

Chapter 1

Routine maintenance and servicing



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Degrees of difficulty

Easy, suitable for novice with little experience



Fairly easy, suitable for beginner with some experience



Fairly difficult, suitable for competent DIY mechanic



Difficult, suitable for experienced DIY mechanic



Very difficult, suitable for expert DIY or professional



1.2 Servicing specifications

Lubricants, fluids and capacities

Refer to the end of "Weekly checks"

Engine

Oil filter Champion C101/C160

Valve clearances

1.05 and 1.3 litre engines - pre August 1985:

Warm:

Inlet 0.15 to 0.20 mm

Exhaust 0.25 to 0.30 mm

Cold:

Inlet 0.10 to 0.15 mm

Exhaust 0.20 to 0.25 mm

Hydraulic tappet free travel

1.05 and 1.3 litre - post August 1985, 1.6 and 1.8 litre (Maximum travel) .. 0.1 mm

Cooling system

Antifreeze mixture 50 % antifreeze (by volume) with water

Air conditioning system

Compressor drivebelt tension 5.0 to 10.0 mm deflection on longest run

Fuel system

Air filter element types

Carburettor engines:

1.05 litre Champion W101

1.3 litre Champion W102

1.6 and 1.8 litre Champion U508

Fuel-injected engines:

K-Jetronic on 16 valve engine:

1.8 litre Champion U502

All other systems:

1.8 litre Golf Champion U506

1.8 litre Jetta Champion U502

1.8 litre GTi (engine code RP) Champion U572

Fuel filter element types

Carburettor engines (all models) Champion L104

Fuel-injected engines:

K-Jetronic on 16 valve engine:

1.8 litre Golf Champion L203

1.8 litre Jetta Champion L206

All other systems:

1.8 litre GTi (engine code RP) Champion L206

All other models Champion L204*

* New copper washers must be used and these are not supplied with the filter

Idle speed

1.05 litre carburettor engines:

Pierburg/Solex 31 PIC-7 900 to 1000 rpm

Pierburg/Solex 1B3 and Weber 32 TLA 750 to 850 rpm

1.3 litre carburettor engines:

Pierburg/Solex 2E3 750 to 850 rpm

1.6 litre carburettor engines:

Pierburg/Solex 2E2 - engine code EZ 900 to 1000 rpm

Pierburg/Solex 2E2 - engine code RF 700 to 800 rpm

1.8 litre carburettor engines:

Pierburg/Solex 2E2 900 to 1000 rpm

K-Jetronic fuel-injected engine:

8 valve:

Pre Sept. 1984 900 to 1000 rpm

From Sept. 1984 800 to 1000 rpm

Air conditioned models 850 to 1000 rpm

16 valve 900 to 1000 rpm

Mono Jetronic fuel-injected engine 750 to 950 rpm (not adjustable)

Digijet fuel-injected engine:

Up to July 1989 750 to 850 rpm

July 1989 880 to 980 rpm

Digifant fuel-injected engine 750 to 850 rpm

CO content (%)

1.05 litre carburettor engines:	
Pierburg/Solex 31 PIC-7	0.5 to 1.5
Pierburg/Solex 1B3 and Weber 32 TLA	1.5 to 2.5
1.3 litre carburettor engines (Pierburg/Solex 2E3)	
1.6 litre carburettor engines:	
Pierburg/Solex 2E2 - engine code EZ	0.5 to 1.5
Pierburg/Solex 2E2 - engine code RF	1.0 to 1.5
1.8 litre carburettor engines (Pierburg/Solex 2E2)	
K-Jetronic fuel-injected engine	
Mono Jetronic fuel-injected engine	
Digijet fuel-injected engine:	
Up to July 1989	0.3 to 1.1
July 1989	0.3 to 1.5
Digifant fuel-injected engine	
0.5 to 1.5	

Ignition system

Firing order (all engines) 1-3-4-2 (No. 1 cylinder at crankshaft pulley end)

Contact breaker system

Spark plugs*:	Type	Electrode gap
1.05, 1.3, 1.6 and 1.8 litre (pre July 1985)	Champion N7YCC or N7YC	0.8 mm or 0.7 mm

* Spark plug types and electrode gaps are recommended by Champion Spark Plug. If other types are used, refer to their manufacturer's recommendations

HT lead type:

1.05 litre	Champion LS-05 boxed set
1.3, 1.6 and 1.8 litre	Champion LS-07 boxed set

Distributor:

Contact breaker gap (initial setting only)	0.4 mm
Dwell angle (1.05, 1.3 and 1.6 litre):	
Setting	44 to 50° (50 to 56%)
Wear limit	42 to 58° (47 to 64%)

Ignition timing (at idle):

1.05 and 1.3 litre	4 to 6° BTDC
1.6 and 1.8 litre (carburettor engine)	17 to 19° BTDC
1.8 litre (fuel injection engine)	5 to 7° BTDC

Transistorised system

Spark plugs*:	Type	Electrode gap
pre Sept. 1985:		
1.05, 1.3, 1.6, 1.8 litre (pre July 1985)	Champion N7YCC or N7YC	0.8 mm or 0.7 mm
from Sept. 1985:		
1.3 litre	Champion N7BYC or N7YCC	0.8 mm
1.6 litre:		
Coil with green sticker	Champion N9BYC4 or N9YCC	1.0 mm
Coil with grey sticker	Champion N9YCC	0.8 mm
1.8 litre:		
Except 16V	Champion N7BYC or N7YCC	0.8 mm
16V	Champion C6BYC or C6YCC	0.8 mm

* Spark plug types and electrode gaps are recommended by Champion Spark Plug. If other types are used, refer to their manufacturer's recommendations

HT lead type:

1.05 litre	Champion LS-05 boxed set
1.3, 1.6 and 1.8 litre	Champion LS-07 boxed set

Distributor:

Dwell angle (1.05, 1.3 and 1.6 litre):	
Setting	44 to 50° (50 to 56%)
Wear limit	42 to 58° (47 to 64%)

Ignition timing:

1.3 litre (code NZ) - TCI-H	4 to 6° BTDC at 750 to 850 rpm, with vacuum hose disconnected
1.6 litre (code RF) - TCI-H	17 to 19° BTDC at 700 to 800 rpm, with vacuum hose disconnected
1.8 litre:	
Code PB and PF - Digifant	5 to 7° BTDC at 2000 to 2500 rpm, with temperature sender disconnected
Code GU and RH - TCI-H	17 to 19° BTDC at 675 to 825 rpm, with vacuum hose connected
Code RP - TCI-H	5 to 7° BTDC at 950 rpm, with vacuum hose disconnected

Fully electronic system

All Specifications as for Transistorised System except for:

Ignition timing:	
1.8 litre 16 valve engine	5 to 7° BTDC at 950 to 1050 rpm, with vacuum hose connected

1.4 Servicing specifications

Charging system

Alternator drivebelt tension

Initial adjustment for new drivebelt	2.0 mm deflection under finger pressure at point midway between alternator and crankshaft pulleys
Adjustment after 500 miles (750 km)	5.0 mm deflection under finger pressure at same point
Models after early 1985 fitted with rack type adjustment link	8 to 10 Nm (6 to 7 lbf ft) torque loading on adjuster bolt

Clutch

Free play at clutch pedal	15 to 20 mm
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Braking system

Pad thickness

Front disc brakes:

New - excluding backplate:

1.05 and 1.3 litre	12.0 mm
1.6 and 1.8 litre	14.0 mm
1.8 litre with ventilated discs	10.0 mm

Minimum - including backplate:

All models	7.0 mm
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Rear disc brakes:

New - including backplate	12.0 mm
Minimum - including backplate	7.0 mm

Shoe lining thickness

Rear drum brakes:

Minimum - including shoe	5.0 mm
Minimum - excluding shoe	2.5 mm

Steering

Power steering pump drivebelt tension	10.0 mm deflection under firm finger pressure at point midway between pump and crankshaft pulleys
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Tyre pressures

Refer to the end of "Weekly checks"

Torque wrench settings

Engine

	Nm	lbf ft
Sump drain plug	30	22
Valve cover	10	7

Ignition system

Contact breaker system:

Spark plugs	20	15
Distributor clamp bolt:		
1.05 and 1.3 litre	10	7
1.6 and 1.8 litre	25	18

Transistorised and fully electronic systems:

Spark plugs:		
1.05 and 1.3 litre	25	18
1.6 and 1.8 litre	20	15

Charging system

Alternator mounting/pivot bolt	45	33
Alternator adjuster link bolts	25	18

Manual gearbox

Oil filler plug	25	18
Oil drain plug	25	18

Automatic transmission

Oil pan bolts	20	15
Oil strainer (filter) cover bolts	3	2

Steering

Power steering pump/swivel bracket bolts	20	15
Power steering pump tensioner/bracket	20	15

Roadwheels

Roadwheel bolts	110	81
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Body fittings

Seat belt anchor bolts	40	30
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The maintenance intervals in this Manual are provided with the assumption that you will be carrying out the work yourself. These are the minimum maintenance intervals recommended by the manufacturer 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.

If the vehicle is driven in dusty areas, used to tow a trailer, or driven frequently at slow

speeds (idling in traffic) or on short journeys, then more frequent maintenance intervals are recommended.

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

Vehicles manufactured before August 1985

Every 250 miles (400 km) or weekly

- see "Weekly checks"

Every 1000 miles (1500 km) or monthly

- Check lock, hinge and latch mechanisms (Section 3)
- Check seat belts (Section 4)
- Check brakes (Section 5)
- Check for fluid leakage and engine electrical system security (Section 6)
- Check battery electrolyte level (Section 7)
- Check air conditioning system (Section 8)
- Check and lubricate fuel system control linkage (Section 9)
- Check operation of lights, direction indicators and horns (Section 10)

Every 5000 miles (7500 km) or 6 months

- Check contact breaker points (Section 11)

Every 10 000 miles (15 000 km) or 12 months

- Check valve clearances (Section 12)
- Check alternator, power steering pump and air conditioner compressor drivebelt(s) adjustment and condition (Section 13)
- Check antifreeze concentration (Section 14)
- Renew spark plugs (Section 15)
- Renew and adjust contact breaker points (Section 16)
- Check ignition timing (Section 17)
- Renew engine oil and filter (Section 18)
- Check exhaust system (Section 19)
- Adjust slow running (Section 20)
- Check clutch operation (Section 21)
- Check gearbox oil level (Section 22)
- Check automatic transmission fluid level (Section 23)
- Check CV joints and boots (Section 24)
- Check fuel and brake lines, hoses and unions (Section 25)
- Check brake pads and rear shoe linings (Section 26)
- Check headlight beam alignment (Section 27)
- Check steering gear (Section 28)
- Check suspension (Section 29)
- Lubricate hinges and catches (Section 30)
- Check vehicle underbody (Section 31)

Every 20 000 miles (30 000 km) or 24 months

- Renew air cleaner element (Section 32)
- Renew fuel filter (Section 33)

Every 30 000 miles (45 000 km)

- Renew automatic transmission and final drive fluid (Section 35)

