Chapter 10
Suspension and steering

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Degrees of difficulty

<table>
<thead>
<tr>
<th>Easy, suitable for novice with little experience</th>
<th>Fairly easy, suitable for beginner with some experience</th>
<th>Fairly difficult, suitable for competent DIY mechanic</th>
<th>Difficult, suitable for experienced DIY mechanic</th>
<th>Very difficult, suitable for expert DIY or professional</th>
</tr>
</thead>
</table>

Specifications

Front suspension
Type ................................................................. Independent, unequal length upper and lower arms, anti-roll bar, Hydragas spring units, telescopic shock absorbers

Rear suspension
Type ................................................................. Independent, trailing arms, operating interconnected Hydragas spring units via arms and pushrods

Suspension ride heights
Front - all models ................................................ 12.87 ± 0.59 in (327 ± 15 mm)
Rear:
  - Turbo - up to 1984 ........................................ 12.44 ± 0.59 in (316 ± 15 mm)
  - Van up to 1984, Turbo - 1985 on, GTA, Advantage ....... 13.03 ± 0.59 in (331 ± 15 mm)
  - Van - 1985 on .............................................. 13.62 ± 0.59 in (346 ± 15 mm)
  - All other models - up to 1984 .......................... 12.64 ± 0.59 in (321 ± 15 mm)
  - All other models - 1985 on .............................. 13.23 ± 0.59 in (336 ± 15 mm)
Maximum permissible side-to-side difference ..................... 0.39 in (10 mm)

Note: Ride heights measured VERTICALLY (seen from front and side of vehicle) from wheel arch lip to roadwheel hub centre, engine cold and car unladen but with full fuel tank and all lubricants and fluids. If fuel tank is only half full, increase specified heights by adding 1 mm to front height and 3 mm to rear to compensate for reduced vehicle weight. Specified heights correct at nominal ambient temperature of 17ºC - above this temperature add 0.6 mm for every 1ºC temperature difference, below it subtract 0.6 mm for every 1ºC temperature difference.
Hydragas unit nitrogen nominal pressures

Front ................................................. 315 lb/in² ± 3% (2172 kN/m² ± 3%)
Rear ................................................. 230 lb/in² ± 3% (1586 kN/m² ± 3%)

Suspension grease points

Grease type ........................................ Multi-purpose lithium based grease

Steering

Type .................................................. Rack-and-pinion, flexible coupling
Number of turns lock-to-lock ...................... 3.3
Rack pinion bearing preload ....................... 0.001 to 0.004 in (0.025 to 0.102 mm)
Pinion bearing shim gap .......................... 0.011 to 0.013 in (0.28 to 0.33 mm)
Pinion bearing standard shim ..................... 0.092 in (2.337 mm)
Pinion bearing shims available .................. 0.005 in, 0.0075 in, 0.010 in (0.127 mm, 0.1905 mm, 0.254 mm)
Yoke-to-cover plate clearance ...................... 0.002 to 0.005 in (0.05 to 0.12 mm)
Yoke-to-cover plate shims available ............. 0.0024 in (0.061 mm)
Rack ball-pin centre dimension .................. 44.2 to 44.3 in (112.2 to 112.5 mm)

Front wheel alignment (models up to 1985) - at correct ride heights

Toe-out .............................................. 0 to 0.125 in (0 to 3 mm)
Inner wheel angle (with outer wheel at 20°) .... 23.75° ± 1.5°
Camber angle ....................................... 0° ± 0.030°
Caster angle ........................................ 2° 6’ positive ± 1°

Front wheel alignment (all models 1986-on)

Front wheel toe ................................... Parallel to 0° 25’ toe-out
Inner wheel angle (except those below) with outer wheel at 20° .... 20° 40’
Inner wheel angle (MG Turbo, GTa, Advantage) with outer wheel at 29° 48’ .... 31° 50’
Caster angle ........................................ 2° 6’ positive 2° 0’
King pin inclination ............................... 10° 38’

Rear wheel alignment - at correct ride heights

Toe-in/out .......................................... 0°30 toe-in to 0°30’ toe-out
Camber angle ....................................... 1° negative ± 30’

Rear suspension (MG Turbo, GTa, Advantage)

Type .................................................. As other models, plus anti-roll bar
Rear wheel alignment .............................. Parallel ± 0° 15’

Wheels

Size and type:

Pre-1984 (all models) ................................ 4.50B x 12 pressed steel
1984-on (all models) .................................. 315 x 105 mm pressed steel
MG Metro 1986-on ................................... 13 x 120
MG Turbo 1986-on ................................... 13 x 5 ½ in
MG Turbo, GTa, Advantage and Metro Sport 1989-on ........................................... 13 x 5 ½ in
MG Turbo .............................................. 5.50J x 13 alloy
MG 1300 (pre-1984) ................................... 5J x 12 pressed steel
MG 1300 (1984) ....................................... 12 in x 5J alloy
MG 1300 (1985-on) ..................................... 315 x 120 mm alloy
1.0 and 1.3 Van .......................... 12 in x 4.5B pressed steel

Tyres

Size:

1982 to 1983 models:

