- If less than 1 V

3. Ignition OFF.
4. Test for infinite resistance between the signal circuit and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance
5. Test for less than 2 Ω in the signal circuit end to end.
    - If 2 Ω or greater, repair the open/high resistance in the circuit.
    - If less than 2 Ω, replace the K20 Engine Control Module.

- **If between 575-800 Hz AC**

4. Test or replace the T3 Audio Amplifier.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for Audio Amplifier or Engine Control Module replacement, programming, and setup.

DTC B1277, B127C, OR B127D: MICROPHONE 1-3 INPUT SIGNAL

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 B1277

Microphone 1 Input Signal Circuit

DTC B127C

Microphone 2 Input Signal Circuit

DTC B127D

Microphone 3 Input Signal Circuit

For symptom byte information refer to **Symptom Byte List**

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Microphone High Signal Circuit (LF)	B1277 02	B1277 04	B1277 01	B1277 1A
Microphone Low Signal Circuit (LF)	B1277 02	B1277 04	B1277 01	B1277 1A
Microphone High Signal Circuit (RF)	B127C 02	B127C 04	B127C 01	B127C 1A
Microphone Low Signal Circuit (RF)	B127C 02	B127C 04	B127C 01	B127C 1A
Microphone High Signal Circuit (RR)	B127D 02	B127D 04	B127D 01	B127D 1A
Microphone Low Signal Circuit (RR)	B127D 02	B127D 04	B127D 01	B127D 1A

Circuit/System Description

The adaptive cruise control functionality depends on various modules on the vehicle to function and each module performs a function that is critical to the proper operation of the adaptive cruise control system. Adaptive cruise control will not operate if any components fail. Communication between modules is via serial data. The following is a functional description of the active safety control module and the other associated components:

Active Safety Control Module

The Active Safety Control Module analyzes data from various modules, sensors, and switches to provide enhanced safety features. Refer to **Object Detection Description and Operation (with Rear Park Assist, UD7)Object Detection Description and Operation (with Front and Rear Park Assist, UD5)Object Detection Description and Operation (with Side Blind Zone Alert, UDQ)Object Detection Description and Operation (with Rear Cross Traffic Alert, UFG)Object Detection Description and Operation (with Lane Departure Warning, UFL)Object Detection Description and Operation (with Forward Collision Alert, UEU)Object Detection Description and Operation (with Pedestrian Impact Detection, B3T)Object Detection Description and Operation (with Haptic Signal Motor Seat)Object Detection Description and Operation (with Adaptive Cruise Control, KSG, N America)Object Detection Description and Operation (with Active Safety System, UGN, except N America)Object Detection Description and Operation (with Adaptive Cruise Control, KSG, except N America)Object Detection Description and Operation (with Active Safety System, UGN, N America)** for more information. In addition to enhanced safety features, the active safety control module provides the adaptive cruise control system functionality. The active safety control module analyzes data from the long range radar sensor module, front short range radar sensor modules, and frontview camera module to identify and classify objects in the road environment. The system scans the road environment to detect targets within its specified field of view. The active safety control module then sends throttle and/or brake commands to the engine control module (ECM) and electronic brake control module (EBCM) via serial data in order to control the vehicle acceleration/deceleration based on the data from the modules. The ECM and EBCM provide throttle control and automatic braking needed for proper cruise speed adjustment. The following is a list of the active safety control module functions pertaining to the adaptive cruise control functionality:

- The active safety control module processes the road environment to get data concerning any vehicle ahead of the adaptive cruise control vehicle. Detection, parameter estimation, tracking, object classification and diagnostics are the primary functions. When an object is detected, the controller calculates the object range, range rate, acceleration and azimuth angle parameters.
- The active safety control module performs adaptive cruise control state processing automatically - distance control or speed control. The adaptive cruise control operates in 2 possible states - cruise or follow. The normal operating state is cruise, whereby the vehicle speed is controlled to match the driver selected set speed. When a preceding forward target is identified, the adaptive cruise control system will automatically transition into the follow speed state to provide proper lane spacing behind the target vehicle in front. The preceding vehicle's speed and acceleration, with the adaptive cruise control vehicle speed, acceleration and distance between the two vehicles will be used to determine the adaptive cruise control follow speed limit. The adaptive cruise control follow speed limit will ensure that an acceptable distance is maintained to the preceding vehicle.
- The active safety control module determines the follow speed limit for throttle control by the ECM.
- The active safety control module arbitrates the adaptive cruise control system brake and throttle control between the EBCM and the ECM.
- The active safety control module requests brake light activation during automatic braking.
- The active safety control module provides operational feedback to the vehicle driver. The active safety control module sends signals for telltales and messages to be displayed on the instrument cluster or driver information center.

Body Control Module (BCM)

The following are the adaptive cruise control System functions provided by the BCM:

- The BCM provides a translating gateway for the high speed GMLAN serial data circuit.
- The BCM reads all cruise control switches and the gap switch. The active safety control module monitors a variety of user operated switches from the BCM switch status information sent via the GMLAN serial data circuit.

