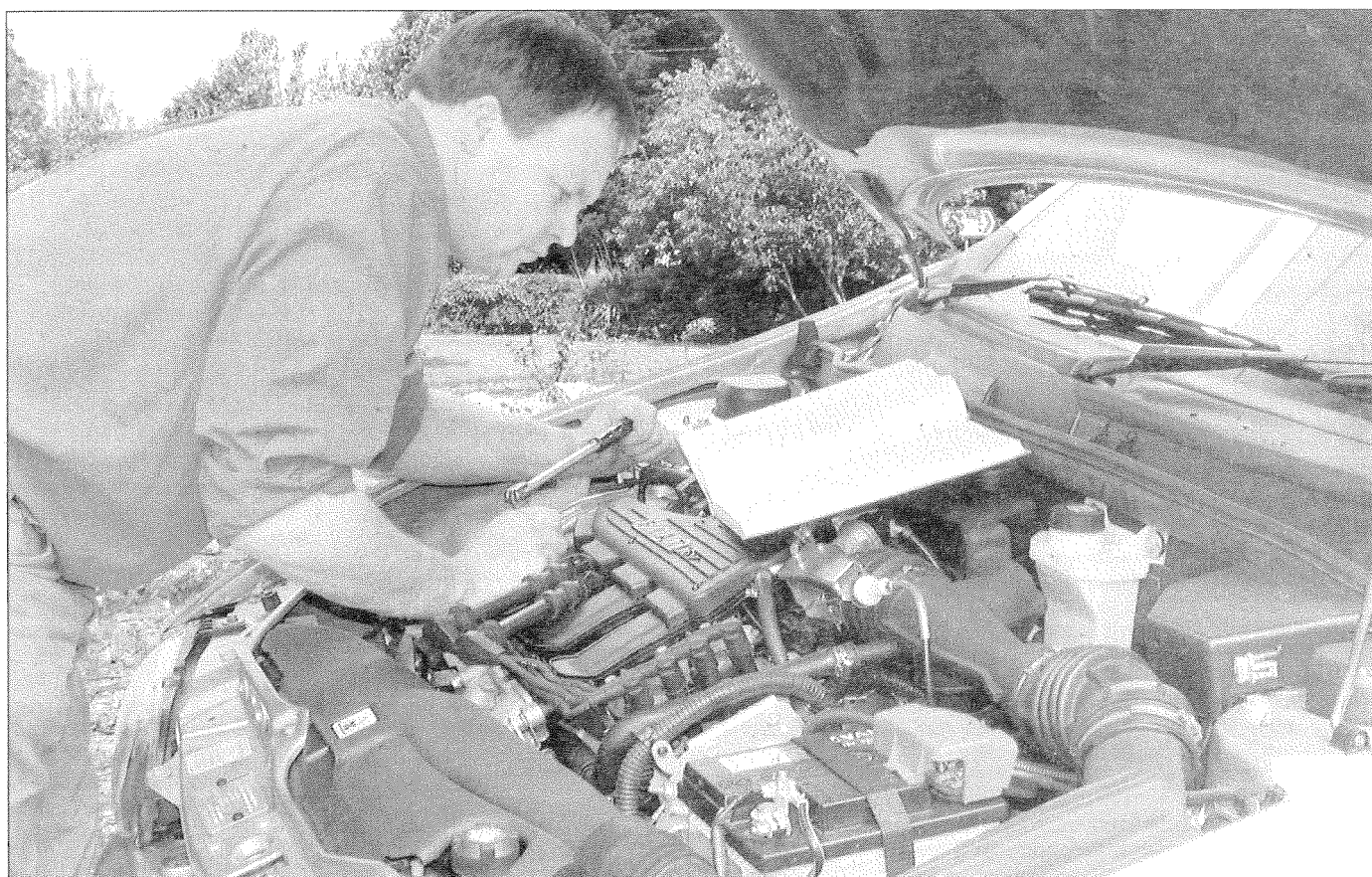


Chapter 1

Routine maintenance & servicing

Contents

Air filter renewal	19	Handbrake adjustment	23
Automatic transmission fluid level check	5	Hinge and lock lubrication	16
Auxiliary drivebelt check and renewal	21	Hose and fluid leak check	9
Auxiliary drivebelt tension check	7	Introduction	1
Battery electrolyte level check	6	Lights and horn operation check	15
Brake fluid renewal	26	Manual transmission oil level check	27
Braking system pipes and hoses check	11	Pollen filter renewal	8
Clutch cable adjustment	22	Rear brake shoe check	28
Coolant renewal	31	Regular maintenance	2
Engine management system fault code check	25	Road test	17
Engine oil and filter renewal	3	Spark plug renewal	18
Evaporative emission control system check	29	Steering and suspension check	13
Exhaust emissions check	24	Timing belt renewal	30
Exhaust system check	12	Transmission and driveshaft gaiter check	10
Front brake pad check	4	Underbody protection check	14
Fuel filter renewal	20		



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



1.2 Servicing specifications

Lubricants and fluids

Refer to end of *Weekly checks* on page 0•17

Capacities

Engine oil (including filter):

1.2 litre engine	2.8 litres
1.4 litre engine	4.1 litres
1.6 litre engine	3.8 litres
1.8 litre engine	4.3 litres

Cooling system (approximate):

1.2 and 1.4 litre engines	6.0 litres
1.6 and 1.8 litre engines	7.0 litres

Transmission (approximate):

Manual transmission:

1.2 and 1.4 litre engine models	1.65 litres
1.6 and 1.8 litre engine models	2.0 litres
Automatic transmission (fluid change)	4.3 litres

Fuel tank (approximate):

Except 1.8 litre models	50 litres
1.8 litre models	60 litres

Washer reservoir:

Models with headlight washers	6.4 litres
Models without headlight washers	5.0 litres

Engine

Oil filter:

1.2, 1.4 and 1.6 litre engines	Champion F107*
1.8 litre engine:	
Up to March 1996	Champion F107*
April 1996 onwards	Champion F133*

***Note:** This is the latest information available; if in any doubt, contact Champion on 01274 848283.

Cooling system

Antifreeze mixture:

40% antifreeze	Protection down to -25°C
50% antifreeze	Protection down to -35°C

Note: Refer to antifreeze manufacturer for latest recommendations.

Fuel system

Air filter element:

Except 1.2 litre engine	Champion U564*
1.2 litre engine	Champion type not available*
Fuel filter	Champion L225*

***Note:** This is the latest information available; if in any doubt, contact Champion on 01274 848283.

Ignition system

Ignition timing Refer to Chapter 5B

Spark plugs:

Except 1.2 litre engine	Champion RC8BYC or RC7YC*
1.2 litre engine	Champion RA4HCX or RA4HC*

Electrode gap**:

Champion RC8BYC	Not adjustable
Champion RA4HCX	0.8 mm (0.032 in)
Champion RC7YC or RA4HC	0.7 mm (0.028 in)

***Note:** This is the latest information available; if in any doubt, contact Champion on 01274 848283.

****The spark plug electrode gap is as quoted by Champion for their recommended plugs. If spark plugs of any other type are to be used, refer to their manufacturer's specifications.**

Clutch

Clutch pedal stroke (see Section 22):

1.2 and 1.4 litre models (where applicable)	155 ± 10 mm
1.6 and 1.8 litre models	170 ± 10 mm

Brakes

Brake pad/shoe friction material minimum thickness 1.5 mm

Torque wrench settings

	Nm	lbf ft
Manual transmission drain plug	46	34
Manual transmission filler/level plug	46	34
Roadwheel bolts	86	63

Torque wrench settings (continued)

	Nm	lbf ft
Spark plugs:		
All except 1.6 litre engine	25	18
1.6 litre engine	27	20
Sump drain plug:		
1.2 litre engine	10	7
1.4 litre engine	25	18
1.6 litre engine	50	37
1.8 litre engine	20	15

Maintenance schedule

The maintenance intervals in this manual are provided with the assumption that you, not the dealer, will be carrying out the work. These are the minimum intervals recommended for vehicles driven daily. If you wish to keep your

vehicle in peak condition at all times, you may wish to perform some of these procedures more often. We encourage frequent maintenance, since it enhances the efficiency, performance and resale value of your vehicle.

When the vehicle is new, it should be serviced by a dealer service department, in order to preserve the factory warranty.

Every 250 miles (400 km) or weekly

- ☐ Refer to *Weekly checks*

Every 12 000 miles (20 000 km) or 12 months

In addition to the items listed in the previous services, carry out the following:

- ☐ Renew the engine oil and filter (Section 3)
- ☐ Check the front brake pad thickness (Section 4)
- ☐ Check the automatic transmission fluid level (Section 5)
- ☐ Check battery electrolyte level - where applicable (Section 6)
- ☐ Check the tension of the auxiliary drivebelt(s) (Section 7)
- ☐ Renew the pollen filter element (Section 8)
- ☐ Check all underbonnet/underbody components and hoses for fluid leaks (Section 9)
- ☐ Check the transmission and driveshaft gaiters for leaks and damage (Section 10)
- ☐ Check the brake pipes and hoses for leaks and damage (Section 11)
- ☐ Check the condition of the exhaust system and its mountings (Section 12)
- ☐ Check the steering and suspension components for condition and security (Section 13)
- ☐ Check underbody protection for damage (Section 14)
- ☐ Check operation of all lights and horn (Section 15)
- ☐ Lubricate all hinges, locks and door check straps (Section 16)
- ☐ Carry out a road test (Section 17)

Every 24 000 miles (40 000 km) or 2 years

In addition to the items listed in the previous services, carry out the following:

- ☐ Renew the spark plugs (Section 18)
- ☐ Renew the air filter element (Section 19)
- ☐ Renew the fuel filter, where applicable (Section 20)

Every 24 000 miles (40 000 km) or 2 years (continued)

- ☐ Check the condition of the auxiliary drivebelt(s), and renew if necessary (Section 21)
- ☐ Check clutch cable adjustment, where applicable (Section 22)
- ☐ Check handbrake adjustment (Section 23)
- ☐ Check exhaust gas emissions (Section 24)
- ☐ Check engine management system for fault codes (Section 25)

Every 36 000 miles (60 000 km) or 2 years

In addition to the items listed in the previous services, carry out the following:

- ☐ Renew the brake fluid (Section 26)
- ☐ Check the manual transmission oil level (Section 27)
- ☐ Check the rear brake shoe lining thickness (Section 28)

Every 48 000 miles (80 000 km) or 4 years

In addition to the items listed in the previous services, carry out the following:

- ☐ Check the evaporative emissions control system (Section 29)

Every 72 000 miles (120 000 km)

In addition to all the items listed above, carry out the following:

- ☐ Renew the timing belt (Section 30)

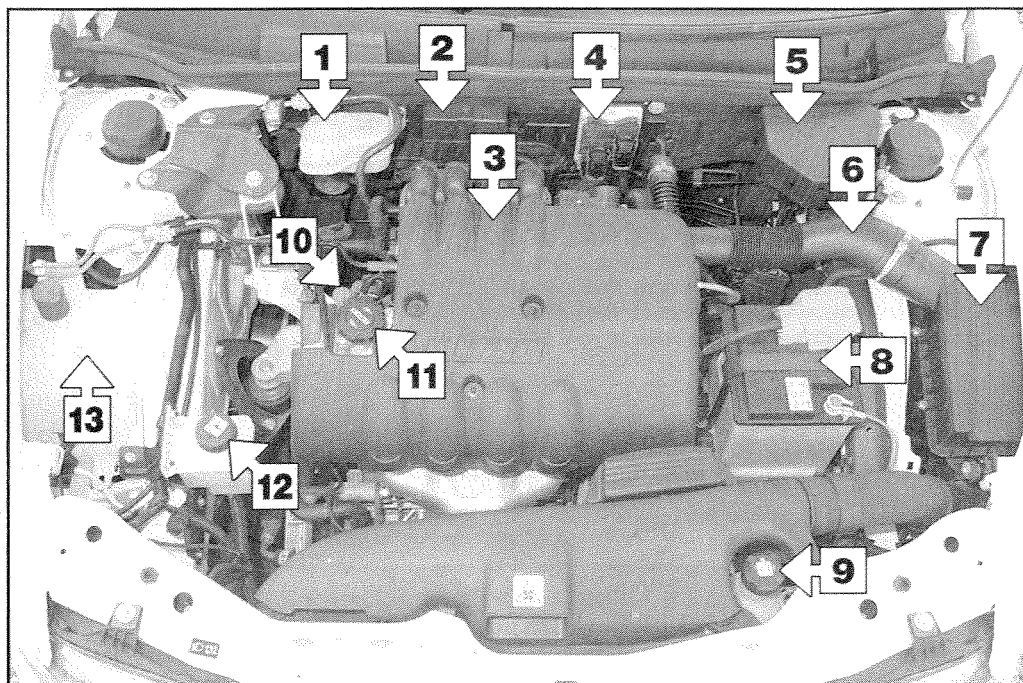
Note: It is strongly recommended that the interval is halved to 36 000 miles (60 000 km), particularly on vehicles which are subjected to intensive use, ie. mainly short journeys or a lot of stop-start driving. The actual belt renewal interval is therefore very much up to the individual owner, but bear in mind that severe engine damage will result if the belt breaks.

