GENERAL INFORMATION

Trouble Shooting - Basic Procedures

* PLEASE READ THIS FIRST *

NOTE: This is GENERAL information. This article is not intended to be specific to any unique situation or individual vehicle configuration. The purpose of this Trouble Shooting information is to provide a list of common causes to problem symptoms. For model-specific Trouble Shooting, refer to SUBJECT, DIAGNOSTIC, or TESTING articles available in the section(s) you are accessing.

ACCESSORIES & ELECTRICAL

CHARGING SYSTEM TROUBLE SHOOTING

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BASIC CHARGING SYSTEM TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Vehicle Will Not Start	
Dead battery	Check battery cells, alternator belt tension and alternator output
Loose or corroded battery connections	Check all charging system connections

Fig. 2: Ignition Primary Trouble Shooting Chart

STARTER TROUBLE SHOOTING

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BASIC STARTER TROUBLE SHOOTING CHART

CONDITION & POSSIBLE CAUSE	CORRECTION
Starter Fails to Operate	
Dead battery or bad connections between starter and battery	Check battery charge and all wires and connections to starter
Ignition switch faulty or misadjusted	Adjust or replace ignition switch
Open circuit between starter switch ignition terminal on starter relay	Check and repair wires and connections as necessary
Starter relay or starter defective	See Testing in STARTER article
Open solenoid pull-in wire	Testing in STARTER article
Starter Does Not Operate and Headlights Dim	
Weak battery or dead cell	Charge or replace battery as necessary
Loose or corroded battery connections	Check that battery connections are clean and tight
Internal ground in starter windings	See Testing in STARTER article
Grounded starter fields	See Testing in STARTERS
Armature rubbing on pole	See STARTER article shoes
Starter Turns but Engine Does Not Rotate	

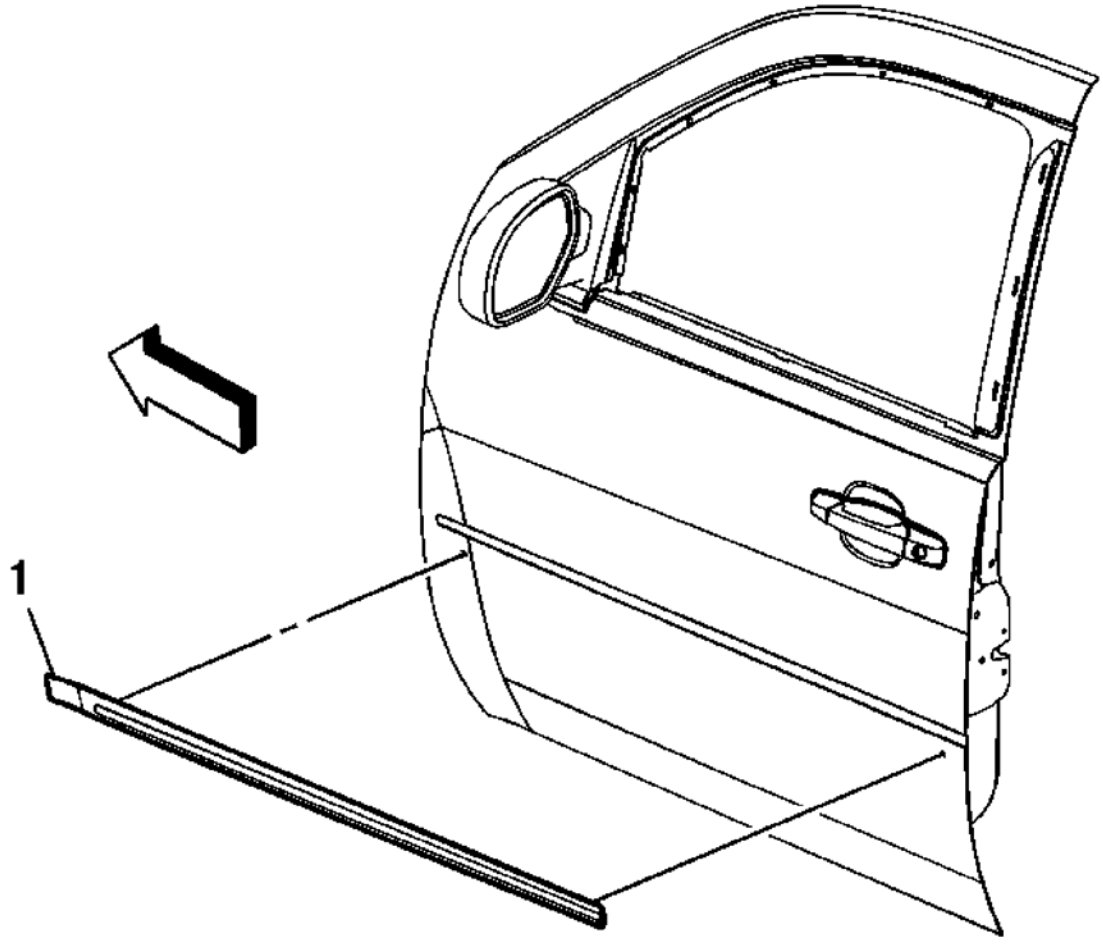

Fig. 21: View Of Door Body Side Molding (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Front Side Door Molding **Tip:** 1. The part and surface should be 21°C (70°F) prior to installation. The vehicle should remain 21°C (70°F) for one hour after assembly to allow adhesive to develop sufficient bond strength. 2. Using a **J 25070** Heat Gun in a circular motion, warm the front side door molding prior to removal. Carefully clean the body panel thoroughly prior to bonding the new front body side molding to the door. 3. Ensure the front door is in the closed position prior to installing the new front side door molding. 4. Remove the protective liner from the backside of the molding adhesive tape. 5. Position the pin on the backside of the molding to the round hole at the rear edge of

