Vauxhall Cavalier Service and Repair Manual

Steve Rendle and Finn Deacon

Models covered

Vauxhall Cavalier front-wheel-drive models with four-cylinder petrol engines, including special/limited editions;
Saloon and Hatchback
1398 cc, 1598 cc, 1796 cc & 1998 cc (inc. DOHC)

Does not cover Diesel engine, V6 engine, air conditioning or four-wheel-drive models

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A book in the **Haynes Service and Repair Manual Series**

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The Cavalier covered by this manual was first introduced to the UK market in October 1988. Although there is a fundamental similarity to its predecessor, the later version is much improved in all respects. This manual covers models with petrol engines and front-wheel-drive, but other models in the range are fitted with diesel engines, and four-wheel drive is available on certain models.

Thirteen derivatives of 1.4, 1.6, 1.8 and 2.0 litre single overhead camshaft (SOHC) versions and 2.0 litre double overhead camshaft (DOHC) petrol engines have been fitted.

The latest 'ECOTEC' engines (X 16 SZ and X 20 XEV), have been designed to meet strict EEC exhaust gas limits for 1996.

All the engines are of well-proven design and, provided regular maintenance is carried out, are unlikely to give trouble.

Saloon and Hatchback body styles are available. In it's later years models started from a well-equipped 'Envoy' base model up to the sporty SRi.

Selected models use the floorpan layout of the four-wheel-drive models, to accommodate fully independent rear suspension. Other models in the range have semi-independent torsion beam rear suspension.

A five-speed manual transmission is fitted as standard to all models, and four-speed automatic transmission is available as an option.

A wide range of standard and optional equipment is available within the Cavalier range to suit most tastes, including an anti-lock braking system.

Safety features such as front and rear, side impact bars fitted to the inside of doors, were fitted as standard from 1993. During the same year, a full-size drivers airbag was introduced. 1994 saw the introduction of airbags for front seat passengers.

For the home mechanic, the Cavalier is a straightforward vehicle to maintain, and most of the items requiring frequent attention are easily accessible.

Your Vauxhall Cavalier 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). It will also 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. Tasks are described and photographed in a clear step-by-step sequence.

Cavalier 2.0 litre SRi Saloon

Cavalier SRi 16v Hatchback

Acknowledgements

Thanks are due to Champion Spark Plug who supplied the illustrations showing spark plug conditions. Thanks are also due to Sykes-Pickavant Limited, who provided some of the workshop tools, and to all those people at Sparkford who helped in the production of this manual. Certain illustrations are the copyright of Vauxhall Motors Ltd, and are used with their permission.

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 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

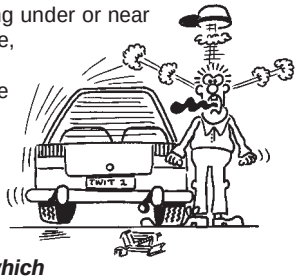
Scalding

• 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

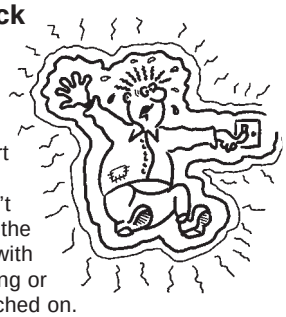


• When working under or near a raised vehicle, always supplement the jack with axle stands, or use drive-on ramps. ***Never venture under a car which is only supported by a jack.***
• Take care if loosening or tightening high-torque nuts when the vehicle is on stands. Initial loosening and final tightening should be done with the wheels on the ground.

Fire

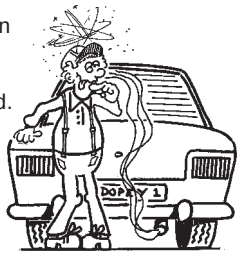
• Fuel is highly flammable; fuel vapour is explosive.
• Don't let fuel spill onto a hot engine.
• Do not smoke or allow naked lights (including pilot lights) anywhere near a vehicle being worked on. Also beware of creating sparks (electrically or by use of tools).
• Fuel vapour is heavier than air, so 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.

Specia 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 facia. 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.

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.

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

- ☐ Is there fuel in the tank, or is the gauge faulty?
- ☐ 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. (lights, heater, wipers, etc) is switched off.

A Check that the spark plug HT leads are securely connected by pushing them home.

B The fuel injection system wiring plug may cause problems if not connected securely.

C Check the ECU multi-plug for security (where fitted), with the ignition switched off.

