

Fiat Punto

Service and Repair Manual

A K Legg LAE MIMI and Spencer Drayton

Models covered

(3251 - 272 - 10AC2)

Fiat Punto Hatchback, including Selecta and special/limited editions

Petrol engines: 1.1 litre (1108 cc) and 1.2 litre (1242 cc, 8-valve and 16-valve)

Diesel & turbo-diesel engines: 1.7 litre (1698 cc)

Does NOT cover 1.4 litre (1372 cc) or 1.6 litre (1581 cc) petrol engines, or Cabriolet

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A book in the Haynes Service and Repair Manual Series

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Contents

LIVING WITH YOUR FIAT PUNTO

Introduction to the Fiat Punto	Page 0•4
Safety first!	Page 0•5

Roadside repairs

If your car won't start	Page 0•6
Jump starting	Page 0•7
Wheel changing	Page 0•8
Identifying leaks	Page 0•9
Towing	Page 0•9

Weekly checks

Introduction	Page 0•10
Underbonnet check points	Page 0•10
Engine oil level	Page 0•12
Coolant level	Page 0•12
Brake fluid level	Page 0•13
Power steering fluid level	Page 0•13
Tyre condition and pressure	Page 0•14
Automatic transmission fluid level	Page 0•15
Screen washer fluid level	Page 0•15
Wiper blades	Page 0•15
Battery	Page 0•16
Electrical systems	Page 0•16

Lubricants and fluids	Page 0•17
-----------------------	-----------

Tyre pressures	Page 0•18
----------------	-----------

MAINTENANCE

Routine maintenance and servicing

Fiat Punto petrol models	Page 1A•1
Servicing specifications	Page 1A•2
Maintenance schedule	Page 1A•3
Maintenance procedures	Page 1A•6
Fiat Punto diesel models	Page 1B•1
Servicing specifications	Page 1B•2
Maintenance schedule	Page 1B•3
Maintenance procedures	Page 1B•5

Contents

REPAIRS AND OVERHAUL

Engine and associated systems

SOHC (8-valve) petrol engine in-car repair procedures	Page 2A•1
DOHC (16-valve) petrol engine in-car repair procedures	Page 2B•1
Diesel engine in-car repair procedures	Page 2C•1
Engine removal and overhaul procedures	Page 2D•1
Cooling, heating and ventilation systems	Page 3•1
Fuel system - single-point petrol injection models	Page 4A•1
Fuel system - multi-point petrol injection models	Page 4B•1
Fuel system - diesel models	Page 4C•1
Exhaust and emission control systems	Page 4D•1
Starting and charging systems	Page 5A•1
Ignition system - petrol models	Page 5B•1
Preheating system - diesel models	Page 5C•1

Transmission

Clutch	Page 6•1
Manual transmission	Page 7A•1
Automatic transmission	Page 7B•1
Driveshafts	Page 8•1

Brakes and suspension

Braking system	Page 9•1
Suspension and steering	Page 10•1

Body equipment

Bodywork, trim and fittings	Page 11•1
Body electrical systems	Page 12•1

Wiring diagrams

Page 12•13

REFERENCE

Dimensions and weights	Page REF•1
Conversion factors	Page REF•2
Buying spare parts	Page REF•3
Vehicle identification	Page REF•3
General repair procedures	Page REF•4
Jacking and vehicle support	Page REF•5
Disconnecting the battery	Page REF•5
Tools and working facilities	Page REF•6
MOT test checks	Page REF•8
Fault finding	Page REF•12
Glossary of technical terms	Page REF•20

Index

Page REF•24

0.4 Introduction

The Fiat Punto range was introduced in March 1994 with 1108 cc, 1242 cc and 1372 cc petrol engines and a 1698 cc diesel engine. At first, models were only available in 5-door Hatchback form, however 3-door versions followed in May 1994 and Cabriolet and Automatic versions in June 1994. At the same time a turbo diesel model was launched. Power-assisted steering and ABS were offered as options in October 1994, and the 6-speed 55SX and normally-aspirated diesel followed in June 1995. In June 1997 a minor facelift was undertaken which included improvements to the suspension and steering and various cosmetic changes. This facelift also saw the introduction of the 1242 cc DOHC 16-valve engine available in top of the range models.

All engines covered in this Manual are fitted with single- or double-overhead-camshaft engines, and all models have fully independent front and rear suspension. The distinguished lines of the bodywork together with the high level rear lighting have made the Fiat Punto a very popular small car.

Provided that regular servicing is carried out in accordance with the manufacturer's recommendations, the Fiat Punto should prove reliable and economical. The engine compartment is well-designed, and most of the items needing frequent attention are easily accessible.



Fiat Punto 55 SX 5-door



Fiat Punto 55 S 3-door

The Fiat Punto Team

Haynes manuals are produced by dedicated and enthusiastic people working in close co-operation. The team responsible for the creation of this book included:

Authors	A.K. Legg LAE MIMI Spencer Drayton
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Cover illustration & Line Art	Roger Healing
Wiring diagrams	Matthew Marke

We hope the book will help you to get the maximum enjoyment from your car. By carrying out routine maintenance as described you will ensure your car's reliability and preserve its resale value.

Your Fiat Punto Manual

The aim of this manual is to help you get the best value from your vehicle. It can do so in several ways. It can help you decide what work must be done (even should you choose to get it done by a garage), provide information on routine maintenance and servicing, and give a logical course of action and diagnosis when random faults occur. However, it is hoped that you will use the manual by tackling the work yourself. On simpler jobs, it may even be quicker than booking the car into a garage and going there twice, to leave and collect it. Perhaps most important, a lot of money can be saved by avoiding the costs a garage must charge to cover its labour and overheads.

The manual has drawings and descriptions to show the function of the various components, so that their layout can be understood. Then the tasks are described and photographed in a clear step-by-step sequence.

References to the 'left' or 'right' are in the sense of a person in the driver's seat, facing forward.

Acknowledgements

Thanks are due to the Champion Spark Plug Company, who supplied the illustrations of various spark plug conditions. Thanks are also due to Draper Tools Limited, who provided some of the workshop tools, and to all those people at Sparkford who helped in the production of this manual.

We take great pride in the accuracy of information given in this manual, but vehicle manufacturers make alterations and design changes during the production run of a particular vehicle of which they do not inform us. No liability can be accepted by the authors or publishers for loss, damage or injury caused by any errors in, or omissions from, the information given.

Working on your car can be dangerous. This page shows just some of the potential risks and hazards, with the aim of creating a safety-conscious attitude.

General hazards

Scalding

- Don't remove the radiator or expansion tank cap while the engine is hot.
- Engine oil, automatic transmission fluid or power steering fluid may also be dangerously hot if the engine has recently been running.

Burning

- Beware of burns from the exhaust system and from any part of the engine. Brake discs and drums can also be extremely hot immediately after use.

Crushing

- When working under or near a raised vehicle, always supplement the jack with axle stands, or use drive-on ramps. **Never venture under a car which is only supported by a jack.**



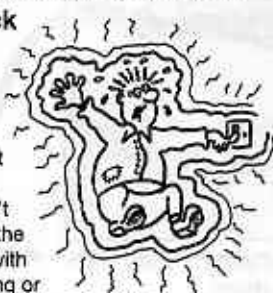
- Take care if loosening or tightening high-torque nuts when the vehicle is on stands. Initial loosening and final tightening should be done with the wheels on the ground.

Fire

- Fuel is highly flammable; fuel vapour is explosive.
- Don't let fuel spill onto a hot engine.
- Do not smoke or allow naked lights (including pilot lights) anywhere near a vehicle being worked on. Also beware of creating sparks (electrically or by use of tools).
- Fuel vapour is heavier than air, so don't work on the fuel system with the vehicle over an inspection pit.
- Another cause of fire is an electrical overload or short-circuit. Take care when repairing or modifying the vehicle wiring.
- Keep a fire extinguisher handy, of a type suitable for use on fuel and electrical fires.

Electric shock

- Ignition HT voltage can be dangerous, especially to people with heart problems or a pacemaker. Don't work on or near the ignition system with the engine running or the ignition switched on.



- Mains voltage is also dangerous. Make sure that any mains-operated equipment is correctly earthed. Mains power points should be protected by a residual current device (RCD) circuit breaker.

Fume or gas intoxication

- Exhaust fumes are poisonous; they often contain carbon monoxide, which is rapidly fatal if inhaled. Never run the engine in a confined space such as a garage with the doors shut.
- Fuel vapour is also poisonous, as are the vapours from some cleaning solvents and paint thinners.



Poisonous or irritant substances

- Avoid skin contact with battery acid and with any fuel, fluid or lubricant, especially antifreeze, brake hydraulic fluid and Diesel fuel. Don't syphon them by mouth. If such a substance is swallowed or gets into the eyes, seek medical advice.
- Prolonged contact with used engine oil can cause skin cancer. Wear gloves or use a barrier cream if necessary. Change out of oil-soaked clothes and do not keep oily rags in your pocket.
- Air conditioning refrigerant forms a poisonous gas if exposed to a naked flame (including a cigarette). It can also cause skin burns on contact.

Asbestos

- Asbestos dust can cause cancer if inhaled or swallowed. Asbestos may be found in gaskets and in brake and clutch linings. When dealing with such components it is safest to assume that they contain asbestos.

Special hazards

Hydrofluoric acid

- This extremely corrosive acid is formed when certain types of synthetic rubber, found in some O-rings, oil seals, fuel hoses etc, are exposed to temperatures above 400°C. The rubber changes into a charred or sticky substance containing the acid. *Once formed, the acid remains dangerous for years. If it gets onto the skin, it may be necessary to amputate the limb concerned.*
- When dealing with a vehicle which has suffered a fire, or with components salvaged from such a vehicle, wear protective gloves and discard them after use.

The battery

- Batteries contain sulphuric acid, which attacks clothing, eyes and skin. Take care when topping-up or carrying the battery.
- The hydrogen gas given off by the battery is highly explosive. Never cause a spark or allow a naked light nearby. Be careful when connecting and disconnecting battery chargers or jump leads.

Air bags

- Air bags can cause injury if they go off accidentally. Take care when removing the steering wheel and/or fascia. Special storage instructions may apply.

Diesel injection equipment

- Diesel injection pumps supply fuel at very high pressure. Take care when working on the fuel injectors and fuel pipes.



