TECHlink

GM

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Do You Really Need a VCI Number ?

It's not an electronic version of duct tape, something that can be stuck in place and serve as a fix-all for driveability conditions. So what exactly is a Vehicle Calibration Index (VCI) number? And when do you really need one?

When reprogramming a vehicle using the Service Programming System (SPS), you need to identify the type of programming to be performed: Normal, VCI or Reconfigure. If you aren't going through a normal programming procedure, TIS 2000 will ask for a Vehicle Configuration Index (VCI) number.

Reprogramming a vehicle means you're changing or updating the calibration files that are stored in the vehicle's on-board controller, such as the PCM. The calibration file custom-tailors a module to a certain vehicle, based on the components and systems of the vehicle.

There are a number of things to keep in mind while reprogramming a vehicle. And there are many different calibrations available for different vehicles with different systems. You need to make sure you're programming the right calibration for the right vehicle condition.

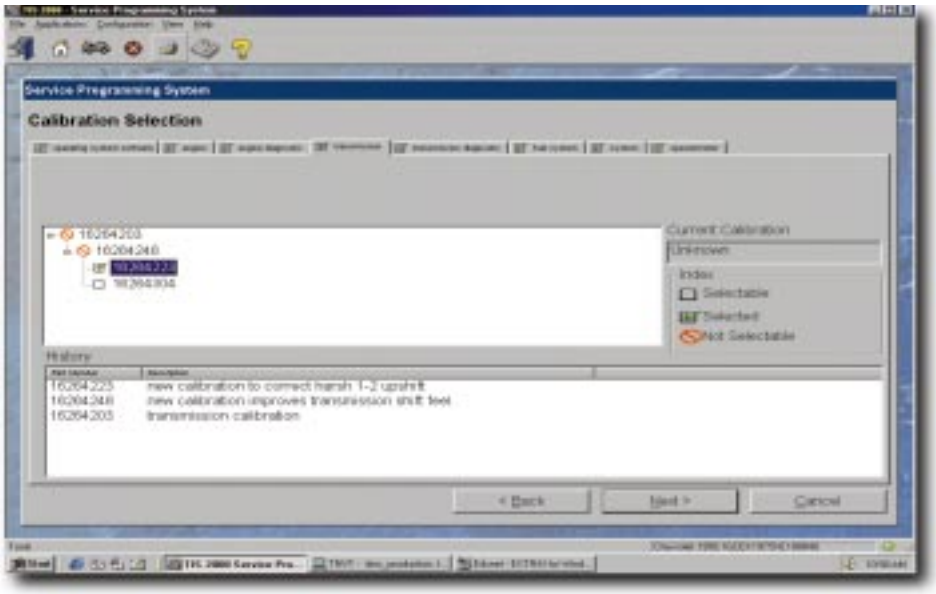
VCI Numbers

A Vehicle Configuration Index (VCI) is a number representing a valid combination of parts and systems built in a vehicle, including optional equipment. Service Operations uses VCI numbers to identify a unique calibration or group of calibrations.

You will need a VCI number to access vehicle calibrations when reprogramming if the VIN of the vehicle is not on the TIS 2000 data CD or, depending on the vehicle, if it has been reconfigured from its original build specifications.

Keep in mind that many calibrations for reconfiguring vehicles (adding/changing options, such as fog lamps) have recently been made selectable in TIS 2000 and a VCI number is not necessary.

If the VIN is not on the TIS 2000 data CD, a TIS 2000 error message will state that the VIN is incorrect or a VCI number is needed. In this case, the VIN may be new or the data CD may be old. The VIN may not be on the CD yet because the vehicle is brand new or is a recent build that was shipped to the dealership after the CD was distributed. Or the dealership may not have access to the latest information because the latest data CD isn't loaded on the dealership's server. Make sure the latest CD version is loaded and your system is operating properly.



To check which TIS 2000 version you are using, select the Help menu, then select TIS 2000 Main Help and click About TIS 2000. The current data CD version will be listed along with the blockpoint version for North American Operations.

A VCI number also allows you to program a reconfigured truck equipped with a VCM. This includes changes in tire sizes and axle ratios. When selecting Reconfigure from the "type of programming" screen in TIS 2000, the calibrations that support various vehicles are presented as information only. To access those calibrations, you'll need a VCI number.

The VCI number provides access to all of the latest calibrations available for the vehicle, based on the VIN. You need to select the right calibration according to how the vehicle was reconfigured.

A VCI number does not allow you to access calibrations that are designated as "Not Selectable." This is why it's so

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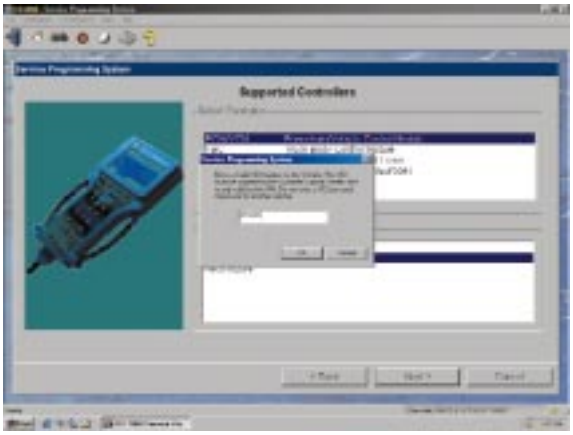

important to make sure you have the correct calibration you need before completing the reprogramming.

