

2007 Hummer H3

2007 Driveline/Axle Wheel Drive Shafts - H3

2007 Driveline/Axle

Wheel Drive Shafts - H3

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Wheel Drive Shaft Nut	260 N.m	191 lb ft

COMPONENT LOCATOR

WHEEL DRIVE SHAFTS DISASSEMBLED VIEWS

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Fig. 1: Wheel Drive Shafts Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 1

Callout	Component Name
1	Joint Retaining Ring
2	D/O Joint Housing
3	D/O Ball Retaining Ring
4	Small Retaining Ring
5	D/O Balls

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6	Inner Race
7	Cage
8	Large Retaining Clamp
9	Inner Seal
10	Small Retaining Clamp
11	Drive Shaft Bar

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - WHEEL DRIVE SHAFTS

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

SYMPTOMS - WHEEL DRIVE SHAFTS

Before beginning diagnosis, review the system description and operation in order to familiarize yourself with the system function. Refer to **Wheel Drive Shafts Description and Operation**.

Classifying the Symptom

Wheel Drive Shaft symptoms can usually be classified into the following categories:

- Noises
- Vibrations

Noise related concerns are diagnosed within the Wheel Drive Shafts section. For vibration related symptoms, refer to **Diagnostic Starting Point - Vibration Diagnosis and Correction** for diagnosis.

Visual/Physical Inspection

- Inspect the system for aftermarket devices which could affect the operation of the wheel drive shafts.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

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Symptom List

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

- **Click Noise In Turns**
- **Clunk When Accelerating from Coast**
- **Clunk Noise When Accelerating During Turns**

CLICK NOISE IN TURNS

Click Noise In Turns

Step	Action	Yes	No
DEFINITION: Clicking noise while turning in drive under load.			
1	Check for worn or damaged outer CV joints. Are the outer CV joints/seals worn?	Go to Step 2	System OK
2	Replace the outer CV joints/seals. Refer to <u>Wheel Drive Shaft Outer Joint and Boot Replacement.</u> Is the repair complete?	System OK	-

CLUNK WHEN ACCELERATING FROM COAST

Clunk When Accelerating from Coast

Step	Action	Yes	No
DEFINITION: A clunking noise present when accelerating from coast to drive under load.			
1	Check for a loose wheel drive shaft to hub assembly nut. Is the wheel drive shaft nut loose?	Go to Step 2	Go to Step 3
2	Tighten the wheel drive shaft to hub assembly nut to specification. Refer to <u>Fastener Tightening Specifications.</u> Is the repair complete?	System OK	-
3	Check for a damaged inner CV joint. Is the inner CV joint damaged?	Go to Step 4	System OK
4	Replace the inner CV joint. Refer to <u>Wheel Drive Shaft Inner Joint and Boot Replacement.</u> Is the repair complete?	System OK	-

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CLUNK NOISE WHEN ACCELERATING DURING TURNS

Clunk Noise When Accelerating During Turns

Step	Action	Yes	No
1	Check for worn or damaged outer wheel drive shaft joints and/or seals. Are the outer wheel drive shaft joints/seals worn?	Go to Step 2	System OK
2	Check for proper clearance between the wheel drive shaft and other components. Correct as necessary. Is the repair complete?	System OK	Go to Step 3
3	Replace the outer CV joints/seals. Refer to <u>Wheel Drive Shaft Outer Joint and Boot Replacement.</u> Is the repair complete?	System OK	-

REPAIR INSTRUCTIONS

WHEEL DRIVE SHAFT REPLACEMENT

Removal Procedure

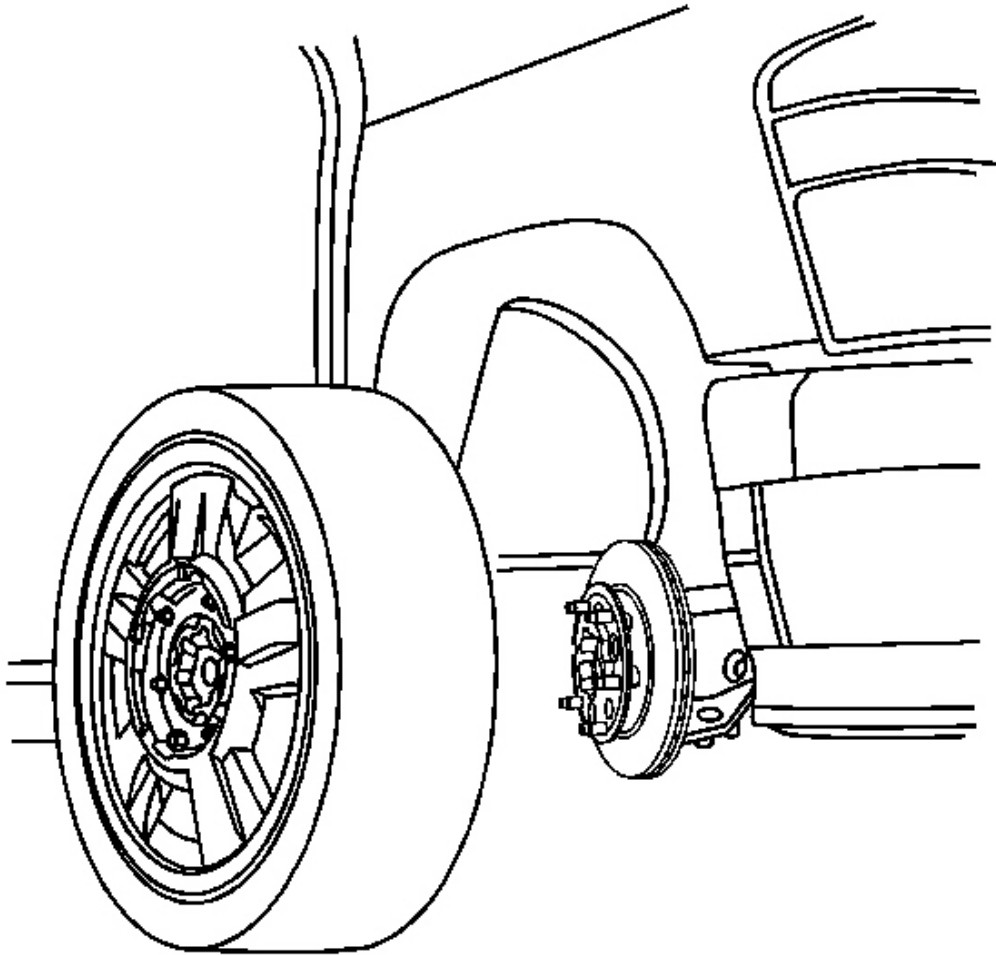


Fig. 2: View Of Tire & Wheel Assembly
Courtesy of GENERAL MOTORS CORP.

1. Remove the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation**

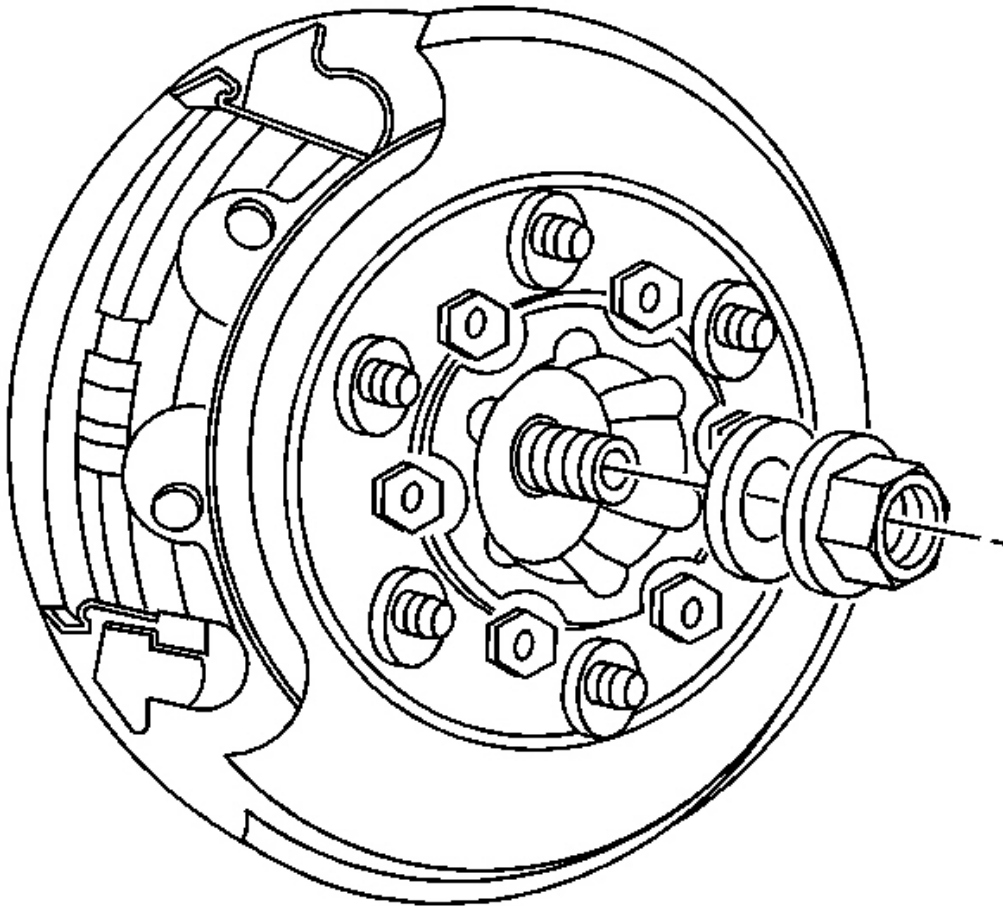


Fig. 3: View Of Wheel Drive Shaft Nut & Washer
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: DO NOT reuse the wheel drive shaft nut, replace with new.

