

## 2006 Buick Rainier

2006 ENGINE Engine Mechanical - 5.3L - Ascender, Envoy, Rainier & TrailBlazer

### 2006 ENGINE

**Engine Mechanical - 5.3L - Ascender, Envoy, Rainier & TrailBlazer**

## SPECIFICATIONS

### FASTENER TIGHTENING SPECIFICATIONS

#### Fastener Tightening Specifications

Application	Specification	
	Metric	English
Air Cleaner Outlet Duct Bolt	10 N.m	89 lb in
Air Cleaner Outlet Duct Clamp	7 N.m	62 lb in
Air Conditioning Belt Tensioner Bolt	50 N.m	37 lb ft
Air Conditioning Bracket Bolt	50 N.m	37 lb ft
Automatic Transmission Flex Plate Bolts - First Pass	20 N.m	15 lb ft
Automatic Transmission Flex Plate Bolts - Second Pass	50 N.m	37 lb ft
Automatic Transmission Flex Plate Bolts - Final Pass	100 N.m	74 lb ft
Battery Cable Channel Bolt	12 N.m	106 lb in
Brake Hose Retaining Bolt	25 N.m	18 lb ft
Camshaft Position (CMP) Sensor Bolt	12 N.m	106 lb in
Camshaft Position (CMP) Sensor Wire Harness Bolt	12 N.m	106 lb in
Camshaft Retainer Bolts - Hex Head Bolts	25 N.m	18 lb ft
Camshaft Retainer Bolts - TORX® Head Bolts	15 N.m	11 lb ft
Camshaft Sprocket Bolts	25 N.m	18 lb ft
Connecting Rod Bolts - First Pass	20 N.m	15 lb ft
Connecting Rod Bolts - Final Pass	75 degrees	
Coolant Air Bleed Pipe and Cover Bolts	12 N.m	106 lb in
Coolant Temperature Sensor	20 N.m	15 lb ft
Crankshaft Balancer Bolt - Installation Pass to Ensure the Balancer is Completely Installed	330 N.m	240 lb ft
Crankshaft Balancer Bolt - First Pass - Install a NEW Bolt After the Installation Pass and Tighten as Described in the First and Final Passes	50 N.m	37 lb ft
Crankshaft Balancer Bolt - Final Pass	140 degrees	

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monitor the specific cylinders ability to go into and out of DoD as commanded by the scan tool. The actual pressure values on the compression gage are not as critical as is observing the on-off switching action of the solenoid and valve lifters.

1. Measure the engine oil level. Fill, as required.
2. Perform the Diagnostic System Check - Vehicle. Refer to **Diagnostic System Check - Vehicle** in Vehicle DTC Information.
3. Disable the ignition system for the cylinder to be tested, by disconnecting the electrical wire harness to the ignition coil.
4. Disable the fuel injection system for the cylinder to be tested, by disconnecting the electrical wire harness to the fuel injector.
5. Remove the spark plug and wire for the cylinder to be tested.
6. Install a 0-1378 kPa (0-200 psi) compression gage.
7. Start the engine.
8. Using the scan tool output controls, command the solenoid ON, for the cylinder to be deactivated.
9. Depress the Schrader valve on the compression gage in order to release the pressure and zero the gage. With the engine running and the cylinder in DoD mode, the compression reading should be less than 172 kPa (25 psi).
10. Using the scan tool, de-energize the solenoid while observing the reading on the compression gage. With the engine running and the cylinder NOT in DoD mode, the compression gage reading should increase quickly to greater than 345 kPa (50 psi).

**IMPORTANT: Only 1 cylinder can be tested at a time. When testing has been completed on a specific cylinder, the wire harness electrical connectors, spark plug, and spark plug wire must be installed prior to testing of each additional cylinder.**

