

1997-2001 DRIVE AXLES**Driveshaft & Universal Joints - Catera****DESCRIPTION & OPERATION**

NOTE: Driveshaft may also be referred to as propeller shaft.

A fully sealed ball type bearing provides support to the 2-piece Driveshaft in the center of the vehicle. The bearing is housed in a rubber dampened insulator ring that allows the bearing some (minimal) movement. Once the bearing has been pressed out of the insulator, the bearing must be replaced because the seal is damaged upon removal.

ADJUSTMENTS**DRIVESHAFT ANGLE**

The universal joint angle can be measured using this method with the vehicle on a hoist, over an inspection pit, or on the ground. the suspension travel will not affect the driveline angles.

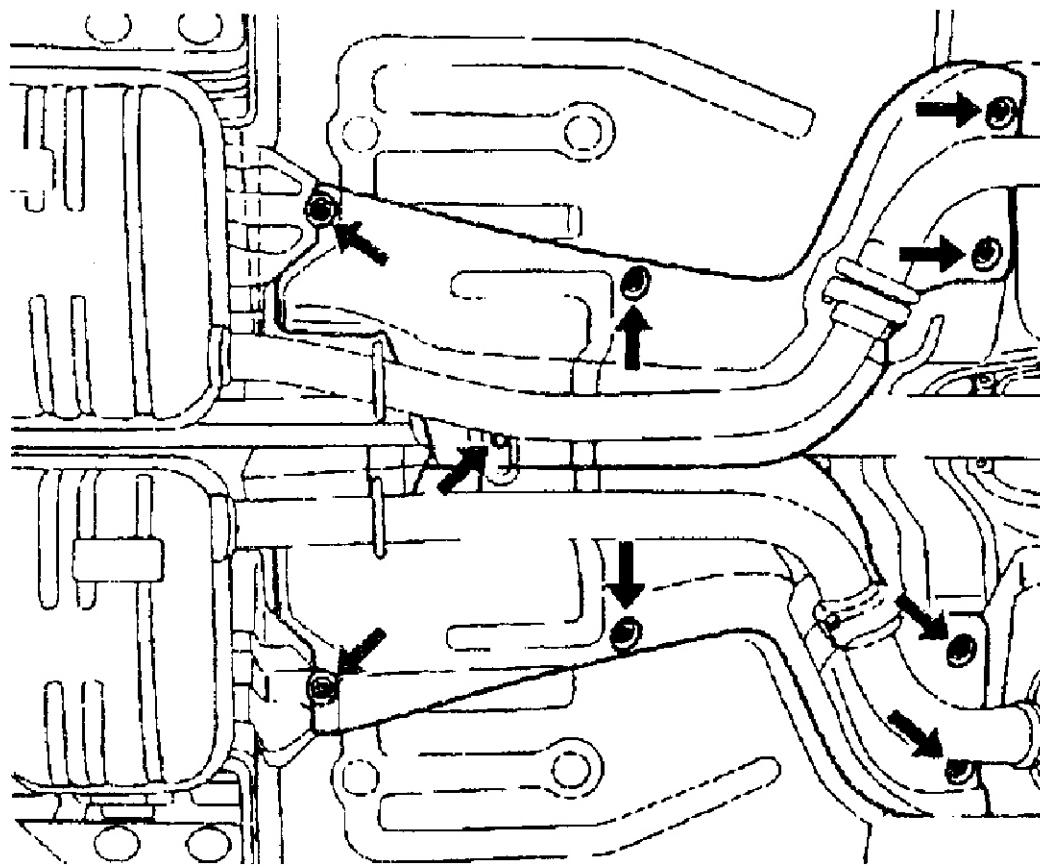
1. Take a measurement at the universal joint bearing cap mounted in the rear driveshaft yoke:
 - Rotate the shaft until the cap is facing straight down.
 - Place the Driveshaft Inclinator (J 23498-A) on the cap. See **SPECIAL TOOLS**.
 - Center the bubble in the Driveshaft Inclinator (J 23498-A) sight glass. See **SPECIAL TOOLS**.
 - Record the measurement.
2. Take a measurement at the universal joint bearing cap mounted in the front Driveshaft yoke:
 - Rotate the shaft 90 degrees.
 - Place the Driveshaft Inclinator (J 23498-A) on the cap. See **SPECIAL TOOLS**.
 - Center the bubble in the sight glass.
 - Record the measurement.
3. Determine the universal joint angle by subtracting the smaller measurement from the larger. (The angle is actually the angle between the front (transmission) and rear (differential) Driveshaft half center lines.) The maximum universal joint angle is 0.75 degrees.
4. Adjust the universal joint angle as necessary:
 - In order to increase the angle, add shims between the insulator and the mounting bracket.
 - In order to decrease the angle, add shims between the mounting bracket and the underbody.

OVERHAUL**2-PIECE PROPELLER SHAFT****Removal**

NOTE: Numbers in parenthesis refer to components numbered in illustrations.

