# Appendix 3 V1.1B Features

The v1.1B of the Valve Spring Tester adds several new features, which are described in this Appendix. In addition, the Automatic Spring Tester was released after the original publication of this manual, so some of its features will be described here also.

# Calculation and Accuracy Improvements:

A new Shim report has been added, which lets you specify different shim requirements and the program automatically finds the best shims for each spring to meet those requirements. See Figure A9.

A Valve Lift input has been added to the Quick Check screen so you can quickly find a seated height which meets your seated force requirements and quickly shows bind height clearance. See Figure A10.

A new, faster "Gen 3" USB logger has been released, which records more data and provides for better accuracy. You need this v1.1B to read that logger.

# **Operation:**

Graph printouts now have no border around the graph, so there are no broken lines on the left side of the printed graph. See Figure A11.

Program has added Graph Format option to display the Legend Titles to appear in 3 different font sizes, larger than the standard font. See Figure A12.

Program now allows up to 100 data points for graphs and/or reports.

Program now automatically checks for proper USB logger, and warns you if you have chosen the wrong one.

Program now disables the 'Settings' option on main screen until you have opened a previous test as a template.

There is a new Preference to allow for showing when calibration numbers do not match those of the master tester specs. This could cause confusion to some users. The Preference also lets you set this toy 'Always', which is very handy for troubleshooting.

Company Logo is now displayed on Main Screen.

Figure A7 New, Faster Mini Logger (looks same from outside as previous logger)



Program has added Export to Excel option to screen for saving ASCII data files. See Figure A14.

Program has added a Browse button screen for saving ASCII data files. See Figure A14.

Program has several improvements so it is more accurate when calibrating force from a known spring. It also has more explanation about calibrating with a known spring and further identify if you must include a retainer for doing the calibration.

When switching program or file from Metric to English units or vice versa, the program now also converts the Quick Check settings and Spring Height scales in the Electronics screen.

Program has a New Preference of "Warn About Slowing Data Recording" which you can set to 'No' to stop the "nag" screen we added.

Program now warns you if tester encounters a force which is close to over-ranging and damaging the load cell. This can be due to too force from user, or testing springs which are too large for the range of load cell. The program may be able to still use the data for a valid test, but just warn you.

Starting with Windows Vista, the Operating System works best if the data files for programs are stored in a "public" folder, and not with the program files under C:\Program Files or C:\Program Files(x86) folder. For some brands of computers, this is not a big problem, for other brands, and or newer operating systems like Windows 8 or newer, this can be a big problem. Therefore, starting with this v1.1 B, we are storing the data files for Vista, Windows 7, Windows 8, Windows 10 in the folder path of:

### C:\Users\Public\Public Documents\Performance-Trends-Data\Valve-Spring-Tester-Files

Therefore, if you want to copy data files using Windows Explorer, or other types of browsers, start looking in this location. See Figure A15.

## Automatic Valve Spring Tester:

The Automatic Spring Tester uses an air cylinder to stroke the valve spring into bind, then allowing the spring to return to is fully open height, and then retract back to it's fully retracted position. All these different steps may need to be "tweeked" depending on the air pressure supply, length and/or force of the valve springs, or your particular spring tester. Some of the items listed below identify different settings in the program to tweek these steps. See Figure A13.

Notes:

Since the Automatic Spring Tester is powered by compressed air, the amount of force the tester can generate depends on the air pressure. The standard tester with a 4 inch cylinder can generate about 12 lbs of force for each PSI of air pressure, or about 1500+ lbs at 130 psi shop air pressure. The optional High Pressure tester with a 5 inch cylinder can generate about 19.5 lbs for each PSI of air pressure, or about 2500+ lbs at 130 psi shop air pressure. A clean, steady supply of high pressure shop air will help the Automatic Tester operate reliably and accurately.

You must choose one of the "Automatic tester" or the "Gen III" logger types under Settings, then Tester Calibration to see all of these features in the program.

There is an Option in the Electronics Recording Screen, under "Automatic Tester Utilities" called Maximum Compression Time, the amount of time before the tester assumes there is not enough force for bind, and stops compressing. Click on Options, then Automatic Tester, then Maximum Compression Time to change this. The default of 15 seconds is typical a good setting.

There is an Option in the Electronics Recording Screen, under "Automatic Tester Utilities" called "Retract Setpoint". The default is 10 units, but can be adjusted by the user. If you find the tester is not retracting once the spring is fully open, try increasing this number.

There is an Option in the Electronics Recording Screen, under "Automatic Tester Utilities" called Number of Pre-Test Cycles. Many engine builders believe you get a more accurate, repeatable number if you run the valve spring into bind a few times before you make your final measurement. These Pre-Test Cycles are sometimes called "bull nosing". Zero 0 is the default setting.

There is an Option in the Electronics Recording Screen, under "Automatic Tester Utilities" called Safety Setting – Minimum Clearance. This is the amount of clearance allowed between the 2 plattens. This should be set low enough to be less than your spring's bind height, but not so low as fingers could be crushed.



In Preferences, there are also some Automatic Spring Tester settings to note:

Click on Settings, then Preferences, then General Operation tab at the top. The Preference of "Auto Tester, Pause after Bind" is the amount of time the tester will set at bind before retracting. If the tester seems to be "hanging up" at the bind condition, try changing this setting. Zero (0) is the default setting.

Click on Settings, then Preferences, then General Operation tab at the top. Set the Preference of "Auto Tester has High Force Option" to Yes, if you have the High Force tester with 5" diameter air cylinder. This adjusts the cycle parameters some, and accurately shows the approximate air pressure be supplied to the tester. No is the default setting.

The approximate air pressure being supplied to the Auto Tester is now displayed on the recording screen. This can help you troubleshoot problems if the spring is not being compressed sufficiently or quickly.

An info message has been added for if the spring tester exceeds the 'Auto Tester Max Compression Time' and possible reason being 'Digital Retract Offset'.

The Auto Spring Tester now stops it's test cycle when it encounters a force which is close to over-ranging and damaging the load cell. This can be due to too much air pressure, or testing springs which are too large for the range of load cell. The program may be able to still use the data for a valid test, but just warn you.







New graph style eliminates the lines to the left and right of the graph. These lines could appear broken on some styles of printers.





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