






Chapter 1

Routine maintenance and servicing

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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

Engine

Direction of crankshaft rotation	Clockwise (seen from right-hand side of vehicle)
Oil filter:	
4-cylinder engines	Champion B101
V6 engines:	
paper type	Champion X119
cannister type	Champion E102

Cooling system

Coolant protection at 33% antifreeze/water mixture ratio:	
Slush point	-19°C (-2°F)
Solidifying point	-36°C (-33°F)
Coolant protection at 50% antifreeze/water mixture ratio:	
Slush point	-36°C (-33°F)
Solidifying point	-48°C (-54°F)

Fuel system

Air filter element:	
"M" series 4-cylinder engines	Champion W114
"T" series 4-cylinder engines	Champion type not available
V6 engines	Champion W601
Fuel filter:	
4-cylinder engines	Champion L208
V6 engines	Champion L207

1.2 Specifications

Ignition system

Firing order:

4-cylinder engines	1-3-4-2 (No 1 cylinder at timing belt end)
V6 engines	1-4-2-5-3-6 (No 1 cylinder at timing belt end on rear bank)

Spark plugs:

Type: *

4-cylinder normally aspirated engines	Champion RC9YCC
4-cylinder turbocharged engines up to 1992 model year	Champion RC7YCC
4-cylinder turbocharged engines 1992 model year onwards	Champion RC9YCC
V6 engines	Champion RC9YCC4

Electrode gap: *

4-cylinder engines	0.8 mm
V6 engines	1.0 mm

Spark plug (HT) leads:

Type:

4-cylinder engines	Champion LS-05 boxed set
V6 engines	Champion boxed set not available
Maximum resistance per lead	30 000 ohms

* Information on spark plug types and electrode gaps is as recommended by Champion Spark Plug.

Where alternative types are used, refer to their manufacturer's recommendations

Braking system

Front brake pad thickness (including backing but excluding shims):

New	17.4 mm
Minimum	8.2 mm

Rear brake pad thickness (including backing):

New	14.5 mm
Minimum	7.2 mm

Tyres

Tyre pressures (cold):

	Front	Rear
195/70 VR 14 tyres	1.8 bar (26 psi)	1.8 bar (26 psi)
195/65 VR 15 tyres	2.0 bar (28 psi)	2.0 bar (28 psi)
205/55 VR or ZR 16 tyres	2.2 bar (32 psi)	2.2 bar (32 psi)
205/60 VR 15 tyres	2.0 bar (28 psi)	2.0 bar (28 psi)
215/45 ZR 17 tyres	2.3 bar (34 psi)	1.9 bar (28 psi)
115/70 R 15 (space saver spare tyre)	4.1 bar (60 psi)	4.1 bar (60 psi)

Note: For sustained high speeds above 100 mph (160 km/h), increased pressures are necessary.

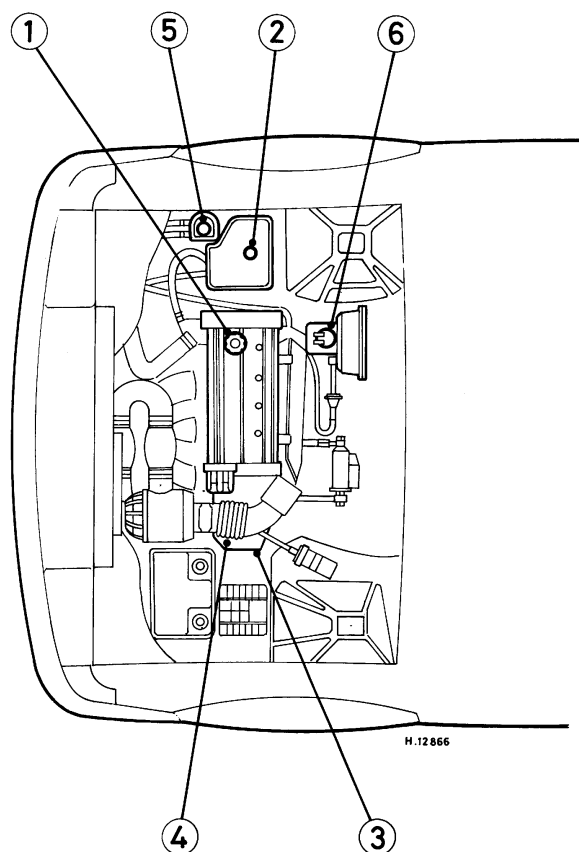
Consult the driver's handbook supplied with the vehicle.

Wiper blades

Windscreen	Champion X-5103
Tailgate/rear window	Champion X-5103

Torque wrench settings

	Nm	lbf ft
Power steering pump bolts:		
4-cylinder engines - rear-mounted pump	25	18
4-cylinder engines - front-mounted pump:		
Early version (4 mounting bolts)	10	7
Later version (5 mounting bolts)	25	18
V6 engines:		
Mounting bolt	39	29
Adjusting nut	22	16
Power steering pump drivebelt tensioner wheel retaining nut (4-cylinder engines - rear mounted pump)	45	33
Alternator pivot and mounting bolts (4-cylinder engines)	25	18
Alternator adjustment bracket bolts (4-cylinder engines)	12	9
Alternator side pivot bolt (V6 engines)	45	33
Alternator lower mounting nut (V6 engines)	24	17
Engine oil drain plug	45	33
Manual transmission filler/level and drain plugs	45	33
Automatic transmission drain plugs:		
4-cylinder engines	15	11
V6 engines	40	30
Spark plugs:		
4-cylinder engines up to 1991	18	13
4-cylinder engines from 1991 onward	25	18
V6 engines	18	13
Roadwheel nuts	110	81



Lubricants and fluids

Component or system

1 Engine

2 Cooling system

3 Manual transmission

4 Automatic transmission

5 Power steering fluid reservoir

6 Brake and clutch fluid reservoir

General greasing

Lubricant type/specification

Multigrade engine oil to specification API SG/CD or better, viscosity range 5W/50 to 10W/40

Soft water, and antifreeze (ethylene glycol-based, suitable for use in mixed-metal cooling systems)

Multigrade engine oil to specification API SG/CD or better, viscosity 10W/40

Dexron IID type ATF

Dexron IID type ATF

Hydraulic fluid to FMVSS 116 DOT 4

Multipurpose lithium based grease

Capacities

Engine oil (including filter) 4.5 litres

Cooling system:

4-cylinder engines:

"M" series engines 10.0 litres

"T" series engines 8.0 litres

V6 engines:

2.5 litre engines 10.0 litres

2.7 litre engines 8.6 litres

Manual transmission (drain and refill) 2.3 litres

Automatic transmission (drain and refill):

4-cylinder engines 2.0 litres

V6 engines 3.2 litres

Power steering reservoir 1.5 litres

Fuel tank 68 litres

Rover 800 Series maintenance schedule

The manufacturer's recommended maintenance schedule for these vehicles is as described below - note that the schedule starts from the vehicle's date of registration. These are the minimum maintenance intervals recommended by the factory for vehicles driven daily, but subjected only to "normal" use. If you wish to keep your car in peak condition at all times, you may wish to perform some of these procedures even more often. Because frequent maintenance enhances the efficiency, performance and resale value of your car, we encourage you to do so. If your usage is not "normal", shorter intervals are also recommended - the most important examples of

these are noted in the schedule. These shorter intervals apply particularly if you drive in dusty areas, tow a caravan or trailer, sit with the engine idling or drive at low speeds for extended periods (ie, in heavy traffic), or drive for short distances (less than four miles) in below-freezing temperatures.

Although the manufacturer's intervals have been extended to one main service at 12 000 mile (12 monthly) intervals for 1994 models onward, the earlier schedule which also includes a lubrication service at 6000 mile (6 monthly) intervals, is the schedule shown in this Chapter.

Weekly checks

- ☐ Check the engine oil level, and top-up if necessary (Section 3).
- ☐ Check the brake fluid level, and top-up if necessary (Section 3). If repeated topping-up is required, check the system for leaks or damage at the earliest possible opportunity (Section 24).
- ☐ Check the windscreen/tailgate and headlight washer fluid level, and top-up if necessary (Section 3).
- ☐ Check the tyre pressures, including the spare (Section 4).
- ☐ Visually check the tyres for excessive tread wear, or damage (Section 4).
- ☐ Check the operation of all (exterior and interior) lights and the horn, wipers and windscreen/tailgate washer system (Sections 6 and 13).
- ☐ Renew any blown bulbs (Chapter 12), and clean the lenses of all exterior lights.
- ☐ Check the coolant level, and top-up if necessary (Section 3).
- ☐ Check the battery electrolyte level, where applicable (Section 3).
- ☐ Check the power steering fluid level, and top-up if necessary (Section 5).
- ☐ Check the aim of the windscreen/tailgate/headlight washer jets, correcting them if required (Section 6).
- ☐ Check the condition of the wiper blades, renewing them if worn or no longer effective (Section 6).
- ☐ Visually check all reservoirs, hoses and pipes for leakage (Section 8).
- ☐ Check the operation of the air conditioning system (where applicable) (Section 18).

Every 6000 miles (10 000 km) or 6 months, whichever occurs first

- ☐ Change the engine oil and filter (Section 7).
- ☐ Check under the bonnet for fluid leaks and hose condition (Section 8).

Every 12 000 miles (20 000 km) or 12 months, whichever occurs first

- ☐ Check the cooling system (Section 9).
- ☐ Check the operation of the accelerator cable and linkage (Section 10).
- ☐ Renew the spark plugs (models without emission control equipment) (Section 11).
- ☐ Renew the air cleaner filter element (models without emission control equipment) (Section 12).
- ☐ Check the electrical system (Section 13).
- ☐ Check the battery (Section 14).
- ☐ Check the seat belts (Section 15).
- ☐ Check the auxiliary drivebelt(s) (Section 16).
- ☐ Check the condition of all engine compartment wiring (Section 17).
- ☐ Check the condition of all air conditioning system components (where applicable) (Section 18).
- ☐ Check the engine idle speed and mixture (where applicable) (Section 19).
- ☐ Check the manual transmission oil level (Section 20).
- ☐ Check the steering, suspension and roadwheels (Section 21).
- ☐ Check the driveshaft rubber gaiters and CV joints (Section 22).
- ☐ Check the exhaust system (Section 23).
- ☐ Check the underbody, and all fuel/brake lines (Section 24).
- ☐ Check the clutch operation and hydraulic hose condition (Section 25).
- ☐ Check the brake system (Section 26).
- ☐ Check the doors and bonnet, and lubricate their hinges and locks (Section 27).
- ☐ Check the condition of the bodywork and all exterior trim (Section 28).
- ☐ Check the security of all roadwheel nuts (Section 29).
- ☐ Road test (Section 30).
- ☐ Check the level of the automatic transmission fluid after road test (Section 31).

Every 24 000 miles (40 000 km) or 2 years, whichever occurs first

- ☐ Renew the spark plugs (models with emission control equipment) (Section 11).
- ☐ Renew the air cleaner filter element (models with emission control equipment) (Section 12).
- ☐ Check the condition and tension of the timing belt (Section 32).
- ☐ Check the Positive Crankcase Ventilation system (Section 33).
- ☐ Renew the fuel filter (Section 34).
- ☐ Renew the automatic transmission fluid (Section 35).
- ☐ Renew the brake fluid (Section 36).
- ☐ Renew the manual transmission oil (Section 37).
- ☐ Renew the coolant (Section 38).

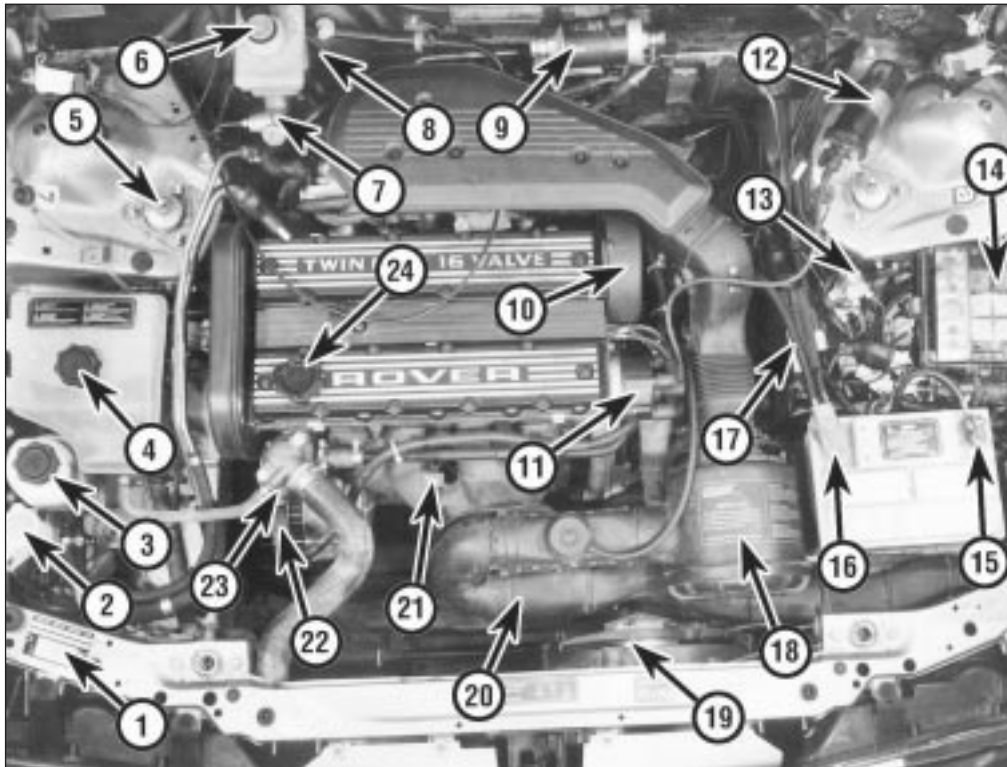
Every 48 000 miles (80 000 km)

- ☐ Renew the timing belt (Section 39).

Every 60 000 miles (100 000 km) or 5 years, whichever occurs first

- ☐ Renew the braking system rubber seals (recommendation only) (Section 40).
- ☐ Check the operation of the emission control equipment (Section 41).