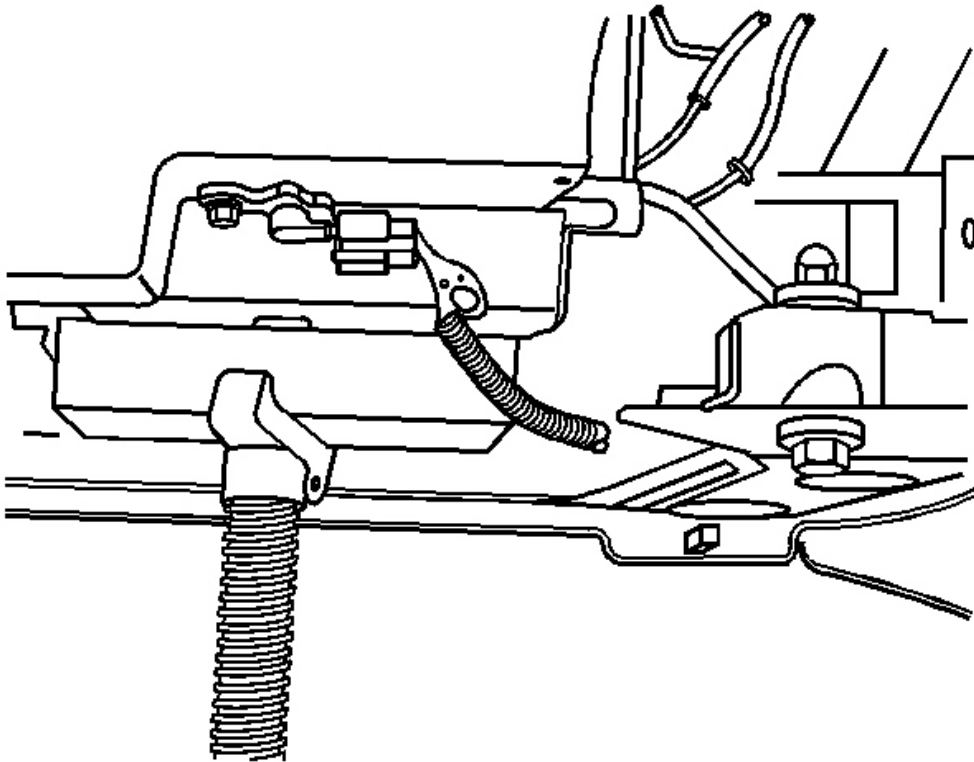
11. Test each of the 4 DoD cylinders, 1 at a time. If the readings are not within specifications, remove and test the VLDM, as required. Refer to **Valve Lifter Oil Manifold Replacement** and **Displacement on Demand (DoD) Valve Lifter Oil Manifold Diagnosis and Testing**.
12. If the compression test has been performed and all DoD cylinders are operating within specifications, the DoD system is performing as designed and no repairs are required.
13. Clear the DTCs with a scan tool.

### CYLINDER LEAKAGE TEST

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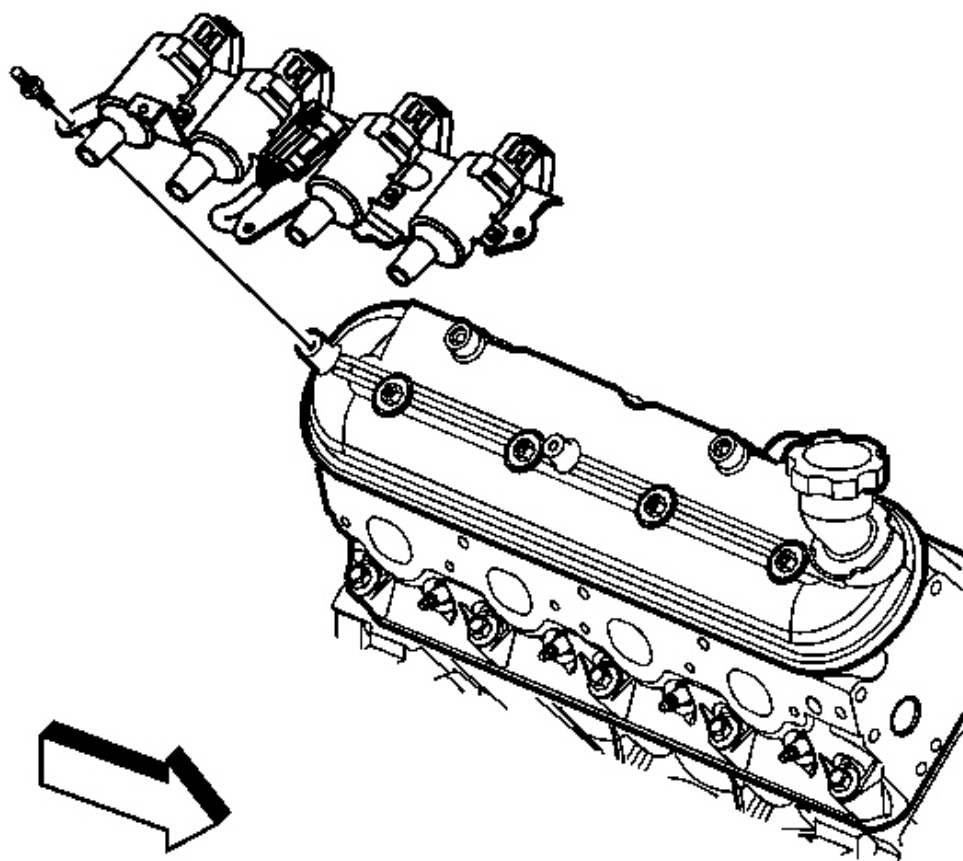
**Fig. 52: Block Of Wood Between Engine Oil Pan And Pole Jack**  
Courtesy of GENERAL MOTORS CORP.

