

9.10b Rear suspension strut components

- |                      |                     |
|----------------------|---------------------|
| 1 Damper rod top nut | 5 Upper spring seat |
| 2 Top mounting nuts  | 6 Rubber gaiter     |
| 3 Gasket             | 7 Coil spring       |
| 4 Top mounting       | 8 Bump rubber       |
|                      | 9 Damper            |

11 Fit suitable spring compressors to the spring, and compress the spring sufficiently to enable the upper spring seat to be turned by hand.

**Warning:** Do not use makeshift or improvised tools to compress the spring, as there is a danger of serious injury if the spring is not retained properly and released slowly.

12 Fully unscrew and remove the damper rod top nut. Note that it will be necessary to counterhold the damper rod, using a suitable spanner, as the nut is unscrewed. Discard the nut - a new one must be used on reassembly.

13 Withdraw the washers, gasket, top mounting, and upper spring seat.

14 Withdraw the spring, complete with compressors, then lift the rubber gaiter and the bump rubber from the damper rod.

15 With the strut assembly now dismantled, examine all the components for wear, damage or deformation. Renew any of the components as necessary.

16 Examine the damper for signs of fluid leakage. Check the damper rod for signs of pitting along its entire length, and check the strut body for signs of damage. While holding it in an upright position, test the operation of the strut by moving the damper rod through a full stroke, and then through short strokes of 50 to 100 mm. In both cases, the resistance felt should be smooth and continuous. If the resistance is jerky, or uneven, or if there is any visible sign of wear or damage to the strut, renewal is necessary. Note that the damper cannot be renewed independently, and if leakage or damage is evident, the complete strut/damper assembly must be renewed (in which case, the spring, upper mounting components, bushes, and associated components can be transferred to the new strut).

17 If any doubt exists about the condition of the coil spring, carefully remove the spring compressors, and check the spring for distortion and signs of cracking. Renew the spring if it is damaged or distorted, or if there is any doubt as to its condition.

18 Clamp the strut body in a vice, as during dismantling, then refit the bump rubber and the rubber gaiter.

19 Ensure that the coil spring is compressed sufficiently to enable the upper mounting components to be fitted, then fit the spring over the damper rod, noting that two paint marks on the spring coils must be positioned towards the bottom of the strut (see illustration). Make sure that the lower end of the spring is correctly located on the lower spring seat.

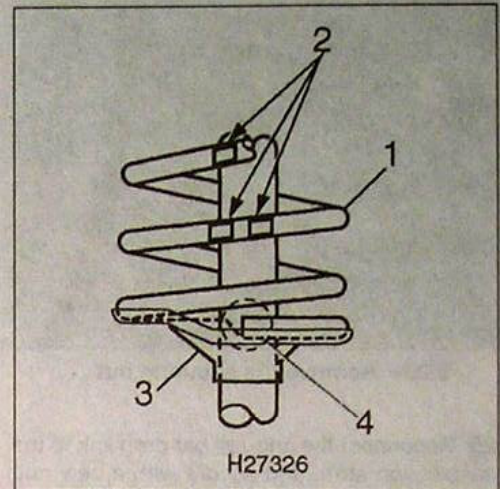
20 Refit the upper spring seat, noting that the seat must be positioned as shown (see illustration). Ensure that the top end of the spring is correctly located on the upper spring seat.

21 Refit the top mounting, then refit the washers and a new top nut to the damper rod. Tighten the top nut to the specified torque, counterholding the damper rod as during removal.

22 Remove the spring compressors.

#### Refitting

23 Fit a new gasket to the top mounting, then manoeuvre the strut assembly into position under the wheel arch, passing the mounting studs through the holes in the body turret. Note that the cut-out in the upper spring seat

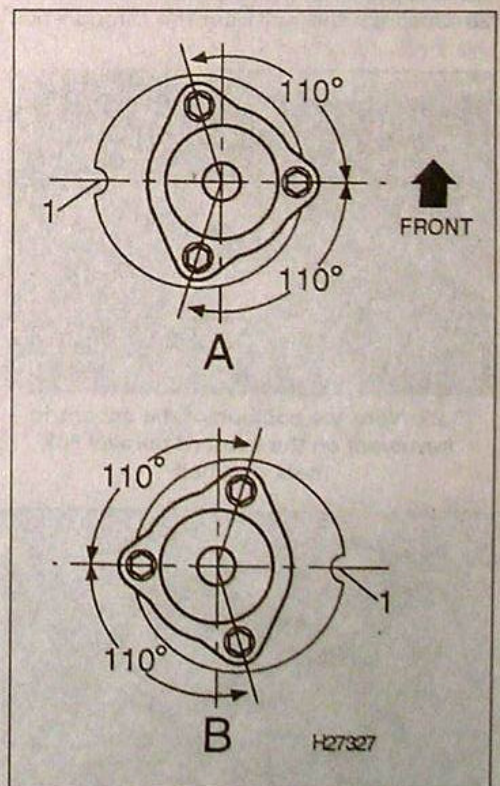


9.19 Rear suspension strut coil spring orientation

- |                     |                            |
|---------------------|----------------------------|
| 1 Coil spring       | 4 Spring locating shoulder |
| 2 Paint marks       |                            |
| 3 Lower spring seat |                            |

must be positioned nearest the outer edge of the suspension turret (ie, the side nearest the roadwheel - see illustration 9.20). Fit the new upper mounting nuts, and tighten them to the specified torque.

24 Engage the lower end of the strut with the hub carrier, then refit the bolts and fit the new nuts, noting that the nuts fit on the forward side of the strut, and tighten to the specified torque.



9.20 Rear suspension strut upper spring seat orientation

- |                   |           |
|-------------------|-----------|
| A Left-hand side  | 1 Cut-out |
| B Right-hand side |           |



39 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). To improve access, remove the appropriate rear roadwheel.

40 Where applicable, remove the cover from the nut securing the rear end of the radius rod to the hub carrier, then unscrew the nut and recover the washer (see illustration).

41 Unscrew the nut from the bolt securing the front of the radius rod to the bracket on the vehicle body, then remove the bolt, and withdraw the radius rod from under the vehicle (see illustration). Discard the nut - a new one should be used on refitting.

### Overhaul

42 Inspect the radius rod for cracks or other signs of damage, and examine the bushes for wear and deterioration.

43 The bushes are integral with the radius rods, and if worn or damaged, the complete assembly must be renewed.

### Refitting

44 Manoeuvre the radius rod into position under the vehicle, and position the rear of the rod on the hub carrier stud. Refit the washer and nut, but do not fully tighten the nut at this stage.

45 Move the front of the rod into position in the front mounting bracket, then refit the front securing bolt, noting that the bolt fits from the inboard edge of the bracket. Fit a new nut, but do not fully tighten the nut at this stage.

46 Refit the roadwheel, and lower the vehicle to the ground.

47 Make sure that the vehicle is parked on level ground, then release the handbrake. Roll the vehicle backwards and forwards, and bounce the front of the vehicle to settle the suspension components.

48 Chock the wheels, then tighten the radius rod securing nuts to the specified torque. On completion, where applicable, refit the cover to the rear radius rod securing nut.

### Hub carrier

#### Removal

**Note:** A new parallel link outboard mounting nut, and new suspension strut-to-hub carrier nuts, should be used on refitting.

49 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the appropriate rear roadwheel.

50 On models with rear disc brakes, unbolt the brake caliper from the hub carrier as described in Chapter 9. Note that there is no need to disconnect the brake fluid hose - suspend the caliper using wire or string.

51 On models with rear drum brakes, remove the brake shoes, and disconnect the brake fluid pipe from the rear wheel cylinder, as described in Chapter 9 - be prepared for fluid spillage. Plug the open ends of the pipe and wheel cylinder, to reduce fluid spillage and to prevent dirt ingress.



9.40 Radius rod-to-hub carrier nut (arrowed)

52 Where applicable, remove the cover from the nut securing the rear end of the radius rod to the hub carrier, then unscrew the nut and recover the washer.

53 Unscrew the nut from the through-bolt securing the outboard ends of the two parallel links to the hub carrier. Recover the washer and withdraw the bolt. Discard the nut - a new one must be used on refitting.

54 Unscrew the nuts from the bolts securing the lower end of the suspension strut to the hub carrier, then withdraw the bolts, and remove the hub carrier from under the vehicle. Discard the nuts - new ones must be used on refitting.

### Overhaul

55 Examine the hub carrier for signs of cracking or damage. If desired, the hub bearings can be renewed as described in Section 8.

### Refitting

56 Move the hub carrier into position, engaging the radius rod with the hub carrier stud, then fit the two bolts securing the hub carrier to the lower end of the suspension strut, noting that the bolts fit from the rear of the hub carrier. Fit new nuts to the bolts, and tighten them to the specified torque.

57 Reconnect the parallel links to the hub carrier, then refit the through-bolt, noting that the bolt fits from the rear of the hub carrier. Refit the washer and a new securing nut, but do not fully tighten the nut at this stage.

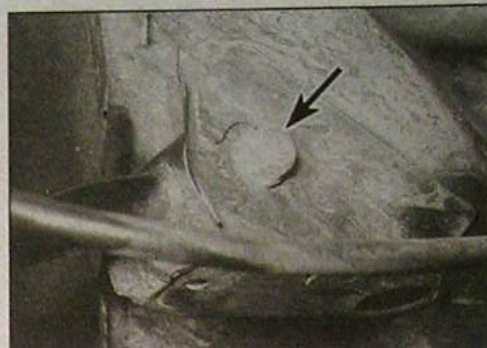
58 Refit the radius rod-to-hub carrier securing nut, ensuring that the washer is in place, but do not fully tighten the nut at this stage.

59 On models with rear drum brakes, refit the brake shoes, and reconnect the brake fluid pipe to the wheel cylinder, then bleed the brake hydraulic circuit, as described in Chapter 9.

60 On models with rear disc brakes, refit the brake caliper as described in Chapter 9.

61 Refit the roadwheel, and lower the vehicle to the ground.

62 Make sure that the vehicle is parked on level ground, then release the handbrake. Roll the vehicle backwards and forwards, and bounce the front of the vehicle to settle the suspension components.



9.41 Radius rod-to-body bolt (arrowed)

63 Chock the wheels, then tighten the radius rod securing nut, and the parallel link outboard securing nut, to the specified torque. On completion, where applicable, refit the cover to the rear radius rod securing nut.

64 Have the rear wheel alignment checked at the earliest opportunity (see Chapter 1).

### Anti-roll bar

#### Removal

**Note:** New anti-roll bar clamp nuts, and new anti-roll bar-to-drop link nuts, should be used on refitting.

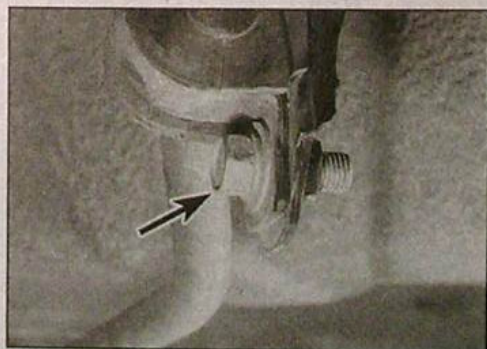
65 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). To improve access, remove the rear roadwheels.

66 Unscrew the nuts securing the lower ends of the drop links to the anti-roll bar. Discard the nuts - new ones should be used on refitting.

67 Unscrew the nuts and bolts securing the anti-roll bar mounting clamps to the brackets on the body (see illustration), then withdraw the clamps, and manipulate the anti-roll bar out from under the vehicle. Discard the clamp nuts - new ones should be used on refitting.

#### Overhaul

68 Inspect the mounting clamp rubbers for cracks or deterioration. If renewal is necessary, slide the old rubbers from the bar, and fit the new rubbers. Note that the rubbers should be positioned with their slits at the top of the bar.



9.67 Rear anti-roll bar securing bolt (arrowed)



**Overhaul**

15 If any doubt exists about the condition of the coil spring, check the spring for distortion and signs of cracking. Renew the spring if it is damaged or distorted, or if there is any doubt as to its condition.

**Refitting**

16 Locate the springs in position between the axle and the upper seats, then raise the jack sufficiently to position the upper end of the Panhard rod in its mounting bracket on the underbody.

17 Refit the Panhard rod upper securing bolt, noting that the bolt fits from the rear of the vehicle, then fit a new nut to the bolt. Do not fully tighten the nut at this stage.

18 Position the lower ends of the shock absorbers in the mounting brackets on the axle assembly, then refit the bolts (note that the bolts fit from the inboard sides of the trailing arms). Fit new securing nuts to the bolts, but do not fully tighten them at this stage.

19 Refit the roadwheels, and lower the vehicle to the ground.

20 Make sure that the vehicle is parked on level ground, then release the handbrake, roll the vehicle backwards and forwards, and bounce the rear of the vehicle to settle the suspension components.

21 Chock the wheels, then tighten the shock absorber lower securing nuts and the Panhard rod upper securing nut.

**Panhard rod****Removal**

**Note:** New Panhard rod mounting nuts should be used on refitting.

22 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*).

23 Place a trolley jack and interposed block of wood under the centre of the axle tube, then raise the axle slightly to tension the coil springs.

24 Ensure that the axle assembly is still adequately supported, then unscrew the nut securing the lower end of the Panhard rod to the axle assembly (see illustration). Discard the nut - a new one should be used on refitting. Recover the washer.

25 Unscrew the nut from the bolt securing the top end of the Panhard rod to the body bracket, then withdraw the bolt, and remove the Panhard rod. Discard the nut - a new one should be used on refitting. Recover the remaining washer from the Panhard mounting stud on the axle assembly.

**Overhaul**

26 Examine the Panhard rod for cracks or signs of damage. Similarly, examine the mounting bushes.

27 The lower mounting bushes (Panhard rod-to-rear axle mounting) can be renewed, but if the top mounting bush is worn or damaged, the complete Panhard rod must be renewed.

28 To renew the lower bushes, simply prise them from the Panhard rod (if they are not already loose), then press the new bushes into position.

**Refitting**

29 Ensure that the lower mounting bushes are in position, then refit the lower end of the Panhard rod to the stud on the axle assembly. Make sure that the inboard washer is in place (note that the concave side of the washer should be positioned against the stud, ie, away from the Panhard rod).

30 Refit the outboard washer to the Panhard rod stud (the concave side should be against the securing nut), then fit a new securing nut. Do not fully tighten the nut at this stage.

31 Manoeuvre the top end of the Panhard rod into position in the top mounting bracket (if necessary, raise or lower the jack to align the mounting bolt holes in the rod and bracket). Refit the mounting bolt, noting that the bolt fits from the rear of the vehicle. Fit a new nut to the bolt, but do not fully tighten it at this stage.

32 The jack used to support the axle assembly can now be withdrawn.

33 Lower the vehicle to the ground.

34 Make sure that the vehicle is parked on level ground, then roll the vehicle backwards and forwards, and bounce the rear of the vehicle to settle the suspension components.

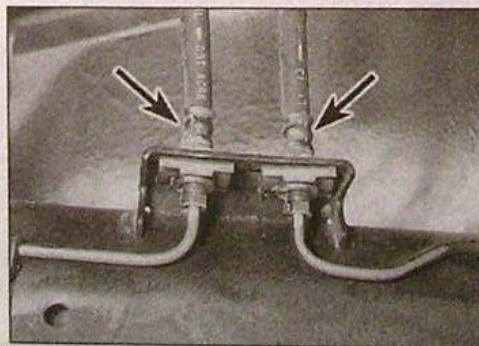
35 Chock the wheels, then tighten the Panhard rod securing nuts to the specified torque.

**Rear axle assembly****Removal**

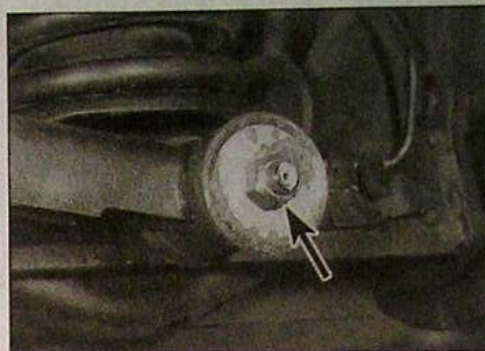
**Note:** New shock absorber mounting nuts, new Panhard rod mounting nuts, and trailing arm securing nuts, should be used on refitting.

36 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the rear roadwheels.

37 Disconnect the brake fluid hoses from the pipes at the brackets on the rear axle tube, with reference to Chapter 9 (see illustration). Be prepared for fluid spillage, and plug the open ends of the pipes and hoses, to reduce fluid spillage and to prevent dirt ingress.



10.37 Disconnect the brake fluid hoses from the pipes at the brackets on the rear axle



10.24 Panhard rod lower securing nut (arrowed)

38 Where applicable, remove the ABS wheel sensors, and disconnect the wiring harnesses from any clips or brackets on the rear suspension components, as described in Chapter 9. Note the routing of the cables to ensure correct refitting.

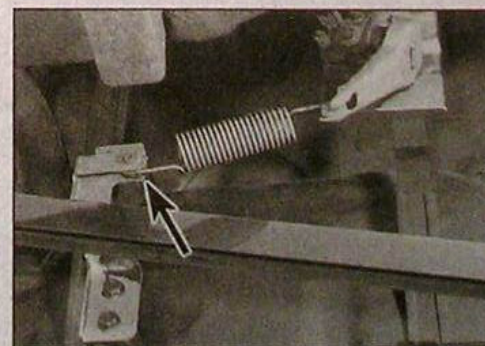
39 Disconnect the rear brake pressure-regulating valve spring from the bracket on the axle tube (see illustration).

40 Disconnect the handbrake cables from the rear brake shoes or calipers, as applicable, as described in Chapter 9, then release the handbrake cables from any clips or brackets on the rear suspension components. Note the routing of the cables to ensure correct refitting.

41 Remove the shock absorbers, the Panhard rod, and the coil springs, as described previously in this Section.

42 Counterhold the nuts, and unscrew the pins securing the fronts of the trailing arms to the body brackets. Note that a suitable long-reach socket will be required to unscrew the pins. Discard the nuts - new ones must be used on refitting.

43 Ensure that the axle assembly is adequately supported, then withdraw the pins securing the trailing arms to the body brackets, and lower the assembly sufficiently to withdraw it from under the vehicle. Take care not to drop the assembly off the jack - the help of an assistant to support the assembly on the jack will ease the operation greatly.



10.39 Disconnect the rear brake pressure-regulating valve spring (arrowed) from the bracket on the axle tube



components to be fitted, then fit the spring over the damper rod, noting that flat end of the spring coils must be uppermost. Make sure that the lower end of the spring is correctly located on the lower spring seat.

16 Refit the upper mounting, noting that the mounting must be positioned as shown (see illustration).

17 Refit the bushing and washers and the top nut to the damper rod. Tighten the top nut to the specified torque, counterholding the damper rod as during removal.

18 Remove the spring compressors.

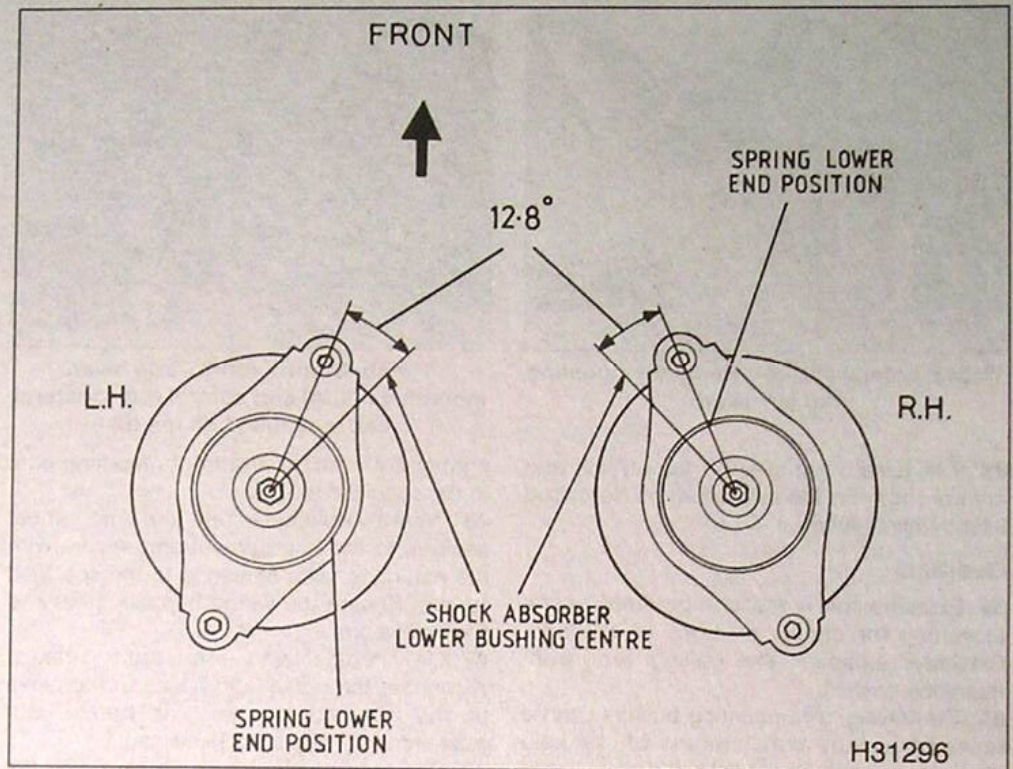
#### Refitting

19 Manoeuvre the strut assembly into position under the wheel arch, engaging the upper mounting with the mounting studs. Fit the new upper mounting nuts, and tighten them to the specified torque.

20 Engage the lower end of the strut with the axle beam, then fit the new bolt and new nut. Tighten the nut to the specified torque.

21 On SRI and GT Saloon models, refit the two nuts securing the suspension strut brace to the upper mounting and tighten the nuts to the specified torque. Refit the rear interior trim panels as necessary.

22 Refit the roadwheel, and lower the vehicle to the ground.



11.16 Correct positioning of suspension strut upper mounting

#### Rear axle assembly

##### Removal

**Note:** New shock absorber lower mounting bolt/nut, new lateral link mounting nut, and trailing arm mounting nuts, should be used on refitting.

23 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the rear roadwheels.

24 Disconnect the handbrake cables from the rear brake shoes or calipers, as applicable, as described in Chapter 9, then unbolt the handbrake cable support brackets from the trailing arms (see illustration).

25 On models with rear disc brakes, extract the retaining clips and release the brake fluid hoses from the brackets on the axle beam. Referring to Chapter 9, remove the brake calipers from the hub carriers. Note that there

is no need to disconnect the brake fluid hoses from the calipers - suspend the calipers with wire or string, to avoid straining the hoses. **Do not** depress the brake pedal whilst the calipers are removed.