Every 2 years (regardless of mileage)

- ☐ Renew the coolant (Section 31)

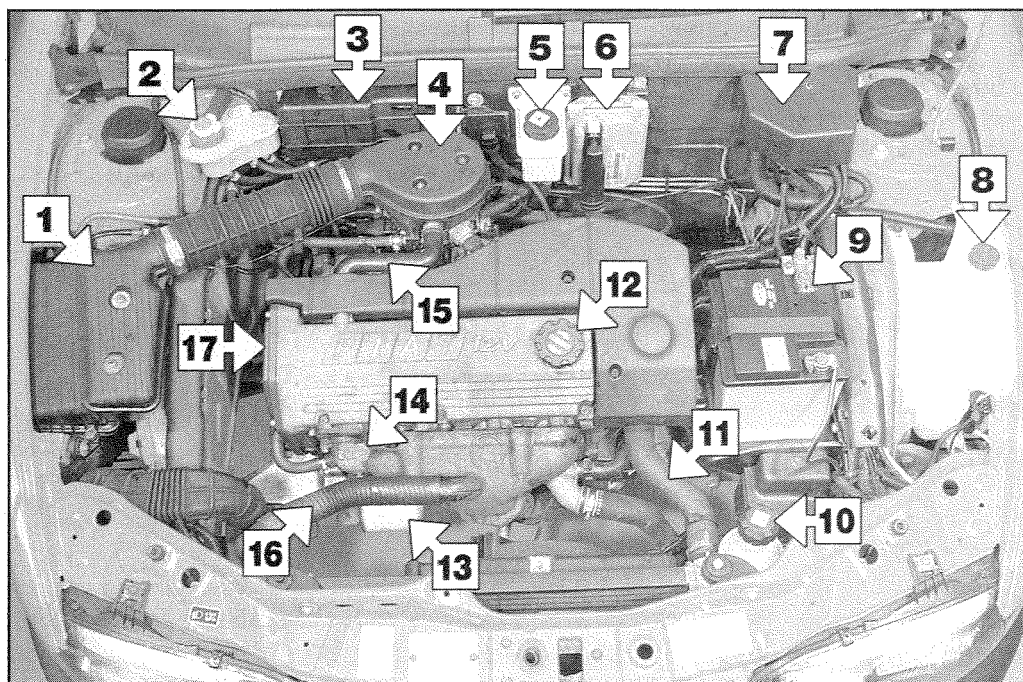
1.4 Maintenance - component locations

Underbonnet view of 1.2 litre model



- 1 Brake and clutch fluid reservoir
- 2 Fuse and relay box
- 3 Engine top cover (remove for access to coils and spark plugs)
- 4 Engine management system ECU
- 5 Auxiliary fusebox
- 6 Air inlet duct
- 7 Air cleaner
- 8 Battery
- 9 Cooling system expansion tank
- 10 Engine oil dipstick
- 11 Oil filler cap
- 12 Power steering reservoir
- 13 Washer reservoir

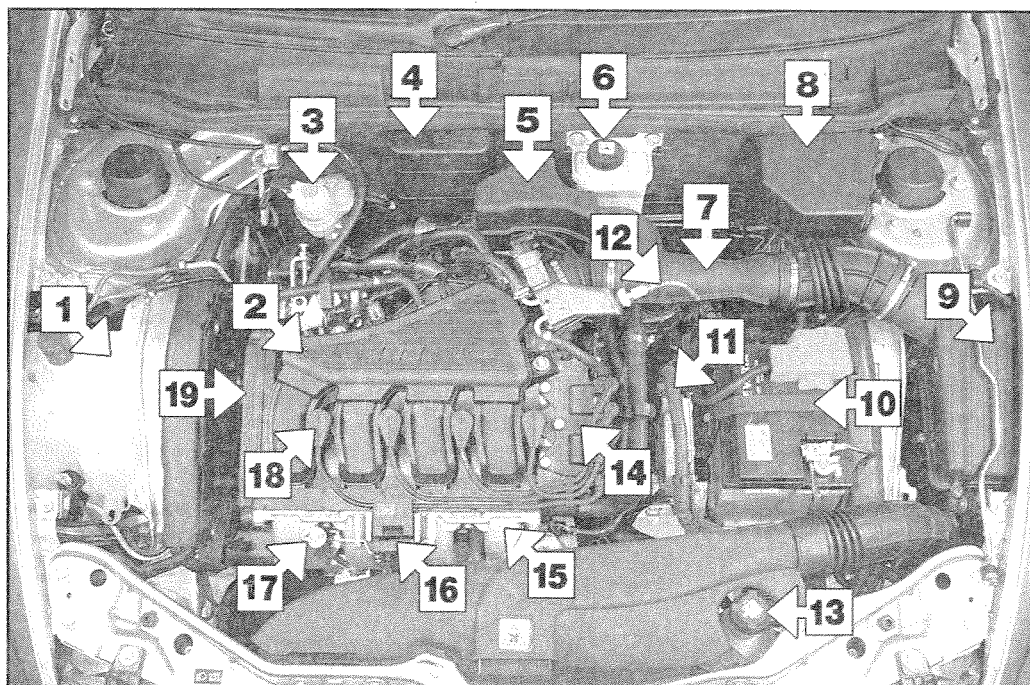
Underbonnet view of 1.4 litre model



- 1 Air cleaner
- 2 Brake and clutch fluid reservoir
- 3 Fuse and relay box
- 4 Throttle body airbox
- 5 Power steering reservoir
- 6 Engine management system ECU
- 7 Auxiliary fusebox
- 8 Washer reservoir
- 9 Battery
- 10 Cooling system expansion tank
- 11 Radiator top hose
- 12 Oil filler cap
- 13 Oil filter
- 14 Engine oil dipstick
- 15 Crankcase breather hose
- 16 Warm-air inlet duct
- 17 Timing belt cover

Underbonnet view of 1.6 litre model

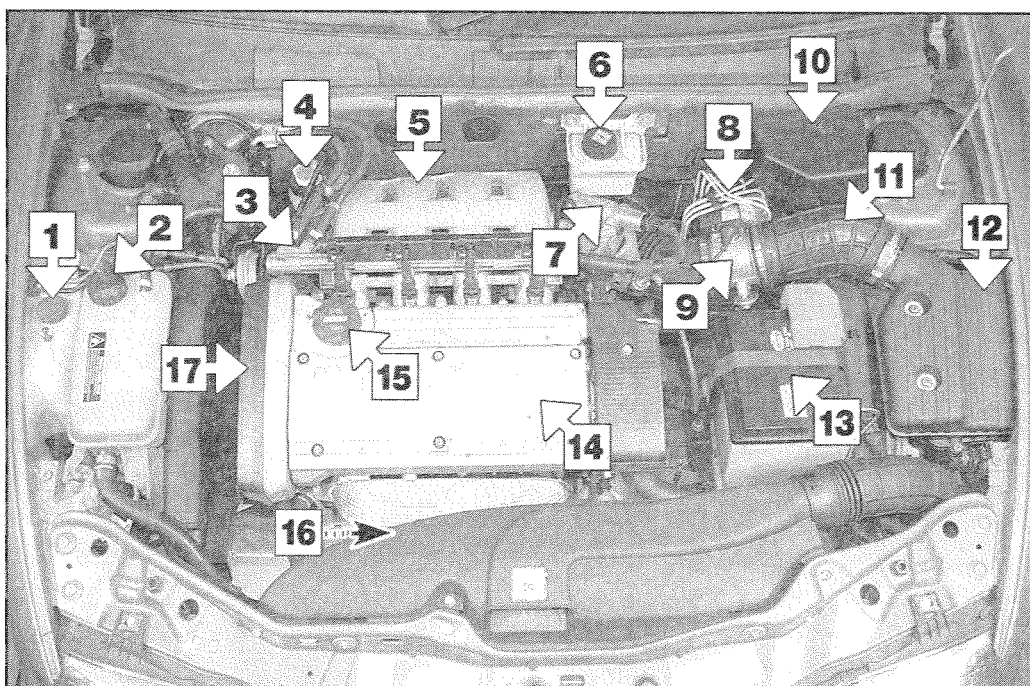
- 1 Washer reservoir
- 2 Inlet manifold (upper section)
- 3 Brake and clutch fluid reservoir
- 4 Fuse and relay box
- 5 Inlet air resonator box
- 6 Power steering reservoir
- 7 Air inlet duct
- 8 Auxiliary fusebox
- 9 Air cleaner
- 10 Battery
- 11 Engine management system ECU
- 12 Accelerator cable
- 13 Cooling system expansion tank
- 14 Ignition coil
- 15 Inlet manifold (lower section)
- 16 Oil filler cap
- 17 Engine oil dipstick
- 18 No 1 spark plug HT lead
- 19 Timing belt cover



1

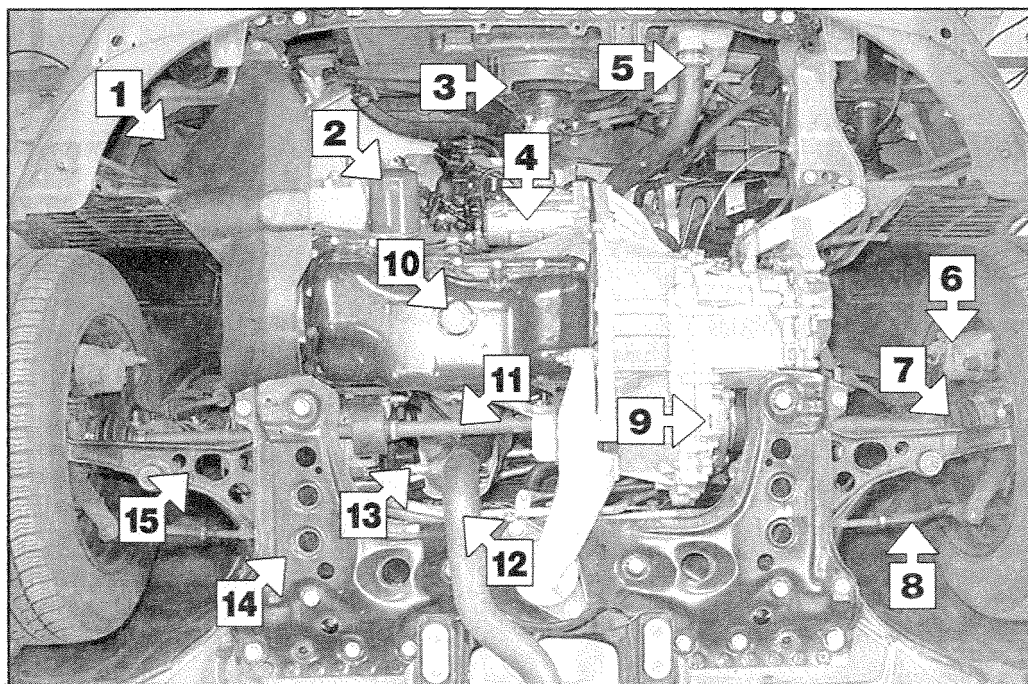
Underbonnet view of 1.8 litre model

- 1 Washer reservoir
- 2 Cooling system expansion tank
- 3 Fuel hoses, fuel rail and injectors
- 4 Brake and clutch fluid reservoir
- 5 Inlet manifold
- 6 Power steering reservoir
- 7 Idle speed control valve
- 8 Anti-lock braking system (ABS) modulator
- 9 Airflow meter
- 10 Auxiliary fusebox
- 11 Air inlet duct
- 12 Air cleaner
- 13 Battery
- 14 Engine top cover (remove for access to coils and spark plugs)
- 15 Oil filler cap
- 16 Engine oil dipstick
- 17 Timing belt cover



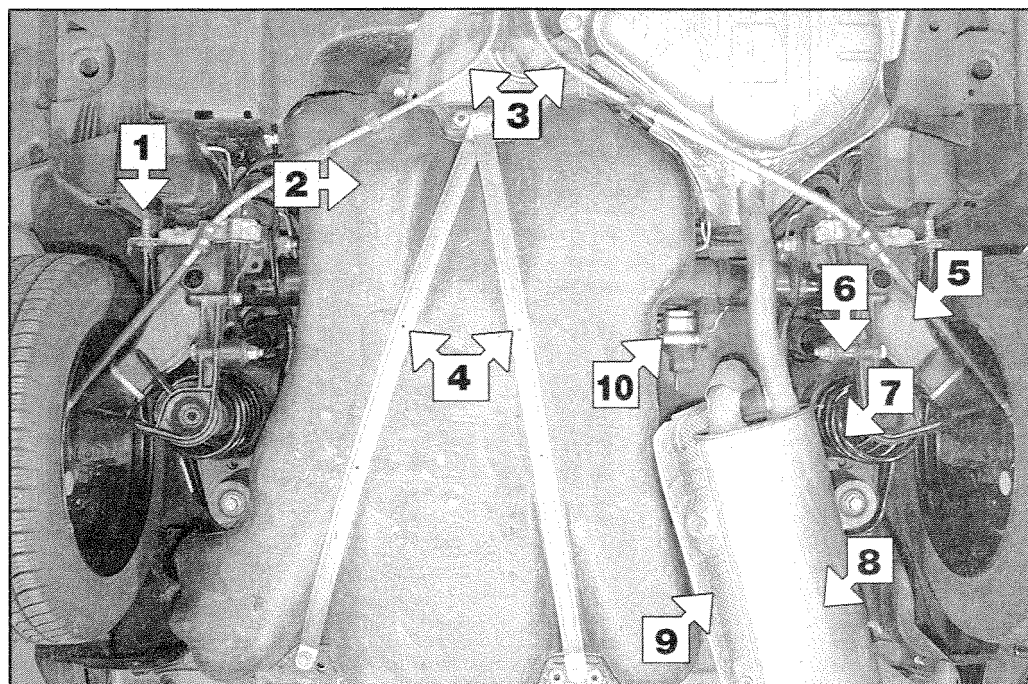
1.6 Maintenance - component locations

Front underside view of 1.6 litre model



- 1 Horn unit
- 2 Oil filter
- 3 Radiator cooling fan
- 4 Starter motor
- 5 Radiator bottom hose
- 6 Front brake caliper
- 7 Driveshaft CV joint gaiter
- 8 Track rod end
- 9 Manual transmission drain plug
- 10 Engine oil drain plug
- 11 Right-hand driveshaft
- 12 Exhaust downpipe
- 13 Oxygen sensor
- 14 Subframe
- 15 Suspension arm

Rear underside view of 1.6 litre model



- 1 Brake pipe/hose connection
- 2 Fuel tank
- 3 Handbrake cables
- 4 Fuel tank retaining straps
- 5 Rear suspension arm
- 6 Rear shock absorber mounting
- 7 Rear coil spring
- 8 Exhaust rear silencer
- 9 Exhaust heat shield
- 10 Brake pressure proportioning valve

1 Introduction

General information

This Chapter is designed to help the home mechanic maintain his/her vehicle for safety, economy, long life and peak performance.

The Chapter contains a master maintenance schedule, followed by Sections dealing specifically with each task in the schedule. Visual checks, adjustments, component renewal and other helpful items are included. Refer to the accompanying illustrations of the engine compartment and the underside of the vehicle for the locations of the various components.

Servicing your vehicle in accordance with the mileage/time maintenance schedule and the following Sections will provide 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 vehicle, you will discover that many of the procedures can - and should - be grouped together, because of the particular procedure being performed, or because of the proximity of two otherwise unrelated components to one another. For example, if the vehicle is raised for any reason, the exhaust can be inspected at the same time as the suspension and steering components.

The first step in this maintenance programme

is to prepare yourself before the actual work begins. Read through all the Sections relevant to the work to be carried out, then make a list and gather all the parts and tools required. If a problem is encountered, seek advice from a parts specialist, or a dealer service department.

2 Regular maintenance

1 If, from the time the vehicle is new, the routine maintenance schedule is followed closely, and frequent checks are made of fluid levels and high-wear items, as suggested throughout this manual, the engine will be kept in relatively good running condition, and the need for additional work will be minimised.

2 It is possible that there will be times when the engine is running poorly due to the lack of regular maintenance. This is even more likely if a used vehicle, which has not received regular and frequent maintenance checks, is purchased. In such cases, additional work may need to be carried out, outside of the regular maintenance intervals.

3 If engine wear is suspected, a compression test (refer to the relevant part of Chapter 2) will provide valuable information regarding the overall performance of the main internal components. Such a test can be used as a basis to decide on the extent of the work to be carried out. If, for example, a compression test indicates serious internal engine wear, conventional maintenance as described in this Chapter will not greatly improve the perform-

ance of the engine, and may prove a waste of time and money, unless extensive overhaul work is carried out first.