- **If the device is powered**

3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate X80 Accessory Power Receptacle.
2. Test for less than 10 Ω between the ground circuit terminal 3 and ground.
   - **If greater than 10 Ω**
   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 10 Ω**
3. Ignition ON.
4. Verify that a test lamp illuminates between the control circuit terminal 1 and ground.
   - **If the test lamp does not illuminate and the circuit fuse is good**
   1. Ignition OFF.
   2. Test for less than 2 Ω in the control circuit end to end.
      - If greater than 2 Ω, repair the open/high resistance in the circuit.
      - If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse. Refer to **Retained Accessory Power Malfunction** .
   - **If the test lamp does not illuminate and the circuit fuse is open**
   1. Ignition OFF.
   2. Test for infinite resistance between the control circuit terminal 1 and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the appropriate X80 Accessory Power Receptacle.
   - **If the test lamp illuminates**
5. Replace the appropriate X80 Accessory Power Receptacle.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Accessory Power Receptacle Replacement.

POWER OUTLET RECEPTACLE MALFUNCTION (110V)

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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	1	1	-	-
Ignition	1	1	-	-
AC Terminal 2	1	1	1	-
AC Terminal 7	1	1	1	-
Signal	1	1	2	-
Ground	-	1	-	-
1. Accessory DC/AC Power Inverter Module Always OFF 2. Accessory DC/AC Power Inverter Module Always ON				

Most intermittent conditions are caused by faulty electrical connections or wiring. Inspect for the following items:

- Wiring broken inside the insulation
- Poor connection between the male and female terminal at a connector
- Poor terminal to wire connection - Some conditions which fall under this description are poor crimps, poor solder joints, crimping over the wire insulation rather than the wire itself, and corrosion in the wire to terminal contact area, etc.
- Pierced or damaged insulation can allow moisture to enter the wiring causing corrosion. The conductor can corrode inside the insulation, with little visible evidence. Look for swollen and stiff sections of wire in the suspect circuits.
- Wiring which has been pinched, cut, or its insulation rubbed through may cause an intermittent open or short as the bare area touches other wiring or parts of the vehicle.
- Wiring that comes in contact with hot or exhaust components
- Refer to **Inducing Intermittent Fault Conditions** in order to duplicate the conditions required, in order to verify the customer concern.
- Refer to **Testing for Electrical Intermittents** for test procedures to detect intermittent open, high resistance, short to ground, and short to voltage conditions.
- Refer to **Scan Tool Snapshot Procedure** for advanced intermittent diagnosis and Vehicle Data Recorder operation.

Testing for Terminal Fretting

Some intermittent conditions can be caused by wire terminal fretting corrosion. Fretting corrosion is a build-up of insulating, oxidized wear debris that can form when there is a small motion between electrical contacts. The oxidized wear debris can pile up enough at the electrical contact spots that the electrical resistance across the connection increases. Movement between the contacting surfaces as small as 10 to 100 microns can cause fretting. To put this in perspective, a sheet of paper is about 100 microns thick, so fretting motion is small and hard to see. Vibration and thermal expansion/contraction are the main sources that create fretting motion. Since vehicles vibrate and can experience large temperature swings, they are a good source for fretting motion. Tin, copper, nickel, and iron surfaces are all susceptible to fretting corrosion. Fretting corrosion can be difficult to see but it looks like small, dark smudges on the terminals contact surface.

To correct a fretting condition disconnect the suspect connector and add dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087) to both sides of the connector terminals. Then reconnect the connector and wipe away any excess lubricant. This will correct the additional terminal contact resistance due to the terminal fretting corrosion.

Testing for Proper Terminal Contact

It is important to test terminal contact at the component and any inline connectors before replacing a suspect component. Mating terminals must be inspected to ensure good terminal contact. A poor connection between the male and female terminal at a connector may be the result of contamination or deformation.

Contamination may be caused by the connector halves being improperly connected. A missing or damaged connector seal, damage to the connector itself, or exposing the terminals to moisture and dirt can also cause contamination. Contamination, usually in the underhood or underbody connectors, leads to terminal corrosion, causing an open circuit or intermittently open circuit.

Deformation is caused by probing the mating side of a connector terminal without the proper adapter. Always use the **EL-35616** kit when probing connectors. Other causes of terminal deformation are improperly joining the connector halves, or repeatedly separating and joining the connector halves. Deformation, usually to the female terminal contact tang, can result in poor terminal contact causing an open or intermittently open circuit.

Testing for Proper Terminal Contact in Bussed Electrical Centers

It is very important to use the correct test adapter when testing for proper terminal contact of fuses and relays in a bussed electrical center. Use the **EL-35616** kit to test for proper terminal contact. Failure to