1.0 models ............................................. 135 SR x 12 radial
1.3 models, except MG Turbo .................... 165/70R x 12 radial
MG Turbo ............................................. 165/60 HR x 13 radial

1984 models:

1.0 Saloon models .................................... 150/65 R 315 radial
1.0 and 1.3 Vans ..................................... 155/70 SR 12 radial
1.3 Moritz ............................................. 150/65 R 315 radial
MG 1300 ............................................... 155/70 SR 12 radial
MG Turbo ............................................. 165/65 HR 13 radial
All other 1.3 models ................................ 160/65 R 315 radial
1 General description

1 The front suspension is of independent, upper and lower arm type incorporating separate Hydragas spring units on each side, telescopic shock absorbers and an anti-roll bar. From 1985, with exception of MG Turbo models, front shock absorbers are no longer fitted (see illustration).  
2 The rear suspension is of independent, trailing arm type incorporating interconnected Hydragas spring units, which are operated via pushrods from the trailing arms. The rear Hydragas units are each preloaded with a coil spring (see illustration).  
3 The Hydragas units comprise a chamber of pressurised nitrogen gas contained by a rubber diaphragm, and a further chamber of pressurised fluid consisting of water, alcohol and additives. Movement of the suspension causes the pushrod to compress the fluid, which causes the intermediate diaphragm to deflect into the nitrogen chamber. The unit acts as a variable rate gas spring.  
4 Although the front and rear Hydragas units function in an identical manner, the rear units incorporate an internal damper flap valve, whereas the front units are dampened by separate telescopic shock absorbers. The front units are not interconnected but the rear units are via a pipe containing a flow restrictor. The front and rear ride heights are set by pressurising the fluid in the Hydragas units.

5 Due to the high pressures involved and the special equipment required, the Hydragas units must only be depressurised, evacuated and pressurised by a Rover dealer. In the event of loss of pressure, the car may be driven to the place of repair over metalled roads at up to 20 mph (32 kph).  
6 The steering is of rack-and-pinion type mounted on the rear of the front subframe. The steering column is attached to the rack pinion by a flexible coupling. Note that a minor steering column modification was carried out on all cars early in 1981; if in doubt as to whether this modification has been carried out on your vehicle, consult your dealer. 1985 and 1986-on models are fitted with modified steering columns and rack and pinions. All service procedures should remain basically unchanged.
1.1 Exploded view of the front suspension

1 Shock absorber 22 Anti-roll bar
2 Rubber bushes 23 Bracket
3 Plate 24 Bearing
4 Thrustwasher 25 Subframe front mounting
5 Sealing ring 26 Bolt
6 Needle roller bearing 27 Shock absorber lower mounting bolt
7 Upper suspension arm 28 Steering arm
8 Boot 29 Upper balljoint
9 Ball-pin (and spacer where fitted) 30 Subframe rear mounting
10 Socket 31 Swivel hub
11 Bump rubber 32 Outer bearing
12 Pivot arm 33 Oil seal
13 Hydragas unit 34 Lower balljoint
14 Helper spring 35 Bush
15 Strut 36 Plastic washer
16 Return spring 37 Caliper
17 Mounting pad 38 Disc shield
18 Pivot bolt 39 Driving flange and disc arm
19 Lower suspension arm 40 Hydragas unit
20 Bush 41 Return spring
21 Pivot bolt

1.2 Exploded view of the rear suspension

1 Thrustwasher 19 Reaction strap
2 Needle roller bearing 20 Handbrake cable mounting bracket
3 Sealing ring 21 Backplate
4 Lubricating tube 22 Upper return spring
5 Rebound rubber 23 Brake shoe
6 Radius arm 24 Brake adjuster
7 Pivot shaft 25 Handbrake levers
8 Retaining plate 26 Lower return spring
9 Bump rubber 27 Wheel cylinder
10 Stub shaft 28 Oil seal
11 Socket 29 Inner bearing
12 Ball-pin 30 Hub
13 Boot 31 Outer bearing
14 Return spring 32 Brake drum
15 Strut 33 Grease retaining cap
16 Helper spring 34 Grease retaining cap
17 Hydragas unit 35 Grease retaining cap
18 Mounting pad

2 Hydragas units - testing

Testing
1 A fault in a Hydragas unit can be determined by checking the car ride height as shown (see illustration). If the measurements are less than those specified, first check the units and rear interconnecting pipe for signs of leakage, which will appear as a slight residue left after the fluid has evaporated.
2 If the cause is a union, tighten the nut and have the system repressurised by a Rover dealer.
3 Where a leak in a Hydragas unit is suspected, clean the area around the charging valve threads to determine whether the valve is the source of the leak.

