

PROPELLER SHAFTS AND UNIVERSAL JOINTS

ALL MODELS ARE EQUIPPED with two propeller shafts which are supported by a bearing assembly at the center frame crossmember. A slip yoke is used in the drive line to compensate for movement of the rear axle or variations in distance between rear axle and transmission, and to facilitate removal of the shafts. The slip yoke is located on the front of the rear propeller shaft. The external splines of the slip yoke mate with the internal splines in the front shaft.

Needle bearing type universal joints, equipped with lubrication fittings, are used on all models. Each bearing assembly includes a cork lubricant seal and dust shield. Split type universal joints are used at the transmission and rear axle while a straight universal joint is used between shafts.

SPECIFICATIONS

Universal joint—make.....
—type.....
—number.....
—lubricated with.....

ALL MODELS

Spicer
Needle Bearing
3
Chassis Lubricant
(Light Weight)

DRIVE LINE ASSEMBLY

Alignment—All Models

Correct alignment, balance, and concentricity of drive line components are essential to smooth, vibration-free operation. Misalignment is usually caused by a worn support bearing, worn or damaged support bearing cushions, or improper mounting of the support itself. The proper mounting of the bearing support is illustrated in Fig. 4.

Because of the close limits involved, measurement of the drive line runout requires a great deal of care. Raise the rear wheels of the car clear of the floor, and shift the transmission to neutral gear. Using a dial indicator, measure the runout of each propeller shaft in three places—at the front, center, and rear of the shaft—while turning the shaft slowly by hand. To minimize inaccuracies, the end measurements should be made about 1½" (31,8 mm.) back from the weld joint, and the shaft should be cleaned with sandpaper.

The maximum runout for the front propeller shaft is .010" (0,25 mm.) at any of the three positions. Maximum runout of the rear shaft is .010" (0,25 mm.) at either the front or the rear, and .015" (0,32 mm.) at the center.

If the runout is not within these limits, check the transmission and differential flanges also. Measure the shaft runout at the end nearest the flange, and mark the flange to show the point of highest runout. Disconnect the universal joint, rotate the flange 180 degrees, and reassemble the universal joint. Again

check the shaft runout. If the high side of the runout is still on the same side of the flange as before, even though it is not the same amount, the flange may be assumed to be causing the runout.

If the shaft runout cannot be brought within the specified limits by rotating the flanges, the shafts and/or flanges should be replaced.

Removal—All Models

The propeller shaft and support bearing can be removed as a complete assembly. Mark the yokes of the universal joints to obtain the original position at the reassembly. Disconnect the rear propeller shaft from the rear axle companion flange. Remove the shaft support stud nuts, lock washers, and plain washers. Disconnect the front propeller shaft from the transmission companion flange. Remove the bearing cups and bearings or tape them securely in place on the joint crosses. Then move the assembly rearward, slipping the shaft support off the cushions and threading the front shaft rearward through the center crossmember.

Installation—All Models

Thread the front shaft through the center crossmember, align the universal joint yokes, install the shaft support on the cushions, and then install the front universal joint U bolts. Install the support stud nuts, lock washers, and plain washers. Bring the rear shaft into position at the rear axle, align, connect the joint, and install the retaining U bolts.



- 1. Nut
- 2. Lock washer
- 3. Plain washer
- 4. Support cushion
- 5. Cushion stud
- 6. Lock washer
- 7. Nut
- 8. Slip yoke
- 9. Grease washer nut

FIG. 1

- 10. Washer retainer
- 11. Cork grease washer
- 12. Lock plate
- 13. Spacer
- 14. Support bracket
- 15. Support shield
- 16. Support bearing
- 17. Outer dust shield
- 18. Front shaft

PROPELLER SHAFTS AND SUPPORT BEARING

REAR SHAFT

Removal—All Models

To remove the rear propeller shaft, first straighten the ear of the lock plate (2, Fig. 2), loosen the grease washer nut (3), and unscrew it from the shaft. Then mark the universal joint flange and rear axle companion flange so that at installation the original position and balance will be maintained. Remove the U bolts which hold the rear joint bearing cups and cross to the rear axle flange. Shift the shaft forward and separate the joint by prying with a suitable bar between the companion flange and the universal cross. Hold the bearing cups on the cross while separating the joint to avoid dropping the cups and spilling the bearings. Then remove the bearing cups and bearings or tape them securely in place on the cross. Slide the shaft rearward, slipping the end of the slip yoke out of the splines of the front shaft.

