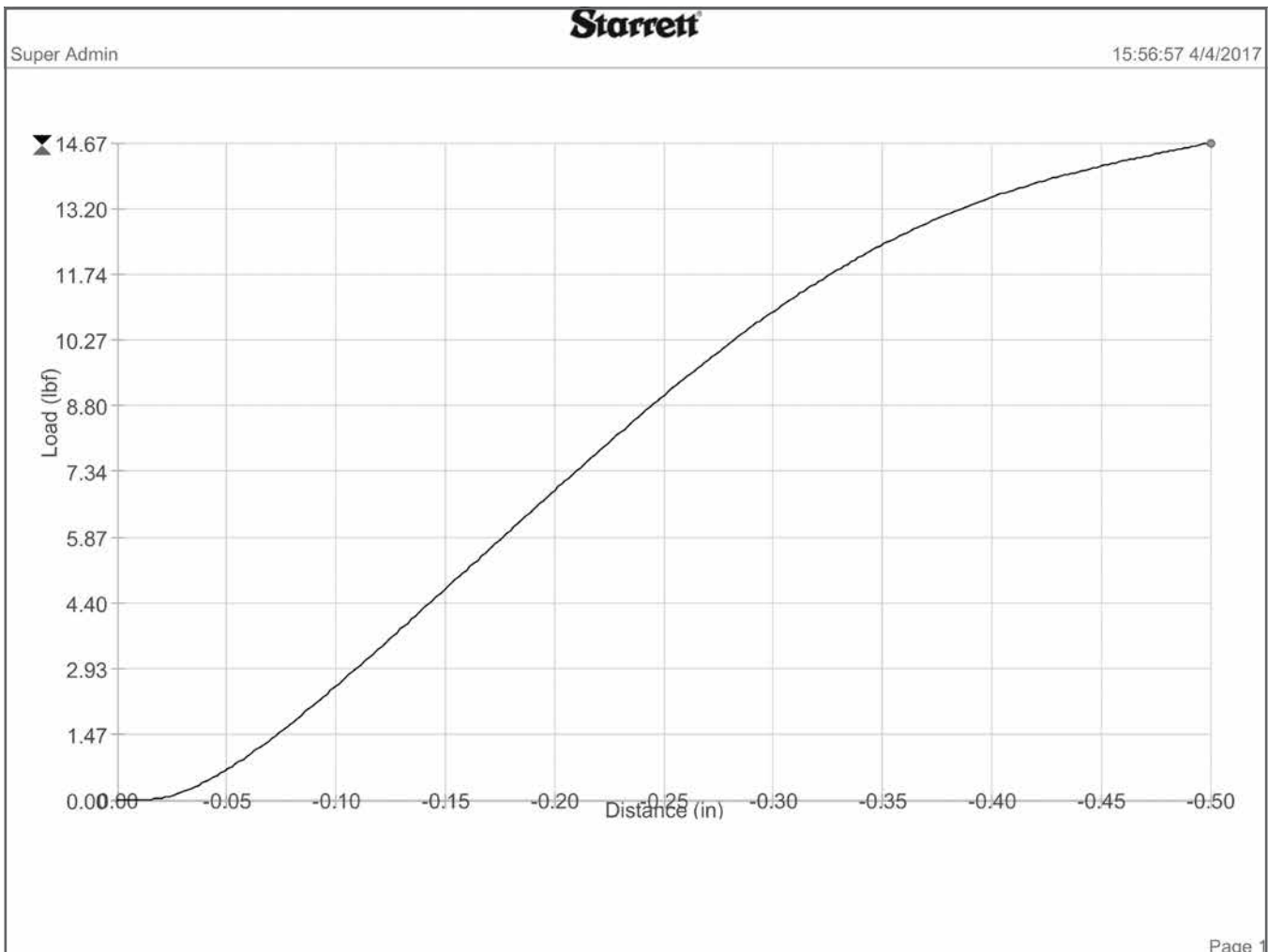
Shown: Graph Report

7.2 STATISTICS REPORT

The Statistics report prints from the Data view. Statistics are not displayed, nor can a Statistics report print when using tolerances. You must use the Tolerance report for printing tolerance information and result.

Shown: Statistics Report

7.3 TOLERANCE REPORT

When tolerances are used, you may print a Tolerance report from the Data view. The Tolerance reports will print in a WYSIWYG format. You cannot print a report with both tolerances and statistics.

