



Saab 9-5

Owners Workshop Manual

Peter T Gill

Models covered

Saloon & Estate

Petrol: 2.0 litre (1985cc) & 2.3 litre (2290cc) turbo

Turbo-Diesel: 1.9 litre (1910cc)

Does NOT cover 'BioPower' models or new range introduced July 2010

(4891 - 336)

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A book in the **Haynes Owners Workshop Manual Series**

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Contents

LIVING WITH YOUR SAAB 9-5

Introduction to the Saab 9-5

Safety first!

Roadside Repairs

If your car won't start

Jump starting

Wheel changing

Identifying leaks

Towing

Page 0•4

Page 0•5

Page 0•6

Page 0•7

Page 0•8

Page 0•9

Page 0•9

Weekly Checks

Introduction

Underbonnet check points

Engine oil level

Coolant level

Brake (and clutch) fluid level

Screen washer fluid level

Tyre condition and pressure

Wiper blades

Battery

Electrical systems

Page 0•10

Page 0•10

Page 0•11

Page 0•11

Page 0•12

Page 0•12

Page 0•13

Page 0•14

Page 0•14

Page 0•15

Lubricants and fluids

Page 0•16

Tyre pressures

Page 0•16

MAINTENANCE

Routine Maintenance and Servicing

Petrol engine models

Page 1A•1

Servicing specifications

Page 1A•2

Maintenance schedule

Page 1A•3

Maintenance procedures

Page 1A•5

Diesel engine models

Page 1B•1

Servicing specifications

Page 1B•2

Maintenance schedule

Page 1B•3

Maintenance procedures

Page 1B•5

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REPAIR

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Diesel engine

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0•4 Introduction

The Saab 9-5 was introduced in the UK in August 1997 as an executive class model. Like the 9-3, which is essentially a rebadged 900, the 9-5 is based on a Vauxhall Vectra chassis, and competes with other models such as the BMW 5-Series, Mercedes E-Class and the Audi A6. It was originally available as a 4-door Saloon with turbocharged 2.0 and 2.3 litre, balancer-shaft, 16-valve engines. The 3.0 litre V6 engine (not covered in this manual) was introduced in February 1998, and was available with automatic transmission and traction control. The Estate version was launched in November 1998. Models may be fitted with a five-speed manual transmission or a four-speed automatic transmission mounted on the left-hand side of the engine. The automatic transmission was changed to five-speed as from September 2001.

Saab 9-5 models from 2005 had a complete facelift, with new body panels from the A-pillar forwards, new rear panels and exterior lighting. The interior trim had a revamp with new fascia trim and instrument panel. Suspension and chassis components were also updated.

Standard equipment includes power-assisted steering, ABS brakes, remote deadlock central locking, twin front and side airbags, electric windows and mirrors, and air conditioning. Optional extras include electric sunroof, electric front seats, leather upholstery and CD autochanger.

All models have front-wheel-drive with fully independent front and rear suspension, incorporating struts, gas-filled shock absorbers, and coil springs.

For the home mechanic, the Saab 9-5 is a relatively straightforward vehicle to maintain and repair, since design features have been incorporated to reduce the actual cost of ownership to a minimum, and most of the items requiring frequent attention are easily accessible.

Your Saab 9-5 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 also due to Draper Tooling 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.

Project vehicle

The main vehicles used in the preparation of this manual, and which appear in many of the photographic sequences, was a 2007 Saab 9-5 Saloon Aero fitted with the 2.3 litre turbocharged petrol engine and automatic transmission.

Working on your car
This page shows just
risks and hazards, with
safety-conscious attitudes

General

Scalding

- Don't remove the cap while the engine is running.
- Engine oil, transmission fluid may be hot. The engine has recently been running.

Burning

- Beware of burns from hot surfaces and from any parts of the engine, such as discs and drums, immediately after use.

Crushing

- When working on a raised vehicle, supplement the use of axle stands with drive-on ramps.

Never venture under a car which is only supported by a jack.

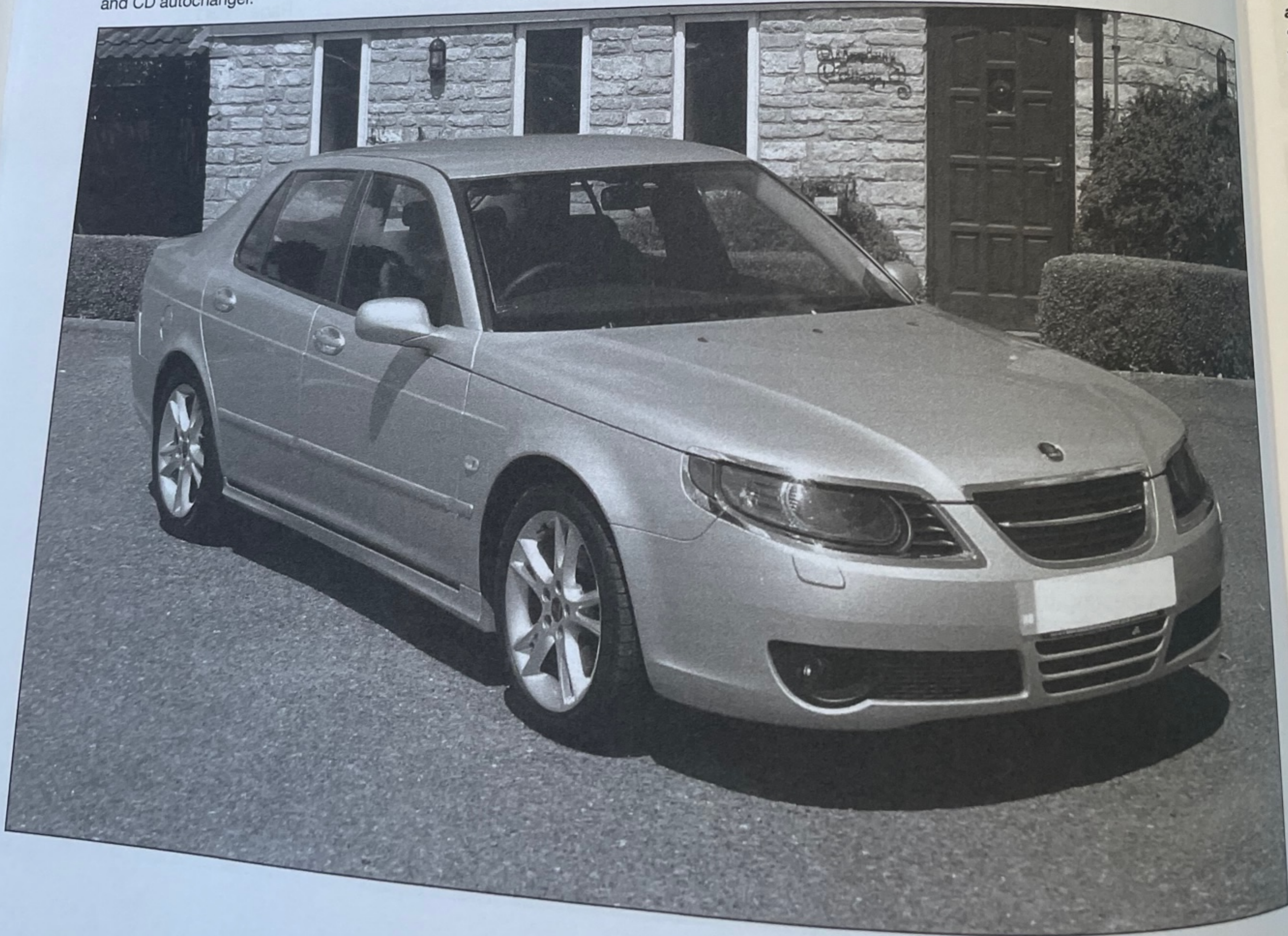
- Take care if torque nuts are loosened. Initial loosening done with the

Fire

- Fuel is highly explosive.
- Don't let fuel spill.
- Do not smoke (including cigarettes, vehicle batteries, creating sparks, tools).
- Fuel vapour can work on the skin. An inspection should be made after overloading, repairing.
- Keep a fire extinguisher suitable for use on petrol fires.

Electrical

- Ignition system. Xenon headlights. Voltage should be checked before starting, especially if people have heart problems. A pacemaker may work. These are the effects of the



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, 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.

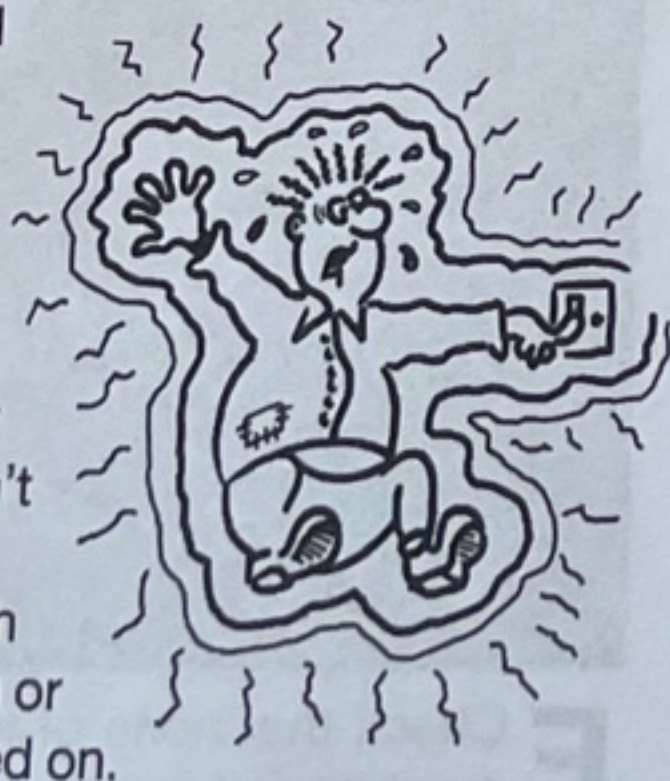
- Take care if loosening or tightening high-torque nuts when the vehicle is on stands. Initial loosening and final tightening should be done with the wheels on the ground.

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 and Xenon headlight voltages can be dangerous, especially to people with heart problems or a pacemaker. Don't work on or near these systems 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 can 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 trim panels. 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

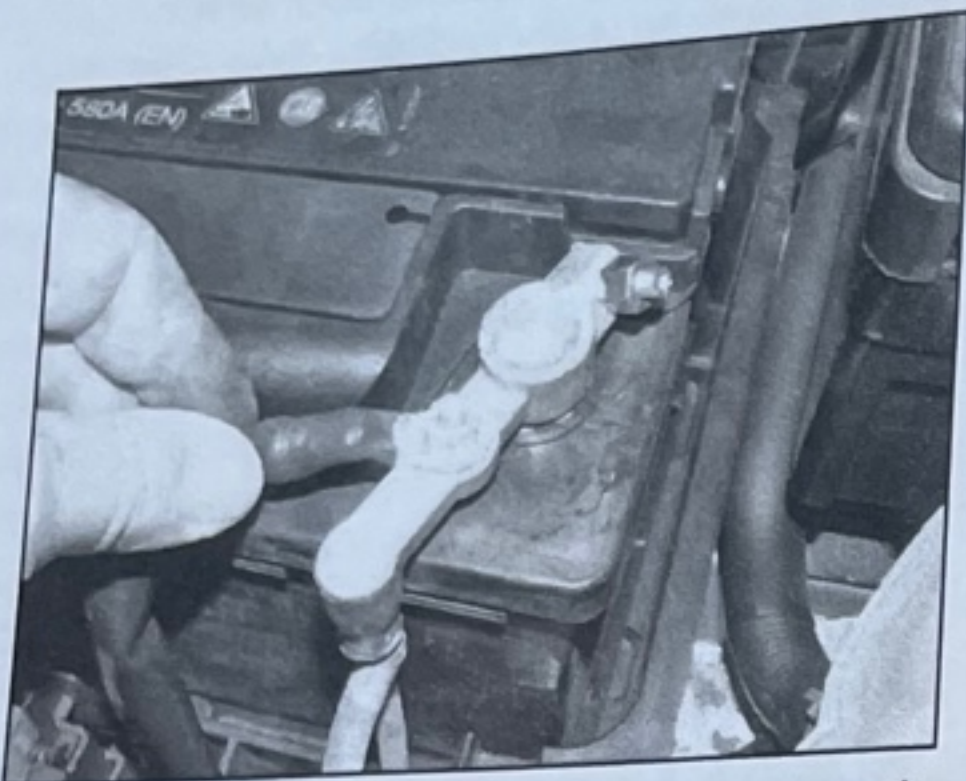
- Don't attempt to lift a heavy component which may be beyond your capability – get assistance.
- Don't rush to finish a job, or take unverified short cuts.
- Don't use ill-fitting tools which may slip and cause injury.
- Don't leave tools or parts lying around where someone can trip over them. Mop up 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

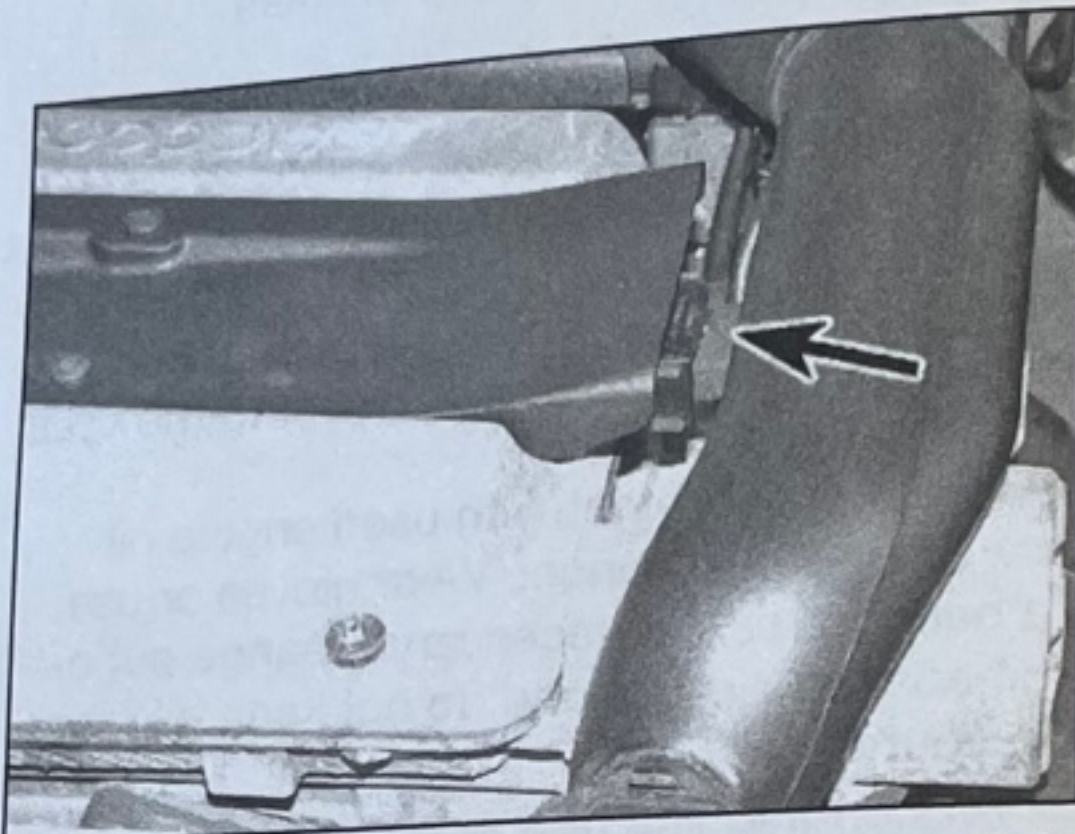
The following pages are intended to help in dealing with common roadside emergencies and breakdowns. You will find more detailed fault finding information at the back of the manual, and repair information in the main chapters.

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 the P or N position.
- 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 another car.



