Appendix 9 New Features in v4.2

The Dyno DataMite Analyzer has had many updates since this user manual was written for the original v3.2 for Windows. Here is a brief listing of some of the features released in Version 4.2.

Here's a list of the most notable features which have been added or changed. For a complete list of changes, check the readme.doc file on the website right below the demo program download option (with the spinning disk). Some of the features listed here apply to only the Professional or Enterprise Edition, and it will be noted. Anything which applies to the Professional "Pro" version also applies to the Enterprise Edition.

> **The website will have the most up-to-date information. This can be found under Support, then FAQs, then Dyno DataMite…, or Support, then User Manuals, or Programs, then Data Loggers, then either Dyno DataMite or Dyno DataMite – Enterprise Edition.**

New Features and Hardware Enhancements

This new version can read the new 12 bit DataMite IIIs and DTM4s. What a particular logger is (10 or 12 bit), or what type of logger recorded a particular test file is displayed in the DataMite specs screen. These new 12 bit loggers provide a slight improvement in accuracy for recording analog data, like torque, pressure, etc. They also have some improvements in recording weather data like barometer and humidity, and better capabilities for controlling digital outputs (for relays, lights, etc). Fig A9.1.

Dyno Controller for water brakes with position feedback now sets the Differential multiplier to x100 and the Integral multiplier to /100 so the integral can be more finely tuned. Fig A9.1.

Program now loads the Max RPM from Test Conditions screen as the "Max RPM to Control" when loading Defaults in the Dyno Controller screen.

Made several changes in RPM Controller settings to better load proper settings into controller, including new feature in controller firmware 1.80 for the Integral effect only being able to ADD to the load, not remove load.

The program is now more reliable and better at showing proper messages when you click on the Find button for finding Com Ports and doing Detailed Checking of USB DataMite loggers.

Screen warning about using commas (,) for decimal points is now always shown 'on top of other screens. This is a common setting outside the USA and can cause some problems.

Program now better ensures the Current Readings screen is refreshed correctly, to display proper features.

Program now has more explanation about the Engine RPM calibration and what it means, and displays 'pulses per rev' info in calibration screen. Fig A9.2.

Program has a new method of opening pages on the internet, which should work better for a wider range in internet browsers.

There is now a Preference setting to let you keep the Graph on the main screen always at the same graph scales. This can cause problems if you open files for engines with different power levels than you normally run, or the engines you run produce quite different power levels. However, if you motors are always about the same power, this new Preference makes it easier to spot changes with the graph on the main screen. This preference also lets you have the program warn you if the current power curves are not appearing on the graph because you have set these limits very different than correct for the current power curves. Pro and Dyno Enterprise Edition only. Fig A9.3 and A9.4.

Program now redraws and refreshes Main Screen when you resize main screen.

If you change the printer within the program to something other than the computer's default printer, the program now restores the default printer (and printer orientation) when it shuts down.

Program now prints logo and test piece picture in proper aspect ratio, without distortion. Pro and Dyno Enterprise Edition only.

You can now hide the Graph Multiplier column in the DataMite screen. Most users were not using these 'Graph Multipliers' and hiding them makes for a less confusing screen. (Check Appendix 8 New Features in v4.1 for an explanation of 'Graph Multiplier'.) Pro and Dyno Enterprise Edition only. Fig A95.

Starting and Running a Test, including Current Readings Screen

Program now has an option for power curve on Current Readings screen. You can choose a couple of different locations for this on the Current Readings screen, and the line thickness for the graph. The graph will also include the graph from the previous test you ran and saved. It is important to understand that these graphs are "raw" data, without the refinements of better averaging, more accurate acceleration calculations, inertia corrections, weather corrections, etc. They will let you see trends, like if the HP has peaked, but will not exactly match the final power curves produced. Dyno Enterprise Edition only. Fig A9.6.

There are now more enhancements so the 6 additional bar gauges on the right side are shown correctly. Dyno Enterprise Edition only. Fig A9.7. Notes:

- These extra 6 bar gauges can only display raw data, like pressures, temperatures, etc. They can not display calculated numbers like HP, total fuel (adding or subtracting 2 fuel flow readings), or slip.
- If you have selected to display the same data on more than 1 bar gauge, only the first bar gauge will display it. The 2nd bar gauge will not update with the data you have requested.

Exhaust thermocouples on the Current Readings screen are now shown larger and thicker for easier reading. The warning color is now a dark yellow instead of bright yellow, to show up better on white background.

The program now remembers what you are displaying at the bottom of the Current Readings screen for DataMite III and DataMite 4, either "RPMs, Internal TCs, more", '"Standard Analogs", or "Accel, GPS, more". These are now remembered and restored when you shut down the program.

If you have a DataMite III or DataMite 4, the current readings screen now always updates the Engine RPM signal (first frequency signal) at about 10 times per second, even if you have slowed down the display readings. All other readings will be displayed more slowly if your computer screen can not keep up. This is because Engine RPM is critical, and is typically needed to be updated as often as possible. Notes:

- If you do not show a display for Engine RPM or are not using the first channel for anything, then this feature has no advantage.
- This reading will be updated at a fast rate even if you are asking for Engine RPM to be calculated from dyno RPM.

The 2 round gauges on the Current Readings display now also show the number values of the gauge. This is so you can be more precise at reading Engine RPM. Fig A9.8.

Program now explains why changes in 'Starting a New Test' screen are not saved if you don't start a new test.

Made changes when starting a new test to better choose file name numbering to provide for better sorting of file names in the future, suggesting xxx001 instead of xxx1.

The default size for the Current Readings screen is now larger, assuming newer computers have higher resolution screens.

The website has lots of tutorial movies on program and hardware operation, and troubleshooting. Visit it and look for Support, then Movie Demo Files. Movies are also available on performancetrends on youtube. Fig A9.12.

New Calculations and Outputs

The program has eliminated all references to a Preference for adding or subtracting fuel flow channels for total fuel flow. The program now allows you to specify fuel flow channels as either To the Engine or Return from Engine. This replaces the

previous Preference of 'Fuel for BSFC' and is better because you can change this setting from test to test. With a Preference setting, all tests had to have the same setting. Fig A9.2.

Now the program displays the proper Label for Fuel Flow and Air Flow graphs which use a frequency channel.

Fixed a minor bug where the program would not do fuel flow calculations correctly if the fuel Multiplier was exactly 1.000.

The Trace Recorder on the Current Readings screen now has an option to display an average value. This lets you more precisely see minor changes in performance as you make modifications, like to spark or fuel through an engine controller. Pro and Dyno Enterprise Editions only. Fig A9.8.

There is a new option for producing comparison reports between 2 runs. You can show the difference as a ***difference***, or as an ***improvement***. If you select improvement, the Improvement column shows how much the current test is better than other tests included in the report. Difference shows the opposite, ie a 10 ft lb improvement will be shown as a -10 ft lb difference. Fig A9.9.

Made provision for using "Other RPM" for measuring engine crankshaft position when measuring Spark Advance, when using dyno RPM which is not measuring engine RPM, like on a Chassis Dyno, or any dyno which is not a direct drive connected to the engine. Dyno Enterprise Edition only.

The program has a new Preference for using US time format (mm/dd/yyyy) or European time format (dd/mm/yyyy) for dates.

Program now will display maximum chassis dyno MPH or KPH at end of the run, and the test run time for all dyno runs. Test Time and Chassis Dyno Max MPH or KPH now appears in Test Summaries for both printed reports and graphs. Fig A9.10.

File Handling

Files and folders you delete now are actually sent to the Recycle Bin so they can be recovered later if you want. The program now displays a proper message when aborting the deleting of a file if you cancel out of sending to the Recycle Bin. Fig A9.11.

Field to display Folders (customers) when opening a new test has now been enlarged so you can completely view long folder names. Fig A9.11.

If you make a copy of a folder and the folder already exists, the program asks if you want files from folder being copied from to be ***added*** to the existing folder. Fig A9.11.

Program is now better at ensuring the config file is not corrupt when it is being written. This should avoid problems where you could open the program and it does not remember your Reg Name or Reg Code or any other settings.

Fixed some bugs in the “Filter” feature for finding and opening an old test file to work more reliably.

Now when you open a file which has a Graph Name specified in the History Log, that Graph Name stays with the file. Previously it was restored to the default as being the File Name.

Program has a new Preference of "Use Alternate Location for Data Files" to allow you to more easily share data files on a network.

Figure A9.1 New, 12 bit DataMite III and 4 and Controller Features

New 4.2 can take advantage of new controller features in firmware v1.80 and later. Refer to controller instructions for details.

