






Chapter 8

Driveshafts

Contents

Driveshaft gaiter check	See Chapter 1	Driveshafts - removal and refitting	2
Driveshaft overhaul - general information	4	General information	1
Driveshaft rubber gaiters - renewal	3	Right-hand driveshaft intermediate bearing - renewal	5

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	
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Specifications

General

Type	Unequal-length, solid steel shafts, splined to inner and outer constant velocity joints. Intermediate support bearing on right-hand driveshaft on 2.0 litre models
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Lubrication

Lubricant type	Nissan grease supplied with gaiter repair kit
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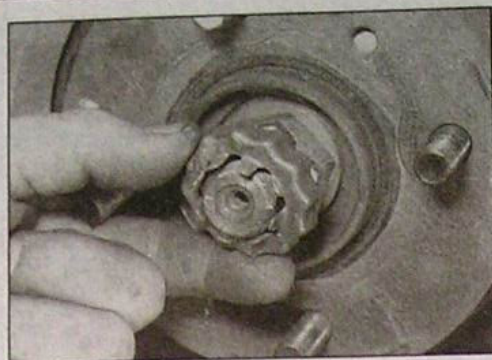
Torque wrench settings

	Nm	lbf ft
Brake caliper guide pin bolts:		
Bendix caliper	35	26
Girling caliper	25	18
Driveshaft nut*	300	221
Hub carrier-to-suspension centre link nut* (Phase I and Phase II Saloon and Hatchback models, and all Phase III models)	110	81
Lower arm balljoint-to-lower arm nuts* (Phase I and Phase II Estate models)	90	66
Right-hand driveshaft intermediate bearing housing-to-support bracket bolts	15	11
Roadwheel nuts	110	81
Track-rod end-to-steering arm nut:		
Recommended torque	35	26
Maximum permissible torque	49	36

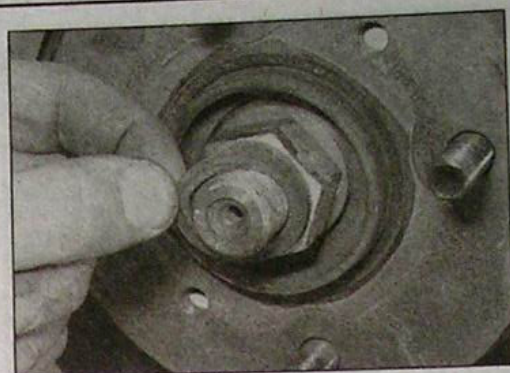
*Use a new nut.



2.3a Remove the split-pin ...



2.3b ... then withdraw the locking plate ...



2.3c ... and the spacer

Suspend the caliper from the body using wire or string. **Do not** depress the brake pedal whilst the caliper is removed, as this will cause the piston to be ejected.

6 Remove the split-pin, then partially unscrew



2.4 Removing the driveshaft nut

the castellated nut securing the track-rod end to the steering arm. Using a balljoint separator tool, separate the track-rod end from the steering arm (see illustration). Remove the nut. Discard the split-pin - a new one must be used on refitting.

7 On Phase I and Phase II Saloon and Hatchback models, and all Phase III models, prise off the dust cap, then unscrew the nut securing the hub carrier to the suspension centre link assembly. Recover the washer. Pull the hub carrier downwards to separate it from the centre link assembly. Discard the nut - a new one should be used on refitting. On models with ABS, take care not to strain the ABS sensor wiring - if necessary, remove the screws securing the wiring brackets to the hub carrier and the wing panel (see illustrations).

8 On Phase I and Phase II Estate models, unscrew the nuts securing the lower arm balljoint to the lower arm, and remove the

mounting plate to free the hub carrier from the lower arm. Discard the nuts - new ones should be used on refitting.

9 Temporarily refit the driveshaft nut to the end of the driveshaft, to prevent damage to the driveshaft threads, then using a soft-faced mallet, carefully tap the driveshaft from the hub carrier (see illustration). If the shaft is a tight fit, a suitable puller can be used to force the end of the shaft from the hub. Support the end of the driveshaft - do not allow the end of the driveshaft to hang down.

