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Testing Fuel Injectors -- Misfires

With the inception of OBD 2 vehicles, being able to correctly diagnose misfires has become more important to the service technician. The causes of misfire codes (P0300 or P0301-08) can range from low compression to poor fuel quality. Of course, basic tests must be made to determine the root cause of the misfire. If injectors are suspect, you must perform diagnostics to evaluate injector performance.

Testing fuel injectors requires the use of a Fuel Pressure Gauge included in the PFI Diagnostic Kit J-34730.

J-34730 PFI Diagnostic Kit includes Fuel Pressure Gauge

TIP: This gauge has a scale that reads in kPa as well as psi.

Although psi may be used to diagnose fuel delivery concerns, it is not a fine enough scale to determine whether or not a fuel injector is faulty.

Most psi gauges increment in 2 psi steps, which is not a fine enough resolution for the balance test.

Under no circumstances should fuel injectors be tested using a gauge that reads only in psi. Diagnosis will be inaccurate and you may miss a degraded component.

There are two tests that can be performed on fuel injectors.

Coil Test -- checks the integrity of the winding inside the injector.

Balance Test -- determines if the injector is restricted (lean) or delivering too much fuel (rich).

Coil Testing

Although OBD 2 vehicles may have the capability of setting P0200 codes (injector circuit faults), do not take for granted that the electrical component of an injector is OK if such a code is not set.

TIP: The PCM is able to detect an open circuit or shorted circuit. It is not able to detect a high resistance circuit.

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Techline News

TechLink Website Update

By now, we hope you've discovered the renovated TechLink website at http://service.gm.com. This version went online in October.

If you attempt to print an article from a current issue, some printers cut off the right margin. To prevent this, you may have to adjust the margins in your printer's Page Setup. A left and right margin as small as 0.25-inch may be necessary, depending on your individual printer's characteristics. This is a printer function, not a fault of the website.

During the first month, the links to Archive articles were not functioning. They are now, and you can access any TechLink issue from October 1999 to present.

If you prefer to print out a replica of the paper magazine, either a single page or the whole issue, click on the red "download a PDF of this issue" button. You will need Acrobat Reader for this to work. This free download is available on the Internet at www.adobe.com.

- Thanks to Mark Stesney

TECHlink GM

Contents

GM Service and Parts Operations

Front End Alignment

This information pertains to C/K trucks, G-Vans and Hummer H2.

Wheel alignment machines measure "true" caster, which is relative to the ground. Factory specifications for caster are measured relative to the vehicle's frame. The weight of the vehicle's contents (fuel, cargo, caps, etc.) may cause the vehicle's frame to tilt relative to the ground. This tilt can affect the "true" caster measurement.

For this reason, it is necessary to take into account the angle of the vehicle's frame. This measurement is called frame angle, and it is measured using a digital protractor or equivalent, with a resolution of 0.1 degree.

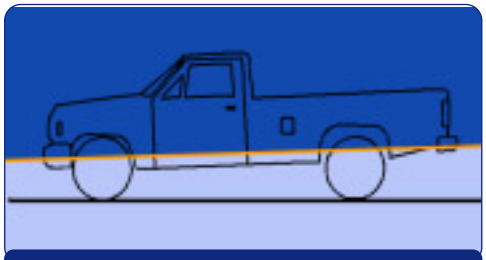
TIP: The frame angle is measured on a flat portion of the frame ahead of the rear tire, near the driver and front passenger doors.

Alignment by following the frame angle method ensures that vehicle caster meets the original design requirements. If caster is too great, steering system load increases. If caster is too little, returnability and steering feel issues will result.

Positive Frame Angle

The frame angle is considered positive if the frame is higher in the rear.

Measure both sides of the frame and average them. Then **add** the average to the caster reading when making adjustments.



Positive Frame Angle Higher in the Rear

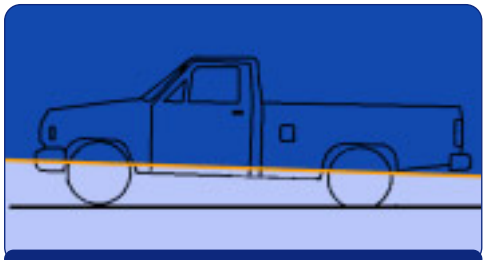
Negative Frame Angle

The frame angle is considered negative if the frame is lower in the rear.

Measure both sides of the frame and average them. Then **subtract** the average from the caster reading when making adjustments.

Follow procedures in SI to make the necessary adjustments to the vehicle's caster.

- Thanks to Rod Evans and Doug Ritter



Negative Frame Angle Lower in the Rear

Seat Belt Post Cover

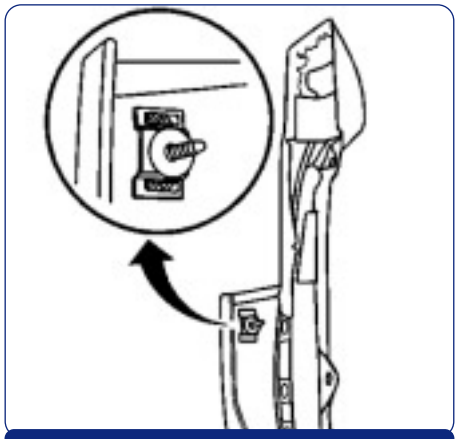
This revised procedure applies to 1998-2003 Cadillac Seville. To remove the front seat belt post cover without breaking it, begin by removing the two trim cover screws.

