

2004 DRIVELINE/AXLE

Front Drive Axle - SRX

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Differential Housing Cover Bolts	29 N.m	21 lb ft
Differential Support Mounting Bolts	175 N.m	129 lb ft
Drain Plug	39 N.m	29 lb ft
Fill Plug	39 N.m	29 lb ft
Pinion Housing Bolts	29 N.m	21 lb ft
Pinion Nut	241 N.m	178 lb ft
Propeller Shaft Coupler-to-Differential Flange Bolts	85 N.m	63 lb ft

FRONT AXLE USAGE

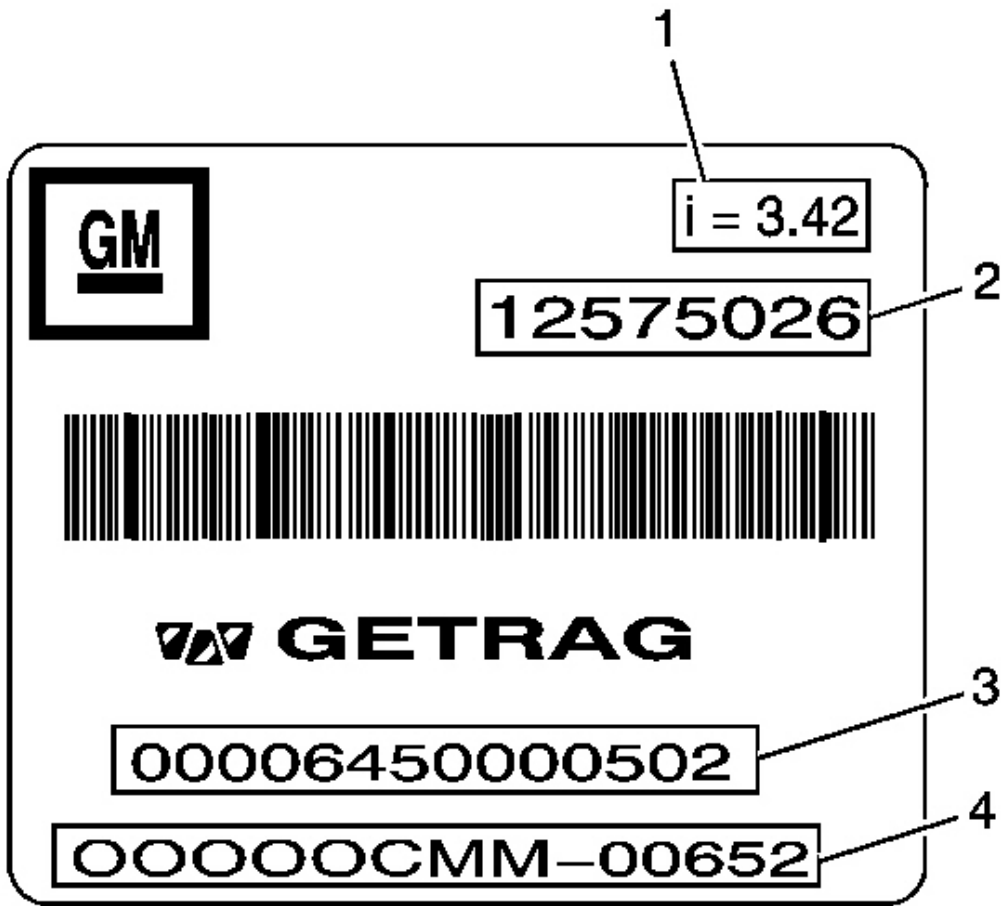


Fig. 1: Front Axle Usage
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 1

Callout	Component Name
1	Ratio
2	GM Part Number
3	Getrag Part Number
4	Serial Number

Front Axle Usage

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GM P/N	Axle Ratio	Transmission
25714854	3.23	Automatic
12573042	3.91	Automatic

LUBRICATION SPECIFICATIONS

Lubrication Specifications

Application	Quantity	
	Metric	English
Differential Lubricant GL 75W90 G/M P/N 12378261 (Canadian P/N 10952622)	0.7L	1.37 qt

SEALERS, ADHESIVES, AND LUBRICANTS

Sealers, Adhesives, and Lubricants

Application	Type of Material	GM Part Number	
		US	Canada
Pinion Nut	Thread Locker	12345382	10953489

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - FRONT DRIVE AXLE

Begin the system diagnosis by reviewing the Front Drive Axle Description and Operation and **Wheel Drive Shafts Description and Operation** in Wheel Drive Shafts. Reviewing the description and operation information will help you determine the correct symptom diagnostic procedure when a malfunction exists. Reviewing the description and operation information will also help you determine if the condition described by the customer is normal operation. Refer to **Symptoms - Front Drive Axle** in order to identify the correct procedure for diagnosing the system and where the procedure is located.

SYMPTOMS - FRONT DRIVE AXLE

Strategy Based Diagnostics

Review the system operations in order to familiarize yourself with the system functions. Refer to **Front Drive Axle Description and Operation** and **Wheel Drive Shafts Description and Operation** in Wheel Drive Shafts. All diagnosis on a vehicle should follow a logical process. Strategy based diagnostics is a uniform approach for repairing all systems. The diagnostic flow may always be used in order to resolve a system problem. The diagnostic flow is the place to start

when repairs are necessary. For a detailed explanation, refer to **Strategy Based Diagnosis** in General Information.

Visual/Physical Inspection

- Inspect for aftermarket devices, which could affect the operation of the vehicle. Refer to **Checking Aftermarket Accessories** in Wiring Systems.
- Inspect the easily accessible or visible system components for obvious damage or conditions, which could cause the symptom.
- Check for the correct lubricant level and the proper viscosity.
- Verify the exact operating conditions under which the concern exists. Note factors such as vehicle speed, road conditions, ambient temperature, and other specifics.
- Compare the driving characteristics or sounds, if applicable, to a known good vehicle and make sure you are not trying to correct a normal condition.

Intermittent

Test the vehicle under the same conditions that the customer reported in order to verify the system is operating properly.

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Diagnostic Starting Point - Vibration Diagnosis and Correction** in Vibration Diagnosis and Correction
- **Diagnostic Starting Point - Automatic Transmission** in Automatic Transmission - 5L40-E
- **Symptoms - Propeller Shaft** in Propeller Shaft
- **Noisy in Drive**
- **Noisy When Coasting**
- **Intermittent Noise**
- **Constant Noise**
- **Noisy on Turns**
- **Front Axle Lubricant Leak Diagnosis**

NOISY IN DRIVE

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Noisy in Drive

Cause	Correction
Inspect for the proper gear oil levels prior to performing system diagnosis. Refer to <u>Lubricant Level Inspection - Front Drive Axle</u> .	
Transmission noise	Repair or replace as required. Refer to <u>Diagnostic Starting Point - Automatic Transmission</u> in Automatic Transmission - 5L40-E.
Driveline assembly noise	Repair or replace as required. Refer to <u>Symptoms - Propeller Shaft</u> in Propeller Shaft.
Worn axle shaft constant velocity joints	Replace the constant velocity joints as required.
Worn, loose, or damaged axle mount and/or bracket	Repair or replace the axle mount and/or bracket as required.
Bearing noise within the differential assembly	A grinding or roar type noise will increase or decrease relative to the vehicle speed. 1. Check for the proper fluid level. Fill as required. 2. If the noise continues, repair or replace the unit as required.
Gear set whine noise within the differential assembly	A whine type noise will increase or decrease relative to the vehicle speed, approximately 80-96 km/h (50-60 mph). Typical causes of a gear set whine type noise may include incorrect backlash and/or pinion depth adjustment or worn or scored gear set teeth. 1. Check for the proper fluid level. Fill as required. 2. Repair or replace the unit as required.

NOISY WHEN COASTING

Noisy When Coasting

Cause	Correction
IMPORTANT:	

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Inspect for the proper gear oil levels prior to performing system diagnosis. Refer to Lubricant Level Inspection - Front Drive Axle .

Worn axle shaft constant velocity joints	Replace the constant velocity joints as required.
Worn, loose, or damaged axle mount and/or bracket	Repair or replace the axle mount and/or bracket as required.
Bearing noise within the differential assembly	A grinding or roar type noise will increase or decrease relative to the vehicle speed. 1. Check for the proper fluid level. Fill as required. 2. If the noise continues, replace the carrier unit. Refer to <u>Differential Carrier Assembly Replacement</u> .
Gear set whine noise within the differential assembly	A whine type noise will increase or decrease relative to the vehicle speed, approximately 31-37 km/h (50-60 mph). Typical causes of a gear set whine type noise may include incorrect backlash and/or pinion depth adjustment or worn or scored gear set teeth. 1. Check for the proper fluid level. Fill as required. 2. Replace the carrier unit. Refer to <u>Differential Carrier Assembly Replacement</u> .

INTERMITTENT NOISE

Intermittent Noise

Cause	Correction
IMPORTANT: Inspect for the proper gear oil levels prior to performing system diagnosis. Refer to <u>Lubricant Level Inspection - Front Drive Axle</u> .	
Worn, loose, or damaged axle mount and/or bracket	Repair or replace the axle mount and/or bracket as required.
Incorrect gear oil	Replace with the correct gear oil. Refer to <u>Sealers, Adhesives, and Lubricants</u> .

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CONSTANT NOISE

Constant Noise

Cause	Correction
IMPORTANT: Inspect for the proper gear oil levels prior to performing system diagnosis. Refer to <u>Lubricant Level Inspection - Front Drive Axle</u> .	
Low gear oil levels	Faulty oil seals or other type leaks may contribute to lower than required fluid levels. Refer to <u>Front Axle Lubricant Leak Diagnosis</u> . Fill to the proper level with the correct gear oil. Refer to <u>Sealers, Adhesives, and Lubricants</u> and <u>Lubricant Level Inspection - Front Drive Axle</u> .
Worn, loose, or damaged axle mount and/or bracket	Repair or replace the axle mount and/or bracket as required.
Bearing noise within the differential assembly	A grinding or roar type noise will increase or decrease relative to the vehicle speed. 1. Check for the proper fluid level. Fill as required. 2. If the noise continues, replace the carrier unit. Refer to <u>Differential Carrier Assembly Replacement</u> .
Gear set whine noise within the differential assembly	A whine type noise will increase or decrease relative to the vehicle speed, approximately 31-37 km/h (50-60 mph). Typical causes of a gear set whine type noise may include incorrect backlash and/or pinion depth adjustment or worn or scored gear set teeth. 1. Check for the proper fluid level. Fill as required. 2. Replace the carrier unit. Refer to <u>Differential Carrier Assembly Replacement</u> .

NOISY ON TURNS

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Noisy on Turns

Cause	Correction
IMPORTANT: Inspect for the proper gear oil levels prior to performing system diagnosis. Refer to <u>Lubricant Level Inspection - Front Drive Axle</u> .	
Worn or loose rear axle mount and/or bracket	Repair or replace as required.
Worn axle shaft constant velocity joints	Replace the constant velocity joints as required.
Worn wheel bearings	Replace the wheel bearings as required.
Incorrect gear oil	Fill to the proper level with the correct gear oil. Refer to <u>Sealers, Adhesives, and Lubricants</u> and <u>Lubricant Level Inspection - Front Drive Axle</u> .

FRONT AXLE LUBRICANT LEAK DIAGNOSIS

Front Axle Lubricant Leak Diagnosis

Cause	Correction
IMPORTANT: Upon completion of all repairs, refill the axle with the proper amounts of axle lubricant. Refer to <u>Lubricant Level Inspection - Front Drive Axle</u> and <u>Lubrication Specifications</u> .	
Restricted or damaged vent valve assembly	Repair or replace the vent valve as required.
Right side cover O-ring seal	Replace the side cover O-ring seal as required.
Worn or damaged axle shaft oil seals	Replace the axle shaft oil seals as required.
Housing or side cover porosity	Replace the carrier. Refer to <u>Differential Carrier Assembly Replacement</u> .
Loose Drain or Fill Plug	Tighten to specification
Pinion Housing Assembly O-ring	• Pull Housing Assembly • Replace O-ring

REPAIR INSTRUCTIONS

LUBRICANT LEVEL INSPECTION - FRONT DRIVE AXLE

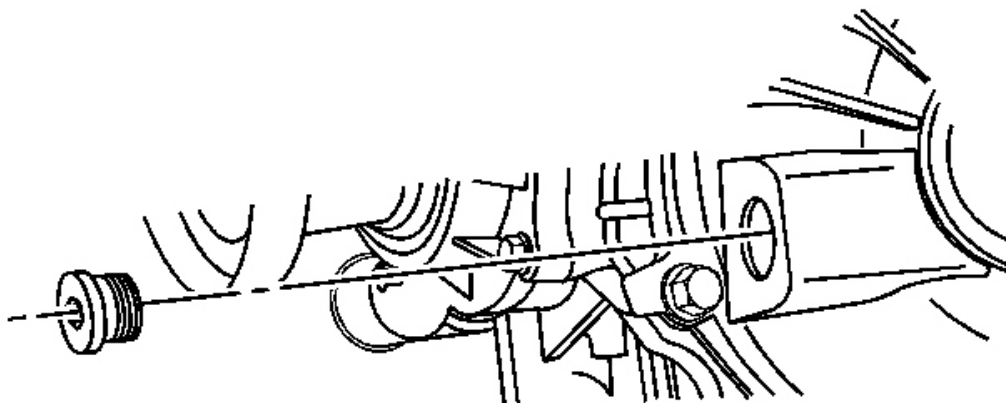


Fig. 2: View Of Differential Fill Plug
Courtesy of GENERAL MOTORS CORP.

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Clean any dirt from around the differential fill plug.
3. Remove the fill plug from the differential and drain the fluid.
4. Check the differential fluid level, it should be even with the bottom of the fill plug hole to no lower than 6 mm (0.25 in) below the opening.
5. Add new fluid if necessary.
6. Fill the differential with 75W90 synthetic axle lubricant, GM P/N 12378261 (Canadian P/N 10953455) or equivalent. Refer to **Capacities - Approximate Fluid** in Maintenance and Lubrication.

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

7. Install the differential fill plug to the differential.

Tighten: Tighten the differential fill plug to 39 N.m (29 lb ft).

8. Lower the vehicle.

Draining Procedure

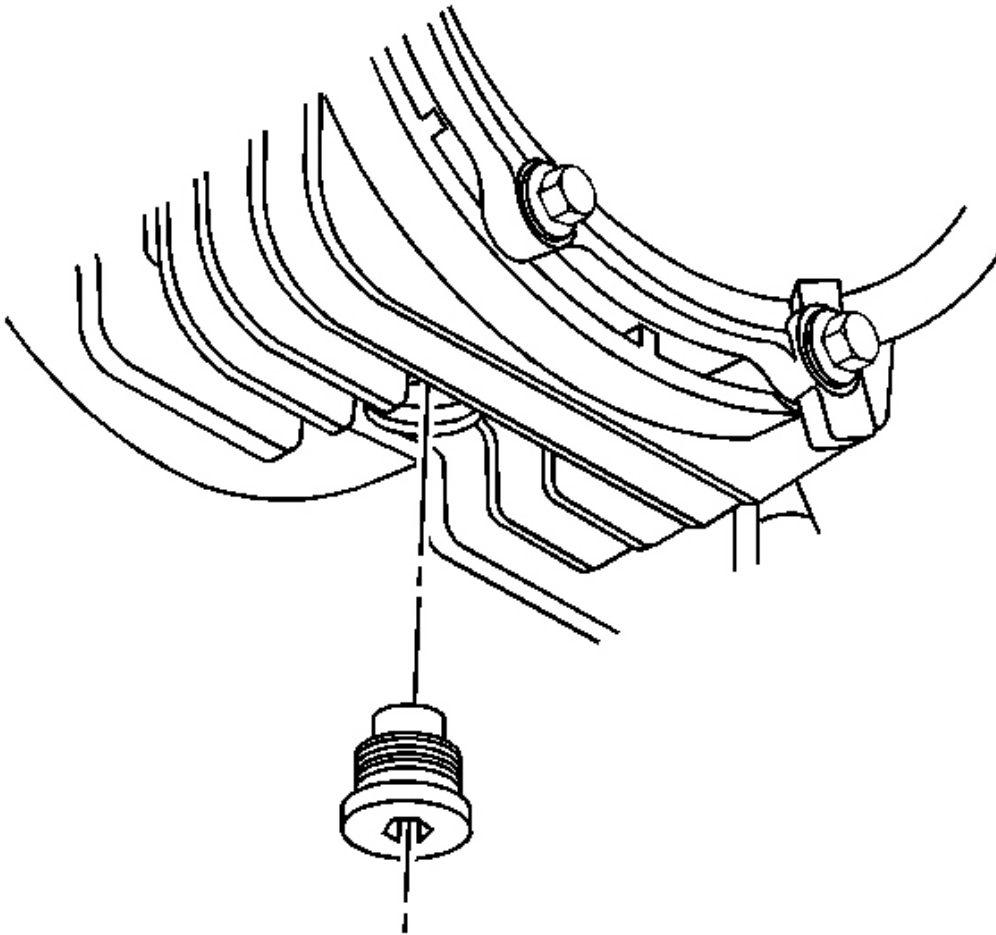


Fig. 3: View Of Differential Drain Plug
Courtesy of GENERAL MOTORS CORP.

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Clean any dirt from around the differential drain plug.
3. Position a drain pan under drain plug.
4. Remove the drain plug from the differential and drain the fluid.

