Chapter 8
Driveshafts

Contents

Degrees of difficulty

Easy, suitable for novice with little experience

Fairly easy, suitable for beginner with some experience

Fairly difficult, suitable for competent DIY mechanic

Difficult, suitable for experienced DIY mechanic

Very difficult, suitable for expert DIY or professional

Specifications

For engine to model applications refer to Chapter 2

Driveshafts

Type	Front wheel shafts, each having two tripod constant velocity joints. Inner end splines permit axial movement

Torque wrench settings

	Nm	lbf ft
Hub nut (front and rear)	270	195
Driveshaft intermediate bearing nuts (BX and BX 19)	10	7
Lower suspension arm/hub carrier balljoint nut	30	22

1 General information

The driveshafts are conventional with constant velocity joints and splined engagement with the wheel hubs and the differential/final drive unit. They are of two distinct types, these being for the BX and BX 14 models or BX 16 and BX 19 models. The right-hand driveshaft of the BX 16 and BX 19 models differs in that it has an intermediate support bearing.

Constant velocity joints are fitted near each end of each shaft to accommodate the steering and suspension angular movements.

The inner end of each shaft mates with the final drive using sliding splines. This allows changes in overall length of each shaft resulting from suspension and steering movements.

The driveshafts are splined into the front wheel hubs which run on double row ball-races located in the hub carrier at the bottom of each front shock absorber strut.

2 Driveshaft bellows - renewal

1 With the driveshaft removed, loosen the clips on the outer rubber bellows. If plastic straps are fitted, cut them free with snips **(see illustration)**.

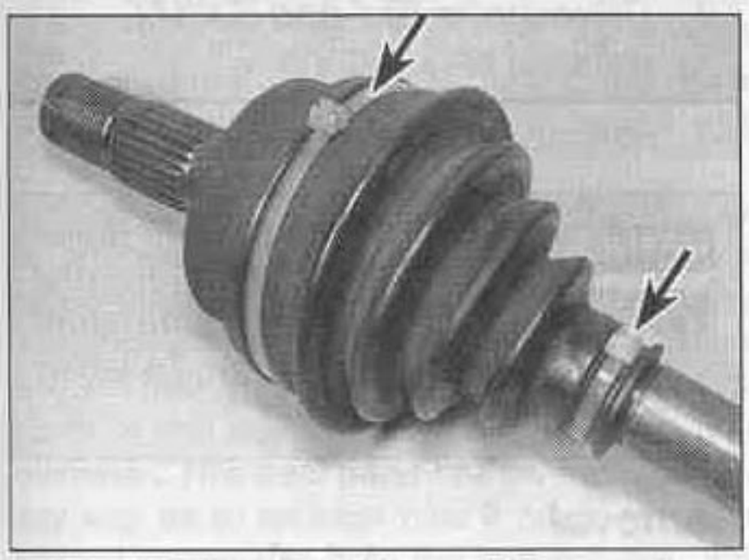
2 Prise the bellows larger diameter end from the outer joint housing **(see illustration)** then tap the centre hub outwards, using a soft metal drift in order to release it from the retaining circlip. Slide the outer joint complete from the driveshaft splines.

3 Extract the circlip from the groove in the driveshaft **(see illustration)**.

4 Prise off the rubber bellows. If necessary, remove the plastic seating from the recess in the driveshaft **(see illustration)**.

