

## 2004 Isuzu Ascender LS

2004 DRIVELINE/AXLE Transfer Case - Overhaul - NVG 226-NP8

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## SPECIFICATIONS

### FASTENER TIGHTENING SPECIFICATIONS

#### Fastener Tightening Specifications

Application	Specification	
	Metric	English
Drain Plug	27 N.m	20 lb ft
Extension Housing to Rear Case Half Bolts	22 N.m	16 lb ft
Fill Plug	27 N.m	20 lb ft
Front Case Half to Rear Case Half Bolts	22 N.m	16 lb ft
Oil Pump Cover Bolts	11 N.m	9 lb ft
Transfer Case Motor/Encoder Bolts	16 N.m	12 lb ft
Vehicle Speed Sensors	17 N.m	13 lb ft

### SEALERS, ADHESIVES, AND LUBRICANTS

#### Sealers, Adhesives, and Lubricants

Application	Type of Material	GM Part Number	
		United States	Canada
Drain Plug	Pipe Sealant	12346004	10953480
Fill Plug	Pipe Sealant	12346004	10953480
Rear Case Half to Front Case Half	RTV Sealant	12345739	10953541
Rear Extension to Rear Case Half	RTV Sealant	12345739	10953541
Vehicle Speed Sensor O-rings	Transfer Case Fluid	12378508	10953626
Vent	Retaining Compound	12377901	10953504

### CAPACITIES - APPROXIMATE FLUID

#### Capacities - Approximate Fluid

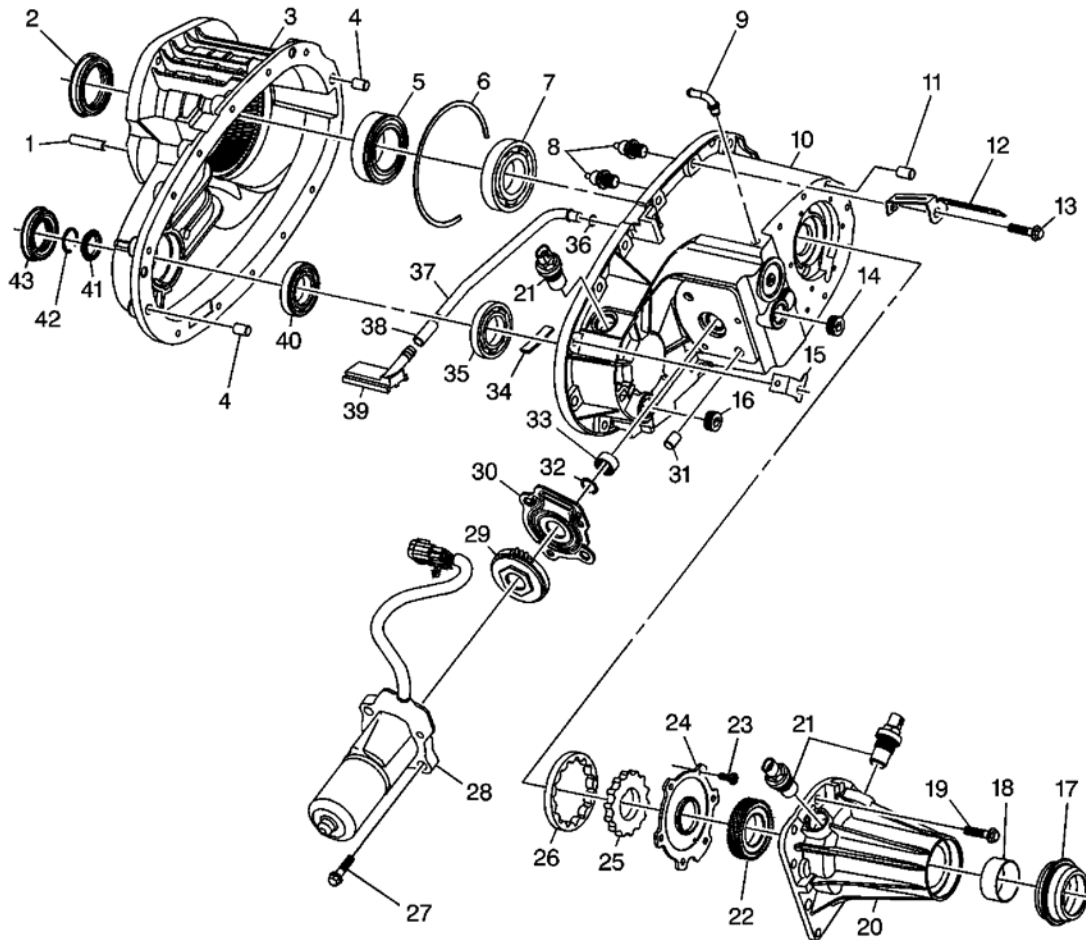
Application	Specification	
	Metric	English
Auto Trak II GM P/N 12378508 (Canadian P/N 10953626)	1.8 liters	2 quarts

## VISUAL IDENTIFICATION

### TRANSFER CASE DISASSEMBLED VIEW

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**Fig. 1: Case Components Disassembled View**  
Courtesy of GENERAL MOTORS CORP.

### Callouts For Fig. 1

Callout	Component Name
1	Adapter Stud
2	Input Shaft Seal
3	Front Case Half
4	Location Pin
4	Location Pin
5	Front Input Bearing
6	High/Low Internal Gear Retaining Ring
7	Rear Output Rear Bearing
8	Control Lever Studs
9	Vent Pipe
10	Rear Case Half

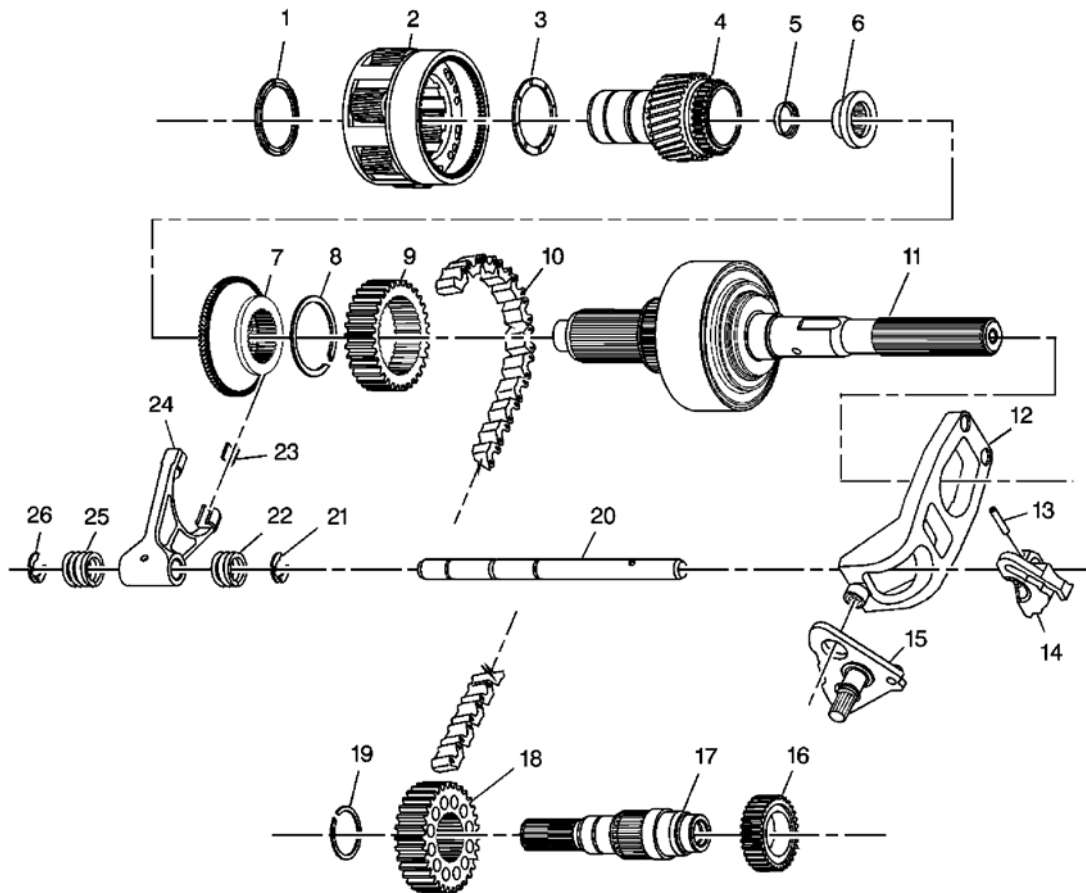
**2004 Isuzu Ascender LS**

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11	Location Pin
12	Wiring Harness Bracket
13	Case Half Bolt
14	Oil Fill Plug
15	Bracket
16	Oil Drain Plug
17	Rear Output Shaft Seal
18	Rear Extension Bushing
19	Rear Extension Bolt
20	Rear Extension
21	Vehicle Speed Sensor
21	Vehicle Speed Sensors
22	Output Shaft Speed Reluctor Wheel
23	Oil Pump Cover Bolt
24	Oil Pump Cover
25	Oil Pump Drive Gear
26	Oil Pump Driven Gear
27	Encoder Motor Bolt
28	Encoder Motor
29	Encoder Sensor
30	Insulator
31	Location Pin
32	Actuator Lever Shaft Retaining Ring
33	Actuator Lever Shaft Bearing
34	Chip Collector Magnet
35	Front Output Shaft Rear Bearing
36	Oil Pump Suction Pipe Seal O-Ring
37	Oil Pump Suction Pipe
38	Oil Pump Suction Hose
39	Oil Pump Screen
40	Front Output Shaft Front Bearing
41	Front Output Shaft Dust Seal
42	Front Output Shaft Ring
43	Front Output Shaft Seal

## 2004 Isuzu Ascender LS

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**Fig. 2: Internal Components Disassembled View**  
Courtesy of GENERAL MOTORS CORP.

### Callouts For Fig. 2

Callout	Component Name
1	High/Low Planetary Thrust Washer - Front
2	High/Low Planetary Carrier
3	High/Low Planetary Thrust Washer - Rear
4	Input Shaft Gear
5	Input Shaft Bore Seal
6	Input Gear Thrust Bearing
7	Range Sleeve
8	Drive Sprocket Retaining Ring
9	Drive Sprocket
10	Drive Chain
11	Rear Output Shaft
12	Clutch Lever
13	Shift Shaft Link Pin

<b>2004 Isuzu Ascender LS</b>
2004 DRIVELINE/AXLE Transfer Case - Overhaul - NVG 226-NP8

14	Shift Detent Lever
15	Control Actuator Lever Shaft
16	Front Output Shaft Speed Reluctor Wheel
17	Front Output Shaft
18	Driven Sprocket
19	Driven Sprocket Retaining Ring
20	Shift Fork Shaft
21	Shift Fork Spring Retainer
22	Shift Fork Spring
23	Range Shift Fork Control Pad
24	High/Low Shift Fork
25	Shift Fork Spring
26	Shift Fork Spring Retainer



Callout	Component Name
1	Clutch Retaining Ring
2	Rear Output Shaft Thrust Washer
3	Clutch Housing

Callout	Component Name
1	Clutch Retaining Ring
2	Rear Output Shaft Thrust Washer
3	Clutch Housing

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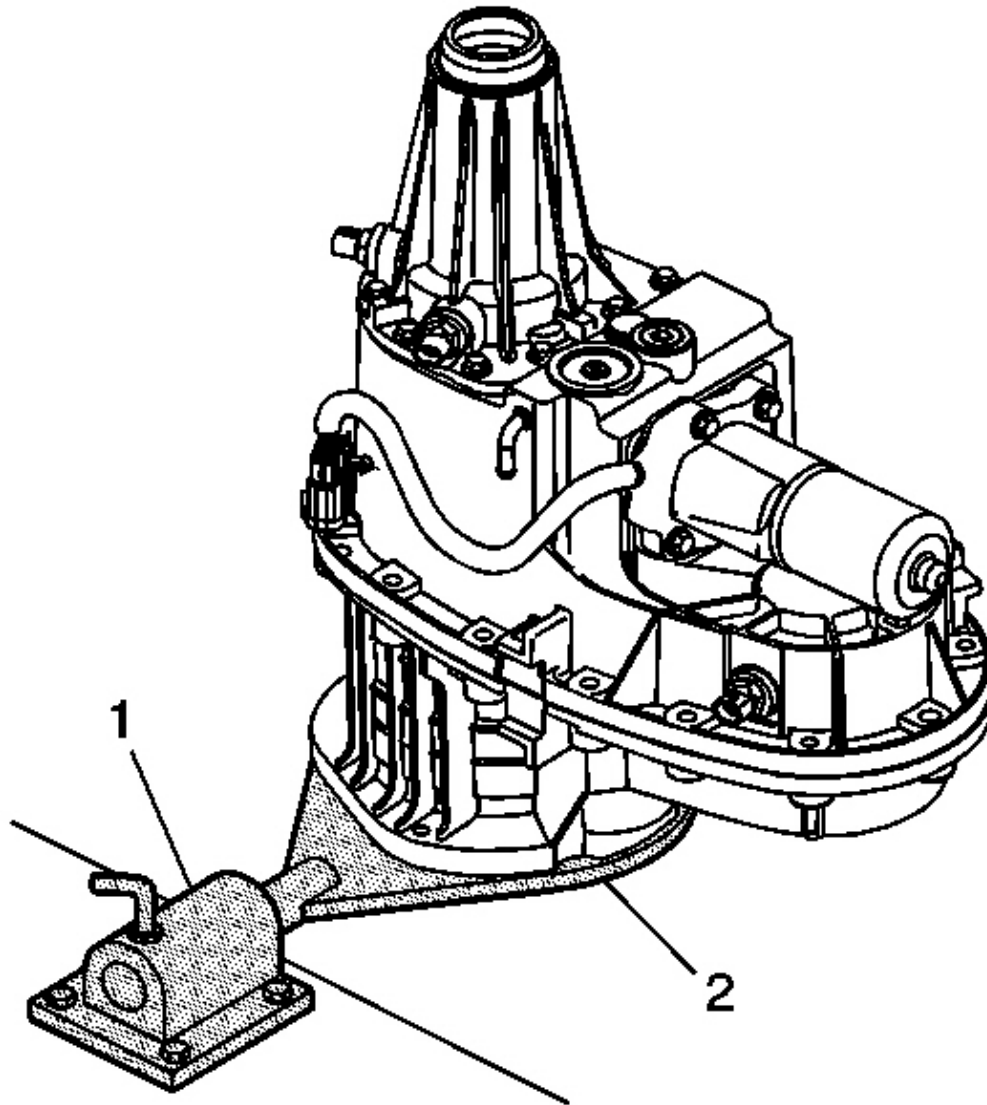
4	Clutch Housing Bearing
5	Rear Output Shaft
6	Clutch Hub
7	Clutch Retaining Ring
8	Clutch Pressure Plate - Outer
9	Clutch Pressure Plate - Inner
10	Clutch Spring
11	Clutch Pressure Plate - Apply
12	Clutch Pressure Plate Bearing
13	Clutch Inner Plate
14	Clutch Pressure Plate Bearing Hub Retaining Ring

## REPAIR INSTRUCTIONS

### TRANSFER CASE DISASSEMBLE

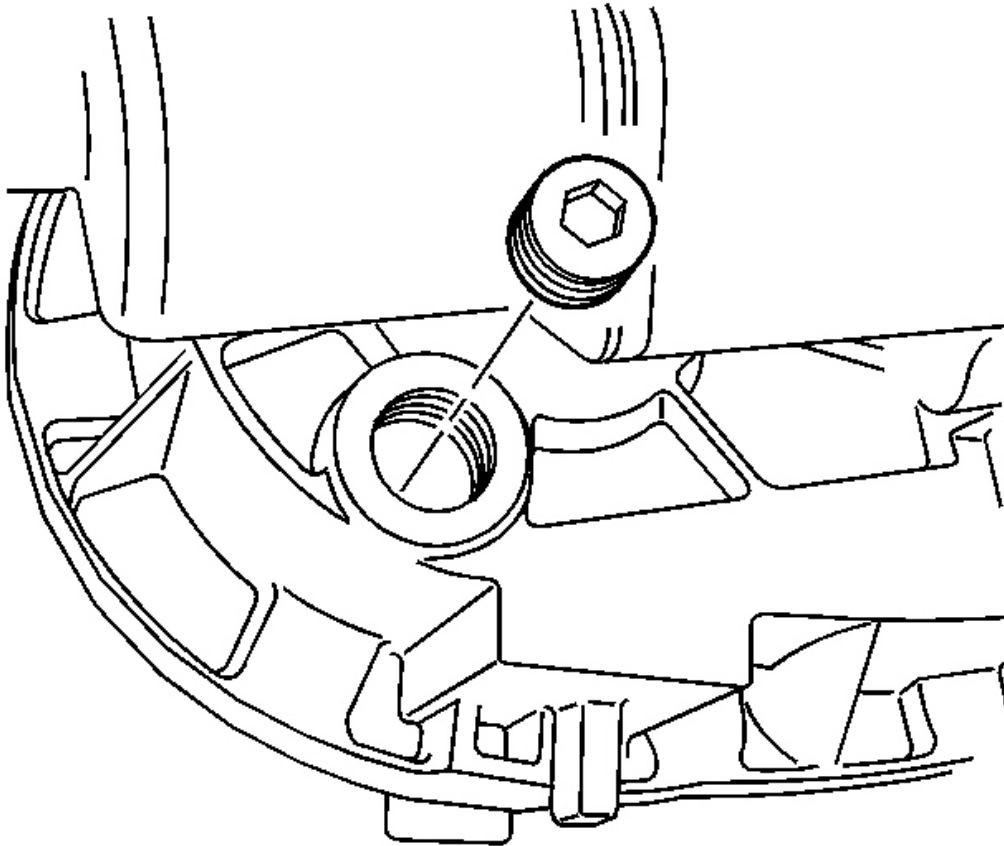
#### Tools Required

- **J 3289-20** Holding Fixture. See **Special Tools and Equipment**.
- **J 23907** Slide Hammer with Bearing Adapter. See **Special Tools and Equipment**.
- **J 26941** Bushing and Bearing Remover (3-4 inch). See **Special Tools and Equipment**.
- **J 36513** Gear and Bearing Separator Plate. See **Special Tools and Equipment**.
- **J 44707** T Bar Push Puller. See **Special Tools and Equipment**.
- **J 44737** Shift Rail Bearing Remover. See **Special Tools and Equipment**.
- **J 44759** Adapter 3/8 NC to 5/8 NF. See **Special Tools and Equipment**.
- **J 45358** Case Spreader. See **Special Tools and Equipment**.
- **J 45380** Transfer Case Rear Bushing Remover and Installer. See **Special Tools and Equipment**.
- **J 45759** Assembly Fixture. See **Special Tools and Equipment**.



**Fig. 4: Mounting Transfer Case To J 45759**  
Courtesy of GENERAL MOTORS CORP.

1. If available, using the adapter studs, attach the **J 45759** (2) to the transfer case.
2. Mount the **J 3289-20** (1) to a sturdy workbench.
3. Install the **J 45759** (2) into the **J 3289-20** (1) and secure with the pivot pin.

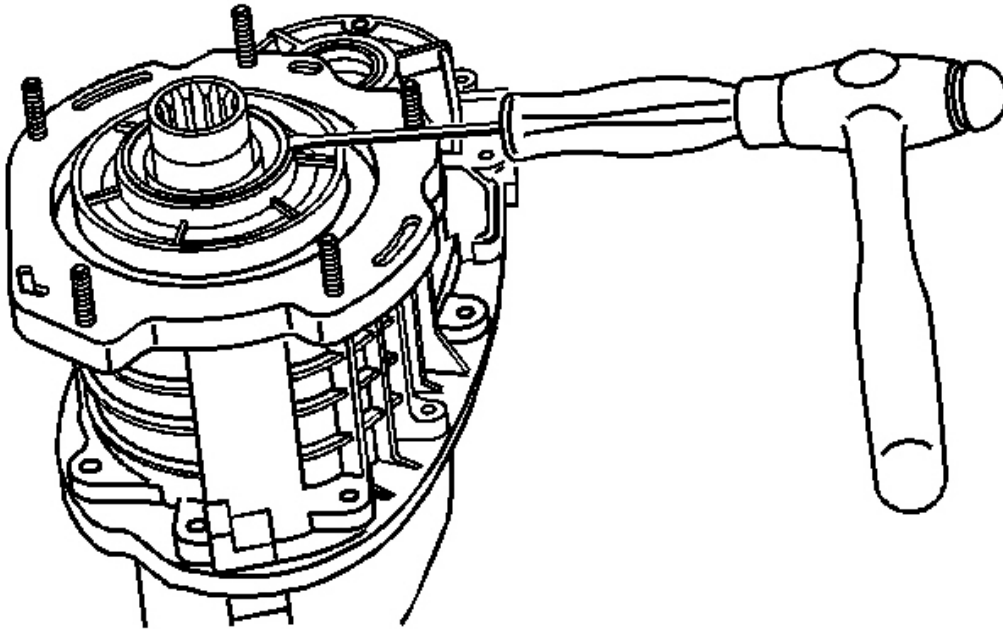


**Fig. 5: View Of Drain Plug**

**Courtesy of GENERAL MOTORS CORP.**

4. Remove the drain plug.
5. Tip the transfer case to remove any remaining transfer case fluid.

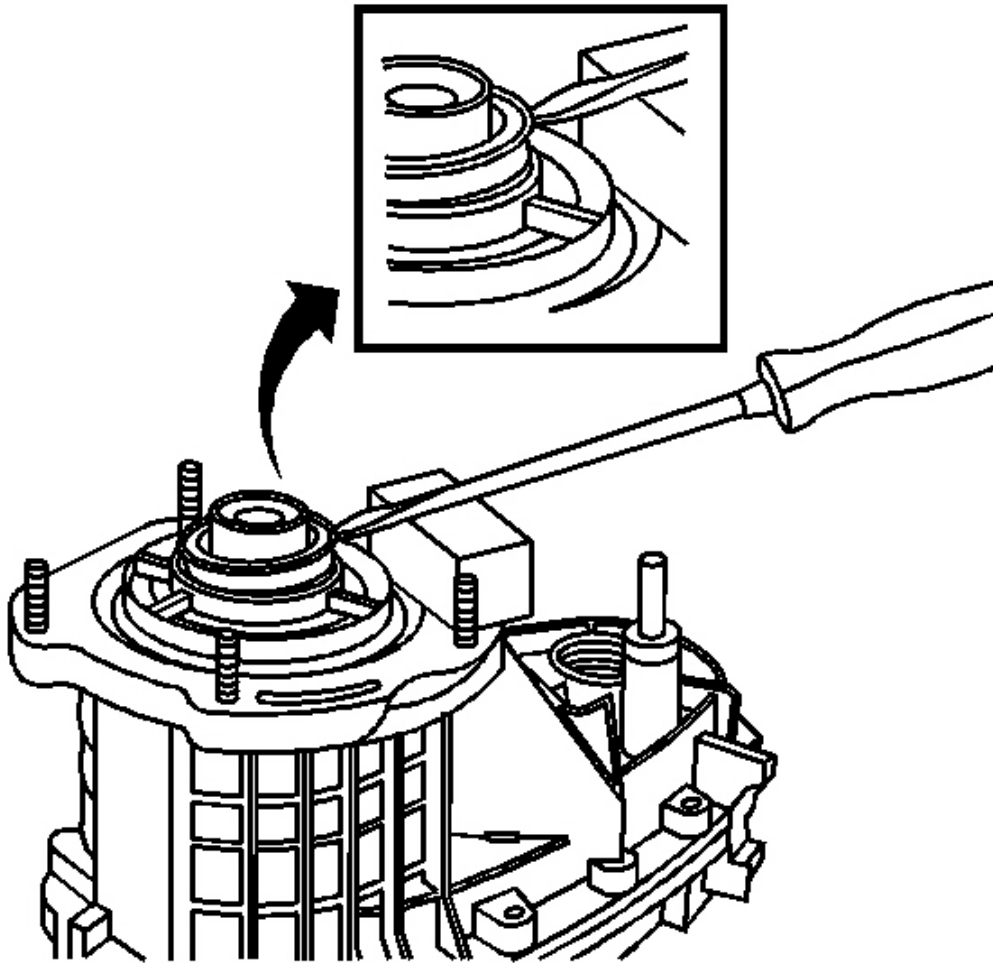




**Fig. 6: Loosening Front Input Shaft Seal**  
Courtesy of GENERAL MOTORS CORP.

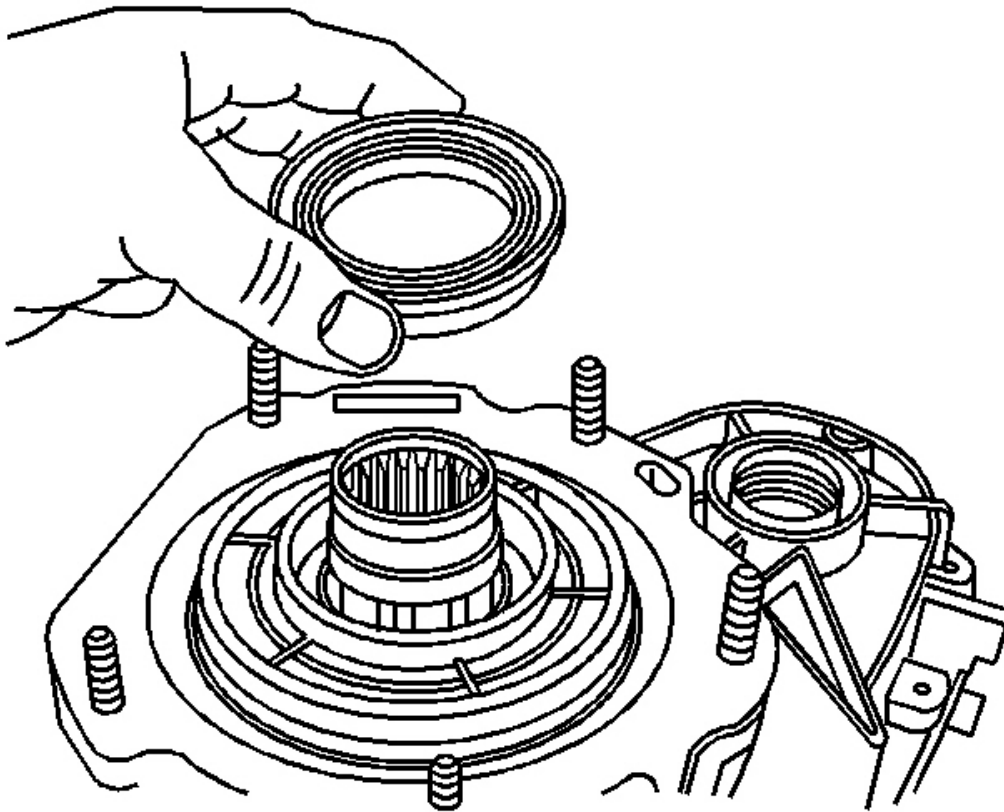
**NOTE:** Refer to Transfer Case Seal Removal Notice in Cautions and Notices.

6. Using a fine flat-bladed screwdriver and a mallet, loosen the front input shaft seal.



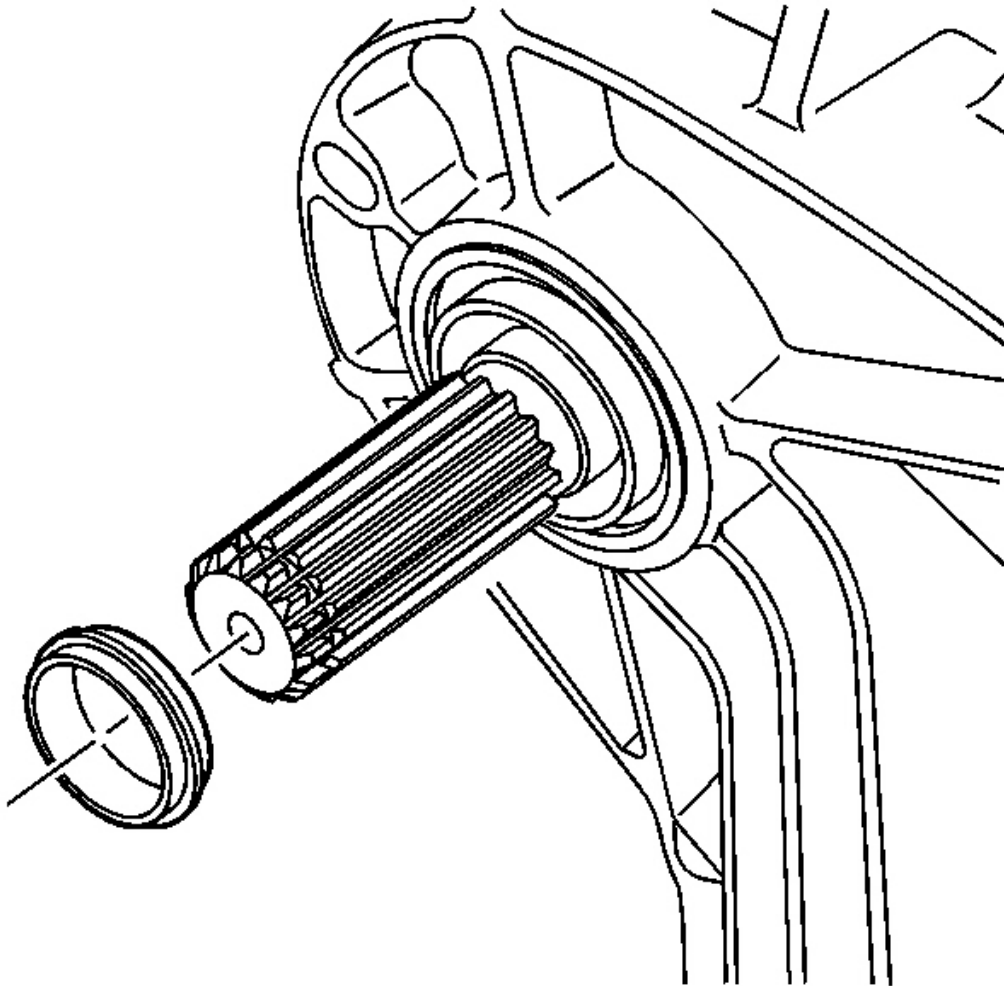
**Fig. 7: Identifying Front Input Shaft Seal**  
Courtesy of GENERAL MOTORS CORP.

7. Using a small block of wood and a large flat-bladed screwdriver, remove the front input shaft seal from the transfer case.



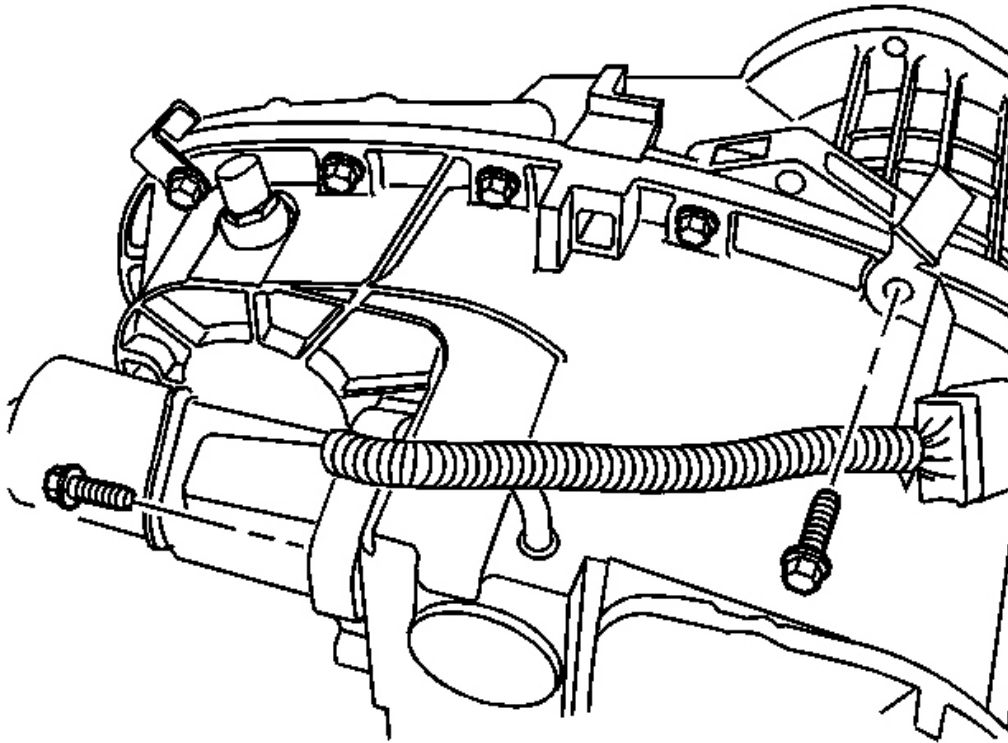
**Fig. 8: View Of Front Input Shaft Seal**  
**Courtesy of GENERAL MOTORS CORP.**

8. Remove the front input shaft seal.



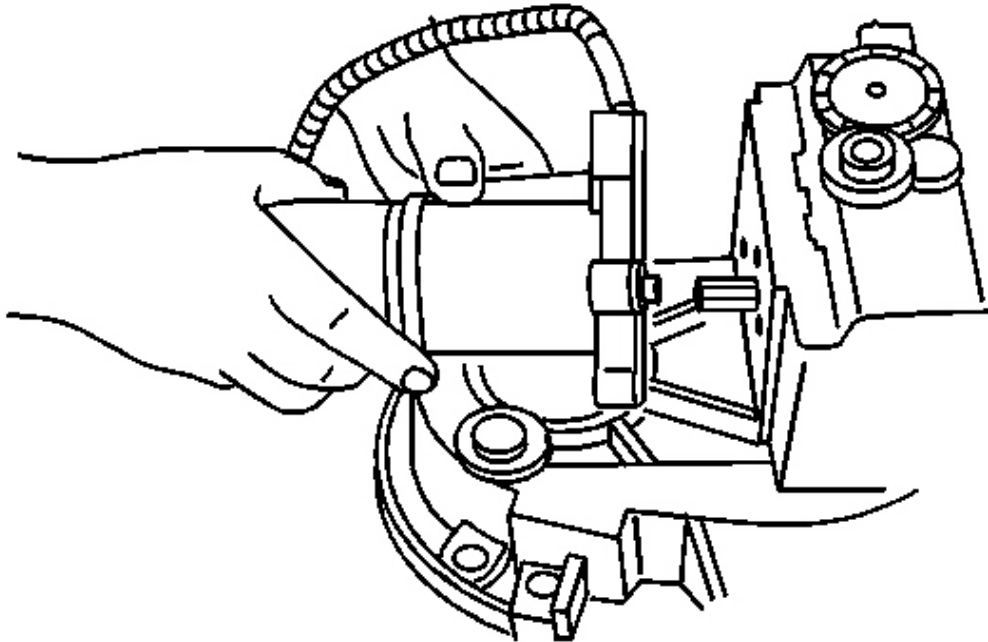
**Fig. 9: Removing Front Output Shaft Dust Seal**  
Courtesy of GENERAL MOTORS CORP.

9. Remove the dust seal from the front output shaft. The front output shaft oil seal does not require removal at this time.



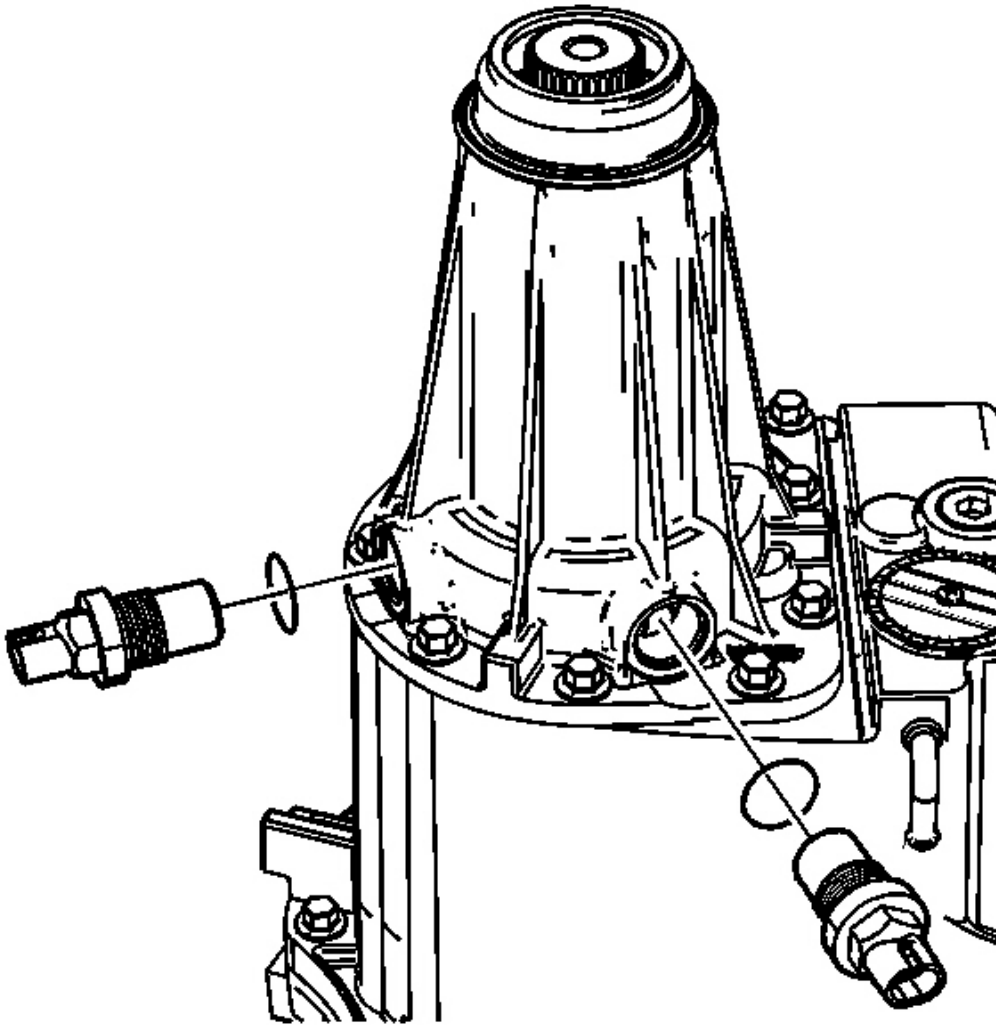
**Fig. 10: Locating Motor/Encoder And Harness Mounting Bolts**  
Courtesy of GENERAL MOTORS CORP.

10. Remove the transfer case bolt that is retaining the wiring harness bracket.
11. Mark the location of the wiring harness bracket bolt.
12. Remove the encoder/motor mounting bolts.



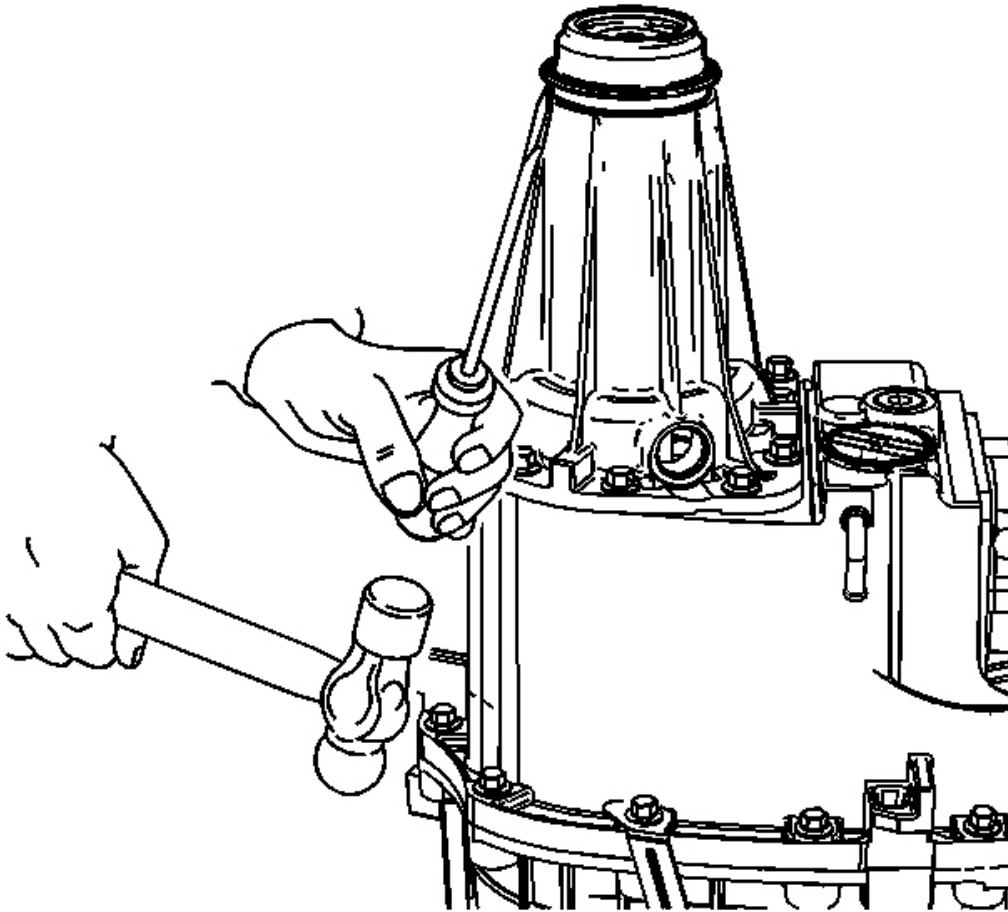
**Fig. 11: View Of Motor/Encoder Assembly**  
**Courtesy of GENERAL MOTORS CORP.**

13. Remove the encoder/motor assembly.



**Fig. 12: View Of Right Rear And Left Rear Vehicle Speed Sensor (VSS)**  
Courtesy of GENERAL MOTORS CORP.

14. Remove both vehicle speed sensors (VSS) and O-ring seals from the rear extension.

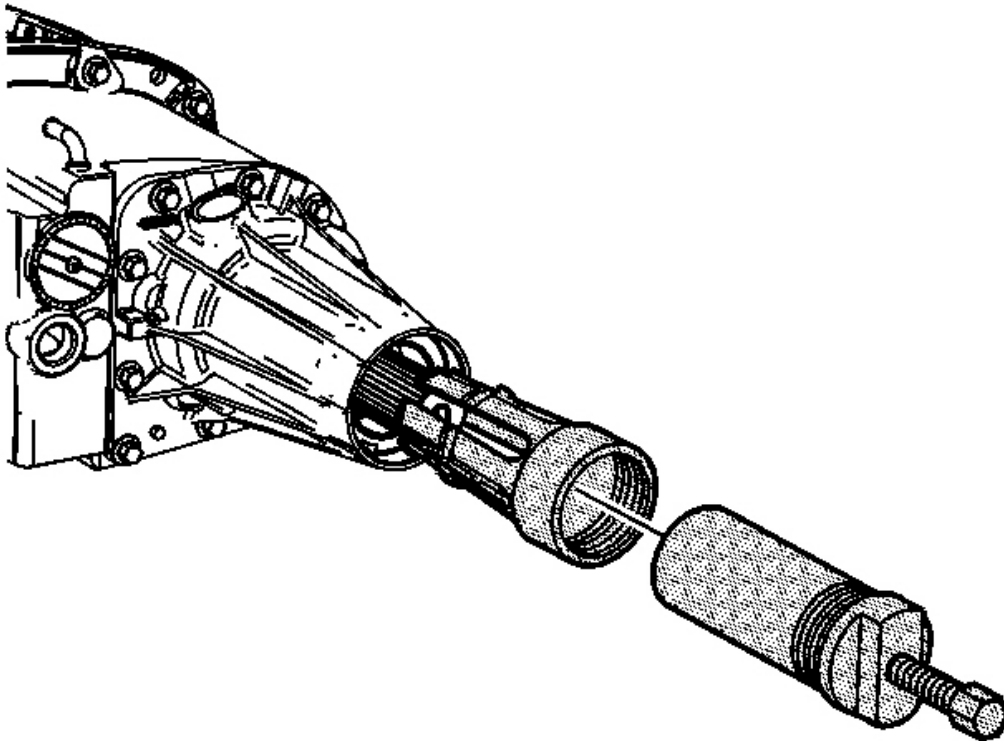


**Fig. 13: Removing Rear Output Seal**  
Courtesy of GENERAL MOTORS CORP.

**NOTE:** Refer to Transfer Case Seal Removal Notice in Cautions and Notices.

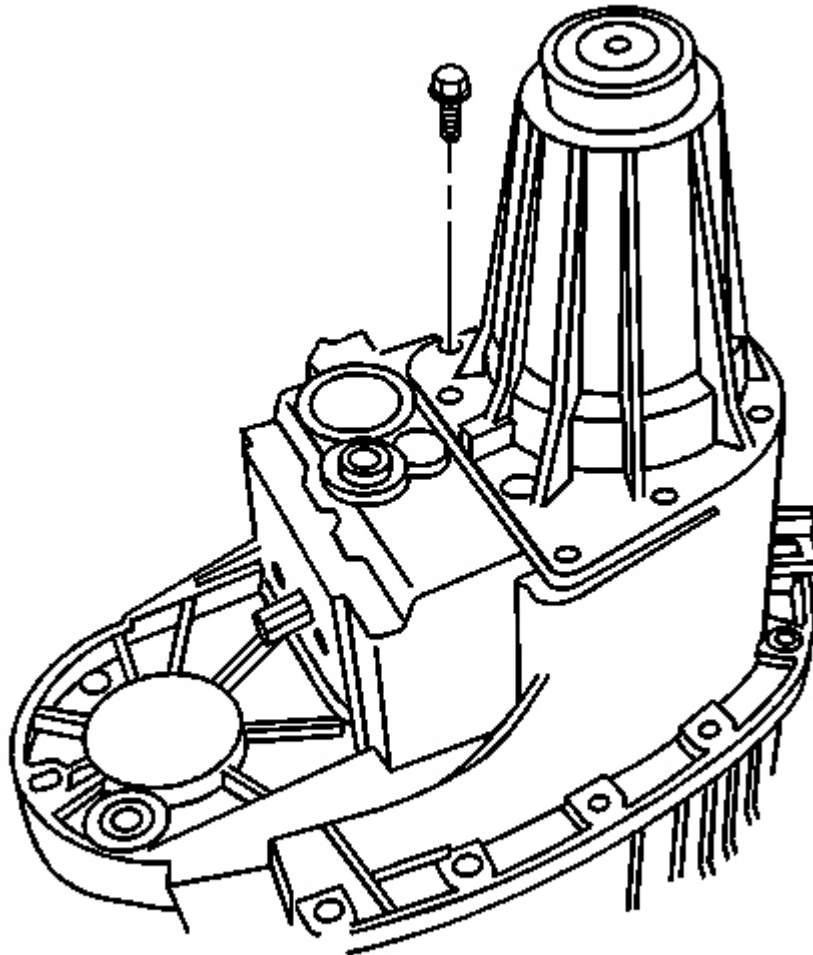
15. Remove the rear output seal.





**Fig. 14: Rear Output Shaft Bushing**  
Courtesy of GENERAL MOTORS CORP.

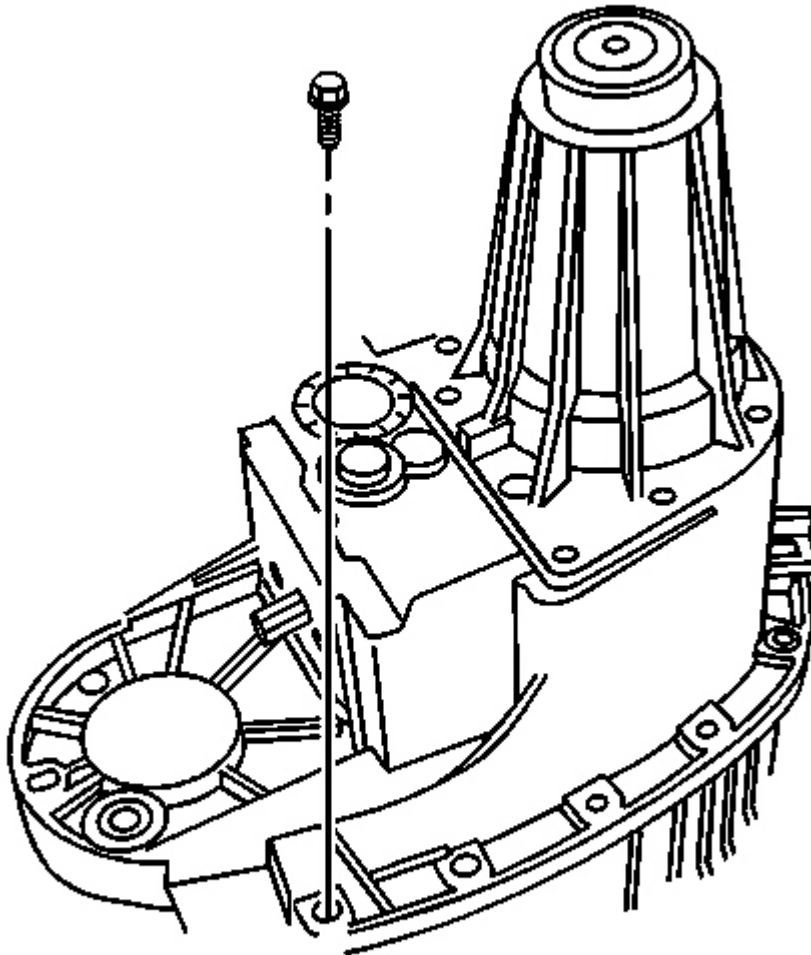
16. Inspect the rear output shaft bushing for scoring or wear.
17. Remove the rear output shaft bushing using the **J 45380** .
  - Install the finger section of the **J 45380** in front of the bushing.
  - Install the tube and forcing screw assembly to the finger section. Ensure the forcing screw is backed out.
  - Using a wrench on the forcing screw, remove the rear output shaft bushing.



**Fig. 15: Removing Rear Extension Mounting Bolts**  
Courtesy of GENERAL MOTORS CORP.

**IMPORTANT:** Remove the rear extension and case half bolts at the same time for easier rear case disassembly.

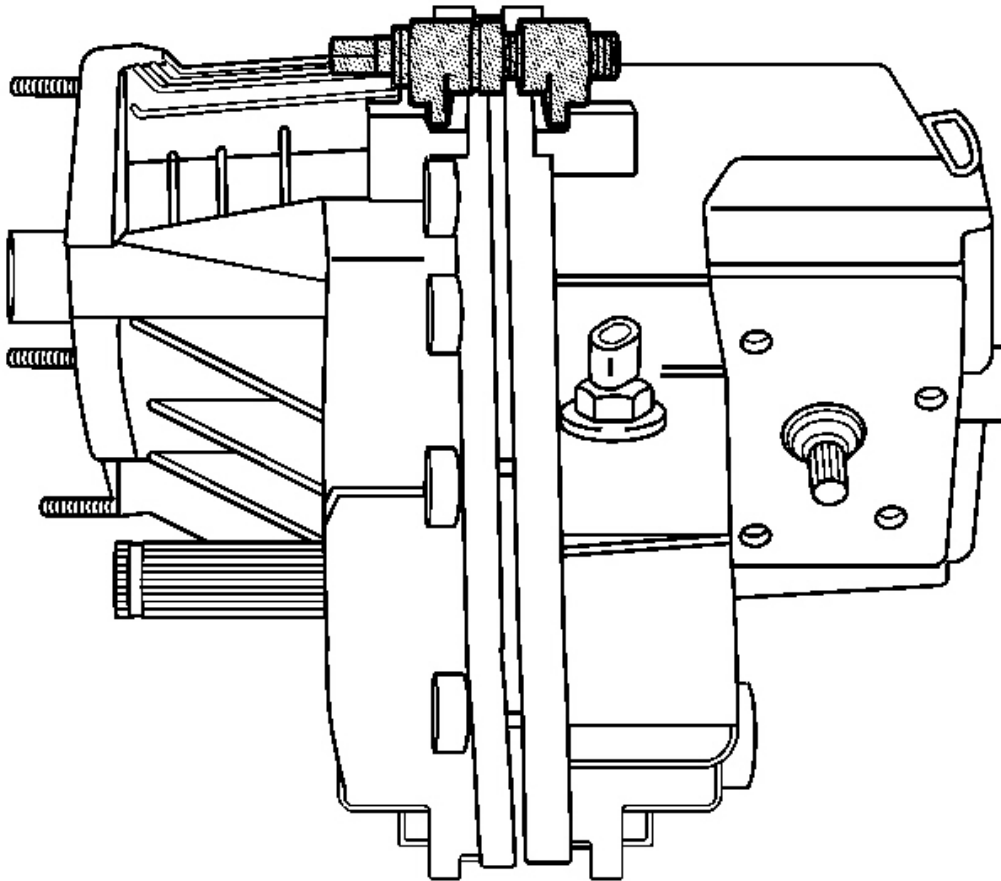
18. Remove the rear extension mounting bolts.