New 12 bit DataMite III and DataMite 4 with improved weather sensors and digital outputs (DataMite 4 only)

12 or 10 bit identified here in DataMite specs screen.

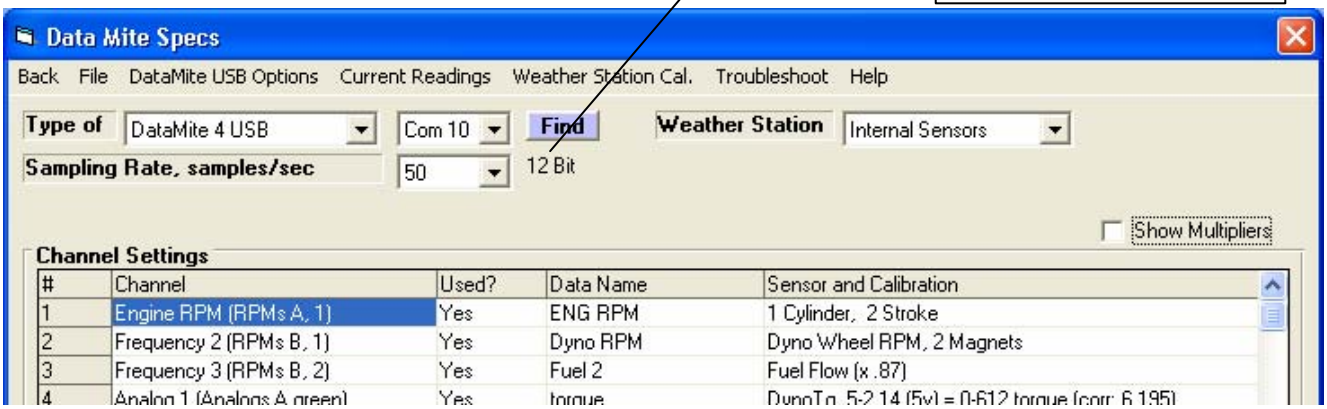
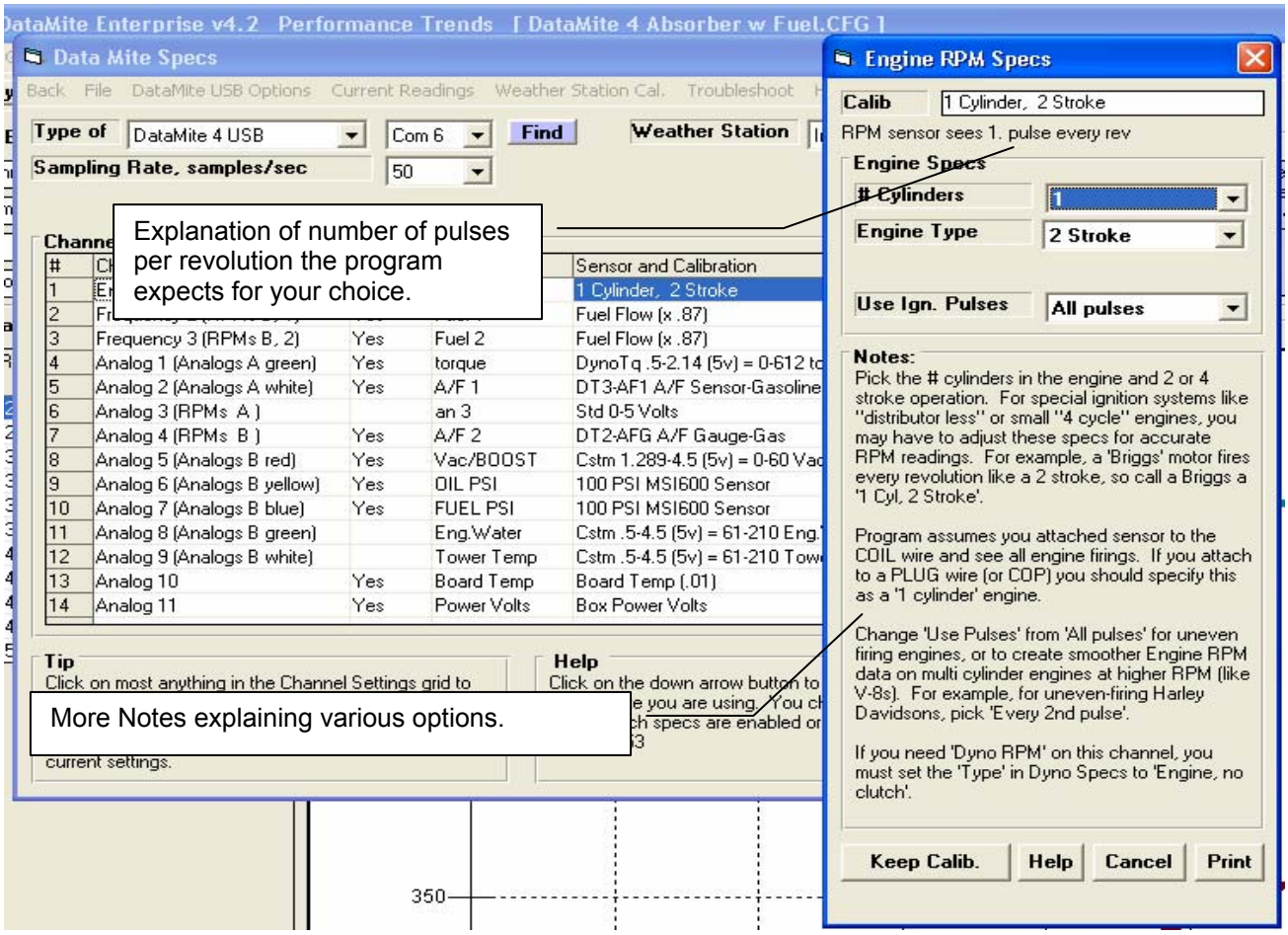
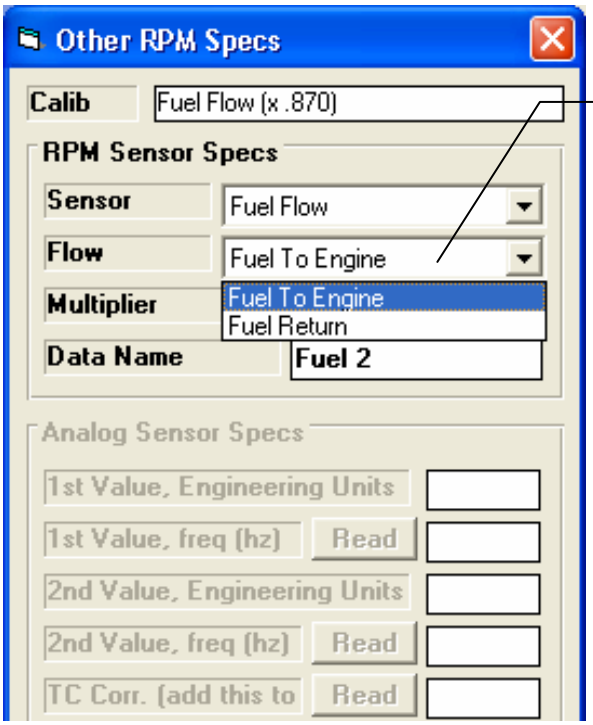