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

D Check the security and condition of the battery connections.

E Check that the ignition coil wiring plug is secure, and spray with water-dispersant if necessary.

Jump starting

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).

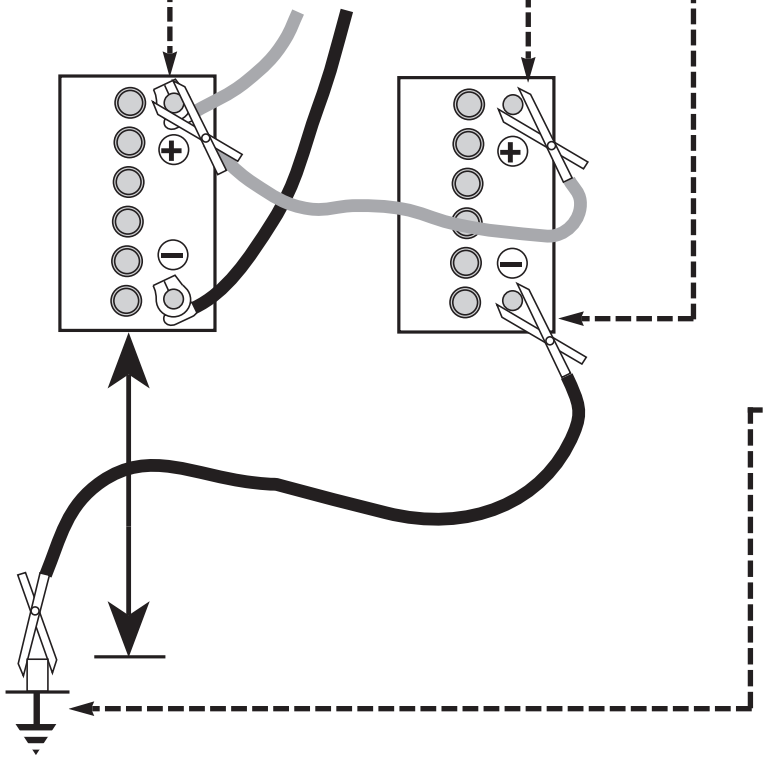
When jump-starting a car using a booster battery, observe the following precautions:

- ✔ 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.
- ✔ 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 vehcles 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, drive-belts or other moving parts of the engine.

6 Start the engine using the booster battery, then with the engine running at idle speed, disconnect the jump leads in the reverse order of connection.

Wheel changing

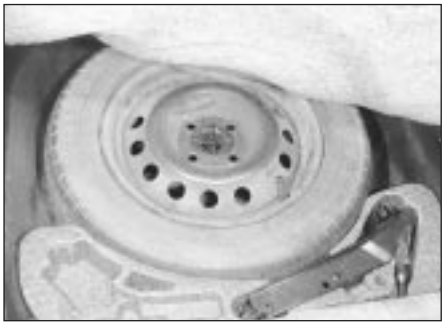
Some of the details shown here will vary according to model. For instance, the location of the spare wheel and jack is not the same on all cars. However, the basic principles apply to all vehicles.

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

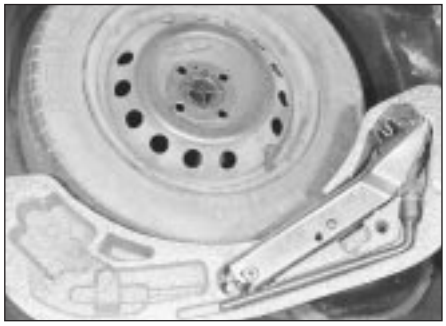
Preparation

- ☐ 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 foot of the jack.

Changing the wheel



1 Clear the boot area and remove the carpet.



2 Remove the tool holder and unscrew the spare wheel clamp

3 For safety, place the spare wheel under the car near the jacking point.

4 Remove the wheel trim (where fitted) and slacken each wheel bolt by half a turn.

5 Raise the jack whilst locating below the jacking point (ensure that the jack is on firm ground and located correctly)

6 Turn the handle clockwise until the wheel is raised clear of the ground. Remove the bolts and lift the wheel clear.

7 Position the spare wheel and fit the bolts. Hand tighten with the wheel brace and lower the car to the ground. Tighten the wheel bolts in a diagonal sequence.

Finally...

- ☐ Refit the wheel trim (if applicable) and put the punctured wheel in the boot
- ☐ Remove the wheel chocks.
- ☐ 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, 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.
- ☐ 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.