2. Remove the wheel drive shaft nut and washer.

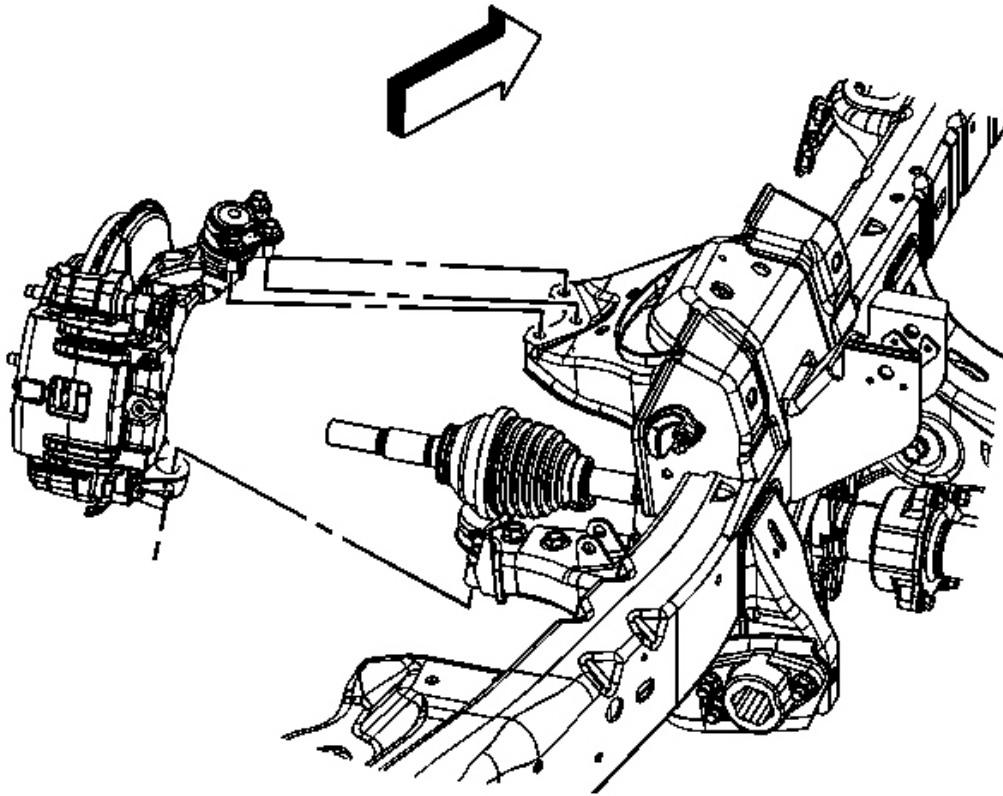


Fig. 4: View Of Steering Knuckle Assembly
Courtesy of GENERAL MOTORS CORP.

3. Remove the steering knuckle assembly. Refer to **Steering Knuckle Replacement** .

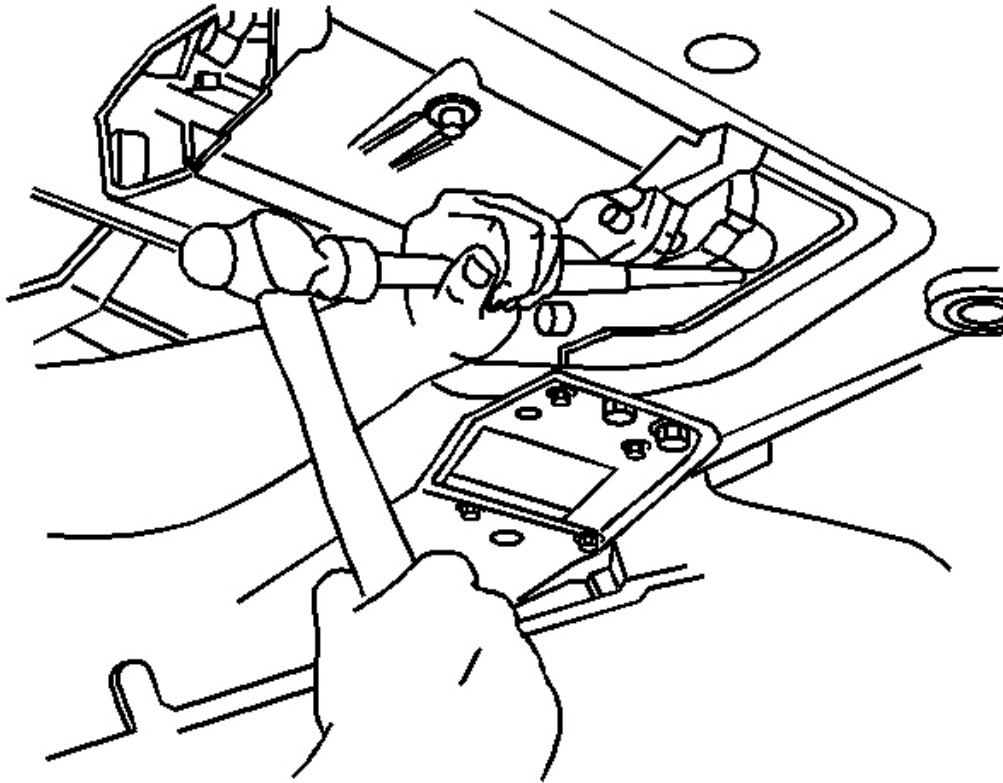


Fig. 5: Removing Left Side Wheel Drive Shaft
Courtesy of GENERAL MOTORS CORP.

4. Release the wheel drive shaft by placing a brass drift against the tripod housing. Firmly strike the brass drift with a hammer to release the drive shaft. Left side shown, right side similar.

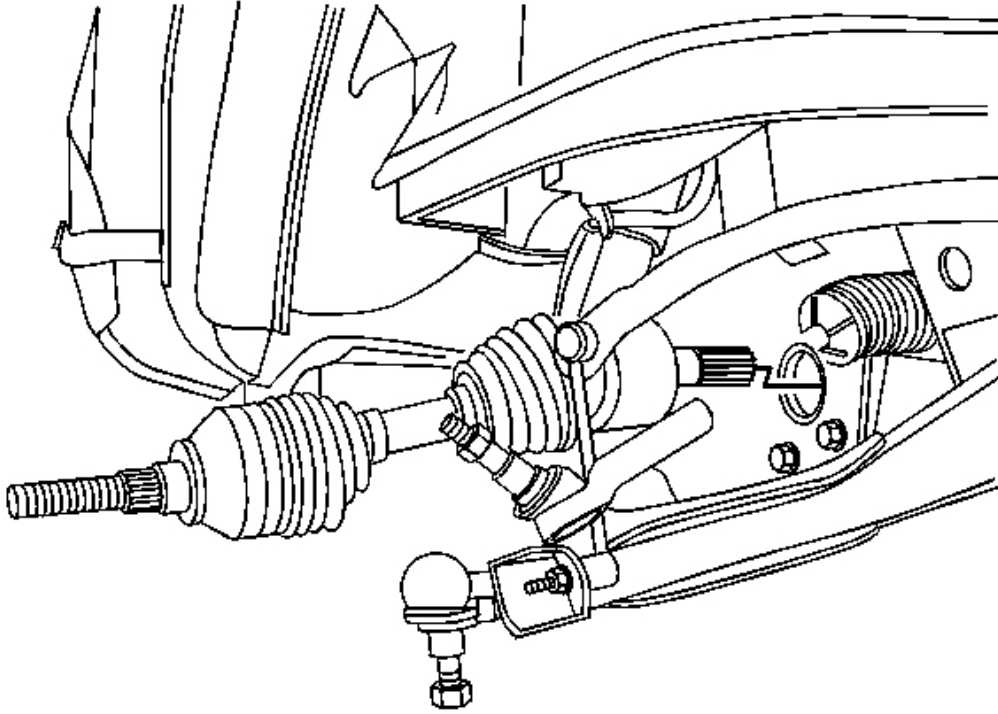


Fig. 7: View Of Front Wheel Drive Shaft
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: When installing the front wheel drive shaft, a snap or pop should be heard and felt when the front wheel drive shaft is properly seated in the differential case.

1. Install the front wheel drive shaft in the front differential.

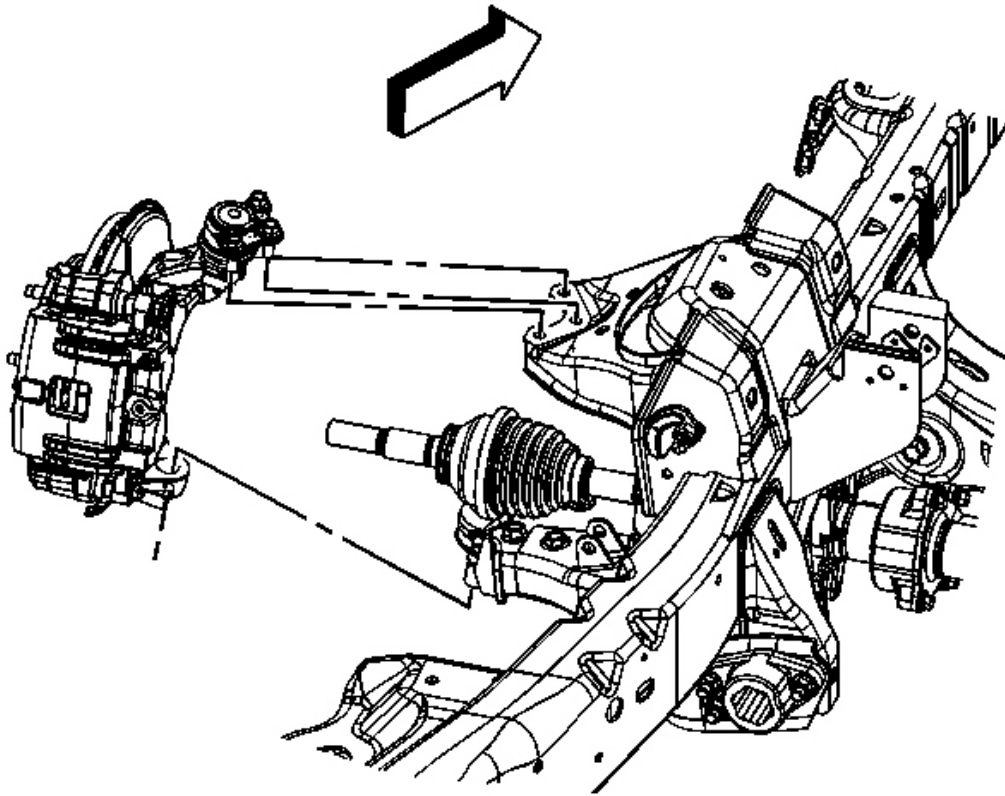


Fig. 8: View Of Steering Knuckle Assembly
Courtesy of GENERAL MOTORS CORP.