Every 2 years

- Renew brake fluid (Section 36)

Every 40 000 miles (60 000 km)

- Renew timing belt (Section 37)

1.6 Maintenance schedule

Vehicles manufactured after August 1985

Every 250 miles (400 km) or weekly

- See "Weekly checks"

Every 1000 miles (1500 km) or monthly

- Check lock, hinge and latch mechanisms (Section 3)
- Check seat belts (Section 4)
- Check brakes (Section 5)
- Check for fluid leakage and engine electrical system security (Section 6)
- Check battery electrolyte level (Section 7)
- Check air conditioning system (Section 8)
- Check and lubricate fuel system control linkage (Section 9)
- Check operation of lights, direction indicators and horns (Section 10)

Every 12 months

- Check antifreeze concentration (Section 14)
- Renew engine oil and filter (Section 18)
- Check exhaust system (Section 19)
- Check idling speed and mixture (Section 20)
- Check clutch operation (Section 21)
- Check automatic transmission fluid level (Section 23)
- Check CV joints and boots (Section 24)
- Check fuel and brake lines, hoses and unions (Section 25)
- Check brake pads and rear shoe linings (Section 26)
- Check headlight beam alignment (Section 27)
- Check steering gear (Section 28)
- Check suspension (Section 29)
- Lubricate hinges and catches (Section 30)
- Check vehicle underbody (Section 31)

Every 10 000 miles (15 000 km) - if completing more than 10 000 miles (15 000 km) per annum

- Renew engine oil and filter (Section 18)
- Check brake pad linings (Section 26)

Every 20 000 miles (30 000 km)

- Check alternator, power steering pump and air conditioner compressor drivebelt(s) adjustment and condition (Section 13)
- Renew spark plugs (Section 15)
- Renew air cleaner element (Section 32)
- Renew fuel filter (Section 33)
- Clean and lubricate sunroof guide rails (Section 34)
- Renew automatic transmission and final drive fluid (Section 35)

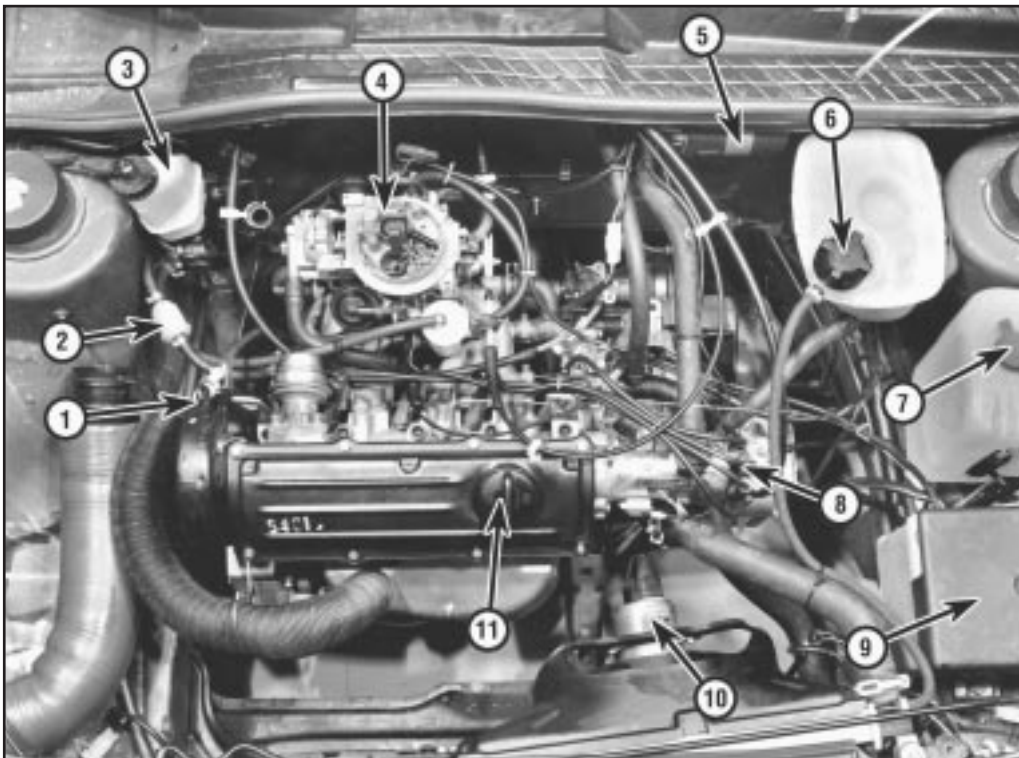
Every 2 years

- Renew brake fluid (Section 36)

Every 40 000 miles (160 000 km)

- Renew timing belt (Section 37)

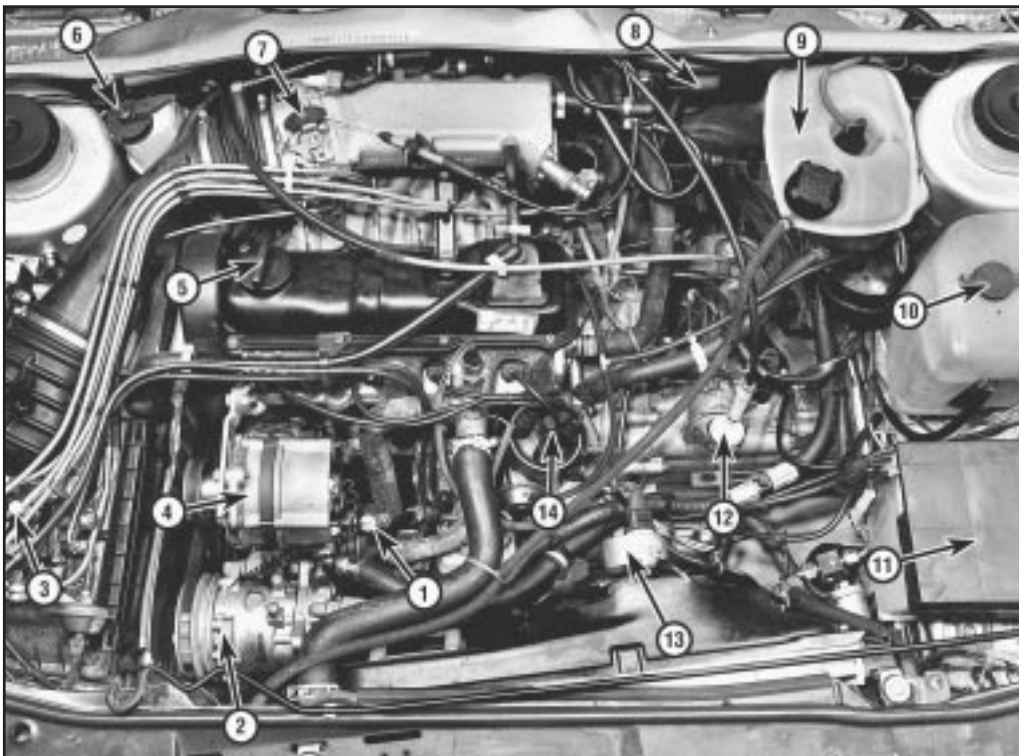
Underbonnet view – 1.3 litre model (air cleaner removed)



- 1 Engine oil dipstick
- 2 Fuel line filter
- 3 Brake master cylinder reservoir
- 4 Carburettor
- 5 Ignition coil
- 6 Cooling system expansion tank
- 7 Windscreen/headlight washer reservoir
- 8 Ignition distributor
- 9 Battery
- 10 Cooling fan
- 11 Engine oil filler cap

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Underbonnet view – fuel injection model

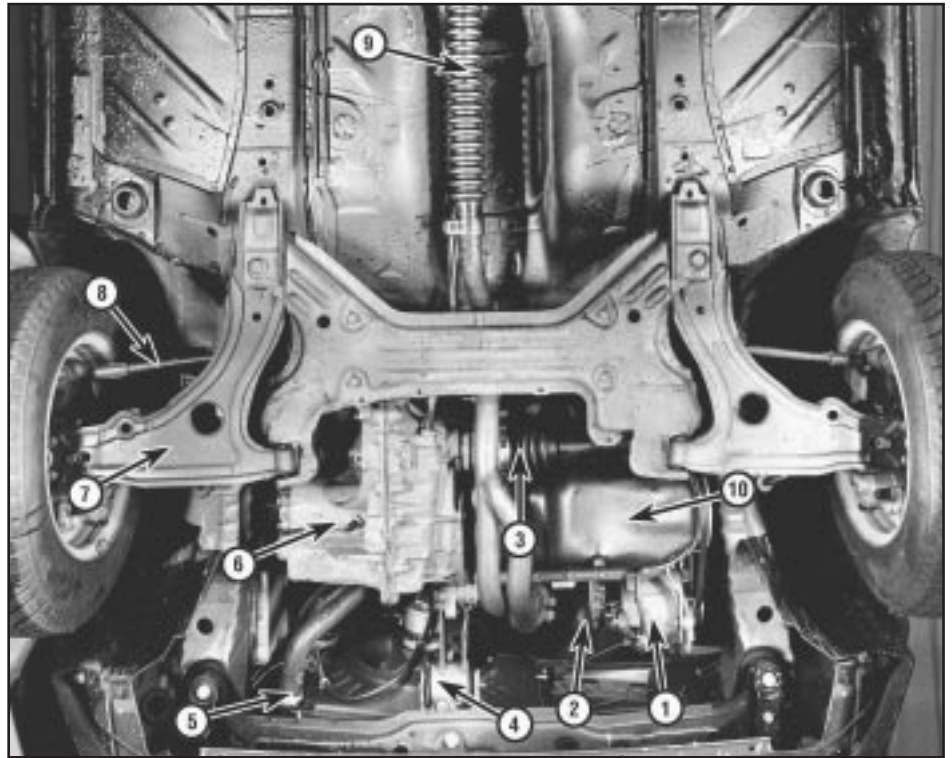


- 1 Engine oil dipstick
- 2 Compressor (air conditioning)
- 3 Fuel distributor
- 4 Alternator
- 5 Engine oil filler cap
- 6 Brake master cylinder reservoir
- 7 Throttle housing
- 8 Ignition coil
- 9 Cooling system expansion tank
- 10 Windscreen/headlamp washer reservoir
- 11 Battery
- 12 Clutch cable
- 13 Cooling fan
- 14 Ignition distributor

