



11.16 Adjusting the mixture (CO) setting - 2.0 litre 16-valve models

17 On models fitted with a catalytic converter, the mixture (CO level) is also automatically controlled by the electronic control unit and is not adjustable. If it is found to be incorrect then a fault is present in the fuel injection/ignition system (Chapter 4B).

1.4 and 1.6 litre models

18 On 1.4 and 1.6 litre models both the idle speed and mixture CO content are automatically controlled by the control unit and cannot be manually adjusted (See Chapter 4B). If necessary, they can be checked by if they are found to be incorrect then a fault is present in the fuel injection/ignition system.

12 Fuel pump filter cleaning - carburettor models



Warning: Before carrying out the following operation refer to the precautions given 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 some models the fuel pump may be a sealed unit, in which case this procedure is not necessary.

- 1 Place a wad of rag underneath the fuel pump to catch the fuel which will be spilt during the following operation.
- 2 Undo the retaining screw and remove the end cover from the fuel pump. Recover the rubber seal (see illustration).



12.2 Removing the fuel pump cover, filter and rubber seal - carburettor models

3 Remove the filter from the cover and wash it fresh fuel to remove any debris from it. Inspect the filter for signs of clogging or splitting and renew it if necessary.

4 Locate the filter in the cover and fit the rubber seal.

5 Refit the cover to the pump and securely tighten its retaining screw.

6 Start the engine and check for signs of fuel leakage.

13 Automatic transmission fluid level check

1 To check the fluid level, the vehicle must be parked on level ground. Apply the handbrake.

2 If the transmission fluid is cold (ie, if the engine is cold), the level check must be completed with the engine idling, within one minute of the engine being started.

3 With the engine idling, fully depress the brake pedal, and move the gear selector lever smoothly through all positions, finishing in position "P".

4 With the engine still idling, withdraw the transmission fluid level dipstick (located at the left-hand side of the engine compartment, next to the engine oil level dipstick). Pull up the lever on the top of the dipstick to release it from the tube. Wipe the dipstick clean with a lint-free rag, re-insert it and withdraw it again.

5 If the transmission fluid was cold at the beginning of the procedure, the fluid level should be on the "MAX" mark on the side of the dipstick marked "+20°C". Note that 0.4 litres of fluid is required to raise the level from the "MIN" to the "MAX" mark.

6 If the transmission fluid was at operating temperature at the beginning of the procedure (ie, if the vehicle had been driven for at least 12 miles/20 km), the fluid level should be between the "MIN" and "MAX" marks on the side of the dipstick marked "+94°C". Note that 0.2 litres of fluid is required to raise the level from the "MIN" to the "MAX" mark.

7 If topping-up is necessary, stop the engine, and top-up with the specified type of fluid through the transmission dipstick tube.

8 Re-check the level, and refit the dipstick on completion.

14 Electrical system check

1 Check the operation of all the electrical equipment, ie lights, direction indicators, horn, etc. Refer to the appropriate sections of Chapter 12 for details if any of the circuits are found to be inoperative.

2 Note that stop-light switch adjustment is described in Chapter 9.

3 Check all accessible wiring connectors, harnesses and retaining clips for security, and for signs of chafing or damage. Rectify any faults found.

15 Wiper blade check

Check the condition of the wiper blades. If they are cracked, or show any signs of deterioration, or if they fail to clean the glass effectively, renew the blades. Ideally, the wiper blades should be renewed annually as a matter of course.

To remove a wiper blade, pull the arm away from the glass until it locks. Swivel the blade through 90°, then squeeze the locking clip, and detach the blade from the arm. When fitting the new blade, make sure that the blade locks securely into the arm, and that the blade is orientated correctly.

16 Roadwheel bolt tightness check

Using a torque wrench on each wheel bolt in turn, ensure that the bolts are tightened to the specified torque.

17 Brake pad, caliper and disc check

Front brakes

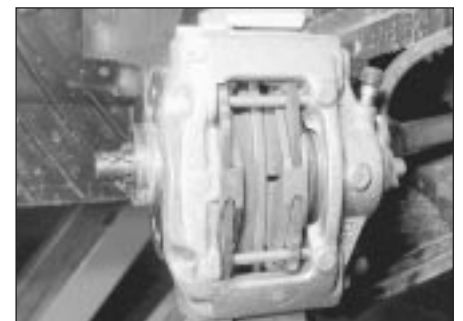
1 Apply the handbrake, then jack up the front of the vehicle and support securely on axle stands; remove the roadwheels (see "Jacking and Vehicle Support").