Use a J-38778 Door Trim Pad Clip Remover to remove the retainer from the center of the trim cover.

Push up and remove the trim cover.

The service manual has been updated to reflect this revised procedure.

- Thanks to Martin Stark



Location of retainer

Know-How Broadcasts for December

Emerging Issues	January16, 2003	9:00 AM, 12:30 PM, 3:30 PM EasternTime
Technology Close-Up	January 30, 2003	9:00 AM, 12:30 PM, 3:30 PM EasternTime

- Thanks to Tracy Timmerman

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Manager, Product Readiness:

R. M. (Bob) Savo
GM Parts and Service Operations
bob.savo@GM.com

Publisher & Editor:

Mark Stesney
GM Parts and Service Operations
Mark.Stesney@GM.com

Technical Editor:

Jim Horner
Jim.Horner@SandyCorp.com
1-248-816-3641

Production Manager:

Marie Meredith

Desktop Publishing:

Greg Szpaichler, MediaWurks
spake@mediawurks.com

FAX number:

1-248-649-5465

Write to:

TechLink
PO Box 500
Troy, MI 48007-0500

GM TechLink on the Web:

http://service.gm.com

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The fuel injector needs a certain amount of electrical current to generate enough magnetic force to allow fuel to flow through it. With high resistance in the circuit, current can be cut down substantially, hindering the fuel delivery performance of the injector. It may not open

J-39021 Fuel Injector Tester

at all, or may react very slowly, restricting fuel delivery. Multec 2 injector coils are best tested using an ohmmeter directly on the injector coil (TechLink, July 2001).

TIP: Multec 1 fuel injectors are more accurately tested using the J-39021 Fuel Injector Tester. Refer to the service manual for proper procedures.

TIP: An injector coil voltage drop test will not work on Multec 2, due to coil wire material and small packaging.

Balance Testing

Testing the flow rate of a fuel injector can be done easily on a test stand during manufacturing. This is not practical in a dealer situation because of the cost of equipment. And, you would have to remove the injector from the vehicle to test it. The balance test determines the condition of the injectors on the vehicle by comparing injector pressure drops. An initial fuel system pressure is achieved for each injector. Each injector is individually pulsed with the same number of pulses for the same time duration. By using two constants (starting fuel system pressure and pulse width/duration), we are able to look at the differences in injector flow based on the comparison of the fuel pressure dropped by each injector as it is pulsed.

1. Connect a fuel pressure gauge (calibrated in kPa) to the fuel rail pressure connection. Purge air from the gauge by opening the valve on the side of the gauge and cycling the fuel pump (this can be accomplished by turning the ignition switch on, then off for 30 seconds, then back on.)

TIP: Fuel system pressure must be at the desired specification in the service manual. Fuel pressure must not leak down at a rate of more than 5 kPa in 30 seconds. If a concern exists, follow diagnostics in the service manual.

2 . Connect the Tech 2, turn the ignition switch on and select Special Functions, Fuel System -- Injector Balance Test.

3. Select injector 1. The fuel system will prime. Record the **Initial Pressure** reading immediately after the fuel pump shuts off.

TIP: The fuel system pressure may rise due to warm fuels vaporizing. This is normal.

4. Press the soft key to pulse the first injector. Record the **Pressure After Pulse** reading immediately after the injector stops pulsing.

5. Select and test each remaining injector. Be sure to record the **Initial Pressure** reading after each fuel system prime.

Cylinder Number	Initial Pressure (kPa)	Pressure After Pulses (kPa)	Subtracted Value (kPa)
1	346	165	181
2	345	172	173
3	345	167	178
4	346	187	159
5	345	169	176
6	344	171	173

Max Subtracted Value	181
Min Subtracted Value	159
Max Difference	22

Analysis

1. Subtract the **Pressure After Pulse** reading from the **Initial Pressure** reading for each cylinder. Record the result as **Subtracted Value**.

2. Identify and record the **Maximum Subtracted** Value and the **Minimum Subtracted** Value.

3. Subtract the minimum from the maximum to obtain **Max Difference**.

TIP: If the **Max Difference** is less than 20 kPa, the injectors are all flowing about the same and should not be cleaned or replaced.

4. If the **Max Difference** is greater than 20 kPa, you have one or more faulty injectors. The injector with the highest subtracted value delivers the most fuel (rich), while the one with the lowest subtracted value delivers the least fuel (lean). An injector that is overly rich when compared to the others must be replaced. An injector that is lean when compared to the others may have some type of internal contamination causing a restriction.

