



EZ Lab System Operating Manual

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**Revision 3.7
January 27, 2016**

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OVERVIEW

The EZ Lab System software is designed to enhance your model 1000 or 1100 ChemInstruments test platforms. This document describes how to use the EZ Lab System. Should you have any problems or questions, please contact ChemInstruments at 513-860-1598.

SPECIFICATIONS

System Requirements	Personal computer operating Microsoft Windows 2000 or newer. Pentium processor, 200 MHz or higher. RS-232 COM port or USB with converter to RS-232. 3MB of hard drive space.
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INSTALLATION

1. Insert the EZ Lab USB flash drive into the computer.
2. Run the **EZLabvXX-setup.exe** file from the flash drive. XX represents the version number of the software.
3. Follow the on-screen instructions to complete the software installation.
4. The installation should have installed an “EZ Data Lab – 1000” program group and desktop icon on your computer.
5. It will also create a folder on your C: drive named EZ Lab. The EZ Lab System requires this folder and its sub-folders in order to operate correctly. Please do not delete.
6. Connect the provided RS232 serial cable from the test platform's RS232 connector to the appropriate COM port on your computer.

OPERATION

1. Open the EZ Lab System program to display the Main Screen as shown in Figure 1 – Main Screen.
2. Select the appropriate test platform button to activate the program. The operating screen will appear on your display as shown in Figure 2 – Operating Screen.

The Operating Screen is designed to provide all the necessary instructions on your computer screen. We will cover the areas that are common to all machines. For machine specific information, please refer to the machine's area at the back of this manual.

The Operating Screen provides for calibration of the load cell, choosing the units of measure, setting test speed, selecting the test mode and associated features when available. It is also used for running a test and status messages.

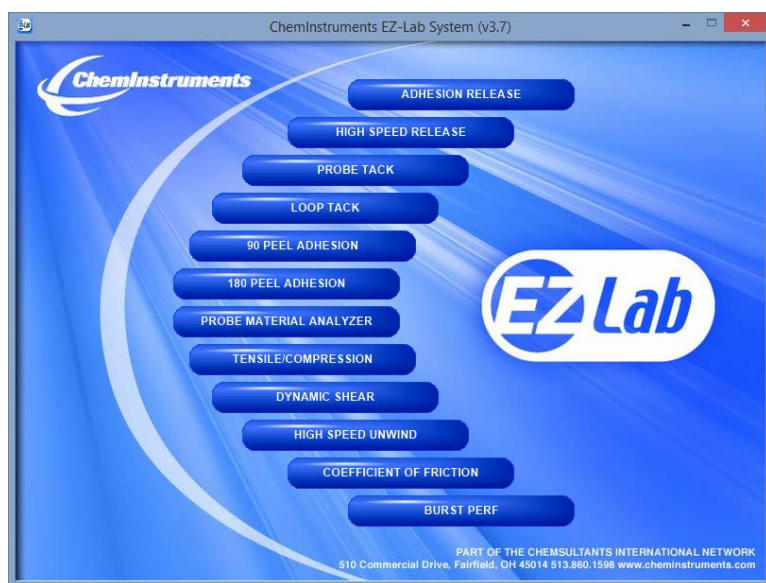


Figure 1 – Main Screen



Figure 2 – Operating Screen

CALIBRATION

In order for the load cell to measure forces correctly, it is necessary to calibrate the system. The following procedure describes the calibration process.

1. Select the “CALIBRATE” button in the Setup section of the Operating Screen.
2. Follow the on-screen instructions exactly. (See Figure 3 – Calibration Screens)
3. Grams are the unit of measure for the calibration process.
4. The calibration process requires 2 known weights – a lighter weight and a heavier weight. The lighter weight can be no weight at all.
5. Make sure to hang the appropriate weight on the load cell grip when entering the low and high calibration values.
6. Make sure that the weight is not moving before pressing “Next” or “Finish”.
7. Verify the calibration by hanging some other known weight on the load cell grip and checking the display in the “Current Load” field.

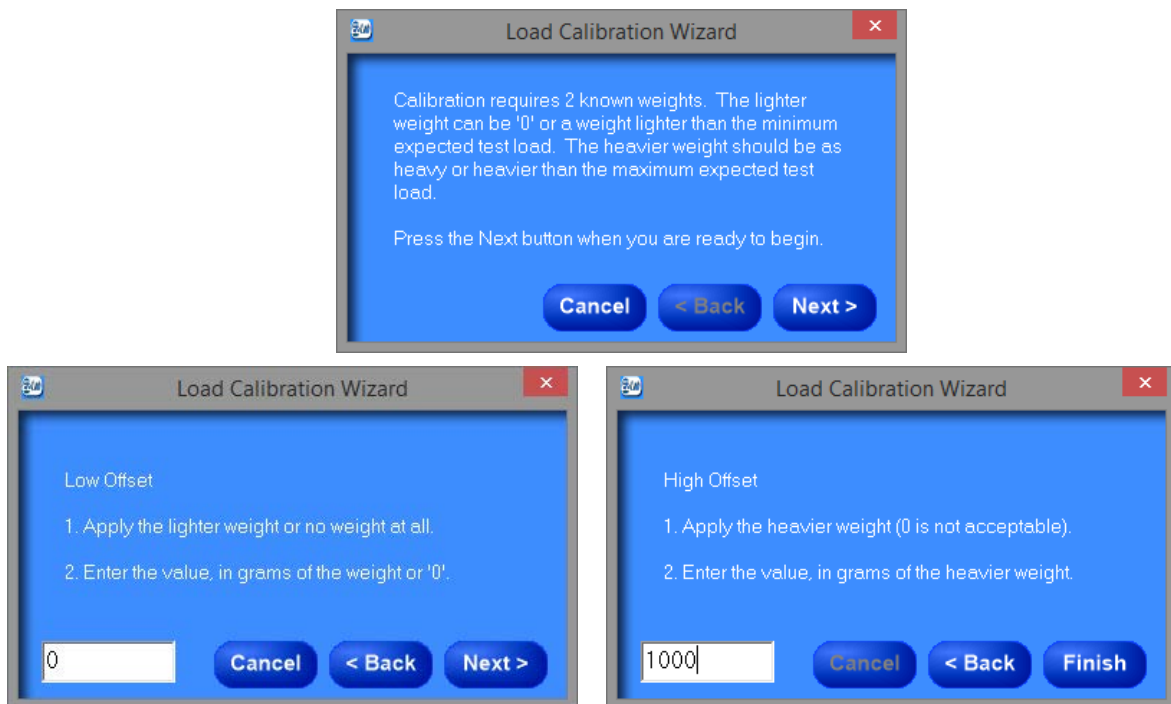


Figure 3 – Calibration Screens

TEST METHODS

Individual test parameters must be selected for each test that is to be conducted. These parameters can be saved as a unique test method. This test method can then be accessed at any time by identifying and selecting it for use at a later time. These saved test methods assure consistent and repeatable machine operation from one test and operator to the next. The following procedure explains how to use the Test Methods feature of EZ Lab.

Note: The Tensile Tester, High Speed Unwind, and Probe Material Analyzer are the only test platforms that provide the ability to save Test Method Parameters.

1. Select the “Test Method Change” button on the Operating Screen. (See Figure 2 – Operating Screen)
2. You will now see the Test Methods screen which allows the user to either select an existing test method or create a new test method. (See Figure 4 – Test Methods Screen)

TO CREATE A NEW TEST METHOD

1. Select the “New” button. This will open the Test Method Change screen. (See Figure 5 – Test Method Change Screen)
2. Enter all parameter values for the test method. Be sure to provide a unique name for the test method.
3. Click on the “OK” button to save the test method for future use.

TO SELECT AN EXISTING TEST METHOD

1. Highlight a test method in the list and press the “Select” button.
2. The parameters from the selected test method will be programmed into the machine.