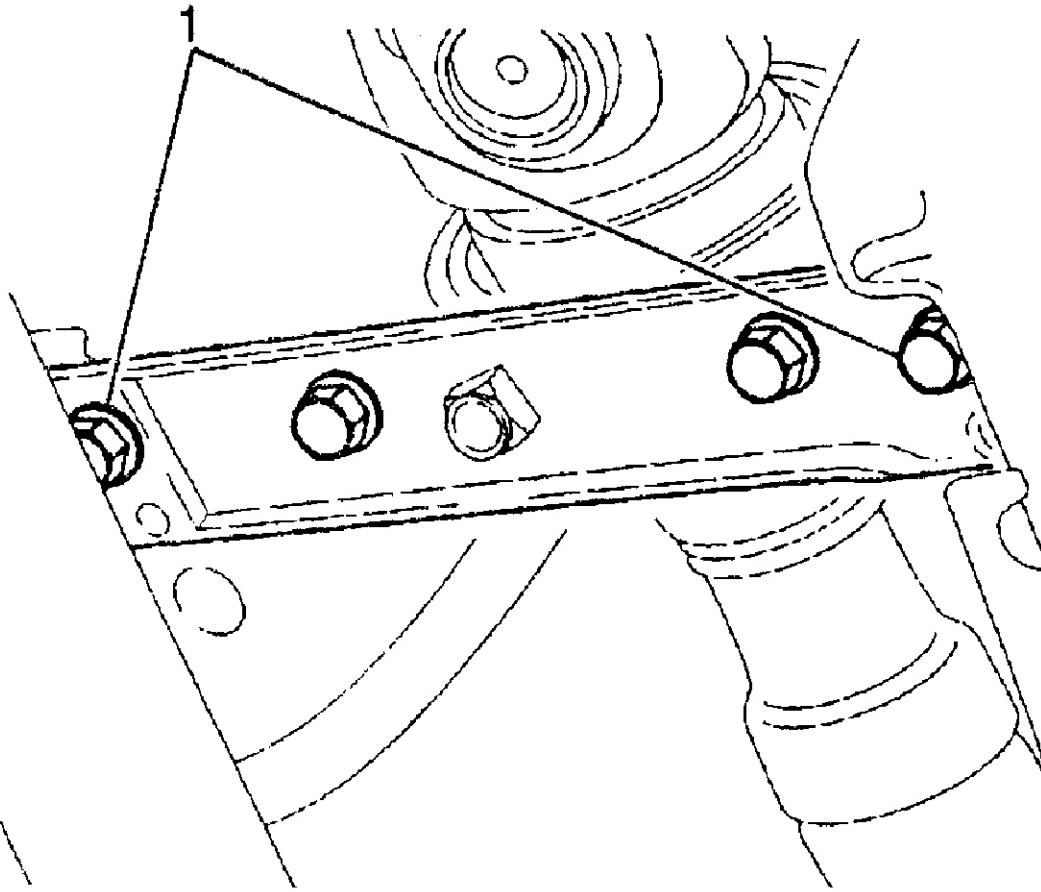
1. Place the transmission in Neutral.
2. Raise and support the vehicle.
3. Remove the heatshield nuts. See **Fig. 1**.
4. Remove the heatshield. See **Fig. 1**.
5. Remove the bolts (1) from the Driveshaft center bearing bracket at the underbody. See **Fig. 2**.
6. Remove the propeller shaft from the front propeller shaft coupling: See **Fig. 2**.

- Remove the coupling nuts and bolts.
 - Slide the front half of the shaft rearward in order to clear the coupling about one inch.
 - Lower the shaft.
7. Remove the propeller shaft from the rear propeller shaft coupling: See **Fig. 3** .
- Remove the coupling nuts and bolts.
 - Slide the front half of the shaft rearward in order to clear the coupling about one inch.
 - Lower the shaft.
8. Slide the propeller shaft between the exhaust and the underbody in order to remove without removing the exhaust system.
9. Remove the propeller shaft center bearing, if necessary. See **CENTER BEARING** .



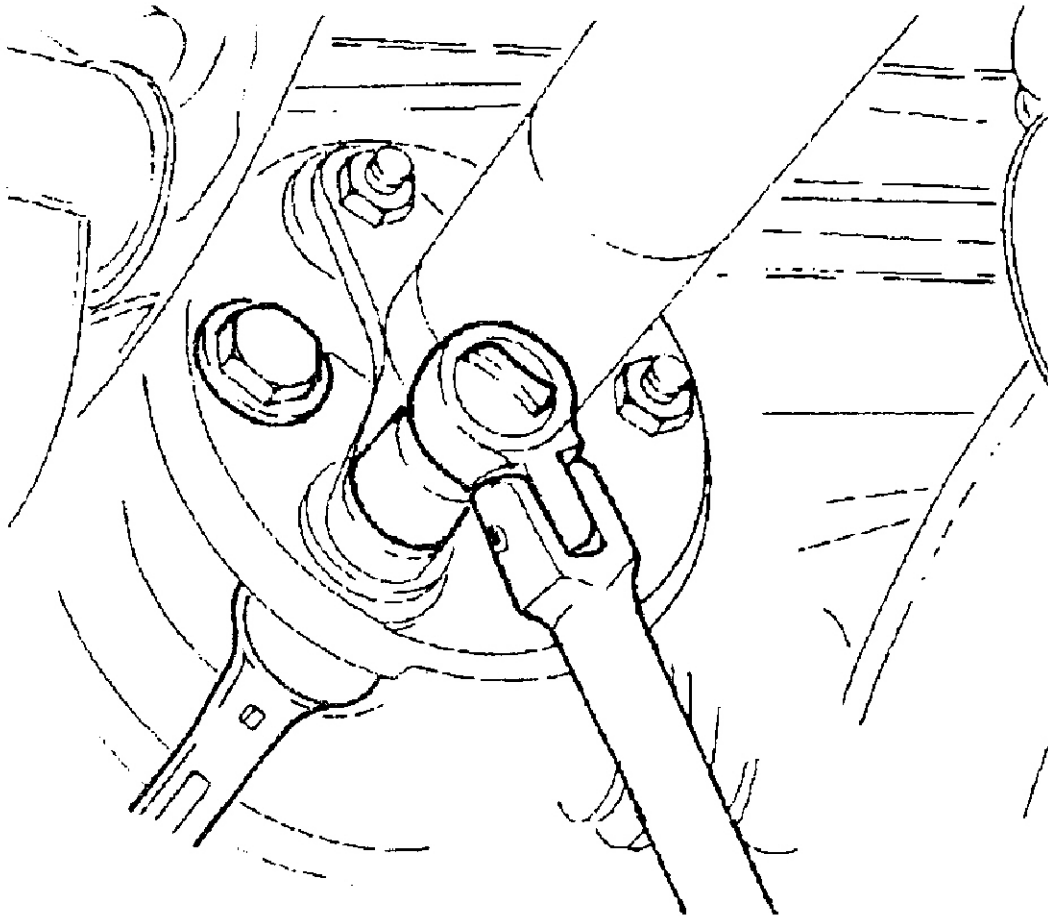
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Fig. 1: Removing & Installing Heatshields & Nuts
Courtesy of GENERAL MOTORS CORP.



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Fig. 2: Removing & Installing Bolts From Driveshaft
Courtesy of GENERAL MOTORS CORP.



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Fig. 3: Removing & Installing Coupling Bolts
 Courtesy of GENERAL MOTORS CORP.

Installation

NOTE: Numbers in parenthesis refer to components numbered in illustrations.