26 On models with rear drum brakes, disconnect the brake fluid hoses from the pipes at the brackets on the axle beam, with reference to Chapter 9. Be prepared for fluid spillage, and plug the open ends of the pipes and hoses, to reduce fluid spillage and to prevent dirt ingress.

27 Where applicable, undo the mounting bolts and withdraw the ABS wheel sensors from the hub carriers. Unbolt the wiring harness guides from the trailing arms and move the sensors clear of the axle assembly.

28 Position a trolley jack under the centre of the axle beam and raise the jack slightly to just take the weight of the axle.

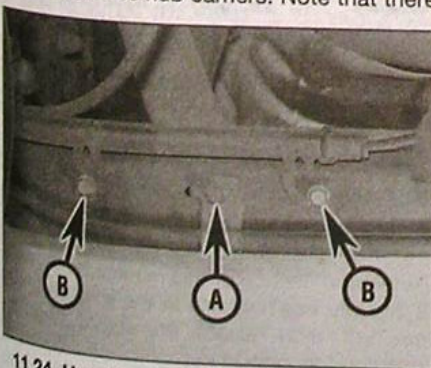
29 Unscrew the nut from the bolt securing

the lower end of each suspension strut to the axle beam, then withdraw the bolt. Discard the bolt and nut - new ones must be used on refitting.

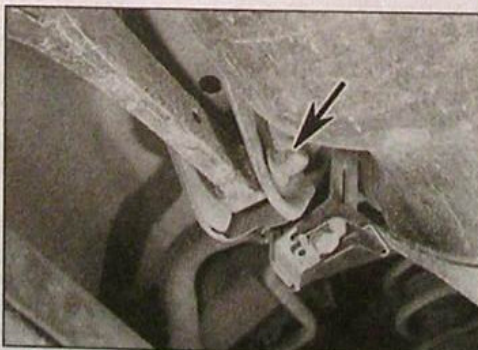
30 Unscrew the nut from the bolt securing the lateral link to the body mounting bracket then withdraw the bolt (see illustration). Discard the nut - a new one must be used on refitting.

31 Unscrew the nuts from the trailing arm front mounting bolts each side (see illustration). Discard the nuts - new ones must be used on refitting.

32 Ensure that the axle assembly is adequately supported, then withdraw the bolts securing the trailing arms to the body brackets. Lower the assembly sufficiently to withdraw it from under the vehicle. Take care not to drop the assembly off the jack - the help of an assistant to support the assembly on the jack will ease the operation greatly.



11.24 Handbrake cable support bracket bolt (A) and ABS wiring harness guide retaining bolts (B)

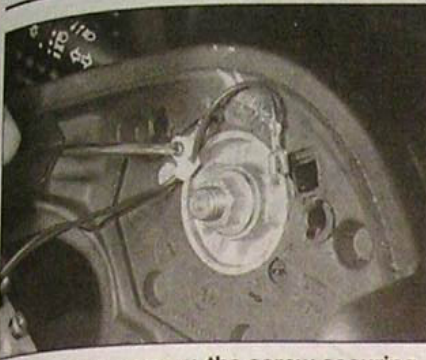


11.30 Unscrew the nut (arrowed) from the bolt securing the lateral link to the body mounting bracket



11.31 Unscrew the nuts from the trailing arm front mounting bolts (arrowed) each side





12.4 ... then remove the screw securing the wiring bracket

4 Remove the screw securing the horn wiring bracket to the steering wheel (see illustration).

5 Make alignment marks between the steering wheel and the end of the steering column shaft.

6 Slacken and remove the steering wheel securing nut (see illustration).

7 Lift the steering wheel off the column splines. If it is tight, tap it up near the centre, using the palm of your hand, or twist it from side to side, whilst pulling upwards to release it from the shaft splines. If the wheel is particularly tight, a suitable puller should be used.

#### Refitting

8 Before commencing refitting, lightly coat the surfaces of the direction indicator cancelling mechanism components and the horn contact slip ring components with grease.

9 Refitting is a reversal of removal, bearing in mind the following points:

- Ensure that the direction indicator switch is in the central (cancelled/off) position, otherwise the switch may be damaged as the wheel is refitted.
- Align the marks made on the wheel and the steering column shaft before removal.
- Tighten the securing nut to the specified torque.

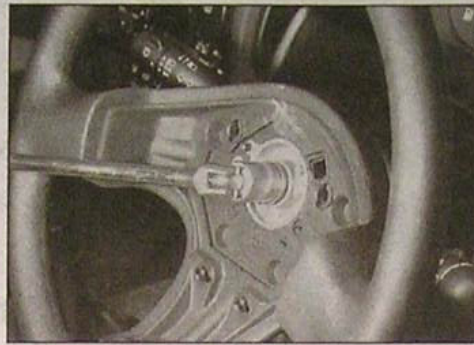
10 Note that if necessary, the position of the steering wheel on the column shaft can be altered in order to centralise the wheel (ensure that the front roadwheels are pointing in the straight-ahead position), by moving the wheel the required number of splines on the shaft.

#### Models with air bag

**Warning:** Refer to the precautions given in Chapter 12 before proceeding. Take great care not to drop the steering wheel centre pad, or to allow objects to impact the steering wheel centre pad, during this procedure.

#### Removal

11 Ensure that the ignition is switched off, then disconnect the battery negative terminal (refer to Disconnecting the battery in the Reference Section of this manual). Wait for at least ten minutes before carrying out any further work.



12.6 Unscrewing the steering wheel securing nut

12 Carefully prise the lower cover from the rear of the steering wheel/air bag unit, and disconnect the now-exposed air bag wiring connector.

13 Prise the side covers from the rear of the steering wheel/air bag unit, to expose the securing bolts.

14 Using a suitable Torx bit, remove the two air bag unit securing bolts (one each side), then carefully lift the unit from the steering wheel. **Take care not to drop the air bag unit, and do not attempt to dismantle it.** Discard the bolts, new ones must be used on refitting. Always store the air bag unit with the pad side (visible side) facing upwards.

15 Set the front wheels in the straight-ahead position, then release the steering lock by inserting the ignition key.

16 Disconnect the horn wiring connector.

17 Proceed as described in paragraphs 5 to 7 inclusive. Unclip the wiring harnesses, and feed them through the steering wheel as the wheel is withdrawn.

#### Refitting

18 Refitting is a reversal of removal, bearing in mind the following points:

- Ensure that the direction indicator switch is in the central (cancelled/off) position, otherwise the switch may be damaged as the wheel is refitted.
- Feed the wiring harnesses through the steering wheel, and clip the connector into position as the wheel is refitted.
- Align the marks made on the wheel and the steering column shaft before removal, and align the steering wheel with the

guide pins on the air bag contact assembly.

d) Tighten the steering wheel securing nut to the specified torque.

e) Secure the air bag unit to the steering wheel using new Torx bolts, and tighten the bolts to the specified torque.

19 Note that it is not possible to alter the position of the steering wheel on the column shaft in order to centralise the wheel.

#### 13 Ignition switch/steering column lock - removal and refitting

##### Removal

**Note:** New shear-screws must be used when refitting the lock assembly.

1 Disconnect the battery negative terminal (refer to Disconnecting the battery in the Reference Section of this manual).

2 Remove the steering column shrouds as described in Chapter 11.

3 To remove the ignition switch, disconnect the wiring plug from the switch, then remove the grub screw from the rear of the lock (using a suitable cranked key), and withdraw the switch (see illustrations).

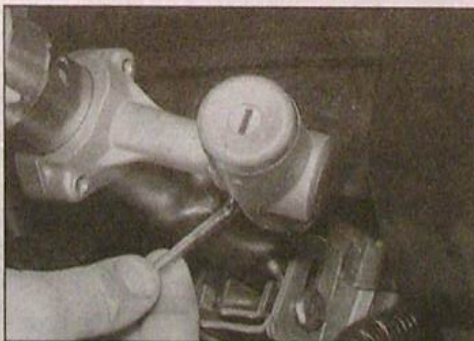
4 To remove the lock assembly, drill out and remove the two shear-screws, then withdraw the two sections of the lock casting from the steering column. Note that the lock assembly cannot be removed from the casting.

##### Refitting

5 Refitting is a reversal of removal, but when refitting the lock assembly, use new shear-screws, and tighten the screws until the heads break off.

#### 14 Steering column - removal, inspection and refitting

**Warning:** Later models are equipped with an air bag system. The air bag is mounted in the steering wheel centre pad and, on certain models, the control module is mounted

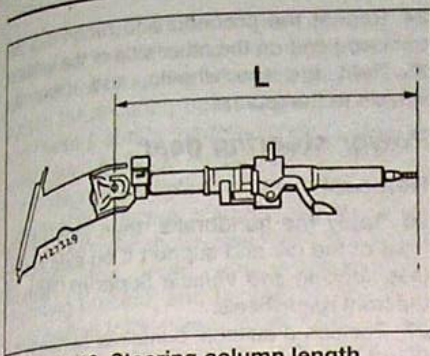


13.3a Remove the grub screw ...



13.3b ... and withdraw the ignition switch





14.13 Steering column length measurement

L = See Specifications

### Inspection

11 The steering column incorporates a telescopic safety feature. In the event of a front-end crash, the shaft collapses and prevents the steering wheel injuring the driver. Before refitting the steering column, examine the column and mountings for signs of damage and deformation, and renew as necessary.

12 Check the steering shaft for signs of free play in the column bushes, and check the universal joints for signs of damage or roughness in the joint bearings. If any damage or wear is found in the steering column universal joints or shaft bushes, the column must be renewed as an assembly.

13 Measure the length of the steering column from the centre of the universal joint pin to the top of the column shaft (see illustration). If the measurement is outside the specified limits, this is probably due to accident damage, and the complete column assembly should be renewed.

### Refitting

14 Commence refitting by sliding the rubber gaiter (where applicable), and the metal cover onto the lower end of the shaft. Where applicable, refit and tighten the clip securing the upper end of the gaiter to the steering column (see illustration).

15 Offer the steering column into position, and engage the lower end of the column shaft with the universal joint. Note that there is a master spline, so that the column shaft can only be fitted in one position.

16 Refit the steering column lower securing nuts and the upper bolts, then tighten them to the specified torque.

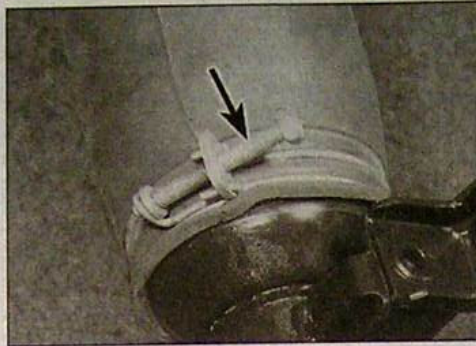
17 Refit and tighten the universal joint clamp bolt.

18 Position the metal cover over the universal joint, then refit and tighten the securing nuts.

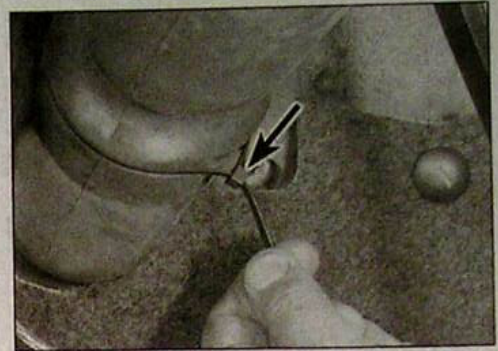
19 Clip the lower end of the rubber gaiter into position in the metal cover, then fit a new lower gaiter securing clip (cable-tie) (see illustration). Alternatively, refit the two halves of the plastic cover.

20 Where applicable, refit the driver's side lower fascia panel.

21 Reconnect the ignition switch wiring plug.



14.14 Refit and tighten the clip (arrowed) securing the upper end of the gaiter to the steering column



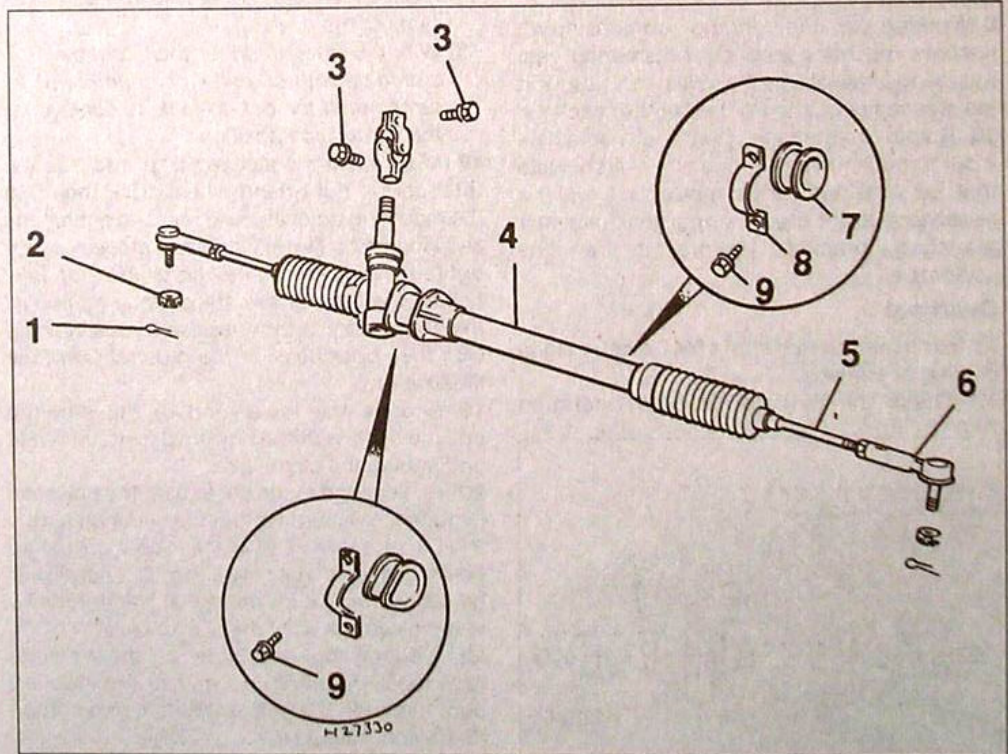
14.19 Use a new cable-tie (arrowed) to secure the lower end of the steering column gaiter

- 22 Refit the steering column stalk switches.
- 23 Refit the steering wheel, with reference to Section 12.
- 24 Reconnect the battery negative terminal.

### 15 Steering gear assembly - removal, overhaul and refitting



**Warning:** Later models are equipped with an air bag system. The air bag is mounted in the steering wheel centre pad and, on certain models, the control module is mounted under the steering column. Make sure that the safety recommendations given in Chapter 12 are followed, to prevent personal injury.



15.3a Manual steering gear assembly

- |                   |                 |                    |
|-------------------|-----------------|--------------------|
| 1 Split pin       | 4 Steering gear | 7 Mounting rubber  |
| 2 Castellated nut | 5 Track-rod     | 8 Mounting bracket |
| 3 Clamp bolt      | 6 Track-rod end | 9 Mounting bolts   |



- 40 Manoeuvre the steering gear into position from under the left-hand side of the vehicle, then refit the mounting brackets, and refit and tighten the securing bolts. **Note:** On Phase I and Phase II Estate models, lightly tighten the lower clamp bolts (do not fully tighten the bolts at this stage), then tighten all the clamp bolts to the specified torque, starting with the upper bolts, in the order shown (see illustration 15.18).
- 41 Refit the rear engine/transmission mounting bracket, and tighten the fixings to the specified torque (see Chapter 2B).
- 42 Refit the crossmember, and tighten the securing bolts to the specified torque (see Chapter 2B), then refit the through-bolt securing the engine/transmission mounting to the crossmember. Where applicable, clip the wiring harness into position on the crossmember.
- 43 Withdraw the jack used to support the engine/transmission assembly.
- 44 Refit the exhaust front section with reference to the relevant Part of Chapter 4.
- 45 Proceed as described in paragraphs 19 to 24.
- 46 Reconnect the fluid feed pipe and the return hose to the steering gear.
- 47 Refit the roadwheels, then bleed the power steering hydraulic system as described in Section 17.
- 48 On completion, lower the vehicle to the ground.

## 16 Steering gear rubber gaiters - renewal

**Note:** New gaiter retaining clips should be used on refitting.

- 1 Remove the relevant track-rod end as described in Section 19.
- 2 If not already done, unscrew the track-rod end locknut from the end of the track-rod.
- 3 Mark the correct fitted position of the gaiter on the track-rod, then release the gaiter securing clips. Slide the gaiter from the steering gear, and off the end of the track-rod.
- 4 Thoroughly clean the track-rod and the steering gear housing, using fine abrasive paper to polish off any corrosion, burrs or sharp edges, which might damage the new gaiter



18.5a Unscrew the nut (arrowed) from the power steering pump adjuster stud - 1.6 litre models

sealing lips on installation. Scrape off all the grease from the old gaiter, and apply it to the track rod inner balljoint. (This assumes that grease has not been lost or contaminated as a result of damage to the old gaiter. Use fresh grease if in doubt.)

5 Carefully slide the new gaiter onto the track-rod, and locate it on the steering gear housing. Align the outer edge of the gaiter with the mark made on the track-rod prior to removal, then secure it in position with new retaining clips.

6 Screw the track-rod end locknut onto the end of the track-rod.

7 Refit the track rod end as described in Section 19.

## 17 Power steering hydraulic system - bleeding

### General

1 The following symptoms indicate that there is air present in the power steering hydraulic system:

- a) Generation of air bubbles in fluid reservoir.
- b) 'Clicking' noises from power steering pump.
- c) Excessive 'buzzing' from power steering pump.

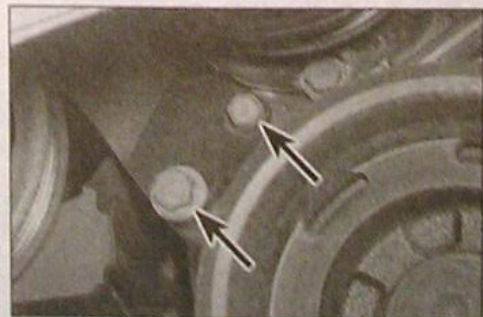
2 Note that when the vehicle is stationary, or while moving the steering wheel slowly, a 'hissing' noise may be produced in the steering gear or the fluid pump. This noise is inherent in the system, and does not indicate any cause for concern.

### Bleeding

3 Apply the handbrake, then jack up the front of the car and support it on axle stands (see *Jacking and Vehicle Support*).

4 Check the fluid level in the power steering fluid reservoir (bear in mind that the vehicle will be tilted, so the level cannot be read accurately), and if necessary top-up to just above the relevant level mark.

5 Have an assistant turn the steering quickly from lock to lock, and observe the fluid level. If the fluid level drops, add more fluid, and repeat the operation until the fluid level no



18.5b Power steering pump adjuster bracket lower securing bolts (arrowed) - 1.6 litre models

longer drops. Failure to achieve this within a reasonable period may indicate a leak in the system.

6 Start the engine and repeat the procedure described in the previous paragraph.

7 Once the fluid level has stabilised, and all air has been bled from the system, lower the vehicle to the ground.

8 Check and if necessary top-up the fluid to the relevant mark as described in *Weekly checks*.

## 18 Power steering pump - removal and refitting

### 1.6 litre models

#### Removal

**Note:** New sealing rings must be used when reconnecting the high-pressure fluid hose to the pump.

1 For improved access, apply the handbrake, then jack up the front of the car and support it on axle stands (see *Jacking and Vehicle Support*).

2 Remove the power steering pump (auxiliary) drivebelt as described in Chapter 1.

3 Place a suitable container beneath the power steering pump, then unscrew the banjo bolt from the high-pressure fluid hose union, and disconnect the hose from the pump. Recover the sealing rings and discard them - new ones should be used on refitting. Drain the escaping fluid into the container. Plug or cover the open ends of the hose and pump, to reduce further fluid loss, and to prevent dirt ingress.

4 Similarly, disconnect the fluid return hose from the pump, noting that the hose is secured by a hose clip rather than a banjo union.

5 Unscrew the nut from the adjuster stud, then unscrew the two lower bolts securing the adjuster bracket to the engine, and withdraw the adjuster bracket assembly (see illustrations).

6 Turn the pump pulley until one of the holes in the pulley lines up with the through-bolt, then unscrew the nut from the end of the through-bolt, and recover any washers (see illustration).



18.6 Turn the pump pulley until one of the holes lines up with the through-bolt (arrowed)



7 Support the pump, then withdraw the through-bolt, and manipulate the pump out from above the engine. Note that on certain models surrounding components may prevent the pump from being withdrawn from above - in this case, it will be necessary to unbolt the pump mounting bracket from the engine, and withdraw the pump from underneath the vehicle.

#### Refitting

8 Refitting is a reversal of removal, but use new sealing rings when reconnecting the high-pressure fluid hose, and on completion, refit and tension the drivebelt as described in Chapter 1.

### 2.0 litre models

#### Removal

9 Proceed as described in paragraphs 1 to 4 inclusive.

10 Working at the top of the pump, unscrew the bolt securing the pump to the adjuster bracket.

11 Working underneath the vehicle, unscrew the through-bolt securing the pump to the main mounting bracket.

12 If necessary, to allow additional clearance to remove the pump, unbolt the rear bracket from the pump.

13 Lower the pump, and manipulate it out from underneath the vehicle.

#### Refitting

14 Refer to paragraph 8.

### 19 Track-rod end - removal and refitting

#### Removal

**Note:** A balljoint separator tool will be required for this operation. A new track-rod end nut split pin should be used on refitting.

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 relevant front roadwheel.

2 Remove the split pin, then partially unscrew 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. Remove the nut. Discard the split pin - a new one must be used on refitting.

3 Counterhold the track-rod end using the flats provided, then loosen the track-rod end locknut.

4 Counting the exact number of turns required to do so, unscrew the track-rod end from the track-rod.

#### Refitting

5 Carefully clean the track-rod end and the track-rod threads.

6 Renew the track-rod end if the rubber dust cover is cracked, split or perished, or if the movement of the balljoint is either sloppy or too stiff. Also check for other signs of damage such as worn threads.

7 Screw the track-rod end onto the track-rod by the number of turns noted before removal.

8 Ensure that the balljoint taper is clean, then engage the taper with the steering arm on the hub carrier.

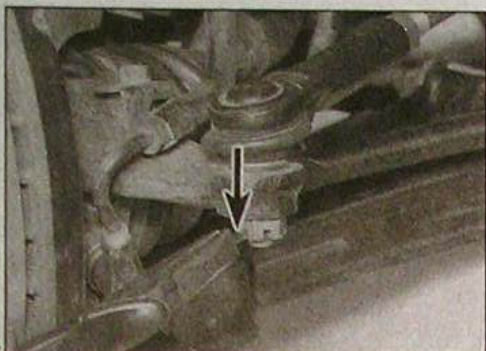
9 Refit the castellated nut, and tighten to the specified torque.

