

Propeller Shaft

Specifications

Fastener Tightening Specifications

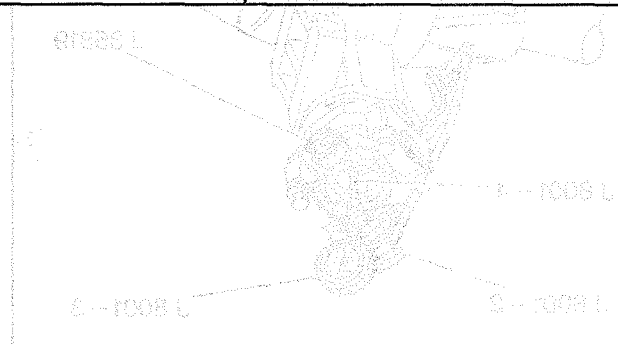
Application	Specification	
	Metric	English
Propeller Shaft Bolt/Screw	22 N·m	16 lb ft
Propeller Shaft-To-Center Support Bearing Bolt/Screw	50 N·m	37 lb ft

Propeller Shaft Runout Specifications

Application	Specification	
	Metric	English
Propeller Shaft Runout	1.40 mm	0.055 in

GM SPO Group Numbers

Application	GM SPO Group Number
Center Support Bearing	5.000
One-Piece Propeller Shaft (V8)	5.000
Two-Piece Propeller Shaft (V6)	5.000
Universal Joints	5.000



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Diagnostic Information and Procedures

Propeller Shaft Diagnosis

Tools Required

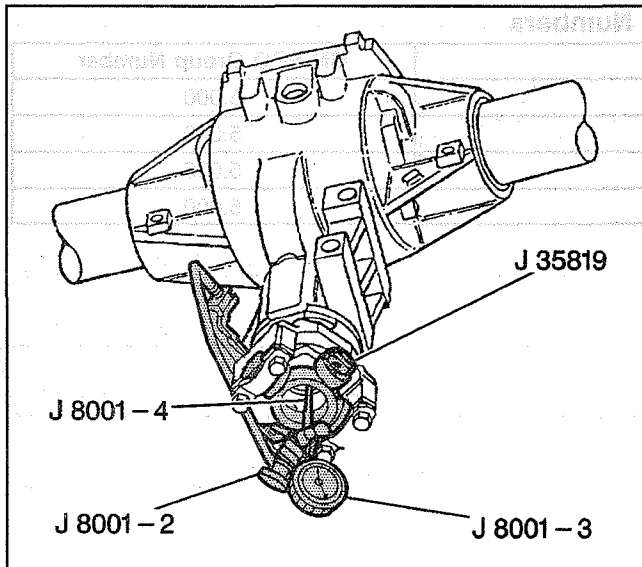
- J 8001 Dial Indicator Set
- J 35819 Runout Gage
- J 35819-100 Runout Gage Adapter Sleeves

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

Ensure that the following conditions are met:

- The vehicle is supported on the rear axle housing
- The rear wheels can rotate freely

2. Remove the propeller shaft. Refer to *Propeller Shaft Replacement - One Piece* or *Propeller Shaft Replacement - Two Piece*.



3. Use the J 8001 the J 35819 and the J 35819-100 in order to measure and record the pinion gear yoke runout. Mark the high point and the low point of the pinion gear yoke.

4. If the pinion gear yoke runout is 0.15 mm (0.006 in) or less, remove the pinion gear yoke balance weight if the pinion gear yoke balance weight is used.

5. No further action is required if the following circumstances exist:

- The pinion gear yoke runout is between 0.15–0.28 mm (0.006–0.011 in)
- The balance weight is near or at the low point of pinion gear runout

If the balance weight is not near or at the low point of pinion gear runout, remove the weight.

6. No further action is required if the following circumstances exist:

- The pinion gear yoke runout is between 0.28–0.38 mm (0.011–0.015 in)
- The balance weight is near or at the low point of pinion gear runout

7. If the balance weight is not at or near the low point of the pinion gear runout, complete the following steps:

7.1. Remove the weight.

7.2. Rotate the pinion gear yoke until the runout is 0.25 mm (0.010 in) or less.

8. If a runout of 0.25 mm (0.010 in) or less cannot be attained, complete the following steps:

Important: Service replacement differential pinion gear yokes may be equipped with balance weights. Do not remove these weights.

8.1. Install a new differential pinion gear yoke.

8.2. Inspect again in order to determine if the runout is 0.25 mm (0.010 in) or less.

9. Install the propeller shaft. Refer to *Propeller Shaft Replacement - One Piece* or *Propeller Shaft Replacement - Two Piece*.

10. Lower the vehicle.

Leak at Front Slip Yoke

Step	Action	Value(s)	Yes	No
Important: An occasional drop of fluid from the slip yoke is normal.				
1	Inspect the outside surface of the slip yoke for roughness. Is the outside surface of the slip yoke rough?	—	Go to Step 2	Go to Step 3
2	Replace the yoke. Is there still a leak at the front slip yoke?	—	Go to Step 3	System OK
3	Inspect the seal for cuts caused by burrs on the slip yoke. Are there cuts on the seal?	—	Go to Step 4	Go to Step 5
4	Replace the seal. Is there still a leak at the front slip yoke?	—	Go to Step 5	System OK
5	Inspect the rear transmission oil seal for damage. Is the rear transmission oil seal damaged?	—	Go to Step 6	—
6	Replace the rear transmission oil seal. Add fluid if fluid is needed. Is there still a leak at the front slip yoke?	—	—	System OK

Roughness or Vibration

Step	Action	Value(s)	Yes	No
1	Inspect the propeller shaft for the following conditions: • Bending • Damage Is the propeller shaft bent or damaged?	—	Go to Step 2	Go to Step 3
2	Replace the propeller shaft. Is there still roughness or vibration?	—	Go to Step 3	System OK
3	Inspect for undercoating on the propeller shaft. Is there undercoating on the propeller shaft?	—	Go to Step 4	Go to Step 5
4	Remove the undercoating from the propeller shaft. Is there still roughness or vibration?	—	Go to Step 5	System OK
5	Inspect the tires for the following conditions: • Unbalance • Vibration during vehicle operation at a speed of 48–80 km/h (30–50 mph) Do the above conditions exist?	—	Go to Step 6	Go to Step 7
6	Balance the tires. Is there still roughness or vibration?	—	Go to Step 7	System OK
7	Inspect the universal joints for tightness. Are the universal joints tight?	—	Go to Step 8	Go to Step 9
8	If the universal joints are equipped with snap rings, tap on the yokes with a hammer in order to free up the universal joints. If the joints cannot be freed up or if the joints feel rough, replace the joints. Is there still roughness or vibration?	—	Go to Step 9	System OK
9	Inspect the universal joints for wear. Are any of the universal joints worn?	—	Go to Step 10	Go to Step 11
10	Replace the worn universal joint(s). Is there still roughness or vibration?	—	Go to Step 11	System OK
11	Inspect the fixed yoke for bending and inspect the flange for excessive runout. Does either of the above conditions exist?	—	Go to Step 12	Go to Step 13
12	Replace the fixed yoke. Is there still roughness or vibration?	—	Go to Step 13	System OK

Roughness or Vibration (cont'd)

Step	Action	Value(s)	Yes	No
13	Inspect the propeller shaft for lack of balance. Is the propeller shaft unbalanced?	—	Go to Step 14	Go to Step 15
14	Inspect for the missing balance weight on the propeller shaft. Rotate the shaft 180 degrees on the fixed yoke. Is there still roughness or vibration?	—	Go to Step 15	System OK
15	Inspect the universal joint for incorrect angle placement. Is the universal joint at an incorrect angle?	—	Go to Step 16	Go to Step 17
16	Correct the universal joint angle. Is there still roughness or vibration?	—	Go to Step 17	System OK
17	Inspect the yokes and the flanges for the following conditions: • Damage • Distortion Are the yokes and/or the flanges damaged or distorted?	—	Go to Step 18	Go to Step 19
18	Replace the yokes and/or the flanges. Is there still roughness or vibration?	—	Go to Step 19	System OK
19	Inspect the shaft for yokes that are out of phase. Are the yokes out of phase on the shaft?	—	Go to Step 20	Go to Step 21
20	Replace the propeller shaft if the propeller shaft is a one-piece shaft. Reindex the propeller shaft if the propeller shaft is a two-piece shaft. Is there still roughness or vibration?	—	Go to Step 21	System OK
21	Inspect for driveline vibration during vehicle operation at a speed of 80 km/h (50 mph). Is there driveline vibration at the specified speed?	—	Go to Step 22	System OK
22	Inspect the propeller shaft runout. Inspect for missing balance weights on the propeller shaft. Is there driveline vibration at the specified speed?	—	—	System OK