2. Install the steering knuckle assembly. Refer to **Steering Knuckle Replacement** .

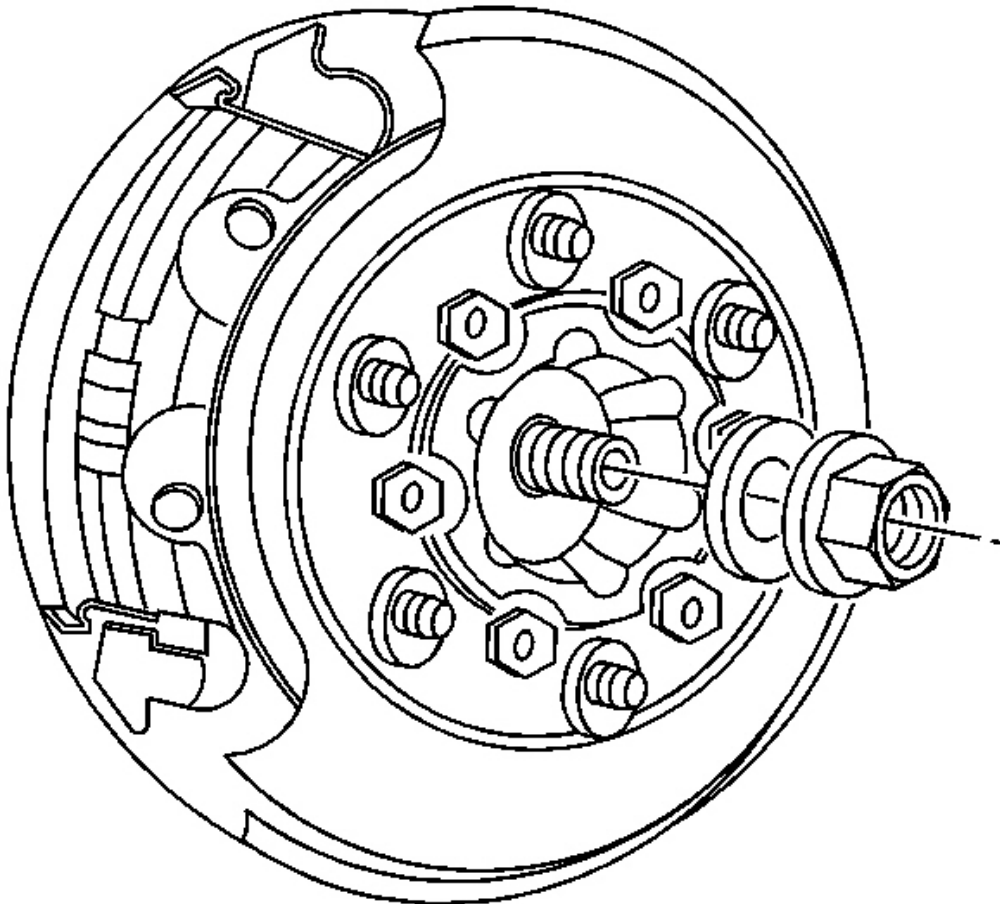


Fig. 9: View Of Wheel Drive Shaft Nut & Washer
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice .

3. Install the new front wheel drive shaft nut and washer.

Tighten: Tighten the front wheel drive shaft nut to 260 N.m (191 lb ft).

4. Check the fluid level of the front differential. Add fluid if necessary. Refer to Front Axle Lubricant Replacement .

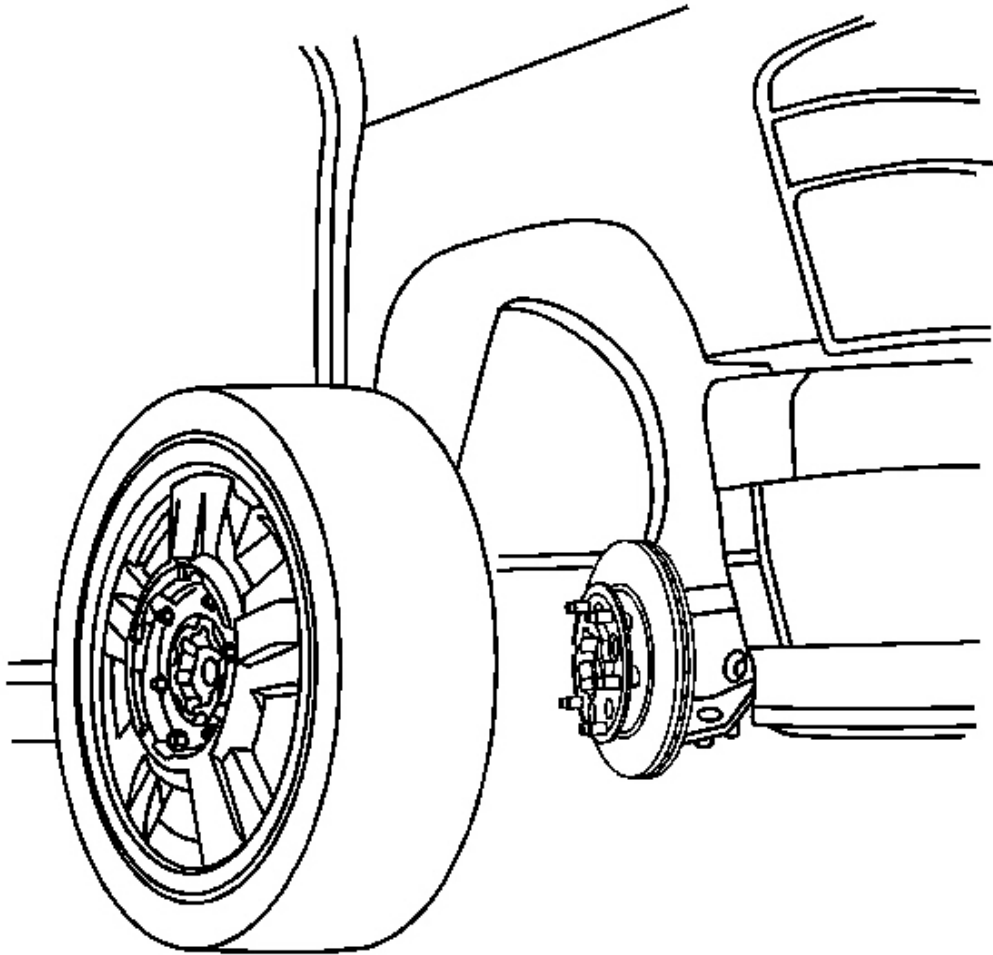


Fig. 10: View Of Tire & Wheel Assembly
Courtesy of GENERAL MOTORS CORP.

5. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
6. Lower the vehicle.

WHEEL DRIVE SHAFT INNER JOINT AND BOOT REPLACEMENT

Tools Required

- **J 35566** Drive Axle Seal Clamp Pliers. See **Special Tools**.

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- **J 35910** Drive Axle Seal Clamp Pliers. See **Special Tools**.
- **J 8059** Snap Ring Pliers - Parallel Jaw. See **Special Tools**.

Removal Procedure

Fig. 11: Securing Halfshaft

Courtesy of GENERAL MOTORS CORP.

1. Remove the wheel drive shaft. Refer to **Wheel Drive Shaft Replacement**.

IMPORTANT: Before placing the driveshaft in a vise, place protective covers over the vise jaws.

2. Place the driveshaft in a vise.

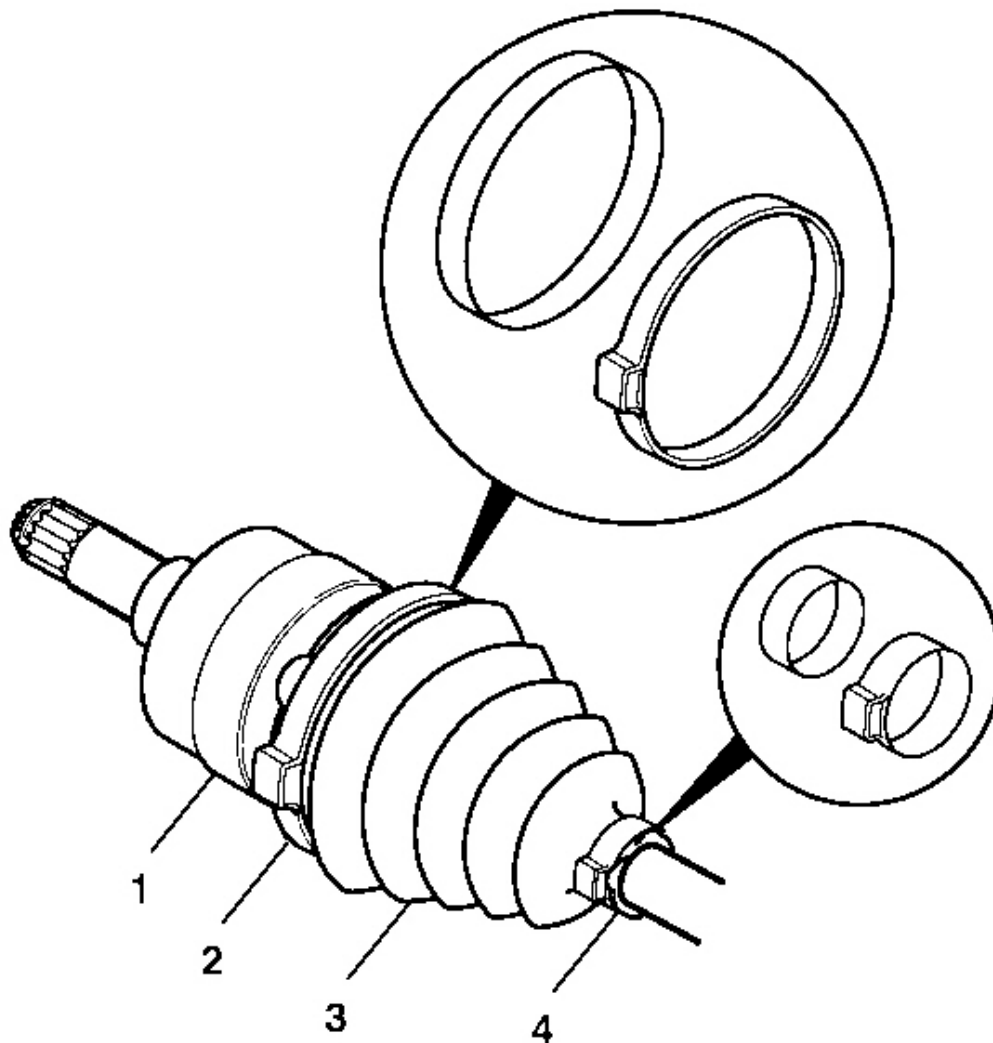


Fig. 12: View Of Driveshaft Retaining Clamps
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Do not damage the D/O joint housing while using the hand grinder.

3. Use a hand grinder to cut through the large retaining clamp (2) located at the D/O joint (1).
Discard the large retaining clamp.
4. Use a hand grinder to cut through the small retaining clamp (4) on the small end of the seal (3).
Discard the small retaining clamp.

