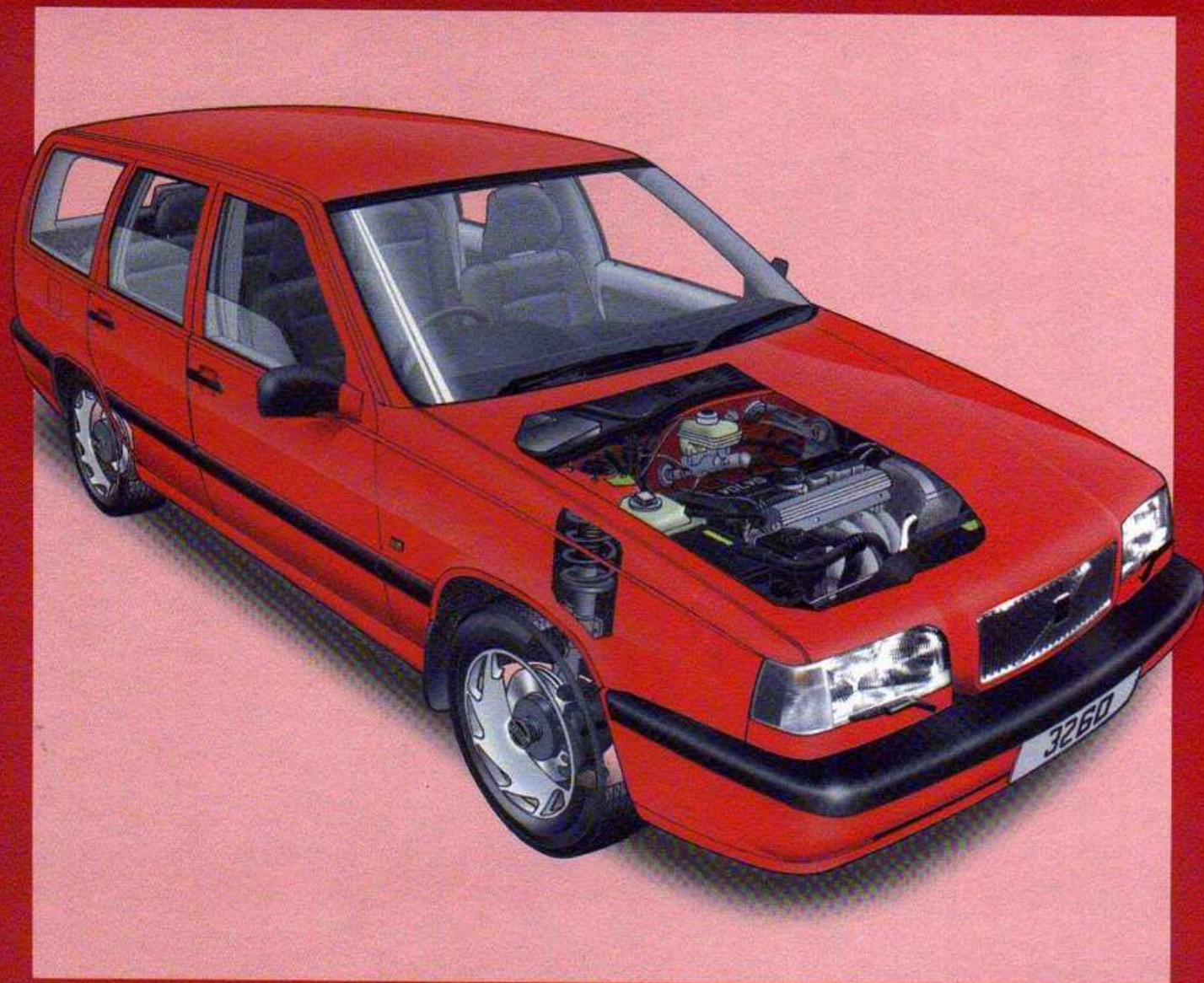


VOLVO 850

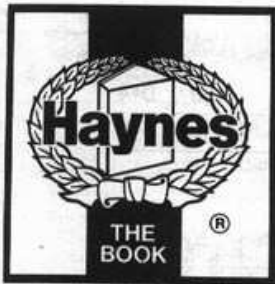


1992 to 1996 (J to P registration) Petrol

Haynes **Service and Repair Manual**



Includes **Roadside Repairs** and **MOT Test Checks**



Volvo 850

Service and Repair Manual

John S. Mead

Models covered

(3260-240-2AB1)

All Volvo 850 models with 1984 cc, 2319 cc and 2435 cc petrol engines

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A book in the Haynes Service and Repair Manual Series

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0•4 Introduction

The Volvo 850 Saloon and Estate models were introduced in 1992 and were a radical departure from the traditional Volvo large vehicle format. The 850 features transverse engine/transmission layout, front-wheel drive and state-of-the-art suspension technology providing excellent handling and driveability for a large car.

