

2004 Cadillac Escalade

2004 DRIVELINE/AXLE Transfer Case - Overhaul - BW 4481-NR3

2004 DRIVELINE/AXLE

Transfer Case - Overhaul - BW 4481-NR3

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Adapter Studs	31 N.m	23 lb ft
Case Bolts	21 N.m	15 lb ft
Drain Plug	25 N.m	18 lb ft
Fill Plug	25 N.m	18 lb ft
Vehicle Speed Sensors	17 N.m	13 lb ft
Vent	6 N.m	53 lb in

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
Front Output Shaft Cup Plug	Threadlocker	12345382	10953489
Rear Case Half to Front Case Half	RTV Sealant	12345739	10953541
Transfer Case Fluid	DEXRON®III	12346143	10952622
Vehicle Speed Sensor O-Ring	Transfer Case Fluid	12346143	10952622
Vent	Pipe Sealant	12346004	10953480

CAPACITIES - APPROXIMATE FLUID

Capacities - Approximate Fluid

Application	Specification	
	Metric	English
DEXRON®III Fluid GM P/N 12346143 (Canadian P/N 10952622)	1.4 liters	1.5 quarts

VISUAL IDENTIFICATION

TRANSFER CASE DISASSEMBLED VIEW

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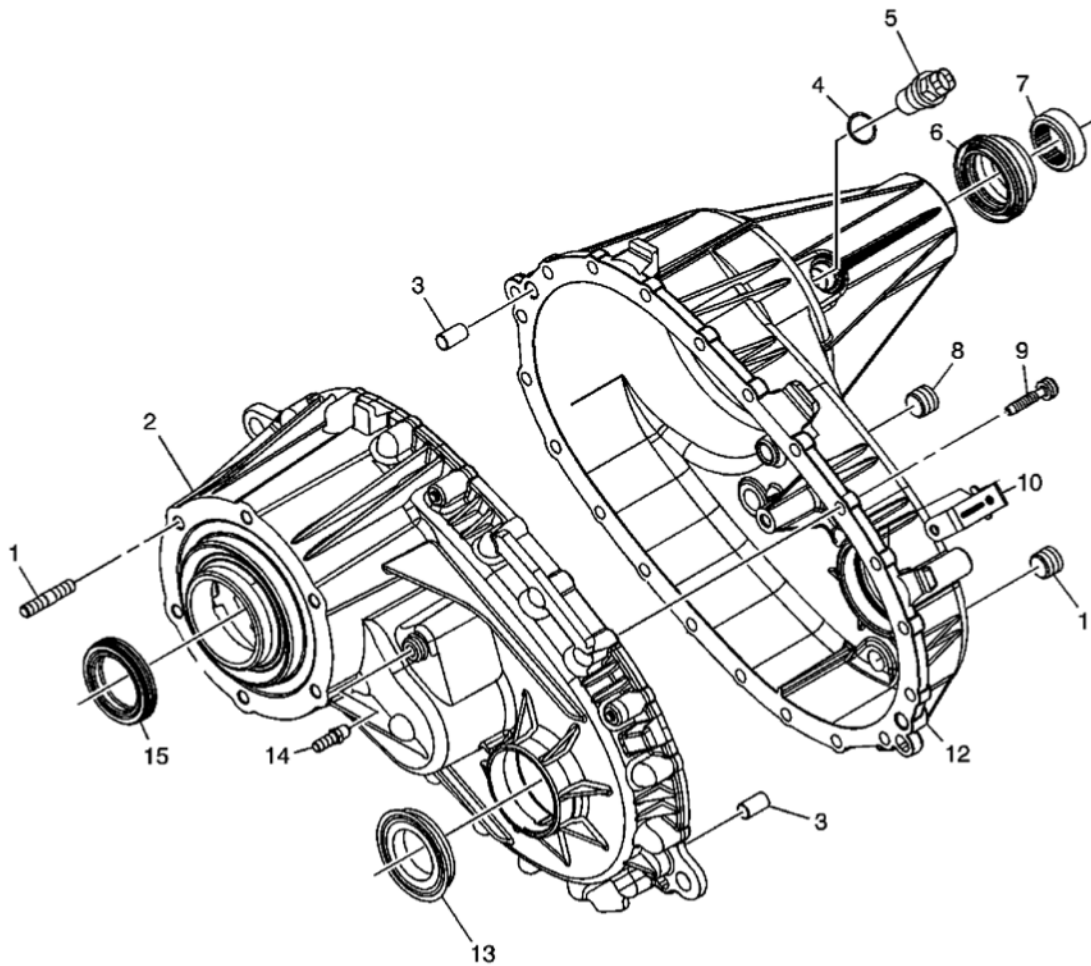


Fig. 1: Case Components Disassembled View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 1

Callout	Component Name
1	Adapter Stud
2	Front Case Half
3	Location Pin
3	Location Pin
4	Vehicle Speed Sensor O-Ring Seal
5	Vehicle Speed Sensor
6	Rear Output Shaft Seal
7	Shipping Seal
8	Fill Plug
9	Case Half Bolt
10	Wiring Harness Bracket

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11	Drain Plug
12	Rear Case Half
13	Front Output Shaft Seal
14	Vent
15	Input Shaft Seal

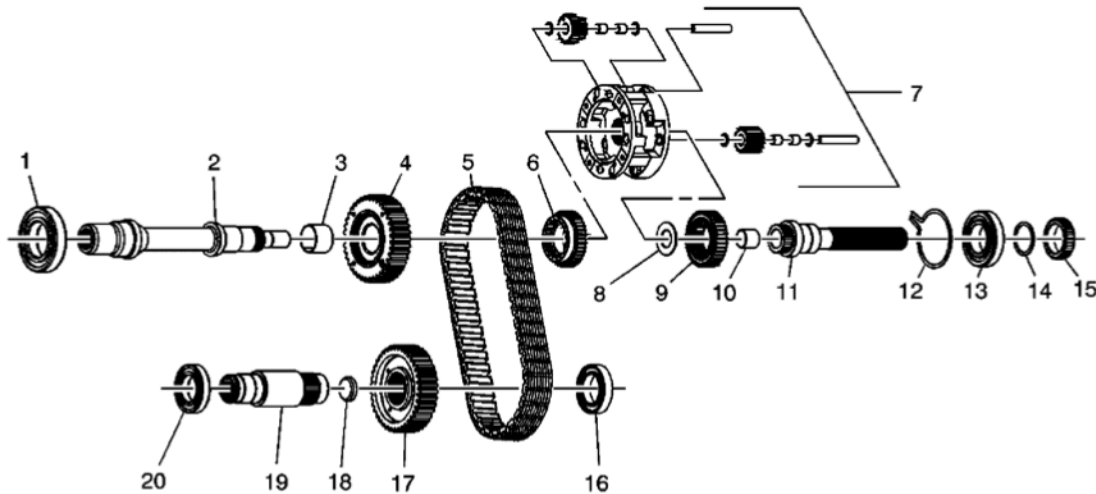


Fig. 2: Transfer Case Internal Components Disassembled View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 2

Callout	Component Name
1	Input Gear Bearing
2	Input Shaft
3	Drive Sprocket Bushing
4	Drive Sprocket
5	Drive Chain
6	Front Sun Gear
7	Planetary Differential Assembly
8	Rear Sun Gear Thrust Washer
9	Rear Sun Gear
10	Input Shaft Rear Support Bushing
11	Rear Output Shaft
12	Rear Output Shaft Bearing Outer Retaining Ring
13	Rear Output Shaft Bearing
14	Rear Output Shaft Bearing Retaining Ring
15	Speed Reluctor Wheel
16	Front Output Shaft Rear Bearing
17	Front Output Shaft
18	Front Output Shaft Seal
19	Front Output Shaft Bushing
20	Front Output Shaft Gear

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17	Driven Sprocket
18	Front Output Shaft Cup Plug
19	Front Output Shaft
20	Front Output Shaft Front Bearing

REPAIR INSTRUCTIONS

TRANSFER CASE DISASSEMBLE

Tools Required

- **J 2619-01** Slide Hammer. See **Special Tools and Equipment**.
 - **J 3289-20** Holding Fixture. See **Special Tools and Equipment**.
 - **J 22912-01** Rear Pinion and Axle Bearing Remover. 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 45358** Case Spreader. See **Special Tools and Equipment**.
 - **J 45548** Mainshaft Support Bushing/Bearing Remover. See **Special Tools and Equipment**.
 - **J 45759** Assembly Fixture. See **Special Tools and Equipment**.
1. Attach the **J 45759** to the transfer case using the adapter studs. All of the transfer case disassembly procedures can be performed with the case mounted to the **J 45759**.

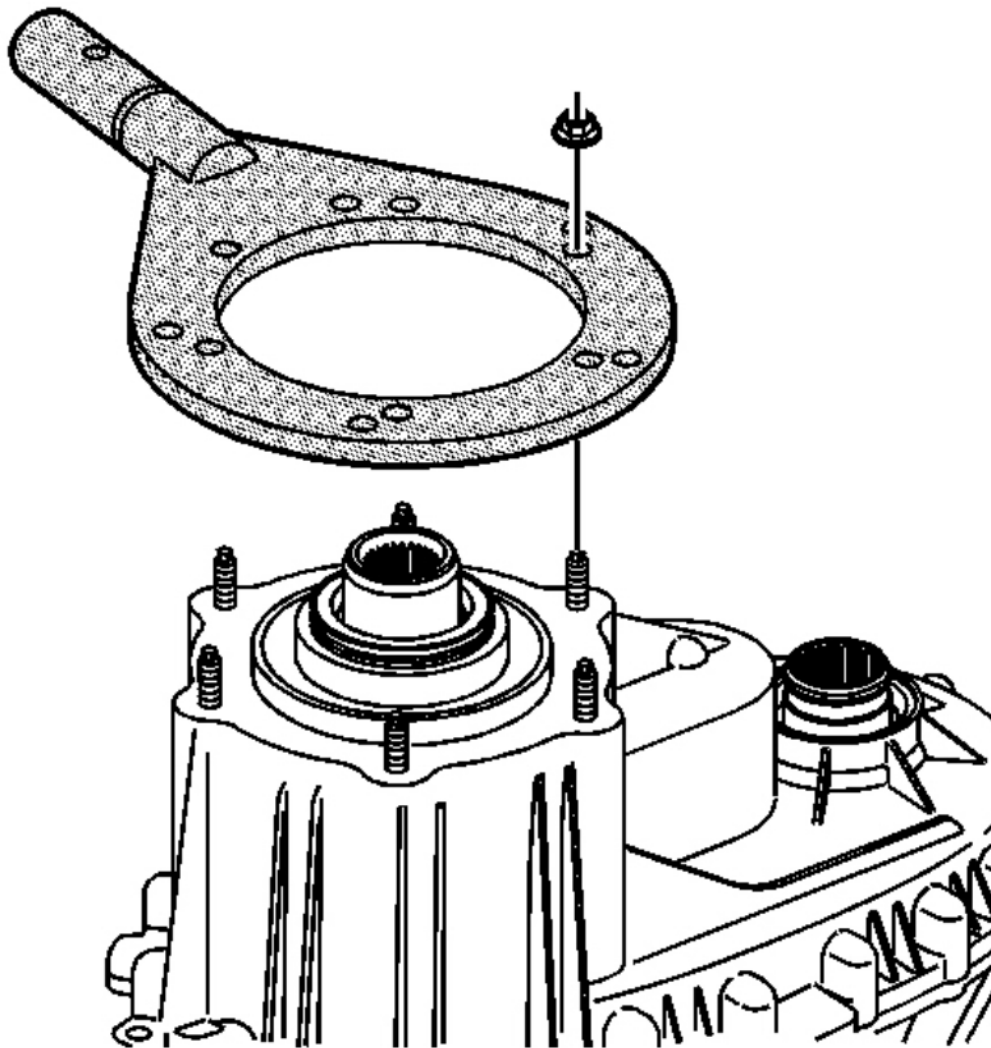


Fig. 3: Identifying J 45759
Courtesy of GENERAL MOTORS CORP.

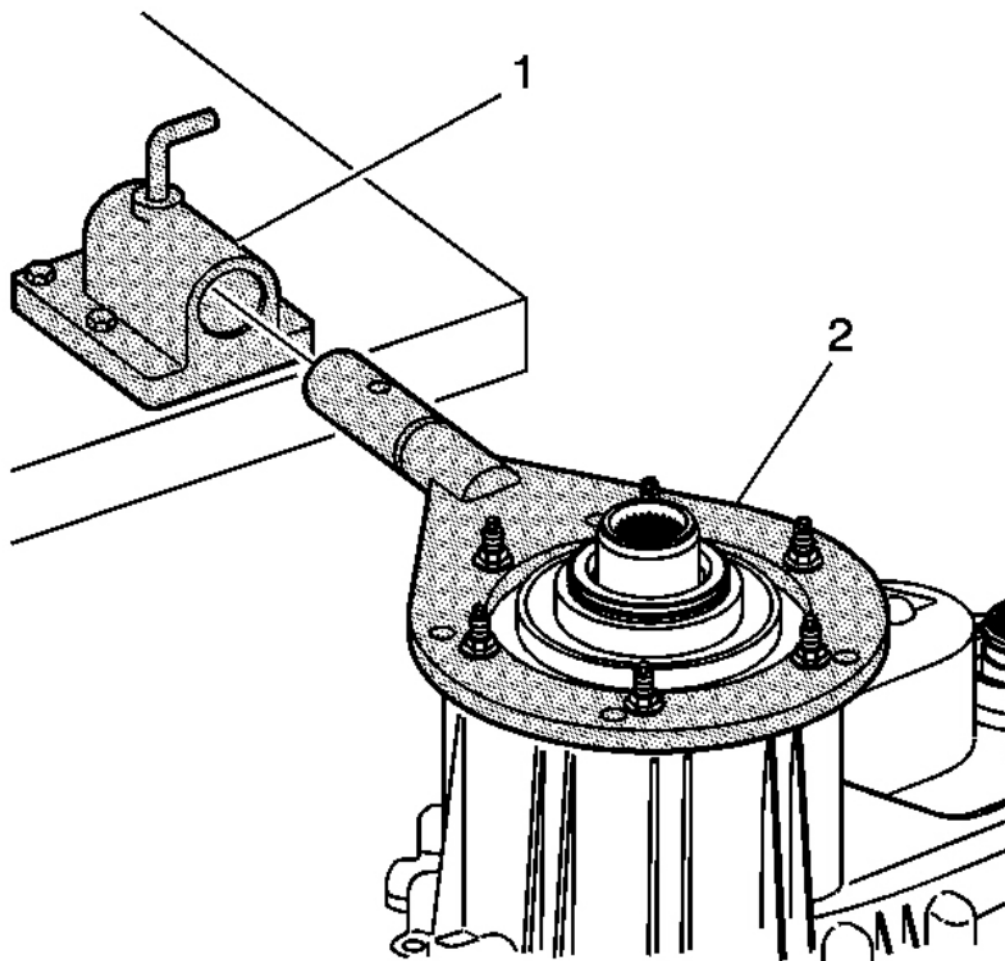


Fig. 4: View Of Front Transfer Case Bench Mount
Courtesy of GENERAL MOTORS CORP.

2. Mount the **J 3289-20** (1) to a sturdy workbench.
3. Install the **J 45759** (2) into **J 3289-20** (1) and secure with pivot pin.

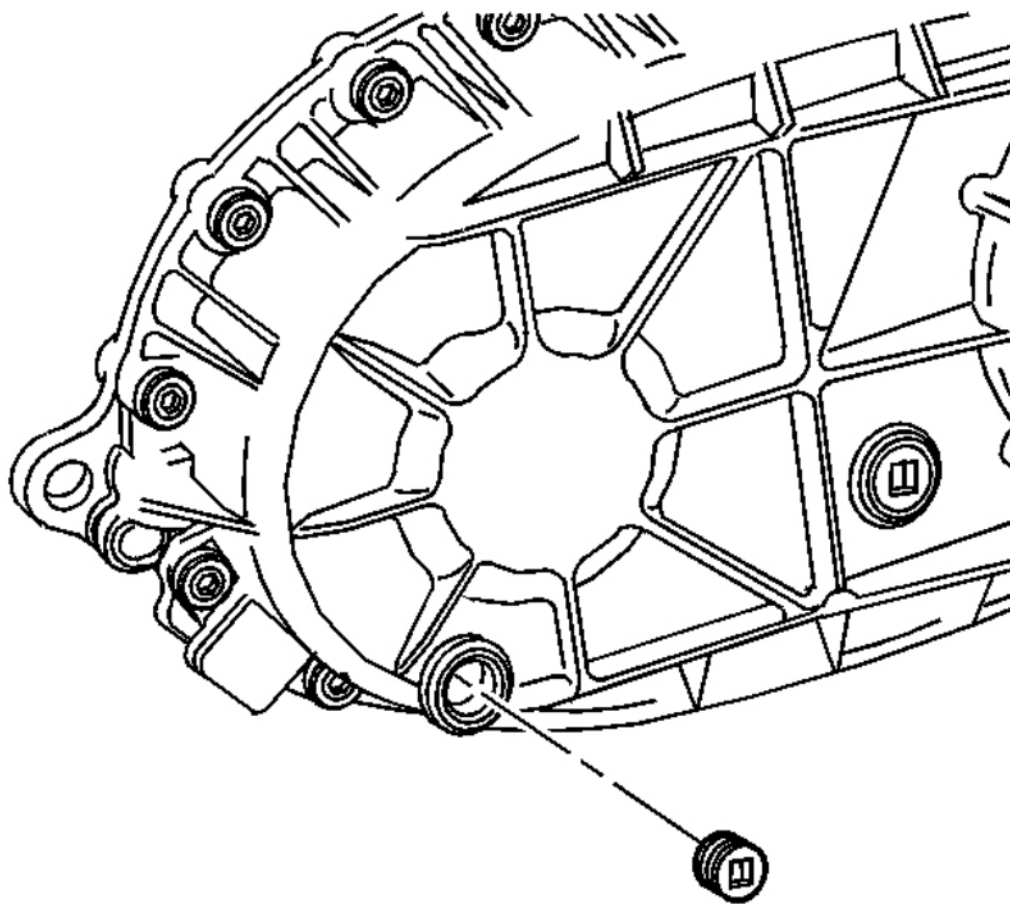


Fig. 5: Identifying Drain & Fill Plugs

Courtesy of GENERAL MOTORS CORP.

4. Remove the drain plug and the fill plug. Ensure all of the transfer case fluid is drained out of the transfer case.

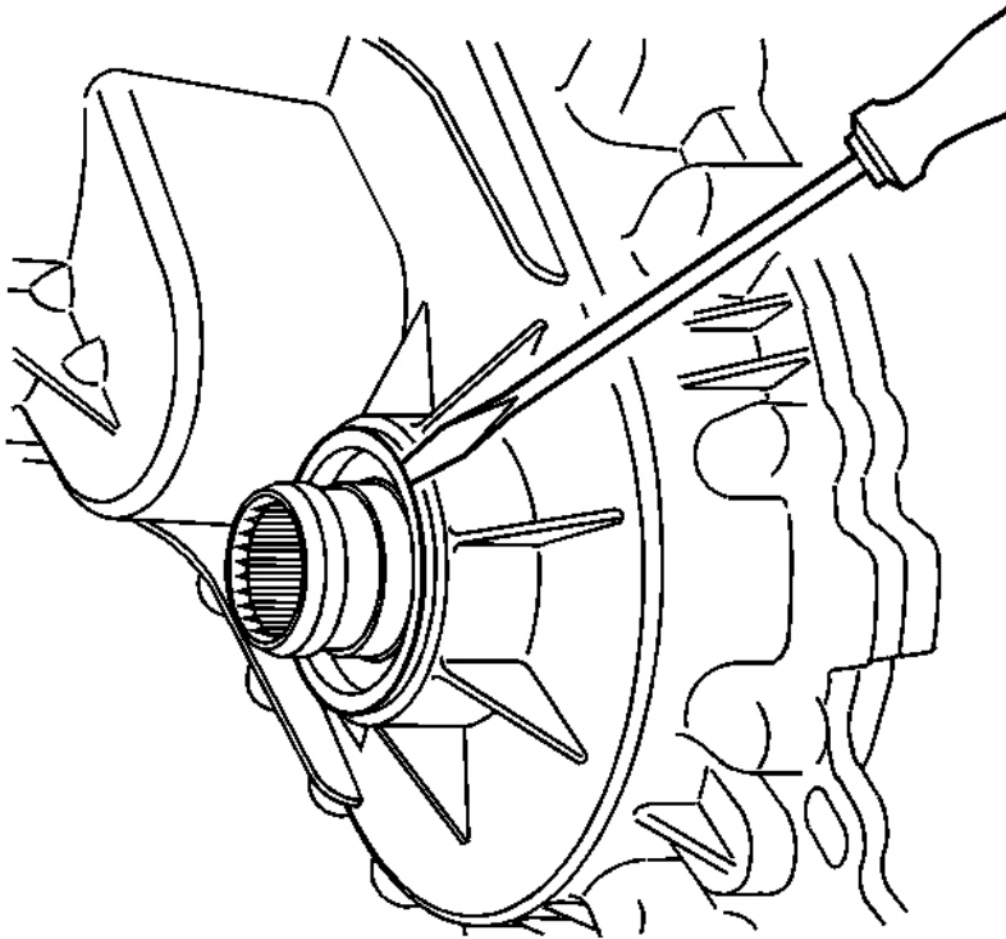


Fig. 6: Inserting Screwdriver Behind Inner Race Of Front Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

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

IMPORTANT: The front output shaft seal is a two piece internal seal. The inner seal race is a force fit on the front output shaft.

5. Remove the front output shaft seal by inserting a flat-tip screwdriver behind the inner race of the seal.
6. Pry the inner seal race forward.

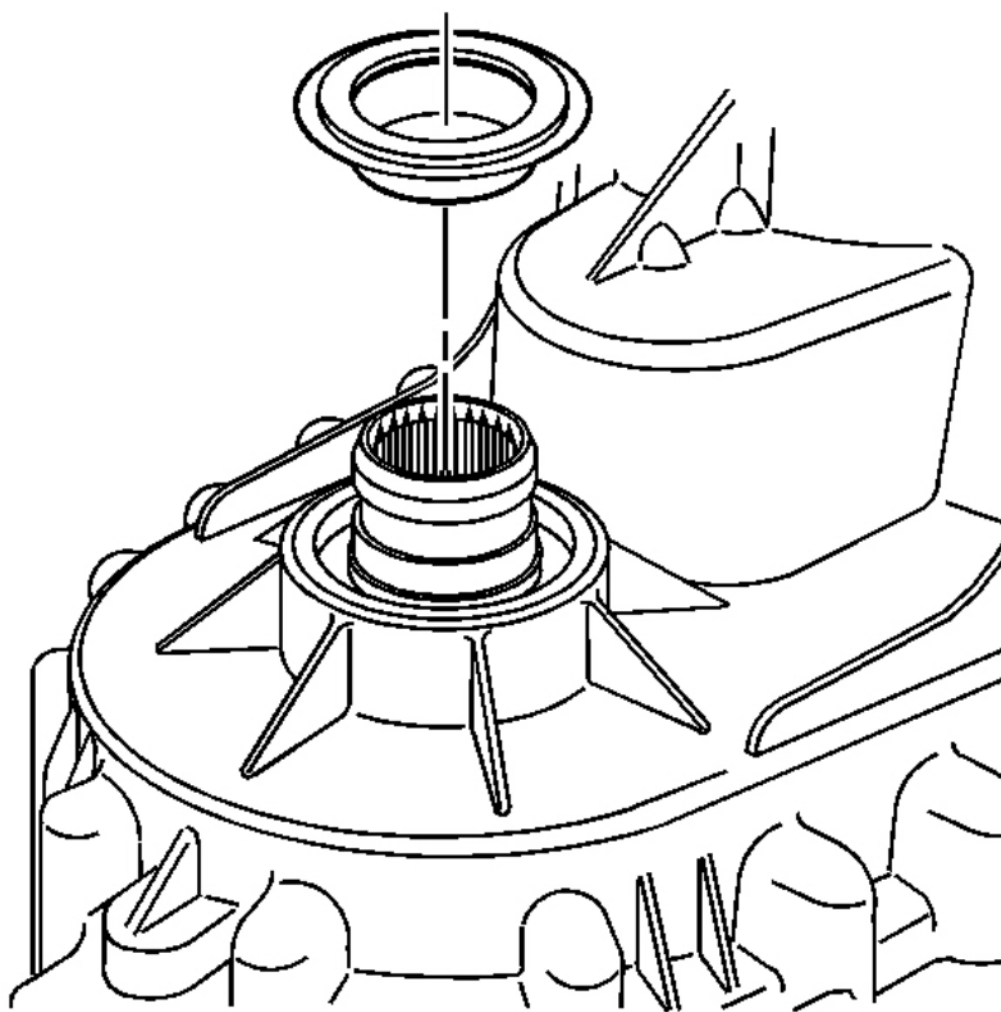


Fig. 7: View Of Inner Seal Race On Front Output Shaft
Courtesy of GENERAL MOTORS CORP.

7. Using a small pry bar, move the inner seal race forward on the front output shaft.
8. Remove the inner seal race from the front output shaft.

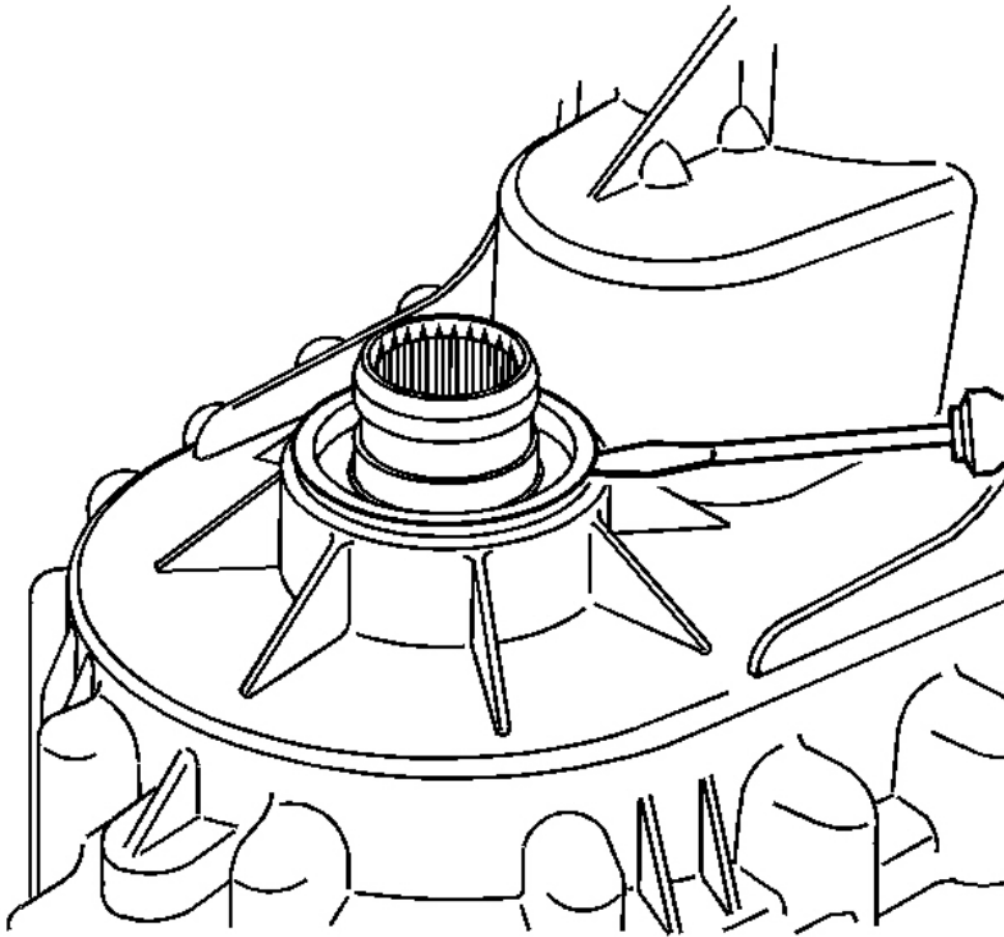


Fig. 8: Identifying Outer Lip Of Front Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

9. Insert a flat-tip screwdriver or a small pry bar between the outer lip of the front output shaft seal and the transfer case.
10. Remove the remaining part of the front output shaft seal from the transfer case.

