



**PROBE TACK TESTER**  
**MODEL PT-1000**  
**OPERATING INSTRUCTIONS**

**CHEMINSTRUMENTS**  
**510 COMMERCIAL DRIVE**  
**FAIRFIELD, OHIO 45014**  
**(513) 860-1598**

[www.cheminstruments.com](http://www.cheminstruments.com)

**Revision 1.1**  
**August 9, 2017**

## CONTENTS

PRODUCT DESCRIPTION .....	3
SPECIFICATIONS.....	3
UNPACKING.....	4
ASSEMBLY.....	5
KEY COMPONENTS .....	6
THEORY OF OPERATION .....	7
POWER UP .....	7
MENU FORMAT.....	7
MACHINE SETUP .....	9
RUNNING A TEST .....	12
FILE MANAGEMENT .....	13
MAINTENANCE .....	17
TROUBLESHOOTING .....	17
MAINTENANCE PROCEDURES .....	17

## PRODUCT DESCRIPTION

Congratulations on the purchase of your new ChemInstruments Probe Tack Tester. This versatile, user-friendly, carefully designed instrument allows you to determine probe tack values of adhesive laminates.



**WARNING: This equipment can cause injury if not used properly. It is the operator's responsibility to observe all safety rules and warnings.**

The unit has the following features:

- Automated test sequence.
- Stores up to 20 tests in memory.
- Stored test data is available for review.
- Collected test data can be exported via RS232 port.
- Selectable units of measure: Kilograms, Grams, Newtons, Pounds, and Ounces.
- Compatible with EZ-Lab System software. See [www.cheminstruments.com](http://www.cheminstruments.com) for details.

## SPECIFICATIONS

<b>Electrical</b>	Model specific 120V model: 120 VAC, 60 Hz, 2 amps 240V model: 240 VAC, 50 Hz, 2 amps
<b>Operating Temperature</b>	32 – 150 degrees Fahrenheit (0 – 70 degrees Celsius)
<b>Humidity</b>	0 – 55% relative humidity
<b>Speed</b>	Fixed speed of 24 inches per minute
<b>Probe Diameter</b>	5 millimeter
<b>Physical Dimensions</b>	Width: 12 inches (30 centimeters) Depth: 15 inches (38 centimeters) Height: 16 inches (40 centimeters) Weight: 37 pounds (17 kilograms)

## UNPACKING

ChemInstruments has made every effort to ensure that the Probe Tack Tester arrives at your location without damage. Carefully unpack the instrument and check for any damage that may have occurred during shipment. If any damage did occur during transit, notify the **carrier** immediately.

The ChemInstruments Probe Tack Tester consists of the following parts:

- The test frame, which includes the motor/drive mechanism and the data acquisition system.
- Probe and annular ring
- 3 calibration ring weights
- An envelope with this manual.
- Power cord.

Make sure all of these components are present before discarding packaging material.

