






Chapter 10 Suspension and steering

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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

Front ride height - fully-laden*:

1124 cc and 1360 cc models	177 ± 10 mm
1580 cc and 1761 cc models	185 ± 10 mm
1905 cc and 1998 cc 8-valve models	167 ± 10 mm
1998 cc 16-valve models	165 ± 10 mm

* *Fully-laden - 4 occupants and 40 kg of luggage in the vehicle*

Rear suspension

Rear ride height - fully-laden*:

1124 cc and 1360 cc models	201 ± 10 mm
1580 cc models:	
Three-door models	189 ± 10 mm
Five-door models	209 ± 10 mm
1761 cc models	189 ± 10 mm
1905 cc and 1998 cc 8-valve models	200 ± 10 mm
1998 cc 16-valve models	199 ± 10 mm

* *Fully-laden - 4 occupants and 40 kg of luggage in the vehicle*

Steering

Power steering fluid typeDexron type II ATF

Tyres

Tyre size165/70 R 13, 175/65 R 14, 185/60 R 14 or 195/55 R 15 (depending on model)

Pressures - (tyres cold):

	Front	Rear
165/70 R 13 tyres	2.2 bar (32 psi)	2.2 bar (32 psi)
175/65 R 14 tyres	2.1 bar (30 psi)	2.1 bar (30 psi)
185/60 R 14 tyres*.	2.2 bar (32 psi)	2.2 bar (32 psi)
195/55 R 15 tyres*.	2.2 bar (32 psi)	2.3 bar (33 psi)

Note: Pressures apply only to original-equipment tyres, and may vary if any other make or type is fitted; check with the tyre manufacturer or supplier for correct pressures if necessary.

* Models with these tyres have a "space-saver" spare wheel fitted with a smaller tyre. The smaller spare tyre should run at 2.4 bars (35 psi), noting the vehicle should not be driven at speeds exceeding 100 mph (160 km/h) whilst the spare wheel is fitted.

Roadwheels

Type	.Pressed-steel or aluminium alloy (depending on model)
Size	.5B x 13, 5J x 13, 5.5J x 14 or 6J x 15 (depending on model)
Maximum run-out at rim	.1.2 mm
Maximum eccentricity on tyre bead locating surface	.0.8 mm

Wheel alignment and steering angles

Front wheel camber angle:	
Unladen	.0° 30' ± 40'
Fully-laden*	.0° ± 40'
Castor angle	
Unladen:	
Manual steering	.0° 30' ± 40'
Power-assisted steering	.2° ± 40'
Fully-laden*:	
Manual steering	.1 ° 30' ± 40'
Power-assisted steering	.3° ± 40'
Steering axis inclination/kingpin inclination	.10° 45' ± 40'
Front wheel toe setting:	
Unladen	
Manual steering	.0 to 2 mm (toe-out)
Power-assisted steering	-.2.5 to -4.5 mm (toe-in)
Fully-laden*:	
Manual steering	.1 to 3 mm (toe-out)
Power-assisted steering	-.1 to -3 mm (toe-in)
Rear wheel camber setting	-.1° ± 40'
Rear wheel toe setting:	
Unladen	
Manual steering	-.2 to 2 mm (toe-in/toe-out)
Fully-laden*	-.2.5 to -6.0 mm (toe-in)

* Fully-laden - 4 occupants and 40 kg of luggage in the vehicle

Torque wrench settings

	Nm	lbf ft
Front suspension		
Strut-to-swivel hub bolt	.55	41
Strut upper mounting bolts	.20	15
Strut upper mounting retaining nut	.45	33
Lower arm balljoint clamp bolt	.40	30
Lower arm balljoint retaining nuts	.45	33
Lower arm front pivot bolt	.60	44
Lower arm rear pivot bush mounting bolts:		
8 mm bolt	.27	20
10 mm bolt	.55	41
Anti-roll bar (models with anti-roll bar connected to lower arm):		
Mounting clamp bolts	.55	41
Bar-to-connecting link nuts	.30	22
Connecting link-to-bracket bolt	.40	30
Bracket-to-lower arm bolts	.20	15
Anti-roll bar (models with anti-roll bar connected to strut):		
Mounting clamp bolts	.55	41
Connecting link nuts	.40	30
Subframe mounting bolts	.84	62
Rear suspension		
Shock absorber upper mounting bolt	.75	55
Shock absorber lower mounting bolt	.120	89
Rear hub nut:		
Models with rear drum brakes	.200	148
Models with rear disc brakes	.180	133
Torsion bar Torx retaining screw	.20	15
Anti-roll bar retaining bracket bolt	.35	26
Brake backplate bolts (drum brakes only)	.37	27
Rear axle mountings:		
Front mounting-to-body nuts	.55	41
Front mounting-to-crossmember bolts	.70	52
Rear mounting nuts	.45	33

Torque wrench settings (continued)**Steering**

	Nm	lbf	ft
Track rod balljoint-to-swivel hub nut . . . . .	.35		26
Track rod-to-steering rack . . . . .	.50		37
Steering gear mounting bolts . . . . .	.40		30
Steering wheel nut . . . . .	.35		26
Steering column mounting nuts . . . . .	.17		13
Universal joint clamp bolt . . . . .	.25		18
Power-assisted steering gear fluid unions:			
Feed pipe25		18
Return pipe20		15

Roadwheels

Wheel bolts90		66
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1 General information

The independent front suspension is of the MacPherson strut type, incorporating coil springs and integral telescopic shock absorbers. The MacPherson struts are located by transverse lower suspension arms, which utilise rubber inner mounting bushes, and incorporate a balljoint at the outer ends. The front swivel hubs, which carry the wheel bearings, brake calipers and the hub/disc assemblies, are bolted to the MacPherson struts, and connected to the lower arms via the balljoints. A front anti-roll bar is fitted to all models. The anti-roll bar is rubber-mounted

onto the subframe, and is either connected to both lower suspension arms or directly to the front suspension struts, depending on the model (**see illustration**).

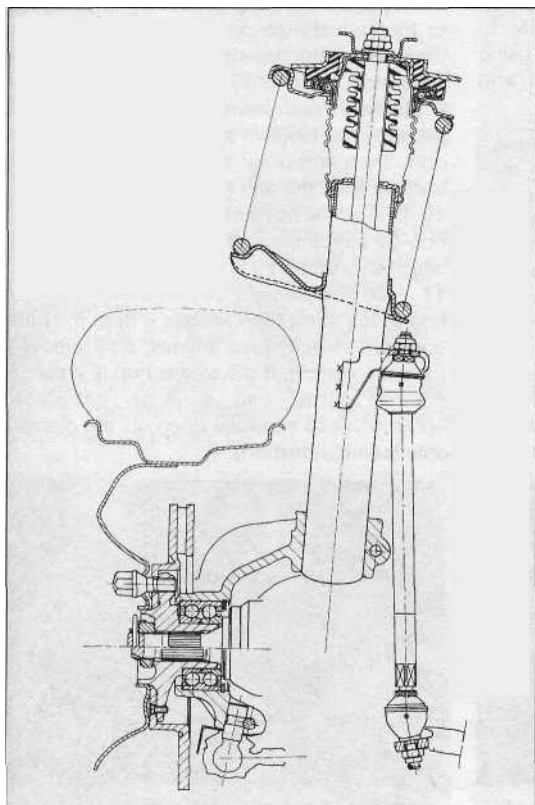
The rear suspension is of the independent trailing arm type, which consists of two trailing arms, linked by a tubular crossmember. Torsion bars linking the trailing arms are situated in front of and behind the crossmember, and an anti-roll bar linking the arms passes through the centre of the crossmember (**see illustration**).

The complete rear axle assembly is mounted onto the vehicle underbody by four "self-steering" rubber mountings. These mountings are designed to move slightly under extreme cornering forces. This

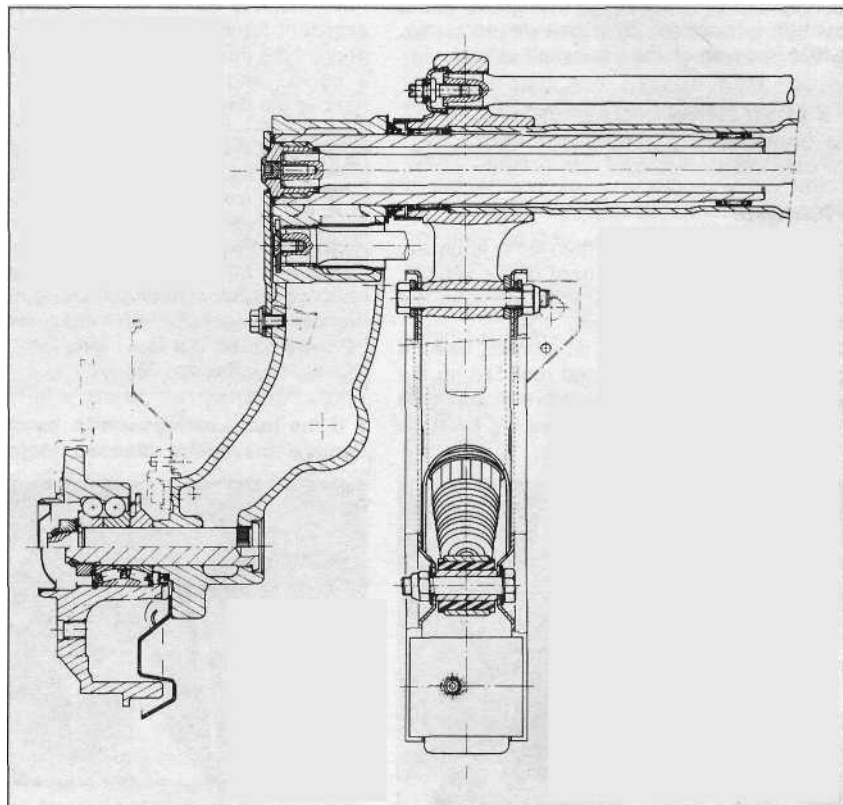
movement of the rear axle assembly has the effect of actually turning the rear wheels slightly, to help steer the vehicle in the required direction. This improves the handling of the vehicle when cornering at extreme speeds.

The steering column has a universal joint fitted in the centre of its length, which is connected to an intermediate shaft having a second universal joint at its lower end. The lower universal joint is clamped to the steering gear pinion by means of a clamp bolt (**see illustration**).

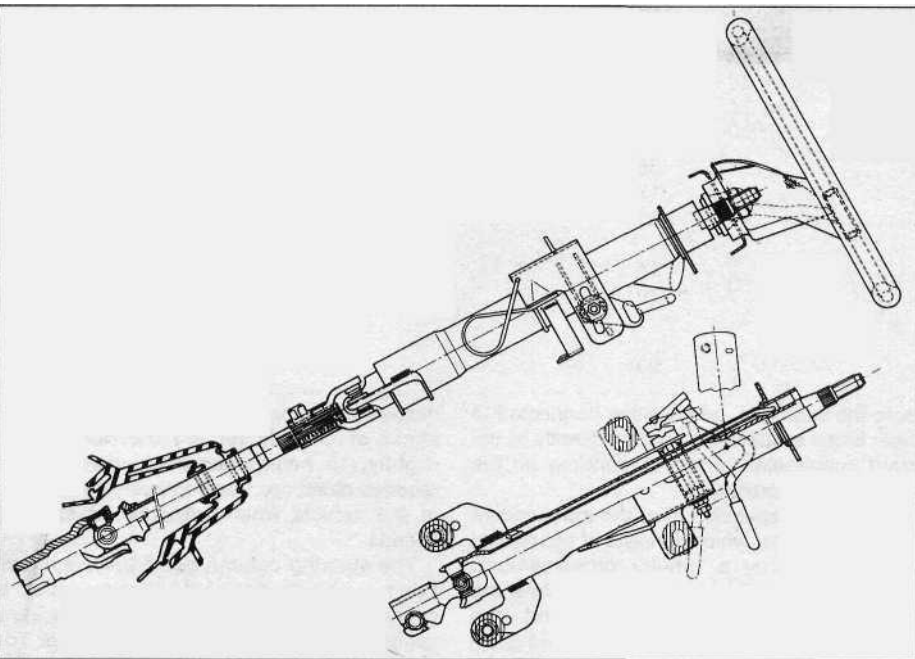
The steering gear is mounted onto the front subframe, and is connected by two track rods, with balljoints at their outer ends, to the steering arms projecting rearwards from the



1.1 Cross-sectional view of the front suspension components



1.2 Cross-sectional view of the rear suspension components



1.4 Cross-sectional view of the steering column and associated components

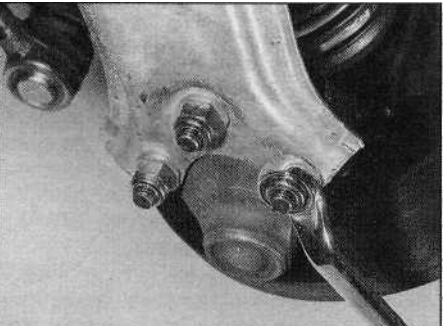
swivel hubs. The track rod ends are threaded, to facilitate adjustment.

Power-assisted steering is fitted as standard on some models, and is available as an option on all others. The hydraulic steering system is powered by a belt-driven pump, which is driven off the crankshaft pulley.

2 Front swivel hub assembly - removal and refitting

Removal

- 1 Chock the rear wheels, then firmly apply the handbrake. Jack up the front of the vehicle, and support it on axle stands. Remove the appropriate front roadwheel.
- 2 On 1124 cc and 1360 cc models, using a hammer and a chisel-nosed tool, tap up the staking securing the driveshaft retaining nut in position. Note that a new retaining must be used on refitting.



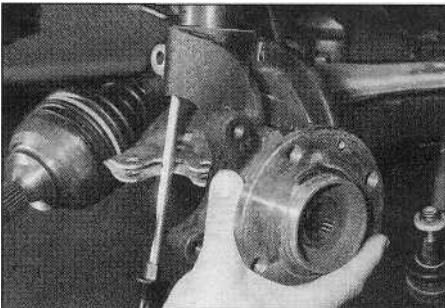
2.9 Undo the three lower suspension arm balljoint retaining nuts

- 3 On all 1580 cc and larger-engined models, withdraw the R-clip, and remove the locking cap from the driveshaft retaining nut.
- 4 Refit at least two roadwheel bolts to the front hub, and tighten them securely. Have an assistant firmly depress the brake pedal, to prevent the front hub from rotating, then using a socket and extension bar, slacken and remove the driveshaft retaining nut.

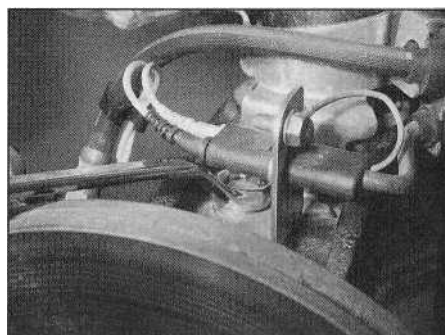
TOOL TIP

A tool to prevent the hub rotating can be fabricated from two lengths of steel strip (one long, one short) and a nut and bolt; the nut and bolt forming the pivot of a forked tool. Bolt the tool to the hub using two wheel bolts, and hold the tool to prevent the hub from rotating as the driveshaft nut is undone (see Chapters, Section 2).

- 5 If the hub bearings are to be disturbed, remove the brake disc as described in



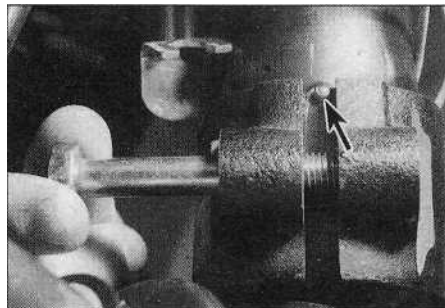
2.11 Removing the swivel hub assembly. Note the use of the screwdriver to open up the hub clamp



2.6 Slacken and remove the bolt securing the wiring retaining bracket to the swivel hub

Chapter 9. If not, unscrew the two bolts securing the brake caliper assembly to the swivel hub, and slide the caliper assembly off the disc. Using a piece of wire or string, tie the caliper to the front suspension coil spring, to avoid placing any strain on the hydraulic brake hose. Discard the caliper mounting bolts - they must be renewed whenever they are disturbed.

- 6 Slacken and remove the bolt securing the wiring retaining bracket to the top of the swivel hub (see illustration).
- 7 On models with ABS, remove the wheel sensor as described in Chapter 9.
- 8 On all models, slacken and remove the nut securing the steering gear track rod balljoint to the swivel hub, and release the balljoint tapered shank using a universal balljoint separator.
- 9 Slacken and remove the three nuts securing the balljoint to the lower suspension arm, then withdraw the bolts and free the balljoint from the arm (see illustration).
- 10 Undo the nut and withdraw the swivel hub-to-suspension strut clamp bolt, noting which way around it is fitted.
- 11 Free the swivel hub assembly from the end of the strut, then release it from the outer constant velocity joint splines, and remove it from the vehicle. If the swivel hub is a tight fit on the strut, use a large flat-bladed screwdriver to carefully open up the clamp a little (see illustration).



2.14 On refitting, ensure the swivel hub clamp is aligned with the lug (arrowed) on the strut prior to inserting the clamp bolt

Refitting

12 Note that all Nyloc nuts disturbed on removal must be renewed as a matter of course. These nuts have threads which are pre-coated with locking compound (this is only effective once), and include the track rod balljoint nut, lower suspension arm balljoint nuts, and the swivel hub clamp bolt nut.