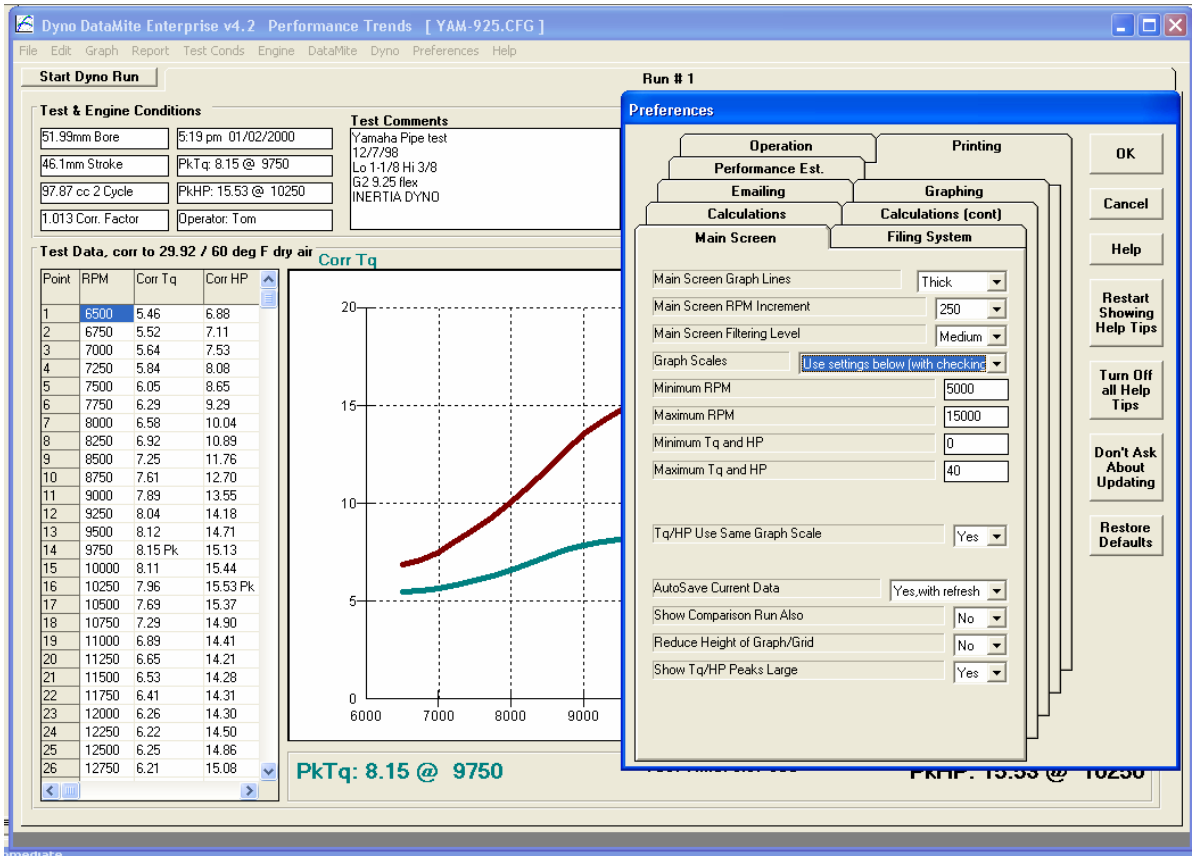
Figure A9.2 Better Explanation of RPM Calibrations and New Fuel Options

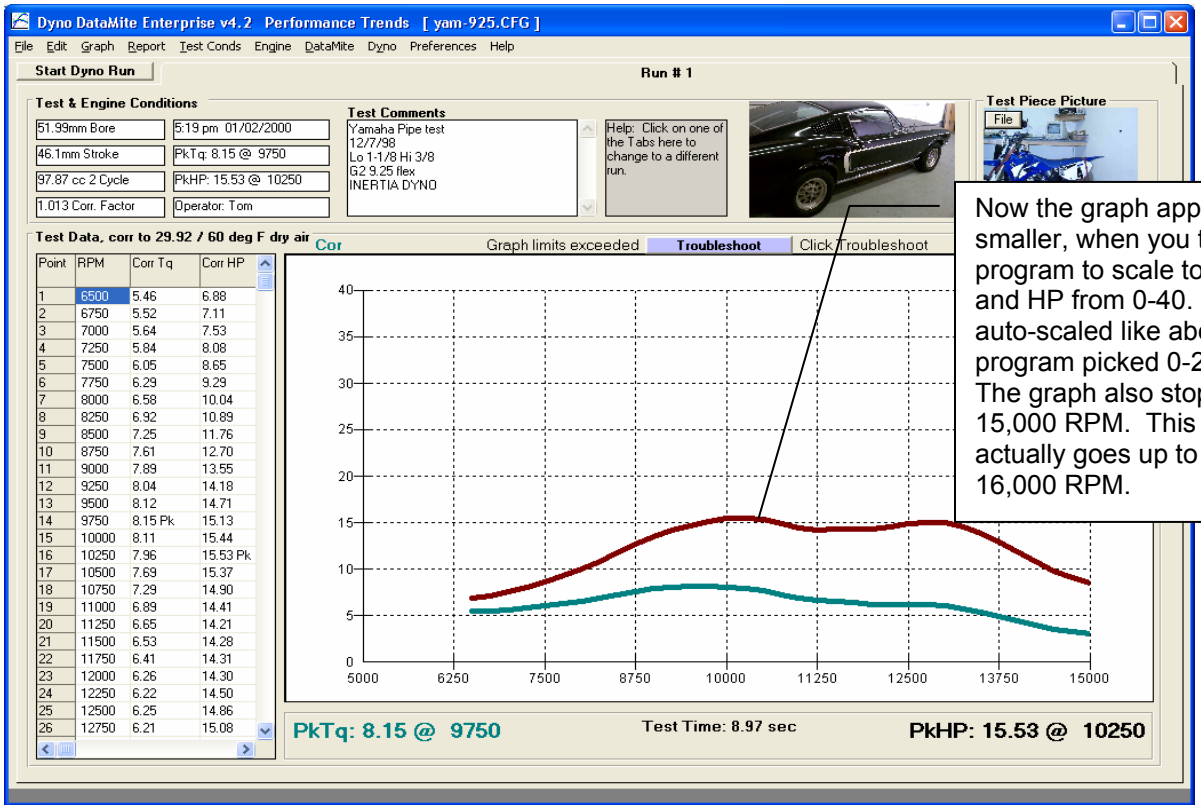




When entering a Fuel Flow sensor calibration, you now have a choice if this is fuel to the engine, or Fuel Return. If you have 2 fuel flow sensors both marked Fuel to Engine, these fuel flows will be added together for BSFC and “Total Fuel” calculations. If you have 2 fuel flow sensors, one marked Fuel to Engine on one Fuel Return, the Fuel Return is subtracted from Fuel To Engine for BSFC and “Total Fuel” calculations.

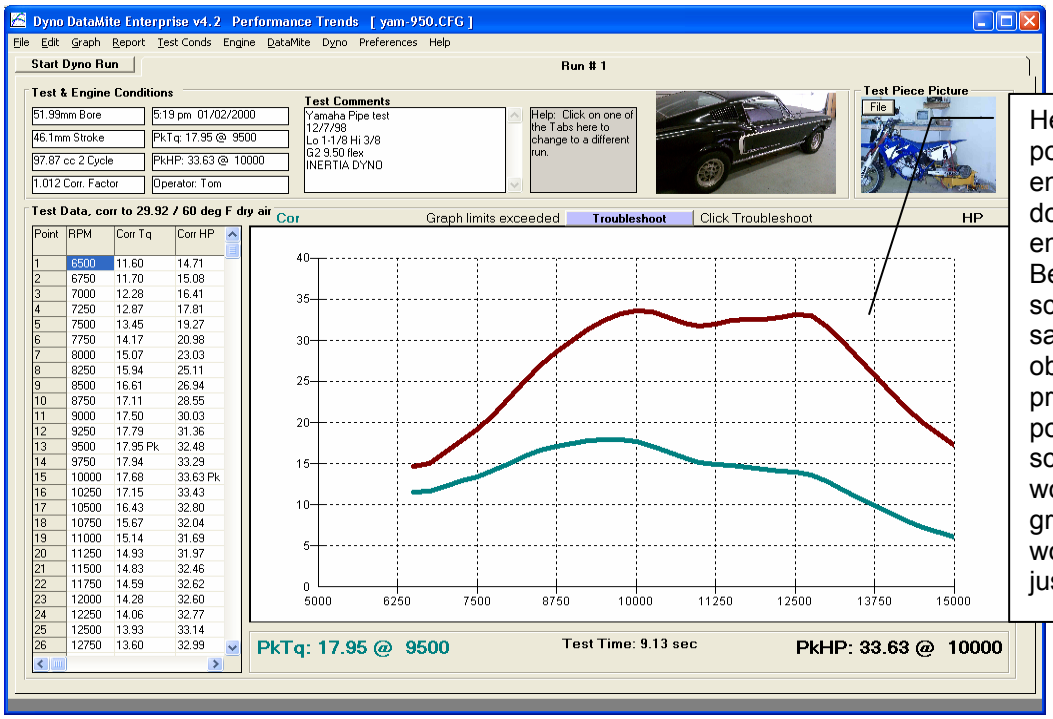
Figure A9.3 Setting Graph Scales on Main Screen