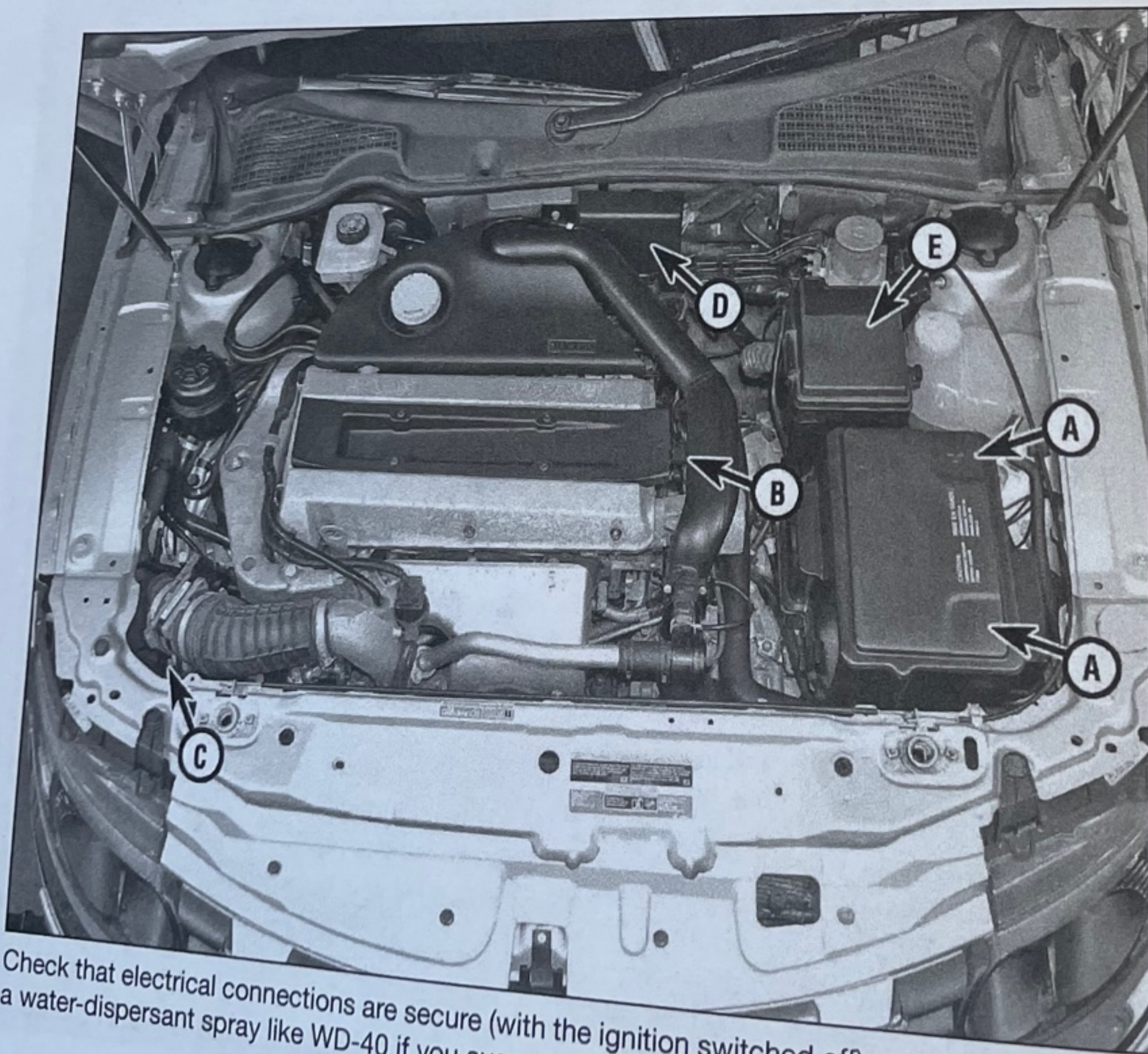
A Check that the battery cables are securely connected.



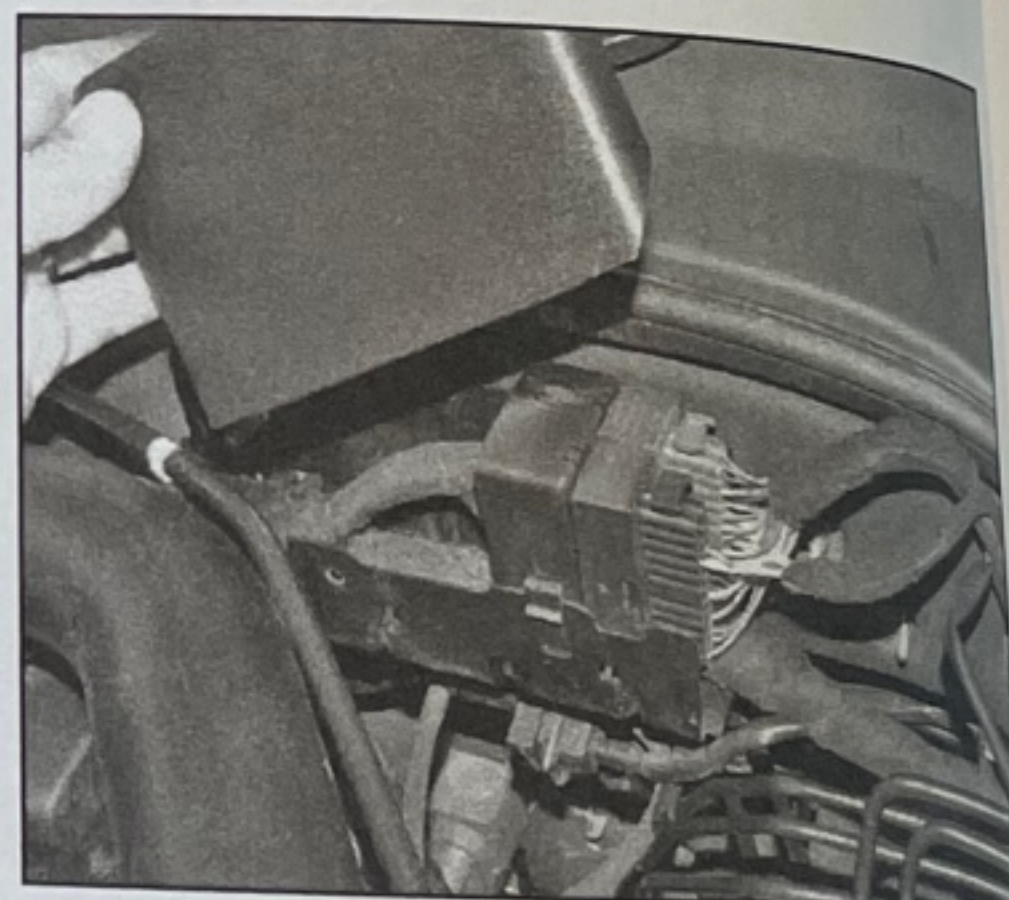
B Check that the ignition discharge module wiring is securely connected.



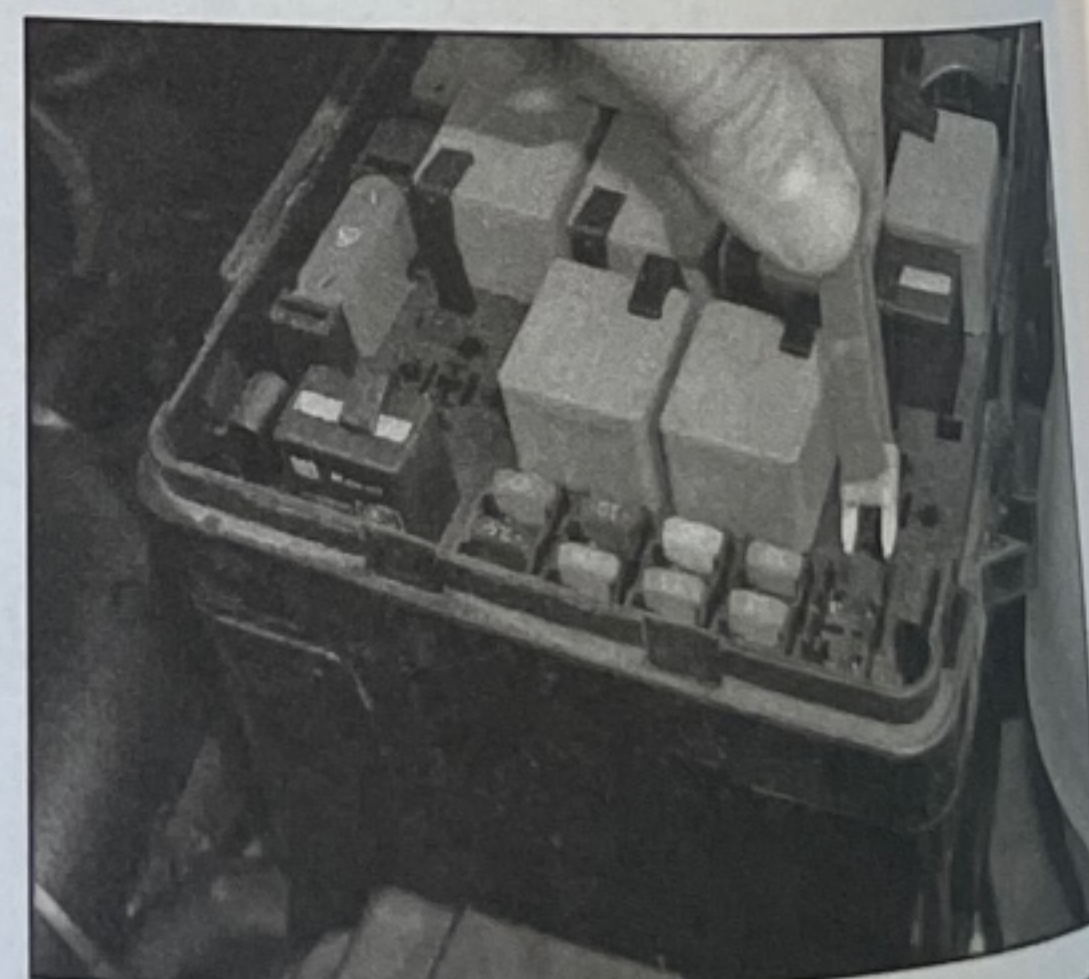
C Check that the mass airflow meter wiring is securely connected.



Check that electrical connections are secure (with the ignition switched off) and spray them with a water-dispersant spray like WD-40 if you suspect a problem due to damp.



D Check the engine wiring loom multi-plugs for security.



E Check that none of the engine compartment fuses have blown.

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 coils wiring connector.

Jump start

When jump-starting a booster battery, take the following precautions:

- ✓ Before connecting the battery, make sure the ignition is switched off.
- Caution: Remove the central locking system jump leads and disconnect the battery.**
- ✓ Ensure that all electrical components (lights, heater, etc.) are switched off.

1 Connect the positive battery

Jump starting

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.

Caution: Remove the key in case the central locking engages when the jump leads are connected

- ✓ Ensure that all electrical equipment (lights, heater, wipers, etc) is switched off.

- ✓ Take note of any special precautions printed on the battery case.
- ✓ 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).

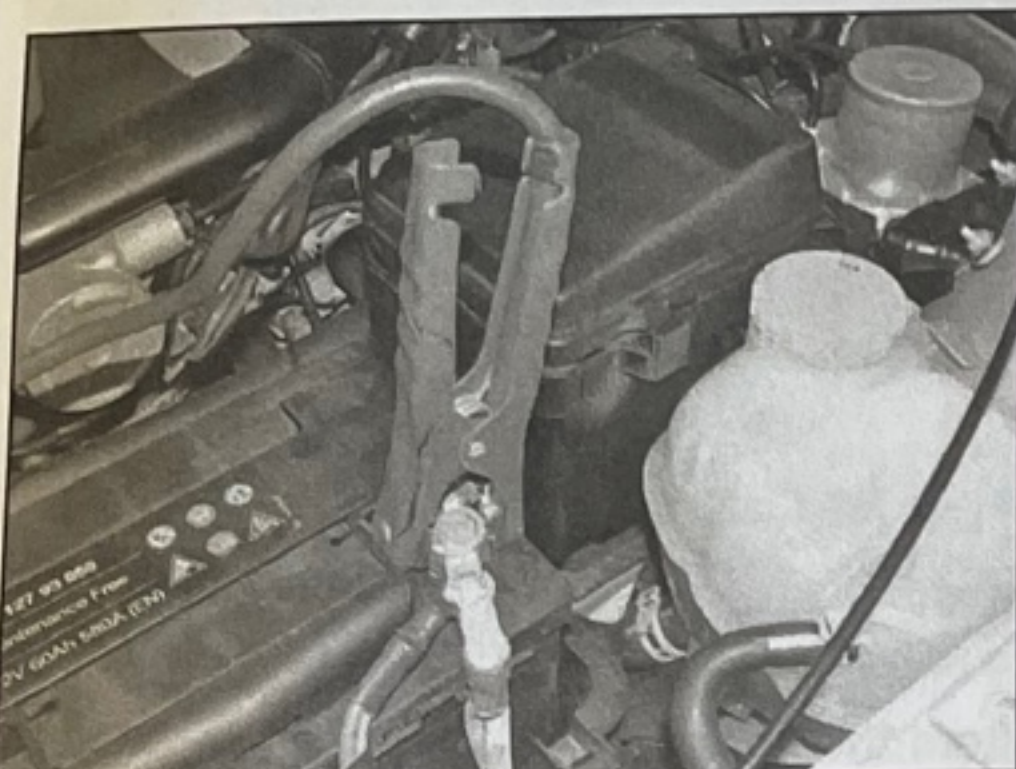
HAYNES HiNT

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).

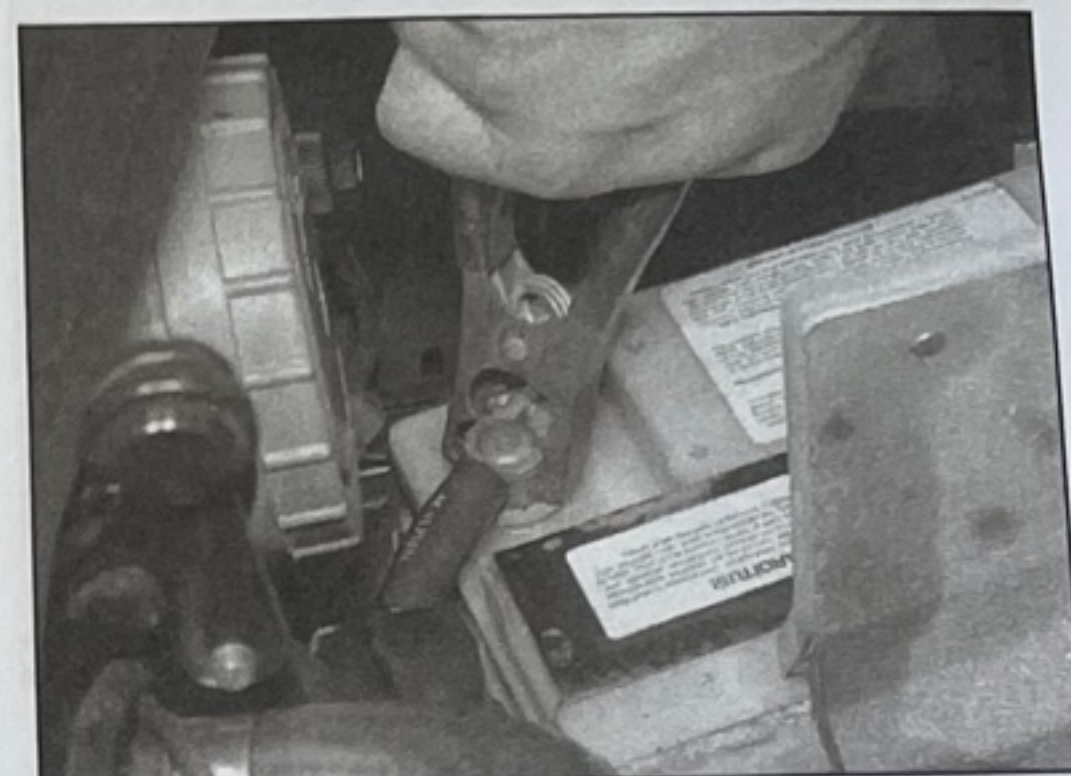
3 The battery itself is at fault (electrolyte low, or battery worn out).