2 For a quick check, the thickness of friction material remaining on each pad can be measured through the slot in the front of the caliper body (see illustration). If any pad is worn to the minimum thickness or less, all four pads must be renewed (see Chapter 9).

3 For a complete check, the brake pads should be removed and cleaned. This will allow the operation of the caliper to be checked, and the condition of the brake disc itself to be fully examined on both sides (see Chapter 9).

Rear brakes

4 Chock the front wheels, then jack up the rear of the vehicle and support securely on axle stands; remove the roadwheels (see "Jacking and Vehicle Support"). Inspect the pads as described in paragraphs 2 and 3.



17.2 The thickness of the brake pads are visible through the caliper aperture

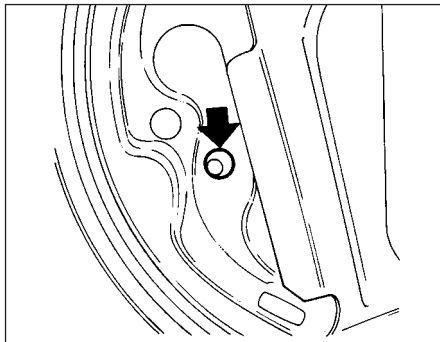
18 Rear wheel bearing adjustment

Refer to Chapter 10, Section 9.

19 Handbrake adjustment

Rear drum brake models

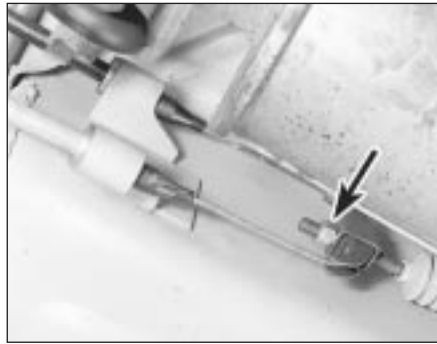
- 1 Normal adjustment of the handbrake takes place automatically due to the self-adjusting mechanism of the rear brakes. To compensate for cable stretch, or after a new cable has been fitted or the adjustment has otherwise been disturbed, proceed as follows.
- 2 Chock the front wheels, release the handbrake and raise and support the rear of the vehicle so that the rear wheels are clear of the ground.
- 3 Tighten the nut on the handbrake cable yoke until the rear wheels start to become stiff to turn, then back it off until they are free again (see illustration).
- 4 Check that the handbrake starts to take effect at the second notch of lever movement, and is fully applied by the fourth or fifth notch.
- 5 A further check may be made by removing the plug in the brake backplate (see illustration). When adjustment is correct, the pin on the handbrake operating lever is clear



19.5 Check the handbrake lever pin (arrowed) is correctly positioned as described in text



19.11a On models with rear disc brakes the handbrake shoe adjuster wheel is accessible through the hole in the disc . . .



19.3 Handbrake cable adjusting nut (arrowed) on yoke - rear drum brake models

of the shoe web by approximately 3 mm with the handbrake released.

- 6 When adjustment is correct, apply a smear of grease to the threads of the cable end fitting to prevent corrosion. Lower the vehicle, apply the handbrake and remove the wheel chocks.

Rear disc brake models

- 7 Before checking handbrake adjustment, drive for approximately 300 metres at low speed with the handbrake lightly applied. This will clean off any rust or glaze from the drums and shoes.
- 8 Chock the front wheels and engage a gear. Slacken the rear wheel bolts. Raise and support the rear of the vehicle and remove the rear wheels.
- 9 Release the handbrake, then reapply it by two notches.
- 10 Slacken off the adjuster nut on the handbrake cable yoke (located to the left of the silencer) until it is at the end of its travel. If a silencer heat shield is fitted, access will be improved by removing it.
- 11 Turn a brake disc to bring the adjuster hole (the large unthreaded hole) into line with the adjuster at the bottom of the brake shoes. Using a screwdriver through the hole, turn the adjuster wheel until the shoes are against the disc, then back it off again until the disc is just free to turn without the shoes dragging (see illustrations).



