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owner's manual
VOLVO 164



Notice to Owner: Your Volvo has been built to comply to all North American safety and anti-pollution regulations and evidence of this can be seen from the certification label attached to the door opening sheet metal and on the firewall in the engine compartment. For further information regarding these regulations, please talk to your selling dealer.

Personal Information

Nearest Volvo Dealer

Car Information

Name	Name	Type Designation
Address	Address	Chassis No.
Tel. No.	Tel. No.	Engine No.
Driving License No.	Garage Manager	License Plate No.
Insurance Company	Tel. No.	Ignition Key No.
Insurance Policy No.		Door Key No.

VOLVO 164

Operating Instructions

Description

Servicing



AB VOLVO · GÖTEBORG, SWEDEN

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Before you start driving your new Volvo please read through this manual carefully. It contains all the information you need to be able to drive and service your vehicle in the best possible way. By following the instructions given in this manual you will find that your Volvo will come up to all the expectations concerning economical operation

and excellent performance that you have every right to expect of a top-quality vehicle.

This is not intended to be a comprehensive technical manual and does not claim to make the reader a perfect car mechanic. It will, however, show you how to look after your vehicle so that trouble in the future

can be avoided. The better you know your Volvo, the better service it can give you. Even for an experienced motorist it can contain some valuable information. For a more detailed mechanical description and repair procedures, we refer you to the special Service Manual for the car which can be purchased from the dealer.

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Volvo Service Organization

To get the most out of the invested capital represented by a car, it must be looked after and serviced regularly. Volvo has gone to a great deal of trouble in the design and selection of material to ensure that the car in question only requires a minimum of servicing. We rely, however, on your co-operating with regard to the future maintenance of your vehicle. To help you with this, Volvo has built up a world-wide service organization. All Volvo dealers have specially trained personnel and receive a continuous supply of technical information from the Volvo Service Organization concerning repairs and adjustments. They have also special tools, designed at the Volvo factory. Moreover, all Volvo dealers have a comprehensive stock of parts which is a guarantee that the part you get is genuine Volvo. That is why our

dealers are in the best possible position to give your vehicle first-class service concerning both maintenance operations and repairs. You should also refer to your dealer for any information about your Volvo that is not included in this manual. Volvo not only has a workshop within easy reach in your own country, it also has a widely distributed service network in other countries.

Warranty and Service Booklet

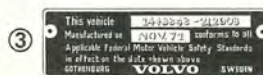
A warranty and service booklet accompanies each vehicle when it is delivered. This booklet contains a coupon entitling you to a service inspection after 1 500 miles (2 500 km). If possible, let the dealer who supplied the vehicle carry out this service inspection. Any of our dealers,

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

Service Inspections

After the 1 500 miles (2 500 km) service inspection has been carried out, **you should come to some arrangement with your dealer concerning continued, regular service inspections in accordance with the suggestions made in our Service Book.** Thorough and regular servicing is of vital importance for the performance and length of life of the vehicle.

Always use genuine Volvo parts.