7.4 REPORT SETUP

The Printout Setting is used to globally format your printouts. All printouts will use these settings options on all reports.

NOTE

On-demand printouts use the Print symbol from the Main System Menu. While at the display view of your result, select the Print symbol. The report associated with that view will print.

7.4.1 PRINT REPORT HEADER

You may specify that all printouts output with a header when this option = Yes. All reports will print with a header.

If this option = No, all reports will print without a header.

When the Print Header option = No, the Print Custom Text in Header options will not print even if you have enter information in the Settings.

7.4.2 PRINT COLUMN HEADERS

Print Column Headers refers to the column labels used in your Data views. These labels are generally the name used to distinguish your results (coefficients).

A Column Header example would be LPt. If Print Column Headers = Yes, all reports using the data view information will print with these headers. If the Print Column Headers = No, reports using the data view information will print row information without the column labels.

7.4.3 PRINT GRID LINES

Graphs are displayed with grid lines. When you print a report that uses the graph image, the graph will always display with grid lines.

7.4.4 PRINT HEADER LOGO

You can setup your reports to print your company logo in the header. You first must create a .bmp file of your logo with a height no greater than 300 pixels (25 pixels is recommended). Next, you will rename your .bmp file to "Headerlogo". Then, save this file in your Metlogix/LogosAndBitmaps directory.

You can choose to print your header logo and position the logo center, left or right on your printout.

7.4.5 PRINT FOOTER LOGO

You can setup your reports to print your company logo in the footer. You first must create a .bmp file of your logo with a height no greater than 300 pixels (25 pixels is recommended). Next, you will rename your .bmp file to "Footerlogo". Then, save this file in your Metlogix/LogosAndBitmaps directory.

You can choose to print your footer logo and position the logo center, left or right on your printout.
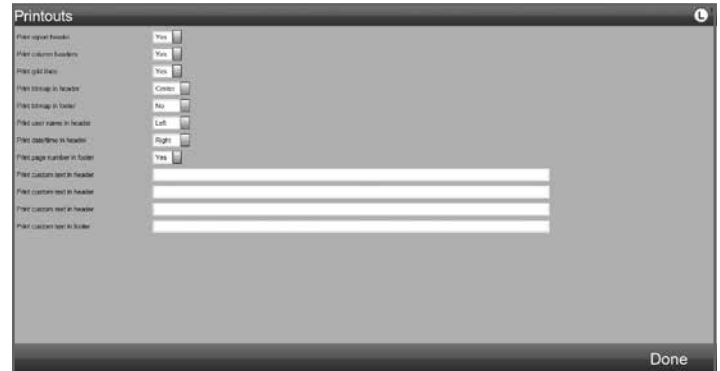
Shown: Printout SETTINGS options

7.4.6 PRINT USER NAME IN HEADER

When User Names are setup for your operators, you may specify that the User Name prints in the Header.

The user who is logged into the system at the time the report is printed either print automatically or printed on-demand), has their User Name printed in the header.

The User Name may be printed in the center, left or right on the header.

7.4.7 PRINT DATE/TIME IN HEADER

You may time stamp your printouts using the Print Date/Time in Header option. The Date and Time may be printed in the center, left or right on the header. The Date and Time represent the actual date and time that the printout was executed either automatically or on-demand.

7.4.8 PRINT PAGE NUMBER IN FOOTER

You may print page numbers on your printouts using the Print Page Number in Footer option.

The Page Number may be printed in the center, left or right on the footer.

7.4.9 PRINT CUSTOM TEXT IN HEADER

There are three rows reserved in the header for printing custom text. The text may be up to 100 characters, including spaces, in length.

Additionally, you may print coefficients in any of these three rows using a bracket and the coefficient name, e.g. [LPt].

NOTE

If using a coefficient in your custom text, please note that this coefficient will always be printed on all reports. If the coefficient was reported as an out-of-range value (XXXXX), the XXXXX is printed in this location.

7.4.10   PRINT CUSTOM TEXT IN FOOTER

There is a single row reserved in the footer for printing custom text. The text may be up to 100 characters, including spaces, in length.

Additionally, you may print coefficients in this rows using a bracket and the coefficient name, e.g. [LPt].

NOTE

If using a coefficient in your custom text, please note that this coefficient will always be printed on all reports. If the coefficient was reported as an out-of-range value (XXXXX), the XXXXX is printed in this location.