13 Ensure the driveshaft outer constant velocity joint and hub splines are clean, then slide the hub fully onto the driveshaft splines.

14 Slide the hub assembly fully onto the suspension strut, aligning the split in the hub clamp with the lug on the base of the strut. Insert the swivel hub-to-suspension strut clamp bolt from the front side of the strut, then fit a new nut to the clamp bolt, and tighten it to the specified torque (**see illustration**).

15 Align the balljoint with the lower arm, and fit the three retaining bolts. Fit new retaining nuts to the bolts, and tighten them to the specified torque.

16 Engage the track rod balljoint in the swivel hub, then fit a new retaining nut and tighten it to the specified torque.

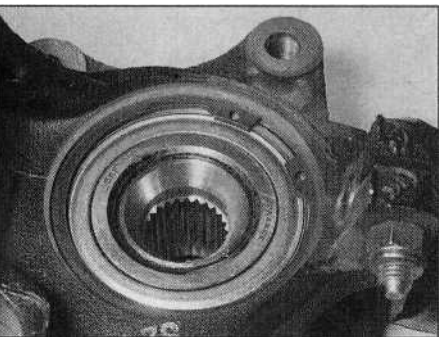
17 Where necessary, refit the brake disc to the hub, referring to Chapter 9 for further information. If the threads of the new caliper mounting bolts are not already pre-coated with locking compound, apply a suitable locking compound to them. Slide the caliper assembly into position over the disc, then fit the mounting bolts and tighten them to the specified torque (see Chapter 9).

18 Where necessary, refit the ABS wheel sensor as described in Chapter 9.

19 Refit the wiring retaining bracket to the top of the swivel hub, and tighten its retaining bolt securely.

20 Lubricate the inner face and threads of the driveshaft retaining nut with clean engine oil, and refit it to the end of the driveshaft. Use the method employed on removal to prevent the hub from rotating, and tighten the driveshaft retaining nut to the specified torque (see Chapter 8). Check that the hub rotates freely.

21 On 1124 cc and 1360 cc models, stake the nut firmly into the driveshaft grooves using a hammer and punch.



3.3 Front hub bearing retaining circlip

22 On 1580 cc and larger-engined models, engage the locking cap with the driveshaft nut so that one of its cut-outs is aligned with the driveshaft hole. Secure the cap with the R-clip.

23 Refit the roadwheel, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque.

3 Front hub bearings - renewal



Note: The bearing is a sealed, pre-adjusted and pre-lubricated, double-row roller type, and is intended to last the car's entire service life without maintenance or attention. Never overtighten the driveshaft nut beyond the specified torque wrench setting in an attempt to "adjust" the bearing.

Note: A press will be required to dismantle and rebuild the assembly; if such a tool is not available, a large bench vice and spacers (such as large sockets) will serve as an adequate substitute. The bearing's inner races are an interference fit on the hub; if the inner race remains on the hub when it is pressed out of the hub carrier, a knife-edged bearing puller will be required to remove it.

1 Remove the swivel hub assembly as described in Section 2.

2 Support the swivel hub securely on blocks or in a vice. Using a tubular spacer which bears only on the inner end of the hub flange, press the hub flange out of the bearing. If the bearing's outboard inner race remains on the hub, remove it using a bearing puller (see note above).

3 Extract the bearing retaining circlip from the inner end of the swivel hub assembly (**see illustration**).

4 Where necessary, refit the inner race back in position over the ball cage, and securely support the inner face of the swivel hub. Using a tubular spacer which bears only on the inner race, press the complete bearing assembly out of the swivel hub.

5 Thoroughly clean the hub and swivel hub, removing all traces of dirt and grease, and polish away any burrs or raised edges which might hinder reassembly. Check both for cracks or any other signs of wear or damage, and renew them if necessary. Renew the circlip, regardless of its apparent condition.

6 On reassembly, apply a light film of oil to the bearing outer race and hub flange shaft, to aid installation of the bearing.

7 Securely support the swivel hub, and locate the bearing in the hub. Press the bearing fully into position, ensuring that it enters the hub squarely, using a tubular spacer which bears only on the bearing outer race.

8 Once the bearing is correctly seated, secure the bearing in position with the new

circlip, ensuring that it is correctly located in the groove in the swivel hub.

9 Securely support the outer face of the hub flange, and locate the swivel hub bearing inner race over the end of the hub flange. Press the bearing onto the hub, using a tubular spacer which bears only on the inner race of the hub bearing, until it seats against the hub shoulder. Check that the hub flange rotates freely, and wipe off any excess oil or grease.

10 Refit the swivel hub assembly as described in Section 2.

4 Front suspension strut - removal and refitting



Removal

1 Chock the rear wheels, apply the handbrake, then jack up the front of the vehicle and support on axle stands. Remove the appropriate roadwheel.

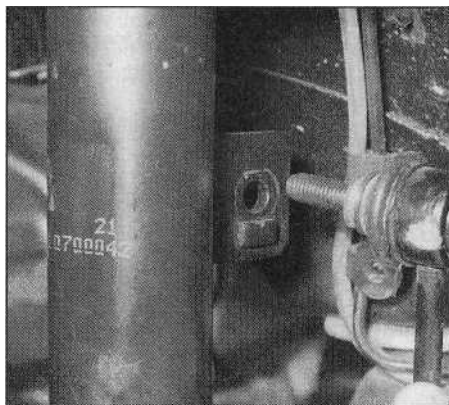
2 Unscrew the two bolts securing the brake caliper to the swivel hub, and discard them; new bolts must be used on refitting. Slacken and remove the bolt securing the wiring retaining bracket to the swivel hub, then slide the caliper assembly off the disc. Using a piece of wire or string, tie the caliper to the front suspension lower arm, to avoid placing any strain on the hydraulic brake hose.

3 On models where the anti-roll bar is connected to the suspension strut body, undo the nut and washer securing the connecting link to the strut, and position the link clear of the strut (**see illustration**). Discard the nut - a new one must be used on refitting.

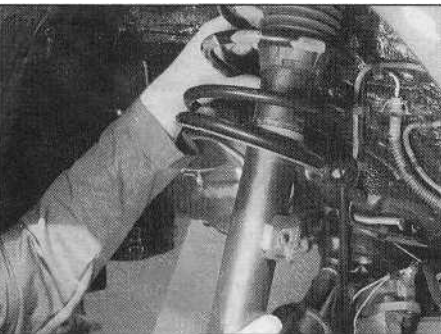
4 Undo the nut and withdraw the swivel hub-to-suspension strut clamp bolt, noting which way around it is fitted. Discard the nut - a new one must be used on refitting.

5 Slacken and remove the two suspension strut upper mounting bolts.

6 Release the strut from the swivel hub, and withdraw it from under the wheel arch. If the



4.3 Where the anti-roll bar is linked to the strut, undo the retaining nut and free the connecting link from the strut body



Removing the front suspension strut

swivel hub is a tight fit on the strut, carefully open up the clamp a little using a large flat-bladed screwdriver (see illustration).

Refitting

7 Manoeuvre the strut assembly into position, ensuring that the top mounting plate locating pin is correctly located in its hole. Engage the lower end of the strut with the swivel hub, aligning the split in the hub clamp with the lug on the base of the strut.

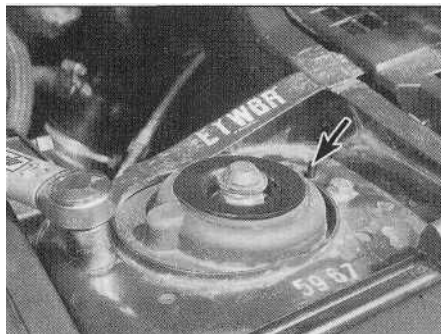
8 Insert the two strut upper mounting bolts, and tighten them to the specified torque (see illustration).

9 Insert the swivel hub-to-suspension strut clamp bolt from the front side of the strut. Fit a new nut to the clamp bolt, and tighten it to the specified torque.

10 Where necessary, refit the anti-roll bar connecting link to the strut. Fit a new nut to the connecting link, and tighten it to the specified torque.

11 Slide the brake caliper into position over the disc. If the threads of the new caliper mounting bolts are not already pre-coated with locking compound, apply a suitable locking compound to them. Install the bolts and tighten them to the specified torque (see Chapter 9).

12 Refit the roadwheel, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque.



4.8 Tighten the suspension strut upper mounting bolts to the specified torque. Note upper mounting locating pin (arrowed)

5 Front suspension strut - overhaul



Warning: Before attempting to dismantle the front suspension strut, a suitable tool to hold the coil spring in compression must be obtained. Adjustable coil spring compressors are readily-available, and are recommended for this operation. Any attempt to dismantle the strut without such a tool is likely to result in damage or personal injury.

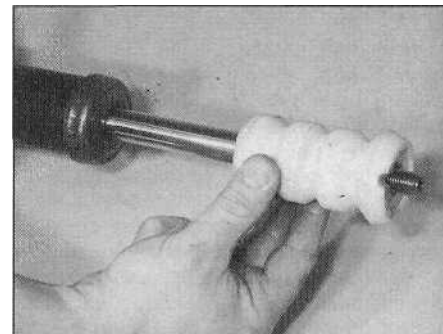
1 With the strut removed from the car as described in Section 4, clean away all external dirt, then mount it upright in a vice.

2 Fit the spring compressor, and compress the coil spring until all tension is relieved from the upper mounting plate.

3 Remove the rubber cap, then slacken the upper mounting retaining nut whilst retaining the strut piston with an Allen key.

4 Remove the nut and washer, then lift off the collar, mounting plate, bearing, upper spring seat and flat washer. Remove the coil spring, then slide off the damper piston dust cover and rubber damper stop.

5 With the strut assembly now completely



5.9a Ensure all components are clean and dry, then slide the rubber damper stop ...

dismantled, examine all the components for wear, damage or deformation, and check the bearing for smoothness of operation. Renew any of the components as necessary.

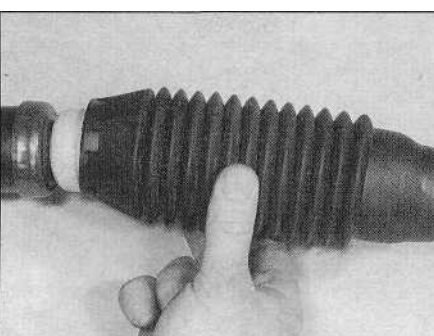
6 Examine the strut for signs of fluid leakage. Check the strut piston for signs of pitting along its entire length, and check the strut body for signs of damage. While holding it in an upright position, test the operation of the strut by moving the piston through a full stroke, and then through short 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.

7 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.

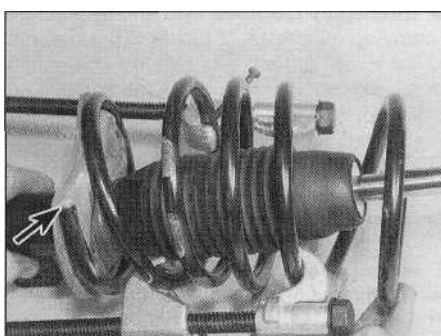
8 Inspect all other components for signs of damage or deterioration, and renew any that are suspect.

9 To reassemble the strut, follow the accompanying photos, beginning with illustration 5.9a. Be sure to stay in order, and carefully read the caption underneath each (see illustrations).

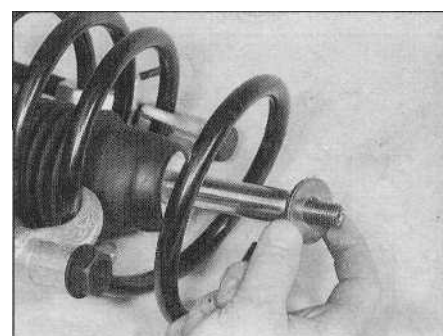
10 Refit the rubber cap to the top of the strut piston, then refit the strut to the vehicle as described in Section 4.



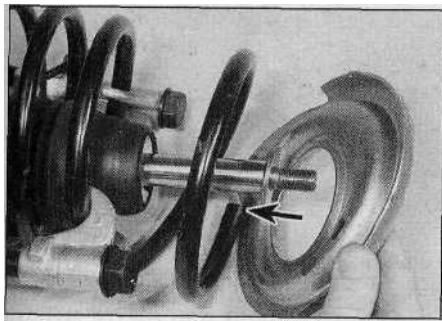
5.9b ... and dust cover into position on the strut



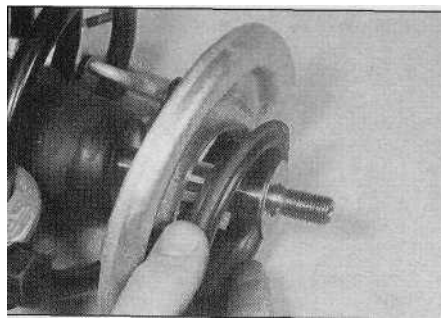
5.9c Refit the coil spring, ensuring the spring end is correctly located against its stop on the lower seat (arrowed)



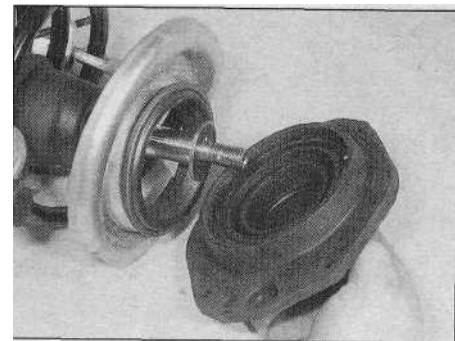
5.9d Fit the flat washer to the top of the strut piston ...



5.9e ... then locate the upper spring seat on the spring, ensuring that the spring seat stop (arrowed) is correctly located against the spring end



5.9f Refit the bearing to the upper spring seat, ensuring that it is fitted the correct way around



5.9g Locate the upper mounting plate on the spring seat...

6 Front suspension lower arm - removal, overhaul and refitting

Removal

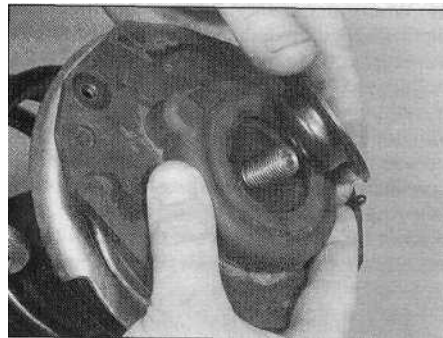
1 Chock the rear wheels, firmly apply the handbrake, then jack up the front of the vehicle and support on axle stands. Remove the appropriate front roadwheel.

2 On models where the anti-roll bar is mounted onto the lower suspension arm, slacken and remove the two nuts securing the mounting bracket to the lower arm, then withdraw then retaining bolts and free the bracket from the arm. Discard the nuts - new ones must be used on refitting.

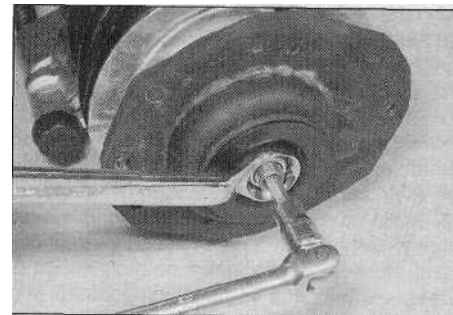
3 Slacken and remove the nut, then withdraw the lower arm balljoint clamp bolt from the swivel hub (see illustration). Discard the nut - a new one must be used on refitting.

4 Lever the arm downwards to release the balljoint from the swivel hub, and remove the protector plate which is fitted to the balljoint shank (see illustration).

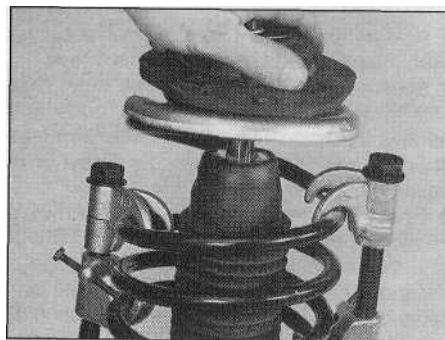
5 Slacken and remove the lower arm front pivot bolt and nut, then undo the two bolts securing the rear mounting bush to the subframe (the larger of which is also the anti-roll bar mounting clamp bolt), and recover the nut from the top of the subframe. Manoeuvre the lower arm assembly out from underneath the vehicle (see illustrations).



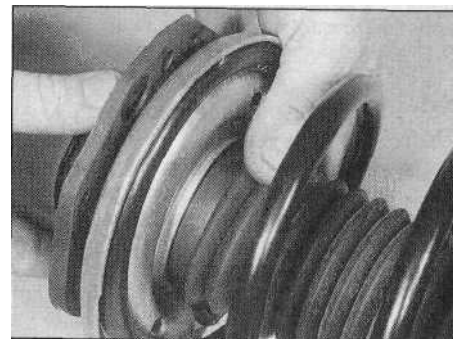
5.9h ... and refit the collar to the mounting plate



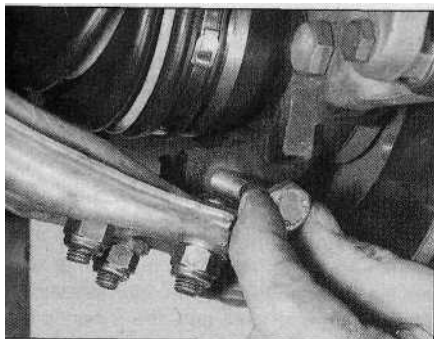
5.9i Refit the washer and upper mounting retaining nut, and tighten the nut to the specified torque



5.9j Ensure that the spring ends are still correctly located against the seat stops, then release the spring compressors and remove them from the strut



5.9k With the compressors removed, push the rubber bump stop and gaiter upwards until they are correctly seated inside the upper mounting plate



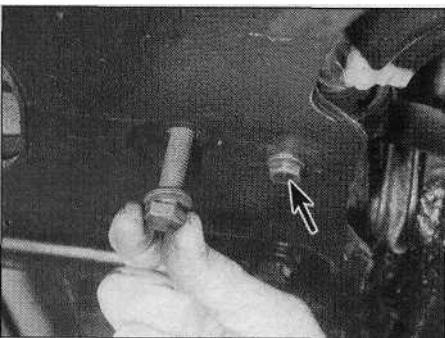
6.3 Removing the lower suspension arm balljoint clamp bolt



6.4 Release the balljoint from the swivel hub, and remove the protector plate from the balljoint shank



6.5a Slacken and remove the lower suspension arm front pivot bolt...



