HMA-612 Soil Cement 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 Soil Cement Data Acquisition Software automatically records, and graphs load and displacement measurements used to calculate the compressive strength of soil-cement cylinders. Realtime data is shown in a tabular format in addition to a graphical display of either strain or displacement. At the conclusion of a test this data is used to perform calculations in accordance with ASTM D1633. These calculations as well as a strain curve are included on the test report generated by the software.

Gilson Soil Cement Data Acquisition Software offers a variety of benefits including:

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

EQUIPMENT COMPATIBILITY AND TEST SETUP

The following is required for use with the Gilson Soil Cement 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 additional test accessories. 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,** or **HM-399**
Displacement Transducer	**HM-739** or **HM-740**
Load Cell	**HM-428D, HM-430D,** or any Gilson load cell of adequate capacity
Swivel Platen	**HMA-129** or **HMA-129B**

Figure 1: Typical Test Setup

Above is a typical soil cement test setup. Comparable load frames 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 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 Account" to access the "Software Downloads" page.

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2. Run the **SoilCementSetup** 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.
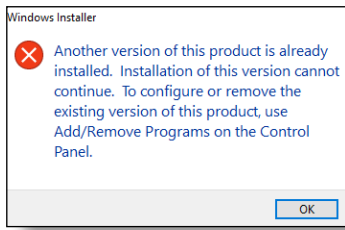

Figure 1: Installation Error Message

3. Eject the USB containing installation files and insert the USB security key. Open the Soil Cement 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.

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

a. Make sure all connections to the computer and data readout box are secure.

b. Select the COM port for the data readout box from the **Read Port** drop down menu in the **Start Communications** 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.

c. Once connected, the travel values will be displayed at the bottom right of the **Start Communications** tile. Gently move one of the LVDTs on the load frame up and down to confirm the connection. The travel value should change.
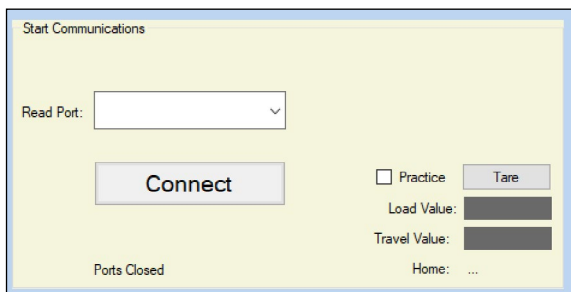

Figure 3: Installation Error Message
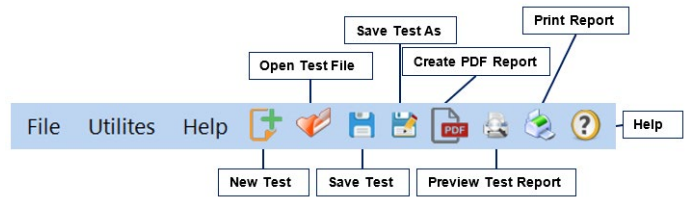
SETTINGS AND CONTROLS

Figure 4: Toolbar

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

The program settings can be found under the **Utilities** dropdown menu on the top toolbar. Testing agency and equipment information can be entered here. The information entered here will be displayed on the final test report and included in the data file for the test. In addition to selecting testing units and toggling popup keyboards. Popup keyboards are helpful when using a touch screen operated device. These settings remain saved for future testing.
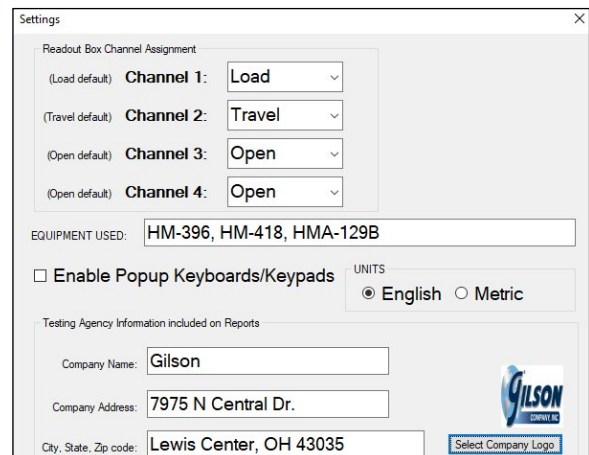

