

2004 Cadillac SRX

2004 DRIVELINE/AXLE Rear Drive Axle - SRX

2004 DRIVELINE/AXLE**Rear 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 Ring Gear Bolts	185 N.m	136 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 Cage Bolts	29 N.m	21 lb ft
Pinion Nut	265 N.m	195 lb ft
Propeller Shaft Coupler-to-Differential Flange Bolts	85 N.m	63 lb ft

REAR AXLE SPECIFICATIONS**Rear Axle Specifications**

Application	Specification	
	Metric	English
Differential Case Shim Sizes	3.5-4.4 mm	.14-.17 in
Pinion Housing Shim Sizes	1.2-1.9 mm	.04-.07 in
Pinion Rotating Torque w/seals	2.5-4 N.m	22-35 lb in
Ring Gear/Pinion A1 Nominal Value-All Axles	111.00 mm	4.37 in
Ring Gear/Pinion A2 Nominal Value-3.42 Ratio Axles	63.5 mm	2.50 in
Ring Gear/Pinion A2 Nominal Value-3.73 Ratio Axle	63.5 mm	2.50 in
Ring Gear/Pinion A2 Nominal Value-3.91 Ratio Axle	63.5 mm	2.50 in
Torsional Backlash		
• 3.42 Ratio with 96 mm Flange	0.22-0.35 mm	.009-.014 in

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• 3.23 Ratio with 96 mm Flange	0.21-0.34 mm	.008-.013 in
• 3.91 Ratio with 96 mm Flange	0.25-0.41 mm	.010-.016 in
• 2.73 Ratio with 105 mm Flange	0.20-0.31 mm	.007-.012 in
• 3.23 Ratio with 105 mm Flange	0.23-0.37 mm	.009-.014 in
• 3.42 Ratio with 105 mm Flange	0.24-0.38 mm	.009-.015 in
• 3.73 Ratio with 86 mm Round Flange	0.21-0.34 mm	.008-.013 in

REAR AXLE USAGE

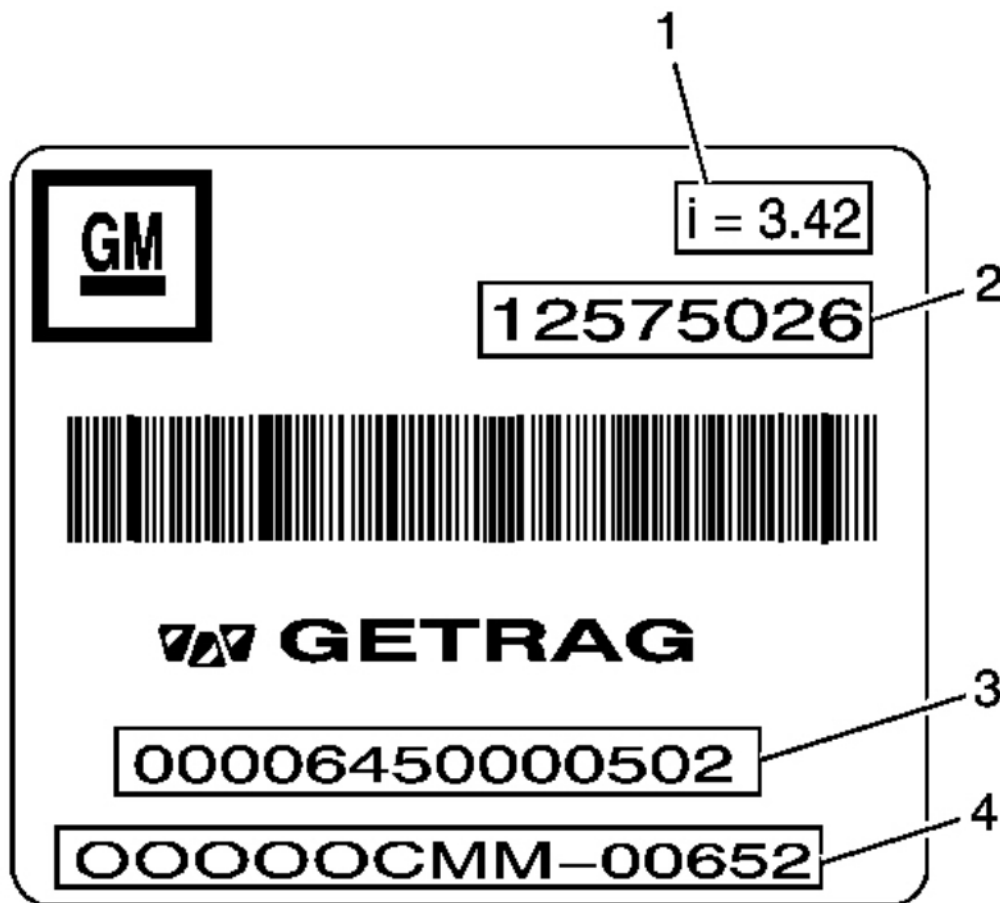


Fig. 1: Rear Axle Usage

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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

Available Axle Ratios

Axle Ratio	Drive/Engine	Flange Size
3:23	RWD/4.6L V8	105 mm
3:23	AWD/4.6L V8	96 mm
3:73	RWD/3.6L V6	105 mm
3:91	AWD/3.6L V6	96 mm

SPACER AND SHIM SPECIFICATIONS**Pinion Shim Calculation Table with an A1 Value Greater Than 111.00 mm (4.37 in)**

Calculations		Example Measurements		Actual Measurements	
Metric		English		Metric	English
B Nominal Value	5.00 mm	0.197 in		5.00 mm	0.197 in
B1 Measured Value	3.31 mm	0.130 in		-	-
B2 (B Nominal Value Minus B1 = B2)	1.69 mm	0.067 in		-	-
A1 Value (Taken from Ring Gear)	111.03 mm	4.371 in		-	-
A Nominal Value	111.00 mm	4.37 in		111.00 mm	4.37 in
B3 (A1 Value Minus A Nominal = B3)	0.03 mm	0.0012 in		-	-
B2	1.69 mm	0.0665 in		-	-
B3	0.03 mm	0.0012 in		-	-
Pinion Shim Size (B2 Plus B3 = Pinion Shim)	1.72 mm	0.0677 in		-	-

Pinion Shim Calculation Table with an A1 Value Less Than 111.00 mm (4.37 in)

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Calculations		Example Measurements		Actual Measurements	
Metric		English		Metric	English
B Nominal Value	5.00 mm	0.197 in		5.00 mm	0.197 in
B1 Measured Value	3.31 mm	0.130 in		-	-
B2 (B Nominal Value Minus B1 = B2)	1.69 mm	0.067 in		-	-
A1 Value (Taken from Ring Gear)	110.97 mm	4.369 in		-	-
A Nominal Value	111.00 mm	4.37 in		111.00 mm	4.37 in
B3 (A1 Value Minus A Nominal = B3)	-0.03 mm	-0.0011 in		-	-
B2	1.69 mm	0.067 in		-	-
B3	-0.03 mm	-0.0011 in		-	-
Pinion Shim Size (B2 Plus B3 = Pinion Shim)	1.66 mm	0.0654 in		-	-

Differential Case Left Side Shim Calculation Table with an A2 Value Greater Than 63.5 mm (2.5 in)

Calculations		Example Measurements		Actual Measurements	
Metric		English		Metric	English
C Nominal Value	5.00 mm	0.197 in		5.00 mm	0.197 in
C1 Measured Value	3.10 mm	0.122 in		-	-
C2 (C Nominal Value Minus C1 = C2)	1.90 mm	0.075 in		-	-
A2 Value (Taken from Ring Gear)	63.53 mm	2.501 in		-	-
D Nominal Value	63.50 mm	2.5 in		63.5 mm	2.5 in
C3 (A2 Value Minus D Nominal = C3)	0.03 mm	0.0012 in		-	-
C2	1.90 mm	0.0748 in		-	-
C3	0.03 mm	0.0012 in		-	-
Left Side Case Shim (C2 Plus C3 = Left Side Shim)	1.93 mm	0.0736 in		-	-

Differential Case Left Side Shim Calculation Table with an A2 Value Less Than 63.5 mm (2.5 in)

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Calculations		Example Measurements		Actual Measurements	
Metric		English		Metric	English
C Nominal Value	5.00 mm	0.197 in		5.00 mm	0.197 in
C1 Measured Value	3.10 mm	0.122 in		-	-
C2 (C Nominal Value Minus C1 = C2)	1.90 mm	0.75 in		-	-
A2 Value (Taken from Ring Gear)	63.47 mm	2.499 in		-	-
D Nominal Value	63.5 mm	2.5 in		63.5 mm	2.50 in
C3 (A2 Value Minus D Nominal = C3)	-0.03 mm	-0.0012 in		-	-
C2	1.90 mm	0.0748 in		-	-
C3	-0.03 mm	-.0012 in		-	-
Left Side Case Shim (C2 Plus C3 = Left Side Shim)	1.87 mm	0.0736 in		-	-

LUBRICATION SPECIFICATIONS**Lubrication Capacities & Specifications**

Application	Quantity	
	Metric	English
Differential Lubricant GL 75W90 G/M P/N United States 12378261, GM P/N Canada 10953455	1.3L	1.37 qt

SEALERS, ADHESIVES, AND LUBRICANTS**Sealers, Adhesives, and Lubricants (Pinion Nut)**

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

COMPONENT LOCATOR**REAR AXLE DISASSEMBLED VIEWS**

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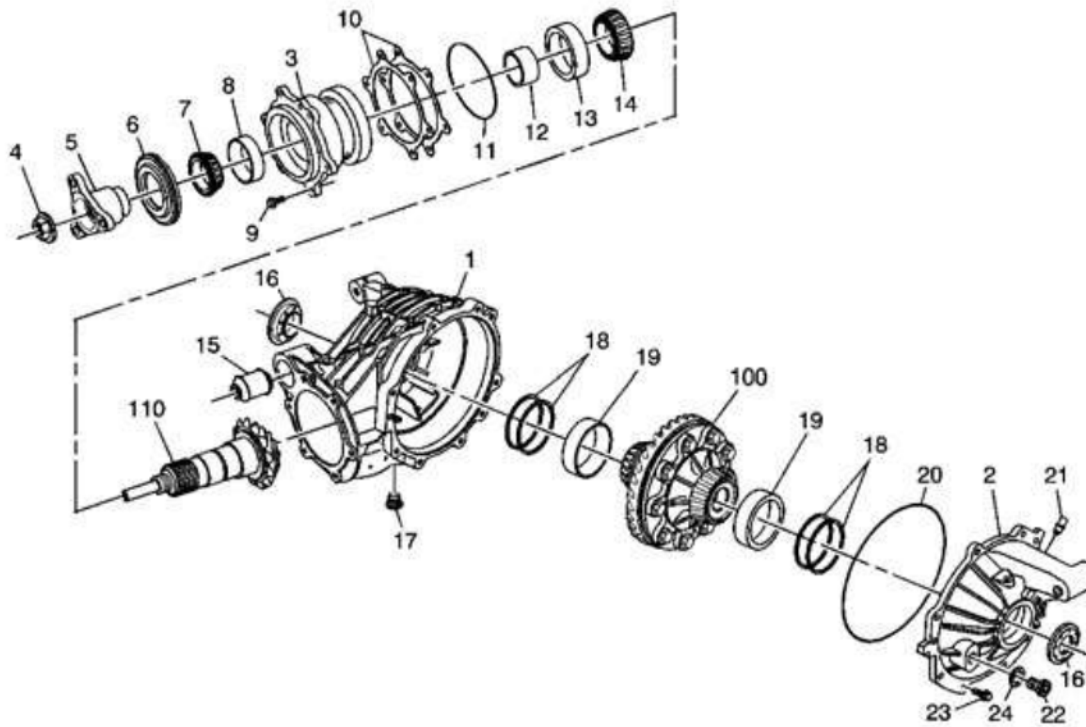


Fig. 2: Rear Axle Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 2

Callout	Component Name
1	Differential Carrier
2	Carrier Cover
3	Pinion Bearing Cage
4	Nut
5	Flange
6	Pinion Oil Seal
7	Bearing
8	Cup
9	Bolt
10	Shim
11	O-ring Seal
12	Pinion Bearing Spacer
13	Cup
14	Bearing

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15	Support Bushing
16	Axle Oil Seal
16	Axle Oil Seal
17	Drain Plug
18	Shim
18	Shim
19	Cup
19	Cup
20	O-ring Seal
21	Vent
22	Fill Plug
23	Bolt
24	Fill Plug Washer
100	Differential Assembly
110	Pinion Gear

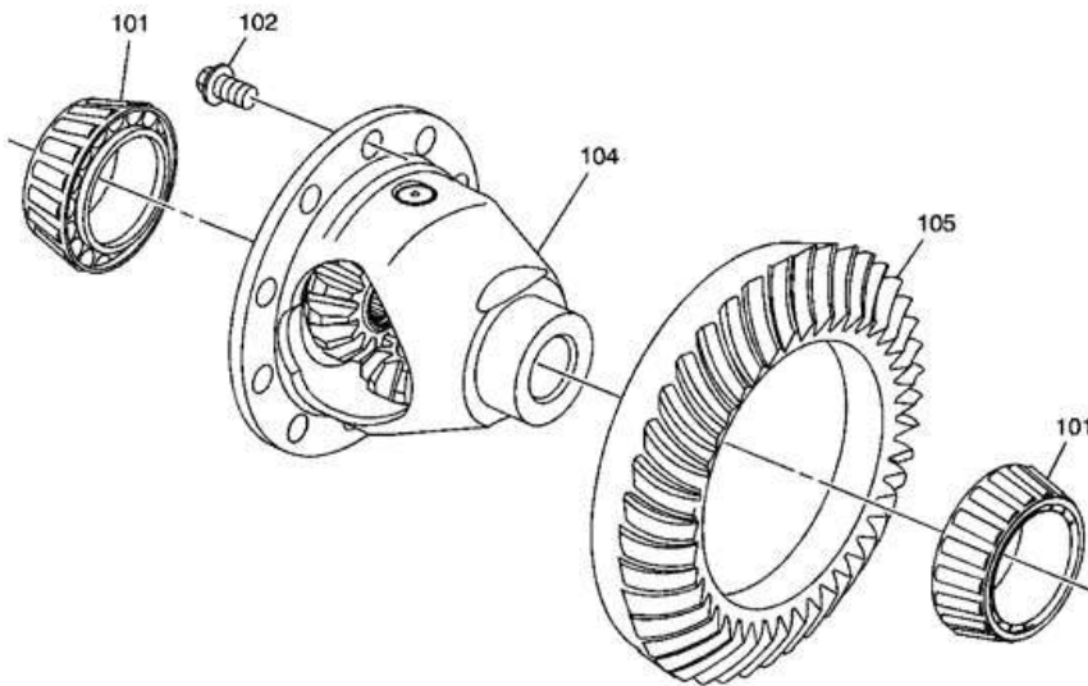


Fig. 3: Differential Assembly Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 3

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Callout	Component Name
101	Bearing
101	Bearing
102	Bolt
104	Differential Case
105	Ring Gear

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - REAR DRIVE AXLE

Begin the system diagnosis by reviewing the **Rear Axle Disassembled Views** and **Rear 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 - Rear Drive Axle** in order to identify the correct procedure for diagnosing the system and where the procedure is located.

SYMPTOMS - REAR DRIVE AXLE

Strategy Based Diagnostics

Review the system operations in order to familiarize yourself with the system functions. Refer to **Rear Axle Disassembled Views** and **Rear 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.

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- 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
- Clutch Noisy in Clutch
- **Noisy in Drive**
- **Noisy When Coasting**
- **Intermittent Noise**
- **Constant Noise**
- **Noisy on Turns**
- **Rear Axle Lubricant Leak Diagnosis**

NOISY IN DRIVE

Noisy in Drive

Cause	Correction
Inspect for the proper gear oil levels prior to performing system diagnosis. Refer to <u>Lubricant Level Inspection - Rear Drive Axle</u> .	
Worn clutch disc and/or pressure plate assembly	Repair or replace as required. Refer to Clutch Noisy in Clutch.
Transmission noise	Repair or replace as required. Refer to <u>Diagnostic Starting Point - Automatic Transmission</u> in Automatic Transmission - 5L40-E.
Worn axle shaft constant velocity joints	Replace the constant velocity joints as

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	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: Inspect for the proper gear oil levels prior to performing system diagnosis. Refer to <u>Lubricant Level Inspection - Rear Drive Axle</u> .	
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.

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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. Repair or replace the unit as required.

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 - Rear 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 and friction modifier additive. Refer to <u>Sealers, Adhesives, and Lubricants</u> .

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 - Rear 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>Rear Axle Lubricant Leak Diagnosis</u> . Fill to the proper level with the correct gear oil and friction modifier additive. Refer to <u>Sealers, Adhesives, and Lubricants</u> and <u>Lubricant Level Inspection - Rear Drive</u>

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	<u>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, 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 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. Repair or replace the unit as required.

NOISY ON TURNS

Noisy on Turns

Cause	Correction
IMPORTANT: • Inspect for the proper gear oil levels prior to performing system diagnosis. Refer to <u>Lubricant Level Inspection - Rear Drive Axle</u>. • Operate the vehicle turning in tight circles in both left and right directions. A chatter type concern may indicate an incorrect type gear oil, lack of the friction modifier additive, or worn friction discs and/or plates.	
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 and friction modifier additive. Refer to <u>Sealers, Adhesives, and Lubricants</u> and <u>Lubricant Level Inspection - Rear Drive</u>

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Axle.

REAR AXLE LUBRICANT LEAK DIAGNOSIS

Rear Axle Lubricant Leak Diagnosis

Cause	Correction
IMPORTANT: Upon completion of all repairs, refill the axle with the proper amounts of axle lubricant and friction modifier additive. Refer to <u>Lubricant Level Inspection - Rear Drive Axle</u> and <u>Lubrication Specifications</u> .	
Restricted or damaged vent valve assembly	Repair or replace the vent valve as required.
Left 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 housing and/or the covers as required.
Loose Drain or Fill Plug	Tighten to specification
Pinion Cage Assembly O-Ring	• Pull Cage Assembly • Replace O-Ring

REPAIR INSTRUCTIONS

LUBRICANT CHANGE

Draining Procedure

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.

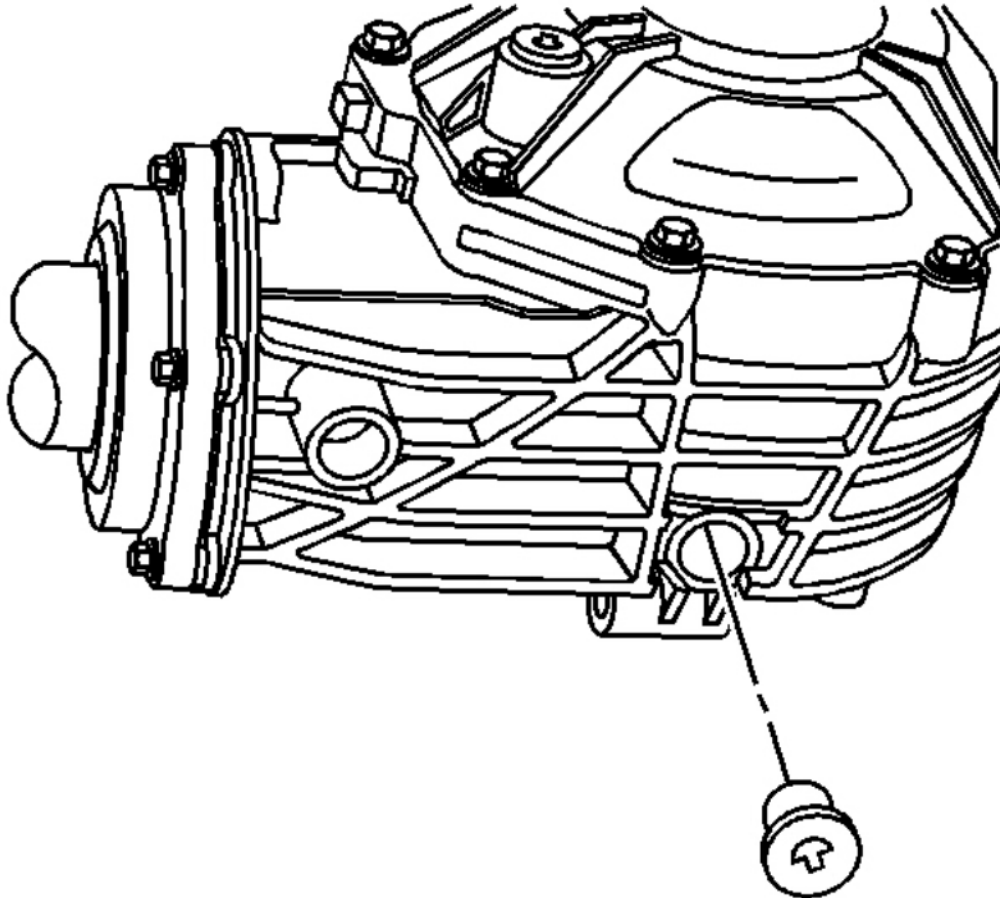


Fig. 4: View Of Differential Drain Plug
Courtesy of GENERAL MOTORS CORP.

3. Position a drain pan under drain plug.
4. Remove the drain plug from the differential and drain the fluid.

Filling Procedure

NOTE: Refer to Fastener Notice in Cautions and Notices.

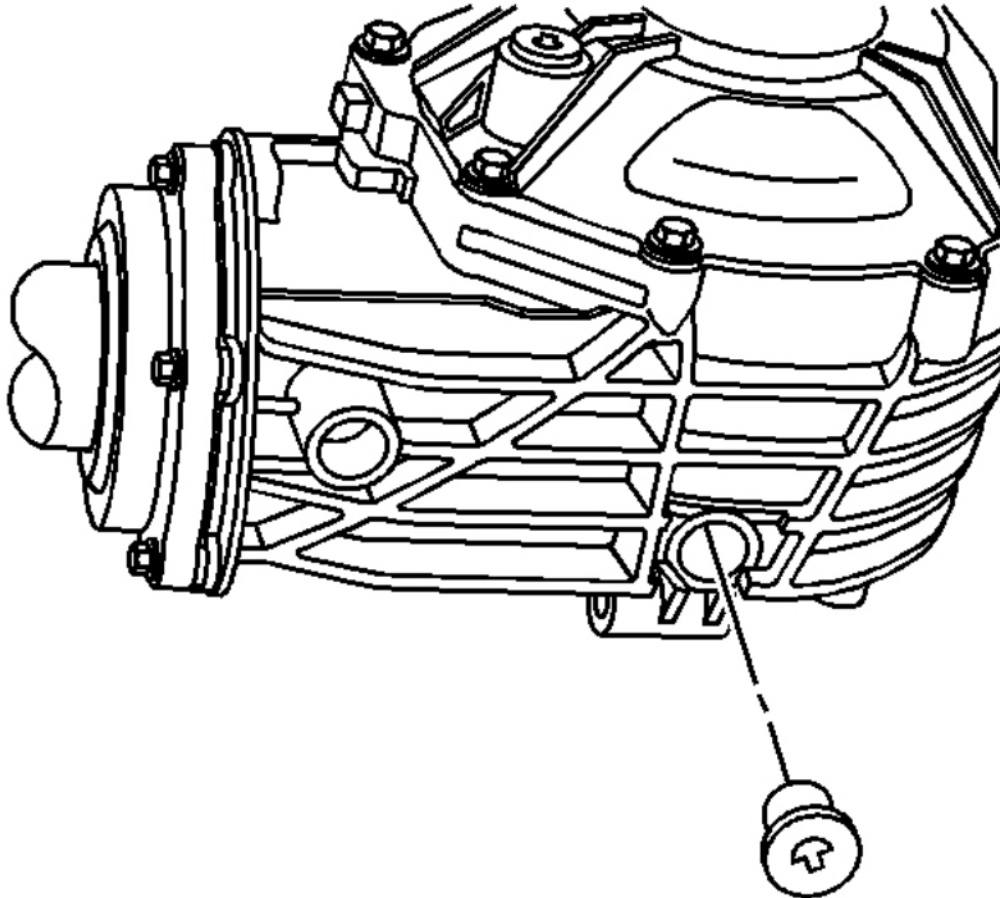


Fig. 5: View Of Differential Drain Plug
Courtesy of GENERAL MOTORS CORP.

1. Install the drain plug to the differential.

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

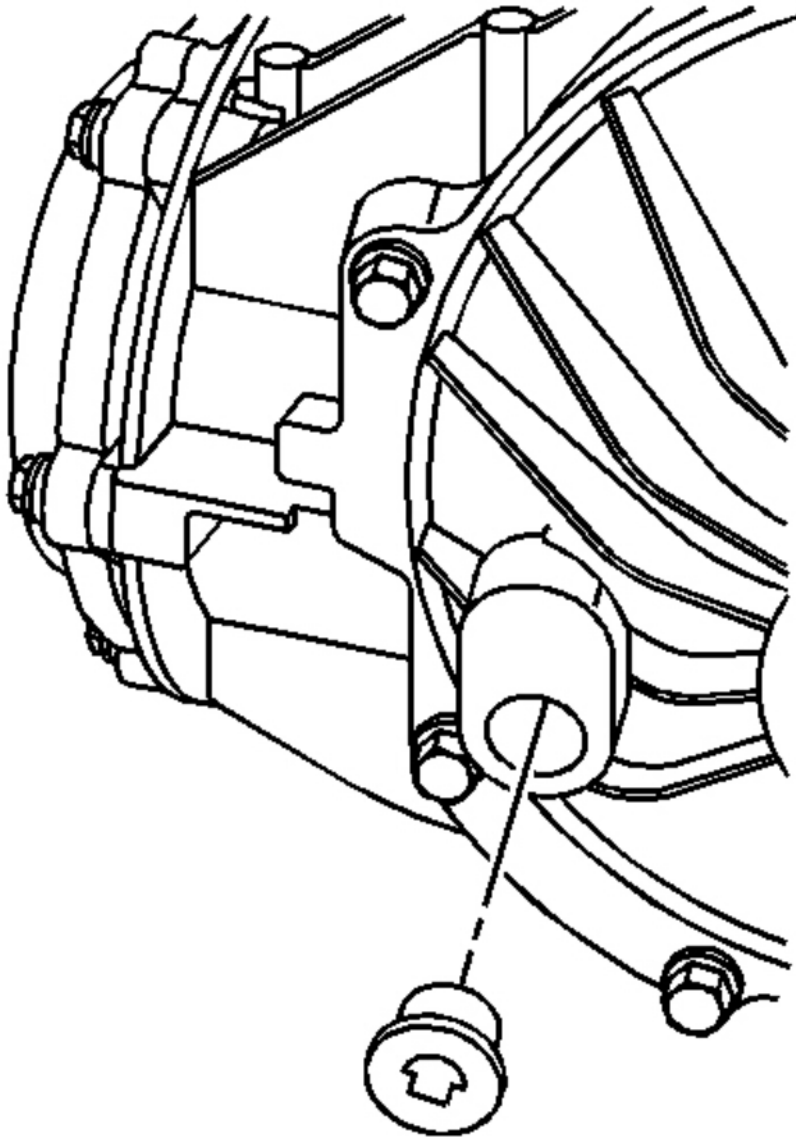


Fig. 6: View Of Differential Fill Plug
Courtesy of GENERAL MOTORS CORP.

2. Clean any dirt from around the differential fill plug.
3. Remove the fill plug from the differential.

IMPORTANT: If equipped with a limited slip differential, limited slip differential lubricant additive, GM P/N 1052358 (Canadian P/N 992394) or equivalent must be added first. Refer to Capacities - Approximate Fluid in Maintenance and Lubrication.

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.
6. Install the fill plug to the differential.

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

7. Lower the vehicle.

LUBRICANT LEVEL INSPECTION - REAR DRIVE AXLE

Inspection Procedure

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.

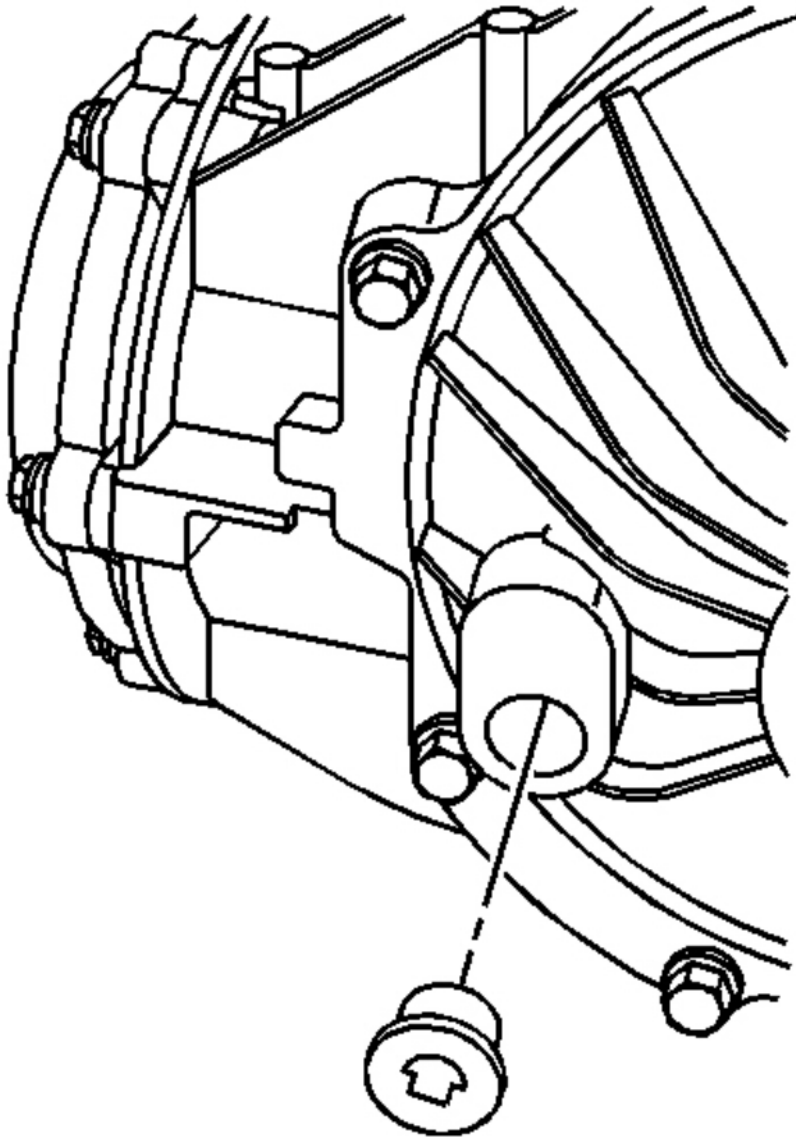


Fig. 7: View Of Differential Fill Plug
Courtesy of GENERAL MOTORS CORP.

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.

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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.

OUTPUT SHAFT SEAL REPLACEMENT

Tools Required

J 45017 Output Shaft Seal Installer

Removal Procedure

1. Raise and suitably support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the appropriate rear tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
3. Remove the appropriate wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Rear** in Wheel Drive Shafts.
4. Using a flat bladed tool remove the 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 differential output shaft seal (2) to the **J 45017**.

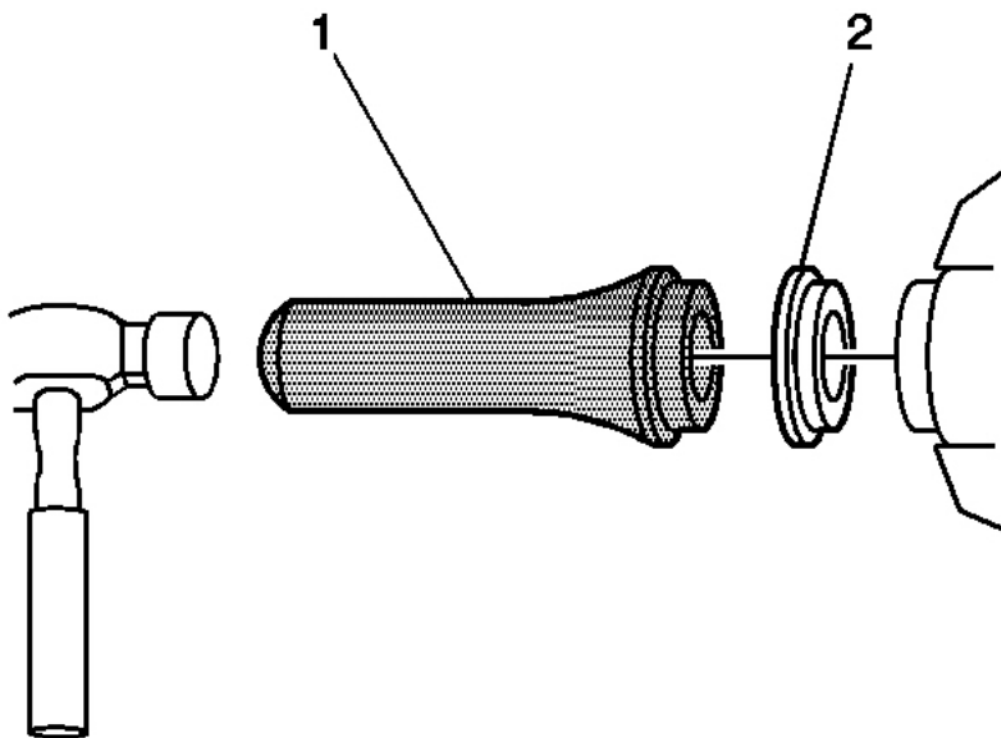


Fig. 8: Installing Differential Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

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

DRIVE PINION FLANGE/YOKE AND/OR OIL SEAL REPLACEMENT

Tools Required

- **J 45005** Seal Installer. See Special Tools and Equipment.
- **J 45012** Holding Fixture
- **J 45019** Flange and Pinion Cage Remover
- **J 34826** Hub Nut Socket (36 mm). See Special Tools and Equipment.

Removal Procedure

1. Raise and support vehicle. Refer to Lifting and Jacking the Vehicle in General Information.

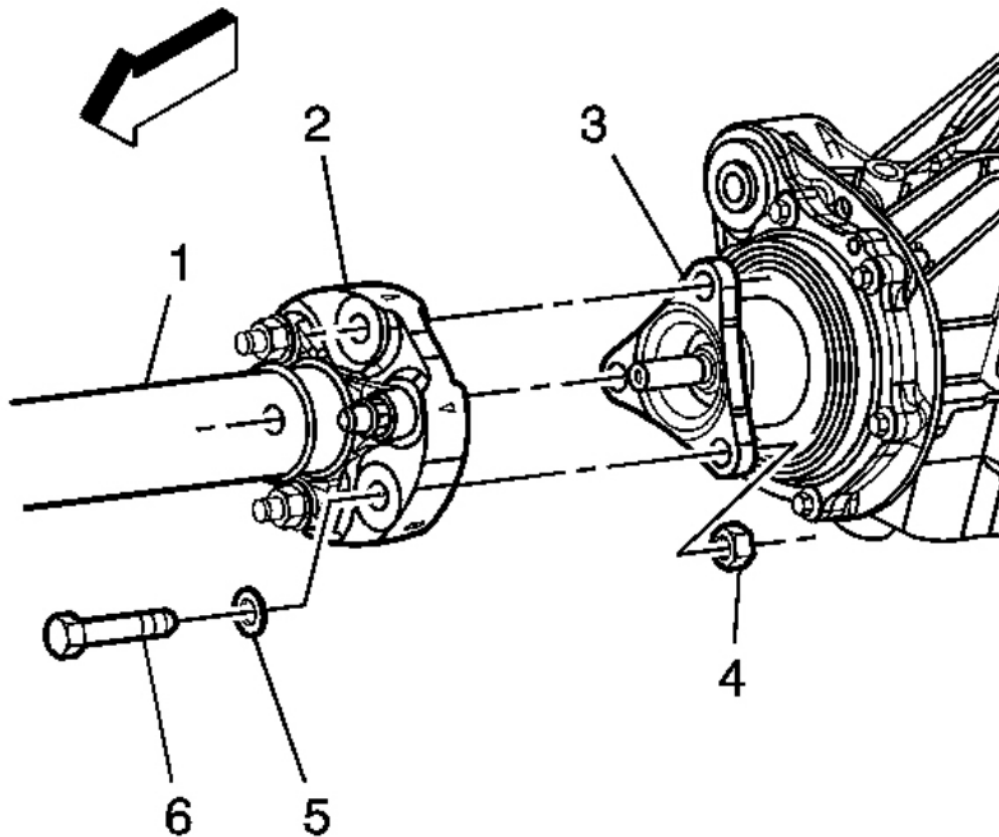


Fig. 9: View Of Propeller Shaft Coupler-To-Differential Flange Bolts, Nuts & Washers

Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Remove only the propeller shaft coupler-to-differential flange bolts. Do NOT remove the coupler from the propeller shaft.

2. Remove the propeller shaft coupler-to-differential flange bolts (6), nuts (4), and washers (5).
3. Push the rear propeller shaft (1) toward the front of the vehicle in order to release the propeller shaft coupler (2) from the differential pinion flange (3).
4. Carefully position the propeller shaft (1) out of the way and support the propeller shaft using a suitable jack.

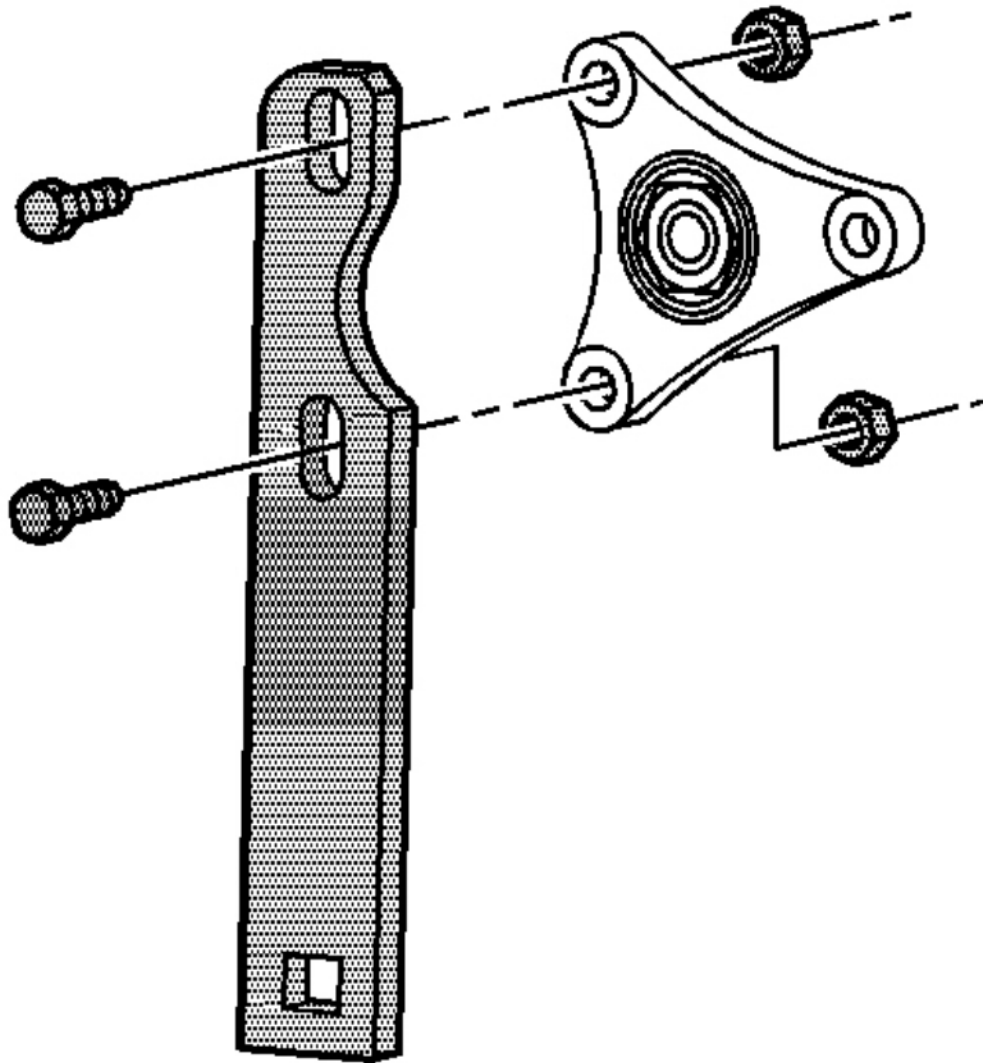


Fig. 10: View Of Flange Tool
Courtesy of GENERAL MOTORS CORP.

5. Install the **J 45012** to the flange.
6. While holding the **J 45012** , remove the drive pinion nut, using **J 34826** . See **Special Tools and Equipment**.
7. Remove the **J 45012** .