6.5b ... and the two rear mounting bush bolts (second bolt arrowed)...

Overhaul

6 Thoroughly clean the lower arm and the area around the arm mountings, removing all traces of dirt and underseal if necessary, then check carefully for cracks, distortion or any other signs of wear or damage, paying particular attention to the pivot bushes, and renew components as necessary.

7 Check that the lower arm balljoint moves freely, without any sign of roughness; check also that the balljoint gaiter shows no sign of deterioration, and is free from cracks and splits. If renewal is necessary, slacken and remove its retaining bolts, and remove the balljoint from the arm. Fit the new balljoint, and insert its retaining bolts. Fit new retaining nuts to the bolts, and tighten them to the specified torque.

8 Examine the shank of the pivot bolt for signs of wear or scoring, and renew if necessary.

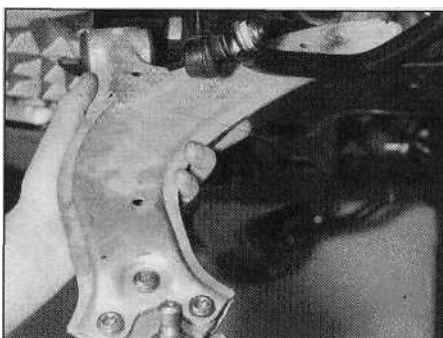
Refitting

9 Manoeuvre the lower arm assembly into position, and refit the front pivot bolt, tightening it finger-tight only. Refit the two rear pivot bush retaining bolts, and tighten both to their specified torque settings.

10 Refit the protector plate to the lower arm balljoint, then locate the balljoint shank in the swivel hub, ensuring that the lug on the protector plate is correctly located in the clamp split. Insert the balljoint clamp bolt, then fit the new retaining nut and tighten it to the specified torque.



7.2a Remove the three retaining bolts ...



6.5c ... then remove the lower arm from the vehicle

11 Where necessary, align the anti-roll bar mounting bracket with the lower arm, and insert its retaining bolts. Fit new nuts to the bolts, and tighten them to the specified torque.

12 Refit the roadwheel, then lower the vehicle and tighten the roadwheel bolts to the specified torque. Rock the vehicle to settle the disturbed components in position, then tighten the lower arm front pivot bolt to the specified torque (**see illustration**).

7 Front suspension lower arm balljoint - removal and refitting

Removal

1 Release the balljoint from the swivel hub as described in Section 6, paragraphs 1 to 4.

2 Slacken and remove the three nuts, then withdraw the balljoint retaining bolts and remove the balljoint from the lower arm (**see illustrations**). Discard the nuts - new ones must be used on refitting.

3 Check that the lower arm balljoint moves freely, without any sign of roughness. Check also that the balljoint gaiter shows no sign of deterioration, and is free from cracks and splits. Renew worn or damaged components as necessary.

Refitting

4 Locate the balljoint in the end of the suspension arm, and insert the three retaining



7.2b ... and remove the lower arm balljoint



6.12 With the vehicle resting on its wheels, tighten the lower arm front pivot bolt to the specified torque setting

bolts. Fit new nuts to the bolts, and tighten them to the specified torque.

5 Carry out the operations described in paragraphs 10 to 12 of Section 6.

8 Front suspension anti-roll bar - removal and refitting

Removal

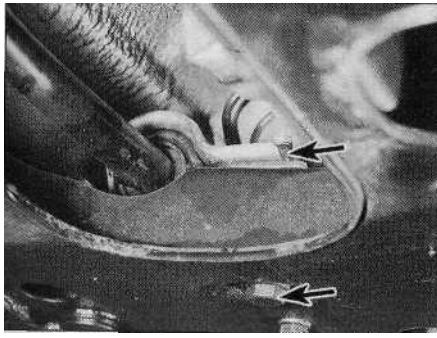
1 Chock the rear wheels, firmly apply the handbrake, then jack up the front of the vehicle and support on axle stands. Remove both front roadwheels.

2 On models where the anti-roll bar is mounted onto the lower suspension arm, slacken and remove the two nuts and bolts securing the mounting bracket to the left-hand lower arm, then undo the nut securing the connecting link to the anti-roll bar, and remove the connecting link and bracket assembly. Repeat the procedure on the right-hand side.

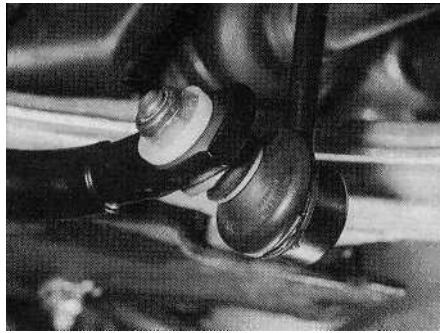
3 On models where the anti-roll bar is connected to the suspension strut body, undo the nut and washer securing the left-hand connecting link to the anti-roll bar, and position the link clear of the bar. Repeat the procedure on the right-hand side.

4 On models with power steering, using brake hose clamps, clamp both the supply and return hoses near the power steering fluid reservoir. This will minimise fluid loss during subsequent operations. Mark the unions to ensure they are correctly positioned on reassembly, then unscrew the feed and return pipe union nuts from the steering gear assembly; be prepared for fluid spillage, and position a suitable container beneath the pipes whilst unscrewing the union nuts. Disconnect both pipes, and plug the pipe ends and steering gear orifices, to prevent excessive fluid leakage and the entry of dirt into the hydraulic system.

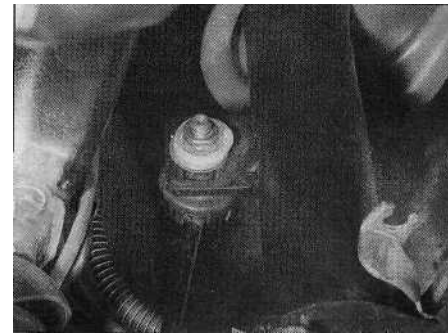
5 On all models, using a hammer and punch, white paint or similar, mark the exact relationship between the steering intermediate shaft universal joint and the steering gear drive pinion. Slacken and remove the clamp bolt securing the joint to the pinion, and free the intermediate shaft from the steering gear.



8.10 Slacken and remove the bolt and nut (arrowed) and remove the anti-roll bar mounting clamp



9.3a Anti-roll bar connecting link lower retaining nut...



9.3b ... and upper retaining nut - models with the anti-roll bar connected to the suspension strut body

6 Slacken and remove the nut securing the left-hand steering gear track rod balljoint to the swivel hub, and release the balljoint tapered shank using a universal balljoint separator. Repeat the procedure on the right-hand side.

7 On 1580 cc and larger-engined models with manual transmission, using a large screwdriver, carefully lever the three gearchange linkage link rods off their balljoints on the transmission unit.

8 Slacken and remove the engine/transmission rear mounting through-bolt and nut.

9 Slacken and remove the four front subframe mounting bolts which are situated at the rear of the subframe. Loosen the two front subframe mounting bolts by a few turns, until it is possible to lower the rear edge of the subframe approximately 65 mm. Wedge a block of wood between the rear of the subframe and the vehicle underbody, to hold the subframe in this position.

10 Slacken the two anti-roll bar mounting clamp retaining bolts, and recover the nuts from the top of the clamps (**see illustration**). Remove both clamps from the subframe.

11 Manoeuvre the anti-roll bar out from underneath the vehicle, and remove the mounting bushes from the bar.

12 Carefully examine the anti-roll bar components for signs of wear, damage or deterioration, paying particular attention to the mounting bushes. Renew worn components as necessary.

Refitting

13 Fit the rubber mounting bushes to the anti-roll bar, ensuring that the recess on the inside of each bush engages with the lugs on the anti-roll bar. Rotate each bush so that its marking is aligned with the paint mark on the anti-roll bar.

14 Offer up the anti-roll bar, and manoeuvre it into position on the subframe. Refit the mounting clamps, ensuring that their ends are correctly located in the hooks on the subframe, and refit the retaining bolts and nuts. Ensure that the bush markings are still aligned with the paint marks on the bars, then

tighten the mounting clamp retaining bolts to the specified torque.

15 The remainder of the refitting is a reversal of the removal procedure, noting the following points:

- (a) *All Nyloc nuts disturbed on removal must be renewed as a matter of course. These nuts have threads which are pre-coated with locking compound (this is only effective once), and include the track rod balljoint nuts, connecting link nuts, engine mounting bolt nut, and the intermediate shaft clamp bolt nut. The intermediate shaft clamp bolt nut is retained by a metal cage; release the cage retaining tangs, then remove the old nut from inside the cage and install the new one. Refit the cage to the shaft, and secure it in position with the retaining tangs.*
- (b) *Tighten all nuts and bolts to the specified torque settings (where given).*
- (c) *Align the marks made on removal when reconnecting the intermediate shaft to the steering gear splines.*
- (d) *On models with power steering, bleed the hydraulic system as described in Section 24.*
- (e) *On completion check and, if necessary, adjust the front wheel alignment as described in Section 28.*

9 Front suspension anti-roll bar connecting link - removal and refitting

Removal

1 Firmly apply the handbrake, then jack up the front of the car and support it on axle stands.

2 On models where the anti-roll bar is connected to the lower suspension arms, slacken and remove the nut and bolt securing the link to the lower arm bracket, then undo the nut and washer securing the link to the anti-roll bar. Disengage the connecting link from the end of the anti-roll bar, and remove it from the vehicle.

3 On models where the anti-roll bar is

connected to the strut, slacken and remove the upper and lower connecting link retaining nuts and washers, and remove the link from the vehicle (**see illustrations**).

4 Examine the connecting link for signs of damage, paying particular attention to the mounting bushes or balljoints (as applicable), and renew if necessary. It is not possible to renew the bushes or balljoints separately. Note that the connecting link retaining nuts must be renewed as a matter of course.

Refitting

5 Refitting is a reversal of the removal procedure, using new retaining nuts and tightening them to the specified torque setting.

10 Front suspension subframe - removal and refitting

Removal

1 Chock the rear wheels, firmly apply the handbrake, then jack up the front of the vehicle and support it on axle stands. Remove both front roadwheels.

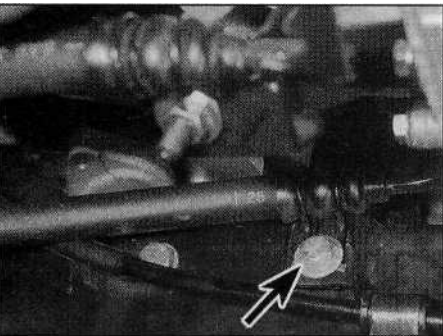
2 Remove the anti-roll bar connecting links as described in Section 9.

3 Slacken and remove the rear engine/transmission through-bolt and nut, then undo the nut and bolt securing the mounting bracket to the subframe and remove the bracket.

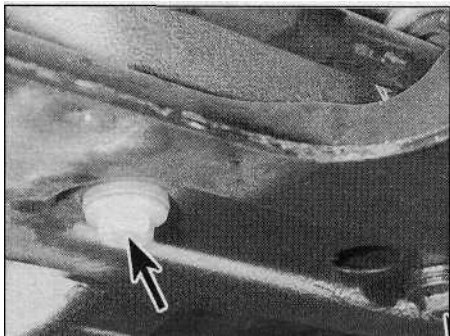
4 Slacken and remove the three nuts, then withdraw the balljoint retaining bolts and disengage the left-hand balljoint from the lower arm. Repeat the procedure on the right-hand side.

5 Slacken the steering gear mounting bolts, and recover the nuts. Withdraw the mounting bolts, and recover the spacers from the subframe apertures.

6 On 1580 cc and larger-engined models with manual transmission, using a large screwdriver, carefully lever the three gearchange linkage link rods off their balljoints on the transmission unit. Slacken and remove the pivot bolt securing the selector rod to the gearchange lever.



10.7 Power steering pipe-to-subframe retaining clip



10.9a Front subframe left-hand rear mounting bolts (arrowed)...



10.9b ... and front mounting bolt

7 On models with power steering, undo the nut securing the steering gear pipe to its mounting bracket on the subframe, and free those pipes from any subframe retaining clips (see illustration).

8 On right-hand-drive models, undo the nut securing the clutch cable retaining clip to the subframe, and disengage the cable from its retaining clips on either side of the subframe.

9 Slacken and remove the four rear front subframe mounting bolts and the two front mounting bolts, then carefully lower the subframe assembly out of position and remove it from underneath the vehicle (see illustrations). On models with power steering, take great care to ensure the subframe assembly does not catch the power steering pipes as it is lowered out of position.

Refitting

10 Refitting is a reversal of the removal procedure, noting the following points:

- (a) All Nyloc nuts disturbed on removal must be renewed as a matter of course. These nuts have threads which are pre-coated with locking compound (this is only effective once), and include the connecting link nuts, lower arm balljoint nuts, engine mounting bolt nuts and steering gear bolt nuts.
- (b) Tighten all nuts and bolts to the specified torque settings (where given).
- (c) On completion check and, if necessary, adjust the front wheel alignment as described in Section 28.

11 Rear hub assembly - removal and refitting

Rear drum brakes

1 On models with rear drum brakes, the rear hub is an integral part of the brake drum. Refer to Chapter 9 for drum removal and refitting details.

Rear disc brakes

Note: Do not remove the hub assembly unless it is absolutely necessary. A puller will be required to draw the hub assembly off the stub axle, and the hub bearing will almost certainly be damaged by the removal procedure.

Removal

- 2 Remove the rear brake disc as described in Chapter 9.
- 3 Using a hammer and a large flat-bladed screwdriver, carefully tap and prise the cap out of the centre of the hub. Discard the cap - a new one must be used on refitting. Using a hammer and a chisel-nosed tool, tap up the staking securing the hub retaining nut to the groove in the stub axle (see illustrations).
- 4 Using a socket and long bar, slacken and remove the rear hub nut, and withdraw the thrustwasher. Discard the hub nut - a new nut must be used on refitting.

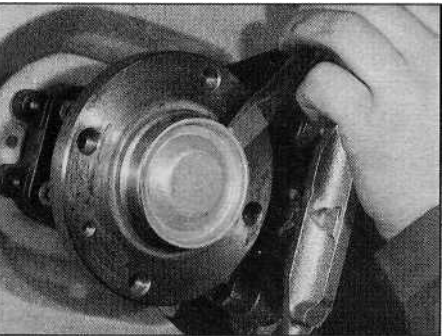
5 Using a puller, draw the hub assembly off the stub axle, along with the outer bearing race (see illustration). With the hub removed, use the puller to draw the inner bearing race off the stub axle, then remove the hub spacer, noting which way around it is fitted.

6 Refit the races to the hub bearing, and check the hub bearing for signs of roughness. It is recommended that the bearing should be renewed as a matter of course, as it is likely to have been damaged during removal. This means that the complete hub assembly must be renewed, since it is not possible to obtain the bearing separately.

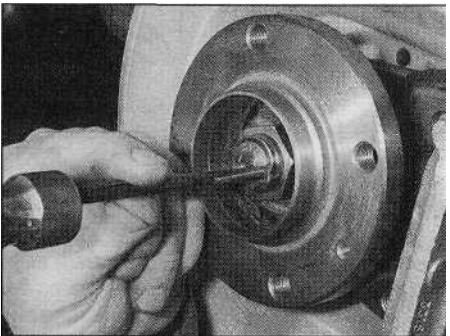
7 With the hub removed, examine the stub axle shaft for signs of wear or damage, and if necessary renew it. The stub axle is an interference fit in the trailing arm, and can either be tapped out of position, using a hammer and a soft-metal drift, or pushed out using a heavy-duty bearing puller. When installing the new stub axle, align its splines with those of the trailing arm, and drift or press it fully into position in the arm.

Refitting

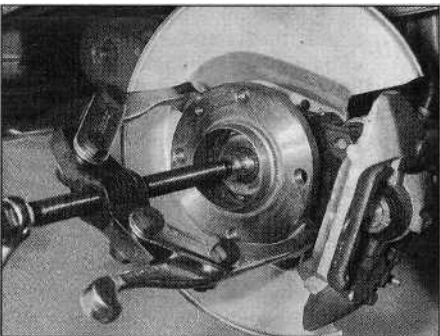
- 8 Lubricate the stub axle shaft with clean engine oil, then slide on the spacer, ensuring it is fitted the correct way round.
- 9 Fit the new bearing inner race, and tap it fully onto the stub axle using a hammer and a tubular drift which bears only on the flat inside edge of the race.