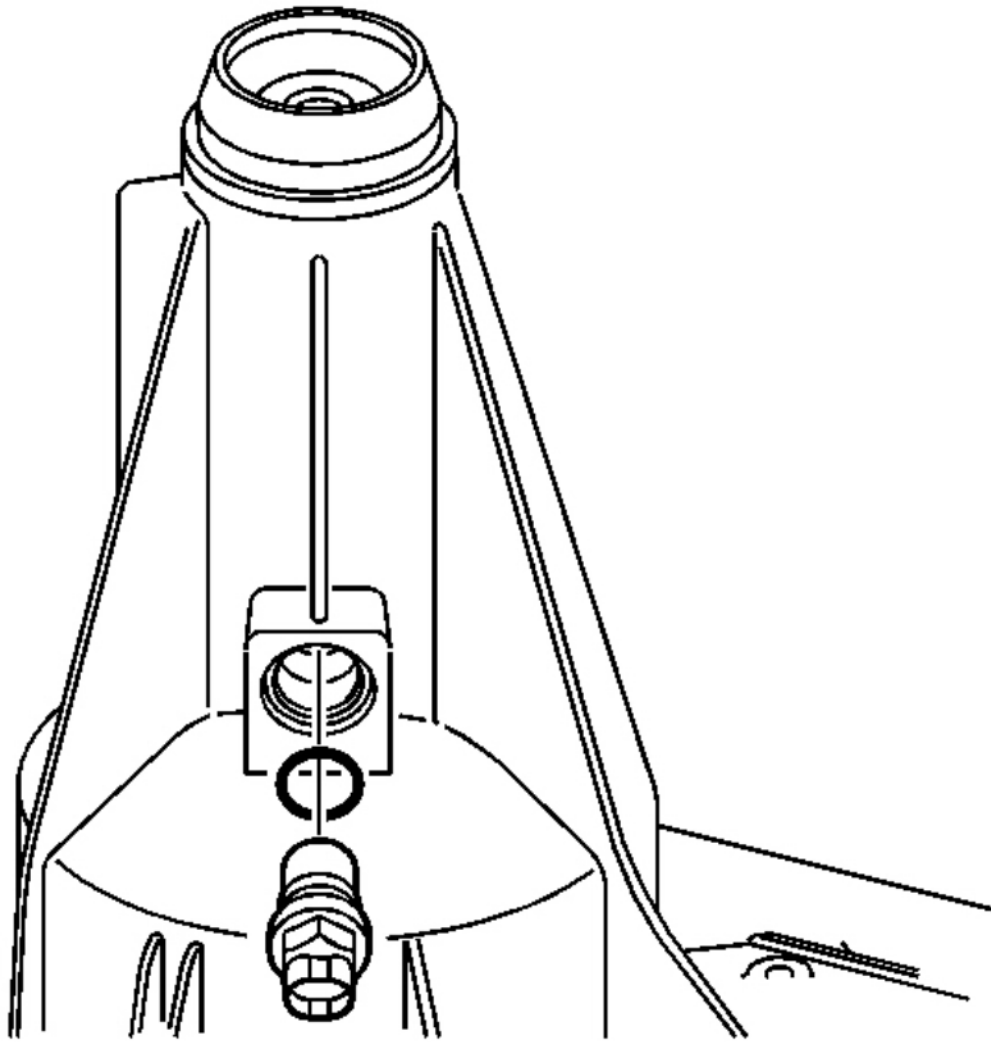


Fig. 9: View Of Vehicle Speed Sensor (VSS) & O-Ring Seal
Courtesy of GENERAL MOTORS CORP.

11. Remove the vehicle speed sensor (VSS) and the O-ring seal.

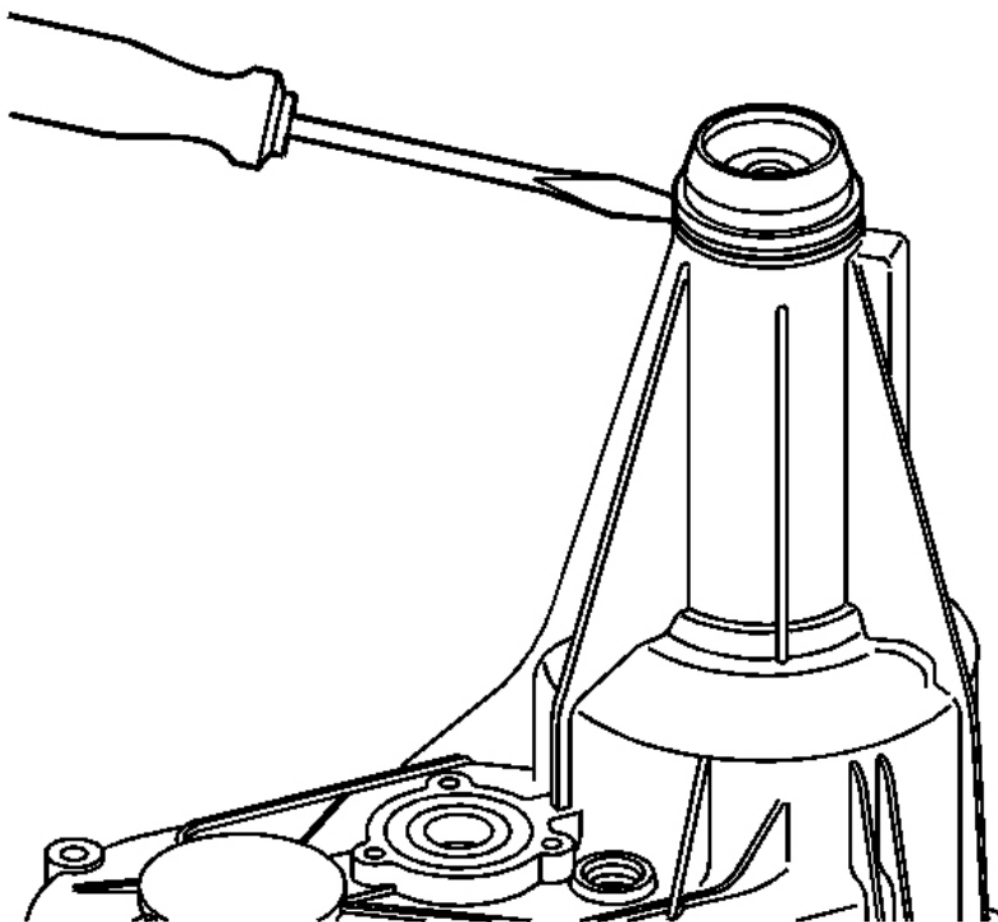


Fig. 10: Removing Rear Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

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

12. Remove the rear output shaft seal by prying it out with a flat-blade screwdriver.

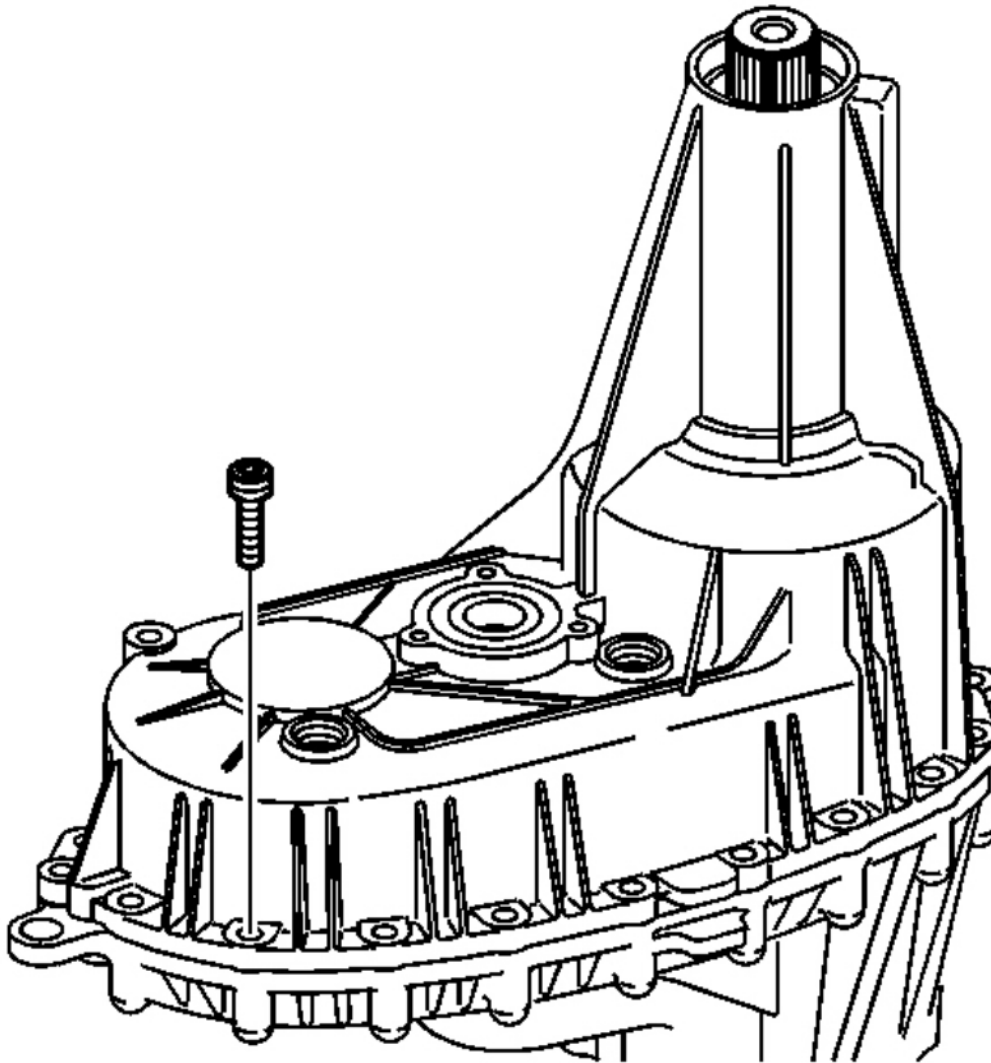


Fig. 11: View Of Transfer Case Bolts

Courtesy of GENERAL MOTORS CORP.

13. Remove the transfer case retaining bolts and washers.

Mark the location of the brackets.

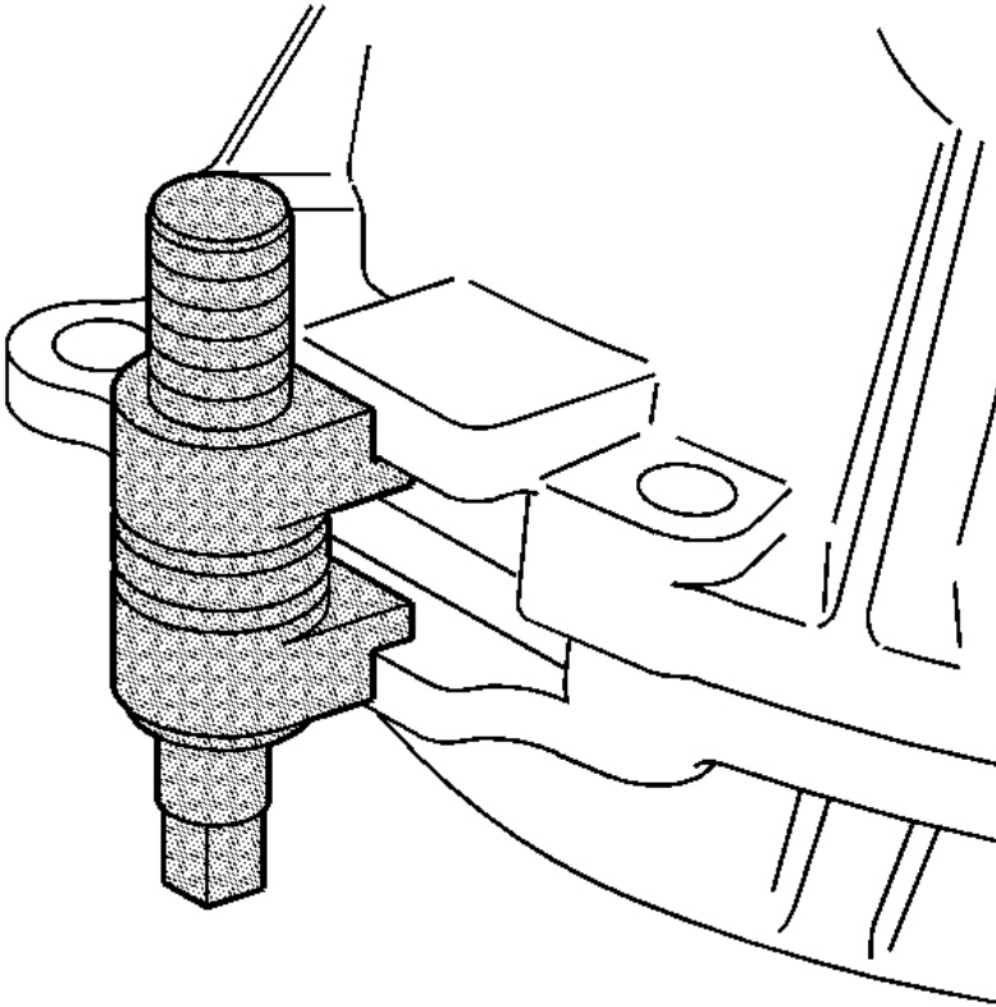


Fig. 12: Identifying J 45358

Courtesy of GENERAL MOTORS CORP.

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

14. Using the **J 45358** between the tabs on the case halves, shear the sealer that is holding the case halves together.
15. Using pry bars at each side of the case, remove the case from the locating pins.

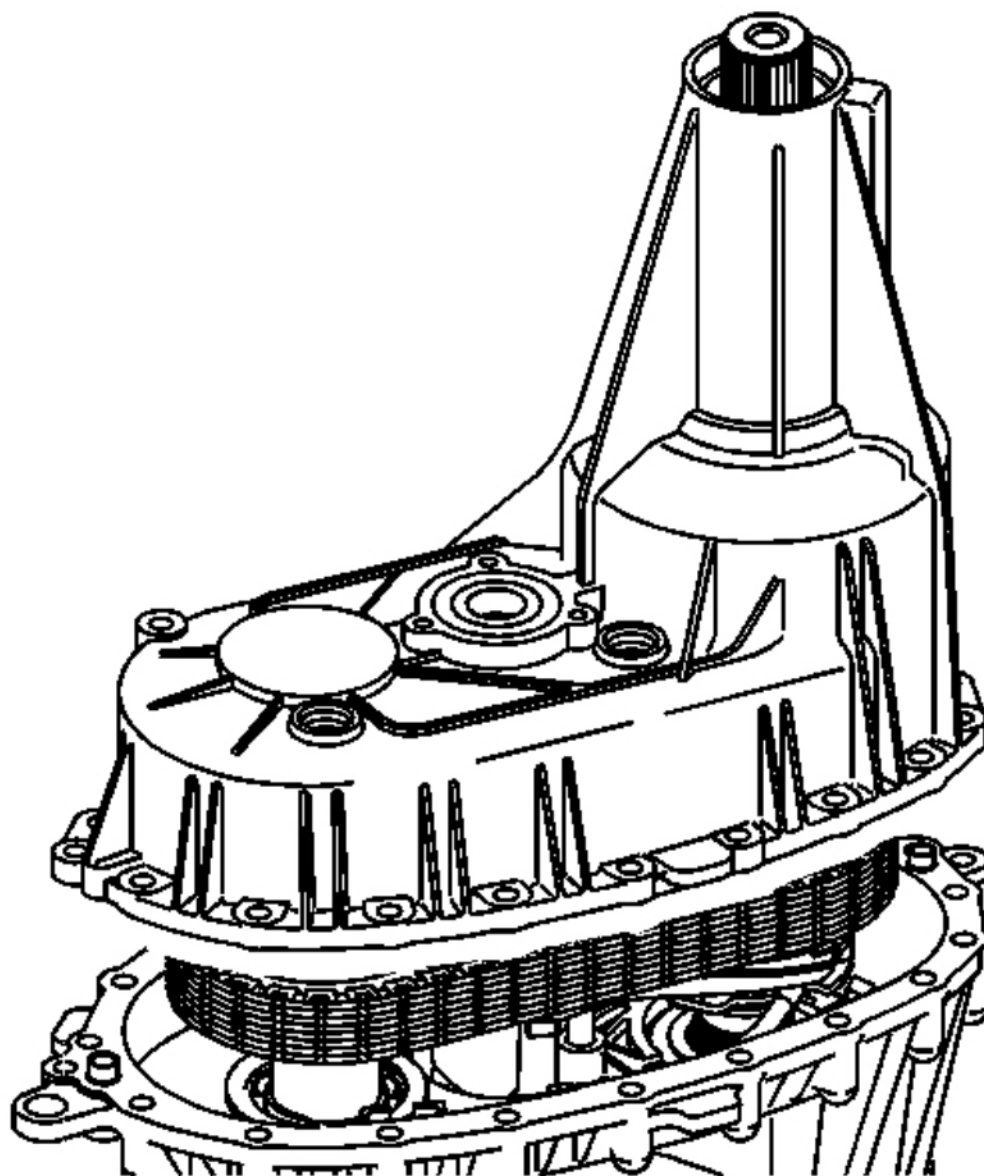


Fig. 13: Rear Case Half & Front Case Half
Courtesy of GENERAL MOTORS CORP.

16. Remove the rear case half from the front case half. The rear output shaft will come with the rear case half.

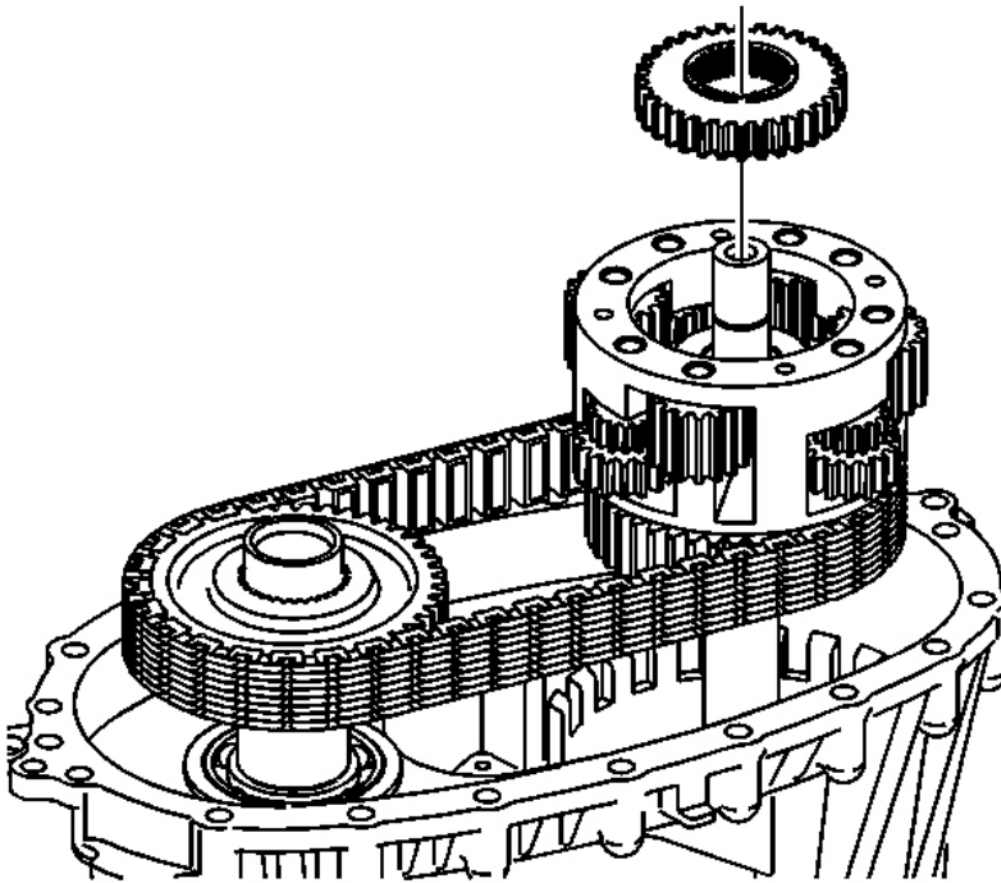


Fig. 14: Aligning Sun Gear

Courtesy of GENERAL MOTORS CORP.

17. Remove the rear sun gear.

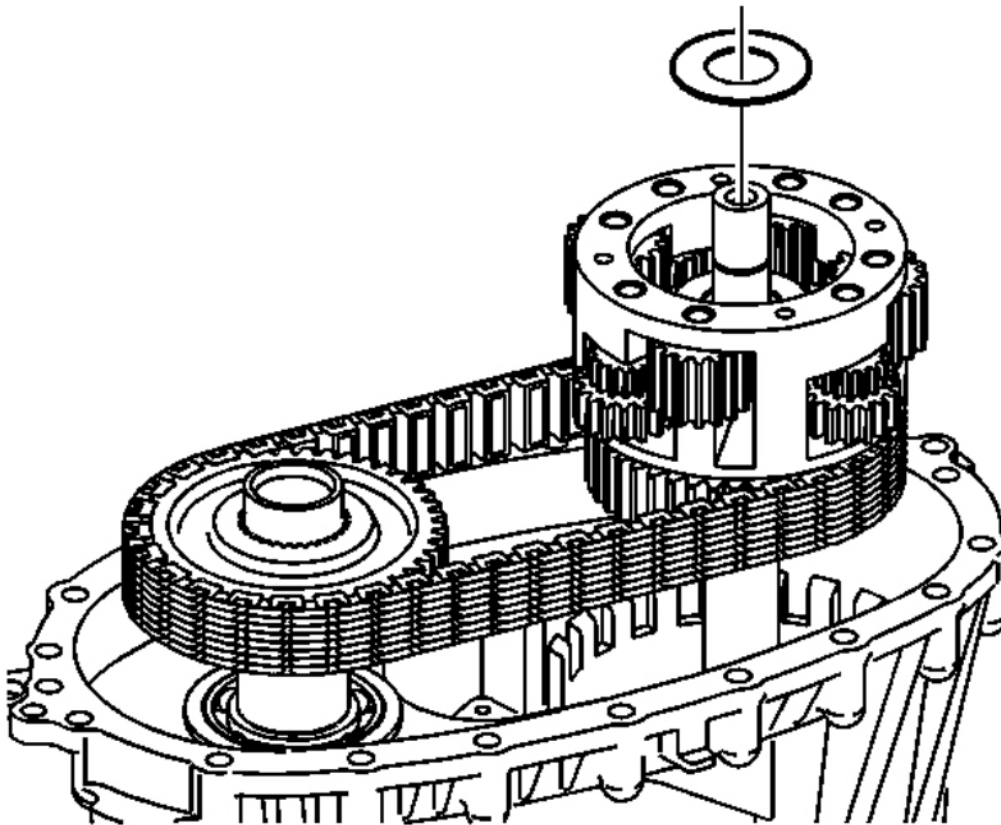


Fig. 15: View Of Sun Gear Thrust Washer
Courtesy of GENERAL MOTORS CORP.

18. Remove the sun gear thrust washer.

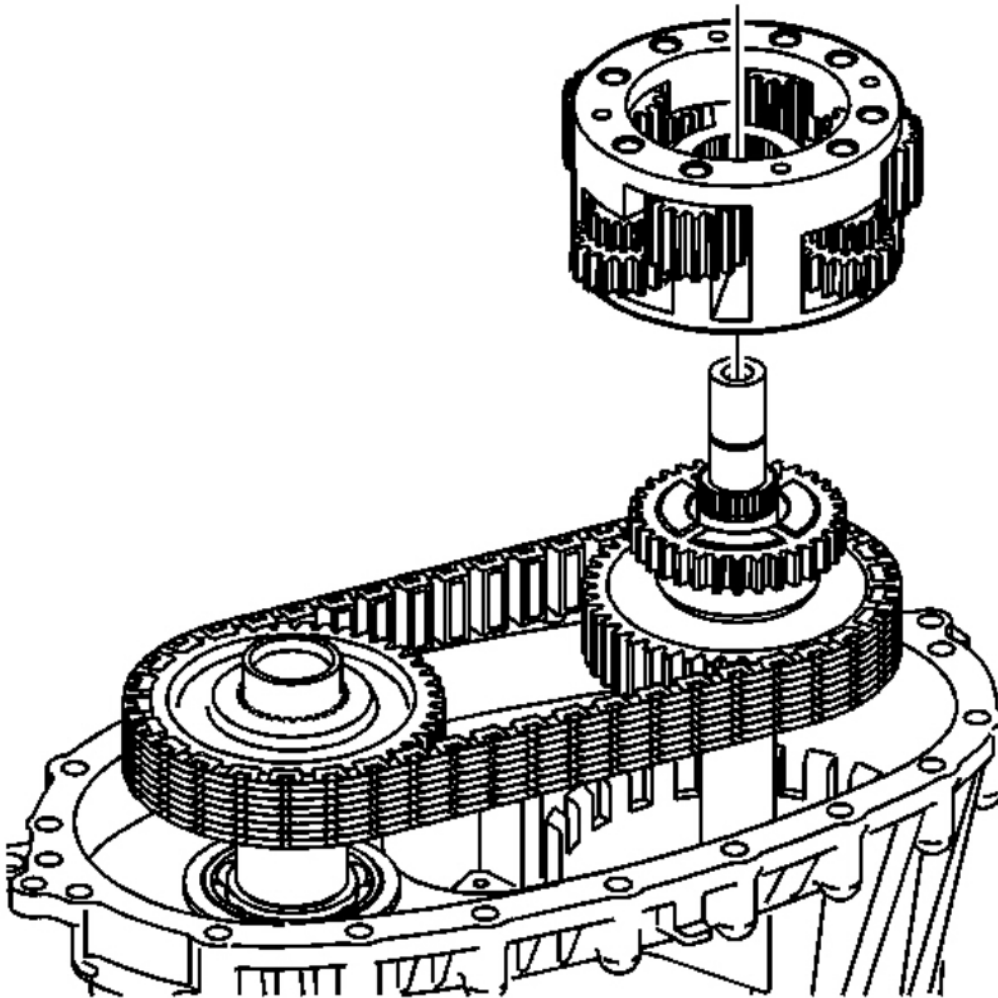


Fig. 16: Identifying Planetary Differential Assembly
Courtesy of GENERAL MOTORS CORP.

