TECHlink
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BREAKING NEWS

2004 Cadillac CTS models with the 3.5L V6 engine (RPO LY7) require use of the CANdi module when using the Tech 2. Refer to the March 2003 TechLink for installation and functionality testing. The CANdi module can remain in place for all 2004 Cadillacs. http://service.gm.com

Electric Power Steering (EPS)

For several years, GM vehicles have offered steering systems involving electronics. The Magnasteer system (TechLink Dec. 2000) uses an electronically controlled magnetic unit to vary the amount of effort needed to steer the vehicle. Quadrasteer (TechLink, Dec 2001) uses an electronically controlled electric motor to provide steering for the rear wheels.

Now, the 2004 Chevrolet Malibu is offering an Electric Power Steering (EPS) system, which uses an electric motor to provide steering assist to the front wheels. This eliminates the power steering pump, hoses, control valve and piston/cylinder assembly.

The EPS motor provides a variable amount of assist directly to the steering shaft, based on vehicle speed and input torque. The motor and the Power Steering Control Module (PSCM) are mounted as an assembly directly to the steering column.

TIP: Unlike Magnasteer, which is controlled by the Electronic Brake Control Module, the EPS has its own control module.

The EPS motor is a 65 amp, brushless, 12-volt reversible unit. It drives the steering shaft through a worm shaft and 22:1 reduction gear.

This method of providing boost is considerably different from a hydraulic assist. In the hydraulic system, pressure is applied directly to the steering rack to help move it side to side. On the EPS system, boost is applied to the steering shaft, which helps the driver turn the steering pinion.

Because the electric motor draws a large amount of current when it is running, the system has built-in overload protection. Heat build-up may be a factor at high ambient temperatures, when a large amount of steering wheel movements occur in a short period of time (such as repeatedly performing lock-to-lock turns, while standing still). It's unlikely that a customer will experience this.

continued on page 3

DTC Symptoms

Background

As the complexity of GM vehicles has increased, so has the need for additional DTC (Diagnostic Trouble Code) numbers.

For a given circuit or circuit type, 5 consecutive DTC numbers were usually assigned in the following format:

B2700 Ignition Shift Interlock **Circuit** (base number)

B2701 Ignition Shift Interlock **Circuit Range/Performance**

B2702 Ignition Shift Interlock **Circuit Low**

B2703 Ignition Shift Interlock **Circuit High**

B2704 Ignition Shift Interlock **Circuit Open**

For some circuits, not all 5 of the assigned DTCs were actually needed. But because assignments were made according to the formatting plan, many new types of circuits consumed 5 numbers.

The list of numbers available for DTCs used on GM vehicles worldwide was being rapidly depleted.

When the message structure of the GMLAN Serial Data Network was being developed (see March 2003 TechLink), an additional byte of data was included in each DTC Message. So, additional information could be displayed on the scan tool for a circuit failure without assigning more than one DTC number to a given circuit. This extra data is being called the DTC Symptom.

This byte of data can be indicated with two alphanumeric characters. The first character following the DTC indicates the DTC Symptom category and the second character indicates the subtype of the DTC Symptom. There's a complete list of categories and subtypes in SI under the 2004 XLR or the 2004 Malibu. Follow this path:

continued on page 3

TECHlink GM

Contents

GM Service and Parts Operations

Programming Corner

Programmable Radios

At present, radios are programmable on the following vehicles:

2003 C/K vehicles

2003 G/H vans

2003-04 Hummer H2

2004 all light and medium duty trucks

These radios must be programmed when a new unit is installed or radios are swapped. In the past, it was necessary to call the Techline Customer Support Center for a VCI number to complete the event. The new process makes this phone call unnecessary.

Requirements

To use this procedure, you must be using TIS satellite version 9.0 and Tech 2 software version 23.005 (or newer). This coverage was released in late August.

Procedure

You will need the following information before you begin:

- RPO code of the radio you're going to program
- RPO code of speakers
- On C/K trucks, observe if there's a Y91 amplifier package
- On Hummer H2, observe if there's a Y91, Y92, or no amp package
- Be aware that RPO UC6 is a six-disc in-dash CD changer.

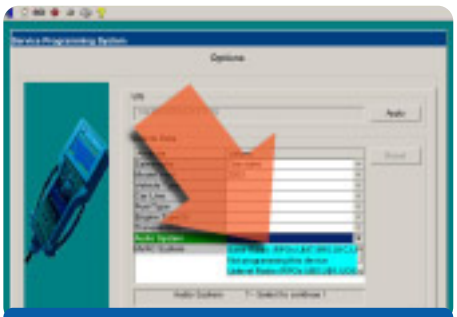
TIP: On vehicles with RPO U42 DVD player, you must pull the DVD fuse before programming the radio.

