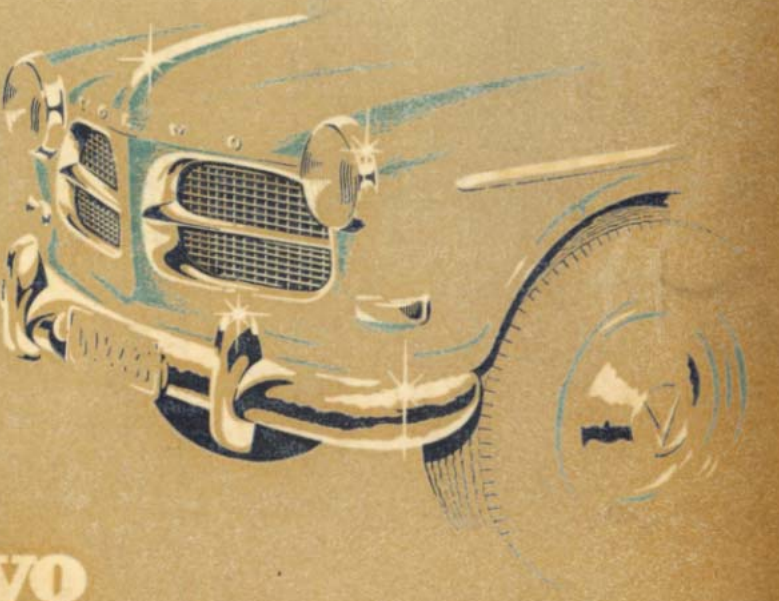
INSTRUCTION BOOK



VOLVO

121 and 122 S

HOW TO DRIVE AND SERVICE

YOUR

VOLVO

AKTIEBOLAGET VOLVO GOTHENBURG SWEDEN

FOREWORD

Your Volvo has been designed with the primary object of giving you a car which will always be ready to take you wherever and whenever you want to go, quickly, comfortably and cheaply. You now have a car which stands at the top of its class but remember that things may occasionally happen which may make it necessary for you to call in help. In such cases it is a reassurance to know that Volvo maintains a world-wide Service Organization with Dealers disposing of modern equipment and whose staffs include factory trained personnel.

We have a mutual interest — that your car should give complete satisfaction — but to achieve this your co-operation is necessary. This book has been specially prepared for you, the owner, and contains the information you need to enable you to keep this car in the best possible trim.

Follow the instructions given and see that your car gets regular service — you'll find that it will always pay.

We reserve the right to change the specifications given in this book without notice.

Handelstryckeriet, Göteborg 1959

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VOLVO 121 and 122 S

Main data:

Output, B 16 A engine:	66 h.p. (SAE) at 4500 r.p.m. (121)
B 16 B engine:	85 h.p. (SAE) at 5500 r.p.m. (122 S)
Wheelbase:	2600 mm (102.4")
Kerb weight:	1130 kg (2491 lb)

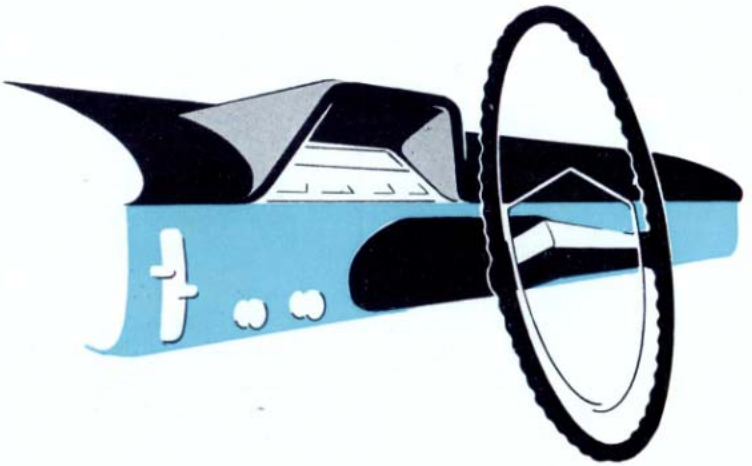
INTRODUCTION

The Volvo 121 and 122 S is a 4-door, 5-seater saloon car with an overhead-valve engine and having a kerb weight of 1130 kg (2491 lb). It fulfills every modern demand as regards appearance, comfort and performance. The petrol-thrifty, lively engine combined with independent front wheel and robust rear axle suspensions, makes it an outstandingly road-worthy car. It is easy to drive and it is fast — but at the same time, safe. The Volvo has an all-welded steel body, itself a vital safety factor. The brakes are over-sized, the steering feather-light and there is good all-round vision in all types of weather. It also has a safety type steering wheel, padded instrument panel and sun visor and reinforcements in the body for fitting of safety belts. If an accident should happen a safety belt gives you the best possible chance of avoiding injury. Therefore buy the safety belts from your Volvo dealer — better be safe than sorry.

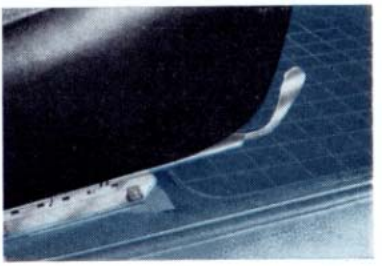
The Volvo can be delivered having front seats with fixed back rests or with seats which can be folded back to form sleeping accommodation. In addition a vacuum-servo system can be supplied which gives increased braking effec with lighter pedal pressure.

There are, besides, many other accessories for your Volvo and your Volvo dealer is always at your service with any further information.

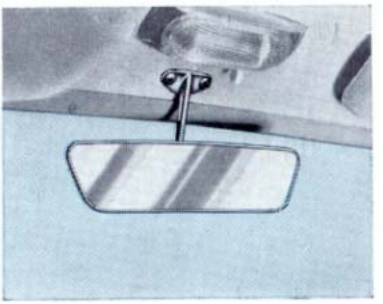
INSTRUMENTS AND CONTROLS



When you first get into your Volvo and sit behind the steering wheel you may find that the seat will require adjusting. This is no trouble since the catch at the side of the seat has only to be moved sideways and the seat can then be adjusted backwards or forwards until the most comfortable position is obtained.



Next adjust the driving mirror so that you have a clear view rearwards without having to crane your neck. If this is adjusted properly you will have an excellent view through the large rear window. Make sure that you adjust the mirror so as to give you an unobstructed view of any traffic coming up from behind which may wish to overtake you.



Before starting to drive, examine the

instrument panel with the different instruments and controls. The first to catch your eye will be the dials of the instruments right in front of you. Here are grouped the instruments and controls which indicate your speed, that the engine is working properly and that the electrical system is in order.

There is a figure in brackets following the headings below. This refers to the captions in Fig. A below and Fig. B on page 9.

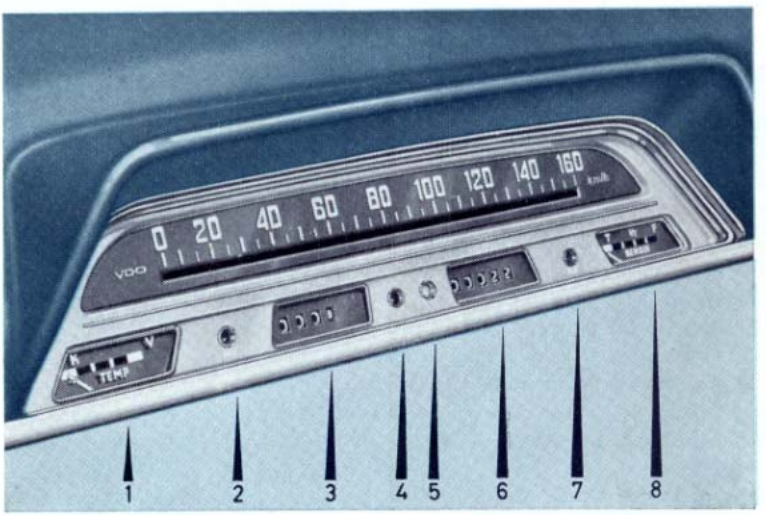


Fig. A. Instrument panel.

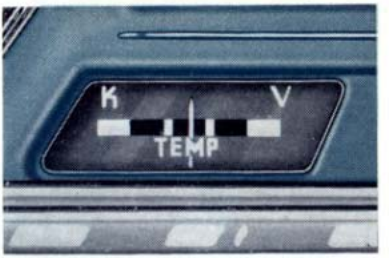
1. Temperature gauge
2. Charging control lamp
3. Trip meter
4. Headlight control lamp
5. Traffic indicator control lamp
6. Mileometer
7. Oil pressure control lamp
8. Fuel gauge

Speedometer

is of new type having a red column which moves horizontally to the right across the face of the instrument as the speed increases. In this way a clearer indication is given, especially at higher speeds. It differs from conventional speedometers in that the red column varies in length in proportion to the speed. Here you have another safety factor because the more red there is showing, the faster you are going. Remember — red spells d-a-n-g-e-r.

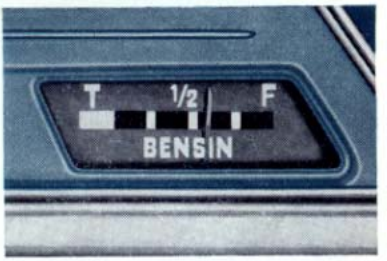
In addition to the usual mileometer (6) there is a trip meter (3) which is graduated into units of hundreds of metres. This can be set to zero by pulling down the knob to the left of the steering column underneath the dashboard.

Temperature gauge (1)



shows the working temperature of the engine. The reading should be between the green marks. If the gauge should consistently register too high a reading this could be due to the fact that the channels in the cooling system have become choked and impair circulation. In such cases the cooling system should be cleaned out: see page 48.

Fuel gauge (8)



operates when the ignition is switched on and shows the level of the petrol in the tank. When the needle lies within the white mark there is about 4 litres (just under 1 Imp.gall.) left in the tank as a reserve. To be on the safe side, however, we would recommend you always to have a reserve can with you, especially on long journeys. There is a special place reserved for a petrol can in the luggage compartment behind the spare wheel.

Warning lamps

In order more easily to call attention to certain of the car's functions some instruments have been replaced by warning lamps. Should anything unusual happen or perhaps something be left switched on, these lamps will light, thus calling your attention to the fact.

Green lamp (7)

lights up when the engine oil pressure is too low. When you switch on the ignition the lamp should light but should extinguish as soon as the engine has started. NOTE. If the lamp comes on whilst driving, stop the engine immediately and try to ascertain the reason. In most cases it will be found that the oil level is too low. **Never run the engine if the oil pressure is too low.**

Red lamp (2)

lights up when the battery is being discharged, which is normal whilst the engine is idling. As soon as you depress the accelerator the light will go out. NOTE. If the lamp lights during normal driving this usually indicates some fault in the electrical system. It may also be due to the fact that the fan belt is not tensioned correctly and is slipping, the result of which is insufficient charging.

Blue lamp (4)

indicates that headlights are full on. No need to tell you how unpleasant it is, to say nothing of dangerous, to be dazzled by the headlights of an oncoming car. When meeting another vehicle at night always dip your headlights by means of the foot dipper switch.

Yellow lamp (5)

reminds you that one of the traffic indicators is blinking. At the same time you will hear a ticking sound.

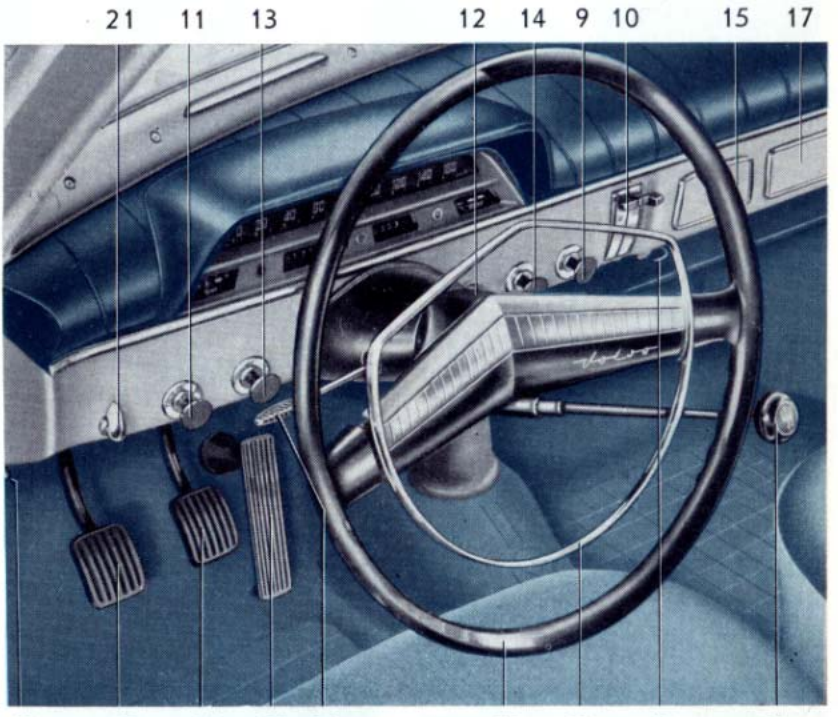


Fig. B. Controls

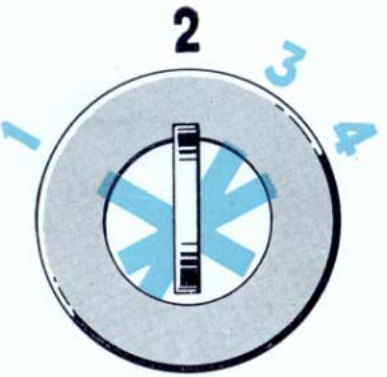
9—10. Heater controls (see page 15)
11. Choke control
12. Ignition and starter switch
13. Headlight switch
14. Cigarette lighter
15. Ashtray
16. Radiator blind
17. Radio panel
20. Gear lever
21. Windscreen wiper control
22. Horn ring
23. Steering wheel
24. Traffic indicator switch with headlight blinker
25. Accelerator pedal
26. Brake pedal
27. Clutch pedal
28. Switch for "long-time" parking lights

Choke control (11)

is used when starting from cold. It operates on a shutter and fast idling device in the carburetter.

This fast idling device prevents the engine stalling before it has had a chance to warm up. The choke should be used sparingly — never drive with the choke out for more than a few minutes and never when the engine is thoroughly warm.

Ignition switch (12)



has a built-in starter switch and there are four different key positions as shown in Fig. C. Position 1 is the "radio position". In this position all electrical accessories can be switched on with the exception of the ignition system. Position 2 is the neutral position and the only one in which the key can be removed. Position 3 is the driving position. When starting the engine turn the key right over to position 4 and release it as soon as the engine starts. The key returns automatically to the driving position 3.

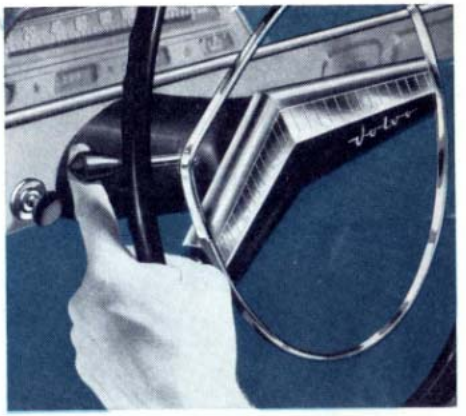
Headlights (13)

are controlled by a switch having three positions as shown in the illustration opposite. By pulling out the knob halfway the parking lights are switched on. Pulled right out, the headlights come on. In both positions the rear lights and number plate lights are also switched on.

There is a foot dipper switch on the floor to the left which is used for switching the headlights from the full to the dipped position and vice versa. When the headlights are on full the blue control lamp (4) is alight. If you so desire you can have the foot dipper switch connected through the light switch parking light position. The dipper switch then also changes from parking lights to dipped headlights and vice versa. Your dealer will be able to tell you more about this.

Blinking headlights (24)

are a feature of the Volvo. When overtaking, a light signal is often more effective than sounding the horn. The headlights can be made to blink by moving the traffic indicator switch upwards for as long as you think necessary for the vehicle in front of you to be made aware of your intention to overtake.

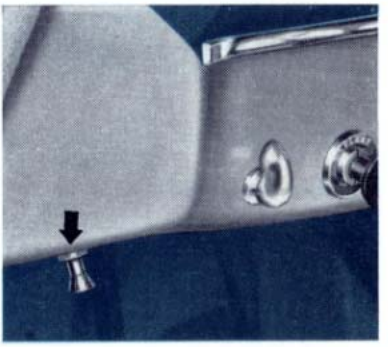


Position of traffic indicator switch for blinking headlights

"Long-time" parking lights (28)

Two large reflectors are fitted at the rear to protect your car from being run in to by other vehicles if you are parked in a badly lit spot. In addition, the Volvo has special lights for long-time parking which are built in to the front and rear lights and are lit by means of a button beneath the instrument panel.

You won't want to be the cause of an accident, so set a good example by switching these lights on when you leave the car on a dark road.



Switch button for "long-time" parking lights

Interior lighting

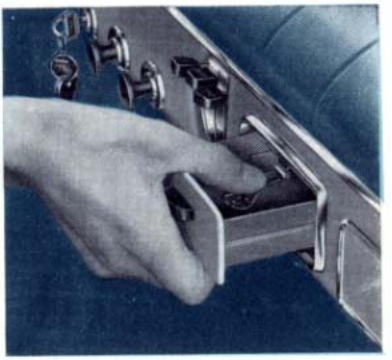
consists of a roof light with switch. There are three position for the switch as shown in Fig. D. The first is the normal position.

1. The lamp lights when either of the front doors is opened.
2. Lamp always remains off.
3. Lamp is on all the time.

Fig. D.

Instrument lighting (13)
is controlled by turning the headlight switch button. The more the button is turned anti-clockwise the stronger the lighting becomes.

If you are a smoker (14, 15)
you will appreciate the convenience of a cigarette lighter and ashtray placed within easy reach of the driving seat. For passengers there is an ashtray in each of the rear doors. When using the cigarette lighter press in the button and after a few seconds it can be pulled right out ready for use. The ashtrays are emptied by removing them with a simple movement as shown in the illustration.



