

2018 ACCESSORIES & EQUIPMENT

Active Noise Cancellation - Traverse

SPECIFICATIONS

FASTENER SPECIFICATIONS

Reusable Threaded Fastener Tightening Specifications

NOTE:

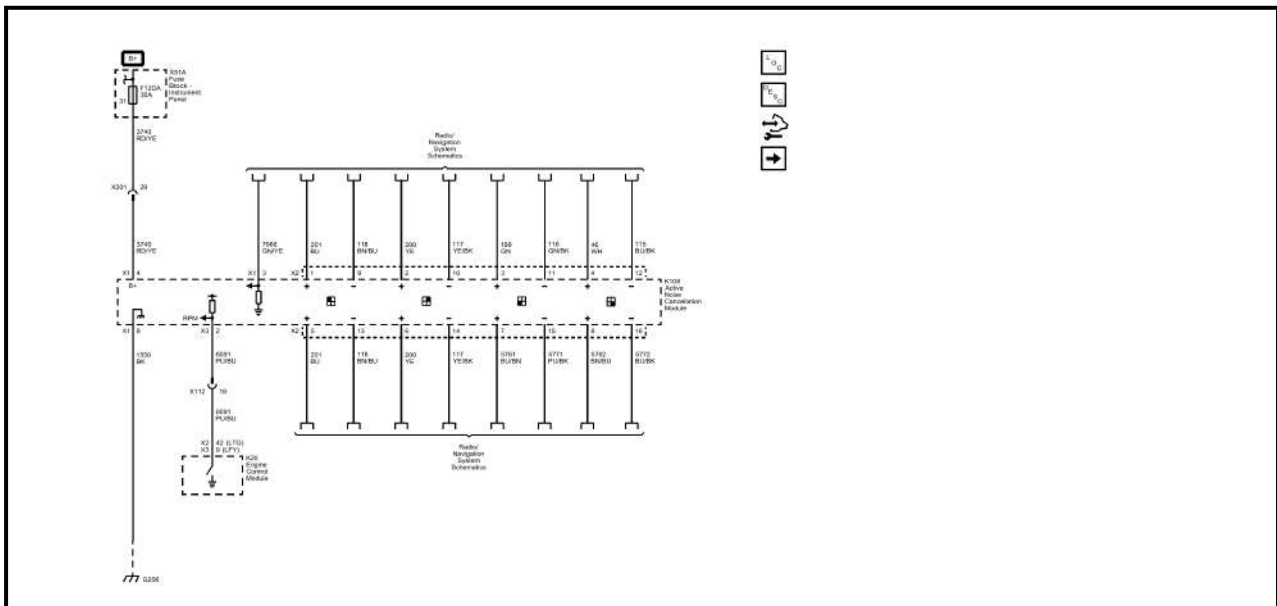
All fasteners listed in this table can be reused after removal.

Application	Specification
	Metric (English)
Radio Speaker Amplifier Nut	6 N.m (53 lb in)

SCHEMATIC WIRING DIAGRAMS

ACTIVE NOISE CANCELLATION WIRING SCHEMATICS

Active Noise Cancellation Module Power, Ground, Controls, and Subsystem References (UQF)



Active Noise Cancellation Microphones (UQF)



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

DTC Type Reference

[Powertrain Diagnostic Trouble Code \(DTC\) Type Definitions](#)

Scan Tool Reference

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

Circuit/System Verification

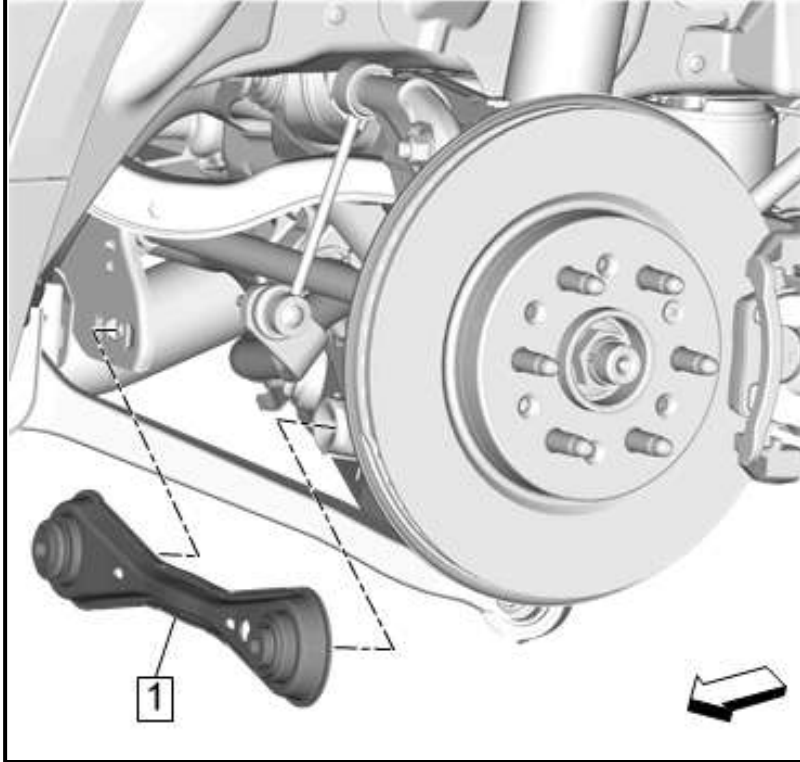
1. Ignition ON.
2. Verify the fuel level gauge sweeps when performing the scan tool Instrument Cluster Gauge Sweep control function.
 - **If the fuel level gauge does not sweep**
Replace the P16 Instrument Cluster
 - **Go to next step: If the fuel level gauge sweeps**
3. Verify the low fuel level indicator turns ON and OFF when commanding the scan tool All Indicators control function ON and OFF.
 - **If the low fuel level indicator does not turn ON and OFF**
Replace the P16 Instrument Cluster
 - **Go to next step: If the low fuel level indicator turns ON and OFF**
4. Verify the scan tool Fuel Level Sensor Left Tank parameter is between 0.5 - 3.5 V and varies with fuel level.
 - **If not between 0.5 - 3.5 V or does not vary with fuel level**
Refer to Primary Fuel Level Sensor Malfunction in Circuit/System Testing
 - **Go to next step: If between 0.5 - 3.5 V and varies with fuel level**
5. Verify the scan tool Fuel Level Sensor Right Tank parameter is between 0.5 - 3.5 V and varies with fuel level.
 - **If not between 0.5 - 3.5 V or does not vary with fuel level**
Refer to Secondary Fuel Level Sensor Malfunction in Circuit/System Testing
 - **Go to next step: If between 0.5 - 3.5 V and varies with fuel level**
6. All OK.