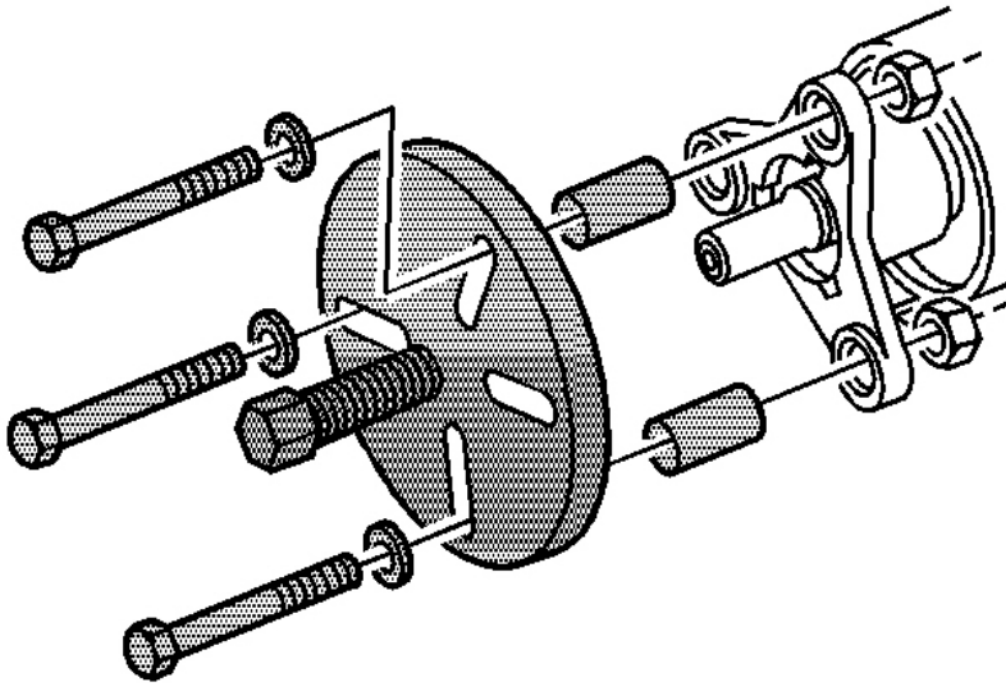


Fig. 11: View Of J 45019
Courtesy of GENERAL MOTORS CORP.

8. Install the **J 45019** to the flange.
9. Using the **J 45019** , remove the flange.
10. Using a flat-bladed tool, 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 45005** . See **Special Tools and Equipment**.

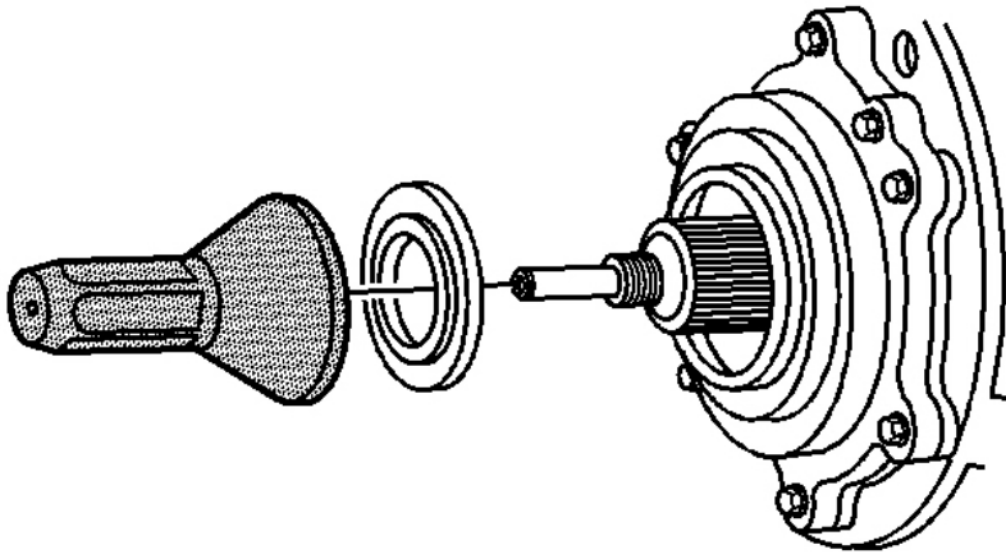


Fig. 12: Installing Pinion Seal To Differential
Courtesy of GENERAL MOTORS CORP.

3. Using the **J 45005** , install the pinion seal to the differential. See **Special Tools and Equipment**.
4. Remove the **J 45005** . See **Special Tools and Equipment**.
5. Remove the **J 45019** .

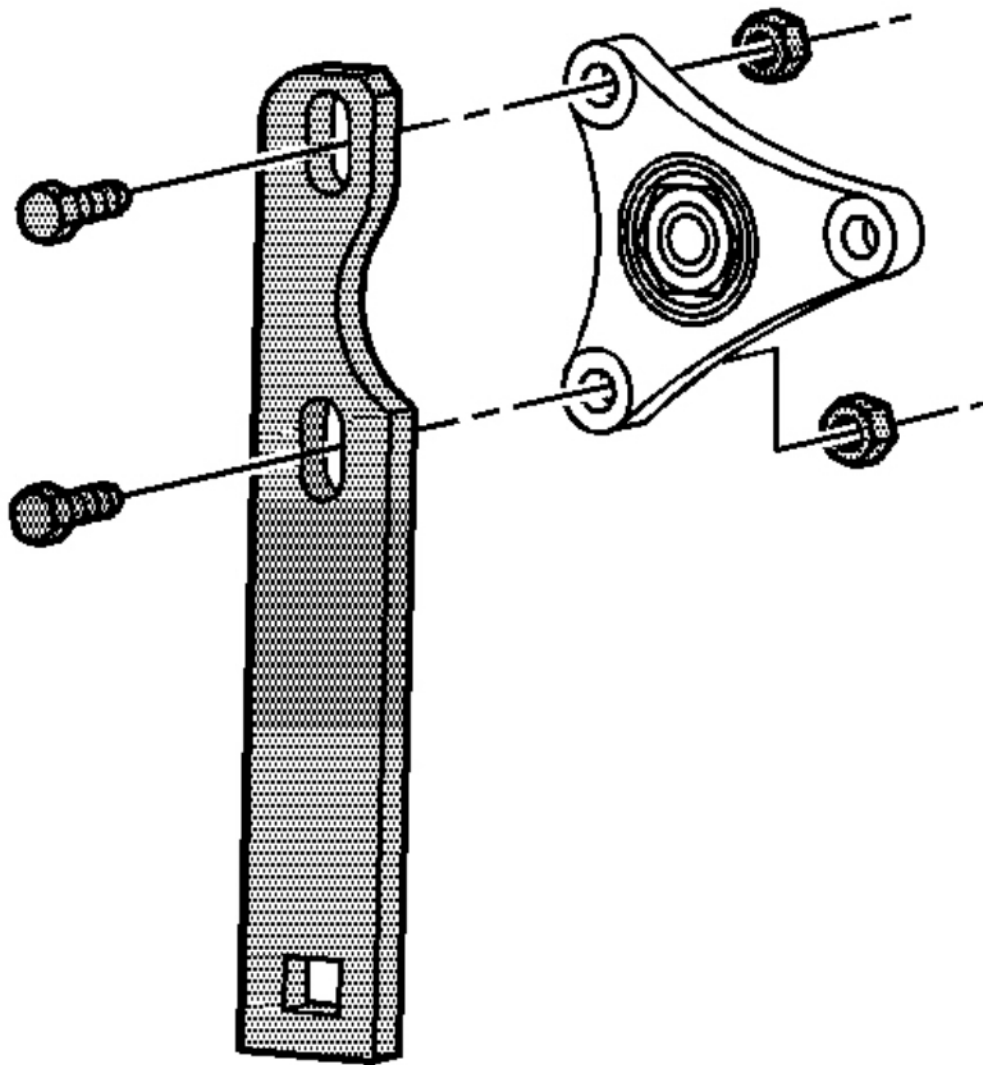


Fig. 13: View Of Flange Tool

Courtesy of GENERAL MOTORS CORP.

6. Install the **J 45012**.
7. 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.

8. 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.
9. 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.
10. Allow the threadlocker to cure approximately 10 minutes before installation.

NOTE: Refer to Fastener Notice in Cautions and Notices.

11. Install the drive pinion flange nut to the pinion shaft. While holding the **J 45012** , use **J 34826** to tighten the drive pinion nut. See Special Tools and Equipment.

Tighten: Tighten the pinion flange nut to 285 N.m (210 lb ft).

12. Remove the **J 45012** .

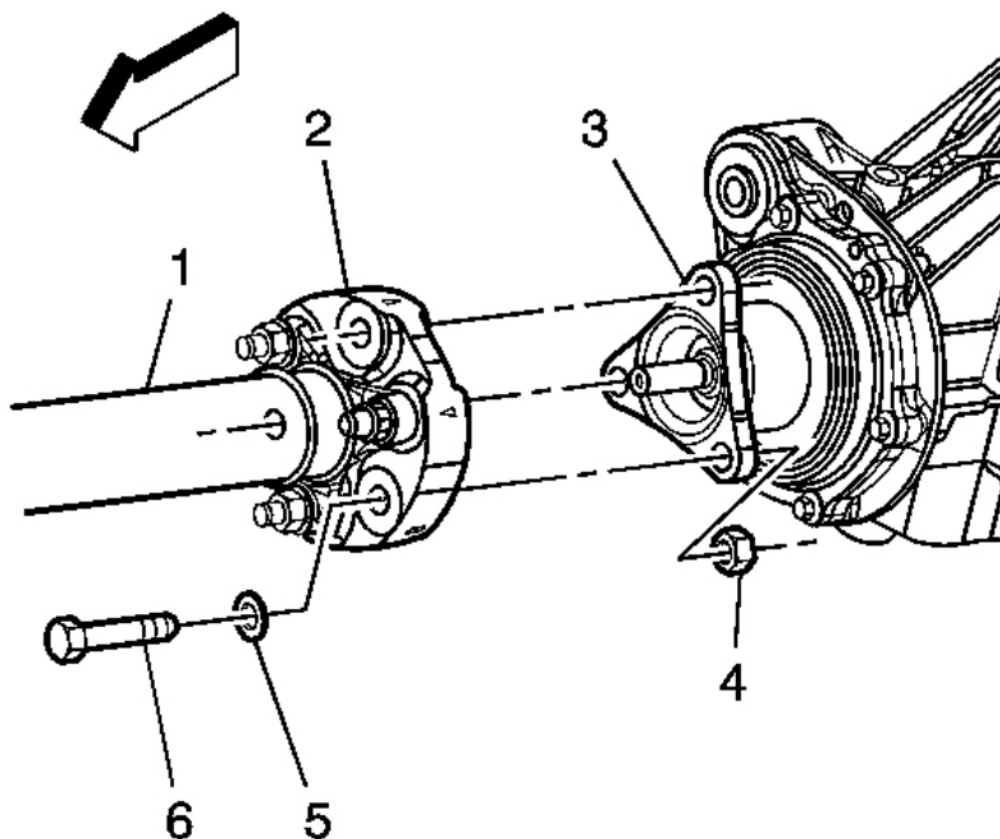


Fig. 14: View Of Propeller Shaft Coupler-To-Differential Flange Bolts, Nuts & Washers

Courtesy of GENERAL MOTORS CORP.

13. Install the propeller shaft coupler (2) to the differential flange (3).
14. Remove the jack.
15. Inspect the propeller shaft to flange nuts (4), bolts (6), and washers (5). Replace if damaged or worn.

IMPORTANT: If reusing the propeller shaft to flange nuts and bolts, to ensure proper adhesion and fastener retention, the threads must be free of debris prior to the application of threadlocker.

2004 Cadillac SRX

2004 DRIVELINE/AXLE Rear Drive Axle - SRX

16. Thoroughly clean the threads using denatured alcohol or equivalent and allow to dry. Apply threadlocker GM P/N 12345493 (Canadian P/N 10953488), or equivalent to the propeller shaft to the flange bolt. Ensure that there are no gaps in the threadlocker along the length of the filled area of the bolt. Allow the threadlocker to cure approximately 10 minutes before installation.
17. Install the propeller shaft coupler-to-differential flange washers (5) to the propeller shaft coupler-to-differential flange bolts (6).
18. Install the propeller shaft coupler-to-differential flange bolts (6) and washers (5) to the differential flange (3) and propeller shaft coupler (2).
19. Install the propeller shaft coupler-to-differential flange nuts (4).

Tighten: Tighten the propeller shaft coupler-to-differential flange bolts to 85 N.m (63 lb ft).

20. Inspect the fluid level. Refer to **Lubricant Level Inspection - Rear Drive Axle**.
21. Lower the vehicle.

DIFFERENTIAL REPLACEMENT

Tools Required

J 44394 Seal Protector

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove propeller shaft. Refer to **Propeller Shaft Replacement - Rear (AWD)** or **Propeller Shaft Replacement - Rear (RWD)** in Propeller Shaft.
3. Remove the right rear tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
4. Remove the right wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Rear** in Wheel Drive Shafts.

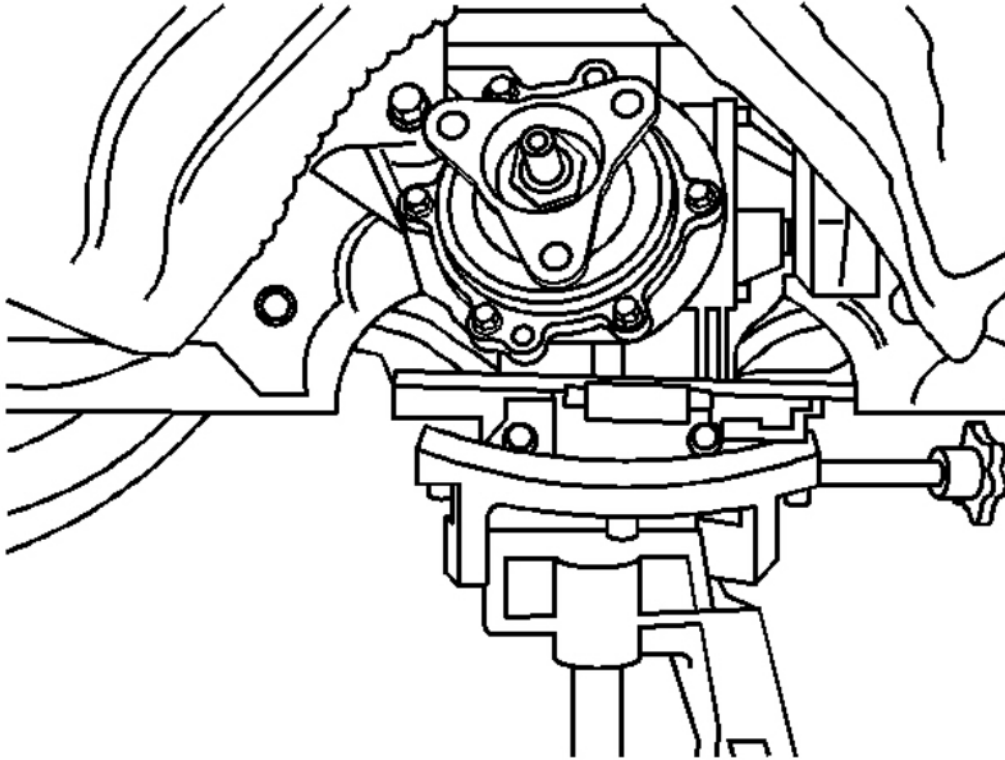


Fig. 15: View Of Transmission Jack Supporting Differential
Courtesy of GENERAL MOTORS CORP.

5. Position a transmission jack beneath the differential.
6. Firmly secure the differential to the transmission jack.

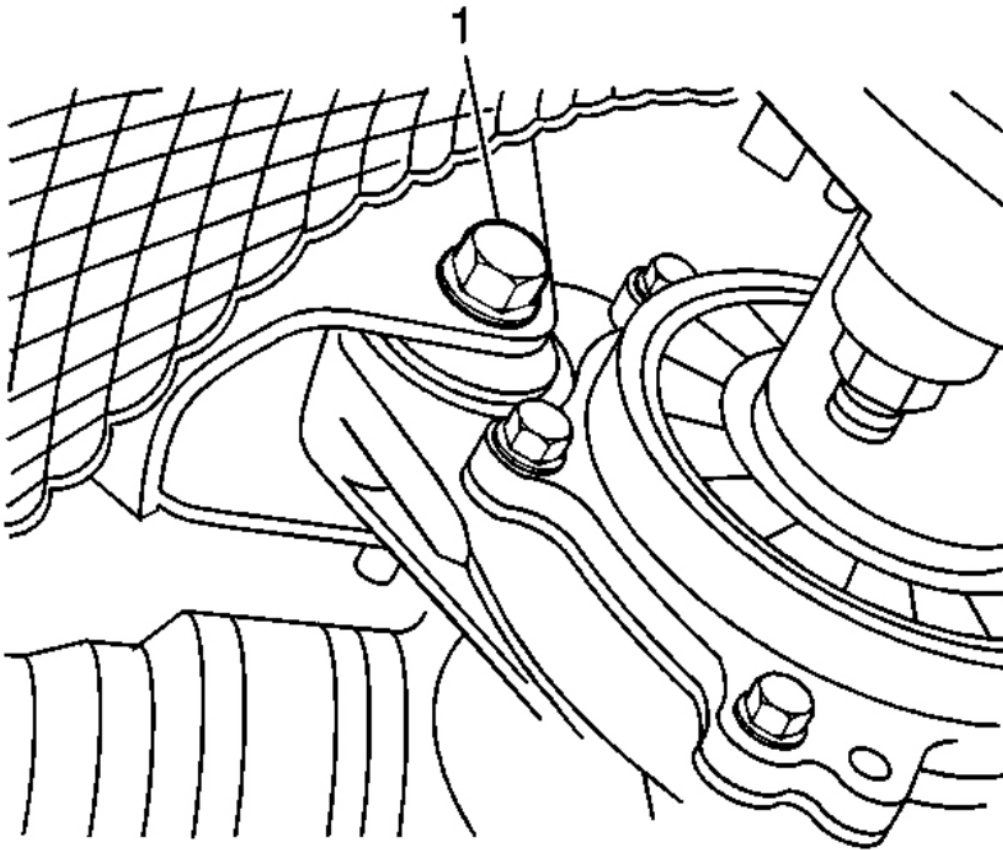


Fig. 16: View Of Front Differential-To-Support Mounting Bolt
Courtesy of GENERAL MOTORS CORP.

7. Remove the front differential to support mounting bolt (1) and nut.

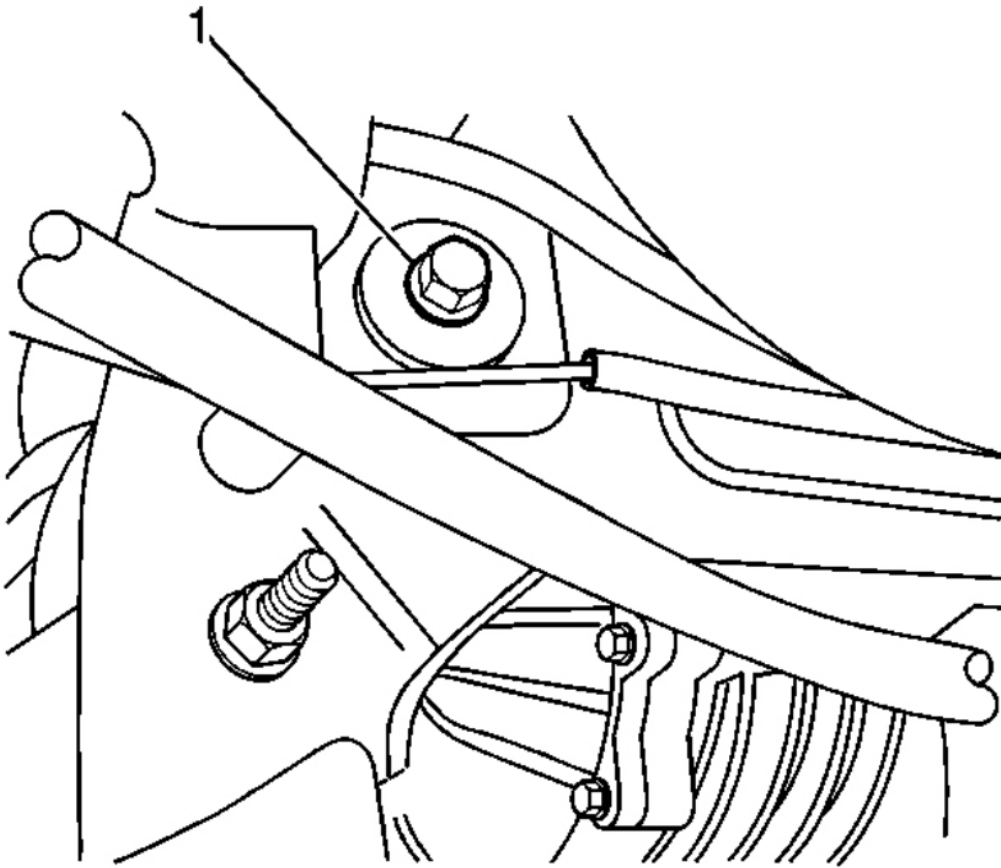


Fig. 17: View Of Left Rear Differential-To-Support Mounting Bolt
Courtesy of GENERAL MOTORS CORP.

8. Remove the left rear differential to support mounting bolt (1).

Note that the rear differential support mounting bolts will not be able to be removed completely due to interference with the underbody.

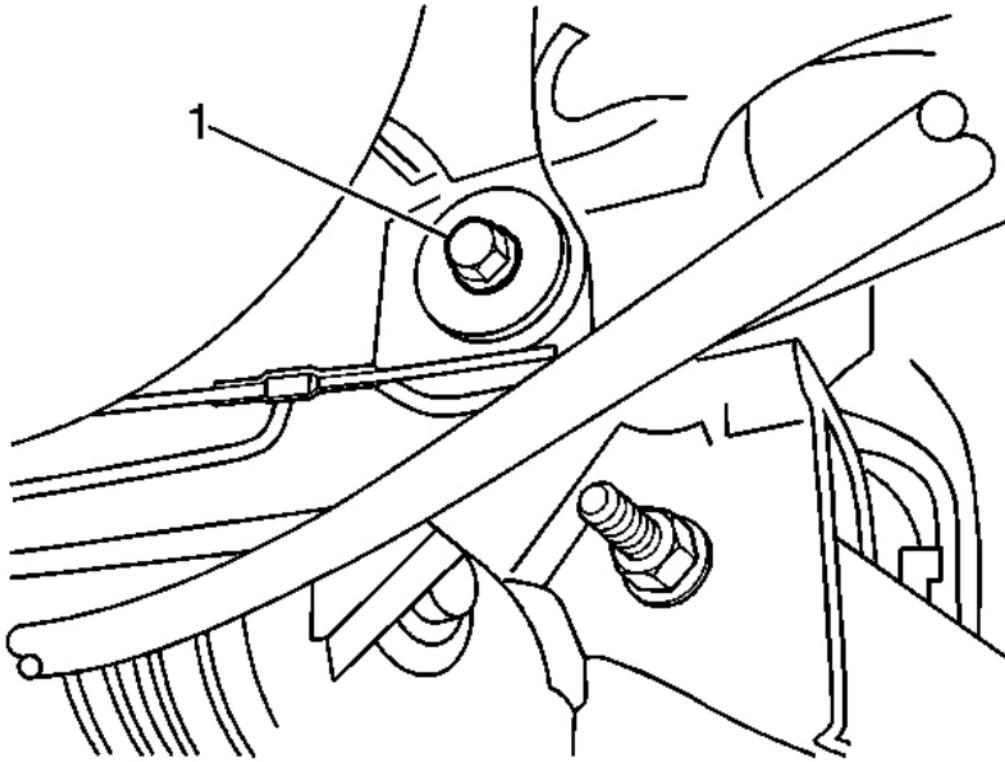


Fig. 18: View Of Right Rear Differential-To-Support Mounting Bolt
Courtesy of GENERAL MOTORS CORP.

9. Remove the right rear differential to support mounting bolt (1).
10. Lower the jack slightly until the mounting ear at the front of the differential clears the support attachment point.

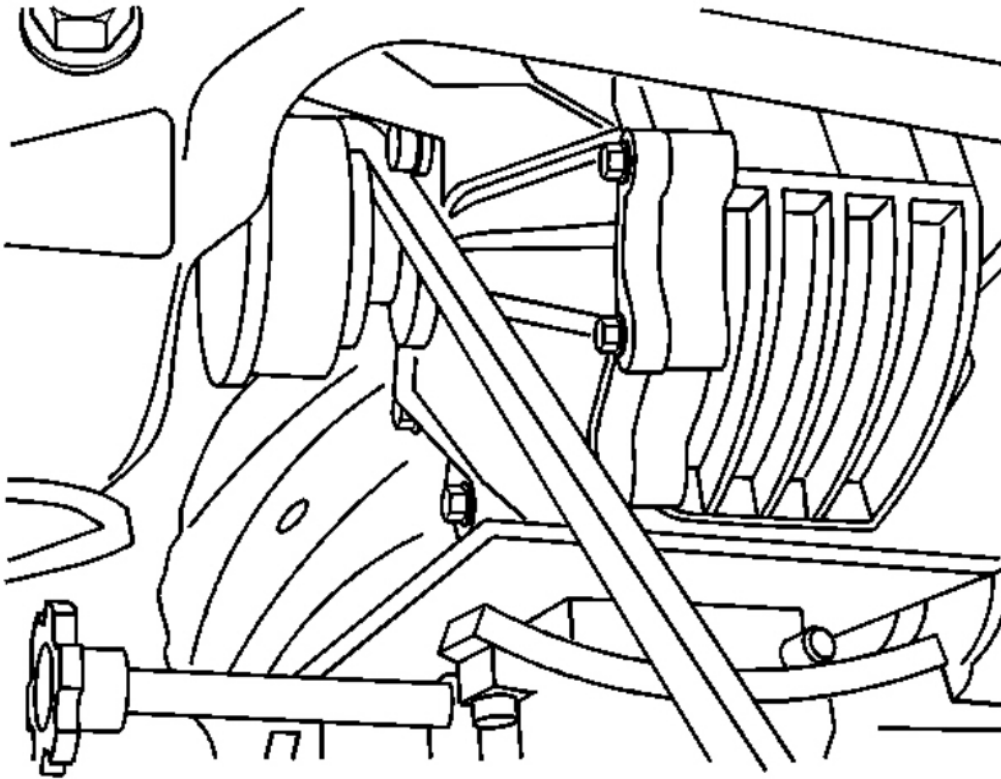


Fig. 19: Releasing Wheel Drive Shaft From Differential
Courtesy of GENERAL MOTORS CORP.

11. Using a suitable tool, carefully release the wheel drive shaft from the differential enough to install the **J 44394** .

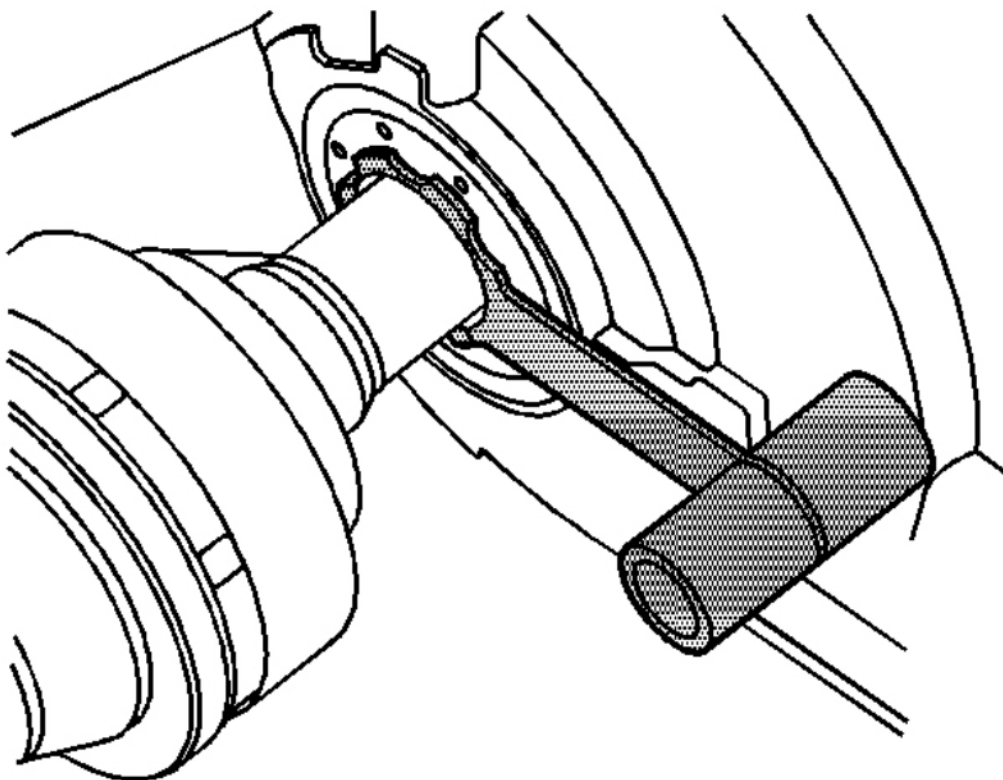


Fig. 20: View Of J 44394 Installed Into The Differential Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

NOTE: J-44394 must be installed into the differential output shaft seal prior to removing and installing the wheel drive shaft. Failure to install J-44394 as indicated may cause the splines of the wheel drive shaft to cut the differential output seal.

12. Carefully install **J 44394** the over the wheel drive shaft.
13. Carefully slide the **J 44394** into the differential output shaft seal.
14. Continue lowering the jack, while simultaneously disengaging the left wheel drive shaft.
15. Remove the differential from the vehicle.

1. If reusing the wheel drive shaft remove and discard the wheel drive shaft retaining ring. The wheel drive shaft retaining ring is on the splined shaft of the inner tripod housing.
2. Install the new wheel drive shaft retaining ring. The wheel drive shaft retaining ring is on the splined shaft of the inner tripod housing.

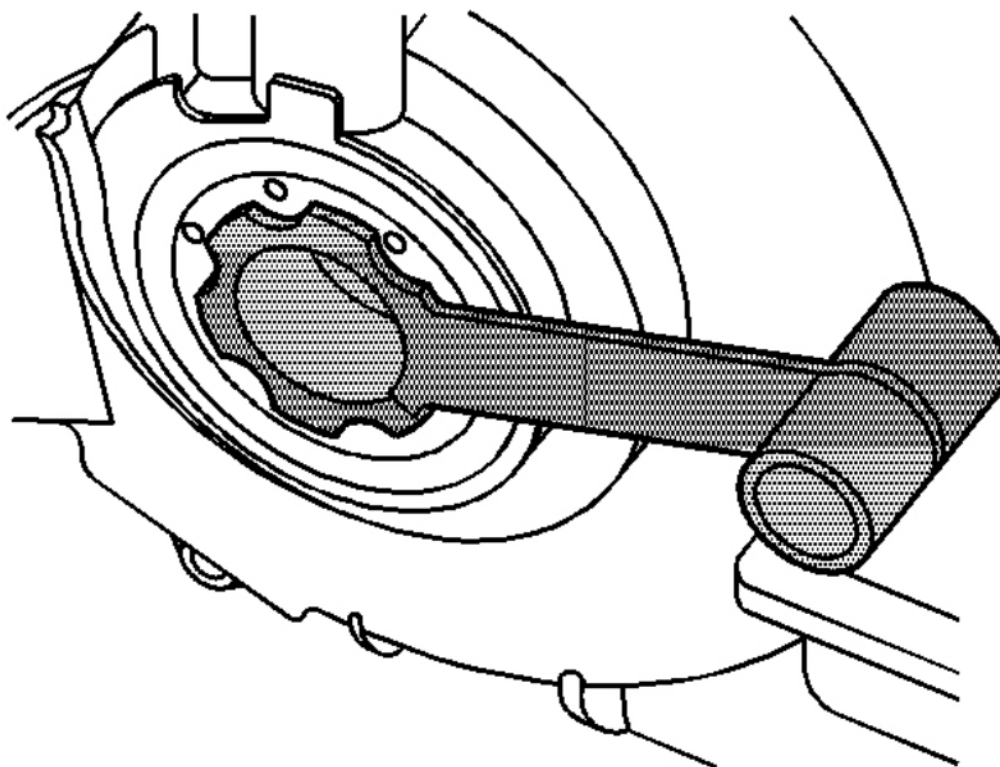


Fig. 21: View Of J 44394 Installed Into The Differential Output Shaft Seal
Courtesy of GENERAL MOTORS CORP.

NOTE: J-44394 must be installed into the differential output shaft seal prior to removing and installing the wheel drive shaft. Failure to install J-44394 as indicated may cause the splines of the wheel drive shaft to cut the differential output seal.

3. If previously removed carefully install J 44394 into the left differential output shaft seal.

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.

4. With the differential firmly attached to the jack, raise the differential while carefully installing the left wheel drive shaft into the differential until the splines are past the **J 44394**.
5. Carefully remove the **J 44394** from the differential.

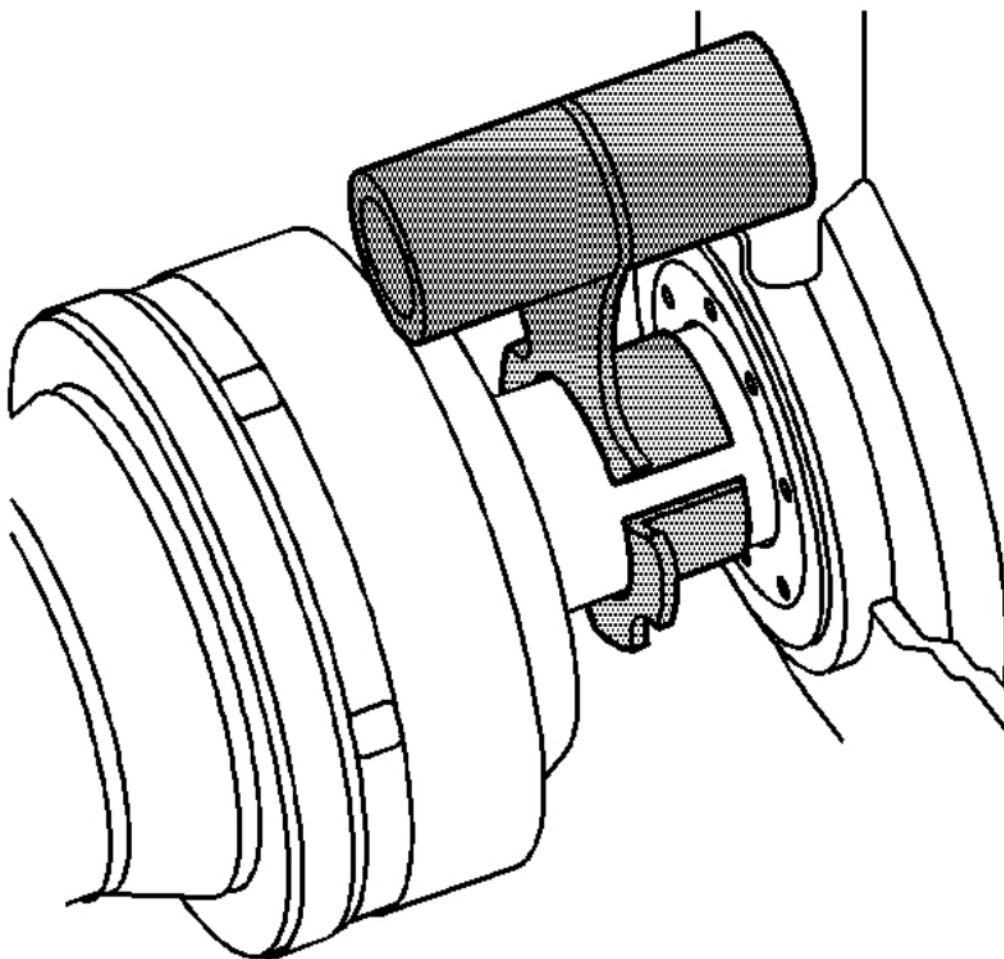


Fig. 22: Removing J 44394 From The Differential

Courtesy of GENERAL MOTORS CORP.

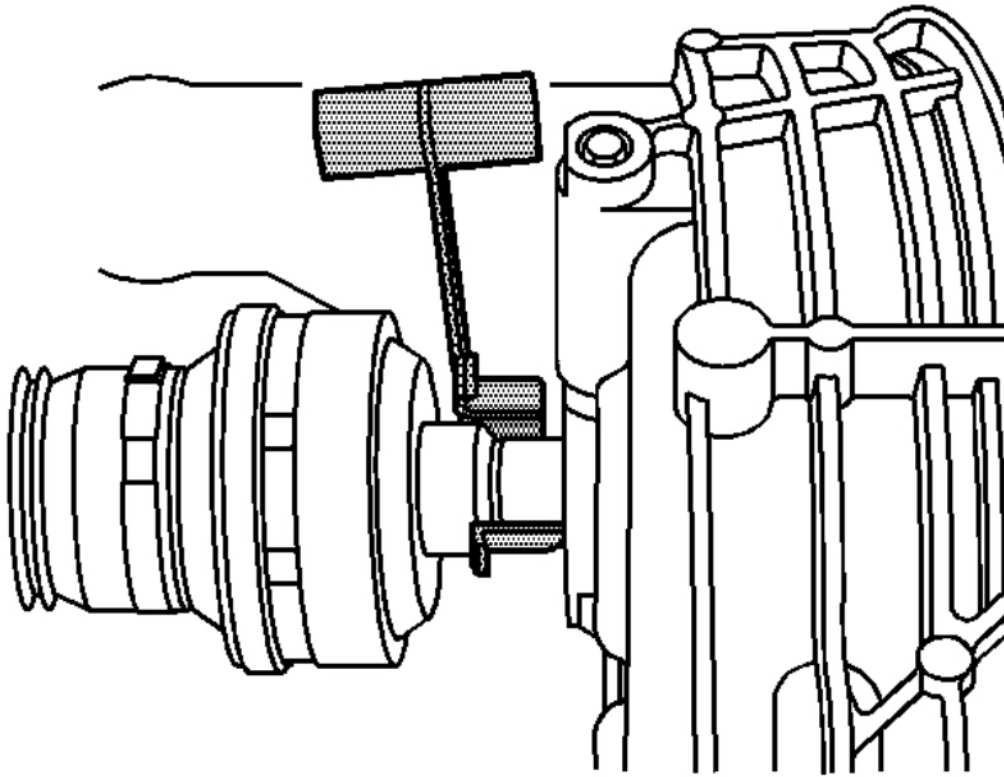


Fig. 23: Removing J 44394 From Left Wheel Drive Shaft
Courtesy of GENERAL MOTORS CORP.

6. Carefully remove **J 44394** from the left wheel drive shaft.
7. Carefully install the wheel drive shaft into the differential until the retaining ring is engaged.
8. Ensure the wheel drive shaft retaining ring is fully engaged to the differential by grasping the inner housing and pulling outward. The wheel drive shaft will stay positively engaged if properly installed to the differential.

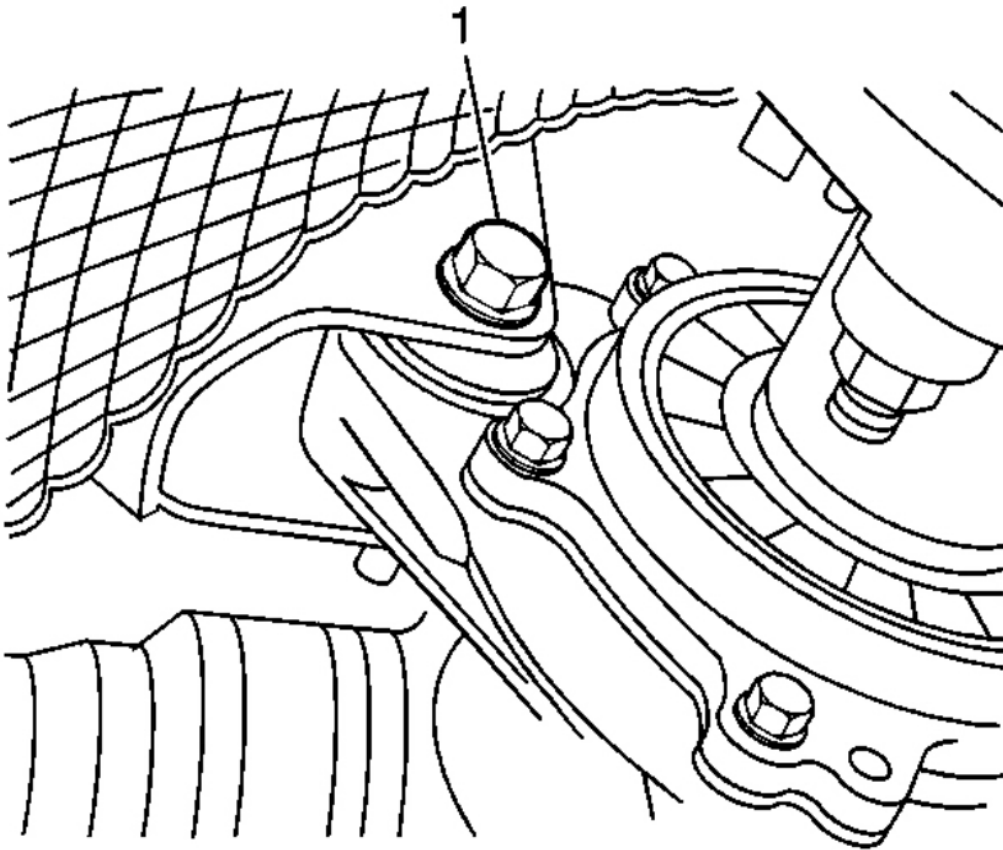


Fig. 24: View Of Front Differential-To-Support Mounting Bolt
Courtesy of GENERAL MOTORS CORP.

