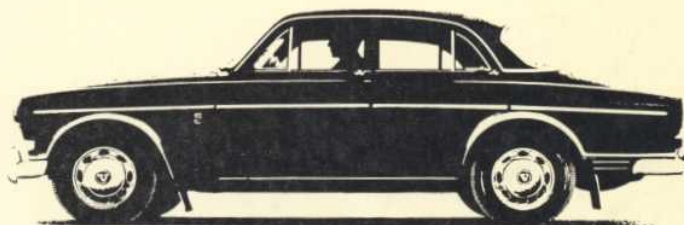


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VOLVO



120

VOLVO 120

2-DOOR

CARS

(120 P)

DESCRIPTION

OPERATING INSTRUCTIONS

SERVICING



AB VOLVO GOTHENBURG SWEDEN

Service

Cables: Volvo, Gothenburg, Sweden

VOLVO 121, 122S, 131, 132S, P 1800 AND P 1800 S MODELS

RECOMMENDED LUBRICANTS

	ESSO	CASTROL	SHELL	BP	MOBIL	REGENT
ENGINE: Summer and Winter	Eso Extra Motor Oil 10W/30	Castrolite	Super Motor Oil	Super Visco-Static 10W-40	Mobiloil Special 10W/30	Havoline 20-20W or Havoline 10W/30
*GEARBOX Manual	Eso Extra Motor Oil 20W/30	Castrol XL	Shell X-100 30	Energol SAE 30	Mobiloil A	Havoline 30
Automatic	Automatic Trans. Fluid	Castrol TQ	Donax T6	Automatic Trans. Fluid Type A Suffix A	Mobil ATF 200	Texanatic Fluid
*REAR AXLE & STEERING BOX	Eso Gear Oil GP 90/140	Castrol Hypoy	Spirax 90EP	Gear Oil SAE 90EP	Mobilube GX 90	Multi-gear Lubricant EP 90
CHASSIS GREASING	Eso Multi-Purpose Grease H	Castrolase LM	Retinax A	Energrease L2	Mobilgrease Special or Mobilgrease MP	Marfat All Purpose

*NOTE :—The grades shown above for the manual gearbox, rear axle and steering box are correct and should be used in place of the SAE 80 grades mentioned in the Lubrication Chart.

BEFORE YOU START DRIVING YOUR NEW VOLVO PLEASE READ THROUGH THIS INSTRUCTION BOOK CAREFULLY. IT CONTAINS ALL THE INFORMATION YOU NEED TO BE ABLE TO DRIVE AND SERVICE YOUR VEHICLE IN THE BEST POSSIBLE WAY. BY FOLLOWING THE INSTRUCTIONS GIVEN IN THIS BOOK, YOU WILL FIND THAT YOUR VOLVO WILL COME UP TO ALL THE EXPECTATIONS CONCERNING ECONOMICAL OPERATION AND EXCELLENT PERFORMANCE THAT YOU HAVE EVERY RIGHT TO EXPECT OF A TOP-QUALITY VEHICLE. DO NOT WAIT UNTIL SOMETHING GOES WRONG BEFORE YOU START READING THIS BOOK. READ IT NOW. THE SHORT TIME THIS TAKES WILL MORE THAN REPAY YOU IN THE LONG RUN. THIS INSTRUCTION BOOK IS NOT INTENDED TO BE A COMPREHENSIVE TECHNICAL MANUAL AND DOES NOT CLAIM TO MAKE THE READER INTO A PERFECT CAR MECHANIC. IT WILL, HOWEVER, SHOW YOU HOW TO LOOK AFTER YOUR VEHICLE SO THAT TROUBLE IN FUTURE CAN BE AVOIDED. FOR MORE DETAILED OPERATING INSTRUCTIONS AND ADJUSTMENTS, YOU ARE REFERRED TO THE SPECIAL SERVICE MANUAL FOR THE VEHICLE.

AB VOLVO

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Volvo Service Organization

In order to get the most out of the invested capital represented by a car, it must be looked after and serviced regularly. Volvo has gone to a great deal of trouble in the design and selection of material to ensure that the car in question only requires a minimum of servicing. All this work will be in vain unless we can count on your co-operation - that is to say, that you make sure that your vehicle gets the regular servicing it needs. In order to help you, Volvo has built up a world-wide service organization. All Volvo dealers have specially trained personnel and receive a continuous supply of technical information from the Volvo Service Organization concerning repairs and adjustment work. They have also special tools, designed at the Volvo factory.

All Volvo dealers have a comprehensive stock of spare parts which is your guarantee for genuine Volvo spares. This is why our dealers are in the very best position to give your vehicle first-class service concerning both maintenance operations and repairs. You should also refer to your dealer if you need information about your Volvo that is not included in this instruction book.

Not only in your own country is there a Volvo workshop within easy reach. Volvo also has a widely distributed service network in other countries.

Warranty and Service Booklet

A warranty and service booklet accompanies each vehicle when it is delivered. This book contains a coupon entitling you to a free service inspection after 2 500 km (1500 miles) running. If possible, let the dealer who supplied the vehicle carry out this service inspection. If necessary, however, any of our dealers can do this.

If our six-month guarantee is to apply, we make one absolute condition and that is that the above-mentioned cost-free inspection is carried out at roughly the mileage shown and that the vehicle has been looked after in accordance with the instructions in this book.

Service Inspections

After the cost-free service inspection has been carried out, you should make an agreement with your dealer concerning continued, regular service inspections in accordance with the suggestions made in our Service Book. Thorough and regular servicing is of vital importance for the performance and length of life of the vehicle.

Always use genuine Volvo spares.

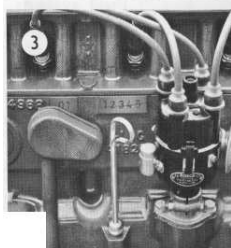
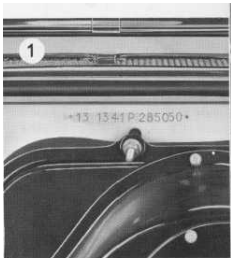
Type designations



This instruction book deals with vehicles having the following type designations:

Type designation	Engine	Gearbox
13-121P	B18A	M30
13-134 P	B 18 A	M 40
13-194 P		
13-334 P	B 18 B	M 40
13-344		
13-394 P		
13-335 P	B 18 B	M 41
13-395 P		
13-346	B 18 B	BW 35

1. The type designation and chassis number are stamped on the cowl under the bonnet.
2. Stamped on a plate to the left under the bonnet is the type designation together with the code numbers for colour and upholstery.
3. The engine type designation, part number and serial number are given on the left-hand side of the cylinder block. The last figures of the part number are stamped on a tab. The serial number follows this with all the figures stamped on. For identifying the engine, both the part number and serial number should be quoted, for example 496801-12345.



In all correspondence concerning your vehicle with the dealer and when ordering spare parts, the type designation, chassis and engine number should always be quoted.

DESCRIPTION

Engine

The engine is a four-cylinder carburettor unit with overhead valves. The pistons are made of light-alloy and the upper compression rings on each piston are chromed. The main bearing and big-end bearing shells are replaceable. The crankshaft is statically and dynamically balanced.

Engine type B 18 A has an output of 85 h.p. (SAE) and is equipped with a Zenith-Stromberg horizontal carburettor.

Engine type B 18 B has an output of 115 h.p. (SAE) and is equipped with twin SU horizontal carburettors.

Fuel system

The fuel system is fed from the tank to the carburettor by a fuel pump which is driven by a cam on the engine camshaft. There is a filter in the fuel pump which traps water and other impurities in the fuel.

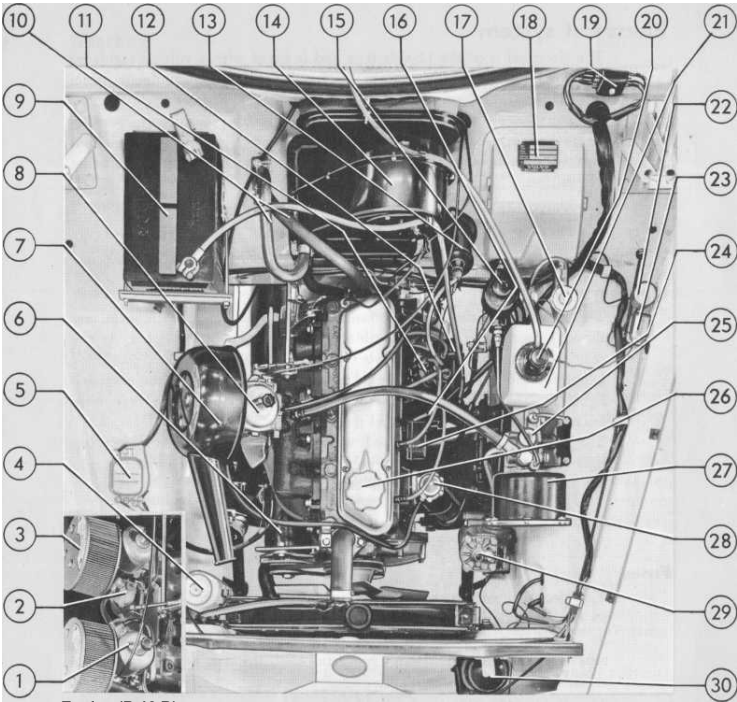
Lubricating system

The engine lubrication is taken care of by a gear pump which sucks up oil from the sump on the bottom of the engine and forces it through the oil filter out to the lubricating points in the engine. A relief valve is built into the oil filter which prevents the oil pressure from reaching excessively high values.

Cooling system

The engine is water-cooled and the cooling system is of the pressure type. Water is circulated by means of a pump fitted on the fan shaft. A thermostat with an opening temperature of about 76 °C (169 °F) prevents the cooling water from passing through the radiator before the engine has reached its normal working temperature.

Engine compartment (B 18 A)



Engine (B 18 B)

- | | | |
|---|--|---------------------------------|
| 1. Carburettor (B 18 B) | 13. Ignition coil | 22. Relay for reversing light |
| 2. Float chamber (B 18 B) | 14. Heater | 23. Relay for headlight flasher |
| 3. Air cleaner (B 18 B) | 15. Brake fluid container | 24. Oil trap |
| 4. Expansion tank with coolant filler cap | 16. Oil dipstick | 25. Booster cylinder air filter |
| 5. Charging control | 17. Clutch fluid container | 26. Oil filler cap |
| 6. Dynamo | 18. Plate with type designation and code for colour and upholstery | 27. Booster cylinder |
| 7. Air cleaner (B 18 A) | 19. Fusebox | 28. Fuel pump |
| 8. Carburettor (B 18 A) | 20. Motor for windscreen washers | 29. Steering box |
| 9. Battery | 21. Fluid container for windscreen washers | 30. Horn |
| 10. Hoses for heater system | | |
| 11. Distributor | | |
| 12. Starter motor | | |

DESCRIPTION

Electrical system

The electrical is of the 12-volt type and is fitted with a voltage-regulated dynamo. The starter motor is operated from the instrument panel by the ignition key. This key also forms the main switch for the rest of the electrical system. The cables to the headlights, parking lights and internal lighting, however, are not taken over the ignition switch but can be switched on and off without the ignition key being in position.

The Volvo 123 GT is fitted with an alternator.

Lighting

The lighting on the vehicle consists of two headlights (mainbeam and dipped) together with two combined flasher and parking lights. At the rear the lighting consists of two tail lights including flashers, combined lamps for the tail lights and brake warning lights as well as the reversing light. Internal lighting consists of a roof light above the rear view mirror and a light for the parcel shelf.

The Volvo 123 GT is equipped with fog and spot lights (or just fog lights), also with lights in the engine and luggage compartments.

See pages 40-42 concerning replacement of bulbs.

Fuses

The electrical system is protected by means of fuses fitted in a fusebox to the left on the bulkhead under the bonnet. When replacing a fuse, be sure that you use one with the right rating. If any fuse should blow repeatedly, do not fit a more powerful fuse. Instead, have a workshop check the electrical system.

The Volvo 123 GT is also equipped with a fusebox located on the right-hand side of the engine compartment.

Power transmission

Clutch

The function of the clutch is to transmit the power from the engine to the gearbox. The clutch is of the single dry plate type with diaphragm spring. The diaphragm spring functions partly as a lever when disengaging and partly as a pressure spring when engaging.

DESCRIPTION

Gearbox

The gearbox is used to regulate the speed ratio between the engine and the rear axle so that the engine always operates in its most favourable speed range. The gearboxes are fully synchronized. The M 30 gearbox is a three-speed type, the M 40 four-speed, the M 41 four-speed with overdrive and the BW fully automatic.

Propeller shaft

The propeller shaft, which is the connecting link between the gearbox and the rear axle, is divided into two sections. The front section is journalled at its rear end in a bearing housing consisting of a rubberized ring.

Rear axle

The engine driving power is transmitted via the propeller shaft to the rear wheels through the rear axle. The rear axle is of the hypoid type, that is, the drive pinion is below the centre line of the drive shafts.

On certain markets, the rear axle is fitted with a differential brake as extra equipment. The function of the differential brake is to transfer automatically the pulling power to the wheel with the best grip on the road surface when one of the wheels begins to skid. Except for the differential, the rear axle is similar to a conventional rear axle.

Brakes

As standard, the vehicle is equipped with disc brakes at the front and drum brakes at the rear.

The brake system is also provided with a reducer valve, which prevents involuntary locking of the rear wheels.

The brake system includes a vacuum type booster brake cylinder, which makes light pedal pressure possible even under a heavy load.

