PROPELLER SHAFT AND CENTRAL JOINT

CONTENTS

DESCRIPTION AND OPERATION

PROPELLER SHAFT AND CENTRAL JOINT

Due to the use of both automatic and manual transmissions, propeller shafts of various lengths are required depending upon vehicle, engine, and transmission (manual or automatic) application. The propeller shaft is of a strong design due to increased engine torque. It is also a one piece tubular shaft, but it has two universal joints. See Figure 4A-1. The front universal joint attaches to the transmission output shaft by a splined slip joint. The rear universal joint attaches to the pinion extension shaft flange by two U-bolts. The splines of both propeller shafts are lubricated internally with transmission lubricant. An oil seal in the rear of the transmission extension prevents loss of lubricant and entrance of harmful foreign material.

The torque tube which houses the drive pinion extension shaft is bolted to the differential housing. The torque tube is pivoted in rubber elements of the central joint support bracket which is bolted to the floor panel. The support bracket and rubber parts of the torque tube are termed the central joint. The front end of the drive pinion extension shaft rides in a ball bearing mounted in rubber in the central joint.

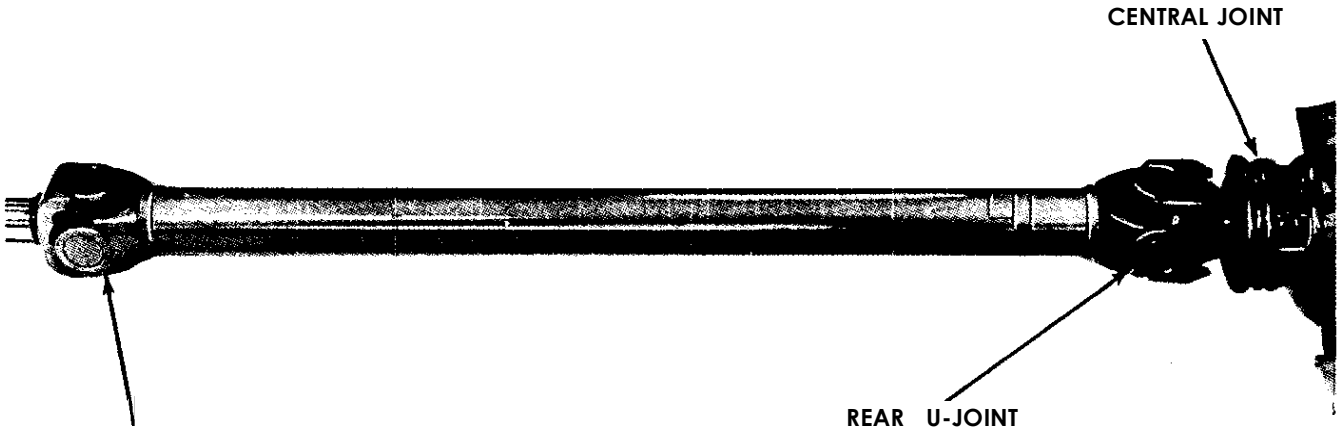

Figure 4A-1 Propeller Shaft

MAJOR REPAIR

PROPELLER SHAFT REMOVAL AND INSTALLATION

Removal

1. Raise rear of car and support on jack stands at rear jack brackets.

2. Disconnect parking brake cable equalizer from rod.

3. On the Opel 1900 and Manta, unhook parking brake cable from floor panel.

4. On the Opel 1900 and Manta, unhook exhaust system and let it down.

5. Mark the mating parts of the U-joint and the drive pinion extension shaft flange.

6. Loosen bolt locks and remove bolts or nuts.

7. Work propeller shaft slightly forward, lower rear end of shaft and slide assembly rearward. Remove thrust spring from front of propeller shaft.

8. Install plug in transmission extension housing to prevent loss of lubricant.

Installation

CAUTION: *Fasteners in the following steps are important attaching parts in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.*

1. Remove plug from rear of transmission.

2. Slide thrust spring onto transmission output shaft and slide propeller shaft through the oil seal and onto the transmission output shaft. Make certain transmission rear seal is not damaged.