The engines used in the 850 range are all fuel-injected, in-line, five-cylinder units of 1984 cc, 2319 cc or 2435 cc displacement. Both normally-aspirated and turbocharged versions are available. The engines feature a comprehensive engine management system with extensive emission control equipment.

Both 5-speed manual and 4-speed computer controlled, automatic transmissions are available throughout the range. The automatic transmission features mode control selection allowing the driver to alter the transmission characteristics to suit economy, sport or winter driving requirements.

Braking is by discs all round, the handbrake acting on drums incorporated in the rear brake discs. Anti-lock braking (ABS) and power-assisted steering is standard on all models.

A wide range of standard and optional equipment is available within the 850 range to suit virtually all tastes. As with all Volvo models, safety features are of paramount importance and the Supplemental Restraint System and Side Impact Protection System offer an exceptional level of driver and passenger protection throughout the vehicle.

Provided that regular servicing is carried out in accordance with the manufacturer's recommendations, the Volvo 850 will provide the enviable reliability for which this marque is famous. The engine compartment is relatively spacious and most of the items requiring frequent attention are easily accessible.



Volvo 850 T-5 Turbo



Volvo 850 SE Estate

The Volvo 850 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:

Author	John Mead
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Editor & Page Make-up	Steve Churchill
Workshop manager	Paul Buckland
Photo Scans	John Martin Paul Tanswell
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 Volvo 850 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.

Acknowledgements

Thanks are due to Champion Spark Plug, who supplied the illustrations showing spark plug condition. Certain illustrations are the copyright of Volvo Car Corporation and are used with their permission. 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.

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.

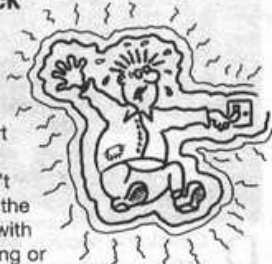
- Take care if loosening or tightening high-torque nuts when the vehicle is on stands. Initial loosening and final tightening should be done with the wheels on the ground.

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.

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 HT leads are securely connected to the distributor and that the cap is clean and properly fitted



B Check that the HT lead and wiring connections are securely connected to the ignition coil.

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



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



C Check the mass air flow sensor or inlet air temperature sensor wiring connector for security.



D Check the security and condition of the battery terminals.

**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.

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).



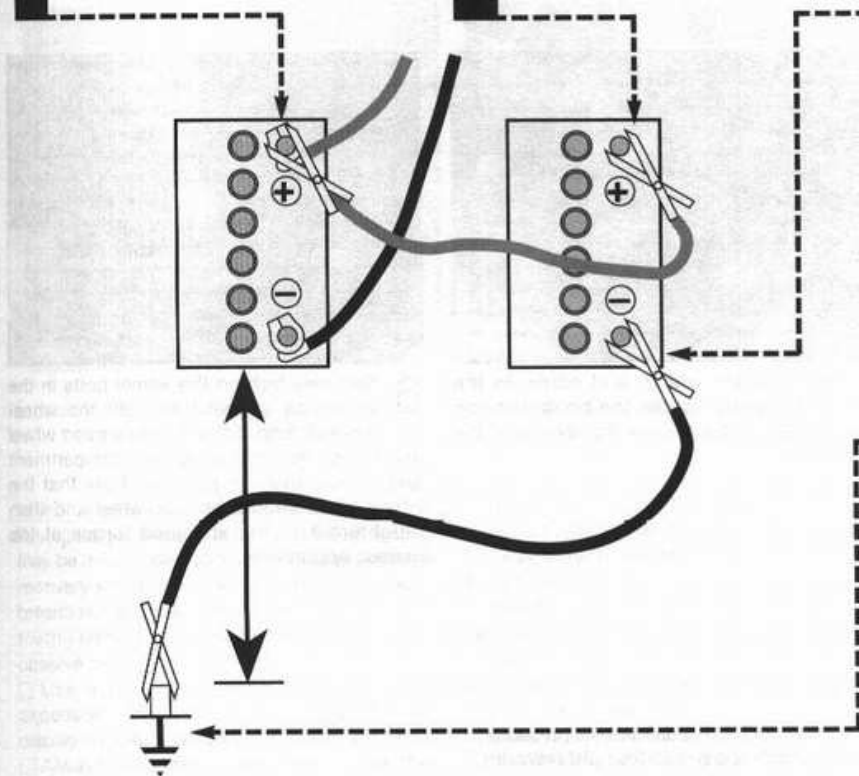
1 Connect one end of the red jump lead to the positive (+) terminal of the flat battery



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, 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.