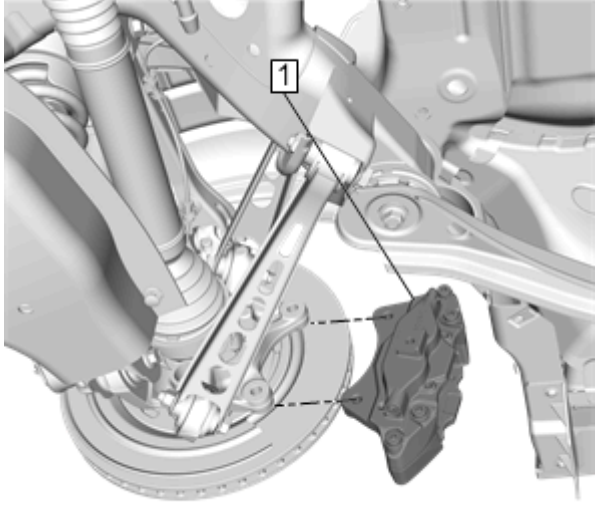


Fig. 182: Brake Caliper Assembly
Courtesy of GENERAL MOTORS COMPANY

7. Brake Caliper Assembly - Install

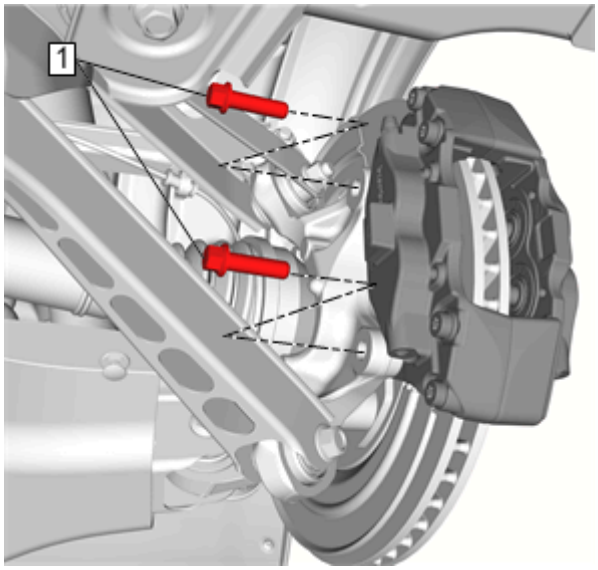


Fig. 183: Brake Caliper Bolt
Courtesy of GENERAL MOTORS COMPANY

8. Brake Caliper Bolt - Install and tighten 125 N.m (92 lb ft)
9. Tire and Wheel Removal and Installation (Non V-Series) Tire and Wheel Removal and Installation (V-Series October 4th 2015 and Earlier) Tire and Wheel Removal and Installation (V-Series October 5th 2015 and Later) - Install
10. Burnish the brake pads and rotors. Brake Pad and Rotor Burnishing.

FRONT BRAKE SHIELD REPLACEMENT (JE5, J55)

Removal Procedure

WARNING: **Refer to Brake Dust Warning .**

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle (Base) Lifting and Jacking the Vehicle (V-Series) .
2. Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation (Non V-Series) Tire and Wheel Removal and Installation (V-Series October 4th 2015 and Earlier) Tire and Wheel Removal and Installation (V-Series October 5th 2015 and Later) .
3. Remove the front brake rotor. Refer to Front Brake Rotor Replacement (JE5)Front Brake Rotor Replacement (J55)Front Brake Rotor Replacement (J6G).

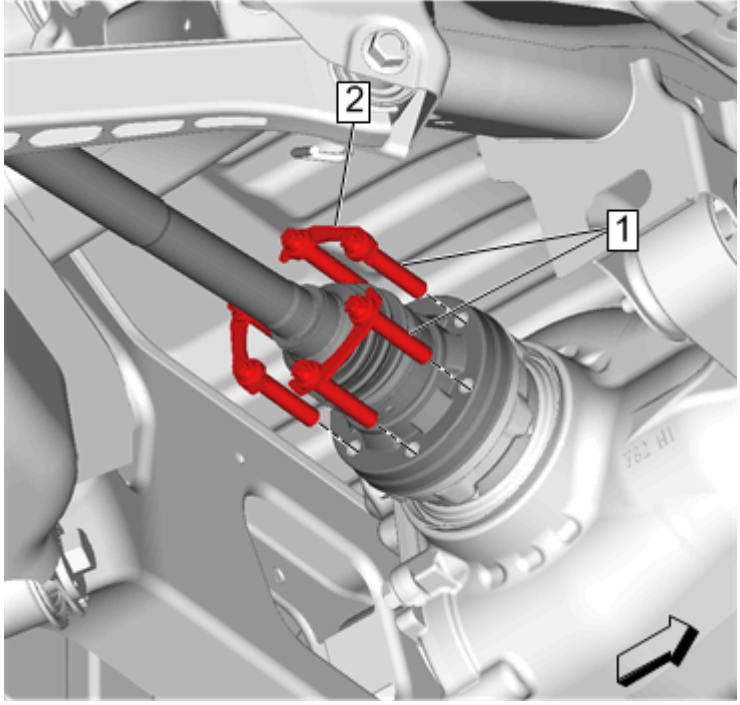


Fig. 92: Wheel Drive Shaft Bolts and Washers
Courtesy of GENERAL MOTORS COMPANY

7. Wheel Drive Shaft Bolt - Install
8. Wheel Drive Shaft Washer - Install a NEW washer. Do NOT reuse the old washer

CAUTION: **Refer to Fastener Caution .**

9. Tighten the wheel drive shaft bolts.

Tighten

1. First Pass: 50 N.m (37 lb ft)
2. Final Pass: (45 degrees)

NOTE: **Tighten the NEW torque prevailing wheel drive shaft nut slowly to draw the wheel drive shaft into the hub assembly prior to tightening to specifications.**