3. Align rear universal joint and pinion flange locating marks and secure with respective bolts and lock plates. Torque bolts to 11 lb.ft. Bend lock plate tangs to secure bolts or nuts.

4. Connect parking brake cable equalizer to brake rod and adjust to specifications.

5. On the Opel 1900 and Manta connect parking brake cable to floor panel.

DISASSEMBLY AND ASSEMBLY OF THE CENTRAL JOINT

Disassembly of Central Joint

1. Raise and support rear of car under axle tubes.

2. Release brake line bracket from rear of torque tube.

3. Disconnect parking brake cable equalizer and return spring from brake rod.

4. On the Opel 1900 and Manta, unhook exhaust system and let it down.

5. Mark universal joint and flange. Disconnect propeller shaft from flange and support it out of the way.

6. Support torque tube with floor jack using minimum pressure.

7. Remove the central joint bracket to underbody attaching bolts.

8. Allow floor jack to lower the torque tube.

9. Disconnect torque tube from differential carrier by removing the attaching bolts.

10. Install pinion flange holder J-8614 and remove self-locking flange nut. See Figure 4A-2.

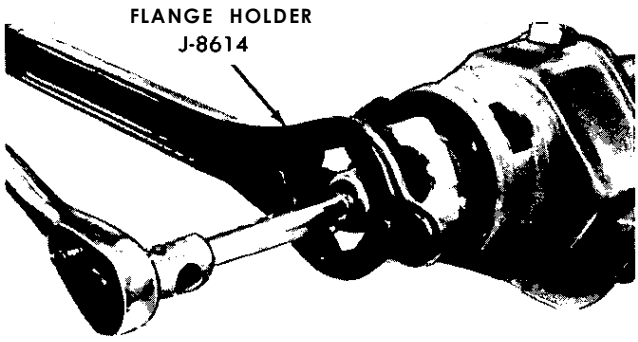

Figure 4A-2 Removing Pinion Flange Nut

11. Pull pinion flange using J-8614 adapter. See Figure 4A-3.

12. Remove drive pinion extension shaft from torque tube using a soft faced mallet. See Figure 4A-4.

13. Removal ball bearing from cushion.

14. With torque tube placed in vise remove support

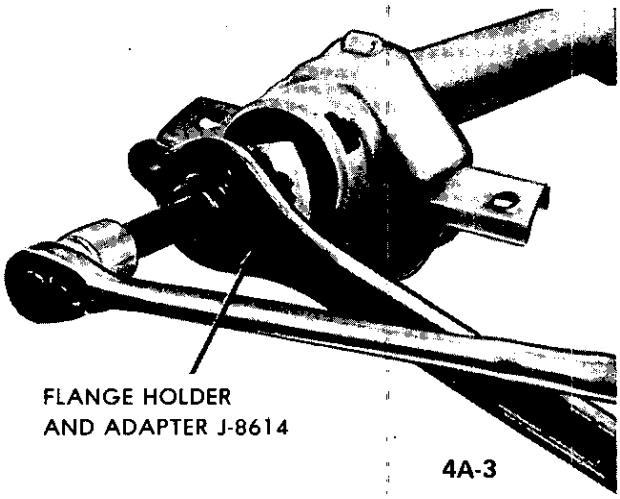

Figure 4A-3 Removing Pinion Flange

bracket to support cushion bolts and pull central joint support from torque tube. See Figure 4A-5.

Assembly of Central Joint

CAUTION: *Fasteners in the following steps are important attaching parts in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.*