1.8 Maintenance - component location

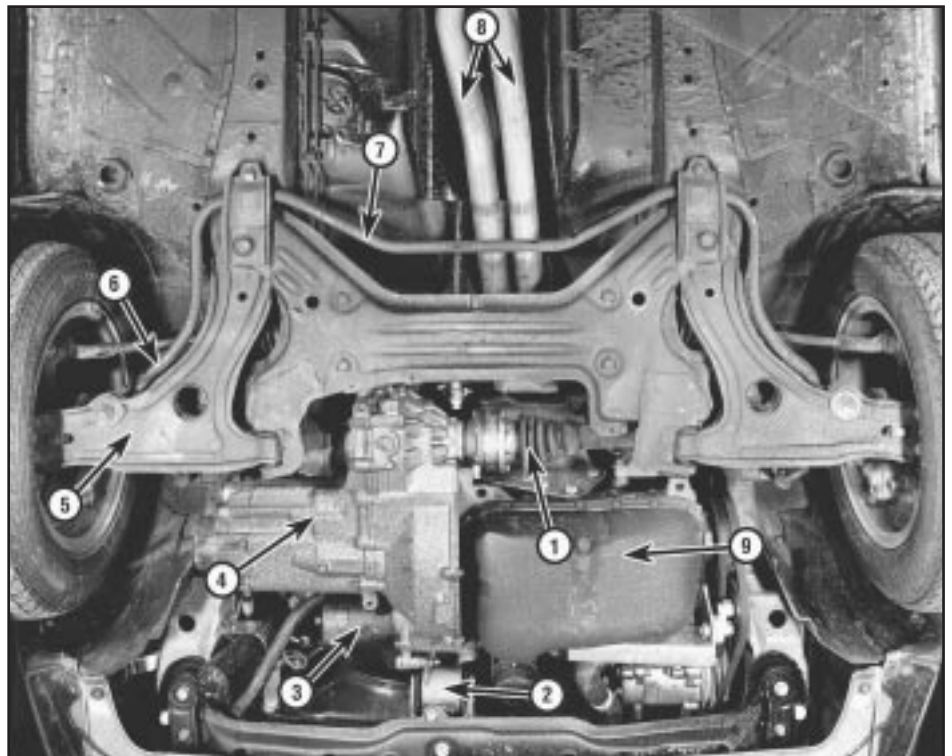
Front underbody view - 1.3 litre model

- 1 Alternator
- 2 Oil filter
- 3 Driveshaft
- 4 Front mounting
- 5 Cooling system bottom hose
- 6 Gearbox
- 7 Track control arm
- 8 Tie-rod
- 9 Exhaust
- 10 Engine sump

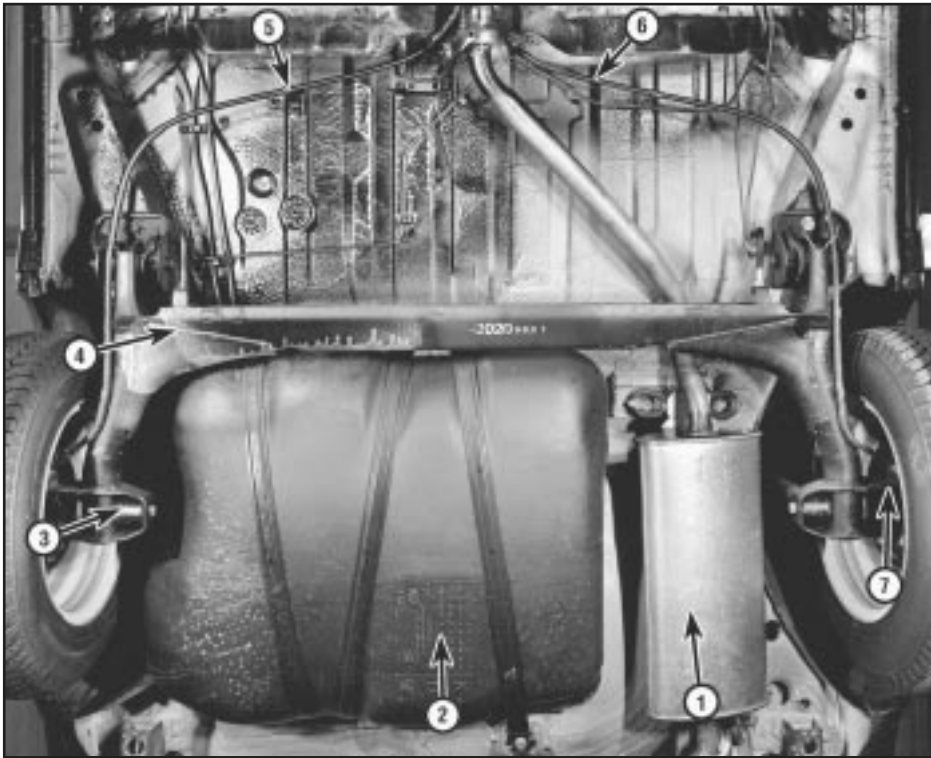


Front underbody view - fuel injected model

- 1 Driveshaft
- 2 Front mounting
- 3 Starter motor
- 4 Gearbox
- 5 Track control arm
- 6 Tie-rod
- 7 Anti-roll bar
- 8 Exhaust system
- 9 Engine sump



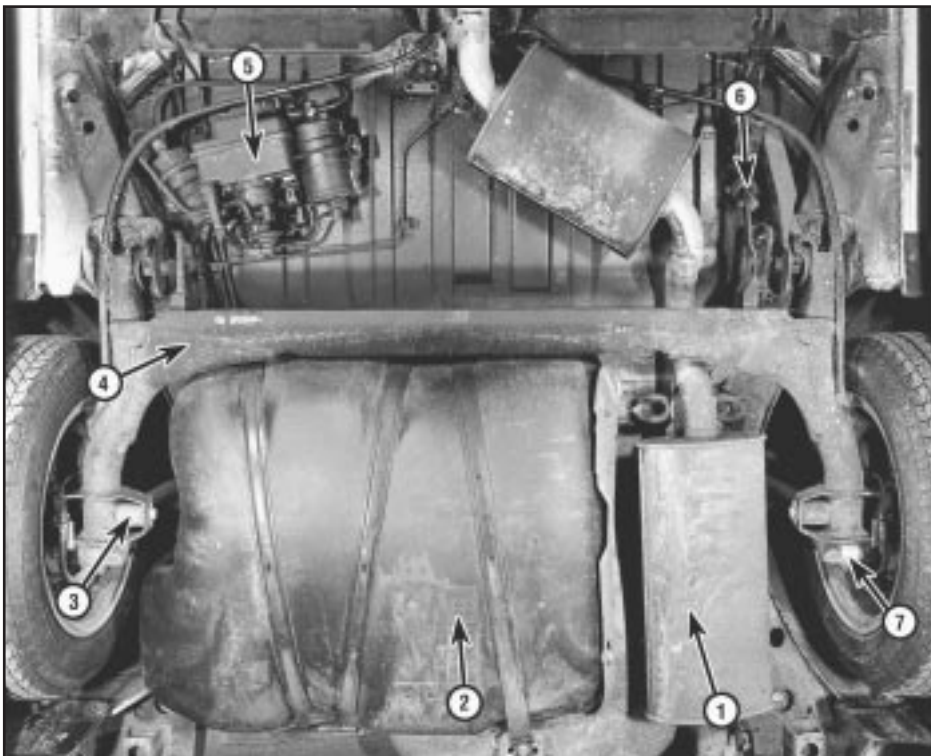
Rear underbody view - 1.3 litre model



- 1 Exhaust
- 2 Fuel tank
- 3 Rear shock absorber lower mounting
- 4 Axle beam
- 5 Handbrake cable (right-hand)
- 6 Handbrake cable (left-hand)
- 7 Rear drum brake

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Rear underbody view - fuel injected model



- 1 Exhaust
- 2 Fuel tank
- 3 Rear shock absorber lower mounting
- 4 Axle beam
- 5 Fuel pump and associated fittings
- 6 Brake pressure regulator
- 7 Rear disc brake

1.10 Maintenance procedures

1 Introduction

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

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

Servicing your vehicle in accordance with the mileage/time maintenance schedule and the following Sections will provide a planned maintenance programme, which should result in a long and reliable service life. This is a comprehensive plan, so maintaining some items but not others at the specified service intervals, will not produce the same results.

As you service your vehicle, you will discover that many of the procedures can - and should - be grouped together, because of the particular procedure being performed, or because of the close proximity of two otherwise-unrelated components to one another. For example, if the vehicle is raised for any reason, the exhaust can be inspected at the same time as the suspension and steering components.

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

2 Intensive 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 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

- a) Clean, inspect and test the battery
- b) Check all the engine-related fluids
- c) Check the condition and tension of the auxiliary drivebelt
- d) Renew the spark plugs
- e) Inspect the distributor cap and HT leads - as applicable
- f) Check the condition of the air cleaner filter element, and renew if necessary
- g) Renew the fuel filter (if fitted)
- h) Check the condition of all hoses, and check for fluid leaks
- i) Check the idle speed and mixture settings - as applicable

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

Secondary operations

- a) Check the charging system
- b) Check the ignition system
- c) Check the fuel system
- d) Renew the distributor cap and rotor arm - as applicable
- f) Renew the ignition HT leads - as applicable

Every 1000 miles (1500 km) or monthly

3 Lock, hinge and latch mechanism check



Check the security and operation of all hinges, latches and locks.

Check the condition and operation of the tailgate struts, renewing them if either is leaking or is no longer able to support the tailgate securely when raised.

4 Seat belt check



1 Check the webbing of each belt for signs of fraying, cuts or other damage, pulling the belt out to its full extent to check its entire length. Check the operation of the buckles by fitting the belt tongue plate and pulling hard to ensure that it remains locked, then check the retractor mechanism (inertia reel only) by pulling out the belt to the halfway point and jerking hard. The mechanism must lock immediately to prevent any further unreeling but must allow free movement during normal driving.

2 Ensure that all belt mounting bolts are securely tightened. Note that the bolts are shouldered so that the belt anchor points are free to rotate.

3 If there is any sign of damage, or any doubt about a belt's condition, it must be renewed. If the vehicle has been involved in a collision any belts in use at the time must be renewed as a matter of course and all other belts should be checked carefully.

4 Use only warm water and non-detergent soap to clean the belts. Never use any

chemical cleaners, strong detergents, dyes or bleaches. Keep the belts fully extended until they have dried naturally; do not apply heat to dry them.

5 Brake check



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

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

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

4 Check the brake warning device for correct operation by switching the ignition on and releasing the handbrake. Now press the contact on the reservoir filler cap down and get an assistant to check that the handbrake and dual circuit warning lamp light up (see illustration).



5.4 Check brake fluid level warning device

6 Fluid leakage and engine electrical system check



1 Open the bonnet and inspect the engine joint faces, gaskets and seals for any signs of coolant or oil leaks. Pay particular attention to the areas around the rocker 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 but 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.

2 Carefully check the condition and security of all under bonnet coolant, fuel, power steering and brake pipes and hoses. 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 system components. Hose clips can pinch and puncture hoses, resulting in leaks. If wire type hose clips are used, it may be a good idea to replace them with screw-type clips (see Haynes Hint).

**HAYNES
HiNT**



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

3 Check the condition of all exposed wiring harnesses. Ensure that all cable-ties are in place and in good condition. Ties which are broken or missing can lead to chafing of the wiring which could cause serious problems in the future.

4 Wipe away any dirt which has accumulated on the outside of the alternator and check that its cable connector is pushed firmly onto its terminals.

5 Clean the ignition system HT and LT leads by wiping along their length with a fuel-moistened cloth. Inspect each lead for damage and renew if defective in any way. Ensure that all lead connections are secure and where applicable, protected (see illustration).