Filling Procedure

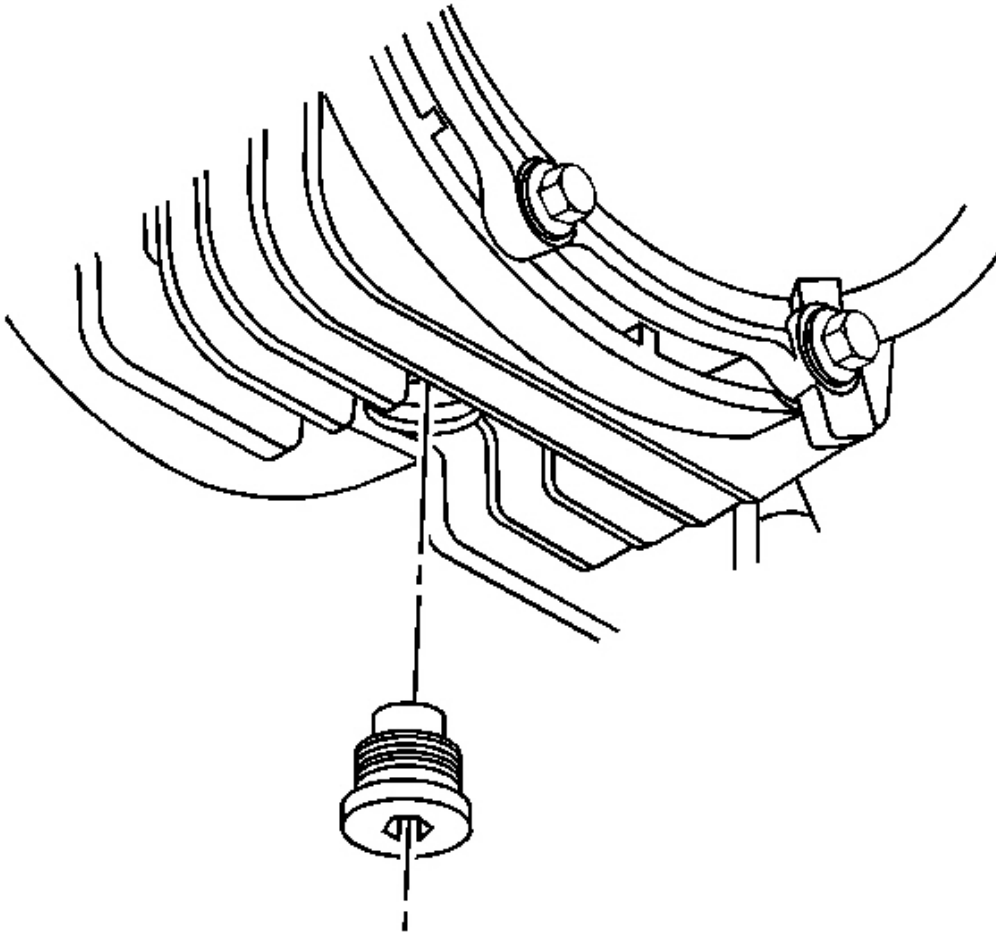


Fig. 4: View Of Differential Drain Plug
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

1. Install the drain plug to the differential.

Tighten: Tighten the differential drain plug to 39 N.m (29 lb ft).

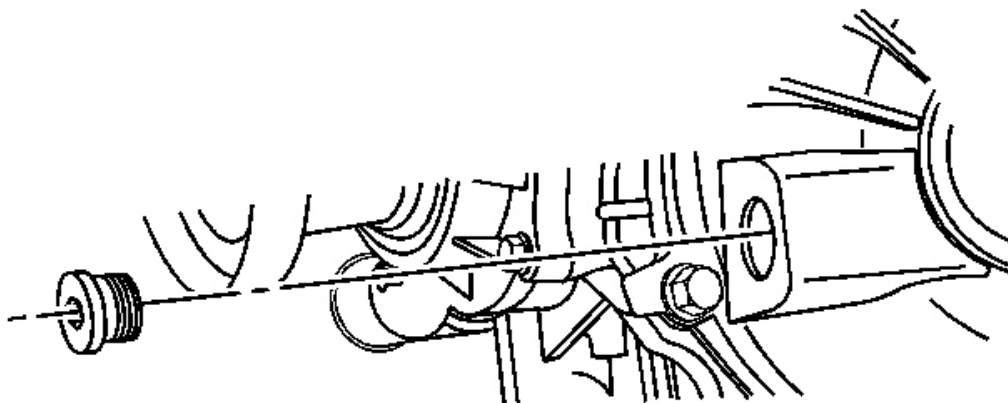


Fig. 5: View Of Differential Fill Plug
Courtesy of GENERAL MOTORS CORP.

2. Clean any dirt from around the differential fill plug.
3. Remove the fill plug from the differential.
4. Fill the differential with 75W90 synthetic axle lubricant, GM P/N 12378261 (Canadian P/N 10953455) or equivalent. Refer to **Capacities - Approximate Fluid** in Maintenance and Lubrication.
5. Inspect the gear lubricant level to ensure it is even with the bottom of the fill plug hole to no lower than 6 mm (0.25 in) below the opening.

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

6. Install the fill plug to the differential.

Tighten: Tighten the fill plug to 39 N.m (29 lb ft).

7. Lower the vehicle.

SHIELD REPLACEMENT

Removal Procedure

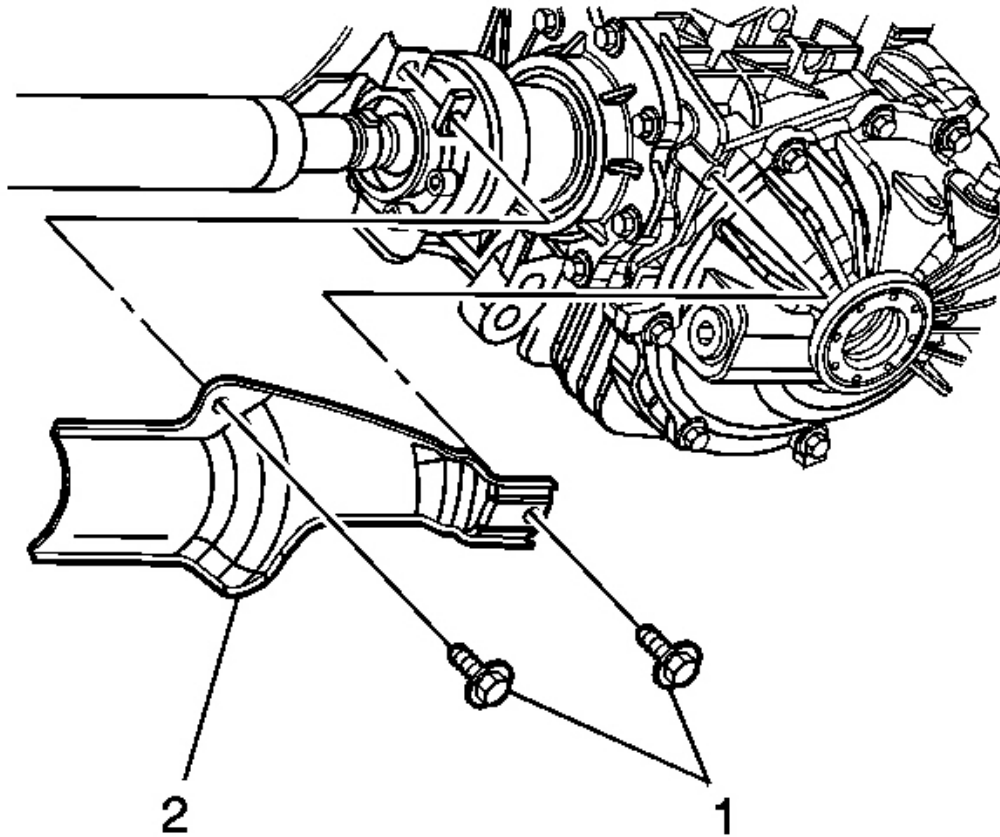


Fig. 6: View Of Propeller Shaft CV Joint Heat Shield
Courtesy of GENERAL MOTORS CORP.

1. Raise and support vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the front propeller shaft constant velocity (CV) joint shield bolts (1).
3. Remove the front propeller shaft CV joint heat shield (2).

Installation Procedure

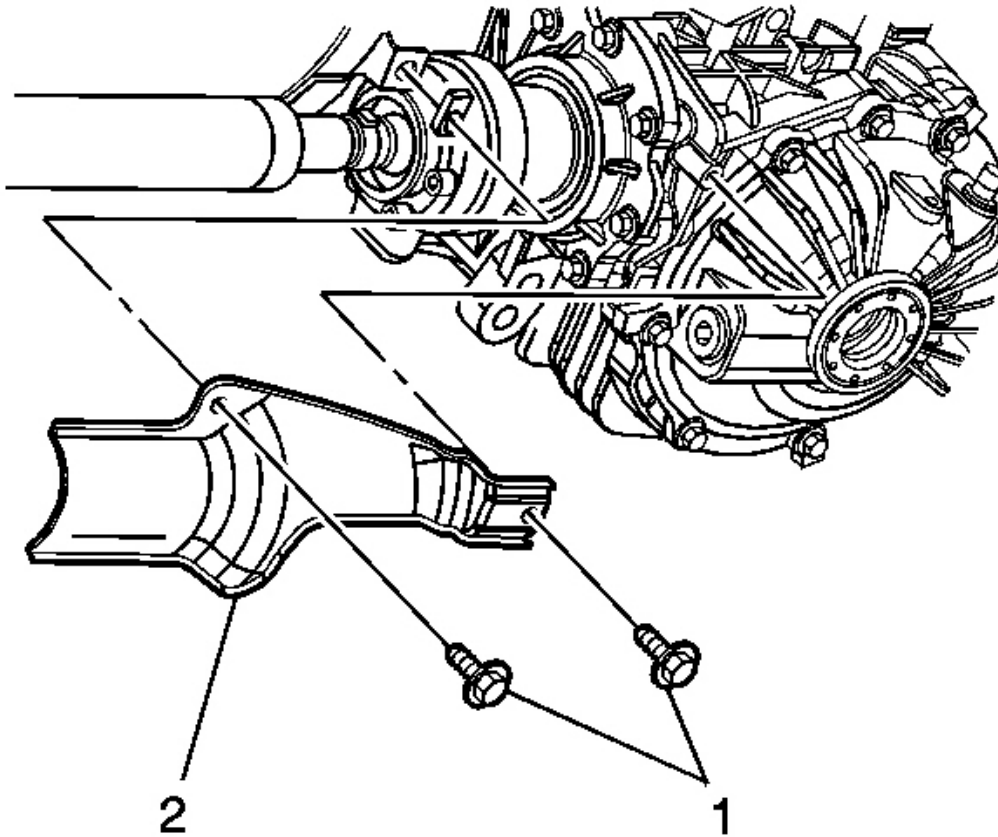


Fig. 7: View Of Propeller Shaft CV Joint Heat Shield
Courtesy of GENERAL MOTORS CORP.

1. Install the front propeller shaft CV joint heat shield (2) to the vehicle.
2. Inspect the front propeller shaft CV joint heat shield bolts (1). Replace if damaged or worn.

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Install the front propeller shaft CV joint heat shield bolts (1).

Tighten: Tighten the front propeller shaft CV joint heat shield bolts to 9 N.m (80 lb in).

4. Lower the vehicle.

INTERMEDIATE SHAFT BEARING ASSEMBLY REPLACEMENT - FRONT DRIVE AXLE

Tools Required

- **J 45019** Flange and Pinion Cage Remover. See **Special Tools and Equipment** .
- J 21474-20 Bushing Installer

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the left front tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
3. Remove the left front wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Front (Left)** or **Wheel Drive Shaft Replacement - Front (Right)** in Wheel Drive Shafts.

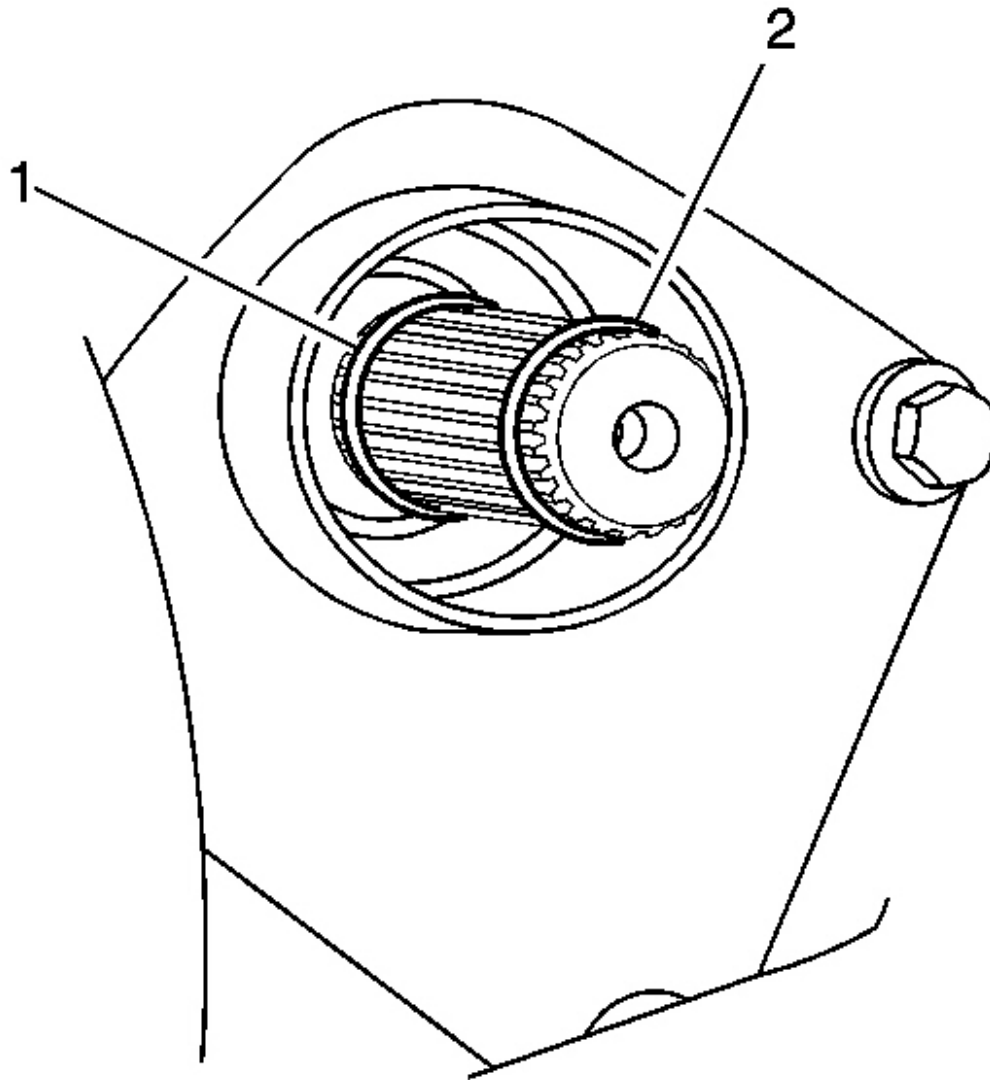


Fig. 8: View Of Intermediate Wheel Drive Shaft O-Ring & Retaining Ring
Courtesy of GENERAL MOTORS CORP.

4. Remove and discard the intermediate wheel drive shaft retaining ring (2). The intermediate wheel drive shaft retaining ring is on the splined end of the shaft.
5. Remove and discard the intermediate wheel drive shaft O-ring (1). The O-ring is on the splined end of the shaft.

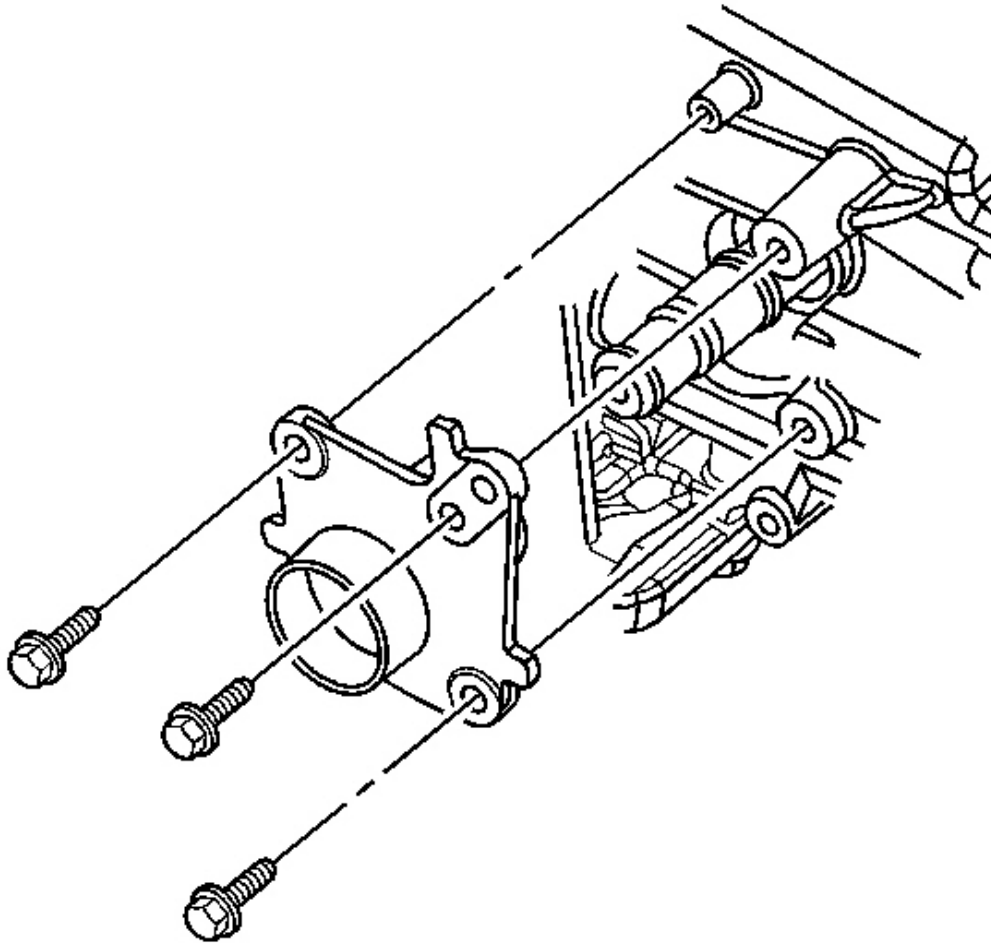


Fig. 9: View Of Intermediate Shaft Bearing Assembly
Courtesy of GENERAL MOTORS CORP.

