

2016 ACCESSORIES AND EQUIPMENT

Active Noise Cancellation - SRX

SCHEMATIC WIRING DIAGRAMS

ACTIVE NOISE CANCELLATION WIRING SCHEMATICS

Active Noise Cancellation

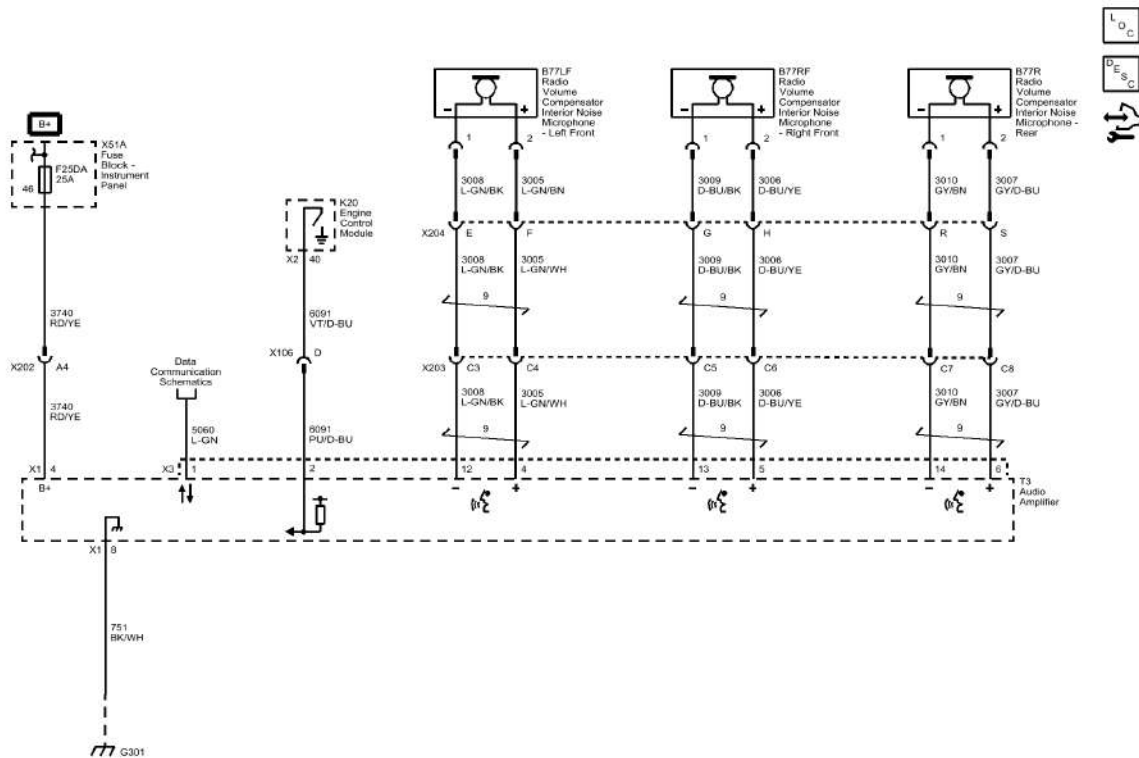


Fig. 1: Active Noise Cancellation

Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B0560: ENGINE RPM INPUT CIRCUIT SIGNAL INVALID

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptor

DTC B0560 08

Engine RPM Input Circuit Signal Invalid

Circuit/System Description

The Audio Amplifier receives a discrete pulse-width modulated engine speed signal from the Engine Control Module. The Audio Amplifier uses the engine RPM signal for operating active noise

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#)

1. Lower the window all the way down.
2. Remove the rear side door trim panel. Refer to [Rear Side Door Trim Replacement](#)
3. Remove the rear side door garnish molding. Refer to [Rear Side Door Window Garnish Molding Replacement](#)
4. Remove the rear side door water deflector.
5. Remove the rear side door window inner sealing strip. Refer to [Rear Side Door Window Inner Sealing Strip Replacement](#)
6. Remove the rear side door window belt reveal molding. Refer to [Rear Side Door Window Belt Reveal Molding Replacement](#)
7. Connect the rear side door trim panel electrical connector.
8. Run the window to the fully up position.
9. Tape the window in the up position.
10. Loosen rear side door front window run channel bolts and reposition channel.
11. Loosen the window regulator guide nuts 4 revolutions.
12. Using the power window switch, lower the window regulator to the fully down position.
13. Remove the tape.
14. Slide the window down past the window regulator guides and out of the front window run channel.

