

HMA-613 Triaxial Data Acquisition Software

NOTE: Please read the equipment requirements, installation, and operation instructions prior to testing. Reliable test results are dependent on the operator's knowledge of both the software and applicable test methods.

INTRODUCTION

The Triaxial Data Acquisition Software automatically records load and displacement data to generate a real-time stress-strain curve during UU, CU, CD, or unconfined compressive strength testing. The software then calculates results in accordance with ASTM standards. These calculations in addition to the stress-strain curve are included on the test report generated by the software. Testing agency and project information can also be included on these reports.

Gilson Triaxial Data Acquisition Software offers a variety of benefits including:

- User friendly interface
- Quick and easy installation and updates
- Automatically performs test calculations in accordance with ASTM standards
- Customizable professional testing reports
- Optimized for both touch-screen and mouse/keyboard operation
- Data is exportable to spreadsheet applications, such as Excel
- Compatible with Windows 10, 8, 7, Vista, and XP

EQUIPMENT COMPATIBILITY AND TEST SETUP

The following is required for use with the Gilson Triaxial Software:

Data Readout Box	HMA-418 or HMA-419
Windows Operating System	Windows 10, 8, 7, Vista, or XP
Computer	Any tablet, PC, or laptop using Windows XP or newer.

Below is a list of Gilson equipment compatible with the software and test components. Please contact Gilson Technical Support to inquire about compatibility of transducers and load cells not listed below.

Load Frame	HM-396, HM-397, HM-397B, HM-398, HM-399
Displacement Transducer	HM-739 or HM-740
Load cell	Any Gilson load cell of adequate capacity
Pore Pressure Transducer	HMA-525 or HMA-521



Figure 1: Typical triaxial test setup.

Above is a typical triaxial test setup using a portable pore pressure transducer and readout. To automatically collect pore pressure data using the software, an HMA-525 Pore Pressure Transducer must be connected to an HM-419 4-Channel Data Readout Box. Comparable load frames and permeability panels can also be used, but Gilson data acquisition components are required for use.

INSTALLATION

1. Two USB devices are included with the software: A Gilson flash drive containing the installation files and a small, black USB security key. Insert the Gilson flash drive into the tablet or PC to be used during testing. Navigate to the USB Drive in File Explorer then double click on the USB Drive to open the installation files. Save or copy these files locally. The software can be downloaded onto other devices to open and edit test data, but data collection is only enabled when the USB security key is attached.

If running Windows 7 or below, right click on the application titled "dotNetFx40_Full_x86_x64" and select "Run as administrator." Doing so will check the current version of the Microsoft .NET framework. If the .NET Framework is not installed or up to date, the most current version will be

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installed. If the most current version is already installed, the installer will complete with no further action.

NOTE: All software installation files and updates are also available for download on www.globalgilson.com. Log into your “My Gilson Account” to access the “My Downloads” page.

2. Run the **TRIAXSetup** file and follow the prompts on the screen. The software should detect any previous versions and uninstall them automatically. If a Windows Installer message appears, follow the prompts and uninstall the previous version of the software. Once installation is complete, close the installer.

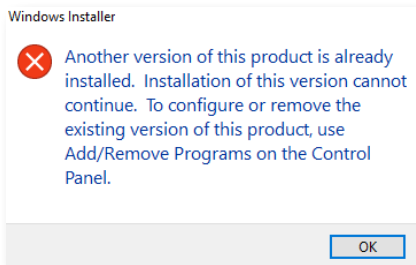


Figure 2: Windows Installer Message

3. Eject the USB containing installation files and insert the USB security key. Open the Triaxial Data Acquisition Software. Click **Help** along the toolbar then select **Activation** from the drop-down menu. Enter the provided license number, USB ID, and activation code. The software will run normally for 30 days before this information is required to continue use. Activation information can be entered at any point within the first 30 days after installation.

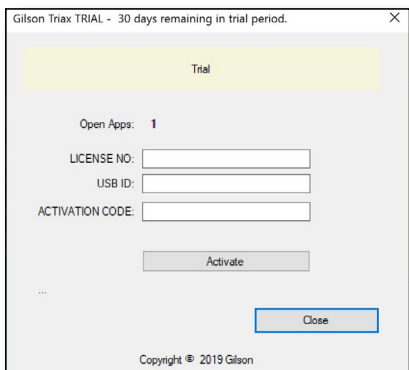


Figure 3: Activation Menu

4. Establish the connection between the data readout box and the software:

- Make sure all connections to the computer and data readout box are secure.
- Select the COM port for the data readout box from the **Read Port** drop down menu in the **Connect** tile. To determine the correct COM port, navigate to **Control Panel > Device Manager** and view the devices listed under **Ports (COM & LPT)**. The data readout box will appear as a USB serial port. If multiple devices are listed as a USB serial port, the correct serial port can

be identified by unplugging the device from the tablet or PC then identifying which serial port disappeared from the listed devices. Once identified, plug the data readout box back into the tablet or PC and click connect.