8. Install a pole jack underneath the oil pan.
9. Insert a block of wood between the oil pan and the pole jack.

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5. Reposition the engine harness, if necessary.
6. Remove the spark plug wires from the ignition coils.
  - Twist each plug wire 1/2 turn.
  - Pull only on the boot in order to remove the wire from the ignition coil.



**Fig. 133: Ignition Coil View**

Courtesy of GENERAL MOTORS CORP.

7. If necessary, remove the ignition coil bracket studs from the rocker arm cover.
8. If necessary, remove the ignition coils and bracket from the rocker cover.

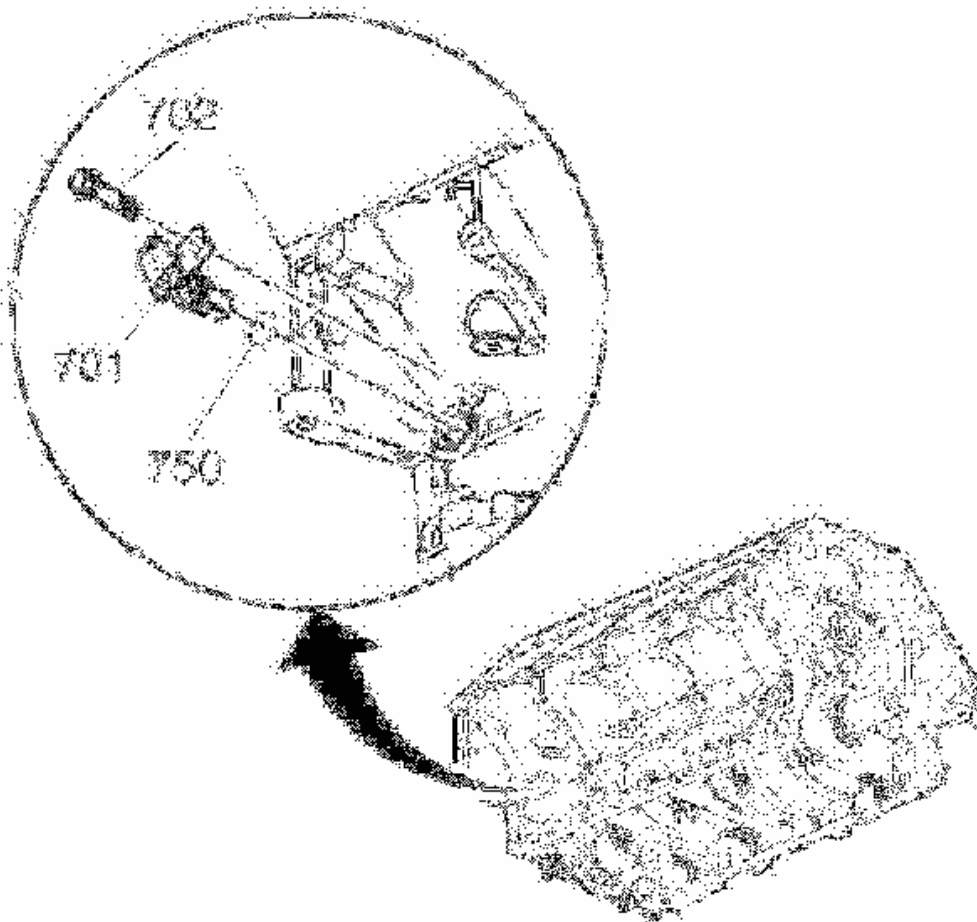
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### CRANKSHAFT AND BEARINGS REMOVAL

#### Tools Required

- **J 6125-1B** Slide Hammer with Adapter
- **J 41818** Crankshaft Bearing Cap Remover. See **Special Tools**.