TIP: You must install the radio to be programmed in the vehicle before beginning the request process.

Begin by requesting information from the vehicle. The Tech 2 will gather:

- Calibration numbers
- VIN
- Radio's 8-digit GM part number

Connect the Tech 2 to a PC with the TIS application. The next part of the process is automated and transparent. TIS will obtain the VIN and radio 8-digit part number from your Tech 2, and will then locate and display the appropriate Option Screen. In the turquoise area of the display, make the necessary selection, based on the known radio RPO.



Option Screen

Fill in other option selections as required; i.e., HVAC.

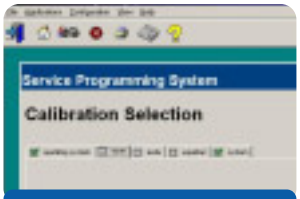
TIP: Ordinarily, the Radio Part Number Select popup will not appear, because TIS will obtain the number from the Tech 2. But if the popup does appear, it may be because:

- The Tech 2 does not contain software version 23.005 or newer. In this case, you must manually select the correct radio part number from the list provided. You can obtain the number from the tag on the radio, or by using the Tech 2 Diagnostic Functions to read the number from the radio.
- Something is wrong with the radio.

Drop Down Details

On the Supported Controller screen, select Radio and select Normal. Then when the Calibration screen appears, deal with each available tab, one at a time.

Under the Tuner tab, specify the country in which the radio will be operated. This affects the range of frequencies displayed.



Tabs

Under the Audio tab, you will need to make a selection based on the radio's RPO code.

Under the Equalizer tab, you need to know and specify the vehicle's cabin and speaker configuration. This affects how the radio sounds in its surroundings.

Return to the vehicle and download the programming data to the radio.

TIP: If you make any errors during the selection process, improper calibrations could result in no audio and/or no chime functions. (The radio will light up but has no volume.) If this occurs, DO NOT replace the radio. Start the selection and calibration process again.

Finally, as with any programming event, check for codes.

- Thanks to Chris Jenkins, Craig Jones and Mark Stesney

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Electric Power Steering — from page 1

The software in the controller keeps track of current usage and compares that with the known heat buildup of various components. If a heat threshold is reached, the controller uses pulse width modulation (PWM) to temporarily limit current to the motor. This is called de-rating. In this rare instance, the driver would notice a temporary reduction in boost.

The EPS control module depends on various inputs:

- Vehicle speed
- Steering shaft torque sensor
- Steering wheel position sensor

In a hydraulic power steering system, the input and output steering shafts are joined by a small torsion bar. Two halves of a hydraulic flow valve are attached, one to each shaft. When torque is applied, the torsion bar twists, the valve halves move relative to each other, and fluid is allowed to flow. In the electric power steering system, the upper and lower torque sensor rotors, which use resistive elements, are mounted to the input and output shafts. When torque is applied, the torsion bar twists, the rotors move relative to each other, and the movement affects the difference in resistance between the two rotors. This electrical information is used by the PSCM as the torque input. Boost is provided, proportional to torque. The combined torque/hand wheel position sensor assembly is contained within the steering column.

Each EPS unit is calibrated for the vehicle in which it is installed, which ensures the proper amount of assist and road feel. The calibration is called the Steering Tuning Selection and is specific to the vehicle's VIN. It can be read from the module, using the Tech 2.

Service

The EPS motor and control unit are replaceable as an assembly. The torque sensor and steering wheel position sensor are serviced by replacing the steering column assembly.

If components are replaced in the EPS system, it is necessary to perform a hand wheel position sensor calibration so the system knows where the center position is for the steering wheel.

There's a torque sensor zero calibration, which affects on-center effort bias.

And, the correct Steering Tuning Selection will also have to be made so the system knows which boost curve to use for that particular vehicle.

Diagnosis

Diagnosis of the EPS system is aided by the following data readouts using the Tech 2 scan tool:

- Battery Voltage
- Calculated System Temperature
- Engine Speed
- Motor Command
- Motor Feedback
- Steering Shaft Torque
- Steering Position Sensor
- Steering Tuning Selection
- Steering Wheel Position
- Torque Sensor Signal
- Vehicle Speed

The PSCM module communicates using the GMLAN network.

