### **SECTION 4A**

# PROPELLER SHAFT

NOTICE: Always use the correct fastener in the proper location. When you replace a fastener, use ONLY the exact part number for that application. General Motors will call out those fasteners that require a replacement after removal. General Motors will also call out the fasteners that require thread lockers or thread sealant. UNLESS OTHERWISE SPECIFIED, do not use supplemental coatings (paints, greases, or other corrosion inhibitors) on threaded fasteners or fastener joint interfaces. Generally, such coatings adversely affect the fastener torque and joint clamping force, and may damage the fastener. When you install fasteners, use the correct sequence and tightening specifications. Following these instructions can help you avoid damage to parts and systems.

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### GENERAL DESCRIPTION

### PROPELLER SHAFT

#### Figure 1

The propeller shaft is a balanced cylindrical shaft which transfers engine torque from the transmission or transfer case to the front or rear differential carrier through universal joints. The number of propeller shafts and universal joint assemblies can be either one propeller shaft and two universal joint assemblies (two-wheel drive), or two propeller shafts and four universal joint assemblies (four-wheel drive) (Figure 1). The sliding yoke is splined to the transmission or transfer case output shaft. The sliding yoke permits fore and aft movement of the propeller shaft as the differential moves up or down with suspension movement. The splines are lubricated internally by transmission or transfer case lubricant.

The pinion flange yoke is bolted to the differential pinion flange and needs no lubrication. The propeller shaft is designed and built with the yoke lugs in line with each other. This design produces the smoothest running shaft possible and is known as phasing. The propeller shaft will absorb vibrations from speeding up and slowing on each revolution of the universal joints. A total cancellation of vibration produces a smooth flow of power through the driveline.

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When servicing the propeller shaft and its components, care must be exercised during removal and installation procedures to make sure the propeller shaft is installed in the same position from which it was removed. It is necessary to make index marks (reference marks) on the propeller shaft pinion flange yoke and differential pinion flange before removing them to ensure correct installation and alignment. If this precaution is not observed, a driveline imbalance may result, causing vibration, premature component wear or other undesirable problems.

#### UNIVERSAL JOINT

### Figure 2

A universal joint consists of bearing assemblies connected by a crossmember called a spider. The spider is shaped like a cross and has arms of equal length. The bearings used in universal joints are the needle roller type and revolve around the ends of the spider inside bearing caps which act as races. The bearing caps are fitted into the propeller shaft yokes and are held in place with snap rings. The universal joint is designed to handle the effects of various loadings and axle windup during acceleration.

The universal joints will operate safely and efficiently within design angle variations. When the design angle is changed or exceeded, the operational life of the joint may decrease. Universal joints are lubricated and sealed during manufacturing and do not require maintenance. If a universal joint becomes noisy or worn, it must be replaced as an assembly.

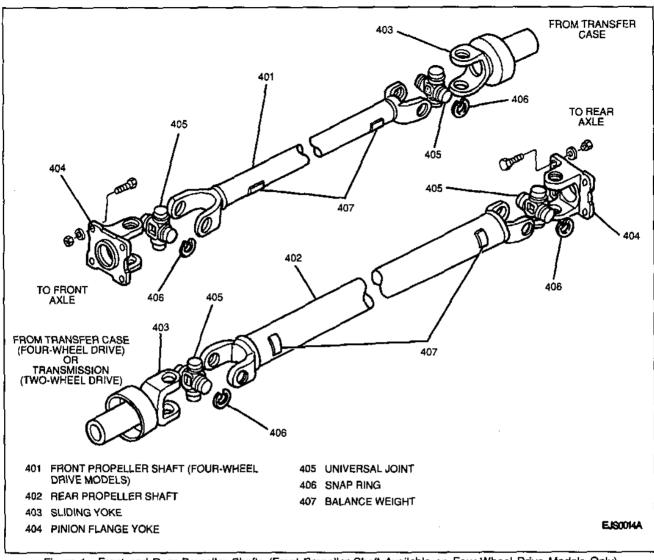


Figure 1—Front and Rear Propeller Shafts (Front Propeller Shaft Available on Four-Wheel Drive Models Only)

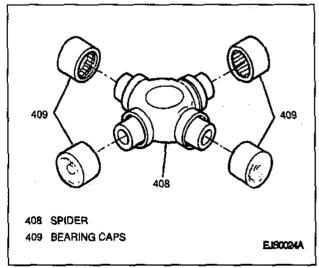


Figure 2-Universal Joint-Typical

#### DIAGNOSIS

If a problem is suspected of originating in the driveline, it is necessary to identify the component causing the problem. Since the propeller shaft rotates according to vehicle speed, the component responsible can be anything that rotates proportionally with vehicle speed (i.e., wheels, tires, brake rotors, brake drums). Most driveline problems can usually be classified in one of two categories: noise or vibration. The road test is a beneficial way to help the technician verify the problem and locate the suspected component causing the noise or vibration.