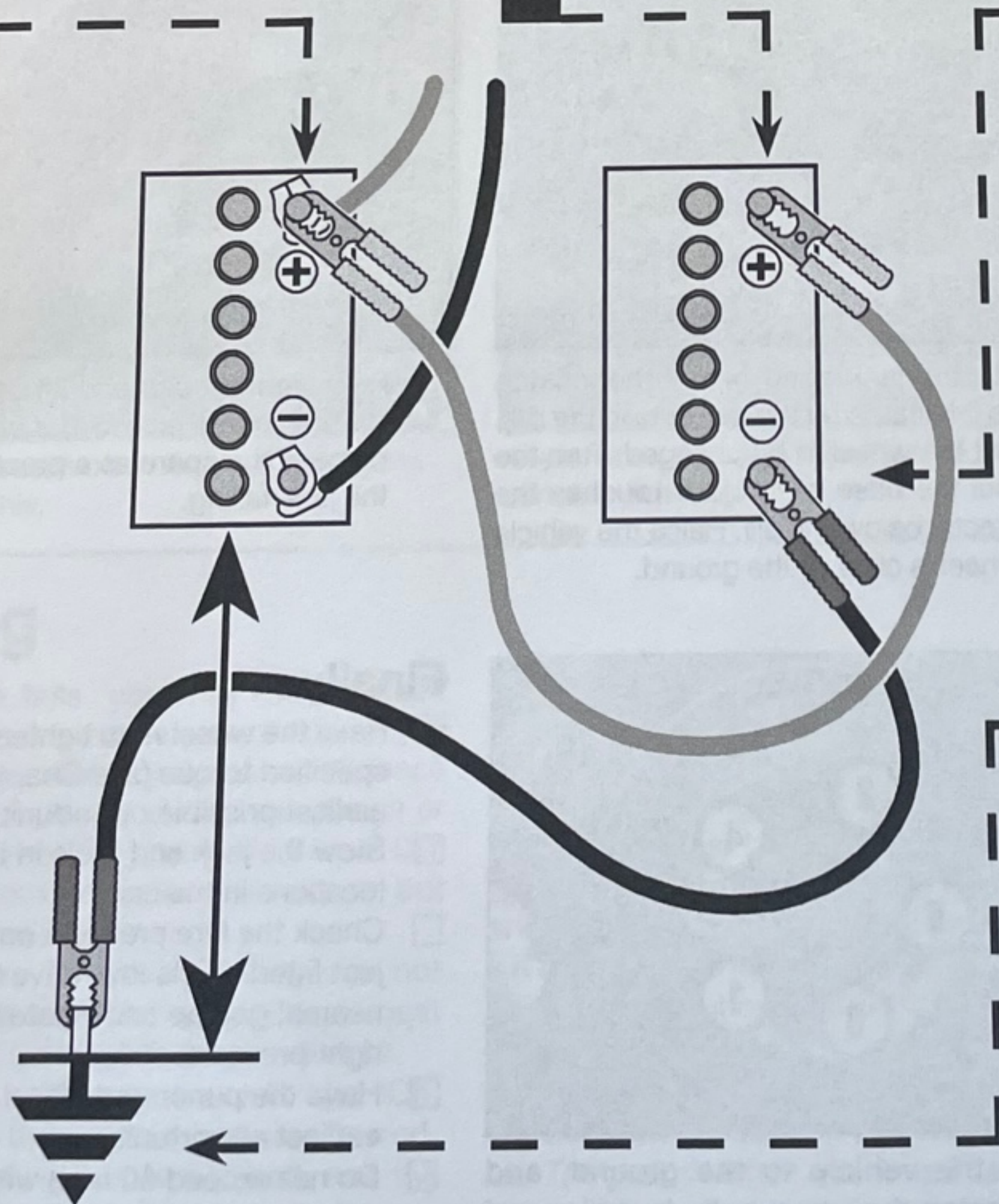
1 Connect one end of the red jump lead to the positive (+) terminal of the flat battery



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, drive-belts 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



Warning: Do not change a wheel in a situation where you risk being hit by other traffic. 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.
- ☐ 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.

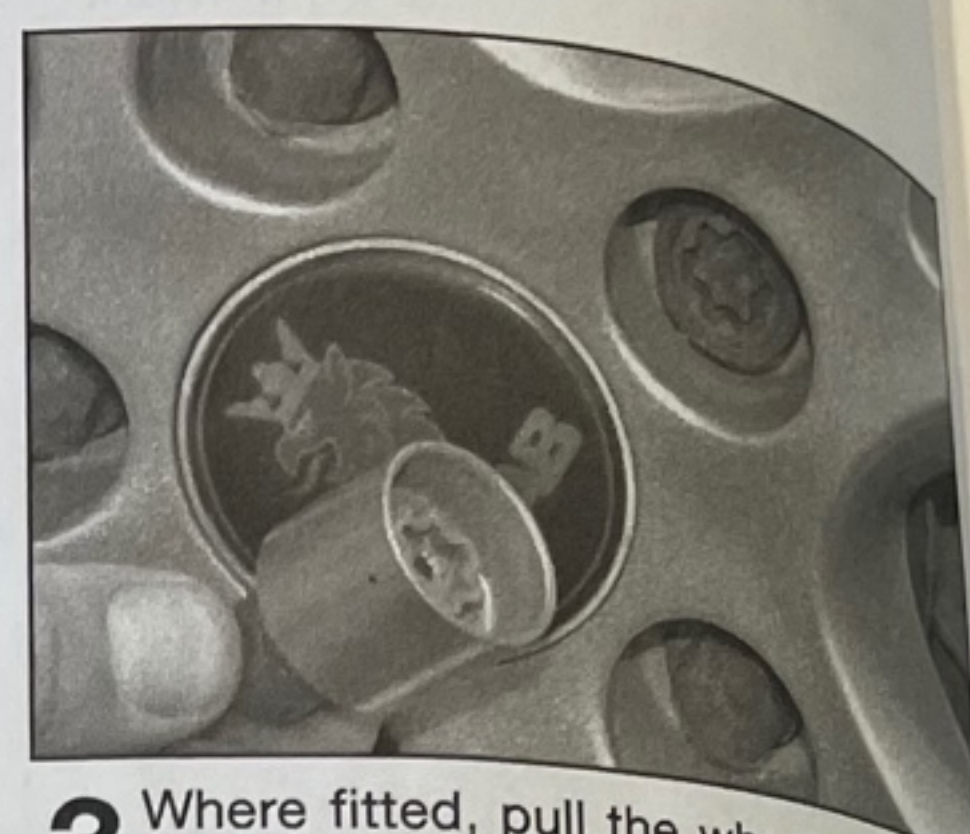
Changing the wheel



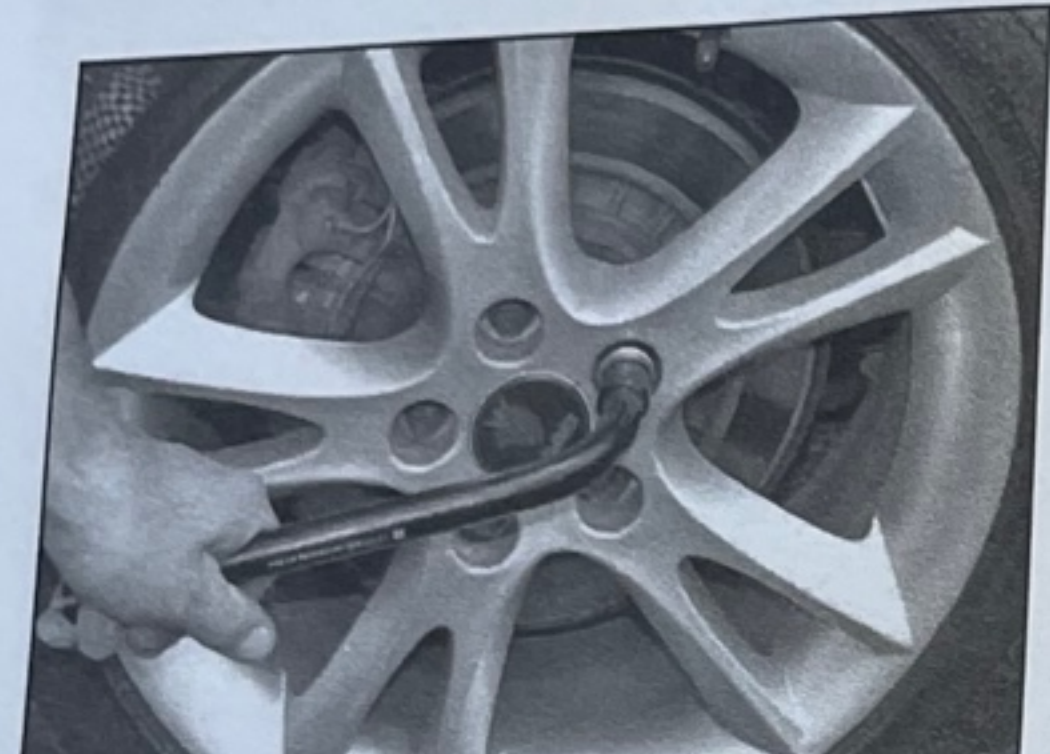
1 The spare wheel, jack and wheel removal tools are stored beneath a cover in the luggage compartment.



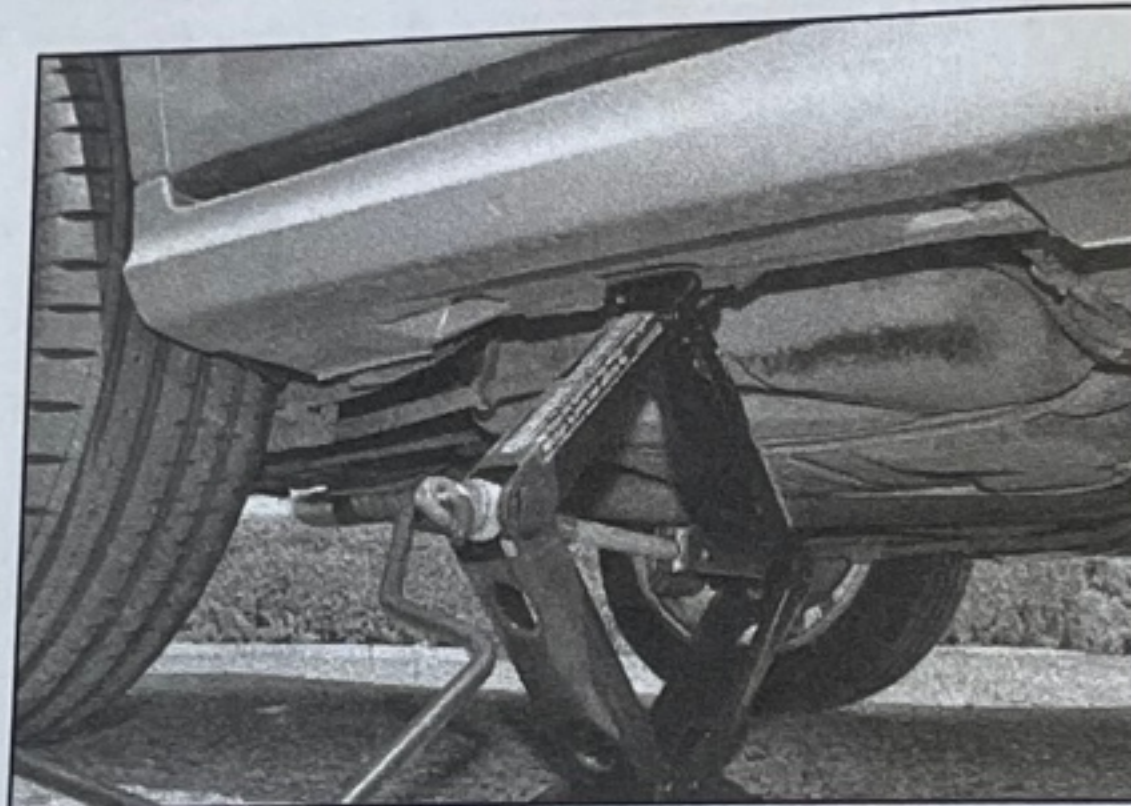
2 Unscrew the retaining nut and lift out the spare wheel. Place it beneath the sill as a precaution against the jack failing. Note that the spare wheel is a 'space saver' type.



3 Where fitted, pull the wheel trim off the wheel. On models with alloy wheels, use the plastic tool provided to prise the cap from the locking wheel bolt, and then fit the adapter.



4 Before you raise the car, loosen each wheel bolt by half a turn only.



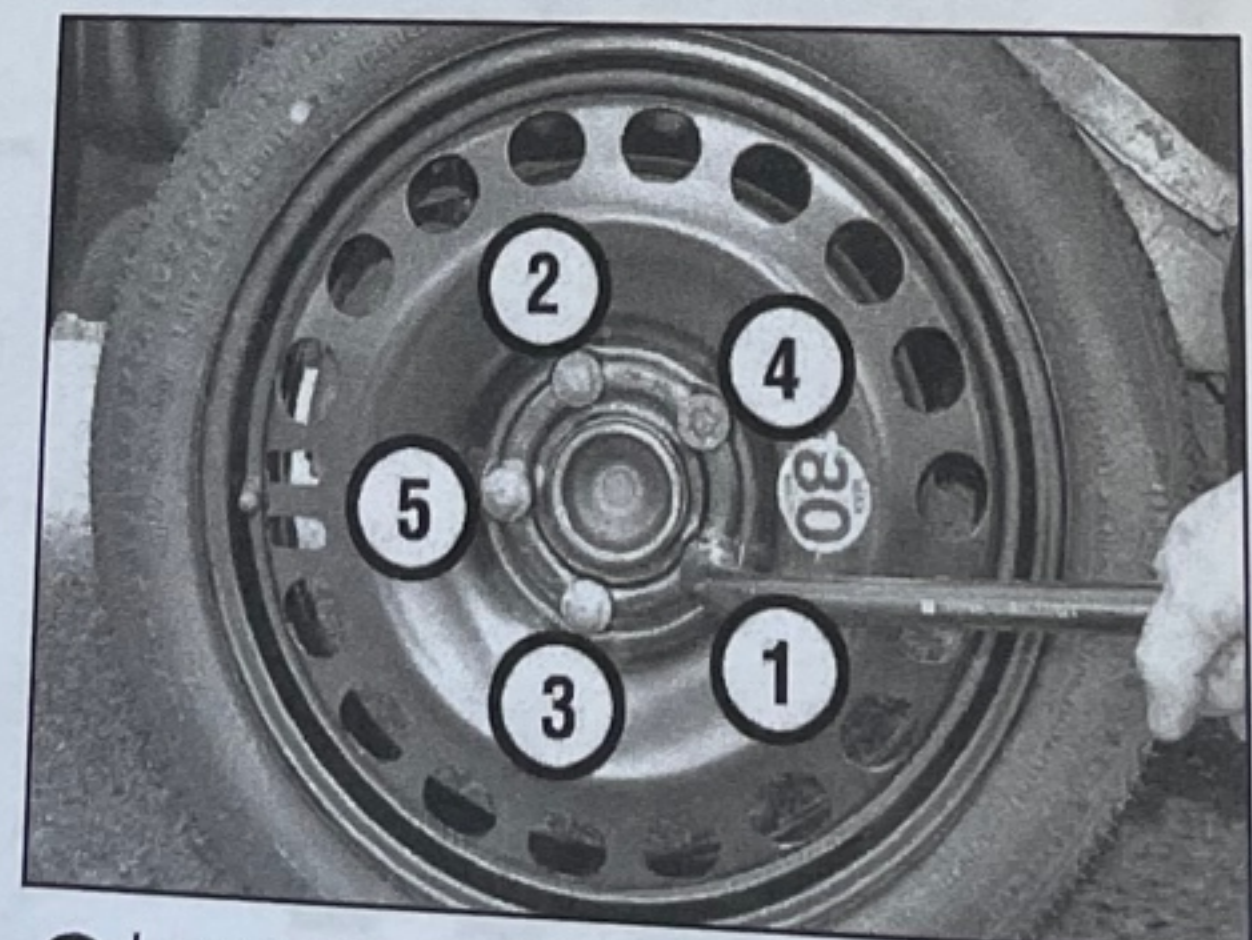
5 Locate the jack head below the jacking points (indicated by the cut-outs in the sill), nearest the wheel to be changed. Turn the handle until the base of the jack touches the ground directly below the sill. Raise the vehicle until the wheel is clear of the ground.