On certain markets, the car is fitted with a dual-circuit brake system. This system has a warning light located on the instrument panel. This warning light shows if there is a failure in one of the circuits when braking. The light also serves as a warning light for the handbrake.

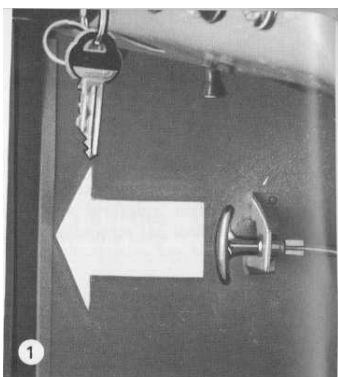
Wheels and tyres

The vehicle has pressed steel wheels with lugs for the attachment of the hub caps. All wheels are carefully balanced and the tyres are of the tubeless type. Tyre size: 165 S 15, or 165 SR 15.

DESCRIPTION

Bonnet

- ① The bonnet is fitted with a locking catch which is operated from the driving seat by means of a handle located to the left under the dashboard. Pulling out the handle releases the bonnet.



- ② When the bonnet locking catch has been released, the bonnet is still retained by a safety catch. Press in this catch as shown in the picture opposite and the bonnet can be lifted up. Closing the bonnet locks it so that it can only be opened by pulling out the release handle. Always make sure that the bonnet locks properly when closed.



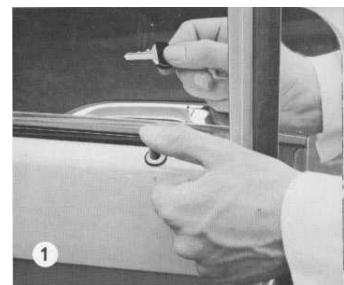
Luggage compartment

- ③ The luggage compartment is locked with the same key as that used for the doors. The lid is opened by pressing the handle upwards as shown in the picture opposite. The lid is balanced and will thus remain in the opened position. To the left of the luggage compartment there is space sufficient for the spare wheel and a tool kit. Always make sure that the spare wheel is fastened securely and that the tool kit is firmly stowed, otherwise irritating rattles can occur.

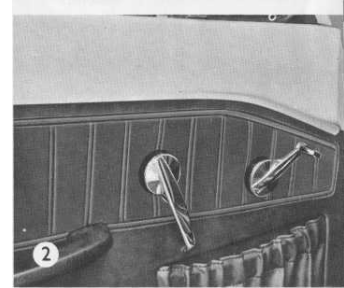


Doors and locks

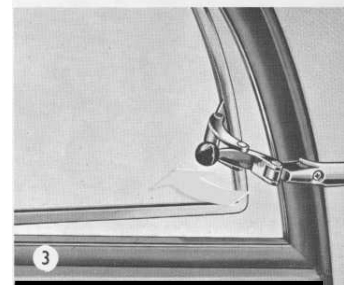
- ① Both the doors are fitted with a lock and keyhole. Both doors can be locked from inside the car by pressing down the lock buttons on the window ledge. The lock button lifts automatically when the door is opened from the inside. The doors can be locked from the outside by pressing the lock button on the window ledge and shutting the door. *Do not leave the keys in the car.*



- ② The doors are opened from the inside by turning the door handle to the rear. The ventilation windows for the door are opened by unscrewing the lock stud, pressing it in and then turning the handle upwards. Screwing in the stud, locks the handle.



- ③ The rear side windows can be partially opened by setting the handle at the rear edge in different positions (does not apply to type 13-121). To prevent the locks from freezing up in cold weather, apply a suitable anti-freeze agent. If the locks are already frozen, do not exert undue force on the key otherwise you might break it. Instead, heat it with a match or similar and place it quickly into the keyhole.

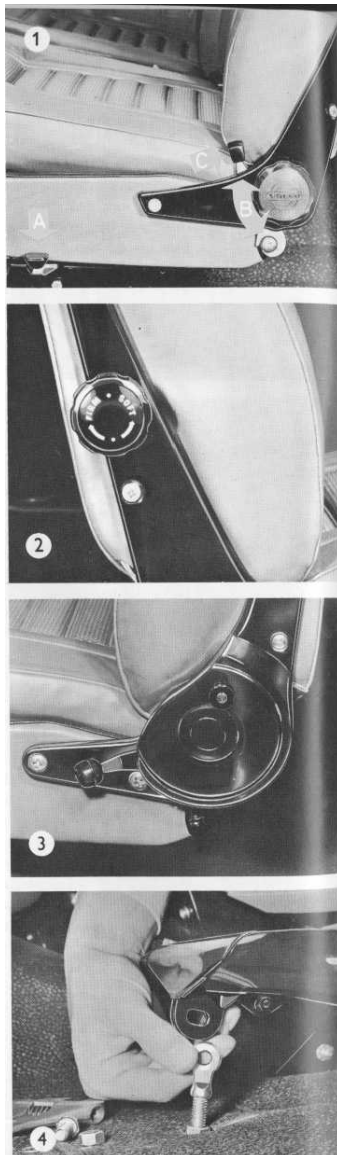


Should you lose the car keys, contact your nearest Volvo dealer for new keys and quote the code number of the keys which have been lost.

DESCRIPTION

Front seats

- ① The front seats can be moved backwards or forwards after the knob (A) is pressed down.
If necessary, the seats can be moved further to the rear than permitted by the slide rail by using the extra holes in the seat frames.
- ② The backrest inclination of the front seats is smoothly adjusted by means of a knob (B) on the outside of the seat. A catch automatically locks the backrest and thus prevents it from falling forwards. To fold the backrest backwards, release the catch (C).
- ③ The front seats are also provided with an adjustable lumbar support. To tension the lumbar support, and thus exert more pressure against the small of the back, turn the knob clockwise. Turning it anti-clockwise slackens the tension on the support and reduces the pressure against the small of the back.
- ④ The front seats in the Volvo 123 GT are provided with a folding device for the backrest. The backrest inclination is adjusted by means of the lever. Lift the lever upwards and adjust the backrest to the desired position. Lock the backrest by pressing down the lever. To fold the backrest forwards, lift the lever. The backrest can be moved backwards again without touching the lever. It will stop at the position set by the small knob on the folding device.
- ⑤ The inclination angle of the entire seat can be adjusted with the eyelet screw at the front under the seat. Remove the screw which goes through the eyelet and tip the seat backwards as shown in the picture. Then slacken the locknut on the floor and screw the eyelet screw upwards or downwards to the desired height. Then secure the eyelet screw with the locknut.
- ⑥ The whole seat can be raised or lowered, which is done as follows: Remove the seat cushion, also the screw and nut on the seat frame attachment on the floor. Then place the screw in one of the other holes in the attaching bracket.
- ⑦ The front seat backrests have built-in attachments for mounting a headrest.
- ⑧ On certain markets, the seats are provided with headrests.



Safety belts

Always use the safety belt when driving. Remember that even when driving slowly in city traffic, serious injury can arise from sudden, unexpected stopping. The practical design of the belt makes it very easy to use. Place one strap across the lap and the other over the shoulder and breast and lock the belt by inserting the buckle tongue into the locking device between the front seats. A loud clicking noise indicates that the belt is locked. Make sure that the parts of the belt in contact with the body are not twisted. Always ensure that the bonnet locks the belt is so adjusted that the belt fits well against the body. If the belt requires lengthening, take hold of the adjusting piece with one hand and with the other hand pull out to the desired length the lower part of the double section of the lap strap. If the belt is to be shortened, pull in the upper part of the lap strap. After a certain amount of practice, all belt adjustment can be carried out with the one hand. The belt is released from the locking device by moving to the rear the lever concerned on the locking device. Do not let the belt lie on the floor otherwise it will become dirty and probably be a hindrance when getting in and out of the car. Now and again check that the bolts anchoring the belt are properly tightened and that the belt is in good condition. Use water mixed with a synthetic washing agent for cleaning the belt. As the safety belts lose much of their strength when exposed to violent stretching, they should be replaced after a collision, even though they may appear to be undamaged. Never modify or repair the belt on your own but have this done by a Volvo workshop.

Rear seat

As standard, the rear seat has anchorages for safety belts. On certain markets, the safety belt is also fitted on the rear seat.



DESCRIPTION

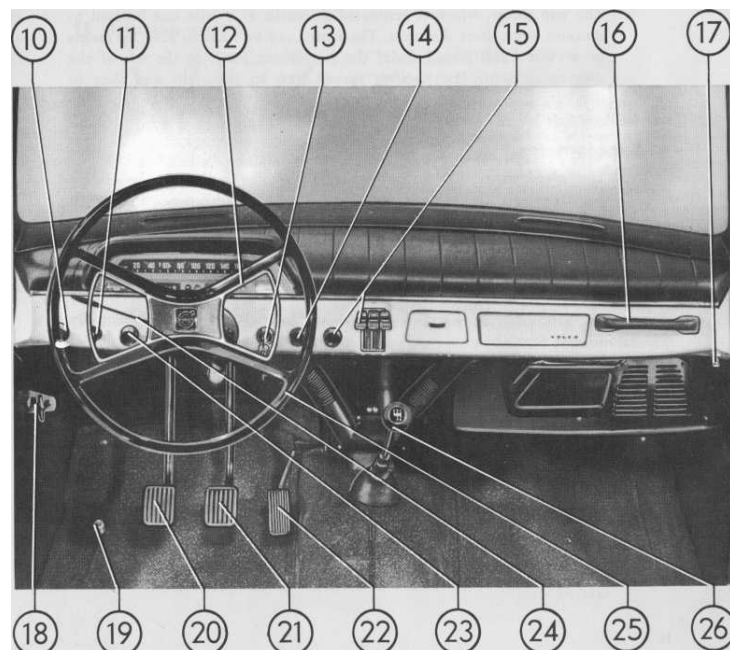
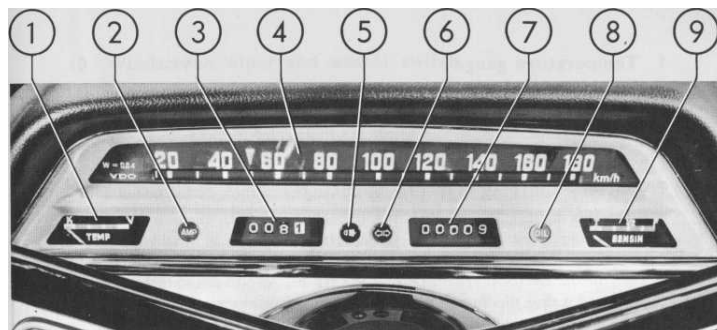
PARIS

Instruments and controls

Before you start the car, sit behind the wheel and carefully check through all the instruments and controls. The location of these is shown in the illustration opposite. The instruments and controls are described in more detail on the following pages with reference to the numbers in the illustration. Note that variations may occur on different markets.

Immediately after starting, and now and then while driving, glance at the instruments to make sure they are showing normal readings according to the values given in the following text.

- | | |
|---|---|
| 1. Temperature gauge | 14. Cigarette lighter |
| 2. Warning light, battery charging | 15. Fan switch, heater/ventilation controls |
| 3. Trip meter | 16. Grab handle |
| 4. Speedometer | 17. Switch for glove compartment light |
| 5. Mainbeam control light | 18. Bonnet release handle |
| 6. Direction indicator control light | 19. Foot dipper switch |
| 7. Milometer | 20. Clutch pedal |
| 8. Oil pressure warning light | 21. Brake pedal |
| 9. Fuel gauge | 22. Accelerator pedal |
| 10. Windscreen wiper and washer switch | 23. Lighting switch |
| 11. Choke control | 24. Direction indicator switch, headlight flasher |
| 12. Horn ring | 25. Steering wheel |
| 13. Ignition switch and starter contact | 26. Gear lever |



DESCRIPTION

1 Temperature gauge

The temperature gauge shows the temperature of the coolant and thus indicates the working temperature of the engine. The pointer on this gauge should remain within the three green sectors.

2 Battery charging warning light

This light goes on when the battery discharges, which is normal at idling speed. As soon as you accelerate a little, it should go out. If it goes on during driving, this means either that there is some fault in the electrical system or that the fan belt is not sufficiently tensioned and is thus slipping on the pulley, causing poor charging.

3 Trip meter

The trip meter, which is graduated in tenths of a mile, can be used to measure even short distances. The meter can be reset to zero by means of a twist knob placed under the instrument panel to the left of the steering column. The knob is turned first to the right and then to the left.

4 Speedometer

The speedometer has a horizontal red ribbon indicator, the ribbon point showing the speed at which you are travelling. Since the length of the red ribbon is proportional to the speed, this is in itself a safety factor - the more red shown, the more dangerous your speed.

7 Milometer

The milometer shows the total distance covered in miles. After 99 999 miles it returns to zero and starts going round again.

8 Oil pressure warning light

This light goes on when the engine oil pressure is too low. When the ignition is switched on, the light should go on and then go out again when the engine has been started. *Never start driving until the light goes out.* Should the light remain on during driving, the engine should be stopped and the cause for this determined. In most cases it means that the oil level is too low. After hard driving it may happen that the warning light comes on when the engine is at idling speed. This is normal providing it goes out again when the engine speed is increased.

DESCRIPTION

10 Windscreen wiper and washer switch

The windscreen wiper and washer switch has four positions. When pressed fully in, the switch is switched off. When the switch is pulled out to the first position, the windscreen wipers operate at normal speed. When it is pulled out to the second position, the wipers operate more quickly. Pulling the switch out fully also operates the windscreen washers.