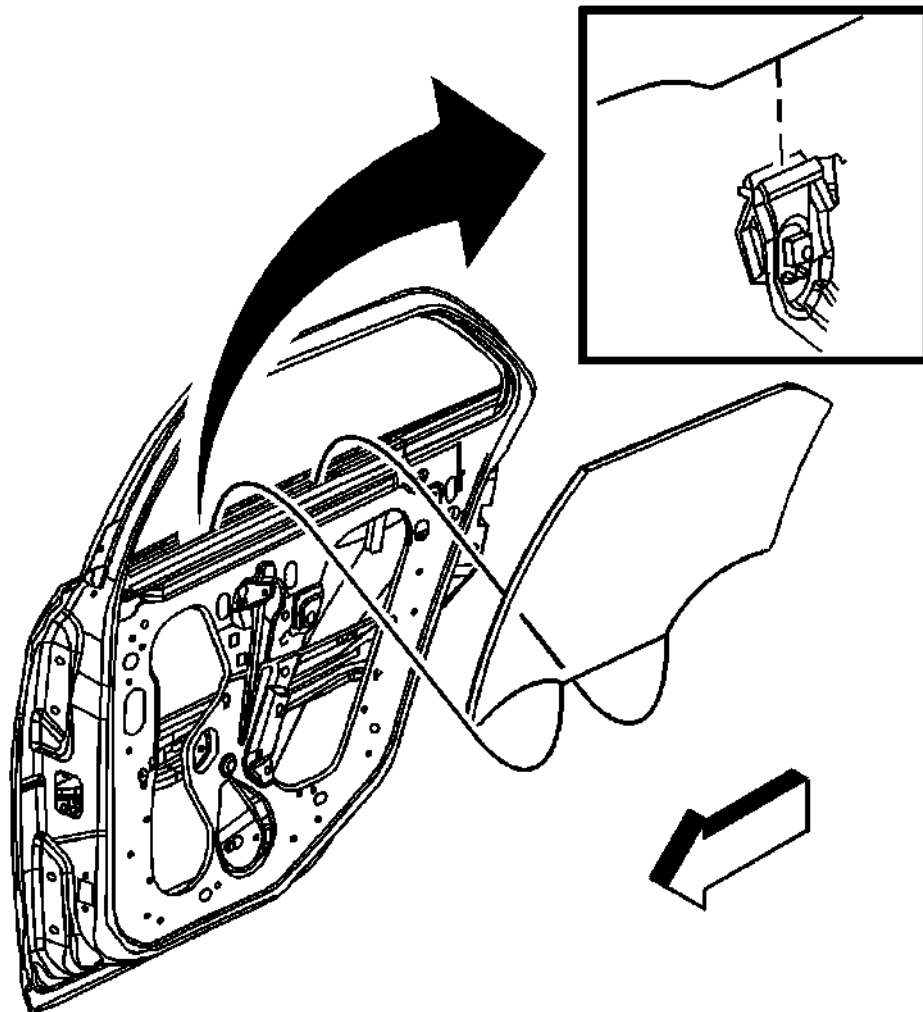


Fig. 10: Removing & Installing Rear Door Window
Courtesy of GENERAL MOTORS COMPANY

15. Lift the rear side door window out of the door.

circuits, engine control module (ECM), center high mounted stop lamp control circuit, and trailer lighting control module (with U4G).

Conditions for Running the DTC

- Battery voltage must be between 9-16 V.
- Brakes APPLIED.

Conditions for Setting the DTC

The BCM detects a short to ground in the center high mounted stop lamp control circuit.

Actions Taken When the DTC Sets

The BCM will not illuminate the center high mounted stop lamp.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

WIRING SYSTEMS AND POWER MANAGEMENT - COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Exterior Lights Schematics

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Testing

Without U4G

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the E6 center high mounted stop lamp.
2. Test for less than 5 Ω between the ground circuit terminal B and ground.
 - **If 5 Ω or greater**
 1. Ignition OFF.
 2. Test for less than 2 Ω in the ground circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , repair the open/high resistance in the ground connection.
 - **If less than 5 Ω**
3. Connect a test lamp between the control circuit terminal A and ground, ignition ON.

The front console antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

Rear Console Antenna

This antenna is located in the rear of the center console.

The rear console antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

Rear Compartment Antenna

This antenna is located in the center of the rear compartment metal floor pan, near the seatback.

The rear compartment antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

Remote Control Door Lock Receiver

The remote control door lock receiver is located on the vehicle windshield, directly in front of the inside rearview mirror.

The remote control door lock receiver is control by and directly communicates with the body control module (BCM). When the transmitter receives a low frequency challenge from an antenna, it responds with an RF message. This RF message is received by the remote control door lock receiver and communicated to the BCM. If the RF message is a valid response to the low frequency challenge, vehicle starting will be allowed.

Immobilizer Antenna Coil Assembly

The keyless entry immobilizer coil assembly is located in the center console, directly beneath the transmitter pocket. If the transmitter battery is dead, weak, or the RF signal is being interrupted, the transmitter may be placed in the pocket to create a low powered coupling between the transmitter and immobilizer antenna, allowing communications to occur and enabling vehicle starting.

The immobilizer antenna coil is controlled by the BCM. The immobilizer control module is also active when learning transmitters.