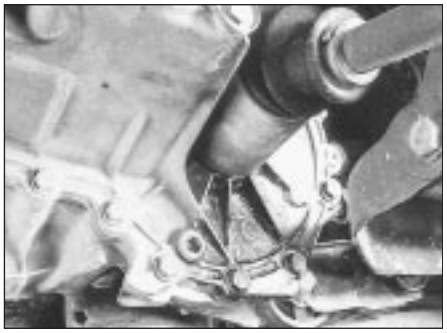
Sump oil

Engine oil may leak from the drain plug...

Oil from filter

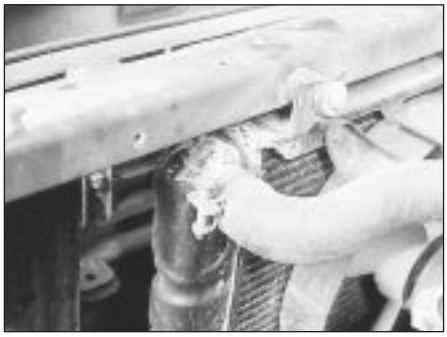
...or from the base of the oil filter.

Gearbox oil



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

Antifreeze

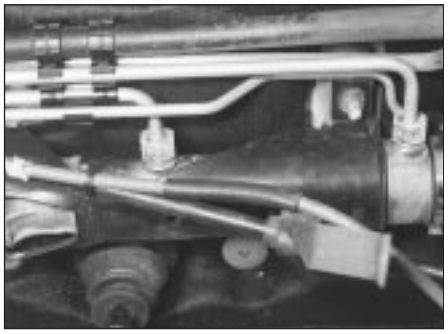


Leaking antifreeze often leaves a crystalline deposit like this.

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.

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 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. If in doubt, do not tow, or transmission damage may result.

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;

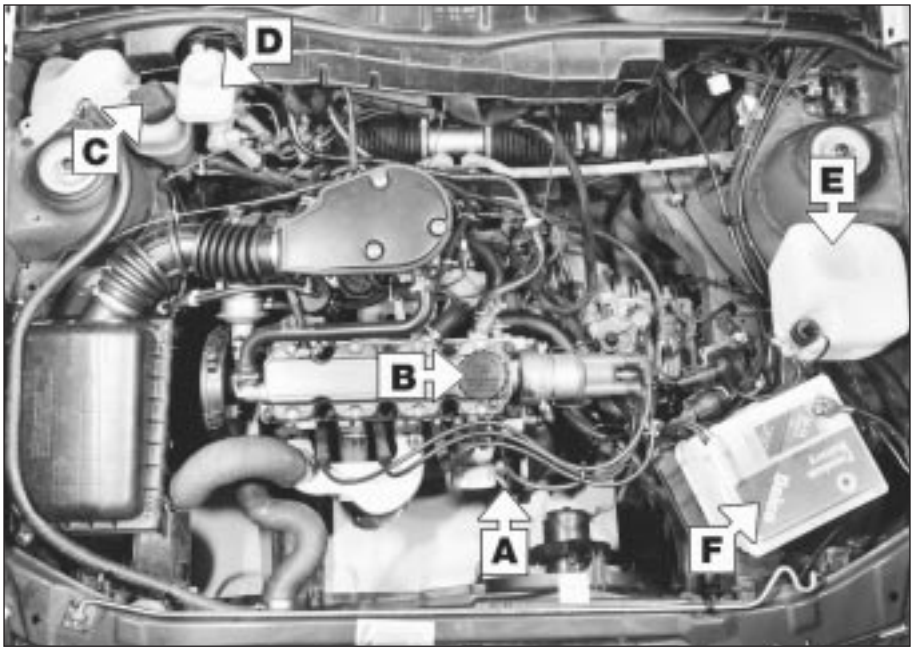
☐ Keeping an eye on tyre condition and pressures, will not only help to stop them wearing out prematurely, but could also save your life.

☐ 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.