6. Remove the intermediate shaft bearing assembly mounting bolts.

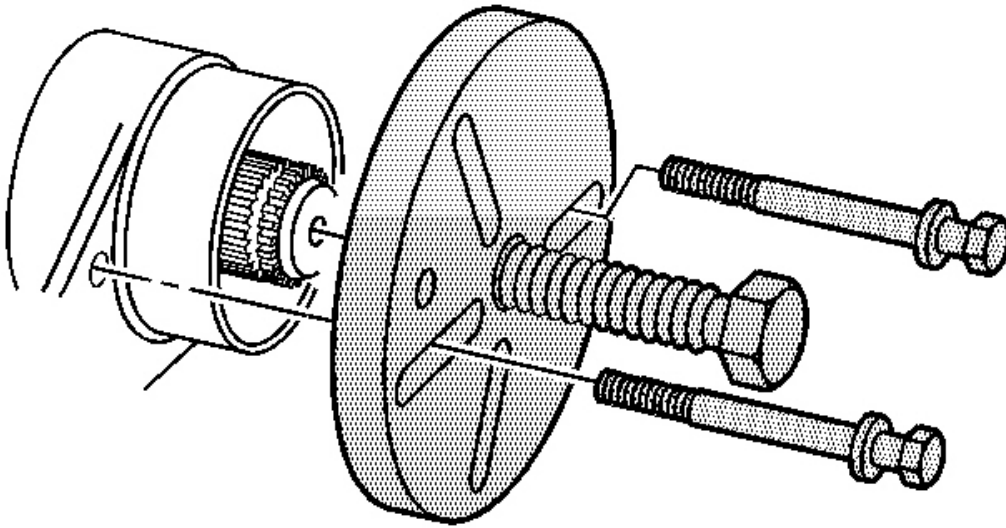


Fig. 10: View Of J 45019

Courtesy of GENERAL MOTORS CORP.

7. Install **J 45019** into the threaded holes in the intermediate shaft bearing assembly. See **Special Tools and Equipment** .
8. Remove the intermediate shaft bearing assembly from the intermediate wheel drive shaft.
9. Remove **J 45019** from the intermediate shaft bearing housing. See **Special Tools and Equipment** .

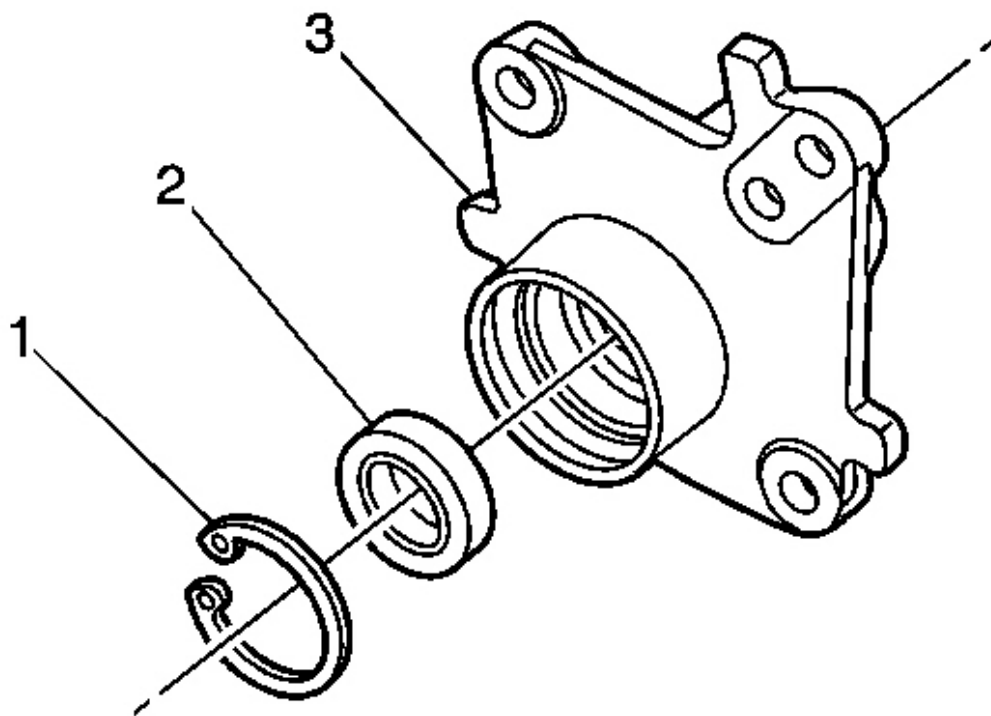


Fig. 11: View Of Intermediate Shaft Bearing Housing, Shaft Bearing & Snap Ring
Courtesy of GENERAL MOTORS CORP.

10. Remove the snap ring (1) from the intermediate shaft bearing housing (3).
11. Using hammer and brass drift carefully separate the intermediate shaft bearing (2) from the intermediate shaft bearing housing (3).
12. Thoroughly clean the intermediate shaft bearing housing using denatured alcohol or equivalent and allow to dry.
13. Inspect the intermediate shaft bearing housing for damage, if damaged replace the intermediate shaft bearing housing.

Installation Procedure

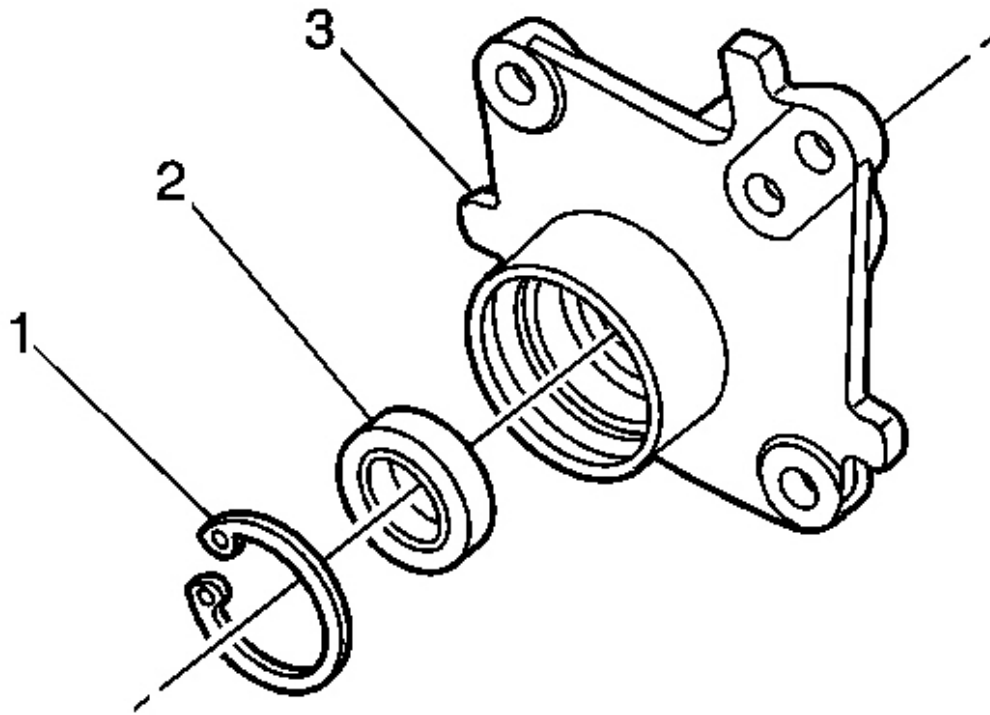


Fig. 12: View Of Intermediate Shaft Bearing Housing, Shaft Bearing & Snap Ring
Courtesy of GENERAL MOTORS CORP.

1. Install the intermediate shaft bearing (2) to the intermediate shaft bearing housing (3).
2. Using J 21474-20 , and a hydraulic press fully seat the intermediate shaft bearing (2) to the intermediate shaft bearing housing (3).
3. Install the snap ring (1) into the retaining groove of the bearing housing (3).

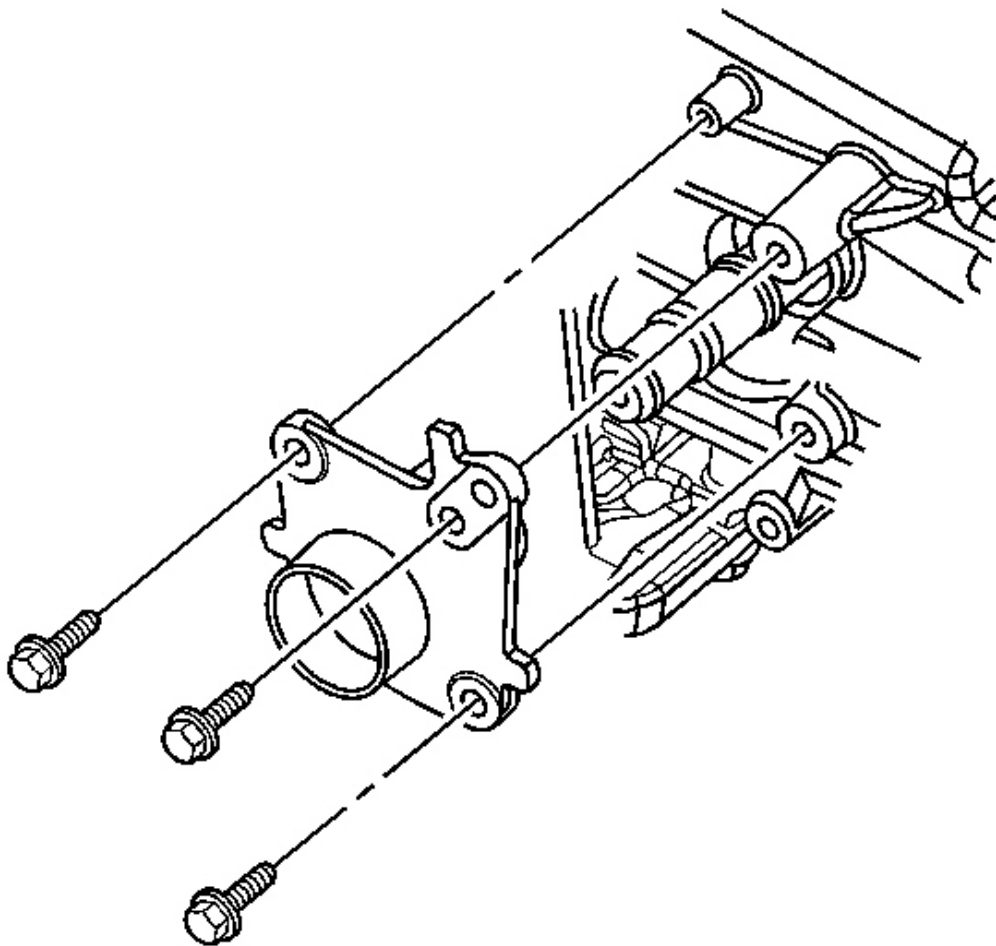


Fig. 13: View Of Intermediate Shaft Bearing Assembly
Courtesy of GENERAL MOTORS CORP.

4. Install the intermediate shaft bearing assembly to the intermediate wheel drive shaft.

NOTE: Refer to Fastener Notice in Cautions and Notices.

5. Install the intermediate shaft bearing housing mounting bolts to the oil pan.

Tighten: Tighten the intermediate shaft bearing assembly mounting bolts to 60 N.m (44 lb ft).

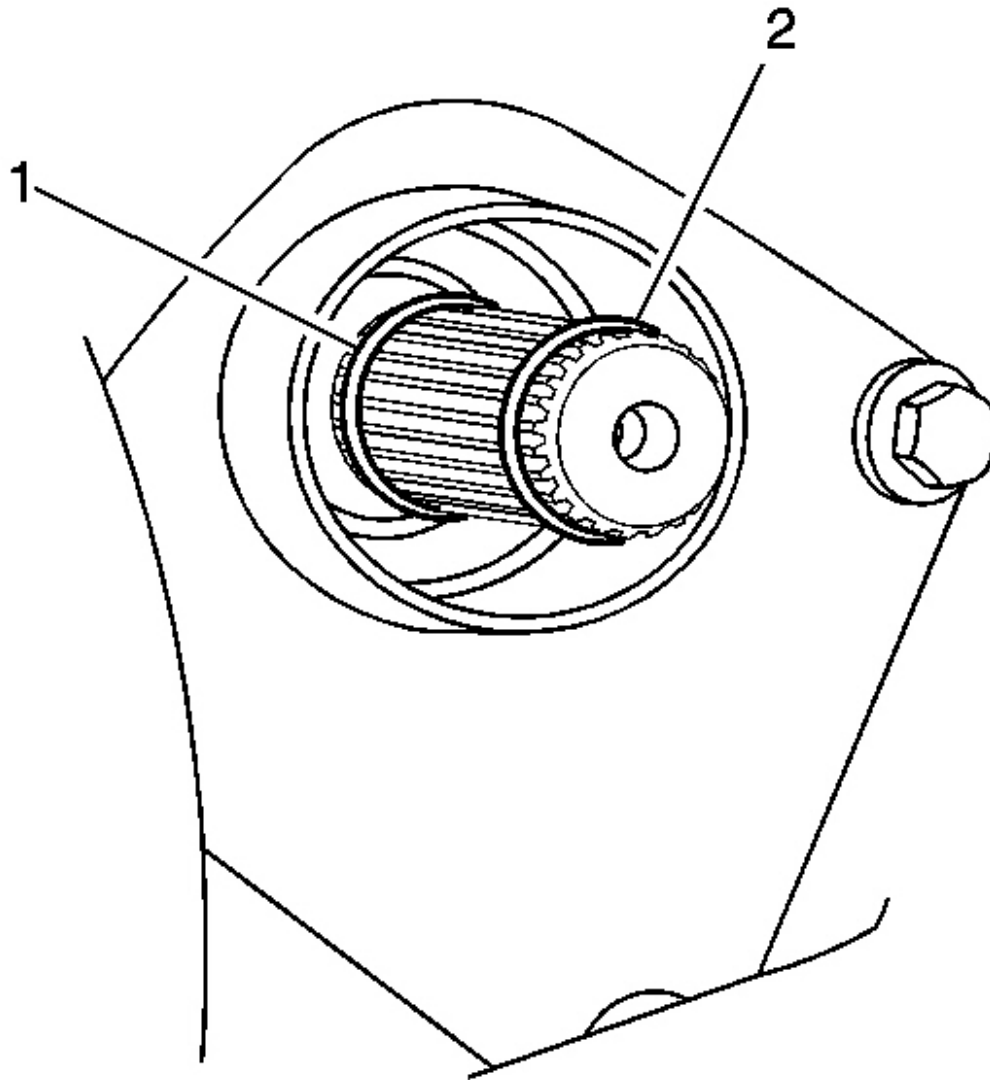


Fig. 14: View Of Intermediate Wheel Drive Shaft O-Ring & Retaining Ring
Courtesy of GENERAL MOTORS CORP.

6. Apply a small amount of grease GM P/N 01051344, (Canadian P/N 993037) to the intermediate wheel drive shaft splines
7. Install a new O-ring (1) on the intermediate wheel drive shaft. The intermediate wheel drive shaft O-ring groove is on the splined end of the shaft.

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8. Install a new wheel drive shaft retaining ring (2). The intermediate wheel drive shaft retaining ring groove is on the splined end of the shaft.
9. Install the left front wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Front (Left)** or **Wheel Drive Shaft Replacement - Front (Right)** in Wheel Drive Shafts.
10. Install the left tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
11. Lower the vehicle.

OUTPUT SHAFT SEAL REPLACEMENT - LEFT

Removal Procedure

Tools Required

- J 22912-01 Split-Plate Bearing Puller
 - J 25070 Heat Gun
 - J 45012 Pinion Flange Holder. See **Special Tools and Equipment** .
 - J 45019 Flange and Pinion Cage Remover. See **Special Tools and Equipment** .
 - J 45124 Removal Bridge
1. Remove the carrier from the vehicle. Refer to **Differential Carrier Assembly Replacement** .

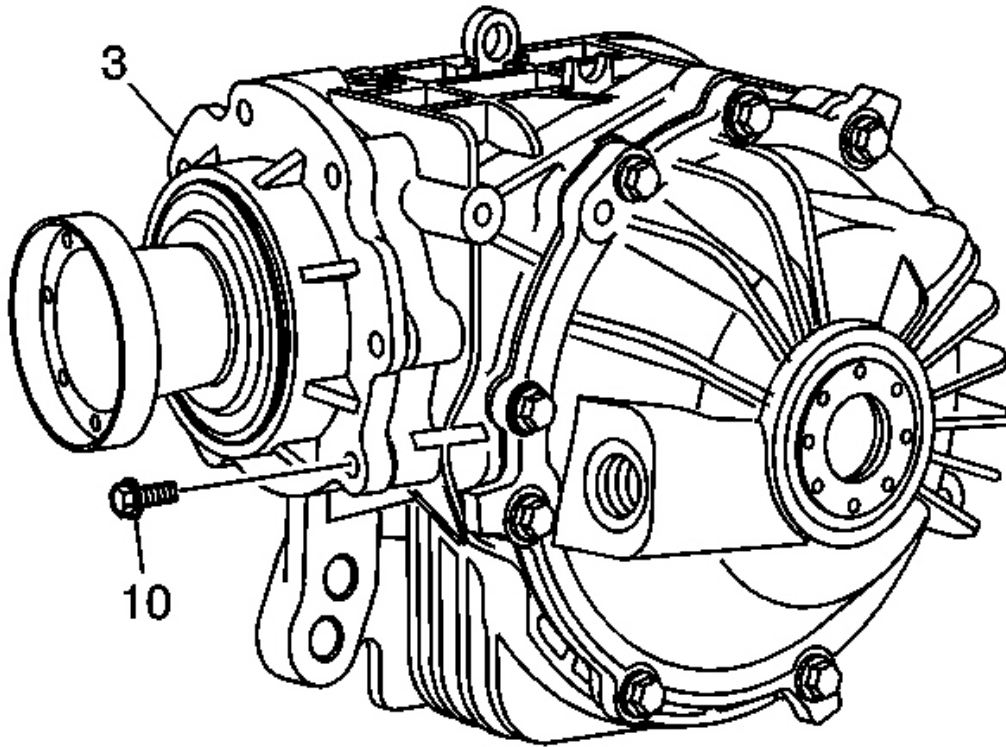


Fig. 15: View Of Pinion Bearing Housing & Bolts
Courtesy of GENERAL MOTORS CORP.

