



Chapter 1 Part A:

Routine maintenance and servicing - petrol engine models



1A

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Degrees of difficulty

Easy, suitable for novice with little experience



Fairly easy, suitable for beginner with some experience



Fairly difficult, suitable for competent DIY mechanic



Difficult, suitable for experienced DIY mechanic



Very difficult, suitable for expert DIY or professional



1A•2 Servicing specifications - petrol models

Lubricants and fluids

Refer to the end of *Weekly checks*

Capacities (approximate)

Engine oil

Non-turbo models 5.40 litres

Turbo models:

Models without air conditioning 4.75 litres

Models with air conditioning 4.50 litres

Cooling system

Non-turbo models 7.30 litres

Turbo models 10.80 or 11.30 litres (according to equipment)

Transmission

Manual transmission 1.90 litres

Automatic transmission:

From dry 7.50 litres

Fluid change 2.40 litres

Hydraulic LHM fluid

All models 5.40 litres

Fuel tank

All models 80.00 litres

Engine

Oil filter:

Models up to 1994 Champion F104

Models from 1995 Champion F118

Cooling system

Antifreeze mixture:

28% antifreeze Protection down to -15°C (5°F)

50% antifreeze Protection down to -30°C (-22°F)

Note: Refer to antifreeze manufacturer's recommendations

Fuel system

Air filter element Champion U561

Fuel filter Champion L206

Ignition system

Spark plugs:

Non-turbo models without catalytic converter Champion RC7YCC

Non-turbo models with catalytic converter Champion RC9YCC

Turbo models Champion RC7BMC

Spark plug electrode gap* 0.8 mm

Ignition HT lead set:

Models with distributor ignition system Champion LS-55

Models with distributorless ignition system Champion LS-51

*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 recommendations

Brakes

Brake pad friction material minimum thickness:

Front pads 3.0 mm

Rear pads 2.0 mm

Wiper blades

Front Champion X55

Rear:

Hatchback models Champion X45

Estate models Champion X41

Clutch

Clutch pedal travel 45 -0+10 mm

Tyre pressures

See end of *Weekly checks*

Torque wrench settings

	Nm	lbf ft
Roadwheel bolts	90	66
Spark plugs	25	18
Manual transmission oil filler/level plug	20	15
Manual transmission oil drain plug	30	22

1 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 maintenance intervals recommended by us 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, because it enhances the efficiency, performance and resale value of your vehicle.

2 If the vehicle is driven in very dusty areas, used to tow a trailer, spends long periods with the engine idling, is driven frequently at slow speeds (eg in heavy traffic) or is used mainly for short journeys, then more frequent maintenance intervals are recommended.

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

Every 250 miles (400 km) or weekly

- ☐ Refer to *Weekly checks*.

Every 9000 miles or 12 months, whichever comes first

- ☐ Renew the engine oil and filter (Section 3)
- ☐ Renew the automatic transmission fluid - where applicable (Section 4)
- ☐ Check the clutch pedal height - models with cable-operated clutch (Section 5)
- ☐ Check all components, pipes and hoses for fluid leaks (Section 6)
- ☐ Check the condition and security of the steering and suspension components (Section 7)
- ☐ Check the condition of the driveshafts (Section 8)
- ☐ Lubricate all hinges and locks (Section 9)
- ☐ Check the fault diagnosis system memory for fault codes (Section 10)

Every 18 000 miles

- ☐ Renew the air filter element - Turbo models (Section 11)
- ☐ Renew the spark plugs (Section 12)
- ☐ Check the condition of the front and rear brake pads and discs (Section 13)

Every 2 years, regardless of mileage

- ☐ Renew the coolant (Section 14)

Every 36 000 miles

- ☐ Renew the air filter element - normally-aspirated models (Section 15)
- ☐ Renew the hydraulic fluid and clean the hydraulic fluid return filters (Section 16)
- ☐ Renew the fuel filter (Section 17)
- ☐ Check the manual transmission oil level (Section 18)
- ☐ Check the condition of the auxiliary drivebelts (Section 19)
- ☐ Clean the automatic transmission fluid strainer - where applicable (Section 20)
- ☐ Carry out a road test (Section 21)

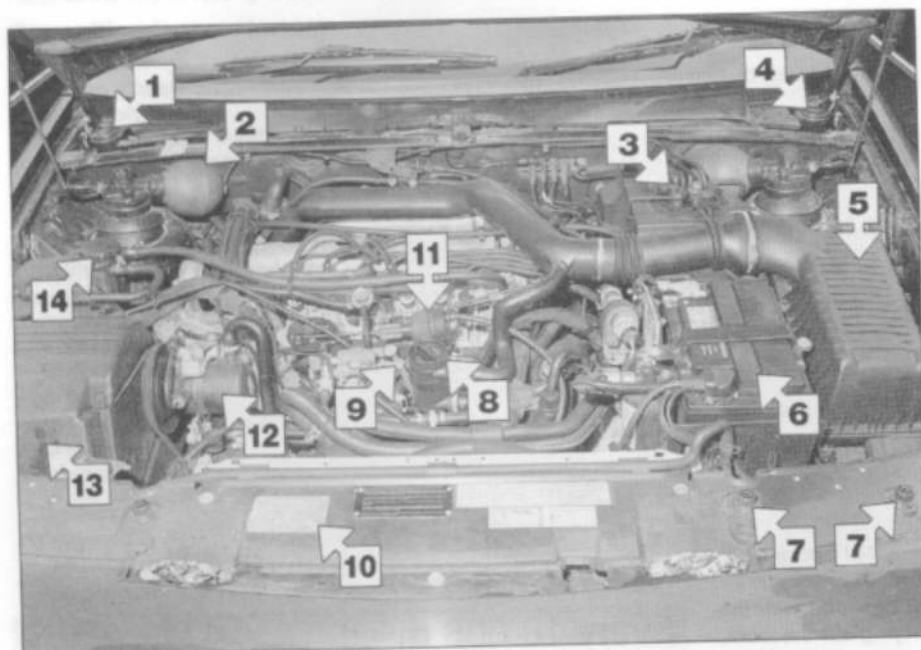
Every 72 000 miles

- ☐ Renew the timing belt (Section 22)

Note: Although this is the normal interval for timing belt renewal, it is strongly recommended that the interval is reduced on vehicles which are subjected to intensive use, ie, mainly short journeys or a lot of stop-start driving. The actual belt renewal is therefore very much up to the individual owner, but bear in mind that severe engine damage may result if the belt breaks

