Engine Polygraph FAQ

2017-06-05

Q: What is the ideal sample size (time sweep) for the scope to get an accurate Assessment report?

A: The time sweep must be long enough to include 5 rotations of the crankshaft (in a 4-stroke engine): 1500 rpm = 200 ms; 1000 rpm = 300 ms; 2000 rpm = 150 ms; 3000 rpm = 100 ms. The sweep may be longer than the indicated values; a 500 ms sweep should cover a wide variety of speeds.

Q: Is it important to keep the engine speed constant during the signature capture?

A: Yes, very important if you are requesting an engine Assessment report. The Assessment report measures differences in the time of the strokes among the cylinders. A variation of engine speed during the signature can alter the report assessment. This is a reason to keep the time sweep near the lower limits described for the sample size/time sweep.

Q: Is the rpm of the engine important for getting a meaningful engine Assessment report?

A: If the RPM is over 1100 and under 3000 RPM, the software should be reliable based on our consistency testing.

Q: How accurate does the RPM need to be when I enter it on the Signature record?

A: The RPM is calculated based on the signature data, so the value you record should be similar. If it is not reasonably close and you are quite confident that the program did not calculate the real rpm, you might question the accuracy of the report. But please inform support@engineangel.com in such a case, telling us the real rpm and sending a copy of the Engine Polygraph report.

Q: The *.psdata file is too large for the Engine Polygraph to upload. What should I do?

A: Chances are that you either are saving a very long duration (much longer than 500 ms) or you are saving multiple buffers of data. Pico allows you to capture up to 32 buffers (separate signatures) for you to browse. (See Preferences.) Pick one that looks stable and save it. Select the option to Save

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'Current waveform only' and upload that one into Engine Polygraph. Engine Polygraph will analyze only one waveform in an Assessment request.

Q: Help me understand how to get the crankcase sensor data with unusual dipstick tubes.

A: We provide a set of attachments to cover many oil dipstick tubes: The tappers nozzles handle many tubes sometimes the short rubber tube that is provided will do the trick. The three-way adapter handles a number of large vehicles to the Harley-Davidson motorcycles. In addition:

1. Some smaller engines (Yanmar, etc.) have 1.25" ID oil fill/dipstick tubes. We provide a 1.25" OD plastic tube with 1" ID for the 3-way adapter in the kit.
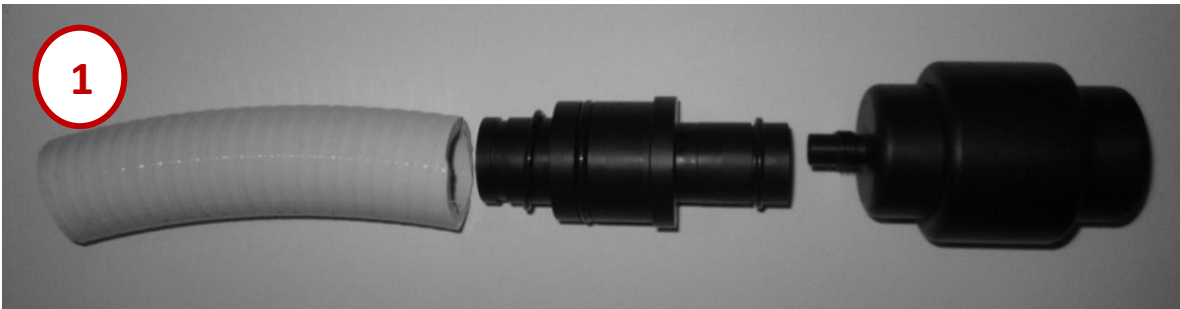
2. To get a sample from a common Cummins dipstick tube with the notched 'cup' at the top, we provide a clear plastic attachment so that the narrow section can be inserted into the tube and the FirstLook® sensor can be inserted into the wider diameter tube. The narrow tube fits many oil dipstick tubes snuggly.

3. Some horizontal exhausts now have baffles to reduce the danger of starting grass fires from the heat of DPF regens. To accommodate these, we provide a 27" silicone rubber hose that can be used to 'thread' through the baffles to get a good exhaust pulse from the exhaust. The FirstLook sensor with tapered attachment can be inserted to the external end of the hose.