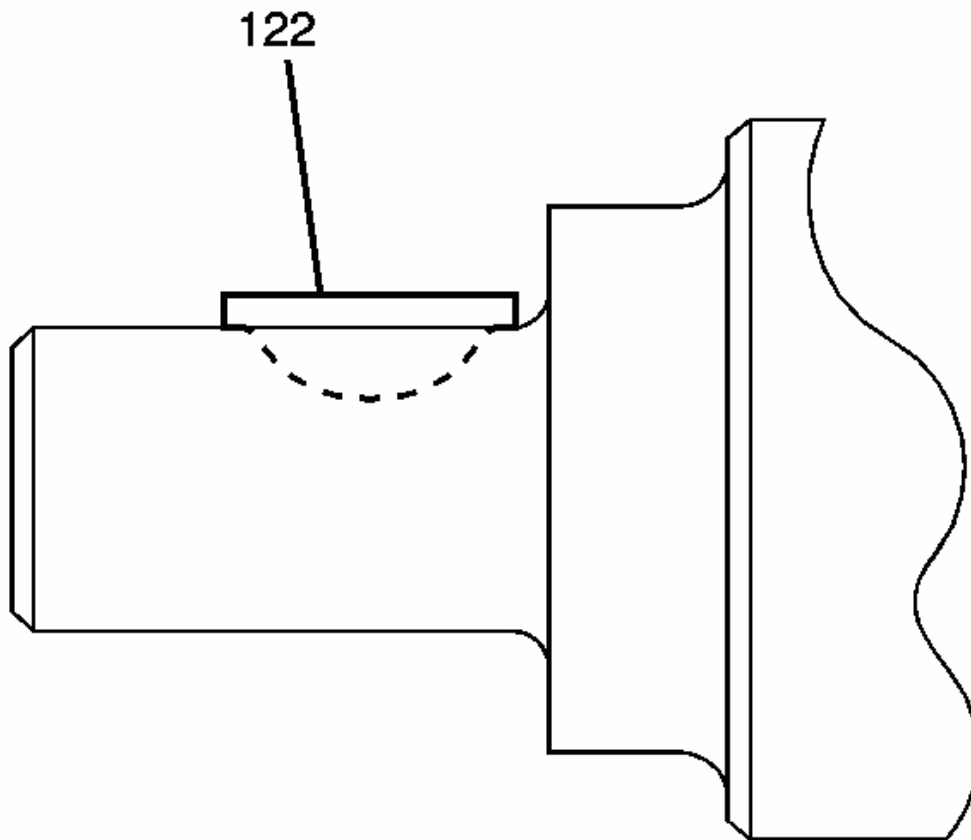


**Fig. 375: CKP Sensor, Bolt & O-Ring**  
Courtesy of GENERAL MOTORS CORP.

**IMPORTANT:** • The crankshaft bearing caps are machined with the

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**Fig. 565: View Of Installed Crankshaft Key**  
**Courtesy of GENERAL MOTORS CORP.**

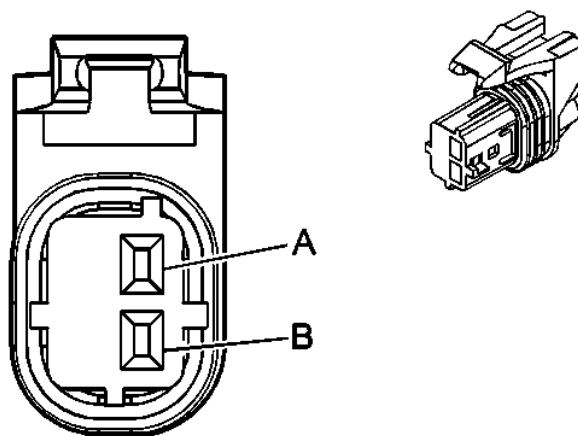
2. Tap the key (122) into the keyway until both ends of the key bottom onto the crankshaft.

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2006 RESTRAINTS SIR - Ascender, Envoy, Rainier & TrailBlazer

58	GY	349	Discriminating Sensor - Left - Signal
59	L-GN/WH	2638	Driver Seat Position Sensor - High
60	L-BU	2645	Passenger Seat Position - High