1. Install the propeller shaft center bearing. If removed. See **CENTER BEARING** .
2. Install the propeller shaft into the mounting position between the exhaust and the underbody.
3. Prepare shaft flanges for assembly:
 - Clean the bushing surfaces on both the front (transmission) and the rear (differential) flanges.
 - Apply a light coat of Grease, (GM 12345740) or equivalent, to the flange faces.
4. Install the propeller shaft center bearing bracket bolts (1) through the bracket and into the body. Tighten the bolts. See **Fig. 2** and **TORQUE SPECIFICATIONS** .
5. Install the propeller shaft to the rear propeller shaft coupling.
6. Install the rear propeller shaft coupling bolts and nuts. Tighten the bolts and nuts. See **Fig. 3** and **TORQUE SPECIFICATIONS** .
7. Install the propeller shaft to front propeller shaft coupling.
8. Install the front propeller shaft coupling bolts and nuts. Tighten the bolts and nuts. See **Fig. 2** and **TORQUE SPECIFICATIONS** .
9. Install the heatshield. See **Fig. 1** .
10. Install the heatshield nuts. Tighten the nuts. See **Fig. 1** and **TORQUE SPECIFICATIONS** .
11. Lower the vehicle.

CENTER BEARING

Removal

NOTE: Numbers in parenthesis refer to components numbered in illustrations.

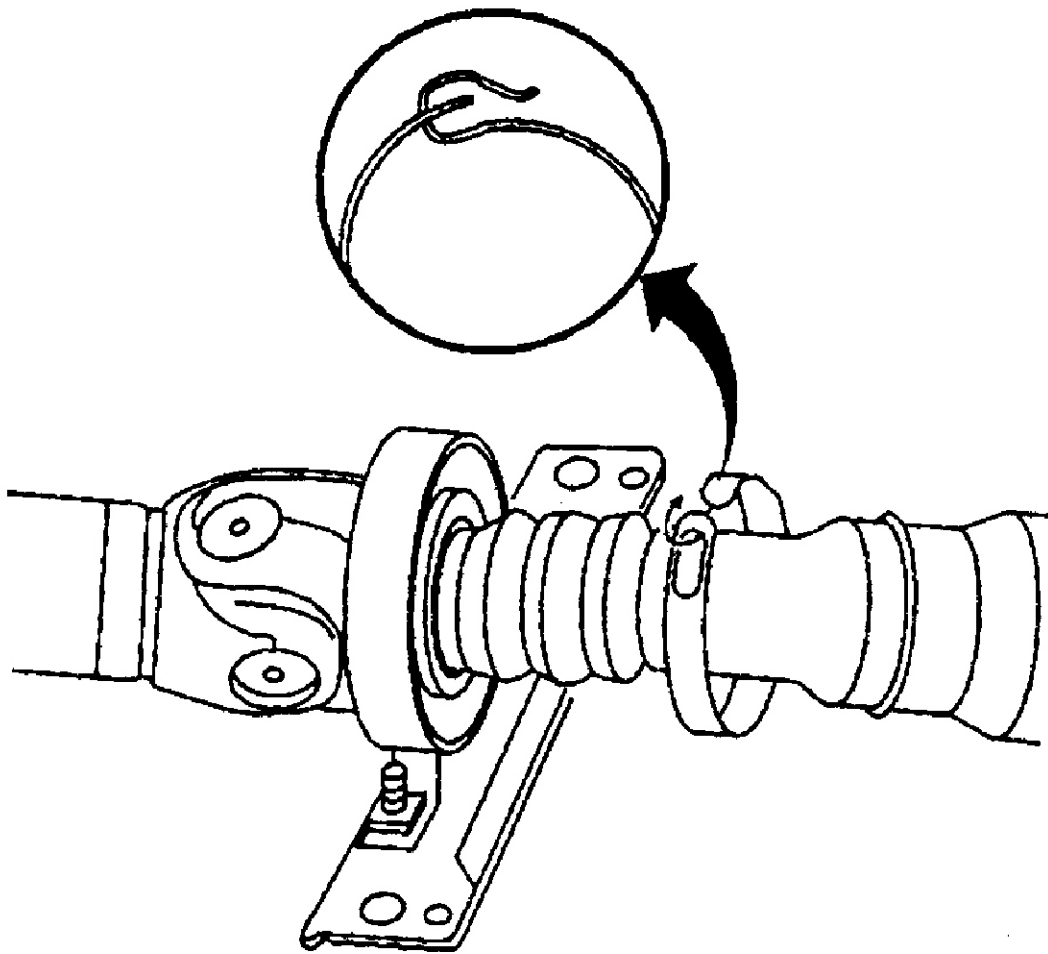
1. Remove the propeller shaft. See **2-PIECE PROPELLER SHAFT**.
2. Remove the propeller shaft slip yoke boot strap and remove the boot. See **Fig. 4**.

NOTE: Marking the propeller shaft must be preformed to ensure correct spline alignment, as well as, retaining the production balance of the propeller shaft assembly.

3. Mark the halves of the propeller shaft near the slip joint. See **Fig. 5**.
4. Separate the propeller shaft halves. See **Fig. 5**.
5. Remove the front propeller shaft bearing retaining ring (1) from the journal. See **Fig. 6**.
6. Remove the slinger (1). See **Fig. 7**.
7. Remove the bracket bolts (1) and washers (2). See **Fig. 8**.
8. Remove the bracket (3) from the insulator (4). See **Fig. 8**.