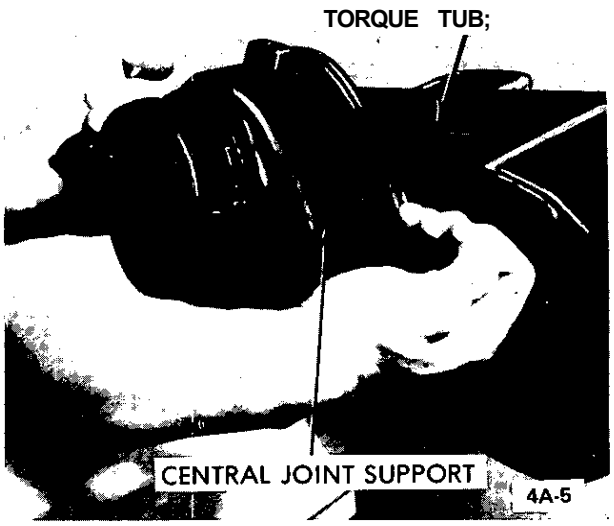

Figure 4A-5 Disassembling Central Joint

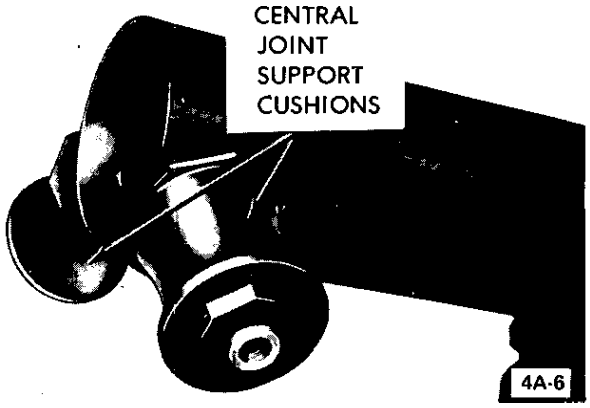

Figure 4A-6 Support Cushions Installed on Torque Tube

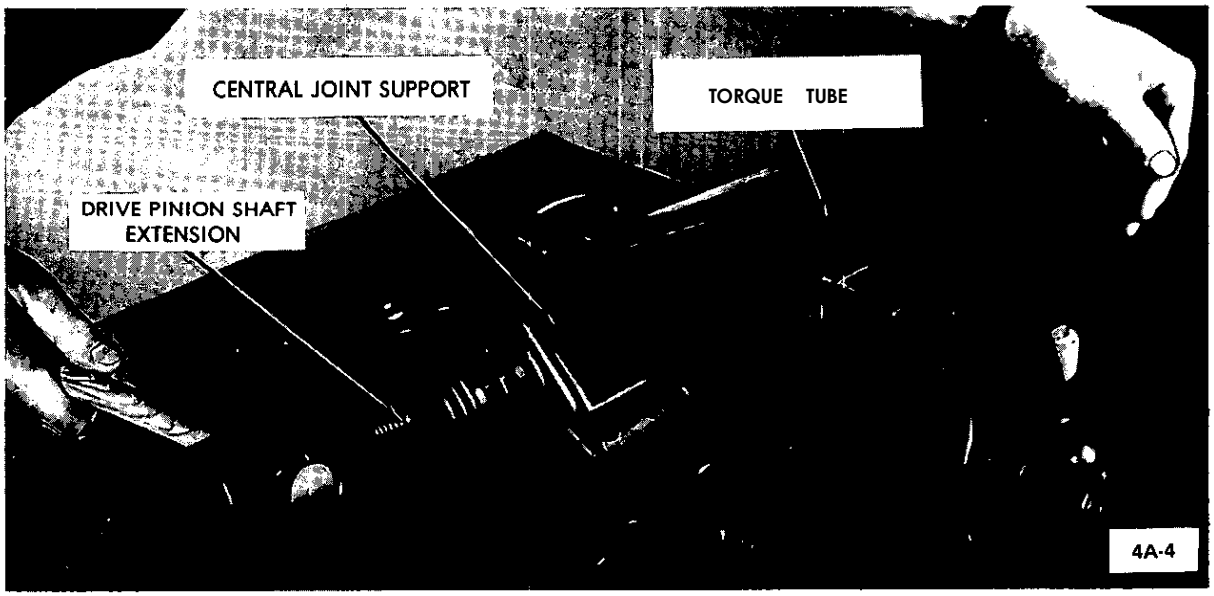

Figure 4A-4 Removing Drive Pinion Extension Shah

1. Check condition of support cushions. If new cushions are installed, torque to 29 lb. ft. See Figure 4A-6.

2. Install ball bearing into rubber cushion with the flange facing toward front of car. Pack area in front of bearing with water resistant grease. See Figure 4A-7.