Circuit/System Testing

NOTE: **Circuit/System Verification must be performed before proceeding with Circuit/System Testing.**

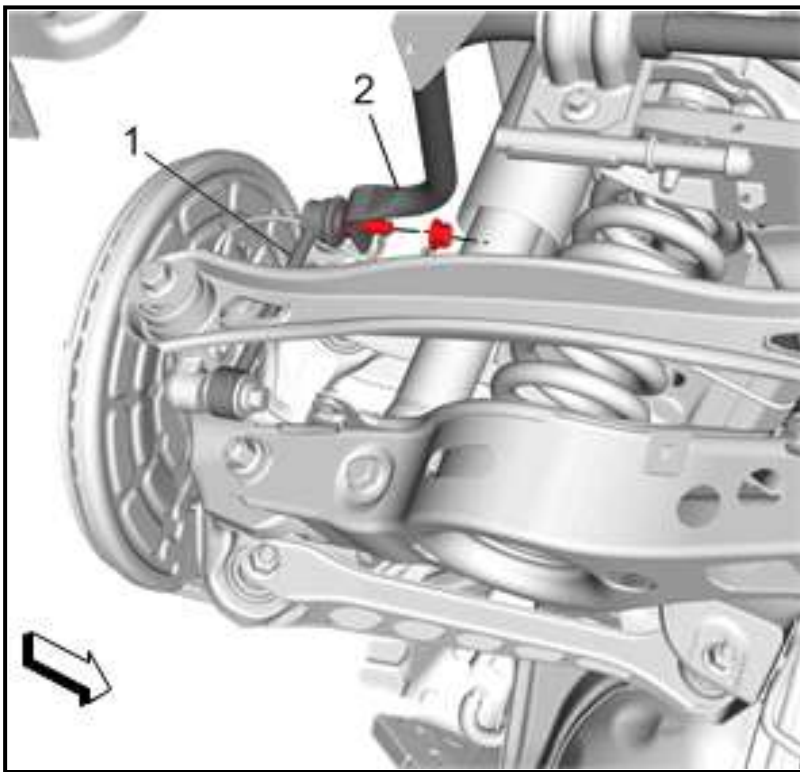
Primary Fuel Level Sensor Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the A7 Fuel Pump and Level Sensor Assembly. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 6 and ground.
 - **If 10 Ω or greater**
 1. Ignition OFF, disconnect the harness connector at the K20 Engine Control Module.



Rear Suspension Adjust Link (1) @ Rear Knuckle - Separate - [Adjust Link Replacement](#)

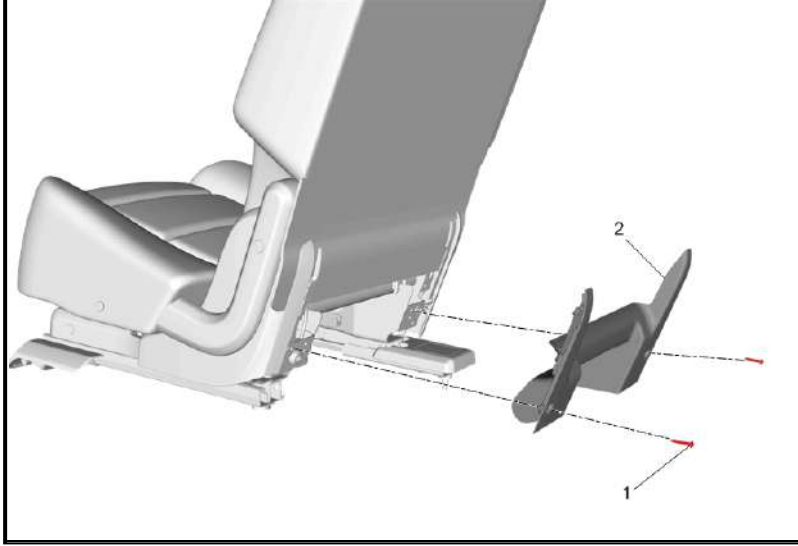
13.



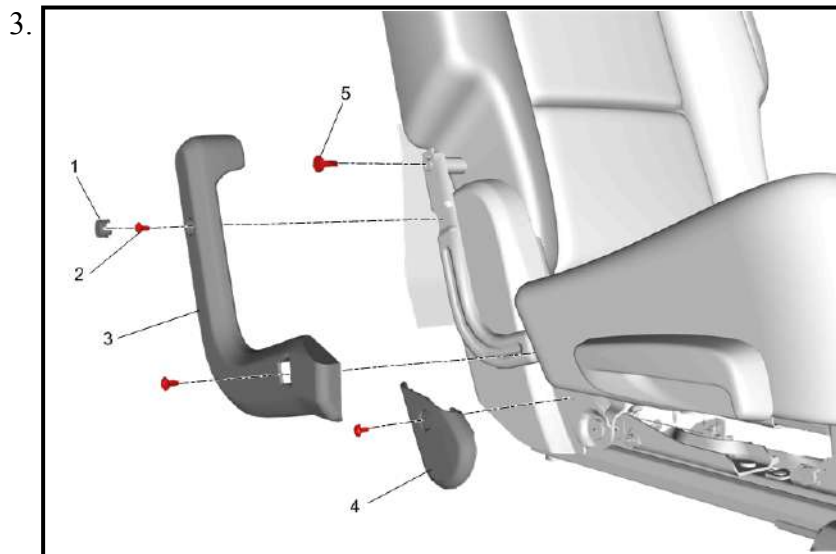
Stabilizer Shaft Link (1) @ Stabilizer Shaft - Separate - [Stabilizer Shaft Link Replacement](#)

14.