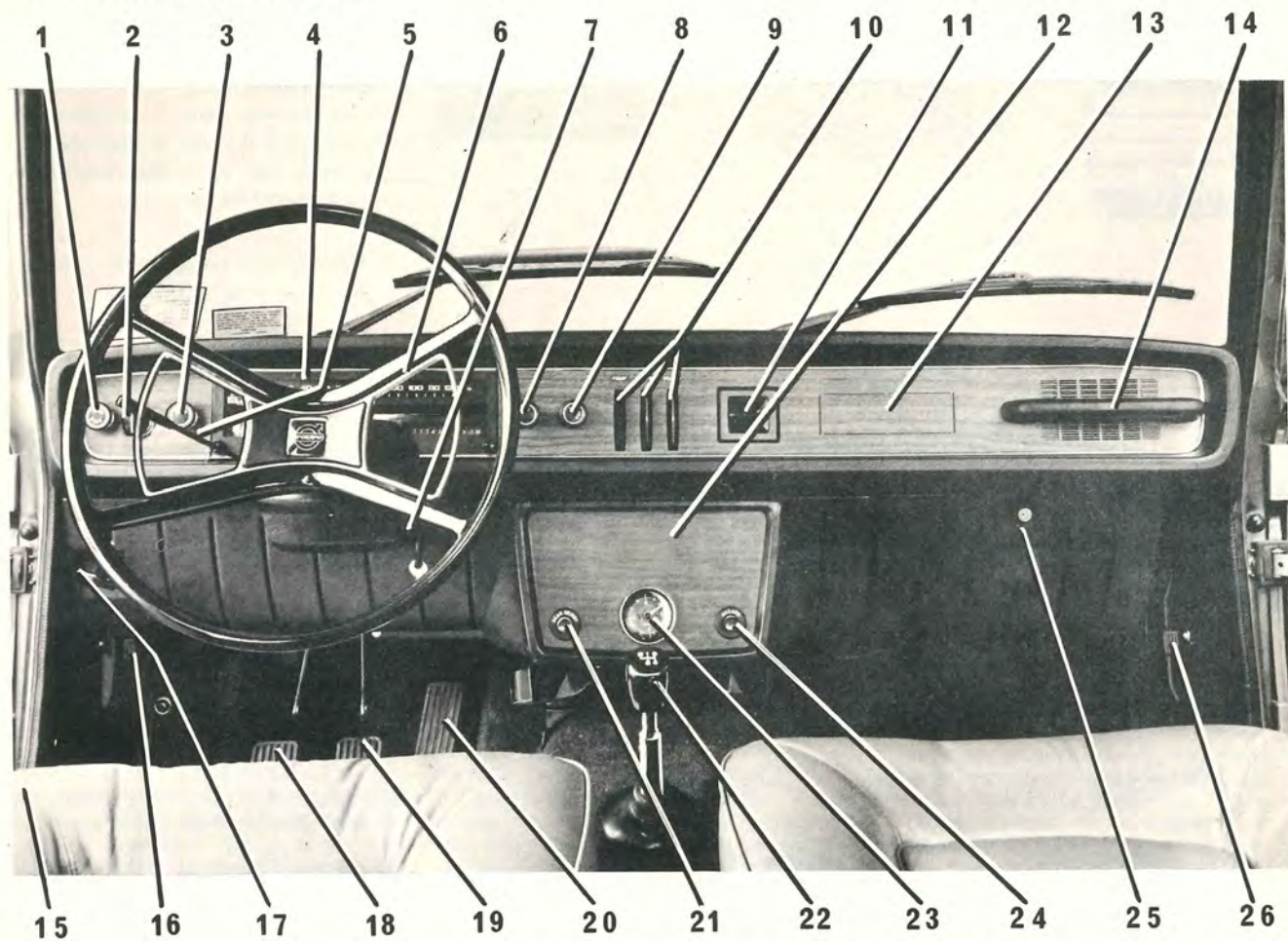


Type designations

In all correspondence concerning your vehicle with the dealer and when ordering parts, the V.I.N. and engine number should always be quoted.

1. Vehicle type designation, code number for color and upholstery: on bulkhead.
2. Body number.
3. V.I.N. (Vehicle Identification Number) plate located at the foot of the left door post. The V.I.N. is also stamped on right door pillar.
4. Type designation, serial number and part number of engine: stamped on engine left-hand side. The final figures of the part number are stamped on a plate. The serial number then follows with all its figures stamped on the block.
5. Type designation, serial number and part number of transmission: underneath transmission.
6. Final drive reduction ratio, part number and serial number: on a plate on left-hand side of final drive.

OPERATING INSTRUCTIONS



INSTRUMENTS AND CONTROLS

1. Windshield wiper and washer switch
2. Choke control (not B30F)
3. Lighting switch
4. Instrument panel
5. Turn indicator switch lever, dimmer and headlight flasher
6. Horn ring
7. Ignition switch and steering wheel lock
8. Fan switch
9. Cigarette lighter
10. Heater and ventilation controls
11. Ashtray
12. Foldable panel for fusebox (fuse change, see page 55)
13. Place for radio
14. Grab handle
15. Parking brake
16. Fresh-air intake vents
17. Hood release handle
18. Clutch pedal
19. Brake pedal
20. Accelerator pedal
21. Switch, electrically heated rear window
22. Gear lever
23. Clock
24. Switch, emergency warning flashers
25. Glove locker
26. Fresh-air intake vents

The instruments and controls are described in more detail in the following pages with a reference to the numbers in the picture opposite.

1 Windshield wiper and washer switch

The windshield wipers are operated electrically and can be adjusted to two speeds. Normal speed is attained by pulling the switch out to the first position. This speed is recommended for normal driving in rainy weather or snow. When the switch is pulled out fully, the wipers operate at full speed. Full speed is only recommended when driving in heavy rain or when driving at high speed in the rain.

When the switch is pressed fully in, the wiper blades stop in their parking position. The windshield washers are operated by turning the switch clockwise. The switch automatically returns to its initial position on being released. The fluid container for the washers is located in the engine compartment and holds about 3 $\frac{1}{4}$ US pints/2 $\frac{3}{4}$ Imp. pints (1 $\frac{1}{2}$ liters).

2 Choke control

The choke control is used when the engine is started from cold. When the control is pulled out about $\frac{1}{2}$ " (10—15 mm), the idling speed is increased. Pulling the control out further enriches the fuel-air mixture. The warning lamp (4J) on the instrument panel lights when the choke is pulled out.

3 Lighting switch

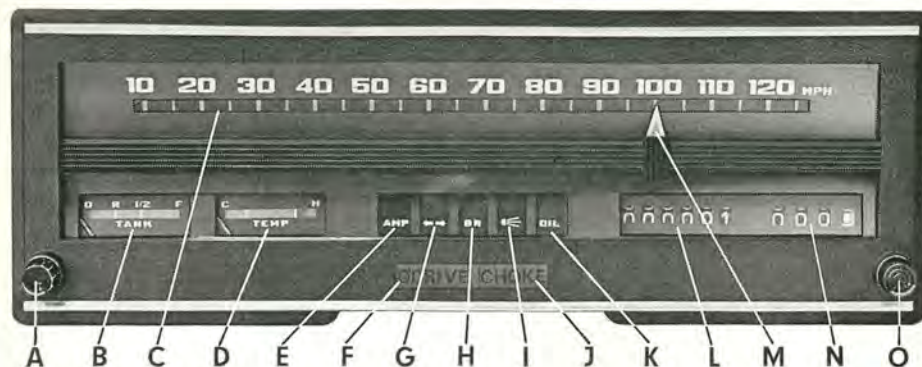
The headlights are operated by means of a push-pull type switch on the dashboard as well as a lever (5) on the steering column.

All the lights are extinguished when the lighting switch is pushed fully in. Pulling it out to the half-way position, switches on the parking lights, and when it is fully out, the full or dipped headlights are switched on, depending on the position of the lever (5).

Since the lighting system is not connected across the ignition switch, the lights will function irrespective of whether the ignition key is in position or not.

Your car is fitted with side marker lights. These are located on the sides of the mudguards and are switched on by pulling out the switch knob for the headlamp lighting.

OPERATING INSTRUCTIONS



4 Instrument panel

- A Panel light switch
- B Fuel gauge
- C Speedometer
- D Coolant temperature gauge
- E Warning light, charging
- F Warning lamp, overdrive
- G Turn indicator warning light
- H Warning light, parking brake and brake circuits
- I Mainbeam warning light
- J Warning lamp, choke
- K Oil pressure warning light
- L Odometer
- M Speed warning indicator
- N Trip odometer
- O Trip odometer reset knob

A Panel light switch

Turning the knob clockwise or anti-clockwise increases or dims the lighting on the instrument panel.