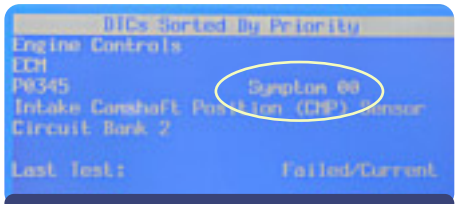
- Thanks to David Juarez

DTC Symptoms — from page 1

- "Build" vehicle
- Vehicle Control Systems
- Vehicle DTC Information
- Description and Operation
- DTC Symptom Description

Display of DTC Symptoms

When DTC Symptoms are available on the scan tool, they will be displayed separately from the DTC number.



Typical DTC symptom

Service Information will also deal specifically with DTC Symptoms. Information about the DTC Symptom(s) will be provided in the facing page information for a DTC. See the accompanying sample from a facing page.

In many cases, the diagnostic procedure in Service Information is the same for a given DTC regardless of DTC Symptom. In some cases, different diagnostic procedures will be used for different DTC Symptoms with the same base DTC number. In either case, use the Search function in ESI to find DTCs by base DTC number only, and if necessary, select the appropriate procedure for the


DTC B3265

DTC Symptom after the search.

A special case of the DTC Symptom is when the base DTC is the only malfunction identified. Additional information that a DTC symptom would provide is not needed or recorded by the module. The base DTC number and descriptor provide all the information that is available. In that case, the DTC Symptom displayed is 00 (No Additional Information). If 00 is displayed as a DTC Symptom, there is not a fault with DTC display on the scan tool; it is just indicating that no additional information is available.

- Thanks to Gary Clark

Accessing GM Common Training Website (USA only)

The July issue of TechLink mentioned the Terminal and Connector Reference Guide and gave the wrong instructions on how to obtain a copy.

We suggest following this path to obtain this information from the GM Common Training website:

- https://www.gmcommontraining.com
- Use your ID and password
- Select Resources
- Select Training Materials
- Select 18043.05B - GM Terminals and Connectors Reference Guide

- Thanks to Chris Wallace

Corrections

An article in the July 2003 issue of TechLink involving Switch Plate Bezel Removal contains an error in the applicable model years. It applies to 2003 - 04.

An article in the August 2003 issue involving Front Stabilizer Shaft Installation refers to 2003 vehicles. It should have said 2004.

XM Satellite Radio News

There's a lot of news about XM™ Satellite Radio for the 2004 model year.

New Models Added

First, a number of additional vehicles will be offering XM radio in 2004: Canyon, Colorado, Envoy, Envoy XL, Envoy XUV, Grand Prix, Ion, Malibu, Malibu Maxx, Montana, Rainier, SRX, Trail Blazer, Trail Blazer EXT, Venture, Vibe, Vue, and XLR.

All vehicles that offered XM radio in the past will continue for 2004.

New Antenna Technology

Beginning with the 2004 model year, a new XM antenna is being installed on some vehicles. The list includes Avalanche, Denali, Denali XL, Escalade, Escalade ESV, Escalade EXT, Sierra, Silverado, Suburban, Tahoe, Yukon, and Yukon XL. The DeVille, Seville, Bonneville, and LeSabre will switch to this new antenna mid-year. And also mid-year, the 2004 Envoy, Envoy XL, Envoy XUV, Rainier, TrailBlazer, and TrailBlazer EXT will switch to a different new antenna.

New 2004 Antenna

The XM antenna used in the 2002-03 model years included two different elements, one to receive signals from the satellites, and a second one to receive signals from the ground repeaters. Two coax cables were required. The new

New Mid-Year Antenna

antennas use one element to receive both sets of signals, and only one coax cable is required.

TIP: The two types of antenna cannot be interchanged in service.

XM Radio Activation

At present, all vehicles with XM radio arrive at the dealership with ten rotating free-to-air channels. It's necessary to phone XM radio at 800.556.3600 to activate the service. Beginning in October, the ten free-to-air channels will be phased out. Dealers will be able to activate all of the vehicles on their lot through a process called Rapid Activation, turning all of their vehicles into XM demonstrators. The only information needed to Rapid-Activate a vehicle is the 8-digit XM radio ID, obtained by tuning to XM channel 0.

TIP: When a customer buys an XM-equipped vehicle that has been Rapid Activated, an account is automatically set up at XM, when the Customer Delivery Record is received.

Beginning early in calendar year 2004, all vehicles will arrive pre-activated from the factory. Each customer will have several choices:

1. Accept the vehicle with the radio activated and enjoy 3 months of free service before deciding to continue. XM will send information to the customer about extending their subscription.