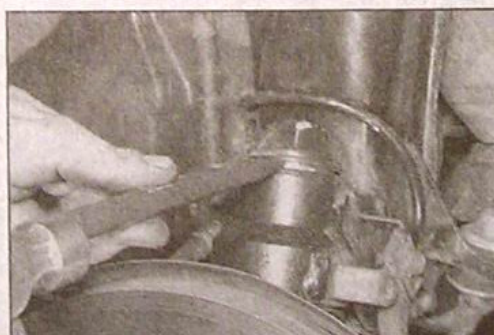
10 Proceed as follows, according to which driveshaft is to be removed.

Right-hand driveshaft - 1.6 litre models

11 Separate the driveshaft from the transmission, using a suitable lever inserted between the casing of the inner constant velocity joint and the transmission casing.



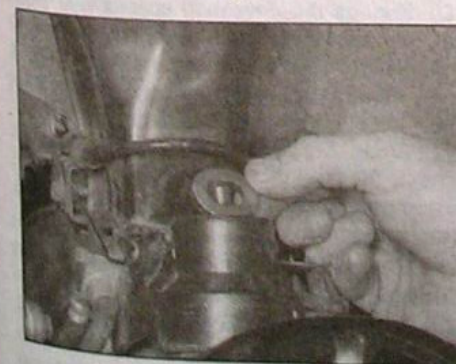
2.6 Using a balljoint separator tool to disconnect the track-rod end from the steering arm



2.7a Prise the dust cap from the nut securing the hub carrier to the centre link assembly



2.7b Remove the nut ...



2.7c ... and the washer ...



2.7d ... then pull the hub carrier down from the centre link



2.9 Withdraw the driveshaft from the hub carrier

the differential sun gear, taking care not to damage the oil seal.

30 Manipulate the bearing housing into position in the bracket, ensuring that the bolt holes are aligned.

31 Refit the bolts securing the bearing housing to the support bracket, and tighten them to the specified torque.

32 Proceed to paragraph 35.

Left-hand driveshaft - all except 2.0 litre models with automatic transmission

33 Proceed as described in paragraphs 25 to 28.

Left-hand driveshaft - 2.0 litre models with automatic transmission

34 Proceed as described in paragraphs 25 to 27, then refit the right-hand driveshaft with reference to paragraphs 29 to 32.

All models

35 Apply a thin film of grease to the outer driveshaft joint splines, then engage the outer end of the driveshaft with the hub, ensuring that the splines engage correctly.

36 Refit the washer and a new driveshaft nut, but do not tighten the nut at this stage.

37 On Phase I and Phase II Saloon and Hatchback models and all Phase III models, engage the hub carrier with the suspension centre link assembly, then refit the washer and new nut. Tighten the nut to the specified torque, and refit the dust cap (fit a new dust cap if the original cap was damaged during removal).

38 On Phase I and Phase II Estate models, refit the mounting plate (engage the studs with the lower arm balljoint, which is still attached to the hub carrier), then fit new nuts to secure the balljoint to the lower arm. Tighten the nuts to the specified torque.

39 Reconnect the track-rod end to the steering arm, then refit the castellated nut, and tighten to the specified torque.

40 If necessary, tighten the nut further (ensure that the maximum torque for the nut is not exceeded) until the nearest grooves in the nut are aligned with the split-pin hole in the track-rod end, then fit a new split-pin.

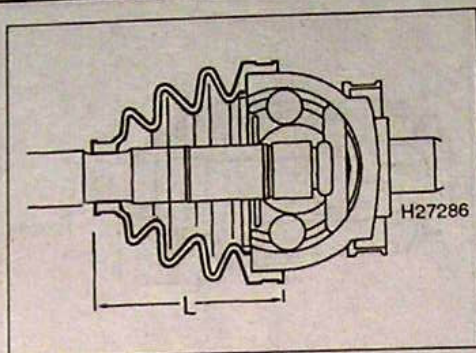
41 Refit the brake caliper as described in Chapter 9. Where applicable, refit the screws securing the ABS sensor wiring brackets.