B Fuel gauge

The fuel gauge is graduated "full", "half", "reserve" and "empty". The red field between "reserve" and "empty" is a reminder that the tank should be filled. When the gauge pointer is on "reserve", there are approx. 2½ US galls/2 Imp. galls (8 liters) in the tank. The gauge pointer registers when the ignition is switched on.

D Coolant temperature gauge



The temperature gauge shows the temperature of the coolant and thus indicates the working temperature of the engine. The gauge pointer should normally remain within the green sector.

During town driving and idling when the weather is particularly warm, the temperature gauge pointer may enter the field marked with oblique red dash lines. Should the pointer repeatedly point to the completely red field, the coolant and fan belt tension should be checked.

E Warning light, charging

This lights red when the battery is discharging. Should it light during driving, either there is some fault in the electrical system or the fan belt is not sufficiently tensioned and is thus slipping on the alternator pulley, causing poor charging.

F Warning lamp, overdrive

The lamp gives a steady green light when the overdrive is engaged. Concerning engaging and disengaging overdrive, see page 22.

H Warning light, parking brake and brake circuits

This lights red when the parking brake is applied and the ignition is on. It also functions as a warning light should one of the brake circuits fail. **If the light goes on during driving, the car should be driven without delay to a workshop for a check on the brake system. Observe due care when driving under such conditions.**

J Warning lamp, choke

The lamp gives a steady amber light when the choke control is pulled out. Push in the choke as soon as possible. This warning lamp is not fitted on the 164 E.

K Oil pressure warning light

This lights red when the engine oil pressure is too low. When the ignition is switched on, the light should go on and then go out again when the engine starts. Never start driving until the light goes out. If the light goes on during driving, stop the engine and find out the reason for this. In most cases it means that the oil level is too low. After hard driving it may happen that the warning light comes on when the engine is idling. This is normal **providing it goes out again when engine speed is increased.**

L Odometer

The odometer shows the total distance covered in miles. After 999999 miles it returns to zero and starts to go round again.

M Speed warning indicator

The speed warning indicator is mounted on the speedometer and consists of a manually adjustable sliding arrow. Its purpose is to remind the driver of the particular maximum permissible speed in connection with speed limit regulations.

N Trip odometer

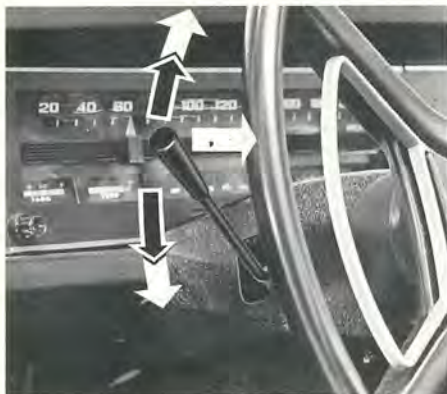
The trip odometer measures distances of up to maximum 999 miles. The window furthest to the right shows tenths of a mile and is therefore useful for measuring short distances.

O Trip odometer reset knob

The trip odometer is reset to zero by pushing in the knob.



OPERATING INSTRUCTIONS



5 Turn indicator lever, dimmer and headlight flasher

The lever on the left-hand side of the steering column just below the steering wheel controls the turn indicators, dipped headlights and headlight flasher. The lever has a stop point for lane changing. This means that with small swings on the steering wheel (when, e.g., changing lanes, passing, etc.) the lever can be moved up or down to this point and kept there. The right or left indicator will then start flashing. When the switch lever is released, it automatically returns to its off position. For normal swings on the steering wheel, the lever is moved past this stop point to the end position. Straightening up the steering wheel will return the lever to its off position.

Switching from mainbeam to dipped beam and vice versa is carried out by moving the lever towards the steering wheel and then releasing it. Here the lighting switch (3) should be pulled fully out.

The lever is also used for flashing with mainbeams when the headlights are not switched on. The headlight flasher is switched on by moving the lever towards the steering wheel and it remains switched on until the lever is released.



7 Combined ignition switch and steering wheel lock

The switch has four positions: (0) **Locking**, (1) **Intermediate**, (2) **Driving** and (3) **Starting**. The key can be taken out of the lock only in the **Locking** position.

The ignition switch is provided with a buzzer to warn the driver should he forget to

remove the ignition key when his door is opened.

Removing the key automatically locks the steering wheel.

With the key in the **Intermediate** position, the steering wheel is not locked and some electrical components are switched on.

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

If the car is parked in such a way as to make it difficult to unlock the steering wheel, unlocking can be made easier by slightly turning the steering wheel one way and then the other.

8 Fan switch



The fan is operated by means of a push-pull switch which can be set at two different positions. Pushing the switch fully in stops the fan, pulling it out to the first position operates the fan at full speed and when pulled fully out, the fan operates at half speed.

The overpressure in the air intake is relatively small. Therefore, at speeds below 50 mph (80 kmph), the fan should be allowed to operate at full speed if maximum air capacity is desired. On the other hand, however, the fan should not be used if cooling air is required on a hot summer's day. Instead, open both the fresh-air controls (16, 26), the defroster control "DEFR" and the ventilation control "FLOOR".

10 Heater/ventilation controls



The control on the left, TEMP, regulates the temperature of the air in the car. The middle control, DEFR, regulates the air flow to the windshield. And the control to the right, FLOOR, regulates the air flow to the front seat and rear seat floor.

The temperature, also the air volume, is increased by moving the controls downwards whereby a red strip marked down the middle of the control in question indicates the size of the opening. Note that when altering the temperature control, there will be a slight delay before the desired temperature is reached.

To avoid or remove mist on the windows, set the fan and defroster controls at maximum output. However, the fresh-air controls (16, 26) should be closed. Try to avoid water on the floor and under the mats as this increases the humidity and thereby misting, particularly during the wintertime.