2. Sign up for a multi-year subscription.

3. Tell the dealer that they are not interested in 3 months of free service.

Theftlock

To deter theft, all XM receivers are programmed to learn the VIN of the vehicle in which they are installed, using the Class 2 data line. As soon as the VIN is learned, the unit becomes "locked." That is, it cannot be moved to a vehicle with a different VIN – it will not work. Once locked, the receiver can be installed only in the original vehicle.

Cadillac XLR Antenna

On the XLR, the XM radio antenna must be installed during new vehicle preparation, if the customer desires XM service. This is explained on an instruction sheet accompanying the vehicle. It is also highlighted on page 5.

TIP: All XLR service stock antennas are unpainted, and must be painted before installation.

Other

XM radio receivers are still on a parts restriction. After diagnosis, call GM TAC at 877.446.8227. (The prompt for XM radio is combined with the OnStar prompt.) After verifying your diagnosis, the TAC consultant will order a replacement. Use the supplied pre-paid return label to return the original receiver to avoid a non-return core charge.

Soon, you will be able to use the Tech 2 to read the serial number from the XM radio receiver. TechLink will publish the necessary path when it becomes available.

The XM antenna is molded of black plastic. Do not attempt to apply paint or clearcoat; doing so can reduce system performance. This does not apply to the Cadillac XLR antenna.

The factory location for each antenna was optimized for performance by GM engineering. Do not attempt to relocate the antenna, as this can cause degraded performance.

And finally, the antenna needs to be attached to a solid surface. Do not install cloth or vinyl roof covers on XM-equipped vehicles. This may cause degraded performance and could also lead to water leaks.

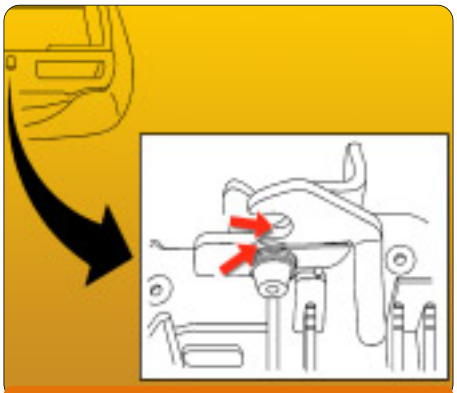
- Thanks to Doug McKibbon

Console Latch Lubricant

Owners of some 1999-2003 Chevrolet and GMC fullsize pickups and utilities with a center console may comment that the lid is hard to open or close. According to bulletin 02-08-49-007, this may be caused by insufficient lubrication on the latch.

TIP: Do not replace parts in an attempt to repair this condition.

TIP: If the lid will not open, depress the center console latch handle button and give the top of the center console lid a sharp rap with your hand.



Apply Dri Slide Lubricant as indicated

Apply a small amount of GM Dri Slide® Lubricant 1052948 (992926 in Canada) to the center console latch, through the opening in the latch trim plate. Operate the latch while spraying to work the lubricant into the mechanism.

Open and close the console lid several times to verify the proper operation of the latch.

- Thanks to Jerry Garfield

XM Antenna Installation on XLR

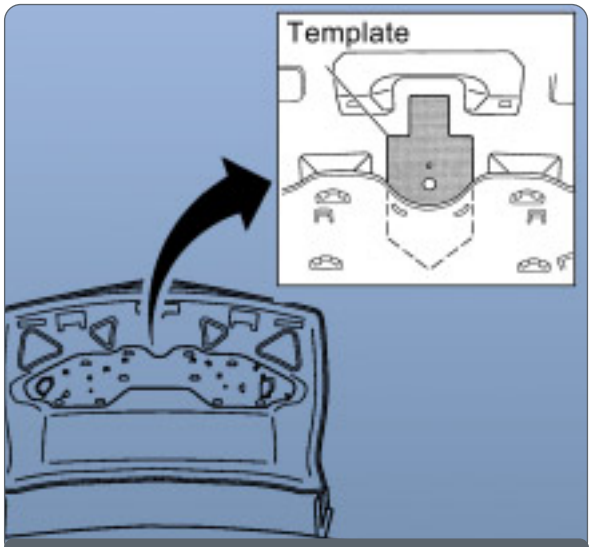
When a 2004 Cadillac XLR is ordered with the optional XM radio, the antenna is shipped loose. It must be installed before delivery of the vehicle (at customer request). A detailed instruction sheet is supplied with the antenna kit. Here are some highlights.

TIP: Install protective coverings over the rear compartment and adjacent panels. The folding top must be in the lowered position and the compartment lid open.

On all XLR models, an AM/FM antenna ground plate is attached to the underside of the rear compartment lid. A supplemental ground plate/template is supplied with the XM antenna. It must be positioned and installed before the XM antenna is installed.