Warning: Never expose the hands, face or any other part of the body to injector spray; the fuel can penetrate the skin with potentially fatal results.

Remember...

DO

- Do use eye protection when using power tools, and when working under the vehicle.
- Do wear gloves or use barrier cream to protect your hands when necessary.
- Do get someone to check periodically that all is well when working alone on the vehicle.
- Do keep loose clothing and long hair well out of the way of moving mechanical parts.
- Do remove rings, wristwatch etc, before working on the vehicle – especially the electrical system.
- Do ensure that any lifting or jacking equipment has a safe working load rating adequate for the job.

DON'T

- Don't attempt to lift a heavy component which may be beyond your capability – get assistance.
- Don't rush to finish a job, or take unverified short cuts.
- Don't use ill-fitting tools which may slip and cause injury.
- Don't leave tools or parts lying around where someone can trip over them. Mop up oil and fuel spills at once.
- Don't allow children or pets to play in or near a vehicle being worked on.

0.6 Roadside repairs

The following pages are intended to help in dealing with common roadside emergencies and breakdowns. You will find more detailed fault finding information at the back of the manual, and repair information in the main chapters.

If your car won't start and the starter motor doesn't turn

- If it's a model with automatic transmission, make sure the selector is in P or N.
- Open the bonnet and make sure that the battery terminals are clean and tight.
- Switch on the headlights and try to start the engine. If the headlights go very dim when you're trying to start, the battery is probably flat. Get out of trouble by jump starting (see next page) using a friend's car.



A Check that the spark plug HT leads are securely connected by pushing them onto the plugs (petrol engine models).



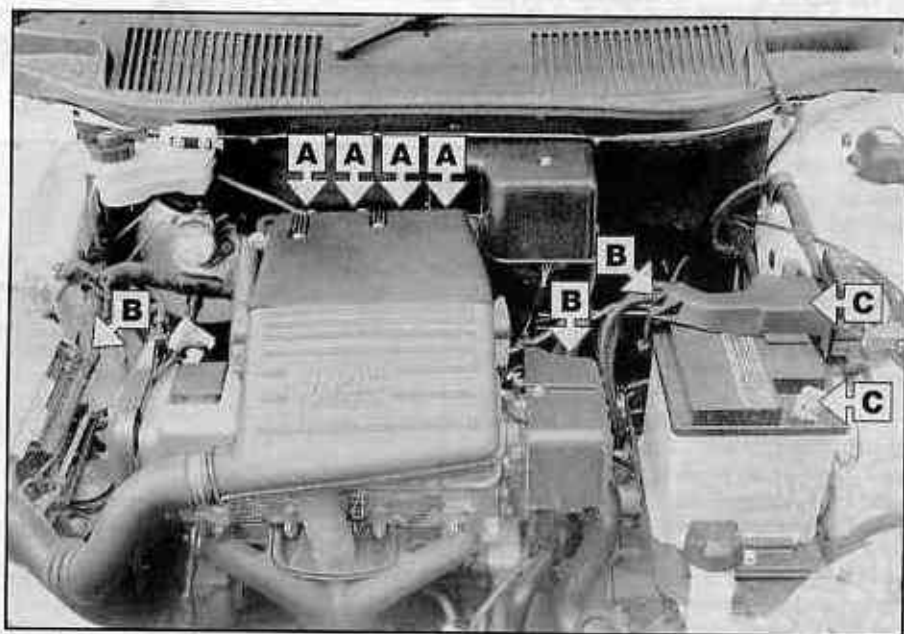
B Check that the wiring to the engine compartments is securely connected.



C Check the security and condition of the battery terminals.

If your car won't start even though the starter motor turns as normal

- Is there fuel in the tank?
- Is there moisture on electrical components under the bonnet? Switch off the ignition, then wipe off any obvious dampness with a dry cloth. Spray a water-repellent aerosol product (WD-40 or equivalent) on ignition and fuel system electrical connectors like those shown in the photos. Pay special attention to the ignition coil wiring connector and HT leads. (Note that Diesel engines don't normally suffer from damp.)



Check that electrical connections are secure (with the ignition switched off) and spray them with a water dispersant spray like WD40 if you suspect a problem due to damp

HAYNES
HINT

Jump starting will get you out of trouble, but you must correct whatever made the battery go flat in the first place. There are three possibilities:

- 1** The battery has been drained by repeated attempts to start, or by leaving the lights on.
- 2** The charging system is not working properly (alternator drivebelt slack or broken, alternator wiring fault or alternator itself faulty).
- 3** The battery itself is at fault (electrolyte low, or battery worn out).

When jump-starting a car using a booster battery, observe the following precautions:

- ✓ Before connecting the booster battery, make sure that the ignition is switched off.
- ✓ Ensure that all electrical equipment (lights, heater, wipers, etc) is switched off.
- ✓ Take note of any special precautions printed on the battery case.

Jump starting

- ✓ Make sure that the booster battery is the same voltage as the discharged one in the vehicle.
- ✓ If the battery is being jump-started from the battery in another vehicle, the two vehicles **MUST NOT TOUCH** each other.
- ✓ Make sure that the transmission is in neutral (or PARK, in the case of automatic transmission).



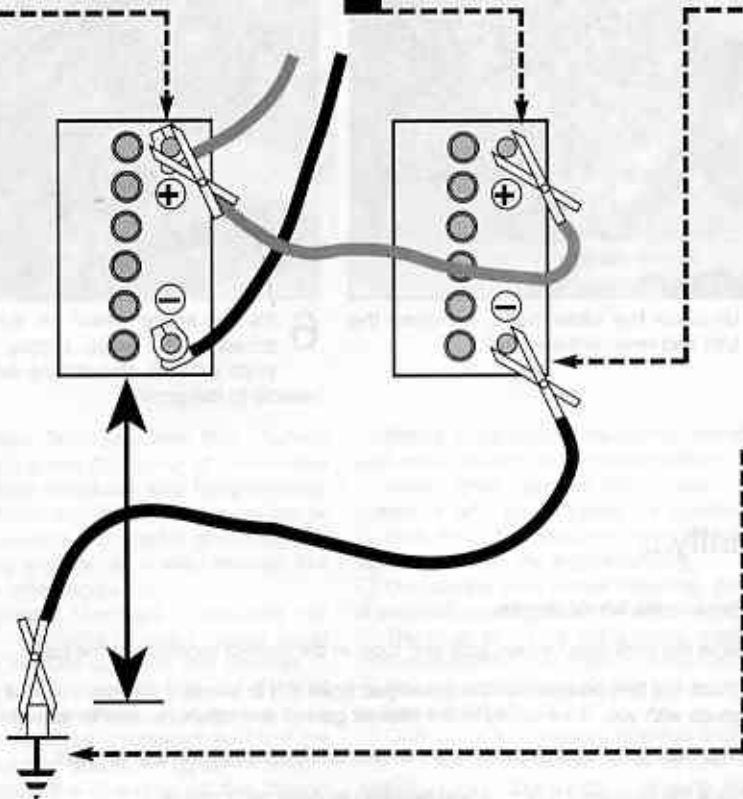
1 Connect one end of the red jump lead to the positive (+) terminal of the flat battery



2 Connect the other end of the red lead to the positive (+) terminal of the booster battery.



3 Connect one end of the black jump lead to the negative (-) terminal of the booster battery



4 Connect the other end of the black jump lead to a bolt or bracket on the engine block, well away from the battery, on the vehicle to be started.

5 Make sure that the jump leads will not come into contact with the fan, drivebelts or other moving parts of the engine.

6 Start the engine using the booster battery and run it at idle speed. Switch on the lights, rear window demister and heater blower motor, then disconnect the jump leads in the reverse order of connection. Turn off the lights etc.

Wheel changing

Some of the details shown here will vary according to model. For instance, the location of the spare wheel and jack is not the same on all cars. However, the basic principles apply to all vehicles.

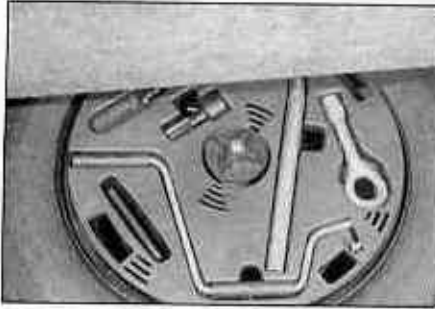


Warning: Do not change a wheel in a situation where you risk being hit by another vehicle. On busy roads, try to stop in a lay-by or a gateway. Be wary of passing traffic while changing the wheel - it is easy to become distracted by the job in hand.

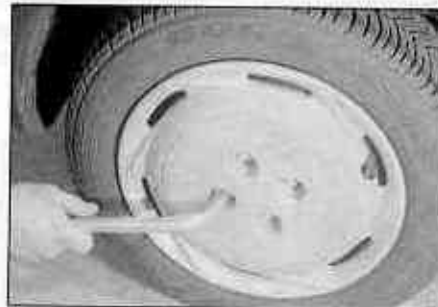
Preparation

- When a puncture occurs, stop as soon as it is safe to do so.
- Park on firm level ground, if possible, and well out of the way of other traffic.
- Use hazard warning lights if necessary.
- If you have one, use a warning triangle to alert other drivers of your presence.
- Apply the handbrake and engage first or reverse gear (or P on models with automatic transmission).
- Chock the wheel diagonally opposite the one being removed - a couple of large stones will do for this.
- If the ground is soft, use a flat piece of wood to spread the load under the jack.

Changing the wheel



1 The spare wheel and tools (including the jack) are stored in the luggage compartment beneath the floor covering. Unscrew the central plastic nut to remove the tool holder.



2 Slacken each wheel bolt by a half turn



3 Locate the jack under the triangular mark on the sill next to the wheel to be changed, on firm ground



4 Turn the jack handle clockwise until the wheel is raised clear of the ground



5 Unscrew the wheel bolts, withdraw the trim and remove the wheel



6 Fit the spare wheel on the pins, and screw in the bolts. Lightly tighten the bolts with the wheelbrace then lower the vehicle to the ground



7 Securely tighten the wheel bolts in the sequence shown. Note that the wheel bolts should be slackened and retightened to the specified torque at the earliest possible opportunity.

Finally...