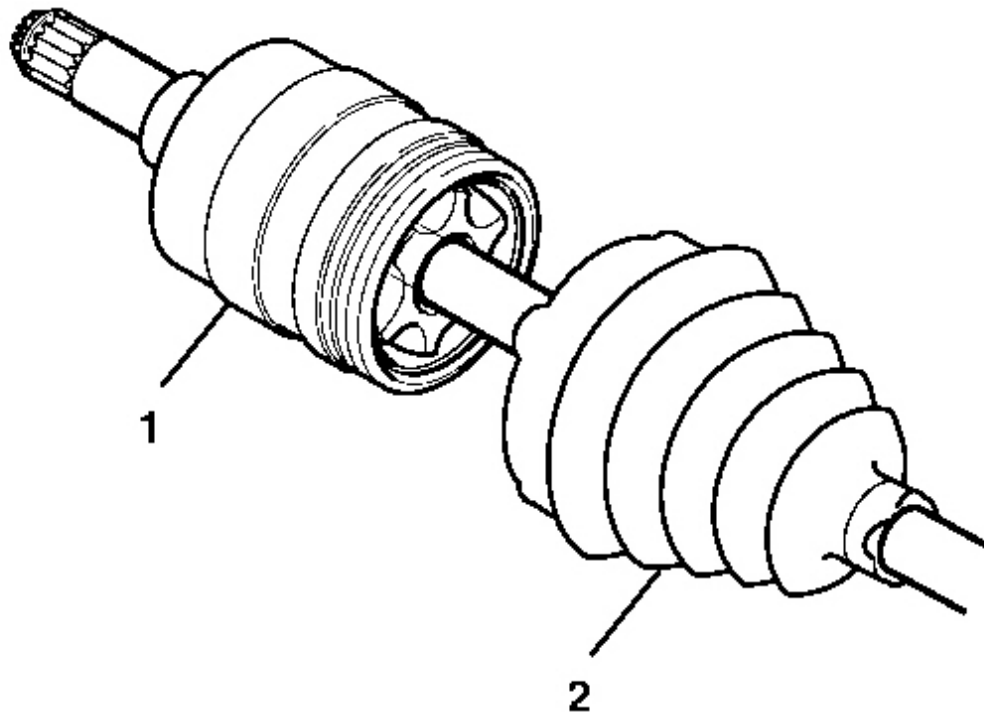


Fig. 13: View Of Driveshaft D/O Joint & Seal
Courtesy of GENERAL MOTORS CORP.

5. Slide the seal (2) down the driveshaft bar and away from the D/O joint (1).

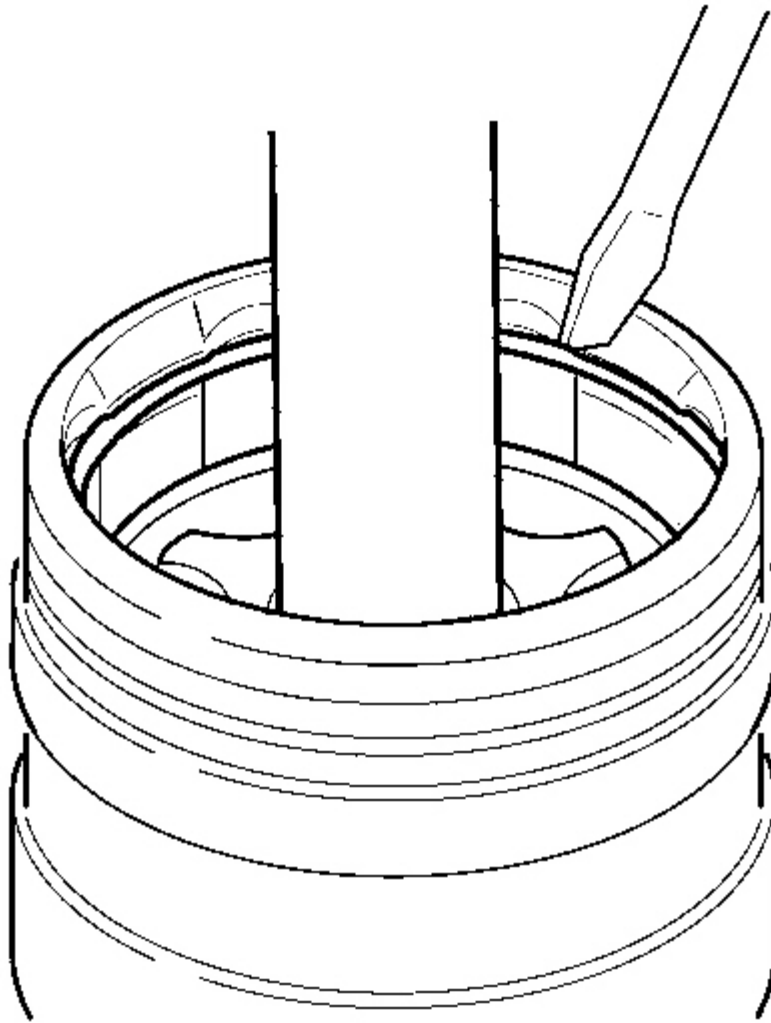


Fig. 14: Locating D/O Ball Retaining Ring
Courtesy of GENERAL MOTORS CORP.

6. Remove the D/O joint housing in the following manner:
7. Collapse and remove the D/O ball retaining ring using a common hand tool (screwdriver).
8. Pull the D/O joint housing from the driveshaft bar.

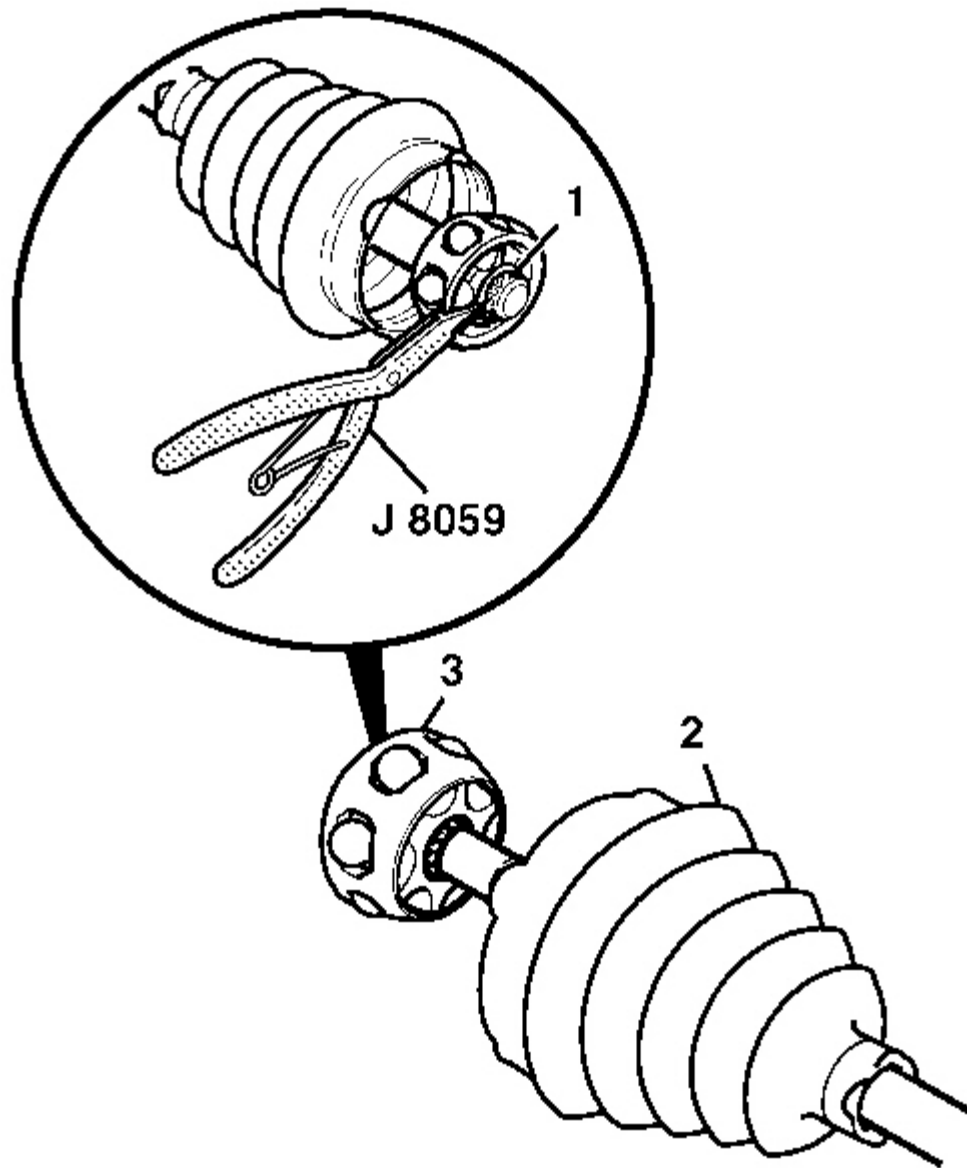


Fig. 15: View Of Small Retaining Ring & Inner Race Assembly
Courtesy of GENERAL MOTORS CORP.

9. Using pliers **J 8059** , spread the small retaining ring (1) located in the cage and inner race assembly (3). See **Special Tools**.

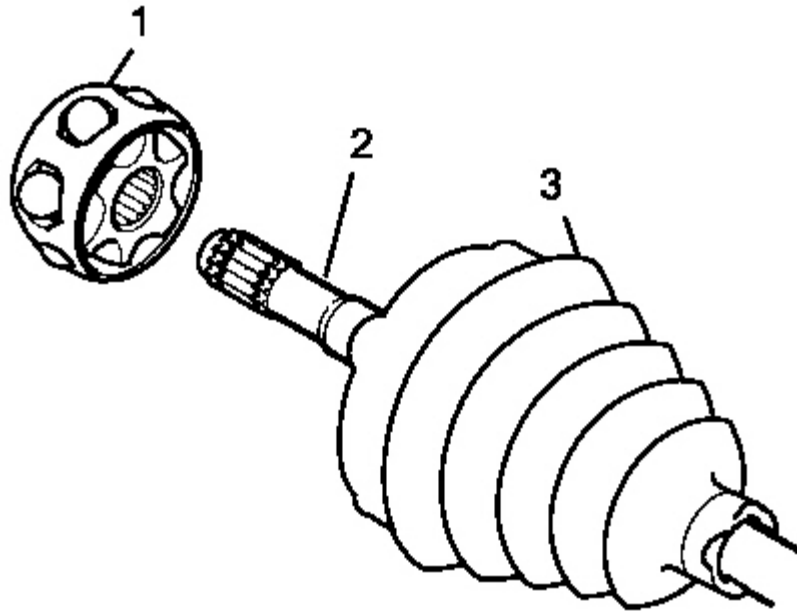


Fig. 16: View Of Inner Race Assembly & Driveshaft Bar
Courtesy of GENERAL MOTORS CORP.