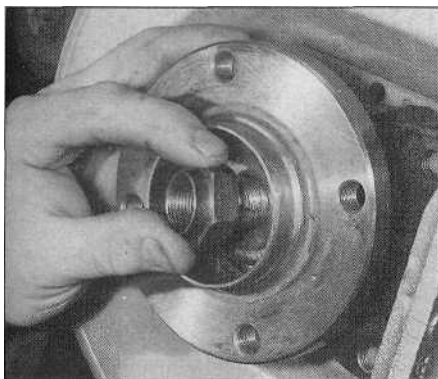
11.3a Tap off the hub centre cap ...



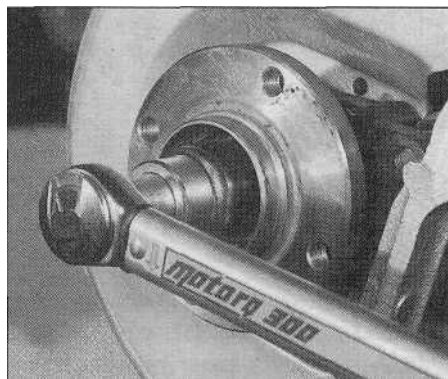
11.3b ... then tap up the rear hub staking using a hammer and suitable punch



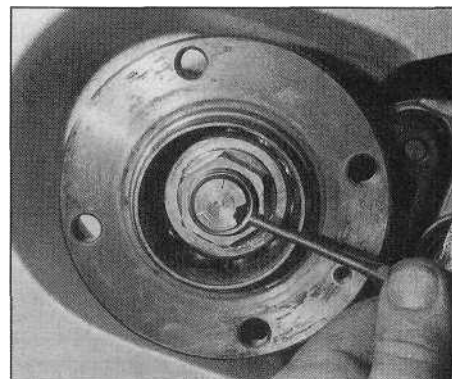
11.5 Use a puller to draw the hub assembly off the stub axle



11.11a Fit the thrustwasher and new hub nut...



11.11b ... and tighten the nut to the specified torque

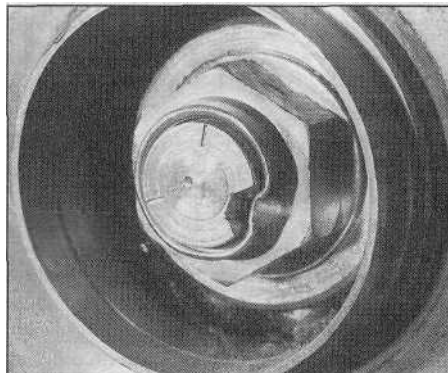


11.11c Using a hammer and punch ...

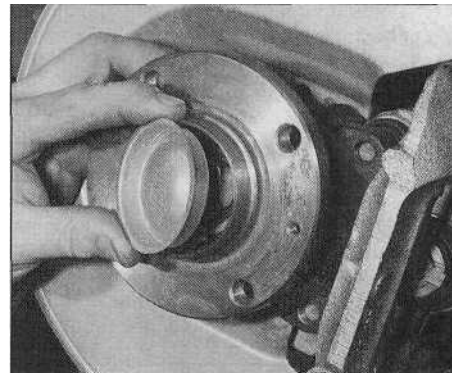
10 Ensure that the bearing is packed with grease, then slide the hub assembly onto the stub axle. Fit the new outer bearing race, and tap it into position using the tubular drift.

11 Fit the thrustwasher and new hub nut, and tighten the hub nut to the specified torque. Stake the nut firmly into the groove on the stub axle to secure it in position, then tap the new hub cap into place in the centre of the hub (see illustrations).

12 Refit the rear brake disc as described in Chapter 9.



11.11d ... stake the hub nut firmly into the stub axle groove ...



11.11e ... then fit the new hub cap

12 Rear hub bearings - renewal

Note: The bearing is intended to last the car's entire service life without maintenance or attention. Never overtighten the hub nut beyond the specified torque wrench setting, in an attempt to "adjust" the bearings.

Rear drum brakes

1 Remove the rear brake drum as described in Chapter 9.

2 Using a flat-bladed screwdriver, lever the spacer out of the rear of the brake drum, noting which way around it is fitted.

3 Using circlip pliers, extract the bearing retaining circlip from the centre of the brake drum.

4 Securely support the drum hub, then press or drive the bearing out of position, using a tubular drift which bears on the bearing inner race.

5 Thoroughly clean the hub, removing all traces of dirt and grease, and polish away any burrs or raised edges which might hinder reassembly. Check the hub for cracks or any other signs of wear or damage, and renew them if necessary. The bearing and its circlip must be renewed whenever they are disturbed. Note that a replacement bearing kit, which consists of the bearing, circlip and spacer, is available from Citroen dealers.

6 Examine the stub axle shaft for signs of wear or damage, and if necessary renew it.

The stub axle is an interference fit in the trailing arm, and can either be tapped out of position, using a hammer and a soft-metal drift, or pushed out using a heavy-duty bearing puller. When installing the new stub axle, align its splines with those of the trailing arm, and drive or press it fully into position in the arm.

7 On reassembly, apply a light film of clean engine oil to the bearing outer race, to aid installation of the bearing.

8 Securely support the drum, and locate the bearing in the hub. Press the bearing fully into position, ensuring that it enters the hub squarely, using a tubular spacer which bears only on the bearing outer race.

9 Ensure the bearing is correctly seated against the hub shoulder, and secure it in position with the new circlip. Ensure that the circlip is correctly seated in its hub groove.

10 Fit the new spacer to the drum, ensuring it is fitted the correct way around, and use a tubular spacer to press it into squarely into position.

11 Refit the brake drum as described in Chapter 9.

Rear disc brakes

12 On models with rear disc brakes, it is not possible to renew the rear hub bearing separately. If the bearing is worn, the

complete rear hub assembly must be renewed. Refer to Section 11 for hub removal and refitting procedures.

13 Rear shock absorber - removal, testing and refitting

Removal

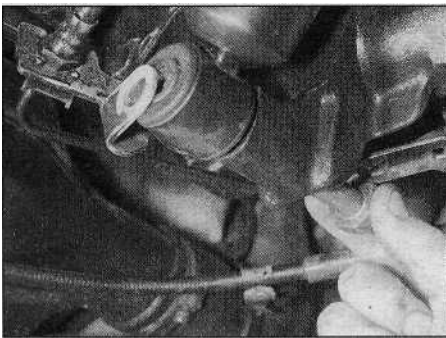
1 Chock the front wheels, then jack up the rear of the vehicle and support it on axle stands. Remove the relevant rear roadwheel.

2 On some models, note that if the left-hand shock absorber is to be removed, it will first be necessary to remove the exhaust tailpipe and tailpipe heatshield, in order to allow the shock absorber upper mounting bolt to be withdrawn. If this is the case, refer to Chapter 4 for information on exhaust system removal.

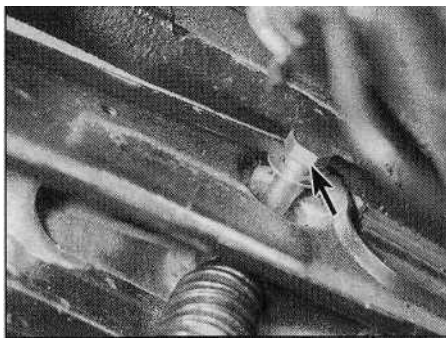
3 Using a trolley jack, raise the trailing arm until the shock absorber is slightly compressed.

4 Free the handbrake cable from its retaining clip on the bottom of the trailing arm. Slacken and remove the nuts and washers from both the upper and lower shock absorber mounting bolts, and free the brake hose mounting bracket from the lower mounting bolt.

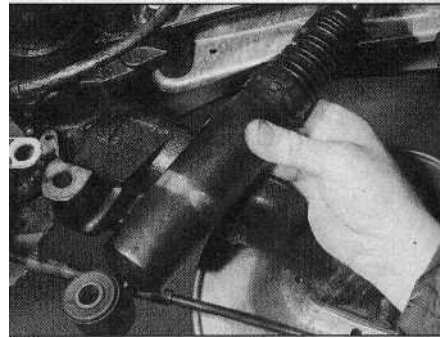
5 Withdraw the mounting bolts, noting which way around they are fitted, and manoeuvre



13.5a Withdraw the shock absorber lower mounting bolt...



13.5b ... and the upper mounting bolt (arrowed)...



13.5c ... and remove the shock absorber from underneath the vehicle

the shock absorber out from underneath the vehicle (see illustrations).

Testing

6 Examine the shock absorber for signs of fluid leakage or damage. Test the operation of the shock absorber, while holding it in an upright position, by moving the piston 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, renewal is necessary. Also check the rubber mounting bushes for damage and deterioration. Renew

the complete unit if any damage or excessive wear is evident; the mounting bushes are not available separately. Inspect the shanks of the mounting bolts for signs of wear or damage, and renew as necessary.

Refitting

7 Prior to refitting the shock absorber, mount it upright in the vice, and operate it fully through several strokes in order to prime it. Apply a smear of multi-purpose grease to both the shock absorber mounting bolts.

8 Manoeuvre the shock absorber into position, and insert its mounting bolts; ensure that the upper bolt is inserted from the inside

of the trailing arm, and the lower bolt from the outside.

9 Refit the nuts and washers to the mounting bolts, not forgetting to refit the brake hose bracket to the lower bolt, tightening them by hand only at this stage. Clip the handbrake cable onto the trailing arm bracket.

10 Refit the roadwheel, then lower the car to ground and tighten the roadwheel bolts to the specified torque.

11 With the car standing on its wheels, rock the car to settle the shock absorber in position, then tighten both the upper and lower mounting bolts to their specified torque settings.

12 Where necessary, refit the heat shield and tailpipe as described in the relevant part of Chapter 4.

14 Rear suspension torsion bar - removal and refitting

Note: To ensure the trailing arm is correctly positioned prior to refitting the torsion bar, a special bracket is required. This bracket (special tool number 9501-T.G3) can be obtained from a Citroen dealer, or alternatively, a home-made substitute can be fabricated; the dimensions of the Citroen tool are shown in illustration 14.0. Note that the substitute bracket must be accurately fabricated to be of use.

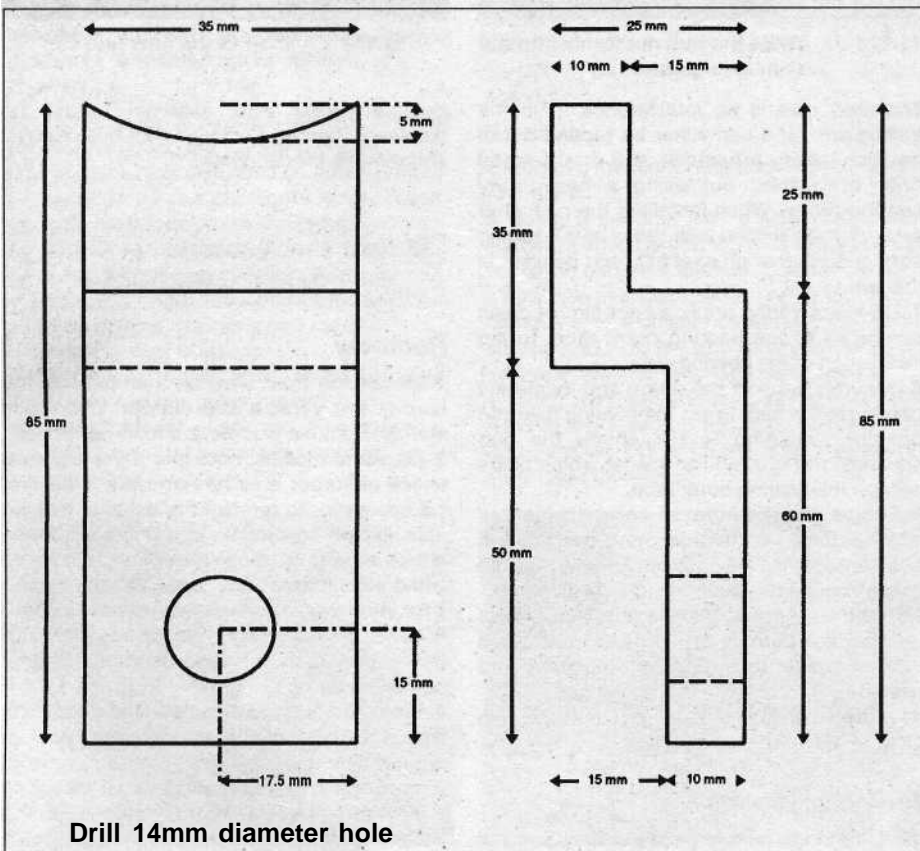
Removal

1 Chock the front wheels, then jack up the rear of the vehicle and support it on axle stands. Remove both rear roadwheels, then proceed as described under the relevant sub-heading.

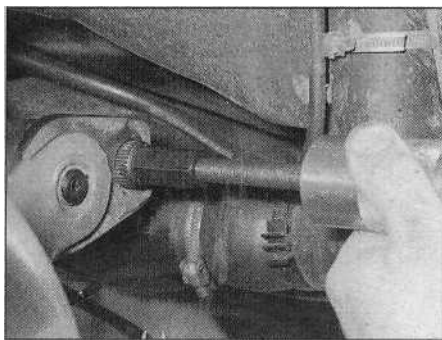
Front torsion bar

2 Remove the right-hand shock absorber as described in Section 13.

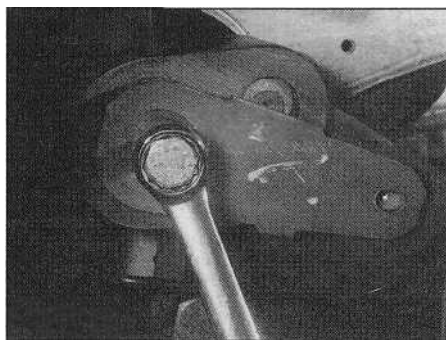
3 With the trailing arm unsupported, measure the distance between the centres of the upper and lower shock absorber mounting bolt holes, on the side from which the shock absorber has been removed, and note this down; this measurement will be needed on refitting.



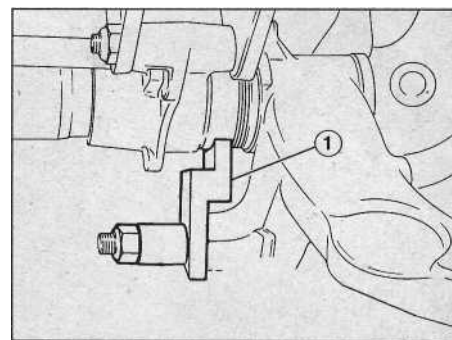
14.0 Citroen trailing arm positioning bracket dimensions



14. 6 Using a slide-hammer to withdraw a torsion bar



14. 10 Using a jacking bolt to draw the retaining bracket off the end of the anti-roll bar



14. 14a Attach the position bracket (1) to the shock absorber lower mounting bolt hole as shown, using the mounting bolt and nut and a suitable spacer

4 Position a trolley jack underneath the end of the trailing arm, and raise the jack until it is supporting the weight of the trailing arm. It is necessary to support the trailing arm, to prevent it moving as the torsion bar is removed. Excess trailing arm movement will place strain on the brake lines, which could cause them to fracture.

7 Once the splines of the torsion bar are free, the bar can be withdrawn completely from its location. Note that the front and rear torsion bars are not interchangeable; the bars can be identified by the markings on their shafts. The front bar has one band painted around the left-hand end of its shaft, and the rear bar has two bands painted around its right-hand end.

Rear torsion bar

8 Remove the left-hand shock absorber as described in Section 13.

9 Carry out the operations described above in paragraphs 3 and 4.

10 Slacken and remove the bolt securing the anti-roll bar retaining bracket to the left-hand trailing arm, and unscrew the plastic plug from the centre of the bracket. Obtain a 12 x 1.5 mm bolt at least 70 mm long, lubricate its threads and screw it into the bracket. The bolt can then be used as a jacking bolt, to draw the bracket out of position (**see illustration**). Once the bracket is free from the anti-roll bar splines, remove it from the trailing arm, along with its sealing rings. Discard the sealing rings - new ones should be used on refitting.

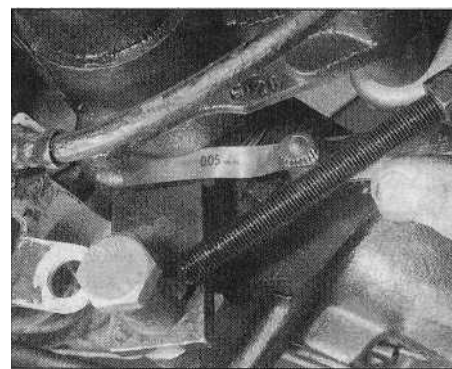
11 Slacken and remove the Torx screw and washer from the left-hand end of the torsion bar. Using a punch or scribe, make alignment marks between the torsion bar and trailing arm. Unscrew the retaining nut from the right-hand end of the torsion bar, and remove the washer.

12 Withdraw the torsion bar from the left-hand side, using the information given above in paragraphs 6 and 7.

Refitting

Front torsion bar

13 Ensure that the trailing arm and torsion bar splines are clean and dry, then lubricate the splines with molybdenum disulphide grease. Where a new torsion bar is being installed, unscrew the threaded stud from the original bar, and screw it fully into the smaller-diameter end of the new bar.



