SECTION G

PROPELLER SHAFT

Section No. G.1. Description

Section No. G.2. Lubrication

Section No. G.3. Assembly

Section No. G.4. Fault diagnosis

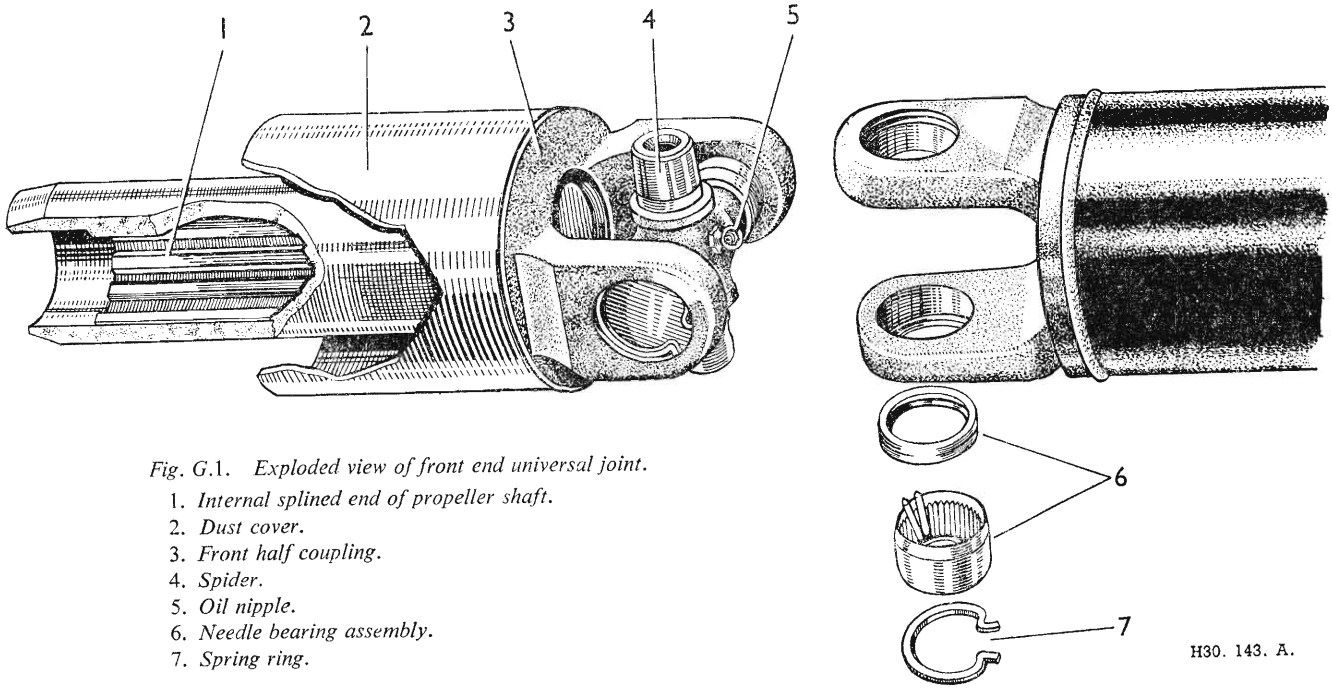


Fig. G.1. Exploded view of front end universal joint.

1. *Internal splined end of propeller shaft.*
2. *Dust cover.*
3. *Front half coupling.*
4. *Spider.*
5. *Oil nipple.*
6. *Needle bearing assembly.*
7. *Spring ring.*

Section G.1

DESCRIPTION

The propeller shaft and universal joints (Fig. G.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 at the rear of this Manual will show the locations of these joints.

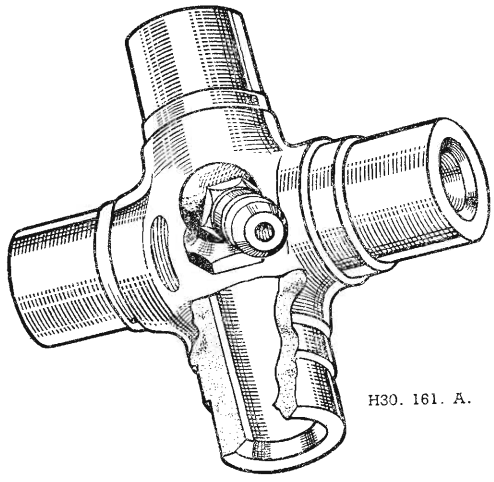


Fig. G.2. Showing the oil channels in the spider.

Section G.2

LUBRICATION

An oil nipple is fitted to each centre spider for lubricating the bearings. Always use oil and never grease. The central oil chamber is connected to the four oil reservoirs and to the needle roller bearing assemblies (see Fig. G.2).

The needle roller bearings are filled with oil on assembly. Oil from the gearbox lubricates the sliding splined joint between the propeller shaft and the gearbox. Before refitting the propeller shaft to the gearbox smear the splines with oil.

Section G.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 and Replacement

Although the propeller shaft can be removed separately by withdrawing it rearwards from the car, replacement presents some difficulty. It is therefore advisable to remove and replace it together with the engine and gearbox.