When diagnosing a driveline noise or vibration, there are four major component groups that can usually cause or contribute to a noise or vibration:

- Engine and mounts
- Clutch and transmission
- · Tires, wheels, brake drums and rotors
- · Propeller shaft and universal joints

#### ROAD TEST

### Figures 3 and 4

Before road testing the vehicle, several inspections must be made to rule out other components which may cause or contribute to the problem.

# Inspect

- 1. Propeller shaft for missing or loose balance weights (Figure 3). If balance weights are loose or missing, the propeller shaft must be balanced or replaced.
- All fasteners for tightness and correct torque specifications at universal joints, wheel nuts and engine mounts.
- Tires for correct inflation pressure. Refer to the tire placard located on the driver's door jamb for correct tire inflation information.
- Vehicle for correct load conditions. Refer to the tire placard located on the driver's door jamb for correct vehicle load specifications.

When road testing the vehicle, verify that the condition exists and record the speed and rpm at which the condition is most pronounced. A vibration is likely to be felt in two places; the steering wheel or in the seat cushion. The road test is also helpful in determining the location of a noise or vibration in either the front or rear of the vehicle.

#### **COAST TEST**

#### Figure 4

When performing a "Coast Test" on a vehicle equipped with an automatic transmission, care must be exercised when returning the selector lever from "N" (neutral) to "D" (drive) or transmission damage may occur. When shifting from "N" (neutral) to "D" (drive) during a "Coast Test," use the following procedure:

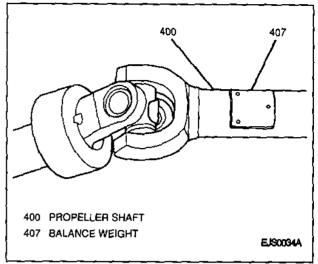


Figure 3-Balance Weight-Typical

- 1. Maintain engine speed at 1500 rpm.
- 2. Apply brakes and gradually slow vehicle to 40 km/h (25 mph).
- 3. Return selector lever to "D" (drive).

This test helps determine in what area the vibration or noise exists. Drive the vehicle past the vibration or noise speed, shift the transmission into neutral, and coast back through the speed at which the vibration or noise occurs. At this stage, one of two types of vibration or noise normally occurs. A "shaking" type of vibration is usually a tires or a wheel and brake drum/disc assembly problem. A "buzzing" type noise or vibration is usually a driveline problem. Use the "Propeller Shaft Diagnosis" chart to determine possible causes of propeller shaft conditions (Figure 4).

CONDITION	INSPECT COMPONENT	FOR PROBABLE CAUSE
FLUID LEAK AT FRONT OR REAR SLIDING YOKE JOINT	SLIDING YOKE JOINT	ROUGH, NICKED OR BURRED SURFACE WHERE SEAL MAKES CONTACT
	TRANSMISSION OR TRANSFER CASE OUTPUT SHAFT SEALS	CUT SEALS OR BROKEN GARTER SPRING
PING, SNAP OR CLICK IN	FRONT OR REAR CONTROL ARMS	LOOSE OR WORN BUSHINGS
DRIVELINE ON INITIAL LOAD WITH THE TRANSMISSION IN GEAR	PINION FLANGE YOKE JOINT	WEAR OR DAMAGE
KNOCKING OR CLUNKING IN	SLIDING YOKE JOINT	WEAR OR DAMAGE
DRIVELINE WHEN VEHICLE IS OPERATED UNDER FLOAT	PINION FLANGE YOKE JOINT	WEAR OR DAMAGE
CONDITION AT 16 km/h (10 mph) IN HIGH GEAR OR NEUTRAL	FRONT OR REAR DIFFERENTIAL SIDE GEARS	EXCESSIVE GEAR BACKLASH OR WEAR
SHUDDER ON LOW SPEED ACCELERATION	SLIDING YOKE JOINT	WEAR OR DAMAGE
	PINION FLANGE YOKE JOINT	WEAR OR DAMAGE
L	VEHICLE HEIGHT	EXCESSIVE JOINT ANGLE

CONDITION	INSPECT COMPONENT	FOR PROBABLE CAUSE
ROUGHNESS OR VIBRATION ABOVE 48 km/h (30 mph)	PROPELLER SHAFT	UNDERCOATING OR OTHER FOREIGN MATERIAL
		LOOSE OR MISSING BALANCE WEIGHTS
		DISTORTED OR DAMAGED JOINT YOKES
		RUNOUT, DENTS OR DAMAGE
	SLIDING YOKE JOINT	WEAR OR DAMAGE
	PINION FLANGE YOKE JOINT	WEAR OR DAMAGE
	FRONT OR REAR TIRES AND WHEELS	UNDER-INFLATION OR IMBALANCE
	VEHICLE HEIGHT	EXCESSIVE JOINT ANGLE

Figure 4—Propeller Shaft Diagnosis Chart

T5468(Cont'd)

#### **UNIVERSAL JOINT NOISES**

### Figure 5

If a universal joint is suspected of producing a rattling or knocking noise, the universal joint may be worn or loose. Make a preliminary inspection by grasping the propeller shaft toward the end near the suspected universal joint and rotate it back and forth. Then, move the propeller shaft in an up and down direction while feeling for any looseness (Figure 5). If the propeller shaft shows excessive movement, the universal joint should be removed and inspected for wear or damage.