## ASSEMBLY

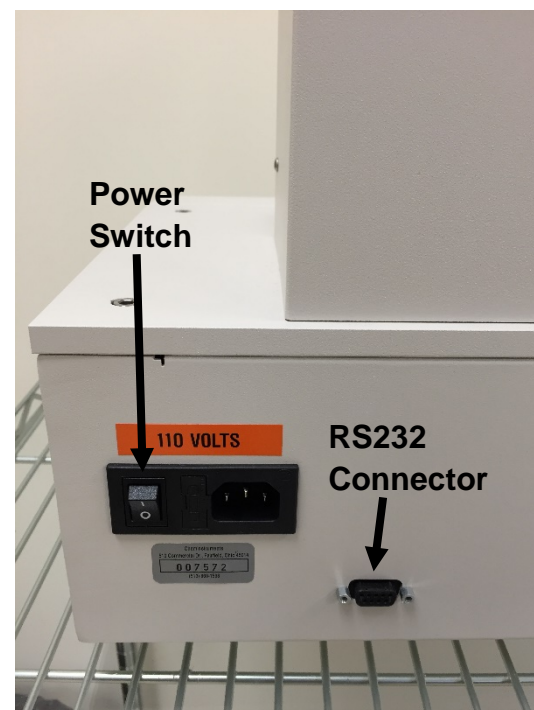
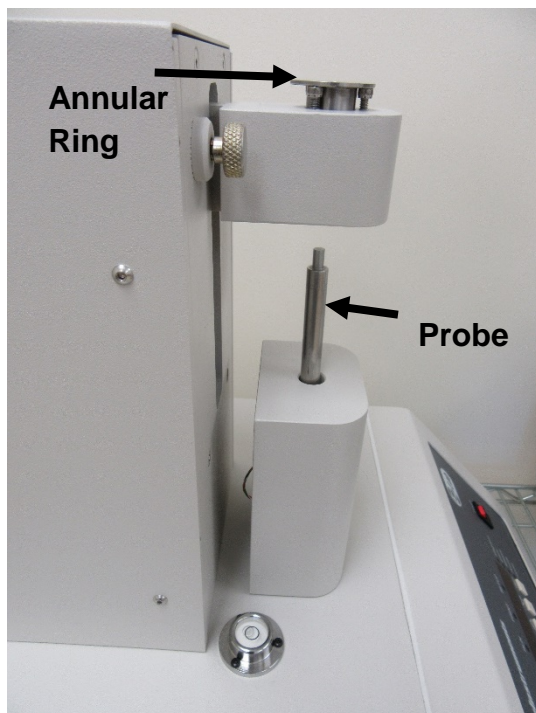
Carefully remove the test frame/data acquisition assembly from the packaging and set it on a sturdy bench top. Check the physical dimensions listed previously for the space required for the instrument. As with any precision piece of laboratory equipment, it is preferable to locate the Probe Tack Tester in an area where temperature and humidity are controlled to standard conditions of  $72 \pm 2$  degrees Fahrenheit and  $50 \pm 5\%$  relative humidity.



**WARNING: Make sure the power source matches the requirements of the Probe Tack Tester. Input voltage requirement will be labeled in orange above power receptacle. Damage will occur if this unit is plugged into the incorrect power supply.**

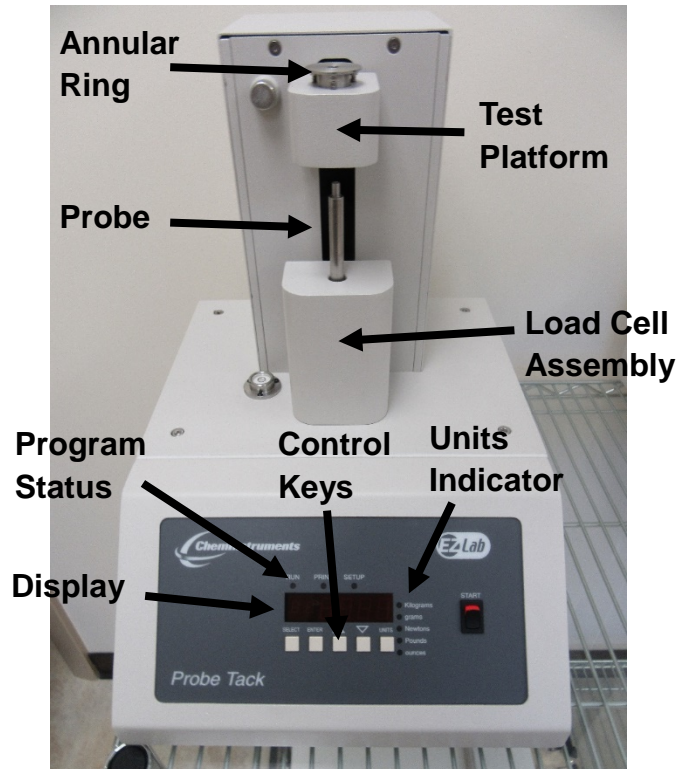
Insert the annular ring in the test platform. Attach the probe to the threaded bolt on the load cell.