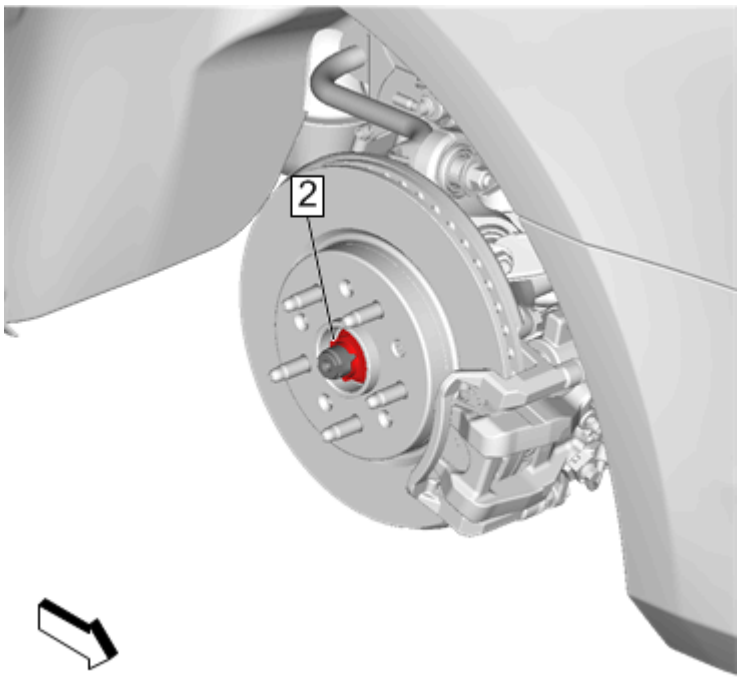
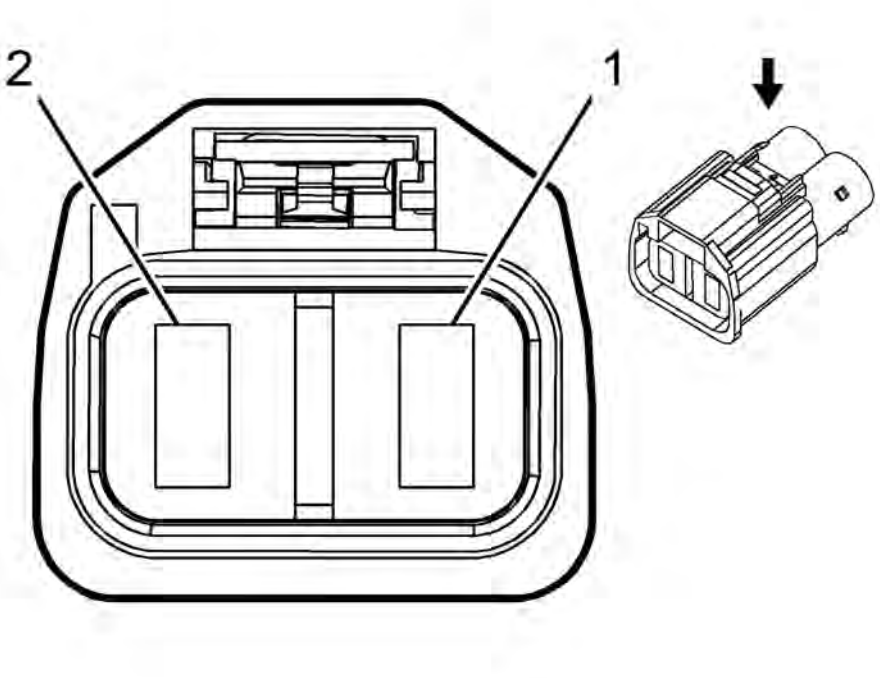


Fig. 93: Wheel Drive Shaft Nut
Courtesy of GENERAL MOTORS COMPANY

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray Name	Core Crimp	Insulation Crimp
I	19331015	J-35616-64B (LT BU)	J-38125-12A	Not Available	Not Available	Not Available	Not Available

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 20	-	-	-	Not Occupied	-	-
21	0.35	BN/WH	4035	Pedestrian Protection Impact Sensing Module Low Reference	I	-
22	0.35	OG/VT	4034	Pedestrian Protection Impact Sensing Module Signal	I	-
23	0.35	BN/YE	4038	Pedestrian Protection Safing Sensor Module Signal	I	-
24	0.35	BK/VT	4045	Pedestrian Protection Safing Sensor Module Low Reference	I	-
25 - 54	-	-	-	Not Occupied	-	-

K43 POWER STEERING CONTROL MODULE X1



Connector Part Information

- Harness Type: Engine
- OEM Connector: 13581053
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 9.5 Series, Sealed (BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray Name	Core Crimp	Insulation Crimp