The “Delete” button will delete the highlighted test method.

The “Delete All” button will delete all created test methods.

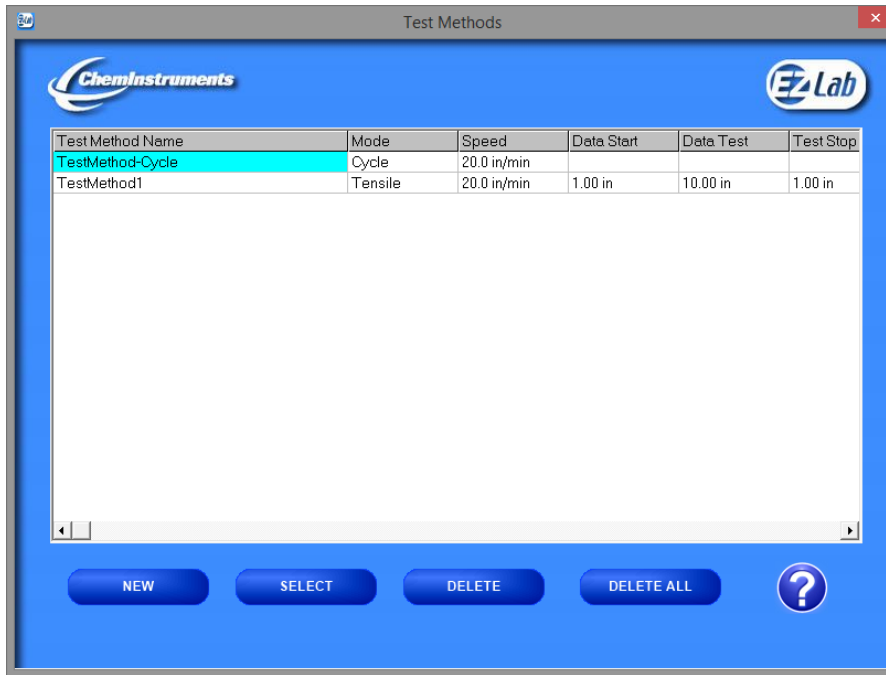


Figure 4 – Test Methods Screen

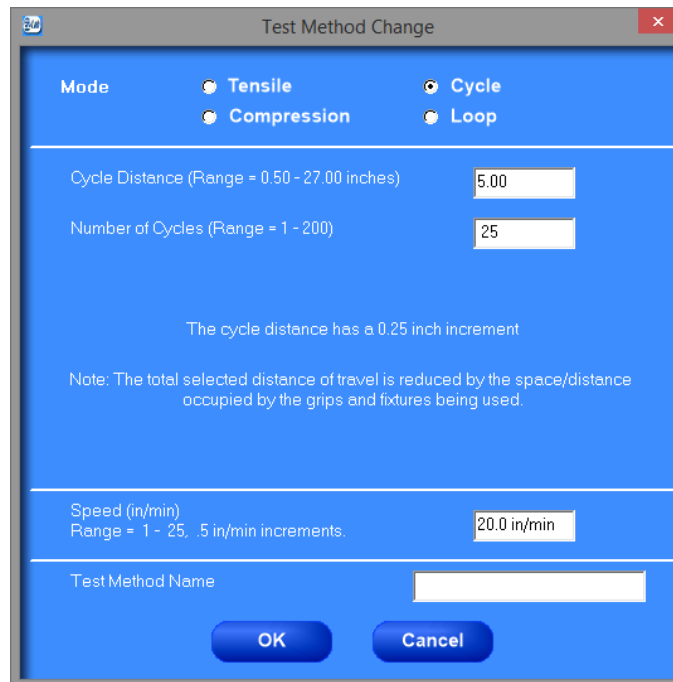


Figure 5 – Test Method Change Screen

DATA SET INFORMATION

Upon completion of every test, the Data Set Information Screen will appear. This allows the user to record information about the test performed. It will also allow the user to select where test data is stored. All fields on the Data Set Information Screen are optional except for “File Name”. See Figure 6 – Data Set Information Screen for details.

The screenshot shows a software window titled "Data Set Information" with the EZ Lab logo in the top right corner. The window is divided into several sections:

- Input Fields:** A vertical list of text boxes for "File Name", "Operator", "Test Method", "Data Set ID", "Sample Length", "Sample Thickness", "Failure Mode", "Test Mode", and "Test Method Used".
- Checkboxes:** "Elastic Modulus", "Auto File Increment", and "Save Testdata to Excel".
- Buttons:** "FINISH" and "ABORT" buttons are located below the checkboxes.
- Normalize Sample:** A section with a "Sample Width" input field and radio buttons for "Inches", "Feet", "Centimeters", and "Meters".
- Data Set Stored In the Following:** A section with a checked checkbox for "File saved to: C:\EZ Lab\TestData\1000", an unchecked checkbox for "Save File to Folder Specified Below", a text input field containing "c:\", and a "SPECIFY PATH" button.

Figure 6 – Data Set Information Screen

ELASTIC MODULUS

Elastic Modulus will be described in the next section.

AUTO FILE INCREMENT

Auto File Increment automatically assigns a sequential number to the File Name. It allows the user to perform tests without having to rename each test. The feature is activated by checking the box. While active, the user will not be able to change the File

Name field. EZ Lab will automatically assign sequential numbers in ascending order to each new test performed.

For example, if the user enters “Test” into the File Name field and then checks the Auto File Increment box, EZ Lab will change the File Name to “Test-001”. The next test will automatically be named “Test-002”.

SAVE TEST DATA TO EXCEL

This feature will automatically save test data in excel format to the EZ Lab directory for the given test. The format will consist of the first column in excel representing the data on the x axis and the second column of data representing the data on the y axis. The units for each axis is listed at the top of each column in excel.

NORMALIZE SAMPLE

Normalize Sample allows you to record the width of the sample being tested. It is the value that the “Normalize Test” feature uses to calculate force per width. When the graph is displayed, you will notice the y-axis being labeled, “Force/Width”, as shown in Figure 12. The graphed test data will be altered based on the entered sample width. The saved test data file contains the actual measured forces. If the “Normalize Test” feature is disabled and the graph is displayed again, the y-axis will display “Force” values.

DATA SET STORAGE

All data is stored in the following folder: C:\EZ Lab\TestData\ (test platform). EZ Lab also has the option to save the test file to another location as specified by the user. Select the “SPECIFY PATH” button to select an additional location to store test data. Check the box labeled, “Save File to Folder Specified Below”, to activate this feature.

FINISH OR ABORT

Once all information has been entered on the Data Set Information Screen, select the “FINISH” button to save the test data. EZ Lab will automatically proceed to the Graph Screen. The “ABORT” button discards the test data. EZ Lab will return to the Operating Screen.

ELASTIC MODULUS

EZ Lab provides the option for computing elastic modulus, tensile strength, and percent elongation. This option is only available in the Tensile Tester, High Speed Unwind, and Dynamic Shear test platforms.

PROCEDURE FOR COMPUTING MODULUS VALUES

1. Select the check box labeled “Elastic Modulus” on the Data Set Information screen. See Figure 6 in the Data Set Information section of this manual.
2. Verify that the correct units are selected for force on the main screen and that the correct units are selected for distance on the Data Set Information screen.
 - a. KSI: force unit must be pounds, distance unit must be inches
 - b. MPa: force unit must be Newtons, distance unit must be centimeters
3. Sample Length, Sample Thickness, and Sample Width values must be entered so that the modulus and tensile strength calculations can be made.
4. To compute the elastic modulus, select the CALC MODULUS button on the Graph screen. It will prompt you to enter a y-axis force value. This value is referred to as $y(n)$ in the calculation of elastic modulus below. The distance at this y value is referred to as $x(n)$ in the calculation.