9. Install the front differential to support mounting bolt (1) in order to locate the differential to the rear support.
10. Hand install the nut to the bolt.

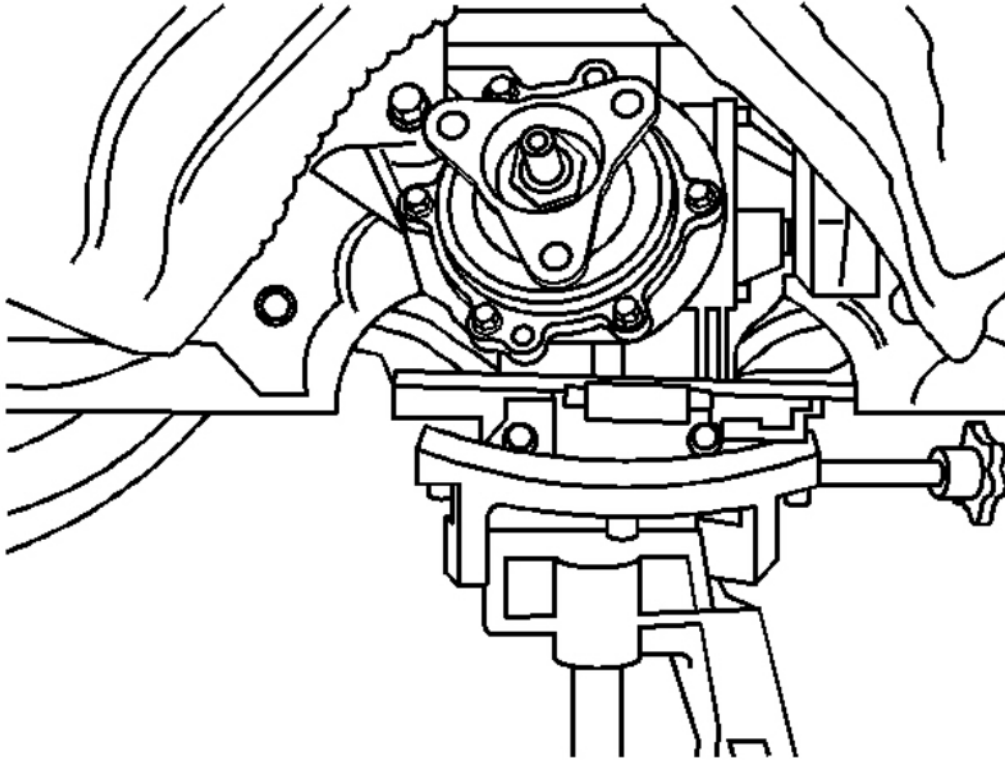


Fig. 25: View Of Transmission Jack
Courtesy of GENERAL MOTORS CORP.

11. With the differential firmly attached to the jack, raise the differential to the rear support.
12. Position the differential to the support.

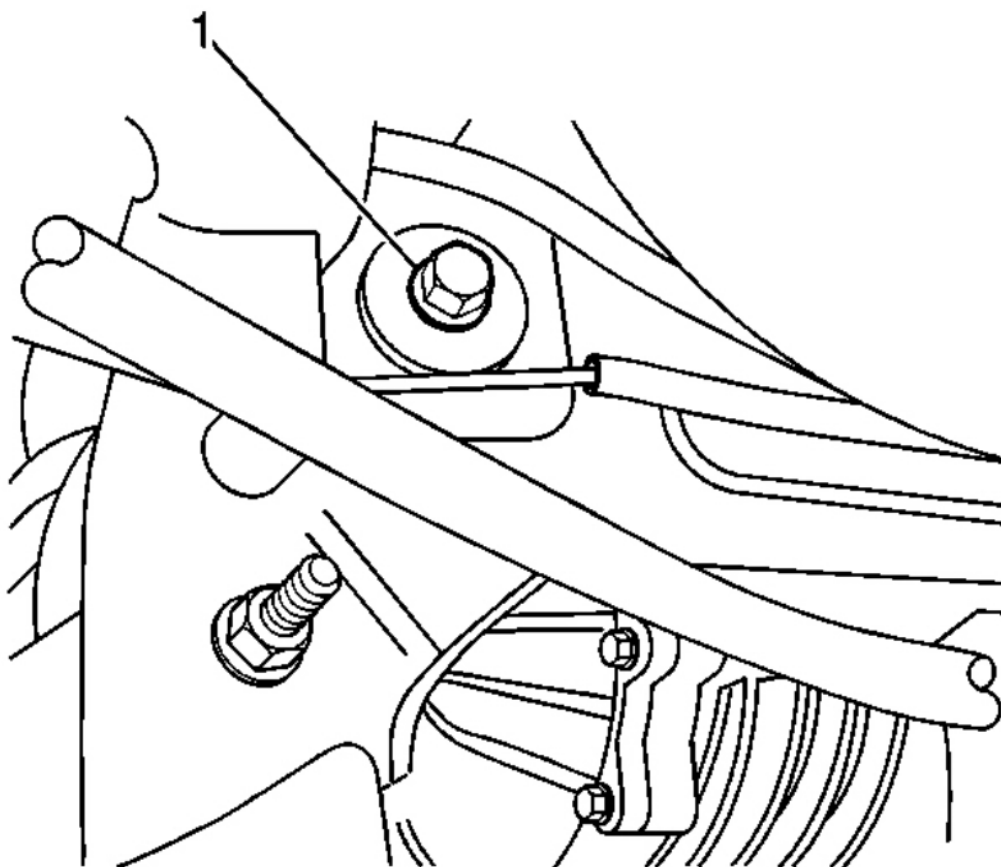


Fig. 26: View Of Left Rear Differential-To-Support Mounting Bolt
Courtesy of GENERAL MOTORS CORP.

13. Hand install the left rear differential to support mounting bolt (1).

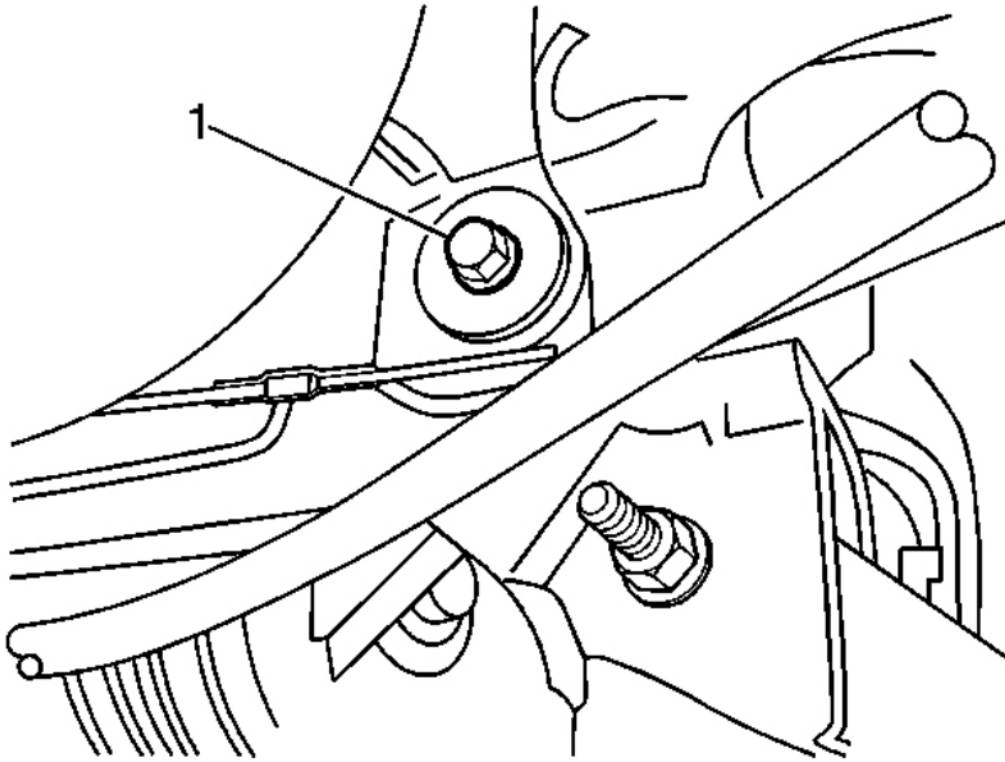


Fig. 27: View Of Right Rear Differential-To-Support Mounting Bolt
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

14. Hand install the right rear differential-to-support mounting bolt (1).

Tighten:

- Tighten the rear differential-to-support mounting bolts to 175 N.m (129 lb ft).
- Tighten the front differential-to-support mounting bolt 175 N.m (129 lb ft).

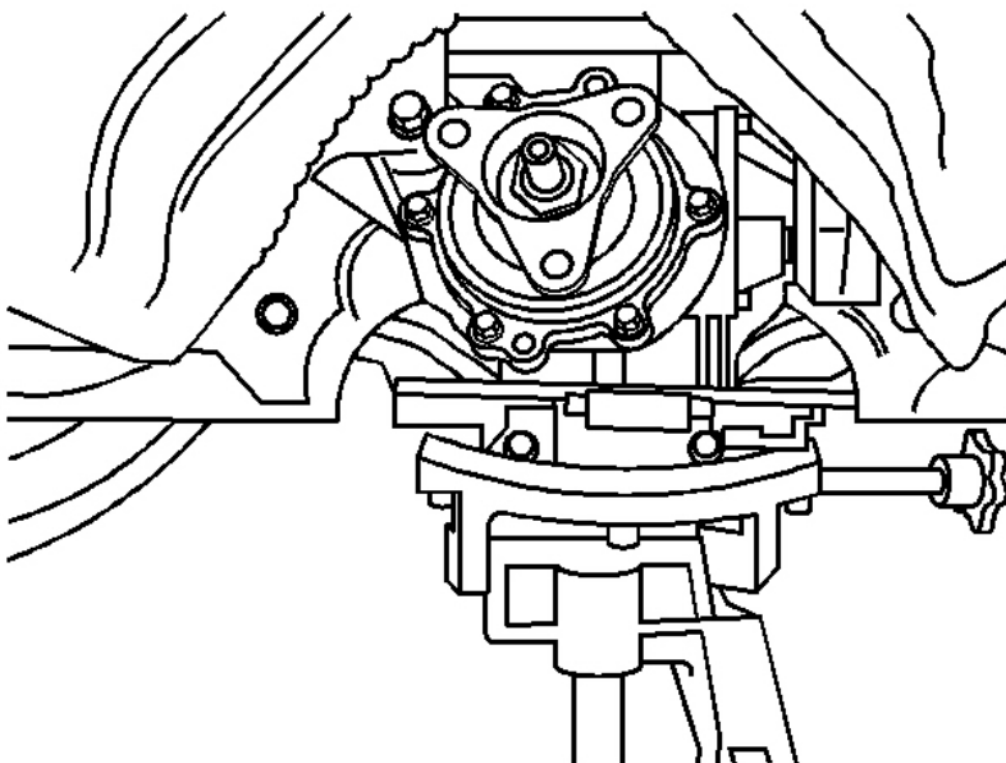


Fig. 28: View Of Transmission Jack
Courtesy of GENERAL MOTORS CORP.

15. Remove the transmission jack.
16. Install propeller shaft. Refer to **Propeller Shaft Replacement - Rear (AWD)** or **Propeller Shaft Replacement - Rear (RWD)** in Propeller Shaft.
17. Install the right wheel drive shaft. Refer to **Wheel Drive Shaft Replacement - Rear** in Wheel Drive Shafts.
18. Install the right rear tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
19. Inspect the differential lubricant level. Refer to **Lubricant Level Inspection - Rear Drive Axle**.
20. Lower the vehicle.

Tools Required

- **DT-47595** Bearing Cup Remover. See Special Tools and Equipment.
- **J 24433** Pinion Cone and Side Bearing Installer. See Special Tools and Equipment.
- **J 25070** Heat Gun
- **J 45124** Removal Bridge. See Special Tools and Equipment.

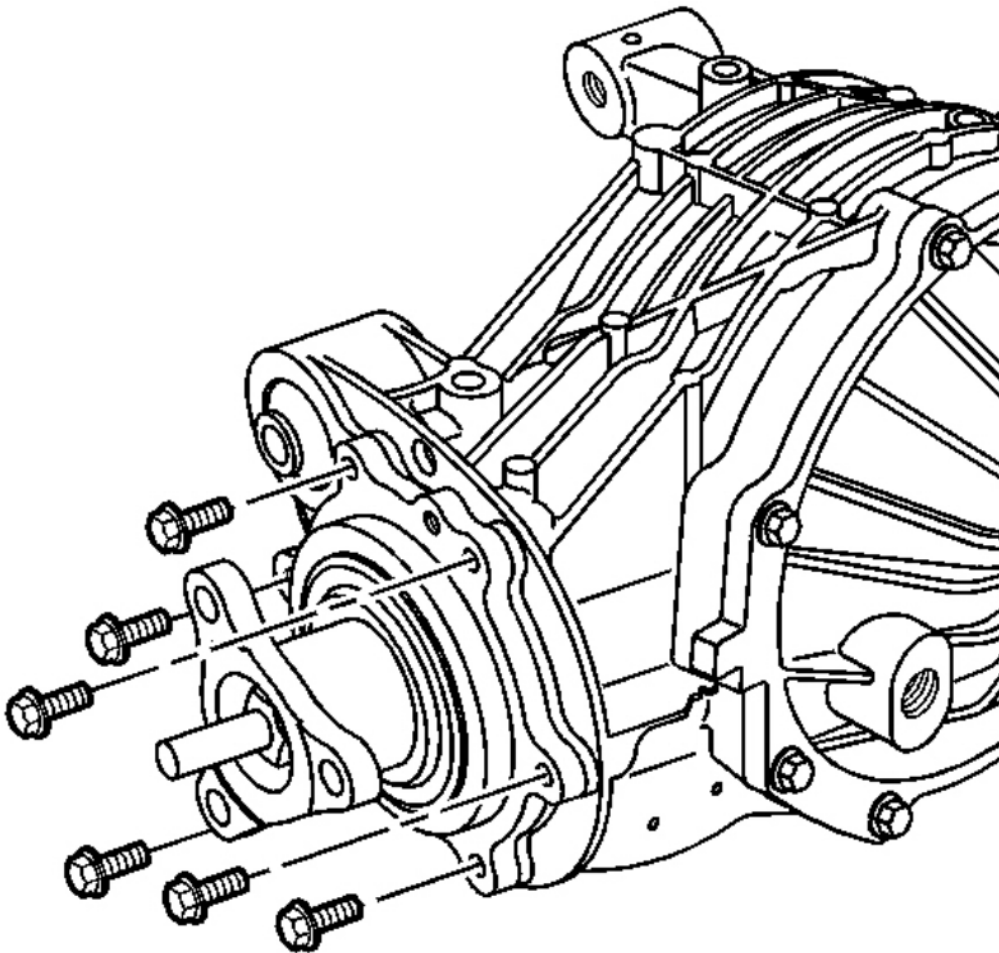


Fig. 29: View Of Bearing Carrier Bolts
Courtesy of GENERAL MOTORS CORP.

1. Remove the bearing carrier bolts from the pinion cage.

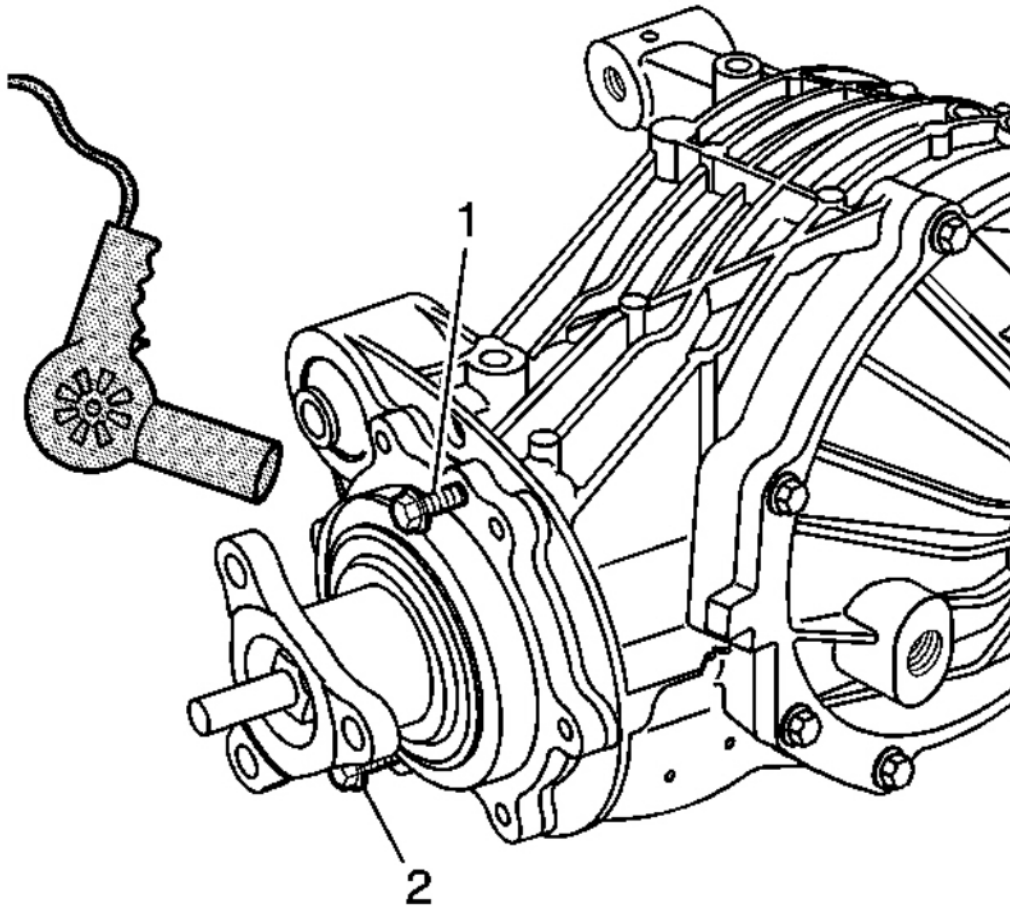


Fig. 30: Heating Around The Pinion Bearing Cage Using The J 25070
Courtesy of GENERAL MOTORS CORP.

2. Using the **J 25070** , heat around the pinion bearing cage to ease pinion removal.
3. Place 2 bolts in the jackscrew holes (1) and (2).
4. Tighten the bolts equally to push out the pinion bearing cage assembly.

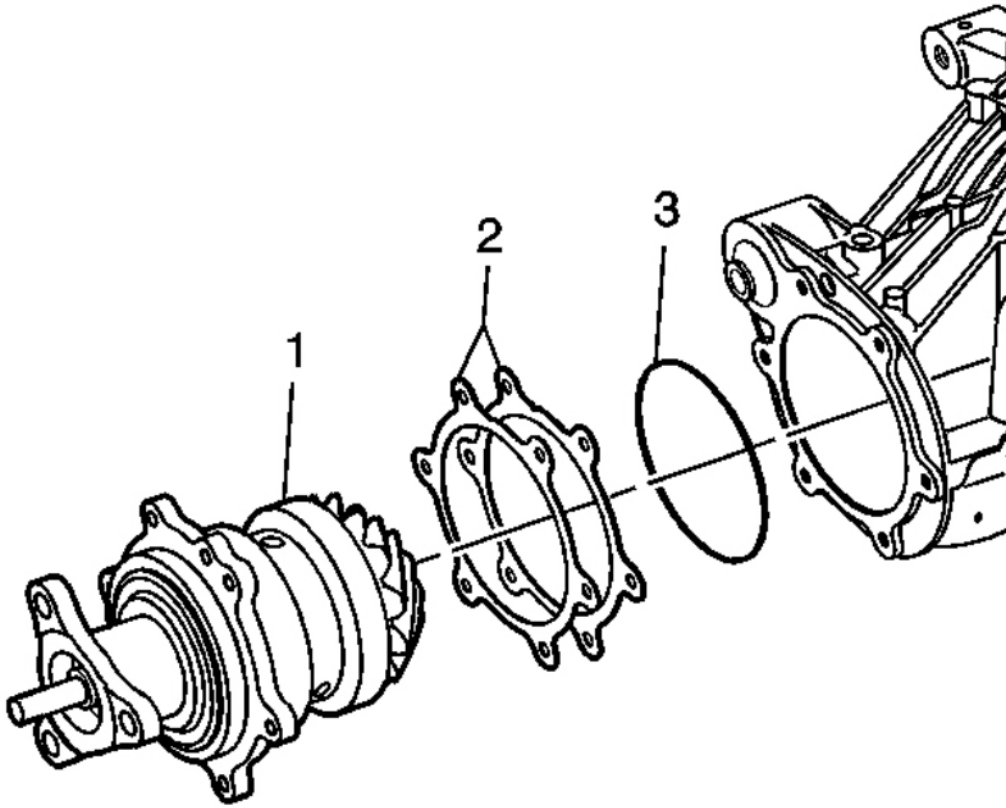


Fig. 31: View Of Pinion Cage Assembly, Shims & O-Ring Seal
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Mark or tag the shims for reassembly.

5. Remove the pinion cage assembly (1), shims (2) and O-ring seal (3) from the differential carrier.

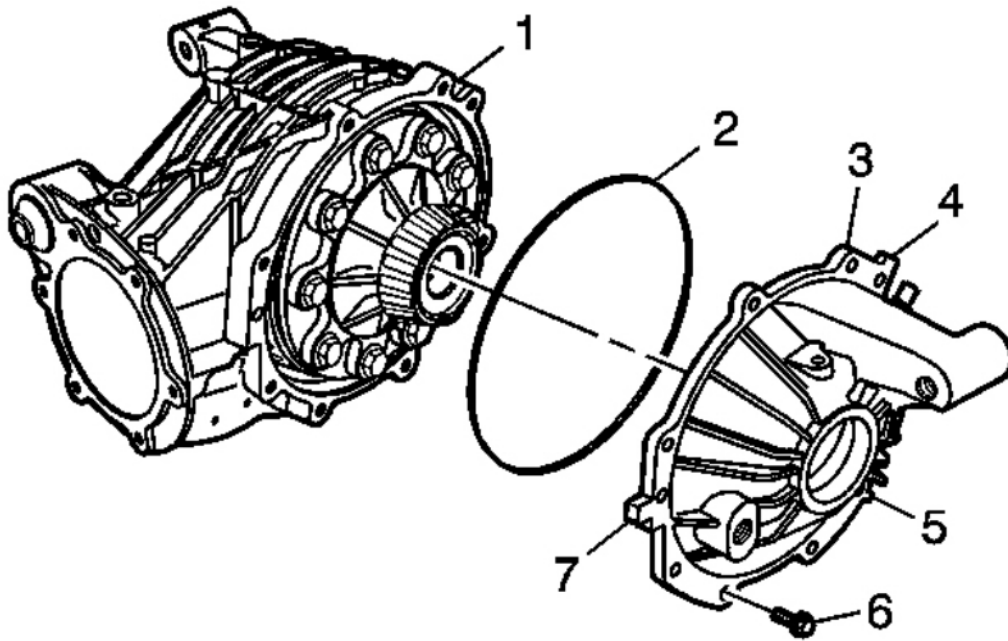


Fig. 32: View Of Differential Carrier & Cover
Courtesy of GENERAL MOTORS CORP.

6. Remove the 9 carrier cover bolts (6).
7. Using the pry tabs (4, 5, 7), remove the carrier cover (3) from the differential carrier (1).
8. Remove the O-ring seal (2) from the cover (3).

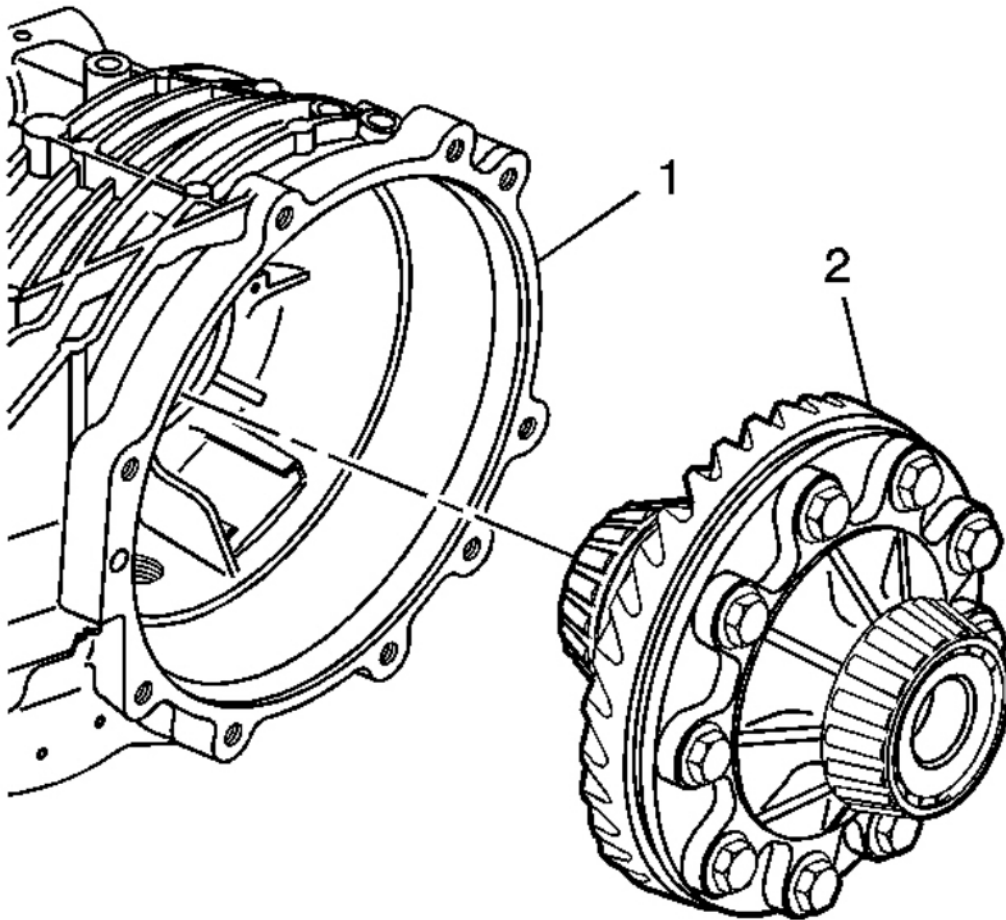


Fig. 33: View Of Differential Assembly
Courtesy of GENERAL MOTORS CORP.

9. Remove the differential assembly (2) from the carrier (1).

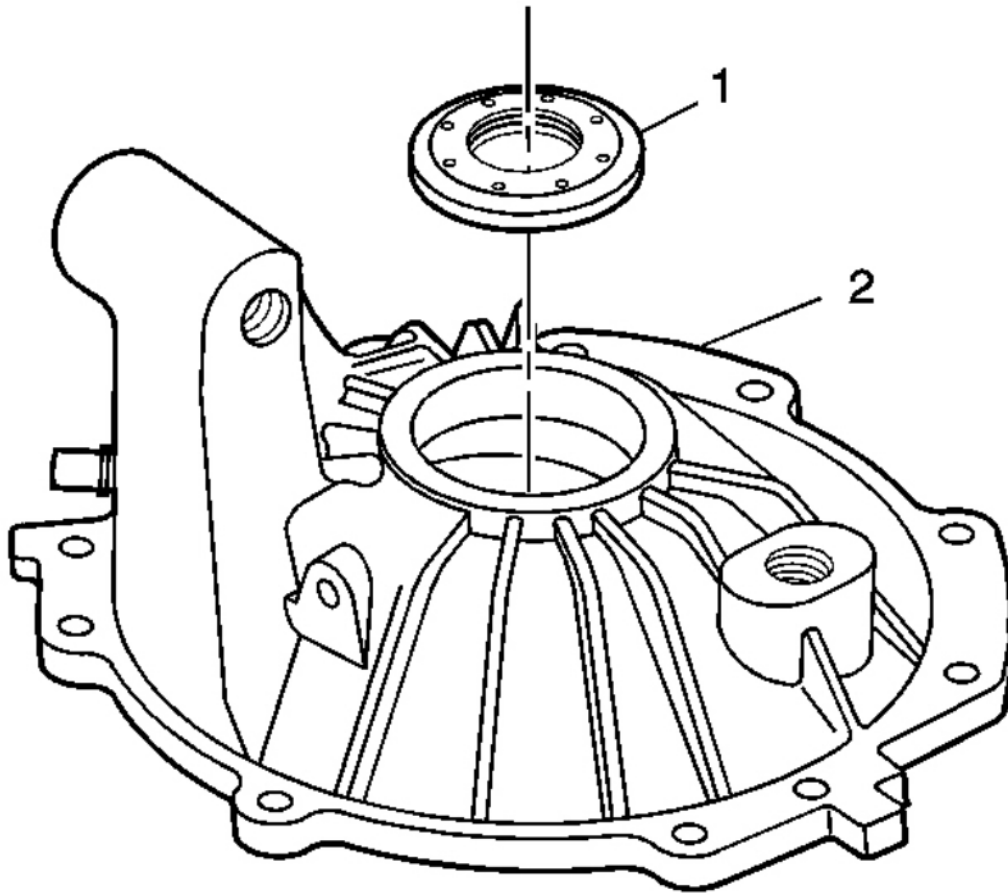


Fig. 34: Removing Axle Oil Seal From Carrier Cover
Courtesy of GENERAL MOTORS CORP.

10. Remove the axle oil seal (1) from the carrier cover (2) using **J 24433** and hammer from inside the cover. See **Special Tools and Equipment**.

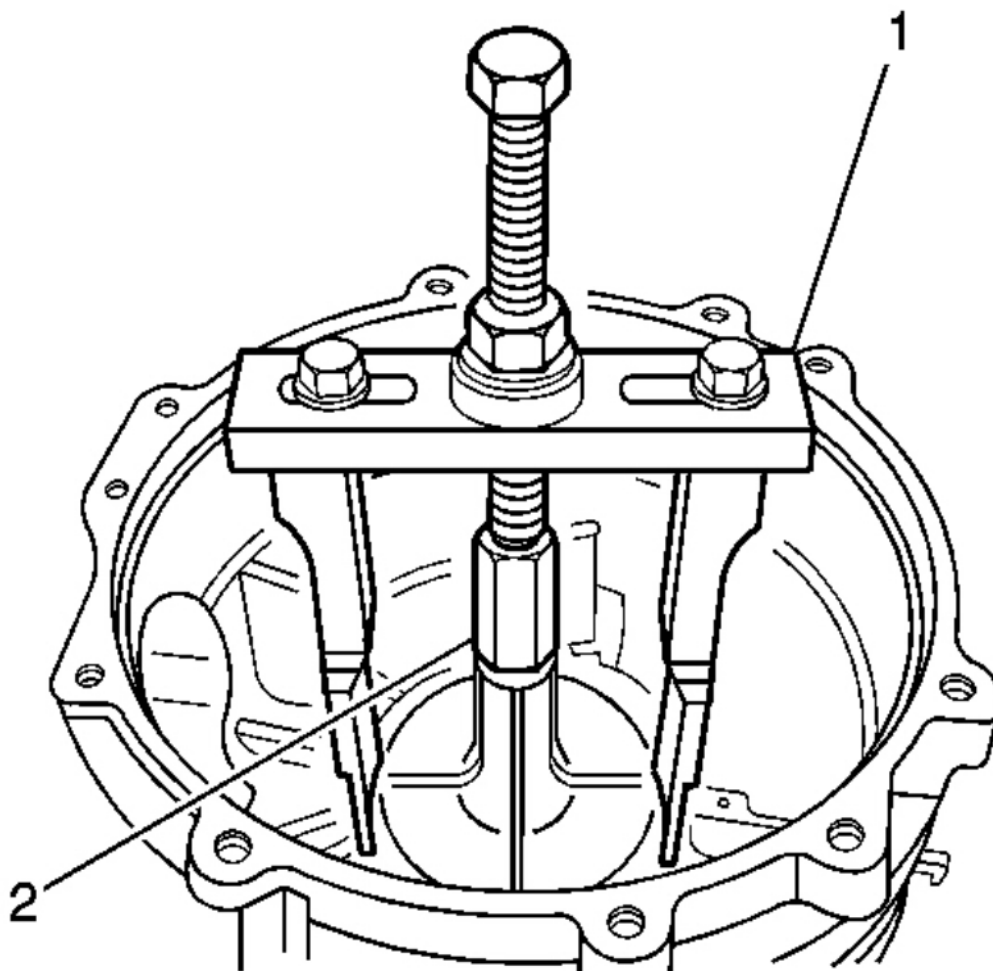


Fig. 35: Installing J 45124 & DT-47595
Courtesy of GENERAL MOTORS CORP.

11. Install the **DT-47595** (2) into the bearing cup. See Special Tools and Equipment.
12. Tighten the spreader bolt in order to lock the tool into the cup.
13. Install the **J 45124** (1) over the **DT-47595** (2) with the center bolt. See Special Tools and Equipment.

IMPORTANT: Mark or tag the shim and cup cover.

14. Tighten the center bolt and remove the cup and shim.

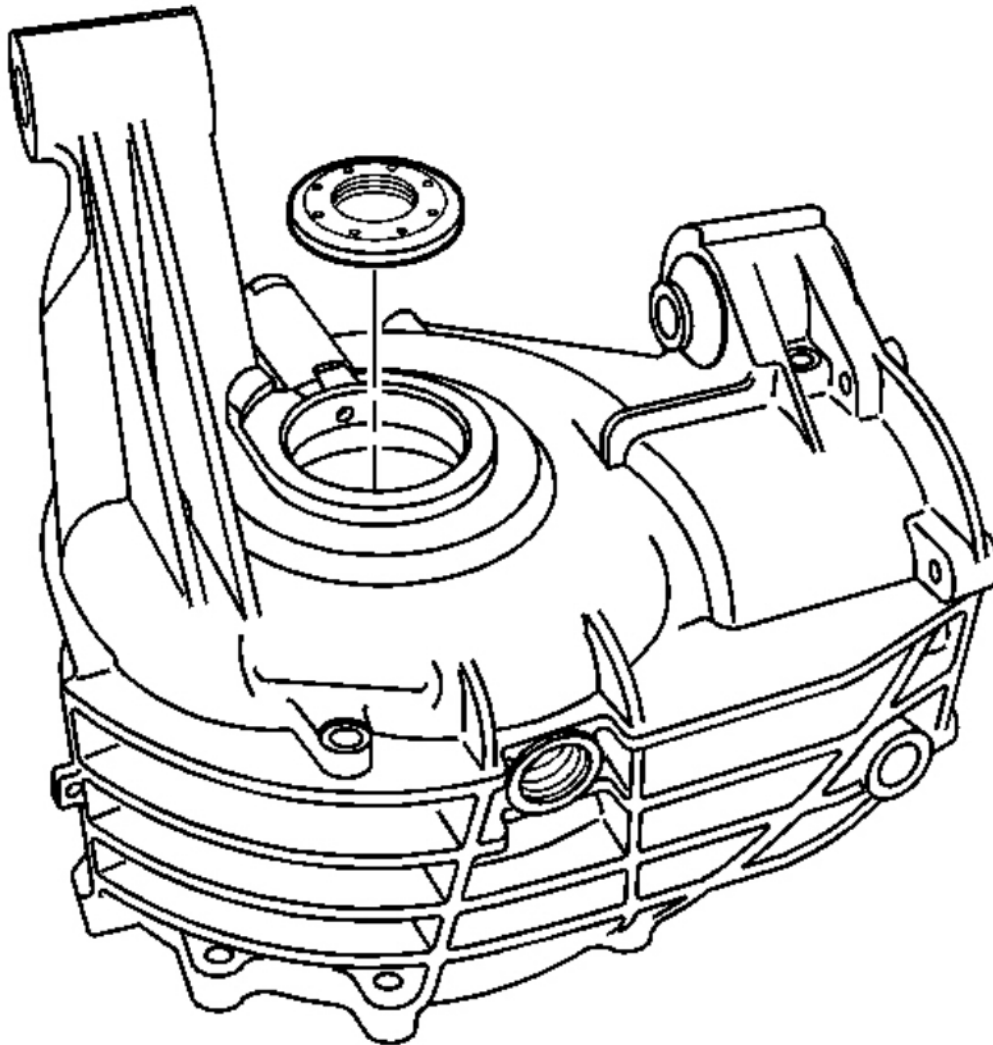


Fig. 36: Removing Axle Oil Seal From Carrier
Courtesy of GENERAL MOTORS CORP.

15. Remove the axle oil seal from the carrier using **J 24433** and hammer. See **Special Tools and Equipment**. Drive out the seal.

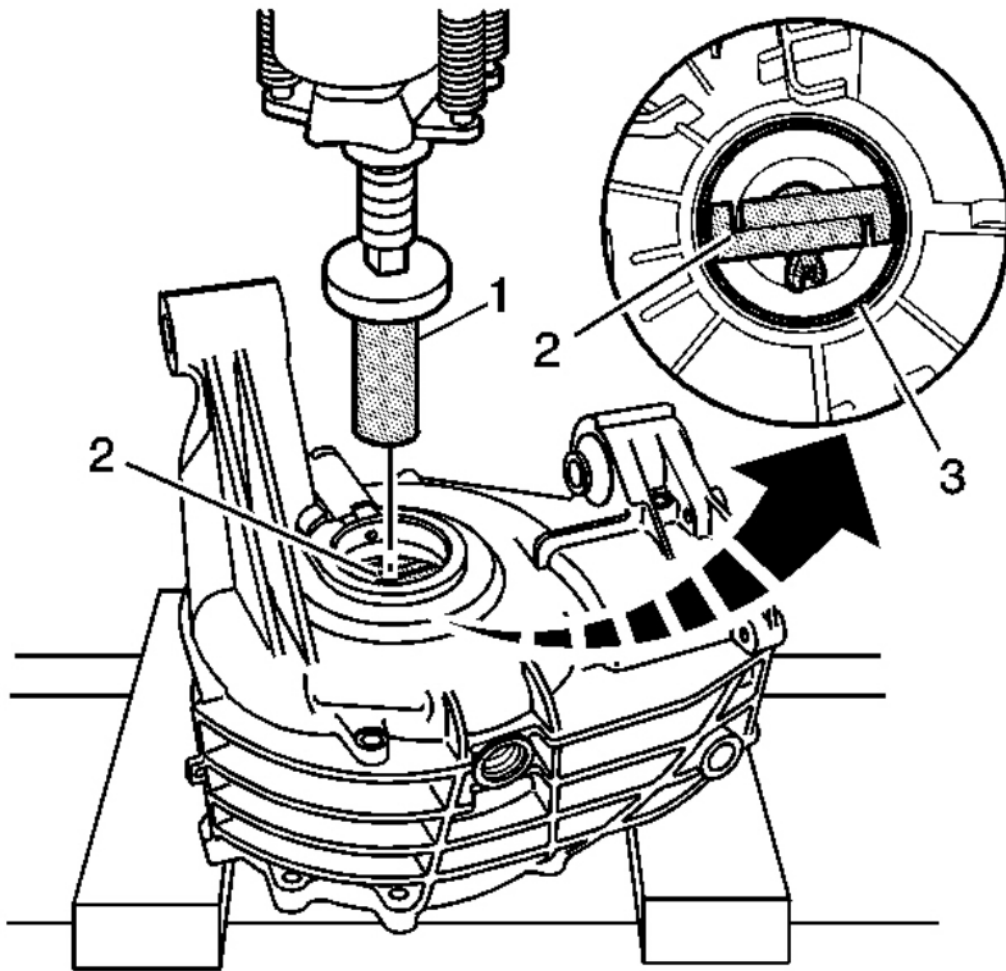


Fig. 37: Installing J 24433 & J 45008
Courtesy of GENERAL MOTORS CORP.

16. Install the J 45008 (2) behind the bearing cup (3).

IMPORTANT: Mark or tag the shim and the race carrier.

17. Place the carrier in a press.
18. Place **J 24433** (1) against. See Special Tools and Equipment. J 45008 (2) and press out the cup.

2004 Cadillac SRX

2004 DRIVELINE/AXLE Rear Drive Axle - SRX

RING GEAR AND DIFFERENTIAL HOUSING DISASSEMBLE

Tools Required:

J 22912-01 Split-Plate Bearing Puller

1. Remove the 10 ring gear bolts (1) and the ring gear (3) from the differential carrier (2) using a punch and a hammer through the bolt hole.

Note: Differential gears are preloaded and cannot be disassembled or assembled in the field.

