



## Computer Technology and Your Car

Each year, cars seem to get more and more complicated. All vehicles manufactured today contain at least one computer. It is in charge of monitoring engine emissions and adjusting the engine to keep emissions as low as possible. The computer receives information from a many different sensors, including oxygen sensors, map sensor, air temperature sensor, engine temperature sensor, throttle position sensor & knock sensor to list a few. Using the information from these sensors, the computer controls things like the fuel injectors, spark plugs, ignition timing and idle speed to get the best performance and fuel economy possible from the engine while keeping emissions low. The computer will also sense when something has gone wrong and can inform the driver with the "Check Engine" light. With special equipment a technician can read a diagnostic code from the computer and obtain information to repair the problem. Depending on what type of vehicle and what options it has there can be up to 20 onboard computers present to control such components as the transmission, cruise control, anti-lock braking system, traction control, air bags, seat belt monitors, keyless entry, security system, door locks, climate control, seats, mirrors, radio, CD player, interior lighting to name a few. In other words, a modern vehicle can be a rolling computer network. It is mind boggling how many micro processors may be present and what their functions are.

Although all these microprocessors make it more difficult for you to work on your own car, they actually make your car easier to service if one has the proper equipment and training. As all of these computers are software controlled they are no different than your home computer, which also requires maintenance and upgrades from time to time. In the past a vehicle's computers were controlled by a "chip", which contained the software program to operate the vehicle. As improvements for engine control problems were made by the manufacturers, the only way to upgrade the programming was to physically replace the "memory chip" or in some cases replace the entire computer. This was a very cost prohibitive way of doing an upgrade. With the introduction of the second generation of automotive computer controls "ODB II" systems in 1996 advancing technologies provided for the reprogramming (re-flashing) of the on board computers without removing any components from the vehicle. For example a vehicle may exhibit stalling problems, transmission shift concerns, anti-lock brake problems to name a few. The manufacturer now can provide a "fix" for this by providing a re-flash that will address the complaint.

For example let's select a 2003 Chevrolet Silverado pick up truck and inquire if any software calibration upgrades are available. After searching the database (based on specific VIN #), we found the following upgrades. 1) Idle surge condition repair. 2). Changes to eliminate the setting of false trouble codes for the throttle position sensor and oxygen sensors. 3). New transmission calibration for 4wheel drive vehicles to address a delayed and firm 1-2 up-shift, and another addresses a drive clunk on a 3-2 downshift. 4). Re-flash to correct an intermittent "Service 4WD" light with no codes. 5). Calibration change to correct a speedometer error.

Up until recently the only source to get this done was to return to the dealer for this service. But some manufacturers have released this information to the aftermarket service field, which allows an independent shop the ability to provide these services with the necessary equipment and training. In reality, what all this means if you have a 1996 and up vehicle that is exhibiting drivability problems you may find that a computer re-flash may be required to repair certain problems along with the usual traditional services.

We here at Buehler Automotive & Transmission have recently acquired the equipment to re-flash General Motors vehicles. If you have any questions or concerns regarding this service please drop by or call our service department.

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