Radiator blind (16)
is standard equipment. When starting from cold the blind should be pulled fully up so that the engine can reach its normal operating temperature quickly. In cold weather it may be advantageous to run with the blind drawn partly up. This helps to maintain a higher temperature inside the car.
NOTE. Never drive with the blind pulled up so far that the engine becomes too hot — a seized engine may be the result.

Gear lever (20)
is direct-operating which makes for quick and precise gear changing. Positions of the various gears are shown in the illustration opposite.
When changing gear the lever should be held in neutral for a moment before engaging the desired speed.

B = Reverse.

Handbrake lever

is placed on the off side of the driving seat which facilitates application. Thus you can easily apply the handbrake without actually sitting in the car. The lever is released by pressing in the button as shown in the illustration below.

Pedals

are of suspended type which means that irritating floor draughts are avoided. When you have started the engine and place your foot on the clutch pedal you feel none of the usual engine vibrations since the pedal operates hydraulically.

Lighter brake pedal application can be achieved by means of a servo-brake system. Have a word with your Volvo dealer about this.

Traffic indicators (24)

consist of blinkers front and rear. The switch lever is self-cancelling. When the traffic indicators are on there is a ticking sound as well as the yellow blinking control lamp.

Windscreen wipers (21)

are driven electrically — which means even running regardless of engine loading. Another advantage is that they have two speeds and are self-parking. To set them going turn the control a little to the right. They will then run at normal speed. To increase the speed and therefore the capacity of the wipers, turn the control further to the right.

A roomy shelf

for holding maps, gloves, etc., replaces the conventional glove compartment. Besides being so capacious it also has the advantage that you can easily see all the contents. It is also provided with illumination which is very useful for map reading etc. The switch for this (19) is fitted to the under side of the instrument panel furthest away from the driver. There is also another roomy shelf below the rear window for parcels and so on. It is sunken so that the contents will not obstruct the driver's rearward view.

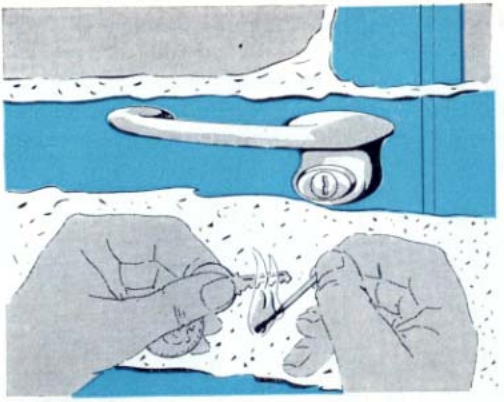
Door locking system

on the Volvo offers many advantages.

1. All doors, including the luggage compartment door, are opened from outside by pressing in the respective button.
2. All doors can be locked from inside by pressing down the respective knob on the window ledge.
3. When the car is locked, both front doors can be opened from the outside with the key.
4. On the front doors, the locking knob lifts automatically when the doors are opened from inside. This prevents you from locking yourself out. There is also a further advantage — you do not need a key to lock the car. Just depress the locking knobs and close the doors. **But remember to take the key out of the car.**

   By having to depress the locking knobs in order to lock the car, this will jog your memory not to leave the key in the car.

Don't forget to take the key out of the car.



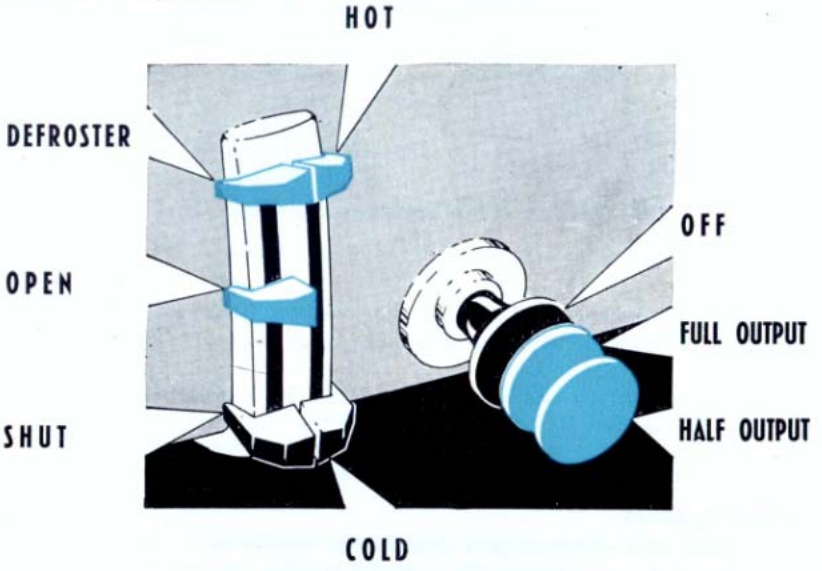
Sometimes, in extremely cold weather, the locks can freeze particularly if air humidity is high. Do not use force as this can break the key. Warm up the key instead.
Special preparations are available to prevent the locks from freezing. A little glycol on the key can often do the trick.

Ventilating panes
on the front door windows give draught-free ventilation in the car. When the window is closed and the handle turned down, this is locked by a catch.
This catch must be pressed in for the window to be opened again.

Heating system (9, 10)
of the Volvo also provides ventilation and gives fresh warm air during the winter and invigorating outside air during the summer.
The fresh air intake is placed immediately in front of the windscreen thus avoiding taking in exhaust gases from preceding vehicles.

Earlier type
The system is operated by three controls — a pull switch for the fresh air fan and two controls for regulating the degree of heat and air distribution (see illustration). The pull switch on the right has three positions. In the inmost position the fan is off, the intermediate position gives full output and, pulled right out, gives half output. The control marked with a blue spot operates the fresh air shutter. When the knob is in the lower position the shutter is closed and is fully open when the knob is in the intermediate position.

When the knob is moved right up (defroster position) all the air is directed to the windscreen. The second control, marked with red, regulates the temperature of the incoming air. In the lowest position no heat is supplied to the air The higher up this knob is moved the warmer the incoming air becomes. When adjusting this control it takes a few minutes before the thermostat settles down at the new temperature.



Earlier type heater

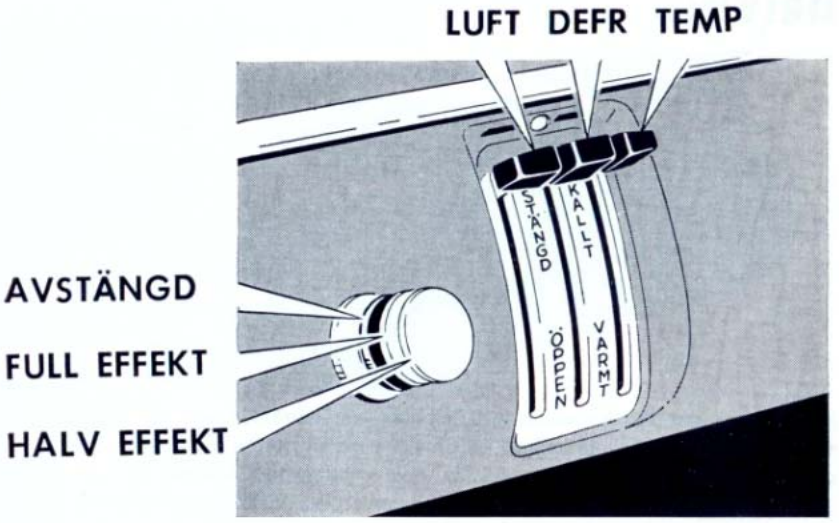
Later type

The system is operated by four controls — a pull switch for the fresh air fan and three controls for regulating the degree of heat and air distribution (see illustration).

The pull switch on the left has three positions. In the inmost position the fan is off, the intermediate position gives full output and, pulled right out, gives half output.

The control on the left operates the fresh air shutter and the centre one (defroster) operates the shutter for controlling the flow of air to the windscreen. Both shutters are closed when the controls are in their upper position. By pushing the controls downwards the respective shutters are opened, being fully opened when the controls are in their lower position.

The right-hand control regulates the temperature of the incoming air. In the upper position no heat is supplied to the air. The lower down the control is moved, the warmer the incoming air becomes. When adjusting this control it takes a few minutes before the thermostat settles down to the new temperature.



Later type heater

Luft	= Air
Defr.	= Defroster
Temp.	= Temperature
Avstängd	= Closed
Full effekt	= Full output
Halv effekt	= Half output

DRIVING

Whether or not the Volvo is the first car you have owned, driving it will not present any great difficulties — on the contrary, in fact. Everything is laid out to enable you to drive quickly and comfortably without in any way sacrificing safety. Safety is, after all, the sovereign virtue especially when it comes to car driving where awkward situations crop up suddenly and where even more or less experienced drivers squabble for road space. It is very difficult to lay down any hard and fast rules as to how to drive in any particular situation but every driver should try to cultivate an instinctive reaction to do the right thing. This can best be achieved by developing a sense of judgement, by always having consideration for other road users and by taking into account localities and road conditions. In this way you and your Volvo will have many miles of carefree motoring ahead. You have, of course, fitted safety belts?

Starting the car

is done with a few simple movements.

1. Make sure that the handbrake is on.
2. See that the gear lever is in neutral.
3. **If the engine is cold pull out the choke.**
   If the engine is warm the choke should be fully in and the accelerator pedal fully depressed.
4. Fully depress the clutch pedal.
5. Turn the ignition key to the starting position and release the key as soon as the engine starts. When making repeated attempts to start, both engine and starter motor must be allowed to come to rest completely before a further attempt is made.

6. When the engine has started, idling speed is controlled by the fast idling device which is linked with the choke. As the engine warms up so the choke must be pushed in more and more.

Never race a cold engine

Never race up the engine immediately after a cold start but allow it to run at a moderate speed. Do not subject the engine to heavy loading until it has reached its normal working temperature. Before moving off ensure that the oil pressure control light is out.

Stalling

In wet cold weather with temperatures between —5° C (23° F) and +10° C (50° F), ice can form in the carburetter (B 16 A). This can cause stalling when the accelerator is released and usually occurs about 10 minutes after starting a cold engine. To prevent this, pull out the choke about 10 mm (3/8") so that the rapid idling is influenced, i.e. so that the engine speed noticably increases.

Starting indoors

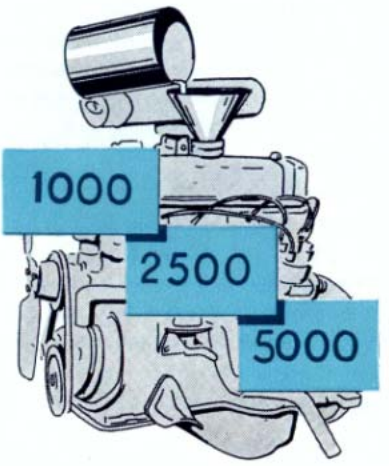
Make a point of always opening the garage doors **before** starting your car. Exhaust fumes contain poisonous carbon monoxide gas which is both colourless and odourless.

Air containing only 2 parts per thousand carbon monoxide can have fatal results if breathed in for half an hour.

Don't run the engine in a closed garage

When the car is new

it goes without saying that it should not be driven "flat out". During this first period it should be run in carefully so that all vital parts of the car such as engine, gearbox, rear axle, wheels, etc., have a chance to "bed down". For the first 500 km (300 miles) it is unwise to exert full engine output except for very short periods and for the very first journeys it is particularly important that the engine should not be subjected to full loading. Keep an eye on the temperature gauge and should this show an excessively high reading the engine should be stopped immediately.



During the running-in period the engine oil should be changed more often than will later be necessary. Change the oil for the first time after having driven for 1000 km (600 miles), a second time after 2500 km (1500 miles) and a third after 5000 km (3000 miles) when at the same time the oil filter element should also be replaced (see page 29). Thereafter the engine oil should normally be changed at 5000 km (3000 miles) driving intervals.

Since the engine has been thoroughly tested, partly on a test bench and partly on road test after installation, we are ensured that all fits are satisfactory and we are therefore unable to accept responsibility for any subsequent scoring of pistons and bearings.

Do not thrash the car when it is new.

SERVICING

There are some cars on the road which cause their owners continual trouble. As a Volvo owner, however, you will not suffer such trouble — always providing you see that the normal servicing which every vehicle requires is properly carried out. The small amount of pains and care required to follow our instructions and advice concerning service and maintenance will be repaid many times by the pleasure and enjoyment you will get from your Volvo.
You will soon notice that one of the features in the design and manufacture of the Volvo is that all servicing and maintenance work has been brought to a minimum and at the same time made as simple as possible. It is impossible to avoid entirely all aspects of servicing work but the intervals between which various maintenance adjustments have to be carried out have been increased considerably when compared with other makes. For this reason your overhead maintenance and servicing costs will be very small.

Through simplification of the maintenance work there are many of the recurring servicing jobs which you will be able to do yourself. We would, however, warn you against attempting to do any work requiring the use of special tools or which you are not absolutely certain you can manage yourself. Volvo has built up a large and comprehensive service organization and all Volvo dealers are equipped with special tools. It is for your — the customer's — sake that this organization has been built — to bring down costs and to expedite work. Knowing full well that nothing is so good that it cannot de made better, Volvo engineers strive constantly to find ways and means of further simplifying service. You, as the owner of a Volvo product, will reap the reward of all this effort in the form of well-done work at low cost.

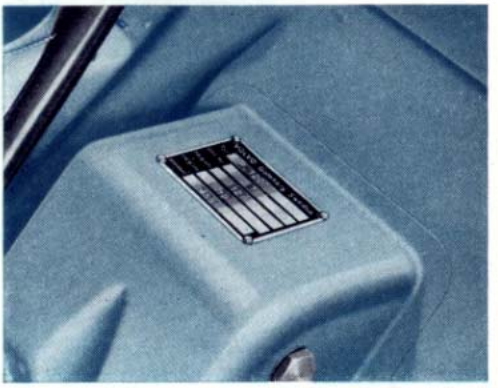
If for any reason you need to order spare parts for your Volvo or require information, you should, **in the first place**, apply to your dealer and only **in the second place** direct to the Volvo factory.

Always quote the car's type designation and chassis or engine number. Note also that when ordering upholstery items or enamel, the number code appearing on the chassis number plate should be quoted.
These numbers will be found stamped on two plates fixed to the car as shown in the following illustrations.

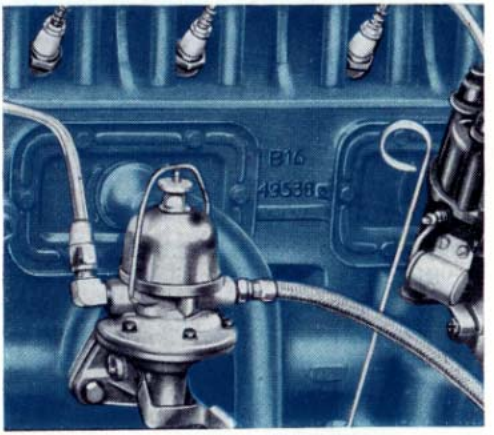
The chassis number plate is by the side of the bonnet.
Example of type designation and chassis number:

121 V—1 or
121 H—2

where V indicates left-hand steering and
H right-hand steering.

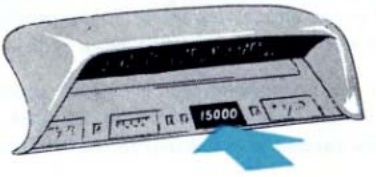


The type designation and part number of the engine are stamped in the engine block on the left side as shown in the illustration. The engine serial number is stamped under the part number for engine identification, always state the engine part number and the serial number, for example 495383—12345.



Maintenance scheme

Regular service is of the utmost importance. This should be done about every 5000 km (3000 miles). Every time the mileometer comes up to units of 5000 km this will be a reminder that a service is due.



In order to give you an idea as to what should be done on these occasions we have drawn up a scheme of the different measures and when they should be carried out. Some of these jobs you will be able to do yourself whilst others must be left to the dealer since they require trained mechanics and the use of special tools Such items are marked with colour in the scheme. The different maintenance items have been numbered consecutively and the scheme is followed by brief descriptions of the various measures. The numbers in brackets following the headings of these descriptions refer back to the scheme.

It is in your own interests to follow these rules as in this way you will save yourself time and money.
In addition to the measures listed in the following scheme you should at least once a fortnight, preferably when filling up with petrol, check:

a) engine oil level
b) coolant level in radiator
c) tyre pressure
d) battery

From a traffic safety point of view you should also check:

a) lighting (don't forget the stop lights)
b) traffic indicators
c) horn

Always try to keep your car in good trim. Wash and polish it regularly and brush out or vacuum-clean the inside when necessary. Also keep it clean and spruce under the bonnet — it will facilitate service and help you to find and remedy any fault quicker and more easily. Follow this advice and you will soon realize how much more satisfying it is to have a well-kept car to say nothing of the good impression made on friends and acquaintances.

MAINTENANCE SCHEME FOR YOUR VOLVO

MEASURE	Every 5000 km (3000 miles	Every 10000 km (6000 miles)	See page
ENGINE			
1. Renew oil filter element	●1)	●	29
2. Clean breather filter		●	
3. Clean fuel filter	●		
4. Adjust idling	●		
5. Clean air filter	●		
6. Decarbonizing			48
7. Check valve clearance	●		
8. Check cooling system			48
9. Check fan belt		●	
CLUTCH			
10. Check fluid level	●		
FRONT OF CAR			
11. Check front wheel alignment		●	51
BRAKES			
12. Check handbrake		●	
13. Check fluid level	●		
ELECTRICAL SYSTEM			
14. Check headlight adjustment		●	59
15. Check sparking plugs	●		
16. Renew sparking plugs			60
BODYWORK			
17. Polishing and waxing			62
18. Cleaning upholstery and mats			62
LUBRICATION			
19. Engine	●		
20. Gearbox	●2)		65
21. Rear axle	●2)		65
22. Steering gear	●		
23. Chassis	●	●	66
24. Body		●	

1) Only after the first 5000 km (3000 miles). 2) After the first 5000 km (3000 miles), the gearbox and rear axle should be thoroughly flushed out and new oil added.