TIP: For the first several months of production, it will be necessary to temporarily remove the large ground plate from the underside of the rear compartment lid. In later production, it will be reshaped and can be left in place. The instruction sheet provided with the antenna kit will reflect the appropriate steps.

The XM antenna ground plate/template aligns to a recessed feature in the rear compartment lid. It serves as a template to mark the locations for two pilot holes on the underside of the rear compartment lid.



Positioning Template

A strip of masking tape is used to protect the exterior surface of the compartment lid while the pilot holes are enlarged as instructed.

TIP: After the pilot holes are drilled and enlarged, remove masking tape and drilling remnants and use GM RTV silicone rubber sealant (12345739) to seal the raw edges of the holes.

The XM antenna ground plate/template is equipped with an adhesive material. Peel the backing and install the plate to the underside of the compartment lid.

TIP: When the backing is removed, be sure the diecut discs are also removed from the mounting holes.

Then follow the instructions to install the XM antenna, fasteners, and wiring.

On early models, follow SI procedures to reinstall the large ground plate to the rear compartment lid. On later models, this step will not be necessary.

Then use your Tech 2 to verify that the proper parameters are displayed, and clear DTCs, following the instruction sheet.

The vehicle is now ready for the XM radio receiver to be activated.

- Thanks to Jason Macco

Cadillac XLR Trim Removal

Here are some tips to help avoid damage when removing the console trim pieces on the new Cadillac XLR.

The two trim pieces are the console trim plate (which surrounds the shifter and cupholder) and the instrument panel trim plate (which surrounds the radio and HVAC controls).

Both of these trim pieces are retained by metal clips, which must be loosened by prying.


Typical clip

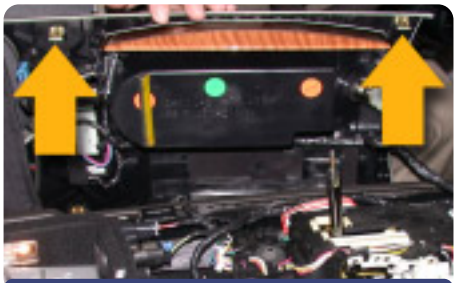
TIP: Use a plastic trim removal stick, to avoid damage to the trim or surrounding areas.

TIP: Be sure all clips are loosened before pulling on the trim plates, to avoid deforming the metal covering.

Refer to SI for the complete procedure. The information here is additional tips.

The console trim plate comes out first. Use a T-15 Torx bit to remove the shifter handle. Then insert the trim removal stick under the edge of the trim plate in the area of the rear clip and loosen the clip. Repeat this for each clip, then lift the trim plate off the console. Refer to the photo for the clip locations.


Pry rear clip first


Console trim plate clip locations

With the console trim removed, you can remove the IP trim plate. Insert the trim stick at the upper corner and loosen the top clips. Work down the sides and loosen the center and bottom clips. Then remove the trim plate. Refer to the photo for clip locations.


Pry upper corner first


IP trim plate clip locations

- Thanks to Brad Thacher

Quality Pre-Delivery Inspection

Most customers consider the condition of their new vehicle during delivery as a direct reflection on your dealership, and on your service department. A quality pre-delivery inspection (PDI) is critical to customer satisfaction with their new vehicle, which is reflected in CSI and various automotive surveys.

Bulletin 03-00-89-006 addresses the PDI process. We're including some critical highlights here.

Steering Wheel, Seats, and Interior Door Panels

Interior components are frequently covered in protective plastic.

TIP: Do not use any sharp object or cutting utensil to remove any plastic coverings.

Leather Steering Wheels -- With your hands at 11 o'clock and 2 o'clock positions, pull the plastic from behind the wheel toward you and then downward. Do not allow it to twist or bunch up. If there's a second layer of thin plastic wound around the wheel, unwind it. Do not twist it into a wire-like bunch. It could damage the leather.

Seats and Panels -- Plastic wrap caught behind moldings or bezels may require removal of these trim pieces to remove the plastic. Do not remove residual adhesive with a razor blade. Do not expose the surfaces to harsh chemicals.

TIP: The bulletin lists adhesive removers and cleaners that can be safely used on various interior surfaces. These products must be used with care. Space does not permit repeating the instructions here. Follow the instructions on the labels.

Tire Pressure

Tires are inflated at the factory to 35-41 psi (241-283 kPa) to assure proper tire bead seating.

Tires must be inflated to the recommended pressure before delivery, including the spare tire. Improper tire pressure may result in ride, handling and/or noise concerns.