Selecting the Right Calibration

When reprogramming a vehicle, selecting the right calibration is critical. You will only see calibrations that are valid for the VIN that is entered. Be sure to check the history of each calibration. The history lists an explanation of the calibration file, telling what the calibration is for and if it supersedes any other calibrations.

Also read the latest bulletins to stay up to date on why certain calibrations have been released. Related bulletin numbers are listed along with the calibration files.

Based on the calibration history and bulletins, select the appropriate calibration file. For many vehicles equipped with VCMs, you'll also need to complete the multiple tab selections. Each tab is for a distinct calibration file contained in the VCM. An unchecked box on a system tab indicates that a necessary selection has not been made.

If a VCI number is needed, contact the Techline Customer Support Center (TCSC). Once you have the VCI number, it must be entered in the entry screen when requested by the SPS. Before entering the VCI number, delete the zero in the entry screen.

To perform a complete reprogramming procedure without interruption, remember that battery voltage must be between 12 and 14 volts at the control module.

– Mark Stesney

Not All Reprogramming Is the Same

Reprogramming various vehicles sometimes requires setting up for the reprogramming in different ways. For 2000 model year Cadillac models, there are several reprogramming set up procedures that should be completed before beginning to reprogram the vehicle. This will help ensure a proper reflash of the PCM.

First, the Tech2 should be updated with the latest available software version, currently 20.001.

The vehicle battery should be fully charged, with a voltage reading between 12 and 14 volts, and voltage must be maintained during reprogramming.

A voltage drop during reprogramming will cause the control modules in the vehicle to reset and programming will fail.

Several fuses should be pulled to reduce the possibility of a voltage drop. This includes pulling both fuses for the Instrument Panel Cluster (IPC), located in the front and rear (behind the rear seat); the fuse for the navigation module (if equipped); the fuse for the radio; the fuse for the HVAC system or disconnect the HVAC blower motor under the hood; and the fuse for the daytime running lights.

Also eliminate any noise on the serial data line by disconnecting several connectors. The theft module connector should be disconnected, located at the base of the steering column, along with the clear connector from the PCM. The clear connector is for serial data from other control modules in the vehicle.

Eliminating any potential activity from these control modules will reduce the possibility of a reprogramming failure.

Use the Tech2 message monitor function to check the activity of all control modules. The message monitor will indicate each module is inactive once the correct fuse has been pulled or the module has been disconnected.

If a voltage drop does occur and reprogramming is interrupted, a control module may be damaged.

TECHlink GM

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Fill 'Er Up with Flexible Fuel

In December 1999, a changeover was made in 4-cylinder engine two-wheel-drive S-Truck Pickup models from the LN2 engine to the L43 engine. The new L43 engine has E85 flexible fuel capability, which allows it to operate on fuels anywhere between pure gasoline and a mix of up to 85 percent ethanol/15 percent gasoline. Underhood, the L43 engine looks very similar to the LN2. Unlike the LN2, the L43 exhaust manifold has two secondary Air Injection Reaction (A.I.R.) tubes. Looking at the VIN, the eighth character is a 5 for the L43 and a 4 for the LN2.

E85 Ethanol

E85 fuel is a mixture of up to 85 percent ethanol, with the remainder being gasoline. In most cases, E85 fuel will range from approximately 81-82 percent ethanol.

As with all fuels, E85 blending guidelines are seasonal. Refiners will provide E85 with a range of ethanol content due to the ambient temperature requirements. In warmer climates, E85 may range up to 85 percent ethanol. While in very cold climates, the ethanol content of E85 may be as low as 55 percent.

For good starting and heater efficiency, the fuel mix should contain a maximum of 70 percent ethanol when the ambient temperature is below 0 degrees Fahrenheit.

Flexible Fuel Sensor

To measure the true ethanol alcohol percentage and fuel temperature needed for proper engine operation, the L43 engine uses a flexible fuel sensor. It's located on the top of the right side frame rail, behind the right front upper control arm. All fuel delivered to the engine passes through the flex fuel sensor for ethanol measurement.

Here's how the sensor determines alcohol percentage and fuel temperature. The sensor generates a digital signal that varies in frequency, based on ethanol percentage. By measuring the frequency of the signal, the PCM can determine the ethanol percentage. A 50 Hz signal equals a zero percentage of ethanol. If a true E100 ethanol fuel (100 percent ethanol) was available, it would equal 150 Hz. So an E85 fuel containing 85 percent ethanol should be about 135 Hz.

The sensor controls the width of the digital signal (pulsewidth) to indicate fuel temperature. The sensor causes its output signal pulsewidth to be between 1 millisecond (equals a fuel temperature of -40 degrees Celsius) to 5 milliseconds (equals a fuel temperature of 125 degrees Celsius).

The flex fuel sensor has its own internal circuit diagnostic capabilities. If an internal sensor fault is detected, the output will be forced to 170 Hz if the fault is with the percentage-measuring circuits. Output will be forced to 0.5 millisecond pulsewidth and 170 Hz if the fault is with the temperature-measuring circuits.

Flexible Fuel DTCs

There are three new diagnostic trouble codes relating to the L43 flexible fuel engine management system and to the fuel itself.