19. Remove the planetary differential assembly.

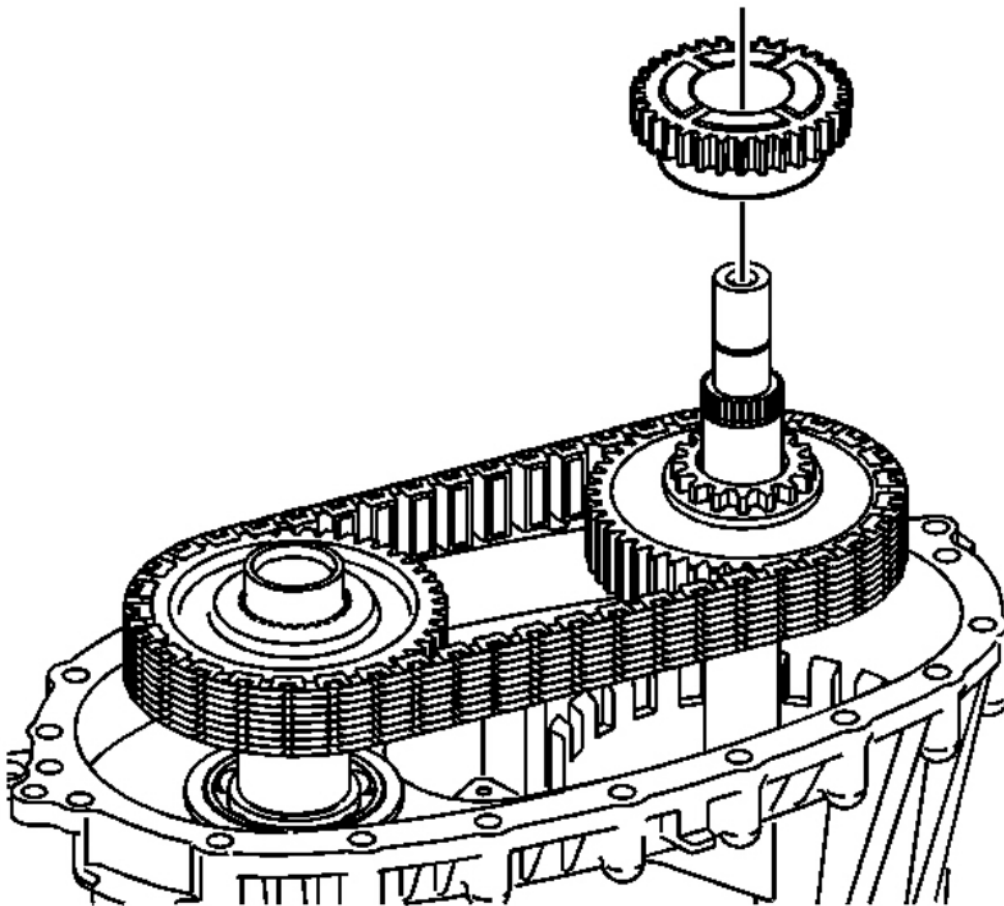


Fig. 17: View Of Front Sun Gear
Courtesy of GENERAL MOTORS CORP.

20. Remove the front sun gear.

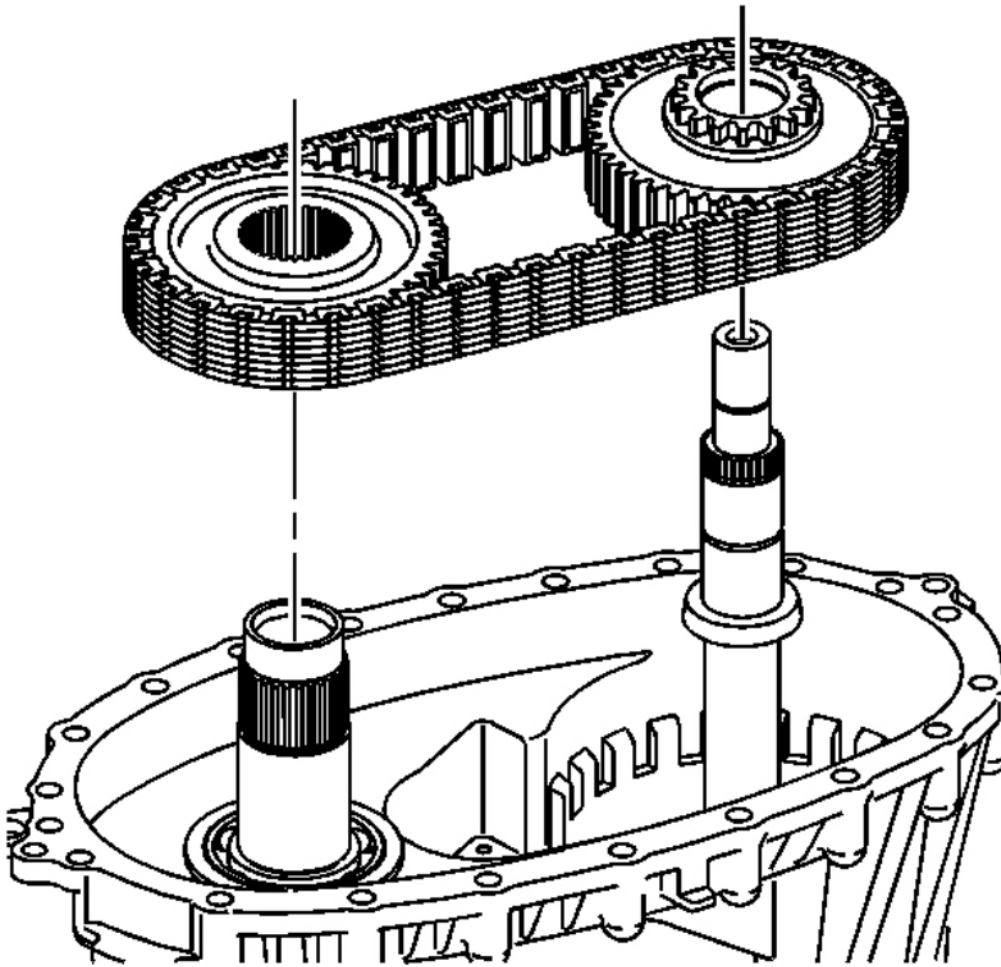


Fig. 18: Locating Drive Chain & Sprockets
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: If the chain and sprockets are to be used again, mark the relationship of the chain to the sprockets in order to mark the wear patterns.

21. Remove the chain with the drive sprocket and driven sprocket.

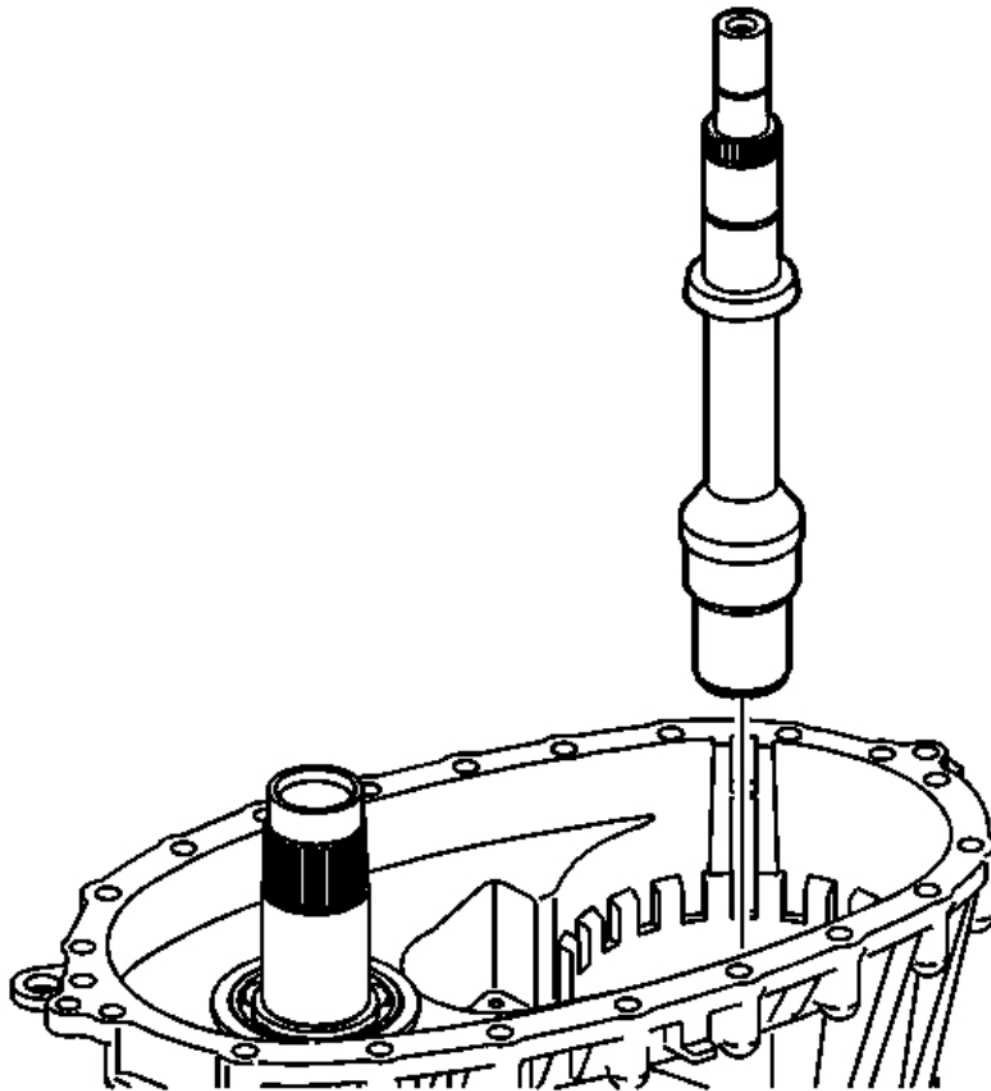


Fig. 19: Identifying Input Shaft
Courtesy of GENERAL MOTORS CORP.

22. Remove the input shaft.

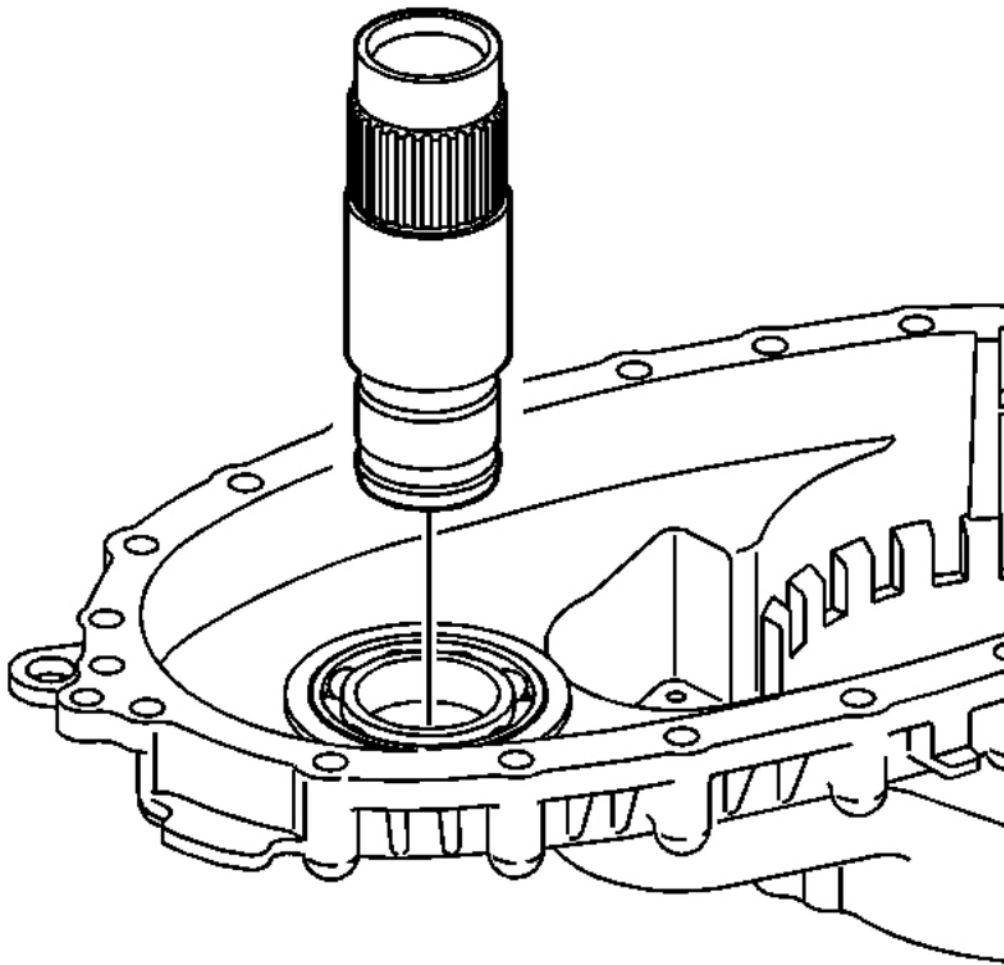


Fig. 20: View Of Front Output Shaft Assembly
Courtesy of GENERAL MOTORS CORP.

23. Remove the front output shaft assembly.

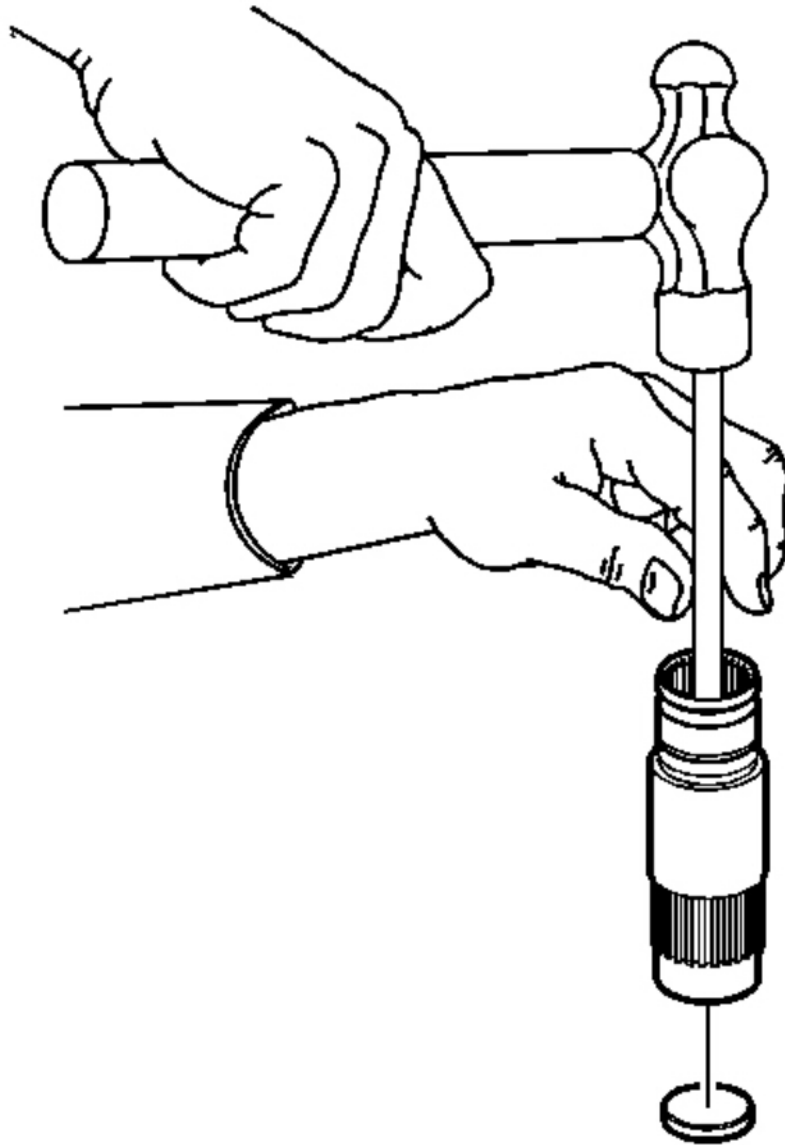


Fig. 21: Removing Cup Plug
Courtesy of GENERAL MOTORS CORP.

24. If the cup plug in the front output shaft is leaking, remove the plug using a brass drift.

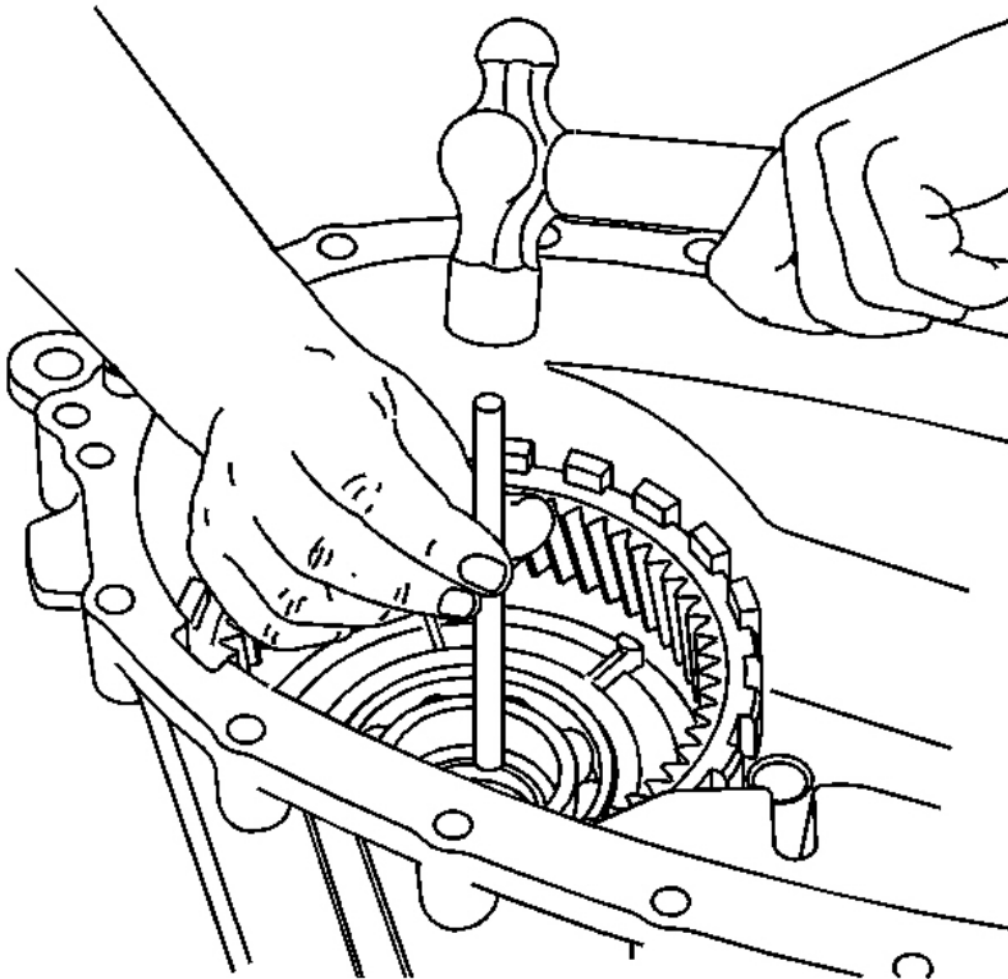


Fig. 22: View Of Input Seal

Courtesy of GENERAL MOTORS CORP.

25. Using a hammer and a suitable punch, remove the input seal.

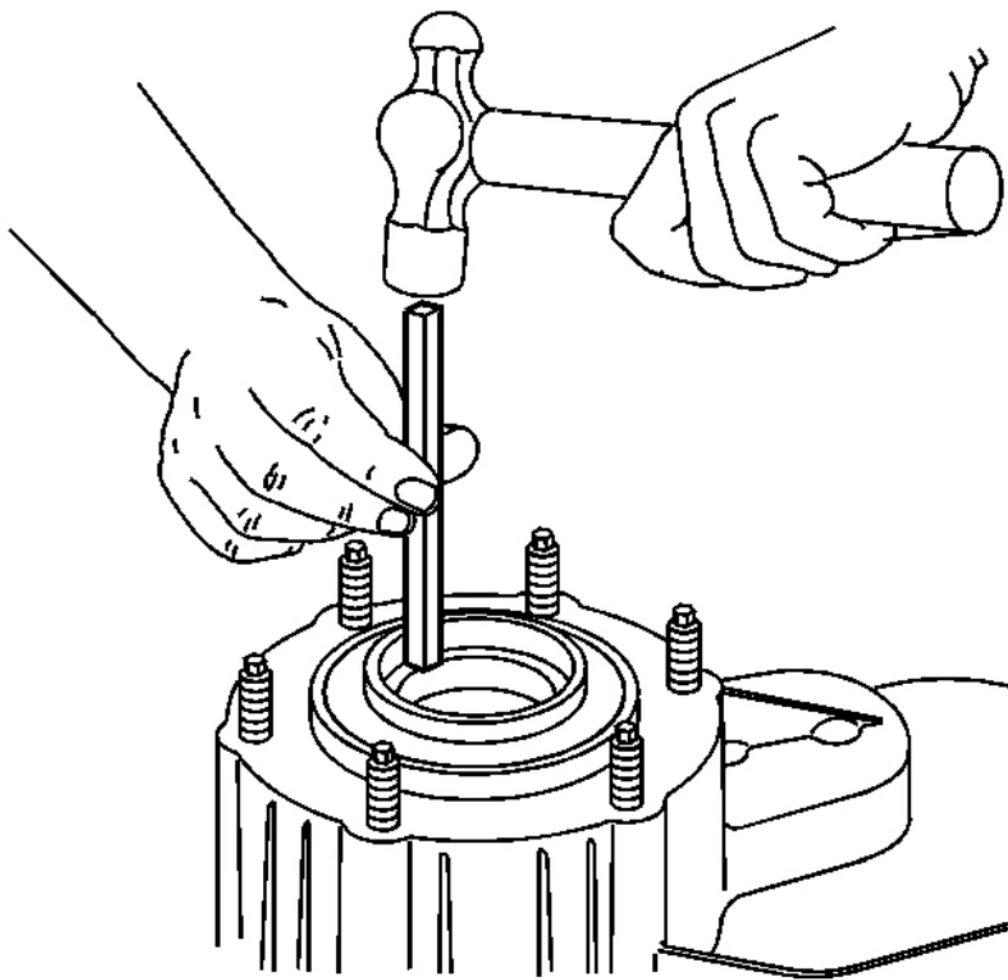


Fig. 23: Removing Input Shaft Bearing
Courtesy of GENERAL MOTORS CORP.

26. Using a hammer and a brass drift, remove the input shaft bearing from the front case half.

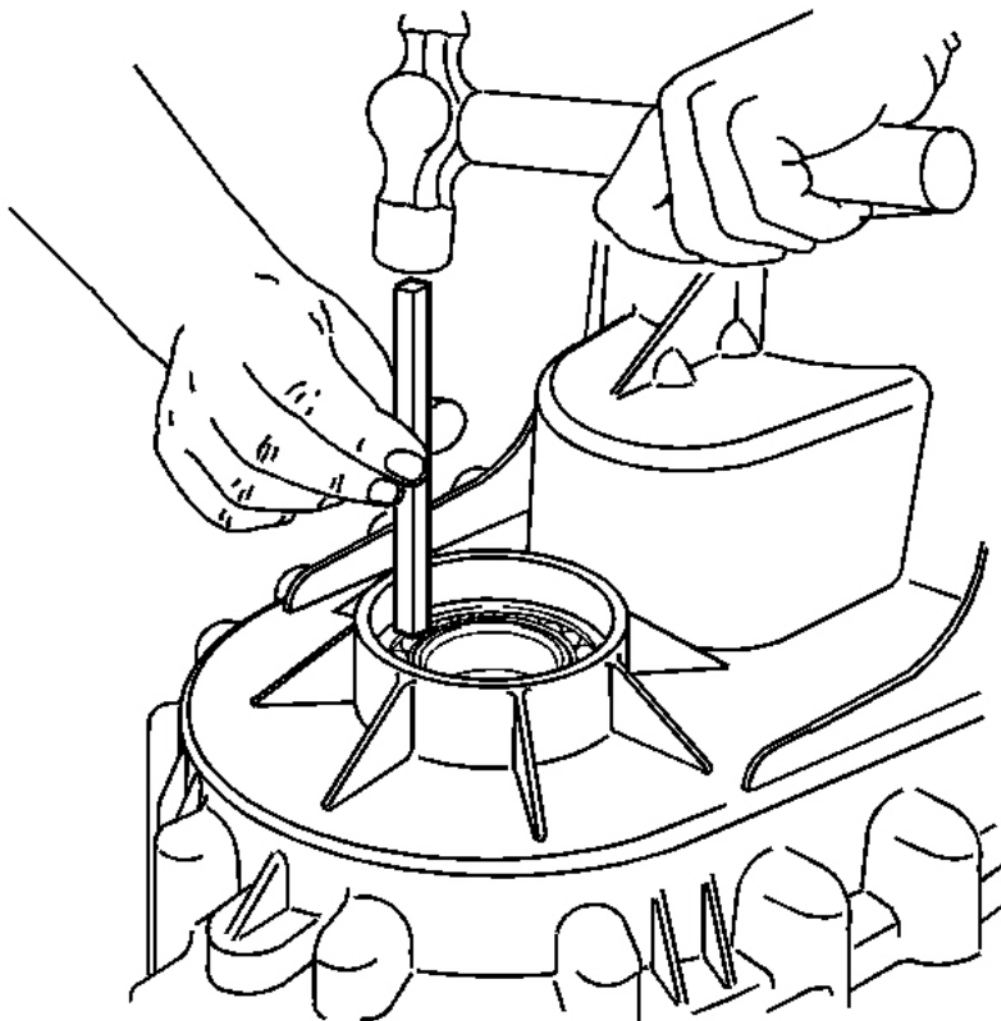


Fig. 24: Tapping Out Front Output Shaft Bearing With Brass Drift
Courtesy of GENERAL MOTORS CORP.

27. Using a brass drift, remove the front output shaft bearing from the front case half.

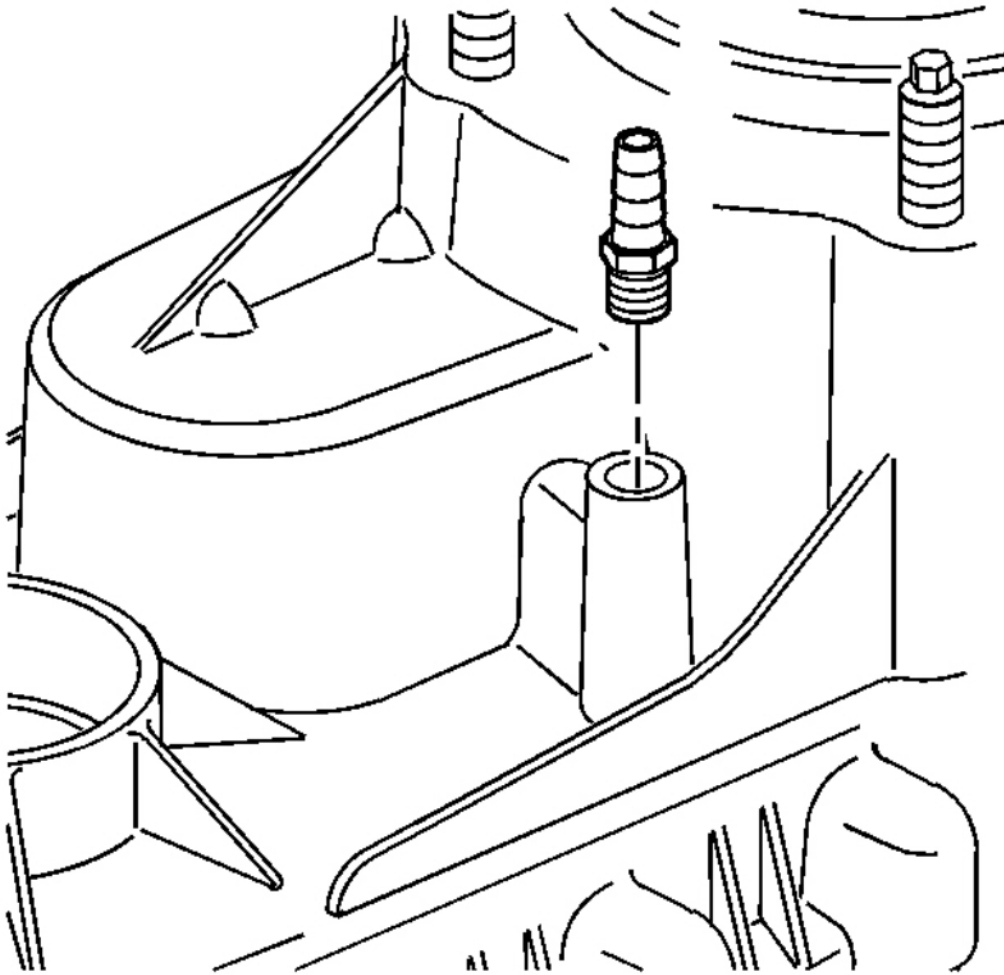


Fig. 25: View Of Front Case Vent
Courtesy of GENERAL MOTORS CORP.