Code	Name	Option	Location	Locator View	Connector End View
M57P	Seat Vertical Motor - Passenger	without AE8 or W2E	In the passenger compartment, mounted to the bottom of the passenger seat, forward of middle	Passenger Seat Components (AQ9)	M57P Seat Vertical Motor - Passenger (without AE8)
M64	Starter Motor	LCV or LTG	In the engine compartment, right of center, near rear, mounted to engine block	Right Rear of Engine Components (LCV or LTG)	• M64 Starter Motor X1 KL9 • M64 Starter Motor (Except KL9) • M64 Starter Motor (KL9)
M64	Starter Motor	LF4 or LGX	In the engine compartment, left of center, near rear, mounted to left side of engine block	Front of Engine Components (LGX)	• M64 Starter Motor X1 KL9 • M64 Starter Motor X1 • M64 Starter Motor (KL9) • M64 Starter Motor X2
M65	Steering Column Telescope Motor	N38	In the passenger compartment, left front, attached to steering column, right side, near middle	Steering Column Components	-
M68	Steering Column Tilt Motor	N38	In the passenger compartment, left front, attached to steering column, left side, near front	Steering Column Components	-
M69	Sunroof Motor	CF5	In the passenger compartment, rear center of roof, mounted to the bottom of the sunroof assembly	-	M69 Sunroof Motor (CF5)
M71	Transfer Case Clutch	F46	In the vehicle underbody, center middle, mounted inside the transfer case at rear	Transfer Case Components (F46)	M71 Transfer Case Clutch

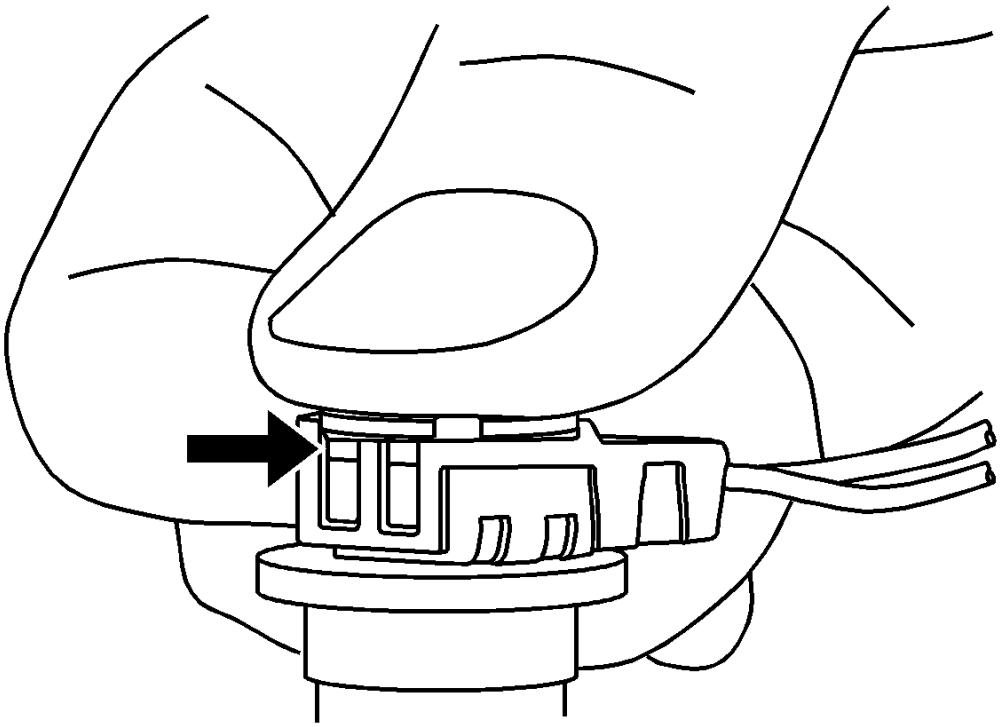


Fig. 104: Pushing CPA Down
Courtesy of GENERAL MOTORS COMPANY

3. After the connector is fully seated, push the CPA down with your thumb until the CPA is touching the yellow cover on the connector.

FEP CONNECTORS (STEERING GEAR)

Removal Procedure

Back To Article

SCHEMATIC AND ROUTING DIAGRAMS

SCHEMATICS RPO CODE LIST

RPO	Option Name	Country Group
1SV	ATS V-Series	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX),Other China Group (MAB),Korea (MAW),Israel (MBI),Mid-East (MAM),Russia Group (MBR),Europe Group (MBM)
A45	MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX),Other China Group (MAB),Japan (MAS),Korea (MAW),Israel (MBI),Mid-East (MAM),Russia Group (MBR),Europe Group (MBM)
AE8	ADJUSTER FRT ST-POWER, 8 WAY	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX),Other China Group (MAB),Japan (MAS),Korea (MAW),Israel (MBI),Mid-East (MAM),Russia Group (MBR),Europe Group (MBM)
AHE	BOLSTER DRVR-SEAT, POWER	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX),Other China Group (MAB),Japan (MAS),Korea (MAW),Israel (MBI),Mid-East (MAM),Russia Group (MBR),Europe Group (MBM)
AL0	SENSOR INDICATOR-INFLATABLE RESTRAINT, FRT PASS/CHILD PRESENCE DETECTOR	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX),Other China Group (MAB),Japan (MAS),Korea (MAW),Israel (MBI),Mid-East (MAM),Russia Group (MBR),Europe Group (MBM)
AQ9	SEAT-FRT BKT, LUXURY	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX),Other China Group (MAB),Japan (MAS),Korea (MAW),Israel (MBI),Mid-East (MAM),Russia Group (MBR),Europe Group (MBM)
ATH	LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX),Other China Group (MAB),Japan (MAS),Korea (MAW),Israel (MBI),Mid-East (MAM),Russia Group (MBR),Europe Group (MBM)

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω, replace the K20 Engine Control Module.