6. Test for more than 10 volts on the signal circuit terminal C while commanding the rear window DOWN with a scan tool.
    - If less than the specified range, test the signal circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
7. Test for more than 10 volts on the signal circuit terminal A while commanding the rear window UP with a scan tool.
    - If less than the specified range, test the signal circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
8. Ignition OFF, connect harness connector at the rear window switch and disconnect the harness connector at the rear window motor
9. Test for less than 1 ohm between the control circuit terminal A and ground
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the rear window switch.
10. Test for less than 1 ohm between the control circuit terminal B and ground
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the rear window switch.
11. Connect a test lamp between control circuit terminal A and control circuit terminal B.
12. Ignition ON, command the rear window UP and DOWN by using the rear window switch. The test lamp should illuminate when commanding the UP and DOWN states.
    - If the test lamp is always OFF during either of the commands, test either control circuit for a short to ground. If the circuits test normal, replace the rear window switch.
13. If all circuits test normal, test or replace the rear window motor.

Component Testing

1. Ignition OFF, disconnect the harness connector at the appropriate window motor.
2. Install a 25-amp fused jumper wire between the control terminal A and 12 volts. Momentarily install a jumper wire between the control terminal B and ground. The window motor should perform the UP or DOWN function.
    - If the function does not perform as specified, replace the window motor.
3. Reverse the jumper wires; the appropriate window motor should perform the DOWN or UP function.
    - If the function does not perform as specified, replace the window motor

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

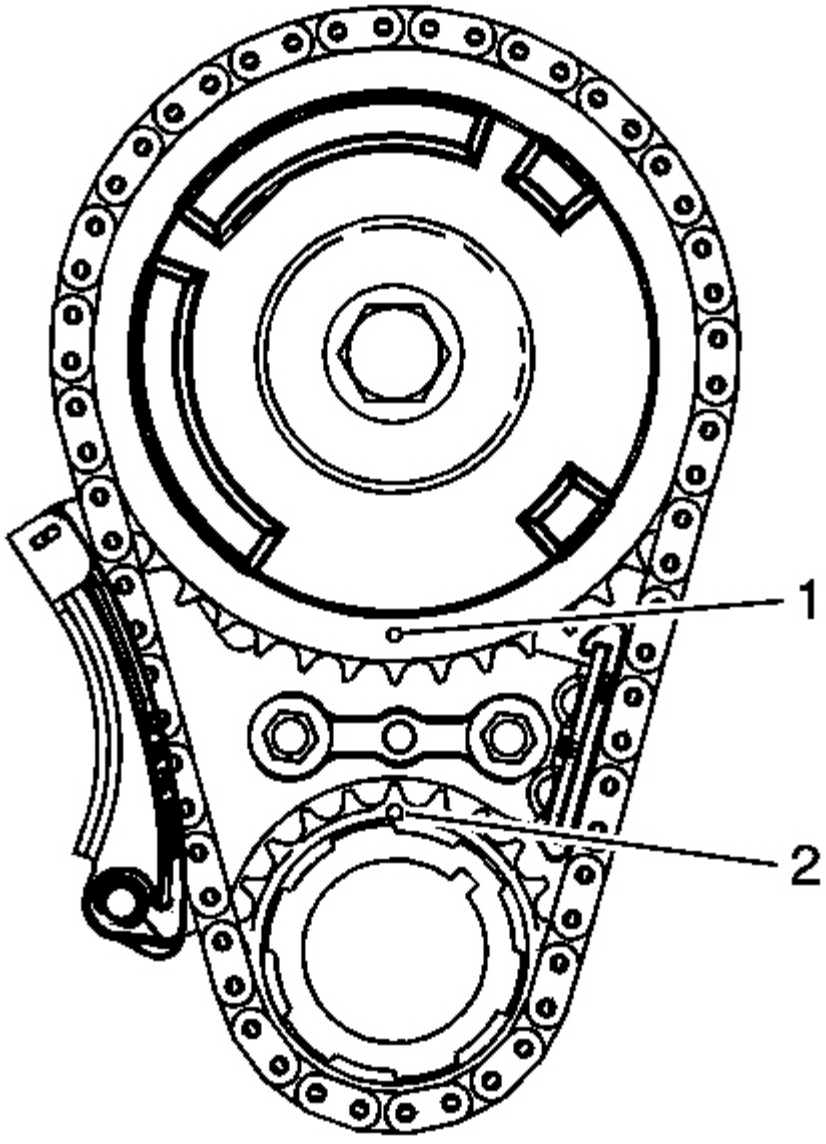

Fig. 68: Identifying Camshaft & Crankshaft Marks
Courtesy of GENERAL MOTORS CORP.

6. Rotate the crankshaft sprocket until the camshaft sprocket alignment mark (1) and the crankshaft sprocket alignment mark (2) are aligned.