28. If necessary, remove the vent from the front case half.

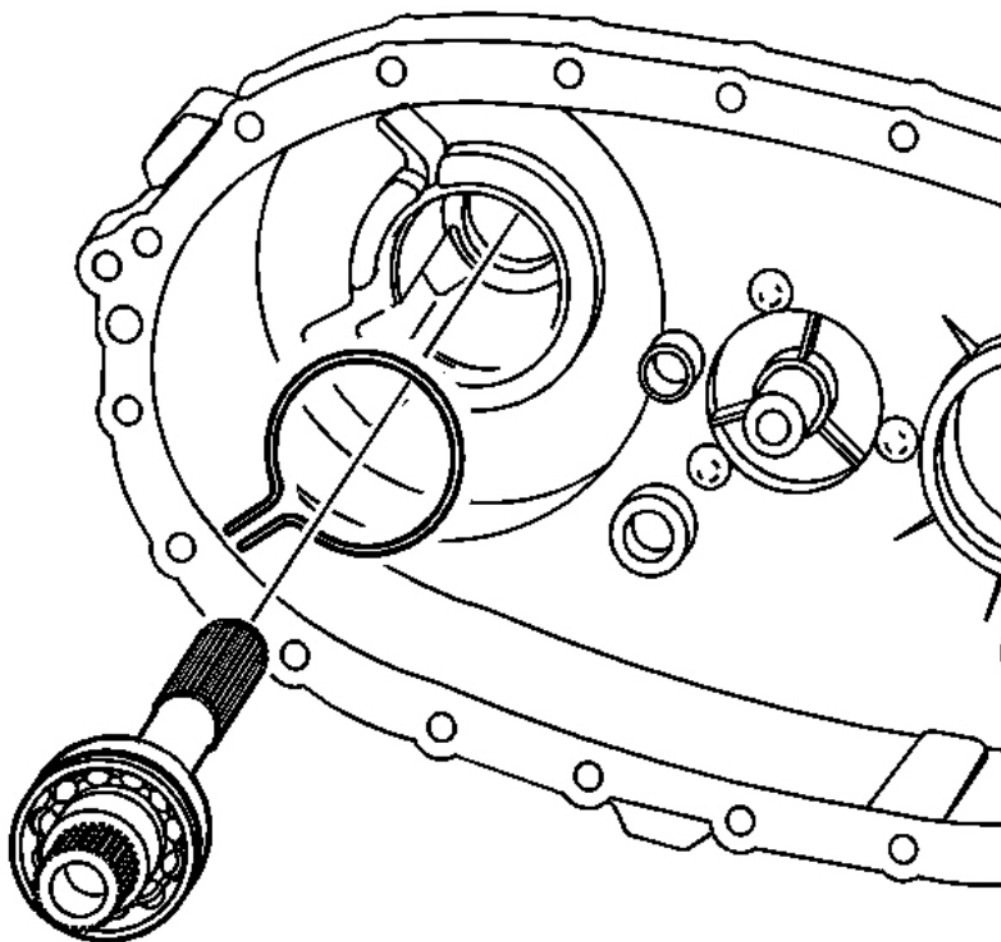


Fig. 26: View Of Rear Output Shaft In The Rear Case Half
Courtesy of GENERAL MOTORS CORP.

29. Remove the rear output shaft from the rear case half.
 1. Spread the rear output shaft rear bearing outer retaining ring.
 2. Using a soft-face hammer, tap on the end of the rear output shaft.

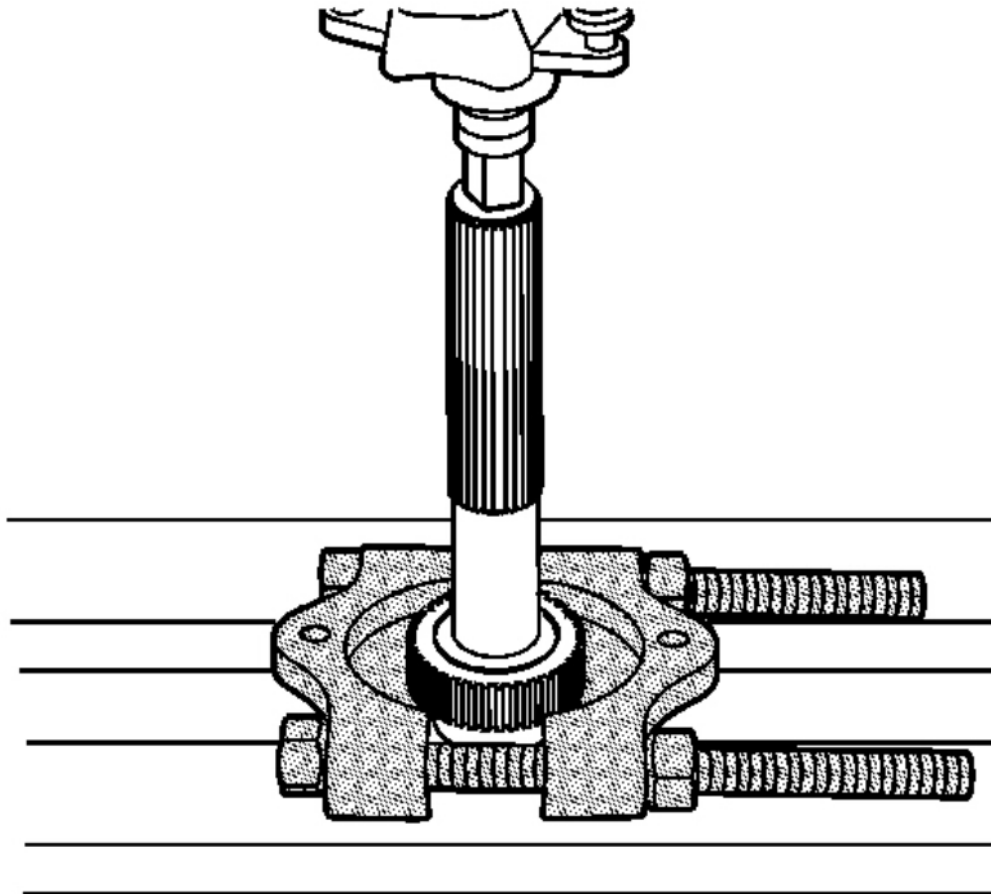


Fig. 27: Removing Speed Reluctor Wheel With J 22912-01
Courtesy of GENERAL MOTORS CORP.

30. Using a hydraulic press and the **J 22912-01** , remove the speed reluctor wheel.
Do not use the speed reluctor wheel again.

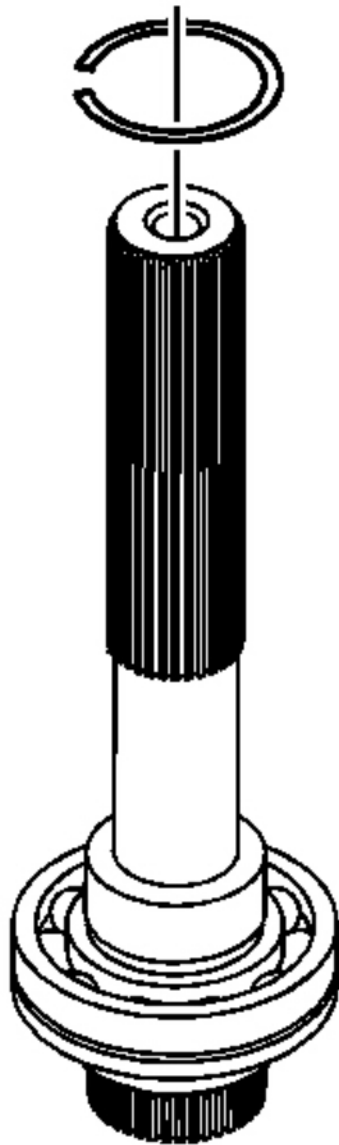


Fig. 28: Identifying Rear Output Shaft Bearing Retaining Ring
Courtesy of GENERAL MOTORS CORP.

31. Remove the retaining ring for the rear output shaft bearing.

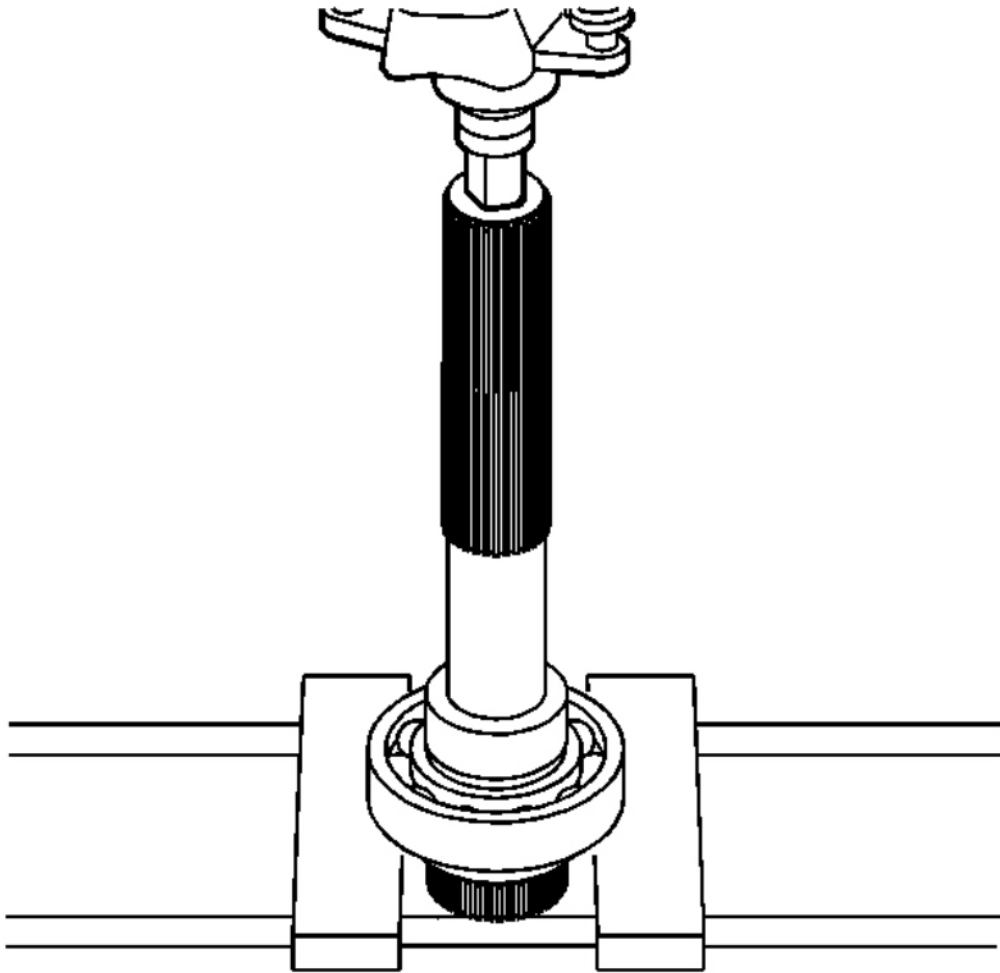


Fig. 29: Pressing Out Rear Output Shaft Bearing
Courtesy of GENERAL MOTORS CORP.

32. Using a hydraulic press, remove the rear output shaft bearing.



Fig. 30: View Of Mainshaft Rear Support Bushing
Courtesy of GENERAL MOTORS CORP.

33. Inspect the mainshaft rear support bushing in the rear output shaft for being faulty. Refer to **Cleaning and Inspection.**
34. Using the **J 2619-01** (1) and the **J 45548** (2), remove the mainshaft rear support bushing from the rear

output shaft.

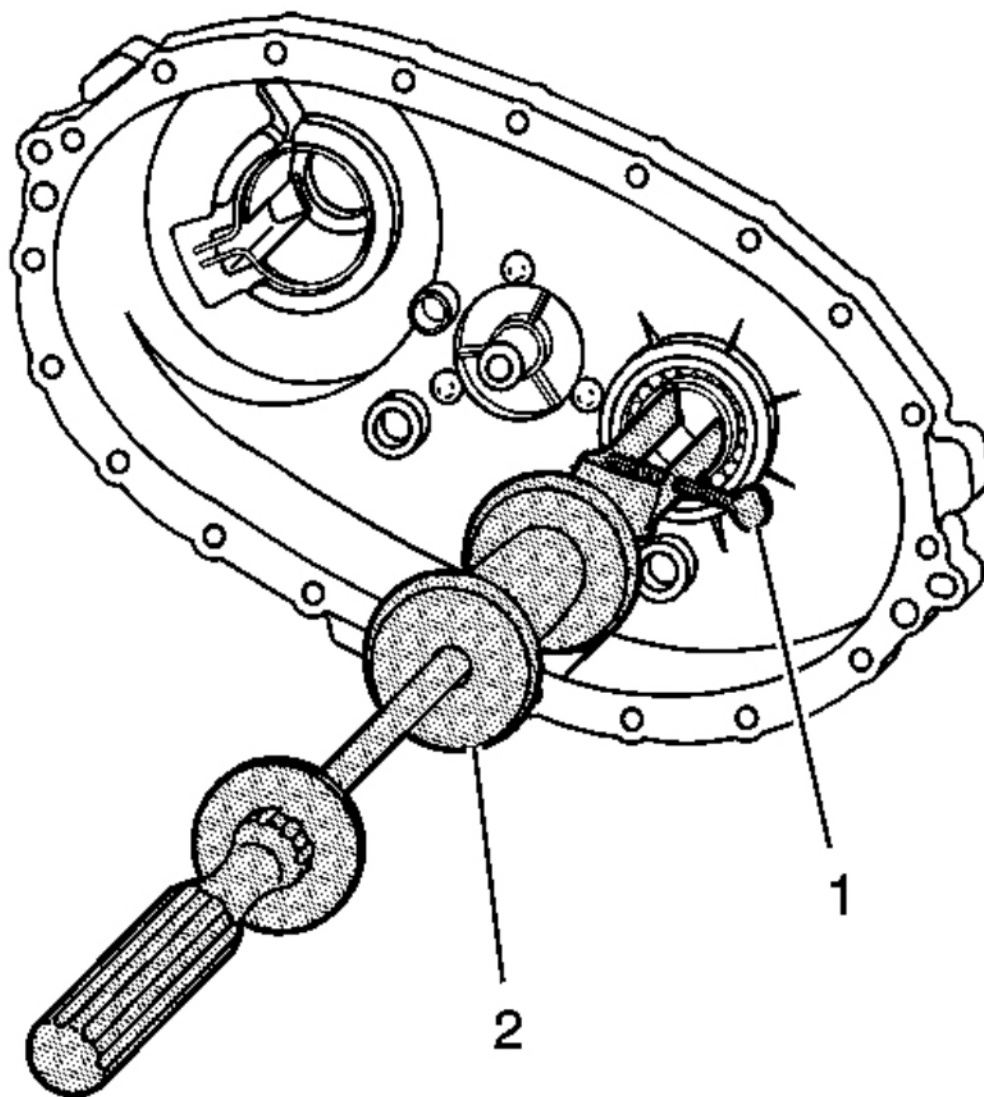


Fig. 31: Removing Rear Bearing With J 26941 & J 23907
Courtesy of GENERAL MOTORS CORP.

35. Using the **J 26941** (1) and the **J 23907** (2), remove the rear bearing for the front output shaft from the rear case.

CLEANING AND INSPECTION

Front Case Half

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

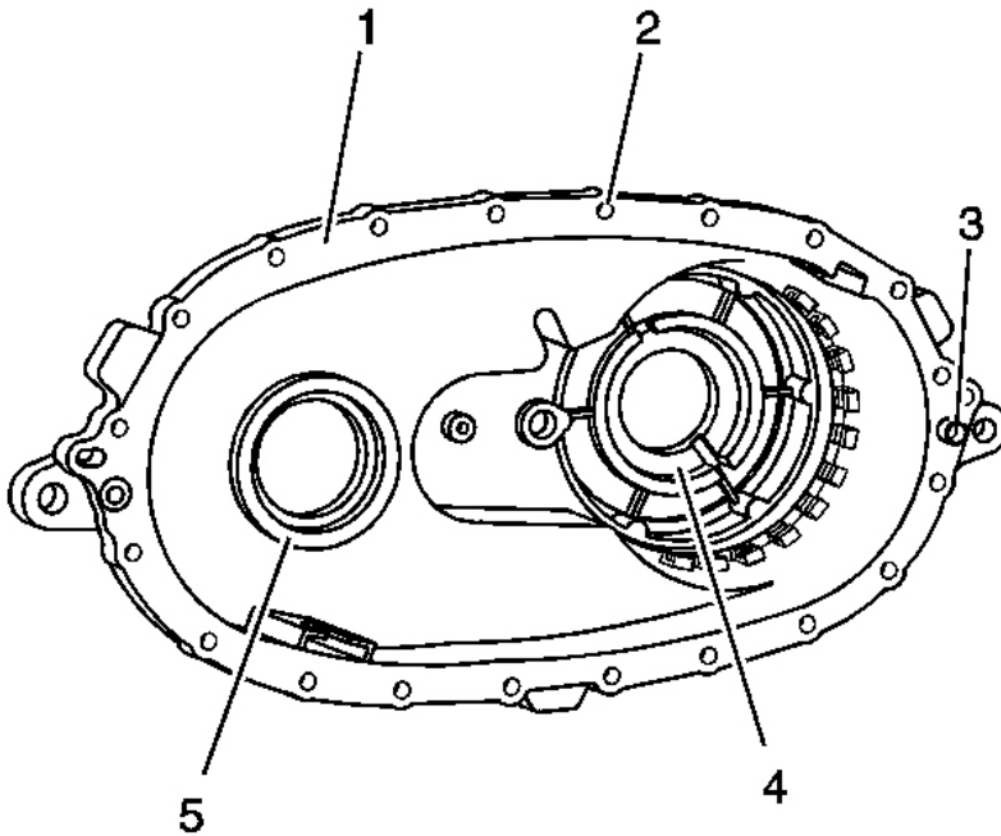


Fig. 32: Identifying Front Case Inspection Points
Courtesy of GENERAL MOTORS CORP.

2. Remove the metal shavings from the case half bolt holes.

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

3. Remove the sealer from the case sealing surfaces.
4. Inspect the case for being broken or cracked.
5. Inspect the front output shaft front bearing bore (5) for the following conditions:

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- A spun bearing
 - Cracks
6. Inspect the input shaft bearing bore (4) for the following conditions:
 - A spun bearing
 - Cracks
 7. Replace the front case half if any of the above conditions are found.
 8. Inspect the sealing surfaces (1) for damage.
 9. Repair small scratches or nicks with a soft stone.
 10. Inspect the front case to transmission case mounting surface for damage.
 11. Inspect the case threaded bolt holes (2) for damage.
 12. Repair any damaged threads.
 13. Inspect the transmission to transfer case studs for damage.
 14. Replace any damaged studs. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
 15. Inspect the location pins (3) for being loose or missing.
 16. Repair or replace any damaged location pins.
 17. Inspect the front output shaft front bearing and the input shaft bearing for the following conditions:
 - Roughness
 - Brinelling
 - Pitting
 18. Replace the bearings if any of the above conditions are found. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.

Rear Case Half

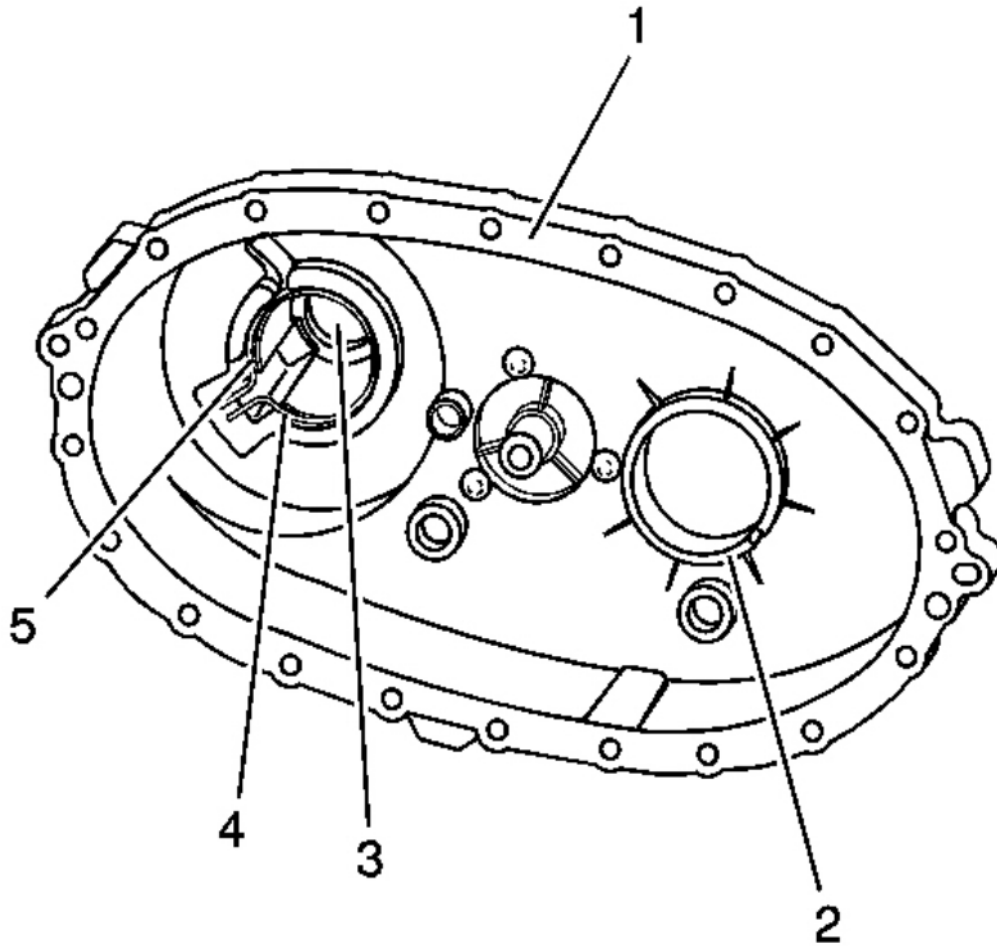


Fig. 33: Locating Rear Case Inspection Areas
Courtesy of GENERAL MOTORS CORP.

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 case for being broken or cracked.
4. Replace the case if it is broken or cracked.
5. Inspect the sealing surfaces (1) for damage.
6. Repair small scratches or nicks with a soft stone.

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7. Inspect the case threaded bolt holes for damage.
8. Repair any damaged threads.
9. Inspect the front output shaft rear bearing bore (2) for the following conditions:
 - Spun bearing
 - Cracks
10. Inspect the rear output shaft rear bearing bore (4) for the following conditions:
 - Spun bearing
 - Cracks
11. Replace the case if the bearing has spun. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
12. Inspect the retaining ring (5) for the rear output shaft rear bearing for being bent or twisted.
13. Replace a faulty retaining ring.
14. Inspect the rear output shaft bushing (3) for scoring or wear.
15. Replace the case if the rear output shaft bushing is faulty. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
16. Replace the case if the control actuator lever shaft bore is faulty. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.

Differential Components

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

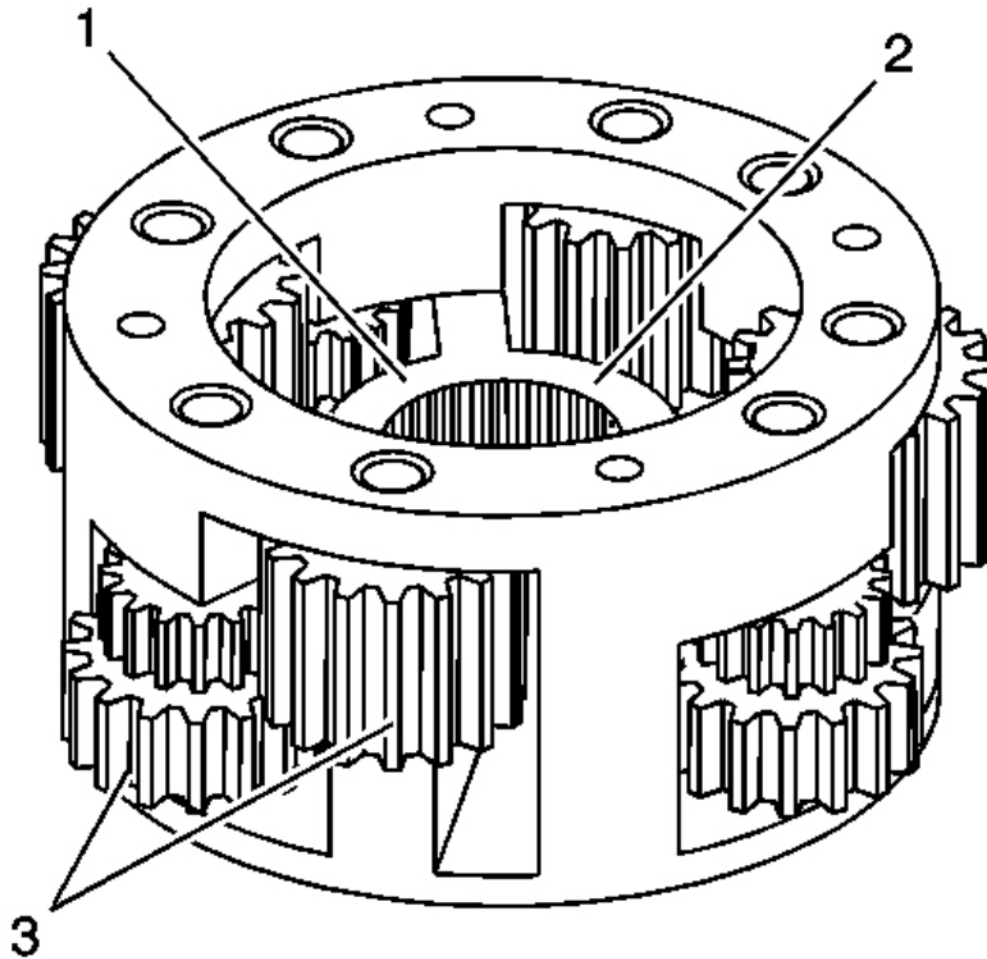


Fig. 34: Inspecting Planetary Differential Components
Courtesy of GENERAL MOTORS CORP.

3. Inspect the pinion gears for chipped teeth.
4. Inspect the pinion gears for debris embedded in the root of the teeth.
5. Inspect the pinion gears for excessive side movement from worn bushings or shafts.
6. Inspect the planetary housing for cracks at the web (1) of the housing.
7. Inspect the thrust washer surface (2) for scoring or excessive wear.
8. Inspect the planetary housing for distortion.
9. Inspect the planetary housing to mainshaft splines for excessive wear.