- Once connected, the load, travel, and pore pressure (optional) values will be displayed at the bottom right of the **Connect** tile. Gently move the displacement transducer up and down to confirm the connection. The travel value should change.

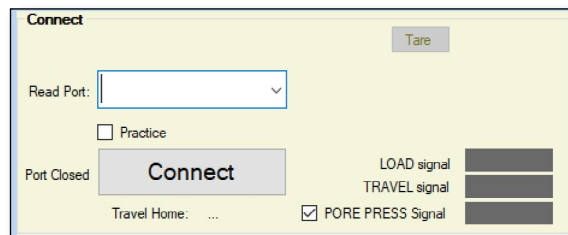


Figure 4: Connect Tile

SETTINGS AND CONTROLS

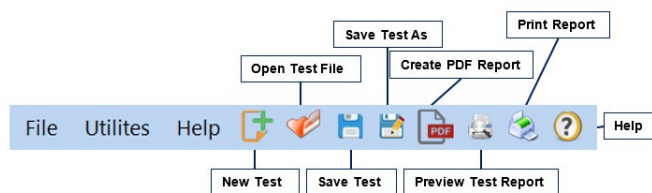


Figure 5: Toolbar

The top toolbar of the Triaxial Data Acquisition Software consists of icons used to start, open, save, create, and print test reports. These commands are also listed under the **File** dropdown menu.

The application settings can be found under the **Utilities** dropdown menu at the top of the software window. Testing agency and equipment information can be entered here, in addition to selecting testing units and enabling/disabling popup keyboards. Popup keyboards are helpful when using a touch screen operated device. This information entered here will be displayed on the final test report and included in the data file for the test. These settings remain saved for future testing.

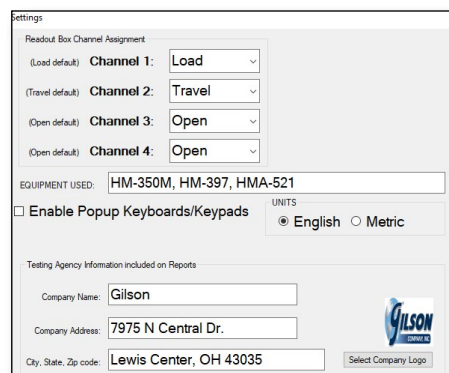


Figure 6: Applications settings

Familiarize yourself with the software by using the practice feature. To use practice mode simply click on the box labeled **Practice**. When this is active, random load, displacement, and pore pressure values are generated so that you can interact with the software as if a test is being performed.

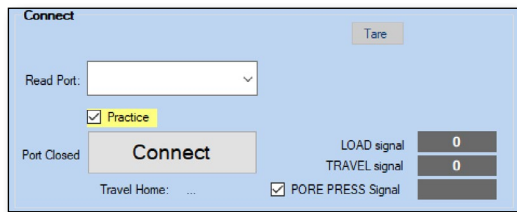


Figure 7: Practice Mode

advance to **UP** on the load frame. The software will display load, displacement, stress, strain, and pore pressure (when applicable) values in real time. Two graphs are also generated, a stress-strain graph and a stress-displacement graph. You can switch between these two graphs throughout the duration of the test.

Reading	ET, s	Load, lbf	Travel, in	Stress, psi	Strain, %	Pore psi
0	0	12.4	0	0	0	53.4
1	30	12.7	0	28.1	0	53.4
2	60	13.6	0	112.3	0	53.4
3	90	14.2	0	168.4	0	53.4
4	120	14.5	0	196.4	0	53.4

Ht/Dia Ratio: 2.0 Strain Rate, %/min: 6 Max Displacement: 0.169
 Peak Stress: 5080.5 Peak Load: 70.2 Max Strain: 6
 ET: ... At Strain: 6 At Displacement: 0.169

Figure 10: Tabular Test Data

RUNNING A TEST

1. Prepare and saturate your sample in accordance with the applicable ASTM or AASHTO method. Enter test and specimen information in the **Sample Info, File Location** field at the top right of the software window. Once entered, select **Set File** to save this info and select where the data will be automatically saved at the conclusion of the test.