Connect the power cord to its receptacle on the backside of the control cabinet. Complete the connection by inserting the male end of the power cord into an appropriate AC outlet. Notice that the on/off power switch is located directly beside the power cord receptacle on the backside of the test frame.



## KEY COMPONENTS

- **POWER SWITCH** is located on the back panel of the control cabinet directly beside the power cord connection.
- **LOAD CELL ASSEMBLY** consists of the mounting bracket for the load cell with grip.
- **TEST PLATFORM** holds the annular ring.
- **ANNULAR RING**
- **PROBE**
- **DIGITAL DATA DISPLAY** provides test data results and system status information.
- **PROGRAM STATUS INDICATOR** these three LED lights identify the operating status. Run, Print, or Setup Menus are active when the LED light is on.
- **UNITS INDICATOR** there are five LED lights indicating the units of measure for the data collected. They are Kilograms, Grams, Newtons, Pounds, and Ounces.
- **CONTROL KEYS** control the various features of the data acquisition and operating system. There are 5 keys consisting of Select, Enter, Up↑, Down↓, and Units.
- **RS232 CONNECTION** data output port for downloading test data.



## THEORY OF OPERATION

A test sample is secured on the annular ring per the test method and placed in the test platform. The probe is brought into contact with the test sample and retracted at a set speed. An electronic load cell measures the force, then feeds the information to a data acquisition unit. The data acquisition unit collects the data from the load cell and stores these data points in memory for use in calculating the maximum, minimum and average values. The data acquisition unit assigns a file number and saves the results in memory. This data can be downloaded through the RS232 connection port to an appropriate receiving program on your PC.

## POWER UP

Turn on the master power switch located on the back panel of the control cabinet next to the power line receptacle. The internal control board will go through a self-test and then display the average force for the last test.



**WARNING: Operating temperature for this equipment is 32 to 150 degrees Fahrenheit (0 to 70 degrees Celsius). The equipment needs to be completely free of condensation, inside and out, before applying power.**

## MENU FORMAT

There are three distinct Menus for the Probe Tack Tester. They are the Run menu, Print menu, and Setup menu. Each menu has an indicator light that will be on when that menu is active. Within each menu there are a series of modes that display the data collected, calibration sequence, and data storage/transfer.

Each of the three menus uses the Up ↑ and Down ↓ arrow keys to access the modes within the menu. When the desired mode is displayed the Enter key is used to access the parameter settings for that mode. Once a parameter selection is made the Enter key is used to record the setting and return to the Run menu.

The following is an outline of the three menus and the modes contained within each menu. Use this chart to quickly identify the location and proper path to access any of the settings.

## RUN MENU

---

- **I** – displays the force currently measured by the load cell.
- **A** – displays the average force measured from a test.
- **H** – displays the maximum force measured from a test.
- **L** – displays the minimum force measured from a test.

## PRINT MENU

---

- **P** – transfers the selected test's data to the connected PC through the RS232 port.
- **St** – turns data storage on or off.
- **dL** – deletes all stored test data.

## SETUP MENU

---

- **F** – calibrates the load cell.
  - **LC** – records the low calibration point.
  - **HC** – records the high calibration point.
- **dT** – sets the dwell time.
- **bE** – turns the beeper on or off.

There is also a Units key that allows you to change the unit of measure to any of the five choices: Kilograms, Grams, Newtons, Pounds, and Ounces. The green LED lights to the right of the display indicate the current active unit of measure.



## MACHINE SETUP

### LOAD CELL CALIBRATION

---

It is important to calibrate the load cell to ensure that reliable data will be gathered. A calibration procedure is built into the software of the Probe Tack Tester. This procedure should be followed upon first use of the Probe Tack Tester and whenever necessary thereafter. The following is the step-by-step procedure for calibrating the load cell.