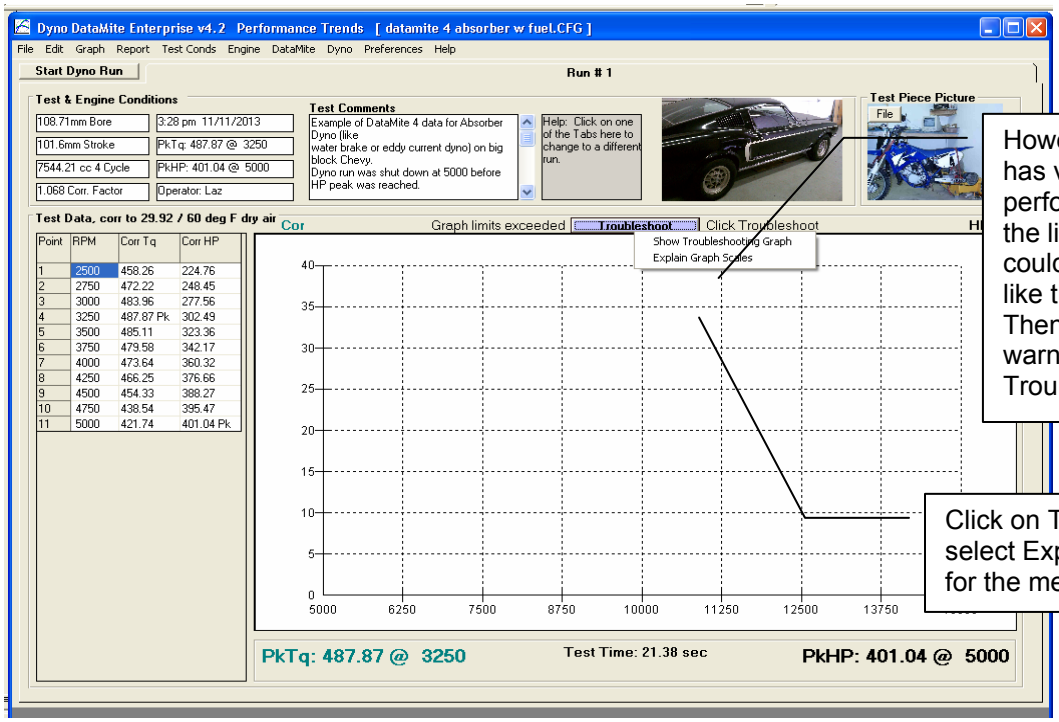


Now the graph appears smaller, when you tell the program to scale torque and HP from 0-40. When auto-scaled like above, the program picked 0-20 HP. The graph also stops at 15,000 RPM. This data actually goes up to almost 16,000 RPM.

Figure A9.4 Setting Graph Scales on Main Screen, cont



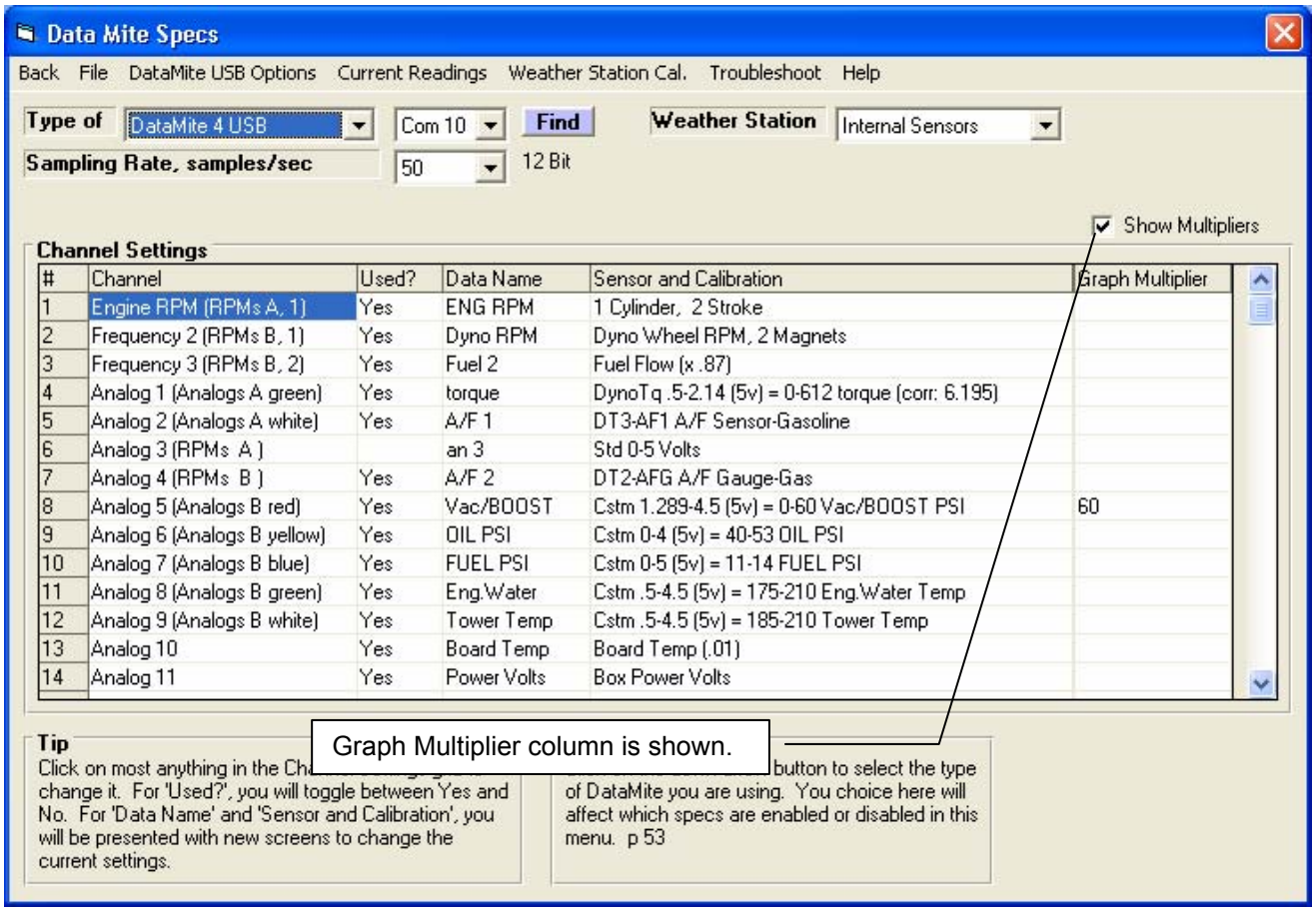
Here's an example power curve from an engine producing about double the power of the engine in Figure A9.3. Because the graph scales have stayed the same, it is immediately obvious this engine produces a lot more power. If it was "auto-scaled" both graphs would completely fill the graph and the difference would not be obvious by just looking at the graph.



However, if the graph has very much different performance than what the limits expect, you could see no graph at all, like this V8 produced. Then you could see warnings next to this Troubleshoot button.

Click on Troubleshoot and select Explain Graph Scales for the message box below.