4 The following series of operations are those most often required to improve the performance of a generally poor-running engine:

Primary operations

- Clean, inspect and test the battery (See Weekly checks and Section 6, where applicable).*
- Check all the engine-related fluids (See Weekly checks).*
- Check the condition and tension of the auxiliary drivebelt (Sections 7 and 21).*
- Renew the spark plugs (Section 18).*
- Check the condition of the air filter, and renew if necessary (Section 19).*
- Check the fuel filter, where applicable (Section 20).*
- Check the condition of all hoses, and check for fluid leaks (Section 9).*
- Check the exhaust gas emissions (Section 24).*

5 If the above operations do not prove fully effective, carry out the following secondary operations:

Secondary operations

All items listed under Primary operations, plus the following:

- Check the charging system (see Chapter 5A, Section 4).*
- Check the ignition system (see Chapter 5B).*
- Check the fuel system (see relevant Part of Chapter 4).*
- Renew the ignition HT leads, if applicable.*

Every 12 000 miles (20 000 km)

3 Engine oil and filter renewal

1 Frequent oil and filter changes are the most important maintenance procedures which can be undertaken by the DIY owner. As engine oil ages, it becomes diluted and contaminated, which leads to premature engine wear.

2 The oil change interval given in this Manual is the same as quoted by the manufacturer, but owners of older vehicles (or those covering a small annual mileage) may feel justified in changing the oil and filter more frequently, perhaps every 6000 miles, or every 6 months. The quality of engine oil used is a significant factor in this - the 12 000-mile interval **only** applies if a high-quality synthetic-based oil is used.

3 Before starting this procedure, gather all the necessary tools and materials. Also make sure that you have plenty of clean rags and newspapers handy, to mop up any spills. Ideally, the engine oil should be warm, as it will drain better, and more built-up sludge will be removed with it. Take care, however, not to

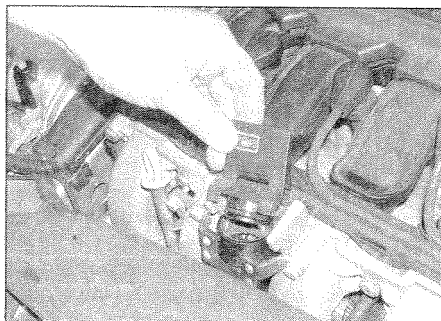
touch the exhaust or any other hot parts of the engine when working under the vehicle. To avoid any possibility of scalding, and to protect yourself from possible skin irritants and other harmful contaminants in used engine oils, it is advisable to wear gloves when carrying out this work.

4 Remove the oil filler cap (see illustration), and take out the dipstick.

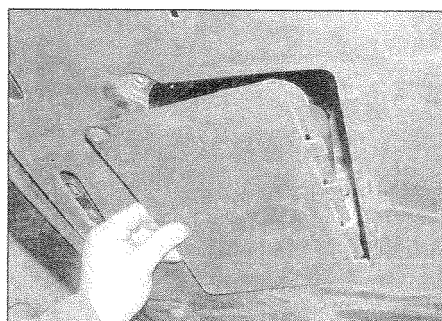
5 Access to the underside of the vehicle will be greatly improved if it can be raised on a lift, driven onto ramps, or jacked up and

supported on axle stands (see *Jacking and vehicle support*). Whichever method is chosen, make sure that the vehicle remains level, or if it is at an angle, that the drain plug is at the lowest point.

6 Where applicable, unscrew the fasteners and remove the engine undertray, for access to the drain plug. On 1.8 litre engines, the drain plug can be reached from the back of the engine, and a panel is provided in the undertray, which can be hinged down to get to the filter (see illustration).



3.4 Removing the oil filler cap on a 1.6 litre model

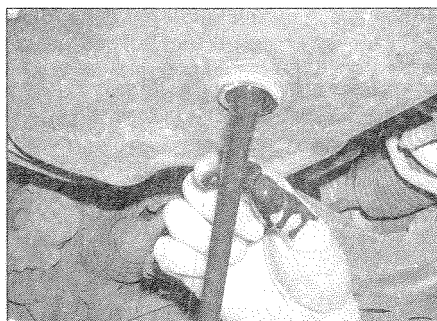


3.6 Removing the oil filter access panel on a 1.8 litre model

1.8 Every 12 000 miles (20 000 km)



3.7 On some models, a special socket is required to loosen the sump drain plug



3.8 Draining the engine oil



3.11 Removing the oil filter on a 1.8 litre model

7 Using a special socket where necessary, slacken the drain plug (on the base of the sump) about half a turn (**see illustration**). Position the draining container under the drain plug, then remove the plug completely. Recover the sealing ring from the drain plug.

8 Allow some time for the old oil to drain, noting that it may be necessary to reposition the container as the oil flow slows to a trickle (**see illustration**).

9 After all the oil has drained, wipe off the drain plug with a clean rag, and fit a new sealing washer. Clean the area around the drain plug opening, and refit the plug. Tighten the plug securely.

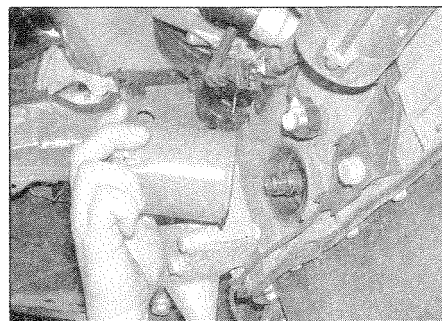
10 Move the container into position under the oil filter, which is located on the front of the cylinder block.

11 Using an oil filter removal tool if necessary, slacken the filter initially, then unscrew it by hand the rest of the way (**see illustration**). Empty the oil in the filter into the container.

12 Use a clean rag to remove all oil, dirt and sludge from the filter sealing area on the engine. Check the old filter to make sure that the rubber sealing ring has not stuck to the engine. If it has, carefully remove it.

13 Apply a light coating of clean engine oil to the sealing ring on the new filter, then screw it into position on the engine (**see illustration**). Tighten the filter firmly by hand only - **do not** use any tools.

14 Remove the old oil from under the car, then refit the undertray or access panel (as applicable). Lower the car to the ground.



3.13 Fit and tighten the new oil filter by hand only - **do not** use any tools

15 With the car on level ground, fill the engine, using the correct grade and type of oil (**see Lubricants and fluids**). An oil can spout or funnel may help to reduce spillage (**see illustration**). Pour in half the specified quantity of oil first, then wait a few minutes for the oil to fall to the sump.

16 Continue adding oil a small quantity at a time until the level is up to the MIN mark on the dipstick. Adding around 1.0 litre of oil will now bring the level up to the MAX on the dipstick - **do not** worry if a little too much goes in, as some of the apparent excess will be taken up in filling the oil filter. Refit the dipstick and the filler cap.

17 Start the engine and run it for a few minutes; check for leaks around the oil filter seal and the sump drain plug. Note that there may be a few seconds' delay before the oil pressure warning light goes out when the engine is started, as the oil circulates through the engine oil galleries and the new oil filter before the pressure builds up.

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 completely full, recheck the level on the dipstick, and add 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.

4 Front brake pad check

1 Firmly apply the handbrake, loosen the front roadwheel bolts, then jack up the front of the car and support it securely on axle stands. Remove the front roadwheels.

2 For a comprehensive check, the brake pads should be removed and cleaned. The operation of the caliper can then also be checked, and the condition of the brake disc itself can be fully examined on both sides. Refer to Chapter 9.

3 If any pads friction material is worn to the specified thickness or less, *all four pads must be renewed as a set*.

4 Check the operation of the pad wear warning light by disconnecting the wiring plug

adjacent to the brake caliper. With the ignition on, touch the wiring plug to earth, and check that the warning light comes on.

5 Automatic transmission fluid level check

1 Ideally, the fluid level must be checked with the engine/transmission at operating temperature. This can be achieved by checking the level after a journey of at least 10 miles. If the level is checked when cold, follow this up with a level check when the fluid is hot.

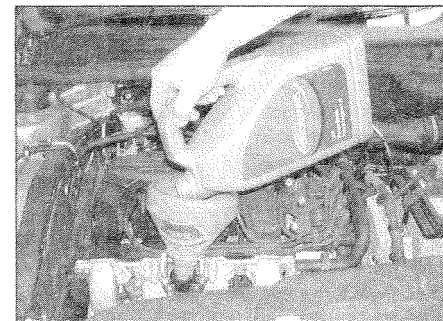
2 Park the car on level ground, and apply the handbrake very firmly. As an added precaution, chock the front and rear wheels, so that the car cannot move.

3 With the engine idling, move the selector lever gently from position P to position 1, and back to P.

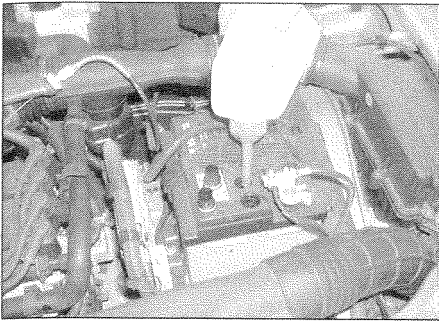
4 The fluid level dipstick is located on the front of the transmission. Before removing the dipstick, thoroughly clean the area around it - no dirt or debris must be allowed to enter the transmission.

5 Extract the dipstick, and wipe it clean using a clean piece of rag or tissue. Re-insert the dipstick completely, then pull it out once more. The fluid level should be between the reference marks on the side of the dipstick marked HOT (if the level is checked when cold, use the markings on the COLD side of the dipstick).

6 If topping-up is required, this is done via the dipstick tube. It is most important that no dirt



3.15 Filling the engine with oil



6.3 Topping-up the battery electrolyte

or debris enters the transmission as this is done - use a clean funnel (preferably with a filter) and fresh fluid from a clean container.

7 Pour the fresh fluid a little at a time down the dipstick tube, checking the level frequently.

8 When the level is correct, refit the dipstick and switch off the engine.

6 Battery electrolyte level check



Warning: The electrolyte inside a battery is diluted acid - it is a good idea to wear suitable rubber gloves. When topping-up, don't overfill the cells so that the electrolyte overflows. In the event of any spillage, rinse the electrolyte off without delay. Refit the cell covers and rinse the battery with copious quantities of clean water. Don't attempt to siphon out any excess electrolyte.

1 Models covered by this Manual are fitted with a 'limited-maintenance' battery as standard equipment (or may have had a 'maintenance-free' one fitted as a replacement). If the battery in your vehicle is marked 'Freedom', 'Maintenance-Free' or similar, no electrolyte level checking is required (the battery is often completely sealed, preventing any topping-up).

2 Batteries which do require their electrolyte level to be checked can be recognised by the presence of level markings and removable covers over the six battery cells - the battery casing is also sometimes translucent, so that the electrolyte level can be more easily checked. Some of the batteries fitted by FIAT have level markings, but no means of topping-up!

3 Remove the cell covers and either look down inside the battery to see the level web, or check the level using any markings provided on the battery casing. The electrolyte should at least cover the battery plates. If necessary, top up a little at a time with distilled (de-ionised) water until the level in all six cells is correct - don't fill the cells up to the brim (see illustration). Wipe up any spillage, then refit the cell covers.

4 On batteries where the level can be checked but not topped-up, if the level is low, consult a dealer or automotive electrical specialist as to the best course of action (likely to be fitting a replacement battery).

7 Auxiliary drivebelt tension check

Note: On models with 1.4 and 1.8 litre engines, an automatic belt tensioner is used, and regular tension checks are not required. Check the belt condition at the specified intervals, however, as described in Section 21.

1 The only belt tension specifications quoted by FIAT are for use with their dedicated belt tensioning equipment, and are not of great practical help. The advice given below should be treated as a rough guide, and should be adequate in most cases. If there is serious concern over belt tension, refer to a FIAT dealer for advice.

2 If a drivebelt is set too tight, it will subject the driven unit to excess load, resulting in premature wear of the unit (and of the belt). If the belt is too slack, it will not transmit drive properly, and the belt will suffer wear due to slippage.

1.2 litre engine

3 Two or three separate belts are used on this engine, depending on whether or not air conditioning is fitted.

4 For improved access to the belts, remove the three bolts securing the engine top cover, and lift the cover away.

5 Each of the drivebelts is checked and adjusted in much the same way. To check the power steering pump drivebelt, remove the bolt securing the belt upper cover, and remove the cover. To access the air conditioning compressor drivebelt, refer to paragraphs 16 to 18.

6 Press on the belt at the centre-point between the two pulleys, and the drivebelt should deflect by approximately 5 mm.

Alternator drivebelt

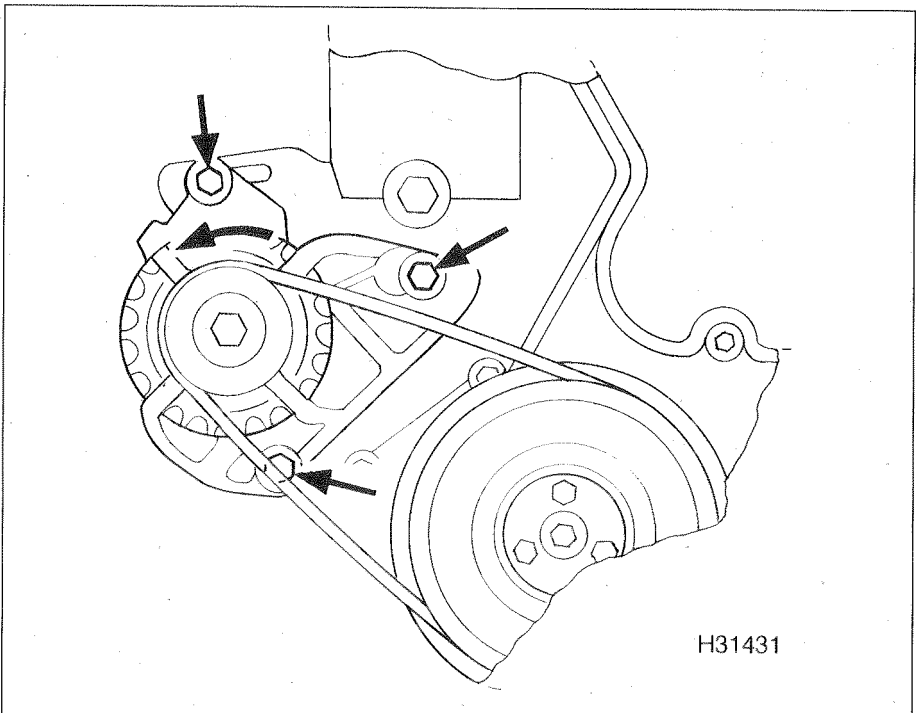
7 If adjustment is required, loosen the nuts and bolts on the two adjuster slots, and the lower mounting through-bolt. Pivot the alternator as necessary using a suitable lever to set the belt tension, then re-tighten all the fasteners (see illustration). Take care when levering the alternator that no damage is caused to the alternator or surrounding components.