10. Remove the cage and the inner race assembly (1) from the driveshaft bar (2).
11. Remove the balls.
12. Remove the inner race from the cage.
13. Thoroughly degrease all parts.
14. Remove the seal and discard.
15. Clean the driveshaft bar, Use a wire brush to remove any remove any rust in the seal mounting areas (grooves).

Check the D/O joint housing for unusual wear, cracks or other damage. Replace the assembly if any damaged parts are evident.

Installation Procedure

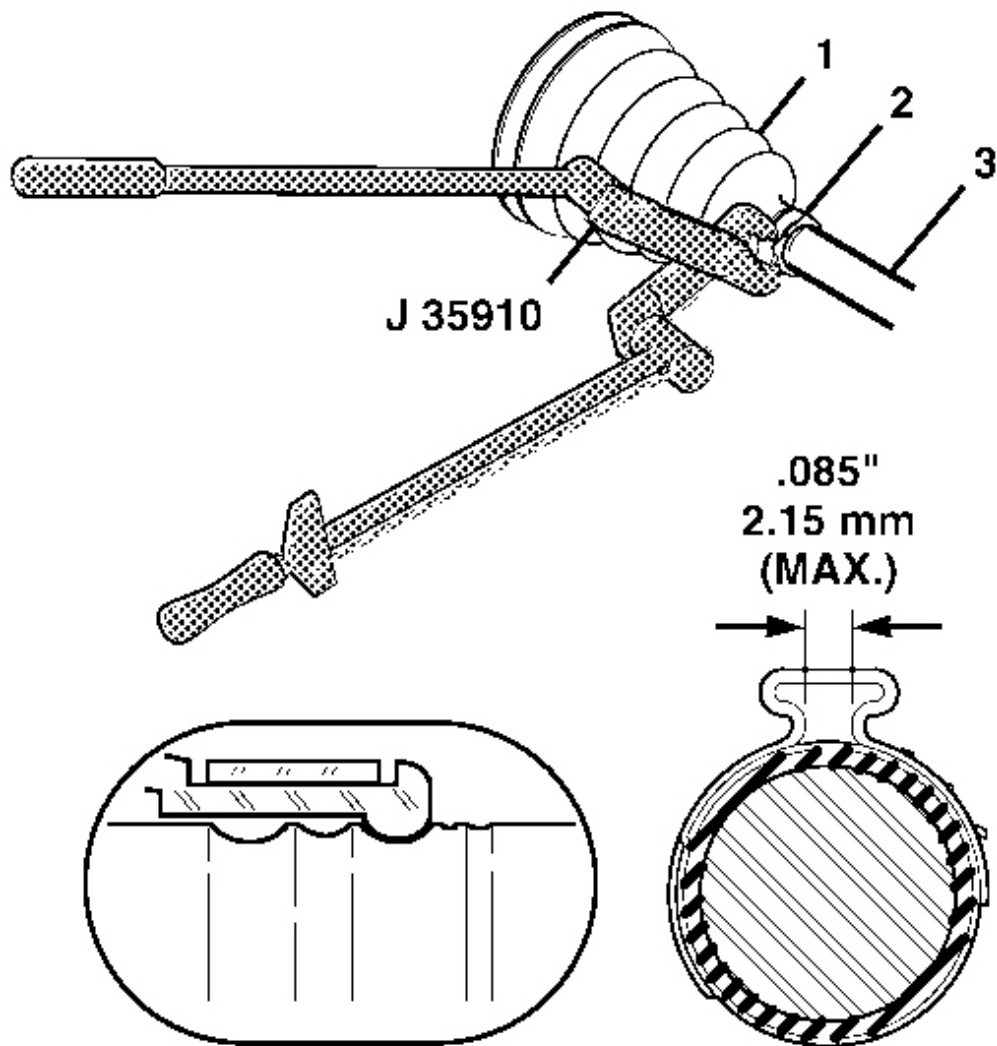


Fig. 17: Installing Small Retaining Clamp
Courtesy of GENERAL MOTORS CORP.

1. Install the new small retaining clamp (2) onto the neck of the seal (1).
2. Slide the small retaining clamp and seal to their proper position on the driveshaft bar (3).

NOTE: Refer to Fastener Notice .

- Secure the small retaining clamp using the pliers **J 35910** or equivalent, a breaker bar and a torque wrench. See **Special Tools**.

Tighten: Tighten the small retaining clamp (2) to 136 N.m (100 lb ft).

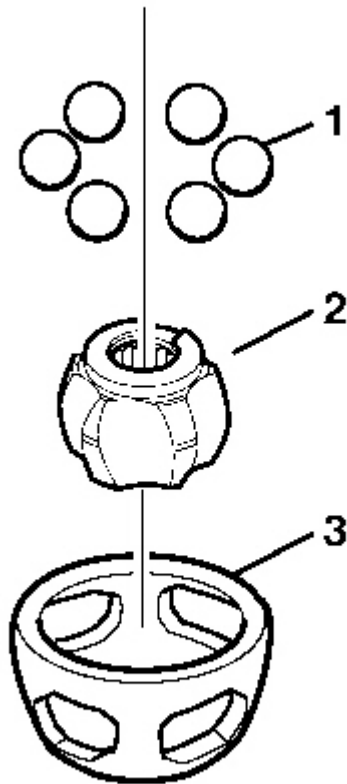


Fig. 18: View Of Inner Race & Components
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: The cage (3) is **NOT** symmetrical; the larger outside diameter is the bottom of the cage.

- Place the cage on the table large diameter side up.
- Place the inner race (2) with retaining ring side up into the cage.
- Place the six balls (1) in the cage windows.

- Slide the cage/inner race assembly, small diameter first, onto the driveshaft bar.

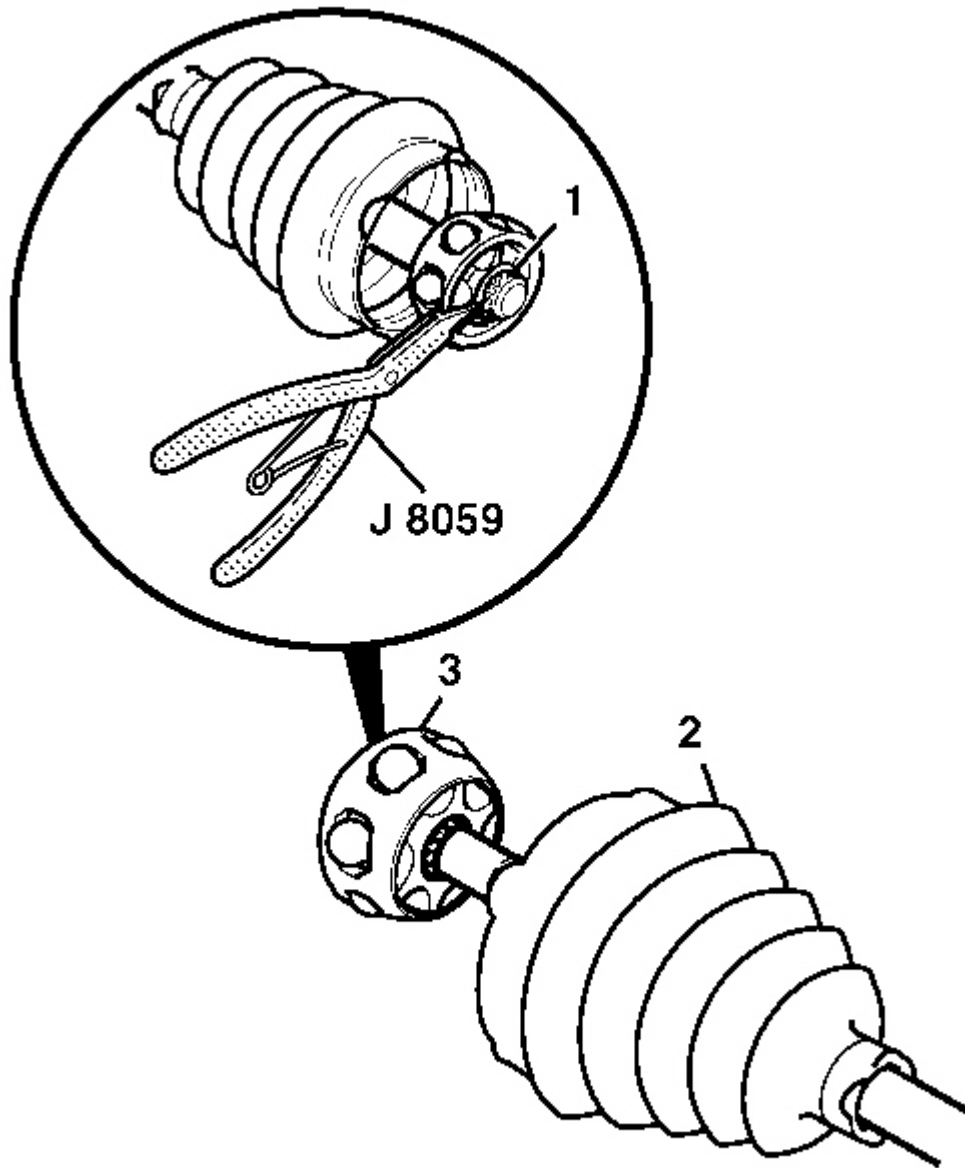


Fig. 19: View Of Small Retaining Ring & Inner Race Assembly
Courtesy of GENERAL MOTORS CORP.

8. Install the small retaining ring (1) using pliers **J 8059** into the groove of the driveshaft bar. See **Special Tools**.