P0178 – Flex Fuel Sensor Circuit Low Frequency, will set if the PCM receives a flex fuel sensor frequency less than 45 Hz.

P0179 – Flex Fuel Sensor Circuit High Frequency, will set if the PCM receives a flex fuel sensor frequency greater than 155 Hz.

In order for either of these DTCs to set and turn on the MIL, two consecutive trips with a test fail condition must be recorded (a fail record is stored in the PCM's memory after the first failed test and the MIL is illuminated after the second consecutive failed test). The test includes an engine run time of greater than 30 seconds, ignition voltage greater than 10.9 volts and all conditions, including the high or low frequency, must be present for more than 12.5 seconds. Diagnosing P0179 may require testing the fuel itself to determine between an electrical condition and "bad" fuel.

P0169 – Incorrect Fuel Composition, will store a fail record in the PCM (the MIL will not illuminate) if the ethanol percentage (sensor output frequency) is too high during very cold ambient temperatures. This DTC is tested at a "cold start." It is a fuel-related DTC, not a sensor/circuit DTC.

Scan tool data parameters relating to the flex fuel sensor are:

- Fuel ethanol percentage (calculated by PCM)
- Fuel temperature (calculated by PCM)
- Flex fuel sensor – frequency (Hertz)
- Flex fuel sensor – pulsewidth (milliseconds)

Contaminated, or "bad," E85 fuel will cause the flex fuel sensor's output frequency to be incorrectly too high. Diagnosing DTC P0179 requires determining if the E85 fuel is bad or if the flex fuel sensor is at fault. A sensor/fuel tester is currently being developed to do just that. "Bad" E85 fuel may be corrosive, contain water or methanol, or have too much ethanol content. Until the tester is available, a temporary diagnostic procedure is available from the GM Technical Assistance Center (TAC). The temporary procedure has no ability to test for bad fuel, but helps in determining if the sensor's output frequency is accurate. The temporary procedure involves raising the vehicle on a lift, disconnecting the sensor from the fuel lines and filling the sensor "tubes" with acetone. The electrical harness is left connected to the sensor. When the sensor is full of acetone, it should output a known frequency of 136 Hz (+/- 6 Hz), which is measured using the scan tool. Acetone is available from your local hardware store or auto body paint supplier. Contact TAC for more information on this procedure.

Important: Acetone is a harsh solvent. Wear full-coverage eye protection during this procedure. Make sure any acetone does not contact any painted surfaces. It will damage the paint finish on a vehicle.

If your diagnosis calls for the replacement of the sensor, contact TAC for authorization for a new sensor. Currently, the flex fuel sensor is a restricted part. The sensor and the mounting bracket are available individually.

– Jack Woodward

L43 Flexible Fuel System

The L43 engine's fuel system is a "mechanical - returnless" system, with no fuel return line from the engine compartment. This helps to prevent heating the fuel supply in the tank, lowering evaporate emissions.

The fuel filter and fuel pressure regulator are combined in one unit. It is mounted inside the left frame rail approximately even with the driver's door. It has a return line from the regulator/filter back to the fuel tank.

The fuel injectors are Multec-2 injectors. Follow the normal handling and testing procedures for Multec-2 injectors. The E85 injectors have a special internal coating to resist corrosion from acidic ethanol fuels.

The new position of the fuel pressure test fitting is at the rear of the fuel rail, between #3 and #4 injectors. Operating fuel pressure at the fuel rail is 400 kPa (+/- 20) or 58 psi (+/- 3).

When filling up an S-Truck with E85, heed the warning on the fuel filler door: "Use no fuel additives with alcohol fuel."

Fuel additives, such as fuel injector cleaners, combined with ethanol fuel can result in sludge formations in the bottom of the fuel tank. This can plug the strainers on the fuel pump, causing damage to the fuel pump motor.

Fuel consumption with ethanol fuel may increase by up to 28 percent when compared to gasoline fuel economy. Because ethanol has less energy content than gasoline, fuel flow is increased to maintain the same engine power.

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Oil Life Monitor -- How Does It Know?

How long will oil last in an engine? What reduces the oil's effectiveness? When should it be changed?

Lubrication engineers perform a number of tests to answer these kinds of questions. Vehicles are operated under prescribed conditions, and periodically a sample of the oil is taken into the laboratory for analysis. When the condition of the oil is no longer satisfactory, the mileage is noted.

From controlled testing like this, engineers in the past have determined two sets of mileage numbers, one number for normal driving and the other for severe conditions. Severe conditions can mean that the vehicle is driven hot (for example, pulling a trailer up a mountain) or is driven such that the oil never warms completely (for example, trips less than 5 or 10 miles in a winter climate). It is then up to the owner to decide whether their own driving is normal or severe and to change the oil accordingly.

Now, science and technology have found a way of taking the guesswork out of the picture. GM is installing an oil life monitor in an increasing number of new vehicles. Using a simple indicator lamp or readout on the instrument panel, this system notifies the driver when to change the oil.

The February and March 2000 issues of *TechLink* explain how to reset these monitors. Here's information on how an oil life monitor works.

Additives

Straight oil is not an ideal lubricant in an engine. A package of additives is needed to give the oil properties it does not naturally have or to enhance its natural properties. Some of the tasks accomplished by additives:

- viscosity modifiers, to keep the oil the proper thickness over a wide range of operating temperatures
- anti-oxidant, to keep the oil from thickening
- corrosion inhibitors, to protect engine components
- anti-wear
- anti-foam
- detergents, to suspend solid particles.