8.0   L1 SYSTEM SETTINGS

The System Settings function is the central location where essential system functions can be setup for operation and user preferences.

The System Settings function can be accessed when you are not within an active test setup. Go to the Home view, and select the L1 symbol to access the System Settings.

NOTE

The System Settings may be accessed from the Home view only.

Select the Settings symbol to access the System Settings options
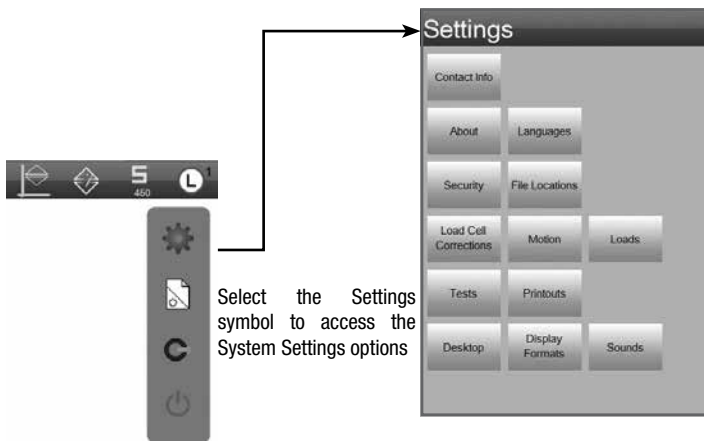
Shown: System SETTINGS symbol

Shown: System SETTINGS options

8.1   CONTACT INFORMATION

The Contact Information setting can be used to enter information on your dealer or service provider. This allows users to know who and how to contact your provider about service and technical support and to arrange service schedules, including calibrations.
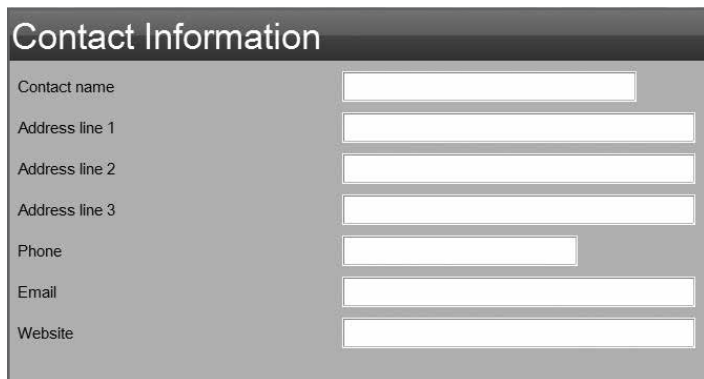
8.2   ABOUT SETTING

The About settings displays critical information about the hardware and software that make up your L1 System. This includes serial number information, firmware and software revision level information.

8.2.1   READ SETTING

The Read setting is used by authorized Starrett personnel during system maintenance and configuration.

8.2.2   WRITE SETTING

The Write setting is used by authorized Starrett personnel during system maintenance and configuration.

8.2.3   HARDWARE

The Hardware setting is used to display critical information about the hardware controller used by your L1 System. The controller serial number is displayed, which is required for licensing of software options.

8.3 LANGUAGE

The Language setting is used to set the language that will be used to display textual information. The L1 System can be used with a variety of different languages and information displays can be customized for local terminology and dialect.

Individual language files are saved in the TEXT directory within the Metlogix directory. A file for each supported language is supplied or is created by the user.

NOTE

1. Individual language files must be created or supplied and be resident in the TEXT sub directory within the Metlogix directory. Otherwise, without the appropriate file, textual information will not be translated.

