## SECTION I

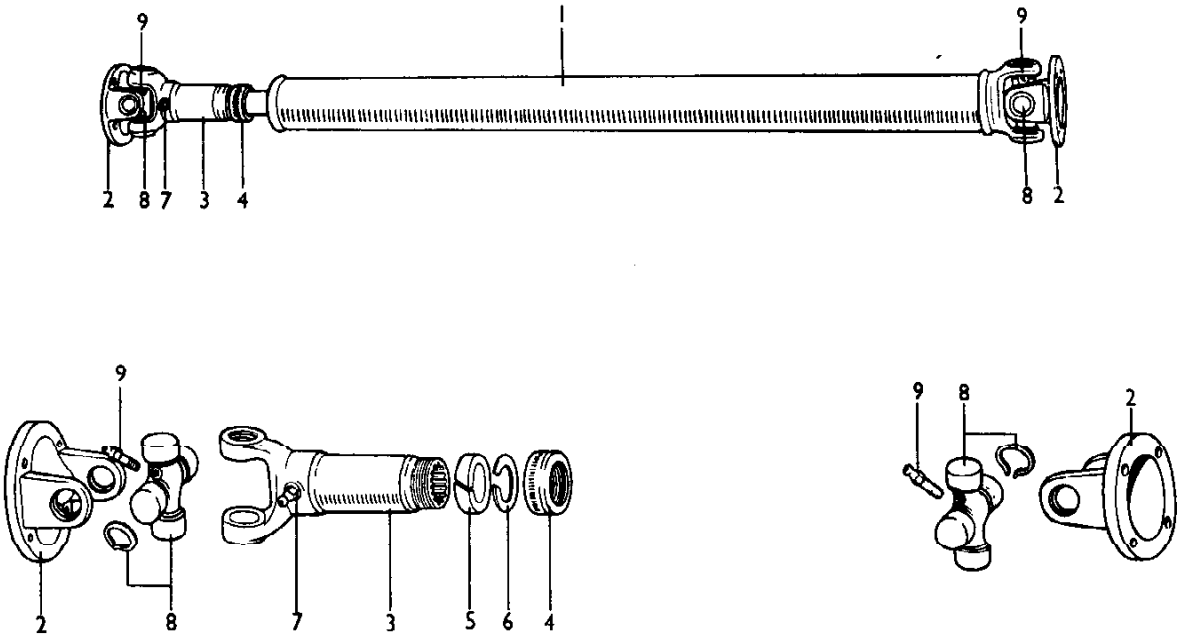
## THE PROPELLOR SHAFT

## THE PROPELLER SHAFT

DESCRIPTION Fig. I1.

The tubular propeller shaft has an integral yoke at the rear end and at the front a splined extension is provided and carries the sliding sleeve yoke assembly. These two yokes communicate with similar but flanged yoke through two universal joints. The latter consists of four bearing race assemblies, two to each yoke and containing needle roller bearings, with a spider journal assembly in the centre. Lubrication is effected through a lubricator in the hub of the spider journal and drillings therein communicate with the inside of each bearing race assembly. Cork type oil seals fitted in metal retainers are located with shellac on each spider journal trunnion. Only the recommended oil must be used never use grease.

When the rear axle rises and falls due to the flexing of the rear roadsprings, the arc of the rear axle travel necessitates variations in the length of the propeller shaft. This is facilitated by incorporating a length of spline in the design of the unit which when the propeller shaft is being fitted to the car is positioned at the front. It is important that the splines are well lubricated and a nipple is provided for this purpose on the cylinderical body of the sleeve yoke.




Page I.1.

Figure I.1.

Exploded view of the propeller shaft.

1. Propeller shaft tube, sliding spline and rear yoke assembly.
2. Gearbox or rear axle flange.
3. Sleeve yoke.
4. Yoke dust cap.
5. Cork washer.
6. Spring washer.
7. Sliding spline lubricator nipple.
8. Universal bearing assembly.
9. Universal lubricator nipple.