To remove the grease washer nut (9, Fig. 1) from the slip yoke, first remove the cork grease washer (11) and washer retainer (10) from within the nut and slide the nut off the slip yoke. The cork grease washer and washer retainer are split to facilitate removal.

Installation—All Models

Place the grease washer nut (9, Fig. 1) on the slip yoke (8), and install the grease washer retainer (10) and washer (11).

Align the transmission companion flange with the flange of the slip yoke, engage the splines, and slide the slip yoke into the front shaft. When properly aligned, the lubrication fittings of the universal joints will be in line. Install the grease washer nut and tighten securely, and bend the ears of the lock plate.

Install the bearings and cups on the cross or, if taped, remove the tape. Align the marks of the joint

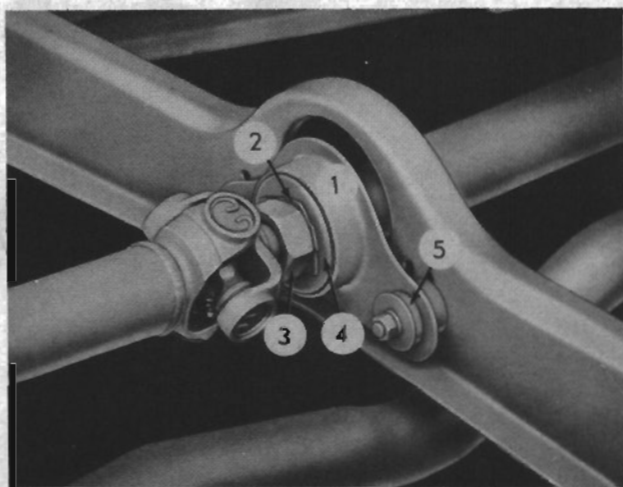


FIG. 2

- | | |
|--------------------|----------------------|
| 1. Bearing support | 3. Grease washer nut |
| 2. Lock plate | 4. Bearing |
| 5. Support cushion | |

and companion flanges and position the cups in the recess of the companion flange. Then install the U bolts and nuts and tighten to 14 to 17 ft-lbs (1.9 to 2.4 kg-m) torque.

SUPPORT BEARING

Removal—All Models

Remove the lock plate (12, Fig. 1) and spacer (13) from the projecting end of the front shaft, and remove the shield (17). Remove the shaft support stud nuts (1), lock washers (2), and plain washers (3), and slide the bearing and support assembly off the front shaft and support cushions (4). Remove the dust shields (15) from the front shaft.

To remove the support bearing (16) from the support (14), use a suitable tube which will fit the outer race of the bearing, and with an arbor press, remove the bearing. Be careful not to damage the bearing seal.

To clean the support bearing, wipe it with a clean cloth. The bearing is prelubricated and must not be washed in any type of cleaning solvent.

Installation—All Models

Press the bearing (16, Fig. 1) into the support (14) so that the bearing is laterally centered in the support. Install the dust shield (17) on the front shaft with the concave side of the shield against the shoulder on the shaft. Install the support against the shoulder on the shaft. Install the support bearing and support assembly on the shaft and support cushions (4).

If the shaft support cushions and studs have been removed, it is important that the proper holes are used when installing the studs. The holes to be used

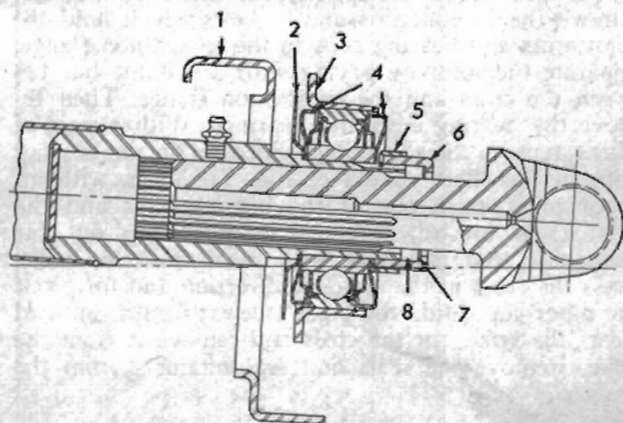


FIG. 3

- | | |
|----------------------|----------------------|
| 1. Crossmember | 5. Lock plate |
| 2. Outer dust shield | 6. Grease washer nut |
| 3. Bearing support | 7. Spacer |
| 4. Dust shield | 8. Grease washer |

are determined by the models and whether the car is left-hand or right-hand control. Fig. 4 illustrates the proper holes to be used with the various models.