42 Hold the front hub stationary as during removal, then tighten the new driveshaft nut to the specified torque.

43 Fit the spacer and the castellated locking plate (ensure that the grooves in the locking plate are aligned with the split-pin hole in the end of the driveshaft, then fit a new split-pin).

44 Refit the roadwheel(s), and lower the vehicle to the ground.

45 Refill the transmission with oil/fluid as described in Chapter 1.



3.2 Measure the length (L) of the outer joint gaiter

3 Driveshaft rubber gaiters - renewal

Outer joint

Note: New gaiter securing clips and a new joint retaining clip must be used on refitting.

1 Remove the driveshaft as described in Section 2.

2 Measure the length of the gaiter, so that the new gaiter can be set to the same length before securing it in position (see illustration).

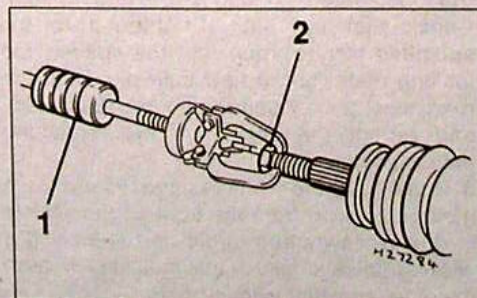
3 Remove the rubber gaiter securing clips, then slide the gaiter away from the joint towards the centre of the driveshaft.

4 If the original joint is to be re-used, make alignment marks between the joint and the driveshaft.

5 The joint must now be pulled from the end of the driveshaft. Clamp the driveshaft in a vice.

6 To remove the joint, temporarily refit the driveshaft nut to the end of the driveshaft, then attach a slide hammer with a suitable puller adapter to act on the driveshaft nut (see illustration). Take great care not to damage the threads on the end of the driveshaft. Alternatively, tap the driveshaft joint outwards using a mallet, to force the retaining clip to contract into its groove, thus releasing the joint from the shaft.

7 Slide the gaiter from the end of the shaft, then remove the joint retaining clip. Discard the clip - a new clip must be used on refitting.



3.6 Using a slide hammer to remove the outer driveshaft joint

1 Slide hammer

2 Driveshaft nut

8 Thoroughly clean the outer constant velocity joint and the end of the driveshaft using paraffin, or a suitable solvent, and dry thoroughly. Carry out a visual inspection of the joint. If any of the joint components are worn, it will be necessary to renew the joint complete, as no spare parts are available.

9 Commence refitting by winding a thin layer of tape around the end of the shaft, to protect the gaiter from the shaft splines.

10 Slide the smaller gaiter securing clip onto the shaft, followed by the gaiter.

11 Remove the tape from the end of the shaft, then fit a new joint retaining clip to the end of the shaft.

12 Fit the outer joint to the shaft, and engage it with the shaft splines. If the original joint is re-used, align the marks made on the joint and the end of the driveshaft before dismantling.

13 Temporarily refit the driveshaft nut to protect the joint threaded end, then clamp the driveshaft in a vice, and use a mallet to tap the joint onto the shaft until the retaining clip engages correctly behind the joint cage.

14 Pack the joint with the correct amount of the specified grease (supplied with the gaiter kit), then twist the joint to ensure that all the recesses are filled. Pack any surplus grease into the gaiter.

15 Slide the gaiter onto the outer joint, then fit the new outer gaiter securing clip, and tighten as shown. Bend back the end of the clip, and secure it under the tags as shown (see illustration).

16 Set the gaiter so that the length is as measured in paragraph 2.

17 Check that the smaller end of the gaiter is located in the driveshaft groove, and ensure that the gaiter is not trapped or deformed.