10 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.

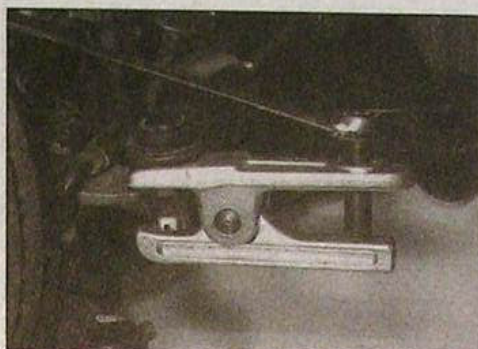
11 Refit the roadwheel, and lower the vehicle to the ground.

12 Check the front wheel alignment as described in Chapter 1, and adjust if necessary, then tighten the track-rod end locknut. **Note:** If the vehicle is to be driven to have the wheel alignment checked, the track-rod end locknut should be tightened before driving the vehicle.





15.3b Removing the split pin (arrowed) from a track-rod end nut



15.3c Using a balljoint separator tool to disconnect the track-rod end from a steering arm

nut. Discard the split pin - a new one must be used on refitting.

4 Repeat the procedure to disconnect the track-rod end on the other side of the vehicle.

5 Working in the driver's footwell, release the steering shaft lower gaiter securing clip, then unclip the gaiter from the metal cover, and slide the gaiter up the steering shaft. Alternatively, on models with a plastic steering column lower cover, remove the clips and securing screws, and separate the two halves of the cover.

6 Unscrew the three securing nuts, and withdraw the metal cover from the studs in the footwell. Slide the cover up the steering column to expose the lower universal joint.

7 Temporarily refit the steering wheel, and turn the steering column as necessary for access to the universal joint clamp bolt.

8 Unscrew and remove the universal joint clamp bolt.

9 Working in the engine compartment, unscrew the bolts securing the steering gear mounting brackets to the bulkhead. Support the steering gear, then withdraw the brackets.

10 Rotate the steering gear, and manipulate it out through the right-hand wheel arch. Note that on left-hand-drive models, it will be necessary to lift the steering gear over the mounting brackets before it can be withdrawn.

### Overhaul

11 Examine the assembly for obvious signs of wear or damage.

12 Check the rack for smooth operation

through its full stroke of movement, and check that there is no binding or free play.

13 Check the track-rods for deformation and cracks.

14 Check the condition of the steering gear rubber gaiters, and renew if necessary with reference to Section 16.

15 Examine the track-rod ends for wear or damage, and renew if necessary with reference to Section 19.

16 No overhaul of the manual steering gear is possible, and if worn or damaged, the complete assembly (including track-rods) must be renewed.

### Refitting

17 Ensure that the steering gear is centralised as follows:

a) Turn the pinion to rotate the steering from lock-to-lock, and count the number of turns of the pinion.

b) With the steering on full lock, turn the pinion back through half the number of turns noted for lock-to-lock, to achieve the centralised position.

18 Manoeuvre the steering gear into position through the right-hand wheel arch, then refit the mounting brackets, and refit and tighten the securing bolts. **Note:** On Estate models, lightly tighten the lower clamp bolts (do not fully tighten the bolts at this stage), then tighten all the clamp bolts to the specified torque, starting with the upper bolts, in the order shown (see illustration).

19 Engage the lower end of the steering column shaft with the universal joint, then refit and tighten the clamp bolt.

20 Position the metal cover over the universal joint, then refit and tighten the securing nuts.

21 Clip the lower end of the rubber gaiter into position in the metal cover, then fit a new lower gaiter securing clip (cable-tie). Alternatively, refit the two halves of the plastic cover.

22 Working on one side of the vehicle, reconnect the track-rod end to the steering arm, then refit the castellated nut, and tighten to the specified torque.

23 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.

24 Repeat the procedure to reconnect the track-rod end on the other side of the vehicle.

25 Refit the roadwheels, and lower the vehicle to the ground.

### Power steering gear

#### Removal

26 Apply the handbrake, then jack up the front of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the front roadwheels.

27 Position a suitable container beneath the fluid feed pipe unions on the steering gear, then unscrew the union nut, and disconnect the pipe from the steering gear. Similarly, disconnect the fluid return hose from the steering gear. Drain the fluid into the container, then plug or cover the open ends of the pipe/hose and steering gear to reduce further fluid loss, and to prevent dirt ingress.

28 Remove the exhaust front section as described in the relevant Part of Chapter 4.

29 Disconnect the track-rod ends from the steering arms as described previously for the manual steering gear in paragraphs 2 to 4.

30 Where applicable, unclip the wiring harness from the clip on the front subframe mounting bracket.

31 Disconnect the steering column universal joint from the steering gear pinion as described previously for the manual steering gear in paragraphs 5 and 8.

32 Place a trolley jack with an interposed block of wood beneath the transmission, and raise the jack to just take the weight of the engine/transmission assembly.

33 Unscrew the through-bolt securing the rear engine/transmission mounting to the lower crossmember.

34 Unscrew the securing bolts, and withdraw the crossmember from under the vehicle.

35 Unbolt the rear engine/transmission mounting bracket from the engine/transmission assembly.

36 Working in the engine compartment, unscrew the bolts securing the steering gear mounting brackets to the bulkhead. Support the steering gear, then withdraw the brackets.

37 Manipulate the steering gear around the wiring harness (where applicable), then slide the assembly to the right-hand side of the vehicle, and withdraw the assembly from under the left-hand side of the vehicle.

#### Overhaul

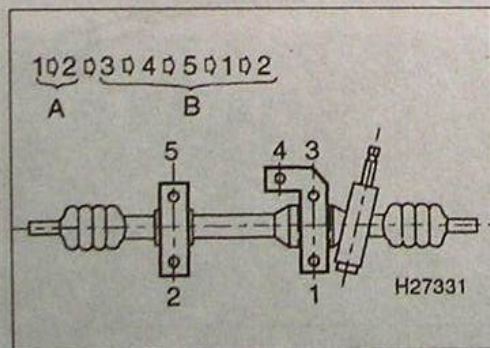
38 Overhaul of the power steering gear should be entrusted to a Nissan dealer.

#### Refitting

39 Ensure that the steering gear is centralised as follows:

a) Turn the pinion to rotate the steering from lock-to-lock, and count the number of turns of the pinion.

b) With the steering on full lock, turn the pinion back through half the number of turns noted for lock-to-lock, to achieve the centralised position.



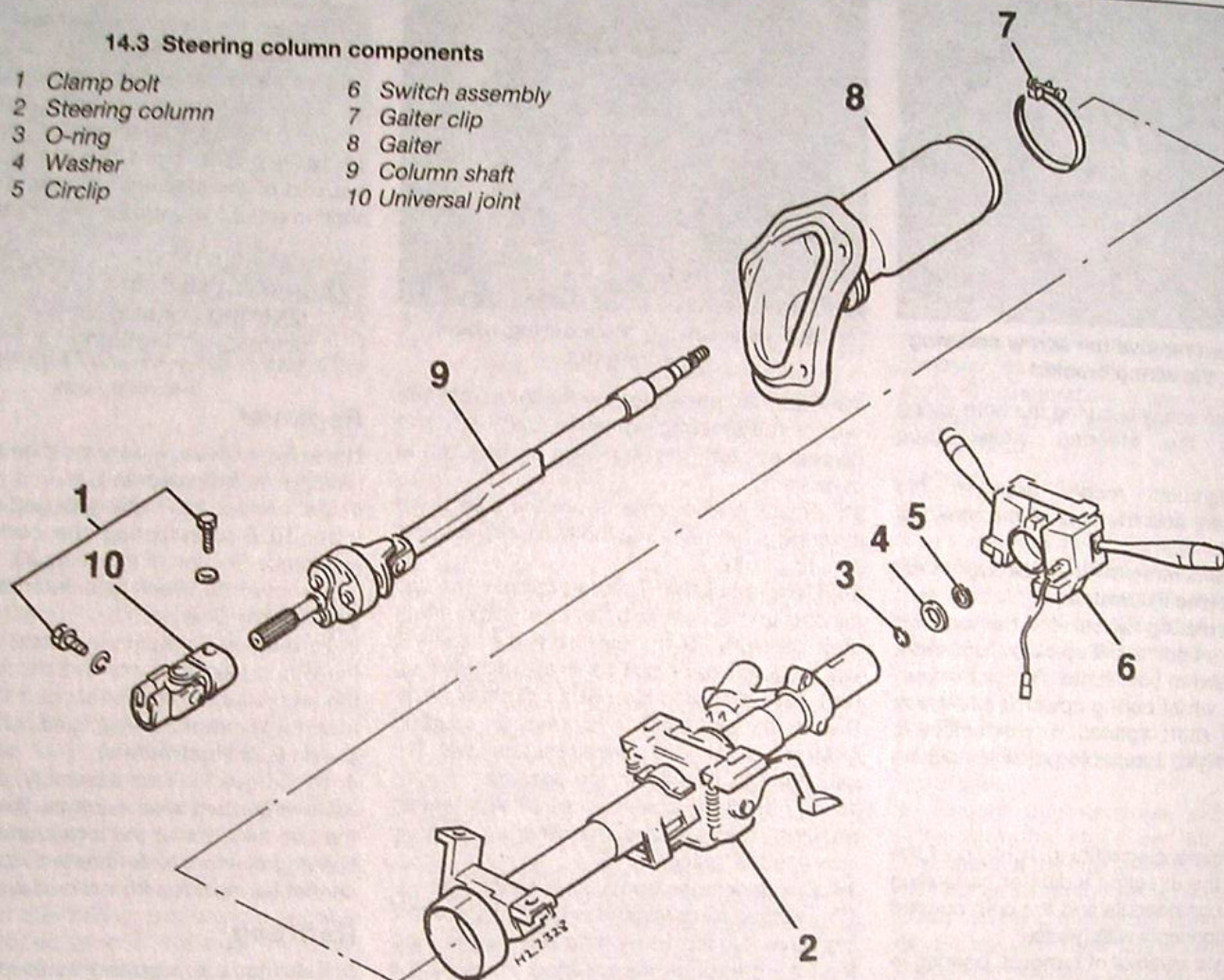
15.18 Steering gear securing bolt tightening sequence - Estate models

A Initial tightening B Final tightening



### 14.3 Steering column components

- |                   |                    |
|-------------------|--------------------|
| 1 Clamp bolt      | 6 Switch assembly  |
| 2 Steering column | 7 Gaiter clip      |
| 3 O-ring          | 8 Gaiter           |
| 4 Washer          | 9 Column shaft     |
| 5 Circlip         | 10 Universal joint |



under the steering column. Make sure that the safety recommendations given in Chapter 12 are followed, to prevent personal injury.

### Removal

- 1 Disconnect the battery negative terminal (refer to *Disconnecting the battery* in the Reference Section of this manual).
- 2 Remove the steering wheel as described in Section 12.
- 3 Remove the steering column stalk switches with reference to Chapter 12 (see illustration).

4 Disconnect the wiring plug from the ignition switch.

5 If desired, to improve access, remove the driver's side lower facia panel as described in Chapter 11.

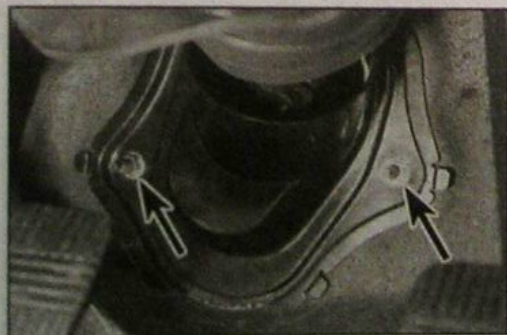
6 Working in the driver's footwell, release the steering shaft lower gaiter securing clip, then unclip the gaiter from the metal cover, and slide the gaiter up the steering shaft (see illustration). Alternatively, on models with a plastic steering column lower cover, remove the clips and securing screws, and separate the two halves of the cover.

7 Unscrew the three securing nuts, and withdraw the metal cover from the studs in the footwell (see illustration). Slide the cover up the steering column to expose the lower universal joint.

8 Temporarily refit the steering wheel, and turn the steering column as necessary for access to the universal joint clamp bolt.

9 Unscrew and remove the universal joint clamp bolt.

10 Unscrew the two steering column upper securing bolts (see illustration), and the two lower nuts, and withdraw the steering column.



14.6 Slide the gaiter up the steering shaft to expose the metal cover securing nuts (arrowed)...



14.7 ... then remove the metal cover



14.10 Unscrewing a steering column upper securing bolt (arrowed)





11.54a Lateral link-to-axle beam mounting nut (arrowed)

33 If required, remove the lateral link and control rod from the axle beam as described later in this Section.

### Overhaul

34 Examine the metal components of the assembly for cracks or signs of damage. Similarly, examine the trailing arm front mounting bushes.

35 The trailing arm mounting bushes can be renewed using metal tubes of suitable diameter, as follows. Ideally, a press should be used.

36 Note the orientation of the bushes in the trailing arms, and the positioning of any identification marks or arrows which can be used as a guide when fitting the new bushes.

37 Support the trailing arm using a suitable tube positioned around the bush housing, then press or drive the bush from the housing.

38 Again support the trailing arm, then press or tap the new bush into position, using a tube of suitable diameter - **do not** tap the end face of the bush directly with a hammer.

### Refitting

39 If removed, refit the lateral link and control rod to the axle beam as described later in this Section.

40 Support the axle assembly on a jack, as during removal, then manoeuvre the assembly into position under the vehicle.

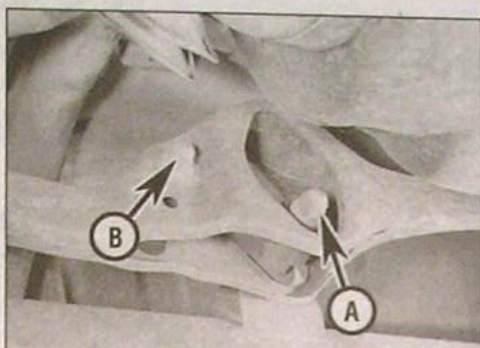
41 Refit the bolts securing the trailing arm front mountings to the body brackets, then fit the new nuts, but do not tighten them at this stage.

42 Locate the lateral link in the body mounting bracket then fit the new nut, but do not tighten the nut at this stage.

43 Raise the axle assembly by means of the jack until the lateral link and control rod are in a horizontal position in relation to the axle beam. With the axle in this position, tighten the lateral link-to-body mounting bracket nut to the specified torque.

44 Lower the jack slightly, if necessary and engage the lower ends of the suspension struts with the axle beam. Fit the new bolts and nuts and tighten to the specified torque.

45 Lower the jack fully and remove it from under the axle assembly. With the axle assembly in the fully extended position,



11.54b Control rod-to-axle beam mounting nut (A) and control rod-to-lateral link mounting bolt nut (B)

tighten both trailing arm front mounting nuts to the specified torque.

46 Where applicable, refit the ABS wheel sensors to the hub carriers and secure with the mounting bolts tightened to the specified torque. Secure the wiring harness guides to the trailing arms.

47 On models with rear drum brakes, reconnect the brake fluid hoses to the pipes at the brackets on the axle beam, with reference to Chapter 9 if necessary.

48 On models with rear disc brakes, refit the brake calipers to the hub carriers as described in Chapter 9. Refit the brake fluid hoses to the brackets on the axle beam and secure with the retaining clips.

49 Reconnect the handbrake cables to the rear brake shoes or calipers, as applicable, as described in Chapter 9, then bolt the handbrake cable support brackets to the trailing arms.

50 On drum brake models, bleed the brake hydraulic system as described in Chapter 9.

51 Check the handbrake adjustment as described in Chapter 1.

52 Refit the roadwheels, and lower the vehicle to the ground.

### Lateral link and control rod

#### Removal

**Note:** New lateral link and control rod mounting nuts should be used on refitting.

53 Remove the rear axle assembly as described previously in this Section.



12.3 Pull the horn pad from the centre of the steering wheel, and disconnect the horn wiring (arrowed) . . .

54 Undo the mounting nuts and remove the lateral link and control rod from the studs on the axle beam (see illustrations). Discard the nuts - new ones must be used on refitting.

55 Undo the nut from the bolt securing the control rod to the lateral link. Withdraw the bolt and separate the two components. Discard the nut - a new one must be used on refitting.

### Overhaul

56 Examine the control rod and lateral link for distortion, cracks or signs of damage. Similarly, examine the mounting bushes for signs of deterioration. If any signs of wear or damage are apparent, renew the component(s).

### Refitting

57 Locate the control rod in position on the lateral link and insert the mounting bolt with its bolt head toward the rear of the vehicle. Ensure that the control rod is fitted correctly - the bush with the smaller internal diameter is fitted to the lateral link, and the bush with the larger internal diameter locates on the axle beam stud.

58 Fit the new nut to the control rod mounting bolt, but do not tighten the nut at this stage.

59 Engage the lateral link and control rod ends with the studs on the axle beam, ensuring that the lateral link is the correct way up - the arrow on the link adjacent to the axle beam mounting must point upward.

60 Fit the new nuts to the control rod and lateral link mounting studs on the axle beam, but do not tighten the nuts at this stage.

61 Position the lateral link and control rod horizontally in relation to the axle beam, hold the components in this position and tighten the two mounting nuts to the specified torque.

62 Refit the rear axle assembly as described previously in this Section.

### 12 Steering wheel - removal and refitting



**Warning:** Later models are equipped with an air bag system. The air bag is mounted in the steering wheel centre pad. Make sure that the safety recommendations given in Chapter 12 are followed, to prevent personal injury.

#### Models without air bag

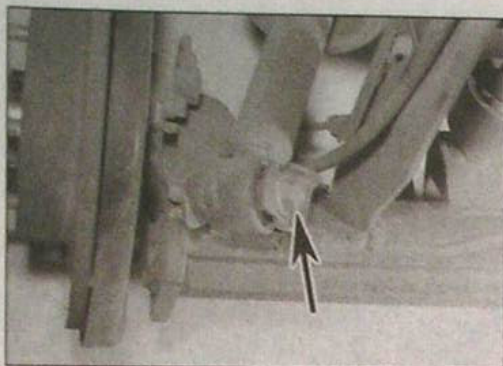
#### Removal

1 Disconnect the battery negative terminal (refer to Disconnecting the battery in the Reference Section of this manual).

2 Set the front wheels in the straight-ahead position, then release the steering lock by inserting the ignition key.

3 Pull the horn pad from the centre of the steering wheel, and disconnect the horn wiring from the pad (see illustration).





**11.2 Unscrew the nut from the bolt (arrowed) securing the lower end of the suspension strut to the axle beam**

## Overhaul

**44** Examine the metal components of the assembly for cracks or signs of damage. Similarly, examine the trailing arm front mounting bushes.

**45** The trailing arm mounting bushes can be removed/renewed using metal tubes of suitable diameter, as follows. Ideally, a press should be used.

**46** Support the trailing arm using a suitable tube positioned around the bush housing, then press or drive the bush from the housing.

**47** Lubricate the new bush with a little soapy water (washing-up liquid is ideal) to aid installation. Note that the arrows on the outer face of the bush must point towards the front and rear of the vehicle.

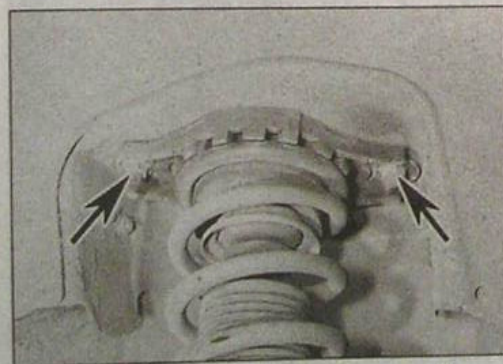
**48** Again support the trailing arm, then press or tap the new bush into position, using a tube of suitable diameter, which must bear on the outer metal sleeve of the bush - **do not** tap the end face of the bush directly with a hammer.

## Refitting

**49** Support the axle assembly on a jack, as during removal, then manoeuvre the assembly into position under the vehicle.

**50** Refit the pins securing the fronts of the trailing arms to the body brackets, then fit the new nuts, but do not fully tighten them at this stage.

**51** Refit the coil springs, Panhard rod, and shock absorbers as described previously in this Section. Do not fully tighten the mountings until the vehicle is resting on its wheels.



**11.4 Suspension strut upper mounting securing nuts (arrowed)**

**52** The jack used to support the axle assembly can now be withdrawn.

**53** Clip the handbrake cables into position in the securing clips and brackets, ensuring that the cables are routed as noted before removal. Reconnect the cables to the rear brake shoes or calipers, as applicable, as described in Chapter 9.

**54** Reconnect the rear brake pressure-regulating valve spring to the bracket on the axle tube.

**55** Where applicable, refit the ABS wheel sensors, and clip the wiring harnesses into position, as described in Chapter 9. Ensure that the wiring is routed as noted before removal.

**56** Reconnect the brake fluid hoses to the pipes, with reference to Chapter 9.

**57** Refit the roadwheels, and lower the vehicle to the ground.

**58** Make sure that the vehicle is parked on level ground, then roll the vehicle backwards and forwards, and bounce the rear of the vehicle to settle the suspension components.

**59** Chock the wheels, then tighten the trailing arm, Panhard rod, and rear shock absorber fixings to the specified torque.

**60** Bleed the brake hydraulic system as described in Chapter 9.

**61** Check the handbrake adjustment as described in Chapter 1.

**62** Check the adjustment of the rear brake pressure-regulating valve as described in Chapter 9.

## 11 Rear suspension components - removal, overhaul and refitting

**Note:** The following procedures are for all Phase III models only. Phase I and Phase II Saloon and Hatchback models are covered in Section 9, and Phase I and Phase II Estate models are covered in Section 10.

## Suspension strut

### Removal

**Note:** New suspension strut upper and lower securing nuts and bolts, should be used on refitting.

**1** Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the appropriate rear roadwheel.

**2** Unscrew the nut from the bolt securing the lower end of the suspension strut to the axle beam, then withdraw the bolt (see illustration). Discard the bolt and nut - new ones must be used on refitting.

**3** On SRi and GT Saloon models, remove the rear interior trim panels as necessary to expose the suspension strut upper mounting (see Chapter 11). Undo the two nuts securing the suspension strut brace to the upper mounting.

**4** From under the wheel arch, support the suspension strut, then unscrew the two upper mounting securing nuts (see illustration). Discard the nuts - new ones must be used on refitting. Lower the strut assembly and remove it from under the wheel arch.