A filter located at the top of the injector captures large contaminates in the fuel system. It is recommended that you replace the injector if this filter is plugged with debris. You must also closely inspect the other injectors, the fuel rail and the fuel pump and tank. Clean and/or replace components as necessary. Refer

Cutaway Multec 2 to show filter, top, and director plate, bottom.

to the service manual for proper procedures.

Contamination may also form on the director plate on the bottom of the injector. This can be removed only by using an appropriate cleaning procedure. However, not all injectors may be cleaned. Refer to bulletins 99-06-04-005B and 00-06-04-003A for specific applications. Repeat the balance test with the new or cleaned injectors to make sure the **Max Difference** is now less than 20 kPa.

Things to Remember

Using the misfire graphic and/or misfire data on the Tech 2 may help pinpoint suspect cylinders.

Always take your pressure measurements in kPa. It takes a difference of only 20 kPa between injectors to cause a misfire. 20 kPa is equivalent to 3 psi. Most psi gauges do not have enough resolution to accurately represent such small changes.

If the Coil Resistance Test and Balance Test are within specifications, do not change the injectors. Check for other causes for misfire, such as ignition, compression, vacuum leaks and valve train.

- Thanks to Randy Pearl

Tire Pressure Monitoring System Update

A tire pressure monitor (TPM) system is used on Cadillac DeVille and Seville and Chevrolet Corvette.

This system was discussed in the November 2000 TechLink; this is a brief review, because there is some new service information.

Components

There is a separate sensor/transmitter in each wheel. The TPM system shares the receiver with the keyless entry system. Data from the receiver is displayed on the instrument panel, using the driver information center (DIC).

Sensors

The sensor, with built-in valve stem, is inserted from the inside of the wheel,

Sensor mounted with valve stem nut

through a hole in the rim. It is retained by a nut (4 N.m, 35 lb. in.) and is sealed by a grommet. The sensor is powered by a lithium battery with a design life of 10 years.

Each sensor is coded differently. This permits the receiver to determine exactly which tire is over- or under-inflated.

Operation

The sensors operate only above 20 mph (32 kph) and transmit once per hour when parked, to preserve battery power.

If the pressure in a tire rises or falls outside the calibration limits, the condition is displayed by the DIC. The low limit is 24 psi (168 kPa) and the upper limit is 39 psi (272 kPa).

Service

The sensors are lightweight, only about an ounce (28 g), and this small weight is easily accounted for during normal tire balancing.

The sensors are mounted within the

Tire Pressure Monitor Sensor

well of the rim. It's important to be careful when using a tire mounting machine. The sensor could be damaged in two ways: either by direct contact with the machinery or by the bead of the tire as it is forced over the rim.

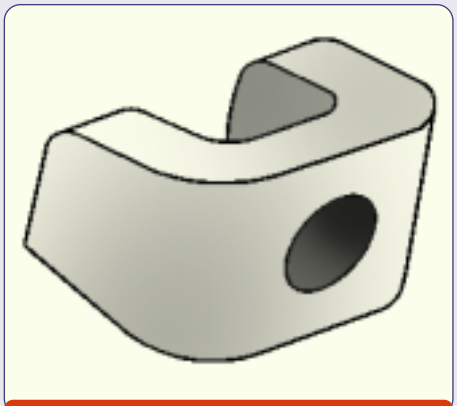
The valve stem cap is made of aluminum and the valve core is nickel-plated to resist corrosion. The end of the stem serves as the sensor's antenna.

Use care when using tire machine

TIP: Do not replace either the cap or the valve with standard parts. This will interfere with the sensor's ability to transmit.

Sensor ruined by tire mounting equipment

TIP: The TPM sensor is more precise than consumer-grade tire pressure gauges. It may be necessary to explain this if the customer routinely mis-inflates tires using a gas station gauge.



J-41760 Magnet

Receiver Programming

The receiver is programmed at the factory to recognize which sensor is at each wheel location. If tires are rotated or a sensor is replaced, the receiver must be reprogrammed, following SI procedures.

If the receiver is not reprogrammed, the system will continue to report the correct pressures, but will assign them to the wrong locations on the vehicle.

TIP: There are two reprogramming methods. You must use the J-41760 magnet when a new sensor is installed. During tire rotation, you can use either the magnet or your Tech 2.

Magnet Method -- You will have only one minute between horn chirps, and five minutes overall, to complete the procedure once you start.

With ignition on, engine not running, press both lock and unlock buttons on the key fob. A horn chirp within 10 seconds indicates that the receiver is in programming mode.

At each wheel, hold the J-41760 magnet over the valve stem until the horn chirps, to force the sensor to transmit its code. You must follow this order: LF, RF, RR, LR. The horn chirps twice to indicate completion.

Scroll through the DIC readout to verify all four pressures are displayed.

Tech 2 Method -- With the TPM Reprogramming procedure on your Tech 2, you can command each sensor to its new location. As long as no new sensors are being installed, the magnet is not needed.

Scroll through the DIC readout to verify all four pressures are displayed.