6 Check that all HT and LT leads are correctly routed and clear of moving or hot engine components.

7 Any corroded HT or LT lead connection



6.5 Ensure all HT lead connections are secure

must be cleaned. A smear of petroleum jelly (not grease) applied to the cleaned connection will help to prevent further corrosion.

8 Check the transmission for obvious oil leaks and investigate and rectify any problems found.

9 Where accessible, inspect the fuel filler neck for punctures, cracks and other damage. Sometimes a rubber filler neck or connecting hose will leak due to loose retaining clamps or deteriorated rubber.

7 Battery electrolyte level check



1 A "maintenance-free" (sealed for life) battery is standard equipment on all vehicles covered by this Manual. Although this type of battery has many advantages over the older refillable type and should never require the addition of distilled water, it should still be routinely checked. The electrolyte level can be seen through the battery's translucent case and must be between the MINIMUM and MAXIMUM level marks. Although it should not alter in normal use, if the level has lowered (for example, due to electrolyte having boiled away as a result of overcharging) it is permissible to gently prise up the cell cover(s) and to top-up the level.

2 If a conventional battery has been fitted as a replacement, the electrolyte level of each cell should be checked and, if necessary, topped up until the separators are just



7.3a Remove battery filler caps . . .

covered. On some batteries the case is translucent and incorporates MINIMUM and MAXIMUM level marks. The check should be made more often if the vehicle is operated in high ambient temperature conditions.

3 Top-up the electrolyte level using distilled or de-ionised water (see illustrations).

**HAYNES
HiNT**

If regular topping-up becomes necessary and the battery case is not fractured, the battery is being over-charged and the voltage regulator and/or alternator will have to be checked.

8 Air conditioning system check



During winter months, operate the air conditioner for a few minutes each week to keep the system in good order.

Check that the condenser is free of dirt and insects. If necessary, clean it either by rinsing with a cold water hose or by blowing it clean with an air hose. Use a soft bristle brush to assist removal of dirt jammed in the condenser fins.

9 Fuel system control linkage check



Check all parts of the fuel system control linkage for free movement throughout its complete operating range.

Clean all linkage joints and then lubricate with a light machine oil.

10 Light, direction indicator and horn check



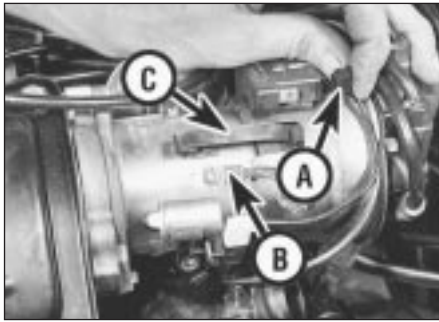
Check that the horn and all vehicle lights are functioning correctly. Renew any defective bulbs.

The headlights and (where applicable) the foglights should be in correct alignment.



7.3b . . . and top up electrolyte level using distilled or de-ionised water

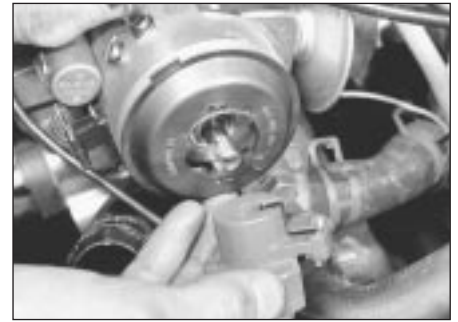
1.12 Maintenance procedures



11.1 Disconnect LT lead (A) earth strap (B) and release securing clips (C)



11.2 Withdraw distributor cap and screen ring



11.3 Pull off the rotor arm

Every 5000 miles (7500 km) or 6 months

11 Contact breaker point check



1 Disconnect the LT lead from the terminal block on the screening ring, then the earth strap spade connector on the distributor body (see illustration).

2 Release the two retaining clips and withdraw the distributor cap, complete with screen ring,

from the distributor (see illustration).

3 Pull off the rotor arm and remove the dust cover (see illustration).

4 Using a screwdriver, prise open the points and inspect the condition of their faces (see illustration). If they are pitted and discoloured, remove them and dress them using emery tape or a grindstone whilst ensuring that their surfaces are flat and parallel. If the points are worn excessively, renew them. If the points are in good condition, then check their adjustment.



11.4 Contact breaker points viewed through window in bearing plate (arrowed) - Ducellier

Every 10 000 miles (15 000 km) or 12 months

12 Valve clearance check



1.05 and 1.3 litre engines

1 Run the engine up to its normal operating temperature. Stop the engine and remove the valve cover.

2 Turn the engine until both cam peaks for No 1 cylinder are pointing upwards.

3 Insert a feeler blade of the correct thickness (specified "Warm" clearance) between the cam and cam follower. If the blade is not a firm sliding fit, proceed as follows:

4 Turn the adjustable ball-stud using an Allen key (see illustration). The valves from the

timing belt end of the engine are in the following order:

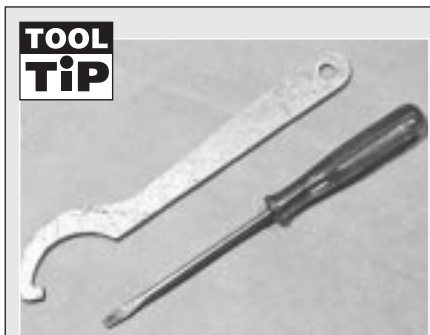
Inlet - Exhaust - Inlet - Exhaust - Inlet - Exhaust - Inlet - Exhaust

5 Repeat the procedure given in paragraphs 2 and 3 for the remaining valves. If the engine is rotated in its normal direction, adjust the valves of No 3 cylinder followed by No 4 cylinder and No 2 cylinder.

6 Refit the valve cover, together with a new gasket.



12.4 Adjusting a valve clearance - 1.05 and 1.3 litre



TOOL TIP
Ideally VW tools 2078 and 10.208 should be used to remove the valve shims, but we managed quite well with these tools; a small electrician's screwdriver and a C-spanner which was just the right size to push the bucket down without pushing the tappet shim (ie pushing the rim down).

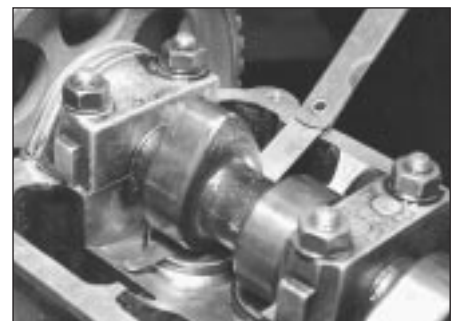
1.6 and 1.8 litre 8 valve engines

Note: Ideally VW tools 2078 and 10.208 should be used to remove the valve shims, but alternatives can be used (see Tool Tip)

Note: The following procedure applies only to engines fitted with shim bucket tappets - that is, those manufactured before August, 1985

7 Run the engine up to its normal operating temperature. Stop the engine and remove the valve cover.

8 Check each valve clearance in turn by rotating the engine so that the valve to be checked has the cam lobe facing upwards. In this position, the valve in question is fully closed and a feeler blade inserted between the heel of the cam lobe and the valve tappet shim within the tappet bucket will give the clearance present (see illustration).



12.8 Checking a valve clearance - 1.6 and 1.8 litre

9 The engine will turn over more easily if the spark plugs are removed. Do not rotate the engine by turning the camshaft sprocket as this will stretch the timing belt. Use the alternator drivebelt (V-belt) or jack up one front wheel and with the engine in gear rotate the roadwheel. Do not turn the engine with any of the shims removed, otherwise the camshaft may foul the rim at the top of the bucket.

10 Repeat this measurement for all valves in turn and then compare the measurements with those specified ("Warm" clearance).

11 Make a table of the actual clearances and then calculate the error from those specified. Suppose on No 1 exhaust valve, the measured clearance is 0.15 mm. It is 0.3 mm too small so it must be adjusted and a shim 0.3 mm thinner fitted instead of the present one. As the shims are in steps of 0.05 mm variation, the required shim can be selected once the size of the shim at present installed is known. If you have dismantled and reassembled the head, then you know the size etched on the back of the shim but if you do not, then the shim must be removed to find out.

12 With the cam turned to give maximum clearance, the tappet is pushed down against the valve springs while the shim is levered out and removed by the VW tool or a screwdriver. Be careful, because if the spanner slips when the shim is halfway out, the shim will fly out sharply (see illustration).

13 Once all the shim sizes are known, a table may be constructed and the sizes of the new shims required may be calculated. Going back to the example, if the present shim is marked 3.60 then one marked 3.30 is required. Bucket



12.12 Removing a tappet bucket shim - 1.6 and 1.8 litre

shims are available in 26 different thicknesses which increase in increments of 0.05 mm, from 3.00 mm to 4.25 mm.

14 As it is unlikely that you will have the required shims readily available, it will be necessary to wait until they have been obtained before the tappets can be adjusted.

15 When inserting the shims, the thickness etching faces should be facing downwards.

16 Once the correct clearances have been achieved, refit the spark plugs and the valve cover.

13 Alternator, power steering pump and air conditioner compressor drivebelt(s) check



1 Check all drivebelts along their full length for cracks, splitting, fraying or damage. Check also for signs of glazing (shiny patches) and for separation of the belt plies. Renew the belt if worn or damaged.

HAYNES HINT Always recheck the tension of a new drivebelt after the engine has been run for ten minutes.

Alternator

Pre 1985

2 Depress the alternator drivebelt firmly with a finger midway between the alternator and crankshaft pulleys (see illustration). The belt should deflect approximately 5.0 mm.

3 If a new drivebelt has been fitted, then initial

adjustment should give a deflection of 2.0 mm. After a suitable running in period of about 500 miles (750 km), belt adjustment should be rechecked and adjusted to deflect 5.0 mm.

4 To adjust the drivebelt, loosen the nut on the adjusting link and pivot bolt (see illustrations), then lever the alternator away from the cylinder block by using a lever at the pulley end of the alternator, until the belt is tensioned correctly.

5 Tighten the nut and bolt on completion of drivebelt adjustment.

From 1985

6 From early 1985, some models are fitted with a rack type alternator adjustment link (see illustration). To adjust drivebelt tension, first fully loosen the adjustment locknut and bolt, the link pivot bolt and the alternator pivot bolt, so that the alternator falls to one side under its own weight.

7 Using a socket and torque wrench on the adjustment bolt, apply a torque of 8 to 10 Nm (6 to 7 lbf ft), then secure the adjustment bolt in the set position by tightening its locknut to 35 Nm (26 lbf ft).

8 If the special VW tool is being used, then the adjustment bolt can now be tightened. If not, tighten the pivot bolt then remove the socket and immediately tighten the adjustment bolt, making sure that the alternator does not move.

9 Tighten the link pivot bolt and alternator pivot bolt.

Power steering pump

10 Loosen the power steering pump unit retaining nuts and bolts and the adjuster bolt locknut on the pump bracket.

11 Turn the tensioning bolt until the belt can be depressed approximately 10.0 mm under firm finger pressure midway between the crankshaft and pump pulleys.