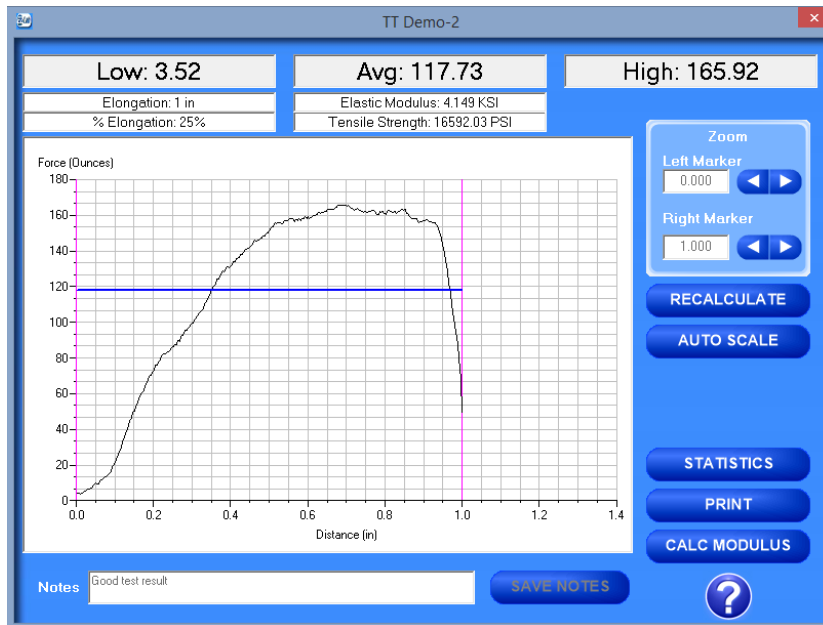
CALCULATIONS

$$\text{Percent Elongation} = \frac{\text{Elongation}}{\text{Sample Length}} * 100$$

$$\text{Tensile Strength} = \frac{\text{High Force Value}}{\text{Sample Width} * \text{Sample Thickness}}$$

$$Elastic\ Modulus = \frac{\left(\frac{y(n)}{Sample\ Width * Sample\ Thickness} \right)}{\left(\frac{x(n)}{Sample\ Length} \right)} * 0.001$$

The Graph screen below shows the modulus values displayed.



REVIEW DATA

The “REVIEW DATA” button is located on the Operating Screen. Review data will allow the user access to previously saved test data and graphs.

File Name	Date	Low	Avg	High
Test-008-RevA	08/21/14 03:24 PM	0.0	83.2	123.7
Test-008	08/21/14 03:24 PM	0.0	100.3	127.5
Test-007-RevA	08/21/14 03:24 PM	0.0	86.8	188.6
Test-007	08/21/14 03:04 PM	0.0	129.3	191.5
Test-006	08/21/14 03:04 PM	198.1	200.7	209.7
Test-005	08/21/14 03:03 PM	187.0	203.0	208.4
Test-004	08/21/14 02:33 PM	2.0	144.2	172.3
Test-003	08/21/14 02:32 PM	155.2	160.2	163.9
Test-002	08/21/14 02:27 PM	18.4	172.3	200.0
Test-001	08/21/14 02:27 PM	564.9	573.6	593.8
HSRDemo-1	05/21/03 04:28 PM	9.8	15.6	17.1

Figure 7 – Review Data Screen

Every time the Review Data Screen is accessed, the screen will automatically display the test data located in the C:\EZ Lab\TestData folder on the computer. The tests will be displayed in chronological order with the most recent test appearing at the top of the list. The grid will display the test’s filename, date and time test was performed, low, average, and high values recorded for the test. To access a test file, select the filename. With a test file selected, the filename will be highlighted and the user can view the graph, view file details, add to list, or delete the test.

GRAPH

The “GRAPH” button will access the Graph Screen as shown in Figure 11. For a description of the graph screen see GRAPH section of this document.

FILE DETAILS

The “FILE DETAILS” button will display all of the information entered in the Data Information Screen. It will also display the test speed, length of test, average, high, low, standard deviation, variance, work, and notes recorded for the test.

Parameter	Value
File Name	Test-009
Operator	Operator 0012
Test Method	Test Method HSR
Data Set ID	DSID 001
Sample Length	15 inches
Sample Thickness	0.01 in
Sample Width	2 Inches
Failure Mode	FM 100100
Test Speed	100 ft/min
Length of Test	1.2 Seconds
Average	285.9 Grams
High	417.5 Grams
Low	0.0 Grams
Std Deviation	176.9772
Variance	31320.94
Work	1.705944 joules
Notes	This is a demo test.

Figure 8 – File Details Screen

DELETE

The “DELETE” button will permanently delete the selected test file.

DELETE ALL

The “DELETE ALL” button will permanently delete all test files located in the EZ Lab test data folder for the test platform. For example, selecting “DELETE ALL” for the screen in Figure 7, all test data files in the HSR1000 directory would be deleted.

COMPILE DATA



In order to compile test data from multiple tests, the user must create a list of the test files to be compiled. To create a list, select a filename and select the “ADD TO LIST” button. The “REMOVE FROM LIST” button will remove the selected file from the list. The “CLEAR LIST” button will remove all files from the list.

SAVE TO EXCEL

EZ Lab collects data throughout the entire test. This is done by collecting individual data points. These individual data points are used to compute the low, average, and high values displayed on the graph screen and review data screen. The “SAVE TO EXCEL” feature allows the user to create an excel file with a list of the individual data points. See Figure 9 for an example.

	A	B	C	D	E
1	Units:	Grams			
2					
3	Test-005	Test-006	Test-007	Test-008	Test-009
4	405.064	396.209	379.052	255.076	405.618
5	406.171	396.486	379.605	253.969	408.938
6	406.171	396.762	379.605	253.416	410.045
7	406.863	396.901	379.882	253.554	411.014
8	407.555	397.316	380.158	253.001	412.951
9	407.693	397.592	380.158	253.001	413.366
10	407.97	397.731	380.158	252.724	413.643
11	408.108	397.869	380.158	252.586	413.92
12	408.385	398.008	380.158	252.447	414.196
13	408.662	398.146	380.158	252.309	414.473
14	408.938	398.423	380.158	252.171	414.75
15	409.353	398.699	380.158	252.032	414.888
16	409.63	398.838	380.158	251.894	415.027
17	409.907	398.976	380.297	251.617	415.027
18	410.184	398.976	380.435	251.479	415.027
19	410.322	398.976	380.435	251.202	414.888
20	410.46	398.976	380.574	250.925	414.75
21	410.599	398.976	380.574	250.787	414.611
22	410.737	398.838	380.712	250.51	414.335
23	410.876	398.838	380.85	250.372	414.196
24	411.014	398.699	380.989	250.233	414.058

Figure 9 – Sample Excel File

TABULATE DATA

The “TABULATE DATA” button will create a table of data summarizing the average, high, low, standard deviation, variance, and work. See the TABULATE section of this document for more information on the Tabulate Data Screen.


OVERLAY DATA

The “OVERLAY DATA” button will create a single graph with test data taken from up to 5 different tests. See the OVERLAY section of this document for more information on the Overlay Data Screen.

REVIEW DATA FROM OTHER FOLDERS

The Review Data Screen also has the ability to list tests from different locations.

1. Use the drop down list at the top of the screen, click on the arrow, and select “Select files to export to excel, tabulate, or overlay graph”. See Figure 10 for an example.

2. Click on the button  to open a “Browse for Folder” window. Select the folder and click “OK”.
3. There is the option to display individual data files, previously saved tabulate files (discussed in section 9.0), and previously save overlay files (discussed in section 10.0)
4. All of the buttons (Graph, File Details, Delete, etc.) work as previously discussed.