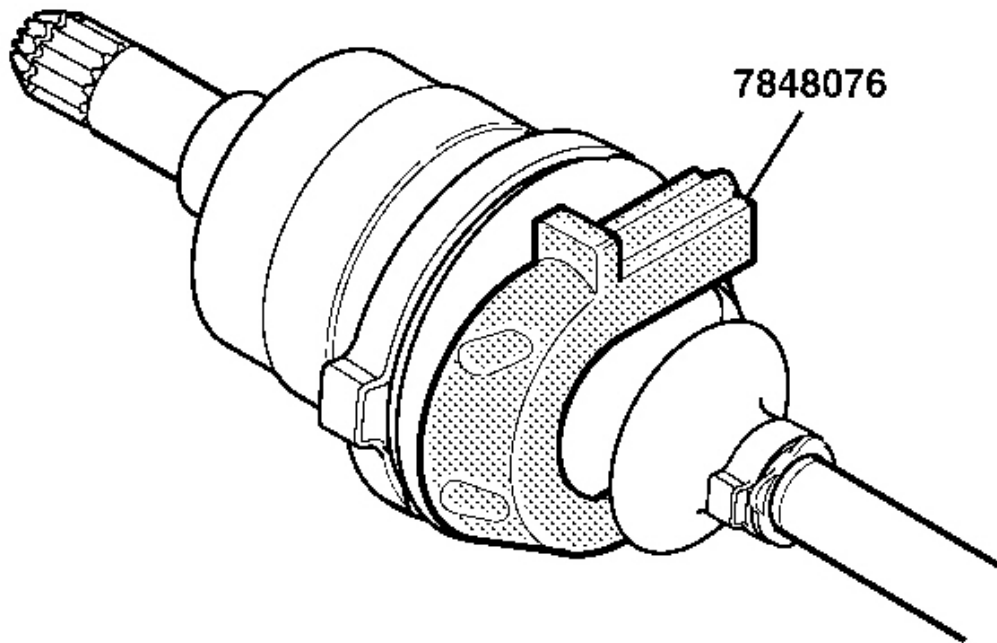


Fig. 20: Installing D/O Joint Housing Seal
Courtesy of GENERAL MOTORS CORP.

9. Pack the seal and D/O joint housing with the grease supplied in the kit. The amount of grease supplied in this kit has been pre-measured for this application.
10. Place the new large retaining clamp on the seal.
11. Slide the D/O joint housing over the cage and inner race assembly.

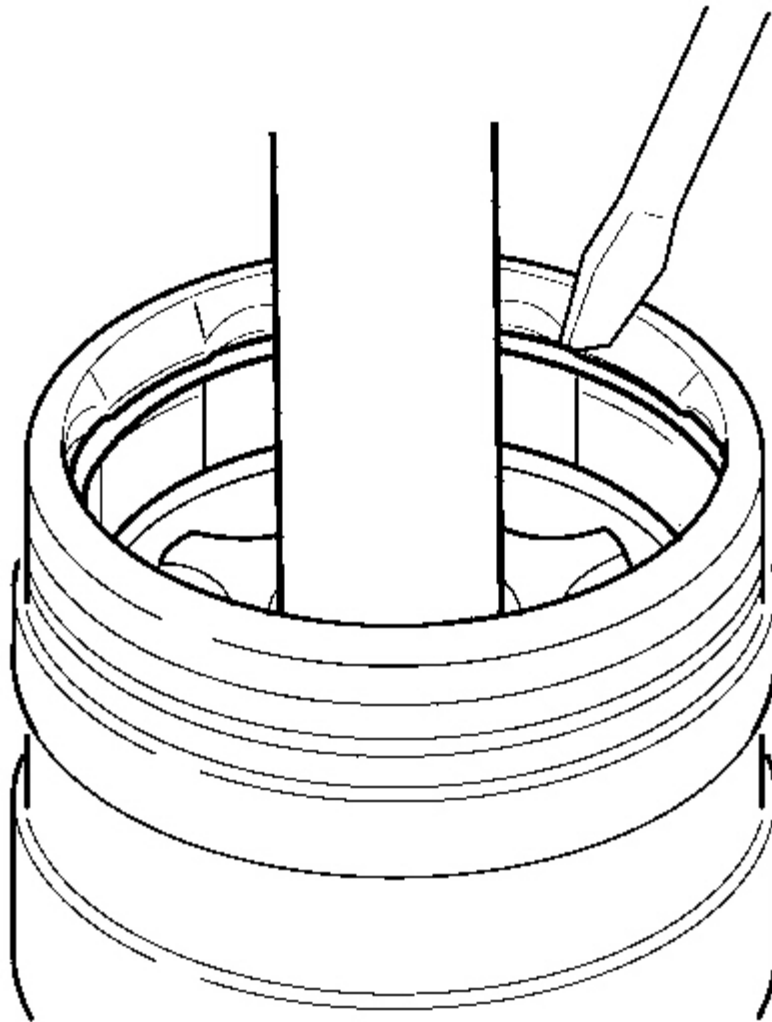


Fig. 21: Locating D/O Ball Retaining Ring
Courtesy of GENERAL MOTORS CORP.

12. Insert the D/O ball retaining ring into the groove at the top of the D/O joint housing.

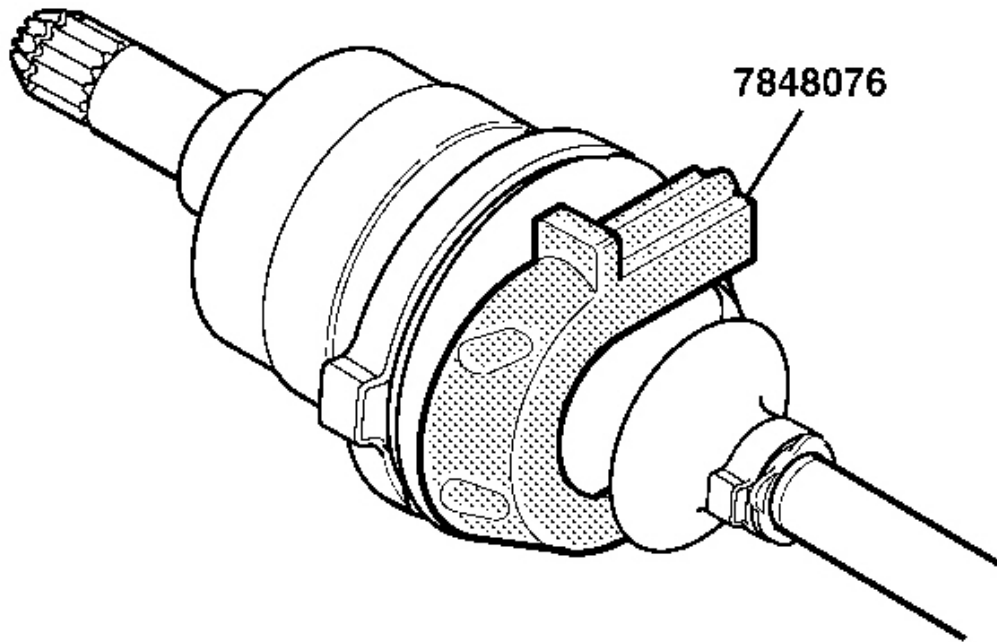


Fig. 22: Installing D/O Joint Housing Seal
Courtesy of GENERAL MOTORS CORP.

13. Install the seal onto the D/O joint housing.

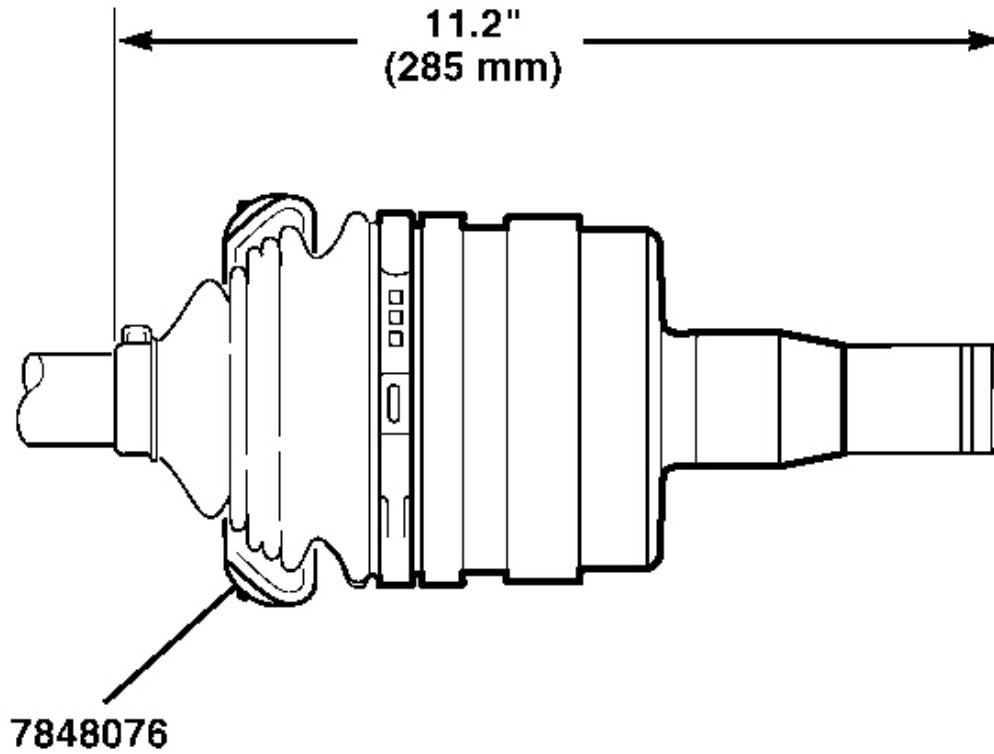


Fig. 23: Checking Inboard Stroke Position
Courtesy of GENERAL MOTORS CORP.