12 When tension is correct, tighten the adjusting bolt locknut and the pump retaining nuts and bolts.

Air conditioner compressor

13 Drivebelt tension is adjusted by adding or subtracting shims from between the halves of the compressor pulley.

14 When correctly adjusted, the belt should give a deflection of 5 to 10 mm on its longest run.



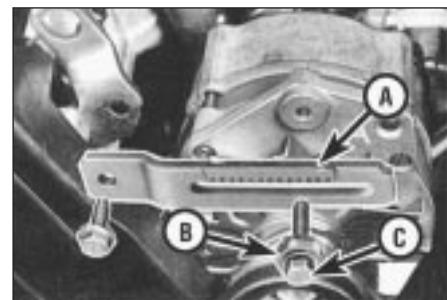
13.2 Checking alternator drivebelt tension



13.4a Alternator drivebelt tensioner link - 1.3 litre



13.4b Alternator drivebelt tensioner link - 1.8 litre



13.6 Rack type alternator drivebelt tensioner link (A) locknut (B) and adjustment bolt (C)

14 Antifreeze concentration check



Warning: Wait until the engine is cold before checking antifreeze. 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 The concentration of antifreeze in the cooling system should be checked and made good if necessary. Most garages can do this check, or an instrument similar to a battery hydrometer can be purchased for making the check at home.

2 It is essential that an antifreeze mixture is retained in the cooling system at all times to act as a corrosion inhibitor and to protect the engine against freezing in winter months. The mixture should be made up from clean water with a low lime content (preferably rainwater) and a good quality ethylene glycol based antifreeze which contains a corrosion inhibitor and is suitable for use in aluminium engines.

3 The proportion of antifreeze to water must be 50/50 and give protection down to approximately -30°C.

4 In climates which render frost protection redundant, it is still necessary to use a corrosion inhibitor in the cooling system. Suitable inhibitors should be available from a local VW agent or other reputable specialist.

15 Spark plug renewal



Note: Some models are fitted with a modified ignition coil and single earth electrode spark plugs. This modified coil is identified by a grey (rather than green) sticker. Refer to the Servicing Specifications at the start of this Chapter for the recommended plug types. It is not permissible to use new plugs with an old coil, or vice versa.



16.3 Removing the bearing plate - 1.05 and 1.3 litre



15.2 Hold the suppresser cap when pulling each HT lead from its spark plug

1 Where applicable, remove the air cleaner.

2 Pull the HT lead and fittings from each spark plug, identifying them for location if necessary (see illustration). On the 16V engine, the end fittings incorporate extensions, as the plugs are deeply recessed in the cylinder head.

3 Using compressed air or a vacuum cleaner, remove any debris from around the spark plugs.

4 Unscrew the plugs using a plug socket, preferably with a rubber insert to grip the plug.

5 Refitting is a reversal of removal. Tighten each spark plug to the specified torque (see Haynes Hint).

16 Contact breaker point renewal and adjustment



Renewal

1 Disconnect the LT lead from the terminal block on the screening ring, then the earth strap spade connector on the distributor body.

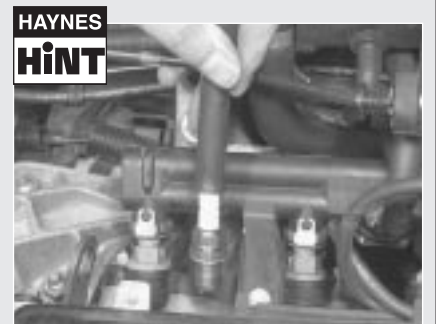
2 Release the two retaining clips and withdraw the distributor cap, complete with screen ring, from the distributor.

3 On 1.05 and 1.3 litre engines, remove the screws and withdraw the bearing plate (see illustration).

4 Disconnect the moving contact LT lead from the terminal then remove the retaining screw and withdraw the contact breaker set from the distributor.



16.10a Checking contact breaker points gap



HAYNES HINT
It is very often difficult to insert spark plugs into their holes without cross-threading them. To avoid this possibility, fit a short length of 5/16 inch internal diameter rubber hose over the end of the spark plug. The flexible hose acts as a universal joint to help align the plug with the plug hole. Should the plug begin to cross-thread, the hose will slip on the spark plug, preventing thread damage to the aluminium cylinder head.

5 Wipe clean the contact breaker plate in the distributor and make sure that the contact surfaces of the new contact breaker set are clean. Lubricate the arm surface and moving contact pivot with a little multi-purpose grease. Use only a small amount, otherwise the contact points may become contaminated.

6 Fit the contact set on the baseplate and refit the retaining screw. Connect the LT lead to the terminal.

7 Refit the bearing plate and tighten the screws (where applicable).

8 Adjust the contact breaker points as follows.

Adjustment

9 Turn the engine with a spanner on the crankshaft pulley bolt until the moving contact point is fully open with its contact heel on the peak of one of the cam lobes.

10 Using a feeler blade, check that the gap between the two points is as specified. If not, loosen the fixed contact screw and reposition the fixed contact until the feeler blade is a firm sliding fit between the two points. In order to make a fine adjustment, slightly loosen the screw then position the screwdriver in the fixed contact notch and the two pips on the contact plate. With the gap adjusted, tighten the screw (see illustrations).

11 Using a dwell meter, check that the dwell angle of the contact points is as specified while spinning the engine on the starter. If not, readjust the points gap as necessary. Reduce the gap in order to increase the dwell angle, or increase the gap in order to reduce the dwell angle.

12 Clean the dust cover and rotor arm then refit them. Do not remove any metal from the rotor arm segment.



16.10b Adjusting contact breaker points gap



16.10c Two pips and notch (arrowed) for inserting screwdriver when adjusting contact breaker points gap

13 Wipe clean the distributor cap and make sure that the carbon brush moves freely against the tension of the spring. Clean the metal segments in the distributor cap but do not scrape away any metal, otherwise the HT spark at the spark plugs will be reduced. Also clean the HT leads and coil tower.

14 Refit the distributor cap and interference screen.

15 Start the engine and check that the dwell angle is as specified, both at idling and higher engine speeds. A decrease in dwell angle at high engine speeds indicates a weak spring on the moving contact points.

16 After making any adjustment to the contact breaker points, check and adjust the ignition timing.

used with a special VW tester to give an instant read-out. However, this tester will not normally be available to the home mechanic. For initial setting-up purposes, the test bulb method can be used but this must always be followed by the stroboscopic timing light method

Test bulb method

1 Remove No. 1 spark plug (crankshaft pulley end) and place a thumb over the aperture.

2 Turn the engine in the normal running direction (clockwise viewed from the crankshaft pulley end) until pressure is felt in No. 1 cylinder, indicating that the piston is commencing its compression stroke. Use a spanner on the crankshaft pulley bolt, or engage top gear and pull the vehicle forwards.

3 Continue turning the engine until the line on the crankshaft pulley is aligned with the pointer on the timing cover. If there are no marks on the timing cover, unscrew and remove the DC sensor or blanking plug from the top of the gearbox and align the timing mark (see Specifications) with the timing pointer (see illustrations).

4 Remove the distributor cap and check that the rotor arm is pointing toward the No. 1 HT lead location in the cap.

5 Connect a 12 volt test bulb between the coil LT negative terminal and a suitable earthing point on the engine.

6 Loosen the distributor clamp retaining bolt.

7 Switch on the ignition. If the bulb is already lit, turn the distributor body slightly clockwise until the bulb goes out.

8 Turn the distributor body anti-clockwise until the bulb just lights up, indicating that the points have just opened. Tighten the clamp retaining bolt.

9 Switch off the ignition and remove the test bulb.

10 Refit the distributor cap and No. 1 spark plug and HT lead. Once the engine has been started, check the timing stroboscopically.

Stroboscopic timing light method

11 Run the engine until its normal operating temperature is reached.

12 On 1.05, 1.3 and 1.8 litre fuel injection engines, disconnect and plug the distributor vacuum hose.

13 If there are no timing marks on the timing cover and crankshaft pulley, unscrew and remove the TDC sensor or blanking plug from the top of the gearbox.

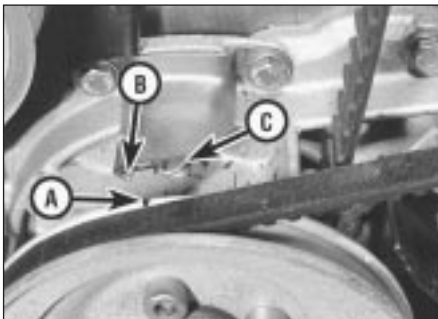
14 Connect the timing light in accordance with the manufacturer's instructions.

17 Ignition timing check

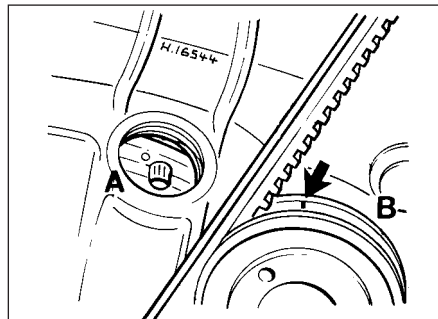


Contact breaker system

Note: Accurate ignition timing is only possible using a stroboscopic timing light, although on some models a DC sender unit is located on the top of the gearbox casing and may be



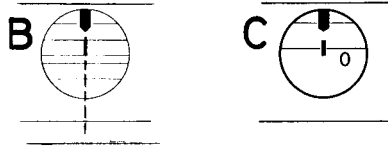
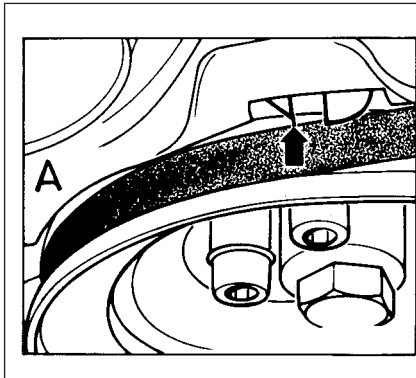
17.3a Crankshaft pulley mark (A) timing mark (B) and TDC mark (C) (timing cover removed) - 1.3 litre



17.3b TDC timing marks - 1.6 and 1.8 litre
A Flywheel/driveplate
B Crankshaft pulley



17.3c Rotor arm aligned with TDC mark on distributor body - 1.6 and 1.8 litre



17.17 Ignition timing marks

- A 1.05 and 1.3 litre
- B 1.6 and 1.8 litre (carburettor models)
- C 1.8 litre (fuel injection models)

15 Connect a tachometer in accordance with the manufacturer's instructions.

16 Start the engine and run it at idling speed.

17 Point the timing light at the timing mark and pointer which should appear to be stationary and aligned. If adjustment is necessary (ie. the marks are not aligned), loosen the clamp retaining bolt and turn the distributor body to correct the ignition timing (see illustration).

