

HMA-611 Unconfined Compression 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

Gilson Unconfined Compression Data Acquisition Software automatically records, and graphs load and displacement measurements used to calculate the unconfined compressive strength of cohesive soils. Real-time 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 D2166. These calculations as well as a strain curve are included on the test report generated by the software

Gilson Unconfined Compression Data Acquisition Software offers a variety of benefits including:

- User friendly interface
- Quick and easy installation and updates
- Generates professional testing reports
- Capable of exporting data into 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 to use the Unconfined Compression Data Acquisition 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 compatible equipment with the Unconfined Compression Software. Please contact Gilson Technical Support to inquire about compatibility of transducers and load cells not listed below.

Displacement Transducer	HM-739 or HM-740
Load cell	HM-428D, HM-430D or any Gilson load cell of adequate size
Filter paper	HMA-773 or other filter paper of adequate size
Plastic discs	HMA-109



Figure 1: Typical unconfined compression test setup

Figure 1 is a typical unconfined 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.

NOTE: 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.

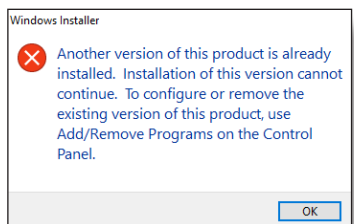


Figure 2: Installation error message

2. Run the **UnconfinedSetup** 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 (Figure 2), follow the prompts and uninstall the previous version of the software. Once installation is complete, close the installer.
3. Eject the USB containing installation files and insert the USB security key. Open the Unconfined Compression Data Acquisition Software. Click **Help** along the toolbar (Figure 3) 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.

SETTINGS AND CONTROLS

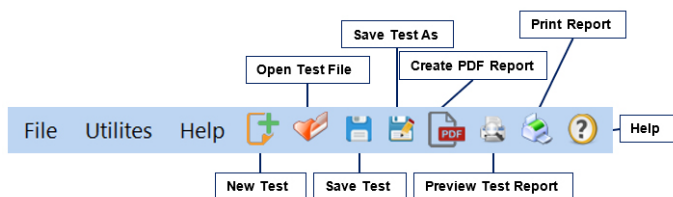


Figure 3: Toolbar

The top toolbar (Figure 3) consists of icons used to start, open, save and create test reports. These commands are also listed under the **File** dropdown menu.

The application settings (Figure 4) can be found under the **Utilities** dropdown menu on the top toolbar. Test type, 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 will be displayed on the report generated at the completion of a test. These settings remain saved for future testing. There is no need to reenter these settings when opening the program or starting a new test.

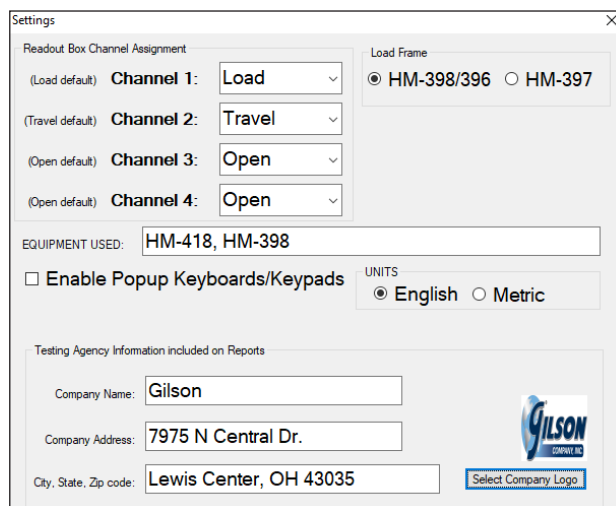


Figure 4: Applications settings

RUNNING A TEST

NOTE: Familiarize yourself with the software by using practice mode. To use practice mode simply click on the box labeled “Practice.” In this mode a data readout box is not needed to explore the software’s full functionality.

1. Prepare your sample in accordance with ASTM D2166. Enter the sample info in the fields at the top right of the window (Figure 5). These values will be included in the final test report. Once entered, click “Set File” to designate a file location for the test data.

Sample Info, File Location			
Project:	Unconfined	Client:	Materials Lab
Project ID:	1508	Sample Diameter, in:	2.875
Test Date:	2/ 8/2019	Sample Height, in:	5.7
Boring ID:	7298	Sample Moisture, %:	20
Depth:	5 (ft)	Sample Dry Density, pcf:	116
Soil Type:	Silty Clay		
Set File			

Figure 5: Sample Info and File Location tile

2. Set the recording frequency for the test under the **Run Test** section (Figure 6) of the software. The software will automatically record every 5 second unless specified otherwise. The Auto Stop function can also be selected here to stop recording data when the force drops below peak load by a specified number of pounds or at a specified percent strain.

Run Test			
Record every (s):	5	<input type="checkbox"/>	Auto Stop test when:
Test Speed 0.0285-0.114 in/min			
Start Test		Stop Test	
Ht/Dia Ratio:	Strain Rate, %/min:	Max Displacement:	
Peak (Failure) Reading:		Max Strain:	
Peak Stress:	Peak Load:	At Displacement:	
		At Strain:	

Figure 6: Run Test options

3. Place the sample in the load frame and seat the cross arm. Once seated, click **Start Test** (Figure 6) then select **UP** on the load frame to start the platen advance. The software will continue to collect data until the travel has reached 0.500in 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.

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.

EXPORTING DATA TO SPREADSHEET APPLICATION

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 dropdown menu.