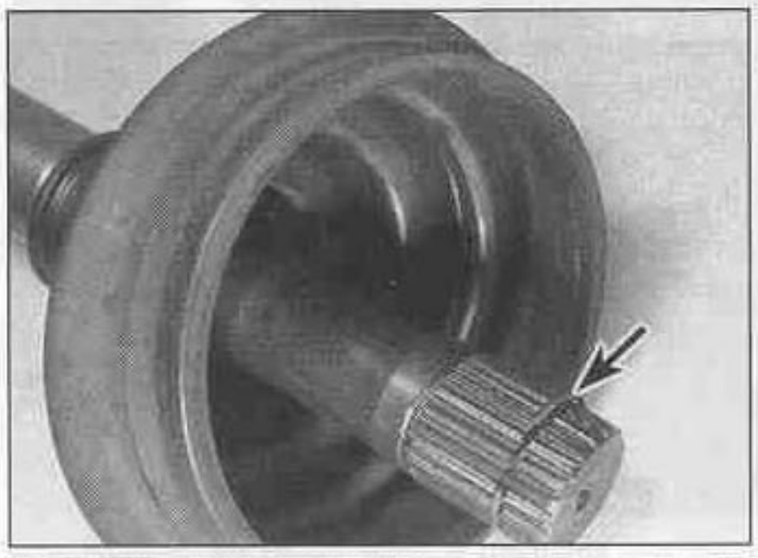
5 Loosen the clips on the inner rubber bellows. If plastic straps are fitted, cut them free.