19.11b . . . and can be adjusted using a suitable screwdriver

- 12 Repeat the operation on the other brake.
- 13 Tighten the cable adjuster nut until the shoes start to drag again. This should happen on both sides.
- 14 Release and fully reapply the handbrake a couple of times. Check that the discs turn freely when the control is fully released, and that the brake is fully applied at the sixth notch.
- 15 Refit the exhaust heat shield if it was removed. Refit the wheels, lower the vehicle and tighten the wheel bolts.

20 Driveshaft CV joint and gaiter check

Refer to Chapter 8, Section 5.

21 Hinge and lock lubrication

Lubricate the hinges of the bonnet, doors and tailgate with a light general-purpose oil. Similarly, lubricate all latches, locks and lock strikers. At the same time, check the security and operation of all the locks, adjusting them if necessary (see Chapter 11).

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

22 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 (see "Jacking and Vehicle Support"), 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. 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. Reputable exhaust repair systems can be used for effective repairs to exhaust pipes and silencer boxes, including ends and bends. Check for an MOT-approved permanent exhaust repair.

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

23 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), gearbox/transmission and driveshafts.

- 7 Listen for any unusual noises from the engine, clutch and gearbox/transmission.
- 8 Make sure that the engine runs smoothly when idling, and that there is no hesitation when 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 gearbox 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 Vauxhall/Opel 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.

Check the operation and performance of the 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 18 000 miles

24 Air cleaner filter element renewal



Carburettor models

- 1 To remove the air cleaner element, remove the air cleaner cover. This is secured by a centre nut or bolt, or by three screws. Additionally, release the spring clips around the edge of the cover or, if spring clips are not fitted, carefully prise around the lower edge of the cover with your fingers to release the retaining lugs (see illustrations).
- 2 With the cover removed, lift out the element (see illustrations).
- 3 Wipe inside the air cleaner, being careful not to introduce dirt into the carburettor throat. It is preferable to remove the air cleaner completely. Remember to clean the inside of the air cleaner cover.
- 4 Fit the new element, then refit and secure the cover. Observe any cover-to-body alignment lugs or slots.

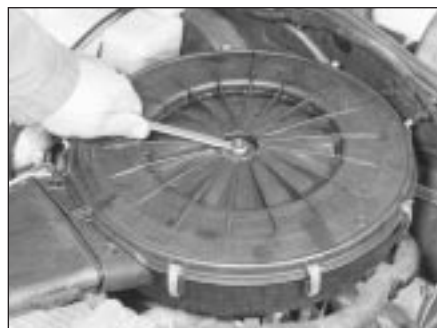
Fuel injection models

1.4 and 1.6 litre models

- 5 Refer to paragraphs 1 to 4.

1.8 and 2.0 litre 8-valve models

- 6 The air cleaner on these models is contained within the airflow sensor housing.



24.1a On carburettor models, undo the retaining nut (on some models the lid will be retained by screws) . . .



24.1b . . . and release the retaining clips . . .



24.2a . . . then lift off the air cleaner lid . . .



24.2b . . . and withdraw the filter element



24.7 On 1.8 and 2.0 litre 8-valve models, disconnect the airflow sensor wiring connector . . .



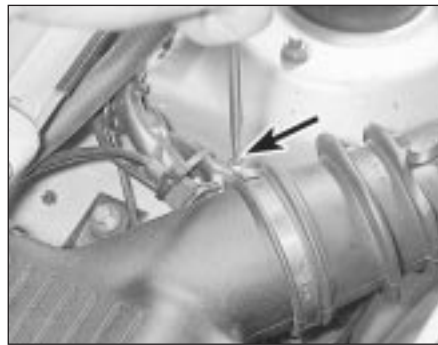
24.8a . . . then release the retaining clips . . .



24.8b . . . and remove the air cleaner housing cover, complete with the filter element



24.9 On fitting, ensure the element is correctly seated in the cover groove



24.10 Disconnecting the trunking from the air cleaner - 2.0 litre 16-valve models



24.13 Fitting a new air cleaner element - 2.0 litre 16-valve models

7 Release the locking clip, and disconnect the plug from the airflow sensor (see illustration). Disconnect the air trunking.

8 Release the spring clips, and lift off the air cleaner cover with airflow sensor attached. The element will probably come away with the cover (see illustrations). Do not drop or jar the airflow sensor.

9 Wipe clean the inside of the air cleaner and fit a new element to the cover, engaging the element seal in the cover recess (see illustration). Refit and secure the cover, then reconnect the airflow sensor plug. Refit the air trunking.