Ping, Snap, or Click Noise

Step	Action	Value(s)	Yes	No
DEFINITION: A ping, a snap or a clicking noise in the driveline that is usually heard during initial load after the transmission is in gear.				
1	Inspect the rear axle lower control arm for loose bolts/screws. Are there loose bolts/screws in the lower control arm?	—	Go to Step 2	Go to Step 3
2	Tighten the bolts/screws to the specified torque. Refer to Rear Suspension in Suspension. Is there still a ping, a snap or a clicking noise?	—	Go to Step 3	System OK
3	Inspect the universal joints for the following conditions: • Wear • Damage Are any of the universal joints worn or damaged?	—	Go to Step 4	Go to Step 5
4	Replace the worn or damaged universal joint(s). Is there still a ping, a snap or a clicking noise?	—	Go to Step 5	System OK
5	Inspect the fixed yoke in order to determine if the fixed yoke is loose. Is the fixed yoke loose?	—	Go to Step 6	System OK
6	Tighten the drive pinion gear nut to the specified torque. Refer to Fastener Tightening Specifications. Is there still a ping, a snap or a clicking noise?	—	—	System OK

Knock or Clunk Noise

Step	Action	Value(s)	Yes	No
DEFINITION: A knock or a clunking noise in the driveline that occurs during operation of the vehicle in high gear or during coasting in neutral at a speed of 16 km/h (10 mph.)				
1	Inspect the universal joints for the following conditions: • Damage • Wear Are any of the universal joints damaged or worn?	—	Go to Step 2	Go to Step 3
2	Replace the worn or damaged universal joint(s). Is there still a knock or a clunking noise?	—	Go to Step 3	System OK
3	Inspect the differential side gears for wear. Are any of the differential side gears worn?	—	Go to Step 4	—
4	Replace the worn differential side gear(s). Is there still a knock or a clunking noise?	—	—	System OK

Scraping Noise

Step	Action	Value(s)	Yes	No
1	Is the vehicle equipped with drum brakes?	—	Go to Step 2	Go to Step 4
2	Inspect the backing plate for contact with the brake drum. Is there contact between the brake drum and the backing plate?	—	Go to Step 3	Go to Step 4
3	Replace the brake drum or the backing plate. Is there still a scraping noise?	—	Go to Step 4	System OK
4	Inspect the pinion flange and the center support bearing for rubbing. Is there rubbing between the pinion flange and the center support bearing?	—	Go to Step 5	—
5	Correct the interference. Is there still a scraping noise?	—	—	System OK

Shudder on Acceleration at Low Speed

Step	Action	Value(s)	Yes	No
DEFINITION: A shudder during acceleration from 0–24 km/h (0–15 mph)				
1	Inspect the universal joint angle in order to determine if the universal joint angle is incorrectly set or excessive. Is the universal joint angle incorrectly set or excessive?	—	Go to Step 2	Go to Step 3
2	Add or remove transmission mount shims as needed. Is there a shudder during acceleration?	—	Go to Step 3	Go to Step 5
3	Inspect the flanges for loose or missing bolts/screws? Are there loose or missing bolts/screws in the flanges?	—	Go to Step 4	Go to Step 5
4	Replace or tighten the bolts/screws to the specified torque. Is there a shudder during acceleration?	—	Go to Step 5	System OK
5	Inspect the universal joints for wear. Are the universal joints worn?	—	Go to Step 6	—
6	Replace the worn universal joints. Is there a shudder during acceleration?	—	—	System OK

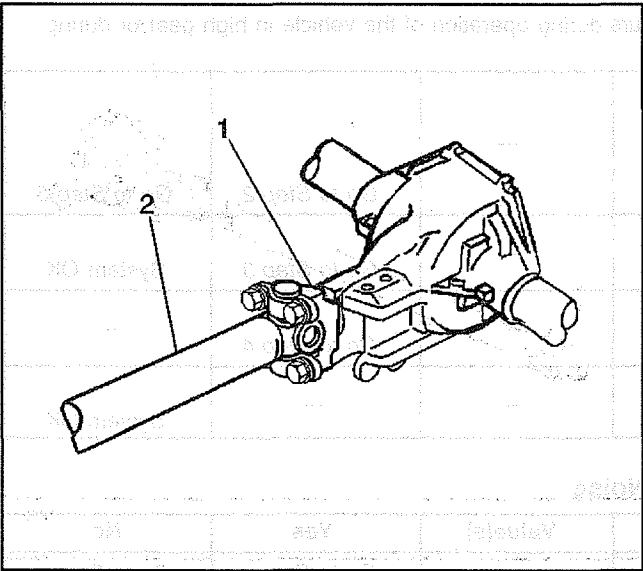
Repair Instructions

Propeller Shaft Replacement - One Piece

Removal Procedure

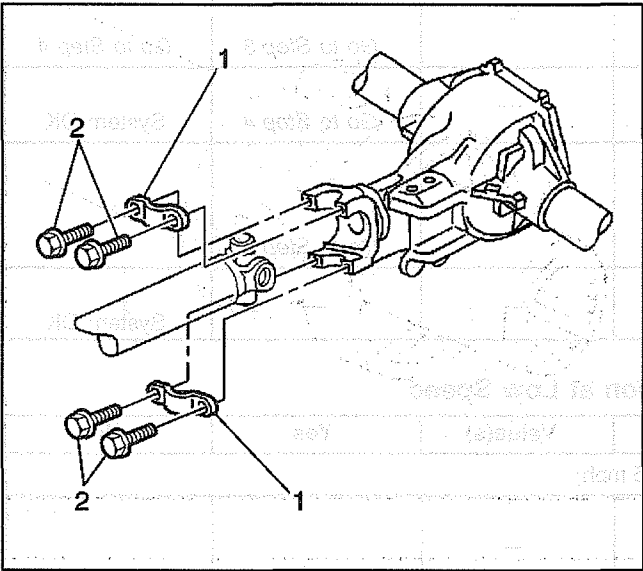
Notice: Do not strike or drop the propeller shaft, or allow the universal joints to bend to extreme angles, as internal joint damage might occur.

- 1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
- 2. Mark the relationship of the propeller shaft (2) to the pinion gear yoke (1).



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- 3. Remove the propeller shaft bolts/screws (2).
- 4. Remove the propeller shaft retainers (1).



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Important: Support the propeller shaft during removal.

5. Use the following steps in order to remove the propeller shaft:

5.1. Withdraw the slip yoke (3) from the transmission.

5.2. Move the propeller shaft (1) rearward and pass the propeller shaft under the housing (2).

If the bearing caps are loose, tape the bearing caps together in order to prevent dropping and losing the needle roller bearings.

6. Inspect the transmission output shaft splines for burrs.

7. Inspect the outer diameter of the slip yoke (1) for burrs.

8. Inspect the outer splines of the slip yoke (1) for the following conditions:

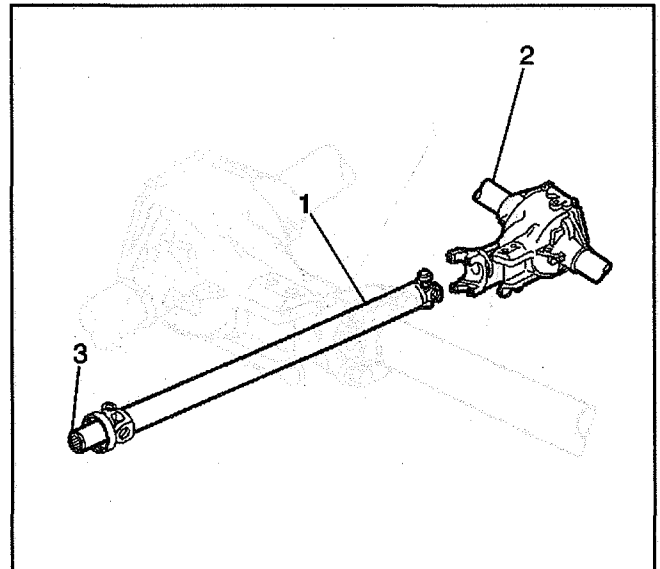
- Damage
- Twisting
- Wear

9. Inspect the relationship of the outer splines of the slip yoke (1) to the transmission output shaft splines. The outer splines of the slip yoke should meet the following requirements:

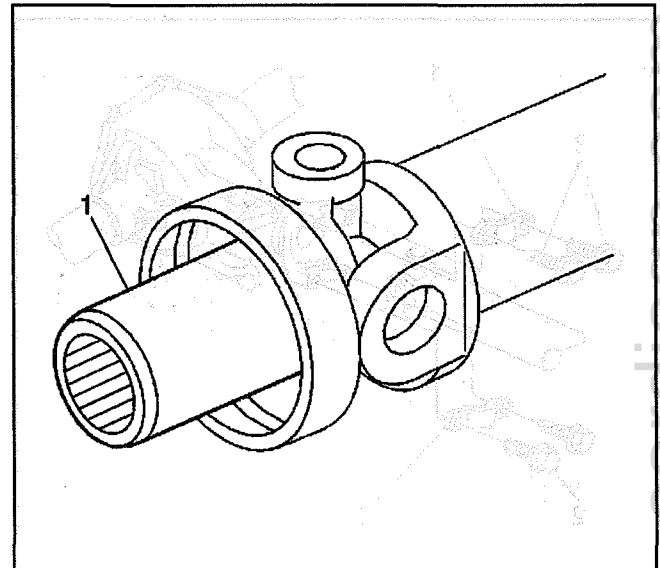
- The outer splines should agree in number with the transmission output shaft splines.
- The outer splines should fit with the transmission output shaft splines.