6 Remove the bolts and lift the wheel from the vehicle. Place it beneath the sill in place of the spare as a precaution against the jack failing.



7 Fit the spare wheel, then insert each of the wheel bolts and tighten them moderately using the wheel brace.



8 Lower the vehicle to the ground, and then tighten the wheel bolts in a diagonal sequence. Remove the wheel chocks.

Finally . . .

- ☐ Have the wheel nuts tightened to the specified torque (see Chapter 10) at the earliest possible opportunity.
- ☐ Stow the jack and tools in the correct locations in the car.
- ☐ Check the tyre pressure on the wheel just fitted. If it is low, drive slowly to the nearest garage and inflate the tyre to the right pressure.
- ☐ Have the punctured wheel repaired at the earliest opportunity.
- ☐ Do not exceed 50 mph when driving the vehicle with a 'Space Saver' spare wheel fitted.

Identifying

Puddles on the ground or obvious wetness underneath the car needs investigating. It is difficult to decide where from, especially if the car is parked rearwards by the pavement, giving a false impression.

Sump oil



Engine oil may

Antifreeze



Leaking a deposit li

Tow

When a car is having trouble, it may be better to recover it rather than break down towing. Observe the following:
☐ Use an experienced driver to display the car.
☐ Always position the car so that the direction of travel is clear.
☐ On

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 an engine undershield is fitted. 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.



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 remove the engine undershield, 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



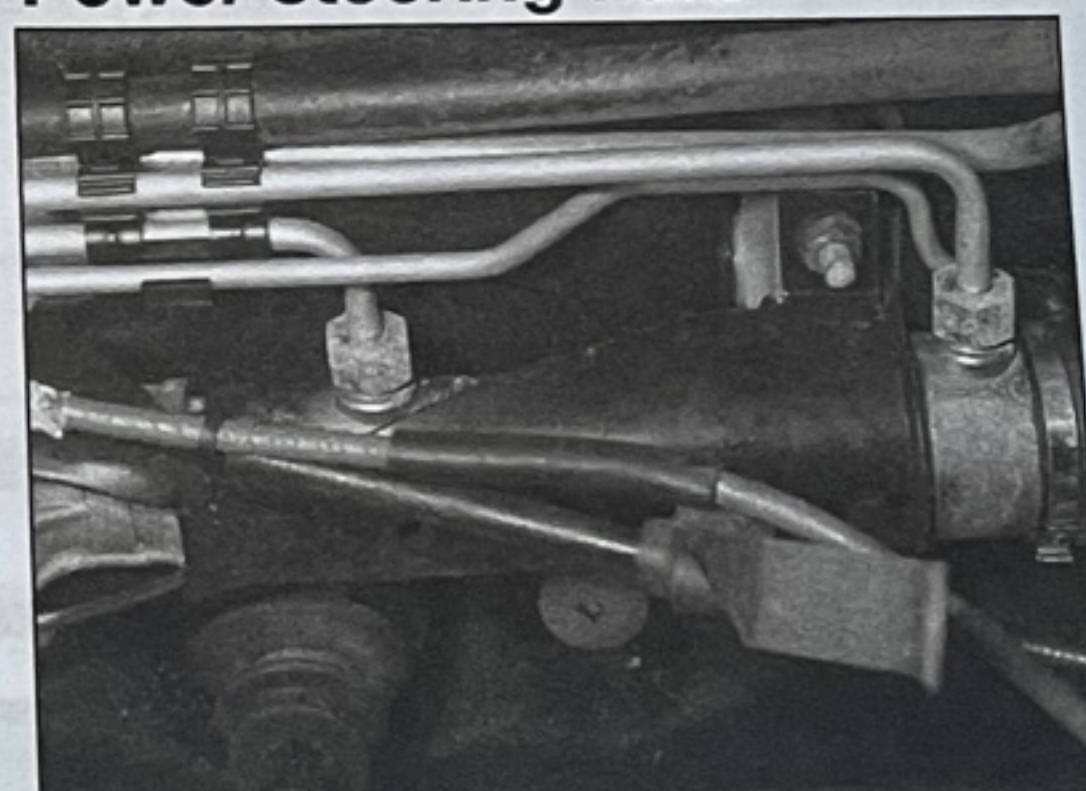
Leaking antifreeze often leaves a crystalline deposit like this.

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.

Towing

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 the direction indicator and brake lights work.
- ☐ Only attach the tow-rope to the towing eyes

provided. The front towing eye is in the vehicle tool kit, and screws into the hole in the centre of the subframe; use the wheelbrace to tighten it. The rear towing eye is located beneath the centre of the rear bumper and is permanent.

- ☐ Before being towed, release the handbrake and select neutral on the transmission.
- ☐ On models with automatic transmission, special precautions apply as follows (if in doubt, do not tow, or transmission damage may result):

- a) Only tow the car in a forward direction.
- b) The gear selector lever must be in the N position.
- c) The vehicle must not be towed at a speed

exceeding 30 mph, nor for a distance of more than 30 miles.

- ☐ 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. Similarly, 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.

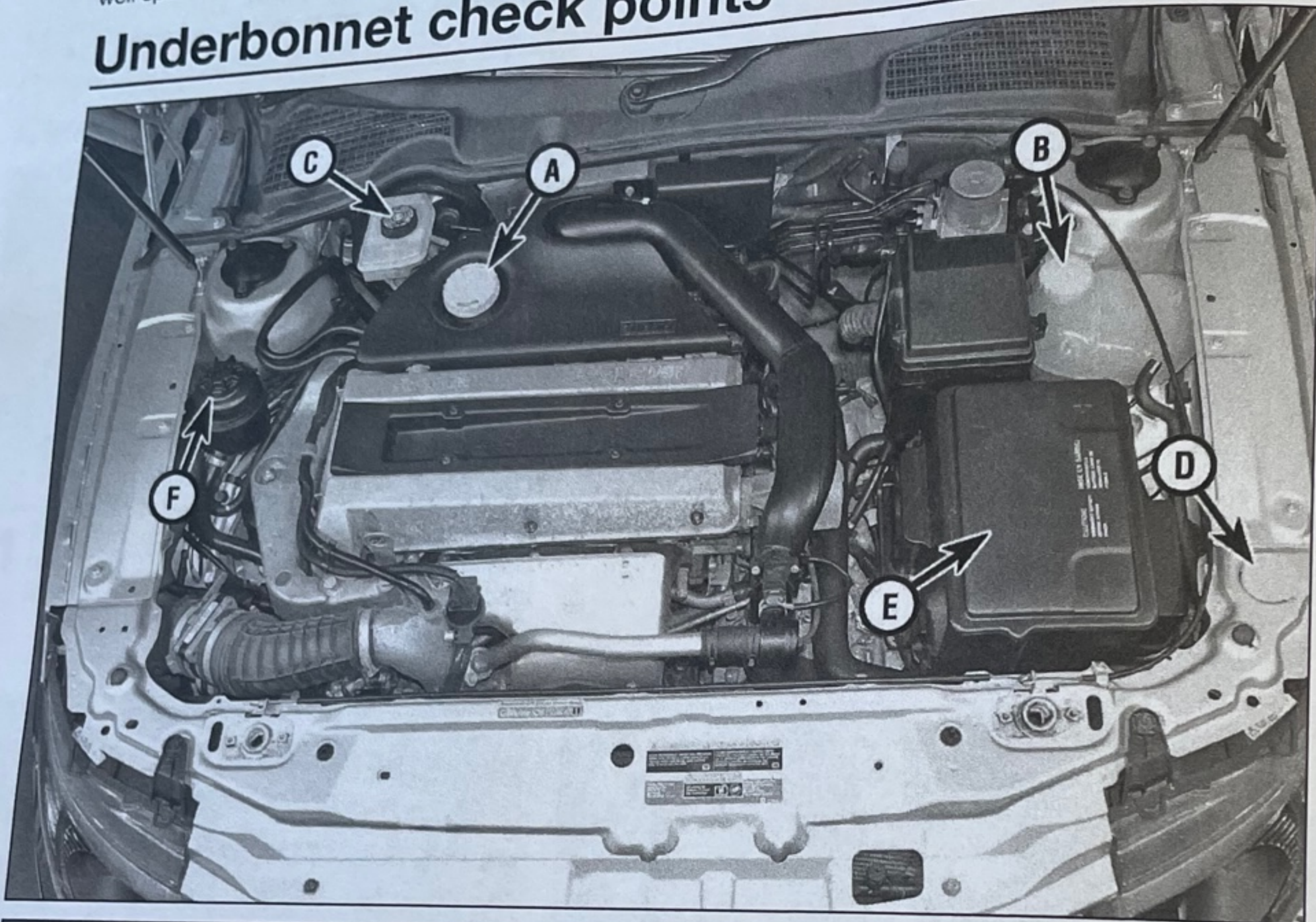
Introduction

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.

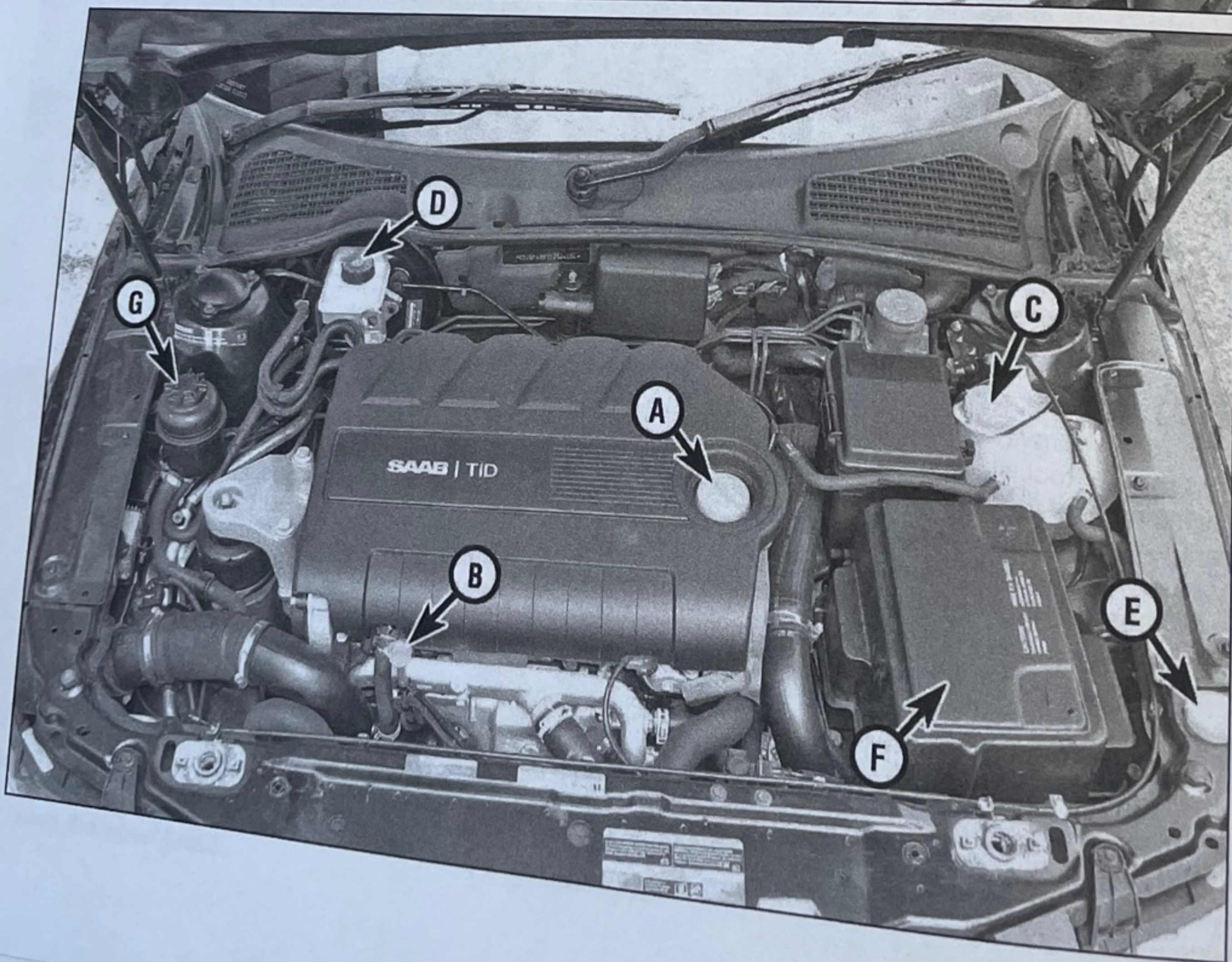
- If your car develops a brake fluid leak the first time you might know about it is when the brakes don't work properly. Checking the level regularly will give advance warning of a problem.
- If the oil or coolant levels run low the cost of repairing any engine damage will be greater than fixing the leak, for example.

Underbonnet check points



◀ 2.3 litre petrol engine

- A Engine oil level filler cap and dipstick
- B Coolant reservoir
- C Brake fluid reservoir
- D Washer fluid reservoir
- E Battery
- F Power steering fluid reservoir



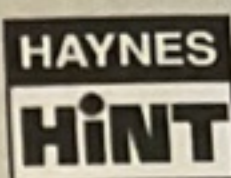
◀ 1.9 litre diesel engine

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

Engine oil

Before you start

- ✓ Make sure that the engine is warm.
- ✓ Check the oil level when the engine is switched off.



If the engine is immediately switched off, the oil level will remain the same. Components, readings on the dipstick.

The correct

Modern engines require oil. It is very important that your car is used (several times a week).

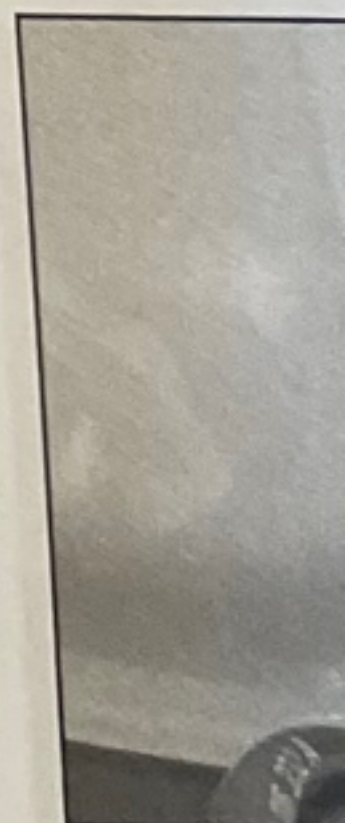
Car care

- If you have to add oil, check whether you have some clean paper and check for stains. There are no leaks, then add oil.
- Always maintain the upper and lower oil level. If the level is too low, oil may occur. Oil level engine is overfill.

Coolant



Warning: remove pressure hot, of steam, components is possible.

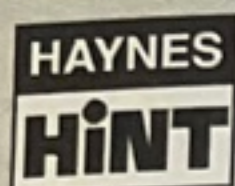


- 1 The coolant temperature engine on or slightly the side of the level w

Engine oil level

Before you start

- ✓ Make sure that the 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.