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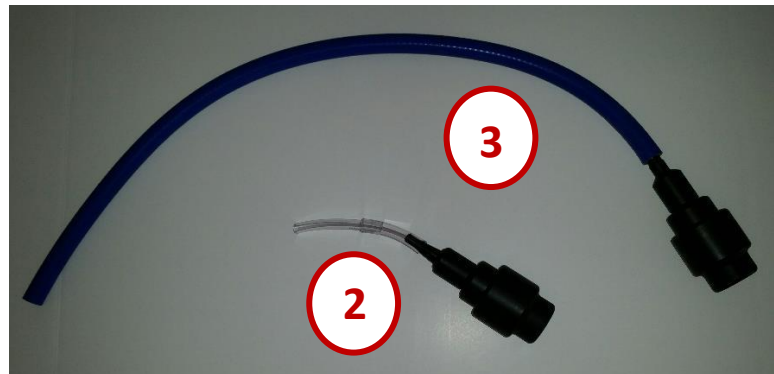
4. The clamp of the provided exhaust sampler might slide and squeeze the silicone hose. Verify that the clamp is over the metal insert that is designed to prevent distortion of the airflow from the exhaust to the sensor.

Q: The adapters that came with the diesel kit are not providing a snug fit in the oil filler tube. What should I do?

A: As long as the section of hose attached to the threaded sensor has a 3/8" I.D., the O.D. of the short segment going into the oil filler tube can be of any dimension to fit, provided the opening at the end is not less than 1/4" I.D.

Q: Is it important if the waveform goes off the screen in places?

A: Yes, the file created by the PC oscilloscope reports a value at a moment only if the voltage is within the range that you have specified for that sensor. If that happens more than rarely, the software will not be able to give a reliable interpretation. (The software will attempt 'curve fitting' to estimate the missing values if there are not too many missing values.) If you see that the waveform exceeds the limits of the display, increase the range for the channel.

Q: My system does not seem to recognize the PicoScope driver. I've checked connections but it still doesn't work.

A: Several things could be happening.

1. The Pico device drivers that control data between the PC and PicoScope are installed specifically for the driver that was connected when installed. If you plug into a different port later, the system should install the driver to that port. But if it did not re-install the driver, continue to step 2:
2. The Pico device driver might have been corrupted:

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       a. Look at the Device Manager in the Windows Control Panel.
       b. 'Right-click' to see if it proposes to Update the driver. Choose 'yes' if the choice is there.
3. The Pico software might have been corrupted:
       a. Uninstall the Pico software
       b. Reinstall the Pico software (should be at: C:\Programfiles(x86)\Pico Technology)). If not there, download a new copy/version from the Pico website.
       c. Restart the computer

Q: Can I combine multiple signatures in one file for upload?

A: No. Each signature should be a single file, normally 200-300Kb in size. This is important if your PC oscilloscope preferences specify storing multiple buffers; if so, save only one for upload to Engine Polygraph.

Q: How accurate does the engine temperature need to be when I enter it on the Signature record?

A: The temperature should be within plus or minus ten degrees of the actual engine temperature.

Q: Can I take a signature with a cold engine?

A: Our experience suggests that the engine coolant temperature is not very significant for gasoline engines. But diesel engines should be warm to at least 150 °F

Q: How should I name my signature files?

A: The Pico software proposes a filename with the current date followed by a sequence number. You might want a short description of the vehicle/engine and the rpm from the tachometer. This should make it easier to spot for the upload process. You may want to delete the file from your PC after you upload it.

Q: Will I be charged for an assessment that does not produce a report?

A: No. If the assessment fails for any reason, you should not be charged.

Q: My exhaust pressure readings are very low. What might be wrong?

A1: A hole in the tailpipe or muffler might be a cause. If so, temporarily plug the hole with wet rags taking care not to actually plug the exhaust stream itself.

Or put the hose from the sensor into the hole, directed toward the engine.

A2: Be sure the spring clamp has not slipped and is not pinching the rubber hose, constricting the flow to the sensor.

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