The liquid container for the windscreen washers is placed under the bonnet and holds about 1½ litres (2¾ Imp. pints = 3¼ US pints). Never allow the wiper blades to operate on a dry and dusty surface since this can easily scratch the glass and blades.

Choke control

The choke control is used when the engine is started from cold. When pulled out about 10–15 mm (½") the control operates the throttle flap and increases idling speed. Pulling the control out further, enriches the fuel-air mixture, and this steps up the idling speed.

Ignition switch



1. "Radio" position

With the switch in this position, the complete electrical system of the vehicle, with the exception of the engine ignition system, is switched on.

2. Neutral position

3. Driving position

4. Starting position

To start the engine, turn the key to the Starting position and this engages the starter motor. As soon as the engine starts, release the key which then automatically returns to the Driving position.

14 Cigarette lighter

To use the cigarette lighter, push it in. As soon as it attains sufficient heat, it will automatically spring out.

Revolution counter

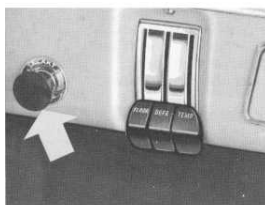
The Volvo 123 GT model is fitted with a revolution counter. Temporary permissible speed 6000-6500 r.p.m. The speed must not exceed 6500 r.p.m.

Brake circuits-handbrake warning light

On vehicles fitted with a dual-circuit brake system, there is a warning lamp located to the left on the instrument panel. The light goes on if there is a failure in one of the brake circuits when the foot brake is depressed. The light also shows if the handbrake is applied.

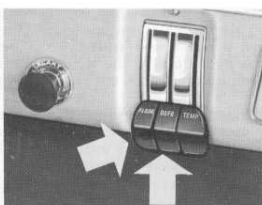
DESCRIPTION

15 Heater and ventilation system



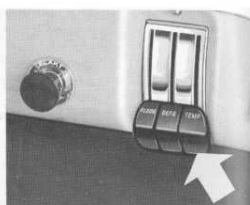
Fresh-air fan switch

Pushed right in - closed
Interm. pos. - full output
Fully out - half output



Air-flow

FLOOR = Air to front seat floor
DEFR = Air to windscreen
and to rear seat floor

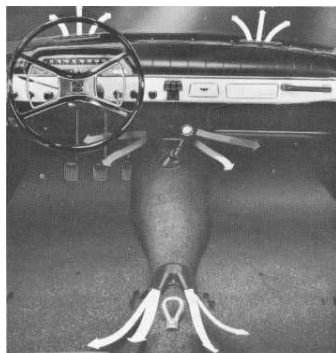


Air temp.

This control is used to regulate the temperature of the incoming air.

The heating and ventilation system of the car is operated as shown above. Air is sucked in by the fan and then passes through a heater element to a distributing chamber where it is distributed to the floor and windscreen by means of the controls. **NOTE:** During normal condition there is sufficient air-flow due to the fact of the overpressure at the air inlet of the vehicle. If greater quantities of air are required, use the fan. The heater element is connected with a thermostat which keeps the temperature constant. When the temperature control is moved, there will be a slight delay before the heater element adjusts itself to the desired temperature.

The illustration shows the air duct to the rear seat and the air distribution in the vehicle when both the "FLOOR" and "DEFR" controls are used.

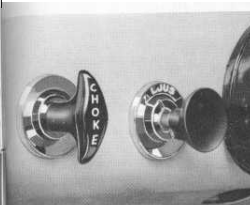


Misting on the windows

During cold or damp weather mist can easily form on the windows, particularly with a full number of passengers. The best way of getting rid of this or to avoid it altogether is to open the ventilation windows partly or fully and to set the fan and defroster controls at max. output.

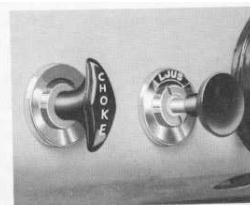
DESCRIPTION

23 Lighting switch



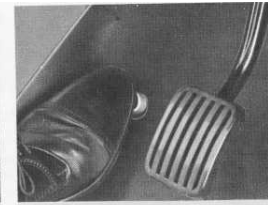
Parking lights

(Lighting switch pulled out one notch)



Dipped headlights

(Lighting switch fully out and foot dipper switch in dipped position)



Mainbeam

(Lighting switch out fully and foot dipper switch in mainbeam position)

Panel light switch

The panel light switch is regulated by turning the small lighting switch knob.

Warning signal flashers

On certain markets, the car is fitted with warning signal flashers which are operated by pulling out the switch next to the heater controls.

Fog and spot lights

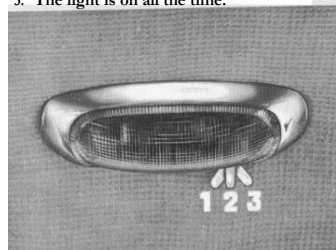
On cars fitted with fog and spot lights the switches for these are placed on the extreme left under the dashboard.

24 Direction indicator switch lever

The direction indicators are controlled by means of the switch lever mounted on the left-hand side of the steering column under the steering wheel.

Interior lighting

1. The light goes on when the front doors are opened.
2. The light is off all the time.
3. The light is on all the time.



Mainbeam flasher

Moving the direction indicator switch up towards the steering wheel switches on the mainbeam lighting which remains on until the switch lever is released.



OPERATING INSTRUCTIONS

ROM

Running-in

As the vehicle is new, we recommend that a certain amount of caution be observed during the running-in period, for it is during this time that the moveable parts of the car must be properly bedded in so as to obtain smooth and durable sliding surfaces. Do not drive at full engine output for more than short periods during the first 500 km (300 miles) and avoid labouring in all gears.

Warranty inspection

After 2 500 km (1500 miles) running, the vehicle should be taken to a Volvo workshop for the free warranty inspection. The procedure then carried out also includes an engine oil change. It is very important to ensure that this oil change is carried out since during the first period the engine oil usually collects a lot of impurities.

After 5 000 km (3 000 miles) running, the engine oil together with the filter, gearbox and rear axle should be changed. After this oil change, future changes should be carried out at approximately those intervals indicated in the maintenance scheme on page 28 and in the lubricating chart at the end of the book.

OPERATING INSTRUCTIONS

Before being delivered, Volvo engines are test-run on test benches and in the vehicles on test tracks. We are therefore assured that all clearances are satisfactory and thus accept no responsibility for damage caused by careless running-in.

Starting the engine

Starting a cold engine

1. Check that the handbrake is on and the gear lever is in neutral.
2. Pull the choke control out fully.
3. Depress the clutch pedal to assist when starting especially in cold weather.
4. Turn the ignition key to the starting position. Release the key as soon as the engine has started.
5. Push in the choke control until the best idling speed is obtained. As the engine becomes warmer push in the control more and more but never so far that the engine starts to run unevenly. Drive for as short a period as possible with the choke out. When the engine is thoroughly warm, the controls should be pushed right in.

After starting a cold engine, do not race it immediately but run it at moderate speed and do not subject it to heavy loading until engine temperature has reached normal level.

Starting a warm engine

1. Check that the handbrake is on and the gear lever is in neutral.
2. Depress the clutch pedal.
3. Turn the ignition key to the starting position. Release the key as soon as the engine has started. If the engine does not start immediately, depress the accelerator pedal fully and hold it there until the engine has started.

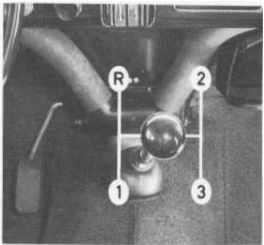
Warming up the engine

Experience has shown that engines in vehicles which are frequently stopped and started are subject to abnormally rapid wear. The reason for this is that the engine is not given a chance to reach its normal working temperature. When the engine is cold, it should thus be taken up to its normal working temperature as quickly as possible. Do not therefore idle the engine too long but start driving with a light load on the engine as soon as the oil pressure light goes out.

Gear-changing



Gear positions for 4-speed gearbox

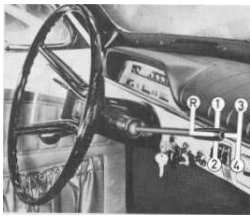


Gear positions for 3-speed gearbox

The gearbox has synchromesh on all forward gears. If this is to function satisfactorily, the clutch pedal must be fully depressed. To obtain good acceleration, it is important that the gear-change timing is adapted to the speed in such a way that the engine speed is within suitable limits, neither too high nor too low. The gear positions for vehicles fitted with a floor-mounted gear lever are shown in the pictures above.

Gear lever mounted on steering column

On a number of markets, certain older types of the Volvo 120 model were fitted with the gear lever mounted on the steering column. The gear positions for this gear lever are shown in the picture opposite.



Engaging the overdrive

To engage the overdrive move the overdrive lever located on the right-hand side of the steering column. This switches on the overdrive control light on the instrument panel. To disengage the overdrive, move the lever back to its original position. Normally no extra operation of the accelerator or clutch pedal is necessary when engaging or disengaging the overdrive. Operation is, however, facilitated if the accelerator pedal is kept depressed. Changing down from the overdrive to the ordinary 4th gear can be done smoothly by lightly tramping on the clutch pedal.

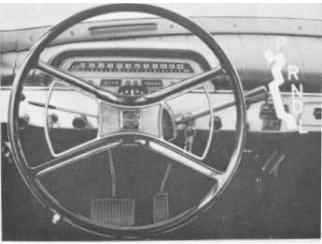
Recommended speeds, km.p.h. (m.p.h.) for the different gears

Engine	Gearbox	1st speed	2nd speed	3rd speed	4th speed
B 18 A	M 30	0-45 (0-28)	20-85 (15-55)	35- (22-)	
B 18 A	M 40	0-45 (0-28)	15-70 (10-45)	25-100 (15-60)	35- (22-)
B 18 B	M 40	0-55 (0-35)	20-85 (15-55)	30-120 (20-75)	40- (25-)
B 18 B	M 41	0-50 (0-30)	15-75 (10-45)	25-110 (15-70)	35- (22-)

70 km p.h. (45 m.p.h.) with overdrive engaged.

Automatic transmission

The selector lever for the automatic transmission has the following positions:
P = Parking
R = Reverse
N = Neutral
D = Driving
L = Low gear



OPERATING INSTRUCTIONS

Starting the engine

Move the selector lever either to the "P" or "N" position. The starter inhibitor switch is automatically disconnected if the selector lever is moved to any of the other positions. The lever can be moved freely between the "N" and "D" positions, while the other positions are provided with a catch. For this reason, the selector lever must first be lifted towards the wheel before it can be moved into any of the other positions. If the car is temporarily stopped and the selector lever is moved to the "R", "D" or "L" position, apply the handbrake or the footbrake to stop any tendency for the car to "creep". When the selector lever is moved from "N" to "R", "D" or "L", a pronounced engagement thump can be heard at high idling speed. This is not detrimental to the car or the transmission system.

"D" position

Under normal driving conditions use your car at all times with the selection "D" - fully automatic drive. The transmission then starts in first gear and automatic upchanges to second and third gear occur in accordance with road speed and accelerator position. Automatic downchanges from third to second and first occur with decreasing vehicle speed.

"L" position

Normally no advantage is gained by selecting "L" (lock-up) for moving off or low-speed driving because the available ratios (first and second) are the same as those of "D" position. If, on the other hand, the speed is higher and third gear is engaged, an immediate downchange to second gear will take place if the selector is moved to "L". No upchanging takes place as long as "L" is used, although the transmission will automatically downchange to first gear and remain locked in this ratio as long as the selector remains at "L".

The main uses of the "L" position are as follows:

1. To obtain immediate changing-down manually.
2. To obtain powerful engine braking effect - for example, on long, mountainous descents.
3. In order to obtain a higher engine speed when, for example, the battery requires charging.

Never move the selector to the "L" position if the speed exceeds 90 km. p. h. (55 m.p.h.) as this will risk overrevving the engine.

"N" position

The, neutral position has the same function as on a manual gearbox, i.e. no gear is engaged. This position can be used when starting the engine and when parking with the handbrake applied.

OPERATING INSTRUCTIONS

"R" position

This position is used when reversing. Note the advantage offered by "creeping" (driving with no throttle) when manoeuvring in restricted parking spaces.

"F" position

When parking with the engine switched on or off, position "P" should be selected. On a steep gradient the handbrake should also be applied.

Starting

The car is started by moving the selector to the desired position and releasing the brake pedal. The car then moves off gently ("creeps"). The speed is then controlled with the accelerator pedal. If the quickest possible acceleration is required, the accelerator pedal is pressed down to the "kick-down" position, i.e. past the "hard-spot" in the lower accelerator pedal position.

Stopping the car

The car is stopped by releasing the accelerator pedal and applying the footbrake. It is not necessary to move the selector.

Driving under different conditions

Manual driving to a limited extent can also be done with the automatic transmission. In this case starting is done with the selector in position "L". Changing up to second gear is done by moving the selector to "D" and quickly back to "L". Third gear is obtained by moving the selector to position "D".

Earlier changing down from third gear to second gear and from second gear to first can be obtained by pressing down the accelerator pedal to the "kickdown" position.

In the same way, changing up between first gear and second, and second gear and third can be delayed.

If the car has become stuck in snow, loose sand or similar, it can be "rocked" loose by moving the selector alternately between the "D" and "R" positions under continuous light accelerator pressure.

For emergency starting the car is towed with the selector in the "N" position and the choke control pulled out slightly with the ignition switched on.

The selector is moved to "L" and the engine pulled round until it starts.