**Make sure that the Probe Tack Tester has been powered on for 30 minutes before proceeding with calibration.**



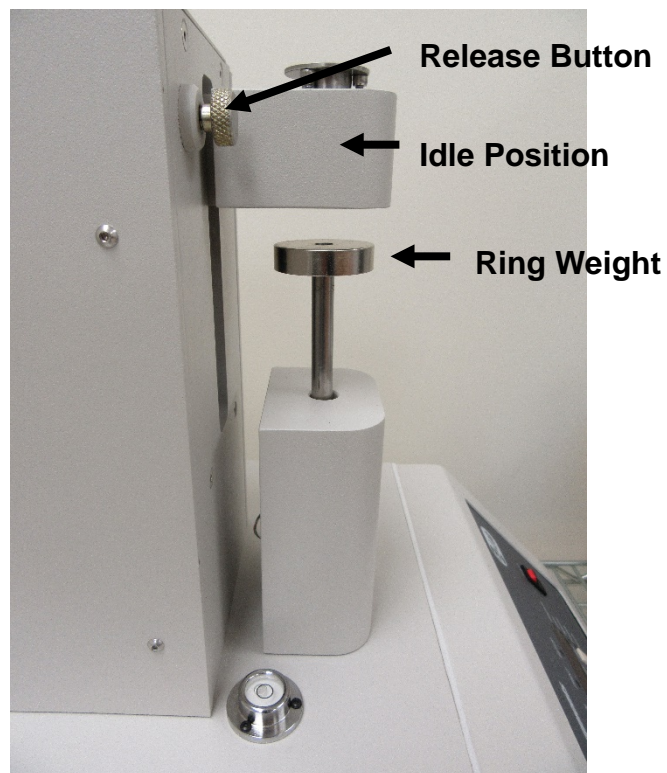
**The calibration sequence defaults to grams as the unit of measure. Make sure that your calibration weights and entries are in grams.**

### LOAD CELL CALIBRATION PROCEDURE

---

1. Move the Test Platform Assembly to the upper idle position using the release button. Make sure the engaging pin is activated to lock the assembly in this position.
2. Simultaneously press the Select and Enter keys for 3 seconds to access the Setup menu.
3. Use the Up↑ and Down↓ keys until the “F” is visible on the Display, press the Enter key to access the calibration sequence.
4. At the “LC” display, determine the Low Offset Value desired (typically 0.00). Make sure that you **do not** have any weight in contact with the probe, and press the Enter key. The display will change to “HC” for high calibration value.
5. At the “HC” display select a calibration weight (200 grams). Place the 200 gram ring weight on the probe. Notice the hole in the ring weight fits over the tip of the probe.

6. Set the High Offset Value on the Display to correspond with the selected calibration weight. You can change the displayed value by pressing the Up↑ and Down↓ keys.
7. Press the Enter key to complete calibration. The display will change to the “I” mode showing the current reading of force.
8. Verify the calibration by setting a **different calibration weight** on the probe. Confirm that the instantaneous force reading is the same as the selected weight sitting on the load cell calibration pad.
9. Repeat the calibration procedure if necessary.



## CURRENT FORCE READING

---

A current force reading is available by accessing the “I” mode in the Run menu. To access this mode, simply press the Up↑ key until the display shows “I #####” where the # will be the current force being measured. This reading should be used only as a quick reference.

**NOTE: It is important to remember that the load cell is measuring forces at a rate of 400 times per second. The rate of display on the display screen cannot cycle at this speed. Therefore, the value in the “I” reading is an average of the data points that the load cell is measuring. Fluctuations in the reading could be caused by vibration of the load cell.**

## AUDIBLE BEEP

---

The Probe Tack Tester has an audible beep feature that sounds each time a Control key is pressed. This provides confirmation that electrical contact has been made by the key. This audible beep feature may be turned off by following this procedure.

1. Simultaneously press the Select and Enter keys for 3 seconds to access the Setup menu.
2. From the Setup menu, press the Up ↑ key to select the Beep mode.
3. When the display shows “bE”, press the Enter key to access the settings.
4. Press the Up ↑ or Down ↓ keys to turn the beep feature off or on.
5. After selecting the appropriate setting press the Enter key to activate your choice and return to the Run menu.