18 Gradually increase the engine speed while still pointing the timing light at the timing marks. The mark on the flywheel or pulley should appear to move opposite to the direction of rotation, proving that the centrifugal weights are operating correctly. If not, the centrifugal mechanism is faulty and the distributor should be renewed.

19 Accurate checking of the vacuum advance (and retard where fitted) requires the use of a vacuum pump and gauge. However, providing that the diaphragm unit is serviceable, the vacuum hose(s) firmly fitted, and the internal mechanism not seized, the system should work correctly.

20 Switch off the engine, remove the timing light and tachometer, and refit the vacuum hose (where applicable).

Transistorised systems

Note: Accurate ignition timing is only possible using a stroboscopic timing light, although on some models a DC sender unit is located on the top of the gearbox casing and may be used with a special VW tester to give an instant read-out. However, this tester will not normally be available to the home mechanic

TCI-H

21 Run the engine until its normal operating temperature is reached.

22 On 1.05, 1.3 and 1.8 fuel injection engines, disconnect and plug the distributor vacuum hose.

23 If there are no timing marks on the timing cover and crankshaft pulley, unscrew and remove the TDC sensor or blanking plug from the top of the gearbox.

24 Connect a timing light in accordance with the manufacturer's instructions.

25 Connect a tachometer in accordance with the manufacturer's instructions.

26 Start the engine and run it at idling speed.

27 Point the timing light at the timing mark and pointer which should appear to be stationary and aligned. If adjustment is necessary (ie. the marks are not aligned), loosen the clamp retaining bolt and turn the distributor body to correct the ignition timing (see illustration 17.17).

28 Gradually increase the engine speed while still pointing the timing light at the timing marks. The mark on the flywheel or pulley should appear to move opposite to the direction of rotation, proving that the centrifugal weights are operating correctly. If not, the centrifugal mechanism is faulty and the distributor should be renewed.

29 Accurate checking of the vacuum advance (and retard where fitted) requires the use of a vacuum pump and gauge. However, providing that the diaphragm unit is serviceable, the vacuum hose(s) firmly fitted, and the internal mechanism not seized, the system should work correctly.

30 Switch off the engine, remove the timing light and tachometer, and refit the vacuum hose (where applicable).

Digifant

31 Run the engine to normal operating temperature, then switch off the ignition.

32 Connect a stroboscopic timing light to the engine.

33 Run the engine at idle speed.

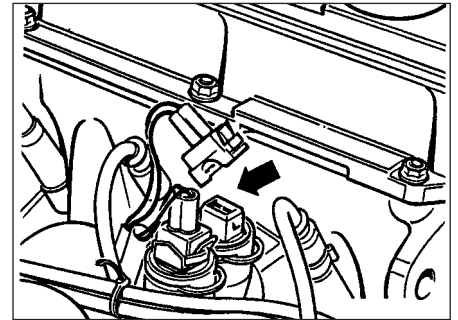
34 Disconnect the wiring from the temperature sender (see illustration).

35 Increase the engine speed to between 2000 and 2500 rpm, then point the timing light at the aperture over the flywheel. The timing marks should be aligned (see illustration 17.17), but if not, loosen the clamp bolt, turn the distributor as required and retighten the bolt.

36 While checking the ignition timing, the opportunity should be taken to check the temperature and knock sensor controls.

37 With the temperature sender wiring disconnected, increase the engine speed to 2300 rpm and note the exact ignition timing. Hold the engine speed at 2300 rpm, then reconnect the wiring and check that the ignition timing advances by $30^\circ \pm 3^\circ$ from the previously noted value.

38 If the ignition timing only advances about 20° , slacken the knock sensor securing bolt,



17.34 Disconnecting temperature sender wire

retighten to 20 Nm (15 lbf ft) and repeat the test. If there is no difference, check the associated wiring for an open-circuit, or as a last resort, renew the knock sensor.

39 If there is no advance in ignition timing, check the temperature sender wiring for an open-circuit. A fault is indicated in the Digifant control unit if there is no open-circuit.

18 Engine oil and filter renewal

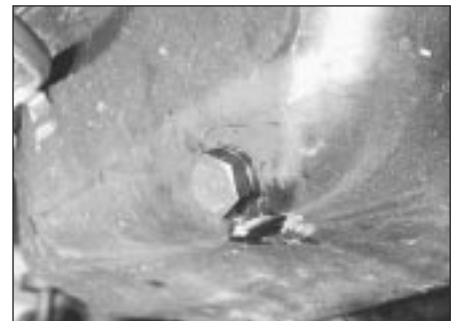


Oil renewal

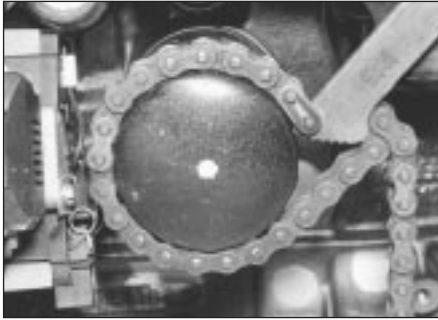
1 Before starting this procedure, gather together all necessary tools and materials. Ensure that you have plenty of clean rags and newspapers handy to mop up any spills. Ideally, the engine oil should be warm as it will drain better and more built-up sludge will be removed with it. Take care not to touch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

2 With the vehicle standing on level ground, position a suitable container under the sump drain plug (see illustration). Remove the drain plug from the sump.

3 Allow some time for the old oil to drain, noting that it may be necessary to reposition the container as the flow of oil slows to a trickle. Work can be speeded-up by removing



18.2 Sump drain plug



18.13 Using a chain wrench to unscrew oil filter

the oil filter, as described below, while the oil is draining.

4 After all the oil has drained, wipe off the drain plug with a clean rag and on 1.6 and 1.8 litre models, renew the O-ring. Clean the area around the drain plug opening and refit the plug. Tighten the plug to the specified torque setting.

5 Depending on engine type, refer to the following sub Section and renew the oil filter.

6 Remove the oil container and all tools from under the vehicle.

7 Refill the engine with the specified type of oil. Pour in half the specified quantity of oil first, then wait a few minutes for the oil to drain to the sump. Continue adding oil a small quantity at a time until the level is up to the lower mark on the dipstick (see *Weekly checks*). Adding a further 1.0 litre will bring the level up to the upper mark on the dipstick.

8 Start the engine and run it for a few minutes while checking for leaks around the oil filter seal and the sump drain plug.

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

10 Dispose of the used engine oil safely.

Filter renewal

11 On 1.05 and 1.3 litre engines, the oil filter is located on the front of the engine beside the alternator.

12 On 1.6 and 1.8 litre engines, the oil filter is located on the side of the crankcase beneath the distributor. It is screwed onto a mounting bracket attached to the crankcase. On fuel injection models, an oil cooler is fitted between the mounting bracket and filter cartridge.

13 With the engine oil drained, place a suitable container beneath the filter then, using a suitable tool, unscrew the filter (see *illustration*). Empty any oil in the old filter into the container and allow any residual oil to drain out of the engine.

14 Check the old filter to make sure that the rubber sealing ring has not stuck to the engine. If it has, then carefully remove it. Wipe clean the sealing face on the cylinder block.

15 Smear the sealing rubber on the new filter with clean engine oil, then fit and tighten the filter by hand only.



19.2 Check exhaust system connections for leaks and security

16 On completion, replenish the engine oil then wipe clean the filter body. When the engine is restarted, check around the filter joint for any signs of leakage.

19 Exhaust system check

1 With the exhaust system cold, check the complete system from the engine to the end of the tailpipe. Ideally the inspection should be carried out with the vehicle raised and supported on axle stands (see *"Jacking and vehicle support"*) to permit unrestricted access.

2 Check the exhaust pipes and connections for evidence of leaks, severe corrosion and damage (see *illustration*). Ensure that all brackets and mountings are in good condition and tight. Leakage at any of the joints or in other parts of the system will usually show up as a black sooty stain in the vicinity of the leak.

3 Rattles and other noises can often be traced to the exhaust system, especially the brackets and mountings (see *illustration*). Try to move the pipes and silencers. If the components can come into contact with the body or suspension parts, secure the system with new mountings or if possible, separate the joints and twist the pipes as necessary to provide additional clearance.

20 Slow running adjustment

To check this adjustment, first determine which fuel system is fitted to the vehicle concerned and then refer to the appropriate Part of Chapter 4 for adjustment of that particular system.

21 Clutch operation check

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



19.3 Check exhaust system mountings

2 If excessive effort is required to operate the clutch, check first that the cable is correctly routed and undamaged, then remove the pedal to ensure that its pivot is properly greased before suspecting a fault in the cable itself. If the cable is worn or damaged, or if its adjusting mechanism is no longer effective, then it must be renewed.

3 Refer to Chapter 6 and on those models where it is possible, check that the clutch is correctly adjusted.

22 Gearbox oil level check

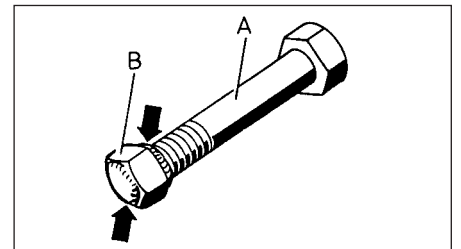
Note: Gearbox oil can foam when hot and give a false level reading. Allow the gearbox to cool before checking the oil level.

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

084 and 085 gearboxes

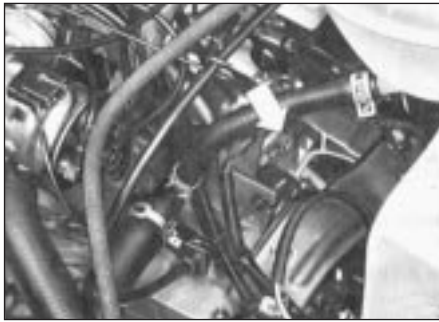
2 Position the vehicle on level ground.

3 The oil filler/level plug is difficult to reach using the normal hexagon key and it will be much easier to use a nut and bolt as shown (see *illustration*) together with a conventional spanner. Instead of welding a single nut on the bolt, two nuts may be tightened against each other using thread-locking fluid.



22.3 Nut and bolt welded together to make oil level plug removal tool - 084 gearbox

A Bolt M10 x 100 mm B Welded nut
Arrows show area of weld



22.4 Gearbox filler/level plug location (arrowed) - 084 gearbox

4 Wipe clean the area around the filler/level plug, then unscrew the plug and clean it. Discard the sealing washer (see illustration).

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

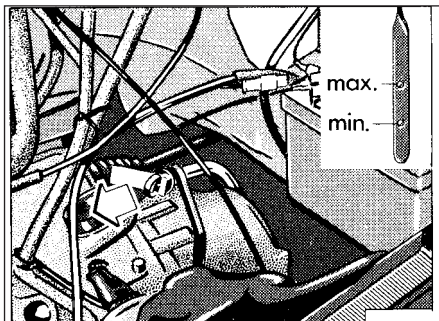
6 If the gearbox has been overfilled so that oil flows out as soon as the filler/level plug is removed, check that the vehicle is completely level (front-to-rear and side-to-side) and allow the surplus to drain off into a suitable container.