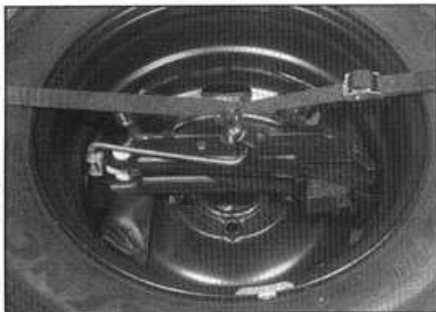


Warning: Do not change a wheel in a situation where you risk being hit by other traffic. On busy roads, try to stop in a lay-by or a gateway. Be wary of passing traffic while changing the wheel – it is easy to become distracted by the job in hand.

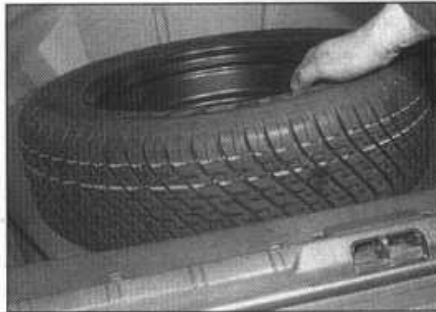
Preparation

- 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 (or Park 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 are stored in the luggage compartment under the carpet (Estate model shown). Release the restraining strap, unscrew the tool and wheel clamp, and lift out the jack and wheel changing tools from the centre of the wheel.



2 With the jack and tools removed, lift the wheel from its well.



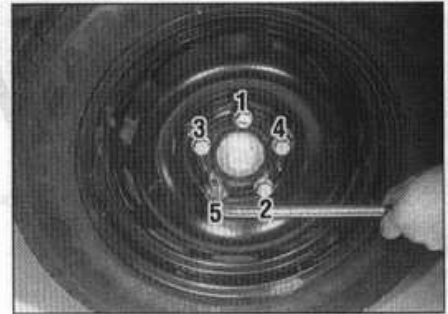
3 Remove the wheel trim, either by pulling it straight off (steel wheels) or by prising off the hub cap (alloy wheels). Slacken each wheel bolt by half a turn using the wheel brace in the tool kit.



4 Engage the jack head with the reinforced stud located in the middle of the sill on each side of the car (don't jack the vehicle at any other point of the sill). With the base of the jack on firm ground, turn the jack handle clockwise until the wheel is raised clear of the ground. Unscrew the wheel bolts and remove the wheel.



5 Fit the spare wheel, and screw in the bolts. Lightly tighten the bolts with the wheel brace then lower the vehicle to the ground.



6 Securely tighten the wheel bolts in the sequence shown then refit the wheel trim/hub cap. Stow the punctured wheel and tools back in the luggage compartment and secure them in position. Note that the wheel bolts should be slackened and then retightened to the specified torque at the earliest opportunity.

Finally...

- 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.

Engine

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.

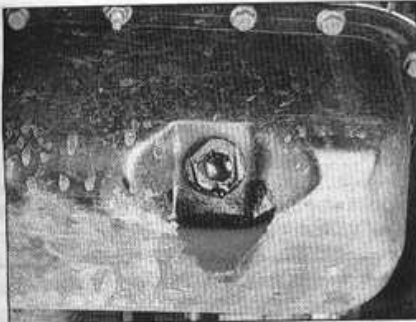
Identifying leaks

**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



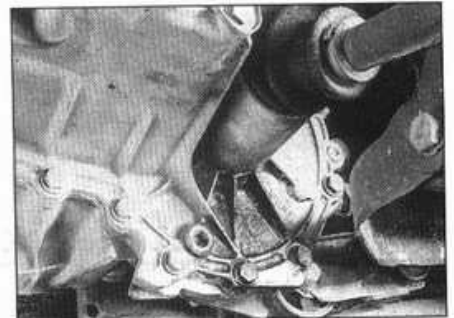
Engine oil may leak from the drain plug...

Oil from filter



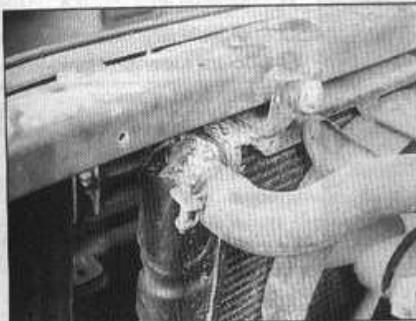
...or from the base of the oil filter.

Gearbox oil



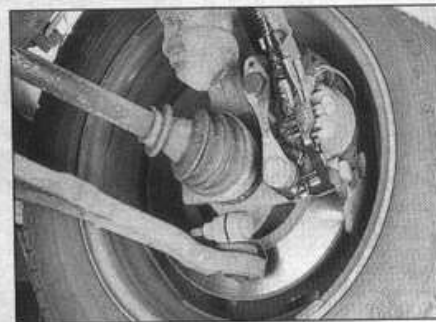
Gearbox oil can leak from the seals at the inboard ends of the driveshafts.