2. Remove the bolts (10) from the pinion bearing housing (3).

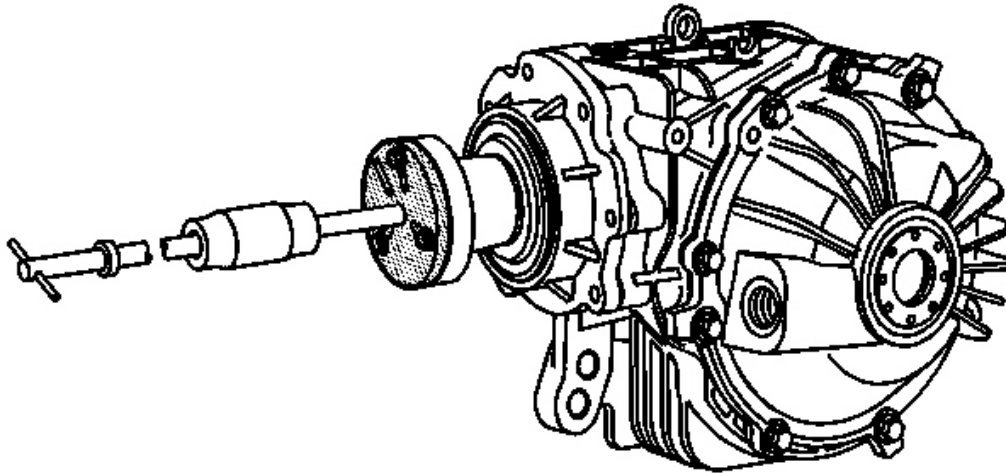


Fig. 16: Installing J 45019 And Slide Hammer
Courtesy of GENERAL MOTORS CORP.

3. Install the **J 45019** and slide hammer as shown. See **Special Tools and Equipment** .

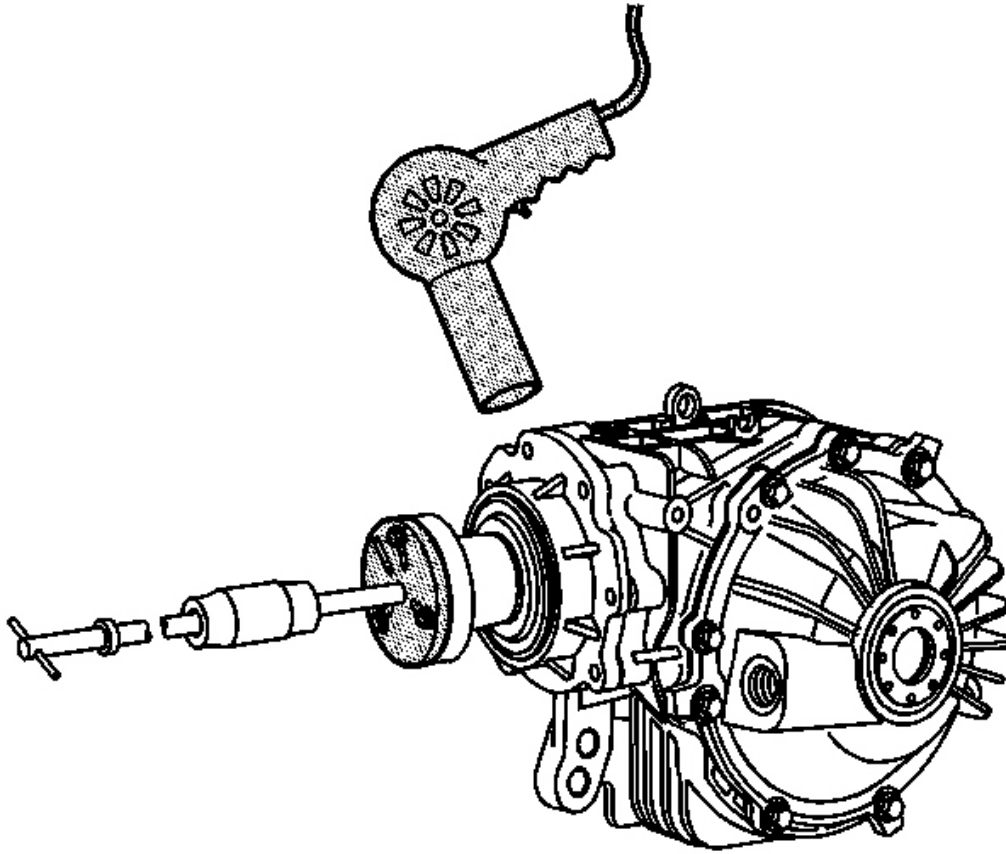


Fig. 17: Heating Around Pinion Housing
Courtesy of GENERAL MOTORS CORP.

4. Using the **J 25070** , heat around the pinion housing in order to ease removal.

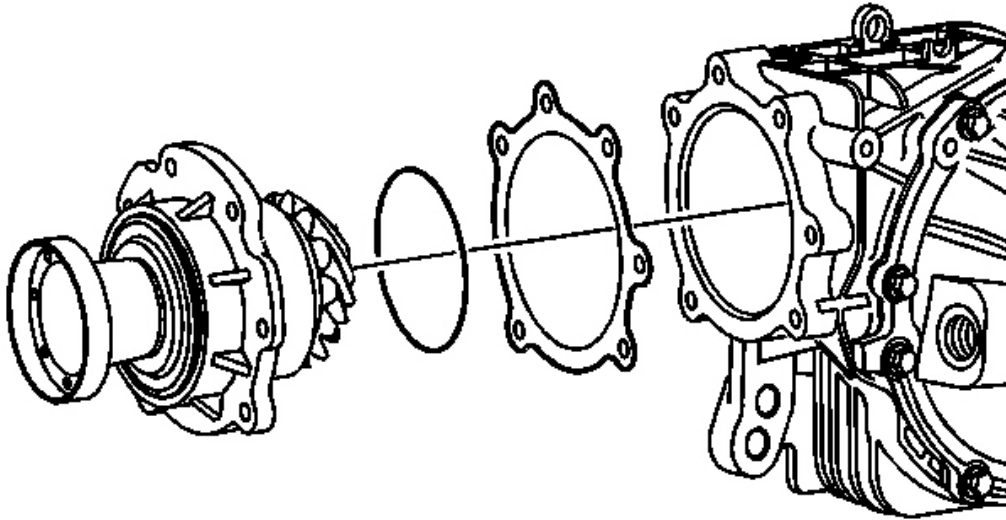


Fig. 18: Removing Pinion Housing
Courtesy of GENERAL MOTORS CORP.

5. Remove the **J 45019** from the flange. See **Special Tools and Equipment** .
6. Remove the pinion housing from the differential carrier.
7. Remove the O-ring from the housing.
8. Remove the pinion housing shims.

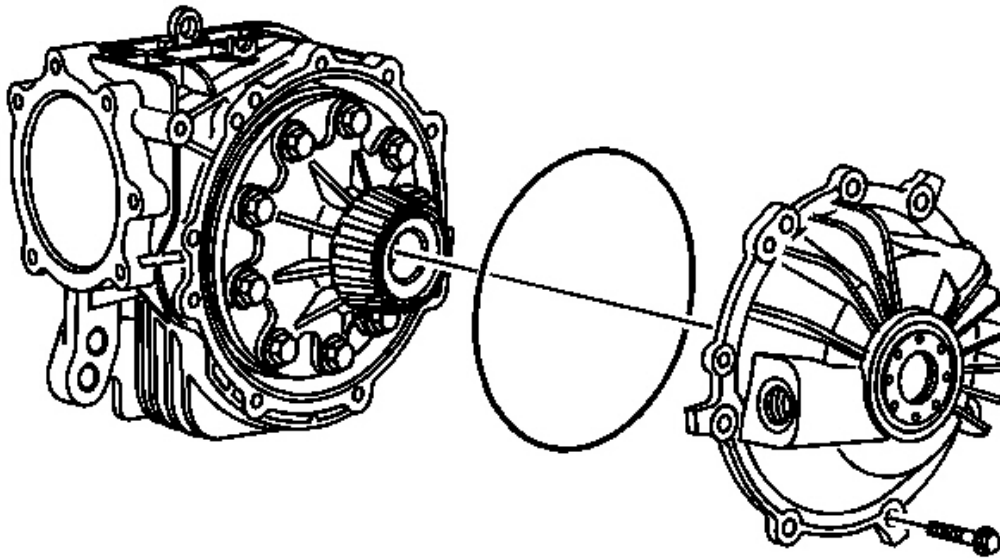


Fig. 19: View Of Carrier Cover
Courtesy of GENERAL MOTORS CORP.

9. Remove the carrier cover bolts.
10. Using the pry tabs, remove the carrier cover.
11. Remove the O-ring from the cover.

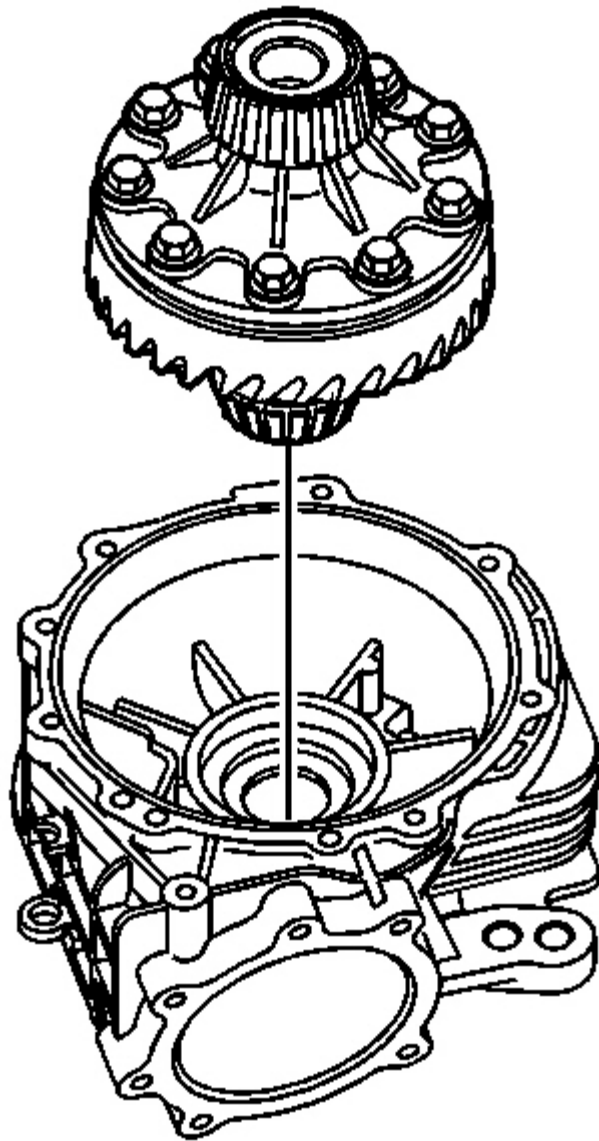


Fig. 20: Removing Differential Assembly
Courtesy of GENERAL MOTORS CORP.

12. Remove the differential assembly from the carrier.

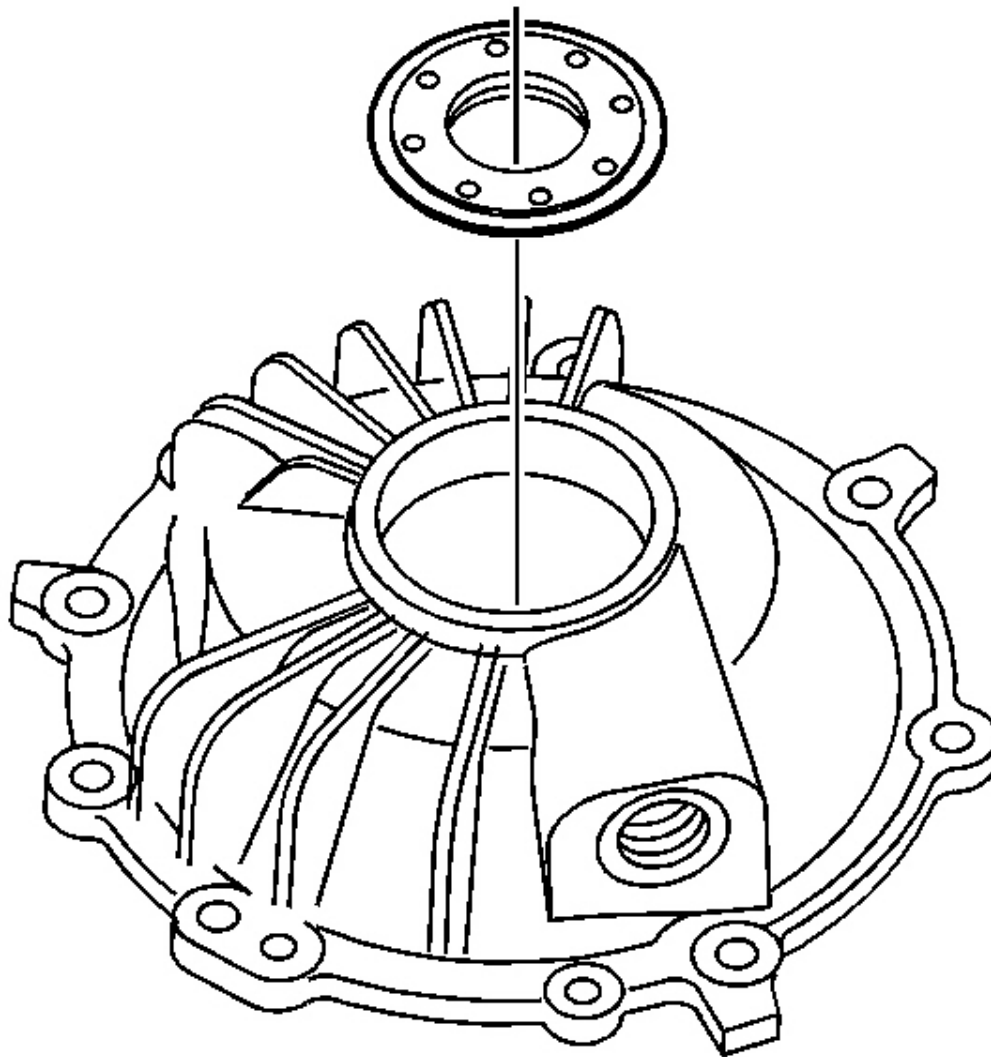


Fig. 21: Removing Right Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

13. Remove the right output shaft seal from the cover.

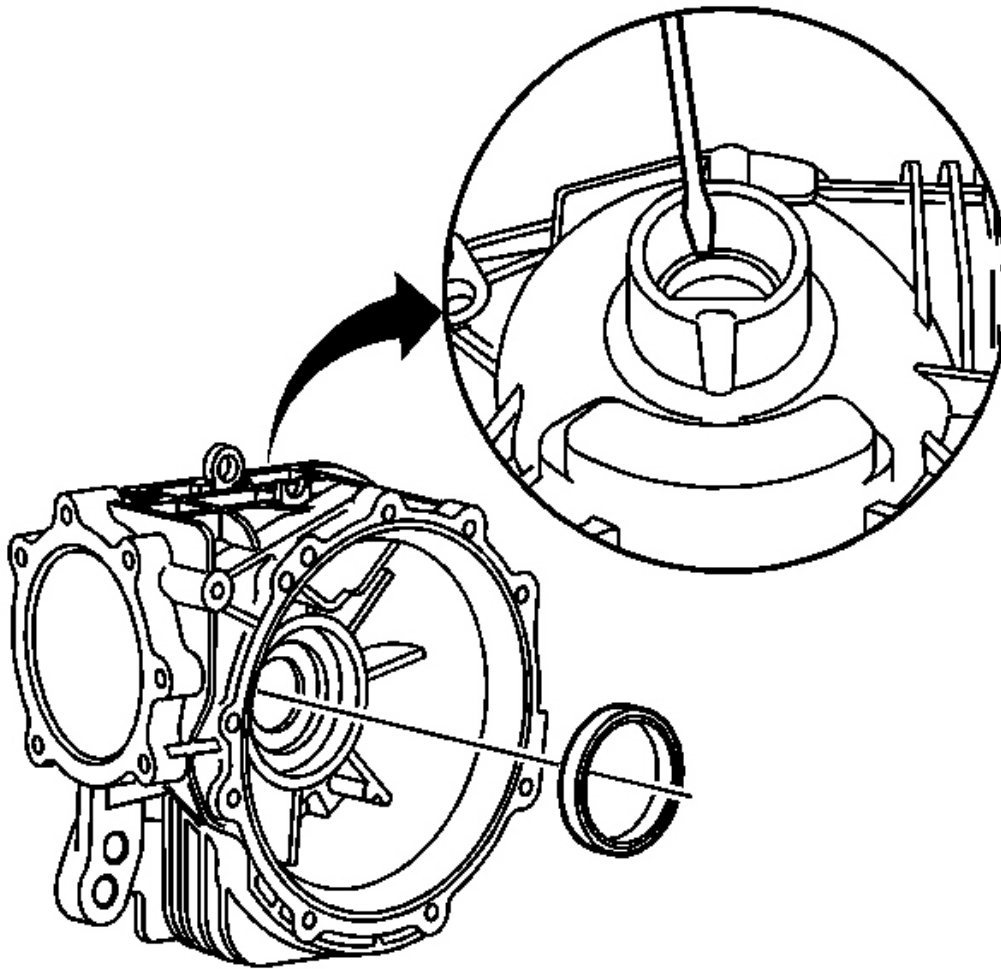


Fig. 22: Removing Left Output Shaft Oil Seal
Courtesy of GENERAL MOTORS CORP.

