

# Contents

## LIVING WITH YOUR VOLVO 850

Introduction	Page 0•4
Safety First!	Page 0•5

## Roadside Repairs

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

## Weekly Checks

Introduction	Page 0•10
Underbonnet check points	Page 0•10
Engine oil level	Page 0•11
Coolant level	Page 0•11
Brake and clutch fluid level	Page 0•12
Power steering fluid level	Page 0•12
Battery	Page 0•13
Screen washer fluid level	Page 0•13
Tyre condition and pressure	Page 0•14
Wiper blades	Page 0•15
Bulbs and fuses	Page 0•15

Lubricants, fluids and tyre pressures	Page 0•16
---------------------------------------	-----------

## MAINTENANCE

### Routine Maintenance and Servicing

Servicing Specifications	Page 1•1
Maintenance schedule	Page 1•2
Maintenance procedures	Page 1•4

# Contents

## REPAIRS & OVERHAUL

### Engine and Associated Systems

Engine in-car repair procedures	Page 2A•1
Engine removal and overhaul procedures	Page 2B•1
Cooling, heating and air conditioning systems	Page 3•1
Fuel system	Page 4A•1
Exhaust and emission control systems	Page 4B•1
Starting and charging systems	Page 5A•1
Ignition system	Page 5B•1

### Transmission

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

### Brakes and Suspension

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

### Body Equipment

Bodywork and fittings	Page 11•1
Body electrical system	Page 12•1

### Wiring Diagrams

Page 12•14

## REFERENCE

Dimensions and weights	Page REF•1
Conversion factors	Page REF•2
Buying spare parts	Page REF•3
Vehicle identification	Page REF•3
General repair procedures	Page REF•4
Jacking and vehicle support	Page REF•5
Radio/cassette unit anti-theft system - precaution	Page REF•5
Tools and working facilities	Page REF•6
MOT test checks	Page REF•8
Fault finding	Page REF•12
Glossary of technical terms	Page REF•19

### Index

Page REF•23

## 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:

<b>Author</b>	<b>John Mead</b>
<b>Sub-editors</b>	<b>Sophie Yar Carole Turk</b>
<b>Editor &amp; Page Make-up</b>	<b>Steve Churchill</b>
<b>Workshop manager</b>	<b>Paul Buckland</b>
<b>Photo Scans</b>	<b>John Martin Paul Tanswell</b>
<b>Cover illustration &amp; Line Art</b>	<b>Roger Healing</b>
<b>Wiring diagrams</b>	<b>Matthew Marke</b>

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



**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.

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

**HAYNES  
HINT**

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

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

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

- ✓ Before connecting the booster battery, make sure that the ignition is switched off.
- ✓ Ensure that all electrical equipment (lights, heater, wipers, etc) is switched off.

## 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).



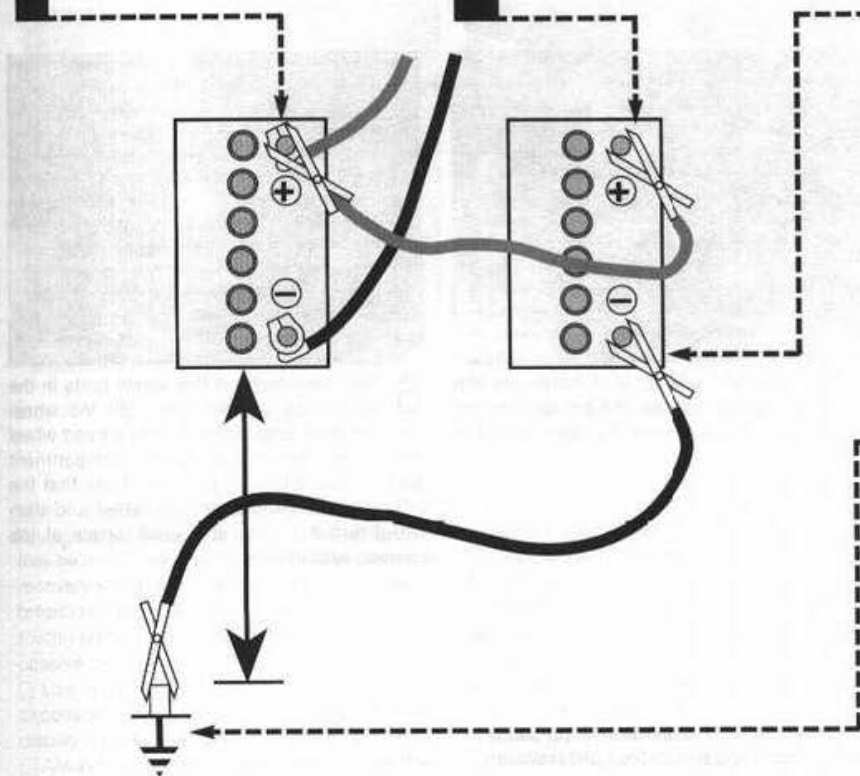
**1** Connect one end of the red jump lead to the positive (+) terminal of the flat battery



**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.