15 Parking brake



The parking brake lever is on the outside of the driving seat and operates on the rear wheels only. When the parking brake is applied and the ignition is on, a red warning light (4, H) shows on the instrument panel.

Remember that the footbrake warning system is also connected to this light. **Should the light show when the parking brake is not on, this may be due to a failure in one of the brake circuits. If this is the case, drive immediately (but with due care) to a workshop for a check.**

9 Cigarette lighter



To use the cigarette lighter, push it in. The lighter releases automatically when it attains sufficient heat.

16, 26 Fresh-air controls

Pushing the control forwards opens fresh-air intake vents on the driver's or passenger's side. Note that the fan should not be operating if cool air is desired through these vents.

OPERATING INSTRUCTIONS



17 Hood release handle

The hood is released by pulling out the handle situated to the extreme left under the dash. This releases the hood which is still held by the safety catch.



The hood is opened by inserting the fingers under the front edge and pressing up the catch as shown in the picture. Check that it shuts properly when closed.

The location of the hood when closed can be adjusted if necessary by screwing in or out the rubber plugs underneath the hood at the front end and on the mudguards below the windshield.



21 Switch for electrically heated rear window

In order to obtain a clear rearview during cold and damp weather, the car is fitted with an electrically heated rear window. Heating is provided by wires on the inside of the rear window. **Avoid placing anything on the hat shelf which might damage these wires.**

The heating is switched on by pushing in the switch. This lights a warning lamp mounted in the switch.

Pushing in the switch again switches off the heating.

Switch off the heating when the rear window is clear of mist and ice in order not to overload the battery unduly.

23 Clock

The clock is operated electrically. To reset it, push in the re-setting knob and turn the hands.

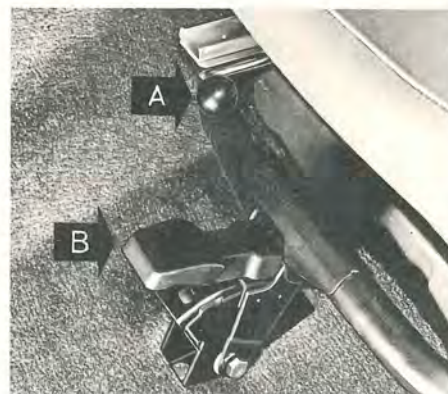
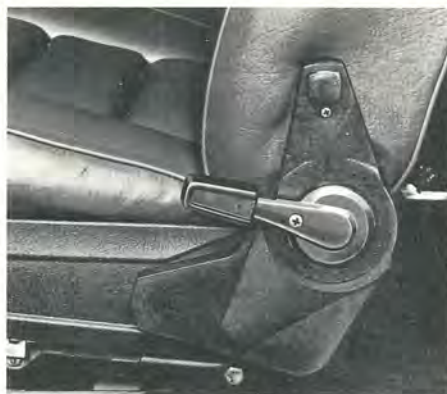
24 Switch for emergency warning flashers

All the four emergency warning lights start flashing when this switch is pushed in. A warning lamp mounted in the switch blinks in unison with them. The warning light is not wired across the ignition and therefore functions irrespective of whether the ignition is switched on or not.

Pushing in the switch again puts out the flasher lights.

The emergency warning flasher lights should only be used when the car must be stopped where there is danger to other traffic. Note that regulations concerning the use of these lights may vary from place to place.

OPERATING INSTRUCTIONS



INTERIOR AND BODY

Front seats

Lumbar support

The front seats are provided with an adjustable lumbar support. This is operated by means of the knob on the right side of the backrest. To tension the lumbar support, and thus exert more pressure against the small of the back, turn the knob clockwise, "FIRM", and to relieve the pressure against the small of the back, turn the knob anti-clockwise, "SOFT".

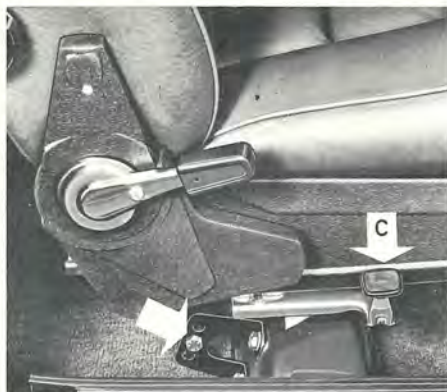
Backrest adjustment

The front seat backrest is adjusted with the lever on the outside of the backrest (see picture). Lift up the lever, adjust to the desired angle, and lock the backrest there by pushing down the lever. The backrest can be folded backwards to a comfortable rest or repose angle.

Length and height adjustment driver's seat

The driver's seat can be adjusted forwards-backwards by lifting catch A upwards. Exert leverage with your feet on the floor and slide the seat to the desired position.

Adjustment is made vertically by lifting catch B upwards and then setting the seat to one of the four height positions. If necessary, the seat can then be adjusted longitudinally.



Length and height adjustment front passenger's seat

The front passenger's seat can be adjusted forward-backwards by pressing down latch C on the outside of the seat. Vertically the seat is adjustable to three different positions. Remove the seat cushion to get to the bolts in the seating bracket. Remove the two bolts holding the seating frame to the seating brackets. Place the frame in the desired position and refit the bolts in the suitable holes.

In connection with this adjustment, it may be desirable or necessary to adjust the inclination angle of the entire seat. This is done with the eyelet bolt at the front under the seat frame. Remove the bolt which goes through the eyelet screw and fold the seat backwards. Then release the locknut in the floor of the car and adjust the eyelet screw to the desired position. Re-lock securely the eyelet screw with the locknut.

Head restraints

The front seats are provided with adjustable head restraints. If the head restraint is to fulfil its function properly, it is important that it is correctly adjusted, that is, it supports against the head and against the neck. To adjust slacken the plastic nuts on the head restraints retainers. After adjusting lock the head restraints by turning the plastic nuts clockwise.