# Inspect

- 1. Needle bearings for locking or wear. If needle bearings exhibit signs of locking or wear, replace the universal joint as an assembly. Refer to "Universal Joints" later in this section.
- Bearing surfaces on spiders for wear or flat spots.
   If spider bearing surfaces exhibit flat spots or appear worn, replace the universal joint as an assembly. Refer to "Universal Joints" later in this section.

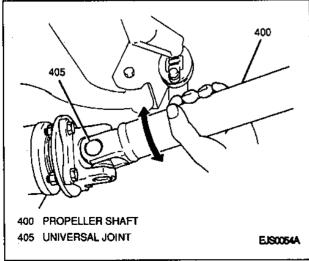


Figure 5-Inspecting Universal Joints

3. Bearing caps for cracks or other damage. If bearing caps are damaged in any way, replace the universal joint as an assembly. Refer to "Universal Joints" later in this section.

### ON-VEHICLE SERVICE

### PROPELLER SHAFT RUNOUT CHECK

### Figures 6, 7 and 8

If a noise vibration is present in the vehicle driveline, the propeller shaft may be out of round due to damage. This check will help to determine if the propeller shaft and its attaching driveline components are "true" or turning with an absolute minimum amount of lateral movement.

Tool Required:

J 7872 Magnetic Base Indicator Set

1. Place selector lever in "N" (neutral) position.

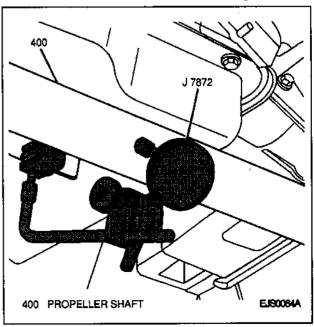


Figure 6-Measuring Propeller Shaft Runout

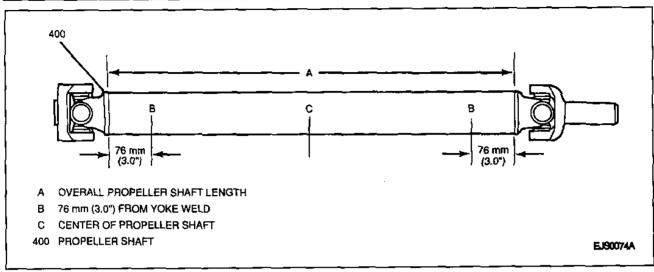


Figure 7--Dial Indicator Placement

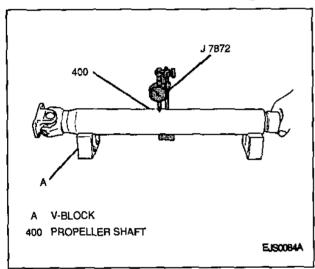


Figure 8—Measuring Propeller Shaft Runout Off the Vehicle

2. Raise and suitably support vehicle. Refer to SECTION 0A.

# Inspect

- Propeller shaft for any dents or damage. If any portion of the propeller shaft appears dented or damaged, replace the propeller shaft. Refer to "Propeller Shaft" under "On-Vehicle Service" later in this section.
- Install a J 7872 to the vehicle undercarriage and place the indicator plunger on the propeller shaft (Figure 6).

# Measure

• Propeller shaft in three separate positions (Figure 7): at the center, and 76.2 mm (3.0-inches) from each yoke weld. Slowly turn one of the rear wheels in order to rotate the propeller shaft. Record the highest dial indicator reading in all three locations.

- 4. After all readings have been recorded, remove the J 7872.
- 5. Lower vehicle.

Propeller shaft runout should not exceed 0.8 mm (0.031-inch). If runout exceeds specification, remove the propeller shaft at the differential pinion flange. Refer to "Propeller Shaft" under "On-Vehicle Service" later in this section. Without removing the sliding yoke from the transmission or transfer case, rotate the shaft 180 degrees (1/2 turn). Then, reconnect the shaft to the differential pinion flange and recheck runout. If runout is still beyond specification at one or more check points, remove the propeller shaft and place in two V-blocks. Recheck runout while slowly rotating the propeller shaft in the two V-blocks (Figure 8). If runout still exceeds specification, replace the propeller shaft. If runout no longer exceeds specification, the differential pinion flange, transmission output shaft or transfer case output shaft may be out of round. Refer to SECTION 4B for rear axle service procedures, SECTION 4C for front axle service procedures, SECTION 7A-10A for automatic transmission service procedures, SECTION 7B for manual transmission service procedures and to the 1996 Transmission/Transaxle/Transfer Case Unit Repair Manual.