**Fig. 16: View Of Front Case Half To Rear Case Half Bolts**  
Courtesy of GENERAL MOTORS CORP.

19. Remove the case half bolts.

**NOTE:** Refer to Machined Surface Damage Notice in Cautions and Notices.



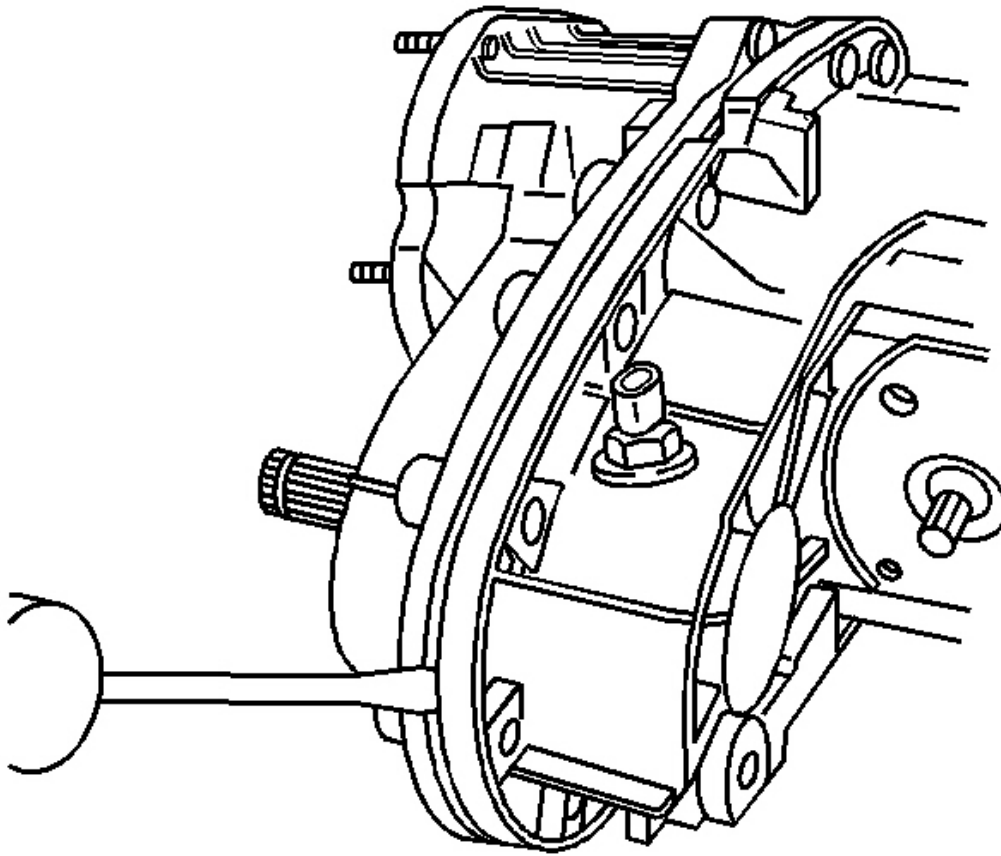
**Fig. 17: Installing J 45358 Between The Tabs On One Side Of The Case**  
Courtesy of GENERAL MOTORS CORP.

20. Install the **J 45358** between the tabs on one side of the case.

**IMPORTANT:**

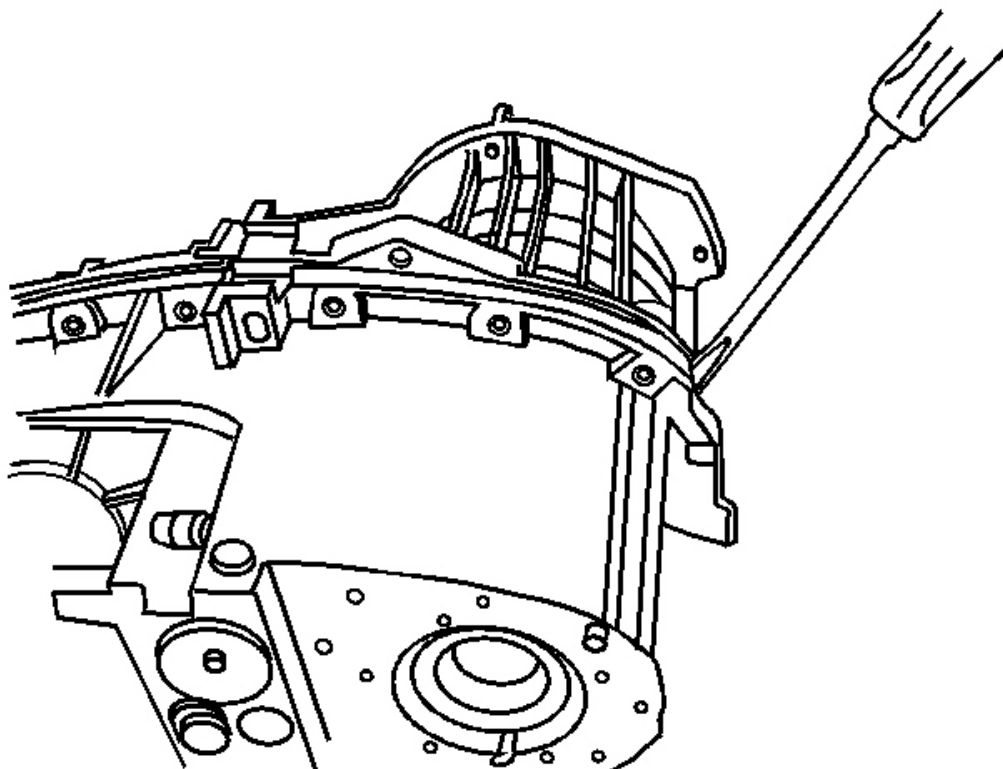
- Ensure that all of the case half bolts have been removed.
- **DO NOT** use screwdrivers or pry bars to separate the transfer case halves. The special tool must be used to separate the transfer case halves properly.

21. Using the **J 45358** , shear the sealer securing the front and rear case half together.
22. Move the **J 45358** to the tabs on the other side of the case and shear the sealer.



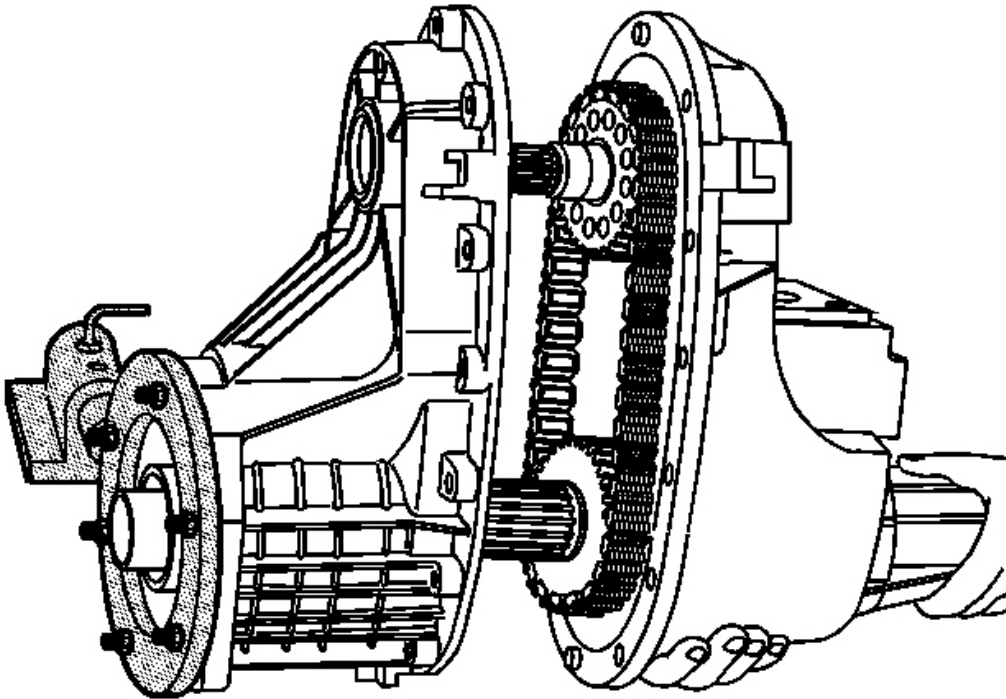
**Fig. 18: Inserting Prying Tool In Case Half**  
Courtesy of GENERAL MOTORS CORP.

23. Use a suitable prying tool at one side of the case half.



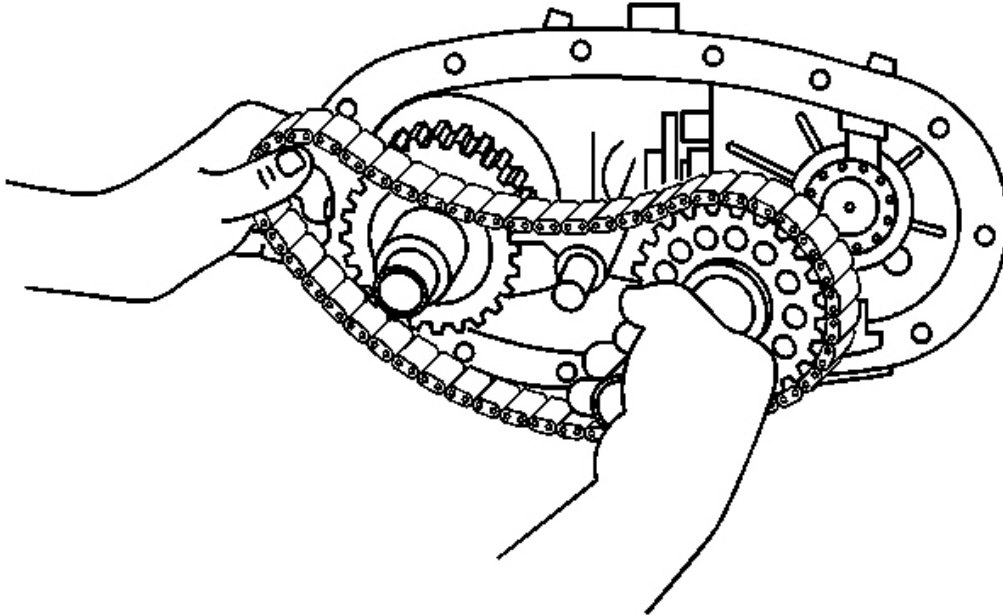
**Fig. 19: Separating Cased Halves**  
**Courtesy of GENERAL MOTORS CORP.**

24. Use a suitable prying tool at the other side of the cased halves.
25. Working both tools, separate the front input shaft from the front output shaft bearing, and the input shaft from the output shaft.



**Fig. 20: View Of Front Case Half To Rear Case Half Bolts**  
Courtesy of GENERAL MOTORS CORP.

26. Remove the front case half from the rear case half. Only the input gear assembly will remain with the front case half.



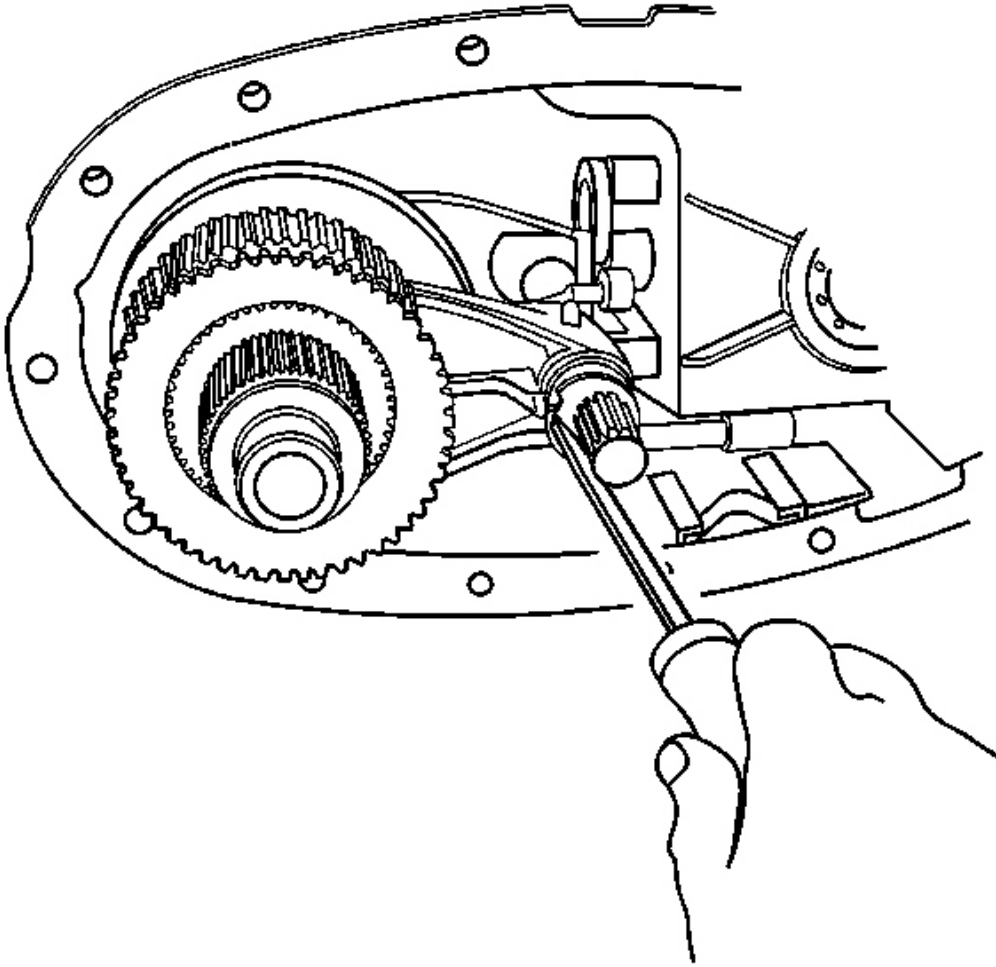
**Fig. 21: View Of Drive Chain**

Courtesy of GENERAL MOTORS CORP.

**IMPORTANT:** If using the drive chain and sprockets again, mark the position of the drive chain to the sprockets in order for the proper wear pattern alignment.

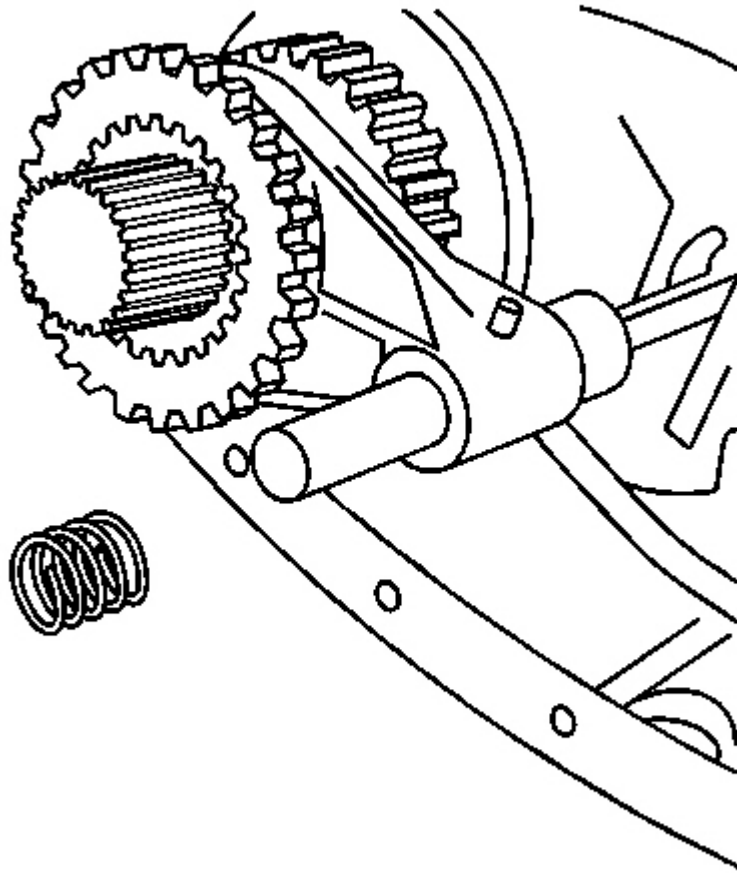
27. Remove the front output shaft from the front output shaft rear bearing.
28. Remove the drive chain assembly from the drive gear on the output shaft and the driven gear on the front output shaft.





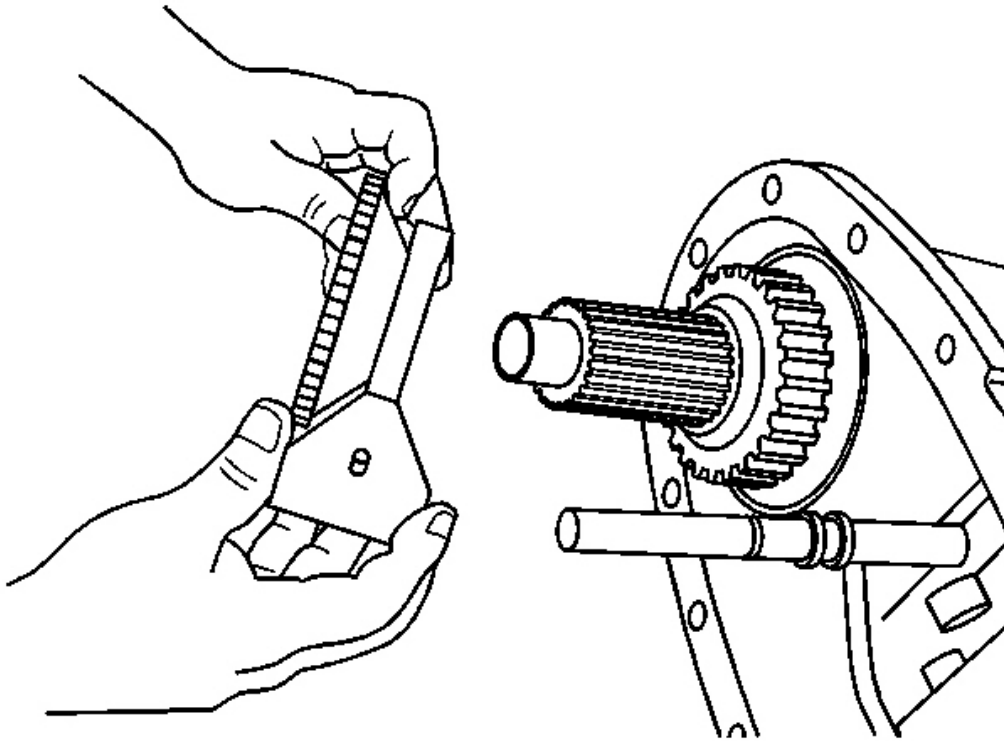
**Fig. 22: Removing Retaining Ring For High/Low Shift Fork**  
Courtesy of GENERAL MOTORS CORP.

29. Remove the retaining ring for the high/low shift fork.



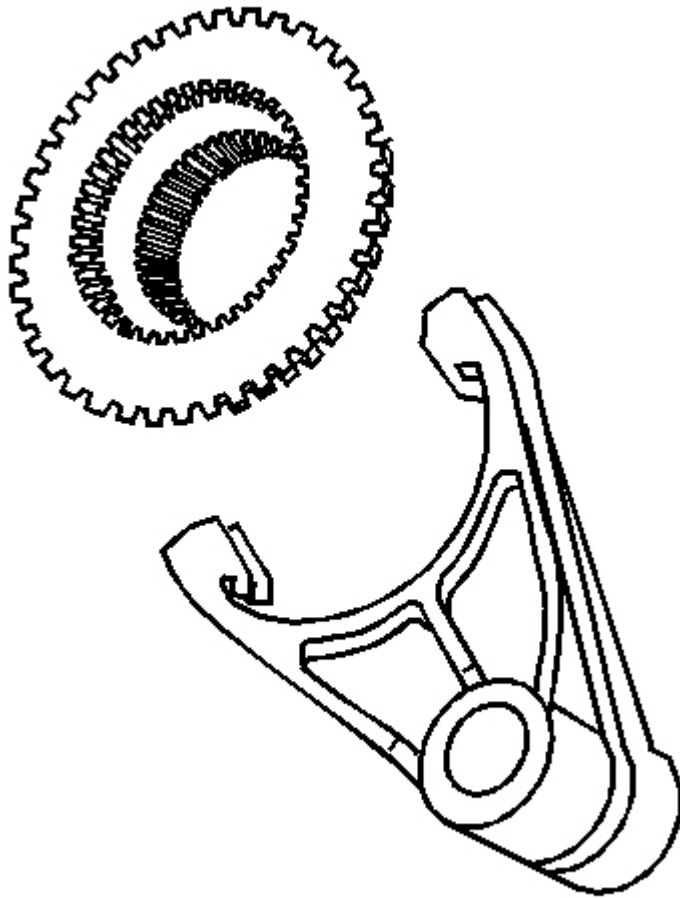
**Fig. 23: View Of Top Shift Fork Spring**  
**Courtesy of GENERAL MOTORS CORP.**

30. Remove the top shift fork spring.



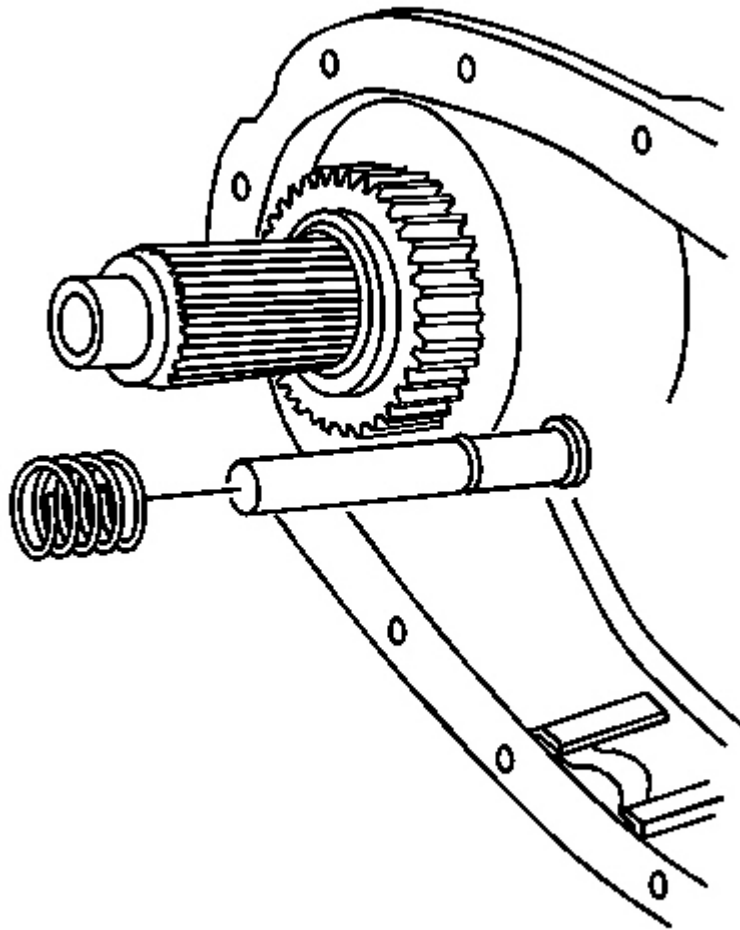
**Fig. 24: Removing Shift Fork Assembly**  
Courtesy of GENERAL MOTORS CORP.

31. Remove the shift fork assembly from the shift fork shaft.



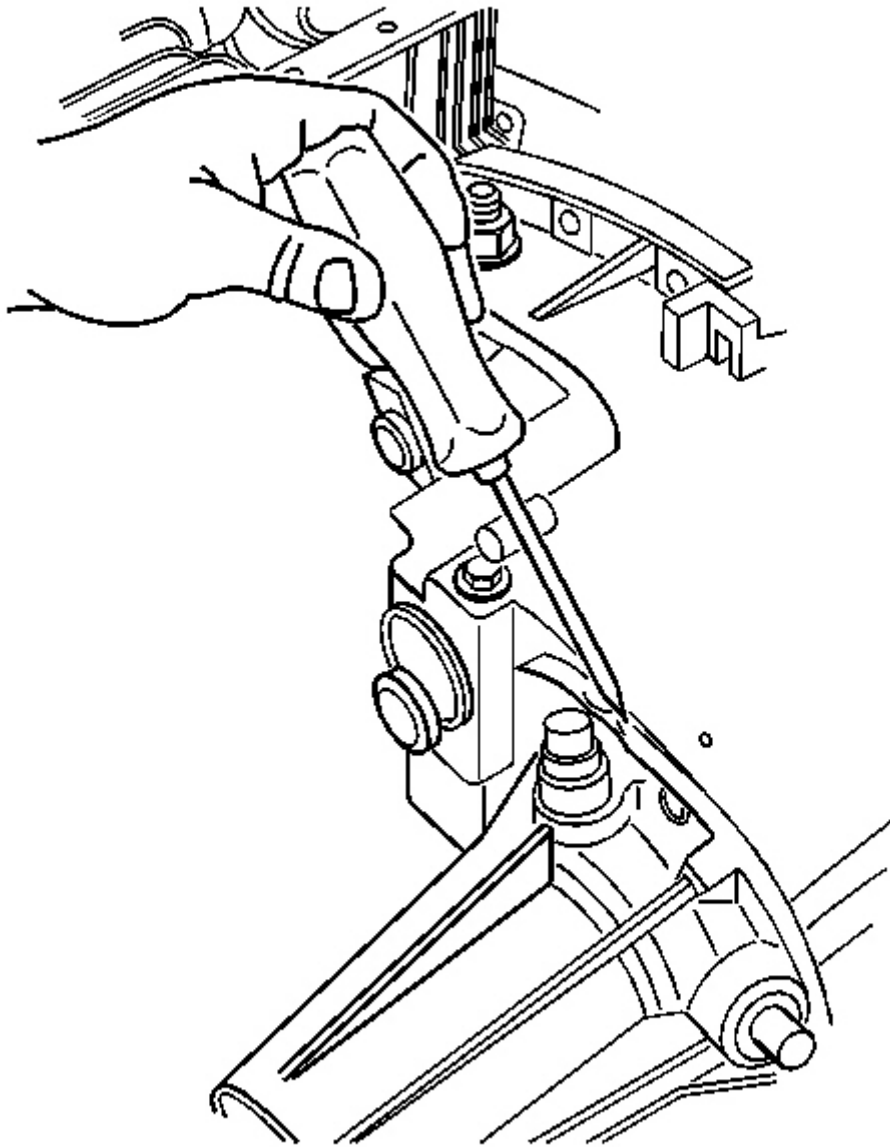
**Fig. 25: Separating Shift Fork From Range Sleeve**  
Courtesy of GENERAL MOTORS CORP.

32. Separate the shift fork from the range sleeve.



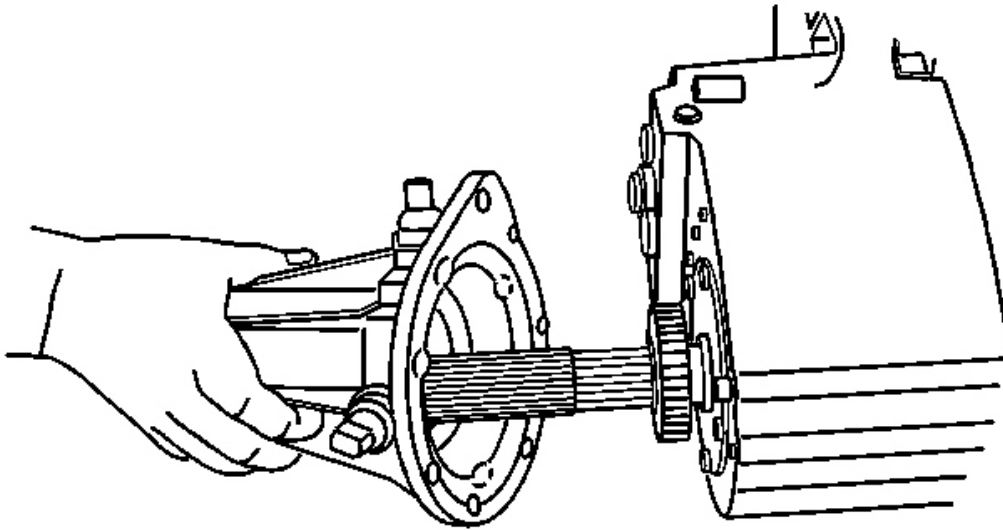
**Fig. 26: View Of Bottom Shift Fork Spring**  
Courtesy of GENERAL MOTORS CORP.

33. Remove the bottom shift fork spring.



**Fig. 27: Locating Slot In Rear Extension**  
**Courtesy of GENERAL MOTORS CORP.**

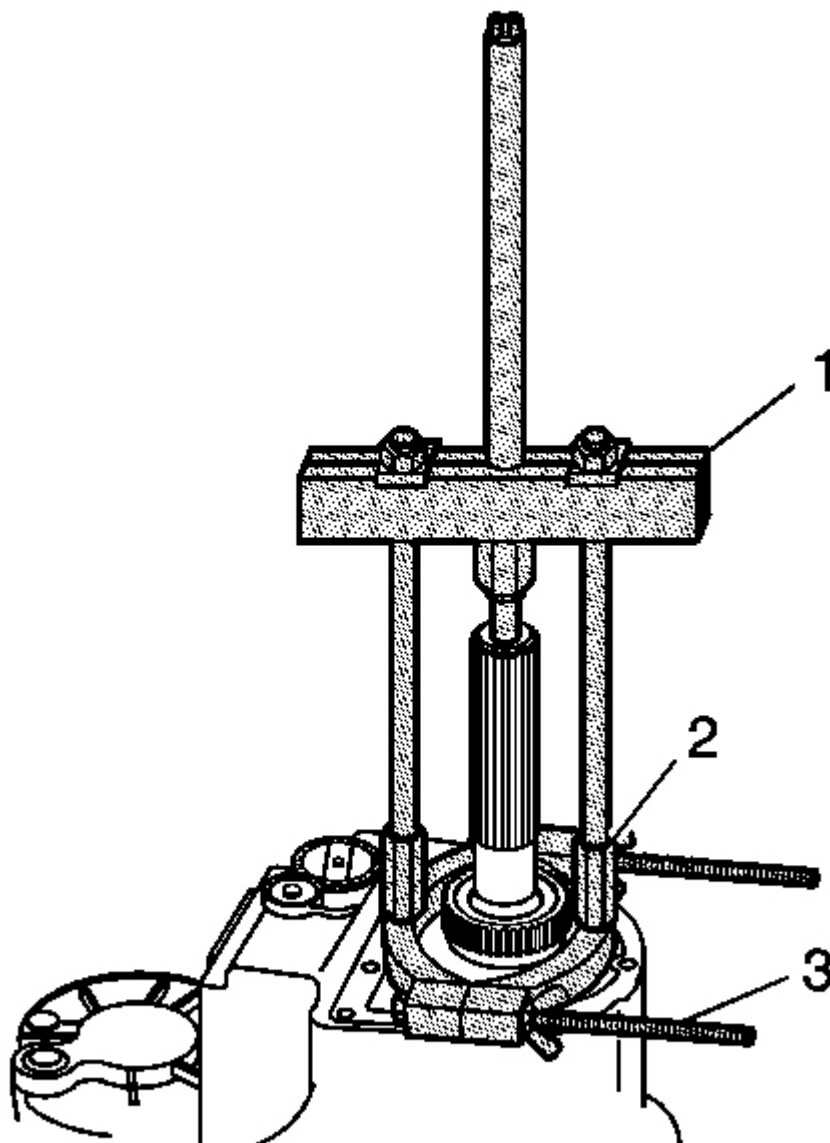
34. Insert a screwdriver in the slot of the rear extension.



**Fig. 28: Identifying Rear Extension**

Courtesy of GENERAL MOTORS CORP.

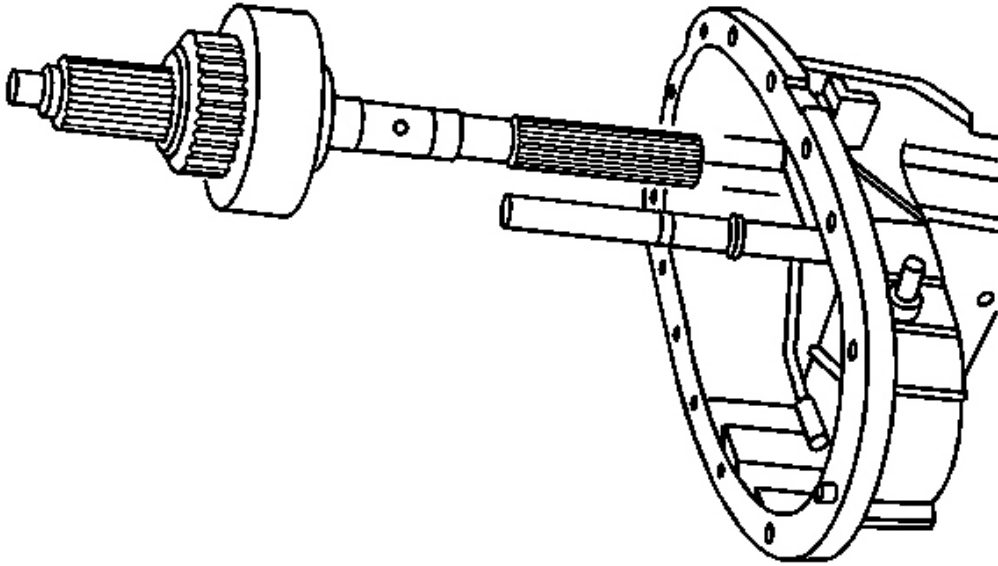
35. Remove the rear extension from the rear case half.



**Fig. 29: Identifying Speed Sensor Reluctor Wheel**  
Courtesy of GENERAL MOTORS CORP.

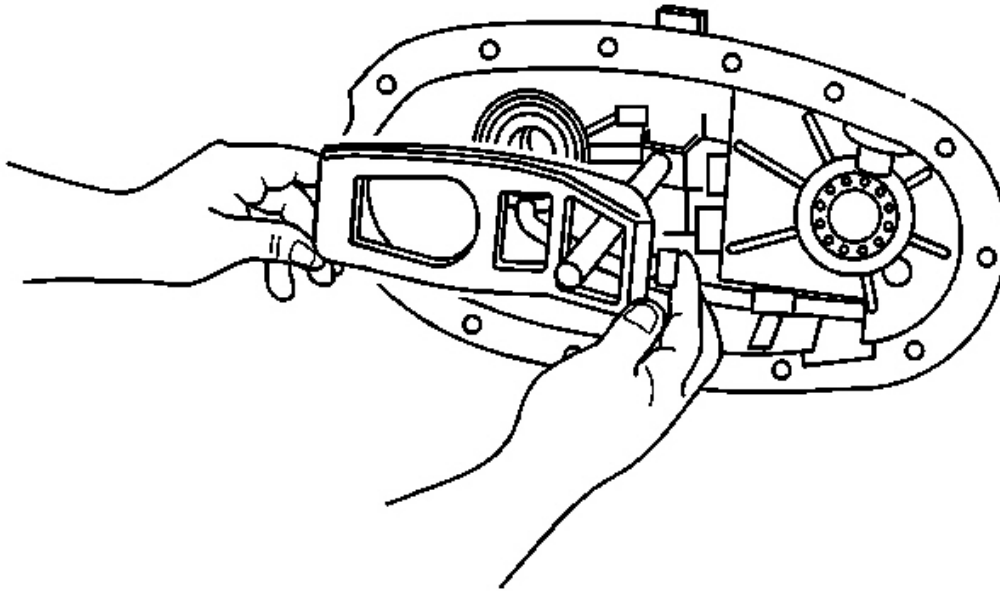
36. Using the **J 44707** (1), the **J 44759** (2), and the **J 36513** (3), remove the speed sensor reluctor wheel from the rear output shaft.
37. Discard the speed sensor reluctor wheel after removal.





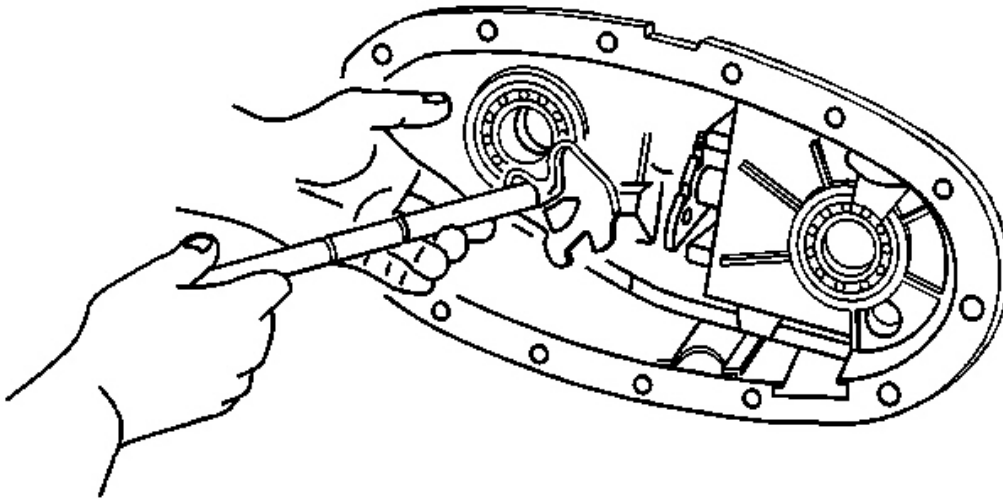
**Fig. 30: Removing Rear Output Shaft Assembly**  
Courtesy of GENERAL MOTORS CORP.

38. Remove the rear output shaft assembly.



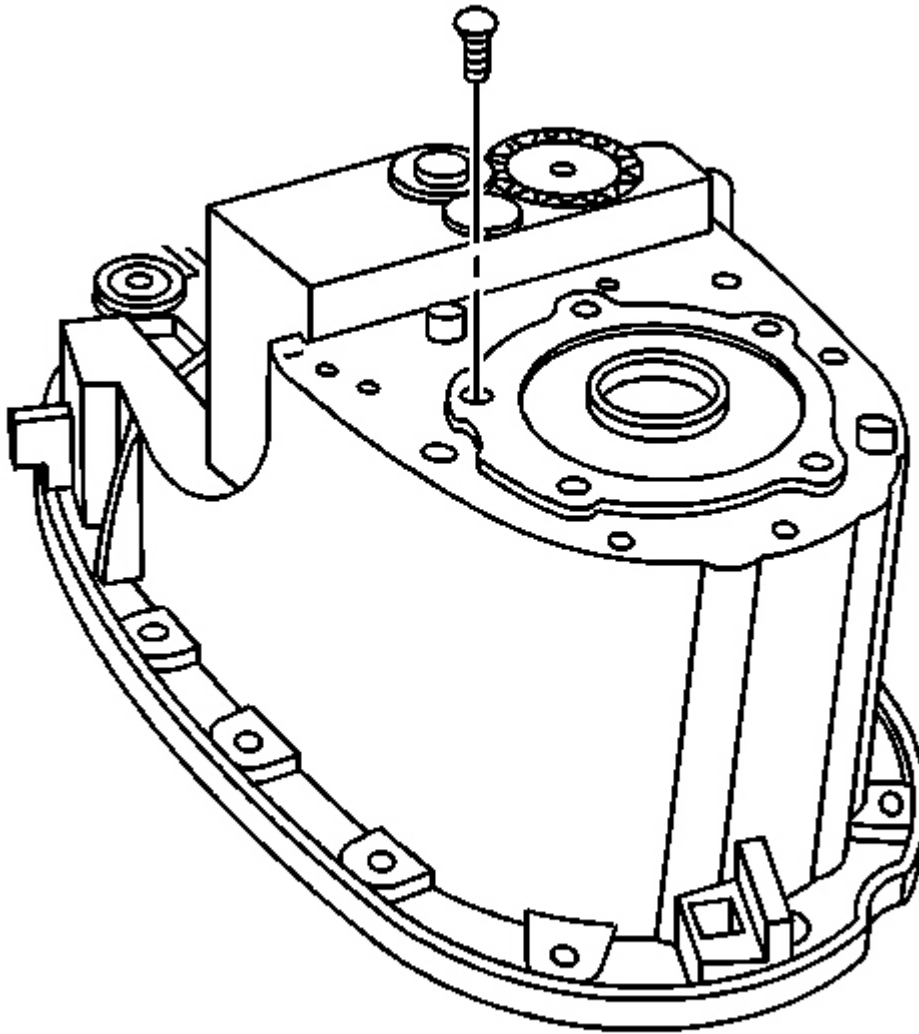
**Fig. 31: Identifying Clutch Lever In Rear Case**  
Courtesy of GENERAL MOTORS CORP.

39. Remove the clutch lever from the rear case half.



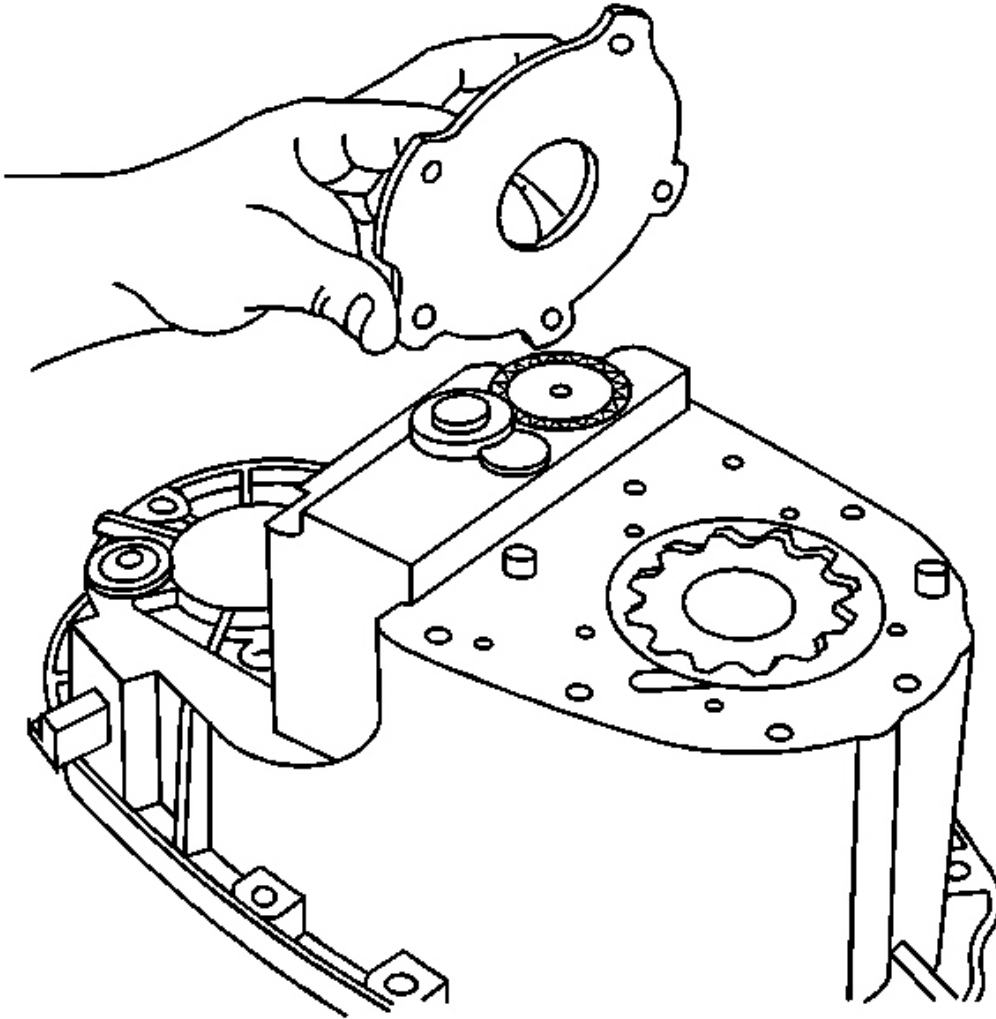
**Fig. 32: Locating Shift Fork Shaft**  
Courtesy of GENERAL MOTORS CORP.

40. Remove the shift fork shaft with the shift detent lever. Rotate the control actuator lever shaft in order to remove the shift detent lever.



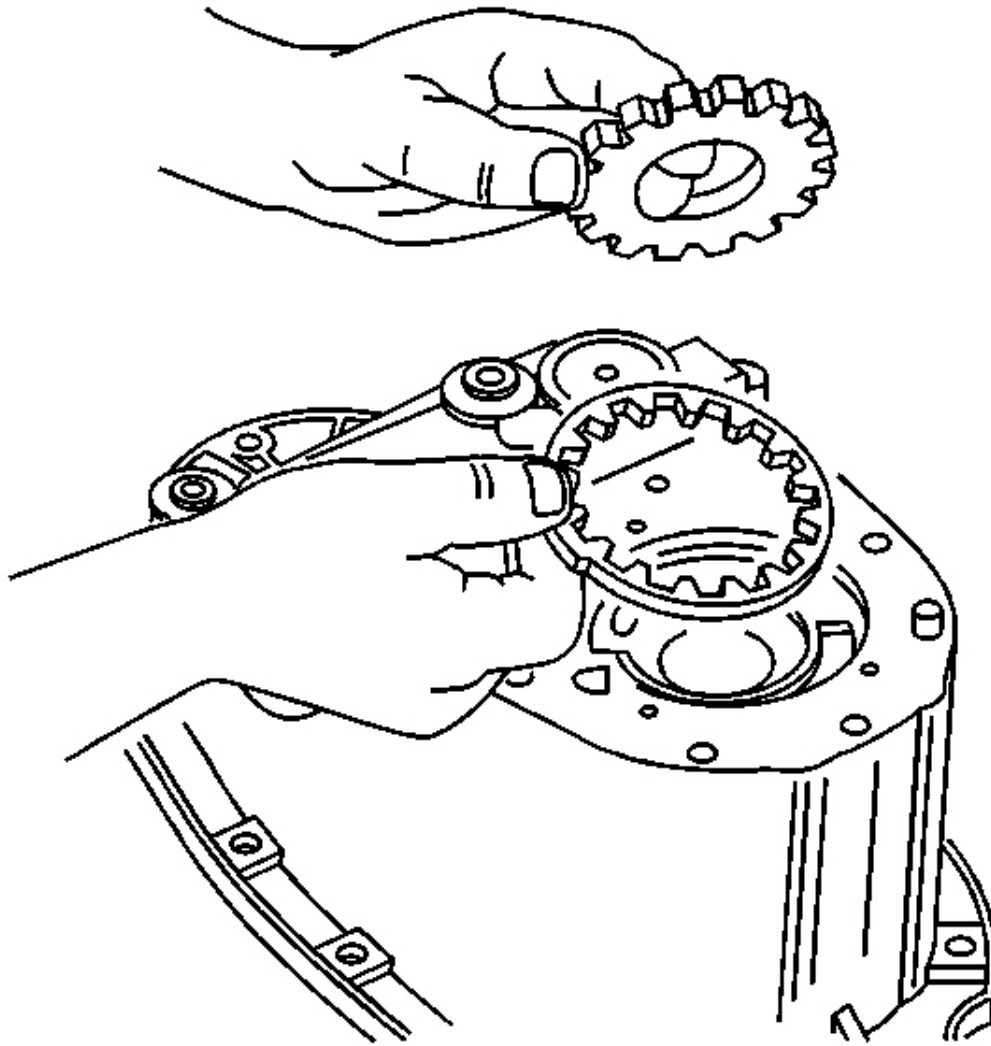
**Fig. 33: Removing Oil Pump Cover Mounting Bolts**  
Courtesy of GENERAL MOTORS CORP.

41. Remove the oil pump cover mounting bolts.



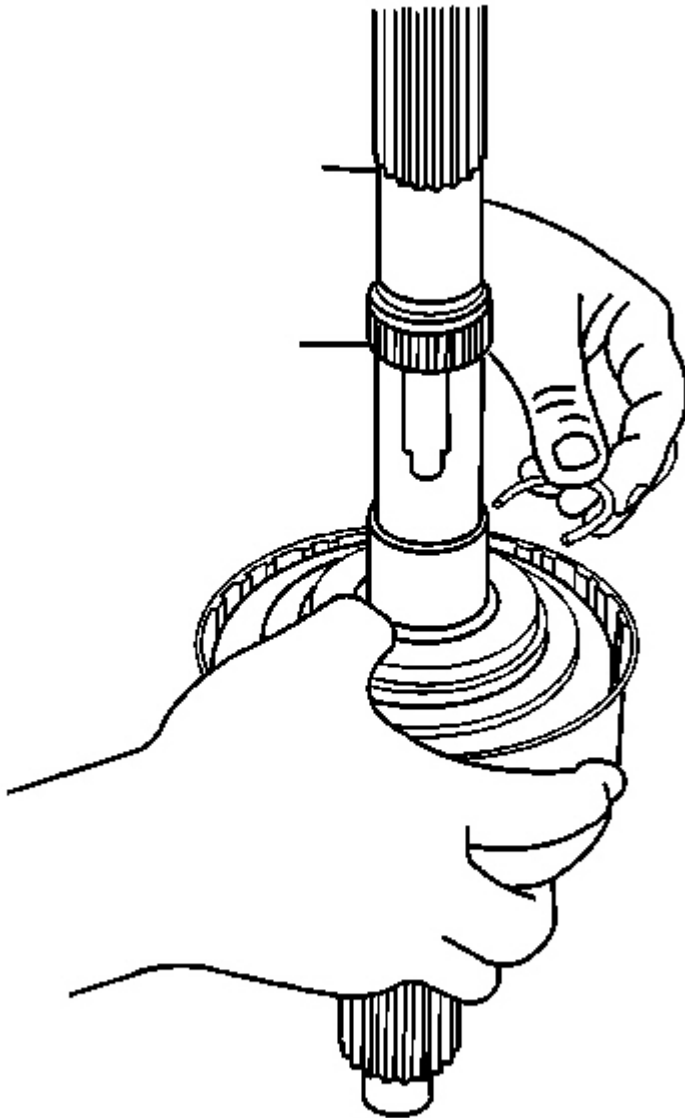
**Fig. 34: Identifying Oil Pump Cover**  
**Courtesy of GENERAL MOTORS CORP.**

42. Remove the oil pump cover.



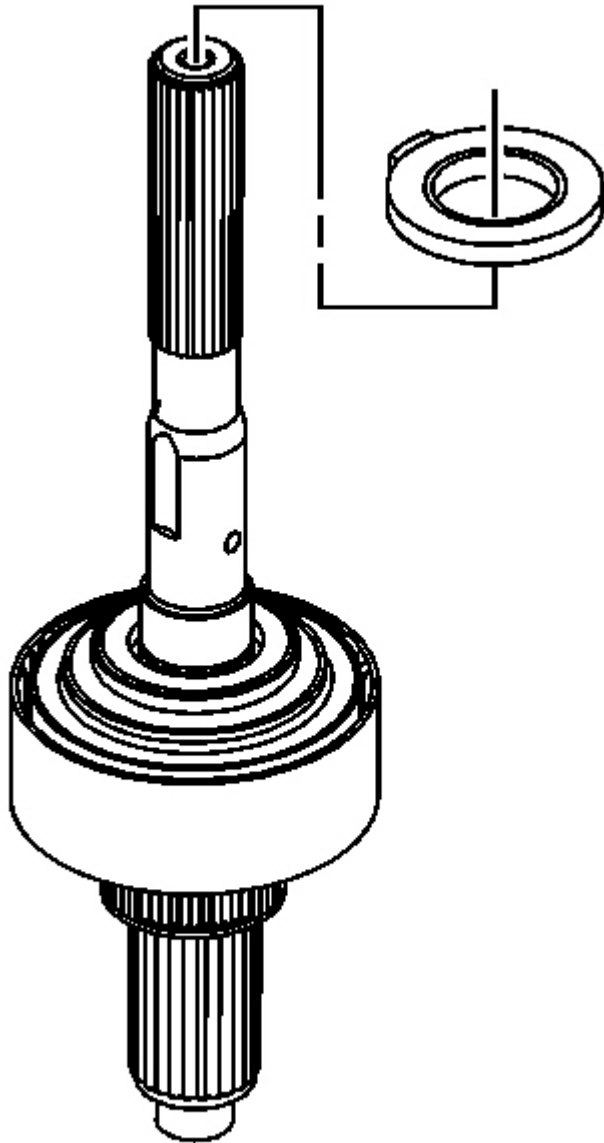
**Fig. 35: View Of Oil Pump Drive Gear & Oil Pump Driven Gear**  
Courtesy of GENERAL MOTORS CORP.

43. Remove the oil pump drive gear, the inner rotor.
44. Remove the oil pump driven gear, the outer rotor.



**Fig. 36: Removing Clutch Pressure Plate Bearing Retaining Ring**  
Courtesy of GENERAL MOTORS CORP.

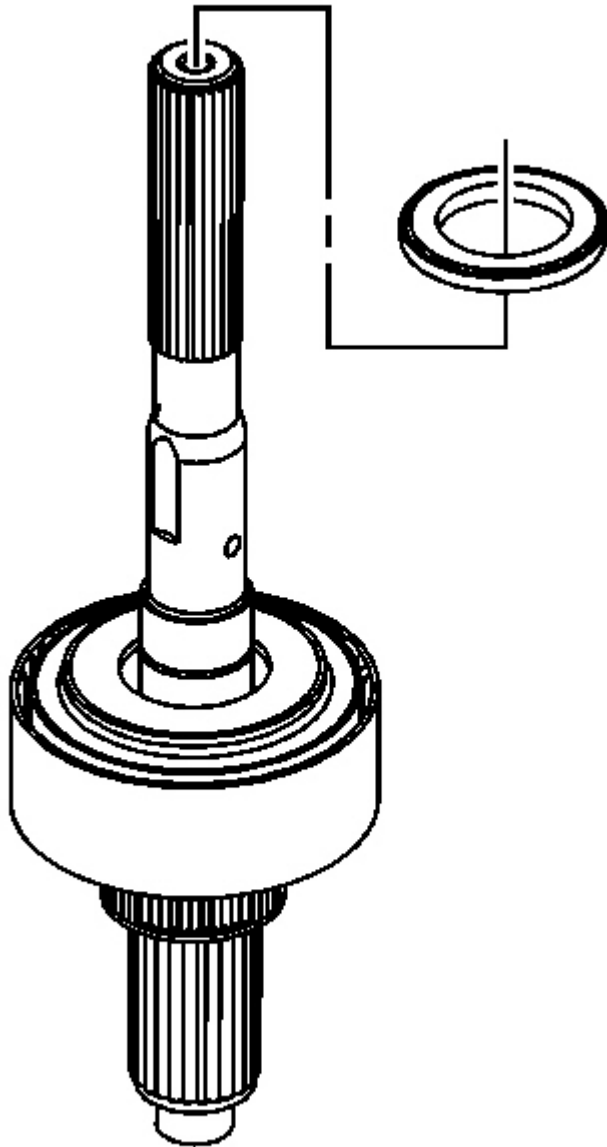
45. While pushing down on the clutch apply plate, remove the clutch pressure plate bearing retaining ring.