14. Check the inboard stroke position.

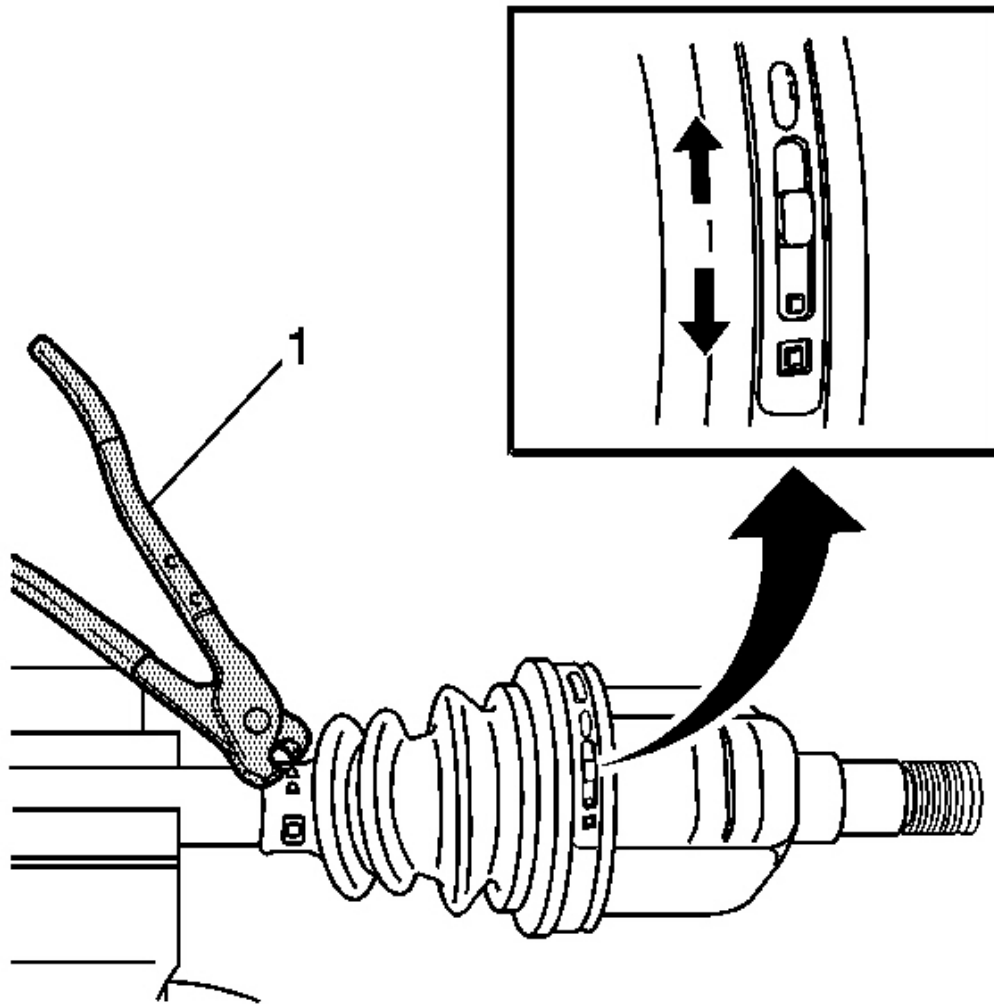


Fig. 24: View Of Drive Axle Large Seal Retaining Clamp
Courtesy of GENERAL MOTORS CORP.

15. Install a new large retaining clamp. Crimp the large retaining clamp using the pliers **J 35566** (1). See **Special Tools**.

Tighten: Tighten the large retaining clamp to 176 N.m (130 lb ft).

16. Fully stroke the D/O joint several times to disperse the grease.
17. Install the wheel drive shaft. Refer to **Wheel Drive Shaft Replacement**.

WHEEL DRIVE SHAFT OUTER JOINT AND BOOT REPLACEMENT

Tools Required

- **J 35910** Drive Axle Seal Clamp Plier. See Special Tools.
- **J 8059** Snap Ring Pliers. See Special Tools.

Removal Procedure

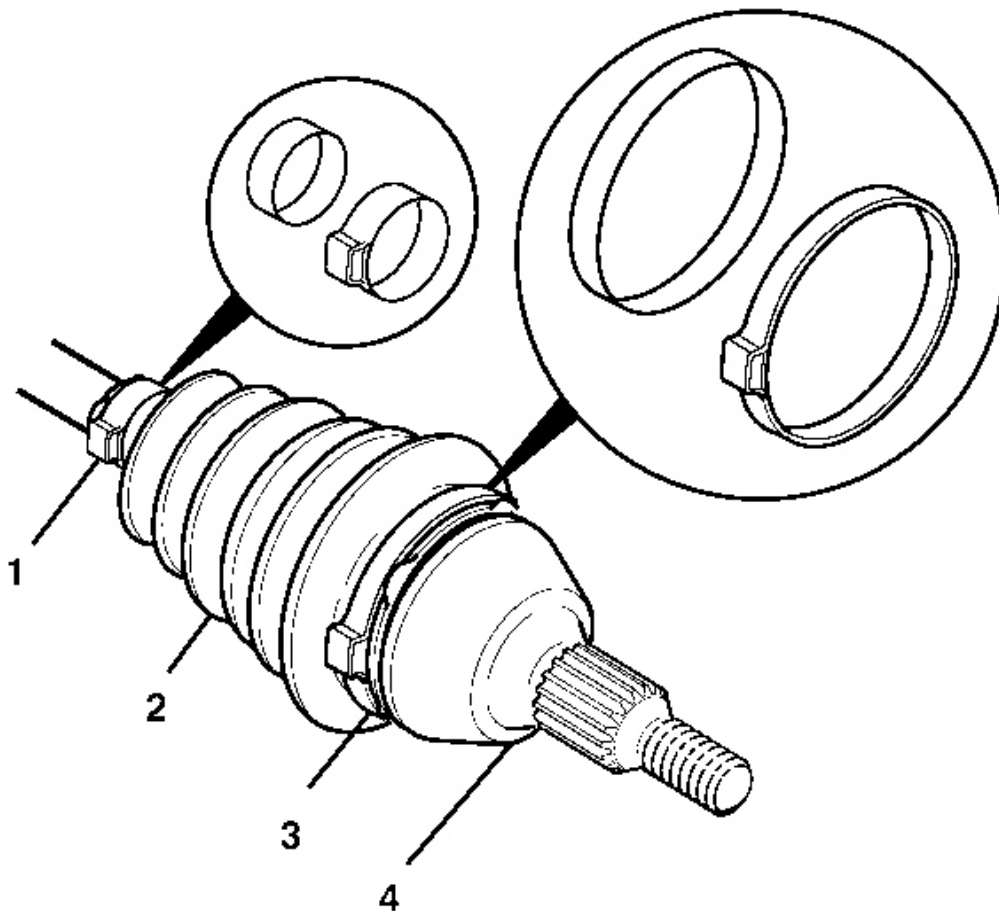


Fig. 25: View Of Driveshaft Retaining Clamps
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: When replacing the outer seal you **MUST** replace the inner

seal.

1. Remove the inner seal. Refer to Wheel Drive Shaft Inner Joint and Boot Replacement.

IMPORTANT: Do not damage the outer race while using the hand grinder.

2. Use a hand grinder to cut through the large retaining clamp (3) located at the C/V joint (4).

Discard the large retaining clamp.

3. Use a hand grinder to cut through the small retaining clamp (1) on the small end of the outer seal (2).

Discard the small retaining clamp.

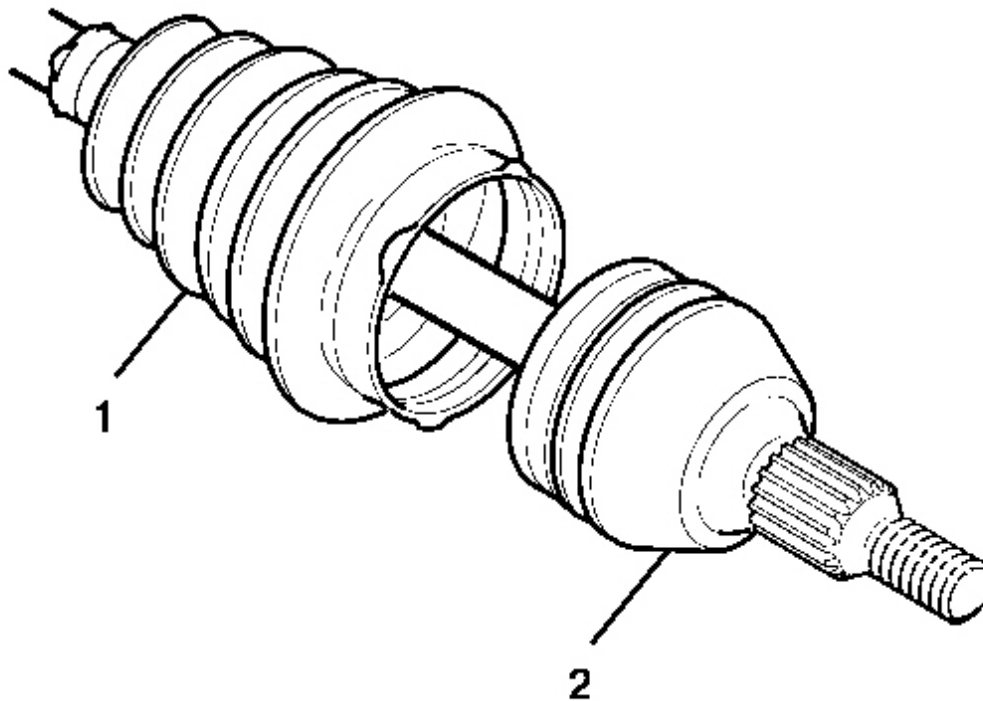


Fig. 26: View Of Outer Seal & C/V Joint
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Do NOT remove the C/V joint from the driveshaft bar. If the C/V joint is removed from the driveshaft bar you must replace the whole driveshaft assembly.

4. Remove the outer seal (1) from the C/V joint (2).

Slide the outer seal (1) away from the C/V joint (2) and remove from the driveshaft bar.

Discard the outer seal.

5. Clean the old grease out of the C/V joint and allow to thoroughly dry.

Installation Procedure

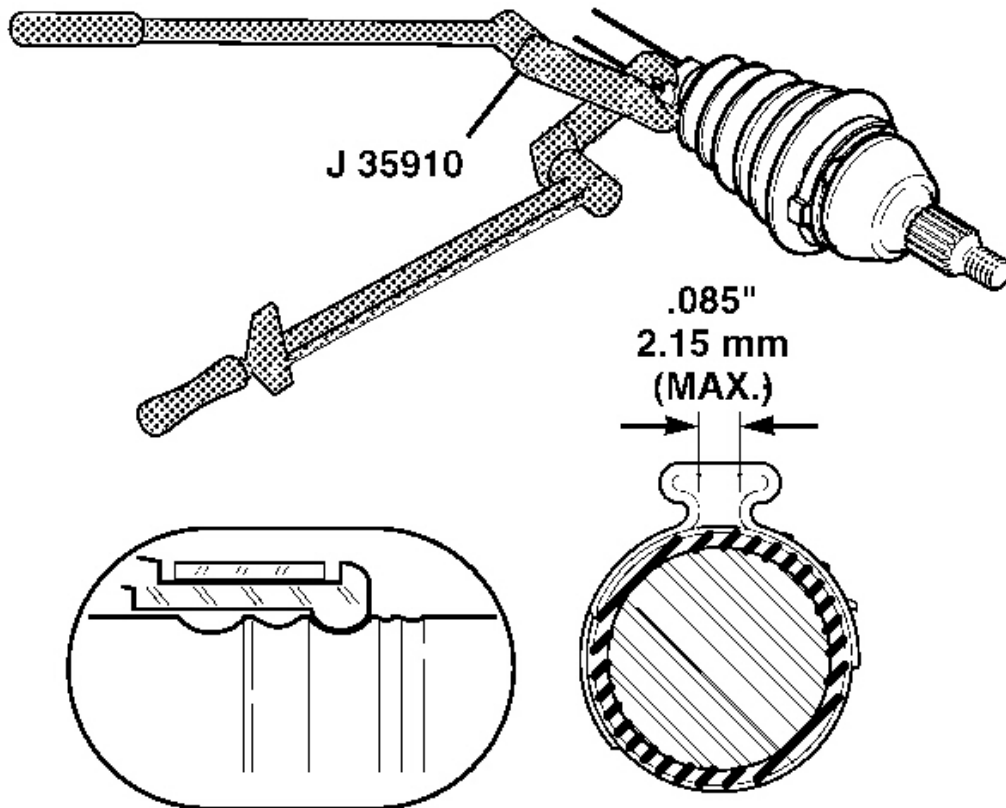


Fig. 27: Securing Small Retaining Clamp To C/V Outer Seal

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Courtesy of GENERAL MOTORS CORP.