What Makes Oil "Wear Out?"

If you were to start out with a crankcase full of fresh, clean oil, and drove the vehicle for a period of time, eventually the oil would have to be changed. During this time, what can change fresh oil into "worn out" oil?

First, dilution. When gasoline is burned in the combustion chamber, the by-products include a lot of water. Some of this water can find its way into the crankcase through piston ring blow-by. If the engine is cold, and if combustion is not perfectly complete, a small amount of acid is formed. It, too, can blow-by into the oil. You don't need to be a top-notch scientist to realize that water and acid aren't good things to pump through the lubrication system of the engine. If an engine is run long enough for the engine oil to warm, the water and acids will evaporate and not accumulate. But, during very short trips in cold weather, water and acids can enter the engine oil and cause the oil to "wear out."

Second, the degradation of the oil and its additives. We mentioned earlier that a number of additives are put into oil to improve its performance. If these additives are degraded or decomposed, the oil is no longer capable of doing all of its jobs properly. Oil with degraded additives can become thick and dark. Additives become degraded by exposure to extreme heat. There are two places a lot of heat can reach the oil. One is near the combustion chamber. Oil at the top piston

Water in oil, resulting from extreme short-trip driving, photographed through a transparent oil pan.

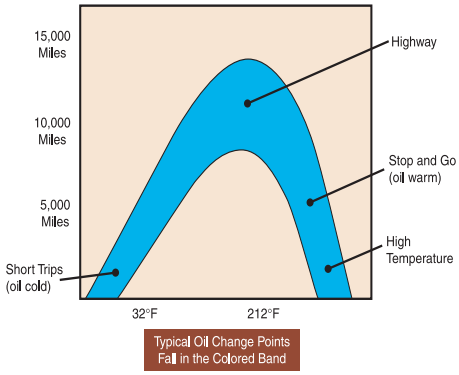
ring is exposed to very high temperature. And some bearing surfaces can also put a lot of heat into the oil at high operating temperatures. So, degradation of additives from high temperature operation is the second factor that can cause oil to "wear out."

How Can Operating Conditions be Used to Predict Oil Life?

Using carefully controlled laboratory tests, it's possible for lubrication engineers to measure how long it takes to dilute engine oil during cold operation. And it's possible to measure how long it takes for high temperature to degrade the additives.

We usually think of measuring time in hours and minutes, but for an engine, the amount of revolutions it has run is also a good measure. So for the purposes of oil life, time is measured in engine revolutions.

Engineers like to talk in terms of models. A model is a way to describe something



How Driving Style Affects Engine Oil Life

mathematically. It's possible to create an oil life model that very carefully matches the results of analyzing the oil in a laboratory.

The oil life monitor, then, is based on a model. A computer chip in the Powertrain Control Module is loaded with a certain number of engine revolution counts. The count for each engine/vehicle combination is determined by testing. As the engine runs, each revolution is subtracted from the remaining count in the oil life monitor. When the count reaches zero, the instrument panel light comes on. But, here's the clever part. When the various input sensors detect that the engine is running under either cold or hot conditions, it subtracts extra counts (penalties) for each engine revolution. So, the conditions that cause the oil to "wear out" make the counter run down faster.

When the oil is changed, it's necessary to reset the oil life monitor (see the February and March 2000 issues of *TechLink*) and the countdown begins again.

NOTE: Synthetic oil resists "wearing out" better than mineral oil, so the oil life monitor is set to account for this, but only on vehicles that are specified for synthetic oil from the factory -- the Corvette, for instance. Using synthetic oil in other vehicles is certainly not harmful, but the oil life monitor will continue to count down as though the engine contained mineral oil.

- Shirley Schwartz contributed to this article

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GM Oil Life System Reset Procedures, *Part 2*

For 1996, '97 and '98 model year GM vehicles, follow these procedures to reset the oil life monitor after an oil change.

1998 Buick LeSabre
1998 Buick Park Avenue
1998 Cadillac DeVille
1998 Cadillac Eldorado
1998 Oldsmobile Aurora

1. Turn the ignition to Run.
2. Press the Trip button on the Driver Information Center (DIC) switch to view various menu choices and stop on Oil Life Remaining.
3. Press and hold the Reset button on the DIC switch for more than five seconds. The oil life will change to 100%.

1998 Cadillac Seville

1. Turn the ignition to Run.
2. Press the Info button on the DIC switch to view the DIC menu choices. Stop on the % Engine Oil Life message.
3. Press and hold the Info Reset button on the DIC switch until the % Engine Oil Life message changes to 100%.

1998 Buick Century
1997 Buick Century
1998 Buick Regal
1997 Buick Regal
1998 Chevrolet Lumina
1998 Oldsmobile Intrigue
1998 Pontiac Grand Prix
1997 Pontiac Grand Prix

1. Turn the ignition to On without starting the engine.
2. Fully press and release the accelerator pedal three times within five seconds.
3. If the Change Oil Soon indicator flashes, the system is resetting. If the Change Oil Soon indicator comes on and stays on for five seconds, try to reset the system again.