Figure 8: Sample Info, File Location

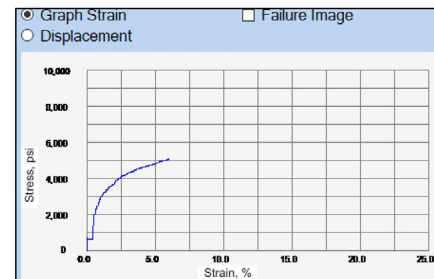


Figure 11: Real-Time Graphs

2. To run a test, first confirm the recording frequency in the **Run Test** section in the bottom left corner of the software window. This recording frequency can be set in 1 second intervals. If nothing is entered the software will default to one recording per second. The **Auto Stop Test** feature can also be set. When selected, the software will automatically stop recording test data when the load falls below a peak load by a specified amount or when the percent strain has reached a specified percent. The load frame will continue to advance until the limit is reached or it is stopped by the user.

Figure 9: Run Test Selection

4. The software will automatically stop recording data and save to the selected file if the **Auto Stop Test** feature has been selected. Otherwise, click **Stop Test** to end recording and save the test data to the selected file. At this time, stop the load frame. If the load frame is not stopped, the platen will continue to advance until the upper limit is reached.

5. The test file can be reopened at any point after the completion of a test and a failure image added. To add a failure photo or sketch to the test report, select the **Failure Image** box above the final graph, then click the camera icon to select a failure image file such as a .jpg, .gif, or .png file.

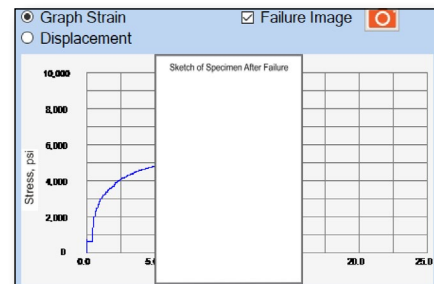


Figure 12: Failure Image Selection

3. Once the **Run Test** section has been completed, seat your sample and select **Start Test**. The software will begin to collect load and displacement data. Switch the platen

6. To generate a PDF report, select the PDF icon from the top tool bar or **Export to PDF** from the **File** drop down menu. An example test report can be found on the last page of this manual. The test data is saved in ASCII Comma delimited format which can be exported to spreadsheet applications, like Excel, for further processing.

EXPORTING DATA TO EXCEL

To export test data into Excel, begin by opening Excel.

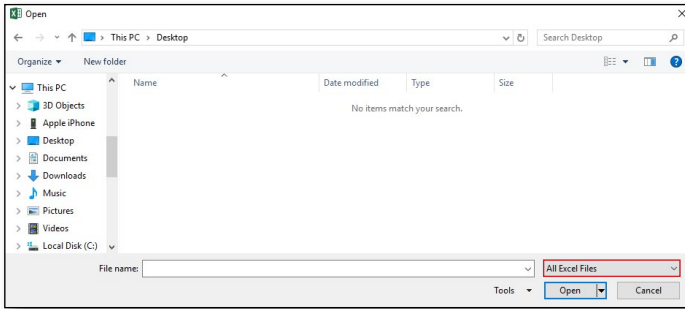


Figure 13: Excel File Explorer

1. Click **File > Open > Browse** to locate the test file(s). In the bottom right corner of File Explorer select **All Files** from the drop-down menu.
2. Navigate to the test file you are trying to export.
3. Click on the file then select **Open**.
4. The **Text Import Wizard** dialog box will pop up. Select **Delimited** then click **Next**.