1. Do not select "P" or "R" positions when the car is moving.
2. Do not select "D", "L" or "R" at a higher engine speed than idling when the car is stationary.
3. Do not select "L" positions at speeds above 90 km. p. h. (55 m. p. h.)

Points worth noting

Starting in a garage

If you start your vehicle in a garage, always open the garage doors before starting the engine. The exhaust gases from the engine contain the poisonous carbon monoxide gas which is particularly dangerous since it is both invisible and odourless.

Driving with the luggage compartment lid open

While driving with the luggage compartment lid partly or fully open, exhaust gases (and consequently also carbon monoxide) can be sucked into the car through the luggage compartment, particularly if a window is open. Normally this involves no risk to the passengers. However, on such occasions, the following advice should be followed:

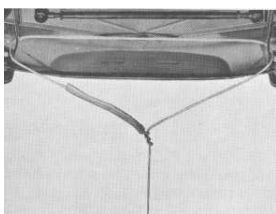
1. Keep all windows closed.
2. Set the fresh air and defroster levers to fully open and the fan control to full speed.

Braking

Steady acceleration and gentle braking are characteristic of a good driver and also result in the most economic running. Apply the brakes *before* going into a curve and use your gearbox on downhill gradients so that you save unnecessary wear on both brakes and tyres. Violent braking is only justified in dangerous situations.

Towing

If the vehicle is to be towed, the tow line should not be attached directly to the bumpers, but should be taken round the bumper supports as shown in the picture opposite. While the vehicle is being towed, the tow line should be ^{kept taut} stretched since violent jerks can damage the bumpers.



General

Before the vehicle was delivered from the factory it was subjected to a very thorough inspection. Your dealer, in his turn, carried out a further delivery inspection in accordance with the specifications of the Volvo factory. In addition to this there is the free service inspection after 2 500 km (1 500 miles). Subsequent servicing of the vehicle should follow the routine in the *service book* which is based on a system involving an oil change and oil level check after every 5 000 km (3 000 miles) and service inspections after every 10 000 km (6 000 miles).

The simplest (and in the long run most profitable) way to give the vehicle the servicing it requires is to have all the servicing done by a Volvo workshop. You will then have all the work specified in the service book carried out in accordance with recommended prices and the workshop stamp in the service book will show when the vehicle was serviced - this is also extremely important as far as second-hand value is concerned.

During the designing of the car, particular attention was given to the "safety details" (e.g. suspension, brakes and steering). They are calculated to withstand the severest stresses with a wide safety margin. However, if you use your car for hard driving, you should take the precaution of checking these parts for fatigue cracks sometime during the car's useful life, for instance when the parts concerned are reconditioned.

If you prefer to carry out the simpler servicing procedures yourself or if you are sometimes obliged to have them done by a workshop outside the Volvo organization, this chapter contains some advice as to when and how they should be carried out.

For the sake of convenience, the servicing procedures have been summarized in a maintenance scheme in the next two pages.

SERVICING

Maintenance scheme

In the maintenance scheme below the servicing procedures have been given certain numbers which refer to the detailed descriptions on the following pages.

Some of the work must be carried out by skilled mechanics or requires the use of special tools and these have been marked in colour.

Operation	Carried out every:			See note below
	5 000 km 3 000 miles	10 000 km 6 000 miles	20 000 km 12 500 miles	
Lubrication				
1 Lubricate body		●		● Once a year
2 Check oil level in engine				● When tanking
3 Change oil in engine	●			● Spring and autumn
4 Check oil level in gearbox	●			
5 Change oil in gearbox	● ¹⁾			● 40 000 km (25 000 miles)
6 Check oil level in overdrive	●			
7 Change oil in overdrive	● ¹⁾			● 40 000 km (25 000 miles)
8 Check oil level in automatic transm.	●			
9 Check oil level in rear axle	●			
10 Change oil level in rear axel	● ¹⁾			
11 Check oil level in rear axle with the differential brake	●			
12 Change oil in the rear axle with differential brake	● ¹⁾			
13 Check oil level in steering box	●			
14 Check brake and clutch fluid level ..	●			
Engine				
15 Clean filter in oil filler cap				● 40 000 km (25 000 miles)
16 Servicing of crankcase ventilation ..				● 40 000 km (25 000 miles)
17 Replace oil filter	1)			
18 Clean fuel filter		●		
19 Change air cleaner B 18 A				● 40 000 km (25 000 miles)
20 Change air cleaners B 18 B			● ¹⁾	
21 Clean foam plastic sleeve, air cleaner			● ¹⁾	
22 Check valve clearances				
23 Carry out compression test				

¹⁾ Only after the first 5 000 km (3 000 miles).

²⁾ 40 000 km (25 000 miles) for the air cleaner with damping filter.

³⁾ After every 80 000 km (50 000 miles) the paper filter should be replaced.

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SERVICING

In addition to the servicing procedures mentioned in this scheme, you should also regularly check the following from the point of view of traffic safety:

- Lighting, including brake warning light
- Direction indicator lights
- Horn

Operation	Carried out every:			See note below
	5 000 km 3 000 miles	10 000 km 6 000 miles	20 000 km 12 500 miles	
24 Check fan belt	⁴⁾			
25 Check coolant level				● When filling up with fuel
26 Change coolant				● Every other year
27 Check sparking plugs				
28 Change sparking plugs				
29 Check distributor contact breakers ..				
30 Check ignition timing				
31 Check carburettor(s)				
Electrical system				
32 Check electrolyte level in battery ..				● When filling up with fuel
33 Check state of charge of battery				
34 Check headlight alignment				
Power transmission				
35 Check clutch yoke travel				
36 Check propeller shaft				Once a year
Brakes				
37 Check and overhaul brakes				
38 Replace booster cylinder air filter ..				● 40 000 km (25 000 miles)
Front end				
39 Check front wheel alignment				Once a year
40 Check ball joints, tie-rods, etc				Once a year
Wheels and tyres				
41 Check the air pressure				● When filling up with fuel
Body				
42 Washing				See page 46
43 Polishing				See page 46
44 Anti-rust treatment				See page 48
45 Cleaning				See page 48

⁴⁾ Only for a new belt.

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SERVICING

Lubrication

Chassis maintenance

To simplify maintenance of your Volvo, the vehicle has been equipped with ball joints, steering rods and propeller shaft of such a design that they do not require regular lubrication. This has been possible due to the fact that points which normally require lubricating have been packed with very durable grease at the factory and then carefully sealed, thus obviating the need for lubrication.

However, in order to be certain that these parts are functioning properly, it is necessary to inspect their seals and rubber sleeves thoroughly after every 10 000 km (6 000 miles) or at least once a year.

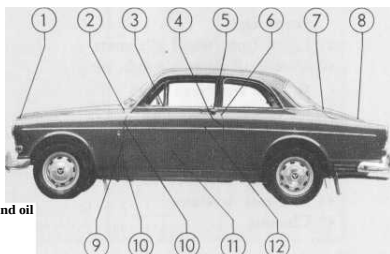
Oil should be changed or the oil level checked after every 5 000 km (3 000 miles) in accordance with the lubricating chart at the end of the book. After every 10 000 km (6000 miles) the vehicle should undergo the 10 000 km (6000 miles) inspection at a Volvo workshop. The measures taken during this inspection are also to be found in the lubricating chart.

You should follow the recommendations of the Service Booklet, which are based on Volvo's own investigations. Use only first-class lubricants of a well-known make. The *right* lubricant in the *right* quantity at the *right* time will increase both the lifetime and reliability of your car.

1 Body lubrication

In order to avoid squeaks and unnecessary wear, the body should be lubricated about every 10 000 km (6 000 miles) or at least once a year. During very cold weather the door locks and luggage compartment lock should be treated with a suitable anti-freeze agent to prevent them from freezing up.

No. Lubricating point	Lubricant
1 Bonnet catch	Paraffin wax
2 Bonnet hinges	oil
3 Ventilator window catches and hinges	Oil
4 Catches	Paraffin wax
5 Door handle lock buttons	Paraffin wax
Keyholes	Silicon oil
6 Door locks	Silicon oil
7 Luggage compartment hinges	Oil
8 Luggage compartment locks	Oil
9 Door stops	Paraffin wax
10 Door hinges	Oil
11 Driving seat rails and catches	Paraffin wax and oil
12 Window lifts	Oil and grease
Lacks (Accessible after removal of door panels)	Silicon grease

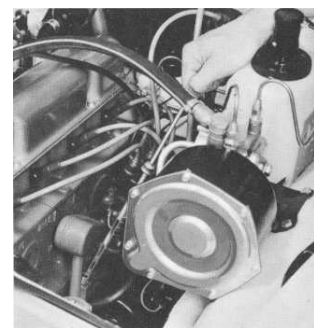


SERVICING

2 Check the oil level in the engine

The oil level in the engine should be checked each time the fuel tank is filled. Carry out the check with the engine switched off but still warm and after about 1 minute. Before checking wipe the dipstick to avoid faulty reading.

The oil level should be between the two marks on the dipstick. It must never be permitted to go down below the lower mark but, on the other hand, it should not be above the upper mark since oil consumption will then be abnormally high. If necessary top up with oil of the same type already in the engine.



3 Changing the engine oil

For lubrication of the engine, oil "For Service MS" should be used. The viscosity should be selected according to the table below. Multigrade oil SAE 10 W-30, which covers the entire temperature range, is recommended. At very low temperatures (below $-20^{\circ}\text{C} = -4^{\circ}\text{F}$) when difficulties with cold starting can be expected, multigrade oil SAE 5 W-20 is recommended. However, this oil should not be used when the temperature is continuously above $0^{\circ}\text{C} (32^{\circ}\text{F})$.

The intervals between oil changes depend to a great extent on the driving conditions to which the engine is subjected, as can be seen from the table below.

Light driving conditions concern long-distance driving on motorways with the engine thoroughly warm and with infrequent stopping and starting.

Normal driving conditions concern relatively short distances (not interrupted by frequent stopping and starting), when the engine is able to become warm but cools down between individual journeys.

Unfavourable driving conditions concern continuous driving in congested traffic with much stopping and starting and long periods with the engine idling.

Operating Conditions	Oil change intervals, km (miles) *)		Oil grade	Oil capacity	
	Summer	Winter		For oil changing	Including oil filter
Light	5000 (3000)	5000 (3000)	Multigrade SAE 10 W-30 or motor oil "For Service MS"	3.25 litres (5 1/4 Imp. pints = 7 US pints)	3.75 litres (6 1/4 Imp. pints = 8 1/4 US pints)
Normal	5000 (3000)	2500 (1500)	Viscosity: below $-10^{\circ}\text{C} (14^{\circ}\text{F})$ SAE 10W between -10°C and $+30^{\circ}\text{C}$ (14°F - 90°F) SAE 20/20W above $+30^{\circ}\text{C} (90^{\circ}\text{F})$ SAE 30		
Unfavourable	2500 (1500)	2500 (1500)			

*) During the running-in period the oil should be changed after the first 2 500 km (1 500 miles) and thereafter according to the intervals given above, or at least every six months.

SERVICING

4 Gearbox, M 30, M 40

- 5 The oil in the gearbox should be checked after every 5 000 km (3 000 miles). The oil should be at the level of the filler hole. Top up with the recommended oil if necessary. The oil in the gearbox should be changed after every 40 000 km (25 000 miles). In the case of a new or reconditioned gearbox, the oil should be changed after the first 5 000 km (3 000 miles), on which occasion the gearbox should be flushed thoroughly with gear oil. The old oil should be drained off immediately after the vehicle has been run when the oil is still warm.

Oil grade	Viscosity	Oil capacity
Gear oil	SAE 80 At temperatures continuously below +30°C (90°F), SAE 90	0.75 litre 1 1/4 Imp. pints 1 1/4 U.S. pints

6 Gearbox, with overdrive M 41

- 7 The oil level should be checked and the oil changed in the gearbox with overdrive at the same interval described for a gearbox without overdrive.
The oil level and oil filler hole is the same for both the overdrive and the gearbox. When topping up, make sure that the oil runs over into the overdrive.
When draining off the oil, note that there is a separate drain plug (marked "Drain") for the overdrive.

Cleaning the oil strainer

When changing the oil, clean the overdrive oil strainer.
Clean the strainer in petrol or white spirit and blow it dry, preferably with compressed air. Check that the gasket is not damaged and place it in position with the steel lining facing inwards. Then fit the three magnetized washers so that they are held together by magnetic force, and then the strainer and cover.

Oil grade	Viscosity	Oil capacity
Engine oil	SAE 30 or Multigrade SAE 20W-40	1.6 litres 2 1/4 Imp. pints 2 1/4 U.S. pints

SERVICING

8 Automatic transmission BW 35

The oil should not be changed but the oil level should be checked every 5 000 km (3 000 miles). A filler tube housing a graduated dipstick is to be found under the bonnet just in front of the cowl. The oil level should be checked with the vehicle on level ground and with the transmission at normal working temperature. With the engine idling and the selector in position "P", the level should be between the upper and lower graduation marks on the dipstick. If topping up is necessary, use only special oil for automatic transmissions, Type A.

Note: The dipstick should be wiped with a nylon cloth, paper or chamois leather. Wipers leaving residues on the dipstick must not be used.