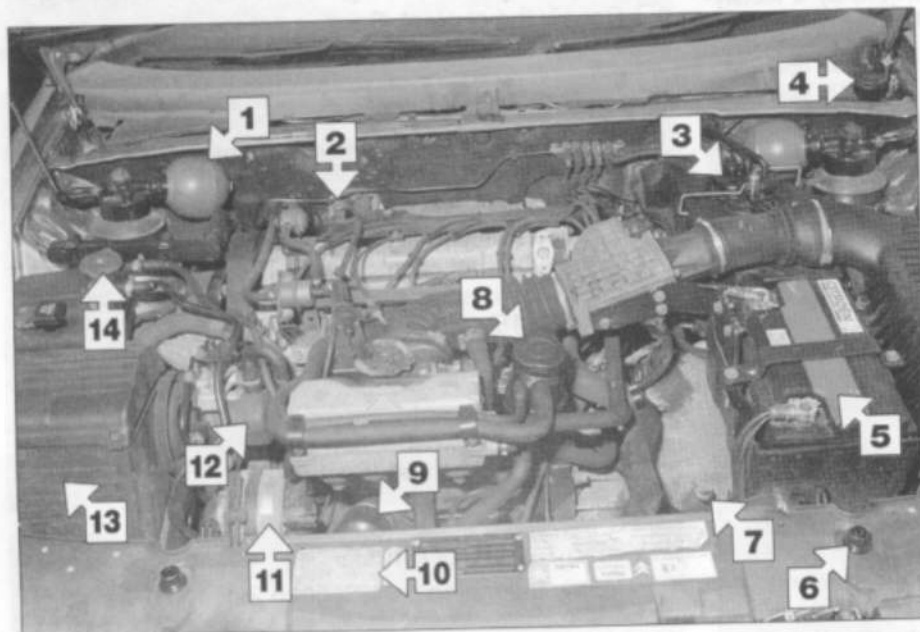
1A•4 Component locations - petrol models

Underbonnet view of a 2.0 litre turbo petrol engine



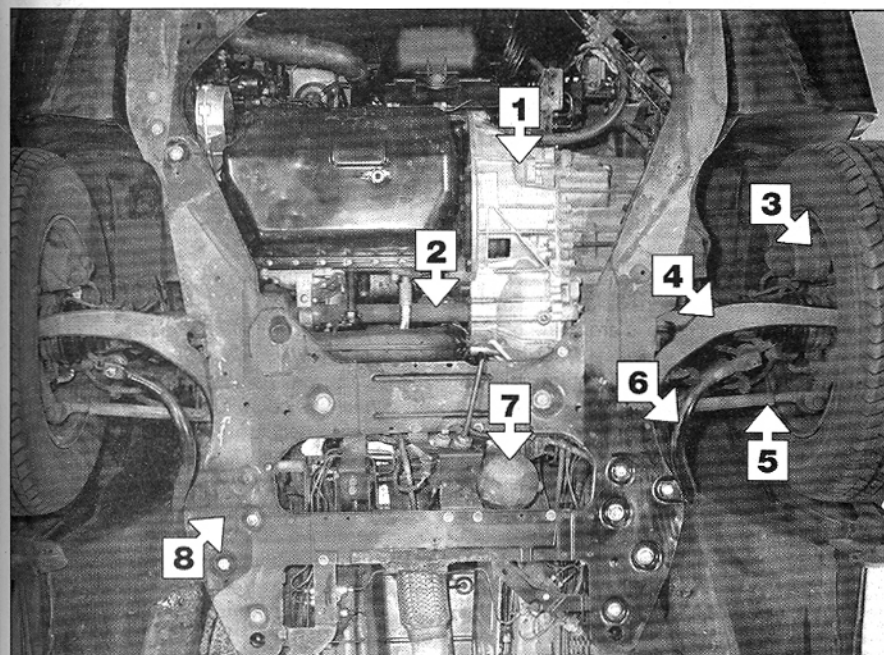
- 1 Headlight washer fluid reservoir
- 2 Air suspension hydraulic fluid reservoir bulb
- 3 Hydraulic fluid reservoir
- 4 Windscreen/tailgate washer fluid reservoir
- 5 Air cleaner housing
- 6 Battery
- 7 Headlight beam adjustment screws
- 8 Engine oil filler cap
- 9 Engine oil level dipstick
- 10 VIN plate
- 11 Cruise control vacuum actuator
- 12 Hydraulic fluid pump
- 13 Electronic control unit housing
- 14 Coolant reservoir (expansion tank)

Underbonnet view of a 2.0 litre non-turbo petrol engine



- 1 Air suspension hydraulic fluid reservoir bulb
- 2 Engine oil level dipstick
- 3 Hydraulic fluid reservoir
- 4 Windscreen/tailgate washer fluid reservoir
- 5 Battery
- 6 Headlight beam adjustment screw
- 7 Automatic transmission fluid level dipstick
- 8 Engine oil filler cap
- 9 Engine oil filter
- 10 VIN plate
- 11 Alternator
- 12 Hydraulic fluid pump
- 13 Electronic control unit housing
- 14 Coolant reservoir (expansion tank)

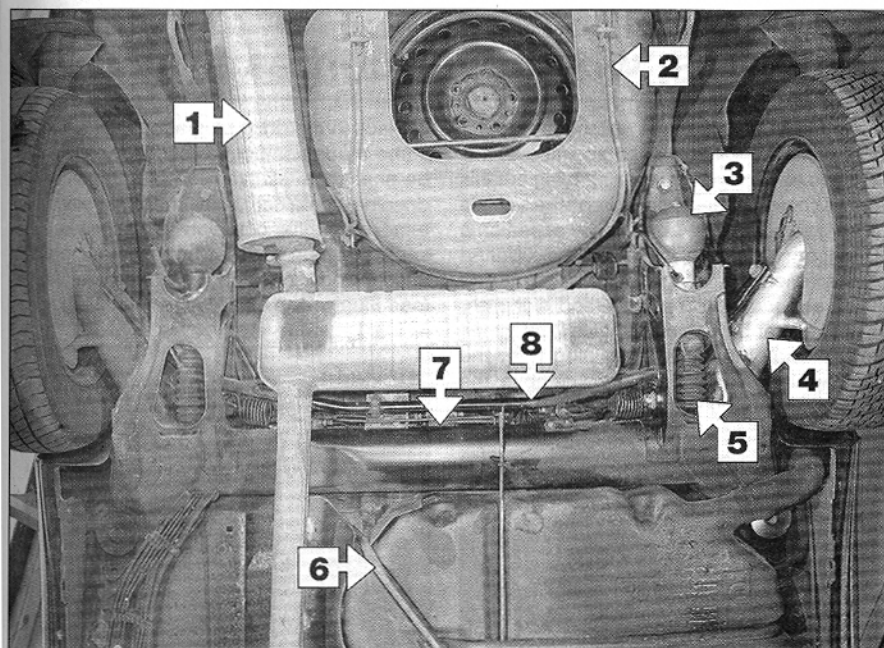
Front underbody view (diesel engine model shown, petrol engine model similar)