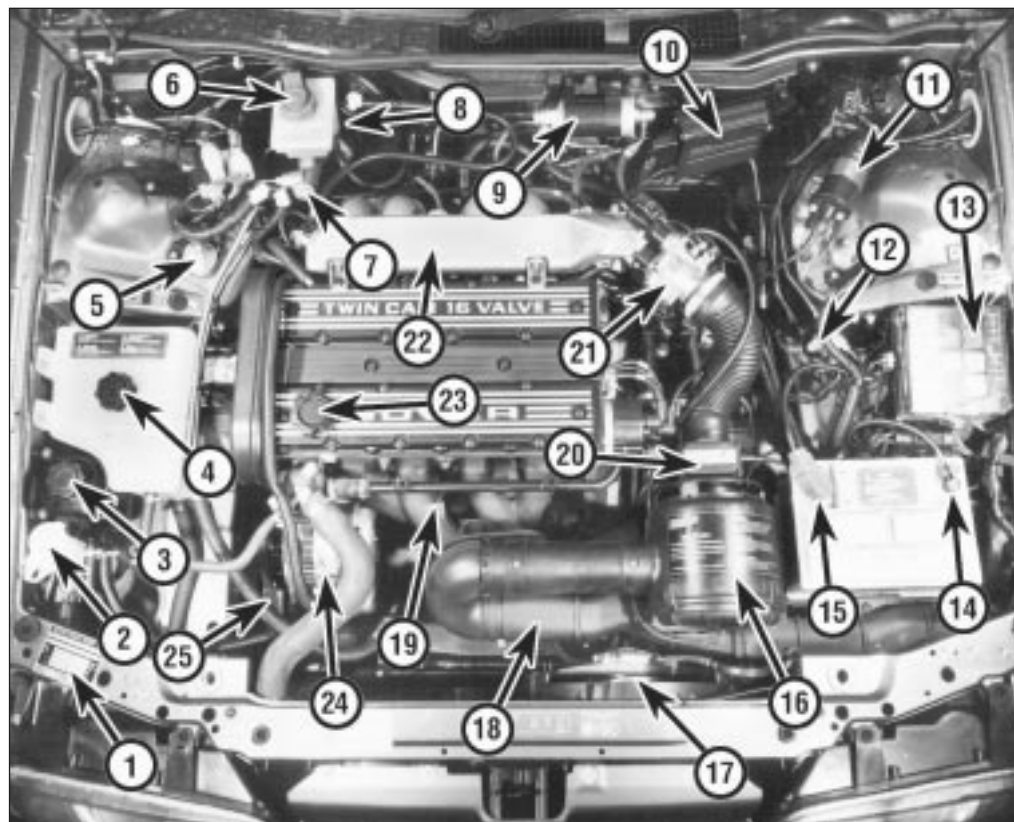
Engine compartment component locations - 4-cylinder engine models with single-point fuel injection



- 1 Vehicle identification plate
- 2 Screen washer reservoir filler
- 3 Power steering fluid reservoir filler
- 4 Cooling system expansion tank filler
- 5 Front shock absorber top mounting
- 6 Brake and clutch fluid reservoir filler
- 7 Brake master cylinder
- 8 Vacuum servo unit
- 9 Fuel filter
- 10 Power steering pump drivebelt (early models)
- 11 Distributor cap
- 12 Ignition coil
- 13 Brake pressure reducing valve
- 14 Fuse and relay box
- 15 Battery negative terminal
- 16 Battery positive terminal
- 17 Ignition/fuel ECU
- 18 Air cleaner assembly
- 19 Radiator cooling fan
- 20 Air cleaner intake trunking
- 21 Engine oil dipstick
- 22 Alternator
- 23 Thermostat housing
- 24 Engine oil filler cap

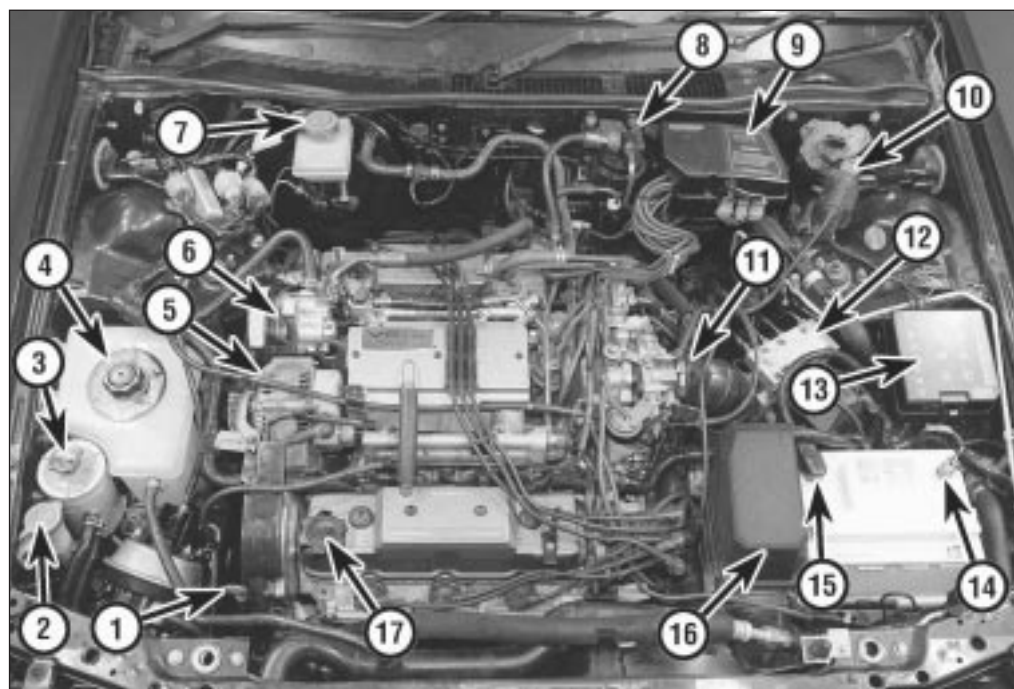
1.6 Maintenance and servicing

Engine compartment component locations - 4-cylinder engine models with multi-point fuel injection



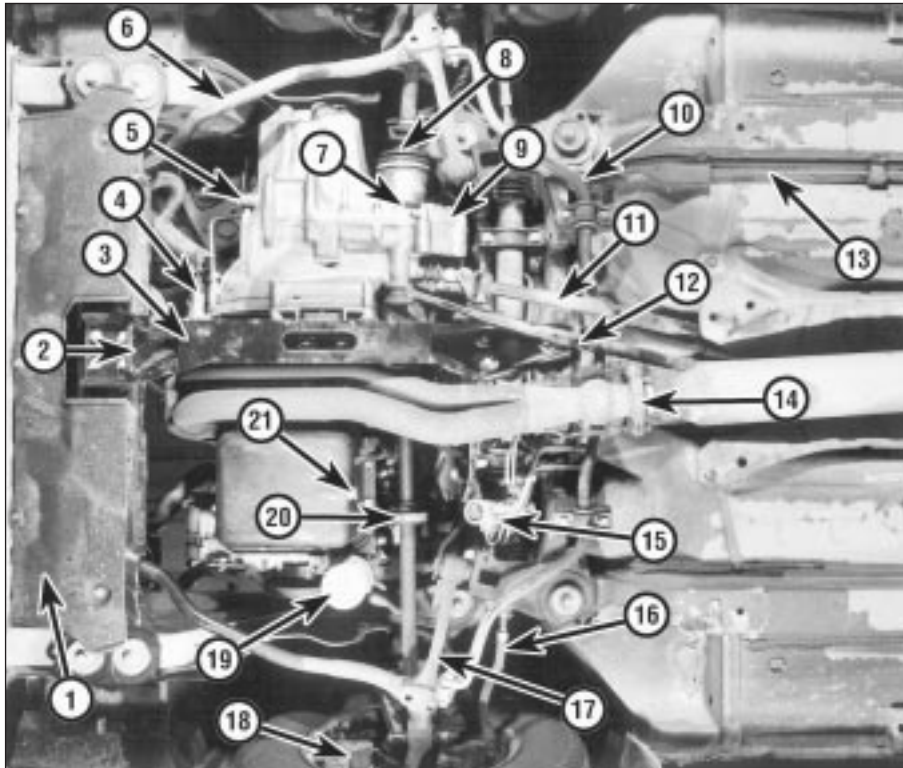
- 1 Vehicle identification plate
- 2 Screen washer reservoir filler
- 3 Power steering fluid reservoir filler
- 4 Cooling system expansion tank filler
- 5 Front shock absorber top mounting
- 6 Brake and clutch fluid reservoir filler
- 7 Brake master cylinder
- 8 Vacuum servo unit
- 9 Fuel filter
- 10 Ignition system ECU
- 11 Ignition coil
- 12 Brake pressure reducing valve
- 13 Fuse and relay box
- 14 Battery negative terminal
- 15 Battery positive terminal
- 16 Air cleaner assembly
- 17 Radiator cooling fan
- 18 Air cleaner intake trunking
- 19 Engine oil dipstick
- 20 Airflow meter
- 21 Throttle housing
- 22 Plenum chamber
- 23 Engine oil filler cap
- 24 Alternator
- 25 Power steering pump (later models)

Engine compartment component locations - V6 engine models



- 1 Engine oil dipstick
- 2 Screen washer reservoir filler
- 3 Power steering fluid reservoir filler
- 4 Cooling system expansion tank filler
- 5 Alternator
- 6 Power steering pump
- 7 Brake and clutch fluid reservoir filler
- 8 Fuel filter
- 9 Control box
- 10 Ignition coil
- 11 Throttle body
- 12 ABS modulator
- 13 Fuse and relay box
- 14 Battery negative terminal
- 15 Battery positive terminal
- 16 Air cleaner assembly
- 17 Engine oil filler cap

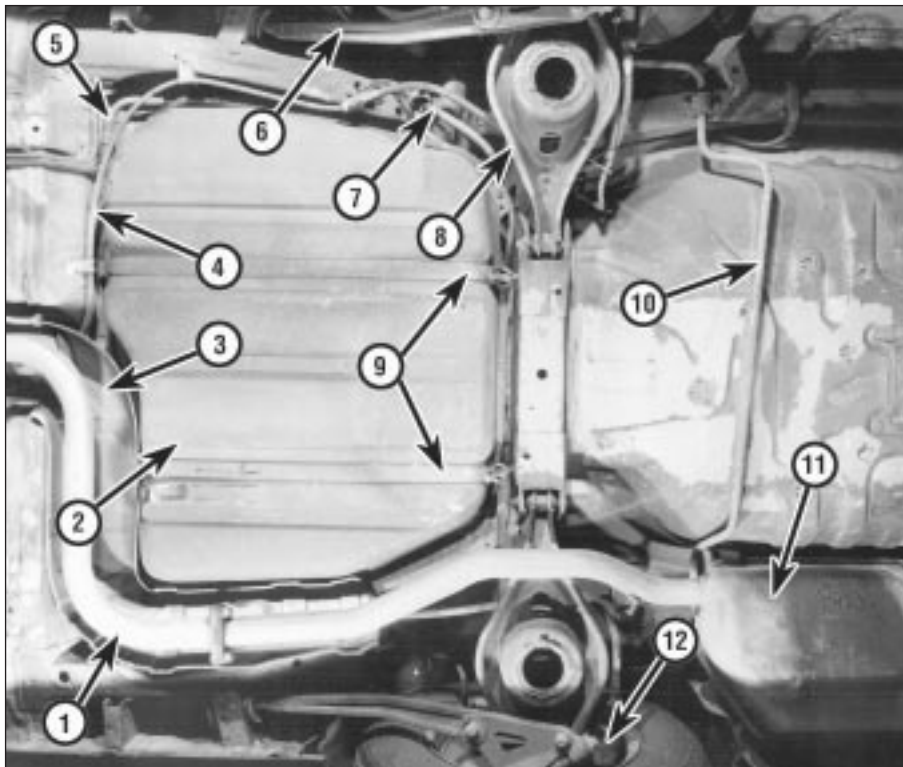
Underside view at front end showing component locations on 4-cylinder engine models



- 1 Engine undertray
- 2 Front towing eye
- 3 Longitudinal support member
- 4 Clutch slave cylinder
- 5 Reversing light switch
- 6 Front tie-bar
- 7 Transmission drain plug
- 8 Inner constant velocity joint
- 9 Transmission filler plug
- 10 Front anti-roll bar
- 11 Gearchange rod
- 12 Steady rod
- 13 Fuel pipes
- 14 Exhaust section flange joint
- 15 Power steering gear
- 16 Steering track rod
- 17 Front lower suspension arm
- 18 Brake caliper
- 19 Oil filter
- 20 Driveshaft damper
- 21 Engine oil drain plug

1

Underside view at rear end



- 1 Exhaust intermediate section
- 2 Fuel tank
- 3 Exhaust rear heat shield
- 4 Handbrake cable
- 5 Fuel pipes
- 6 Trailing link
- 7 Fuel filler neck connection
- 8 Transverse link
- 9 Fuel tank retaining straps
- 10 Rear anti-roll bar
- 11 Rear silencer
- 12 Brake caliper

Maintenance procedures

1 Introduction

This Chapter is designed to help the home mechanic maintain the Rover 800 Series models for peak performance, economy, safety and long life.

Contained in this Chapter is a master maintenance schedule, followed by Sections dealing specifically with each item on the schedule. Visual checks, adjustments, component replacement and other helpful items are included. Refer to the accompanying illustrations of the engine compartment and the underside of the vehicle for the location of various components.

Servicing your Rover in accordance with the mileage/time maintenance schedule and the following Sections will provide it with a

planned maintenance programme, which should result in a long and reliable service life. This is a comprehensive plan, so maintaining some items but not others at the specified service intervals will not produce the same results.

As you service your car, you will discover that many of the procedures can - and should - be grouped together, because of the nature of the particular procedure you're performing, or because of the close proximity to one another of two otherwise-unrelated components.

For example, if the vehicle is raised for any reason, you should inspect the exhaust, suspension, steering and fuel systems while you're under the vehicle. When you're checking the tyres, it makes good sense to check the brakes and wheel bearings, especially if the roadwheels have already been removed.

Finally, let's suppose you have to borrow or

hire a torque wrench. Even if you only need to tighten the spark plugs, you might as well check the torque of as many critical fasteners as time allows.

2 Routine maintenance

The first step of this maintenance programme is to prepare yourself before the actual work begins. Read through all the Sections which are relevant to the procedures you're planning to carry out, then make a list of, and gather together, all the parts and tools you will need to do the job. If it looks as if you might run into problems during a particular segment of some procedure, seek advice from your local parts man or dealer service department.

Weekly checks

3 Fluid level checks



General

1 Fluids are an essential part of the lubrication, cooling, braking and other systems. Because these fluids gradually become depleted and/or contaminated during normal operation of the vehicle, they must be periodically replenished. See "Lubricants, fluids and capacities" at the beginning of this Chapter before adding fluid to any of the following components. **Note:** The vehicle must be on level ground before fluid levels can be checked.

Engine oil

2 The engine oil level is checked with a dipstick located at the front of the engine in the centre, or on the right-hand side (see illustration). The dipstick extends through a metal tube, from which it protrudes down into the sump at the bottom of the engine.

3 The oil level should be checked before the vehicle is driven, or about 5 minutes after the engine has been switched off. If the level is checked immediately after driving the vehicle, some of the oil will remain in the engine upper components, producing an inaccurate reading.

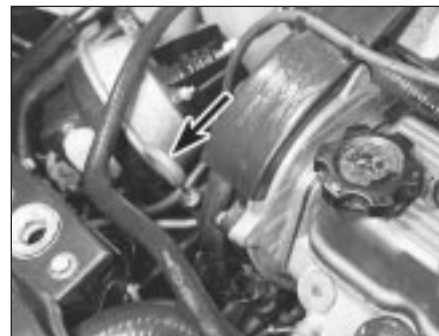
4 Pull the dipstick from the tube, and wipe all the oil from the end with a clean rag or paper towel; note the dipstick's maximum and minimum levels, indicated by holes on the dipstick (see illustration). Insert the clean dipstick all the way back into its metal tube,

and pull it out again. Observe the oil on the end of the dipstick; its level should be between these two holes.

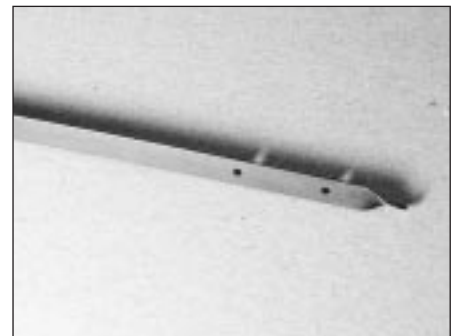
5 Do not allow the level to drop below the minimum level notch, or oil starvation may cause engine damage. Conversely, overfilling

the engine (adding oil above the maximum level notch) may cause oil-fouled spark plugs, oil leaks or oil seal failures.

6 The oil filler cap is screwed into the right-hand front end of the valve cover; unscrew it to add oil (see illustrations). When topping-



3.2 Engine oil dipstick location (arrowed) on V6 engines



3.4 Note the dipstick's maximum and minimum levels, indicated by holes on the dipstick



3.6a Topping up the engine oil on 4-cylinder engines . . .



3.6b . . . and on V6 engines

up, use only the correct grade and type of oil, as given in the "Lubricants, fluids and capacities" Section of this Chapter; use a funnel if necessary to prevent spills. After adding the oil, refit the filler cap hand-tight. Start the engine, and allow it to idle while the oil is redistributed around the engine - while you are waiting, look carefully for any oil leaks, particularly around the oil filter or drain plug. Stop the engine; check the oil level again, after the oil has had enough time to drain from the upper block and cylinder head galleries.