### Overhaul

**Note:** Suitable coil spring compressor tools will be required for this operation.

**5** Clamp the lower end of the strut in a vice fitted with jaw protectors.

**6** Temporarily fit two old bolts and nuts to the upper mounting stud holes. Using a suitable bar inserted between the bolts, counterhold the strut upper mounting whilst loosening the damper rod top nut. **Do not** remove the nut.

**7** Fit suitable spring compressors to the spring, and compress the spring sufficiently to enable the upper mounting to be turned by hand.



**Warning:** Do not use makeshift or improvised tools to compress the spring, as there is a danger of serious injury if the spring is not retained properly and released slowly.

**8** Fully unscrew and remove the damper rod top nut. Note that it will be necessary to counterhold the damper rod, using a suitable spanner, as the nut is unscrewed.

**9** Withdraw the washer, bushing and upper mounting.

**10** Withdraw the spring, complete with compressors, then lift the rubber gaiter and the bump rubber from the damper rod.

**11** With the strut assembly now dismantled, examine all the components for wear, damage or deformation. Renew any of the components as necessary.

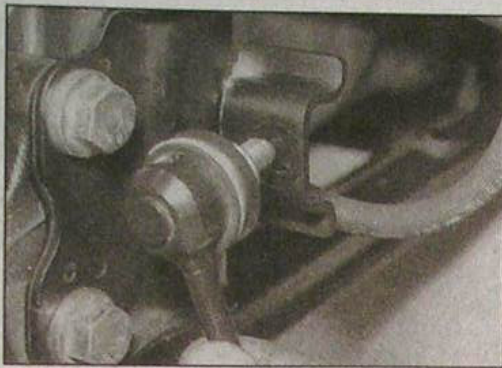
**12** Examine the damper for signs of fluid leakage. Check the damper rod for signs of pitting along its entire length, and check the strut body for signs of damage. While holding it in an upright position, test the operation of the strut by moving the damper rod through a full stroke, and then through short strokes of 50 to 100 mm. In both cases, the resistance felt should be smooth and continuous. If the resistance is jerky, or uneven, or if there is any visible sign of wear or damage to the strut, renewal is necessary. Note that the damper cannot be renewed independently, and if leakage or damage is evident, the complete strut/damper assembly must be renewed (in which case, the spring, upper mounting components, bushes, and associated components can be transferred to the new strut).

**13** If any doubt exists about the condition of the coil spring, carefully remove the spring compressors, and check the spring for distortion and signs of cracking. Renew the spring if it is damaged or distorted, or if there is any doubt as to its condition.

**14** Clamp the strut body in a vice, as during dismantling, then refit the bump rubber and the rubber gaiter.

**15** Ensure that the coil spring is compressed sufficiently to enable the upper mounting





9.72 Disconnecting a rear anti-roll bar drop link from the suspension strut

### Refitting

69 Refitting is a reversal of removal, bearing in mind the following points:

- When refitting the anti-roll bar clamps, note that the elongated bolt holes should be positioned at the bottom.
- When reconnecting the drop links to the anti-roll bar, make sure that the drop link balljoint is positioned centrally in its arc of movement, and is not under strain, and use new nuts.
- Use new clamp nuts, and new anti-roll bar-to-drop link nuts.

### Anti-roll bar drop link

#### Removal

**Note:** New anti-roll bar-to-drop link nuts should be used on refitting.

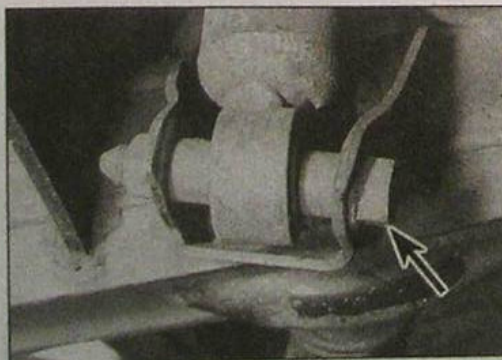
70 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). To improve access, remove the relevant rear roadwheel.

71 If necessary, counterhold the drop link pin, then unscrew the nut securing the end of the anti-roll bar to the drop link. Discard the nut - a new one should be used on refitting.

72 Again, if necessary counterhold the drop link pin, then unscrew the nut securing the drop link to the lower end of the suspension strut, and withdraw the drop link (see *illustration*). Discard the nut - a new one should be used on refitting.

#### Overhaul

73 Check the drop link balljoints for wear and damage, and if necessary renew the drop link.



10.2 Rear shock absorber lower securing bolt (arrowed)

### Refitting

74 Refitting is a reversal of removal, bearing in mind the following points:

- Make sure that the drop link balljoints are positioned centrally in their arcs of movement, and are not under strain.
- Use new drop link securing nuts, and tighten them to the specified torque.

### 10 Rear suspension components - removal, overhaul and refitting

**Note:** The following procedures are for Phase I and Phase II Estate models only. Phase I and Phase II Saloon and Hatchback models are covered in Section 9 and all Phase III models are covered in Section 11.

### Shock absorber

#### Removal

**Note:** Shock absorbers should always be renewed in pairs - ie, renew BOTH rear shock absorbers, even if only one actually needs to be renewed. New shock absorber mounting nuts should be used on refitting.

1 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the relevant rear roadwheel.

2 Place a trolley jack and interposed block of wood under the centre of the axle tube, then raise the axle slightly to tension the coil springs. Unscrew the nut from the bolt securing the shock absorber to the axle assembly. Discard the nut - a new one must be used on refitting. Withdraw the bolt (see *illustration*).

3 Unscrew the nut securing the top of the shock absorber to the stud on the underbody, then recover the washer, and withdraw the shock absorber. Discard the nut - a new one should be used on refitting.

#### Overhaul

4 Examine the shock absorber for signs of fluid leakage. Check the shock absorber rod for signs of pitting, and check the shock absorber body for signs of damage. While holding it in an upright position, test the operation of the shock absorber by moving

the rod through a full stroke, and then through short strokes of 50 to 100 mm. In both cases, the resistance felt should be smooth and continuous. If the resistance is jerky, or uneven, or if there is any visible sign of wear or damage to the shock absorber, renewal is necessary.

5 Inspect the mounting bushes for signs of cracking or wear. Note that the bushes are not available separately, and if worn or damaged, the complete shock absorber must be renewed.

### Refitting

6 Position the top of the shock absorber over the mounting stud on the underbody, then refit the washer (the larger diameter of the washer fits against the nut), and a new securing nut. Do not fully tighten the nut at this stage.

7 Position the lower end of the shock absorber in the mounting bracket on the axle assembly, then refit the bolt (note that the bolt fits from the inboard side of the trailing arm) and a new securing nut. Do not fully tighten the nut at this stage.

8 Withdraw the trolley jack from under the axle, then refit the roadwheel and lower the vehicle to the ground.

9 Make sure that the vehicle is parked on level ground, then release the handbrake, roll the vehicle backwards and forwards, and bounce the rear of the vehicle to settle the suspension components.

10 Chock the wheels, then tighten the shock absorber securing nuts to the specified torque.

### Coil spring

#### Removal

**Note:** Coil springs should always be renewed in pairs - ie, renew BOTH rear springs, even if only one actually needs to be renewed. As it is necessary to lower the complete axle assembly, both coil springs should be removed at the same time. New shock absorber lower mounting nuts, and a new Panhard rod upper mounting nut, should be used on refitting.

11 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the rear roadwheels.

12 Place a trolley jack and interposed block of wood under the centre of the axle tube, then raise the axle slightly to tension the coil springs. Unscrew the nuts from the bolts securing the shock absorbers to the axle assembly, then withdraw the bolts. Discard the nuts - new ones should be used on refitting.

13 Unscrew the nut from the bolt securing the Panhard rod to the bracket on the underbody, then withdraw the bolt (see *illustration*). Discard the nut - a new one should be used on refitting.

14 Lower the jack sufficiently to relieve the tension in the coil springs, then withdraw the coil springs.



10.13 Panhard rod upper securing bolt (arrowed)

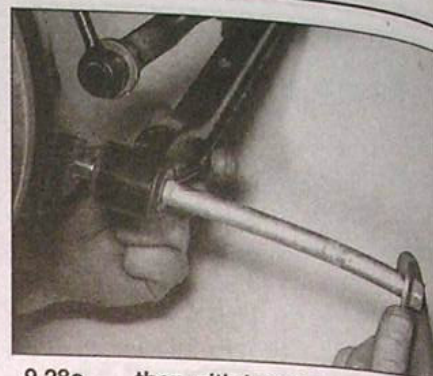




9.28a Remove the securing nut...



9.28b ... and recover the washer...



9.28c ... then withdraw the parallel link-to-hub carrier through-bolt

25 Reconnect the anti-roll bar drop link to the suspension strut, and secure with a new nut. Ensure that the balljoint is positioned in the centre of its arc of movement, and is not under strain, then tighten the nut to the specified torque.

26 Refit the roadwheel, and lower the vehicle to the ground.

## Parallel links

### Removal

**Note:** New parallel link mounting nuts should be used on refitting. On completion of refitting, the rear wheel alignment must be checked with reference to Chapter 1.

27 Chock the front wheels, then jack up the rear of the vehicle and support securely on axle stands (see *Jacking and Vehicle support*). Remove the relevant rear roadwheel.

28 Unscrew the nut from the through-bolt

securing the outboard ends of the two parallel links to the hub carrier. Recover the washer and withdraw the bolt (see illustrations). Discard the nut - a new one must be used on refitting.

29 If the rear parallel link is being removed, make a careful note of the position of the eccentrics on the inboard securing bolt (see illustration). The eccentrics have graduations on the outer edges, and the position of the eccentrics determines the rear wheel toe-setting (see Chapter 1). Note that one eccentric is integral with the bolt head, and the other locates in a groove in the shank of the bolt, under the nut. Make alignment marks between the eccentric and the body bracket.

30 Unscrew the nut from the bolt securing the inboard end of the parallel link to the bracket on the body. Note that it will be necessary to counterhold the bolt. Recover the eccentric, then withdraw the bolt, and lower the parallel link from under the vehicle. Discard the nut - a new one must be used on refitting (see illustrations).

### Overhaul

31 Inspect the parallel link for cracks or other signs of damage, and examine the bushes for wear and deterioration.

32 The bushes are integral with the parallel links, and if worn or damaged, the complete link assembly must be renewed.

### Refitting

33 Manoeuvre the link into position beneath the vehicle, then refit the bolt securing the inboard end of the link to the bracket on the

body (note that the bolt fits from the front of the vehicle). Where applicable, refit the washer, then fit a new securing nut, but do not tighten it fully at this stage.

34 Refit the through-bolt securing the outboard ends of the parallel links to the hub carrier (note that the bolt fits from the rear of the vehicle), then refit the washer, and a new nut, but do not fully tighten the nut at this stage.

35 Refit the roadwheel, and lower the vehicle to the ground.

36 Make sure that the vehicle is parked on level ground, then release the handbrake. Roll the vehicle backwards and forwards, and bounce the front of the vehicle to settle the suspension components.

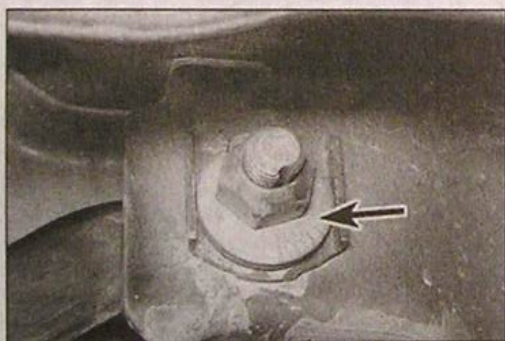
37 Chock the wheels, then tighten the outboard parallel link securing nut to the specified torque.

38 Set the eccentric on the inboard parallel link securing bolt to the position noted before removal, then check the rear wheel alignment (see Chapter 1), and tighten the nut to the specified torque. If no suitable equipment is available to check the wheel alignment, tighten the nut with the eccentric positioned as noted before removal, then have the rear wheel alignment checked at the earliest opportunity by a Nissan dealer or a suitably-qualified tyre specialist.

## Radius rod

### Removal

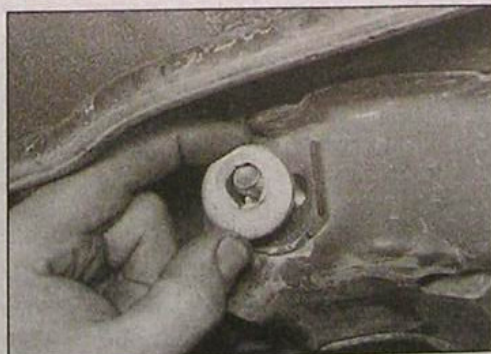
**Note:** A new radius rod front mounting nut should be used on refitting.



9.29 Note the position of the eccentric (arrowed) on the inboard parallel link securing bolt



9.30a Unscrew the parallel link inboard securing nut while counterholding the bolt...



9.30b ... then recover the eccentric...



9.30c ... and withdraw the bolt





9.2 Unscrewing the anti-roll bar drop link-to-rear suspension strut nut

11 On models with rear disc brakes, refit the brake disc and the caliper as described in Chapter 9.

12 Hold the hub stationary as during removal, then tighten the hub nut to the specified torque.

13 Check that the hub spins freely, then fit a new split pin, then tap the dust cap into position.

14 On models with ABS, refit the wheel sensor and tighten its retaining bolt to the specified torque (Chapter 9).

15 Refit the roadwheel, then lower the vehicle to the ground.

## 9 Rear suspension components - removal, overhaul and refitting

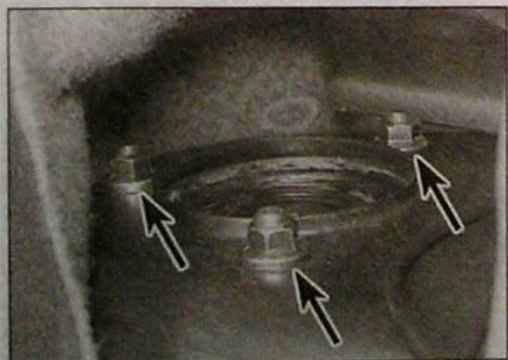
**Note:** The following procedures are for Phase I and Phase II Saloon and Hatchback models only. Phase I and Phase II Estate models are covered in Section 10 and all Phase III models are covered in Section 11.

### Suspension strut

#### Removal

**Note:** New suspension strut upper and lower securing nuts, a new top mounting gasket, and a new anti-roll bar drop link securing nut should be used on refitting.

1 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see Jacking and Vehicle Support). Remove the appropriate rear roadwheel.



9.7 Rear suspension strut securing nuts (arrowed)



9.3 Unbolting the ABS wiring from the rear strut

2 Unscrew the nut securing the upper end of the anti-roll bar drop link to the lower end of the suspension strut (see illustration). Discard the nut - a new one should be used on refitting. Separate the drop link from the strut.

3 Where applicable, unbolt the ABS wiring from the lower end of the strut (see illustration).

4 Pull out the securing clip, and disconnect the brake fluid hose from the bracket at the lower end of the suspension strut (see illustration).

5 Unscrew the nuts from the bolts securing the lower end of the suspension strut to the hub carrier, then withdraw the bolts (see illustration). Discard the nuts - new ones must be used on refitting.

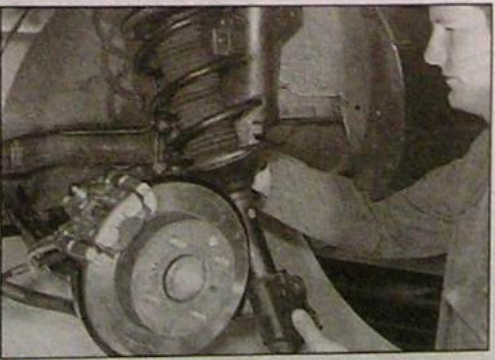
6 Remove the rear seat back side bolster as described in Chapter 11. On Saloon models, remove the rear parcel shelf (see Chapter 11). Unclip the carpet trim panel to expose the suspension strut top mounting cover.

7 Prise the plastic cover from the top of the suspension strut top mounting, to expose the three securing nuts (see illustration).

8 Have an assistant support the suspension strut from under the wheel arch, then unscrew the three top securing nuts, and lower the strut assembly from the vehicle (see illustration). Discard the nuts - new ones must be used on refitting.

#### Overhaul

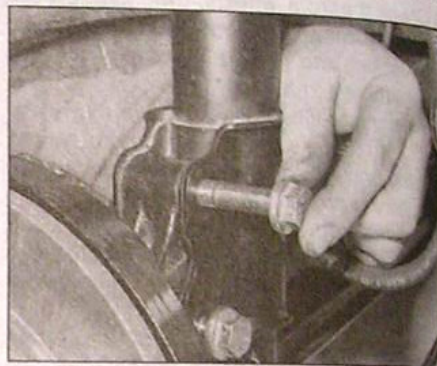
**Note:** Suitable coil spring compressor tools will be required for this operation, and a new damper rod top nut must be used on reassembly.



9.8 Removing a rear strut



9.4 Removing the brake fluid hose securing clip (arrowed) from the rear strut



9.5 Removing a rear suspension strut-to-hub carrier bolt

**Note:** On 1.6 litre models, there are two types of strut with different diameter damper rods, and therefore different bump rubbers. If the bump rubber is renewed, ensure that the correct replacement part is obtained.

9 Clamp the lower end of the strut in a vice fitted with jaw protectors.

10 Temporarily refit two of the strut upper securing nuts to their studs then, using a suitable bar inserted between the upper mounting studs, counterhold the upper strut mounting whilst loosening the damper rod top nut. Do not remove the nut (see illustrations).

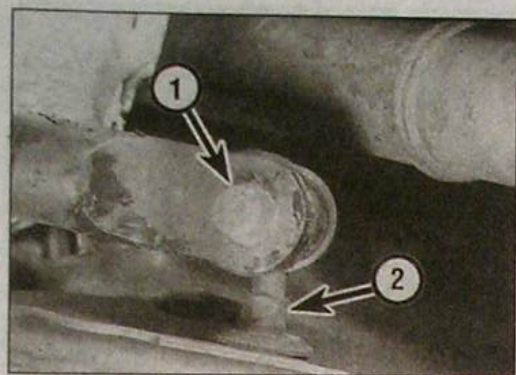
**HAYNES**  
**HINT**

Fit the strut upper securing nuts upside-down, to prevent the bar from slipping off the studs.



9.10a Loosening the rear strut damper rod top nut





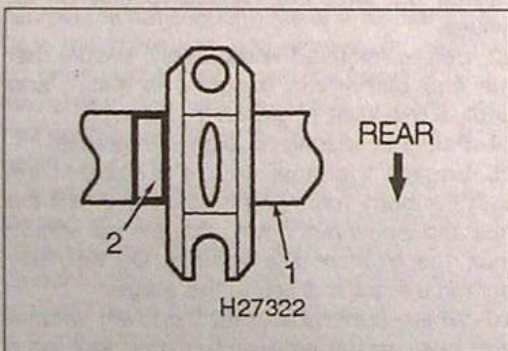
**7.2 Front anti-roll bar-to-drop link nut (1) and drop link pin (2)**

**17** Engage the centre link assembly with the suspension upper link (and where applicable, the anti-roll bar drop link), and refit the bolt and a new nut, noting that the nut should face the rear of the vehicle. Do not fully tighten the nut and bolt at this stage.

**18** Engage the lower end of the suspension strut with the centre link assembly, and refit the bolt and a new nut, again noting that the nut should face the rear of the vehicle. Do not fully tighten the nut and bolt at this stage.

**19** Engage the hub carrier pin with the centre link assembly, then refit the washer and the new nut. Tighten the nut to the specified torque, then pack the dust cap with grease, and tap the cap into position.

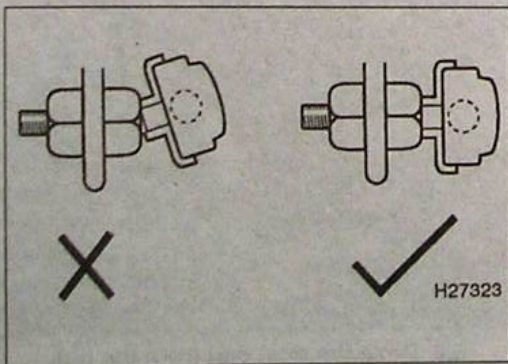
**20** Where applicable, refit the anti-roll bar drop link upper bush, washer (the concave side of the washer should fit against the bush), and the new securing nut. Again, do not fully tighten the nut at this stage.



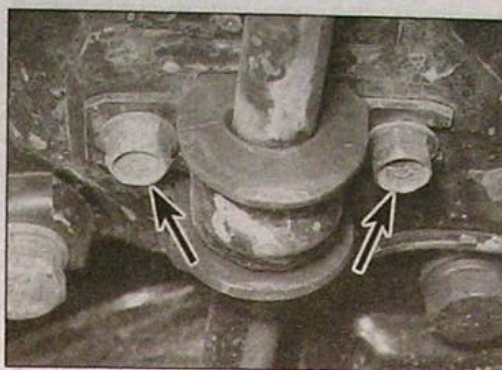
**7.7a Correct position of anti-roll bar clamp**

1 Anti-roll bar

2 Paint mark



**7.7b Correct positioning of anti-roll bar drop link balljoint**



**7.4 Front anti-roll bar-to-floor clamp bolts (arrowed)**

**21** Refit the roadwheel, and lower the vehicle to the ground.

**22** Make sure that the vehicle is parked on level ground, then release the handbrake. Roll the vehicle backwards and forwards, and bounce the front of the vehicle to settle the suspension components.

**23** Chock the wheels, then tighten all relevant nuts and bolts to the specified torque.

**24** On completion, the front wheel alignment should be checked with reference to Chapter 1.

## 7 Front suspension anti-roll bar - removal and refitting

### Anti-roll bar

#### Removal

**Note:** New anti-roll bar-to-drop link nuts should be used on refitting.

**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 front roadwheels.

**2** Working at one side of the anti-roll bar, where necessary counterhold the drop link pin, then unscrew the nut securing the end of the anti-roll bar to the drop link (see *illustration*). Recover the washer. Discard the nut - a new one should be used on refitting.

**3** Repeat the operation on the remaining side of the anti-roll bar.

**4** Unscrew the bolts, and withdraw the clamps securing the anti-roll bar to the vehicle floor (see *illustration*).

**5** Manipulate the anti-roll bar out from under the vehicle.

#### Refitting

**6** Inspect the mounting clamp rubbers for cracks or deterioration. If renewal is necessary, slide the old rubbers from the bar, and fit the new rubbers. Note that the rubbers should be positioned with the paint marks on the bar against their inner edges.