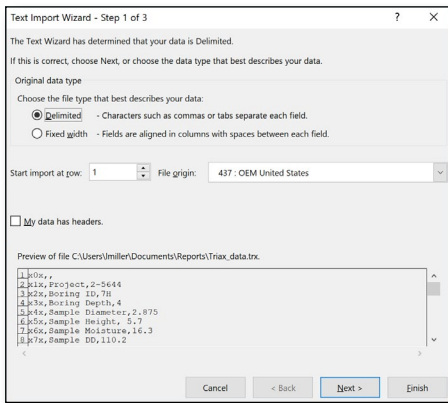


Figure 14: Text Import Wizard Step 1

5. Uncheck the box labeled **Tab** and select the box labeled **Comma**. Select **Next** then **Finish**.

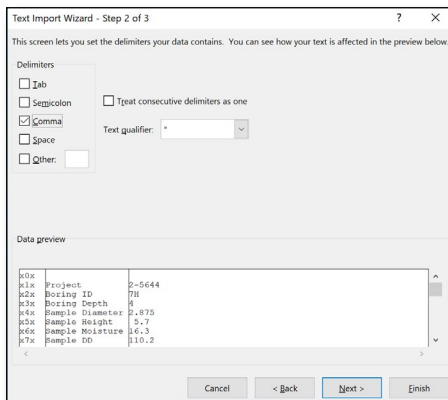


Figure 15: Text Import Wizard Step 2-3

6. The company information, sample information, and test data will be displayed on the spreadsheet.

TROUBLESHOOTING

Software is not identifying serial port connections

Confirm there is power going to the data readout box and that all connections to the box and computer are secure. Make sure all ports and connections are free of dust or debris. Open **Windows Device Manager** to see if the readout box is listed as a device under **Ports (COM & LPT)**. Instructions for determining the correct serial port can be found in the Installation instructions. Once the readout box appears under **Ports (COM & LPT)**, close then reopen the Software and try reconnecting.

Application License Error Message Appears

This message will appear when more than the allowed number of test windows is opened. If you would like more than the currently allowed test windows to be opened simultaneously, additional licenses can be purchased. Please contact Please contact Gilson at **1.800.444.1508** or **customerservice@gilsonco.com** to purchase additional licenses.

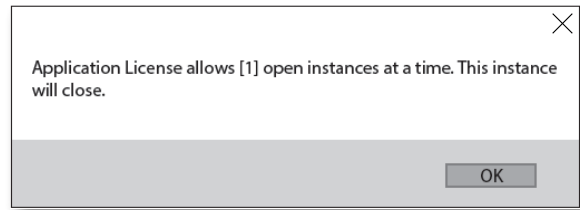


Figure 16: Excel File Explorer

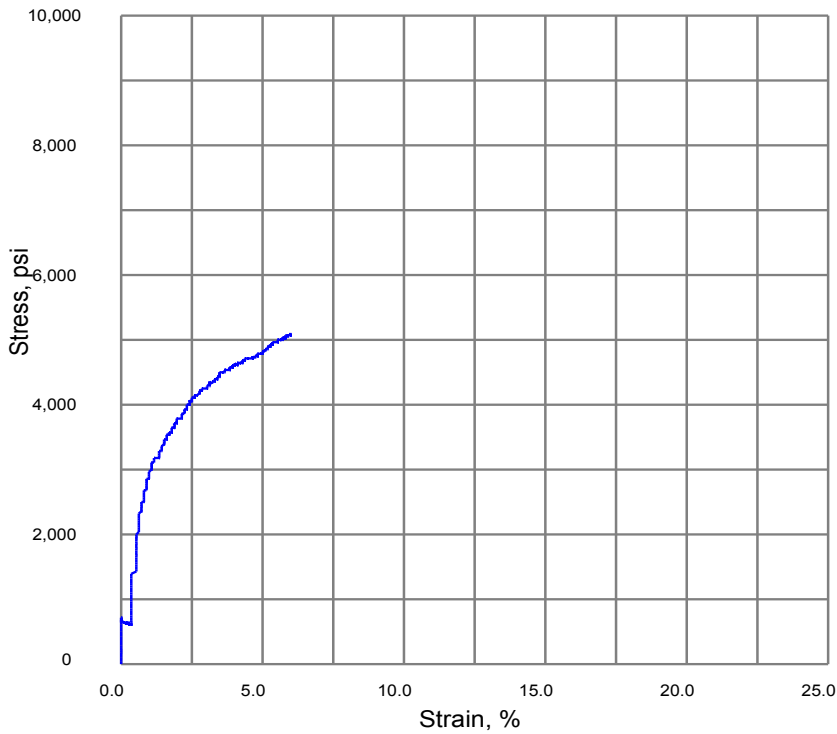
If you are not attempting to open more than the allowable windows, open **Task Manager**. If you see **Triaxial Test**, select it from the list, then click **End Task**. Now try reopening the Triaxial Software.

Triaxial Compressive Strength of Cohesive Soil

ASTM D4767 CU Consolidated Undrained

Boring No:	1508	Sample Moisture, %:	16.3
Boring Depth, ft:	4	Sample Dry Density, pcf:	110.2
Date Tested:	10/19/2018	Height/Diameter Ratio:	2.0
Sample Diameter, in:	2.875	Strain Rate, %/min:	6
Sample Height, in:	5.7	Max. Load lbf:	70.2
Stress @ Failure, psi:	5080.5	at Displacement, in:	0.169
Strain @ Failure, %:	6	Chamber Pressure:	5
		Init. Pore Pressure:	3
		Back Pressure:	1

Soil Type: Clay



Equipment: Gilson HM-350M, HM-397, HMA-517



Gilson Company, Inc.
P.O. Box 200
Lewis Center, OH 43045

Project: Triaxial Demo
Project ID: 7298
Client: Gilson Co.