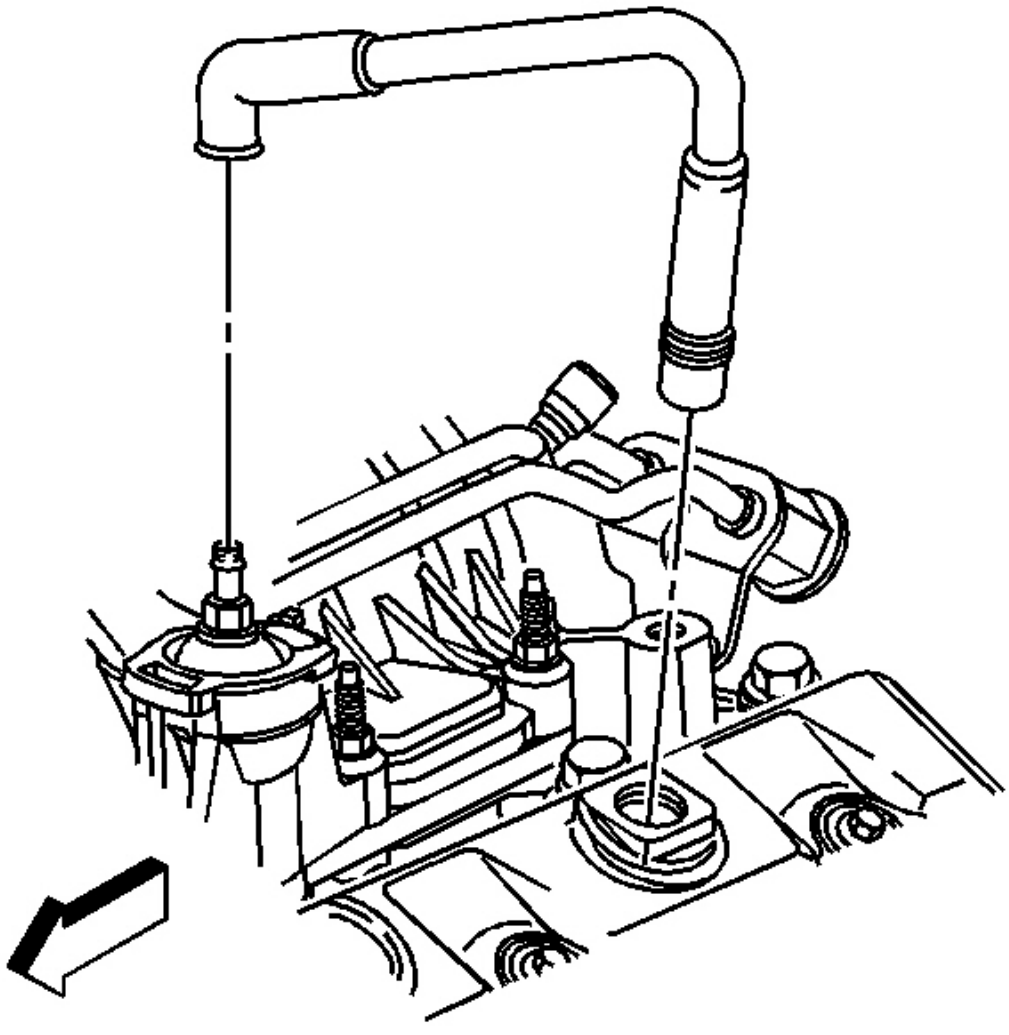

Fig. 88: Locating PCV Valve Hose At Valve & Rocker Cover
Courtesy of GENERAL MOTORS CORP.

19. Remove the positive crankcase ventilation (PCV) valve hose from the valve cover and rocker cover.
20. Disconnect the power brake booster vacuum hose from the vacuum fitting.