10. Inspect the pinion gear yoke (1) at the universal joint cap connecting surface for the following conditions:

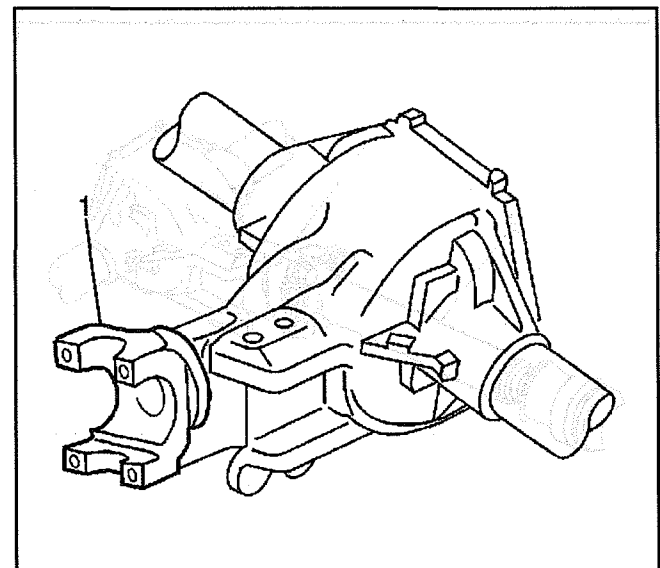
- Burrs
- Foreign material



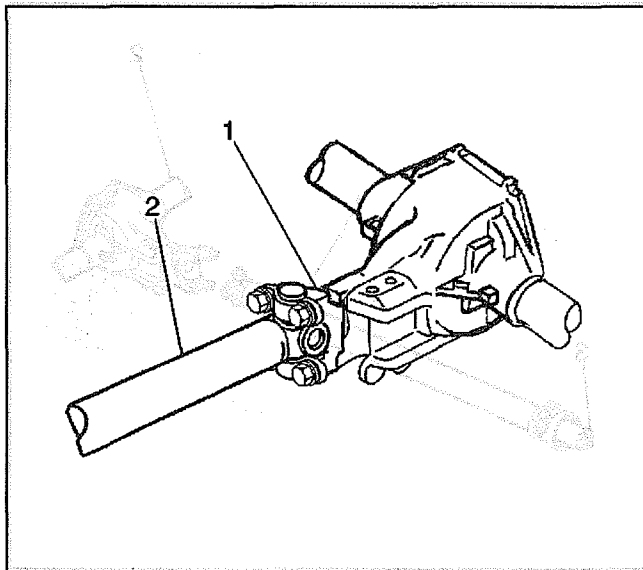
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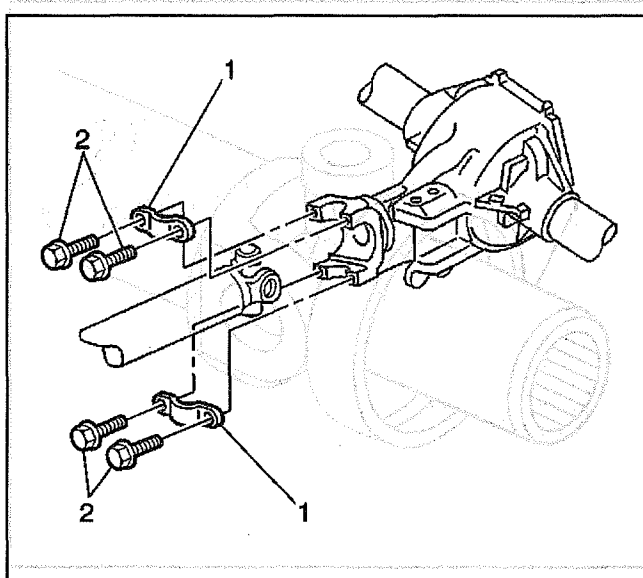
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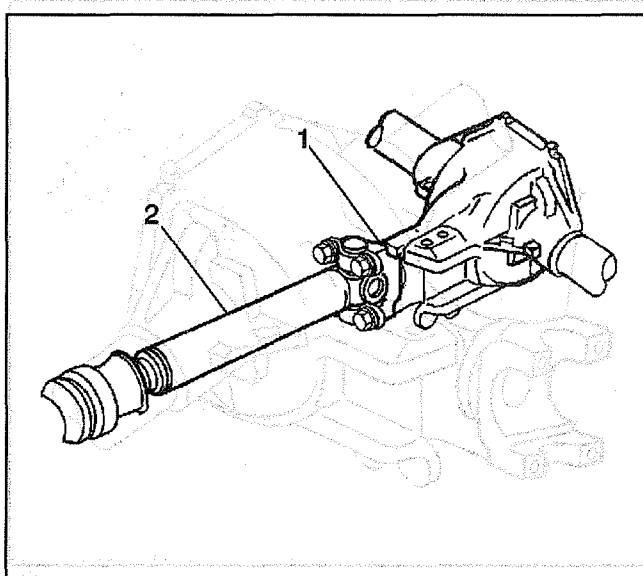
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Installation Procedure

Notice: The propeller shaft must be supported carefully during handling to avoid jamming or bending of parts.

Important: Do not place any tool between the propeller shaft slip yoke and the splines. Placing any tool between the propeller shaft slip yoke and the splines may cause damage to the transmission oil seal.

1. Lubricate the slip yoke with chassis lubricant.
2. Install the slip yoke onto the transmission output shaft.

Important: Be sure to align the mark on the pinion gear yoke with the mark on the propeller shaft.

3. Install the rear of the propeller shaft (2) to the pinion gear yoke (1).
4. Install the rear universal joint to the pinion gear yoke.

Ensure that the bearing caps are properly seated.

5. Install the propeller shaft retainers (1).

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

6. Install the propeller shaft bolts/screws (2).

Tighten

Tighten the propeller shaft bolts/screws evenly to 22 N·m (16 lb ft).

7. Lower the vehicle.

Propeller Shaft Replacement - Two Piece

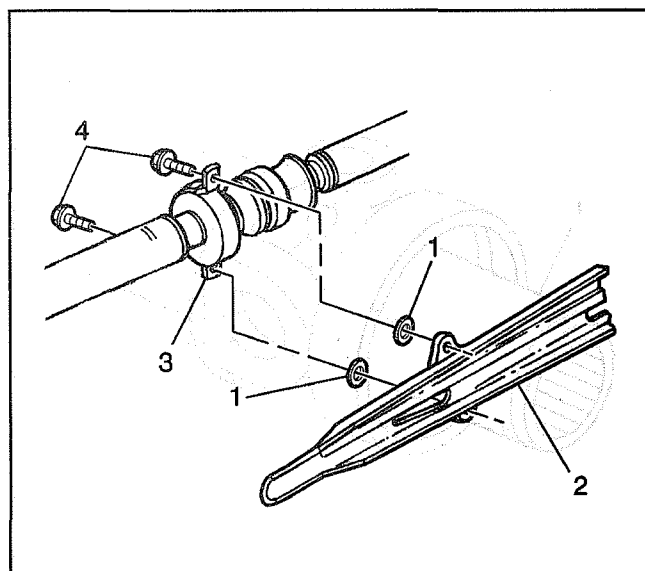
Removal Procedure

Notice: Do not strike or drop the propeller shaft, or allow the universal joints to bend to extreme angles, as internal joint damage might occur.

Important: The two-piece propeller shaft and the center support bearing used with the 3800 (VIN K) engine are not serviceable separately. The propeller shaft and the support bearing should be replaced as a complete assembly only.

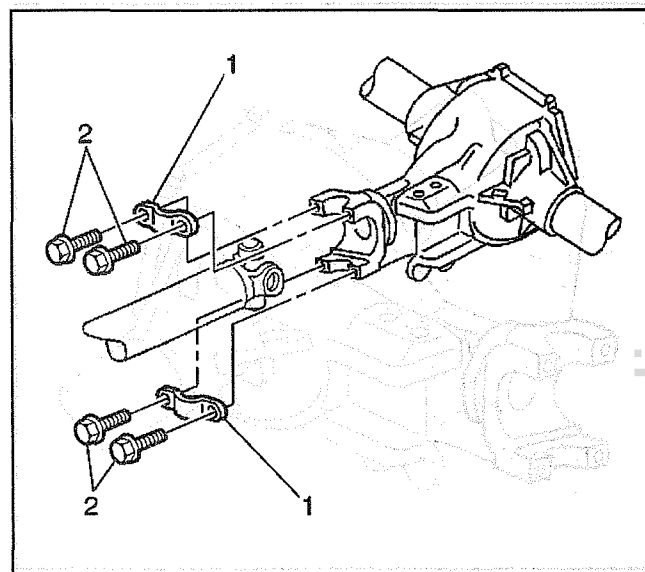
1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Mark the relationship of the propeller shaft (2) to the pinion gear yoke (1).