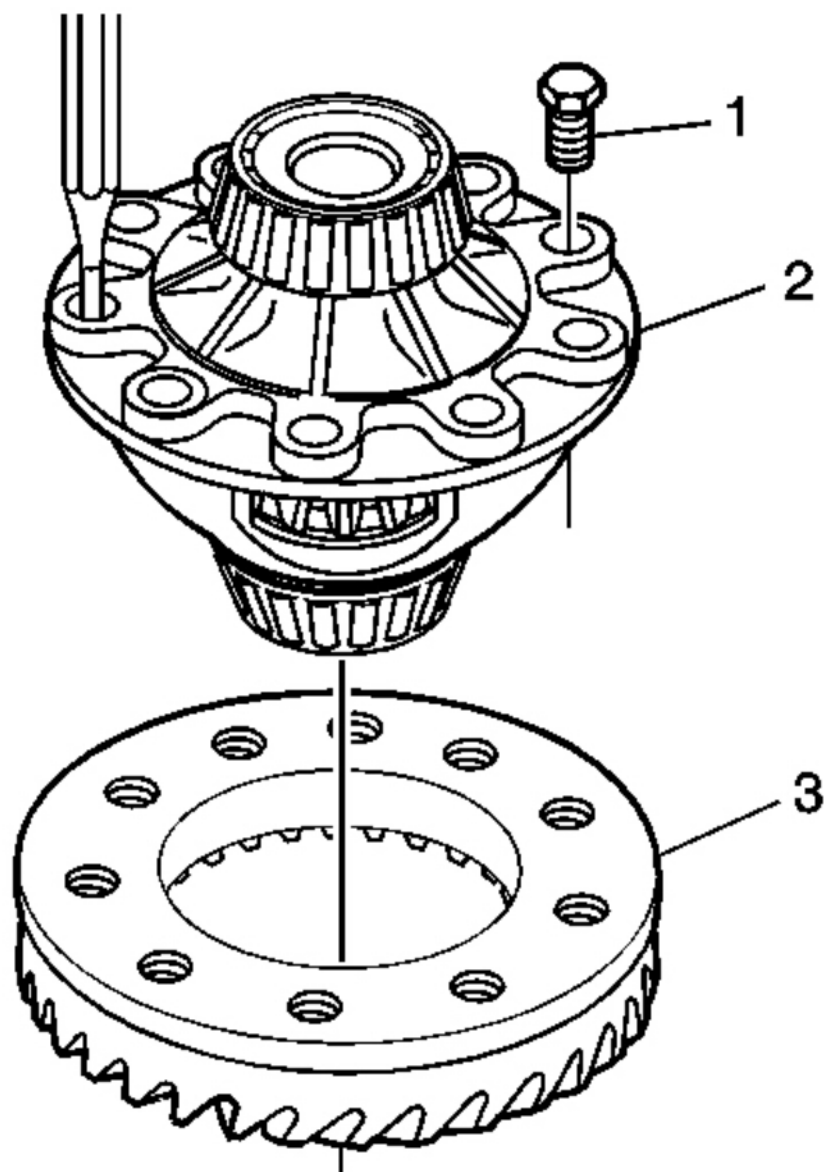


Fig. 38: Removing Ring Gear & Bolts
Courtesy of GENERAL MOTORS CORP.

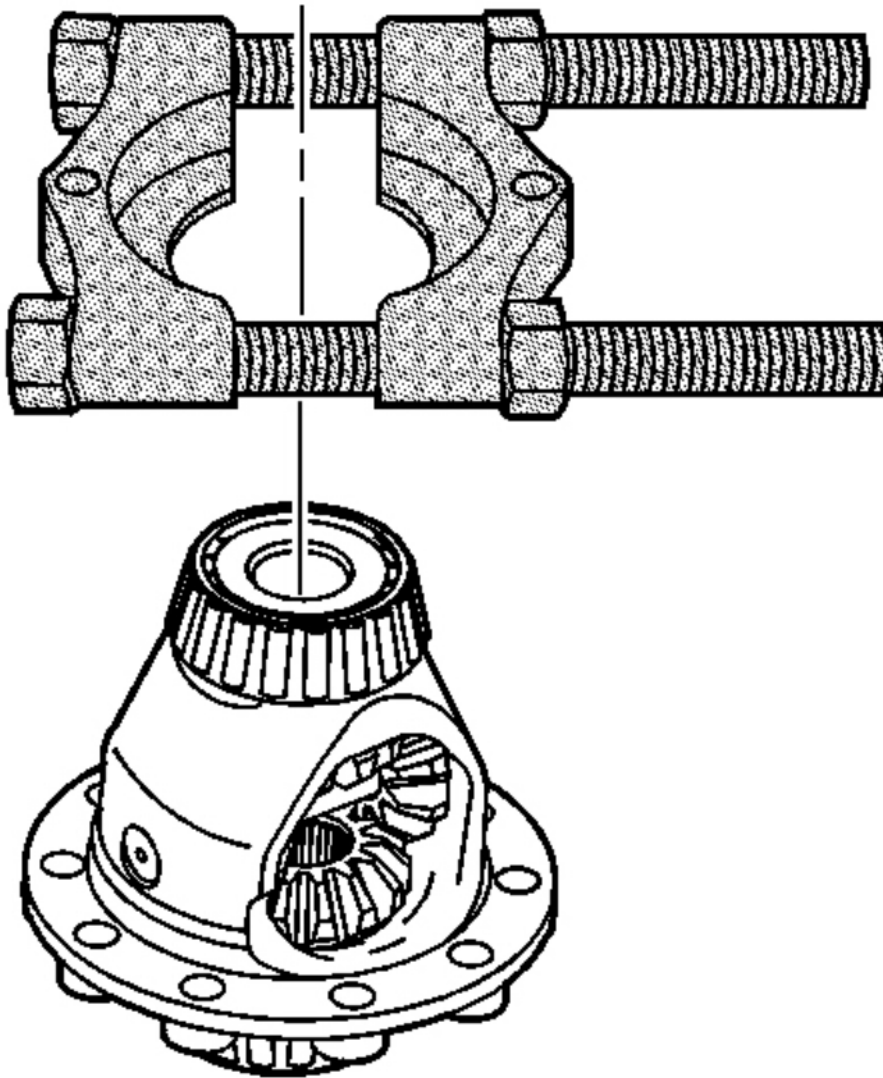


Fig. 39: Removing Left Side Bearing
Courtesy of GENERAL MOTORS CORP.

2. Using the J 22912-01 and a press, remove the left side bearing. It may be necessary to cut the cage and remove the rollers so the tool will grip the race.

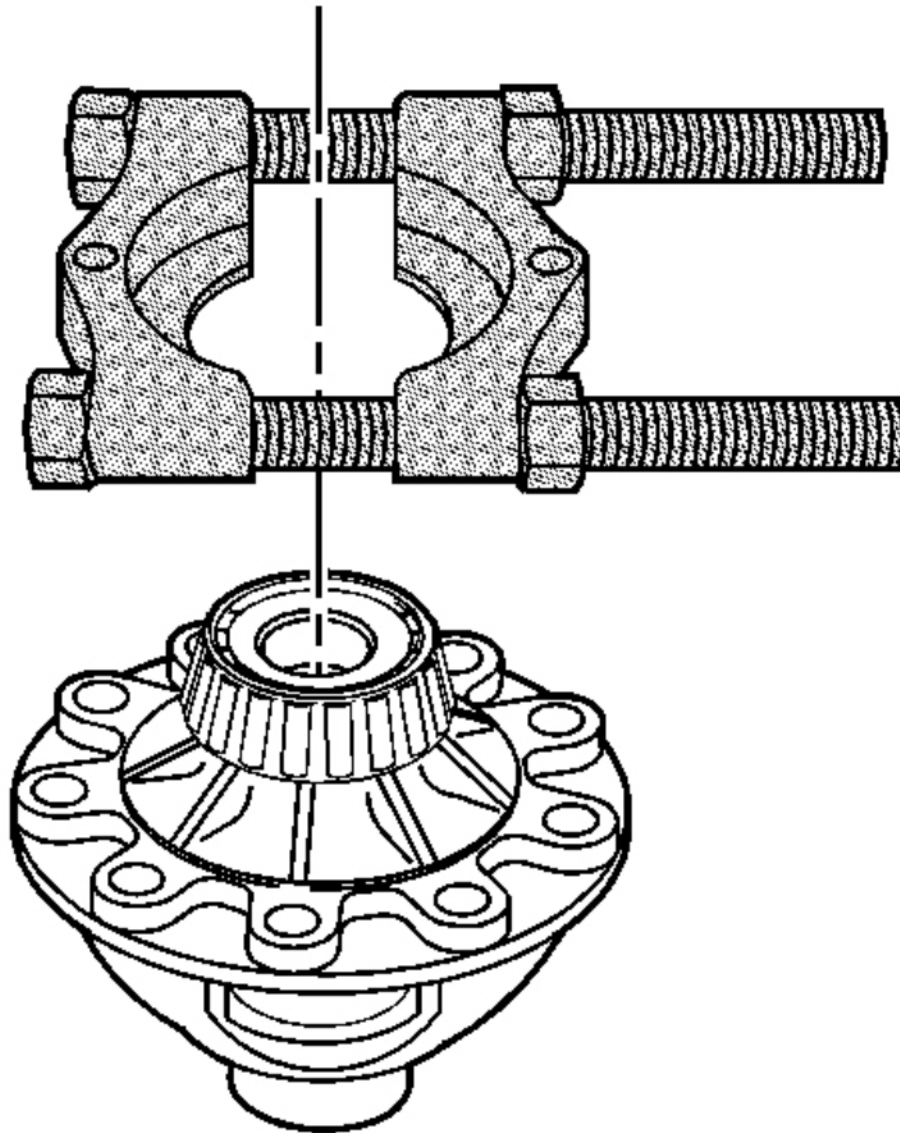


Fig. 40: Removing Right Side Bearing
Courtesy of GENERAL MOTORS CORP.

3. Using the J 22912-01 and a press, remove the right side bearing. It may be necessary to cut the cage and remove the rollers so the tool will grip the race.

DRIVE PINION DISASSEMBLE**Tools Required**

- **J 22912-01** Split-Plate Bearing Puller
- **J 34826** Hub Nut Socket - 36 mm. See Special Tools and Equipment.
- **J 45006** Pinion Press Pilot. See Special Tools and Equipment.
- **J 45012** Pinion Flange Holder
- **J 45019** Flange and Pinion Cage Remover

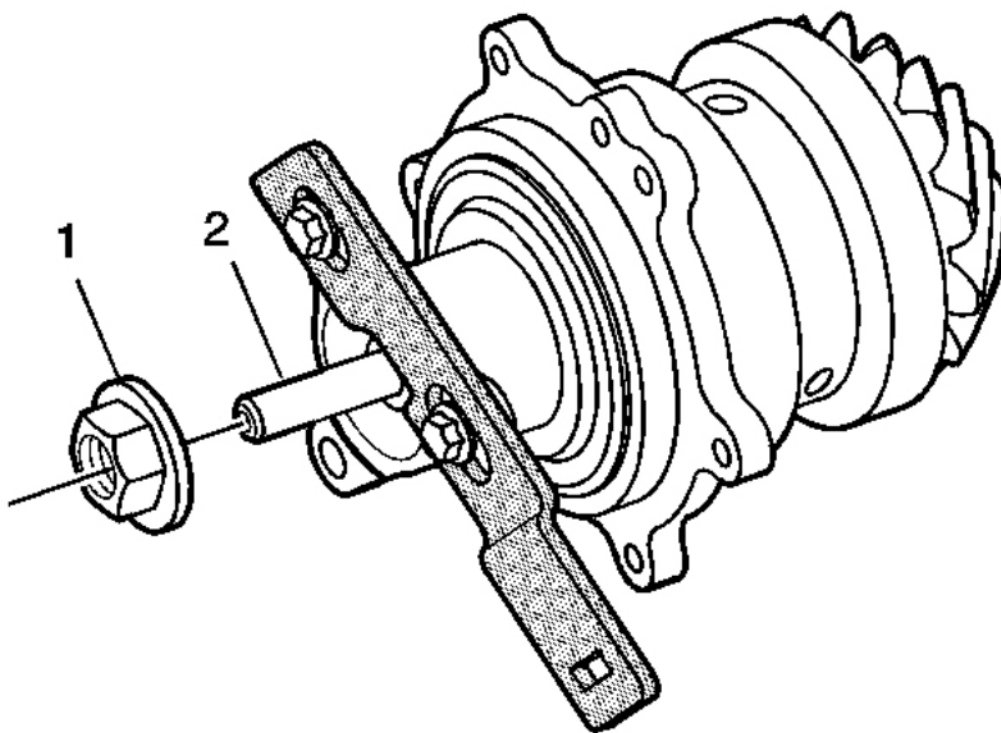


Fig. 41: Removing Pinion Flange Nut
Courtesy of GENERAL MOTORS CORP.

1. Remove the pinion flange nut (1) using **J 34826** while holding the flange with the **J 45012** and a breaker bar. See Special Tools and Equipment.

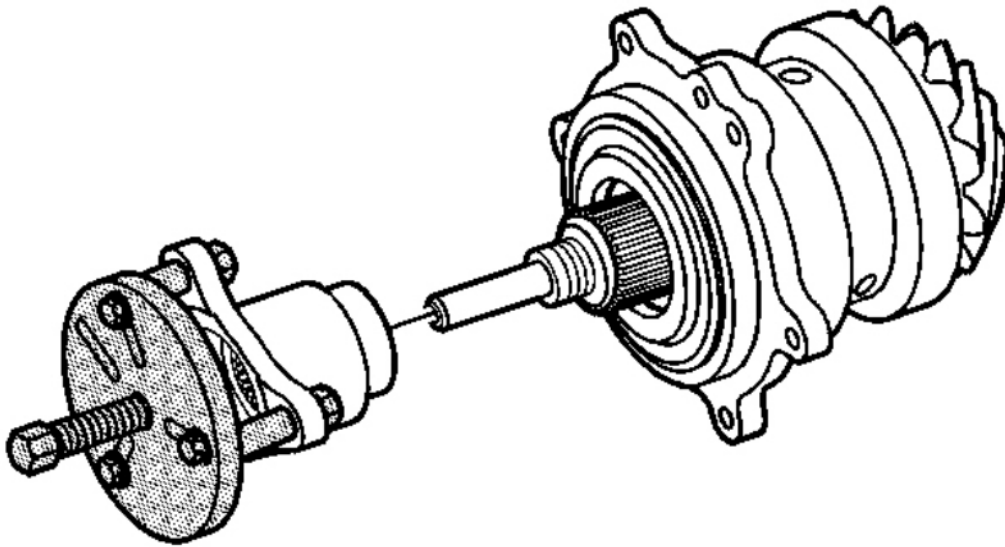


Fig. 42: Removing Pinion Flange
Courtesy of GENERAL MOTORS CORP.

2. Remove the pinion flange from the shaft. If the flange will not pull off, use the **J 45019** with forcing screw, bolts and spacers.

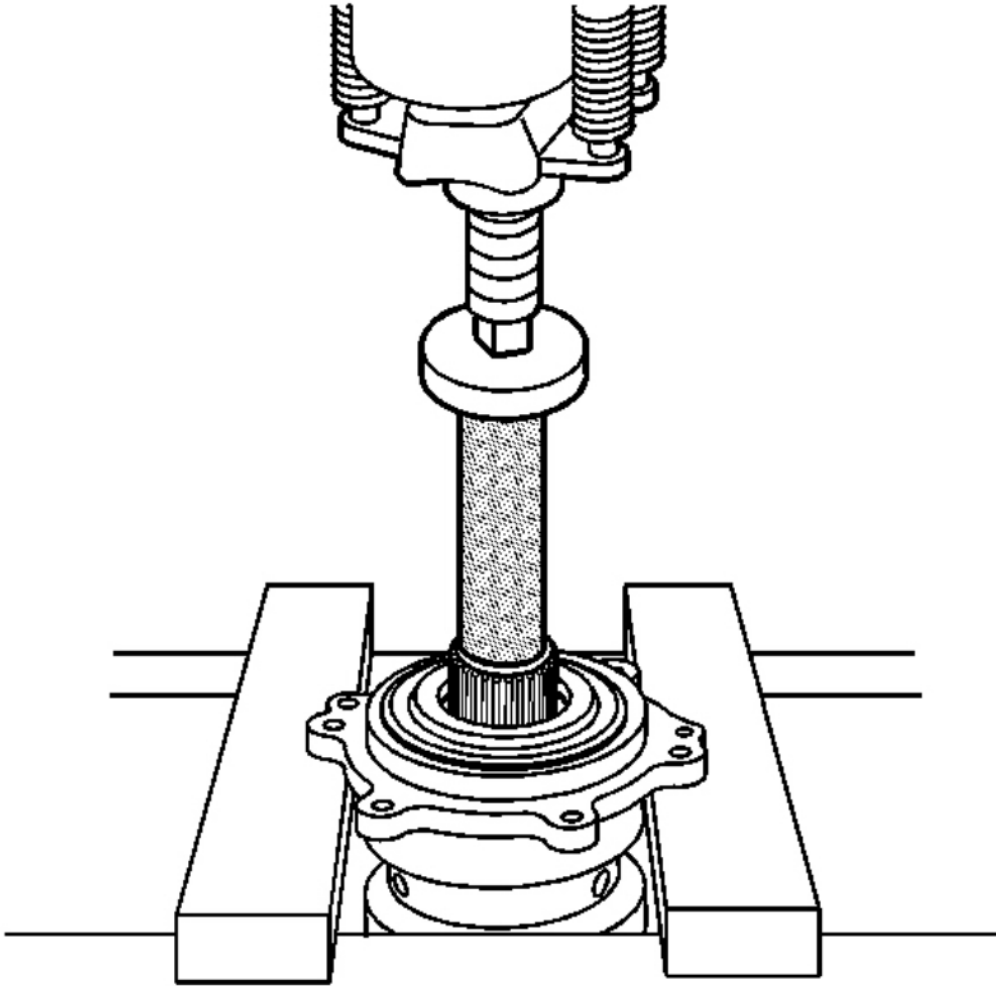


Fig. 43: Removing Pinion Shaft & Bearing
Courtesy of GENERAL MOTORS CORP.

3. Place the pinion cage into a press.
4. Remove the pinion shaft and bearing from the cage using the **J 45006** and a hydraulic press. See **Special Tools and Equipment**.

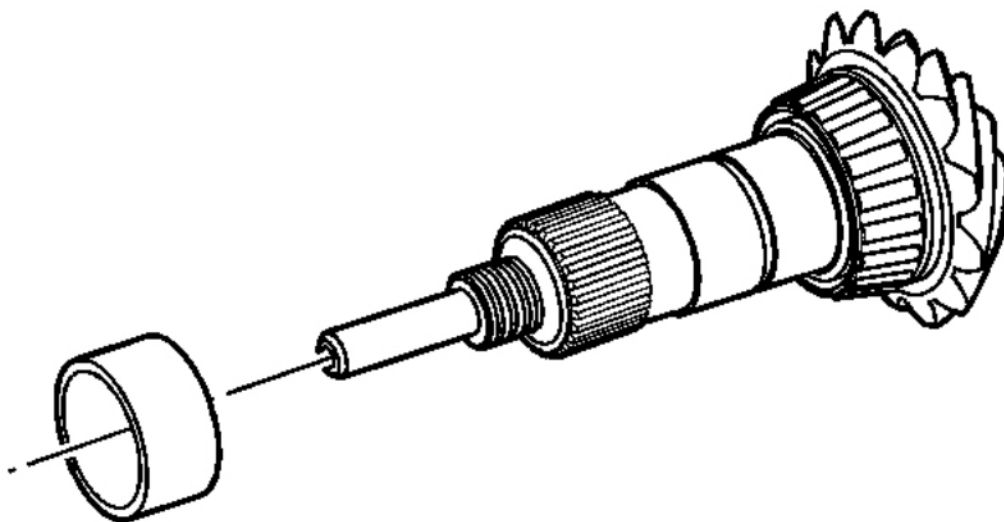


Fig. 44: View Of Pinion Shaft Spacer
Courtesy of GENERAL MOTORS CORP.

5. Remove the spacer from the pinion shaft.

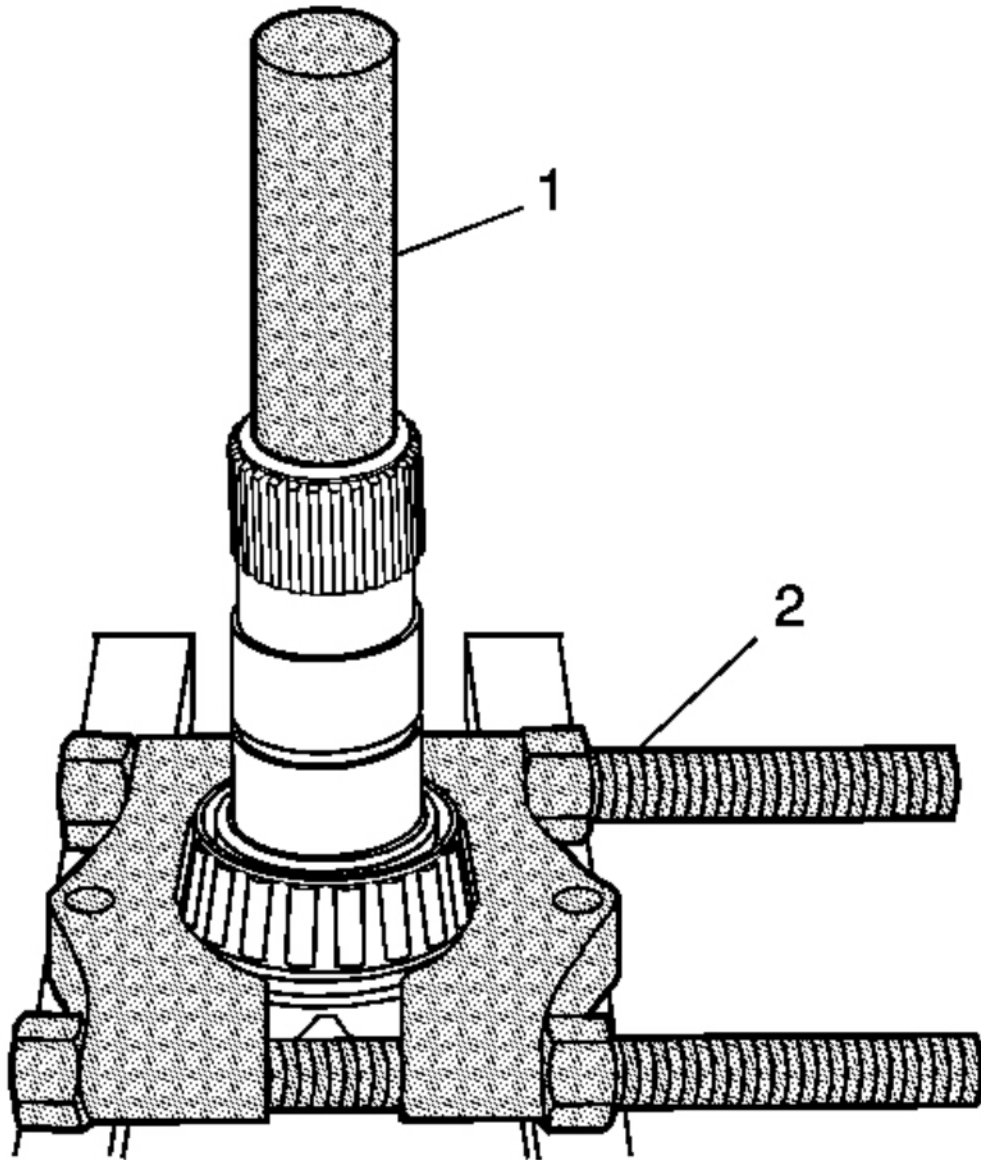


Fig. 45: Removing Bearing From Pinion Shaft
Courtesy of GENERAL MOTORS CORP.

6. Install the J 22912-01 (2) onto the pinion shaft, under the inner-bearing race.
7. Place the pinion shaft in a press to remove the bearing from the shaft.

8. Install the **J 45006** (1) and press the bearing from the pinion shaft. See **Special Tools and Equipment**.

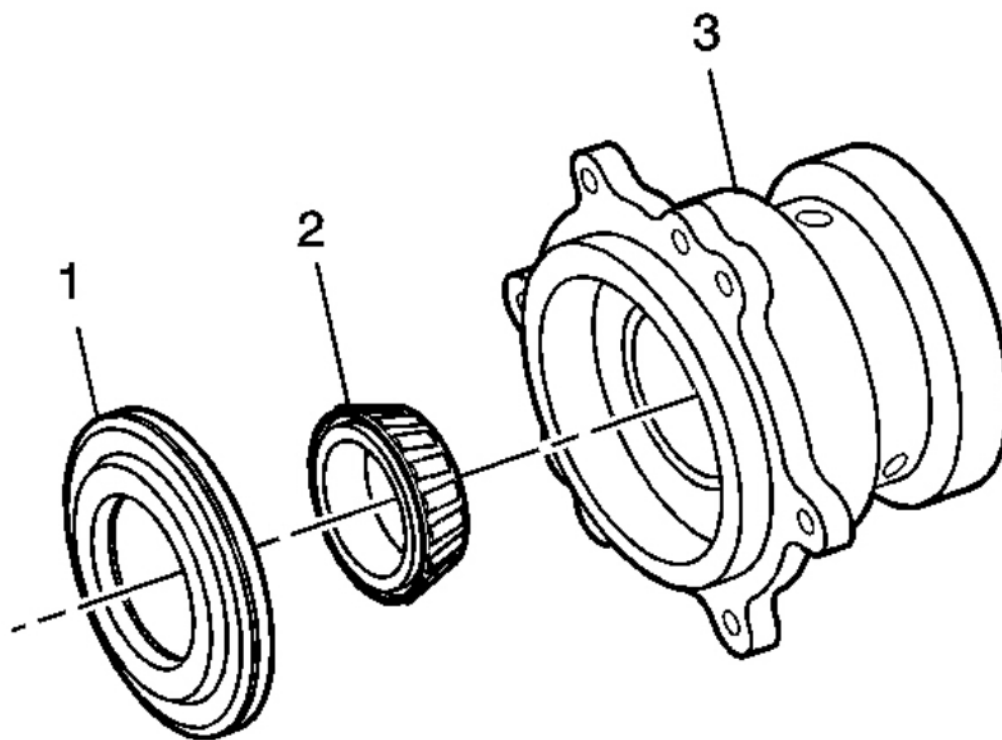


Fig. 46: Removing Pinion Oil Seal & Bearing From Bearing Cage
Courtesy of GENERAL MOTORS CORP.

9. Remove the pinion oil seal (1) and the pinion bearing (2) from the bearing cage (3).

DIFFERENTIAL CASE CLEANING AND INSPECTION

CAUTION: Refer to **Safety Glasses Caution** in Cautions and Notices.

Differential Case

1. Clean the differential case in solvent.
2. Inspect the differential case for the following conditions:

- Chips or cracks
- Damage to the bolts holes (1)
- Unusual wear, grooves or scoring
- Damaged side bearing flanges (2)
- Heat discoloration
- Worn differential pin bores (3)

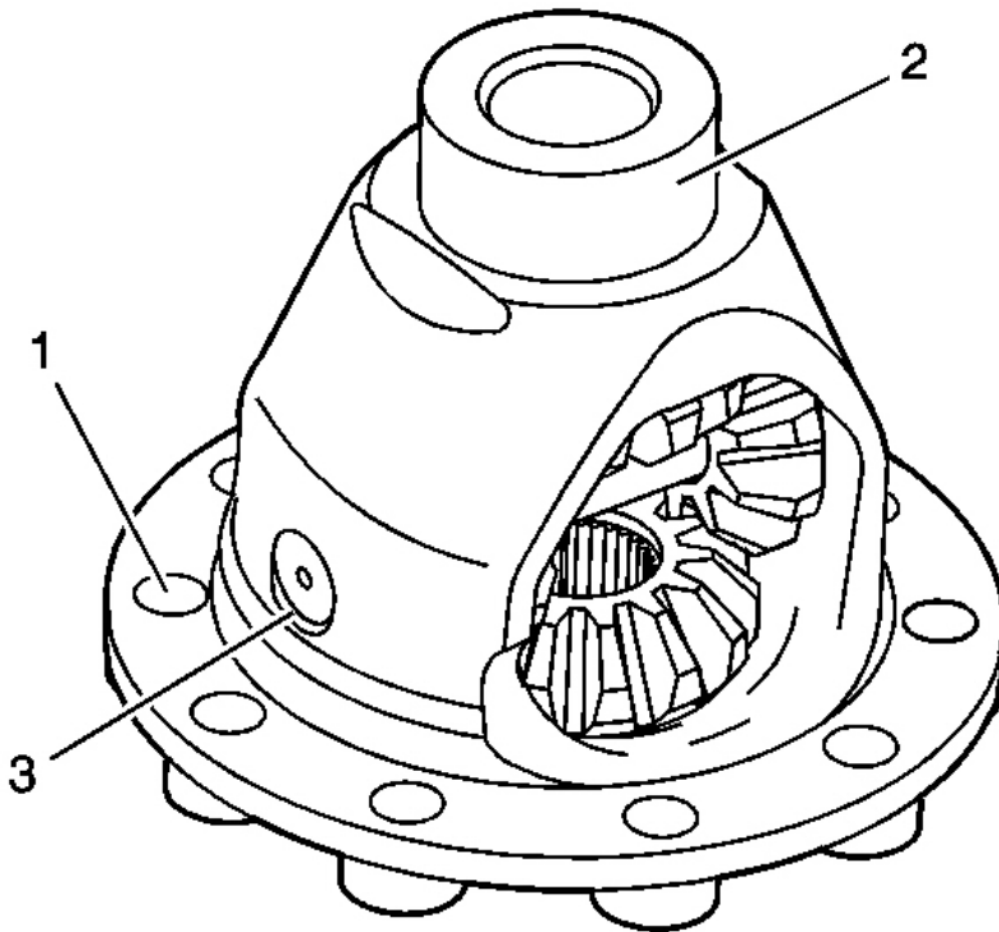


Fig. 47: Inspecting Differential Case
Courtesy of GENERAL MOTORS CORP.

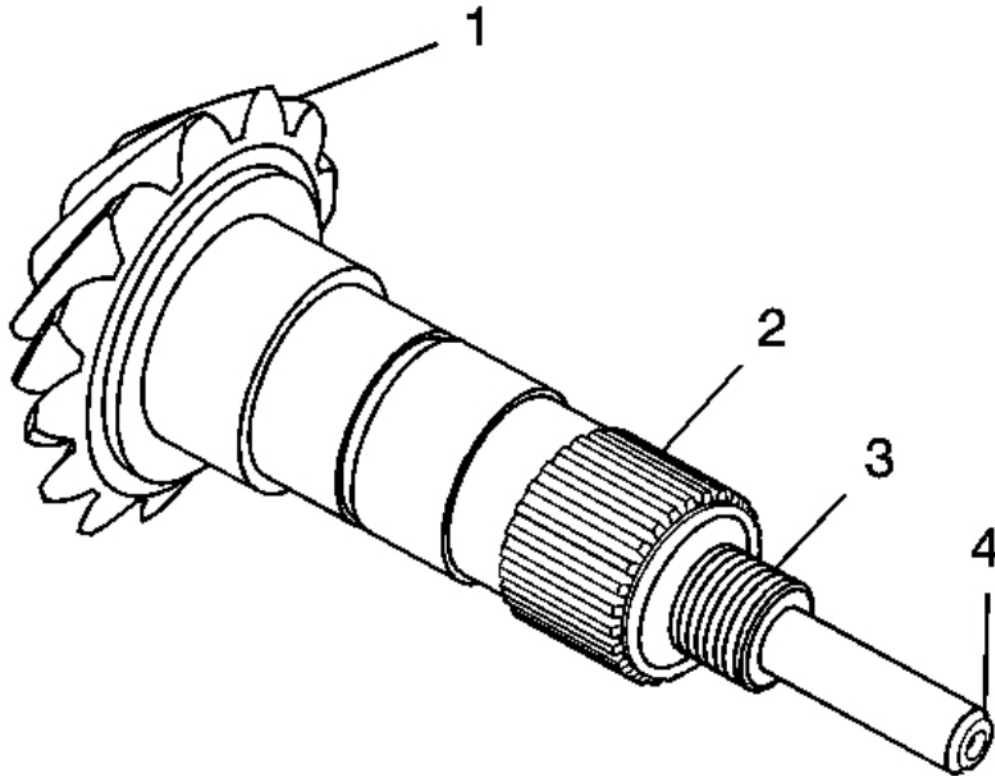


Fig. 48: Inspecting Pinion Gear
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Safety Glasses Caution in Cautions and Notices.

3. Clean the pinion gear in solvent.
4. Inspect the pinion gear for the following conditions:
 - Unusual gear teeth wear, pitting or heat discoloration (1)
 - Pinion splines for wear, pitting or twisted splines (2)
 - Pinion shaft thread condition (3)
 - Ensure pinion gear end is not bent or burred over on the end (4)

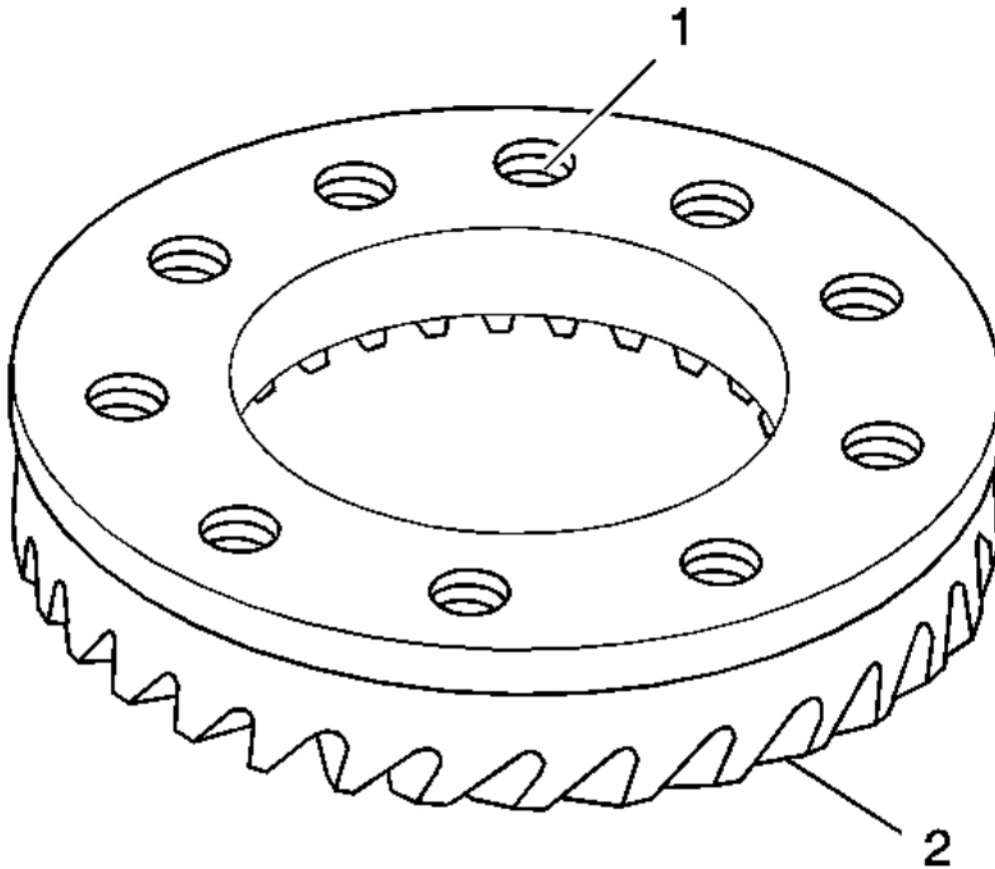


Fig. 49: Inspecting Ring Gear
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Safety Glasses Caution in Cautions and Notices.

5. Clean the ring gear in solvent.
6. Inspect the ring gear for the following conditions:
 - Damage to the threaded holes (1)
 - Unusual wear or heat discoloration to the gear teeth (2)

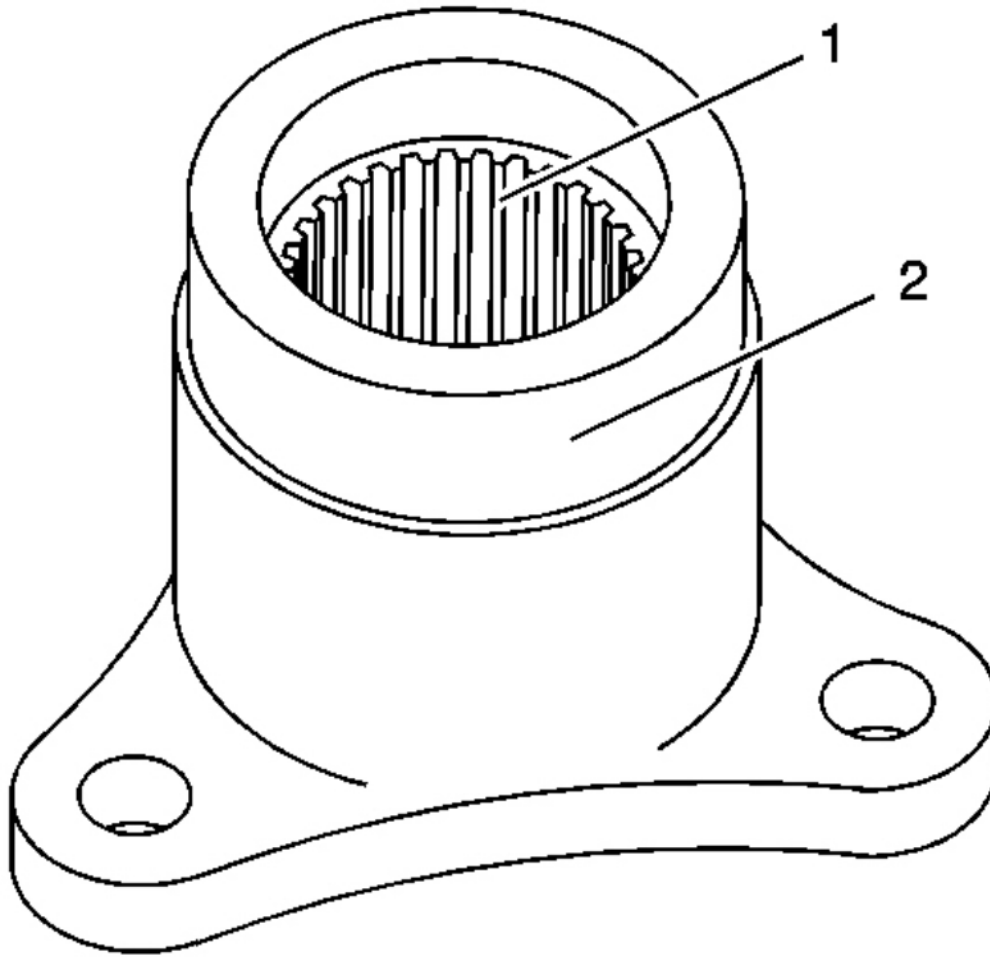


Fig. 50: Inspecting Pinion Flange
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Safety Glasses Caution in Cautions and Notices.

7. Clean the pinion flange in solvent.
8. Inspect the pinion flange for the following conditions:
 - Splines for wear, pitting or twisting (1)
 - Sealing surface for grooves or pitting (2)

Bearings and Races

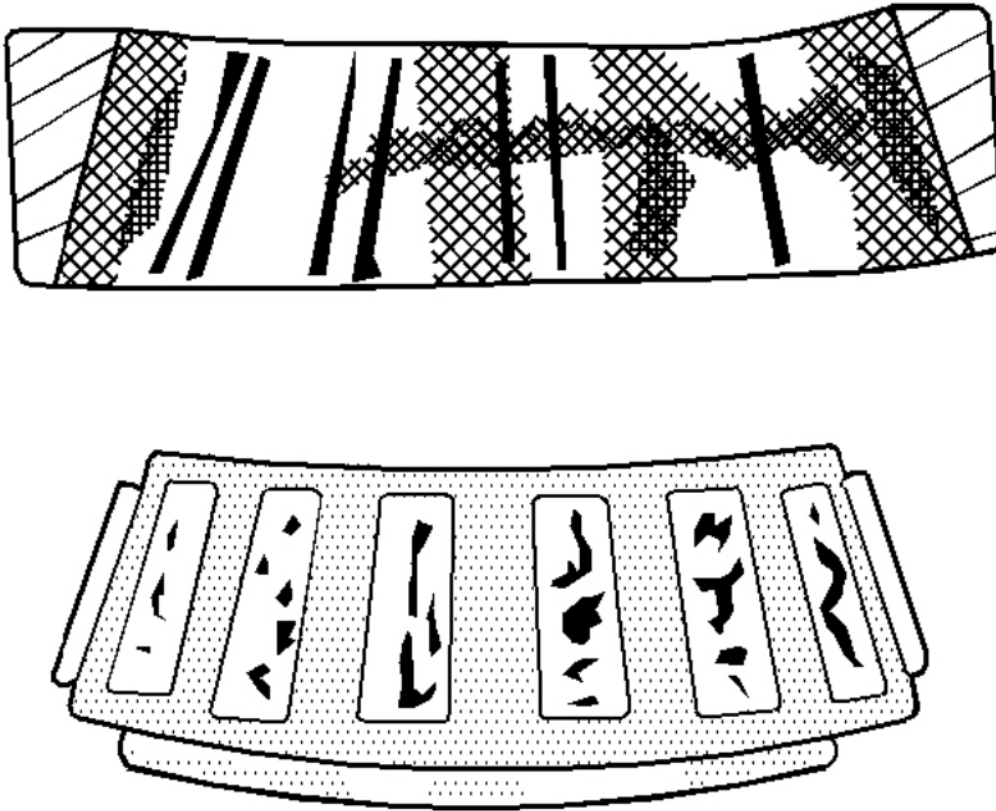


Fig. 51: Inspecting Bearing Rollers & Races For Pitting, Grooves, Spalling & Excessive Wear

Courtesy of GENERAL MOTORS CORP.