7 Checking the oil level is an important preventive maintenance step. A continually-dropping oil level indicates oil leakage through damaged seals and from loose connections, or oil consumption past worn piston rings or valve guides. If the oil looks milky in colour, or has water droplets in it, the cylinder head gasket may be blown - the engine's compression pressure should be checked immediately (see Chapter 2). The condition of the oil should also be checked. Each time you check the oil level, slide your thumb and index finger up the dipstick before wiping off the oil. If you see small dirt or metal particles clinging to the dipstick, the oil should be changed.

Coolant



Warning: DO NOT attempt to remove the expansion tank filler cap, or to disturb any part of the cooling system, while it or the engine is hot, as there is a very great risk of scalding.

8 All vehicles covered by this manual are equipped with a sealed, pressurised cooling system. A translucent plastic expansion tank, located on the right-hand side of the engine compartment, is connected by a hose to the thermostat housing or radiator top hose. As the coolant heats up during engine operation, surplus coolant passes through the connecting hose into the expansion tank. As the engine cools, the coolant is automatically drawn back into the cooling system's main components, to maintain the correct level.

9 While the coolant level must be checked regularly, remember that it will vary with the temperature of the engine. When the engine is cold, the level should be up to the pipe outlet on the side of the tank, but once the engine has warmed up, the level may rise to above this level.

10 For an accurate check of the coolant level, the engine must be cold and the level must be up to the pipe outlet. If it is below this level, the coolant must be topped-up as follows.

11 First prepare a sufficient quantity of coolant mixture, using clean, soft water and antifreeze of the recommended type, in the specified mixture ratio. If only a small amount of coolant is required to bring the system up to the proper level, plain water can be used, but repeatedly doing this will dilute the antifreeze/water solution in the system, reducing the protection it should provide against freezing and corrosion. To maintain

the specified antifreeze/water ratio, it is essential to top-up the coolant level with the correct mixture, as described here. Use only ethylene/glycol type antifreeze, and *do not* use supplementary inhibitors or additives.



Warning: Never remove the expansion tank filler cap when the engine is running, or has just been switched off, as the cooling system will be hot, and the consequent escaping steam and scalding coolant could cause serious injury.

12 If topping-up is necessary, wait until the system has cooled completely (or at least 10 minutes after switching off the engine, if lack of time means it is absolutely necessary to top-up while the engine may still be warm). Wrap a thick cloth around the expansion tank filler cap, and unscrew it one full turn. If any hissing is heard as steam escapes, wait until the hissing ceases, indicating that pressure is released, then slowly unscrew the filler cap until it can be removed. If more hissing sounds are heard, wait until they have stopped before unscrewing the filler cap completely. At all times, keep your face, hands and other exposed skin well away from the filler opening.

13 When the filler cap has been removed, add coolant to bring the level up to the outlet pipe level (see illustration). Refit the cap, tightening it securely.

14 With this type of cooling system, the addition of coolant should only be necessary at very infrequent intervals. If topping-up is regularly required, or if the coolant level drops within a short time after replenishment, there may be a leak in the system.

15 Inspect the radiator, hoses, expansion tank filler cap, radiator drain plug and water pump. If no leak is evident, have the filler cap and the entire system pressure-tested by your dealer or garage; this will usually show up a small leak not otherwise visible.

Windscreen/tailgate and headlight washer fluid

16 Fluid for the windscreen/tailgate/headlight washer system is stored in a plastic reservoir, the filler neck of which is located at the right-hand front corner of the engine compartment.

17 To check the fluid level, release the cap and observe the level in the reservoir by looking down the filler neck. In milder

climates, plain water can be used to top-up the reservoir, but the reservoir should be kept no more than two-thirds full, to allow for expansion should the water freeze. In colder climates, the use of a specially-formulated windscreen washer fluid, available at your dealer or any car accessory shop, will help lower the freezing point of the fluid. *Do not* use regular (engine) antifreeze - it will damage the vehicle's paintwork.

Battery electrolyte

18 On models not equipped with a sealed battery (see Section 9), check the electrolyte level of all six battery cells. The level must be approximately 10 mm above the plates; this may be shown by maximum and minimum level lines marked on the battery's casing. If the level is low, use a coin to release the filler/vent cap, and add distilled water. Install and retighten the cap.

Caution: Overfilling the cells may cause electrolyte to spill over during periods of heavy charging, causing corrosion or damage. Refer to the warning at the beginning of Section 9.

Brake fluid

19 The brake fluid reservoir is located on the top of the brake master cylinder, attached to the front of the vacuum servo unit. The "MAX" and "MIN" marks are indicated on the side of the translucent reservoir, and the fluid level should be maintained between these marks at all times.

20 The brake fluid inside the reservoir is readily visible. With the vehicle on level ground, the level should be on or just below the "MAX" mark.

21 Progressive wear of the brake pad linings causes the level of the brake fluid to gradually fall; however, when the brake pads are renewed, the original level of the fluid is restored. It is not therefore necessary to top-up the level to compensate for this minimal drop, but the level must never be allowed to fall below the minimum mark.

22 If topping-up is necessary, first wipe the area around the filler cap with a clean rag before removing the cap - do not invert the cap after removal. When adding fluid, pour it carefully into the reservoir, to avoid spilling it on surrounding painted surfaces (see illustration).



3.13 Topping up the cooling system



3.22 Topping up the brake master cylinder reservoir



4.2 Checking the tyre tread depth with a depth gauge

Be sure to use only the specified hydraulic fluid (see "Lubricants, fluids and capacities" at the start of this Chapter) since mixing different types of fluid can cause damage to the system.



Warning: Brake hydraulic fluid can harm your eyes and damage painted surfaces, so use extreme caution when handling and pouring it. Wash off spills immediately with plenty of water. Do not use fluid that has been standing open for some time, as it absorbs moisture from the air. Excess moisture can cause corrosion and a dangerous loss of braking effectiveness.

23 When adding fluid, it is a good idea to inspect the reservoir for contamination. The system should be drained and refilled if deposits, dirt particles or contamination are seen in the fluid.

24 After filling the reservoir to the correct level, make sure that the cap is refitted

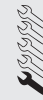
securely, to avoid leaks and the entry of foreign matter.

25 If the reservoir requires repeated replenishing to maintain the correct level, this is an indication of an hydraulic leak somewhere in the system, which should be investigated immediately.

Power steering fluid

26 See Section 5 of this Chapter.

4 Tyre and tyre pressure checks



1 Periodic inspection of the tyres may spare you from the inconvenience of being stranded with a flat tyre. It can also provide you with vital information regarding possible problems in the steering and suspension systems before major damage occurs.

2 The current tyres are equipped with tread wear indicator (TWI) bands, which will appear when the tread depth reaches approximately 1.6 mm. Most tyres have a mark around the tyre at regular intervals to indicate the location of the tread wear indicators, the mark being TWI, an arrow, or the tyre manufacturer's symbol. Tread wear can also be monitored with a simple inexpensive device known as a tread depth indicator gauge (see illustration).

3 Ensure that tyre pressures are checked regularly and maintained correctly (see the Specifications at the beginning of this Chapter for pressures). Checking should be carried out with the tyres cold, and *not* immediately after

the vehicle has been in use. If the pressures are checked with the tyres hot, an apparently-high reading will be obtained, owing to heat expansion. *Under no circumstances* should an attempt be made to reduce the pressures to the quoted cold reading in this instance, or effective under-inflation will result. Most garage forecourts have a pressure line which combines a gauge to check and adjust the tyre pressures, but they may vary in accuracy, due to general misuse and abuse. It therefore pays to carry a good-quality tyre pressure gauge in the vehicle, to make the checks required and ensure pressure accuracy.

4 Note any abnormal tread wear (see illustration). Tread pattern irregularities such as feathering, flat spots, and more wear on one side than the other, are indications of front wheel alignment and/or balance problems. If any of these conditions are noted, they should be rectified as soon as possible.

5 Under-inflation will cause overheating of the tyre, owing to excessive flexing of the casing, and the tread will not sit correctly on the road surface. This will cause a consequent loss of adhesion and excessive wear, as well as the danger of sudden tyre failure due to heat build-up.

6 Over-inflation will cause rapid wear of the centre part of the tyre tread, coupled with reduced adhesion, harder ride, and the danger of damage occurring in the tyre casing.

7 Regularly check the tyres for damage in the form of cuts or bulges, especially in the sidewalls. Remove any nails or stones

Tyre tread wear patterns



Shoulder Wear

Underinflation (wear on both sides)

Under-inflation will cause overheating of the tyre, because the tyre will flex too much, and the tread will not sit correctly on the road surface. This will cause a loss of grip and excessive wear, not to mention the danger of sudden tyre failure due to heat build-up.

Check and adjust pressures

Incorrect wheel camber (wear on one side)

Repair or renew suspension parts

Hard cornering

Reduce speed!



Centre Wear

Overinflation

Over-inflation will cause rapid wear of the centre part of the tyre tread, coupled with reduced grip, harsher ride, and the danger of shock damage occurring in the tyre casing.

Check and adjust pressures

If you sometimes have to inflate your car's tyres to the higher pressures specified for maximum load or sustained high speed, don't forget to reduce the pressures to normal afterwards.



Uneven Wear

Front tyres may wear unevenly as a result of wheel misalignment. Most tyre dealers and garages can check and adjust the wheel alignment (or "tracking") for a modest charge.

Incorrect camber or castor

Repair or renew suspension parts

Malfunctioning suspension

Repair or renew suspension parts

Unbalanced wheel

Balance tyres

Incorrect toe setting

Adjust front wheel alignment

Note: The feathered edge of the tread which typifies toe wear is best checked by feel.

embedded in the tread, before they penetrate the tyre to cause deflation. If removal of a nail reveals that the tyre has been punctured, refit the nail, so that its point of penetration is marked. Then immediately change the wheel, and have the tyre repaired by a tyre dealer. Do not drive on a tyre in such a condition. If in any doubt as to the possible consequences of any damage found, consult your local tyre dealer for advice.

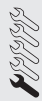
8 General tyre wear is influenced to a large degree by driving style - harsh braking and acceleration, or fast cornering, will all produce more rapid tyre wear. Interchanging of tyres may result in more even wear; however, it is worth bearing in mind that if this is completely effective, the added expense is incurred of replacing simultaneously a complete set of tyres, which may prove financially restrictive for many owners.

9 Front tyres may wear unevenly as a result of wheel misalignment. The front wheels should always be correctly aligned according to the settings specified by the vehicle manufacturer.

10 Don't forget to check the spare tyre for condition and pressure.

11 Legal restrictions apply to many aspects of tyre fitting and usage, and in the UK this information is contained in the Motor Vehicle Construction and Use Regulations. It is suggested that a copy of these regulations is obtained from your local police, if in doubt as to current legal requirements with regard to tyre type and condition, minimum tread depth, etc.

5 Power steering fluid level check



1 The power steering fluid reservoir is located on the right-hand side of the engine compartment next to the cooling system expansion tank.

2 For the fluid level check on 4-cylinder models, the power steering system must be cold; on V6 models, it may be either hot or cold.



5.5 Topping up the power steering fluid reservoir

3 Use a clean rag to wipe the filler cap and the surrounding area, to prevent foreign matter from entering the system. Unscrew and remove the filler cap.

4 Check that the fluid level is up to the "MAX" mark on the dipstick. On V6 engine models, there is a scale on both sides of the dipstick, one for hot checking and one for cold checking.

5 Top-up the level to the "MAX" mark, using the grade of fluid specified at the beginning of this Chapter (see illustration). Be careful not to introduce dirt into the system, and do not overfill. The need for frequent topping-up indicates a leak, which should be investigated.

6 Refit the filler cap.

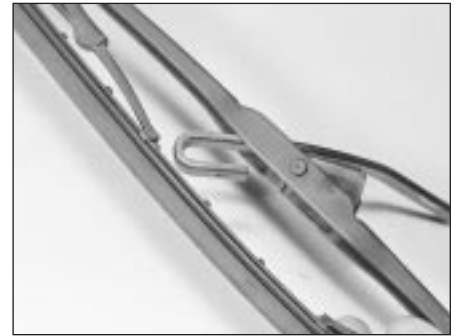
6 Windscreen/tailgate and headlight washer system and wiper blade check



1 The windscreen and tailgate wiper and blade assembly should be inspected at the specified intervals for damage, loose components, and cracked or worn blade elements.

2 Road film can build up on the wiper blades and affect their efficiency, so they should be washed regularly with a mild detergent solution.

3 The action of the wiping mechanism can loosen bolts, nuts and fasteners, so they



6.6 Remove the windscreen wiper blade by depressing the catch on the blade, then withdraw the blade assembly off the arm

should be checked and tightened, as necessary, at the same time as the wiper blades are checked.

4 If the wiper blade elements are cracked, worn or warped, or no longer clean adequately, they should be replaced with new ones.

5 Switch on the ignition, and the windscreen wipers, then park the wipers vertically on the windscreen while they are still running. Lift the wiper arm and blade away from the glass.

6 To remove the wiper blade, depress the catch on the blade attachment, then withdraw the blade assembly off the arm (see illustration).

7 The tailgate wiper blade is removed in the same way, but it is not necessary to park it in the centre of the glass prior to removal.

8 If the metal part of the wiper blade is in good condition, it may be possible to renew the rubber insert separately. The insert can be obtained from a car accessory shop and, according to type, it may need to be cut to the correct length before sliding into the clips.

9 Refit the wiper blade assembly using a reversal of the removal procedure, making sure that it fully engages with the spring clip.

10 Check that the washer jets direct the fluid onto the upper part of the windscreen/tailgate, and if necessary adjust the small sphere on the jet with a pin. Note that the headlight washer jets are of the fixed type and cannot be adjusted.

Every 6000 miles or 6 months, whichever occurs first

7 Engine oil and filter change



Frequent oil changes are the best preventive maintenance the home mechanic can give the engine, because ageing oil becomes diluted and contaminated, which leads to premature engine wear.

1 Make sure that you have all the necessary tools before you begin this procedure. You should also have plenty of rags or newspapers handy, for mopping up any spills.

2 To avoid any possibility of scalding, and to protect yourself from possible skin irritants and other harmful contaminants in used engine oils, it is advisable to wear gloves when carrying out this work.

3 Access to the underside of the vehicle is greatly improved if the vehicle can be lifted on a hoist, driven onto ramps, or supported by axle stands.



Warning: Do not work under a vehicle which is supported only by an hydraulic or scissor-type jack, or by bricks, blocks of wood, etc.

4 If this is your first oil change, get under the vehicle and familiarise yourself with the position of the engine oil drain plug location in the sump. The engine and exhaust components will be warm during the actual work, so try to anticipate any potential problems while the engine and accessories are cool.

5 The oil should preferably be changed when



7.9 Using a filter removal tool, unscrew the oil filter from the housing

the engine is still at normal operating temperature, just after a run; warm oil and sludge will flow out more easily. Park the vehicle on firm, level ground, apply the handbrake, then select 1st or reverse gear (manual transmission) or the "P" position (automatics). Open the bonnet and remove the engine oil filler cap from the valve cover, then remove the oil level dipstick.

6 Raise the front of the vehicle, and support it securely on axle stands. Remove the front right-hand roadwheel, then remove the plastic panel under the wheelarch to provide additional access to the oil filter.



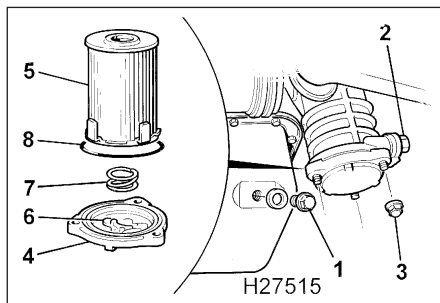
Warning: To avoid personal injury, never get beneath the vehicle when it is supported by only by a jack. The jack provided

with your vehicle is designed solely for raising the vehicle to remove and refit the roadwheels. Always use axle stands to support the vehicle when it becomes necessary to place your body underneath the vehicle.