Engine

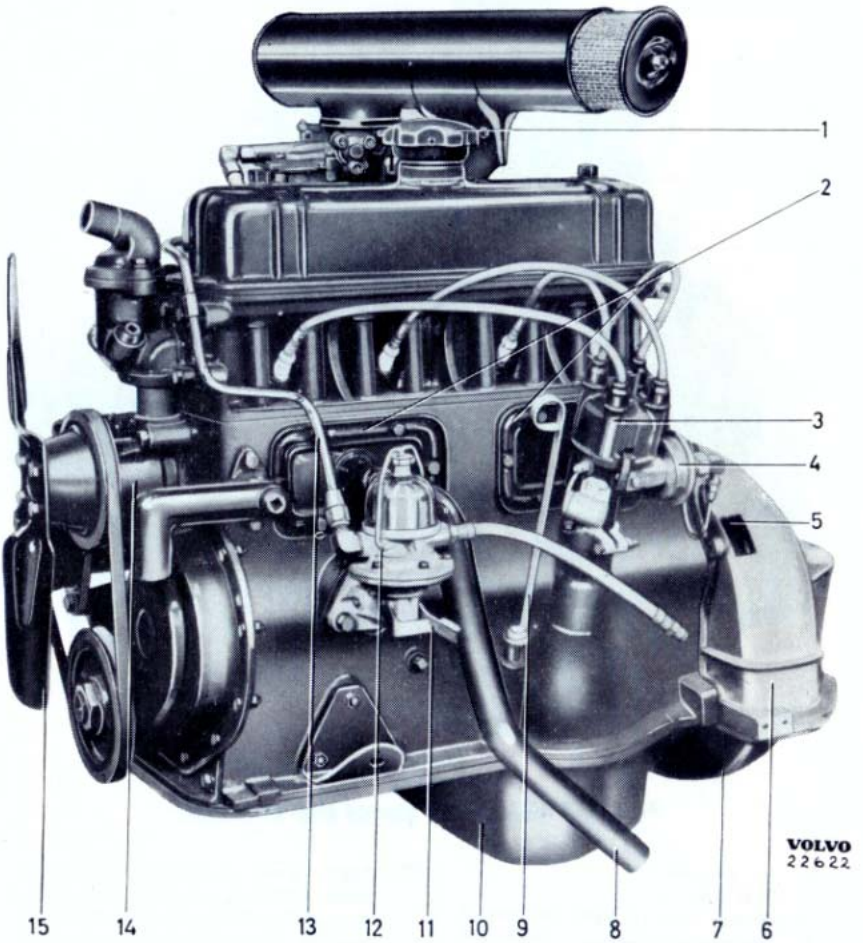


Fig. E. B 16 A engine viewed from the left.

1. Oil filler cap
2. Inspection cover
3. Distributor
4. Vacuum regulator
5. Ignition setting control window
6. Flywheel housing
7. Protecting plate
8. Crankcase breather
9. Oil dipstick
10. Oil sump
11. Lever for hand pump
12. Fuel pump
13. Fuel line
14. Water pump
15. Fan

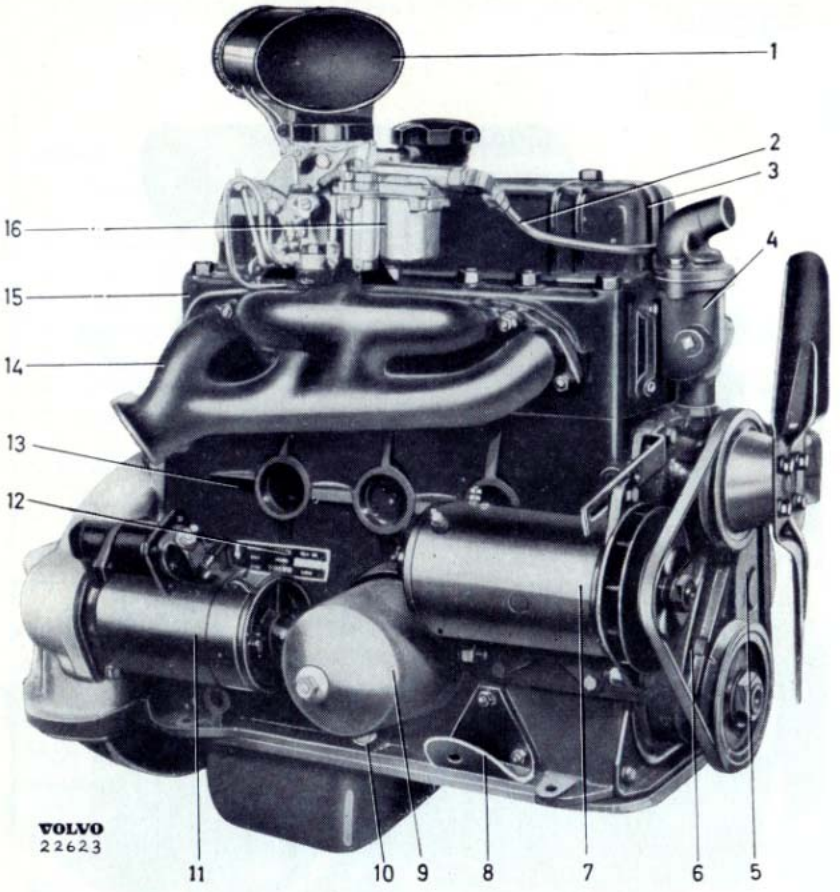


Fig. F. B 16 A engine viewed from the right.

1. Air cleaner
2. Fuel line
3. Rocker arm cover
4. Thermostat housing
5. Timing gear casing
6. Mark for T.D.C.
7. Dynamo
8. Engine mounting
9. Oil cleaner
10. Oil pressure relief valve
11. Starter motor
12. Type and number designation plate. (On late production the type designation is cast in and the serial number stamped on a plate between the inspection covers on the left-hand side of the engine).
13. Cylinder block
14. Exhaust manifold
15. Cylinder head
16. Carburetter

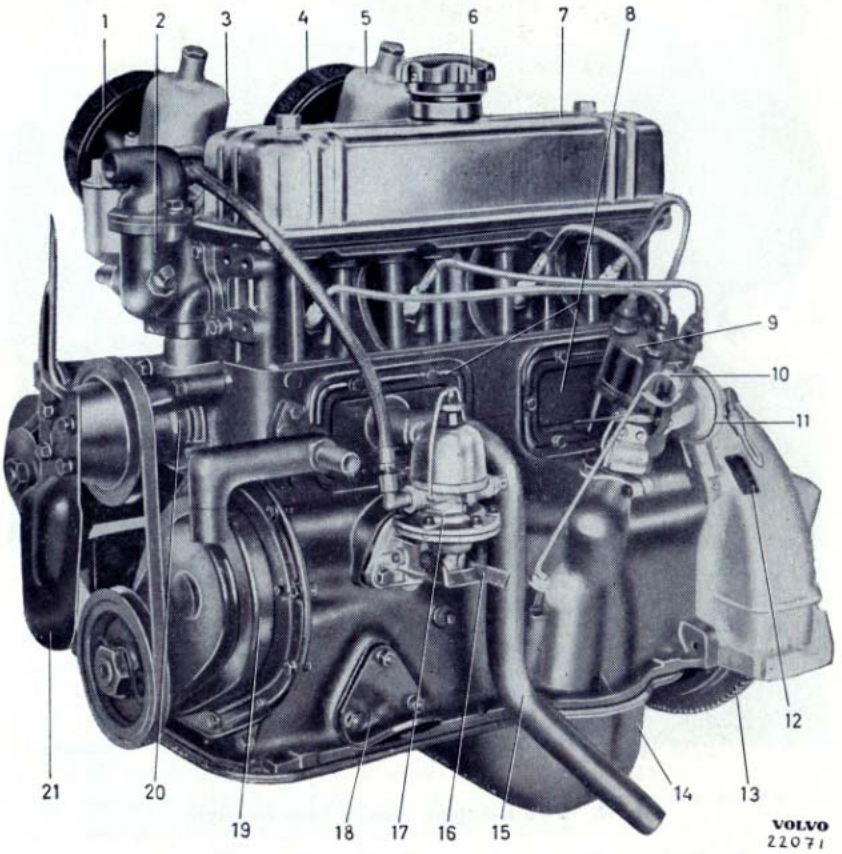


Fig. G. B 16 B engine viewed from the left.

1. Front air filter
2. Thermostat housing
3. Front carburetter
4. Rear air filter
5. Rear carburetter
6. Oil filler cap
7. Rocker arm cover
8. Inspection cover
9. Distributor
10. Oil dipstick
11. Vacuum regulator
12. Inspection hole
13. Flywheel
14. Oil sump
15. Crankcase breather
16. Hand primer pump
17. Fuel pump
18. Engine mounting
19. Timing gear casing
20. Water pump
21. Fan

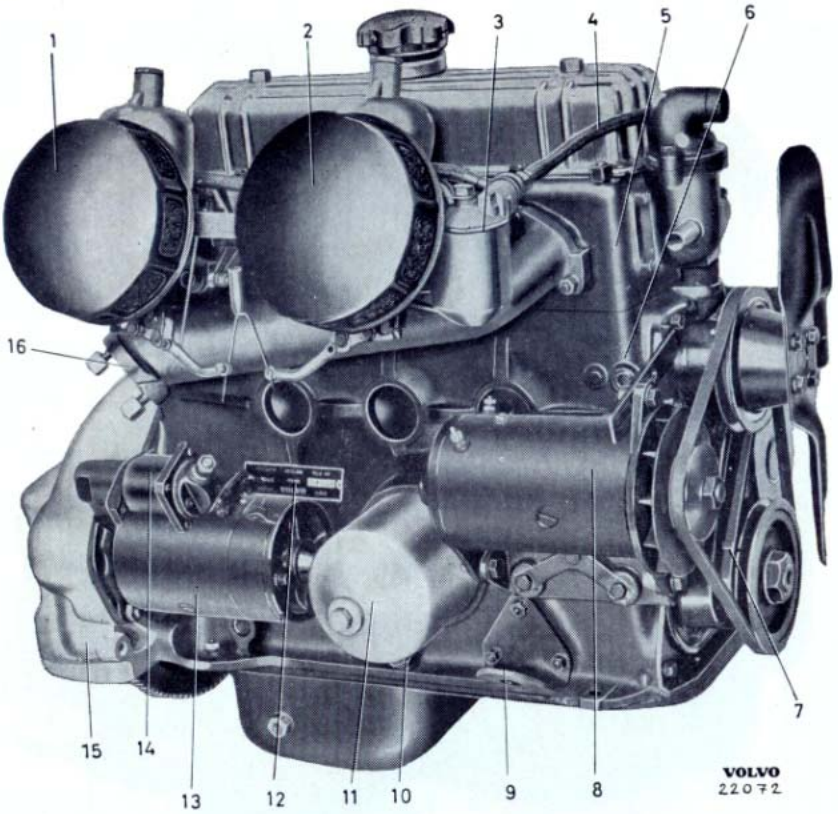
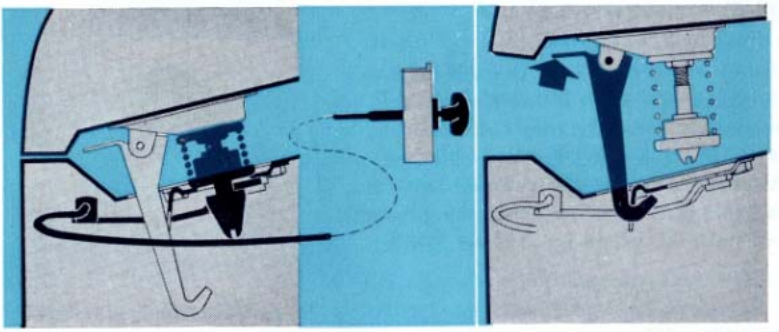


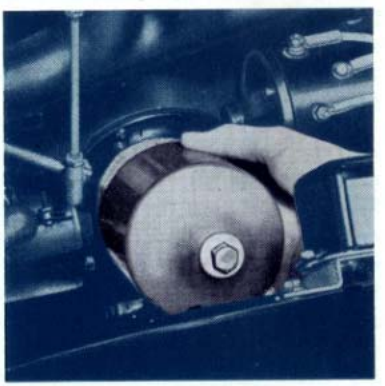
Fig. H. B 16 B engine viewed from the right.

1. Rear air filter
2. Front air filter
3. Float chamber (front carburetter)
4. Fuel line
5. Cylinder head
6. Cylinder block
7. Ignition setting mark (T.D.C.)
8. Dynamo
9. Engine mounting
10. Oil pressure relief valve
11. Oil filter
12. Type and number designation plate
13. Starter motor
14. Solenoid
15. Flywheel housing
16. Exhaust manifold

The bonnet can only be opened from inside the car. This is to prevent unauthorized persons from being able to get at the engine. The bonnet is opened by pulling the handle furthest to the left (to the right on right-hand drive cars) underneath the instrument panel. A safety catch at the front edge of the bonnet still holds it down but when this is released the bonnet can be fully raised. When closing the bonnet make sure that it is properly shut.



Oil filter (1)



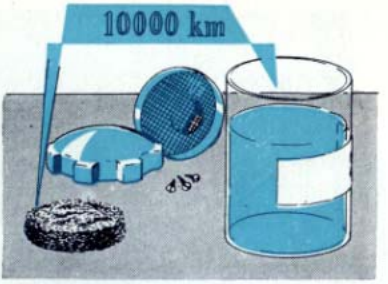
The Volvo has an oil filter of the full-flow type, that is to say all the oil circulating in the engine passes through it. During the process impurities in the oil accumulate in the filter so that the element gradually becomes choked up. The element must therefore be replaced regularly which should be done at a workshop. In a new or reconditioned engine the filter element must be replaced for the first time after 5000 km (3000 miles) driving and for the second time after a total of 10000 km (6000 miles) and thereafter at driving intervals of 10000 km (6000 miles), that is to say at every other oil change. Replacement of the oil filter element is done as follows:

1. Clean off the outside of the filter and adjacent parts so that no dirt can enter the lubricating system when dismantling.
2. Slacken the centre bolt, collect up the oil which runs out and remove the filter.
3. Discard the old element and wash out the filter with paraffin.
4. Place in a new element, fit a new gasket and refit the filter. Ensure that it seats properly in the groove in the cylinder block. The centre bolt should be tightened with a torque wrench to 2.0 kgm (14.5 lb.ft.).
5. If the element is renewed without the engine oil being changed at the same time, the sump should be topped up with 0.75 litres (1 ¼ Imp. pints) of fresh oil.
6. Start the engine and check that no oil leaks out from the joint.

Note. It is most important that only genuine Volvo elements should be used as otherwise the oil circulation may be unsatisfactory.

Oil filler cap (2)

is fitted with a breather filter for ventilating the crankcase. The incoming air is cleaned by this filter which should be cleaned regularly with petrol about every 10000 km (6000 miles). Slacken the three screws in the cap and remove the upper part. Take out the filter and wash the whole lot in clean petrol.



Fuel filter (3)

should be given due attention in order to prevent contaminated petrol from being pumped into the carburetter. Because of the easy accessibility of the filter, cleaning offers no difficulties. This filter should be cleaned at every 5000 km (3000 miles) service.

First slacken the nut (1) Fig. I and move the bail (2) Fig. I to one side. Remove the glass bowl and strainer and clean them. Also clean the upper part of the pump where the gasket is fitted. Be careful not to allow any dirt to enter the fuel lines. After having reassembled the filter make sure that the gasket seals properly. Fuel can then be pumped through by means of the handle (3) Fig. I.

Carburetter (B 16 A)

Fuel is supplied to the carburetter from the pump. Besides the float chamber, the carburetter contains fixed jets for regulating fuel supply to the engine and an accelerating pump.

When you took delivery of your Volvo the carburetter was correctly adjusted but in the course of time minor adjustments may have to be made for which only a screwdriver is necessary.

Idling adjustment (4)

should be done as necessary or every 5000 km (3000 miles) in conjunction with valve setting. If you notice that the engine tends to stall when idling or

if it runs too quickly, idling speed can be adjusted by means of the screw (1). Fig. J which influences the throttle shutter in the carburetter.

If you find that the engine runs jerkily or unevenly whilst idling it may be because the proportion of the fuel/air mixture is faulty. This can be adjusted by means of the screw (2). Fig. J. This should be screwed in until the engine just about stops then screwed slowly out until it runs evenly. The mixture becomes weaker the farther the screw is screwed in. If the fast idling device (see page 19) does not work satisfactorily, check it and make any necessary adjustments.

In order to richen the mixture when the accelerator is depressed quickly, the carburetter is fitted with an acceleration pump. The length of stroke of this pump is determined by a cam washer which can be set for short or long pump strokes. The normal setting is for short strokes but if you wish to increase acceleration performance it can be adjusted to give long strokes. Naturally this will cause increased fuel consumption.

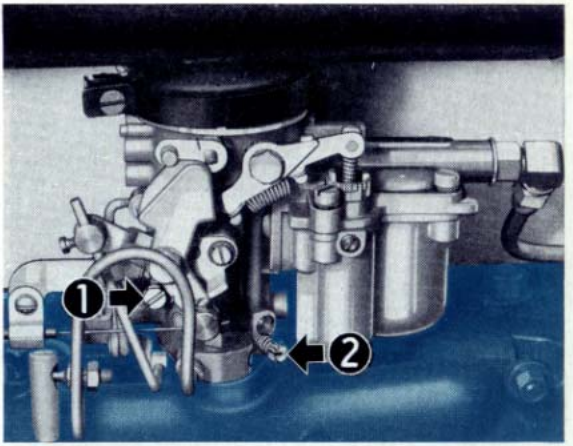


Fig. J.

Air filter (5) B 16 A

is a combination of air filter and induction noise silencer. The function of the filter gradually diminishes, especially if you do much driving along gravelly or dusty roads.