- Remove the wheel chocks.
- Stow the punctured wheel, jack and tools in the correct locations in the car.
- Check the tyre pressure on the wheel just fitted. If it is low, or if you don't have a pressure gauge with you, drive slowly to the nearest garage and inflate the tyre to the right pressure.
- When using the space-saver spare wheel, do not exceed 50 mph (80 kph).
- Have the damaged tyre or wheel repaired as soon as possible.

Identifying leaks

Puddles on the garage floor or drive, or obvious wetness under the bonnet or underneath the car, suggest a leak that needs investigating. It can sometimes be difficult to decide where the leak is coming from, especially if the engine bay is very dirty already. Leaking oil or fluid can also be blown rearwards by the passage of air under the car, giving a false impression of where the problem lies.



Warning: Most automotive oils and fluids are poisonous. Wash them off skin, and change out of contaminated clothing, without delay.

**HAYNES
HINT**

The smell of a fluid leaking from the car may provide a clue to what's leaking. Some fluids are distinctively coloured.

It may help to clean the car carefully and to park it over some clean paper overnight as an aid to locating the source of the leak.

Remember that some leaks may only occur while the engine is running.

Sump oil



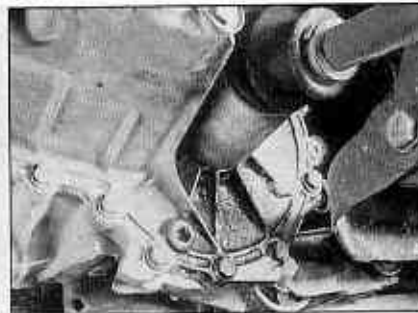
Engine oil may leak from the drain plug...

Oil from filter



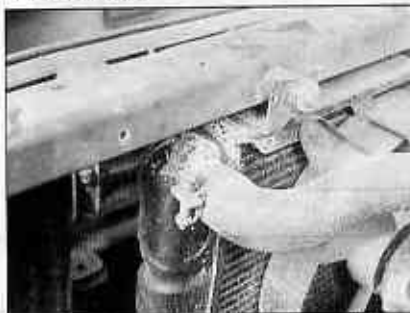
...or from the base of the oil filter.

Gearbox oil



Gearbox oil can leak from the seals at the inboard ends of the driveshafts.

Antifreeze



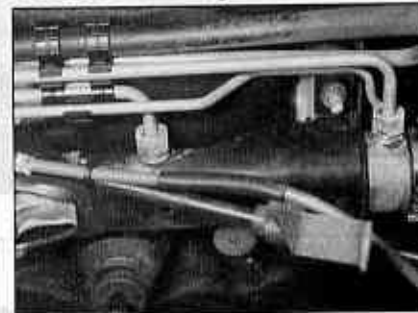
Leaking antifreeze often leaves a crystalline deposit like this.

Brake fluid



A leak occurring at a wheel is almost certainly brake fluid.

Power steering fluid



Power steering fluid may leak from the pipe connectors on the steering rack.

When all else fails, you may find yourself having to get a tow home – or of course you may be helping somebody else. Long-distance recovery should only be done by a garage or breakdown service. For shorter distances, DIY towing using another car is easy enough, but observe the following points:

- Use a proper tow-rope – they are not expensive. The vehicle being towed must display an ON TOW sign in its rear window.
- Always turn the ignition key to the ON position when the vehicle is being towed, so that the steering lock is released, and that the direction indicator and brake lights will work.
- Only attach the tow-rope to the towing eyes provided.

- Before being towed, release the handbrake and select neutral on the transmission.
- Note that greater-than-usual pedal pressure will be required to operate the brakes, since the vacuum servo unit is only operational with the engine running.
- On models with power steering, greater-than-usual steering effort will also be required.
- The driver of the car being towed must keep the tow-rope taut at all times to avoid snatching.
- Make sure that both drivers know the route before setting off.
- Only drive at moderate speeds and keep the distance towed to a minimum. Drive smoothly and allow plenty of time for slowing down at junctions.

- On models with automatic transmission, special precautions apply (see Chapter 7B, Section 1). If in doubt, do not tow, or transmission damage may result.

- The front towing eye is supplied as part of the tool kit stored in the luggage compartment. To fit the eye prise out the plastic cover from the front or rear bumper using a screwdriver, then screw the eye onto the threaded pin as tightly as possible.



Warning: To prevent damage to the catalytic converter, a vehicle must not be push-started, or started by towing, when the engine is at operating temperature. Use jump leads (see Jump starting).

Towing

Introduction

There are some very simple checks which need only take a few minutes to carry out, but which could save you a lot of inconvenience and expense.

These *Weekly checks* require no great skill or special tools, and the small amount of time they take to perform could prove to be very well spent, for example;

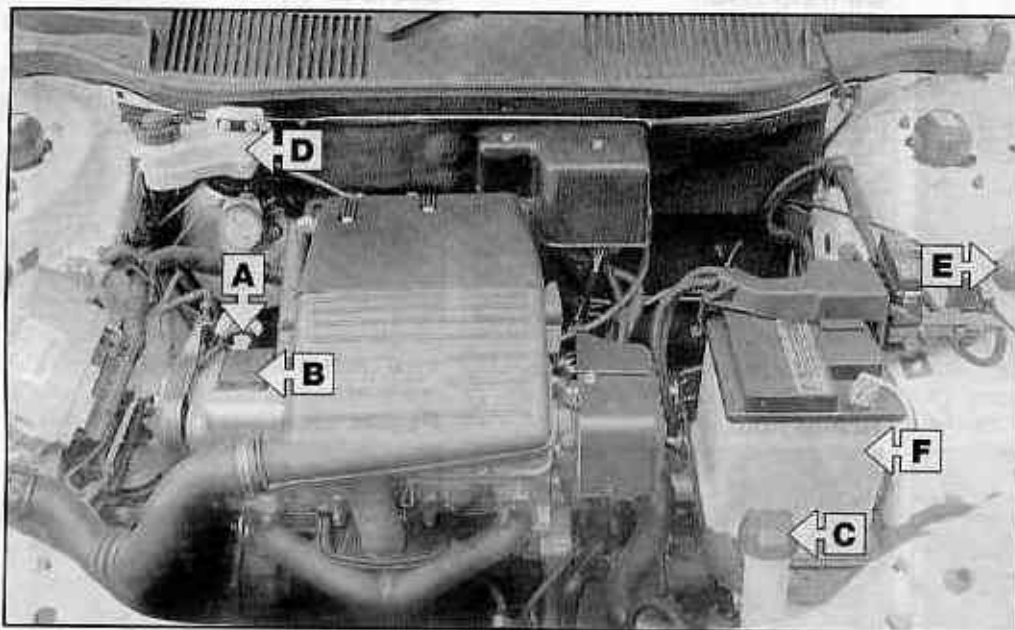
Keeping an eye on tyre condition and pressures, will not only help to stop them wearing out prematurely, but could also save your life.

Many breakdowns are caused by electrical problems. Battery-related faults are particularly common, and a quick check on a regular basis will often prevent the majority of these.

If your car develops a brake fluid leak, the first time you might know about it is when your brakes don't work properly. Checking the level regularly will give advance warning of this kind of problem.

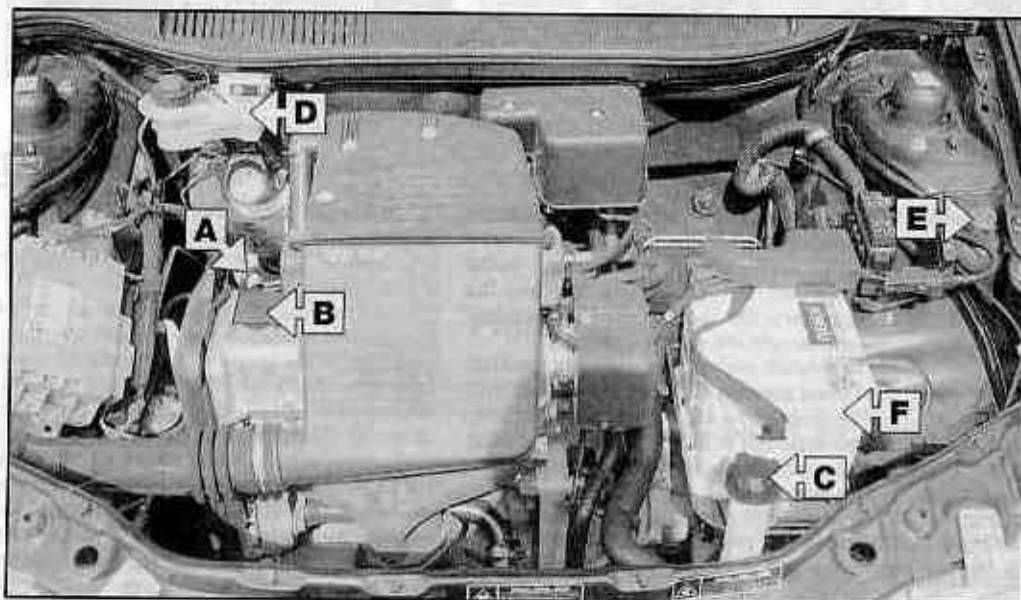
If the oil or coolant levels run low, the cost of repairing any engine damage will be far greater than fixing the leak, for example.

