

INSTRUCTION BOOK  
**VOLVO 1800 S**



INTRODUCTION



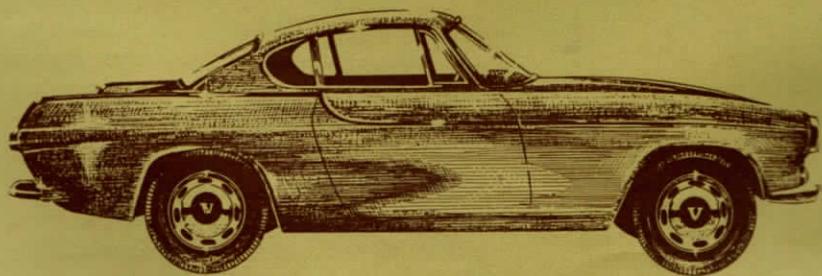
**B**efore starting to drive your new Volvo we advise you to read through this instruction book carefully. It contains all the information you need to be able to drive and service your car in the best possible way. If you follow the advice and instructions given in this book, the car will more than satisfy all demands concerning good running economy and outstanding performance that you have every right to expect of such a high-class vehicle.

Do not wait until something goes wrong before reading the instruction book. Read it now! The short time this takes will be more than well spent. The better you know your car, the more you will get out of it. Even for experienced motorists, this book may perhaps contain some valuable information.

This instruction book is not intended to be a complete technical manual, nor is it intended to make the reader into a qualified automobile mechanic. It will, however, show you how to look after your vehicle so that trouble in the future can be avoided.

For a more detailed mechanical description and repair procedures, we refer you to the special Service Manual for the car which can be obtained from your local Volvo dealer.

DESCRIPTION

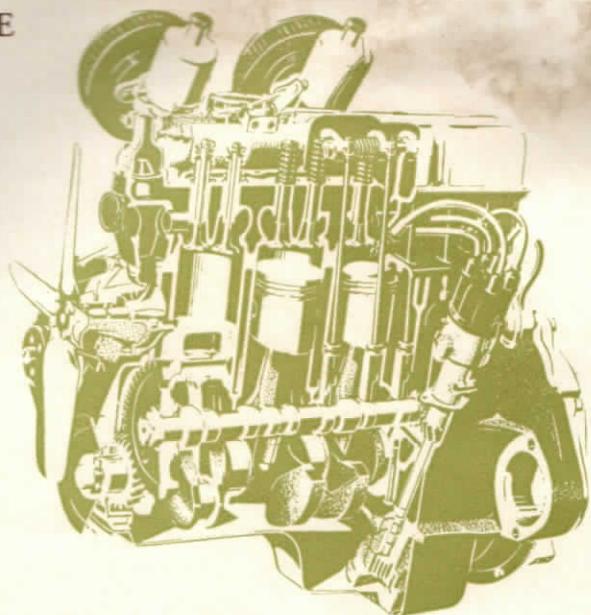


The Volvo 1800 S is a two-door sports car. The car is a two-seater model but there is space for a further two passengers in the rear seat. The body is of integral construction so there is no frame as such. The front and rear suspensions, the engine and the transmission (gearbox) are attached directly to the body. The body surface finish is synthetic and applied over a rust-protective primer.

The car is protected from theft by having the ignition switch and the ignition coil connected by means of an armored cable.

The instruments are located on the instrument panel in such a way that they are very easy to see and are in keeping with the sports character of the car: revolution counter, temperature gauge for oil as well as water, etc. The operation of the various controls and adjusting instructions for the seats, etc. are described in this chapter in detail.

## ENGINE



The engine is a four-cylinder, water-cooled gasoline (petrol) unit with overhead valves. The max. output is 115 b.h.p. SAE, the compression ratio 10:1 and the displacement 1.78 liters. (108.6 cu.in.).

## Fuel system

The engine is fitted with twin 1<sup>3</sup>/<sub>4</sub>" SU horizontal carburetors. The fuel is fed from the tank to the carburetors by a fuel pump driven by a cam on the engine camshaft. There is a fuel filter incorporated in the fuel pump which traps any water and other impurities in the fuel.

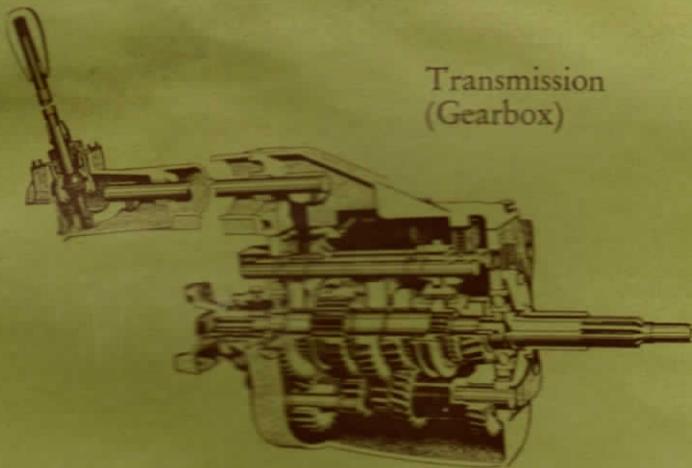
## Lubricating system

Engine lubrication is taken care of by means of a gear pump which sucks oil from the oil pan (sump) on the lower part of the engine and forces it through the oil filter out to all the lubricating points in the engine. The oil is cooled in an oil cooler, water from the engine cooling system circulating through the jacket of the oil cooler.

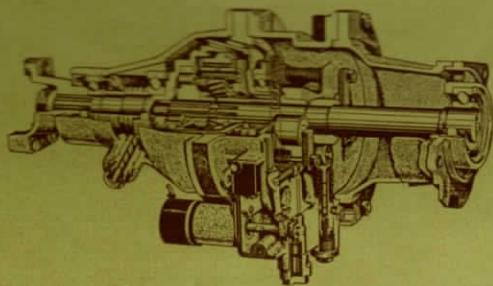
## Cooling system

The engine is water-cooled and has a pressure system. Cooling water circulation is taken care of by a pump which is fitted on the fan shaft. A thermostat, which does not open until the temperature reaches 76° C (170° F), prevents the cooling water from passing through the radiator before the engine has reached its normal operating temperature.

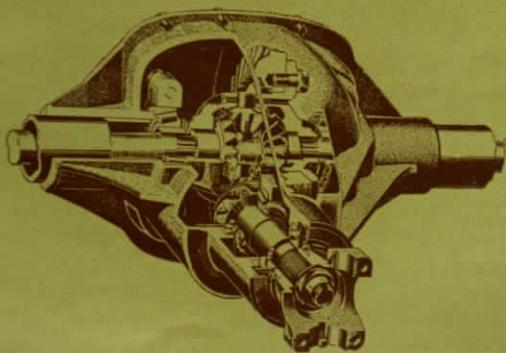
Transmission  
(Gearbox)



Overdrive



Rear axle



## STEERING GEAR

This car is fitted with a cam and roller type steering gear. Movements of the steering wheel are transmitted via the worm on the steering column to the roller on the pitman arm shaft, which in turn influences the wheels through the medium of the steering rods.

## BRAKES

The car is fitted with two independent brake systems, a footbrake system and a handbrake system.

### Handbrake System

This is mechanical and only influences the brakes on the rear wheels. Movement of the handbrake lever is transmitted through a series of pull rods and cables to the rear brake levers which then apply the brakes.

### Footbrake System

This is hydraulic and influences all four wheels. The hydraulic system consists of a master cylinder filled with brake fluid which, when the brake pedal is depressed, transfers the brake pressure through the fluid in the lines to a servo brake cylinder which further increases the pressure before it continues to the brake cylinders at the wheels. The plungers in these wheel cylinders are pressed outwards and the brakes are applied.

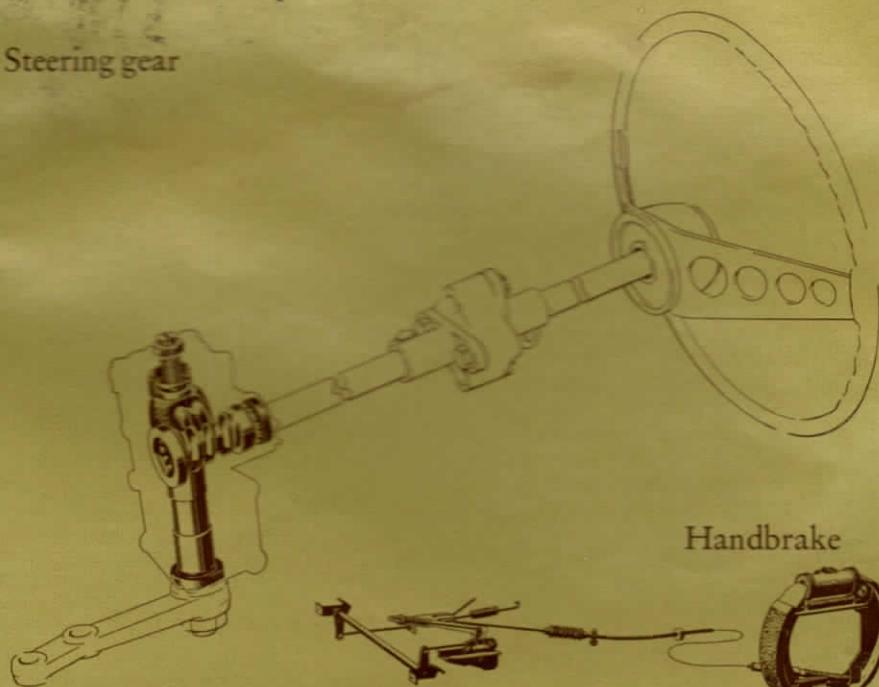
The front wheel brakes are of the disc type and the rear wheel brakes of the drum type.

There is a reducer valve in the rear wheel brake circuit, the purpose of which is to prevent the rear wheels from locking involuntarily when braking.

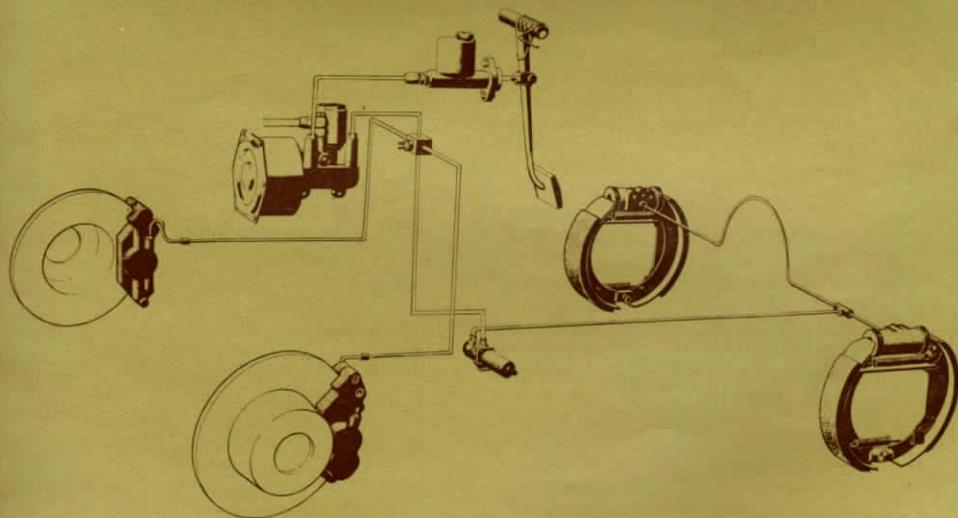
## WHEELS AND TIRES

The car is fitted with pressed steel wheels with hub caps. All the wheels are carefully balanced. The tires are of the braced tread type with inner tubes specially designed for the stresses occurring at high speeds. The tire size is 165 SR 15.