Keyless Entry Control Module

The keyless entry control module is a multi-function module which performs the following keyless entry system functions:

- Activating vehicle antennas for keyless start functions
- Backup control for the ECM accessory wakeup and the run/crank relay
- Redundant power moding, in addition to the BCM
- Ignition mode switch monitoring

OnStar[®] Remote Link

A vehicle operator may have the ability to perform some of the keyless entry functions using applications on personal devices such as smart phones. Refer to [**OnStar Description and Operation \(without EF7 or Z49\)**](#), [**OnStar Description and Operation \(with EF7 or Z49\)**](#).

Body Control Module (BCM)

The BCM is a multi-function module that performs the following functions:

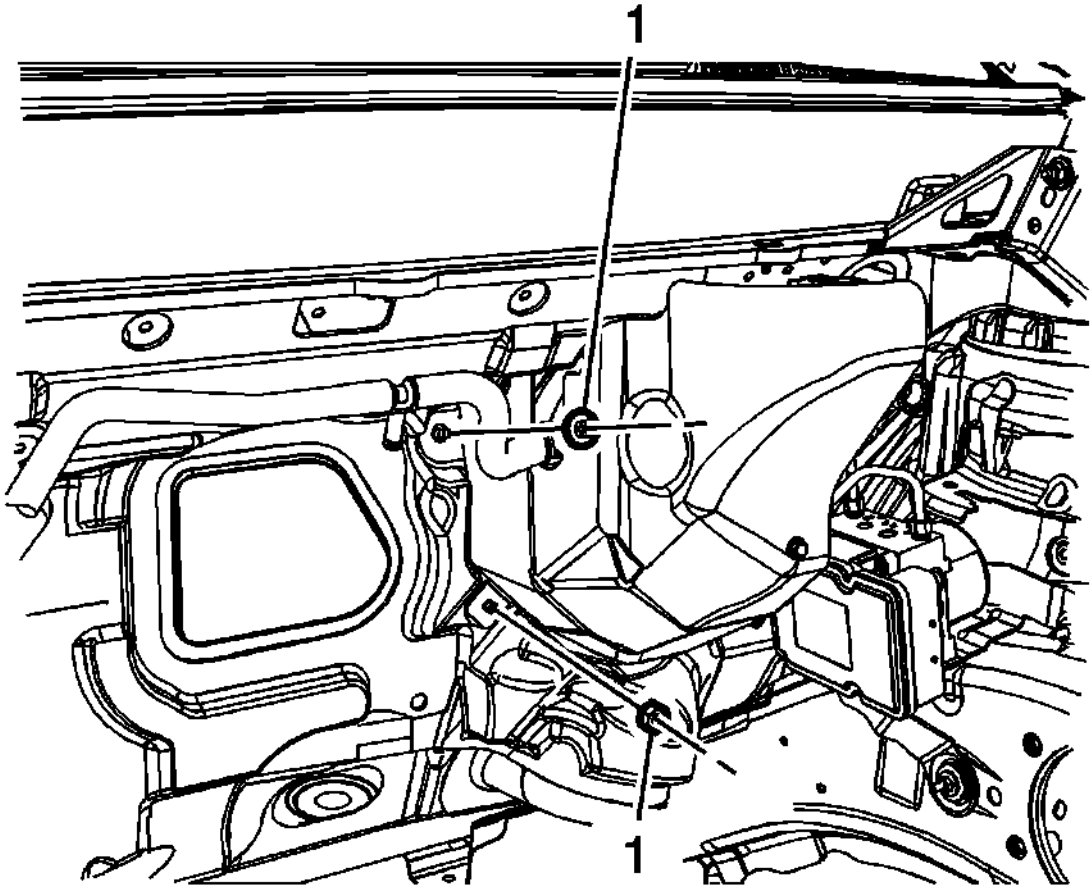


Fig. 4: Master Cylinder Heat Shield Nuts
Courtesy of GENERAL MOTORS COMPANY

NOTE: Lift the dash panel insulator slightly to remove the upper master cylinder heat shield nut.

3. If equipped with the master cylinder heat shield, remove the master cylinder heat shield nuts (1).

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify that DTC C0558 55 is not set.
 - **If DTC C0558 55 is set**
 1. Program the K83 Parking Brake Control Module. Refer to [Electronic Parking Brake Control Module Programming and Setup](#) .
 2. Ignition ON.
 3. Apply and release the park brake.
 4. Verify the DTC is not set.
 - If the DTC is set, replace the K83 Parking Brake Control Module.
 - If the DTC is not set
 5. All OK.
 - **If DTC C0558 55 is not set**
3. Verify the scan tool Park Brake Cable Position parameter is less than 1251 counts.
 - **If 1251 counts or greater**
 1. Verify the park brake cable is connected properly. Refer to [Park Brake System Diagnosis](#)
 2. Check park brake pads for excessive wear. Refer to [Disc Brake System Diagnosis](#)
 - **If less than 1251 counts**
4. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for parking brake control module replacement, programming and setup.

DTC C0561: SYSTEM DISABLED INFORMATION STORED INVALID DATA

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provide an overview of each diagnostic category.