Instrument Cluster Module Programming

On the Seville and DeVille models, if you disconnect or replace the IP cluster, the IP module must also be programmed to enable the TPM option. If this is not

done, the DIC will not be able to display information from TPM receiver.

Follow this path on your Tech 2.

- Body
- Instrument Panel Cluster
-- Special Functions
- Set Options
- Tire Pressure Monitor
- Read the instruction screen, then press Continue
- Scroll to highlight the Tire Pressure Monitor
- Press the Enter key to place an asterisk * next to the option.
- Press the Save Option soft key.

Additional Tips

Because the TPM system shares its receiver with the remote locking system, the TPM function is turned off in vehicles that are built without the TPM system. It is possible to add TPM to one of these vehicles by adding the appropriate wheels and sensors. In this case, the TPM option must be enabled in the receiver.

TIP: If the horn does not chirp at the beginning of the reprogramming procedure (Magnet Method, above), this is a good indication that the TPM option has not been enabled.

Follow this path on your Tech 2:

- Body
- Remote Function Actuation
- Special Functions
- Set Options
- Tire Pressure Warning
- Read the instructions on the next screen, then press Continue.
- Scroll to highlight the Tire Pressure Warning Option.
- Press the Enter key to put and asterisk * next to the option.
- Press the Save Option soft key

The system is now enabled.

If the car's battery or the receiver is disconnected, or the voltage drops below a certain value, the receiver will lose all sensor IDs. It then sets all four DTCs. In this case, it must be reprogrammed using the magnet.

Sensor Batteries

On the Cadillac system only, the status of the sensor batteries is presented in the TPM data list.

The sensors are built to continue to operate for three months after the batteries reach low status.

When the battery in a sensor runs down, it is necessary to replace the sensor. Batteries are not serviceable.

- Thanks to Scott Bower and John Spidle

Vehicle Data Recorder (VDR) Update

Since its introduction in 1998, the J-42598 Vehicle Data Recorder (VDR) has been updated periodically to keep it current. This month, software version 7.0 is being released. It supports GM OBD II vehicles from 1995 1/2 through 2003.

The tool itself is unchanged, but you will need to install the latest software on your TechLine terminal.

The VDR is useful in instances where the customer's vehicle is having an intermittent condition. To diagnose a condition like this, it's helpful to have a snapshot of the data stream information at the moment the condition occurs. But to record a snapshot, it would be necessary to hook up your Tech 2 to the vehicle, train the customer which buttons to press when the condition occurred, and hope for the best. You'd also be without your Tech 2 while it was riding around in the customer's car.

The VDR was developed to eliminate all these objections. It's a dedicated snapshot recorder. With the VDR properly programmed using your TechLine terminal, you can install the VDR in the customer's car in place of your Tech 2. Then, when the condition occurs, all the customer has to do is press one button on the VDR to record the event. Up to four events can be recorded. Nothing could be simpler. Until now.

DTC Trigger Setup

With version 7.0, even the button press can be eliminated. That's right. You can now program the VDR to trigger automatically. You can have it trigger on any diagnostic code, or you can specify up to 5 different codes of your own choice. The customer has to do absolutely nothing but drive the vehicle normally.

TIP: Of course, you can still have the customer press the button if you determine that this is appropriate.

Data Collection Rate

You can choose either Normal or Fast, to specify how many frames to capture during a recording.

Trigger Point Setup

As before, you can specify the trigger point. It works like this. The VDR records data continuously as long as the vehicle is running. When the memory is full, the oldest data is dropped and new data is constantly added. When the trigger event occurs, the recorder takes in as much additional data as necessary to satisfy the trigger point you've specified. If you specify 0%, the recording is completed as soon as the trigger occurs. You will have a recording of only the data leading up to the event. If you specify 50%, half of the data will be before the trigger, and half of it will be after. And at 100%, all of the data will be after the trigger. Of course, you can choose any number between 0% and 100%.

Data Parameter Groups

The data parameters you can record are included within groups. You can view a list of the parameters contained within each group before making your decision.

Playback and Display

When the customer brings their vehicle and your VDR back, you can download the stored data for playback. The data will appear on your monitor just as though you were watching it on your Tech 2 while the vehicle was being driven. You can run the data back and forth, and replay it as necessary to determine the condition you're looking for. If you wish, you can display the data in graphic form for additional analysis. And, you can save the data for future reference.

Printing

Data can be printed. You can specify the list of Diagnostic Codes. Or you can print a text version of the values of all the sensors and switches in the parameter group.

Forward Compatibility

In the past, data recorded on one version of software could not be played on other versions. Beginning with this version, data recorded in 7.0 will be playable in future software versions as well.

User's Manual

A new updated user's manual is now included on the CD supplied with this version of the software.

A Summary of New Features

The version 7.0 software offers several important new features:

- 2003 vehicles included
- Automatic trigger option
- Future compatibility

A Final Word

The VDR is an excellent diagnostic aid. But it can do its job only if you choose to use it. Take a few minutes to locate the tool in your dealership. Then, read the user's manual, and be prepared to put your VDR to work the next time you're dealing with an intermittent condition.