MAINTENANCE
FIRST 500 MILES (805 kms)

Lubricate both universal joints and splined sleeves.

EVERY 1,000 MILES (1,016 kms).

Lubricate both universal joints and splined sleeve.

LUBRICATION Figs. I.2, I.3, and I.4.

The spider journal assemblies are provided with a lubricator and a third is fitted in the sleeve yoke assembly for lubrication of the needle bearings and splines respectively. Should ever an abnormal amount of lubricant be observed exuding from any of the bearing race assemblies, the latter should be dismantled and new cork seals fitted.

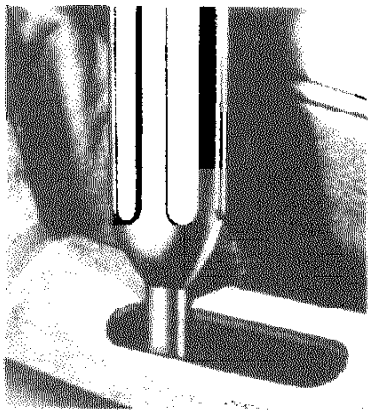


Figure I.2.

Lubricating front universal joint of propeller shaft with oil gun.

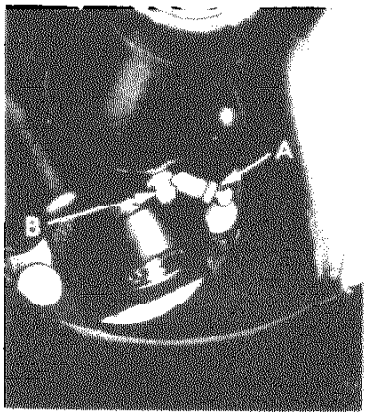



Figure I.3.

Location of propeller shaft front end lubrications.
A. Front universal joint.
B. Sliding spline.

Figure I.4.

Location of propeller shaft rear end lubricator.

REMOVAL AND REPLACEMENT
PROPELLER SHAFT

1. REMOVAL

Securely chock the front roadwheels and release the handbrake. Remove the transmission cover from inside the cockpit as detailed in THE BODY, SECTION Q. Jack up one rear road wheel clear of the ground to enable the propeller shaft to be rotated. Remove the four nuts and bolts from the rear axle coupling first, engaging a gear as necessary to hold the propeller shaft stationary while slackening the nuts. Repeat this operation with the front end of the propeller shaft and withdraw the propeller shaft from beneath the car.

2. REPLACEMENT

The replacement of the propeller shaft is the reversal of the removal sequence but particular attention must be given to the following points:

(i) That the propeller shaft is fitted so that sliding spline is toward the front of the car.

(ii) That the dust cover of the sliding spline assembly is fully tightened by hand.

DISMANTLING AND ASSEMBLING
PROPELLER SHAFT

1. DISMANTLING Figs. I.5, I.6, I.7, and I.8.

Ensure that the arrow identification markings are apparent on the propeller shaft tube and the sleeve yoke assembly. Withdraw the sleeve yoke assembly from the propeller shaft assembly by removing the dust cap. Remove the cork and steel washer followed by the dust cap from the splined end of the propeller shaft.

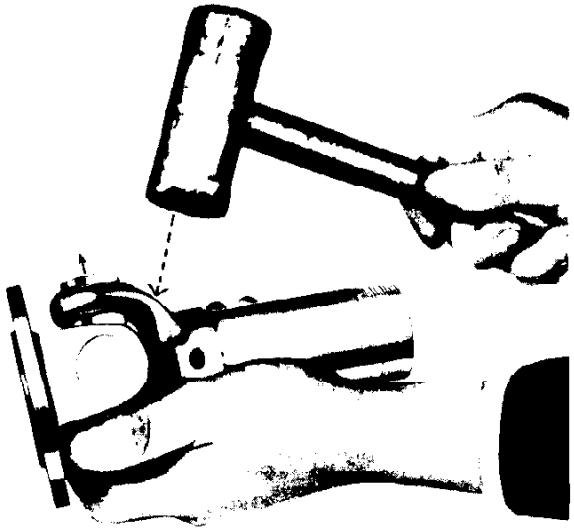


Figure I.5.
Tapping sleeve yoke assembly to eject bearing race.

