Larson Systems Inc.

060-1000-0084-01
Excel Template for Valve Spring Set Building and Certification

About This Manual
This manual could contain technical inaccuracies or typographical errors. Changes are periodically made to the information contained herein. These changes will be incorporated in new editions of the manual.

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1   OVERVIEW

This manual explains the use of the Larson Systems Inc. Valve Spring Certification and Valve Spring Sorting Excel templates. These templates are used in conjunction with the Larson Systems Inc. UTM or SSS computer software and any Larson Systems Inc. spring tester.

This manual will show how each template works and how to alter the template for other uses. Each template uses macros to accomplish the interface to the Larson Systems Inc. UTM and SSS product and other features.

The purpose of the Valve Spring Certification template is to create a certificate for a set of valve springs. The certificate states that all the springs are within tolerance and how closely they are matched. The template is set up to check 8 intake springs and 8 exhaust springs but can be altered by the user for any number of springs.

The purpose of the Valve Spring Sorting template is to sort large groups of springs into matched sets. The user has full control of the overall tolerance of the springs and how closely each set is matched. This is done when the user decides how many sub sets are within the overall tolerance. A large number of sub sets creates closer matched sets.

2   INSTALLING THE LARSON SYSTEMS UTM OR SSS AND THE VALVE SPRING TEMPLATES

This section gives step-by-step instructions for installing the UTM or SSS software.

1) Insert the UTM or SSS CD into a CD drive.
2) The Setup.exe program should run automatically. If it does not, open the CD and the Explorer window and run the setup.exe program.
3) Read and follow the on-screen instructions to install the program.
4) Note the location where the UTM or SSS is installed. This path will be needed later when you set up the Excel templates.
5) Eject the disk.

Larson Systems Inc. suggests that you copy the Excel Templates from the provided CD to a primary file server. These copies should never the altered. When they are to be used, we suggest that they be copied and renamed before opening. This will help maintain the integrity of the originals. The originals on the provided CD also have their Read Only property set.

3   FIRST TIME SETUP

Before the Excel templates can be used, the Larson Systems software must be set up correctly and the Templates should be set for typical use.

3.1 UTM or SSS First Time Setup

This section explains how to set up the software correctly. The SSS and UTM are very similar products. Any picture below uses the UTM product; however, the SSS has the same menu structure.