7 Being careful not to touch the hot exhaust components, place the drain pan under the drain plug, and unscrew the plug. If possible, try to keep the plug pressed into the sump while unscrewing it by hand the last couple of turns. As the plug releases from the threads, move it away sharply, so the stream of oil issuing from the sump runs into the pan, not up your sleeve! Allow the oil to drain into the drain pan, and check the condition of the plug's sealing washer; renew it if worn or damaged.

8 Allow some time for the old oil to drain, noting that it may be necessary to reposition the pan as the oil flow slows to a trickle. When the oil has completely drained, wipe clean the drain plug and its threads in the sump and refit the plug, tightening it securely.

9 On all engines except the 2.5 litre V6, the oil filter renewal procedure is relatively simple; proceed as follows. Reposition the drain pan under the oil filter then, using a filter removal tool, unscrew the oil filter from the housing; be prepared for some oil spillage (see illustration). Check the old filter to make sure that the rubber sealing ring hasn't stuck to the engine; if it has, carefully remove it. Withdraw



7.12 Oil filter cartridge components on 2.5 litre V6 engines

- 1 Engine oil drain plug
- 2 Oil filter housing drain plug
- 3 Baseplate retaining nuts
- 4 Baseplate
- 5 Oil filter cartridge
- 6 Spring locating lugs
- 7 Spring
- 8 Sealing ring

the filter, taking care to spill as little oil as possible.

10 Using a clean, lint-free rag, wipe clean the cylinder block around the filter mounting. If there are no specific instructions supplied with it, fit a new oil filter as follows. Apply a light coating of clean engine oil to the filter's sealing ring. Screw the filter into position on the engine until it seats, then tighten it through a further half- to three-quarters of a turn *only*. Tighten the filter by hand only - do not use any tools.

11 On 2.5 litre V6 engines the filter is a cartridge contained within the filter housing.

12 Reposition the drain pan under the filter assembly and first, drain the filter by unscrewing the drain plug on the side of the housing (see illustration). Refit the plug when the filter has drained. Now undo the three retaining nuts and withdraw the baseplate from the filter assembly. As you do this be prepared for oil spillage and catch the filter cartridge and its components, which will fall out and probably land in the oil as the baseplate is removed. Retrieve the filter lower spring and the sealing ring on the baseplate.

13 Clean the baseplate thoroughly and wipe around the inside of the filter housing using a clean lint-free rag.

14 Locate the new sealing ring in the baseplate, then fit the spring to the locating lugs in the baseplate. Locate the filter in the housing, and refit the baseplate. Screw on the three nuts and tighten them securely.

15 Remove the old oil and all tools from under the vehicle, refit the access panel and roadwheel, then lower the vehicle to the ground.

16 Refill the engine with oil, using the correct grade and type of oil, as given in the "Lubricants, fluids and capacities" Section of this Chapter. Pour in half the specified quantity of oil first, then wait a few minutes for the oil to fall to the sump. Continue adding oil a small quantity at a time, until the level is up

to the lower notch on the dipstick. Adding approximately 0.5 to 1.0 litre will raise the level to the dipstick's upper notch.

17 Start the engine. The oil pressure warning light will take a few seconds to go out while the new filter fills with oil; do not race the engine while the light is on. Run the engine for a few minutes, while checking for leaks around the oil filter seal and the drain plug.

18 Switch off the engine, and wait a few minutes for the oil to settle in the sump once more. With the new oil circulated and the filter now completely full, recheck the level on the dipstick, adding more oil as necessary.

19 Dispose of the used engine oil safely, with reference to "General repair procedures" in the Reference Section of this manual.

8 Underbonnet check for fluid leaks and hose condition



Caution: Renewal of air conditioning hoses must be left to a dealer service

department or air conditioning specialist who has the equipment to depressurise the system safely. Never remove air conditioning components or hoses until the system has been depressurised.

General

1 High temperatures in the engine compartment can cause the deterioration of the rubber and plastic hoses used for engine, accessory and emission systems operation. Periodic inspection should be made for cracks, loose clamps, material hardening and leaks.

2 Carefully check the large top and bottom radiator hoses, along with the other smaller-diameter cooling system hoses and metal pipes; do not forget the heater hoses/pipes which run from the engine to the bulkhead. Inspect each hose along its entire length, replacing any that is cracked, swollen or shows signs of deterioration. Cracks may become more apparent if the hose is squeezed.

3 Make sure that all hose connections are tight. A leak in the cooling system will usually show up as white- or rust-coloured deposits on the areas adjoining the leak; if the spring clamps that are used to secure the hoses in this system appear to be slackening, they should be renewed to prevent the possibility of leaks.

4 Some other hoses are secured to their fittings with clamps. Where clamps are used, check that they haven't lost their tension, allowing the hose to leak. If clamps aren't used, make sure the hose has not expanded and/or hardened where it slips over the fitting, allowing it to leak.

5 Check all fluid reservoirs, filler caps, drain plugs and fittings etc, looking for any signs of leakage of oil, transmission and/or brake hydraulic fluid, coolant and power steering

fluid. If the vehicle is regularly parked in the same place, close inspection of the ground underneath it will soon show any leaks; ignore the puddle of water which will be left if the air conditioning system is in use. As soon as a leak is detected, its source must be traced and rectified. Where oil has been leaking for some time, it is usually necessary to use a steam cleaner, pressure washer or similar, to clean away the accumulated dirt, so that the exact source of the leak can be identified.

Vacuum hoses

6 It's quite common for vacuum hoses, especially those in the emissions system, to be numbered or colour-coded, or to be identified by coloured stripes moulded into them. Various systems require hoses with different wall thicknesses, collapse resistance and temperature resistance. When renewing hoses, be sure the new ones are made of the same material.

7 Often the only effective way to check a hose is to remove it completely from the vehicle. If more than one hose is removed, be sure to label the hoses and fittings to ensure correct installation.

8 When checking vacuum hoses, be sure to include any plastic T-fittings in the check. Inspect the fittings for cracks, and check the hose where it fits over the fitting

for distortion, which could cause leakage. 9 A small piece of vacuum hose (quarter-inch inside diameter) can be used as a stethoscope to detect vacuum leaks. Hold one end of the hose to your ear, and probe around vacuum hoses and fittings, listening for the "hissing" sound characteristic of a vacuum leak.



Warning: When probing with the vacuum hose stethoscope, be very careful not to come into contact with moving engine

components such as the auxiliary drivebelt, radiator electric cooling fan, etc.

Fuel hoses



Warning: There are certain precautions which must be taken when inspecting or servicing fuel system

components. Work in a well-ventilated area, and do not allow open flames (cigarettes, appliance pilot lights, etc.) or bare light bulbs near the work area. Mop up any spills immediately, and do not store fuel-soaked rags where they could ignite.

10 Check all fuel hoses for deterioration and chafing. Check especially for cracks in areas where the hose bends, and also just before fittings, such as where a hose attaches to the fuel filter.

11 High-quality fuel line, usually identified by the word "Fluoroelastomer" printed on the hose, should be used for fuel line renewal. Never, under any circumstances, use unreinforced vacuum line, clear plastic tubing or water hose for fuel lines.

12 Spring-type clamps are commonly used on fuel lines. These clamps often lose their tension over a period of time, and can be "sprung" during removal. Replace all spring-type clamps with screw clamps whenever a hose is replaced.

Metal lines

13 Sections of metal piping are often used for fuel line between the fuel filter and the engine. Check carefully to be sure the piping has not been bent or crimped, and that cracks have not started in the line.

14 If a section of metal fuel line must be renewed, only seamless steel piping should be used, since copper and aluminium piping don't have the strength necessary to withstand normal engine vibration.

15 Check the metal brake lines where they enter the master cylinder and ABS hydraulic unit (if used) for cracks in the lines or loose fittings. Any sign of brake fluid leakage calls for an immediate and thorough inspection of the brake system.

Every 12 000 miles or 12 months, whichever occurs first

9 Cooling system check



1 The engine should be cold for the cooling system checks, so perform the following procedure before driving the vehicle, or after it has been shut off for at least three hours.

2 Remove the expansion tank filler cap (Section 3), and clean it thoroughly inside and out with a rag. Clean the filler neck on the expansion tank. The presence of rust or corrosion in the filler neck indicates that the coolant should be changed. The coolant inside the expansion tank should be relatively clean and transparent. If it is rust-coloured, drain and flush the system, and refill with a fresh coolant mixture.

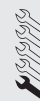
3 Carefully check the radiator hoses and heater hoses as described in Section 8.

4 Inspect all other cooling system components (joint faces, etc.) for leaks. A leak in the cooling system will usually show up as white- or rust-coloured deposits on the area adjoining the leak. Where any problems of this nature are found on system components, renew the component or gasket with reference to Chapter 3.

5 Clean the front of the radiator with a soft brush to remove all insects, leaves, etc, embedded in the radiator fins. Be careful not

to damage the radiator fins, or cut your fingers on them.

10 Accelerator cable and linkage check and lubrication



1 From within the engine compartment check the condition of the accelerator cable ensuring that it isn't kinked or trapped behind any other components or fittings. Make sure that all clips and cable ties are in place and that the cable properly supported. Where cruise control is fitted, check the cruise control operating cable in the same way.

2 Operate the throttle by means of the accelerator pedal and make sure that the action is smooth without notchiness or evidence of binding.

3 Finally, lubricate the throttle linkage and the accelerator pedal pivot with a few drops of light oil.

11 Spark plug renewal



Note: Spark plug renewal at this service interval is only necessary on certain engines without emission control equipment. On all

other engines the recommended interval for spark plug renewal is every 24 000 miles or 2 years. Consult the spark plug manufacturer or a Rover dealer for their advice concerning renewal intervals.

Spark plug check and renewal

1 It is vital for the correct running, full performance and proper economy of the engine that the spark plugs perform with maximum efficiency. The most important factor in ensuring this, is that the plugs fitted are appropriate for the engine. The suitable type is given in the Specifications Section at the beginning of this Chapter, or in the vehicle's Owner's Handbook. If this type is used and the engine is in good condition, the spark plugs should not need attention between scheduled renewal intervals. Spark plug cleaning is rarely necessary, and should not be attempted unless specialised equipment is available, as damage can easily be caused to the firing ends.

2 Spark plug removal and refitting requires a spark plug socket, with an extension which can be turned by a ratchet handle or similar. This socket is lined with a rubber sleeve, to protect the porcelain insulator of the spark plug, and to hold the plug while you insert it into the spark plug hole. You will also need a wire-type feeler gauge, to check and adjust the spark plug electrode gap, and a torque

1•14 Every 12 000 miles



11.2 Tools required for spark plug removal, gap adjustment and refitting

wrench to tighten the new plugs to the specified torque (see illustration).

3 To remove the spark plugs, first open the bonnet; the plugs are easily reached at the top of the engine or on the front and rear facing sides. Note how the spark plug (HT) leads are routed and secured by clips, and on some engines, how they're positioned along the channel in the cylinder head cover. To prevent the possibility of mixing up spark plug (HT) leads, it is a good idea to work on one spark plug at a time.

4 If the marks on the original-equipment spark plug (HT) leads cannot be seen, mark the leads 1 to 4 (or 1 to 6), to correspond to the cylinder the lead serves (No 1 cylinder is at the timing belt end of the engine on 4-cylinder engines, and at the timing belt end of the engine on the rear bank under the brake master cylinder on V6 engines).

5 On 4-cylinder engines, undo the bolts securing the spark plug cover to the centre of the cylinder head, noting the accelerator cable support bracket on early engines. Lift off the cover and again, on early engines, release the HT lead grommet from the end of the cover.

6 On all engines, pull the leads from the plugs by gripping the rubber boot, not the lead, otherwise the lead connection may be fractured.

7 Unscrew the spark plugs, ensuring that the socket is kept in alignment with each plug - if the socket is forcibly moved to either side, the porcelain top of the plug may be broken off. If any undue difficulty is encountered when unscrewing any of the spark plugs, carefully

check the cylinder head threads and tapered sealing surfaces for signs of wear, excessive corrosion or damage; if any of these conditions is found, seek the advice of a dealer as to the best method of repair.

8 As each plug is removed, examine it as follows - this will give a good indication of the condition of the engine. If the insulator nose of the spark plug is clean and white, with no deposits, this is indicative of a weak mixture.

9 If the tip and insulator nose are covered with hard black-looking deposits, then this is indicative that the mixture is too rich. Should the plug be black and oily, then it is likely that the engine is fairly worn, as well as the mixture being too rich.

10 If the insulator nose is covered with light tan to greyish-brown deposits, then the mixture is correct, and it is likely that the engine is in good condition.

11 If you are renewing the spark plugs, purchase the new plugs, then check each of them first for faults such as cracked insulators or damaged threads. Note also that, whenever the spark plugs are renewed as a routine service operation, the spark plug (HT) leads should be checked as described below.

12 The spark plug electrode gap is of considerable importance as, if it is too large or too small, the size of the spark and its efficiency will be seriously impaired. The gap should be set to the value given in the Specifications Section of this Chapter. New plugs will not necessarily be set to the correct gap, so they should always be checked before fitting.

13 Special spark plug electrode gap adjusting tools are available from most motor accessory shops.

14 To set the electrode gap, measure the gap with a feeler gauge or adjusting tool, and then bend open, or closed, the outer plug electrode until the correct gap is achieved (see illustrations). The centre electrode should never be bent, as this may crack the insulation and cause plug failure, if nothing worse. If the outer electrode is not exactly over the centre electrode, bend it gently to align them.

15 Before fitting the spark plugs, check that the threaded connector

sleeves at the top of the plugs are tight, and that the plug exterior surfaces and threads are

clean. Brown staining on the porcelain, immediately above the metal body, is quite normal, and does not necessarily indicate a leak between the body and insulator.

16 On installing the spark plugs, first check that the cylinder head thread and sealing surface are as clean as possible; use a clean rag wrapped around a paintbrush to wipe clean the sealing surface. Apply a smear of copper-based grease or anti-seize compound to the threads of each plug, and screw them in by hand where possible.

HAYNES HiNT



Take extra care to enter the plug threads correctly, as the cylinder head is of aluminium alloy - it's often difficult to insert spark plugs into their holes without cross-threading them. To avoid this possibility, fit a short piece of hose over the end of the spark plug. The flexible hose acts as a universal joint, to help align the plug with the plug hole. Should the plug begin to cross-thread, the hose will slip on the spark plug, preventing thread damage.

17 When each spark plug is started correctly on its threads, screw it down until it just seats lightly, then tighten it to the specified torque wrench setting.

18 Reconnect the spark plug (HT) leads in their correct order, using a twisting motion on the boot until it is firmly seated. On 4-cylinder engines, refit the spark cover.

Spark plug (HT) lead and distributor cap check

19 The spark plug (HT) leads should be inspected one at a time, to prevent mixing up



11.14a Measure the spark plug gap with a feeler gauge . . .



11.14b . . . or adjusting tool . . .



11.14c . . . then use the end of the special tool to adjust the gap



12.1a Removing the air cleaner cover . . .



12.1b . . . and element on 4-cylinder engines with single-point fuel injection



12.1c Lift the element out of the housing, together with its support frame on V6 engines

the firing order, which is essential for proper engine operation. Gain access to the leads and disconnect them as described above for the spark plug check and renewal.

20 Check inside the boot for corrosion, which will look like a white crusty powder. Clean this off as much as possible; if it is excessive, or if cleaning leaves the metal connector too badly corroded to be fit for further use, the lead must be renewed. Push the lead and boot back onto the end of the spark plug. The boot should fit tightly onto the end of the plug - if it doesn't, remove the lead and use pliers carefully to crimp the metal connector inside the boot until the fit is snug.

21 Using a clean rag, wipe the entire length of the lead to remove built-up dirt and grease. Once the lead is clean, check for burns, cracks and other damage. Do not bend the lead sharply, because the conductor might break.

22 Inspect the remaining spark plug (HT) leads, ensuring that each is securely fastened at the distributor cap and spark plug when the check is complete. If any sign of arcing, severe connector corrosion, burns, cracks or other damage is noticed, obtain new spark plug (HT) leads, renewing them as a set. If new spark plug leads are to be fitted, remove and refit them one at a time, to avoid mix-ups in the firing order.