Antifreeze



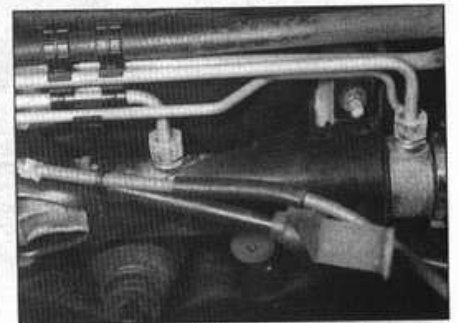
Leaking antifreeze often leaves a crystalline deposit like this.

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

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;

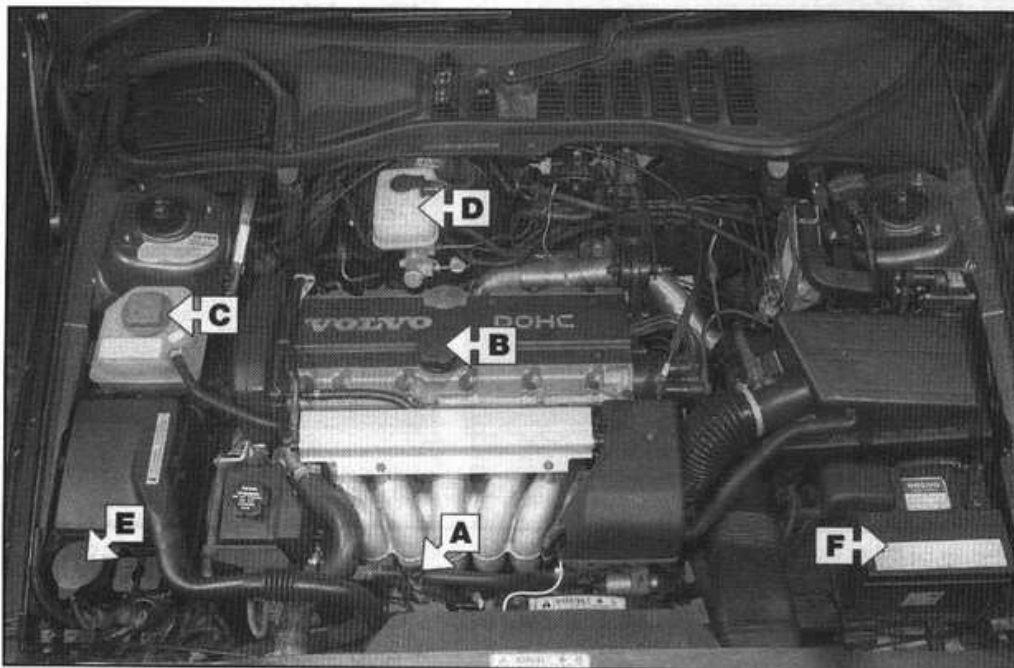
Keeping an eye on tyre condition and pressures, will not only help to stop them wearing out prematurely, but could also save your life.

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



◀ 2.5 litre 10-Valve

- 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

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, fluids and tyre pressures").

Car Care

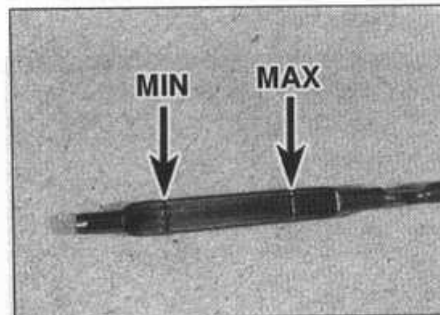
- If you have to add oil frequently, you should check whether you have any oil leaks. Place some clean paper under the car overnight, and check for stains in the morning. If there are no leaks, the engine may be burning oil (see "Fault Finding").
- Always maintain the level between the upper and lower 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 top is often brightly coloured for easy identification (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 as far as it will go, then withdraw it again.



3 Note the oil level on the end of the dipstick, which should be between the upper ("MAX") mark and lower ("MIN") mark. 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. 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 often. Don't overfill (see "Car Care" left).

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 engine temperature. When cold, the coolant level should be between the "MAX" and "MIN" marks. When the engine is hot, the level may rise slightly above the "MAX" mark.



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 Add a mixture of water and antifreeze to the expansion tank until the coolant is at the correct level. Refit the cap and tighten it securely.

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.

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 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 sender float. Inspect the reservoir, if the fluid is dirty the hydraulic system should be drained and refilled (see Chapter 1).



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 spilled 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.



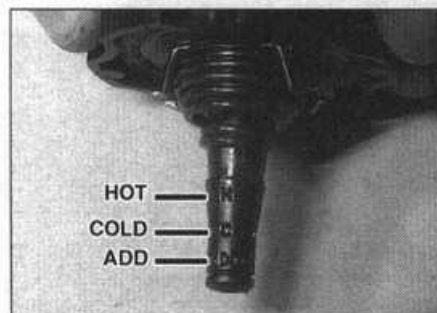
For the check to be accurate, the steering must not be turned once the engine has been stopped.