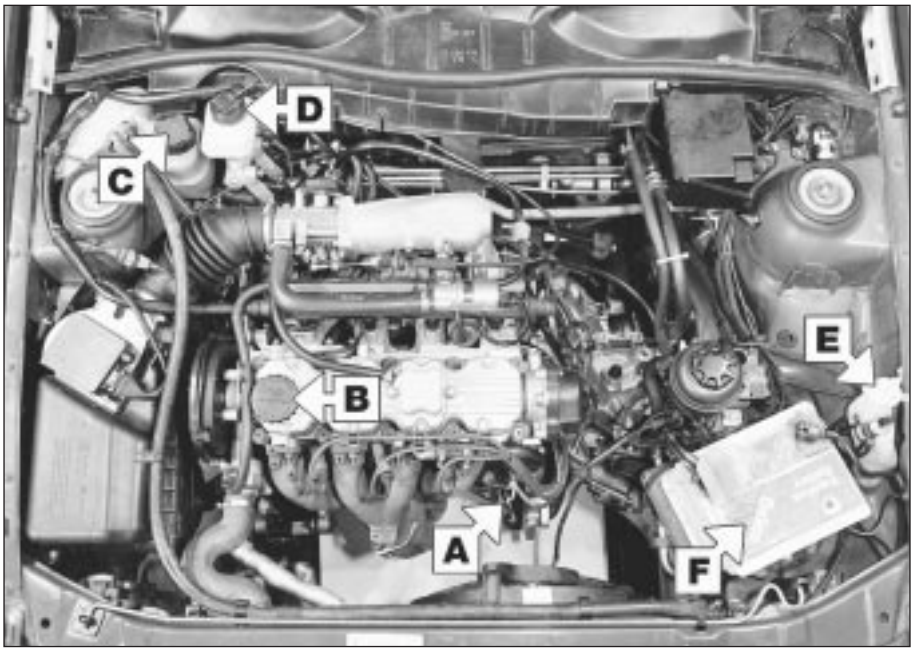
☐ If the oil or coolant levels run low, the cost of repairing any engine damage will be far greater than fixing the leak, for example.