1) Start the UTM or SSS program.
2) Serial Port Setup.
    a. Open the menu item Options | Setup Port.
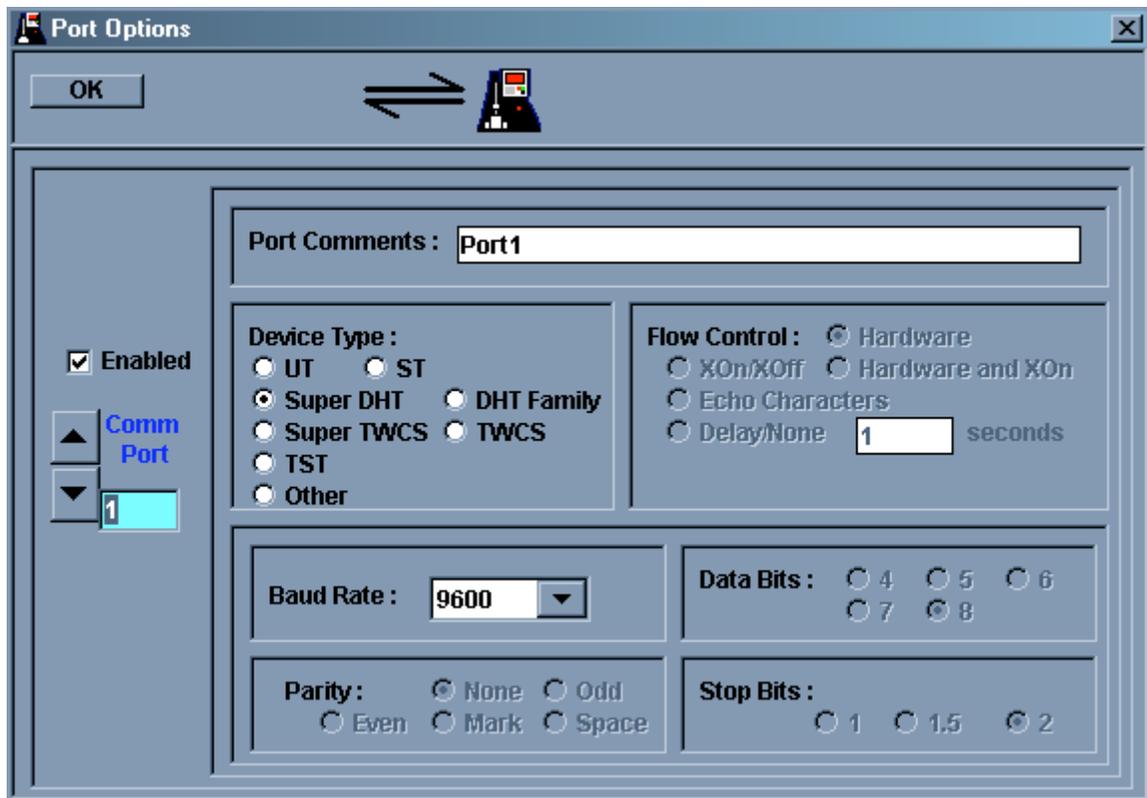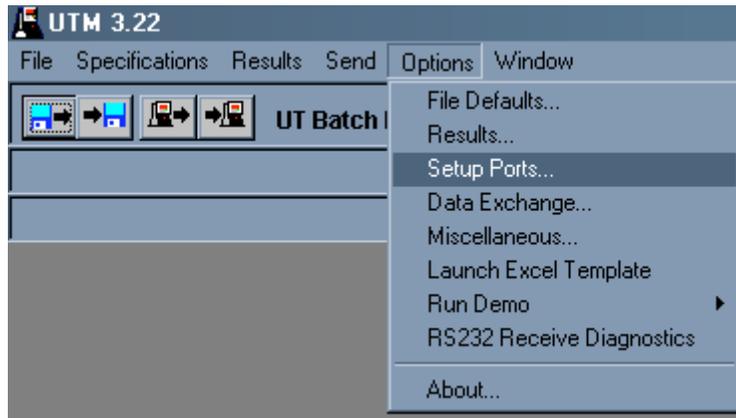
   b. Using the Up/Down arrows on the left, select the RS-232 Serial port to which the tester will be connected. Larson Systems Inc. testers currently use only RS-232 Serial communication. If your computer does not have any serial ports, then you will need a USB to Serial adapter.
   c. Select the correct device from the Device Type section. For FLASH or FLASH Lite testers, use the UT selection. For the Super DHT and DHT testers, make

sure to select the correct device. If the port is set for a Super DHT and a DHT is connected, communication will not occur.

    d. Leave the Baud Rate at 9600.

    e. Type in any Port Comments desired.

    f. Check the Enabled setting above the communications port selection.

    g. Click the OK button to close the Port Options.

3) Data Exchange Setup.