2. The user may be required to create their translation file in the appropriate language. This allows the user to apply special terminology or dialects for their operators.
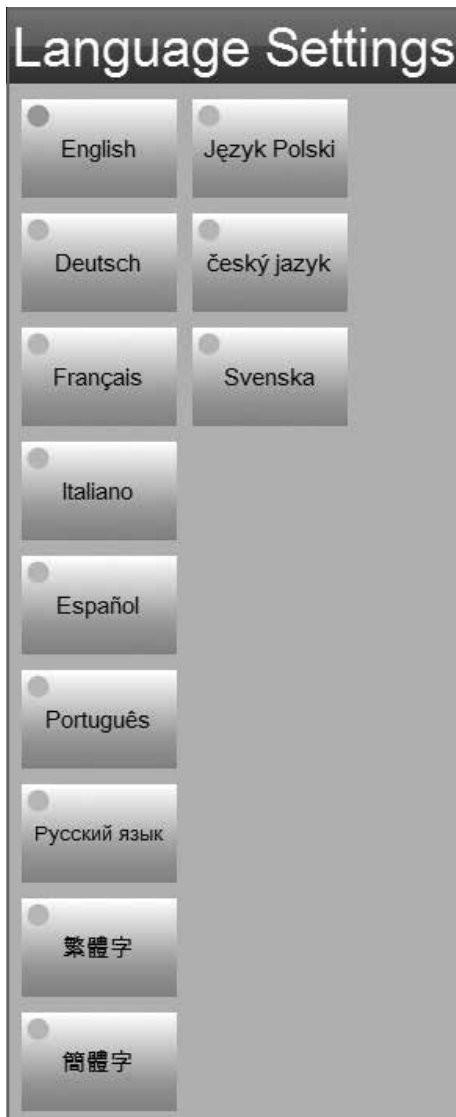
Shown: Display LANGUAGE options

8.4 SECURITY

System security, including the setting up of users and their system privileges are performed using the Security Settings function.

To access the Security Settings, go to the Main System menu, select Settings and then select Security.

Your L1 System has three levels of user security. These are:

• Super Administrator

• Supervisor

• User

Select the drop down options for: Administrator, Supervisors and Users.

The Administrator in the only person with total access to all system setup and operational features. It is recommended that the Administrator information be maintained by the IT Department. There is only one Administrator allowed.
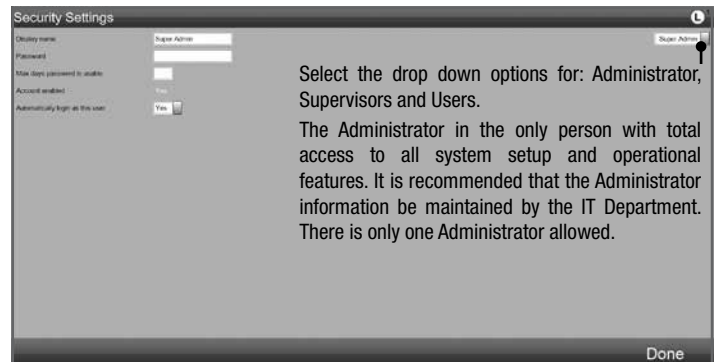
Shown: System SECURITY options

SYSTEM USER RESTRICTIONS	
User Type	Maximum Allowed per System
Super Administrator	1 allowed per system
Supervisor	1 allowed per system
User	5 allowed per system

SUPER ADMINISTRATOR

The Super Administrator is the highest level of authorization. This level has total access to all system functions. An L1 System must have a Super Administrator.

NOTE

You may have only one Super Administrator account.
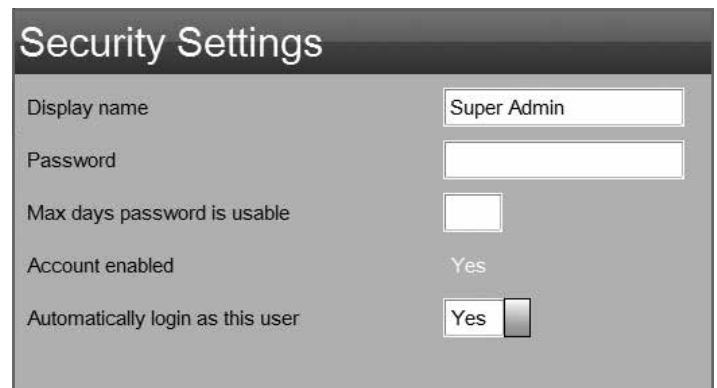
Shown: Administrator SECURITY options

SUPERVISOR

The Supervisor is a level below the Super Administrator. Only the Super Administrator can assign the "access rights" to the Supervisor. You may have multiple Supervisors for an L1 System.

NOTE

You may have only one Supervisor account.

Security Settings

Display name	Supervisor
Password	
Max days password is usable	
Account enabled	Yes
Automatically login as this user	No

Access rights for Supervisor, users 1 to 5

Capability	Access
Language Settings	Yes
Display Formats	Yes
File Locations	Yes
Tests	Yes
IO Lines	Yes
Printouts	Yes
Security Settings	Yes
Sounds Settings	Yes

Shown: Supervisor and Users SECURITY options

USER

The User level is below the Supervisor level. A User is generally used for the operator with restrictive access to only the functions the operator needs to perform in their normal duties.