18 Slide the smaller securing clip onto the gaiter, and tighten and secure it as described previously.

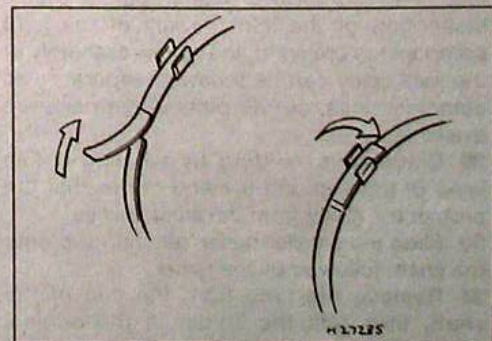
19 Refit the driveshaft as described in Section 2.

Inner joint

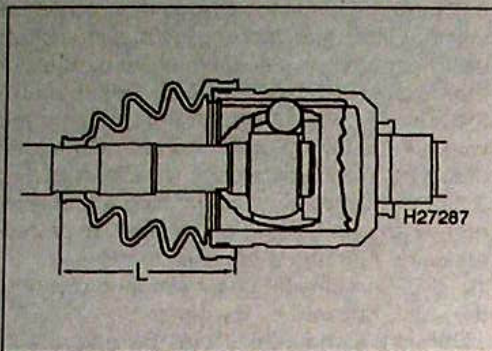
Ball-and-cage type joint

Note: New gaiter securing clips and a new joint retaining clip must be used on refitting.

20 The procedure is as described for the outer joint in paragraphs 1 to 18 inclusive, bearing in mind the following points:



3.15 Bend back the gaiter securing clip, and secure it under the tags



3.20 Measure the length (L) of the inner joint gaiter - ball-and-cage type joint

- a) Ignore the reference to refitting the driveshaft nut and using a slide hammer to remove the joint - the joint must be tapped off using a mallet.
- b) Measure the length of the gaiter at the points shown (see illustration).

Tripod joint

Note: New gaiter securing clips and a new joint spider circlip must be used on refitting.

21 Remove the driveshaft as described in Section 2.

22 Measure the length of the gaiter, so that the new gaiter can be set to the same length before securing it in position (see illustration).

23 Remove the gaiter securing clips, and slide the gaiter off the joint towards the middle of the driveshaft.

24 If the original joint is to be re-used, make alignment marks between the joint and the driveshaft.

25 Pull the joint body from the spider, ensuring that the rollers remain in place on the spider.

26 If the original spider is to be re-used, mark the relationship of the spider and the driveshaft, then using circlip pliers, remove the circlip securing the spider to the end of the shaft. Discard the circlip - a new one should be used on refitting.

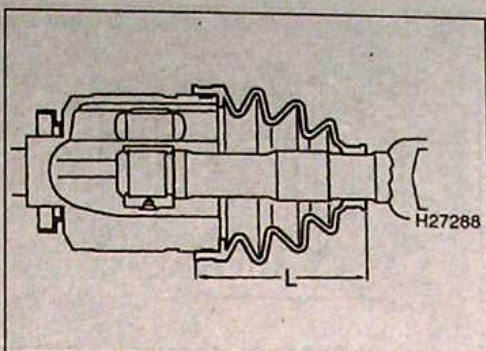
27 Withdraw the spider and the gaiter from the end of the shaft.

28 Thoroughly clean the constant velocity joint components and the end of the driveshaft using paraffin, or a suitable solvent, and dry thoroughly. Carry out a visual inspection of the joint. If any of the joint components are worn, the spider assembly or the joint body can be renewed separately as complete units, but no other spare parts are available.

29 Commence refitting by winding a thin layer of tape around the end of the shaft, to protect the gaiter from the shaft splines.

30 Slide the smaller gaiter securing clip onto the shaft, followed by the gaiter.

31 Remove the tape from the end of the shaft, then refit the spider. If the original spider is being refitted, align the marks made on the spider and the driveshaft before removal.



3.22 Measure the length (L) of the inner joint gaiter - tripod type joint

32 Fit a new circlip to secure the spider.

33 Pack the correct amount of the specified grease (supplied with the gaiter kit), around the spider rollers and into the joint body.

34 Fit the joint body over the spider. If the original body is being refitted, align the marks made between the body and the driveshaft before removal.

35 Slide the gaiter onto the joint body, expelling any trapped air, then fit a new outer gaiter securing clip, and tighten it. Bend back the end of the clip, and secure it under the tags as shown in illustration 3.15.