Safety First!

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



1 The fluid reservoir is mounted on top of the power steering pump located at the front right-hand side of the engine. Wipe clean the area around the reservoir filler neck and unscrew the filler cap/dipstick from the reservoir.



2 Dip the fluid with the reservoir cap/dipstick. When the engine is cold, the fluid level should be between the "ADD" mark and the "COLD" mark; when hot it should be between the "ADD" and "HOT" marks. Top-up when the level is at the "ADD" mark.



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.

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.

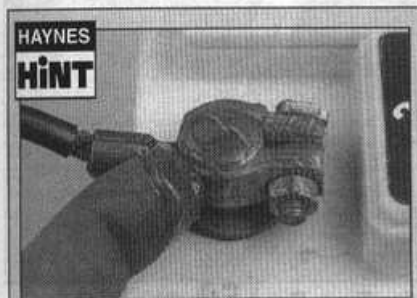
✓ If the battery is flat, and you need to jump start your vehicle, see *Roadside Repairs*.



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



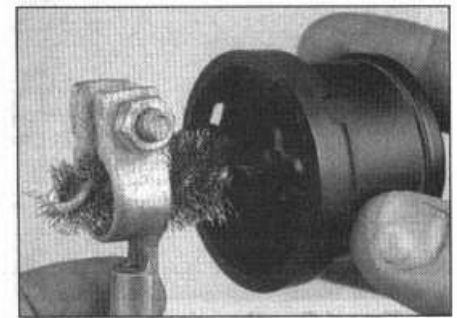
2 Check the tightness of battery clamps to ensure good electrical connections. You should not be able to move them. Also check each cable for cracks and frayed conductors.



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.

Screen washer fluid level*

*On models so equipped, the screenwasher fluid is also used to clean the headlights and the tailgate rear window.

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 washer fluid reservoir filler is located at the front right-hand side of the engine compartment, (the reservoir itself is actually located under the car); release the cap and observe the level in the reservoir by looking down the filler neck.



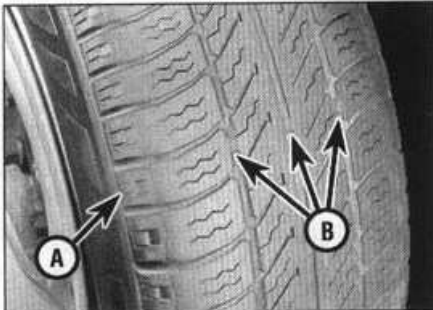
2 When topping-up the reservoir, a screenwash additive should be added in the quantities recommended on the bottle.

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

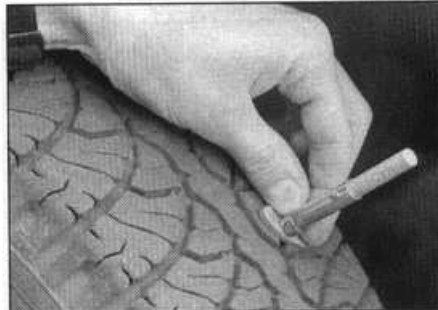
the tyre has been punctured, refit the nail so that its point of penetration is marked. Then immediately change the wheel, and have the tyre repaired by a tyre dealer. Regularly check the tyres for damage in the form of cuts or bulges, especially in the sidewalls. Periodically remove the wheels, and 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!



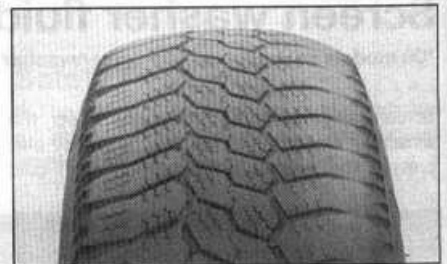
Centre Wear

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

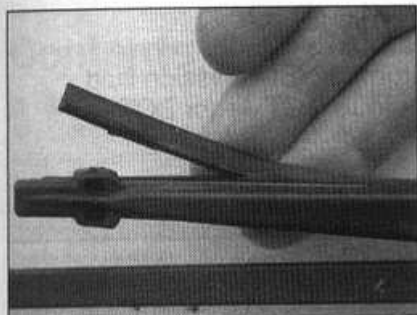
Balance tyres

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. Wiper blades should be renewed annually.



2 To remove a windscreen or tailgate wiper blade, pull the arm fully away from the glass 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.



3 Don't forget to check the headlight wiper blades as well. To remove the blade, lift the arm and simply pull the blade out of the arm fitting. Push the blade firmly home to refit.

Bulbs and fuses

✓ 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.



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 stop light switch above the brake pedal needs adjusting. This operation is described in Chapter 12.

