6752 CBR/LBR Data Acquisition Software

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

Karol-Warner CBR/LBR Data Acquisition Software automatically records and graphs data during either CBR or LBR testing. Data points and calculations are determined in accordance with ASTM D1883 and AASHTO T 193, or Florida FM-5-515 specifications. The data is displayed in real time in a tabular and graphical format. At the conclusion of a test this data can be used to generate a PDF report or imported into spreadsheet applications such as Excel for further processing.

The CBR/LBR Data Acquisition Software offers a variety of benefits when performing CBR and LBR tests.

- 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 Karol-Warner CBR/LBR Data Acquisition Software.

Data Readout Box	6572 or 6574
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 Karol-Warner equipment compatible with the CBR/LBR Software. Please contact Karol-Warner Technical Support to inquire about compatibility of transducers and load cells not listed.

Displacement Transducer	6152 or 6153
Load Cell	Any Karol-Warner load cell of adequate capacity
Penetration Piston	7010-A, 7010-B, or comparable penetration piston
Mold	7011, 7011M, or another manufacturer's CBR/LBR mold

Figure 1: Typical test setup with laptop computer

Figure 1 is a typical CBR test setup. Comparable load frames, molds and penetration pistons can also be used, but Karol-Warner data acquisition components are required for use.

INSTALLATION

1. Two USB devices are included with the software: A Karol-Warner flash drive containing the installation files and a small, black USB security key. Insert the Karol-Warner 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.karolwarner.com**. Log into your "My Account" to access the "Software Downloads" page.

Rev: 04/2020
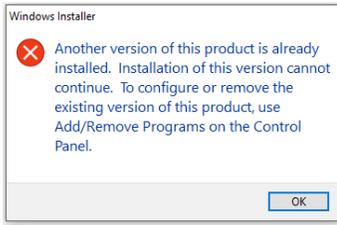
Figure 2: Installation error message

2. Run the **CBRSetup** 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 CBR/LBR Software. Click **Help** along the toolbar (Figure 4) 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
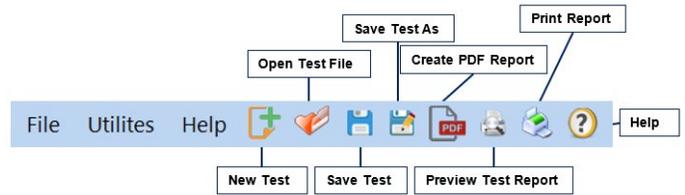
Figure 3: Toolbar

The top toolbar (Figure 4) of the Software 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.
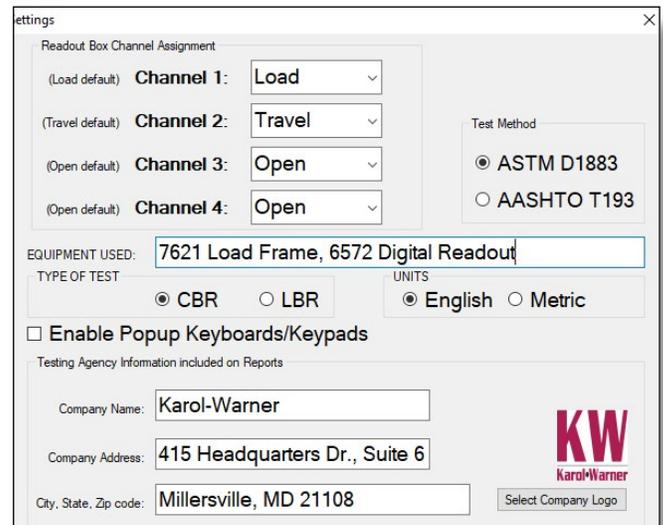
Figure 4: Program settings

RUNNING A TEST

1. In the application settings (Figure 4), confirm that the appropriate test, CBR or LBR, is selected then **Save & Close** the settings window.