2.1 Suspension ride height measuring points

Measure VERTICALLY (seen from the front and side of vehicle) from wheel arch lip to roadwheel hub centre - see Specifications for dimensions

3 Front Hydragas unit

3.3 Front Hydragas unit

3.1 Exploded view of the rear suspension

4 If it is determined that a Hydragas unit is leaking fluid, renew the unit and again have it repressurised by a Rover dealer.
5 If no fluid leak can be found, it is possible that nitrogen has leaked from the unit. To check this, the car must be taken to a Rover dealer and the unit checked with the pressure pump. The fluid pressure should increase rapidly to the pressure of the nitrogen, and thereafter increase at a noticeably slower rate. If nitrogen has been leaking, the pressure will have dropped and the fluid pressure will increase rapidly above the normal nitrogen pressure. The nitrogen pressures are as follows:
Front Hydragas unit 325 lbf/in² ± 6.5 lbf/in²
(2241 kN/m² ± 44.8 kN/m²)
Rear Hydragas unit 230 lbf/in² ± 4.6 lbf/in²
(1586 kN/m² ± 31.7 kN/m²)

Note that the rear Hydragas units must be checked for a nitrogen leak separately, by removing the interconnecting pipe and using an adapter.
6 If it is determined that a Hydragas unit has leaked nitrogen, renew it and have the suspension repressurised by a Rover dealer.

3.2 Exploded view of the rear suspension

4.1 Exploded view of the rear suspension

3 Front Hydragas unit - removal and refitting

Removal
1 Have the Hydragas unit depressurised by a Rover dealer.
2 Apply the handbrake, then jack up the front of the car and support it on axle stands (see “Jacking and vehicle support”). Remove the roadwheel.
3 Unbolt the outer bracket from the subframe tower, and withdraw the Hydragas unit together with its return spring (see illustration).
4 Remove the piston spacer(s) from the knuckle joint on the driver’s side.

Refitting
5 Refitting is a reversal of removal, but have the Hydragas unit pressurised by a Rover dealer.

4 If it is established that the leak is occurring round the valve threads, have the system depressurised by your Rover dealer, then unscrew the valve.
5 Screw in a new valve, using a sealant on the threads (Loctite 270 or equivalent). Tighten the valve to the specified torque. Have the system recharged by your Rover dealer.
6 If it is determined that a Hydragas unit is leaking fluid, renew the unit and again have it repressurised by a Rover dealer.
7 If no fluid leak can be found, it is possible that nitrogen has leaked from the unit. To check this, the car must be taken to a Rover dealer and the unit checked with the pressure pump. The fluid pressure should increase rapidly to the pressure of the nitrogen, and thereafter increase at a noticeably slower rate. If nitrogen has been leaking, the pressure will have dropped and the fluid pressure will increase rapidly above the normal nitrogen pressure. The nitrogen pressures are as follows:
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3 Front Hydragas unit - removal and refitting

Removal
1 Have the Hydragas unit depressurised by a Rover dealer.
2 Apply the handbrake, then jack up the front of the car and support it on axle stands (see “Jacking and vehicle support”). Remove the roadwheel.
3 Unbolt the outer bracket from the subframe tower, and withdraw the Hydragas unit together with its return spring (see illustration).
4 Remove the piston spacer(s) from the knuckle joint on the driver’s side.

Refitting
5 Refitting is a reversal of removal, but have the Hydragas unit pressurised by a Rover dealer.
Removal

1 If the left-hand shock absorber is being removed, remove the retaining screws and place the cooling system expansion tank to one side.

2 For both left and right-hand sides unscrew the self-locking nut from the upper mounting, and remove the cup washer and large diameter rubber bush.

3 Turn the steering to allow access from the front, then unscrew the bottom mounting nut and remove the washer (see illustration).

4 Slide the shock absorber, washer and distance sleeve from the bottom mounting bolt, leaving the bolt and bump stop in position.

5 Withdraw the shock absorber from the upper mounting together with the small diameter rubber bush.

Overhaul

6 The rubber bush in the front shock absorber lower mounting eye may be renewed separately to the shock absorber if necessary. If so, drive the metal sleeve from the centre of the bush.

7 Using a metal tube, long bolt, thick washers and nut, pull the bush from the mounting eye. If necessary, cut the bush with a small hacksaw before removing it.

8 Dip the new bush in soapy water before pressing it into the eye, then refit the shock absorber.

9 Note that the shock absorber must be stored in an upright position.

Refitting

10 Before fitting, grip the shock absorber lower mounting in a vice with the unit upright, then compress and extend it at least six times until there is no free travel when changing the direction of stroke. This will remove any trapped air from the internal fluid.

11 Refitting is a reversal of removal, but tighten the self-locking mounting nuts to the specified torque.

5 Anti-roll bar - removal, overhaul and refitting

Removal

1 Turn the steering as necessary to allow access from the front, and remove the rebound buffers from the subframe on both sides. The buffers are located beneath the suspension upper arms and are secured by two cross-head screws (see illustration).

2 Insert distance pieces such as nuts in place of the buffers to retain the suspension in the normal running position.

3 Apply the handbrake, jack up the front of the car, and support it on axle stands (see “Jacking and vehicle support”). Remove both front wheels.

4 Extract the split pin from one end of the anti-roll bar and unscrew the nut (see illustration). Remove the plain washer and plastic washer. Similarly remove the nut and washers from the remaining end of the anti-roll bar.

5 Unbolt the bearing brackets from the front of the subframe, noting the position of the components (see illustration).

6 Unbolt and detach one of the subframe rear mountings.

7 Remove the nut, spring and plain washer from the mounting pivot bolt, then drive the bolt through the mounting and lower suspension arm.