Steering gear



Handbrake



Footbrake

VOLVO  
31048

## ELECTRICAL SYSTEM

The electrical system is of the 12-volt type and is fitted with a voltage controlled generator (dynamo). The starter motor is operated from the instrument panel by means of the ignition key. This key is also used to switch on the other electrical equipment. The cables to the headlamps, parking lights and interior lighting, however, are not connected over the ignition switch but can be used independently of the ignition key.

## Lighting

Lighting on the front of the car consists of the headlamps with full and dimmed beams, as well as the combined lamps for the directional signal flashers and the parking lights.

Lighting at the rear consists of combined lamps for the directional signals and tail-lights, and the brake warning lights. There are also two lamps for rear license plate lighting.

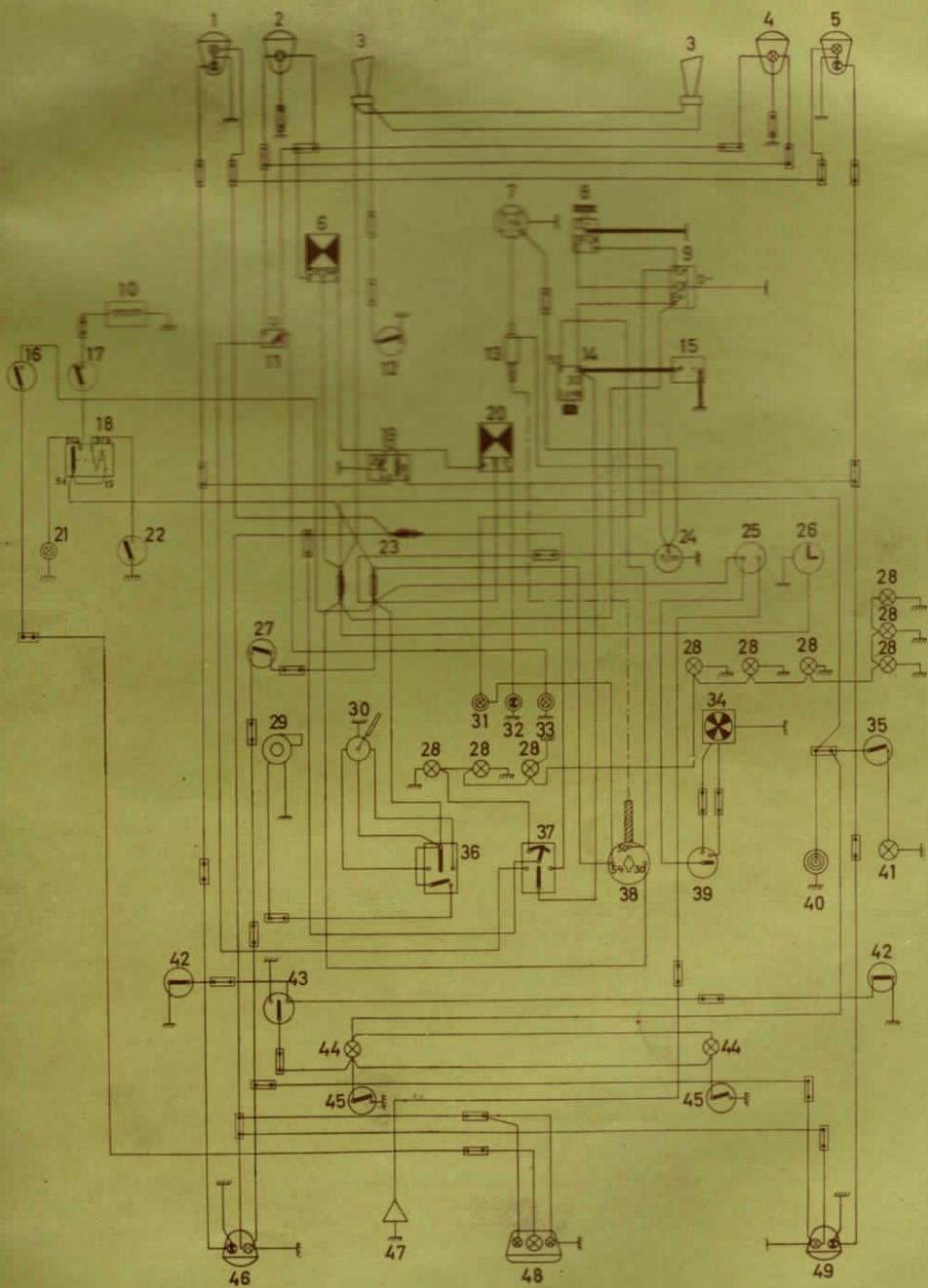
The car is fitted with a back-up light which comes on automatically when reverse gear is engaged.

Interior lighting consists of two lamps located on the rear side pillars and a map-reading lamp to the right under the instrument panel. There are bulbs for indirect instrument lighting. For bulb replacement, see pages 34—36.

## Fuses

The electrical equipment is protected by means of three 35 A fuses, located in fuse boxes on the left-hand wheel arch.

- |   |   |  |
|---|---|--|
| 1 Flasher and parking light, left                       | 18 Relay for overdrive                                | 33 Warning lamp for fullbeam headlights                  |
| 2 Headlamp, left  | 19 Directional signal switch                          | 34 Heater  |
| 3 Horn  | 20 Flasher impulse unit for directional signal        | 35 Switch for map-reading lamp                           |
| 4 Headlamp, right                                       | 21 Warning lamp for overdrive                         | 36 Switch for windshield (windscreen) wipers and washers |
| 5 Flasher and parking light, right                      | 22 Selector switch for overdrive (on steering column) | 37 Lighting switch                                       |
| 6 Relay for headlight signal (not USA)                  | 23 Fuses  | 38 Ignition switch                                       |
| 7 Distributor   | 24 Revolution counter                                 | 39 Control switch for heater                             |
| 8 Generator (dynamo)                                    | 25 Fuel gauge   | 40 Cigarette lighter                                     |
| 9 Charging relay  | 26 Clock  | 41 Map-reading lamp                                      |
| 10 Control solenoid for overdrive                       | 27 Brake contact                                      | 42 Door contact switch for interior lighting             |
| 11 Foot dimmer switch                                   | 28 Instrument lighting                                | 43 Switch for interior lighting                          |
| 12 Horn button  | 29 Windshield (windscreen) washers                    | 45 Switch for interior lighting (built into lamp)        |
| 13 Ignition coil  | 30 Windshield (windscreen) wipers                     | 46 Rear lamp, left                                       |
| 14 Starter motor  | 31 Warning lamp for charging                          | 47 Fuel gauge impulse unit                               |
| 15 Battery  | 32 Warning lamp for directional signals               | 48 License plate lighting                                |
| 16 Switch for back-up light (on transmission = gearbox) |   | 49 Rear lamp, right                                      |
| 17 Switch for overdrive (on transmission = gearbox)     |   |  |

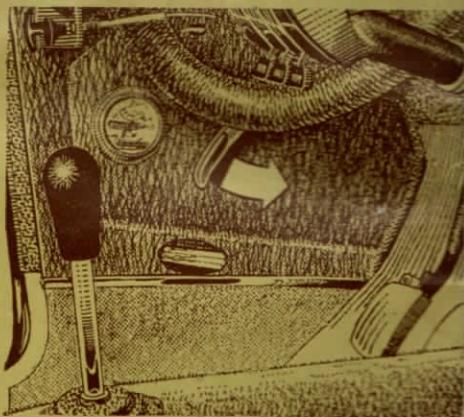


## BODY

## Hood (Bonnet)

The hood (bonnet) is fitted with a locking device which is operated from the driving seat by means of a handle to the left under the instrument panel. This releases the hood which can then be lifted up after the handle has been moved forwards and downwards.

The hood remains in its lifted position by means of a stay which is automatically locked by a built-in catch when the hood is lifted all the way up. When the hood is to be lowered again, depress the catch at the same time as the hood is lifted to its uppermost position, and then lowered.



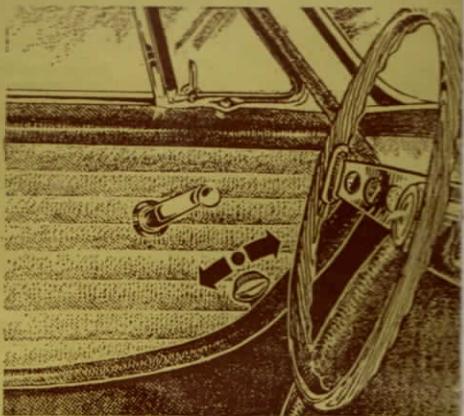
## Doors and Locks

The car is fitted with key locks for both doors, the luggage compartment lid and the fuel tank cap. Before the doors can be opened, the button in the door handle must be pressed in. The doors can be locked from the inside by moving the handle forwards as shown in the illustration. To open the door, move the handle to the rear. If you happen to lose your keys, contact your nearest Volvo dealer, who will supply you with new keys if you inform him of the code number of the missing keys.



## Safety belts

Make a habit of fitting on the safety belt as soon as you get into the car. The length of the belt can be easily adjusted on the part which is attached to the floor. Adjust the length of the belt carefully so that it is neither too tight nor too loose.

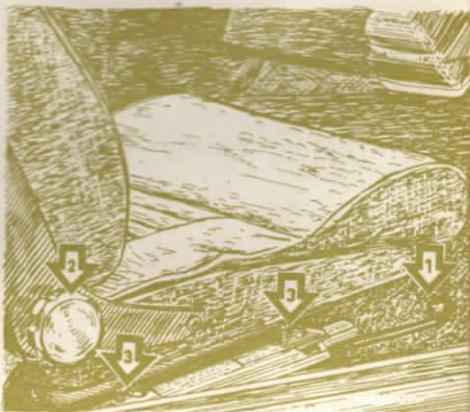


- Place one part of the belt around the waist and the other part over the shoulder and chest, and then lock the buckle in the anchorage between the seats. To release the belt from the locking slot, move the small lever on the anchorage unit to the rear. Check now and then that the bolts which retain the belt are well tightened. If the belt has become dirty it can best be cleaned with water and a suitable household detergent.



## Adjusting the seats

The front seats can be adjusted backwards or forwards after the handle (1) has been moved sideways towards the middle of the car. By utilizing the extra holes in the seat frames and the spacing brackets on the slide rails, the seats can be moved further backwards or forwards. The inclination of the backrest is adjusted by means of the knob (2).

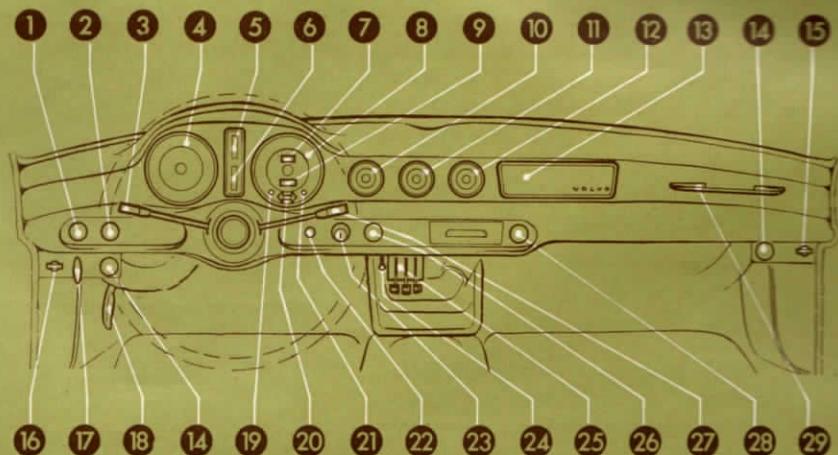


The seat can be adjusted vertically with the bolts and nuts (3) on the slide rails. Slacken the upper nuts and adjust to the desired position with the lower ones.