3. Remove the bolts/screws (4) from the center support bearing (3).
4. Remove the following components from the torque arm (2):
 - The center support bearing (3)
 - The washers (1)



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5. Remove the propeller shaft bolts/screws (2).
6. Remove the propeller shaft retainers (1).

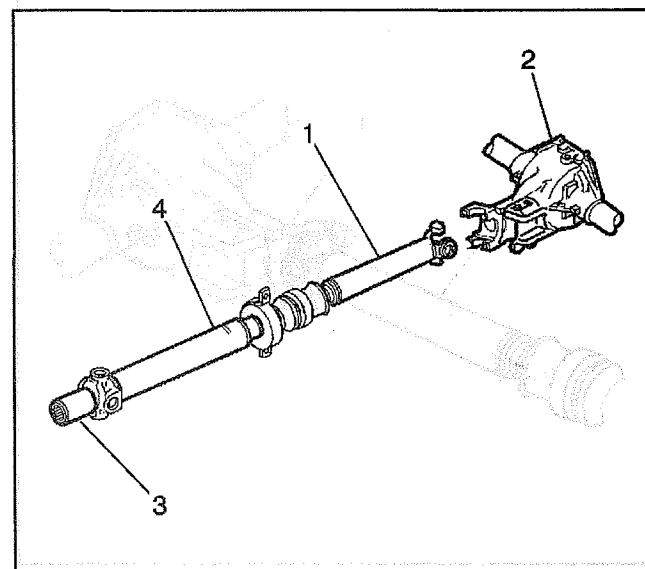


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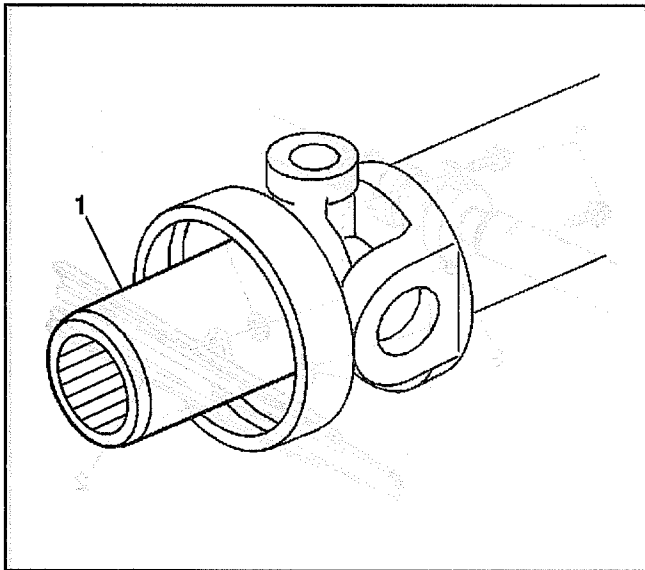
Important: Support the propeller shaft during removal.

7. Use the following steps in order to remove the propeller shaft:
 - 7.1. Withdraw the slip yoke (3) from the transmission.
 - 7.2. Move the propeller shaft (1 and 4) rearward and pass the propeller shaft under the housing (2).

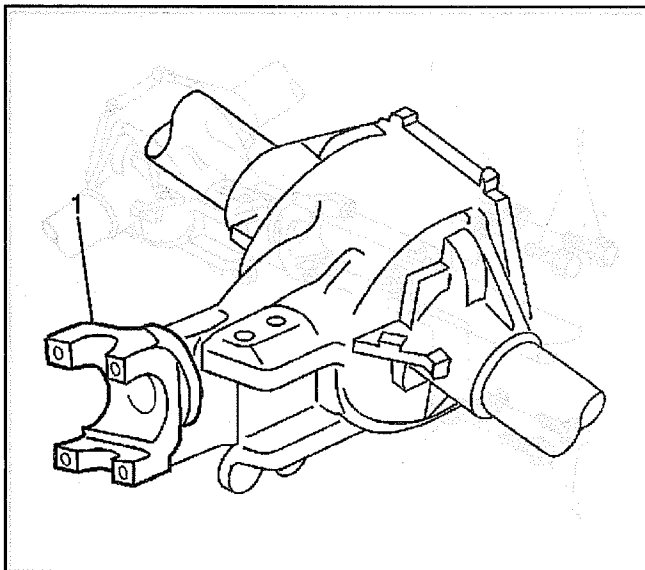
If the bearing caps are loose, tape the bearing caps together in order to prevent dropping and losing the needle roller bearings.
8. Inspect the transmission output shaft splines for burrs.



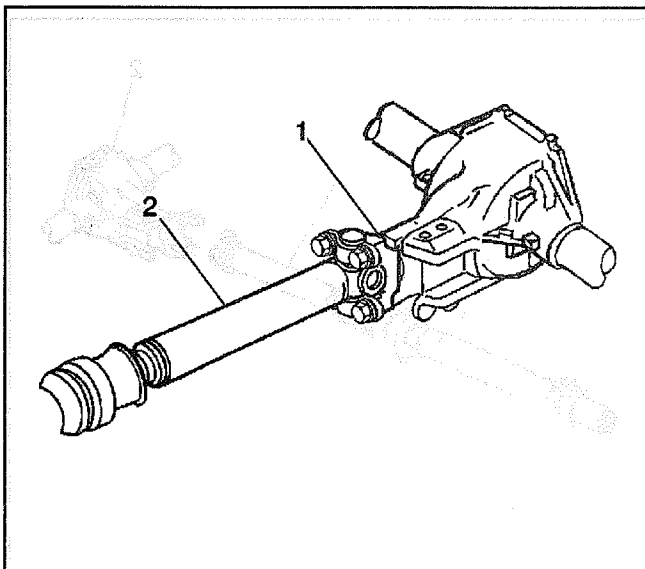
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9. Inspect the outer diameter of the slip yoke (1) for burrs.
10. Inspect the outer splines of the slip yoke (1) for the following conditions:
 - Damage
 - Twisting
 - Wear
11. Inspect the relationship of the outer splines of the slip yoke to the transmission output shaft splines. The outer splines of the slip yoke should meet the following requirements:
 - The outer splines should agree in number with the transmission output shaft splines.
 - The outer splines should fit with the transmission output shaft splines.
12. Inspect the pinion gear yoke (1) at the universal joint cap connecting surface for the following conditions:
 - Burrs
 - Foreign material

Installation Procedure

Notice: The propeller shaft must be supported carefully during handling to avoid jamming or bending of parts.

Important: Do not place any tool between the propeller shaft slip yoke and the splines. Placing any tool between the propeller shaft slip yoke and the splines may cause damage to the transmission oil seal.

1. Lubricate the slip yoke with chassis lubricant.
2. Install the slip yoke onto the transmission output shaft.

Important: Be sure to align the mark on the pinion gear yoke with the mark on the propeller shaft.

3. Install the rear of the propeller shaft (2) to the pinion gear yoke (1).
4. Install the rear universal joint to the pinion gear yoke.

Ensure that the bearing caps are properly seated.

5. Install the propeller shaft retainers (1).

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

6. Install the propeller shaft bolts/screws (2).

Tighten

Tighten the propeller shaft bolts/screws evenly to 22 N·m (16 lb ft).

Notice: Never clamp propeller shaft riding in a vise. Clamping propeller shaft riding in a vise could dent or deform the tube causing an imbalance or unsafe condition. Always clamp on one of the yokes and support the shaft horizontally. Avoid damaging the slip yoke sealing surface. Hooks may damage the cushioning or cut the lip seal.

Important: Nylon injected into universal joints cannot be reassembled. Replace nylon injected into universal joints with external snap ring universal joints.

When reassembling a propeller shaft, always install a complete propeller shaft universal joint service kit.

7. Install the following components to the torque arm (2):

- The washers (1)
- The center support bearing (3)
- Install the bolts/screws (4) to the center support bearing.

Tighten

Tighten the propeller shaft-to-center support bearing bolts/screws to 50 N·m (37 lb ft).

8. Lower the vehicle.

Important: There are no bearing retainer grooves in production bearing caps. Production bearing caps cannot be reused.