8 On models with air conditioning, note that if the air conditioning compressor drivebelt needs adjusting, this will affect the alternator belt tension.

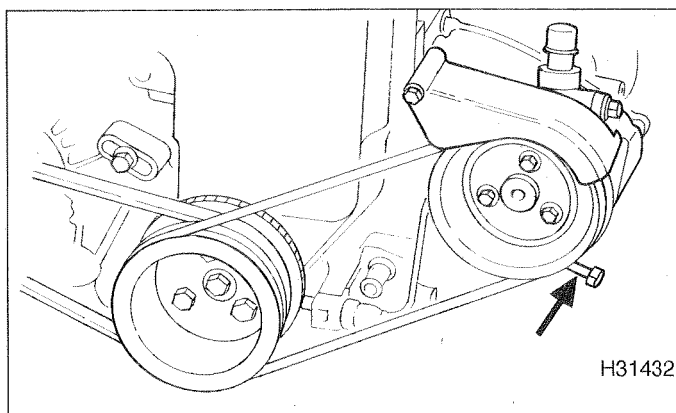
Air conditioning compressor drivebelt

9 If adjustment is required, loosen the nut and bolt on the adjuster slot, and the lower mounting through-bolt. Pivot the compressor as necessary using a suitable lever to set the belt tension, then re-tighten all the fasteners. Take care when levering the compressor that no damage is caused to the compressor or surrounding components.

10 Note that if the air conditioning compressor drivebelt needs adjusting, this will affect the alternator belt tension.



7.7 Loosen the alternator mountings (arrowed) and pivot the alternator to tension the belt



7.11 Power steering pump adjuster bolt (arrowed)



7.13 To improve access to the power steering pump drivebelt, remove the belt guard

Power steering pump drivebelt

11 If adjustment is required, loosen the nuts and bolts on the two adjuster slots, and the upper mounting through-bolt. The belt tension is set by now turning the adjuster bolt at the front of the pump mounting bracket (see illustration). When the belt tension is correct, re-tighten all the fasteners and refit the belt upper cover.

1.6 litre engine

12 Two or three separate belts are used on this engine, depending on whether or not air conditioning is fitted.

Power steering pump drivebelt

13 Check the power steering pump drivebelt

first - to improve access, unbolt and remove the drivebelt guard (see illustration). Press on the belt at the centre-point between the two pulleys, and the drivebelt should deflect by approximately 5 mm.

14 If adjustment is required, loosen the pump mountings, the nut and bolt on the adjuster slot, and the adjuster locknut. Turn the adjuster bolt as required to set the belt tension, then re-tighten the locknut and the nut and bolt on the adjuster slot (see illustrations).

15 With all fixings re-tightened, turn the belt clockwise through one complete revolution, using a spanner on the crankshaft pulley bolt. Re-check the belt tension, and re-adjust if necessary. Refit the drivebelt guard on completion.

Alternator/coolant pump drivebelt

16 With the car parked on a level surface, apply the handbrake and chock the rear wheels. Loosen the right-hand front wheel bolts.

17 Raise the front of the vehicle, rest it securely on axle stands and remove the right-hand front roadwheel.

18 Unscrew and release the fasteners securing the wheelarch inner panel, to gain access to the belt run (see illustration).

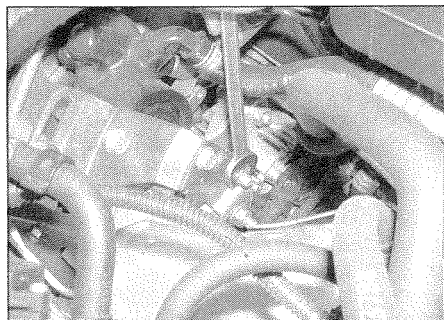
19 Press firmly on the belt, midway between the crankshaft and water pump pulleys (see illustration). The belt should deflect by approximately 5 mm.

20 Refer to the advice given in paragraph 2, noting that the lower drivebelt drives the alternator and coolant pump.

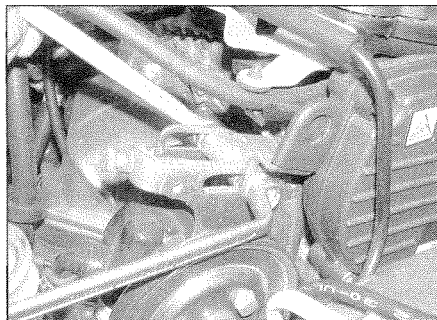
21 If adjustment is required, loosen the tensioner upper and lower bolts. Using an Allen key, turn the hex adjuster as required to set the belt tension, then re-tighten the tensioner bolts (see illustration).

22 Turn the belt clockwise through one complete revolution, using a spanner on the crankshaft pulley bolt. Re-check the belt tension, and re-adjust if necessary.

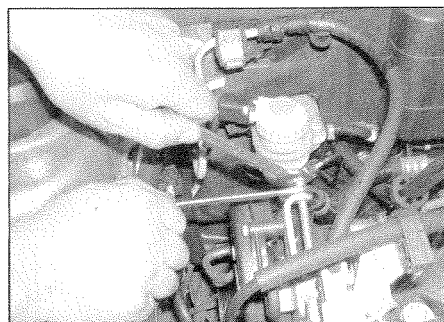
23 On completion, refit the wheelarch access panel and the roadwheel, and lower the car to the ground. Tighten the wheel bolts to the specified torque.



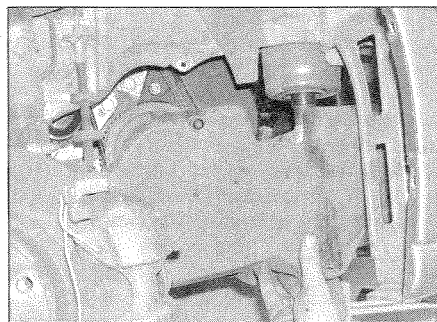
7.14a Loosen the pump mounting bolts ...



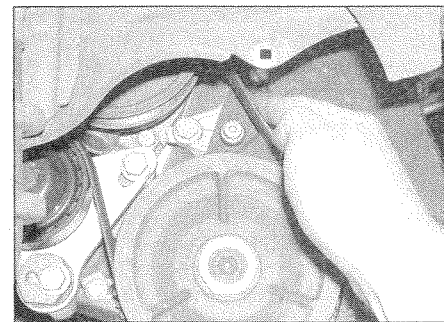
7.14b ... and the nut and bolt on the adjuster slot ...



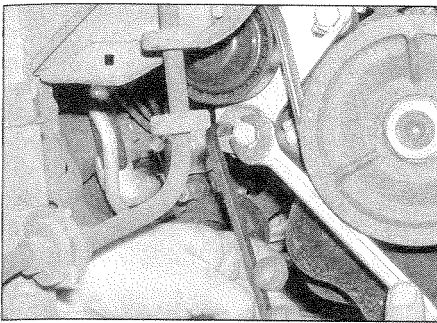
7.14c ... then turn the adjuster bolt as required before tightening the locknut



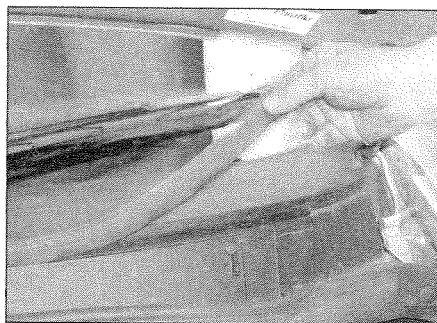
7.18 Removing the wheelarch inner panel



7.19 Checking the drivebelt tension



7.21 Set the belt tension, then tighten the tensioner bolts



8.3 Lift up the weatherstrip which fits over the filter access panel



8.4a Undo the two screws ...

Air conditioning compressor drivebelt

24 Press on the belt at the centre-point between the two pulleys, on the opposite side to the tensioner wheel. The drivebelt should deflect by approximately 5 mm.

25 If adjustment is required, loosen the bolt on the adjuster slot, and the pivot bolt at the top of the tensioner arm.

26 Loosen the locknut at the front of the arm, and turn the adjuster bolt as required to move the tensioner wheel and set the belt tension.

27 On completion, re-tighten all the fasteners. With all fixings re-tightened, turn the belt clockwise through one complete revolution, using a spanner on the crankshaft pulley bolt. Re-check the belt tension, and re-adjust if necessary.

8 Pollen filter renewal

Note: A pollen filter is not fitted to all models, and one was not actually fitted to our main project vehicle seen in the workshop.

1 The air entering the vehicle's ventilation system is passed through a very fine pleated-paper air filter element, which removes particles of pollen, dust and other airborne foreign matter. To ensure its continued effectiveness, this filter's element must be renewed at regular intervals. Failure to renew the element will also result in greatly-reduced airflow into the passenger compartment, reducing demisting and ventilation.

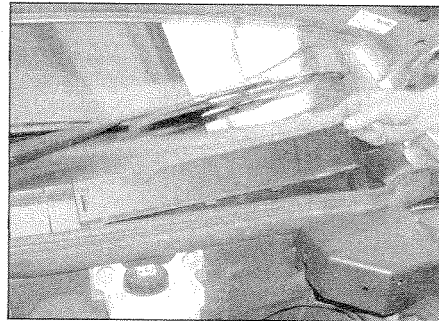
2 The pollen filter is located in the air intake at the base of the windscreen. Open the bonnet for access.

3 Lift up the separate section of weatherstrip which fits over the top edge of the pollen filter access panel (see illustration).

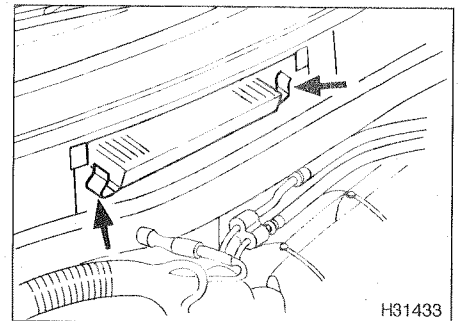
4 Unscrew and remove the two retaining bolts, and pull out the pollen filter access panel (see illustrations).

5 Reach in through the access panel, and release the two spring clips which retain the pollen filter. Lower the filter out of its location, noting which way up it fits (see illustration).

6 As far as possible, clean the inside of the filter housing, and the inside of the access panel.



8.4b ... and lift out the access panel



8.5 Remove the pollen filter by releasing the two clips (arrowed)

7 Fit the new filter into position, and secure with the two clips.

8 Refit the access panel, secure with the two bolts, and clip the weatherstrip into position.

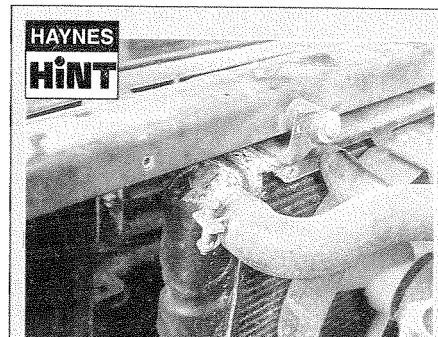
9 Hose and fluid leak check

1 Visually inspect the engine joint faces, gaskets and seals for any signs of water or oil leaks. Pay particular attention to the areas around the cylinder head, oil filter and sump joint faces. Bear in mind that, over a period of time, some very slight seepage from these areas is to be expected - what you are really

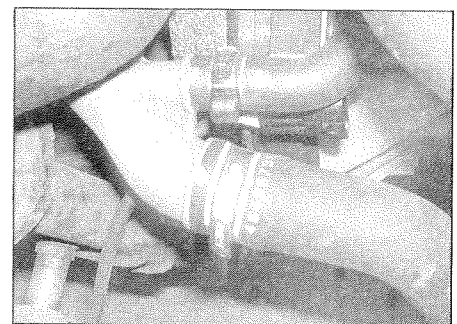
looking for is any indication of a serious leak (see Haynes Hint). Should a leak be found, renew the offending gasket or oil seal by referring to the appropriate Chapters in this manual.

2 Also check the security and condition of all the engine-related pipes and hoses. Ensure that all cable-ties or securing clips are in place and in good condition. Clips that are broken or missing can lead to chafing of the hoses, pipes or wiring, which could cause more serious problems in the future.

3 Carefully check the radiator hoses and heater hoses along their entire length. Renew any hose that is cracked, swollen or deteriorated. Cracks will show up better if the hose is squeezed. Pay close attention to the hose clips that secure the hoses to the cooling system components. Hose clips can pinch and puncture hoses, resulting in cooling system leaks (see illustration).



A leak in the cooling system will usually show up as white- or rust-coloured deposits on the areas adjoining the leak.



9.3 Check all hoses and their retaining clips

1•12 Every 12 000 miles (20 000 km)

4 Inspect all the cooling system components (hoses, 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 Where applicable, inspect the automatic transmission fluid cooler hoses for leaks or deterioration.

6 With the vehicle raised, inspect the fuel tank and filler neck for punctures, cracks and other damage. The connection between the filler neck and tank is especially critical. Sometimes a rubber filler neck or connecting hose will leak due to loose retaining clamps or deteriorated rubber.

7 Carefully check all rubber hoses and metal fuel lines leading away from the fuel tank. Check for loose connections, deteriorated hoses, crimped lines, and other damage. Pay particular attention to the vent pipes and hoses, which often loop up around the filler neck and can become blocked or crimped. Follow the lines to the front of the vehicle, carefully inspecting them all the way. Renew damaged sections as necessary.

8 From within the engine compartment, check the security of all fuel hose attachments and pipe unions, and inspect the fuel hoses and vacuum hoses for kinks, chafing and deterioration (see illustration).

9 Check the condition of the power steering fluid hoses and pipes.

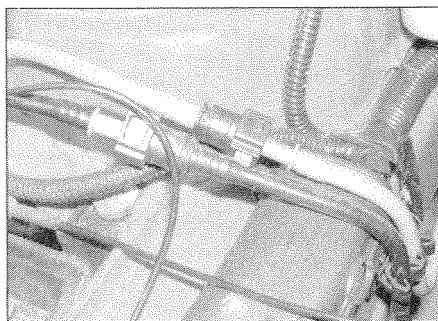
10 Transmission and driveshaft gaiter check

1 Raise the front of the vehicle and support on axle stands. Alternatively, drive the car onto ramps.

2 Inspect around the transmission for any sign of leaks or damage. In particular, check the area around the driveshaft oil/fluid seals for leakage. Slight seepage should not be of great concern, but a serious leak should be investigated further, with reference to Chapter 7A or 7B.