23 Refer to Chapter 5 and remove the distributor cap then thoroughly clean it inside and out with a dry lint-free rag.

24 Examine the HT lead segments inside the cap. If they appear badly burned or pitted renew the cap. Also check the carbon brush in the centre of the cap, ensuring that it is free to move and stands proud of its holder. Make sure that there are no sign of cracks or black "tracking" lines running down the inside of the cap, which will also mean renewal if evident. Refit the cap as described in Chapter 5 on completion.

12 Air cleaner element renewal



1 The air cleaner filter element is located in the air cleaner assembly mounted on the left-

hand side of the engine compartment. Undo the retaining screws and/or release the clips, and lift the air cleaner cover, disconnecting the vacuum hose where fitted. Lift the element out of the housing, together with its support frame on V6 engines, and wipe out the housing (see illustrations). Check that no foreign matter is visible, either in the air intake or in the housing.

2 If carrying out a routine service, the element must be renewed regardless of its apparent condition. If you are checking the element for any other reason, inspect its lower surface; if it is oily or very dirty, renew the element. If it is only moderately dusty, it can be re-used by blowing it clean from the upper to the lower surface with compressed air.



Warning: Wear eye protection when using compressed air! Because it is a pleated-paper type filter, it cannot be washed

or re-oiled. If it cannot be cleaned satisfactorily with compressed air, discard and renew it.

Caution: Never drive the vehicle with the air cleaner filter element removed.

Excessive engine wear could result, and backfiring could even cause a fire under the bonnet.

3 Refitting is the reverse of the removal procedure. Ensure that the element and cover are securely seated, so that unfiltered air cannot enter the engine.

13 Electrical system check



1 Check the operation of all external lights and indicators (front and rear).

2 Check for satisfactory operation of the instrument panel, its illumination and warning lights, the switches and their function lights.

3 Check the horn(s) for satisfactory operation.

4 Check all other electrical equipment for satisfactory operation.

5 Check all electrical wiring in the engine compartment for correct routing, and for any signs of physical or heat-damage or chafing.

14 Battery check, maintenance and charging



Warning: Certain precautions must be followed when checking and servicing the battery. Hydrogen gas, which is

highly flammable, is always present in the battery cells, so keep lighted tobacco and all other open flames and sparks away from the battery. The electrolyte inside the battery is actually dilute sulphuric acid, which will cause injury if splashed on your skin or in your eyes. It will also ruin clothes and painted surfaces. When disconnecting the battery, always detach the negative (earth) lead first and connect it last!

Note: Before disconnecting the battery, refer to Section 1 of Chapter 5.

General

1 A routine preventive maintenance programme for the battery in your vehicle is the only way to ensure quick and reliable starts. Before performing any battery maintenance, make sure that you have the proper equipment necessary to work safely around the battery.

2 There are also several precautions that should be taken whenever battery maintenance is performed. Before servicing the battery, always turn the engine and all accessories off, and disconnect the lead from the negative terminal of the battery - see Chapter 5, Section 1.

3 The battery produces hydrogen gas, which is both flammable and explosive. Never create a spark, smoke, or light a match around the battery. Always charge the battery in a well-ventilated area.

4 Electrolyte contains poisonous and corrosive sulphuric acid. Do not allow it to get in your eyes, on your skin, or on your clothes. Never ingest it. Wear protective safety glasses when working near the battery. Keep children away from the battery.

5 Note the external condition of the battery. If the positive terminal and lead clamp on your vehicle's battery is equipped with a plastic

1•16 Every 12 000 miles

cover or rubber protector, make sure that it's not torn or damaged. It should completely cover the terminal. Look for any corroded or loose connections, cracks in the case or cover, or loose hold-down clamps. Check the entire length of each lead for cracks and frayed conductors.

6 If corrosion, which looks like white, fluffy deposits is evident, particularly around the terminals, the battery should be removed for cleaning as described in Chapter 5, Section 2.

7 Clean the lead clamps thoroughly, using a soft wire brush or a terminal cleaner, with a solution of warm water and baking soda. Wash the terminals and the top of the battery case with the same solution, but make sure that the solution doesn't get into the battery. When cleaning the leads, terminals and battery top, wear safety goggles and rubber gloves, to prevent any solution from coming in contact with your eyes or hands. Wear old clothes too - even when diluted, acid splashed onto clothes will burn holes in them. Wash all cleaned areas with plain water.

8 Make sure that the battery tray is in good condition and the hold-down clamp nuts are tight. If the battery is removed from the tray, make sure no parts remain in the bottom of the tray when the battery is refitted. When refitting the hold-down clamp nuts, do not overtighten them.


9 Information on jump starting can be found at the front of this manual. For more detailed battery checking procedures, refer to the Haynes *'Automobile Electrical and Electronic Systems Manual'*.

Cleaning

10 Corrosion on the hold-down components, battery case and surrounding areas can be removed with a solution of water and baking soda. Thoroughly rinse all cleaned areas with plain water.

11 Any metal parts of the vehicle damaged by corrosion should be covered with a zinc-based primer, then painted.

Charging

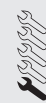
 **Warning: When batteries are being charged, hydrogen gas, which is very explosive and flammable, is produced. Do not smoke, or allow open flames, near a charging or a recently-charged battery. Wear eye protection when near the battery during charging. Also, make sure the charger is unplugged before connecting or disconnecting the battery from the charger.**

12 Slow-rate charging is the best way to restore a battery that's discharged to the point where it will not start the engine. It's also a good way to maintain the battery charge in a vehicle that's only driven a few miles between starts. Maintaining the battery charge is particularly important in winter, when the battery must work harder to start the engine, and electrical accessories that drain the battery are in greater use.

13 It's best to use a one- or two-amp battery charger (sometimes called a "trickle" charger). They are the safest, and put the least strain on the battery. They are also the least expensive. For a faster charge, you can use a higher-ampere charger, but don't use one rated more than 1/10th the amp/hour rating of the battery (ie no more than 5 amps, typically). Rapid boost charges that claim to restore the power of the battery in one to two hours are hardest on the battery, and can damage batteries not in good condition. This type of charging should only be used in emergency situations.

14 The average time necessary to charge a battery should be listed in the instructions that come with the charger. As a general rule, a trickle charger will charge a battery in 12 to 16 hours.

15 Seat belt check



1 Check the seat belts for satisfactory operation and condition. Inspect the webbing for fraying and cuts. Check that they retract smoothly and without binding into their reels.

2 Check that the seat belt mounting bolts are tight, and if necessary tighten them to the specified torque wrench setting (see Chapter 11).

16 Auxiliary drivebelts check and renewal



General

1 The number and type of auxiliary drivebelts depends on the engine, year of manufacture, and whether or not the vehicle is equipped with air conditioning. The belt will be either a V-belt or a flat, multi-ribbed (or "polyvee") type. All the drivebelts are located on the right-hand end of the engine and are driven from the crankshaft pulley. Early "M" series 4-cylinder engines have an additional drivebelt for the power steering pump, which is driven from a pulley on the camshaft.



16.6a Alternator adjustment bracket bolts (arrowed) . . .

2 The good condition and proper tension of the auxiliary drivebelts is critical to the operation of the engine. Because of their composition and the high stresses to which they are subjected, drivebelts stretch and deteriorate as they get older. They must, therefore, be regularly inspected.

Check

3 With the engine switched off, open and support the bonnet, then locate the auxiliary drivebelts fitted to your car (Be very careful, and wear protective gloves to minimise the risk of burning your hands on hot components, if the engine has recently been running). For improved access, jack up the front of the vehicle, support it securely on axle stands, remove the roadwheel, then remove the cover from inside the wheelarch.

4 Using an inspection light or a small electric torch, and rotating the engine when necessary with a spanner applied to the crankshaft pulley bolt, check the whole length of the drivebelt for cracks, separation of the rubber, and torn or worn ribs. Also check for fraying and glazing, which gives the drivebelt a shiny appearance. Both sides of the drivebelt should be inspected, and you will have to twist the drivebelt to check the underside. Use your fingers to feel the drivebelt where you can't see it. If you are in any doubt as to the condition of the drivebelt, renew it.

Drivebelt tension - 4-cylinder engines

Alternator drivebelt (early "M" series engines)

5 Check that it is just possible to twist the belt by hand through 90° at a point midway between the two pulleys. If adjustment is necessary, proceed as follows.

6 Slacken the two alternator adjustment bracket bolts and the alternator pivot bolt and nut (see illustrations).

7 Lever the alternator away from the engine until the drivebelt is moderately tight. The alternator must only be levered with care at the drive end bracket. Hold the alternator in this position and tighten the adjustment bracket bolts and pivot nut and bolt.



16.6b . . . and pivot bolt retaining nut on early "M" series 4-cylinder engines

Power steering pump drivebelt (early "M" series engines)

8 Refer to Chapter 4, Part A or B, and remove the air cleaner components as necessary, for access.

9 Undo the retaining screw and remove the cover over the camshaft pulley (see illustration).

10 Undo the bolts securing the coolant bypass pipe to the cylinder head and to the main coolant pipe, and move the bypass pipe aside as necessary for access.

11 To check and adjust the belt tension accurately it will be necessary to obtain a socket to fit the power steering pump pulley retaining nut, a socket bar of at least 12 inches in length, and a spring balance capable of recording a minimum of 25 lbs. Make a paint mark or similar on the socket bar, 12 inches up from the centre of the square drive end.

12 Slacken the centre retaining nut on the belt tensioner wheel, then turn the tension adjuster bolt clockwise until the belt is slack. Retighten the tensioner wheel retaining nut to 5.0 Nm.

13 Fit the socket and bar to the pump pulley retaining nut, and position it so that the socket bar is vertical.

14 Attach the spring balance to the socket bar at the point marked 12 inches up from the square drive end.

15 Turn the adjuster bolt anti-clockwise until it takes a pull of 25 lbs to make the pump pulley slip. This procedure is shown (see illustration 16.9), but using the Rover special tool. The socket and bar are a substitute for this tool.

16 Remove the socket, bar and spring balance, then turn the crankshaft until the camshaft pulley has turned through 180°.

17 Check the belt tension again, and re-adjust if necessary.

18 Now turn the tension adjuster bolt anti-clockwise two complete turns.

19 Tighten the tensioner wheel retaining nut fully to the specified torque.

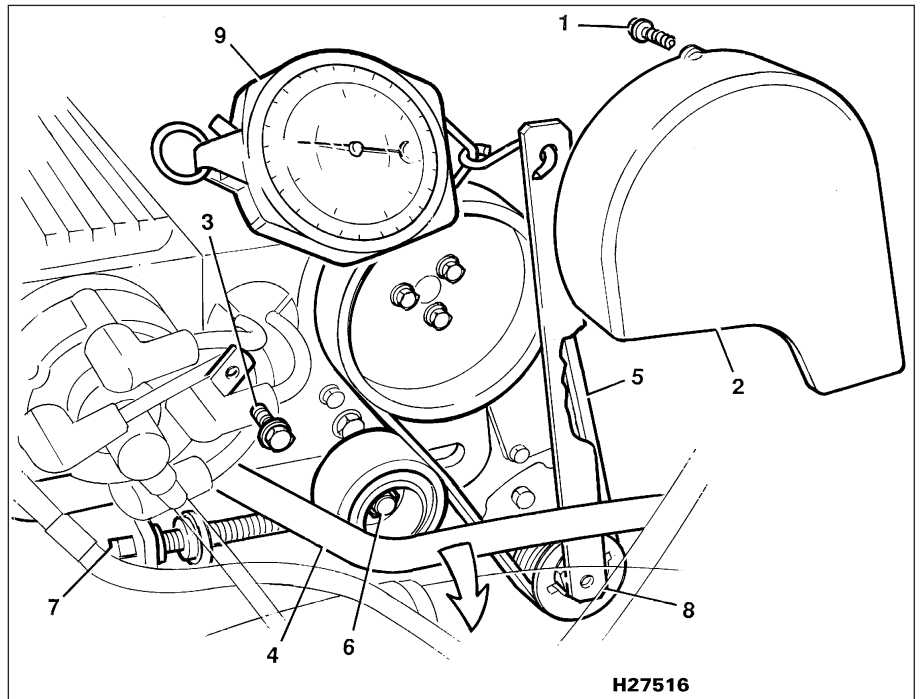
20 Refit the coolant pipe retaining bolts, and the cover over the camshaft pulley.

21 Refit the air cleaner components.

Alternator/power steering pump/air conditioning compressor drivebelt (later "M" series engines)

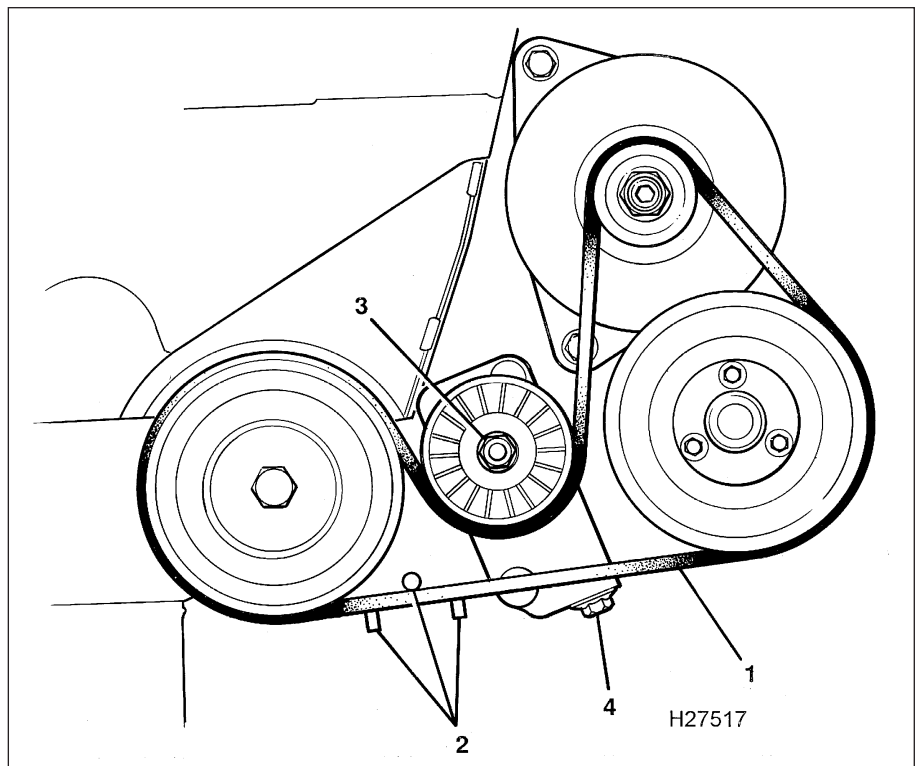
22 Accurate tensioning of the drivebelt on cars with this arrangement can only be achieved with the Rover belt tensioning tool, and ideally this operation should be carried out by a Rover dealer. However, if a new belt has been fitted, or if the existing tension is extremely slack, a rough approximation as a temporary measure can be achieved using the following procedure.

23 To adjust the belt tension, slacken the idler pulley retaining nut, then turn the adjuster bolt clockwise to increase the tension or anti-clockwise to decrease it, until it is just possible to twist the belt by hand through 90° at a point midway between the crankshaft and power steering pump pulleys (see illustration).