## DWELL TIME

---

To perform a test correctly, it is necessary to set the dwell time in accordance with the selected test method. The following is the procedure for setting the dwell time.

1. Simultaneously press the Select and Enter keys for 3 seconds to access the Setup menu.
2. From the Setup menu, press the Up ↑ key to select the Dwell Time mode.
3. When the display shows “dT”, press the Enter key to access the settings.
4. Press the Up ↑ or Down ↓ keys to change the dwell time.
5. After selecting the appropriate setting press the Enter key to activate your choice and return to the Run menu.

**NOTE: The three screws on the top of the test platform are to hold the annular ring. They are set to a certain height to ensure the proper dwell time. The PT-1000 dwell time default is 1 second. DO NOT adjust the three screws. Adjustment of any one of the screws will lead to improper dwell time.**

## RUNNING A TEST

Probe tack tests are conducted according to written test methods, such as ASTM, PSTC, TLMI and others. These tests are performed to determine the tack adhesive values of the selected PSA material as it is removed from a stainless steel test probe.

**NOTE: Make sure the load cell has been calibrated before conducting a test.**

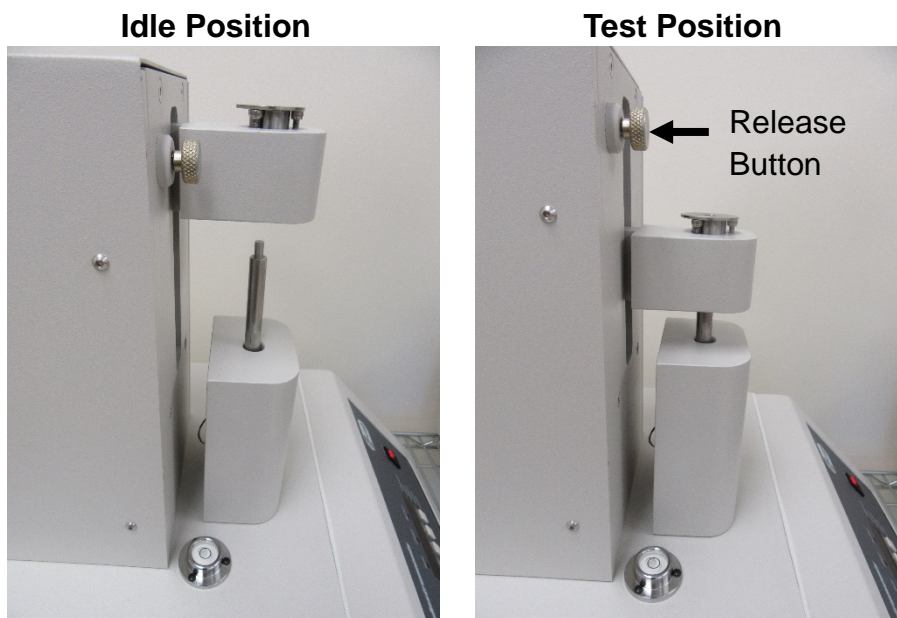
## TEST PROCEDURE

---

The ChemInstruments Probe Tack Tester is very simple to use. The following is the correct procedure for running a Probe Tack Test. See pictures that follow this procedure for clarification of terms.

1. Secure the test sample on the annular ring per the test method and place the annular ring in the test platform.
2. Lower the test platform to the test position using the release button. See picture below.

3. Press the start switch and hold it until the test platform start to move. The machine will complete one full test cycle and automatically stop when finished.
4. The test platform will move downward and maintain probe contact with the sample for the selected dwell time. The test platform will then move upward at 24 inches per minute. The load cell will measure the peak tension force on the probe during this upward movement.
5. When the test platform returns to the start position, the annular ring can be removed and cleaned in preparation for the next test.
6. The probe can be cleaned with a cotton swab and appropriate solvent when the annular ring is removed.
7. Repeat the procedure for additional tests.



## FILE MANAGEMENT

There are four file management functions available in the Probe Tack Tester. They are Review, Download, Store, and Delete. The following sections describe each of these modes and the procedure for enacting each.