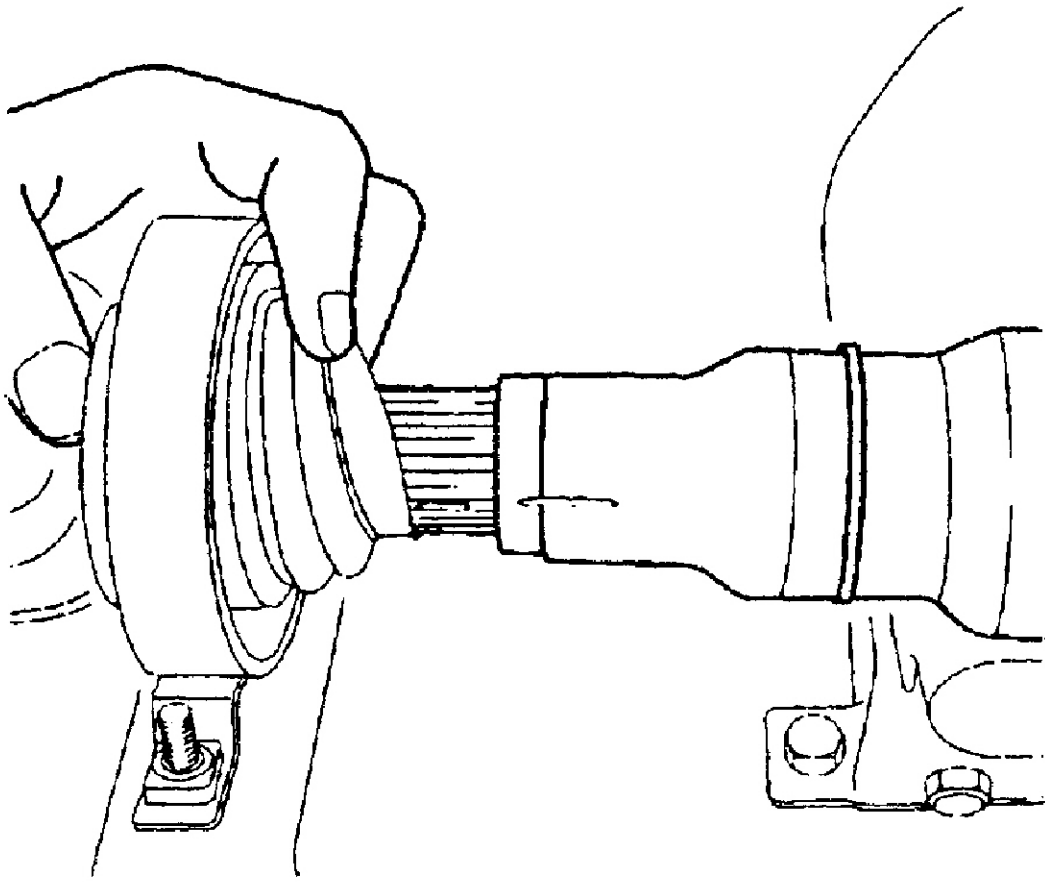
CAUTION: During this step, only tighten the Rear Pinion Bearing Remover (J 22912-01) enough so that the tool supports the inner race and does not clamp onto the journal. Damage to the journal will occur.

9. Install the Rear Pinion Bearing Remover (J 22912-01) on the shaft. See **Fig. 9** and **SPECIAL TOOLS**.
10. Support the Rear Pinion Bearing Remover (J 22912-01) in a vice.
11. Drive the propeller shaft from the bearing using a deadblow hammer.
12. Remove the rear slinger.



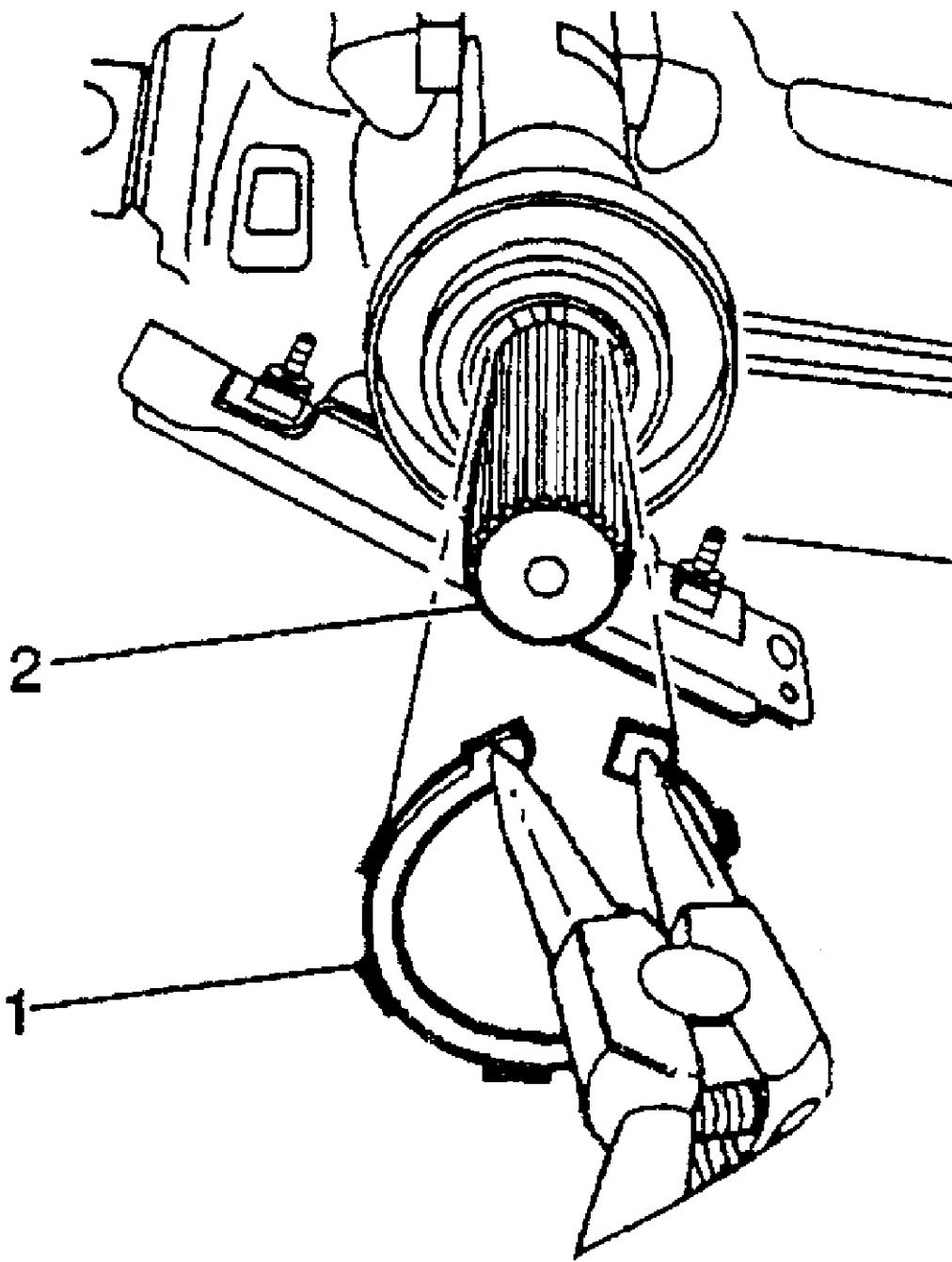
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Fig. 4: Removing & Installing Propeller Shaft Slip Yoke
Courtesy of GENERAL MOTORS CORP.