36 Set the gaiter so that the length is as measured in paragraph 22, then check that the smaller end of the gaiter is located in the driveshaft groove, and that the gaiter is not stretched or deformed when at this length.

37 Locate the smaller gaiter securing clip on the end of the gaiter, and secure it as described previously.

38 Refit the driveshaft as described in Section 2.

4 Driveshaft overhaul - general information

1 If any of the checks described in Chapter 1 reveal wear in any driveshaft joint, first remove the roadwheel trim or centre cap (as appropriate).

2 Check that the driveshaft nut is correctly tightened; if in doubt, remove the split pin and the castellated locking plate and spacer. Check that the nut is tightened to the specified torque, then refit the spacer, the locking plate, and a new split-pin. Refit the roadwheel trim or centre cap (as applicable), and repeat the check on the remaining driveshaft nut.

3 Road test the vehicle, and listen for a metallic clicking from the front as the vehicle is driven slowly in a circle on full-lock. If a clicking noise is heard, this indicates wear in the outer constant velocity joint.

4 If vibration, consistent with road speed, is felt through the car when accelerating, there is a possibility of wear in the inner constant velocity joints.

5 To check the joints for wear, remove the driveshafts, then dismantle them as described in Section 3. If any wear or free play is found, the relevant joint must be renewed (no individual spare parts are available).

5 Right-hand driveshaft intermediate bearing - renewal

Note: A suitable press will be required for this operation. New bearing circlips must be used on refitting.

1 Remove the right-hand driveshaft as described in Section 2.

2 To ease the operation, remove the inner constant velocity joint, complete with the intermediate bearing and housing, from the driveshaft as described in Section 3.

3 Clamp the joint in a vice, then tap the dust shield from the inner end of the shaft, using a suitable drift.

4 Using a suitable screwdriver, prise the bearing dust shield from the inboard end of the bearing housing.

5 Using circlip pliers, remove the bearing circlip. Discard the circlip - a new one should be used on refitting.

6 Using a suitable press, remove the bearing/housing assembly from the end of the shaft. It should be possible to tap the bearing from the end of the shaft, if the bearing inner race is supported adequately, but this is not recommended if the bearing is to be re-used, as damage to the bearing is likely to result.

7 Invert the bearing/housing assembly, and use circlip pliers to remove the large circlip from the outboard end of the bearing. Discard the circlip - a new one should be used on refitting. Prise off the dust seal.

8 Support the bearing housing, then using a suitable tube or socket, which bears only on the bearing outer race, tap the bearing from the housing.

9 Commence refitting by packing the bearing with grease.

10 Using a suitable tube or socket which bears only on the bearing outer race, tap the bearing into the housing until the outboard dust shield and the large circlip can be refitted.

11 Ensure that the bearing inner race is adequately supported, then using a suitable tool (a block of wood should serve) to bear across the end of the driveshaft joint, press the shaft into the bearing until the inboard circlip can be refitted.

12 Carefully tap the bearing dust seal into position against the bearing, then tap the dust seal into position on the inboard end of the driveshaft.

13 Refit the inner constant velocity joint as described in Section 3.

14 Refit the driveshaft as described in Section 2.



2.13 Unscrew the bolts (arrowed) securing the intermediate bearing housing to the support bracket - 2.0 litre models

Prise out the driveshaft until the retaining clip compresses into its groove, and is released from the differential sun gear. Discard the retaining clip - a new clip must be used on refitting.

