Chapter 11 Suspension

For modifications, and information applicable to later models, see Supplement at end of manual

Contents

Degrees of difficulty

Easy, suitable for novice with little experience 

Fairly easy, suitable for beginner with some experience 

Fairly difficult, suitable for competent DIY mechanic 

Difficult, suitable for experienced DIY mechanic 

Very difficult, suitable for expert DIY or professional 

Specifications

Front suspension

Type	Independent with MacPherson struts and coil springs
Coil springs	
Free height:	
903 cc models	334 mm (13.16 in)
1116 and 1301 cc models	342 mm (13.5 in)
Number of coils	4.25

Rear suspension

Type	Beam axle, trailing arms, coil springs and double-acting gas-filled shock absorbers
Coil springs	
Free height	246.5 mm (9.7 in)
Number of coils	2.75

Torque wrench settings

	Nm	lbf ft
Front suspension		
Driveshaft/hub nut	272	200
Strut upper mounting nuts	24	18
Strut spindle nut	60	44
Strut base clamp bolts	49	36
Track control arm balljoint nuts	49	36
Track control arm inboard mounting bolts	90	66
Roadwheel bolts	86	63
Crossmember bolts	60	44
Rear suspension		
Trailing arm bracket to body bolts	20	15
Trailing arm pivot bolt	70	52
Shock absorber lower mounting bolt	30	22
Shock absorber upper mounting nuts	12	9
Shock absorber spindle nut	30	22
Roadwheel bolts	86	63

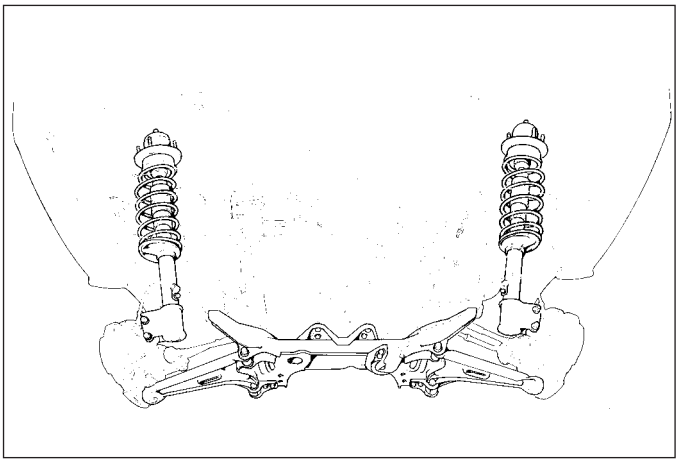


Fig. 11.1 Front suspension arrangement (Sec 1)

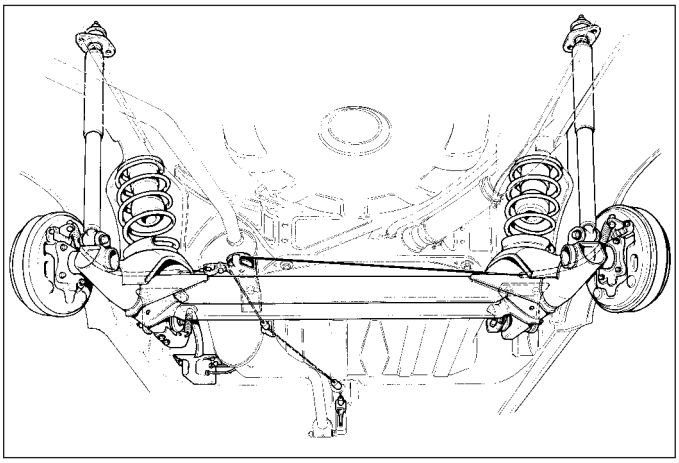


Fig. 11.2 Rear suspension arrangement (Sec 1)

1 General description

The front suspension is of independent MacPherson strut type.

The rear suspension consists of a beam axle with trailing arms, coil springs and double acting gas-filled telescopic shock absorbers.

Operations covering the hubs, roadwheels and tyres are described in Chapter 7.