2.0 litre 16-valve models

10 Disconnect the trunking which connects

the air cleaner to the mass meter (see illustration).

11 Release the four spring clips which secure the air cleaner lid. Remove the lid.

12 Remove the element and wipe clean the inside of the filter housing and lid.

13 Fit a new element, sealing lip uppermost (see illustration). Refit and secure the lid and trunking.

plug the hose ends as they are disconnected (see illustration).

4 Loosen the clamp bolt, and withdraw the filter from its clamp. Note the orientation of the fuel flow direction indicator on the filter. This will be in the form of an arrow which points in the direction of the fuel flow, or the filter will have AUS (out) stamped on its outlet side (see illustration).

5 Recover the mounting rubber from the old filter, and transfer it to the new filter.

6 Fit the new filter making sure its fuel flow direction indicator is facing the right way.

7 Reconnect the hose and securely tighten their retaining clips.

8 Start the engine and check the disturbed hose connections for signs of leakage.

25 Fuel filter renewal - fuel injection models



Warning: Before carrying out the following operation refer to the precautions given 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.



25.3 Fuel filter showing mounting and hose connections

1 The fuel filter is located under the rear of the vehicle. Chock the front wheels, jack up the rear of the vehicle, and support securely on axle stands (see "Jacking and Vehicle Support").

2 Disconnect the battery negative lead and position a suitable container below the fuel filter, to catch spill fuel.

3 Slacken the retaining clips and, bearing in mind the information given in Chapter 4B on depressurising the fuel system, disconnect both hoses. To minimise fuel loss clamp the hoses either side of the filter or be prepared to



25.4 Fuel filter directional marking

26 Carburettor fuel inlet filter cleaning



Warning: Before carrying out the following operation refer to the precautions given 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.

Referring to the relevant Section of Chapter 4A, remove the filter, wash it fresh fuel to remove any debris from it. Inspect the filter for signs of clogging or splitting and renew it if necessary. Refit the filter and reconnect the fuel hose.

27 Manual transmission oil level check

1 Ensure that the vehicle is standing on level ground and the handbrake applied.

2 Working underneath the vehicle, unscrew the transmission oil level plug (see illustration). The level plug is located beside the driveshaft inner CV joint; on 1.2, 1.3, 1.4 and later 1.6 litre models the plug is on the left-hand side of the transmission, and on all other models it is on the right-hand side.

3 The oil level should be up to the lower edge of the level plug hole.

4 If necessary, top-up with oil through the breather/filler orifice in the gear selector cover. Unscrew the breather/filler plug, and top-up with the specified grade of oil, until oil just begins to run from the level plug hole. A funnel may be helpful, to avoid spillage (see illustrations). Do not overfill - if too much oil is added, wait until the excess has run out of the level plug hole. Refit the level plug and the breather/filler plug on completion.

28 Clutch adjustment check

Refer to Chapter 6

29 Rear brake shoe, wheel cylinder and drum check

1 Chock the front wheels, then jack up the rear of the vehicle, and support it securely on axle stands (see *"Jacking and Vehicle Support"*).

2 For a quick check, the thickness of friction material remaining on one of the brake shoes can be observed through the hole in the brake backplate which is exposed by prising out the sealing grommet (see illustration). If a rod of the same diameter as the specified minimum friction material thickness is placed against the shoe friction material, the amount of wear can be assessed. A torch or inspection light



27.2 Removing the manual transmission level plug - early 1.6 litre model shown

will probably be required. 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.

3 For a comprehensive check, the brake drum should be removed and cleaned. This will allow the wheel cylinders to be checked, and the condition of the brake drum itself to be fully examined (see Chapter 9).

30 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, except that 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. Top-up to the 'MAX'



29.2 Removing the sealing grommet from the inspection hole in the rear brake backplate



27.4a To top up, unscrew the breather/filler plug from the top of the transmission . . .



27.4b . . . then top up via the breather/filler plug orifice

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.



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

3 Work through all the remaining bleed screws in 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.

4 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 master cylinder reservoir fluid level.

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

31 Headlamp aim check

Accurate adjustment of the headlight beam is only possible using optical beam-setting equipment, and this work should therefore be carried out by a Vauxhall/Opel dealer or service station with the necessary facilities.

Basic adjustments can be carried out in an emergency, and further details are given in Chapter 12.