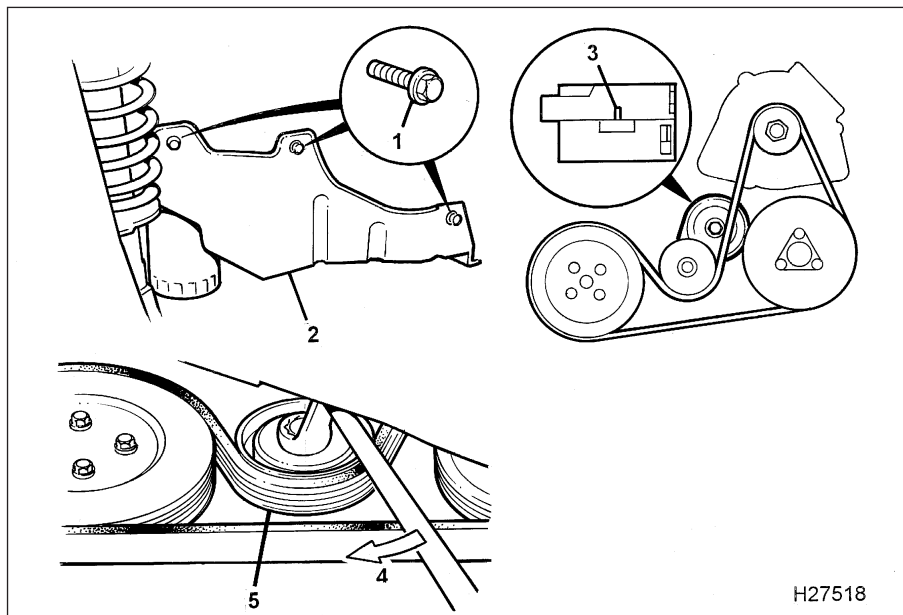
16.9 Power steering pump drivebelt adjustment on early "M" series 4-cylinder engines

- | | | |
|---|---|---|
| 1 Camshaft pulley cover retaining screw | 4 Coolant pipe | 7 Tension adjuster bolt |
| 2 Camshaft pulley cover | 5 Drivebelt | 8 Rover special tool for checking tension |
| 3 Coolant pipe retaining bolt | 6 Belt tensioner wheel centre retaining nut | 9 Spring balance |



16.23 Drivebelt adjustment on later "M" series 4-cylinder engines

- | | | |
|-------------|---------------------------------------|------------------------------|
| 1 Drivebelt | 2 Checking gauge - Rover special tool | 3 Idler pulley retaining nut |
| | | 4 Adjuster bolt |



16.25 Drivebelt adjustment details on "T" series engines

- | | | |
|-----------------------------------|----------------------------|--|
| 1 Wheelarch cover retaining bolts | 2 Wheelarch cover | 4 Releasing the tensioner for belt renewal |
| | 3 Tensioner wear indicator | 5 Drivebelt |

24 When the tension is correct, tighten the idler pulley retaining nut to the specified torque and lower the car to the ground.

Alternator/power steering pump/air conditioning compressor drivebelt ("T" series engines)

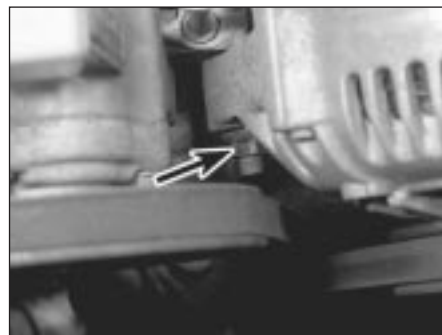
25 "T" series engines are fitted with an automatic drivebelt tensioner incorporating a wear indicator to show when the belt has stretched too far for the tensioner to maintain correct adjustment (see illustration).

26 To check the tension, observe the wear indicator and make sure that the pointer has not reached the right-hand end of the slot. If it hasn't, all is well, and no further action is necessary; if it has, renew the belt.

Drivebelt tension - V6 engines

Alternator drivebelt

27 Undo the three bolts and one nut securing the power steering pump and alternator pulley



16.29b ... and lower mounting nut (arrowed), then turn the adjusting bolt to achieve the correct tension

covers to the top of the engine. Move the pipes and cables clear and lift off the covers (see illustration).

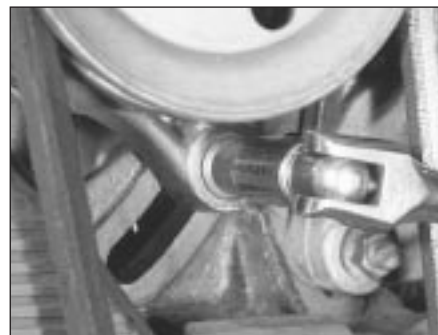
28 The belt tension is correct when it is just possible to deflect the belt by 18 to 22 mm at the mid-point of its run, under moderate finger pressure. If adjustment is required, proceed as follows.

29 Slacken the alternator side pivot bolt and lower mounting nut, then turn the adjusting bolt on the side of the unit as necessary to achieve the correct tension (see illustrations).

30 Tighten the pivot and mounting nuts and bolts and refit the covers to the top of the engine.

Power steering pump drivebelt

31 Undo the three bolts and one nut securing the power steering pump and alternator pulley covers to the top of the engine. Move the pipes and cables clear and lift off the covers.



16.33a Slacken the V6 engine power steering pump adjusting nut ...



16.27 On V6 engines, remove the pulley covers over the top of the engine ...



16.29a ... slacken the alternator side pivot bolt (arrowed) ...

32 The belt tension is correct when it is just possible to deflect the belt by 18 to 22 mm at the mid-point of its run, under moderate finger pressure. If adjustment is required, proceed as follows.

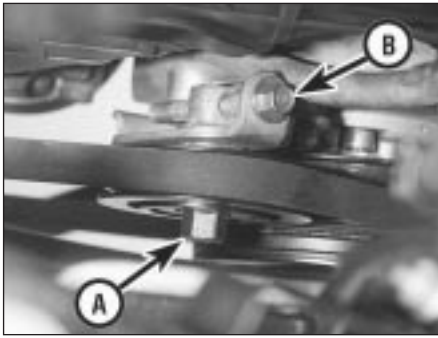
33 Slacken the pump adjusting nut and mounting bolt, then engage the end of a 1/2 inch square drive socket bar in the hole at the rear of the large lug on top of the pump (see illustrations). Using the bar, move the pump as necessary, until the belt tension is correct, then tighten the adjusting and mounting nut and bolt.

Air conditioning compressor drivebelt

34 The belt tension is correct when it is just possible to deflect the belt by 7 to 9 mm at a point mid-way between the crankshaft pulley and the tensioner jockey wheel, under



16.33b ... then engage the end of a socket bar in the lug on top of the pump to adjust the belt



16.35 Air conditioning compressor drivebelt tensioner jockey wheel bolt (A), and adjusting bolt (B) on V6 engines

moderate finger pressure. If adjustment is required, proceed as follows.

35 Slacken the bolt in the centre of the tensioner jockey wheel, then turn the adjusting bolt, behind the adjuster, to obtain the correct belt tension (*see illustration*). When the adjustment is correct, tighten the jockey wheel bolt.

Renewal - 4-cylinder engines

36 Open the bonnet, jack up the front of the vehicle (where applicable) and support it securely on an axle stands, remove the roadwheel, then remove the cover from inside the wheelarch.

37 The routing of the drivebelt around the pulleys is dependant on the drivebelt type and whether or not air conditioning is fitted. Before removing the drivebelt, it's a good idea to sketch the belt run around the pulleys; this will save a lot of frustration when it comes to refitting.

38 If the existing drivebelt is to be refitted, mark it, or note the maker's markings on its flat surface, so that it can be installed in the same way.

39 To renew the drivebelt, slacken the belt tension fully as described above according to type, noting that where an automatic tensioner is fitted, it is only necessary to turn the tensioner centre bolt clockwise, using a spanner, to release the belt tension. Slip the belt off the pulleys then fit the new belt ensuring that it is routed correctly. With the belt in position, adjust the tension as previously described, or simply release the tensioner bolt.

40 Using a spanner applied to the crankshaft pulley bolt, rotate the crankshaft through at least two full turns clockwise to settle the drivebelt on the pulleys, then check that the drivebelt is properly installed.

41 Refit the cover and roadwheel, then lower the vehicle to the ground.

Renewal - V6 engines

42 Open the bonnet, jack up the front of the vehicle (where applicable) and support it securely on an axle stands, remove the roadwheel, then remove the cover from inside the wheelarch.

43 If the existing drivebelt is to be refitted, mark it, or note the maker's markings on its flat surface, so that it can be installed the same way.

44 Depending on which drivebelt is to be renewed, it will probably be necessary to remove one (or both) of the other drivebelts first, to gain access. Note also, that if the power steering pump drivebelt is to be renewed, it will be necessary to support the engine under the sump on a jack (with interposed block of wood) and undo the two bolts on the right-hand engine mounting, to allow the belt to pass through.

45 To renew the drivebelt, slacken the belt tension fully as described above according to type. Slip the belt off the pulleys then fit the new belt. With the belt in position, refit the engine mounting bolts (where applicable) and adjust the tension as previously described.

46 Using a spanner applied to the crankshaft pulley bolt, rotate the crankshaft through at least two full turns clockwise to settle the drivebelt on the pulleys, then check that the drivebelt is properly installed.

47 Refit the cover and roadwheel, then lower the vehicle to the ground.

17 Engine compartment wiring check



1 With the vehicle parked on level ground, apply the handbrake firmly and open the bonnet. Using an inspection light or a small electric torch, check all visible wiring within and beneath the engine compartment.

2 What you are looking for is wiring that is obviously damaged by chafing against sharp edges, or against moving suspension/transmission components and/or the auxiliary drivebelts, by being trapped or crushed between carelessly-refitted components, or melted by being forced into contact with the hot engine castings, coolant pipes, etc. In almost all cases, damage of this sort is caused in the first instance by incorrect routing on reassembly after previous work has been carried out.

3 Depending on the extent of the problem, damaged wiring may sometimes be repaired by rejoining the break or splicing-in a new length of wire, using solder to ensure a good connection, and remaking the insulation with adhesive insulating tape or heat-shrink tubing, as appropriate. If the damage is extensive, given the implications for the vehicle's future reliability, the best long-term answer may well be to renew that entire section of the loom, however expensive this may appear.

4 When the actual damage has been repaired, ensure that the wiring loom is re-routed correctly, so that it is clear of other components, and not stretched or kinked, and is secured out of harm's way using the plastic clips, guides and ties provided.

5 Check all electrical connectors, ensuring

that they are clean, securely fastened, and that each is locked by its plastic tabs or wire clip, as appropriate. If any connector shows external signs of corrosion (accumulations of white or green deposits, or streaks of "rust"), or if any is thought to be dirty, it must be unplugged and cleaned using electrical contact cleaner. If the connector pins are severely corroded, the connector must be renewed; note that this may mean the renewal of that entire section of the loom - see your local Rover dealer for details.

6 If the cleaner completely removes the corrosion to leave the connector in a satisfactory condition, it would be wise to pack the connector with a material which will exclude dirt and moisture, preventing the corrosion from occurring again.

7 Check the condition of the battery connections - remake the connections or renew the leads if a fault is found. Use the same techniques to ensure that all earth points in the engine compartment provide good electrical contact through clean, metal-to-metal joints, and that all are securely fastened.

8 Refer to Section 11 for details of spark plug (HT) lead checks.

18 Air conditioning system check



Warning: The air conditioning system is under high pressure. Do not loosen any fittings or remove any components until after the system has been discharged. Air conditioning refrigerant must be properly discharged into an approved type of container, at a dealer service department or an automotive air conditioning repair facility capable of handling the refrigerant safely. Always wear eye protection when disconnecting air conditioning system fittings.

1 The following maintenance checks should be performed on a regular basis, to ensure that the air conditioner continues to operate at peak efficiency:

- (a) Check the auxiliary drivebelt. If it's worn or deteriorated, renew it (*see Section 16*).
- (b) Check the system hoses. Look for cracks, bubbles, hard spots and deterioration. Inspect the hoses and all fittings for oil bubbles and seepage. If there's any evidence of wear, damage or leaks, renew the hose(s).
- (c) Inspect the condenser fins for leaves, insects and other debris. Use a "fin comb" or compressed air to clean the condenser.



Warning: Wear eye protection when using compressed air!

- (d) Check that the drain tube from the front of the evaporator is clear - note that it is normal to have clear fluid (water) dripping

from this while the system is in operation, to the extent that quite a large puddle can be left under the vehicle when it is parked.

2 It's a good idea to operate the system for about 30 minutes at least once a month, particularly during the winter. Long term non-use can cause hardening, and subsequent failure, of the seals.

3 Because of the complexity of the air conditioning system and the special equipment necessary to service it, in-depth fault diagnosis and repairs are not included in this manual. For more complete information on the air conditioning system, refer to the Haynes "Automotive Heating and Air Conditioning Manual".

4 The most common cause of poor cooling is simply a low system refrigerant charge. If a noticeable drop in cool air output occurs, the following quick check will help you determine if the refrigerant level is low.

5 Warm the engine up to normal operating temperature.

6 Place the air conditioning temperature selector at the coldest setting, and put the blower at the highest setting. Open the doors - to make sure the air conditioning system doesn't cycle off as soon as it cools the passenger compartment.

7 With the compressor engaged - the clutch will make an audible click, and the centre of the clutch will rotate - feel the inlet and outlet pipes at the compressor. One side should be cold, and one hot. If there's no perceptible difference between the two pipes, there's something wrong with the compressor or the system. It might be a low charge - it might be something else. Take the vehicle to a dealer service department or an automotive air conditioning specialist.

19 Engine base idle speed and CO content check



Refer to the appropriate Parts of Chapter 4.

20 Manual transmission oil level check



1 The manual transmission does not have a dipstick. To check the oil level, raise the vehicle and support it securely on axle stands, making sure that the vehicle is level. On the left-hand side of the transmission casing, to the rear of the constant velocity joint, you will see the filler/level plug. Wipe around the plug with a rag, then unscrew and remove it. If the level is correct, the oil should be up to the lower edge of the hole.

2 If the transmission needs more lubricant (if the oil level is not up to the hole), use a syringe, or a plastic bottle and tube, to add more (see illustration). Stop filling the transmission when the lubricant begins to run

out of the hole. Make sure that you refer to "Lubricants, fluids and capacities" at the beginning of this Chapter for the correct grade of lubricant to use, according to transmission type.

3 Refit the filler/level plug, and tighten it to the specified torque wrench setting. Drive the vehicle a short distance, then check for leaks.

4 A need for regular topping-up can only be due to a leak, which should be found and rectified without delay.

21 Steering, suspension and roadwheel check



Front suspension and steering check

1 Apply the handbrake, then raise the front of the vehicle and support it on axle stands.

2 Visually inspect the balljoint dust covers and the steering gear gaiters for splits, chafing or deterioration. Any wear of these components will cause loss of lubricant, together with dirt and water entry, resulting in rapid deterioration of the balljoints or steering gear.

3 Check the power-assisted steering fluid hoses for chafing or deterioration, and the pipe and hose unions for fluid leaks. Also check for signs of fluid leakage under pressure from the steering gear rubber gaiters, which would indicate failed fluid seals within the steering gear.

4 Check for signs of fluid leakage around the shock absorber body, or from the rubber boot around the piston rod (where fitted). Should any fluid be noticed, the shock absorber is defective internally, and renewal is necessary.

5 Grasp the roadwheel at the 12 o'clock and 6 o'clock positions, and try to rock it. Very slight free play may be felt, but if the movement is appreciable, further investigation is necessary to determine the source. Continue rocking the wheel while an assistant depresses the footbrake. If the movement is now eliminated or significantly reduced, it is likely that the hub bearings are at fault. If the free play is still evident with the footbrake depressed, then there is wear in the suspension joints or mountings.



20.2 Topping up the manual transmission oil

6 Now grasp the wheel at the 9 o'clock and 3 o'clock positions, and try to rock it as before. Any movement felt now may again be caused by wear in the hub bearings or the steering track rod balljoints. If the outer track rod end balljoint is worn, the visual movement will be obvious. If the inner joint is suspect, it can be felt by placing a hand over the rack-and-pinion rubber gaiter, and gripping the track rod. If the wheel is now rocked, movement will be felt at the inner joint if wear has taken place.

7 Using a large screwdriver or flat bar, check for wear in the suspension mounting bushes by levering between the relevant suspension component and its attachment point. Some movement is to be expected as the mountings are made of rubber, but excessive wear should be obvious. Also check the condition of any visible rubber bushes, looking for splits, cracks or contamination of the rubber.