Figure 5: Applications Settings

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 and displacement values are generated so that you can interact with the software as if a test is being performed.
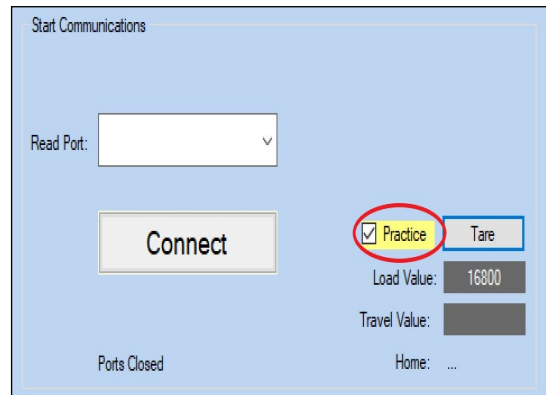

Figure 6: Practice Mode

RUNNING A TEST

1. Prepare your sample in accordance with ASTM D1632. Enter the sample info in the fields at the top right of the window. These values will be included in the final test report. Once entered, click **Set File** to designate a file location for the test data.

Figure 7: Project/Sample Info

2. Set the recording frequency for the test under the **Run Test** section of the software. The software will automatically record every 5 second unless specified otherwise. The **Stop Test** function can also be selected here to stop recording data when the load drops below peak load by a specified drop in load.

3. Place the sample in the load frame and seat the cross arm. Once seated, click **Start Test** then select **UP** on the load frame to start the platen advance. The software will continue to collect data until the load has dropped below peak or until **Stop Test** is selected. At this time, you can stop the load frame, otherwise it will travel until the upper limit has been reached.

Figure 8: Run Test

4. The test is automatically saved to the assigned file location. The saved file can be reopened, edited and saved using the icons on the top toolbar. The test data is saved in ASCII Comma Delimited format which can be opened for further analysis and processing using spreadsheet applications such as Excel.
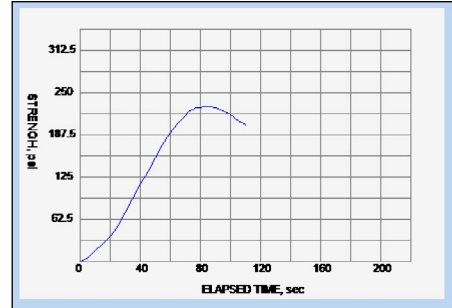

Figure 9: Tabular Data

Figure 10: Final Graph

5. Once the test is completed a message will display reading: **Test has finished. Data has been saved to the selected file. Enter a new test or close the ports.** The saved file can be reopened, edited and saved using the icons on the top toolbar. The test data is saved in ASCII Comma Delimited format which can be opened for further analysis and processing using spreadsheet applications such as Excel.

EXPORTING DATA TO EXCEL

To export spreadsheet compatible test data:

1. Open spreadsheet application. Select **File > Open > Browse** to locate the test file(s). In the bottom right corner of the file explorer (Figure 7) select **All Files** from the drop-down menu.
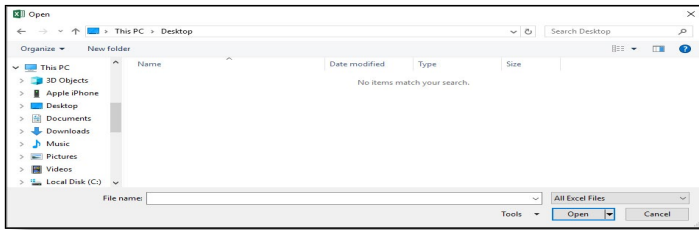

Figure 11: Excel File Explorer

2. Navigate to the test file you are trying to export.

3. Select the file then select **Open**.

4. The **Text Import Wizard** dialog box (Figure 8) will appear. Select **Delimited** then click next.
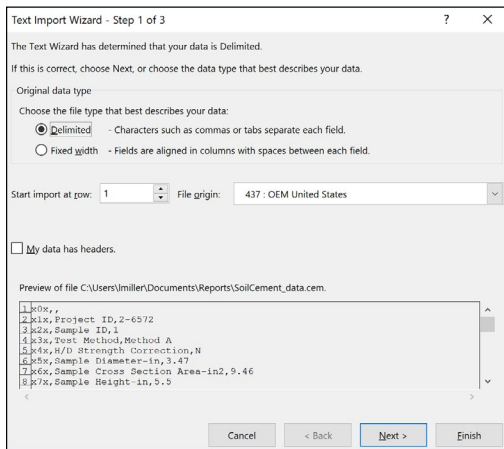