### Inflatable Restraint Side Impact Sensor (SIS) - Left (ASF)



#### Connector Part Information

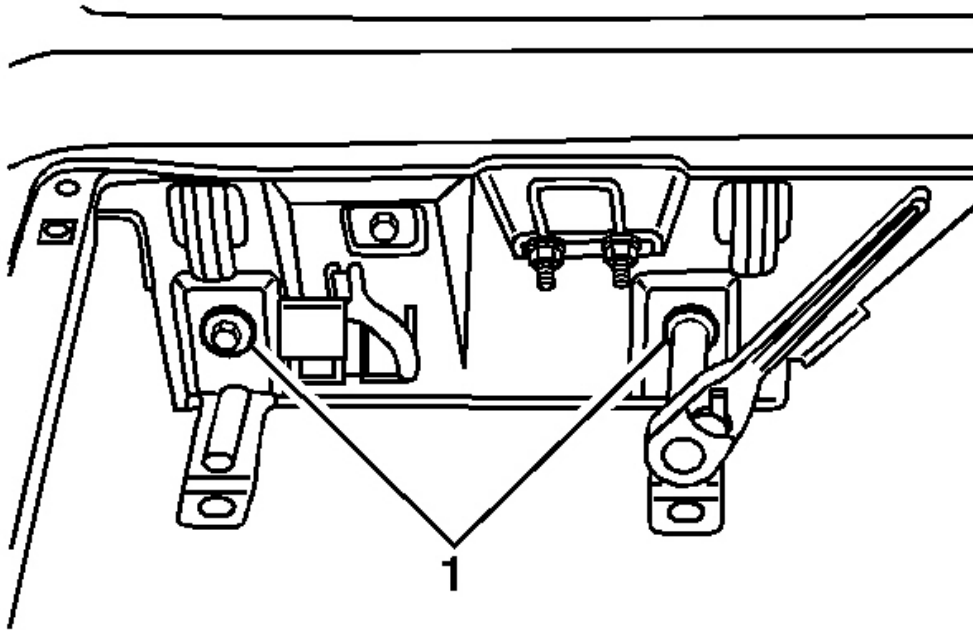
- 15356726
- 2-Way F GT 150 Series Sealed (YE)

Pin	Wire Color	Circuit No.	Function
A	WH	2162	Side Impact Sensor - Left - Signal
B	YE	2161	Side Impact Sensor - Left - Voltage

### Inflatable Restraint Side Impact Sensor (SIS) - Right (ASF)

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2006 RESTRAINTS SIR - Ascender, Envoy, Rainier & TrailBlazer



**Fig. 103: Removing/Installing 2 Lower Passenger Supplemental Inflatable Restraint (PSIR) Inflator Module Retaining Bolts**  
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3. Install the 2 retaining bolts (1) to the PSIR inflator module.

**Tighten:** Tighten the bolts until fully driven, seated and not stripped.



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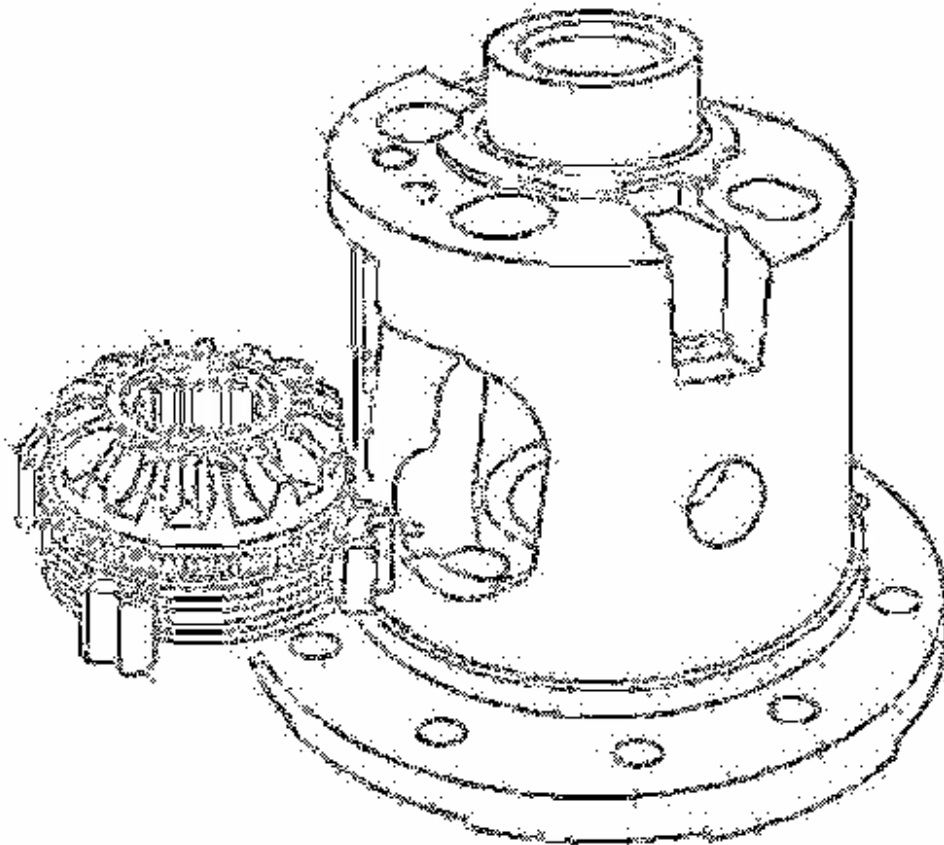
2006 BRAKES Anti-Lock Brake System - Ascender, Envoy, Rainier & TrailBlazer