This filter must be cleaned regularly, preferably too often than too seldom but at any rate at least every 5000 km (3000 miles). It is a very simple matter to clean this filter and thus revive its efficiency. It is not even necessary to dis-

mantle it — just slacken the nut on the end and remove the filter. Wash the filter in petrol, allow it to dry and then soak it in engine oil which should be allowed to run off before refitting. The whole job does not take more than a quarter of an hour and it is time well spent. As an optional extra you can have the engine fitted with an oil-bath type air filter. Ask your dealer about this.

Carburetters (B 16 B)

The correct adjustment of the carburetters is of paramount importance if the engine is to run efficiently and economically. Since the B 16 B engine has twin carburetters which are not of an altogether usual type we give below a full description of their design and function.

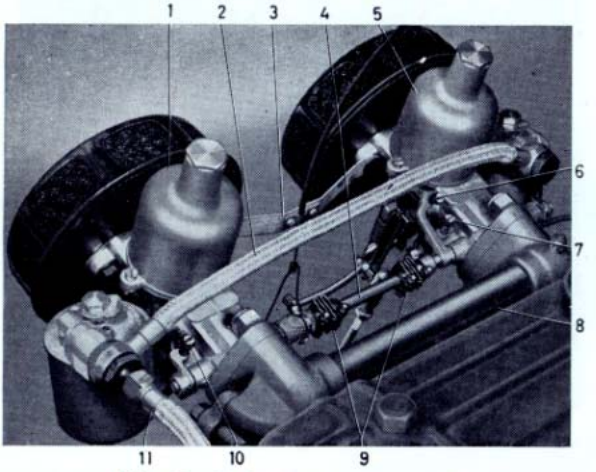


Fig. K. Carburetter arrangement.

1. Front carburetter
2. Fuel pipe
3. Control retainer
4. Carburetter coupling spindle
5. Rear carburetter
6. Adjusting screw for fast idling
7. Adjusting screw for idling
8. Equalizing tube
9. Couplings
10. Adjusting screw for idling
11. Fuel pipe from pump

The B 16 B engine is equipped with two coupled horizontal type SU carburetters. The rear carburetter is fitted with a fast idling device whose impulses are transferred to the front carburetter through a common spindle.

A pressure equalizing tube is fitted between the induction ports. Each carburetter has only one jet. Fuel flow is regulated by a taper needle which is guided by a piston located in the carburetter which moves under the influence of vacuum in the carburetter throat.

There is no choking device in the accepted sense as a cold-starting device is fitted which gives a richer mixture when starting from cold.

The function of the carburetter can be divided into the following parts: float system, normal running, cold starting, fast idling and idling.

Float system

The float system controls the flow of fuel so that the correct fuel level is received by the carburetter.

1. Vacuum chamber
2. Spring
3. Damping plunger
4. Piston in vacuum chamber
5. Channel
6. Throttle shutter
7. Carburetter housing
8. Rubber gasket
9. Bolt for float chamber
10. Jet
11. Adjusting nut
12. Lower jet retaining sleeve
13. Sealing ring with washer
14. Spring
15. Lock nut
16. Sealing ring with gland
17. Spring
18. Washer
19. Sealing ring with washer
20. Upper jet retaining sleeve
21. Washer
22. Bridge
23. Channel
24. Fuel needle

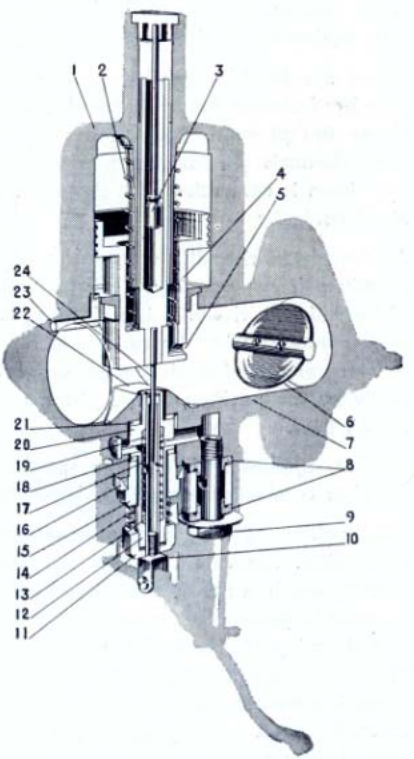


Fig. L. Carburetter, operating position.

Normal running

The quantity of fuel/air mixture supplied to the engine is controlled by means of the throttle shutter (6, Fig. L) in the carburetter housing (7) which takes the form of a channel but also acts as a body on which the various carburetter components are built.

Above the jet (10) the channel narrows due to the projection called the bridge (22) and the piston (4) which is situated above the bridge. The speed of the air flow increases when it passes this restriction so that the fuel is more easily sucked up. Opposite the bridge in the upper part of the carburetter there is a vacuum chamber (1) containing a piston (4). A taper needle (24) is fixed to the lower part of the piston.

The piston is guided by a centrally placed spindle which moves in a bushing in the central sleeve of the vacuum chamber. The upper part of the piston is precision-fitted in the vacuum chamber. The lower portion acts as a shutter and restricts the area of the air channel above the jet as the piston moves downwards. The piston, under its own weight and influenced by a spring (2) tends continually to reach its lowest position. In its lowest position the piston rests against the bridge on a pin fitted into the piston.

When the throttle opening is increased whilst running the vacuum in the chamber between the bridge and the throttle shutter increases. Since the space above the piston is connected with the above mentioned chamber by two small channels (5), the piston will rise. The space beneath the upper part of the piston is connected with the outer air via two small channels (23) and the air filters.

As the piston rises the cross-sectional area above the jet increases and thus permits a larger quantity of air to pass. Since the fuel needle is fixed to the piston, this will rise with it and the aperture between the needle and the jet is thus increased with the result that an amount of fuel corresponding to the greater amount of air is sucked up with it. The amount of fuel is determined partly by the position of the piston (fuel needle) and partly by the speed of the air flow.

The jet supplies fuel from the space in the carburetter housing at the float chamber connection through holes in the jet walls.

The position of the piston is constant for any given air flow through the carburetter. The extent of this air flow is determined by engine speed and loading which in turn is controlled by the extent of the throttle shutter opening. In order to prevent the piston from "wandering" or moving too suddenly there is a damping device in the piston guide spindle sleeve. The device consists of a damping plunger (3) attached to the rod which is fixed at the top end. There is a small quantity of thin engine oil in the guide spindle and the braking effect imparted to the piston when it tends to rise quickly prevents the engine from stalling as a result of too weak a fuel/air mixture when the accelerator is suddenly depressed.

Opposite the throttle on the rear carburetter there is a connection for a pipe line to the vacuum device on the distributor.

Cold starting

In order to richen the fuel/air mixture when starting from cold, the carburetter is provided with a device by which the jet can be lowered. When the jet is lowered a larger passage for the fuel is formed since the needle in the jet is conical. There is no choke shutter on the carburetter.

When starting from cold the outer end of lever (25, Fig. M) is drawn upwards by means of a control and this movement is transferred via link (26) so that the jet, which is connected to the inner end of the lever, is pulled downwards. This movement is limited by a catch on the lever and return to the normal position is effected by means of the spring (27) when the control is pushed in.

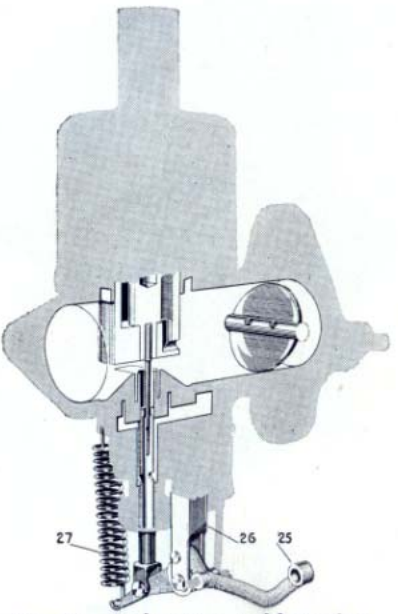


Fig. M. Carburetter, cold starting.

25. Lever 26. Link 27. Spring

Fast idling

When the fast idling device is engaged it causes a larger throttle opening than for normal idling and should be used during the warming-up period to obtain a somewhat higher idling speed. See Fig. N.

When the control on the instrument panel is pulled out the first effect is on the fast idling. With continued movement increased resistance is felt which is due to the fact that the jets are beginning to be influenced (lowered).

The device consists of linkage rod (31 Fig. N) conected to the lower lever. This operates on a cam-shaped disc (30) fixed to the carburetter housing. When engaged, an adjuster screw comes into contact with the disc. This screw is attached to the throttle lever (28). When the outer end of the lower lever is lifted the cam disc turns and the throttle is thus opened slightly. (The end of the lever can be lifted slightly before the jet is influenced because of the large amount of play in the lever arm link hole).
The cam disc has three holes for different positions on the linkage rod (31). Normally the rod is connected at the hole marked 2.

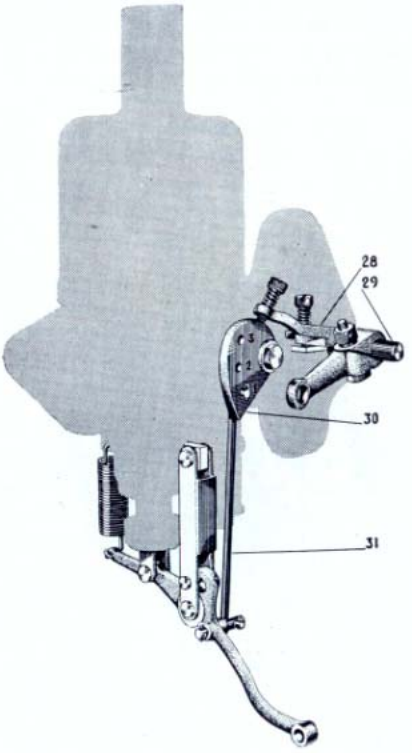


Fig. N. Carburetter, fast idling.

28. Throttle lever
29. Throttle spindle
30. Cam disc
31. Linkage rod

Idling

When the engine idles the carburetter piston is in the lowest position and rests against the bridge at the jet on a pin. The narrow opening which then remains between the bridge and the piston permits the passage of the requisite amount of air for idling.

Only a very small amount of fuel is required for idling and the taper needle fills up practically the whole of the jet aperture.

The fuel/air proportion for the whole range of engine speed is adjusted when idling.

The jet is pressed upwards by the lever spring (10, Fig. P) so that its lower part rests against the adjusting nut (8, Fig. P) which is locked in place by a spring (6, Fig. P). The quantity of fuel flowing through is controlled by this nut since the fuel needle is conical.

If the nut is screwed upwards a weaker mixture is obtained whilst screwing it downwards gives a richer mixture.

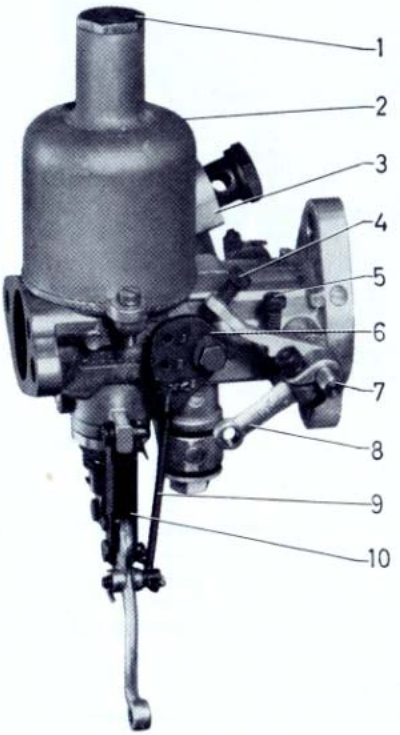


Fig. O. Rear carburetter viewed from control side.

1. Nut for damping plunger
2. Vacuum chamber
3. Float chamber cover
4. Adjusting screw for fast idling
5. Adjusting screw for idling
6. Cam disc
7. Throttle spindle
8. Throttle control lever
9. Link rod
10. Link

INSTRUCTIONS FOR ADJUSTING THE CARBURETTERS

The hollow central spindle for the vacuum chamber piston is filled with oil and together with the small damping plunger (3, Fig. L) acts as a damper. This should be topped up with oil at regular intervals, suitably when changing the engine oil. To do this screw off the nut at the top of the vacuum chamber, lift up the nut with damping plunger and fill oil through the hole. Only fill the central spindle and not the part above it. Use thin engine oil (SAE 10 W).

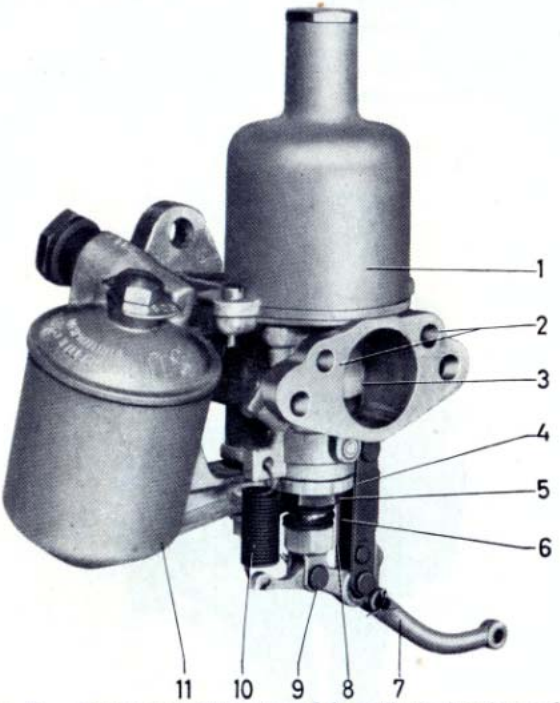


Fig. P. Rear carburetter viewed from float chamber side.

1. Vacuum chamber
2. Air channel
3. Piston
4. Sealing washer
5. Lock nut
6. Spring
7. Lever
8. Adjusting nut
9. Jet
10. Lever spring
11. Float chamber

Removing

1. Blow the carburetters clean externally.
2. Slacken and remove the air filters and control retainers and controls between them.
3. Slacken the fuel pipe connections and the vacuum pipe connections to the distributor.
4. Unscrew the coupling nuts on the spindle between the carburetters. Move up the couplings on the spindle. Slacken the throttle control. Remove the carburetters.

Dismantling and cleaning

a. Float chamber

1. Remove the float chamber from the carburetter housing.
2. Screw out the float chamber cover nut. Remove the cover and lift out the float. See Fig. Q.
3. Remove the float lever by pulling out the pin on which it pivots.
4. Remove the needle valve in the cover together with the strainer and drilled pin.

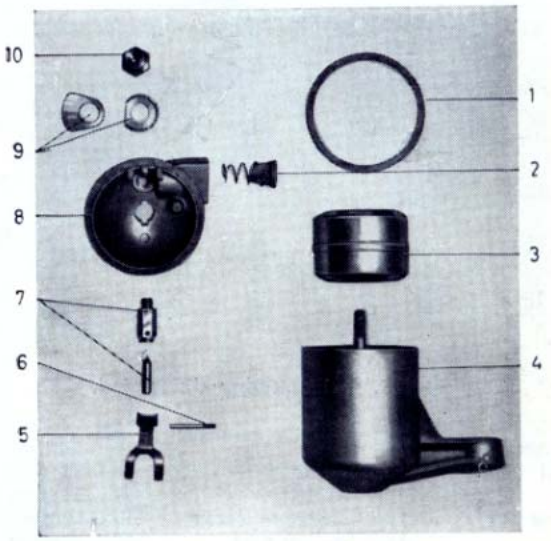


Fig. Q. Float chamber dismantled.

1. Gasket
2. Strainer and spring
3. Float
4. Float chamber
5. Lever
6. Pin
7. Needle valve
8. Float chamber cover
9. Washer
10. Nut

b. Jet assembly

1. Remove the jet lever return spring and link rod between the lever and cam disc.
2. Take out the jet head pivot pin and the upper pivot pin for the link and then remove the lever. See Fig. R.
3. Unscrew the lock nut and remove the jet sleeves with springs and seals. Pull out the jet. Unscrew the adjusting nut and remove its spring.

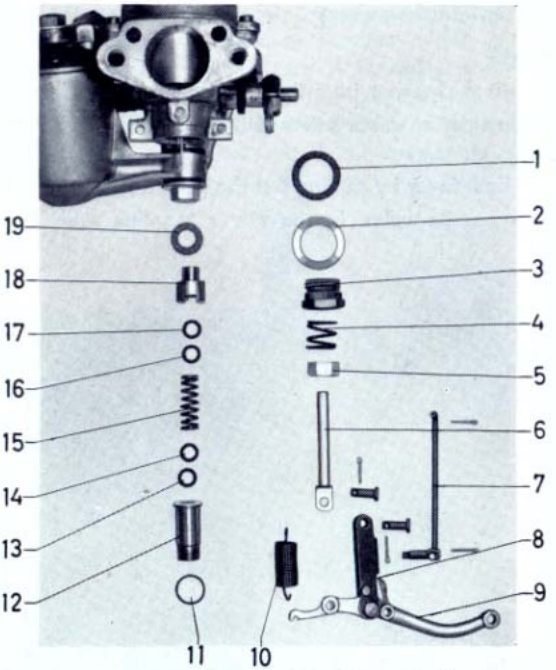


Fig. R. Jet assembly dismantled.

1. Gasket
2. Sealing washer
3. Lock nut
4. Spring
5. Adjusting nut
6. Jet
7. Link rod
8. Link
9. Lever
10. Spring
11. Washer
12. Lower jet sleeve
13. Sealing ring
14. Washer
15. Spring
16. Washer
17. Sealing ring
18. Upper jet sleeve
19. Washer

c. Vacuum chamber with piston and fuel needle.