OPERATING INSTRUCTIONS



Seat belts

Always use the seat belt for **all** types of driving. Remember that it is possible even in slow city traffic to incur serious injury from sudden, unexpected stopping.

Automatically retracting inertia seat belts

The Volvo 164 is equipped with automatically retracting inertia seat belts. To fit the belt, pull out the webbing slowly. If the webbing is pulled out too quickly, the emergency-locking retractor reacts and locks the belt. Normally the seat belt retractor is "unlocked". Locking takes place when the webbing is pulled out rapidly or when the car is braked suddenly.

Should the webbing lock when being pulled out, slacken off slightly and then continue pulling out more slowly. Place one strap round the waist and the other across the shoulder — chest and secure the belt by pushing the buckle tongue into the locking slot in the lock between the seats. An audible clicking sound is a sign that the belt is locked.

Make sure that the webbing fits comfortably across the body and is not twisted. The belt is released by pulling up the lever in the locking device. Make a habit of letting the roller roll up the webbing on removing the belt.

Seat belts in rear seat

Seat belts for three passengers are installed in the rear seat.

The belts are fastened by pushing the buckle tongue on the strap into the lock in the other. The belts are released by pulling back the spring-loaded sleeve over the lock and pulling the straps apart.



If the belt requires lengthening, first slacken the upper section of the belt and take hold of the adjusting piece with one hand and pull out the lap strap to the desired length. Tidy up belt slackness by pulling in the upper part of the double section.



To shorten the belt, pull in the upper section of the lap belt.

Remember

Do not let the belt lie on the floor otherwise it will get entangled and dirty as well as hinder getting in and out of the vehicle.

Now and again check that the bolts anchoring the belts are properly tightened and that the belt is otherwise in good condition. Water mixed with some synthetic washing agent can be used for cleaning the belt. If the belt is exposed to violent stretching, for example, in connection with a collision, it should be replaced even though it may appear to be undamaged. Also replace the belt if well worn or damaged.

Never modify or repair the belt on your own, but have this done by a Volvo workshop.

OPERATING INSTRUCTIONS



The door locks have been designed with a view to providing maximum possible protection against freezing during the wintertime. As an extra measure, however, you should lubricate the locks regularly during very cold weather with a suitable anti-freeze agent. If the lock is already frozen, be careful not to break the key in the lock. Instead, heat the key and immediately place it in the lock. This should unfreeze the lock. Should you lose the car keys, contact your nearest Volvo dealer for new ones and quote the code number of the keys which have been lost.

Doors and locks

The car is fitted with a lock and keyhole on each of the front doors. All the doors can be locked on the inside by pushing down the lock button on the window ledge. On the front doors this lock button lifts automatically when the door is opened from the inside. On the rear doors, however, the lock button must first be pulled up before the doors can be opened from the inside. This is an advantage if children are in the back seat.

The front doors can be locked from the outside by pushing the lock button on the window ledge down and shutting the door while keeping the outside handle pulled out as shown in the picture. To lock the rear doors it is not necessary to keep the door handle pulled out.

Do not leave the keys in the car.

Rearview mirror

The inside rearview mirror can be switched to anti-dazzle by pushing back the knob (N) at the bottom.



Interior lighting

1. The light comes on when either front door is opened.
2. The light is always off.
3. The light is always on.



Trunk

The trunk lid is locked with the same key as that used for the doors. It is opened by turning the knob clockwise and lifting the lid at the same time. **Note that the key must be removed from the lock in order to turn the lock knob.** The lid is balanced and will remain stationary in its opened position.

The trunk light goes on automatically when the lid is opened. The spare wheel is securely held in position to the right. The jack and tool kit are located next to the spare wheel. Under the trunk floor to the left there is space sufficient for an extra spare wheel, or for stowing tools or a reserve fuel can.



STARTING AND DRIVING

Running-in

The maximum permissible speeds given below must not be exceeded in the beginning when the moving parts of the car are in the process of adaption in order to achieve overall smooth function:

	below the first 600 miles (1000 km)		between 600 and 1200 miles (1000 and 2000 km)	
1st speed	20 mph	(30 kmph)	30 mph	(50 kmph)
2nd speed	35 mph	(55 kmph)	45 mph	(75 kmph)
3rd speed	50 mph	(80 kmph)	60 mph	(100 kmph)
4th speed	70 mph	(110 kmph)	80 mph	(130 kmph)

Avoid driving at high speed in low gear and using the kick-down (automatic transmission) during the first 1 200 miles (2 000 km).

Running-in inspections

After 1 500 miles (2 500 km) the vehicle should be taken to a Volvo workshop for the warranty inspection. Included with the checks and adjustments then made is a change of oil in the engine, transmission and rear axle. It is very important to ensure that this oil change is carried out since during the running-in period the engine oil usually collects a lot of impurities. Subsequent oil changes should be carried out at approximately those intervals indicated in the maintenance schedule on page 40 and in the lubricating chart at the end of the book.

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

Your first drive

Before starting to drive your new Volvo, we would advise you to become acquainted with your car and the various instruments and controls required for the driving. When you are seated comfortably and can find the various controls without bother you are ready to start driving — but do not forget to fasten your seat belt.

Start the engine B 30 A (carb. engine)

as follows:

1. Check that the parking brake is on and the gear lever is in neutral (position **N** or **P**, autom. transmissions).
2. When the engine is cold, pull the choke control out fully.
3. Always make a habit of depressing the clutch pedal until the engine starts.
4. Turn the ignition key to the starting position. Release the key as soon as the engine has started.
5. Push in the choke control until the best idling speed is obtained. As the engine becomes warmer push in the control more and more. Drive for as short a period as possible with the choke out. Thanks to the preheating arrangement the engine should run smoothly already a couple of minutes or so after starting. When the engine is warm, the control should be pushed right in. When starting a warm engine. Depress the accelerator pedal halfway. If the engine does not start immediately, tramp the pedal to the bottom and keep it there until the engine starts.