14. Using a suitable tool, remove the left output shaft oil seal from the carrier.

Installation Procedure

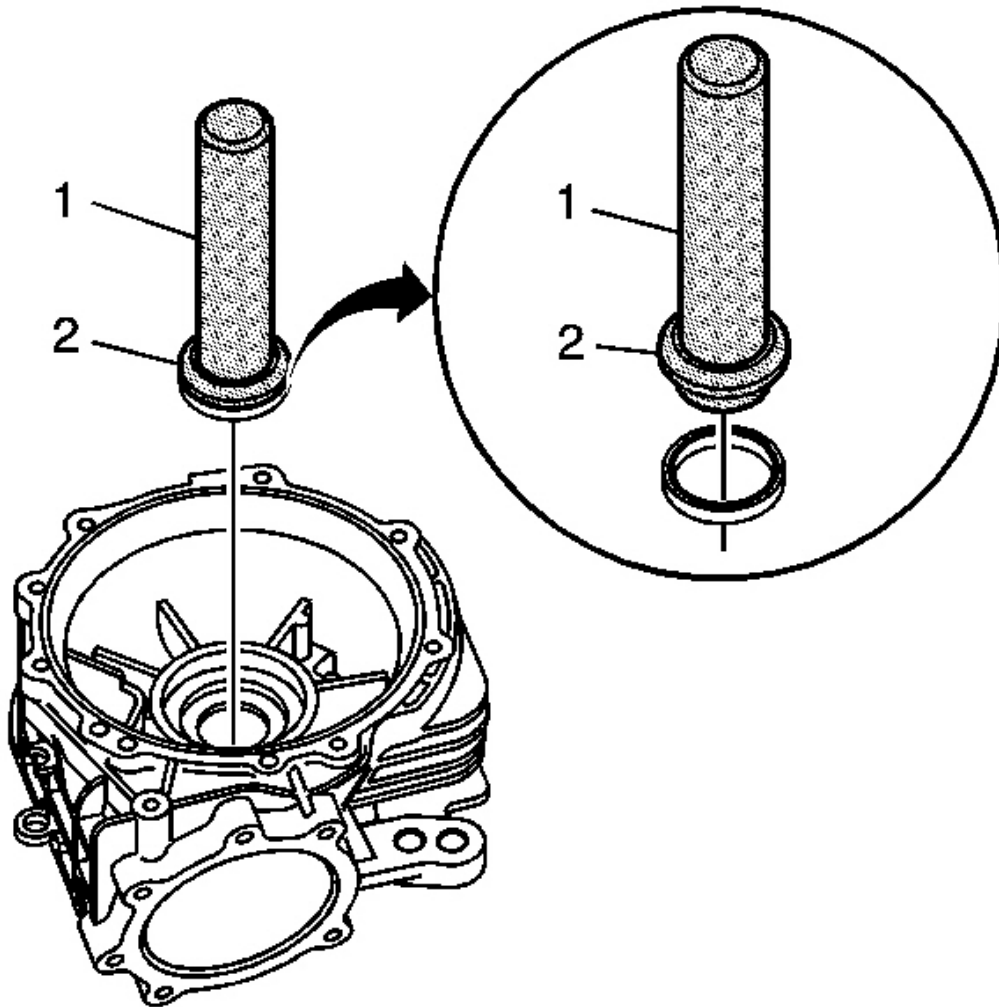


Fig. 23: Installing Left Output Shaft Oil Seal
Courtesy of GENERAL MOTORS CORP.

1. Using J 46265 (2) and J 8092 (1), install the left output shaft seal. See **Special Tools and Equipment** .

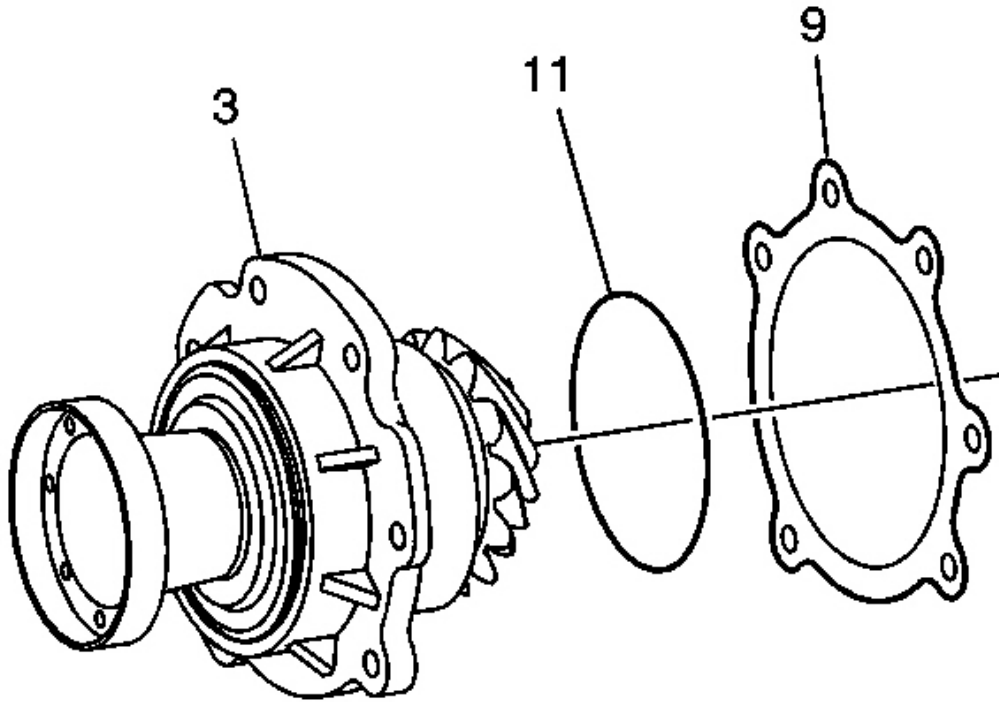


Fig. 24: Installing Shims & O-Ring To Pinion Housing
Courtesy of GENERAL MOTORS CORP.

2. Install the selected shims (9) on the pinion housing (3).
3. Install a NEW O-ring (11) in the groove on the pinion housing.

IMPORTANT: Inspect the bearing housing for nicks and burrs. Remove if necessary.

4. Apply a light coat of gear lube to the bearing housing to ease installation.

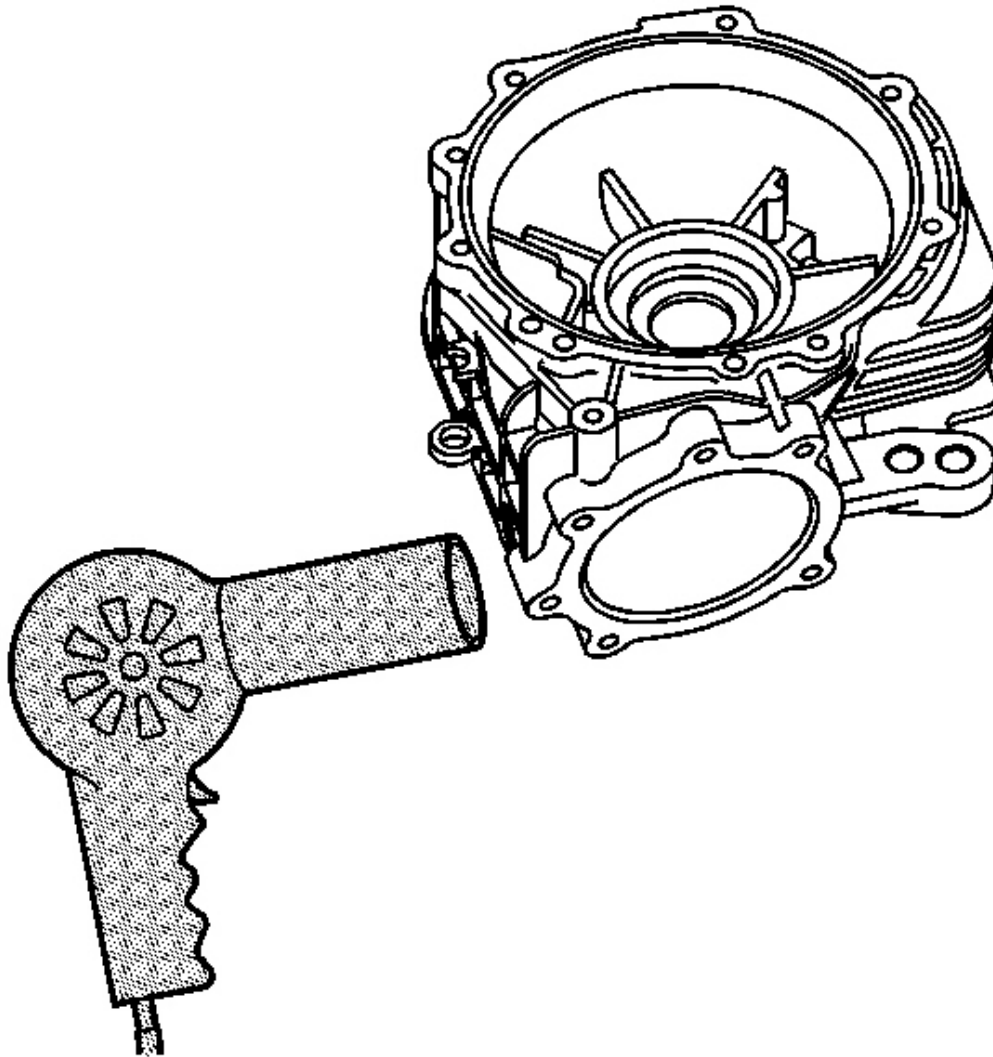


Fig. 25: Heating Carrier Pinion Housing
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Inspect the carrier pinion housing bore for nicks or burrs.
Remove if necessary.

5. Apply a light coat of gear lube into the pinion housing bore of the carrier.
6. Using **J 25070** , heat the carrier.

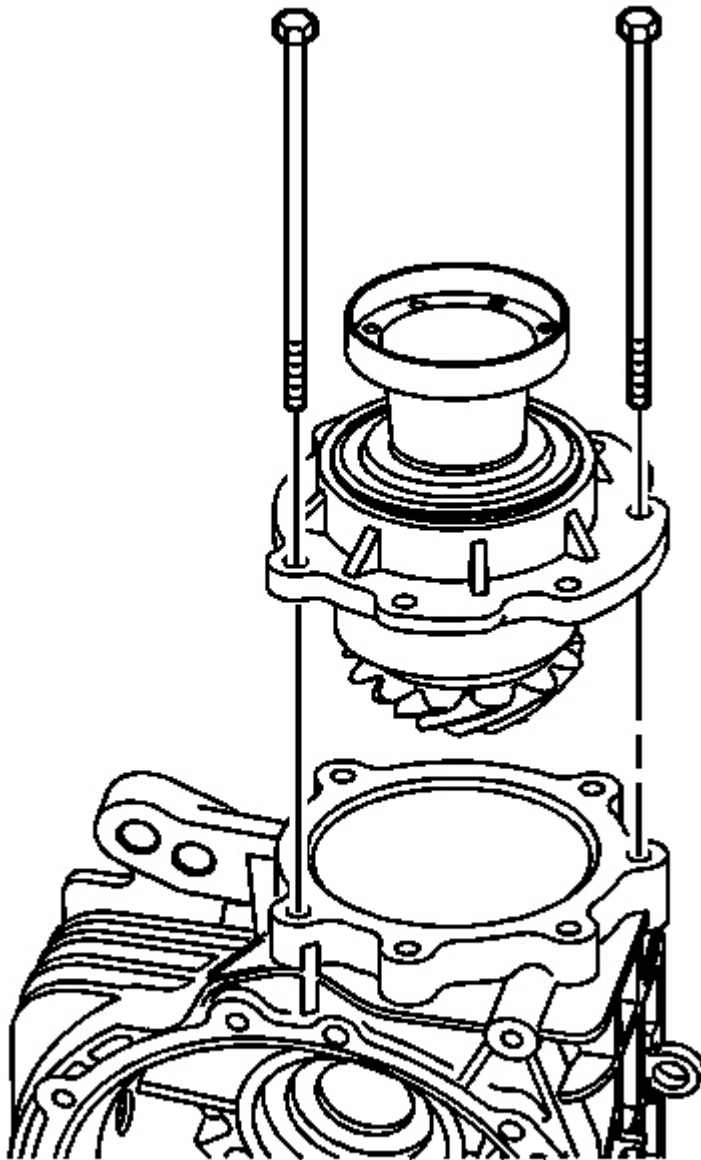


Fig. 26: Installing Pinion Housing
Courtesy of GENERAL MOTORS CORP.

7. Using the long bolts from **J 45019** as guides, align the housing bolt holes to the carrier bolt holes. See **Special Tools and Equipment** .

8. Snug the bolts.
9. Push the housing evenly into the bore.
10. Remove the long bolts.

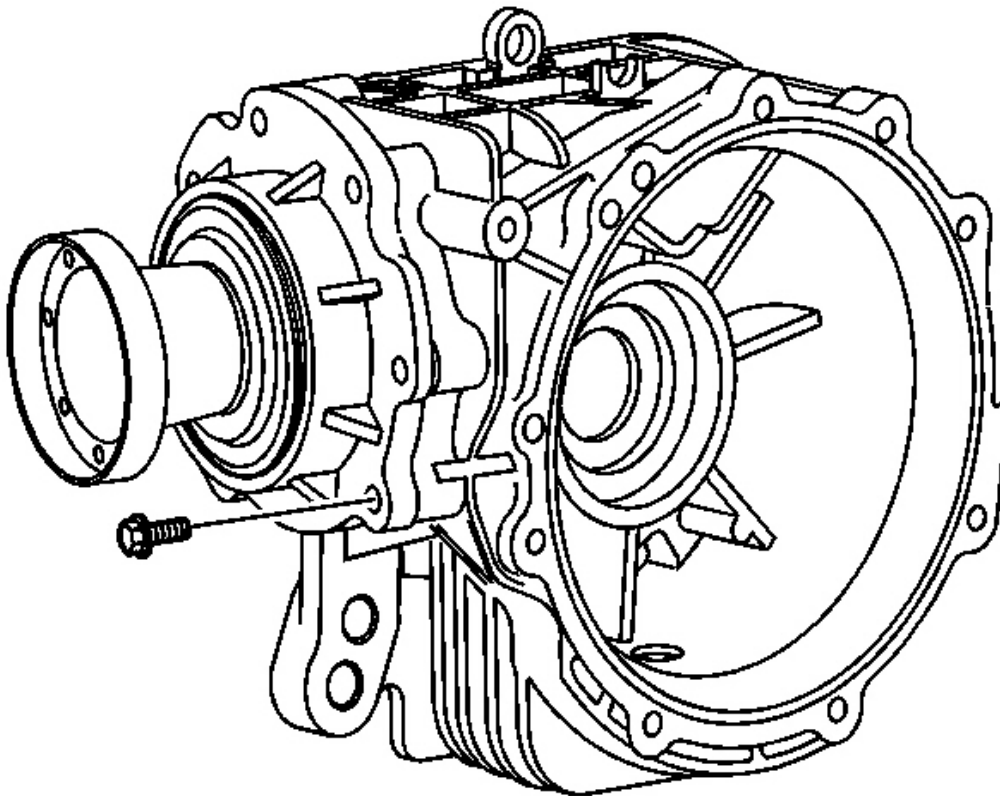


Fig. 27: Installing Pinion Housing Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice .

11. Install the pinion housing bolts.

Tighten: Tighten the bolts to 29 N.m (21 lb ft).

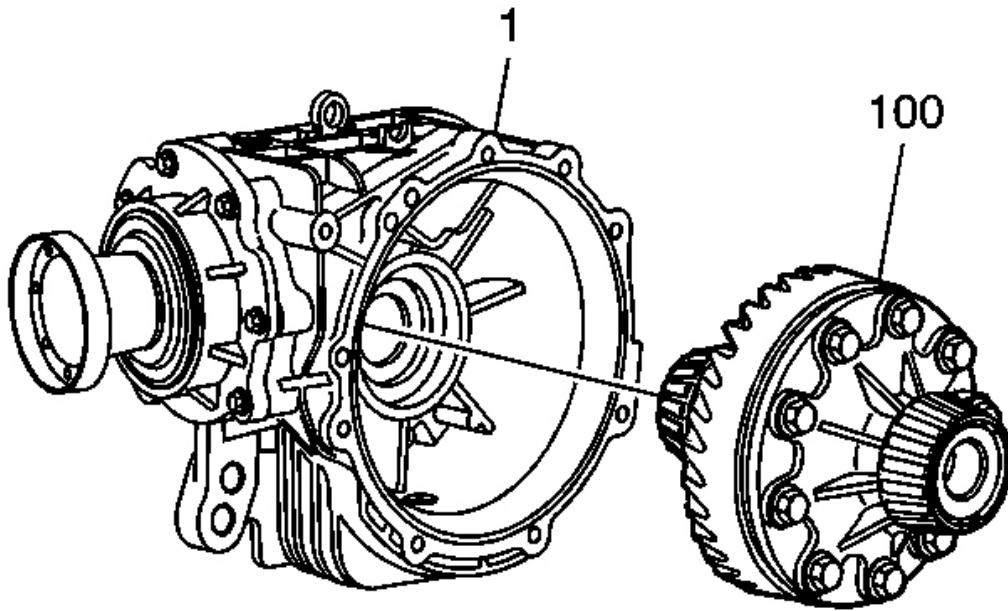


Fig. 28: Installing Differential Assembly Into Differential Carrier
Courtesy of GENERAL MOTORS CORP.

12. Install the differential assembly (100) into the differential carrier (1).

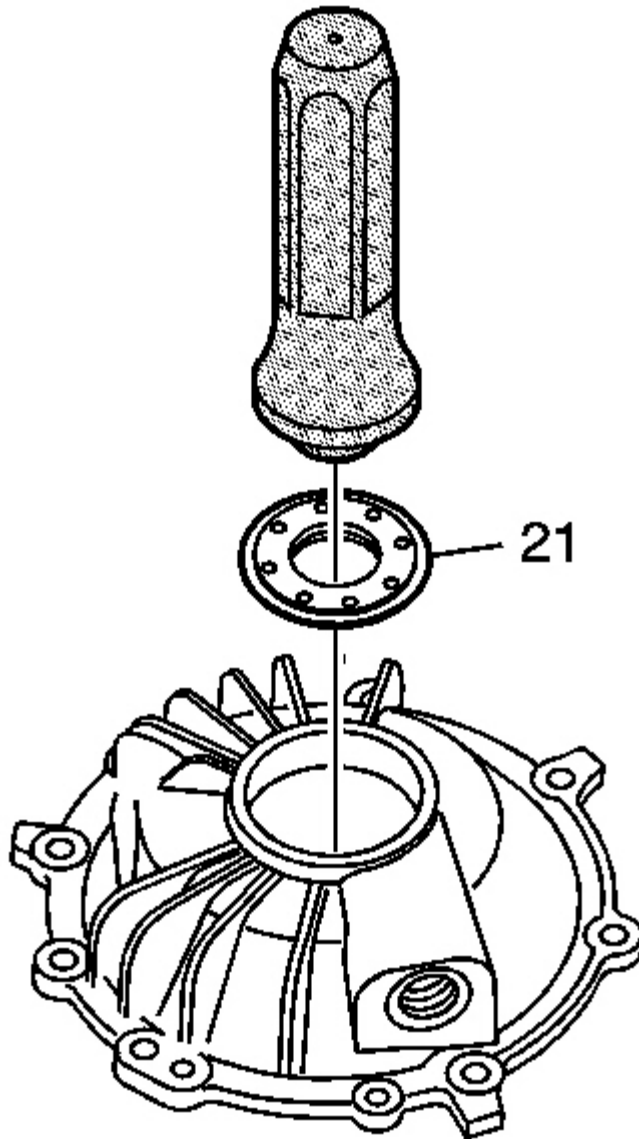


Fig. 29: Installing Right Output Shaft Oil Seal
Courtesy of GENERAL MOTORS CORP.