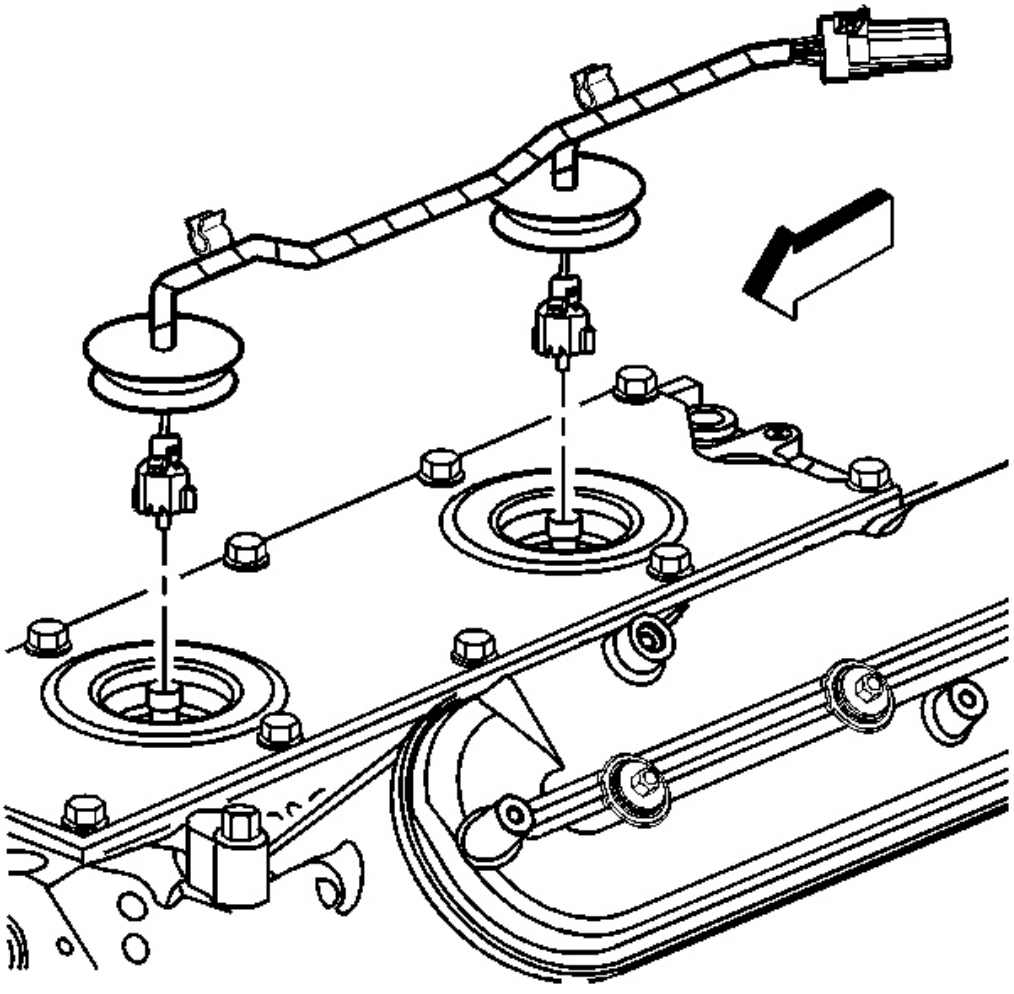

Fig. 74: View Of Knock Sensor Wire Harness
Courtesy of GENERAL MOTORS CORP.

6. Connect the knock sensor electrical connectors.
7. Push down on the rubber covers.
8. Install the intake manifold. Refer to **Intake Manifold Replacement**.

VALVE ROCKER ARM COVER REPLACEMENT - LEFT SIDE

Removal Procedure

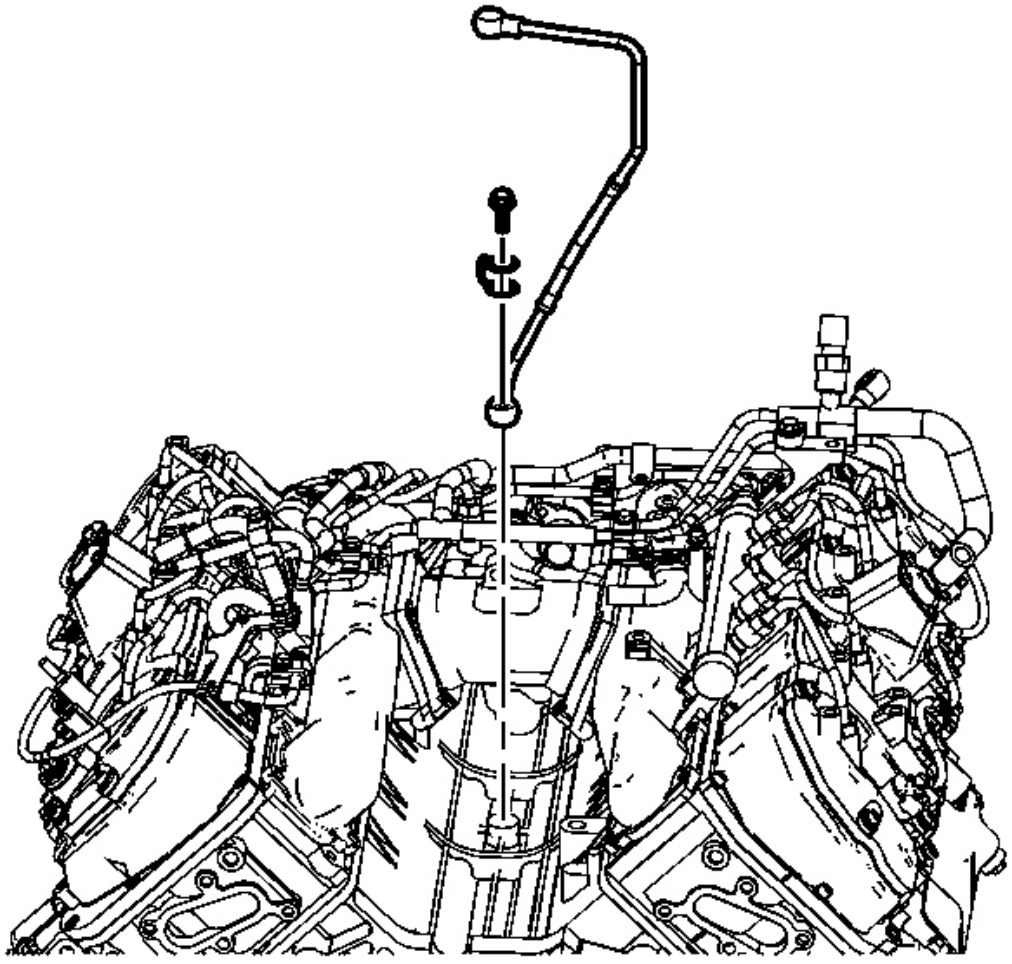

Fig. 165: View Of Oil Feed Pipe Bolt, Washer & Pipe
Courtesy of GENERAL MOTORS CORP.