- 1 Manual transmission
- 2 Driveshaft
- 3 Brake caliper
- 4 Front suspension lower arm
- 5 Track-rod
- 6 Anti-roll bar
- 7 Suspension soft-setting hydraulic fluid reservoir bulb
- 8 Front suspension subframe

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Rear underbody view (diesel engine model shown, petrol engine model similar)



- 1 Exhaust expansion box
- 2 Spare wheel carrier
- 3 Hydraulic fluid reservoir bulb
- 4 Rear suspension trailing arm
- 5 Rear suspension hydraulic unit
- 6 Fuel tank
- 7 Rear suspension cross-tube
- 8 Rear anti-roll bar

1 Introduction

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

2 The Chapter contains a 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.

3 Servicing your vehicle in accordance with the above recommendations 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.

4 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.

5 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 performance 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 Chapter 5A).*
- Check all the engine-related fluids (See Weekly checks).*
- Check the condition and tension of the auxiliary drivebelt(s) (Section 19).*
- Renew the spark plugs (Section 12).*
- Check the condition of the air filter, and renew if necessary (Sections 11 and 15).*
- Check the fuel filter (Section 17).*
- Check the condition of all hoses, and check for fluid leaks (Section 6).*

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 (Chapter 5A).*
- Check the ignition system (see relevant Part of Chapter 5).*
- Check the fuel system (see relevant Part of Chapter 4).*

Every 9000 miles or 12 months, whichever comes first

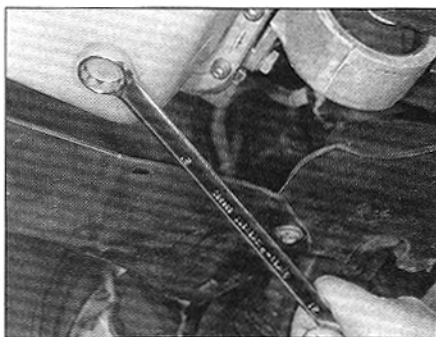
3 Engine oil and filter renewal

Note: A suitable square-section wrench may be required to undo the sump drain plug on some models. These wrenches can be obtained from most motor factors or your Citroën dealer.

1 Frequent oil and filter changes are the most important preventative 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.

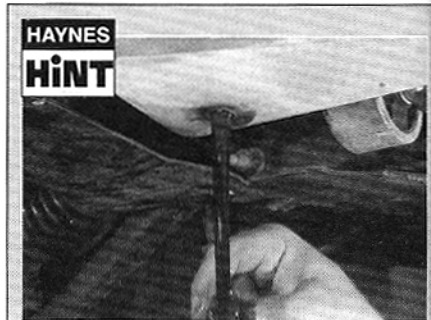
2 Before starting this procedure, gather together all the necessary tools and materials. Make sure that you have plenty of clean rags and newspapers handy, to mop up any spills, and a container of suitable size to drain the oil into. Ideally, the engine oil should be warm, as it will drain better, and 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. 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. Where necessary remove the splash guard from under the engine.

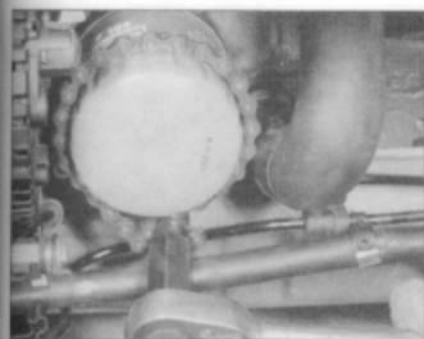


3.3 Slacking the sump drain plug

3 Slacken the drain plug about half a turn; on some models, a square-section wrench may be needed to slacken the plug. Position the draining container under the drain plug, then remove the plug completely. If possible, try to keep the plug pressed into the sump while unscrewing it by hand the last couple of turns (see illustration and Haynes Hint).



As the drain plug releases from the threads, move it away sharply, so that the stream of oil issuing from the sump runs into the container - not down your arm.



3.8a Using an oil filter removal tool, slacken the filter . . .



3.8b . . . then unscrew it by hand the rest of the way

4 Recover the sealing ring from the drain plug.

5 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.

6 After all the oil has drained, wipe off the drain plug with a clean rag, and fit a new sealing washer. Clean around the drain plug opening, then refit and tighten the plug.

7 If the filter is also to be renewed, move the container into position under the oil filter. On all models, the filter is located on the front side of the cylinder block.

8 Using an oil filter removal tool if necessary, slacken the filter initially, then unscrew it by hand the rest of the way (see illustrations). If any oil remains in the old filter, empty it into the container.

9 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 hasn't stuck to the engine. If it has, carefully remove it.

10 Apply a light coating of engine oil to the sealing ring on the new filter, then screw it onto the engine. Tighten the filter firmly by hand only - **do not** use any tools. If necessary, refit the splash guard under the engine.

11 Remove the old oil and all tools from under the car, then lower the car to the ground (if applicable).

12 Remove the dipstick, then unscrew the oil filler cap from the cylinder head cover. Fill the engine, using the correct grade and type of oil (see *Weekly checks*). An oil can spout or funnel may help to reduce spillage. Pour in half the specified quantity of oil first, then wait a few minutes for the oil to fall to the sump. Continue adding oil a small quantity at a time until the level is up to the lower mark on the dipstick. Adding approximately 1.5 litres will bring the level up to the upper mark on the dipstick. Refit the filler cap.

13 Start the engine and run it for a few minutes; check for leaks around the oil filter seal and the sump drain plug. There may be a delay of a few seconds before the oil pressure warning light goes out when the engine is first started, as the oil circulates through the

engine oil galleries and the new oil filter (where fitted) before the pressure builds up.

14 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.

15 Dispose of the used engine oil safely, with reference to *General Repair Procedures*.

4 Automatic transmission fluid renewal

1 Take the vehicle on a short run, to warm the transmission up to normal operating temperature.

2 Park the car on level ground, then switch off the ignition and apply the parking brake firmly. For improved access, chock the rear wheels then jack up the front of the car and support it securely on axle stands (see *Jacking and Vehicle Support*). When refilling and checking the fluid level, the car must be lowered to the ground, and level, to ensure accuracy.