    a. Click the menu item Options | Data Exchange to open the Data Exchange Setup window.
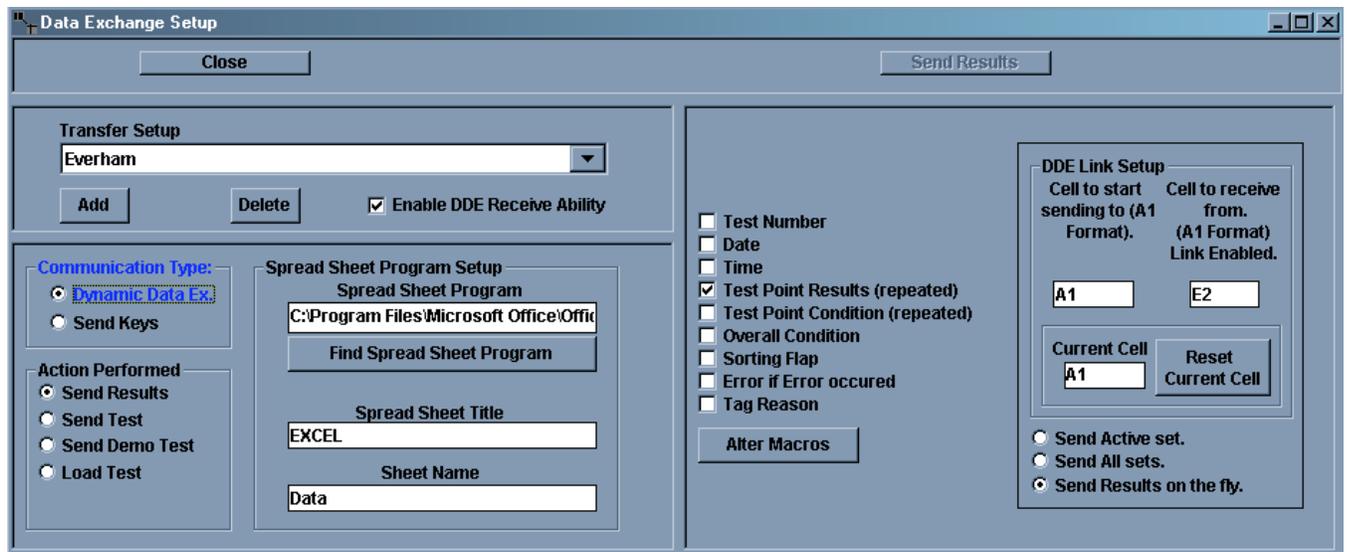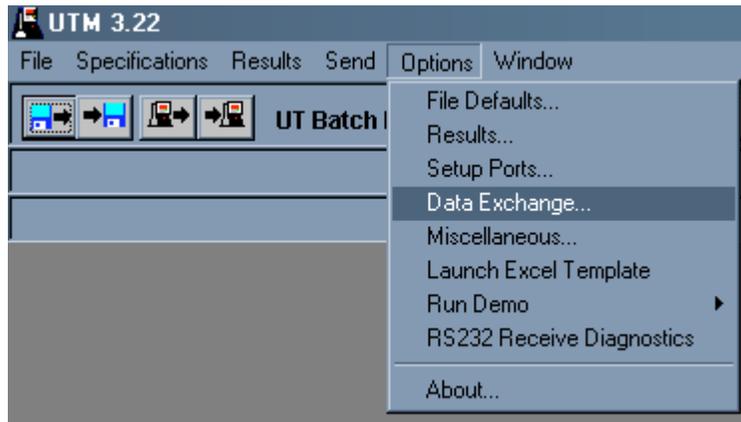
    b. Click the Add button, type in a name for the data exchange setup, and click the Add button.

    c. The Communication Type should be set to Data Exchange as shown in the picture.

    d. Action Performed should be set to Send Results as shown above.

    e. In the Spread Sheet Program Setup, set the following:

        i. Spread Sheet Program. This is the path to the spreadsheet. Click the Find Spread Sheet Program button to open a File/Folder navigation window to find the correct path.

        ii. Set the Spread Sheet Title. For Microsoft Excel, the title should be Excel.

        iii. Set the Sheet Name. This will be the sheet where the data is placed. For the Larson Systems Inc. templates, the sheet is labeled Data.

f. In the check box list in the middle of the window, uncheck all items except for Test Point Results (repeated). This list controls the data sent to the worksheet. For the Larson Systems Inc. templates, only the data is necessary.

g. Click the Alter Macros button.
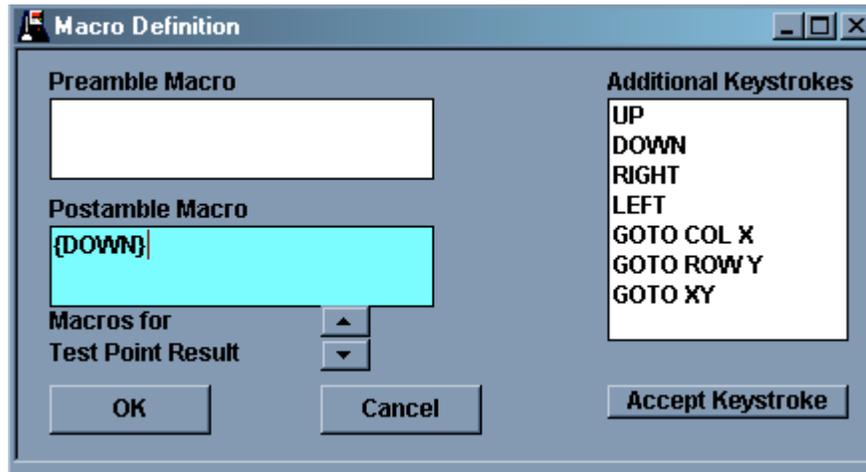
i. Click inside the Postamble Macro section, then double-click on the Down item in the Additional Keystrokes list. This tells the UTM to move down a cell after each result is sent to the spreadsheet. This is necessary for the Larson Systems Inc. templates to function correctly.