6 Prise the bellows larger diameter end from the inner joint housing and slide the rubber

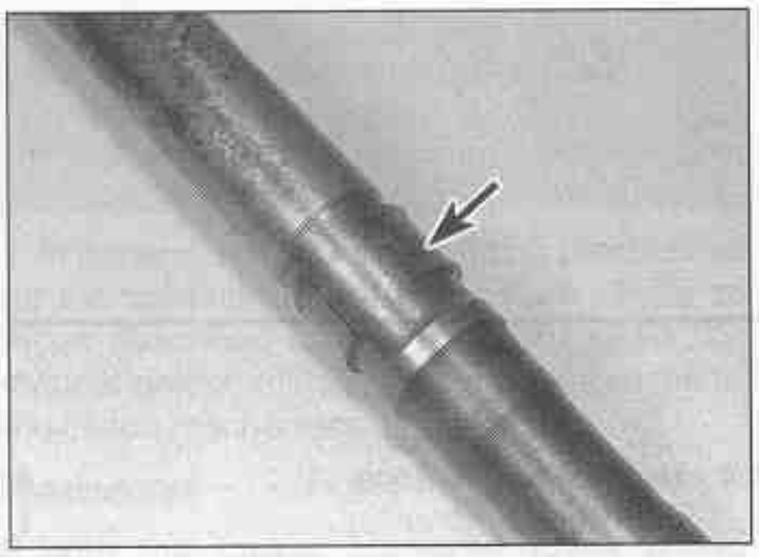


2.1 Plastic ratchet-type clips used to secure driveshaft bellows

2.2 Outer joint with bellows larger diameter end released

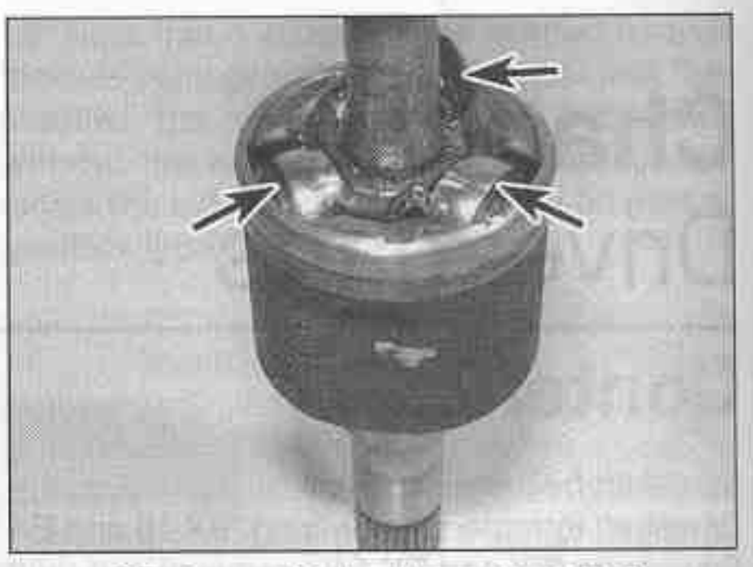


2.3 Driveshaft outer joint circlip (arrowed)

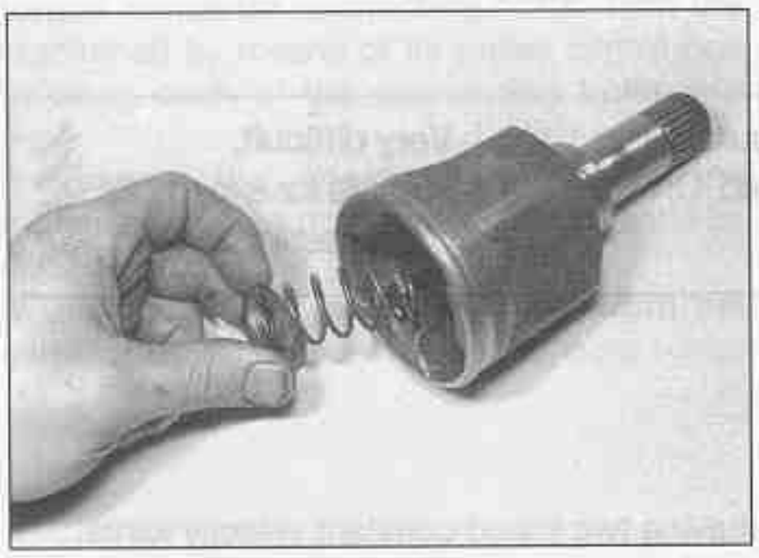


2.4 Plastic seating for outer joint bellows

2.6 Removing the inner joint bellows



2.7 Inner joint rollers (arrowed)



2.9 Removing the pressure pad and spring from the inner joint housing

2.11 Injecting grease into the inner joint housing

2.12 Inner joint rubber bellows located on driveshaft

bellows off the outer end of the driveshaft **(see illustration)**.

7 Mark the driveshaft and inner joint housing in relation to each other then separate them, keeping the rollers engaged with their respective spigots **(see illustration)**.

8 Clean away the grease, then retain the rollers using adhesive tape.

9 Remove the pressure pad and spring from inside the inner joint housing **(see illustration)**.

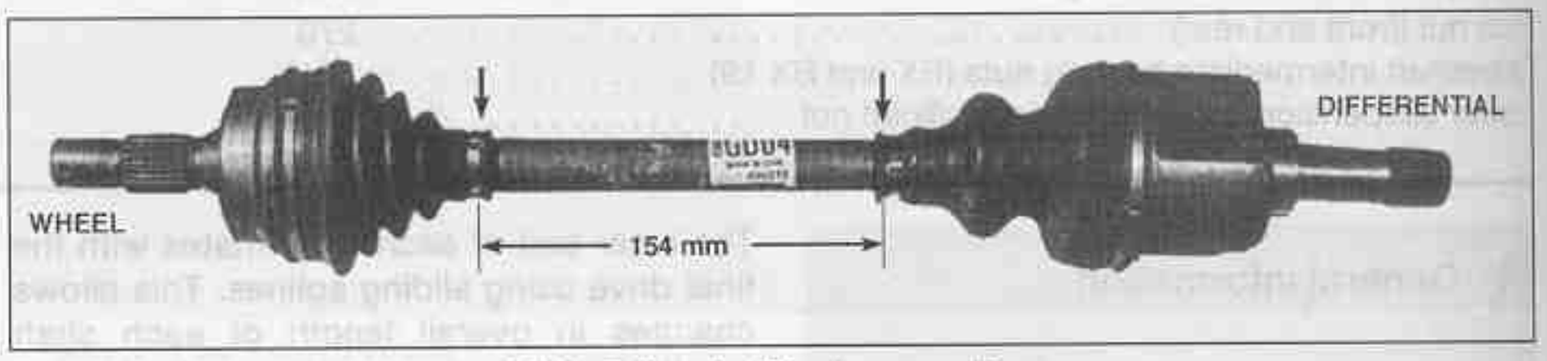
10 Clean away the grease, then commence reassembly by inserting the pressure pad and spring into the inner joint housing, with the housing mounted upright in a soft-jawed vice.