Do not race the engine up to high speed immediately after starting from cold.

Start the engine B 30 F (fuel injection)

as follows:

1. Check that the parking brake is on and the gear lever is in neutral (position **N** or **P**, autom. transmission).
2. Always make a habit of depressing the clutch pedal until the engine starts.
3. Turn the ignition key to the starting position. Release the key as soon as the engine has started.
4. **NOTE. Do not depress the accelerator if the engine is cold.** If the engine stops start it again without depressing the accelerator pedal. If the engine is warm, the accelerator pedal should be pressed down about half-way. Avoid repeated **short** attempts to start. (In the case of **each** new attempt, the starting valve functions and causes fuel to be injected into the inlet duct.) Instead, allow the starter motor to operate for a rather longer time (not more than 15—20 seconds, however) each time.

Do not race the engine up to high speed immediately after starting from cold.

Starting in garage

Before starting your car in a garage, always open the garage doors. The exhaust gases from the engine contain carbon monoxide gas which is poisonous and particularly dangerous since it is invisible and odorless.

Warming up the engine

Experience has shown that engines in vehicles used for frequent stopping and starting are subject to abnormally rapid wear. The reason for this is that the engine is not given a chance to reach its normal working temperature. When the engine is cold, it should just be taken up to its normal working temperature as quickly as possible. Therefore, do not idle the engine too long but start driving with a light load on the engine as soon as the oil pressure light has gone out.

Driving with the trunk lid open

While driving with the trunk lid partly or fully open, exhaust gases can be sucked into the car through the trunk. Normally, this involves no risk to the passengers. However, the following advice should be followed on such occasions:

1. Keep all windows closed.
2. Set the fresh air and defroster controls to the fully-opened position and the fan switch to full speed.

OPERATING INSTRUCTIONS



Gearshifting

The Volvo 164 may have a manual transmission with or without an overdrive, or it may be fitted with an automatic transmission.

The transmission is synchronized on all forward gears. If synchronization is to function satisfactorily, the clutch pedal must be fully depressed. Never let the engine drag in high gear. Shift down in good time.

Floor-mounted shift lever

Shifting with a floor-mounted shift lever is quite conventional and the different shift positions are shown in the picture above.



Overdrive

The overdrive, which can be used on fourth gear, is operated by means of a lever to the right under the steering wheel. Moving the lever downwards engages and upwards disengages the overdrive. No extra operation of the clutch pedal or accelerator is normally necessary but engagement of overdrive is facilitated if the accelerator pedal position is maintained steady. When disengaging the overdrive, light pressure on the clutch pedal helps to make this operation smoother. The overdrive should not be used at speeds below 38 mph (60 kmph).

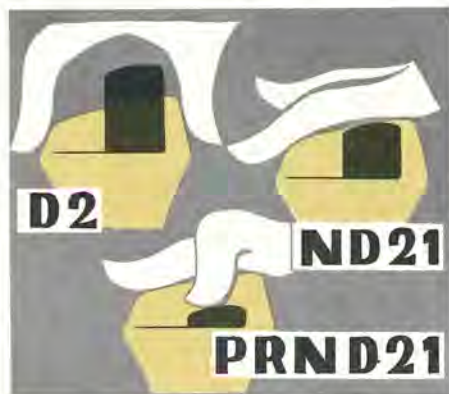


Automatic transmission

The shift positions for the selector lever are marked on the console next to the lever.

- P = Parking
- R = Reverse
- N = Neutral
- D = Driving
- 2 = Low speed
- 1 = Low speed

The selector lever can be moved freely between positions **D** and **2** where the other positions are blocked with a gate which is opened by means of the push button in the knob of the selector lever.



To shift from **D** and **2** to positions **N** or **1** all that is required is a light push on the button with the palm of the hand. With the push button in this position, the selector lever can be moved between the four positions, **1**, **2**, **D** and **N**.

To shift to positions **R** and **P** more force is required to press down the button. This can be done with the thumb. Similar force is also required to move the selector lever out of the **P** position. In other words, with the push button fully depressed, the selector lever can be moved freely between the various shift positions in the transmission.

P-position

Engage selector in position "**P**" for parking, whether the engine is stopped or running. When parking on a steep gradient, the parking brake should also be applied. In the "**P**" position the transmission is mechanically locked.

"P" position may only be selected when the car is standing still.

R-position

This position is used when reversing.

"R" position may only be selected when the car is standing still.

N-position

"N" position is for neutral, that is, no gear is engaged.

D-position

This position is the normal one for driving. Start is in 1st gear and the transmission automatically shifts up in accordance with road speed and accelerator position. Downshifting takes place automatically with decreasing speed.

2-position

In position "**2**" the transmission can shift up or down automatically between 1st and 2nd gear.

In this position there is no shifting up to 3rd gear.

"2" position can be used to obtain immediate downshifting (to 2nd gear) and also when shifting up from 2nd to 3rd gear is not desired, for example, at the following times:

- during certain types of highway driving
- during crawling town driving
- when driving in hilly country
- when overtaking
- in order to increase engine braking

Do not select "2" position for speeds exceeding 70 mph (115 kmph), B 30 A and 80 mph (130 kmph), B 30 F engine.

1-position

With "**1**" position there is automatic downshifting **but no upshifting**.

If "**1**" position is selected at high speed, 2nd gear is engaged. It is only when the speed has dropped to about 6 mph (10 kmph) that 1st gear engages. The 1st gear can also be engaged by kick-down below about 35 mph (55 kmph). If you want to drive in 1st gear without intending to shift up, use "**1**" position, e.g., when driving in hilly country where maximum engine braking can be obtained in "**1**" position.