10. Replace the planetary differential if any of the above conditions are found.
11. Inspect the planetary thrust washers for excessive wear or scoring.
12. Replace the thrust washers if they are faulty.

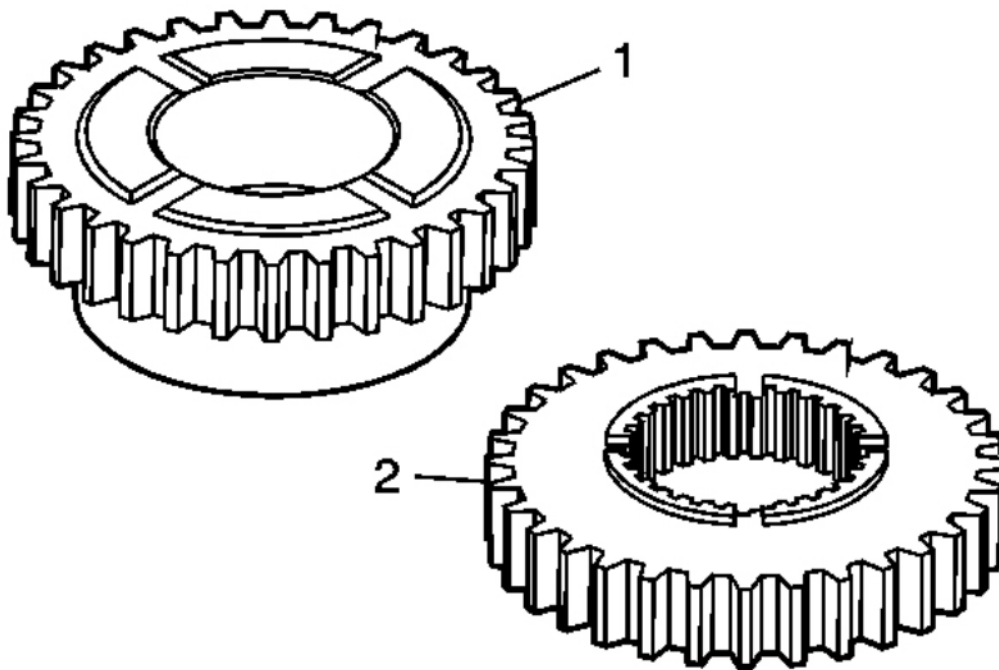


Fig. 35: View Of Front & Rear Sun Gears
Courtesy of GENERAL MOTORS CORP.

1. Clean the front sun gear (1) and the rear sun gear (2) in cleaning solvent and air dry.
2. Inspect the teeth on the front sun gear (1) and the rear sun gear (2) for the following conditions:
 - Chipped teeth
 - Excessively worn gear surfaces

Slight wear marks are normal.

 - Debris embedded in the root of the teeth
3. Inspect the thrust washer surfaces for excessive wear or scoring.
4. Replace the front sun gear (1) and the rear sun gear (2) if they are faulty.

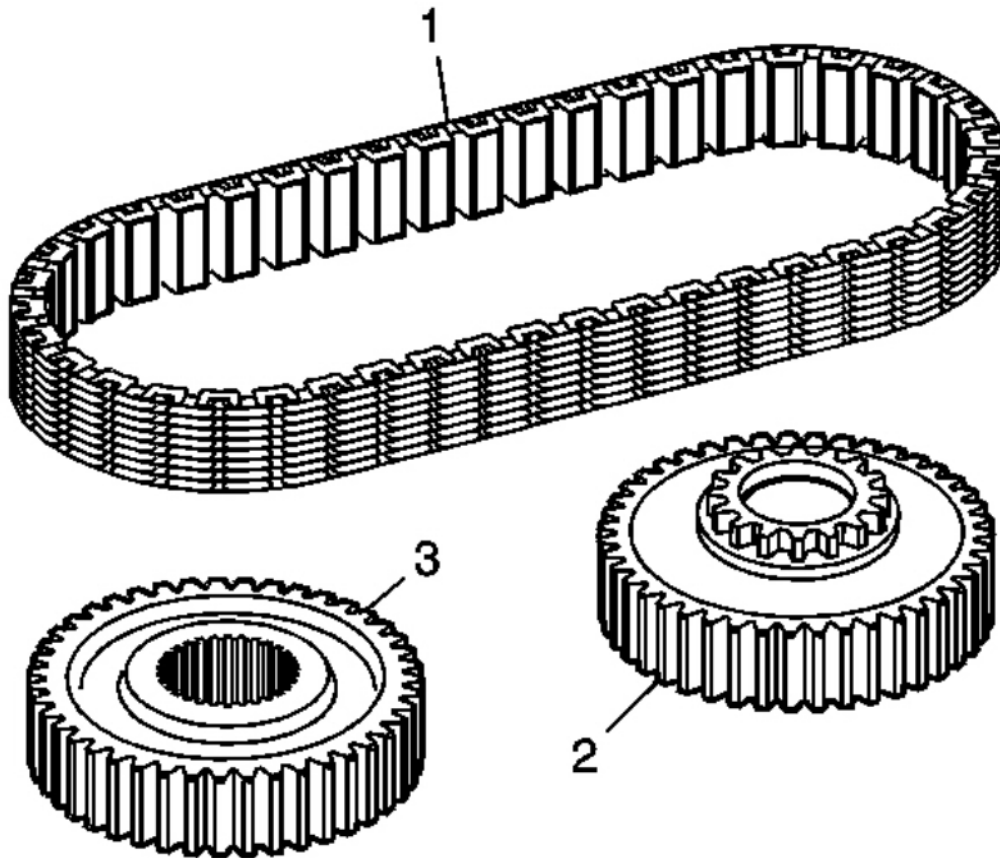


Fig. 36: Identifying Drive Chain, Drive Sprocket & Driven Sprocket
Courtesy of GENERAL MOTORS CORP.

1. Clean the drive chain (1), drive sprocket (2), and driven sprocket (3) in cleaning solvent and air dry.
2. Inspect the drive chain (1) for the following conditions:
 - 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 (3) and the drive sprocket (2) for the following conditions:
 - Chipped teeth
 - Excessively worn gear surfaces

Slight wear marks are normal.

- Debris embedded in the root of the teeth
5. Inspect the drive sprocket bushing for the following conditions:
 - Excessive wear
 - Scoring
 6. Replace the sprockets if any of the above conditions are found. The chain and sprockets may be replaced separately.

Input Shaft

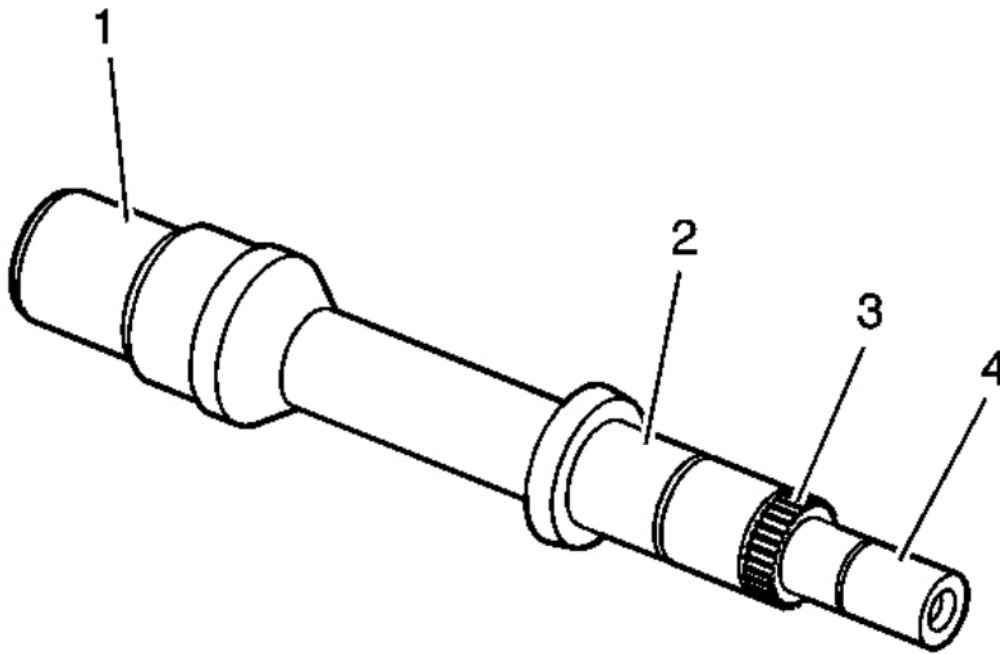


Fig. 37: View Of Input Shaft
Courtesy of GENERAL MOTORS CORP.

1. Clean the input shaft in cleaning solvent.
2. Inspect the input seal surface (1) for excessive grooves or damage.

IMPORTANT: Do not attempt to smooth any roughness in the bearing journals.

3. Inspect the bearing journals on the input shaft for the following conditions:

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- The drive gear bushing (2)
 - The rear support bushing (4)
 - Scoring
 - Pitting
 - Brinelling
 - Excessive wear
4. Inspect the input shaft planetary carrier assembly splines (3) for damage or excessive wear. Witness marks at the location of the gear is normal.
 5. Replace the input shaft if any of the above conditions are found.

Front Output Shaft

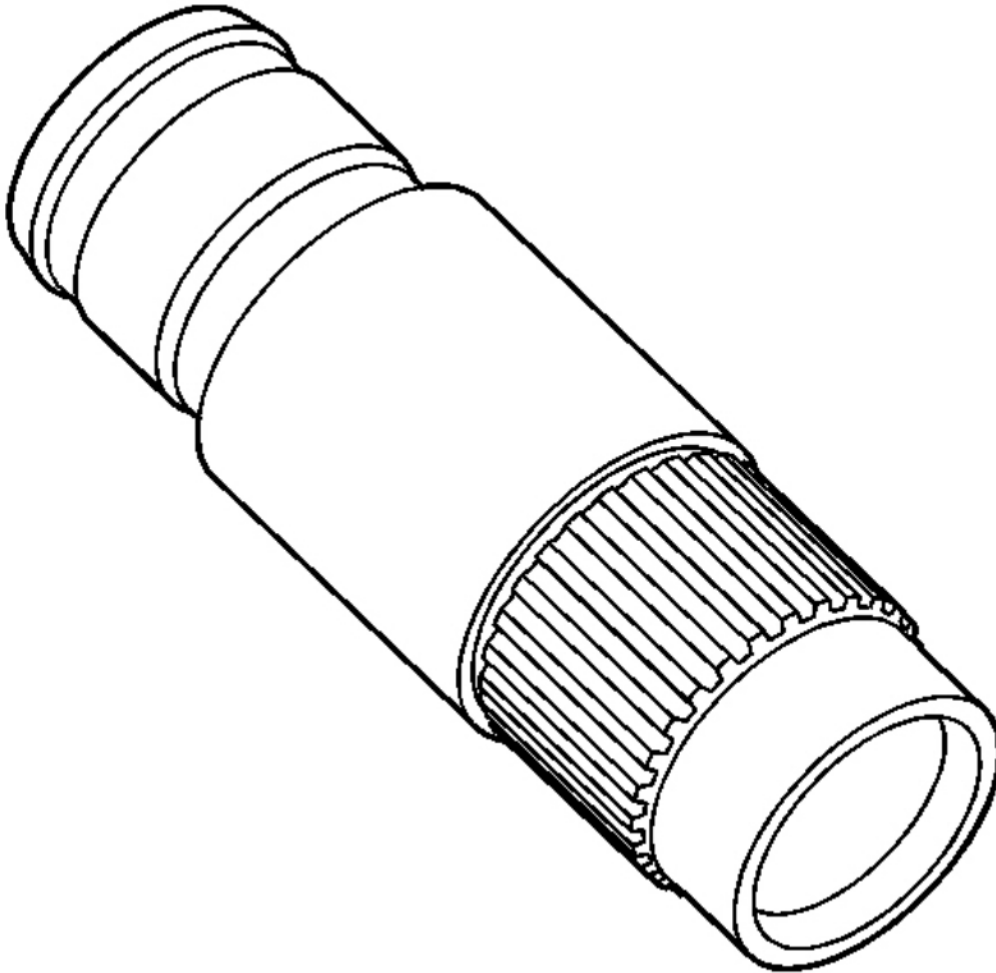


Fig. 38: Identifying Front Output Shaft
Courtesy of GENERAL MOTORS CORP.

1. Clean the front output shaft in cleaning solvent and air dry.
2. Inspect for spun bearings at the front output shaft bearing areas.
3. Inspect the front output internal splines and driven gear splines for damage or excessive wear.
4. Replace the front output shaft if it is damaged.
5. Inspect the cup plug in the front output shaft for leaking.
6. Replace the cup plug if it is leaking. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.

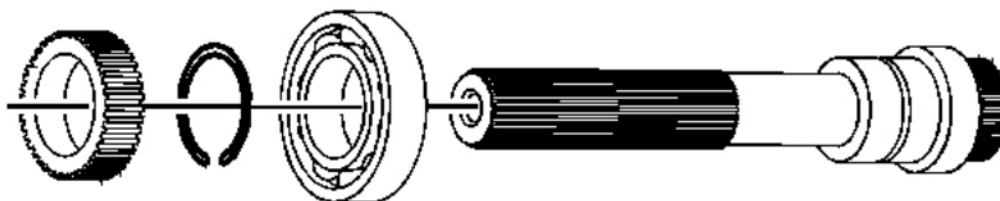


Fig. 39: View Of Rear Output Shaft Components

Courtesy of GENERAL MOTORS CORP.

1. Clean the rear output shaft with rear output shaft bearing in cleaning solvent.
2. Air dry and ensure all solvent is removed from the bearing.
3. Inspect the speed reluctor wheel for damage.
4. Replace the speed reluctor wheel if it is faulty. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
5. Inspect the rear output shaft bearing for the following conditions:
 - Scoring
 - Pitting
 - Brinelling
 - Excessive wear
6. Replace the rear output shaft bearing if it is faulty. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
7. Inspect the mainshaft rear support bushing for the following conditions:
 - Pitted
 - Wear
 - Corrosion
8. Replace the mainshaft rear support bushing if any of the above conditions are found. Refer to **Transfer Case Disassemble** and **Transfer Case Assemble**.
9. Inspect the rear output shaft splines for wear or damage.
10. Inspect the rear output shaft bearing area for a spun bearing.
11. Replace the rear output shaft if any of the above conditions are found.

TRANSFER CASE ASSEMBLE

Tools Required

- J 3289-20 Holding Fixture. See **Special Tools and Equipment**.

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- **J 8092** Universal Driver. See **Special Tools and Equipment**.
- **J 22912-01** Rear Pinion and Axle Bearing Remover. See **Special Tools and Equipment**.
- **J 36850** Transjel Lubricant. See **Special Tools and Equipment**.
- **J 42176** Universal Driver Handle - Non-Threaded. See **Special Tools and Equipment**.
- **J 42738** Seal Installer. See **Special Tools and Equipment**.
- **J 43484** Front Output Shaft Seal Installer. See **Special Tools and Equipment**.
- **J 45756** Rear Output Shaft Seal Installer. See **Special Tools and Equipment**.
- **J 45757** Mainshaft Support Bushing and Bearing Installer. See **Special Tools and Equipment**.
- **J 45759** Assembly Fixture. See **Special Tools and Equipment**.

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

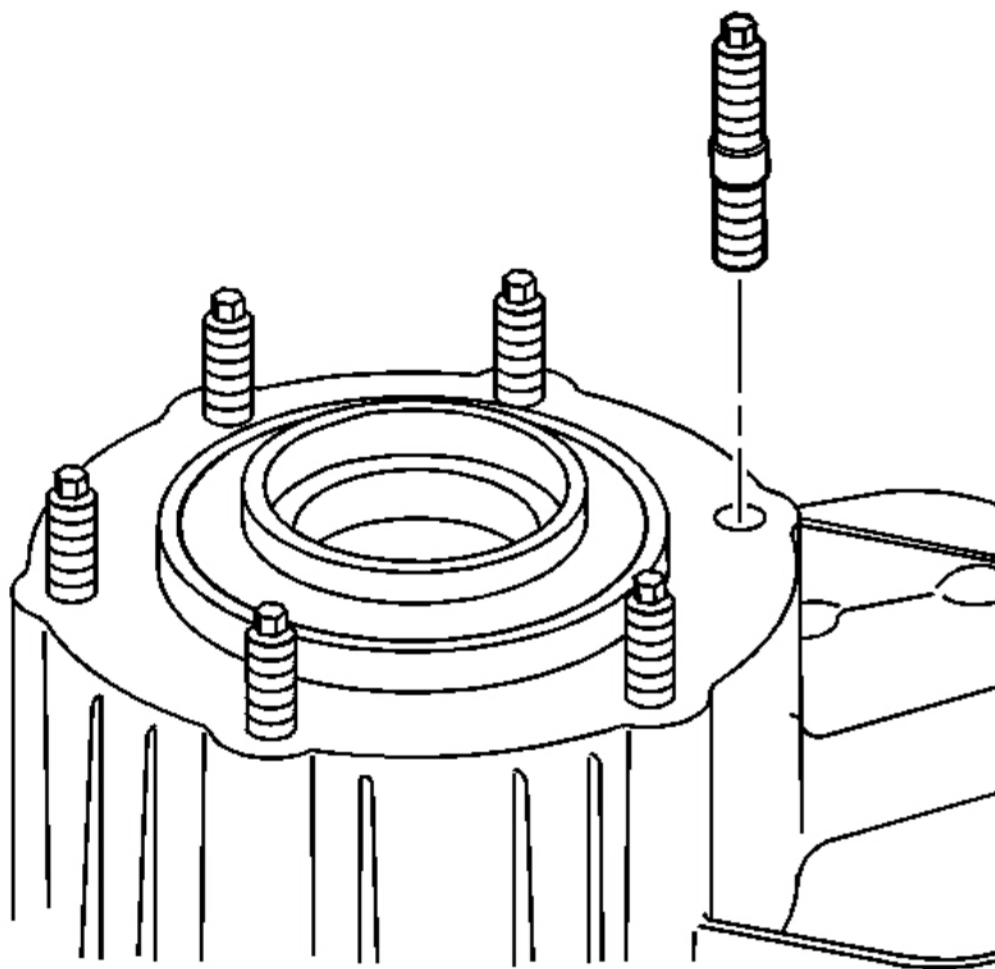


Fig. 40: View Of Transfer Case Mounting Stud
Courtesy of GENERAL MOTORS CORP.

1. If removed, install the transfer case mounting studs.

Tighten: Tighten the mounting studs to 31 N.m (23 lb ft).

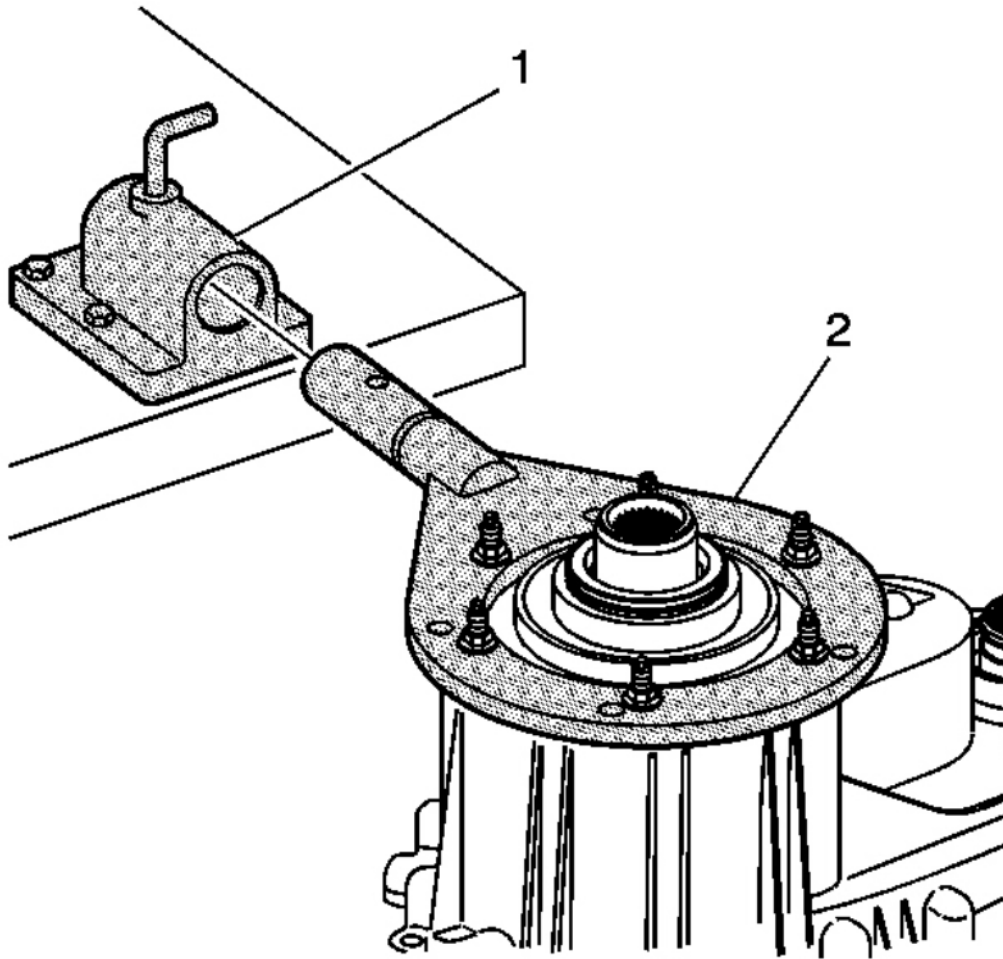


Fig. 41: View Of Front Transfer Case Bench Mount
Courtesy of GENERAL MOTORS CORP.

2. Attach the **J 45759** to the front transfer case using the adapter studs. All of the assembly procedures can be performed with the case mounted to the **J 45759**.
3. Install the **J 45759** (2) into the **J 3289-20** (1) and secure with the pivot pin.

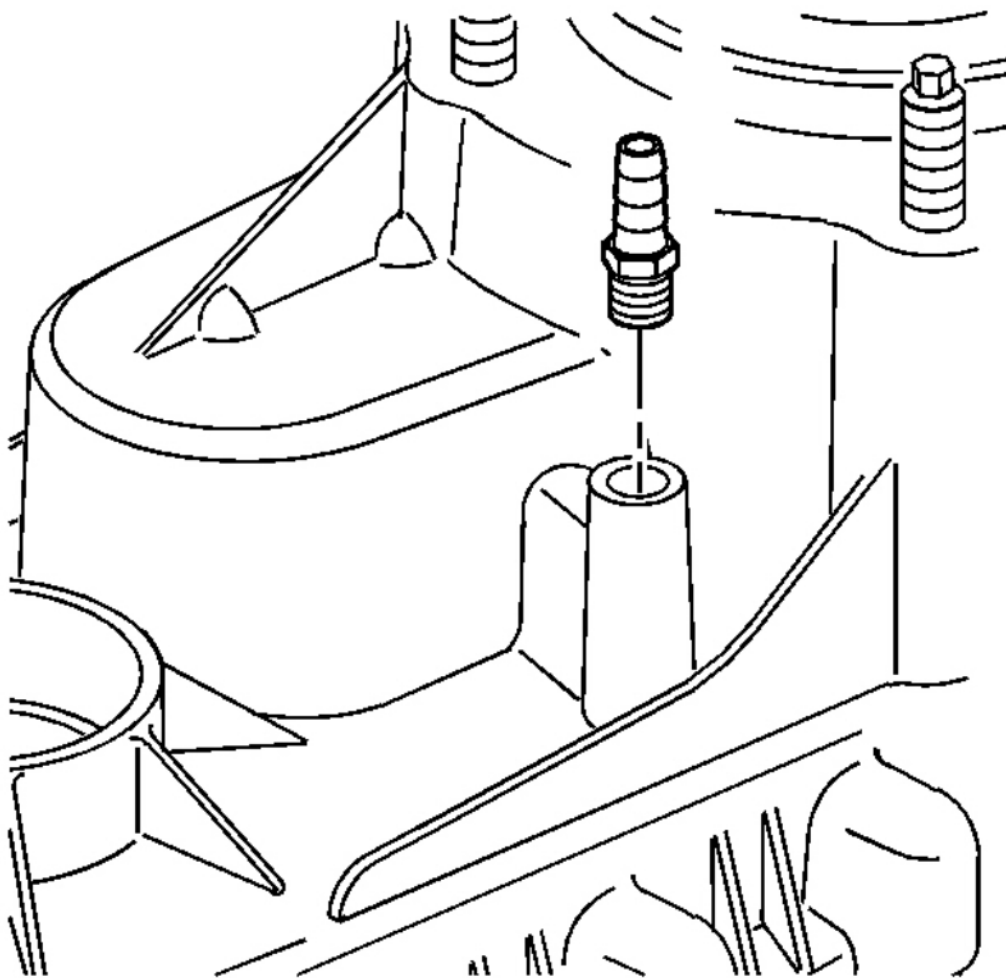


Fig. 42: View Of Front Case Vent
Courtesy of GENERAL MOTORS CORP.

4. If the vent is removed, apply pipe sealant GM P/N 12346004 (Canadian P/N 10953480) to the threads on the vent.
5. Install the vent.

Tighten: Tighten the vent to 6 N.m (53 lb in).

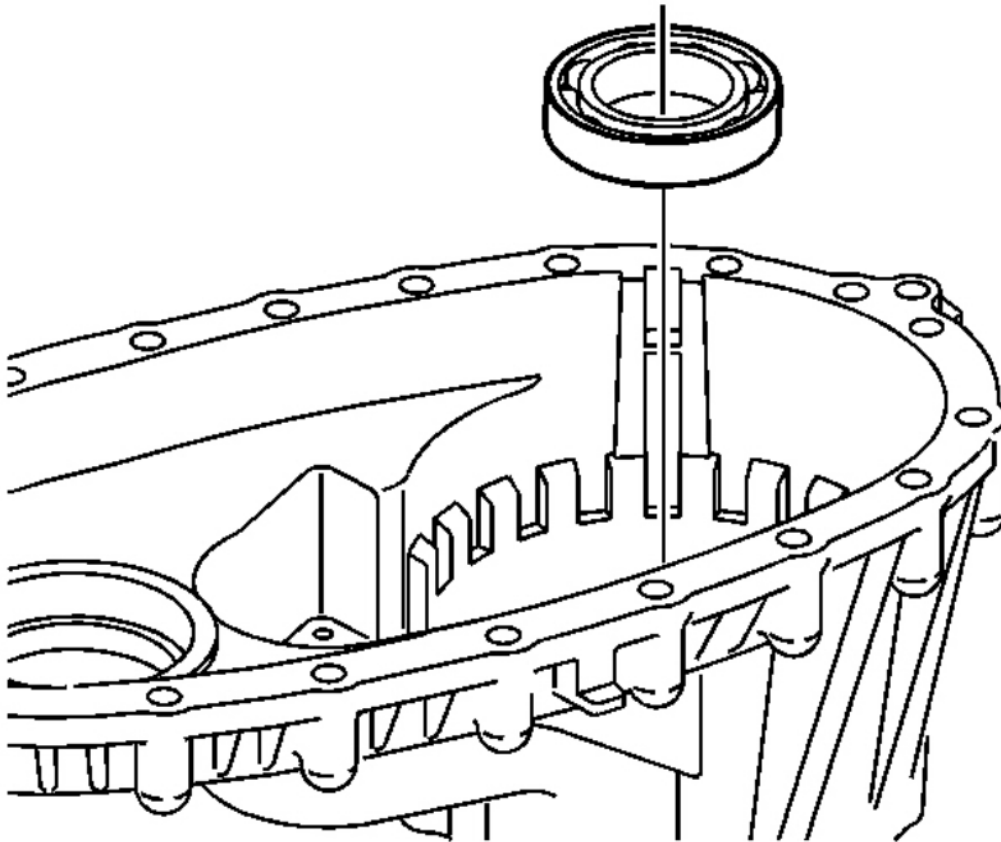


Fig. 43: Installing Input Shaft Bearing With Brass Drift
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Lubricate all of the bearings and bearing journals with transfer case fluid during installation.