- **If greater than 5.2 V**

NOTE: **If the signal circuit is shorted to a voltage the engine control module or the sensor may be damaged.**

1. Ignition OFF, disconnect the harness connector at the K20 Engine Control Module.
2. Ignition ON, test for less than 1 V between the signal circuit and ground.
   - If 1 V or greater, repair the short to voltage on the circuit.
   - If less than 1 V, replace the K20 Engine Control Module.

- **If between 4.8-5.2 V**

17. Test or replace the B75C Multifunction Intake Air Sensor.

Component Testing

Multifunction Intake Air Sensor

1. Ignition OFF, disconnect the harness connector at the B75C Multifunction Intake Air Sensor.

NOTE: **A thermometer can be used to test the sensor off the vehicle.**

2. Test the IAT sensor 1 by varying the sensor temperature while monitoring the sensor resistance. Compare the readings with the **Temperature Versus Resistance - Intake Air Temperature Sensor (Hitachi Sensor)** **Temperature Versus Resistance - Intake Air Temperature Sensor (Delco Sensor)** table for Hitachi Sensors. The resistance values should be in range of the table values.
   - **If not within the specified range**

     Replace the B75C Multifunction Intake Air Sensor.

   - **If within the specified range**
3. All OK.

Multifunction Intake Air Sensor

1. Test the IAT Sensor 2 by varying the sensor temperature while monitoring the air temperature with a thermometer. Compare the readings with the scan tool IAT Sensor 2 parameter. The values should be within 5%.
   - **If not within the specified range**

     Replace the B75C Multifunction Intake Air Sensor.

   - **If within the specified range**
2. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Mass Airflow Sensor with Intake Air Temperature Sensor Replacement (LCV)** **Mass Airflow Sensor with Intake Air Temperature Sensor Replacement (LTG)** for multifunction intake air sensor replacement
- **Control Module References** for engine control module replacement, programming, and setup.

DTC P219A: FUEL TRIM CYLINDER BALANCE

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Refer to Circuit/System Testing.

- **If the DTC does not set**

7. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the X107 Engine Harness to Coolant Temperature Jumper Harness. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 5 Ω between the low reference circuit terminal A or 2 and ground.
   - **If 5 Ω or greater**
   1. Ignition OFF, disconnect the harness connector at the K20 Engine Control Module.
   2. Test for less than 2 Ω in the low reference circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, replace the K20 Engine Control Module.
   - **If less than 5 Ω**
3. Ignition ON.
4. Verify the scan tool ECT Sensor parameter is colder than -39Â° C (-38Â° F).
   - **If warmer than -39Â° C (-38Â° F)**
   1. Ignition OFF, disconnect the harness connector at the K20 Engine Control Module.
   2. Test for infinite resistance between the signal circuit terminal B or 1 and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance, replace the K20 Engine Control Module.
   - **If colder than -39Â° C (-38Â° F)**
5. Install a 3 A fused jumper wire between the signal circuit terminal B or 1 and the low reference circuit terminal A or 2.
6. Verify the scan tool ECT sensor parameter is warmer than 149Â° C (300Â° F).
   - **If 149Â° C (300Â° F) or colder**
   1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the K20 Engine Control Module, ignition ON.
   2. Test for less than 1 V between the signal circuit and ground.
      - If 1 V or greater, repair the short to voltage on the circuit.
      - If less than 1 V
   3. Ignition OFF.
   4. Test for less than 2 Ω in the signal circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, replace the K20 Engine Control Module.
   - **If warmer than 149Â° C (300Â° F)**
7. Test the B34 Engine Coolant Temperature Sensor.