2	<p>3. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.</p> <p>Does the DTC set?</p>	-	Go to <b>Step 3</b>	Go to Diagnostic Aids
3	<p>1. Disconnect the Electronic Brake Control Module (EBCM) harness connector.</p> <p>2. Connect a test lamp between the battery positive voltage circuit to the ABS pump motor, and a good ground.</p> <p>Does the test lamp illuminate?</p>	-	Go to <b>Step 4</b>	Go to <b>Step 5</b>
4	<p><b>IMPORTANT:</b> Using a test lamp other than that which is approved for performing diagnostic procedures on GM vehicles, may cause an inaccurate result when performing this step. It is also imperative that the ground to which the test lamp is connected be clean and provide no resistance to battery ground. Refer to <u>Troubleshooting with a Test Lamp</u> for more information.</p> <p>With the test lamp still connected and illuminated, use a DMM to measure the voltage between the high side of the test lamp and a good ground. Does the voltage measure greater than the specified value?</p>	12 V	Go to <b>Step 6</b>	Go to <b>Step 5</b>
5	<p>Repair the high resistance in the battery positive voltage circuit. Ensure that total circuit resistance is not greater than the specified value. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you complete the repair?</p>	0.2 ohms	Go to <b>Step 13</b>	-
6	<p>Test the ABS motor ground circuit for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	-	Go to <b>Step 13</b>	Go to <b>Step 7</b>

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2006 Driveline/Axle Drive Axle - Locking/Limited Slip - Ascender, Envoy, Rainier & TrialBlazer

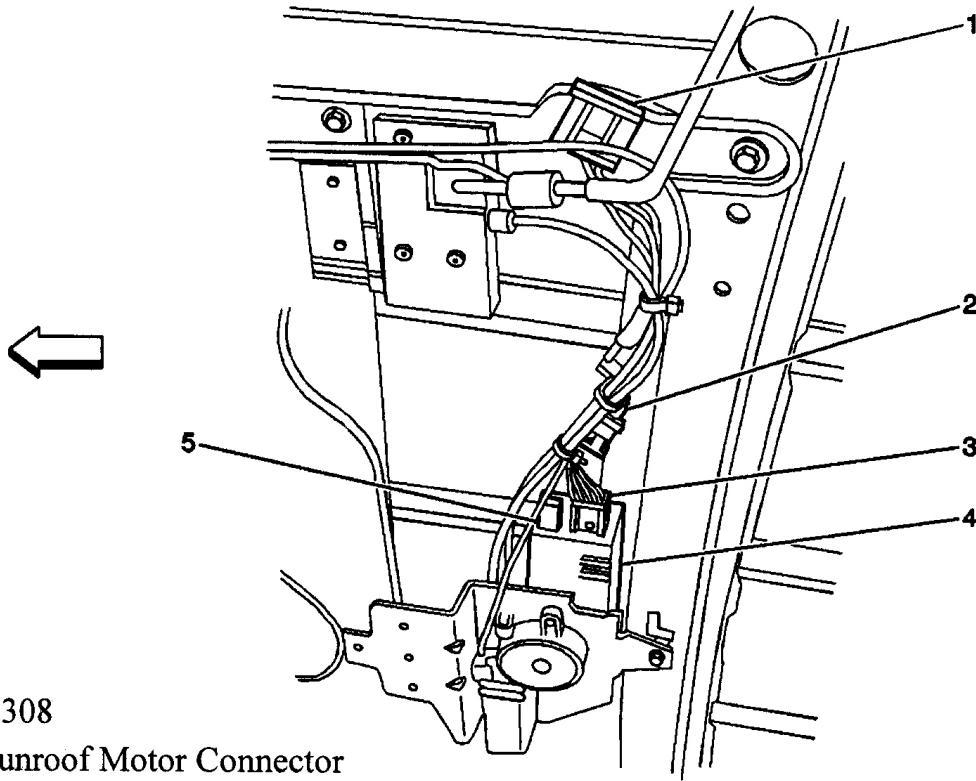


**Fig. 5: View Of Left Side Gear Cam Unit & Clutch Disc Assembly**  
Courtesy of GENERAL MOTORS CORP.

10. Remove the left side gear (cam unit) and clutch discs assembly.

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2006 GENERAL MOTORS Envoy, Envoy XL, Rainier & TrailBlazer