Oil grade	Oil capacity
Oil for automatic transmissions, Type A	6.2 litres 11 Imp. pints 13 U.S. pints

9 Rear axle

- 10 The oil level in the rear axle should be checked after every 5 000 km (3 000 miles). The oil should be up to the level of the filler hole. Top up with the recommended oil if necessary.
The oil in the rear axle should be changed after the first 5 000 km (3 000 miles), and should also be flushed thoroughly with the same type of oil used for topping up. The used oil should be drained off immediately after the vehicle has been run, when the oil is still warm.
After this oil change, only the oil level need be checked and topping up take place if necessary.

Oil grade	Viscosity	Oil capacity
Hypoid oil	SAE 90 — Continuously below -10°C (14°F), SAE 80	1.3 litre 2 1/4 Imp. pints 2 1/4 U.S. pints

SERVICING

11 Rear axle with differential brake

- 12 A rear axle fitted with differential brake is filled at the factory with transmission oil according to the American military standard MIL-L-2105 or MIL-L-2105 B provided with an additive for rear axles with differential brake. The same type of oil should be used for topping up and when changing. Oil level checking and changing should take place at the same intervals and in the same way as for a rear axle without differential brake.

13 Steering box

The oil level in the steering box should be checked after every 5 000 km (3 000 miles). The oil should be at the level of the filler plug. If necessary, top up with the recommended oil. The oil in the steering box generally does not need to be changed except when reconditioning takes place. If the oil is to be changed, the old oil can be sucked up by means of an oil syringe or similar, which is inserted down through the filler hole.

Oil grade	Viscosity	Oil capacity
Hypoid oil	SAE 80 (all year round)	0,25 litre 5/8 Imp. pint 3/4 U.S. pint

14 Brake fluid

Clutch fluid

The fluid level in the brake and clutch control hydraulic systems should be checked after every 5 000 km (3 000 miles). The fluid should be up to 15—20 mm (5/8—3/4") in the respective containers.

The same type of fluid (brake fluid) should be used for both hydraulic systems. The upper container in the picture belongs to the brake system.

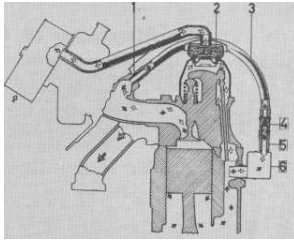
Only brake fluids which meet the requirements according to the specifications under SAE 70 R 3 may be used for the hydraulic brake system.



Engine

15 Oil filler cap

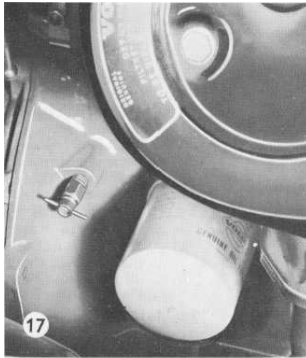
The oil filler cap is fitted with a filter. If this filter becomes blocked, there will be excessive pressure in the crankcase and this can lead to oil leakage. The filter must therefore be cleaned after about every 40 000 km (25 000 miles), and more often in dusty conditions.



16 Crankcase ventilation

Some models are provided with a positive crankcase ventilation which prevents crankcase gases from being released into the atmosphere. The valve (4) should be replaced at intervals of 40 000 km (25 000 miles). The oil cap (6), the hoses (3 and 5), the nipple (1) and the filter (2) should be removed at the same time and thoroughly cleaned. If the rubber hoses should be in a poor condition, replace them.

16



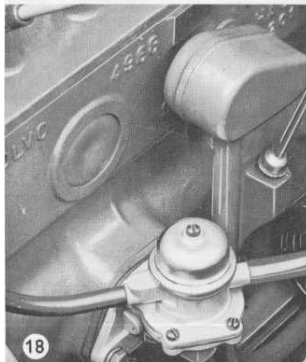
17 Oil filter

The oil filter traps any impurities in the oil so that filter becomes blocked after a time. For this reason, it must be replaced regularly, for example after every 10 000 km (6 000 miles) and preferably by a Volvo workshop.

If the filter is replaced without the oil being changed, 0,5 litre (7/8 Imp. pint = 1 U.S. pint) of oil should be added.

18 Fuel filter

The fuel filter should be cleaned after every 10 000 km (6000 miles). Loosen the screw and remove the cover and strainer and clean these. When refitting the cover make sure that the gasket seals properly.



SERVICING

19 Air cleaner (B 18 A)

The air cleaner should be replaced with a new one after 40 000 km (25 000 miles). Replacement should be more frequent if the driving conditions are dusty.

NOTE. On no account must the element be moistened or oiled.

20 Air cleaners (B 18 B)

The air cleaners should be replaced with new ones after every 20 000 km (12 500 miles).

Air cleaners with damping cylinders only require to be replaced every 40 000 km (25 000 miles).

21 Cleaning the filter with foam plastic sleeve

Cars intended for markets where dusty conditions are prevalent are fitted with air cleaners provided with a foam plastic sleeve. This sleeve is normally washed or changed after every 20 000 km (12 500 miles). After every 80 000 km (50 000 miles) the paper filter must also be replaced.

The foam plastic sleeves is removed from the air cleaner and washed in paraffin (kerosene), fuel oil or warm water mixed with a washing agent. Squeeze the sleeve until it is clean and then rinse it in clean water. When the sleeve is dry, dip it in engine oil SAE 30. Squeeze the sleeve in the oil and remove surplus oil by rolling the sleeve in a clean cloth. Fit the sleeve on the paper filter.

22 Valves

Let your Volvo workshop check the engine valve clearances after every 10 000 km (6 000 miles). Too narrow clearances can cause burnt valves.

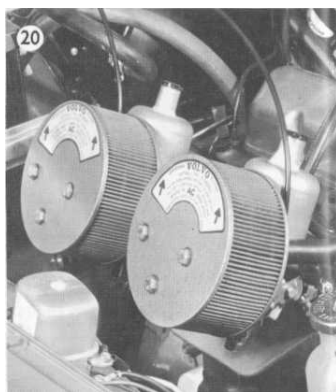
23 Compression test

Every 10 000 km (6 000 miles) a compression test should be carried out to get some idea of the condition of the engine. The test should be carried out at a Volvo workshop.

24 Fan belt

The fan belt tension should be checked at a Volvo workshop after every 10 000 km (6 000 miles).

A new belt should also be checked after 5 000 km (3 000 miles).



SERVICING

25 Check the coolant level

The cooling system must be well filled with coolant and not leak if it is to operate at maximum efficiency.

Check the coolant level when filling up with fuel. The level should be between the "Max" and "Min" marks on the expansion tank.

When the engine is new or the cooling system has been emptied, this check should be carried out with particular thoroughness.

The cooling system filler caps on the radiator and expansion tank should not be removed other than for topping up with coolant. More frequent removal may impede the circulation between the expansion tank and the engine when the latter is warming up and cooling.



Topping up with coolant

Top up with coolant when the level in the expansion tank drops down to the "Min" mark. Top up to the level of the "Max" mark. Use a good quality anti-freeze.

NOTE. Do not top up with water only, particularly during the winter. Water by itself reduces both the rust-protective and anti-freeze qualities of the coolant.

Topping up with water only in the winter can also cause damage to the cooling system resulting from ice forming in the expansion tank.

26 Change coolant

The coolant retains its properties for approx. 2 years, when it should be changed. To drain the cooling system, open the drain tap on the engine and remove the plug on the bottom of the radiator. The expansion tank is emptied by removing it from its brackets and lifting it to a sufficient height so that the coolant flows into the radiator.

Before filling with new coolant, flush the entire system with clean water. The cooling system is filled with coolant through the filler opening on top of the radiator. When this has been done, the heater control should be set to max. to ensure that the entire system will be filled. Fill the radiator to the top and refit the cap. Then fill the expansion tank to the "Max" level or somewhat above this. Refit the expansion tank cap. Run the engine warm, switch off the ignition and allow the engine to cool. Then check the radiator to make sure that it is completely filled and that the level in the expansion tank is at the "Max" mark.

The capacity of the cooling system is 8.6 litres (17/8 Imp. galls. = 2 1/4 U.S. galls.) when the level is at the "Max" mark in the expansion tank.

SERVICING

27 Check, replace the sparking plugs

- 28 The sparking plugs should be removed every 10 000 km (6000 miles) and the electrode gap checked. The gap should be 0.7-0.8 mm (0.028-0.32"). After 20 000 km (12500 miles) the plugs should be changed. This replacement should preferably be carried out at a Volvo workshop where the plugs should be tightened with a torque wrench. When fitting new plugs, be sure to fit the right type (see page 54). Consult a Volvo workshop if you intend changing to a harder or softer type of plug. The appearance of the old sparking plugs will easily tell whether or not they were the right type for your driving.

29 Ignition system

- 30 The distributor contact breaker gap should be checked at a Volvo workshop after every 10 000 km (6 000 miles). All adjusting work to the engine ignition system should be done by the workshop which has the proper equipment for this purpose. The distributor is one of the most sensitive units in the engine and careless handling can lead to decreased engine output and high fuel consumption or even serious damage to the engine.

Fuel

The petrol used for fuel should be at least 97° octane for the B 18 A engine. For the B 18 B type engine an octane value of 100° is recommended. If petrol with too low an octane value is used, knocking or pre-ignition can occur.

When delivered from the factory, the B 18 A engine is adjusted for fuel with an octane rating of at least 97°, and the B 18 B for an octane rating of 100°.

31 Carburettor(s)

After every 10 000 km (6 000 miles), the vehicle should be taken to a Volvo workshop for a check on the carburettor(s). At each engine oil change, check that the oil level in the centre spindle of the carburettor(s) is about 6 mm (1/4") from the top of the spindle. If it is not, top up to the level using oil ATF, type A (transmission oil).

*Research Method Rating.

SERVICING

Electrical System

The electrical system in the Volvo 123 GT is equipped with an alternator. When changing the battery or carrying out any other work with the electrical system, the following should be observed:

1. A battery connection to the wrong terminal will damage the rectifiers. Before making the connections, check the polarity of the battery with a voltmeter.
2. If extra batteries are used for starting, they must be properly connected to prevent damage to the rectifiers. The negative lead from the auxiliary battery for starting must be connected to the negative terminal stud of the car battery and the positive lead from the auxiliary battery for starting to the positive terminal stud.
3. If a rapid charger is used for charging the battery, the car battery leads should be disconnected. The rapid charger must never be used as an auxiliary unit for starting, otherwise this might damage the alternator and the charging control.
4. Never disconnect the battery circuit (for example, to change the battery) while the engine is running, as this will immediately damage the alternator. Always make sure that the battery connections are properly tightened.

32 Check the battery electrolyte level

To ensure that the battery functions properly, the electrolyte level should be checked regularly. A suitable time to do this is when the fuel tank is being filled. The electrolyte level should be 5-10 mm (3/16-3/8") over the top of the cell plates. Top up with distilled water if necessary. Never add too much distilled water since this can cause the acid to splash over and cause damage in the engine compartment. *Never check the electrolyte level by lighting a match.* The gases formed in the cells are highly explosive.

SERVICING

33 Check the state of charge of the battery

The state of charge of the battery should be checked after every 10 000 km (6 000 miles). The check is carried out with the help of a hydrometer, this showing the specific gravity of the electrolyte which varies with the state of charge. See page 55. When checking the battery, check also the terminals and terminal bolts to make sure *they* are well tightened and smeared with grease or vaseline. If necessary, wipe off the terminals and terminal bolts with a rag or brush them with a wire brush before greasing them.

34 Check headlight alignment

The alignment of the headlights should be checked in a Volvo workshop after every 10 000 km (6 000 miles). Remember that the section of the road lit up by the headlights can vary depending on the load in the vehicle.

Replacement of bulbs

To obtain maximum lighting effect and to forestall the chances of lights going out, the headlights bulbs should be changed every year, suitably during the Autumn. Some of the bulbs have two functions, for example, the headlight bulbs which have filaments for both main-beam and dipped lights. The guide pins on the sockets of these bulbs are either of different thickness or they are staggered so that the bulbs can only be fitted in one definite position. Certain makes of bulbs have a "Top" mark on the socket and this should face upwards.

Replacing the roof light bulb

When replacing the roof light bulb, the lamp shade is pulled straight out.

When fitting headlight bulbs do not touch the glass with your fingers. The reason for this is that grease, oil or any other impurities can be carbonized onto the bulb and this can cause damage to the deflector.



Replacing the headlight bulbs

- ① Loosen the three screws retaining the rim with a screwdriver.
- ② Pull out the bottom part of the rim slightly and then lift upwards so that the retainer catch releases its grip. (Do not pull out the headlight rim so far forwards that the catch at the top becomes bent, otherwise water can penetrate into and damage the reflector.)
- ③ Loosen the screw on the underside of insert. It is not necessary to remove these screws completely. The insert can be removed by turning it in an anti-clockwise direction.
- ④ Remove the bulb holder contact and take off the rubber sleeve. Remove the spring fixing the lamp holder in the correct position.
- ⑤ The bulb and holder are changed completely as one unit. When fitting the bulb holder into the insert, make sure that the small spring retainer engages in the notch.

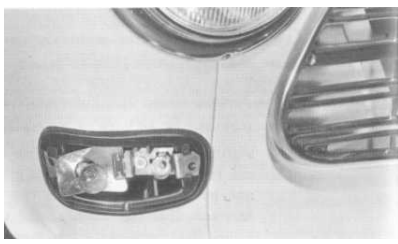


SERVICING

Replacing the bulbs in the front parking lights/flashers



Unscrew the two screws by means of a Phillips screw driver and lift off the glass and the metal frame. The bulbs can now be removed by pushing in and twisting anti-clockwise.