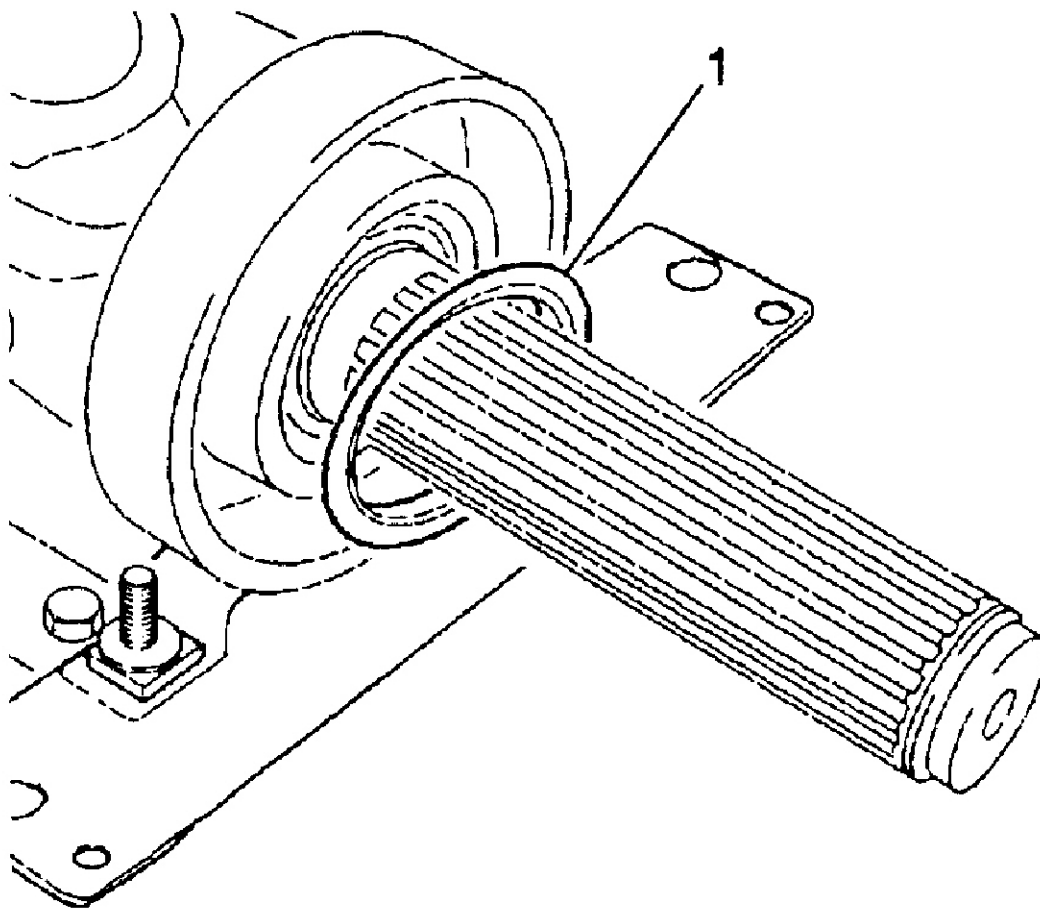
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Fig. 5: Marking & Separating Propeller Shafts
Courtesy of GENERAL MOTORS CORP.



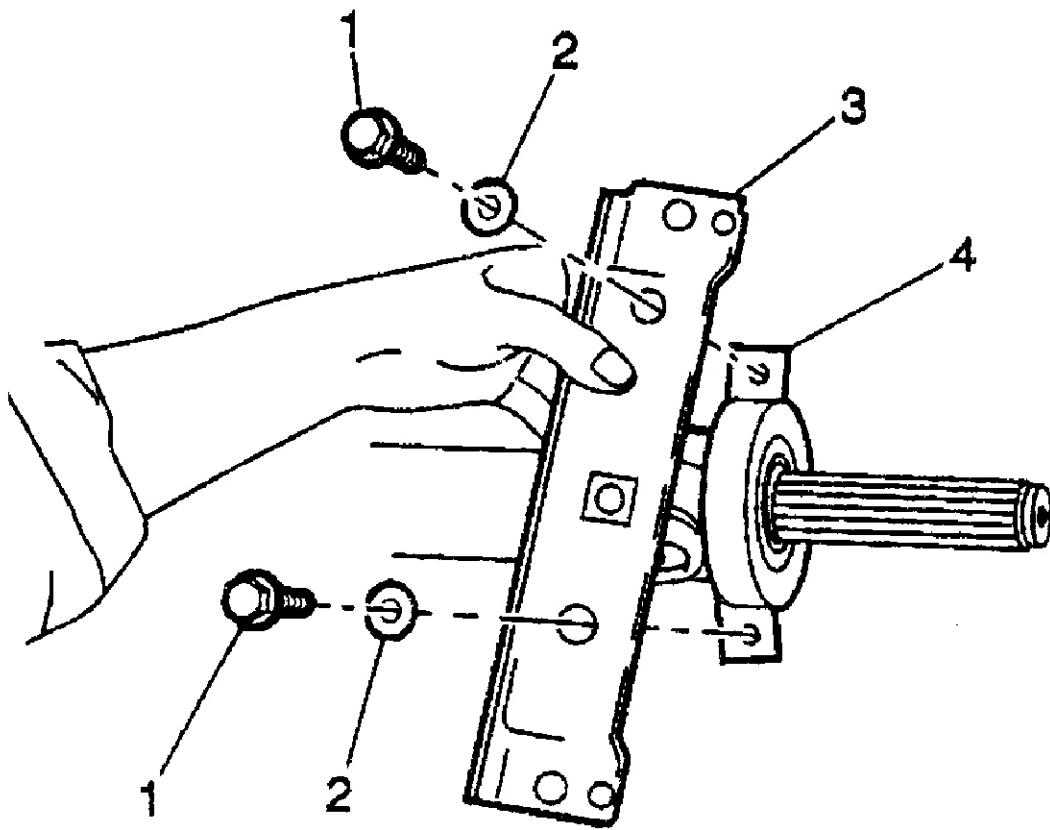
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Fig. 6: Removing & Installing Front Retaining Ring From Journal
Courtesy of GENERAL MOTORS CORP.