ii. Click the OK button to close the windows

h. In the DDE Link Setup section set the Cell to send to item to A1. This specifies the cell where the first piece of data is sent.

i. Set the Cell to receive from section to E2. This is necessary for the bi-directional communication to the template.

j. Select the item Send Results On The Fly. This allows data to be sent to the template as it is received.

k. Finally, check the Enable DDE Receive Ability under the Setup name.

l. Click the close button to close the window.

The First Time Setup for the UTM or SSS is complete. Close the UTM or SSS program.

3.2 Valve Spring Certifying Template First Time Setup

This section explains the suggested first time setup steps for the Excel templates. These steps are given so that the original Larson Systems Inc. templates can be modified once to create new "customer originals" for everyday use. These steps should be performed for each of the Larson Systems Inc. original templates.

1) Copy the Larson Systems Inc. original to a temporary computer, such as your workstation.

2) Rename the copy for easier identification.

3) Open the template. The templates contain un-certified macros. These macros must be enabled for the template to function properly. The Security settings under the Macro section of the Tools menu need to be set to Medium or Low. In the High setting, all un-signed macros are disabled. Under the Medium setting, the user has

the option to enable or disable macros. Under the Low setting, all macros are enabled without user intervention.

4) Switch to the Program Setup tab. In cell B1, enter the path to the UTM or SSS program that was installed in section 2.

5) Switch to the Program (Three Point Test) tab.
    a. Change cells B5 to E5 to the number of the communications port where the tester will be connected.
    b. Change cells B6 to E6 to reflect the tester(s) that may be connected to the computer. Set the cell to ACTIVE if the tester shown in row 3 of the individual columns can possibly be connected to the computer. Set the cell to INACTIVE if the listed tester will not be connected to the computer.

6) Switch back to the Control tab. Save the template and close the spreadsheet.

7) Set the properties of the new template to Read-Only to avoid inadvertently overwriting the original.

3.3 Valve Spring Sorting Template First Time Setup

This section explains the suggested first time setup steps for the Excel templates. These steps are given so that the original Larson Systems Inc. templates can be modified once to create new "customer originals" for everyday use. These steps should be performed for each of the Larson Systems Inc. original templates.

1) Copy the Larson Systems Inc. original to a temporary computer, such as your workstation.

2) Rename the copy for easier identification.

3) Open the template. The templates contain un-certified macros. These macros must be enabled for the template to function properly. The Security settings under the Macro section of the Tools menu need to be set to Medium or Low. In the High setting, all un-signed macros are disabled. Under the Medium setting, the user has the option to enable or disable macros. Under the Low setting, all macros are enabled without user intervention.

4) Switch to the Program Setup tab. In cell B1, enter the path to the UTM or SSS program that was installed in section 2.

5) Switch to the Program (Three Point Test) tab.
    a. Change cells B5 to D5 to the number of the com port where the tester will be connected.
    b. Change cells B6 to E6 to reflect the tester(s) that may be connected to the computer. Set the cell to ACTIVE if the tester shown in row 3 of the individual columns can possibly be connected to the computer. Set the cell to INACTIVE if the listed tester will not be connected to the computer

6) Switch back to the Control tab. Save the template and close the spreadsheet.

7) Set the properties of the new template to Read-Only to avoid inadvertently overwriting the original.

3.4 First Time Tester Setup

Larson Systems Inc. FLASH, FLASH Lite, and DHT tester are set up to work with the Larson Systems Inc. UTM or SSS right out of the box.

The Larson Systems Inc. Super DHT tester must have its RS232 settings set up correctly to work with the UTM or SSS product. Refer to the tester's User Manual for further information on the following settings.

1) Output Format must be set to Data
2) Send Results must be set to Yes
3) The following Data Transfer settings must be set
   a. Send Heading
   b. Send Count
   c. Send Date
   d. Send Time
   e. Send Tab Char
   f. Send Length
   g. Send Force
4) Communication Protocol set to Hardware
5) Communication Baud Rate set to 9600

4 USING THE VALVE SPRING CERTIFYING TEMPLATE

This section illustrates a typical use of the Valve Spring Certifying template.