2 Maintenance

1 Periodically check the tightness of all suspension nuts and bolts using a torque wrench.

2 At the intervals specified in "*Routine Maintenance"* inspect all suspension rubber bushes for deterioration or wear. Renew where necessary.

3 Check for wear in the track control arm to hub carrier balljoint. Do this by raising the roadwheel and prising the control arm down. If the hub carrier is pulled outwards, any up and down movement or slackness will necessitate renewal of the track control arm, although it may be possible to obtain a balljoint repair kit from a motor factor.

4 A defective strut or shock absorber can usually be detected by the tendency of the car to pitch badly when braking or cornering. However the component can be tested more thoroughly in the following way.

5 Remove the strut and take off the coil spring or withdraw the rear shock absorber as described later in this Chapter.

6 Grip the strut or shock absorber lower mounting in the jaws of a vice and then fully extend and contract the unit five or six times, with the unit held in a vertical attitude. If there is any lack of resistance, jerkiness or seizure, then the unit will have to be renewed, no repair being possible. It is recommended that struts or shock absorbers are renewed in pairs as axle sets, in order to maintain similar suspension characteristics on both sides of the car.

7 Check for signs of hydraulic fluid leakage from around the front strut spindle gland and also the condition of the dust excluding boot. Oil leakage will mean a new unit, a split boot can be renewed after having withdrawn the coil spring.

3 Front suspension strut - removal and refitting

1 Raise the front of the car, support it securely and remove the roadwheel.

2 Release the brake hydraulic hose from the strut by unscrewing the retaining clip bolt.

3 Unscrew and remove the two bolts from the clamp at the bottom of the strut, push the hub carrier down out of the clamp (photo).

4 Open the bonnet. Unscrew and remove the domed reinforcement cover. Then remove the strut top mounting nuts from the turret. Do not attempt to unscrew the centre spindle nut (photos).

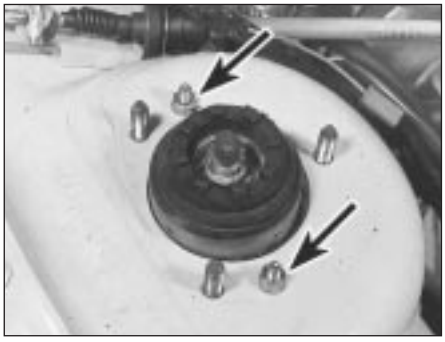
5 Withdraw the strut downwards and out from under the wing (photo).

6 Coil spring clamps must now be fitted. These are available from most motor stores or can be hired (photo).

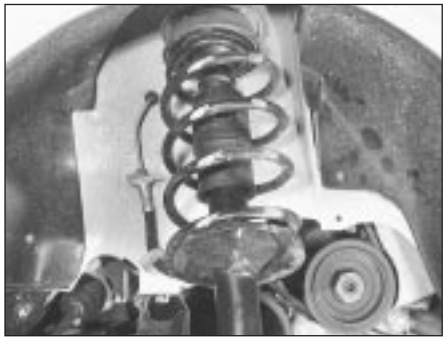
7 Once the spring has been compressed to

3.3 Strut clamp bolt

3.4A Strut reinforcement plate



3.4B Strut upper mounting nuts



3.5 Withdrawing a front strut

release its top coil from the strut upper mounting, hold the flats on the strut spindle and unscrew the spindle nut.

8 Take off the upper mounting components and the clamped coil spring. The clamps need not be removed if the spring is to be fitted to a new strut.

9 Commence reassembly by fitting the coil spring onto the strut. Make sure that the smaller coil is at the top and the lower coil is up against its end stop in the spring seat.