The vacuum chamber and piston are fitted together as a unit and if either need renewing then both must be replaced. **The vacuum chamber must not be turned a half-turn but must be refitted in exactly the same position. Put a mark on these parts when dismantling to ensure that they are refitted correctly.**

1. Remove the damping plunger (1, Fig. S) from the vacuum chamber.
2. Slacken the two screws for the vacuum chamber and remove it.
3. Lift up the spring and piston. Do this carefully so that the needle does not get bent.
4. Unscrew the locking screw for the fuel needle and pull it out.

d. Cleaning

After dismantling wash all parts in paraffin then blow them dry with compressed air.

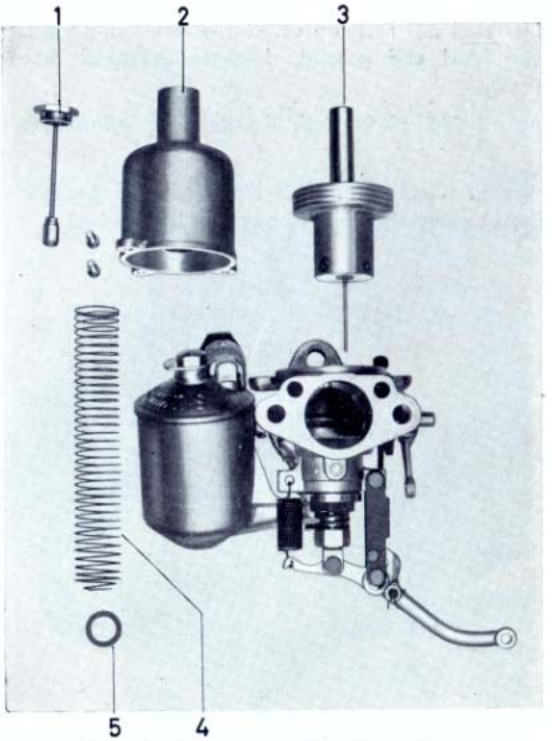


Fig. S. Vacuum chamber dismantled.

1. Damping plunger
2. Vacuum chamber
3. Piston
4. Spring
5. Washer

Assembling and fitting

Assembling and fitting to the engine is done in the reverse sequence from removing and dismantling.

Before assembling check that all gaskets and seals are undamaged, renewing any as necessary. Check also that all other parts are serviceable and not worn. The vacuum chamber and piston must on no account be filed or polished with emery cloth so that the character of the fit is altered since the existing fit is essential for the proper function of the carburetter. Any rough spots can, however, be carefully scraped away.

When fitting the needle into the piston it is very important that the needle beds into the correct depth. See below under "Replacing fuel needle". The piston in the vacuum chamber is provided with a groove into which fits a guide peg in the carburetter housing. Lubricate the piston stem lightly with thin engine oil before assembling.

When the jet is fitted this must be centred before being tightened, otherwise the needle can bind and possibly become damaged. See below under "Centring the jet".

Fill oil (engine oil SAE 10 W) into the damping cylinders after fitting the carburetters.

When fitting the air filters ensure that they and their gaskets are turned the proper way. The air channel (2, Fig. P) must not be blocked.

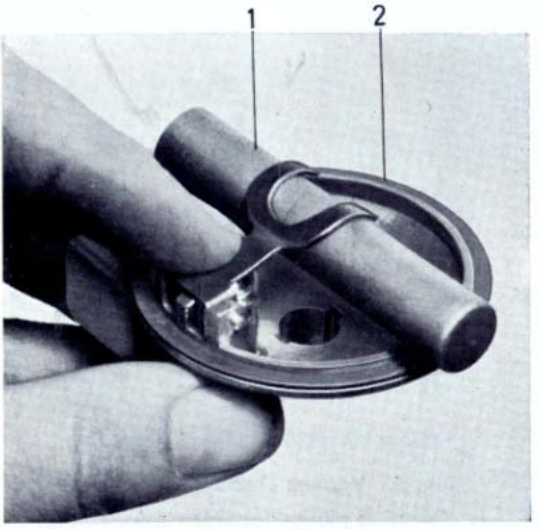


Fig. T. Checking fuel level.

1. Gauge (11 mm [.433"] diam.)
2. Float chamber cover

Checking fuel level

The fuel level can be checked indirectly after removing the float chamber cover.

1. Slacken the fuel pipe and remove the float chamber cover.
2. Turn the float chamber cover over.
3. Measure the distance from the float chamber cover to the lever by placing in a gauge of 11 mm (.433") diameter as shown in Fig. T. The needle valve lever should just lie on the gauge when the needle valve is closed.
4. If necessary bend the lever at the base of the forked portion so as to obtain the setting in point 3 above.

Replacing fuel needle

1. Remove vacuum chamber with piston and fuel needle.
2. Slacken the screw and pull out the fuel needle.
3. Fit the new fuel needle. Check that it has the right marking in accordance with the specifications. Be careful when inserting the needle into the piston so that the tapered portion only protrudes. See Fig. U. Tighten the locking screw.
4. Fit the parts in the carburetter. Check that the piston moves easily up and down. The piston can be lifted up a little way with the help of the pin without having to remove the air filter. When the pin is released the piston should strike the bridge with a characteristic sound.

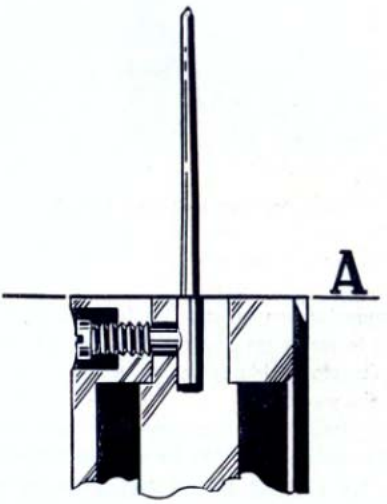


Fig. U. Fitting Fuel needle.

A = Fitting line

Changing the jet

1. Remove the jet. The adjusting nut need not be removed. If the carburetter is fitted on the engine the control wire on the jet lever must first be removed.
2. Fit the new jet in the lower sleeve and then the lower sealing ring with washer, spring, upper sealing ring with washer and upper sleeve and copper washer. The washers for the upper and lower sealing rings should lie against the spring.
3. Insert the jet with fitted parts into the carburetter housing. See fig. V. Tighten the lock nut gently. Centre the jet as described in the following section and then fit the lever and other parts.

Fig. V. Jet unit assembled.

Centring the jets

In order that the carburetter can function as intended it is most important that the fuel needle is free to move up and down in the jet without binding against the jet walls. It is, therefore, important to ensure that the jet is correctly centred in relation to the needle.

The jet sleeves are secured in such a way that they have a relatively large lateral clearance which enables them to be moved sideways.

The jet must always be centred before being finally tightened and fitted and in other cases when it is found to be out of centre.

1. Screw in the adjusting nut (8, Fig. P) as far as possible towards the carburetter housing.
2. Check that the lock nut (5, Fig. P) is slackened and if not, do so.
3. Check that the jet is in its upper position, that is to say, the jet head is in contact with the adjusting nut and that the piston with needle is in the lower position.
4. Centre the jet by carefully turning the lower jet sleeve. Do not screw down the adjusting nut. If necessary the jet sleeve can be moved by lightly tapping the adjusting nut.
5. Lift up the piston and needle. When the piston is released it should, under its own weight, strike the bridge with a distinct sound which indicates that the jet is correctly centred and the piston moves easily.
6. Tighten the lock nut. Re-check that the piston moves easily as per point 5.

Idling adjustment and connecting up the carburetters

Idling adjustment is done partly with the screws (7 and 10, Fig. K) on the throttle arms which control the engine speed, and partly by turning the adjusting nuts at the jet heads which control the mixture proportions. When the nuts are screwed downwards a richer mixture is obtained, whilst screwing them upwards gives a weaker mixture. Mixture proportions for the whole range of engine speed is set when idling.

When correct idling speed has been obtained and when both carburetters have as equal a flow through them as possible, they can be coupled together. The adjustment before connecting them together should be carried out as carefully as possible so that the best engine output can be attained.

1. Run the engine until it is warm. If the jets have not been adjusted, approximate setting is done by first screwing the adjusting nuts to the upper position and then screwing them back one turn.
2. Slacken one of the couplings (9, Fig. K) on the shaft between the carburetters. Ensure that the jets on both carburetters are in contact with the adjusting nuts and that the adjusting screw for fast idling (6, Fig. K) is not in contact with the cam disc.
3. Set both throttle shutters alike by screwing out the throttle adjusting screws (7 and 10) and then screwing them in again sufficiently so that they just contact the stops. Then screw each down equally one turn.
4. Start the engine. Check that the throttles are opened the same amount in both carburetters by listening to the sound with the aid of a rubber tube which should be placed on similar points on both the air filters. Adjust the idling screws so that induction noise is equally strong on both carburetters.
5. Set the jets by turning the adjusting nuts so that the idling speed is as high as possible with unchanged throttle opening. Adjust the carburetters one at a time. First screw the adjusting nuts upwards (weaker mixture) until the engine runs unevenly, then screw back until the engine runs perfectly smoothly. If the engine speed is too high, it can be decreased by unscrewing the idling screws on the throttle shaft levers. After this, check once more that induction noise is equally strong on both carburetters.
6. Check that the fuel/air mixture is correct in both carburetters by lifting their respective pistons a small but equal amount wih the aid of the pin beside the air intake. Listen to the engine sound and lift first one and then the other pison. When the mixture is correct the engine should run unevenly when either one or other of the pistons is lifted.
7. Connect the carburetters together by tightening the couplings on the shaft. Adjust the fast idling screw. Screw in until it is in contact with the cam disc. Then screw it back one turn so that a certain clearance is obtained. Check once again that the flow through both carburetters is the same. See point 4.

Fast idling and controls

The fast idling device (Fig. N) can be adjusted to suit varying conditions by means of the adjusting screw against the cam disc. When the control is pushed fully in, the clearance between the adjusting screw and cam disc should normally correspond to one turn of the screw.

The clamp on the end of the control cable should be attached so that the jets begin to lower when the knob on the instrument panel has been pulled out about 10 mm (3/8") (fast idling movement). Increased resistance will be felt on the knob when the jets begin to move downwards.

When the control button is pulled out as far as it will go, the long lever ends should be lifted so far that the jets are fully lowered, i.e. the levers should contact the stops in the links.

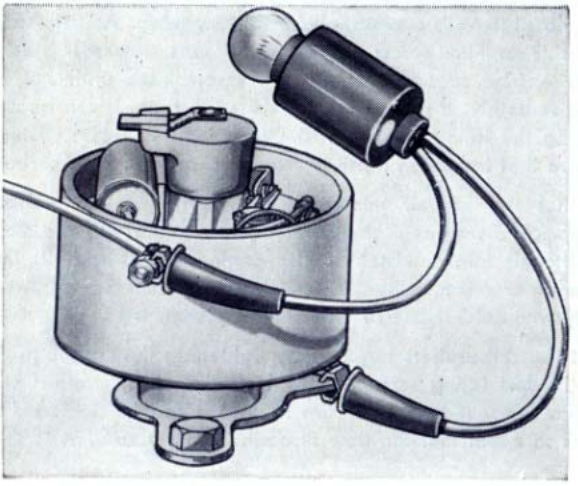
Make sure that the curved cable moves both levers to the same extent so that both jets start to move downwards at the same time.

Ignition setting (B 16 A and B 16 B)

Ignition setting should be done with the aid of a stroboscope whilst the engine is running and with the vacuum governor disconnected. Basic setting should be used when fitting the distributor and in cases where a stroboscope is not available but the setting should be checked with one of these instruments as soon as the opportunity occurs.

Basic setting

1. Remove the distributor cover and hold it over the distributor. Turn the engine slowly in the normal direction of rotation until the rotor arm approaches the contact for No. 1 cylinder sparking plug.



VOLVO
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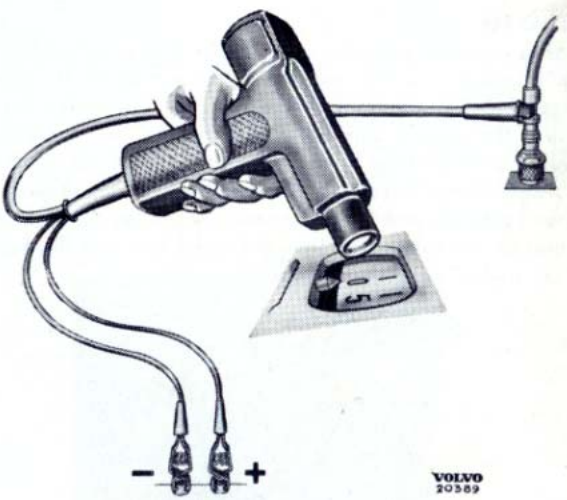
2. Connect in a small control lamp (max. 3 w.) between the low tension cable on the distributor and the earth. Switch on the current. Continue to turn the engine slowly in the normal direction of rotation and watch the lamp. Stop turning instantly the lamp lights (this represents the moment when the contacts break) and check the ignition setting through the hole in the flywheel housing. The indicator should be opposite 4° B.T.D.C. (A small deviation is permissible if the engine has recently been checked with the aid of a stroboscope, which is more reliable than basic setting).
3. If necessary, adjust the setting after slackening the clamping screw on the distributor. When turning the engine forwards, remember not to pass ignition point. If this should happen, the engine must be turned back a ¼ turn and then forwards again towards ignition point. This must be done in order to take up the play in tooth contacts etc.

Setting with a stroboscope

1. Run the engine until it is warm, then stop and mark out 21° B.T.D.C. on the flywheel with chalk. Disconnect the vacuum regulator by loosening one end of the vacuum pipe.



2. Connect the stroboscope with low tension cables to battery voltage and high tension cable to No. 1 cylinder sparking plug.
3. Run the engine at 1500 r.p.m. and direct the light beam onto the flywheel marking. The chalk mark at 21° B.T.D.C. should remain steadily opposite the indicator. Adjust the setting if necessary after slackening the distributor clamping screw.

Air filters (B 16 B)

generally require cleaning about every 5000 km (3000 miles). They should be flushed with clean petrol and then immersed in thin engine oil which should

be allowed to drain off before the filters are re-fitted. When doing this ensure that the gasket between the air filter and carburetter is fitted correctly.

Decarbonizing (6)

You should have the engine decarbonized regularly. The need for this varies considerably depending upon manner of driving but we would recommend driving intervals of about 40000 km (25000 miles) as being suitable. Cars which are used mostly for light driving require decarbonizing at relatively shorter intervals.

Valve clearance (7)

should be checked at every 5000 km (3000 miles) service. Faulty clearance has a bad effect on engine output. Too little clearance can, in addition, cause burned valves.

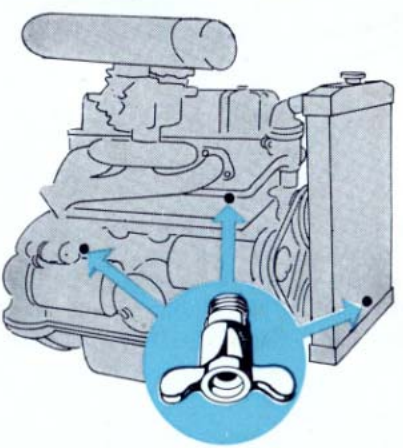
Correct clearances with a warm engine are:

	B 16 A	B 16 B
Inlet valves	0.40 mm (0.016″)	0.50 mm (0.020″)
Exhaust valves	0.45 mm (0.018″)	0.50 mm (0.020″)

Cooling system (8)

is provided with a pressure cap to raise the boiling point of the coolant. Be careful when opening the cap, especially if the coolant is boiling for any reason. The cap has two positions — the first one for decreasing pressure in the system and the second one for removing the cap for filling up with coolant. Never pour cold water into a hot engine unless the engine is running — the great temperature difference may cause cracks in the engine.

There are three cocks for draining the system — one on the right-hand side of the engine, one on the connection from the water pump to the heater element and one on the underside of the radiator (see figure).



Cooling system drain cocks.

In order to function the cooling system must be clean and all channels in the engine and radiator must be free from deposits and impurities. These deposits are caused by the salts which are usually present in ordinary water.

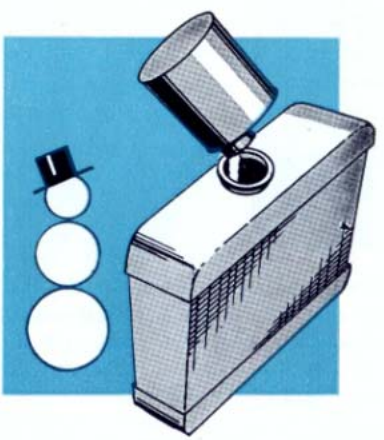
In order to keep the cooling system clean and to prevent boiling you should

a) use clean water (preferably rain water) with some rust preventive additive.
b) when filling up and draining off anti-freeze in autumn and spring, the system should be well flushed with water or steam at about 1 kg/cm² (14 p.s.i.) pressure or with a suitable soda solution. The latter method is carried out as follows:

Add about 300 grammes (10.6 oz.) oxalic acid to the coolant and let the engine run warm for about an hour, (when the system is badly blocked, run for 2 or 3 hours) the drain the cooling system. Remember that splashes from oxalic acid have a corrosive effect on clothes etc. Refill the system with water and let the engine run warm for about ten minutes. Flush the system through three times in this way. After adding about 50 grammes (1.8 oz.) of sodium carbonate, proceed in the same manner as for oxalic acid, i.e. draining and flushing three times.

Anti-freeze fluids

During the cold season an anti-freeze solution should be used in the cooling system. The most common anti-freeze mediums are methylated spirits and ethylene-glycol. Unfortunately methylated spirits evaporates quickly at normal engine temperature and therefore requires frequent checking and topping up. Since ethylene-glycol does not have this disadvantage, it is preferable as an anti-freeze medium.



It should be noted that pure ethylene-glycol has a marked corrosive effect on the cooling system and for this reason anti-freeze fluids on the market are treated with anti-corrosive additives. For chemical reasons these additives

cannot be applied in a larger quantily than is required for one winter season and — if sludge, rust or flushing agent are present in a badly cleaned system — will not even last this long.