3 Remove the dipstick, then position a suitable container under the transmission. The transmission unit has one drain plug, located at the bottom of the differential housing.



Warning: If the fluid is hot, take precautions against scalding.

4 Unscrew the drain plug, and allow the fluid to drain completely into the container. Clean the drain plug, being especially careful to wipe any metallic particles off the magnetic insert. Discard the original sealing washers; these should be renewed whenever they are disturbed.

5 When the fluid has finished draining, clean the drain plug threads and those of the transmission casing. Fit a new sealing washer to the drain plug, and refit the plug to the transmission, tightening it securely. If the car was raised for the draining operation, now lower it to the ground. Make sure that the car is level (front-to-rear and side-to-side).

6 Refilling the transmission is an awkward operation, adding the specified type of fluid to the transmission a little at a time via the dipstick tube. Alternatively, use the filler cap (breather) having cleaned around the area first. Use a funnel with a fine-mesh gauze, to avoid spillage, and to ensure that no foreign matter enters the transmission. Allow plenty of time for the fluid level to settle properly.

7 Once the level is up to the MAX mark on the dipstick, refit the dipstick. Start the engine, and allow it to idle for a few minutes in P, then recheck the level, topping-up if necessary. Take the car on a short run to fully distribute the new fluid around the transmission, then recheck the fluid level.

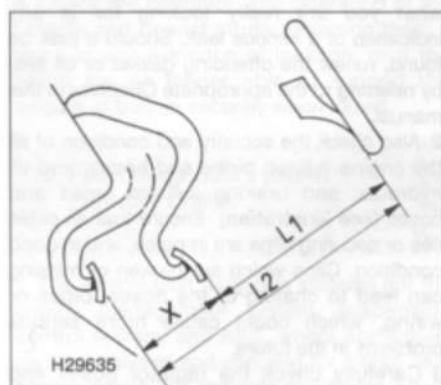
5 Clutch pedal height check - models with cable-operated clutch

1 The clutch adjustment is checked by measuring the clutch pedal travel. If a new cable has been fitted, settle it in position by depressing the clutch pedal at least thirty times.

2 Ensure that there are no obstructions beneath the clutch pedal then measure the distance (L1) from the centre of the clutch pedal pad to the base of the steering wheel with the pedal in the at-rest position. Depress the clutch pedal fully to the floor, and measure the distance (L2) from the centre of the clutch pedal pad to the base of the steering wheel (see illustration).

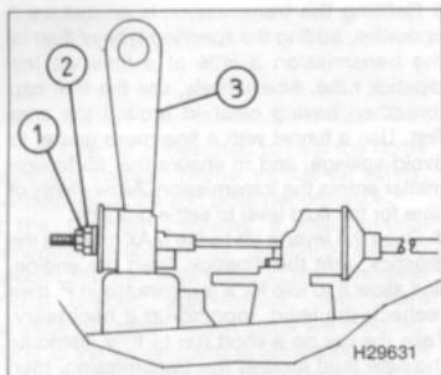
3 Subtract the first measurement from the second to obtain the clutch pedal travel. If this is not within the range given in the Specifications at the start of this Chapter, adjust the clutch as follows.

4 The clutch cable is adjusted by means of the adjuster nut on the transmission end of the cable. Access to the locknut is limited and, if required, the air cleaner duct or housing component can be removed or disconnected to improve access (refer to Chapter 4A). Access can be further



5.2 Clutch pedal height measurement

- L1 Pedal height at rest
- L2 Pedal height fully depressed
- X Clutch pedal travel



5.4 Clutch cable adjustment details

- 1 Locknut 2 Adjustment nut 3 Clutch release arm

improved by removing the battery and its holder (refer to Chapter 5A) (see illustration).

5 Working in the engine compartment, slacken the locknut from the end of the clutch cable. Adjust the position of the adjuster nut, then depress the clutch pedal ten times and re-measure the clutch pedal travel. Repeat this procedure until the clutch pedal travel is as specified.

6 Once the adjuster nut is correctly positioned, and the pedal travel is correctly set, securely tighten the cable locknut. Where necessary, refit any disturbed air cleaner duct/housing components (see Chapter 4A).

6 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 cover, 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. 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, and all hydraulic and braking system pipes and hoses (see illustration). Ensure that all cable ties or securing clips are in place, and in good condition. Clips which 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 which 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



6.2 Check the hydraulic fluid pipes for leaks

cooling system components. Hose clips can pinch and puncture hoses, resulting in cooling system leaks. If the crimped-type hose clips are used, it may be a good idea to replace them with standard worm-drive clips.

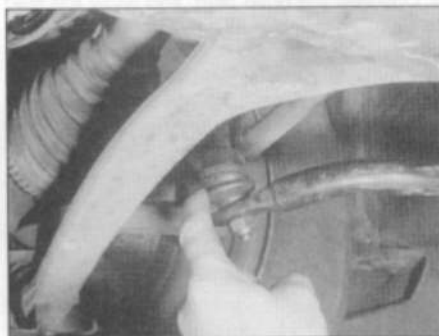
4 Inspect all the cooling system components (hoses, joint faces, etc) for leaks (see Haynes Hint).

5 Where any problems are found on system components, renew the component or gasket with reference to Chapter 3.

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. Similarly, whilst the vehicle is raised, take the opportunity to inspect all underbody brake fluid pipes and hoses.

8 From within the engine compartment,



7.2a Inspect the balljoint dust covers ...



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

check the security of all fuel, vacuum and brake hose attachments and pipe unions, and inspect all hoses for kinks, chafing and deterioration.

9 Check the condition of the power steering fluid pipes and hoses and, where applicable the automatic transmission fluid cooler pipes and hoses.

7 Steering and suspension check

Suspension and steering check

1 Raise the front of the vehicle, and secure support it on axle stands (see *Jacking and Vehicle Support*).

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

3 Check the hydraulic fluid hoses and pipes 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



7.2b ... and the steering gear gaiters



7.4 Check for wear in the hub bearings by grasping the wheel and trying to rock it



8.1 Check the condition of the driveshaft gaiters

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 (**see illustration**). 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.

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 outer balljoint is worn, the visual movement will be obvious. If the inner joint is suspect, it can be felt by placing a hand over the rack-and-pinion rubber gaiter and gripping the track-rod. If the wheel is now rocked, movement will be felt at the inner joint if wear has taken place.