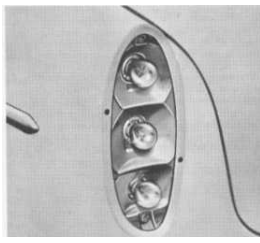
The larger one is the direction indicator flasher and the smaller one the parking light. Make sure that the glass fits well against the gasket.

Replacing the bulbs in the rear flashers, stop/tail lights and reversing light



Unscrew the two screws, one at the upper and at the lower end of the lighting fixture, by means of a Phillips screw driver lift off the glass and the metal frame. The bulbs can now be removed by pushing in and twisting anti-clockwise.

42



The top bulb is the direction indicator, the middle one the combined stop/tail light, and the bottom one the reversing light. Make sure that the glass fits properly on the gasket when assembling the fixture. The untinted part of the glass

Replacing the bulbs in the number plate light



should be at the bottom. The number plate light is built into the handle on the luggage compartment lid with one bulb on each side of the emblem. The bulbs are accessible from the underside of the emblem.

SERVICING

Power transmission

35 Checking the clutch yoke free travel

To avoid risk of the clutch slipping, the clutch yoke free travel should be checked and adjusted if necessary every 10 000 (6 000 miles). If the clutch does not disengage in a satisfactory way, the free travel of the clutch pedal should also be checked. For data see page 55. The clutch should be checked and adjusted at a Volvo workshop since these workshops have the proper equipment.

36 Check the propeller shaft

Every 10 000 km (6 000 miles) or once a year the rubber seal on the spline shaft should be checked as well as the universal joints. If the rubber seal is damaged, it should be replaced and the new seal filled with molybdenum disulphide grease.

Brakes

37 Check and overhaul the brakes

After every 10 000 km (6 000 miles) vehicles should be taken to a Volvo workshop for a check on the functioning of the brakes. Every third year or 60 000 km (36 000 miles) the brakes system seals should also be replaced. In connection with this check, the brakes should also be inspected for wear.

38 Replacing the booster cylinder air filter

The booster cylinder air filter should be replaced every 40 000 km (25 000 miles). The filter is secured by means of a Phillips screw.

Front end

39 Check the front wheel alignment

Correct front wheel alignment is of vital importance for the steering of the vehicle. Faulty adjustment can mean heavy wear on the tyres. For this reason, have the front wheel alignment checked regularly at your local Volvo workshop, for example after every 10 000 km (6 000 miles). If the vehicle has met with a collision involving heavy impact and it is suspected that the front end may have been affected, take the vehicle to a Volvo workshop for a check on the front wheel alignment as soon as possible. Volvo workshops have special measuring equipment for this purpose and can therefore carry out this control very quickly. The front wheel alignment angles are shown on page 56.

40 Check the ball joints, tie-rod, etc.

After every 10 000 km (6000 miles) the vehicle should be taken to a Volvo workshop for a check on the front end concerning excessive play in the ball joints, tie-rods etc. At this check, the ball joint seals should be inspected for damage and leakage. When new seals are fitted, they should be filled with the recommended grease.

SERVICING

Wheels and tyres

41 Check the tyre pressure

Always make a habit of checking the air pressure in the tyres regularly. The simplest way to do this is to check the pressure when filling the fuel tank. See page 56 for the correct air pressures. Do not forget the spare wheel when checking the air pressure. Even if this wheel is not used, its air pressure can go down and you may find that the tyre is flat just when you need it. Do not let the spare wheel be unused for a considerable period, but change it regularly with one of the other wheels.

During driving, the temperature of the tyre rises and also the air pressure in relation to the speed of the vehicle and its load. Normally the air pressure should only be checked when the tyres are cold. If the tyres are warm, any alteration should be made in those cases when the tyres must be pumped with air.

Size 165 S 15 tyres are intended for speeds up to 175 km.p.h. (110 m.p.h.). For prolonged driving at speeds above 140 km.p.h. (90 m.p.h.) the air pressure in the tyres should be increased by 0.3 kg/cm² (4.5 lb/sq. in.). The pressure must not exceed 2.1 kg/cm² (30 lb/sq. in.).

For size 165 SR 15 tyres, the air pressure should be 1.8 kg/cm² (25.5 lb/sq.in.) front, and 2.2 kg/cm² (31.2 lb/sq.in.) rear, irrespective of the driving speed. If inspection of the tyres shows that there are worn spots and unusual wear on the tread, take the vehicle to a Volvo workshop for the wheels to be balanced. Check also that the tread pattern is not less than 1 mm (1/32") in depth. If it is, the tyre must be changed.



Excessively low air pressure is one of the most common reasons for tyre wear. If the pressure is too low, the tread shoulders bear the entire load and wear down very quickly. Tyres which are insufficiently inflated also result in difficult steering and high fuel consumption. Excessively high air pressure means tyre wear along the centre of the tread. It also tends to make travelling less comfortable.

Avoid damaging the tyres against pavement kerbs.

Changing a wheel

Before the vehicle is jacked up, the handbrake should be applied and one of the gears engaged to ensure that the vehicle stands still. If possible block those wheels remaining on the ground as an extra safety precaution. Remember that the handbrake operates only on the rear wheels.

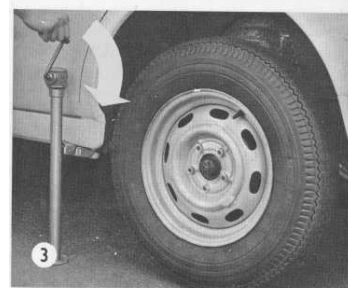
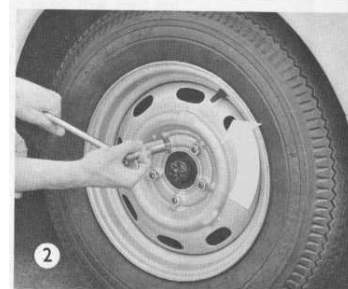
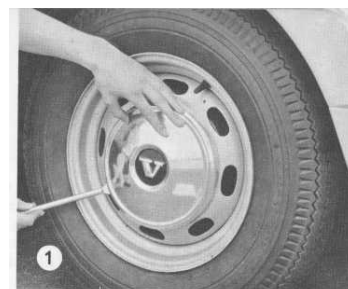
Removing

- ① Lever off the hub cap with the help of the spade-shaped lever.
- ② Loosen the wheel nuts with the help of the box spanner and tommy bar. All the wheels have nuts with right-hand threads and loosened by turning them anti-clockwise.
- ③ Insert the lifting arm of the jack in the appropriate jack attachment of the wheel to be changed. Lift up the side of the car far enough for the wheel to turn freely.
- ④ Unscrew the wheel nuts completely and lift off the wheel. Be careful when lifting of the wheel that the threads of the studs are not damaged.

Fitting

Fit on the new wheel and tighten the nuts until the wheel makes good contact with the hub flange. Then lower the vehicle and tighten the nuts alternately.

Warning. On cars fitted with a differential brake, a jacked-up rear wheel must not be turned if the other rear wheel is on the ground. Because of the differential brake, turning the jacked-up wheel will also move the other rear wheel, thus causing the car to topple off the jack.



SERVICING

Body

42 Washing

When the vehicle is new, it should be washed often to harden the surface finish. Dust and dirt and especially insects and tar spots can damage the paintwork. Washing and polishing are also extremely important from the viewpoint of rust protection. During the winter, make sure that all road salt residue is washed off as soon as possible, otherwise corrosion can easily occur. A vehicle, the bodywork of which has been well taken care of, has of course a higher second-hand value, should the owner consider selling it.

When washing the car, make sure that it is not exposed to direct sunlight since this can cause drying patches. Begin by softening up the dirt on the underside of the body with a jet of water and use if necessary a soft brush. Then rinse down the whole body with a light jet until the dirt has loosened up. Use plenty of water. After this wash off the dirt with a sponge using plenty of water.

If washing with water alone is not sufficient, washing agents can be used. Be very careful when choosing a washing agent since some of them are detrimental to the surface finish.

Asphalt splashes and tar spots can be easily removed with white spirit prior to washing with water. Whenever a washing agent is used, the car should be well rinsed down with clean water afterwards.

After washing, dry the car with a soft, clean chamois leather. Use different leathers for the windows and the remainder of the car, otherwise using the same leather can cause greasy smears on the windows.

43 Polishing (waxing)

The vehicle does not need polishing until the surface finish begins to lose its lustre and normal washing is no longer sufficient to make it shine again. Under normal conditions it is sufficient to polish the vehicle a couple of times a year on condition that it is carefully looked after and thoroughly washed as soon as it has become dirty or dusty. During the winter and in coastal or industrial areas it may, however, be necessary to polish the vehicle more often in order to avoid rusting. Before the vehicle is polished it should be carefully washed and dried so that scratches do not occur in the paintwork.

Polishing a couple of times a year is generally sufficient to give the surface finish the maintenance it needs. If you want to wax the vehicle, be very careful to ensure that the surface is absolutely clean before application. Be very careful when using solvents since in many cases these can damage the surface finish. Waxing may not be carried out until at least one year after the vehicle has been delivered. This is to ensure that the surface finish has been given enough opportunity to harden.

Use only a good quality polish intended for a synthetic finish. Never polish or wash the vehicle in direct sunlight as this can easily result in a smeary surface.

Touching-up surface finish damage

The touching-up of any extensive damage to the synthetic finish requires the use of special equipment and skill, so that the repairing of any such damage should be entrusted to a Volvo workshop. Minor damage caused by flying stones, etc. and small scratches can, however, be attended to by you yourself.

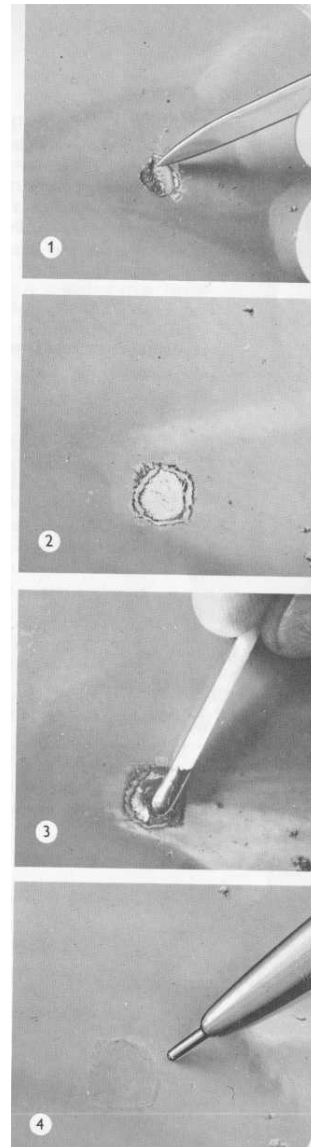
Damage caused by flying stones requires immediate treatment. Therefore, make a habit of checking the finish and carrying out touching-up work regularly - for example when washing the car. Volvo dealers can supply you with suitable touching-up paint with brush. Always check to make sure that you get exactly the right colour.

1 Scrape the damaged surface absolutely clean with a penknife or any other sharp object. Carefully remove any loose flakes of paint and "chamfer off" the edges around the damaged surface.

2 The picture shows a damaged spot scraped clean with "chamfered" edges ready for touching-up.

3 In the event of severe damage due to flying stones, it is necessary to treat the spot with anti-rust primer. This can be applied with a matchstick or fine brush. The primer should cover the whole of the scraped and "chamfered" surface.

4 When the anti-rust primer has dried, genuine Volvo paint is applied. Stir the paint well (but not with a brush). Apply several thin coats of the paint, allowing it to dry thoroughly between each application.



SERVICING

Chromed parts

The chromium-plated and anodized parts should be washed with clean water as soon as they become dirty. This is particularly important if you drive on gravel roads which are treated with chemicals to keep down the dust or in the winter when salt is used to melt down the snow or if you drive near the sea. After washing you can apply wax or anti-rust preparation.

44 Anti-rust treatment

The Volvo 120 models are anti-rust treated at the factory. The door sills are made of galvanized sheet metal and do not require any maintenance. The lower part of the body is treated with underbody sealing compound on those places subjected to flying stones from the wheels, that is, the wheel arches, the entire floor and the underside of the sills. Anti-rust fluid is sprayed on the chassis parts.

Inspection and touching-up of the anti-rust protection should be done at regular intervals, and at least once a year.

If any touching-up of the anti-rust protection is necessary, this should be done immediately to prevent moisture from seeping in and consequently damaging it.

45 Cleaning

Cleaning the upholstery

The upholstery consists of vinyl-coated fabric which is very resistant to dirt so that it rarely requires any maintenance. If it becomes stained, the upholstery can easily be cleaned with a synthetic washing agent and lukewarm water.

Cleaning the floor mats

The floor mats should be taken out at least twice a year and cleaned and dried, particularly during the winter. The floor under the mats can be cleaned at the same time.

If the mats have become stained, they can be cleaned with methylated spirit and then rinsed off with water.

SERVICING

Servicing before a long-distance trip

If you are thinking of travelling abroad with your car, or taking a long trip, you should first have it completely checked at a Volvo workshop. You will enjoy your journey better if you know that your car is in perfect trim. Irritating incidents can be avoided as well as expensive time-absorbing stoppages. Even if something unforeseen should happen, your journey does not need to be spoiled. Wherever you go you know you have Volvo workshops within reach to take

care of your car, if it should be necessary. Do not forget the regular servicing during your trip abroad. All Volvo workshops abroad are equipped to give your vehicle the service it requires.