Rear Seat Back Center Bar Front Finish Cover (2) - Remove - [Rear Seat Back Center Bar Front Finish Cover Replacement \(40%\)](#)



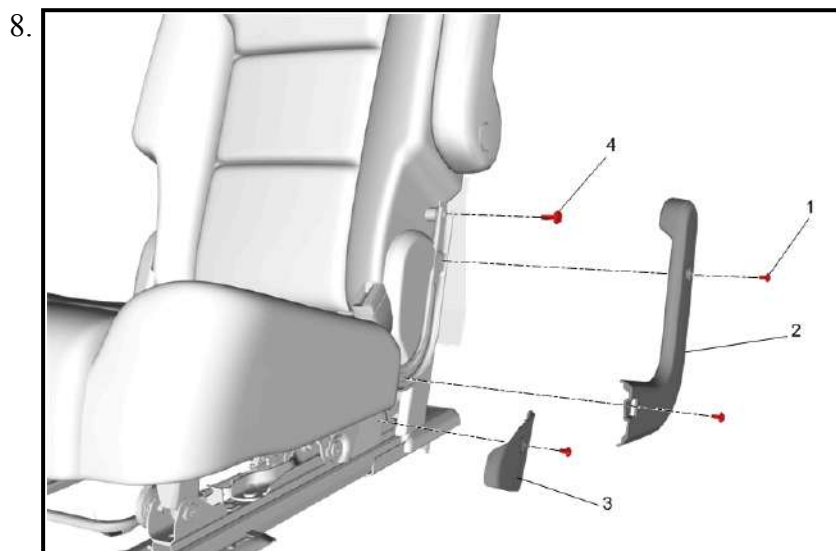
Rear Seat Outer Hinge Finish Cover Cap (1) - Remove

4. Rear Seat Outer Hinge Finish Cover Fastener (2) - Remove [3x]

5. Rear Seat Outer Hinge Finish Cover - Outer (3) - Remove

6. Rear Seat Outer Hinge Finish Cover - Front (4) - Remove

7. Rear Seat Cushion Frame Bolt - Upper (5) - Remove



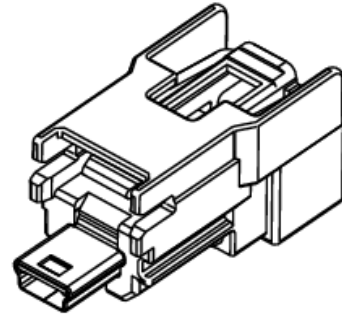
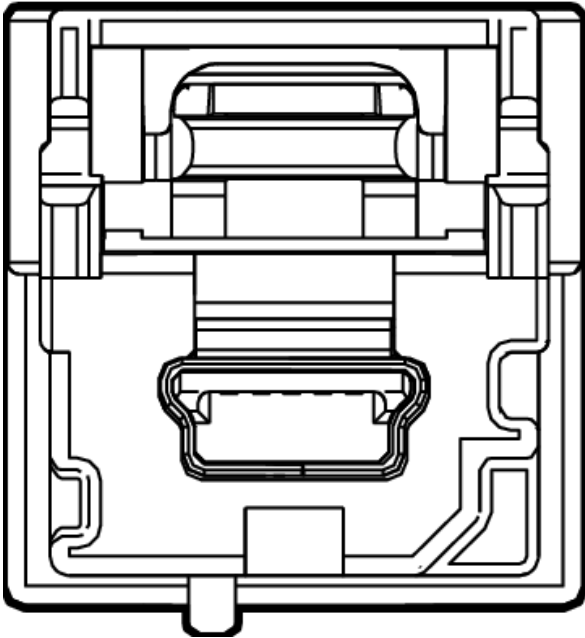
Rear Seat Inner Hinge Finish Cover Fastener (1) - Remove [3x]

9. Rear Seat Inner Hinge Finish Cover - Outer (2) - Remove

Step	Action	Yes	No
19	<ol style="list-style-type: none"> 1. Inspect the hydraulic brake system components for brake fluid seepage at a seal and/or fitting location, which may have drawn air into the system. 2. Inspect the hydraulic brake system components for evidence of a recent repair, which may have introduced air into the system. 3. Repair or replace any of the components found to be installed incorrectly or seeping brake fluid. <p>Did you find and correct a condition?</p>	Go to Step 21	Go to Step 20
20	<ol style="list-style-type: none"> 1. Inspect the brake master cylinder for internal fluid leaks. <u>Brake System Internal Leak Test</u> 2. Replace the brake master cylinder if it is found to be leaking brake fluid internally. <u>Brake Master Cylinder Replacement</u> <p>Did you find and correct a condition?</p>	Go to Step 21	Return to Symptom Table
21	<p>Install or connect components that were removed or disconnected during diagnosis.</p> <p>Did you complete the operation?</p>	Hydraulic Brake System OK Return to Symptom Table	-

BRAKE ASSIST SYSTEM DIAGNOSIS

Step	Action	Yes	No
<p>DEFINITION: This diagnostic table is designed to diagnose ONLY the components of the brake ASSIST system in order to determine if the brake ASSIST system is operating properly. You will be directed by the appropriate Symptom table to go to other brake system diagnostic tables as appropriate.</p>			
1	Were you sent here from a Brake Symptom table?	Go to Step 3	Go to Step 2
2	Were you sent here directly from an electrical diagnostic to investigate vacuum as a possible concern?	Go to Step 5	Go to <u>Diagnostic Starting Point - Vehicle</u>
3	<p>Inspect for proper brake pedal travel. <u>Brake Pedal Travel Measurement and Inspection</u></p> <p>Is the brake pedal travel distance within the acceptable limits?</p>	Go to Step 5	Go to Step 4
4	<ol style="list-style-type: none"> 1. Inspect for worn, missing, misaligned, bent or damaged brake pedal system components. <u>Brake Pedal Pushrod Inspection</u> <ul style="list-style-type: none"> • Inspect the brake pedal bushings for excessive wear and/or damage and inspect the brake pedal for a misaligned, bent and/or damaged condition. 2. Replace the brake pedal system components that are worn, missing, misaligned, bent or damaged. <p>Did you find and replace any worn, missing, misaligned, bent or damaged brake pedal system components?</p>	Go to Step 5	Go to <u>Hydraulic Brake System Diagnosis</u> to check for internal and external fluid leaks and air in the hydraulic brake system