Underbonnet check points



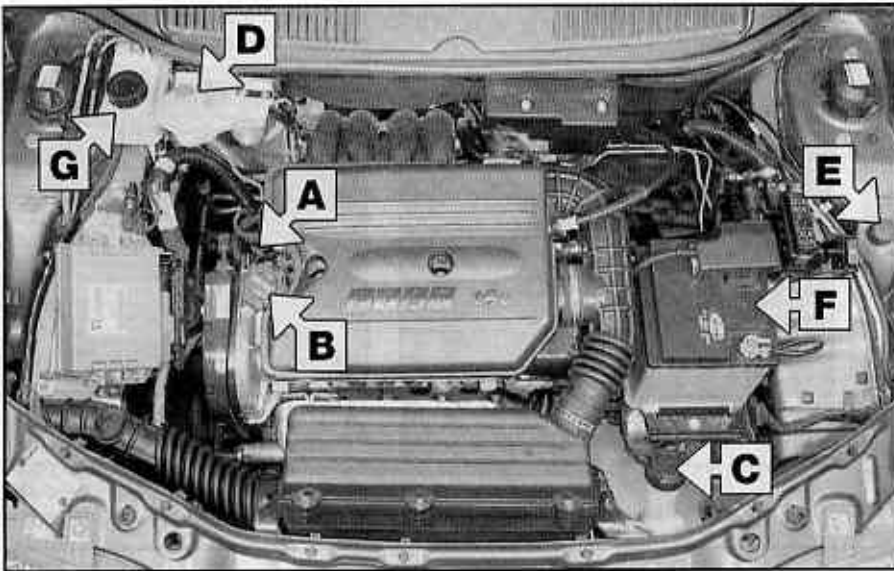
◀ 1.1 litre petrol

- A Engine oil level dipstick
- B Engine oil filler cap
- C Coolant expansion tank
- D Brake fluid reservoir
- E Screen washer fluid reservoir
- F Battery



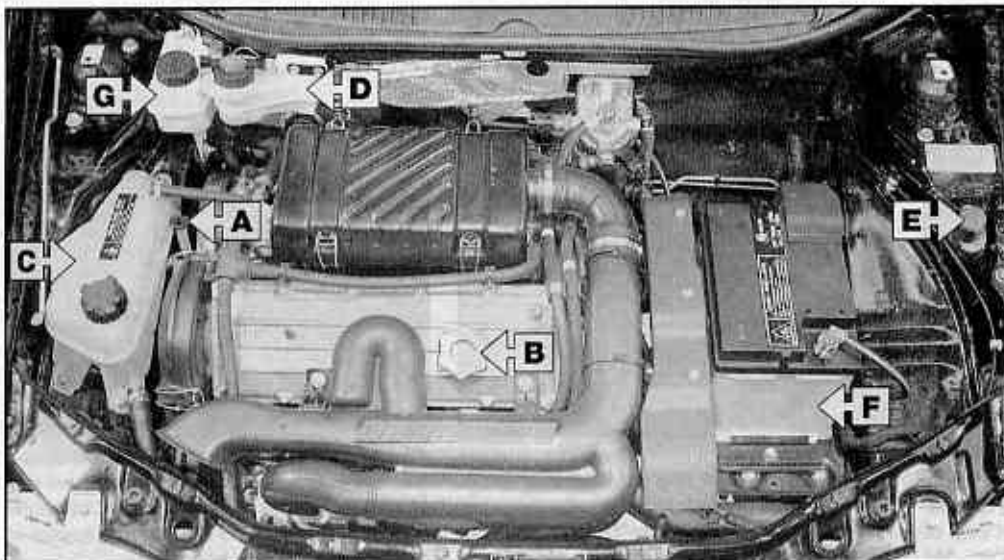
◀ 1.2 litre (8-valve) petrol

- A Engine oil level dipstick
- B Engine oil filler cap
- C Coolant expansion tank
- D Brake fluid reservoir
- E Screen washer fluid reservoir
- F Battery



◀ **1.2 litre
(16-valve) petrol**

- A Engine oil level dipstick
- B Engine oil filler cap
- C Coolant expansion tank
- D Brake fluid reservoir
- E Screen washer fluid reservoir
- F Battery
- G Power steering fluid reservoir



◀ **1.7 litre
Turbo diesel**

- A Engine oil level dipstick
- B Engine oil filler cap
- C Coolant expansion tank
- D Brake fluid reservoir
- E Screen washer fluid reservoir
- F Battery
- G Power steering fluid reservoir

Engine oil level

Before you start

- ✓ Make sure that your car is on level ground.
- ✓ Check the oil level before the car is driven, or at least 5 minutes after the engine has been switched off.



HAYNES HINT *If the oil is checked immediately after driving the vehicle, some of the oil will remain in the upper engine components, resulting in an inaccurate reading on the dipstick!*

The correct oil

Modern engines place great demands on their oil. It is very important that the correct oil for your car is used (See Lubricants and fluids).

Car Care

● If you have to add oil frequently, you should check whether you have any oil leaks. Place some clean paper under the car overnight, and check for stains in the morning. If there are no leaks, the engine may be burning oil.

● Always maintain the level between the upper and lower dipstick marks (see photo 2). If the level is too low severe engine damage may occur. Oil seal failure may result if the engine is overfilled by adding too much oil.



1 The dipstick is brightly coloured for easy identification (see Underbonnet check points). Withdraw the dipstick (petrol engine shown).



2 Using a clean rag or paper towel remove all oil from the dipstick. Insert the clean dipstick into the tube as far as it will go, then withdraw it again. The level should be between the upper and lower marks.



3 If more oil is needed, remove the oil filler cap from the top of the engine (petrol engine shown).



4 Oil is added through the filler cap aperture (diesel engine shown). Add the oil a little at a time, checking the level on the dipstick often. Using a funnel will help to reduce spillage. Don't overfill (see Car Care).

Coolant level



Warning: DO NOT attempt to remove the expansion tank pressure cap when the engine is hot, as there is a very great risk of scalding. Do not leave open containers of coolant about, as it is poisonous.

Car Care

● With a sealed-type cooling system, adding coolant should not be necessary on a regular basis. If frequent topping-up is required, it is likely there is a leak. Check the radiator, all hoses and joint faces for signs of staining or wetness, and rectify as necessary.

● It is important that antifreeze is used in the cooling system all year round, not just during the winter months. Don't top-up with water alone, as the antifreeze will become too diluted.



1 Check that the coolant level is between the MIN and MAX marks. If topping up is necessary, wait until the engine is cold. Slowly unscrew the expansion tank cap to release any pressure present in the cooling system, and remove it (petrol engine shown).



2 On diesel engine models, the coolant expansion tank is a different shape, but the same procedure applies as for petrol engine models (see photo 1). The MIN and MAX marks appear on the side of the tank nearest the engine.



3 Add a mixture of water and antifreeze to the expansion tank until the coolant level is up to the MAX mark (petrol engine shown). The MIN and MAX marks appear on the tank below the filler neck.

Brake fluid level



Warning:

- Brake fluid can harm your eyes and damage painted surfaces, so use extreme caution when handling and pouring it.

- Do not use fluid that has been standing open for some time, as it absorbs moisture from the air, which can cause a dangerous loss of braking effectiveness.



- Make sure that your car is on level ground.
- The fluid level in the reservoir will drop slightly as the brake pads wear down, but the fluid level must never be allowed to drop below the "MIN" mark.

Safety First!

- If the reservoir requires repeated topping-up this is an indication of a fluid leak somewhere in the system, which should be investigated immediately.

- If a leak is suspected, the car should not be driven until the braking system has been checked. Never take any risks where brakes are concerned.



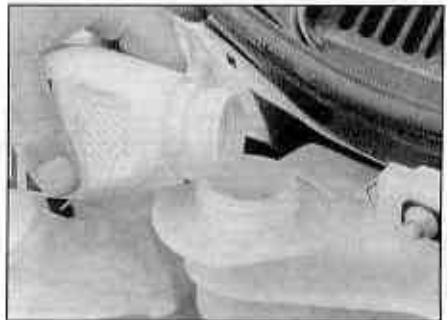
1 The MIN and MAX marks are indicated on the side of the reservoir. The fluid level must be kept between the marks at all times.



2 If topping-up is necessary, first wipe clean the area around the filler cap to prevent dirt entering the hydraulic system.



3 Unscrew the reservoir cap and carefully lift it out of position, taking care not to damage the level switch float. Inspect the reservoir; if the fluid is dirty the hydraulic system should be drained and refilled (see Chapter 1A or 1B).



4 Carefully add fluid, taking care not to spill it onto the surrounding components. Use only the specified fluid; mixing different types can cause damage to the system. After topping-up to the correct level, securely refit the cap and wipe off any spilt fluid.

Power steering fluid level

Before you start:

- ✓ Park the vehicle on level ground.
- ✓ Set the steering wheel straight-ahead.
- ✓ The engine should be turned off.



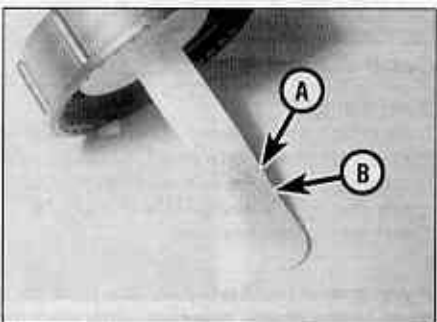
For the check to be accurate, the steering must not be turned once the engine has been stopped.

Safety First!

- The need for frequent topping-up indicates a leak, which should be investigated immediately.



1 The reservoir is located on the right-hand side of the bulkhead in the engine compartment. Wipe clean the area around the reservoir filler cap then unscrew it from the reservoir.



2 Dip the fluid with the reservoir cap/dipstick (do not screw the cap into position). When the engine is cold, the fluid level should be up to the MIN mark (B); when hot, it should be on the MAX mark (A).



3 When topping-up, use the specified type of fluid and do not overfill the reservoir. When the level is correct, securely refit the cap.

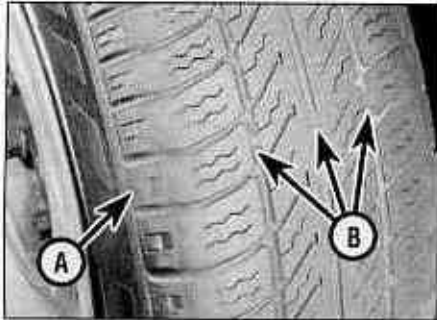
Tyre condition and pressure

It is very important that tyres are in good condition, and at the correct pressure - having a tyre failure at any speed is highly dangerous. Tyre wear is influenced by driving style - harsh braking and acceleration, or fast cornering, will all produce more rapid tyre wear. As a general rule, the front tyres wear out faster than the rears. Interchanging the tyres from front to rear ("rotating" the tyres) may result in more even wear. However, if this is completely effective, you may have the expense of replacing all four tyres at once! Remove any nails or stones embedded in the tread before they penetrate the tyre to cause deflation. If removal of a nail does reveal that

the tyre has been punctured, refit the nail so that its point of penetration is marked. Then immediately change the wheel, and have the tyre repaired by a tyre dealer.