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. In addition, check the steering

column universal joints for wear, and also check the rack-and-pinion steering gear itself.

Suspension strut/hydraulic unit check

8 Check for any signs of fluid leakage around the suspension strut/hydraulic unit body, or from the rubber gaiter around the piston rod. Should any fluid be noticed, the suspension strut/hydraulic unit may be defective internally, and may need renewing (although leaky connectors could be the cause).

9 Check the condition and security of all hydraulic pipes and hoses. If any signs of leakage are found, investigate the cause. Pipe and hose renewal is described in Chapter 9.

10 Similarly, check around all hydraulic valves and connectors for signs of leakage.

11 If it is suspected that there is a fault in the operation of the suspension, the system can be checked by a Citroën dealer using specialist test equipment.

8 Driveshaft check

1 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 while squeezing the gaiters to open out the folds (**see illustration**). 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 as described in Chapter 8.

2 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 loose driveshaft retaining nut.

9 Hinge and lock lubrication

1 Work around the vehicle and lubricate the hinges of the bonnet, doors and tailgate with a light machine oil.

2 Lightly lubricate the bonnet release mechanism and exposed section of inner cable with a smear of grease.

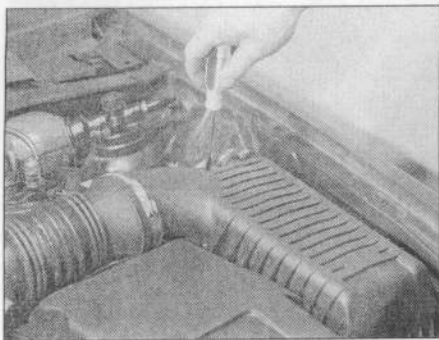
3 Check carefully the security and operation of all hinges, latches and locks, adjusting them where required. Check the operation of the central locking system (if fitted).

4 Check the condition and operation of the tailgate and bonnet struts, renewing them if there is any evidence of leakage, or if the struts are no longer able to support the tailgate or bonnet securely when raised.

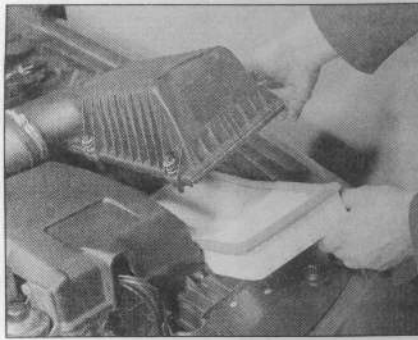
10 Fault diagnosis system memory check

The vehicle fault diagnosis systems (for the engine management system, suspension control system, and ABS, where applicable) can be analysed and checked for stored fault codes, which will indicate any faults which have occurred in the relevant systems.

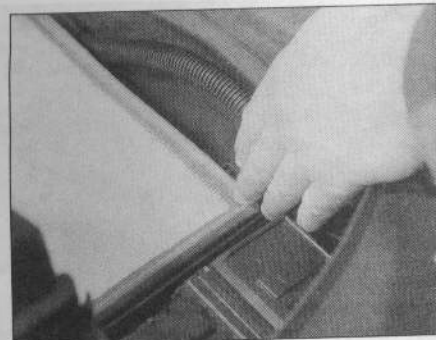
This check must be carried out by a Citroën dealer using the appropriate specialist diagnostic equipment.



11.1 Slacken the retaining screws around the edge of the air cleaner



11.2 Lift the filter element from the air cleaner casing



11.4 Fit the new element in position in the air cleaner, pressing the rubber seal firmly into the recess at the edge of the casing

Every 18 000 miles

11 Air filter element renewal - Turbo models

- 1 Slacken and withdraw the retaining screws around the edge of the air cleaner (see illustration), then remove the cover.
- 2 Lift the filter element from the air cleaner casing (see illustration). Check that the replacement element is the same, before discarding the old one.
- 3 Remove any dirt or debris from the inside of the air cleaner casing, using a brush or rag.
- 4 Fit the new element in position in the air cleaner, pressing the rubber edging firmly into the recess in the air cleaner casing (see illustration).
- 5 Refit the air cleaner cover, securing it in position with its retaining screws.
- 6 Reconnect the intake duct to the rear of the air cleaner cover, and securely tighten its retaining clip.

12 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 end 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 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 transmission end of the engine). Pull the leads from the plugs by gripping the end fitting, not the lead, otherwise the lead connection may be fractured (see illustration).

3 It is advisable to remove the dirt from the spark plug recesses using a clean brush, vacuum cleaner or compressed air before removing the plugs, to prevent dirt dropping into the cylinders.

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

5 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).

6 If the tip and insulator nose are covered with powdered, black-looking deposits, then this is indicative that the mixture is too rich. Should the plug be black and oily, then it is possible that the either the valve guides,

piston rings, or turbocharger (where applicable) are worn.

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

8 The spark plug electrode gap is of considerable importance as, if it is too large or too small, the size of the spark and its efficiency will be seriously impaired. The gap should be set to the value given in the Specifications at the beginning of this Chapter.

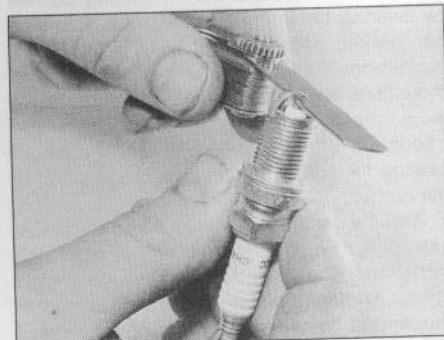
9 To set the gap, measure it with a feeler blade, and then bend the outer plug electrode until the correct gap is achieved (see illustration). The centre electrode should never be bent, as this may crack the insulator and cause plug failure, if nothing worse. If using feeler blades, the gap is correct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

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

11 Before fitting the spark plugs, check that the threaded connector sleeves are tight, and that the plug exterior surfaces and threads are clean. It is very often difficult to insert spark plugs into their holes without cross-threading them. To avoid this possibility, fit a short

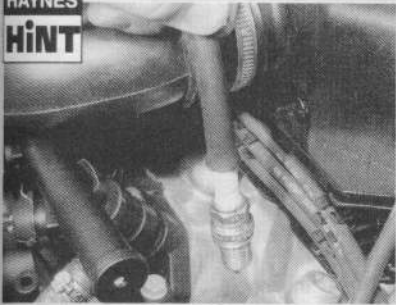


12.2 Pull the HT leads from the spark plugs using the end fittings, not the lead itself



12.9 Measuring the spark plug electrode gap using a feeler gauge

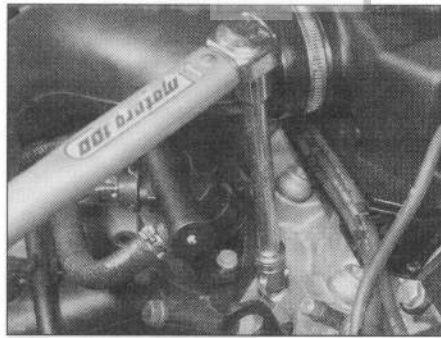
HAYNES
HiNT



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

length of hose over the end of the spark plug (see Haynes Hint).