## REVIEWING TEST DATA

---

When the Data Storage is turned on, test data is maintained in the memory of the PT-1000. This data is accessible for reviewing, downloading and deleting. The following procedures will describe how to review data contained within each test file.

1. Press the Select key to access the Print menu. The Display will show the letter "P" indicating Print mode.
2. Press the Enter key to access the Print mode.
3. The Display will show "P ####" where # represents the number of tests currently stored in memory.
4. Pressing the Down ↓ and Up ↑ key will allow you to select any of the individually stored test files, each one indicated by a different number.
5. After selecting the file number to be reviewed, press the Select key two (2) times to access that particular file's data. The Display will change to the "I" or current force reading.
6. Pressing the Up ↑ key will change the display from "I" to "Average, High, and then Low." The numerical values displayed are the test results stored for the selected test file in the Print mode.

## DOWNLOADING TEST DATA

---

When the Data Storage is turned on, test data can be downloaded to an accepting program like HyperTerminal through the PT-1000's RS232 port. The PT-1000 must be connected to a computer with a RS232 cable. The following procedures will describe how to download data contained within each test file.

1. Press the Select key to access the Print menu. The Display will show the letter "P" indicating Print mode.
2. Press the Enter key to access the Print mode.

3. The Display will show “P ####” where # represents the number of tests currently stored in memory.
4. Pressing the Down ↓ and Up ↑ key will allow you to select any of the individually stored test files, each one indicated by a different number.
5. After selecting the file number to be reviewed, press the Enter key to download that particular file’s data. The Display will show the number of data points that being downloaded.

**NOTE: This will only download to a program that can accept RS232 data. The accepting program must be set to 9600 baud, 8 data bits, 1 stop bit, and no parity.**

## DATA STORAGE

---

The PT-1000 can store test files in the memory or operate without storing test files. The following procedure describes how to turn the memory storage function on and off.

1. Press the Select key to select the Print menu. The Display will initially show the “P” mode.
2. Press the Up ↑ to select the “St” storage mode.
3. Press the Enter key to access the Storage mode. The Display will show either, “St On” or “St OFF”.
4. Pressing the Up ↑ or Down ↓ key will toggle the Display between “St On” and “St OFF”. When the St On is selected the PT-1000 will store up to 20 individual tests in files.

## DELETING TEST DATA

---

The storage limit of the PT-1000 memory is 20 tests. When this limit is reached, an error message, “St FULL” is displayed. It is then necessary to delete test data from the memory in order to allow additional test data to be stored. Deleting test files before the memory is full is also accomplished with this procedure.

1. Press the Select key to access the Print menu. The Display will show the letter "P" indicating Print mode.
2. Press the Up ↑ key until "dL" is displayed. Then press the Enter key to access the Delete mode. The Display will show "dl 00##" where the ## indicates the number of test files stored in memory.
3. Pressing the Select and Enter keys together for 3 seconds will delete the stored test files and return the Display to the Run Menu and "I" mode.



## MAINTENANCE

### TROUBLESHOOTING

The troubleshooting chart describes some problems that may occur over time. After determining the problem, follow one of the following maintenance procedures.

**Table 1 – Troubleshooting Chart**

<b>Problem</b>	<b>Possible Cause</b>	<b>Procedure</b>
No data collected	Not in Run Menu	Refer to running a test
Load Cell Assembly does not move during a test	Load cell assembly is in the upper idle position	Move the load cell assembly to the test position. Refer to test procedure
	Motor is not allowing the assembly to move	Replace motor
Data measurement consistently low/high	Improper calibration	Check calibration
	Bad calibration	Refer to load cell calibration
Calibration drifts	Bad or damaged load cell	Replace load cell
“St FULL” message	Max number of tests have been collected	Refer to deleting test data

### MAINTENANCE PROCEDURES

As with any precision equipment it is important to provide care and maintenance to ensure proper performance and long life. General cleaning and care will ensure accurate test and trouble free performance.