SECTION H

PROPELLER SHAFT

Section No. H.1 Description
Section No. H.2 Lubrication
Section No. H.3 Propeller shaft assembly
Section H.1

DESCRIPTION

The propeller shaft and universal joints (Fig. H.1) are of Hardy Spicer manufacture.

The fore and aft movement of the rear axle and other components is allowed for by a sliding spline between the propeller shaft and gearbox unit. Each universal joint consists of a centre spider, four needle roller bearings and two yokes. Reference to the Lubrication Chart (end of Manual) shows the location of the joints.

Section H.2

LUBRICATION

A nipple is fitted to each centre spider for the lubrication of the bearings. Reference to fig. H.2 shows that the central lubricant chamber is connected to four reservoirs and to the needle roller bearing assemblies.

The needle roller bearings are filled with lubricant on assembly. A nipple is provided on the sleeve yoke of the sliding spline joint for lubrication of the splines.

If a large amount of grease exudes from the cork seals the joint should be dismantled and new seals fitted.

After dismantling, and before reassembly, the inside splines of the sleeve yoke should be smeared liberally with grease.

Section H.3

PROPELLER SHAFT ASSEMBLY

Tests for Wear

1. Wear on the thrust faces is located by testing the lift in the joint, either by hand, or by using a length of wood suitably supported.

2. Any circumferential movement of the shaft relative to the flange yokes, indicates wear in the needle roller bearings, or the sliding spline.

Removal of Complete Assembly

Before removal of the propeller shaft can be effected, the gearbox tunnel must be removed.

The removal procedure for the propeller shaft is as follows:

1. Mark the propeller shaft and companion flanges on the gearbox and axle to facilitate replacement in the same position.

2. Support the shaft near the sliding joint, then withdraw the bolts from the gearbox companion flange.

3. Unscrew, by hand, the dust cap at the rear of the sliding joint. Slide the splined sleeve yoke about...
Examination and Checking for Wear

After long usage the parts most likely to show signs of wear are the bearing races and the spider journals of the universal joints. Should looseness or stress marks be observed, the assembly should be renewed complete, as no oversize journals or bearings are provided.

It is essential that bearing races are a light drive fit in the yoke trunnions. Should any ovality be apparent in the trunnion bearing holes, new yokes must be fitted.

With reference to wear of the cross holes in a fixed yoke, which is part of the tubular shaft assembly, only in cases of emergency should this be replaced. It should normally be renewed with a complete tubular shaft assembly. The other parts likely to show signs of wear are the splined sleeve yoke, or splined stub shaft. A total of 0.004 in. (0.1mm) circumferential movement, measured on the outside diameter of the spline, should not be exceeded. Should the splined stub shaft require renewing, this must be dealt with in the same way as the fixed yoke, i.e. a replacement tubular shaft assembly fitted.

Reassembly

(1) See that all drilled holes in the journals of the universal joints are cleaned out and filled with lubricant.

(2) Assemble the needle rollers in the bearing races and fill with grease. Should difficulty be experienced in assembly, smear the walls of the races with grease to retain the needle rollers in place.
(3) Insert the spider in the flange yoke.

(4) Using a soft-nosed drift about \( \frac{3}{8} \) in. smaller in diameter than the hole in the yoke, tap the bearing in position. It is essential that bearing races are a light drive in the yoke trunnion.

(5) Repeat this operation for the other three bearings. The spider journal shoulders should be coated with shellac prior to fitting the retainers to ensure a good seal.

(6) If the joint appears to bind, tap lightly with a wooden mallet which will relieve any pressure of the bearings on the end of the journals. When replacing the sliding joint on the shaft, be sure that the trunnions in the sliding and fixed yoke are in line. This can be checked by observing that arrows marked on the splined sleeve yoke and the splined stub shaft are in line. It is advisable to renew cork washers and washer retainers on spider journals, using a tubular drift.

(7) Place the dust cover, steel washer, and cork washer over the splines of the shaft. Slide the splined sleeve onto the shaft making sure that the front and rear universal joint spiders are lying in the same plane. To achieve this condition the arrows on the sleeve and shaft must be in line.

Replacing the Shaft Assembly

(1) Wipe the companion flange and flange yoke faces clean, to ensure that the pilot flange registers properly and the joint faces bed evenly all round.

(2) The sliding joint must be at the gearbox end.

(3) Align the marks made on all the flanges when removing the propeller shaft.

(4) Insert the bolts, and see that the nuts are tightened evenly all round and are securely locked.