- Thanks to Mark Stesney and Mike Banar

Servicing Heated Seats

Before service replacement heat elements were developed for the vehicles listed below, the only way to repair these vehicles' failed heat element was to replace the entire seat back or seat cushion trim cover.

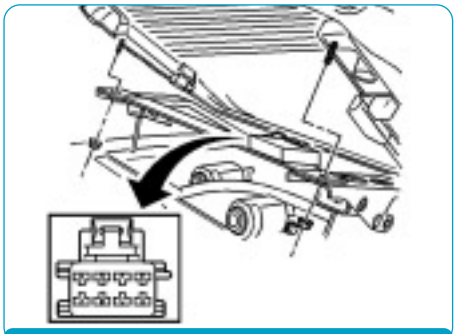
This is not only expensive ($450 - $475) but after several years, it becomes exceedingly difficult to match the color of a new cover with that of the existing cover. This customer dissatisfier may result in having to replace both of the trim covers.

TIP: When making a seat heat element repair, refer to the latest version of the appropriate service bulletin for information about parts and procedures.

TIP: If a sublet trim repair facility is used, provide a copy of the bulletin to the repair shop.

The information provided in the service bulletins focuses on the diagnosis and repair of the heat element. The majority of heated seat concerns are failed heat elements. If just one heat element in the heated seat assembly has failed due to an open or break in its circuit, the seat will not heat.

Locating a Defective Heating Element



Typical test point for seat heat elements

To find the failed element, measure the resistance values at the appropriate location, as instructed. You will be able to determine if the failed heat element is in the seat back or seat cushion. If all of the resistance values are within the proper range, the problem is not with the heat elements. Refer to the diagnostic procedures in the service manual.

Installing a Replacement Heating Element

Typical seat heat element

IMPORTANT: Observe the procedure in the relevant service bulletin. The following is condensed, and is intended only as background information.

TIP: Ensure that the new service heat element functions properly. Before installation, measure the resistance values and verify that they are within the proper range.

Installation of the new service heat element varies between models and between model years. It's important that you refer to the latest appropriate service bulletin when making this repair:

Self-Adhesive Type -- The replacement element is installed between the factory heat element and the seat trim cover. It is necessary to cut the wiring harness from the original element and to open a hole in the factory element to permit installing the replacement. The replacement element is supplied with self-adhesive.

Bulletin	Applicable Models
01-08-50-001C	2000 – 2003 Cadillac Deville
01-08-50-002B	1998 – 2003 Cadillac Seville
01-08-50-012A	2000 – 2003 Buick LeSabre 2000 – 2003 Pontiac Bonneville 2001 – 2003 Oldsmobile Aurora
02-08-50-TBD *	1994 – 2002 Cadillac Eldorado 1997 – 1999 Cadillac DeVille 1994 – 1997 Cadillac Seville

***Soon to be released.**

- Thanks to Terry Bordeau

3 Step Maintenance Fuel Induction Service Kit

General Motors has introduced a new 3 Step Maintenance Fuel Induction Service Kit to the Vehicle Care product line. The GM part number is 12378546. In Canada, the AC Delco part number is 88901364. Each kit includes three containers: Fuel System Treatment, Induction Cleaner, and Throttle Body Cleaner. The kits are available from GMSPO and are sold by the case. One case contains enough cleaner to service 12 vehicles.

The three-step kit is designed to de-carbon engines and is intended for use with mileage-driven service menus. A typical customer comment may refer to rough idle.

Tool Kit

A tool kit to apply the cleaning materials is also available from GMSPO, part number E-957-001.

Maintenance Kit

The maintenance kit includes three containers of cleaning solvents, each for a specific purpose.

The Fuel System Treatment is to be poured into the fuel tank. It cleans the fuel system and fuel injectors, intake valves and combustion chamber. Clean fuel system components contribute to lower emissions.

The Throttle Body Cleaner is packaged in a spray can and is used to clean the throttle body and lubricate the throttle plate. It also cleans the idle air control by-pass. This product is toluene-free and includes an ester oil lubricant.

The Induction Cleaner cleans the front and back of the throttle body butterfly. It also cleans the intake plenum and runner, intake valves and combustion chamber. This product is toluene-free, so it is safe for seals and gaskets and will not harm plenum, catalytic convertors or oxygen sensors.

Procedure

Procedures are described in detail in the manual that accompanies the kit. The exact steps required vary depending on the type of fuel injection system on the vehicle.

Generally, the procedure calls for three steps:

- First, pour a bottle of Fuel System Treatment in the fuel tank.

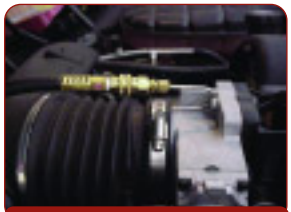
- Second, thoroughly clean the throttle body, using the Throttle Body Cleaner and a brush.

-Third, apply a container of Induction Cleaner. Because of the various induction systems used on GM engines, the kit includes TBI sprayer tips, multiport S-sprayer tips, vacuum delivery adapters, and EGR adapter. Follow the appropriate instructions. The engine must be running, and some of the tools require the use of compressed air.