Do not choose "1" position for speeds exceeding 70 mph (115 kmph), B 30 A, and 80 mph (130 kmph), B 30 F engine.

OPERATING INSTRUCTIONS

Kick-down

When the accelerator pedal is depressed past full throttle position, kick-down is obtained, that is, there is an immediate shifting down to the next lower gear. As soon as a maximum speed for this gear has been reached or if the accelerator pedal is eased from the kick-down position, automatic shifting takes place to the next higher gear.

Driving

Starting the engine

Move the selector to "P" or "N". The starting switch will be put out of function if the selector is moved to any of the other positions.

Carry out the following procedure **when starting**:

1. Check to make sure that the parking brake is on or depress the brake pedal (otherwise the car will start creeping when the selector is moved to any of the driving positions).
 2. Move the selector to the intended driving position.
 3. Release the brake and drive off.
- The car is **stopped** in the usual way by releasing the accelerator pedal and depressing the brake pedal. It is not necessary to move the selector.

If the car gets stuck in snow, loose sand, etc., it can be "rocked" loose by moving the selector alternately between the "D" and "R" position during continuous light accelerator pressure.

Important

Do not select "P" or "R" when the car is moving.

Do not select "D", "2", "1" or "R" at an engine speed higher than idling when the car is stationary.

Do not select "2" or "1" at speeds above 70 mph (115 kmph) B 30 A and 80 mph (130 kmph), B 30 F engine.

Towing

If necessary, your car can be towed with the selector lever in position "N", providing that the transmission is properly adjusted and that the oil level is correct. The maximum permissible speed when towing is 20 mph (30 kmph) and the longest distance your car ought to be towed is 20 miles (30 km). If the car has to be towed longer than this or if you suspect that there is some fault in the transmission, the rear wheels should be raised or the propeller shaft disconnected in order to avoid possible damage to the transmission.

Due attention should be paid to laws concerning maximum speed when towing.

Remember that a car fitted with an automatic transmission cannot be started by towing.

If your car cannot be started because of a flat battery, an assist battery with cables must be used instead.

NOTE. Always connect a plus cable from the assist starter battery to the plus pole on the car battery and the minus cable to the minus pole.

STANDARD TRANSMISSION

Recommended max. and min. speeds mph (kmph) for the different gears

Engine	1st gear	2nd gear
B 30 A	0-30 (0-50)	15-53 (20-85)
B 30 E	0-35 (0-55)	15-55 (20-90)
Engine	3rd gear	4th gear
B 30 A	22-78 (35-125)	28- (45-)*
B 30 E	22-85 (35-140)	28- (45-)*

*) 38 mph (60 kmph) with overdrive engaged.

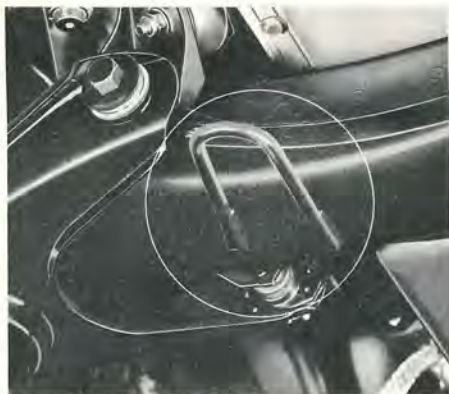
AUTOMATIC TRANSMISSION

Gear speeds at full throttle, kick-down, mph (kmph)

Gear	B 30 A	B 30 F
1—2	40 (65)	47 (75)
2—3	73 (117)	80 (130)

Max. speed when kick-down downshifting, mph (kmph)

Gear	B 30 A	B 30 F
3—2	65 (104)	70 (115)
3—1	33 (53)	35 (55)



Towing

The tow line should be attached to one of the towing eyelets fitted underneath the car. At the front, the towing eyelet is situated at the right-hand side (left picture) on the front axle member, and the rear eyelet on the right spare wheel housing (right picture). During towing, the tow line should be kept stretched to avoid unnecessary jerking. Concerning towing a car with automatic transmission, see page 24.

Note: Current law about max. speed during towing should be observed.



Starting by towing

The towing car should start smoothly and be driven at even speed in 2nd gear. Switch on the ignition, and pull out the choke if the engine is cold.

Standard transmission: Engage 3rd or 4th gear and gradually release the clutch pedal. Once the engine starts running, depress the clutch pedal.

Automatic transmission: If your car has automatic transmission, do not attempt to start it by towing. See recommendations on page 24.

Braking — Important

When you drive your car in the rain or through pools of water, even when washing it, water may splash up onto the brake discs and linings. This may alter their frictional properties which is sometimes noticeable by a certain delay in braking effect.

If you drive long stretches in the rain or slush, **lightly depress the brake pedal now and again to warm up the linings and thus dry them.** This should also be done when you drive immediately after washing the car or after starting when the weather is very damp.

When the car's power brakes do not function, e.g., when the car is in motion with the engine shut off, about 3 to 4 times greater brake pedal pressure is required to reach the same braking effect achieved by means of the power brakes. **Note that on this occasion the brake pedal travel will be short and stiff.**

Should one of the brake circuits fail to function (the red warning lamp H, page 9 goes on), double brake pedal pressure is required in order to achieve about 8 % braking effect with the brake circuits intact. About 50 % braking effect is achieved with normal pedal pressure. **Note that the pedal stroke here will be long and then it should feel stiff and hard in the braking position.** The car should be taken at once to a workshop for a check on the brake system.