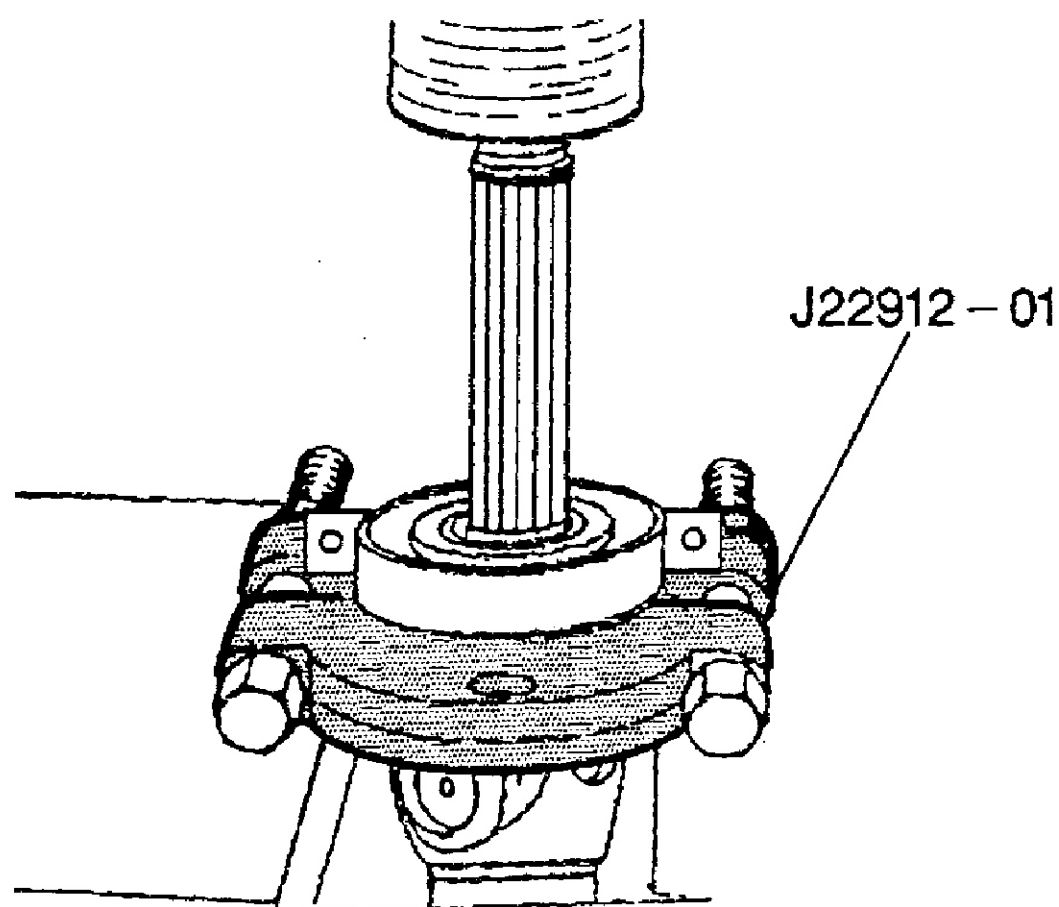
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Fig. 7: Removing & Installing Slinger
Courtesy of GENERAL MOTORS CORP.



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Fig. 8: Removing & Installing Bracket, Insulator, Bolts & Washers
Courtesy of GENERAL MOTORS CORP.



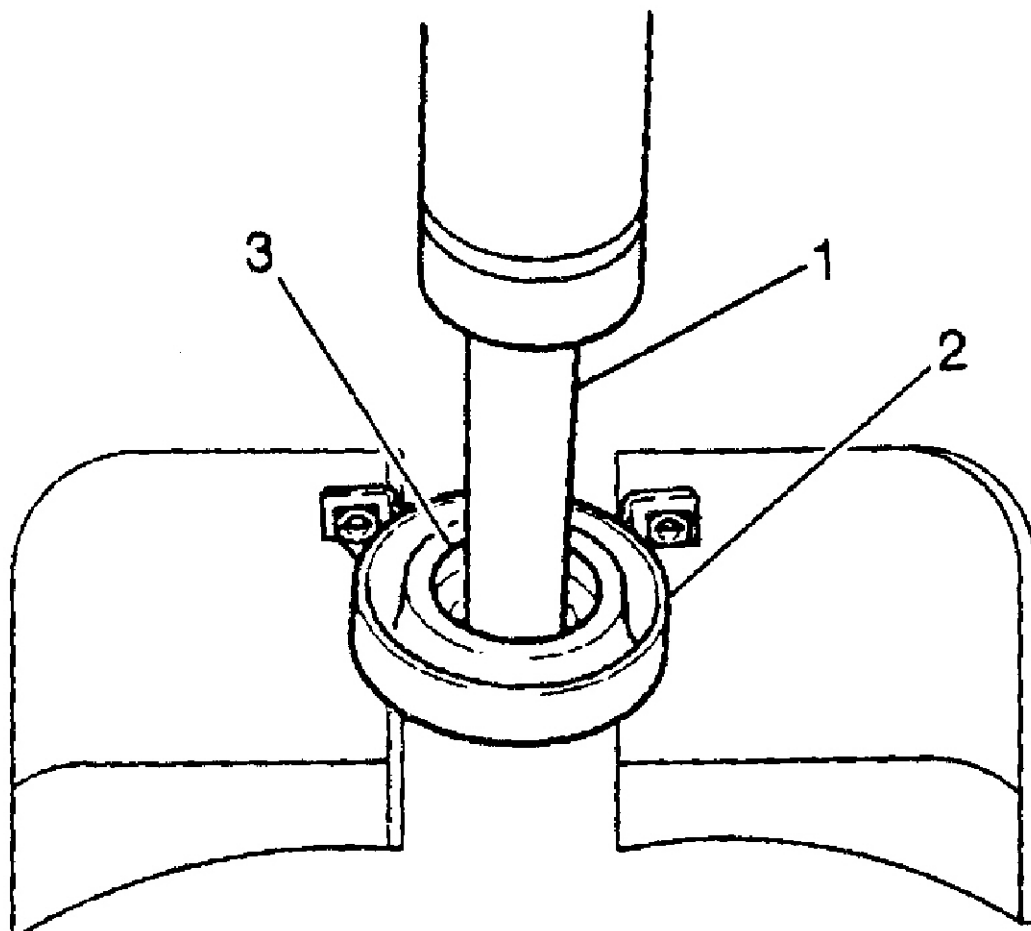
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Fig. 9: Pressing Bearing Off Shaft
Courtesy of GENERAL MOTORS CORP.