**7** Refitting is a reversal of removal, bearing in mind the following points (see *illustrations*):

- a) When refitting the clamps, make sure that the clamps are positioned with the paint

- marks on the anti-roll bar against the inner edges of the clamps, and that the cut-out bolt holes in the clamps are positioned towards the rear of the vehicle.
- b) When reconnecting the drop links to the anti-roll bar, make sure that the drop link balljoint is positioned centrally in its arc of movement, and is not under strain; use new nuts.
- c) Do not fully tighten the clamp bolts until the vehicle is resting on its roadwheels, and the suspension has been settled.

### Drop link

#### Removal

**Note:** New securing nuts should be used on refitting.

**8** To improve access, apply the handbrake, then jack up the front of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the relevant front roadwheel.

**9** Counterhold the drop link pin, then unscrew the nut securing the end of the anti-roll bar to the drop link. Recover the washer. Discard the nut - a new one should be used on refitting.

**10** Again, counterhold the drop link pin, then unscrew the nut securing the anti-roll bar drop link to the lower arm, or the suspension centre link, as applicable (see *illustration*). Recover the washer and bush. Again, discard the nut - a new one should be used on refitting.

**11** Lift out the drop link, and recover the remaining bush and washer.

#### Refitting

**12** Check the condition of the drop link bushes, and renew if necessary.

**13** Refitting is a reversal of removal, bearing in mind the following points:

- a) Note that the concave sides of the washers should be positioned against the bushes.
- b) When reconnecting the drop links to the anti-roll bar, make sure that the drop link balljoint is positioned centrally in its arc of movement, and is not under strain.
- c) Use new drop link securing nuts, and tighten them to the specified torque.



**7.10 Anti-roll bar drop link-to-suspension centre link securing nut (arrowed)**





4.3 Lower arm rear mounting clamp bolts (arrowed)

#### 4 Front suspension lower arm - removal, overhaul and refitting



4.4 Lower arm-to-mounting pin nut (arrowed)

### Phase I and Phase II Saloon and Hatchback models and all Phase III models

#### Removal

**Note:** A balljoint separator tool may be required for this operation. The lower arm balljoint split pin, lower arm front mounting nut, and on Phase I and Phase II 1.6 litre models, the anti-roll bar drop link nut, must be renewed on refitting.

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.

2 On Phase I and Phase II 1.6 litre models, unscrew the nut securing the anti-roll bar drop link to the lower arm, and recover the washer and bush. Note that it may be necessary to counterhold the drop link pin in order to unscrew the nut. Discard the nut - a new one should be used on refitting.

3 Unscrew the two bolts securing the lower arm rear mounting clamp to the vehicle floor, and remove the clamp (see illustration).

4 Slacken the nut securing the front of the lower arm to the mounting pin. Do not remove the nut at this stage (see illustration).

5 Remove the split pin, then unscrew the nut securing the lower end of the hub carrier to the lower arm balljoint. Discard the split pin - a new one must be used on refitting.

6 Separate the hub carrier from the lower arm. If necessary, use a balljoint separator tool. Remove the nut, and lever the end of the lower arm down to release it from the hub carrier.

7 Remove the nut securing the front of the lower arm to the mounting pin, and recover the washer. Discard the nut - a new one must be used on refitting.

8 Slide the lower arm forwards from the front mounting pin, and withdraw the lower arm from under the vehicle. Note that on Phase I and Phase II 1.6 litre models, it will be necessary to pivot the lower arm down to release it from the anti-roll bar drop link before

the lower arm can be withdrawn from the front mounting pin - recover the remaining bush and washer from the drop link.

#### Overhaul

9 With the lower arm removed, examine the lower arm itself, and the mounting bushes, for wear, cracks or damage.

10 Check the balljoint for wear, excessive play, or stiffness. Also check the balljoint dust boot for cracks or damage.

11 The mounting bushes and balljoint assembly are integral with the lower arm, and cannot be renewed independently. If either the bushes or the balljoint are worn or damaged, the complete lower arm assembly must be renewed.

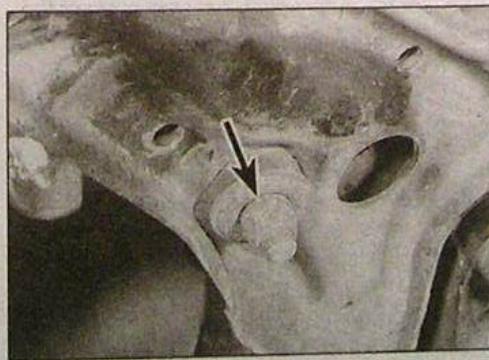
#### Refitting

**Note:** Final tightening of all fixings should be carried out with the vehicle resting on its wheels.

12 Slide the lower arm into position on the front mounting pin. On Phase I and Phase II 1.6 litre models, engage the lower arm with the anti-roll bar drop link (ensure that the upper washer and bush are fitted to the drop link - the concave side of the washer should be against the bush). Refit the washer and the new nut to the front mounting pin. Do not fully tighten the nut at this stage.

13 Engage the lower arm balljoint with the hub carrier, then refit the balljoint nut. Do not fully tighten the nut at this stage.

14 Refit the lower arm rear mounting clamp, and refit the securing bolts. Do not fully tighten the bolts at this stage.



4.22 Anti-roll bar-to-lower arm nut (arrowed)

15 On Phase I and Phase II 1.6 litre models, refit the lower bush and washer to the anti-roll bar drop link (the concave side of the washer should be against the bush), then fit a new securing nut. Again, do not fully tighten the nut at this stage.

16 Refit the roadwheel, and lower the vehicle to the ground.

17 Make sure that the vehicle is parked on level ground, then release the handbrake. Roll the vehicle backwards and forwards, and bounce the front of the vehicle to settle the suspension components.

18 Chock the wheels, then tighten all relevant nuts and bolts to the specified torque. After tightening, fit a new split pin to the lower arm balljoint nut.

19 On completion the front wheel alignment should be checked, with reference to Chapter 1.

### Estate models

#### Removal

**Note:** The lower arm balljoint securing nuts, anti-roll bar drop link nut, and lower arm front mounting nut, should be renewed on refitting.

20 Chock the rear wheels, apply the handbrake, then jack up the front of the vehicle and support securely on axle stands (see *Jacking and Vehicle support*). Remove the relevant roadwheel.

21 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.

22 If necessary, counterhold the anti-roll bar pin, using a suitable spanner, and unscrew the nut securing the anti-roll bar to the lower arm (see illustration). Recover the washer and bush. Discard the nut - a new one should be used on refitting.

23 Unscrew the two bolts securing the lower arm rear mounting clamp to the vehicle floor, and remove the clamp.

24 Remove the nut securing the front of the lower arm to the mounting pin, and recover the washer. Discard the nut - a new one should be used on refitting.

25 Pivot the lower arm down to release it from the anti-roll bar drop link, then slide the lower arm forwards from the front mounting pin, and withdraw it from under the vehicle. Recover the remaining bush and washer from the anti-roll bar drop link.

#### Overhaul

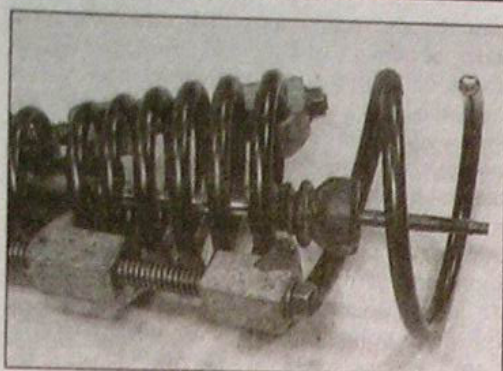
26 Examine the lower arm itself, and the mounting bushes, for wear, cracks or damage. The bushes are integral with the lower arm, and if they are worn or damaged, the complete lower arm must be renewed.

#### Refitting

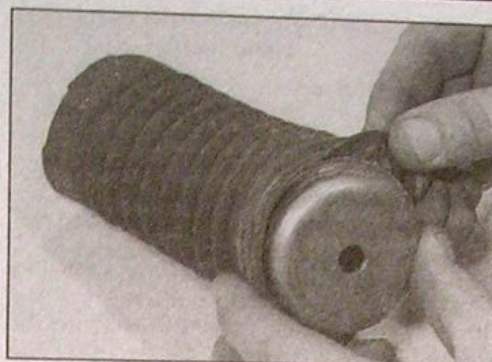
**Note:** Final tightening of all fixings should be carried out with the vehicle resting on its wheels.

27 Slide the lower arm into position on the front mounting pin, and engage the lower arm

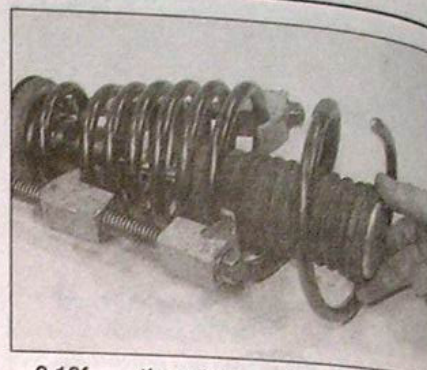




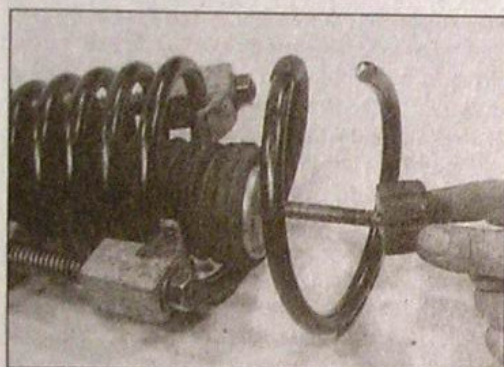
3.16d ... against the seat on the piston rod



3.16e Ensure that the gaiter cap is correctly engaged with the rubber gaiter ...



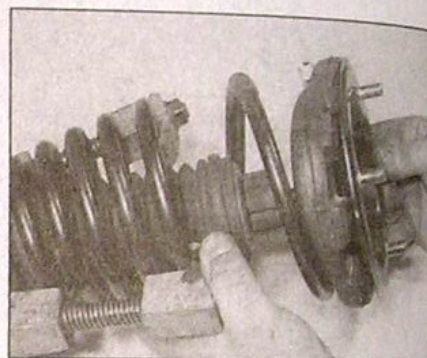
3.16f ... then fit the gaiter and cap ...



3.16g ... and the bush



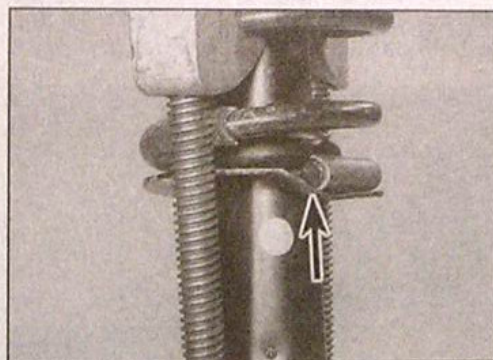
3.16h Fit the upper spring seat to the top mounting ...



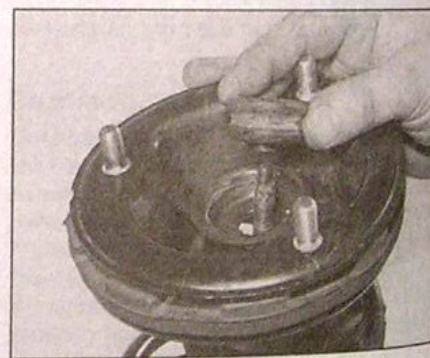
3.16i ... then refit the spring seat/top mounting assembly ...



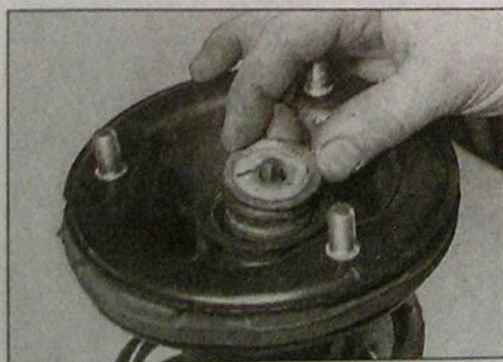
3.16j ... noting that the cut-out marked 'L' must be positioned nearest the inner edge of the suspension turret when the strut is refitted



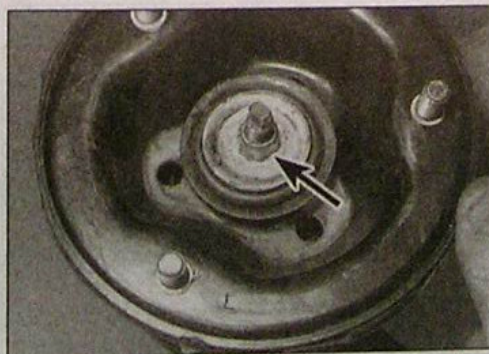
3.16k ... and the spring stop (arrowed) on the lower spring seat must be point towards the rear of the vehicle - left-hand strut shown, see text



3.16l Fit the bush ...



3.16m ... the washer ...



3.16n ... and the damper rod top nut (arrowed)



3.17 Fit a new gasket to the strut top mounting



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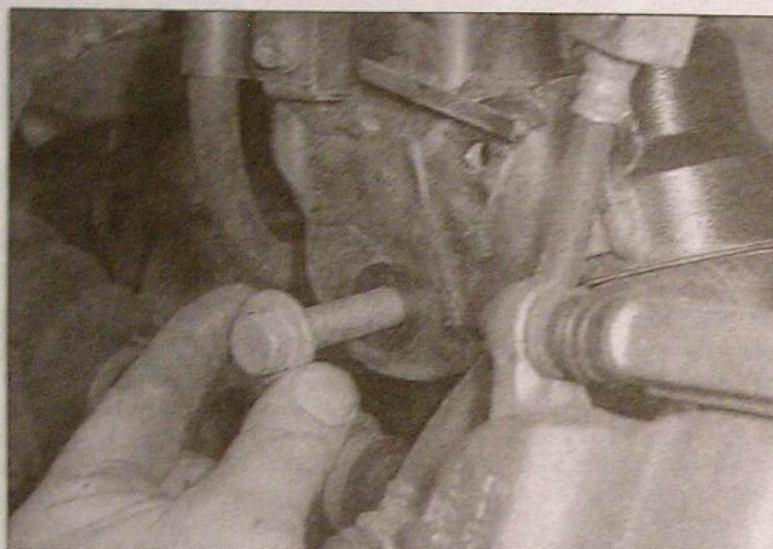
3.2 Remove the screw securing the ABS sensor wiring bracket



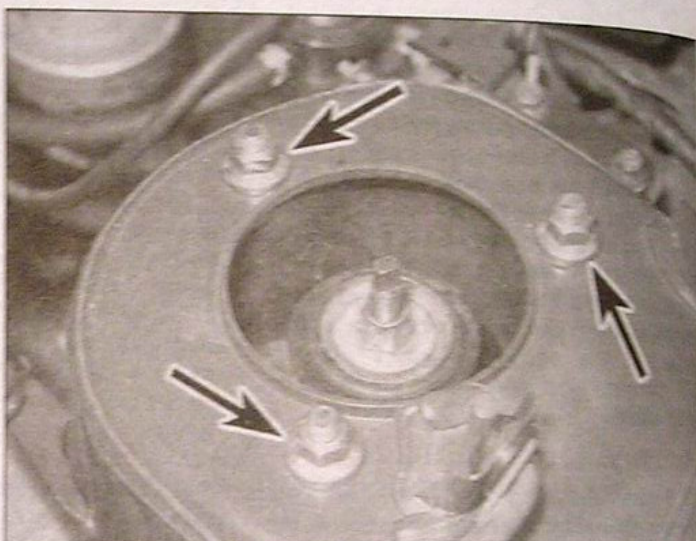
3.3 Unbolt the brake fluid line connector block



3.4 Removing the centre link-to-upper link bolt



3.5 Removing the suspension strut-to-centre link bolt



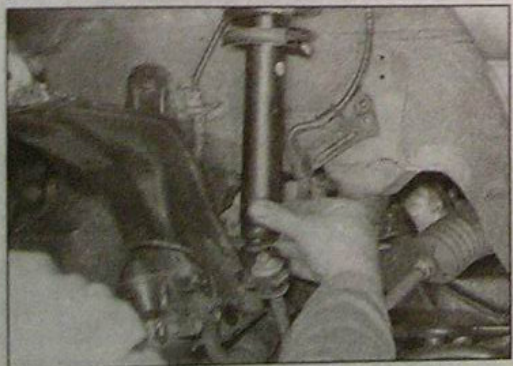
3.6a Unscrew the suspension strut top nuts (arrowed) ...

### 3 Front suspension strut - removal, overhaul and refitting

#### Phase I and Phase II Saloon and Hatchback models and all Phase III models

##### Removal

**Note:** The manufacturers recommend that the suspension strut-to-centre link bolt and nut, the centre link-to-upper link nut, and the suspension strut top mounting nuts and gasket, are renewed on refitting.



3.6b ... then manipulate the strut from behind the centre link ...

- 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.
- 2 On models with ABS, remove the screws securing the ABS sensor wiring bracket to the inner wing panel (see illustration).
- 3 Unbolt the brake fluid line connector block from the suspension centre link (see illustration).
- 4 Unscrew and remove the nut and bolt securing the suspension centre link to the upper link, then pivot the centre link and the upper link as necessary to allow sufficient clearance to remove the strut (see illustration). Discard the nut - a new one should be used on refitting.
- 5 Remove the nut from the bolt securing the lower end of the strut to the suspension centre link, then withdraw the bolt (see illustration). Discard the nut and bolt - new ones should be used on refitting.
- 6 Have an assistant support the strut from underneath the wheel arch then, working in the engine compartment, unscrew the three nuts securing the top of the strut to the suspension turret (see illustrations).



**Warning:** Do not unscrew the centre damper rod nut. Lower the strut, and withdraw the assembly from under the wheel arch.

##### Overhaul

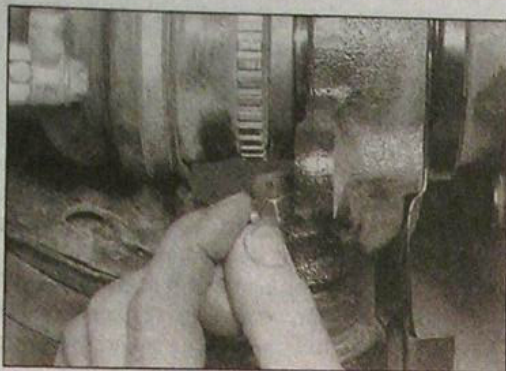
**Note:** Suitable coil spring compressor tools will be required for this operation, and a new damper rod top nut must be used on reassembly.

- 7 Clamp the lower end of the strut in a vice fitted with jaw protectors.
- 8 Temporarily refit two of the strut upper securing nuts to their studs. Using a suitable bar inserted between the upper mounting studs, counterhold the upper strut mounting whilst loosening the damper rod top nut. Do not remove the nut (see illustration).
- 9 Fit suitable spring compressors to the spring, and compress the spring sufficiently to



3.6c ... and withdraw the strut





**2.4 Removing the split pin from the lower arm balljoint**

ABS sensor wiring to the hub carrier. Suspend the sensor away from the working area, to avoid the possibility of damage.

### Phase I and Phase II Saloon and Hatchback models and all Phase III models

**4** Remove the split pin, then unscrew the nut securing the lower end of the hub carrier to the lower arm balljoint (**see illustration**). Discard the split pin - a new one must be used on refitting.

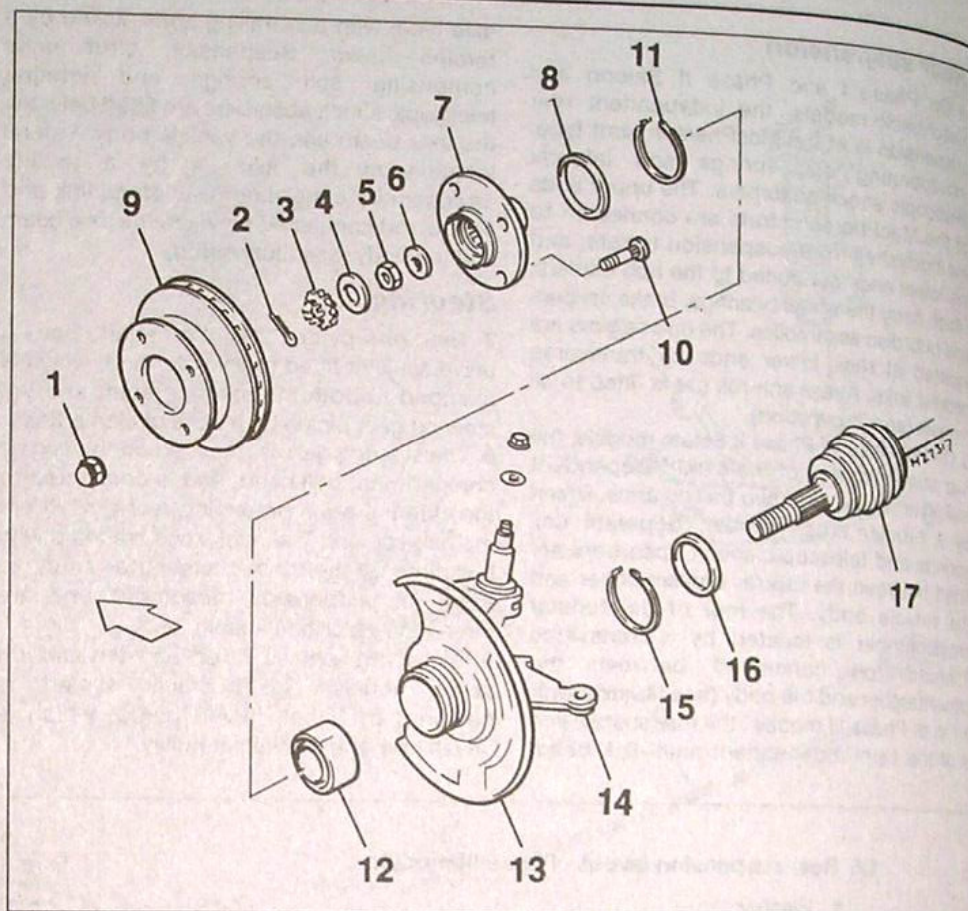
**5** Separate the hub carrier from the lower arm balljoint. If necessary, use a balljoint separator tool. Remove the nut, then withdraw the hub carrier.

**6** Disconnect the outboard end of the driveshaft from the hub, as described during the driveshaft removal and refitting procedure in Chapter 8 (**see illustration**). Note that there is no need to disconnect the inboard end of the driveshaft from the transmission. **Do not** allow the end of the driveshaft to hang down under its own weight - support the end of the driveshaft using wire or string.