Connector Part Information

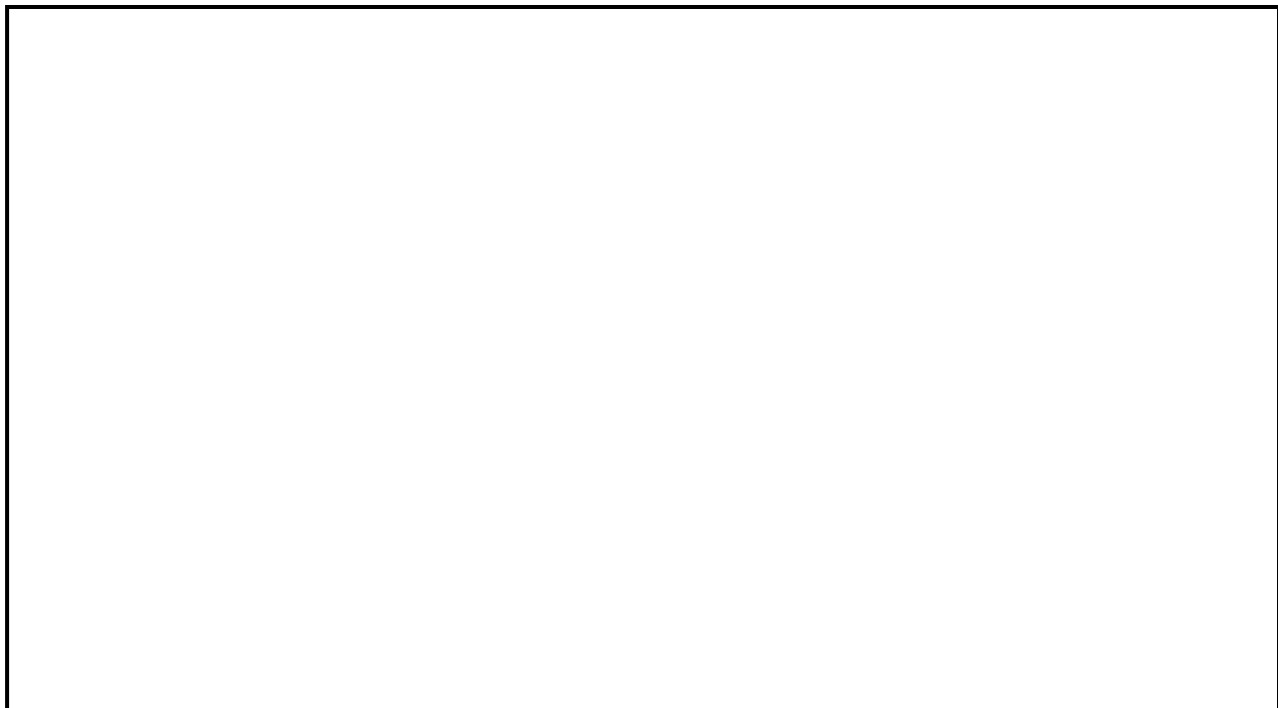
- Harness Type: Instrument Panel USB
- OEM Connector: 111014-9014
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type (GY)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray Name	Core Crimp	Insulation Crimp
I	Not Required	No Tool Required	No Tool Required	Not Required	Not Required	Not Required	Not Required

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
-	-	USB	-	USB Serial Data	I	-

M6B AIR TEMPERATURE DOOR ACTUATOR - AUXILIARY



- B218R Side Object Sensor Module - Right - B+ circuit terminal 8
- B233R Radar Sensor Module - Short Range Rear - B+ circuit terminal 1
- K171 Hands-Free Liftgate Sensor Control Module - B+ circuit terminal 2 X1
- B174W Frontview Camera - Windshield - B+ circuit terminal 3
- K124 Active Safety Control Module - Windshield - B+ circuit terminal 1 X1
- B233B Radar Sensor Module - Long Range - B+ circuit terminal 1
- B233LF Radar Sensor Module - Short Range Left Front - B+ circuit terminal 1
- B233RF Radar Sensor Module - Short Range Right Front - B+ circuit terminal 1
- B200 Rain Sensor Module - B+ circuit terminal 1
- S25 Garage Door Opener - B+ circuit terminal 1
- S48B Multifunction Switch - Overhead Console - B+ circuit terminal 1
- B165 Content Theft Deterrent Sensor Module - B+ circuit terminal 1
- P25 Power Sounder Content Theft Deterrent Alarm Module - B+ circuit terminal 1
- **If the test lamp illuminates**

Repair the short to voltage on the B+ circuit.

- **Go to next step: If the test lamp does not illuminate**

17. Ignition ON/Vehicle in Service Mode.

18. Verify that a test lamp illuminates between each of the B+ circuits listed below and ground.

- K19 Suspension Control Module - B+ circuit terminal 1
- K47 Rear Differential Clutch Control Module - B+ circuit terminal 10 X1
- K157 Video Processing Control Module - B+ circuit terminal 1 X2
- B218L Side Object Sensor Module - Left - B+ circuit terminal 8
- B218R Side Object Sensor Module - Right - B+ circuit terminal 8
- B233R Radar Sensor Module - Short Range Rear - B+ circuit terminal 1
- K171 Hands-Free Liftgate Sensor Control Module - B+ circuit terminal 2 X1
- B174W Frontview Camera - Windshield - B+ circuit terminal 3
- K124 Active Safety Control Module - Windshield - B+ circuit terminal 1 X1
- B233B Radar Sensor Module - Long Range - B+ circuit terminal 1
- B233LF Radar Sensor Module - Short Range Left Front - B+ circuit terminal 1
- B233RF Radar Sensor Module - Short Range Right Front - B+ circuit terminal 1
- B200 Rain Sensor Module - B+ circuit terminal 1
- S25 Garage Door Opener - B+ circuit terminal 1
- S48B Multifunction Switch - Overhead Console - B+ circuit terminal 1
- B165 Content Theft Deterrent Sensor Module - B+ circuit terminal 1
- P25 Power Sounder Content Theft Deterrent Alarm Module - B+ circuit terminal 1
- **If the test lamp does not illuminate and the circuit fuse is good**

1. Ignition OFF/Vehicle OFF, remove the test lamp.

2. Test for less than 2 Ω in the B+ circuit end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , replace the X53A Fuse Block - Rear Body.

- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition OFF/Vehicle OFF.

2. Test for infinite resistance between the B+ circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, test or replace the appropriate device that is controlled by the KR104B Battery Saver Relay 2.

- **Go to next step: If the test lamp illuminates**

19. Test or replace the appropriate device that is controlled by the KR104B Battery Saver Relay 2.

Refer to Circuit/System Testing.

- **Go to next step: If 0 counts and the engine does not stumble or stall**

6. Operate the vehicle within the Conditions for Running the DTC. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

7. Verify the DTC does not set.

- **If the DTC sets**

Refer to Circuit/System Testing.

- **Go to next step: If the DTC does not set**

8. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the B26 Crankshaft Position Sensor. 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 2 and ground.

- **If 5 Ω or greater**

1. Ignition OFF, disconnect the X2 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 2 Ω or less, replace the K20 Engine Control Module.

- **Go to next step: If less than 5 Ω**

3. Ignition ON.

4. Test for 4.8 - 5.2 V between the 5 V reference circuit terminal 1 and ground.

- **If less than 4.8 V**

1. Ignition OFF, disconnect the X2 harness connector at the K20 Engine Control Module.

2. Test for infinite resistance between the 5 V reference circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- Go to next step: If infinite resistance

3. Test for less than 2 Ω in the 5 V 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 greater than 5.2 V**

1. Ignition OFF, disconnect the X2 harness connector at the K20 Engine Control Module, ignition ON.

2. Test for less than 1 V between the 5 V reference 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.

- **Go to next step: If between 4.8 - 5.2 V**

5. Test for 4.8 - 5.2 V between the signal circuit terminal 3 and ground.

- **If less than 4.8 V**

1. Ignition OFF, disconnect the X2 harness connector at the K20 Engine Control Module.

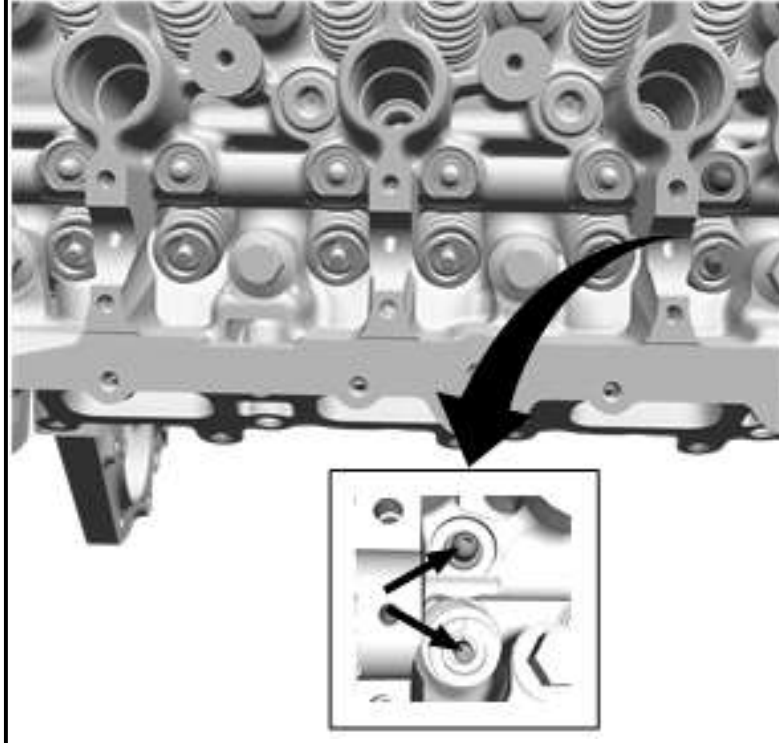
2. Test for infinite resistance between the signal circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- Go to next step: If infinite resistance.

3. Test for less than 2 Ω in the signal circuit end to end.

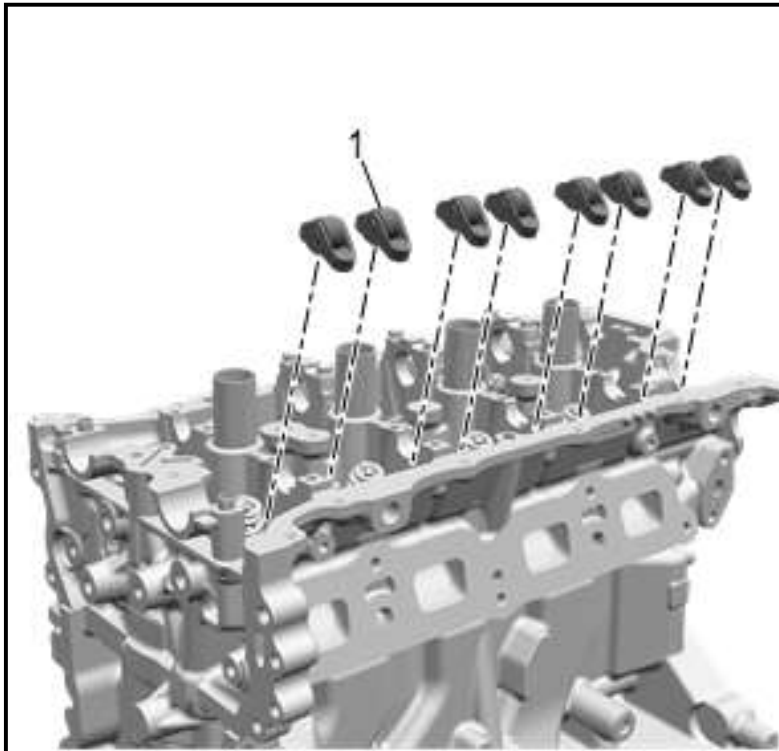
- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , replace the K20 Engine Control Module.

- **If greater than 5.2 V**



Lubricate the valve tips. Refer to [Adhesives, Fluids, Lubricants, and Sealers](#).

4.



NOTE: Used rocker arms must be returned to the original position on the camshaft. If the camshaft is being replaced, the rocker arms actuated by the camshaft must also be replaced.

NOTE: Pre-oil roller bearings before installation.