14. 14b Using a feeler blade to check the positioning bracket-to-crossmember clearance

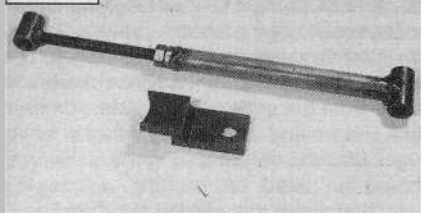
14 Ensure the distance between the upper and lower shock absorber mounting bolt holes is still as measured prior to removal, and adjust as necessary. Attach the positioning bracket (see note above) to the shock absorber lower mounting bolt hole as shown in **illustration 14.14a**. Using feeler blades, check that the clearance between the inner edge of the bracket and the edge of the tubular crossmember is 0.05 mm. If necessary, adjust the position of the trailing arm by tapping it lightly with a soft-faced mallet until the 0.05 mm feeler blade is a light, sliding fit (**see illustrations**).

15 Where the original torsion bar is being installed, rotate the bar until the marks made on removal are aligned, then slide the bar into position. The bar should engage freely with the trailing arm splines for the first 8 to 10 mm, and can then be tapped fully into position using a hammer and a soft metal drift.

16 If a new bar is being installed, rotate the bar until the position is found where the bar can be freely engaged with the first 8 to 10 mm of the trailing arm splines. Having found this position, tap the bar fully home using a hammer and a soft metal drift.

17 Once the torsion bar is fully home, refit the washer and Torx screw to the end of the

TOOL TIP



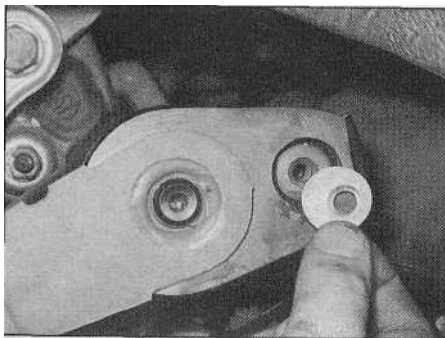
A tool to hold the trailing arm in position can be fabricated from a length of threaded bar, and attached to the shock absorber mounting bolt holes.

5 Slacken and remove the Torx screw and washer from the right-hand end of the torsion bar. Using a punch or scribe, make alignment marks between the torsion bar and trailing arm. Unscrew the retaining nut from the left-hand end of the torsion bar, and remove the washer.

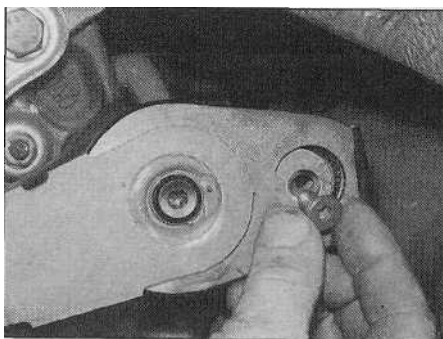
6 The torsion bar can now be withdrawn from the right-hand side, using a slide-hammer which is screwed into the 8 mm threaded hole in the end of the bar (**see illustration**).

HAYNES HINT

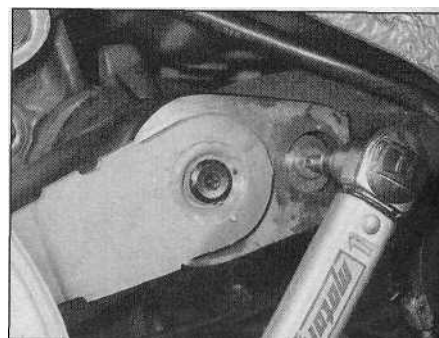
It is possible to improvise torsion bar removal by screwing a long bolt with a flat washer into the bar, and placing the jaws of a spanner against the washer. Striking the spanner sharply with a hammer should free the torsion bar.



14. 17a Refit the offset washer...



14. 17 b... and the retaining screw to the end of the torsion bar...



14. 17 c... and tighten the screw to the specified torque

torsion bar, and tighten it to the specified torque (**see illustrations**).

18 Ensure the trailing arm is still correctly positioned, then unscrew the threaded stud from the opposite end of the torsion bar until its shoulder contacts the trailing arm cup; do not force the stud against the cup. Refit the washer and nut to the stud, and securely tighten the nut whilst retaining the stud with a small flat-bladed screwdriver (**see illustrations**).

19 Refit the rear shock absorber as described in Section 13, then check and, if necessary, adjust the vehicle ride height as described in Section 18.

Rear torsion bar

20 Refit the torsion bar as described above in paragraphs 13 to 19.

21 Unscrew the plastic plug from the centre of the opposite anti-roll bar retaining bracket, and screw a short 8 mm bolt and washer into the end of the anti-roll bar. Securely tighten the bolt to hold the anti-roll bar in position.

22 Apply a smear of the special grease (Mobil Temp G9, available from your Citroën dealer) to the new sealing rings, and fit them to the anti-roll bar bracket. In the absence of the special grease, a good-quality molybdenum disulphide grease can be used.

23 Insert the retaining bracket into position in the trailing arm, aligning its retaining bolt hole with that of the trailing arm, and engage it with the anti-roll bar splines. Using a soft-faced

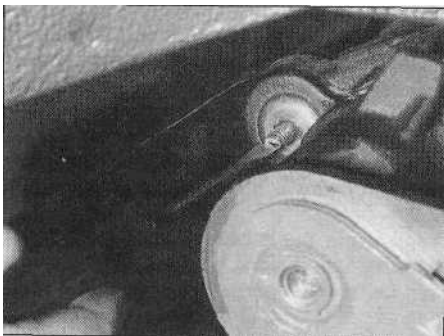
mallet, tap the bracket into position until the clearance between the inside of the bracket and the trailing arm is 1.0 mm; this can be checked using a feeler blade. If the bracket is a tight fit on the anti-roll bar splines, screw a long 8 mm bolt, nut and washer into the end of the anti-roll bar. The bracket can then be drawn into position by tightening the nut (**see illustration 16.13b**).

24 Once the bracket is correctly positioned, refit its retaining bolt, not forgetting to position the handbrake cable bracket underneath it, and tighten it to the specified torque setting. Unscrew the bolt(s) from the end(s) of the anti-roll bar, then wipe clean the threads of the retaining bracket holes. Apply a smear of sealant to the plugs, and refit them to the brackets.

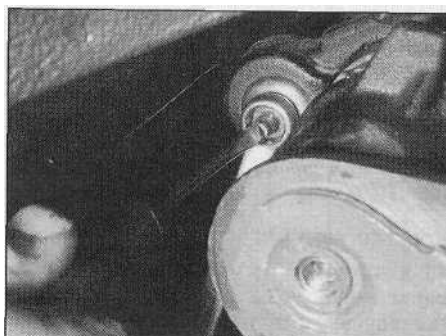
25 Refit the rear shock absorber as described in Section 13, then check and, if necessary, adjust the vehicle ride height as described in Section 18.

15 Rear suspension trailing arm - removal and refitting

Note: To ensure the trailing arm is correctly positioned on refitting, a special bracket is required. This bracket (special tool number 9501-T. G3) can be obtained from a Citroën dealer, or alternatively, a home-made substitute can be fabricated; the dimensions of the Citroën tool are shown in **illustration**



14. 18a Screw the threaded stud out from the end of the opposite end of the bar until it just contacts the cup



14. 18b Refit the washer and retaining nut, and securely tighten the nut whilst retaining the stud with the screwdriver

14. 0. Note that the substitute bracket must be accurately fabricated to be of use.

Removal

1 Chock the front wheels, then jack up the rear of the vehicle and support it on axle stands. Remove both rear roadwheels.

2 Remove the relevant shock absorber as described in Section 13.

3 Slacken and remove the bolt securing the anti-roll bar retaining bracket to the left-hand trailing arm, and unscrew the plastic plug from the centre of the bracket. Obtain a 12 x 1.5 mm bolt at least 70 mm long, lubricate its threads and screw it into the bracket. The bolt can then be used as a jacking bolt, to draw the bracket out of position. Once the bracket is free from the anti-roll bar splines, remove it from the trailing arm, along with its sealing rings. Discard the sealing rings - new ones should be used on refitting. Proceed as described under the relevant sub-heading.

Rear drum brakes

4 Remove the brake drum as described in Chapter 9.

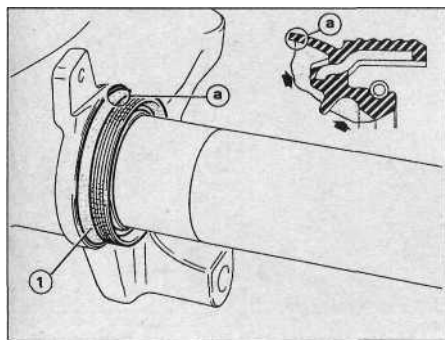
5 Work back along the length of the brake pipe/hose, and remove any retaining clips securing it to the trailing arm. Note that on some models, it may be necessary to split the brake hose at its union in order to free it from the trailing arm bracket; refer to Chapter 9 for further information.

6 Undo the four bolts and washers securing the brake backplate to the trailing arm. Carefully ease the backplate assembly over the end of the stub axle, and position it clear of the trailing arm. Tie the backplate assembly to the vehicle underbody, to prevent undue strain being placed on the brake pipe.

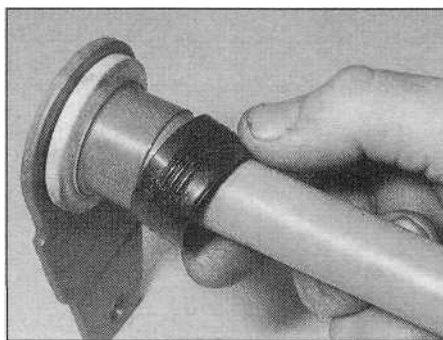
7 Remove the relevant torsion bar as described in Section 14.

8 The trailing arm can then be withdrawn from the crossmember, and removed from the vehicle.

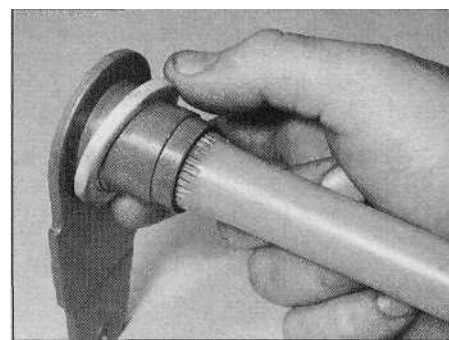
9 Inspect the trailing arm bearings, axle tube tracks and crossmember outer sleeves for signs of wear and damage. If renewal is necessary, the task should be entrusted to a Citroën dealer. The bearing renewal procedure involves the use of numerous



15. 15 Ensure the seal (1) is fitted the correct way around, and is correctly located on the trailing arm shoulder (a)



16. 5a Slide the inner.



16. 5 b ... and outer sealing rings off the anti-roll bar

special tools to remove the original bearings and install the new ones. Attempting to install the bearings without these special tools will almost certainly lead to damage during fitting.

Rear disc brakes

10 Work back along the length of the brake hose/pipe, and remove any retaining clips securing it to the trailing arm. Note that on some models, it may be necessary to split the brake hose at its union in order to free it from the trailing arm bracket; refer to Chapter 9 for further information. On models with ABS, trace the wiring back from the wheel sensor, and disconnect it at the wiring connector.

11 Slacken the two bolts securing the caliper assembly to the trailing arm, and remove them along with the mounting plate, noting which way around the plate is fitted. Discard the caliper mounting bolts - they should be renewed whenever they are disturbed.

12 Slide the caliper assembly off the brake disc. Where the brake hose/pipe has not been split, tie the caliper to the vehicle underbody, to prevent any undue strain being placed on the brake hose.

13 Remove the relevant torsion bar as described in Section 14.

14 The trailing arm can then be withdrawn from the crossmember, and examined as described above in paragraph 9.

Refitting

15 Prior to refitting, inspect the trailing arm seal for signs of wear or damage, and renew if necessary. Ensure the new seal is installed the correct way around, and is pressed fully onto the trailing arm (see illustration).

16 Goat the lips of the seal, and the bearing and bearing tracks, with a smear of the special grease (Total Multis G6, available from your Citroen dealer). In the absence of the special grease, a good-quality molybdenum disulphide grease can be used.

17 Slide the trailing arm into position in the crossmember, until its seal is against the crossmember sleeve. Support the trailing arm so that the distance between the upper and lower mounting bolt holes is as noted prior to removal.

18 Refit the torsion bar as described in paragraphs 13 to 18 of Section 14.

Rear drum brakes

19 Ensure the mating surfaces of the brake backplate and trailing arm are clean and dry. Locate the backplate over the stub axle, then refit its retaining bolts and tighten them to the specified torque setting.

20 Refit the anti-roll bar retaining bracket as described in paragraphs 21 to 24 of Section 14.

21 Reconnect the brake pipe/hose (where split), and ensure the brake pipe/hose and handbrake cable are securely retained by all the necessary fasteners. Refit the brake drum, referring to the relevant Sections of Chapter 9.

22 Refit the rear shock absorber as described in Section 13, then check and, if necessary, adjust the vehicle ride height as described in Section 18.

Rear disc brakes

23 Slide the caliper into position over the brake disc.

24 If the threads of the new caliper mounting bolts are not already pre-coated with locking compound, apply a suitable locking compound to them. Install the new caliper mounting bolts and the mounting plate, noting that the mounting plate must be fitted so that its bend curves away from the caliper body. With the plate correctly positioned, tighten the caliper bolts to the specified torque setting (see Chapter 9).

25 Refit the anti-roll bar retaining bracket as described in paragraphs 21 to 24 of Section 14.

26 Reconnect the brake pipe/hose (where split), and ensure the brake hose/pipe and handbrake cable are securely retained by all the necessary fasteners. Where necessary, reconnect the ABS wheel sensor wiring connector, referring to Chapter 9 for further information.

27 Refit the rear shock absorber as described in Section 13. Check and, if necessary, adjust the vehicle ride height as described in Section 18.

16 Rear suspension anti-roll bar - removal and refitting

Removal

1 Chock the front wheels, then jack up the rear of the vehicle and support it on axle stands. Remove both rear roadwheels.

2 Slacken and remove the bolt securing the anti-roll bar retaining bracket to the right-hand trailing arm, and unscrew the plastic plug from the centre of the bracket. Obtain a 12 x 1.5 mm bolt at least 70 mm long, lubricate its threads and screw it into the bracket. The bolt can then be used as a jacking bolt, to draw the bracket out of position. Once the bracket is free from the anti-roll bar splines, remove it from the trailing arm, along with its sealing rings. Discard the sealing rings - new ones should be used on refitting.

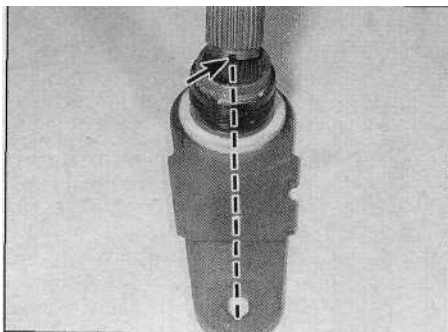
3 Slacken and remove the bolt securing the anti-roll bar retaining bracket to the left-hand trailing arm, and unscrew the plastic plug from the centre of the bracket.

4 The anti-roll bar and right-hand retaining bracket assembly can now be withdrawn from the left-hand side, using a slide-hammer which is screwed into the 8 mm threaded hole in the end of the anti-roll bar. It is possible to improvise by screwing a long bolt with a flat washer into the bar, and placing the jaws of a spanner against the washer. Striking the spanner sharply with a hammer should free the torsion bar. Alternatively, the bar can be tapped out of position, using a hammer and a soft-metal drift on the exposed right-hand end of the bar.

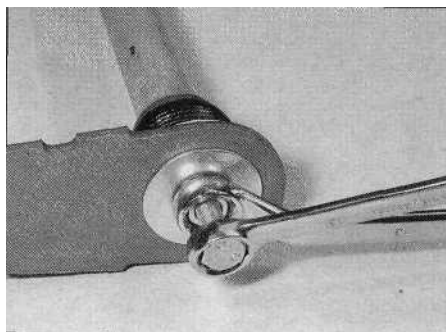
5 Remove the sealing rings from the left-hand end of the bar (see illustrations).

6 If it is wished, the anti-roll bar and left-hand retaining bracket can be separated using the jacking bolt (see paragraph 2). Prior to separation, make alignment marks between the bar and bracket.

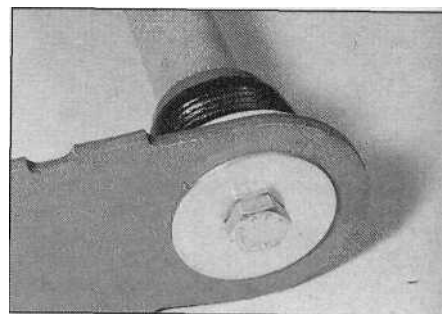
7 Inspect the anti-roll bar and retaining brackets for signs of wear or damage, and renew if necessary. The sealing rings should be renewed as a matter of course.