3 Check the security and condition of the wiring and wiring plugs on the transmission housing.

4 With the vehicle raised and securely supported on stands, turn the steering onto full lock, then slowly rotate the roadwheel. 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 grease to escape, and lead to water and grit entry 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 (see Chapter 8).



9.8 Check all fuel and vacuum hoses

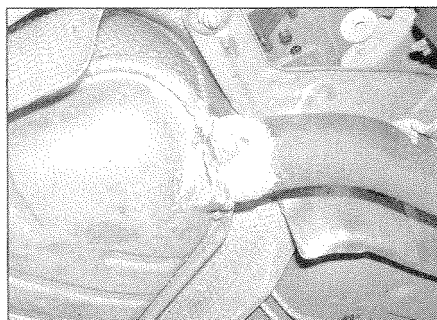
5 At the same time, check the general condition of the CV joints themselves by first holding the driveshaft and attempting to rotate the wheel. Repeat this check by holding the inner joint and attempting to rotate the driveshaft. Any appreciable movement indicates wear in the joints, wear in the driveshaft splines, or a loose driveshaft retaining nut.

11 Braking system pipes and hoses check

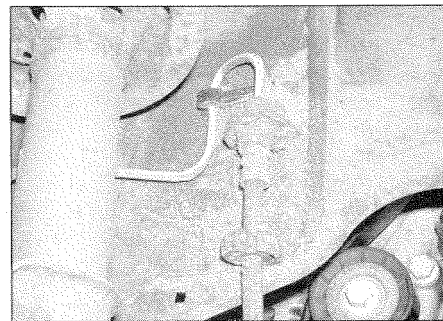
1 Starting under the bonnet, examine the brake fluid reservoir and master cylinder for leaks. When a brake fluid leak occurs, it is normal to find blistered or wrinkled paint in the area of the leak. Check the metal pipes from the master cylinder for damage, and check the brake pressure regulator, servo/ABS unit and fluid unions for leaks.

2 With the vehicle raised and securely supported on stands, first inspect each front brake caliper. In particular, check the flexible hose leading to the caliper for signs of damage or leaks, especially where the hose enters the metal end fitting. Make sure that the hose is not twisted or kinked, and that it cannot come into contact with any other components when the steering is on full lock.

3 From the caliper, trace the metal brake pipes back along the car. Again, look for leaks from the fluid unions or signs of damage, but additionally check the pipes for signs of corrosion (see illustration). Make sure the



12.2 Check all exhaust joints for signs of corrosion damage



11.3 Check all brake pipes and fittings for corrosion

pipes are securely located by the clips provided on the vehicle underside.

4 At the rear of the vehicle, inspect each rear brake and its flexible hose, where applicable. Examine the handbrake cable, tracing it back from each rear brake and checking for frayed cables or other damage. Lubricate the handbrake cable guides, pivots and other moving parts with general-purpose grease.

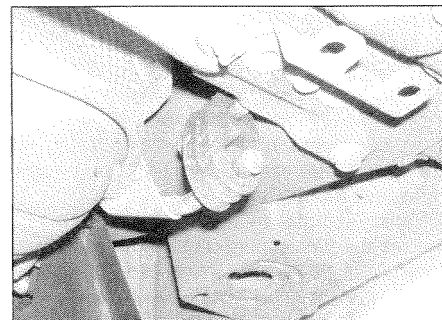
5 If any damage is found, refer to Chapter 9 for further information.

12 Exhaust system check

1 With the engine cold (at least an hour after the vehicle has been driven), check the complete exhaust system from the engine to the end of the tailpipe. The exhaust system is most easily checked with the vehicle raised on a hoist, or suitably supported on axle stands, so that the exhaust components are readily visible and accessible.

2 Check the exhaust pipes and connections for evidence of leaks, severe corrosion and damage (see illustration). Make sure that all brackets and mountings are in good condition, and that all relevant nuts and bolts are tight. 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.

3 Rattles and other noises can often be traced to the exhaust system, especially the brackets and mountings (see illustration).



12.3 Check the condition of all exhaust mounting brackets and rubbers

Try to move the pipes and silencers. If the components are able to come into contact with the body or suspension parts, secure the system with new mountings. Otherwise separate the joints (if possible) and twist the pipes as necessary to provide additional clearance.

13 Steering and suspension check

Front suspension and steering check

- 1 Raise the front of the vehicle, and securely support it on axle stands. Where necessary for improved access, release the fasteners and remove the engine undertray (where applicable).
- 2 Visually inspect the balljoint dust covers and the steering rack-and-pinion 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 (see illustration).
- 3 Check the power 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 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. Before condemning any components, however, check that the roadwheel bolts are tightened to the specified torque.
- 5 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 inner or outer balljoint is worn, the visual movement will be obvious.
- 6 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.
- 7 With the car 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 the rack-and-pinion steering gear itself.

Suspension strut/shock absorber check

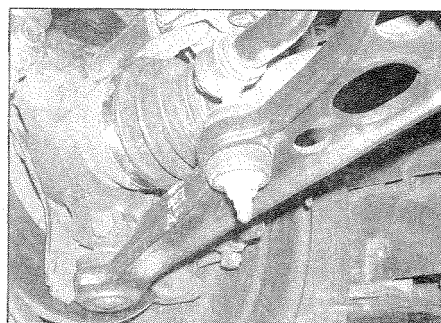
- 8 Check for any signs of fluid leakage around the suspension strut/shock absorber body, or from the rubber gaiter around the piston rod. Should any fluid be noticed, the suspension strut/shock absorber is defective internally, and should be renewed. **Note:** Suspension struts/shock absorbers should always be renewed in pairs on the same axle.
- 9 The efficiency of the suspension strut/shock absorber may be checked by bouncing the vehicle at each 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 suspension strut/shock absorber is probably suspect. Examine also the suspension strut/shock absorber upper and lower mountings for any signs of wear.

14 Underbody protection check

Raise and support the vehicle on axle stands. Using an electric torch or lead light, inspect the entire underside of the vehicle, paying particular attention to the wheelarches. Look for any damage to the flexible underbody coating, which may crack or flake off with age, leading to corrosion. Also check that the wheelarch liners are securely attached with any clips provided - if they come loose, dirt may get in behind the liners and defeat their purpose. If there is any damage to the underseal, or any corrosion, it should be repaired before the damage gets too serious.

15 Lights and horn operation check

- 1 With the ignition switched on where necessary, check the operation of all exterior lights.
- 2 Check the brake lights with the help of an assistant, or by reversing up close to a reflective door. Make sure that all the rear lights are capable of operating independently, without affecting any of the other lights - for example, switch on as many rear lights as possible, then try the brake lights. If any unusual results are found, this is usually due to an earth fault or other poor connection at that rear light unit.
- 3 Again with the help of an assistant or using a reflective surface, check as far as possible that the headlights work on both main and dipped beam.
- 4 Replace any defective bulbs with reference to Chapter 12.



13.2 Check the condition of the balljoint rubber covers

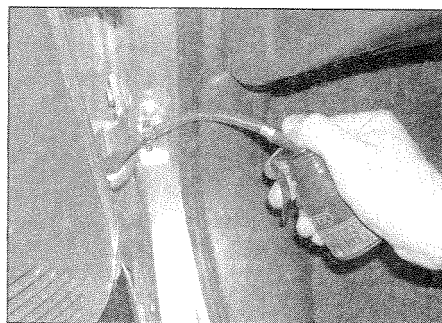


HAYNES HINT Particularly on older vehicles, bulbs can stop working as a result of corrosion build-up on the bulb or its holder - fitting a new bulb may not cure the problem in this instance. When replacing any bulb, if you find any green or white-coloured powdery deposits, these should be cleaned off using emery cloth.

- 5 Check the operation of all interior lights, including the glovebox and luggage area illumination lights. Switch on the ignition, and check that all relevant warning lights come on as expected - the vehicle handbook should give details of these. Now start the engine, and check that the appropriate lights go out.
- 6 When you are next driving at night, check that all the instrument panel and fascia lighting works correctly. If any problems are found, refer to Chapter 12, Section 5.
- 6 Finally, choose an appropriate time of day to test the operation of the horn.

16 Hinge and lock lubrication

Lubricate the hinges of the bonnet, doors and tailgate with light general-purpose oil. Similarly, lubricate all latches, locks and lock strikers, and the door check straps with general-purpose oil or grease (see illustration). At the same time, check the



16.1 Lubricate the door hinges and check straps

1•14 Every 12 000 miles (20 000 km)

security and operation of all the locks, adjusting them if necessary (see Chapter 11).

Lightly lubricate the bonnet release mechanism and cable with suitable grease.

Do not attempt to lubricate the steering lock.

17 Road test

Instruments and electrical equipment

1 Check the operation of all instruments and electrical equipment.

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

Steering and suspension

3 Check for any abnormalities in the steering, suspension, handling or road 'feel'.

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

5 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

6 Check the performance of the engine, clutch (where applicable), transmission and driveshafts.

7 Listen for any unusual noises from the engine, clutch and transmission.

8 Make sure the engine runs smoothly at idle, and there is no hesitation on accelerating.

9 Check that, where applicable, the clutch action is smooth and progressive, that the drive is taken up smoothly, and that the pedal travel is not excessive. Also listen for any noises when the clutch pedal is depressed.

10 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'.

11 On automatic transmission models, make sure that all gearchanges occur smoothly, without snatching, and without an increase in engine speed between changes. 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 FIAT dealer.

12 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 if necessary.

Braking system

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

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

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

16 Test the operation of the brake servo unit as follows. With the engine off, depress the footbrake four or five times to exhaust the vacuum. Hold the brake pedal depressed, 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 depressed now, 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.

Every 24 000 miles (40 000 km)

18 Spark plug renewal

1 The correct functioning of the spark plugs is vital for the correct running and efficiency of the engine. It is essential that the plugs fitted are appropriate for the engine (a suitable type is specified at the beginning of this Chapter). If this type is used and the engine is in good condition, the spark plugs should not need

attention between scheduled replacement 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 Before removing the spark plugs, allow the engine time to cool.

1.2 and 1.4 litre engines

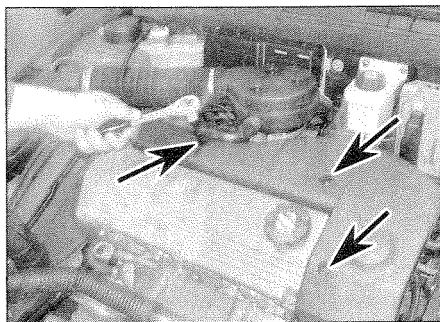
3 Remove the three bolts securing the engine top cover, loosen the fourth bolt at the rear of the timing cover (where applicable), and lift

away the cover for access to the spark plugs and leads (see illustrations).

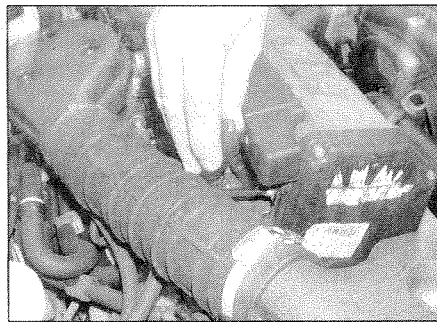
1.2, 1.4 and 1.6 litre engines

4 Release the HT leads from the retaining clips on the top of the cylinder head as necessary.

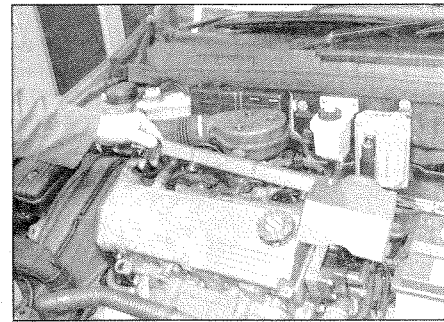
5 If the marks on the original-equipment spark plug (HT) leads cannot be seen, mark the leads 1 to 4, to correspond to the cylinder the lead serves (No 1 cylinder is at the timing belt end of the engine).



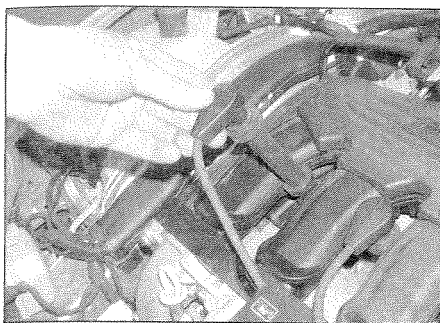
18.3a Remove the three screws (arrowed) ...



18.3b ... loosen the screw behind the timing cover ...



18.3c ... and remove the engine top cover - 1.4 litre engine



18.6 Pull the HT leads off the spark plugs

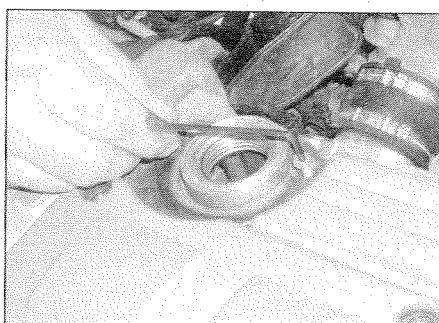
6 Carefully pull the lead end fittings upwards from the plugs, and (where applicable) out of the recesses in the cylinder head. Grip the end fitting, not the lead, otherwise the lead connection may be fractured (see illustration).

1.8 litre engine

7 Unscrew the oil filler cap, and remove the two Allen screws concealed underneath. Remove the six main cover bolts, and lift off the engine top cover, for access to the ignition coil assemblies (see illustrations).

8 Disconnect the wiring plugs from the ignition coil which fits over each spark plug (see illustration).

9 To avoid transposing the ignition coils, it is advisable to work on one assembly at a time. Alternatively, mark the coil assemblies for position, noting that No 1 coil is nearest the timing belt end of the engine.



18.7a Removing one of the Allen screws under the oil filler cap

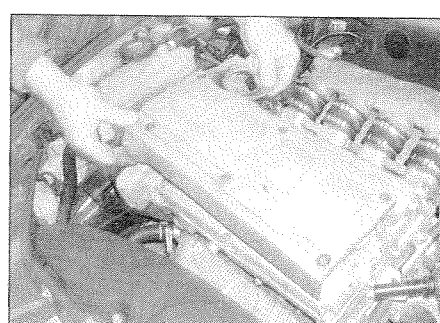
10 Starting with No 1 coil, unscrew the two bolts securing the coil to the cylinder head (see illustration).

11 Carefully pull the coil and plug connector upwards off the plug, and withdraw it from the cylinder head recess (see illustration).

All engines

12 It is advisable to remove the debris from the spark plug recesses using a clean brush, vacuum cleaner or compressed air before removing the plugs. If this is not done, this debris will drop into the cylinders or lodge in the spark plug threads.

13 Unscrew the plugs using a spark plug spanner, suitable box spanner or a deep socket and extension bar (see illustrations). Keep the socket aligned with the spark plug - if it is forcibly moved to one side, the ceramic insulator may be broken off. As each plug is removed, examine it as follows.