NOTE: Do not twist the turbocharger oil feed pipe. Twisting of the feed pipe will result in the collapse and deformation of the plastic pipe, restricting oil flow and causing turbocharger damage. During turbocharger replacement, gently push the oil feed pipe towards the front of the engine to clear the turbocharger. Assistance may be required to keep the pipes clear of the turbocharger during removal or installation.

10. Install a NEW turbocharger oil feed pipe washer and the banjo bolt.

    Tighten: Tighten the bolt to 34 N.m (25 lb ft).

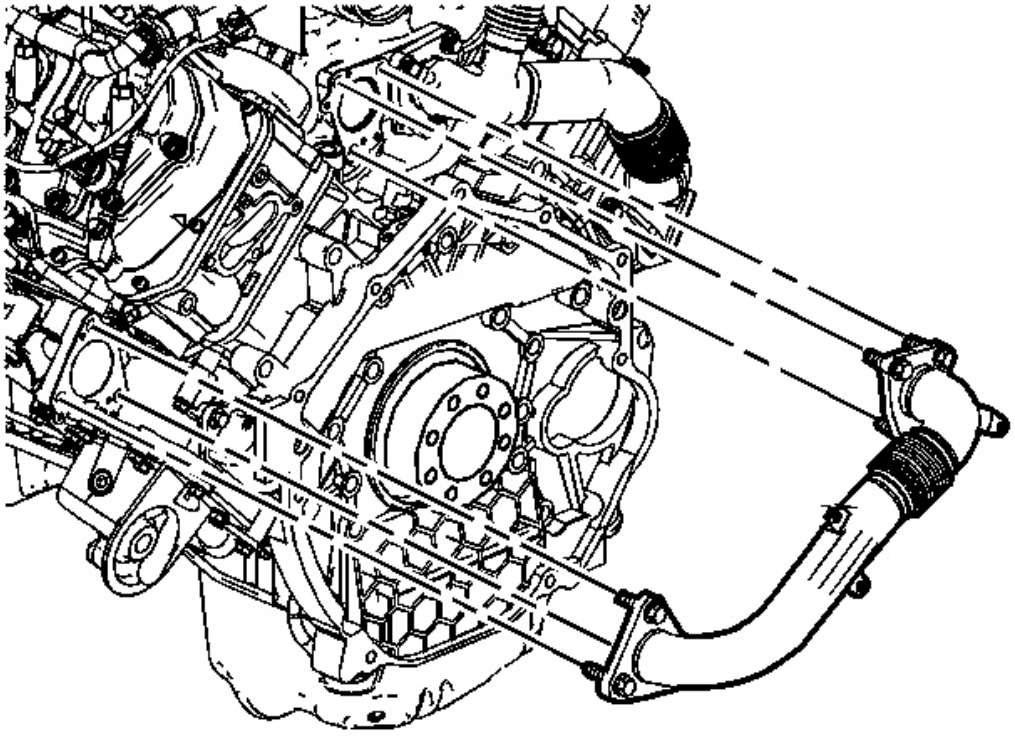

Fig. 168: View Of Left Exhaust Pipe
Courtesy of GENERAL MOTORS CORP.

11. Install the left exhaust pipe and a NEW gasket.
12. Install the left exhaust pipe to turbocharger bolts.

    Tighten: Tighten the bolt to 53 N.m (39 lb ft).