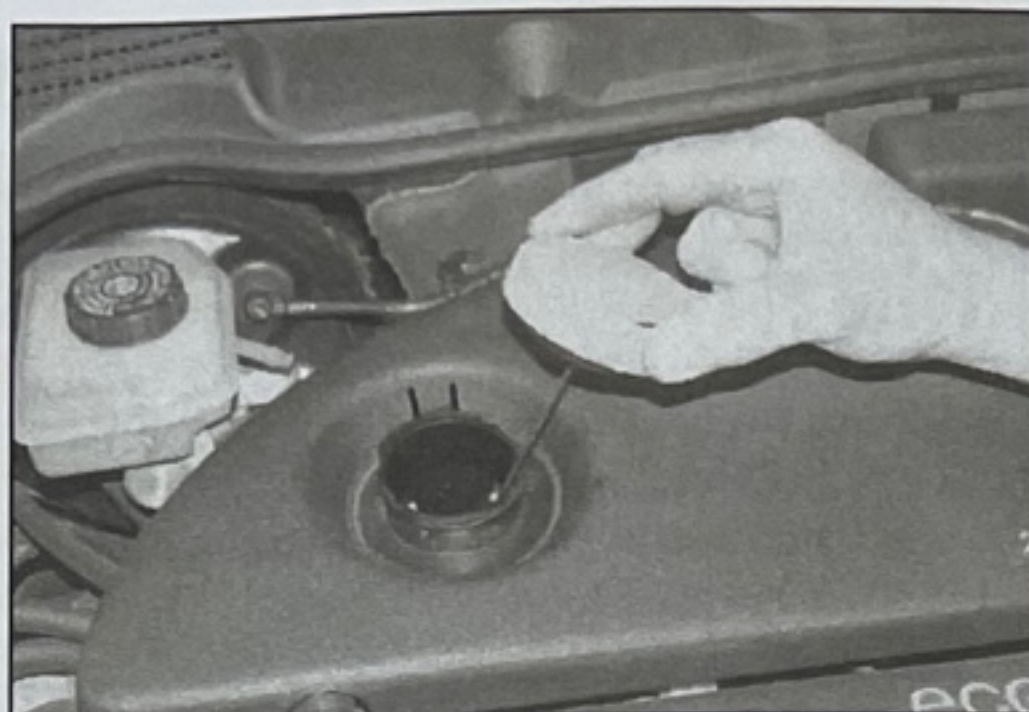
HAYNES HINT If the oil is checked immediately after driving the vehicle, some of the oil will remain in the upper engine components, resulting in an inaccurate reading on the dipstick.

The correct oil

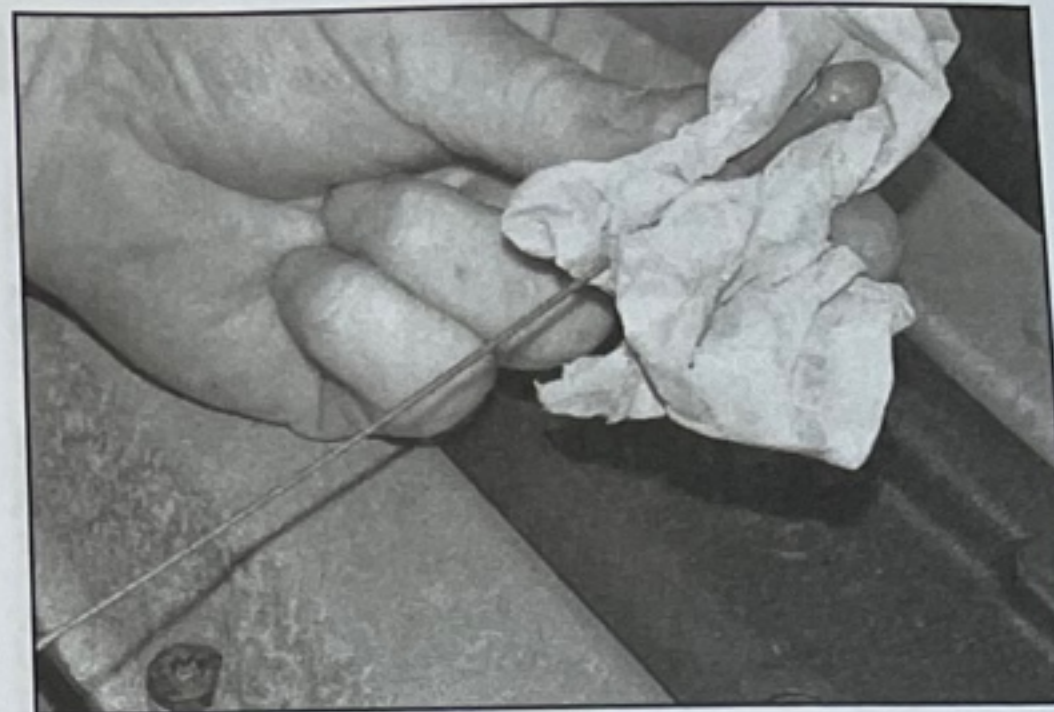
Modern engines place great demands on their oil. It is very important that the correct oil for your car is used (see *Lubricants and fluids*).

Car care

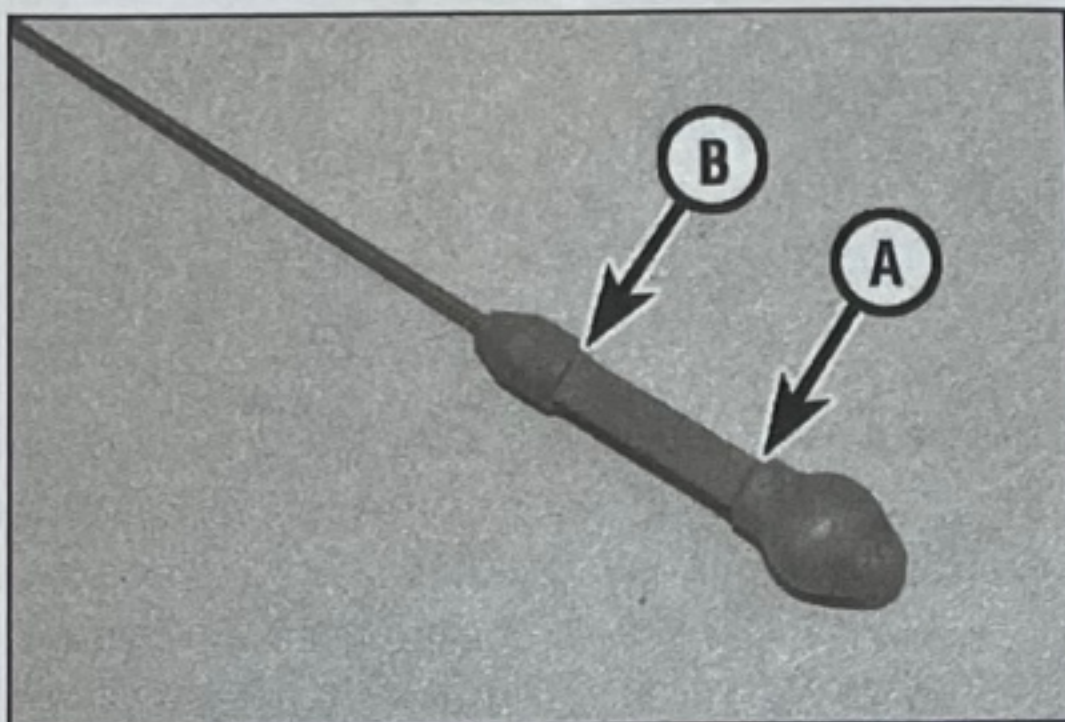
- If you have to add oil frequently, you should check whether you have any oil leaks. Place some clean paper under the car overnight, and check for stains in the morning. If there are no leaks, then the engine may be burning oil.
- Always maintain the level between the upper and lower dipstick marks (see photo 3). 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.



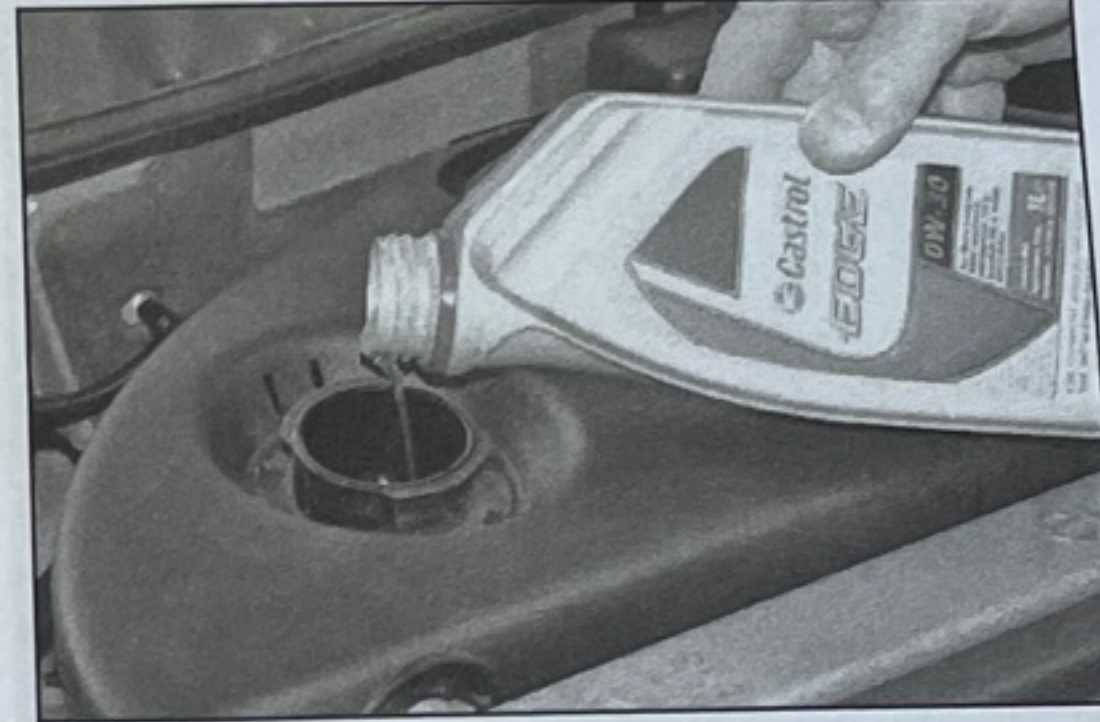
1 The dipstick is integral with the oil filler cap, on petrol engines or at the front of the engine on diesel models (see *Underbonnet check points* on page 0•10 for exact location). Withdraw the dipstick



2 Using a clean rag or paper towel remove all oil from the dipstick. Insert the clean dipstick into the tube and tighten the filler cap, then withdraw it again.



3 Note the oil level on the end of the dipstick, which should be between the upper mark (B) and lower mark (A). Approximately 1.0 litre of oil will raise the level from the lower mark to the upper mark.

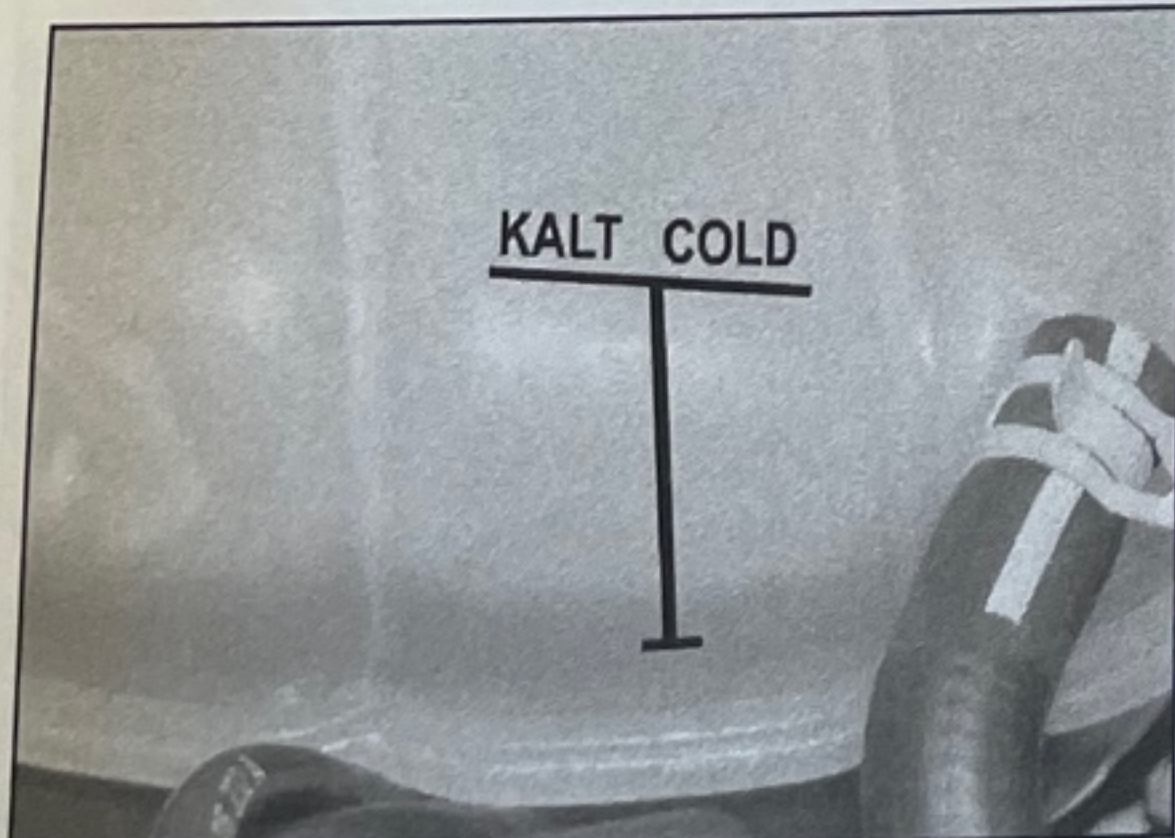


4 Oil is added through the filler cap hole. Unscrew the cap and withdraw it. Top-up the level. A funnel may help to reduce spillage. Add the oil slowly, checking the level on the dipstick often. Do not overfill. Refit the cap on completion.

Coolant level



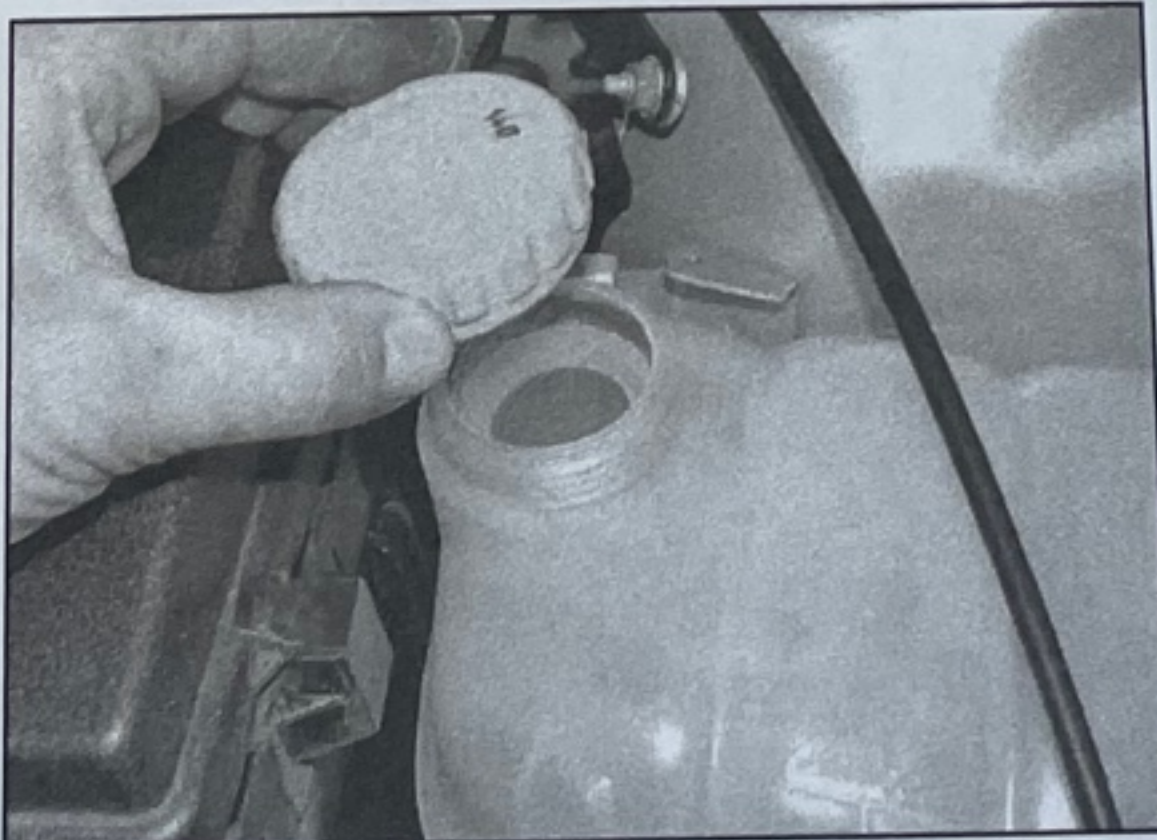
Warning: Do not attempt to remove the expansion tank pressure cap when the engine is hot, as there is a very great risk of scalding. Do not leave open containers of coolant about, as it is poisonous.