The backrest is provided with holes on both sides for adjusting the lumbar support. The upholstery fabric round the holes is pressed into the recess underneath whereby the screw in the backrest frame is accessible. Adjusting can now be carried out with a Philips screwdriver, see figure. The lumbar support is tensioned by turning the screw clockwise and eased off by turning it anti-clockwise.



## INSTRUMENTS AND OPERATING CONTROLS



- |   |   |  |
|---|---|--|
| 1 Control knob for windshield (windscreen) wipers and washers   | 10 Fuel gauge                           | 21 Warning lamp for fullbeam headlights          |
| 2 Lighting switch   | 11 Oil pressure gauge                   | 22 Warning lamp for overdrive                    |
| 3 Directional signal switch built-in headlight signal (not USA) | 12 Clock                                | 23 Ignition switch with built-in starter contact |
| 4 Revolution counter  | 13 Recess for radio                     | 24 Zero-setting control for trip meter           |
| 5 Temperature gauge for cooling water                           | 14 Control for direct ventilation       | 25 Heater and ventilation controls               |
| 6 Temperature gauge for engine oil                              | 15 Switch for map-reading lamp          | 26 Fan control                                   |
| 7 Trip meter  | 16 Switch for interior lighting         | 27 Selector for overdrive                        |
| 8 Speedometer   | 17 Choke control knob                   | 28 Cigarette lighter                             |
| 9 Mileometer  | 18 Hood (bonnet) catch                  | 29 Grab handle                                   |
|   | 19 Warning lamp for charging            |  |
|   | 20 Warning lamp for directional signals |  |

### ① Control for windshield (windscreen) wipers and washers

The windshield wipers are electrical and can be set to two different speeds by pulling out the control knob. If pulled out to the first notch, the wipers run at half speed, and if pulled out two notches they run at full speed. When the knob is pushed in fully, the windshield wipers automatically stop in their parked position.

The windshield washers are operated by turning the control knob in a clockwise direction. They can be used even when the windshield wipers are switched off. The fluid container for the windshield washers is located under

the hood (bonnet) and contains about one liter (one quart). *Never let the windshield wipers run on a dry and dusty surface since this can easily scratch the glass.*

#### 4 Revolution counter

The revolution counter indicates the engine speed in revolutions per minute. The shaded area between 6000 and 6500 r.p.m. shows the momentary permissible speed. The area between 6500 and 7000 r.p.m. is marked in red and should not be used.

#### 5 Temperature gauge for cooling water

The temperature gauge shows the temperature of the cooling water and thus the working temperature of the engine. The temperature should normally be 70–90° C (158–194° F). If it should indicate a high temperature for a lengthy period, this can be due to the fact that the thermostat has been damaged. In such cases the thermostat should be replaced.

#### 6 Temperature gauge for engine oil

The oil temperature is a function of the engine speed and can vary quite considerably. Temperatures above 130° C (265° F), however, should not be permitted.

#### 11 Oil pressure gauge

The oil pressure is dependent on the temperature of the oil and the engine speed. Since the engine is fitted with an oil cooler, there can be some slight delay before the oil pressure gauge gives a reading. If the engine is cold, it will show relatively high pressure, which is normal. If the pressure should at any point go down to zero, the engine must be stopped immediately and the reason determined. See under "Driving", pages 21 and 23.

#### 12 Clock

The clock is driven electrically. If the battery has been disconnected for any reason, the clock must be started again by pressing in the setting knob.

#### 19 Warning lamp for charging

This lamp lights up when the battery is discharging, which is normal at idling speeds. If you accelerate a little, the lamp should go out. Should the lamp remain on while you are driving, this usually means that there is some fault in the electrical system or that the fan belt is insufficiently tensioned and is slipping on the generator pulley. The result of this will be poor charging.

#### 24 Zero-setting control for tripmeter

The trip meter is set to zero by pressing up the knob and turning it anti-clockwise.

**2** Lighting switch

The headlights are operated by means of a pull control knob on the instrument panel as well as by a foot dimmer switch to the left on the floorboard.

Position 0 = Off

Position 1 = Parking lights

Position 2 = Fullbeam or dimmed headlights

The headlights are switched from fullbeam to dimmed and vice versa by depressing the foot dimmer switch.

**INSTRUMENT LIGHTING**

The strength of the instrument lighting can be regulated by turning the lighting switch knob.

**3** Directional signal switch and \*headlight signal

By moving the switch lever towards the steering wheel, fullbeam headlights are engaged and remain so until the switch is released again.

**14** Control for direct ventilation

There are two scuttles for direct ventilation, one on the right side and one on the left side. These are opened by means of their respective handles which are pulled straight out (1) and locked in the desired position by turning a quarter of a turn (2).

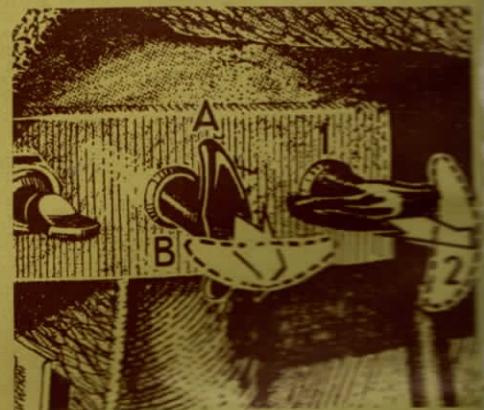
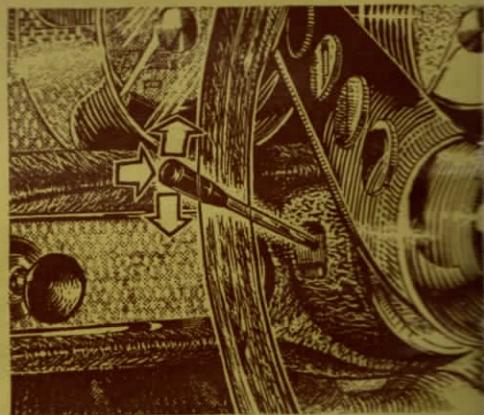
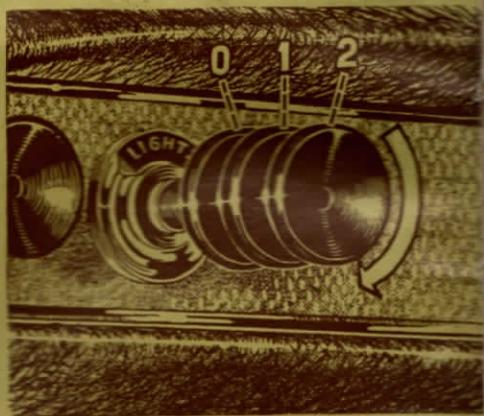
**16** Interior lighting

The interior lighting switch has three positions. In the central position the lighting is switched off all the time, and in the lower position switched on all time. In the upper position the lighting comes on when the doors are opened.

**17** Choke control knob

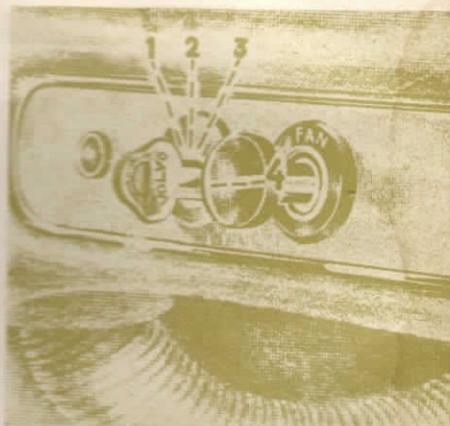
To use the choke control, pull the knob straight out (A) and lock it by turning a quarter of a turn (B), see figure. Concerning the use of the choke, see page 21.

\* headlight signal, not USA.



### 23 Ignition switch with built-in starter contact

- 1 "Radio" position. In this position the whole electrical system of the car with the exception of the ignition system is "live".
- 2 Neutral position.
- 3 Driving position.
- 4 Starting position. To start the engine turn the key to this position, which engages the starter motor. As soon as the engine has started release the key, which then returns to position 3.



### 25 Heater and ventilation controls

The ventilation controls regulate both the air flow to the windshield (wind-screen) (DEFR) and the air flow inside the car (AIR). The third control (TEMP) regulates the temperature of the incoming air.

The controls are fully closed in the upper position A and open gradually when moved towards position B, where they are fully open.

The best way of avoiding misting-up is to open the ventilation windows and set the defroster control to the fully open position.



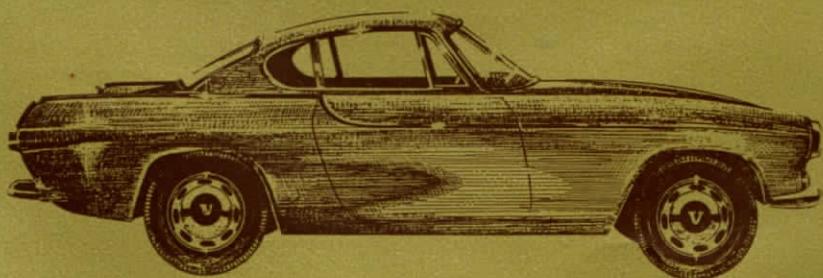
### 26 Fan control

If the speed of the car is not too low, a sufficient air flow for the ventilation system will be obtained through the air intakes. At low speeds, or when the car is stationary, air flow is produced by means of a fan, the output of which can be regulated.

- Position 1 = Fan switched off
- Position 2 = Full output
- Position 3 = Half output



DRIVING



The driving of your 1800 S will not cause you any trouble whatsoever if you follow the advice and instructions given in this book. You will soon find that everything has been arranged so that you can feel relaxed and drive fast without sacrificing road safety. The brakes and the road-holding properties of the car are designed to match the speed at which it is capable of traveling.

The instruments are positioned so that you can see them at a glance. Stop the car immediately if something should go wrong. It may only be a minor point but, if not remedied in time, can lead to expensive time-consuming repairs.

This is a high-performance car, so drive with discrimination and with consideration for other road users.

## RUNNING-IN

When it is new, you should obviously not run your Volvo as fast as it can go. The reason for this is that during the first period all the vital parts of the car become bedded in so that they can stand up to future stresses even better. Do not utilize full output for more than short periods during the first 300 miles (500 km). It is particularly important that the engine should not be loaded too much during the very first miles.

### Keep an eye on the cooling water temperature

When an engine is new, the cooling water temperature can easily go up if the engine is subjected to heavy loading. For this reason you should keep an eye on the temperature gauge during the first period.

### Inspections during the running-in period

After 1 500 miles (2 500 km) operation, the car should be taken to a Volvo workshop for the guarantee inspection, which is free of charge. The control procedures and adjustments carried out here include an oil change in the engine. It is very important to insure that this oil change is carried out, since the oil becomes contaminated comparatively quickly during the first period.

To simplify maintenance of your Volvo, the vehicle has been equipped with ball joints, steering rods and propeller shaft of such a design that they do not require regular lubrication.

After 3 000 miles (5 000 km) the oil in the engine, transmission (gearbox) and rear axle should be changed. When changing the engine oil, the oil filter should also be replaced with a new unit. The transmission (gearbox) and the rear axle should be thoroughly washed out with flushing oil. After this mileage, oil changes should be carried out at the intervals shown in the maintenance scheme on page 26 and in the lubricating chart at the end of this book.