Lubricate the roller bearings with valve rocker arm lubricant. Refer to [Adhesives, Fluids, Lubricants, and Sealers](#).

5. Position the valve rocker arm (1) on the tip of the valve stem and on the lash adjuster and lubricate. Refer to [Adhesives, Fluids, Lubricants, and Sealers](#).

6.



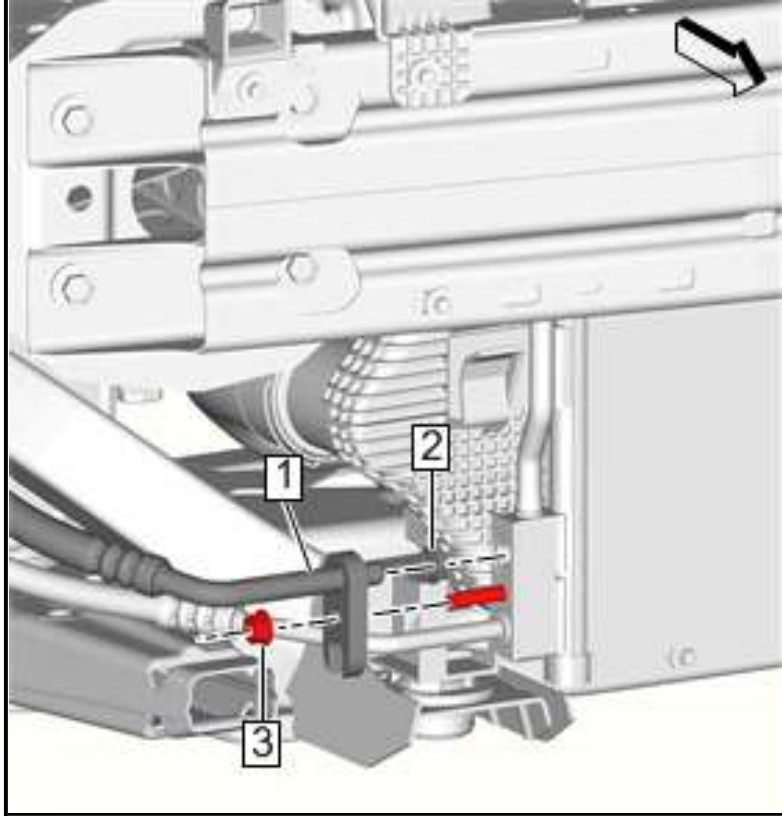
Illustration

**Tool
Number/Description**

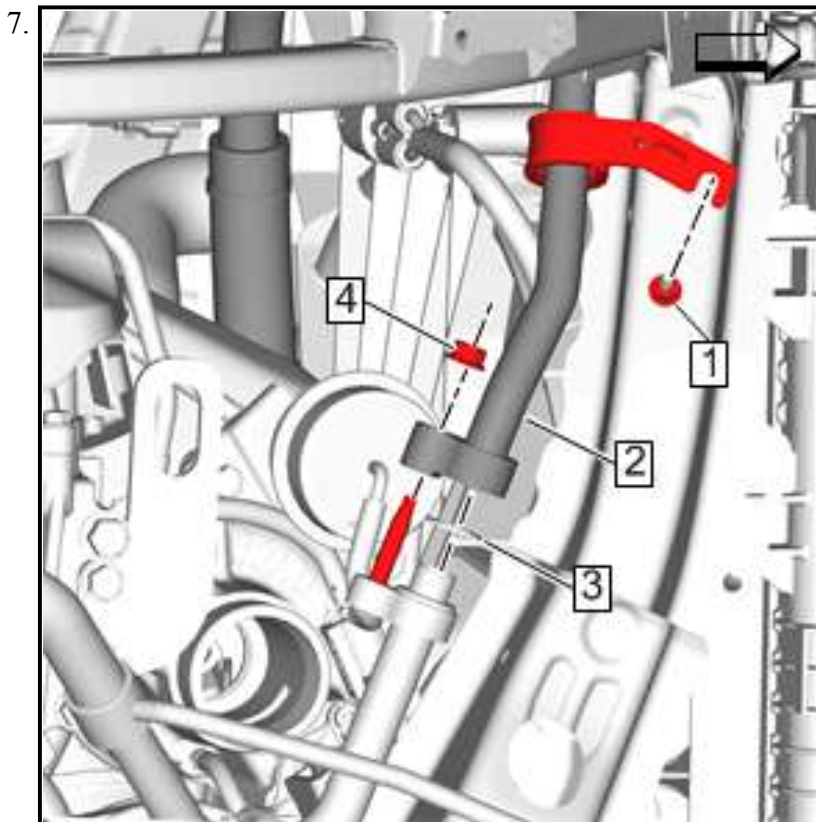


GE-8001
J-8001
Dial Indicator Set
South America Use
Local Equivalent

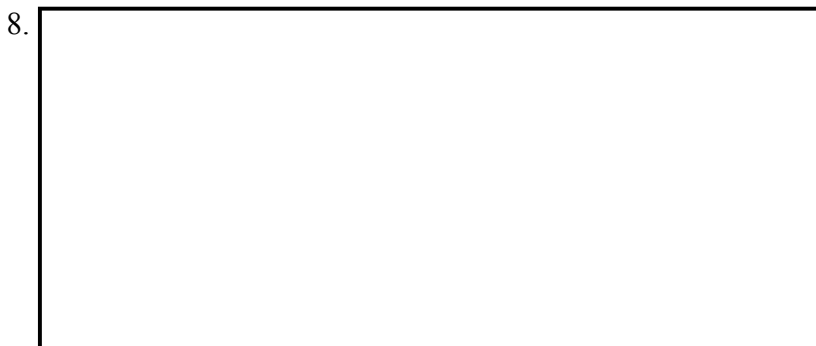
GE-8358
J-8358
Carbon Removal
Brush
South America Use
Local Equivalent



Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Install - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#)



Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Refrigerant Heat Exchanger - Install - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#)