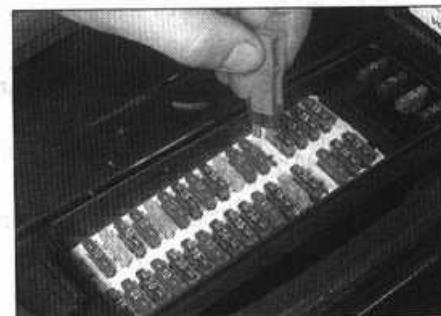
✓ Visually check all accessible wiring connectors, harnesses and retaining clips for security, and for signs of chafing or damage.



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 fuses are located in the electrical control box situated in the engine compartment on the driver's side, just in front of the windscreen.

**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.



3 To replace a blown fuse, simply pull it out using the tool provided. Fit a new fuse of the same 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	Multigrade engine oil, viscosity SAE 10W/40, or 15W/50, to CCMC G4/G5
Cooling system	Ethylene glycol-based antifreeze
Manual transmission	Volvo synthetic gearbox oil 97308
Automatic transmission	Dexron IIE type automatic transmission fluid
Braking system	Brake and clutch fluid to DOT 4+ (or DOT 4)
Power steering	Dexron type II ATF

Tyre pressures (cold)

Non-turbo Saloon models	Front	Rear
Normal use:		
185/65 R15	2.2 bar	2.0 bar
195/60 R15	2.5 bar	2.5 bar
205/55 R15	2.5 bar	2.5 bar
Fully laden or high speed:		
185/65 R15	2.3 bar	2.5 bar
195/60 R15	2.6 bar	2.8 bar
205/55 R15	2.6 bar	2.8 bar
Turbocharged Saloon models		
Normal use:		
205/45 R17	2.3 bar	2.1 bar
205/50 R16	2.8 bar	2.6 bar
205/55 R15	2.8 bar	2.6 bar
185/65 R15 (winter tyres)	2.8 bar	2.6 bar
Fully laden or high speed:		
205/45 R17	2.5 bar	2.5 bar
205/50 R16	2.9 bar	2.9 bar
205/55 R15	2.9 bar	2.9 bar
185/65 R15 (winter tyres)	2.9 bar	2.9 bar
T115/70 R15 "Space saver" spare	4.2 bar	4.2 bar
Non-turbo Estate models		
Normal use:		
185/65 R15	2.2 bar	2.1 bar
195/60 R15	2.5 bar	2.5 bar
205/55 R15	2.5 bar	2.5 bar
T115/70 R15 "Space saver" spare	4.2 bar	4.2 bar
Fully laden or high speed:		
185/65 R15	2.4 bar	2.8 bar
195/60 R15	2.6 bar	3.1 bar
205/55 R15	2.6 bar	3.1 bar
T115/70 R15 "Space saver" spare	4.2 bar	4.2 bar
Turbocharged Estate models		
Normal use:		
205/45 R17	2.3 bar	2.2 bar
205/50 R16	2.8 bar	2.7 bar
205/55 R15	2.8 bar	2.7 bar
185/65 R15 (winter tyres)	2.8 bar	2.7 bar
T115/70 R15 "Space saver" spare	4.2 bar	4.2 bar
Fully laden or high speed:		
205/45 R17	2.5 bar	2.8 bar
205/50 R16	2.9 bar	3.2 bar
205/55 R15	2.9 bar	3.2 bar
185/65 R15 (winter tyres)	2.9 bar	3.2 bar
T115/70 R15 "Space saver" spare	4.2 bar	4.2 bar

Note: Refer to the tyre pressure data sticker on the fuel filler flap for the correct tyre pressures for your particular vehicle. Pressures apply only to original-equipment tyres, and may vary if other makes or type is fitted; check with the tyre manufacturer or supplier for correct pressures if necessary.

Chapter 1

Routine maintenance and servicing

Contents

Air cleaner element renewal	26	Exhaust system check	11
Air conditioning system check	20	Fuel filter renewal	27
Automatic transmission fluid level check	19	Handbrake check and adjustment	12
Automatic transmission selector cable adjustment check	17	Headlight beam alignment check	15
Auxiliary drivebelt check and renewal	21	Intensive maintenance	2
Bodywork, paint and exterior trim check	16	Introduction	1
Brake fluid renewal	23	Manual transmission oil level check	9
Brake pad wear check	4	Road test	18
Clutch hydraulic check	8	Seat belt check	13
Coolant renewal	22	Spark plug renewal	25
Distributor cap, rotor arm and HT lead check	24	Steering and suspension check	6
Door, boot, tailgate and bonnet check and lubrication	14	Timing belt renewal (1992/93 models with 21mm wide belt)	29
Driveshaft gaiter check	7	Timing belt renewal (1994-on models with 23mm wide belt)	30
Emission control equipment check	28	Underbody and fuel/brake line check	10
Engine oil and filter renewal	3	Underbonnet check for fluid leaks and hose condition	5

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



Servicing Specifications

Lubricants and fluids

Refer to end of "Weekly checks"

Capacities

Engine oil

Drain and refill including filter change 5.3 litres (plus 0.9 litres for turbo oil cooler - if drained)

Cooling system:

Non-turbo engines 7.2 litres
Turbo engines 7.0 litres

Fuel tank 73 litres

Cooling system

Specified antifreeze mixture 50% antifreeze/50% water

Note: Refer to Chapter 3 for further details.