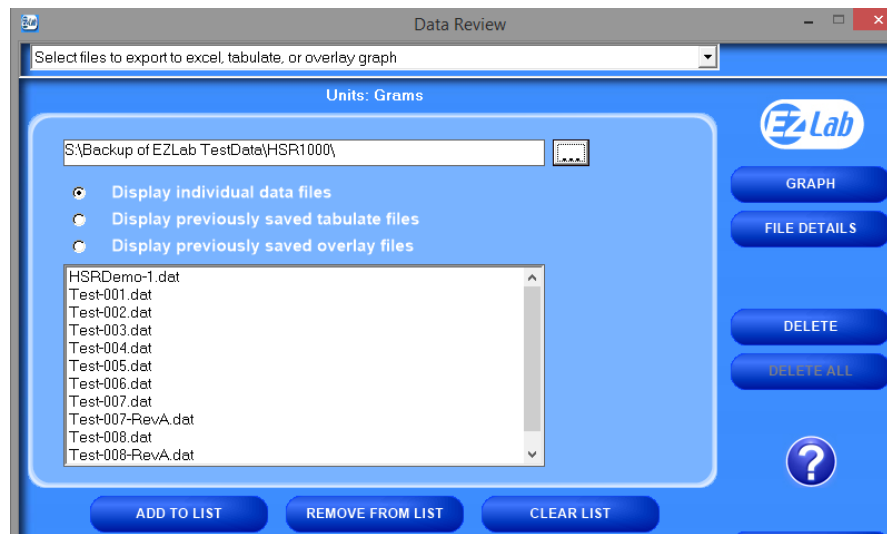


Figure 10 – Another Review Data Screen

OPENING PREVIOUSLY SAVED TABULATE FILES

To recall previously saved tabulate files, click the bullet next to “Display previously saved tabulate files”. You will notice all previously saved tabulate files stored under this directory. Highlight the desired file and click “ADD TO LIST”. Click “TABULATE DATA” to display the previously saved tabulate file. You can only display one previously saved tabulate files at a time.

OPENING PREVIOUSLY SAVED OVERLAY FILES

To recall previously saved overlay files, click the bullet next to “Display previously saved overlay files”. You will notice all previously saved overlay files stored under this directory. Highlight the desired file and click “ADD TO LIST”. Click “OVERLAY DATA” to display the previously saved overlay file. You can only display one previously saved overlay files at a time.

GRAPH

EZ Lab will automatically display the Graph Screen after the user presses “FINISH” on the Data Set Information Screen, see Figure 11 – Graph Screen. The Graph Screen will graph the measured forces versus time or distance, depending on the test platform. It will display the Low, Average, and High values recorded during the test.

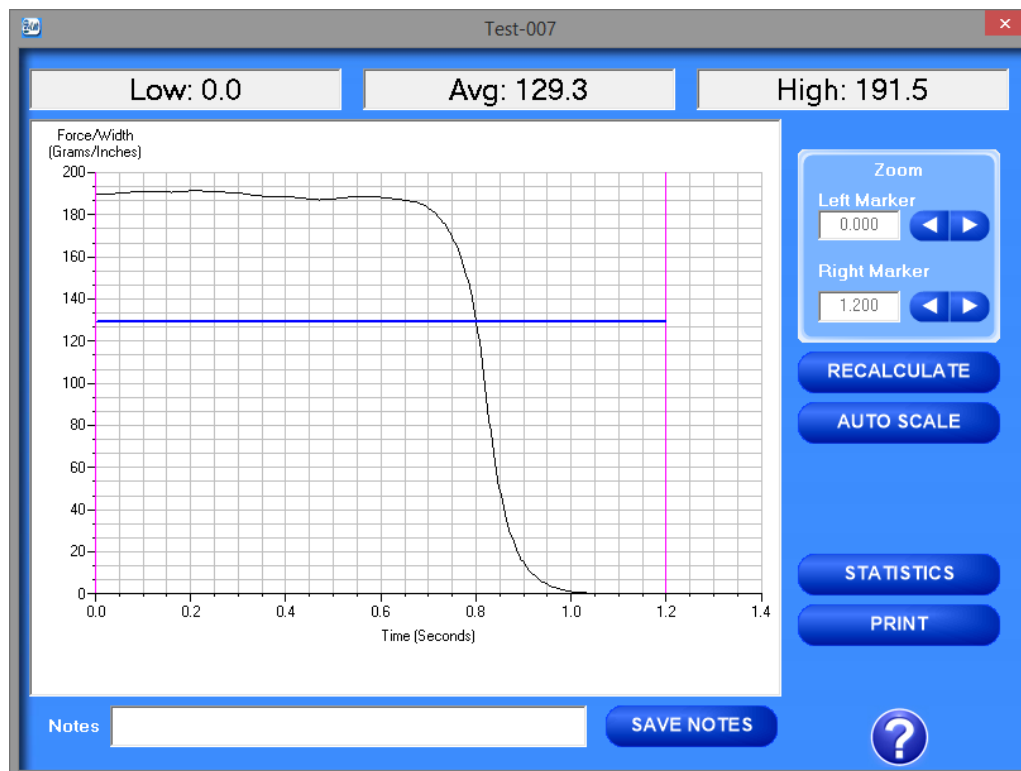


Figure 11 – Graph Screen

CROPPING GRAPHS

The Graph Screen provides a cropping feature. Notice the red vertical lines (markers) located at the left and right sides of the graph. These markers can be moved horizontally on the graph by using the arrows labeled “Left Marker” and “Right Marker”. The field next to the arrows will indicate the position of the marker on the graph.

Note: Cropping a graph will not erase the data saved from the original test.

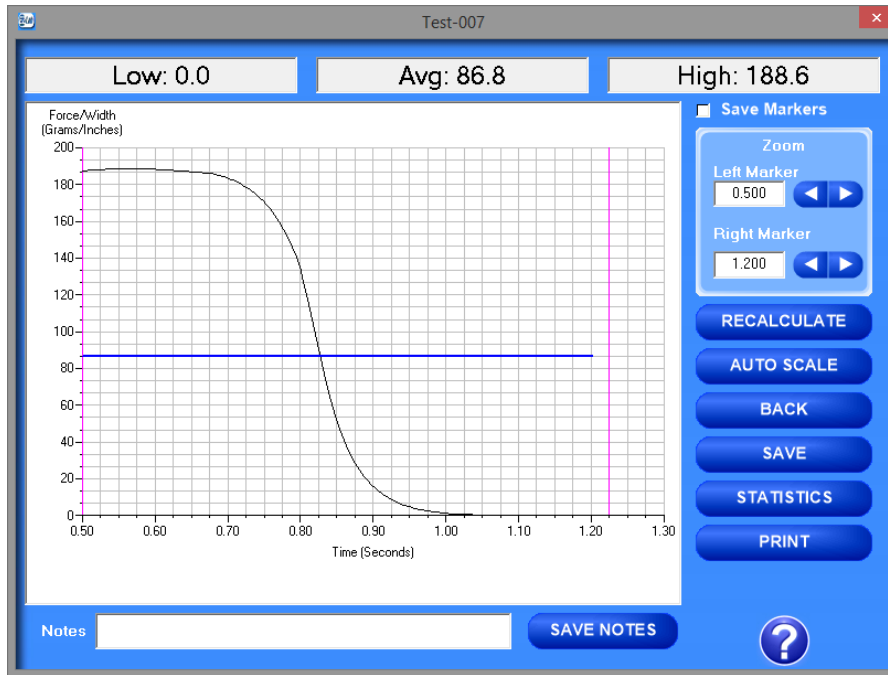


Figure 12 – Graph Screen after Cropping

PROCEDURE FOR CROPPING A GRAPH

1. Using the arrows, move the left and right markers to the desired location.
2. Select the “RECALCULATE” button to crop the graph. This will change the data displayed on the graph page to reflect the data of the area inside the markers. The Low, Average, and High values will be updated to reflect the new graph.
3. After selecting “RECALCULATE”, 3 new items will appear on the Graph Screen, a check box labeled, “Save Markers” and 2 buttons labeled “BACK” and “SAVE”.
4. A graph can be recalculated up to 3 times.