**Fig. 37: Identifying Clutch Inner Plate**  
**Courtesy of GENERAL MOTORS CORP.**

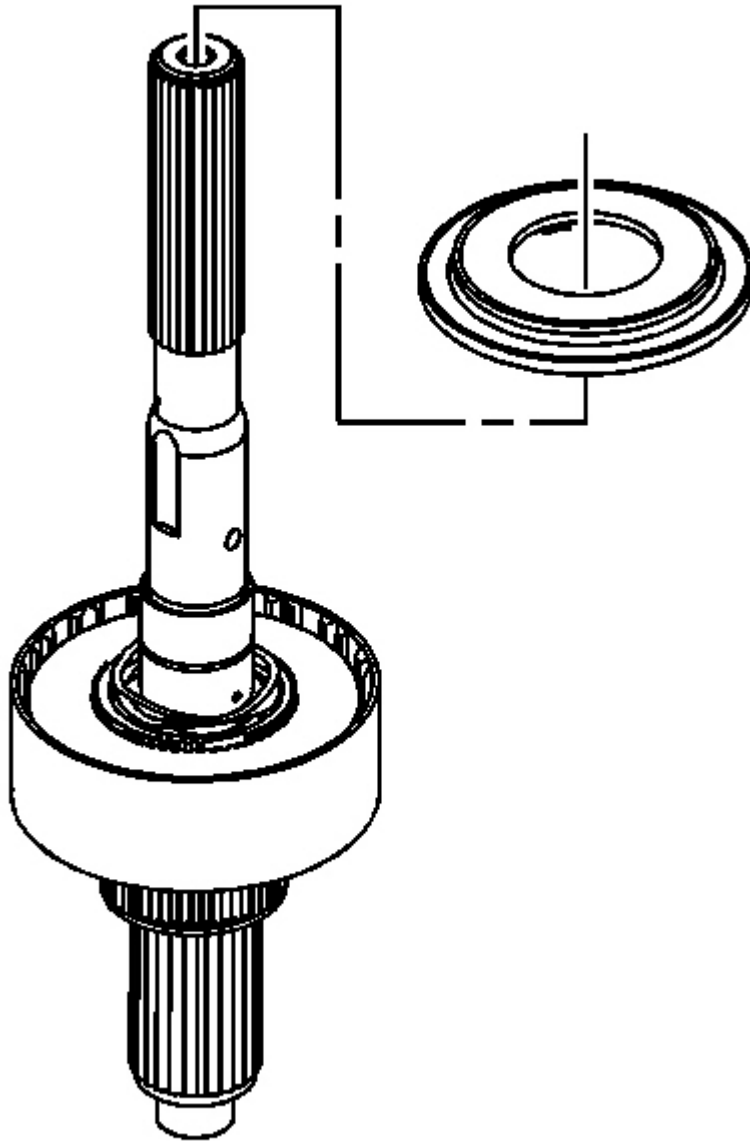
46. Remove the clutch inner plate.





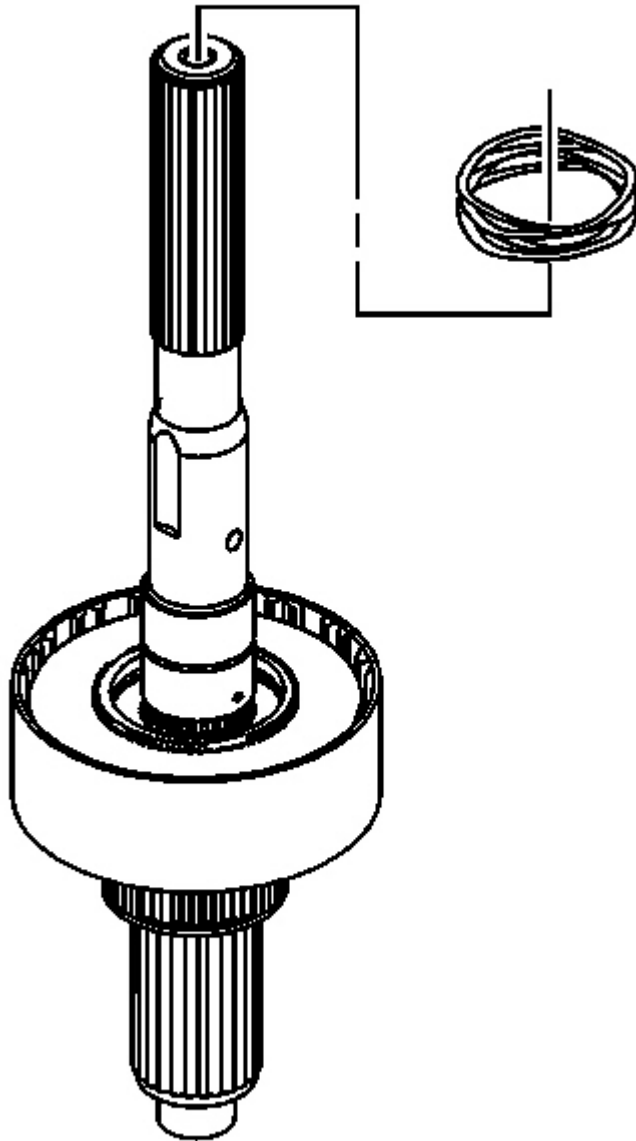
**Fig. 38: Locating Clutch Pressure Plate Bearing**  
Courtesy of GENERAL MOTORS CORP.

47. Remove the clutch pressure plate bearing.



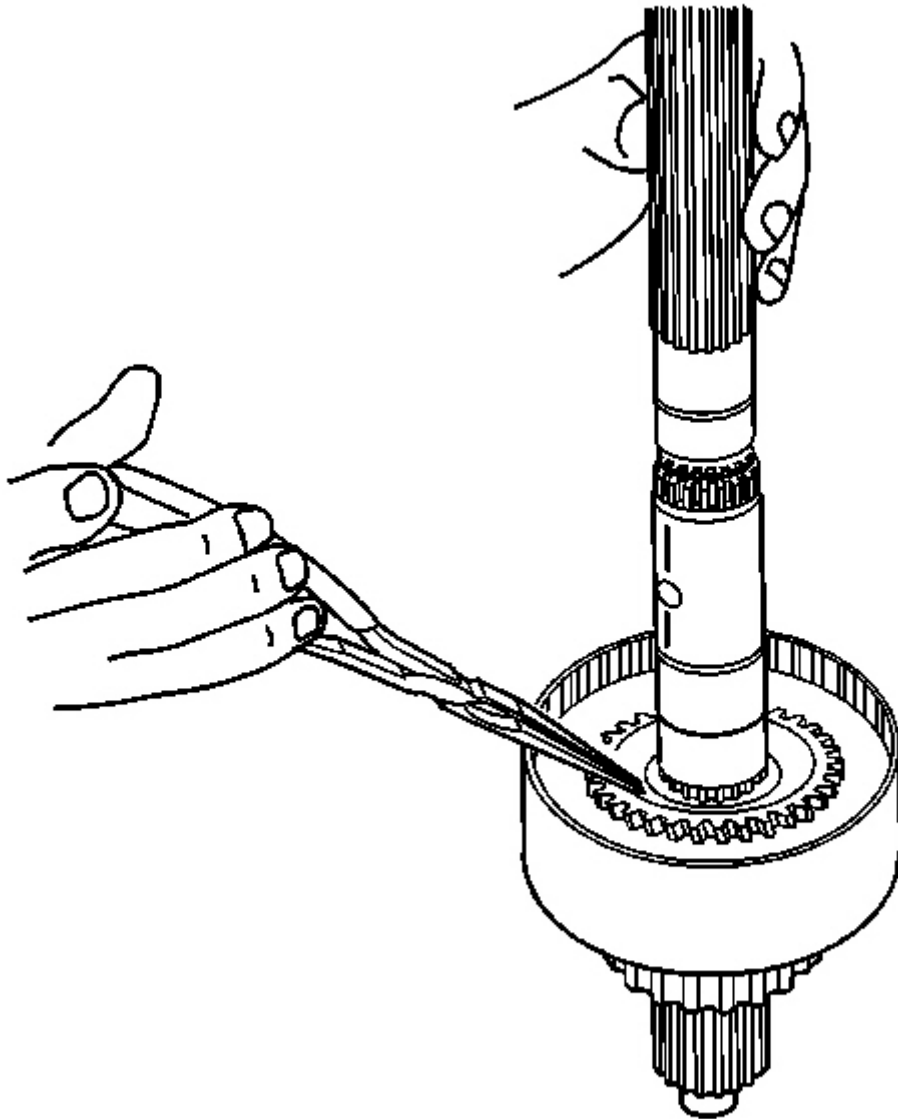
**Fig. 39: Removing Clutch Apply Plate**  
Courtesy of GENERAL MOTORS CORP.

48. Remove the clutch apply plate.



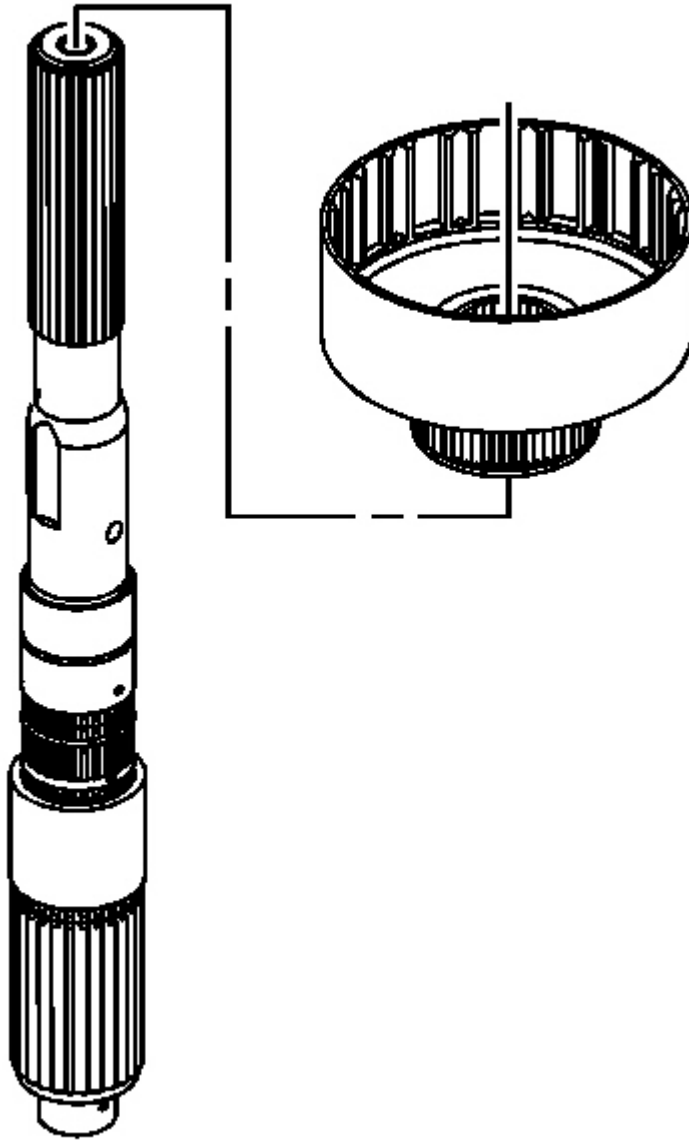
**Fig. 40: View Of Clutch Spring**  
**Courtesy of GENERAL MOTORS CORP.**

49. Remove the clutch spring.



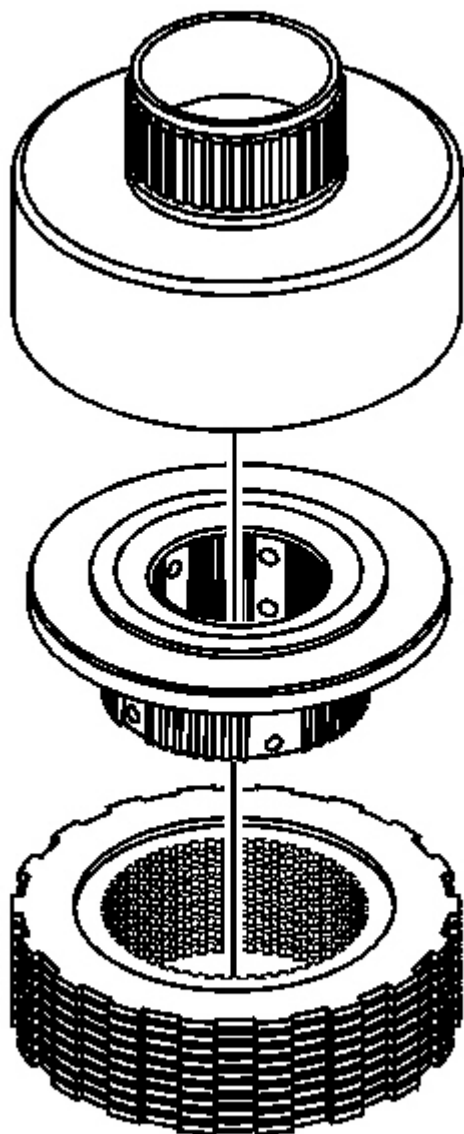
**Fig. 41: Removing Clutch Hub Retaining Ring**  
Courtesy of GENERAL MOTORS CORP.

50. Remove the clutch hub retaining ring.



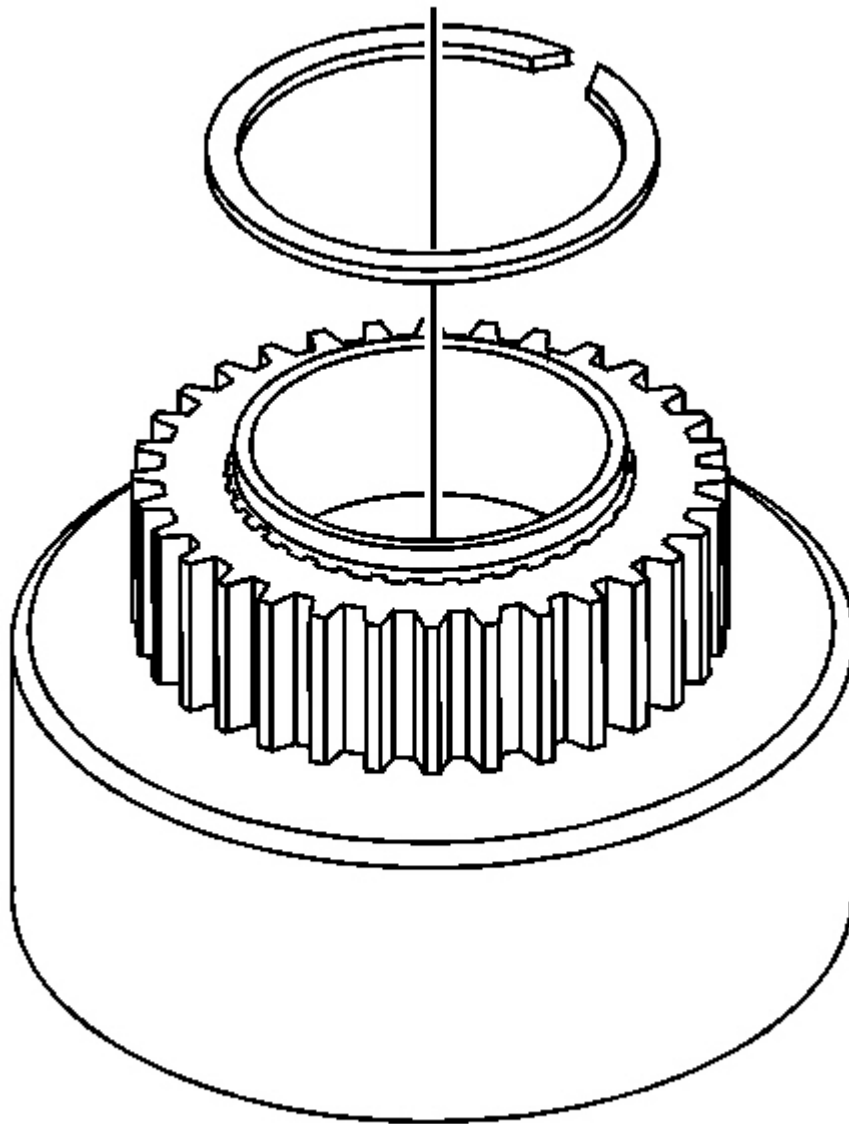
**Fig. 42: View Of Clutch Housing**  
**Courtesy of GENERAL MOTORS CORP.**

51. Remove the clutch housing assembly.



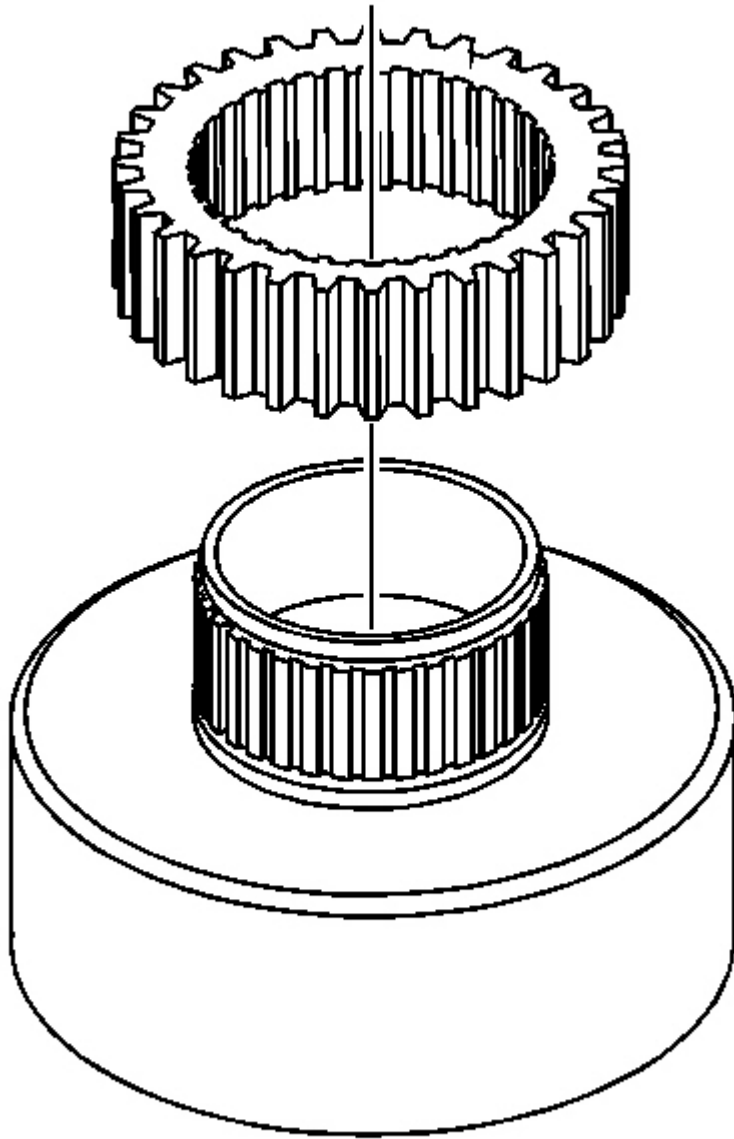
**Fig. 43: Identifying Clutch Plates, Housing & Clutch Hub**  
Courtesy of GENERAL MOTORS CORP.

52. Hold on to the clutch plates, and turn the clutch housing over on a workbench.
53. Remove the clutch housing from the clutch plates and the clutch hub.
54. Remove the clutch hub from the clutch plates.



**Fig. 44: View Of Drive Sprocket Retaining Ring**  
Courtesy of GENERAL MOTORS CORP.

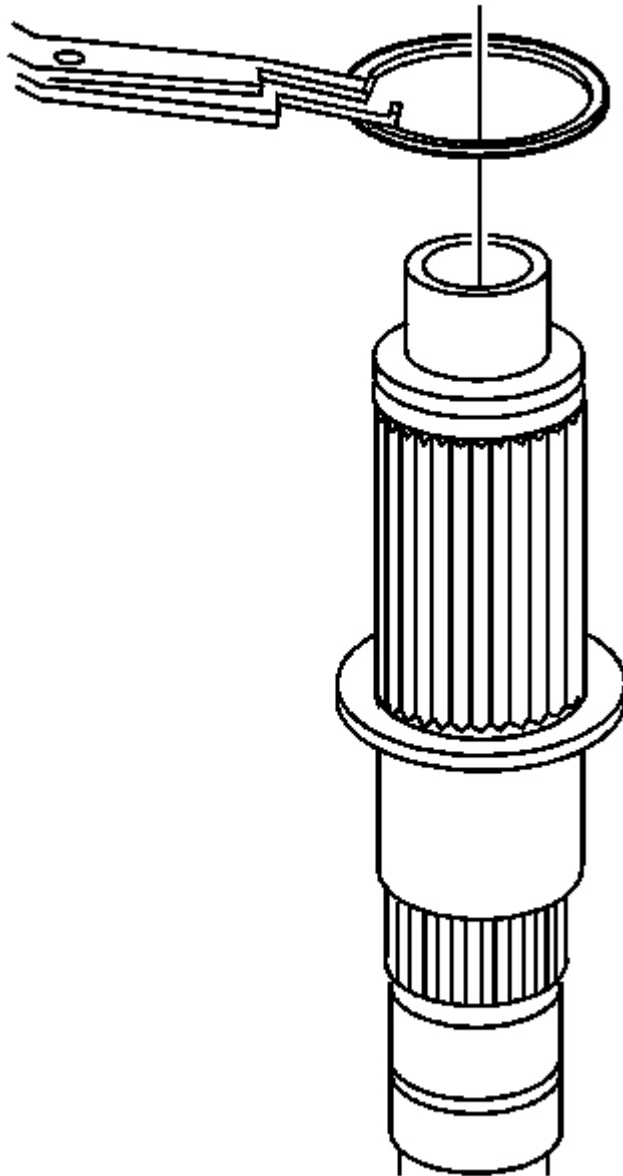
55. Remove the drive sprocket retaining ring from the clutch housing.



**Fig. 45: Clutch Housing & Drive Sprocket**  
Courtesy of GENERAL MOTORS CORP.

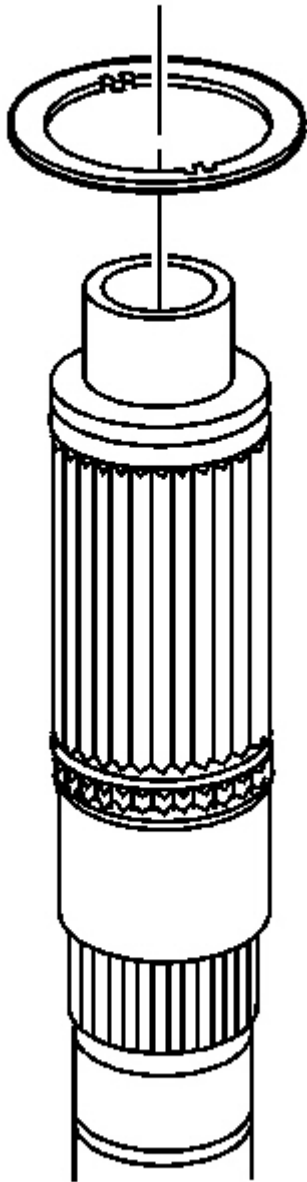
56. Remove the drive sprocket from the clutch housing.





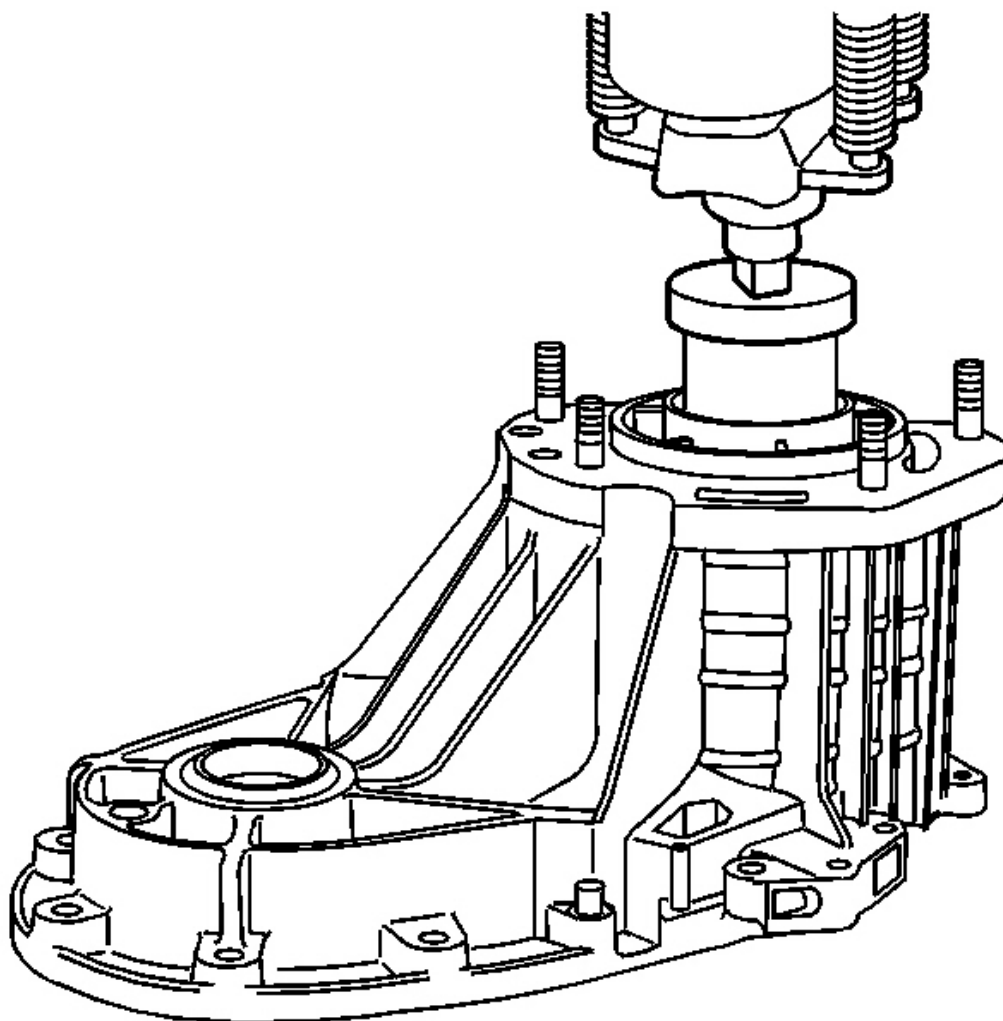
**Fig. 46: Identifying Clutch Housing Retaining Ring**  
**Courtesy of GENERAL MOTORS CORP.**

57. Remove the clutch housing retaining ring from the rear output shaft.



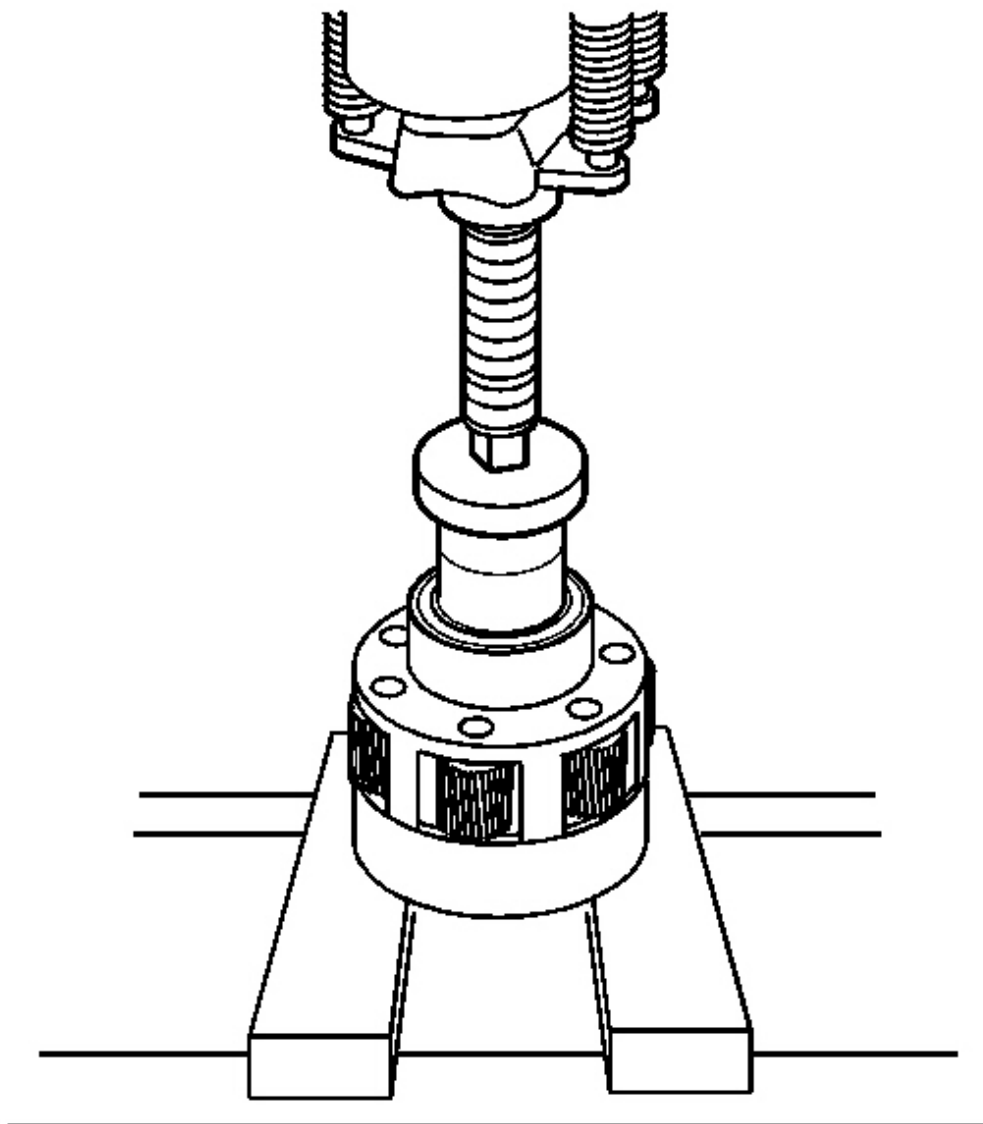
**Fig. 47: Locating Rear Output Shaft Rear Thrust Washer**  
Courtesy of GENERAL MOTORS CORP.

58. Remove the rear output shaft rear thrust washer.



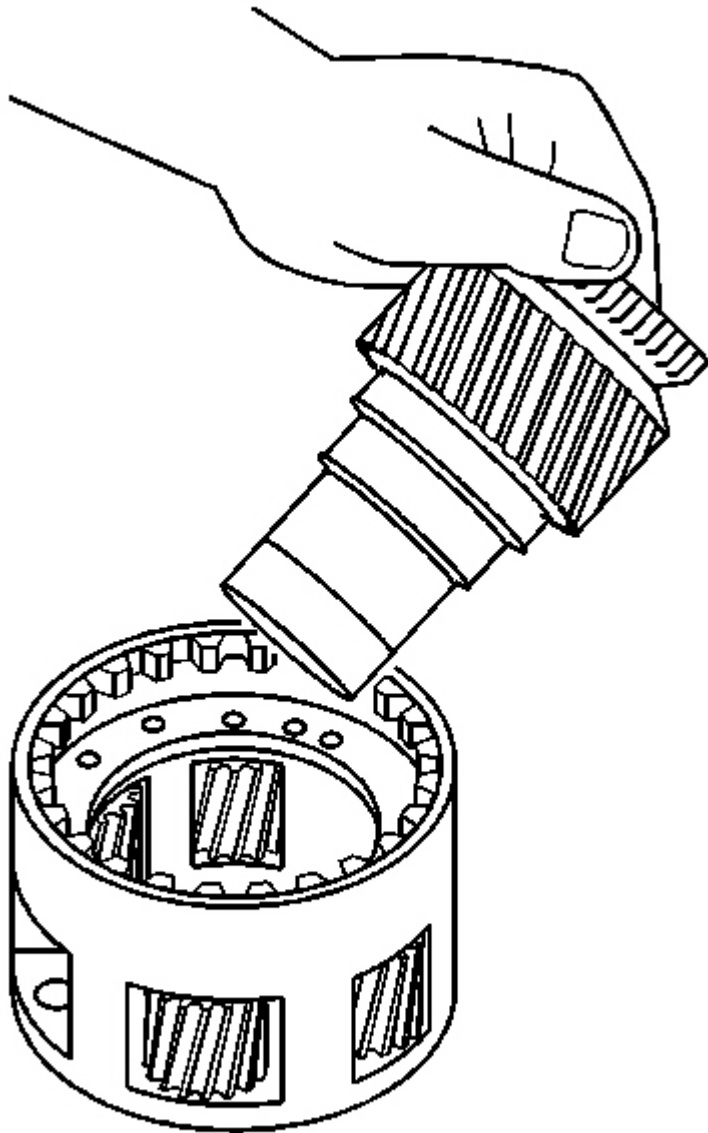
**Fig. 48: Removing Planetary Gear Large Diameter Thrust Washer**  
Courtesy of GENERAL MOTORS CORP.

59. Using a press, remove the planetary gear large diameter thrust washer.
1. Support the front case half on press plates, to allow the planetary gear assembly removal.
  2. Use a suitable adapter to press on the input gear bearing.



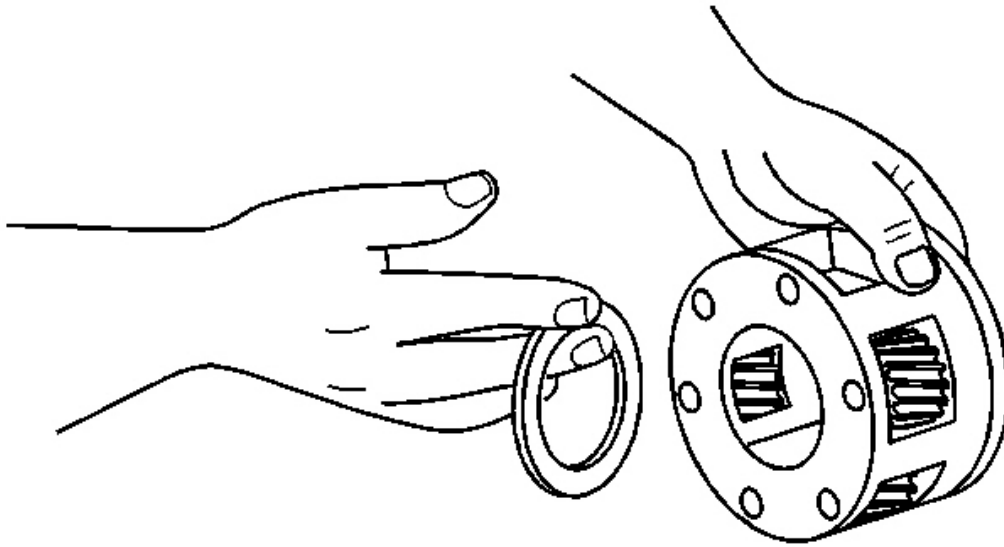
**Fig. 49: Pressing Out Input Gear Bearing**  
Courtesy of GENERAL MOTORS CORP.

60. Using a press, remove the input gear bearing.
  1. Support the planetary gear assembly on press plates, to allow removal of the input gear.
  2. Use a suitable adapter to press on the input gear.



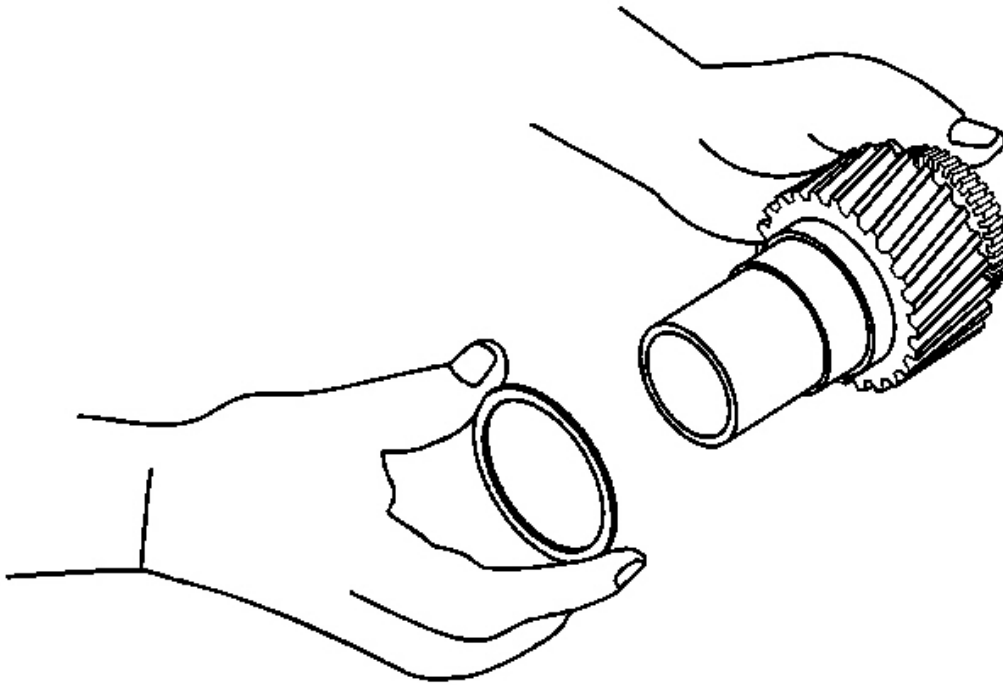
**Fig. 50: Removing Input Gear**  
Courtesy of GENERAL MOTORS CORP.

61. Remove the input gear.



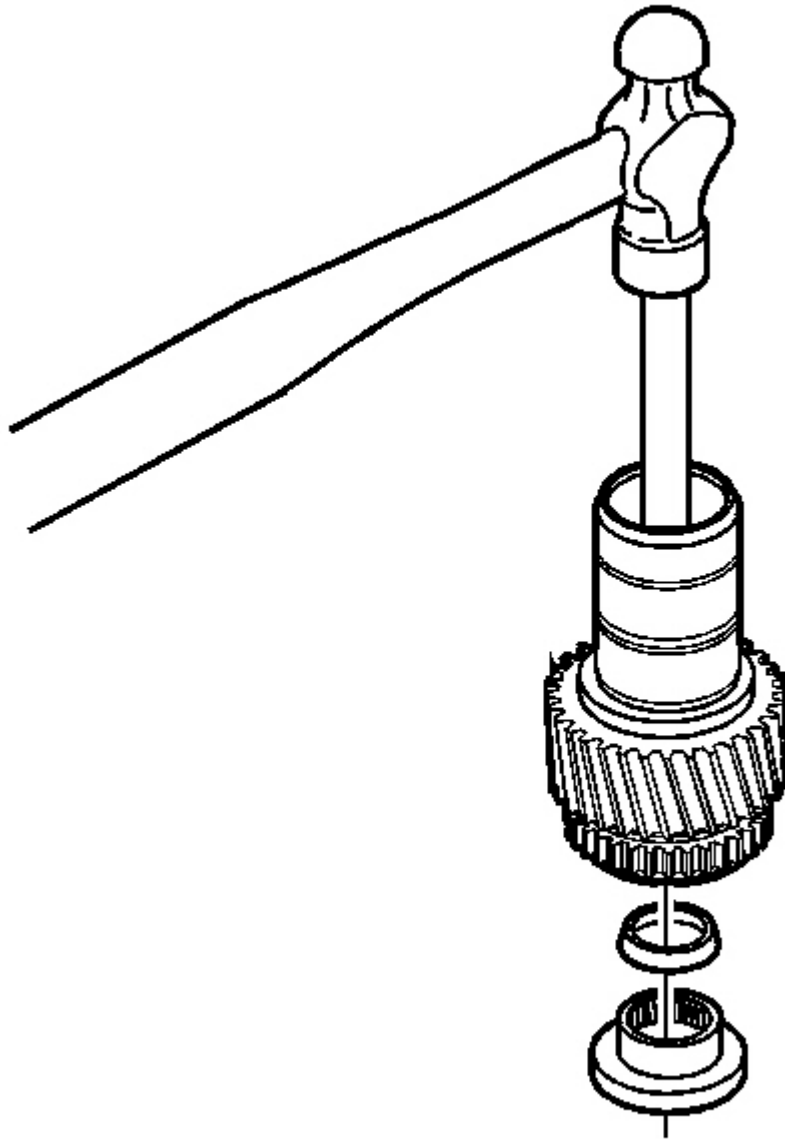
**Fig. 51: View Of Planetary Gear Large Diameter Thrust Washer**  
Courtesy of GENERAL MOTORS CORP.

62. Remove the planetary gear large diameter thrust washer.



**Fig. 52: Locating Input Gear Smaller Diameter Thrust Washer**  
Courtesy of GENERAL MOTORS CORP.

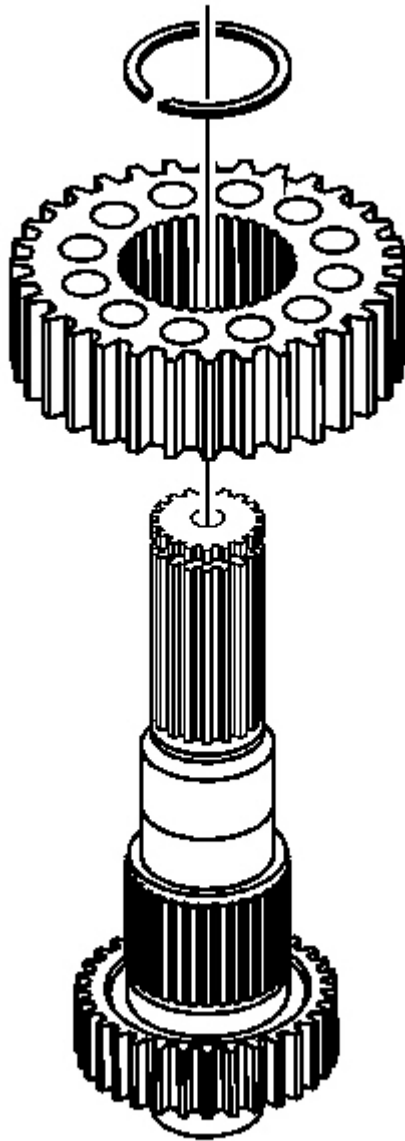
63. Remove the input gear smaller diameter thrust washer.



**Fig. 53: Removing Bore Seal & Input Gear Thrust Bearing**  
Courtesy of GENERAL MOTORS CORP.

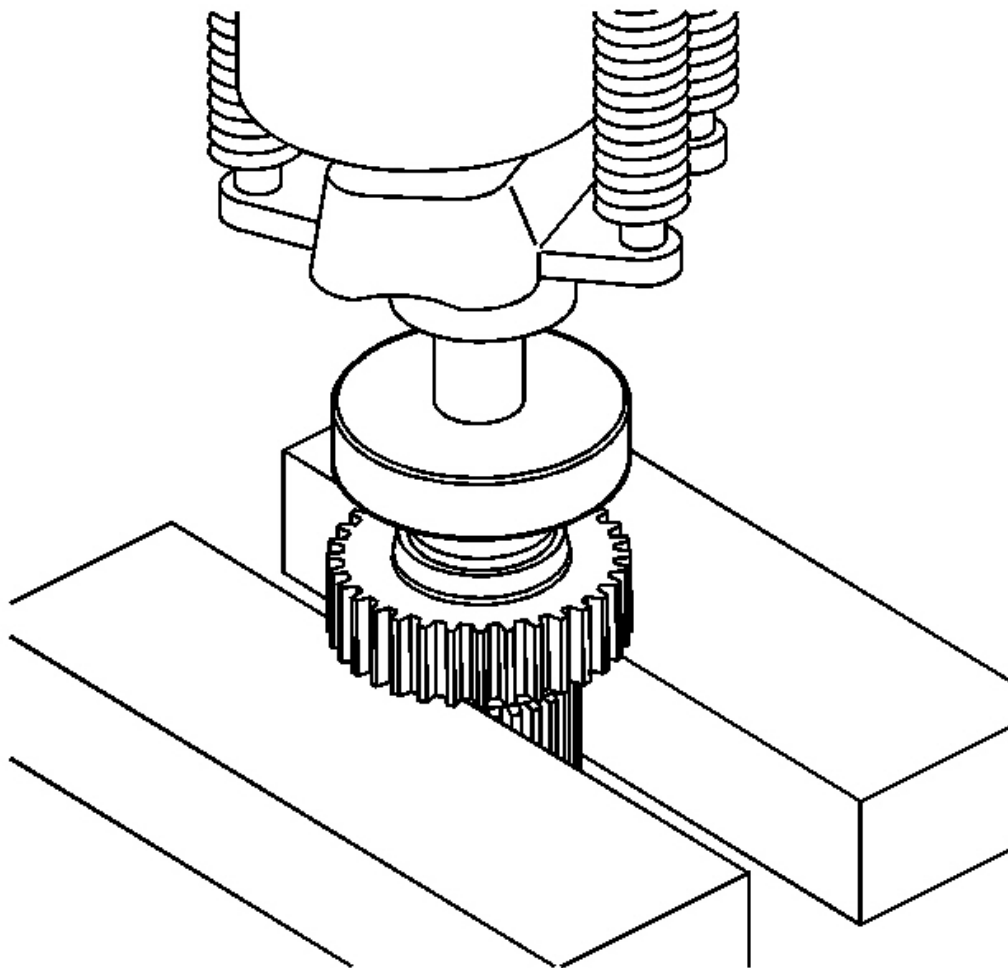
64. If necessary, remove the bore seal and the input gear thrust bearing from the input gear.





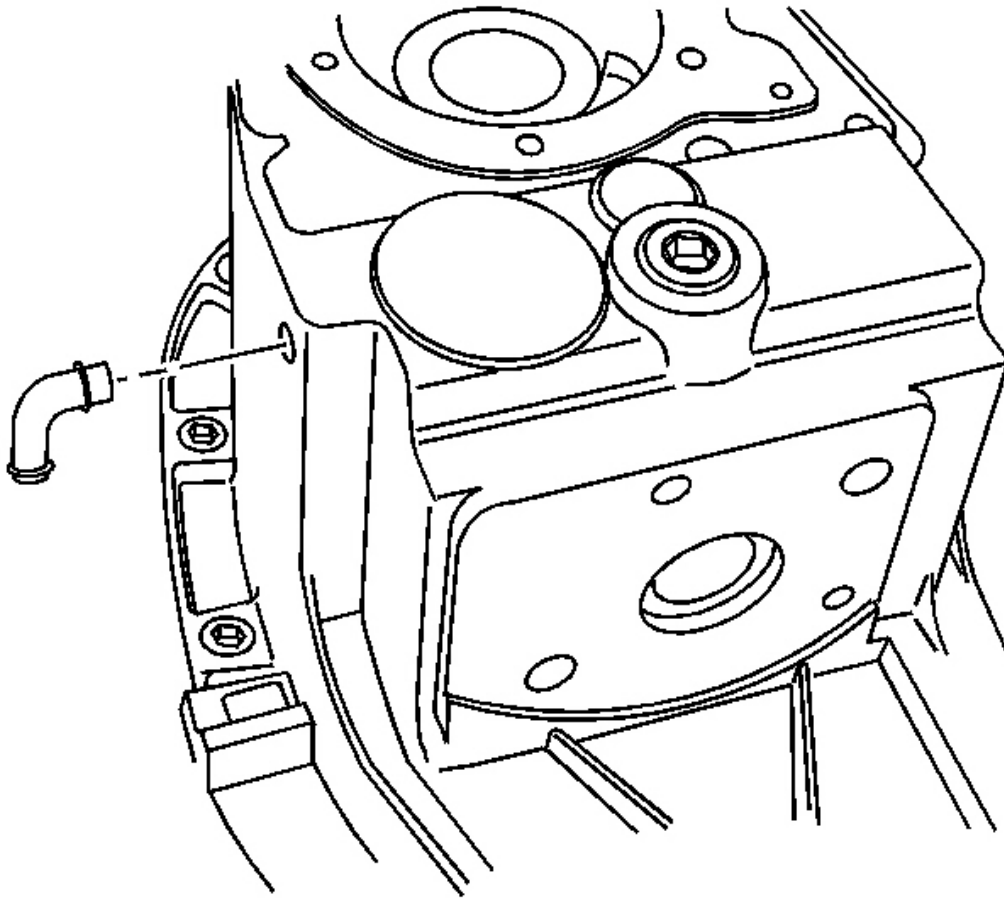
**Fig. 54: Identifying Driven Sprocket On Front Output Shaft**  
Courtesy of GENERAL MOTORS CORP.

65. Remove the driven gear retaining ring from the front output shaft.
66. Remove the driven gear from the front output shaft.



**Fig. 55: Removing The Front Speed Sensor Reluctor Wheel**  
Courtesy of GENERAL MOTORS CORP.

67. Using a hydraulic press and a suitable adapter on the front input shaft, remove the front speed sensor reluctor wheel.

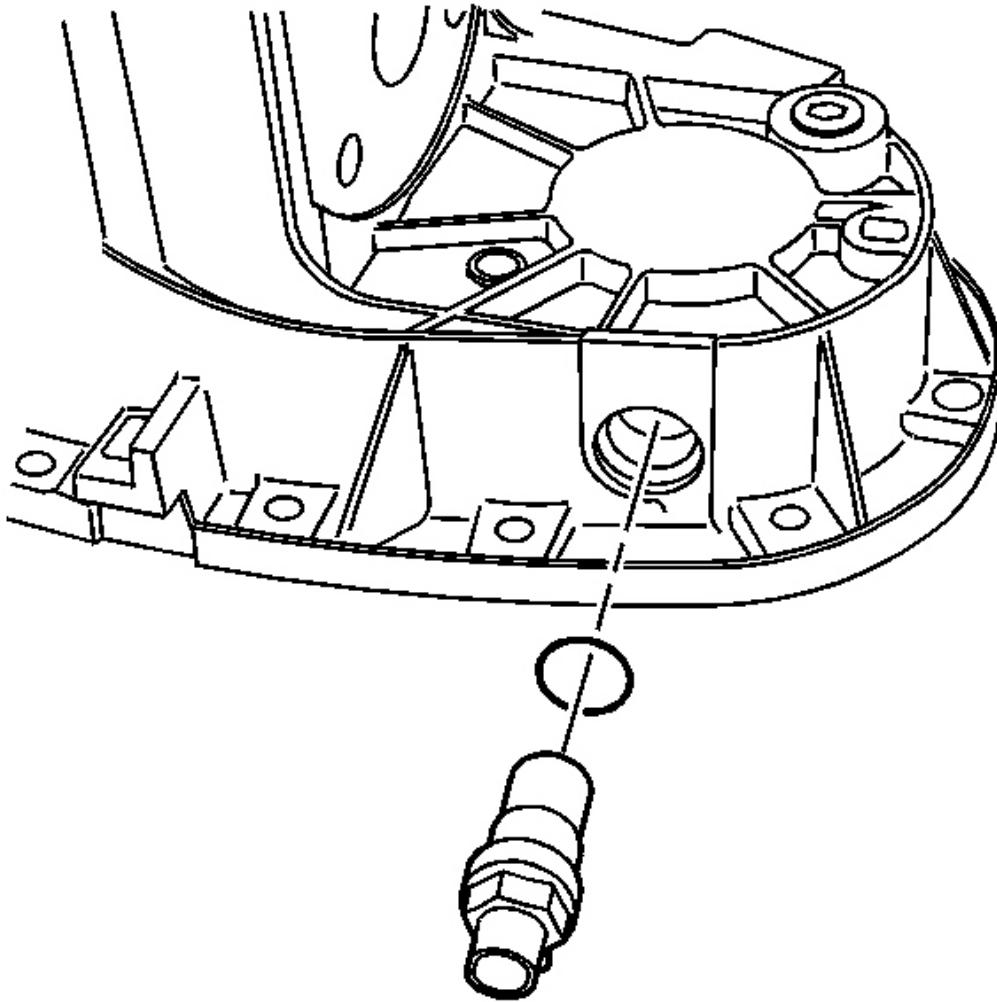


**Fig. 56: Locating Vent**

Courtesy of GENERAL MOTORS CORP.

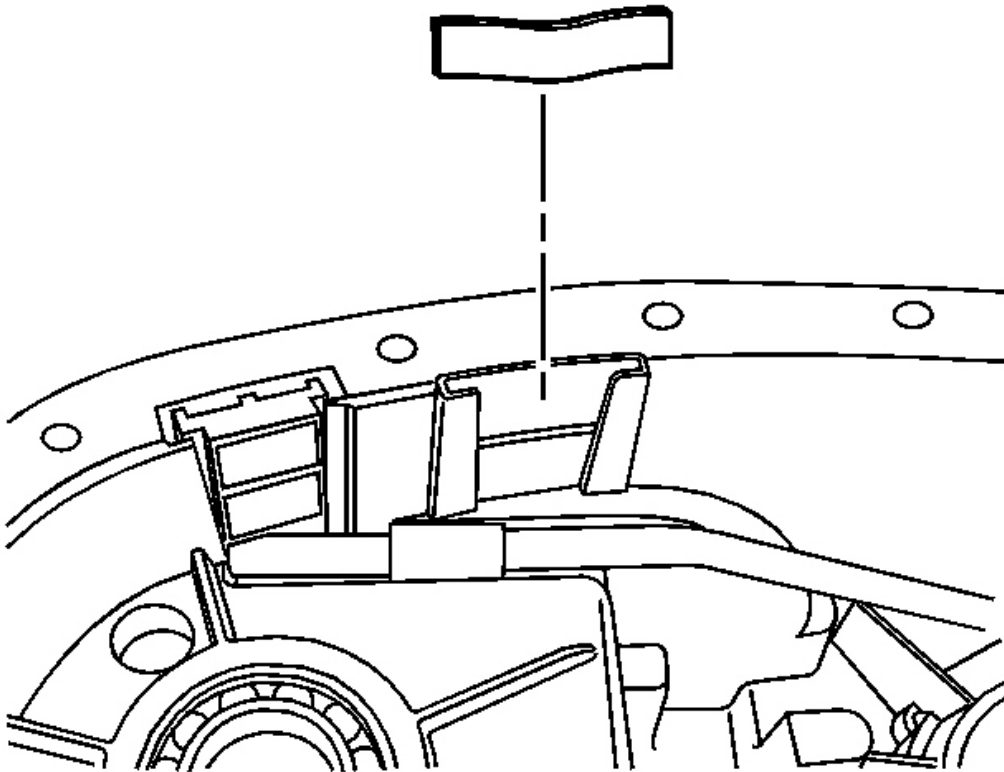
**IMPORTANT:** The vent only requires removal if it is damaged.