### PROPELLER SHAFT BALANCE CHECK

### Figures 9 and 10

- 1. Raise and suitably support vehicle. Refer to SECTION 0A.
- Remove tire and wheel assemblies. Refer to SECTION 3E.
- 3. Remove brake drums and rotors. Refer to SECTION 5.
- Clean the propeller shaft, universal joints and attaching parts of any mud, undercoating or foreign material.

- 5. Inspect the propeller shaft, universal joints and attaching parts for loose fasteners or balance weights. Tighten any loose fasteners to specification. If balance weights are loose or missing, the propeller shaft must be balanced or replaced.
- 6. Lower vehicle.
- 7. Start engine.
- 8. Operate the vehicle in gear at the speed and rpm at which the vibration or noise occurs and observe the intensity of the problem.
- 9. Turn ignition switch to the "OFF" position.
- 10. Place selector lever in "N" (neutral) position.
- 11. Raise and suitably support vehicle. Refer to SECTION 0A.
- 12. Place index marks (reference marks) on the pinion flange yoke and the differential pinion flange in order to ensure proper installation (Figure 9).
- 13. Remove four bolts, four nuts and separate propeller shaft pinion flange yoke from differential pinion flange (Figure 10).
- 14. Rotate propeller shaft 180 degrees (1/2 turn) from its original position.
- 15. Install pinion flange yoke to differential pinion flange; secure with four bolts and four nuts.

# হ্ম Tighten

- Propeller shaft bolts and nuts to 50 N·m (37 lb. ft.).
- 16. Lower vehicle.
- 17. Start engine.
- 18. Operate the vehicle in gear at the speed and rpm at which the vibration or noise occurred previously and observe the intensity of vibration or noise in comparison with the previous amount.
- 19. Turn ignition switch to the "OFF" position.
- 20. Raise and suitably support vehicle. Refer to SECTION 0A.
- 21. Install brake drums and rotors. Refer to SECTION 5.
- 22. Install tire and wheel assemblies. Refer to SECTION 3E.
- 23. Lower vehicle.

Determine the propeller shaft position which gives the best driveline response by road testing the vehicle for a final check of the propeller shaft balance. If the balance is unacceptable, the propeller shaft must be balanced or replaced.

#### PROPELLER SHAFT

### Figures 9 through 14

# Remove or Disconnect

- Raise and suitably support vehicle. Refer to SECTION 0A.
- 2. Place a drain pan or suitable container underneath transfer case (four-wheel drive models).

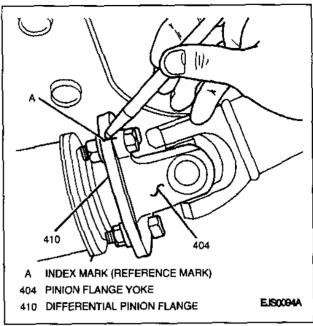


Figure 9—Placing Index Marks on Pinion Flange Yoke and Differential Pinion Flange

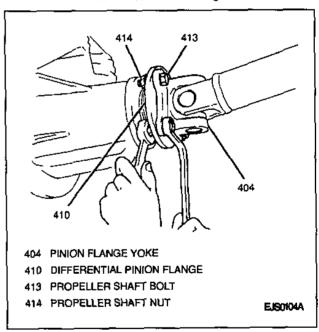


Figure 10-Removing Propeller Shaft Bolts and Nuts

- Transfer case oil level/filler plug from transfer case (four-wheel drive models).
- Transfer case drain plug from transfer case and drain transfer case oil (four-wheel drive models).
- 5. Place index marks (reference marks) on the pinion flange yoke and the differential pinion flange (Figure 9).
- Four bolts, four nuts and separate pinion flange yoke from differential pinion flange (Figure 10).
- 7. Sliding yoke from transmission or transfer case and remove propeller shaft from vehicle (Figure 11).

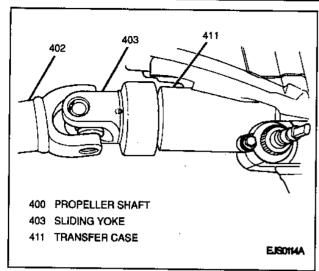


Figure 11-Sliding Yoke at Transfer Case



### Inspect

- 1. Propeller shaft for dents or other damage. If shaft appears damaged, replace it.
- 2. Universal joints for smooth pivoting. If universal joints bind or appear tight, replace them as assemblies. Refer to "Universal Joints" later in this section.
- 3. Sliding yoke splines for excessive wear or damage. If splines appear worn or rounded, replace the sliding yoke. Refer to "Sliding Yoke Joint" later in this section (Figure 12).
- 4. Sliding yoke surface for scoring, burrs or other damage. If sliding yoke surface appears scored or rough, replace it. Refer to "Sliding Yoke Joint" later in this section (Figure 12).
- Pinion flange yoke for cracks, distortion or other damage. If pinion flange yoke appears damaged or distorted, replace it. Refer to "Pinion Flange Yoke Joint" later in this section.