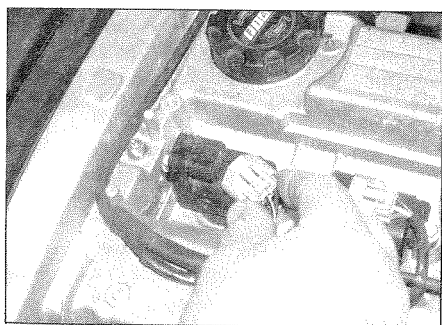
18.7b Lifting off the engine top cover

14 Examination of the spark plugs 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 or too hot a plug (a hot plug transfers heat away from the electrode slowly, a cold plug transfers heat away quickly).

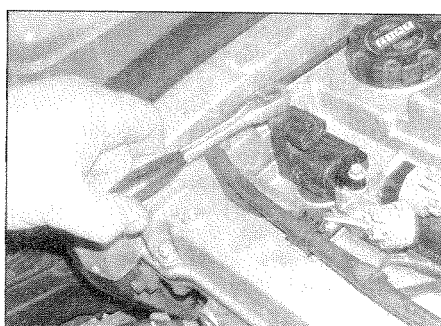
15 If the tip and insulator nose are covered with hard black-looking deposits, then this is indicative that the mixture is too rich. Should the plug be black and oily, then it is likely that the engine is fairly worn, as well as the mixture being too rich.

16 If the insulator nose is covered with light-coloured deposits, then the mixture is correct and it is likely that the engine is in good condition.

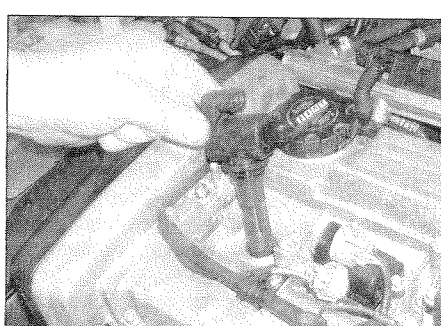
17 The spark plug electrode gap is of considerable importance as, if it is too large or too small, the size of the spark and its efficiency will be seriously impaired. Where the



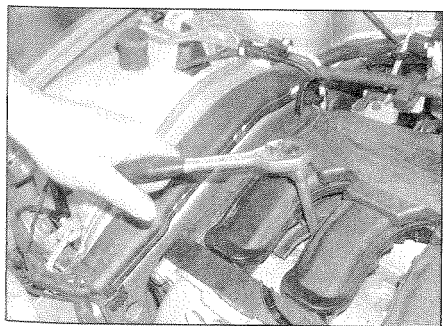
18.8 Disconnect the wiring plug from each coil



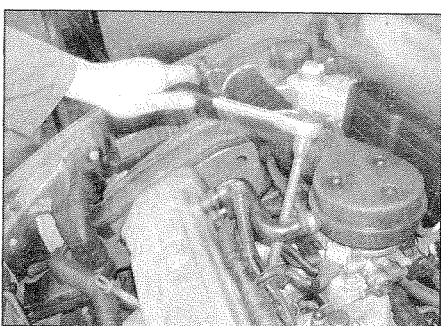
18.10 Unscrew the two coil retaining bolts



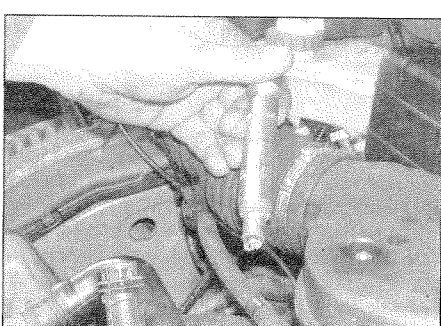
18.11 Pull the coil upwards off its spark plug



18.13a Unscrew the plugs using a socket and extension bar - 1.6 litre engine ...

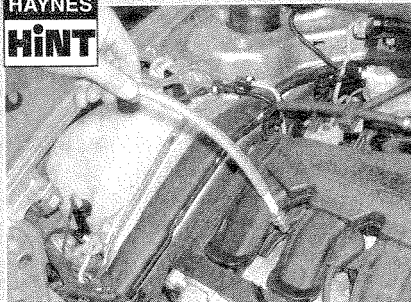


18.13b ... and on the 1.4 litre engine



18.13c ... and remove them from the engine - note the twin-earth electrode plug

**HAYNES
HINT**



It is very often difficult to insert spark plugs into their holes without cross-threading them. To avoid this possibility, fit a short length of 5/16 inch internal diameter rubber 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 to the aluminium cylinder head

gap can be adjusted, it should be set to the value specified at the start of this Chapter. **Note:** Spark plugs with multiple earth electrodes are becoming an increasingly common fitment, especially to vehicles equipped with catalytic converters. Unless there is clear information to the contrary, no attempt should be made to adjust the plug gap on a spark plug with more than one earth electrode.

18 To set the gap, measure it with a feeler blade and then bend open, or closed, the outer plug electrode until the correct gap is achieved. The centre electrode should never be bent, as this may crack the insulator and cause plug failure, if nothing worse. If using feeler blades, the gap is correct when the appropriate-size blade is a firm sliding fit.

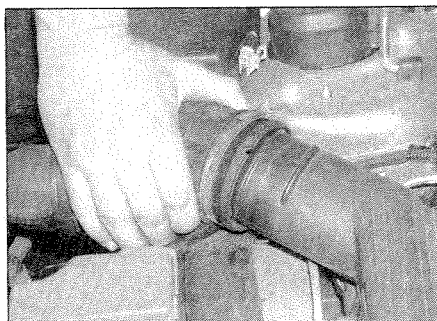
19 Special spark plug electrode gap adjusting tools are available from most motor accessory shops, or from some spark plug manufacturers.

20 Before fitting the spark plugs, check that the threaded connector sleeves are tight, and that the plug exterior surfaces and threads are clean. It's often difficult to screw in new spark plugs without cross-threading them - this can be avoided using a piece of rubber hose (see **Haynes Hint**).

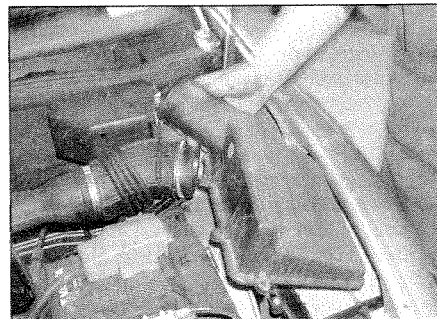
21 Remove the rubber hose (if used), and tighten the plug to the specified torque using the spark plug socket and a torque wrench. If a torque wrench is not available, tighten the plug by hand until it just seats, then tighten it by no more than a quarter of a turn further with the plug socket and handle. Refit the remaining spark plugs in the same manner.

22 Refit the HT leads (or ignition coils) securely in their correct order.

23 Where applicable, refit the engine top cover, using a reversal of the removal procedure.



19.1 Loosen the securing clip, and pull off the air inlet duct ...



19.2b ... and remove the air cleaner lid

19 Air filter renewal

1 Release the metal retaining band securing the air inlet duct to the air cleaner lid, and separate the duct from the lid (see **illustration**).

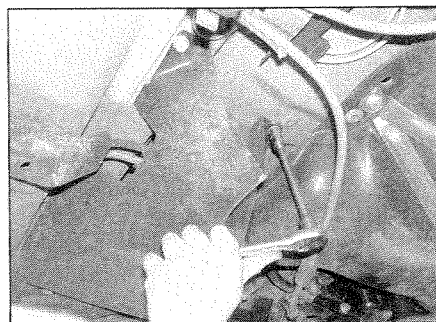
2 Remove the screws securing the air cleaner lid, and lift the lid away (see **illustrations**).

3 Lift out the filter element, noting which way round it fits (see **illustration**).

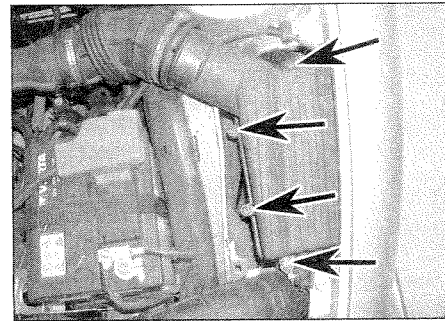
4 Remove any debris that may have collected inside the air cleaner.

5 Fit a new air filter element in position, noting any direction-of-fitting markings and ensuring that the edges are securely seated.

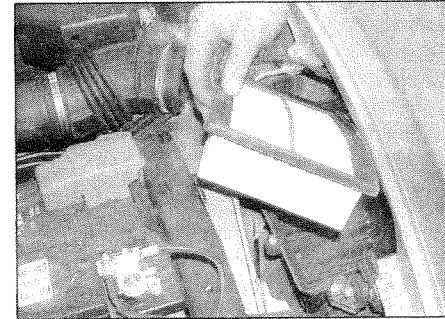
6 Refit the air cleaner lid and secure with the screws. Refit the air inlet duct, and secure with the retaining band.



20.3 Unscrew the bolts securing the filter cover panel



19.2a Loosen the securing screws (arrowed) ...



19.3 Lift out the air filter element, noting which way round it fits

20 Fuel filter renewal



Warning: Refer to the notes in **Safety first!**, and follow them implicitly. Petrol is a highly-dangerous and volatile liquid, and the precautions necessary when handling it cannot be overstressed.

Note: On later 1.6 litre models, and all 1.2 litre models, an in-line fuel filter is not fitted (even though the plastic cover panel still appears under the car). On these models, the only filters are fitted to the base of the fuel pump/sender unit, inside the fuel tank - these are not routinely replaced.

1 The fuel filter is situated underneath the rear of the vehicle, next to the fuel tank. To gain access to the filter, chock the front wheels, then jack up the rear of the vehicle and support it securely on axle stands.

2 Depressurise the fuel system with reference to the relevant Part of Chapter 4.

3 To gain access to the filter, unbolt and remove the plastic cover panel fitted underneath it (see **illustration**).

4 If you have them, fit hose clamps to the filter inlet and outlet hoses. These are not essential, but even with the system depressurised, there will still be an amount of petrol in the pipes (and the old filter), and this will siphon out when the pipes are disconnected. Even with hose clamps fitted, the old filter will contain some fuel, so have some rags ready to soak up any spillage.

5 Before removing the filter, note any direction-of-flow markings on the filter body, and check against the new filter - the arrow should point in the direction of fuel flow (following the hose leading to the front of the car) (see illustration).

6 The inlet and outlet hoses are equipped with quick-release connectors. To release the connectors, squeeze them together at the sides, then pull apart (see illustration).

7 Loosen the retaining clamp bolt and remove the old filter (see illustration).

8 If the fuel hoses show any sign of damage, or if the quick-release connectors are not making a secure fit, seek the advice of a FIAT dealer on renewing the hoses.

9 Fit the new filter into position, with the flow marking arrow correctly orientated, and tighten the retaining clamp bolt (see illustration).

10 Reconnect the fuel hoses, ensuring that no dirt is allowed to enter the hoses or filter connections, and that the quick-release connectors click together fully.

11 Start the engine (there may be a delay as the system re-pressurises and the new filter fills with fuel). Let the engine run for several minutes while you check the filter hose connections for leaks.

12 Refit the cover panel below the filter, secure with the bolts, then lower the vehicle to the ground.



Warning: Dispose safely of the old filter; it will be highly flammable, and may explode if thrown on a fire.

21 Auxiliary drivebelt check and renewal

1.2 litre engine

1 Remove the three bolts securing the engine upper cover, and remove the cover for access to the belts.

2 With the car parked on a level surface, apply the handbrake and chock the rear wheels. Loosen the right-hand front wheel bolts.

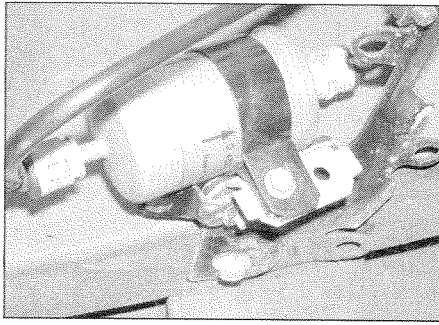
3 Raise the front of the vehicle, rest it securely on axle stands and remove the right-hand front roadwheel.

4 Unscrew and release the fasteners securing the wheelarch inner panel, to gain access to the belt run.

Power steering pump drivebelt

5 The power steering pump is located at the front of the engine. Check the condition of the pump drivebelt as follows.

6 Look for cracks, splitting and fraying on the surface of the belt; check also for signs of glazing (shiny patches) and separation of the belt plies. If damage or wear is visible, the belt should be renewed. If there is any evidence of contamination by oil, grease or coolant, the reason should be investigated without delay.



20.5 Note the flow direction arrow before removing the old filter

7 Note that it is not unusual for a ribbed belt to exhibit small cracks in the edges of the belt ribs, and unless these are extensive or very deep, belt renewal is not essential.

8 Using a socket and wrench on the crankshaft pulley bolt, rotate the crankshaft so that the full length of the drivebelt can be examined.

9 If the belt is to be removed, loosen the fasteners described in Section 7 and slip the drivebelt from the pulleys.

10 Refitting the belt is a reversal of removal, making sure that the belt ribs engage properly with the pulley grooves. Tension the belt using the information in Section 7.

Air conditioning compressor drivebelt

11 Where fitted, the drivebelt is the 'middle' drivebelt of three. The compressor is mounted at the rear of the engine, below the alternator.

12 Check the belt using the information in paragraphs 6 to 8.

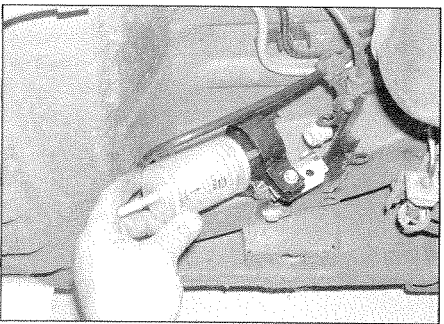
13 If the belt is to be removed, first remove the power steering pump drivebelt as described previously. Loosen the fasteners on the compressor as described in Section 7, and slip the drivebelt from the pulleys.

14 Refitting the belt is a reversal of removal, making sure that the belt ribs engage properly with the pulley grooves. Tension the compressor and pump drivebelts using the information in Section 7.

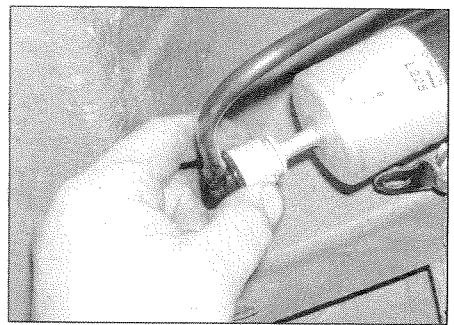
Alternator drivebelt

15 The alternator is fitted at the rear of the engine.

16 Check the belt using the information in paragraphs 6 to 8.



20.7 Removing the fuel filter



20.6 Disconnecting one of the quick-release hoses

17 If the belt is to be removed, first remove the air conditioning compressor drivebelt (where applicable) as described previously. Loosen the fasteners on the alternator as described in Section 7, and slip the drivebelt from the pulleys.