- (1) C308
- (2) Sunroof Motor Connector
- (3) Connector C1
- (4) Sunroof Module
- (5) Connector C2

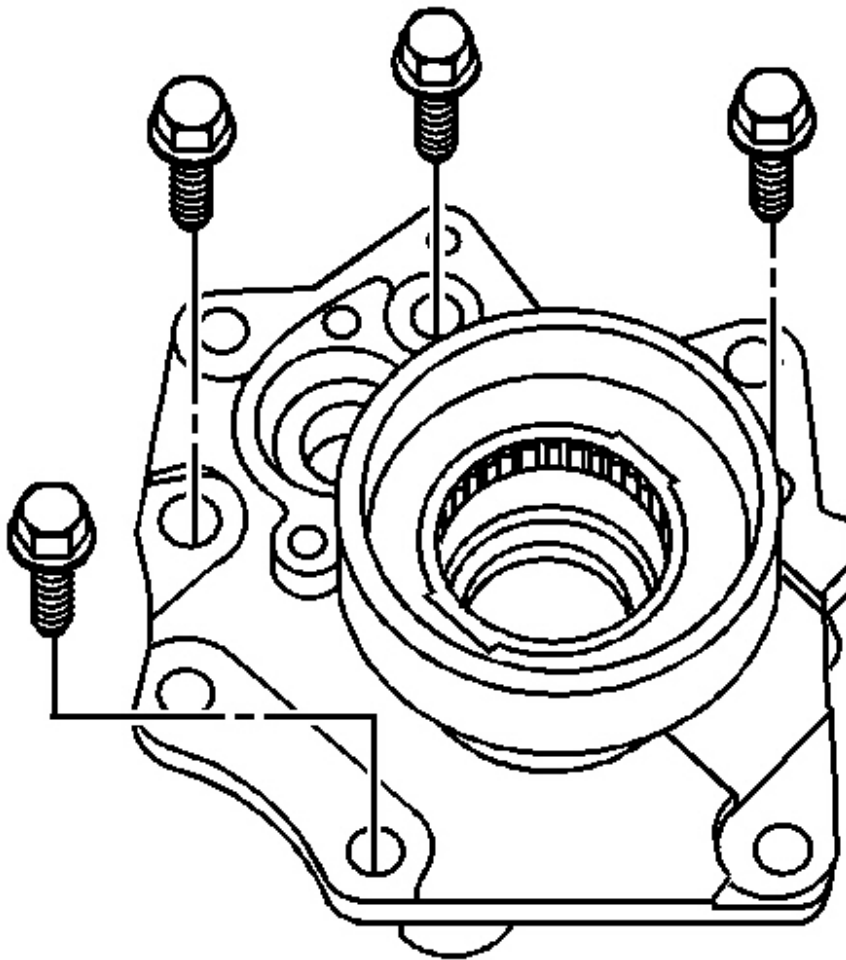
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**Fig. 93: Front Of Roof**  
Courtesy of GENERAL MOTORS CORP.

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2006 Driveline/Axle Front Drive Axle - Ascender, Envoy, Rainier & TrailBlazer

12. Install the outer intermediate shaft bearing housing case to the inner intermediate shaft bearing housing case.



**Fig. 179: Intermediate Shaft Bearing Case Bolts**  
Courtesy of GENERAL MOTORS CORP.

**NOTE:** Refer to Fastener Notice in Cautions and Notices.

13. Install the intermediate shaft bearing case bolts.

## 2006 Buick Rainier

2006 SUSPENSION Front Suspension - Ascender, Envoy, Rainier & TrailBlazer

8. Install the tire and wheel. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels
9. Lower the vehicle.
10. Check the front wheel alignment. Refer to **Wheel Alignment Specifications** in Wheel Alignment.

### LOWER CONTROL ARM REPLACEMENT

#### Tools Required

- **J 24319-B** Steering Linkage and Tie Rod Puller
- **J 43631** Ball Joint Remover. See **Special Tools**.