Figure A9.5 Showing or Hiding Graph Multipliers



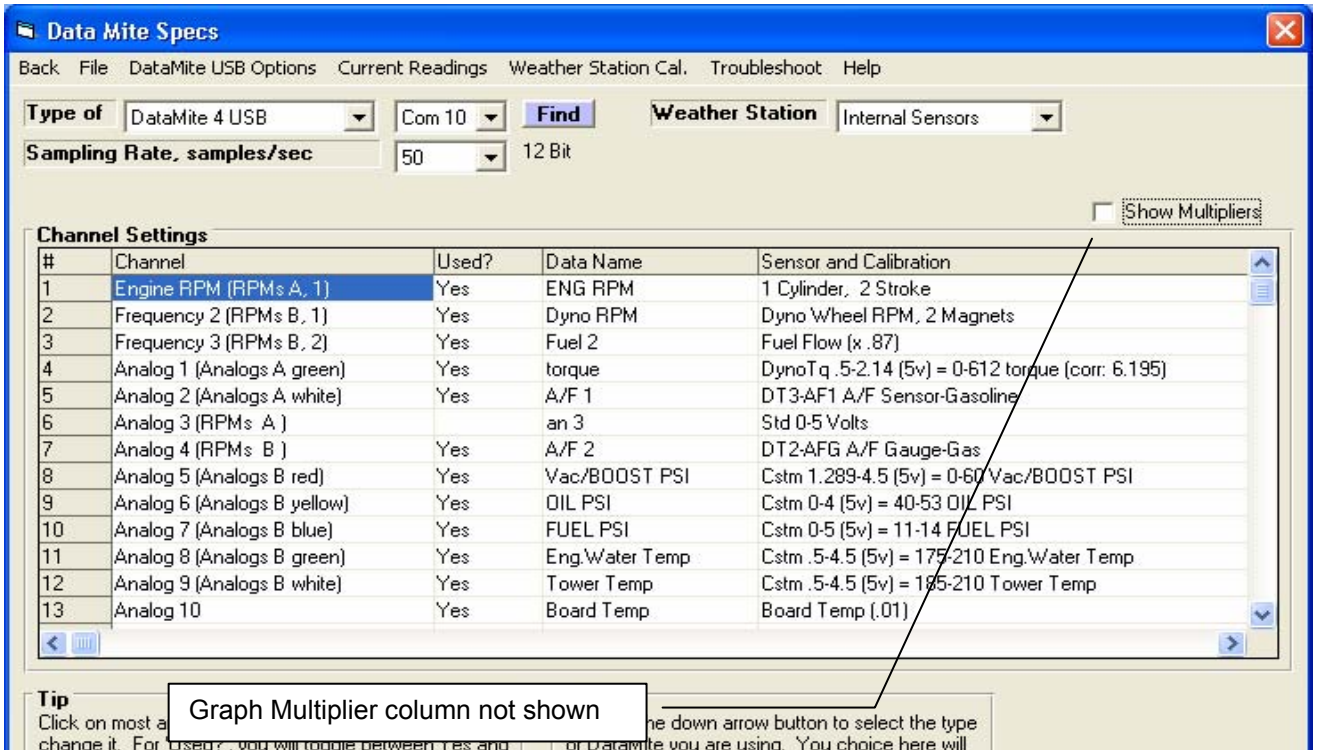


Figure A9.6 New 'Real Time' Graph, Enterprise Edition Only

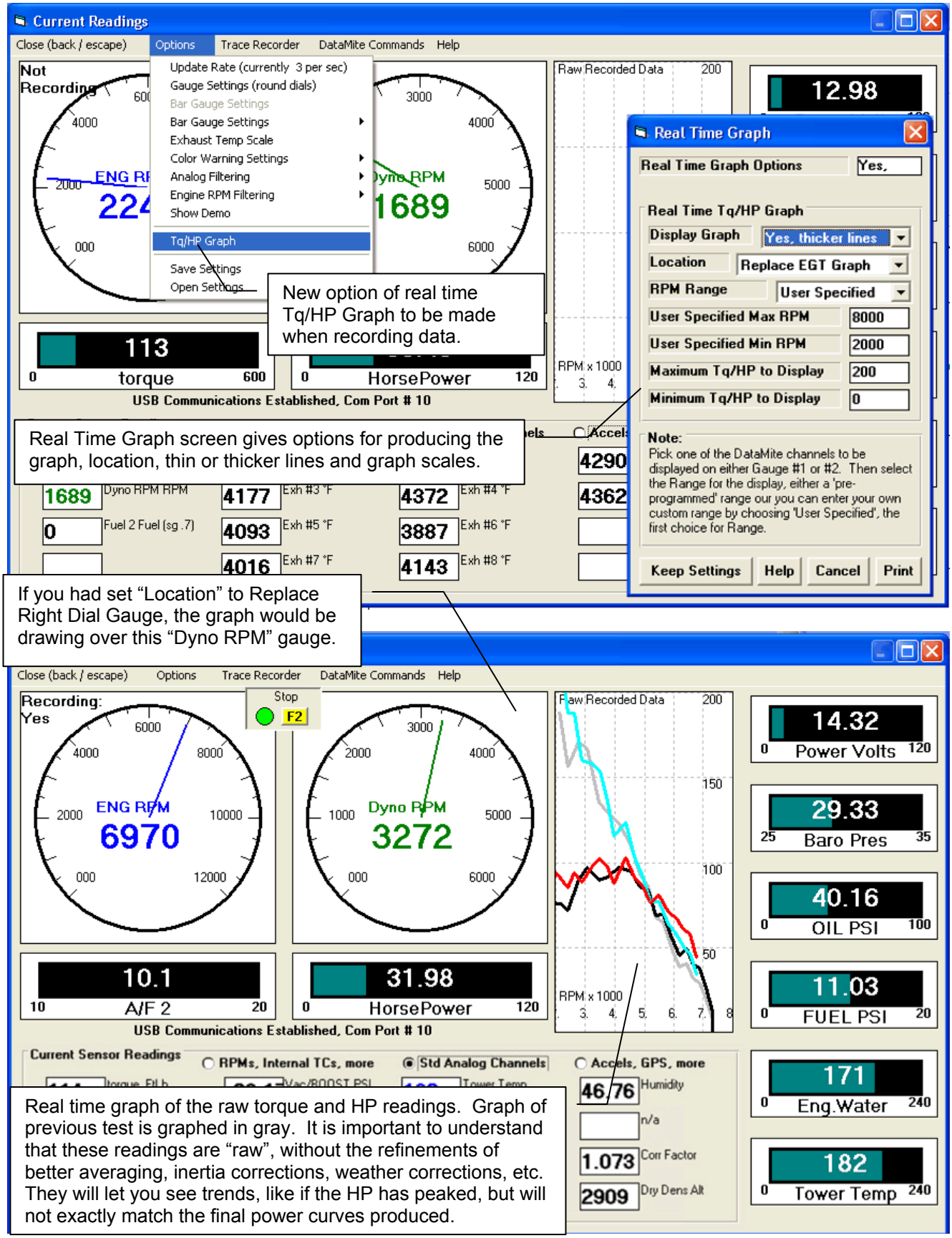
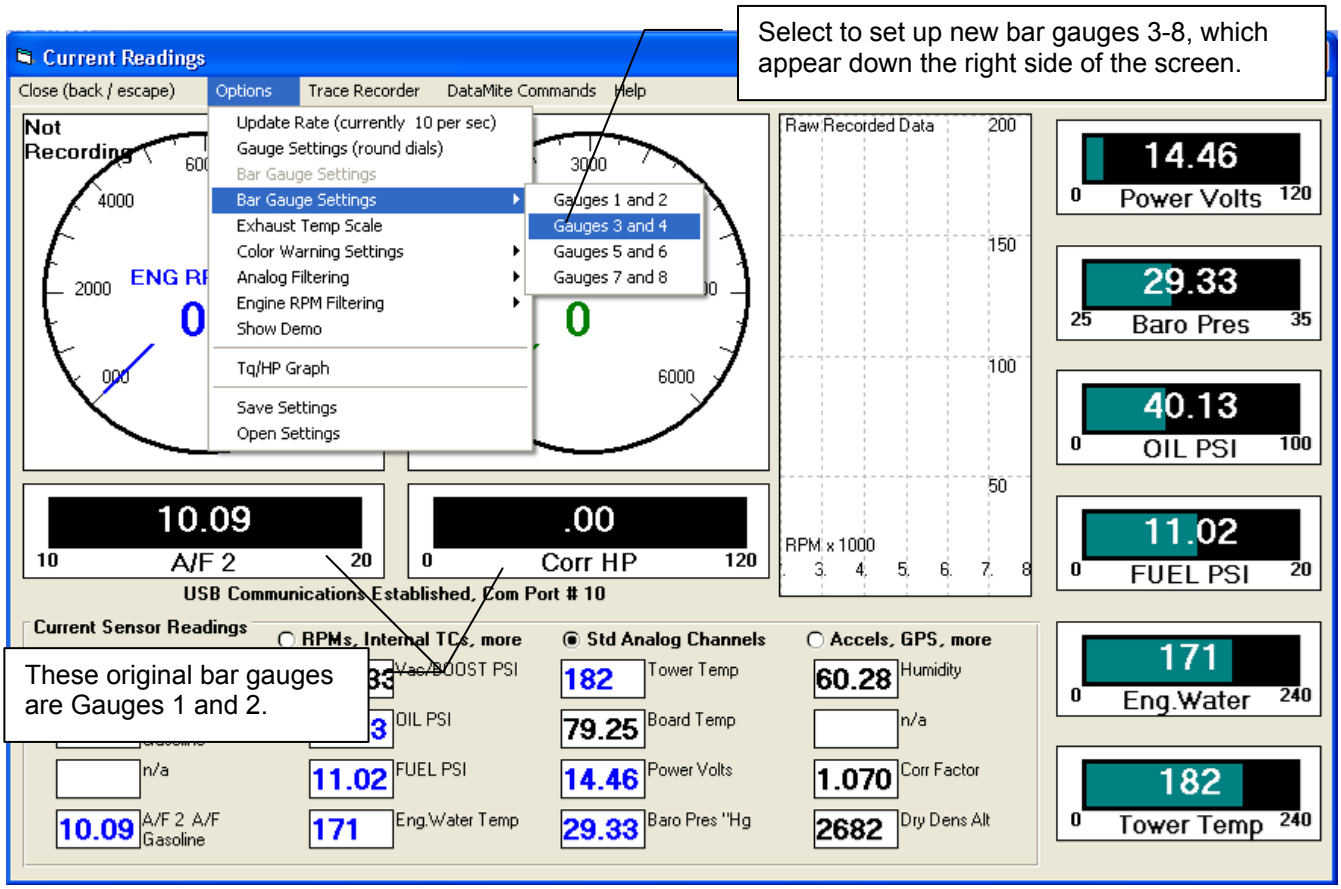
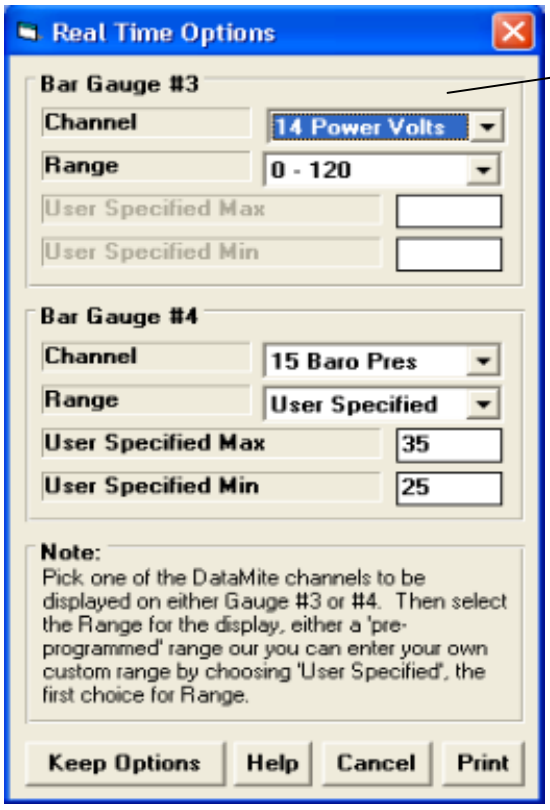