Figure 12: Text Import Wizard Step 1

5. Uncheck the box labeled **Tab** (Figure 9) and select the box labeled **Comma**. Select **Next** then **Finish**.
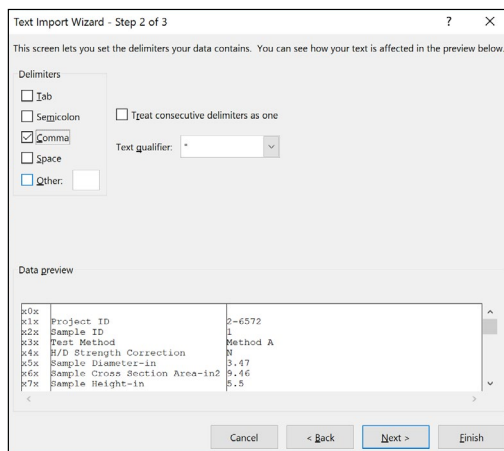

Figure 13: Text Import Wizard Step 2-3

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 (Figure 10) 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.
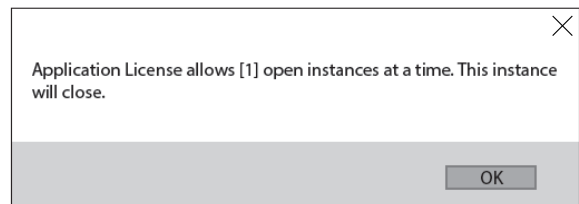

Figure 14: Application License Error Message

If you are not attempting to open more than the allowable windows open Task Manager. If you see **Soil Cement Test**, select it from the list then click **End Task**. Now try reopening the Soil Cement Software.
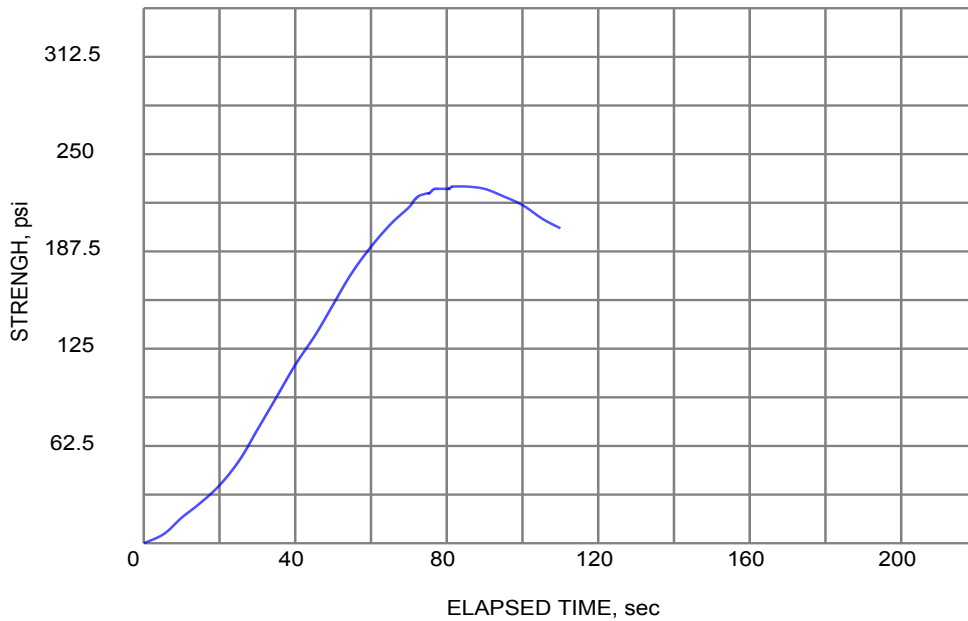
COMPRESSIVE STRENGTH OF SOIL-CEMENT CYLINDER

ASTM D1633

SAMPLE ID:	**7298**
METHOD:	**Method A**
H/D CONVERSION USED:	**None**
SAMPLE DIA., in:	**3.47**
SAMPLE HEIGHT, in:	**5.5**
CROSS-SECTION AREA, in2:	**9.46**
DATE TESTED:	**6/22/2018**
AGE OF SPECIMEN:	**14**
SPECIMEN MOISTURE, %:	**9.1**
LOAD RATE, psi/sec:	**3**
PEAK LOAD, lbf	**2,165**

COMPRESSIVE STRENGTH, psi: **229**

Equipment: HM-396, HM-418, HMA-129B

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