1998 Buick Century
1997 Buick Century
1998 Buick Regal
1997 Buick Regal
(with Driver Information Display, U20 option)

1. Turn the ignition to On without starting the engine.
2. Display the oil life monitor.
3. Press and hold the Driver Information Display switch Reset button for more than five seconds or until the oil life percentage changes to 100%.

1998 Pontiac Grand Prix
1997 Pontiac Grand Prix
(with Driver Information Display, U40 option)

1. Turn the ignition to On without starting the engine.
2. Press the trip calculator Mode button until the light appears next to Oil Life.
3. Press and hold the trip calculator Reset button until the oil life percentage changes to 100%.

1998 Chevrolet Corvette
1997 Chevrolet Corvette

1. Turn the ignition to Run but with the engine off.
2. Press the Trip button so the Oil Life percentage is displayed.
3. Press Reset and hold for two seconds. Oil Life Remain 100% will appear.

1997 Buick LeSabre
1996 Buick LeSabre
1996 Buick Park Avenue

1. Turn the ignition to Run but with the engine off.
2. Press and hold the Oil Reset button (located in the glove box) for at least five seconds, but not more than 60 seconds.
3. After five seconds, the Change Oil Soon light will flash four times and then go off. This indicates that the Engine Oil Life Monitor System has been reset.

1997 Buick Park Avenue

1. Turn the ignition to Run but with the engine off.
2. Press the Gage Button on the DIC to display the Oil Life Index.
3. Press and hold the Reset button for more than five seconds. The oil life will change to 100%.

1997 Cadillac DeVille
1996 Cadillac DeVille, DeVille Concours
1997 Cadillac Eldorado
1996 Cadillac Eldorado
1997 Cadillac Seville
1996 Cadillac Seville

1. Turn the ignition to Run but with the engine off.
2. Display the Oil Life Left message by pressing the Info button.
3. Press and hold the Reset button until the display shows "100." This resets the oil life index.

1997 Oldsmobile Aurora
1996 Oldsmobile Aurora

1. Turn the ignition to Run but with the engine off.
2. Press the ENG button so the Oil Life percentage is displayed.
3. Press and hold the Reset button for five seconds. The word Reset, then Oil Life 100%, will appear.

– *Jerry Garfield, Yvonne Carpenter and Debbie DoorenBos*

Submission of all OBDII P-Codes with Warranty Claims Will Enhance Product Quality Feedback

With the introduction of OBDII (On-Board Diagnostics) there is a potential to gain a wealth of information from vehicles coming in for repair when the Malfunction Indicator Lamp (MIL) is illuminated, particularly when the cause is a sensor. Follow the process below to provide Engineering with OBDII code information through the warranty claims system:

Technicians -- On the repair order, record the OBDII P-codes, technician observations, and customer comments. (GM Service Policies and Procedure Manual, article 1.6.2G)

Warranty Claims Administrator -- Enter the same information in the comment section on the warranty claim for submission. (GM Claims Processing Manual, Section 4.2.g)

This information is continually analyzed by GM Powertrain Engineering. This process will provide engineers with accurate, detailed information on a more timely basis. The idea is to identify and resolve potential product concerns as early as possible.

If you will provide P-codes, your observations, and customer comments on every vehicle you repair for an OBDII related code, engineering can begin to better understand what is causing the Malfunction Indicator Lamp to illuminate.

GM Engineering is committed to working with GM Dealerships and with your help can further improve product quality. Feedback will also be provided to the Dealers based on the information received.

- Ron Minoletti contributed to this article

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TAC Tips

1997-2000 Vehicles with Multiple ABS Codes

Multiple Stabilitrak/Precision Control codes such as C1282, C1283, C1285, C1287 and C1288 may exist on the following models equipped with Delphi Bosch 5.0 or 5.3 systems:

1997-2000 Buick Park Avenue and Ultra

2000 Buick LeSabre Custom and Limited

1997-2000 Cadillac Seville SLS and STS

1997-2000 Cadillac Eldorado and ETC

1997-2000 Cadillac DeVille, D' Elegance and Concours

2000 Cadillac DeVille DHS and DTS

2000 Pontiac Bonneville SE, SLE and SSEi

2001 Oldsmobile Aurora.

The range of codes may not identically match the DTCs listed above, but if there is a trend in which codes simultaneously exist for the SWPS, Yaw Sensor, and Lateral Accelerometer, this information is applicable.

The probable cause is the loss of 5-volt Reference or Ground on circuits 1337 or 1338. It is unlikely to be a sensor issue in this circumstance, as the likelihood of having three sensors simultaneously fail is quite low. The common factor in this instance is the fact that the 5-volt reference and ground are shared for all three sensors.

Verify the condition by taking a snap shot with the Tech2, looking at the SWPS inputs, yaw rate sensor input, and the lateral accelerometer input.

If the review of these three inputs finds the voltage is dropping low/erratic, inspect circuits 1337 and 1338. Check all connectors, splices and pass-throughs between the EBTCM and the sensors. Replacing any of the sensors or checking for a loose yaw sensor will most likely not repair the vehicle. In instances in which individual codes occur, use existing diagnostics.

With regards to steering wheel position sensors, the Delphi-Bosch 5.3 system inputs are listed as Dual Analog SWPS Input A and Dual Analog Input B. These two inputs range from 0 to 5 volts.

The Delphi-Bosch 5.0 system inputs are listed as Digital SWPS Phase A, Digital SWPS Phase B and Analog Steering Wheel Position. The analog input might be the best input to track on the 5.0 system as it will be more obvious if the voltage is dropping out.