7 When the oil level is correct, fit a new sealing washer and refit the filler/level plug, tightening it to the specified torque wrench setting. Clean away any spilt oil.

020 5-speed gearbox

8 Note the basic instructions given for the 084 and 085 gearboxes whilst taking into account the following information.

9 This gearbox was originally designed for an engine/gearbox unit without any inclination. When fitted to the models covered in this Manual a 2° inclination to the left exists, therefore an accurate check cannot be made with the vehicle on ground level.



23.2 Automatic transmission fluid level dipstick - remove in direction of arrow



22.10 Using a key to unscrew level plug - 020 5-speed gearbox

10 When checking the oil level with the vehicle on level ground, unscrew the level plug (see illustration) and if there is a thick flow of oil immediately refit the plug. If there is no flow, first top-up to the bottom of the hole then refit the plug.

11 Now add a further 0.5 litre of oil through the speedometer driveshaft hole (see illustration).

12 From October 1987, the oil level plug hole has been relocated 7.0 mm higher than the one on earlier models. Consequently all filling and topping up can be carried out through the oil level hole. Removal of the speedometer drive cable is no longer necessary for final topping up.

23 Automatic transmission fluid level check

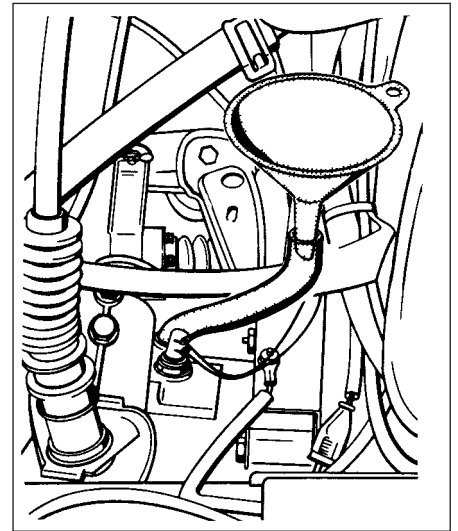
1 Check the transmission fluid level with the engine warm and idling, with the selector lever in position N (neutral) and the handbrake firmly applied.

2 With the vehicle on a level surface, withdraw the level dipstick and wipe it clean with a lint-free cloth. Reinsert it and withdraw again. The level must be between the two marks on the dipstick (see illustration). If not, top-up the level through the dipstick tube using the specified fluid.

3 If much topping-up is required, carry out a check for leaks. If no external leaks are visible, check the final drive oil level. If this is found to be too high, it is probable that the transmission fluid is leaking internally into the final drive casing and if this is the case, it must be attended to without delay by your VW dealer.

4 The difference in quantity of fluid between the maximum and minimum marks on the fluid level dipstick is 0.4 litre.

5 On completion, insert the dipstick and switch off the engine.



22.11 Filling gearbox through speedometer driveshaft hole - early 020 5-speed gearbox

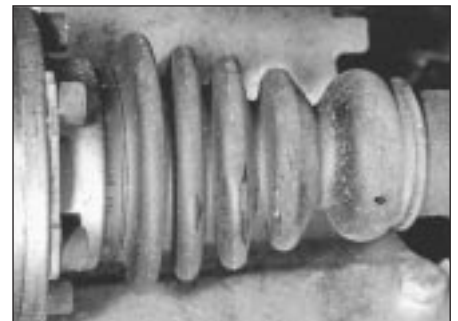
24 CV joint and boot check



1 With the vehicle raised and supported on axle stands (see "Jacking and vehicle support"), turn the steering onto full lock then slowly rotate each roadwheel in turn to facilitate inspection of the CV joints and boots.

2 Inspect the condition of each CV joint boot while squeezing it to open out any folds (see illustration). Check for signs of cracking, splits or deterioration of the rubber which may allow grease to escape and lead to the entry of water and grit into the joint. Also check the security and condition of the boot retaining clips. If any damage or deterioration is found, the boot should be renewed.

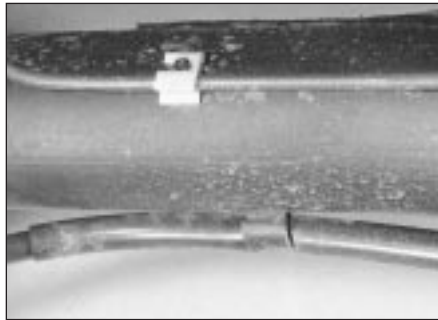
3 At the same time, check the general condition of the CV joints themselves by first holding the driveshaft and attempting to rotate the roadwheel. Repeat this check by holding the inner joint and attempting to rotate the driveshaft. Any appreciable movement indicates wear in the joints, in the driveshaft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



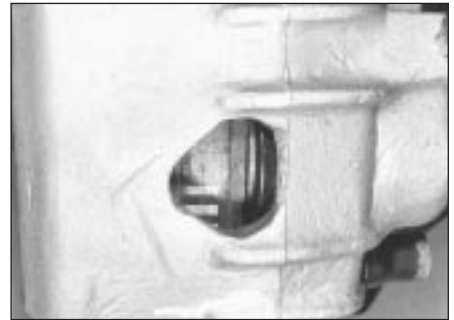
24.2 Inspect condition of each CV joint boot



25.3a Bend each brake hose to check for cracks



25.3b Check all pipe retaining clips for security



26.1 Check brake pad lining wear by viewing through inspection aperture

25 Fuel and brake line, hose and union check



Warning: Do not drive the vehicle until necessary repair work has been carried out on damaged fuel and brake lines.

- 1 It is essential for this check to raise the vehicle sufficiently enough to allow a complete uninterrupted view of its underside.
- 2 Working methodically from one end of the vehicle to the other, carry out the following tasks.
- 3 Clean the rigid brake lines and flexible hoses, at the same time checking them for damage, leakage, chafing and cracks. If the coating on the rigid pipes is damaged or if rusting is apparent, then they must be renewed. Check all pipe retaining clips for security and clean away any accumulation of dirt (see illustrations).
- 4 Similarly, inspect all hoses and metal pipes leading away from the fuel tank. Pay particular attention to the vent pipes and hoses which often loop up around the tank filler neck and can become blocked or crimped.
- 5 Inspect the underside of the fuel tank for punctures, scrapes and other damage.
- 6 If any damage or deterioration is discovered to either system, do not drive the vehicle until the necessary repair work has been carried out.

26 Brake pad and rear shoe lining check



Note: VW recommend that operation of the brake pressure regulator is checked by one of their garages at the same interval that the disc pads and rear brake linings are checked for wear

Brake pads

- 1 Both front and rear brake pad lining wear can be checked by viewing through a hole in the wheel rim (see illustration). Use a mirror placed on the inside of the wheel. The use of a torch may also be necessary.
- 2 If pad thickness is less than the minimum amount specified, renew the pads as a set.

Rear brake shoes

- 3 Jack up the rear of the vehicle and support it on axle stands (see "Jacking and vehicle support"). Chock the front wheels.
- 4 Working beneath the vehicle, remove the rubber plugs from the front of the backplates and check with a torch that the linings are not worn below the minimum thickness specified. On completion, refit the plugs.

27 Headlight beam alignment check



Single unit

Caution: It is recommended that headlamp beam alignment is checked by a VW garage using modern beam setting equipment. However, in an emergency, the following procedure will provide an acceptable light pattern.

- 1 With its tyres correctly inflated, position the vehicle on a level surface, approximately 10 metres in front of a flat wall.
- 2 Draw a horizontal line on the wall or door at headlamp centre height. Draw a vertical line corresponding to the centre line of the vehicle. Now measure off a point either side of this, on the horizontal line, corresponding with the headlamp centres.

3 Switch on the main beam and check that the areas of maximum illumination coincide with the headlamp centre marks on the wall. If not, turn the upper cross-head adjustment screw to adjust the beam laterally and/or the lower screw to adjust the beam vertically (see illustration).

Twin unit

- 4 On models with twin headlamps, the inner lamps are adjusted laterally with the lower adjustment screw and vertically with the upper screw.

28 Steering gear check



1

- 1 Raise the front of the vehicle and securely support it on axle stands (see "Jacking and vehicle support").
- 2 Visually inspect the balljoint dust covers and the steering gear rubber gaiters for splits, chafing or deterioration (see illustration). Any damage to these components will cause loss of lubricant together with dirt and water entry, resulting in rapid deterioration of the balljoints or steering gear.
- 3 Grasp the roadwheel at the 9 and 3 o'clock positions and try to rock it. Any movement felt may be caused by wear in the hub bearings or track rod balljoints. If a 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 steering gear rubber gaiter and



27.3 Turn adjustment screws (arrowed) to adjust headlamp beam alignment



28.2 Inspect balljoint dust covers

1•20 Every 10 000 miles or 12 months

gripping the track rod. If the wheel is now rocked, movement will be felt at the inner joint if wear has taken place.

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

29 Suspension check



1 Raise and support each end of the vehicle in turn and inspect the suspension components for signs of excessive wear or damage as follows.

2 Inspect the suspension balljoints for wear and the dust covers for any signs of splits or deterioration. Renew if necessary.

3 Check the track control arm (wishbone) and anti-roll bar mounting/pivot bushes for signs of excessive wear and/or deterioration and again renew if necessary.

4 Check the shock absorbers for signs of leakage and the suspension to subframe and body mountings for signs of corrosion (see illustration).



29.4 Check shock absorbers for leakage

30 Hinge and catch lubrication



1 Lubricate the door, bonnet and tailgate hinges with a little light machine oil.

2 Lubricate also the bonnet release mechanism and door, bonnet and tailgate locks. Do not lubricate the steering lock.

3 At the same time lubricate the door check straps with a little multi-purpose grease.

31 Vehicle underbody check



Note: Steam-cleaning is available at many garages for the purpose of removing any

accumulation of oily grime from beneath a vehicle.

1 Raise the vehicle sufficiently enough to allow a complete uninterrupted view of its underside.

2 Wash the vehicle underbody down as thoroughly as possible.

3 Carefully check all underbody paintwork, looking closely for chips or scratches. Check with particular care vulnerable areas such as the front spoiler and around the wheel arches. Any damage to the paintwork must be rectified to prevent further corrosion.

4 If a chip or light scratch is found that is recent and still free from rust, it can be touched-up using the appropriate paint. More serious damage or rusted stone chips can be repaired as described in Chapter 11. If damage or corrosion is so severe that a panel must be renewed, seek professional advice as soon as possible.

5 The wax-based underbody protective coating should now be inspected to ensure that it is unbroken and any damage to the coating repaired using undershield. If any body panels are disturbed for repair or renewed, do not forget to replace the coating and to inject wax into door panels, sills, box sections etc. so as to maintain the level of protection provided by the manufacturer.

6 Check carefully that all wheel arch liners and underwing shields are in place and securely fastened.

7 Finally, check that all door and ventilator opening drain holes and pipes are completely clear so that water is allowed to drain.