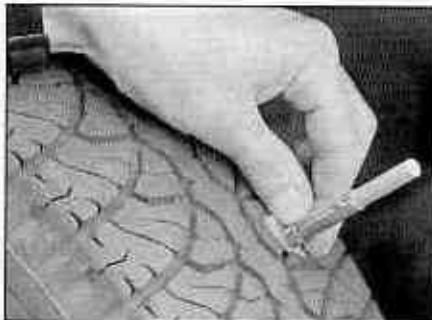
Regularly check the tyres for damage in the form of cuts or bulges, especially in the sidewalls. Periodically remove the wheels, and clean any dirt or mud from the inside and outside surfaces. Examine the wheel rims for signs of rusting, corrosion or other damage. Light alloy wheels are easily damaged by "kerbing" whilst parking; steel wheels may also become dented or buckled. A new wheel is very often the only way to overcome severe damage.

New tyres should be balanced when they are fitted, but it may become necessary to re-balance them as they wear, or if the balance weights fitted to the wheel rim should fall off. Unbalanced tyres will wear more quickly, as will the steering and suspension components. Wheel imbalance is normally signified by vibration, particularly at a certain speed (typically around 50 mph). If this vibration is felt only through the steering, then it is likely that just the front wheels need balancing. If, however, the vibration is felt through the whole car, the rear wheels could be out of balance. Wheel balancing should be carried out by a tyre dealer or garage.



1 Tread Depth - visual check

The original tyres have tread wear safety bands (B), which will appear when the tread depth reaches approximately 1.6 mm. The band positions are indicated by a triangular mark on the tyre sidewall (A).



2 Tread Depth - manual check

Alternatively, tread wear can be monitored with a simple, inexpensive device known as a tread depth indicator gauge.



3 Tyre Pressure Check

Check the tyre pressures regularly with the tyres cold. Do not adjust the tyre pressures immediately after the vehicle has been used, or an inaccurate setting will result. Tyre pressures are shown on page 0•18.

Tyre tread wear patterns



Shoulder Wear

Underinflation (wear on both sides)

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

Check and adjust pressures

Incorrect wheel camber (wear on one side)

Repair or renew suspension parts

Hard cornering

Reduce speed!



Centre Wear

Overinflation

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

Check and adjust pressures

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



Uneven Wear

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

Incorrect camber or castor

Repair or renew suspension parts

Malfunctioning suspension

Repair or renew suspension parts

Unbalanced wheel

Balance tyres

Incorrect toe setting

Adjust front wheel alignment

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

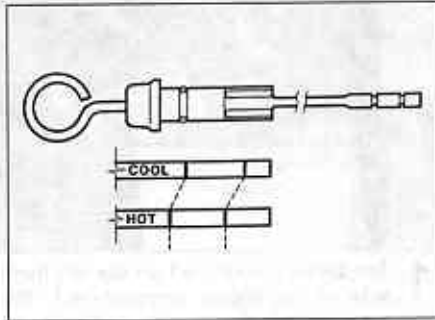
Automatic transmission fluid level

Before you start:

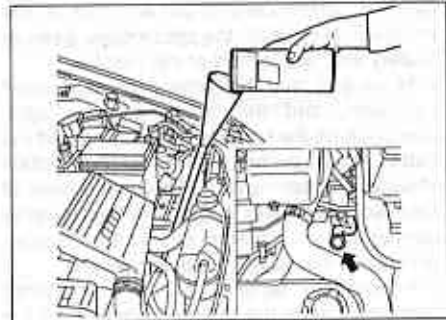
✓ Park the vehicle on level ground, and apply the handbrake firmly. Let the engine idle, and select P or N.

Safety First!

● The need for frequent topping-up indicates a leak, which should be investigated immediately.



1 Open the bonnet. Withdraw the transmission dipstick, and wipe it with a clean non-fluffy rag. Re-insert the dipstick fully, withdraw it again and read the fluid level. It should be between the two level marks. There are two sets of marks. Use the COOL marks if the transmission is cold (20° to 40°C) or the HOT marks if it is hot (60° to 80°C).



2 If topping up is necessary, add the specified fluid via the dipstick tube, using a funnel with a fine mesh filter. Take great care not to introduce dirt into the transmission.

Screen washer fluid level

Screenwash additives not only keep the windscreen clean during foul weather, they also prevent the washer system freezing in cold weather - which is when you are likely to need it most. Don't top up using plain water as the screenwash will become too diluted, and will freeze during cold weather. **On no account use coolant antifreeze in the washer system - this could discolour or damage paintwork.**

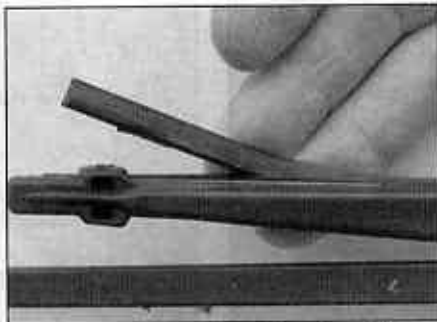


1 The screen washer fluid reservoir is located on the left-hand side of the engine compartment, next to the battery. Prise off the cap and pull out the telescopic filler.

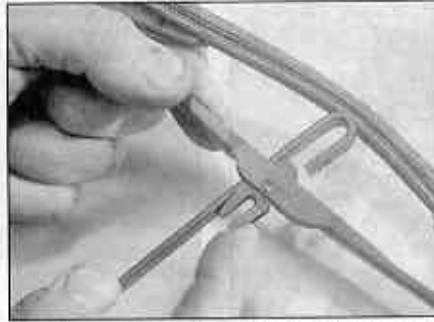


2 When topping-up the reservoir, add a screenwash additive in the quantities recommended on the bottle. Use of a funnel will prevent spillage.

Wiper blades



1 Check the condition of the wiper blades; if they are cracked or show any signs of deterioration, or if the glass swept area is smeared, renew them. Wiper blades should be renewed annually. Don't forget to check the tailgate wiper as well.



2 To remove a wiper blade, pull the arm fully away from the screen until it locks. Swivel the blade through 90°, press the locking tab with your fingers and slide the blade out of the arm's hooked end.

Battery

Caution: Before carrying out any work on the vehicle battery, read the precautions given in "Safety first" at the start of this manual.

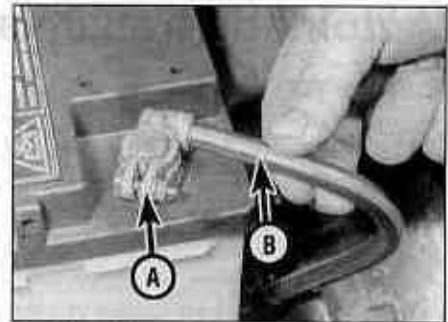
✓ Make sure that the battery tray is in good condition, and that the clamp is tight. Corrosion on the tray, retaining clamp and the battery itself can be removed with a solution of water and baking soda. Thoroughly rinse all cleaned areas with water. Any metal parts damaged by corrosion should be covered with a zinc-based primer, then painted.

✓ Periodically (approximately every three months), check the charge condition of the battery as described in Chapter 5A.

✓ If the battery is flat, and you need to jump start your vehicle, see *Roadside Repairs*.



1 The battery is located on the left-hand side of the engine compartment. The exterior of the battery should be inspected periodically for damage such as a cracked case or cover.



2 Check the tightness of battery clamps (A) to ensure good electrical connections. You should not be able to move them. Also check each cable (B) for cracks and frayed conductors.



Battery corrosion can be kept to a minimum by applying a layer of petroleum jelly to the clamps and terminals after they are reconnected.



3 If corrosion (white, fluffy deposits) is evident, remove the cables from the battery terminals, clean them with a small wire brush, then refit them. Automotive stores sell a tool for cleaning the battery post ...



4 ... as well as the battery cable clamps

Electrical systems

✓ Check all external lights and the horn. Refer to the appropriate Sections of Chapter 12 for details if any of the circuits are found to be inoperative.

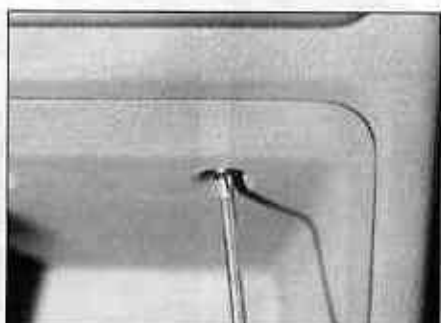
✓ Visually check all accessible wiring connectors, harnesses and retaining clips for security, and for signs of chafing or damage.

HAYNES HiNT

If you need to check your brake lights and indicators unaided, back up to a wall or garage door and operate the lights. The reflected light should show if they are working properly.



1 If a single indicator light, stop-light or headlight has failed, it is likely that a bulb has blown and will need to be replaced. Refer to Chapter 12 for details. If both stop-lights have failed, it is possible that the switch has failed (see Chapter 9).



2 If more than one indicator light or tail light has failed it is likely that either a fuse has blown or that there is a fault in the circuit (see Chapter 12). The fuses are located behind the oddments tray on the fascia. First unscrew the two screws and swivel the tray down.



3 To replace a blown fuse, simply pull it out using the special plastic tool and fit a new fuse of the correct rating (see Chapter 12). If the fuse blows again, it is important that you find out why - a complete checking procedure is given in Chapter 12.

Lubricants and fluids

Engine	
Petrol	Multigrade engine oil, viscosity SAE15W/40, to API SG/CD or better (<i>Duckhams QXR Premium Petrol Engine Oil, or Duckhams Hypergrade Petrol Engine Oil</i>)
Diesel	Multigrade engine oil, viscosity SAE15W/40, to API SG/CD or better <i>Duckhams QXR Premium Diesel Engine Oil, or Duckhams Hypergrade Diesel Engine Oil</i>)
Cooling system	Ethylene glycol-based antifreeze and soft water (<i>Duckhams Antifreeze & Summer Coolant</i>)
Manual gearbox	Hypoid gear oil, viscosity SAE80W to API GL4 (<i>Duckhams Hypoid Gear Oil 80W GL-4</i>)
Automatic transmission	Dexron type II automatic transmission fluid (ATF) (<i>Duckhams ATF Autotrans III</i>)
Braking system	Hydraulic fluid to SAE J1703F or DOT 4 (<i>Duckhams Universal Brake & Clutch Fluid</i>)
Power steering	Dexron type II automatic transmission fluid (ATF) (<i>Duckhams ATF Autotrans III</i>)

Choosing your engine oil

Engines need oil, not only to lubricate moving parts and minimise wear, but also to maximise power output and to improve fuel economy. By introducing a simplified and improved range of engine oils, Duckhams has taken away the confusion and made it easier for you to choose the right oil for your engine.