Verify and adjust the tire pressures to the PSI found on the tire placard. The placard may be located on the front or rear door jamb, inner trunk lid, or IP compartment lid, depending on model

TIP: Do not set to the pressure indicated on the tire sidewall.

Exterior Protection

The following list, although not exhaustive, includes some ways you can minimize damage to vehicles at your dealership.

- Leave exterior protection devices such as plastic sheeting and foam block door protectors in place up to the time of delivery. (This does not apply to display vehicles.)
- In northern areas, be careful with ice scrapers and snow shovels. Consider using plastic implements in storage lots.
- Keep bushes and shrubs trimmed around vehicle storage lots.
- Maintain your dealership car wash equipment. Be sure personnel who prep new vehicles avoid belt buckles, metal snaps, etc. on their uniforms.

Perceived Fuel Economy

In addition to the information in the bulletin above, there's also the matter of perceived fuel economy, particularly on vehicles with a Driver Information Center (DIC). This is covered in Informational Bulletin 03-00-89-021.

To ensure that the fuel economy displayed is a reflection of the owner's driving habits and vehicle usage, it's necessary to reset the fuel economy readout just before delivery.

TIP: The way the vehicle is handled during manufacture and shipping may leave inaccurate values in the DIC.

Refer to the appropriate Owner's Manual for the reset procedure. You will find all 2004 Owner's Manuals on SI.

- Thanks to Diana Sancya

Follow the Links to Complete Diagnosis and Repair

Following a repair procedure or diagnostic chart in SI is much like following written directions when you're driving to an unfamiliar place. That is, you must follow every step, in order, without skipping any. Otherwise, you probably won't end up where you're supposed to go.

In SI, many instructions contain links (underlined and displayed in blue) that take you to additional, related instructions. It may be tempting to ignore these links, but you must click each link and perform the instructions they lead to. Doing otherwise could cause you to overlook or completely miss important steps.

How SI is Organized

To understand this fully, it helps to know a little bit about how SI is organized and developed.

Many service or diagnostic procedures are broken down into numerous subroutines, which can be assembled by the SI developer as needed to complete an overall procedure. Put another way, an overall procedure may consist of a string of related subroutines. In many cases, a certain subroutine is used in more than one procedure. To conserve space, the SI developer places a link in the procedure to take you to the necessary subroutine, instead of reproducing it each time it's used.

(Your own toolbox works like this. You have only one 1/2-inch ratchet wrench, but you assemble it with numerous different sockets and extensions to perform countless different tasks.)

This places responsibility on you, the service technician. To get the whole picture, you must follow each link as instructed.

An Example

An example taken from SI will help explain this.

Suppose you've just replaced the Sensing and Diagnostic Module (SDM) in a vehicle's airbag system. At the end of the installation procedure, you're told to enable the SIR system, and there's a link to Disabling and Enabling. If you ignore the link, simply plug the fuse in and think you're done, you've made a mistake.

In many cases, the vehicle's BCM will not recognize a new SDM because it hasn't yet been set-up/programmed, and will set a code B1001. And the SIR system will not operate. But, because you have skipped some important steps, you don't know that. So now, you can run yourself in circles, trying to figure out what went wrong.

But, if you had followed the link, you would have discovered that the AIR BAG indicator was not blinking properly and would have been instructed to perform a Diagnostic System Check (follow the link!).

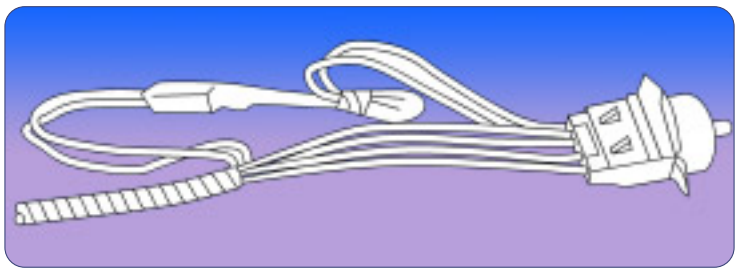
The Diagnostic System Check is designed to find symptoms, communication faults and DTCs. In this case, it would have turned up the DTC B1001, which would have linked you to the diagnostic table for that DTC. Here, you would learn that it's necessary to perform programming so the BCM will accept the new SDM.

Following the chain of links is the quickest, surest way to reach the desired outcome.

- Thanks to Chad O'Brien

Electric Mirror Short Circuit

Product Safety Bulletin 03006A (May, 2003) explains that a fused jumper harness may need to be added to the electric mirror switch of certain 1997-98 trucks. This harness addresses the possibility of a short circuit in the mirror switch. See the bulletin for details.