8 Pull the lower suspension arm from the subframe and detach the anti-roll bar from both lower suspension arms. Withdraw the anti-roll bar from the car. Remove the washers.

Overhaul

9 Check the anti-roll bar bushes for deterioration. Renew them if necessary. Lubricate the new bushes with a grease.

10 Clean any grease from the anti-roll bar itself in the area next to the bushes.

11 If not already so equipped, fit clamps and U-bolts on the inboard side of each bush as shown (see illustration). The correct clamps are available from your Rover dealer.
5.12 U-bolt and clamp next to anti-roll bar bush

12 Tighten the U-bolts evenly to the specified torque, making sure that the clamps are pulled down evenly and that the clamps are firmly up against the bushes, thus preventing sideways movement of the anti-roll bar (see illustration).

Refitting

13 To refit the anti-roll bar, first fit one steel washer against the shoulder on each end of the bar, followed by one plastic washer.
14 Insert the bar in the fixed lower suspension arm, then in the free lower suspension arm.
15 Locate the lower suspension arm in the subframe and insert the pivot bolt through the arm and mounting from the front. Fit the plain washer and spring washer and tighten the nut finger tight.
16 Fit the mounting to the underbody and tighten the bolts.
17 Fit the bearing brackets to the front of the subframe and tighten the nuts finger tight.
18 Fit one plain washer on the ends of the bar against the lower arms, followed by the steel washers and nuts. Tighten the nuts finger tight.
19 Fit the roadwheels and lower the car to the ground.
20 Remove the distance pieces and fit the rebound buffers to the subframe.
21 With the weight of the car on the suspension, tighten the lower arm pivot bolts and the anti-roll bar bracket bolts to the specified torque.
22 Tighten the anti-roll bar end nuts to the lower of the torque wrench settings specified.

Tighten further if necessary to align the split pin holes, but do not exceed the higher specified torque. Insert new split pins and bend over the ends to secure.

6 Front suspension upper arm - removal, overhaul and refitting

Removal

1 Have the relevant Hydragas unit depressurised by a Rover dealer.
2 Jack up the front of the car and support it on axle stands (see "Jacking and vehicle support"). Apply the handbrake and remove the roadwheel.
3 Unscrew the shock absorber lower mounting nut, and remove the shock absorber, washers and distance sleeve.
4 Remove the bolt and bump stop.
5 Remove the knuckle joint from the upper arm and extract it from the Hydragas unit together with the return spring (see illustration).
6 Support the driving flange and disc assembly with a trolley jack or block of wood.
7 Flatten the tab washer and unscrew the swivel hub upper balljoint nut. Remove the tab washer.
8 Using a separator tool, release the upper arm from the balljoint.
9 Unscrew the upper arm shaft rear nut, and unbolt the front retaining plate from the subframe (see illustration).
10 If removing the left-hand side upper arm, move the windscreen washer reservoir to one side.
11 Withdraw the pivot shaft assembly from the front of the subframe and recover the rear washers.
12 Lift the suspension upper arm from the subframe and recover the sealing rings and rear thrustwasher.

Overhaul

13 To overhaul the upper arm, unscrew the grease nipple and grip the arm in a soft-jawed vice.

6.5 Hydragas unit-to-upper arm knuckle joint

14 Remove the needle roller bearings with a soft metal drift.
15 Examine the needle roller bearings and the pivot shaft for damage, wear and pitting. If evident, renew the bearings and shaft. Make sure that the grease nipple lubrication drilling is unobstructed.
16 Drive the needle roller bearings into the upper arm with the marked ends facing outwards. Lubricate the bearings with multi-purpose lithium based grease, then refit the grease nipple.

Refitting

17 The number and thickness of the spacer(s) fitted between the front Hydragas units and their knuckle joint varies according to model.
18 Incorrect fitting of spacers will make the suspension seem firmer on one side of the car than on the other. Correct applications are as shown in the table at the top of this page.
19 Refitting is a reversal of removal, but note the following additional points:
   a) The thrustwashers must be fitted with their grooved sides against the upper arm. Initially, fit the sealing rings and locate the rear thrustwasher in the ring.
   b) Lubricate the knuckle joint with a multi-purpose lithium based grease
   c) Tighten all nuts to the specified torque, and lock the swivel hub upper balljoint nut by bending the tab washer over the upper arm and nut.
   d) After having the Hydragas unit depressurised by a Rover dealer, fully loosen the shock absorber lower mounting nut and retighten it to the specified torque with the weight of the car on the suspension.

Application of spacers for front Hydragas units

<table>
<thead>
<tr>
<th>Model</th>
<th>LH side</th>
<th>RH side</th>
<th>Thickness in (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MG Turbo</td>
<td>1</td>
<td>3</td>
<td>0.09 (2.29)</td>
</tr>
<tr>
<td>MG and Vanden Plas (manual)</td>
<td>0</td>
<td>2</td>
<td>0.09 (2.29)</td>
</tr>
<tr>
<td>- alternative fitting</td>
<td>1</td>
<td>1</td>
<td>0.05 (1.27)</td>
</tr>
<tr>
<td>Automatic models</td>
<td>1</td>
<td>4</td>
<td>0.09 (2.29)</td>
</tr>
<tr>
<td>All other models except Van</td>
<td>0</td>
<td>2</td>
<td>0.09 (2.29)</td>
</tr>
<tr>
<td>Van</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

HAYNES HINT
Clean all the components in paraffin and wipe dry.