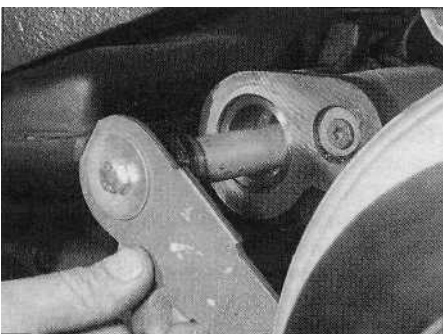
16. 9a If a new anti-roll bar is being installed, align the cut-out (arrowed) with the bracket retaining bolt hole



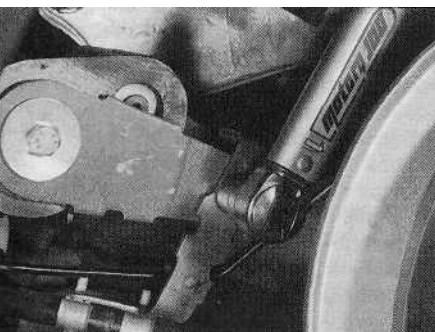
16. 9b Using a nut and bolt to draw the retaining bracket into position on the anti-roll bar



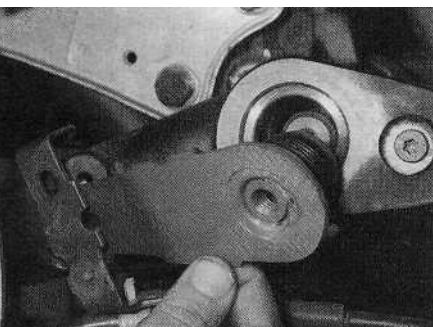
16. 10 Secure the left-hand bracket in position with a short 8 mm bolt and washer before refitting the anti-roll bar to the vehicle



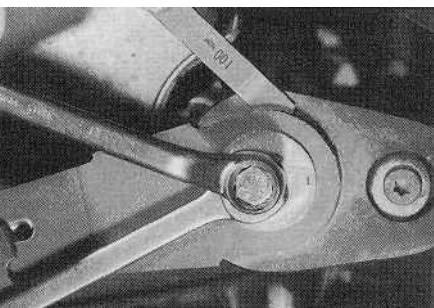
16. 11a Refit the anti-roll bar and bracket assembly to the vehicle...



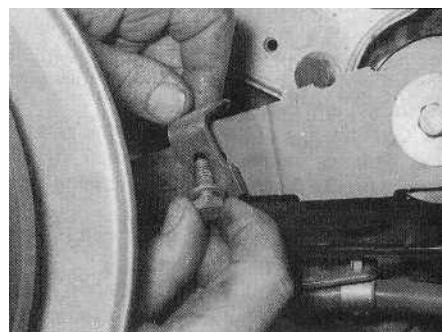
16. 11 b... then refit the retaining bracket bolt, and tighten it to the specified torque



16. 13a Fit the new sealing rings to the right-hand retaining bracket, then refit the bracket to the anti-roll bar



16. 13b Using a nut and bolt arrangement to draw the right-hand bracket into position, whilst using a feeler blade to measure bracket-to-arm clearance



16. 14a Refit the handbrake cable bracket to the trailing arm, then refit the retaining bracket bolt...

Refitting

8 Ensure the splines of the anti-roll bar and retaining bracket(s) are clean and dry, then apply a smear of the special grease (Mobil Temp G9, available from your Citroen dealer) to them and the new sealing rings. In the absence of the special grease, a good-quality molybdenum disulphide grease can be used.

9 If the left-hand retaining bracket and anti-roll bar were separated, refit the bracket to the bar, aligning the marks made on removal. If a new bar or bracket is being fitted, align the bracket retaining bolt hole with the cut-out on the end of the anti-roll bar. Tap the bracket fully onto the splines using a soft-faced mallet. If the bracket is a tight fit on the anti-roll bar splines, screw a long 8 mm bolt, nut and washer into the end of the anti-roll bar. The bracket can then be drawn into position by tightening the nut (**see illustrations**).

10 Screw a short 8 mm bolt and washer into the left-hand end of the anti-roll bar, and tighten it securely (**see illustration**). This will ensure that the bar and bracket will stay correctly engaged during the refitting procedure.

11 Slide the new sealing rings onto the anti-roll bar, then slide the bar into position from the left-hand side of the vehicle. Refit the retaining bracket bolt, not forgetting to

position the handbrake cable bracket underneath it, and tighten it to the specified torque setting (**see illustrations**).

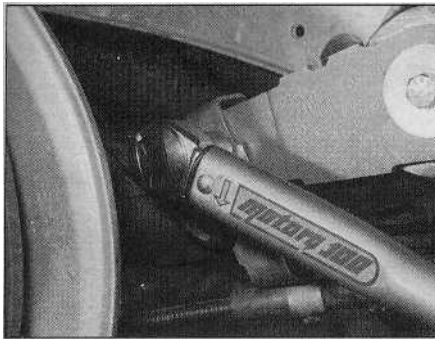
12 Fit the new sealing rings to the right-hand retaining bracket.

13 Insert the right-hand retaining bracket into position in the trailing arm, aligning its retaining bolt hole with that of the trailing arm, and engage it with the anti-roll bar splines. Using a soft-faced mallet, tap the bracket into position until the clearance between the inside of the bracket and the trailing arm is 1.0 mm; this can be checked using a feeler blade. If the bracket is a tight fit on the anti-roll bar splines, screw a long 8 mm bolt, nut and washer into the end of the anti-roll bar. The bracket can then be drawn into position by tightening the nut (**see illustrations**).

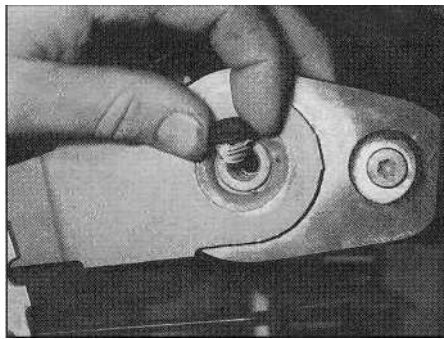
14 Once the bracket is correctly positioned, refit its retaining bolt, not forgetting to position the handbrake cable bracket underneath it, and tighten it to the specified torque (**see illustrations**).

15 Unscrew the bolt(s) from the end(s) of the anti-roll bar, then wipe clean the threads of the retaining bracket holes. Apply a smear of sealant to the threads of the plastic plugs, and refit them to the brackets (**see illustration**).

16 Refit the roadwheels, then lower the car to ground and tighten the roadwheel bolts to the specified torque.



16.14b ... and tighten it to the specified torque



16.15 Apply a smear of sealant to the threads of the plastic plugs, and refit them to the retaining brackets

17 Rear axle assembly - removal and refitting



Removal

- 1 Remove the rear seat assembly as described in Chapter 11.
- 2 Firmly chock the front wheels, then jack up the rear of the vehicle and support it on axle stands. Remove both rear roadwheels, then lower the spare wheel out from underneath the rear of the vehicle, and unhook the wheel carrier.
- 3 Remove the exhaust system and heat shield(s) as described in Chapter 4.
- 4 Remove the handbrake lever cover, and fully slacken the handbrake cable adjuster nut. Refer to Chapter 9 for further information.
- 5 On models with rear drum brakes, disconnect both cables from the handbrake lever. From underneath the vehicle, work along the length of each cable, and free them from any retaining clips which secure them to the vehicle underbody.
- 6 On models with rear disc brakes, free the end of the handbrake inner cable from the caliper handbrake lever, then tap the outer cable out of the caliper using a hammer and punch. Where necessary, disconnect the ABS wheel sensors at the wiring connectors, and free them from any retaining clips.
- 7 Trace the brake pipes back from the caliper/backplate to their unions, which are situated just in front of the rear axle assembly. Slacken the union nuts, and disconnect the pipes. Plug the pipe ends, to minimise fluid loss and prevent the entry of dirt into the hydraulic system. Remove any retaining clips securing the rear section of the pipe to the vehicle underbody.
- 8 Make a final check that all necessary components have been disconnected and positioned so that they will not hinder the removal procedure, then position a trolley jack beneath the centre of the rear axle assembly. Raise the jack until it is supporting the weight of the axle.
- 9 Remove the luggage compartment lower side trim panels as described in Chapter 11.

Lift up the rear luggage compartment carpet to gain access to the rear axle retaining nuts. Slacken and remove the two retaining nuts and washers from each front mounting assembly, and the single nut and washer securing each rear mounting assembly to the vehicle.

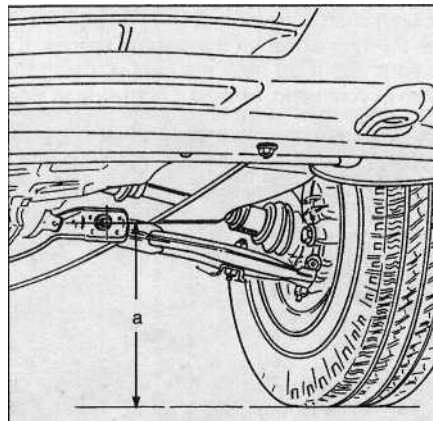
10 Carefully lower the jack and axle assembly out of position, and remove it from underneath the vehicle.

11 Examine the rear axle mountings for signs of damage or deterioration of the mounting rubber, and renew if necessary. Note that all four mountings should be renewed as a set; do not renew the mountings individually.

Refitting

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

- (a) *Raise the rear axle assembly into position, and tighten the mounting retaining nuts to their specified torque settings.*
- (b) *Ensure the brake pipes, handbrake cables and wiring (as applicable) are correctly routed, and retained by all the necessary retaining clips.*
- (c) *Securely tighten the brake pipe union nuts.*



Front axle

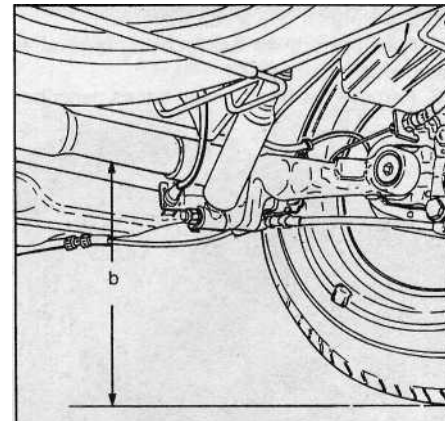
- (d) *Adjust the handbrake cable as described in Chapter 9.*
- (e) *On completion, lower the vehicle to the ground, and bleed the braking system hydraulic circuit as described in Chapters.*
- (f) *Check and, if necessary, adjust the vehicle ride height as described in Section 18.*

18 Vehicle ride height - checking and adjustment



Checking

- 1 Position the unladen vehicle on a level surface, with the tyres correctly inflated; roll the vehicle backwards and forwards, to relieve any stress in the suspension components. For the ride height measurements to be accurate, the vehicle must be loaded with the equivalent of 4 occupants and approximately 40 kg of luggage.
- 2 The front ride height is measured between the centre of the front lower suspension arm pivot and the ground; the rear ride height measurement is taken between the lower edge of the 58 mm section of the tubular crossmember and the ground (**see illustration**).
- 3 Take three measurements on the right-hand side of the vehicle, then take the average of these three to be the correct right-hand height. Repeat the procedure on the left-hand side, to find the correct left-hand height. Note that the maximum permissible difference between the left- and right-hand side averages together, and divide by two to obtain the correct vehicle ride height.
- 4 Compare the measurement obtained with those given in the Specifications at the start of this Chapter.
- 5 If the front ride height differs significantly from that specified, one OT the suspension



Rear axle

18.2 Vehicle front (a) and rear (b) ride height measurement points

components must be worn or damaged; no adjustment is possible. Inspect all the front suspension components for signs of wear or damage, such as worn bushes, and renew components as necessary. If no sign of damage can be found, the vehicle should be taken to a Citroën dealer for a more detailed examination.

6 If the rear ride height differs from that specified, adjust it as follows.

Adjustment (rear ride height only)

7 Determine the amount of adjustment required. The rear suspension height can be adjusted in multiples of 3 mm, by rotating the rear torsion bars. If adjustment is necessary, determine the number of splines the torsion bar must be moved, noting that one spline is equal to roughly 3 mm of ride height. For example, if the ride height needs adjusting by 10 mm, the torsion bar should be moved by three splines. If the height difference between sides was excessive, compensate for this during the adjustment procedure.

8 Chock the front wheels, then jack up the rear of the vehicle and support it on axle stands. Remove both rear roadwheels.

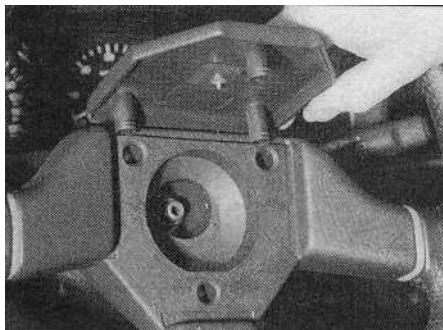
9 Working first on the left-hand side, remove the rear torsion bar as described in Section 14.

10 Noting that a 2 mm change in distance between the rear shock absorber mounting bolt holes equals a 3 mm change in ride height, or one spline of torsion bar movement, raise or lower the trailing arm by the required amount. Note that increasing the distance between the bolt holes increases ride height, and decreasing the distance lowers the ride height; if the ride needs lowering by 9 mm, decrease the distance between the shock absorber mounting bolt holes by 6 mm by raising the trailing arm.

11 Rotate the torsion bar by the required number of splines and in the required direction, and relocate it with the trailing arm splines. The bar should engage freely with the trailing arm splines for the first 8 to 10 mm, and can then be tapped into fully into position using a hammer and a soft metal drift.

12 Refit the anti-roll bar retaining bracket as described in Section 14.

13 Remove the front torsion bar as described



19.2a Remove the centre pad ...

in Section 14, and repeat the procedure described in paragraphs 10 and 11 on the right-hand side. Secure the bar in position as described in Section 14.

14 Refit the roadwheels, then lower the car to ground and tighten the roadwheel bolts to the specified torque.

15 With the car standing on its wheels, rock the car to settle the disturbed suspension components, then tighten the shock absorber mounting bolts to the specified torque settings.

16 Recheck the vehicle ride heights as described earlier in this Section and, if necessary, repeat the adjustment procedure. Note that it may be necessary to adjust the headlight beam alignment, referring to Chapter 12 for further information.

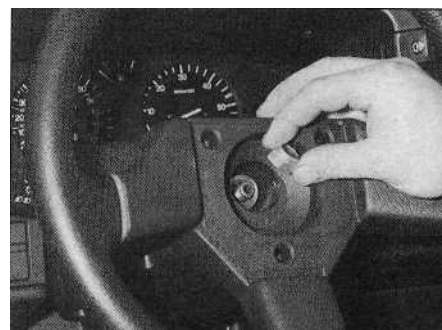
19 Steering wheel - removal and refitting

Removal

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

2 Carefully ease off the steering wheel centre pad, then slacken and remove the steering wheel retaining nut (see illustrations).

3 Mark the steering wheel and steering column shaft in relation to each other, then 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,



19.2b ... then slacken and remove the steering wheel retaining nut

whilst pulling upwards to release it from the shaft splines.

Refitting

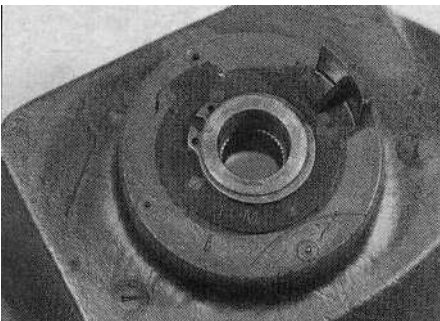
4 Refitting is a reversal of removal, noting the following points:

- (a) Check the indicator cancelling lug fitted to the rear of steering wheel is in good condition, and if necessary renew it. The lug is retained by a circlip (see illustration).
- (b) Prior to refitting, ensure that the indicator switch stem is in its central position. Failure to do this could lead to the steering wheel lug breaking the switch tab as the steering wheel is refitted.
- (c) On refitting, align the marks made on removal, and tighten the retaining nut to the specified torque (see illustration).

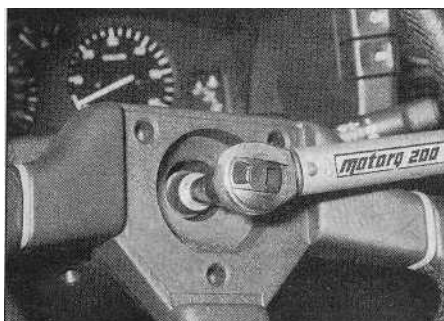
20 Steering column - removal, inspection and refitting

Removal

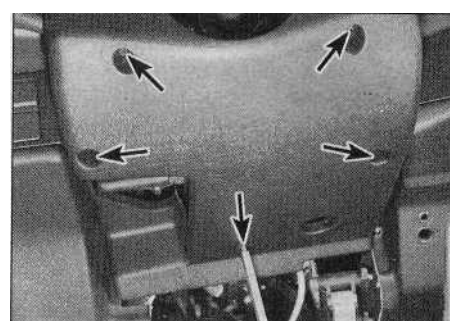
- 1** Disconnect the battery negative terminal.
- 2** Remove the steering wheel as described in Section 19.
- 3** Release the panel fasteners by rotating them through a quarter of a turn, and remove the driver's side lower facia panel.
- 4** Slacken and remove the five screws which secure the two halves of the steering column shrouds together, then remove both the upper and lower shroud (see illustrations).