2. Enter the Project/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.
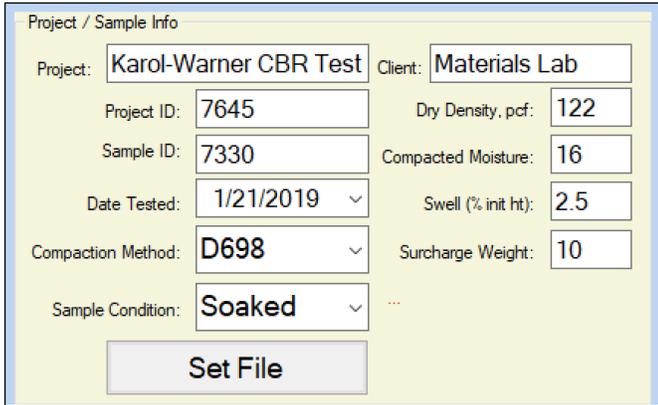
Figure 5: Project/Sample Info tile

3. Ensure the correct piston diameter is entered (Figure 6). This diameter will be used in the final calculations.

4. Place the sample in the load frame and seat the piston. 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.
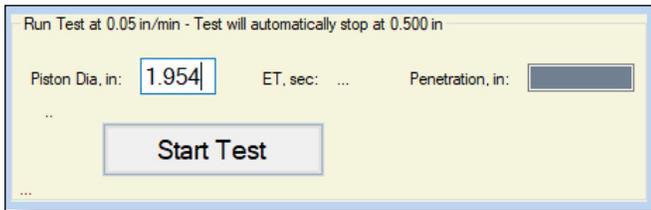
Figure 6: Run a test

5. 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. An example test report is located on page 5 of these operating instructions.

EXPORTING DATA TO SPREADSHEET APPLICATION

To export spreadsheet compatible test data:

1. Open spreadsheet application. Click **File > Open > Browse** to locate the test file(s). In the bottom right corner of the file explorer (Figure 13) select **All Files** from the drop-down menu.
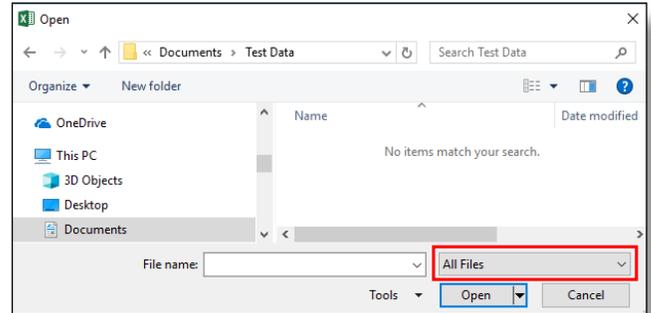
Figure 7: Excel File Explorer

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 (Figure 14) will appear. Select **Delimited** then click next.
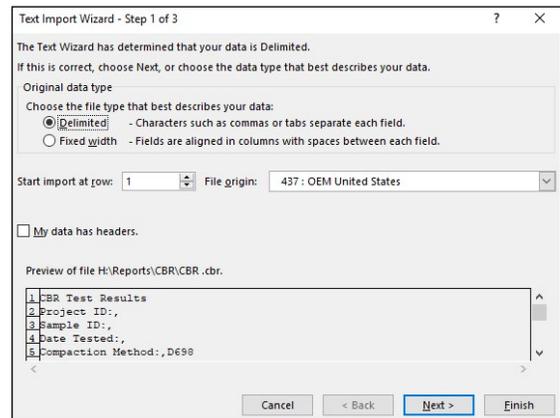
Figure 8: Text Import Wizard Step 1