Every 2 Years

32 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 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. Antifreeze is fatal if ingested.

1 To drain the cooling system, remove the expansion tank filler cap. Turn the cap anti-clockwise until it reaches the first stop. Wait until any pressure remaining in the system is released then push the cap down, turn it anti-clockwise to the second stop and lift off.

2 Position a suitable container beneath the radiator bottom hose union.

3 Slacken the hose clip and ease the hose from the radiator stub. 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.

4 As no cylinder block drain plug is fitted and the radiator bottom hose union may be situated halfway up the radiator, this may not fully drain the cooling system.

5 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.

6 Reconnect the hose and securely tighten its retaining clip on completion of draining.

Cooling system flushing

7 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.

8 The cooling system efficiency can be restored by flushing the system clean.

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

Radiator flushing

10 To flush the radiator, drain the cooling system then proceed as follows.

11 Slacken the retaining clips and disconnect the top and bottom hoses from the radiator.

12 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.

13 If after a reasonable period, the water still does not run clear, the radiator can be flushed



32.19a On 1.2 litre models, bleed the cooling system through the cylinder head heater hose outlet

with a good proprietary cleaning agent. It is important that the manufacturers instructions are followed carefully. If the contamination is particularly bad, insert the hose in the radiator bottom outlet, and flush the radiator in reverse.

Engine flushing

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

15 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.

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

Cooling system filling

17 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). Also check that the radiator and cylinder block drain plugs are in place and tight.

18 Remove the expansion tank filler cap.

19 On 1.2 litre models, disconnect the heater hose from the cylinder head, on 1.3, 1.4 and later 1.6 litre engines models, disconnect the wire and unscrew the coolant temperature sender from the inlet manifold. On early 1.6, and all 1.8 and 2.0 litre models, unscrew the bleed screw which is situated in the thermostat housing cover (where no bleed screw is fitted, unscrew the temperature sender unit) (see illustrations).

20 Fill the system by slowly pouring the coolant into the expansion tank to prevent airlocks from forming.

21 If the coolant is being renewed, begin by pouring in a couple of litres of water, followed by the correct quantity of antifreeze, then top-up with more water.

22 When coolant free of air bubbles emerges from the orifice, reconnect the heater hose (1.2 litre models) or refit the coolant temperature



32.19b On 1.3 litre models, unscrew temperature gauge sender unit from the manifold to bleed the cooling system

sender/bleed screw (as applicable) and tighten it securely (all other models).

23 Top-up the coolant level to the "KALT" (or "COLD") mark on the expansion tank, then refit the expansion tank cap.

24 Start the engine and run it until it reaches normal operating temperature, then stop the engine and allow it to cool.

25 Check for leaks, particularly around disturbed components. 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. If the expansion tank cap is removed while the engine is still warm, cover the cap with a thick cloth, and unscrew the cap slowly to gradually relieve the system pressure (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.

Antifreeze mixture

26 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.

27 Always use an ethylene-glycol based antifreeze which is suitable for use in mixed metal cooling systems. The quantity of antifreeze and levels of protection are indicated in the Specifications.

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

29 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.

30 Do not use engine antifreeze in the screen washer system, as it will cause damage to the vehicle paintwork. A proprietary screen should be added to the washer system in the recommended quantities.

Every 36 000 miles

33 Automatic transmission fluid renewal



- 1 Allow the transmission to cool down before draining, as the fluid: can be very hot indeed.
- 2 Remove all the fluid pan screws except one which should be unscrewed through several turns.
- 3 Release the fluid pan from its gasket and as the end of the pan tilts downwards, catch the

fluid in a suitable container.

- 4 Remove the remaining screw and the pan. Peel off the gasket (where fitted) or remove all traces of sealant (as applicable).
- 5 Pull the filter mesh from its securing clips and recover its sealing ring. Clean the filter in a high flash-point solvent and allow it to dry. If the filter is clogged or split it must be renewed.
- 6 Fit a new O-ring and refit the filter securely.
- 7 Ensure that the fluid pan and transmission

mating surfaces are clean and dry and bolt on the fluid pan using a new gasket. Where no gasket is fitted, apply a bead of sealant about 5.0 mm thick to clean surfaces. The fluid pan which is fitted with a gasket can be identified by the strengthening ribs on the pan flanges. The pan for use with silicone sealant has plain flanges.