10 Check that the strut boot is in position.

11 Fit the upper mounting components and screw on the spindle nut.

12 Gently release the spring clamps and remove them.

13 Refit the strut to the car by reversing the removal operations.

Note: *On cars built before 1985, when assembling the strut top mounting, apply a bead of sealant as shown in Figs. 11.4 and 11.5 to prevent the entry of water into the strut bearing. Later models are fitted with a rubber seal.*

4 Front coil spring - removal and refitting

1 The operations are covered in the preceding Section.

3.6 Spring clamps in position

2 The springs are colour coded according to model and a replacement must be of identical type to the original.

5 Front hub carrier - removal and refitting

1 Disconnect the driveshaft from the hub carrier as described in Chapter 7, Section 2, paragraphs 1 to 8.

2 Unbolt the brake caliper and tie it up out of the way.

3 Unscrew the nut from the track control arm balljoint taper pin and then separate the

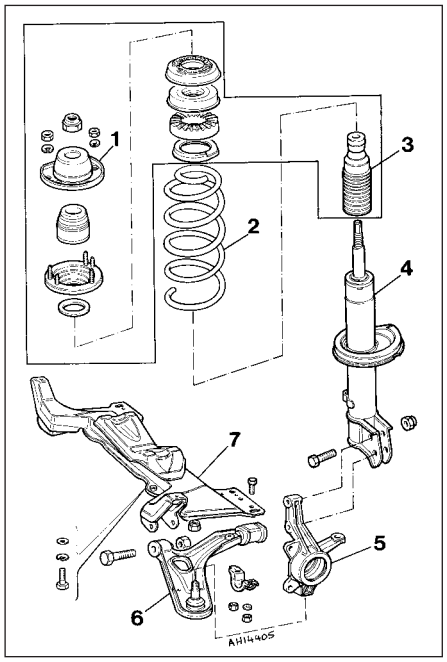


Fig. 11.3 Front strut components (Sec 3)

1 Top mounting cover
2 Coil spring
3 Boot
4 Strut
5 Hub carrier
6 Track control arm
7 Crossmember

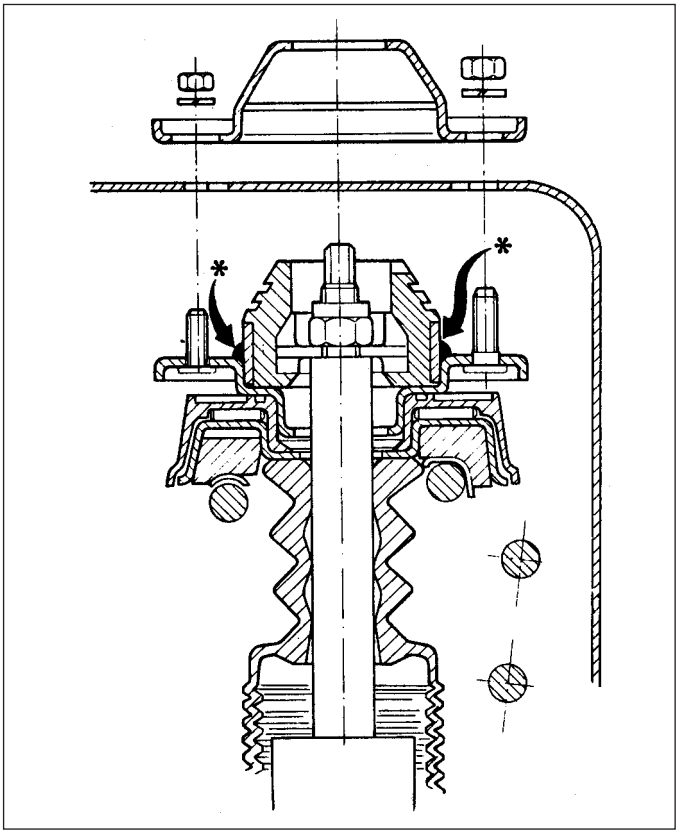


Fig. 11.4 Waterproof bead applied to strut with top cover removed (Sec 3)