The yaw sensor also has a voltage range of 0 to approximately 5 volts and is at 2.5 volts at 0 degrees yaw.

The lateral accelerometer has a voltage range of 0 to approximately 5 volts and is also at 2.5 volts when no G force is detected.

S/T Truck Hood Rattle

A rattle may emanate from the hood hinge area or the front corner of the instrument panel on the following S/T truck models:

1996-00 Chevrolet Blazer 2WD and 4WD

1996-00 Chevrolet S10 Pick-Up 2WD and 4WD

1996-00 GMC Jimmy 2WD and 4WD

1996-00 GMC Sonoma 2WD and 4WD

2000 GMC Envoy 4WD

2000 Oldsmobile Bravada

This noise may often be mistaken for a loose shock absorber. The rattle can be heard over rough road inputs and is most prominent over those that create side-to-side vehicle motion.

This condition is outlined in TSB 52-15-01, which applies to 1995 S/T trucks. If later model vehicles (1995-00) exhibit this condition, follow the procedures outlined in bulletin 52-15-01.

These vehicles may have clearance at the hinge attaching bolt. This allows the hood hinge to make metal to metal contact with the hood hinge bracket, which produces a rattling noise.

Remove the hood hinge attaching bolt. Refer to the S/T truck service manual, section 2B, hood replacement, for the removal procedure. Install a spring washer (GM part number 12383460) on the shoulder of the hood hinge attaching bolt. Reinstall the hood hinge attaching bolt.

– GM Technical Assistance

Exterior Lamp Condensation

Is it normal condensation or is it a water leak? Bulletin 63-82-06A offers guidelines about exterior lamp condensation and replacement.

Some exterior lamps, such as cornering, turn signal, backup, headlamps or tail lamps, may exhibit a fine mist or white fog on the inside of the lamp lens. This condensation occurs when the air inside the lamp assembly, through atmospheric changes, reaches the dew point, when the moisture in the air condenses.

Most exterior lamps on GM vehicles use a vented design and feature a replaceable bulb assembly. Any accumulated moisture vapor is dispersed through the vent, which is most effective when the lamps are on or when the vehicle is in motion. Depending on the size, shape and location of the lamp on the vehicle and the current atmospheric conditions, the amount of time required to clear the lamp may vary from two to six hours.

If any of the following conditions apply, it is most likely condensation inside the lamp and not a water leak.

- May be located primarily in the lens corners (near the vents) and should not cover more than half the lens.
- The condition should clear of moisture when the vehicle is parked in a dry environment, or when the vehicle is driven with the lights on.
- A comparison of the equivalent lamp on the opposing side of the vehicle indicates a similar performance.

If the above conditions are noted, replacement of the lamp assembly may not correct any of these conditions.

A water leak is indicated by numerous drops of water collecting on the inside surface of the lamp lens and accumulating in the bottom of the lamp assembly.

– Gary McAdam, Jim Serafino

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Silverado/Sierra Service Concerns

Roof Bow

The 2000 model year Chevrolet Silverado and GMC Sierra extended-cab pickups have a sound deadening material applied to the B-pillar roof bow during production to eliminate a rattle between the B-pillar bow and the roof. On some models, a slight roof depression located over the B-pillar may be noticeable. This depression in the roof is caused by the sound deadening material adhering to the roof.

Roof Bow

Use a piece of piano wire or a hot knife to cut the material between the roof and the B-pillar bow. The sound deadening material must remain attached to the bow to prevent a roof rattle.

Water in Fuel

An engine misfire may occur in some 1999-2000 Chevrolet Silverado and GMC Sierra models built prior to August 30, 1999. This condition may illuminate the Service Engine Soon lamp and set DTC P0300, Engine Misfire Detected.

If standard diagnostics does not lead to the resolution of the engine misfire, remove the fuel rail and check the fuel system for water.

Water may be entering the fuel system through the Evaporative Emission (EVAP) canister vent solenoid and working up to the end of the fuel rail loop near the #7 and possibly the #8 fuel injector.

Also check the EVAP canister for water and replace if necessary.

To eliminate this water intrusion, a new EVAP canister vent hose assembly, which includes the valve and solenoid, is available. The new solenoid has a revised mounting bracket and a sealant is applied to the top lid surface.

The part numbers are 15759042 for LM7/LQ4/LR4/L35 w/EVA models and 15759043 for LM7/LQ4/LR4/L35 w/o EVA models.

Rear Sliding Window

The frame of the rear sliding window on 2000 Silverado and Sierra models may crack under certain conditions, resulting in a windnoise or waterleak. A stronger frame material is being developed for the rear sliding window option.

Since GM SPO currently carries the same rear sliding window, it is not recommended to replace the window with the same OEM part. A fixed back glass may be the best solution.

– Steve Love, Doug Ritter

Submitting a Product Report

It's the third vehicle you've repaired this week with the same condition. Somebody should know about this, but who?

If you submit a product report via Voice Mail Express (VME), you could provide GM with detailed information about the condition you're seeing in the dealership and help provide important feedback to help correct it at the source.

VME Product Reporting is a pilot program for all GM dealerships. The program provides a way for dealership personnel to report product conditions and concerns through a voice mail message system to the GM Brand Quality groups of Car, Truck and Powertrain. The pilot program will be open to receive voice mail product reports through June 30, 2000.