DTC Descriptors

DTC C0561 71

System Disabled Information Stored Invalid Data

Circuit/System Description

The parking brake control module has an internal motor, apply actuator, release actuator, and temperature sensor. The parking brake control module also contains the logic for applying and releasing the parking brake when commanded by the park brake control switch. When the parking brake control module receives a signal from the switch, the internal circuit board temperature is checked to verify it is within operating range before the control module performs the requested operation. The parking brake module will verify it has a valid signal from other modules before it performs the requested operation.

		(MAM), Russia Group (MBR), Israel (MBI)
JJ2	BRAKE LINING-BRAKE NOISE AND DUST PERFORMANCE	Mexico (MCX), Korea (MAW), Russia Group (MBR)
V76	HOOK-TOW	Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR), Israel (MBI)
VR5	PROVISIONS-SLOW VEHICLE WARNING TRIANGLE MOUNTING	Other China Group (MAB), Japan (MAS), Korea (MAW), Russia Group (MBR), Israel (MBI)
CJ2	HVAC SYSTEM-AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR), Israel (MBI)
CJ4	HVAC SYSTEM-AIR CONDITIONING, FRT and RR ELECTRONIC CONTROLS	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR)
UEC	SENSOR INDICATOR-AUTOMATIC AIR RECIRCULATION	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR)
ASV	EQUIPMENT-SENSOR AIR MOISTURE and W/S TEMP	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR)
VVO	PANEL CENTER-CHOCO SAPELE	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR)
WJJ	PANEL CENTER-RAVEN SAPELE	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR)
5AD	KNOB-CHOCO SAPELE	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR)
5BS	KNOB-RAVEN SAPELE	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR)
44F	STEERING WHEEL COLOR-CHOCO SAPELE	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan (MAS), Korea (MAW), Mid-East (MAM), Russia Group (MBR)
34G	STEERING WHEEL COLOR-RAVEN SAPELE	U.S.A., PR and USVI (MAH), Canada (MBC), Mexico (MCX), Other China Group (MAB), Japan

2016 ENGINE

Engine Mechanical - 3.0L (LFW) or 3.6L (LFX) - Component Locator - SRX

COMPONENT LOCATOR

DISASSEMBLED VIEWS

Engine Covers and Component Assemblies (1 of 2) (LF1, LFW or LFX)