SAVE MARKERS

EZ Lab records data from the entire test. The “Save Markers” feature will hold the place of the left and right marker for future tests. This will automatically crop all test performed while the feature is enabled. To enable this feature, check the box located next to “Save Markers”. To disable this feature, click the box again and the check mark will disappear. Turning this feature off will reset the left and right markers to the left and right sides of the graph. Future test will not be cropped automatically.

BACK

The “BACK” button is used to undo the changes made to the graph when cropping the graph. “BACK” will only undo the last recalculation. When the user gets back to the original graph, the “BACK” button will disappear.

SAVE

The “SAVE” button will save the cropped data as a new file with the same “File Name” as the original but add the suffix “-RevA”. For example, “Test-001” becomes “Test-001-RevA”. Only one “-RevA” file per original test can be saved. Anytime the user selects the “SAVE” button, “-RevA” will be saved. If the “-RevA” already exists when the “SAVE” button is pressed, EZ Lab will prompt the user if they want to overwrite the existing file.

AUTO SCALE

The “AUTO SCALE” button will change the scale of the y-axis of the graph. This feature allows for an enhanced view of the graph. The name of the button will change to “FULL SCALE” after pressing “AUTO SCALE”. The “FULL SCALE” button will restore the graph back to the original scale of the y-axis.

STATISTICS

The “STATISTICS” button will open a new window, displaying the variance, standard deviation, and work of the data displayed on the graph. To exit this screen, press either the “OK” button or the red “X” button.

PRINT

The “PRINT” button will allow the user to use any printing feature available on their computer. Highlight the desired printer and select “PRINT”. To exit this screen, press either the “CANCEL” button or the red “X” button.

NOTES

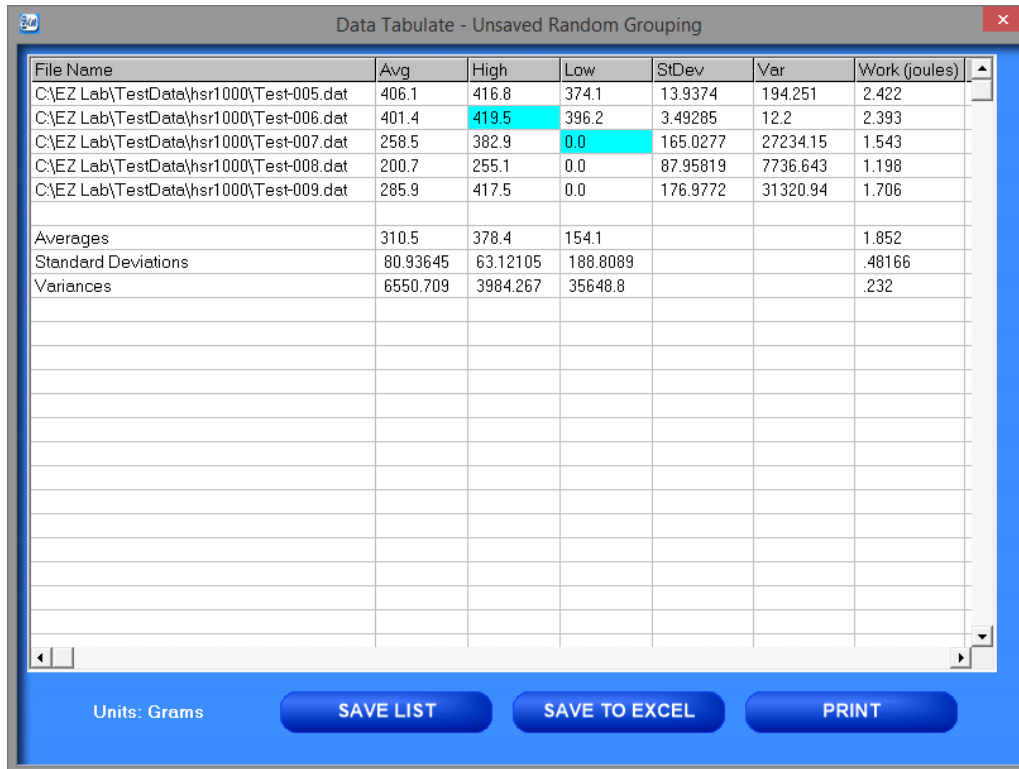
The “SAVE NOTES” button will allow the user to store the notes entered in the “Notes” field with saved test data.

HELP

The “?” button will open a pdf file of the test platform’s operating manual. Adobe Acrobat Reader must be installed on the computer to open this manual.

TABULATE DATA

The Tabulate Data Screen summarizes the data from a group of tests. It will calculate the average, standard deviation, and variance of the average, high, low, and work values computed during the tests. See Figure 13 for an example tabulate data screen.



The screenshot shows a software window titled "Data Tabulate - Unsaved Random Grouping". The window contains a table with the following data:

File Name	Avg	High	Low	StDev	Var	Work (joules)
C:\EZ Lab\TestData\hsr1000\Test-005.dat	406.1	416.8	374.1	13.9374	194.251	2.422
C:\EZ Lab\TestData\hsr1000\Test-006.dat	401.4	419.5	396.2	3.49285	12.2	2.393
C:\EZ Lab\TestData\hsr1000\Test-007.dat	258.5	382.9	0.0	165.0277	27234.15	1.543
C:\EZ Lab\TestData\hsr1000\Test-008.dat	200.7	255.1	0.0	87.95819	7736.643	1.198
C:\EZ Lab\TestData\hsr1000\Test-009.dat	285.9	417.5	0.0	176.9772	31320.94	1.706
Averages	310.5	378.4	154.1			1.852
Standard Deviations	80.93645	63.12105	188.8089			.48166
Variances	6550.709	3984.267	35648.8			.232

At the bottom of the window, there are three buttons: "SAVE LIST", "SAVE TO EXCEL", and "PRINT". The "Units: Grams" label is also visible.

Figure 13 – Tabulate Data Screen

SAVE LIST

The “SAVE LIST” button will save the table for easy recall at a later time. Follow the on-screen prompts to select a location to save and name the table.

The following procedure will detail how to recall the saved tabulate list.

1. From the Review Data Screen, use the drop down list at the top of the screen, click on the arrow, and select “Select files to export to excel, tabulate, or overlay graph”.
2. Select the option to “Display previously saved tabulate files”.
3. Select file to tabulate, click “ADD TO LIST”, click “TABULATE DATA”.

SAVE TO EXCEL

The “SAVE TO EXCEL” button will save the table to Microsoft Excel in the same format as displayed on the screen. This allows the user to use any of Excel’s features to further analyze the test data. After selecting the “SAVE TO EXCEL” button, follow the on-screen prompts to select a location and filename to save.

PRINT

The “PRINT” button will allow the user to print the table using any print feature available on the computer.

OVERLAY DATA

The Overlay Data Screen creates a single graph with test data taken from up to 5 different tests. See Figure 14 for an example overlay data screen.

The file names of the graphed tests will appear in the box labeled “Legend”. The file names are color coded to correspond with the colors of the graph.