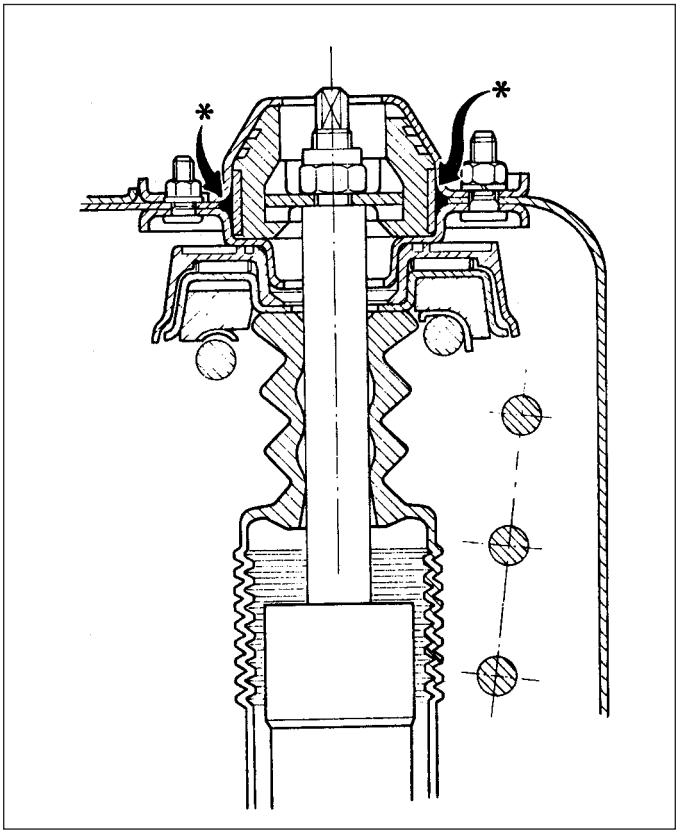


Fig. 11.5 Waterproof bead applied to strut with top cover in position (Sec 3)

6.2 Separating track control arm balljoint from hub carrier

6.3 Track control arm inboard fixing

balljoint from the hub carrier using a suitable "splitter" tool. If such a tool is not available, support the base of the brake disc and drive the balljoint taper pin downwards, but screw on the nut to protect the threads.

4 Remove the hub carrier.

5 Refitting is a reversal of removal, use a new driveshaft nut and tighten all nuts and bolts to the specified torque. Stake the driveshaft nut after tightening.

6 Track control arm - removal and refitting

1 Raise the front of the car and support it securely.

2 Unless a special tool is available to press the track control arm balljoint from the hub carrier, the driveshaft will have to be disconnected as described in Chapter 7, Section 2, paragraphs 1 to 8 to provide more space to enable the balljoint taper pin to be driven from the hub carrier. This should now be done as described in the preceding Section (photo).

3 Unbolt the inboard end of the track control arm. This is retained by a pivot bolt and a clamp (photo).

4 As previously explained, a worn balljoint or flexible pivot bushes will necessitate renewal of the track control arm complete. Note that it may, however, be possible to obtain a replacement balljoint through a motor factor.

5 Refitting is a reversal of removal. Tighten all nuts and bolts to the specified torque. Use a new driveshaft nut and stake it into the driveshaft groove after tightening.

7 Front crossmember - removal and refitting

1 Raise the front of the car, support securely with axle stands placed under the side-members or sill jacking points.

2 Remove the front roadwheels.

3 Unscrew the nuts from the tie-rod end balljoint taper pins and then using a balljoint "splitter" tool disconnect the balljoints from the steering arms on the hub carrier.

4 Unscrew the bolts which hold the inboard track control arms to the body members, and also withdraw the pivot bolt from the body bracket.

5 Support the weight of the engine/transmission using a hoist or support bar across the top of the engine compartment as described in Chapter 6.

6 Disconnect the lower (central) engine/transmission flexible mounting from the floor pan.

7 Unscrew the steering rack mounting bolts and remove them. Leave the steering rack hanging loose.

8 Remove the front crossmember mounting bolts and manoeuvre it from the car.

9 Refitting is a reversal of removal. Tighten all nuts and bolts to the specified torque wrench settings and on completion, check the front wheel alignment as described in Chapter 10.

8 Rear shock absorber - removal and refitting

1 Open the tailgate and remove the cover from the shock absorber top mounting which is located within the luggage area (photo).