- Thanks to Ron Caponey

Tool Kit

TBI Sprayer Tip



S-Sprayer Tip

EGR Adapter

TAC Tips

Automatic Transmission DTC P0706

Some Chevrolet and GMC trucks (C/K2500, C/K3500) equipped with 4L80E/4L85E may set a DTC P0706 (Transmission Range Switch performance) and exhibit a no-start condition.

If this occurs, reprogram the PCM software using TIS2000 CD 9 or later. It is identified as New Calibration to Prevent Setting of DTC P0706.

DTC P0706 can set falsely in unusual driving circumstances such as "bump starting" the vehicle.

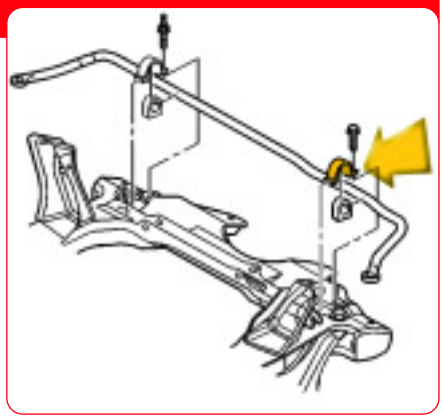
- Thanks to GM Technical Assistance

Cold Upshift Delay

2002 Chevrolet Trailblazer, GMC Envoy and Oldsmobile Bravada equipped with the 4L60E transmission may experience a delayed 1-2 upshift at a throttle opening of 25% or less. The condition will occur when the engine coolant temperature (ECT) is between 45°F (7°C) and 85°F (29°C) at engine start-up.

A revised engine/transmission service calibration was released on July 28, 2002.

- Thanks to GM Technical Assistance



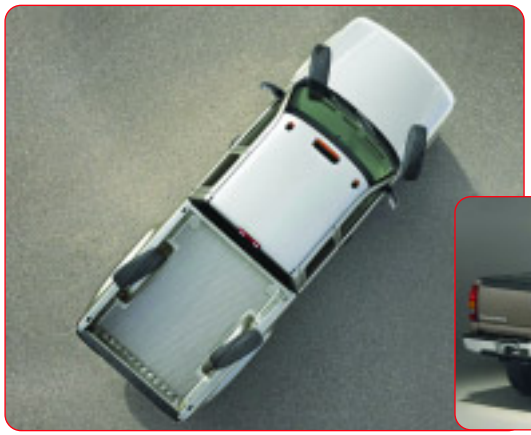
Popping Noise While Turning

Owners of some 2002 Chevrolet Cavaliers or Pontiac Sunfires may comment that they hear a popping type noise when turning the steering wheel. This noise is most easily replicated after a short drive on uneven asphalt, then turning the vehicle left or right into a 90 degree turn. The popping noise will occur only one time per turn.

The condition may be caused by the stabilizer bar-to-suspension support brackets being out of specification. Replacement of the Stabilizer Bar Brackets is recommended to eliminate the noise associated with this condition.

The part number for the bracket is 22660396.

- Thanks to GM Technical Assistance



Ride and Handling Concern

Owners of some early built 2003 model year 1500 HD crew cabs with Quadrasteer option (NYS) may comment about less than optimal ride and handling characteristics (frame beaming, vehicle shake, vibration).

1500HD crew cabs built before 9/16/02 with the Quadrasteer option (NYS) may have been built without the new, improved No. 3 solid body mount.

Dealers can replace the "voided " No. 3 body mount (P/N 15059114) and the lower retainer (P/N 15158599) with the new 75 solid No. 3 body mount (P/N 15095732) and lower retainer (P/N 15529853).

- Thanks to GM Technical Assistance

Bulletins *from page 8*

Controls (RPO UK3)

02-08-46-013; OnStar Proactive Parts Shipment Process; 1996-2003 Passenger Cars and Trucks, 2003 Hummer H2 with On Star (RPO UE1)

02-08-49-009; Interference with Center Console Rear Auxiliary Power Outlet Cover and Rear Seat Cushion (Replace Rear Auxiliary Power Outlet Retainer and Cover); 2002 Chevrolet TrailBlazer, GMC Envoy, Oldsmobile Bravada

02-08-50-008; Rear Seat Rattle (Install Hold Down Pin Retainer Clips); 2000-01 Chevrolet Express and GMC Savana Vans with Floor Carpet (RPO B30)

02-08-51-002; Protective Coatings; 2002 Buick Rendezvous, 2001-02 Chevrolet Camaro, Corvette, Monte Carlo, Pontiac Firebird

02-08-51-003; Service Parts Identification Label Indicates Incorrect Paint Code; 2003 Chevrolet Malibu, Oldsmobile Alero, Pontiac Grand Am

02-08-59-003; General Squeak and Rattle Guide; 2002-03 Chevrolet Venture, Oldsmobile Silhouette, Pontiac Montana