HOW ENGINE OIL WORKS

• Beating friction

Without oil, the moving surfaces inside your engine will rub together, heat up and melt, quickly causing the engine to seize. Engine oil creates a film which separates these moving parts, preventing wear and heat build-up.

• Cooling hot-spots

Temperatures inside the engine can exceed 1000°C. The engine oil circulates and acts as a coolant, transferring heat from the hot-spots to the sump.

• *Cleaning the engine internally*

Good quality engine oils clean the inside of your engine, collecting and dispersing combustion deposits and controlling them until they are trapped by the oil filter or flushed out at oil change.

OIL CARE - FOLLOW THE CODE

To handle and dispose of used engine oil safely, always:

- *Avoid skin contact with used engine oil. Repeated or prolonged contact can be harmful.*
- *Dispose of used oil and empty packs in a responsible manner in an authorised disposal site. Call 0800 663366 to find the one nearest to you. Never tip oil down drains or onto the ground.*



0800 66 33 66

DUCKHAMS ENGINE OILS

For the driver who demands a premium quality oil for complete reassurance, we recommend synthetic formula **Duckhams QXR Premium Engine Oils**.

For the driver who requires a straightforward quality engine oil, we recommend **Duckhams Hypergrade Engine Oils**.

For further information and advice, call the Duckhams UK Helpline on 0800 212988.

DUCKHAMS

Tyre pressures (cold)

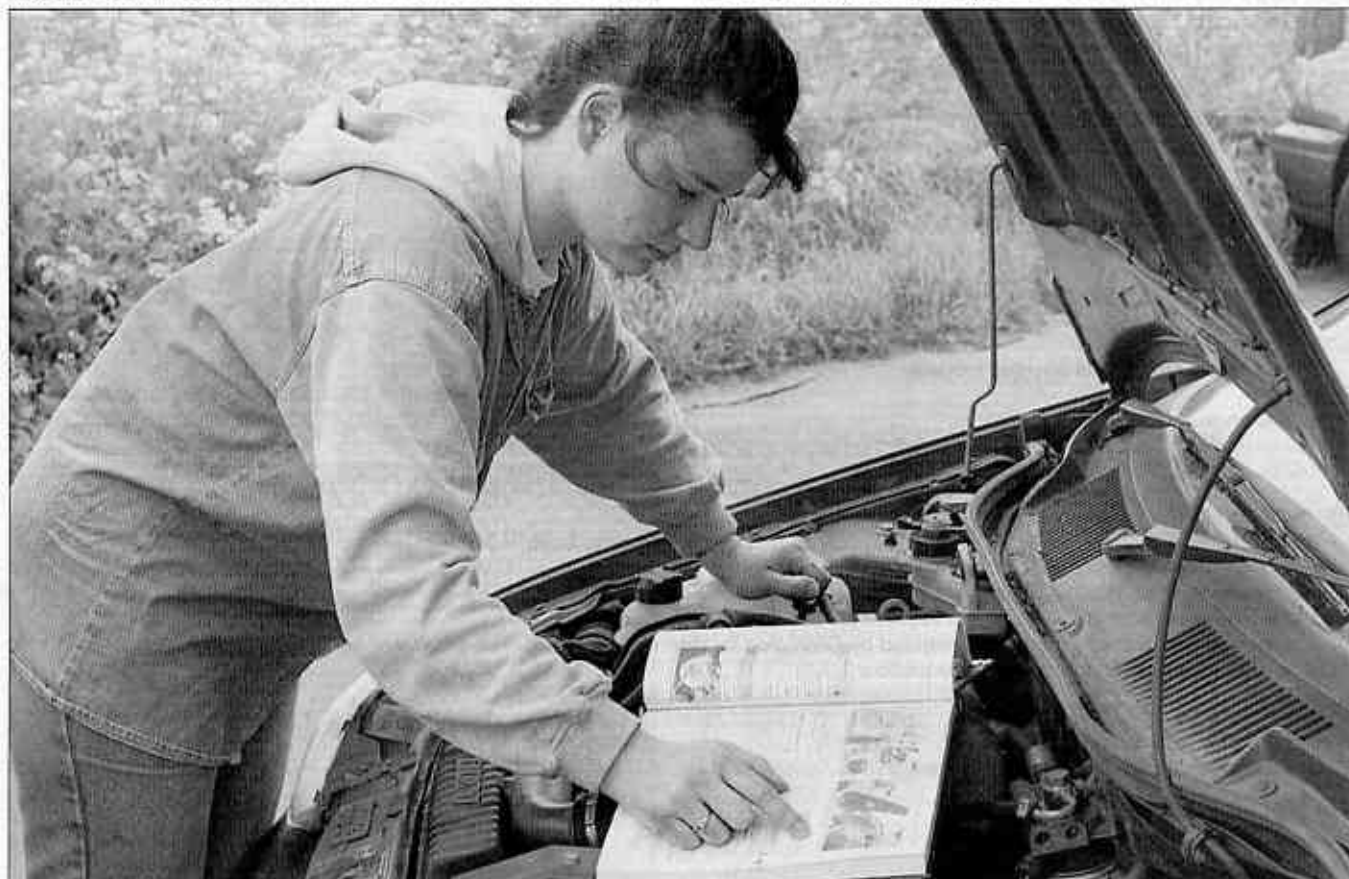
	Front	Rear
Petrol models (average load):		
155/70R13, 165/60R14, 165/65R13, 165/65R14, 175/60R14	2.0 (29)	1.9 (28)
165/65R14 78Q (M+S)	2.5 (36)	2.2 (32)
185/55/R14	2.4 (35)	2.0 (29)
135/80B13, 135/80B14 (space-saver spare tyre)	2.8 (41)	2.8 (41)
Petrol models (fully laden):		
155/70R13, 165/60R14, 165/65R14, 175/60R14	2.2 (32)	2.2 (32)
165/65R14 78Q (M+S)	2.5 (36)	2.2 (32)
185/55/R14	2.4 (35)	2.2 (32)
135/80B13, 135/80B14 (space-saver spare tyre)	2.8 (41)	2.8 (41)
Diesel models (average load):		
165/70R13, 165/65R14, 175/60R14	2.4 (35)	2.0 (29)
135/80B13, 135/80B14 (space-saver spare tyre)	2.8 (41)	2.8 (41)
Diesel models (fully laden):		
165/70R13, 165/65R14, 175/60R14	2.4 (35)	2.2 (32)
135/80B13, 135/80B14 (space-saver spare tyre)	2.8 (41)	2.8 (41)

Chapter 1 Part A:

Routine maintenance & servicing - petrol models

Contents

Air filter renewal	18	Hose and fluid leak check	7
Automatic transmission filter and fluid change	28	Idle speed and CO content check and adjustment	11
Auxiliary drivebelt(s) check and renewal	13	Ignition system check	20
Brake fluid renewal	34	Introduction	1
Brake warning lamp operation check	4	Lambda/oxygen sensor check	25
Clutch adjustment check	14	Manifold mounting check	16
Coolant renewal	33	Manual transmission oil level check	26
Driveshaft gaiter check	9	Manual transmission oil renewal	32
Emission control system check	31	Pollen filter renewal	10
Engine management system check	21	Rear brake shoe check	29
Engine oil and filter renewal	3	Regular maintenance	2
Evaporative loss system check	27	Road test	24
Exhaust system check	8	Spark plug renewal	19
Front brake pad check	5	Steering and suspension check	12
Fuel filter renewal	17	Timing belt renewal	30
Headlight beam adjustment	23	Underbody sealant check	6
Hinge and lock lubrication	22	Valve clearance check and adjustment	15



1A

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 end of *Weekly checks* on page 0•17

Capacities

Engine oil (including filter)

1108 cc engine	3.47 litres
1242 cc (8-valve) engine	3.74 litres
1242 cc (16-valve) engine	2.80 litres

Cooling system	4.6 litres
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Manual transmission

5-speed	1.65 litres
6-speed	1.87 litres

Automatic transmission	1.98 litres
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Power-assisted steering	0.65 litres
--------------------------------	-------------

Fuel tank	47 litres
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Washer reservoir

Without headlight washers	2.5 litres
With headlight washers	7.0 litres

Engine

Oil filter	Champion F107	
Auxiliary drivebelt tension	5.0 mm deflection midway between pulleys	
Valve clearances - engine cold:	Inlet	Exhaust
1108 cc and 1242 cc (single-point petrol injection)	0.40 ± 0.05 mm	0.50 ± 0.05 mm
1242 cc (multi-point petrol injection)	0.40 ± 0.05 mm	0.45 ± 0.05 mm

Cooling system

Antifreeze mixture (50% antifreeze)	Protection down to -35°C
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Note: Refer to antifreeze manufacturer for latest recommendations.

Fuel system

Engine idle speed	900 ± 50 rpm	
CO%	0.35 maximum	
Air filter element:		
1108 cc engine with 6-speed transmission	Champion U647	
1108 cc engine (East Europe)	Champion U648	
1242 cc engine (60 models)	Champion U647	
1242 cc engine (75, 85 and Sporting models)	Champion U649	
Fuel filter:	Up to September 1995	October 1995 onwards
1108 cc engine	Champion L213	Champion L225
1242 cc engine (60 models)	Champion L213	Champion L225
1242 cc engine (75 models)	Champion L203	Champion L225

Ignition system

Ignition timing	Refer to Chapter 5B	
Spark plugs:	Type	Gap*
1108 cc and 1242 cc (8-valve) engines	Champion RC9YCC	0.9 mm
1242 cc (16-valve) engine	Champion RA4HCC	0.8 mm

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

Brakes

Brake pad lining minimum thickness	1.5 mm
Brake shoe friction material minimum thickness	2.0 mm

Torque wrench settings

	Nm	lbf ft
Automatic transmission fluid drain plug	25	18
Automatic transmission fluid sump bolts	4	3
Manual transmission oil drain plug:		
Stage 1	12	9
Stage 2	Angle-tighten a further 180°	
Manual transmission oil filler plug	40	30
Roadwheel bolts	86	63
Spark plugs	27	20
Sump drain plug	10	7

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

Every 250 miles (400 km) or weekly

- Refer to *Weekly checks*

Every 5000 miles (7500 km) or 6 months - whichever comes first

- Renew the engine oil and filter (Section 3)

Note: Frequent oil and filter changes are good for the engine. We recommend changing the oil at the mileage specified here, or at least twice a year if the mileage covered is a less.