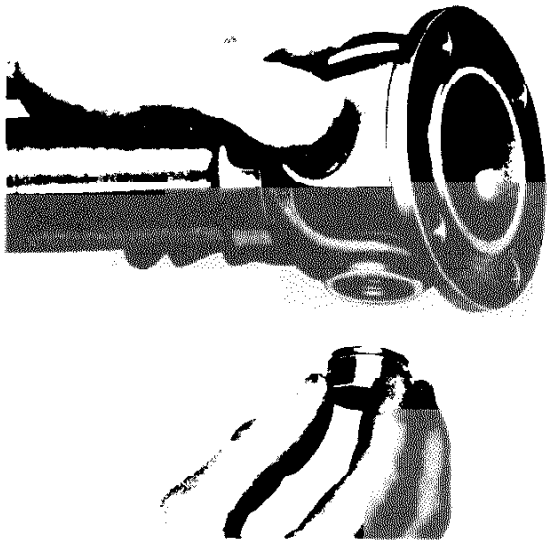


Figure I.6.
Removing bearing race from sleeve yoke.

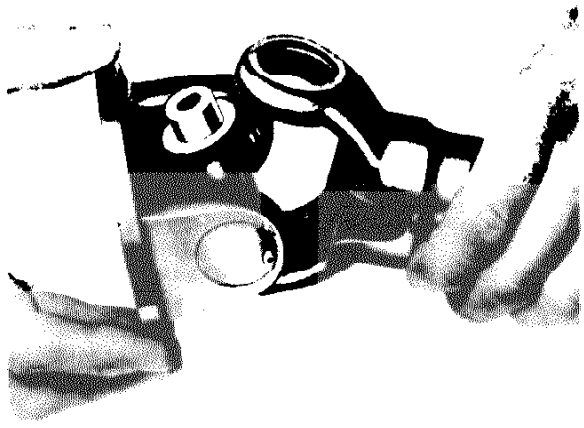


Figure I.7.
Lifting spider journal from sleeve yoke.

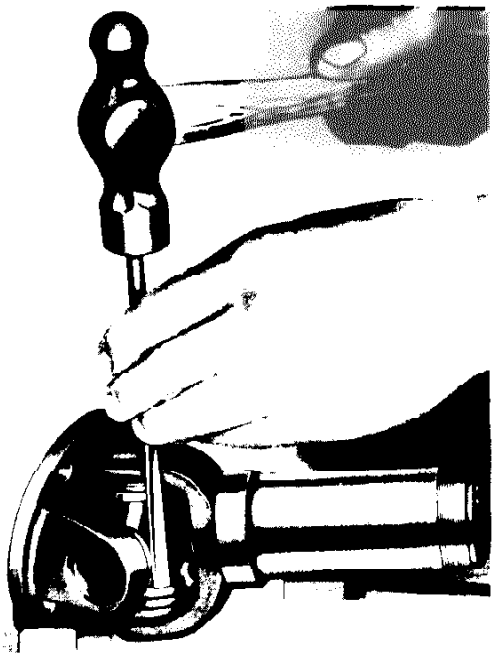


Figure I.8. (Right)
Removing bearing race utilizing a drift
Note: This destroys the cork seal.

Withdraw the four snap rings from the sleeve yoke and flanged yoke bearings, if any undue resistance is felt the bearing assembly can be tapped a little. Hold the sleeve yoke assembly in one hand, so the splined sleeve bearing is uppermost, gently tap the yoke arms lightly with a hide mallet; when the bearing race assembly begins to emerge turn the sleeve yoke over and finally withdraw the bearing race assembly with the fingers. Repeat this operation with the second bearing race assembly of the sleeve yoke and lift the sleeve yoke out of engagement with the spider journal. Repeat the bearing race removal sequence twice with the flanged yoke.