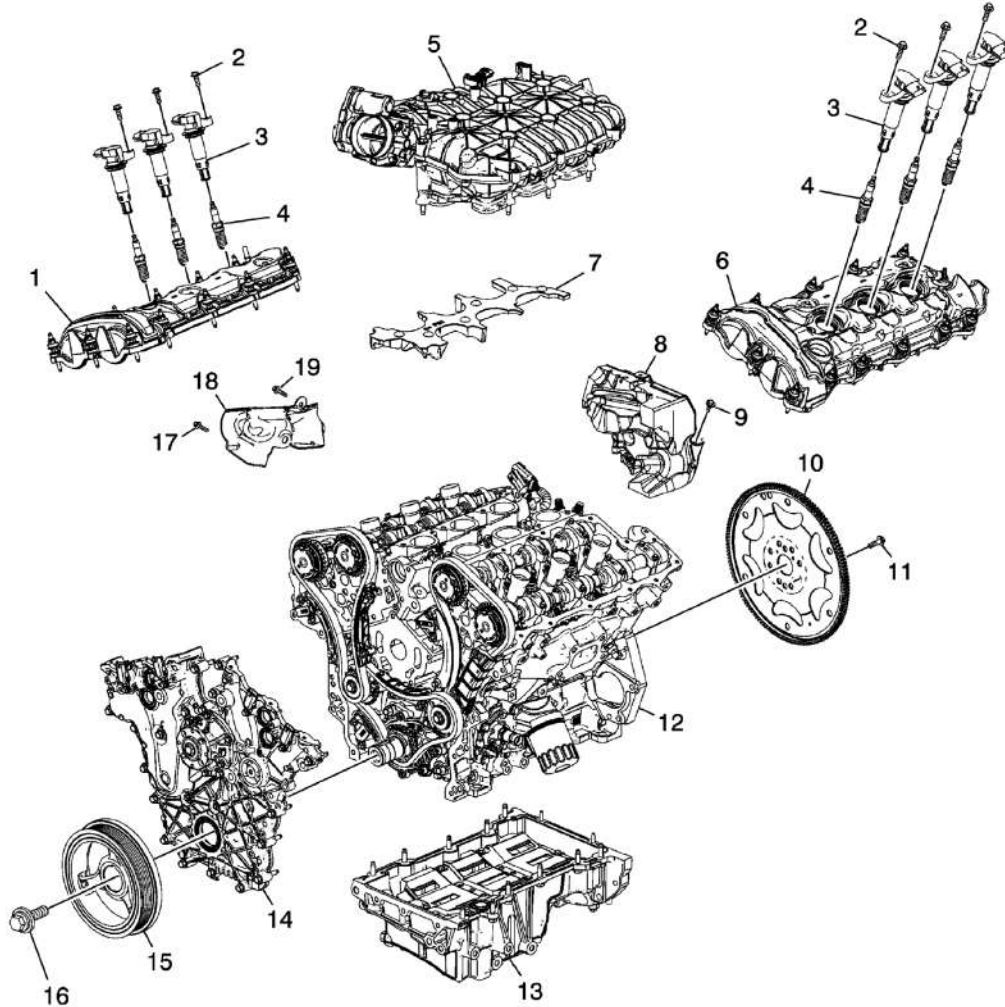


Fig. 1: Engine Covers and Component Assemblies (1 of 2).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Right Camshaft Cover Assembly
2	Ignition Coil Bolt
3	Ignition Coil
4	Spark Plug
5	Intake Manifold Assembly
6	Left Camshaft Cover Assembly
7	Fuel Rail Noise Shield
8	Engine Rear Noise Shield
9	Engine Rear Noise Shield Bolt
10	Engine Flywheel
11	Engine Flywheel Bolt
12	Engine Assembly

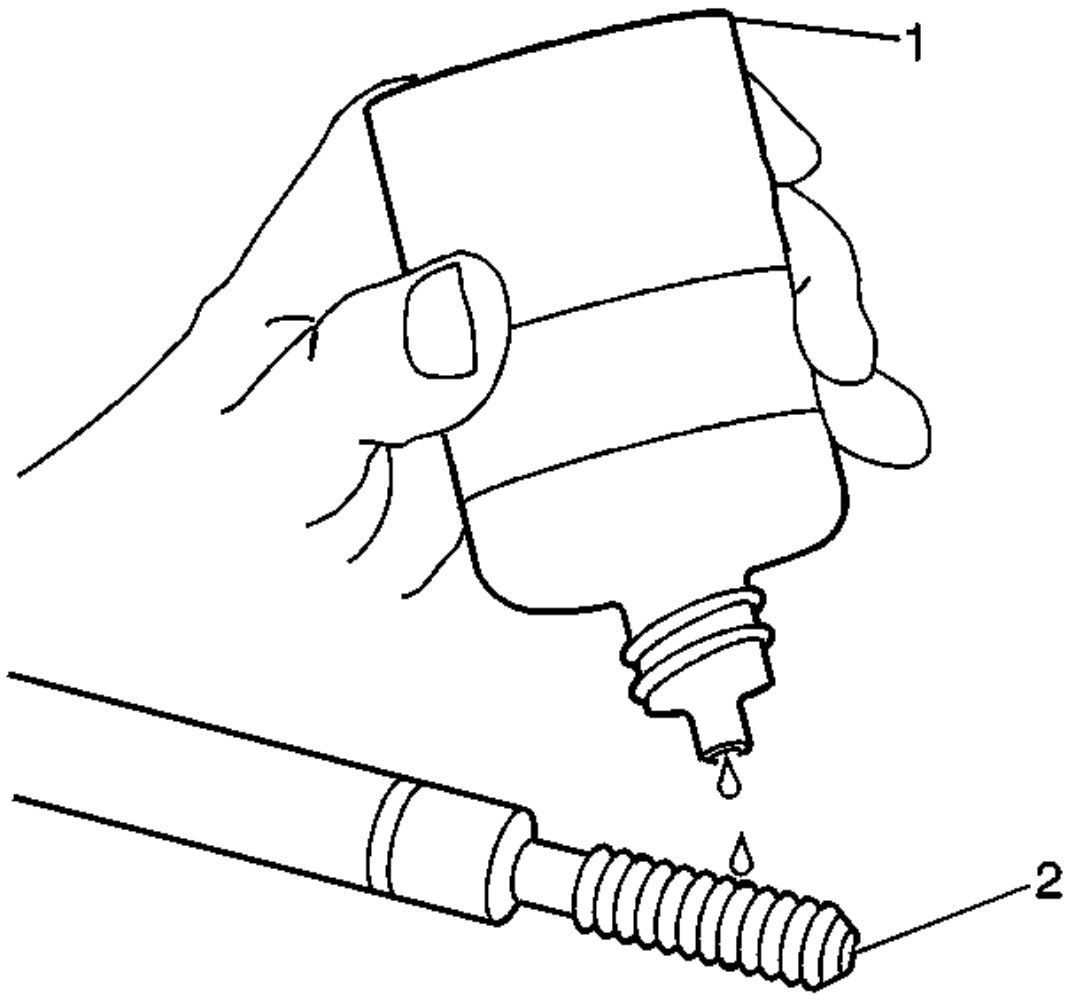


Fig. 406: Lubricating Installer Tool Using Driver Oil
Courtesy of GENERAL MOTORS COMPANY

NOTE:

- Do not remove the fixture plate, ensure the fixture plate is installed during the installation process of the insert.
- Do not allow oil or other foreign material to contact the outside diameter (OD) of the insert.