6. Install the input shaft bearing in the front case half.
 - Use a hammer and a brass drift only on the outer bearing race.
 - Ensure the bearing is kept square to the bore while installing.

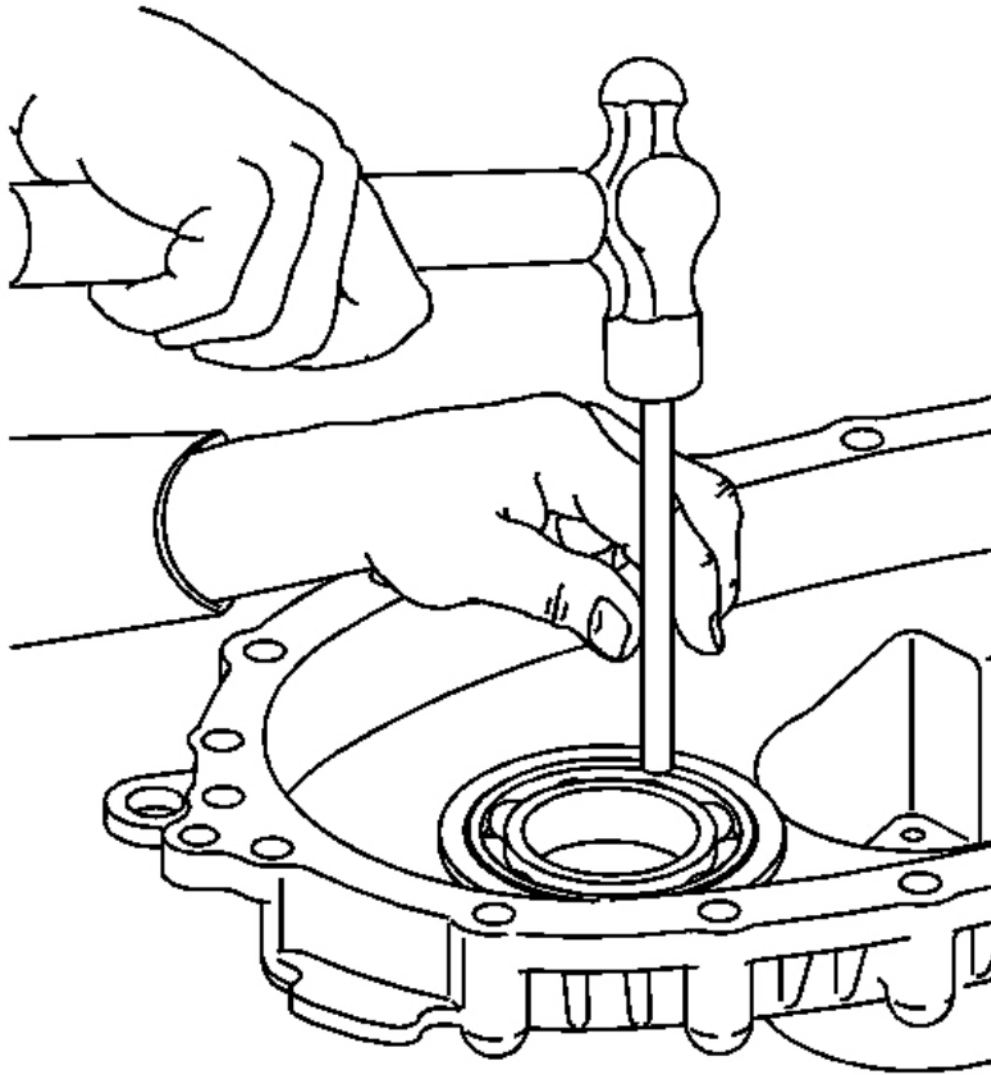


Fig. 44: Installing Front Bearing For Front Output Shaft
Courtesy of GENERAL MOTORS CORP.

7. Install the front bearing, for the front output shaft, in the front case half.
 - Use a hammer and a brass drift only on the outer bearing race.
 - Ensure the bearing is kept square to the bore while installing.

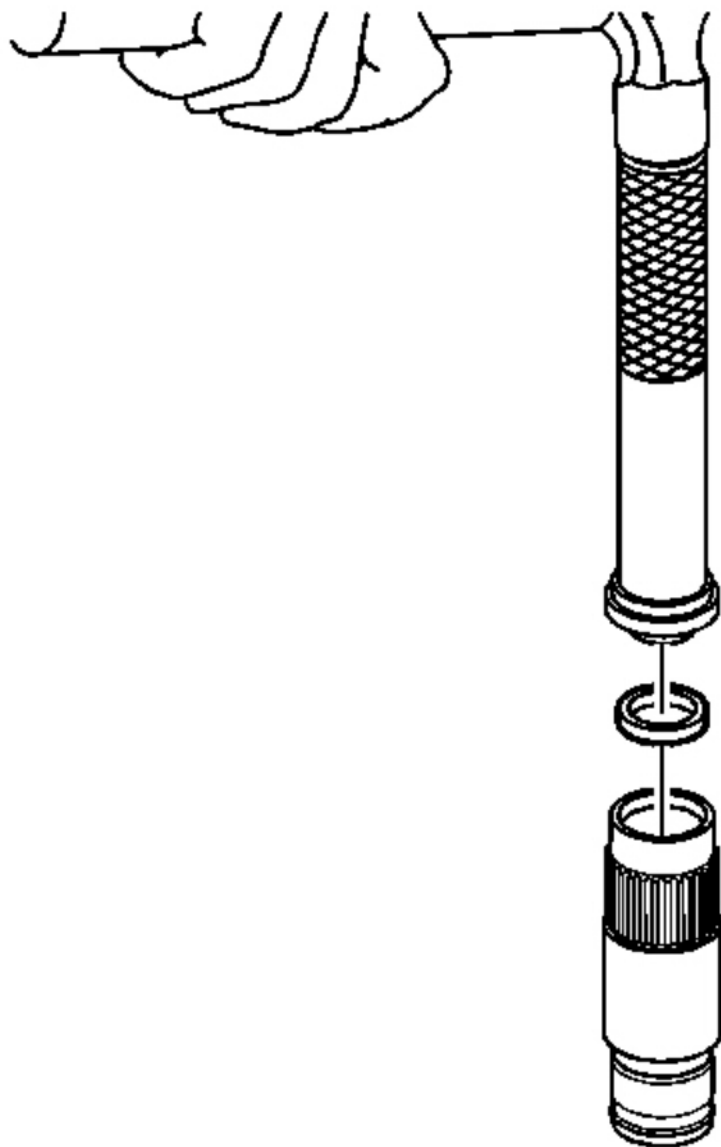


Fig. 45: Installing Front Output Shaft Cup Plug
Courtesy of GENERAL MOTORS CORP.

8. If it is a new shaft or if the cup plug was removed, install the cup plug in the front output shaft, using a suitable driver. Install the cup plug 1 mm (0.039 in) from flush with the end of the shaft.

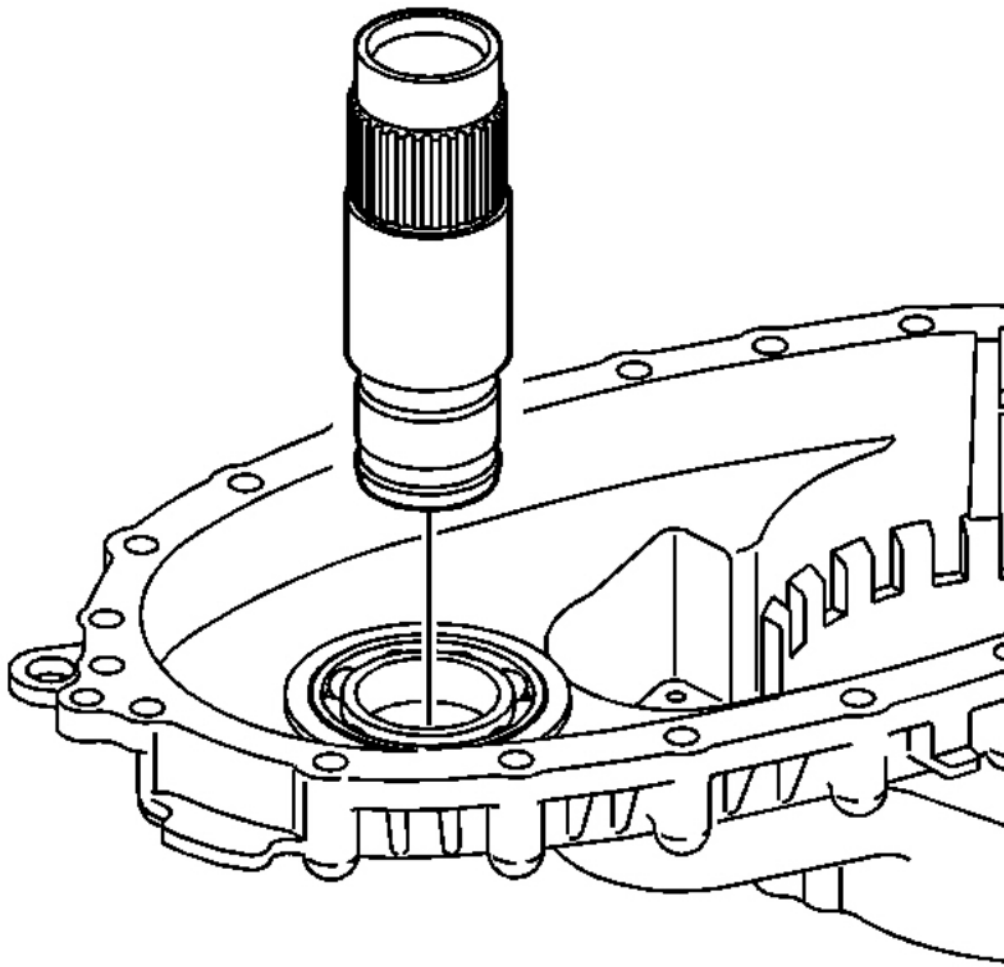


Fig. 46: View Of Front Output Shaft Assembly
Courtesy of GENERAL MOTORS CORP.

9. Install the front output shaft assembly.

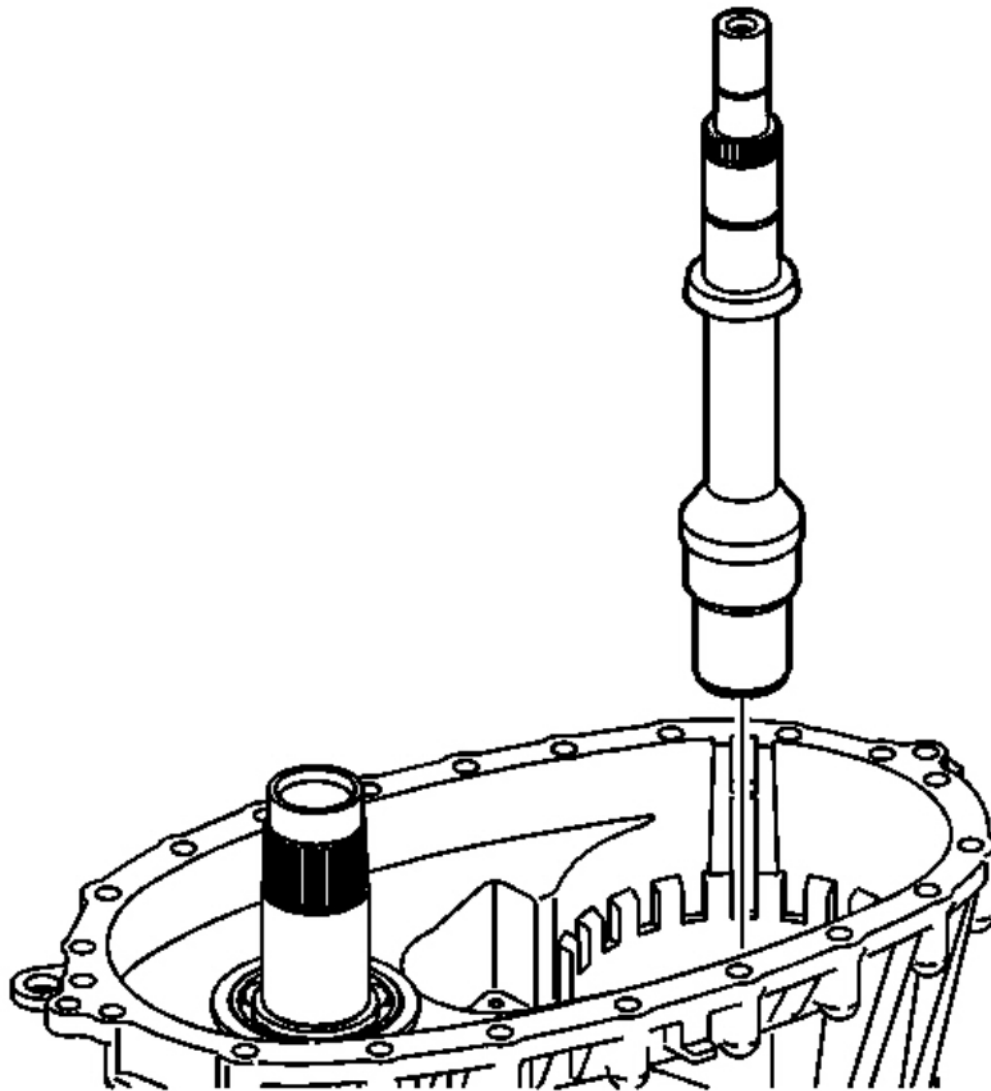


Fig. 47: Identifying Input Shaft
Courtesy of GENERAL MOTORS CORP.

10. Install the input shaft.

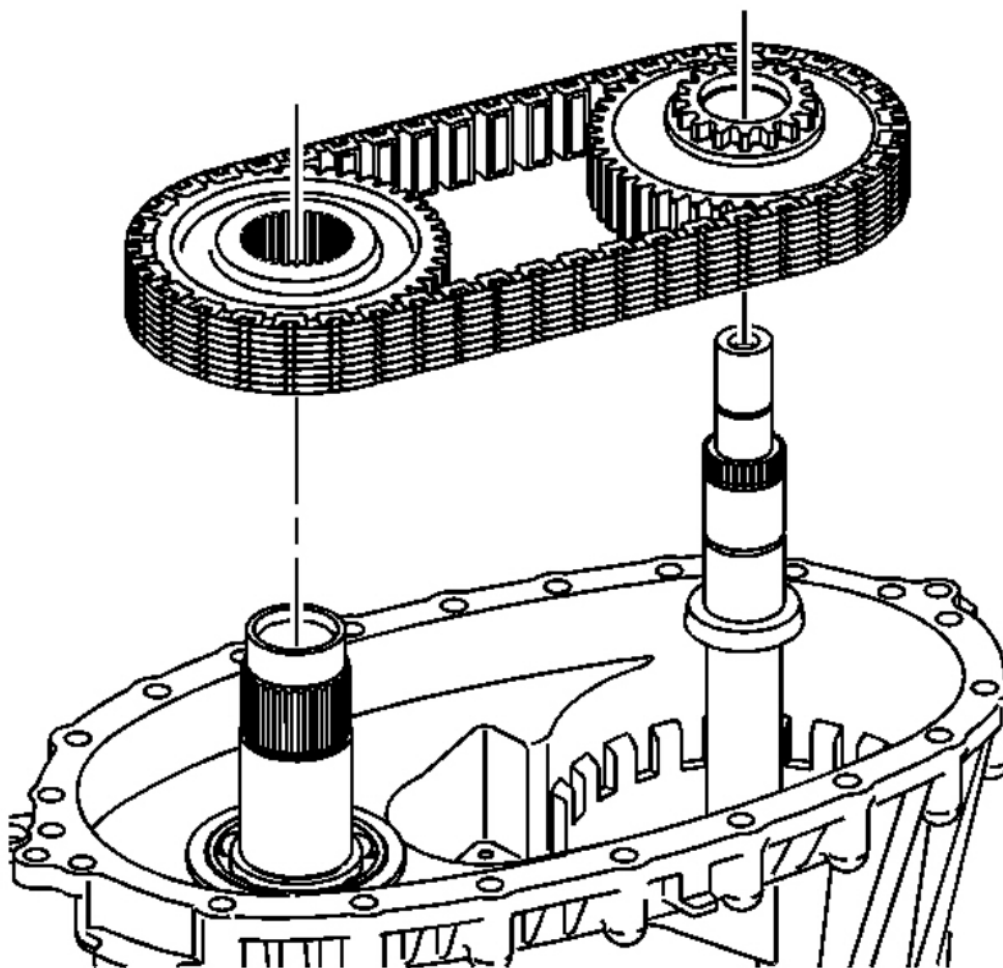


Fig. 48: Locating Drive Chain & Sprockets
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: If using the chain and sprockets again, ensure to align the marks of the drive chain and sprockets.

11. Install the drive chain and sprockets. The blue link on the chain faces up.

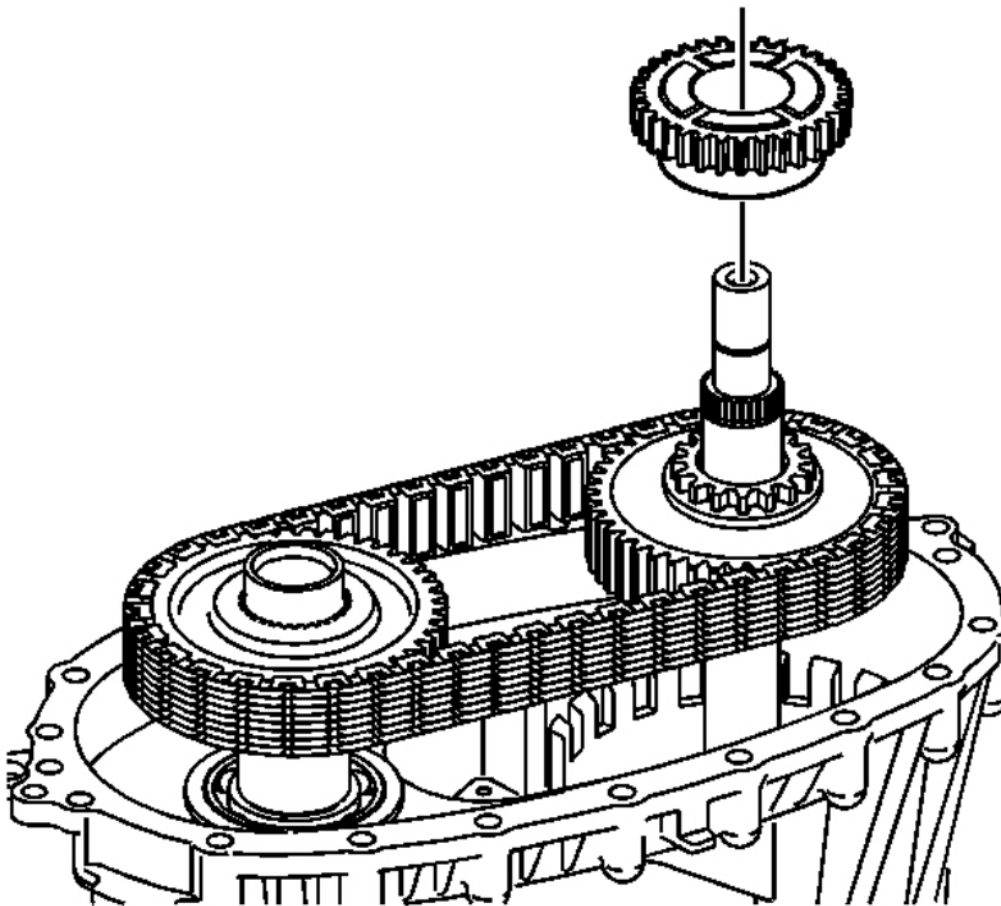


Fig. 49: View Of Front Sun Gear
Courtesy of GENERAL MOTORS CORP.

12. Install the front sun gear.

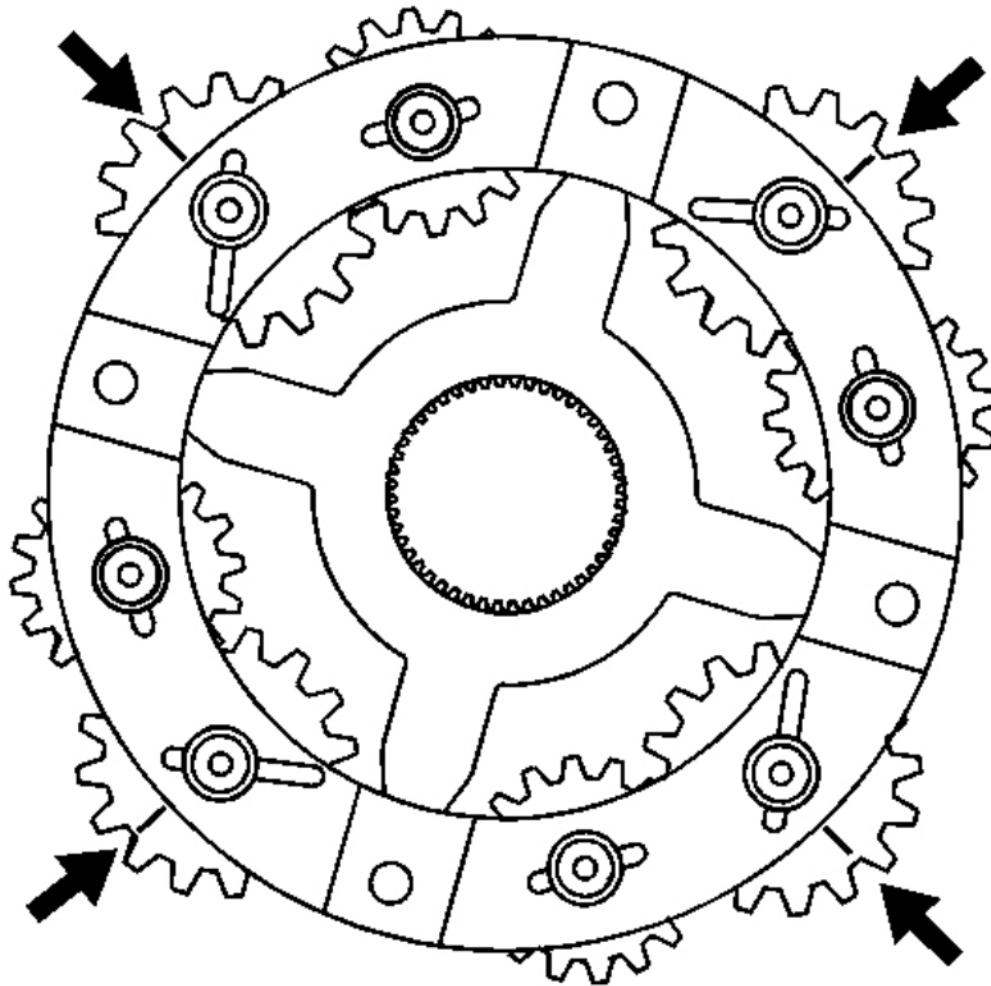


Fig. 50: Aligning Marks On Pinion Gears
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: The planetary differential gears are timed to the sun gears. If the gears are not timed properly, the differential will not rotate without binding.

13. With the rear side of the planetary differential facing up, align the marks on the pinion gears. Position the alignment marks with an area on the planetary housing that can be reference for all gears.

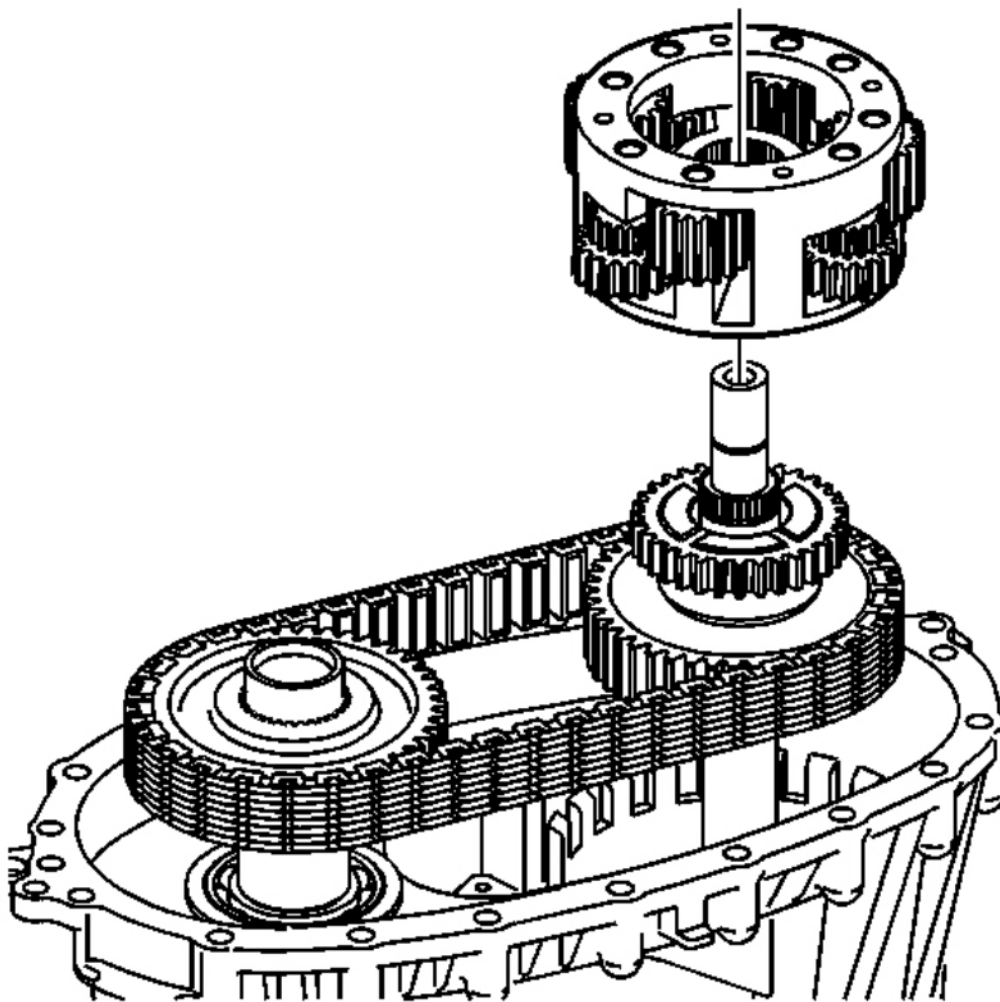


Fig. 51: Identifying Planetary Differential Assembly
Courtesy of GENERAL MOTORS CORP.

14. Install the assembly.
 - Do not rotate the planetary differential pinion gears when installing.
 - Ensure the alignment marks are still in position.