All Volvo engines are test-run before being delivered, partly in test benches and partly in the car on test tracks. By this means we are assured that all clearances and fits are satisfactory, and we can thus accept no responsibility for seizing of pistons or bearings due to careless running-in.

## STARTING THE ENGINE

## COLD ENGINE

- 1 Pull out the choke control fully.
- 2 Depress the clutch pedal.
- 3 Turn the ignition key to the starting position. Release the key as soon as the engine starts.
- 4 Set the choke control so that the best idling speed is obtained. Then push in the choke control little by little as the engine warms up.

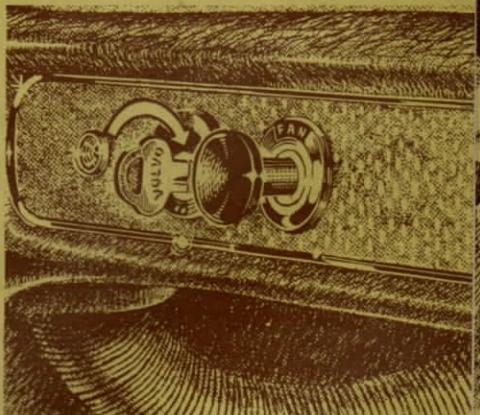
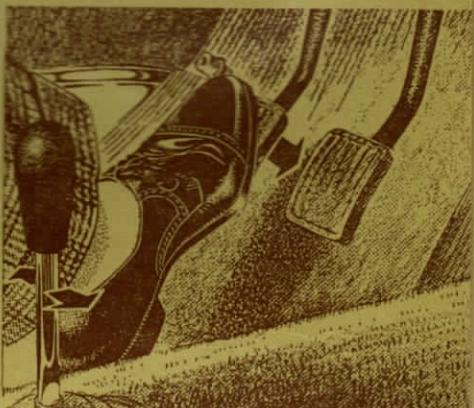
In order to get the engine to run evenly when you start driving, it may sometimes be necessary to pull out the choke control slightly. Use the choke as little as possible while driving. *When the engine is fully warmed up, the choke control should be fully in.*

When an engine is started from cold, it is important to reach the normal working temperature as quickly as possible in order to avoid unnecessary cold-starting wear. For this reason do not run the engine too long at idling speed; it will reach its working temperature sooner when subjected to normal loading.

## WARM ENGINE

- 1 Depress the clutch pedal.
- 2 Turn the ignition key to the starting position. Release the key as soon as the engine starts.

You can then drive the car as soon as the oil pressure gauge shows a reading. Since the engine is fitted with an oil cooler there may be a slight delay before the gauge shows a reading. If the engine is cold, the gauge will show a relatively high reading which is, however, normal.



## GEAR SHIFTING

The transmission (gearbox) is fully synchromesh. If the synchronizing mechanism is to work satisfactorily, the clutch pedal must be fully depressed. Let the engine speed go down when shifting to a higher gear and increase it when shifting to a lower gear.

If the engine is to work in the best possible way, it is important to suit the point at which gearshifting is carried out to the speed of the car so that engine speed is maintained within certain limits, neither too high nor too low. If the engine speed is too low, the result will be poor pulling power and unfavorable loading of the engine and power transmission. If the engine speed is too high, on the other hand, fuel consumption will be higher, the pulling power of the engine will be decreased and better acceleration will not be obtained. The normal speed range for the engine is 1 500—5 500 r.p.m. Do not exceed 6 500 r.p.m.

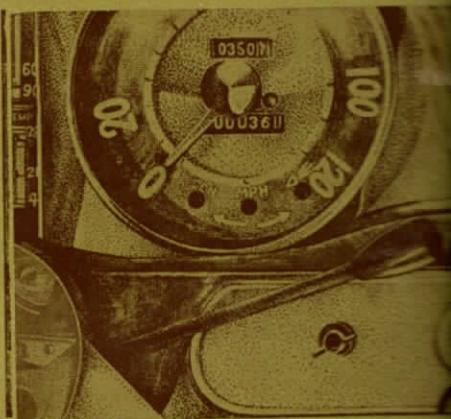
Never let the engine labor in a high gear but shift down in good time. If you do not require high pulling power, however, and the engine is working easily under slight throttle, this of course does not prevent you from going down below 1 500 r.p.m.

## Overdrive

The overdrive, which can be engaged in fourth speed, is operated by means of a lever to the right under the steering wheel. The overdrive is engaged or disengaged respectively by moving the lever towards the steering wheel. It is normally necessary to make any extra movements with the clutch or accelerator pedal. Engagement is, however, easier if the throttle setting remains unaltered. When disengaging the overdrive, light pressure on the clutch ensures a smoother shift.



*When engaging reverse, move the gear-shift lever as far as it will go to the left. Then lift the lever and move it further to the left and forwards.*



*The overdrive is engaged and disengaged by moving the lever towards the steering wheel. The warning lamp to the left of the ignition switch lights when the overdrive is engaged.*

## ADVICE CONCERNING DRIVING

### Starting in a garage

Always open the garage doors when starting the car in a garage. The reason for this is that the exhaust gases from the engine contain the poisonous gas carbon monoxide, which is particularly dangerous since it is both invisible and odorless.

Air containing only 0.2 % carbon monoxide can be fatal if inhaled for half an hour.

### Oil pressure

The oil pressure is dependent on the oil temperature and the engine speed. If the oil pressure should go down to zero at any time, the engine must be stopped immediately. After very hard driving with oil temperatures up to about 120° C (250° F), the oil pressure at idling speed can go down to 0.5 kg/cm<sup>2</sup> (7 lb./sq.in.) which is, however, quite normal.

### Braking

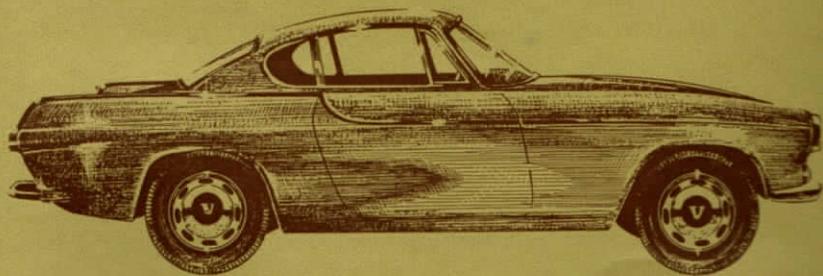
Try to use the brakes as little as possible. Instead use the engine as a brake by releasing the accelerator pedal in good time. Violent braking is only justified in dangerous situations and even in such cases the wheels should never be locked. Remember that the best braking results are obtained if the wheels are allowed to rotate slightly.

Even acceleration and gentle braking are typical characteristics of a good driver and also result in the most economical running.

### Tires

When the car is delivered, it is fitted with tires that stand up to the stresses occurring during high-speed driving. It is, however, very important to maintain the correct air pressure in the tires particularly when driving long distances at a high average speed. It is better to have too much than too little air. If the temperature in a tire becomes excessively high, the cord and the rubber start to separate from each other, and this can have disastrous results.

SERVICING



**B**efore the car was delivered from the factory it was subjected to a very thorough inspection. Your dealer, in his turn, carried out a further delivery inspection. In addition to this there is a cost-free guarantee inspection after 1 500 miles (2 500 km). The Warranty and Service Booklet which is supplied together with the car contains a coupon which entitles you to this inspection. If possible let the dealer who supplied the car carry out this work. *The validity of our six-month guarantee is conditional upon this inspection being carried out at approximately the correct mileage and upon the car being otherwise serviced in accordance with the instructions in this book.*

The servicing of the car should then follow the procedure set out in the servicing section of the booklet, with all round lubrication after every 3 000 miles (5 000 km) and service inspections after every 6 000 miles (10 000 km).

In all countries where Volvos are sold, there are ultra-modern workshops with specially trained personnel at your service. All these workshops receive a continuous supply of technical information through the Volvo Service Organization, and they are also in possession of special tools designed at the Volvo factory. Our dealers are therefore well equipped to give your car first-class service both as regards maintenance and repairs. The car is serviced in accordance with the above-mentioned procedure at fixed prices and the workshop stamp in the book is evidence of this fact, a very important point as far as its second-hand value is concerned.

If you prefer to carry out some of the simpler servicing yourself, this chapter contains advice about when and how this work should be done.

# SERVICING

## MAINTENANCE SCHEME

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

○ = Service workshop operation.

● = Operation you can carry out yourself.

Operation	Carried out every			See note below
	3 000 miles 5 000 km	6 000 miles 10 000 km	12 500 miles 20 000 km	
<i>Lubrication</i>				
1 Lubricate body .....		●		● Once a year
2 Check oil level in engine .....				● When tanking
3 Change oil in engine .....	●			● Spring and autumn
4 Check oil level in transmission (gearbox) .....	●			
5 Change oil in transmission (gearbox) .....	● <sup>1)</sup>			● 25 000 miles (40 000 km)
6 Check oil level in rear axle .....	● <sup>2)</sup>			
7 Check oil level in steering box ..	●			
8 Check brake fluid level .....	●			
9 Check clutch fluid level .....	●			
<i>Engine</i>				
10 Care of crankcase ventilation system .....			●	● 25 000 miles (40 000 km)
11 Change oil filter .....	○ <sup>1)</sup>	○		
12 Check valve clearances .....		○		
13 Clean fuel filter .....		●		
14 Change air cleaners .....			●	
15 Check fan belt .....		○		
16 Check coolant level .....				● When tanking
17 Change coolant .....				● Spring and autumn
18 Check spark plugs .....		○		
19 Change spark plugs .....			○	
20 Check distributor and ignition timing setting .....		○		
21 Carburetors .....		○		

<sup>1)</sup> Only after the first 3 000 miles (5 000 km) <sup>2)</sup> The oil is only changed once: at 3 000 miles (5 000 km)

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

- a) lighting, including brake stoplights
- b) directional signal indicators
- c) horn

Operation	Carried out every			See note below
	3 000 miles 5 000 km	6 000 miles 10 000 km	12 500 miles 20 000 km	
<i>Electrical system</i>				
22 Check battery electrolyte level ..				● When tanking
23 Check state of charge of battery..		●		
24 Check headlight alignment .....		○		
<i>Power transmission system</i>				
25 Clean overdrive oil strainer ....				● 25 000 miles (40 000 km)
26 Check clutch yoke free travel ....		○		
<i>Brakes</i>				
27 Check and overhaul brakes .....		○		
<i>Front end</i>				
28 Check front wheel alignment ....		○		
29 Check ball joints, tie rod, etc. ....		○	○	● Once a year
<i>Wheel and tires</i>				
30 Check tire pressure .....				● When tanking
31 Check-tighten wheel nuts .....		○		
<i>Body</i>				
32 Washing .....				See page 40
33 Polishing and waxing .....				See page 40
34 Anti-rust treatment .....				See page 41
35 Cleaning .....				See page 41

## LUBRICATION

To simplify maintenance of your Volvo, the vehicle has been fitted with ball joints, steering rods, and propeller shaft of such a design that they do not require regular lubrication.

However, after every 6 000 miles (10 000 km) or at least once a year the ball joint seals in the front end should be checked for damage or leakage. When new seals are being fitted, the chassis lubricant should be topped-up.

Every 6 000 miles (10 000 km) the propeller shaft should be checked. If the rubber seal on the spline shaft is damaged, it should be replaced and filled with molybdenum disulphide chassis lubricant.