13. Lightly lube the outside diameter of the oil seal with axle lube.
14. Use **J 45017** to install the right output shaft oil seal (21). See **Special Tools and Equipment** .

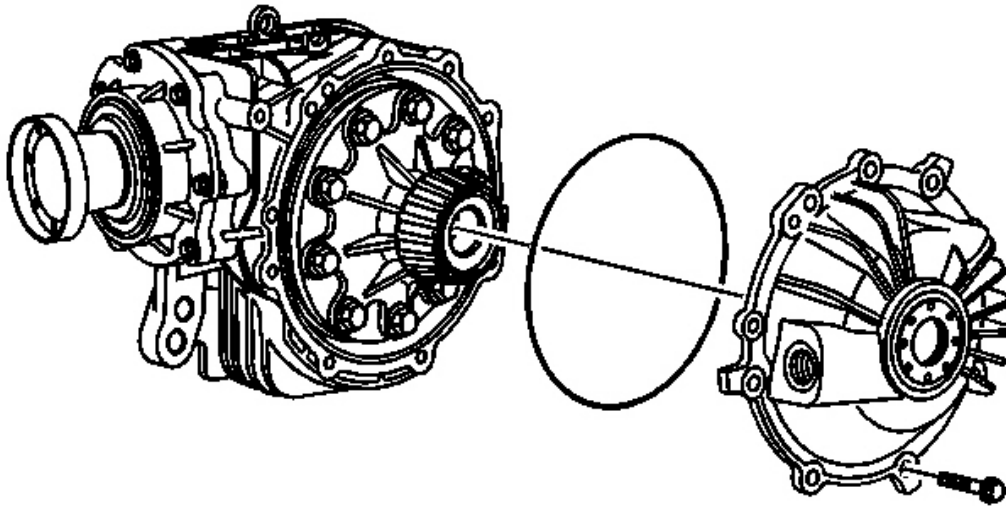


Fig. 30: Installing Carrier Cover
Courtesy of GENERAL MOTORS CORP.

15. Install a NEW carrier cover O-ring into the groove.
16. Apply a light coat of gear lube to the O-ring area.
17. Align the bolt holes and push cover onto the differential carrier evenly.
18. Start the cover bolts in the holes by hand.

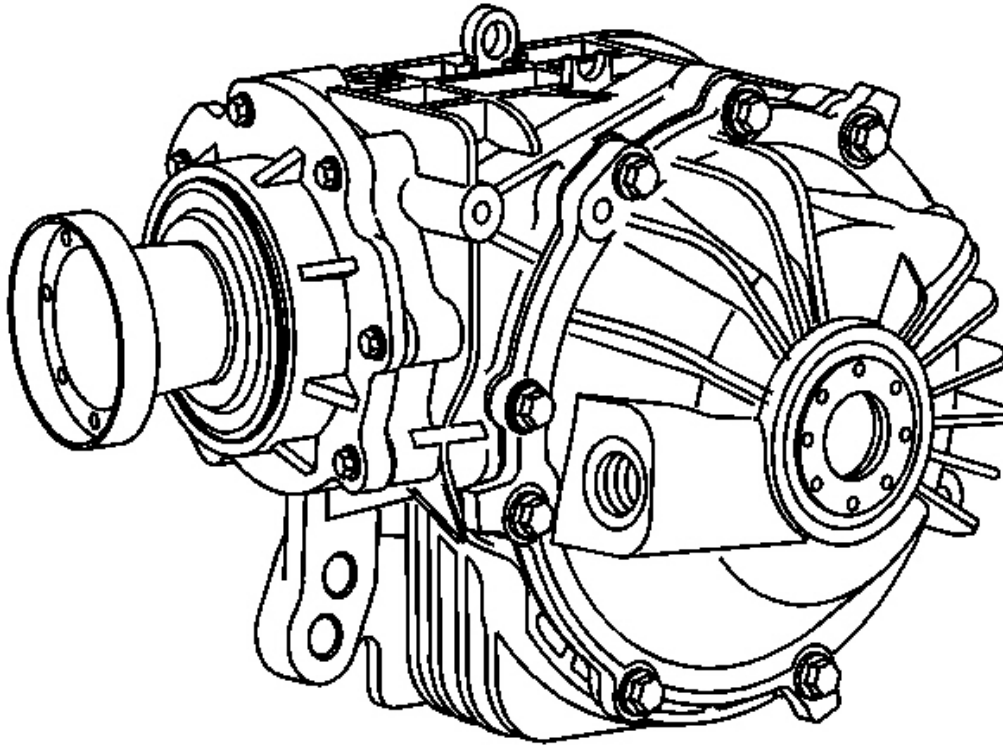


Fig. 31: Installing Cover Bolts
Courtesy of GENERAL MOTORS CORP.

19. Install the cover bolts.

Tighten: Tighten the cover bolts to 29 N.m (21 lb ft) in a criss-cross pattern.

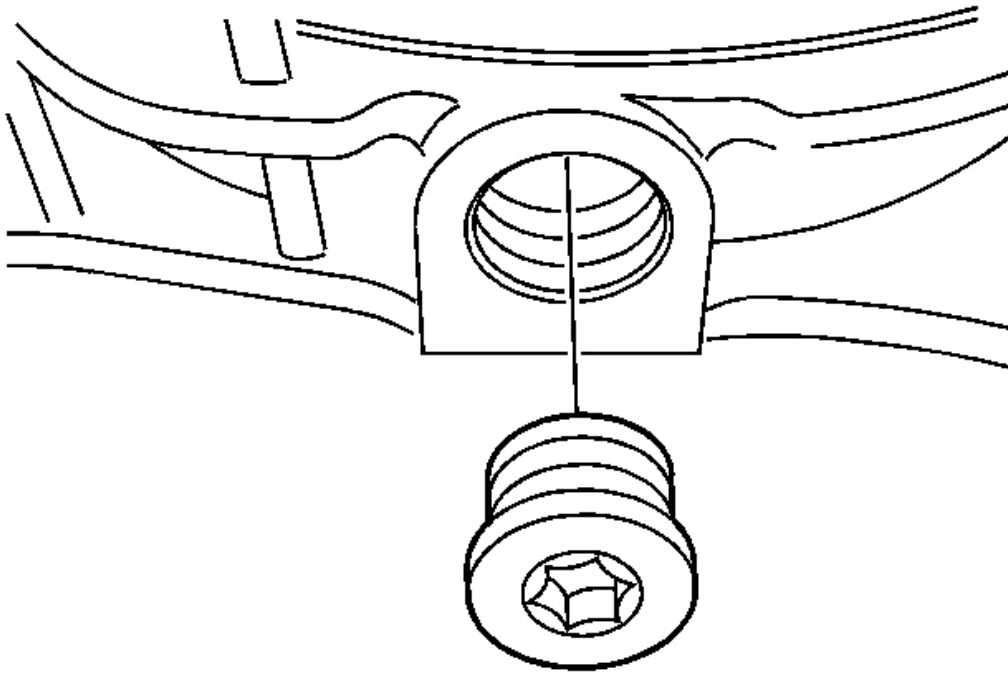


Fig. 32: Identifying Drain Plug
Courtesy of GENERAL MOTORS CORP.

20. Install the drain plug.

Tighten: Tighten the drain plug to 39 N.m (29 lb ft).

21. After the axle and half shaft is installed in the vehicle, fill the axle with differential lube GL 75W90 GM P/N 12378261 (Canadian P/N 10953455) or equivalent. Fill to the bottom of the fill plug threads.

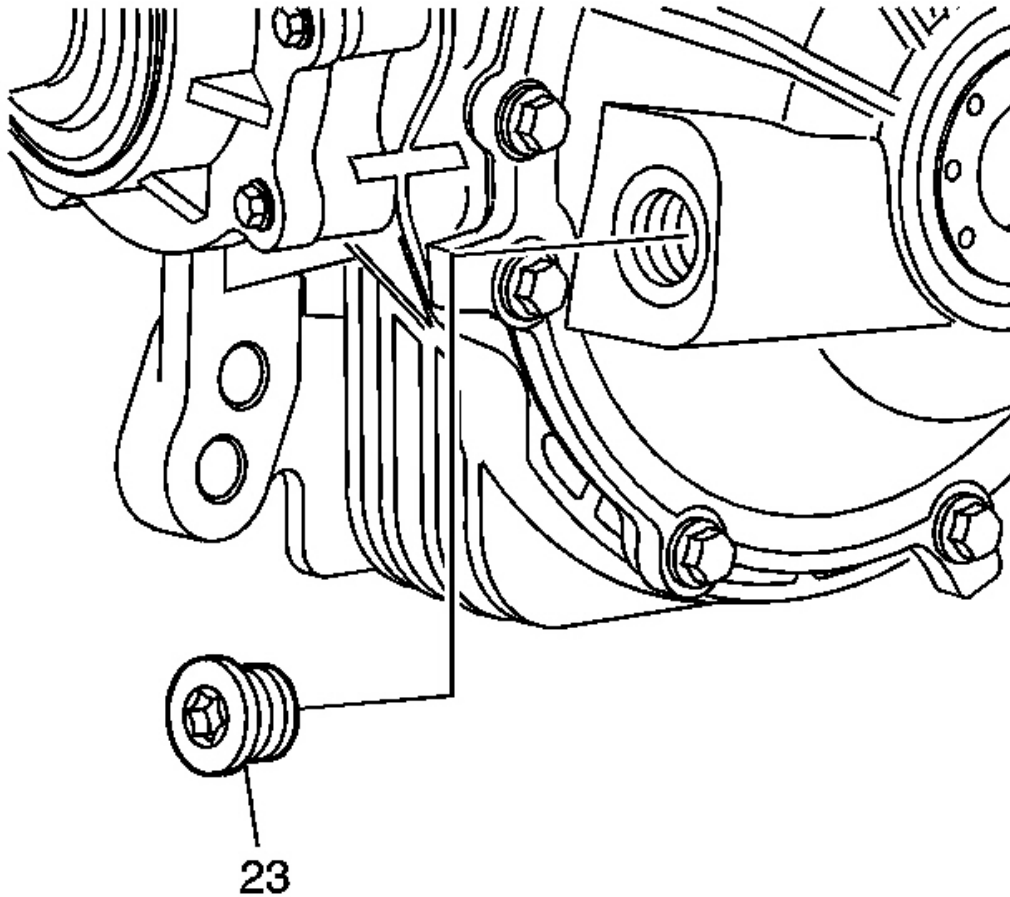


Fig. 33: Identifying Fill Plug
Courtesy of GENERAL MOTORS CORP.

22. Install the fill plug (23).

Tighten: Tighten the fill plug to 39 N.m (29 lb ft).

23. Install the carrier into the vehicle. Refer to **Differential Carrier Assembly Replacement** .

OUTPUT SHAFT SEAL REPLACEMENT - RIGHT

Tools Required

J 45017 Output Shaft Seal Installer. See **Special Tools and Equipment** .

2004 Cadillac SRX

2004 DRIVELINE/AXLE Front Drive Axle - SRX

Removal Procedure

1. Raise and suitably support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the right front tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
3. Remove the right front wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Front (Left)** or **Wheel Drive Shaft Replacement - Front (Right)** in Wheel Drive Shafts.
4. Using a flat bladed tool carefully remove the right differential output shaft seal.

Take care not to damage any sealing surfaces.

Installation Procedure

1. Lubricate the wheel drive shaft sealing surface of the oil seal with 75W90 synthetic axle lubricant, GM P/N 12378261 (Canadian P/N 10953455) or equivalent.
2. Install the right differential output shaft seal (2) to the **J 45017** . See **Special Tools and Equipment** .

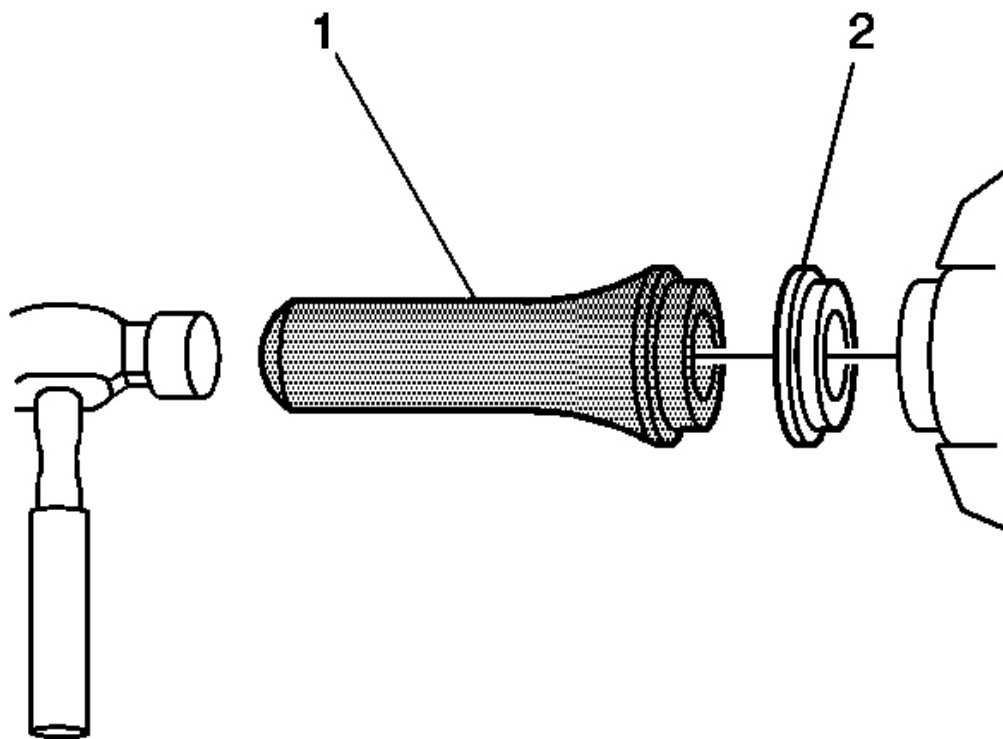


Fig. 34: Installing Right Differential Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

3. Using the **J 45017** (1), carefully install the right differential output shaft seal (2). See **Special Tools and Equipment** .
4. Remove **J 45017** (1) from the right differential output shaft seal (2). See **Special Tools and Equipment** .
5. Install the right front wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Front (Left)** or **Wheel Drive Shaft Replacement - Front (Right)** in Wheel Drive Shafts.
6. Inspect the fluid level. Refer to **Lubricant Level Inspection - Rear Drive Axle** in Rear Drive Axle.
7. Install the right front tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
8. Lower the vehicle.

DIFFERENTIAL DRIVE PINION FLANGE/YOKE, SEAL, AND DUST DEFLECTOR REPLACEMENT - FRONT

Tools Required

- **J 46262** Pinion Sealer. See **Special Tools and Equipment** .
- **J 45012** Holding Fixture. See **Special Tools and Equipment** .
- **J 45019** Flange and Pinion Cage Remover. See **Special Tools and Equipment** .

Removal Procedure

1. Raise and support vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the front propeller shaft constant velocity (CV) joint to drive pinion flange bolts.

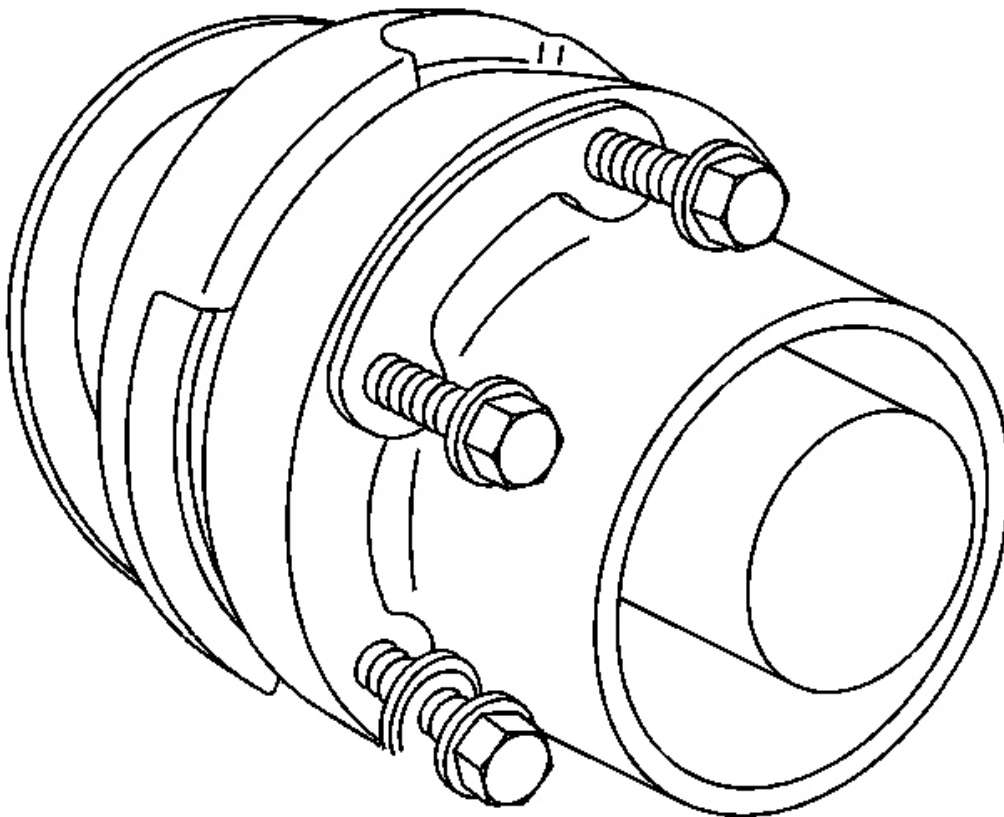


Fig. 35: View Of Propeller Shaft CV Joint-To-Drive Pinion Flange Bolts
Courtesy of GENERAL MOTORS CORP.