If you prefer to look over your vehicle yourself, the following hints are worth noting:

- 1 Check the brakes, front wheel alignment and steering gear.
- 2 Check the engine and drive units concerning fuel, oil coolant leakage.
- 3 Examine the tyres carefully. Replace worn tyres.
- 4 Check that the engine is running perfectly and the fuel consumption is normal.
- 5 Examine the state of the battery and clean the terminals.
- 6 Look over the tool equipment and check the spare wheel.
- 7 Check the lighting.

SERVICING

Procedure in cold weather

When cold weather is on the way, it is time to think of the winter servicing of your car. The first night of frost can come as a very unpleasant surprise unless preventive precautions have been taken.

Engine cooling system

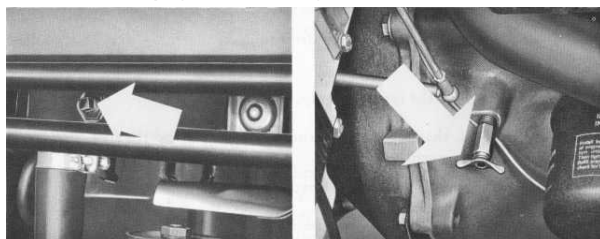
A good quality anti-freeze should be used all the year round. Thus, the cooling system should always contain water plus anti-freeze and rust inhibitor, even in the summertime.

The coolant keeps its properties for approximately 2 years when it should be changed. A suitable time for doing this is during the autumn. This would ensure against possible damage caused during the winter months. When the coolant is being changed, the cooling system should be flushed out with clean water. For further details, see page 37. If the coolant has to be topped up during the winter, use only a good quality coolant. Water alone weakens both the anti-rust properties of the coolant as well as its rust-proofing effectiveness. It is a good idea when topping up with coolant to have the concentration checked in order to be certain that there is always sufficient protection against damage by frost.

Experience has also shown that extremely weak anti-freeze solutions (10-20N) are very unfavourable from the viewpoint of rust protection. For this reason, the quantity of anti-freeze should amount to 50 % of the coolant, that is, 4.3 litres (7 ¹/₈ Imp. pints = 9 U.S. pints), which is effective below -35°C (-31°F). The maximum freezing point, -56°C (-56°F) is obtained when 5.2 litres (9 ¹/₈ Imp. pints = 11 U.S. pints) of anti-freeze is in the cooling system.

Radiator alcohol is not recommended as an anti-freeze agent since it evaporates at normal engine temperature.

Location of drain plug/cock for cooling system



1. Right side of radiator

2. Right side of engine

SERVICING

Engine lubricating system

During the winter multigrade oil SAE 10 W-30 or engine oil with a viscosity of SAE 10 W should be used for the engine lubricating system. At continuous temperatures below -20°C (-4°F) use multigrade SAE 5 W-20. These oils reach the lubricating points mentioned more easily at low temperature and also facilitate cold starting. If you drive for the most part short distances during the winter, the engine oil should be changed more often than usual, for example, after every 2 500 km (1 500 miles). See page 31.

Electrical system

The electrical system in the vehicle is subjected to greater stresses during the winter than during the warm summer months. The lighting and starter motor are used more and since the capacity of the battery is also considerably lower at low air temperature, the state of charge must be checked more often and, if necessary, the battery charged. If the specific gravity of the electrolyte is excessively low, there is risk of frost damage to the battery.

Brake system

During very cold weather, the brakes are subjected to splash and condensation water which can result in the handbrake freezing up if left on. Therefore, never park the car with the handbrake applied, engage instead 1st gear or reverse and if possible place blocks behind the wheels.

Windscreen washer

In the same way as anti-freeze is added to the cooling system during the winter to prevent frost damage, anti-freeze should also be added to the water container for the windscreen washer. This is particularly important because the windscreen during the winter frequently becomes dirty and is often splashed with water which rapidly freezes and thus necessitates the frequent use of the windscreen washer and wipers. Your Volvo dealer can supply you with a suitable anti-freeze for this purpose.

Anti-freeze for door locks

A frozen door lock is one of the most irritating things that can happen to a car-owner. Many valuable minutes early in the morning can be wasted warming up keys and melting ice in locks. Remember this in good time and lubricate the lock with some anti-freeze preparation. These are now available in small handy tubes which can be kept in a handbag or coat pocket.

FAULT TRACING

The information given below is only intended to serve as a guide in localizing and temporarily correcting minor faults. After having carried out any such measures, have them checked and adjusted by an experienced mechanic.

The engine does start although the starter motor turns it round at normal speed

- 1 Check that there is fuel in the tank.
- 2 If the engine is warm, starting should be done with the accelerator pedal slowly depressed as far as it will go.
- 3 In wet weather the sparking plug insulators should be wiped clean and the distributor cap removed and wiped dry if flash-over is suspected.
- 4 Check that the fuel line connections on the pump and carburettor are not leaking and that fuel is supplied to the carburettor.
- 5 If the engine is turned round for a while without having started, too rich a fuel mixture can enter the cylinders resulting in the sparking plugs becoming moist. Blow the cylinders clean by screwing off the sparking plug and turning round the engine with the starter motor. Dry the sparking plugs before fitting them.

If the engine still does not start

- 1 Remove the ignition cable from each plug in turn. Hold the end of the cable about $\frac{1}{4}$ " from the cylinder block while turning round the engine with the ignition switched on. If there is a strong spark, the fault is probably in the sparking plugs, so these should be changed.
- 2 If only a weak spark is obtained or none at all, check to see whether the ignition cables are properly inserted in the distributor and ignition coil.
- 3 Remove the distributor cover, check and clean all contact surfaces. Check that the contact brakes close properly when the engine is turned round. If the contact breaker arm shaft binds, oil it very sparingly.

If the engine misfires, the reason can be:

- 1 That one of the ignition cables has loosened in the distributor cover or from the sparking plug.
- 2 That one or more of the sparking plugs is coated with soot or oiled up, in which case the plug concerned should be cleaned or changed and the sparking plug gap adjusted.
- 3 That the distributor cover and rotor arm can be cracked or damaged.
- 4 That one of the ignition cables is in a poor condition.
- 5 That the contact breaker gap in the distributor is insufficient or non-existent.
- 6 That the contact breakers are badly burned.

Measurements and weights

Length	4440 mm (175")
Width	1633 mm (64")
Height unladen (ready to drive)	1470 mm (58")
Wheelbase	2600 mm (102 $\frac{1}{4}$ ")
Ground clearance, unladen	210 mm (8 $\frac{1}{4}$ ")
Ground clearance, driver and 3 passengers	170 mm (6 $\frac{11}{16}$ ")
Track, front	1315 mm (51 $\frac{3}{4}$ ")
Track, rear	1315 mm (51 $\frac{3}{4}$ ")
Turning circle	9.5 m (31'4")
Kerb weight (depending on the vehicle type)	1150 kg (2535 lb) — 1180 kg (2600 lb)

SPECIFICATIONS

Engine

Type designation	<i>Volvo B 18 A</i>	<i>Volvo B 18 B</i>
Max. output (DIN) at r.p.m.	75 h.p./4700	96 h.p./5600
Max. output (SAE) at r.p.m.	85 h.p./5000	115 h.p./5600
Max. torque (DIN) at r.p.m.	14.5 kgm (105 lb.ft.)/2300	14.7 kg (106 lb.ft.) /3500
Max. torque (SAE) at r.p.m.	15 kgm (108.5 lb.ft.)/3000	15.5 kgm (112 lb.ft.)/4000
Number of cylinders	4	
Bore	84.14 mm	
Stroke	80 mm	
Displacement	1,78 litres	
Compression ratio	8.7:1	10:1
Valves	Overhead	
Valve clearance, warm and cold, inlet and exhaust	0.40—0.45 mm (0.016"—0.018")	0.50—0.55 mm (0.020"—0.022")
Idling speed (warm engine)	500—700 r.p.m.	600—800 r.p.m.

Fuel system

Carburettor, type	Horizontal	Horizontal (twin)
designation	Zenith-Stromberg 175 CD-2S	2 SU—HS 6

Cooling system

Type	Positive pressure
Thermostat, begins to open at	75—78°C (167—172° F)
fully open at	89°C (194° F)

Ignition system

Firing order	1—3—4—2	
Ignition setting,	97 octane	100 octane
stroboscope setting at 1500 r.p.m. with vacuum regulator discon- nected (B 18 A)	21—23° B.T.D.C.	17—19° B.T.D.C.
Spark plug	Bosch W 175 T 1*)	Bosch W 200 T 35*)
Spark plug gap	0.7—0.8 mm	(0.028—0.32")
Tightening torque	3.8—4.5 kgm	(27.5—32.5 lb.ft.)
Distributor, direction of rotation ..	Anti-clockwise	
Contact breaker gap	0.4—0.5 mm	(0.016—0.020")

*) Or corresponding

Electrical system

Voltage	12 V
Battery, type	Tudor 6 EX 4 f*)
capacity	60 Ah
electrolyte, specific gravity	1.275—1.285
when recharging is necessary	1.230
Dynamo, rated output	240 W (max. 360 W)
Alternator, max. output	450 W

Lamp bulbs (12 V)

	Power	Socket	Number
Headlights, asymmetrical	45/40 W	P 45 T ✓	2
Parking lights, front	5 W	Ba 15 s	2
Flashers, front and rear	32 CP	Ba 15 s	2
Stop/parking lights, tail lights	32/4 CP	Ba 15 d spec.	2
Reversing lights	15 W	Ba 15 s	2
Number plate light	5 W	S 8	4
Interior lighting	10 W	S 8	3
Glove compartment lighting	2 W	Ba 9 s	1
Instrument lighting	2 W	Ba 9 s	1
Warning lamps, direction indicators	2 W	Ba 9 s	1
headlights	2 W	Ba 9 s	1
charging	2 W	Ba 9 s	1
oil pressure	6 W	Ba 9 s	1

Additional for Volvo 123 GT

Fog/spot lights	55 W	spec.	2
Warning light, overdrive	2 W	Ba 9 s	2
Luggage/engine compartments	32 CP	Ba 15 s	1
Rev. counter	2 W	Ba 7 s	1

Power transmission

Clutch

Clutch yoke free travel	3—4 mm (approx. 1/8")
Clutch pedal travel	140 mm (5 1/2")

Gearbox

Type designation	M 30	M 40	M 41
Reduction ratios: 1st speed	3.13:1	3.13:1	3.13:1
2nd speed	1.55:1	1.99:1	1.99:1
3rd speed	1:1	1.36:1	1.36:1
4th speed	—	1:1	1:1
4th speed with overdrive	—	—	0.76:1
Reverse	3.25:1	3.25:1	3.25:1

Rear axle

Type	Crown wheel and pinion (Hypoid)
Reduction ratio	4.1:1
with overdrive ...	4.56:1

*) Or corresponding

SPECIFICATIONS

Front wheel alignment

Alignment values apply to an unladen vehicle but include fuel, water and spare wheel.

Toe-in	0—4 mm (0.157")
Camber	0 to +1/2°
Caster	0 to +1°
King pin inclination	8°

Wheels and tyres

Tyre size	165 S 15		
Air pressure (cold tyres)	1—2 persons 4—5 persons Fully loaded		
front kg/cm ²	1.4	1.4	1.5
lb/sq.in.	20	20	21
rear kg/cm ²	1.6	1.8	2.0
lb/sq.in.	23	26	28
For prolonged driving at speeds over 140 km.p.h. = 90 m.p.h. the pressure should be increased by 0.3 kg/cm ² (4.5 lb/sq.in.). The pressure must not exceed 2.1 kg/cm ² (30 lb/sq.in.).			
Type size	165 SR 15		
Air pressure (cold tyres)			
front, kg/cm ²	1.8		
lb/sq.in.	5.26	26	26
rear, kg/cm ²	2.2		
lb/sq.in.	31		

Capacities

Fuel tank	approx. 45 litres (97/8 Imp. galls. = 117/8 US galls.)
Cooling system	approx. 8.6 litres (17/8 Imp. galls. = 21/4 US galls.)
Oil capacity, engine:	
when changing oil	approx. 3.25 litres (53/4 Imp. pints = 7 US pints)
including oil cleaner	approx. 3.75 litres (63/8 Imp. pints = 81/4 US pints)
Oil capacity, gearbox	approx. 0.75 litre (11/4 Imp. pints = 11/2 US pints)
gearbox/overdrive	approx 1.6 litres (27/8 Imp. pints = 33/8 US pints)
gearbox, automatic	approx. 6.2 litres (11 Imp. pints = 13 US pints)
Oil capacity, rear axle	approx. 1.3 litres (21/4 Imp. pints = 23/4 US pints)
Oil capacity, steering box	approx. 0.25 litre (3/8 Imp. pint = 1/2 US pint)

Lubricating chart

Symbols

◆ **Brake fluid**
Grade SAE 70 R 3

◻ **Rear axle oil**
Grade: Hypoid oil
Viscosity: See page 33 and 34

◻ **Light engine oil**

◻ **Engine oil**
Grade: For Service MS
Viscosity: Multigrade SAE 10 W-30
see also page 31

► **Special lubricant, see resp. notes.**

Oil capacities

Engine 3.25 litres
(5¾ Imp. pints =
7 U.S. pints)
Engine, incl. oil cleaner .. 3.75 litres
(6¾ Imp. pints =
8¼ U.S. pints)
Gearbox 0.75 litre
(1¼ Imp. pints =
1½ U.S. pints)