68. Remove the vent.



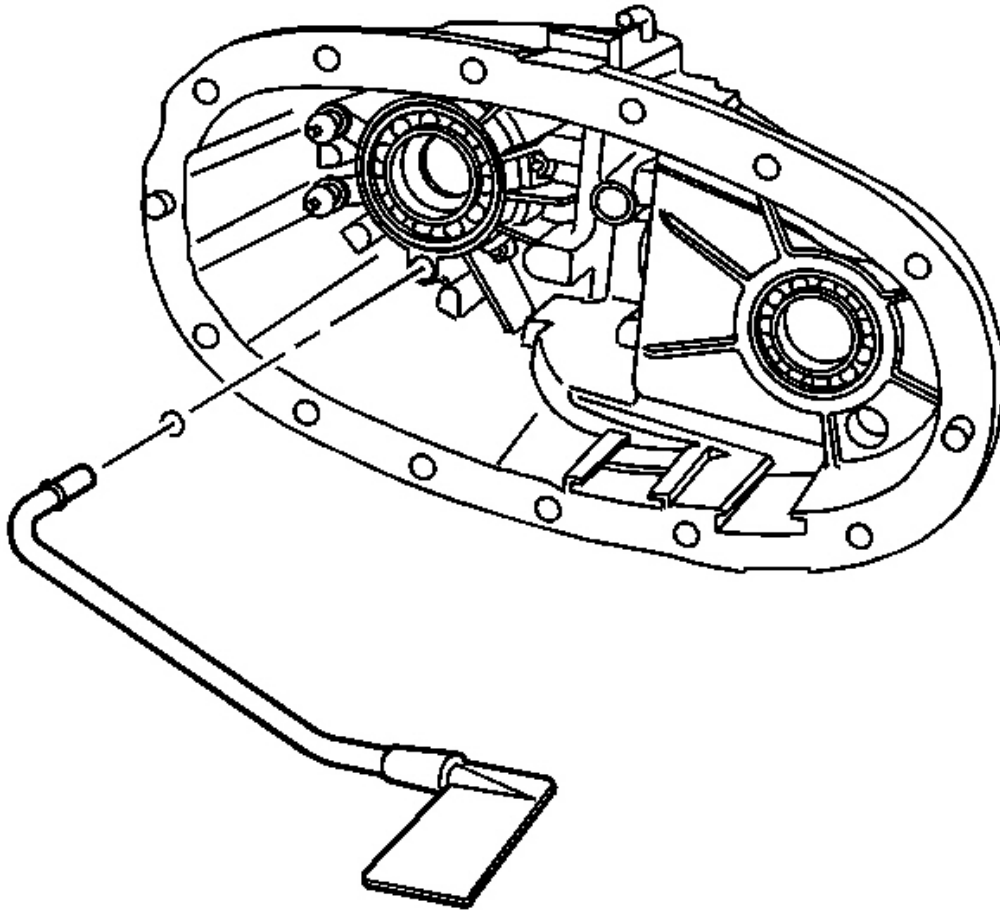
**Fig. 57: Identifying Front Vehicle Speed Sensor (VSS)**  
Courtesy of GENERAL MOTORS CORP.

69. Remove the front output shaft VSS and O-ring seal from the rear case.



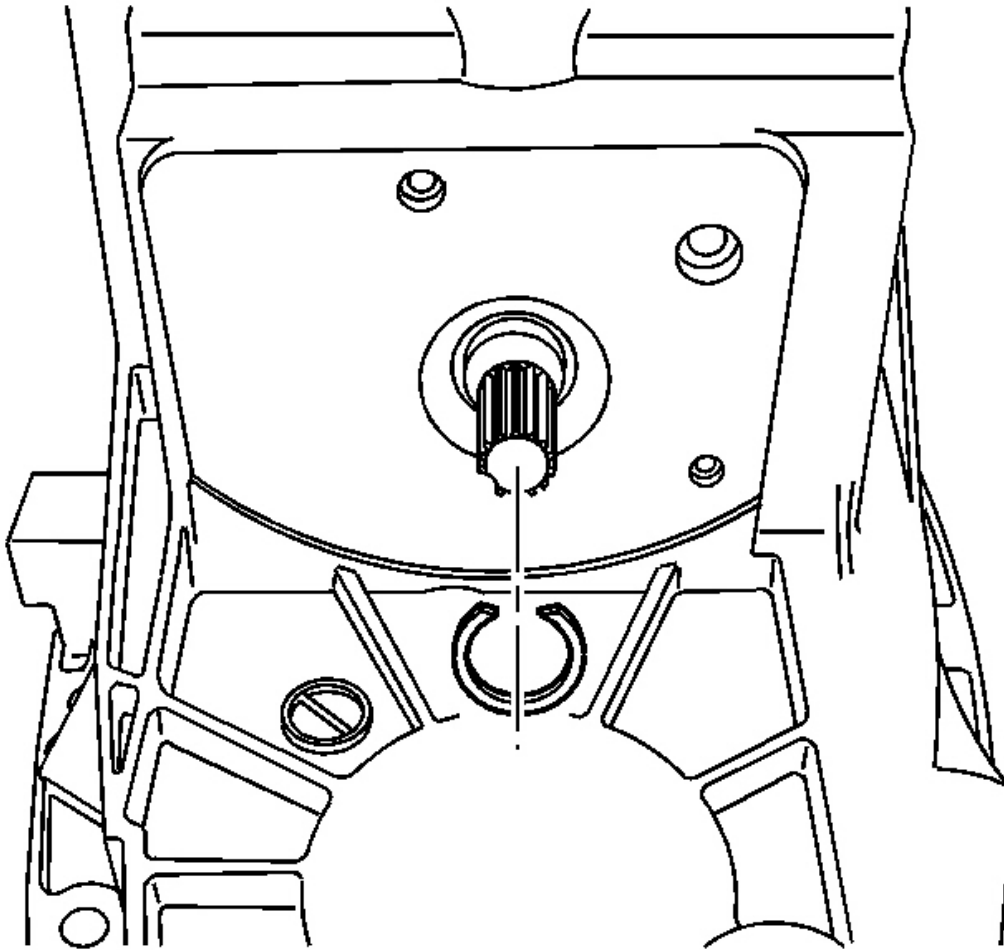
**Fig. 58: Locating Chip Collector Magnet In The Rear Case**  
Courtesy of GENERAL MOTORS CORP.

70. Remove the chip collector magnet from the rear case.



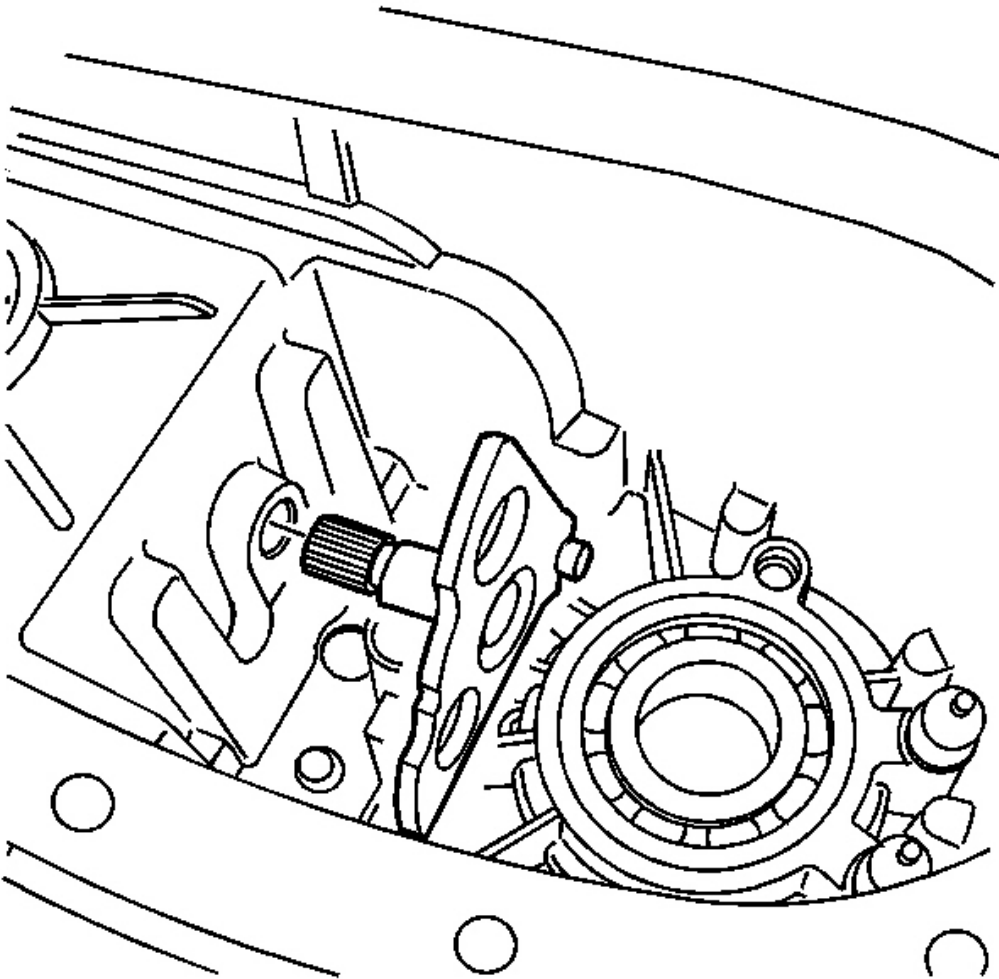
**Fig. 59: Oil Pump Suction Pipe With The Oil Pump Screen**  
Courtesy of GENERAL MOTORS CORP.

71. Remove the oil pump suction pipe with the oil pump screen.



**Fig. 60: Retaining Ring For The Control Actuator Lever Shaft**  
Courtesy of GENERAL MOTORS CORP.

72. Remove the retaining ring for the control actuator lever shaft.
73. Discard the retaining ring.



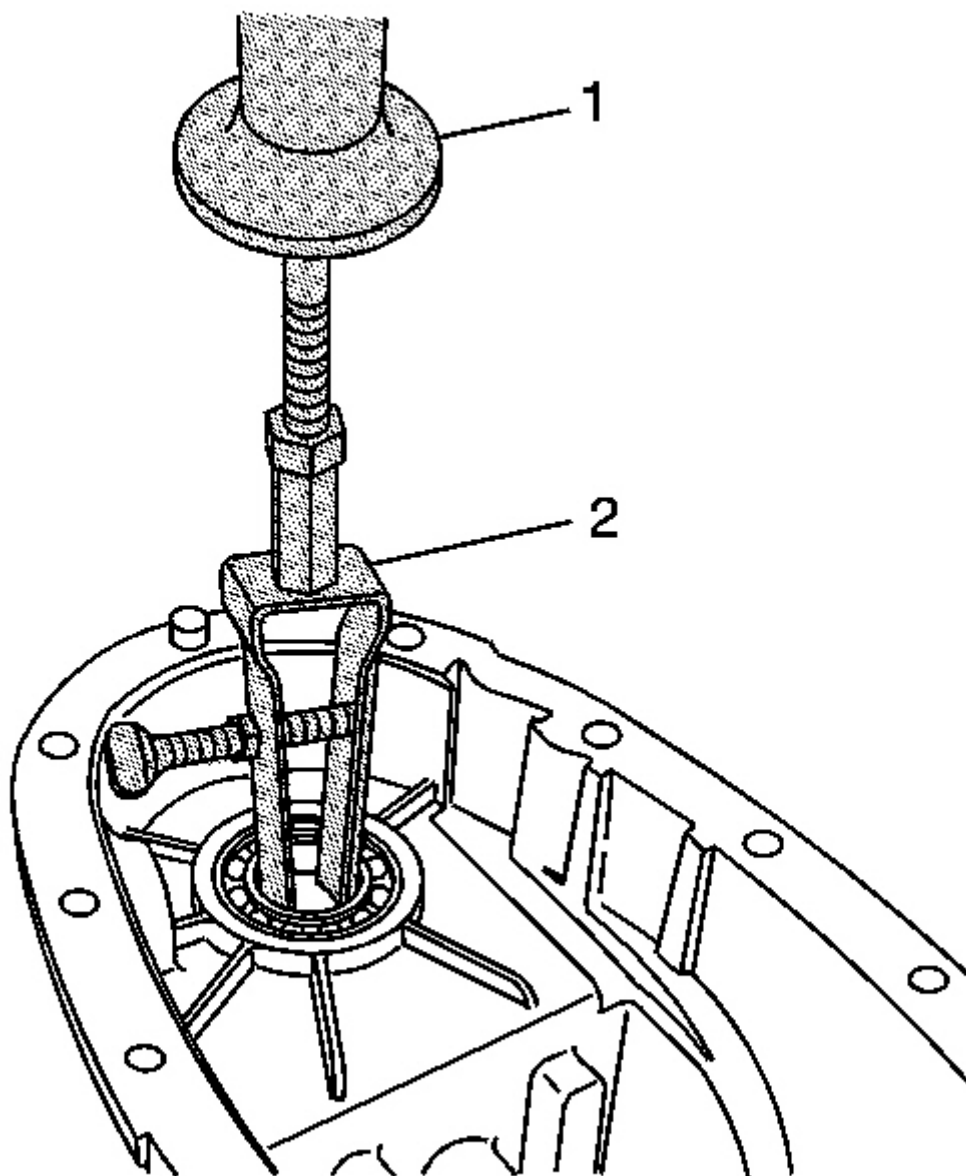
**Fig. 61: Control Actuator Lever Shaft**  
Courtesy of GENERAL MOTORS CORP.

74. Remove the control actuator lever shaft from the rear case.

**IMPORTANT:** Only remove the bearings if they are faulty. Do not use the bearings again.

75. Inspect the front output shaft rear bearing for being faulty. Refer to **Cleaning and Inspection**.  
76. Using the **J 23907** (1) and the **J 26941** (2), remove the rear bearing for the front output shaft.



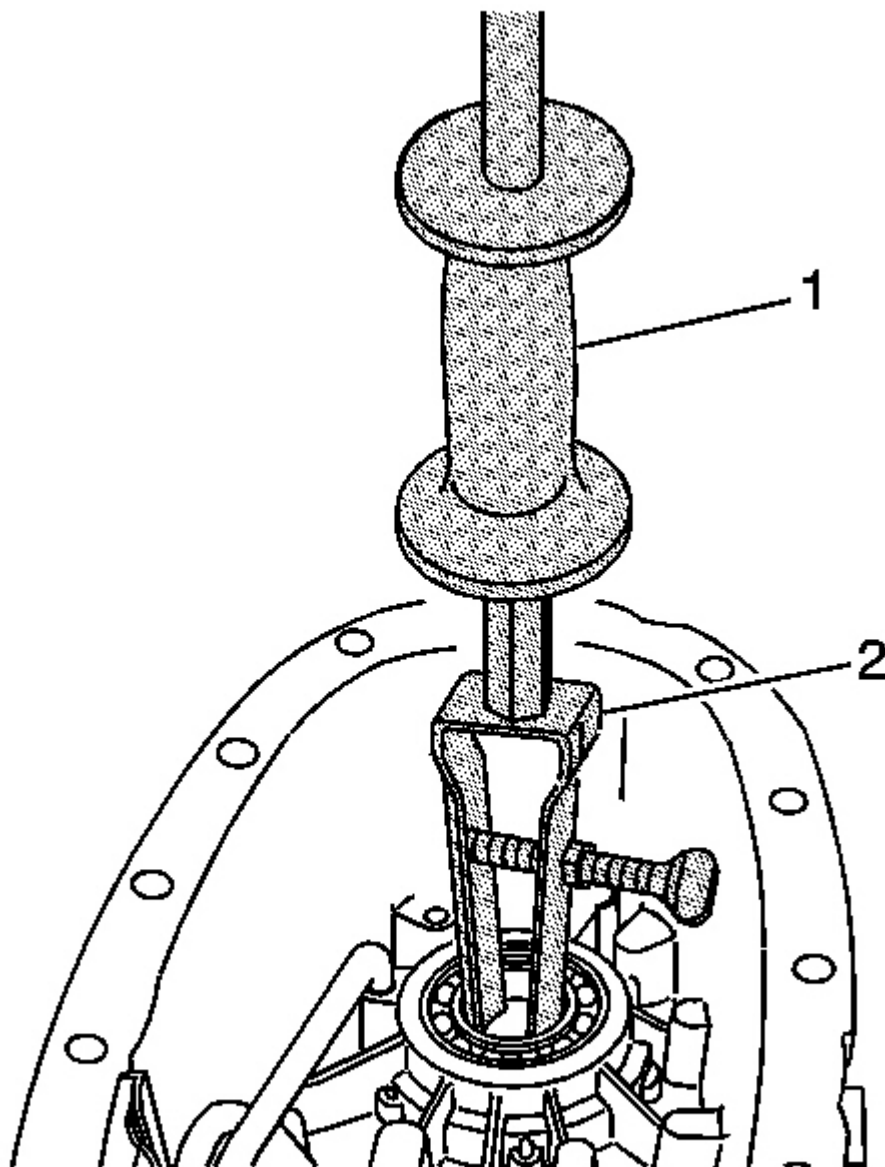


**Fig. 62: Removing The Rear Bearing For The Front Output Shaft**  
Courtesy of GENERAL MOTORS CORP.

**IMPORTANT:** Only remove the bearings if they are faulty. Do not use the bearings again.

77. Inspect the rear output shaft bearing for being faulty. Refer to **Cleaning and Inspection**.

**IMPORTANT:** The bushing surface for the oil pump is located by the output shaft bearing. When using the J 26941 , the jaws must not come in contact with the oil pump bushing surface.

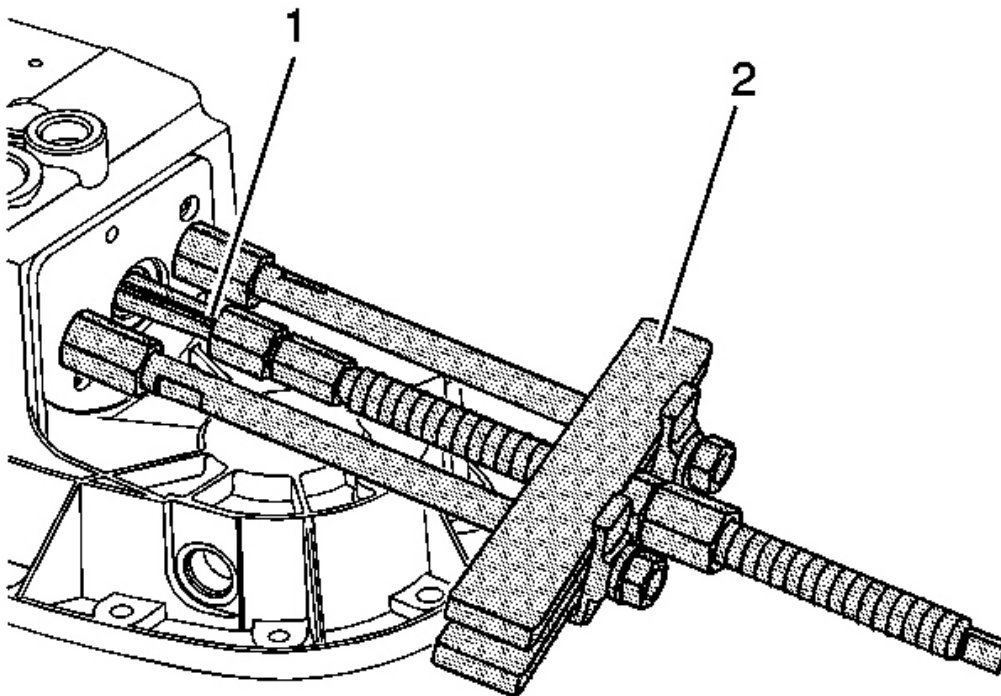


**Fig. 63: Removing The Rear Output Shaft Bearing From The Rear Case**  
Courtesy of GENERAL MOTORS CORP.

78. Using the **J 23907** (1) and the **J 26941** (2), remove the rear output shaft bearing from the rear case. Ensure the jaws on the **J 26941** are between the bearing and the oil pump bushing.

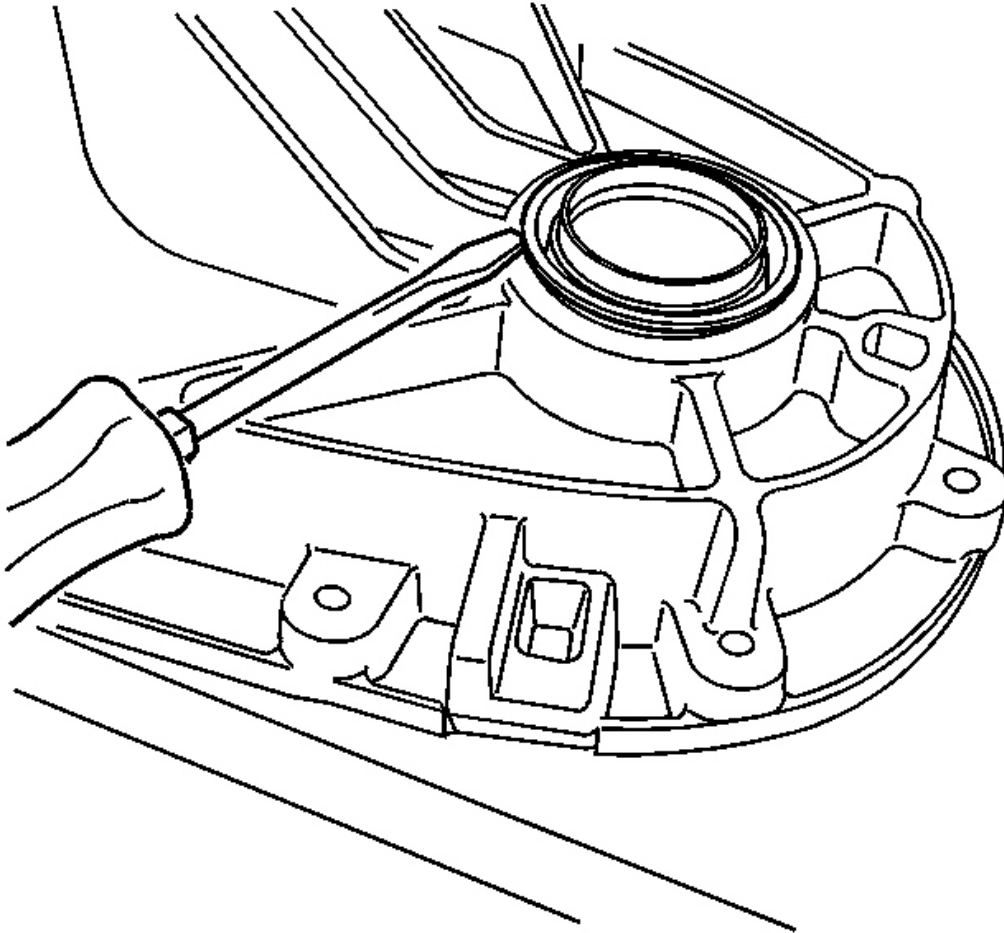
**IMPORTANT: Only remove the bearings if they are faulty. Do not use the bearings again.**

79. Inspect the control actuator lever shaft bearing for being faulty. Refer to **Cleaning and Inspection**.  
80. Using the **J 44707** (2) and the **J 44737** (1), remove the control actuator lever shaft bearing.



**Fig. 64: Removing The Control Actuator Lever Shaft Bearing**  
Courtesy of GENERAL MOTORS CORP.

**NOTE:** Refer to Transfer Case Seal Removal Notice in Cautions and Notices.

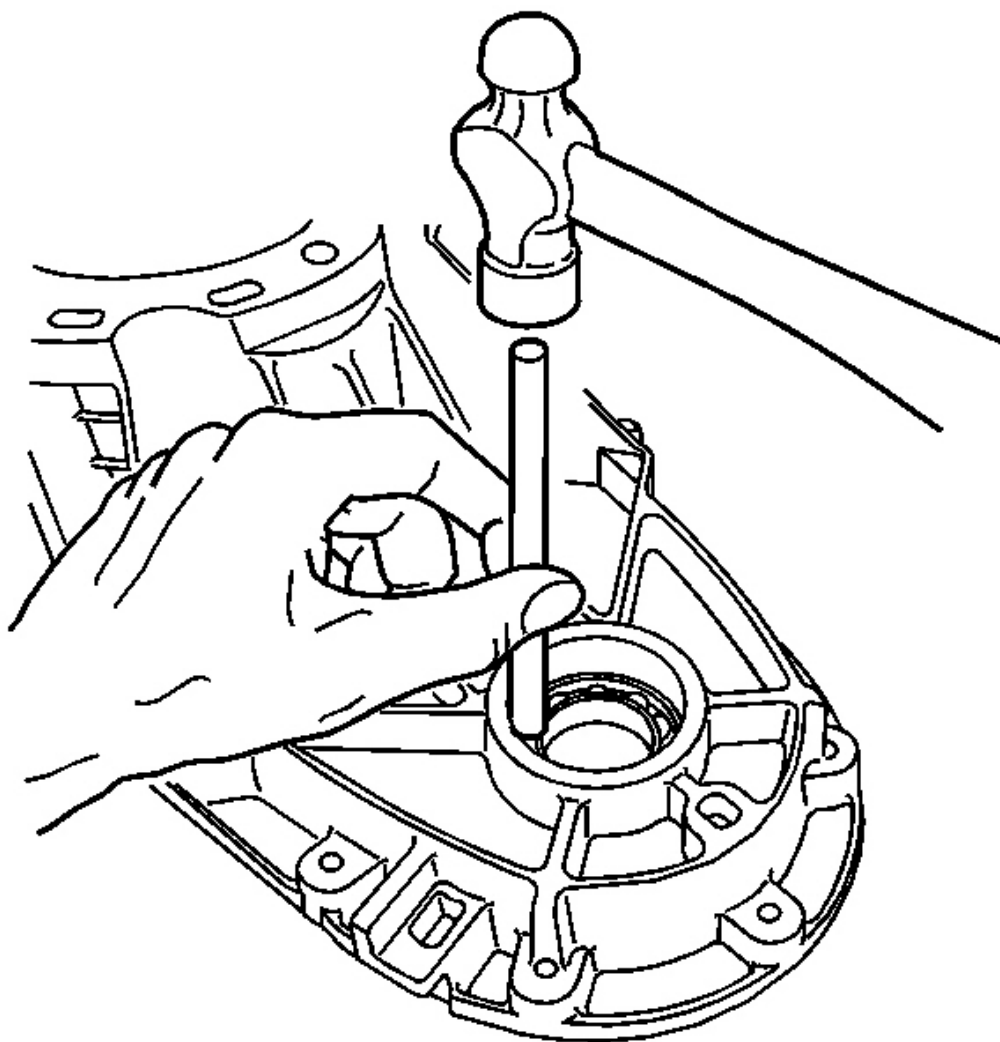


**Fig. 65: Removing The Front Output Shaft Seal**  
Courtesy of GENERAL MOTORS CORP.

81. Using a suitable prying tool, remove the front output shaft seal.
82. Discard the seal.

**IMPORTANT: Only remove the bearings if they are faulty. Do not use the bearings again.**

83. Inspect the front output shaft front bearing for being faulty. Refer to **Cleaning and Inspection**.
84. Using a hammer and a punch, remove the front bearing for the front output shaft from the front case.



**Fig. 66: Removing The Front Bearing For The Front Output Shaft From The Front Case**  
Courtesy of GENERAL MOTORS CORP.

85. Clean and inspect all the internal parts of the transfer case. Refer to **Cleaning and Inspection.**

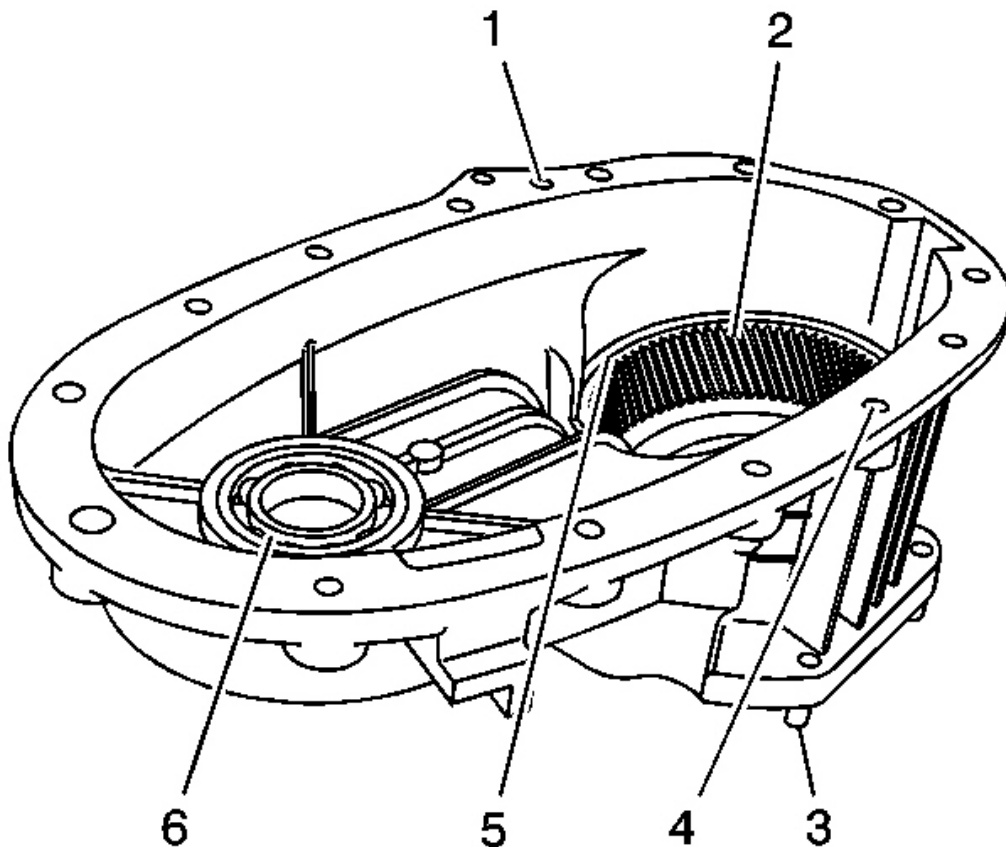
## **CLEANING AND INSPECTION**

### **Front Case Half**

1. Clean the front case half in cleaning solvent and air dry.

**NOTE:** Refer to Machined Surface Damage Notice in Cautions and Notices.

2. Remove the sealer from the case sealing surfaces.
3. Inspect the front output shaft front bearing (6) for:
  - Roughness
  - Brinelling
  - Pitting
4. Replace the front output shaft front bearing if any of the above conditions are found. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
5. Inspect the case for spun bearings.
6. Replace the case if a bearing has spun.
7. Inspect the case for being broken or cracked.
8. Replace the case if it is broken or cracked.



**Fig. 67: Front Case Half Inspection Points**  
**Courtesy of GENERAL MOTORS CORP.**

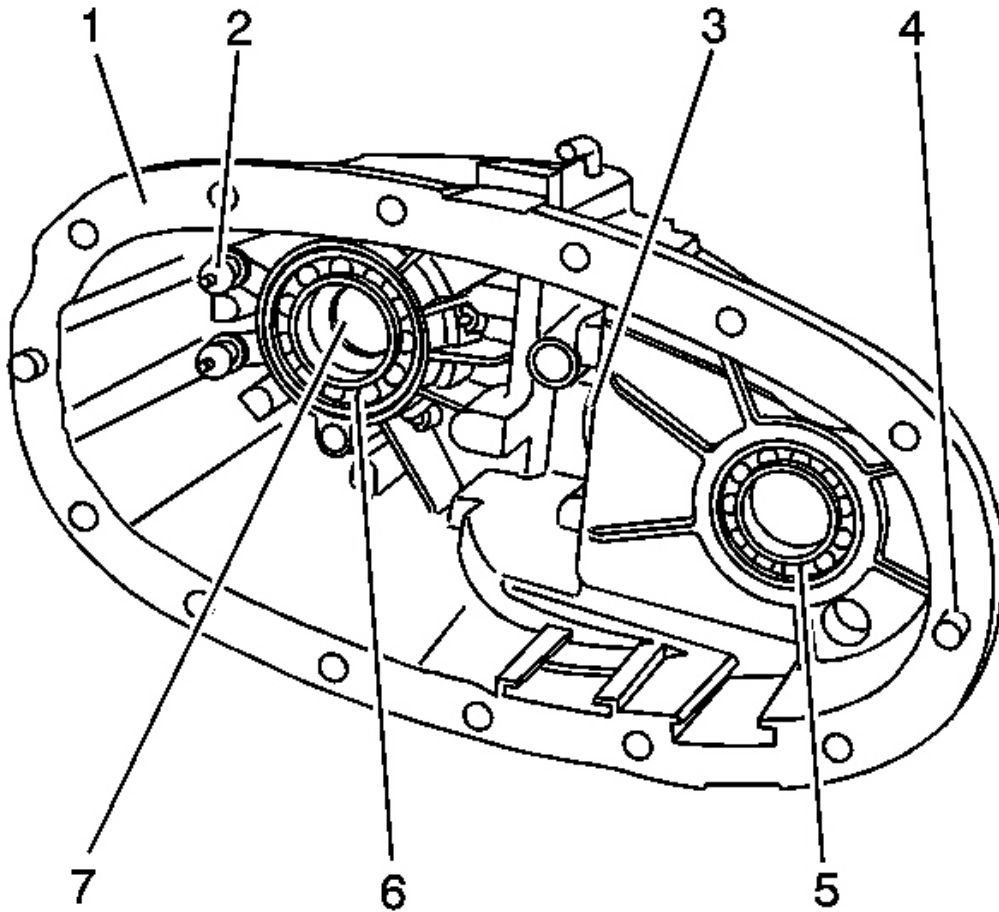
9. Inspect the sealing surfaces (1) for damage.
10. Repair small scratches or nicks with a soft stone.
11. Inspect the front case to transmission case mounting surface for damage.
12. Inspect the case threaded bolt holes (4) for damage.
13. Repair any damaged threads.
14. Inspect the transmission to transfer case studs (3) for damage.
15. Replace any damaged studs.
16. Inspect the retaining ring (5) of the annulus gear to ensure it is properly seated. Do not remove the retaining ring.
17. Inspect the annulus gear (2) for the following:
  - Damage or wear
  - Chipped gear teeth
  - Debris embedded in the root of the teeth
18. Replace the front case half if the annulus gear is damaged.

#### **Rear Case Half**

1. Clean the rear case half in cleaning solvent and air dry.

**NOTE:**        **Refer to Machined Surface Damage Notice in Cautions and Notices.**

2. Remove the sealer from the case sealing surfaces.
3. Inspect the front output shaft rear bearing (5) for the following:
  - Roughness
  - Brinelling
  - Pitting
4. Replace the front output shaft rear bearing if any of the above conditions are found. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
5. Inspect the rear output shaft bearing (6) for the following:
  - Roughness
  - Brinelling
  - Pitting



**Fig. 68: Rear Case Half Inspection Points**  
Courtesy of GENERAL MOTORS CORP.

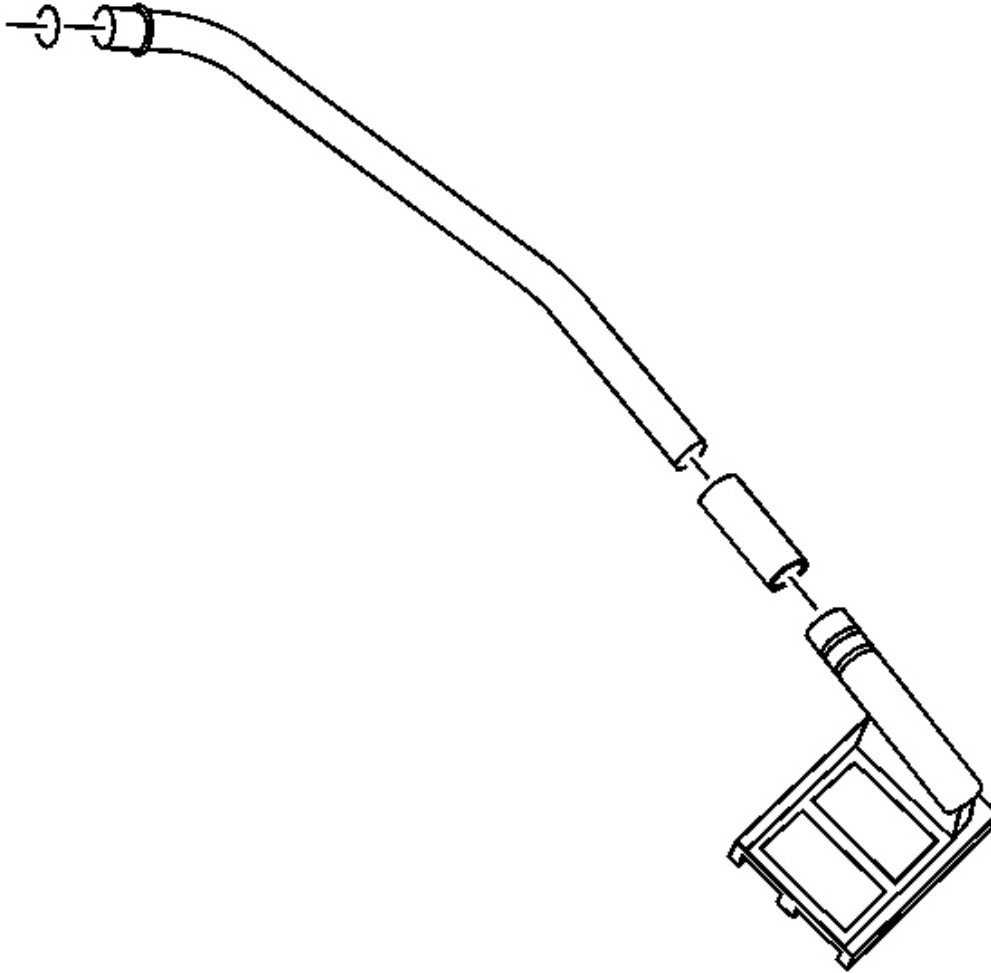
6. Replace the rear output shaft bearing if any of the above conditions are found. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
7. Inspect the case for spun bearings.
8. Replace the case if a bearing has spun.
9. Inspect the control actuator lever shaft bearing and seal (3) for the following:
  - Leakage
  - Roughness
  - Brinelling
  - Pitting



## 2004 Isuzu Ascender LS

2004 DRIVELINE/AXLE Transfer Case - Overhaul - NVG 226-NP8

10. Replace the control actuator lever shaft seal and bearing if any of the above conditions are found. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
11. Inspect the case for being broken or cracked.
12. Replace the case if it is broken or cracked.
13. Inspect the sealing surfaces (1) for damage.
14. Repair small scratches or nicks with a soft stone.
15. Inspect the case threaded bolt holes for damage.
16. Repair any damaged threads.
17. Inspect the dowel pins (4) for being loose or missing.
18. Repair or replace any damaged dowel pins.
19. Inspect the oil pump bushing bore (7) for scoring or damage.
20. Replace the case if the oil pump bushing bore is damaged.
21. Inspect the clutch lever studs (2) for wear.
22. Replace the case if the clutch lever studs are worn.

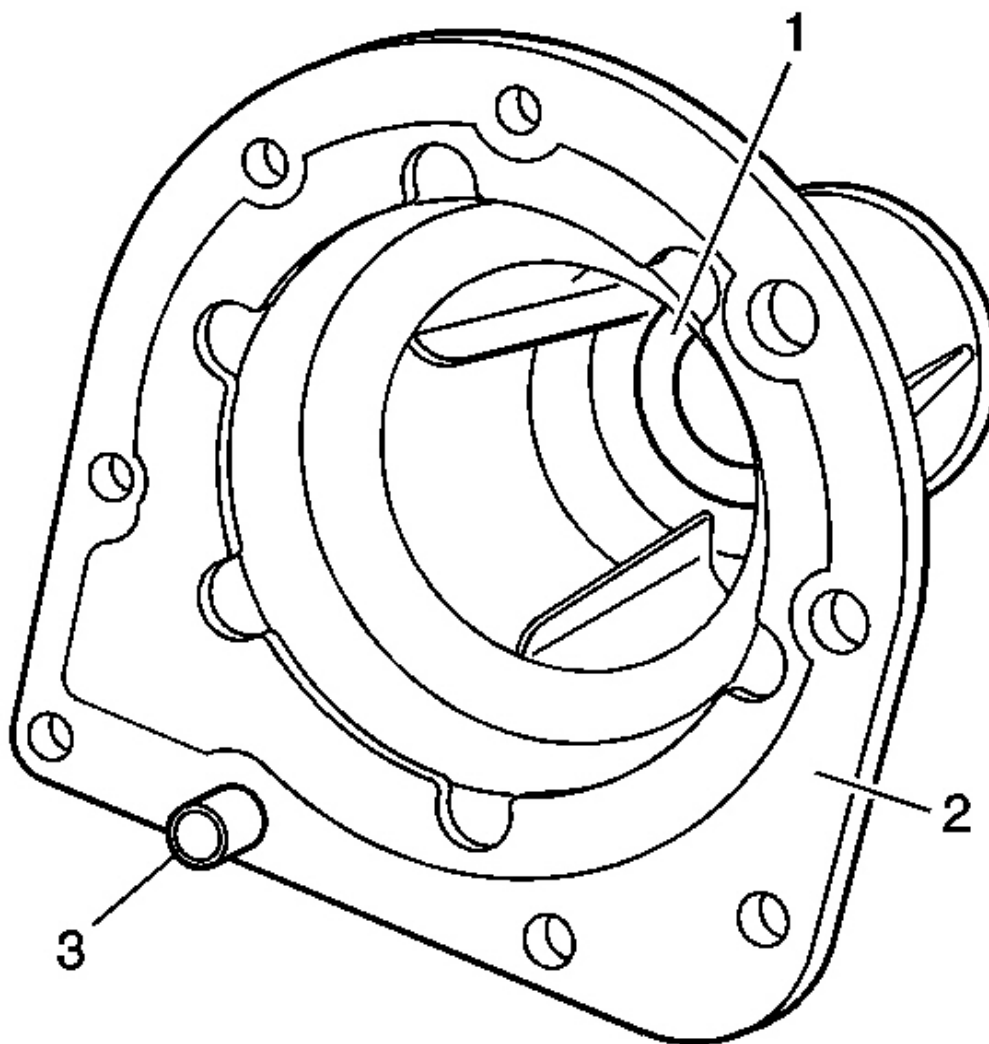


**Fig. 69: Oil Pump Suction Pipe And The Oil Pump Suction Hose**  
Courtesy of GENERAL MOTORS CORP.

23. Remove the oil pump suction pipe and the oil pump suction hose from the oil pump screen.
24. Clean the pipe, hose, and screen in cleaning solvent and air dry.
25. If the screen is embedded with debris, replace the screen.
26. Inspect the hose for cracking or tears.
27. Replace the hose if faulty.

1. Clean the rear extension in cleaning solvent and air dry.

**NOTE:** Refer to Machined Surface Damage Notice in Cautions and Notices.



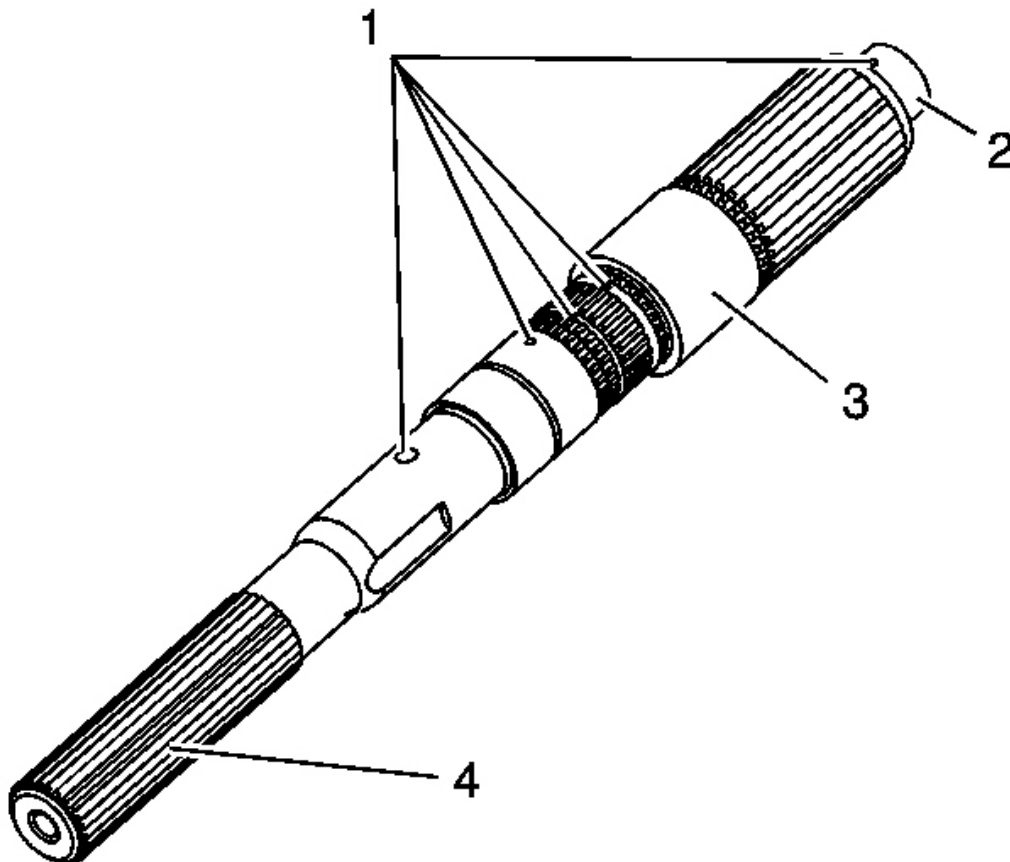
**Fig. 70: Rear Extension Inspection Points**  
Courtesy of GENERAL MOTORS CORP.

2. Remove the sealer from the extension sealing surfaces (2).
3. Inspect the extension for being broken or cracked.

4. Replace the extension if it is broken or cracked.
5. Inspect the sealing surfaces for damage.
6. Repair small scratches or nicks with a soft stone.
7. Inspect the dowel pins (3) for being loose or missing.
8. Repair or replace a damaged dowel pin.
9. Inspect the rear extension bushing (1) for scoring and excessive wear.
10. Replace the rear extension bushing if damaged or worn. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.

#### **Rear Output Shaft**

1. Clean the rear output shaft in cleaning solvent.
2. Clean the rear output shaft oil galleries (1) and air dry.



**Fig. 71: Rear Output Shaft Inspection Points**

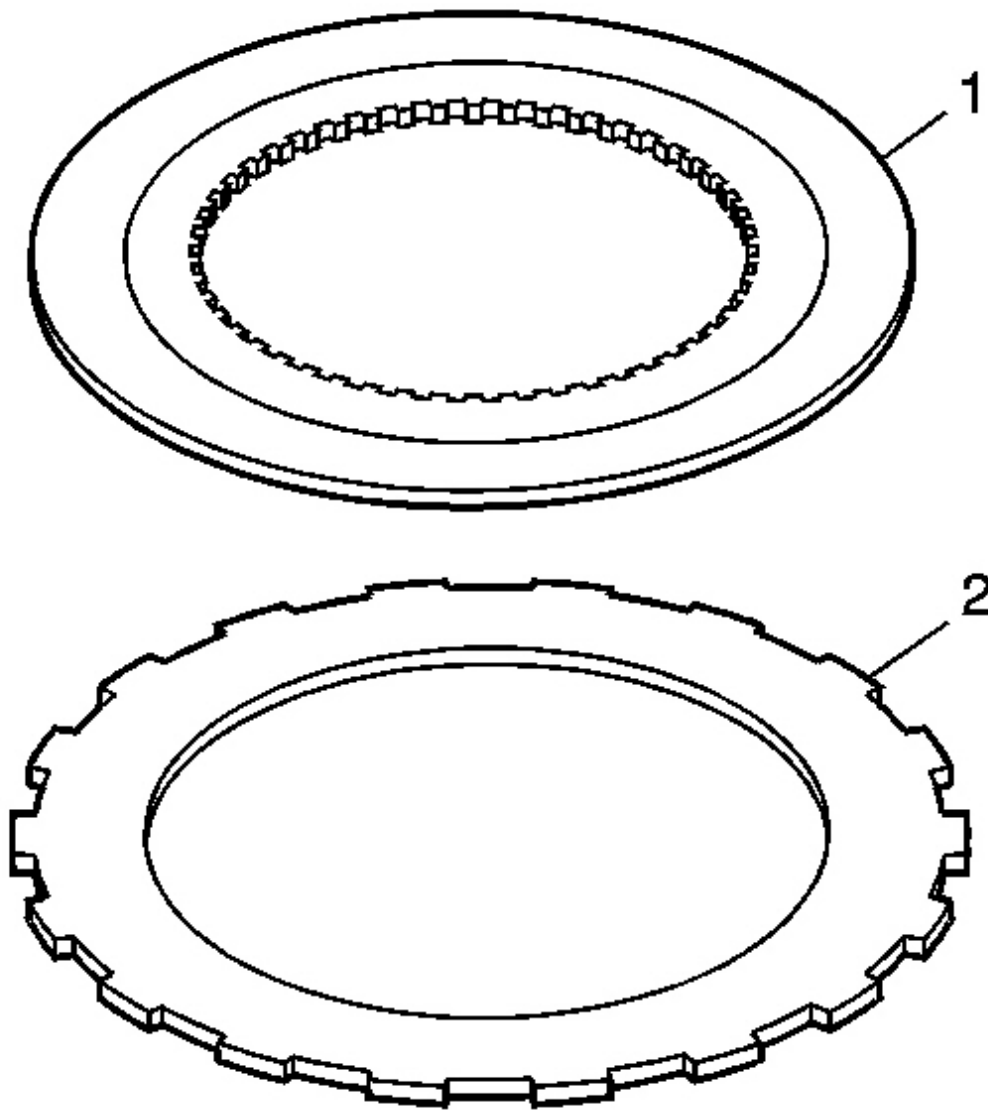
Courtesy of GENERAL MOTORS CORP.

**IMPORTANT: Do not attempt to smooth any roughness in the bearing journals or seal surfaces.**

3. Inspect the input gear thrust bearing surface (2) and the clutch housing bearing surface (3) for the following:
  - Scoring
  - Pitting
  - Brinelling
  - Excessive wear
4. Inspect the rear output shaft splines (4) for damage or excessive wear. Witness marks at the location of the gears is normal.
5. Replace the rear output shaft if any of the above conditions are found.

**Clutch Components**

1. Do not clean the inner clutch discs (1) and outer clutch discs (2) in cleaning solvent.

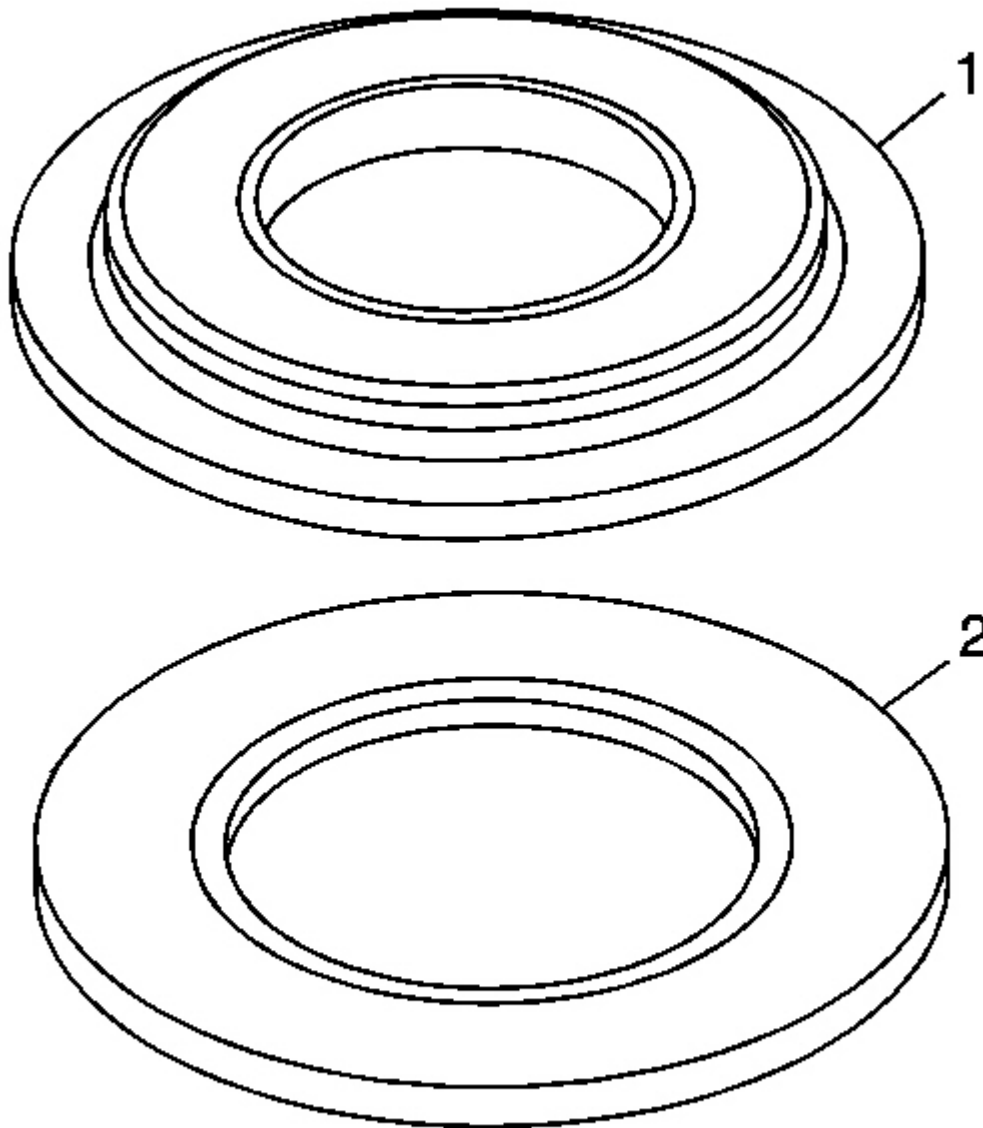


**Fig. 72: Inner Clutch Discs And Outer Clutch Discs**  
Courtesy of GENERAL MOTORS CORP.

2. Inspect the clutch discs for the following:
  - Worn friction material
  - Grooved or scored friction material
  - Warped

- Burnt

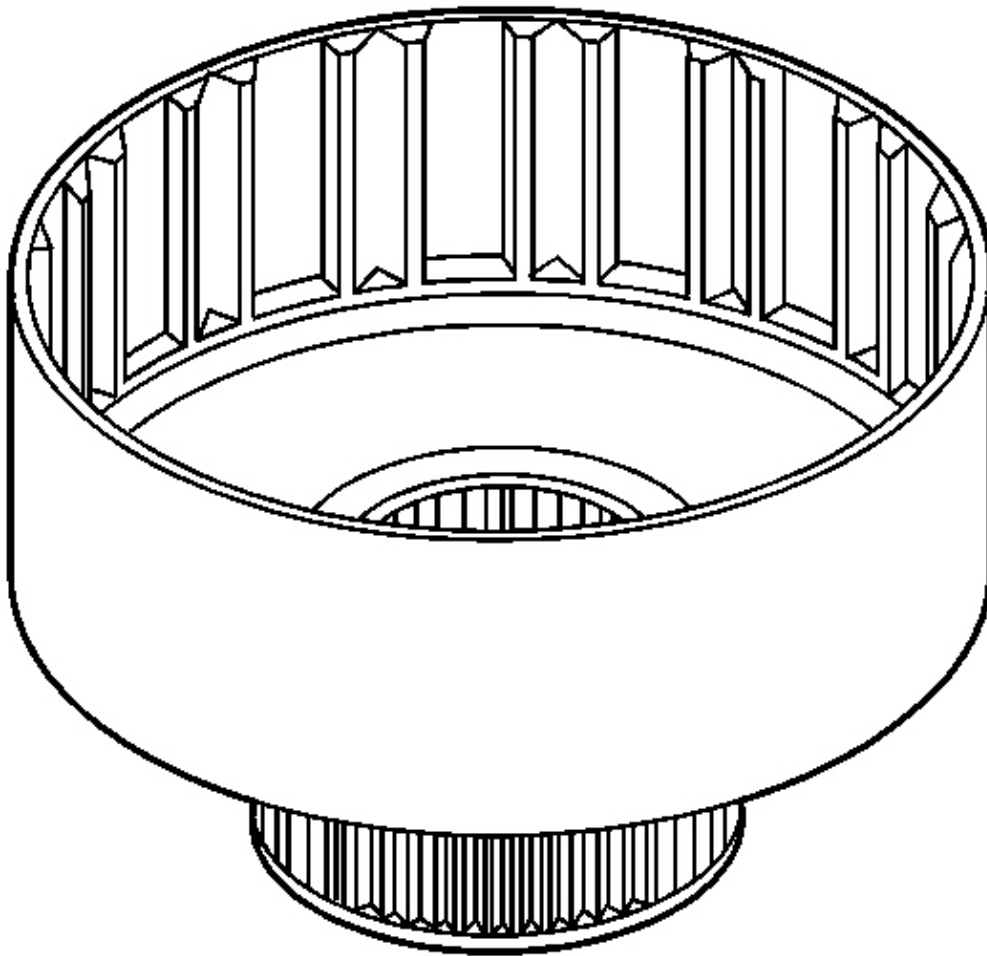
3. Replace the clutch discs if any of the above conditions are found.