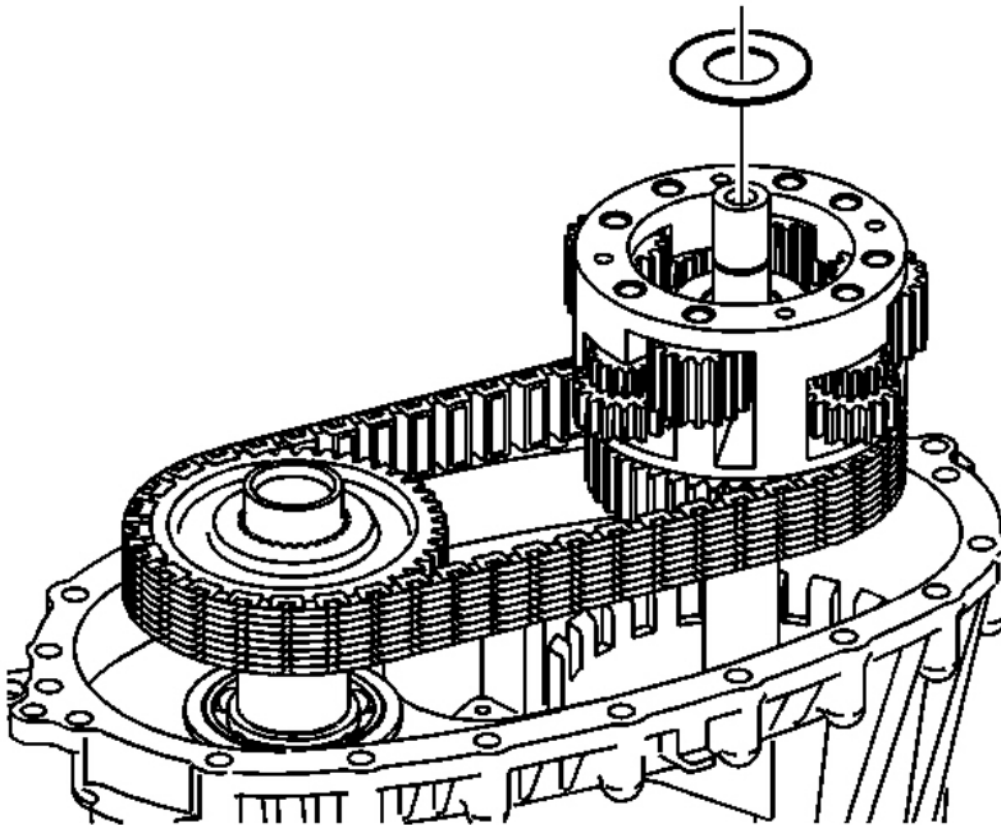


Fig. 52: View Of Sun Gear Thrust Washer
Courtesy of GENERAL MOTORS CORP.

15. Lubricate the sun gear thrust washer with **J 36850** or equivalent.
16. Install the sun gear thrust washer.

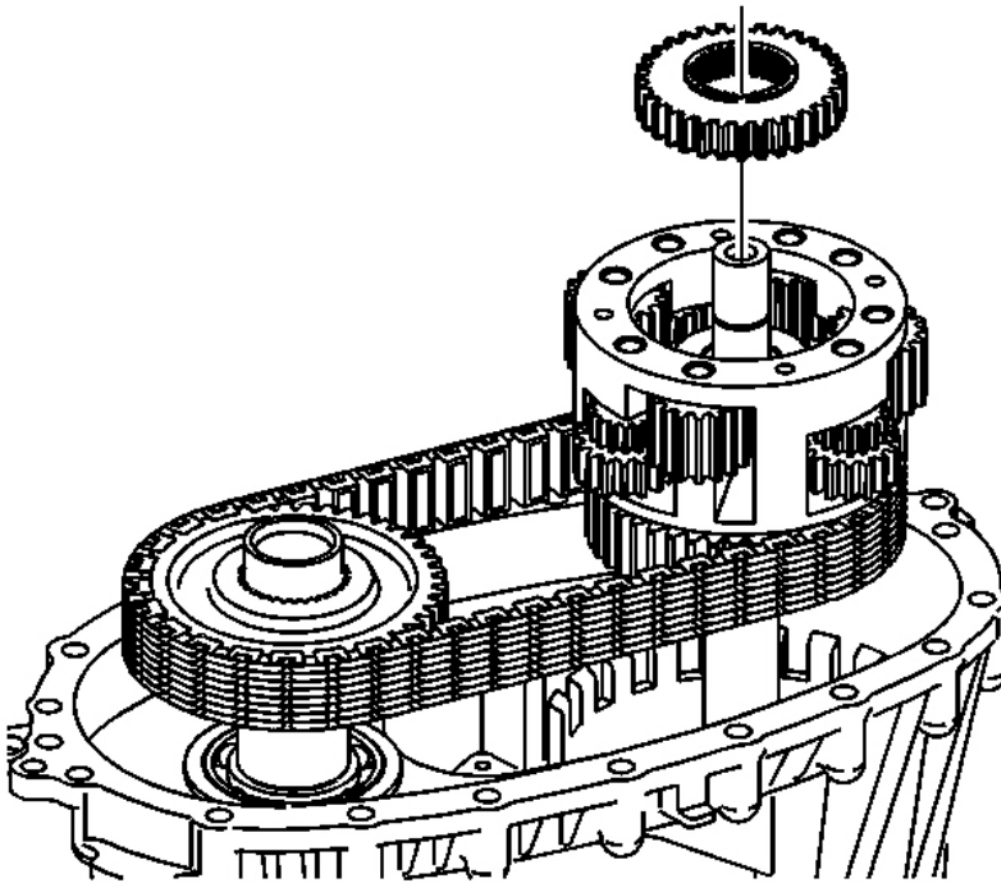


Fig. 53: Aligning Sun Gear

Courtesy of GENERAL MOTORS CORP.

17. Install the rear sun gear.
 - The shoulder side of the gear faces up.
 - Do not rotate the planetary pinion gears.

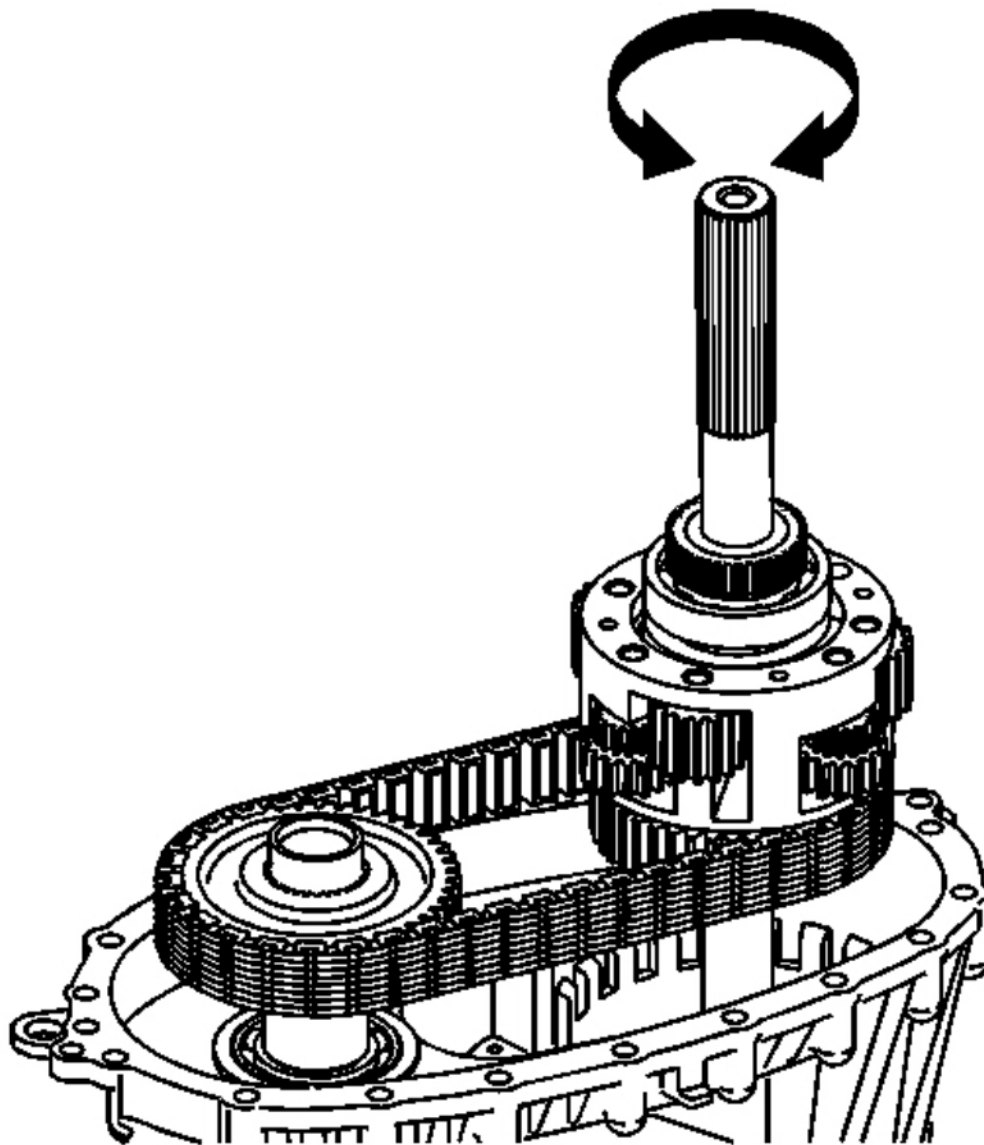


Fig. 54: Checking Planetary Differential Pinion Gear Rotation
Courtesy of GENERAL MOTORS CORP.

18. Temporarily install the rear output shaft to the planetary differential and the rear sun gear.
19. Rotate the rear output shaft three or four revolutions to rotate the planetary differential pinion gears. If properly aligned, the planetary pinion gears will rotate freely, and there will be no binding.
20. Remove the rear output shaft without disturbing the rear sun gear.

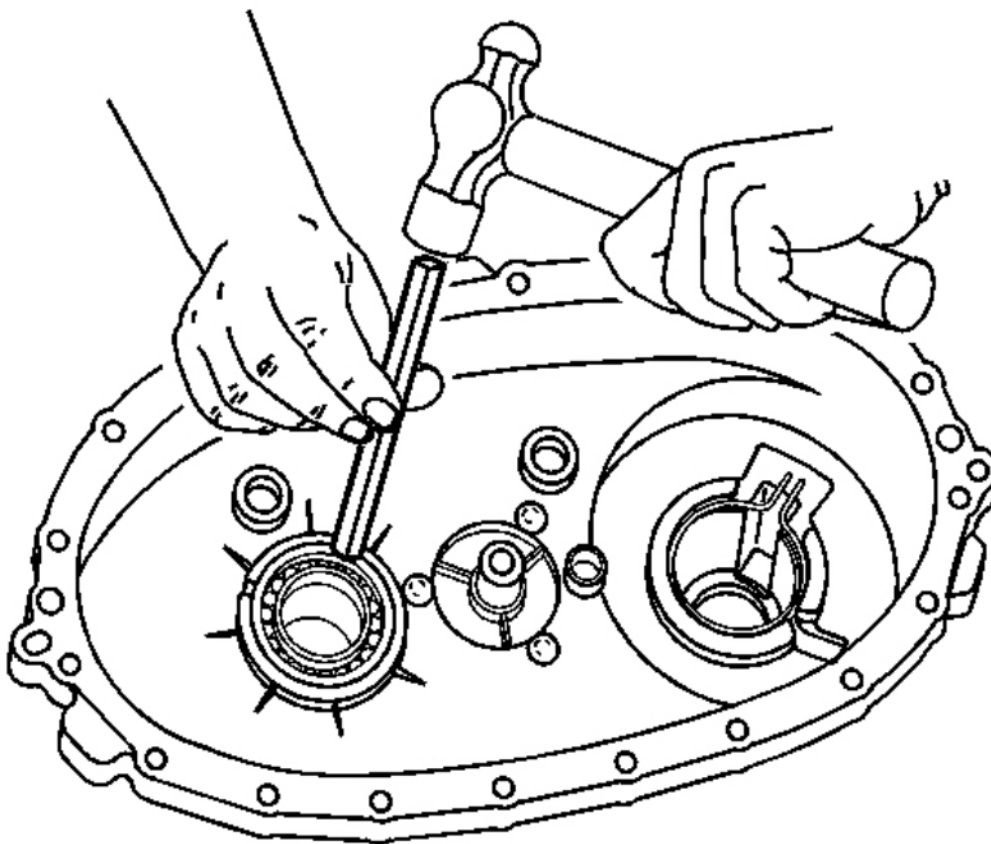


Fig. 55: Installing Front Output Shaft Rear Bearing
Courtesy of GENERAL MOTORS CORP.

21. Install the front output shaft rear bearing in the rear case half.
 - Use a hammer and a brass drift only on the outer bearing race.
 - Ensure the bearing is kept square to the bore while installing.

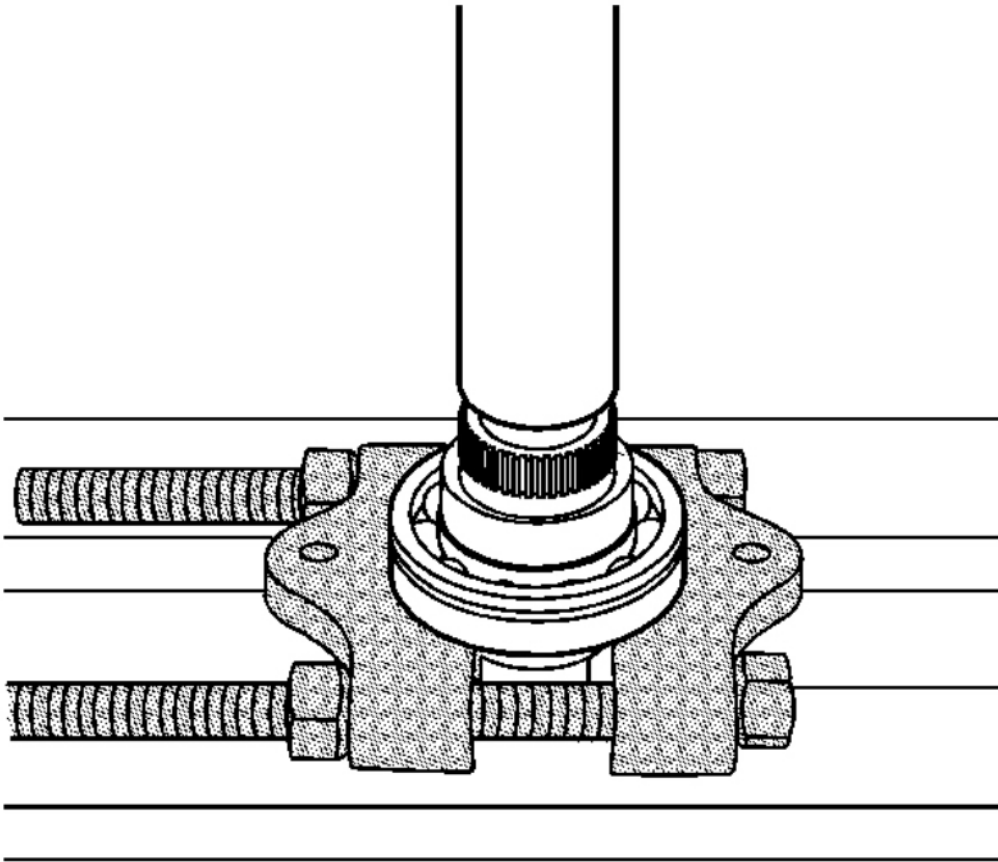


Fig. 56: Using J 22912-01 To Install Rear Output Shaft Bearing
Courtesy of GENERAL MOTORS CORP.

22. Using a hydraulic press and the **J 22912-01** , install the rear output shaft bearing.
 - The retaining ring groove on the bearing goes toward the input end or forward.
 - Use a suitable press plate on the end of the rear output shaft.
 - Ensure the bearing is supported on the inner race.

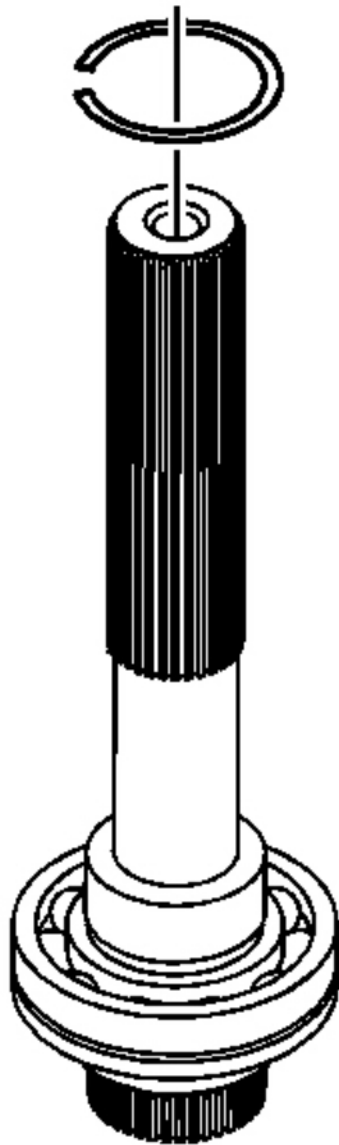


Fig. 57: Identifying Rear Output Shaft Bearing Retaining Ring
Courtesy of GENERAL MOTORS CORP.

23. Install a NEW retaining ring for the rear output shaft bearing.

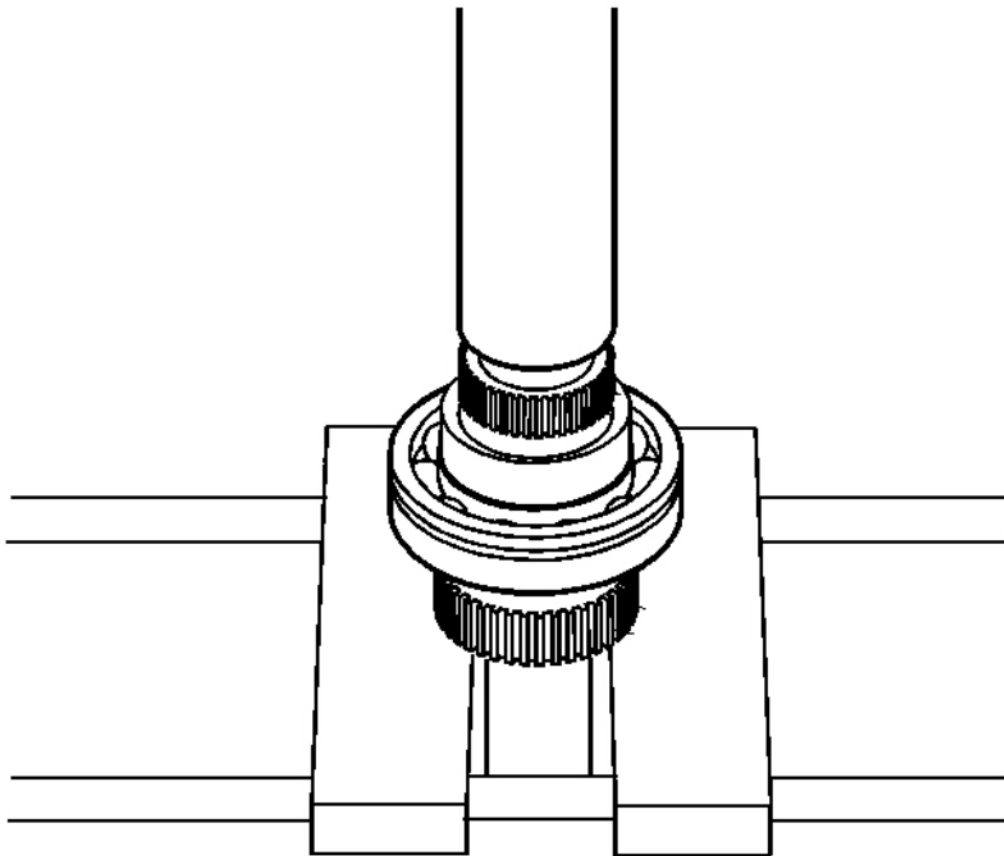


Fig. 58: View Of Speed Reluctor Wheel
Courtesy of GENERAL MOTORS CORP.

24. Using a hydraulic press, install a NEW speed reluctor wheel.

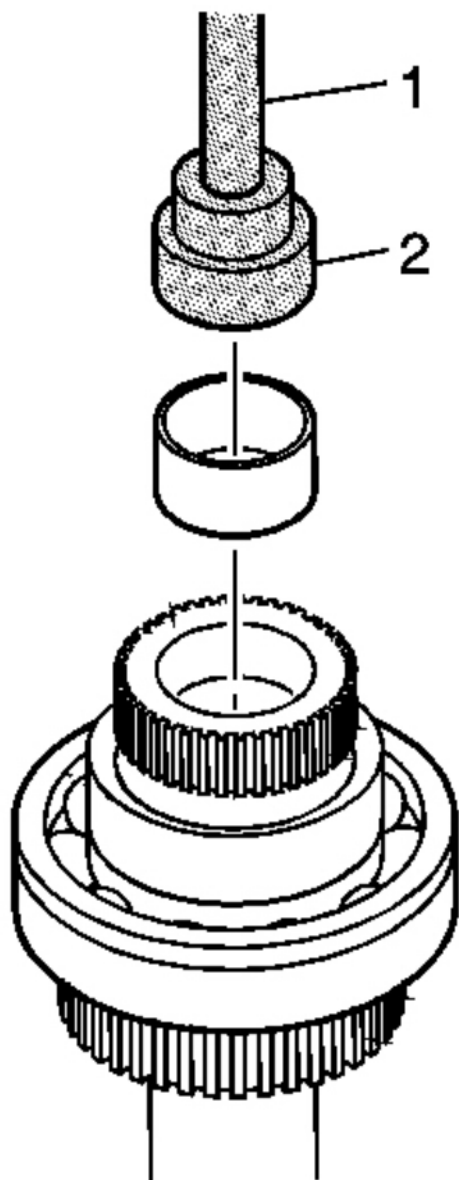


Fig. 59: Pressing Input Shaft Rear Support Bushing In With J 42176 & J 45757
Courtesy of GENERAL MOTORS CORP.

25. Using **J 42176** (1) and **J 45757** (2), install the input shaft rear support bushing in the rear output shaft.

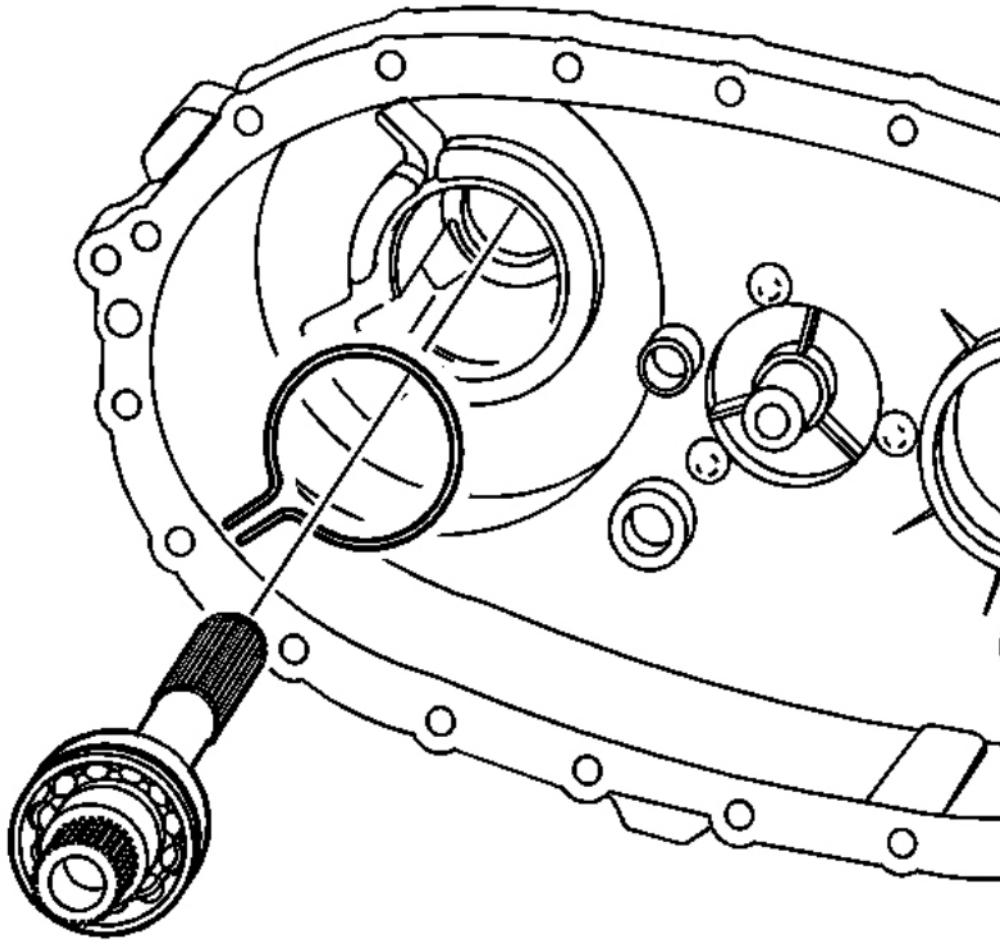


Fig. 60: View Of Rear Output Shaft In The Rear Case Half
Courtesy of GENERAL MOTORS CORP.

26. Install the rear output shaft in the rear case half.
 1. Spread the rear output shaft rear bearing outer retaining ring.
 2. Install, until the rear output shaft bearing outer retaining ring is seated in the bearing groove.

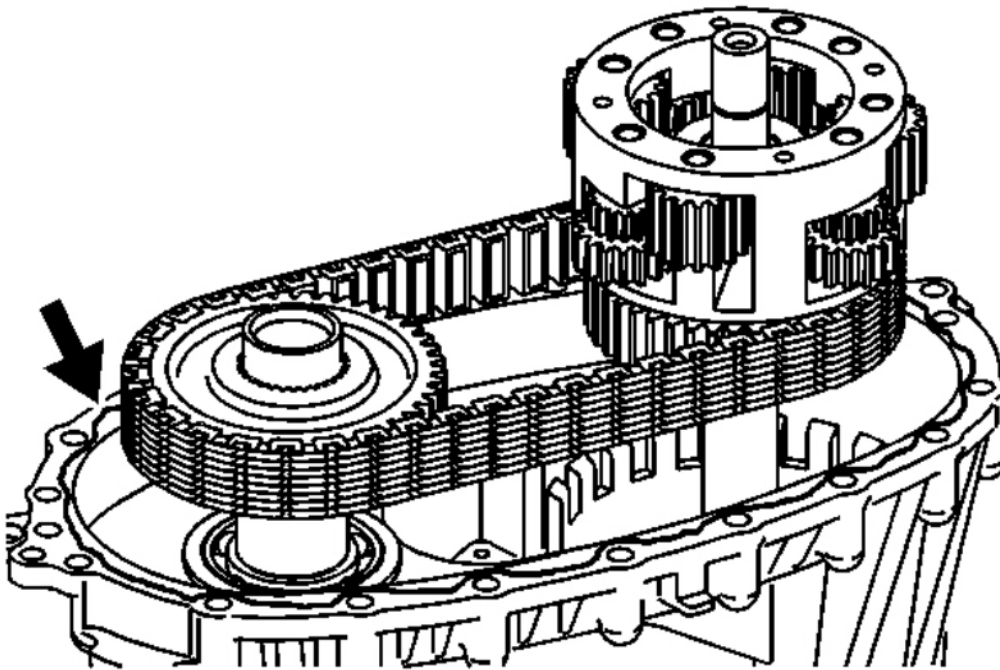


Fig. 61: Identifying Mating Surfaces On Case Half
Courtesy of GENERAL MOTORS CORP.

IMPORTANT:

- Ensure that both the sealing surfaces on the front and rear case halves are free of dirt, oil, and cleaning solvent.
- Ensure the locating pins are installed in the case halves.

27. Install the locating pins in the front case and rear case half, if necessary.
28. Apply a 3.175 mm (1/8 in) bead of room temperature vulcanizing (RTV) sealant GM P/N 12345739 (Canadian P/N 10953541) or equivalent to the mating surfaces of the front case half.