1. Pack the C/V joint assembly with the grease supplied in the kit. The amount of grease supplied in this kit has been pre-measured for this application.
2. Place the new small retaining clamp onto the outer seal.
3. Place the new large retaining clamp on the outer seal.
4. Position the small end of the outer seal into the C/V joint outer seal groove on the driveshaft bar.

NOTE: Refer to Fastener Notice .

5. Secure the small retaining clamp to the outer seal with **J 35910** (or equivalent), a breaker bar and a torque wrench. See Special Tools.

Tighten: Tighten the small retaining clamp to 136 N.m (100 lb ft).

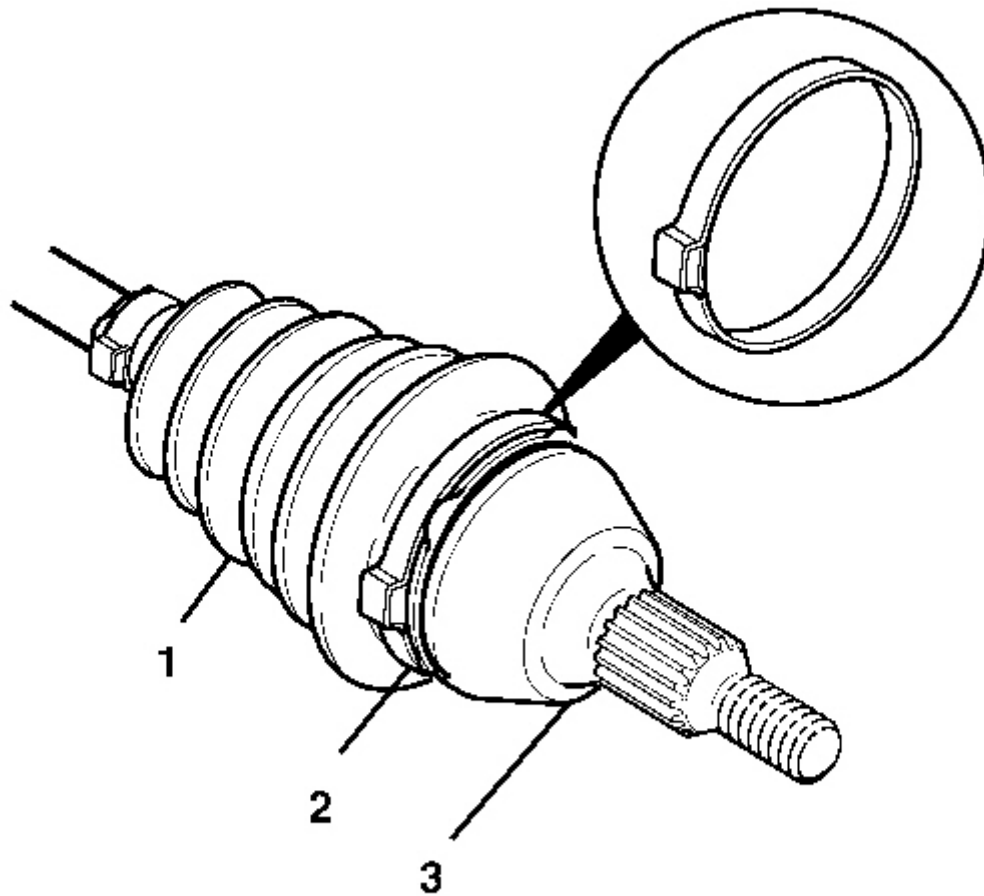


Fig. 28: Installing Large Retaining Ring To C/V Outer Seal
Courtesy of GENERAL MOTORS CORP.

6. Slide the large diameter of the outer seal (1), with the large retaining ring (2) in place, over the outside edge of the C/V joint (3).
7. Position the lip of the outer seal (1) into the groove on the C/V joint (3).
8. Manipulate the outer seal (1) to remove any excess air.

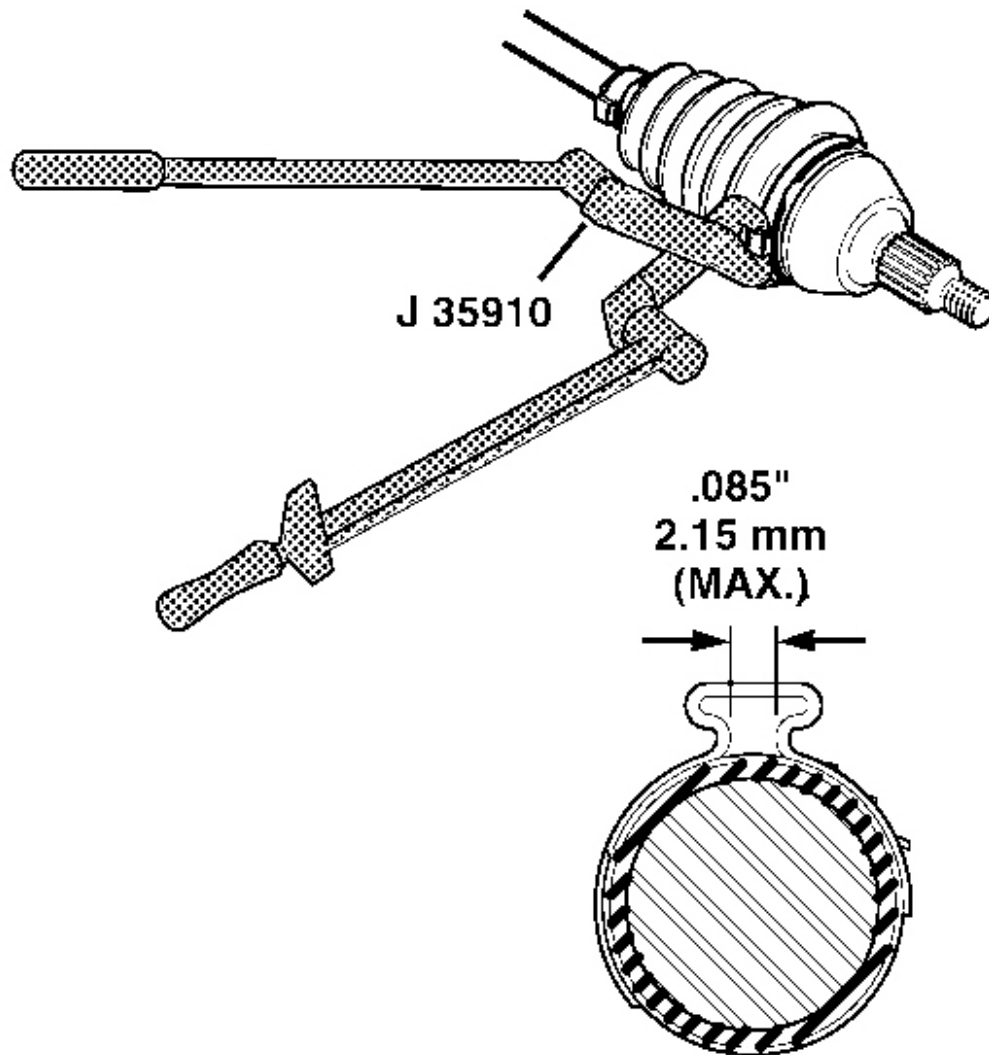


Fig. 29: Securing Large Retaining Clamp To C/V Joint Housing
Courtesy of GENERAL MOTORS CORP.

9. Secure the large retaining clamp to the C/V joint housing with **J 35910** (or equivalent), a breaker bar and a torque wrench. See **Special Tools**.

Tighten: Tighten the large retaining clamp to 176 N.m (130 lb ft).

10. Check the gap dimension on the clamp ear.
11. Angulate the C/V joint several times to disperse the grease.
12. Install the inner seal. Refer to **Wheel Drive Shaft Inner Joint and Boot Replacement**.

DESCRIPTION AND OPERATION

WHEEL DRIVE SHAFTS DESCRIPTION AND OPERATION

Front Wheel Drive Shafts are flexible assemblies which consist of the following components:

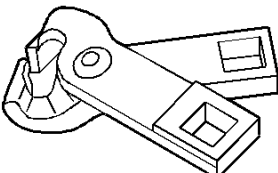
- Front wheel drive shaft constant velocity joint (outer joint).
- Front wheel drive shaft tri-pot joint (inner joint).
- The front wheel drive shaft connects the front wheel drive shaft tri-pot joint and the front wheel drive shaft constant velocity joint.
- The front wheel drive shaft tri-pot joint is completely flexible and moves with an in and out motion.
- The front wheel drive shaft constant velocity joint is flexible but can not move in and out.

The Wheel Drive Shaft is a balanced shaft that transmits rotational force from the front differential to the front wheels when the transfer case is engaged. The wheel drive shaft is mounted to the front differential by bolting the flange of the wheel drive shaft to the flange on the inner output shaft of the front differential. The other end of the wheel drive shaft is splined to fit into and drive the hub assembly when the transfer case is engaged. The tri-pot joint and constant velocity joint on the wheel drive shaft allows the shaft to be flexible to move with the suspension travel of the vehicle.

SPECIAL TOOLS AND EQUIPMENT

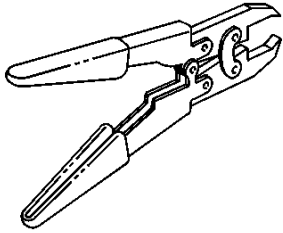
SPECIAL TOOLS

Special Tools

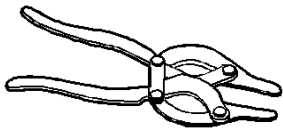
Illustration	Tool Number/Description
	<p style="text-align: center;">J-8059 Drive Axle Seal Clamp Pliers</p>

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J-35566
Drive Axle Seal Clamp Pliers



J-35910
Snap Ring Pliers - Parallel Jaw