Underbonnet check points



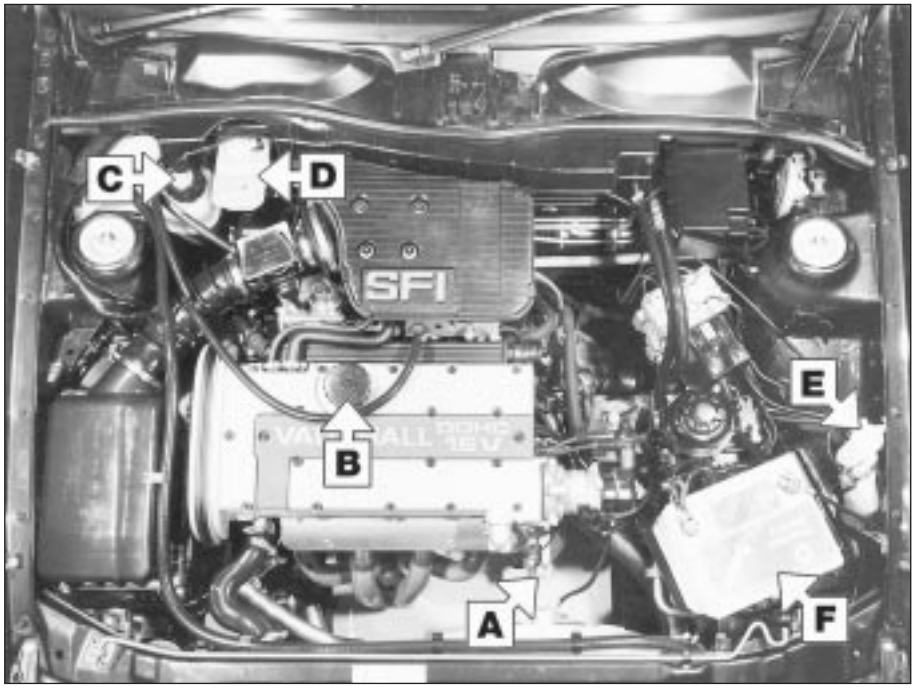
1.6 SV model

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



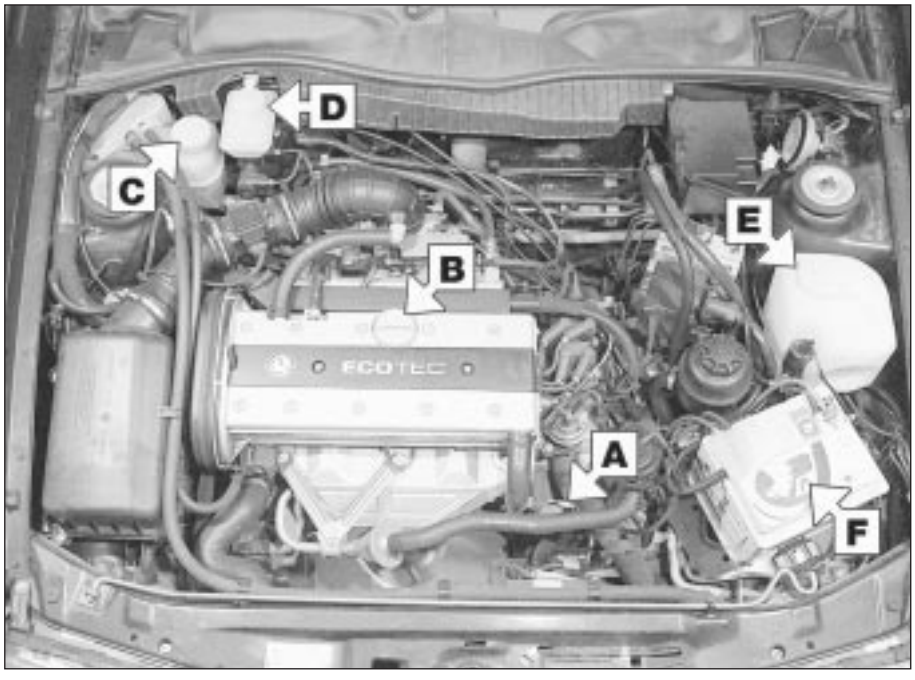
20 SEH model

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



C 20 XE model

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



X 20 XEV model

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

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 *(see "Fault Finding")*.

● 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 often brightly coloured for easy identification (see "Underbonnet check points" on pages 0•10 and 0•11 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 as far as it will go, then withdraw it again.

3 Note the level on the end of the dipstick, which should be between the upper ("MAX") mark and lower ("MIN") mark.

4 Oil is added through the filler cap. Unscrew the cap and top-up the level. A funnel may help to reduce spillage. Add the oil slowly, checking the level on the dipstick frequently. Avoid overfilling (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 The coolant level varies with the temperature of the engine. When the engine is cold, the coolant level should be near the "COLD" (or "KALT") mark.

2 If topping-up is necessary, **wait until the engine is cold**. Slowly turn the expansion tank cap anti-clockwise to relieve the system pressure. Once any pressure is released, turn the cap anti-clockwise unti it can be lifted off.

3 Add a mixture of water and antifreeze through the expansion tank filler neck until the coolant reaches the "COLD" level mark. Refit the cap, turning it clockwise as far as it will go until it is secure.

Screen washer fluid level

Screenwash additives not only keep the winscreen 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 engine antifreeze in the washer system - this could discolour or damage paintwork.

1 The windscreen washer fluid reservoir is located in the rear left-hand corner of the engine compartment. The washer level can be seen through the reservoir body. If topping-up is necessary, open the cap.

2 When topping-up the reservoir, add a screenwash additive in the quantities recommended on the bottle.

Brake fluid level

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

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

HAYNES HiNT

• Make sure that your car is on level ground.

• The fluid level in the master cylinder 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 "MAX" and "MIN" marks are indicated on the side of the reservoir. The fluid level must be kept between the marks.

2 If topping-up is necessary, first wipe the area around the filler cap with a clean rag before removing the cap.

3 When adding fluid, it's a good idea to inspect the reservoir. The system should be drained and refilled if dirt is seen in the fluid (see Chapter 9 for details).

4 Carefully add fluid avoiding spilling it on surrounding paintwork. Use only the specified hydraulic fluid; mixing different types of fluid can cause damage to the system. After filling to the correct level, refit the cap securely, to prevent leaks and the entry of foreign matter. Wipe off any spilt fluid.

Power steering fluid level

Before you start:

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

HAYNES HiNT ***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 fluid level is checked with a dipstick attached to the reservoir filler cap. The reservoir is located on the left-hand side of the engine compartment (veiwed from the drivers seat) behind the battery.

2 Clean the area around the reservoir cap, then unscrew the cap and wipe the dipstick with a clean rag. When the engine is cold, the fluid should come up to the lower “ADD” mark; when hot, it should come up to the “FULL” mark.

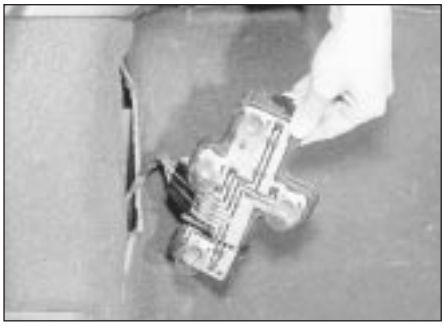
3 If topping up is required, use the specified type of fluid, and do not overfill the reservoir. When the level is correct, refit the cap.