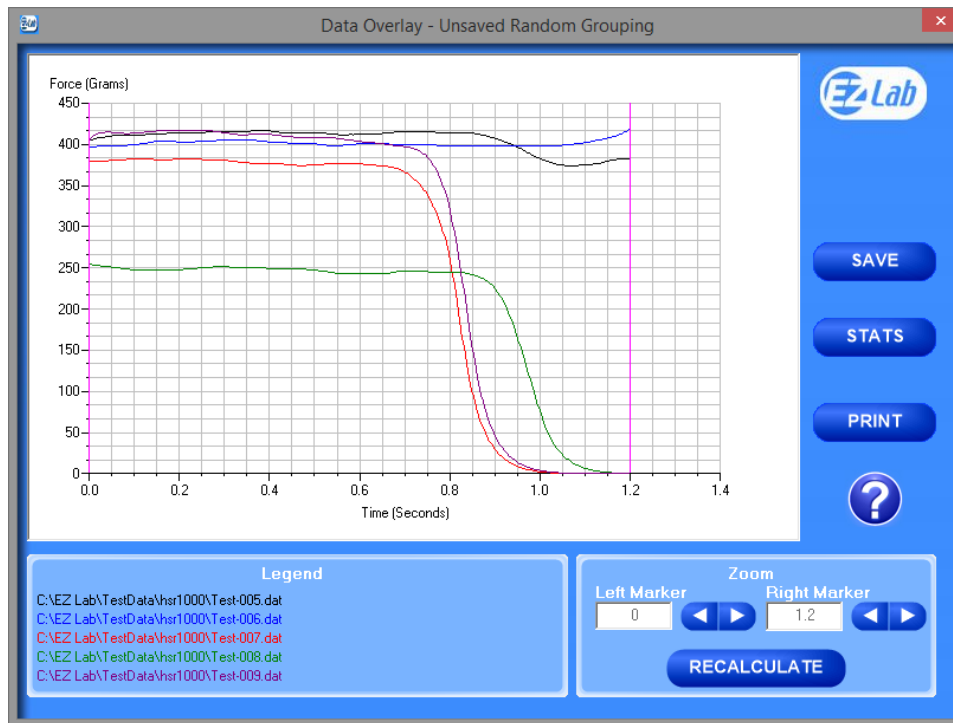


Figure 14 – Overlay Data Screen

CROPPING GRAPHS

The Overlay Data Screen provides a cropping feature. Notice the red vertical lines (markers) located at the left and right sides of the graph. These markers can be moved horizontally on the graph by using the arrows labeled “Left Marker” and “Right Marker”. The field next to the arrows will indicate the position of the marker on the graph.

Note: Cropping a graph will not erase the data saved from the original test.

Procedure for cropping a graph:

1. Using the arrows, move the left and right markers to the desired location.
2. Select the “RECALCULATE” button to crop the graph.
3. After selecting “RECALCULATE”, a button labeled “BACK” will appear.
4. A graph can be recalculated up to 3 times.
5. The “BACK” button is used to undo the changes made to the graph when cropping the graph. “BACK” will only undo the last recalculation. When the user gets back to the original graph, the “BACK” button will disappear.

SAVE

The “SAVE” button will save the overlay for easy recall at a later time. Follow the on-screen prompts to select a location to save and name the overlay.

The following procedure will detail how to recall the saved overlay.

1. From the Review Data Screen, use the drop down list at the top of the screen, click on the arrow, and select “Select files to export to excel, tabulate, or overlay graph”.
2. Select the option to “Display previously saved overlay files”.
3. Select the file to overlay, click “ADD TO LIST”, click “OVERLAY DATA”.

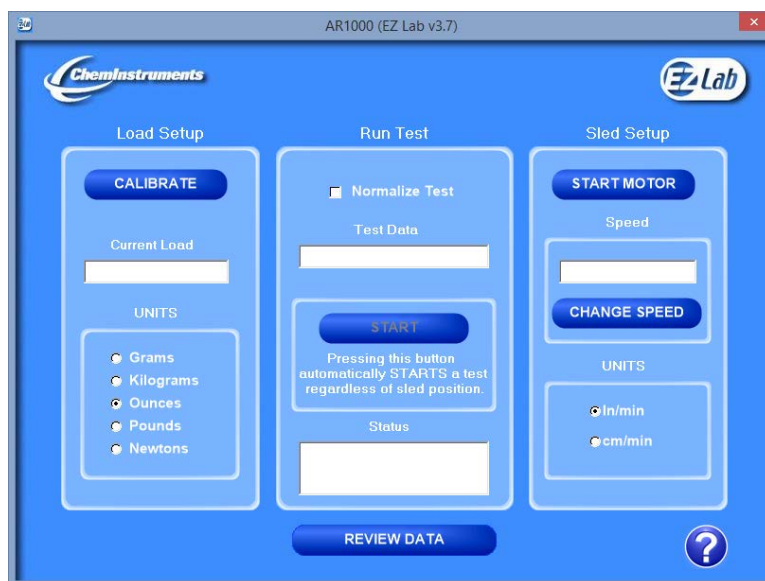
STATS

The “STATS” button will open a new window and display the average, high, low, standard deviation, variance, and work for the test files on the overlay graph.

PRINT

The “PRINT” button will allow the user to print the table using any print feature available on the computer.

ADHESION RELEASE



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis and speed value.

CHANGE SPEED

1. Select “CHANGE SPEED” and follow the on-screen instructions for entering speed.
2. After selecting a new speed value, the test platform will now run at this speed.
3. The new speed value will appear in the box above the “CHANGE SPEED” button.

START MOTOR

Select this button to start or stop the AR-1000’s motor.

RUNNING A REMOTE TEST

Selecting the “START” button automatically starts a test regardless of sled position. To stop the test, move the cart past the “STOP” switch on the AR-1000 or press the “STOP” button on EZ Lab.

BURST PERF



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis and speed value.

CHANGE SPEED

1. Select “CHANGE SPEED” and follow the on-screen instructions for entering the length of test.
2. After selecting a new speed value, the test platform will now run at this test speed.
3. The new speed value will appear in the box above the “CHANGE SPEED” button.

OFFSET

1. Select “CHANGE” and follow the on-screen instructions for entering speed.
2. The new data test value will appear in the “Data Test” box.

TENSION RELIEF

When a test is initiated with “Tension Relief” ON and there are more than 50 grams being measured by the load cell, the cart will move 0.25 inches to the right to relieve the tension. At this point, if there are less than 50 grams of force measured then the test will begin. If there are more than 50 grams measured then an error message will be displayed.

AUTO RETURN

While “Auto Return” is ON, the cart will return to the test’s start position once the test has completed. The test’s start position is defined as the point where 50 grams of force is first detected.

BREAK PERCENT

The “Break Percent” feature is used to stop a test when a break in the test substrate has been detected.

COEFFICIENT OF FRICTION



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis and speed value.

CHANGE SPEED

1. Select “CHANGE SPEED” and follow the on-screen instructions for entering speed.
2. After selected a new speed value, the test platform will now run at this speed.
3. The new speed value will appear in the box above the “CHANGE SPEED” button.

SLED MASS SETUP

The weight of the test sled is used in the calculation that determines the static COF and kinetic COF. The test sled is always entered in grams.

DYNAMIC SHEAR



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis and speed value.

CHANGE SPEED

1. Select “CHANGE SPEED” and follow the on-screen instructions for entering the length of test.
2. After selecting a new speed value, the test platform will now run at this test speed.
3. The new speed value will appear in the box above the “CHANGE SPEED” button.

OFFSET

1. Select “CHANGE” and follow the on-screen instructions for entering speed.

2. The new data test value will appear in the “Data Test” box.

TENSION RELIEF

When a test is initiated with “Tension Relief” ON and there are more than 50 grams being measured by the load cell, the cart will move 0.25 inches to the right to relieve the tension. At this point, if there are less than 50 grams of force measured then the test will begin. If there are more than 50 grams measured then an error message will be displayed.

AUTO RETURN

While “Auto Return” is ON, the cart will return to the test’s start position once the test has completed. The test’s start position is defined as the point where 50 grams of force is first detected.

BREAK PERCENT

The “Break Percent” feature is used to stop a test when a break in the test substrate has been detected.

HIGH SPEED RELEASE



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis and speed value.