6.9 Front suspension upper arm pivot front retaining plate
Removal
1 Turn the steering as necessary to allow access from the front, and remove the rebound buffer from the subframe on the relevant side. The buffer is located beneath the suspension upper arm and is secured by two cross-head screws.
2 Insert a distance piece such as a suitably sized nut in place of the buffer to retain the suspension in the normal running position.
3 Apply the handbrake, jack up the front of the car, and support it on axle stands (see "Jacking and vehicle support"). Remove the roadwheel.
4 Extract the split pin from the end of the anti-roll bar and unscrew the nut. Remove the plain washer and plastic washer abutting the lower arm.
5 Unbolt the anti-roll bar bearing brackets from the front of the subframe, noting the position of the components.
6 Flatten the tab washer and unscrew the swivel hub lower balljoint nut. Remove the tab washer.
7 Using a separator tool, release the lower arm from the balljoint.
8 Unbolt and detach the relevant subframe rear mounting.
9 Remove the nut, spring and plain washer from the pivot bolt, then drive the bolt through the mounting and lower suspension arm.
10 Pull the lower suspension arm from the subframe, and remove it from the anti-roll bar. Recover the plastic and steel washers from the anti-roll bar.

Overhaul
11 To overhaul the lower arm, the pivot bush and anti-roll bar bush should be renewed. To remove the bushes, use a length of metal tubing, a long bolt, nut and packing pieces. Tighten the nut to draw out the bush. To fit the new bushes, dip them in a soapy water solution or use a rubber lubricant. Pull them into the lower arm using a nut and bolt and packing pieces.

Refitting
12 Refitting is a reversal of removal, but note the following additional points:
  a) The anti-roll bar plastic washers must be fitted against the lower arm
  b) Tighten all nuts and bolts to the specified torque; the lower arm pivot bolt and the anti-roll bar mounting nuts and bolts should be fully tightened with the weight of the car on the suspension
  c) Lock the swivel hub lower balljoint nut by bending the tab washer over the lower arm and nut.
  d) Lock the anti-roll bar-to-lever arm retaining nut with a new split pin.

Removal
1 To prevent problems by not being able to unscrew the balljoint socket, it is recommended that tool 18G1341 is obtained from a tool hire agent.
2 Turn the steering as necessary to allow access from the front, and remove the rebound buffer from the subframe on the relevant side. The buffer is located beneath the suspension upper arm and is secured by two cross-head screws.
3 Insert a distance piece such as a suitably sized nut in place of the buffer to retain the suspension in the normal running position.
4 Apply the handbrake, jack up the front of the car, and support it on axle stands (see "Jacking and vehicle support"). Remove the roadwheel.
5 Flatten the tab washer and unscrew the swivel hub upper or lower balljoint nut (as applicable). Remove the tab washer.
6 Using a separator tool release the balljoint from the suspension arm. If removing the upper balljoint, support the swivel hub assembly with a trolley jack.
7 Flatten the lockwasher tabs, and if available fit tool 18G1341 to the balljoint socket, retaining it in position with the balljoint nut.
8 Hold the driving flange and swivel hub stationary, then unscrew the balljoint socket and remove the lockwasher. Remove the tool if used.

Refitting
9 Fitting a new balljoint is a reversal of the removal procedure. Apply two beads of Loctite 245 or equivalent compound, diametrically opposite each other, to the thread (see illustration). Tighten the balljoint and nut to the specified torques within 15 minutes of Loctite application. Lock the balljoint by bending two opposite tabs of the lockwasher over the sides of the swivel hub. Lock the balljoint nut by bending the tab washer over the suspension arm and nut.
and drive out the complete opposite bearing. Invert the hub again and drive out the remaining outer race.

**Overhaul**

Note: The inner oil seal has an extended flange that fits into the water shield.

16 Clean the hub, bearings and driveshaft stub with paraffin and wipe dry. The inner bearing will almost certainly be damaged upon removal, therefore replacement will be necessary. The bearings are only available in a complete kit, along with all the seals, spacers grease and split pins required.

17 Lubricate the bearings with the grease supplied, then drive them into the swivel hub with the marked ends facing outwards. Use a length of tubing on the outer races only.

18 Fit the spacer against the inner bearing.

19 Dip the oil seals in engine oil, then press them into the swivel hub with their lips facing inwards. Use a block of wood to locate the outer seal flush with the hub, and use a length of metal tubing to locate the inner seal against the spacer.

20 Press grease into the spaces between the bearings and oil seals.

21 Press the water shield onto the driveshaft with reference to dimension “A” (see illustration). Fill the water shield groove with grease.

22 Locate the swivel hub over the end of the driveshaft and, using a length of metal tubing against the outer bearing inner race, tap the inner races fully onto the driveshaft.