12 Withdraw the driveshaft assembly.

Right-hand driveshaft - 2.0 litre models

13 Unscrew the three bolts securing the intermediate bearing housing to the support bracket (see illustration).

14 Separate the housing from the bracket by rotating it (using both hands!) until a gap has opened into which a suitable lever can be



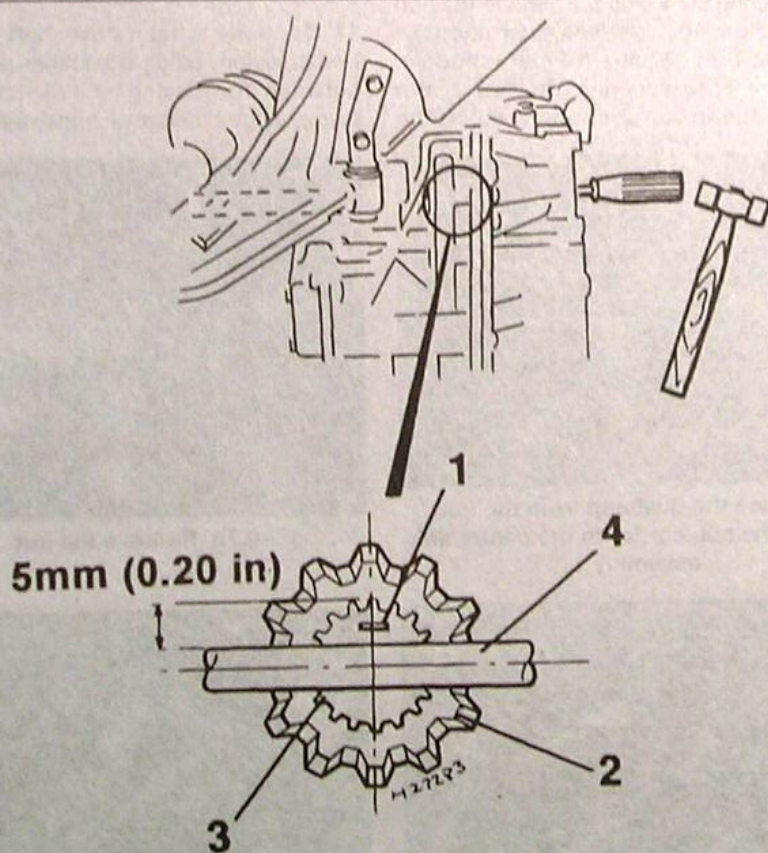
2.14 Separate the bearing housing from the bracket - 2.0 litre models

inserted (see illustration). Do not lever against the seal on the inner end of the driveshaft, or attempt to separate the intermediate bearing from its housing.

15 Withdraw the driveshaft assembly, complete with the intermediate bearing and housing.

Left-hand driveshaft - all except 2.0 litre models with automatic transmission

16 The procedure is as described for the right-hand driveshaft in paragraphs 11 and 12, but take care not to damage the oil seal when prising the driveshaft from the transmission.



2.18 Using a screwdriver to release the inner end of the left-hand driveshaft from the differential - 2.0 litre models with automatic transmission

1 Screwdriver tip
2 Sun gear

3 Driveshaft
4 Planet gear shaft

Left-hand driveshaft - 2.0 litre models with automatic transmission

17 To remove the left-hand driveshaft, the right-hand driveshaft **must** be removed first, as described previously in paragraphs 13 to 15.

18 Working through the aperture in the right-hand side of the differential created by removal of the right-hand driveshaft, pass a suitable long-bladed screwdriver or a similar drift into the differential until it rests against the inner end of the left-hand driveshaft. Take care not to damage the planet gear shaft or the sun gear (see illustration).

19 Tap the end of the driveshaft until the retaining clip compressed into its groove, and is released from the differential sun gear.

20 Withdraw the driveshaft assembly. Discard the retaining clip - a new clip must be used on refitting.

Refitting

21 Before installing a driveshaft, examine the driveshaft oil seal in the transmission for signs of damage or deterioration and, if necessary, renew it, referring to Chapter 7A or 7B for further information (it is advisable to renew the seal as a matter of course).

22 Thoroughly clean the driveshaft splines, and the apertures in the transmission and hub assembly. Apply a thin film of grease to the oil seal lips, and to the driveshaft splines and shoulders. Check that all driveshaft gaiter clips are securely fastened.

23 Note that the retaining clip at the inner end of the driveshaft (all except right-hand driveshaft on 2.0 litre engine models) **must** be renewed on refitting.