CHANGE SPEED

1. Select “CHANGE SPEED” and follow the on-screen instructions for entering speed.
2. After selecting a new speed value, the test platform will now run at this speed.
3. The new speed value will appear in the box above the “CHANGE SPEED” button.

RUNNING A TEST

The “RUN TEST” must be clicked to allow the machine to run a test while in EZ Lab. The “START” button will become enabled to allow the user to run a test remotely.

RUNNING A REMOTE TEST

Selecting the “START” button automatically starts a test.

HIGH SPEED UNWIND



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis and speed value.

CHANGE SPEED

1. Select “CHANGE SPEED” and follow the on-screen instructions for entering speed.
2. After selecting a new speed value, the test platform will now run at this speed.
3. The new speed value will appear in the box above the “CHANGE SPEED” button.

MACHINE MODE

Standard mode measures the unwind force of the roll of tape. Foot Counter mode measures the length of the roll of tape. The Step mode measures the unwind force and the length of the roll of tape.

PARAMETER CHANGE

Parameter Change allows the machine to be programmed to run a test. You must enter a value for every field. If you do not want one of the functions to take place during a test, enter 0 for the value and the program will not perform that function.

Data Start – allows you to program a length of material you would like the machine to unwind before measuring force.

Data Test – is the length you would like to test.

Test Stop – allows you to program a length of material you would like the machine to unwind after measuring force for the Data Test portion.

Speed – is the speed at which the test will be performed. For speeds above 200 ft/min the machine will automatically unwind 15 feet of material before performing the programmed test parameters.

Parameter Change

Offset (inches)

Data Start (Range = 0 - 240, 1 inch increments)

Data Test (Range = 60 - 4800, 1 inch increments)

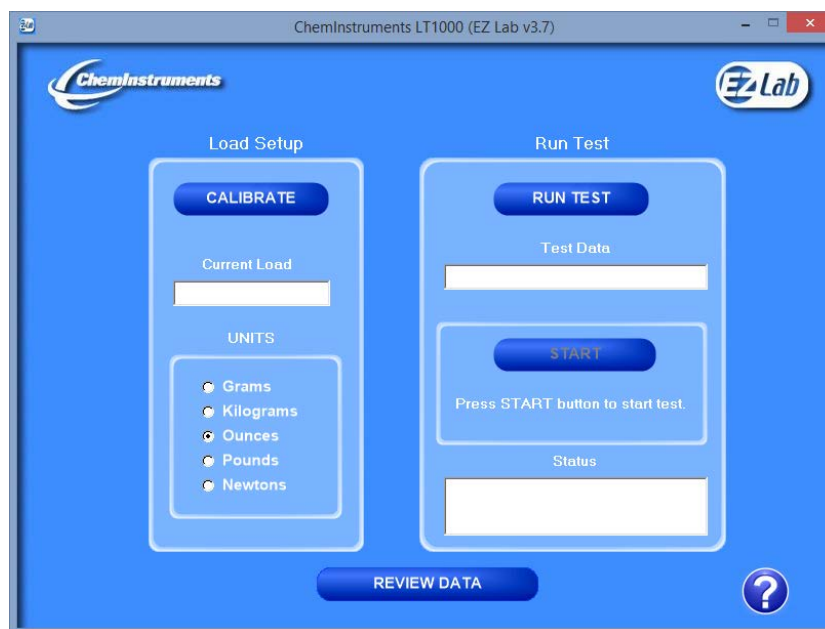
Test Stop (Range = 0 - 240, 1 inch increments)

Speed (in/min)

Range = 12 - 4800, 1 in/min increments.

OK Cancel

LOOP TACK



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis and speed value.

RUNNING A TEST

The “RUN TEST” must be clicked to allow the machine to run a test while in EZ Lab. The “START” button will become enabled to allow the user to run a test remotely.

RUNNING A REMOTE TEST

Selecting the “START” button automatically starts a test.

PROBE MATERIAL ANALYZER



AUTO RETURN

While “Auto Return” is ON, the cart will return to the test’s start position once the test has completed. The test’s start position is defined as the point where 50 grams of force is first detected.

BREAK PERCENT

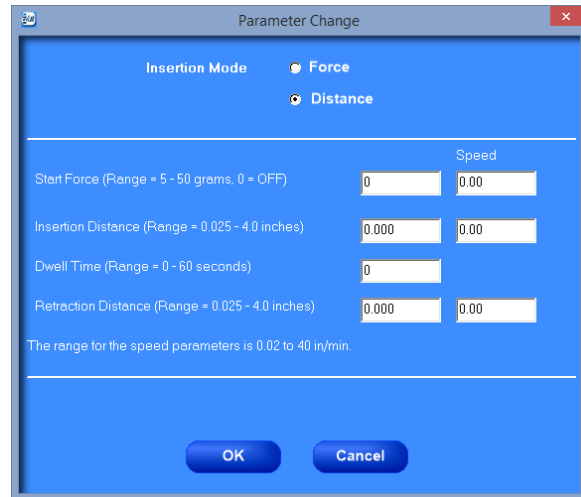
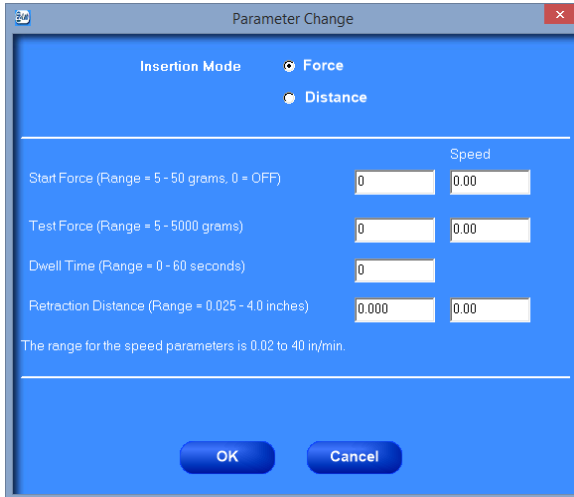
The “Break Percent” feature is used to stop a test when a break in the test substrate has been detected.

PARAMETER CHANGE

Parameter Change allows the machine to be programmed to run a test. You must enter a value for every field. If you do not want one of the functions to take place during a test, enter 0 for the value and the program will not perform that function.

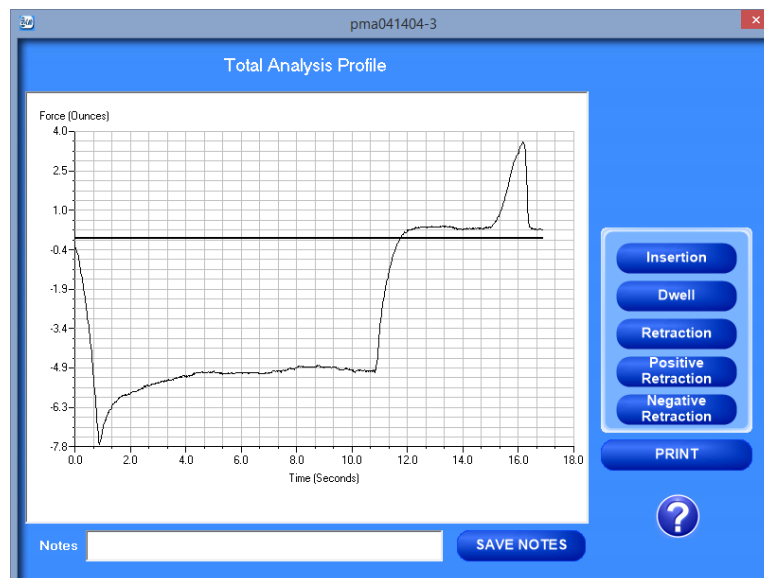
The machine will operate in either “**Force** or **Distance**” mode.