## 1 Chassis lubrication

In order to avoid squeaking door hinges and locks, these should be lubricated with light engine oil after 6 000 miles (10 000 km).

## 2 Check the oil level in the engine

The oil level in the engine should be checked every time tanking is carried out. This should be done while the engine is warm. The oil level is checked by using the dipstick on the left side of the engine. Wipe off the dipstick first to avoid a faulty reading.

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

## 3 Change the engine oil

The intervals between oil changes depend to a great extent on the driving conditions. During the summer, or when the car is being mainly used for long-distance running, it is sufficient to change the oil after every 3 000 miles (5 000 km). During the winter, and when the car is being used under unfavorable conditions with continuous stopping and starting, the oil should be changed after every 1 500 miles (2 500 km). At the same time the carburetor damping cylinders should be lubricated with SAE 20 engine oil — see page 34. During the running-in period the oil should also be changed after the first 1 500 miles (2 500 km).

Oil grade	Viscosities			Oil capacity	
	Below 0°C(32°F)	Between 0°C and 30°C (32°F and 90°F)	Above 30°C(90°F)	When changing oil	Including oil filter
For Service MS	Multigrade SAE 10W—30 or			3.25 liters (3½ US qts. = 3¼ Imp.qts.)	3.75 liters (4 US qts. = 3½ Imp.qts.)
	SAE 10W	SAE 20	SAE 30		

## 4 Transmission (Gearbox)

The oil level in the transmission (gearbox) should be checked after every 3 000 miles (5 000 km). The oil level should be up to the filler hole.

- 5 The oil in the transmission (gearbox) should be changed after every 25 000 miles (40 000 km). (In the case of a new or reconditioned transmission [gearbox] the oil should be changed after the first 3 000 miles [5 000 km] and the transmission [gearbox] should also be thoroughly washed out with flushing oil.) The old oil should be drained off immediately after the car has been run while the oil is still warm. At every other oil change it is advisable to wash out the transmission (gearbox) with flushing oil before the new oil is added. When draining off the oil from a transmission (gearbox) fitted with an overdrive, note that there is an extra drain plug under the overdrive marked "Drain". When oil is being added it takes some time for the oil to run into the overdrive and for this reason filling should be carried out relatively slowly.

Each time the oil is changed, the overdrive oil strainer should be cleaned — see servicing procedure 25, page 37.

Transmission (Gear) oil	Oil grade	Viscosity	Oil-capacity
M 41	Engine oil	SAE 30 all year round	1.6 liters 3 <sup>1</sup> / <sub>2</sub> US pints 2 <sup>3</sup> / <sub>4</sub> Imp. pints)

## 6 Rear axle

The oil level in the rear axle should be checked after every 3 000 miles (5 000 km). The oil level should be up to the filler hole.

The oil in the rear axle should be changed after the first 3 000 miles (5 000 km). The old oil is drained off by removing the cover on the back of the housing and this should be done immediately after the car has been run while the oil is warm. The rear axle should then be thoroughly washed out with flushing oil before new oil is added. After this the oil level only needs checking and topping up if necessary.

Oil grade	Viscosity	Oil capacity
Hypoid oil	SAE 90 (continuously below 0°C=32°F, SAE 80)	1.2 liters (2 <sup>1</sup> / <sub>2</sub> US pints) =2 <sup>1</sup> / <sub>4</sub> Imp. pints)

## 7 Steering box

The oil level in the steering box should be checked after every 3 000 miles (5 000 km). The oil level should be up to the filler plug. If necessary top up with new oil of the same grade and viscosity as that already used.

The oil in the steering box usually only needs changing when reconditioning the unit. Should the oil, however, have to be changed for any reason, the old oil is sucked out by inserting a suitable device through the filler hole.

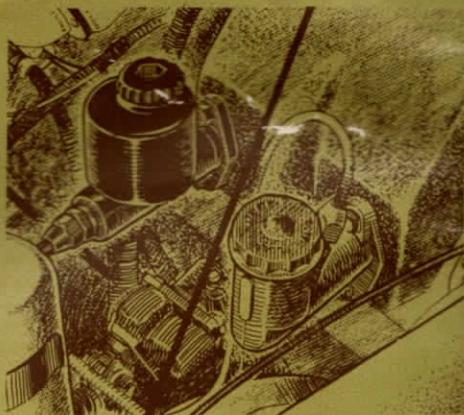
Oil grade	Viscosity	Oil capacity
Hypoid oil	SAE 90 (continuously below 0°C=32°F, SAE 80)	0.25 liter (1/2 US pint= 3/8 Imp. pint)

## 8 Brake fluid

## 9 Clutch fluid

The fluid level in the brake and clutch control hydraulic systems should be checked after every 3 000 miles (5 000 km). The fluid should be up to a point about  $\frac{3}{4}$ " (15–20 mm) below the upper edge of the containers.

Use only brake fluid satisfying the conditions laid down in SAE 70 R 3.



## ENGINE

## 10 Care of the crankcase ventilation system

The positive crankcase ventilation system prevents the gases in the crankcase from being released into the atmosphere. Instead, these gases are sucked into the intake manifold and take part in the combustion process, after which they are blown out through the exhaust pipe in the normal manner.

The valve (4) is replaced at intervals of 25 000 miles (40 000 km). At the same time the oil trap (6), hoses (3 and 5), nipple (1) and filter (2) are removed and cleaned thoroughly. The rubber hoses should also be replaced if they are in a poor condition.

For cars without positive crankcase ventilation, the filter in the oil filler cap should be cleaned in gasoline (petrol) every 6 000 miles (10 000 km).



## 11 Change the oil filter

The engine is fitted with a fullflow type oil filter, which means that all the oil passes through the filter on the way from the oil pump to the various lubricating points. Impurities in the oil thus collect in the filter and gradually block it. For this reason it must be changed at regular intervals, after about every 6 000 miles (10 000 km). This operation should preferably be carried out by a Volvo workshop.

If the oil filter is changed without the engine oil being changed, 0.5 liter (1 US qt. =  $1\frac{3}{4}$  Imp. pints) should be added to the engine.

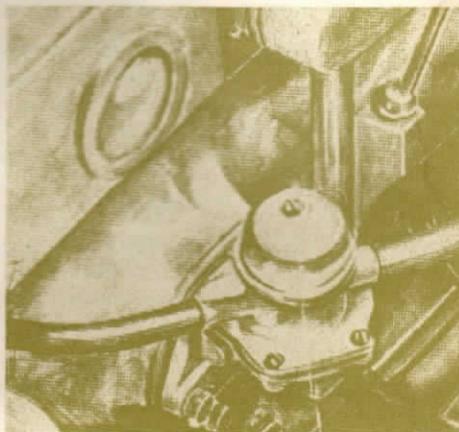
## 12 Valve clearances

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

## 13 Clean the fuel filter

In order to avoid dirty fuel from being pumped into the carburetors, the fuel filter should be regularly serviced. Due to the accessible location of the filter, it is very easy to clean.

The fuel filter should be cleaned after every 6 000 miles (10 000 km). Loosen the screw and remove the cover and strainer and clean these parts. When the cover is re-fitted, make sure that the gasket seals properly.



## 14 Change the air cleaners

The air cleaners on the SU carburetors should be replaced with new units after every 12 500 miles (20 000 km). The old units should be thrown away since the cleaner and filter element are built together in one unit. When driving on dusty roads it may be advisable to change the air cleaners more often, for example after every 6 000 miles (10 000 km).

NOTE. The ventilation air to the lower part of the carburetor suction chambers passes the air cleaner through the two upper holes in the cleaner, so it is important to see that the gasket and the air cleaner are fitted correctly in each case, since otherwise these holes will be blocked.

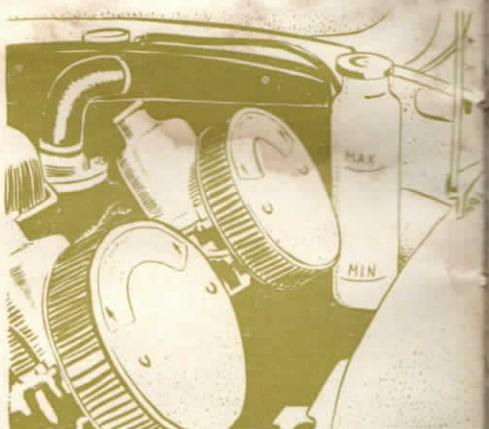
## 15 Check the fan belt tension

After about every 6 000 miles (10 000 km) you should let your Volvo workshop check that the fan belt tension is correct. Due to wear or dirt, this belt can start slipping and the result will be poor cooling and poor generator (dynamo) output. You can easily check the tension by pulling the tips of the fan blades in their correct direction of rotation. There should be definite resistance to movement before the belt starts slipping. A simple but not so reliable way of testing belt tension is to press in the fan belt with your thumb at a point midway between the generator (dynamo) and the fan. It should be possible to press down the belt about  $\frac{1}{8}$ " (3—4 mm) with normal thumb pressure.

## 16 Checking the coolant level

In order for the cooling system to operate with maximum efficiency, it must be well filled and free from leakage. Check the coolant level every time when filling up with fuel. The level should come between the "Max" and "Min" marks on the expansion tank.

Particular care should be taken with this check when the engine is new or after the cooling system has been emptied.



### TOPPING UP WITH COOLANT

Coolant should be topped up through the expansion tank when the level in this has fallen to the "Min" mark. Fill up with sufficient coolant so that the level reaches up to the "Max" mark.

*N. B.* Do not top up with water only, particularly during winter. By using water only, the anti-rust properties of the coolant, as well as the frost protection, will be diminished.

## 17 Changing the coolant

The coolant preserves its properties for about a year, after which it should be changed. When draining the cooling system, open the drain cock on the engine and remove the plug at the bottom of the radiator. Also open the drain cock on the oil cooler. The expansion tank is emptied by lifting it from the brackets and holding it up high enough so that the coolant can run into the radiator.

Before filling up with fresh coolant, the whole system should be flushed with clean water. Coolant is filled up through the radiator opening, when the heater control should be set to "Max" in order to permit the whole system to be filled. Fill up the radiator completely and fit on the cap. Then fill up the expansion tank to the "Max" mark or slightly above it. Run the engine warm and then check that the radiator is completely full and that the level in the expansion tank comes between the "Min" and "Max" marks.

The capacity of the cooling system is 8.6 litres (15 Imp. pints = 18 US pints), of which the expansion tank holds 0.6 litre (1 Imp. pint = 1 1/4 US pints) when the level is on the "Max" mark.

## 18 Check the spark plugs

The spark plugs should be cleaned at a Volvo workshop after every 6 000 miles (10 000 km) and the electrode gaps checked at the same time.

The plugs can be cleaned by using a brush or a sand-blaster and should then be blown clean with compressed air. The electrode gap should be 0.028" (0.7 mm). After the spark plugs have been cleaned and adjusted they should be tested in a spark plug tester.

## 19 Change the spark plugs

When the electrodes have been burnt down by about 50%, all the spark plugs should be replaced. This corresponds to about 12 500 miles (20 000 km) driving. Replacement should preferably be carried out at a Volvo workshop since the spark plugs should be tightened with a torque wrench. When fitting new spark plugs, make sure that you fit the right type (see page 48).

## 20 Ignition system

The distributor contact breaker gap and the engine ignition timing setting should be checked at a workshop after every 6 000 miles (10 000 km).

All adjusting work on the engine ignition system should be carried out by a workshop possessing the correct equipment for this work. The distributor is one of the most sensitive units in the engine and careless handling can lead to decreased engine output, high fuel consumption and, in the worst case, serious damage to the engine.