Repeat the previous operation with the four bearing race assemblies of the propeller shaft assembly.

When difficulty is experienced in removing any bearing it can be ejected by utilizing an oblong shaped drift positioned against the inner end of the bearing race assembly with the coupling flange gripped in the jaws of a vice. The need to leave the removal of the flange yoke bearing until last is now clearly realised and it should be noted that the fork seal will be destroyed.

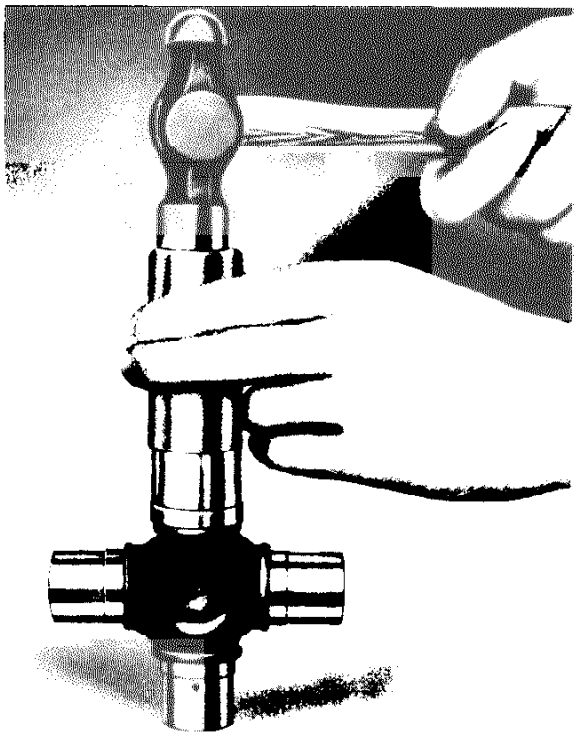


Figure 1.9.
Fitting replacement seals utilizing a tubular drift.

2. ASSEMBLING

The assembling of the propeller shaft is the reversal of the dismantling sequence but particular attention must be given to the following points:

(i) That the needles of the bearing race assemblies are located in position with a smear of petroleum jelly.

(ii) That the cork sealing washers are replaced with new, the shoulders of the spider journal should be shellaced prior to fitting the seal retainers to ensure a good oil seal, fit cork seal and retainer utilizing a tubular drift and clean off all shellac from the bearing trunnion.

(iii) That. when fitting the bearing race assemblies they are a light drive fit in the yoke bores and utilize a soft nosed drift.

(iv) That if after assembly a bearing appears to be tight, tap the yoke lightly with a hide mallet to position them against the snap ring.

(v) That the sleeve yoke assembly is fed onto the splined end of the propeller shaft

EXAMINATION OF COMPONENTS

The components which are most likely to show signs of wear are the bearing race assemblies and the spider journal trunnions. When any slackness load marking or distortion is observed they must be replaced as a complete unit; no oversize bearing race assemblies are available.

It is essential that bearing race assemblies are a light drive fit in the yoke bores. When any

wear is observed in the yoke bore, it will certainly have attained an oval shape and such flanged yokes must be replaced. When ovality is observed in the yokes of the tubular shaft or splined sleeve, the complete unit must be replaced.

The splined extension of the tubular shaft together with the sleeve yoke may show signs of wear and a total of 0.004" (1.016 mm.) circumferential movement, measured on the outside diameter of the spline, should not be exceeded.

The wear of the propeller shaft universal joints and sliding splines are sometimes audible, particularly when the drive is reversed, i.e., when changing from forward to reverse travel or vice versa. No attempt must be made to correct wear by replacing individual components of the universal bearings or sliding spline. When wear is detected here they must be replaced complete by a new universal pack or replacement propeller shaft with a sliding yoke respectively.