NOTE

You may have up to five (5) User accounts.

8.4.1 SECURITY SETTINGS

All assigned users to a system have these configurable attributes:
- Display Name
- Password
- Password expiration
- Account enabled
- Automatic user login

8.4.1.1 USER ACCOUNTS

There are three levels of users organized in a hierarchical order with the Super Administrator having the ability to have total control over all other users and their privileges.

Your L1 System must have a Super Administrator if user accounts are going to be used, e.g. the system will have multiple users with user names and passwords.

WARNING

Starrett recommends setting up your system with user accounts.

If you are not going to have user accounts, then all users will have Super Administrator privileges, including the ability to assign access rights to all users and to prevent users from having any rights.

8.4.1.2 DISPLAY NAMES

Each user of the L1 System may have a unique user name, called the Display Name.

The Display Name is case-sensitive and may be up to 16 characters in length. The Display Name may use alphabetic or numeric characters. Symbols may not be used.

NOTE

1. The Display Name may be up to 16 characters in length. A space is a character.
2. The Display Name may be composed of case-sensitive letters and numbers.

8.4.1.3 USER PASSWORD

A password may be assigned to a User Name. But a password is optional, e.g. you may have a User Name with no password.

A password may be up to 16 characters in length. The password my use any combination of letters and numbers. Spaces should not be used. Passwords are case-sensitive.

NOTE

1. A password is optional for a User Name.
2. A password my be up to 16 characters in length.
3. Passwords are case-sensitive.

8.4.1.4 PASSWORD EXPIRATION

You may specify a password expiration. Enter the number of days that the current password is allowed to be active. At the end of this period, the password will become disabled. The user will be required to change their password, or to re-activate the password through their Super Administrator.

NOTE

1. If you do not wish to have passwords expire, leave the "Max days password is usable" blank.
2. A password may be re-used. It is not necessary to enter a new password when the expiration has occurred.

8.4.1.5 ACCOUNT ENABLED

An account may be enabled or disabled using the Account Enable function. If the Account Enable = Yes, the user may login to the system. If the Account Enable = No, the user will not appear in the login menu and may not login to the system.

NOTE

The Super Administrator is always enabled.

8.4.1.6 AUTOMATIC USER LOGIN

The Automatic User Login option, when set to Yes, automatically logs on a user without having to enter a password. It effectively by-passes the password login function.

Normally, automatic user login is reserved for the Super Administrator.

8.4.2 ACCESS RIGHTS

All assigned users have these configurable access rights:
• Language Settings
• Display Formats
• File Locations
• Tests
• Printouts
• Security Settings
• Desktop Setting
• Load Cell Correction
• Loads
• Motion
• Test Authoring

Access rights are either YES or NO and listed in the Access column. To change the access rights, select the Yes or No status.

Scroll down to view and change the access rights for the current displayed user.

8.5 FILE LOCATION

The File Locations setting is used to specify where exported data and other files used within your L1 System are saved to.

The File Location setting lets you map where files are transmitted to, archived or saved when your L1 System is networked.

CAUTION

Please ensure that files from your system are protected from unauthorized access. Files distributed via a network are not protected by the L1 System. These files must be protected by your company's network security.

Shown: FILE LOCATIONS options

8.5.1 BACKUPS FILE LOCATION

The Backup file location is used by authorized Starrett personnel only. Included in this location are copies of system settings files and software license authentication functions.

The default location for Backup files is the Metlogix directory on your L1 tablet and the Backups sub-directory.

8.5.2 DIAGNOSTICS FILE LOCATION

The Diagnostics file location is used to house diagnostic files that can be created should the user experience an issue with their L1 software. Selecting the L1 symbol (upper right) and holding when a problem is experienced creates a file that is saved to the Diagnostic directory. This file can then be emailed to your Starrett representative or evaluation and recommendations.

The default location for Diagnostics files is the Metlogix directory on your L1 tablet and the Diagnostics sub-directory.

8.5.3 EXPORTS FILE LOCATION

Using the Post Test step, you have the ability to export data and results.

The File Location setting is used to map where the exported files are sent and saved. Files are .csv types.

Data and result files can be exported automatically at the completion of a test run using the Post Test output options. Or, you can export data and results on-demand using the Export function.

The default location for Export files is the Metlogix directory on your L1 tablet and the Exports sub-directory.