1. Inspect the bearing rollers and races for the following conditions:
 - Pitting
 - Scoring or grooves
 - Excessive wear or other damage

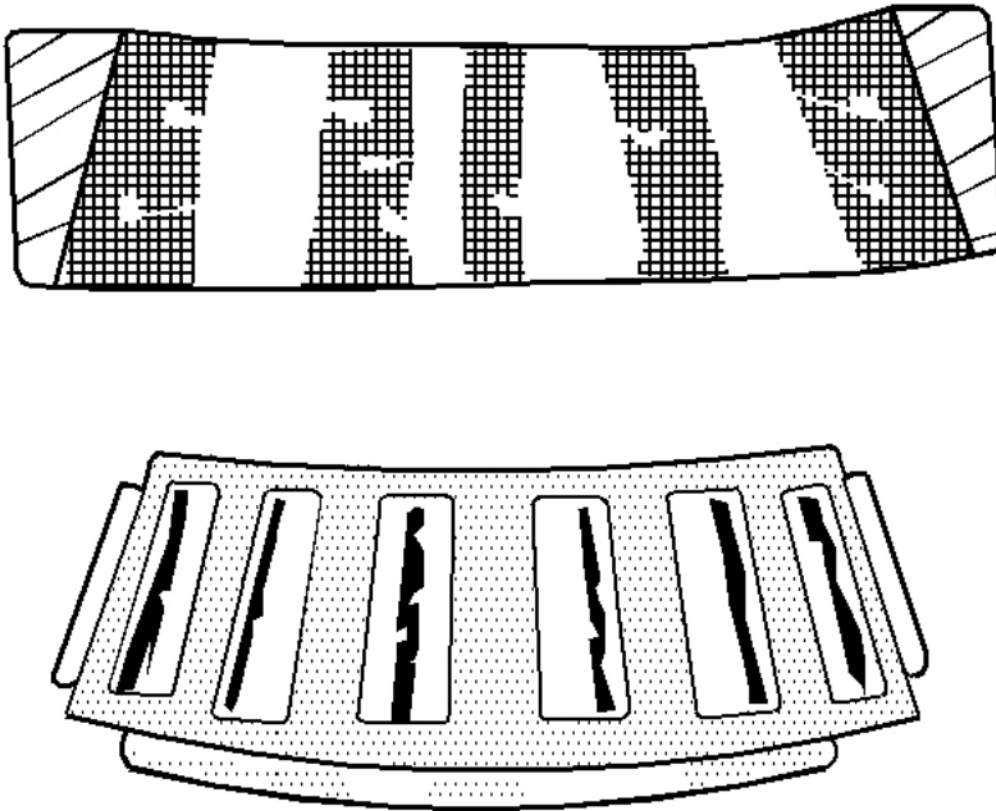


Fig. 52: Inspecting Bearing Rollers & Races For Heat Discoloration
Courtesy of GENERAL MOTORS CORP.

2. Inspect the bearing rollers and races for heat discoloration.

Heat discoloration ranges from a faint yellow to a dark blue color. This discoloration may result from an overload or improper lubrication. Excessive heat causes softening of the rollers and races. Bearings or races with sign of heat discoloration must be replaced.

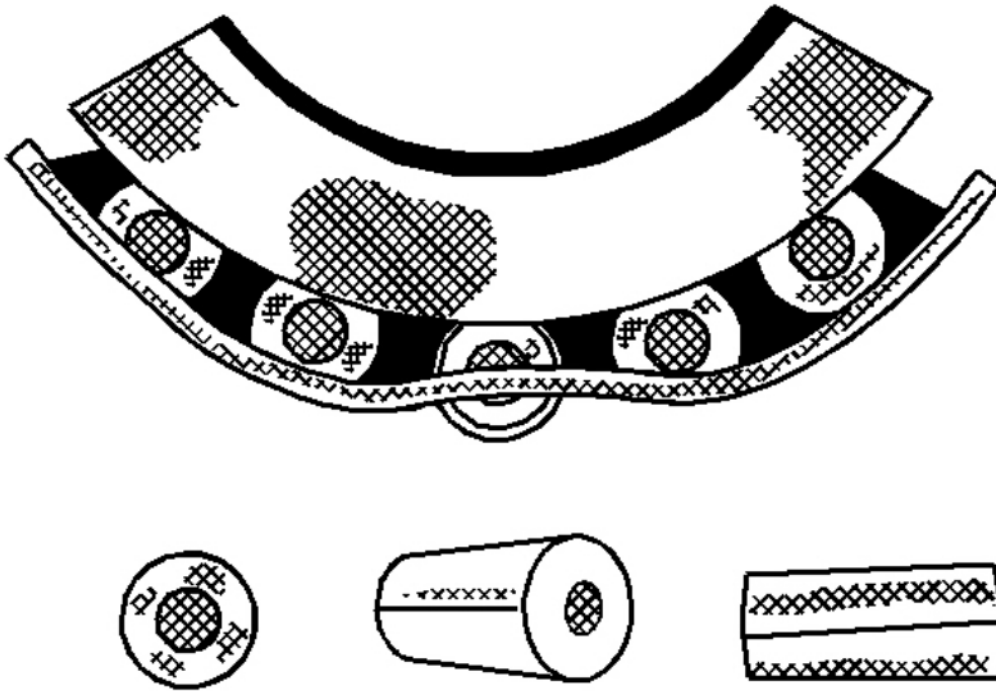


Fig. 53: Identifying Bent Roller Cage
Courtesy of GENERAL MOTORS CORP.

3. Inspect for bent bearing cages.

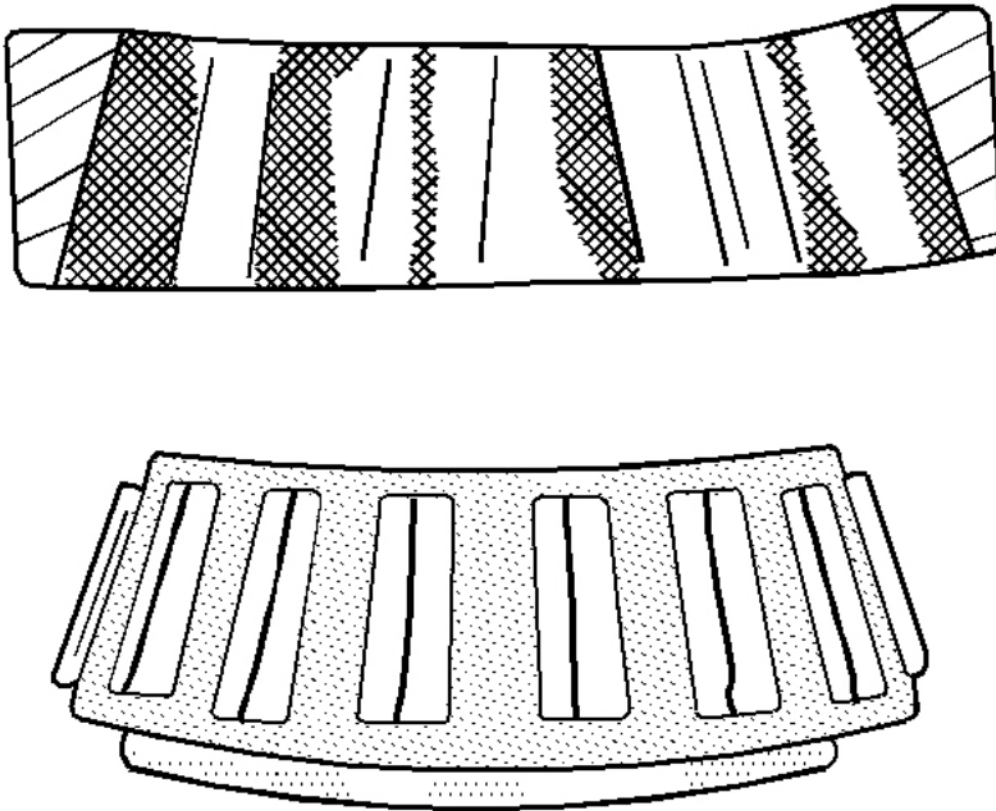


Fig. 54: Identifying Brinelling
Courtesy of GENERAL MOTORS CORP.

4. Inspect for damaged bearing cages.

DIFFERENTIAL HOUSING CLEANING AND INSPECTION

CAUTION: Refer to Safety Glasses Caution in Cautions and Notices.

Differential Housing

1. Clean the differential housing in solvent.
2. Clean and inspect the differential housing for the following:
 - The mounting bolt threads (3)

- The case cover bolt hole threads (4)
- The O-ring sealing surface for nicks or burrs (5)
- The drain plug hole threads (6)
- The axle seal area (2)
- The pinion bolt hole threads (7)
- The bushing bore (1)
- Cracks in the housing, if removed

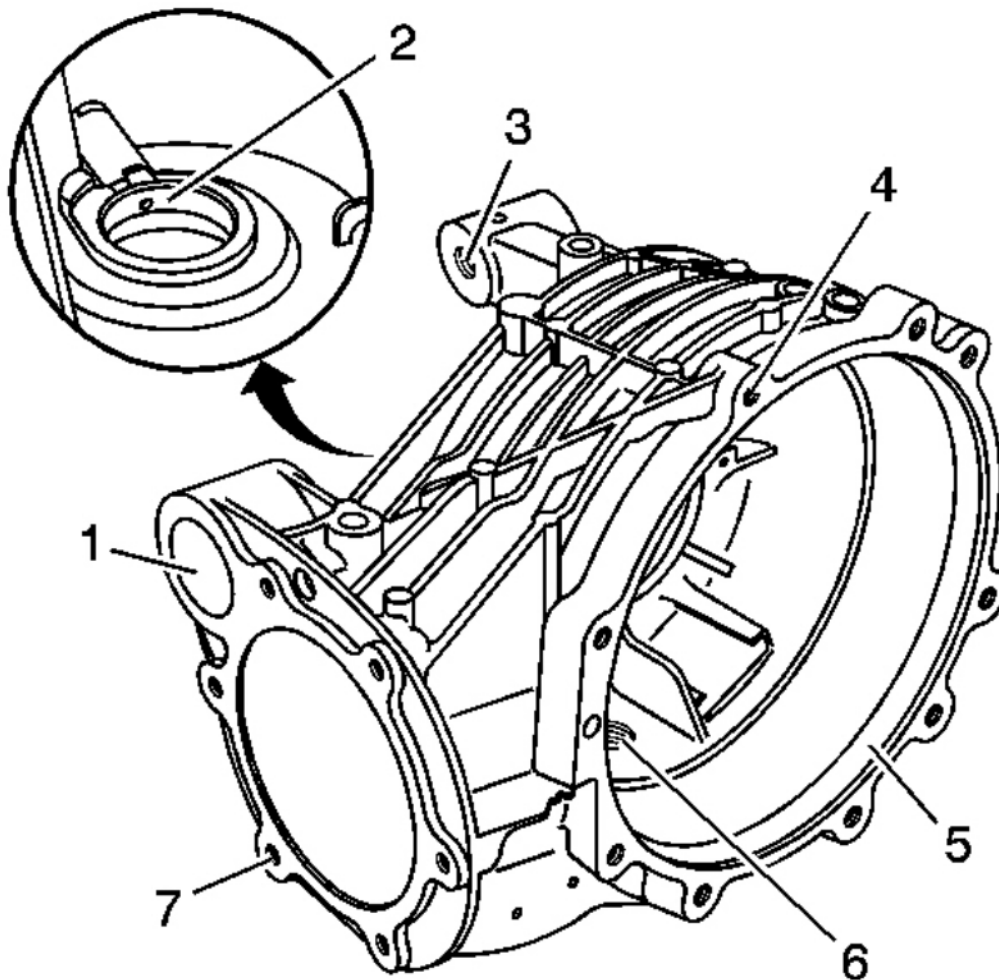


Fig. 55: Inspecting Differential Housing

Courtesy of GENERAL MOTORS CORP.

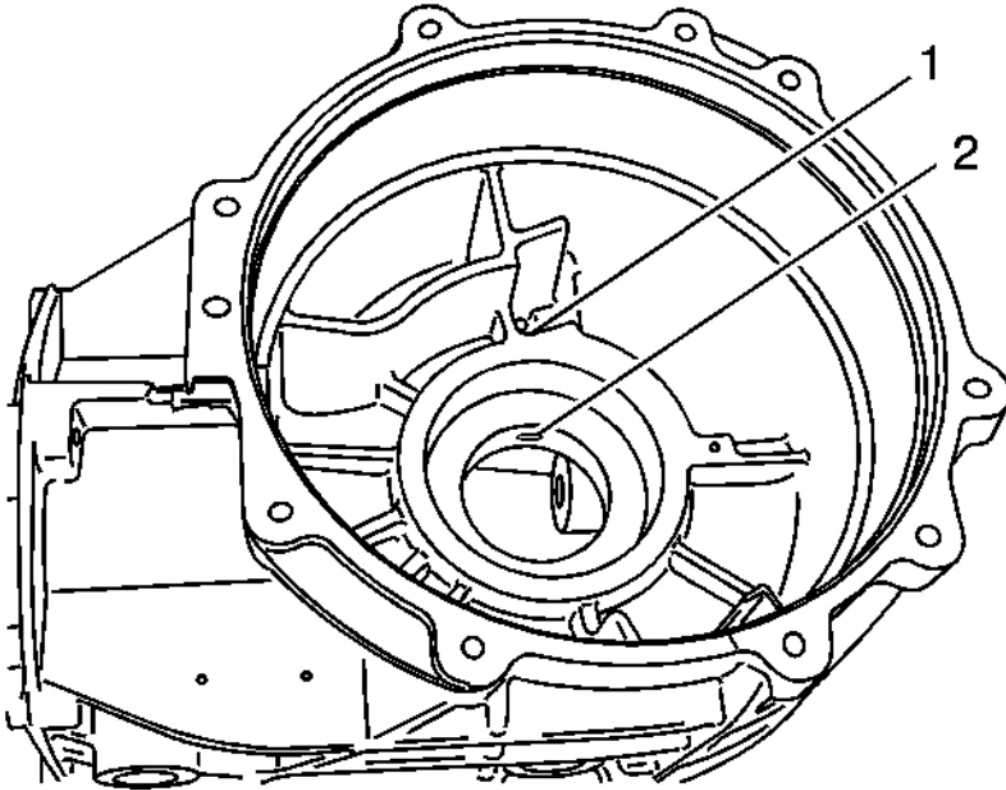


Fig. 56: Cleaning Oil Passage
Courtesy of GENERAL MOTORS CORP.

3. Clean the oil passage between (1) and (2), in the axle bearing bore.

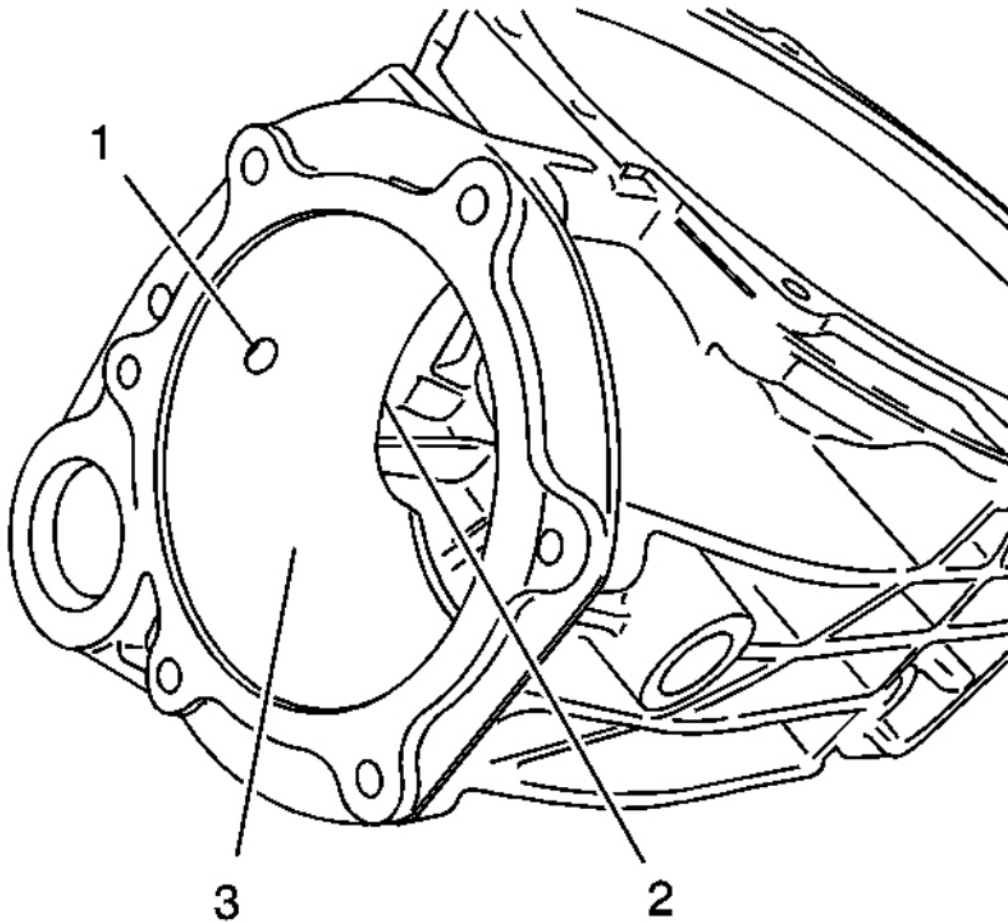


Fig. 57: Inspecting Pinion Housing Surface
Courtesy of GENERAL MOTORS CORP.

4. Clean the oil passage between (1) and (2), in the pinion carrier bore.
5. In 2 locations (3) inspect the pinion housing surface.

Differential Carrier Cover

CAUTION: Refer to Safety Glasses Caution in Cautions and Notices.

1. Clean the differential carrier cover in solvent.

2. Clean and inspect the differential carrier cover for the following:
- Clean the oil passage between (1) and (2), in the axle bearing bore
 - Inspect the cover flat (3) for nicks and burrs
 - Clean the fill plug hole threads (4)
 - Clean the O-ring groove (5)
 - Inspect the race and shim surfaces (6) and (7)

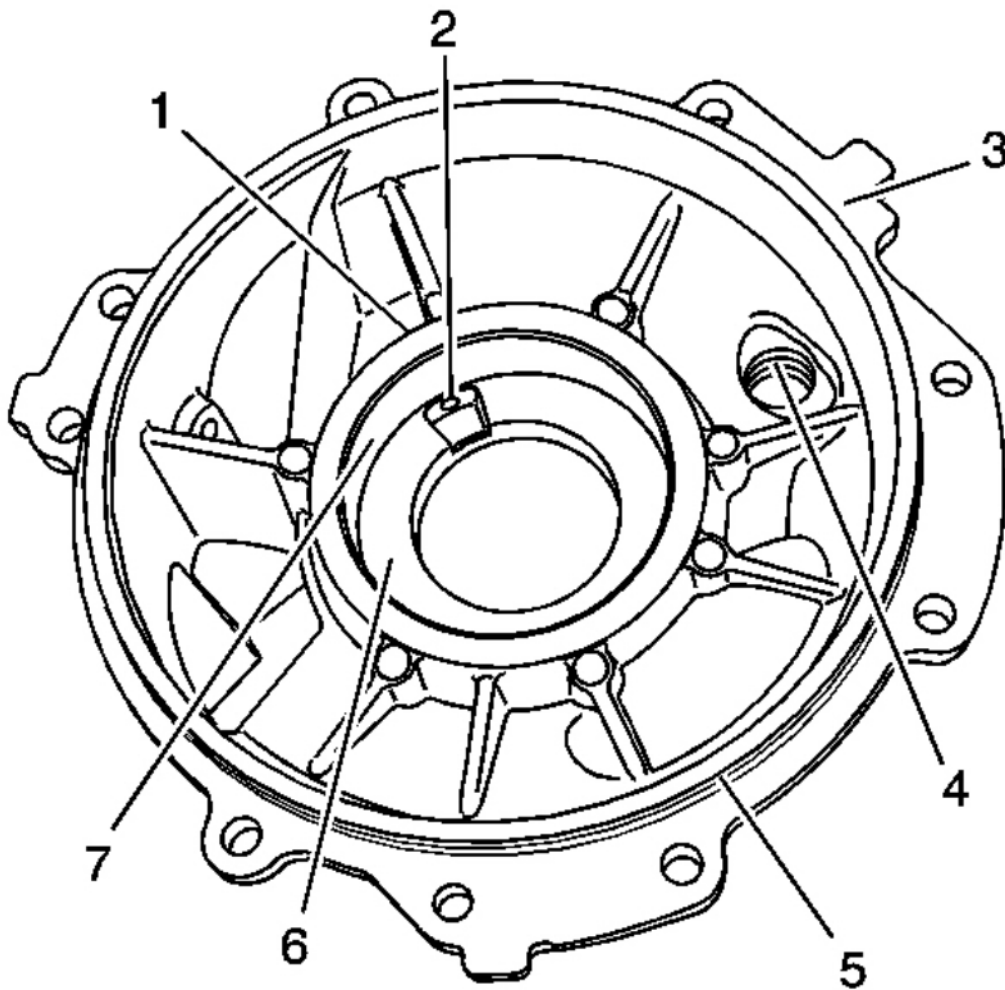


Fig. 58: Inspecting Differential Carrier Cover
Courtesy of GENERAL MOTORS CORP.

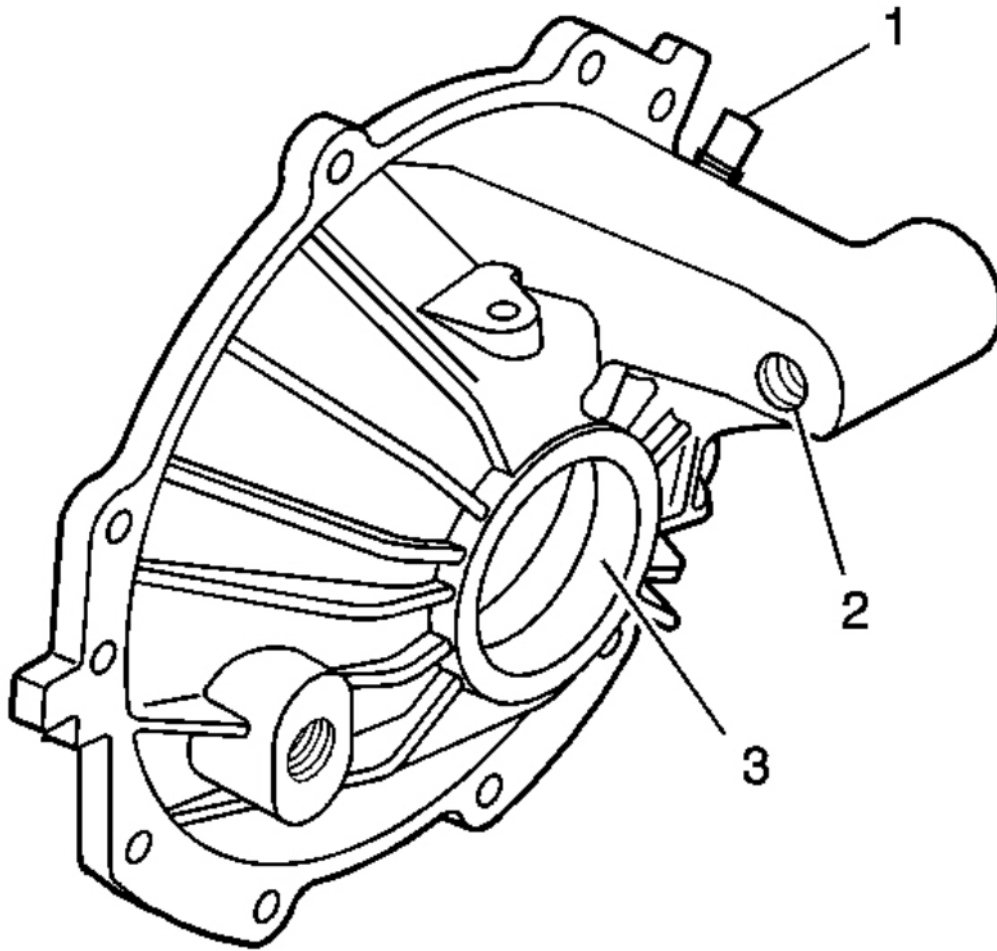


Fig. 59: Inspecting Differential Carrier Cover Exterior
Courtesy of GENERAL MOTORS CORP.

3. Inspect the differential carrier cover exterior for the following:
 - The vent for proper operation (1)
 - The mounting bolt threads (2)
 - The axle seal mounting surface (3)

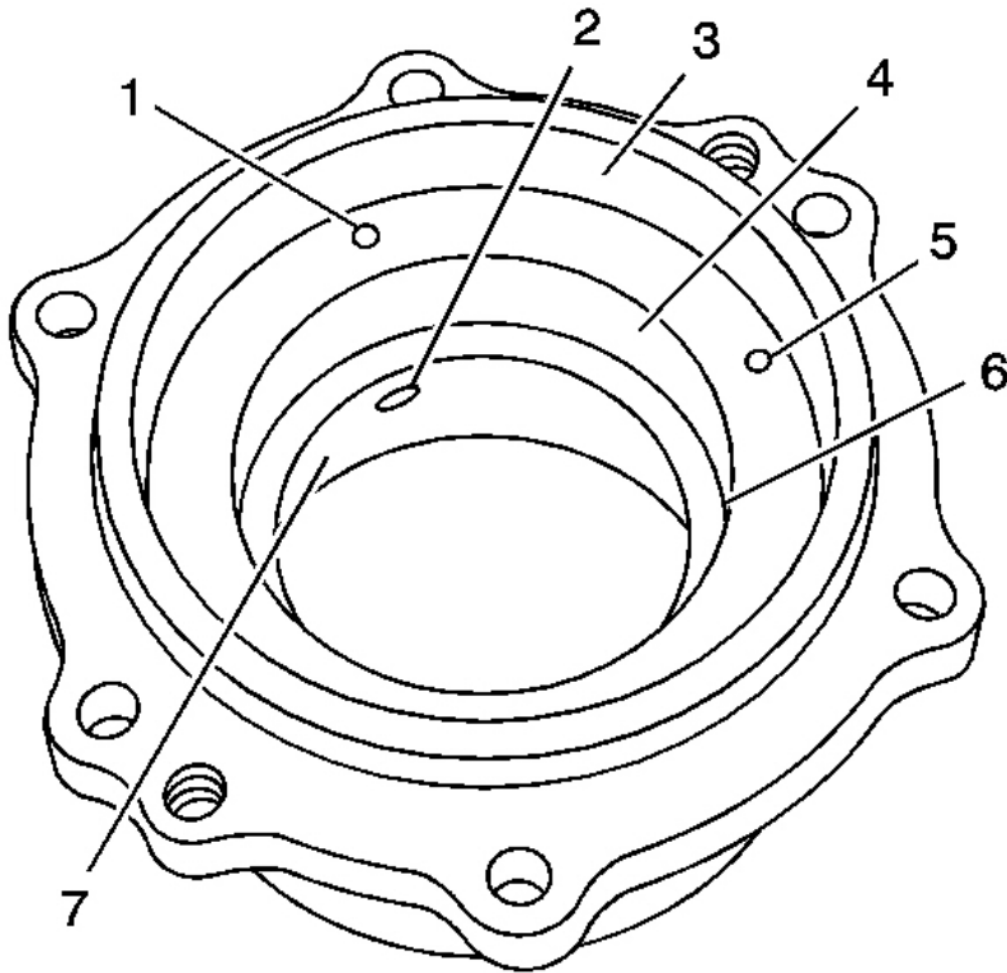


Fig. 60: Inspecting Drive Pinion Carrier Housing
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Safety Glasses Caution in Cautions and Notices.

1. Clean the drive pinion carrier housing in solvent.
2. Clean and inspect the drive pinion carrier housing for the following:
 - Clean the oil passages between holes (1) and (2) and between holes (5) and (6)
 - Inspect the pinion seal area (3) and the bearing races (4, 7) for damage

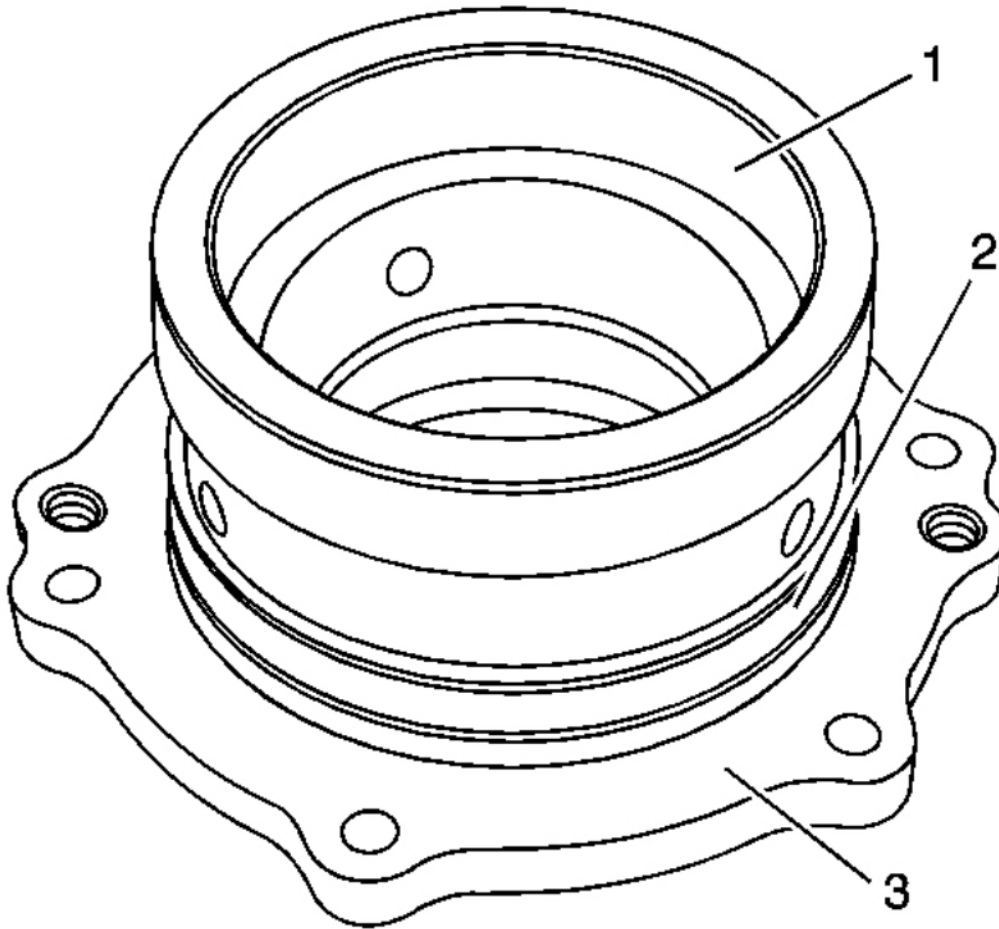


Fig. 61: Inspecting Races, O-Ring Groove & Flat Surface
Courtesy of GENERAL MOTORS CORP.

3. Clean and inspect the following:
 - The O-ring groove (2) for nicks and burrs
 - The flat surface (3) for nicks
 - The races (1)

DIFFERENTIAL HOUSING SUPPORT BUSHING REPLACEMENT

Removal Procedure

Steel Cage Bushing

1. Remove the differential assembly. Refer to **Differential Replacement**.
2. Remove the housing support bushing.

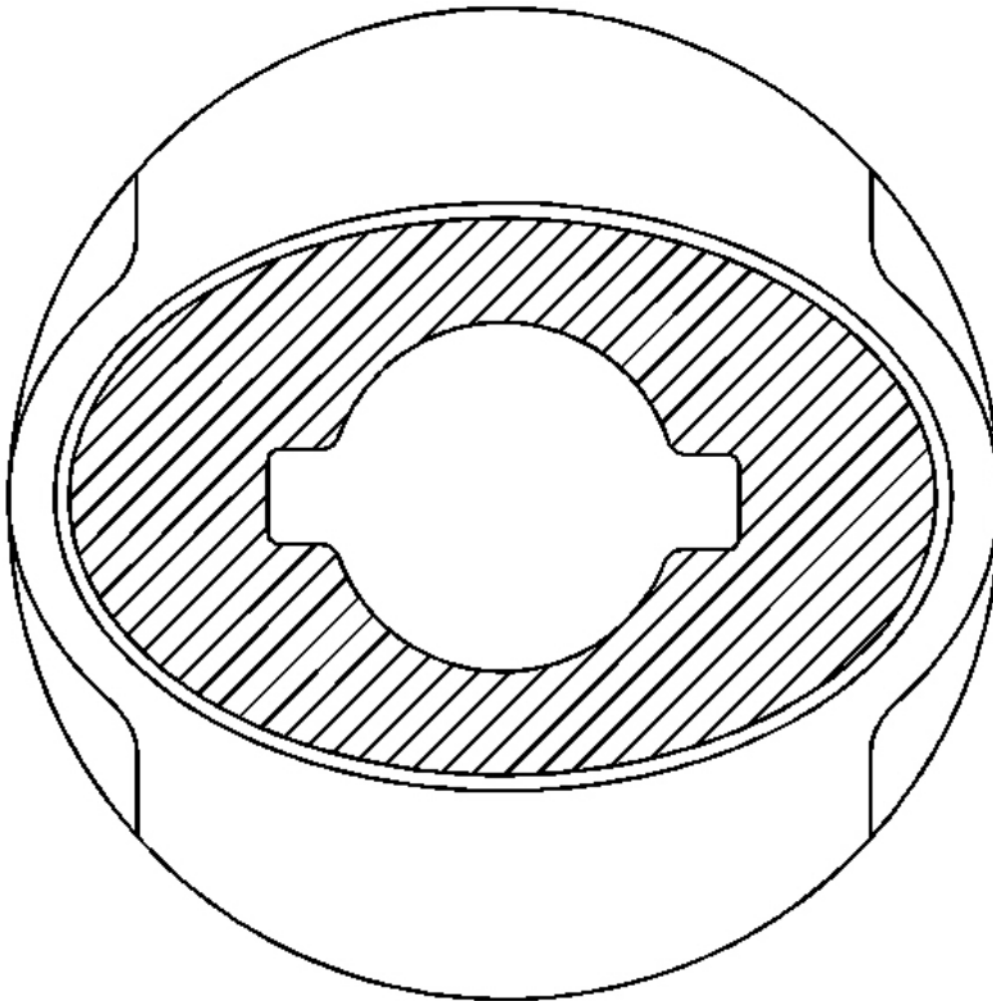


Fig. 62: View Of Housing Support Bushing
Courtesy of GENERAL MOTORS CORP.

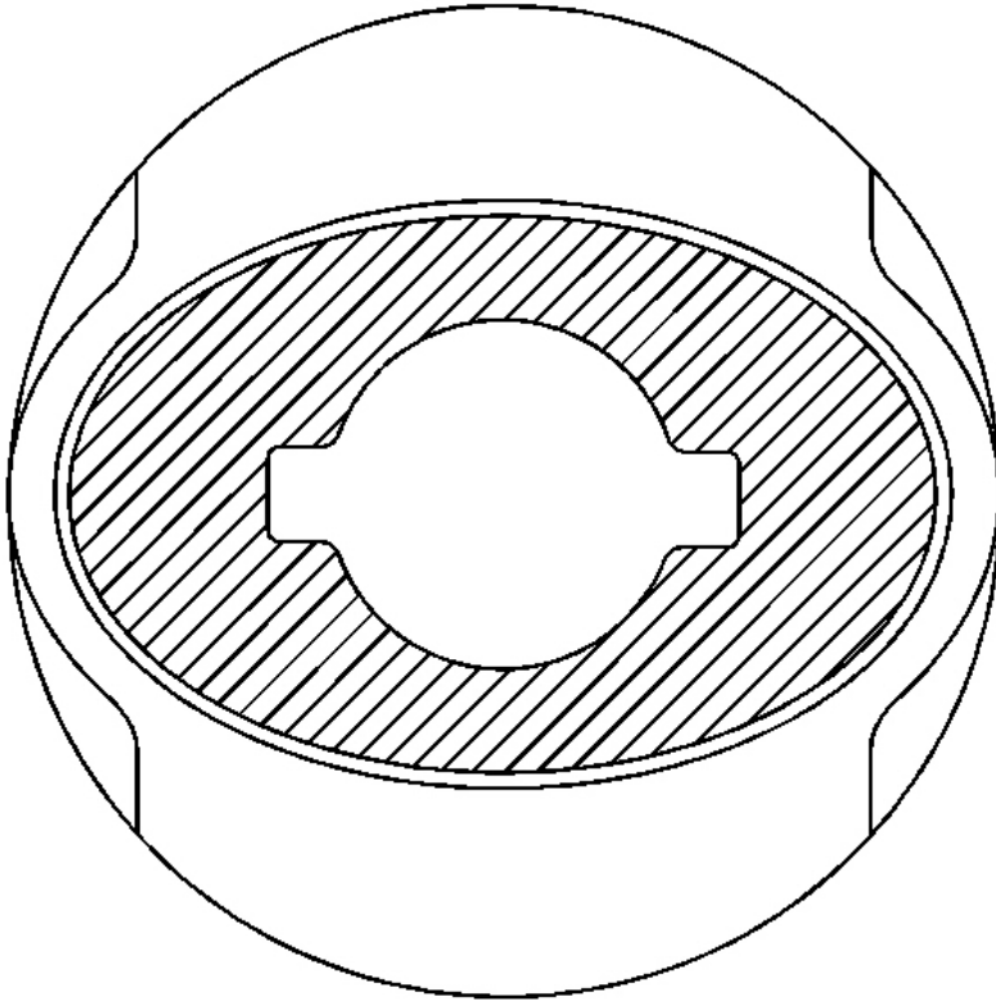


Fig. 63: View Of Housing Support Bushing
Courtesy of GENERAL MOTORS CORP.

1. Install the housing support bushing.
2. Install the differential assembly. Refer to **Differential Replacement**.

Tools Required

J 45007 Bushing Remover/Installer. See **Special Tools and Equipment**.

Removal Procedure

Solid Rubber Bushing

1. Remove the differential assembly. Refer to Differential Replacement.
2. Using the **J 45007** , remove the housing support bushing. See Special Tools and Equipment.

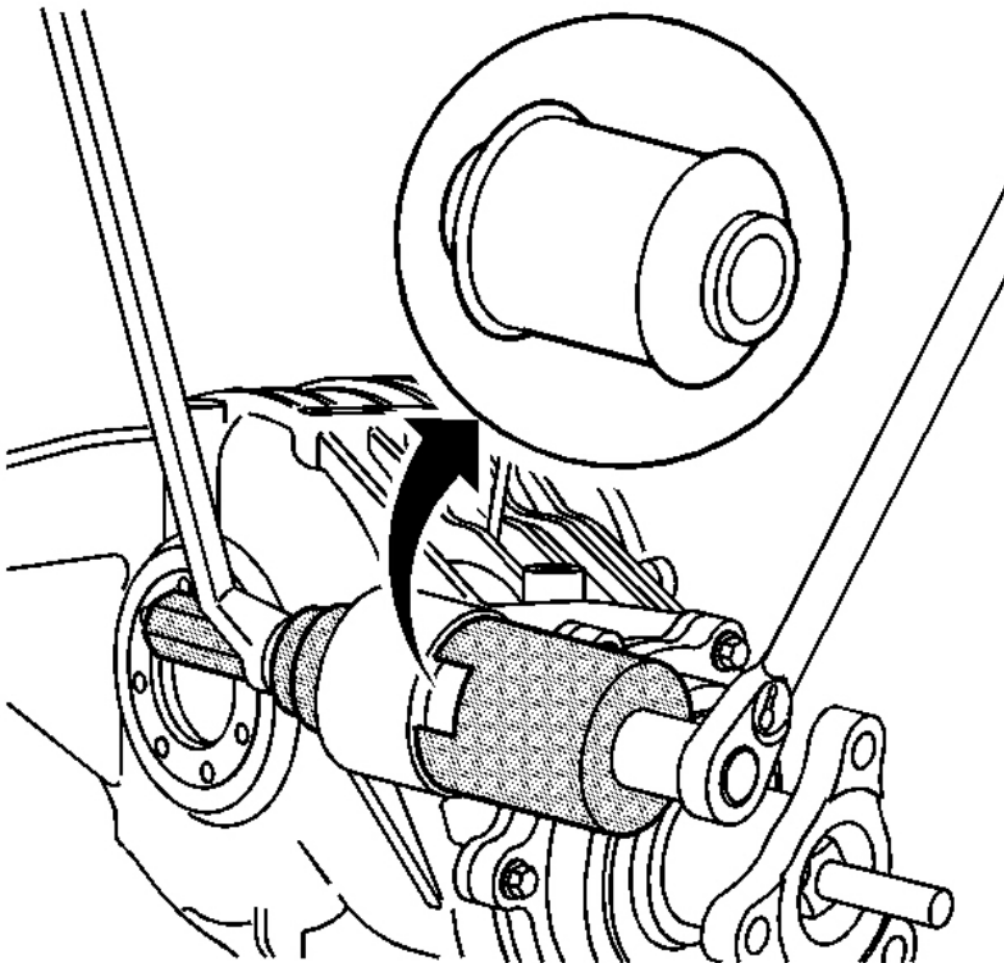


Fig. 64: Removing Differential Assembly Housing Support Bushing
Courtesy of GENERAL MOTORS CORP.