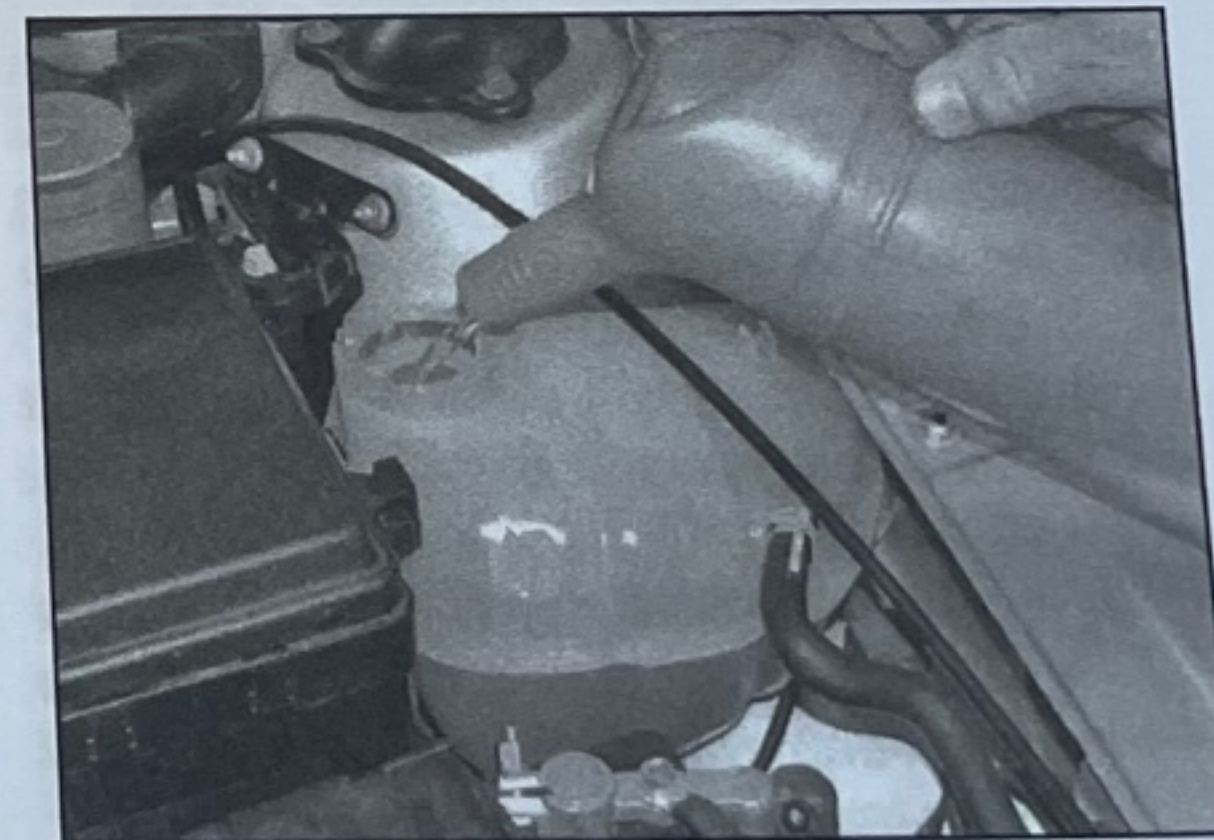
1 The coolant level varies with the temperature of the engine. When the engine is cold, the coolant level should be on or slightly above the KALT/COLD mark on the side of the tank. When the engine is hot, the level will rise.

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.



2 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.



3 Top up the level by adding a mixture of water and antifreeze to the expansion tank. A funnel may help to reduce spillage. Refit the cap and tighten it securely.

0•12 Weekly checks

Brake (and clutch) fluid level



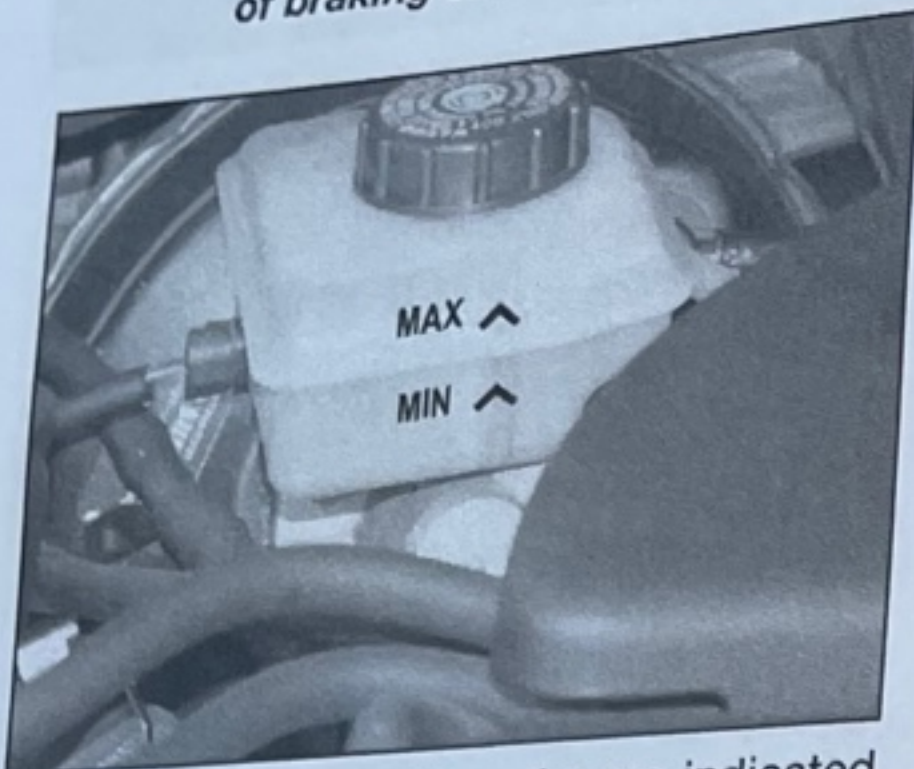
Warning:

- 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.

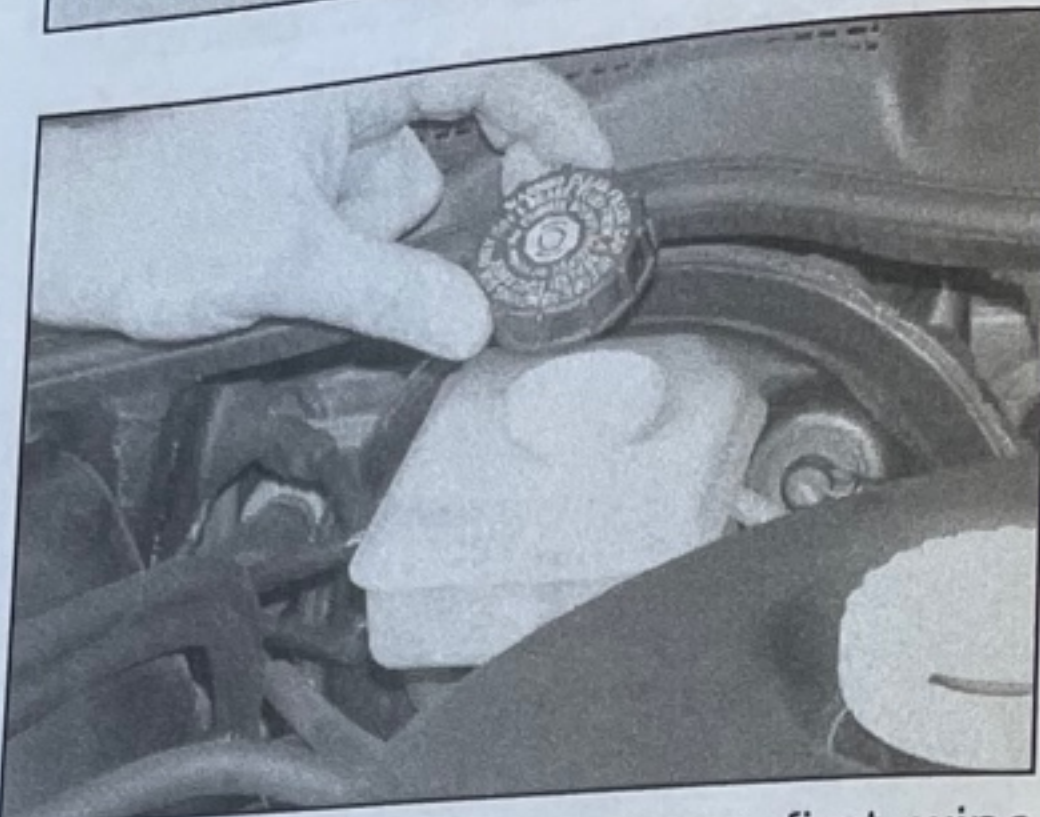


• Make sure that your car is on level ground.

• 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.



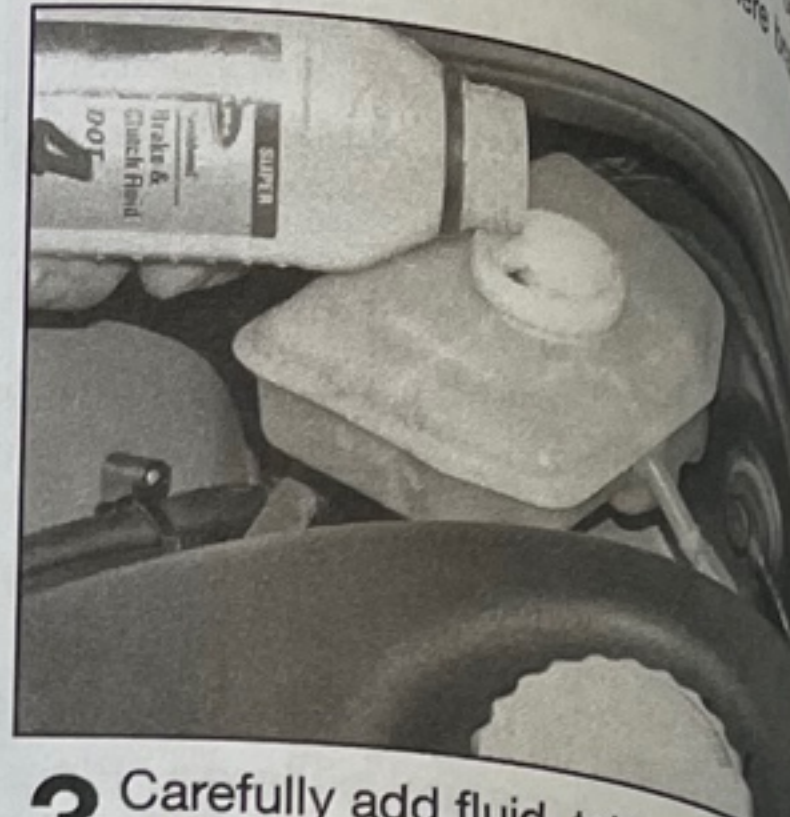
1 The MAX and MIN marks are indicated on the front of the reservoir located in the right-hand rear corner of the engine compartment. The fluid level must always be kept between the marks.



2 If topping-up is necessary, first wipe clean the area around the filler cap to prevent dirt entering the hydraulic system. Unscrew the cap and place it on an absorbent rag.

Safety first!

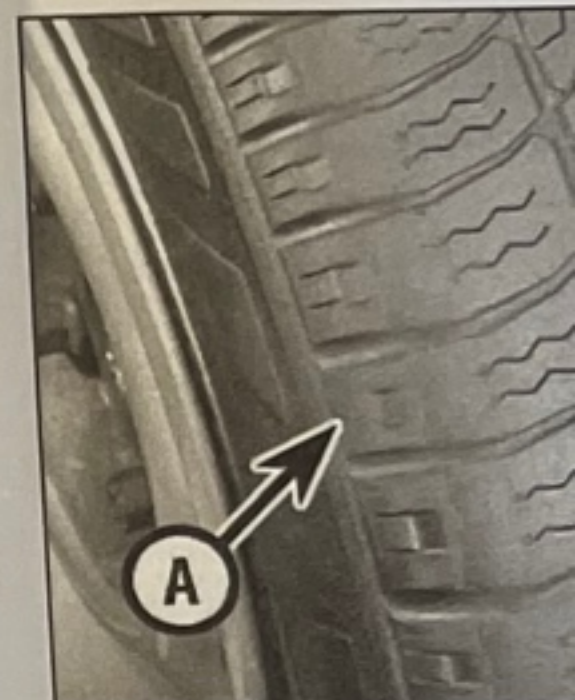
- If the reservoir requires repeated topping-up, this is an indication of a fluid leak somewhere in the system, which should be investigated immediately.
- If a leak is suspected, the car should not be driven until the braking system has been checked. Never take any risks where lives are concerned.



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

Tyre condition

It is very important that tyres are in good condition, and at the correct pressure. A tyre failure at any speed is dangerous. Tyre wear is influenced by driving style, braking and acceleration, load, road conditions. As a general rule, the front tyres wear more than the rears. Interchanging the front and rear ("rotating" the tyres) can help to ensure more even wear. However, this is not completely effective, yet it is a small expense of replacing all four tyres. Remove any nails or stones from the tread before they penetrate the tyre. If removal of a



1 Tread Depth

The original tyres have a tread depth of 1.6mm. The tread depth reaches approximately 1.6mm when the tread band positions are in line with the mark on the tyre sidewall.

Tyre tread



Shoulder Wear

Underinflation (worn shoulders)
Under-inflation will cause excessive wear on the shoulders of the tyre, because the tread will not be in full contact with the road surface. This will lead to excessive wear, a sudden tyre failure. Check and adjust the pressure. **Incorrect wheel alignment**
Repair or renew the tyres. **Hard cornering**
Reduce speed!