8.5.4 RUNS FILE LOCATION

Individual tests are called "runs". Each run has a unique file that contains the individual data points that were acquired during the test based on the Sampling Rate that your have specified in the Pre Test step.

Runs files may only be opened using the L1 software application.

The default location for Runs files is the Metlogix directory on your L1 tablet and the Runs sub-directory.

8.5.5 TEMPLATES FILE LOCATION

The Template location may be used to save test setups that you do not want to have accessible on your L1 system. As a "template" these files may serve as a test that can be copied and used for other materials or components. A "template" can be created that has a common sequence as another test setup, but which has different step attributes. Templates can help speed up the creation of new test methods.

NOTE

A test setup that is saved to the Template location will not appear on the Home view. This test cannot be used on the system until it has been copied or moved to the Tests directory.

The default location for Template files is the Metlogix directory on your L1 tablet and the Templates sub-directory.

8.5.6 TESTS FILE LOCATION

The Tests directory contains the "active" test setups for your L1 System. These tests appear in the Home directory.

The default location for Test files is the Metlogix directory on your L1 tablet and the Tests sub-directory.

CAUTION

The Test files are the source file for a test. If this file is removed from the Tests directory it will not appear on the main Home directory. If a Test file is deleted, the test and all associated Runs are deleted.

8.6 LOAD CELL CORRECTIONS

WARNING

The Load Cell Correction functions are restricted to personnel who are authorized to calibrate a Starrett load cell sensor. Use by inexperienced and untrained personnel can result in permanent damage to the load cell sensor and your testing system.

The Load Cell Corrections setting is used for calibrating a load cell that is connected to your testing frame. This section will describe some of the functions available.

The procedures for calibrating a Starrett load cell sensor may be obtained through your Starrett representative.

8.7 MOTION

The Motion setting is used to establish the highest test speed/velocity that the test system crosshead may travel. This value limits the crosshead velocity for test step setup and for the maximum speed velocity that is controlled by the jog switch.

The default Motion setting is factory set at the maximum allowed speed for that Starrett test frame.

Adjusting the Motion setting downward reduces the maximum allowed crosshead speed to this value.

Motion

| Max velocity | 40.00 | in/min |
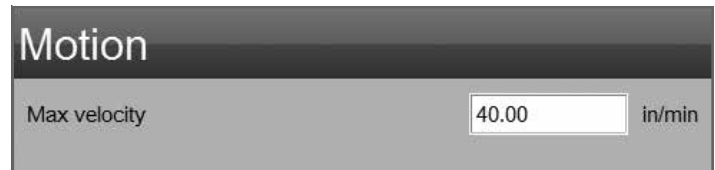
Shown: Crosshead velocity MOTION setting

8.8 LOADS

The Load Setting is used to specify options and characteristics concerning load measurement.

Loads Settings

Export with minus sign	Compression	
Grip load	0.00	lbf
Frame capacity	112.40	lbf
Current load cell		
Max load allowed	100.0	%
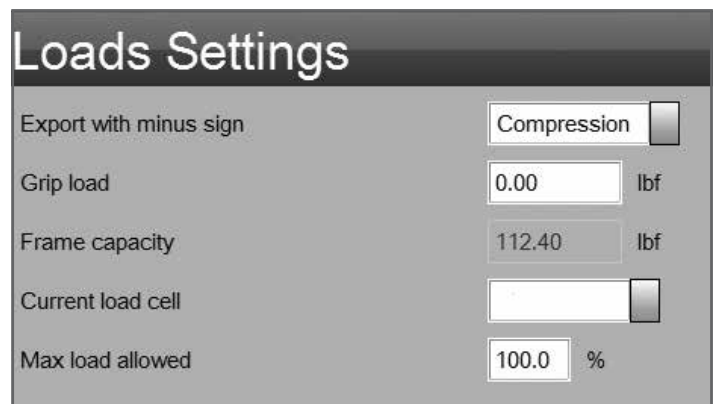
Shown: LOADS setting

8.8.1   LOAD SIGN ASSIGNMENT

The "Export with minus sign" function lets you specify how to designate a compression load using a negative sign. Tensile loads will have a positive sign (no sign actually shown), while compression loads will display a negative sign. Or, you may choose to reverse the sign so that tensile loads have a negative sign to distinguish them from a compression load (no sign).

When the selection = Compression, compression results will be displayed with a negative sign. Tensile results will display without a sign.