Conditions that dealerships should report include quality issues, repetitive conditions and quality concerns noticed at PDI on all 2000 and 2001 model year vehicles.

To submit a product report, call:

1-888-274-4185

- Mailbox 32000, Truck
- Mailbox 32001, Car and U-Van
- Mailbox 32002, Powertrain

Current VME subscribers should submit product reports via the VME system using node 81033 and then one of the mailbox numbers listed above.

When calling, please make sure you're submitting information to the appropriate mailbox as identified in the voice mail introduction.

Only one report per condition should be submitted. Please include the following information in the report:

- Name of person making report
- Phone number with Area Code
- Dealership name
- Dealer code
- Dealership contact and phone number if different from above
- Model of Car or Truck
- Problem Area (see chart)
- Vehicle mileage
- Repair order number
- VIN
- Customer description of condition
- Cause of condition
- Correction (include labor operation code if available)
- Any additional VINs with the same condition

Callers will not receive a confirmation of their voice mail message. However, a GM representative may contact callers to gather additional information, to learn more about a specific condition, or to request the failed part be returned for analysis.

Keep in mind that GM Technical Assistance cannot be reached by calling the product report phone line; however, the submitted information is shared with a number of engineering and technical groups, including Technical Assistance, the assembly plants and suppliers.

Next time you run across a condition you think GM should know more about, try submitting a VME product report. By doing so, you'll be providing important information that helps GM continue to meet our product quality goals.

– Ben Lee, Gary McAdam

Problem areas are divided into the following:

Car and Truck

Fuel system	HVAC
Accessories	Interior
Electrical	Brakes
Air intake system	Prop shaft
Frame	Seats
Starter	Exhaust system
Body/sheet metal	Paint
Generator	Tires/wheels
Steering	Vibration
Suspension	General/other

Powertrain

Diesel engine	Jatco auto trans
Allison trans	Rear axle
Auto trans	Clutch
Gas engine/OBD II	Manual trans
Transaxle	PCM/VCM
Transfer case	Front Axle (4x4)

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Bulletins – February 2000

This review of service bulletins released through February lists the bulletin number, superseded bulletin number (if applicable) subject and models.

GENERAL INFORMATION:

00-00-89-001; February 2000 Labor Time Guide Updates; 1994-2000 Passenger Cars and Trucks

HVAC:

00-01-38-001; HVAC Lack of Performance – Single A/C System Only (Evacuate & Recharge A/C System); 1998-2000 Chevrolet Venture, 1998-2000 Oldsmobile Silhouette, 1998-2000 Pontiac Trans Sport, with C60 Air Conditioner Frt, Manual Controls (Not C34)

00-01-38-002; Air Conditioning Not Cold Enough/Inoperative (Replace "O" Rings/Recharge System); 1999-2000 Chevrolet Tracker

SUSPENSION:

99-03-08-002A; Replaces 99-03-08-002; Front Suspension Coil Spring Noise (Install New Coil Spring Insulator); 1999-2000 Chevrolet and GMC C/K Models (Silverado and Sierra 2WD 1500 Series)

00-03-07-002; Revised Wheel Alignment Specifications; 1999-2000 Chevrolet and GMC C/K Pickup Models (Silverado and Sierra)

00-03-09-001; Rolling Boom Noise Inside Vehicle (Install Pinion Noise Damper and/or New Rear Leaf Spring Dampers); 1995-2000 Chevrolet and GMC M/L Van Models

00-03-10-001; Low Tire Pressure Message Repeatedly Displayed on DIC, Slow Air Loss From Tire and Wheel Assembly (Replace Wheel Assembly); 2000 Chevrolet Corvette

DRIVELINE AXLE:

00-04-20-001; 2-Cut vs. 5-Cut Rear Axle Ring and Pinion Gearset Differences; 1999-2000 Chevrolet and GMC C/K Pickup Models (Silverado and Sierra), with 8.6 Inch Ring Gear Rear Axles (3.73 Axle Ratio)

BRAKES:

00-05-22-002; Brake Rotor Warranty Service Procedure; 1995-2000 Passenger Cars and Light Duty Trucks

ENGINE/PROPULSION SYSTEM:

99-06-01-022; No Start, Hard Start, or Rough Idle After Start (Clean CPI Poppet Valves); 1992-95 Chevrolet and GMC M/L, S/T Models, 1992-95 Oldsmobile Bravada, with 4.3L Engine (VIN W – RPO L35)

99-06-02-012A; Replaces 99-06-02-012; Rust in Coolant System, Heater Inoperative, Blows Cold Air, Engine Overheats (Flush Coolant System); 1996-98 Chevrolet and GMC S/T Models (Blazer, Jimmy, Sonoma, S10 Pickup), 1996-98 Oldsmobile Bravada, with 4.3L V6 Engine (VINs W, X – RPOs L35, LF6)

99-06-02-12B; Replaces 99-06-02-012A; Rust in Coolant System, Heater Inoperative, Blows Cold Air, Engine Overheats (Flush Coolant System); 1996-98 Chevrolet and GMC S/T Models (Blazer, Jimmy, Sonoma, S10 Pickup), 1998 GMC Envoy, 1996-98 Oldsmobile Bravada, with 4.3L V6 Engine (VINs W, X – RPOs L35, LF6)