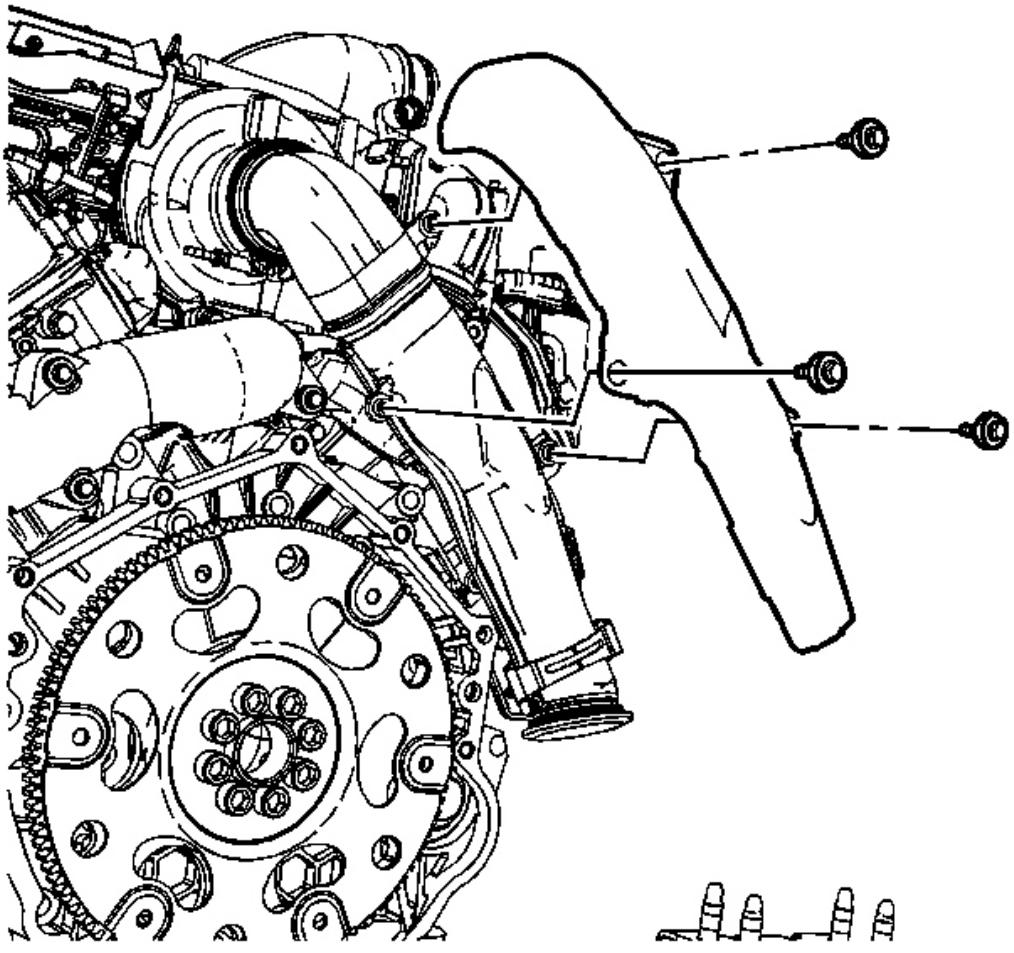

Fig. 172: View Of Exhaust Outlet Heat Shield & Bolts
Courtesy of GENERAL MOTORS CORP.

17. Install the exhaust outlet heat shield.
18. Install the remaining exhaust outlet heat shield bolts.

    Tighten: Tighten the bolt to 8 N.m (71 lb in).

19. Install the PCV hose/pipe. Refer to **Positive Crankcase Ventilation Hose/Pipe/Tube Replacement**.

1	NEW Fluid Pump Seal Assembly
2	NEW Fluid Pump Seal Assembly
3	NEW Center Support Fluid Passage Seal Assembly
4	Control Valve Body Assembly **Tip:** Align the manual shift shaft position switch activator slide with the detent lever guide pin.
5	Bolts M5 x 73 (Qty: 6) **NOTE:** **Refer to Fastener Notice .** **Procedure:** Tighten in the sequence shown. **Tighten:** 8 N.m (71 lb in). **Special Tool:** **DT-48285** Valve Body Torx Plus Socket (if applicable). See **Special Tools**.

AUTOMATIC TRANSMISSION ELECTRICAL CONNECTOR PASSAGE SLEEVE INSTALLATION

IMPORTANT: Clutch plate movement can cause notching on the external splines of the input internal ring gear.

1. Inspect the external splines of the input internal ring gear (1) for notching.
2. Replace the ring gear if detectable notching has occurred.

MAIN SHAFT CLEANING AND INSPECTION

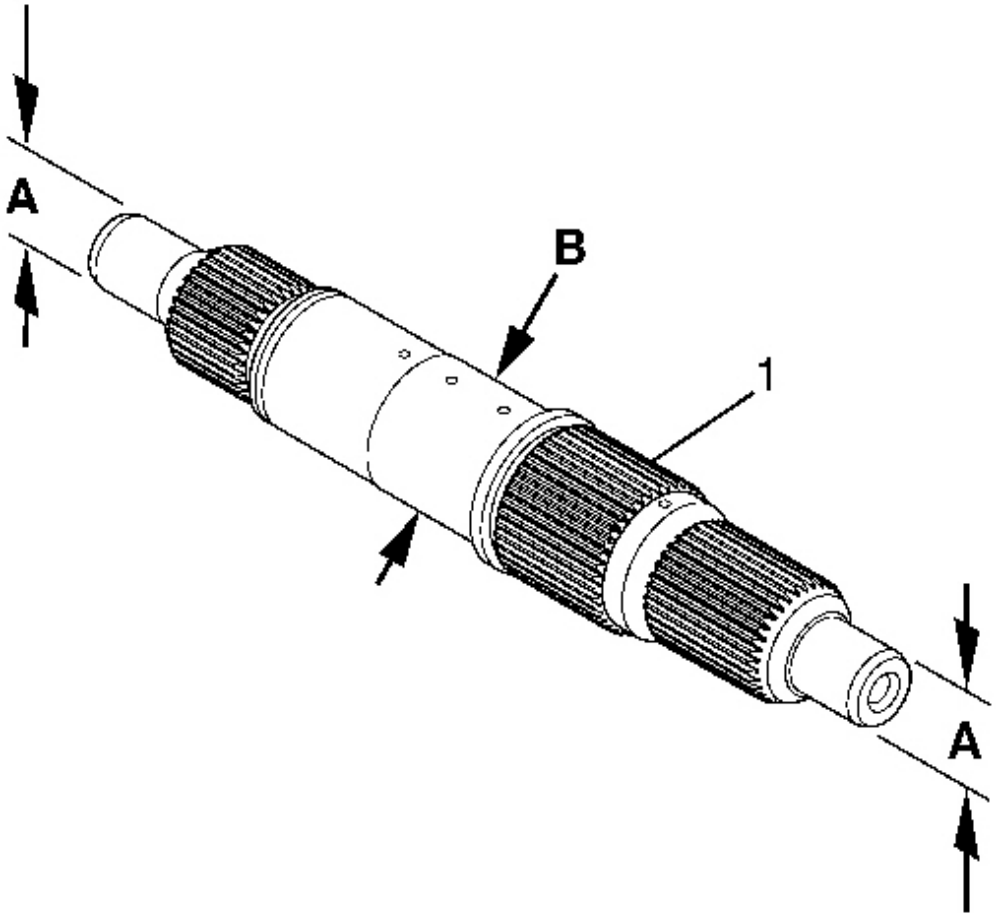

Fig. 355: Inspection Areas On Main Shaft
Courtesy of GENERAL MOTORS CORP.