**Refitting**

23 The remaining refitting procedure is a reversal of removal, but tighten the nuts to the specified torque. Lock the balljoint nuts by bending the tab washers over the suspension arms and nuts. Refer to Chapter 8 for the driveshaft nut tightening procedure.

**10 Rear Hydragas unit - removal and refitting**

**Removal**

1 Have the rear Hydragas units depressurised by a Rover dealer.

2 Chock the front wheels, jack up the rear of the car and support it on stands. Remove the roadwheel.

3 Disconnect and plug the interconnecting pipe from the Hydragas unit.

4 Unbolt the bump rubber and reaction strap from the body (see illustrations).

5 Unbolt the shield and clamp plate from the subframe.

6 Withdraw the Hydragas unit, helper spring and strut, together with the return spring from the subframe and knuckle joint.

7 Prise the knuckle joint assembly from the radius arm.

8 Note that if the three-way connector in front of the left-hand rear wheel is removed, it must always be refitted with the restricted drilling in the line between the two rear Hydragas units (see illustration).

9 Check the knuckle joint for wear, and renew it if necessary.

**Refitting**

10 Refitting is a reversal of removal, but lubricate the knuckle joint with a multi-purpose lithium based grease. Have the rear Hydragas units pressurised by a Rover dealer.

11 The struts must be located in the centre hole within the units, and where helper springs are fitted, these must locate on the split collars welded to the subframe. If the split collars are loose, have them re-welded in position.
11 Rear suspension radius arm - removal, overhaul and refitting

Removal
1 Remove the rear Hydragas unit as described in Section 10.
2 Release the handbrake, then remove the clevis pin and disconnect the handbrake cable from the backplate and bracket.
3 Remove the brake fluid reservoir filler cap, wrap thin polythene over the level warning switch and tighten the cap onto the polythene. This will help prevent brake fluid from being lost in the subsequent procedure.
4 Unscrew the rigid brake pipe union, then unscrew the nut and remove the flexible hose from the bracket in the radius arm (see illustration).
5 Unscrew the nuts from each end of the pivot shaft, and un bolt the retaining plate from the subframe (see illustrations). Remove the outer thrustwasher.
6 Support the radius arm with a jack, then tap out the pivot shaft from the inside.
7 Withdraw the radius arm and collect the inner thrustwasher and both sealing rings.
8 If necessary, remove the brake shoes and backplate as described in Chapter 9.
9 If the bearings are to be renewed, drive them out of the radius arm and remove the lubricating tube.

Overhaul
10 Clean all the components with paraffin and examine them for wear and damage. Renew them as necessary and obtain new sealing rings. Make sure that the lubricating drillings in the shaft are unobstructed.
11 Drive one needle roller bearing into the outer end of the radius arm with its stamped end outwards and to a depth of 0.2 in (5 mm).
12 Insert the lubricating tube with the splined end towards the outer bearing, and drive the second needle roller bearing into the radius arm with the stamped end facing outwards.
13 Locate the large thrustwasher with its grooved side against the inner end of the radius arm, and fit the wide sealing ring over it.
14 Fit the narrow sealing ring to the outer end of the radius arm.

15 Support the radius arm in the subframe, and insert the pivot shaft with the grease nipple outwards.
16 Fit the small thrustwasher with the chamfer against the shaft, install the retaining plate, and tighten the bolts.
17 Fit the spring washers and nuts to the pivot shaft and tighten them to the specified torque.
18 Using a grease gun, lubricate the radius arm bearings with the recommended grease.
19 Reconnect the brake flexible hose and rigid pipe to the bracket. Reconnect the handbrake cable.
20 Remove the polythene from the brake fluid reservoir, then adjust and bleed the brakes as described in Chapter 9.

Refitting
21 Spacers are now fitted between the rear struts and Hydragas units as shown below:
   Model   LH side   RH side   Thickness in (mm)
   MG Turbo   1       1     0.145 (3.68)
   All other 3-door models (except van)   1       1     0.05 (1.27)
   Van and 5-door models   0       0
22 Refit the rear Hydragas unit as described in Section 10.

12 Rear hub assembly - removal, overhaul and refitting

Note: From chassis number 631497 (early 1982), nearside hub nut and shaft has left-hand thread. All replacement nearside hub nut and shaft assemblies have left-hand thread regardless of year.

Removal
1 Chock the front wheels, jack up the rear of the car, and support it on axle stands (see "Jacking and vehicle support"). Remove the roadwheel and release the handbrake.
2 Remove the securing screws and withdraw the brake drum; loosen the adjuster if necessary.
3 Brush clean the backplate, but do not inhale the brake dust as it is injurious to health.
4 Using a soft metal punch, tap the grease cap on alternate sides, and remove it (see illustration).
5 Extract the split pin and unscrew the hub nut. Remove the plain washer.
6 Using a puller, remove the hub from the stub shaft. If the inner bearing inner race remains in the stub shaft, use a puller to remove it.
7 Prise out the oil seal with a screwdriver.
8 Using a soft metal drill, drive out one of the bearing inner races, then invert the hub and drive out the complete opposite bearing. Invert the hub again and drive out the remaining outer race.