Ignition system

Spark plugs:

B5202 S engines	Champion RC 9 YC
B5204 S engines	Champion RC 7 YC
B5204 T engines	Champion RC 7 GYC
B5234 S engines	Champion RC 9 YC
B5234 T/T5 engines	Champion RC 7 GYC
B5252 S engines	Champion RC 9 YC
B5254 S engines (up to 1993)	Champion RC 7 YC
B5254 S engines (1993 onwards)	Champion RC 9 YC
Spark plug electrode gap	0.7 to 0.8 mm

Brakes

Front brake pad minimum lining thickness	3.0 mm
Rear brake pad minimum lining thickness	2.0 mm
Handbrake lever travel:	
After adjustment	3 to 5 clicks
In service	11 clicks maximum

1.2 Servicing specifications

Tyres

Tyre pressures See "Weekly checks"

Torque wrench settings

	Nm
Oil sump drain plug	35
Spark plugs	25
Roadwheel bolts	110

Volvo 850 maintenance schedule

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 average maintenance intervals recommended by the manufacturer for vehicles driven daily under normal conditions. Obviously some variation of these intervals may be

expected depending on territory of use, and conditions encountered. If you wish to keep your vehicle in peak condition at all times, you may wish to perform some of these procedures more often. We encourage frequent maintenance because it enhances the efficiency, performance and resale value of your vehicle.

If the vehicle is driven in dusty areas, used to tow a trailer, driven frequently at slow speeds (idling in traffic) or on short journeys, more frequent maintenance intervals are recommended.

Every 250 miles (400 km) or weekly

- Refer to "Weekly checks".

Every 10 000 miles (16 000 km) or 12 months, whichever comes first

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

- Renew the engine oil and filter (Section 3).
- Check the condition of the brake pads (Section 4).
- Thoroughly inspect the engine for fluid leaks (Section 5).
- Check the condition and security of the steering and suspension components (Section 6).
- Check the condition of the driveshaft gaiters (Section 7).
- Inspect the clutch hydraulic components (Section 8).
- Check the manual transmission oil level (Section 9).
- Inspect the underbody and the brake hydraulic pipes and hoses (Section 10).
- Check the condition of the fuel lines (Section 10).
- Check the condition and security of the exhaust system (Section 11).
- Check the handbrake adjustment (Section 12).
- Check the condition of the seat belts (Section 13).
- Lubricate the locks and hinges (Section 14).
- Check the headlight beam alignment (Section 15).
- Check the condition of the exterior trim and paintwork (Section 16).
- Check the automatic transmission selector cable adjustment (Section 17).
- Road test (Section 18).
- Check the automatic transmission fluid level (Section 19).
- Check the operation of the air conditioning system (Section 20).

Every 20 000 miles (32 000 km) or two years, whichever comes first

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

- Check the condition of the auxiliary drivebelt and renew if necessary (Section 21).
- Renew the coolant (Section 22).
- Renew the brake fluid (Section 23).

Every 30 000 miles (48 000 km) or three years, whichever comes first

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

- Inspect the distributor cap, rotor arm and HT leads (Section 24).
- Renew the spark plugs (Section 25).

Every 40 000 miles (64 000 km) or four years, whichever comes first

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

- Renew the air cleaner element (Section 26).

Every 50 000 miles (80 000 km) or five years, whichever comes first

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

- Renew the fuel filter (Section 27).
- Check the emission control equipment (Section 28). *1992 & 1993 models only (with 21mm wide timing belt);*
- Renew the timing belt (Section 29).