11 Inject one-third of the sachet of grease (supplied in the new bellows repair kit) into the inner joint housing **(see illustration)**.

12 Locate the new inner joint rubber bellows halfway along the driveshaft **(see illustration)**.

13 Remove the adhesive tape and insert the driveshaft into the housing.

14 Inject another third of the grease in the joint.



2.15 Driveshaft bellows setting

Dimension shown is for later models only - see text

15 Keeping the driveshaft pressed against the internal spring, refit the rubber bellows. The distance between the inner ends of the bellows is 166.0 mm for vehicles built before June 1987, and 154.0 mm for later models **(see illustration)**.

16 Tighten the clips. Metal-type clips can be retightened using two pairs of pliers, by holding the buckle and pulling the clip through. Cut off the excess and bend the clip back under the buckle **(see illustrations)**.

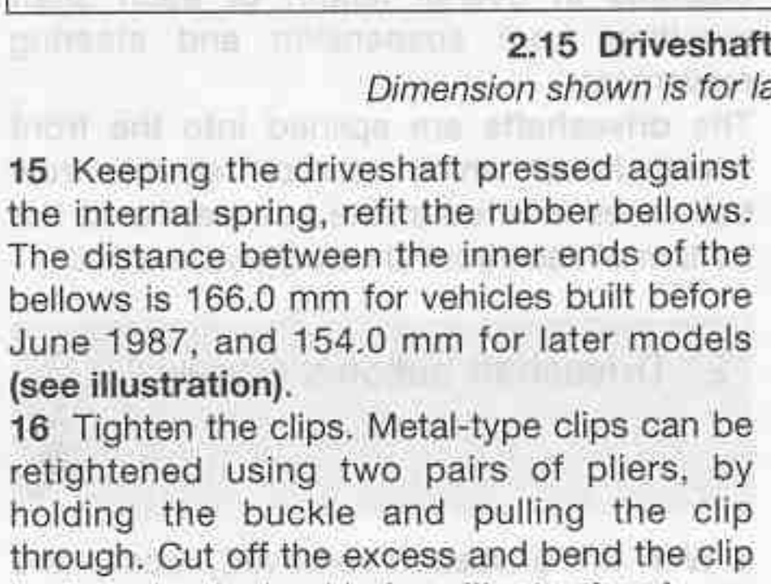
17 Fit the plastic seating in the driveshaft recess and refit the new rubber bellows smaller diameter end on it.

18 Refit the circlip in the driveshaft groove.

19 Inject the remaining grease in the outer joint, then insert the driveshaft, engage the splines, and press in until the circlip snaps into the groove.