Before filling with anti-freeze fluid, the whole cooling system should be carefully cleaned out and any leaks in hoses and connections should be remedied. Then fill with a solution of ethylene-glycol and water. For suitable proportions of ethylene-glycol, see page 71.

At the end of the winter season the whole cooling system should be drained and flushed through.

NOTE. In order to use ethylene-glycol solution for more than one season an anti-corrosion medium must be added. Since it is difficult to determine suitable quantities of this, we advise against using the same solution for more than one season. Avoid spilling any ethylene-glycol solution on the paintwork as it can have a damaging effect.

Fan belt (9)

About every 10000 km (6000 miles) you should get your Volvo workshop to check fan belt tension. If the belt is worn or covered with dirt and grease it can slip and thus cause poor cooling effect and dynamo output. You can check the tension yourself by pulling round the fan at the point of one of the blades in its direction of rotation.

Considerable resistance (5.5—6.5 kg = 12—14½ lb) should be felt before the belt begins to slip. A simpler but more provisional method is to press down the belt with the thumb halfway between the dynamo and fan. When doing this it should be possible to press in the belt about 3—4 mm (approx. ⅛") with normal thumb pressure.

Clutch (10)

On the Volvo the clutch is operated hydraulically by the clutch pedal. In this way vibrations normally occurring in a mechanical control are eliminated. The fluid in the clutch hydraulic system is the same as that in the brake system. (See below). The container is the smaller of the two placed beside the steering column under the bonnet. (See fig.).

The location of the container makes is easy to check the level of the fluid which should reach up to the level mark. It is sufficient if this check is done every 5000 km (3000 miles). If the clutch should ever need adjusting, contact your dealer.

Front of car (11)

In order to be able to drive fast and safely and not to wear the front tyres excessively, it is of great importance that the front wheel setting is correct. You should, therefore, let your Volvo service workshop check this and carry out any necessary adjustments every 10000 km (6000 miles). Volvo dealers are equipped with special measuring devices for this purpose and can therefore give you first-class service in this respect. If you have run into anything so that the front of the car has received a blow, you should have the front wheel setting checked.

Brakes

The brake system

is one of the most important parts of your Volvo. For your own sake and for the sake of others it is of the utmost importance that the brake system functions faultessly.

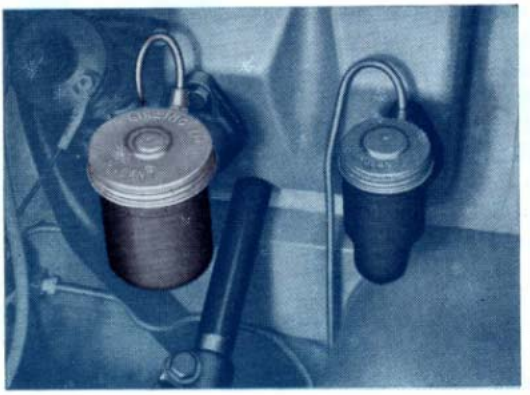
For this reason have the brake checked and adjusted if necessary after every 5000 km (3000 miles). After every 20000 km (12000 miles) have your brakes thoroughly checked in a Volvo workshop.

Handbrake (12)

operates mechanically on the rear wheel brake shoes. Check every 10000 km (6000 miles) that the handbrake effect is satisfactory. When the handbrake is correctly adjusted, full effect is obtained at the 4th or 5th notch. Any necessary adjustment can be carried out quite simply as shown in the figure.
All work on both the hand and foot brake systems should preferably be carried out at a workshop.

Brake fluid (13)

is filled into the master cylinder which is placed by the steering column and which is the larger of the two containers. It should be filled up to the level mark with brake fluid and checked every 5000 km (3000 miles).



From the point of view of traffic safety it is of vital importance that only first-class quality brake fluid is used. Such fluid must fulfil great demands in the way of resistance to heat and cold and must not cause damage to the rubber parts in the brake system.
Therefore use only a brake fluid which fulfills the requirements of specification SAE 70 R1 (HD-quality).

Wheels and tyres

The Volvo is provided with tubeless tyres. This type runs at a lower temperature than the earlier type of tyre with tube and for this reason tyre wear is less. Air pressure in a tubeless tyre also remains more constant than in a tyre with tube. This means that you do not need to check the air pressure more than a couple of times a month.

Air pressure

in the front tyres should be
1.4 kg/cm² (20 p.s.i.)

and in the rear tyres
1.7 kg/cm² (24.2 p.s.i.)

at normal loading. If setting out on a long journey with a full complement of passengers and fully loaded, the above-mentioned figures should be increased by 0.2 kg/cm² (2.8 p.s.i.) If, on the other hand, you drive alone and prefer smoother riding, you can decrease the tyre pressure by 0.2 kg/cm² (2.8 p.s.i.). Remember, however, always to have 0.3 kg/cm² (4.3 p.s.i.) more in the rear tyres than in the front as otherwise the car will tend to "over-steer".

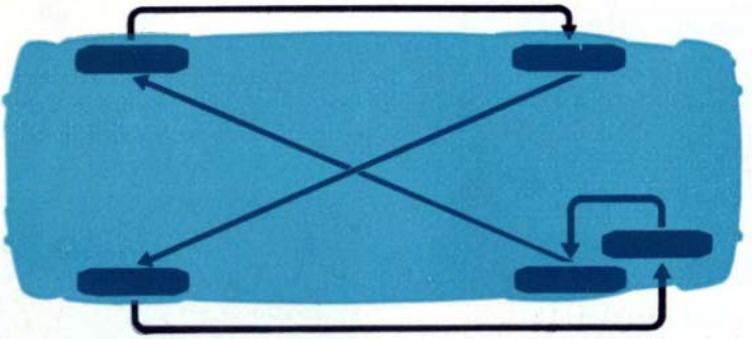
Never allow the tyre pressure to go below 1.0—1.1 kg/cm² (14—15 ½ p.s.i.) as if this happens the seal between the tyre and rim can be endangered should the car be subjected to a violent side thrust, for example, extremely hard cornering or driving against a kerb.

In order to keep tyre bills as low as possible, always drive with consideration so as to spare the tyres.

You as the owner can help increase the length of life of your tyres by maintaining correct air pressure, regularly checking wheel balance and front wheel adjustment and by using the spare wheel, as otherwise this can deteriorate if left out of use for a long time.

We would recommend you to change over the tyres every 10000 km (6000 miles) as shown in the diagram on page 54.

In many cases the Volvo is fitted with side-wall tyres and it often happens that these become grimy. Ordinary washing is not always sufficient. The white side-walls should then be scrubbed with a brush and suitable washing compound or scouring powder. Only in exceptional cases should methylated spirits be used and then it should be thoroughly rinsed off with water. Remember that paintwork can be damaged by methylated spirits.



Changing round the tyres.

Spare wheel

is fitted on the left in the luggage compartment. It is stowed upright in a recess to take up the least possible space and is secured with a strap.
The jack is stowed behind the spare wheel together with the car tools (see list on page 73). There is also a space here for a petrol can.

Spare wheel.

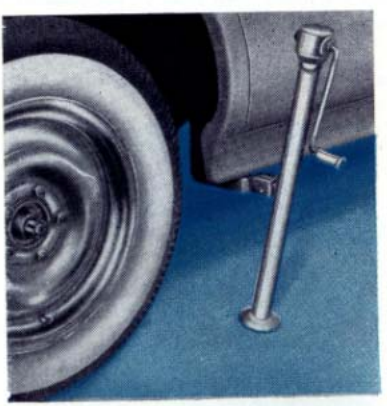
Jack.

Changing a wheel

is done as shown in the illustrations below. Before starting make quite sure that the car is standing firmly and cannot start rolling. **The handbrake operates on the rear wheels only.**

1. First remove the hub cap with the aid of the wheel nut wrench.

2. Slightly slacken all five wheel nuts with the same tool.



3. Then jack the car up sufficiently for the wheel to be clear of the ground. There are brackets in the body in which the jack should be placed. These are located in front of the rear wheels and to the rear of the front wheels.

4. Screw off the wheel nuts and lift off the wheel. Fit on the spare wheel and tighten the nuts a little at a time, taking alternate nuts. Do not tighten up the nuts excessively as otherwise the wheel disc and threads may get damaged.

Note. When working underneath the car never rely completely on the jack but always place a block or some other form of support beneath the car.

Electrical system

Battery

The battery is situated under the bonnet and is easily accessible for checking acid level. This is most conveniently done when filling the car with petrol and in any case at least once a fortnight. Acid level should be about 10 mm (3/8") above the plates. Use distilled water only for topping up but be careful not to put in too much otherwise acid may overflow from the battery and cause damage. Use a hydrometer to test the state of charge of the battery. This shows the specific gravity of the battery acid (see page 72). This is particularly important during winter since a fully charged battery is not so likely to be damaged by frost as one which is almost discharged. The electrical accessory which places the heaviest strain on the battery is the starter motor. When making repeated attempts to start do not keep the starter motor engaged for more than 5 to 10 seconds at a time. Also wait for a similar period between each attempt so that the battery has a chance of recovering.

Long periods of heavy loading considerably reduce the length of life of the battery.

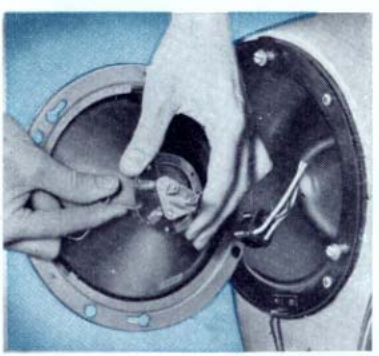
Replacing headlight bulbs

1. Slacken the screw on the underside of the rim.

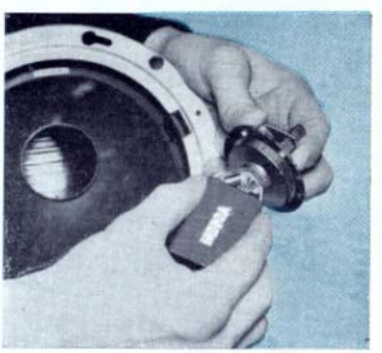
2. Pull out the lower part of the rim a little and then lift upwards so that the catch at the top disengages.

3. Press the headlight body inwards and then turn to the left. Lift out the body.

4. Disconnect the leads by pulling the contact plug straight out of the bulb holder.

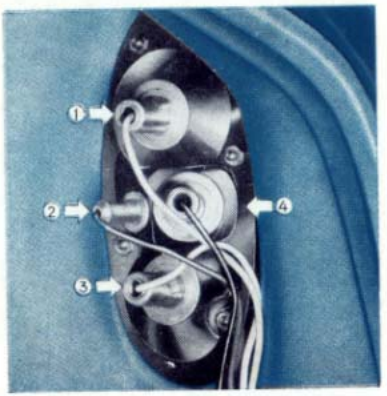


5. Take out the spring which holds the bulb holder in the body and remove the bulb holder. Then take out the old bulb.



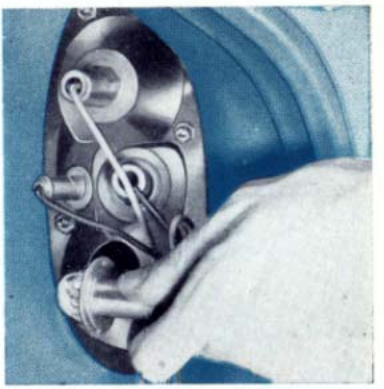
6. Fit the new bulb. Do not touch the bulb with the fingers but just pull the socket out of the carton sufficiently so that it can be fitted. Refitting the headlight is done in reverse sequence to removing.

Replacing rear light bulbs



The various rear light bulbs have the following functions:

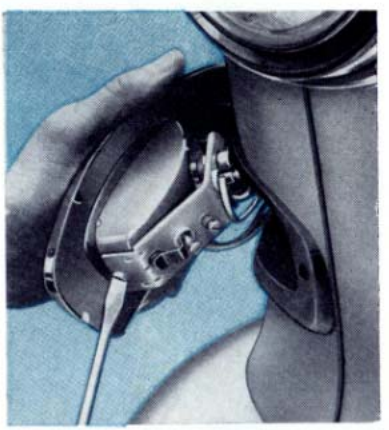
1. Traffic indicator
2. Long-time parking
3. Stop light
4. Rear light



When replacing any of the bulbs, pull out the holder as shown in the figure, after which the bulb can be changed. Do not touch the new bulb with the fingers.

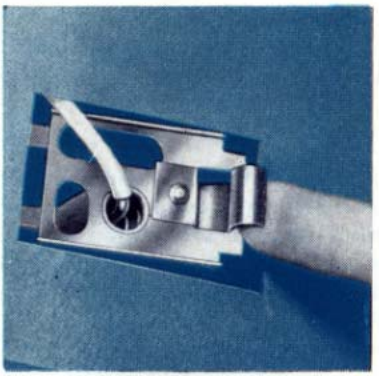
Replacing parking light bulbs

Remove the rim of the parking light with an X-headed screwdriver.

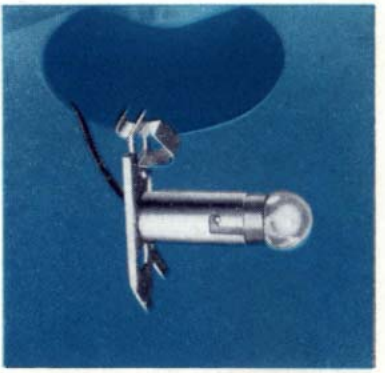


Then remove the bulb holder with an ordinary screwdriver after which the bulb can be changed. The larger bulb is the parking lamp and blinker and the smaller is the long-time parking bulb.

Replacing number plate lighting bulbs

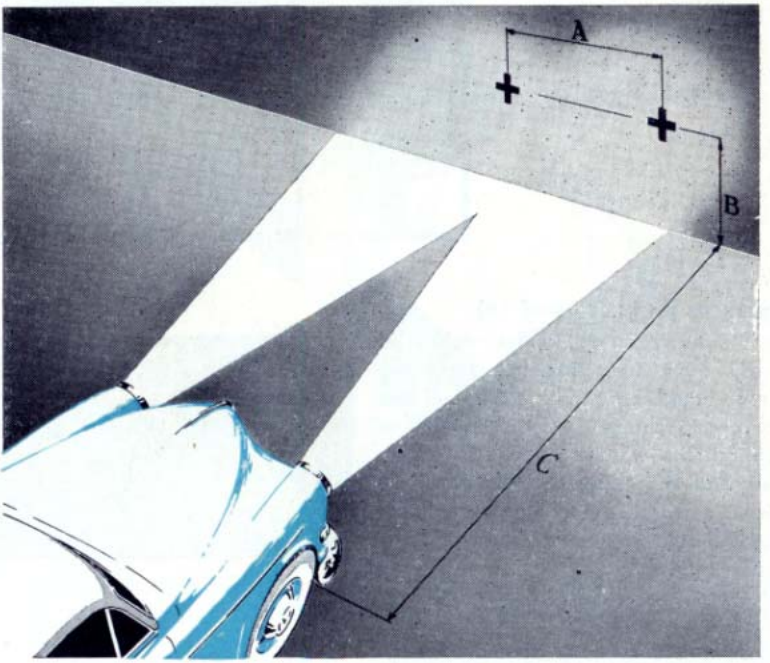


Release the bulb holder by pressing the spring inwards. When replacing ensure that the bulb holder fits in properly.



The bulb can now be replaced. Do not touch the new bulb with the fingers.

Headlight adjustment (14)



Adjustment of headlights.

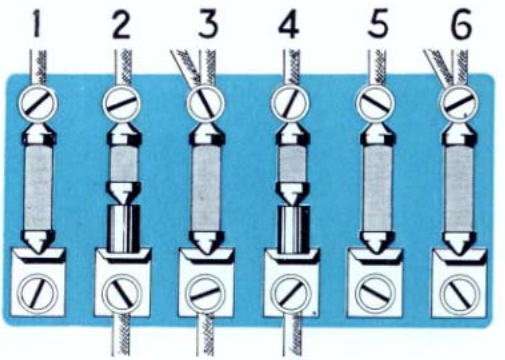
A = 138 cm (54.3″) B = 65 cm (25.6″) C = 5 m (16ft 5in)

If you think your lights do not illuminate the road sufficiently or you notice that oncoming traffic is worried by your lights, have the headlight setting checked by the nearest Volvo workshop. It is especially important to do this check during late autumn when the days begin to grow shorter **Badly adjusted headlights constitute a menace to traffic safety.**

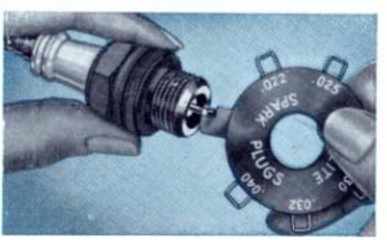
Fuses

The function of the fuses is to protect the electric system in the event of possible short circuits. They are situated in a fuse box fixed to the left under the bonnet. The figure shows which parts of the electrical system are protected by the individual fuses and this information is also given on the fuse box. The two short fuses are 25 amp and the others 8 amp. There are also two extra fuses to allow for subsequent fitting of a fog light etc.
Always carry spare fuses with you in the car.
Brake lights, long-time parking lights, glove shelf light, roof light and clock are protected by a thermal fuse built into the light switch.