1) Power on and initialize the tester. Refer to the tester user manual to for the proper method to initialize the tester.
2) Open the template.
3) From the Control tab, fill in the following cells with the appropriate information.
   a. E24 to E30, Company Name, Date, Engine Number, Spring Set Number, Tester Used, Tester Serial Number, and Program.
   b. Cells H24 and H72, Number of Cylinders and Valve Retainer Thickness if one is used.
   c. Testing Units for Force and Length.
   d. Cells B33 to B35, G33 to G35, and K34 to K35, Intake Valve Testing Specifications.
   e. Cells B40 to B42, G40 to G42, and K41 to K42, Exhaust Valve Testing Specifications.
4) Verify that the tester is connected to the computer correctly.
5) Press the *Upload & Test* button. This will transfer the testing specification to the UTM or SSS program and set the program to receive data from the tester.
6) Press the *Clear All Data* button to clear any existing data in the Spring-by-Spring Results table.
7) Begin testing parts on the tester. For manual testers, the data will appear in the Spring-by-Spring Results table as the Send button is pressed. For FLASH and FLASH Lite testers, the results will appear when the test cycle is finished.
8) If a single part needs to be re-tested, press the *Re-Test Single Part* button. A list of parts will be shown. Double-click on the part to be re-tested. A verification window will appear, showing the selected part. When the verification is complete, the selected row's data will be cleared. The next test's data will appear in the cleared row. After the single test is performed, the next test's data will appear at the end of the rest of the data.
9) If the last few parts need to be re-tested, press the *Re-Test to End* button. A list of parts will be shown. Double-click on the first part to be re-tested. A verification window will appear, showing the selected part. When the verification is complete, the selected row's data and all data to the end of the list will be cleared.

10) When all parts are tested, press the Save button to bring up a File Save As window to save the results with a unique file name. Press the Print button to generate a hard copy of the Print tab.
11) If another set of springs is to be tested, repeat these test steps, beginning at Step 3.

5   USING THE VALVE SPRING SORTING TEMPLATE

This section covers a typical use of the Valve Spring Certifying template.

1) Power on and initialize the tester. Refer to the tester user manual for the proper method to initialize the tester.
2) Open the template.
3) From the Control tab, fill in the following cells with the appropriate information.
   a. Cells D27, D28, and D30 to D34, Company Name, Date, Spring Set Number, Lot Number, Tester Used, Tester Serial Number, and Program.
   b. Cell F28, Valve Retainer Thickness, if one is used.
   c. Cell F31, number of sort groups within the tolerance range.
   d. Cell F33, the Auto Sort check box. When this option is checked, the spring data is automatically re-arranged based on the selected group.
   e. Cells B37 to B39, F37 to F39, and J38 to J39, Valve testing specs.
   f. Testing Units, for both Force and Length.
   g. Select the Auto Sort group criteria, the option buttons above the right side of the Spring-by-Spring results. If the Auto Sort option from step d is checked, the results will automatically sort based on the four groups selected.
4) Click the *Upload Test* button. This will transfer the testing data to the UTM or SSS program.
5) Click the *Clear All Data* button to clear any data in the Spring-by-Spring Results table.
6) Click the Begin Testing button. This will set the UTM or SSS and the template to begin receiving data.
7) Begin testing the parts. After each part is tested, the 4 sort groups will be filled in. Sort the part by the desired group. The number of parts that can be tested is limited only by the row limitation of the spreadsheet.
8) When all parts are finished, click the *Stop Testing* button.
9) If any part needs to be re-tested, use the mouse to click into the row of the part to be re-tested and click the *Re-Test #XX* button. The template and UTM/SSS will be set to receive one test's worth of data.
10) If a new sorting group is desired, select the desired group's option button and click the *Sort* button. The entire list will sort based on the selected option button.
11) When all parts are tested, click the Save button to save the results to a file with a unique name.
12) When all parts are tested, click the Print button to print a hard copy of the results.
13) Click the *Clear All Data* button to clear the results table and begin anew.
14) If a new set of testing specifications is desired, change the appropriate cells mentioned in step 2 above, click the *Stop Testing* button if it is shown, click the *Upload Test* button to transfer the new testing specifications to the UTM/SSS program, and finally, press the *Begin Test* button to begin receiving data.