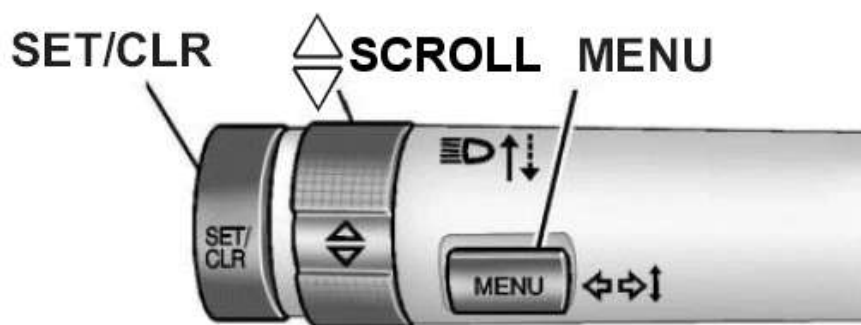


Fig. 2: Identifying DIC Controls (Turn Signal Lever)

Courtesy of GENERAL MOTORS COMPANY

Vehicles without DIC (Some Models)

1. With the engine OFF, turn the ignition key to RUN.
2. Fully press and release the accelerator pedal slowly three times within five seconds.
3. Turn the key to OFF, than start the vehicle.

Reset Using Diagnostic Scan Tool (Some Models)

1. Turn on ignition.
2. Connect scan tool.
3. Select Module Diagnosis.
4. Select Engine Control Module.
5. Select Configuration/Reset function.
6. Select Engine Oil System Reset.
7. Push Enter button to run function.
8. Confirm Executed successfully.
9. Turn ignition of and confirm.
10. Turn ignition on and confirm.

ENGINE OIL REPLACEMENT REMINDER RESET - PROCEDURE 19

1. The Driver Information Center (DIC) will display remaining oil life as a percentage estimate of the useful life of oil.
2. When remaining oil life is 10 percent or less, the system will display CHANGE OIL SOON. When oil life expires, display will show CHANGE ENGINE OIL. After changing oil, reset oil life display.
3. To reset oil life display, press INFORMATION (or INFORMATION SKIP) button to display OIL LIFE LEFT. Press and hold RESET (or RESET NO) button until 100 OIL LIFE LEFT (0.0 OIL LIFE LEFT on some early models) is displayed.

ENGINE OIL REPLACEMENT REMINDER RESET - PROCEDURE 20

With Base Audio System

Press up or down arrow on the INFO button located to right of Driver Information Center (DIC) display to access DIC menu. Once 100 percent ENGINE OIL LIFE menu item is highlighted, press and hold the CLR button. Percentage will return to 100 and oil life indicator will be reset. Repeat procedure if the percentage does not return to 100.

With Navigation System

Turn the system on by pressing PWR/VOL knob once. PWR/VOL knob is located to lower left of DIC display. Press INFO button located to left of the display to access Vehicle Information menu. Turn TUNE/SEL knob located to lower right of the display until ENGINE OIL LIFE is highlighted. Press TUNE/SEL knob once to select it. When 100 percent Engine Oil Life is displayed, press multifunction

9. Output Carrier Assembly Drive

The overdrive carrier (546) pinion gears are in mesh with, and drive, the internal gear (output carrier assembly) (555) in the direction opposite of torque converter rotation to achieve reversal of direction.

10. Output Carrier Transfer Drive Gear Hub Driven

The output carrier transfer drive gear hub (502) is splined to, and driven by, the output carrier assembly (555).

11. Drive Sprocket Driving

The drive sprocket (234), splined to and driven by the output carrier transfer drive gear hub (502), drives the drive link (233) which drives the driven sprocket (241).

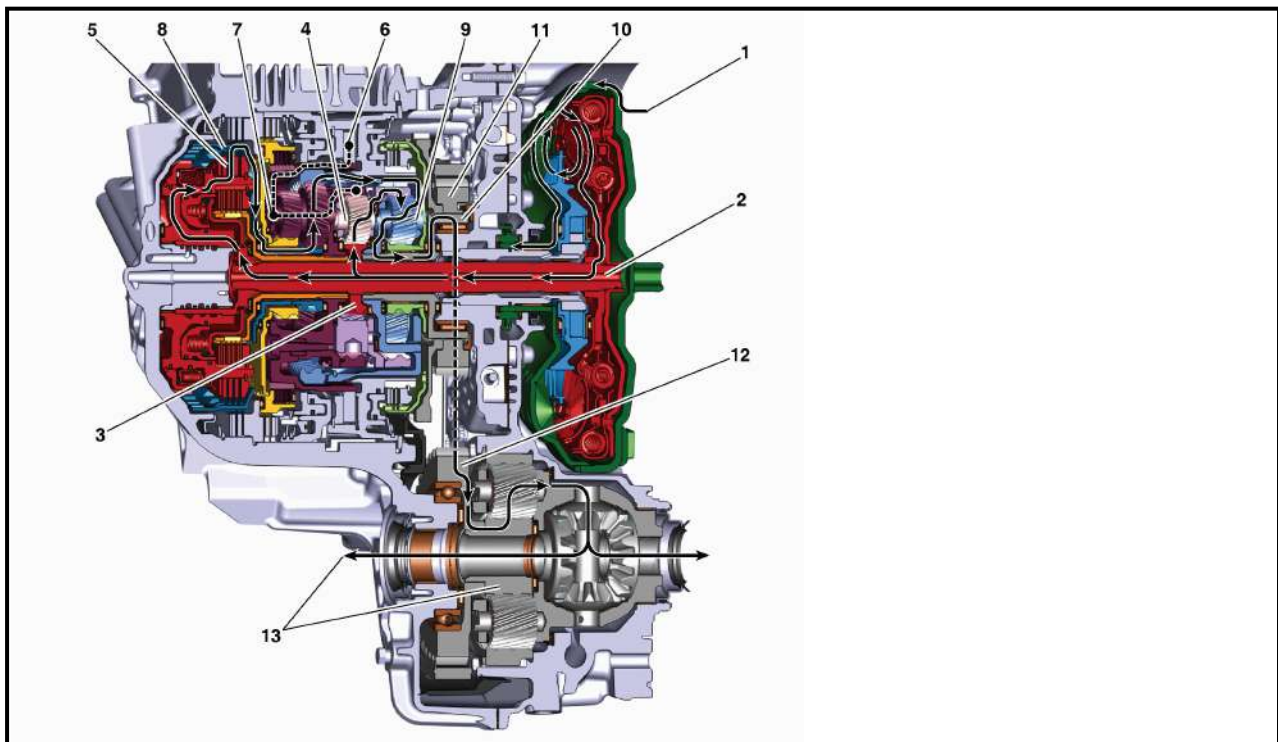
12. Driven Sprocket Driven

The driven sprocket (241), driven by the drive link (233), is splined to the front differential carrier sun gear (240).