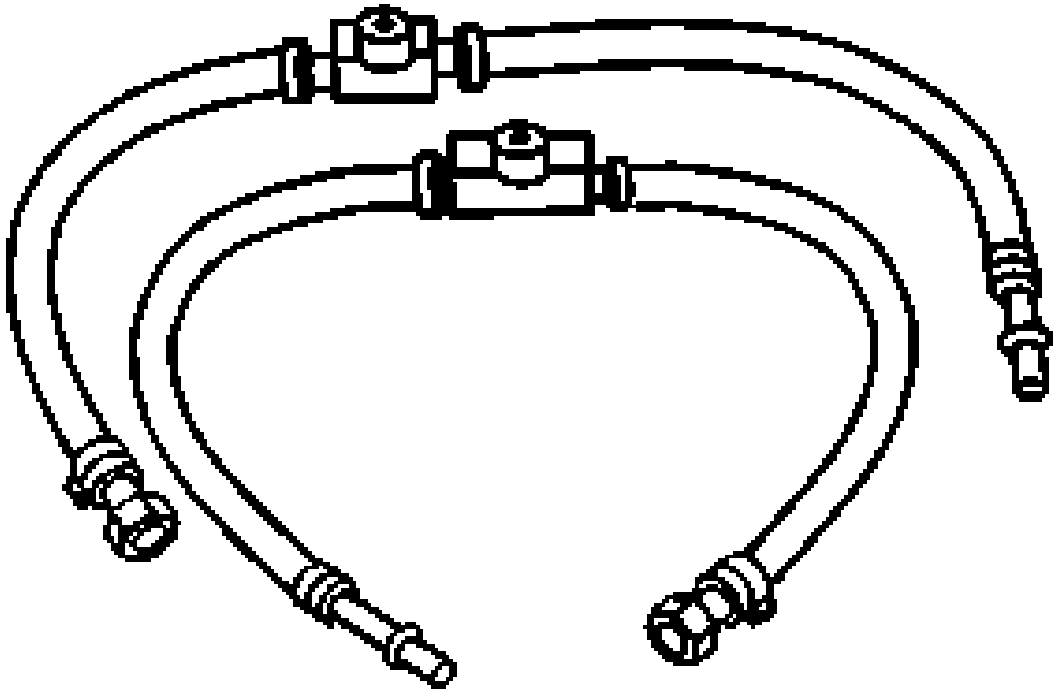
   Refer to Component Testing.

Component Testing

1. Ignition OFF, disconnect the X107 Engine Harness to Coolant Temperature Jumper Harness.
2. Test the ECT sensor by varying the sensor temperature while monitoring the sensor resistance. Compare the readings with the **Temperature Versus Resistance - Engine Coolant Temperature Sensor** table. The resistance values should be in range of the table values.
   - **If not within the specified range**

     Replace the B34 Engine Coolant Temperature Sensor.

   - **If within the specified range**
3. Test for infinite resistance between each terminal and the sensor housing.

Illustration	Tool Number/Description
	

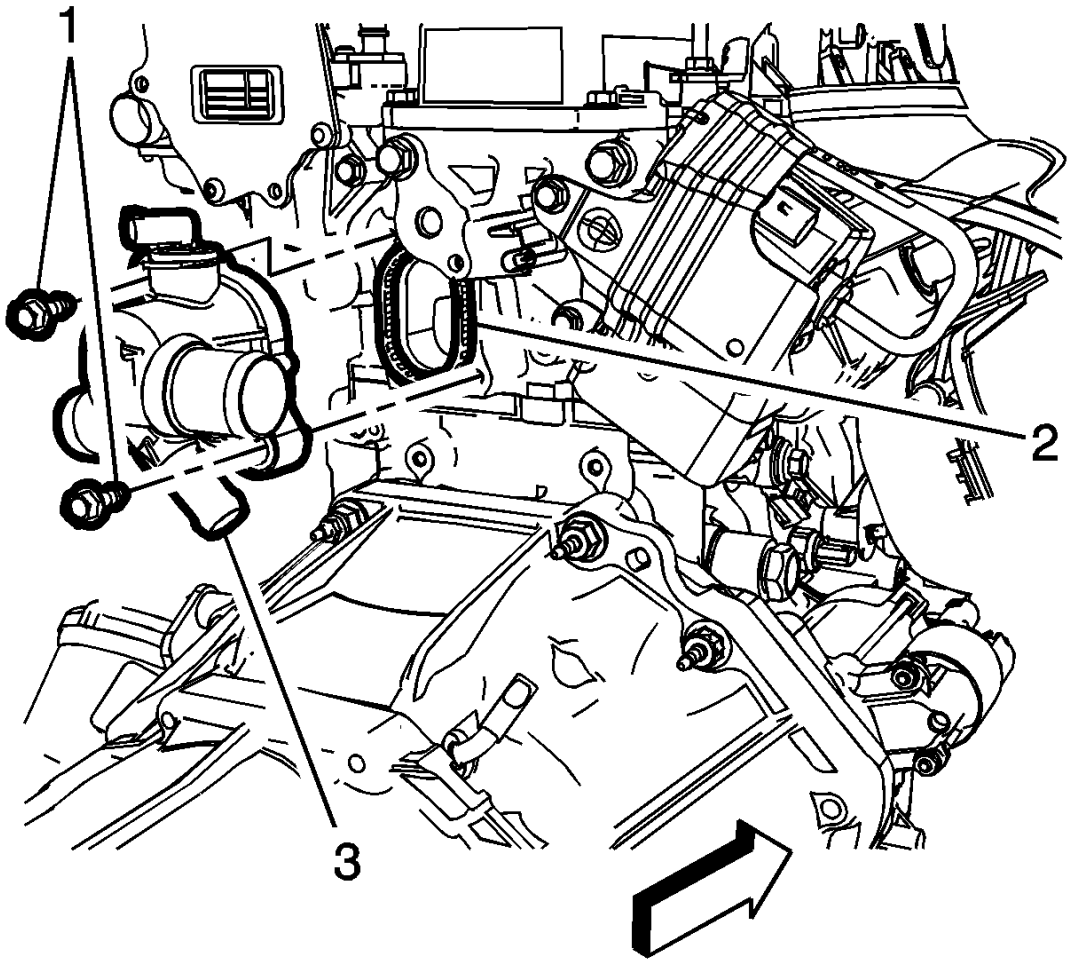


Fig. 222: Water Outlet
Courtesy of GENERAL MOTORS COMPANY

12. Remove the water outlet fasteners (1) and remove the water outlet (3).
13. Discard the water outlet seal (2).

Installation Procedure

1. Clean the sealing surfaces.

Callout	Component Name
18	Hydraulic Valve Lash Adjuster
19	Intake Valve
20	Exhaust Valve
21	Cylinder Head Gasket - Right
22	Cylinder Head Gasket - Left