# →← Install or Connect

- 1. Sliding yoke into transmission or transfer case (Figure 13).
- Pinion flange yoke to differential pinion flange aligning index marks (reference marks) on the pinion flange yoke and the differential pinion flange; secure with four bolts and four nuts (Figure 14).

# (1) Tighten

- Propeller shaft bolts and nuts to 50 N·m (37 lb. ft.).
- Apply Loctite® pipe sealant GM P/N 1052080, or equivalent, to the threaded portion of the transfer case drain plug (four-wheel drive models).
- 3. Transfer case drain plug into transfer case (four-wheel drive models).

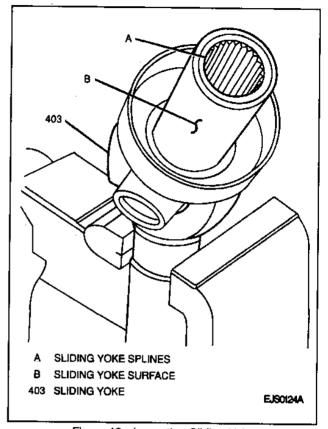


Figure 12—Inspecting Sliding Yoke

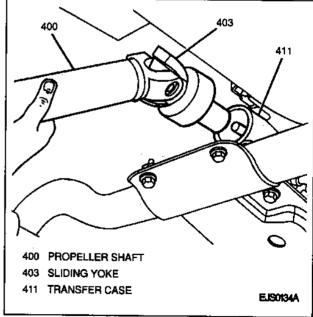


Figure 13—Installing Sliding Yoke Into Transfer Case



### Tighten

Transfer case drain plug to 28 N·m (21 lb. ft.).
4. Refill transfer case with approximately 1.7 liters (1.8 qts.) of synthetic gear lubricant GM P/N 12345836, or equivalent (four-wheel drive models).

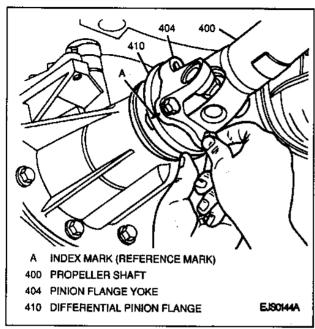


Figure 14—Installing Pinion Flange Yoke to Differential Pinion Flange

- 5. Apply Loctite® pipe sealant GM P/N 1052080, or equivalent, to the threaded portion of the transfer case oil level filler plug (four-wheel drive models).
- 6. Transfer case oil level/filler plug into transfer case (four-wheel drive models).

# হ্ম Tighten

- Transfer case oil filler/level plug to 28 N·m (21 lb. ft.).
- 7. Remove drain pan from underneath transfer case (four-wheel drive models).
- 8. Lower vehicle.

### **UNIVERSAL JOINTS**

# Pinion Flange Yoke Joint Figures 15 through 23

# Remove or Disconnect

- Propeller shaft from vehicle. Refer to "Propeller Shaft" under "On-Vehicle Service" earlier in this section.
- 2. Two snap rings from pinion flange yoke (Figure 15).
- 3. Apply moisture displacing lubricant GM P/N 1052864, or equivalent, to the outside of the pinion flange yoke joint bearing caps.
- 4. Using an 18 mm socket in conjunction with a 24 mm socket and soft-jaw vise, place the pinion flange yoke into the soft-jaw vise with the 18 mm socket acting as a driver and the 24 mm socket acting as a hollow support. Tighten the vise until the bearing cap inside of the 24 mm socket has been exposed approximately 3 to 4 mm (0.12 to 0.16-inch) (Figure 16).

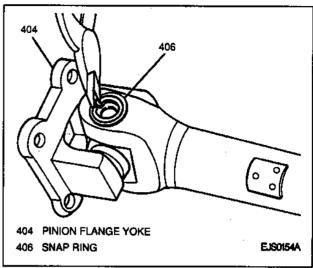


Figure 15-Removing Snap Ring From Pinion Flange Yoke

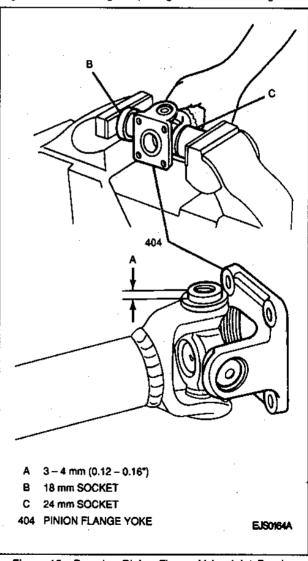


Figure 16—Pressing Pinion Flange Yoke Joint Bearing Caps

Bearing cap from pinion flange yoke by placing the exposed portion of the bearing cap into a soft-jaw vise and tapping upwards on the pinion