02-08-64-021; Outside Rearview Mirrors Do Not Return to Their Original Position After Using Curb View Assist Feature (Update Door Module Software); 2002-03 Chevrolet TrailBlazer, EXT, GMC Envoy, XL, Oldsmobile Bravada, with Outside Rearview Mirror Curb View Assist Feature (RPOs D25 or DS3)

02-08-66-010; Adjustment of Tonneau Cover in Cold Weather; 2003 GMC Sonoma Pickup with Street Rider (RPO ZRX) or Sport Crew (RPO ZR5) Appearance Package

02-08-110-005; Avoiding Sunshade Damage During Removal and Installation; 2002-03 Chevrolet TrailBlazer, EXT, GMC Envoy, XL, Oldsmobile Bravada

RESTRAINTS:

02-09-40-005; Availability of Rear Seat Shoulder Belt Comfort Guides; 2003 Buick Century, Regal, Pontiac Grand Prix, Cadillac Escalade, EXT, Chevrolet Avalanche, Silverado, Suburban, Tahoe, TrailBlazer EXT, GMC Envoy XL, Sierra, Yukon, XL

Bulletins - November 2002

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

GENERAL INFORMATION:

02-00-89-017; Essential Tools That Include Consumable Parts; 2003 and Prior GM Passenger Cars and Trucks, 2003 Hummer H2

HVAC:

02-01-39-006; Diagnosing Poor A/C Performance -- A/C Stops Blowing Cold, A/C Cycles On and Off; 2002-03 Chevrolet TrailBlazer EXT, GMC Envoy XL, with Automatic or Manual HVAC Auxiliary Temperature Control (RPOs CJ2 or CJ3)

STEERING:

02-02-35-006; Squeak Noise in Steering Column (Lubricate Upper Intermediate Shaft Serration Slip Joint); 2002-03 Chevrolet TrailBlazer, EXT, GMC Envoy, XL, Oldsmobile Bravada

SUSPENSION:

02-03-07-002; Revised Front Caster and Camber Adjustment Procedure; 1999-2003 Cadillac Escalade, EXT, Chevrolet Express, Silverado, Tahoe, Suburban, Avalanche, GMC Suburban, Savana, Sierra, Yukon, XL, Denali, Hummer H2

01-03-10-005A; replaces 01-03-10-005; Wheel Squeak (Install Wheel Cover Insulators); 2000-03 Chevrolet with 14 and 15 Inch Wheel Covers, 2000-02 Pontiac Sunfire with 14 Inch Wheel Covers

02-03-10-006; Proper Position of Spare Tire Cover Emblem After Cover Installation; 2002 Chevrolet Tracker

02-03-10-010B; replaces 02-03-10-010A; Inspection of Tire and Wheel Size Prior to Diagnosis of Transmission Shifts, Poor Performance, Speedometer, Cruise Control Concerns; 2001-03 Chevrolet Silverado and GMC Sierra Pickup Models with Duramax Diesel Engine and Allison Transmission

DRIVELINE AXLE:

02-04-17-002; Revised Prop Shaft Runout Specifications; 1998-2000 Chevrolet C/K Full Size and GMC Sierra Pickup Models

02-04-20-004; Availability of Revised Differential Carrier Assembly for Service; 2003 Chevrolet Kodiak, GMC Topkick C4500/C5500 with 13,500 Pound Locking Rear Axle

02-04-21-008; Shudder, Rocking Motion, Binding, Feels Like Vehicle is Stuck in 4WD (Crow Hop) When Turning at Low Speeds (Replace Transfer Case Encoder Sensor and Reprogram TCCM); 2002-03 Chevrolet TrailBlazer, GMC Envoy, Oldsmobile Bravada

BRAKES:

02-05-22-005; Release of New Rear Brake Pipe Shields; 1993-2002 Chevrolet and GMC B7 MD School Bus Models with Hydraulic Brakes (RPO JE3) and 63.5 mm or 73.2 mm Slide Rail Calipers

02-05-23-004; Driver's Information Center (DIC) "Reduced Brake Power" Message, Reduced Vacuum Boost (Inspect/Replace Intake Manifold and Recalibrate the Instrument Panel Cluster IPC); 2002-03 Cadillac Escalade 2WD, Chevrolet Avalanche, Silverado, Suburban, Tahoe, GMC Sierra, Yukon, XL, with Power Vacuum Boost Brake System (RPOs JC3 and JC4)

02-05-23-005; Required Use of Silicone Lubricant on Brake Caliper Slider Pins; 2003 Chevrolet Kodiak and GMC Topkick C4500/C5500 Models

02-05-25-006; Antilock Brake (ABS) Activation at Low Speeds (Clean Wheel Speed Sensor Mounting Surface); 1999-2000 Cadillac Escalade, 1995-99 Chevrolet Silverado, GMC Sierra; 1995-2001 Chevrolet Suburban, Tahoe, GMC Envoy Jimmy, Yukon, XL, Oldsmobile Bravada, 1995-2003 Chevrolet Astro Van, Blazer, S10, GMC Safari Van, Sonoma with 4WD or AWD