**Fig. 73: Clutch Inner Plate And Clutch Pressure Plate Bearing**  
Courtesy of GENERAL MOTORS CORP.

4. Clean the clutch inner plate (1) and the clutch pressure plate bearing (2) in cleaning solvent and air dry.

5. Inspect the pressure plate bearing for roughness and smooth movement.
6. Replace the pressure plate bearing if damaged or worn.
7. Inspect the clutch inner plate inner bushing for wear or damage.
8. Inspect the clutch inner plate for wear.
9. Replace the clutch inner plate if any of the above conditions are found.

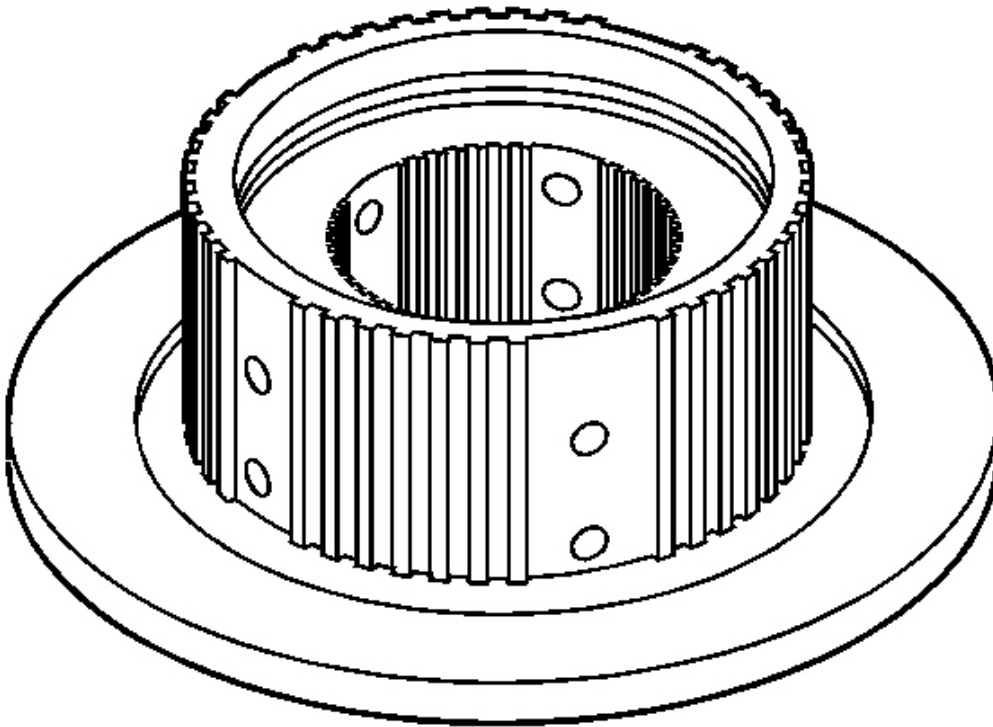


**Fig. 74: Clutch Housing And Bearing**  
**Courtesy of GENERAL MOTORS CORP.**

10. Clean the clutch housing, with the bearing, in cleaning solvent.
11. Air dry and ensure all solvent is removed from the bearing.



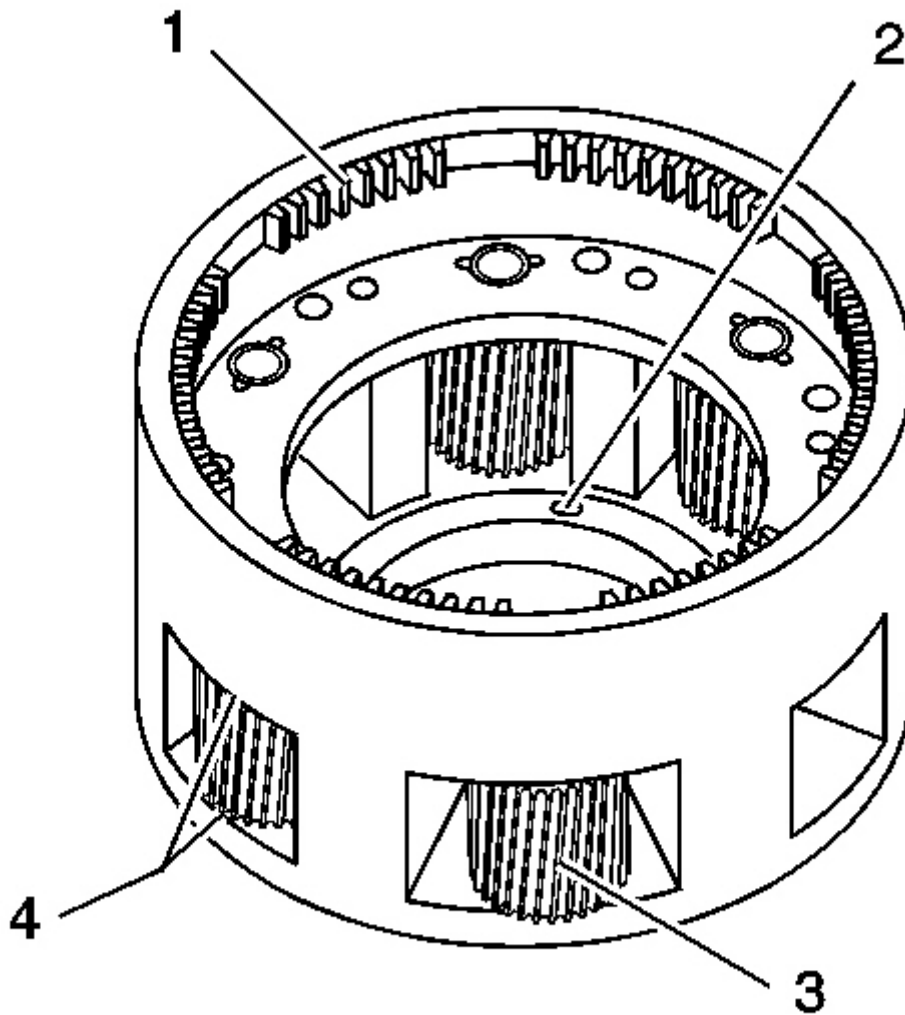
12. Inspect the bearing for wear or damage.
13. Inspect the clutch housing disc teeth for excessive wear. Excessive wear can be identified by the steps in the teeth, which prevents the clutch disc from moving freely.
14. Replace the clutch housing if the bearing is faulty or if the clutch disc teeth are worn. The bearing is not serviced separately.



**Fig. 75: View Of Clutch Hub**  
**Courtesy of GENERAL MOTORS CORP.**

15. Clean the clutch hub in cleaning solvent and air dry.
16. Inspect the inner splines of the clutch hub for wear or damage.
17. Inspect the rear output shaft to the clutch inner hub for excessive looseness.
18. Inspect the clutch hub teeth for excessive wear. Excessive wear can be identified by the steps in the teeth, which prevents the clutch disc from moving freely.
19. Replace the clutch hub if any of the above conditions are found.

1. Clean the high/low planetary carrier in cleaning solvent. Do not disassemble the planetary carrier.
2. Air dry and ensure all cleaning solvent is removed from the bearings in the planetary gears (3). Do not spin the planetary gears with compressed air.

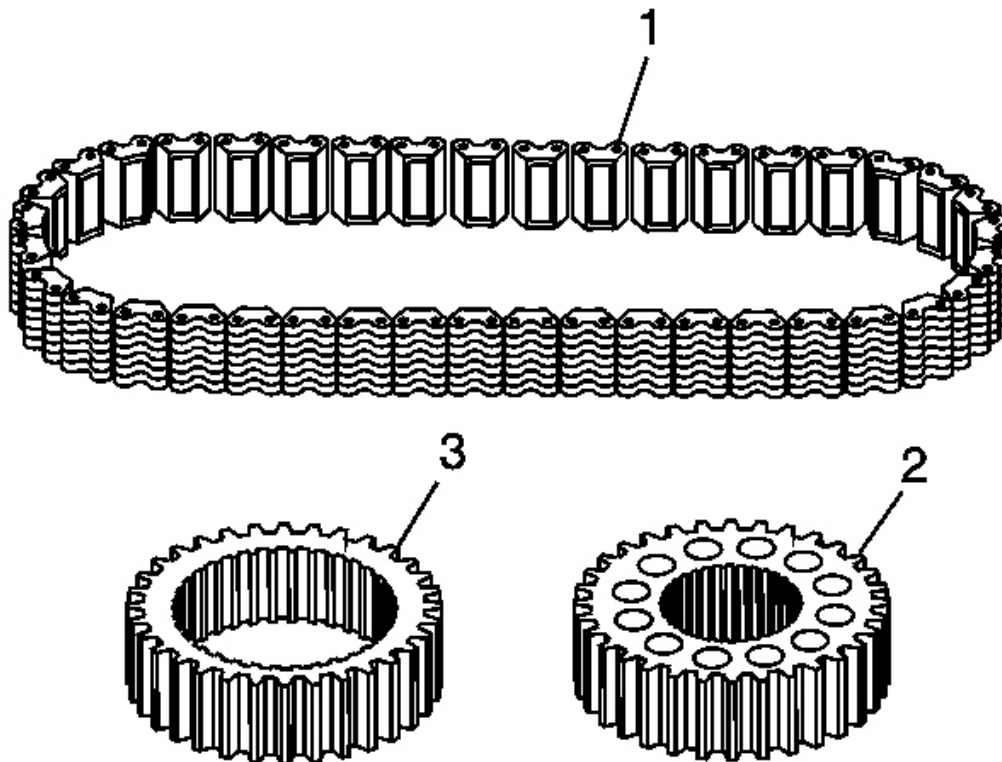


**Fig. 76: High/Low Planetary Carrier Inspection Points**  
Courtesy of GENERAL MOTORS CORP.

3. Inspect the planetary gears for chipped teeth.
4. Inspect the planetary gears for debris embedded in the root of the teeth.
5. Inspect for a washer (4) being on each side of the planetary gears.

6. Inspect the low range teeth (1) for damage or excessive wear.
7. Inspect the thrust washer surface (2) for scoring or excessive wear.
8. Replace the high/low planetary carrier if any of the above conditions are found.
9. Inspect the high/low planetary thrust washers for excessive wear or scoring.
10. Replace the thrust washers if they are faulty.

### Drive Chain and Sprockets



**Fig. 77: Drive Chain And Sprockets Inspection Points**  
**Courtesy of GENERAL MOTORS CORP.**

1. Clean the drive chain (1), drive sprocket (3), and driven sprocket (2) in cleaning solvent and air dry.
2. Inspect the drive chain (1) for the following:
  - Loose link pins
  - Binding or stiff links
  - Debris embedded in the links

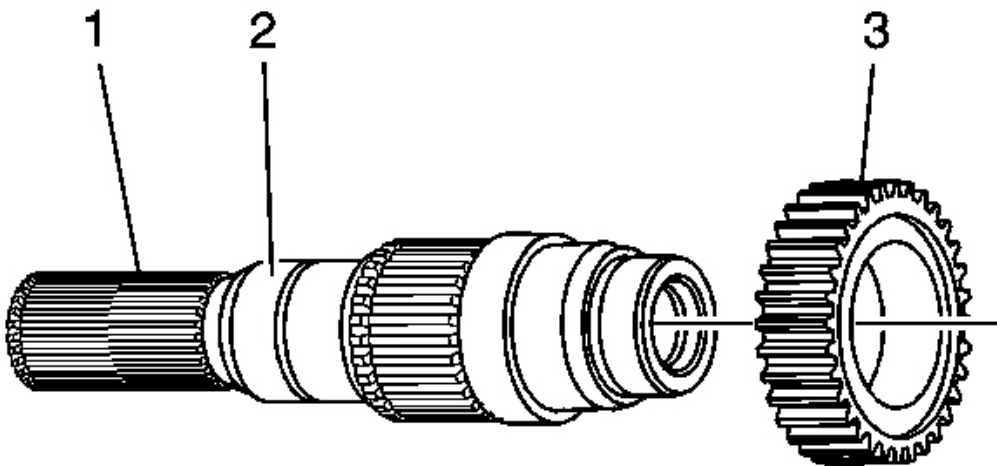
- Worn teeth surfaces
3. Replace the chain if any of the above conditions are found.
  4. Inspect the driven sprocket (2) and the drive sprocket (3) for the following:
    - Chipped teeth
    - Excessively worn gear surfaces

Slight wear marks are normal.

- Debris embedded in the root of the teeth
5. Replace the sprocket if any of the above conditions are found. The chain and sprockets may be replaced separately.

#### **Front Output Shaft**

1. Clean the front output shaft in cleaning solvent and air dry.
2. Inspect the teeth on the speed sensor reluctor wheel (3) for damage.

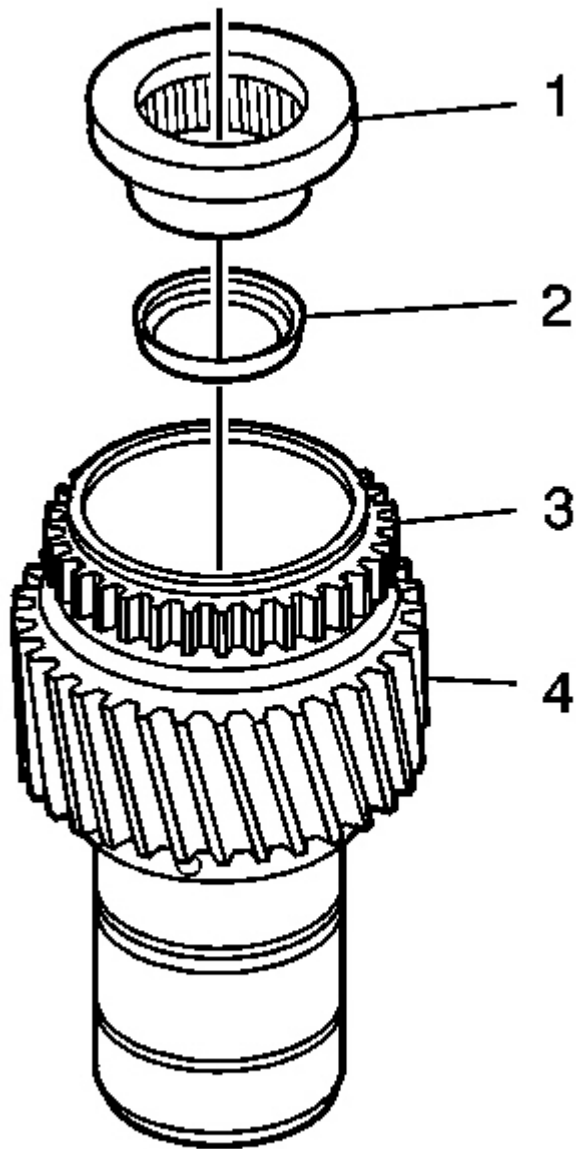


**Fig. 78: Front Output Shaft Inspection Points**  
Courtesy of GENERAL MOTORS CORP.

3. Replace the speed sensor reluctor wheel if damaged.
4. Inspect the front output shaft seal surface (2) for wear or damage.
5. Inspect the front output shaft splines (1) for damage.
6. Replace the front output shaft if damaged.

### Input Gear

1. Clean the input gear, with thrust bearing, in cleaning solvent.
2. Air dry and ensure all solvent is removed from the thrust bearing.



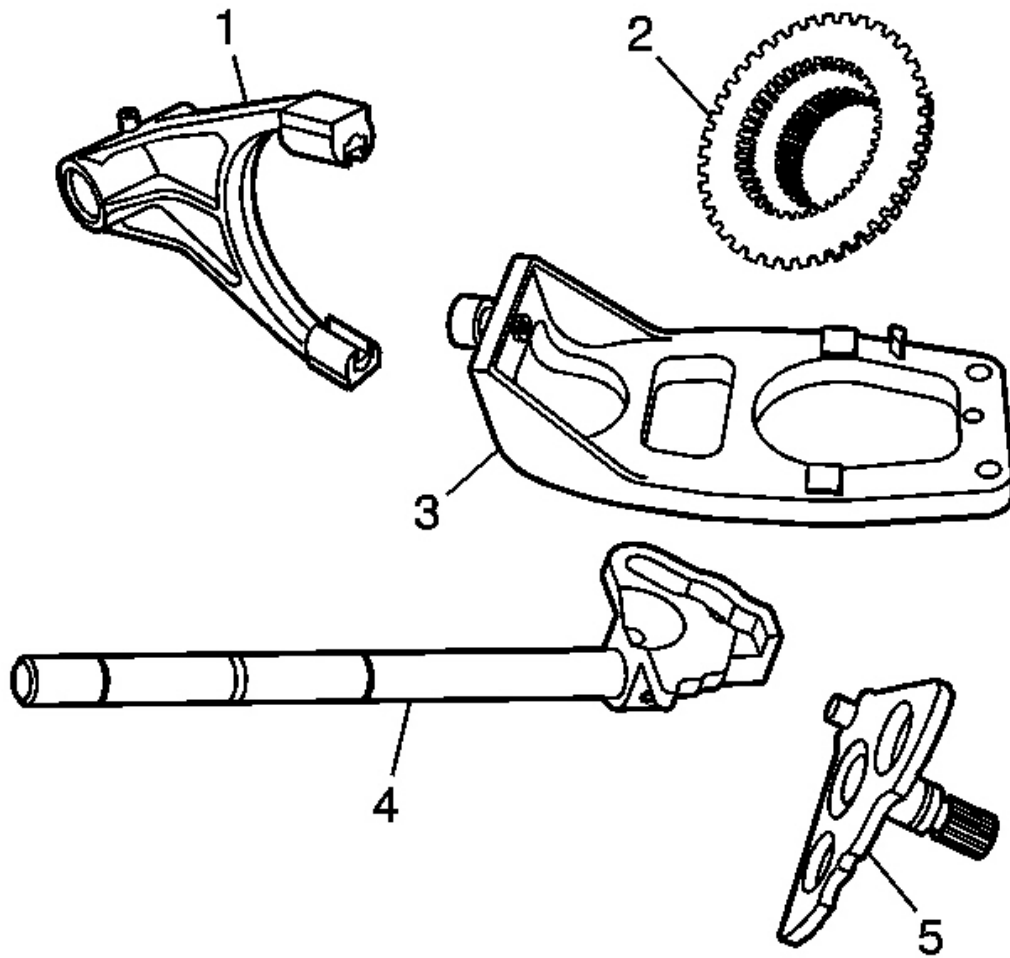
**Fig. 79: Input Gear Inspection Points**  
Courtesy of GENERAL MOTORS CORP.

## 2004 Isuzu Ascender LS

2004 DRIVELINE/AXLE Transfer Case - Overhaul - NVG 226-NP8

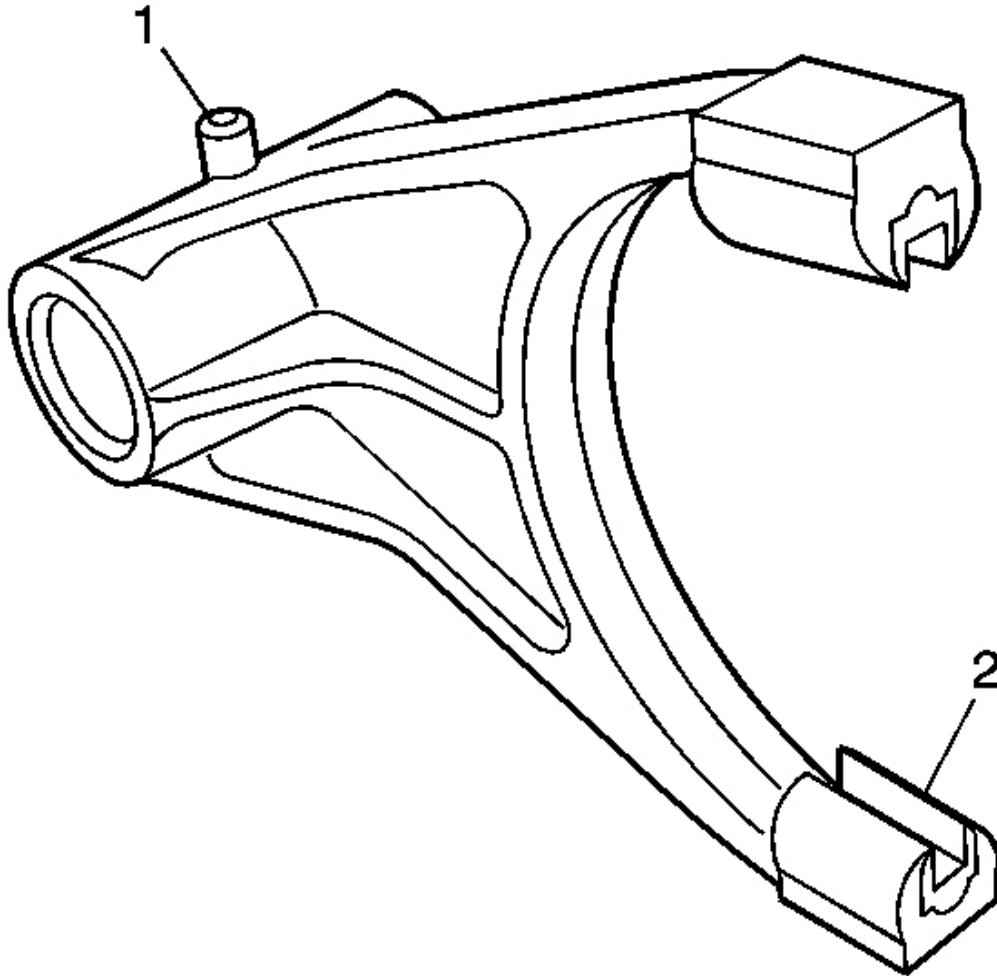
3. Inspect the thrust bearing (1) for the following:
  - Pitted
  - Wear
  - Corrosion
4. Replace the input gear thrust bearing if any of the above conditions are found. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
5. Inspect the bore seal (2) for damage.
6. Replace the bore seal if it is damaged. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
7. Inspect the input gear engagement teeth (3) for chips.
8. Inspect the input gear for broken or damaged planetary teeth (4).
9. Inspect the input gear for debris embedded in the root of the teeth.
10. Replace the input gear if any of the above conditions are found.

### Shift System Components



**Fig. 80: View Of Shift System Components**  
**Courtesy of GENERAL MOTORS CORP.**

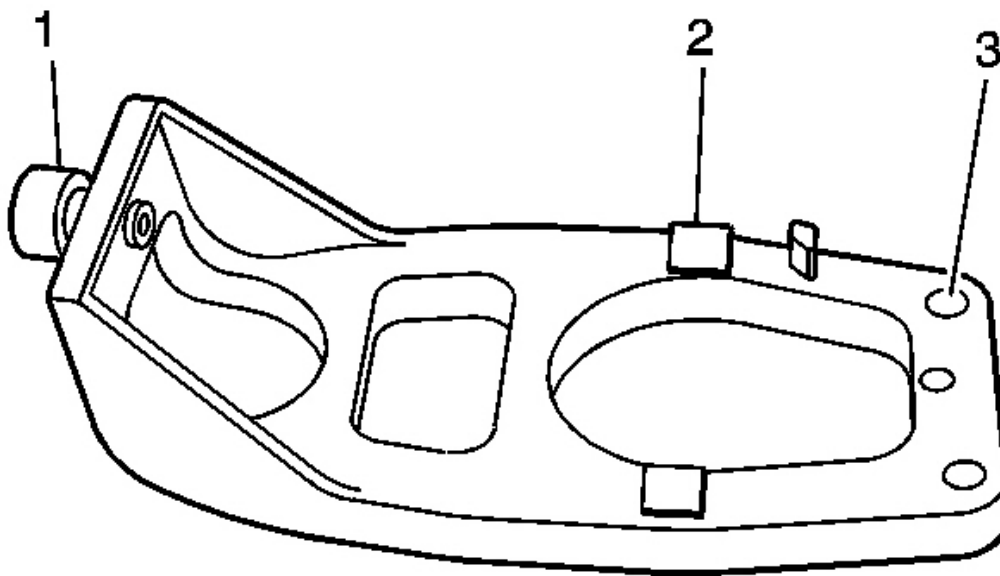
1. Clean the following shift system components in cleaning solvent and air dry:
  - The high/low shift fork (1)
  - The range sleeve (2)
  - The clutch lever (3)
  - The shift fork shaft and shift detent lever (4)
  - The control actuator lever shaft (5)
2. Inspect the range sleeve for being chipped and for excessive worn teeth.
3. Replace the range sleeve if the teeth are damaged or worn.



**Fig. 81: View Of Shift Fork And Pads**  
**Courtesy of GENERAL MOTORS CORP.**

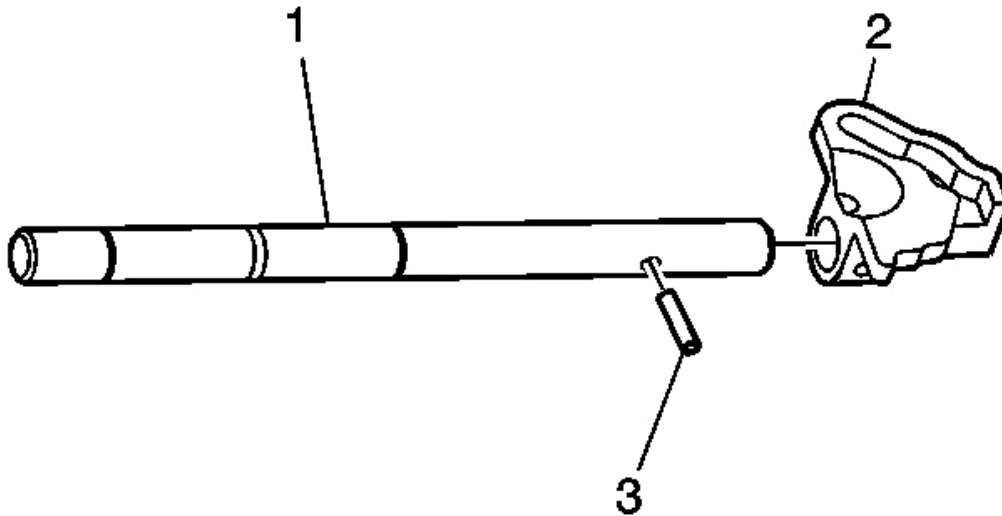
4. Inspect the pads (2) on the shift fork for wear.
5. Replace the shift fork if the pads are worn.
6. Inspect the poppet (1) in the shift fork for proper operation.
  1. Slide the shift fork on to the shift rail.
  2. Move the shift fork to engage the poppet into the groove.
  3. Move the shift fork in both directions to ensure the poppet will disengage from the groove.
7. Replace the shift fork if the poppet is not operating properly.





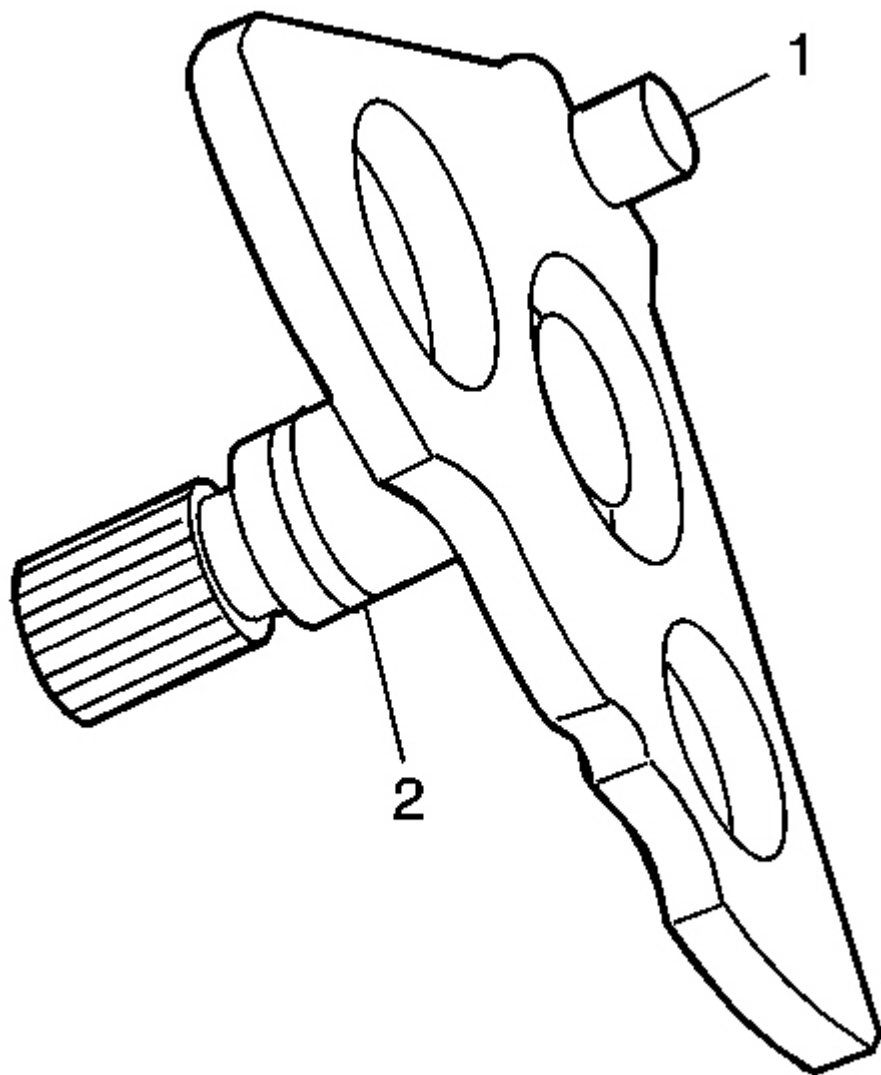
**Fig. 82: Clutch Lever Roller Inspection Points**  
Courtesy of GENERAL MOTORS CORP.

8. Inspect the clutch lever roller (1) for the following:
  - Wear
  - Rotates easily
9. Inspect the clutch lever for worn wear pads (2).
10. Inspect the clutch lever for wear at the pivot pin sockets (3).
11. Replace the clutch lever if the above conditions are found.



**Fig. 83: Inspecting Shift Fork Shaft At The Shift Fork Poppet Groove**  
**Courtesy of GENERAL MOTORS CORP.**

12. Inspect the shift fork shaft at the shift fork poppet groove for damage or wear.
13. Inspect the shift fork shaft (1) for being bent.
14. Inspect the shift detent lever (2) for wear.
15. Replace the shift rail or the shift detent lever if the above conditions are found. Install a new roll pin (3) if the shift detent lever is removed from the shift fork shaft.



**Fig. 84: Inspecting Control Actuator Lever Shaft**  
Courtesy of GENERAL MOTORS CORP.

16. Inspect the roller (1) on the control actuator lever shaft for the following:
  - Wear
  - Rotates easily
17. Inspect the bearing (2) and the seal surface on the control actuator lever shaft for the following:
  - Pitted

## 2004 Isuzu Ascender LS

2004 DRIVELINE/AXLE Transfer Case - Overhaul - NVG 226-NP8

- Wear
- Corrosion

18. Replace the control actuator lever shaft if any of the above conditions are found.

### TRANSFER CASE ASSEMBLE

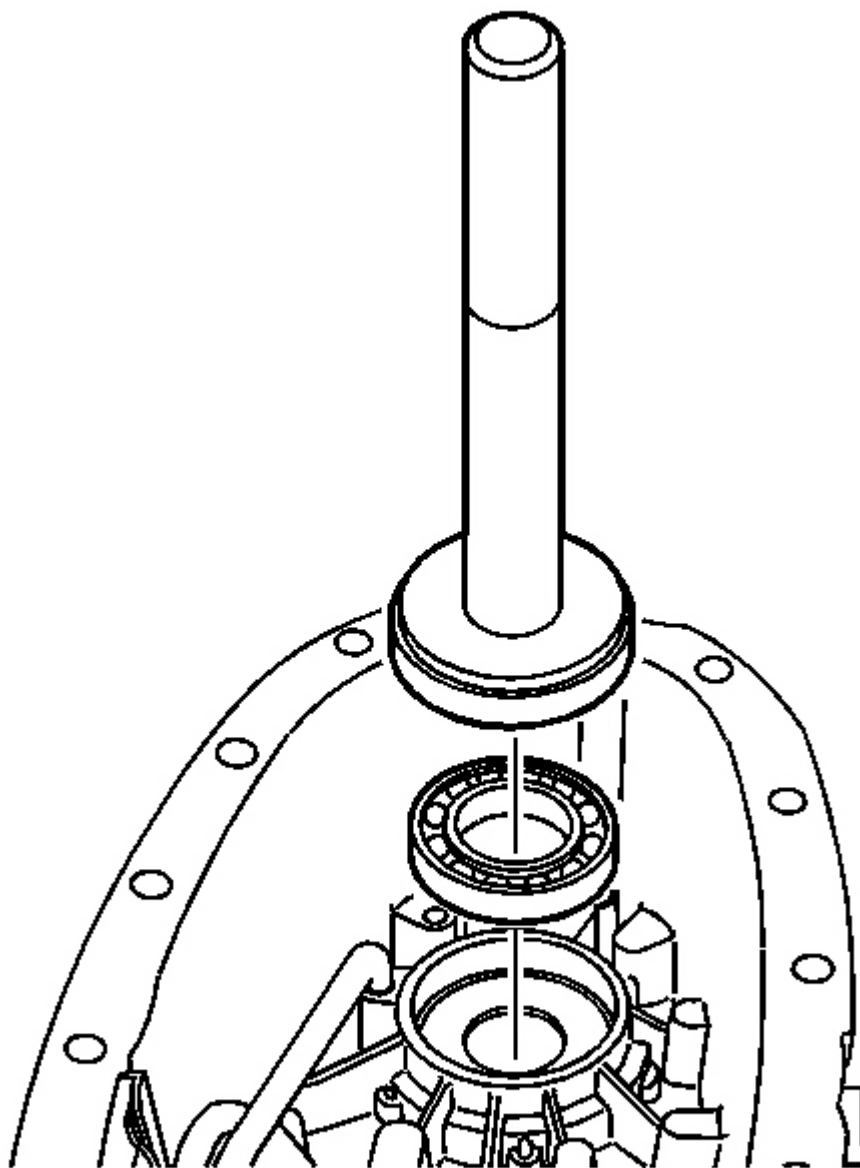
#### Tools Required

- **J 3289-20** Holding Fixture
- **J 8092** Universal Driver Handle
- **J 36371** Output Shaft Bearing Installer
- **J 36373** Input Sun Gear Ball Bearing Installer
- **J 36850** Transjel Lubricant
- **J 37668-A** Shaft Seal Installer
- **J 42738** Seal Installer
- **J 45235** Rear Speed Sensor Reluctor Wheel Installer
- **J 45236** Front Output Shaft Seal Installer
- **J 45238** See **Fig.** Input Gear Thrust Bearing Installer
- **J 45239** Needle Bearing Installer
- **J 45380** Transfer Case Rear Bushing Remover and Installer
- **J 45759** Assembly Fixture

#### Assembly Procedure

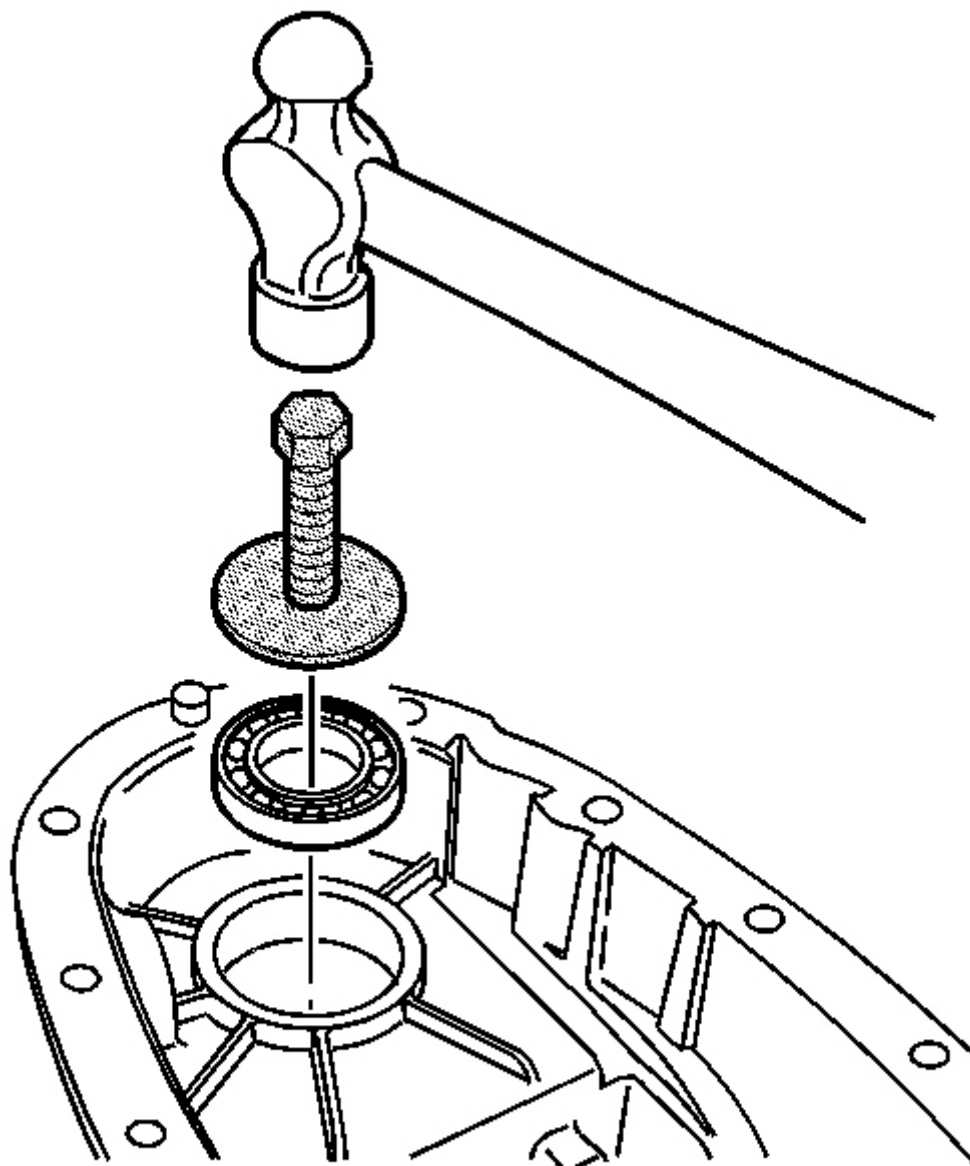
##### IMPORTANT:

- Install the input gear seal after the transfer case is assembled.
- Do not cock the bearing when installing. Ensure the bearing is being installed square to the bore.



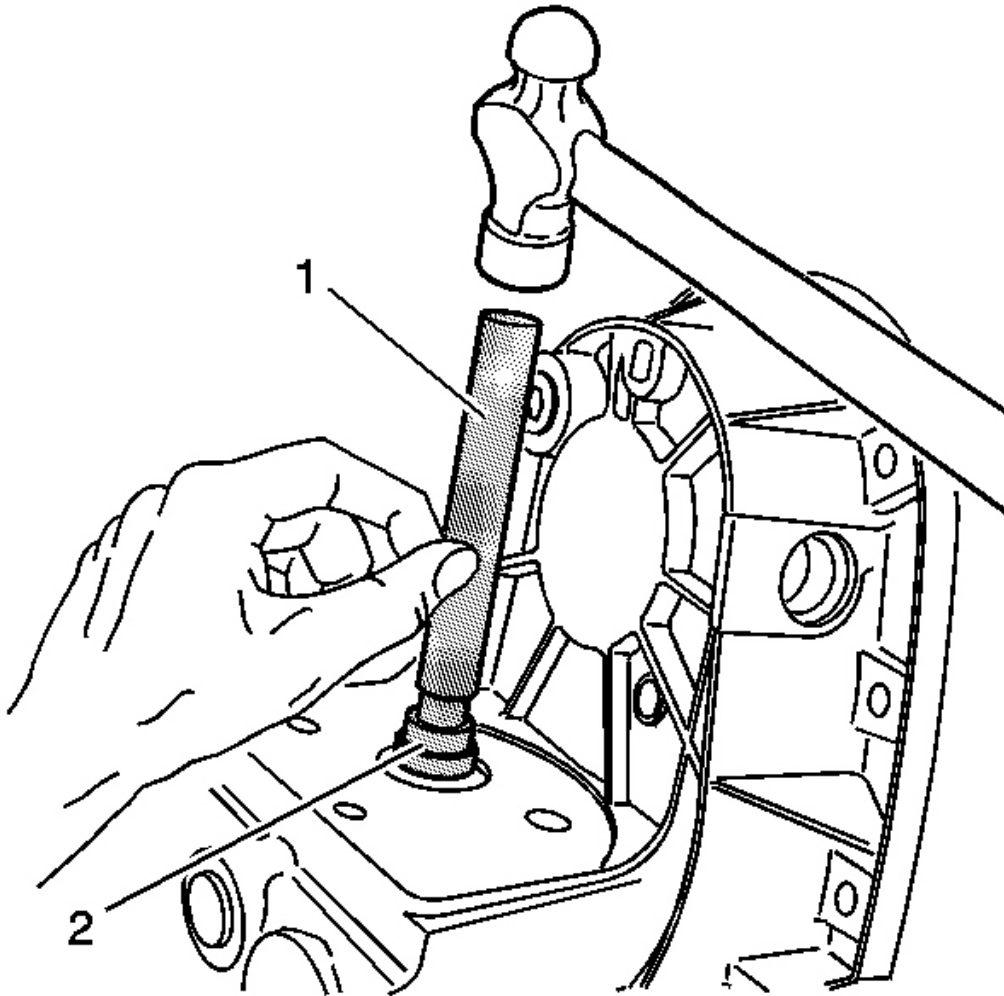
**Fig. 85: Installing The Rear Output Shaft Bearing**  
Courtesy of GENERAL MOTORS CORP.

1. Using a suitable bearing installer, install the rear output shaft bearing. Ensure the bearing installer is used against the outer race of the bearing.
2. Using the **J 36371** , install the front output shaft rear bearing into the rear case half.

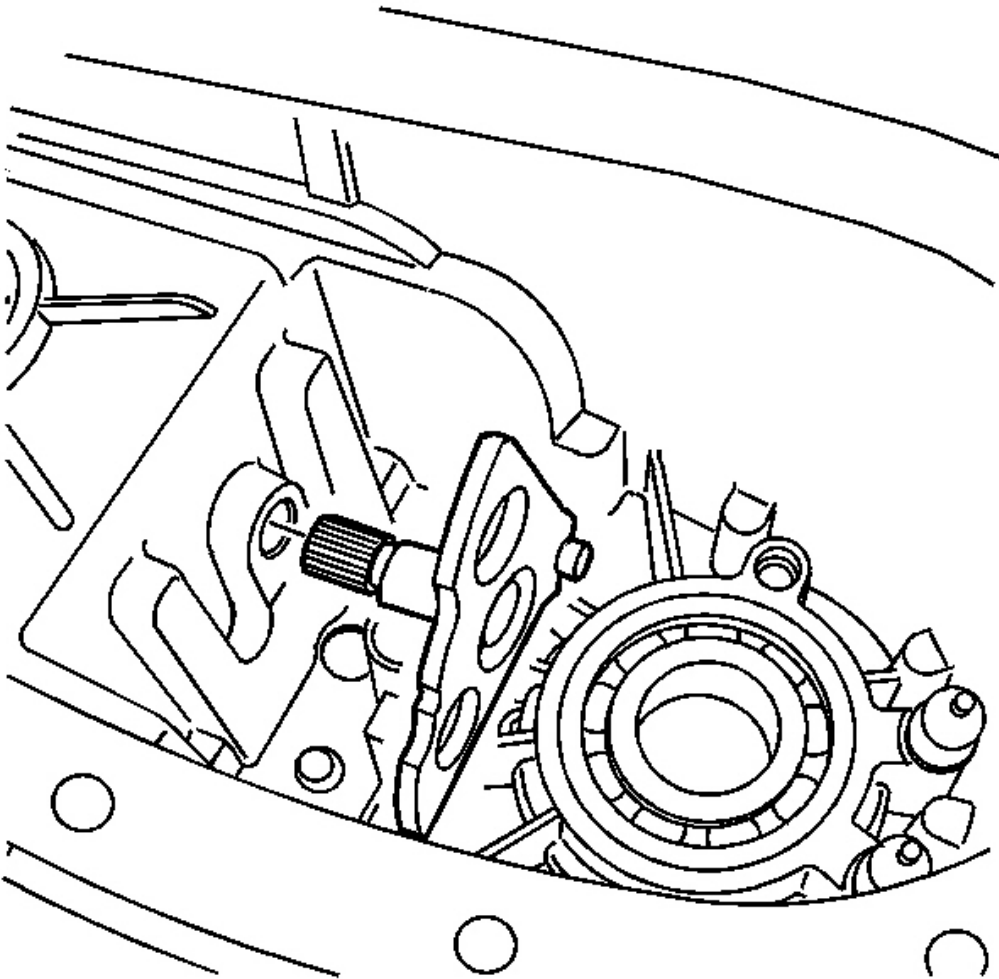


**Fig. 86: Installing The Front Output Shaft Rear Bearing Into The Rear Case Half**  
Courtesy of GENERAL MOTORS CORP.

3. Using the **J 8092** (1) and the **J 45239** (2), install the control actuator lever shaft bearing until it bottoms in the bore. The seal side of the bearing faces the encoder motor.



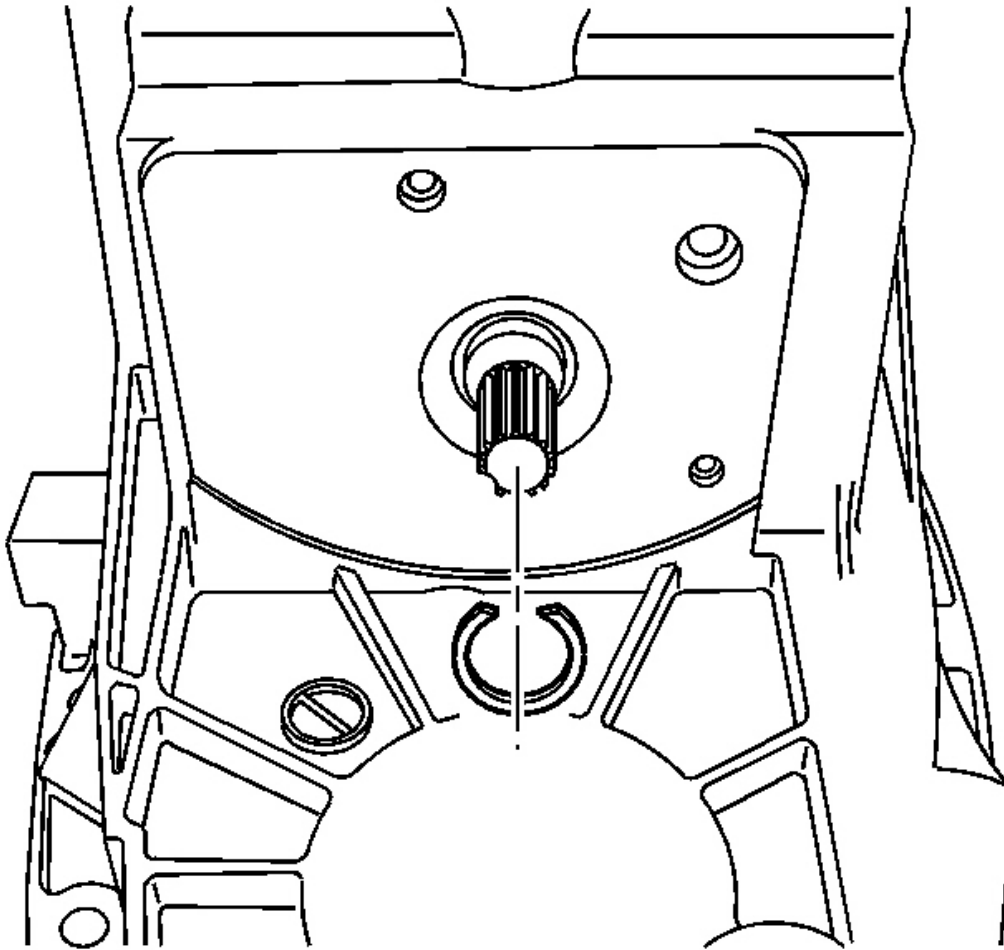
**Fig. 87: Installing Control Actuator Lever Shaft Bearing**  
**Courtesy of GENERAL MOTORS CORP.**



**Fig. 88: Control Actuator Lever Shaft**  
Courtesy of GENERAL MOTORS CORP.

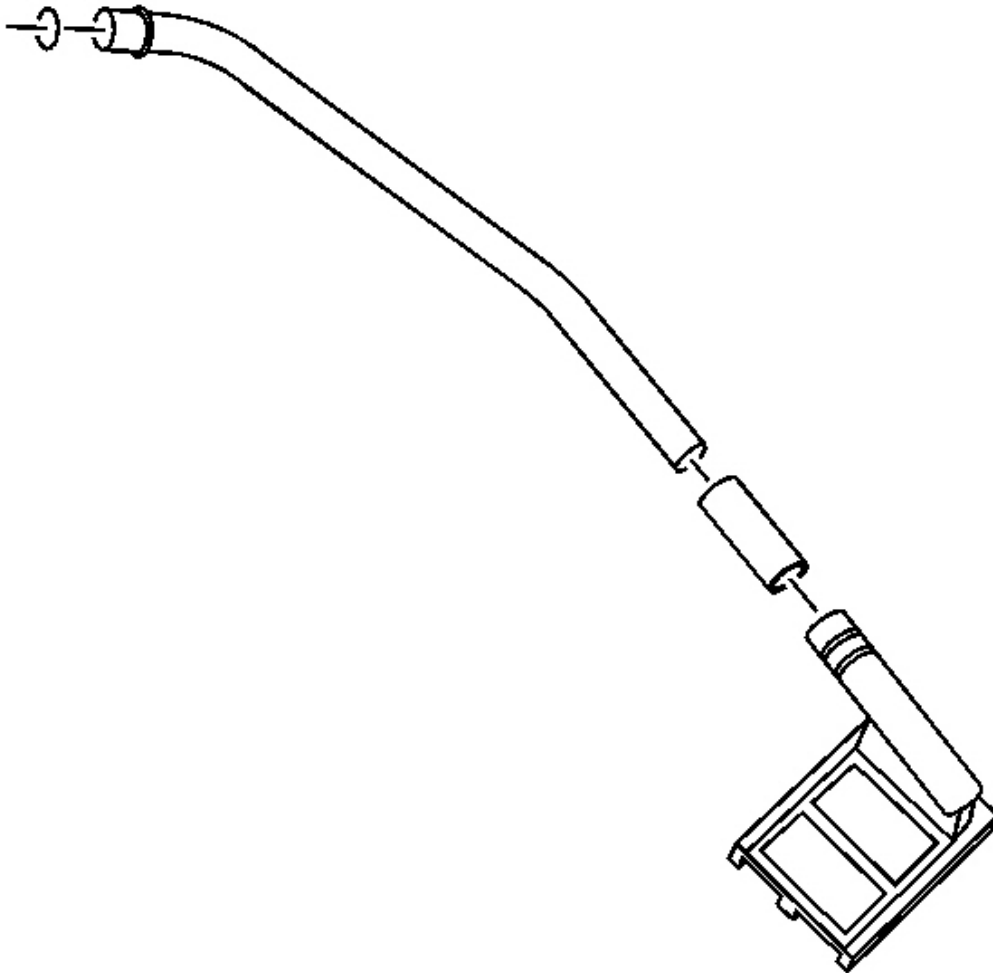
4. Install the control actuator lever shaft in the rear case half.