3. Carefully move the front propeller shaft toward the rear of the vehicle in order to release the propeller shaft (CV) joint from the drive pinion flange.
4. Position the front propeller shaft out of the way.
5. Support the propeller shaft with heavy mechanic's wire or equivalent.

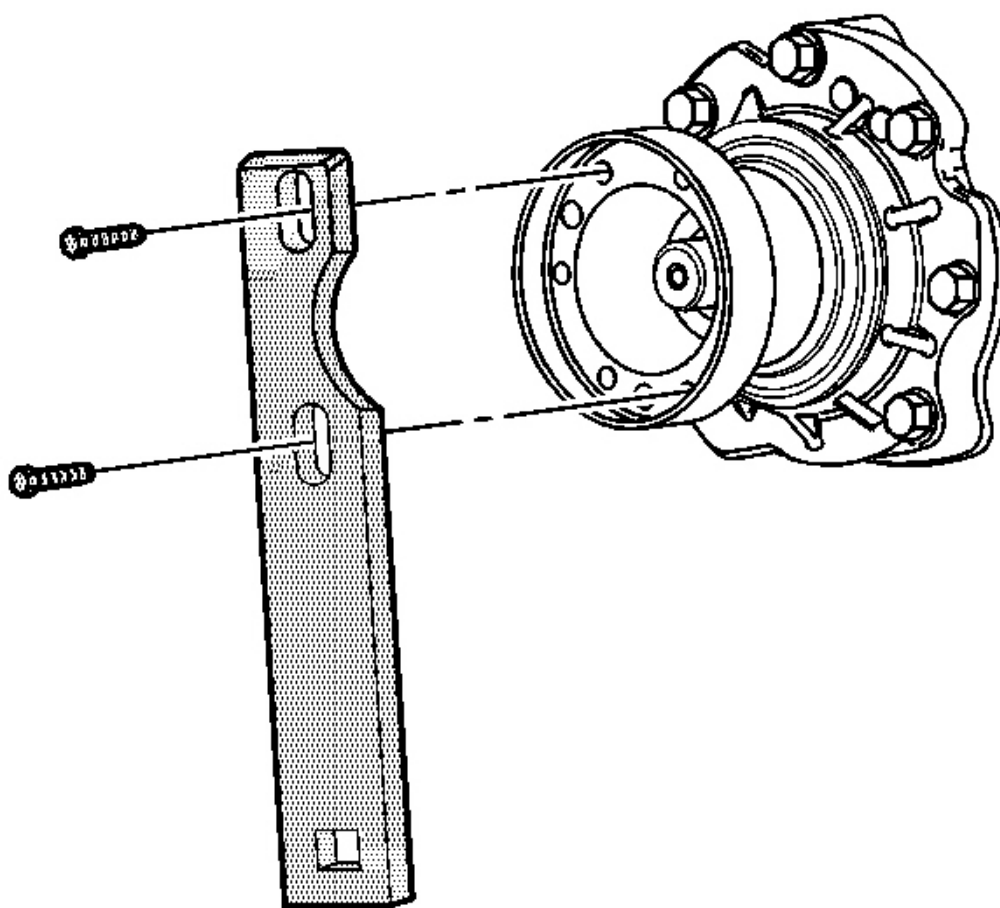


Fig. 36: View Of J 45012
Courtesy of GENERAL MOTORS CORP.

6. Install the J 45012 to the drive pinion flange. See **Special Tools and Equipment** .

7. While holding the **J 45012** remove the drive pinion flange nut. See **Special Tools and Equipment** .
8. Remove **J 45012** from the drive pinion flange. See **Special Tools and Equipment** .

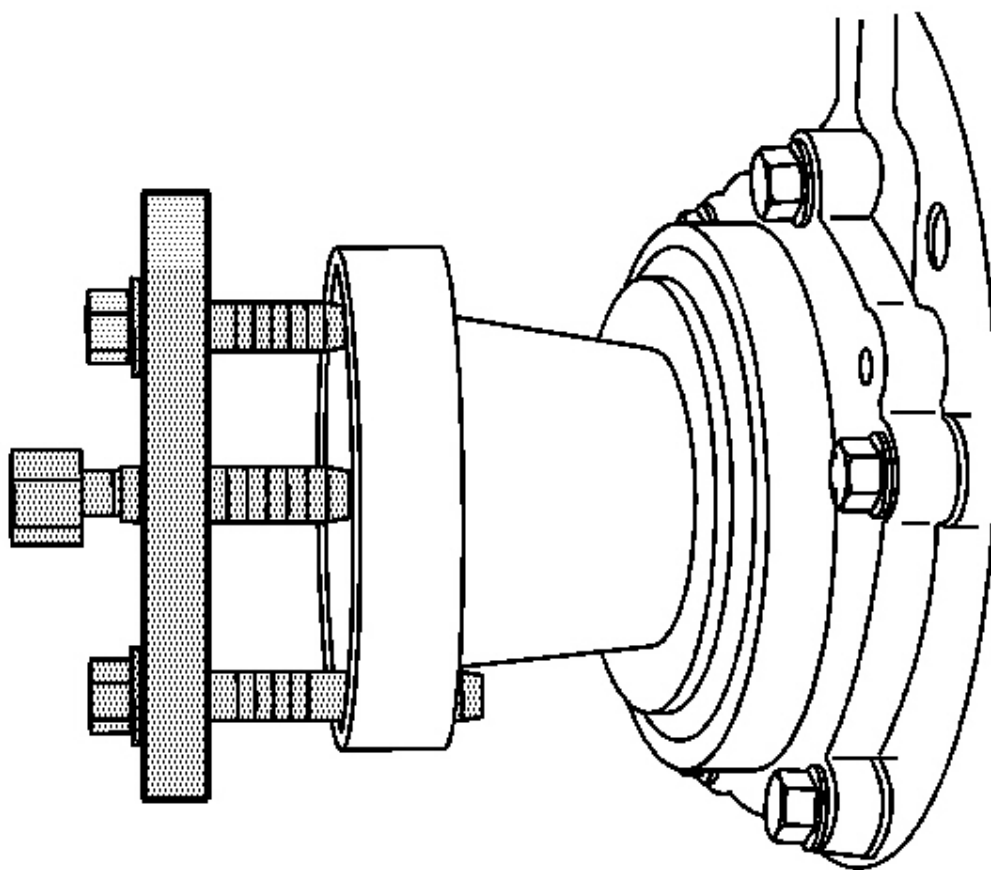


Fig. 37: View Of J 45019 Removing Drive Pinion Flange
Courtesy of GENERAL MOTORS CORP.

9. Install the **J 45019** to the drive pinion flange. See **Special Tools and Equipment** .
10. Using **J 45019** remove the drive pinion flange. See **Special Tools and Equipment** .
11. Remove the **J 45019** from the drive pinion flange. See **Special Tools and Equipment** .
12. Using a flat bladed tool carefully remove the drive pinion seal. Take care not to damage any sealing surfaces.

Installation Procedure

1. Lubricate the drive pinion flange sealing surface of the drive pinion seal with synthetic gear oil GM P/N 12378514 (Canadian P/N 88901045) or equivalent.
2. Install the drive pinion seal to the **J 46262** . See **Special Tools and Equipment** .

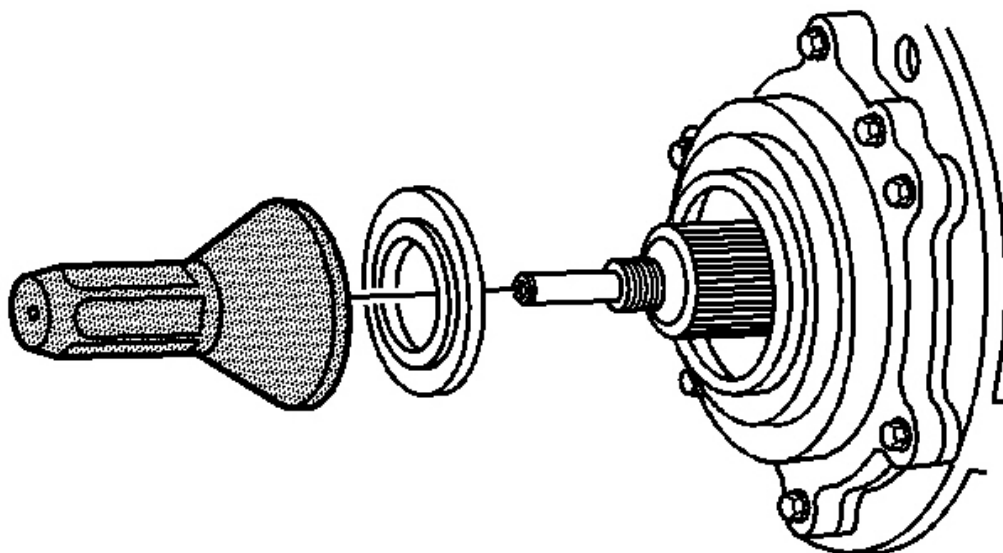


Fig. 38: Installing Drive Pinion Seal
Courtesy of GENERAL MOTORS CORP.

3. Using **J 46262** install the new drive pinion seal to the differential. See **Special Tools and Equipment** .
4. Remove the **J 46262** from the new drive pinion seal. See **Special Tools and Equipment** .
5. Install the pinion flange to the drive pinion shaft.

IMPORTANT: The pinion shaft threads and the pinion flange nut must be free of residue and debris prior to application of threadlocker in order to ensure proper adhesion and fastener retention.

6. Prepare the pinion shaft threads and the pinion flange nut for assembly:
 1. Thoroughly clean the residue from the pinion shaft threads by using denatured alcohol

or equivalent and allow to dry.

2. Thoroughly clean the residue from the pinion flange nut by using denatured alcohol or equivalent and allow to dry.
7. Apply threadlocker GM P/N 12345382 (Canadian P/N 10953489) or equivalent to 2/3 of the threaded length of the pinion shaft threads. Ensure that there are no gaps in the threadlocker along the length of the filled area of the pinion shaft threads.
8. Allow the threadlocker to cure approximately ten minutes before installation.

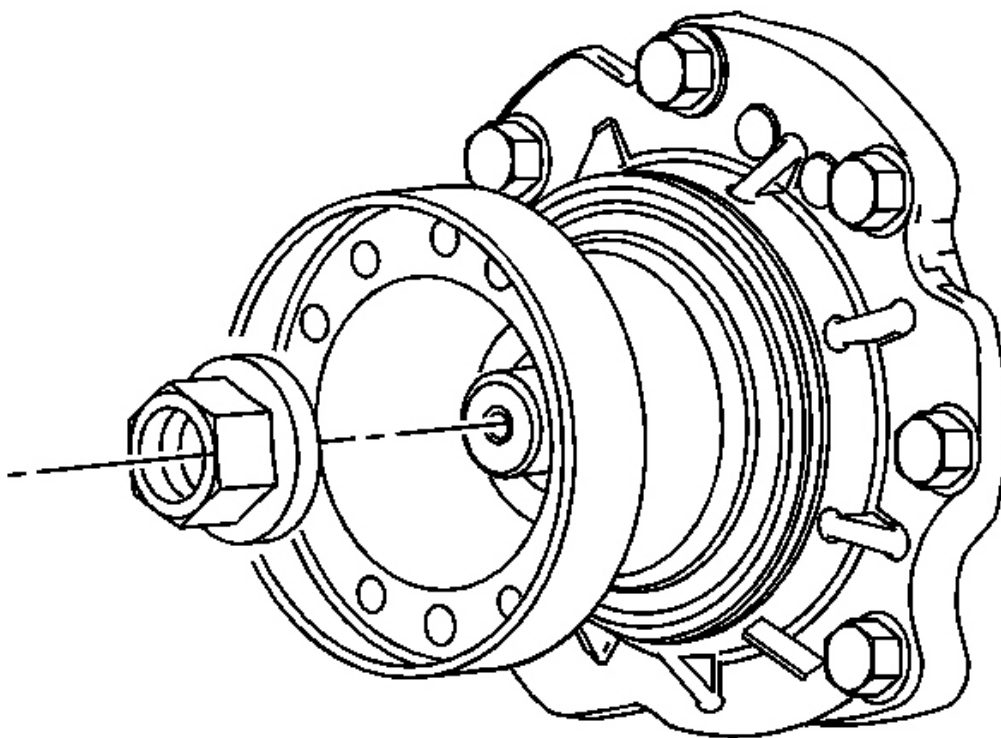


Fig. 39: View Of Drive Pinion Flange Nut
Courtesy of GENERAL MOTORS CORP.

9. Install the drive pinion flange nut to the pinion shaft.

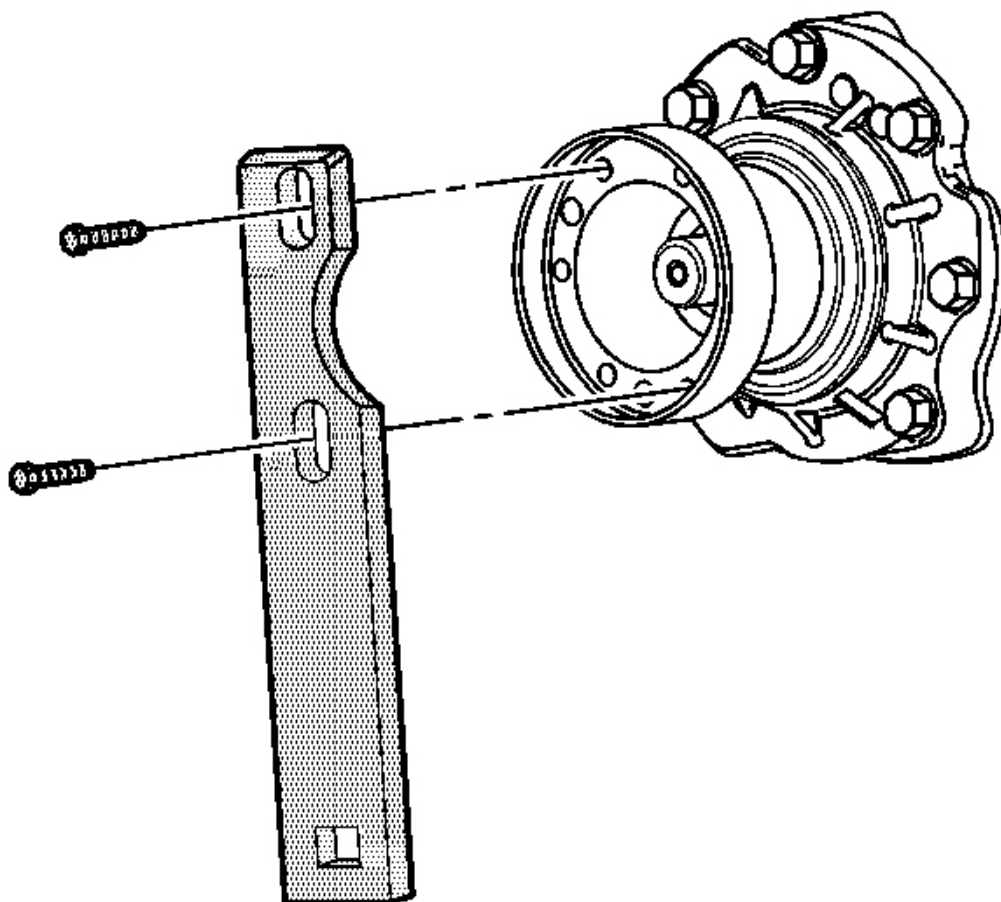


Fig. 40: View Of J 45012

Courtesy of GENERAL MOTORS CORP.

10. Install the **J 45012** to the drive pinion flange. See **Special Tools and Equipment** .

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

11. While holding the **J 45012** tighten the drive pinion nut. See **Special Tools and Equipment** .

Tighten: Tighten the pinion flange nut to 241 N.m (178 lb ft).

12. Remove the **J 45012** from the pinion flange. See **Special Tools and Equipment** .

13. Install the propeller shaft to the drive pinion flange.

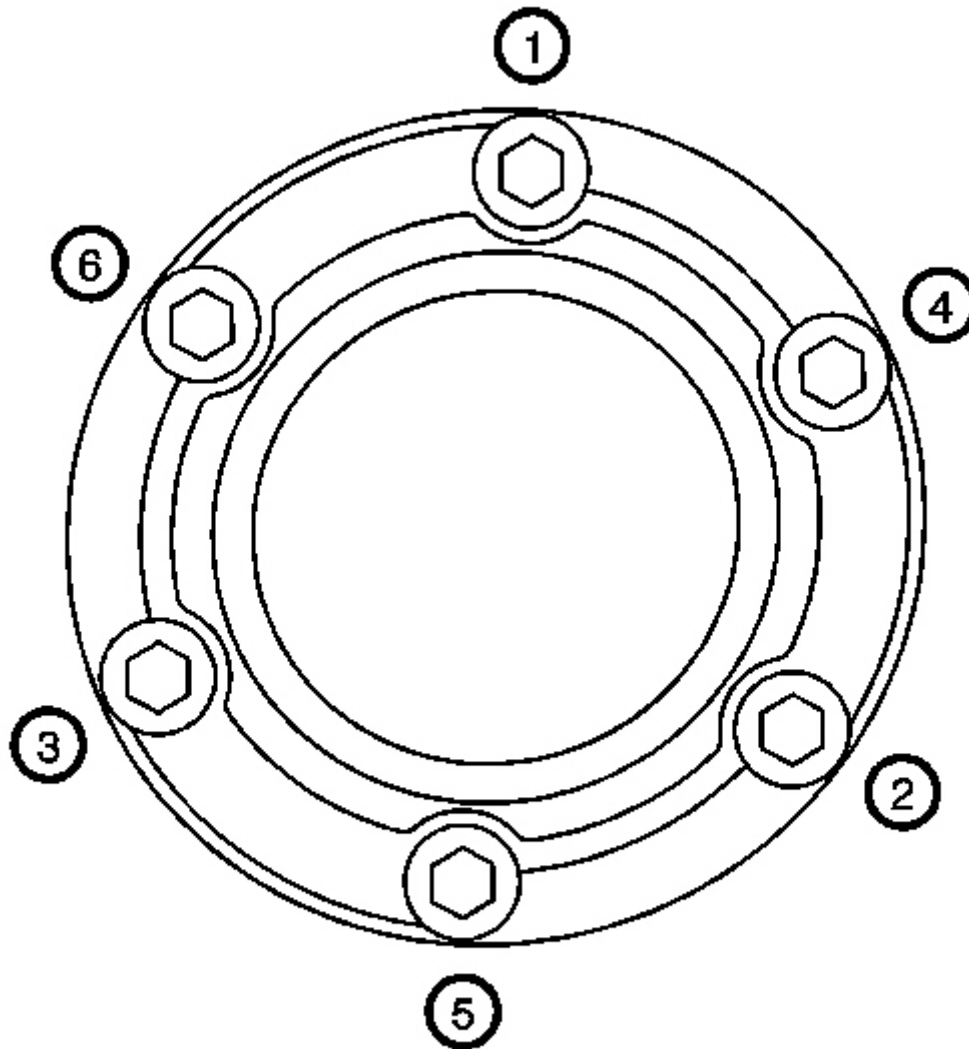


Fig. 41: Installing Propeller Shaft To Drive Pinion Flange Bolts
Courtesy of GENERAL MOTORS CORP.