**7** Proceed to paragraph 10.

### Phase I and Phase II Estate models

**8** Disconnect the outboard end of the driveshaft from the hub, as described during the driveshaft removal and refitting procedure in Chapter 8. Note that there is no need to disconnect the inboard end of the driveshaft from the transmission. **Do not** allow the end of the driveshaft to hang down under its own weight - support the end of the driveshaft using wire or string.



**2.6 Front hub and bearing components**

- |                             |                                    |                                    |
|-----------------------------|------------------------------------|------------------------------------|
| 1 Roadwheel nut             | 7 Hub                              | 13 Brake disc shield               |
| 2 Split pin                 | 8 Outer oil seal                   | 14 Hub carrier                     |
| 3 Castellated locking plate | 9 Brake disc                       | 15 Inner bearing retaining circlip |
| 4 Spacer                    | 10 Roadwheel stud                  | 16 Inner oil seal                  |
| 5 Driveshaft nut            | 11 Outer bearing retaining circlip | 17 Driveshaft                      |
| 6 Washer                    | 12 Wheel bearing assembly          |                                    |

**9** Remove the two nuts from the bolts securing the hub carrier to the suspension strut (**see illustration**). Withdraw the bolts and remove the hub carrier assembly. Discard the nuts and bolts - new ones must be used on refitting.

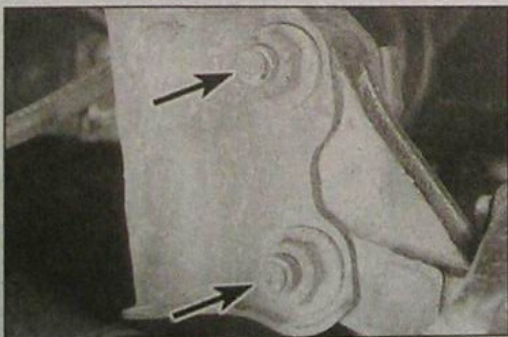
### All models

**10** Support the outer face of the hub carrier on two metal bars, ensuring that the hub is free (take care not to damage the brake disc

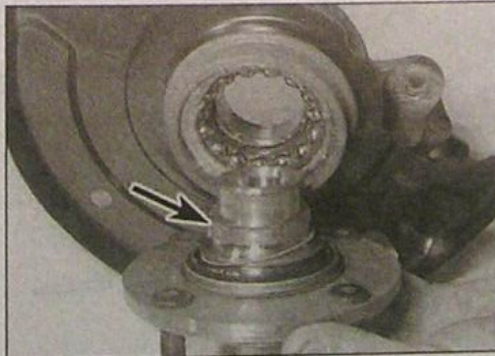
shield). Using a metal bar or tube of suitable diameter, press or drive the hub from the wheel bearing. Note that one half of the inner bearing race will remain on the hub (**see illustration**).

**11** Support the inner bearing race which is still attached to the hub, then press or drive the hub from the race. Alternatively, pull the bearing race from the hub using a suitable puller (**see illustration**).

**12** Recover the outer oil seal from the hub.



**2.9 Remove the two nuts (arrowed) from the bolts securing the hub carrier to the suspension strut**



**2.10 Removing the hub from the wheel bearing. Note bearing inner race (arrowed)**

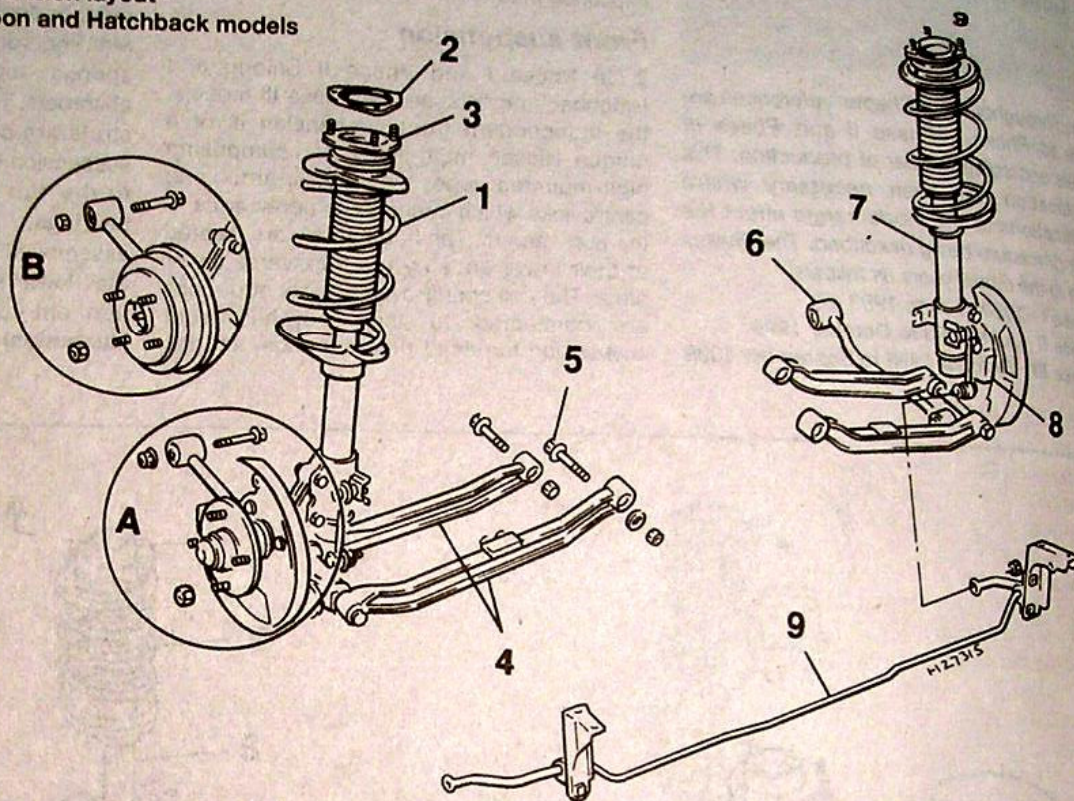


**2.11 Using a puller to remove the bearing race from the hub**



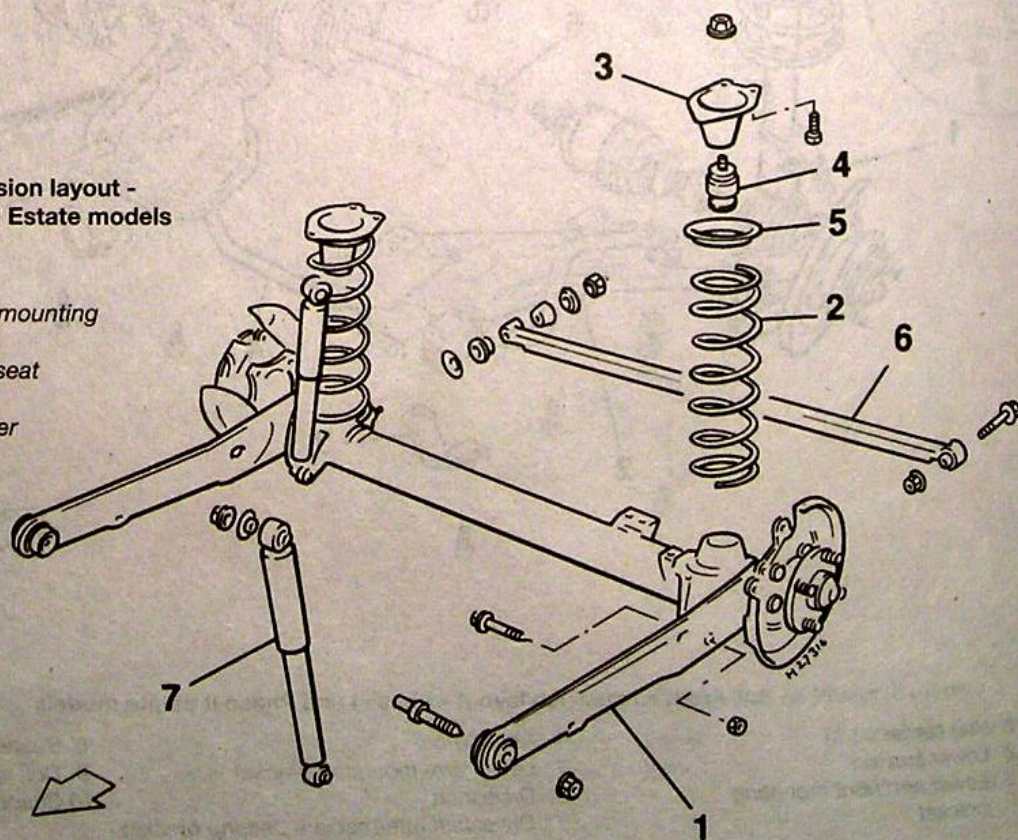
**1.4 Rear suspension layout -  
Phase I and Phase II Saloon and Hatchback models**

- 1 Coil spring
  - 2 Gasket
  - 3 Suspension strut top mounting
  - 4 Parallel links
  - 5 Parallel link inboard securing (adjuster) bolt
  - 6 Radius rod
  - 7 Suspension strut
  - 8 Hub carrier
  - 9 Anti-roll bar
- A Models with rear disc brakes  
B Models with rear drum brakes



**1.5 Rear suspension layout -  
Phase I and Phase II Estate models**

- 1 Trailing arm
- 2 Coil spring
- 3 Bump rubber mounting
- 4 Bump rubber
- 5 Upper spring seat
- 6 Panhard rod
- 7 Shock absorber





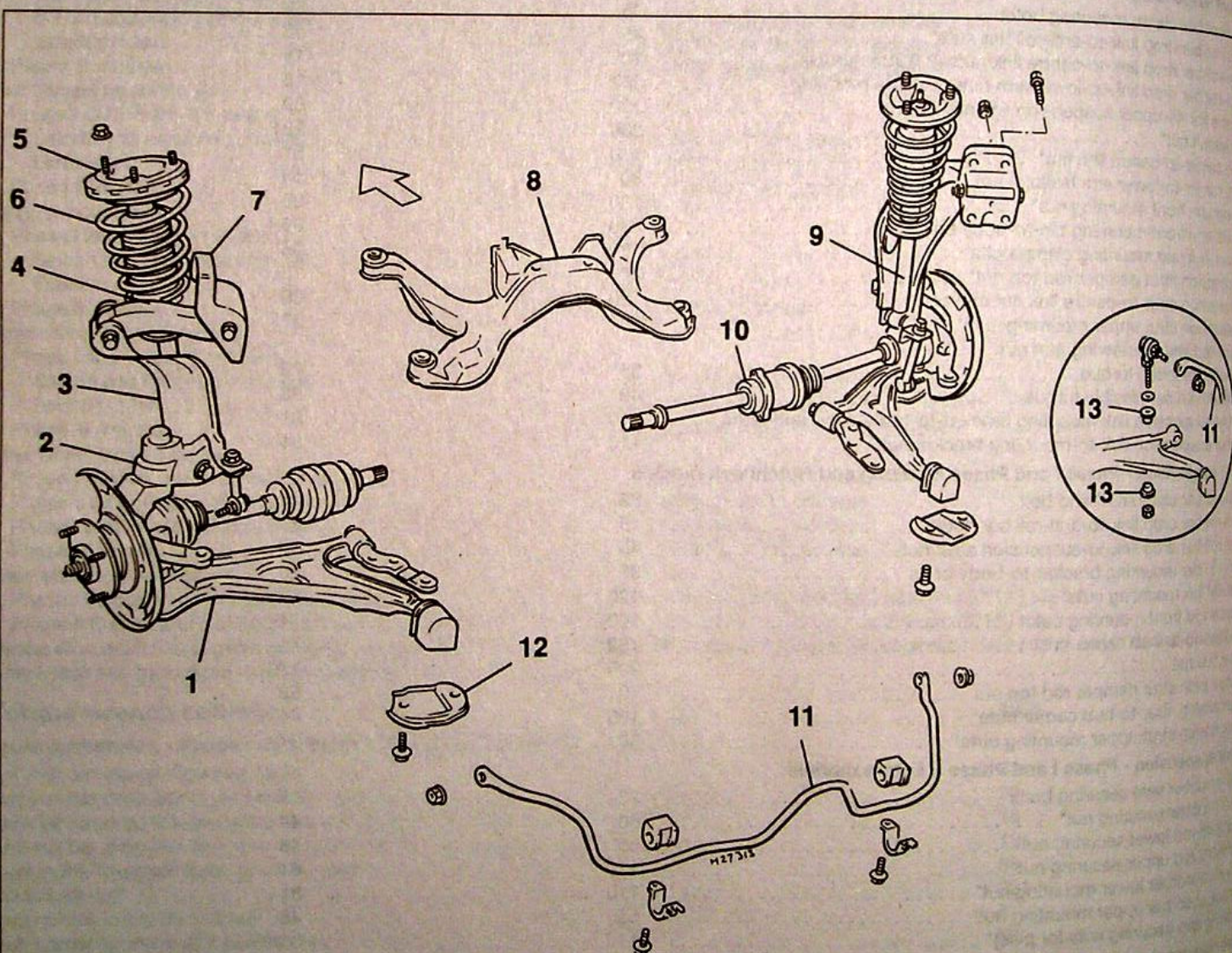
# Torque wrench settings (continued)

	Nm	lbf ft
<b>Steering</b>		
Air bag securing bolts (Torx type)*	20	15
Power steering fluid pipe union banjo-to-pump bolt	60	44
Power steering pump-to-bracket bolts	30	22
Steering column securing nuts and bolts	15	11
Steering column universal joint clamp bolts	25	18
Steering gear mounting clamp bolts	90	66
Steering wheel securing nut	35	26
Track-rod end locknut	45	33
Track-rod end-to-steering arm nut:		
Recommended torque	35	26
Maximum permissible torque	49	36

## Roadwheels

Roadwheel nuts	110	81
----------------	-----	----

\*Use new nut(s)/bolt(s).



1.2 Front suspension layout - Phase I and Phase II Saloon and Hatchback models, and all Phase III models

- |               |                                 |                     |                                  |
|---------------|---------------------------------|---------------------|----------------------------------|
| 1 Lower arm   | 5 Suspension strut top mounting | 8 Front crossmember | 12 Lower arm rear mounting clamp |
| 2 Hub carrier | 6 Coil spring                   | 9 Suspension strut  | 13 Rubber bushes                 |
| 3 Centre link | 7 Upper link mounting bracket   | 10 Driveshaft       |                                  |
| 4 Upper link  |                                 | 11 Anti-roll bar    |                                  |

Inset - Anti-roll bar mounting - 1.6 litre Phase I and Phase II models



## Tyres

### Size:

5J x 13 wheels	165 R13 82T or 165 R13 84T (depending on model)
5.5JJ x 14 wheels	175/70 R14 84T, 185/65 R14 85H, 185/65 R14 87H, or 195/65 R14 89H (depending on model)
6J x 14 wheels	185/65 R14 87H, 195/65 R14 89H, 195/60 R14 85V, or 195/60 R14 86V (depending on model)
6JJ x 15 wheels	185/65 HR15, 195/60 R15, or 195/60 VR15 (depending on model)
Tyre pressures	Refer to manufacturer's tyre specification plate fitted to driver's door rear pillar

## Roadwheels

Type	Pressed-steel or aluminium alloy (depending on model)
Size	5J x 13, 5.5JJ x 14, 6J x 14, or 6JJ x 15 (depending on model)

## Wheel alignment and steering angles\*

### Front wheel camber angle:

Phase I and Phase II models:	
Saloon and Hatchback models	0°45' negative to 0°45' positive
Estate models	0°05' negative to 1°25' positive
Phase III models	0°45' negative to 0°45' positive

### Front wheel castor angle:

Phase I and Phase II models:	
Saloon and Hatchback models	1°00' to 2°30' positive
Estate models	1°15' to 2°45' positive
Phase III models	1°00' to 2°30' positive

### Kingpin inclination:

Phase I and Phase II models:	
Saloon and Hatchback models	13°45' to 15°15'
Estate models	13°15' to 14°45'
Phase III models	13°45' to 15°15'

### Front wheel toe setting:

Phase I and Phase II models:	
Saloon and Hatchback models	Parallel to 2.0 mm (0°12') toe-in
Estate models	1.0 to 3.0 mm (0°6' to 0°17') toe-in
Phase III models	Parallel to 2.0 mm (0°12') toe-in

### Rear wheel camber angle:

Phase I Saloon and Hatchback models	1°45' to 0°15' negative
Phase II Saloon and Hatchback models	2°15' to 0°45' negative
Phase I and Phase II Estate models	2°15' to 0°45' negative
Phase III models	1°45' to 0°15' negative

### Rear wheel toe-setting:

Phase I Saloon and Hatchback models	2.0 mm (0°12') toe-out to 2.0 mm (0°12') toe-in
Phase II Saloon and Hatchback models	1.0 mm (0°6') toe-out to 3.0 mm (0°18') toe-in

\*Note: All specifications given are for an unladen vehicle - ie, no driver or passengers, fuel tank full, engine coolant and oil levels normal, and spare wheel, jack and tools fitted in normal locations.

## Torque wrench settings

### Front suspension - Phase I and Phase II Saloon and Hatchback models

	Nm	lbf ft
Anti-roll bar clamp mounting bolts	45	33
Anti-roll bar drop link-to-anti-roll bar nuts*	45	33
Anti-roll bar drop link-to-centre link nuts (2.0 litre models)	20	15
Anti-roll bar drop link-to-lower arm nuts (1.6 litre models)*	25	18
Centre link-to-upper suspension link nut*	120	89
Driveshaft nut*	300	221
Hub carrier-to-centre link nut*	110	81
Hub carrier-to-lower arm balljoint nut	80	59
Lower arm front mounting nut*	100	74
Lower arm front mounting pin-to-body bolts	100	74
Lower arm rear mounting clamp bolts	130	96
Suspension strut damper rod top nut*	20	15
Suspension strut-to-centre link nut and bolt*	120	89
Suspension strut upper mounting nuts*	50	37
Track-rod end-to-steering arm nut:		
Recommended torque	35	26
Maximum permissible torque	49	36
Upper suspension link-to-mounting bracket nut*	110	81
Upper suspension link mounting bracket-to-body nuts* and bolts	110	81








# Chapter 10

## Suspension and steering

### Contents

Front hub bearings - renewal	2	Rear suspension components (Phase I and Phase II Saloon and Hatchback models) - removal, overhaul and refitting	9
Front suspension anti-roll bar - removal and refitting	7	Rear suspension components (Phase III models) - removal, overhaul and refitting	11
Front suspension centre and upper link assembly - removal, overhaul and refitting	6	Steering and suspension check	See Chapter 1
Front suspension lower arm - removal, overhaul and refitting	4	Steering column - removal, inspection and refitting	14
Front suspension lower arm balljoint - renewal	5	Steering gear assembly - removal, overhaul and refitting	15
Front suspension strut - removal, overhaul and refitting	3	Steering gear rubber gaiters - renewal	16
General information	1	Steering wheel - removal and refitting	12
Ignition switch/steering column lock - removal and refitting	13	Track-rod end - removal and refitting	19
Power steering fluid level check	See Weekly checks	Wheel alignment and steering angles - general information	See Chapter 1
Power steering hydraulic system - bleeding	17	Wheel and tyre maintenance and pressure checks	See Weekly checks
Power steering pump - removal and refitting	18		
Rear hub bearings - renewal	8		
Rear suspension components (Phase I and Phase II Estate models) - removal, overhaul and refitting	10		

### 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

#### Front suspension

Type:

Phase I and Phase II Saloon and Hatchback models	Independent multi-link, incorporating upper and lower arms and coil spring-over-damper strut units. Anti-roll bar fitted to all models.
Phase I and Phase II Estate models	Independent by MacPherson struts, with coil springs and integral shock absorbers, and lower arms. Anti-roll bar fitted to all models.
Phase III models	Independent multi-link, incorporating upper and lower arms and coil spring-over-damper strut units. Anti-roll bar fitted to all models.

#### Rear suspension

Type:

Phase I and Phase II Saloon and Hatchback models	Independent by MacPherson struts, with coil springs and integral shock absorbers, and parallel links with radius rods. Anti-roll bar fitted to all models.
Phase I and Phase II Estate models	Semi-independent by trailing arms linked by tubular crossmember, and located by Panhard rod. Coil springs and telescopic shock absorbers.
Phase III models	Semi-independent multi-link beam axle with coil springs and integral shock absorbers.