24 When refitting a driveshaft, great care must be taken to prevent damage to the driveshaft oil seals. Nissan specify the use of special tools which guide the shafts through the seal lips on refitting. Provided that the seal lips and the shaft ends are lightly greased, and that care is taken on refitting, these tools should not be necessary.

Right-hand driveshaft - 1.6 litre models

25 Insert the inner end of the driveshaft into the transmission, taking care not to damage the oil seal.

26 Engage the driveshaft splines with those of the differential sun gear, and press the driveshaft into place until the retaining clip (a new clip should be fitted) engages correctly behind (inboard of) the sun gear.

27 Grasp the inner joint body firmly, and check that the clip is correctly engaged by attempting to pull the driveshaft from the transmission.

28 Proceed to paragraph 35.

Right-hand driveshaft - 2.0 litre models

29 Insert the inner end of the driveshaft through the intermediate bearing bracket, and engage the driveshaft splines with those of

1 General information

Drive is transmitted from the differential to the front wheels by means of two solid-steel driveshafts of unequal length (see illustration).

Both driveshafts are splined at their outer ends, to accept the wheel hubs, and are threaded so that each hub can be fastened to

the driveshaft by a large nut. The inner end of each driveshaft is splined, to accept the differential sun gear.

Constant velocity (CV) joints are fitted to each end of the driveshafts, to ensure the smooth and efficient transmission of power at all suspension and steering angles. The outer constant velocity joints are of the ball-and-cage type, and the inner joints may be of the ball-and-cage or tripod type, depending on model.

On 2.0 litre models, due to the length of the right-hand driveshaft, the inner constant velocity joint is situated approximately halfway along the length of the shaft, and an intermediate bearing is mounted in a bracket bolted to the rear of the cylinder block. The inner section of the driveshaft passes through the bearing, which prevents lateral flexing of the driveshaft.

Note: In certain Sections of this Chapter references are made to Phase I, Phase II and Phase III models according to year of production. This classification has been necessary where modifications to the model range affect the repair procedure being described. The Phases relate to the model years as follows:

Phase I - 1990 to June 1993

Phase II - June 1993 to October 1996

Phase III - October 1996 to September 1999

2 Driveshafts - removal and refitting

Note: A balljoint separator tool will be required for this operation. A new driveshaft nut, new driveshaft inner joint retaining clip (where applicable), and new driveshaft nut and track-rod end nut split-pins must be used on refitting. On Phase I and Phase II Saloon and Hatchback models, and all Phase III models, a new suspension centre link-to-hub carrier nut should be used on refitting. On Phase I and Phase II Estate models, new lower arm balljoint nuts should be used.