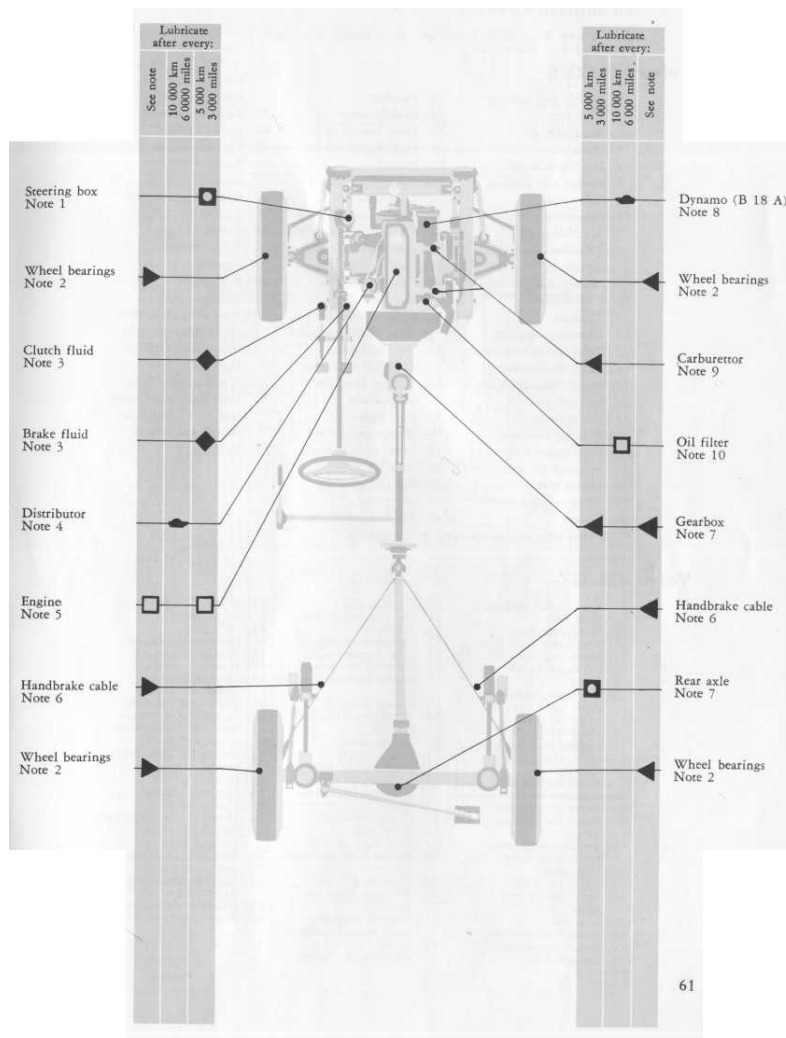
Gearbox oil

Gearbox with overdrive
approx. 1.60 litres
(2⅞ Imp. pints =
3⅝ U.S. pints)
Gearbox automatic .. approx. 6.2 litres
(11 Imp. pints =
13 U.S. pints)
Rear axle 1.30 litres
(2¼ Imp. pints =
2¾ U.S. pints)
Steering box 0.25 litre
(⅓ Imp. pint =
½ U.S. pint)

Notes for lubricating chart

- Note 1** Check that the oil reaches up to the filling plug. Use all year round hypoid oil SAE 80.
- Note 2** In connection with any work in the workshop involving exposing the wheel bearings, remove the bearings, clean them and lubricate them with high-class durable grease in accordance with the instructions in the service manual. Subsequent adding or changing of this grease in addition to the above is not required.
- Note 3** Check that the fluid reaches up to the level mark.
- Note 4** Lubricate the felt wick under the rotor and fill a few drops of light engine oil into the lubricating cup.
- Note 5** Check the oil level when filling up with petrol. Change the oil every 5 000 km (3 000 miles) and in spring and autumn when changing over to another viscosity, if multigrade oil is not used. In unfavourable operating conditions the oil should be changed after every 2 500 km (1 500 miles), see page 31.
- Note 6** Have the handbrake cable lubricated with graphite grease a couple of times a year.
- Note 7** Check every 5 000 km (3 000 miles) that the oil reaches up to the filler plug. Concerning oil change, see page 32. NOTE. The type of gearbox will decide the type of lubricant to be used.
- Note 8** Fill the lubricating cup with light engine oil. The lubricating cup is opened by turning the outer cup. Use an ordinary oil can, not a pressure can.
- Note 9** At every engine oil change check that the oil level in the centre spindle of the carburettor(s) reaches up to about 6 mm (¼") from the top of the spindle. If it does not, top up to this level. Use oil ATF type A (transmission oil).
- Note 10** The oil filter should be changed every 10 000 km (6 000 miles), see page 35.
- Note 11** Check the oil level every 5 000 km (3 000 miles). Concerning lubricant for a final drive with differential brake, see page 34.

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Text for wiring diagrams

Note that the electrical equipment can vary for the different models on different markets.

A = White B = Black C = Blue D = Green E = Grey F = Yellow G = Brown
H = Red I = Spare lead

Volvo 121/122 S

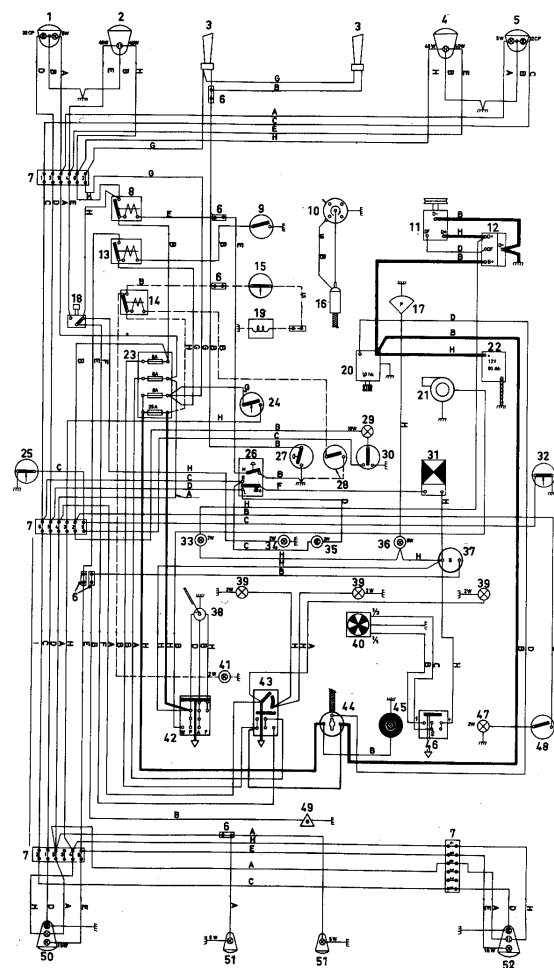
- | | | |
|--|---|--|
| 1. Flasher and parking light, left | 23. Fusebox | wiper and washer |
| 2. Headlight, left | 24. Brake contact | 43. Lighting switch |
| 3. Horn | 25. Door contact, left | 44. Ignition switch |
| 4. Headlight, right | 26. Light signal device | 45. Cigarette lighter |
| 5. Flasher and parking light, right | 27. Horn | 46. Switch for ventilation fan |
| 6. Connector | 28. Overdrive switch ¹⁾ | 47. Glove compartment lighting |
| 7. Junction block | 29. Roof light | 48. Switch for glove compartment lighting |
| 8. Relay for headlight signal | 30. Switch for roof light | 49. Fuel gauge |
| 9. Reverse light contact | 31. Flasher unit, direction indicators | 50. Rear lamp, left, with rear light, stop light, flasher and back-up light |
| 10. Distributor | 32. Door contact, right | 51. Number plate light |
| 11. Dynamo | 33. Control lamp for charging | 52. Rear lamp, right, with rear light, stop light, flasher and reverse light |
| 12. Charging regulator | 34. Control lamp for main beam headlights | |
| 13. Relay for reverse light | 35. Control lamp for direction indicators | |
| 14. Relay for overdrive ¹⁾ | 36. Control lamp for oil pressure | |
| 15. Overdrive contact ¹⁾ | 37. Fuel gauge | |
| 16. Ignition coil | 38. Windscreen wiper | |
| 17. Oil pressure warning indicator | 39. Instrument lighting | |
| 18. Foot dipper switch | 40. Ventilation fan | |
| 19. Solenoid for overdrive ¹⁾ | 41. Control lamp for overdrive | |
| 20. Starter motor | 42. Control for windscreen | |
| 21. Windscreen washer | | |
| 22. Battery | | |

¹⁾ Applies only to cars equipped with overdrive

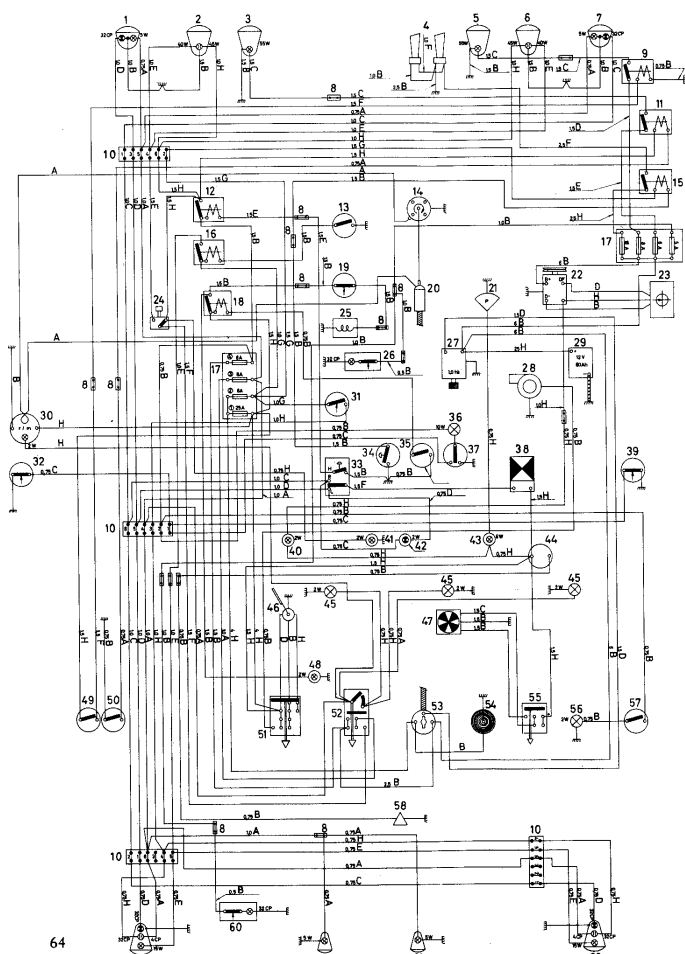
Volvo 123 GT

- | | | |
|---|---|---|
| 1. Flasher and parking light, left | 20. Ignition coil | 43. Warning lamp for oil pressure |
| 2. Headlight, left | 21. Oil pressure pickup | 44. Fuel gauge |
| 3. Spot light, right-hand drive (fog light for left-hand drive) | 22. Alternator | 45. Instrument lighting |
| 4. Horn | 23. Charging regulator | 46. Windscreen wiper |
| 5. Fog light, right-hand drive (spot light for left-hand drive) | 24. Foot dipper switch | 47. Heater |
| 6. Headlight, right | 25. Solenoid for overdrive | 48. Control lamp for overdrive |
| 7. Flasher and parking light, right | 26. Engine compartment light | 49. Switch for fog light |
| 8. Connector | 27. Starter motor | 50. Switch for spot light |
| 9. Relay for fog light | 28. Windscreen washer | 51. Switch for windscreen wiper and washer |
| 10. Junction block | 29. Battery | 52. Switch for spot light and parking light |
| 11. Relay for spot light | 30. Speedometer | 53. Ignition switch |
| 12. Relay for headlight signal | 31. Brake switch | 54. Cigarette lighter |
| 13. Switch on gearbox for reverse light | 32. Door switch, left | 55. Heater switch |
| 14. Distributor | 33. Light signal device, direction indicators | 56. Glove compartment light |
| 15. Relay for horn | 34. Horn | 57. Switch for glove compartment |
| 16. Relay for reverse light | 35. Overdrive switch | 58. Fuel gauge pickup |
| 17. Fusebox | 36. Roof light | 59. Rear lamp, left |
| 18. Relay for overdrive | 37. Roof light switch | 60. Luggage compartment light |
| 19. Switch on gearbox for overdrive | 38. Flasher unit, direction indicators | 61. Number plate light |
| | 39. Door switch, right | 62. Rear lamp, right |
| | 40. Warning lamp for charging | |
| | 41. Control lamp for main beam headlights | |
| | 42. Control lamp for direction indicators | |

Wiring diagram Volvo 121/122 S



Wiring diagram Volvo 123 GT



On a number of markets, the Volvo 123 GT is fitted with twin fog lights. Where this is the case, the wiring of the electrical system differs to a certain extent from the wiring shown above.

Personal information

Name
 Address
 Tel. No.
 Driving licence No.
 Insurance Company
 Insurance Policy No.

Nearest Volvo Dealer

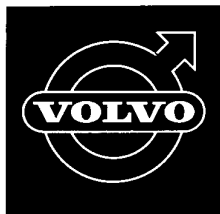
Name
 Address
 Tel. No.
 Garage manager
 Tel. No.

Car information

Type designation
 Chassis No.
 Engine No.
 Registration No.
 Ignition key No.
 Door key No.
 Fuel tank lock, key No.

The specifications and design details given in this book are not binding.
 We reserve the right to carry out modifications without previous notice.

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SERVICE DEPARTMENT