Install the shaft support stud nuts, plain washers, and lock washers. Place the dust shield spacer (13) and lock plate (12) on the end of the shaft which projects through the support bearing.

FRONT SHAFT

Removal—All Models

Remove the rear shaft and shaft support assembly. Mark the front shaft universal joint flange and transmission companion flange. Remove the U bolts which hold the joint bearing cups and cross to the transmission companion flange. Separate the joint by prying with a suitable bar between the companion flange and the universal cross. Hold the bearing cups on the cross while separating the joint to avoid spilling the bearings. Then remove the bearing cups and bearings or tape them in place on the cross. Slide the rear end of the shaft out of the crossmember and remove from the chassis.

Installation—All Models

Insert the rear end of the front shaft in the cross-

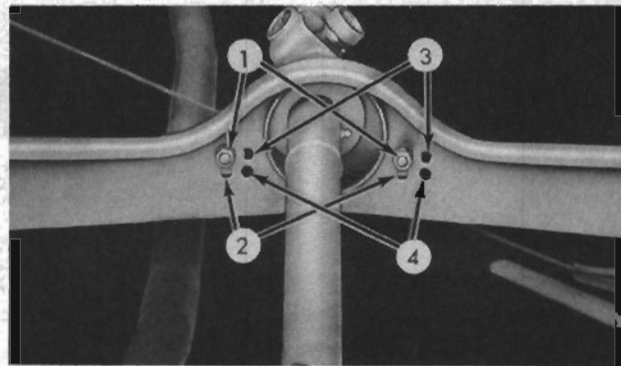


FIG. 4

1. Coupe and Hardtop—LHC Models
2. Sedan and Station Wagon—LMC Models
3. Coupe and Hardtop—RHC Models
4. Sedan and Station Wagon—RHC Models

member. Install the joint bearing cups or, if taped, remove the tape. Align the marks of the joint and the companion flanges and position the cups in the recess of the companion flange. Then install the U bolts and nuts and tighten to 14 to 17 ft-lbs (1,9 to 2,4 kg-m) torque.

UNIVERSAL JOINTS

Before disassembling any joint, be sure to mark the yokes so that at reassembly the original position and balance can be maintained.

Disassembly—All Models

To disassemble the split type universal joint, first remove the U bolt nuts and U bolts which hold the joint cross and bearing cups in the companion flange. Separate the joint by prying with a suitable bar between the cross and the companion flange. Then remove the bearing cups and bearings. With a pair of pliers, remove the snap rings which retain the bearing cups in the shaft yoke (see Fig. 5). Then, with an arbor press, push one of the bearing cups and the joint cross inward, forcing the other cup out far enough so that it can be withdrawn from the yoke. Press the cross in the opposite direction and force out the other cup. Slide the cross sideways until one end clears the yoke, tilt the cross and remove it from the yoke. Remove the seals and seal retainers from the cross.

The straight universal joint, which has snap rings retaining all of the bearing cups in both yokes, is disassembled by following the same procedure as outlined for the part of the disassembly of the split type joint which incorporates the snap rings.

Reassembly—All Models

Install the universal joint cross so all lubrication fittings are aligned and on the same side.

Insert one end of the cross into the yoke as far as possible or until the opposite end clears the yoke, then tilt the cross and position it in the yoke. Install

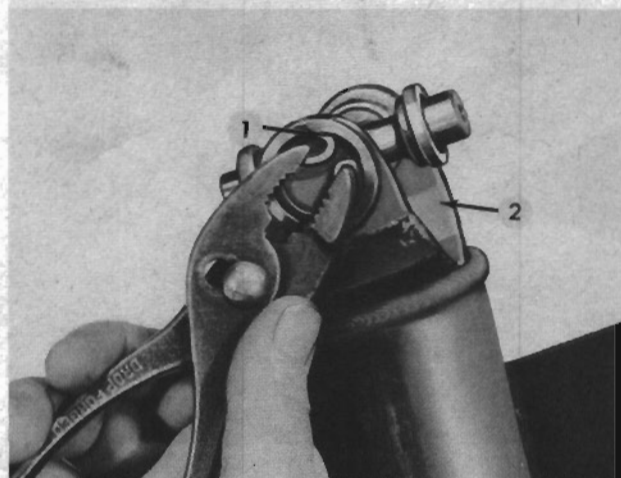


FIG. 5

1. Snap ring

2. Propeller shaft

ADDITIONAL NOTES

A series of horizontal lines provided for handwritten notes.

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