20 Ease the rubber bellows onto the outer joint and fit the two clips, tightening them as previously described.

2.16a Tightening a bellows clip



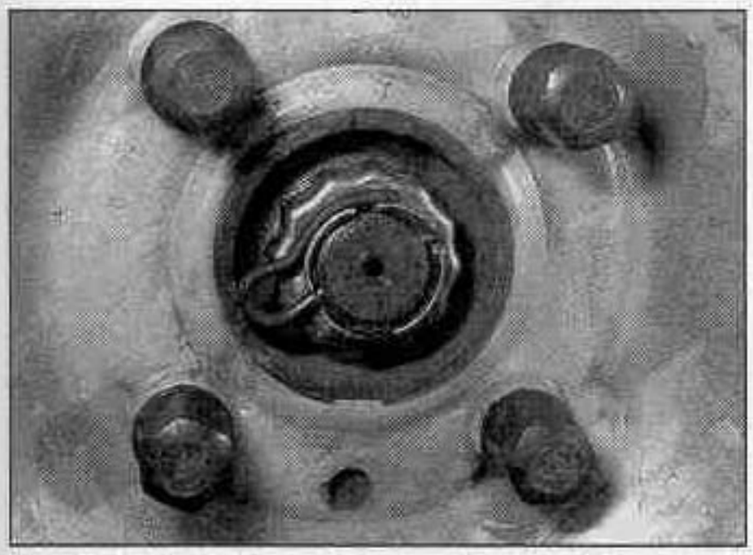
2.16b Bellows clip finally secured

3 Driveshafts (BX and BX 14) - removal and refitting

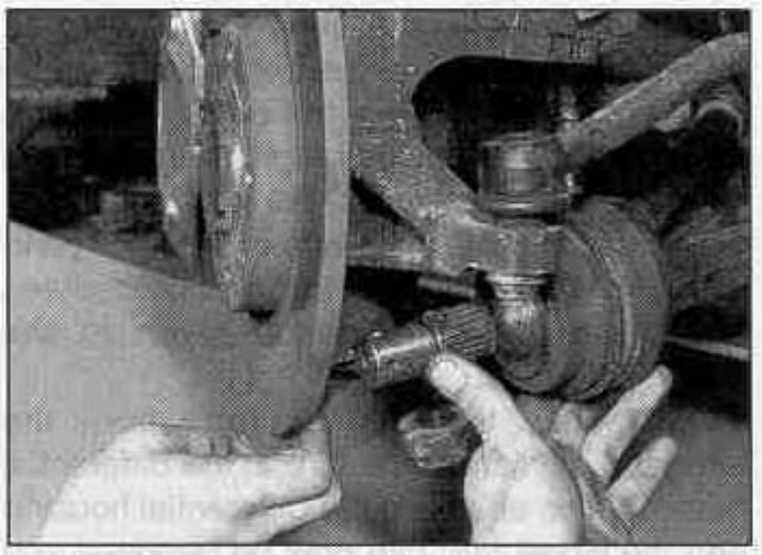
HAYNES HINT *Before withdrawing a driveshaft from the differential housing, place a container under the housing to catch any oil which may leak out*

Removal

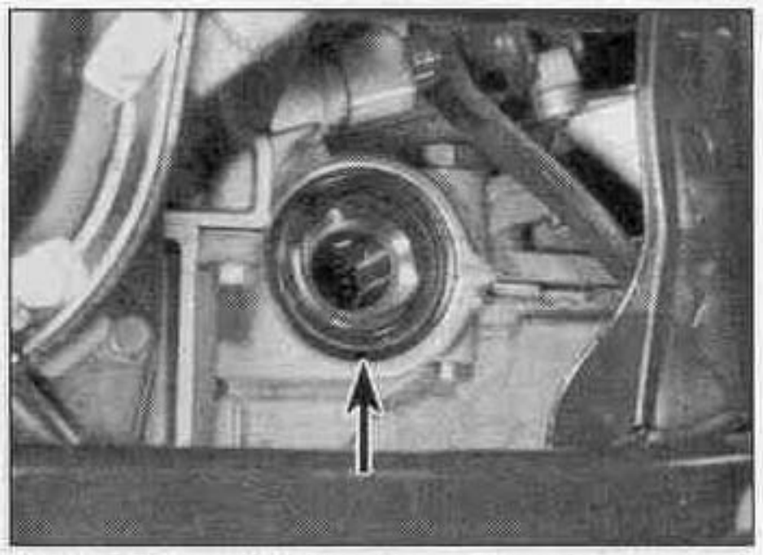
1 Check that the handbrake is fully applied and remove the roadwheel trim.