Every 10 000 miles (15 000 km) or 12 months - whichever comes first

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

- Check the operation of the brake warning lamp (Section 4)
- Check the front brake pads for wear (Section 5)
- Check the underbody and sealant for damage (Section 6)
- Hose and fluid leak check (Section 7)
- Check the condition of the exhaust system and its mountings (Section 8)
- Check the condition of the driveshaft gaiters (Section 9)
- Renew pollen filter (Section 10)
- Check exhaust gas content and idle speed (Section 11)
- Check the steering and suspension components for condition and security (Section 12)

Every 20 000 miles (30 000 km) or 2 years - whichever comes first

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

- Check and if necessary adjust the tension of the auxiliary drivebelt(s) (Section 13)
- Check the freeplay and height of the clutch pedal (Section 14)
- Check and if necessary adjust the valve clearances (Section 15)
- Check and if necessary tighten inlet and exhaust manifold mountings (Section 16)
- Renew the fuel filter (Section 17)
- Renew the air filter element (Section 18)
- Renew the spark plugs (Section 19)
- Check the condition of the HT cables (Section 20)
- Check the engine management system (Section 21)
- Lubricate all hinges and locks (Section 22)
- Check the headlight beam adjustment (Section 23)
- Carry out a road test (Section 24)

Every 30 000 miles (45 000 km) or 3 years - whichever comes first

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

- Check the operation of the Lambda sensor (Section 25)
- Check and if necessary top-up the manual transmission oil level (Section 26)
- Check the operation of the evaporative loss system (Section 27)
- Automatic transmission inner filter and fluid renewal (Section 28)

Every 40 000 miles (60 000 km) or 4 years - whichever comes first

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

- Check the rear brake shoes for wear (Section 29)
- Renew the timing belt (Section 30)*

**Note: Although the normal interval for timing belt renewal is 70 000 miles (105 000 km), it is strongly recommended that the belt is renewed at 40 000 miles (60 000 km) on vehicles which are subjected to intensive use, ie. mainly short journeys or a lot of stop-start driving. The actual belt renewal interval is therefore very much up to the individual owner, but bear in mind that severe engine damage will result if the belt breaks.*

1A

Every 60 000 miles (90 000 km) or 6 years - whichever comes first

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

- Check the condition and operation of the crankcase emission control system (Section 31)

Every 80 000 miles (120 000 km)

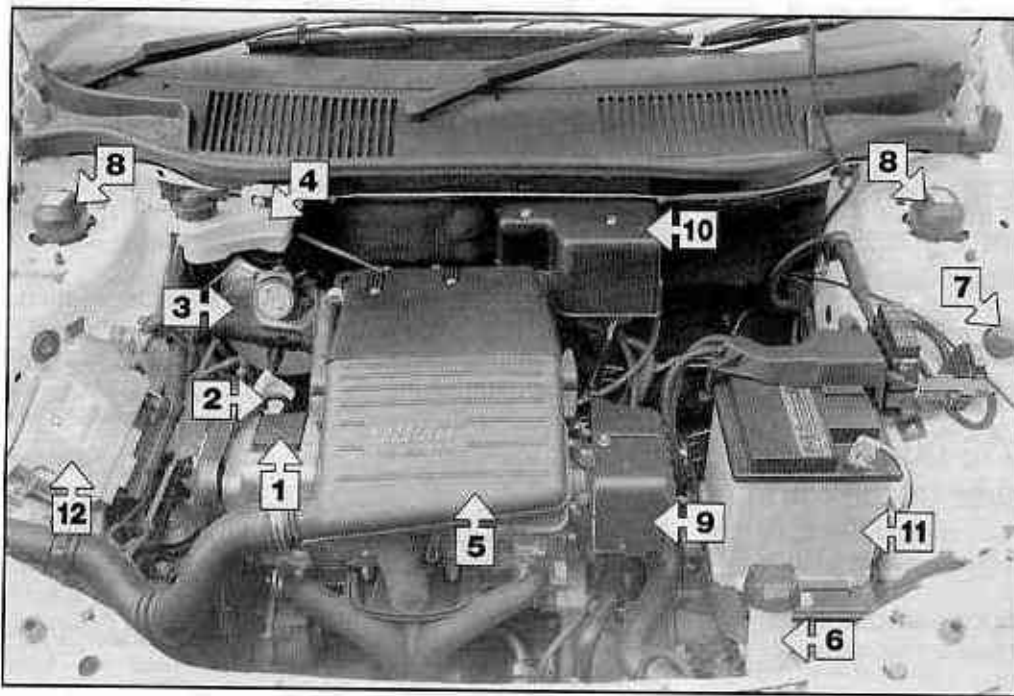
- Renew the manual transmission oil (Section 32)

Every 2 years (regardless of mileage)

- Renew the engine coolant (Section 33)
- Renew the brake fluid (Section 34)

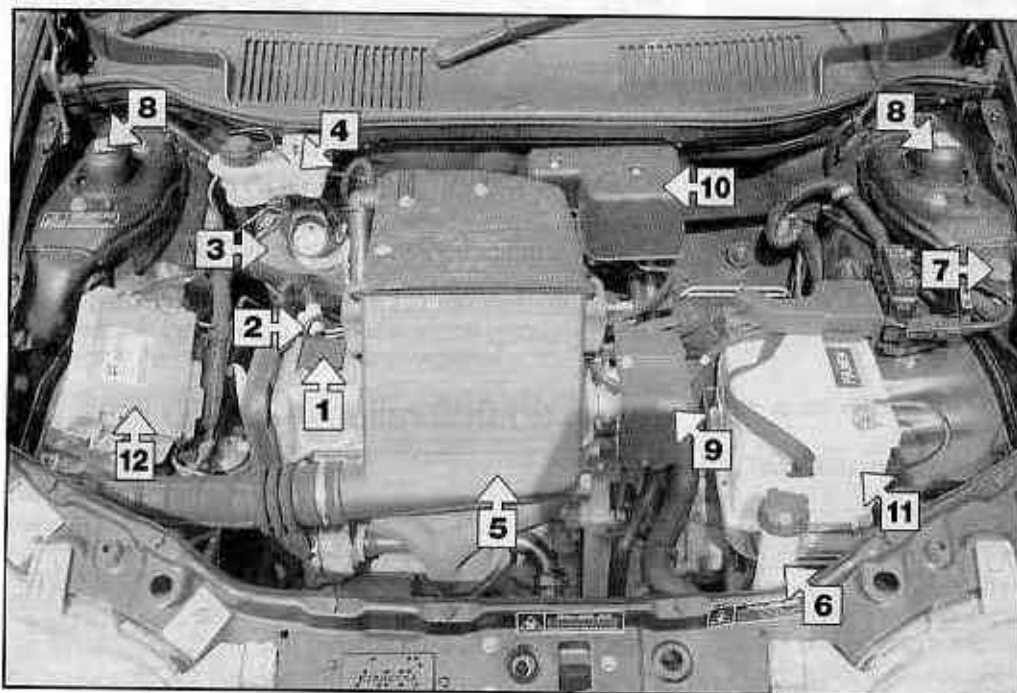
1A•4 Component location - petrol models

Underbonnet view - 1108 cc engine model



- 1 Engine oil filler cap
- 2 Engine oil dipstick
- 3 Brake vacuum servo unit
- 4 Brake fluid reservoir
- 5 Air cleaner cover
- 6 Coolant expansion tank
- 7 Windscreen washer fluid reservoir
- 8 Front suspension strut upper mounting
- 9 Ignition coil cover
- 10 Engine wiring connector cover
- 11 Battery
- 12 ECU

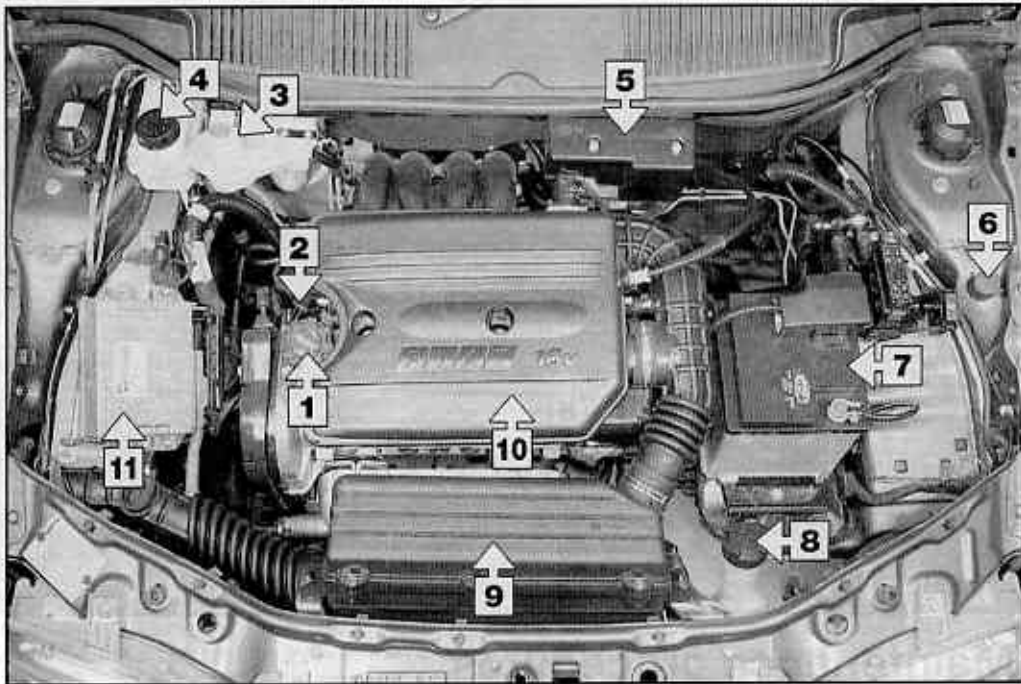
Underbonnet view - 1242 cc (8-valve) engine model



- 1 Engine oil filler cap
- 2 Engine oil dipstick
- 3 Brake vacuum servo unit
- 4 Brake fluid reservoir
- 5 Air cleaner cover
- 6 Coolant expansion tank
- 7 Windscreen washer fluid reservoir
- 8 Front suspension strut upper mounting
- 9 Ignition coil cover
- 10 Engine wiring connector cover
- 11 Battery
- 12 ECU