#### Removal Procedure

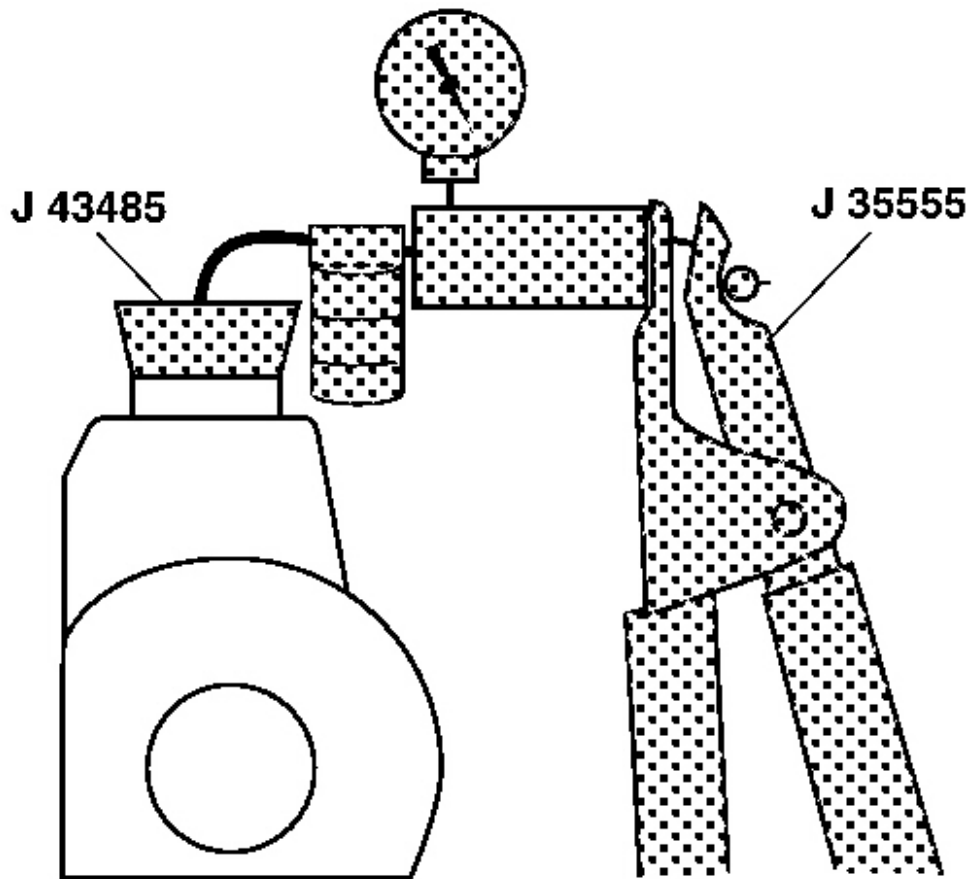
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2006 BRAKES Hydraulic Brakes - Ascender, Envoy, Rainier & TrailBlazer

<p align="center">11</p>	<p><b>damage to the brake hose and in turn may cause a brake fluid leak.</b></p> <p>2. Remove the (front and/or rear) disc brake calipers (as appropriate) from the mounting brackets and support the calipers. Do NOT disconnect the hydraulic brake flex hoses from the calipers. Refer to <b><u>Brake Caliper Replacement - Front</u></b> and/or <b><u>Brake Caliper Replacement - Rear</u></b> .</p> <p>3. Inspect the disc brake caliper mounting/sliding hardware for the following conditions:</p> <ul style="list-style-type: none"> <li>• Binding or seized hardware</li> <li>• Distorted, worn, damaged or missing hardware components</li> </ul> <p>Refer to <b><u>Disc Brake Mounting and Hardware Inspection - Front</u></b> and/or <b><u>Disc Brake Mounting and Hardware Inspection - Rear</u></b> .</p> <p>4. Replace the caliper mounting/sliding hardware components as required. Refer to <b><u>Disc Brake Hardware Replacement - Front</u></b> and/or <b><u>Disc Brake Hardware Replacement - Rear</u></b> .</p> <p>5. Replace the contaminated disc brake pads as a complete axle set. Refer to <b><u>Brake Pads Replacement - Front</u></b> and/or <b><u>Brake Pads Replacement - Rear</u></b> .</p> <p>Did you complete the cleaning, inspection and replacement?</p>	<p align="center">Go to <b>Step 12</b></p>	<p align="center">-</p>
<p align="center">12</p>	<p>Visually inspect each of the disc brake rotor shields/backing plates for evidence of contact with the brake rotors. Are any of the brake rotor shields/backing plates</p>		

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2006 STEERING Power Steering System - Ascender, Envoy, Rainier & TrailBlazer



**Fig. 7: Bleeding Power Steering System Using J 43485 & J 35555**  
Courtesy of GENERAL MOTORS CORP.

19. Attach the **J 43485** to the **J 35555** or equivalent. See **Special Tools**.
20. Place the **J 43485** on or in the pump reservoir filler neck. See **Special Tools**.
21. Apply a vacuum of 68 kPa (20 in Hg) maximum.
22. Wait 5 minutes.
23. Remove the **J 43485** and the **J 35555** . See **Special Tools**.
24. Verify the fluid level.