- flange yoke with a hammer until the bearing cap is free of the pinion flange yoke.
- 6. Insert the 18 mm socket through the bearing cap opening in the pinion flange yoke and tap the socket gently with a hammer until the opposite bearing cap is exposed approximately 3 to 4 mm (0.12 to 0.16-inch).
- 7. Opposite bearing cap from pinion flange yoke by placing the exposed portion of the bearing cap into a soft-jaw vise and tapping upwards on the pinion flange yoke with a hammer until the bearing cap is free of the pinion flange yoke.
- 8. Pinion flange yoke from spider.
- 9. Two snap rings from propeller shaft yoke (Figure 17).
- 10. Using an 18 mm socket in conjunction with a 24 mm socket and soft-jaw vise, place the propeller shaft yoke into the soft-jaw vise with the 18 mm socket acting as a driver and the 24 mm socket acting as a hollow support. Tighten the vise until the bearing cap inside of the 24 mm socket has been exposed approximately 3 to 4 mm (0.12 to 0.16-inch) (Figure 18).
- 11. Bearing cap from propeller shaft yoke by placing the exposed portion of the bearing cap into a soft-jaw vise and tapping upwards on the propeller shaft yoke with a hammer until the bearing cap is free of the propeller shaft yoke (Figure 19).

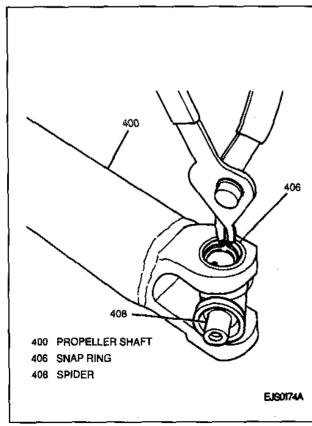


Figure 17-Removing Propeller Shaft Yoke Snap Ring

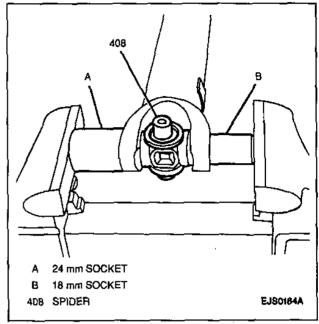


Figure 18-Pressing Propeller Shaft Yoke Bearing Caps

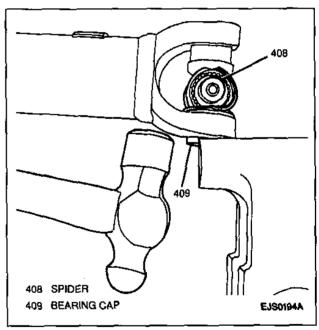


Figure 19—Removing Bearing Cap from Propeller Shaft Yoke

- 12. Opposite bearing cap by inserting the 18 mm socket through the bearing cap opening in the propeller shaft yoke and tapping on the socket gently with a hammer until the opposite bearing cap is exposed approximately 3 to 4 mm (0.12 to 0.16-inch) (Figure 20).
- 13. Opposite bearing cap from propeller shaft yoke by placing the exposed portion of the bearing cap into a soft-jaw vise and tapping upwards on the propeller shaft yoke with a hammer until the bearing cap is free of the propeller shaft yoke.
- 14. Spider from propeller shaft yoke.

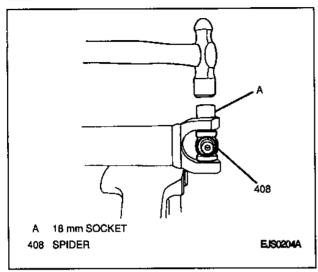


Figure 20-Removing Opposite Bearing Cap



### Inspect

- Propeller shaft yoke for distortion, cracks or other damage. If propeller shaft yoke appears distorted or damaged, replace it. Refer to "Propeller Shaft" under "On-Vehicle Service" earlier in this section.
- Pinion flange yoke for distortion, cracks or other damage. If pinion flange yoke appears distorted or damaged, replace it.
- 3. Bearing caps for broken or missing needle bearings. If needle bearing appears missing or worn, replace universal joint as an assembly (Figure 21).
- 4. Bearing surfaces on the spider for flat spots or excessive wear. If bearing surfaces on spider appear worn or flat, replace universal joint as an assembly (Figure 21).

# ? Important

 If any unusual wear or damage is found on any component upon universal joint inspection, DO NOT attempt to repair or replace the component. Replace the universal joint as an assembly.

# ++ Install or Connect

1. Spider into propeller shaft yoke.

NOTICE: During bearing cap installation, make sure that the needle bearings are correctly positioned. If the needle bearings become mispositioned during installation, damage to the needle bearings and spider will result (Figure 22).