## 21 Carburetors

The engine is fitted with two coupled SU carburetors of the horizontal type. The carburetor throttle flaps are connected by means of a shaft so that movements of the accelerator pedal influence both the carburetors simultaneously.

### IDLING SETTING

The engine idling setting is correctly adjusted before the car is delivered from the factory and should not be altered later. Should adjustment be necessary, it should be carried out by a Volvo workshop so that the engine delivers the maximum output.

Provisional adjustment can, however, be carried out by listening to the induction sound on the carburetors while the setting screws on the carburetors are screwed inwards or outwards to increase or decrease the idling speed. When the setting is correct, the air induction sound on both the carburetors should be the same.



## LUBRICATION OF DAMPING CYLINDERS

At every engine oil change check that the oil level in the carburetor centre spindle reaches up to about 6 mm ( $1/4$ " ) from the edge of the spindle. If it does not, top up to this level with oil of the same type as that used in the engine. Where the temperature is continuously below  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ), the use of hydraulic oil SAE 5 W/10-W in the centre spindle is recommended.

## Fuel

The gasoline (petrol) used as fuel should be at least 97 octane. If gasoline with too low an octane value is used, knocking or glow ignition can result. When the engine is supplied from the Volvo factory, it is adjusted for operation on 97 octane fuel.

## ELECTRICAL SYSTEM

## 22 Check the battery electrolyte level

If it is to function correctly, the battery should be regularly checked to insure that the electrolyte level is not too low. This check can conveniently be carried out when the car is being tanked. The electrolyte level should be about  $3/8$ " (5—10 mm) above the cell plates. If necessary, top up with distilled water. Never add too much since otherwise the acid can splash over and cause damage in the engine compartment. Never check the electrolyte level by using a lighted match. The gases formed in the cells are very explosive.

## 23 Check the state of charge of the battery

The state of charge of the battery should be checked after every 6 000 miles (10 000 km). This check is carried out with the help of a hydrometer which shows the specific gravity of the battery acid, this varying with the state of charge, see page 48. When doing this, the terminals and terminal bolts should be checked to make sure that they are well tightened, and they should be smeared with grease or vaseline. If necessary, they can be wiped off with a rag or brushed with a steel brush before being greased.

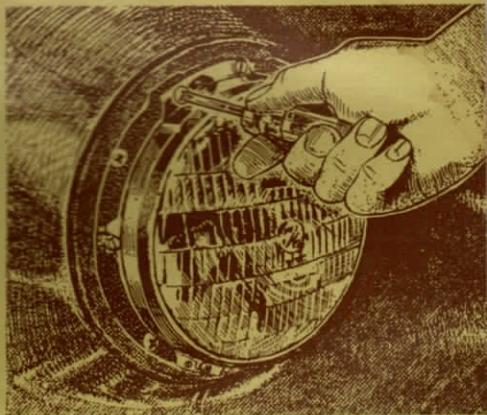
## 24 Check headlight alignment

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

## Replacement of bulbs

When fitting headlight bulbs, do not touch the glass with your fingers as grease, oil, etc. can be carbonized by the heat from the bulb and this can cause damage to the reflector.

The replacement of bulbs in the various lighting units is explained in the following text and illustrations. Note that some of the bulbs have two functions such as, for example, the headlamp bulbs which have filaments for both fullbeam and dimmed lights. The guide pins on the sockets of these bulbs are either of different thicknesses or they are staggered so that the bulbs can only be fitted in one definite position. Certain makes of bulbs have a "Top" mark on the socket. This mark should be turned upwards.



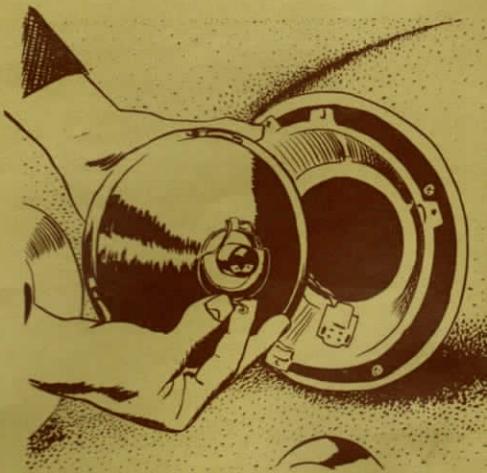
### REPLACING THE HEADLAMP BULBS

- 1 Remove the screw on the underside of the rim.
- 2 Pull out the bottom part of the rim slightly and lift it upwards so that the rim is released.
- 3 Remove the three screws retaining the inner ring and lift it out.
- 4 Remove the bulb holder contact as well as the rubber sleeve. Loosen the ring retaining the bulb holder and remove the latter.
- 5 Remove the spring attaching the bulb to the insert. Then lift out the bulb from the insert. When refitting, check that the pin on the bulb socket fits into the corresponding groove on the insert.



### REPLACING THE BULBS IN THE INTERIOR LIGHTING UNITS

The bulbs are accessible after the shade has been removed, which is done simply by pulling it out.



### REPLACING THE BULBS IN THE FRONT PARKING LIGHTS/FLASHERS

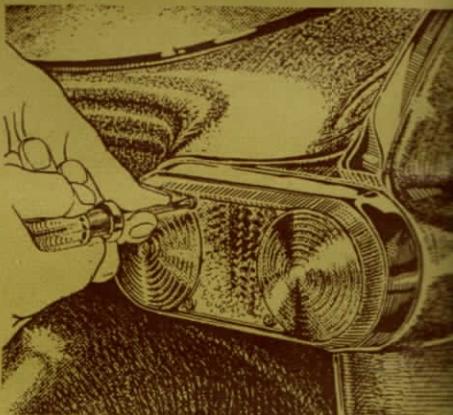
First loosen the glass and rim. These are loosened together by turning them in an anti-clockwise direction. The bulb is now accessible for replacement. The bulb has a bayonet fitting.



### REPLACING THE BULBS FOR THE DIRECTIONAL SIGNAL/TAIL-LIGHTS AND STOPLIGHTS

Loosen the screws with a Philips screwdriver and remove the glass.

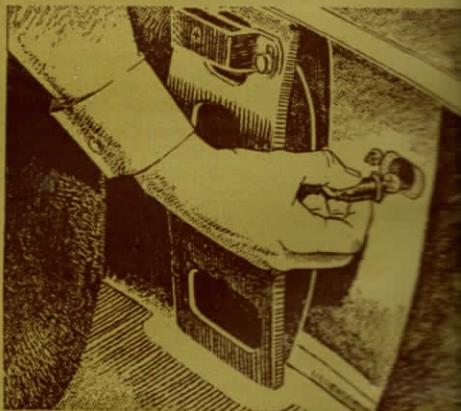
The bulbs are now accessible for replacement. The outer bulb is the directional signal, the inner bulb is the stoplight and tail-light.



### REPLACING THE BULBS FOR THE LICENSE PLATE LIGHTING AND BACK-UP LIGHT

The bulbs for the license plate lighting and the back-up light are accessible from the inside of the luggage compartment.

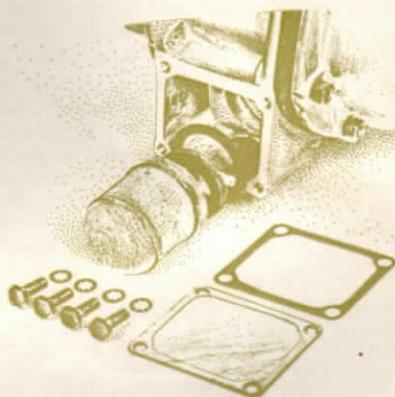
The bulb holder is loosened simply by pressing it to one side, after which the bulb, which has a bayonet fitting, can be removed.



## POWER TRANSMISSION SYSTEM

### 25 Cleaning the overdrive oil strainer

The oil strainer is behind a cover on the left side of the overdrive (see picture) and should be cleaned each time the oil in the transmission (gearbox) is changed (that is, about every 25 000 miles = 40 000 km). The oil strainer should be cleaned in gasoline (petrol) or spirit and blown dry, preferably with compressed air. Check that the gasket is undamaged and placed in position with the steel-covered side facing inwards. Then assemble the three magnetic washers so that they are held together by magnetic force, and fit the strainer and cover.



### 26 Checking the clutch yoke free travel

To avoid risk of the clutch slipping, the clutch yoke free travel should be checked at regular intervals and adjusted if necessary after every 6 000 miles (10 000 km). If the clutch does not disengage in a satisfactory manner, the free travel of the clutch pedal should also be checked. See page 48 for data. The clutch should be checked and adjusted at a Volvo workshop which has the equipment for this purpose.

## BRAKES

### 27 Check and overhaul the brakes

After every 6 000 miles (10 000 km) the car should be taken to a Volvo workshop for a check on the function of the brakes.

As the brake linings become worn, the brake shoes must be adjusted so that satisfactory braking effect is obtained without excessively large movements of the brake pedal and handbrake lever.

In connection with this check the brakes should also be inspected for wear.

## FRONT END

## 28 Checking the front wheel alignment

Correct front wheel alignment is of vital importance for the steering characteristics of the car. Faulty adjustment can also mean unnecessarily heavy tire wear.

For this reason you should let your Volvo workshop carry out a regular check on the front wheel alignment, for example after every 6 000 miles (10 000 km). If the car has been involved in a collision or heavy impact, and it is suspected that the front end may have been affected, the car should be taken as soon as possible to a workshop for a check of the front wheel alignment. Volvo workshops have special measuring equipment for this purpose and can therefore carry out this control very quickly. The front wheel alignment angles are shown on page 49.

## 29 Checking the ball joints, tie rod etc.

After every 6 000 miles (10 000 km) the car should be taken to a Volvo workshop for a check of the front end concerning looseness in the ball joints, steering gear, etc. A check should also be made to insure that the rubber covers of the ball joints are undamaged. When fitting new rubber covers, these should be filled with grease.

## WHEELS AND TIRES

## 30 Check the tire pressure

Make a habit of checking the tire pressure regularly. The best way to do this is to check the pressure at a service station while the car is being tanked. Use a gauge for this purpose. See page 49 for the correct air pressure. Do not forget the spare wheel. Even if the spare wheel is not used, the pressure can go down and the tire can be flat just when you need it. Do not let the spare wheel remain unused for a long time, but change it around at regular intervals with the other tires.

## 31 Check-tightening the wheel nuts, balancing

After every 6 000 miles (10 000 km) the wheel nuts should be tightened to a torque of 72–100 lb.ft (10–14 kgm). At the same time the wheels should be re-balanced if necessary.

If inspection of the tires shows that there are particularly worn spots and unusual wear on the tread, the car should be taken immediately to a Volvo workshop for the wheels to be re-balanced.

## Changing a wheel

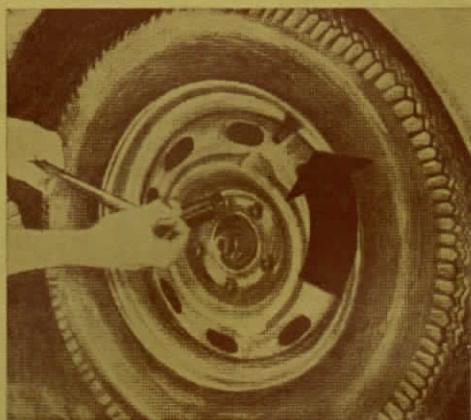
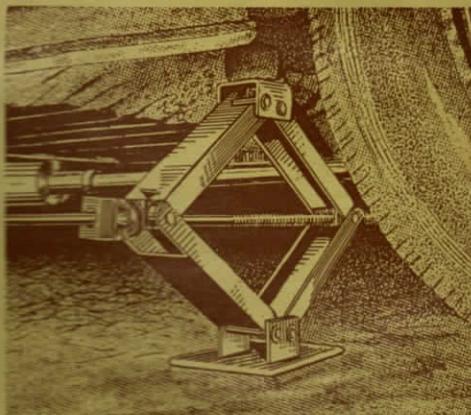
Before the car is jacked up, the hand-brake should be applied. Place blocks or stones in front and behind the wheels that remain on the ground as a further safety measure. Remember that the hand-brake only influences the rear wheels.