All steps of the installation procedure must be done, and must be done in the order given.

TIP: To avoid damaging the fusing circuit contained in the recall harness, DO NOT connect the two-cavity connector until instructed to do so.

TIP: All terminals must lock into the connectors (check by lightly tugging), and all terminal position assurance (TPA) locks must be properly installed.

TIP: All connectors must plug together with an audible click.

TIP: If the wires of the original harness or the jumper harness are crossed (installed into the wrong cavities) when the jumper is installed, improper operation will result. If the mirrors operate only with the headlamps turned on, you've made a mistake.

- Thanks to Dan Oden

Rusty Front Brake Rotors

This information pertains to 1999-2002 Sierra and Silverado 1500 Series pickups only .

A new, more-aggressive front brake pad was released for both production and service in the 2003 model year.

This new pad material has the ability to keep front rotor braking surfaces clean and free of rust. These pads will also fit 1999-2002 1500 series pickups.

If you are in an area of high corrosion (for instance, use of road salt) and are replacing the front rotors due to flaking red rust, you might want to install this new pad to help prevent a repeat occurrence. The new pad kit part number is 18048101.

TIP: The new pads will not clean rotors that already have the flaking red rust condition. Also, these pads should not be used on rear rotors.

- Thanks to Steve Love

Oil Life Monitor Addition

Please make the following addition to the Truck Oil Life Monitor article in the June 2003 issue.

Trucks with DIC

2003 - 04 Sierra
2003 - 04 Sierra Denali
2003 - 04 Silverado
2003 - 04 Yukon and Yukon XL
2003 - 04 Tahoe and Suburban
2003 - 04 Escalade
2003 - 04 Escalade EXT
2003 - 04 Avalanche
2003 - 04 Yukon Denali
2003 - 04 Hummer H2

1. Press the fuel information button until ENGINE OIL LIFE appears in the display.
2. To reset the Oil Life System, press and hold the select button while ENGINE OIL LIFE is displayed.

OIL LIFE RESET will appear on the display for 10 seconds to let you know the system is reset.

- Thanks to Jerry Garfield

TAC*Tips*

Transmission Stuck in Gear

The 1997-2003 Corvette, or 1993-2002 Camaro and Pontiac Firebird equipped with the 6 speed manual transmission may exhibit the following.

Primary Condition

- Unable to shift out of fourth gear.

Other Conditions

- 3-4 upshift -- hard shift, gear clash, or block-out.
- 4-3 downshift -- hard shift, gear clash or block-out.
- 2-3 upshift -- hard shift, gear clash or block-out.
- third gear hop-out
- fourth gear hop-out.

Replace the aluminum 3-4 shift fork with an iron 3-4 shift fork. The part number of the iron shift fork as of July 9, 2003 is 88996653 and is available only through GMSPO.

The 3-4 synchronizer and 3-4 blocking ring should also be replaced at the same time.

- Thanks to Mark Gordon

Belt Chirp at Shutdown

Owners of some 2001-03 Chevrolet and GMC pickups and utilities with the 6.6L LB7 diesel engine may experience the drive belt chirping on shut down.

This is a normal characteristic of all diesels, caused by the rapid stop of the cranktrain due to higher compression, compared with a gasoline engine.

The chirp may or may not occur, depending on variations in temperature, humidity, engine compression, internal engine friction, belt condition, tensioner spring tension, tensioner position at the time of engine stopping, pulley condition, drag imposed by accessory drive components, where the crankshaft is positioned when the engine is shut down, and any other possible variables that affect how fast the engine comes to a stop and variations on belt tension/friction.

For noises with the drive belt at any other time, such as while the engine is running, refer to SI2000 documents:

677248 -- Drive belt chirping diagnosis
677250 -- Drive belt squeal diagnosis
677252 -- Drive belt whine diagnosis
677254 -- Drive belt rumbling diagnosis

- Thanks to Jack McVoy

Aftermarket Aircleaner

Owners of some 2003 Hummer H2s may experience lack or power, transmission will not upshift, or an erratic shift or stumble.

TIP: Check for an aftermarket air cleaner installed on the vehicle.

Some aftermarket air cleaners pull air directly from the underhood area of the vehicle at a higher temperature than the OEM airbox. The increase in temperature can cause erroneous readings from the MAF sensor, causing the above concerns. If an aftermarket air cleaner is discovered, reinstall the OEM equipment and re-evaluate.

Follow all SI related diagnostics if an OEM air cleaner box is installed and the vehicle still exhibits these conditions.