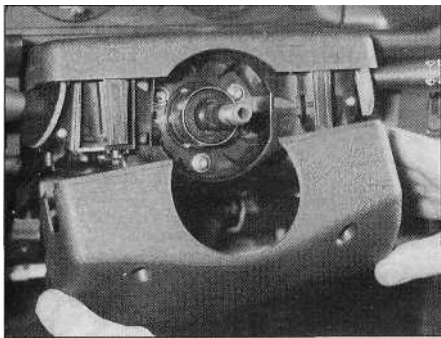
19.4a Indicator cancelling lug is secured to the base of the steering wheel by a circlip



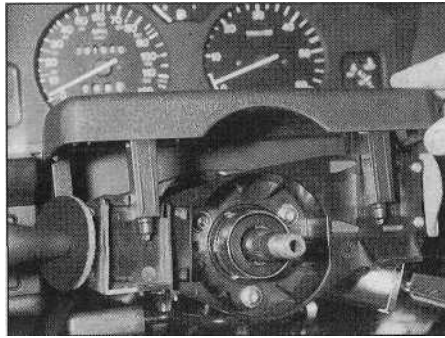
19.4b Tighten the steering wheel retaining nut to the specified torque



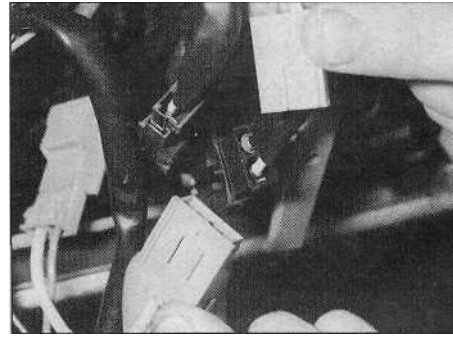
20.4a Undo the five steering column shroud retaining screws (arrowed)...



20.4b ... then remove the both the lower...



20.4c ... and upper shroud sections



20.6 Disconnecting the ignition switch wiring connectors

5 Release the fascia felt undercover retaining clips, and peel back the material. Release the heater duct, and remove the duct to gain access to the steering column mountings.

6 Tilt the steering column fully downwards, and disconnect the wiring connectors from the steering column combination switches and the three wiring connectors from the ignition switch (**see illustration**). Free the wiring from any relevant retaining clips.

7 Make alignment marks between the universal joint on the base of the steering column and the intermediate shaft, then slacken and remove the universal joint clamp bolt.

8 Slacken and remove the four steering column mounting nuts, then release the steering column from its mountings, and recover the column mounting spacers from the lower mounting studs (**see illustration**). Disengage the universal joint from the intermediate shaft, and remove the steering column assembly from the vehicle.

9 To remove the intermediate shaft, firmly apply the handbrake, then jack up the front of the vehicle and support it on axle stands. Disengage the rubber gaiter from the floor, and slide it off the end of the shaft. Make alignment marks between the universal joint on the base of the intermediate shaft and steering gear pinion, then slacken and remove the universal joint clamp bolt (**see**

illustrations). Release the shaft from the pinion splines, and remove it from the vehicle.

Inspection

10 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.

11 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 on the steering column universal joints or shaft bushes, the column must be renewed as an assembly. Inspect the column lower mounting rubbers for signs of damage or deterioration, and renew if necessary.

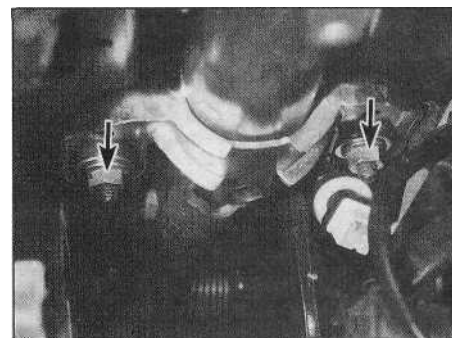
12 The steering column nuts (and, where disturbed, the intermediate shaft clamp bolt nuts) must be renewed as a matter of course. Each nut is retained by a metal cage; release the cage retaining tangs, then remove the old nut from inside the cage and install the new one. Refit the cage, and secure it in position with the retaining tangs (**see illustration**).

Refitting

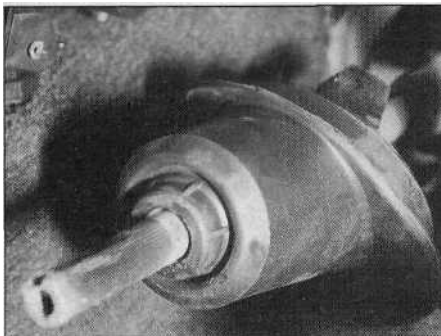
13 Where removed, refit the intermediate shaft, aligning the marks made prior to removal, and engaging the universal joint with the steering gear drive pinion splines. Refit the shaft clamp bolt, and tighten it to the specified torque setting. Slide the rubber gaiter down the intermediate shaft, and locate it in the floorpan.

14 Manoeuvre the steering column assembly into position then, aligning the marks made prior to removal, engage the universal joint with the intermediate shaft splines.

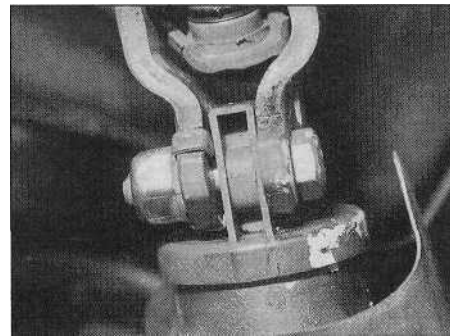
15 Fit the column over its mounting studs, and refit the steering column mounting nuts,



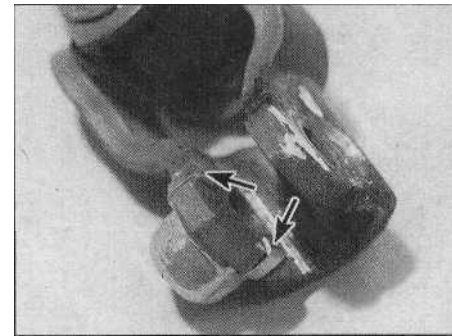
20.8 Steering column lower mounting nuts (arrowed)



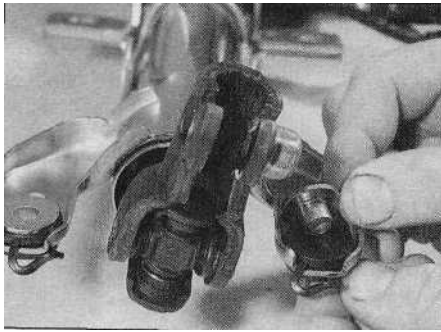
20.9a From inside the vehicle, slide the rubber gaiter off the intermediate shaft..



20.9b ... then slacken and remove the universal joint clamp bolt, and free the shaft from the steering gear



20.12 Ensure the universal joint clamp bolt nut cage is securely held in position by its retaining tangs (arrowed)



20.15a Ensure the mounting rubbers and spacers are correctly positioned on the column lower mountings ...

not forgetting the lower mounting stud spacers, and tighten them to the specified torque (**see illustrations**).

16 Position the column universal joint on the intermediate shaft, so that the top of the steering shaft protrudes from the top of the steering column by 58 mm (**see illustration**). Once correctly positioned, refit the clamp bolt and tighten it to the specified torque.

17 Ensuring that the wiring is correctly routed and retained by any necessary retaining clips, reconnect the wiring connectors to the combination switches and the ignition switch.

18 Refit the heater duct, ensuring that it is correctly seated at each end, and clip the undercover back into position.

19 Position the upper and lower column shrouds around the steering column, then refit the retaining screws and tighten them securely.

20 Refit the lower facia panel, and secure it in position by rotating the fasteners through a quarter of a turn.

21 Refit the steering wheel as described in Section 19.

22 Release the column tilt lever, check that the column moves freely, then lock the lever and check the column is securely held. If adjustment is necessary, working through the aperture in the lower shroud, slacken the lever locknut, then slacken the adjuster nut until the column moves freely with the lever released



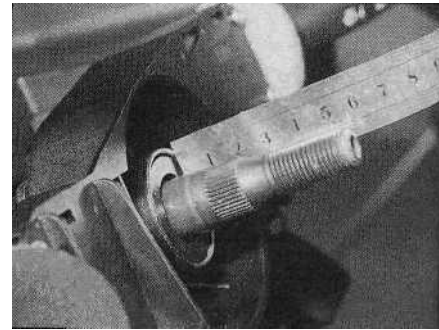
20.15b ... then refit the steering column to the vehicle

and locks securely with the lever locked. Note that on some models, a single Nyloc nut is used instead of the locknut and adjuster nut arrangement. Where necessary, hold the adjuster nut stationary and securely tighten the locknut. Check the operation of the lever and, if necessary, repeat the adjustment procedure. If a Nyloc nut is fitted, it may be necessary to renew it, to restore its effectiveness.

21 Ignition switch/steering column lock - removal and refitting

Removal

- 1 Disconnect the battery negative terminal.
- 2 Working inside the car, release the panel fasteners by rotating them through a quarter of a turn, and remove the driver's side lower facia panel.
- 3 Slacken and remove the five screws which secure the two halves of the steering column shrouds together, then remove the lower shroud.
- 4 Tilt the steering column fully downwards, then trace the wiring back from the ignition switch, and disconnect its three wiring connectors from the main wiring loom.
- 5 Slacken and remove the lock retaining screw and washer from the side of the lock (**see illustration**).



20.16 Adjust the position of the steering shaft as described in text prior to tightening the universal joint clamp bolt

6 Insert the key, and rotate it so that it is aligned with the mark positioned between the "A" and "S" marks on the barrel. Using a small flat-bladed screwdriver, depress the lock retaining lug, then withdraw the lock assembly from the steering column (**see illustrations**).

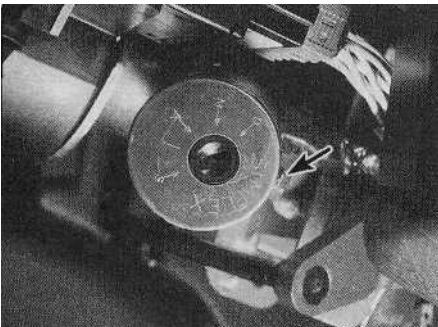
Refitting

7 Refitting is a reversal of the removal procedure, ensuring that the lock assembly is securely held in position by its retaining lug. Prior to refitting the column shroud, remove the ignition key and check that the steering lock functions correctly.

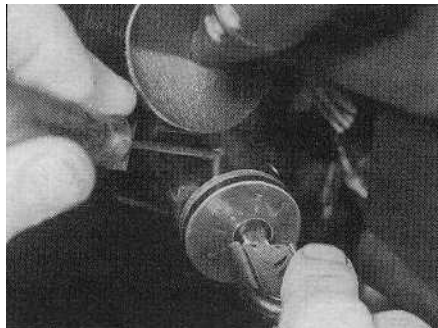
22 Steering gear assembly - removal, overhaul and refitting

Removal

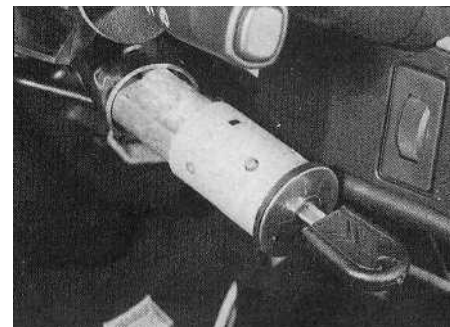
- 1 Chock the rear wheels, firmly apply the handbrake, then jack up the front of the vehicle and support on axle stands. Remove both front roadwheels.
- 2 Slacken and remove the nuts securing the steering gear track rod balljoints to the swivel hubs, and release the balljoint tapered shanks using a universal balljoint separator.
- 3 Using a hammer and punch, white paint or similar, mark the exact relationship between the intermediate shaft universal joint and the steering gear drive pinion. Slacken and



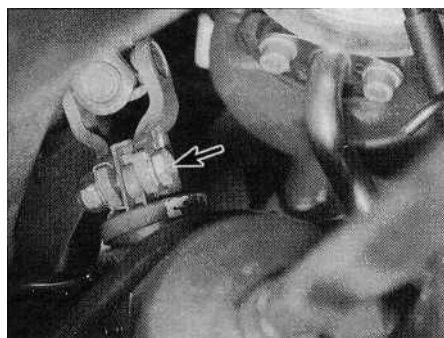
21.5 Ignition switch/steering column lock retaining screw (arrowed)



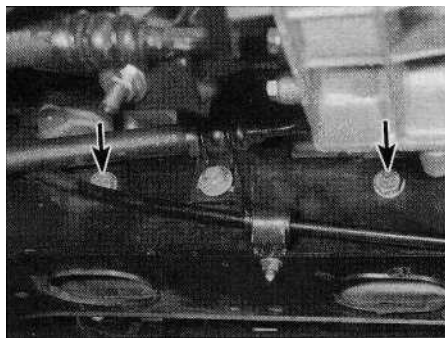
21.6a Insert the key, positioning it as described in the text, then depress the lock retaining lug ...



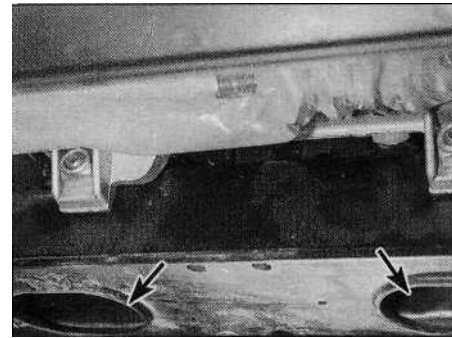
21.6b ... and withdraw the lock assembly from the steering column



22.3 Intermediate shaft universal joint clamp bolt (arrowed) viewed from underneath



22.5a Slacken and remove the two steering gear retaining bolts (viewed underneath the front of the vehicle)...



22.5b ... recover the nuts from the rear of the steering gear, and the spacers from the subframe apertures (arrowed)

remove the clamp bolt securing the joint to the pinion, and free the intermediate shaft from the steering gear (**see illustration**).

4 Where necessary, undo the two retaining screws, then unclip the heat shield and remove it from the top of the steering gear assembly.

Manual steering gear

5 Slacken the steering gear mounting bolts, and recover the nuts. Withdraw the mounting bolts, and recover the spacers from the subframe apertures (**see illustrations**).

6 The steering gear assembly can then be manoeuvred out from underneath the right-hand wheel arch. Note that on left-hand-drive 1580 cc and larger-engined models with manual transmission, it may be necessary to disconnect one or more of the gearchange linkage link rods from their balljoints on the transmission unit, to gain the necessary clearance required to withdraw the steering gear.

Power-assisted steering gear

7 Using brake hose clamps, clamp both the supply and return hoses near the power steering fluid reservoir. This will minimise fluid loss during subsequent operations.

8 Mark the unions to ensure they are correctly positioned on reassembly, then unscrew the feed and return pipe union nuts from the steering gear assembly; be prepared for fluid spillage, and position a suitable container beneath the pipes whilst unscrewing the union nuts. Disconnect both pipes, and plug the pipe ends and steering gear orifices, to prevent fluid leakage and to keep dirt out of the hydraulic system.

9 Free the power steering pipes from any retaining clips, and position them clear of the steering gear so that they will not hinder the removal procedure.

10 Remove the steering gear as described above in paragraphs 5 and 6.

Overhaul

11 Examine the steering gear assembly for signs of wear or damage, and check that the rack moves freely throughout the full length of its travel, with no signs of roughness or

excessive free play between the steering gear pinion and rack. It is possible to overhaul the steering gear assembly housing components, but this task should be entrusted to a Citroën dealer. The only components which can be renewed easily by the home mechanic are the steering gear gaiters, the track rod balljoints and the track rods. Track rod, track rod balljoint and steering gear gaiter renewal procedures are covered in Sections 27, 26 and 23 respectively.

12 On models with power steering, inspect all the steering gear fluid unions for signs of leakage, and check that all union nuts are securely tightened. Also examine the steering gear hydraulic ram for signs of fluid leakage or damage, and if necessary renew it.

Refitting

13 Note that all Nyloc nuts disturbed on removal must be renewed as a matter of course. These nuts have threads which are pre-coated with locking compound (this is only effective once), and include the track rod balljoint nuts, steering gear mounting bolt nuts, and the intermediate shaft clamp bolt nut. The intermediate shaft clamp bolt nut is retained by a metal cage; release the cage retaining tangs, then remove the old nut from inside the cage and install the new one. Refit the cage to the shaft, and secure it in position with the retaining tangs (**illustration 20.12**).

14 Manoeuvre the steering gear assembly into position from the right-hand side of the vehicle.

15 Position the spacers in the subframe apertures, then insert the mounting bolts. Fit the new nuts onto the steering gear, then tighten the mounting bolts to the specified torque. Where necessary, clip the gearchange linkage link rods onto their balljoints.

16 Clip the heat shield (where fitted) onto the top of the steering gear, and securely tighten its two retaining screws.

17 Aligning the marks made prior to removal, engage the intermediate shaft universal joint with the steering gear pinion splines. Refit the clamp bolt with a new nut, and tighten it to the specified torque.

18 Engage the track rod balljoints in the swivel

hubs, then fit a new retaining nut to each one. Tighten the nuts to the specified torque.

19 On models with power steering, wipe clean the feed and return pipe unions, then refit them to their respective positions on the steering gear, and tighten the union nuts to their specified torque settings. Ensure the pipes are correctly routed, and are securely held by all the necessary retaining clips.

20 On all models, refit the roadwheels, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque.

21 Where necessary, remove the hose clamps from the power steering hoses, then top-up the fluid reservoir and bleed the hydraulic system as described in Section 24.