12 Remove the rubber hose (if used), and tighten the plug to the specified torque (see



12.12 Tighten the spark plug to the specified torque wrench setting

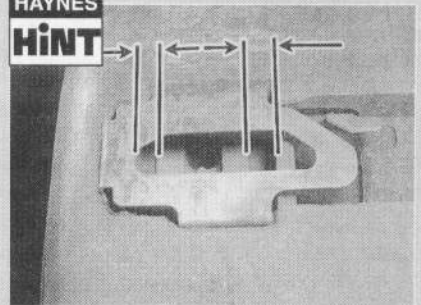
Specifications) using the spark plug socket and a torque wrench. Refit the remaining plugs in the same way (see illustration).

13 Connect the HT leads in the correct order, and refit any components removed for access.

13 Front and rear brake pad and disc check

1 Apply the parking brake, then jack up the front and rear of the car and support it

HAYNES
HiNT



For a quick check, the thickness of friction material remaining on each brake pad can be measured through the aperture in the caliper body

securely on axle stands (see *Jacking and Vehicle Support*). Remove the 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 10 for further information.

3 On completion refit the roadwheels and lower the car to the ground.

1A

Every 2 years, regardless of mileage

14 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, 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 it off.

2 Position a suitable container beneath the coolant drain outlet at the lower left-hand side of the radiator.

3 Loosen the drain plug (there is no need to remove it completely) and allow the coolant to drain into the container (see Haynes Hint).

4 To assist draining, open the cooling system bleed screws. These may be located in the heater matrix inlet hose, on the top of the thermostat housing or hoses, and in the top of the radiator, depending on model (see illustrations).

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, though this is not recommended.

6 Tighten the radiator drain plug on completion of draining.

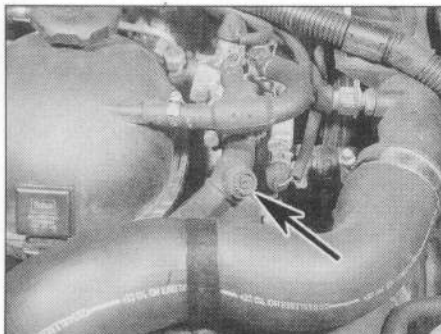
Cooling system flushing

7 To avoid the possibility of the cooling system losing efficiency, as the coolant passages become restricted due to rust, scale

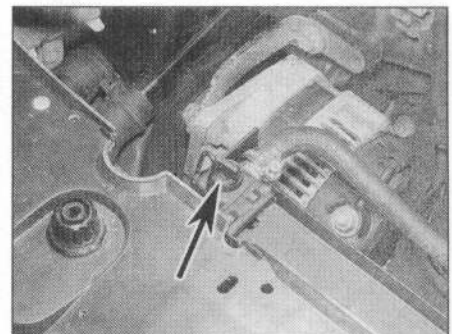
HAYNES
HiNT



A hose can be attached to the outlet on the radiator drain plug to direct the flow of coolant



14.4a Coolant bleed screw (arrowed) in coolant hose



14.4b Coolant bleed screw (arrowed) in radiator

deposits, and other sediment, the cooling system should be flushed as a matter of course whenever the coolant is renewed. The cooling system efficiency can be restored by flushing the system clean.

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

Radiator flushing

9 To flush the radiator, first tighten the radiator drain plug, and the radiator bleed screw, where applicable.

10 Disconnect the top and bottom hoses and any other relevant hoses from the radiator, with reference to Chapter 3.

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

12 If after a reasonable period, the water still does not run clear, the radiator can be flushed with a good proprietary 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

13 To flush the engine, first tighten the cooling system bleed screws.

14 Remove the thermostat (Chapter 3), then temporarily refit the thermostat cover.

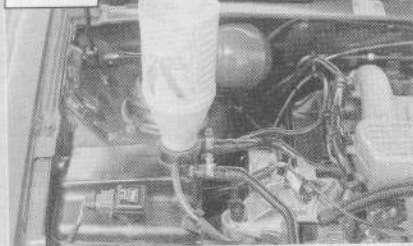
15 With the top and bottom hoses disconnected from the radiator, insert a length of garden hose into the radiator top hose. Direct a flow of clean water through the engine, and continue flushing until clean water emerges from the radiator bottom hose.

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

Cooling system filling

17 Before filling the cooling system, make

TOOL TIP



Although Citroën dealers use a special header tank, the same effect can be achieved by using a plastic bottle with the bottom cut out, and a seal between the bottle and the expansion tank. The seal (a suitable O-ring can be used) must be as airtight as possible

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 drain plug is in place and tight.

18 Remove the expansion tank filler cap.

19 Open all the cooling system bleed screws (see paragraph 4).

20 Some of the cooling system hoses are positioned at a higher level than the top of the radiator expansion tank. It is therefore necessary to use a 'header tank' when refilling the cooling system, to reduce the possibility of air being trapped in the system (see Tool Tip).

21 Fit the 'header tank' to the expansion tank and slowly fill the system. Coolant will emerge from each of the bleed screws in turn, starting with the lowest screw. As soon as coolant free from air bubbles emerges from the lowest screw, tighten that screw, and watch the next

bleed screw in the system. Repeat the procedure until the coolant is emerging from the highest bleed screw in the cooling system and all bleed screws are securely tightened.

22 Ensure that the 'header tank' is full. Start the engine, and run it at a fast idle speed (do not exceed 2000 rpm) until the cooling fan cuts in, and then cuts out. Stop the engine.

Note: Take great care not to scald yourself with the hot coolant during this operation.

23 Allow the engine to cool then remove the 'header tank'.

24 When the engine has cooled, check the coolant level with reference to *Weekly checks*. Top-up the level if necessary and refit the expansion tank cap.

Antifreeze mixture

25 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.