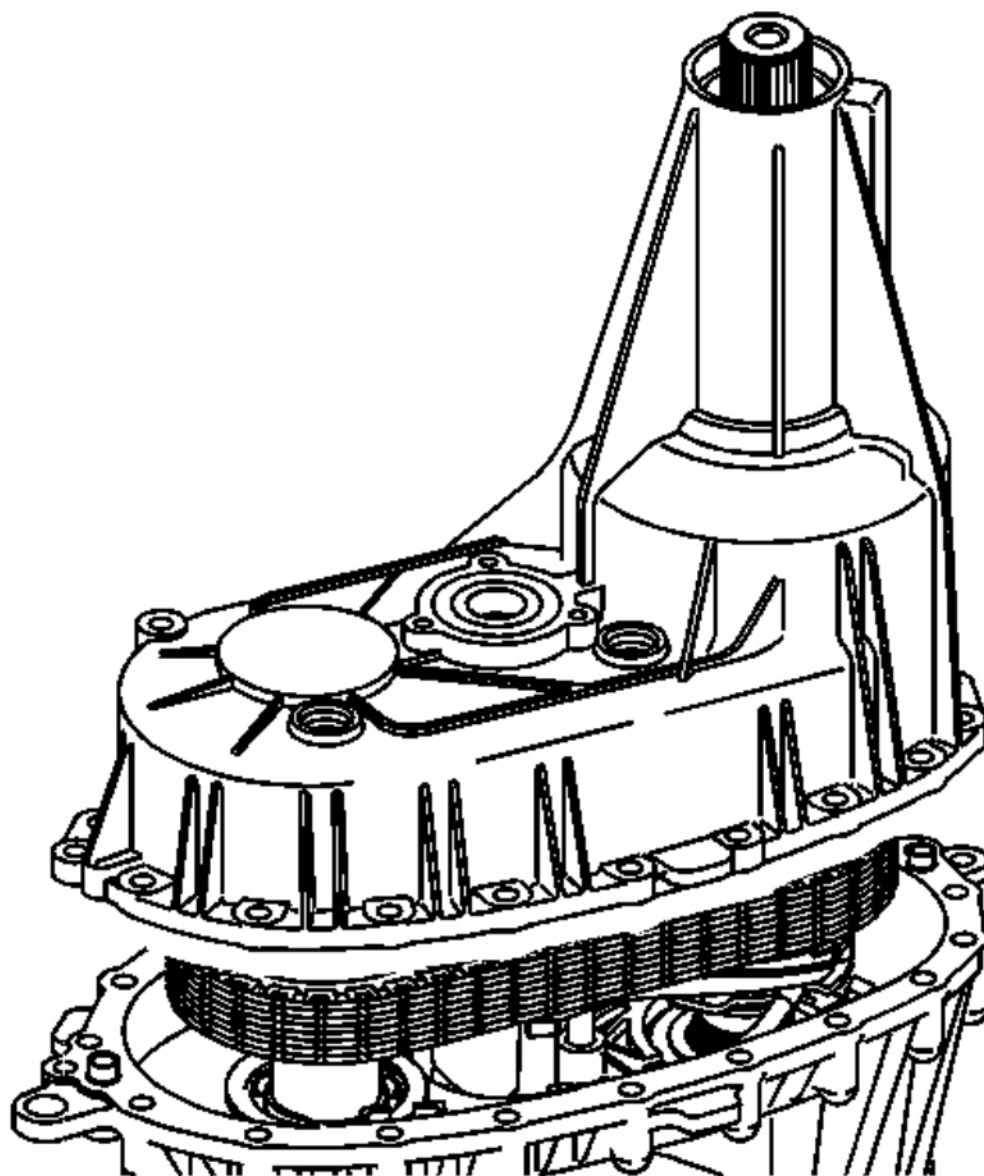


Fig. 62: Rear Case Half & Front Case Half
Courtesy of GENERAL MOTORS CORP.

29. Lower the rear case half into place.

The rear output may require rotating to align the teeth with the planetary carrier.

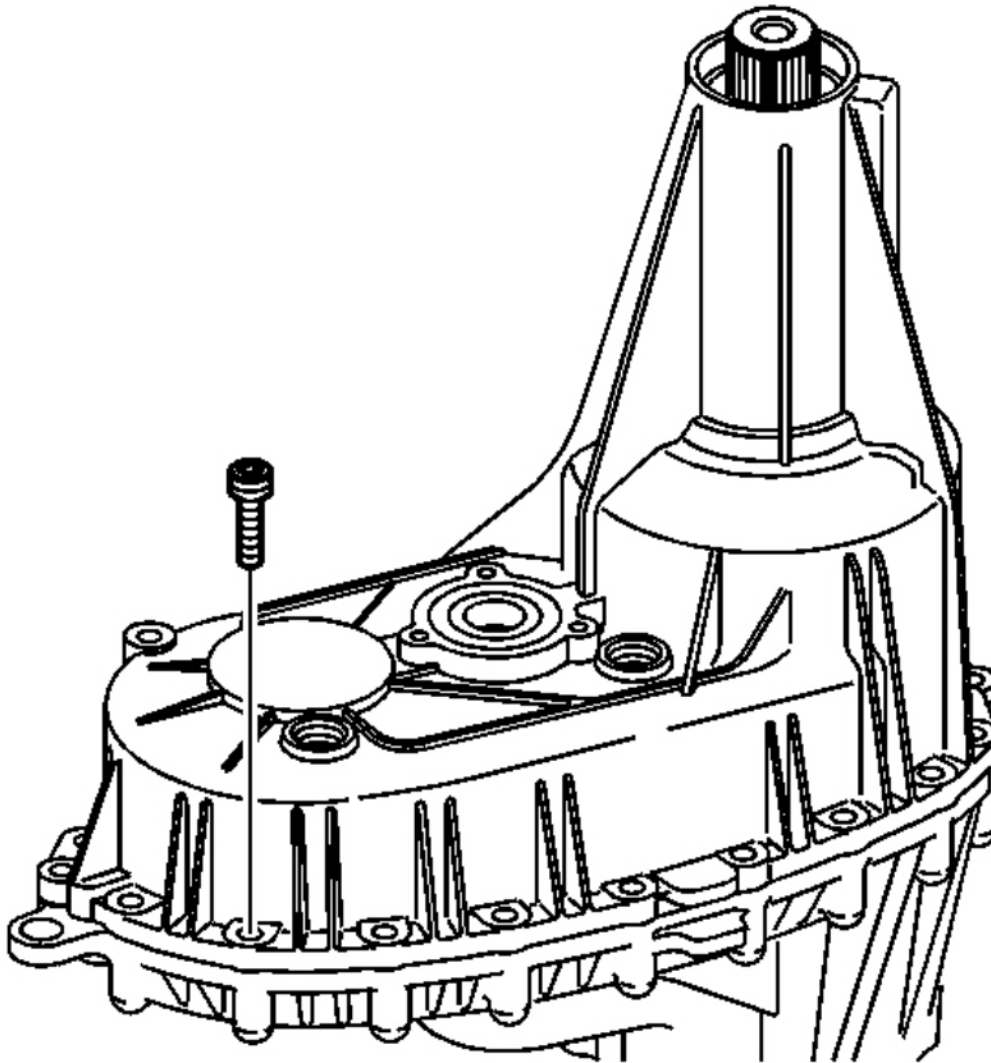


Fig. 63: View Of Transfer Case Bolts

Courtesy of GENERAL MOTORS CORP.

NOTE: This component is made of magnesium. Proper assembly is required to prevent damage. Ensure the magnesium transfer case housings are properly insulated from all external steel components, or galvanic corrosion will occur. New nylon coated case bolts and aluminum washers must be used. Use only aluminum fill and drain plugs. Use only aluminum brackets under the case bolts. Ensure new seals are installed that have a

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rubber insulated outside diameter and have no tears or cuts. Extensive damage will occur if there is galvanic corrosion between the magnesium and steel components.

- 30. Inspect the nylon coating on the case bolts for cuts or tears.
- 31. Replace the case bolts if there is any damage to the nylon coating.

IMPORTANT: The case bolts are self-tapping; they must be hand started. Do not use power assisted tools to install the bolts.

- 32. Install the case bolts, the washers, and the brackets.

Tighten: Tighten the case bolts to 21 N.m (15 lb ft).

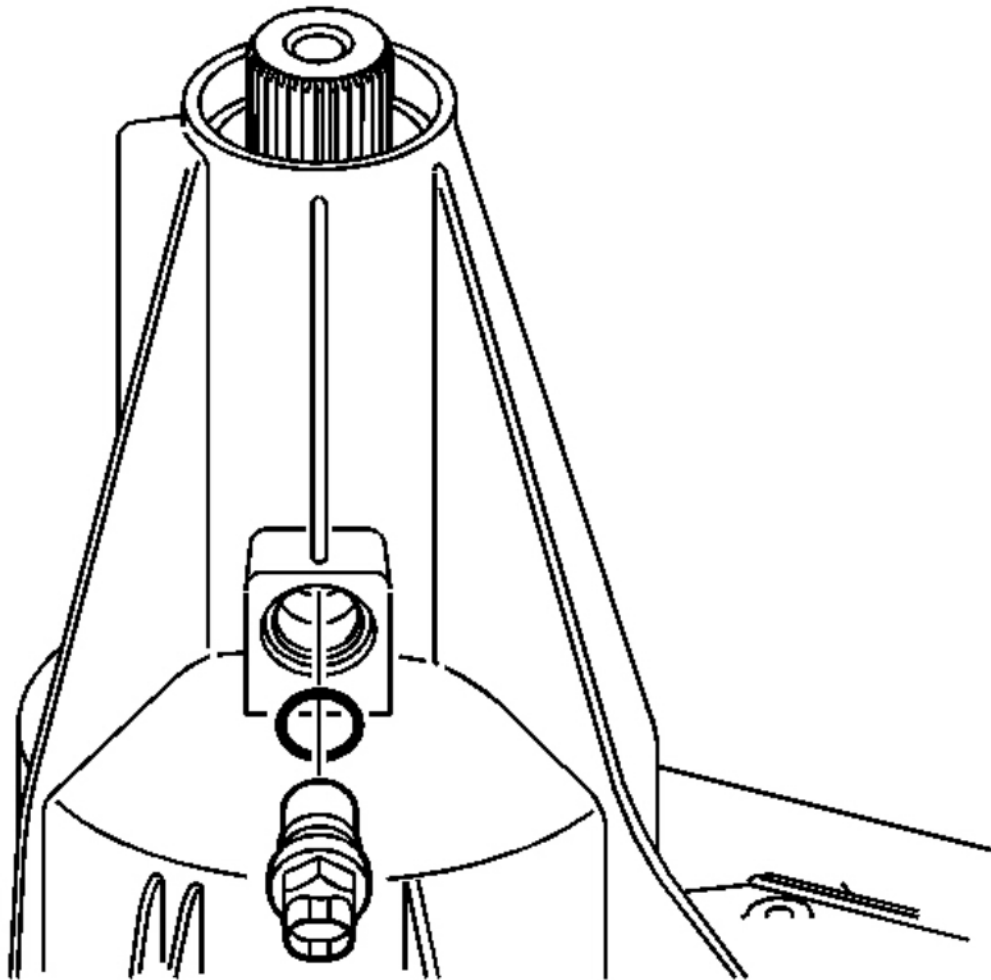


Fig. 64: Locating Vehicle Speed Sensor With O-Ring Seal
Courtesy of GENERAL MOTORS CORP.

33. Install the vehicle speed sensor with a new O-ring seal.

Tighten: Tighten the speed sensor to 17 N.m (13 lb ft).

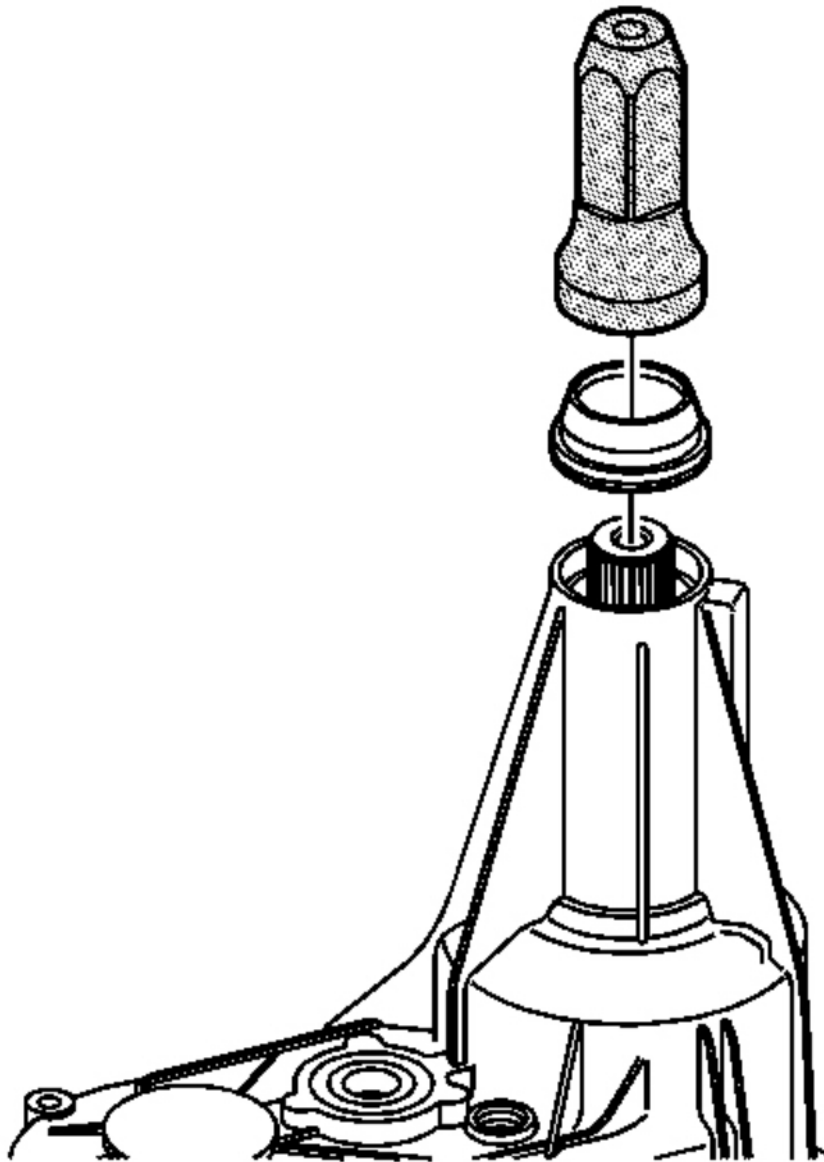


Fig. 65: View Of Rear Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

34. Using **J 45756** , install the rear output shaft seal.

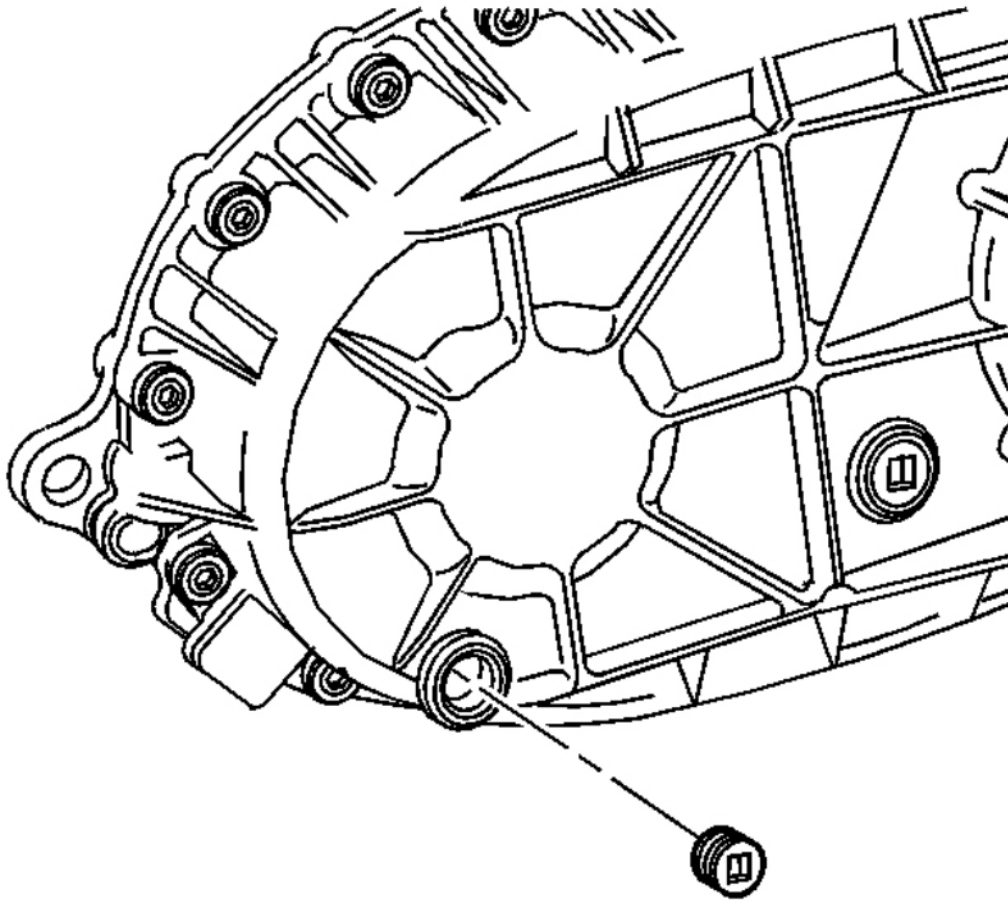


Fig. 66: Identifying Drain & Fill Plugs
Courtesy of GENERAL MOTORS CORP.

35. Apply pipe sealant GM P/N 12346004 (Canadian P/N 10953480) to the threads on the drain plug and fill plug.
36. Install the drain plug and the fill plug.

Tighten: Tighten the drain plug and fill plug to 25 N.m (18 lb ft).

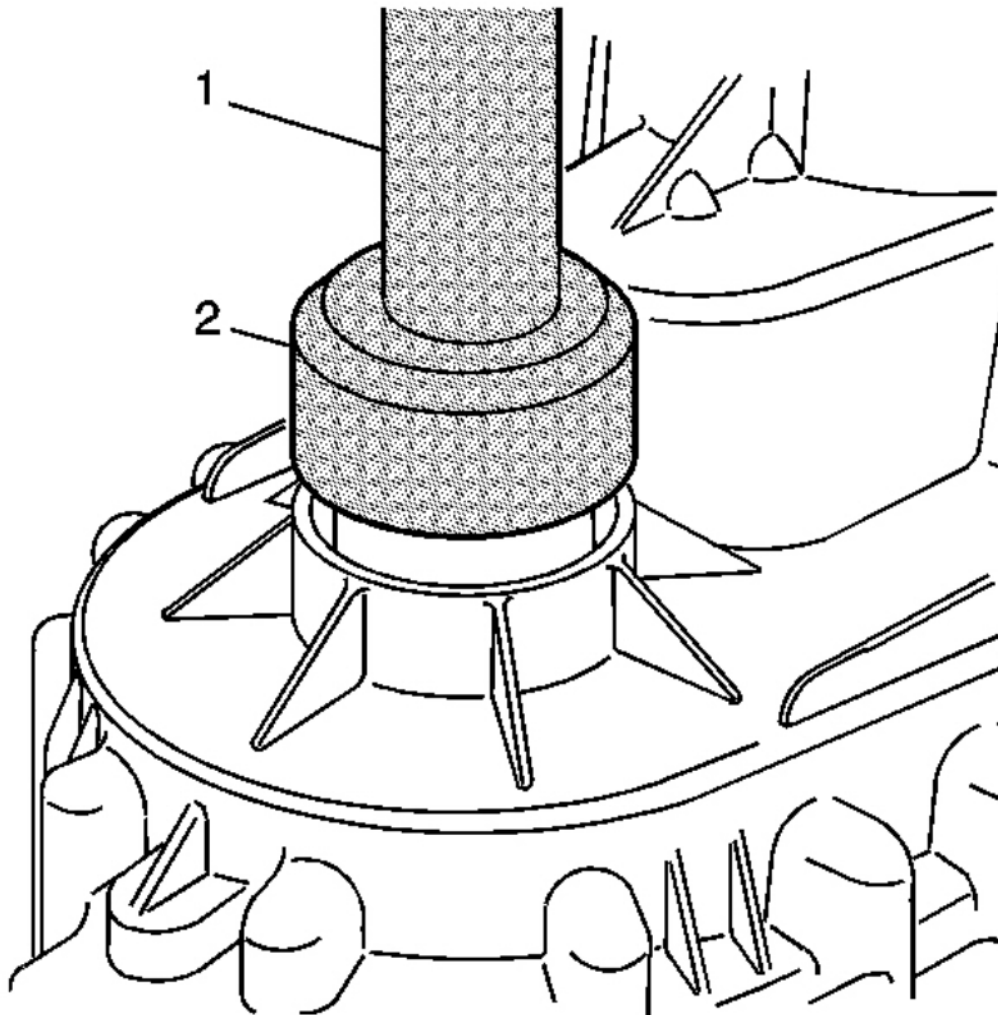


Fig. 67: Using J 43484 & J 8092 On Front Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

37. Using the **J 43484** (2) and the **J 8092** (1), install the front output shaft seal.

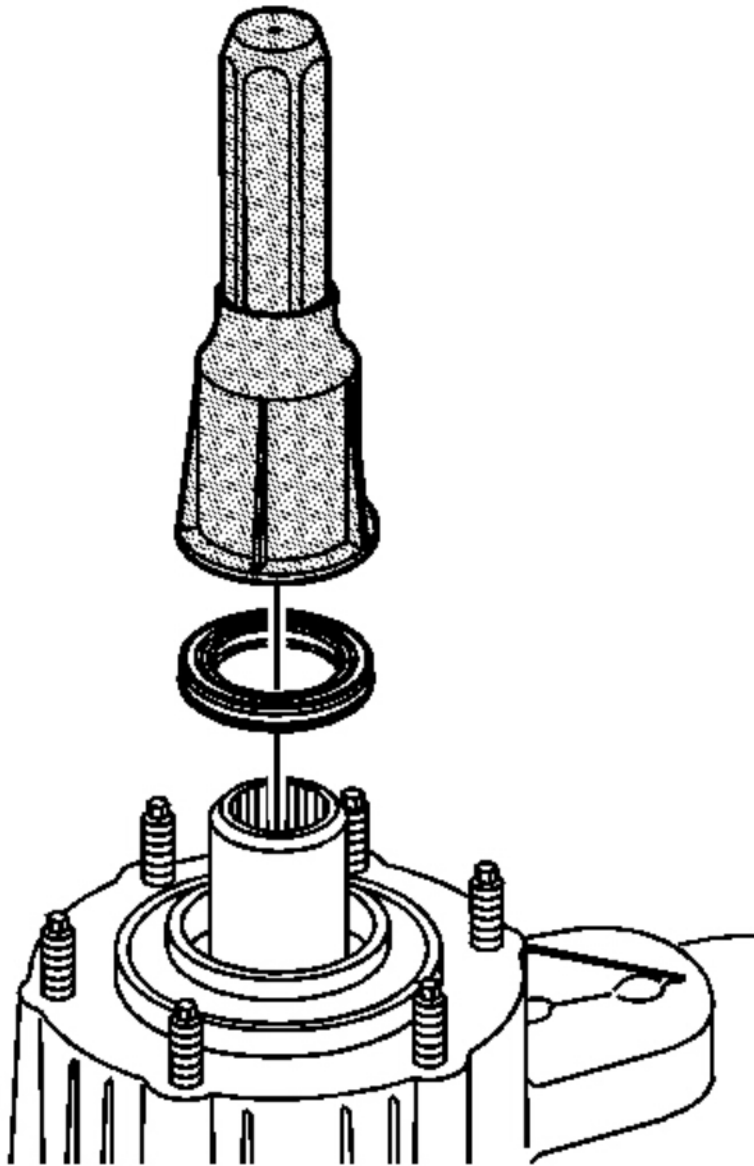


Fig. 68: Identifying J 42738

Courtesy of GENERAL MOTORS CORP.

38. Using the **J 42738** , install the front input shaft seal.
39. Remove the transfer case from the **J 45759** .

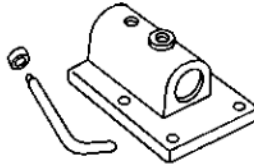
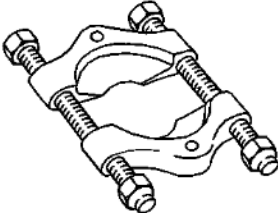
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SPECIAL TOOLS AND EQUIPMENT

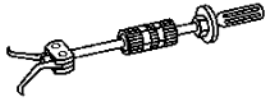
SPECIAL TOOLS

Special Tools

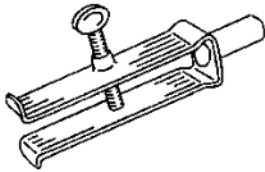
Illustration	Tool Number/Description
	J 2619-01 Slide Hammer
	J 3289-20 Holding Fixture
	J 8092 Universal Driver Handle
	J 22912-01 Rear Pinion and Axle Bearing Remover
	J 23907

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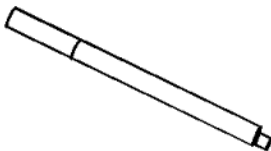
Slide Hammer with Bearing Adapter



J 26941
Bushing and Bearing Remover - 3-4 inch



J 36850
Transjel Lubricant

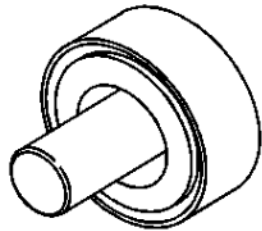
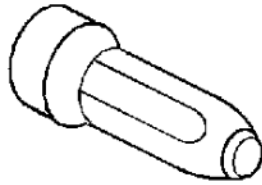


J 42176
Universal Driver Handle - Non-Threaded

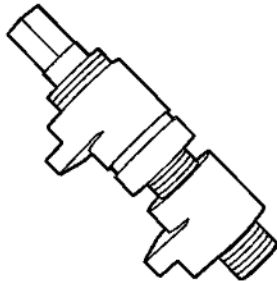
J 42738
Seal Installer

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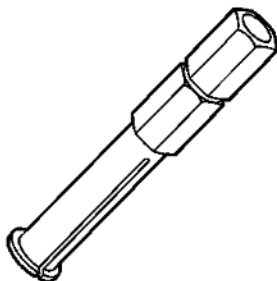
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J 43484
Front Output Shaft Seal Installer



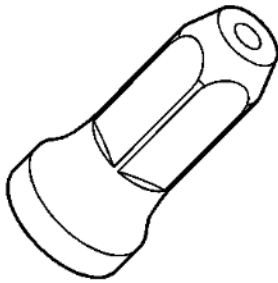
J 45358
Case Spreader



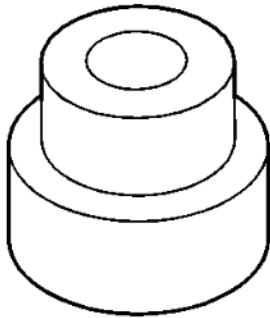
J 45548
Mainshaft Support Bushing/Bearing Remover

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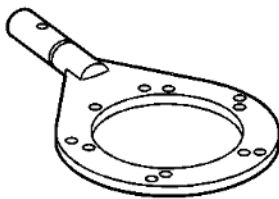
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J 45756
Rear Output Shaft Seal Installer



J 45757
Mainshaft Support Bushing and Bearing Installer



J 45759
Assembly Fixture