18 Refitting the belt is a reversal of removal, making sure that the belt ribs engage properly with the pulley grooves. On models with air conditioning, loosely fit the alternator drivebelt first, then fit and tension the compressor drivebelt before tensioning the alternator belt. Tension the drivebelts using the information in Section 7.

1.6 litre engine

19 To improve access, remove the wheelarch inner panel as described in paragraphs 2 to 4.

Air conditioning compressor drivebelt

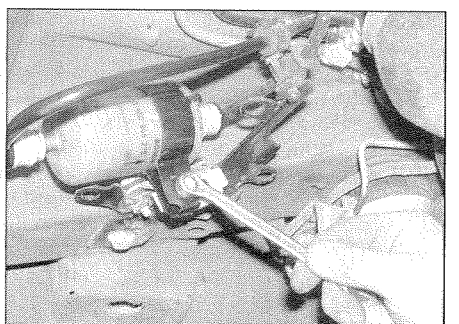
20 The air conditioning compressor is mounted at the front of the engine.

21 Check the belt using the information in paragraphs 6 to 8.

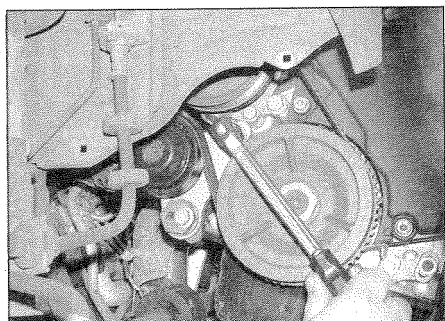
22 Loosen the fasteners on the tensioner pulley as described in Section 7, and slip the drivebelt from the pulleys.

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

- Fit the belt around the pulleys as noted on removal, with the flat side of the belt over the tensioner wheel. Make sure that the belt ribs engage properly with the pulley grooves. Make sure that any slack in the belt is adjacent to the tensioner.
- Tension the belt using the information in Section 7.



20.9 Tighten the filter clamp bolt securely



21.25a Loosen the tensioner bolts . . .

- c) Refit the wheelarch access panel and the roadwheel, and lower the car to the ground. Tighten the wheel bolts to the specified torque.

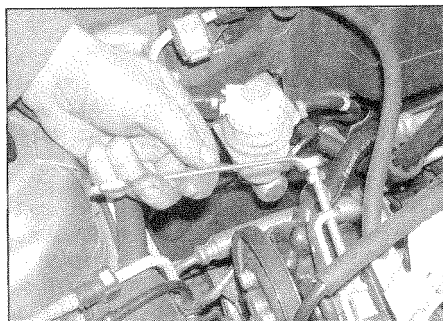
Alternator/coolant pump drivebelt

24 Check the belt using the information in paragraphs 6 to 8.

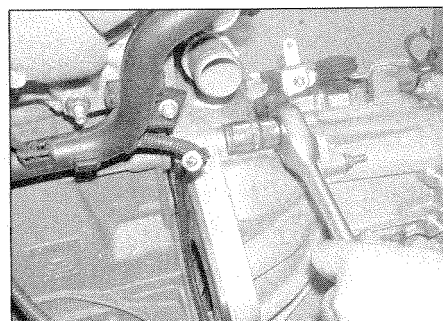
25 If the belt is to be removed, either for servicing work or renewal, remove the air conditioning compressor belt (where applicable) as described previously. Loosen the tensioner bolts, and release the belt tension. Noting how the belt is fitted around the pulleys, slip the belt off and remove it (see illustrations).

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

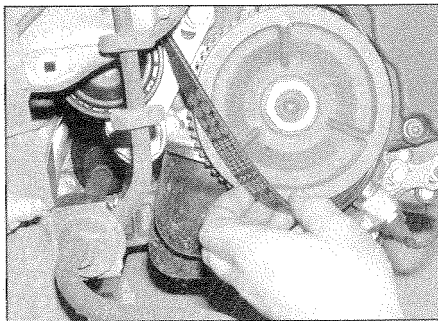
- a) Fit the belt around all the pulleys as noted on removal, apart from the tensioner pulley, making sure that the belt ribs engage properly with the pulley grooves.



21.28a Turn the adjuster to release the belt tension . . .



21.30 Removing the drivebelt upper guard



21.25b . . . and remove the auxiliary drivebelt from the pulleys

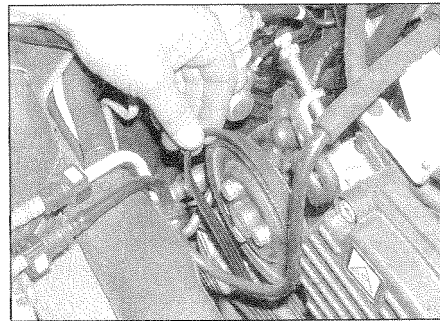
Make sure that any slack in the belt is adjacent to the tensioner.

- b) Turn the tensioner pulley fully anti-clockwise, then slip the flat side of the belt over the tensioner pulley.
c) Tension the belt using the information in Section 7.
d) Where applicable, refit the air conditioning compressor drivebelt as described previously.
e) Refit the wheelarch access panel and the roadwheel, and lower the car to the ground. Tighten the wheel bolts to the specified torque.

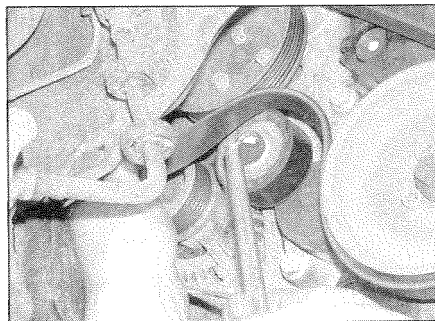
Power steering pump drivebelt

27 Check the belt using the information in paragraphs 6 to 8.

28 If the belt is to be removed, either for servicing work or renewal, the lower belt (which drives the alternator and coolant pump) must



21.28b . . . and remove the drivebelt from the steering pump pulley



21.32 Release the belt tension, then slip the belt from the pulleys

be removed first, as described previously. Loosen the pump mountings, the nut and bolt on the adjuster slot, and the adjuster locknut. Turn the adjuster bolt to slacken the belt tension, then slip the belt from the power steering pump pulley (see illustrations).

29 Refitting the belt is a reversal of removal, making sure that the belt ribs engage properly with the pulley grooves. Tension the belt using the information in Section 7.

1.4 and 1.8 litre engines

30 To improve access, remove the wheelarch inner panel as described in paragraphs 2 to 4. Also remove the upper guard from the drivebelt, which is secured by two bolts - release the hose which is also clipped to the belt guard (see illustration).

31 Check the belt using the information in paragraphs 6 to 8.

32 If the belt is to be removed, either for servicing work or renewal, first note how the belt is fitted around the pulleys. Using a spanner on the drivebelt tensioner bolt, rotate the tensioner anti-clockwise to release the belt tension, then slip the belt from the pulleys (see illustration).

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

- a) Fit the belt around all the pulleys as noted on removal, apart from the tensioner pulley, making sure that the belt ribs engage properly with the pulley grooves. Make sure that any slack in the belt is adjacent to the tensioner.
b) Turn the tensioner pulley fully anti-clockwise, then slip the flat side of the belt over the tensioner pulley.
c) Release the tensioner, and allow it to tension the belt.
d) Using a spanner on the crankshaft pulley bolt, turn the belt clockwise through one complete revolution, checking that the belt runs true, and that the belt ribs stay located in the pulley grooves.
e) Refit the wheelarch access panel and the roadwheel, and lower the car to the ground. Tighten the wheel bolts to the specified torque.

22 Clutch cable adjustment

Note: This check does not apply to models with a hydraulically-operated clutch - the clutch on these models is self-adjusting.

Refer to Chapter 6, Section 2.

23 Handbrake adjustment

1 The handbrake should be fully applied by the fifth click from the handbrake lever ratchet mechanism.

2 To fully check the operation of the handbrake, chock the front wheels, then jack up the rear of the car and support it on axle stands.

3 Release the handbrake completely, and check that both rear wheels are free to turn. If this is not the case, either the handbrake has been over-adjusted, the cable is binding, or there is a problem with the rear drums (investigate using the information in Chapter 9).

4 Apply the handbrake by three clicks of the ratchet. By this point, both rear wheels should become difficult to turn by hand. By the time the lever has been set to the fifth notch (if not before) the wheels should be completely locked.

5 In practice, it may be found that the lever will not travel five notches - provided the handbrake releases completely, and can be fully applied, it is perhaps unnecessary to adjust the cable in this instance. If the lever travels more than five notches, adjustment is required, as follows.

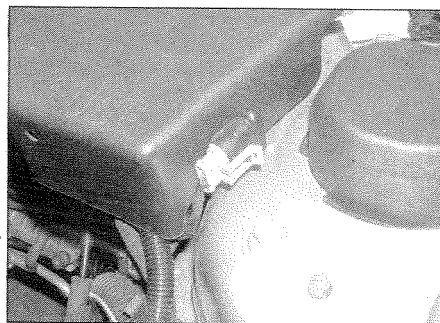
6 Remove the gaiter from the handbrake lever, for access to the adjuster nut. The gaiter clips into a collar/groove at the base of the handbrake grip, and has a lip around its base which clips into the hole in the centre console. Release the gaiter, and lift it over the handbrake lever.

7 Adjust the nut at the base of the lever as required, until the operation of the handbrake is satisfactory. On completion, lower the rear of the car to the ground.

24 Exhaust emissions check



This check is part of the manufacturer's maintenance schedule, and involves testing the exhaust emissions using an exhaust gas analyser. Unless a fault is suspected, this test is not essential, although it should be noted that it is recommended by the manufacturers. In the majority of cases, adjusting the idle speed and mixture is either not possible, or requires access to dedicated FIAT test equipment. Exhaust emissions testing is included as part of the MoT test.



25.1 Connector plug for use with diagnostic equipment - 1.6 litre model shown

25 Engine management system fault code check



1 This check is part of the manufacturer's maintenance schedule, and involves 'interrogating' the engine management control unit (and those for the automatic transmission and/or ABS, as applicable) using special dedicated test equipment. Such testing will allow the test equipment to read any fault codes stored in the electronic control unit memory (see illustration).

2 Unless a fault is suspected, this test is not essential, although it should be noted that it is recommended by the manufacturers.

3 It is possible for quite serious faults to occur in the engine management system without the owner being aware of it. Certain engine management system faults will cause the system to enter an emergency back-up mode, which is often so sophisticated that engine performance is not apparently much affected. If a problem has caused the system to enter its back-up mode, this will usually be most apparent when starting and running from cold.

Every 36 000 miles (60 000 km)

26 Brake fluid renewal



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

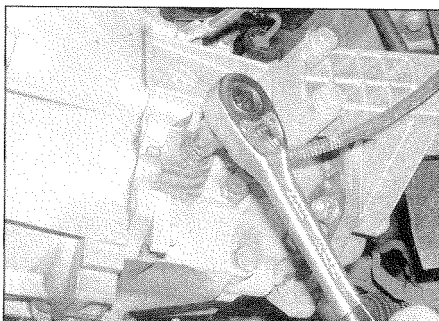
1 The procedure is similar to that for the bleeding of the hydraulic system as described in Chapter 9. The brake fluid reservoir should be emptied by siphoning, using a clean poultry baster or similar before starting, and allowance should be made for the old fluid to be expelled when bleeding a section of the circuit.

2 Working as described in Chapter 9, open the first bleed screw in the sequence, and pump the brake pedal gently until nearly all the old fluid has been emptied from the master cylinder reservoir.

3 Top-up to the MAX level with new fluid, and continue pumping until only the new fluid remains in the reservoir, and new fluid can be seen emerging from the bleed screw. Tighten the screw, and top the reservoir level up to the MAX level line.

4 Work through all the remaining bleed screws in the sequence until new fluid can be seen at all of them. Be careful to keep the master cylinder reservoir topped-up to above the MIN level at all times, or air may enter the system and greatly increase the length of the task.

5 When the operation is complete, check that all bleed screws are securely tightened, and that their dust caps are refitted. Wash off all traces of spilt fluid, and recheck the fluid level.



27.3 Unscrewing the transmission oil filler/level plug

6 Check the operation of the brakes before taking the car on the road.

27 Manual transmission oil level check



1 Park the car on a level surface. The oil level must be checked before the car is driven, or at least 5 minutes after the engine has been switched off. If the oil is checked immediately after driving the car, some of the oil will remain distributed around the transmission components, resulting in an inaccurate level reading.

2 The filler/level plug is on the front of the transmission housing, typically next to the reversing light switch. Access is possible from above, but is better from below, once the engine undertray has been removed (where applicable).

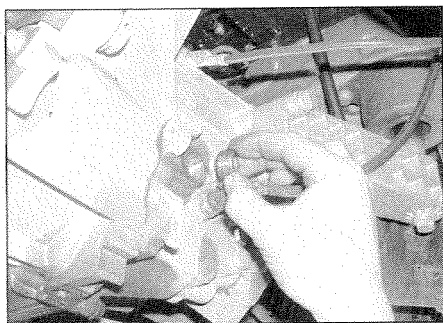
3 Wipe clean the area around the filler/level plug. A large Allen key or socket will be required to remove the plug, which will probably be quite tight (see illustration).

4 Remove the plug, and check the oil level. This can be done with your finger; alternatively, a piece of bent wire can be inserted through the plug hole to assess the oil level inside the transmission - if this is

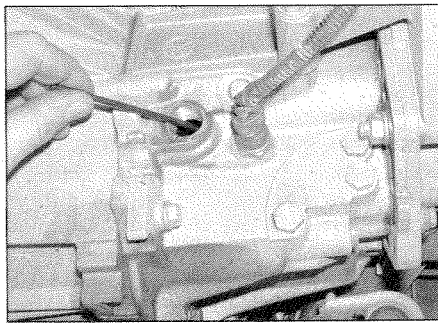


Old hydraulic fluid is often much darker in colour than the new, making it easy to distinguish the two.

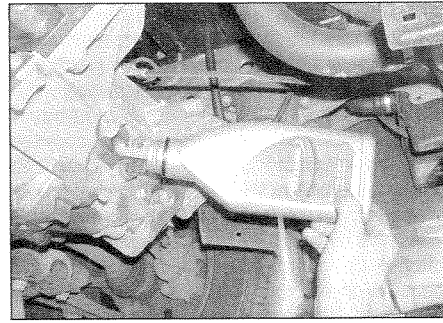
1•20 Every 36 000 miles (60 000 km)



27.4a Remove the filler/level plug . . .