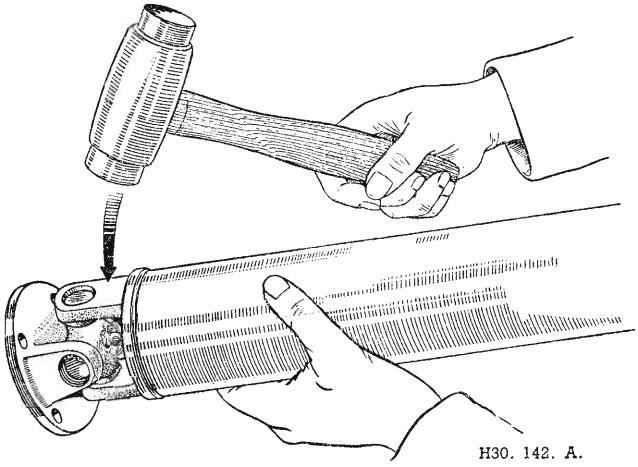


Fig. G.3. Tapping the joint to extract bearing.

Dismantling

The following directions apply to both universal joints of the propeller shaft except for the fact that the front joint can be separated from the shaft, whereas the rear joint has one yoke permanently fixed to the tube.

(1) Clean away the enamel from all the snap rings and bearing faces, to ensure easy extraction of the bearings.

(2) Remove the snap rings by pressing their ends together and prise out with a screwdriver. If the ring does not come out, tap the bearing face lightly to relieve the pressure against the ring.

(3) Hold the splined end of the shaft in one hand and tap the radius of the yoke with a lead or copper hammer (Fig. G.3), when the bearing will begin to emerge. If difficulty is experienced, use a small bar to tap the bearings from the inside, taking care not to damage the race itself. Turn the yoke over and extract the bearing with the fingers (Fig. G.4) being careful not to lose any of the needles.

(4) Repeat this operation for the other bearing, and the splined yoke can be removed from the spider.

(5) Using a support and directions as above remove the spider from the other yoke.

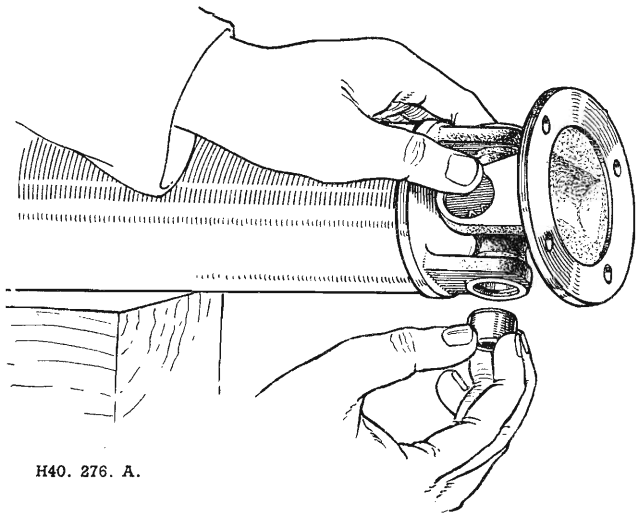


Fig. G.4. Removing a bearing cap complete with needle rollers.

Examination and Checking for Wear

When the propeller shaft has been in use for a long time, the parts most likely to show signs of wear are the bearing races and the spider journals.

The complete assembly should be renewed if looseness or stress marks are observed, as no oversize journals or bearings are provided.

It is essential that bearing races are a light drive fit in the yoke trunnions. Any ovality in the trunnion bearing holes, indicates the fitting of new yokes.

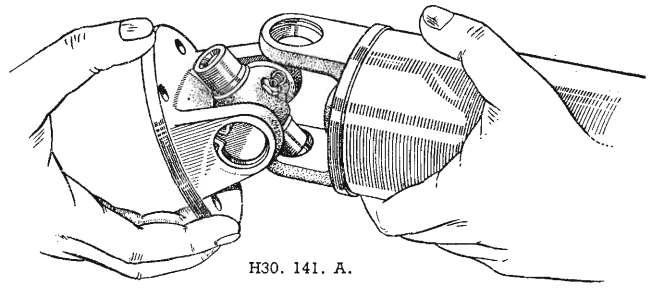


Fig. G.5. Separating the joint.

Reassembly

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

(2) Assemble the needle rollers in the bearing races and fill with oil. Should difficulty be experienced in assembly, smear the walls of the races with vaseline to retain the needle rollers in place.

(3) Insert the spider in the flange yoke.

(4) Using a soft-nosed drift about $\frac{1}{32}$-in. (·794 mm.) smaller in diameter than the hole in the yoke, tap the bearing in position. It is essential that the bearing races are a light drive in the yoke trunnion.

(5) Repeat this operation for the other bearings. The spider journal shoulder 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. It is advisable to renew cork washers and washer retainers on spider journals, using a tubular drift.

Section G.4 FAULT DIAGNOSIS

Symptom	No.	Possible Fault
(a) **Vibration**	1	Shaft bent or misaligned
	2	Worn universal joint bearings or spider bearing journal
	3	Sliding joint splines badly worn
	4	Loose flange bolts