14. Install the propeller shaft to the drive pinion flange bolts.

Tighten: Tighten the (6) propeller shaft coupler-to-differential flange bolts in sequence (1-

6) to 30 N.m (22 lb ft).

15. Inspect the fluid level. Refer to Lubricant Level Inspection - Front Drive Axle .

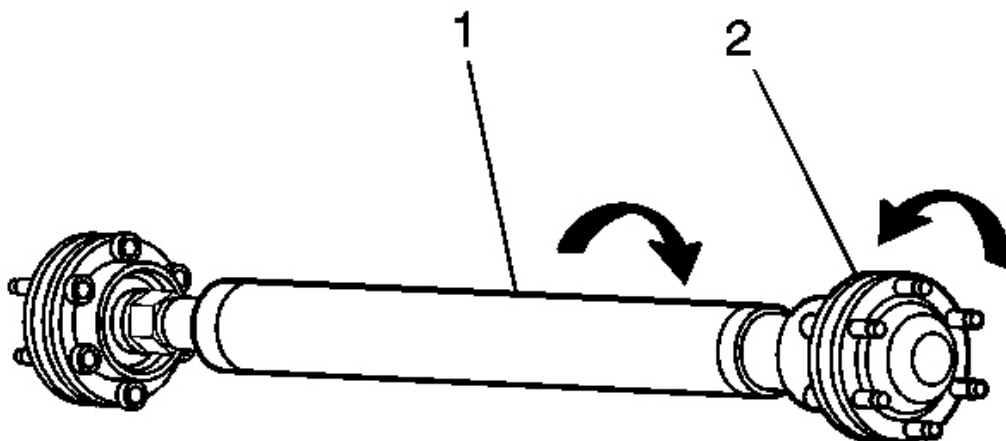


Fig. 42: Checking For Rotational Movement Between The Constant Velocity And The Propeller Shaft Tube

Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Ensure that there is no rotational movement between the constant velocity (2) and the propeller shaft tube.

16. Lower the vehicle.

DIFFERENTIAL CARRIER ASSEMBLY REPLACEMENT

Tools Required

J 44394 Seal Protector

Removal Procedure

IMPORTANT: The intermediate wheel drive shaft and the differential are to be installed and removed as a assembly.

2004 Cadillac SRX

2004 DRIVELINE/AXLE Front Drive Axle - SRX

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Lower the front frame assembly. Refer to **Frame Replacement - Front** in Frame and Underbody.
3. Remove front propeller shaft from the differential and position out of the way. Refer to **Propeller Shaft Replacement - Front** in Propeller Shaft.
4. Remove the right front wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Front (Left)** or **Wheel Drive Shaft Replacement - Front (Right)** in Wheel Drive Shafts.
5. Remove the left front wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Front (Left)** or **Wheel Drive Shaft Replacement - Front (Right)** in Wheel Drive Shafts.
6. Remove the intermediate wheel drive shaft support bearing. Refer to **Intermediate Shaft Bearing Assembly Replacement - Front Drive Axle** .

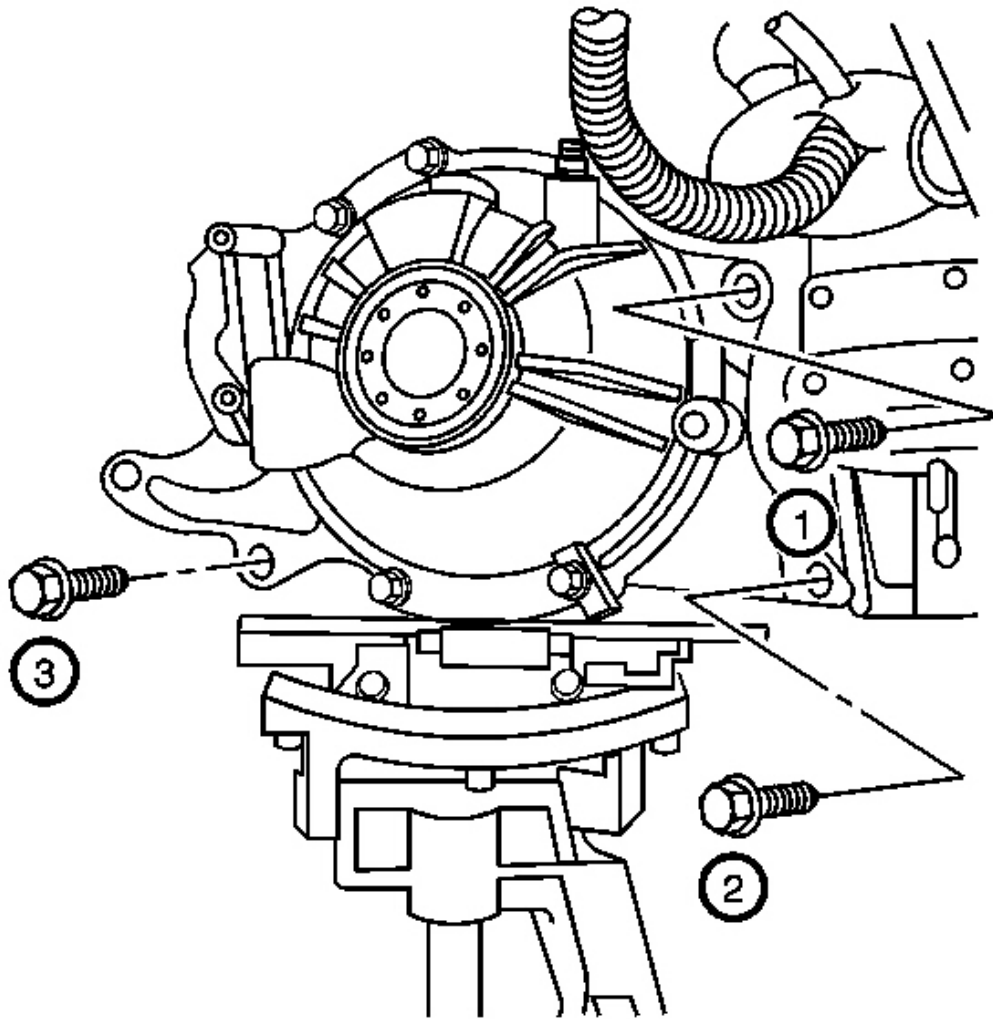


Fig. 43: View Of Front Differential-To-Oil Pan Mounting Bolts
Courtesy of GENERAL MOTORS CORP.

7. Position a transmission jack beneath the differential.
8. Firmly secure the differential to the transmission jack.
9. Remove the front differential to oil pan mounting bolts.
10. Disengaging the intermediate wheel drive shaft and the front differential from the oil pan.

2004 Cadillac SRX

2004 DRIVELINE/AXLE Front Drive Axle - SRX

1. Position the differential on a transmission jack.

IMPORTANT: The intermediate wheel drive shaft and the differential are to be installed removed as a assembly.

IMPORTANT: In order to prevent lubricant leaks, use care when installing the wheel drive shaft to the differential. Do not damage the oil seal. Replace the oil seal if it becomes nicked, distorted, or is otherwise damaged.

2. Firmly secure the differential to the transmission jack.
3. With the differential firmly attached to the jack, install the intermediate wheel drive shaft and the front differential to the oil pan.

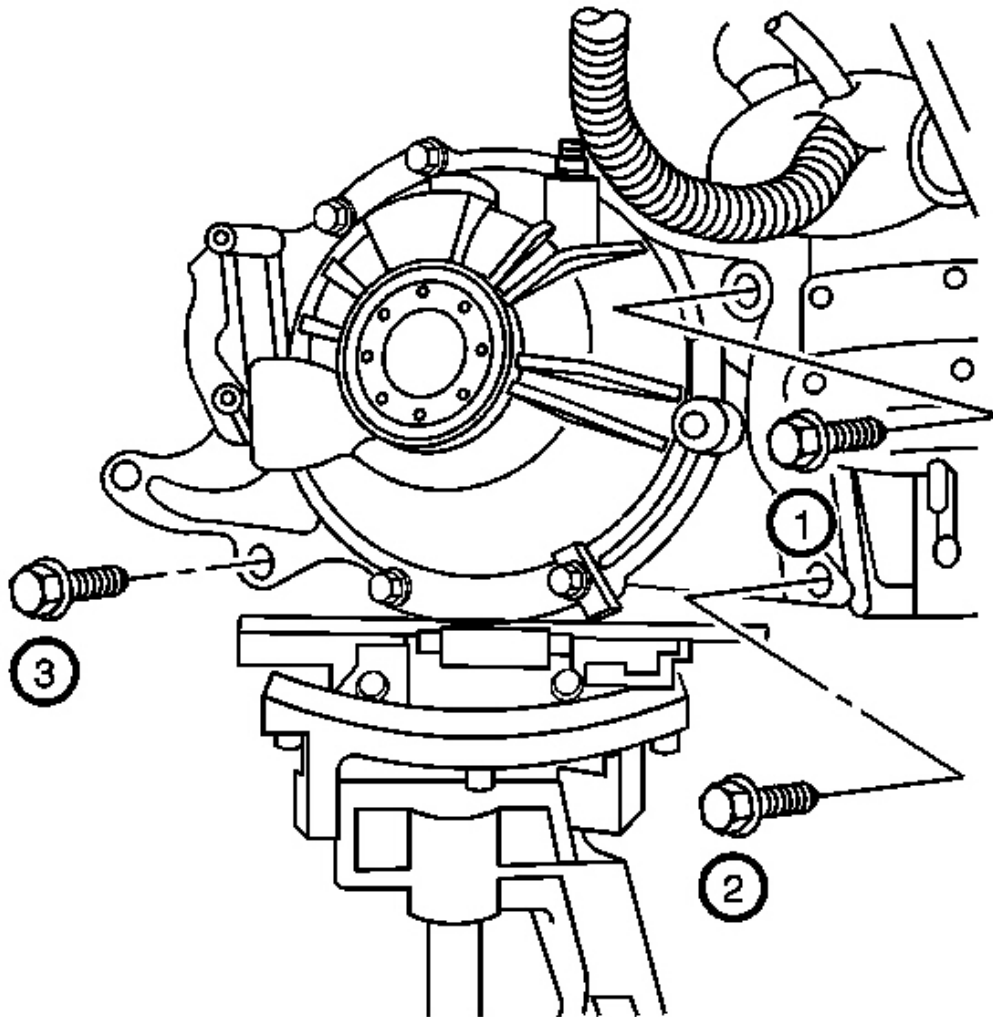


Fig. 44: View Of Front Differential-To-Oil Pan Mounting Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Install the front differential to oil pan mounting bolts.

Tighten: Tighten the front differential to oil pan mounting bolts in sequence to (1-3) to 110 N.m (81 lb ft).

2004 Cadillac SRX

2004 DRIVELINE/AXLE Front Drive Axle - SRX

5. Remove the transmission jack from the differential.
6. Install the intermediate wheel drive shaft support bearing. Refer to **Intermediate Shaft Bearing Assembly Replacement - Front Drive Axle** .
7. Carefully install the left wheel drive shaft to the intermediate wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Front (Left)** or **Wheel Drive Shaft Replacement - Front (Right)** in Wheel Drive Shafts.
8. Install the right front wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Front (Left)** or **Wheel Drive Shaft Replacement - Front (Right)** in Wheel Drive Shafts.
9. Install the front propeller shaft to the differential. Refer to **Propeller Shaft Replacement - Front** in Propeller Shaft.
10. Inspect the differential lubricant level. Refer to **Lubricant Level Inspection - Front Drive Axle** .
11. Install the front frame assembly. Refer to **Frame Replacement - Front** in Frames and Underbody.
12. Lower the vehicle.

DESCRIPTION AND OPERATION

FRONT DRIVE AXLE DESCRIPTION AND OPERATION

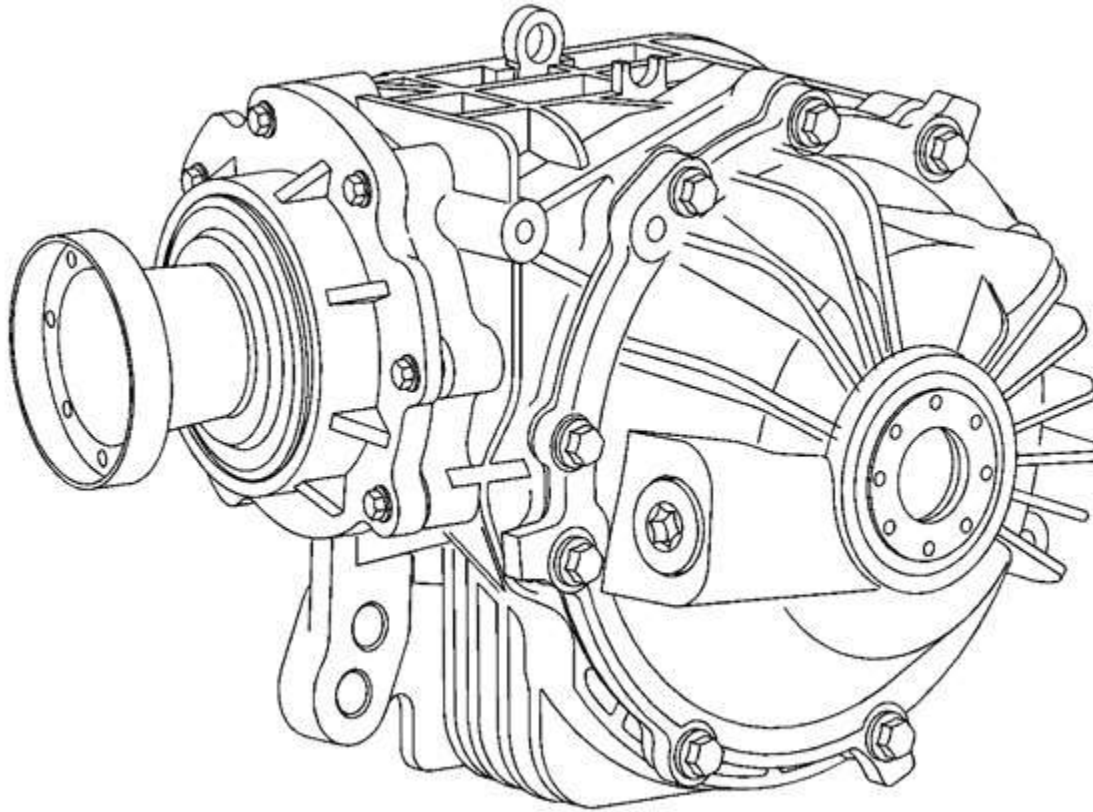


Fig. 45: Front Drive Axle
Courtesy of GENERAL MOTORS CORP.

The differential housing, side cover and pinion housing are constructed of cast aluminum. The internal components incorporate a hypoid gear set, ring and pinion, carrier assembly and pinion housing assembly. The pinion is supported in a pinion housing by tapered roller bearings. The pinion is positioned forward of the ring gear centerline. All models have a 7 5/8 inch ring gear.

The differential assembly is available in 2 gear ratios. The 3.23 ratio axle is used in V8 applications. The 3.91 ratio is used in V6 applications.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Special Tools

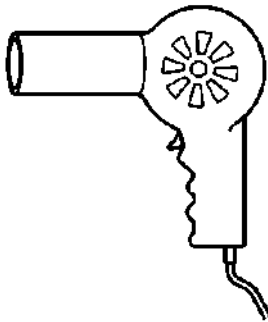
Illustration	Tool Number/Description

2004 Cadillac SRX

2004 DRIVELINE/AXLE Front Drive Axle - SRX



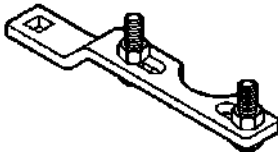
J 8092
Universal Driver Handle



J 25070
Heat Gun



J 44394
Seal Protector



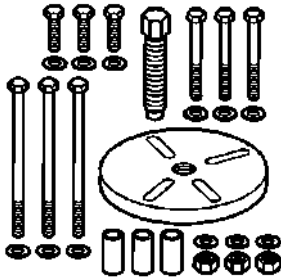
J 45012
Pinion Flange Holder



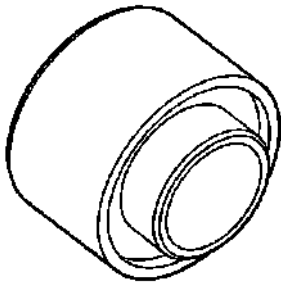
J 45017
Output Shaft Seal Installer

2004 Cadillac SRX

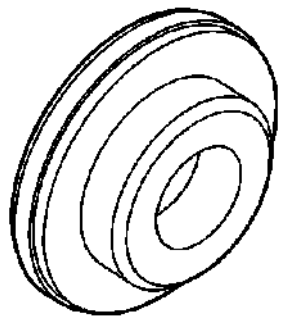
2004 DRIVELINE/AXLE Front Drive Axle - SRX



J 45019
Flange and Pinion Cage Remover



J 46262
Pinion Seal Installer



J 46265
Stub Shaft Seal Installer