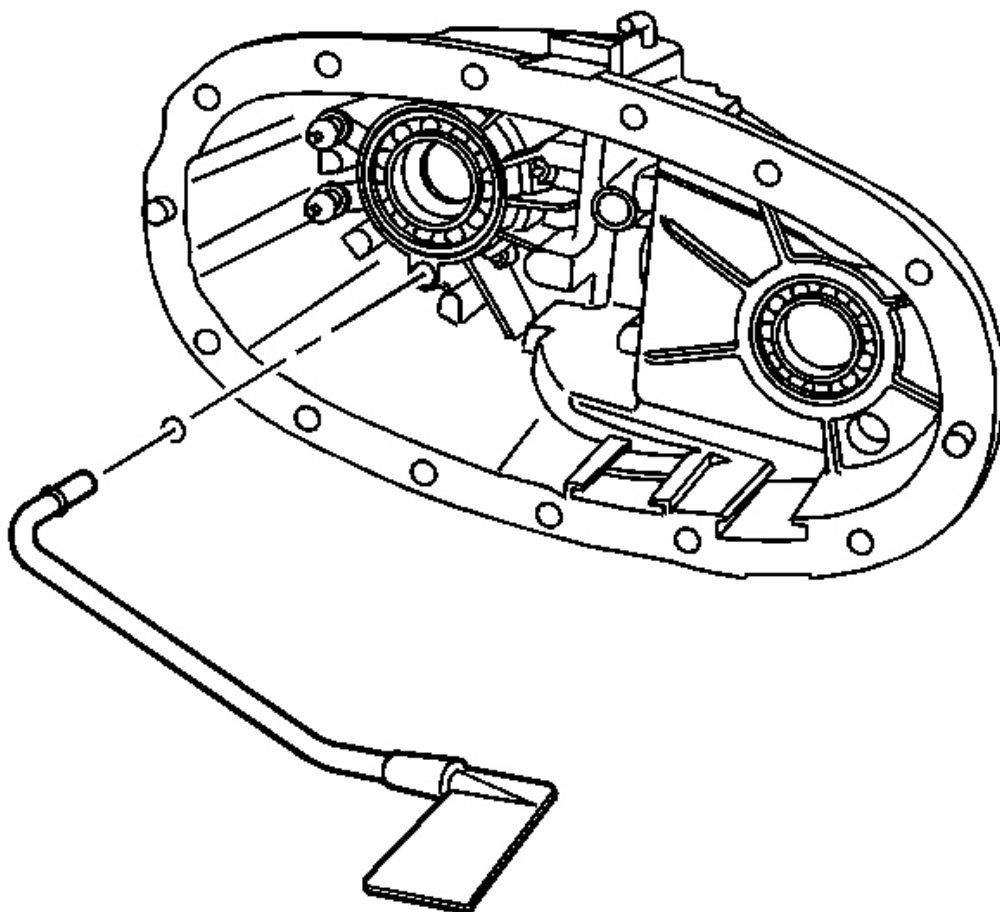
**Fig. 89: Retaining Ring For The Control Actuator Lever Shaft**  
Courtesy of GENERAL MOTORS CORP.

5. Install a new control actuator lever shaft retaining ring.



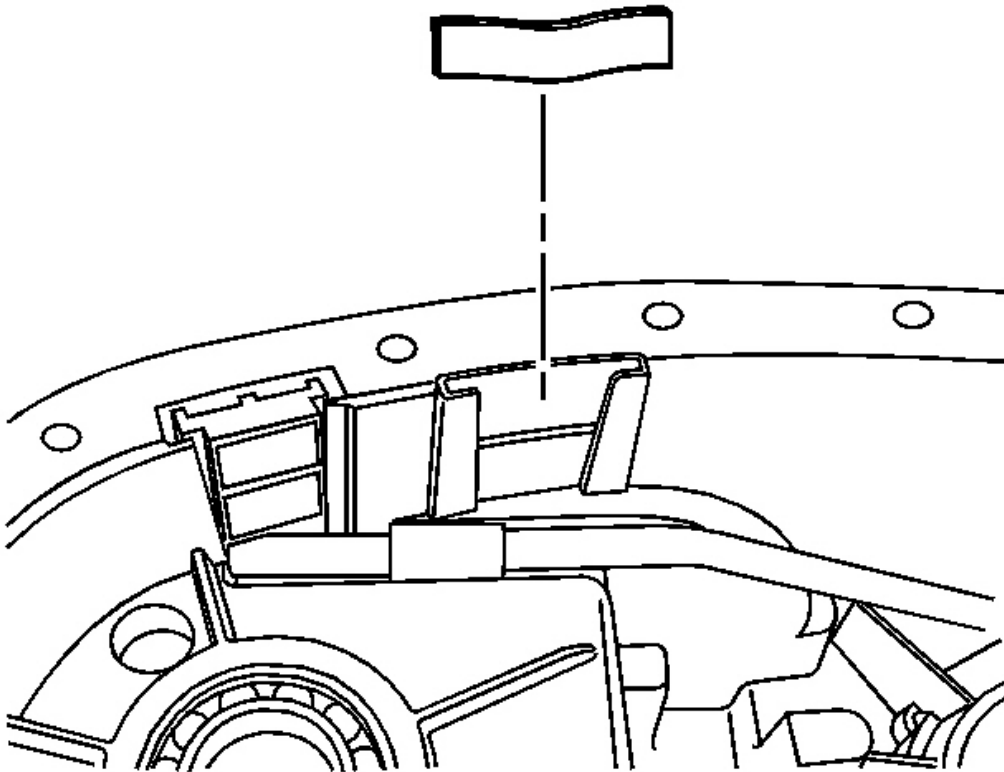
**Fig. 90: Oil Pump Suction Pipe And The Oil Pump Suction Hose**  
Courtesy of GENERAL MOTORS CORP.

6. Install the oil pump screen and oil pump hose to the oil pump suction pipe.



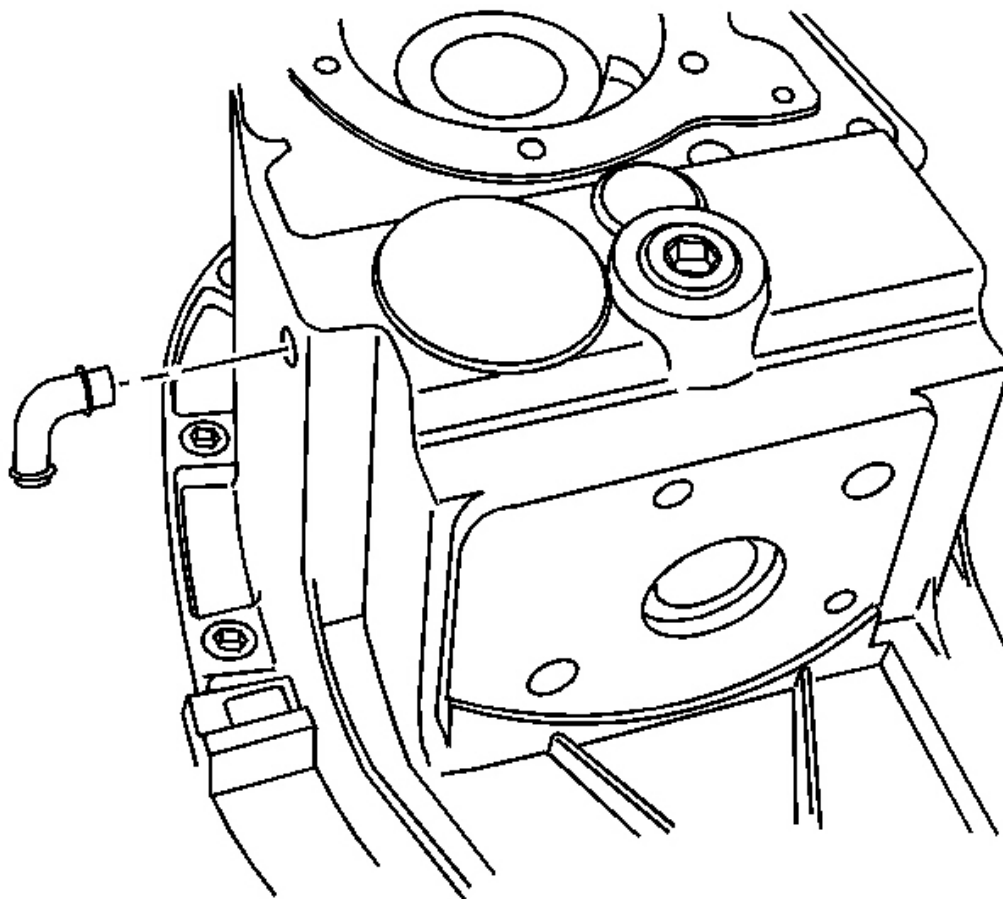
**Fig. 91: Oil Pump Suction Pipe With The Oil Pump Screen**  
Courtesy of GENERAL MOTORS CORP.

7. Install a new O-ring seal onto the oil pump suction pipe.
8. Lightly lubricate the O-ring seal with transfer case oil.
9. Install the oil pump suction pipe assembly in the rear case half. Ensure the oil pump suction pipe is fully seated.



**Fig. 92: Locating Chip Collector Magnet In The Rear Case**  
Courtesy of GENERAL MOTORS CORP.

10. Install the chip collector magnet in the rear case half.

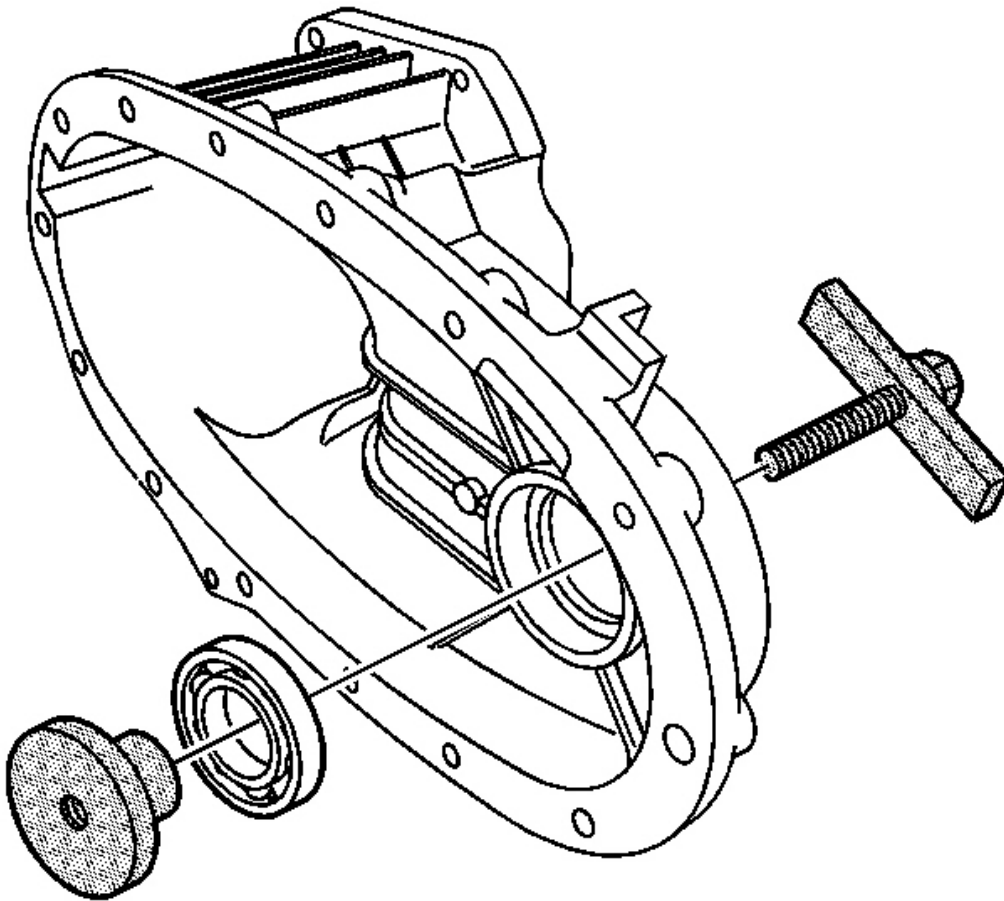


**Fig. 93: Locating Vent**

Courtesy of GENERAL MOTORS CORP.

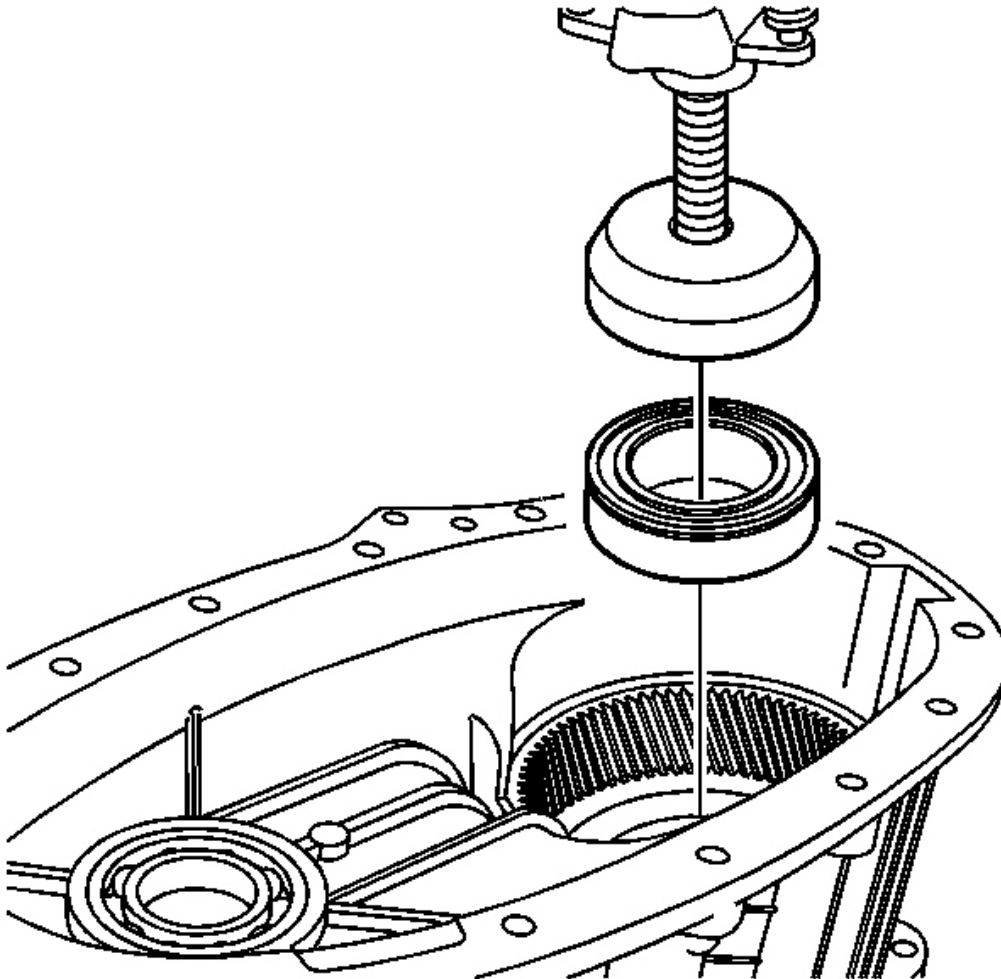
11. Apply a thin layer of retaining compound GM P/N 12377901 (Canadian P/N 10953504) or equivalent to the vent, if removed.
12. Tap the vent into the case. Ensure the vent is aligned in the direction shown.

**IMPORTANT:** Install the front output shaft seal after the transfer case is assembled.



**Fig. 94: Installing The Front Output Shaft Front Bearing Into The Front Case**  
Courtesy of GENERAL MOTORS CORP.

13. Using the **J 36371** , install the front output shaft front bearing into the front case.

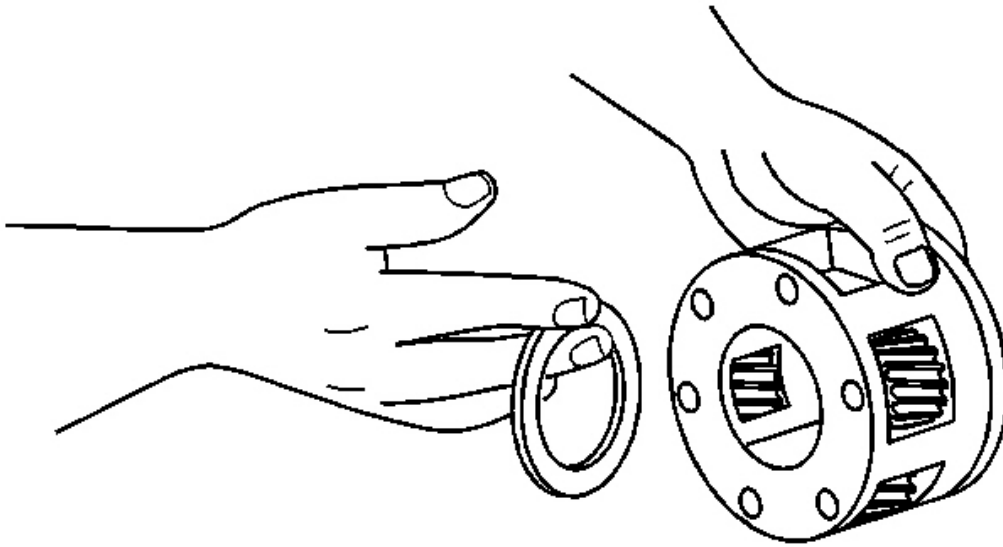


**Fig. 95: Installing The Input Gear Bearing Into The Front Case**  
Courtesy of GENERAL MOTORS CORP.

14. Using a press, install the input gear bearing into the front case.
  - Ensure the press plates fit properly on the case.
  - Use a suitable press tool that fits to the bearing outer race.

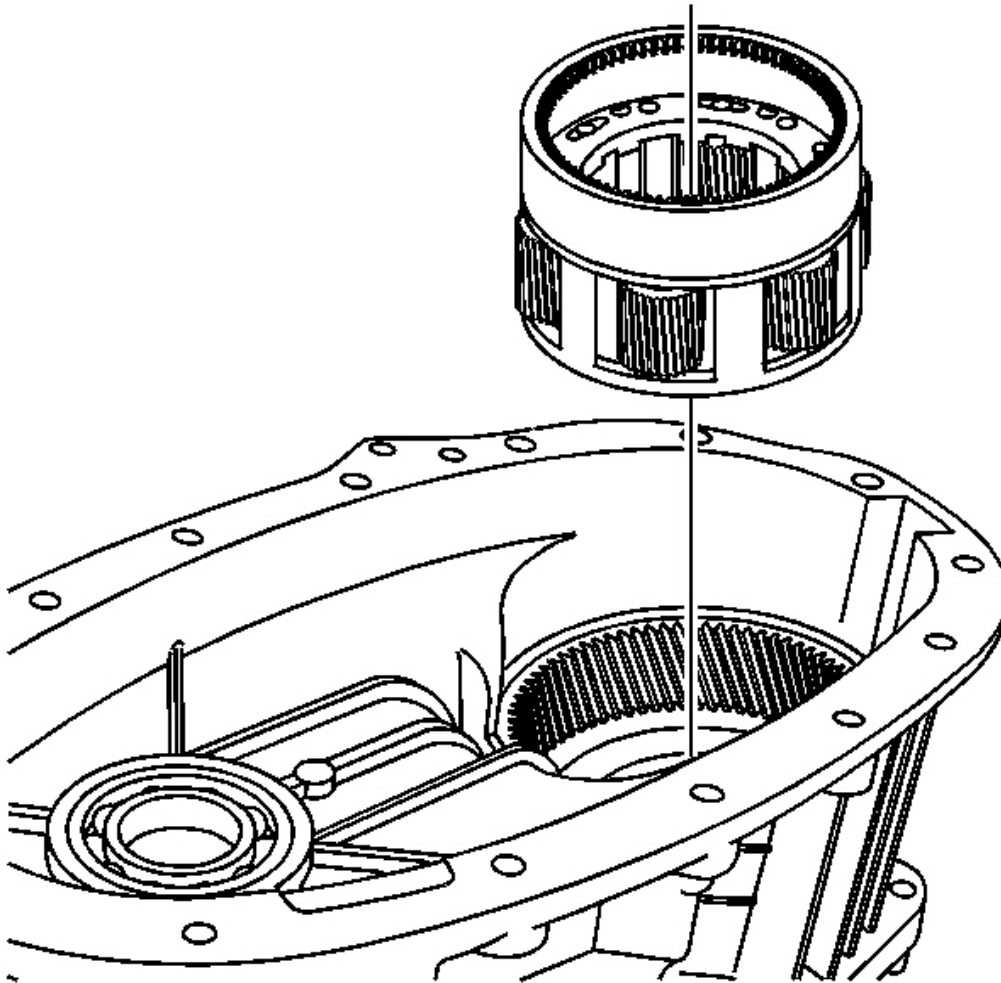
**IMPORTANT: Apply J 36850 to the thrust washer in order to hold the thrust washer on the planetary gear assembly.**

15. Apply a layer of the **J 36850** on the large diameter thrust washer.
16. Install the large diameter thrust washer on the planetary gear assembly.



**Fig. 96: View Of Large Diameter Thrust Washer And Planetary Gear Assembly**  
Courtesy of GENERAL MOTORS CORP.

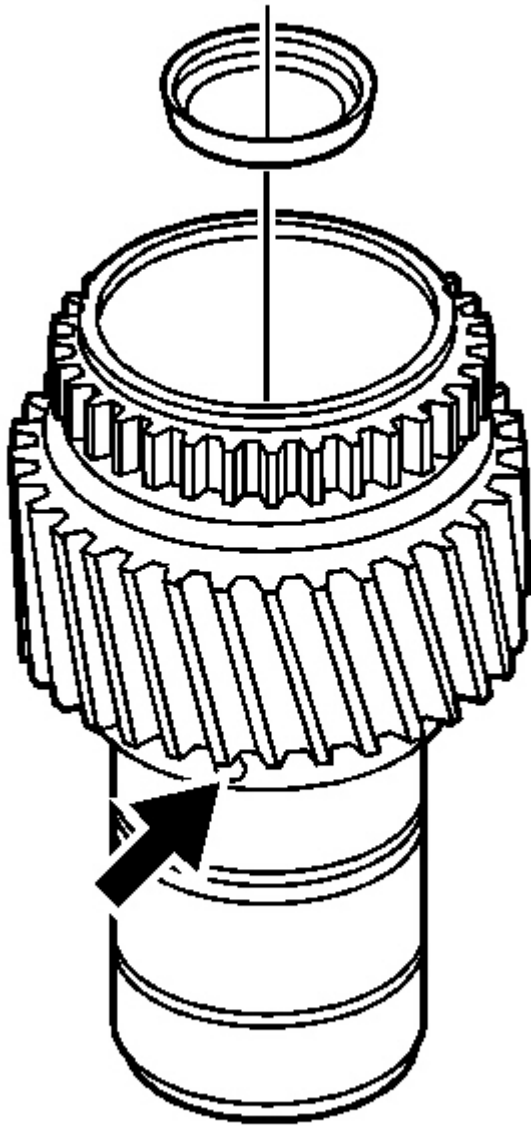




**Fig. 97: Installing The Planetary Gear Assembly Into The Front Case**  
Courtesy of GENERAL MOTORS CORP.

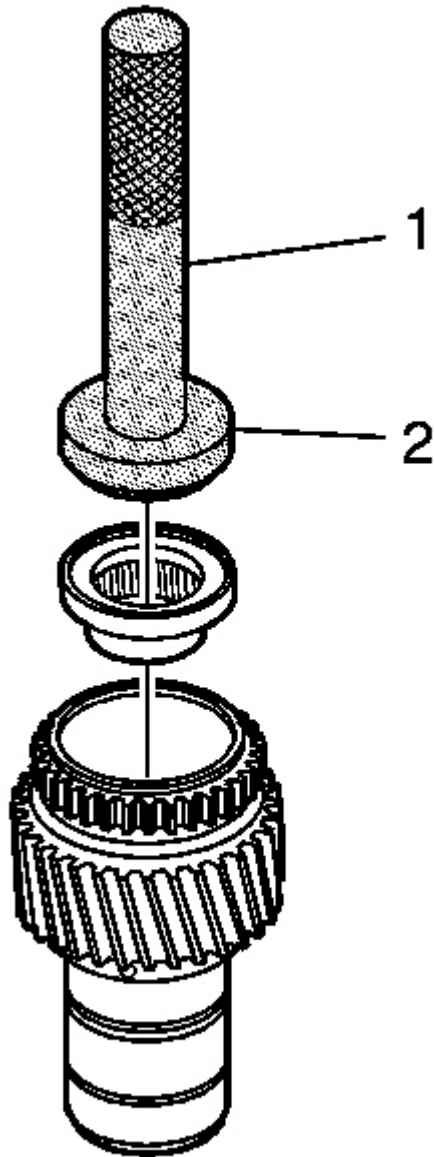
17. Install the planetary gear assembly into the front case. Rotate the planetary gears to align with the annulus gear.
18. Ensure the large diameter thrust washer is aligned to the input gear bearing race.
19. If removed, lightly lubricate the input gear bore seal with transfer case fluid.

**IMPORTANT:** The bore seal installation depth should not block the oil gallery hole in the input gear. If installed too far, the transmission output shaft may contact the bore seal.



**Fig. 98: Installing A New Input Gear Bore Seal Into The Input Gear**  
Courtesy of GENERAL MOTORS CORP.

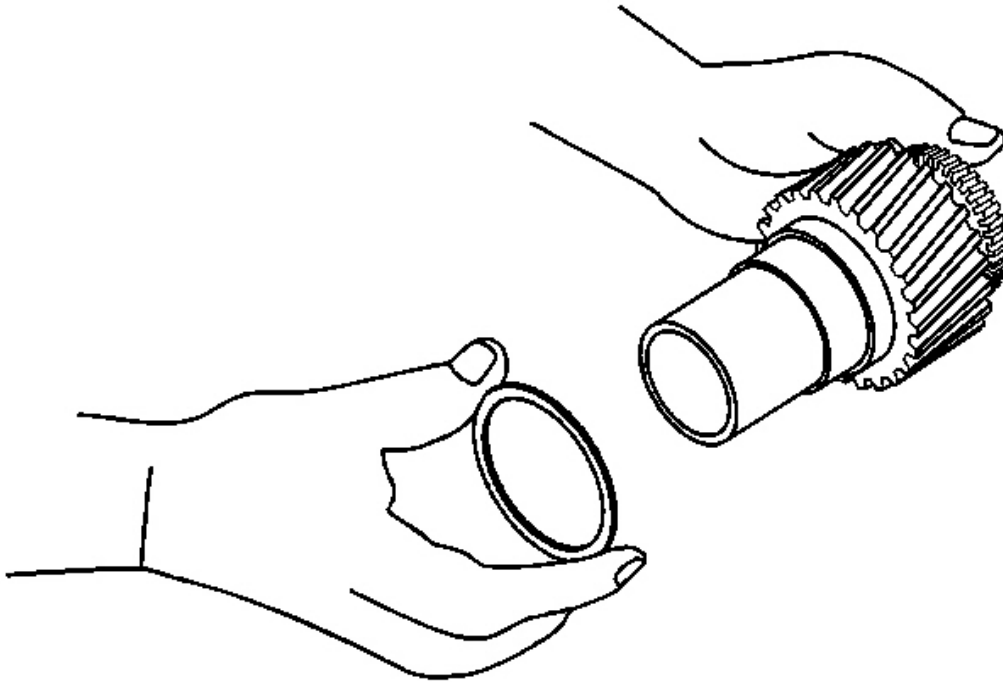
20. Install a new input gear bore seal into the input gear. Push the bore seal into place by hand until the seal is just past the oil gallery hole in the input gear. Ensure the bore seal is square in the bore.
21. If removed, install the input gear thrust bearing into the input gear using the **J 8092** (1) and the **J 45238** See **Fig.** (2).



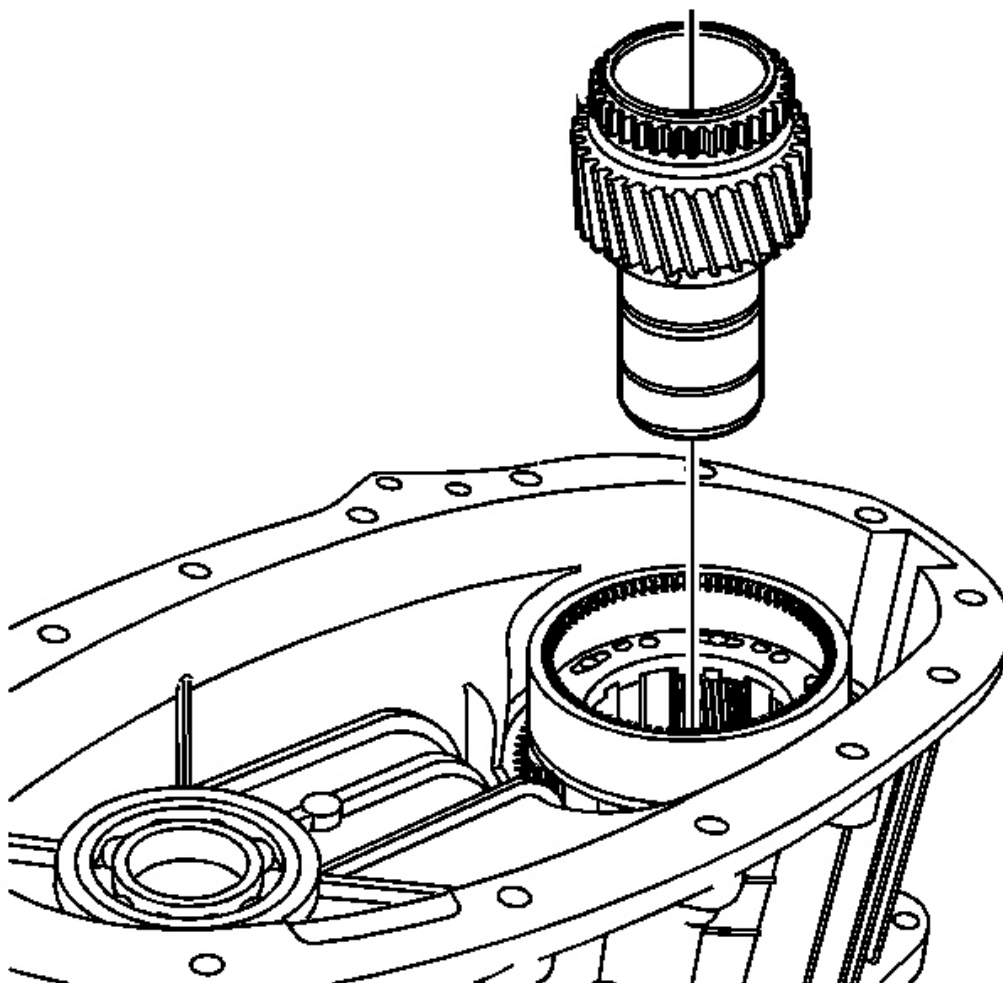
**Fig. 99: Installing The Input Gear Thrust Bearing Into The Input Gear**  
Courtesy of GENERAL MOTORS CORP.

**IMPORTANT:** Apply J 36850 to the thrust washer in order to hold the thrust washer on the input gear.

22. Apply a layer of **J 36850** onto the small diameter thrust washer.
23. Install the small diameter thrust washer onto the input gear.

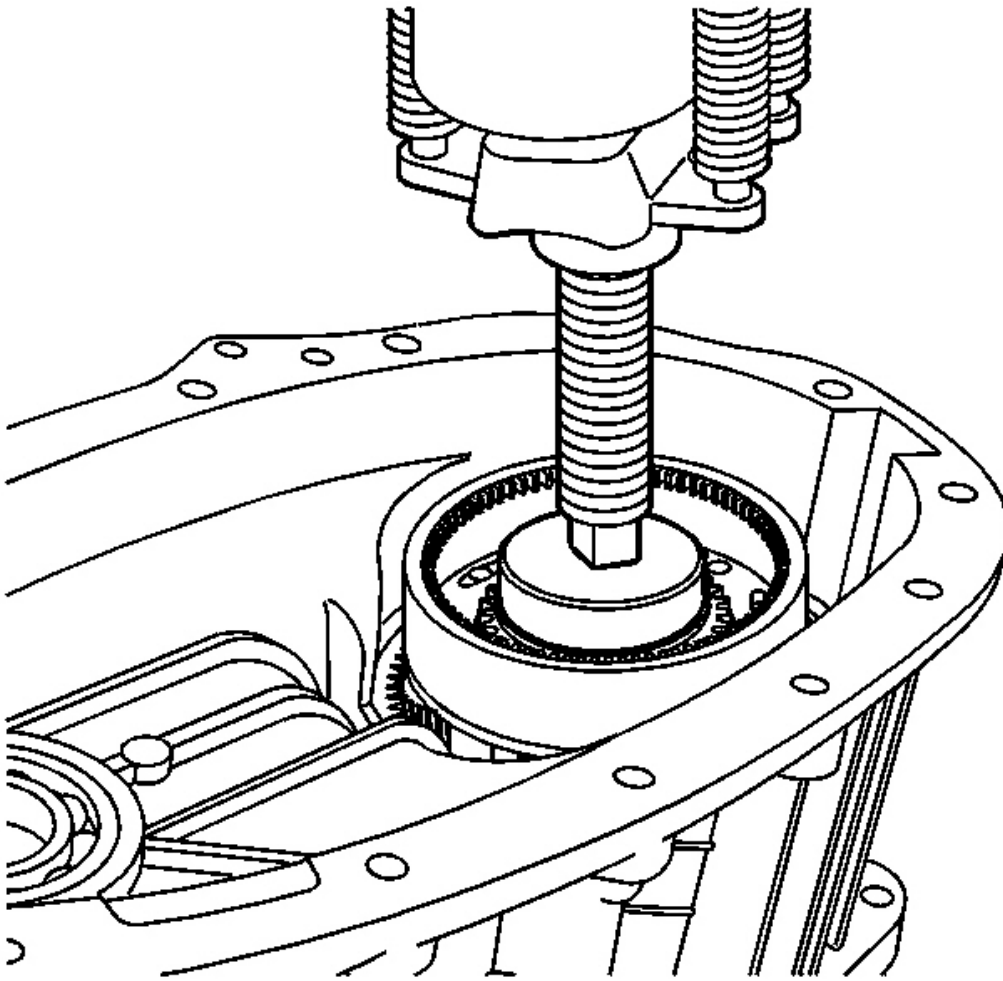


**Fig. 100: Installing The Small Diameter Thrust Washer Onto The Input Gear**  
Courtesy of GENERAL MOTORS CORP.



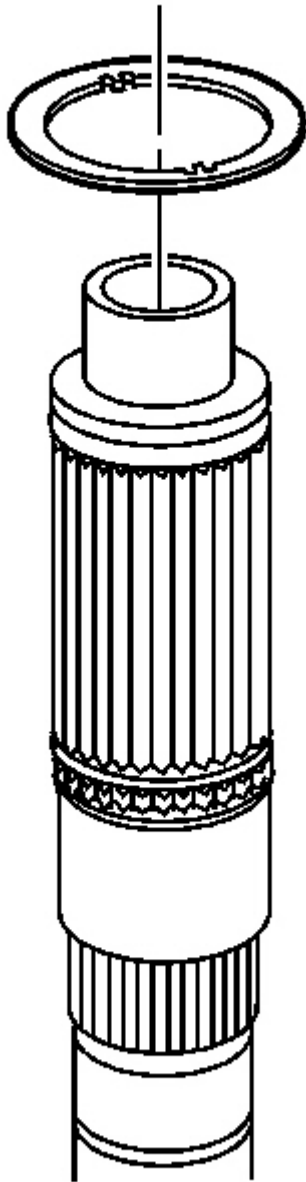
**Fig. 101: Positioning The Input Gear In The Planetary Gear Assembly**  
Courtesy of GENERAL MOTORS CORP.

24. Position the input gear in the planetary gear assembly.
  - Ensure the thrust washers are in the correct position.
  - Ensure the input gear and the planetary gears are correctly meshed.



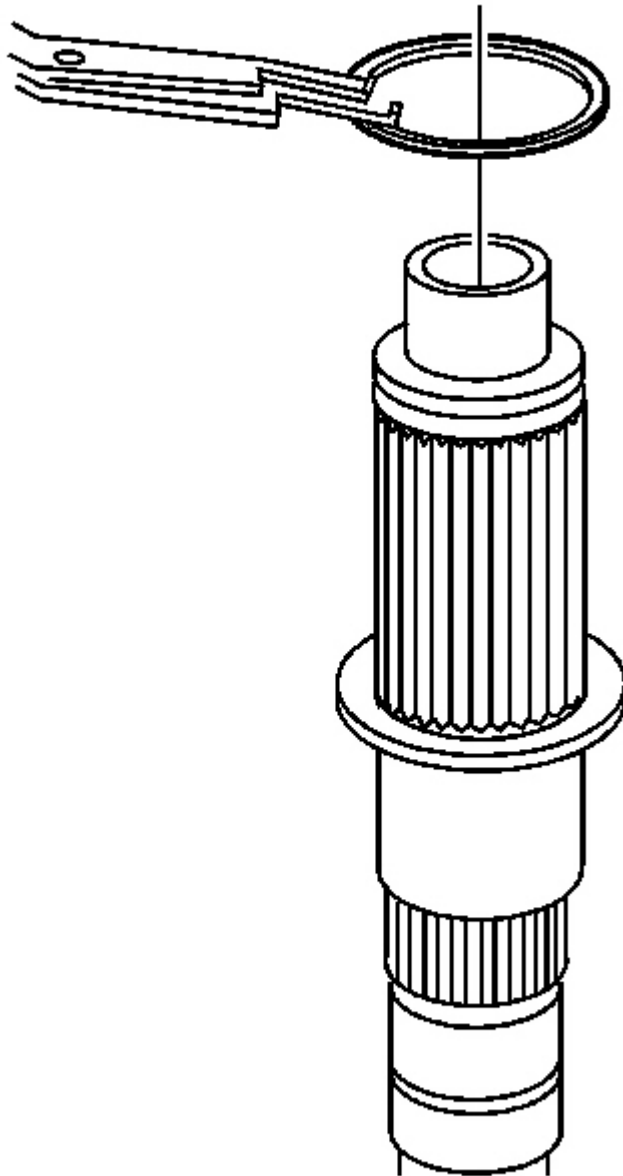
**Fig. 102: Pressing The Input Gear Assembly Into The Input Gear Bearing**  
Courtesy of GENERAL MOTORS CORP.

25. Using a press, press the input gear assembly into the input gear bearing.
  1. Support the front case half on press plates to allow the input gear to protrude.
  2. Support the inner race of the input gear bearing.
  3. Use a suitable press plate on the end of the input gear.
  4. Press on the input gear until it is fully seated against the input gear bearing.
26. Inspect for proper assembly by turning the input gear. The input gear and planetary gears should turn without roughness or binding. If binding or roughness is present, inspect for debris in the planetary gears or for improper assembly.



**Fig. 103: Rear Output Shaft Thrust Washer**  
Courtesy of GENERAL MOTORS CORP.

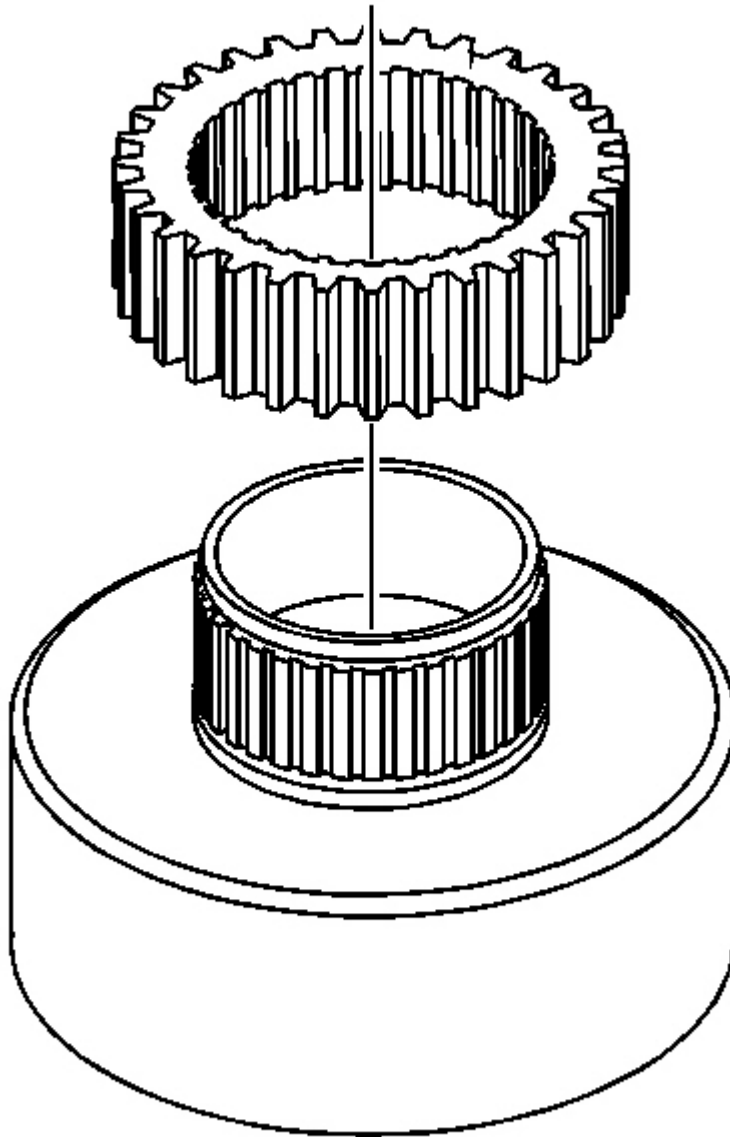
27. Install the rear output shaft thrust washer. Align the tabs with the shaft splines.



**Fig. 104: Retaining Ring For The Clutch Housing On The Rear Output Shaft**  
**Courtesy of GENERAL MOTORS CORP.**

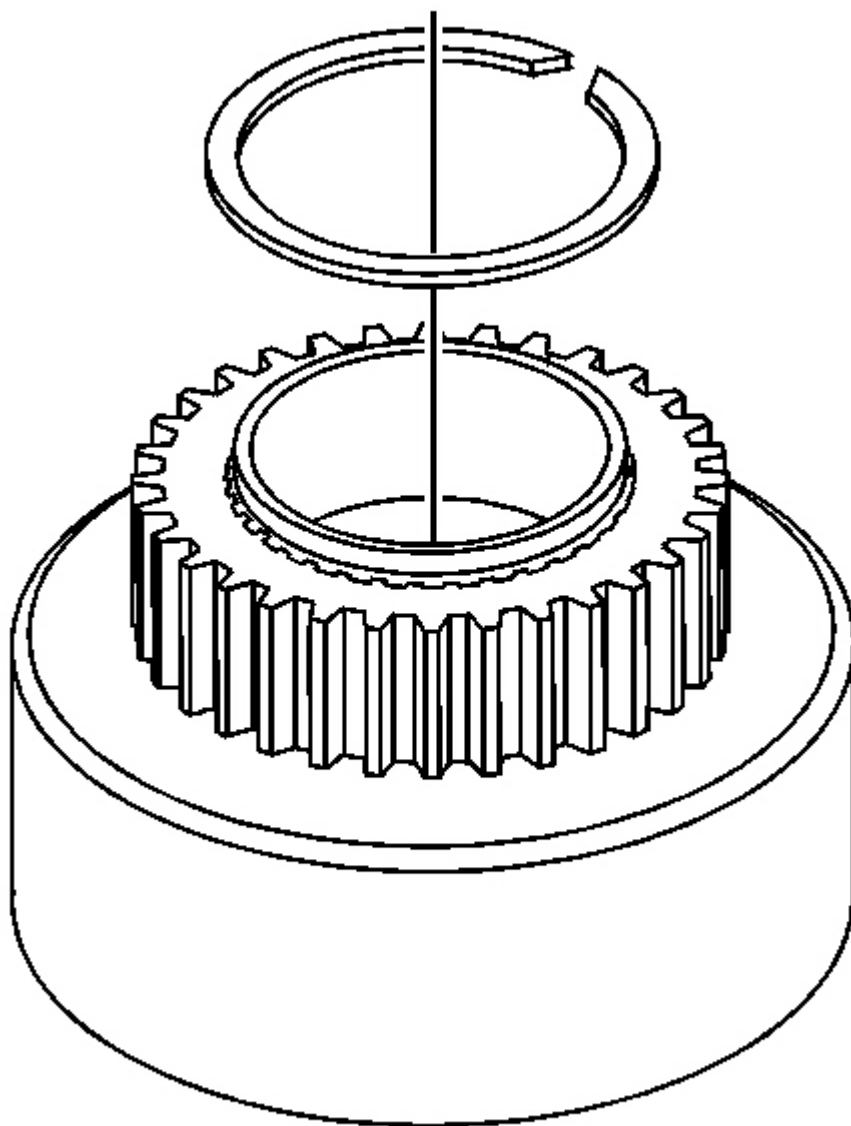
28. Install a new retaining ring for the clutch housing on the rear output shaft. Ensure the retaining ring is properly installed in the groove.





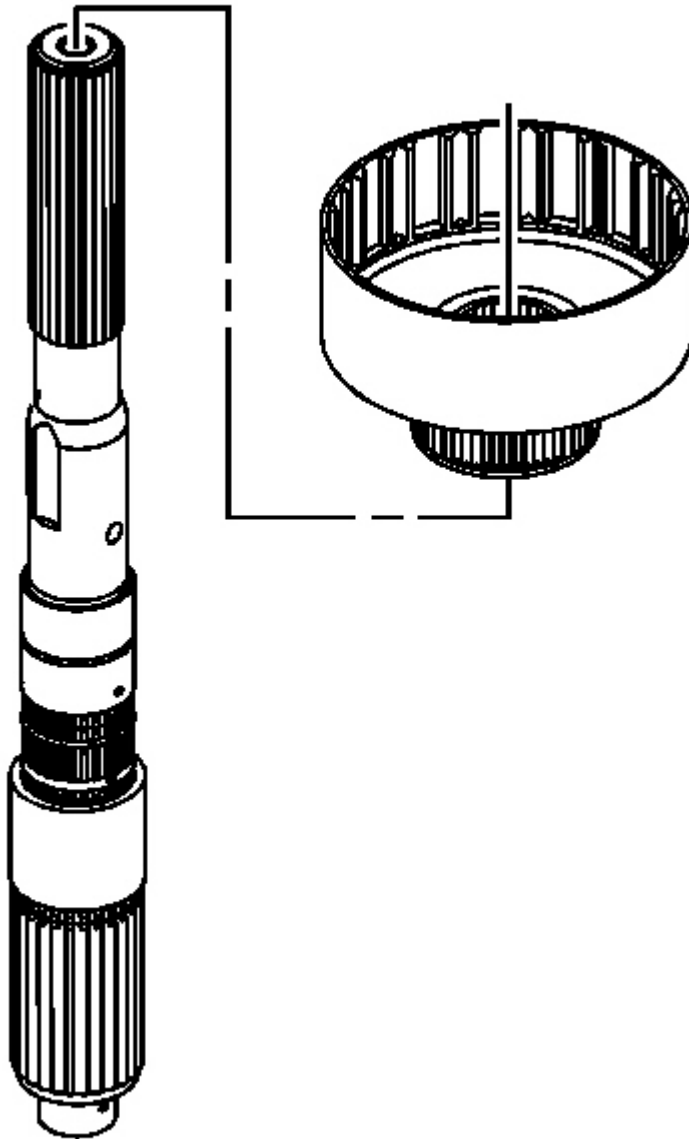
**Fig. 105: Drive Sprocket And Clutch Housing**  
Courtesy of GENERAL MOTORS CORP.

29. Install the drive sprocket on to the clutch housing.

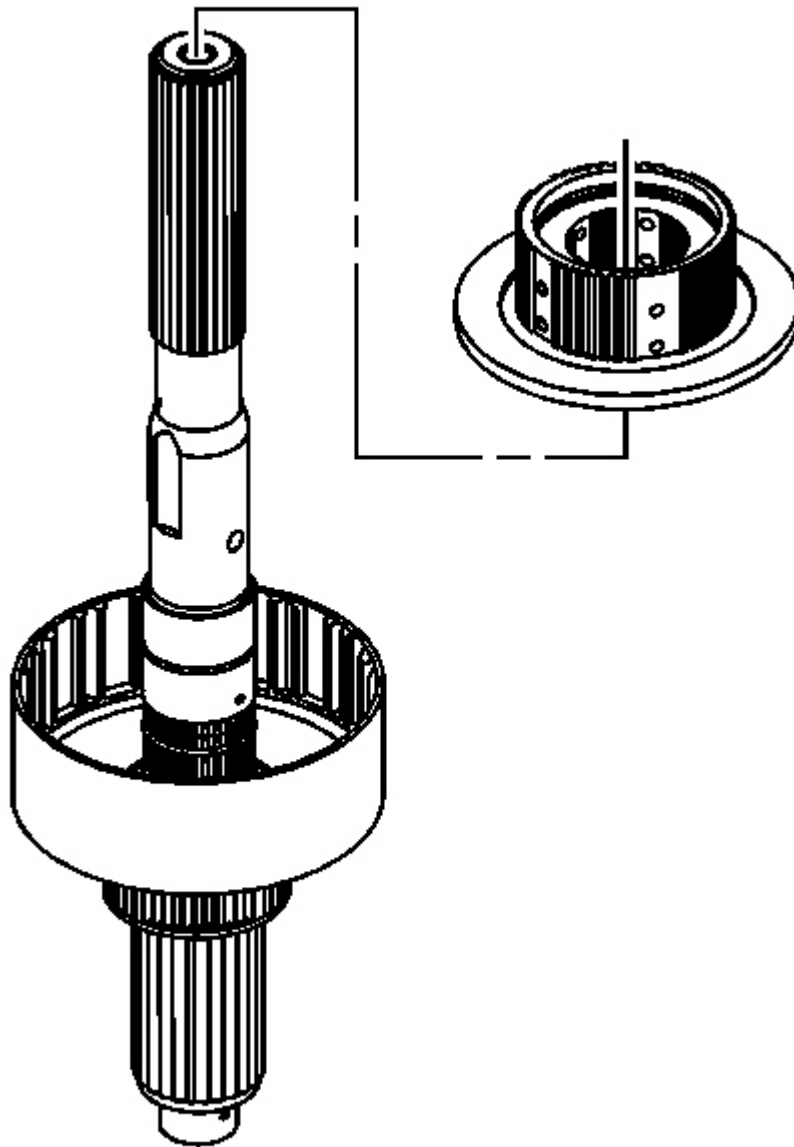


**Fig. 106: Retaining Ring For The Drive Sprocket On The Clutch Housing**  
Courtesy of GENERAL MOTORS CORP.

30. Install a new retaining ring for the drive sprocket on the clutch housing.
31. Lightly lubricate the clutch housing inner bearing with transfer case fluid.
32. Install the clutch housing onto the rear output shaft.

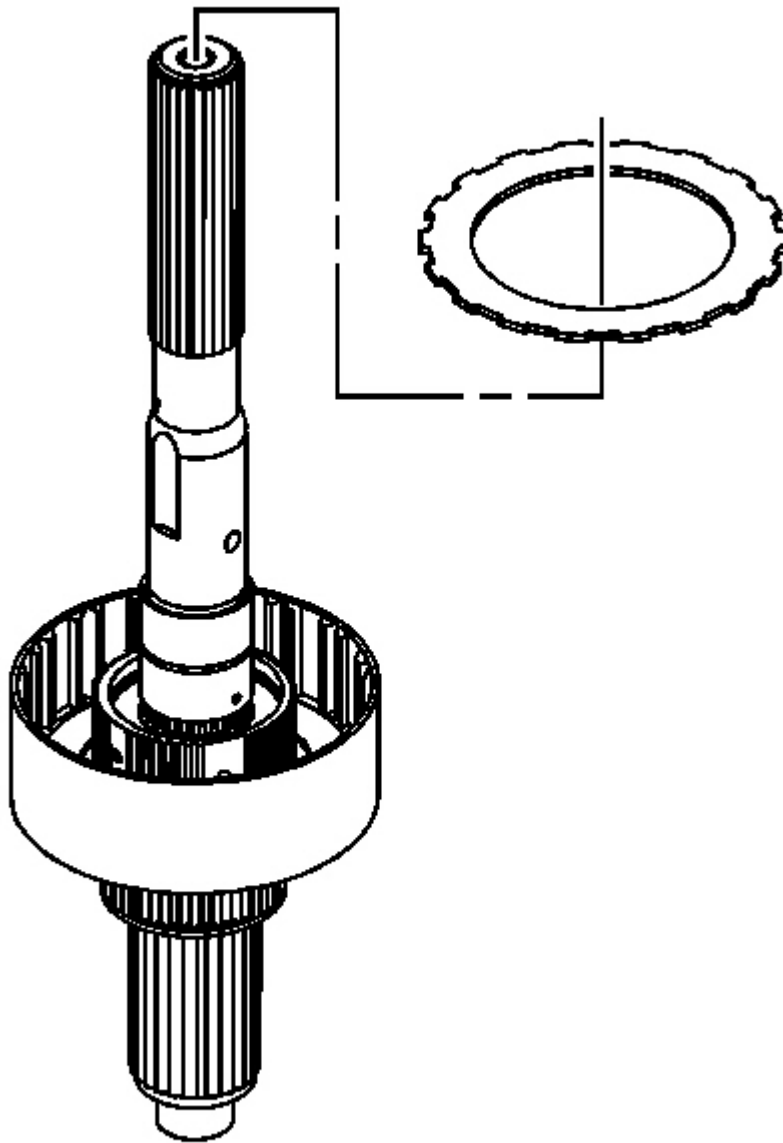


**Fig. 107: Installing The Clutch Housing Onto The Rear Output Shaft**  
Courtesy of GENERAL MOTORS CORP.



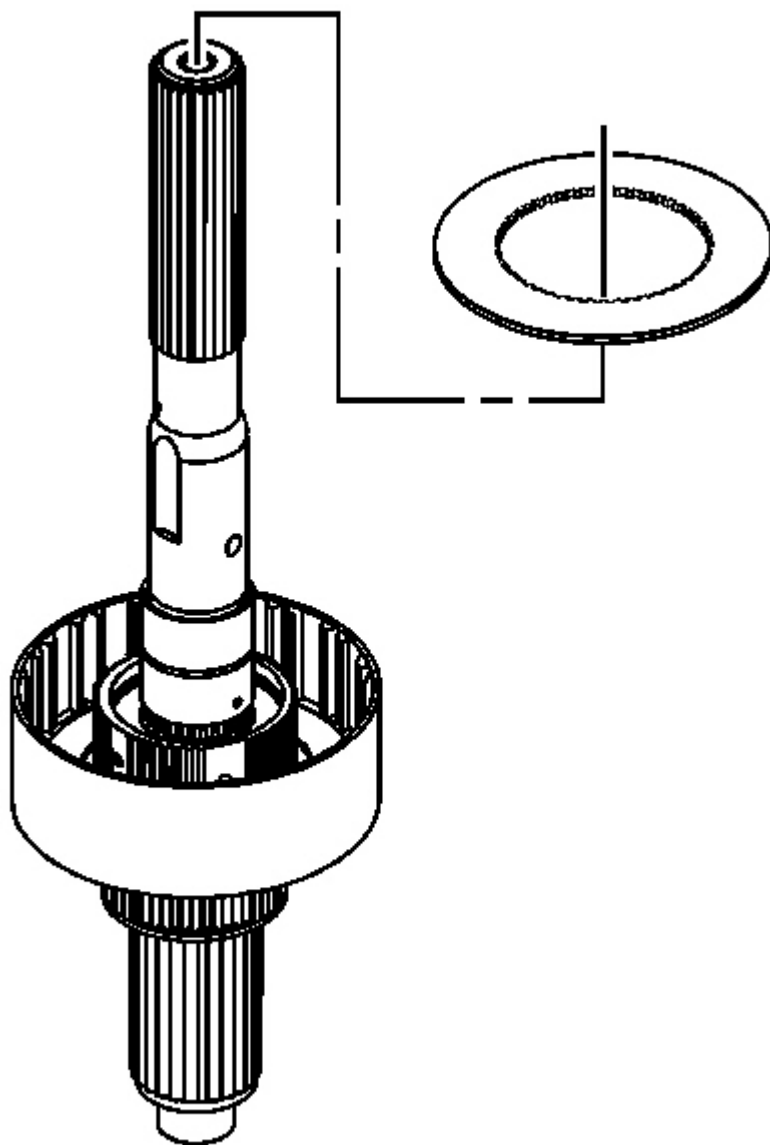
**Fig. 108: Installing The Clutch Hub Into The Clutch Housing**  
Courtesy of GENERAL MOTORS CORP.