Figure A9.7 6 Six New Bar Graphs, Enterprise Edition Only





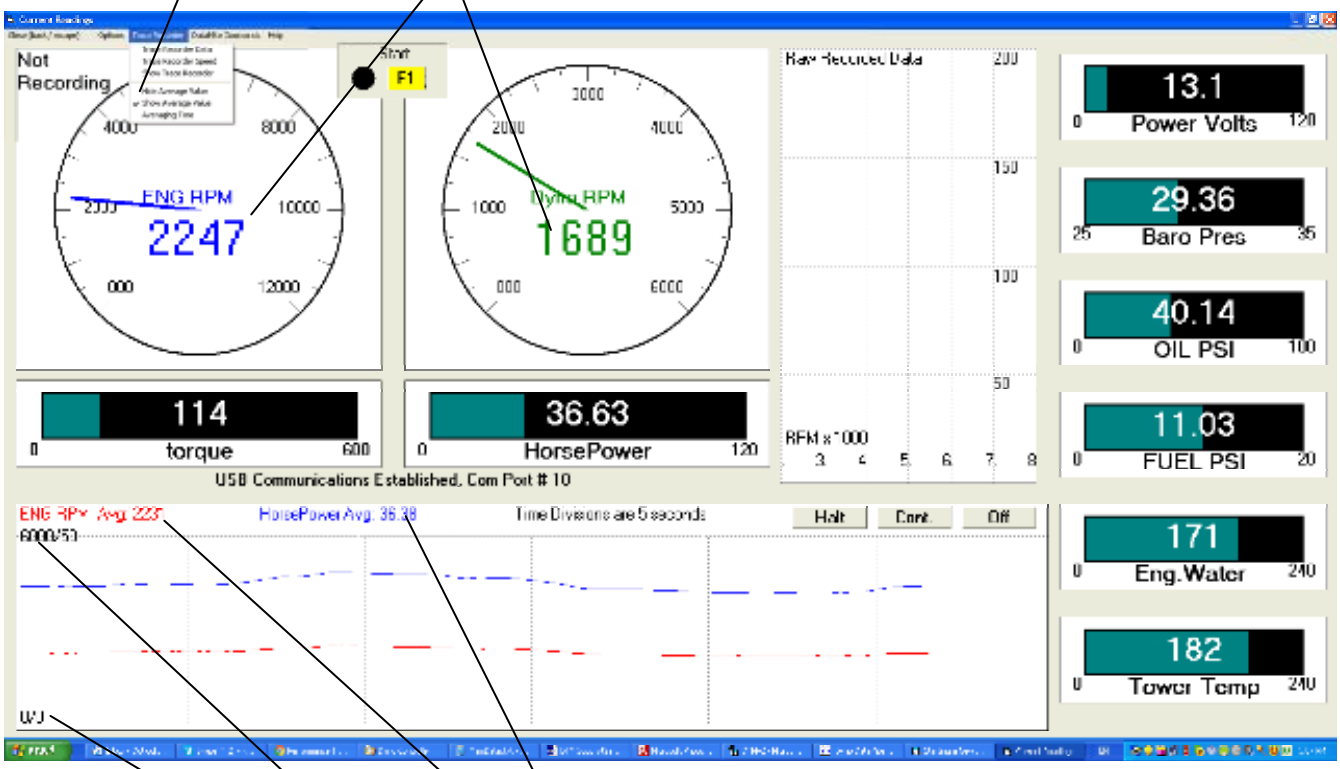
Here you select which channels you want displayed on the bar gauges, and the range you want to see.

IMPORTANT NOTES:

These extra 6 bar gauges can only display raw data, like pressures, temperatures, etc. They can not display calculated numbers like HP, or slip.

If you have selected to display the same data on more than 1 bar gauge, only the first bar gauge will display it. The 2nd bar gauge will not update with the data you have requested.

Figure A9.8 Trace Recorder now shows Average Readings and Numbers on Round Gauges



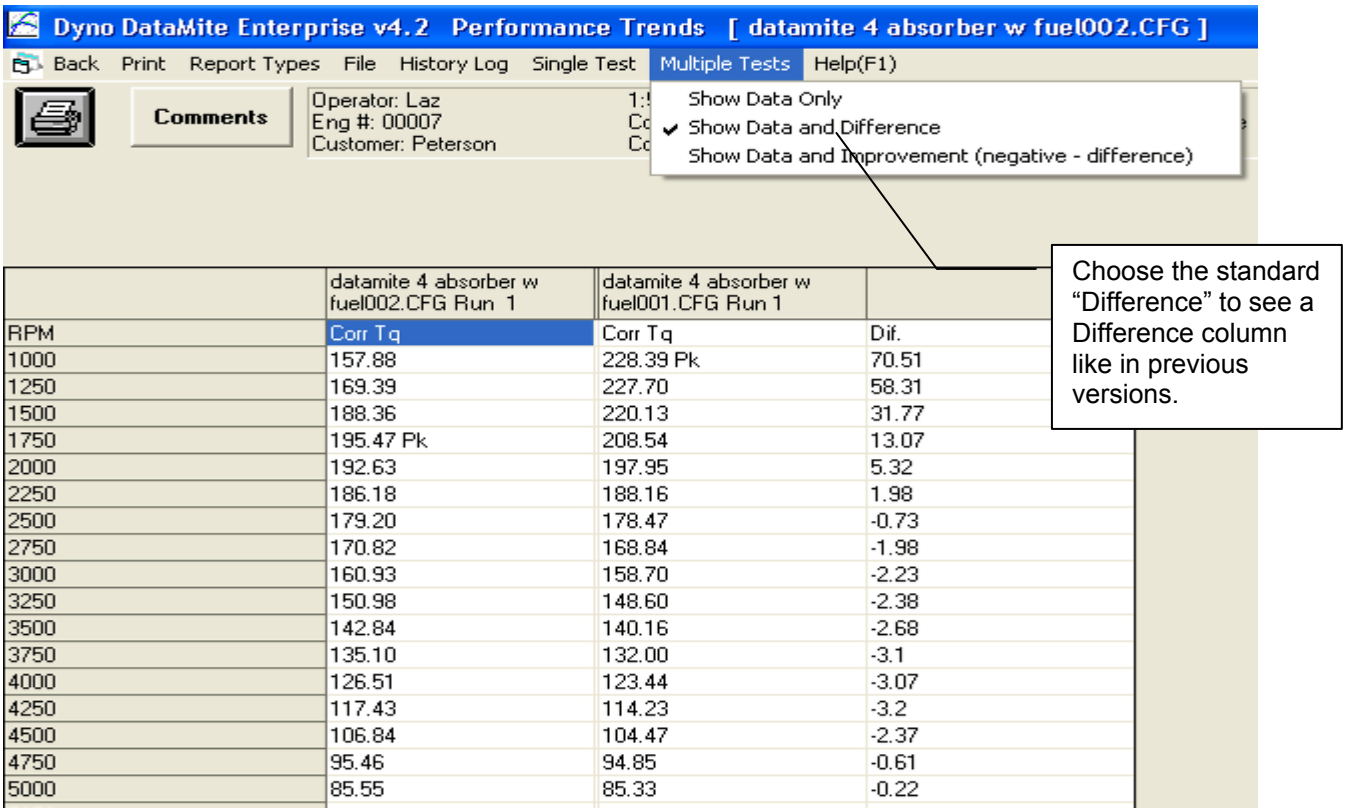
Click on Trace Recorder for these options to include or hide the average readings. Increase the Averaging Time to produce more stable numbers, but at a slower update rate.