When the selection = Tension, tensile results will be displayed with a negative sign. Compressive results will display without a sign.

8.8.2   GRIP LOAD

The Grip Load is a value that you enter to protect your test fixture (grip) from damage due to overloading or exceeding the load capacity of the test fixture.

All test fixtures have a load capacity. This load capacity is the maximum load that the test fixture is rated to. Loads exceeding this capacity can permanent damage the test fixture.

Often, the maximum capacity of the test fixture is below the maximum load capacity of the load cell sensor, therefore, the maximum load for a test setup should be the lowest rated capacity of the test fixture, load cell or test frame.

The Grip Load setting allows you to enter a load capacity limit based on the testing fixture used. For example, you may have a 1000N load cell, but you are using a test fixture with a maximum testing capacity of 50N. In order to protect the test fixture, you can set the Grip Load to 50N. When 50N is reached, the test run will terminate and protect the test fixture.

WARNING

Excessive crosshead speed may make it impossible to stop in sufficient time to prevent an overload. Do not use high speeds, particularly in compression directions.

NOTE

1. If Grip Load is set, a test run will abort if the measured load exceeds the Grip Load value you have entered.
2. The Grip Load value is sign dependent. If your compression sign is negative, you must enter the Grip Load value as a negative value if you intend to protect your test fixture with a load capacity limit in the compressive direction.

8.8.3   FRAME CAPACITY

The Frame Capacity value is automatically displayed and represents the maximum allowed load capacity for the test frame your L1 System is configured with.

This is a "read-only" value and is not adjusted.

NOTE

No tests may be performed beyond the Frame capacity.

8.8.4   CURRENT LOAD CELL

The L1 software identifies the load cell sensor model that is connected to the test frame and that is communicating and controlled by the L1 tablet. You may use the drop down list to select a load cell model if you choose to have a specific load cell associated with this system or a particular test setup.

8.8.5   MAXIMUM LOAD ALLOWED

The "Maximum load allowed" feature lets you limit the capacity of a connected load cell sensor by specifying the maximum load allowed.

Using this limit can help minimize accidental overloads. If you are using a 100N load cell, and you specify the Max load allowed at 75%, the 100N load cell will measure between 0 and 75N. A test run will terminate if this load limit is exceeded.

WARNING

Avoid using high speeds, particularly in compression directions.

8.9   TESTS

The Tests setting is used to specify how certain Test functions perform.

These settings include the ability of the user to edit a locked test; the use of prefixes in the test name; test numbering, and how tests appear on the main Home Menu.

Shown: TEST SETTINGS options

8.9.1   LOCKED TESTS

Test setups may be locked by the creator. If the user has Test Authoring rights, and this setting = YES, the user can edit, copy or delete a test setup. If the setting = NO the user cannot edit, copy or delete a test setup.

8.9.2   TEST NAME PREFIX

The Test Prefix Name option is useful if you want to have a common naming convention for the tests you create. For example, you may want to use the initials of the person who created the test in the naming convention for tests. Or, you may want to use the location/facility/lab that is associated with the test setup.

When a Test Prefix Name is used, all test setups created will have this prefix name, followed by a number.

8.9.3   NEXT TEST AUTO-NUMBER

The Test Auto Number option applies a sequential number beginning with this number specified to all newly created test setup.

The default number is 1. A new test with a Prefix Name=T will have test name with auto number of 1, e.g. T1. Succeeding test setups will have a number T2, T3, etc. until you rename the test.

A naming convention may include the lab facility number and then a sequential number that corresponds to a sample, batch, material, etc.

Renaming the test overwrites the Prefix Name and Test Number.

8.9.4   NOISE FILTER

The Noise filter is used to set the sensitivity of the load cell sensor and its noise dampening capability. The Noise Filter default is 0.01% of the connected load cell sensor. In most applications this value should NOT be changed.

However, in certain extreme conditions, there may be too much noise on the load signal that you need to dampen the signal in order to obtain a more precise load point on your graph. To do this, you can experiment by increasing this noise setting from 0.01% to 0.02%. This effectively increases the measurement band around a point, making it more precise in identifying a specific load scope point.

8.9.5   SORT RECENT TEST LIST

You may specify how test setups appear on your Home menu. Tests may be listed by their Name alpha-numerically, or they may be listed based on "last used". A test that was used most recently will appear at the top of the list of test setups.