### REMOVING

- 1 Prise off the hub cap with the help of the spade-shaped lever.
- 2 Loosen the wheel nuts slightly with the help of the box spanner. All the wheels have right-hand thread nuts which can be loosened by turning in an anti-clockwise direction.
- 3 Place the jack in the jack recess nearest the wheel that is to be lifted up. Lift up the side of the car so high that the wheel is clear of the ground.
- 4 Remove the wheel nuts completely and lift off the wheel. Be careful not to damage the threads on the wheel studs when lifting off the wheel.

### FITTING

- 1 Lift on the new wheel and screw up the nuts. Then lower the car and tighten the nuts finally. *Tighten the nuts alternately.*
- 2 Fit the hub cap by striking smartly with the hand at the last attaching lug to engage.



## BODY

## 32 Washing

When the car is new it should be washed often to harden the surface finish. Otherwise the car should be washed as soon as it is dirty or dusty. If dirt and dust are allowed to remain in contact with the surface finish for any length of time, damage can result.

While the car is being washed it should stand so that it is not in direct sunlight as otherwise drying patches can result. First rinse off the underside of the body with a jet of water and use a soft brush if necessary. Then rinse down the whole body with a light jet until the dirt has softened up. Do not be sparing with the water. The dirt is then washed off with a sponge, using plenty of water.

If washing with water alone is not sufficient, washing agents can be used. Be careful when choosing a washing agent since some of them can be detrimental to the surface finish. Asphalt splashes and tar spots can be removed with white spirit.

Whenever a washing agent is used, the car should be well rinsed down with clean water afterwards.

After washing, the car should be carefully dried off with a soft, clean chamois leather. Keep a special leather for the windows. If the same leather is used for the whole of the car, this can cause greasy smears on the windows.

## 33 Polishing and waxing

The car should be polished when the surface finish appears to be a little dull and normal washing is not sufficient to make it shine again. Under normal conditions it is sufficient to polish the car a couple of times a year, on condition that it is carefully looked after and washed in the meantime.

The car should be carefully washed and dried off before polishing. If polish is applied on a dirty or dusty surface, the result can easily be scratches on the surface finish. Avoid polishing in direct sunlight since this can cause a smeary surface. Use only a good quality polish intended for synthetic finish.

Polishing a couple of times a year is generally sufficient to give the surface finish of the car the maintenance it needs. If you want to wax the car yourself, be very careful to see that the surface is absolutely clean before the wax is applied. The car should also be newly polished. Be very careful when using solvents, since these can be very damaging to the surface finish. Waxing must not be carried out for at least a year after delivery of the car.

## CHROMED PARTS

The bumpers, the radiator grille and the hub caps are chromed and should be washed with clean water as soon as they are dirty. This is particularly important if you drive a lot on gravel roads which are treated with chemicals to keep the dust down, or if you drive a lot near the sea. After washing, you can apply wax or anti-rust preparation.

## 34 Anti-rust treatment

Your car is anti-rust treated at the factory. This means that those parts of the body which are most subjected to corrosion, such as the insides of the door sills, are sprayed with anti-rust fluid.

Underbody sealing compound is applied to the lower parts of the body which are exposed to gravel abrasion, i.e. the wheel arches, the external parts of the floor plate and the lower edges of the door sills. The other parts of the floor and chassis are sprayed with anti-rust fluid.

The anti-rust protection should be inspected and touched-up if necessary at regular intervals, and in any case at least once a year. If any touching-up is necessary, see that it is done before the metal has become attacked by rust.

## 35 Cleaning

## CLEANING THE UPHOLSTERY

The upholstery consist of leather and vinyl-coated fabric. The lather parts are cleaned with a damp cloth or possibly a mild soap solution. In the case of heavy staining, consult a cleaning expert concerning the choice of a suitable cleaning agent.

The vinyl-coated fabric is washed with a tepid soap solution, or in difficult cases with a suitable household detergent.

Do not use gasoline (petrol), white spirit, carbon tetrachloride or similar cleaning agents, since these can damage both the leather and vinyl-coated fabric.

## CLEANING THE FLOOR MATS

The floor mats should be taken out at least twice a year and cleaned. This is particularly important during the winter, since snow and ice can be brought into the car on the feet and the mats should then often be removed for drying. At the same time remove gravel and dirt from the floor plating under the mats.

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

### TOUCHING-UP DAMAGE TO PAINTWORK

Synthetic paint-spraying makes great demands on workshop equipment and professional skill, and for this reason you should take the car to a Volvo workshop if any extensive damage needs touching-up. However, there is nothing to prevent you yourself from touching-up scratches and minor damage due to flying stones.

Damage due to flying stones requires immediate treatment. Make a habit of checking the paintwork and carrying out any touching-up regularly — for example, when washing the car.

Volvo dealers can supply approved touching-up paint and brushes. *Always make sure that you get the proper matching colour.*

- 1 Scrape the damaged surface right down to the bare metal with a pen-knife or other sharp object. Carefully remove any loose flakes of paint and rub down the edges round the damaged surface.
- 2 In the case of severe damage due to flying stones it is necessary to apply anti-rust primer, which is most easily done with a matchstick or fine brush. The primer should cover the whole of the scraped and rubbed-down surface.
- 3 After the anti-rust primer has dried, apply genuine Volvo paint. Stir the paint well (not with the brush!). Apply several thin coats of paint, allowing it to dry thoroughly between each application.

### SERVICING BEFORE A LONG-DISTANCE TRIP

If you are thinking of traveling abroad with your car, or taking a long trip, you should first have it overhauled at a Volvo workshop. You will enjoy your journey better if you know that your car is in perfect trim. But even if something should go wrong, your journey need not be spoiled. Wherever you go will have a Volvo workshop within easy reach to take care of your car. The regular servicing of your car need not be neglected while you are driving abroad. All Volvo service workshops abroad are equipped to give your car the service it needs.

IF YOU PREFER TO LOOK OVER YOUR CAR YOURSELF,  
THE FOLLOWING HINTS ARE WORTH NOTING:

- 1 Give the car a thorough all-round lubrication.
- 2 Check the engine cooling system for leaks. Check the hose clips.
- 3 Examine the tires carefully. Replace worn tires.
- 4 If you are not sure whether the engine is functioning perfectly and that the fuel consumption is normal, you can save both time and money by having a thorough check carried out.
- 5 Examine the state of charge of the battery and clean the terminals.
- 6 Check the brakes, the front wheel alignment and the steering gear.

- 7 Check over the tool kit and check the spare wheel.
- 8 Check the lighting and adjust your headlamps for left- or right-hand traffic where necessary.

## PROCEDURE IN COLD WEATHER

With the approach of cold weather, it is time to think of the winter servicing of your car. The first night of frost can come as a very unpleasant surprise to the car owner, unless preventative measures have already been taken.

### Engine cooling system

Genuine Volvo coolant should be used all the year around. The cooling system should not, therefore, operate only on water plus rust-protector, not even during the summer time.

The coolant retains its properties for approximately 1 year when it should be changed. A suitable time for this is during the autumn as this will give a maximum of safety against frost damage during the winter months. When the coolant is being changed, the cooling system should be flushed thoroughly with clean water. Otherwise see page 32. If the coolant must be topped-up during the winter, refill only with the same type of fluid as used in the coolant. Water by itself merely weakens both the frost-protective properties of the coolant as well as the rust protection. When topping up with coolant, it would be a good idea to check the concentration in order to be certain that it contains sufficient protection against frost damage.

Experience has shown that too thin glycol solutions (10—20 %) are very unfavourable from the point of view of rust protection. For this reason, the quantity of glycol should amount to at least 40 % of the coolant, that is 8.6 litres (15 Imp. pints = 18 US pints), as this lowers the freezing point to  $-24^{\circ}\text{C}$  ( $-11^{\circ}\text{F}$ ).

So-called "radiator alcohol" is not recommended as an anti-freeze agent because it has the disadvantage that it evaporates at normal engine temperature.

### DRAINING THE COOLING SYSTEM

To drain the cooling system one drain cock should be opened and two drain plugs removed.

The drain cock is located at the rear of the engine block on the right-hand side. The drain plugs are located one under the oil cooler and the other under the radiator on the right-hand side.

### Engine lubricating system

During the winter engine oil with a viscosity of SAE 10 W should be used in the engine lubricating system unless multigrade oil SAE 10 W-30 is used regularly. This lighter oil reaches the lubricating points in the engine more easily at low temperatures and also facilitates cold starting. If you drive mainly short stretches during the winter, the engine oil should be changed more often than normal, for example, after every 1 500 miles (2 500 km).

### Electrical system

The electrical system of the car is subjected to greater stresses during the winter than during the warm summer months. The lighting and the starter motor are used more and this means higher current consumption, and since the capacity of the battery is considerably lower with lower air temperatures, it must be checked more often and re-charged when necessary. If the battery voltage is excessively low, there is risk of frost damage to the battery.

### Brake system

During the winter the brakes are more subjected to splash and condensation water. This can result in the handbrake freezing up when it is applied. For this reason the handbrake should not be used when the car is parked, but first gear or reverse should be engaged instead.

### Windshield (windscreen) washers

At the same time the engine cooling system has anti-freeze added, the water in the windshield washer container should also be treated with anti-freeze. Your Volvo dealer can supply you with suitable anti-freeze for this purpose.

### Anti-freeze for door locks

A frozen door lock is one of the most irritating things that can happen to a car-owner. Many valuable minutes early in the morning can be wasted warming up keys and melting ice in locks. Remember to lubricate the lock in good time with some suitable anti-freeze preparation.