02-05-26-002; Scraping Noise From Rear of Vehicle (Replace Parking Brake Shoe Kit and Clean Drum in Hat Rotor); 2002-03 Cadillac Escalade, EXT and Chevrolet Avalanche, 1999-2003 Chevrolet Silverado and GMC Sierra 1500 Series, 2000-03 Chevrolet Tahoe and GMC Yukon 1500 Series

ENGINE/PROPULSION SYSTEM:

02-06-01-031; 4.2L Goodwrench® Engine Service; 2002 Chevrolet TrailBlazer, GMC Envoy, Oldsmobile Bravada with 4.2L Engine (VIN S -- RPO LL8)

02-06-01-032; Exhaust Noise/Leak (Replace Exhaust Manifold Fasteners and Gasket); 2002 Chevrolet TrailBlazer, GMC Envoy, Oldsmobile Bravada with 4.2L Engine (VIN S -- RPO LL8) and Automatic Transmission (RPO M30)

02-06-01-033; Oil Leak at Oil Pressure Switch (Apply Sealant); 2002 Chevrolet TrailBlazer, GMC Envoy, Oldsmobile Bravada with 4.2L Engine (VIN S -- RPO LL8)

02-06-01-034; Revised Rocker Arm Bolt Fastener Tightening Specifications; specified 1996-2003 vehicles with 3.1L or 3.4L Engine (VINs M, J, E -- RPOs L82, LG8, LA1)

02-06-01-035; High Oil Consumption (Replace Intake Manifold Bolts); 2001-02 vehicles with 8.1L Engine (VINs G, E -- RPO L18)

02-06-01-036; Revised Cylinder Head M12 Bolt Fastener Tightening Sequence; 2001-02 Chevrolet Silverado, GMC Sierra, 2003 Chevrolet Kodiak, GMC Topkick with 6.6L Duramax Diesel Engine (VIN 1 -- RPO LB7)

02-06-03-009A; replaces 02-06-03-009; Battery Charging Tips; 1990-03 Passenger Cars and LD Trucks, 2003 Hummer H2

02-06-03-010; Battery Parasitic Drain; 2003 and Prior GM Passenger Cars and LD Trucks; 2003 Hummer H2

02-06-04-050; Modification of Fuel Pipe Bracket During Fuel Rail Replacement; 2003 Chevrolet Kodiak and GMC Topkick C4500/C5500 with 6.6L Duramax Diesel Engine (VIN 1 -- RPO LB7)

02-06-05-004; Misfire DTCs and Catalytic Converter Damage Due to Installation of Alarm Systems; 2003 and Prior GM Passenger Cars and LD Trucks, 2003 Hummer H2

TRANSMISSION/TRANSAXLE:

99-07-30-016B; replaces 99-07-30-016A; Diagnostic Information for Intermittent Transmission Downshift, Slip, Busy/Cycling TCC or Noisy Cooling Fan; specified 1999-2003 models with Air Conditioning

02-07-30-041; Engineering Changes for 2003 Model Year 4T65E Transaxle; specified 2002-03 vehicles with 4T65E Transaxle (RPOs MN3, MN7, M15, M76)

02-07-30-034; Loss of Cruise Control, Decreased Pedal Dampening or Tip-In Driveline Clunk (Inspect Wiring and NSBU Switch); 2001 Chevrolet Silverado and GMC Sierra Pickup Models with 6.6L Duramax Diesel Engine (VIN 1 -- RPO LB7) and Allison Automatic Transmission (RPO M74)

02-07-30-036; New Input and Third Pawl Clutch Assembly Changes for the 4T65-E Transmission for 2003 Model Year; 2003 Buick Park Avenue, Regal, Rendezvous, Chevrolet Venture, Oldsmobile Silhouette, Pontiac Aztek, Bonneville, Grand Prix, Montana with 4T65-E Transaxle (RPOs MN7, M76)

02-07-30-039; Firm Transmission Shifts, Shudder/Chuggle, Transmission Won't Downshift on Deceleration, Service Engine Soon Light Illuminated, DTC P0742 Set (Perform Diagnostics and Replace TCC PWM Solenoid); 2003 Buick Century, LeSabre, Park Avenue, Regal, Rendezvous, Chevrolet Impala, Monte Carlo, Venture, Oldsmobile Aurora, Silhouette, Pontiac Aztek, Bonneville, Grand Prix, Montana, with 4T65-E Transaxle (RPO codes MN3, MN7, M15, M76)

BODY AND ACCESSORIES:

02-08-44-016; Whine, Buzz, Generator Whine, Whine Type Noise Heard on Acceleration (Repair Vehicle Sound System Wiring); 2003 Chevrolet TrailBlazer, GMC Envoy, Oldsmobile Bravada

02-08-44-017; Selecting Radio Source Using Steering Wheel Control; 2003 Cadillac Escalade, EXT, Chevrolet Avalanche, Silverado, Suburban, Tahoe, GMC Denali, Sierra, Yukon, XL, Hummer H2 with Uplevel Steering Wheel Audio

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