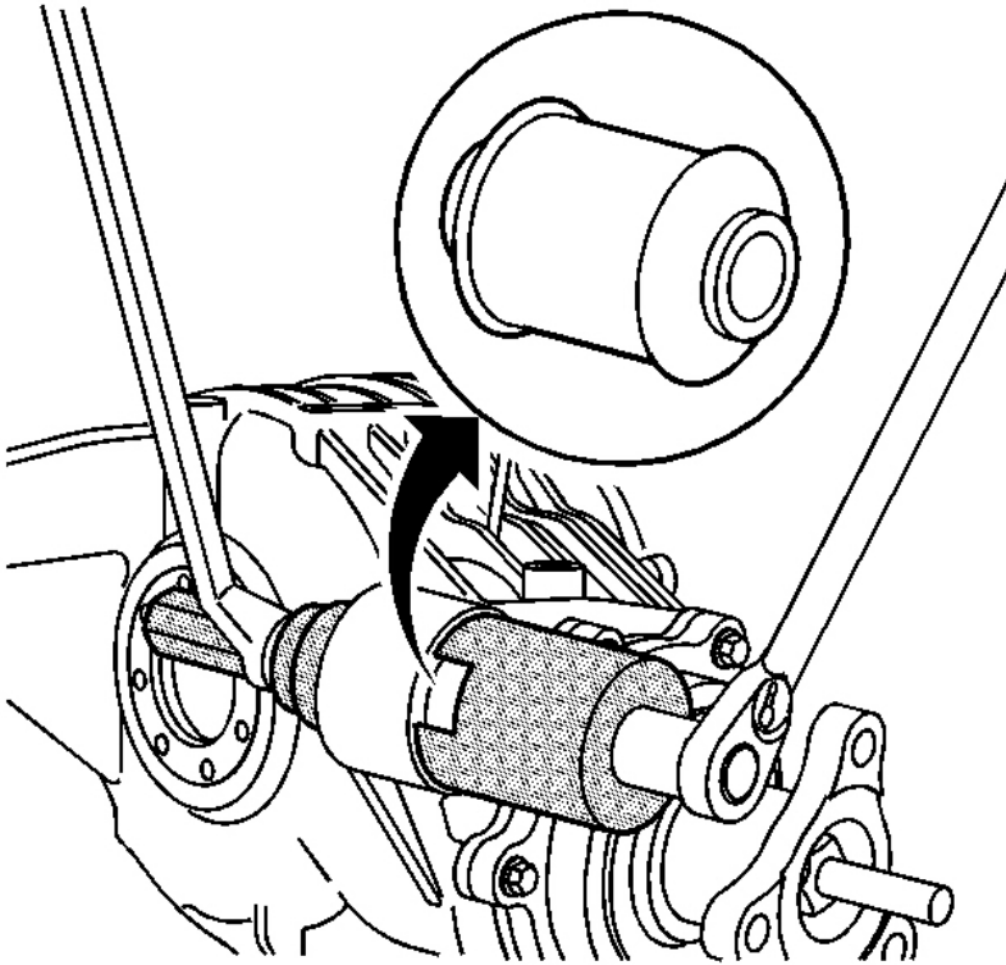


Fig. 65: Installing The Differential Assembly Housing Support Bushing
Courtesy of GENERAL MOTORS CORP.

1. Using the **J 45007** , install the housing support bushing. See **Special Tools and Equipment**.
2. Install the differential assembly. Refer to **Differential Replacement**.

PINION DEPTH ADJUSTMENT

Tools Required

- **J 25070** Heat Gun
- **J 42168-9** Holding Strap. See **Special Tools and Equipment**.
- **J 45013-2** Gage Assembly. See **Special Tools and Equipment**.
- **J 45013-3** Gage Cylinder. See **Special Tools and Equipment**.
- **J 45013-5** Gage Centering Assembly. See **Special Tools and Equipment**.
- **J 45013-7** Adapter Screw. See **Special Tools and Equipment**.
- **J 45019** Flange and Pinion Cage Remover

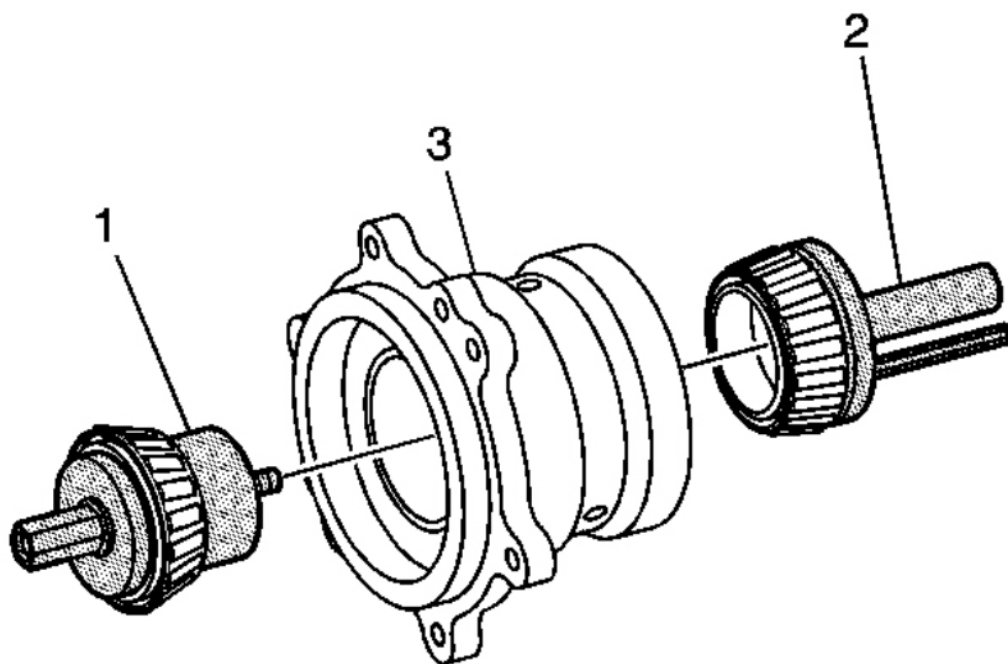


Fig. 66: Installing J 45013-5 & J 45013-2 To Pinion Bearing Cage
Courtesy of GENERAL MOTORS CORP.

1. Install pinion tail bearing then the pinion bearing spacer on the **J 45013-5** (1). See **Special Tools and Equipment**.
2. Install the head bearing on **J 45013-2** (2). See **Special Tools and Equipment**.
3. Install them into the pinion bearing cage (3) as shown.
4. Snug the **J 45013-7** . See **Special Tools and Equipment**. This will apply the proper

bearing preload determined by the custom ground spacer that is provided with the bearing kit.

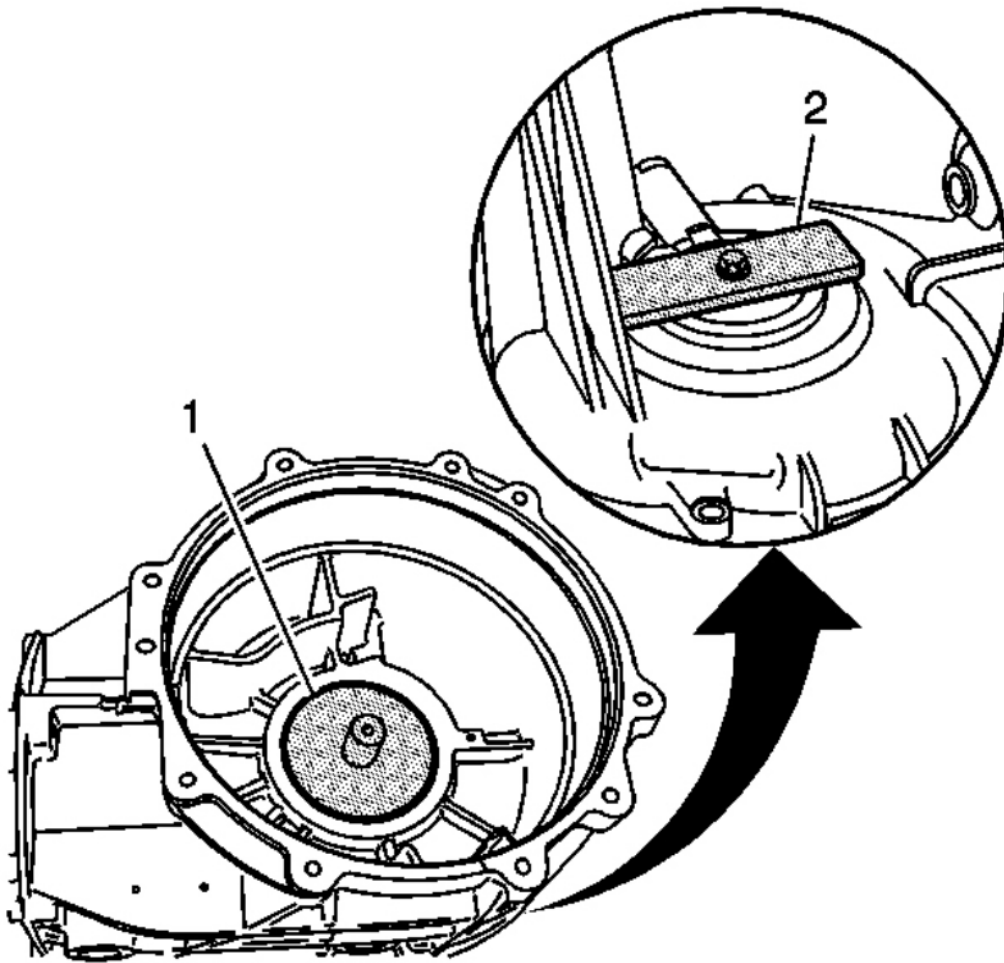


Fig. 67: Installing J 45013-3 & J 42168-9
Courtesy of GENERAL MOTORS CORP.

5. Install the **J 45013-3** (1) into the differential carrier as shown. See **Special Tools and Equipment**.
6. Turn the carrier over and attach the holding strap **J 42168-9** and thumb screw (2). See **Special Tools and Equipment**. Snug the thumb screw.

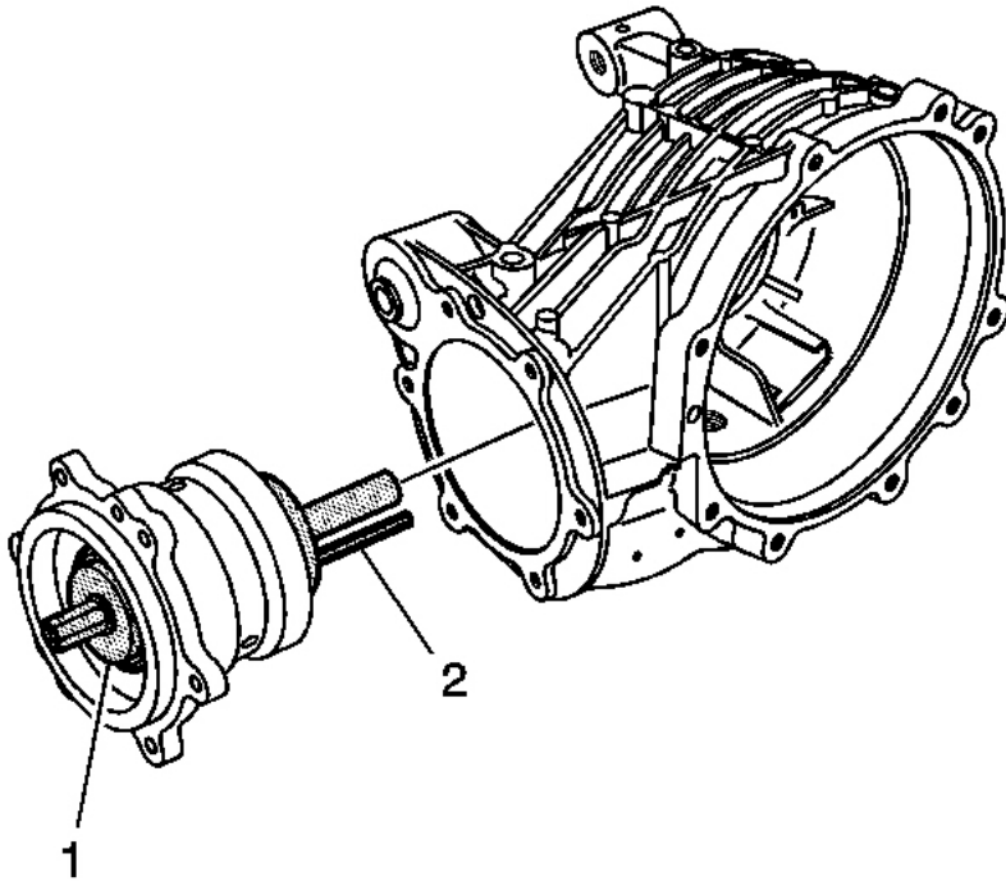


Fig. 68: Installing Pinion Bearing Housing
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: When installing the pinion bearing housing into the carrier, ensure that the gage rod (2) does not hit the ribbing inside the carrier.

7. Inspect the pinion cage surfaces. Ensure that there are no nicks or burrs on the pinion cage surfaces or in the carrier bore.

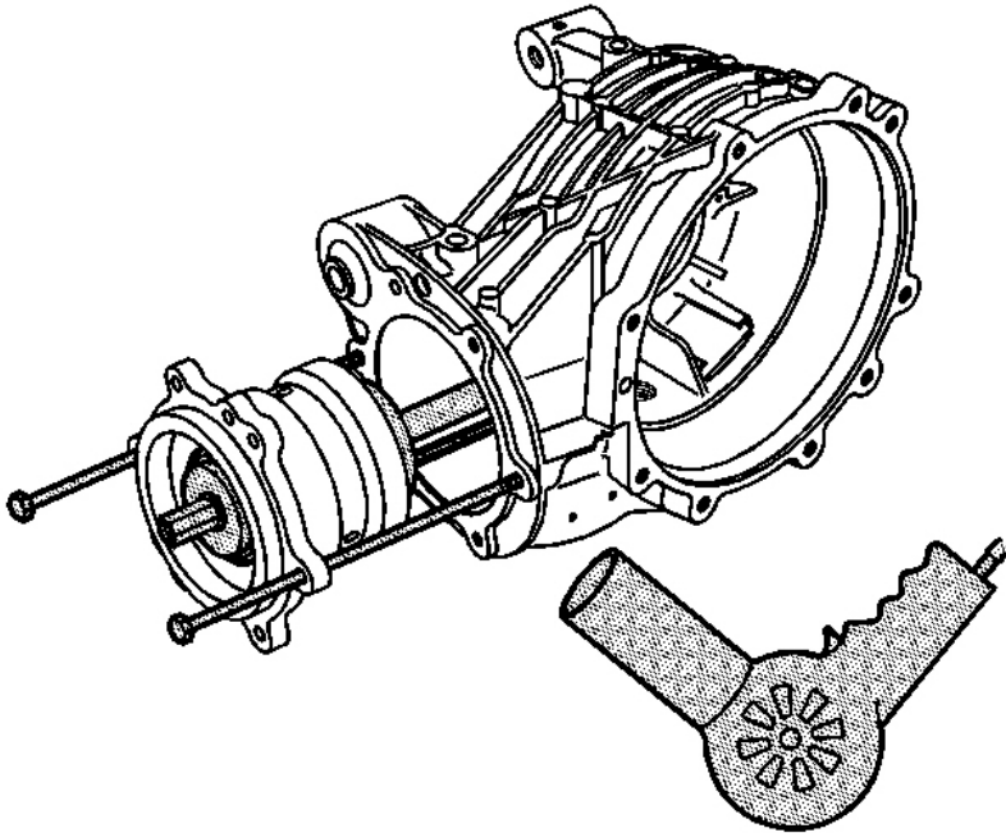


Fig. 69: Aligning Bolt Holes Of Pinion Cage & Carrier
Courtesy of GENERAL MOTORS CORP.

8. Using 2 long bolts from **J 45019** as guides, align the bolt holes of the pinion cage and the carrier. Snug the bolts.
9. Apply a light coat of gear lube to the carrier bore and pinion cage in order to ease assembly.
10. Heat the carrier using **J 25070** in order to ease pinion cage assembly.

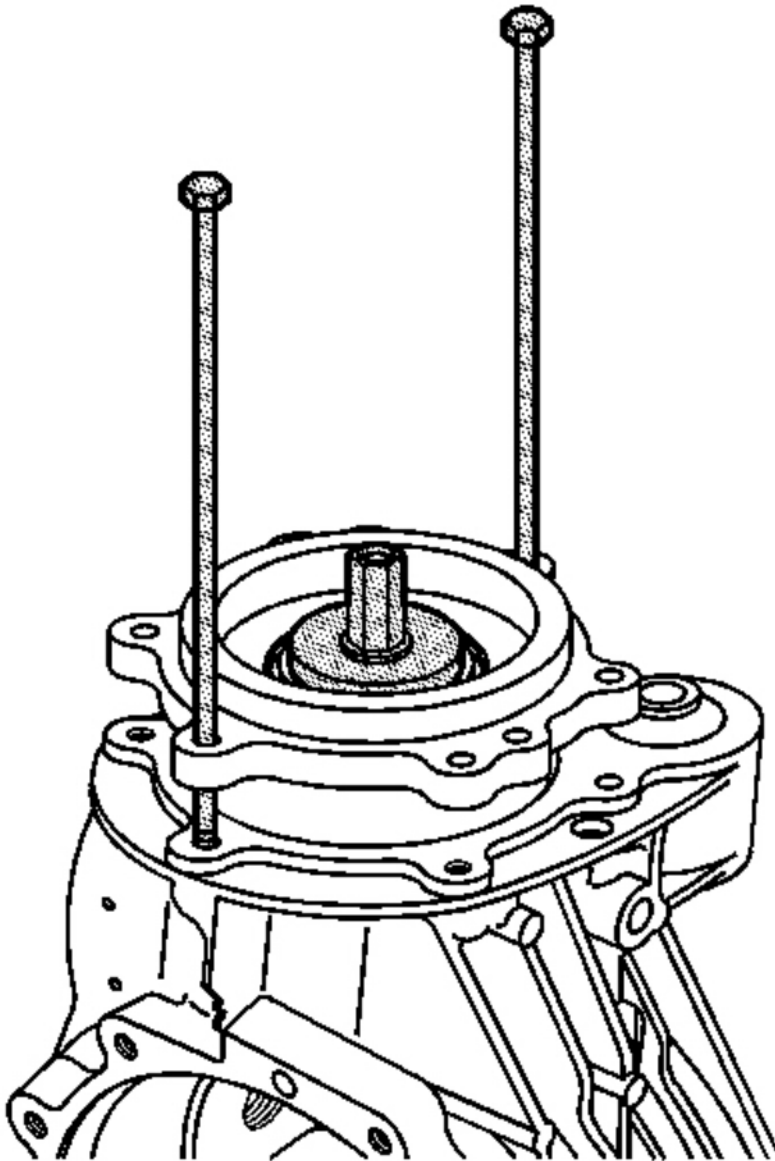


Fig. 70: Installing Pinion Cage Into Bore Of Carrier
Courtesy of GENERAL MOTORS CORP.

11. While aligning the guide bolts and bolt holes, push the pinion cage into the bore of the carrier.

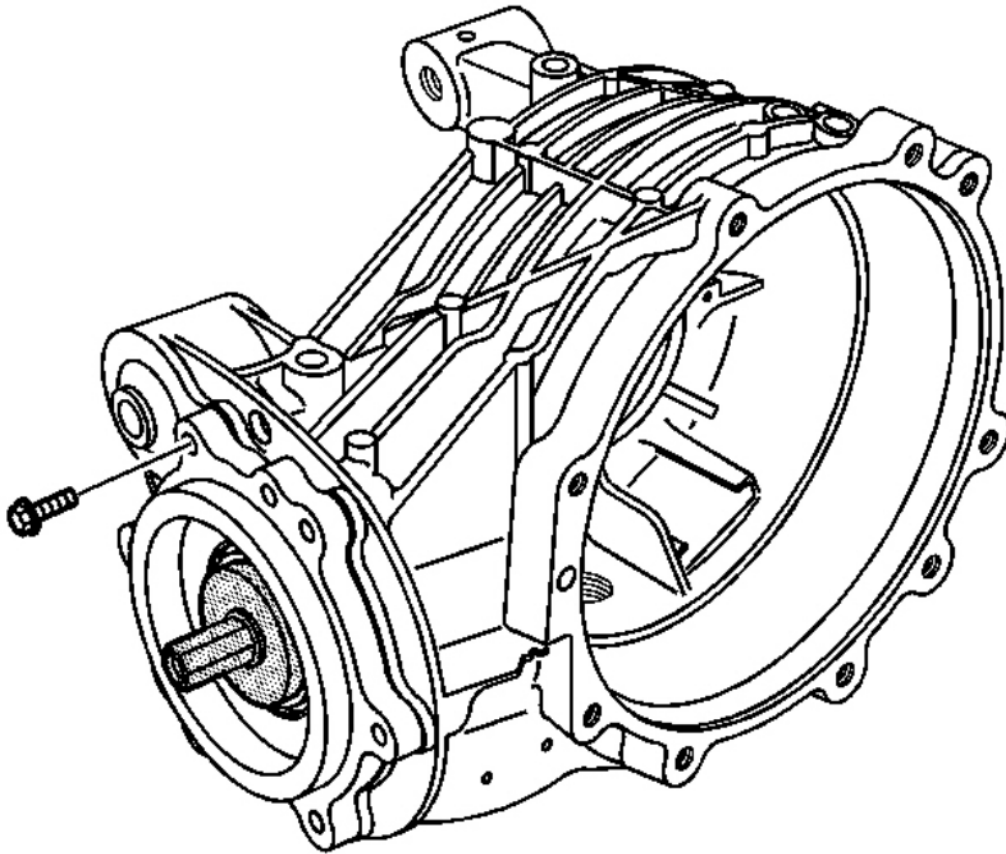


Fig. 71: Identifying Pinion Cage Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

12. Install the pinion cage bolts and tighten in a criss-cross pattern.

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

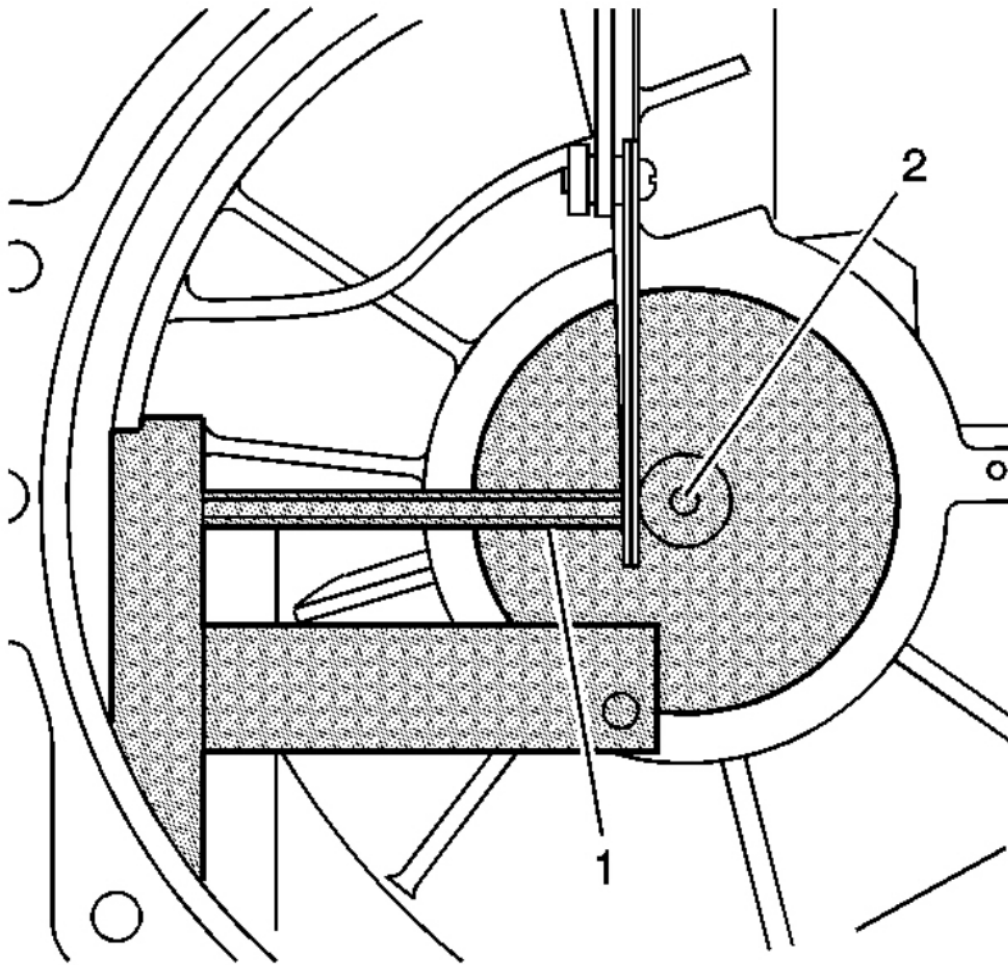


Fig. 72: Measuring Amount Of Pinion Shim Size Value
Courtesy of GENERAL MOTORS CORP.

13. Measure the distance between the hex rod on the **J 45013-2** (1) and the post on the **J 45013-3** (2). See **Special Tools and Equipment**. Record this measurement.
14. Subtract this measurement from 5 mm (0.196 in). This is the amount of pinion shim size value B2.
15. Remove **J 45013-3** from the carrier. See **Special Tools and Equipment**.

Tools Required

- **J 24433** Pinion Cone and Side Bearing Installer. See [Special Tools and Equipment](#).
- **J 42168-16** Spacers. See [Special Tools and Equipment](#).
- **J 45010** Getrag Axle Bearing Race Installer. See [Special Tools and Equipment](#).
- **J 45013-1** Cover Shim Gage. See [Special Tools and Equipment](#).
- **J 45013-2** Gage Assembly. See [Special Tools and Equipment](#).
- **J 45013-4** Gage Plate. See [Special Tools and Equipment](#).
- **J 45013-6** Depth Gage. See [Special Tools and Equipment](#).

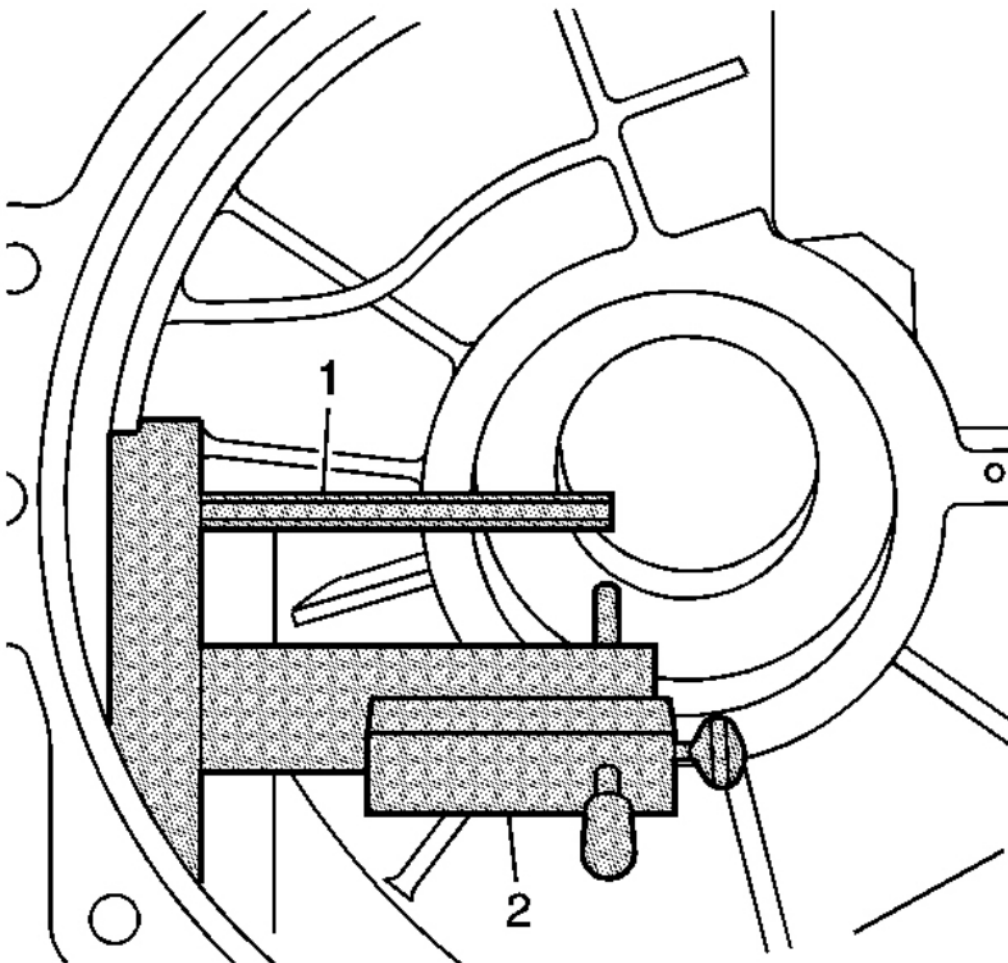


Fig. 73: View Of J 45013-2 & J 45013-6
Courtesy of GENERAL MOTORS CORP.

1. Use the **J 45013-6** (2) drop rod. See **Special Tools and Equipment**. Loosen the thumb screw and drop the rod through the hole on **J 45013-2** (1). See **Special Tools and Equipment**.
2. Ensure the rod bottoms out in the bearing cup bore. Snug the thumb screw in order to record the distance.
3. Install the differential side bearings. Refer to **Differential Side Bearings Assemble**.

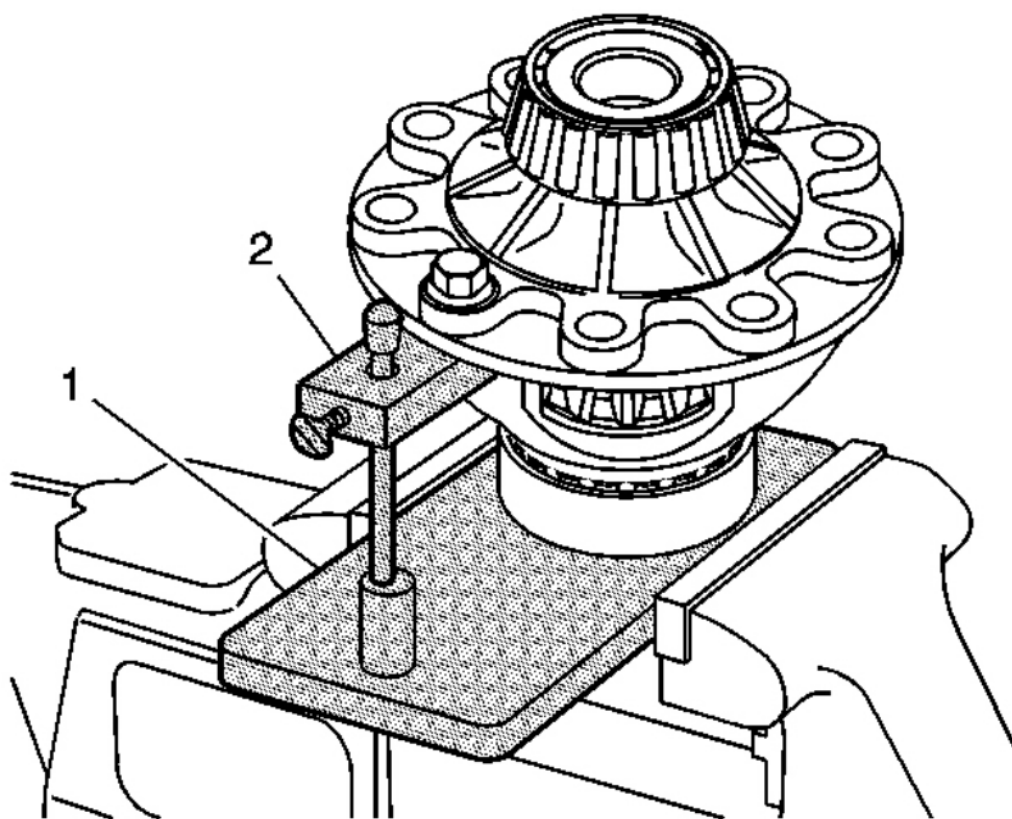


Fig. 74: View Of J 45013-4 & J 45013-6
Courtesy of GENERAL MOTORS CORP.

4. Use an old ring gear bolt. Attach the **J 45013-6** (2) to the differential case as shown.

5. Ensure that the drop rod aligns with the post of **J 45013-4** (1).
6. Snug the bolt.

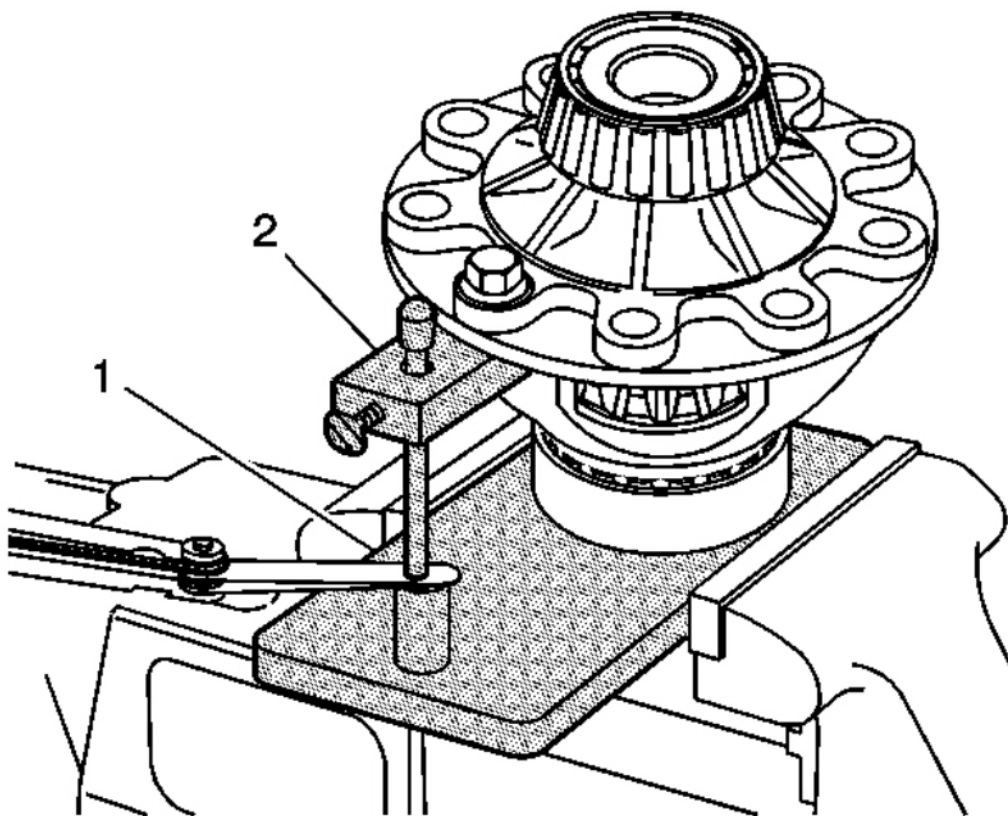


Fig. 75: Measuring Gap Between Rod & Post On J 45013-6
Courtesy of GENERAL MOTORS CORP.

7. Measure the gap (1) between the rod and the post on **J 45013-6** (2). See **Special Tools and Equipment**. Record the measurement as C1.
8. Spin the differential case and ensure that the measurement stayed the same.
9. Subtract the measured distance from 5 mm (0.197 in). This is the differential right shim value C2. Record this distance.
10. Remove the tools.

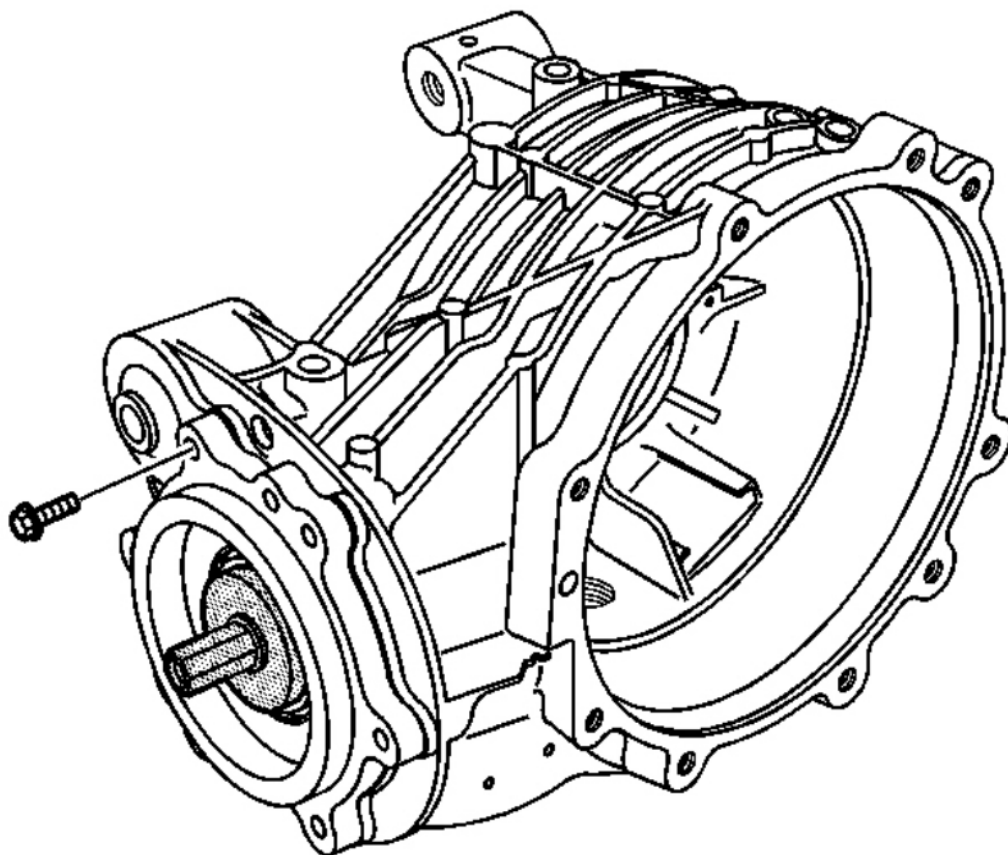


Fig. 76: Identifying Pinion Cage Bolts
Courtesy of GENERAL MOTORS CORP.

11. Remove the pinion cage bolts.

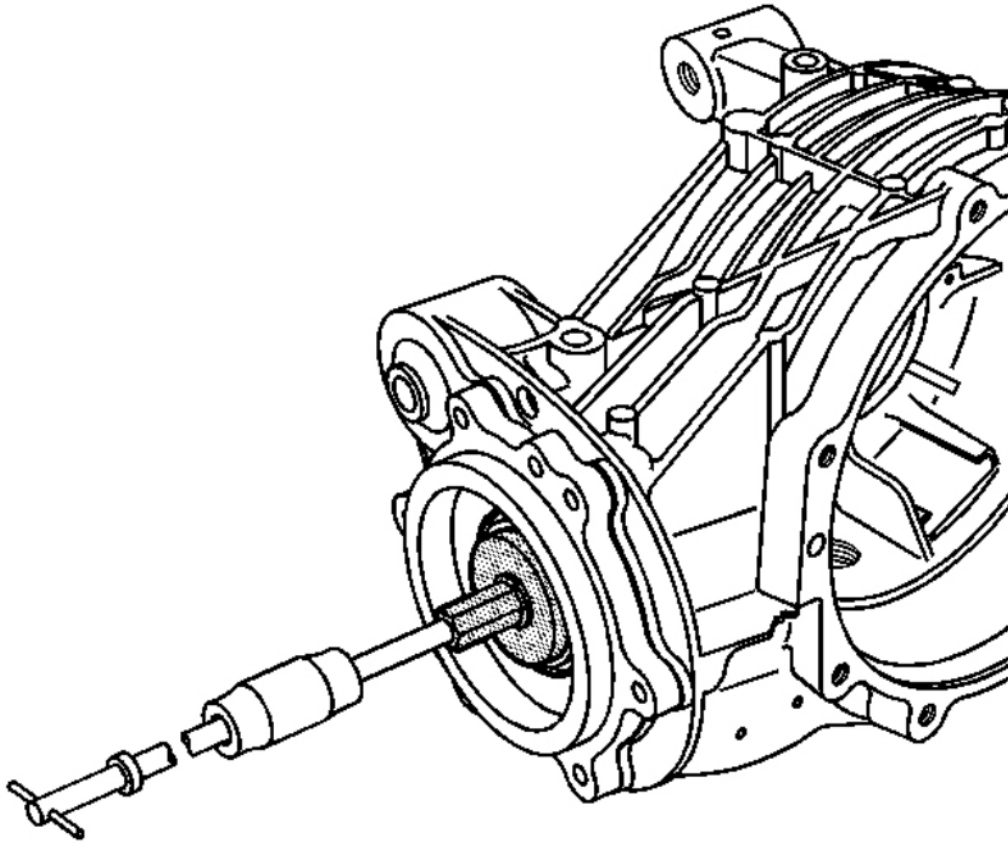


Fig. 77: Removing Housing From Carrier
Courtesy of GENERAL MOTORS CORP.