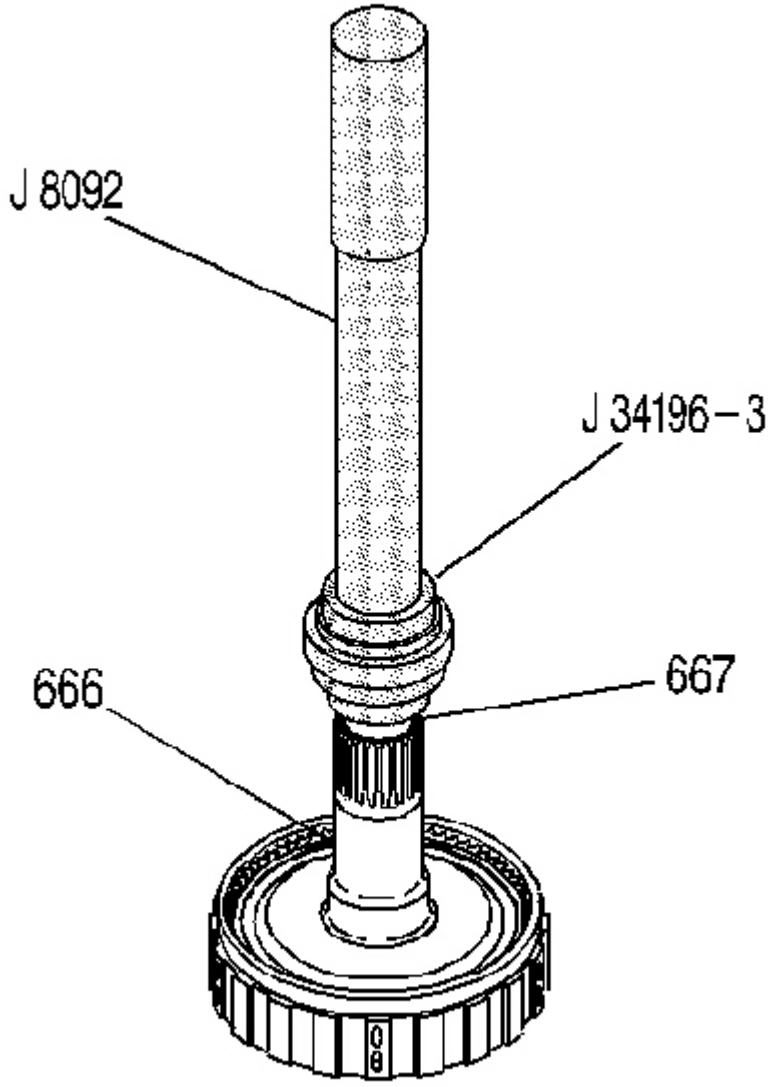

Fig. 341: View Of Reaction Carrier Shaft Rear Bushing
Courtesy of GENERAL MOTORS CORP.

2. Using J 34196-3 which is part of kit **J 34196-B** with **J 8092** , install a reaction carrier shaft rear bushing (667). See **Special Tools**.