2. Apply moisture displacing lubricant GM P/N 1052864, or equivalent, to the outside of the pinion flange yoke joint bearing caps.

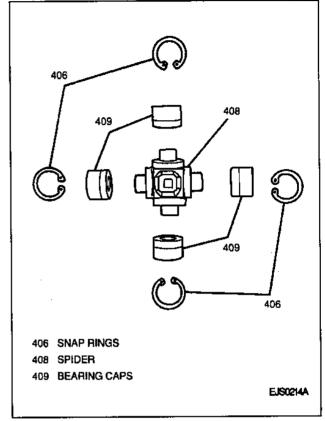


Figure 21-Inspecting Universal Joint Components

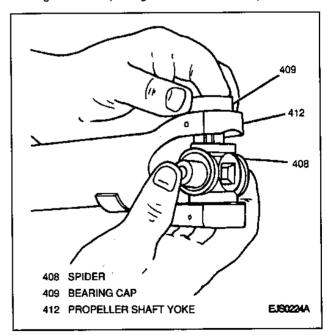


Figure 22-Installing Bearing Cap Onto Spider

- One bearing cap into propeller shaft yoke and tapping gently with a hammer making sure the bearing cap fits smoothly over the pinion flange yoke joint spider.
- Opposite bearing cap into propeller shaft yoke and tapping gently with a hammer until a snap ring can be fitted.

5. One snap ring into the propeller shaft yoke.

# 10

### Inspect

- Snap ring upon installation. Make sure the snap ring is completely seated and firm.
- 6. Using an 18 mm socket in conjunction with a 24 mm socket and soft-jaw vise, place the propeller shaft yoke into the soft-jaw vise with the 18 mm socket acting as a driver and the 24 mm socket acting as a hollow support. Tighten the vise until the opposite bearing cap is pressed into the propeller shaft yoke so that a snap ring can be fitted.
- 7. One snap ring into propeller shaft yoke.



#### Inspect

- Snap ring upon installation. Make sure the snap ring is completely seated and firm.
- 8. Pinion flange yoke onto spider (Figure 23).
- 9. Bearing cap into pinion flange yoke and tapping gently with a hammer making sure the bearing cap fits smoothly over the spider (Figure 23).
- Opposite bearing cap into pinion flange yoke and tapping gently with a hammer until a snap ring can be fitted.
- 11. One snap ring into pinion flange yoke.



### Inspect

- Snap ring upon installation. Make sure the snap ring is completely seated and firm.
- 12. Using an 18 mm socket in conjunction with a 24 mm socket and soft-jaw vise, place the pinion flange yoke into the soft-jaw vise with the 18 mm socket acting as a driver and the 24 mm socket acting as a hollow support. Tighten the vise until the opposite bearing cap is pressed into the pinion flange yoke so that a snap ring can be fitted.
- 13. One snap ring into pinion flange yoke.



#### Inspect

- Snap ring upon installation. Make sure the snap ring is completely seated and firm.
- 14. Propeller shaft into vehicle. Refer to "Propeller Shaft" under "On-Vehicle Service" earlier in this section.

### Sliding Yoke Joint

### Figures 17 through 22



#### Remove or Disconnect

- Propeller shaft from vehicle. Refer to "Propeller Shaft" under "On-Vehicle Service" earlier in this section.
- 2. Two snap rings from sliding yoke.

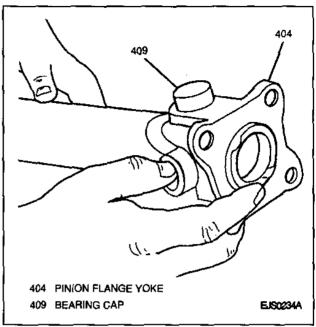


Figure 23-Installing Pinion Flange Yoke

- 3. Apply moisture displacing lubricant GM P/N 1052864, or equivalent, to the outside of the sliding yoke joint bearing caps.
- 4. Using an 18 mm socket in conjunction with a 24 mm socket and soft-jaw vise, place the sliding yoke into the soft-jaw vise with the 18 mm socket acting as a driver and the 24 mm socket acting as a hollow support. Tighten the vise until the bearing cap inside of the 24 mm socket has been exposed approximately 3 to 4 mm (0.12 to 0.16-inch).
- 5. Bearing cap from sliding yoke by placing the exposed portion of the bearing cap into a soft-jaw vise and tapping upwards on the sliding yoke with a hammer until the bearing cap is free of the sliding yoke.
- Insert the 18 mm socket through the bearing cap opening in the sliding yoke and tap gently with a hammer until the opposite bearing cap is exposed approximately 3 to 4 mm (0.12 to 0.16-inch).
- 6. Opposite bearing cap from sliding yoke by placing the exposed portion of the bearing cap into a soft-jaw vise and tapping upwards on the sliding yoke with a hammer until the bearing cap is free of the sliding yoke.
- 7. Sliding yoke from spider.
- 8. Two snap rings from propeller shaft yoke (Figure 17).
- 9. Using an 18 mm socket in conjunction with a 24 mm socket and soft-jaw vise, place the propeller shaft yoke into the soft-jaw vise with the 18 mm socket acting as a driver and the 24 mm socket acting as a hollow support. Tighten the vise until the bearing cap inside of the 24 mm socket has been exposed approximately 3 to 4 mm (0.12 to 0.16-inch) (Figure 18).