26 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 given in the Specifications at the end of this Chapter.

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

28 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.

29 Do not use engine antifreeze in the windscreen/tailgate washer system, as it will cause damage to the vehicle paintwork. A screenwash additive should be added to the washer system in the quantities stated on the bottle.

Every 36 000 miles

15 Air filter element renewal - normally-aspirated models

Refer to the information given in Section 11.

16 Hydraulic fluid renewal and fluid return filter cleaning



Warning: The fluid used in the XM hydraulic system is LHM mineral fluid, which is green in

colour. The use of any other type of fluid will damage the system rubber seals and hoses. Keep the fluid carefully sealed in its original container.

1 Remove and empty the hydraulic fluid reservoir, as described in Chapter 9.

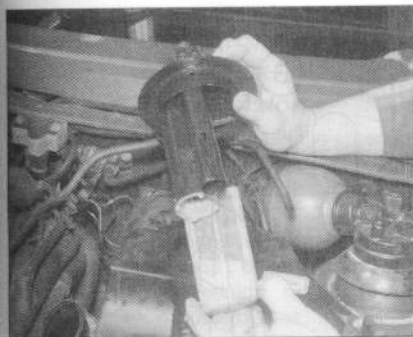
2 Also drain the fluid from the high pressure hose connecting the reservoir centre section to the fluid pump.

3 Remove the metal clip securing the two filters to the bottom of the reservoir centre section (see illustration).

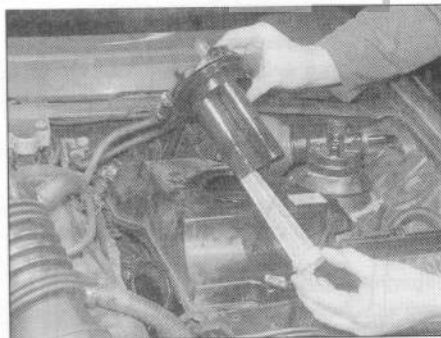
4 Pull the semi-circular filter from the centre section, then twist the round filter to release it (see illustrations).



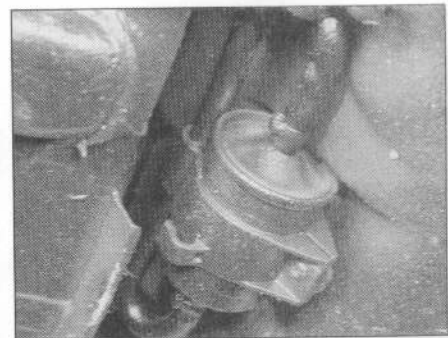
16.3 Remove the metal clip securing the filters



16.4a Pull out the semi-circular filter ...



16.4b ... then twist the round filter to remove it



17.1 Fuel filter location

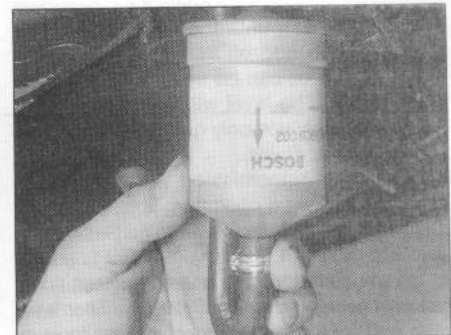
5 Clean the filters and the reservoir using clean petrol, then dry the components. Ideally, the components should be blown through using compressed air.

Warning: Wear eye protection when using compressed air.

- 6 Refit the filters to the reservoir centre section, then refit the reservoir (Chapter 9).
- 7 Refill the reservoir with fresh LHM fluid.
- 8 Prime the hydraulic fluid circuit if necessary, as described in Chapter 9.
- 9 On completion, check and top-up the hydraulic fluid level (see *Weekly checks*).



17.3 Unscrew the screw and release the filter retaining clamp



17.6 When fitting the new filter, ensure that the arrow on the filter casing points in the correct direction

17 Fuel filter renewal



Warning: Before carrying out the following operation, refer to the precautions given in *Safety first!* at the beginning of this manual, and follow them implicitly.

- 1 The fuel filter is situated underneath the rear of the vehicle, on the right-hand side of the fuel tank (see *illustration*). To gain access to the filter, apply the parking brake, then jack up the rear of the vehicle and support it on axle stands (see *Jacking and Vehicle Support*).
- 2 Depressurise the fuel system (Chapter 4A).
- 3 Unscrew the screw and release the retaining clamp (see *illustration*).
- 4 Noting the direction of the arrow marked on the filter body, release the retaining clips and disconnect the fuel hoses from the filter. Where the original crimped-type clips are still fitted, cut and discard them; replace with standard worm-drive hose clips on refitting.
- 5 Remove the filter from the car. Dispose of the old filter safely; it will be highly flammable, and may explode if thrown on a fire.
- 6 Connect the new filter to the hoses and tighten the retaining clips. Make sure that the arrow on the filter points in the correct direction (ie towards the hose which leads to the engine compartment) (see *illustration*).
- 7 Locate the filter in the retaining strap, then insert and tighten the screw.

18 Manual transmission oil level check

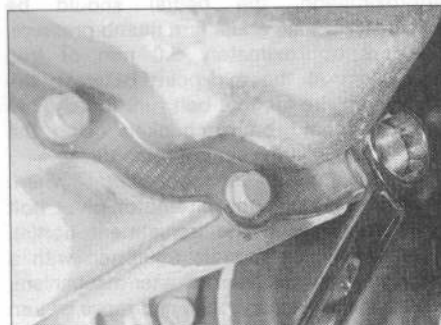


Note: A suitable square-section wrench may be required to undo the transmission filler/level plug on some models. These wrenches can be obtained from most motor factors or your Citroën dealer.

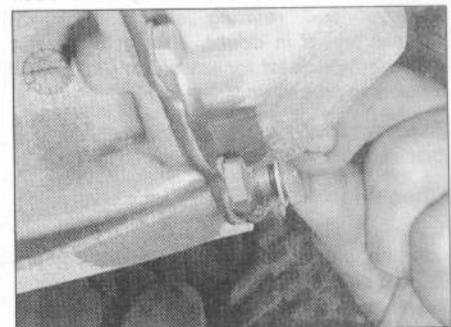
- 1 Park the car on a level surface. The oil level must be checked before the car is driven, or at least 5 minutes after the engine has been switched off. If the oil is checked immediately after driving the car, some of the oil will

remain distributed around the transmission components, resulting in an inaccurate level reading.