27.4b . . . and check the oil level using a suitable probe



27.5 If necessary, top-up the oil level, until oil just starts to trickle out

done, make sure that whatever is used cannot break off or fall inside (see illustrations).

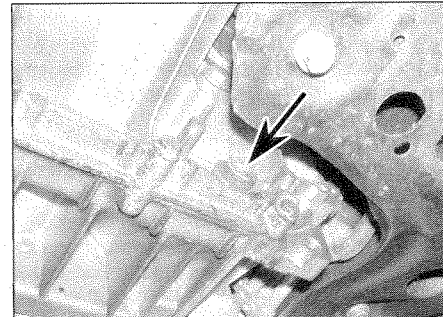
5 The oil level should reach the lower edge of the filler/level hole. A certain amount of oil will have gathered behind the filler/level plug, and will trickle out when it is removed; this does **not** necessarily indicate that the level is correct. To ensure that a true level is established, wait until the initial trickle has stopped, then add oil through the hole as necessary until a trickle of new oil can be seen emerging (see illustration). The level will be correct when the flow ceases; use only good-quality oil of the specified type.

6 Filling the transmission with oil is an extremely awkward operation; above all, allow plenty of time for the oil level to settle properly before checking it. If a large amount is added to the transmission, and a large amount flows out on checking the level, refit the filler/level plug; take the vehicle on a short journey so that the new oil is distributed fully around the transmission components, then recheck the level when it has settled again.

7 If the transmission has been overfilled so that oil flows out when the filler/level plug is removed, check that the car is completely level (front-to-rear and side-to-side), and allow the surplus to drain off into a suitable container.

8 When the level is correct, refit the plug, tightening it to the specified torque, and wipe off any spilt oil. Refit the engine undertray (where removed).

9 FIAT do not state that the transmission oil need ever be drained and refilled as part of the routine maintenance schedule. However, a car which has covered a large mileage would clearly benefit from this being done. For those owners who wish to change the transmission oil, a drain plug is provided on the base of the transmission housing (see illustration). Once the oil has been drained, tighten the plug to the specified torque, and refill until the level is correct.



27.9 Transmission oil drain plug (arrowed)

28 Rear brake shoe check

1 On some models, the thickness of friction material remaining on one of the brake shoes can be observed through an inspection window in the brake backplate.

2 Loosen the rear wheel bolts and chock the front wheels. Jack up the rear of the car and support on axle stands. Remove the rear wheels.

3 The inspection window in the brake backplate may be plugged with a sealing grommet, which can be prised out. A torch or inspection light will probably be required, as well as a small mirror if access is difficult. If the friction material on any shoe is worn down to the specified minimum thickness or less, all four shoes must be renewed as a set.

4 For a comprehensive check (or on cars where no inspection window is provided), the brake drum should be removed and cleaned. This will also allow the wheel cylinders to be checked, and the condition of the brake drum itself to be fully examined (see Chapter 9).

Every 48 000 miles (80 000 km)

29 Evaporative emission control system check

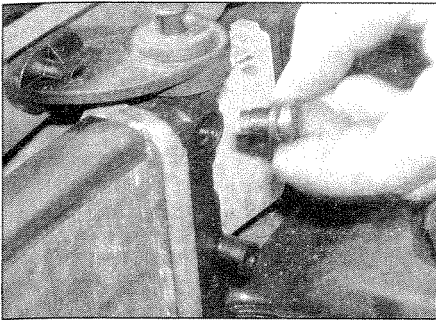
Check all the engine vacuum and fuel vapour hoses associated with the system (typically blue in colour) for signs of cracking, leaks, and general deterioration. For more information, see Chapter 4C. This check is

particularly relevant if any fuel smells have been noted, in which case all fuel pipes and connections should be closely inspected.

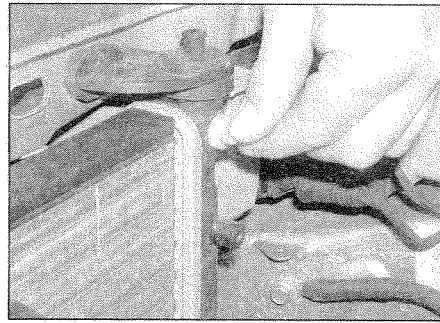
Every 72 000 miles (120 000 km)

30 Timing belt renewal

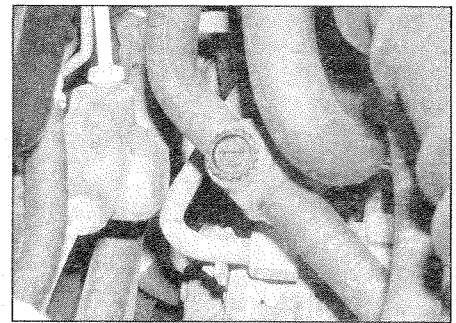
Refer to the relevant Part of Chapter 2.



31.3a Opening the radiator bleed screw on a 1.4 litre engine ...



31.3b ... and on a 1.6 litre engine



31.3c Typical heater hose bleed screw - 1.4 litre engine shown

Every 2 years (regardless of mileage)

31 Coolant renewal



Cooling system draining

Warning: Wait until the engine is cold before starting this procedure. Do not allow antifreeze to come in contact with your skin, or with the painted surfaces of the vehicle. Rinse off spills immediately with plenty of water. Never leave antifreeze lying around in an open container, or in a puddle in the driveway or on the garage floor. Children and pets are attracted by its sweet smell, but antifreeze can be fatal if ingested.

1 With the engine completely cold, cover the expansion tank cap with a wad of rag, and slowly turn the cap anti-clockwise to relieve the pressure in the cooling system (a hissing sound will normally be heard). Wait until any pressure remaining in the system is released, then continue to turn the cap until it can be removed.

2 Where necessary, release the fasteners and remove the engine undertray. On all models except those with the 1.4 litre engine, access to the radiator and cooling system bleed screws may be improved by removing the two screws securing the air inlet shroud over the radiator.

3 Open all the cooling system bleed screws.

Depending on model, there will be one or two on or around the radiator, and one in each of the hoses leading to the heater (towards the engine compartment bulkhead) (see illustrations).

4 Position a suitable container beneath the radiator bottom hose connection, then release the retaining clip and ease the hose from the radiator stub (see illustrations). Some models have hose clips which cannot be re-used, as they have to be cut off. Take care not to damage the hose as this is done, and obtain new clips for refitting.

5 If the hose joint has not been disturbed for some time, it will be necessary to gently manipulate the hose to break the joint. Do not use excessive force, or the radiator stub could be damaged. Allow the coolant to drain into the container. Some models also have a drain tap at the base of the radiator.

6 On 1.6 litre models, a cylinder block drain plug is provided on the front of the engine, next to the starter motor (see illustration). Removing this plug will allow more complete draining to be carried out.

7 On 1.6 and 1.8 litre models, loosen the clip securing the small-diameter hose to the thermostat housing - this hose leads back to the expansion tank. FIAT state that this hose must be blown through (with compressed air) to ensure that all coolant has drained from it. If compressed air is not available, disconnect the hose and allow it to drain - antifreeze may be harmful if ingested.

8 If the coolant has been drained for a reason other than renewal, then provided it is clean and less than two years old, it can be re-used, though this is not recommended (see *Antifreeze type and mixture* later in this Section).

9 Once all the coolant has drained, reconnect the hose to the radiator and secure it in position with the retaining clip. Where applicable, apply a little sealant to the block drain plug threads, then fit and tighten it securely.

Cooling system flushing

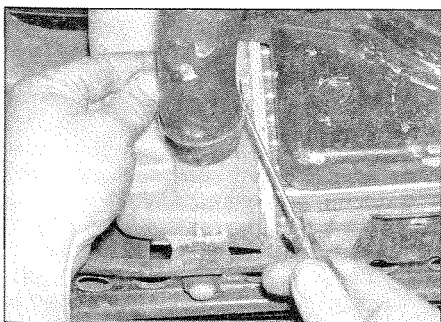
10 If coolant renewal has been neglected, or if the antifreeze mixture has become diluted, then in time, the cooling system may gradually lose efficiency, as the coolant passages become restricted due to rust, scale deposits, and other sediment. Flushing the system clean can restore the cooling system efficiency.

11 The radiator should be flushed independently of the engine, to avoid unnecessary contamination.

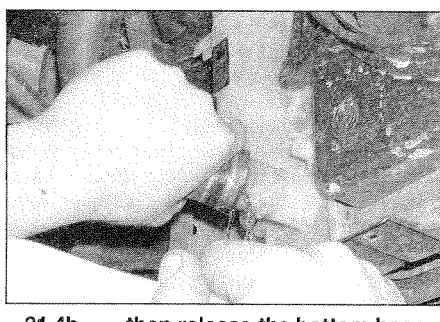
Radiator flushing

12 To flush the radiator, disconnect the top and bottom hoses and any other relevant hoses from the radiator, with reference to Chapter 3.

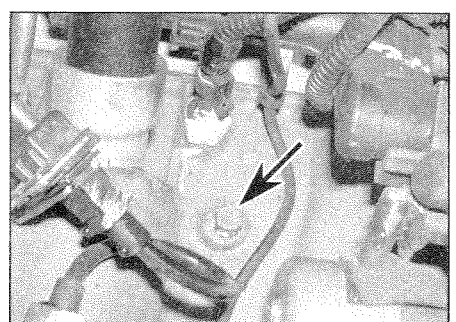
13 Insert a garden hose into the radiator top inlet. Direct a flow of clean water through the radiator, and continue flushing until clean water emerges from the radiator bottom outlet.



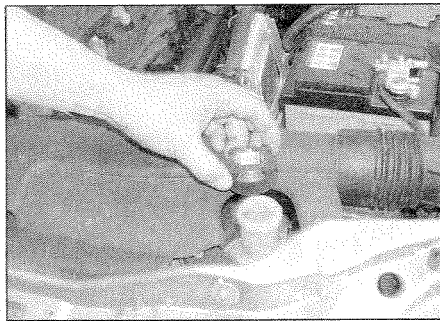
31.4a Loosen the radiator bottom hose clip ...



31.4b ... then release the bottom hose from the radiator, and drain the coolant into a container



31.6 Cylinder block drain plug (arrowed) on 1.6 litre engine



31.24a Remove the expansion tank cap ...



31.24b ... and fill the system slowly

14 If after a reasonable period, the water still does not run clear, the radiator can be flushed with a good proprietary cooling system cleaning agent. It is important that their manufacturer's instructions are followed carefully. If the contamination is particularly bad, insert the hose in the radiator bottom outlet, and reverse-flush the radiator.

Engine flushing

15 To flush the engine, remove the thermostat as described in Chapter 3, then temporarily refit the thermostat cover.

16 With the top and bottom hoses disconnected from the radiator, insert a garden hose into the radiator top hose. Direct a clean flow of water through the engine, and continue flushing until clean water emerges from the radiator bottom hose.

17 On completion of flushing, refit the thermostat and reconnect the hoses with reference to Chapter 3.

Antifreeze type and mixture

18 The antifreeze should always be renewed at the specified intervals. This is necessary not only to maintain the antifreeze properties, but also to prevent corrosion which would otherwise occur as the corrosion inhibitors become progressively less effective.

19 Always use ethylene-glycol-based antifreeze suitable for use in mixed-metal cooling systems. The total system capacity is quoted in the Specifications, as well as the percentage of neat antifreeze required to give adequate protection against freezing (and corrosion).



31.27 Bleed screw (arrowed) on heater hose

20 Before adding antifreeze, the cooling system should be completely drained, preferably flushed, and all hoses checked for condition and security.

21 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.

22 Do not use engine antifreeze in the washer system, as it will cause damage to the vehicle paintwork.

Cooling system filling

23 Before attempting to fill the cooling system, make sure that all hoses and clips are in good condition, and that the clips are tight. Note that an antifreeze mixture must be used all year round, to prevent corrosion of the engine components (see following sub-Section).

24 Remove the expansion tank filler cap, and fill the system by slowly pouring the coolant into the expansion tank to prevent airlocks from forming (see illustrations).

25 If the coolant is being renewed, begin by pouring in a litre of water, followed by the correct quantity of antifreeze to make up the required mixture, then top-up with more water. The best option, if suitable clean containers are available, is to make up the mixture before pouring it in. Bear in mind that the system capacities quoted are only approximate - it is unlikely that all the old coolant will have drained, so allowance must be made when refilling.

26 During the initial stages of filling, squeeze the radiator top and bottom hoses to help expel any trapped air in the system. Fill the system until coolant (free of air bubbles) emerges from the radiator bleed screw(s), then tighten them securely.

27 Continue filling the system until coolant emerges from the bleed screws on the heater hoses, then tighten the screws (see illustration).

28 Now top-up the coolant level to the MAX mark and refit the expansion tank cap loosely. Particularly on models with air conditioning, it is important not to overfill the expansion tank at this stage.

29 Start the engine and run it at idle.

30 Particularly on models with air conditioning, have an assistant raise the engine speed to approximately 3000 rpm every 30 seconds while the engine is warming-up. When this is done, carefully open the bleed screw on the heater hose - bear in mind the dangers of hot coolant - and bleed out any trapped air.

31 Initially, add more coolant as necessary to keep the level up to the MAX mark, but only for the first few minutes after the engine is started.

32 Once the coolant level has stabilised, refit the expansion tank cap securely. Let the engine continue to warm up until normal operating temperature is reached, indicated by the temperature gauge, or by the radiator fan cutting in. Keep the engine running for a few more minutes, then switch it off and allow it to cool for several hours (preferably, overnight).

33 Check for leaks, particularly around disturbed components.

34 Check the coolant level in the expansion tank, and top-up if necessary. Note that the system must be cold before an accurate level is indicated in the expansion tank.

Airlocks

35 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 airlock and restricting the flow of coolant; usually, the air is trapped because the system was refilled too quickly.

36 If an airlock is suspected, first try gently squeezing all visible coolant hoses. A coolant hose which is full of air feels quite different to one full of coolant, when squeezed. After refilling the system, most airlocks will clear once the system has cooled, and been topped up.

37 While the engine is running at operating temperature, switch on the heater and heater fan, and check for heat output. Provided there is sufficient coolant in the system, lack of heat output could be due to an airlock in the system.

38 Airlocks can have more serious effects than simply reducing heater output - a severe airlock could reduce coolant flow around the engine. Check that the radiator top hose is hot when the engine is at operating temperature - a top hose which stays cold could be the result of an airlock (or a non-opening thermostat).

39 If the problem persists, stop the engine and allow it to cool down **completely**, before unscrewing the expansion tank filler cap or opening the bleed screws and squeezing the hoses to bleed out the trapped air. In the worst case, the system will have to be at least partially drained (this time, the coolant can be saved for re-use) and flushed to clear the problem.