3.2 Retaining clip and hub retainer



3.7 Separating driveshaft from front hub - BX 16



3.11 Differential housing oil seal (arrowed)

2 Extract the retaining clip and withdraw the hub nut retainer **(see illustration)**.
3 Loosen the hub nut but do not remove it at this stage.
4 Loosen but do not remove the roadwheel bolts.
5 Place chocks against the rear roadwheels then raise and support the vehicle at the front end so that the front roadwheels are clear of the ground (see "*Jacking and vehicle support*"). Unbolt and remove the roadwheel at the front from the side concerned. Release the handbrake.
6 Loosen the lower arm balljoint nut then detach the joint using a balljoint separator. When the joint is free, remove the separator and the retaining nut. Detach the lower arm.
7 Unscrew and remove the hub nut, then pull the hub carrier outwards and withdraw it from the outboard end of the driveshaft. Pivot the hub carrier as necessary as it is pulled outwards and take care not to strain the hydraulic line connection **(see illustration)**.
8 Before withdrawing the driveshaft from the differential housing, it is advisable to place a clean container under the differential housing to catch any oil leakage once the shaft is removed. Allow for about one litre of oil spillage.
9 Pull the driveshaft from the differential housing, taking care not to damage the housing oil seal. Grip the driveshaft joint cover (not the shaft) when pulling the driveshaft from the transmission, otherwise the CV joint may become dismantled due to displacement of the internal circlip.
10 It is emphasised that if any attempt is made to move the vehicle on its wheels without the driveshafts fitted, there is a danger that the front wheel bearings will collapse.
11 The oil seal in the differential housing can be removed by prising it free using a suitable screwdriver but take care not to damage the housing. Check that the housing is clean before fitting the new seal by driving it carefully into position using a tube of suitable diameter. This seal must not be damaged in any way as oil leakage past it could result in serious damage to both the transmission and the engine **(see illustration)**.

Refitting

12 Refitting the driveshaft is a reversal of the removal procedure but note the following.
13 To ease reassembly and to avoid damaging the oil seal, lubricate the differential hub seal lips and the corresponding hub of the driveshaft with grease prior to refitting.
14 Ensure that the balljoint cone on the hub carrier is clean before refitting the lower arm (do not use a solvent to clean it). Tighten the locknut to the specified torque setting.
15 When refitting the hub nut, lubricate the nut face and threads with grease and tighten the nut to the specified torque before refitting the roadwheel. To prevent the hub from turning, get an assistant to fully apply the brakes. Once the nut is tightened, locate the retainer and refit the retaining clip.
16 With the roadwheel refitted, release the handbrake and check that the hub rotates without excessive binding. A small amount of resistance will probably be present caused by transmission and brake pad drag.
17 On completion, lower the vehicle and tighten the roadwheel bolts to the specified torque settings. Replenish any loss of lubricant from the engine/transmission.