Engine Oil Cooler Adapter Assembly

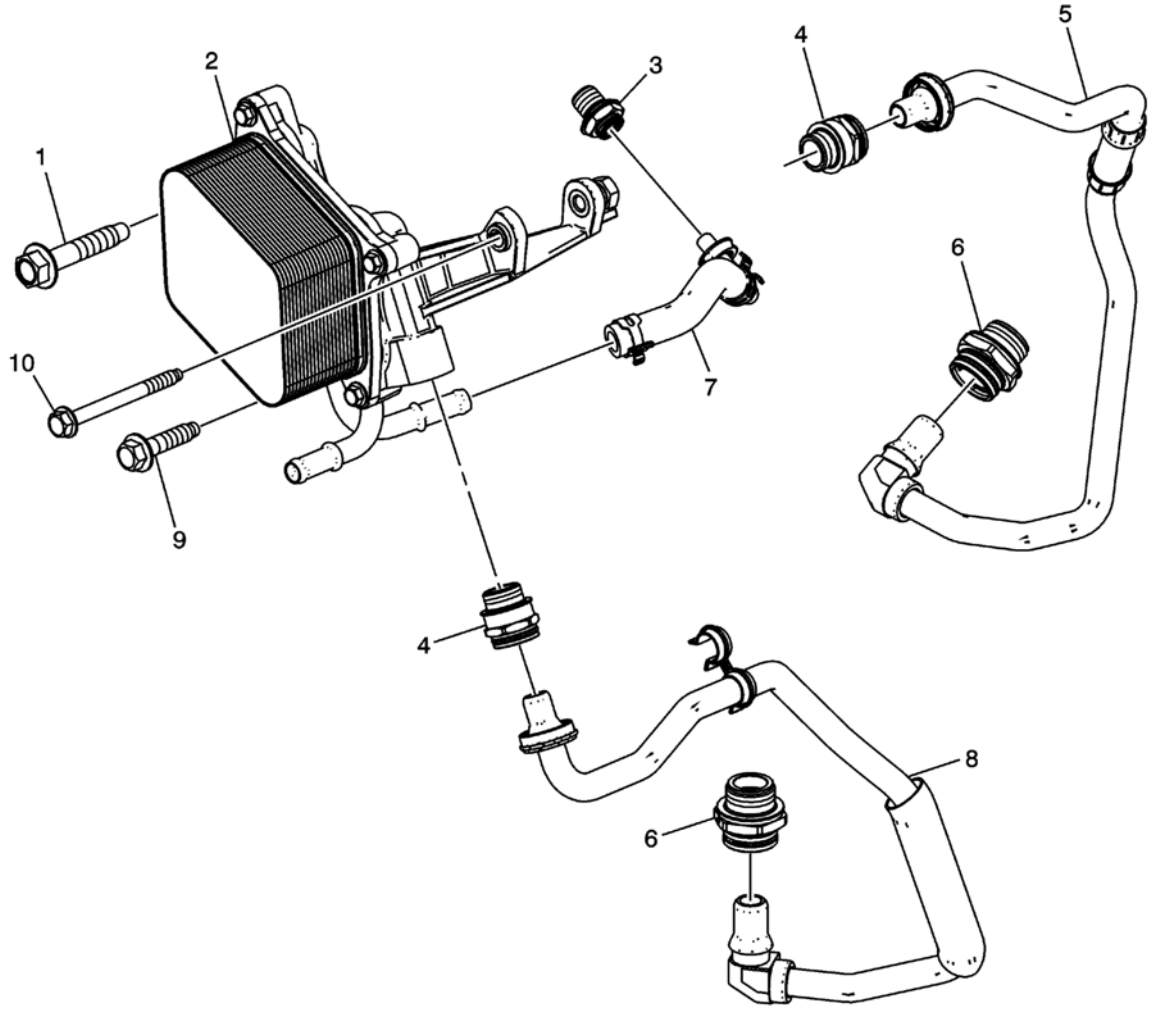


Fig. 9: Engine Oil Cooler Adapter Assembly
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Engine Oil Cooler Adapter Bolt
2	Engine Oil Cooler Adapter Assembly
3	Engine Oil Cooler Fitting
4	Engine Oil Cooler Fitting
5	Engine Oil Cooler Pipe
6	Engine Oil Cooler Fitting
7	Engine Oil Cooler Inlet Pipe
8	Engine Oil Cooler Pipe
9	Engine Oil Cooler Adapter Bolt
10	Engine Oil Cooler Adapter Bolt

Oil Pan Assembly