13. Lubricate the threads of the driver installation tool (2) with the EN 42385-110 (1).

Application	Specification	
	Metric	English
• First Pass	10 N.m (1)	89 lb in (1)
• Second Pass	10 N.m	89 lb in
• Final Pass	45 Degrees	
Water Pump Pulley Bolt	10 N.m	89 lb in
1. Use NEW fastener.		

APPROXIMATE FLUID CAPACITIES

Application	Specification	
	Metric	English
3.0L (LFW) and 3.6L (LFX, LFR, and LLT)		
• Oil Capacity - with Filter	5.7 Liters	6.0 Quarts
• Oil Capacity - without Filter	5.2 Liters	5.5 Quarts

ENGINE MECHANICAL SPECIFICATIONS (LFX)

Application	Specification	
	Metric	English
General		
• Engine Type	V-6	
• Displacement	3.6 Liter	220 cu in
• RPO	LFX	
• VIN	3	
• Bore	94 mm	3.7008 in
• Stroke	85.6 mm	3.37 in
• Compression Ratio	11.5:1	
• Firing Order	1-2-3-4-5-6	
• Spark Plug Gap	0.95-1.10 mm	0.0375-0.0433 in
Block		

Scan Tool Output Control	Description
Driver Door Unlock	The BCM pulses the driver door unlock motor when you select Unlock. The driver door should unlock.
Driver Window Motor	The BCM activates the driver window motor when you select Up/Down/Stop/Express Up/Express Down. The driver window should follow the appropriate command.
Driver Window Motor Mode	The BCM activates the driver window motor when you select Up/Down/Stop/Express Up/Express Down. The driver window should follow the appropriate command.
Front Fog Lamps	The BCM actuates the front fog lamps relay when you select On. The front fog lamps relay should turn on.
Generator Regulator Setpoint	The BCM changes the output of the generator.
Hazard Lamps Switch Backlight	The BCM activates the hazard lamps switch when you select On. The value should be 100%. The hazard lamps switch backlight should illuminate until commanded Off.
High Beams	The BCM activates the high beam command when you select On. The high beam lights should illuminate. The headlamps have to be on.
Horn Relay	The BCM activates the horn when you select On. The horn should sound.
Inadvertent Load	The BCM activates the inadvertent load command when you select On. (It is an electronic request to shut down an electrical or electronic device that is drawing power from the battery at a time when there should be no activity, usually after the key has been removed from the ignition for a period of time.)
Incandescent Dimming	The BCM activates the incandescent light dimming when you select On. The values should be 100%. The incandescent light dimming should illuminate until commanded Off.
Indicator Dimming	The BCM activates the indicator dimming when you select On. The values should be 100%. The indicator should illuminate until commanded Off.
LED Backlight Dimming	The BCM activates the LED backlight dimming when you select On. The values should be 100%. The LED backlight dimming for control switches should illuminate until commanded Off.
Left Brake Lamp	The BCM activates the left brake lamp when you select On. The values should be 100%. The left brake lamp should illuminate until commanded Off.
Left Dedicated Daytime Running Lamp	The BCM activates the left dedicated daytime running lamp when you select ON. The value changes to 100%. The left daytime running lamp should illuminate.
Left Front Park Lamp	The BCM activates the left front park lamp when you select ON with a value of 100%. The left front park lamp should illuminate.
Left Front Park Lamp/Daytime Running Lamp	The BCM activates the left front park lamp/daytime running lamp when you select ON with a value of 100%. The left front park lamp/daytime running lamp should illuminate.
Left Front Turn Signal Lamp	The BCM activates the left front turn signal lamp when you select On. The left front turn signal lamp should illuminate until commanded Off.
Left Headlamp Lamp Low Beam	The BCM activates the left headlamp low beam when you select On. The values should be 100%. The left headlamp low beam should illuminate until commanded Off.
Left Park Lamps	The BCM activates the left park lamps when you select ON with a value of 100%. The left park lamps should illuminate.
Left Rear Park Lamp	The BCM activates the left rear park lamp when you select ON with a value of 100%. The left rear park lamp should illuminate.
Left Rear Stop/Park Lamp	The BCM activates the left rear stop/park lamp when you select ON with a value of 100%. The left rear stop/park lamp should illuminate.
Left Rear Turn Signal Lamp	The BCM activates the left rear turn signal lamp when you select On. The left rear turn signal lamp should illuminate until commanded Off.

6. Test for less than 11 V between the control circuit terminal 3 and ground.
 - **If 11 V or greater**
 1. Ignition OFF.
 2. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 3. Ignition ON.
 4. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If less than 11 V**
7. Passenger seat unoccupied.
8. Test for greater than 25 Ω between the control circuit terminal 3 and ground.
 - **If 25 Ω or less**
 1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 3. Test for less than 2 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If greater than 25 Ω**
9. Passenger seat unoccupied.
10. Test for less than 11 V between the control circuit terminal 1 and ground.
 - **If 11 V or greater**
 1. Ignition OFF.
 2. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 3. Ignition ON.
 4. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If less than 11 V**
11. Passenger seat occupied.
12. Test for greater than 25 Ω between the control circuit terminal 1 and ground.
 - **If 25 Ω or less**
 1. Disconnect the harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module.
 2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 3. Test for less than 2 Ω in each control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
 - **If greater than 25 Ω**
13. Replace the P14 Passenger Air Bag Indicator.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Instrument Panel Airbag Arming Status Display Replacement](#)