13. Front Differential Carrier Sun Gear Driving

The front differential carrier sun gear (240), is in mesh with, and drives, the front differential carrier (238), thus transferring power to the front differential carrier and to the drive axles.

Reverse



NEUTRAL - ENGINE RUNNING (HYDRAULIC CIRCUITS)

When the gear selector is moved to the Neutral (N) position, the hydraulic and electrical system operation is identical to Park (P) range. However, if Neutral is selected after the vehicle was operating in Reverse (R), the 5-7 reverse solenoid and clutch select control solenoid is commanded OFF and the 1 reverse & 6-7-8-9 solenoid is commanded ON and the following changes would occur in the hydraulic system.

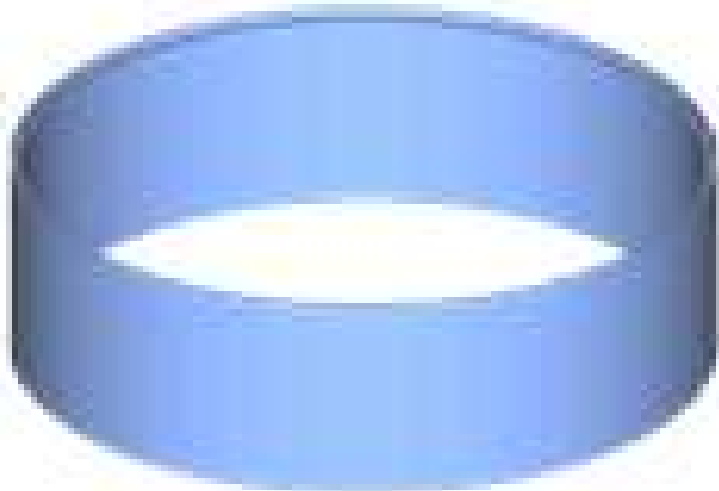
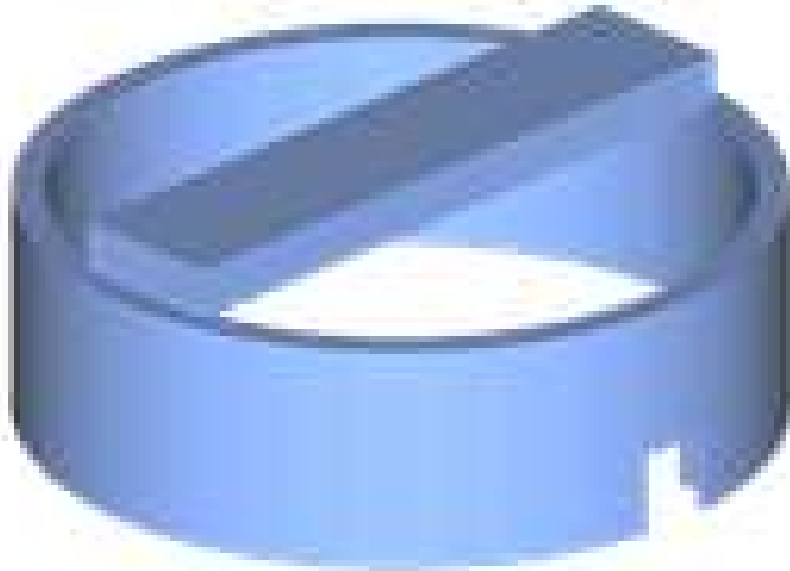
5-7 Reverse Clutch Releases

Manual Valve

The manual valve is moved to the Neutral position and blocks line pressure from entering the reverse and drive fluid circuits. The reverse fluid from the clutch select valve is opened to an exhaust passage at the manual valve.

Illustration

**Tool
Number/Description**



DT-47794
Spring Compressor

Condition	Code	Procedure
Terminal loose, affecting performance	B	Require repair or replacement
Terminal loose, not affecting performance	1	Suggest repair or replacement
Threads damaged	A	Require repair or replacement
Threads stripped (threads missing)	A	Require replacement
Wire lead conductors exposed	B	Require repair or replacement
Wire lead corroded	A	Require repair or replacement
Wire lead open	A	Require repair or replacement
Wire lead shorted	A	Require repair or replacement

ENGINE COOLANT TEMPERATURE SENSORS

Condition	Code	Procedure
Attaching hardware missing	C	Require replacement of hardware
Attaching hardware threads damaged	A	Require repair or replacement of hardware
Attaching hardware threads stripped (threads missing)	A	Require repair or replacement of hardware
Connector (Weatherpack type) leaking	A	Require repair or replacement
Connector broken	A	Require repair or replacement
Connector melted	A	Require repair or replacement
NOTE: Determine cause and correct prior to repair or replacement of part.		
Connector missing	C	Require replacement
Contaminated	A	Require repair or replacement
NOTE: Determine source of contamination, such as engine coolant, fuel, metal particles, or water. Require repair or replacement.		
Inoperative	A	Require repair or replacement
NOTE: Inoperative includes intermittent operation. Some components may be serviceable; check for accepted cleaning procedure.		
Leaking	B	Require repair or replacement
Missing	C	Require replacement
Resistance out of specification	B	Require repair or replacement
Restricted, affecting performance	A	Require repair or replacement
Terminal broken	A	Require repair or replacement
Terminal burned, affecting performance	A	Require repair or replacement
NOTE: Determine cause and correct prior to repair or replacement of part.		
Terminal burned, not affecting performance	2	Suggest repair or replacement
Terminal corroded, affecting performance	A	Require repair or replacement
Terminal corroded, not affecting performance	2	Suggest repair or replacement
Terminal loose, affecting performance	B	Require repair or replacement
Terminal loose, not affecting performance	1	Suggest repair or replacement
Threads damaged	A	Require repair or replacement
Threads stripped (threads missing)	A	Require replacement
Wire lead conductors exposed	B	Require repair or replacement
Wire lead corroded	A	Require repair or replacement
Wire lead open	A	Require repair or replacement