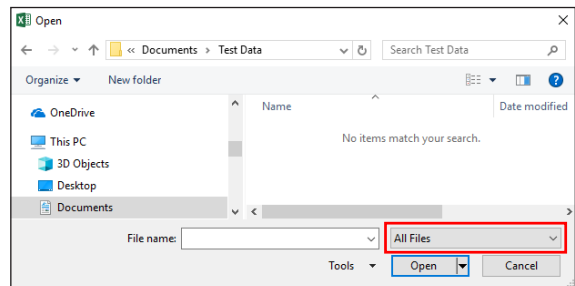


Figure 7: Excel File Explorer

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.

Text Import Wizard - Step 1 of 3	
The Text Wizard has determined that your data is Delimited.	
If this is correct, choose Next, or choose the data type that best describes your data.	
Original data type	
Choose the file type that best describes your data:	
<input checked="" type="radio"/>	Delimited - Characters such as commas or tabs separate each field.
<input type="radio"/>	Fixed width - Fields are aligned in columns with spaces between each field.
Start import at row:	1
File origin:	437: OEM United States
<input type="checkbox"/> My data has headers.	
Preview of file H:\Reports\Unconfined\UC_unc.	
1 k0x, ,	
2 k1x, Project,	
3 k2x, Boring ID,	
4 k3x, Boring Depth,	
5 k4x, Sample Diameter, 2.875	
Cancel	< Back
Next >	Finish

Figure 8: Text Import Wizard Step 1

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

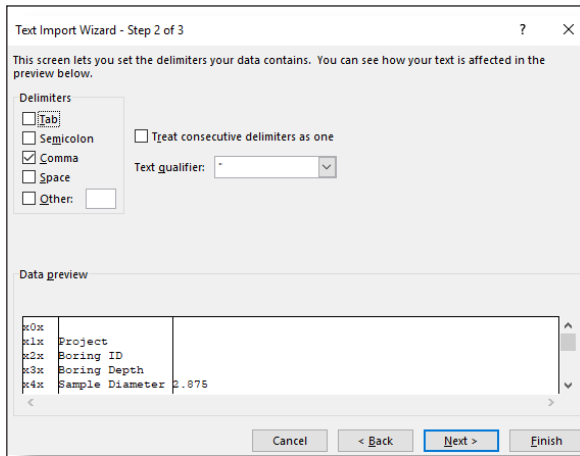


Figure 9: Text Import Wizard Step 2-3

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 Gilson at **1.800.444.1508** or **customerservice@gilsonco.com** to purchase additional licenses.

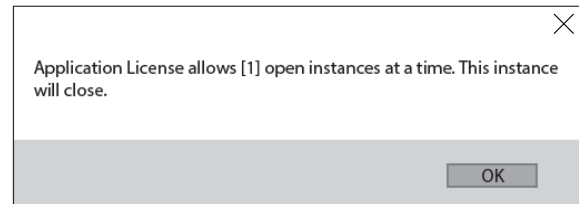


Figure 10: Application License Error Message

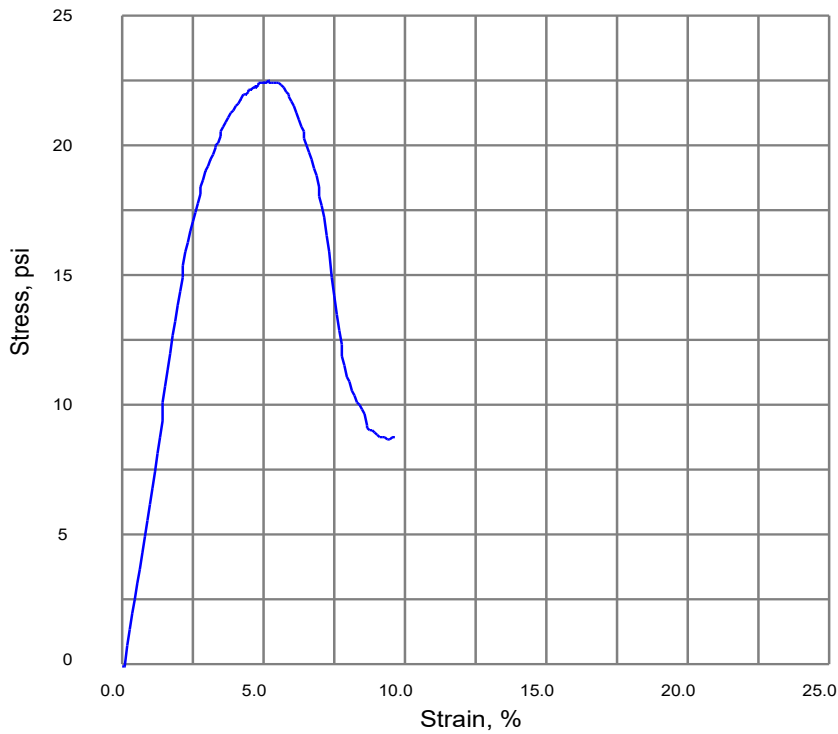
If you are not attempting to open more than the allowable windows open Task Manager. If you see **UnconfinedCompression**, select it from the list then select **End Task**. Try reopening the Software.

Unconfined Compressive Strength of Cohesive Soil

ASTM D-2166

Boring No:	7298	Sample Diameter, in:	2.858
Boring Depth, ft:	9	Sample Height, in:	5.751
Date Tested:	11/26/2018	Sample Moisture, %:	15.3
Stress @ Failure, psi:	22.46	Sample Dry Density, pcf:	2.0
Strain @ Failure, %:	5.18	Height/Diameter Ratio:	2.0
		Strain Rate, %/min:	0.8
		Max. Load lbf:	144.1
		at Displacement, in:	0.2980

Soil Type: SLC



Equipment: Gilson HM-418 HM-398



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Project: Unconfined
Project ID: 1508
Client: Materials Lab