Numbers now displayed on round gauges.

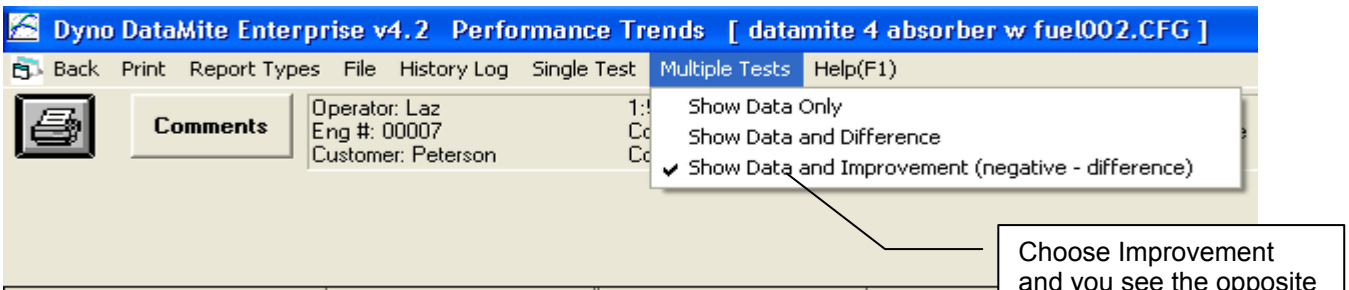
Average Readings are shown here.

The high and low range for the trace recorder for both channels is shown here. Without the Average Readings, the range is shown where the Average Readings are displayed.

Figure A9.9 New “Improvement” Option for Reports

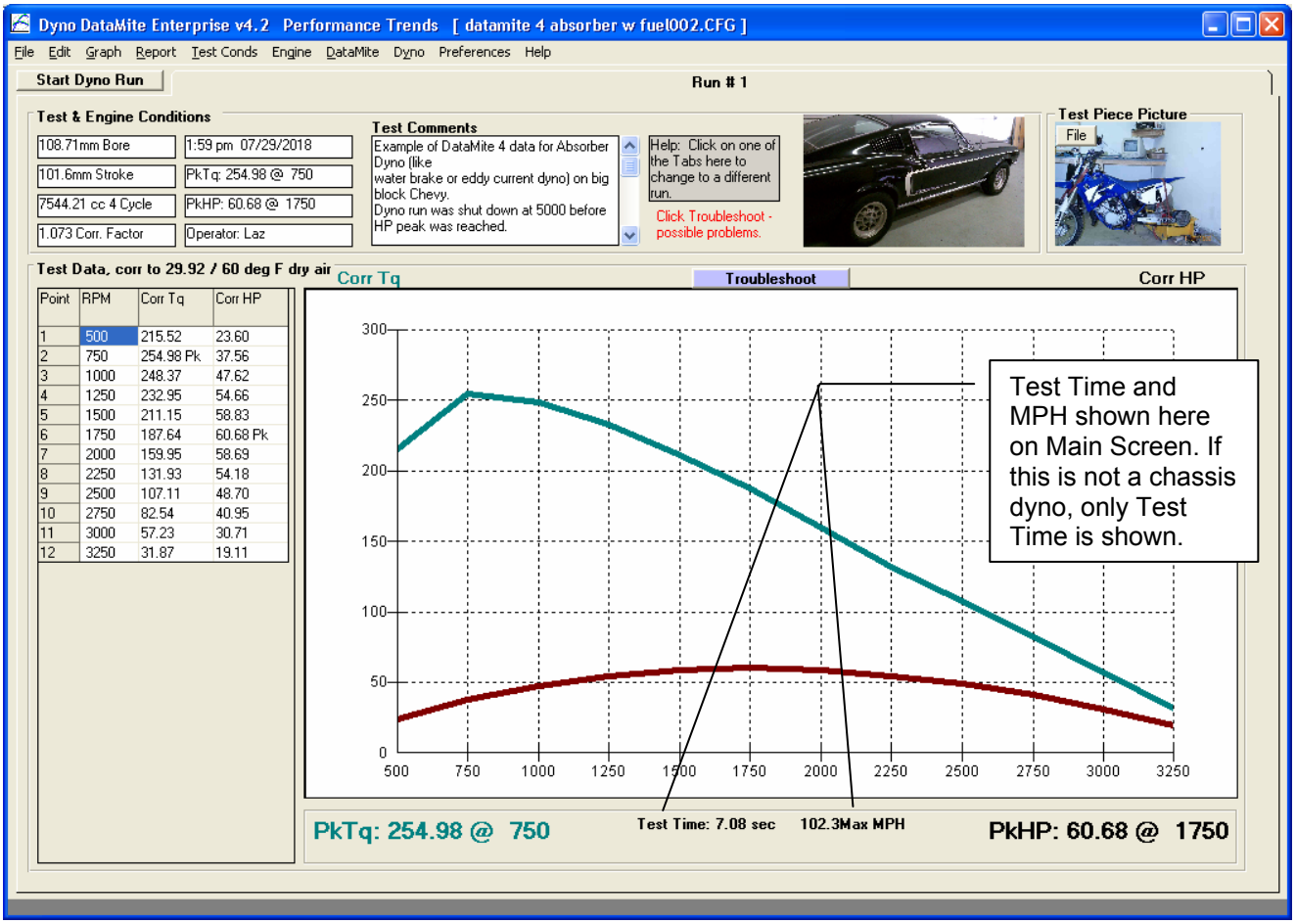


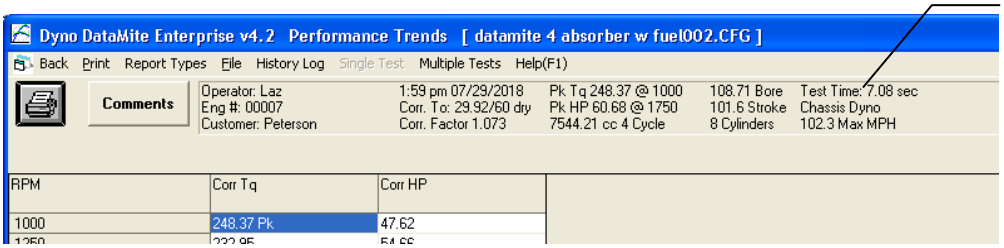
	datamite 4 absorber w fuel002.CFG Run 1	datamite 4 absorber w fuel001.CFG Run 1	
RPM	Corr Tq	Corr Tq	Dif.
1000	157.88	228.39 Pk	70.51
1250	169.39	227.70	58.31
1500	188.36	220.13	31.77
1750	195.47 Pk	208.54	13.07
2000	192.63	197.95	5.32
2250	186.18	188.16	1.98
2500	179.20	178.47	-0.73
2750	170.82	168.84	-1.98
3000	160.93	158.70	-2.23
3250	150.98	148.60	-2.38
3500	142.84	140.16	-2.68
3750	135.10	132.00	-3.1
4000	126.51	123.44	-3.07
4250	117.43	114.23	-3.2
4500	106.84	104.47	-2.37
4750	95.46	94.85	-0.61
5000	85.55	85.33	-0.22



	datamite 4 absorber w fuel002.CFG Run 1	datamite 4 absorber w fuel001.CFG Run 1	
RPM	Corr Tq	Corr Tq	Improv.
1000	157.88	228.39 Pk	-70.51
1250	169.39	227.70	-58.31
1500	188.36	220.13	-31.77
1750	195.47 Pk	208.54	-13.07
2000	192.63	197.95	-5.32
2250	186.18	188.16	-1.98
2500	179.20	178.47	0.73
2750	170.82	168.84	1.98
3000	160.93	158.70	2.23
3250	150.98	148.60	2.38
3500	142.84	140.16	2.68
3750	135.10	132.00	3.1
4000	126.51	123.44	3.07
4250	117.43	114.23	3.2
4500	106.84	104.47	2.37
4750	95.46	94.85	0.61
5000	85.55	85.33	0.22