8 With the vehicle standing on its wheels, have an assistant turn the steering wheel back-and-forth, about an eighth of a turn each way. There should be very little, if any, lost movement between the steering wheel and roadwheels. If this is not the case, closely observe the joints and mountings previously described, but in addition, check the steering column universal joints for wear, and also check the rack-and-pinion steering gear itself.

9 The efficiency of the shock absorber may be checked by bouncing the car at each front corner. Generally speaking, the body will return to its normal position and stop after being depressed. If it rises and returns on a rebound, the shock absorber is probably suspect. Examine also the shock absorber upper and lower mountings for any signs of wear.

Rear suspension check

10 Chock the front wheels, then raise the rear of the vehicle and support it on axle stands.

11 Check the rear hub bearings for wear, using the method described for the front hub bearings (paragraph 4).

12 Using a large screwdriver or flat bar, check for wear in the suspension mounting bushes by levering between the relevant suspension component and its attachment point. Some movement is to be expected as the mountings are made of rubber, but excessive wear should be obvious. Check the condition of the shock absorbers as described previously.

Roadwheel check and balancing

13 Periodically remove the roadwheels, and clean any dirt or mud from the inside and outside surfaces. Examine the wheel rims for signs of rusting, corrosion or other damage. Light alloy wheels are easily damaged by "kerbing" whilst parking, and similarly, steel wheels may become dented or buckled. Renewal of the wheel is very often the only course of remedial action possible.

14 The balance of each wheel and tyre

assembly should be maintained, not only to avoid excessive tyre wear, but also to avoid wear in the steering and suspension components. Wheel imbalance is normally signified by vibration through the vehicle's bodyshell, although in many cases it is particularly noticeable through the steering wheel. Conversely, it should be noted that wear or damage in suspension or steering components may cause excessive tyre wear. Out-of-round or out-of-true tyres, damaged wheels and wheel bearing wear/maladjustment also fall into this category. Balancing will not usually cure vibration caused by such wear.

15 Wheel balancing may be carried out with the wheel either on or off the vehicle. If balanced on the vehicle, ensure that the wheel-to-hub relationship is marked in some way prior to subsequent wheel removal, so that it may be refitted in its original position.

22 Driveshaft rubber gaiter and CV joint check



1 The driveshaft rubber gaiters are very important, because they prevent dirt, water and foreign material from entering and damaging the constant velocity (CV) joints. External contamination can cause the gaiter material to deteriorate prematurely, so it's a good idea to wash the gaiters with soap and water occasionally.

2 With the vehicle raised and securely supported on axle stands, turn the steering onto full-lock, then slowly rotate each front wheel in turn. Inspect the condition of the outer constant velocity (CV) joint rubber gaiters, squeezing the gaiters to open out the folds. Check for signs of cracking, splits, or deterioration of the rubber, which may allow the escape of grease, and lead to the ingress of water and grit into the joint. Also check the security and condition of the retaining clips. Repeat these checks on the inner CV joints. If any damage or deterioration is found, the gaiters should be renewed as described in Chapter 8.

3 At the same time, check the general condition of the outer CV joints themselves,



23.2 Typical exhaust system rubber mountings and brackets

by first holding the driveshaft and attempting to rotate the wheels. Repeat this check on the inner joints, by holding the inner joint yoke and attempting to rotate the driveshaft.

4 Any appreciable movement in the CV joint indicates wear in the joint, wear in the driveshaft splines, or a loose driveshaft retaining nut.

23 Exhaust system check



1 With the engine cold (at least three hours after the vehicle has been driven), check the complete exhaust system, from its starting point at the engine to the end of the tailpipe. Ideally, this should be done on a hoist, where unrestricted access is available; if a hoist is not available, raise and support the vehicle on axle stands.

2 Check the pipes and connections for evidence of leaks, severe corrosion, or damage. Make sure that all brackets and rubber mountings are in good condition, and tight; if any of the mountings are to be renewed, ensure that the replacements are of the correct type (see illustration). Leakage at any of the joints or in other parts of the system will usually show up as a black sooty stain in the vicinity of the leak. **Note:** *Exhaust sealants should not be used on any part of the exhaust system upstream of the catalytic converter - even if the sealant does not contain additives harmful to the converter, pieces of it may break off and foul the element, causing local overheating.*

3 At the same time, inspect the underside of the body for holes, corrosion, open seams, etc. which may allow exhaust gases to enter the passenger compartment. Seal all body openings with silicone or body putty.

4 Rattles and other noises can often be traced to the exhaust system, especially the rubber mountings. Try to move the system, silencer(s) and catalytic converter. If any components can touch the body or suspension parts, secure the exhaust system with new mountings.

24 Underbody and fuel/brake line check



1 With the vehicle raised and supported on axle stands or over an inspection pit, thoroughly inspect the underbody and wheelarches for signs of damage and corrosion. In particular, examine the bottom of the side sills, and any concealed areas where mud can collect. Where corrosion and rust is evident, press and tap firmly on the panel with a screwdriver, and check for any serious corrosion which would necessitate repairs. If the panel is not seriously corroded, clean away the rust, and apply a new coating of

underseal. Refer to Chapter 11 for more details of body repairs.

2 At the same time, inspect the PVC-coated lower body panels for stone damage and general condition.

3 Inspect all of the fuel and brake lines on the underbody for damage, rust, corrosion and leakage. Also make sure that they are correctly supported in their clips. Where applicable, check the PVC coating on the lines for damage.

25 Clutch operation and hydraulic hose condition check



1 Check the clutch pedal moves smoothly and easily through its travel, and that the clutch functions correctly, with no trace of slip or drag.

2 Remove the closing panels under the fascia for access to the pedal and apply a few drops of light oil to the pedal pivot. Refit the panel.

3 From within the engine compartment check the condition of the fluid lines and hoses as described in Section 8. Now have a look under the front of the car at the clutch slave cylinder. Check for signs of fluid leaks around the rubber boot and check the security of the linkage. Apply a few drops of oil to the pushrod clevis pin and linkage.

26 Brake check



Note: *For detailed photographs of the brake system, refer to Chapter 9.*

1 The work described in this Section should be carried out at the specified intervals, or whenever a defect is suspected in the braking system. Any of the following symptoms could indicate a potential brake system defect:

- (a) *The vehicle pulls to one side when the brake pedal is depressed.*
- (b) *The brakes make scraping or dragging noises when applied.*
- (c) *Brake pedal travel is excessive.*
- (d) *The brake fluid requires repeated topping-up.*

2 A thorough inspection should be made to confirm the thickness of the pad linings, as follows.

3 Jack up the front or rear of the vehicle in turn, and support it on axle stands.

4 For better access to the brake calipers, remove the wheels.

5 Look through the inspection window in the caliper, and check that the thickness of the friction lining material on each of the pads is not less than the recommended minimum thickness given in the Specifications. **Note:** *Bear in mind that the lining material is normally bonded to a metal backing plate.*

6 If it is difficult to determine the exact thickness of the pad linings, or if you are at all

1•22 Every 12 000 miles

concerned about the condition of the pads, then remove them from the calipers for further inspection (refer to Chapter 9).

7 Check the remaining brake caliper(s) in the same way.

8 If any one of the brake pads has worn down to, or below, the specified limit, *all four* pads at that end of the car must be renewed as a set (ie all the front pads or all the rear pads).

9 Measure the thickness of the discs with a micrometer, if available, to make sure that they still have service life remaining. If any disc is thinner than the specified minimum thickness, renew it (refer to Chapter 9). In any case, check the general condition of the discs. Look for excessive scoring and discolouration caused by overheating. If these conditions exist, remove the relevant disc and have it resurfaced or renewed (refer to Chapter 9).

10 Before refitting the wheels, check all brake lines and hoses (refer to Chapter 9). In particular, check the flexible hoses in the vicinity of the calipers, where they are subjected to most movement. Bend them between the fingers (but do not actually bend them double, or the casing may be damaged) and check that this does not reveal previously-hidden cracks, cuts or splits. On completion, apply the handbrake and check that the rear wheels are locked. The handbrake does not normally require periodic adjustment but if its travel seems excessive, refer to Chapter 9.

27 Door, boot, tailgate and bonnet check and lubrication



1 Check that the doors, bonnet and tailgate/boot lid close securely. Check that the bonnet safety catch operates correctly. Check the operation of the door check straps.

2 Lubricate the hinges, door check straps, the striker plates and the bonnet catch sparingly with a little oil or grease.

28 Bodywork, paint and exterior trim check



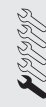
1 The best time to carry out this check is after the car has been washed so that any surface blemish or scratch will be clearly evident and not hidden by a film of dirt.

2 Starting at one front corner check the paintwork all around the car, looking for minor scratches or more serious dents. Check all the trim and make sure that it is securely attached over its entire length.

3 Check the security of all door locks, door mirrors, badges, bumpers radiator grille and wheel trim. Anything found loose, or in need of further attention should be done with reference to the relevant Chapters of this manual.

4 Rectify any problems noticed with the paintwork or body panels as described in Chapter 11.

29 Roadwheel nut tightness check

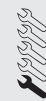


1 Apply the handbrake and remove the wheel trim.

2 Slacken each wheel nut in turn then, using a torque wrench, tighten it to the specified torque wrench setting. If any of the wheel nuts appear corroded, or are tight to unscrew, jack up and securely support the car at the front or rear as applicable, and remove the relevant wheel. Clean the threads of the wheel studs and apply a high-melting point copper based grease to each stud. It's a good idea to do this to all the studs at each wheel; if one was corroded, they're probably all the same.

3 If the nuts were removed, check the torque setting again after lowering the car, then refit the wheel trim.

30 Road test



Check the operation and performance of the braking system

1 Make sure that the vehicle does not pull to one side when braking, and that the wheels do not lock prematurely when braking hard.

2 Check that there is no vibration through the steering when braking.

3 Check that the handbrake operates correctly, without excessive movement of the lever, and that it holds the vehicle stationary on a slope.

4 With the engine switched off, test the operation of the brake servo unit as follows. Depress the footbrake four or five times to exhaust the vacuum, then start the engine. As the engine starts, there should be a noticeable "give" in the brake pedal as vacuum builds up. Allow the engine to run for at least two minutes, and then switch it off. If the brake pedal is now depressed again, it should be possible to detect a hiss from the servo as the pedal is depressed. After about four or five applications, no further hissing should be heard, and the pedal should feel considerably harder.

Steering and suspension

5 Check for any abnormalities in the steering, suspension, handling or road "feel".

6 Drive the vehicle, and check that there are no unusual vibrations or noises.

7 Check that the steering feels positive, with no excessive sloppiness or roughness, and check for any suspension noises when cornering and driving over bumps.

Drivetrain

8 Check the performance of the engine, transmission and driveshafts.

9 Check that the engine starts correctly, both when cold and when hot.

10 Listen for any unusual noises from the engine and transmission.

11 Make sure that the engine runs smoothly when idling, and that there is no hesitation when accelerating.

12 On manual transmission models, check that all gears can be engaged smoothly without noise, and that the gear lever action is not abnormally vague or "notchy".

13 On automatic transmission models, make sure that the drive seems smooth without jerks or engine speed "flare-ups". Check that all the gear positions can be selected with the vehicle at rest. If any problems are found, they should be referred to a Rover dealer.

14 Listen for a metallic clicking sound from the front of the vehicle as the vehicle is driven slowly in a circle with the steering on full-lock. Carry out this check in both directions. If a clicking noise is heard, this indicates wear in a driveshaft joint, in which case renew the joint.

Clutch

15 Check that the clutch pedal moves smoothly and easily through its full travel, and that the clutch itself functions correctly, with no trace of slip or drag. If the movement is uneven or stiff in places, check the system components with reference to Chapter 6.

Instruments and electrical equipment

16 Check the operation of all instruments and electrical equipment.

17 Make sure that all instruments read correctly, and switch on all electrical equipment in turn, to check that it functions properly.

31 Automatic transmission fluid level check



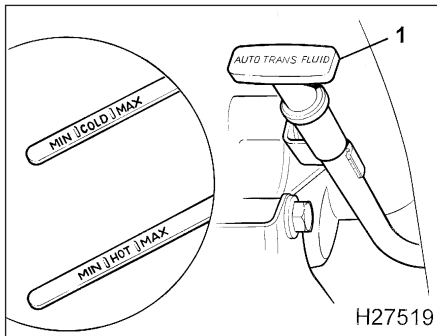
1 The level of the automatic transmission fluid should be carefully maintained. Low fluid level can lead to slipping or loss of drive, while overfilling can cause foaming, loss of fluid and transmission damage.

2 The transmission fluid level should only be checked when the transmission is hot (at its normal operating temperature). If the vehicle has just been driven over 10 miles (15 miles in a cold climate), and the fluid temperature is 160 to 175°F, the transmission is hot.

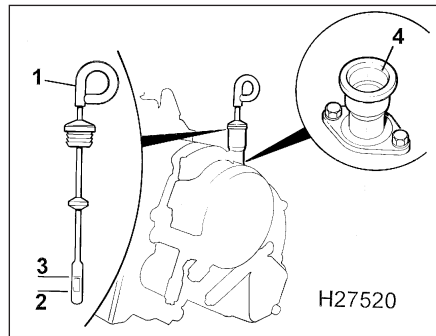
4-cylinder engine models

3 Park the vehicle on level ground, apply the handbrake, and start the engine. While the engine is idling, depress the brake pedal and move the selector lever to the "P" (PARK) position.

4 Remove the dipstick from its tube located



31.6 Automatic transmission fluid level dipstick (1) and level markings on 4-cylinder engine models



31.10 Automatic transmission fluid level dipstick (1), Lower (2) and upper (3) shaded sector and dipstick tube (4)



31.12 Add the specified automatic transmission fluid through the dipstick tube, using a clean funnel

at the front left-hand side of the engine. Note the condition and colour of the fluid on the dipstick.

5 Wipe the fluid from the dipstick with a clean rag, and re-insert it into the filler tube until the cap seats.

6 Pull the dipstick out again, and note the fluid level. The level should be between the "MIN" and "MAX" marks, on the side of the dipstick marked "HOT" (see illustration). If the level is on the "MIN" mark, stop the engine, and add the specified automatic transmission fluid through the dipstick tube, using a clean funnel if necessary. It is important not to introduce dirt into the transmission when topping-up.

7 Add the fluid a little at a time, and keep checking the level as previously described until it is correct. The difference between the "MIN" and "MAX" marks on the dipstick is approximately 0.3 litre.

V6 engine models

8 Park the vehicle on level ground, apply the handbrake, and start the engine. While the engine is idling, depress the brake pedal and move the selector lever to the "P" (PARK) position.

9 Switch off the engine and wait one minute.

10 Remove the dipstick from its tube which is located at the rear left-hand side of the engine. The dipstick is mounted low down, on top of the transmission casing and access is not very good (see illustration). Note the condition and colour of the fluid on the dipstick.

11 Wipe the fluid from the dipstick with a clean rag, and re-insert it into the filler tube until the cap seats.

12 Pull the dipstick out again, and note the fluid level. The level should be within the shaded sector on the blade. If the level is below or very near to the bottom of the shaded sector, add the specified automatic

transmission fluid through the dipstick tube, using a clean funnel (see illustration). It is important not to introduce dirt into the transmission when topping-up.

13 Add the fluid a little at a time, and keep checking the level as previously described until it is correct. The difference between the upper and lower part of the shaded sector is approximately 0.9 litre.

All models

14 The need for regular topping-up of the transmission fluid indicates a leak, which should be found and rectified without delay.

15 The condition of the fluid should also be checked along with the level. If the fluid at the end of the dipstick is black or a dark reddish-brown colour, or if it has a burned smell, the fluid should be changed. If you are in doubt about the condition of the fluid, purchase some new fluid, and compare the two for colour and smell.