Every 20 000 miles (30 000 km) or 24 months

32 Air cleaner element renewal



Carburettor models

1.05 and 1.3 litre engines

1 Release the spring clips securing the air cleaner lid and remove the lid (see illustration).



32.1 Unclip the air cleaner lid . . .

2 Cover the carburettor entry port to prevent any dirt entering it when the element is lifted out. Remove the element (see illustration). Wipe the inside of the air cleaner with a moist rag to remove all dust and dirt and then remove the covering from the entry port.

3 Fit the new element. Clean the cover, position it in place, then clip it down whilst ensuring that the two arrows are aligned.

1.6 and 1.8 litre engines

4 Unclip and remove the cover then withdraw



32.2 . . . and remove the element - 1.3 litre, carburettor

the element. Note that on some models, it is necessary to first loosen the front mounting nut (see illustrations).

5 Clean the interior of the air cleaner with a fuel-moistened cloth, then wipe it dry.

6 Fit the new element in the reverse order of removal.

Fuel-injected models

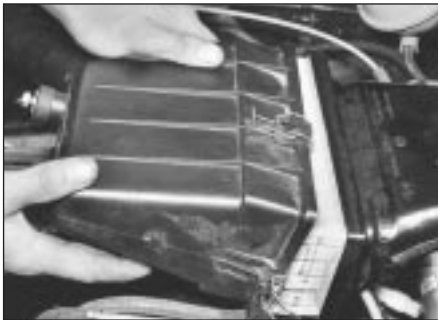
7 Release the spring clips securing the air cleaner cover and separate the cover from the airflow meter (see illustration).



32.4a Unclip air cleaner cover . . .



32.4b . . . loosen front mounting nut . . .



32.4c . . . then remove cover to expose element - 1.6 and 1.8 litre, carburettor

- 8 Withdraw the element from the housing.
- 9 Wipe clean the inside of the cover.
- 10 Fit the new element and secure the cover by pressing the clips home.

33 Fuel filter renewal



Carburettor models

1 To remove the in-line filter, remove its pipe retaining clips, disconnect the pipes and extract the filter (see illustration). If necessary, replace the original crimped type clips with screw type ones.

2 Fit the new filter in a horizontal position with its arrow facing the flow of fuel towards the fuel pump. Ensure that the pipe retaining clips are properly tightened then start the engine and check carefully for any signs of fuel leaks from the pipe ends.

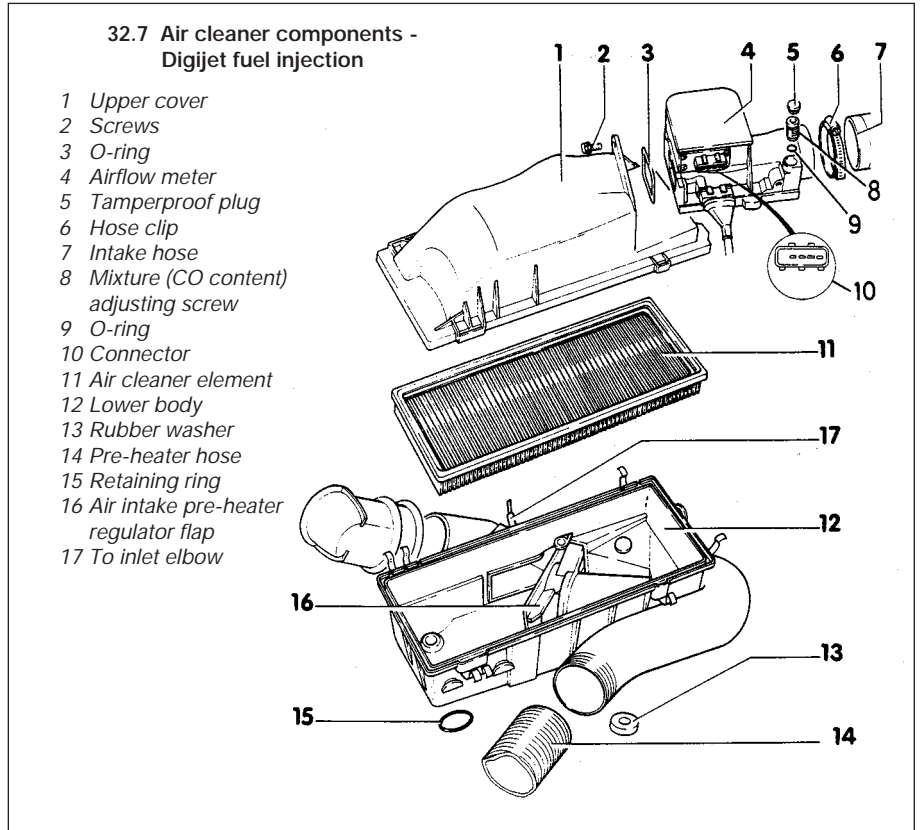
3 Dispose safely of the old filter, it will be highly inflammable and may explode if thrown on a fire.

Fuel-injected models

4 The fuel filter is mounted on the inboard side of the pump reservoir on the underside of the vehicle at the rear just forward of the fuel tank (see illustration)

5 Disconnect the battery earth lead.

6 Raise the vehicle at the rear and support it



on axle stands (see "Jacking and vehicle support").

7 At the forward end of the filter, undo the fuel accumulator hose union bolt and detach the union whilst collecting the washer each side of it.

8 At the rear end of the filter, detach the fuel supply hose (to the metering distributor) by undoing the union bolt. Collect the washer each side of the union.

9 Loosen the filter retaining clamp and withdraw the filter.

10 Fitting the new filter is a reversal of the removal procedure. Renew the union washers and tighten the union bolts to the specified torque. Check that the arrow on the filter points in the direction of fuel flow.

11 On completion, check for any signs of fuel

leakage with the engine running.

12 Dispose safely of the old filter, it will be highly inflammable and may explode if thrown on a fire.

34 Sunroof guide rail cleaning and lubrication

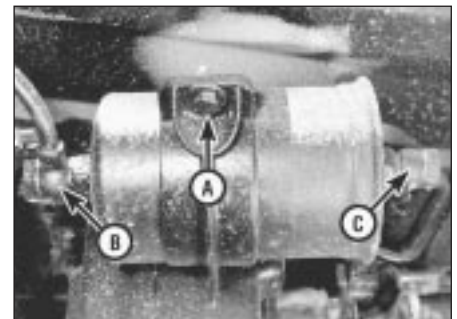


Open the sunroof and wipe clean its guide rails. Coat each rail very lightly with grease, ensuring that none finds its way onto the interior trim.

Check that the sunroof opens and closes smoothly throughout its complete operating range.



33.1 In-line fuel filter - 1.05 and 1.3 litre, carburettor



33.4 Fuel filter unit clamp (A) hose to accumulator (B) and hose to metering valve (C) - K-Jetronic fuel injection

Every 30 000 miles (45 000 km)

35 Automatic transmission and final drive fluid renewal



Note: Under extreme operating conditions, automatic transmission fluid should be changed at more frequent intervals.

Automatic transmission

1 Whenever the automatic transmission fluid is renewed, the oil pan and strainer must also be cleaned (where applicable). First jack up the vehicle and support it on axle stands (see "Jacking and vehicle support").

2 Remove the transmission drain plug and drain the fluid into a container. If there is no drain plug, loosen the oil pan front bolts then unscrew the rear bolts and lower the pan in order to drain the fluid (see illustration). Take care to avoid scalding if the engine has just been run.

3 Unbolt and remove the pan from the transmission and remove the gasket. Clean the inside of the pan.

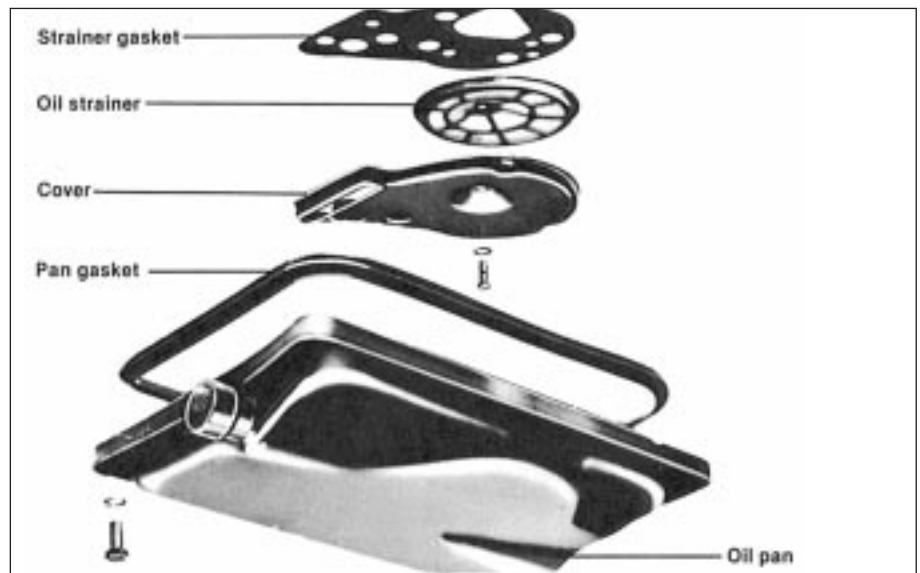
4 Unbolt the strainer cover and remove the strainer and gasket.

5 Clean the strainer and cover and dry thoroughly.

6 Refit the cover and strainer, together with a new gasket, and tighten the bolts to the specified torque.

7 Refit the pan, together with a new gasket, and tighten the securing bolts to the specified torque. Lower the vehicle.

8 Initially, refill the transmission with 2.5 litres of the specified fluid, then restart the engine. Check that the handbrake is fully applied then move the gear selector lever through the full range of gears finishing at N. With the engine still idling, check the fluid level on the dipstick. The fluid level should at least be visible on the dipstick. If not, add the minimum amount of



35.2 Automatic transmission oil pan and strainer

fluid necessary to bring the level up to be visible on the tip of the dipstick.

9 Take the vehicle on a short drive to warm-up the fluid in the transmission then recheck the fluid level. Top-up if necessary. Do not overfill with fluid or the excess will have to be drained off.

Final drive unit

10 To check the oil level in the final drive unit, the vehicle will need to be over an inspection pit or raised and supported on a level position on axle stands (see "Jacking and vehicle support") for access to the filler/level plug (see illustration).

11 Remove the plug and check that the oil is level with the bottom edge of the plug hole. If

not, top-up the level through the plug hole then refit the plug. Lower the vehicle.



35.10 Final drive unit oil filler/level plug (arrowed)

Every 2 years

36 Brake fluid renewal



1 The procedure is similar to that described for bleeding of the hydraulic system in Chapter 9, except that the brake fluid reservoir should be emptied before starting by syphoning, using a clean poultry baster or similar. Also, 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 nipple 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 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 nipple. Tighten the nipple and top the reservoir level up to the MAX level line.

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

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

5 When the operation is complete, check that all nipples 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.

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

Every 40 000 miles (60 000 km)

37 Timing belt renewal



Refer to the appropriate Part of Chapter 2 for the particular engine type concerned.