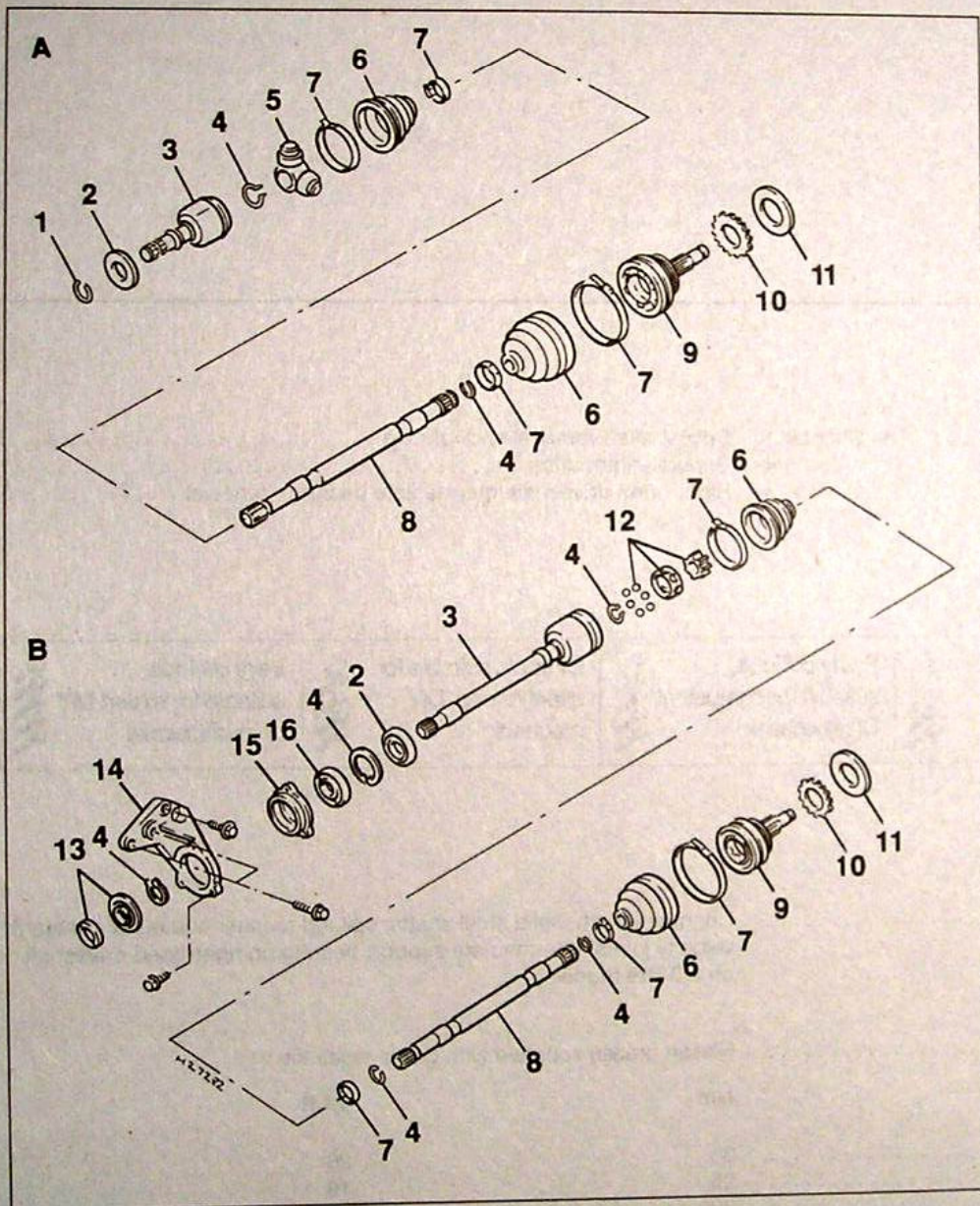
Removal

- 1 Apply the handbrake, then jack up the front of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the appropriate roadwheel(s).
- 2 To reduce spillage when the inner end of the driveshaft is withdrawn from the transmission, drain the transmission oil/fluid as described in Chapter 1.
- 3 Remove the split-pin from the outer end of the driveshaft, then withdraw the castellated locking plate and the spacer. Discard the split-pin - a new one must be used on refitting (see illustrations).
- 4 The front hub must now be held stationary in order to loosen the driveshaft nut. Ideally, the hub should be held by a suitable tool bolted into place using two of the roadwheel nuts. Alternatively, have an assistant firmly apply the brake pedal to prevent the hub from rotating. Using a socket and extension bar, slacken and remove the driveshaft nut (see illustration). Remove the washer.



Warning: Take care, the nut is very tight! Discard the nut - a new one must be used on refitting.

- 5 Unscrew the guide pin bolts, and withdraw the brake caliper from the hub carrier as described in Chapter 9. Note that there is no need to disconnect the brake fluid hose.



1.1 Typical driveshaft components

- | | |
|--|---|
| A All except right-hand driveshaft on 2.0 litre models | 8 Driveshaft |
| B Right-hand driveshaft on 2.0 litre models | 9 Outer joint body |
| 1 Inner joint retaining clip | 10 ABS wheel sensor rotor |
| 2 Oil seal | 11 Washer |
| 3 Inner joint body | 12 Ball-and-cage inner joint components |
| 4 Circlip | 13 Dust shield |
| 5 Tripod | 14 Intermediate bearing support bracket |
| 6 Gaiter | 15 Intermediate bearing housing |
| 7 Gaiter clips | 16 Intermediate bearing |