- Thanks to Sean Garrison

Car Issues -- Fix It Right the First Time

Model Year(s)	Vehicle Line(s) -- Condition	Do This	Don't Do This	Reference Information / Bulletin
2000-2003	3800 L36 Coolant leak at intake manifold	Replace the intermediate (upper) intake gasket	Replace the intake manifold assembly	Bulletin in process VME to field 5/30/03 TechLink article in June
1998-2003	Seville – Rear Seat HVAC Controls	Replace the knob only	Replace the entire rear seat blower switch assembly	03-01-39-001A
2000-2003	Cavalier/Sunfire/Grand Am/Alero/Malibu – Inaccurate Fuel Gauge	Replace sensor card for fuel gauge – accuracy issue	Replace the fuel sender / pump assembly	01-06-04-008D
1999-2003	Grand Am/Alero – Window Disengagement, Broken Clips	Replace sash clip only	Replace door glass assembly	01-08-64-018
1997-2003	Grand Am/Alero/Malibu – Brake Pulsation	Turn rotor and use brake align procedure	Replace rotors for pulsation	00–05-23-002 01-05-23-001 (Know How Video #15040.01B)
2002-2003	Venture/Montana/Silhouette – Rear Storage Compartment Link Arm Breaks	Replace link arm	Replace rear storage compartment	03-08-110-001
1997-2004	Century/Regal – HVAC Operation, No "Auto" Light	Normal in full heat or cold setting	Replace HVAC control head for "Auto" light	99-01-39-007B
1999-2002	Corvette – Fuel Gauge Intermittently Goes to Empty	Install revised software	Replace fuel senders or I/P cluster	02-06-04-010A
2003	All cars with 4T40/45E, 4T56E and 4T80E – Code P0742	Replace TCC PWM Solenoid	Replace transmission or valve body assembly	02-07-30-039B
2002-2004	L61 EcoTech 4 Cylinder – Engine	Replace Cylinder Bore Liner	Replace Engine	03-06-01-018

Truck Issues -- Fix It Right the First Time

Model Year(s)	Vehicle Line(s) -- Condition	Do This	Don't Do This	Reference Information / Bulletin
2003	Fullsize Pickups and Utilities – Transfer Case Service Light	Replace encoder motor sensor and reprogram TCCM	Replace the module, encoder motor or transfer case for DTCs C0327, P0836, P0500	03-04-21-001B
1999-2002	Fullsize Pickups and Utilities – Throttle Body Sticks	Clean throttle body adjust blade and insert plugs	Replace throttle body	02-06-04-054B
2003	Fullsize Pickups – 6.6L Diesel Engine ECM	Follow SI and bulletins for proper diagnostics for P0181. Refer to the Owner's Manual (block heater and front cover)	Replace ECM (DTCs P0540 and P0181) unless diagnostics confirm need to replace	02-06-04-048, 03-06-04-021, 02-06-04-058 and parts restriction
2003	Silverado, Sierra, Savana, Express > 8600 GVW – ABS Lamp On	Reflash for code C0550	Replace ABS module	03-05-25-003 and parts restriction
2002-2003	TrailBlazer, TrailBlazer EXT – Wavy Front Fascia	Repair fascia with Dual Lock	Replace front fascia	02-08-62-004
2002-2003	All TrailBlazers, All Envoys, Bravada – Mirror Erratic Return	Replace mirror actuator and reprogram module	Replace outside mirror assembly	02-08-64-008 02-08-64-021
1999-2003	Fullsize and Midsize Utilities – Sunroof	Install clip or mechanism kits. GMSPO has component parts.	Replace sunroof	02-08-67-009 03-08-67-004
1999-2003	Fullsize Pickups and Utilities, Midsize Utilities – Noise on Steering	Lube I-shaft	Replace I-Shaft	00-02-35-003B 02-02-35-006A
1999-2003	TrailBlazer, Envoy, Bravada without G67 – Moan/Boom	Replace rear coil springs	Repurchase vehicle for rear axle vibration/boom noise	02-03-09-002A
2002-2003	All TrailBlazers, All Envoys, Bravada – Inoperative Tail Light	Replace tail lamp circuit board and bulb	Replace rear tail lamp assembly for brake light	03-08-42-006

Know-How Broadcasts for October

10270.10D Emerging Issues	October 16, 2003	9:00 AM, 12:30 PM, 3:30 PM Eastern Time
10270.22D - New Model Features - 2004 Pontiac GTO	October 30, 2003	9:00 AM, 12:30 PM, 3:30 PM Eastern Time