Every 24 000 miles or 2 years, whichever occurs first

32 Timing belt condition and tension check



1 The manufacturers have increased the service interval for checking the timing belt condition and tension on certain engines, due to the introduction of automatic tensioners and improvements in timing belt construction and manufacture. However, the consequences of timing belt failure can be very expensive in terms of possible engine damage and it is still worthwhile to check the belt at the shorter intervals given in this schedule. The procedures vary considerably according to engine type and model year, and reference should be made to the appropriate Part of Chapter 2 for full information.

33 Positive Crankcase Ventilation (PCV) system check



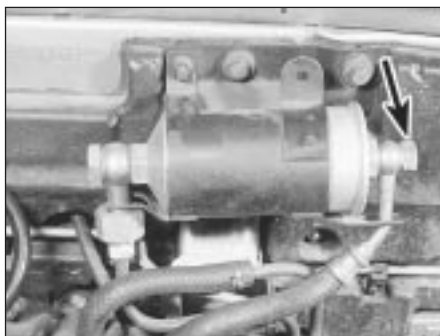
1 The function of the crankcase ventilation system is to reduce the emission of unburned hydrocarbons from the crankcase, and to minimise the formation of oil sludge. By ensuring that a depression is created in the crankcase under most operating conditions, particularly at idle, and by positively inducing fresh air into the system, the oil vapours and "blow-by" gases collected in the crankcase are drawn from the crankcase, through the air cleaner or oil separator, into the inlet tract, to be burned by the engine during normal combustion.

2 On four cylinder engines, the main

components of the system are an oil separator, diverter valve and associated hoses. Checking of the system consists of a simple visual check of the component hoses and their connections.

3 On V6 engines the crankcase ventilation system main components are a PCV valve, located in the breathing chamber of the front camshaft cover, and the hoses that connect to the internal channels in the inlet manifold. As with 4-cylinder engines, checking is limited to merely a visual hose condition check. Accurate checking of the PCV valve should be entrusted to a dealer.

4 Check that all components of the system are securely fastened, correctly routed (with no kinks or sharp bends to restrict flow) and in sound condition; renew any worn or damaged components.



34.3a Fuel filter outlet union banjo bolt (arrowed) on 4-cylinder engines



34.3b Unscrewing the banjo union bolt on V6 engines



34.4 On V6 engines, unscrew the inlet union nut and withdraw the pipe from the filter head

5 If oil leakage is noted, disconnect the various hoses and pipes, and check that all are clear and unblocked. Remove the air cleaner assembly cover, and check that the hose is clear and undamaged. Always ensure that the air cleaner filter element is clean as this is a vital part of the system. If it is not due for renewal but appears dirty, it may be possible to clean it as described in Section 12.

34 Fuel filter renewal



Warning: Petrol is extremely flammable, so extra precautions must be taken when working on any part of the fuel system. Do

not smoke, or allow open flames or bare light bulbs, near the work area. Also, do not work in a garage if a natural gas-type appliance with a pilot light is present. While performing any work on the fuel system, wear safety glasses, and have a suitable (Class B) fire extinguisher on hand. If you spill any fuel on your skin, rinse it off immediately with soap and water.

1 On all engines, a fuel filter is provided in the fuel pump outlet line and is located on the left-hand side of the engine compartment bulkhead. The filter performs a vital role in keeping dirt and other foreign matter out of the fuel system, and so must be renewed at regular intervals, or whenever you have reason to suspect that it may be clogged.

2 Disconnect the battery negative (earth) lead (refer to Chapter 5, Section 1).

3 Place absorbent rags around the fuel filter outlet union banjo bolt, then slowly unscrew the bolt itself or, on later models, the small bleed screw in the centre of the bolt, to relieve the system pressure (see illustrations). If a bleed screw was fitted, tighten it once the pressure has been released.

4 On 4-cylinder engines, unscrew the filter inlet and outlet union banjo bolts, and recover the four copper washers. On V6 engines, unscrew the inlet union nut and withdraw the pipe from the filter head (see illustration).

Now unscrew the outlet union banjo bolt and recover the two copper washers.

5 Undo the filter bracket retaining nuts or bolts, and remove the filter (see illustration).

6 Refitting is the reverse sequence to removal, but use new copper washers on the banjo unions.

35 Automatic transmission fluid renewal



1 The automatic transmission fluid should be changed when the transmission is warm after the vehicle has been driven for two or three miles.

2 Position the vehicle over an inspection pit, on vehicle ramps, or jack it up, but make sure that it is level.

3 Place a large container beneath the transmission and thoroughly clean the area around the drain plug(s). On 4-cylinder engine models, undo the two socket-headed drain plugs - one on the side of the sump pan, and one on the transmission casing (see illustration). On V6 engine models undo the single drain plug on the end of the transmission casing at the front. Allow the fluid to drain into the container.



Warning: Take care to avoid scalding - the transmission fluid will be very hot. Remove the dipstick to speed up the draining operation.



34.5 Undo the filter bracket retaining nuts or bolts, and remove the filter

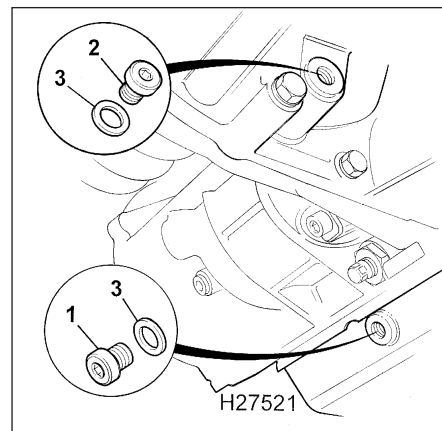
4 When all the fluid has drained (this may take quite some time) clean the drain plug(s) then refit, together with new seals and tighten securely.

5 Lower the vehicle to the ground and apply the handbrake securely.

6 Place a funnel in the dipstick tube and fill the transmission with the specified type of fluid. Only add about half the specified amount before checking the level on the dipstick.

7 On 4-cylinder engine models, slowly add more fluid until the level just shows on the dipstick. Now start the engine with the selector lever in "P" and check the fluid level on the dipstick immediately (don't wait for the engine to warm up). Add fluid as necessary until the level is up to the "MAX" mark on the "COLD" side of the blade then refit the dipstick. Recheck the level as described in Section 31, with the engine fully warmed-up, at the earliest opportunity.

8 On V6 engine models, slowly add more fluid until the level is within the shaded sector on the dipstick blade. Refit the dipstick, drive the car until it is fully warmed-up, then recheck the level as described in Section 31.



35.3 Automatic transmission fluid drain plug locations on 4-cylinder engine models

- 1 Sump pan drain plug
- 2 Transmission casing drain plug
- 3 Sealing washers

36 Brake fluid renewal



The procedure is similar to that for the bleeding of the hydraulic system as described in Chapter 9, except that the brake fluid reservoir should be emptied by syphoning, and allowance should be made for the old fluid to be removed from the circuit when bleeding a section of the circuit.

37 Manual transmission oil renewal



- 1 Raise the vehicle and support it securely on axle stands making sure that it is level.
- 2 Place a container beneath the drain plug, which is located below the driveshaft inner constant velocity joint on the same side as the filler plug (see illustration). Undo the plug using a square key, and allow the oil to drain. If a key is not available, the 3/8 inch square drive end of a socket bar will suffice.
- 3 Refit the plug after draining, using a new sealing washer if necessary, then refill with fresh oil as described in Section 20.

38 Coolant renewal



Warning: Do not allow antifreeze to come in contact with your skin or painted surfaces of the vehicle. Flush contaminated areas immediately with plenty of water.

Don't store new coolant, or leave old coolant lying around, where it's accessible to children or pets - they're attracted by its sweet smell. Ingestion of even a small amount of coolant can be fatal! Wipe up garage-floor and drip-pan spills immediately. Keep antifreeze containers covered, and repair cooling system leaks as soon as they're noticed.



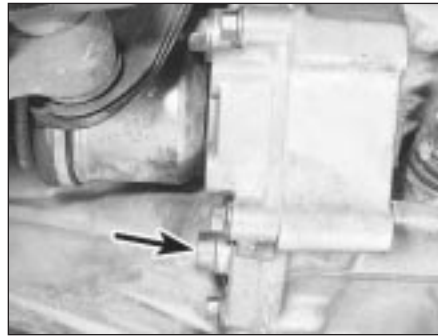
Warning: Never remove the expansion tank filler cap when the engine is running, or has just been switched off, as the cooling system will be hot, and the consequent escaping steam and scalding coolant could cause serious injury.

Coolant draining



Warning: Wait until the engine is cold before starting this procedure.

- 1 To drain the system, first remove the expansion tank filler cap (see Section 3). Move the heater temperature control lever to the fully hot position.
- 2 If additional working clearance is required,



37.2 Manual transmission oil drain plug location (arrowed)

raise the front of the vehicle and support it securely on axle stands.

- 3 Undo the retaining bolts and remove the undertray from beneath the radiator.
- 4 Place a container beneath the left-hand side of the radiator. Slacken the hose clip and carefully ease the bottom hose off the radiator outlet. Allow the coolant to drain into the container.
- 5 Additionally, on V6 engines, slacken the two cylinder block drain plugs, on the front and rear sides of the engine, and drain the cylinder block (see illustration). Use two containers for this operation, or open the drain plugs one at a time.

System flushing

- 6 With time, the cooling system may gradually lose its efficiency, as the radiator core becomes choked with rust, scale deposits from the water, and other sediment. To minimise this, as well as using only good-quality antifreeze and clean soft water, the system should be flushed as follows whenever any part of it is disturbed, and/or when the coolant is renewed.
- 7 With the coolant drained, refit the bottom hose and where applicable tighten the drain plugs, then refill the system with fresh water. Refit the expansion tank filler cap, start the engine and warm it up to normal operating temperature, then stop it and (after allowing it to cool down completely) drain the system again. Repeat as necessary until only clean water can be seen to emerge, then refill finally with the specified coolant mixture.

- 8 If only clean, soft water and good-quality antifreeze has been used, and the coolant has been renewed at the specified intervals, the above procedure will be sufficient to keep clean the system for a considerable length of time. If, however, the system has been neglected, a more thorough operation will be required, as follows.

- 9 First drain the coolant, then disconnect the radiator top and bottom hoses. Insert a garden hose into the top hose, and allow water to circulate through the radiator until it runs clean from the bottom outlet.

- 10 To flush the engine, insert the garden hose into the thermostat water outlet, and allow water to circulate until it runs clear from



38.5 V6 engine cylinder block drain plug (arrowed)

the bottom hose. If, after a reasonable period, the water still does not run clear, the radiator should be flushed with a good proprietary cleaning agent.

11 In severe cases of contamination, reverse-flushing of the radiator may be necessary. To do this, remove the radiator (Chapter 3), invert it, and insert the garden hose into the bottom outlet. Continue flushing until clear water runs from the top hose outlet. A similar procedure can be used to flush the heater matrix.

12 The use of chemical cleaners should be necessary only as a last resort. Normally, regular renewal of the coolant will prevent excessive contamination of the system.

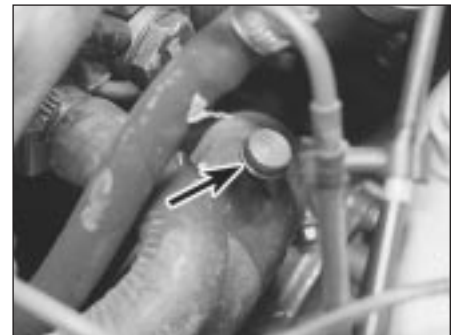
Coolant filling

13 With the cooling system drained and flushed, ensure that all disturbed hose unions are correctly secured, and that the radiator drain plug is securely tightened. Refit the radiator undershield if it was removed for access, and lower the vehicle to the ground.

14 Prepare a sufficient quantity of the specified coolant mixture allow for a surplus, so as to have a reserve supply for topping-up.

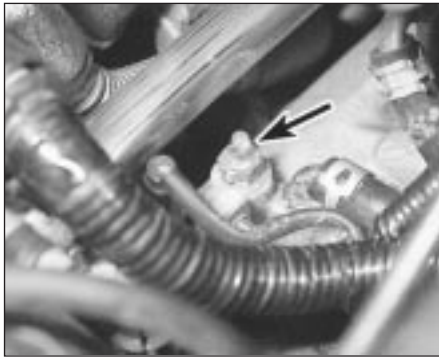
15 Slacken the cooling system bleed screw which, on early 4-cylinder engines, is located on the hose connecting the main coolant pipe to the water pump at the rear of the engine and, on V6 engines, just below the throttle body (see illustrations). Later (1992 onward) 4-cylinder engines don't have a bleed screw.

16 Slowly fill the system through the



38.15a Cooling system bleed screw location (arrowed) on early 4-cylinder engines . . .

1•26 Every 24 000 miles



38.15b . . . and on V6 engines (arrowed)

expansion tank until coolant, free from air bubbles, flows from the bleed screw. Tighten the bleed screw and continue filling until the coolant level reaches the expansion tank "MAX" level line.

17 Start the engine, run it for approximately two minutes, then switch off.

18 Slowly unscrew the pressure cap one complete turn, wait until all the pressure escapes, then remove the cap. Check that the coolant just covers the pipe outlet on the seam of the tank, top up if necessary, then refit the cap.

19 After refilling, always check carefully all components of the system (but especially any unions disturbed during draining and flushing) for signs of coolant leaks. Fresh antifreeze has a searching action, which will rapidly expose any weak points in the system.

20 Note: *If, after draining and refilling the system, symptoms of overheating are found which did not occur previously, then the fault is almost certainly due to trapped air at some point in the system, causing an air-lock and restricting the flow of coolant; usually, the air is trapped because the system was refilled too quickly. In some cases, air-locks can be released by tapping or squeezing the various hoses. If the problem persists, stop the engine and allow it to cool down completely, before unscrewing the expansion tank filler cap or disconnecting hoses to bleed out the trapped air.*

Antifreeze mixture

21 The cooling system should be filled with a water/ethylene glycol-based antifreeze solution, of a strength which will prevent freezing down to at least -25°C, or lower if the local climate requires it. Antifreeze also protects against corrosion, and increases the coolant boiling point.

22 Before adding antifreeze, the cooling

system should be completely drained, preferably flushed, and all hoses checked for condition and security. As noted earlier, fresh antifreeze will rapidly find any weaknesses in the system.

23 After filling with antifreeze, a label should be attached to the expansion tank, stating the type and concentration of antifreeze used, and the date installed. Any subsequent topping-up should be made with the same type and concentration of antifreeze.

24 The exact mixture of antifreeze-to-water which you should use depends on the relative weather conditions. On all V6 engines, and 4-cylinder engines equipped with air conditioning, the mixture should contain approximately 50% antifreeze. On 4-cylinder engines without air conditioning, approximately a 33% antifreeze mixture is recommended. Antifreeze concentrations greater than 55% for V6 engines or 60% for 4-cylinder engines are not recommended as the efficiency of the cooling system may be impaired. Consult the mixture ratio chart on the antifreeze container before adding coolant. Hydrometers are available at most automotive accessory shops to test the coolant. Use antifreeze which meets the vehicle manufacturer's specifications.

Every 48 000 miles

39 Timing belt renewal



1 As mentioned in Section 32, the

manufacturers have increased the service interval for checking the timing belt condition and tension on certain engines, and also the renewal interval. On certain engines the renewal interval is every 48 000 miles but, according to the manufacturer's, the timing

belt on 1990 model year onward V6 engines should last for 96 000 miles. Prudent owners may wish to reduce this interval considerably.

2 Refer to Chapter 2, Part A, or Part B as applicable for renewal procedures

Every 60 000 miles or 5 years, whichever occurs first

40 Braking system hydraulic fluid seal check and renewal



Refer to the relevant overhaul procedures in Chapter 9, for the brake calipers and master cylinder.

41 Emissions control equipment check



1 Details of the emissions control system components are given in Chapter 4 Part E, and checking procedures for the positive

crankcase ventilation system is given in Section 33 of this Chapter.

2 Checking and testing of the other emissions control systems should be entrusted to a Rover dealer.