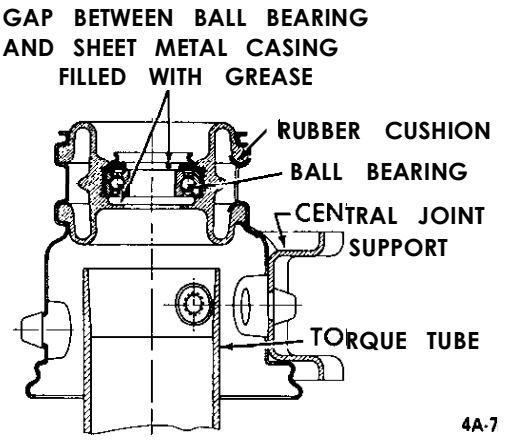

Figure 4A-7 Torque Tube Bearing Installed

3. Install support bracket onto torque tube in such a manner that one cushion is in place, then pry the other cushion into place with a screwdriver. Torque attaching bolts to 15 lb. ft.

4. Install drive pinion extension shaft into torque tube from the rear. Tap in place with soft face mallet.

5. Install flange. Tap-flange onto drive pinion extension shaft, with a soft face mallet, at least far enough to install nut.

6. Assemble flange holder J-8614 to flange, install new self-locking nut and torque to 87 lb.ft.

7. Install torque tube assembly onto differential carrier using only three of the four bolts. The fourth bolt will be used later to install the brake pipe bracket.

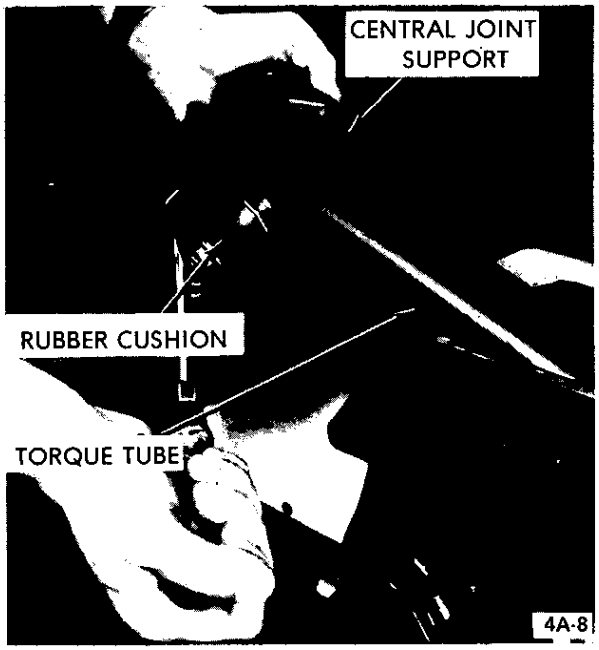

Figure 4A-8 Installing Support Bracket on Torque Tube

8. Position floor jack under torque tube and raise it far enough to install central joint support to underbody bolts finger tight. Remove jack.

9. Jounce rear of car so springs will assume normal position and torque the central joint support to underbody bolts to 36 lb. ft.

10. Align mating marks of universal joint and flange, connect universal joint to flange with respective bolts and lock plates. Torque nuts to 11 lb. ft. Bend lock plate tangs to retain bolts.

11. Assemble parking brake cable equalizer and return spring to brake rod and adjust to specifications.

12. Connect brake line bracket to torque tube.

13. Remove supports from rear of car and lower to the floor.

SPECIFICATIONS

PROPELLER SHAFT AND CENTRAL JOINT SPECIFICATIONS

Tightening Specifications

Use a reliable torque wrench. Specifications are for clean and lightly-oiled threads.

Part	Location	Torque Lb.Ft.
Bolt	Drive Pinion Extension Shaft Flange to Universal Joint	11
Bolt	Central Joint Support to Underbody	36
Bolt	Central Joint Support to Rubber Cushion	15
Torque	Tube Rubber Cushion to Torque Tube	15
Bolt	Support Cushion	29