4 Driveshafts (BX 16 and BX 19) - removal and refitting

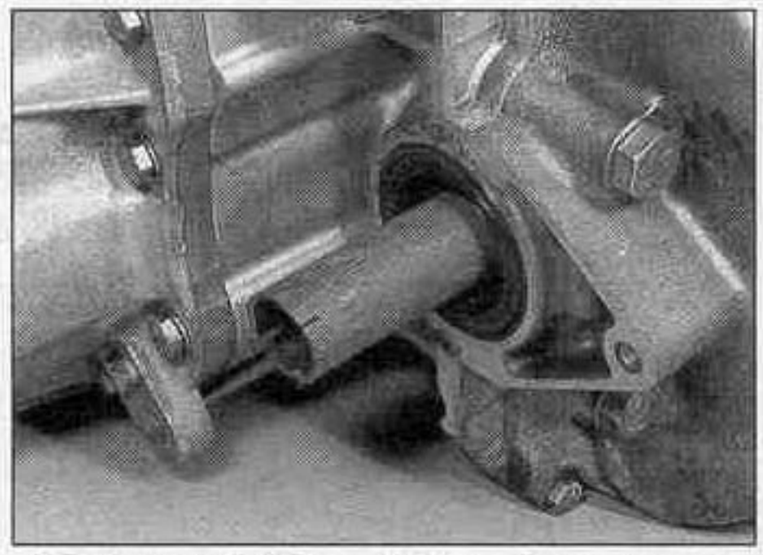
Manual gearbox

Removal

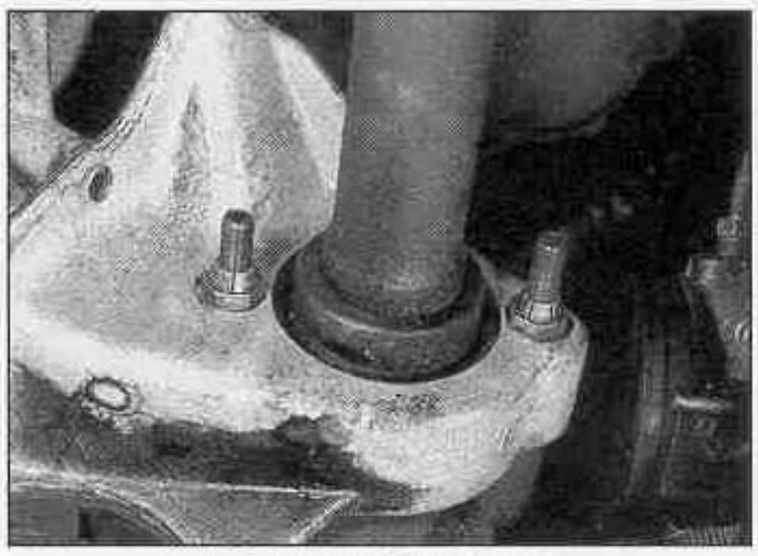
1 If both driveshafts are to be removed, it is important that the left-hand driveshaft is removed first. This can be removed in the same manner as that described for BX and BX 14 models in the previous Section.
2 With the left-hand driveshaft removed, it is necessary to insert a suitable tube or dowel rod into its aperture in the differential housing **(see illustration)**. The diameter of the tube should be a fraction under the diameter of the driveshaft and its purpose when inserted is to retain the position of the sun gears when the right-hand driveshaft is removed. The tube must remain in position until the right-hand driveshaft is fully refitted.
3 Disconnect the outer end of the right-hand driveshaft as described for BX and BX 14 models in the previous Section.
4 Undo the two intermediate bearing nuts and then turn the screws half a turn. The driveshaft can now be withdrawn from the differential housing and the intermediate bearing carrier then removed **(see illustration)**.
5 Lever out the oil seal in the final drive/differential unit and also the one in the wheel hub. Both seals must be renewed on refitting the driveshaft.

Refitting

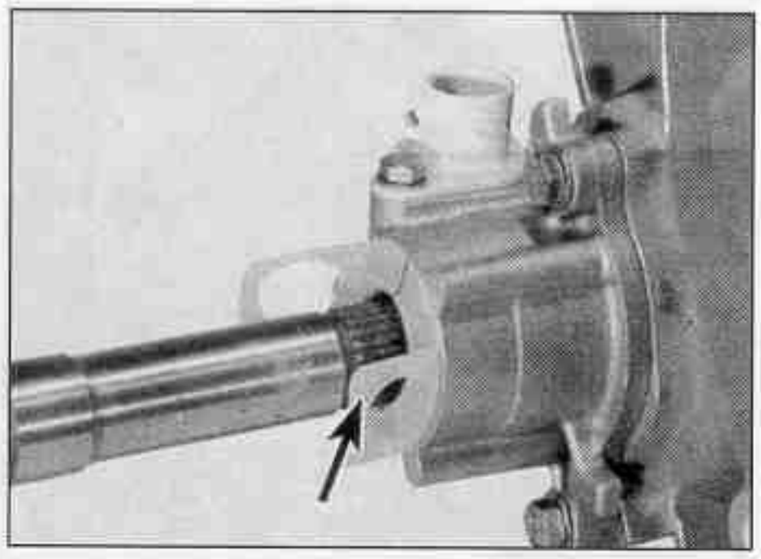
6 Lightly grease a new, double-lipped oil seal and carefully tap it into its recess in the final drive/differential unit with the side containing the spring facing into the unit. Make sure that the seal is abutting the internal shoulder in the unit case. Fill the space between the double



4.2 Support differential housing sun gear by inserting tube into left-side driveshaft aperture (manual gearbox)



4.4 Intermediate bearing and retaining nuts



4.8 Oil seal protector bush (arrowed)

lips with general-purpose grease. Similarly, fit a new seal of similar pattern in the wheel hub, making sure that it abuts the bearing retaining ring. Again, fill the space between the lips with grease.