If you have a large number of test setups, you may also use your keyboard to filter the test names. Type the first few characters of your test using your QWERTY keyboard and the list of test names will be filtered showing only the test names with the characters you typed.

NOTE

1. When you have a large number of test setups in your menu, you can find the test you need by using the "keyboard filter". Type the characters of the test you need and the test setup list will only display setups with those starting characters.

2. You may also barcode your test setups.

8.10   DESKTOP

The Desktop Setting is used to specify and include specialized targets on your L1 tablet that aide in changing units and testing mode. There is also an option that causes the L1 tablet to shutdown when exiting the L1 software application.
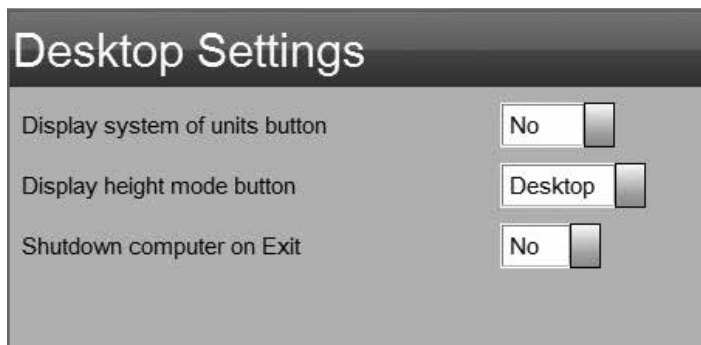
Shown: DESKTOP SETTINGS options

8.10.1   DISPLAY SYSTEM UNITS BUTTON

The Units button provides a target that allows the user to toggle between Metric (SI) and English (Imperial) units of measure.

8.10.2   DISPLAY KEYBOARD BUTTON

The Keyboard button, when pressed or selected, launches a virtual keyboard on your display.

When the Keyboard button is set to Extra, it appears in the "Extra" drop down menu.

When the Keyboard button is set to Desktop, an icon of a keyboard appears on the header tool bar. Press the icon to launch the virtual keyboard.

8.10.3   SHUTDOWN COMPUTER ON EXIT

The "Shutdown computer on Exit" function, when set to Yes, will automatically close the L1 application and shut down the workstation when the user logs out.

If the Shutdown computer on Exit = No, the computer will remain powered up after logging out of the L1 software.

8.11   DISPLAY FORMATS

Units of measure are setup using the Display Formats setting. The L1 System lets you use S.I. or Imperial units. However, you cannot used mixed units of measure- combination S.I. and Imperial.

NOTE

1. System units of measurement may use either S.I. or Imperial units but not both. Mixed units are not permitted.

   The "flags" or "units of measurement" used within the L1 software may be changed by the user.

   Units of measurement may use either the S.I. (metric) units or the imperial units. The user must select either S.I. or Imperial.

2. L1 System units of measurement may be either S.I. or imperial.

3. You may not have mixed units of measurement within your operating system. For example, you cannot have mm (millimeters) for distance measurement and lbf (pound-force) for load measurement.

8.11.1   DISPLAY RESOLUTIONS

The resolution settings are used to establish the significant digits displayed for a variable. When resolutions are adjusted, they should be done so in accordance with the specifications of the test frame and load cell sensor.

8.11.2   USE COMMA FOR RADIX

The radix may be either a period or comma.

8.11.3   DATE FORMAT

The date format my be either MM/DD/YY or DD/MM/YY.

8.12   SOUNDS

The Sound Setting is used to specify audible annunciation for various L1 System actions. These actions are for the following:

• Button activation

• Test run completion

• Test failure

NOTE

Sound files cannot be changed.

Sounds Settings	
Enabled	**Sound**
Yes	Make a sound when a button is activated
No	Play sound when a Test completes
No	Play sound when a Test fails

Shown: SOUND SETTINGS options

8.12.1   MAKE SOUND ON BUTTON PRESS

In the Enable column, selecting Yes will produce a sound whenever a button is pressed, including touchscreen presses or mouse touches.

If the Enable column is set to No, there is no sound produced.

8.12.2   MAKE SOUND WHEN TEST RUN COMPLETES

In the Enable column, selecting Yes will produce a sound when the test run finishes.

If the Enable column is set to No, there is no sound produced.

8.12.3   MAKE SOUND ON FAILED TEST RUN

In the Enable column, selecting Yes will produce a sound when the test run finishes and its results are outside the tolerance range.

If the Enable column is set to No, there is no sound produced.

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