33. Install the clutch hub into the clutch housing.



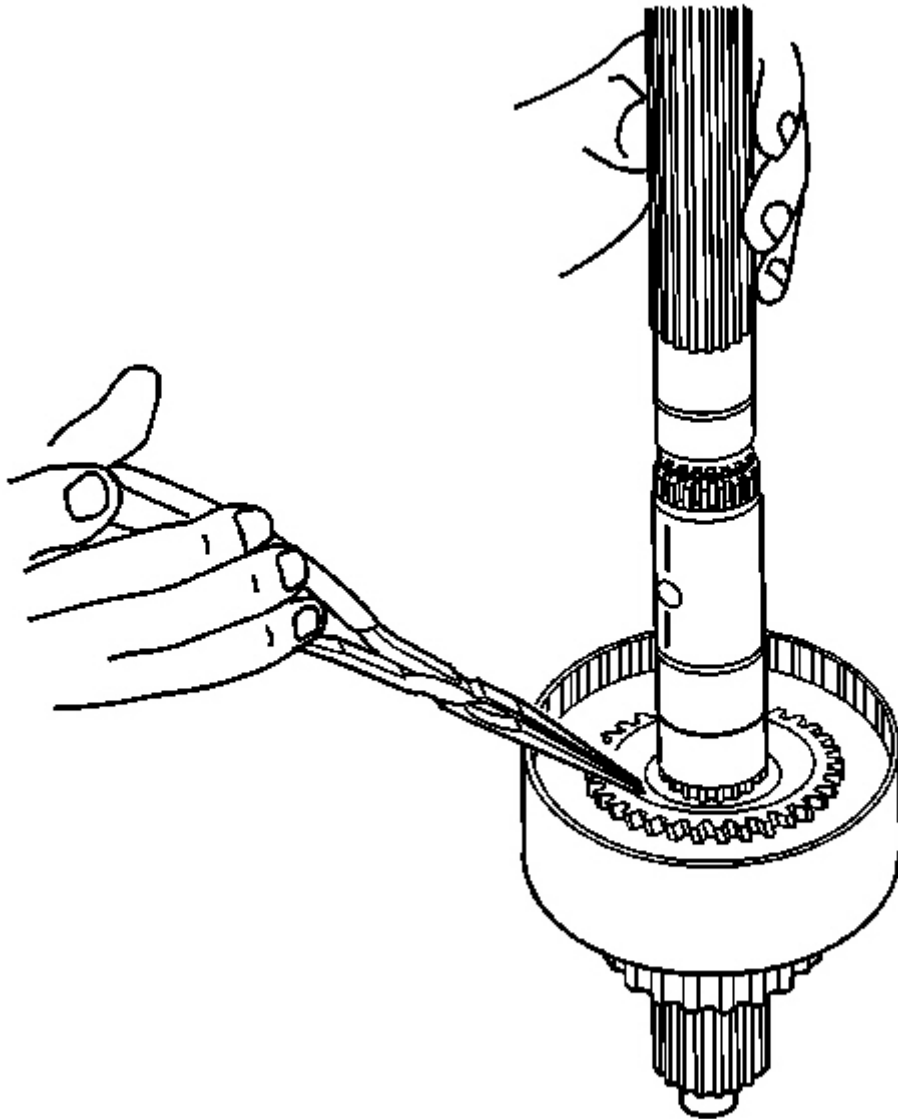
**Fig. 109: Installing An Outer Clutch Disc Into The Clutch Housing**  
Courtesy of GENERAL MOTORS CORP.

34. With the friction material facing down, install an outer clutch disc into the clutch housing.



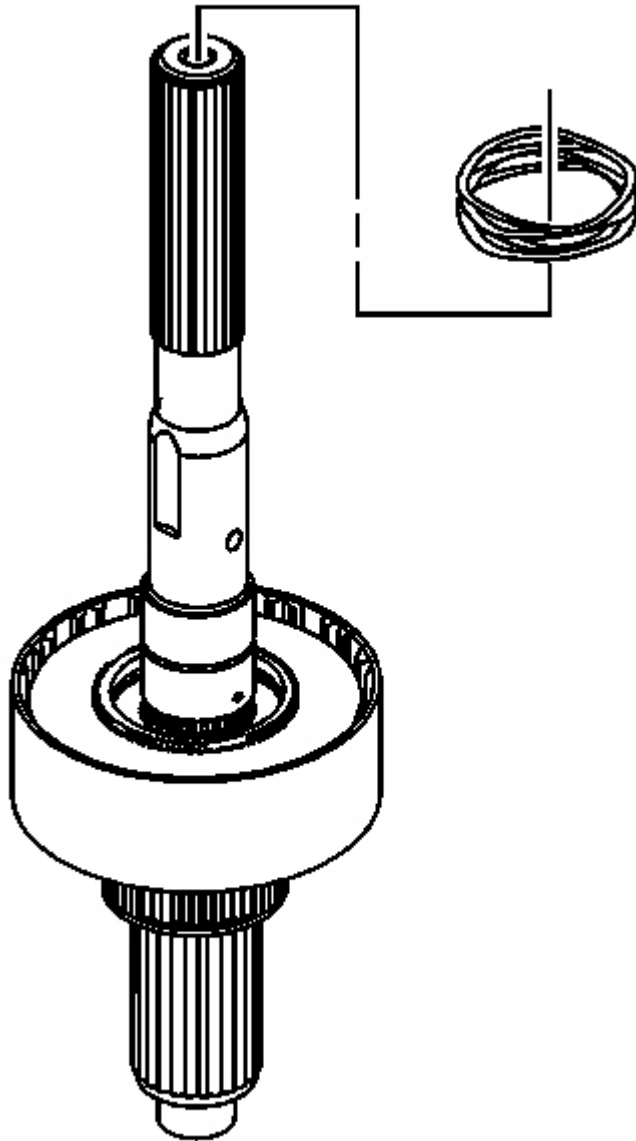
**Fig. 110: Installing An Inner Clutch Disc Into The Clutch Housing**  
Courtesy of GENERAL MOTORS CORP.

35. With the friction material facing down, install an inner clutch disc into the clutch housing.
36. Continue to install the outer clutch disc and inner clutch disc, alternating until 9 of each are installed.



**Fig. 111: Installing A New Clutch Hub Retaining Ring On To The Rear Output Shaft**  
Courtesy of GENERAL MOTORS CORP.

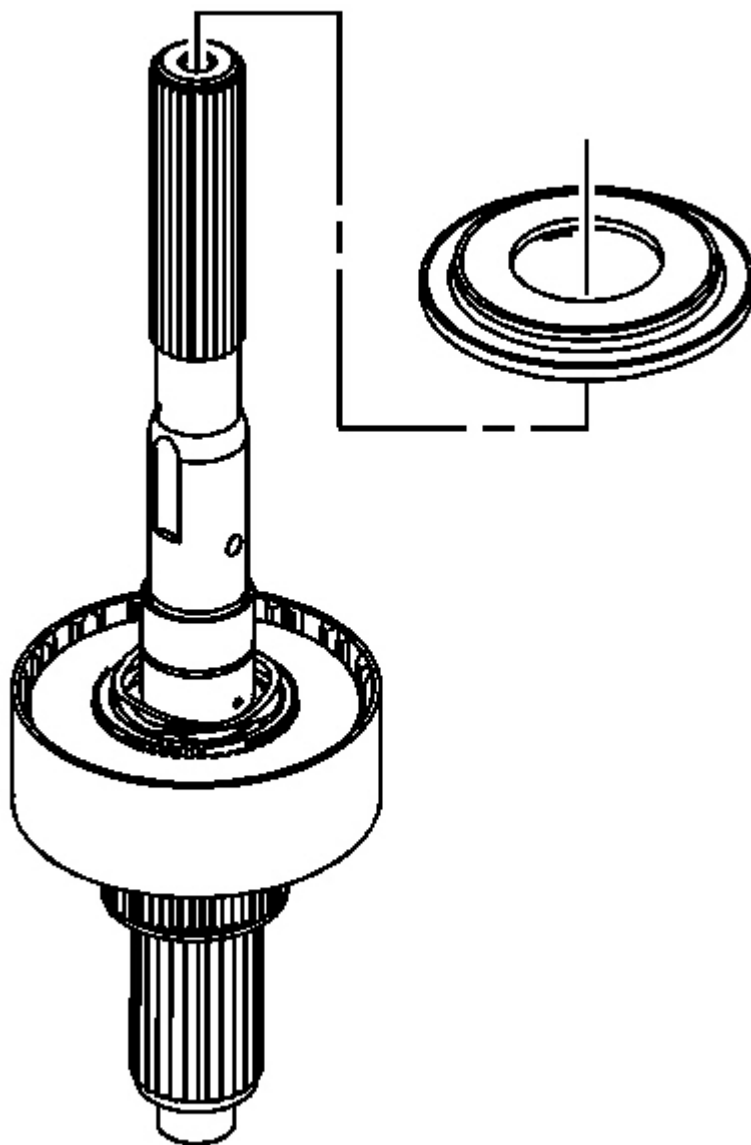
37. Install a new clutch hub retaining ring on to the rear output shaft.



**Fig. 112: Installing The Clutch Spring**  
**Courtesy of GENERAL MOTORS CORP.**

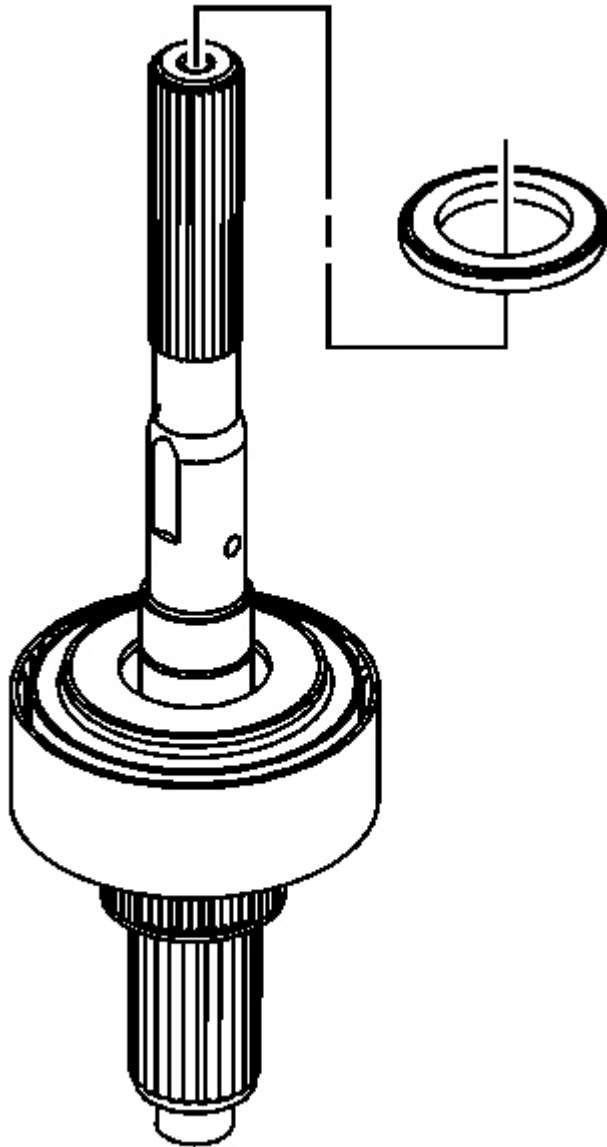
38. Install the clutch spring.





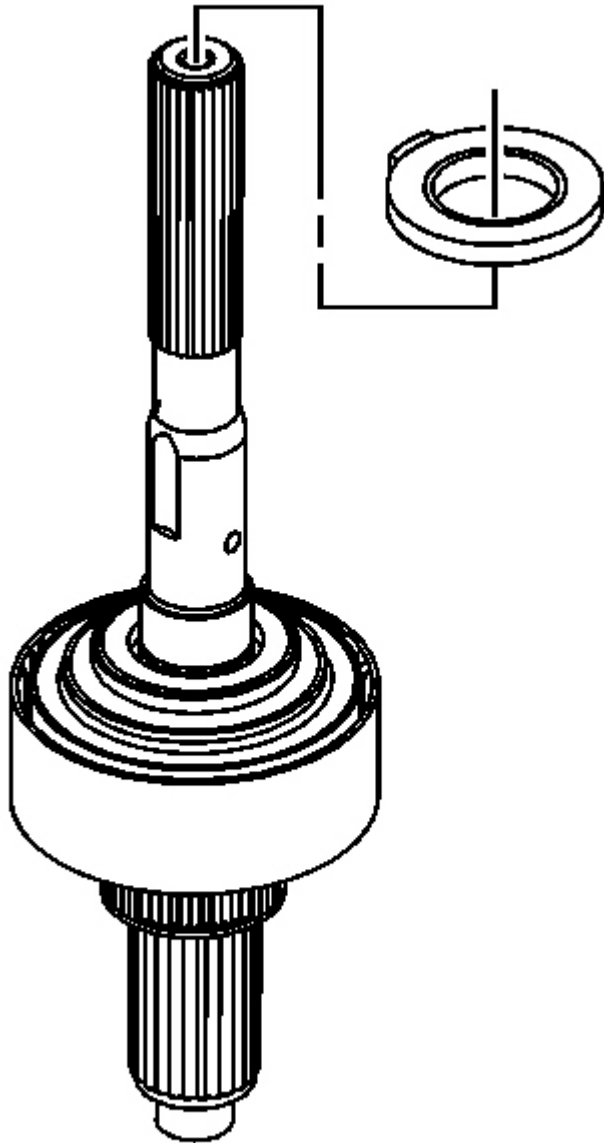
**Fig. 113: Installing The Clutch Apply Plate**  
Courtesy of GENERAL MOTORS CORP.

39. Install the clutch apply plate.
- Ensure the clutch apply plate tabs are aligned with the clutch hub.
  - Ensure the clutch spring is seated properly in the underside groove of the clutch apply plate.



**Fig. 114: Installing The Clutch Pressure Plate Bearing**  
Courtesy of GENERAL MOTORS CORP.

40. Install the clutch pressure plate bearing. The bearing will only install in one direction. The bearing will fit flush to the inner plate when properly installed.

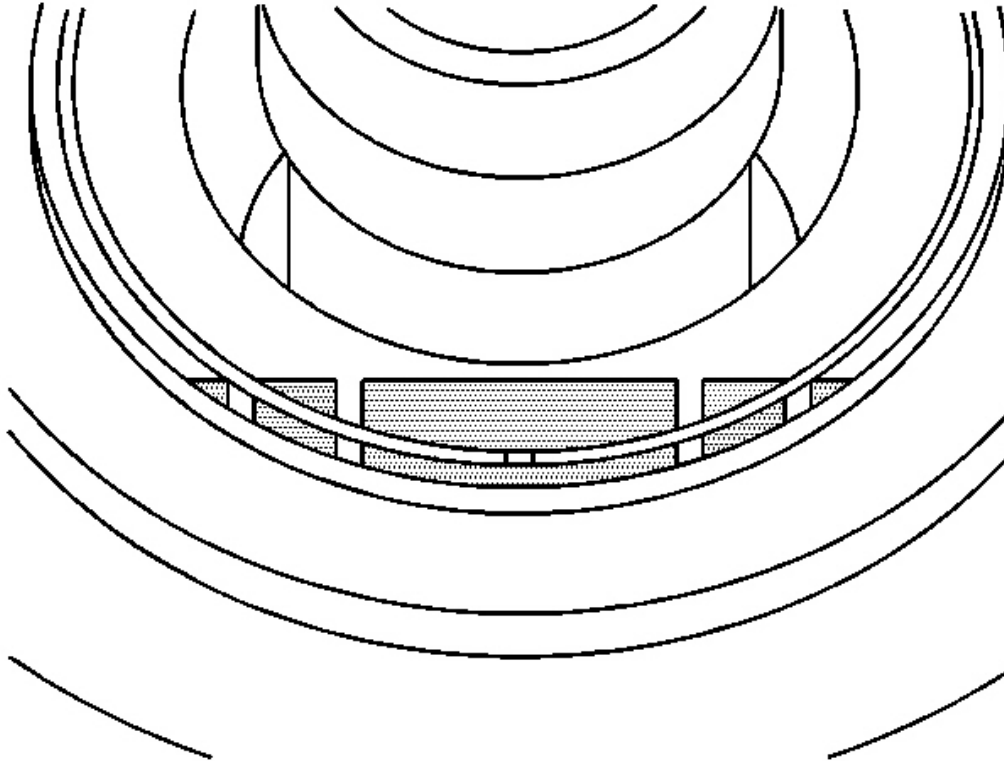


**Fig. 115: Installing The Clutch Inner Plate**  
Courtesy of GENERAL MOTORS CORP.

41. Install the clutch inner plate.

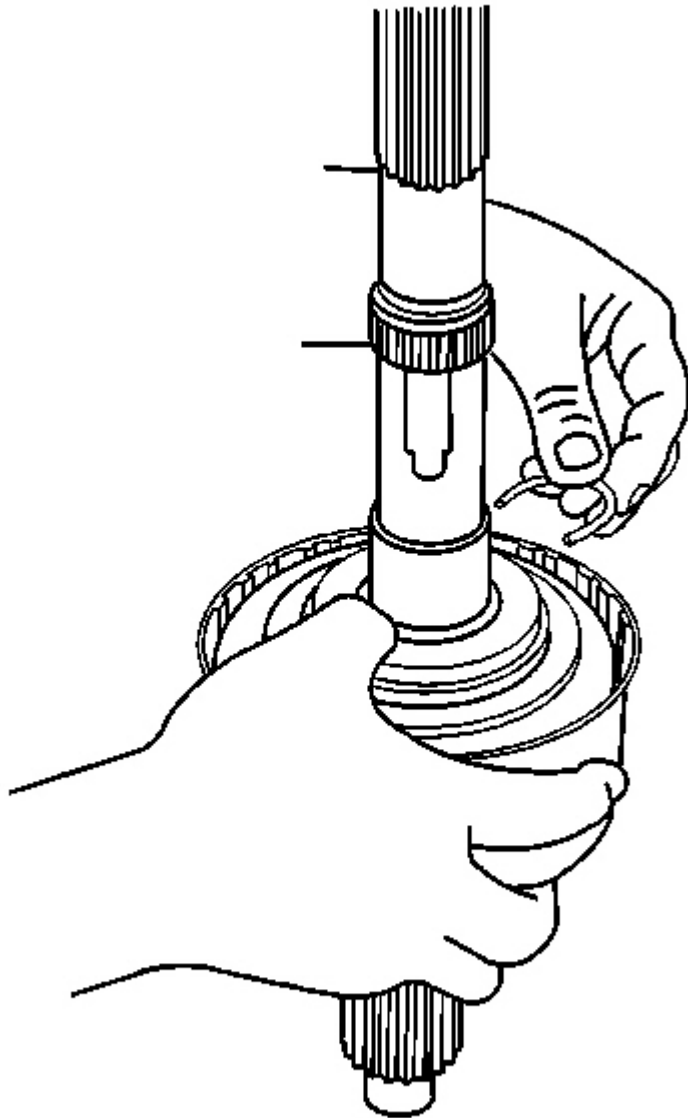
**IMPORTANT:** The marks on the clutch pressure plate bearing must be aligned before

**installing the clutch apply plate retaining ring.**



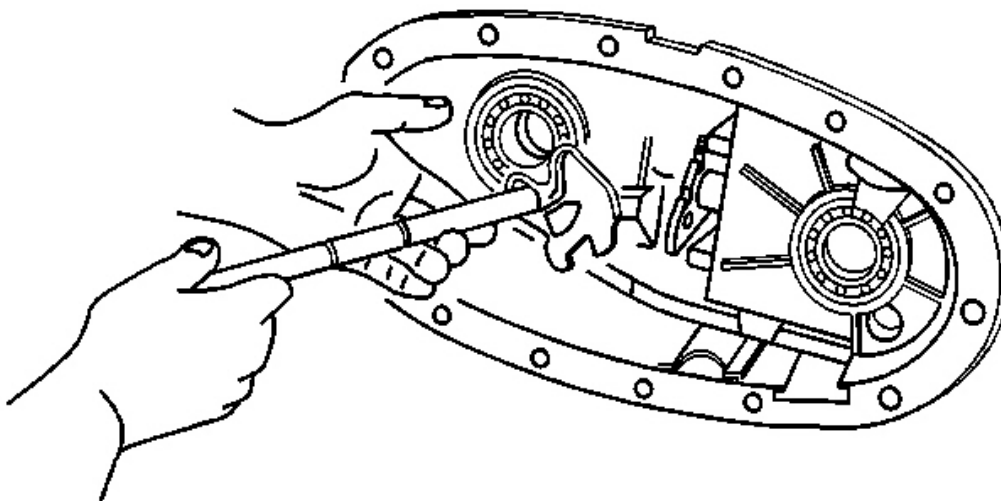
**Fig. 116: Aligning The Markings On The Clutch Pressure Plate Bearing**  
Courtesy of GENERAL MOTORS CORP.

42. Align the markings on the clutch pressure plate bearing.



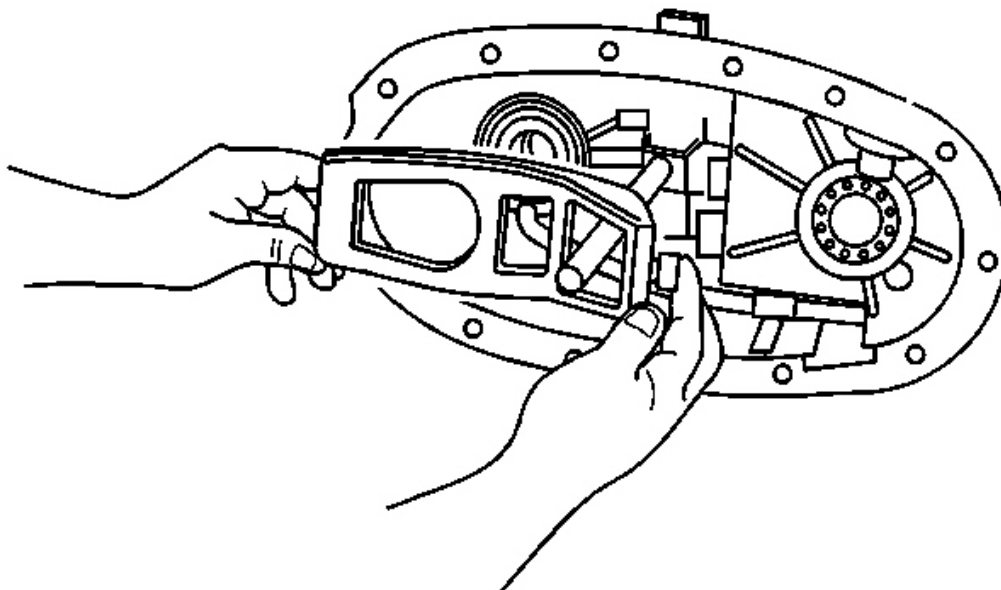
**Fig. 117: Installing The Clutch Apply Plate Retaining Ring**  
Courtesy of GENERAL MOTORS CORP.

43. While pushing down on the clutch apply plate, install the clutch apply plate retaining ring.



**Fig. 118: Installing The Shift Fork Shaft With The Shift Detent Lever**  
Courtesy of GENERAL MOTORS CORP.

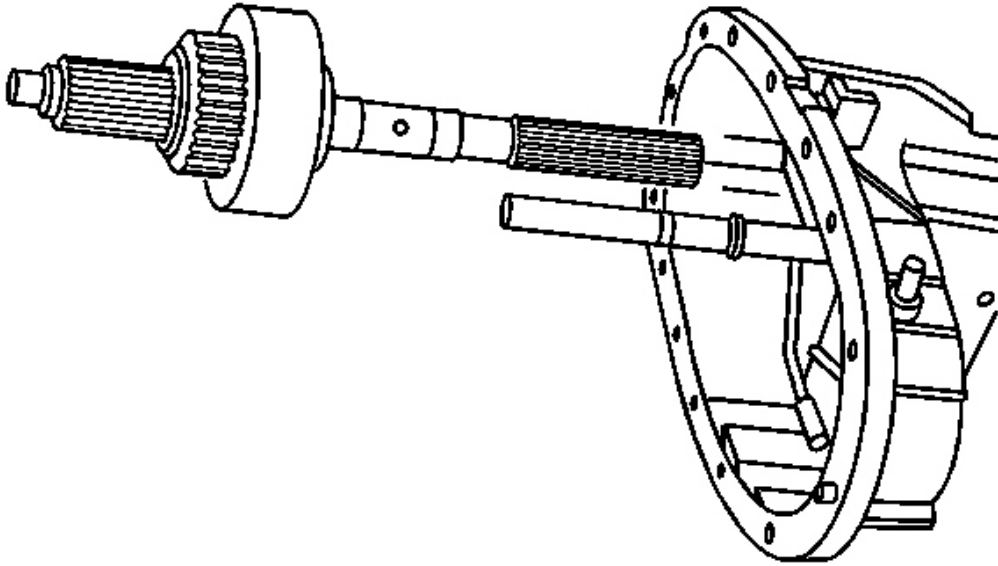
44. Install the shift fork shaft with the shift detent lever.
  1. Rotate the control actuator lever shaft while installing to the shift detent lever.
  2. Ensure the shift detent lever is installed on the roller of the control actuator lever shaft.



**Fig. 119: Installing The Clutch Lever To The Rear Case Half**  
Courtesy of GENERAL MOTORS CORP.

45. Install the clutch lever to the rear case half.
- Install the clutch lever over the shift fork shaft.
  - Position the clutch lever on to the 2 pivot pins.
  - Shift the control actuator lever shaft to the neutral position.

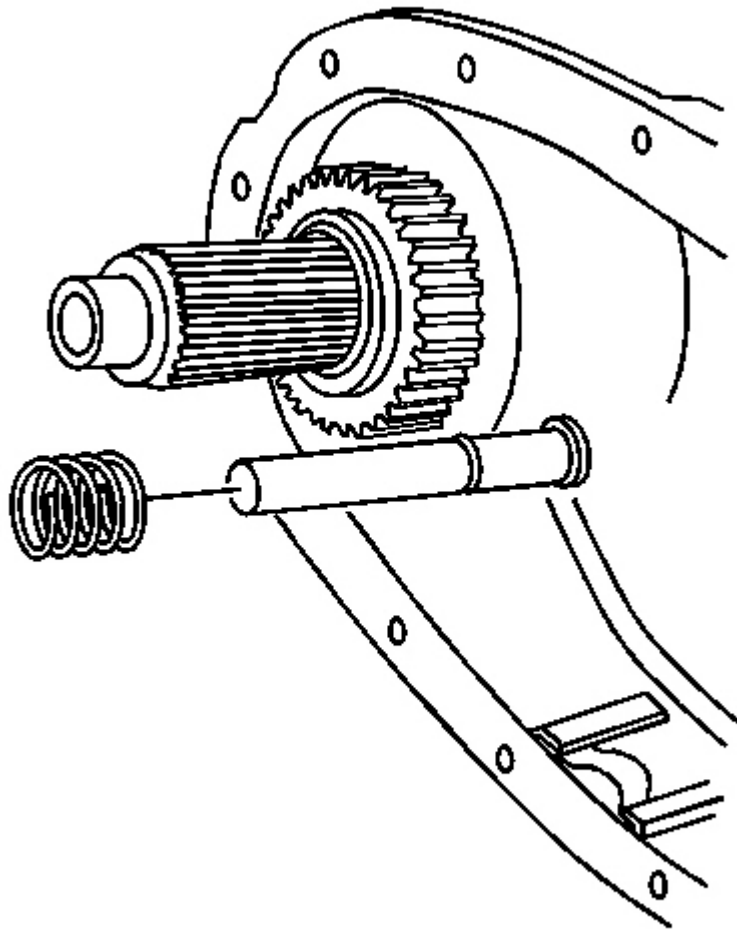
**IMPORTANT:** Ensure the flat area on the rear output shaft is aligned with the shift fork.



**Fig. 120: Installing The Rear Output Shaft Assembly**  
**Courtesy of GENERAL MOTORS CORP.**

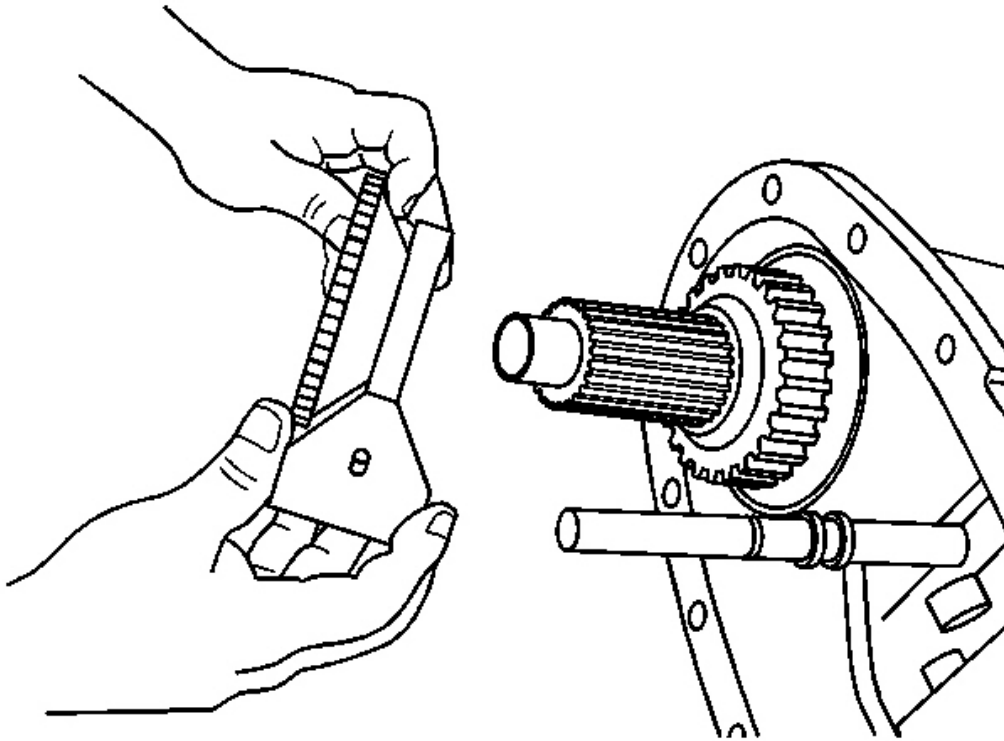
46. Install the rear output shaft assembly.





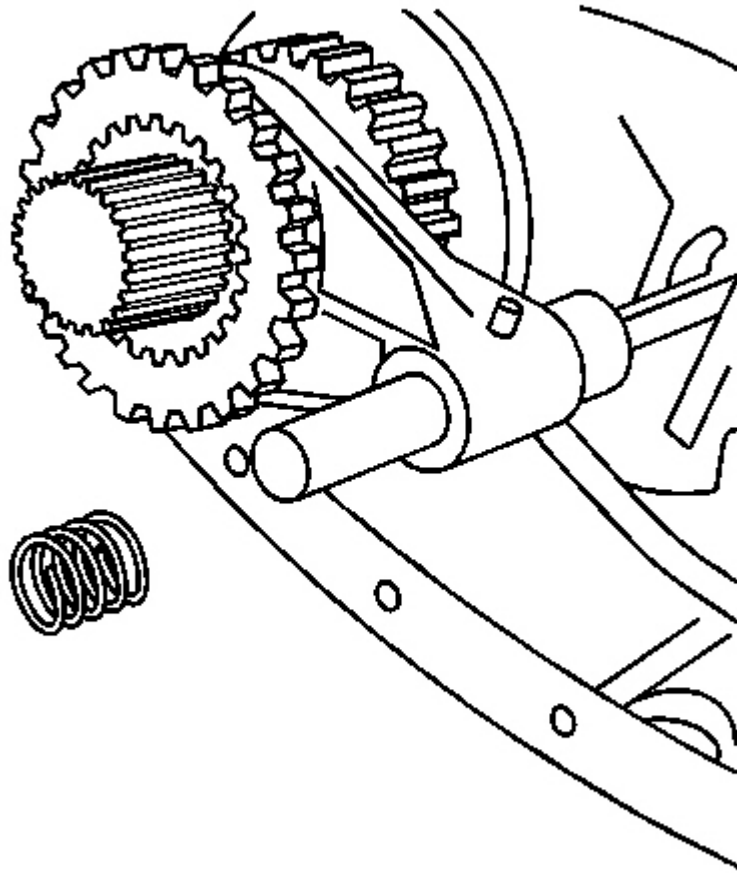
**Fig. 121: Installing The Bottom Retaining Ring On To The Shift Fork Shaft**  
Courtesy of GENERAL MOTORS CORP.

47. Install the bottom retaining ring on to the shift fork shaft.
48. Install the bottom spring on to the shift fork shaft.



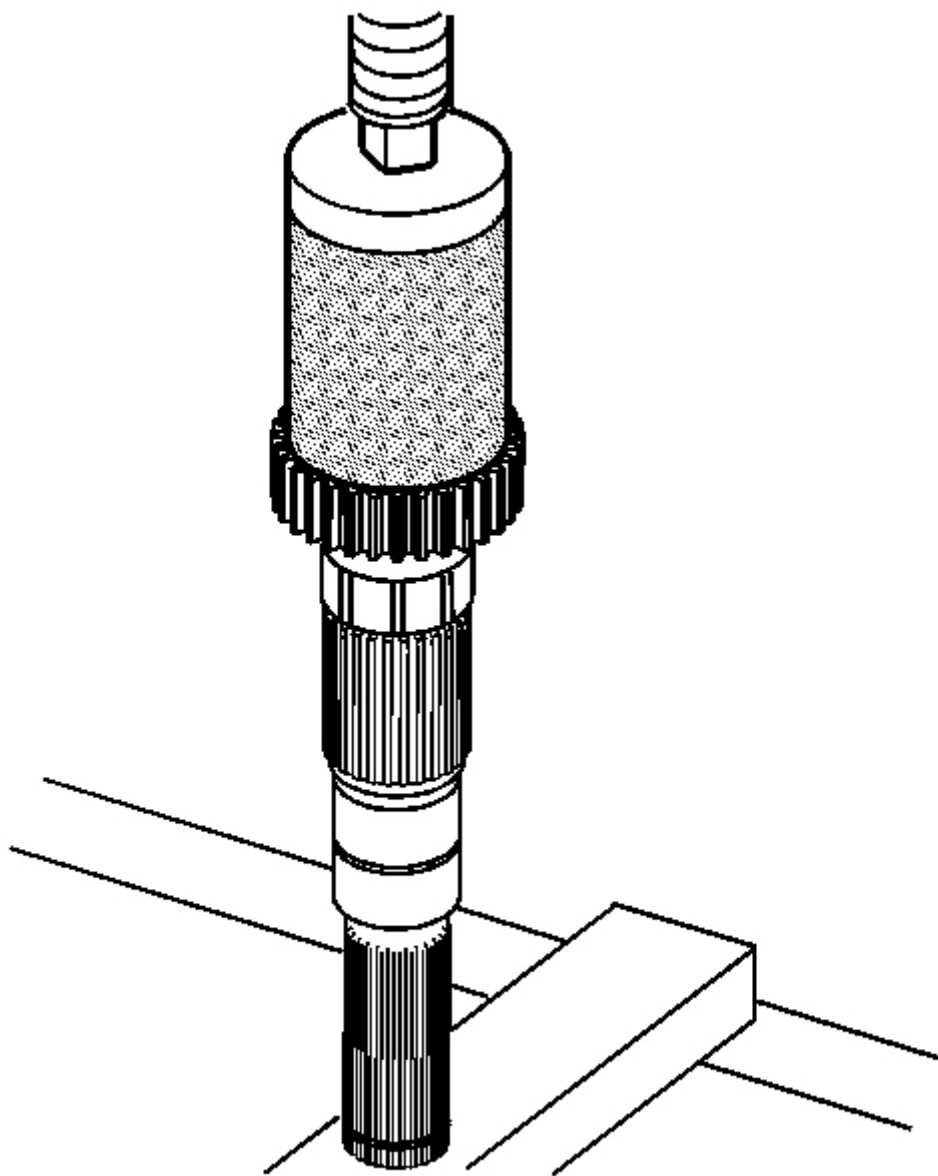
**Fig. 122: Installing The Range Sleeve On The Input Gear**  
Courtesy of GENERAL MOTORS CORP.

49. Install the range sleeve on the input gear while installing the shift fork on the shift fork shaft.



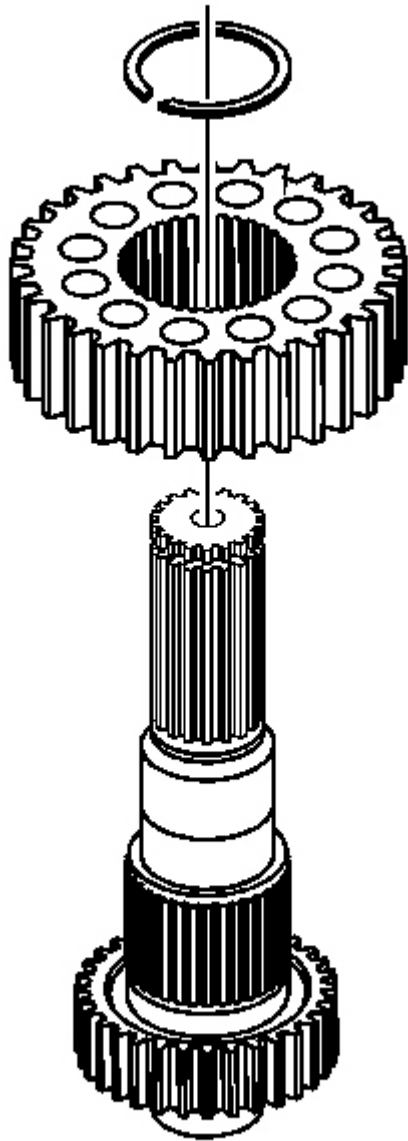
**Fig. 123: Installing The Top Shift Fork Spring**  
Courtesy of GENERAL MOTORS CORP.

50. Install the top shift fork spring.
51. Install the top retaining ring for the shift fork. Ensure the retaining ring is properly installed in the groove.



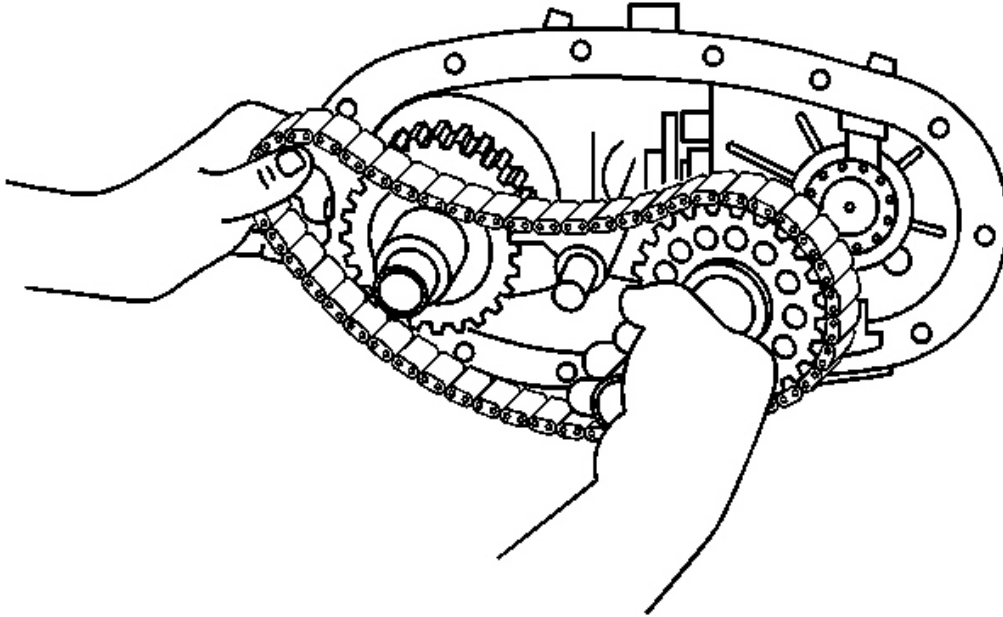
**Fig. 124: Installing A New Front Speed Sensor Reluctor Wheel Onto The Front Output Shaft**  
Courtesy of GENERAL MOTORS CORP.

52. Using a hydraulic press and the **J 36373** , install a new front speed sensor reluctor wheel onto the front output shaft.



**Fig. 125: Identifying Driven Sprocket On Front Output Shaft**  
Courtesy of GENERAL MOTORS CORP.

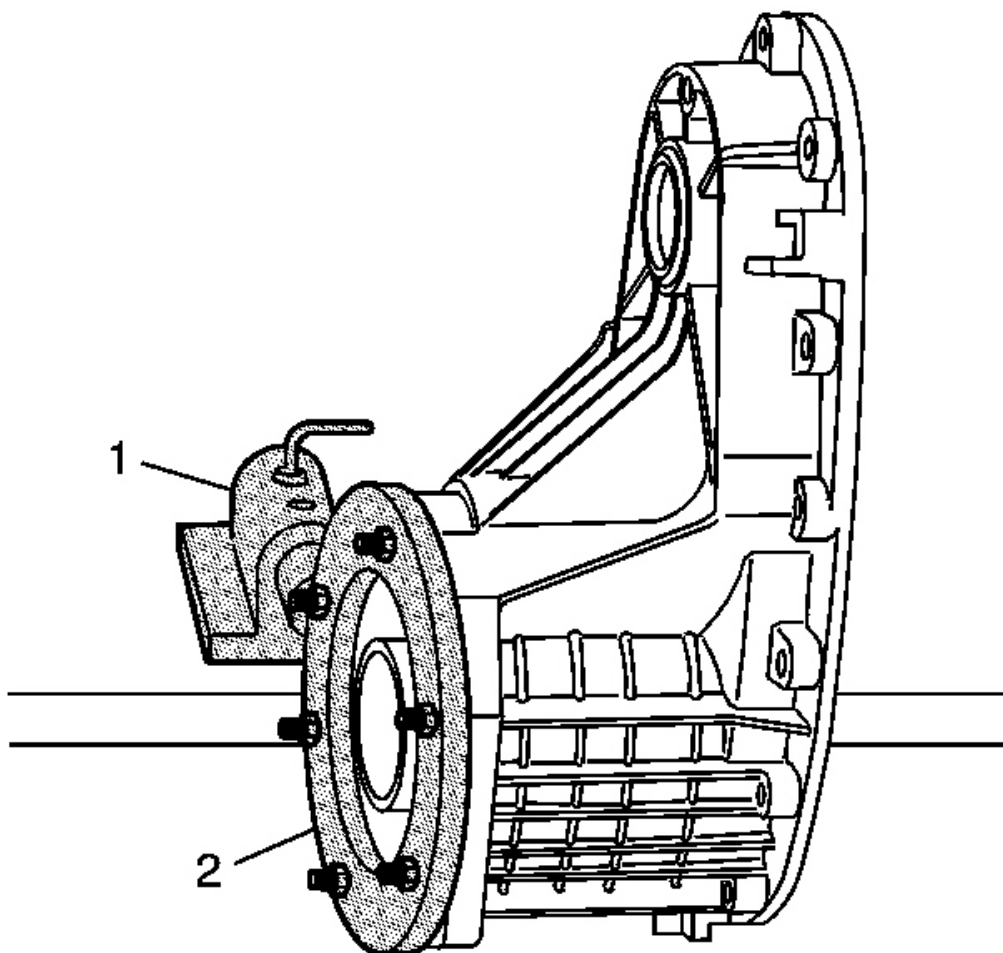
53. Install the driven sprocket onto the front output shaft.
54. Install a new driven sprocket retaining ring onto the front output shaft.



**Fig. 126: View Of Drive Case**  
Courtesy of GENERAL MOTORS CORP.

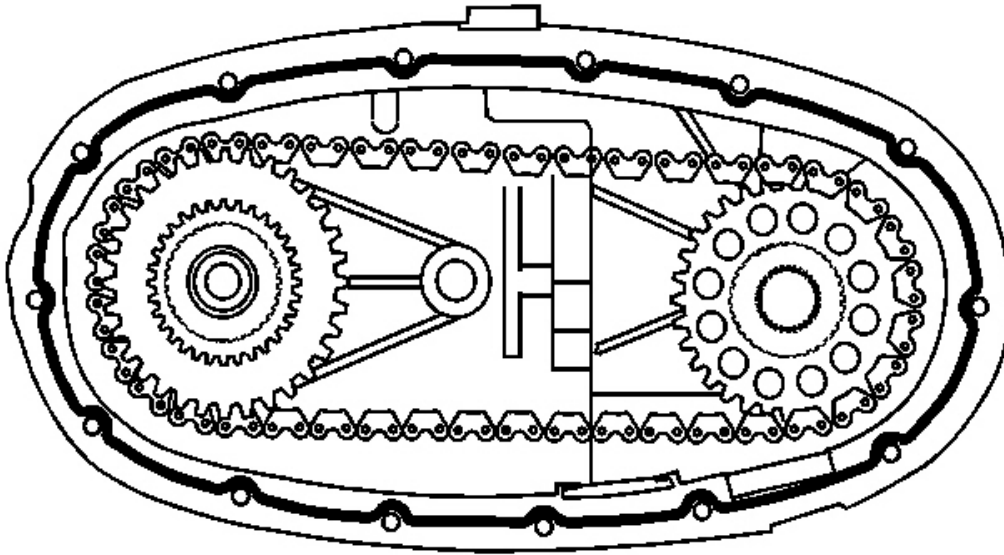
**IMPORTANT:** If using the drive chain again, align the marks made during disassembly for proper wear patterns realignment.

55. Install the drive chain assembly.
  1. Position the drive chain on the driven sprocket onto the front output shaft.
  2. Position the drive chain on the drive sprocket onto the rear output shaft.
  3. Install the front output shaft into the front output shaft rear bearing.



**Fig. 127: Mounting Transfer Case To J 45759**  
Courtesy of GENERAL MOTORS CORP.

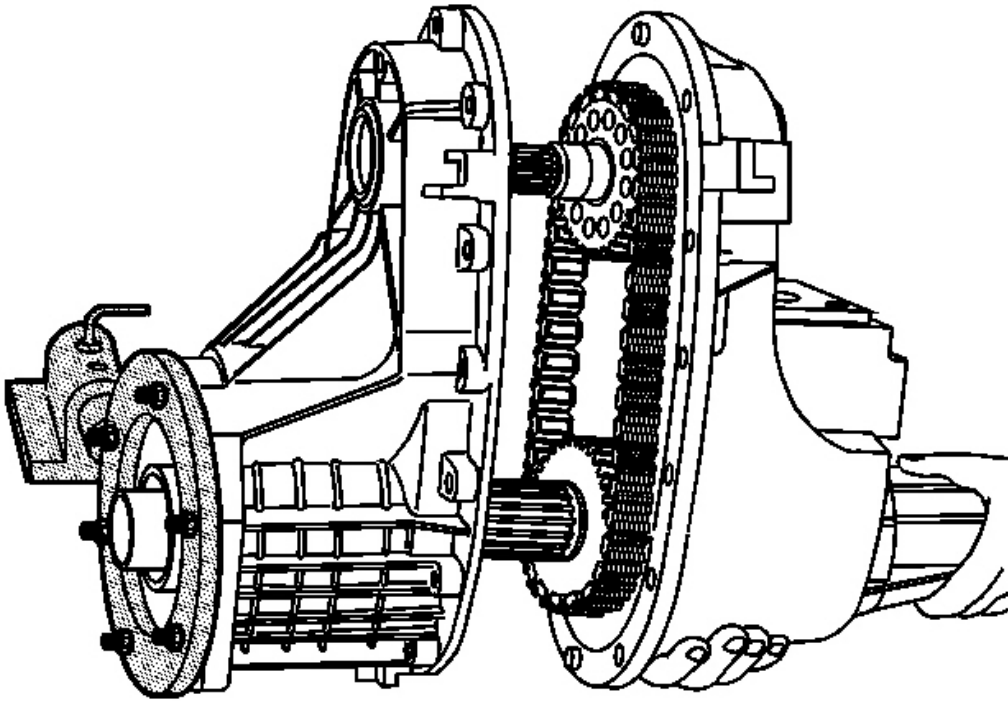
56. Attach the **J 45759** (2) to the transfer case front half.
57. Install the **J 45759** (2) into the **J 3289-20** (1) and secure with the pivot pin.



**Fig. 128: Identifying Sealant On Rear Case Half**  
Courtesy of GENERAL MOTORS CORP.

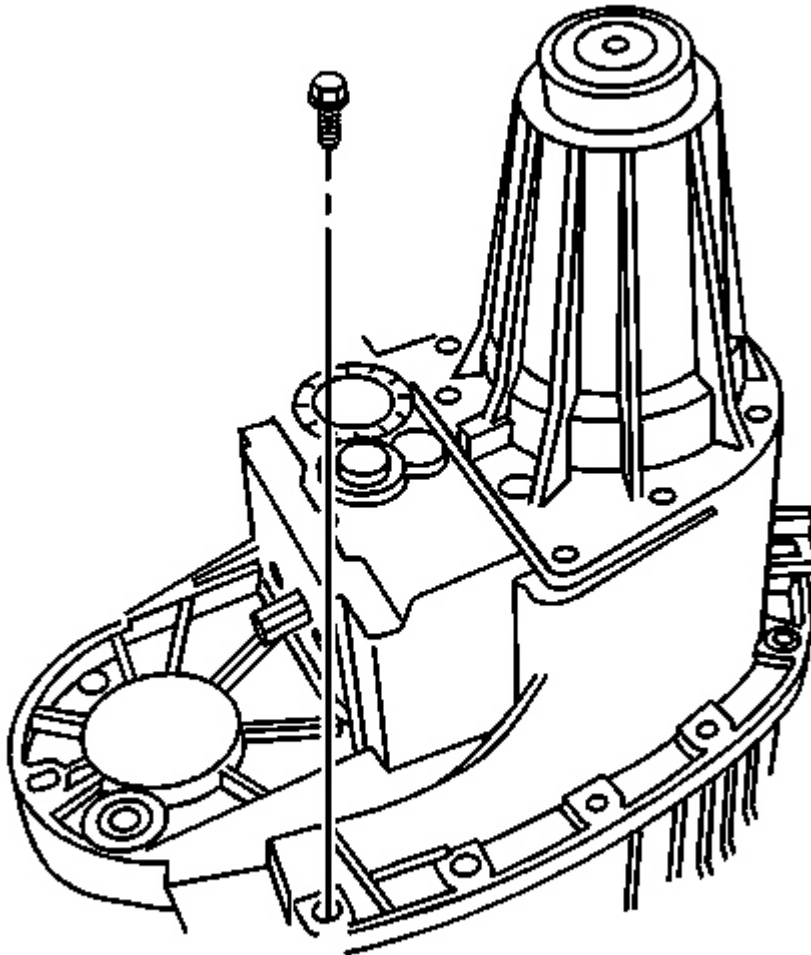
58. Apply a 3 mm (1/8 in) bead of sealant GM P/N 12345739 (Canadian P/N 10953541) or equivalent onto the rear case half.





**Fig. 129: View Of Front Case Half & Rear Case Half**  
Courtesy of GENERAL MOTORS CORP.

59. Inspect to ensure the location pins are installed in the front case half.
60. Install any missing location pins in the front case half.
61. Install the front case half to the rear case half.
  - Rotating the output shaft will align the splines with the input gear.
  - The case halves should come together without any resistance.
  - The rear case half should align on the front case half location pins.