#### Wheel bearings

Maximum endfloat at hub (front and rear)	0.05 mm
--	---------

#### Steering

Type	Rack-and-pinion, manual or power-assisted, depending on model
Maximum steering wheel free play	35.0 mm
Steering column length (see Section 14):	
Phase I and Phase II models	556.2 to 557.8 mm
Phase III models	536.0 to 538.0 mm



Torque wrench settings (continued)	Nm	lbf ft
<b>Front suspension - Phase I and Phase II Estate models</b>		
Anti-roll bar drop link-to-anti-roll bar nuts*	45	33
Anti-roll bar drop link-to-lower arm nuts*	20	15
Anti-roll bar mounting clamp bolts	35	26
Anti-roll bar mounting clamp nuts*	45	33
Hub carrier-to-suspension strut nuts and bolts*	170	125
Lower arm balljoint-to-hub carrier nut	80	59
Lower arm balljoint-to-lower arm nuts*	90	66
Lower arm front mounting nut*	110	81
Lower arm rear mounting clamp bolts	130	96
Suspension strut damper rod top nut*	70	52
Suspension strut upper mounting nuts*	50	37
Track-rod end-to-steering arm nut:		
Recommended torque	35	26
Maximum permissible torque	49	36
<b>Front suspension - Phase III models</b>		
Anti-roll bar clamp mounting bolts	45	33
Anti-roll bar drop link-to-anti-roll bar nuts*	45	33
Anti-roll bar drop link-to-centre link nuts (2.0 litre models)	20	15
Anti-roll bar drop link-to-lower arm nuts (1.6 litre models)*	25	18
Centre link-to-upper suspension link nut*	120	89
Driveshaft nut*	300	221
Hub carrier-to-centre link nut*	110	81
Hub carrier-to-lower arm balljoint nut	80	59
Lower arm front mounting nut*	130	96
Lower arm front mounting pin-to-body bolts	130	96
Lower arm rear mounting clamp bolts	130	96
Suspension strut damper rod top nut*	20	15
Suspension strut-to-centre link nut and bolt*	120	89
Suspension strut upper mounting nuts*	50	37
Track-rod end-to-steering arm nut:		
Recommended torque	35	26
Maximum permissible torque	49	36
Upper suspension link mounting bracket-to-body nuts* and bolts	110	81
Upper suspension link-to-mounting bracket nut*	110	81
<b>Rear suspension - Phase I and Phase II Saloon and Hatchback models</b>		
Anti-roll bar clamp nut* and bolt	35	26
Anti-roll bar drop link-to-anti-roll bar nuts*	45	33
Anti-roll bar drop link-to-suspension strut nuts*	45	33
Anti-roll bar mounting bracket-to-body bolts	35	26
Parallel link mounting nuts*	120	89
Radius rod front mounting nut	100	74
Radius rod-to-hub carrier nut*	100	74
Rear hub nut	230	170
Suspension strut damper rod top nut	70	52
Suspension strut-to-hub carrier nuts*	100	74
Suspension strut upper mounting nuts*	50	37
<b>Rear suspension - Phase I and Phase II Estate models</b>		
Bump rubber seat securing bolts	25	18
Bump rubber securing nut*	60	44
Panhard rod lower securing nut*	65	48
Panhard rod upper securing nut*	110	81
Shock absorber lower mounting nut*	110	81
Shock absorber upper mounting nut*	65	48
Trailing arm securing nuts (or pins)*	110	81
<b>Rear suspension - Phase III models</b>		
Control arm-to-lateral link mounting bolt nut*	69	51
Control rod-to-axle beam mounting nut*	108	80
Lateral link-to-axle beam mounting nut*	108	80
Lateral link-to-body mounting nut*	108	80
Rear hub nut	230	170
Suspension strut brace-to-upper mounting nuts	58	43
Suspension strut damper rod top nut	41	30
Suspension strut lower mounting bolt nut*	108	80
Suspension strut upper mounting-to-body nuts*	50	37
Trailing arm front mounting nuts*	108	80



## 1 General information

**Note:** Throughout 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

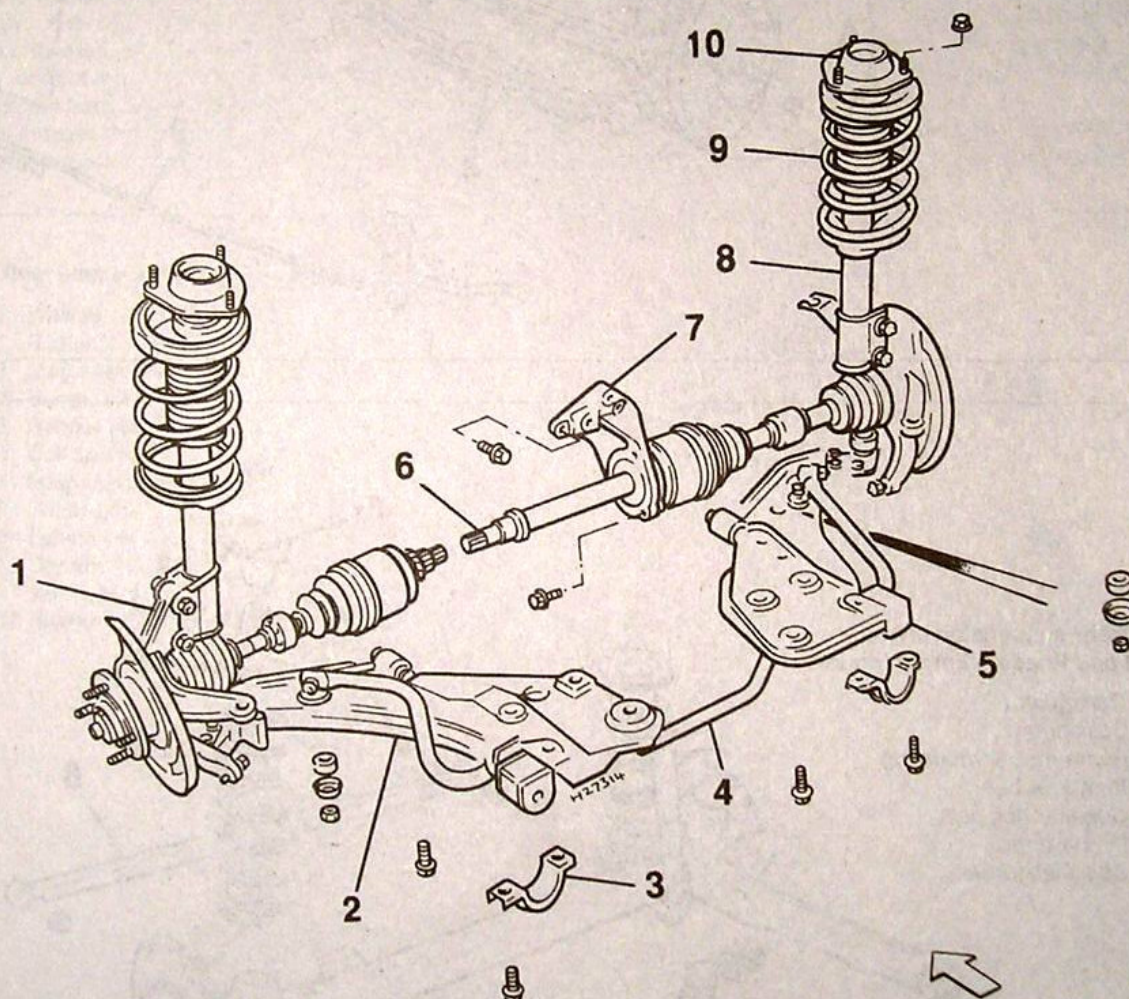
**Phase III** - October 1996 to September 1999

1 The suspension layout differs between Phase I, Phase II and Phase III models, as explained below.

### Front suspension

2 On Phase I and Phase II Saloon and Hatchback models, and all Phase III models, the independent front suspension is of a unique Nissan multi-link type, comprising high-mounted upper arms, lower arms, and centre links which connect the upper arms to the hub carriers. The hub carriers are located at their lower ends by the transverse lower arms. The coil spring-over-damper strut units are connected to the bodyshell front suspension turrets; the lower ends are bolted to the hub carriers, which carry the wheel bearings, brake calipers and hub/disc assemblies. The hub carriers are located at their lower ends by transverse lower arms. A front anti-roll bar is fitted to all models (see illustration).

3 On Phase I and Phase II Estate models, the independent front suspension is of the MacPherson strut type, incorporating coil springs and integral telescopic shock absorbers. The upper ends of the MacPherson struts are connected to the bodyshell front suspension turrets; the lower ends are bolted to the hub carriers, which carry the wheel bearings, brake calipers and hub/disc assemblies. The hub carriers are located at their lower ends by transverse lower arms. A front anti-roll bar is fitted to all models (see illustration).



1.3 Front suspension layout - Phase I and Phase II Estate models

- 1 Hub carrier
- 2 Lower arm
- 3 Lower arm front mounting bracket

- 4 Anti-roll bar
- 5 Lower arm mounting bracket
- 6 Driveshaft
- 7 Driveshaft intermediate bearing bracket

- 8 Suspension strut
- 9 Coil spring
- 10 Suspension strut top mounting



### Rear suspension

4 On Phase I and Phase II Saloon and Hatchback models, the independent rear suspension is of the MacPherson strut type, incorporating coil springs and integral telescopic shock absorbers. The upper ends of the MacPherson struts are connected to the bodyside front suspension turrets, and the lower ends are bolted to the hub carriers, which carry the wheel bearings, brake calipers and hub/disc assemblies. The hub carriers are located at their lower ends by transverse parallel links. A rear anti-roll bar is fitted to all models (see illustration).

5 On Phase I and Phase II Estate models, the rear suspension is of the semi-independent trailing arm type, with two trailing arms, linked by a tubular crossmember. Separate coil springs and telescopic shock absorbers are fitted between the tubular crossmember and the vehicle body. The rear of the tubular crossmember is located by a transverse Panhard rod connected between the crossmember and the body (see illustration).

6 On all Phase III models, the rear suspension is of the semi-independent multi-link beam

axle type, with two trailing arms, linked by a torsion beam. Suspension strut units comprising coil springs and integral telescopic shock absorbers are fitted between the axle beam and the vehicle body. Lateral location of the axle is by a unique arrangement consisting of a lateral link and control rod connected between the axle beam and the body (see illustration).

### Steering

7 The one-piece steering shaft has a universal joint fitted at its lower end, which is clamped to both the steering shaft and the steering gear pinion by means of clamp bolts.

8 The steering gear is mounted on the engine compartment bulkhead, and is connected to the steering arms projecting rearwards from the hub carriers. The track-rod is fitted with balljoints at their inner and outer ends, to allow for suspension movement, and are threaded to facilitate adjustment.

9 Power steering is fitted as standard on some models. The hydraulic system is powered by a belt-driven pump, which is driven from the crankshaft pulley.

### 2 Front hub bearings - renewal

**Note:** A balljoint separator tool, and a press or suitable alternative tools (see text) will be required for this operation. The bearing will be destroyed during the removal procedure.

**Note:** A new lower arm balljoint split pin will be required on refitting. On Phase I and Phase II Estate models, the manufacturers recommend that the suspension strut-to-hub carrier bolts and nuts are renewed. New bearing oil seals should be used, and it is also advisable to renew the bearing retaining circlips.

### Removal

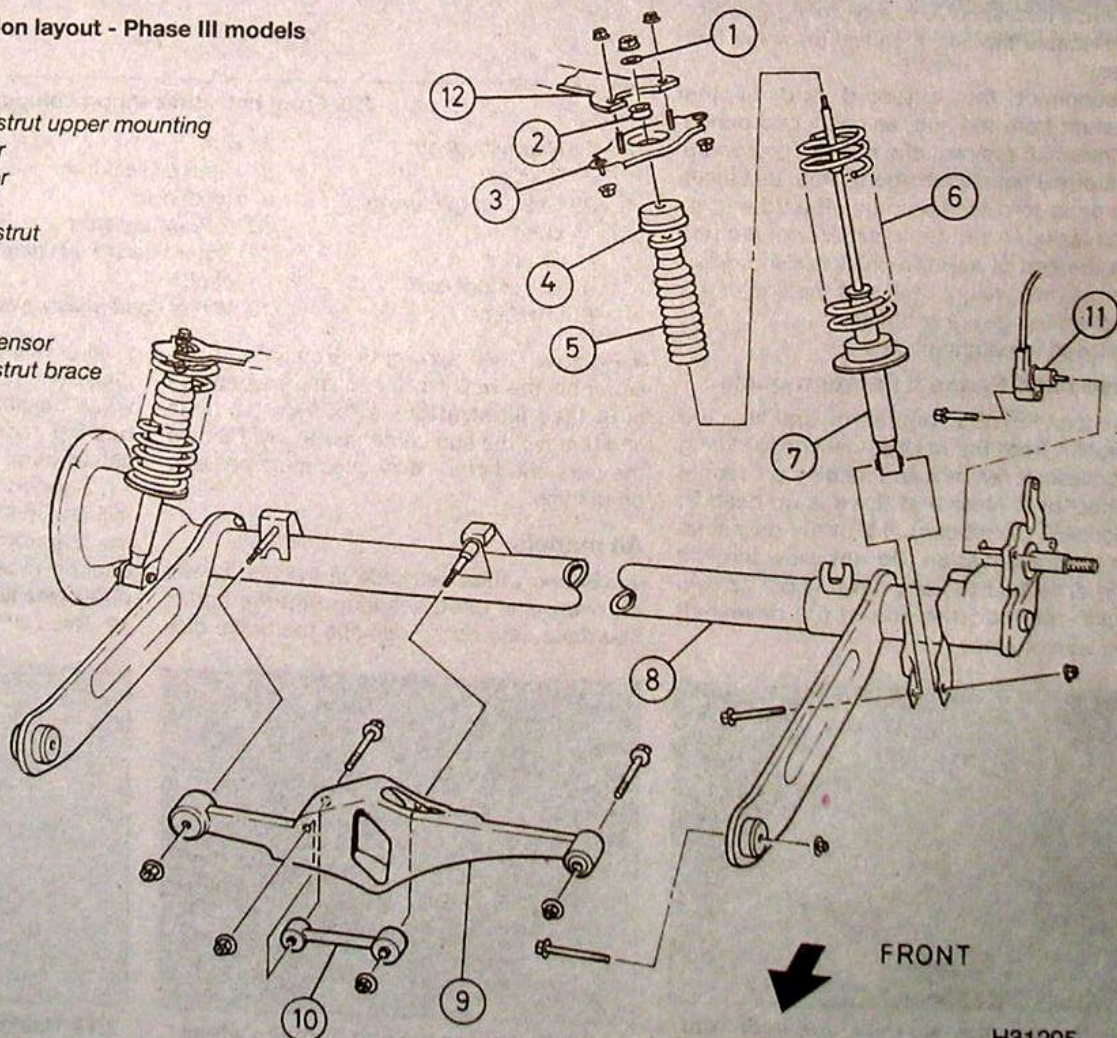
1 Apply the handbrake, then jack up the front of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the appropriate roadwheel.

2 Remove the brake disc, with reference to Chapter 9.

3 On models with ABS, unbolt the ABS wheel sensor, and remove the screw(s) securing the

1.6 Rear suspension layout - Phase III models

- 1 Washer
- 2 Bushing
- 3 Suspension strut upper mounting
- 4 Bump rubber
- 5 Rubber gaiter
- 6 Coil spring
- 7 Suspension strut
- 8 Beam axle
- 9 Lateral link
- 10 Control rod
- 11 ABS wheel sensor
- 12 Suspension strut brace



H31295

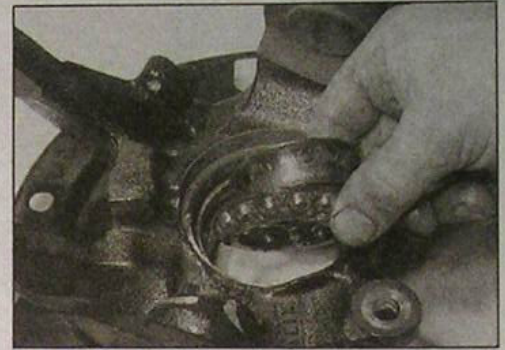




2.13 Prising the oil seal from the rear of the hub carrier



2.14a Removing the outer bearing circlip from the hub carrier



2.14b Recover the remaining inner bearing race from the rear of the hub

13 Working at the rear of the hub carrier, prise out the inner oil seal (see illustration).

14 Using a suitable screwdriver, extract the inner and outer bearing retaining circlips from the hub carrier. Recover the remaining inner bearing race if it is loose (see illustrations).

15 Support the inner face of the hub carrier, then using a suitable metal tube which bears only on the outer bearing race, press or drive the bearing from the hub carrier. Alternatively, temporarily refit the bearing inner race, and drive out the bearing using a tube or bar bearing on the inner race (see illustration).

### Refitting

16 Before installing the new bearing, thoroughly clean the bearing location in the hub carrier, then fit the outer bearing retaining circlip to its groove in hub carrier.

17 Fit the new bearing from the rear of the hub, and press or drive the bearing into position until it contacts the outer circlip, applying pressure only to the bearing outer race. This can be achieved using suitable tools, and the old outer bearing race (see illustration) - grind the outer surface of the old bearing race (to reduce its diameter) before use, to ensure that the race does not stick in the hub carrier.

18 Fit the inner bearing retaining circlip to its groove in the hub carrier.

19 Pack the lips of the new outer oil seal with grease then, using a tube of suitable diameter,

carefully press or tap the seal into position in the outer face of the hub carrier (see illustration).

20 Support the outer face of the hub carrier on its periphery, taking care not to damage the outer oil seal.

21 Pack the lips of the new inner oil seal with grease then, using a tube of suitable diameter, carefully press or tap the seal into position in the inner face of the hub carrier.

22 Support the inner face of the hub carrier, using a suitable diameter metal bar or tube, which will just pass through the inner oil seal to support the wheel bearing inner race. Carefully press or draw the hub into the bearing, noting that the bearing inner race must be supported during this operation, as described previously. This can be achieved using a suitable socket, threaded rod, washers and a length of bar as shown (see illustration). Check that the hub rotates freely in the hub carrier.

### Phase I and Phase II Saloon and Hatchback models and all Phase III models

23 Reconnect the outboard end of the drive-shaft to the hub as described in Chapter 8, noting that the brake disc must be refitted before refitting the brake caliper (see Chapter 9).

24 Reconnect the hub carrier to the lower arm balljoint, then refit the balljoint nut. Tighten the nut to the specified torque, then fit a new split pin.



2.15 Driving the bearing from the hub carrier

25 Refit the roadwheel, and lower the vehicle to the ground.

### Phase I and Phase II Estate models

26 Engage the hub carrier with the suspension strut, then refit the new securing bolts, noting that they should be fitted from the front of the strut. Fit new nuts to the bolts, and tighten to the specified torque.

27 Reconnect the outboard end of the drive-shaft to the hub as described in Chapter 8, noting that the brake disc must be refitted before refitting the brake caliper (see Chapter 9).

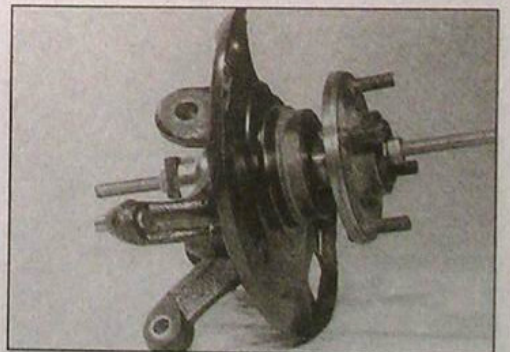
28 Refit the roadwheel, and lower the vehicle to the ground.



2.17 Fitting the new bearing using improvised tools, and the old bearing outer race



2.19 Fit the outer oil seal



2.22 Fitting the hub using improvised tools



### 3.8 Front suspension strut components

- |                      |                     |
|----------------------|---------------------|
| 1 Damper rod top nut | 6 Bush              |
| 2 Bush               | 7 Rubber gaiter     |
| 3 Gasket             | 8 Bump rubber       |
| 4 Top mounting       | 9 Coil spring       |
| 5 Upper spring seat  | 10 Damper           |
|                      | 11 Top mounting nut |

enable the upper spring seat to be turned by hand (see illustration).

10 Fully unscrew and remove the damper rod top nut. Note that it will be necessary to counterhold the damper rod, using a suitable spanner, as the nut is unscrewed (see illustration). Discard the nut - a new one must be used on reassembly.

11 Withdraw the washer, bush, gasket, top mounting, and upper spring seat.

12 Withdraw the spring, complete with the compressors, then lift the bush, rubber gaiter cap and rubber gaiter, and bump rubber, from the damper rod.

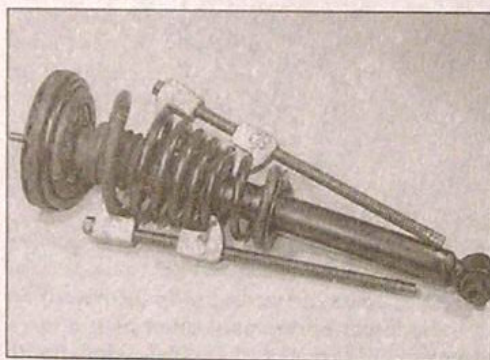
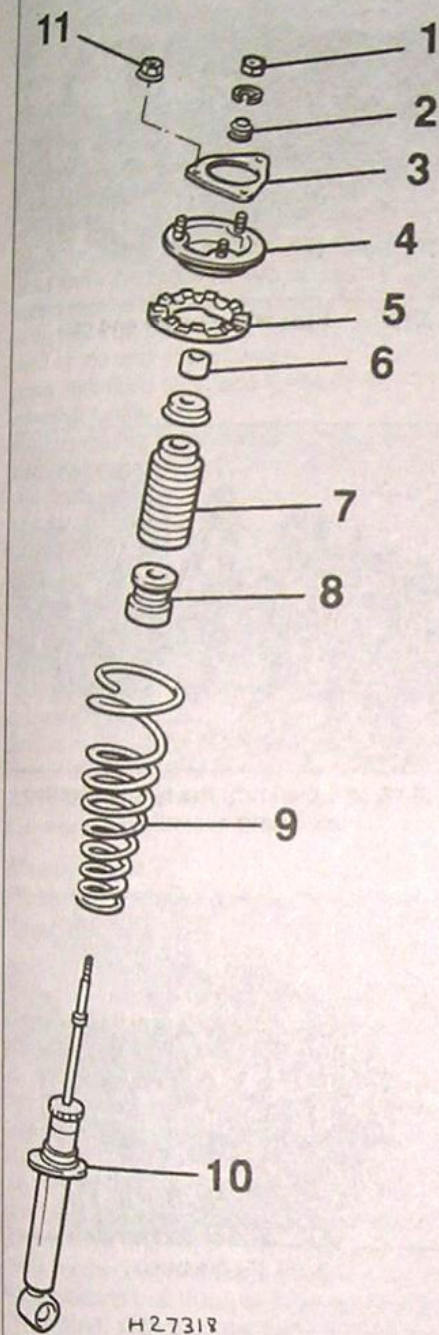
13 With the strut assembly now dismantled, examine all the components for wear, damage or deformation. Check the rubber components for deterioration. Renew any of the components as necessary.

14 Examine the damper for signs of fluid leakage. Check the damper rod for signs of pitting along its entire length, and check the strut body for signs of damage. While holding it in an upright position, test the operation of the strut by moving the damper rod through a full stroke, and then through short strokes of 50 to 100 mm. In both cases, the resistance felt should be

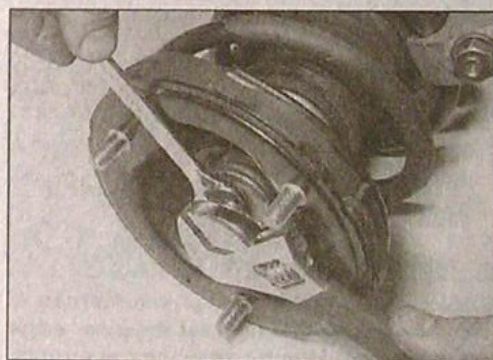
smooth and continuous. If the resistance is jerky, or uneven, or if there is any visible sign of wear or damage to the strut, renewal is necessary. Note that the damper cannot be renewed independently, and if leakage or damage is evident, the complete strut/damper assembly must be renewed (in which case, the spring, upper mounting components, bushes, and associated components can be transferred to the new strut).

15 If any doubt exists about the condition of the coil spring, carefully remove the spring compressors, and check the spring for distortion and signs of cracking. Renew the spring if it is damaged or distorted, or if there is any doubt as to its condition.