1. Support the propeller shaft in a horizontal position that is aligned with the base plate of a press.

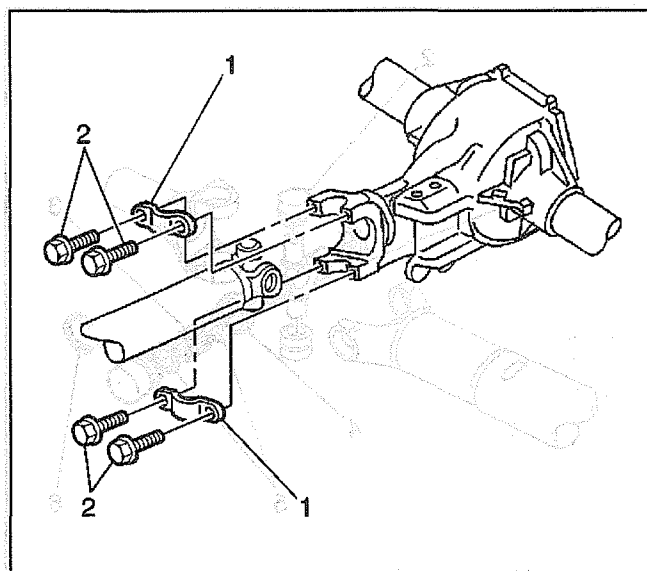
2. Place the universal joint so that the lower ear of the shaft yoke is supported on a 28.6 mm (1.125 in) socket (3).

3. Use the following procedure in order to remove the lower bearing cap from the yoke ear:

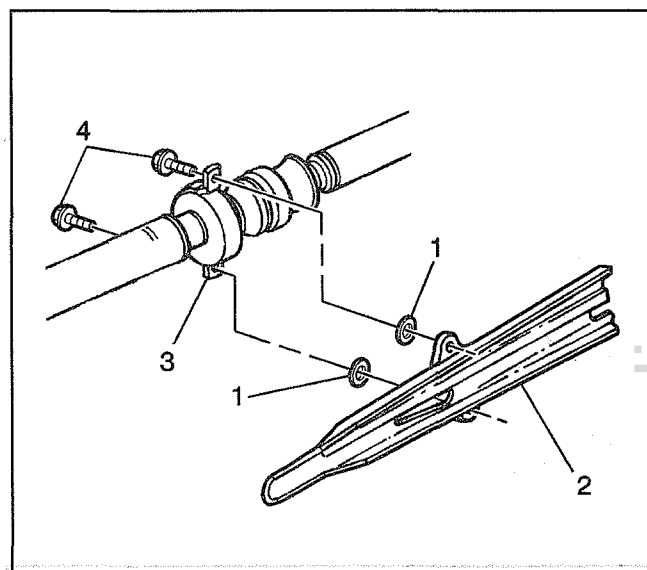
3.1. Place the J 9522-3 on the open horizontal bearing cap.

3.2. Press the lower bearing cap out of the yoke ear.

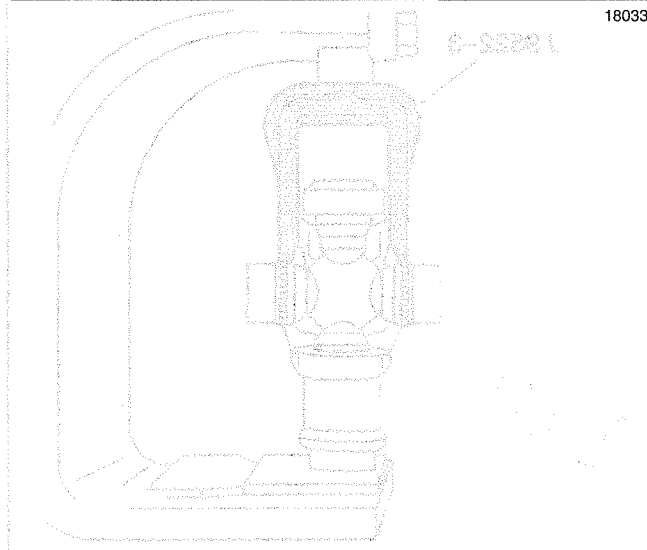
This process eases the nylon injected ring on the lower bearing cap.



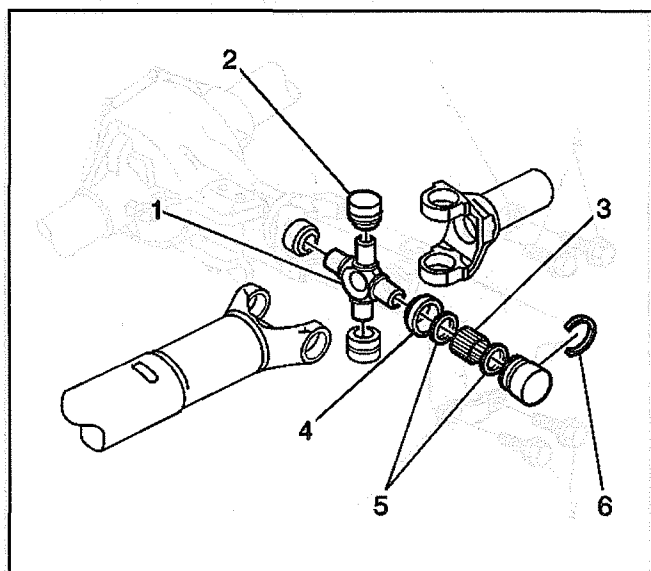
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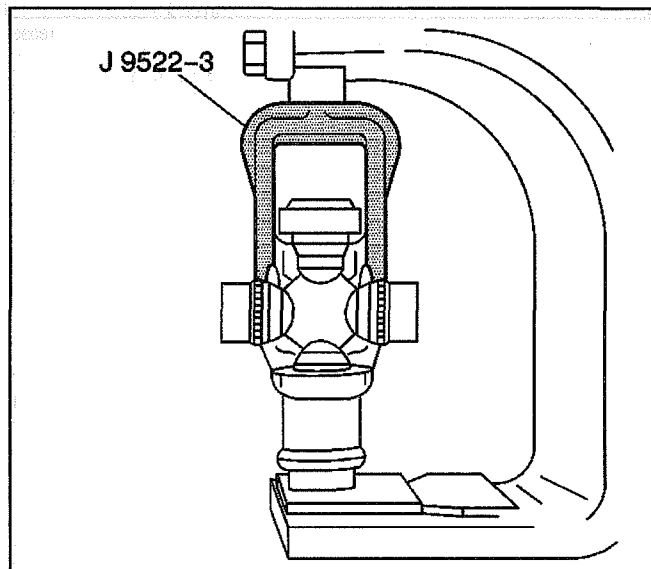
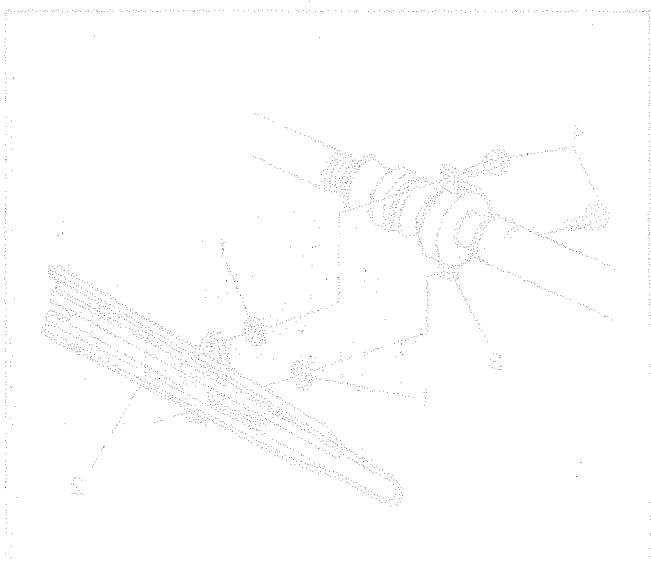
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Universal Joint and Slip Yoke Replacement

Disassembly Procedure

Tools Required

- J 9522-3 U-Joint Bearing Separator
- J 9522-5 U-Joint Bearing Spacer/Remover

Notice: Never clamp propeller shaft tubing in a vise. Clamping propeller shaft tubing in a vise could dent or deform the tube causing an imbalance or unsafe condition. Always clamp on one of the yokes and support the shaft horizontally. Avoid damaging the slip yoke sealing surface. Nicks may damage the bushing or cut the lip seal.

Important: Nylon injected ring universal joints cannot be reassembled. Replace nylon injected ring universal joints with external snap ring universal joints.

When reassembling a propeller shaft, always install a complete propeller shaft universal joint service kit.