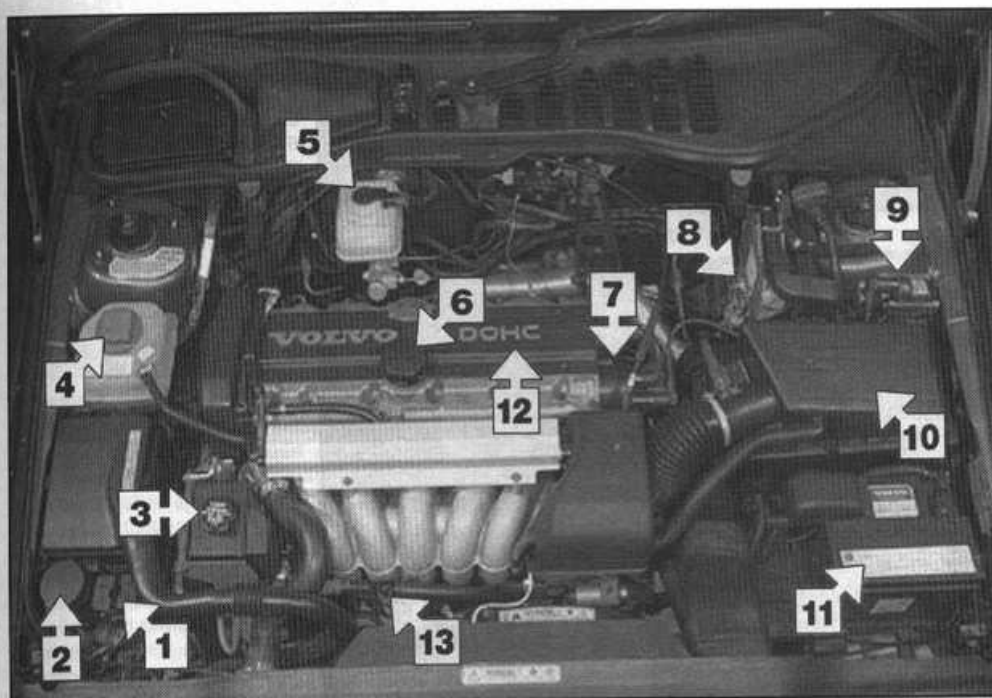
Every 80 000 miles (129 000 km) or eight years, whichever comes first

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

- Renew the timing belt (Section 30). *1994 models onwards (with 23mm wide timing belt);*

Maintenance - component location 1•3

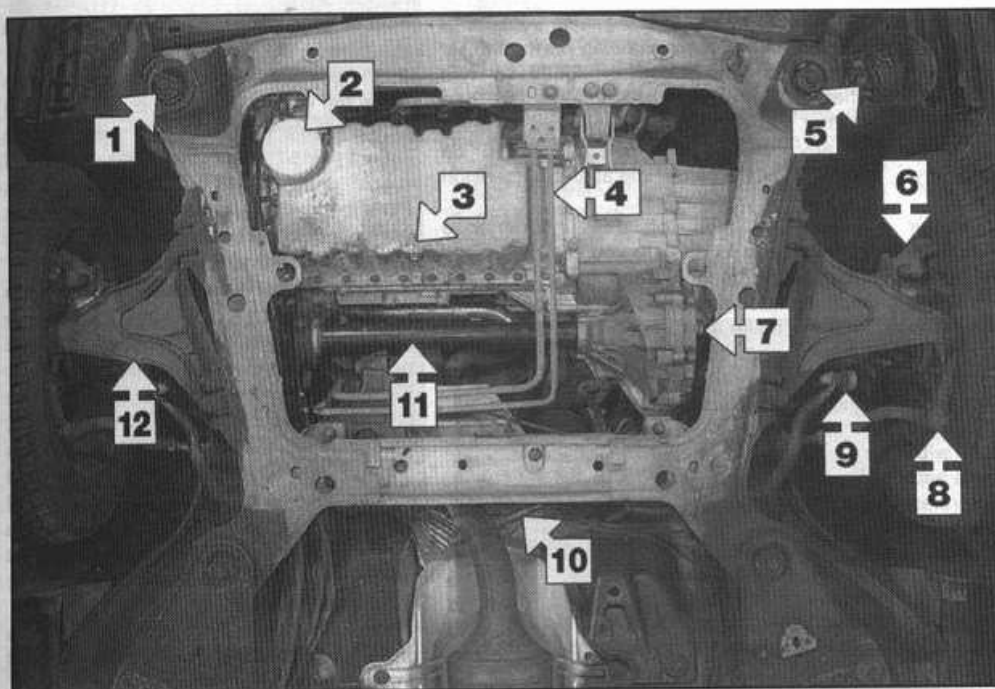
Underbonnet view of a 2.5 litre, 10-valve non-turbo model



- 1 Diagnostic unit
- 2 Washer reservoir
- 3 Power steering reservoir
- 4 Cooling system expansion tank
- 5 Brake master cylinder reservoir
- 6 Oil filler cap
- 7 Distributor
- 8 ABS modulator and ECU
- 9 Ignition coil and power stage
- 10 Air cleaner
- 11 Battery
- 12 Spark plug cover
- 13 Engine oil dipstick

1

Front underside view of a 2.5 litre Estate model



- 1 Subframe mounting
- 2 Oil filter
- 3 Engine oil drain plug
- 4 Power steering fluid pipes
- 5 EVAP carbon canister
- 6 Front brake caliper
- 7 Manual transmission drain plug
- 8 Track rod end
- 9 Anti-roll bar connecting link
- 10 Heated oxygen sensor
- 11 Right-hand driveshaft
- 12 Suspension control arm