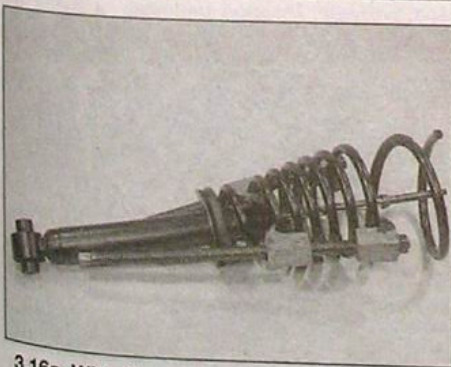
16 To reassemble the strut, follow the accompanying photo sequence (on this page and overleaf), beginning with illustration 3.16a. Be sure to follow each step in sequence, and carefully read the caption underneath each photo (see illustrations). Compress the spring sufficiently to allow the top mounting components to be refitted, and if necessary, pull on the end of the piston rod to extend the damper. **Note:** There are two cut-outs in the strut top mounting, marked 'R' and 'L'. When reassembling the components, note that on the left-hand strut, when the strut is refitted, the cut-out marked 'L' must be positioned nearest the inner edge of the suspension turret (ie, the side nearest the engine), and the spring stop on the lower spring seat must point towards the rear of the vehicle. On the right-hand strut, the cut-out marked 'R' must be positioned nearest the inner edge of the suspension turret (ie,



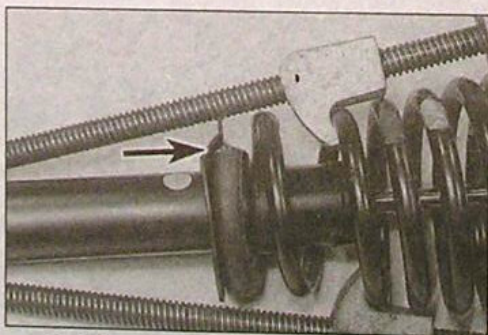
3.9 Fit suitable spring compressors to the suspension strut



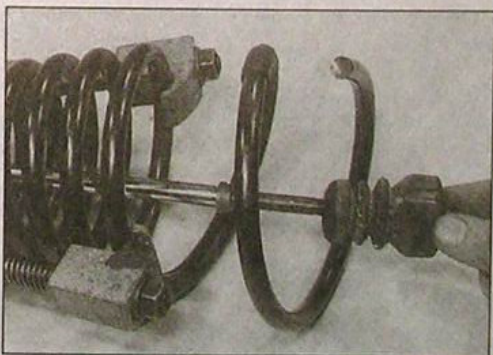
3.10 Unscrewing the damper rod top nut



3.16a With the spring compressed using the spring compressor tools...



3.16b ... fit the spring to the strut, ensuring that the lower end of the spring rests against the spring seat (arrowed)



3.16c Fit the bump stop...



nearest the engine), and the spring stop on the lower spring seat must point towards the front of the vehicle. Also note that a suitable crows-foot adapter will be required to tighten the piston top nut to the specified torque.

### Refitting

17 Fit a new gasket to the top mounting, then manoeuvre the strut assembly into position under the wheel arch, behind the suspension centre link, passing the mounting studs through the holes in the body turret (see illustration). Note that the relevant cut-out in the upper spring seat, and the arrow on the lower spring seat, must be positioned as described in the note at the end of paragraph 16. Fit the new upper mounting nuts, and tighten them to the specified torque.

18 Engage the lower end of the strut with the suspension centre link, then fit the new bolt and nut, noting that the nut should be positioned on the rear side of the strut, and tighten to the specified torque.

19 Reconnect the suspension centre link to the top link, then refit the bolt and a new nut, and tighten to the specified torque.

20 Refit the brake fluid line connector block to the suspension centre link, and tighten the securing bolt.

21 On models with ABS, refit the ABS wheel sensor wiring bracket to the inner wing panel.

22 Refit the roadwheel, and lower the vehicle to the ground.

### Phase I and Phase II Estate models

#### Removal

**Note:** The manufacturers recommend that the suspension strut-to-hub carrier bolts and nuts, and the suspension strut top mounting nuts and gasket, are renewed on refitting.

23 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the appropriate roadwheel.

24 Release the brake fluid line from the bracket on the hub carrier (see illustration).

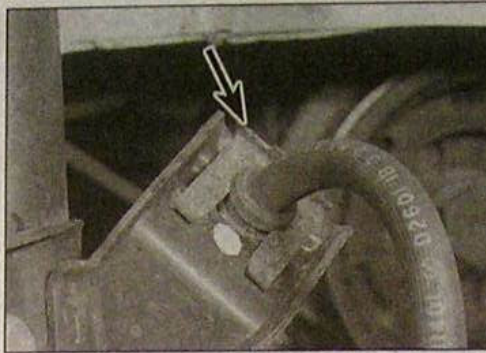
25 Remove the two nuts from the bolts securing the lower end of the strut to the hub carrier, noting that the nuts fit on the rear side of the strut. Withdraw the bolts, and support the hub carrier. Discard the bolts and nuts - new ones should be used on refitting.

26 Have an assistant support the strut from underneath the wheel arch then, working in the engine compartment, unscrew the three nuts securing the top of the strut to the suspension turret.

**Warning:** Do not unscrew the centre damper rod nut. Release the lower end of the strut from the hub carrier, then withdraw the assembly from under the wheel arch.

#### Overhaul

**Note:** Suitable coil spring compressor tools will be required for this operation, and a new damper rod top nut must be used on reassembly.



**3.24 Remove the securing clip (arrowed) to release the brake line from the hub carrier**

27 Proceed as described for Saloon and Hatchback models in paragraphs 7 to 10 inclusive, noting that a plastic cap must be prised off for access to the damper rod top nut.

28 Withdraw the washer, gasket, top mounting, lockwasher, upper spring seat, and upper spring seat rubber.

29 Withdraw the spring, complete with the compressors, then withdraw the bump rubber and the lower spring seat rubber.

30 Proceed as described for Saloon and Hatchback models in paragraphs 13 to 15 inclusive.

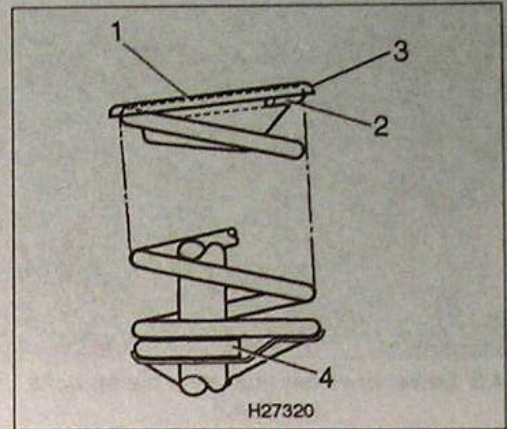
31 Clamp the strut body in a vice, as during dismantling, then refit the lower spring seat rubber, and the bump rubber.

32 Ensure that the coil spring is compressed sufficiently to enable the upper mounting components to be fitted, then fit the spring over the damper rod, ensuring that the lower end of the spring is correctly located on the lower spring seat.

33 Refit the upper spring seat rubber, and the upper spring seat, ensuring that the top end of the spring is correctly located on the upper spring seat. Note that when the strut is refitted, the cut-out and arrow on the upper spring seat must be positioned nearest the outer edge of the suspension turret (ie, the side nearest the roadwheel) (see illustrations). If there are two cut-outs in the strut top mounting, marked 'R' and 'L', proceed as follows.

- On the left-hand strut, when the strut is refitted, the cut-out marked 'L' must be positioned nearest the inner edge of the suspension turret (ie, the side nearest the engine), and the arrow on the lower spring seat must point towards the rear of the vehicle.
- On the right-hand strut, when the strut is refitted, the cut-out marked 'R' must be positioned nearest the inner edge of the suspension turret (ie, nearest the engine), and the arrow on the lower spring seat must point towards the front of the vehicle.

34 Refit the lockwasher, top mounting, washer and a new damper rod top nut, then tighten the top nut to the specified torque, counterholding the damper rod as during



**3.33a Top end of spring correctly located on upper spring seat**

- |                     |                            |
|---------------------|----------------------------|
| 1 Upper spring seat | 3 Spring locating shoulder |
| 2 Upper spring end  | 4 Lower spring end         |

dismantling. Note that a suitable crows-foot adapter will be required to tighten the piston top nut to the specified torque.

35 Remove the spring compressors.

36 Refit the plastic cap to the damper rod top nut.

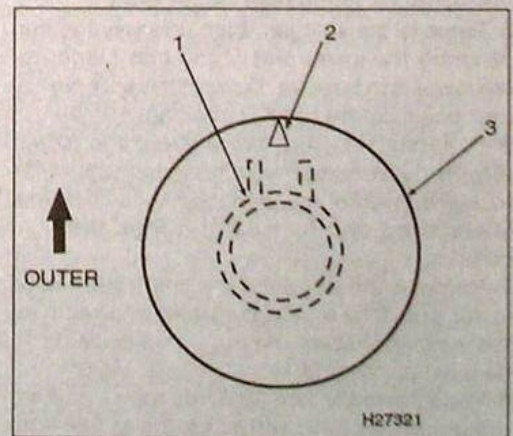
### Refitting

37 Fit a new gasket to the top mounting, then manoeuvre the strut assembly into position under the wheel arch, passing the mounting studs through the holes in the body turret. Note that the cut-out and arrow on the upper spring seat must be positioned nearest the outer edge of the suspension turret (ie, the side nearest the roadwheel). Fit the new upper mounting nuts, and tighten them to the specified torque.

38 Engage the lower end of the strut with the hub carrier, then fit the new securing bolts and nuts, noting that the nuts fit on the rear side of the strut, and tighten to the specified torque.

39 Refit the brake fluid line to the bracket on the hub carrier.

40 Refit the roadwheel, and lower the vehicle to the ground.



**3.33b Upper spring seat orientation**

- |                  |               |
|------------------|---------------|
| 1 Strut position | 3 Spring seat |
| 2 Arrow          |               |



with the anti-roll bar pin (ensure that the upper washer and bush are fitted to the anti-roll bar pin - the concave side of the washer should be against the bush), then refit the washer and the new nut to the front mounting pin. Do not fully tighten the nut at this stage.

28 Refit the lower arm rear mounting clamp, and refit the securing bolts. Do not fully tighten the bolts at this stage.

29 Refit the mounting plate (engage the studs with the lower arm balljoint, which is still attached to the hub carrier), then fit the new nuts to secure the balljoint to the lower arm. Do not fully tighten the nuts at this stage.

30 Refit the lower bush and washer to the anti-roll bar drop pin (the concave side of the washer should be against the bush), then fit a new securing nut. Again, do not fully tighten the nut at this stage.

31 Refit the roadwheel, and lower the vehicle to the ground.

32 Make sure that the vehicle is parked on level ground, then release the handbrake. Roll the vehicle backwards and forwards, and bounce the front of the vehicle to settle the suspension components.

33 Chock the wheels, then tighten all relevant nuts and bolts to the specified torque.

34 On completion, the front wheel alignment should be checked with reference to Chapter 1.

## 5 Front suspension lower arm balljoint - renewal

### Phase I and Phase II Saloon and Hatchback models and all Phase III models

1 On these models, the balljoint is integral with the lower arm. If the balljoint is worn or damaged, the complete lower arm must be renewed as described in Section 4.

### Phase I and Phase II Estate models

**Note:** A balljoint separator tool may be required for this operation. A new lower arm balljoint split pin will be required on refitting.

2 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.

3 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 (see illustration). Discard the nuts - new ones should be used on refitting.

4 Remove the split pin, then unscrew the nut securing the lower end of the hub carrier to the balljoint. Discard the split pin - a new one must be used on refitting.

5 Separate the hub carrier from the balljoint. If necessary, use a balljoint separator tool. Remove the nut, then withdraw the balljoint.

6 Fit the new balljoint using a reversal of the removal procedure, but use a new split pin to secure the balljoint-to-hub carrier nut.

## 6 Front suspension centre and upper link assembly - removal, overhaul and refitting

### General

1 The centre link assembly has two ball bearing races fitted to its upper end, which act as 'kingpin' bearings. When the steering is turned, the hub carrier pivots in these bearings.

2 Normally, the bearings should not require maintenance, and should last for the lifetime of the vehicle. However, if the vehicle has covered a very high mileage, or has been subjected to frequent hard cornering, bearing wear may be evident.

3 Bearing wear is likely to result in a growling noise when the steering is turned during normal driving, particularly under hard cornering. If the hub carrier is turned by hand with the front of the vehicle jacked up, dragging or roughness may be noticed if the bearings are worn.

### Removal

**Note:** A new hub carrier-to-centre link nut, suspension strut-to-centre link nut, centre link-to-upper link nut and, where applicable, a new anti-roll bar drop link-to-centre link nut, will be required on refitting.

4 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.

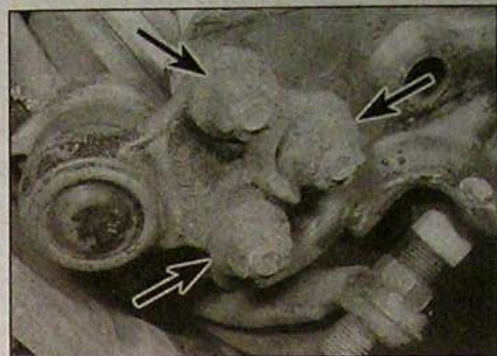
5 On all except Phase I and Phase II 1.6 litre models, unscrew the nut securing the anti-roll bar drop link to the suspension centre link, and recover the washer and bush. Note that it may be necessary to counterhold the drop link pin as the nut is unscrewed. Discard the nut - a new one must be used on refitting.

6 Prise off the dust cap, then unscrew the nut securing the hub carrier to the centre link assembly (see illustration). Recover the washer. Pull the hub carrier downwards to separate it from the centre link assembly. Discard the nut - a new one must be used on refitting.

7 Remove the nut from the bolt securing the lower end of the suspension strut to the centre link assembly, then withdraw the bolt. Discard the nut - a new one must be used on refitting.

8 Remove the nut from the bolt securing the upper end of the centre link assembly to the suspension upper link, then withdraw the bolt, and manipulate the centre link out from under the vehicle. Discard the nut - a new one must be used on refitting. On 2.0 litre engine models, recover the remaining bush and washer from the anti-roll bar drop link.

9 Remove the nut from the bolt securing the inner end of the upper link assembly to the body mounting bracket, then withdraw the bolt and remove the upper link.



5.3 Lower arm balljoint-to-lower arm nuts (arrowed)

### Overhaul

10 Check the centre link casting for signs of cracking or damage, and renew the assembly if necessary.

11 If the bearings require renewal, which is unlikely (see paragraphs 1 to 3), consult a Nissan dealer for advice - it may be that the most economical course of action is to renew the complete centre link assembly.

12 Check the condition of the bushes in the upper link. If any signs of cracks, deterioration or other wear are noticed, the upper link must be renewed - the bushes are not available separately. Note that the upper link is stamped 'L' or 'R' according to the side of the car to which it is fitted. If the link is to be renewed, ensure that the correct part is obtained.

### Refitting

**Note:** Final tightening of the fixings should be carried out with the vehicle resting on its wheels.

13 Before refitting the assembly, ensure that the hub carrier pin (kingpin) is clean, and apply a thin layer of grease to the pin.

14 Pack the bearing housing with grease.

15 Engage the inner end of the upper link with the body mounting bracket and refit the bolt and a new nut, noting that the nut should face the front of the vehicle. Do not fully tighten the nut and bolt at this stage.

16 Where applicable, refit the lower washer and bush to the anti-roll bar drop link (note that the concave side of the washer should fit against the bush).



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



# 8 Rear hub bearings - renewal

**Note:** The bearing will be destroyed during the removal operation, and a new rear hub/bearing assembly must be used on refitting - the old assembly cannot be re-used. A new rear hub nut and split pin must be used on refitting.

1 The rear hub bearings are integral with the rear hubs, and cannot be renewed independently (see illustration). If the bearings require renewal, the complete hub assembly must be renewed as follows.

2 Chock the front wheels, then jack up the rear of the car and support it on axle stands (see *Jacking and Vehicle Support*). Remove the appropriate rear roadwheel.

3 Referring to Chapter 9, remove the brake drum (drum brake models), or brake caliper and the brake disc (disc brake models) Note that there is no need to disconnect the brake fluid hose from the caliper - suspend the caliper with wire or string, to avoid straining the hose. **Do not** depress the brake pedal whilst the drum/caliper is removed.

4 On models with ABS, undo the mounting bolt and withdraw the wheel sensor from the hub carrier. Move the sensor away from the hub carrier to avoid damage to the sensor tip.

5 Prise the dust cap from the hub, then remove the split pin from the end of the stub axle (see illustrations). Discard the split pin - a new one should be used on refitting.

6 The rear hub must now be loosened, using a suitable socket and extension bar.

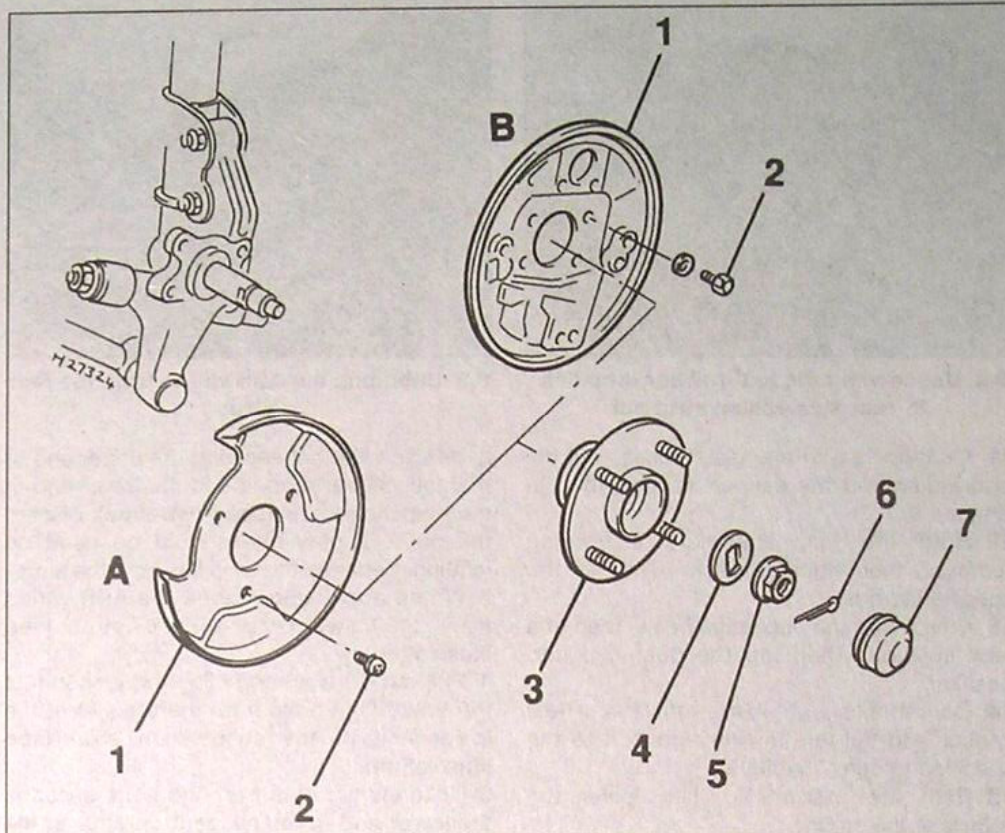
**Warning:** Take care, the nut is very tight! Do not remove the nut at this stage.

7 Remove the hub nut and washer, then withdraw the hub assembly from the stub axle (see illustrations). Discard the hub nut - a new one should be used on refitting.

8 Thoroughly clean the stub axle, then slide the new hub assembly into position.

9 Fit the washer, then fit a new hub nut - do not fully tighten the nut at this stage.

10 On models with rear drum brakes, refit the brake drum as described in Chapter 9.



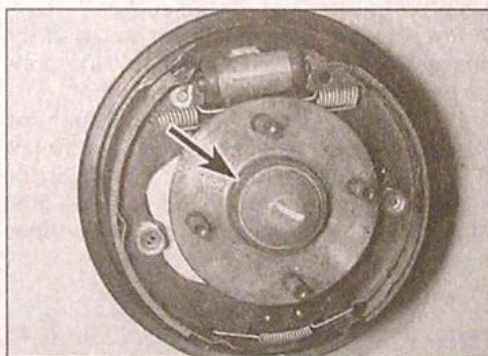
8.1 Rear hub components

## A Disc brake models

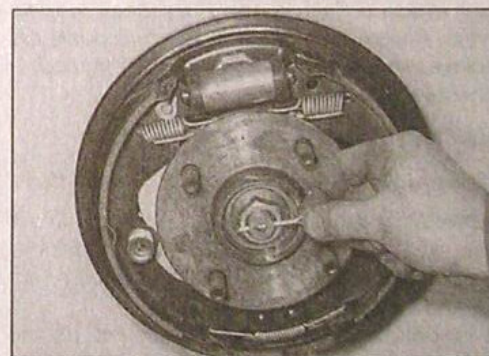
- 1 Brake backplate
- 2 Backplate securing bolt

## B Drum brake models

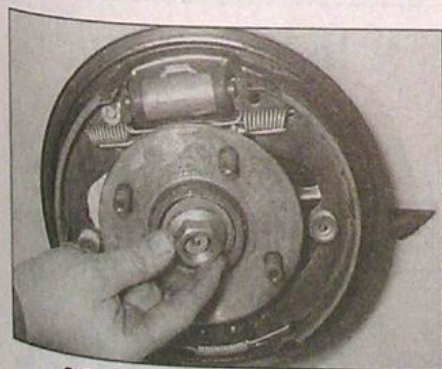
- 3 Hub/bearing assembly
- 4 Washer
- 5 Hub nut
- 6 Split pin
- 7 Dust cap



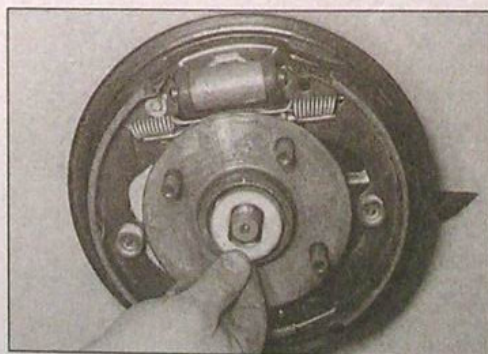
8.5a Prise the dust cap (arrowed) from the hub ...



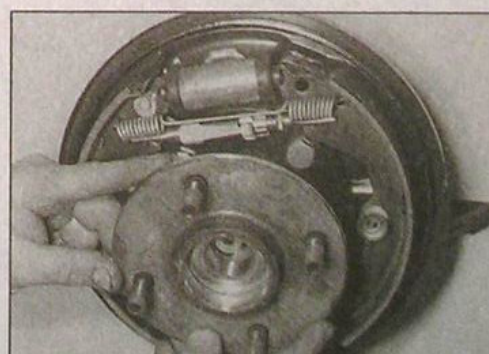
8.5b ... then remove the split pin



8.7a Remove the hub nut ...



8.7b ... and the washer ...



8.7c ... then withdraw the hub assembly