22 On completion check and, if necessary, adjust the front wheel alignment as described in Section 28.

23 Steering gear rubber gaiters - renewal

Manual steering gear

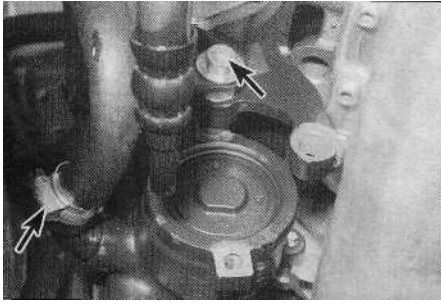
1 Remove the track rod balljoint as described in Section 26.

2 Mark the correct fitted position of the gaiter on the track rod, then release the retaining clips and slide the gaiter off the steering gear housing and track rod end.

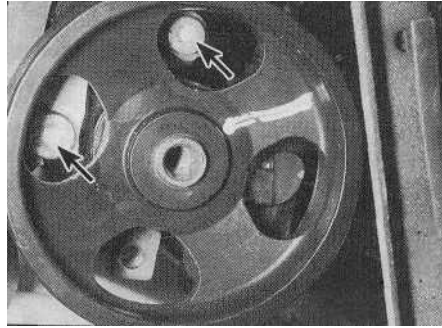
3 Thoroughly clean the track rod and the steering gear housing, using fine abrasive paper to polish off any corrosion, burrs or sharp edges, which might damage the new gaiter's sealing lips on installation. Scrape off all the grease from the old gaiter, and apply it to the track rod inner balljoint. (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.)

4 Carefully slide the new gaiter onto the track rod end, 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.

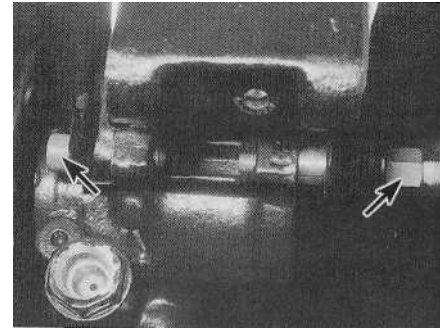
5 Refit the track rod balljoint as described in Section 26.



25.3 Undo the retaining nut (arrowed), and free the feed pipe from the rear of the power steering pump. Fluid supply hose retaining clip also arrowed



25.5a The two front power steering pump retaining bolts can be accessed through holes in the drive pulley



25.5b Power steering pump upper mounting bolts (viewed from above)

Power-assisted steering gear

6 On power-assisted steering gear assemblies, it is only possible to renew the gaiter nearest the drive pinion, ie the right-hand gaiter on right-hand-drive models, and the left-hand gaiter on left-hand-drive models. This can be renewed as described above in paragraphs 1 to 5.

7 The task of renewing the opposite gaiter should be entrusted to a Citroen dealer. This is necessary since it is not possible to pass the gaiter over the steering rack stud to which the hydraulic ram is fixed. Therefore, the steering gear must be dismantled and the rack removed from the housing to allow the gaiter to be renewed.

8 The only task on this end of the assembly which can be carried out by the home mechanic is the renewal of the track rod inner balljoint dust cover. The dust cover can be renewed once the track rod balljoint has been removed as described in Section 26. On refitting, ensure the dust cover is correctly located on the track rod and steering rack, then refit the balljoint.

24 Power steering system - bleeding



1 This procedure will only be necessary when any part of the hydraulic system has been disconnected.

2 Referring to Chapter 1, remove the fluid reservoir filler cap, and top-up with the specified fluid to the maximum level mark.

3 With the engine stopped, slowly move the steering from lock-to-lock several times to purge out the trapped air, then top-up the level in the fluid reservoir. Repeat this procedure until the fluid level in the reservoir does not drop any further.

4 Start the engine, then slowly move the steering from lock-to-lock several times to purge out any remaining air in the system. Repeat this procedure until bubbles cease to appear in the fluid reservoir.

5 If, when turning the steering, an abnormal noise is heard from the fluid lines, it indicates that there is still air in the system. Check this

by turning the wheels to the straight-ahead position and switching off the engine. If the fluid level in the reservoir rises, then air is present in the system, and further bleeding is necessary.

6 Once all traces of air have been removed from the power steering hydraulic system, turn the engine off and allow the system to cool. Once cool, check that fluid level is up to the maximum mark on the power steering fluid reservoir, topping-up if necessary.

25 Power steering pump - removal and refitting



Removal

1 Release the drivebelt tension as described in Chapter 1, and unhook the drivebelt from the pump pulley. The power steering pump is either mounted directly above or directly below the alternator, depending on the engine type and the specification level of the vehicle.

2 Using brake hose clamps, clamp both the supply and return hoses near the power steering fluid reservoir. This will minimise fluid loss during subsequent operations.

3 Undo the retaining nut, and free the power steering hose retaining clip from the rear of the pump, where necessary (see illustration).

4 Slacken the retaining clip, and disconnect the fluid supply hose from the rear of the pump. If the original Citroen clip is still fitted, cut the clip and discard it; replace it with a standard worm-drive hose clip on refitting. Slacken the union nut, and disconnect the feed pipe from the pump, along with its O-ring. Be prepared for some fluid spillage as the pipe and hose are disconnected, and plug the hose/pipe end and pump unions, to minimise fluid loss and prevent the entry of dirt into the system.

5 Slacken and remove the three bolts securing the power steering pump, and remove the pump from the engine compartment (see illustrations).

Refitting

6 Manoeuvre the pump into position, then refit its mounting bolts and tighten them securely.

7 Fit a new O-ring to the feed pipe union, then reconnect the pipe to the pump and securely tighten the union nut. Refit the supply pipe to the pump, and securely tighten its retaining clip. Remove the brake hose clamps used to minimise fluid loss.

8 Refit the fluid hose retaining clip to the rear of the pump, and securely tighten its retaining nut.

9 Refit the drivebelt to the pump pulley, and tension it as described in Chapter 1.

10 On completion, bleed the hydraulic system as described in Section 24.

26 Track rod balljoint - removal and refitting



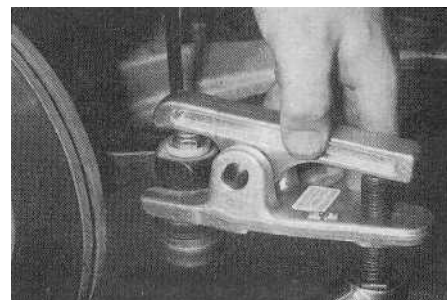
Removal

1 Apply the handbrake, then jack up the front of the vehicle and support it on axle stands. Remove the appropriate front roadwheel.

2 If the balljoint is to be re-used, use a straight-edge and a scribe, or similar, to mark its relationship to the track rod.

3 Hold the track rod, and unscrew the balljoint locknut by a quarter of a turn. Do not move the locknut from this position, as it will serve as a handy reference mark on refitting.

4 Slacken and remove the nut securing the track rod balljoint to the swivel hub, and release the balljoint tapered shank using a universal balljoint separator (see illustration).



26.4 Using a universal balljoint separator to free the balljoint shank from the swivel hub

Discard the nut - a new one must be used when refitting.

5 Counting the **exact** number of turns necessary to do so, unscrew the balljoint from the track rod end.

6 Count the number of exposed threads between the end of the balljoint and the locknut, and record this figure. If a new balljoint is to be fitted, unscrew the locknut from the old balljoint.

7 Carefully clean the balljoint and the threads. Renew the balljoint if its movement is sloppy or too stiff, if excessively worn, or if damaged in any way; carefully check the stud taper and threads. If the balljoint gaiter is damaged, the complete balljoint assembly must be renewed; it is not possible to obtain the gaiter separately.

Refitting

8 If a new balljoint is to be fitted, screw the locknut onto its threads, and position it so that the same number of exposed threads are visible, as was noted prior to removal.

9 Screw the balljoint into the track rod by the number of turns noted on removal. This should bring the balljoint locknut to within a quarter of a turn from the locknut, with the alignment marks that were made on removal (if applicable) lined up.

10 Refit the balljoint shank to the swivel hub, then fit a new retaining nut and tighten it to the specified torque.

11 Refit the roadwheel, then lower the vehicle to the ground and tighten the roadwheel bolts to the specified torque.

12 Check and, if necessary, adjust the front wheel toe setting as described in Section 28, then securely tighten the balljoint locknut.

27 Track rod - removal and refitting



Removal

1 Remove the track rod balljoint as described in Section 26.

2 Either release the retaining clips and slide the steering gear gaiter off the end of the track rod, or release the track rod balljoint dust cover from rack, and slide it off the track rod (as applicable). Refer to Section 23 for further information.

3 Unscrew the track rod inner balljoint from the steering rack end, preventing the steering rack from turning by holding the balljoint lock washer with a pair of grips. Take great care not to mark the surfaces of the rack and balljoint.

4 Remove the track rod assembly, and discard the lock washer - a new one must be used on refitting.

5 Examine the track rod inner balljoint for signs of slackness or tight spots, and check that the track rod itself is straight and free from damage. If necessary, renew the track rod; it is also recommended that the steering gear gaiter/dust cover is renewed.

Refitting

6 Locate the new lock washer assembly on the end of the steering rack, and apply a few drops of locking fluid to the track rod inner balljoint threads.

7 Screw the balljoint into the steering rack, and tighten it to the specified torque whilst retaining the lock washer with a pair of grips. Again, take great care not to damage or mark the track rod balljoint or steering rack.

8 Where a gaiter was removed, carefully slide on the new gaiter, and locate it on the steering gear housing. Turn the steering fully from lock-to-lock, to check that the gaiter is correctly positioned on the track rod, then secure it in position with new retaining clips.

9 Where a dust cover was removed, carefully slide on the new cover, and locate it in its grooves on the steering rack collar and track rod.

10 Refit the track rod balljoint as described in Section 26.

28 Wheel alignment and steering angles - general information



Definitions

1 A car's steering and suspension geometry is defined in four basic settings - all angles are expressed in degrees (toe settings are also expressed as a measurement); the steering axis is defined as an imaginary line drawn through the axis of the suspension strut, extended where necessary to contact the ground (**see illustration**).

2 **Camber** is the angle between each roadwheel and a vertical line drawn through its centre and tyre contact patch, when viewed from the front or rear of the car. Positive camber is when the roadwheels are tilted outwards from the vertical at the top; negative camber is when they are tilted inwards.

3 **Camber** is not adjustable, and is given for reference only; while it can be checked using a camber checking gauge, if the figure obtained is significantly different from that specified, the vehicle must be taken for careful checking by a professional, as the fault can only be caused by wear or damage to the body or suspension components.

4 **Castor** is the angle between the steering axis and a vertical line drawn through each roadwheel's centre and tyre contact patch, when viewed from the side of the car. Positive castor is when the steering axis is tilted so that it contacts the ground ahead of the vertical; negative castor is when it contacts the ground behind the vertical.

5 **Castor** is not adjustable, and is given for reference only; while it can be checked using a castor checking gauge, if the figure obtained is significantly different from that specified, the vehicle must be taken for careful checking by a professional, as the fault can only be

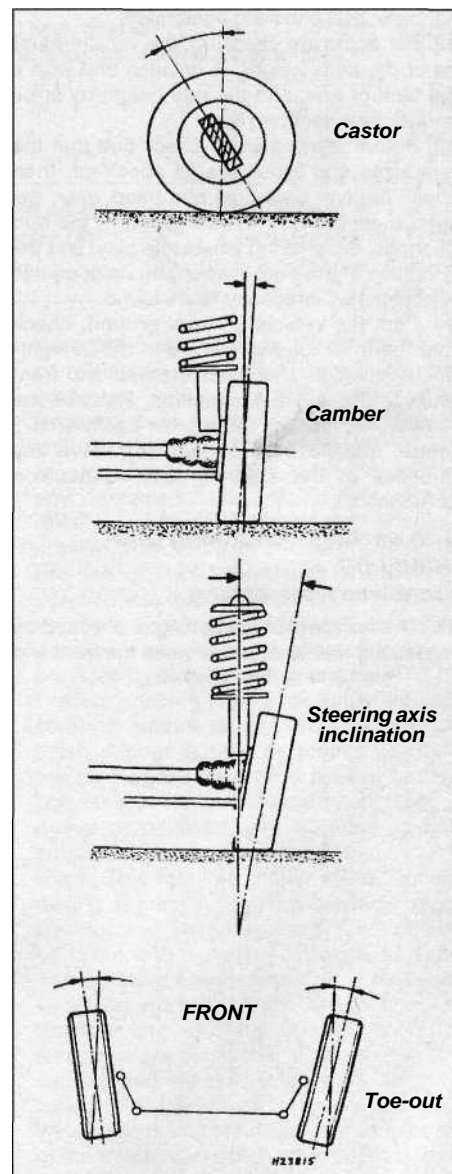
caused by wear or damage to the body or suspension components.

6 **Steering axis inclination/SAI** - also known as **kingpin inclination/KPI** - is the angle between the steering axis and a vertical line drawn through each roadwheel's centre and tyre contact patch, when viewed from the front or rear of the car.

7 **SAI/KPI** is not adjustable, and is given for reference only.

8 **Toe** is the difference, viewed from above, between lines drawn through the roadwheel centres and the car's centre-line. "Toe-in" is when the roadwheels point inwards, towards each other at the front, while "toe-out" is when they splay outwards from each other at the front.

9 The front wheel toe setting is adjusted by



28.1 Wheel alignment and steering angle measurements

screwing the balljoints in or out of their track rods, to alter the effective length of the track rod assemblies.

10 Rear wheel toe setting is not adjustable, and is given for reference only. While it can be checked, if the figure obtained is significantly different from that specified, the vehicle must be taken for careful checking by a professional, as the fault can only be caused by wear or damage to the body or suspension components.

Checking - general

11 Due to the special measuring equipment necessary to check the wheel alignment, and the skill required to use it properly, the checking and adjustment of these settings is best left to a Citroen dealer or similar expert. Note that most tyre-fitting shops now possess sophisticated checking equipment.

12 For accurate checking, the vehicle must be at the kerb weight, ie unladen and with a full tank of fuel, and the ride height must be correct (see Section 18).

13 Before starting work, check first that the tyre sizes and types are as specified, then check the tyre pressures and tread wear, the roadwheel run-out, the condition of the hub bearings, the steering wheel free play, and the condition of the front suspension components (Chapter 1). Correct any faults found.

14 Park the vehicle on level ground, check that the front roadwheels are in the straight-ahead position, then rock the rear and front ends to settle the suspension. Release the handbrake, and roll the vehicle backwards 1 metre, then forwards again, to relieve any stresses in the steering and suspension components.

Toe setting - checking and adjusting

Front wheel toe setting

15 The front wheel toe setting is checked by measuring the distance between the front and

rear inside edges of the roadwheel rims. Proprietary toe measurement gauges are available from motor accessory shops.

16 Prepare the vehicle as described in paragraphs 12 to 14 above.

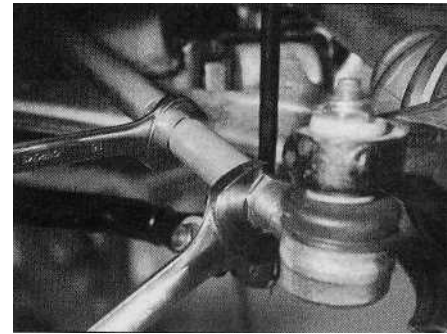
17 Measure the distance between the front edges of the wheel rims and the rear edges of the rims. Subtract the rear measurement from the front measurement, and check that the result is within the specified range.

18 If adjustment is necessary, apply the handbrake, then jack up the front, of the vehicle and support it securely on axle stands. Turn the steering wheel onto full-left lock, and record the number of exposed threads on the right-hand track rod end. Now turn the steering onto full-right lock, and record the number of threads on the left-hand side. If there are the same number of threads visible on both sides, then subsequent adjustment should be made equally on both sides. If there are more threads visible on one side than the other, it will be necessary to compensate for this during adjustment. **Note:** *It is most important that after adjustment, the same number of threads are visible on each track rod end.*

19 First clean the track rod threads; if they are corroded, apply penetrating fluid before starting adjustment. Release the rubber gaiter outboard clips (where necessary), and peel back the gaiters; apply a smear of grease to the inside of the gaiters, so that both are free, and will not be twisted or strained as their respective track rods are rotated.

20 Use a straight-edge and a scribe or similar to mark the relationship of each track rod to its balljoint then, holding each track rod in turn, unscrew its locknut fully.

21 Alter the length of the track rods, bearing in mind the note made in paragraph 18. Screw them into or out of the balljoints, rotating the track rod using an open-ended spanner fitted to the flats provided on the track rod. Shortening the track rods (screwing them into



28.21 Adjusting the front wheel alignment

their balljoints) will reduce toe-in/increase toe-out (**see illustration**).

22 When the setting is correct, hold the track rods and securely tighten the balljoint locknuts. Check that the balljoints are seated correctly in their sockets, and count the exposed threads to check the length of both track rods. If they are not the same, then the adjustment has not been made equally, and problems will be encountered with tyre scrubbing in turns; also, the steering wheel spokes will no longer be horizontal when the wheels are in the straight-ahead position.

23 If the track rod lengths are the same, lower the vehicle to the ground and re-check the toe setting; re-adjust if necessary. When the setting is correct, securely tighten the track rod balljoint locknuts. Ensure that the rubber gaiters are seated correctly, and are not twisted or strained, and secure them in position with new retaining clips (where necessary).

Rear wheel toe setting

24 The procedure for checking the rear toe setting is same as described for the front in paragraph 17. The setting is not adjustable - see paragraph 10.