99-06-03-007B; Replaces 99-06-03-007A; Fuel Gauge Inaccurate/Fluctuates, Premature Low Fuel Chime (Exchange Instrument Panel Cluster, Replace Fuel Level Sensor, Reprogram EEPROM); 1997-99 Buick Century, Regal, 1997-99 Chevrolet Lumina, Monte Carlo, 1998-99 Oldsmobile Intrigue, 1997-99 Pontiac Grand Prix

00-06-01-001; Engine Noise (Check/Replace Crankshaft Position Sensor); 1999 Chevrolet and GMC C/K Models (Silverado and Sierra), with 4.8L or 5.3L V8 Engine (VINs V, T – RPOs LR4, LM7)

00-06-02-001; Engine Running Hot, Overheating and/or Loss of Coolant (Polish Radiator Filler Neck and Replace Radiator Cap); 1999-2000 Passenger Cars and Trucks with Composite Radiator End Tank

00-06-04-002; Hard, No Start or Excessive Gray or White Smoke on Start Up After Recent Glow Plug Replacement (Replace Glow Plugs); 1982-99 Chevrolet and GMC C/K, G, P, R, V Models, with 6.2L or 6.5L Diesel Engine (VINs C, J, F, P, S, Y – RPOs LH6, LL4, L65, L49, L56, L57)

00-06-04-003; Replaces 87-65-07A; Rough Idle After Start, and/or a Service Engine Soon (SES) Light (Unstick and Clean Central Sequential Fuel Injection (CSFI) Poppet Valves); 1999-2000 Cadillac Escalade, 1996-2000 Chevrolet and GMC C/K, S/T, M/L, G, P Models, 1996-2000 Oldsmobile Bravada, with 4.3L, 5.0L, 5.7L Engine (VINs W, X, M, R – RPOs L35, L30, L31)

00-06-04-005; Cold Engine Idle Hunt/Surge (Reprogram PCM); 1997 Chevrolet Malibu, 1997 Oldsmobile Cutlass, with 3.1L Engine (VIN M – RPO L82)

00-06-04-006; Service Engine Soon Lamp On with DTCs P0141 and/or P0161 (Reprogram VCM); 2000 Chevrolet and GMC C/K Models (Silverado and Sierra), with 4.8L or 5.3L Engine (VINs V, T – RPOs LR4, LM7)

TRANSMISSION/TRANSAXLE:

99-07-29-007; Manual Transaxle Exchange Program; 2000 Chevrolet Cavalier, 2000 Oldsmobile Alero, 2000 Pontiac Grand Am, Sunfire, with F23 Manual Transaxle

00-07-30-002; Slips, Harsh Upshift or Garage Shifts, Launch Shudders, Flares, Erratic Shifts, and Intermittent Concerns, DTC P1811 or P0748 Set (Replace Pressure Control Solenoid Valve Assembly); 1999-2000 Buick LeSabre, Park Avenue/Ultra, Regal, Riviera, 1999 Chevrolet Lumina, Monte Carlo, Venture, 1999 Oldsmobile Eighty-Eight, Intrigue, Silhouette, 1999 Pontiac Bonneville, Grand Prix, Montana, with Hydra-Matic 4T65-E (RPO MN3, MN7 or M15) and 3.4L, 3.5L or 3.8L Engine (VINs E, H, K, 1 – RPOs LA1, LX5, L36, L67)

BODY AND ACCESSORIES:

00-08-63-001; Cab Assist Step Cracking (Replace Step and Install Rubber Insulators); 1995-2000 Chevrolet and GMC C6-7 Conventional Models with Single Fuel Tank

00-08-64-003; Front Door Rattle Upon Closing (Replace Door Window Regulator Bolts); 1999-2000 Chevrolet and GMC C/K Pickup Models (Silverado and Sierra)

00-08-66-001; Water Intrusion into Rear Compartment (Replace Primary Weatherstrip/Adjust Doors if Necessary); 1999-2000 Cadillac Escalade, 1999-2000 Chevrolet and GMC C/K Utility Models (Tahoe Z71 and Limited, Yukon Denali), 1999 Chevrolet and GMC C/K Utility Models (Tahoe, Suburban, Yukon) with Cargo Doors or Endgate (RPOs ZW9, E55)

00-08-67-001; Folding Top Hydraulic System; 1994-2000 Chevrolet Camaro, 1994-2000 Pontiac Firebird

Resetting the Oil Level Monitor

Cadillac DeVille, Seville and Eldorado for the 2000 model year have an oil level monitor on the 4.6L engine. A Check Oil Level message appears on the instrument panel when the oil level is approximately one quart low. Bringing the oil level to the full mark on the dipstick will not turn the message off; it must be done manually. Here's how.

Before the message can be reset, the oil level monitor must see a coolant temperature drop of 10°C (18°F). This may require allowing the vehicle to sit for up to 2 hours to allow the coolant temperature to drop. Coolant temperature can be confirmed with a scan tool.

After the cooldown period, turn the ignition ON for at least one second, but do not crank the engine. Turn the ignition OFF and remove the key from the lock cylinder. Reinstall the key and start the engine. Confirm that the oil level message is no longer displayed.

You may share this information with your customers so they can reset the monitor themselves if needed. This information will be included in future owner's manuals.

– Ray Romeo

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