### **4A-12 PROPELLER SHAFT**

- 10. Bearing cap from propeller shaft yoke by placing the exposed portion of the bearing cap into a soft-jaw vise and tapping upwards on the propeller shaft yoke with a hammer until the bearing cap is free of the propeller shaft yoke (Figure 19).
- 11. Opposite bearing cap by inserting the 18 mm socket through the bearing cap opening in the propeller shaft yoke and tapping on the socket gently with a hammer until the opposite bearing cap is exposed approximately 3 to 4 mm (0.12 to 0.16-inch) (Figure 20).
- 12. Opposite bearing cap from propeller shaft yoke by placing the exposed portion of the bearing cap into a soft-jaw vise and tapping upwards on the propeller shaft yoke with a hammer until the bearing cap is free of the propeller shaft yoke.
- 13. Spider from propeller shaft yoke.

# Inspect

- Propeller shaft yoke for distortion, cracks or other damage. If shaft appears damaged, replace it. Refer to "Propeller Shaft" under "On-Vehicle Service" earlier in this section.
- Sliding yoke for distortion, cracks or other damage. If sliding yoke appears worn or damaged, replace it.
- Bearing caps and roller bearings for broken or missing bearings. If bearing caps appear damaged or have missing bearings, replace universal joint as an assembly (Figure 21).
- 4. Bearing surfaces on the universal joint spider for flat spots or excessive wear. Replace universal joint as an assembly (Figure 21).

# [ Important

 If any unusual wear or damage is found on any component upon universal joint inspection, DO NOT attempt to repair or replace the component. Replace the universal joint as an assembly.

# →← Install or Connect

1. Spider into propeller shaft yoke.

NOTICE: During bearing cap installation, make sure that the needle bearings are correctly positioned. If the needle bearings become mispositioned during installation, damage to the needle bearings and spider will result.

2. Apply moisture displacing lubricant GM P/N 1052864, or equivalent, to the outside of the sliding yoke joint bearing caps.

- 3. One bearing cap into propeller shaft yoke and tapping gently with a hammer making sure the bearing cap fits smoothly over the spider (Figure 22).
- 4. Opposite bearing cap into propeller shaft yoke and tapping gently with a hammer until a snap ring can be fitted.
- 5. One snap ring into the propeller shaft yoke.

# Inspect

- Snap ring upon installation. Make sure the snap ring is completely seated and firm.
- 6. Using an 18 mm socket in conjunction with a 24 mm socket and soft-jaw vise, place the propeller shaft yoke into the soft-jaw vise with the 18 mm socket acting as a driver and the 24 mm socket acting as a hollow support. Tighten the vise until the opposite bearing cap is pressed into the propeller shaft yoke so that a snap ring can be fitted.
- 7. One snap ring into propeller shaft yoke.

# Inspect

- Snap ring upon installation. Make sure the snap ring is completely seated and firm.
- 8. Sliding yoke onto spider.
- Bearing cap into sliding yoke and tapping gently with a hammer making sure the bearing cap fits smoothly over the spider.
- Opposite bearing cap into sliding yoke and tapping gently with a hammer until a snap ring can be fitted.
- 11. One snap ring into sliding yoke.

# [**\***

#### Inspect

- Snap ring upon installation. Make sure the snap ring is completely seated and firm.
- 12. Using an 18 mm socket in conjunction with a 24 mm socket and soft-jaw vise, place the propeller shaft yoke into the soft-jaw vise with the 18 mm socket acting as a driver and the 24 mm socket acting as a hollow support. Tighten the vise until the opposite bearing cap is pressed into the sliding yoke so that a snap ring can be fitted.
- 13. One snap ring into sliding yoke.

# 18

### inspect

- Snap ring upon installation. Make sure the snap ring is completely seated and firm.
- Propeller shaft into vehicle. Refer to "Propeller Shaft" under "On-Vehicle Service" earlier in this section.

# **SPECIFICATIONS**

FASTENER TORQUES  Propeller Shaft Bolts and Nuts  Transfer Case Oil Level/Filler Plug  Transfer Case Drain Plug	50	N·m	(37	lb.	ft.)
	28	N·m	(21	lb.	ft.)
	28	N·m	(21	lb.	ft.)
PROPELLER SHAFT SPECIFICATIONS Propeller Shaft Runout (Maximum)	0,8	nım	(0.0)	<b>31</b> i	in.)