Underbonnet view - 1242 cc (16-valve) engine model

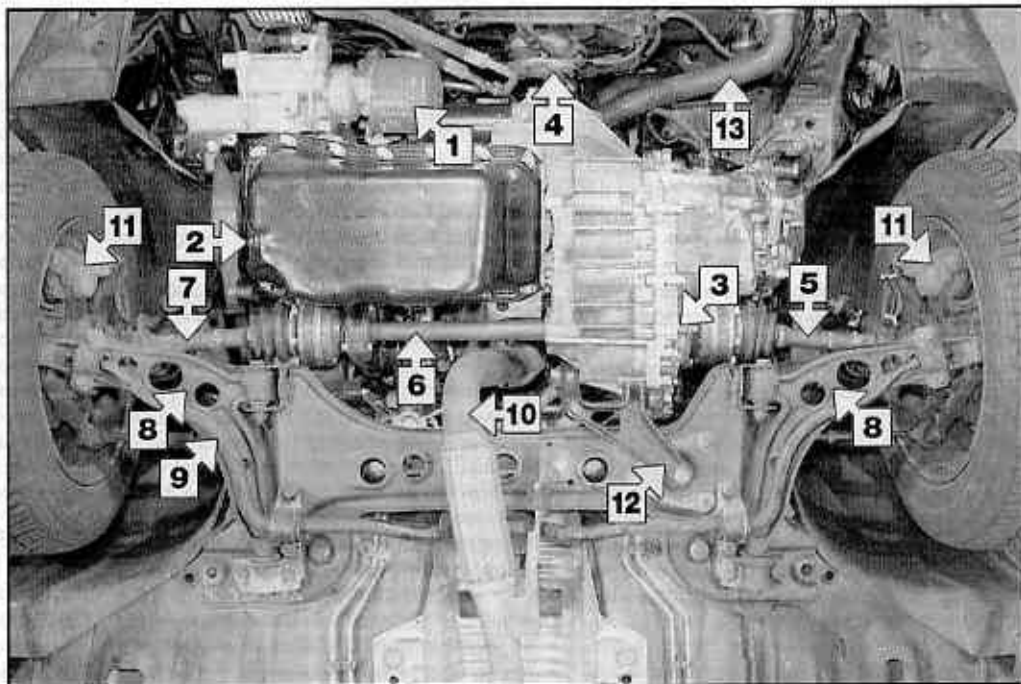
- 1 Engine oil filler cap
- 2 Engine oil dipstick
- 3 Brake fluid reservoir
- 4 Power steering fluid reservoir
- 5 Engine wiring connector cover
- 6 Windscreen washer fluid reservoir
- 7 Battery
- 8 Coolant expansion tank
- 9 Air cleaner cover
- 10 Resonator
- 11 ECU



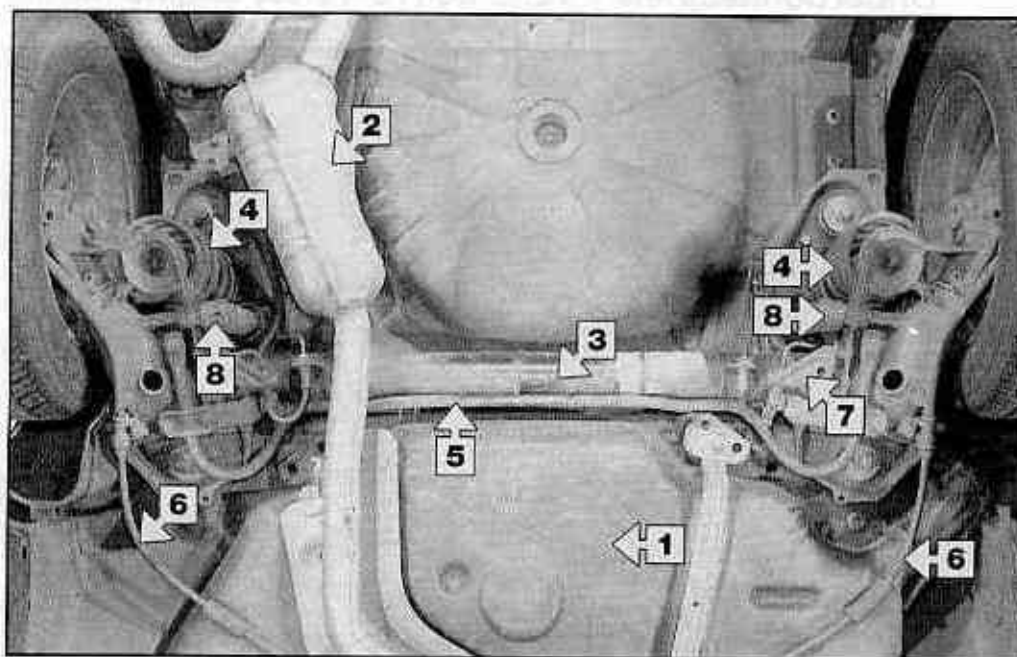
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Front underbody view (diesel model shown, petrol model similar)

- 1 Oil filter
- 2 Sump drain plug
- 3 Transmission drain plug
- 4 Electric cooling fan unit
- 5 Left-hand driveshaft
- 6 Intermediate shaft
- 7 Right-hand driveshaft
- 8 Front suspension lower arms
- 9 Front anti-roll bar
- 10 Exhaust downpipe
- 11 Front brake calipers
- 12 Rear engine mounting
- 13 Radiator bottom hose



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



- 1 Fuel tank
- 2 Exhaust tailpipe and silencer
- 3 Rear axle
- 4 Coil springs
- 5 Rear anti-roll bar
- 6 Handbrake cables
- 7 Rear brake pressure regulating valve
- 8 Rear shock absorber lower mountings

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

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

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

The first step in this maintenance programme is to prepare yourself before the

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

2 Regular maintenance

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

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

3 If engine wear is suspected, a compression test (refer to the relevant Part of Chapter 2) will provide valuable information regarding the overall performance of the main internal components. Such a test can be used as a basis to decide on the extent of the work to be carried out. If, for example, a compression test indicates serious internal engine wear, conventional maintenance as described in this

Chapter will not greatly improve the 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 usually required to improve the performance of a generally poor-running engine:

Primary operations

- a) Clean, inspect and test the battery (See *Weekly checks*).
- b) Check all the engine-related fluids (See *Weekly checks*).
- c) Check the condition and tension of the auxiliary drivebelt(s) (Section 13).
- d) Renew the spark plugs (Section 19).
- e) Inspect the ignition HT leads (Section 20).
- f) Check the condition of the air filter, and renew if necessary (Section 18).
- g) Check the fuel filter (Section 17).
- h) Check the condition of all hoses, and check for fluid leaks (Section 7).
- i) Check the exhaust gas emissions (Section 11).

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:

- a) Check the charging system (Chapter 5A, Section 4).
- b) Check the ignition system (Chapter 5B).
- c) Check the fuel system (see relevant Part of Chapter 4).
- d) Renew the ignition HT leads (Section 20)

Every 5000 miles (7500 km) or 6 months

3 Engine oil and filter renewal



1 Frequent oil and filter changes are the most important preventative maintenance 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 all the necessary tools and materials. Also make sure that you have plenty of clean rags and newspapers handy, to mop up any spills. Ideally, the engine oil should be warm, as it will drain better, and more built-up sludge will be removed with it. Take care, however, not to touch the exhaust or any other hot parts of the engine when working under the vehicle. To avoid any possibility of scalding, and to protect yourself from possible skin irritants and other harmful contaminants in used engine oils, it is advisable to wear gloves when carrying out this work. 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.

3 Slacken the drain plug about half a turn using an Allen key. Position the draining container under the drain plug, then remove the plug completely (see *Haynes Hint*).

4 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.

5 After all the oil has drained, wipe off the drain plug with a clean rag, then clean the area around the drain plug opening and refit

HAYNES HINT



Keep the drain plug pressed into the sump while unscrewing it by hand the last couple of turns. As the plug releases, move it away sharply so that the stream of oil issuing from the sump runs into the container, not up your sleeve.

the plug. Tighten the plug securely.

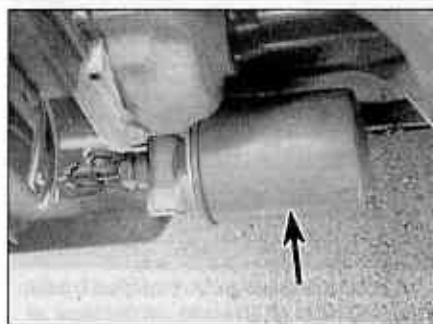
6 If the filter is also to be renewed, move the container into position under the oil filter, which is located on the front right-hand side of the engine (see *illustration*).

7 Using an oil filter removal tool if necessary, slacken the filter initially, then unscrew it by hand the rest of the way. Empty the oil in the old filter into the container.

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

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

10 Remove the old oil and all tools from under the vehicle then lower the vehicle to the ground (if applicable).



3.6 Oil filter location (viewed from above)

11 Remove the dipstick, then pull out 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 MAX mark on the dipstick. Refit the filler cap.

12 Start the engine and run it for a few minutes; check for leaks around the oil filter seal and the sump drain plug. Note that there may be a 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 before the pressure builds up.

13 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.

14 Dispose of the used engine oil safely, with reference to *General repair procedures* in the reference Sections of this manual.

1A

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

4 Brake warning lamp operation check



1 With the ignition key inserted and turned to the MAR position, open the bonnet and depress the button on the top of the brake fluid reservoir cap (see *illustration*).

2 As the button is depressed, the brake warning lamp on the instrument panel should illuminate.

3 If the lamp fails to illuminate, check the operation of the level switch using a continuity tester, then refer to Chapter 12, Section 5, and check the instrument panel bulb.

5 Front brake pad check



1 Firmly apply the handbrake, then jack up the front of the car and support it securely on axle stands (see *Jacking and vehicle support*). Remove the front roadwheels.

2 Using a steel rule, measure the thickness of the friction material of the brake pads on both front brakes. This must not be less than 1.5 mm. Check the thickness of the pad friction material through the hole on the front of the caliper (see *illustration*).

3 For a comprehensive check, the brake pads



4.1 Depress the button on the top of the brake fluid reservoir cap