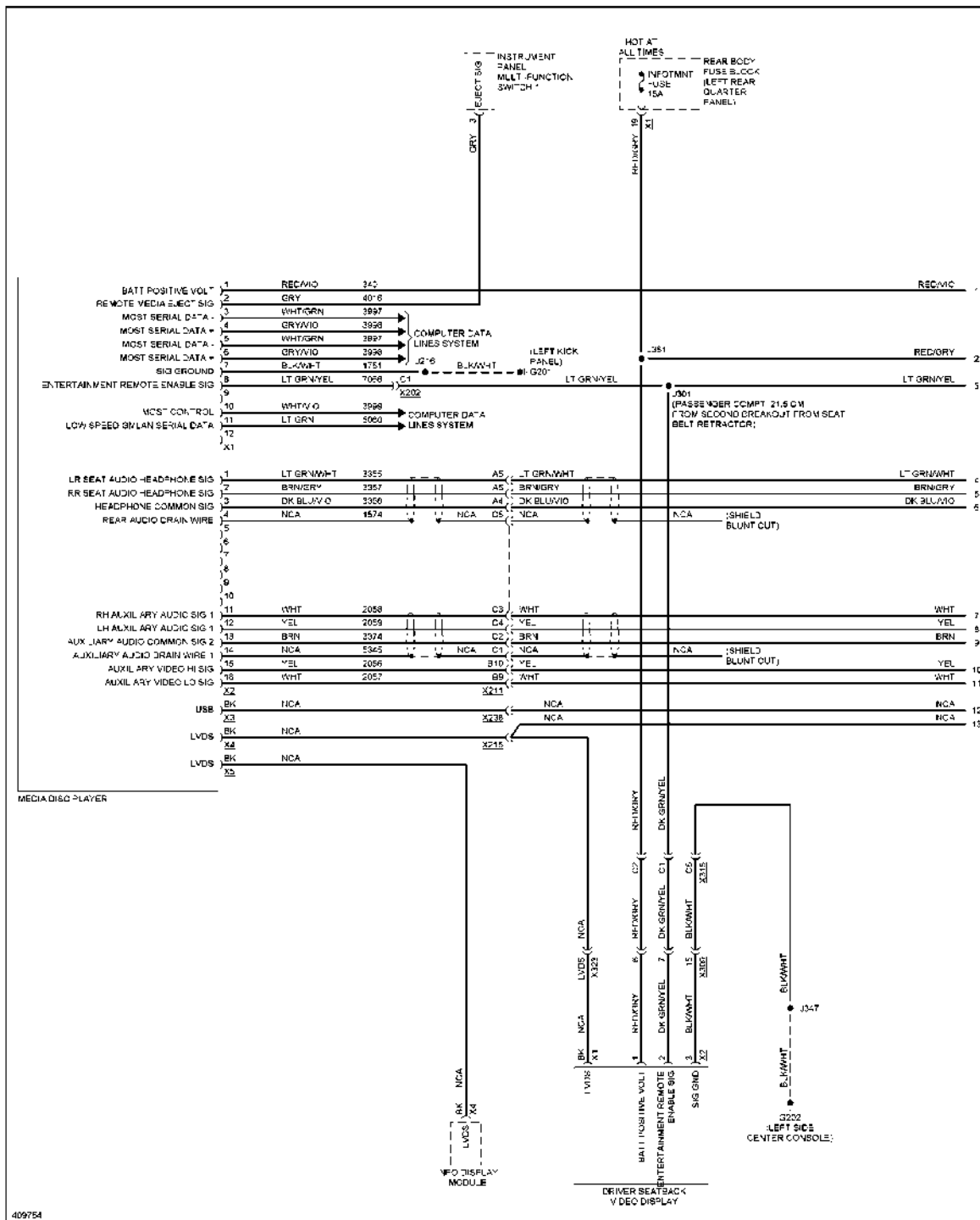


Fig. 99: Video System Circuit (1 of 2)