1. (Reversing light)
2. (Fog light, spot light)
3. Parking lights
4. Blinker mechanism for headlight signalling
5. Heater
6. Horn, traffic indicators, fuel gauge



Sparking plugs (15 and 16)



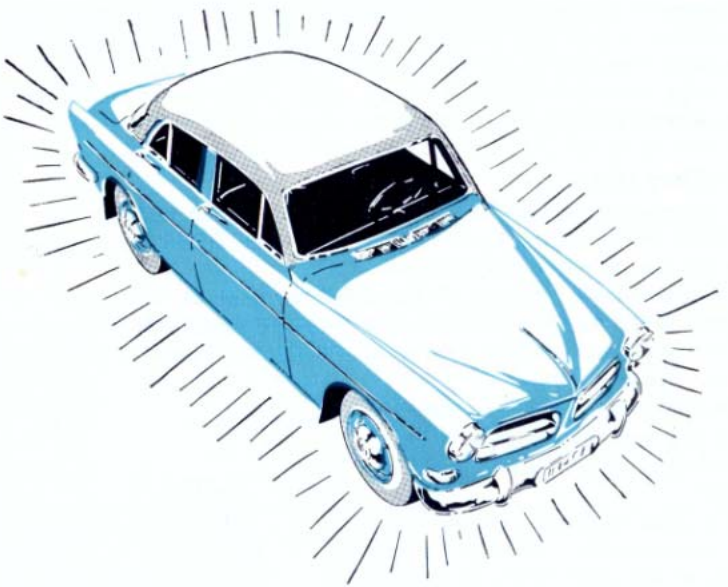
should be taken out and examined at every 5000 km (3000 miles) service. They should be sand-blasted and the spark gap should be adjusted. When refitted, the washers should be replaced and the plugs tightened with a torque wrench. Only in exceptional cases should you remove and refit the plugs yourself.
At least once every 20000 km (12500 miles) the whole set should be replaced if this has not been done previously.

Bodywork

Just as you have the car lubricated to keep it in best condition, so you should also give the bodywork regular attention. In this way you will preserve the attractive appearance of the car.

Washing

The Volvo has a synthetic enamel finish. This enamel has great resistance to wind and weather and damage by external causes. You should not, however, let your car remain dirty for a long time. When the car is new it is most important to wash it as often as possible as by so doing the surface of the enamel is hardened and becomes stronger, tougher and retains its lustre better. Use clean water without any additive since this tends to dry out the enamel and therefore should be avoided. A 1—2% soap solution can, however, be used if washing with ordinary water is not sufficient. After washing with soap solution the car should be polished in order to impregnate the enamel surface with a new sheen in place of that which has been washed away.



Washing should be done with a soft natural sponge and with plenty of water. The sponge should be rinsed often so as to avoid scratching the paintwork. After washing, the car should be dried off carefully with a soft clean chamois leather.

If possible, avoid washing, polishing and waxing your car in direct sunlight.

Polishing (17)

To retain the shine of your Volvo it should be polished twice a year. Polishing serves two purposes, firstly to give the enamel an attractive gloss and secondly, which is more important for the enamel itself, to impregnate it with grease which keeps it fresh and prevents crack formation.

Use a good synthetic enamel polish. Always wash the car first. Apply the polish with a soft cloth or pad to one small surface at a time. After having rubbed in the polish, work up each surface to a high lustre with a new clean cloth.

Waxing (17)

Waxing is done in the same way as polishing. Use only good quality wax.

When the car is new it should not be waxed for the first six months. This is so that the enamel has a chance of hardening properly. Subsequently it is sufficient if the car is waxed after every polishing.

Chromium plated parts

Bumpers, radiator grille and wheel hub caps are chromium plated and should be washed with clean water as soon they have become grimy or dusty. Chromium plating is stimulated by washing and afterwards ordinary wax or some rust preventive medium can be rubbed on.

The strips around the windows are of anodized aluminium which retain their shine without any special care. No polish must be used on these.

Upholstery (18)

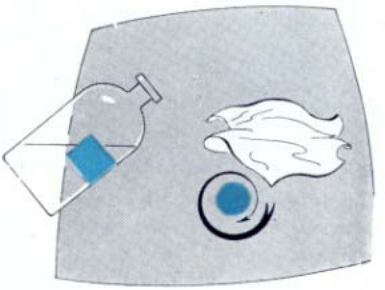
The material in the upholstery is a first-class woollen textile which is dirt-repellant. The headlining is of cotton material which should be vacuum cleaned now and then to retain its appearance.

The woven plastic portions of the upholstery and on the doors are best cleaned with a tepid soap solution or in severe cases with some household washing preparation. Petrol, carbon tetrachloride etc., must on no account be used on woven plastic.

If the upholstery material has got stained in any way the spot should be removed as soon as possible. Proceed as follows:

Use a clean cloth and moisten it with the recommended cleansing medium. Begin at the outer limits of the stain and work inwards towards the centre. In this way you will avoid having a ring left.

Examples of different types of stains and the best way of removing them follow.



Battery acid
If any battery acid happens to get spilled on the upholstery the spot must be treated immediately. Ammonia should be applied but since this is rarely available just when needed, water should be poured over the spot there and then. Treat the spot with ammonia as soon as possible and rinse off with water afterwards.

Blood
Rub the stain with a rag dipped in clean, cold water. Finish with a weak, almost cold, soap flakes solution.

Chocolate
First rub with a rag dipped in lukewarm water. If the mark does not disappear completely treat further with carbon tetrachloride.

Grease
Should be removed with carbon tetrachloride. Do not use petrol as this often leaves a mark on the material. Leaded tetraethyl fuel must not be used.

Fruit
First rub the stain with a rag dipped in hot water. If the spot does not disappear completely treat further with carbon tetrachloride.

Lipstick
Pour a little carbon tetrachloride on the spot and then immediately apply a piece of clean blotting paper over it. Repeat the process until the mark disappears.

Chewing gum
Soften up the chewing gum with carbon tetrachloride and then scrape it off with a blunt knife.

Vomit
Rub the stain with a rag dipped in lukewarm soap flakes solution. Then rub over with cold water. Finally go over the surface with carbon tetrachloride.

Urine
Wash with warm soapy water and afterwards rinse with cold water. Then pour diluted ammonia (one part ammonia to five parts water) on the stain. Allow this to remain for a few minutes and then rinse off with clean water.
Note. When using carbon tetrachloride always be careful to ventilate the car in accordance with the instructions printed on the packing.

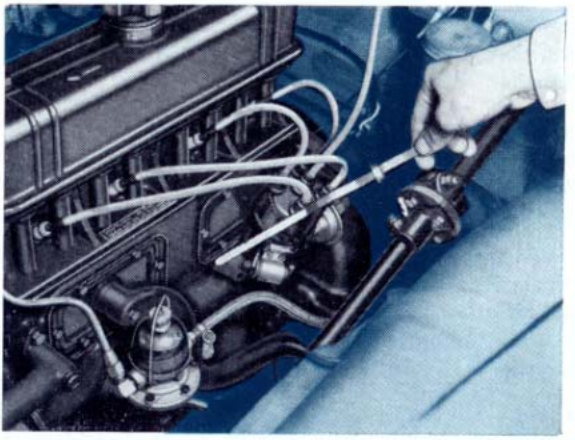
Floor mats (18)
are made of rubber and have a thick layer of felt on the underside.
When vacuum cleaning the upholstery the floor mats should be taken out and the inside of the car swept out. If the mats have got wet through ice or snow being brought in these should be allowed to dry before they are put back into the car. Any stains on the rubber mats can be removed with methylated spirits. The upper side should then be rinsed off with clean water.

Lubrication

Proper lubrication at the right point at the right time — follow this advice and you will save yourself many visits to the workshop.
Every time you take your car in for a general service the oil levels in the engine, gearbox and rear axle are automatically checked without any special instructions on your part. In the same way the radiator and battery also receive attention. You need only carry out an all-round lubrication of the car every 5000 km (3000 miles) as per the lubricating chart at the end of the book.
If you entrust your car to a Volvo dealer — which is by far the best course — you need only ask for a service in accordance with the mileometer reading and the workshop will then know exactly what should be done. They have a special service schedule which has been carefully worked out in consultation with the Volvo factory.
In case you wish to look after the lubrication of your Volvo yourself, we give below brief instructions for the lubrication of the engine, chassis and body.

Engine oil level (19)

should be checked at least once a fortnight, preferably when the car is being filled with petrol. Oil level should be maintained between the two marks on the dipstick. **Under no circumstances must it be allowed to fall below the lower mark.**



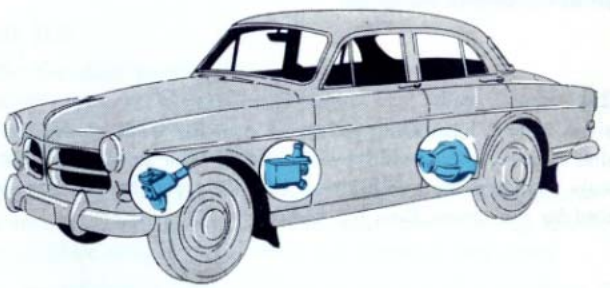
If you need to top up or change the oil you should use a well-known make and in future keep to the same brand.
If you drive on one brand of oil and are obliged to top up with oil of the same type but of different make, this is not a matter of great significance, but

in the long run it is a good policy to keep to the same brand of engine lubricating oil.

The engine oil must be changed every 5000 km (3000 miles). Pour in 2.75 litres (4 7/8 Imp. pints) if the oil filter element is not replaced at the same time. If the filter element has been replaced fill in 3.5 litres (6 1/4 Imp. pints).

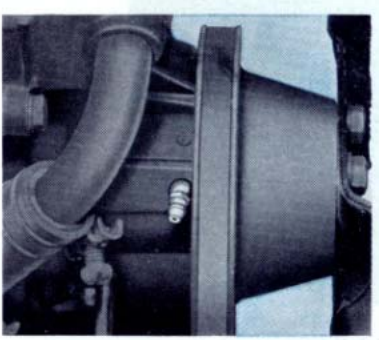
Oil level in gearbox (20)

should reach up to the filling plug hole — if not, top up with fresh oil. The oil should be changed every 20000 km (12500 miles). At every other oil change the gearbox should be flushed out. Use gear oil SAE 80. Hypoid oil must not be used.

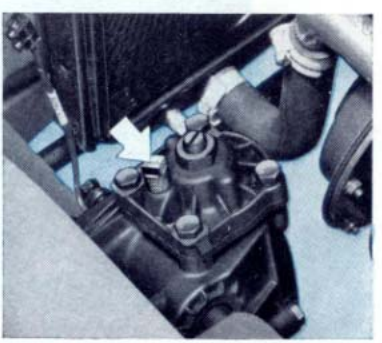


Oil level in rear axle (21)

should reach up to the filling plug hole. Top up as necessary with fresh hypoid oil SAE 80. Every 20000 km (12500 miles) the oil should be drained. At every other oil change the rear axle should be flushed out before fresh oil is filled in. Capacity is 1.3 litres (2 1/4 Imp. pints) of hypoid oil.



Grease nipple for coolant pump.



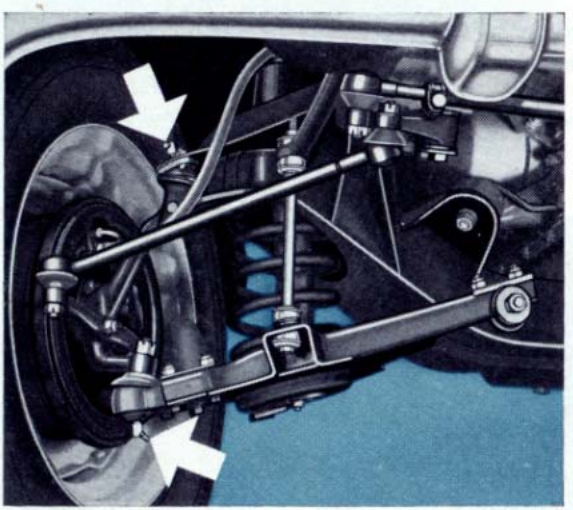
Oil filling plug for steering gear.

Oil level in steering gear (22)
should be checked at every all-round lubrication. The oil should reach up to the filling plug hole and topped up with hypoid oil SAE 80 as necessary.

Coolant pump (23)
should be lubricated sparingly with special heat resistant grease. Only one or two strokes of the grease gun at every all-round lubrication is sufficient.

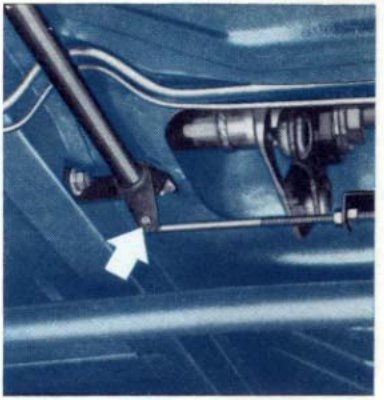
Carburetter (B 16 B)
Regarding lubrication of the carburetters, refer to page 38 and to the lubricating chart at the end of the book.

Chassis (23)
The Volvo has only 8 lubricating points — 4 at the front of the car and 4 on the propeller shaft. These should be lubricated with special chassis lubricant. Also lubricate now and then with an oil can, the point on the handbrake pull-rod indicated by the arrow. (See fig. below).



The front of the Volvo has 4 lubricating points — the 2 ball joints on either side.

About once a year the six steering rod ball joints and handbrake cable should be lubricated. The former are lubricated with chassis grease. The rubber sleeves should be turned up and filled with grease. The handbrake cable should be lubricated with graphite grease — it is best to let your Volvo workshop do this.

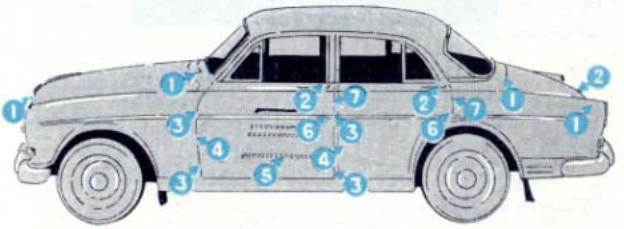


Body work (24)

It is chiefly the door locking mechanism and door stops which require attention and which should be lubricated with special grease which can be obtained from your Volvo dealer. Always lubricate sparingly after first having removed dust and dirt.

The locking cylinders are best lubricated with pulverized graphite which can be blown into the key hole and at the same time the key which has been dipped in graphite should be inserted and turned a few times.

All hinges are lubricated with ordinary engine oil. The following illustrations show where the different lubricating points are.

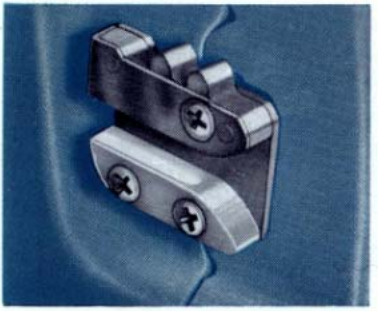


Bodywork lubrication.

1. Bonnet and luggage compartment hinges and locks are lubricated with thin oil.
2. Buttons on doors and luggage compartment are lubricated with thin oil.
3. Door hinges. (See separate fig).
4. Door stops. (See separate fig.).
5. Front seat sliding rails and locking devices are lubricated with grease.
6. Door locks. (See separate fig.).
7. Door latches. (See separate fig.).

3—4. Door hinges are lubricated with thin oil, door stops with paraffin wax.

6. The door locks are lubricated partly with thin oil (upper arrow) and partly with paraffin wax (lower arrow).



7. Door latches are lubricated with paraffin wax.

SPECIFICATIONS

GENERAL DATA

Type designation	Volvo 121, 122 S
Kerb weight	1130 kg (2491 lbs.)
Length	4395 mm (173″)
Width	1615 mm (63 1/2″)
Height	1505 mm (59 1/4″)
Wheelbase	2600 mm (102.4″)
Ground clearance, empty vehicle	210 mm (8 1/4″)
with four persons	185 mm (7.3″)
Track width, front	1315 mm (51.77″)
rear	1315 mm (51.77″)
	9900 mm (389 3/4″)

Engine B 16 A (121)

Output at 4500 r.p.m.	66 h.p. (SAE)
	60 h.p. (DIN)
Maximum torque at 2500 r.p.m.	11.3 kgm
	(81.77 lb.ft.)
Number of cylinders	4
Bore	79.37 mm (3.125″)
Stroke	80 mm (3.150″)
Displacement	1.58 litres (97 cu.in.)
Compression ratio	7.4: 1
Compression pressure at 200 r.p.m.	9.5—10.5 kg/cm²
	(135—150 p.s.i.)
Valve clearance, warm engine, inlet	0.40 mm (0.016″)
exhaust	0.45 mm (0.018″)

Engine, B 16 B (122 S)

Output at 5500 r.p.m.	85 h.p. (SAE)
Maximum torque at 3500 r.p.m.	12 kgm (86.8 lb.ft.)
Number of cylinders	4
Bore	79.37 mm (3.125")
Stroke	80 mm (3.150")
Displacement	1.58 litres (97 cu.in.)
Compression ratio	8.2: 1
Compression pressure	10—11 kg/cm² (142—167 p.s.i.)
Valve clearance, warm engine, inlet	0.50 mm (0.020")
exhaust	0.50 mm (0.020")

Engine lubricating system

Oil capacity for oil changing	2.75 litres (4 7/8 Imp. pints)
including oil filter	3.5 litres (6 1/4 Imp. pints)
Oil pressure, warm engine	2.5—3.5 kg/cm² (36—50 p.s.i.)
Lubricant type	Engine Oil "For Service MM, MS"
viscosity: Below 32° F (0° C)	SAE 10
32° F—90° F (0°—30° C)	SAE 20
Above 90° F (30° C)	SAE 30

Fuel system, B 16 A

Fuel tank capacity	45 litres (9 7/8 Imp. galls)
Carburetter, type	Drown-draught
Make and designation	Zenith 34 VN
venturi throat	27
main jet, standard	97
compensating jet	97
idling jet	50
float valve	1.75

Fuel system, B 16 B

Fuel tank capacity	45 litres (9 7/8 Imp. galls)
Carburetter, type	Horizontal
Make and designation	SU H 4
size (air intake diameter)	38.1 mm (1 1/2")
control jet	AUC 2112
control needle	GT
gauge for float level	11 mm diam. (.433")
idling speed, about	550 r.p.m.