Electrical system

✔ 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 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, brake 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 brake lights have failed, it is possible that the brake light switch above the brake pedal needs adjusting. This simple operation is described in 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 (refer to *“Electrical fault-finding”* in Chapter 12).
The fuses are mounted in a panel located at the lower right-hand corner of the facia under a removable cover.

3 To replace a blown fuse, simply pull it out. Fit a new fuse of the same rating, available from car accessory shops.
It is important that you find the reason that the fuse blew - a checking procedure is given in Chapter 12.

Battery

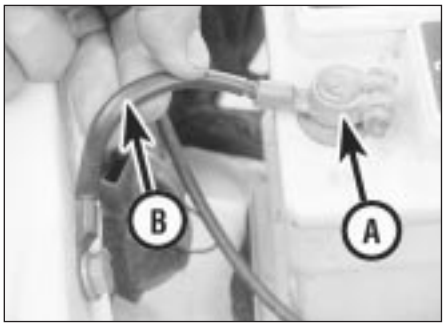
Caution: *Before carrying out any work on the vehicle battery, read the precautions given in "Safety first" at the start of this manual.*

✔ 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. 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.

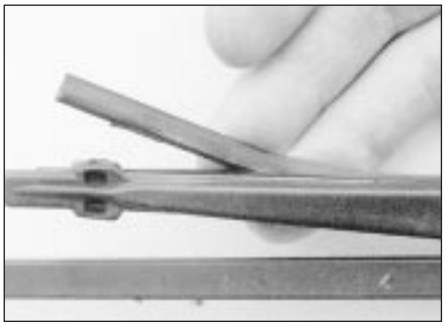
HAYNES HiNT

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. Accessory stores sell a useful tool for cleaning the battery post ...

4 ... as well as the battery cable clamps

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, as a matter of course.

2 To remove a wiper blade, pull the arm fully away from the glass until it locks. Swivel the blade through 90°, press the locking tab(s) with your fingers, and slide the blade out of the arm's hooked end. On refitting, ensure that the blade locks securely into the arm.

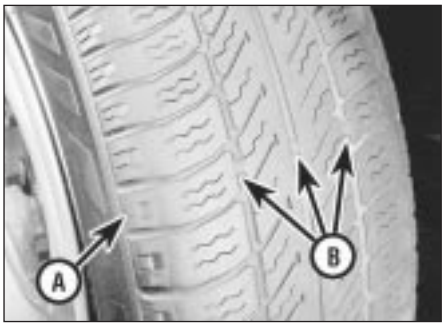
Tyre condition and pressure

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.



Tread Depth - visual check

1 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).

Tread Depth - manual check

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

Tyre Pressure Check

3 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 the next page.

4 *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.*

Lubricants and fluids

Component or system	Lubricant type/specification
Adhesive sealing compound	Vauxhall P/N 90485251
Automatic transmission	Dexron II type ATF(i.e. P/N 90350342)
Braking system	Hydraulic fluid to SAE J1703F or DOT 4 (i.e. P/N 90007080)
Cooling system	Ethylene glycol based antifreeze
Engine	Multigrade engine oil, viscosity SAE 10W/40 to 20W/50, to API SG/CD
Locking compound	Vauxhall P/N 90167347
Long life grease	Molybdenum disulphide grease (MoS2)
Manual transmission	Gear oil, viscosity SAE 80 EP (i.e. Vauxhall P/N 90188629)
Power steering	Dexron II type ATF (i.e. P/N 90350342)
Sealing compound	Vauxhall P/N 90094714
Silicone grease	Vauxhall P/N 90167353

Tyre pressures

	Front	Rear
Early models (up to 1993 model year)		
1.4 and 1.6 litre models	27 psi (1.9 bar)	24 psi (1.7 bar)
2.0 litre 8-valve models	31.5 psi (2.2 bar)	28.5 psi (2.0 bar)
2.0 litre 16-valve models	36 psi (2.5 bar)	33 psi (2.3 bar)
Later models (1993 model year onwards)		
1.6 litre models	28.5 psi (2.0 bar)	26 psi (1.8 bar)
1.8 litre models	31.5 psi (2.2 bar)	28.5 psi (2.0 bar)
2.0 litre models	34 psi (2.4 bar)	31.5 psi (2.2 bar)