Disassembly

NOTE: Numbers in parenthesis refer to components numbered in illustrations.

1. Remove the propeller shaft. See **2-PIECE PROPELLER SHAFT**.
2. Support the insulator (2) on a vice. See **Fig. 10**.
3. Using a suitable tool, press the bearing (3) out of the insulator (2). See **Fig. 10**.
4. Discard the bearing, it is not reusable and must be replaced.

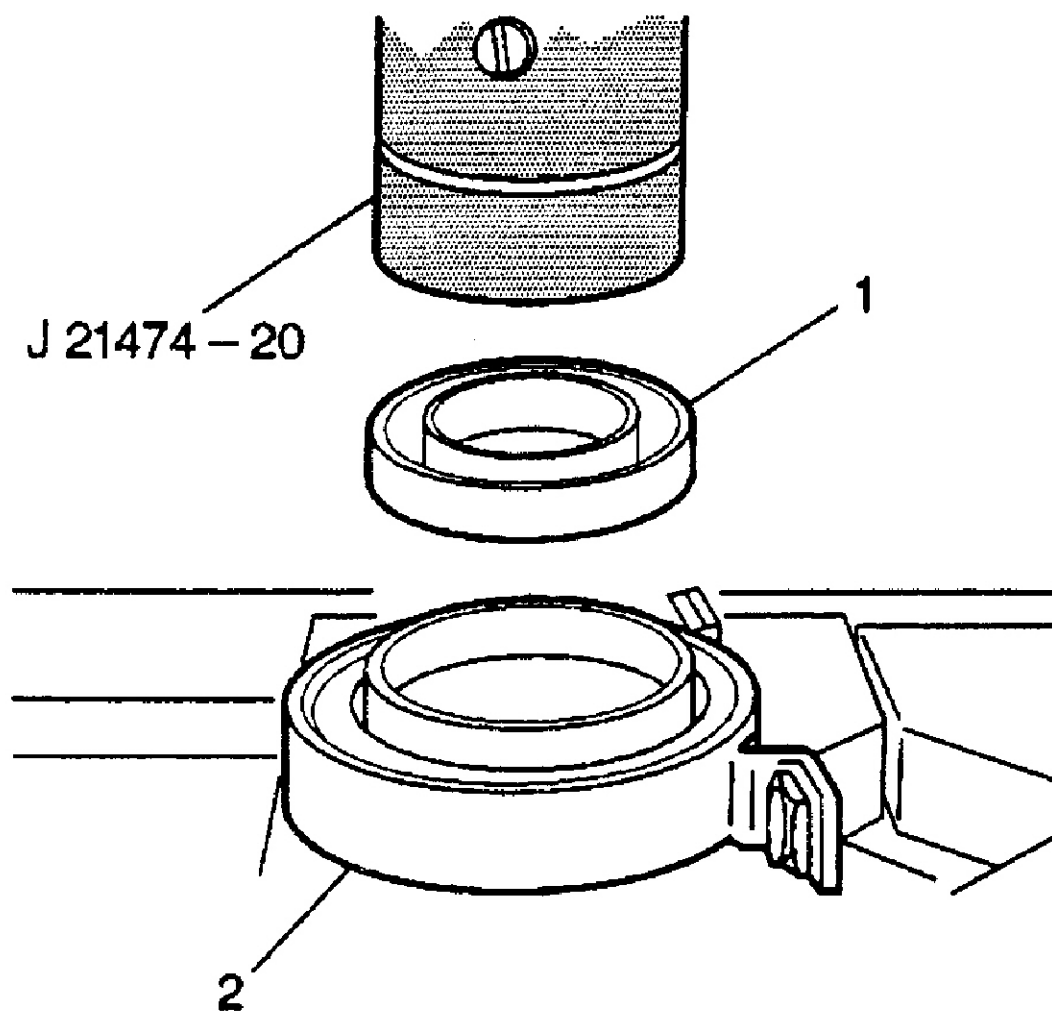


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Fig. 10: Disassembling Center Bearing
Courtesy of GENERAL MOTORS CORP.

Assembly

1. Using the Control Arm Bushing Driver (J 21474-20), press the bearing (1) into the insulator. See **Fig. 11** and **SPECIAL TOOLS**.
2. Install the propeller shaft. See **2-PIECE PROPELLER SHAFT**



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Fig. 11: Assembling Center Bearing
 Courtesy of GENERAL MOTORS CORP.

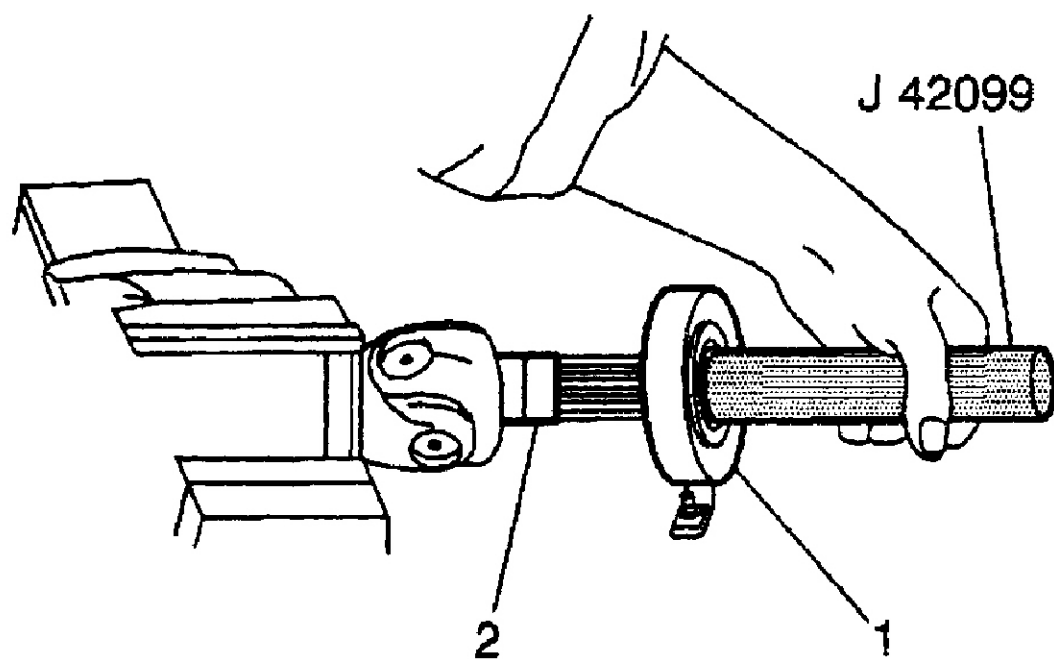
Installation

NOTE: Numbers in parenthesis refer to components numbered in illustrations.