12. It may be necessary to heat the carrier in order to remove the pinion bearing housing.
13. Screw the slide hammer into the bolt that holds the shimming tools in the pinion housing.
14. Pull the housing from the carrier.
15. Remove all of the shimming tools.

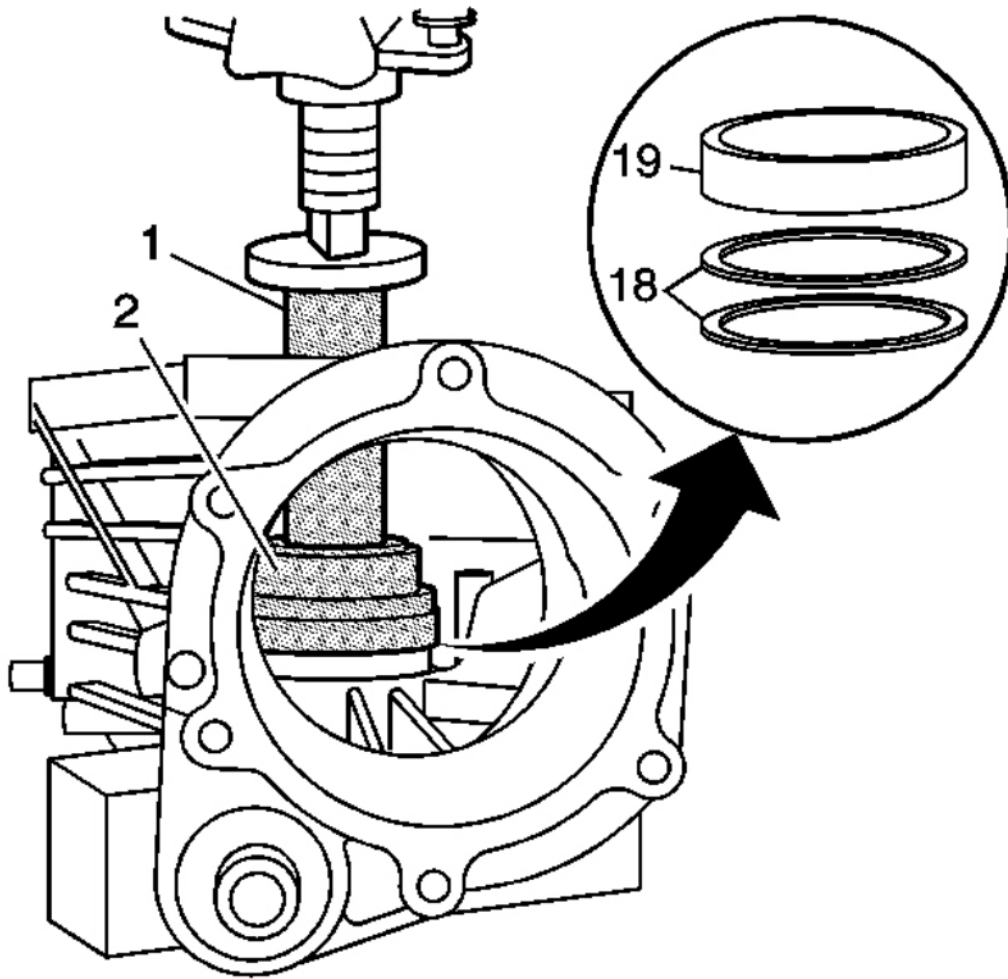


Fig. 78: Installing Shim & Bearing Cup Into Differential Housing
Courtesy of GENERAL MOTORS CORP.

16. Install the shims (18) measured for the differential assembly side bearing cup (19).
17. Lightly lubricate the cup with gear lube.
18. Using **J 24433** and **J 45010** and a press, install the bearing cup until it seats.

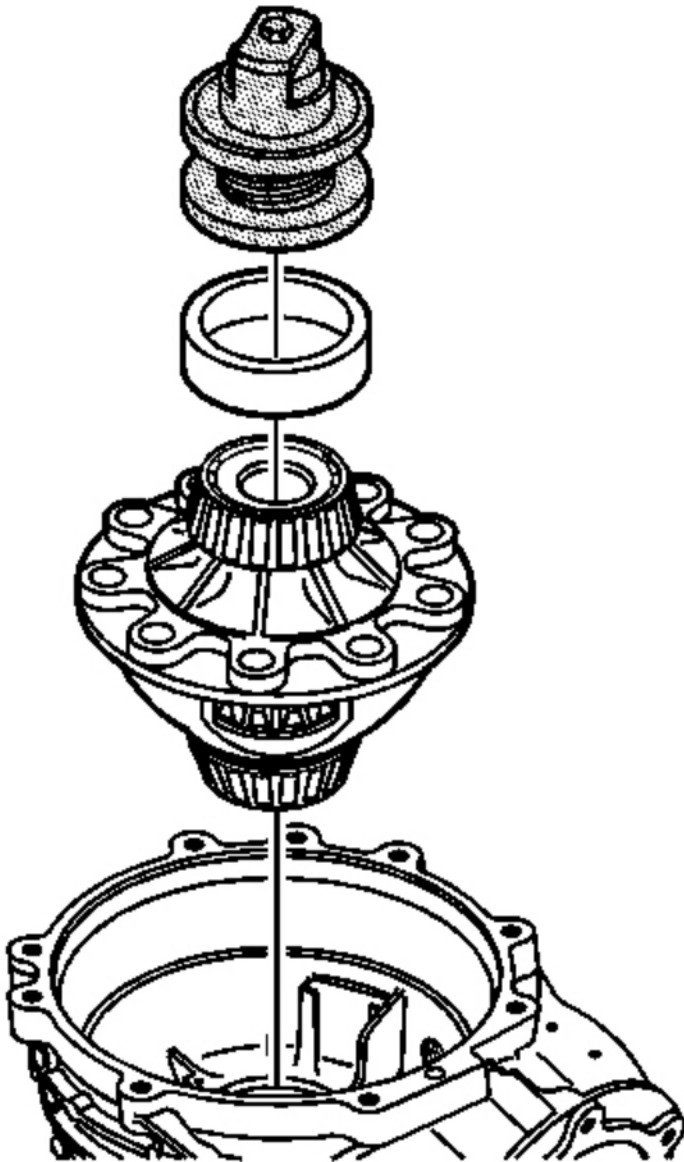


Fig. 79: Installing Differential Case
Courtesy of GENERAL MOTORS CORP.

19. For limited slip differential, the ring gear must be properly installed in order to hold the differential case together. Refer to **Ring Gear and Differential Housing Assemble**.

20. Install the differential case into the differential carrier.
21. Install the bearing cup and **J 45013-1** on top of the cup as shown. See Special Tools and Equipment.

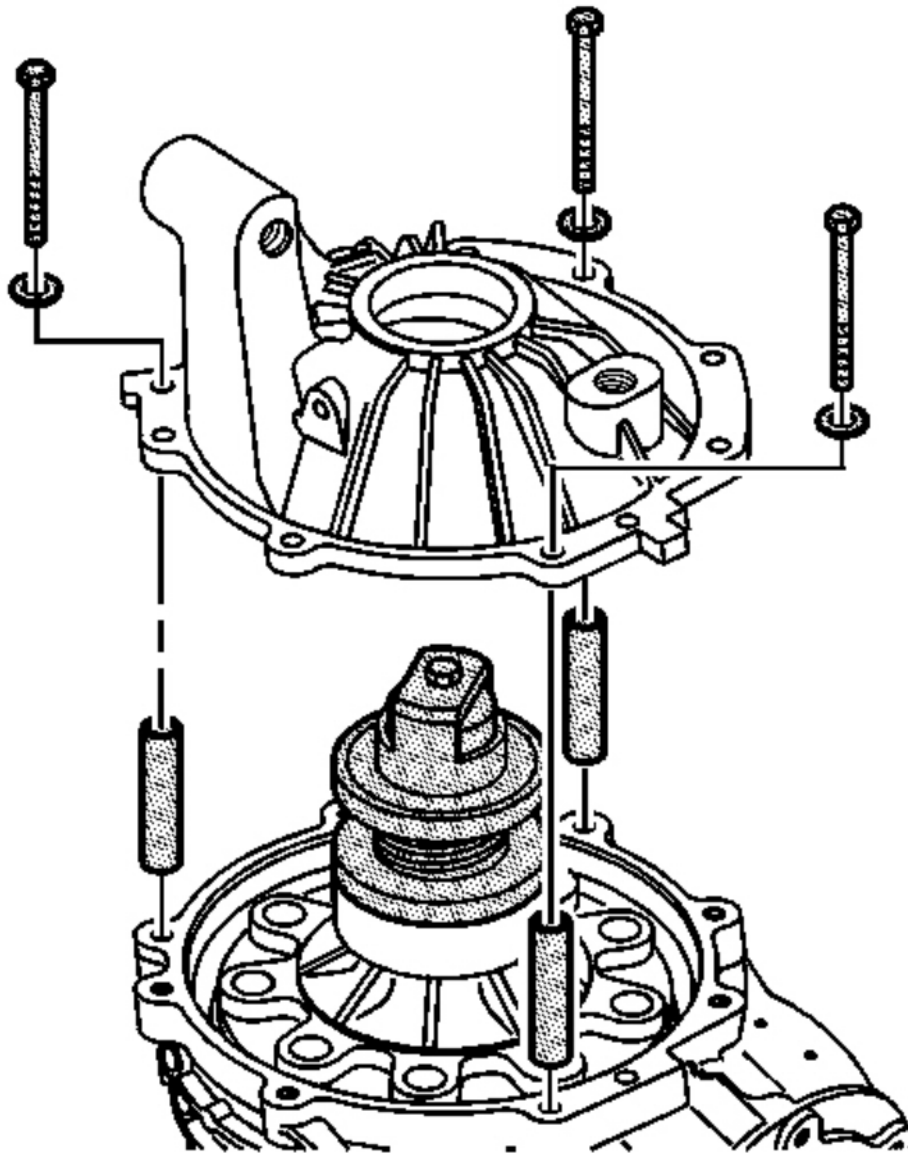


Fig. 80: Installing Bolts, Spacer & Washer

Courtesy of GENERAL MOTORS CORP.

22. Using **J 42168-16** , install the bolts, spacer and washer through the cover. See **Special Tools and Equipment**. Snug the bolts.

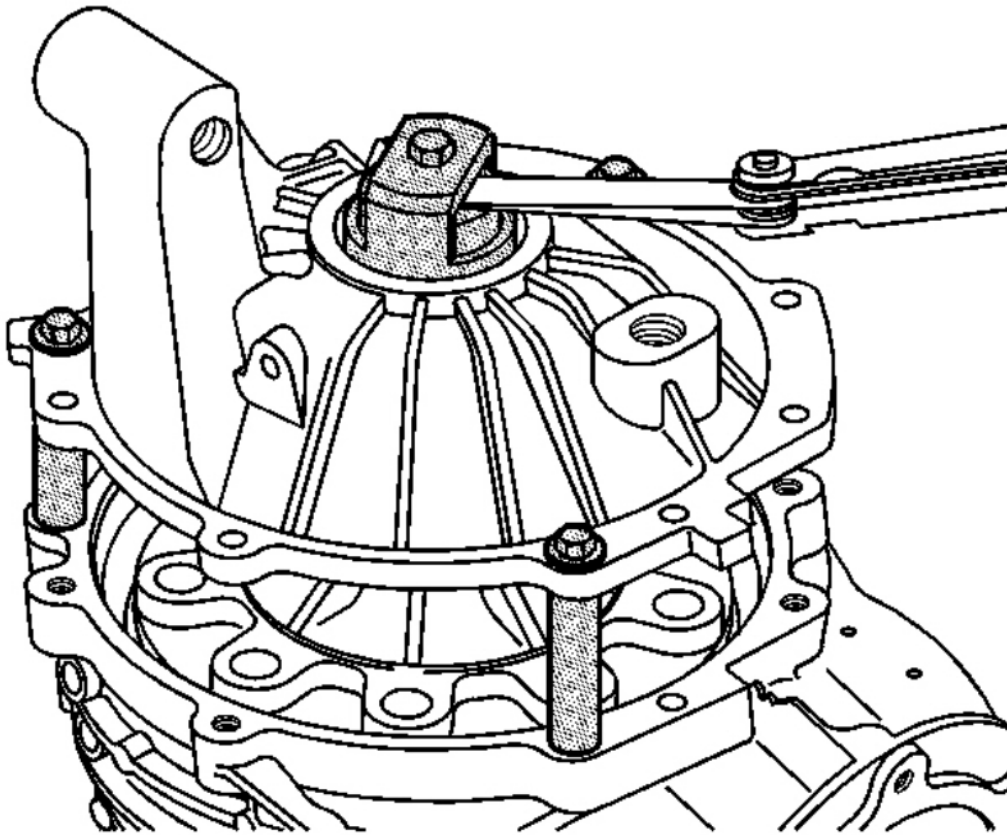


Fig. 81: Measuring Left Side Differential Bearing Shim Side Gap
Courtesy of GENERAL MOTORS CORP.

23. Measure the gap as shown. This is the left side differential bearing shim side.
24. Remove the bolts, cover and tools.

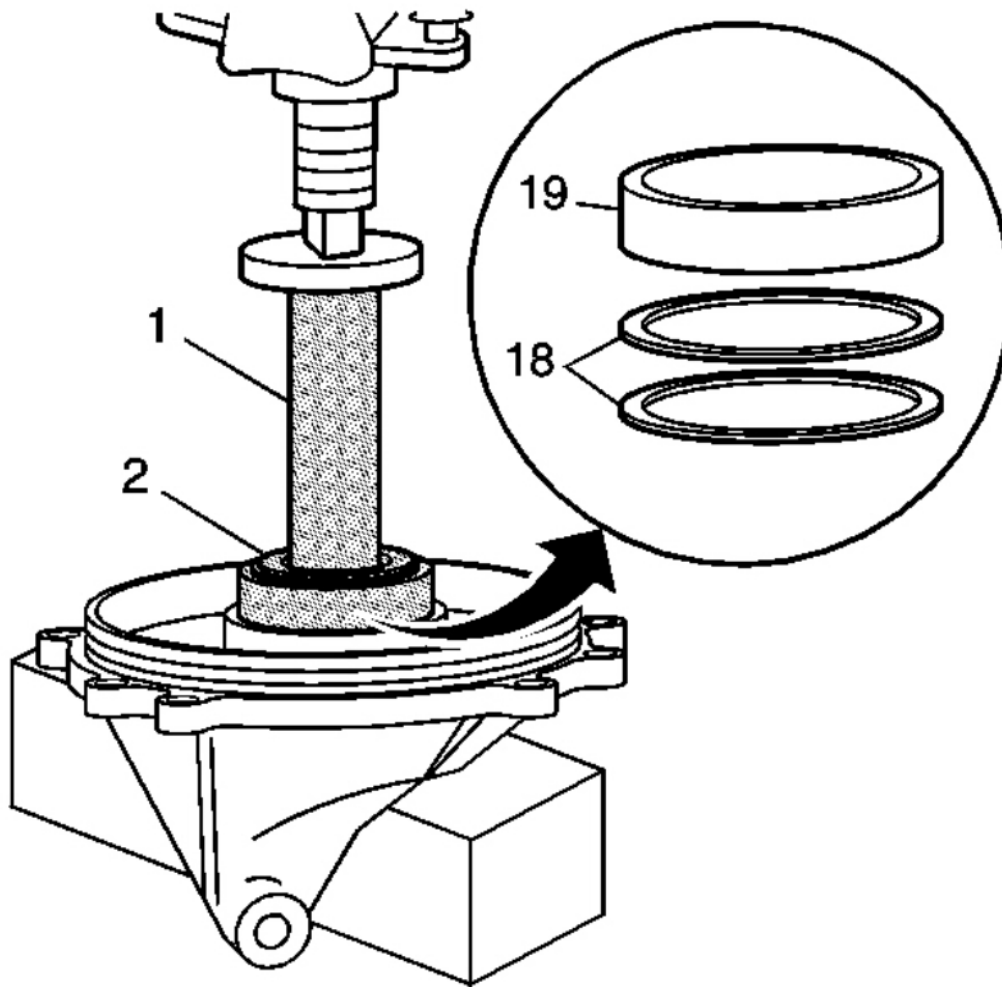


Fig. 82: Installing Measured Shims & Cup
Courtesy of GENERAL MOTORS CORP.

25. Using **J 24433** and **J 45010** , install the measured shims (18) in the cup bore. See **Special Tools and Equipment**.
26. Lightly coat the cup (19) with gear lube.
27. Press the cup into the bore until it seats.

DIFFERENTIAL SIDE BEARINGS ASSEMBLE

Tools Required:

J 45010 Getrag Axle Bearing Race Installer. See **Special Tools and Equipment**.

1. Install the differential case right side bearing (101) using a press and **J 45010** . See **Special Tools and Equipment**. Install the right side bearing (1) until the bearing seats.

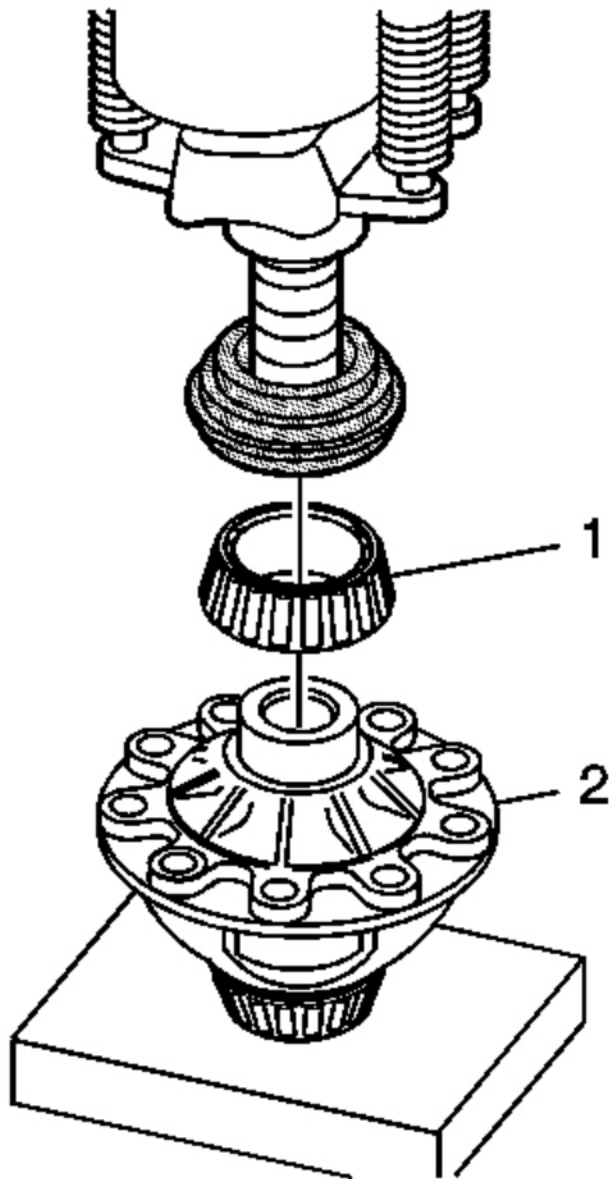


Fig. 83: Installing Right Side Bearing
Courtesy of GENERAL MOTORS CORP.

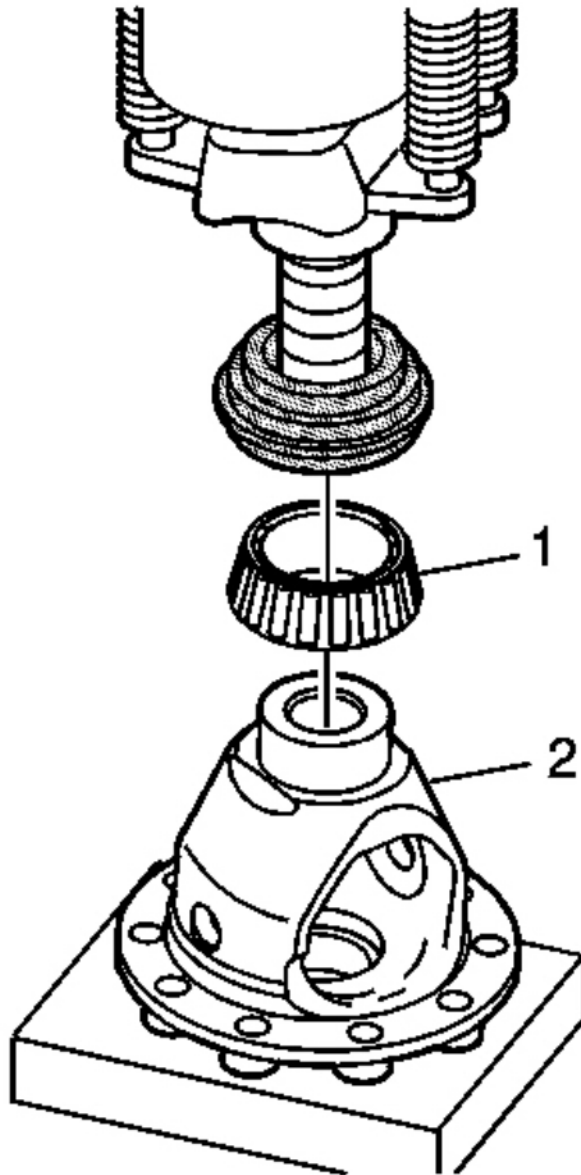


Fig. 84: Installing Left Side Bearing
Courtesy of GENERAL MOTORS CORP.

2004 Cadillac SRX

2004 DRIVELINE/AXLE Rear Drive Axle - SRX

2. Install the differential case left side bearing (101) using a press and **J 45010** . See **Special Tools and Equipment**. Install the left side bearing (1) until the bearing seats.
3. After bearings are assembled, refer to **Pinion Depth Adjustment**.

RING GEAR AND DIFFERENTIAL HOUSING ASSEMBLE

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

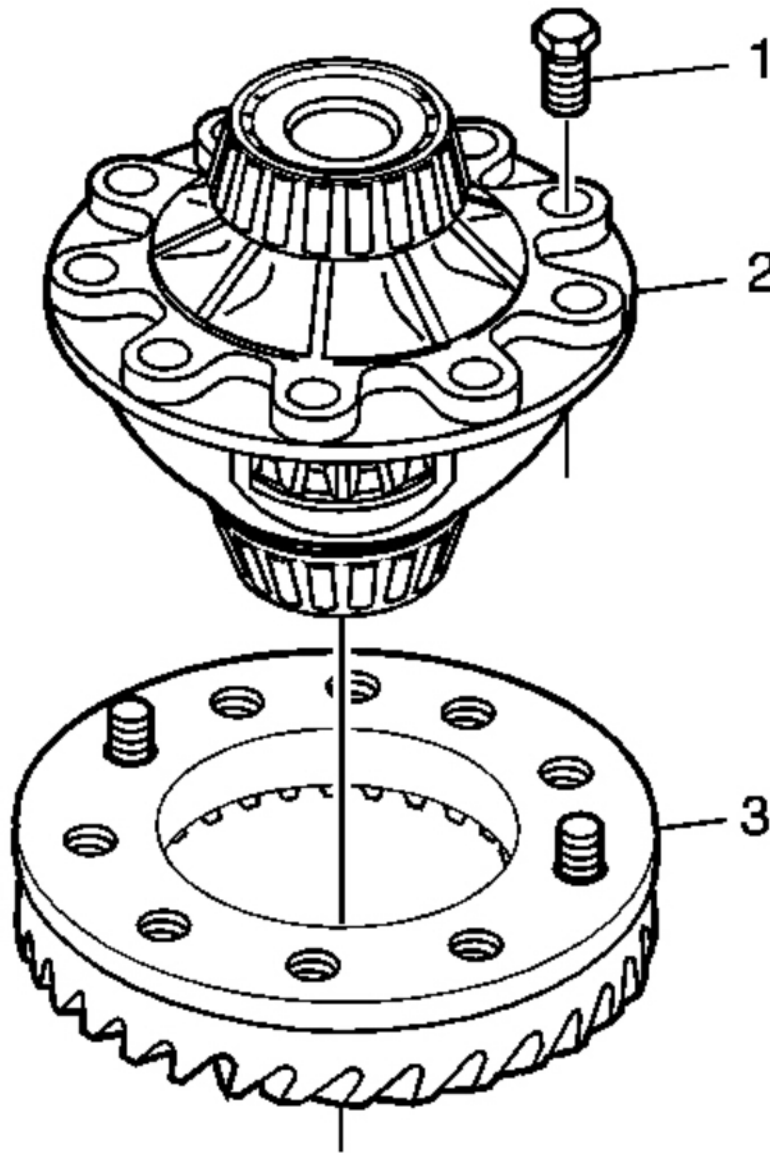


Fig. 85: Installing Ring Gear & Bolts
Courtesy of GENERAL MOTORS CORP.

1. Install the ring gear (2) onto the differential carrier (3).
2. Install the 10 NEW ring gear bolts (1) in order to align the gear to the hub.

2004 Cadillac SRX

2004 DRIVELINE/AXLE Rear Drive Axle - SRX

Tighten: Tighten the 10 ring gear bolts slowly in a criss-cross pattern to 190 N.m (140 lb ft).

DRIVE PINION ASSEMBLE

Tools Required

- **J 24433** Pinion Cone and Side Bearing Installer. See **Special Tools and Equipment**.
- **J 45005** Seal Installer. See **Special Tools and Equipment**.
- **J 45012** Pinion Flange Holder

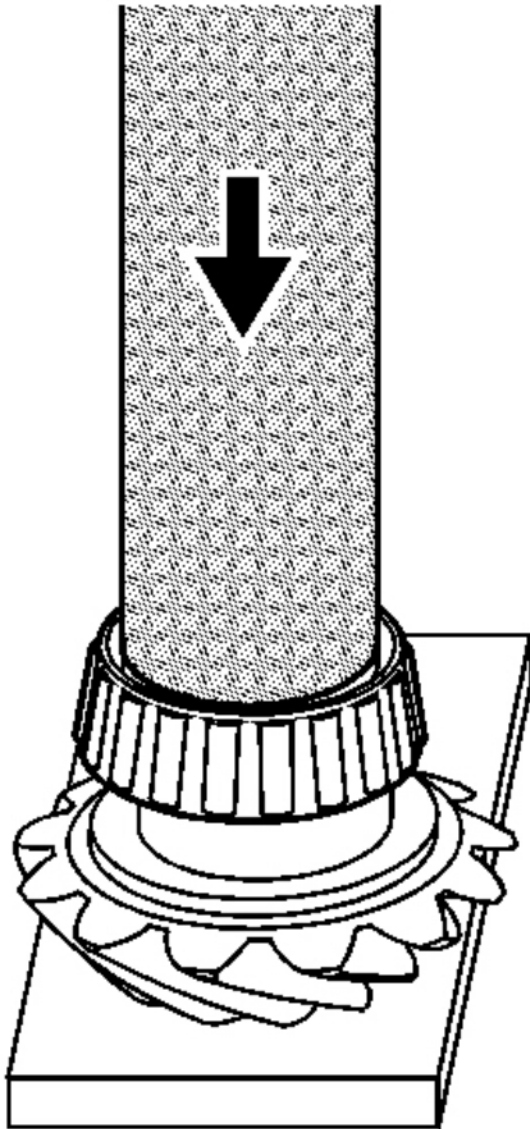


Fig. 86: Installing Pinion Head Bearing Onto Pinion Shaft
Courtesy of GENERAL MOTORS CORP.

1. Install the pinion head bearing onto the pinion shaft using the **J 24433** and a hydraulic press. See **Special Tools and Equipment**.

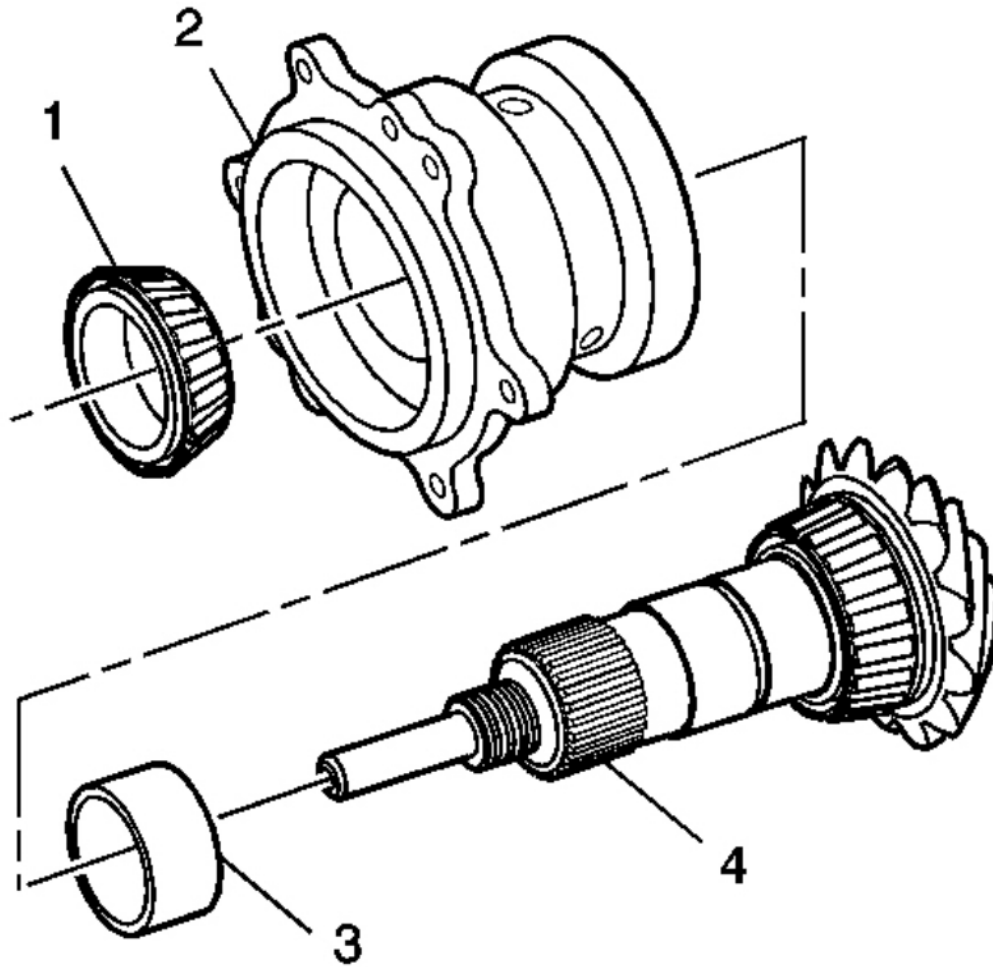


Fig. 87: Exploded View Of Pinion Shaft Assembly
Courtesy of GENERAL MOTORS CORP.

2. Assemble the pinion shaft (4), the housing (2), the spacer (3) and the bearing (1).

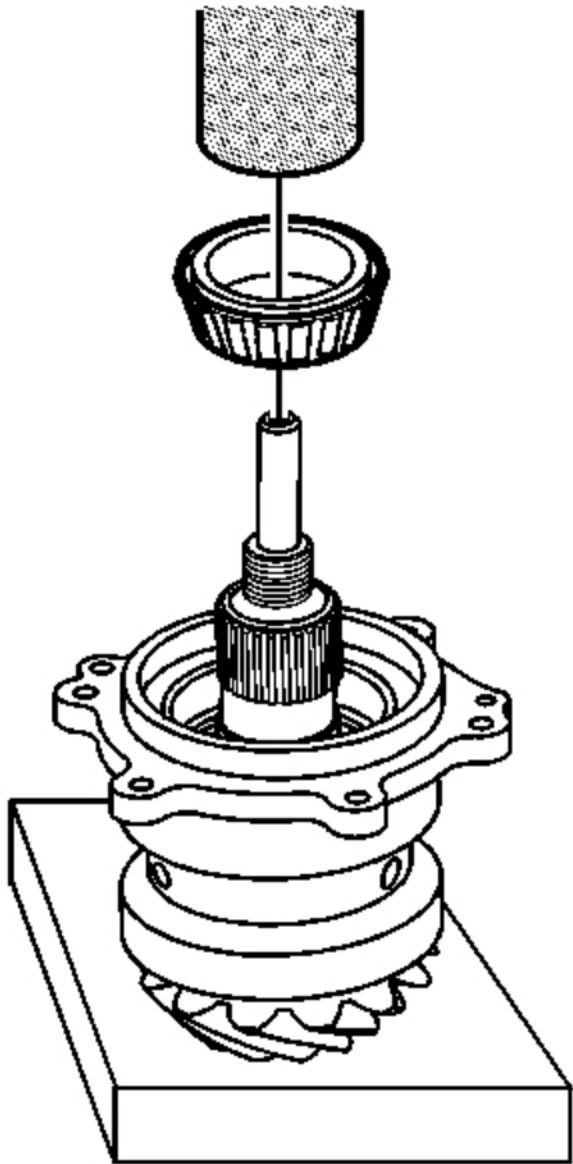


Fig. 88: Installing Bearing Onto Pinion Shaft
Courtesy of GENERAL MOTORS CORP.

3. Press the bearing onto the pinion shaft using the **J 24433** and a hydraulic press. See **Special Tools and Equipment**.

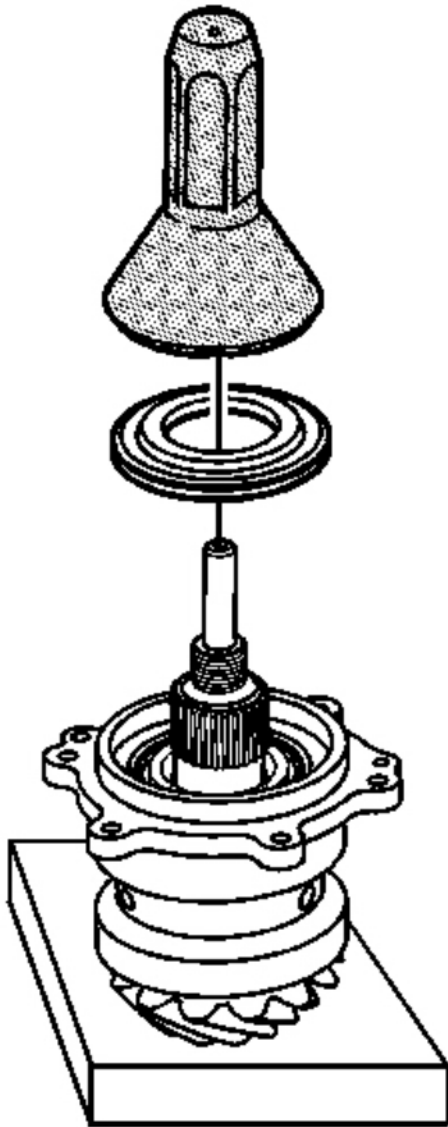


Fig. 89: Installing Pinion Seal
Courtesy of GENERAL MOTORS CORP.

4. Lightly lubricate the outer diameter of the seal with axle lube.
5. Install a NEW pinion seal using the **J 45005** . See **Special Tools and Equipment**.

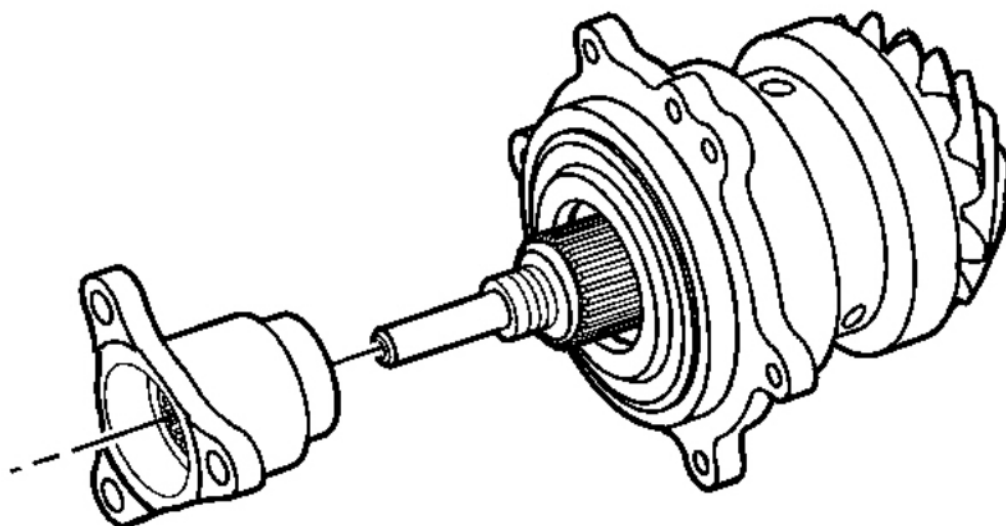


Fig. 90: Installing Pinion Flange
Courtesy of GENERAL MOTORS CORP.

6. Install the pinion flange onto the shaft.

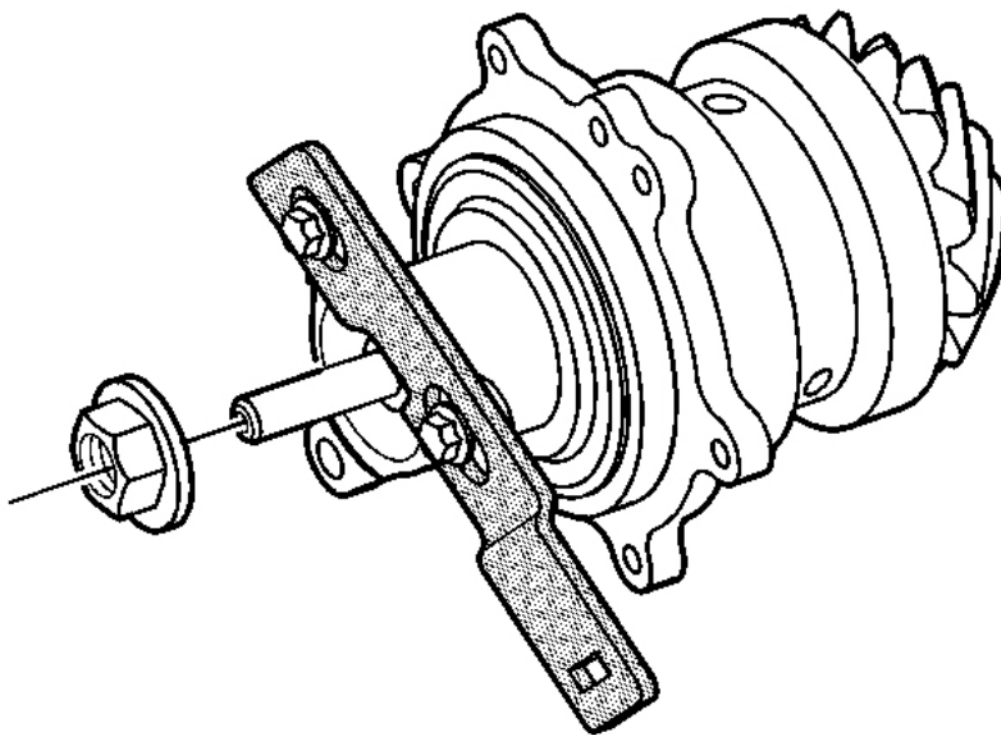


Fig. 91: Installing Pinion Flange Nut
Courtesy of GENERAL MOTORS CORP.

7. Apply threadlocker GM P/N 12345382 (Canadian P/N 10953489) to clean the threads of the pinion nut.

NOTE: Refer to Fastener Notice in Cautions and Notices.

8. Install the pinion flange nut.

Tighten: Tighten the pinion flange nut to 285 N.m (210 lb ft) while holding the flange with **J 45012** and breaker bar.

9. Remove **J 45012**.

Tools Required

- **J 24433** Pinion Cone and Side Bearing Installer. See **Special Tools and Equipment**.
 - **J 25070** Heat Gun
 - **J 45010** Getrag Axle Bearing Race Installer. See **Special Tools and Equipment**.
 - **J 45017** Output Shaft Seal Installer
 - **J 45019** Flange and Pinion Cage Remover
1. Install the housing support bushing, if necessary. Refer to **Differential Housing Support Bushing Replacement**.
 2. Support the housing in a press in the axle seal area.
 3. Using the **J 24433** (2) and the **J 45010** (1) install the shim (18) and the bearing cup (19) into the differential housing. See **Special Tools and Equipment**.