Overhaul
9 Clean all the components in paraffin and examine them for damage and wear. Check the bearing balls and races for wear and pitting. Renew the components as necessary and obtain a new oil seal. If the wheel studs are worn or damaged, drive them out and install new ones.
10 Lubricate the bearings with multi-purpose lithium based grease, then drive them into the hub with their marked ends outwards, using a length of metal tube on the outer races.
11 Dip the oil seal in engine oil, then press it into the hub with the lip facing inwards.
12 Wipe clean the stub shaft and oil seal bearing surface. Locate the hub on the stub shaft and use a length of metal tube to drive the inner races onto the shaft.
13 Fit the plain washer and tighten the nut to the specified torque.
14 Lock the nut with a new split pin and tap the grease cap into the hub.

Refitting
15 Refit the brake drum and wheel, adjust the brakes, and lower the car to the ground.
13 Rear anti-roll bar (MG Turbo) - removal and refitting

Removal
1. Chock the front wheels, slacken the rear wheel nuts and raise and support the rear of
the vehicle. Remove the rear wheels.
2. Undo the nut and bolt on each side which hold the ends of the anti-roll bar to the
suspension links.
3. Remove the mounting clamps from the central section of the anti-roll bar. The bar and
mounting rubbers can now be removed.
4. Renew any mounting components which have deteriorated. Renew the anti-roll bar if it
is distorted or damaged.

Refitting
5. Commence refitting by connecting the ends of the bar to the suspension links. Fit the nut
and bolt on each side but do not tighten them yet.
6. Fit the mounting clamps over the mounting rubbers and secure them to their brackets.
7. Tighten the mounting clamp bolts and then the end link nuts and bolts.
8. Refit the roadwheels and lower the car to the ground.

14 Steering wheel - removal and refitting

Removal
1. Set the front wheels in the straight-ahead position.
2. Prise the cover from the centre of the steering wheel (see illustration).
3. Unscrew and remove the retaining nut and mark the steering wheel and inner column in
relation to each other.
4. Withdraw the steering wheel from the inner column splines.

Refitting
5. Refitting is the reversal of removal, but align the previously made marks, and tighten the
retaining nut to the specified torque.

15 Steering column - removal and refitting

Note: The top bush for 1986-on models is a press fit in the top of the outer column, and
should be coated with graphite grease before fitting.

Removal
1. Remove the steering wheel (Section 14).
2. Lift the carpet, remove the coupling cover, and unbolt the inner column from the flexible
coupling. Carefully note how the bolts are positioned to ensure that they are refitted
correctly.
3. Remove the steering column cowls with reference to Chapter 12. Disconnect the
multi-plugs (see illustration).
4. Unscrew the top and bottom mountings and withdraw the steering column assembly
from the car.
5. Remove the switch assembly. Unbolt the upper column, withdraw the inner column, and
remove the top bush halves.

Refitting
6. Clean the components in paraffin and wipe dry. Examine the bush for wear and renew it if
necessary.
7. To reassemble, insert the inner column in the outer column then bolt the top bush and
upper column to the outer column. The top bush for 1986-on models is a press fit in the
top of the outer column, and should be coated with graphite grease before fitting.
8. Fit the combination switch assembly and tighten the clamp screw.
9. Centralise the inner steering column and roadwheels, and engage the pinion coupling with the flexible coupling. Align the column and
fit the top mounting bracket bolts finger tight.
10. Fully tighten the coupling nuts. The flexible coupling, on later models incorporate
a support plate which must contact the pinion coupling with the lugs located over the studs.
11. Position the coupling cover as shown (see illustration), centralise the inner column in the outer column, then insert and tighten the coupling cover bolts. Fit the circular
grommet.
12. Fully tighten the top mounting bracket bolts. When refitting the steering column, make sure that there is a clearance between
the bottom of the steering wheel and the
13. Reconnect the ignition switch multi-plug
and combination switch bulbholder, and refit
the fusebox cover.
15. Refit the steering column cowls and
steering wheel.
16. Reconnect the battery negative lead.
16 Steering column lock/ignition switch - removal and refitting

Removal
1. Remove the steering column (Section 15).
2. Drill out the shear bolt heads from the lock clamp, and remove the lock ignition switch from the outer column.
3. Locate the lock body centrally over the slot in the outer column, and lightly bolt the clamp into position without shearing the heads.

Refitting
4. Refit the steering column, but before fitting the cowls, check that the lock and ignition switch operate correctly.
5. Tighten the clamp bolts until the bolt heads shear off, then refit the cowls.

17 Tie-rod end balljoint - removal and refitting

Removal
1. Apply the handbrake, jack up the front of the car, and support it on axle stands (see “Jacking and vehicle support”). Remove the roadwheel.
2. Loosen the tie-rod end adjustment locknut a quarter of a turn.
3. Unscrew the tie-rod end balljoint nuts and detach the balljoint from the steering arm using a separator tool (see illustrations).
4. Unscrew the tie-rod end from the tie-rod.

Refitting
5. Refitting is a reversal of removal, but tighten the nuts to the specified torque and check the front wheel toe-out dimension as given in the Specifications.