- 8 Fill the transmission with the specified quantity of fluid and then check the level as described in Section 13.

Specifications

Cooling system

Antifreeze mixtures:

Protection down to -15°C	28% antifreeze
Protection down to -30°C	50% antifreeze

Note: Refer to antifreeze manufacturer for latest recommendation

Fuel system

Idle speed:

Carburettor models:	
Manual transmission	900 to 950 rpm
Automatic transmission	800 to 850 rpm

Fuel-injected models:

1.4 litre models	830 to 990 rpm*
1.6 litre models	720 to 880 rpm*

1.8 litre models:

Early (pre 1987) models:

Manual transmission	900 to 950 rpm
Automatic transmission	800 to 850 rpm

Later (1987 onwards) models

2.0 litre models	720 to 780 rpm*
------------------	-----------------

Idle mixture CO content:

Carburettor models	1.0 to 1.5%
Fuel-injected models	Less than 1.0%**

*Not adjustable - controlled by ECU

**On all 1.4 and 1.6 litre fuel injection models, and 2.0 litre models with a catalytic converter the exhaust gas CO content is regulated by the control unit and is not adjustable

Ignition system

Spark plugs:

Type:

1.2 litre models	Champion RL82YCC or RL82YC
1.3, 1.4, 1.6 and 1.8 litre models	Champion RN9YCC or RN9YC

2.0 litre models:

8-valve models	Champion RN9YCC or RN9YC
16-valve models	Champion RC9MCC

Electrode gap:

RL82YCC, RN9YCC and RC9MCC plugs	0.8 mm
RL82YC and RN9YC plugs	0.7 mm

*The spark plug gap quoted is that recommended by Champion for their specified plugs listed above. If spark plugs of any other type are to be fitted, refer to their manufacturer's spark plug gap recommendations.

HT leads Champion type not available

Braking system

Brake pad minimum thickness (including backing plate)	7.0 mm
Rear brake shoe minimum friction material-to-rivet head depth	0.5 mm

Torque wrench settings

	Nm	lbf ft
Sump drain plug	45	33
Spark plugs	20	15
Roadwheel bolts	90	66






Chapter 2 Part A:

OHV engine

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Crankshaft rear oil seal - removal and refitting	19	General engine checks	See Chapter 1
Cylinder head - overhaul	9	Oil pump - overhaul	13
Cylinder head - removal and refitting	8	Oil pump - removal and refitting	12
Cylinder head and pistons - decarbonising	10	Operations possible with the engine in the car	3
Engine oil and filter - renewal	See Chapter 1	Operations requiring engine removal	4
Engine oil level check	See Weekly checks	Pistons and connecting rods - removal and refitting	15
Engine - initial start-up after overhaul	24	Sump - removal and refitting	11
Engine - removal and refitting	23	Timing gear components - removal and refitting	14
Engine components - examination and renovation	21	Valve clearances - adjustment	7
Engine dismantling and reassembly - general	5		

Degrees of difficulty

Easy , suitable for novice with little experience 	Fairly easy , suitable for beginner with some experience 	Fairly difficult , suitable for competent DIY mechanic 	Difficult , suitable for experienced DIY mechanic 	Very difficult , suitable for expert DIY or professional 
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Specifications

General

Maker's designation	12 SC
Bore x stroke	79.0 x 61.0 mm
Cubic capacity	1196 cc
Compression ratio	9.0: 1

Valve clearances (warm)

Inlet	0.15 mm
Exhaust	0.25 mm

Cylinder head

Identification mark	E
Valve seat width:	
Inlet	1.25 to 1.50 mm
Exhaust	1.60 to 1.85 mm
Overall height	81 ± 0.25 mm

Valves and guides

	Inlet	Exhaust
Overall length	99.3 mm	101.1 mm
Head diameter	32 mm	29 mm
Stem diameter (nominal, ± 0.005 mm):		
Standard	7.005 mm	6.995 mm
Oversize 1	7.080 mm	7.060 mm
Oversize 2	7.155 mm	7.135 mm
Oversize A	7.255 mm	7.235 mm
Valve guide bore (± 0.01 mm):		
Standard	7.035 mm	
Oversize 1	7.110 mm	
Oversize 2	7.185 mm	
Oversize A	7.285 mm	
Valve clearance in guide:		
Inlet	0.015 to 0.045 mm	
Exhaust	0.035 to 0.065 mm	
Sealing face angle	44°	