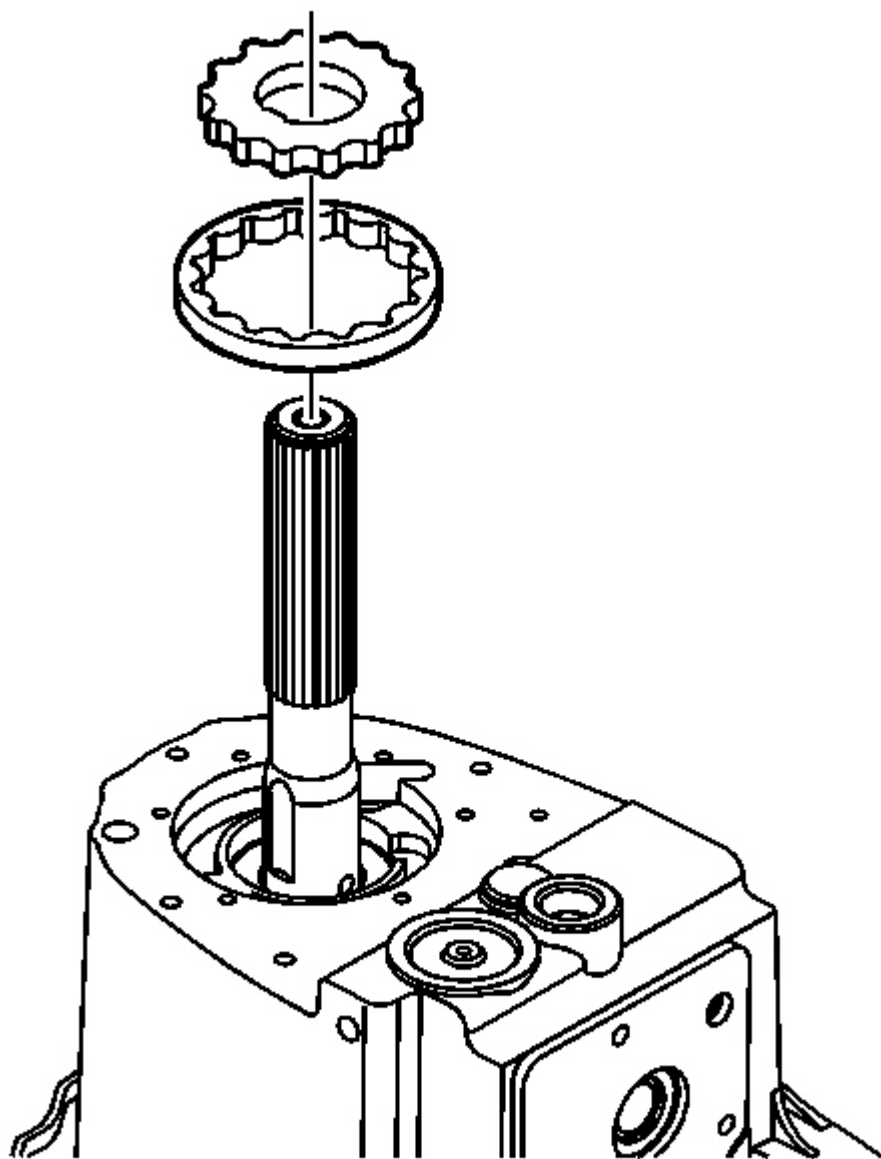


**Fig. 130: View Of Front Case Half To Rear Case Half Bolts**  
Courtesy of GENERAL MOTORS CORP.

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

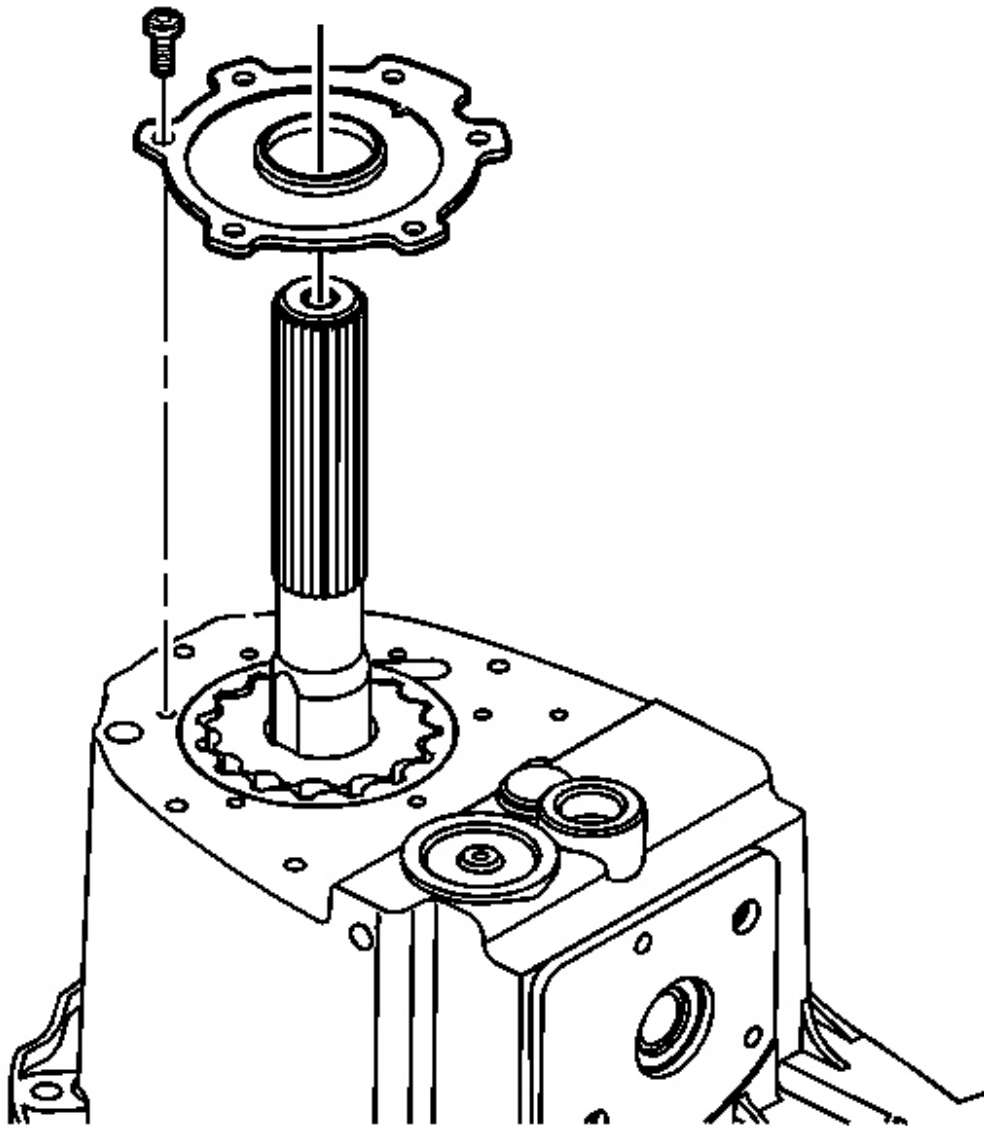
62. Install the front case half to rear case half bolts.

**Tighten:** Tighten the case half bolts to 22 N.m (16 lb ft).



**Fig. 131: Installing Oil Pump Driven Gear & Drive Gear**  
Courtesy of GENERAL MOTORS CORP.

63. Install the oil pump driven gear, the outer rotor.
64. Install the oil pump drive gear, the inner rotor. The flat on the inner rotor aligns to the flat area on the rear output shaft.

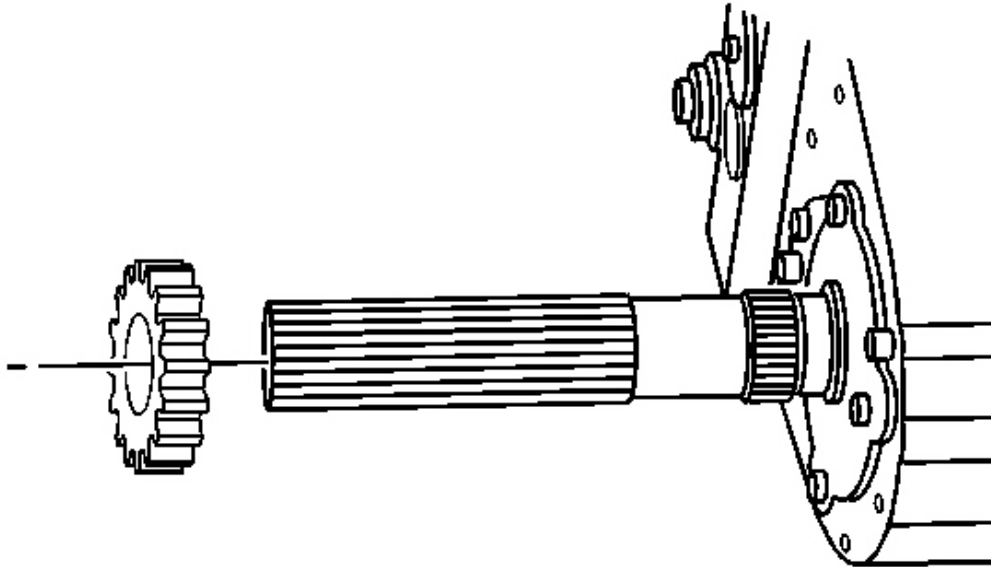


**Fig. 132: Installing Oil Pump Cover Mounting Bolts**  
Courtesy of GENERAL MOTORS CORP.

**IMPORTANT: DO NOT** use sealer on the oil pump cover.

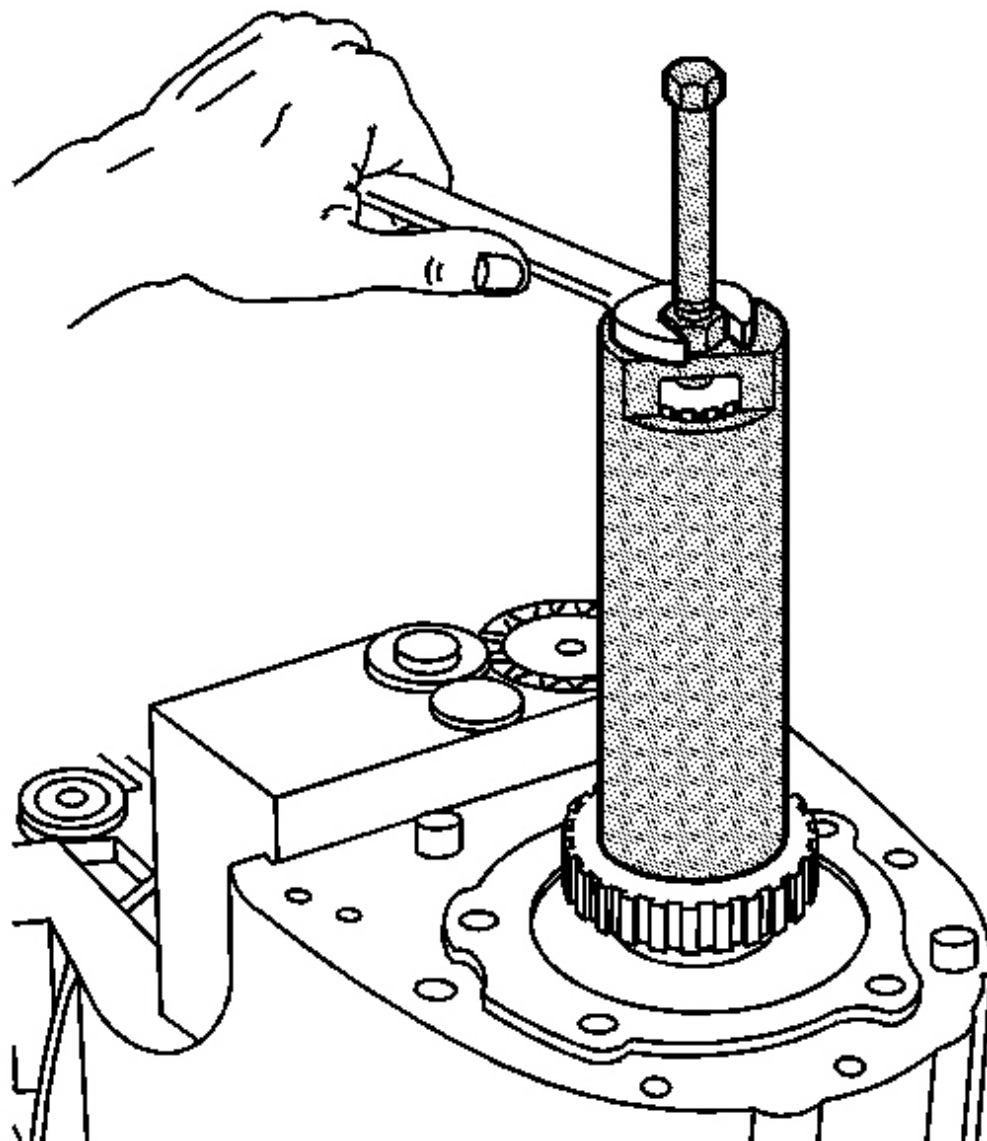
65. Install the oil pump cover.
66. Install the oil pump cover mounting bolts.

**Tighten:** Tighten the oil pump cover mounting bolts to 11 N.m (9 lb ft).



**Fig. 133: Aligning Speed Sensor Reluctor Wheel**  
Courtesy of GENERAL MOTORS CORP.

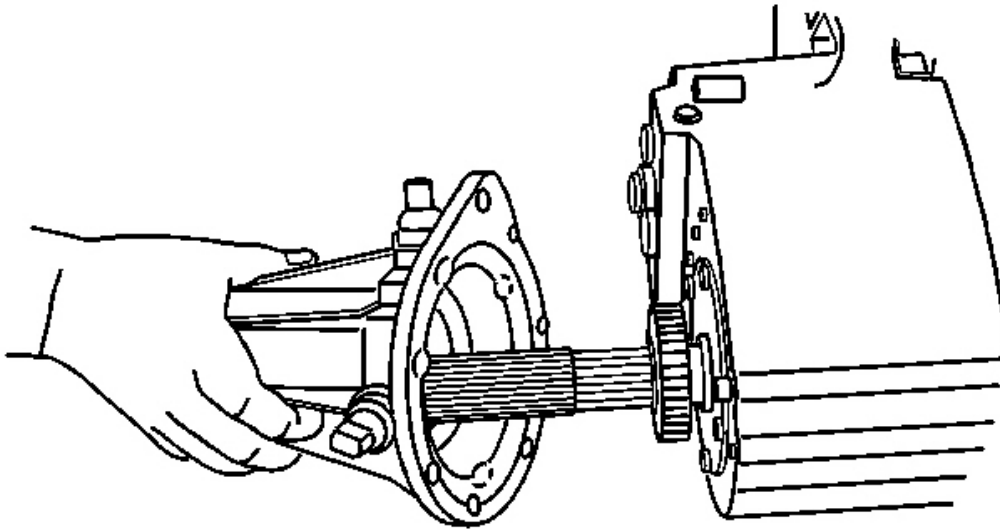
67. Position the NEW speed sensor reluctor wheel on to the rear output shaft.



**Fig. 134: Using J 45235 To Install Rear Speed Sensor Reluctor Wheel**  
Courtesy of GENERAL MOTORS CORP.

**IMPORTANT:** Use the J 45235 to install the rear speed sensor reluctor wheel to the proper specifications.

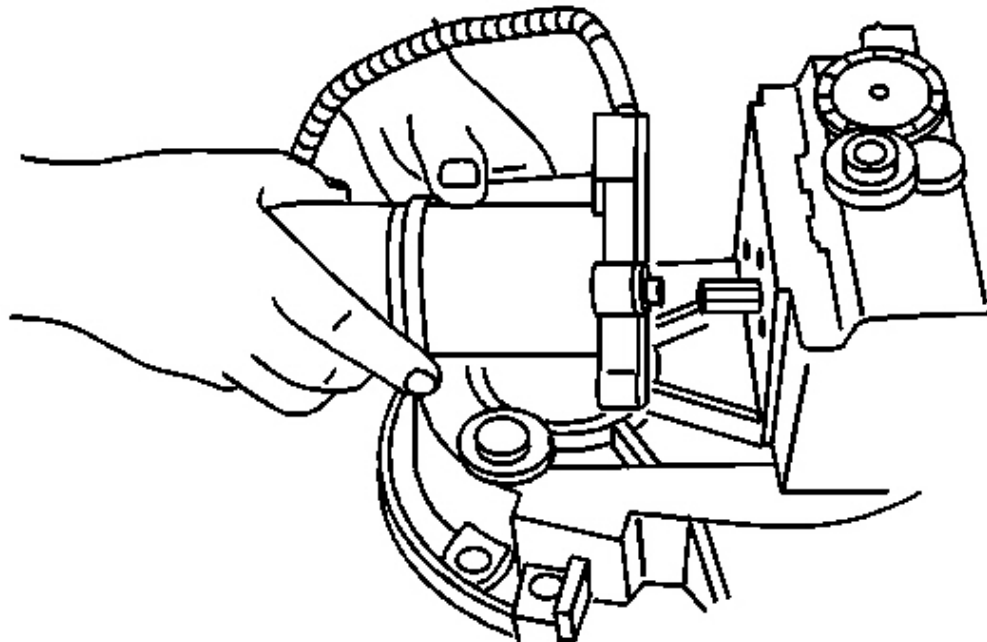
68. Using the **J 45235** on the rear output shaft, install the rear speed sensor reluctor wheel.



**Fig. 135: Identifying Rear Extension**  
Courtesy of GENERAL MOTORS CORP.

69. Inspect to ensure the rear extension location pins are installed in the rear case half.
70. Install any missing location pins in the rear case half.
71. Apply a 3 mm (1/8 in) bead of sealant GM P/N 12345739 (Canadian P/N 10953541) or equivalent onto the rear extension.
72. Install the rear extension to the rear case half. Align on the location pins.
73. Install the rear extension bolts.

**Tighten:** Tighten the rear extension bolts to 22 N.m (16 lb ft).



**Fig. 136: View Of Motor/Encoder Assembly**  
Courtesy of GENERAL MOTORS CORP.

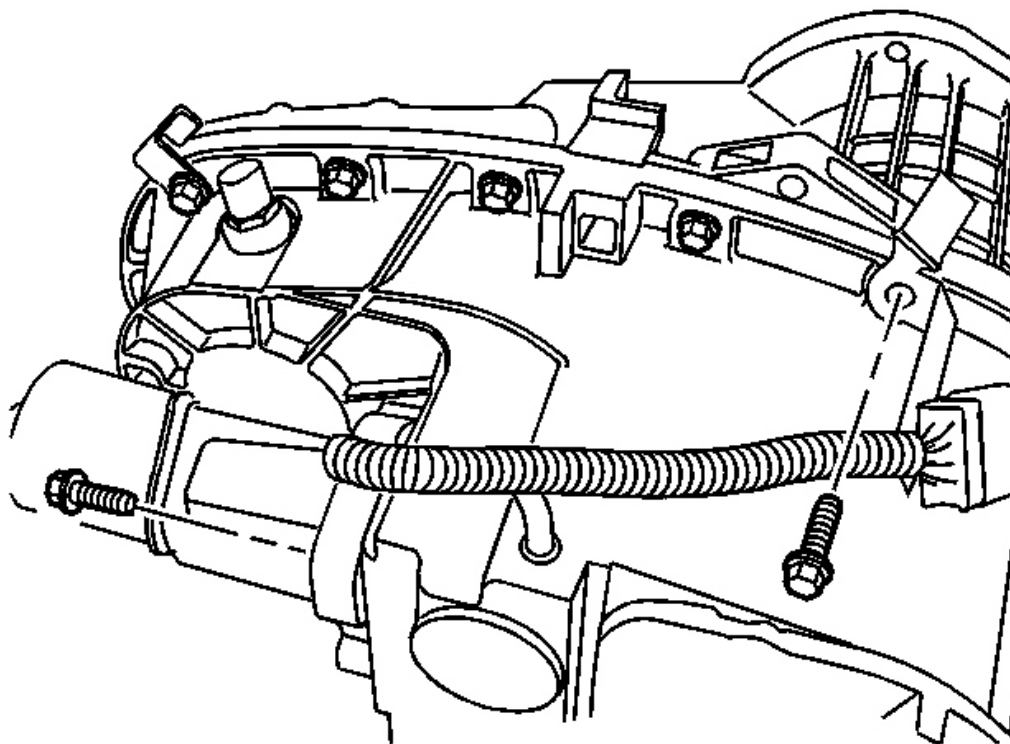
**IMPORTANT:** The shift control detent must be in the neutral position when installing the motor/encoder.

74. Shift the shift control detent into the neutral position.

**IMPORTANT:** A new motor/encoder will not have location pins.

75. Inspect to ensure the location pins are installed in the motor/encoder.
76. Install any missing location pins in the motor/encoder.
77. Install the motor/encoder assembly.





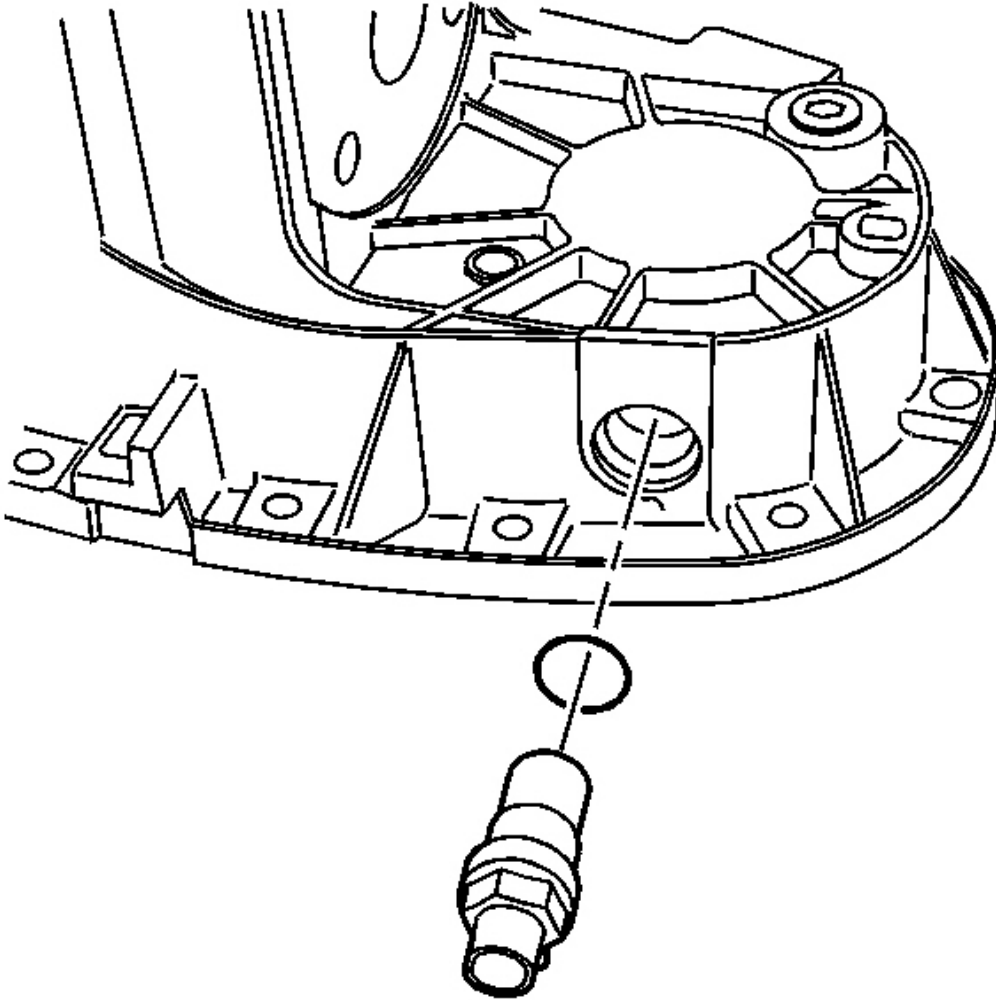
**Fig. 137: Locating Motor/Encoder And Harness Mounting Bolts**  
Courtesy of GENERAL MOTORS CORP.

78. Install the motor/encoder mounting bolts.

**Tighten:** Tighten the motor/encoder mounting bolts to 16 N.m (12 lb ft).

79. Install the motor/encoder wiring harness bracket and case half bolt.

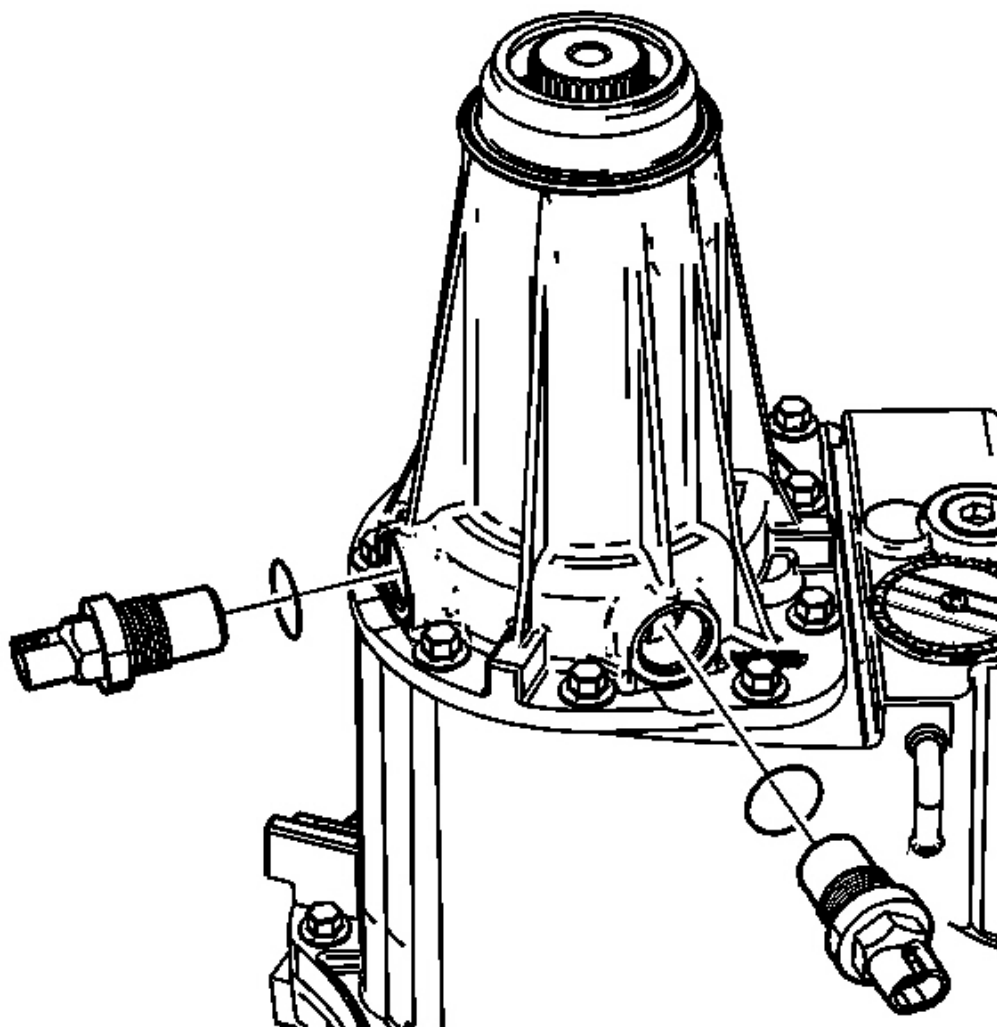
**Tighten:** Tighten the case half bolt to 22 N.m (16 lb ft).



**Fig. 138: Identifying Front Vehicle Speed Sensor (VSS)**  
Courtesy of GENERAL MOTORS CORP.

80. Install the front vehicle speed sensor (VSS).

**Tighten:** Tighten the front VSS to 17 N.m (13 lb ft).



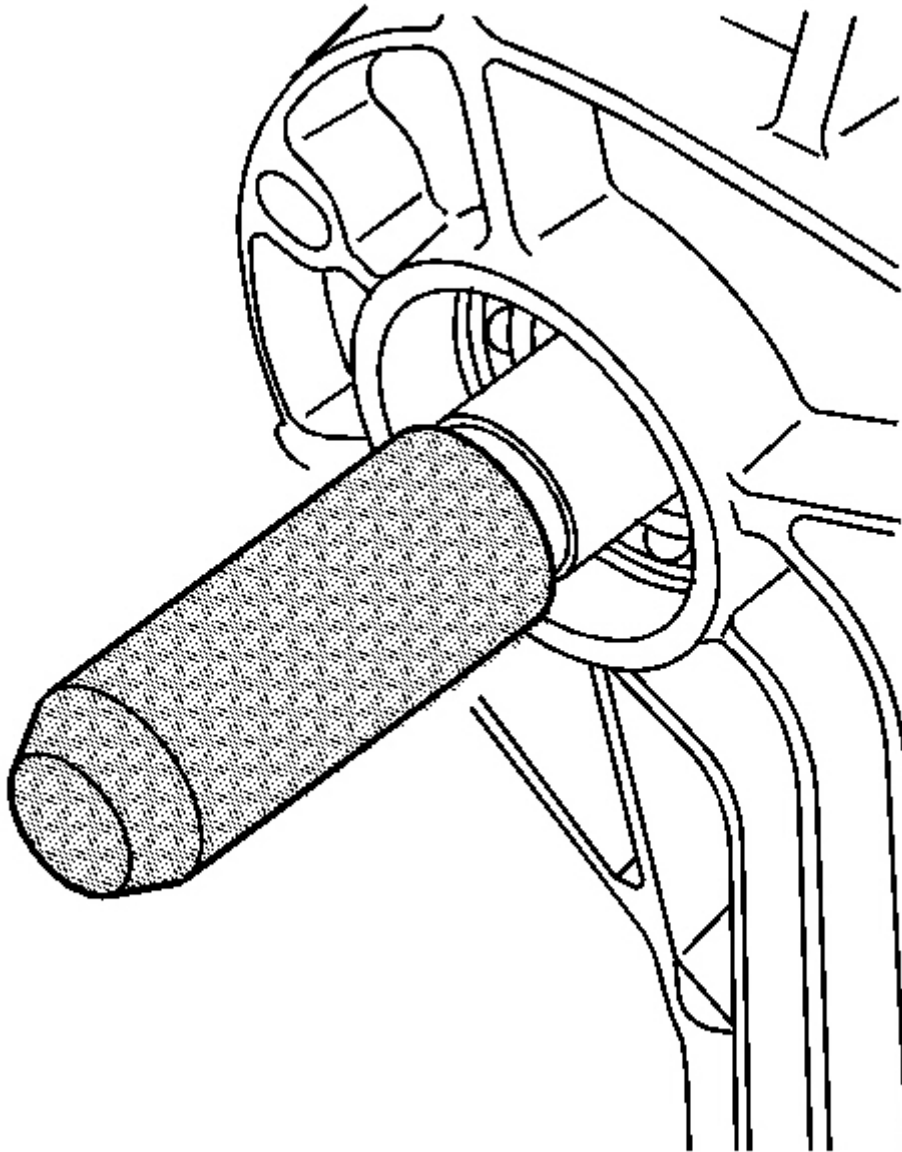
**Fig. 139: View Of Right Rear And Left Rear Vehicle Speed Sensor (VSS)**  
Courtesy of GENERAL MOTORS CORP.

81. Install the right rear VSS.

**Tighten:** Tighten the right rear VSS to 17 N.m (13 lb ft).

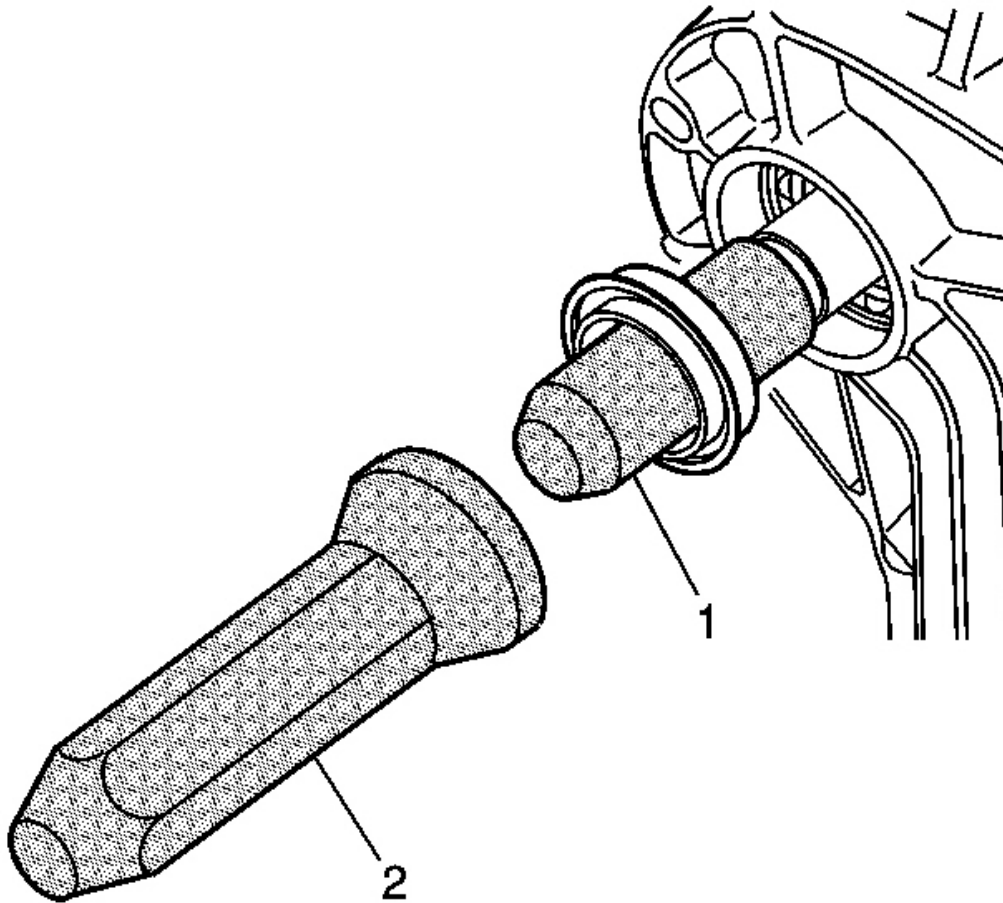
82. Install the left rear VSS.

**Tighten:** Tighten the left rear VSS to 17 N.m (13 lb ft).



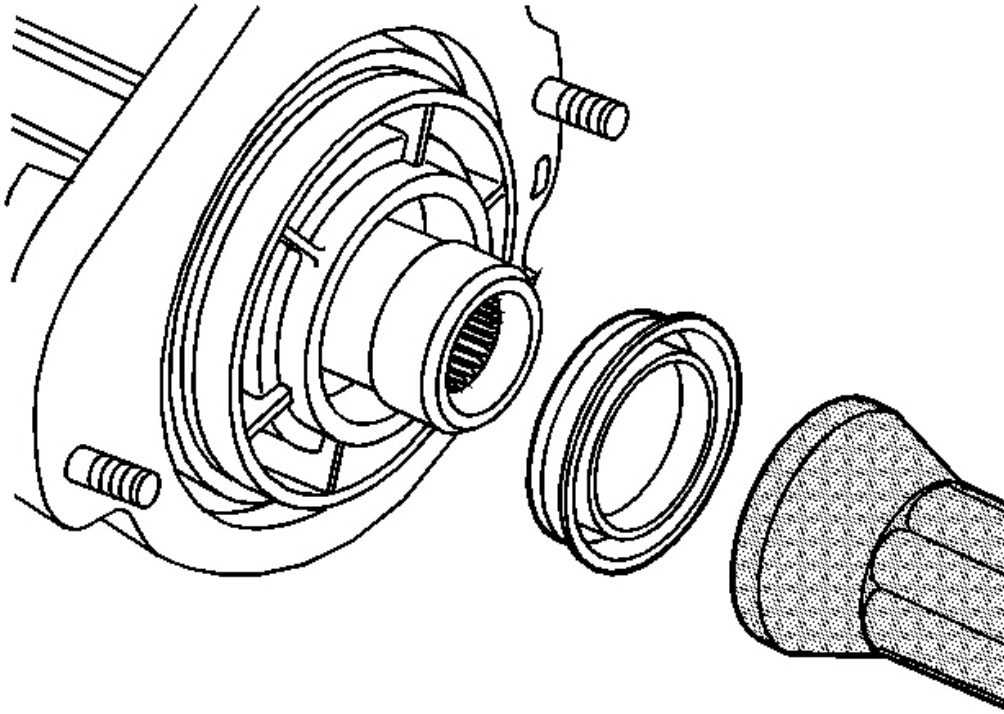
**Fig. 140: Installing J 45236-2 On Front Output Shaft**  
Courtesy of GENERAL MOTORS CORP.

83. Install the **J 45236-2** onto the front output shaft.



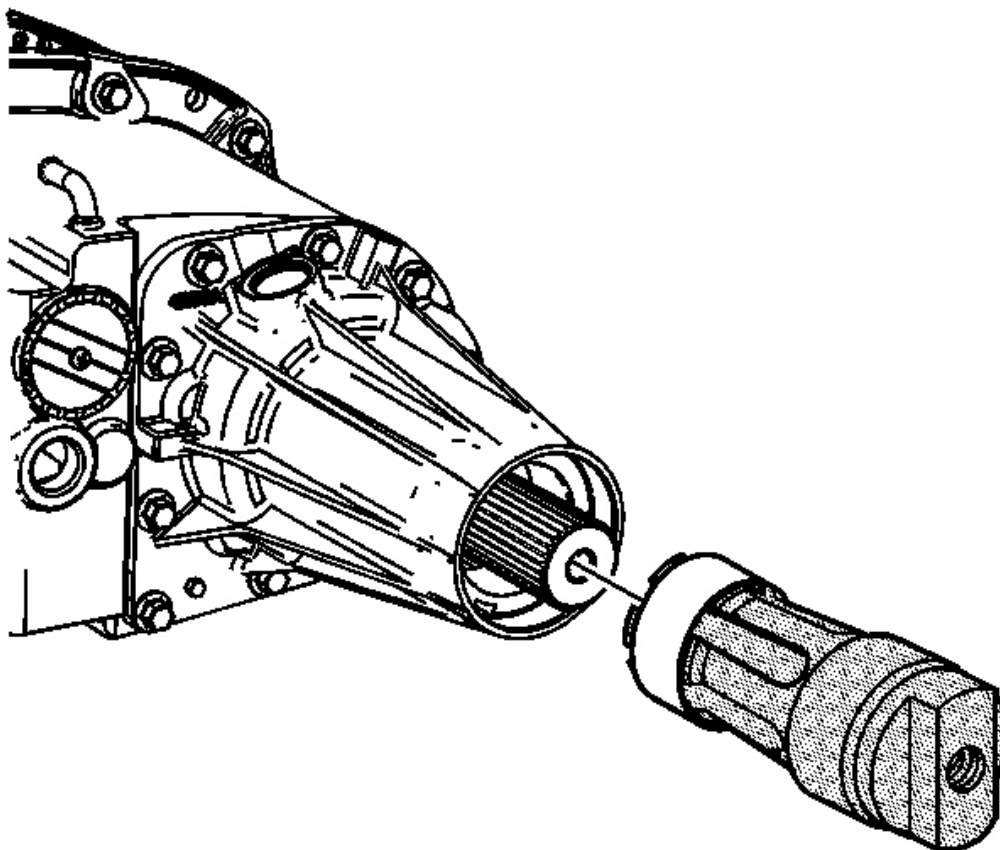
**Fig. 141: Installing Front Output Shaft Seal With J 45326**  
Courtesy of GENERAL MOTORS CORP.

84. Install the seal onto the **J 45236-2** (1).
85. Using the **J 45326-1** (2), install the front output shaft seal.



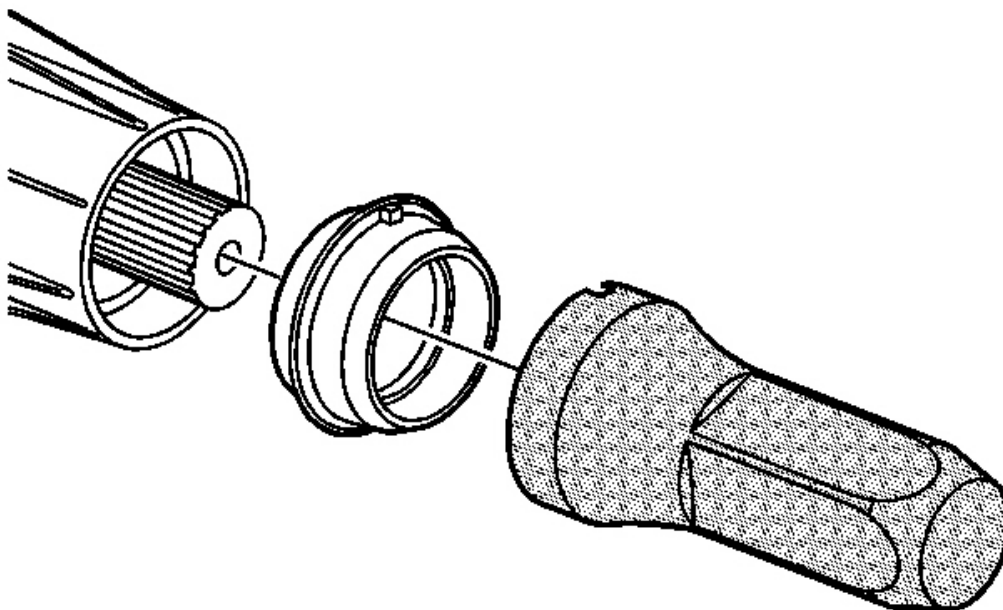
**Fig. 142: Installing Front Input Shaft Seal**  
Courtesy of GENERAL MOTORS CORP.

86. Using the **J 42738** , install the front input shaft seal.



**Fig. 143: Installing Rear Output Shaft Bushing**  
Courtesy of GENERAL MOTORS CORP.

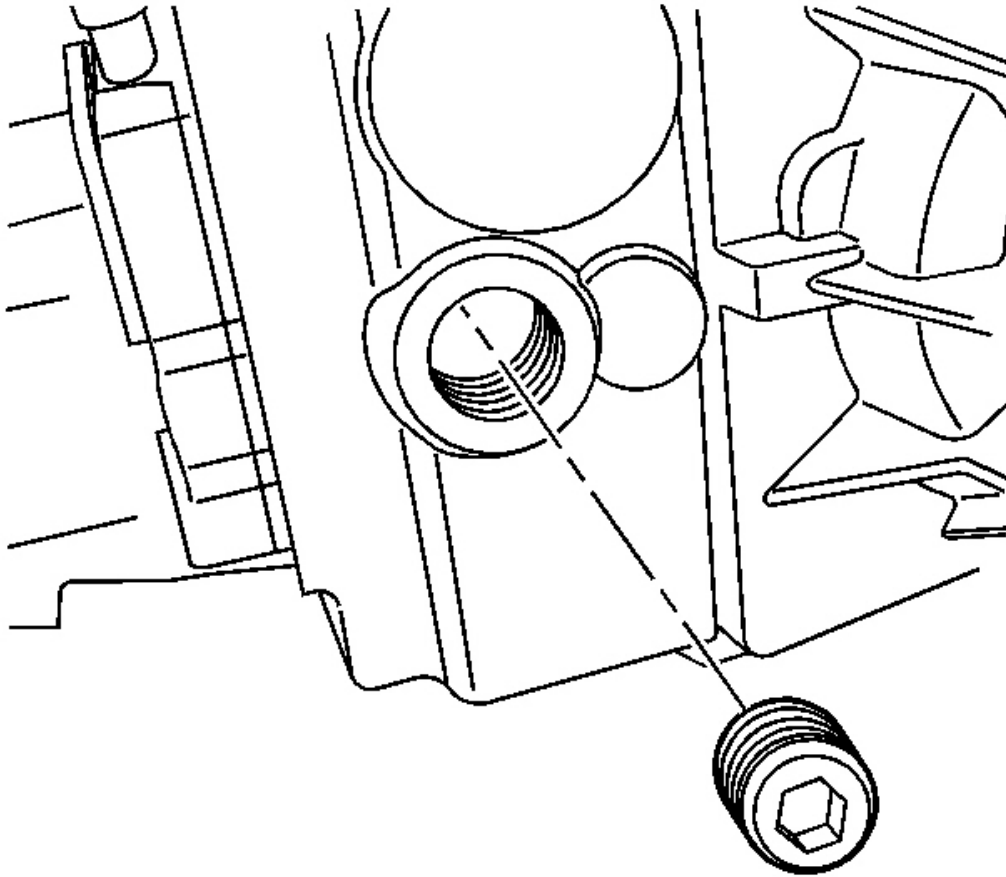
87. Using the **J 45380** , install a new rear output shaft bushing.
1. Install the bushing on the finger section of the **J 45380** .
  2. Install the finger section to the main body of the **J 45380** .
  3. Position the bushing and tool to the case.
  4. Using a hammer and the **J 45380** , install the bushing.



**Fig. 144: Installing Rear Output Shaft Seal**  
Courtesy of GENERAL MOTORS CORP.

88. Using the **J 37668-A** , install the rear output shaft seal.
1. Align the notch on the **J 37668-A** with the tab on the seal.
  2. Install the seal, with the tab, at the top and the weep hole at the bottom.

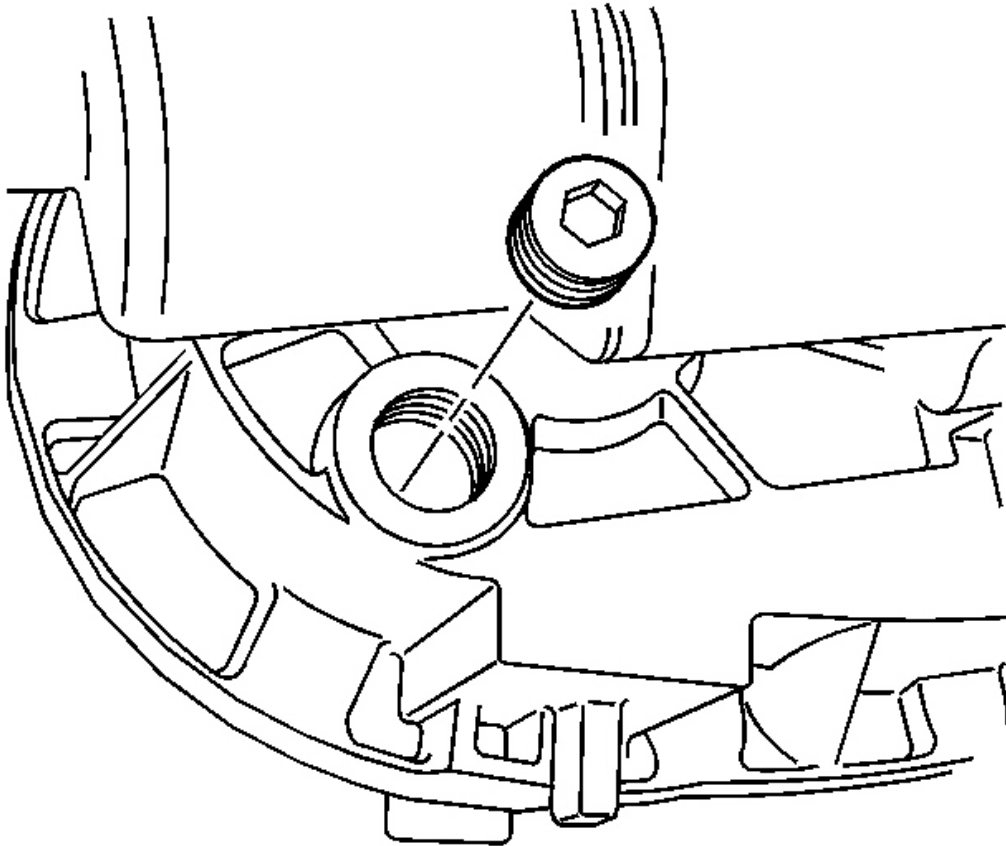




**Fig. 145: Identifying Fill Plug**  
**Courtesy of GENERAL MOTORS CORP.**

89. Apply pipe sealant GM P/N 12346004 (Canadian P/N 10953480) or equivalent to the fill plug threads.
90. Install the fill plug.

**Tighten:** Tighten the fill plug to 27 N.m (20 lb ft).



**Fig. 146: View Of Drain Plug**  
Courtesy of GENERAL MOTORS CORP.

91. Apply pipe sealant GM P/N 12346004 (Canadian P/N 10953480) or equivalent to the drain plug threads.
92. Install the drain plug.

**Tighten:** Tighten the drain plug to 27 N.m (20 lb ft).

## SPECIAL TOOLS AND EQUIPMENT

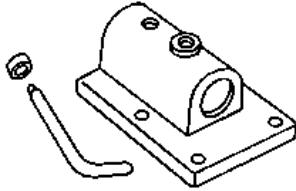
### SPECIAL TOOLS

#### Special Tools

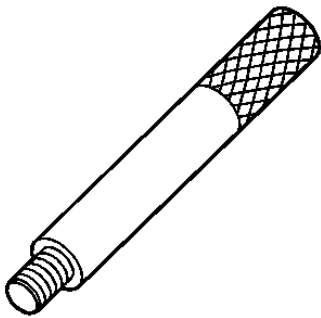
Illustration	Tool Number/Description

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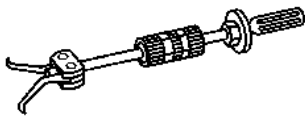
2004 DRIVELINE/AXLE Transfer Case - Overhaul - NVG 226-NP8



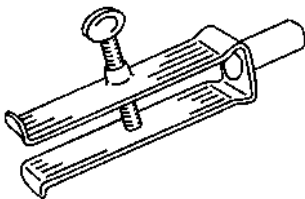
J 3289-20  
Holding Fixture



J 8092  
Universal Driver Handle



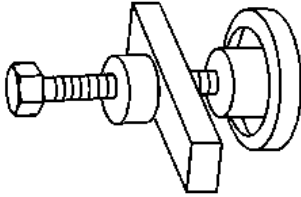
J 23907  
Slide Hammer with Bearing Adapter



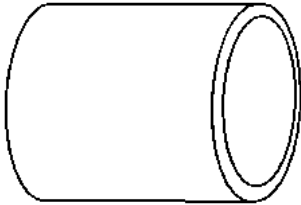
J 26941  
Bushing and Bearing Remover (3-4 inch)

## 2004 Isuzu Ascender LS

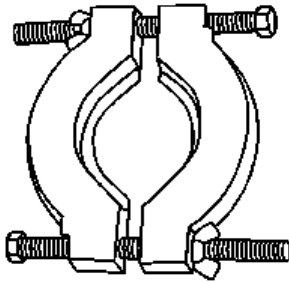
2004 DRIVELINE/AXLE Transfer Case - Overhaul - NVG 226-NP8



J 36371  
Output Shaft Bearing Installer



J 36373  
Input Sun Gear Ball Bearing Installer

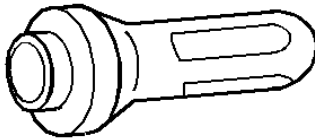
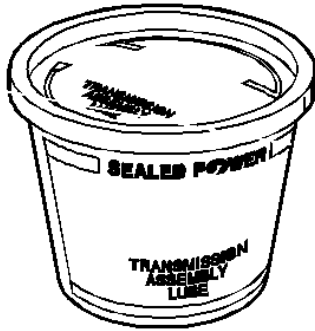


J 36513  
Gear and Bearing Separator Plate

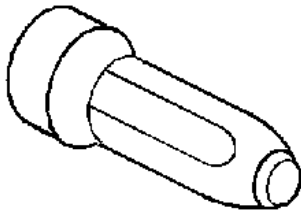
J 36850  
Transjel Lubricant

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J 37668-A  
Seal Installer

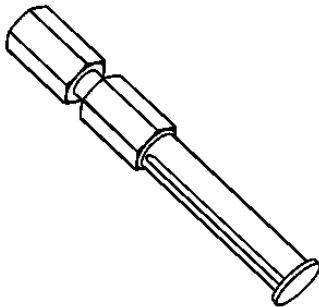
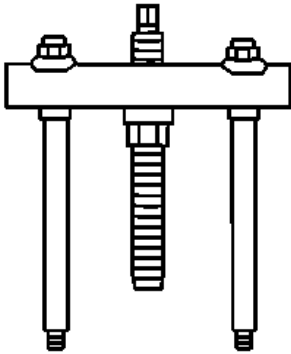


J 42738  
Seal Installer

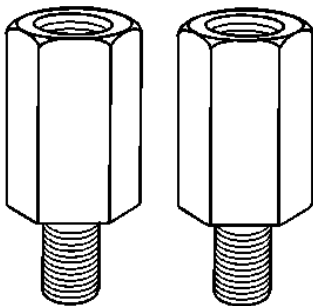
J 44707  
T Bar Push Puller

## 2004 Isuzu Ascender LS

2004 DRIVELINE/AXLE Transfer Case - Overhaul - NVG 226-NP8



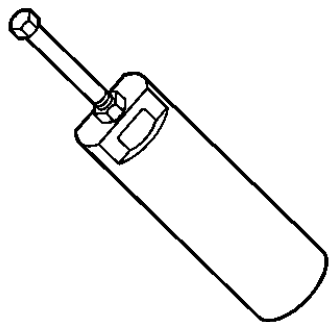
J 44737  
Shift Rail Bearing Remover



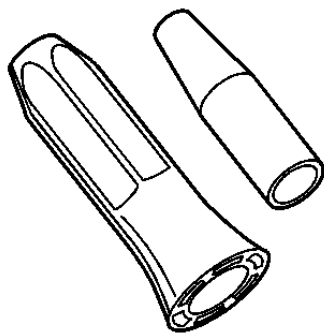
J 44759  
Adapter 3/8 NC to 5/8 NF

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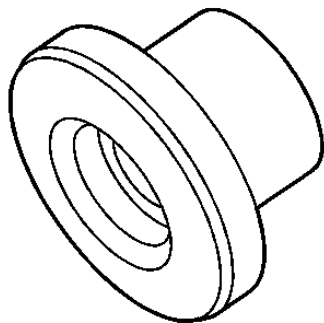
2004 DRIVELINE/AXLE Transfer Case - Overhaul - NVG 226-NP8



J 45235  
Rear Speed Sensor Reluctor Wheel Installer



J 45236  
Front Output Shaft Seal Installer

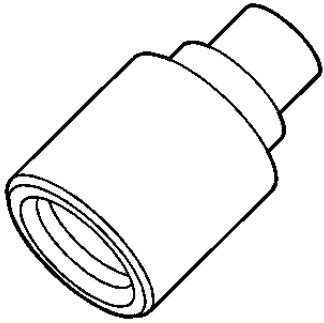


J 45238  
Input Gear Thrust Bearing Installer

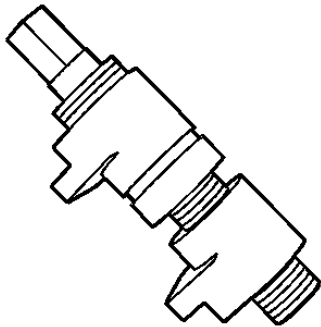
J 45239

## 2004 Isuzu Ascender LS

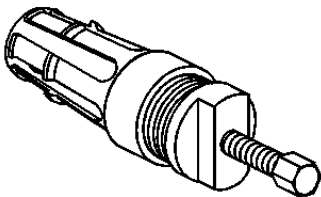
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Needle Bearing Installer



J 45358  
Case Spreader



J 45380  
Transfer Case Rear Bushing Remover and Installer

J 45759  
Assembly Fixture



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