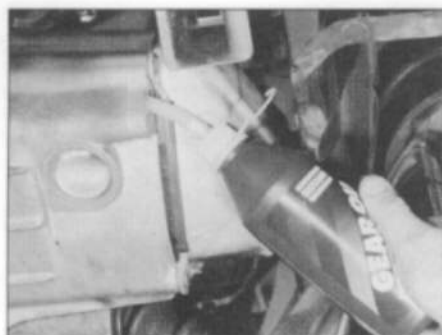
- 2 Prise out the retaining clips and remove the access cover from the left-hand wheelarch liner. On some models it may be necessary to remove the splash guard from under the engine.
- 3 Wipe clean the area around the filler/level plug, which is situated on the left-hand end of the transmission. Slacken the plug with a spanner or socket and wrench, then unscrew it by hand and clean it; discard the sealing washer (see *illustrations*).
- 4 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



18.3a Slacken the filler/level plug with a spanner ...



18.3b ... then unscrew and remove it



18.4 Topping up the transmission oil level

established, wait until the initial trickle has stopped, then add oil 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 (see *Lubricants and Fluids*).

5 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 and 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.

6 If the transmission has been overfilled so that oil flows out as soon as 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.

7 When the level is correct, fit a new sealing washer to the filler/level plug. Refit the plug, tightening it to the specified torque wrench setting (see *Specifications*). Wash off any spilt oil then refit the access cover securing it in position with the retaining clips.

19 Auxiliary drivebelt check

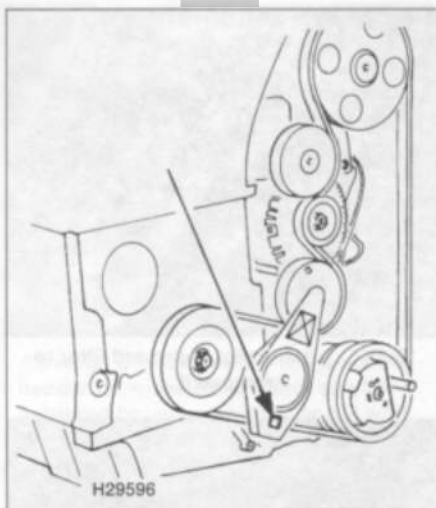
Note: The auxiliary drivebelt configuration varies considerably depending on model. Removal and refitting should be self-explanatory. If in doubt, consult a Citroën dealer or specialist for advice on the correct tensioning procedure.

Alternator/hydraulic pump/air conditioning pump drivebelt(s)

Checking

1 The alternator/hydraulic pump/air conditioning compressor drivebelt(s) is/are located on the right-hand end of the engine.

2 The number and configuration of drivebelts fitted varies considerably depending on model, and whether the model is equipped with air conditioning.



19.7a Auxiliary drivebelt arrangement - later turbo models with air conditioning

Insert a square-drive extension into the hole (arrowed) and lever to release the belt tension

3 Due to their function and material makeup, drivebelts are prone to failure after a period of time and should therefore be inspected, and if necessary adjusted periodically.

4 Since the drivebelt(s) is/are located very close to the right-hand side of the engine compartment, it may be possible to gain better access by raising the front of the vehicle and removing the right-hand wheel, then removing the wheel arch liner.

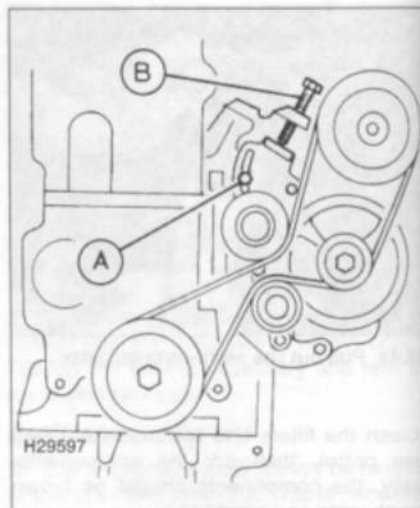
5 With the engine switched off, inspect the full length of the drivebelt(s) for cracks and separation of the belt plies. It will be necessary to turn the engine in order to move the belt(s) from the pulleys so that the belt(s) can be inspected thoroughly. Twist the belt(s) between the pulleys so that both sides can be viewed. Also check for fraying, and glazing which gives the belt(s) a shiny appearance. Check the pulleys for nicks, cracks, distortion and corrosion.

Tensioning

6 Citroën technicians use a special electronic gauge to measure the tension of the auxiliary drivebelt(s). In the absence of this equipment, an approximate setting must be used. As an approximation, the belt(s) should be tensioned to that, under firm thumb pressure, there is approximately 5.0 mm of free movement at the mid-point between the pulleys on the longest belt run. Ideally, the tension should be re-checked using the special gauge at the earliest opportunity.

7 If adjustment is necessary, where applicable loosen the alternator pivot bolt first, then loosen the adjustment bolt(s). Alternatively, on models equipped with a separate belt tensioner/adjuster mechanism, loosen the tensioner bolt(s) and move or turn the tensioner (as applicable) to relieve the tension in the belt (see illustrations).

8 To apply tension to the belt, on models



19.7b Auxiliary drivebelt arrangement - later turbo models without air conditioning

Slacken the bolt (A) and turn the bolt (B) to adjust the tension

without a separate belt tensioner/adjuster mechanism, turn the adjuster screw as necessary, and move the alternator to tension the belt. Tighten the adjustment bolt(s) and the pivot bolt.

9 To apply tension to the belt, on models with a separate belt tensioner/adjuster mechanism, turn or reposition the tensioner (as applicable) to achieve the correct belt tension. Tighten the tensioner bolt(s) securely on completion.

10 Run the engine for about 5 minutes, then recheck the tension.

Removal and refitting

11 To remove a belt, slacken the belt tensioner fully as described previously. Slip the belt off the pulleys, noting its routing to aid refitting then fit the new belt ensuring that it is routed correctly. Note that on models with two drivebelts, it will be necessary to remove the front drivebelt for access to the rear belt.

12 With the belt in position, adjust the tension as previously described.

20 Automatic transmission fluid strainer cleaning

Refer to the information given in Chapter 7B.

21 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, transmission and driveshafts.

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

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

9 Check that 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 Check that all gears can be engaged smoothly without noise, and that the gear lever action is not abnormally vague or 'notchy'.

11 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 (see Chapter 8).

Check the operation and performance of the braking system

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

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

14 Check that the parking brake operates correctly, and that it holds the vehicle stationary on a slope.

Every 72 000 miles

22 Timing belt renewal

Refer to the relevant Part of Chapter 2.