5. Uncheck the box labeled **Tab** (Figure 15) and select the box labeled **Comma**. Select **Next** then **Finish**.
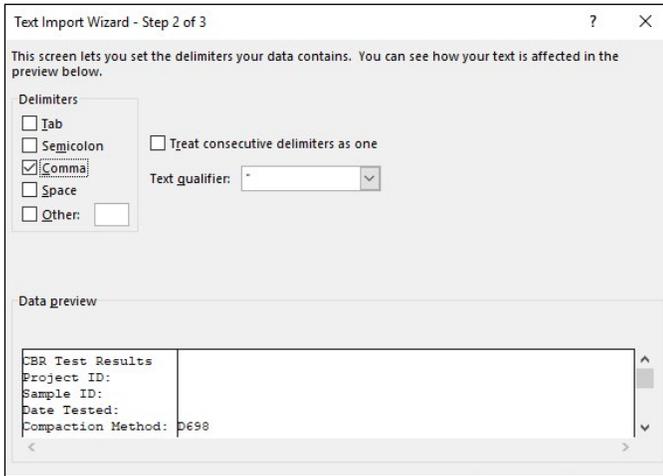
Figure 9: Text Import Wizard Step 2-3

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

TROUBLESHOOTING

Software is not identifying serial port connections

Confirm that 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 16) 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 Karol-Warner at **1.800.999.7645** or **customerservice@karolwarner.com** to purchase additional licenses.
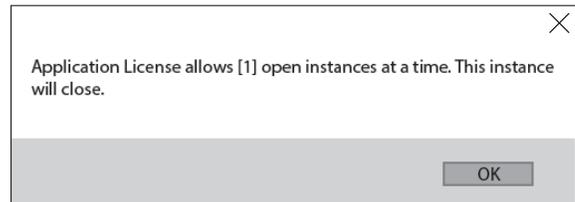
Figure 10: Application License Error Message

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

CALIFORNIA BEARING RATIO (CBR) OF SOILS

ASTM D1883

SAMPLE ID:	**7330**
DATE TESTED:	**9/11/2018**
COMPACTION METHOD:	**D698**
SAMPLE CONDITION	**Soaked**
DRYDENSITY:	**112.3**
COMPACTED MOISTURE:	**14.8**
SWELL (% INIT HT):	**0.2**
SURCHARGE:	**10**
PISTON DIA:	**1.954**
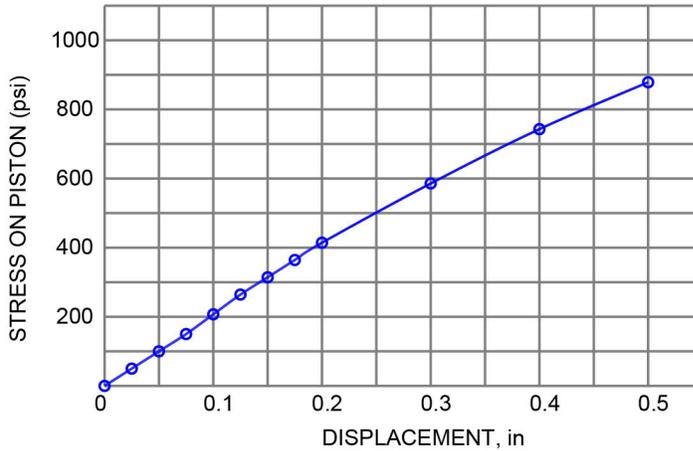
Individual Readings:

Reading	Elapsed Time (s)	Penetration (in)	Load (lbf)	Stress (psi)	CBR (%)
0	0.0	0.0000	10.0	3.3	
1	36.4	0.0250	145.0	48.4	
2	71.4	0.0501	290.0	96.7	
3	106.8	0.0750	448.0	149.4	
4	144.4	0.1001	620.0	206.8	20.7
5	179.8	0.1251	786.0	262.1	
6	212.8	0.1500	942.0	314.1	
7	246.0	0.1750	1094.0	364.8	
8	278.6	0.2001	1236.0	412.2	27.5
9	408.4	0.3000	1767.0	589.2	
10	530.6	0.4001	2231.0	744.0	
11	642.6	0.5001	2635.0	878.7	

Equipment: 7621 Load Frame, 6572 Digital Readout

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Project: **Karol-Warner**
Project ID: **7645**
Client: **Materials Lab**