Cooling system

Type	Pressure (0.25 kg/cm²) (3 ½ p.s.i.)
Capacity incl. heater	8.5 litres (15 Imp. pints)
Thermostat begins to open at about	75—78° C (167—172° F)
fully open at about	90° C (194° F)

Anti-freeze mixtures

Table for ethylene-glycol/water proportions

Cooling system capacity litres (Imp. pints)	Necessary quantity of ethylene-glycol in litres (Imp. pints) for frost protection down to:				
	—10° C 14° F	—15° C 5° F	—20° C —40° F	—30° C —22° F	—40° C —40° F
8.5 (15)	2.0 (3 ½)	2.5 (4 ⅜)	3.0 (5 ¼)	4.0 (7)	4.5 (8)

The maximum possible frost protection with ethylene-glycol/water mixture, —56° C (—69° F) is obtained by the addition of 5.1 litres (9 Imp. pints) of ethylene-glycol.

GEARBOX

Type designation	H 6	M 4
Ratio 1st speed	3.13: 1	3.45: 1
2nd speed	1.62: 1	2.18: 1
3rd speed	1: 1	1.31: 1
4th speed	—	1: 1
reverse	2.66: 1	3.55: 1
Lubricant, type	Gear oil	
viscosity, year round	SAE 80	
Oil capacity	0.5 litres (⅞ Imp. pint)	0.9 litres (1 ¾ Imp. pints)

REAR AXLE

Type	Bevel pinion (hypoid)
Ratio	4.56: 1
Lubricant, type	Hypoid oil
viscosity, year round	SAE 80
Oil capacity	1.3 litres (2 ¼ Imp. pints)

FRONT WHEEL ADJUSTMENT

(Adjustment carried out with unladen car but including fuel, water and spare wheel, on a completely level surface)

Toe-in	0 to +4 mm (1.57")
Camber	0° to +0.5°
Caster	0° to +1.0°
"King pin" inclination at 0° camber	8°

Steering gear

Type	Cam and roller
Lubricant	Hypoid oil SAE 80
Oil capacity	0.2 litres (3/8 Imp. pints)

WHEELS AND TYRES

Wheels	15" × 4"
Tyre size, all round	5.90"—15"

	Extra smooth riding (1 person)	Normal (2 persons)	Fully loaded (5 persons)
Tyre pressure, cold tyres, front	1.2 kg/cm² (17 p.s.i.)	1.4 kg/cm² (20 p.s.i.)	1.6 kg/cm² 23 p.s.i.)
Tyre pressure, cold tyres, rear	1.5 kg/cm² (21 p.s.i.)	1.7 kg/cm² (24 p.s.i.)	1.9 kg/cm² (27 p.s.i.)

ELECTRICAL SYSTEM

Voltage	6 V.
Battery, make and type	Tudor 3DF 6 Noack 312 SAAJ GH-13 or corresponding
Battery capacity	85 amp. hours
Electrolyte specific gravity:	
fully charged battery	1.275—1.285
When battery needs recharging	1.230
Dynamo, designation	Bosch LJ/GG 200/6/2300 R 7 . . . 10
output	300 watts
Starter motor, designation	Bosch EGD 0.6/6 AR19
output	0.75 h.p.
Fuses, rating/number	8/4 25/2

Ignition system

Firing order	1-3-4-2
Ignition setting, 93 octane (Research)	4° B.T.D.C.
83 octane (Research)	2° A.T.D.C.
Plugs, normal driving	AC 44 com. Auto-Lite A5 Bosch W175 T3 Champion J-7 or corresponding.
hard driving	AC 43 com. Auto-Lite AH4 Bosch W 225 T 3 Champion J-6 or corresponding.

Sparking plug gap	0.7—0.8 mm (.028″—.032″)
Distributor, make and designation	Bosch VJU 4 BR 20
direction of rotation	Clockwise
contact breaker gap	0.4—0.5 mm (0.016″—0.020″)

Bulbs (all 6 v.)	**No.**	**Watts.**	**Socket**
Headlights	2	45/40	BA 20 d
Front blinker/parking light	2	20/5	BA 15 d spec.
Long-time parking	4	2	BA 9 s
Number plate lighting	2	5	BA 15 s
Stop light	2	15	BA 15 s
	2	5	BA 15 s
Rear blinkers	2	15	BA 15 s
Roof light	1	10	S 8
Instrument panel	2		
Glove shelf	1		
Clock	1		
Control lamp for traffic indicator	1	2	BA 9 s
for oil pressure	1		
for charging	1		
for full headlights	1		

CAPACITIES, summary

Fuel tank	45 litres (9 7/8 Imp. galls.)
Cooling system	8.5 litres (15 Imp. pints)
Oil capacity, engine, incl. oil filter	3.5 litres (6 1/4 Imp. galls.)
excl. oil filter	2.75 litres (4 7/8 Imp. pints)
gearbox, H 6	0.5 litres (7/8 Imp. pint)
M 4	0.9 litres (1 3/4 Imp. pints)
rear axle	1.3 litres (2 1/4 Imp. pints)
steering gear	0.2 litres (3/8 Imp. pint)

TOOL EQUIPMENT

Jack, jack handle, wheel nut wrench, sparking plug spanner, pliers, adjustable spanner, set of screwdrivers and tool bag.

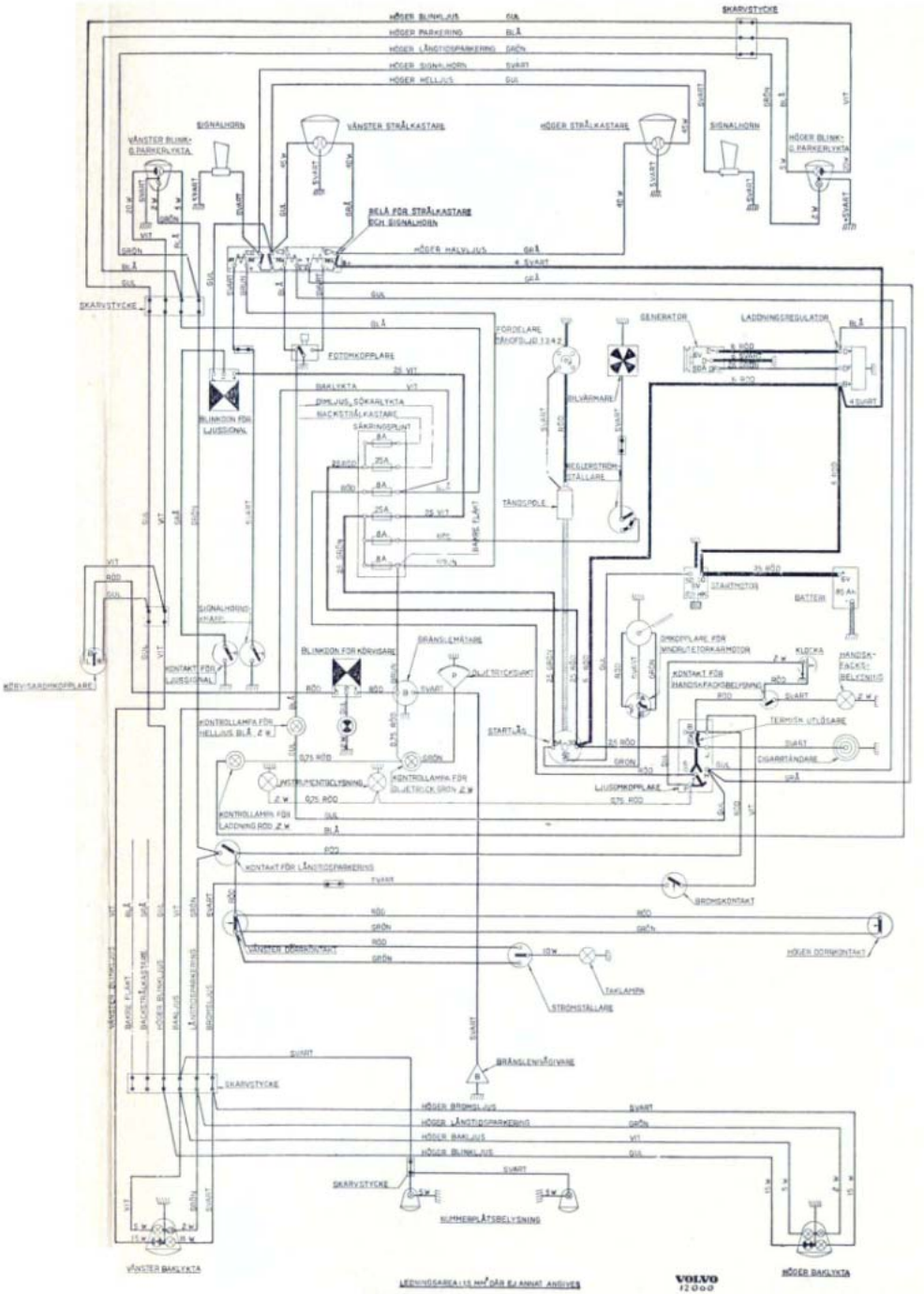
Bromskontakt	=Brake contact
Vänster dörrkontakt	=Left-hand door contact
Höger dörrkontakt	=Right-hand door contact
Taklampa	=Roof lamp
Strömställare	=Switch
Vänster blinkljus	=Left-hand blinker
Bakljus	=Rear light
Långtidsparkering	=Long-time parking
Bromsljus	=Brake light
Bränslenivågivare	=Fuel gauge tank unit
Höger bromsljus	=Right-hand brake light
Höger bakljus	=Right-hand rear light
Nummerplåtsbelysning	=Number plate lighting
Vänster baklykta	=Left-hand rear light
Höger baklykta	=Right-hand rear light

Gul	=Yellow
Blå	=Blue
Grön	=Green
Svart	=Black
Vit	=White
Grå	=Grey
Röd	=Red

Ledningsarea 1,5 mm² där ej annat angives
=Cross-sectional area of leads 1.5 mm² unless otherwise stated

CODE

Höger blinkljus	= Right-hand blinker
Höger parkering	= Right-hand parking
Höger helljus	= Right-hand headlight (full)
Skarvstycke	= Junction box
Vänster blink- o. parker-lykta	= Left-hand blinker and parking light
Signalhorn	= Horn
Vänster strålkastare	= Left-hand headlight
Höger strålkastare	= Right-hand headlight
Höger blink- och parkerlykta	= Right-hand blinker and parking light
Relä för strålkastare och signalhorn	= Relay for headlight and horn
Höger halvljus	= Right-hand headlight (dipped)
Fotomkopplare	= Foot dipper switch
Fördelare	= Distributor
Tändföljd 1-3-4-2	= Firing order 1-3-4-2
Generator	= Dynamo
Laddningsregulator	= Charging control
Blinkdon för ljussignal	= Blinker mechanism for headlight signalling
Baklykta	= Rear light
Dimljus, sökarlykta	= Fog light, spot light
Backstrålkastare	= Reversing light
Säkringsplint	= Fuse box
Bilvärmare	= Heater
Reglerströmställare	= Rheostat switch
Tändspole	= Coil
Bakre fläkt	= Rear fan
Körvisaromkopplare	= Traffic indicator switch
Signalhornsknapp	= Horn button
Kontakt för ljussignal	= Contact for headlight signalling
Blinkdon för körvisare	= Blinker mechanism for traffic indicators
Bränslemätare	= Fuel gauge
Oljetrycksvakt	= Oil pressure tell-tale
Startmotor	= Starter motor
Batteri	= Battery
Omkopplare för vindrutetorkarmotor	= Switch for windscreen wiper motor
Klocka	= Clock
Handsfacksbelysning	= Glove compartment lighting
Kontakt för handskfack-belysning	= Contact for glove compartment lighting
Kontrollampa för helljus	= Control lamp for full headlights
Startlås	= Main switch
Termisk utlösare	= Thermal release
Cigarrtändare	= Cigar lighter
Instrumentbelysning	= Instrument lighting
Kontrollampa för oljetryck	= Control lamp for oil pressure
Ljusomkopplare	= Light switch
Kontrollampa för laddning	= Charging control lamp
Kontakt för långtids-parkering	= Contact for long-time parking



Wiring diagram.

Note 1. Once a year the rubber sleeves over the ball joints should be turned back and filled with grease.

Note 2. Every 20000 km (12000 miles) the front wheel bearings should be dismantled and carefully cleaned. The bearings should be packed with heat-resistant grease when being refitted. Do not overfill with grease otherwise this may work through to the brake drums.

Note 3. Lubricate sparingly with heat-resistant ball bearing grease.

Note 4. Change the engine oil. Drain out the old oil while the engine is warm. At every other oil change the oil filter element should be replaced, see page 29. Check oil level at least once a fortnight, preferably when filling up with petrol.

Note 5. Change the engine oil at spring and autumn. See further Note 4.

Note 6. Check that the oil comes up to the level plug. Top up with fresh oil if necessary.

Note 7. Every 20000 km (12000 miles) the oil should be changed Drain out the old oil immediately after having driven. The gear box should be flushed through with flushing oil at every other oil change. Do **not** use hypoid oil.

Note 8. Have the handbrake cable lubricated with graphite grease once or twice a year. Let your Volvo dealer see to this.

Note 9. Every 40000 km (25000 miles) or at least every other year the bearings should be cleaned and filled with fresh grease. See further Note 2.

Note 10. Check that the oil comes up to the level plug. If necessary top up with the same sort of oil which is already in the rear axle.

Note 11. Every 20000 km (12000 miles) the oil should be changed. The rear axle should be flushed through at every other oil change.

Note 12. Lubricate the pull-rod at the split pin (see figure on page 52).

Note 13. Pour a few drops of thin engine oil into the lubricator.

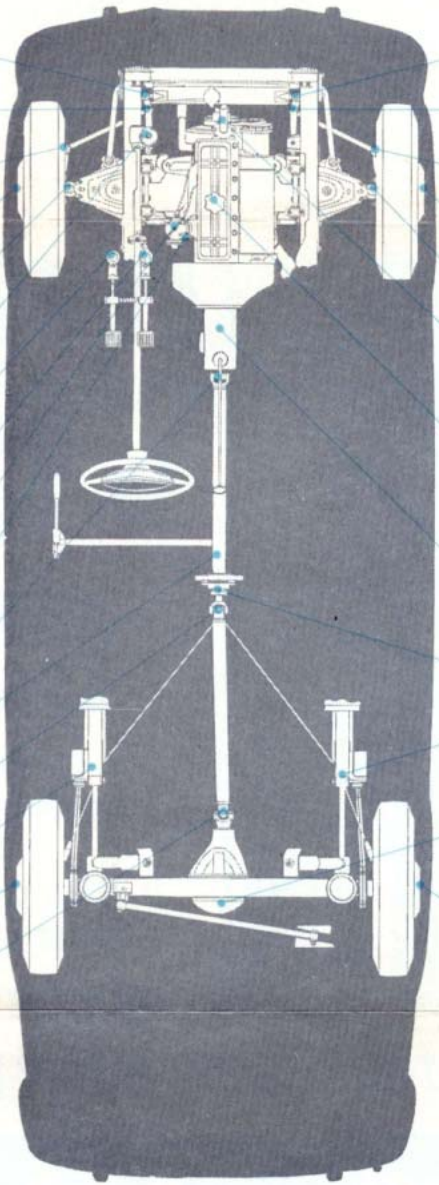
Note 14. The felt wick under the engine should be lubricated with a few drops of thin engine oil.

Note 15. Check fluid level. Top up if necessary with first class brake fluid of HD quality to the level mark.

Note 16. Check that there is sufficient oil in the bearing housing. Top up with fresh oil if necessary.

N.B. For cars with B 16 B engine note that at every all-round lubrication the damping cylinders of the carburetters should be topped up with SAE 5 W oil. See further page 38.

LUBRICATE AFTER EVERY
SEE RESPECTIVE NOTE
(6000 MILES)
(3000 MILES)



Tie-rod
Note 1

Steering rod
Note 1

Steering rod
Note 1

Front wheel
bearing
Note 2

Upper and
lower ball joints
2 lubricating
points

Steering gear
Note 16

Clutch fluid
container
Note 15

Brake fluid
container
Note 15

Distributor
Note 14

Distributor
Note 13

Front universal
joint

Handbrake
Note 12

Intermediate
universal joint

Handbrake
cable
Note 8

Rear wheel
bearing
Note 9

Rear universal
joint

Tie-rod
Note 1

Steering rod
Note 1

Steering rod
Note 2

Front wheel
bearing
Note 2

Upper and
lower ball joints
2 lubricating
points

Coolant pump
Note 3

Engine
Note 4

Engine
Note 5

Gearbox
Note 6

Gearbox
Note 7

Spline shaft

Handbrake
cable
Note 8

Rear wheel
bearing
Note 9

Rear axle
Note 10

Rear axle
Note 11

LUBRICATING CHART
VOLVO 121 and 122 S models

SYMBOLS

Chassis lubricant

Special lubricant
see respective note 

Engine oil "for Service MM, MS"

Below 32° F (0° C)	SAE 10
32° F—90° F (0° C—32° C)	SAE 20
Over 90° F (32° C)	SAE 30

Gearbox oil, year round:
SAE 80

Rear axle oil, year round:
Hypoid oil SAE 80 

Brake fluid

Thin engine oil

OIL CAPACITES

Engine, for oil changing:
2.75 litres
(4 7/8 Imp. pints, 5 3/4 US pints)
incl. oil filter:
3.5 litres
(6 1/4 Imp. pints, 7 1/2 US pints)

Gearbox

H 6	M 4
0.5 litres	0.9 litres
(7/8 Imp. pint, 1 1/8 US pints)	(1 5/8 Imp, pints, 2 US pints)

Rear axle
1.3 litres
(2 1/4 Imp. pints,
2 3/4 US pints)

Steering gear
0.2 litres
(3/8 Imp. pint,
1/2 US pint)

Personal Information

Name .....

Address .....

Tel. .....

Driving License no. .....

Nearest Volvo dealer

Address .....

Name .....

Tel. .....

Garage manager's name .....

Tel. .....

Car Information

Type designation .....

Chassis number .....

Engine number .....

Registration number .....

Ignition key number .....

Door key number .....

General Information

Fuel tank lock, key number .....

Insurance Company .....

Insurance Policy no. .....

.....

E

VOLVO

121 and 122 S

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Handelstryckeriet, Göteborg 1958