INPUT INTERNAL GEAR, REACTION SHAFT AND SHELL INSTALLATION

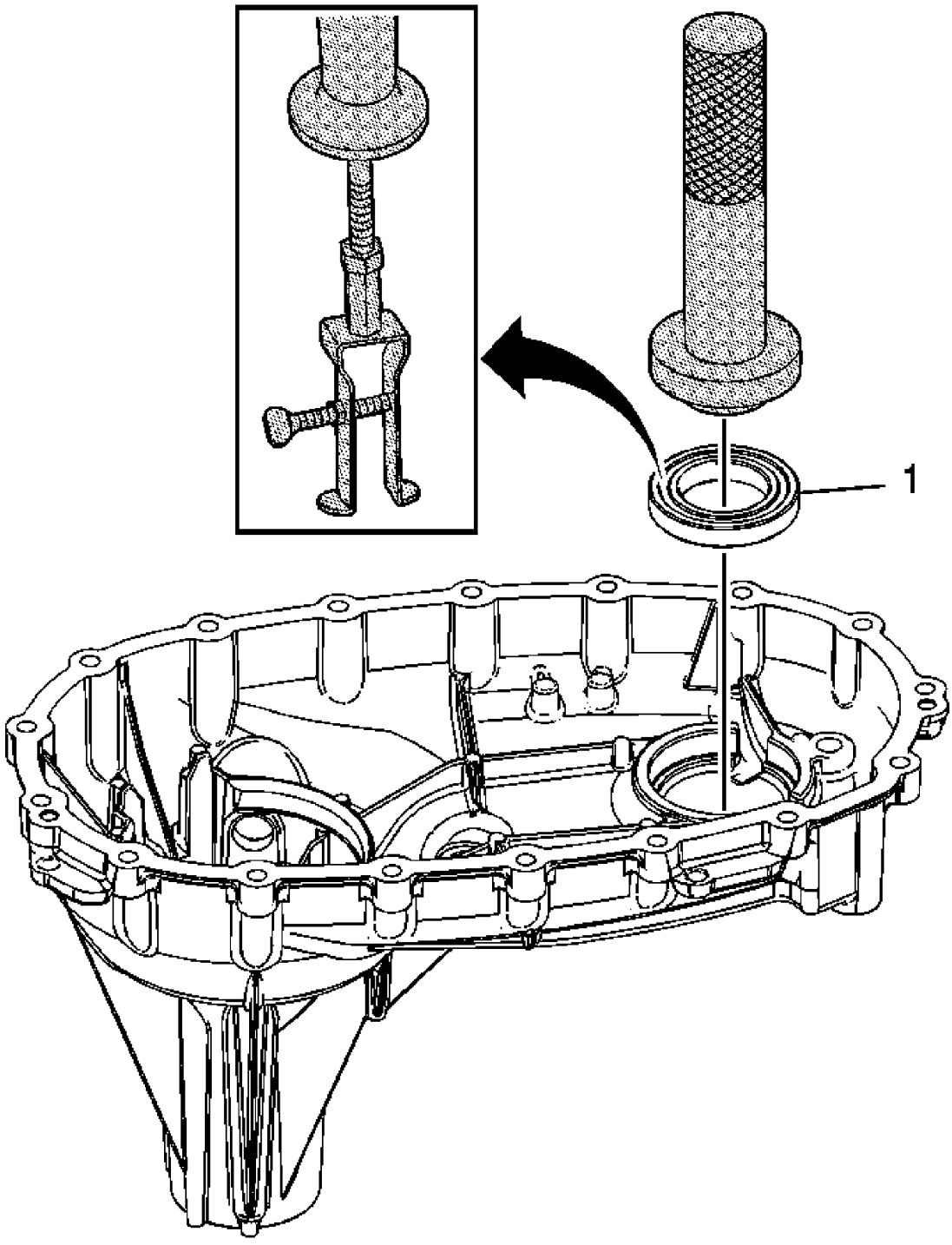

Fig. 41: View Of Front Output Shaft Rear Bearing Assembly
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name

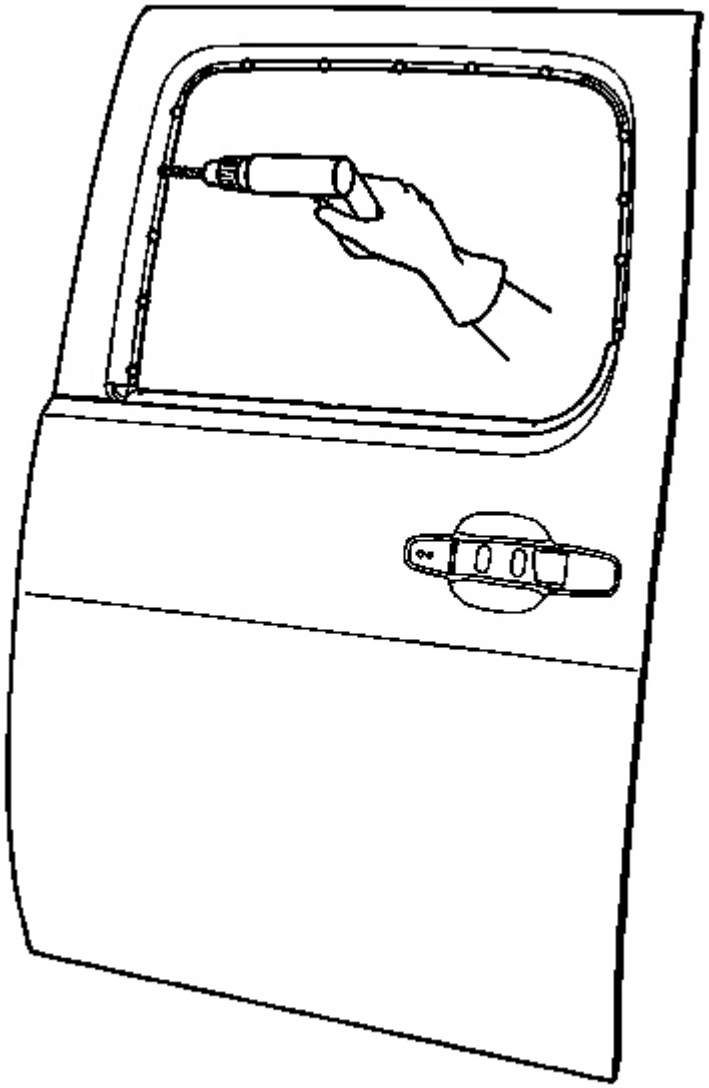

Fig. 58: Drilling Plug Weld Holes
Courtesy of GENERAL MOTORS CORP.

3. Drill 8 mm (5/16 in) plug weld holes, as necessary, in the locations noted from the original panel.

IMPORTANT: In any area damaged beyond recognition, space plug weld holes every 40 mm (1 in) apart.