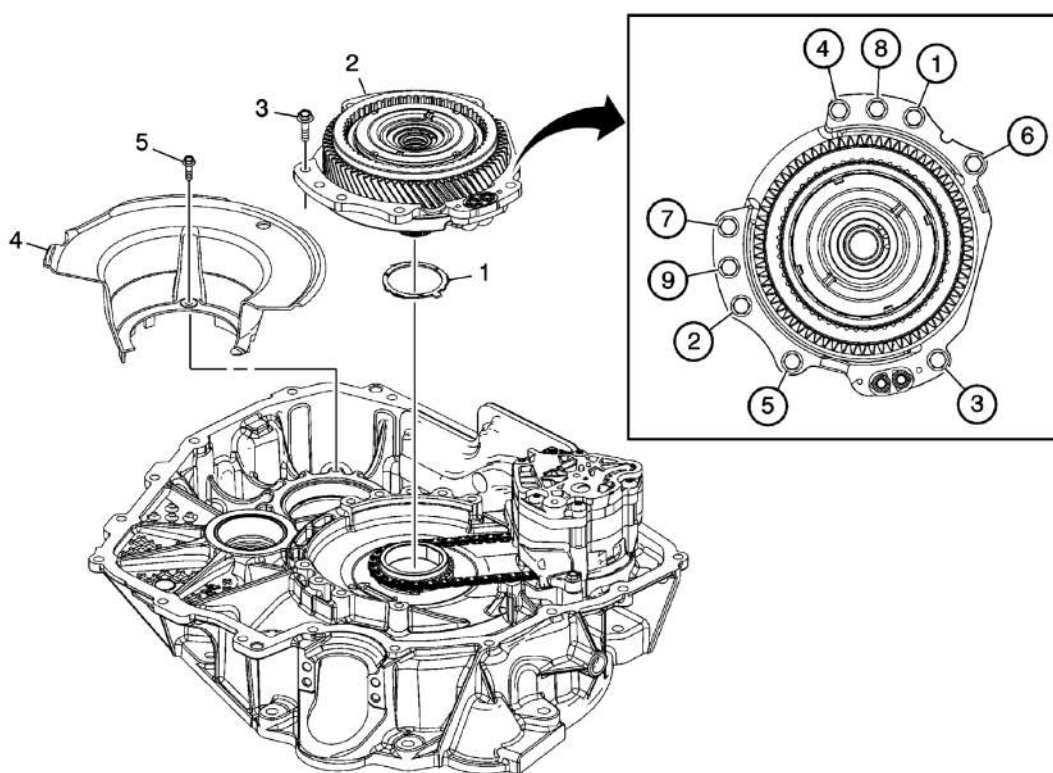


Fig. 39: Transfer Drive Gear Assembly
 Courtesy of GENERAL MOTORS COMPANY

Transfer Drive Gear Assembly Installation

Callout	Component Name
1	Drive Sprocket Thrust Washer
2	Front Differential Transfer Drive Gear Support Assembly
3	Front Differential Transfer Drive Gear Support Bolt M8 x 25 (Qty: 9) CAUTION: Refer to Fastener Caution . Procedure Tighten in sequence shown. Tighten 10 N.m (89 lb in) plus 50 degrees $\tilde{\Delta}$, $\hat{\Delta} \pm 4$ degrees. Special Tools: EN 45059 Angle Meter For equivalent regional tools, refer to Special Tools .
4	Front Differential Carrier Baffle
5	Front Differential Carrier Baffle Bolt M6 x 25 Tighten 12 N.m (106 lb in).

FRONT DIFFERENTIAL DRIVE PINION GEAR BEARING REPLACEMENT

Removal

UNIFORM INSPECTION & COMMUNICATION STANDARDS 2010 - 2011

Engine Performance And Maintenance

ENGINE PERFORMANCE AND MAINTENANCE (INCLUDING EXHAUST SYSTEMS)

These materials are confidential and are not to be disclosed to, or utilized by, any individual or entity other than participants of the Motorist Assurance Program (MAP).

The Automotive Maintenance and Repair Association (AMRA) and MAP do not warrant these materials or guarantee their accuracy, and AMRA and MAP assume no liability for errors.

MAP STANDARDS OF SERVICE

MAP developed standards of service for shops to follow in working with customers. Written from the point of view of customers, and for the use of maintenance and repair shops, the standards expand on the ideas and promises established in MAP's Pledge to Customer

I. Our recommendations are based upon the following definitions.

System Failure - Parts/system indicated are out of manufacturers' specifications, have failed or are unable to perform their normal function as intended or designed by the manufacturers. Service/replacement is required.

Preventive/Scheduled Maintenance - Parts/system are scheduled for service/ replacement per industry standards or are near the end of their useful life and repair/ replacement is recommended in advance of parts/system failure. Service/replacement is suggested.

Improved System Performance - Parts/ system indicated are recommended for repair/ replacement to enhance/improve the vehicle's ability to perform as intended or designed by the manufacturer, or as requested by the customer. Service/replacement is suggested.

II. Training/Criteria Our personnel have acquired auto repair expertise through formal education or work experience. Where appropriate, personnel are moving toward certification (e.g. vehicle manufacturer, ASE, etc.) for the services performed. Continuing education will be supported by all MAP participants.

III. Appropriate Company Approved Inspection

We will perform an appropriate inspection based on MAP Uniform Inspection & Communication Standards.

IV. Written Estimates

Written estimates based on our inspection, in compliance with state and local regulations, will include parts (dollar amount), labor (dollar amount), and the total estimate.

V. Work Authorization

No work will be performed without the customer's prior approval.

VI. Limited Warranty

A minimum limited warranty will be offered of 90 days or 4,000 miles, whichever comes first, covering parts and labor.

VII. Returned Parts