1. Install the rear slinger.
2. Using the Center Bearing Installer (J 42099), install the bearing (1) onto the journal. See **Fig. 12**
3. Install the bracket (3) to the insulator (4). See **Fig. 8**.
4. Install the bracket bolts (1) and the washers (2). Tighten the bolts. See **Fig. 8** and **TORQUE SPECIFICATIONS**.
5. Install the slinger (1). See **Fig. 7**.
6. Install the retaining ring (1). See **Fig. 6**.
7. Install the slip yoke boot onto the propeller shaft. See **Fig. 13**.
8. Clean the slip yoke journal mating surfaces.
9. Lubricate the slip yoke journal splines with Grease (GM 12345740). or equivalent.

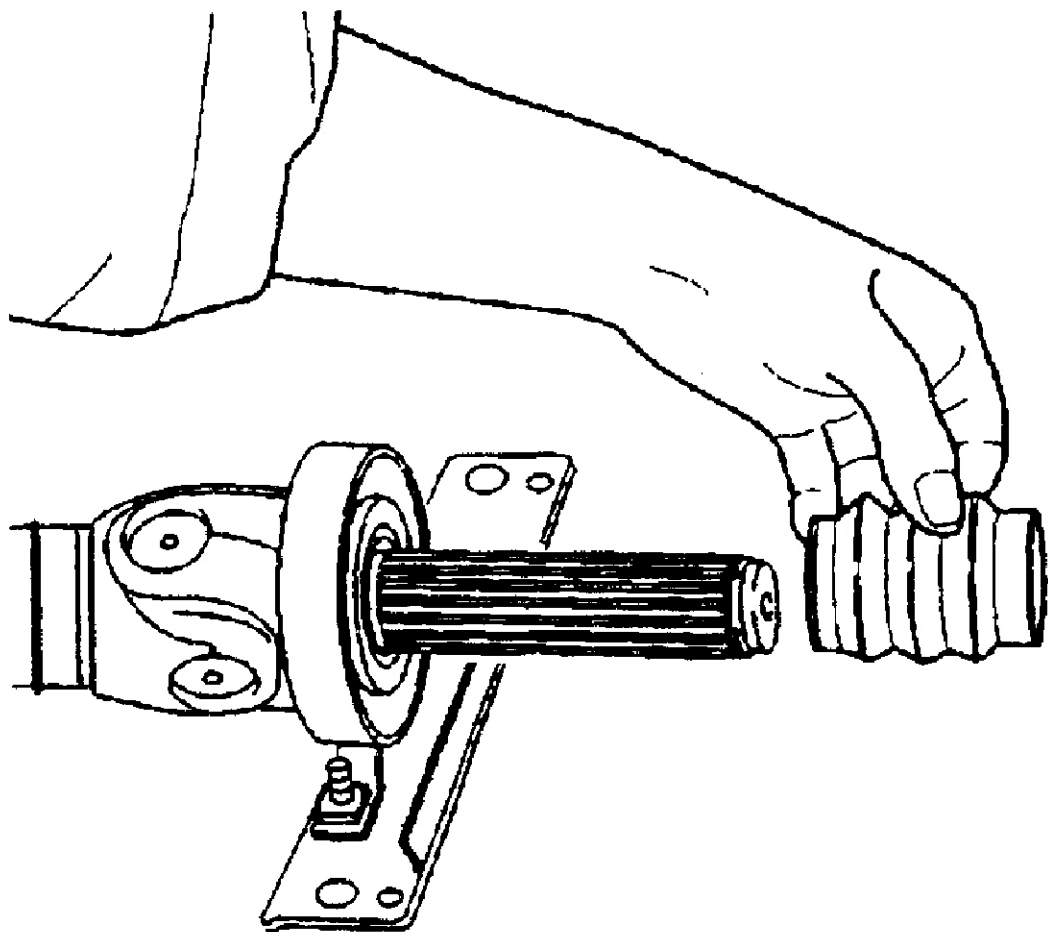
CAUTION: When reassembling the propeller shaft halves, align both markings previously made as well as the blind spline of the journal. If the propeller shaft halves are aligned properly, they should join with little effort. **DO NOT** force the halves together.

10. Join the propeller shaft halves. See **Fig. 5** .
11. Install the slip yoke boot strap. See **Fig. 4** .
12. Install the propeller shaft. See **2-PIECE PROPELLER SHAFT** .



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Fig. 12: Installing Bearing Onto Driveshaft
Courtesy of GENERAL MOTORS CORP.



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Fig. 13: Installing Boot

Courtesy of GENERAL MOTORS CORP.

TORQUE SPECIFICATIONS

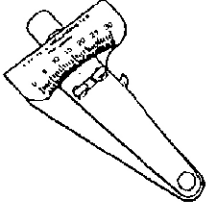
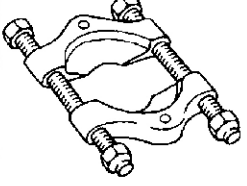
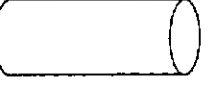
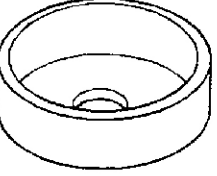
TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Front Driveshaft Bearing Bracket Bolt	15 (20)
Front Driveshaft Bearing Insulator Bolt	16 (22)
Driveshaft Coupler Bolt	70 (95)
Driveshaft Coupler Nut	70 (95)
	INCH Lbs. (N.m)
Heatshield Nut	18 (2)

SPECIAL TOOLS

2001 Cadillac Catera

1997-2001 DRIVE AXLES Driveshaft & Universal Joints - Catera

Illustration	Tool Number/ Description	Illustration	Tool Number/ Description
	J 23498-A Driveshaft Inclinometer		J 22912-01 Rear Pinion Bearing Remover
	J 42099 Center Bearing Installer		J 21474-20 Control Arm Bushing Driver

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Fig. 14: Identifying Special Tools
Courtesy of GENERAL MOTORS CORP.

2001 Cadillac Catera

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