2 Hold the flats on the spindle with an open-ended spanner and then unscrew the self-locking nut.

3 Working under the car, disconnect the shock absorber lower mounting.

4 Withdraw the unit from under the wing.

5 The shock absorber can be tested as described in Section 2.

6 Refitting is a reversal of removal. Tighten mounting nuts and bolts to the specified torque.

9 Rear coil spring - removal and refitting

1 Raise the rear of the car and support it securely on axle stands placed under the side-members or sill jacking points.

2 Remove the roadwheel.

3 Place a jack under the brake drum and support the suspension trailing arm.

4 Disconnect the shock absorber lower mounting and then lower the trailing arm jack until the coil spring can be withdrawn.

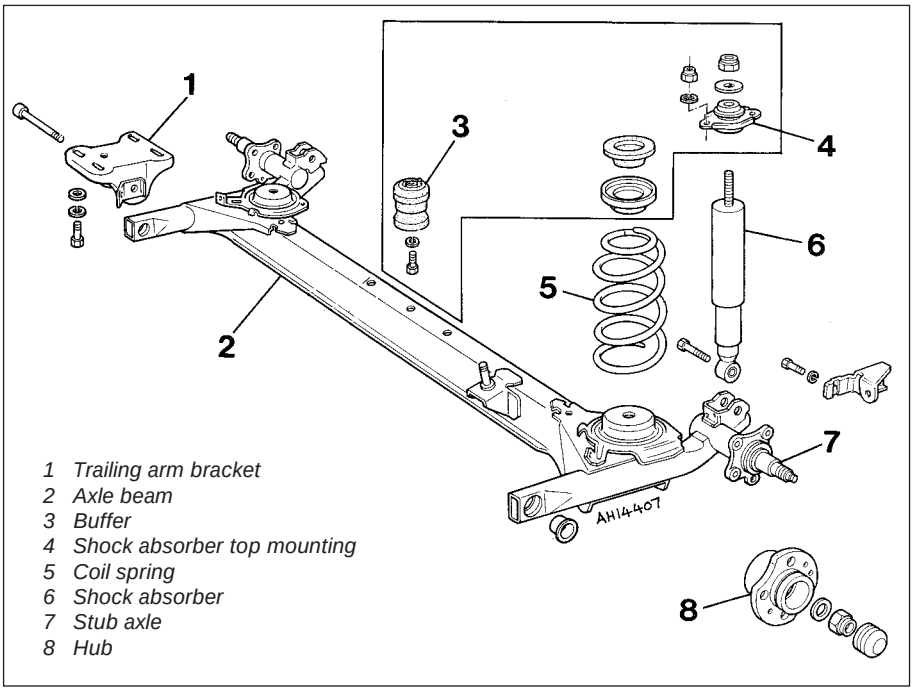
5 Refitting is a reversal of removal. If the spring is being changed, make sure that it is of the same colour code as the original and that its lower coil is correctly located up against its stop in the spring pan.

6 Tighten the shock absorber lower mounting bolt to the specified torque.

Fig. 11.6 Steering rack mounting bolts (Sec 7)

Fig. 11.7 Front crossmember bolts (Sec 7)

8.1 Rear shock absorber upper mounting cover



1 Trailing arm bracket
2 Axle beam
3 Buffer
4 Shock absorber top mounting
5 Coil spring
6 Shock absorber
7 Stub axle
8 Hub

Fig. 11.8 Rear suspension components (Sec 8)

10 Trailing arm rubber bush - renewal

1 A worn trailing arm rubber bush may be renewed in the following way.
2 Raise the rear of the car and support securely on axle stands placed under the body side-members or sill jacking points.
3 Remove the roadwheels.
4 Unscrew and remove both pivot bolts which hold the forward ends of the trailing arms to the body brackets.
5 Pull the trailing arms downward out of the body brackets.
6 A two-legged puller may be used to press the old bush out and to force the new one in. Smear the bush with soapy water or brake fluid to facilitate fitting.
7 Reconnect the trailing arms to the body brackets. Use jacks if necessary to push the arms upwards into the brackets.
8 Tighten the pivot bolts to the specified torque, but only when the car has been located with four occupants or the equivalent plus 40 kg (88 lb) of luggage.