7 Check the driveshaft before fitting to make sure that it is free of obvious defects. Clean the splines at both ends and, at the wheel hub end only, give the splines a thin coat of Molykote 321 R or a suitable alternative anti-friction agent.

8 Protective bushes will have been supplied with new oil seals. The bushes are fitted to the driveshaft aperture in the differential housing to protect the oil seal from damage when refitting the driveshaft(s) **(see illustration)**.

9 Refit the right-hand driveshaft first. Check that the two screws are located in the intermediate bearing and apply a small amount of lubricant to the bearing outer race prior to engagement of the driveshaft. With the driveshaft in position, tighten the bearing retaining nuts to the specified torque setting.

10 Reconnect the outer end of the right-hand driveshaft, reversing the removal procedures and noting the information given in the previous Section.

11 Withdraw the locating tube from the left-hand driveshaft aperture in the differential housing. The oil seal in the differential housing and the wheel hub can now be removed and renewed on the left-hand side (as described in paragraphs 5 and 6).

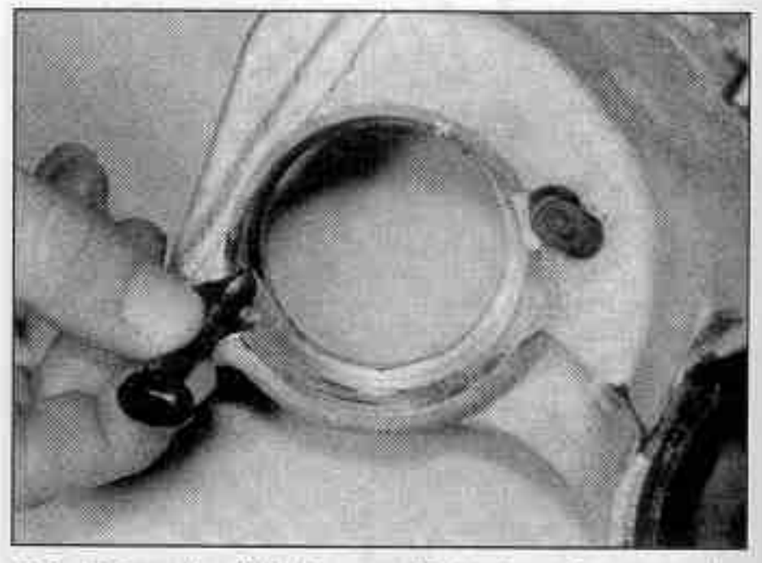
12 Clean, check and prepare the left-hand driveshaft for refitting (paragraph 7) and locate the oil seal protector bush to the oil seal in the differential housing on the left-hand side.

13 Refit the left-hand driveshaft, reversing the removal details and noting the information given in the previous Section.

Automatic transmission

14 The differential sun gears fitted to automatic transmission models are different from those fitted to manual gearbox models in that they are supported on a shaft. It is therefore not necessary to insert a tube or dowel through them when removing both driveshafts.

15 The removal and refitting procedures for both driveshafts, and also the renewal of the differential hub and outer wheel hub oil seals, are otherwise the same as those described for the manual gearbox variants.



5.2 Driveshaft intermediate bearing carrier (removed) showing special bolts

5 Driveshaft intermediate bearing (BX 16 and BX 19) - renewal

1 Remove the right-hand driveshaft.

2 Unbolt and remove the engine mounting/intermediate bearing carrier **(see illustration)**. If the bearing did not come away with the driveshaft, press it and its sealing ring out of the carrier.

3 Fit the new bearing and sealing ring

4 Refit the carrier and the driveshaft. Tighten all fastenings to the specified torque. Use new nuts on the steering and suspension balljoints.