Screen washer fluid level

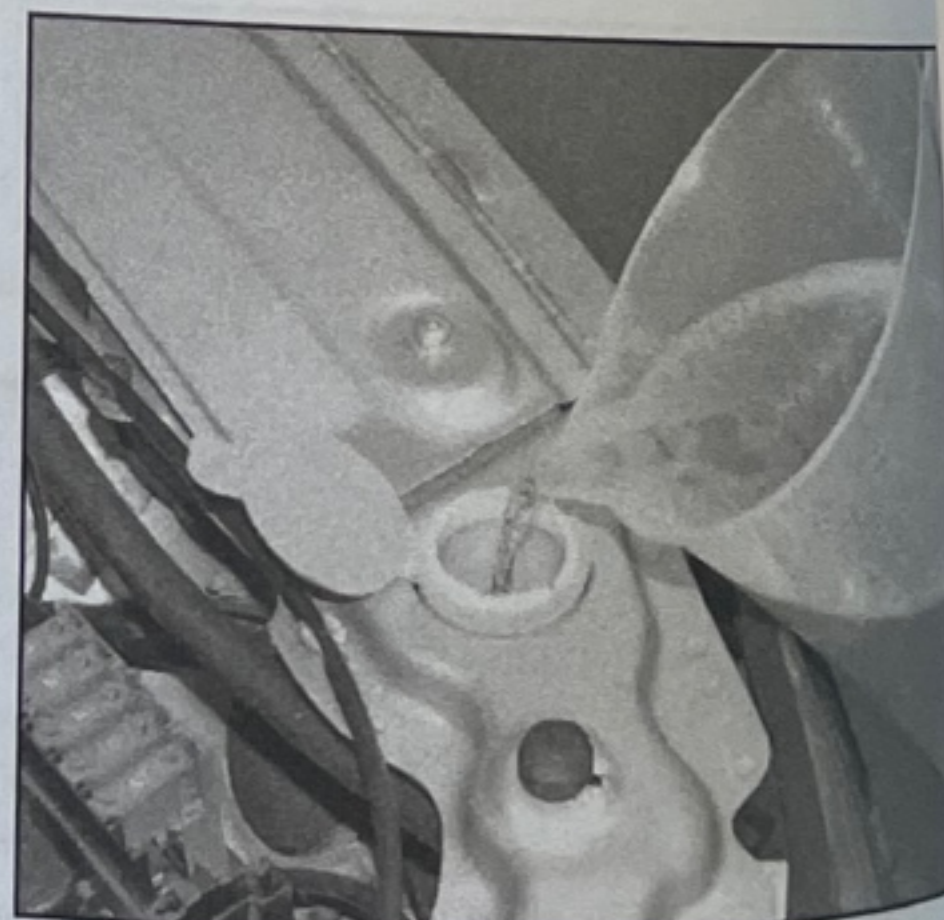
• Screenwash additives not only keep the windscreen clean during bad weather, they also prevent the washer system freezing in cold weather – which is when you are likely to need it most. Don't top-up using plain water, as the screenwash will become diluted, and will freeze in cold weather.



Warning: On no account use engine coolant antifreeze in the screen washer system – this may damage the paintwork.



1 The reservoir for the windscreen, headlight and rear window (where applicable) washer systems is located on the front left-hand side of the engine compartment. If topping-up is necessary, open the cap.



2 When topping-up the reservoir a screenwash additive should be added in the quantities recommended on the bottle.

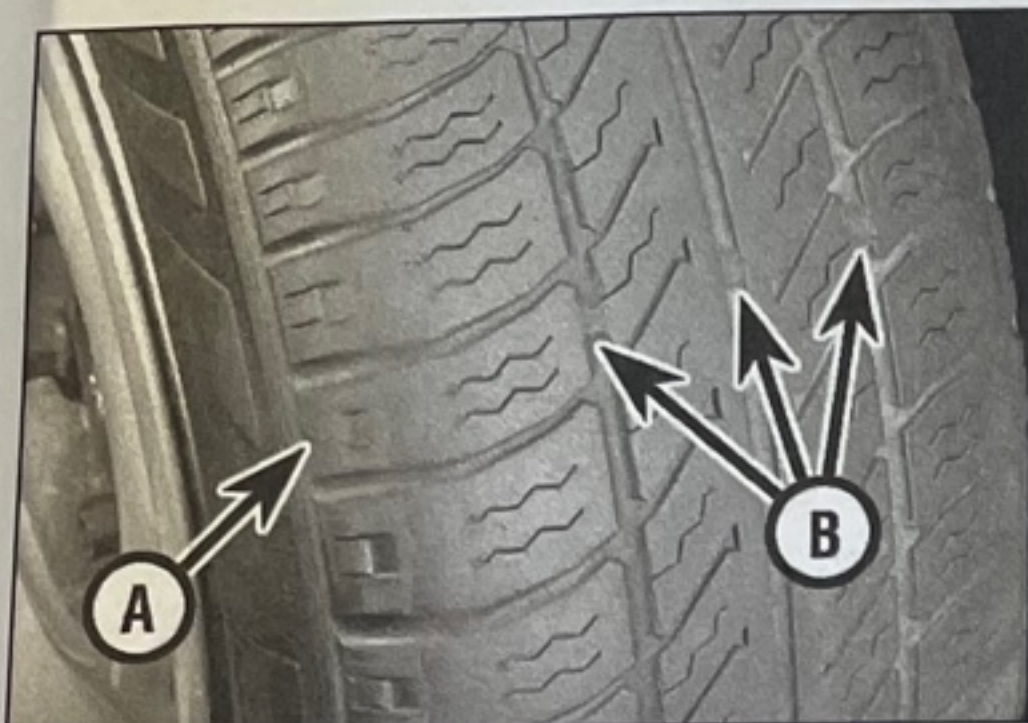
Tyre condition and pressure

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.

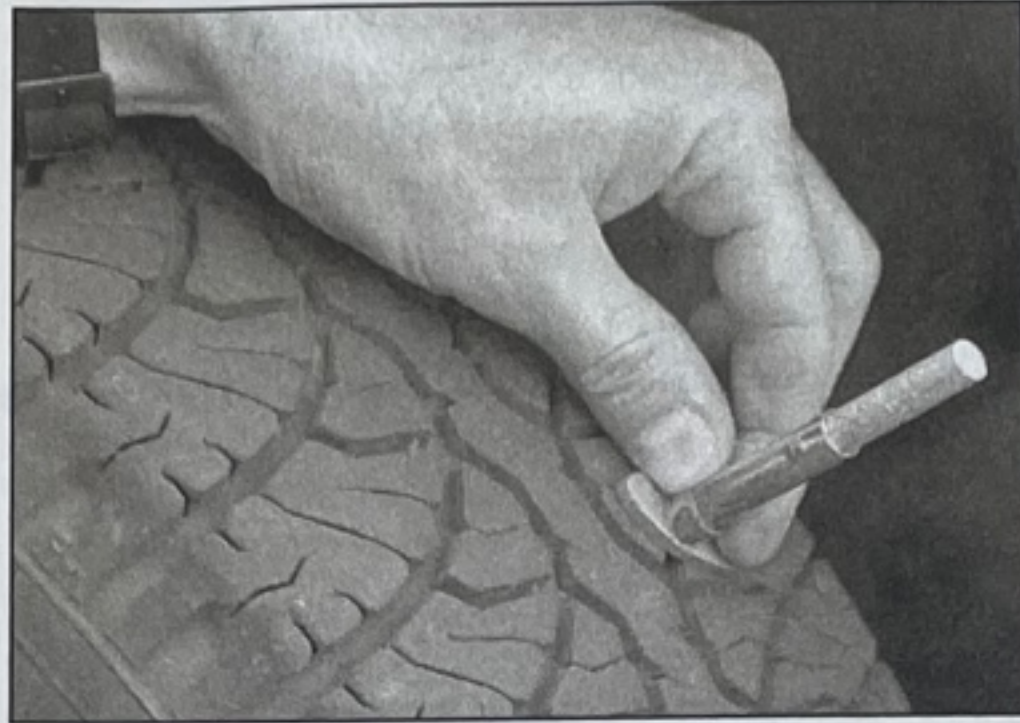
Regularly check the tyres for damage in the form of cuts or bulges, especially in the sidewalls. Periodically remove the wheels, and clean any dirt or mud from the inside and outside surfaces. Examine the wheel rims for signs of rusting, corrosion or other damage. Light alloy wheels are easily damaged 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.



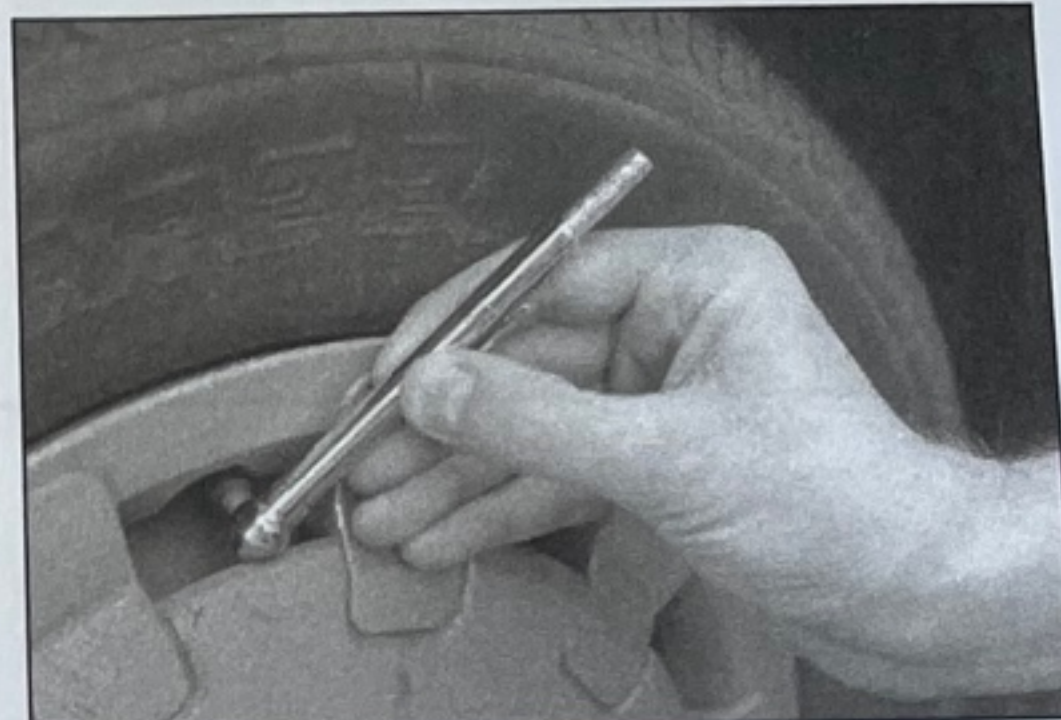
1 Tread Depth - visual check

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 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.

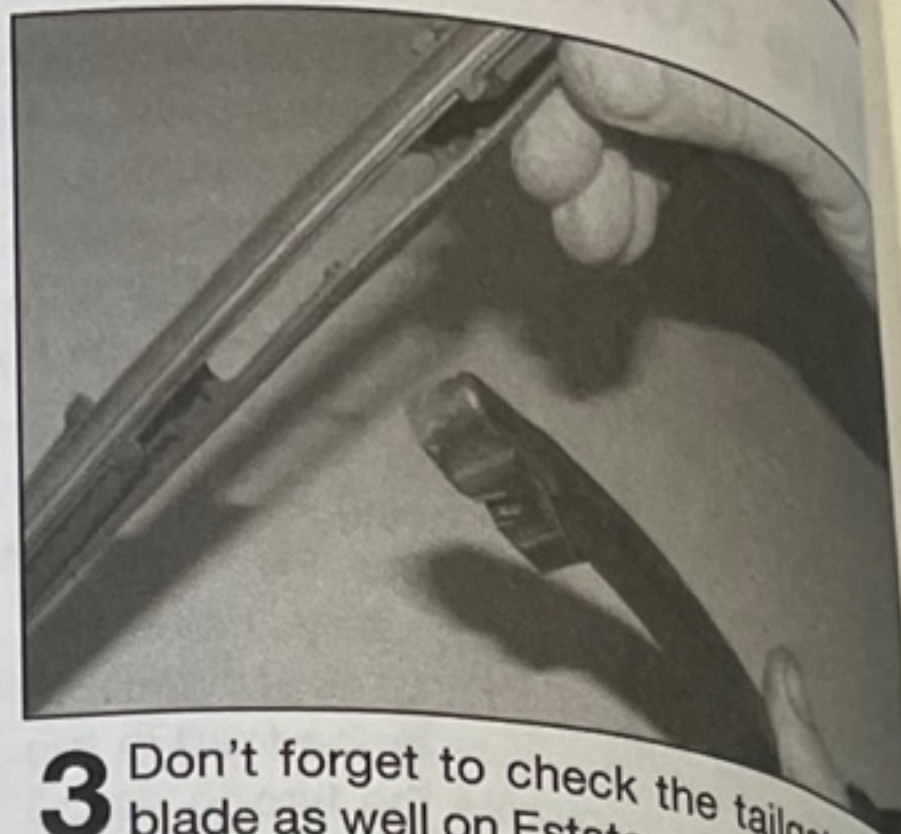
Wiper blades



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. For maximum clarity of vision, wiper blades should be renewed annually.



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



3 Don't forget to check the tailgate wiper blade as well on Estate models. The blade is clipped onto the arm.

Electrical system

✓ Check all external lights and to the appropriate Sections of details if any of the circuits are inoperative.



1 If a single indicator headlight has failed, it has blown and will not work. Refer to Chapter 12 if stop-lights have failed, if a switch has failed (see Chapter 12).

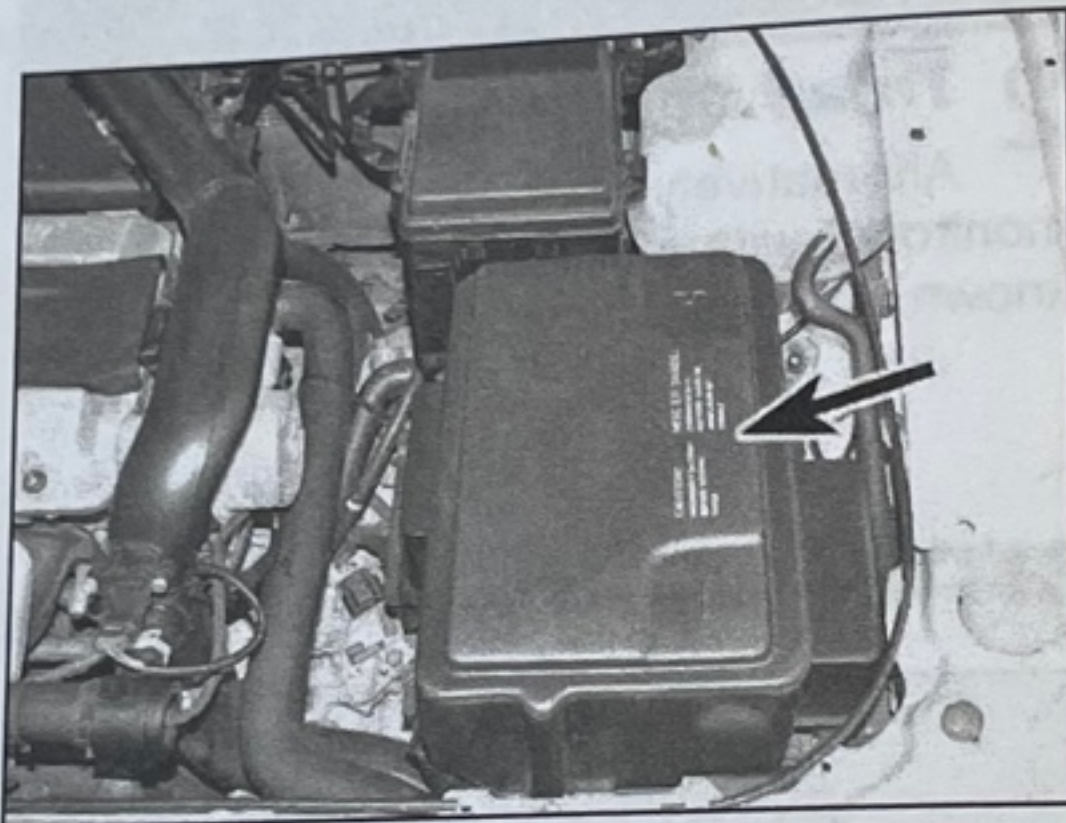
Battery

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, after removing the affected components from the car (see Chapter 5A). 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.