18 Steering rack gaiter - removal and refitting

Removal
1. Remove the tie-rod end balljoint as described in Section 17.
2. Loosen the clips on the tie-rod and steering gear housing, and remove the gaiter.
3. Lubricate the contact surfaces of the gaiter with steering gear grease, then locate it over the tie-rod and housing.
4. Secure the gaiter with the two clips.

Refitting
5. Refit the tie-rod end balljoint (Section 17).

19 Wheel alignment - checking and adjusting

Checking
1. Accurate wheel adjustment is essential for good steering and slow tyre wear. Before checking it, make sure that the car is only loaded to kerbside weight (i.e. with a full fuel tank), the tyres are correctly inflated, and the suspension ride heights are correct; check the latter as described in Section 2, and specifications at the beginning of this chapter.
2. Place the car on level ground with the wheels in the straight-ahead position, then roll the car backwards 12 ft (4 metres) and forwards again.
3. Using a wheel alignment gauge, check that the front wheel toe-out dimension is as given in the Specifications.

17.3b Using a separator tool to release the tie-rod end balljoint

Apply the handbrake and remove both front wheels. Centralise the steering.
3. Lift the carpet, remove the coupling cover, and disconnect the pinion coupling from the flexible coupling. Unbolt the steering column from the top mounting bracket (1985 on models). Note how the bolts are positioned to ensure that they are refitted correctly.
4. Unscrew the tie-rod end balljoint nuts and use a separator tool to detach the balljoints from the steering arms.
5. Unscrew the nuts and bolts and remove the U-bolt and mounting pad and clamp (see illustration).
6. Rotate the rack assembly and withdraw it from the driver’s side of the subframe.
7. Remove the tie-rod ends, locknuts, gaiters and clips with reference to Sections 17 and 18.

Overhaul
8. 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 Rover dealer. The only components which can be renewed easily by the home mechanic are the steering gear gaiters, the tie rod balljoints and the tie rod ends (see illustrations).

Refitting
9. Refitting is a reversal of removal, but tighten all nuts and bolts to the specified torque, and adjust the front wheel alignment as described in Section 19.

17.3a Steering tie-rod end balljoint

20 Steering rack and pinion - removal, overhaul and refitting

19.5 Steering rack and pinion U-bolt mounting nuts (arrowed)

Where difficulty is experienced in removing the steering rack and pinion assembly, the pinion coupling may be removed from the pinion splines after removing the clamp bolt. Mark the pinion and coupling before separating them to ensure correct reassembly.

Removal
1. Disconnect the battery negative lead.
2. Jack up the front of the car and support it on stands (see “Jacking and vehicle support”).
### 20.8a Exploded view of the steering components (early models)

<table>
<thead>
<tr>
<th>Number</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tie-rod end</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Locknut</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Tie-rod</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rubber gaiter</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Ball housing</td>
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</tr>
<tr>
<td>6</td>
<td>Ball seat</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Locking pin</td>
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</tr>
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<td>8</td>
<td>Locking ring</td>
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</tr>
<tr>
<td>9</td>
<td>Rack</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>End cover</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Gasket</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Shims</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Bearing</td>
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</tr>
<tr>
<td>14</td>
<td>Pinion</td>
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</tr>
<tr>
<td>15</td>
<td>Bearing</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Oil seal</td>
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</tr>
<tr>
<td>17</td>
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<td>18</td>
<td>Flexible coupling</td>
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</tr>
<tr>
<td>19</td>
<td>Inner column</td>
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</tr>
<tr>
<td>20</td>
<td>Mounting bracket</td>
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</tr>
<tr>
<td>21</td>
<td>Cowl assembly</td>
<td></td>
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### 20.8b Exploded view of the steering components on 1985 models

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<th>Number</th>
<th>Component</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Tie-rod ends</td>
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</tr>
<tr>
<td>2</td>
<td>Locknuts</td>
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</tr>
<tr>
<td>3</td>
<td>Tie-rods</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rubber gaiters</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Rack housing</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>U-bolt</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Mounting pad</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Centralising hole seal</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Clamp</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Pinion coupling</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Flexible coupling</td>
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</tr>
<tr>
<td>12</td>
<td>Inner column</td>
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</tr>
<tr>
<td>13</td>
<td>Coupling cover</td>
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<tr>
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<tr>
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<td>Top bush</td>
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</tr>
<tr>
<td>18</td>
<td>Upper column</td>
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</tr>
<tr>
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<td>Steering wheel</td>
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<tr>
<td>20</td>
<td>Ignition switch/steering lock assembly</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Steering column cowl</td>
<td></td>
</tr>
</tbody>
</table>
20.8c Exploded view of the steering components on 1986-on models

1 Tie-rod ends 12 Inner column
2 Locknuts 13 Coupling cover
3 Tie rods 14 Retaining ring
4 Rubber gaiters 15 Outer column
5 Rack housing 16 Top mounting bracket
6 U-bolt 17 Top bush
7 Mounting pad 18 Steering wheel
8 Centralising hole seal 19 Ignition switch/steering lock assembly
9 Clamp 20 Steering column cowl
10 Pinion coupling
11 Flexible coupling