This kit includes the following components:

- One pregreased spider (1)
- Four service bearing caps with seals (2)
- One needle roller bearing (3)
- Delrin round washers (4)
- Delrin flat washers (5)
- Grease
- Four retainer rings (6)

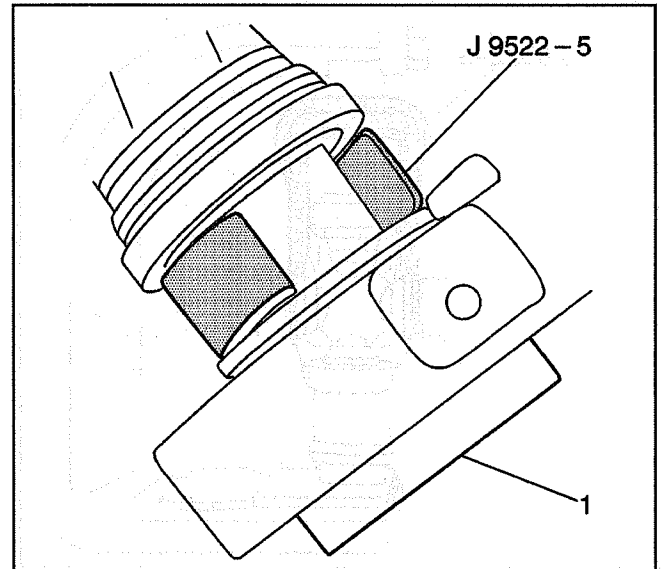
Ensure that the seals are in place on the service bearing caps (2) during handling. The seals will hold the needle roller bearings (3) in place during handling.

Important: There are no bearing retainer grooves in production bearing caps. Production bearing caps cannot be reused.

1. Support the propeller shaft in a horizontal position that is aligned with the base plate of a press.
2. Place the universal joint so that the lower ear of the shaft yoke is supported on a 28.6 mm (1.125 in) socket (2).
3. Use the following procedure in order to remove the lower bearing cap from the yoke ear:
 - 3.1. Place the J 9522-3 on the open horizontal bearing cap.
 - 3.2. Press the lower bearing cap out of the yoke ear.

This process shears the nylon injected ring on the lower bearing cap.

4. If the bearing cap (1) is not completely removed, use the following steps in order to completely remove the bearing cap:
 - 4.1. Lift the J 9522-3
 - 4.2. Insert the J 9522-5 between the seal and the bearing cap (1).
 - 4.3. Press the bearing cap (1) out of the yoke.
5. Rotate the propeller shaft.
 - 5.1. Repeat Step 3 in order to shear the opposite nylon injected ring.
 - 5.2. Repeat Step 4 in order to remove the opposite bearing cap from the yoke.
6. If the front universal joint is being replaced, use the above procedure in order to remove the two bearing caps from the propeller shaft slip yoke.



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7. Remove the spider (1) from the yoke.
8. Clean the yoke in the area that will hold the retainer ring in order to ensure proper assembly.
9. Clean all of the sheared nylon from the universal joint cup bore.

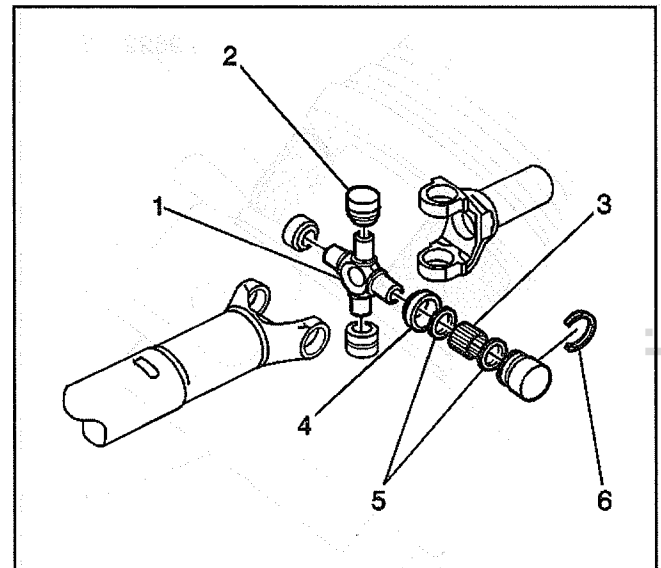
Important: Do not loosen or damage the dust seals.

If the dust seals are loose or damaged, replace the entire universal joint.

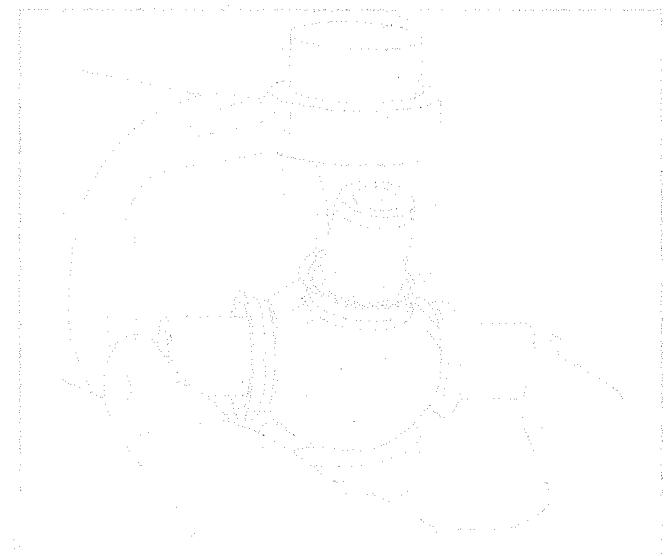
Important: These universal joints are designed for extended life and do not require periodic inspections or lubrication.

When these joints are taken apart, repack the bearing. Lubricate the reservoir at the end of the trunnions with chassis lubricant or linkage joint lubricant.

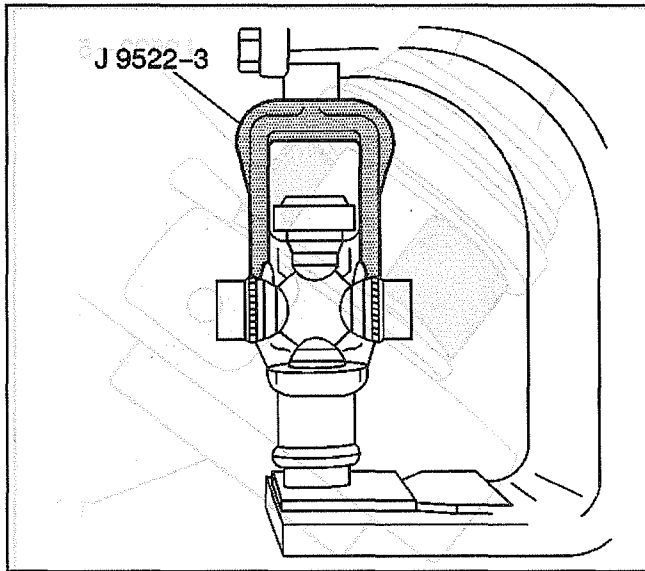
10. Remove the U-joint spider bearing retainer rings (6). If the retainer ring does not snap readily out of the grooves, lightly tap the end of the bearing cap (2) in order to relieve the pressure against the retainer ring. After relieving the pressure, remove the retainer ring.
11. Support the propeller shaft in a horizontal position that aligns with the base plate of a press.



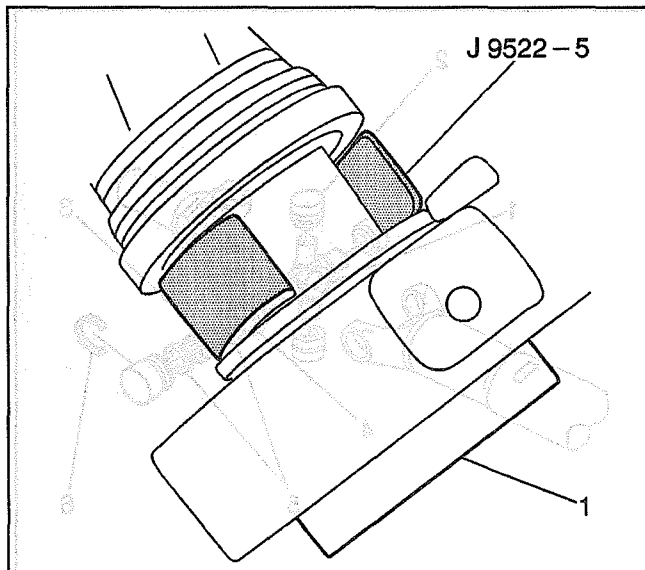
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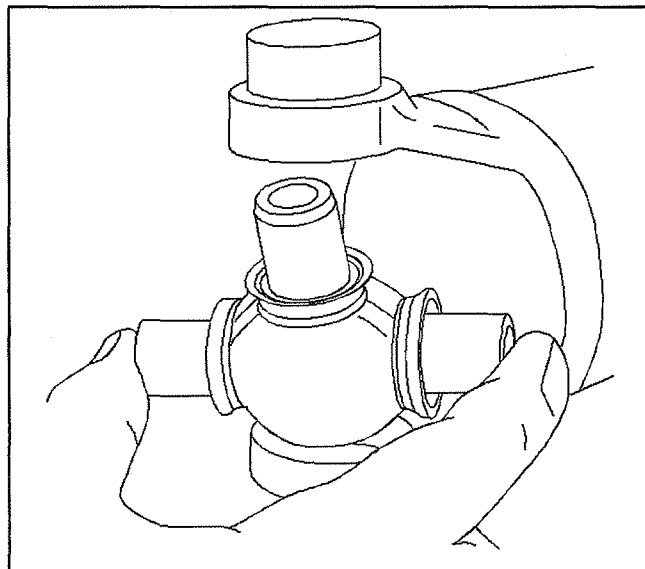
Use the following procedure to remove the U-joint spider bearing retainer rings from the propeller shaft.