**volvo-dealers**



# SPECIFICATIONS



## DIMENSIONS AND WEIGHTS

Length .....	171 $\frac{1}{4}$ "	(4350 mm)
Width .....	67"	(1700 mm)
Height .....	50 $\frac{1}{2}$ "	(1285 mm)
Wheelbase .....	96 $\frac{1}{2}$ "	(2450 mm)
Track, front .....	51 $\frac{1}{4}$ "	(1315 mm)
rear .....	51 $\frac{1}{4}$ "	(1315 mm)
Ground clearance .....	6"	(155 mm)
Turning circle .....	30 ft.	(9.1 m)
Curb weight (with full fuel tank) ..	approx. 2420 lb.	(1100 kg)

## CAPACITIES

Fuel tank .....	approx. 45	liters (12 US galls. = 10 Imp. galls.)
Cooling system .....	approx. 9	liters (19 US pints = 16 Imp. pints)
Engine, when changing oil ..	approx. 3.25	liters (3 $\frac{1}{2}$ US qts. = 3 $\frac{1}{4}$ Imp. qts.)
incl. oil filter ..	approx. 3.75	liters (4 US qts. = 3 $\frac{1}{2}$ Imp. qts.)
Transmission (Gearbox),		
M 40 .....	approx. 0.75	liter (1 $\frac{1}{2}$ US pts = 1 $\frac{1}{4}$ Imp. pts)
M 41 .....	approx. 1.6	liters (3 $\frac{1}{2}$ US pts = 2 $\frac{3}{4}$ Imp. pts)
Rear axle .....	approx. 1.2	liters (2 $\frac{3}{4}$ US pts = 2 $\frac{1}{4}$ Imp. pts)
Steering box .....	approx. 0.25	liter (1 $\frac{1}{2}$ US pint = $\frac{3}{8}$ Imp. pint)

## ENGINE

Type designation .....	B 18 B	
Output SAE .....	115 b.h.p. at 5 800 r.p.m.	
Output DIN .....	103 b.h.p. at 5 600 r.p.m.	
Max torque SAE .....	109 lb.ft. (15.0 kgm) at 4 000 r.p.m.	
Max. torque DIN .....	103 lb.ft. (15.5 kgm) at 3 800 r.p.m.	
Number of cylinders .....	4	
Bore .....	3.312"	(84.14 mm)
Stroke .....	3.15"	(80 mm)
Displacement .....	108.6 cu.in.	(1.78 liters)
Compression ratio .....	10:1	
Valves .....	Overhead	
Valve clearances, warm and cold engine,		
inlet .....	0.020—0.022"	(0.50—0.55 mm)
exhaust .....	0.020—0.022"	(0.50—0.55 mm)
Idling speed .....	600—80 r.p.m.	
Carburetors, make and designation ..	SU-HS 6	

## Cooling system

Type .....	Pressure	
Thermostat, starts to open at .....	167—172° F	(75—78° C)
fully open at .....	192° F	(89° C)
Fan belt, designation .....	HC 38×35"	

# SPECIFICATIONS

## Ignition system

Order of firing .....	1-3-4-2
Ignition setting, stroboscope, at 1 500 r.p.m.:	
97 octane (Research Method) ....	14—19° before TDC
100 octane (Research Method) ....	17—19° before TDC
Spark plugs, type .....	Bosch W 225 T 1*
Spark plug gap .....	0.028—0.032" (0.7—0.8 mm)
Distributor dwell angle .....	60°

\* Or corresponding types

## ELECTRICAL SYSTEM

Voltage .....	12 V
Battery, type .....	Boliden 107 GM 60 or corresponding type
Battery capacity .....	60 Ah
Battery electrolyte, specific gravity ..	1.275—1.285
Battery electrolyte, specific gravity when recharging necessary .....	1.230
Generator (dynamo), rated effect ..	240 W
Starter motor, rated output .....	1 h.p.
Fuses .....	35 A (three)

## Lamp bulbs (12 V)

	Number	Effet
Headlamps .....	2	45/40 W
Directional signals/parking lights, front .....	2	21/6 W
Directional signals/tail-lights .....	2	21/6 W
Brake stoplights .....	2	21 W
License plate lighting .....	2	4 W
Interior lighting .....	2	6 W
Back-up light .....	1	21 W
Instrument lighting .....	9	2 W
Map-reading lamp .....	1	6 W
Warning lamp, directional signals ..	1	2 W
Warning lamp, fullbeam headlights ..	1	2 W
Warning lamp, charging .....	1	2 W
Warning lamp, overdrive .....	1	2 W

## POWER TRANSMISSION SYSTEM

### Clutch

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

## Transmission (Gearbox)

Type designation .....	M 41
Ratio 1st .....	3.13:1
2nd .....	1.99:1
3rd .....	1.36:1
4th .....	1:1
overdrive .....	0.76:1
reverse .....	3.25:1

## Rear axle

Type .....	Spiral bevel (hypoid)
Ratio .....	4.56:1

## FRONT WHEEL ALIGNMENT

(Unloaded car but including fuel,  
water and spare wheel)

Toe-in .....	0 to 0.16" (4 mm)
Camber .....	0 to +1/2°
Caster .....	0 to +1°
King pin inclination (with 0° camber)	8°

## WHEELS AND TIRES

Wheel size .....	4 1/2 J×15
Type of tires .....	Braced tread with inner tube
Tire size .....	165 SR 15
Tire pressure (cold tires): Front ....	26 lb./sq.in. 1.8 kg/cm <sup>2</sup>
Rear ....	29 lb./sq.in. (2.0 kg/cm <sup>2</sup> )

## TOOL KIT

Jack with lever	General purpose pliers
Box spanner with tommy bar	Screwdriver
Adjustable wrench	Philips screwdriver

## Symbols

- |   |   |
|---|---|
| <p>◆ Brake fluid<br/>Grade: SAE 70 R 3</p> <p>◐ Rear axle oil<br/>Grade: Hypoid oil<br/>Viscosity: Year-round SAE 80</p> <p>▶ Special lubricant<br/>See notes</p> | <p>◑ Light engine oil</p> <p>□ Engine oil<br/>Grade: "For Service MS"<br/>Viscosity: Multigrade SAE 10 W-30</p> <p>◑ Gearbox oil<br/>Viscosity: Year-round SAE 80<br/>Engine, oil change quantity approx.</p> |
|---|---|

## Oil capacities

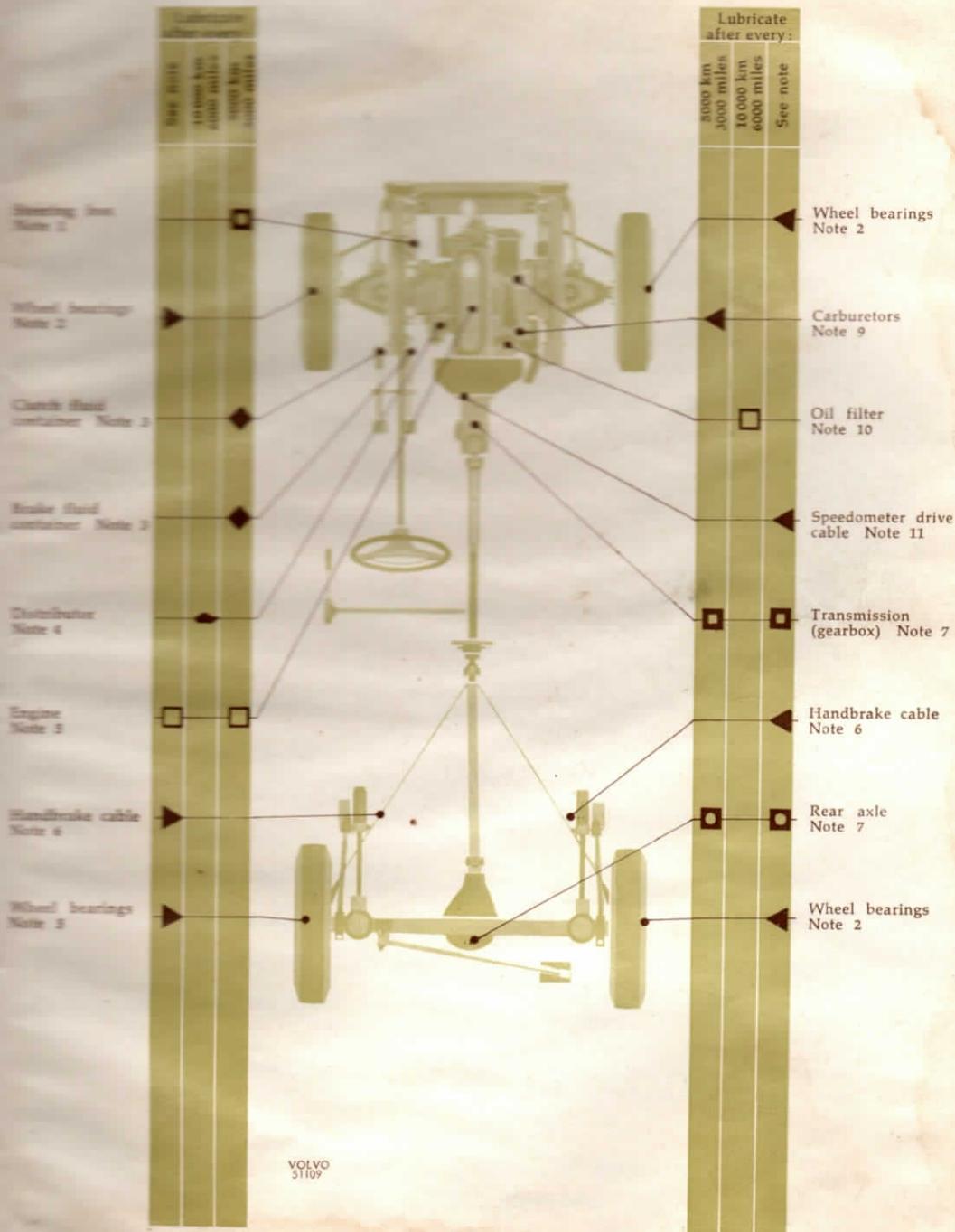
Engine, oil quantity approx.  
3.25 litres  
(3½ US qts. = 3¼ Imp. qts.)  
incl. oil cleaner approx.  
3.75 litres  
(4 US qts. = 3½ Imp. qts.)

Gearbox . . . . . approx. 1.6 litres  
(3½ US pts = 2¾ Imp. pts)  
Rear axle . . . . . approx. 1.2 litres  
(2¾ US pts = 2¼ Imp. pts)  
Steering box . . . . . approx. 0.25 litre  
(½ US pint = ⅜ Imp. pint)

## Notes for lubricating chart

- Note 1* Check that the oil reaches up to the filling plug. Use hypoid SAE 80 oil all year round. See page 29.
- Note 2* The wheel bearings are packed at the factory with a special type of grease intended to last for the entire lifetime of the bearings. The sealed-for-life bearings do not therefore require a change of lubricant or additional grease. This also applies after the bearings have been reconditioned or changed, providing that the bearings have been lubricated with a high-quality multi-purpose grease.
- Note 3* Check that the fluid reaches up to level mark. See page 30.
- Note 4* Lubricate the felt wick under the rotor and fill a few drops of light engine oil into the lubricating cup.
- Note 5* Check the oil level when tanking. Change the oil every 3 000 miles (5 000 km) and in spring and autumn when changing over to another viscosity, if multigrade oil is not used. In unfavourable operating conditions, the oil should be changed after every 1 500 miles (2 500 km). See page 28.
- Note 6* Have the handbrake cable lubricated with graphite grease about twice a year.
- Note 7* Check every 3 000 miles (5 000 km) that the oil reaches up to filling plug.
- Note 8* At every engine oil change check that the oil level in the carburetor reaches up to about 6 mm (¼") from the edge of the spindle. If it does not, top up to this level with oil of the same type as that used in the engine. Where the temperature is continuously below -20°C (-4°F), the use of hydraulic oil SAE 5 W/10 W in the centre spindle is recommended.
- Note 9* The oil filter should be changed every 6 000 miles (10 000 km). See page 30.
- Note 10* After every 12 500 miles (20 000 km) disconnect the drive cable from the instrument and pull it out of the outer casing about 8" (20 cm), wipe it off and smear with a thin coating of grease. Do not use oil since this can penetrate into the instrument.

# LUBRICATING CHART



VOLVO  
51109

## Personal information

Name .....

Address .....

Tel. No. ....

Driving license No. ....

Insurance Company .....

Insurance Policy No. ....

## Nearest Volvo Dealer

Name .....

Address .....

Tel. No. ....

Garage Manager .....

Tel. No. ....

## Car information

Type designation .....

Chassis No. ....

Engine No. ....

License plate No. ....

Ignition key No. ....

Door key No. ....

Fuel tank lock, key No. ....

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

AB VOLVO GÖTEBORG SWEDEN  
Service Department

A B V O L V O G Ö T E B O R G S W E D E N



1800S