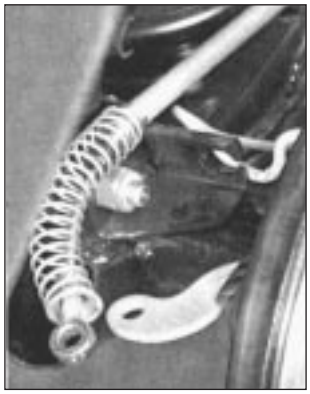
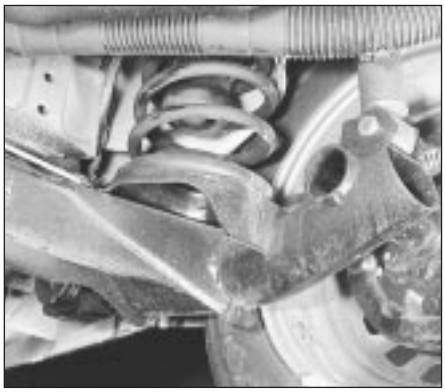


Fig. 11.11 Handbrake cable and lever at brake backplate (Sec 11)



11.7 One side of the rear suspension

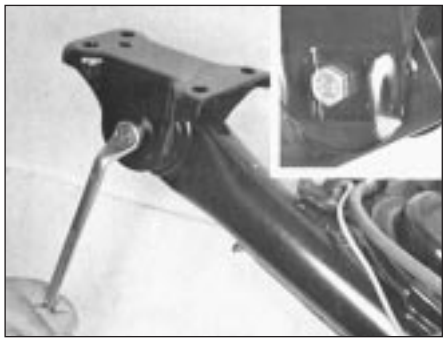


Fig. 11.9 Removing trailing arm pivot bolt (Sec 10)

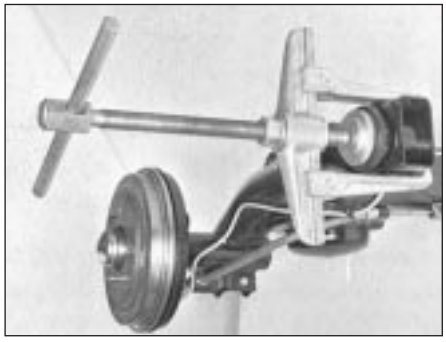


Fig. 11.10 Method of renewing trailing arm bush (Sec 10)

11 Rear suspension - removal and refitting

1 Raise the rear of the car, support it securely and remove the rear road wheels.
2 Unhook the brake pressure regulating valve arm tension spring from its bracket.
3 Disconnect the handbrake cables from the brake backplate levers.
4 Disconnect the flexible brake hose at its junction with the rigid pipeline adjacent to the pressure regulating valve. Cap the open ends of hose and pipe.
5 Support the trailing arms and then disconnect the shock absorber upper mountings.
6 Unbolt the trailing arm forward end support brackets from the body, lower the complete rear suspension and withdraw it from under the car.
7 Refitting is a reversal of removal, but tighten the trailing arm pivot bolts to the specified torque only when the car is loaded with four occupants and 40 kg (88 lb) of luggage (photo).
8 Bleed the brakes as described in Chapter 8.

Fault finding - suspension

Note: *Before diagnosing suspension defects, be sure that trouble is not due to incorrect or uneven tyre pressures, in inappropriate combinations.*

Car pulls to one side

☐ Worn or weak shock absorbers or struts on one side

Excessive roll on corners

☐ Weak shock absorbers or struts
☐ Coil spring weak or cracked

Car wanders or skips on rough surfaces

☐ Defective shock absorbers or struts

Vibration and wheel wobble

☐ Loose or defective shock absorbers or struts

Excessive or uneven tyre wear

☐ Worn suspension components