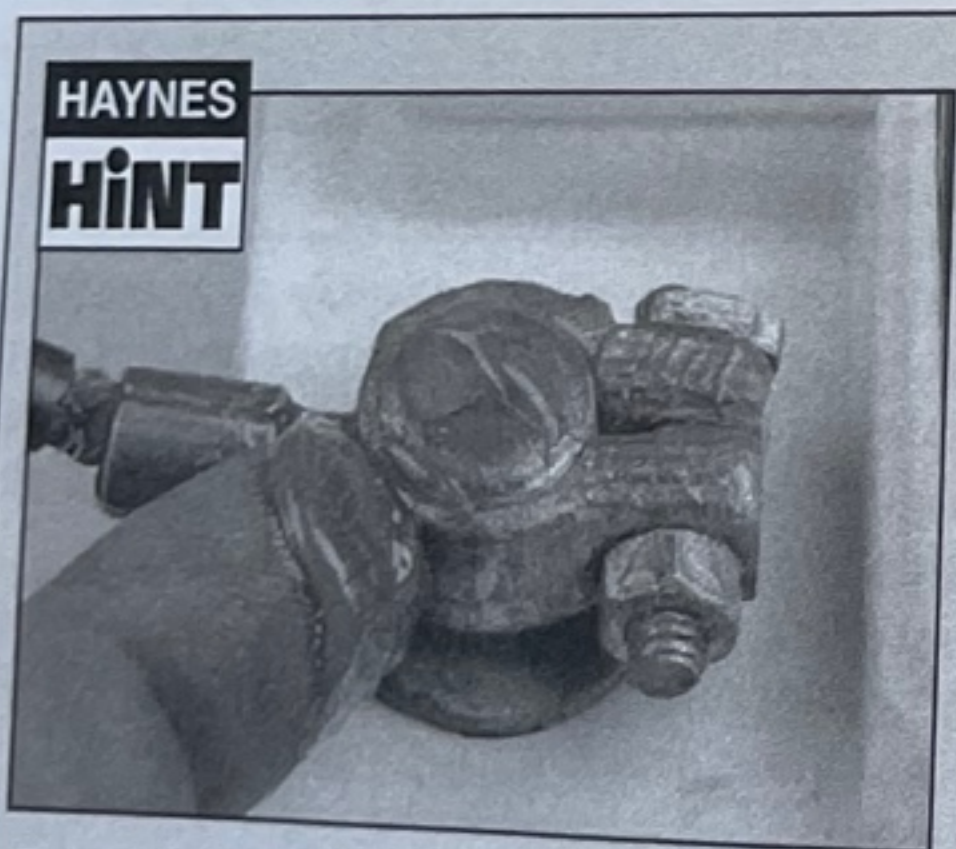
✓ If the battery is flat, and you need to jump start your vehicle, see *Roadside Repairs*.



1 The battery is located at the front, left-hand side of the engine compartment, and is covered with a plastic protective cover. The exterior of the battery should be inspected periodically for damage such as a cracked casing or cover.



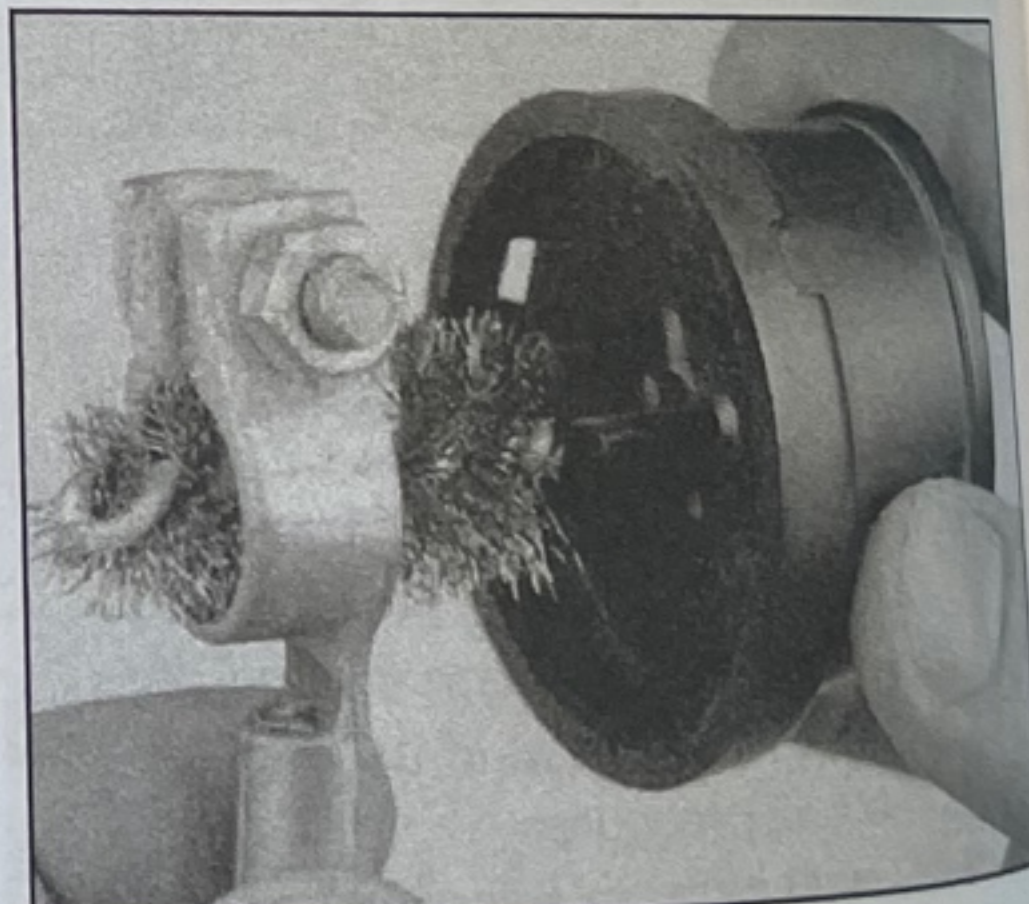
2 Check the tightness of battery clamps to ensure good electrical connections. You should not be able to move them. Also check each cable for cracks and frayed conductors.



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.

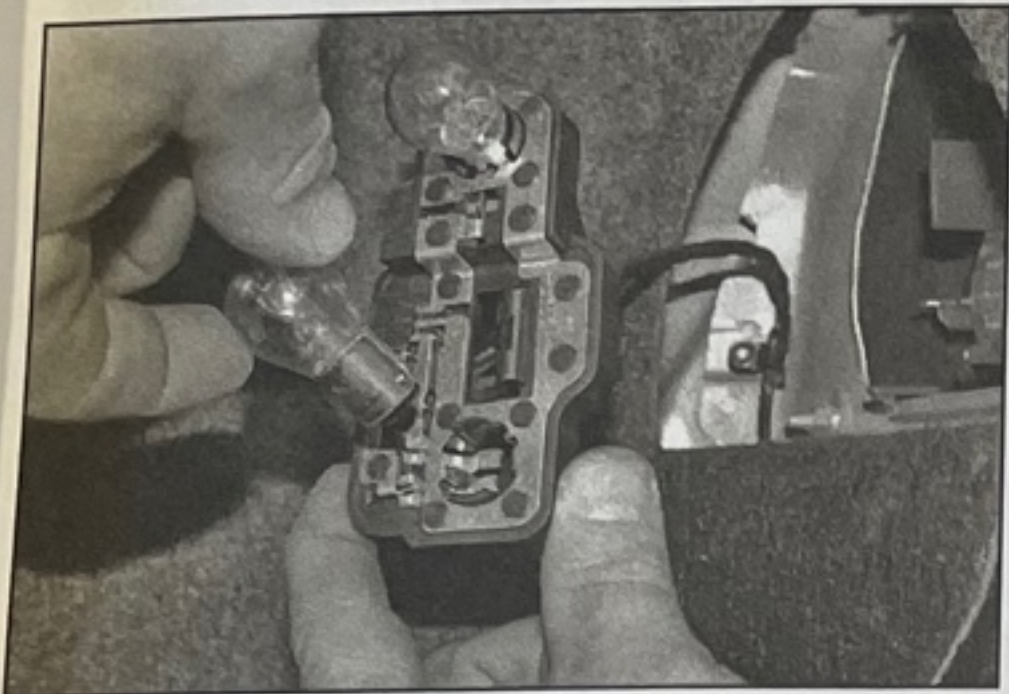
Electrical systems

✓ 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.

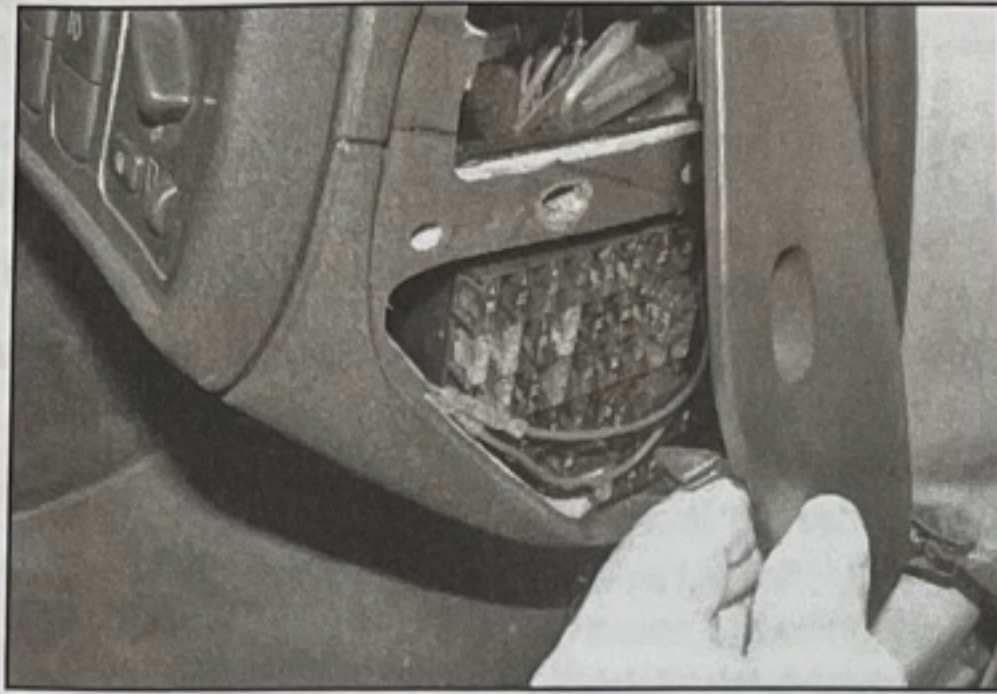
✓ Visually check all accessible wiring connectors, harnesses and retaining clips for security, and for signs of chafing or damage.

HAYNES
HiNT

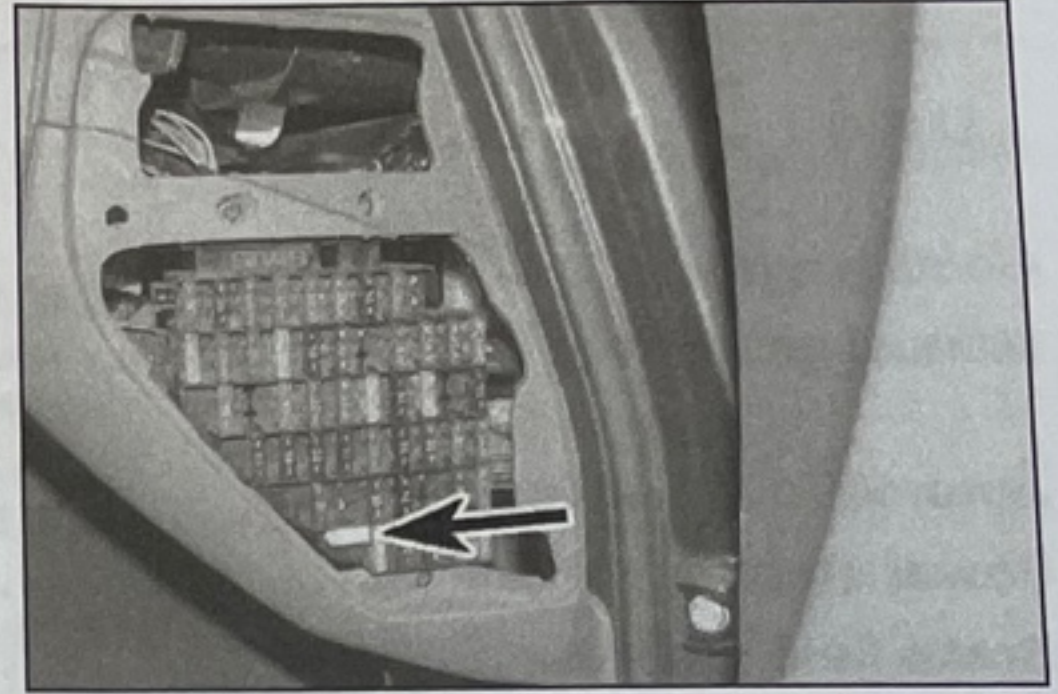
If you need to check your brake lights and indicators unaided, back up to a wall or garage door and operate the lights. The reflected light should show if they are working properly.



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 renewed. 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 headlight has failed, it is likely that either a fuse has blown or that there is a fault in the circuit (see Chapter 12). The main fuses are accessed by removing a cover on the driver's end of the fascia. Additional fuses and relays are located in the left-hand side of the engine compartment.



3 To renew a blown fuse, remove it using the plastic tool provided. Fit a new fuse of the same rating, available from car accessory shops. If the fuse blows repeatedly, refer to Chapter 12 to locate the fault.

0-16 Lubricants, fluids and tyre pressures

Lubricants and fluids

Engine:	
Petrol.....	Saab Long Life Turbo Engine Oil or any fully synthetic oil with viscosity 0W-30 or 0W-40 to specification GM-LL-Acc
Diesel.....	Saab Long Life Turbo Engine Oil or any synthetic engine oil with viscosity 5W-40 to specification GM-LL-B025
Cooling system.....	Saab original coolant/antifreeze only
Manual gearbox.....	Saab synthetic manual gearbox oil MTF 0063, part No 93 165 290
Automatic transmission.....	Saab automatic transmission fluid 3309
Power steering reservoir.....	Saab Power Steering Fluid CHF 11S or CHF 202
Brake fluid reservoir.....	Hydraulic fluid to DOT 4

Chapter 1 Routine maintenance petrol engine

Contents

Air conditioning drain hoses - check.....
Air filter element - renewal.....
Airbag system - check.....
Automatic transmission fluid - check.....
Automatic transmission fluid level.....
Auxiliary drivebelt - renewal.....
Auxiliary drivebelt condition - check.....
Brake fluid - renewal.....
Brake pad wear - check.....
Coolant - renewal.....
Coolant antifreeze concentration.....
Driveshaft joints and gaiters.....
Engine oil and filter - renewal.....
Exhaust system - check.....
Fuel filter - renewal.....

Tyre pressures (cold)

Note: Pressures apply to original-equipment tyres, and may vary if any other make or type of tyre is fitted; check with the tyre manufacturer for correct pressures if necessary. Pressures are also given on the passenger side B-pillar.

Tyre size	Front	Rear
195/65 R15:		
1 to 3 persons, up to 100 mph.....	35 psi (2.4 bar)	35 psi (2.4 bar)
4 to 5 persons, up to 100 mph.....	38 psi (2.6 bar)	38 psi (2.6 bar)
205/65 R15:		
1 to 3 persons, up to 100 mph.....	33 psi (2.3 bar)	30 psi (2.1 bar)
4 to 5 persons, up to 100 mph.....	33 psi (2.3 bar)	30 psi (2.1 bar)
1 to 5 persons, up to 100 mph.....	41 psi (2.8 bar)	38 psi (2.6 bar)
215/55 R16:		
1 to 3 persons, up to 100 mph.....	35 psi (2.4 bar)	32 psi (2.2 bar)
4 to 5 persons, up to 100 mph.....	35 psi (2.4 bar)	32 psi (2.2 bar)
1 to 5 persons, up to 100 mph.....	42 psi (2.9 bar)	39 psi (2.7 bar)
225/45 R17:		
1 to 3 persons, up to 100 mph.....	36 psi (2.5 bar)	35 psi (2.4 bar)
4 to 5 persons, up to 100 mph.....	36 psi (2.5 bar)	35 psi (2.4 bar)
1 to 5 persons, up to 100 mph.....	44 psi (3.0 bar)	42 psi (2.9 bar)
235/45 R17:		
1 to 3 persons, up to 100 mph.....	35 psi (2.4 bar)	35 psi (2.4 bar)
4 to 5 persons, up to 100 mph.....	35 psi (2.4 bar)	35 psi (2.4 bar)
1 to 5 persons, up to 100 mph.....	41 psi (2.8 bar)	41 psi (2.8 bar)
T115/70 R16 (space saver spare).....	61 psi (4.2 bar)	

Degree

Easy, suitable for novice with experience