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12. Place the universal joint so the ear of the yoke is supported on a 28.6 mm (1.125 in) socket.
13. Use the following procedure in order to remove the lower bearing cap from the yoke ear:

- 13.1. Place the *J 9522-3* on the open horizontal bearing cap.

- 13.2. Press the lower bearing cap out of the yoke ear.

14. If the bearing cap (1) is not completely removed, use the following steps in order to completely remove the bearing cap:

- 14.1. Lift the *J 9522-3*.

- 14.2. Insert the *J 9522-5* between the seal and the bearing cap (1).

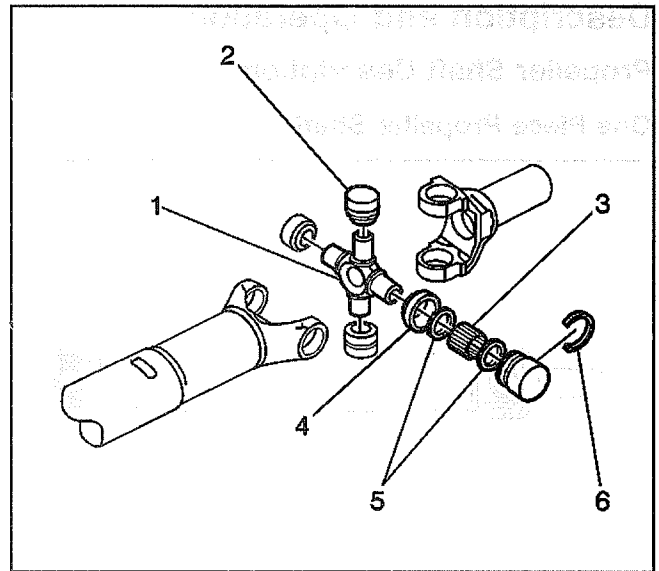
- 14.3. Press the bearing cap (1) out of the yoke.

15. Rotate the propeller shaft.
16. Press the opposite bearing cap out of the yoke.
17. Remove the spider from the yoke.

Assembly Procedure

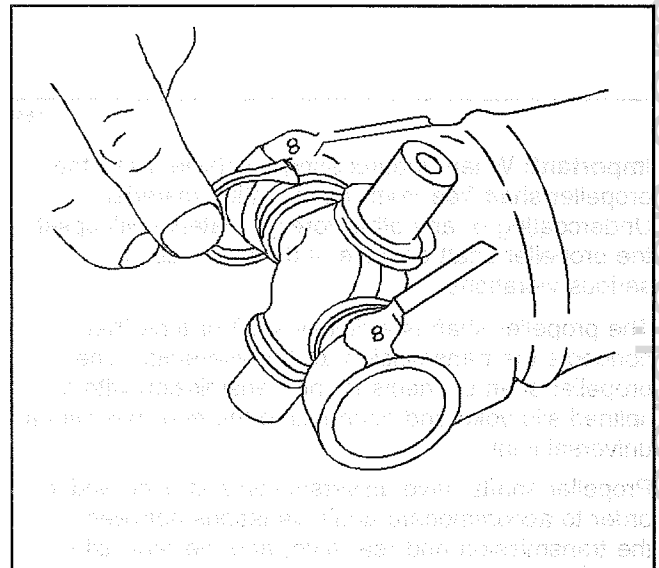
1. Install one bearing cap partially into one side of the yoke.
2. Rotate the yoke so that this yoke ear is on the bottom.
3. Insert the *J 9522-3* in order to seat the trunnion in the bearing cap.
4. Repeat Steps 1 and 2 in order to partially install the opposite bearing cap.
5. Inspect both trunnions in order to ensure their straight positioning into the bearing caps (1).
6. Press against the two opposite bearing caps while working the spider in order to ensure free movement of the trunnions in the bearings.

7. Inspect the needle roller bearing (3) for binding. If binding exists, one or more of the needle roller bearings may have tipped under the end of the relevant trunnion.
8. Stop pressing on the bearing caps (2) when one bearing retainer groove clears inside of the yoke.



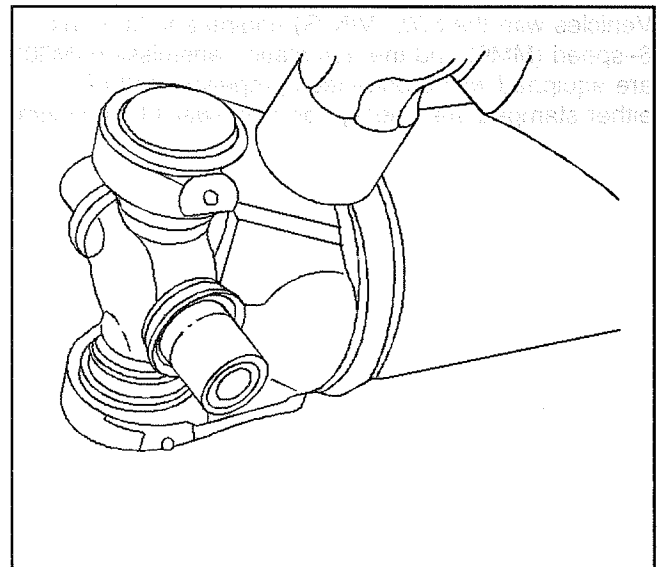
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9. Press the U-joint spider bearing retainer ring into place.



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10. Continue pressing on the retainer ring until the opposite side of the ring can be snapped into place. If necessary, strike the yoke with a hammer in order to facilitate seating of the retainer rings. (Striking the yoke with a hammer slightly springs the yoke ears.)
11. Repeat the above procedure for the other half of the universal joint.

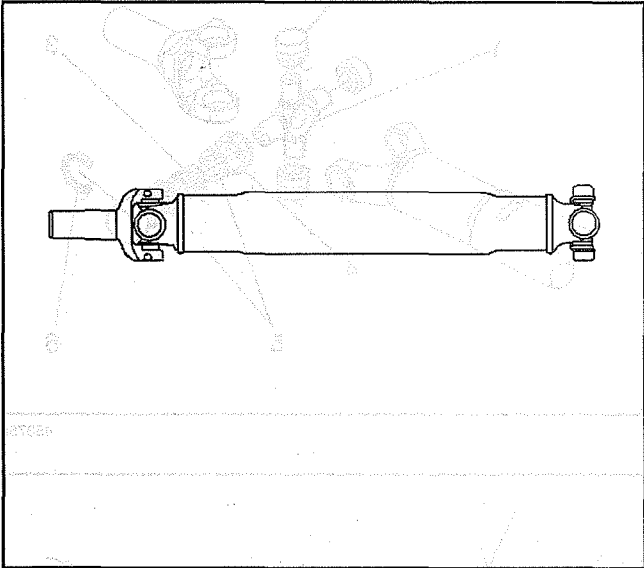


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Description and Operation

Propeller Shaft Description

One Piece Propeller Shaft

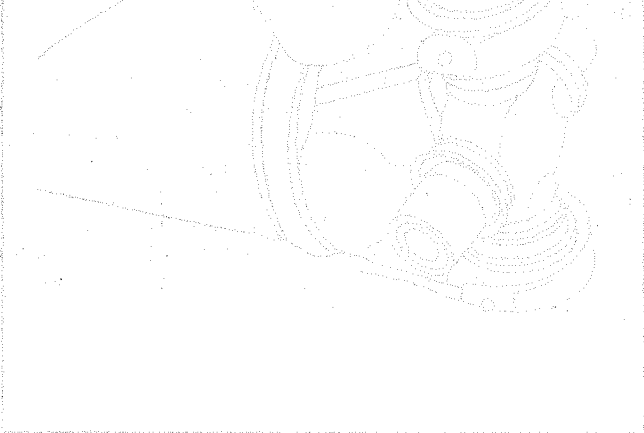


Important: When undercoating a vehicle, keep the propeller shaft free from undercoating material. Undercoating or any other foreign material will upset the propeller shaft balance and may produce serious vibrations.