Figure A9.10 New Test Time and Chassis Dyno MPH (or KPH) Outputs





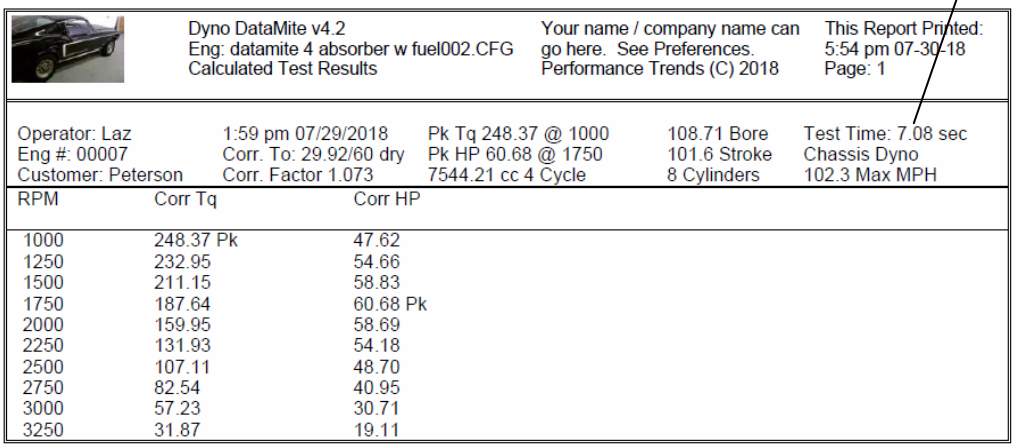
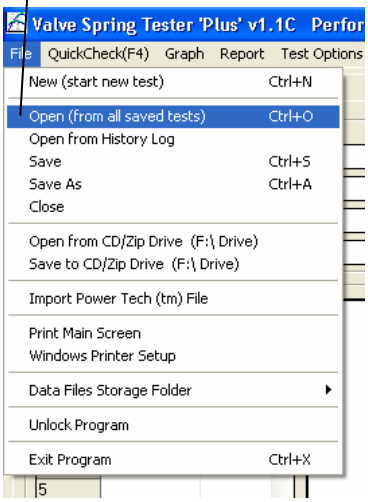
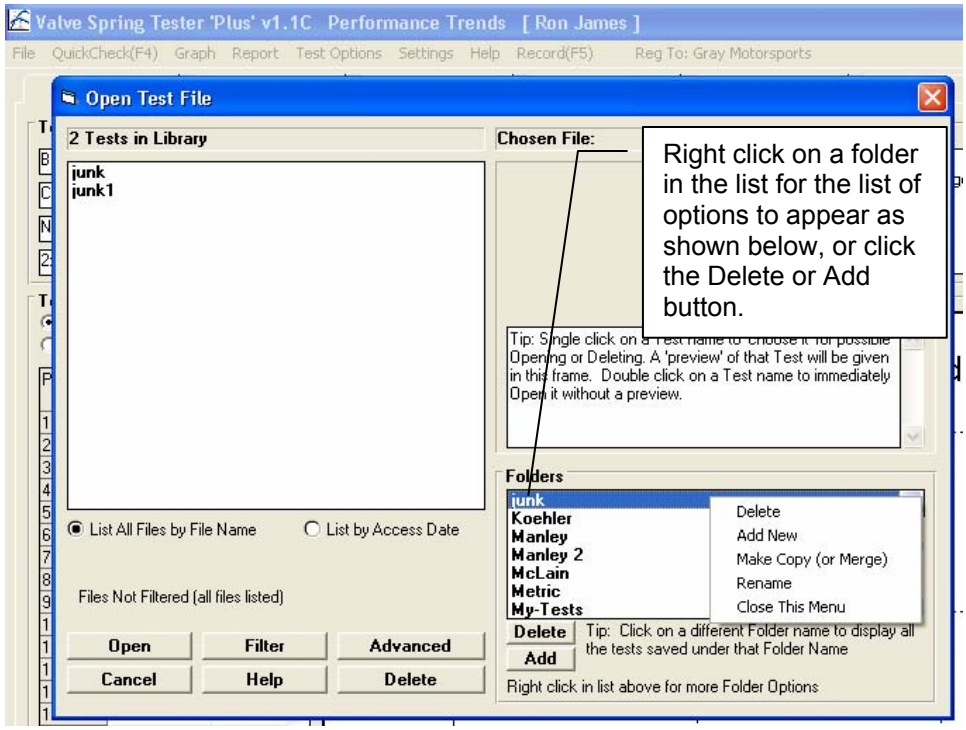


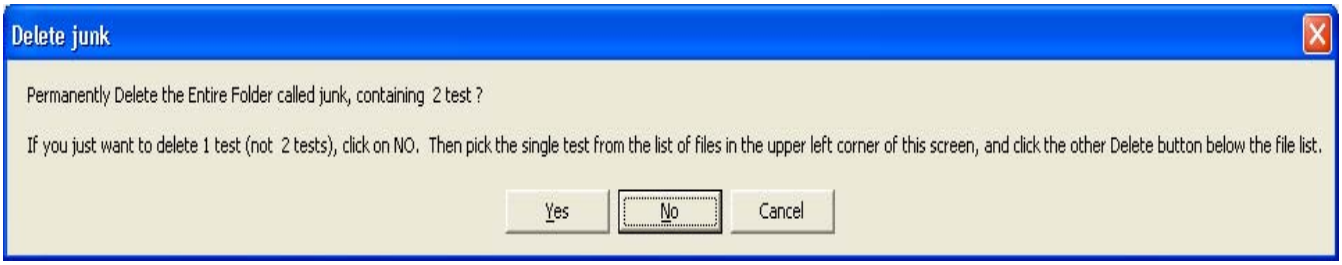
Figure 9.11 New Features Deleting, Adding, etc Files and Folders

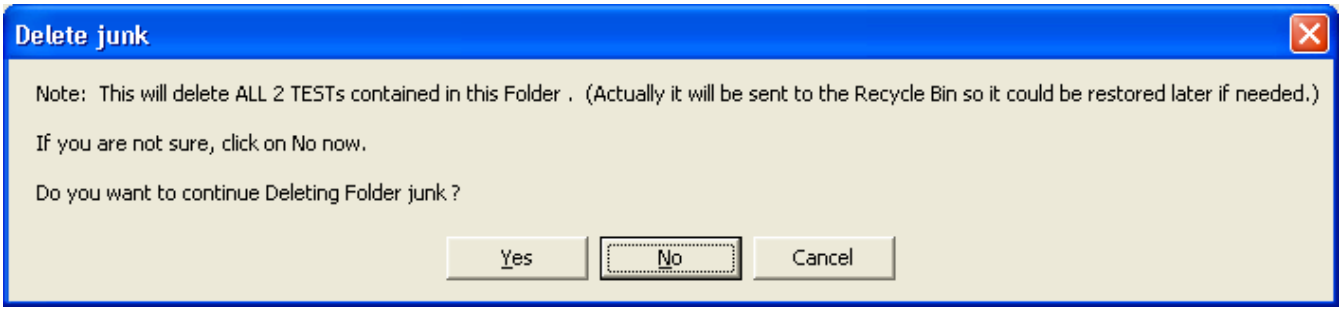
These features are available when you click on File, then Open (from all saved tests) on the main screen.

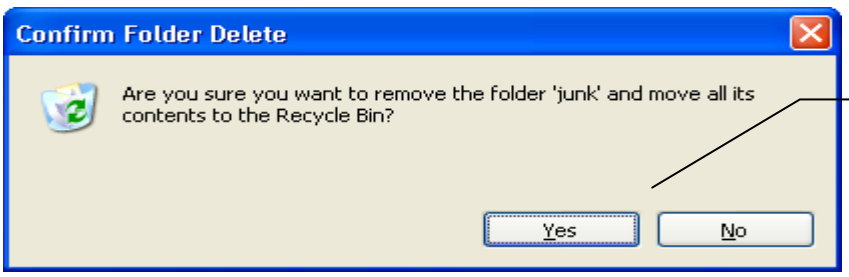




Right click on a folder in the list for the list of options to appear as shown below, or click the Delete or Add button.







Folders and test files you delete are now sent to your computer's Recycle Bin, so they can be recovered if need be.

Figure 9.12 Video Movies to Demo the DataMite Features