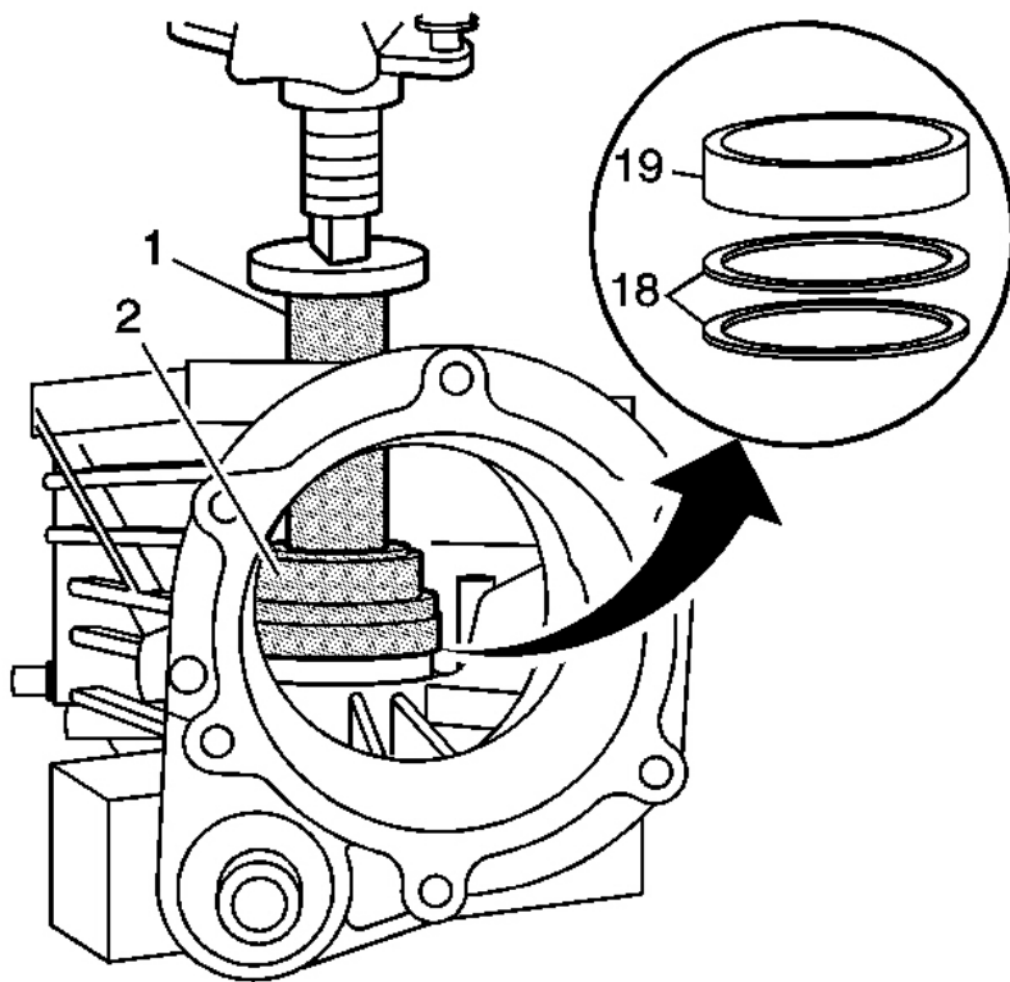


Fig. 92: Installing Shim & Bearing Cup Into Differential Housing
Courtesy of GENERAL MOTORS CORP.

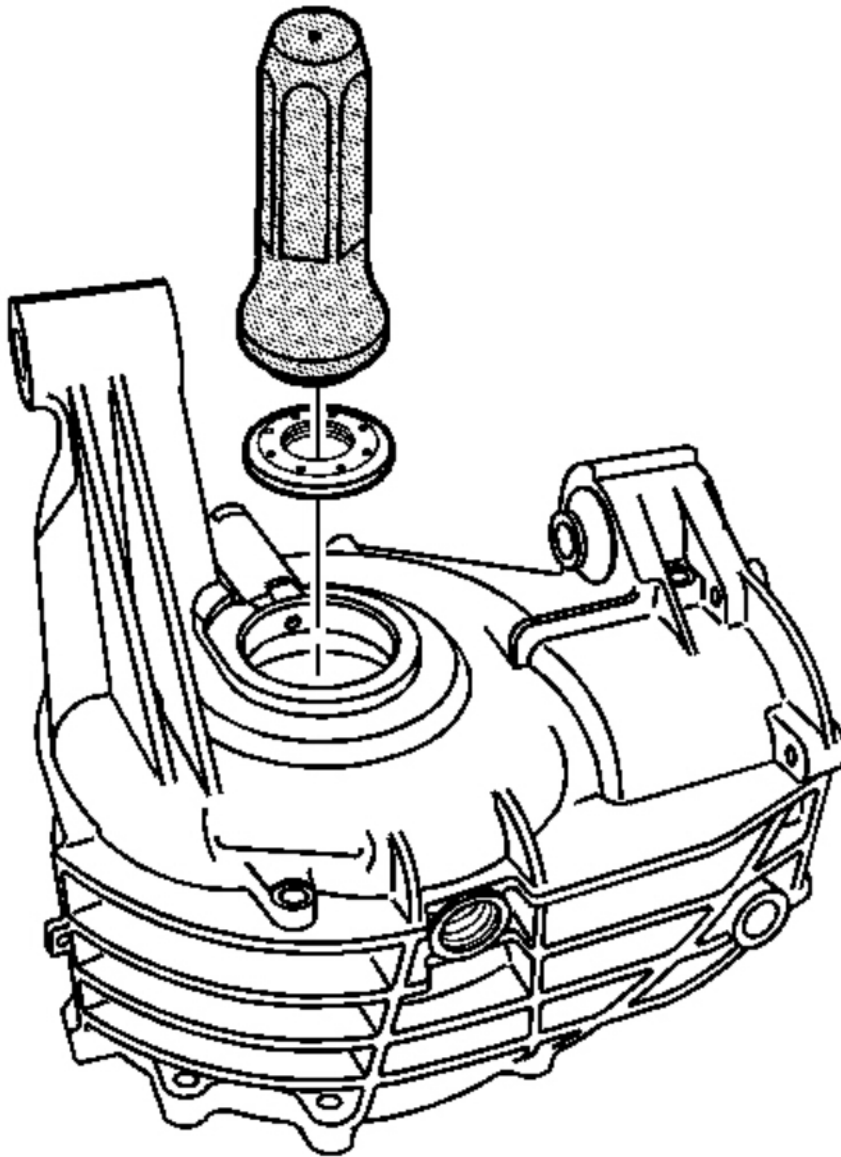


Fig. 93: Installing Axle Oil Seal Into Housing
Courtesy of GENERAL MOTORS CORP.

4. Lightly lube the outer diameter of the seal with axle lube.
5. Using the J 45017 , install the axle oil seal into the housing.

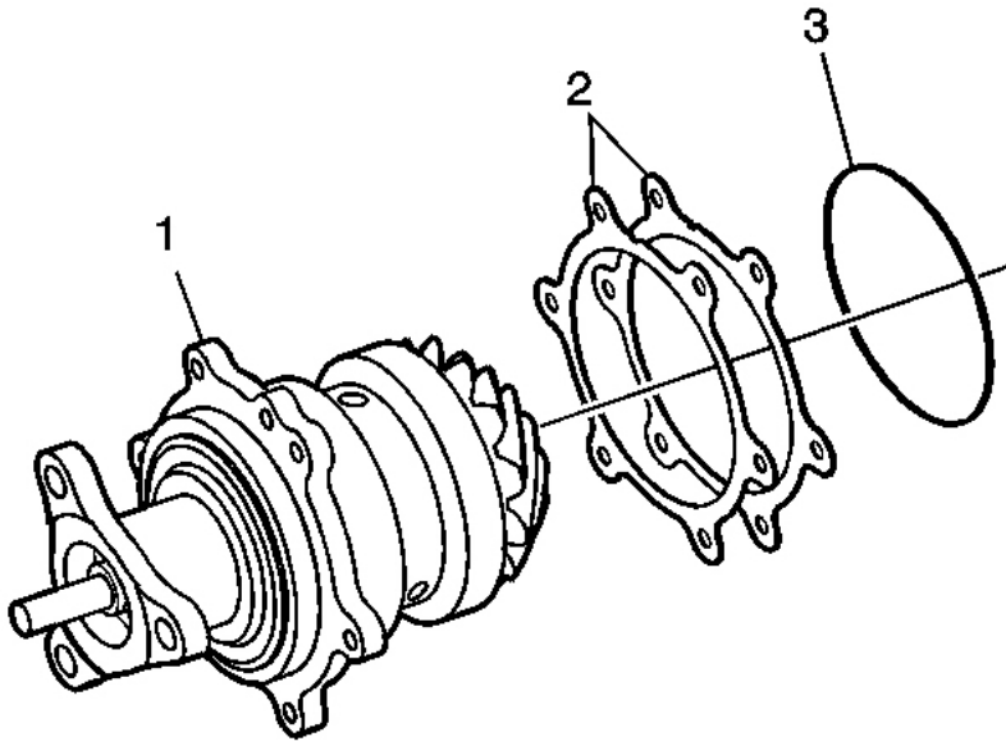


Fig. 94: Installing Shims & O-Ring To Pinion Housing Assembly
Courtesy of GENERAL MOTORS CORP.

6. Install the selected shims or marked shims (2) on the pinion housing assembly (1) and the O-ring (3).
7. Apply a light coat of oil to the pinion housing assembly (1) and the O-ring (3).

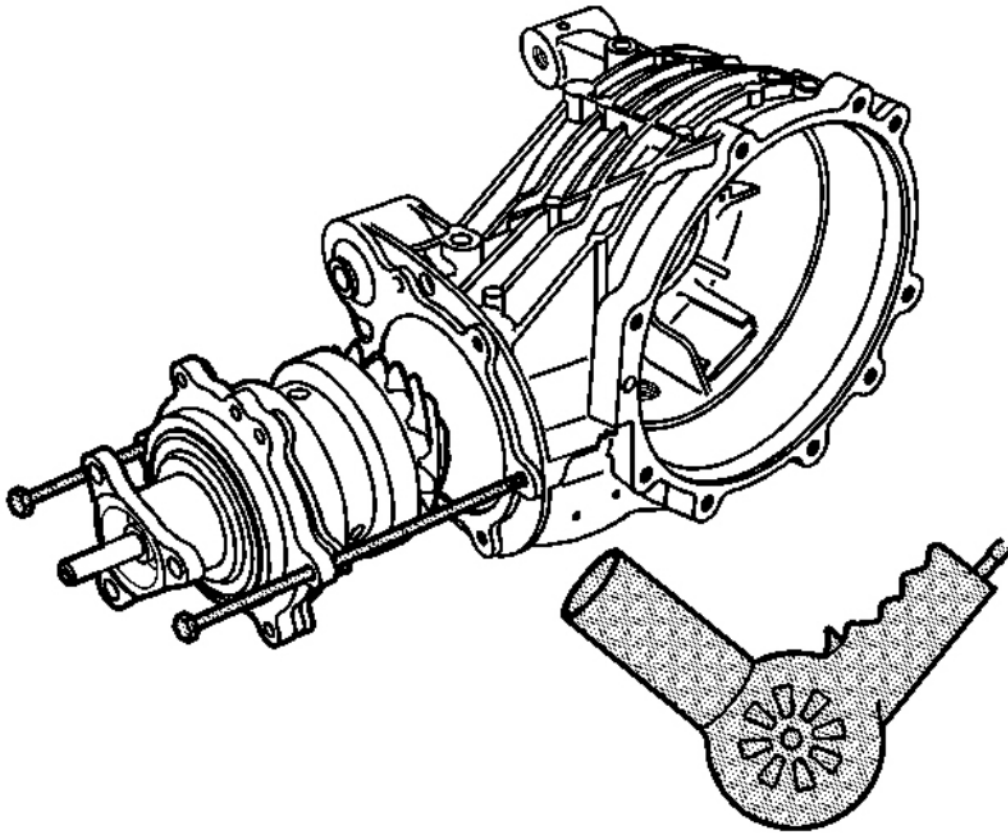


Fig. 95: Aligning Cage Bolts To Carrier Bolt Holes
Courtesy of GENERAL MOTORS CORP.

8. Use the bolts from **J 45019** .
9. Align the cage bolts to the carrier bolt holes.
10. Heat carrier with **J 25070** and push the cage into place.

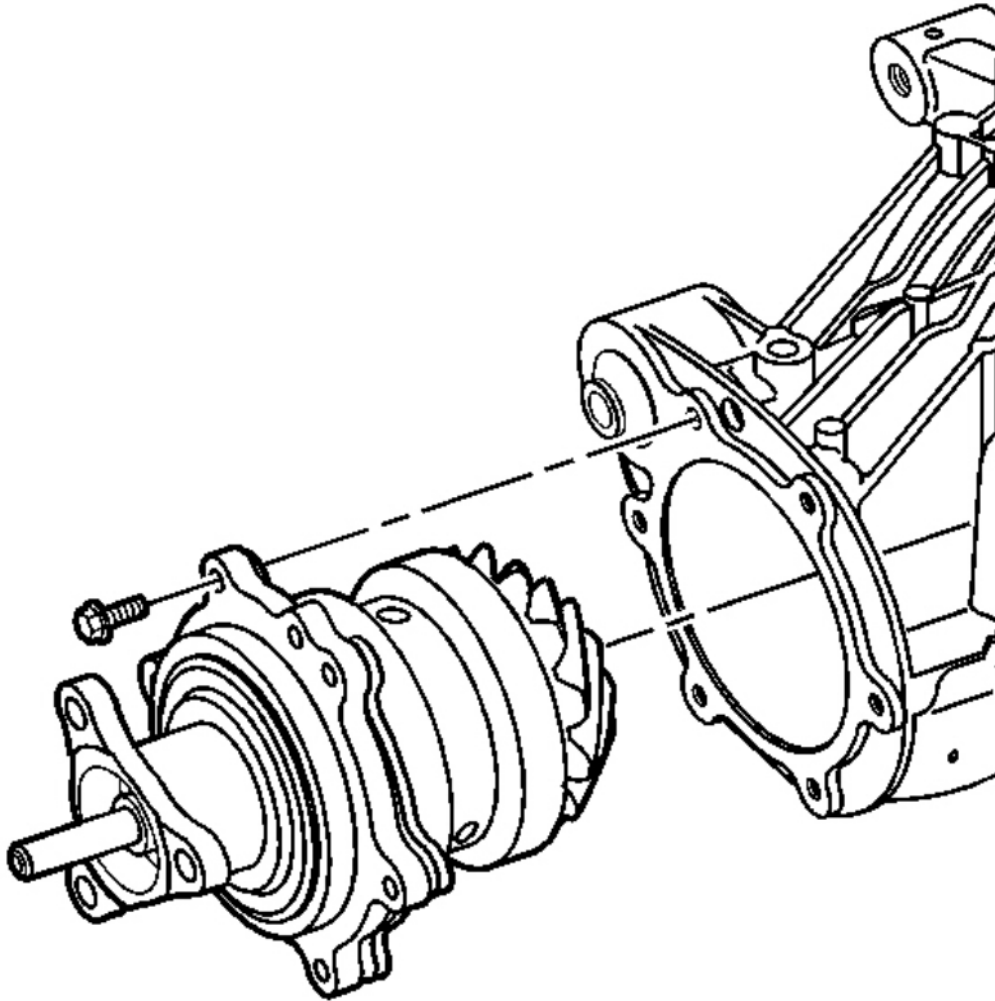


Fig. 96: Installing Pinion Assembly Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

11. Install the 6 pinion assembly bolts.

Tighten: Tighten the 6 pinion assembly bolts in a criss-cross pattern to 25 N.m (18 lb ft).

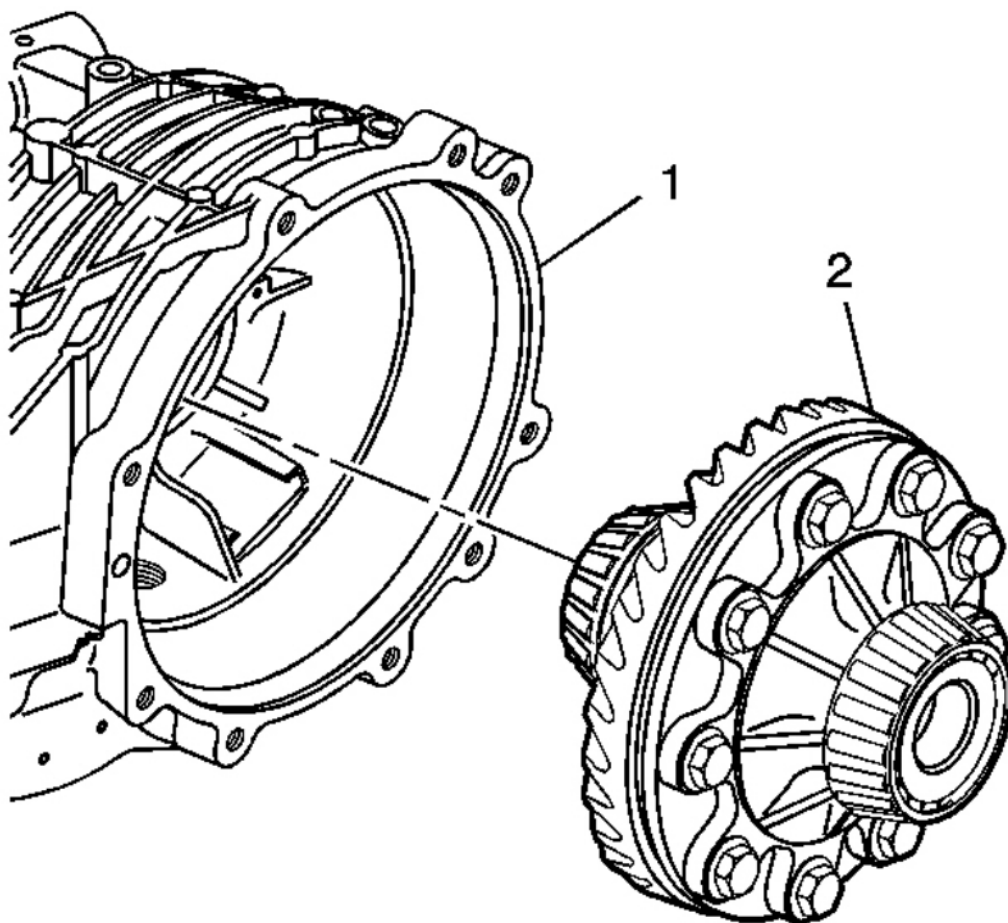


Fig. 97: View Of Differential Assembly
Courtesy of GENERAL MOTORS CORP.

12. Install the differential carrier (2) into the housing (1).

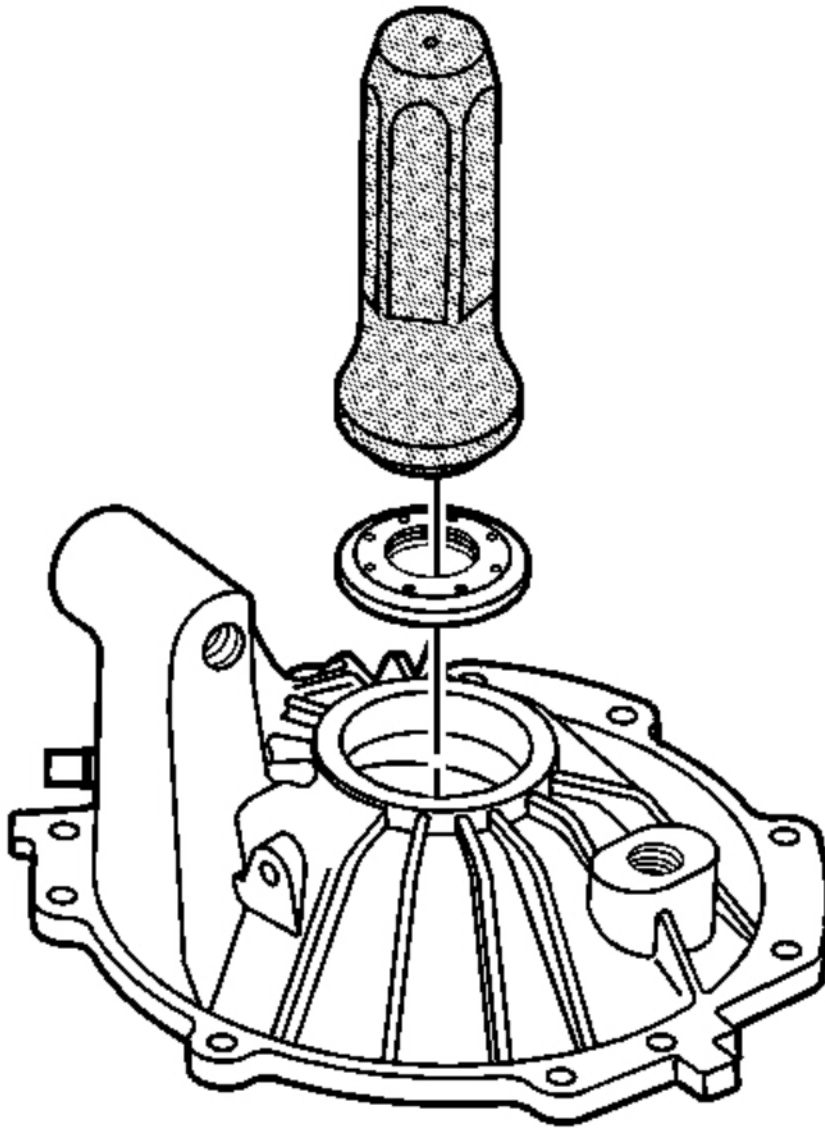


Fig. 98: Installing Axle Oil Seal Into Differential Side Cover
Courtesy of GENERAL MOTORS CORP.

13. Lightly lube the outer diameter of the seal with axle lube.
14. Using the **J 45017** , install the axle oil seal into the differential side cover.

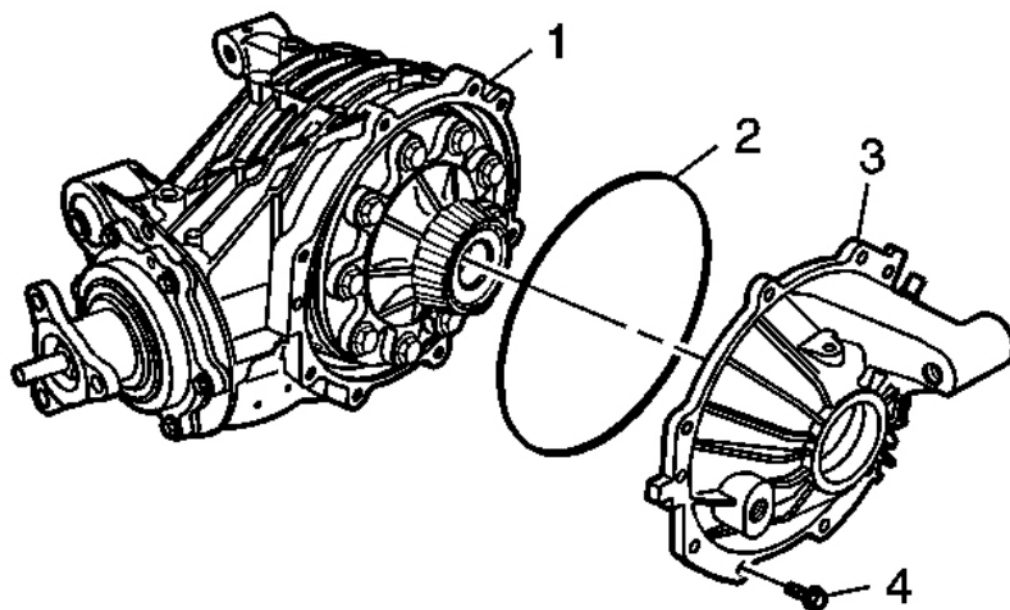


Fig. 99: Installing Housing Cover Onto Housing
Courtesy of GENERAL MOTORS CORP.

15. Install the housing cover O-ring (2) into the groove on the housing cover (3).
16. Apply a light coat of oil to the housing cover O-ring (2), install the housing cover (3) onto the housing (1).
17. Install the 9 side cover bolts (4).

Tighten: Tighten the 9 side cover bolts in a criss-cross pattern to 25 N.m (18 lb ft).

18. Install the drain plug and fill the axle with axle lube. Refer to **Lubricant Change**.

BACKLASH ADJUSTMENT

Tools Required

- **J 45019** Flange and Pinion Cage Remover
- **J 8001** Dial Indicator Set. See **Special Tools and Equipment**.

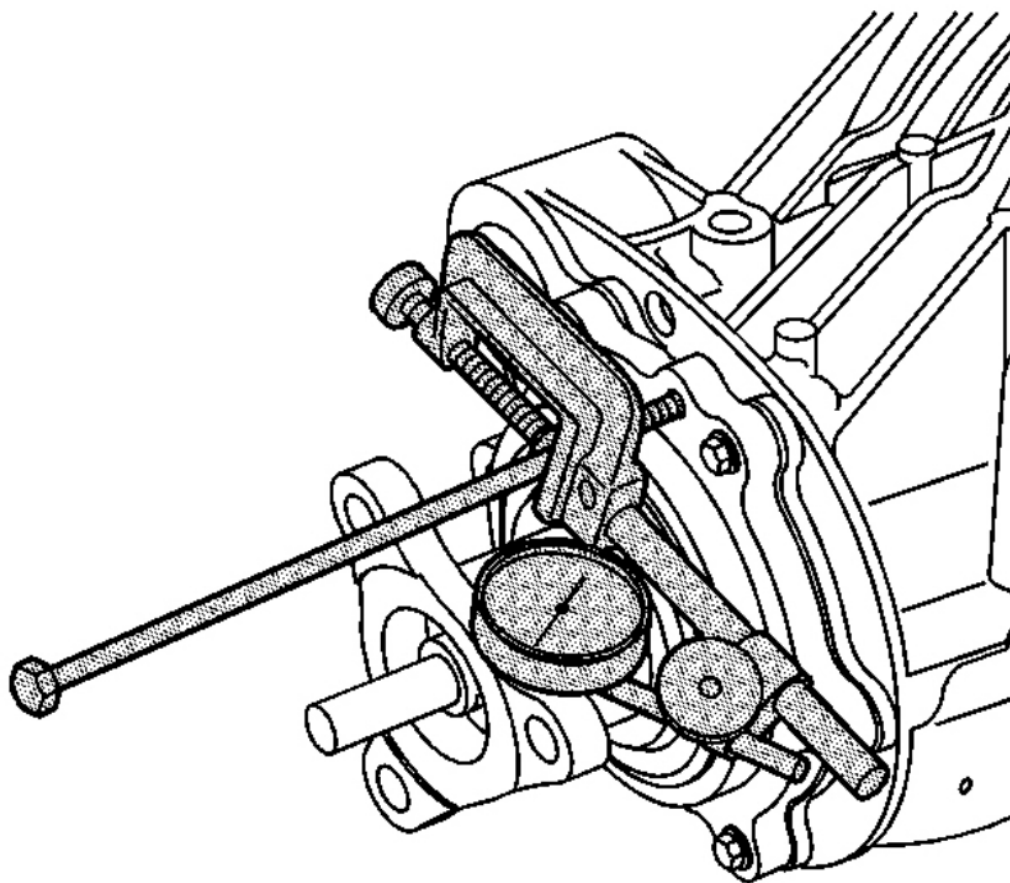


Fig. 100: Checking Backlash Using J 8001
Courtesy of GENERAL MOTORS CORP.

1. Remove 1 pinion cage bolt and install a long bolt from **J 45019** .
2. Install **J 8001** as shown in order to check backlash. See **Special Tools and Equipment**. Position the tip of the dial indicator above the center line of the flange bolt holes.
3. Check the axle ratio on the axle tag. Refer to **Rear Axle Usage**.
4. Determine which flange is used. The 105 mm flange (1) is used with ratios 2.73, 3.23 and 3.42. The 96 mm flange (2) is used with ratios 3.42, 3.23 and 3.91. The 86 mm flange (3) is used with ratio 3.73.

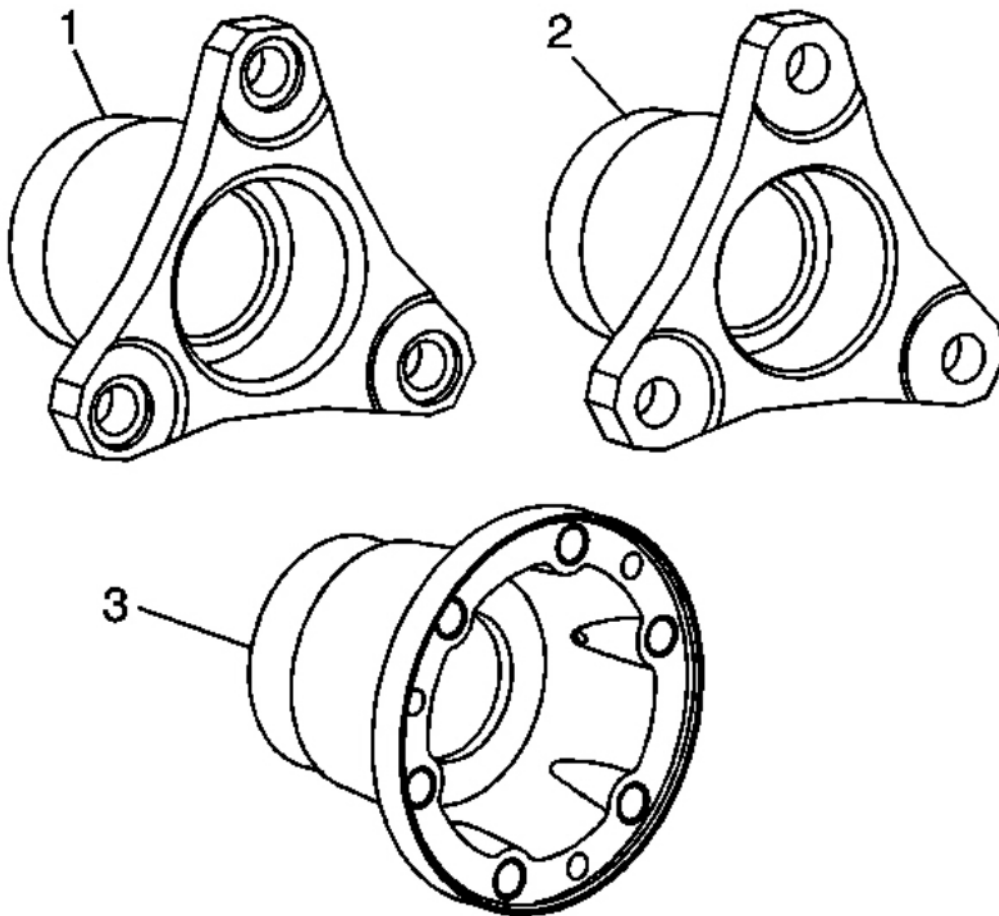


Fig. 101: Identifying Flange Types
Courtesy of GENERAL MOTORS CORP.

5. For backlash specification, refer to Rear Axle Specifications.

DESCRIPTION AND OPERATION

REAR DRIVE AXLE DESCRIPTION AND OPERATION

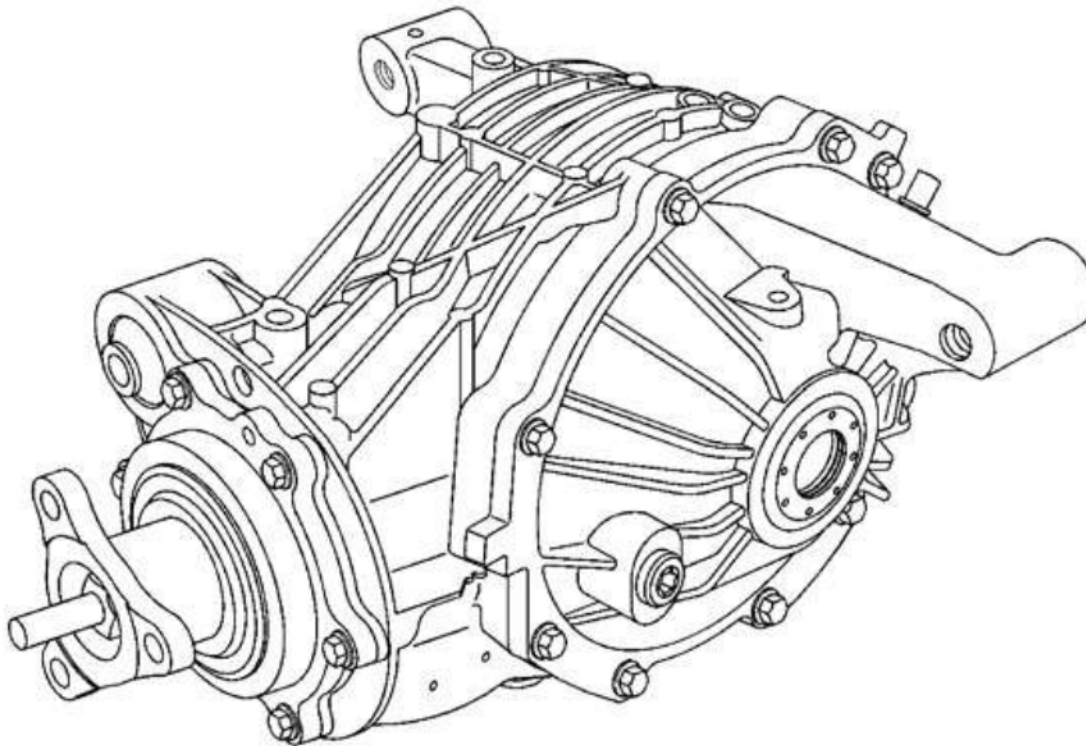


Fig. 102: Rear Drive Axle
Courtesy of GENERAL MOTORS CORP.

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. Each ring gear has specific setup dimensions, A1 and A2 values, stamped onto the side area of the gear. The A1 and A2 values are unique to each ring gear/pinion and are determined during the manufacturers gear/pinion noise and vibration setup and testing.

Pinion position, ring gear position and carrier bearing preload are determined by shimming procedures.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Special Tools

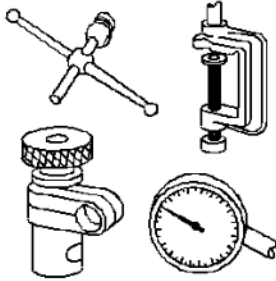
Illustration	Tool Number/Description

2004 Cadillac SRX

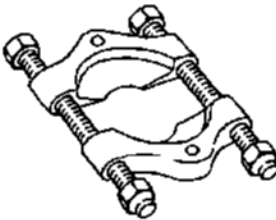
2004 DRIVELINE/AXLE Rear Drive Axle - SRX



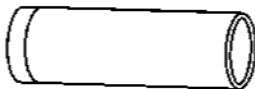
DT 47595
Bearing Cup Remover



J 8001
Dial Indicator Set



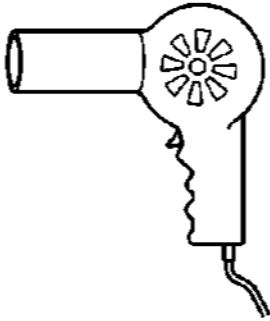
J 22912-01
Split-Plate Bearing Puller



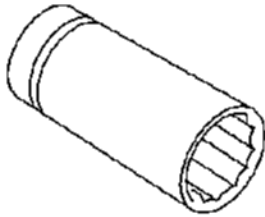
J 24433
Pinion Cone and Side Bearing Installer

2004 Cadillac SRX

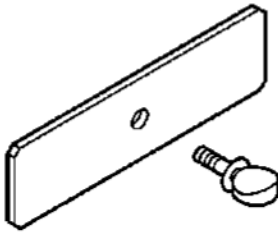
2004 DRIVELINE/AXLE Rear Drive Axle - SRX



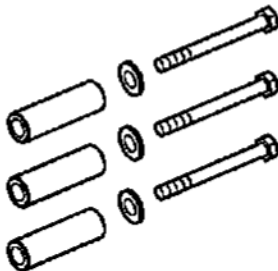
J 25070
Heat Gun



J 34826
Hub Nut Socket - 36 mm



J 42168-9
Holding Strap



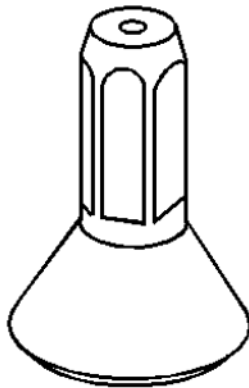
J 42168-16
Spacers

2004 Cadillac SRX

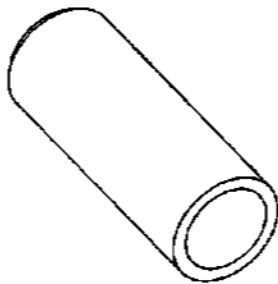
2004 DRIVELINE/AXLE Rear Drive Axle - SRX



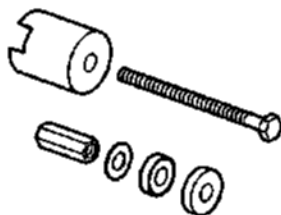
J 44394
Seal Protector



J 45005
Seal Installer



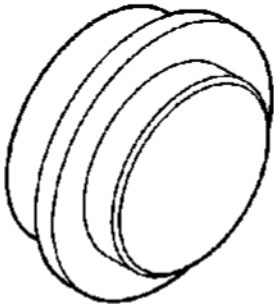
J 45006
Pinion Press Pilot



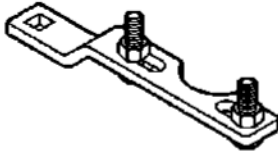
J 45007
Bushing Remover/Installer

2004 Cadillac SRX

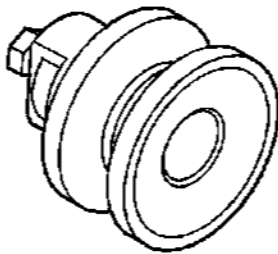
2004 DRIVELINE/AXLE Rear Drive Axle - SRX



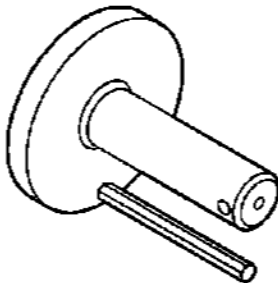
J 45010
Getrag Axle Bearing Race Installer



J 45012
Pinion Flange Holder



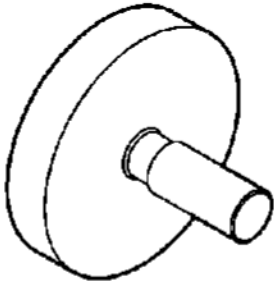
J 45013-1
Cover Shim Gage



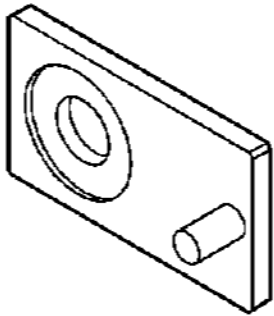
J 45013-2
Gage Assembly

2004 Cadillac SRX

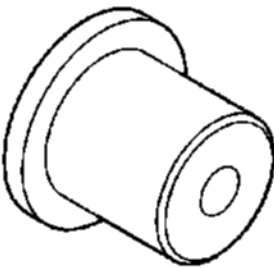
2004 DRIVELINE/AXLE Rear Drive Axle - SRX



J 45013-3
Gage Cylinder



J 45013-4
Gage Plate

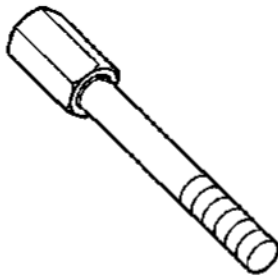
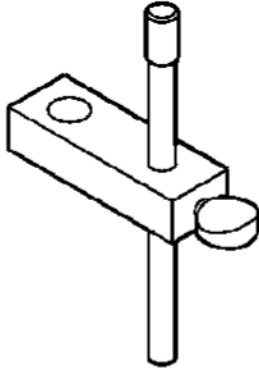


J 45013-5
Gage Centering Assembly

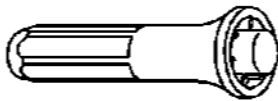
J 45013-6
Depth Gage

2004 Cadillac SRX

2004 DRIVELINE/AXLE Rear Drive Axle - SRX



J 45013-7
Adapter Screw



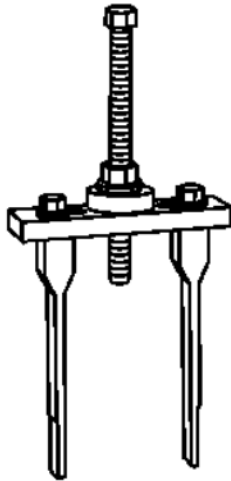
J 45017
Output Shaft Seal Installer



J 45019
Flange and Pinion Cage Remover

2004 Cadillac SRX

2004 DRIVELINE/AXLE Rear Drive Axle - SRX



J 45124
Removal Bridge