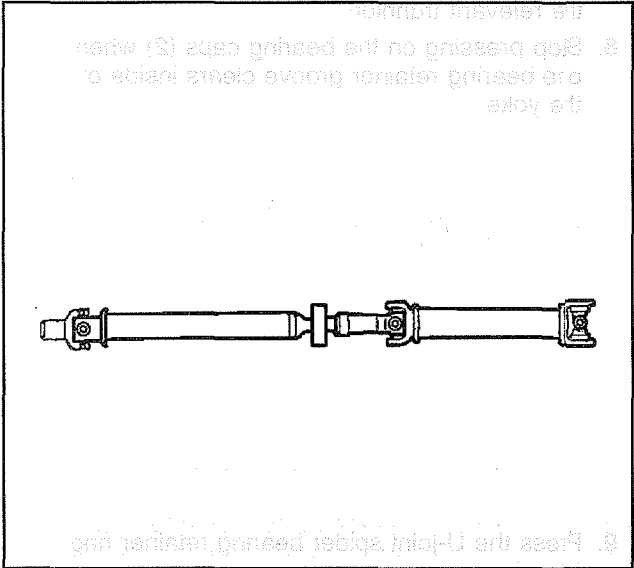
The propeller shaft is a hollow shaft or tube that connects the transmission to the differential. The propeller shaft connects to the transmission with a splined slip yoke and connects to the rear axle with a universal joint.

Propeller shafts have universal joints at each end in order to accommodate angle variations between the transmission and rear axle, and the rear axle position caused by suspension motion. All propeller shafts are the balanced tubular type.

Vehicles with the 5.7L (VIN G) engine and both the 6-speed (MM6) and the automatic transmission (M30) are equipped with a one-piece propeller shaft of either stamped steel design or a lightweight aluminum.



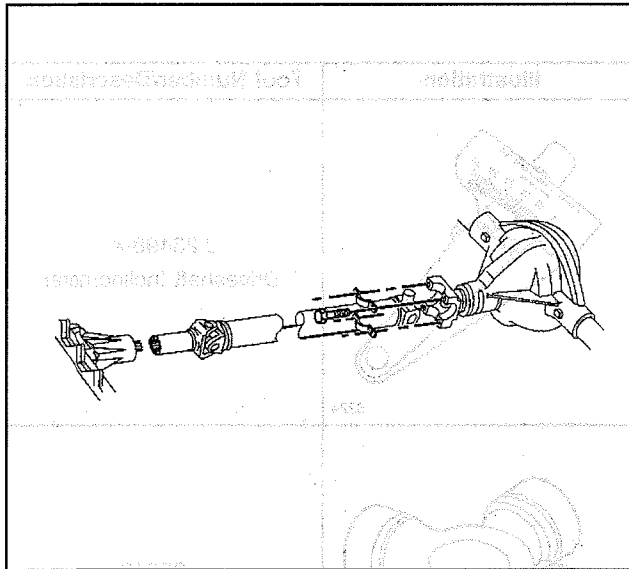
Two Piece Propeller Shaft



Vehicles equipped with the 3800 (VIN K) engine and the 5-speed manual transmission (M49) are equipped with a two-piece propeller shaft assembly. The two-piece shaft assembly consists of a front propeller shaft, a rear propeller shaft, and a center support bearing. The center support bearing prevents angular movement (or "whipping") of the propeller shaft. The support bearing is a ball bearing type. The support bearing mounts in a rubber cushion. The rubber cushion mounts to the torque arm.

The bearing is prelubricated and sealed by the manufacturer.

The spline coupling has internal splines which accept the rear propeller shaft.



A propeller shaft joint (sometimes referred to as constant velocity joint) is located on the front of the rear propeller shaft. The propeller shaft joint fits into the spline coupling of the front propeller shaft. The propeller shaft joint (or constant velocity joint) allows adjustment of the propeller shaft angle without interrupting the power flow. The up and down movement of the vehicle requires the above action.

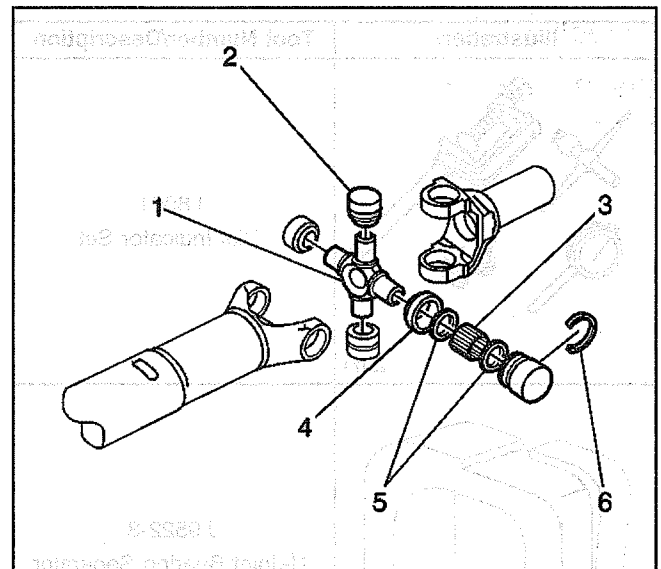
Vehicles with two or more propeller shafts use a center bearing. The center bearing is usually near the rear of the front propeller shaft. The slip joint is at the forward end of the rear propeller shaft.

Propeller Shaft Phasing Description

The propeller shaft is designed and built with the yoke lugs (ears) in line with each other which produces the smoothest running shaft possible. A propeller shaft designed with built in yoke lugs in line is known as in-phase.

An out of phase propeller shaft often causes vibration. The propeller shaft generates vibration from speeding up and slowing down each time the universal joint goes around. The vibration is the same as a person snapping a rope and watching the wave reaction flow to the end. An in phase propeller shaft is similar to two persons snapping a rope at the same time and watching the waves meet and cancel each other out. A total cancellation of vibration produces a smooth flow of power in the drive line. Since phasing of a propeller shaft is between the front and center universal joints, you must reference mark the front and rear propeller shafts before removal in order to ensure proper phasing upon reinstallation. Some splined shaft slip yokes are keyed in order to ensure proper phasing.

Universal Joint Description



Universal joints are designed to handle the effects of various loadings and rear axle windup during acceleration and braking. Within the designed angle variations, the universal joint operates efficiently and safely. When the design angle changes or is exceeded, the operational life of the joint may decrease.

The trunnion bearings (3) used in universal joints are the needle roller type. Round bearing cups (2) hold the needle rollers in place on the trunnions. Either snap rings (6) or injected plastic hold the bearing cups in the yokes.

The Original Equipment Manufacturer (OEM) universal joints are lubricated for life and cannot be lubricated on the vehicle. A service kit which consists of a spider (1) with bearing assemblies, snap rings and derlin washers (4 and 5) may be installed if a universal joint becomes worn or noisy. If it is necessary to repair a universal joint, you must remove the propeller shaft from the vehicle. Avoid jamming, bending, or over-angulating any parts of the propeller shaft assembly. Avoid damaging the propeller weld yokes and slip yoke ears upon installation or removal of U-joints.

Center Bearing Description

Center bearings support the driveline when using two or more propeller shafts. The center bearing is a ball bearing assembly mounted in a rubber cushion that attaches to the rear axle torque arm in the Camaro and Firebird models. The manufacturer prelubricates and seals the bearing. The cushion allows vertical motion at the driveline and helps isolate the vehicle from driveline vibrations. Since the center bearing is a sealed assembly, it must be replaced as an assembly as it can not be overhauled.

Special Tools and Equipment

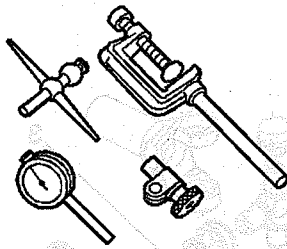
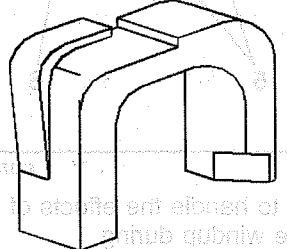
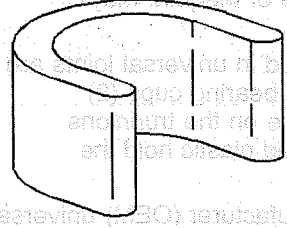
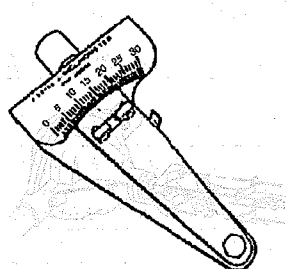
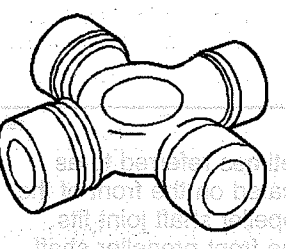
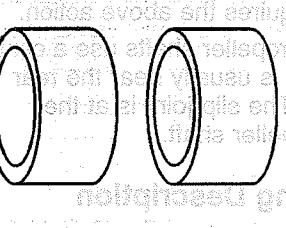
Illustration	Tool Number/Description
 25473	J 8001 Dial Indicator Set
 803	J 9522-3 U-Joint Bearing Separator
 805	J 9522-5 U-Joint Bearing Spacer Remover

Illustration	Tool Number/Description
 8224	J 23498-A Driveshaft Inclinometer
 1512	J 35819 Runout Gage
 180346	J 35819-100 Runout Gage Adapter Sleeves