

Computer Updates

Vehicle computers need updates too

Many of today's vehicle have highly complex computers control systems. These systems have become complex enough in fact, that the computer systems may need updates to ensure that they continue to operate correctly in real world situations. Often the original programming does not properly account for sensor degradation, sulphur contamination, catalyst degradation, elevation changes, and/or, may have been programmed to accept readings from faulty sensors. Some of these updates are directly related to emission controls. If these updates are not performed, they may trigger false CEL (Check Engine Light) codes. Other updates correct problems that could actually damage the emission control systems. Still others correct deficiencies in sensor systems.

Why Do I Need an Update?

The vehicles computers have been programmed to accept slightly diminished efficiencies from the catalytic converters as the vehicles undergoes normal use. They are set up to compensate for inaccuracies in the sensors, normal degradation, and contamination. However, the laboratory conditions that these vehicles were tested under are not always accurate models of the real world. In the real world, people have many different driving habits, there are different grades of fuel. Some have better detergents, and others have excessive levels of contaminants like sulphur, and some may even have traces of lead. These contaminants can accelerate the degradation and contaminate the sensors. This can in turn result in a CEL being triggered. In such cases, a computer update may make the vehicle more tolerant and better match the real world models.

Wouldn't a Faulty Sensor Trigger a CEL?

One would assume that a sensor that had degraded and become inaccurate would trigger a CEL and set a code to indicate which sensor has failed. This is not always the case. The computer determines the condition of a sensor by comparing its values to a table that indicates the range of values the sensor should stay within. As a result, there is a lot of tolerance for sensor conditions. In addition, most systems require that a sensor fails in more than one way, and that the condition occurs more than once. In the case of O₂ sensors, this could mean that a faulty sensor that is reading slight rich or lean may not trigger a code, but could be interfering with proper fuel management. The only way to test such sensors is to compare their readings against a known good sensor at the same time. This is simply not practical. In addition, a number of vehicles on the market require updates because they have been programmed to accept the input from faulty sensors. One example would be Volkswagen cars from 1996—2002 equipped with a 2.0L motor. These vehicles came factory equipped with MAF (Mass AirFlow) sensors that were not operating properly. These sensors are assured to read incorrectly, but they would often fail to trigger a CEL indicating the faulty sensor. The inaccurate readings caused the vehicles to have a large number of catalyst related failures. Such vehicles would require a computer update and any related components replaced.

When Should the Computer be Updated?

Faulty computer programming can easily cause the replacement converters to fail or trigger a CEL even though they are working correctly. In addition, if the updates are not performed at or prior to the converter replacement, they can permanently damage the new converter as well as void your warranty. In addition, if the vehicle is taken to the dealership after the converter has been replaced, they may simply tell your customer that their problems are related to the use of after-market parts, which makes the installer seem like the bad guy. In the event that the CEL remains lit after the parts have been replaced, it becomes much easier to diagnose and resolve the issues if you know that the proper updates were performed prior to the converter replacement, because then you can rule out that the part may have been damaged by a faulty program. No one wants to randomly throw parts at a problem. Get the factory updates performed prior to the converter replacement. Also, replace the sensors that are directly involved, such as O₂ sensors, MAF sensors, EGR systems and sensors, etc. This eliminates over 90% of the related problems and prevents the installer from having to warranty the job.