In **“Force”** mode the probe is inserted into the test substrate until a set force is measured. The probe is then retracted from the substrate. In **“Distance”** mode the probe is inserted into the test substrate until a set distance has been reached. The probe is then retracted.

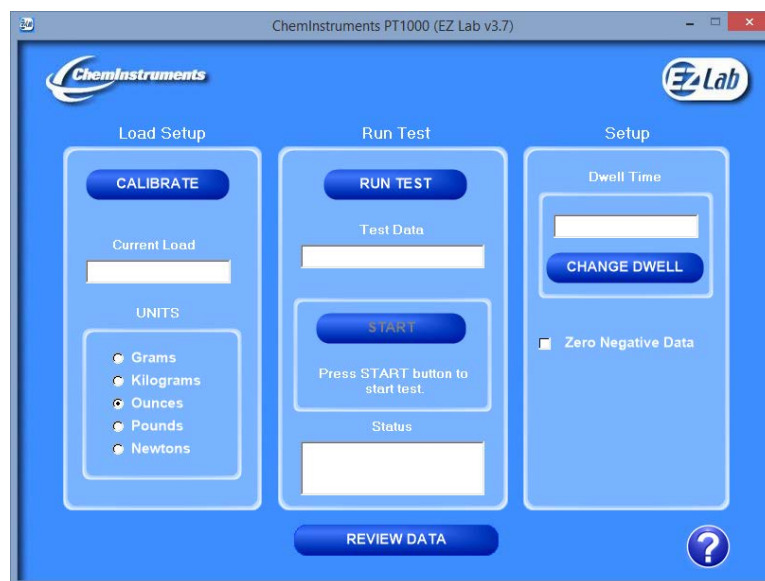


GRAPH

The graph screen is different in the PMA. There are 3 areas of the graph that can be viewed in more depth. They are the insertion, dwell and retraction graphs. Retraction can be broken up in the positive area and the negative area.



PROBE TACK



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis and speed value.

DWELL TIME

1. Select “CHANGE DWELL” and follow the on-screen instructions for entering dwell time.
2. The new dwell time value will appear in the box labeled “Dwell Time”.

ZERO NEGATIVE FORCE

Checking this box will make all negative force values equal to zero.

RUNNING A TEST

The “RUN TEST” must be clicked to allow the machine to run a test while in EZ Lab. The “START” button will become enabled to allow the user to run a test remotely.

RUNNING A REMOTE TEST

Selecting the “START” button automatically starts a test.

90 DEGREE PEEL ADHESION



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis, speed value, and peel length.

CHANGE SPEED

1. Select “CHANGE SPEED” and follow the on-screen instructions for entering speed.
2. After selecting a new speed value, the test platform will now run at this speed.
3. The new speed value will appear in the box above the “CHANGE SPEED” button.

PEEL LENGTH

1. Select “CHANGE” and follow the on-screen instructions for entering peel length.
2. The new peel Length value will appear in the box above the “CHANGE” button.

180 DEGREE PEEL ADHESION



UNITS

Force units and speed units can be changed from this screen. Click the bullet next to the desired unit for data analysis, speed value, and peel length.

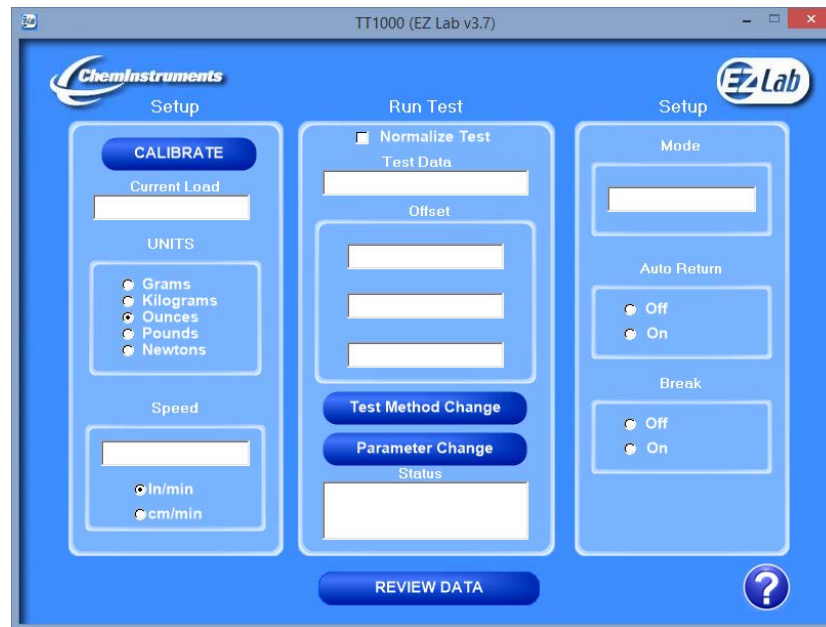
CHANGE SPEED

1. Select “CHANGE SPEED” and follow the on-screen instructions for entering speed.
2. After selecting a new speed value, the test platform will now run at this speed.
3. The new speed value will appear in the box above the “CHANGE SPEED” button.

PEEL LENGTH

1. Select “CHANGE” and follow the on-screen instructions for entering peel length.
2. The new peel Length value will appear in the box above the “CHANGE” button.

TENSILE/COMPRESSION



AUTO RETURN

While “Auto Return” is ON, the cart will return to the test’s start position once the test has completed.

BREAK

The “Break” feature is used to stop a test when a break in the test substrate has been detected.

PARAMETER CHANGE

Parameter Change allows the machine to be programmed to run a test. You must enter a value for every field. If you do not want one of the functions to take place during a test, enter 0 for the value and the program will not perform that function.

Mode –

- **Tensile** - the machine measures forces in the tensile direction.

- **Compression** - the machine measures forces in the compression direction.
- **Cycle** - the machine runs up and down as a cycle. The number of cycles is programmed, and the machine measures forces in the tensile direction.
- **Loop** - the machine performs loop tack tests.

Offset for Tensile and Compression Modes-

- **Data Start** – allows you to program a length of material you would like the machine to travel before measuring force.
- **Data Test** – is the length you would like to test.
- **Test Stop** – allows you to program a length of material you would like the machine to travel after measuring force for the Data Test portion.

Offset for Cycle-

- **Cycle Distance** – is the cycle length.
- **Number of Cycles**

Offset for Loop-

- **Loop Distance** – is the length that the machine will travel for the loop test.
- **Dwell Time** – is the number of seconds that the machine will rest after moving down the loop distance before traveling in the other direction.

Speed – is the speed at which the test will be performed.

The total selected distance of the offset parameters cannot exceed 27 inches and is reduced by the space/distance occupied by the grips and fixtures being used.

Parameter Change

Mode Tensile Cycle
 Compression Loop

Data Start (Range = 0.00 - 2.00 inches)

Data Test (Range = 0.25 - 27.00 inches)

Test Stop (Range = 0.00 - 2.00 inches)

These 3 parameters have 0.25 inch increments.

Note: The total selected distance of these three parameters cannot exceed 27 inches and is reduced by the space/distance occupied by the grips and fixtures being used.

Speed (in/min)
 Range = 1 - 25.5 in/min increments.

OK Cancel

Parameter Change

Mode Tensile Cycle
 Compression Loop

Cycle Distance (Range = 0.50 - 27.00 inches)

Number of Cycles (Range = 1 - 200)

The cycle distance has a 0.25 inch increment

Note: The total selected distance of travel is reduced by the space/distance occupied by the grips and fixtures being used.

Speed (in/min)
 Range = 1 - 25.5 in/min increments.

OK Cancel

Parameter Change

Mode Tensile Cycle
 Compression Loop

Loop Distance (Range = 0.50 - 4.00 inches)

Dwell Time (Range = 1 - 10 seconds)

The loop distance has a 0.25 inch increment

Speed (in/min)
 Range = 1 - 25.5 in/min increments.

OK Cancel