TECHNICAL DESCRIPTION

Engine compartment, B 30 A engine

1. Radiator
2. Battery
3. Alternator
4. Charging regulator
5. Flap housing for air preheating
6. Oil filler cap
7. Air cleaner
8. Carburetor
9. Cannister, evaporative control system
10. Fuel filter
11. Oil dipstick, automatic transmission
12. Oil dipstick, engine
13. Distributor
14. Ignition coil
15. Starter motor
16. Brake servo
17. Brake fluid container
18. Engine compartment light
19. Windshield washer motor and container
20. Starter relay BW 35
(M 400, M 410: Reversing light relay)
21. Main relay, ignition switch
22. Step relay for high and low beams
23. Relay for horn
24. Steering box, servo steering
25. Oil container for servo steering
26. Expansion tank, cooling system

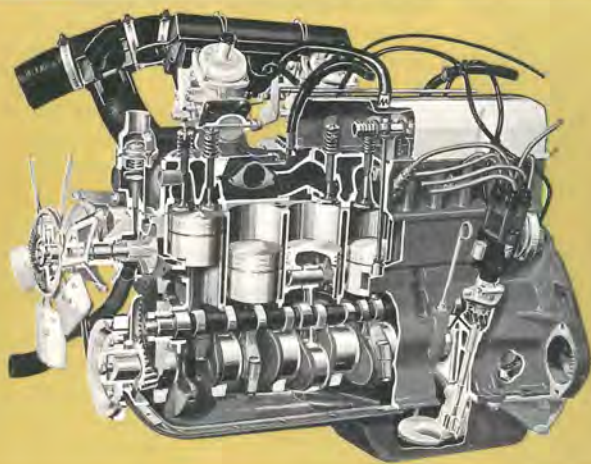




Engine compartment, B 30 F engine

1. Radiator
2. Battery
3. Alternator
4. Charging regulator
5. Pressure sensor
6. Relay for fuel pump
7. Main relay for fuel injection
8. Air cleaner
9. Injectors
10. Cannister, evaporative control system
11. Oil filler cap
12. Pressure regulator
13. Starter motor
14. Oil dipstick
15. Ignition coil
16. Distributor
17. Steering box, servo steering
18. Brake servo
19. Brake fluid container
20. Engine compartment light
21. Windshield wiper motor and container
22. Relay for back-up lights (starter relay BW 35)
23. Main relay for ignition
24. Step relay for high and low beams
25. Relay for horn
26. Fusebox, fuel pump
27. Oil container for servo steering
28. Expansion tank

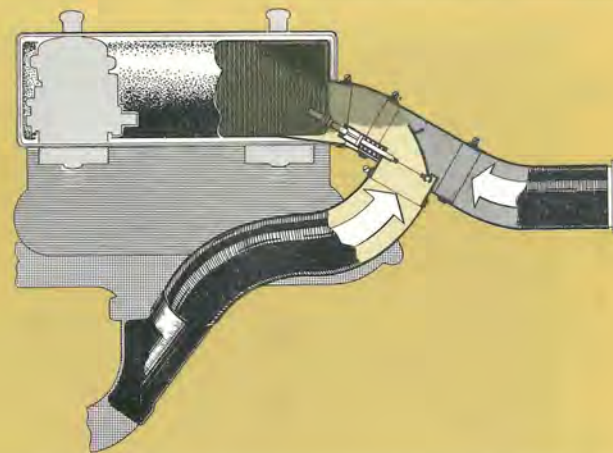
TECHNICAL DESCRIPTION



ENGINE

The engine is a six-cylinder, water-cooled carburetor unit with overhead valves. The engine has a very rigid cylinder block made of special cast iron and is cast in one piece. The cylinder liners are machined directly in the block. The cylinder head has separate inlet and exhaust ports, one for each valve.

The statically and dynamically balanced crankshaft is carried in seven main bearings.



Lubricating system

Engine lubrication is taken care of by a gear pump located in the oil pan. The pump is driven by a gear from the camshaft. From the pump the oil is forced through the full-flow type oil filter and then along oilways to the various lubricating points. A relief valve is built into the oil pump and prevents the oil pressure from reaching excessively high values. The oil filter is of the full-flow type, that is, all the oil passes through the filter before continuing on to the engine lubricating points.

Fuel system, B 30 A

The engine is fitted with two Zenith-Stromberg carburetors. The diaphragm-type fuel pump draws fuel from the tank and pumps it to the carburetors. A filter built into the fuel pump removes any impurities in the fuel.

The car is fitted with a fuel evaporative control system.

Air preheating, B 30 A

The engine has thermostatically controlled air preheating. This keeps the intake air temperature constant and thus counteracts ice forming in the carburetors and makes for shorter warming-up of engine after cold starting.

Fuel system B 30 F

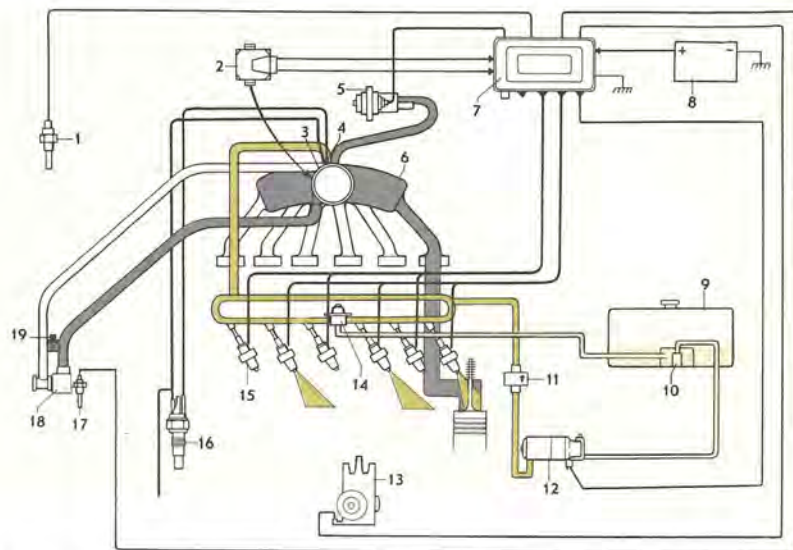
The B 30 F engine is fitted with an electronic fuel injection system.

This system includes an electronic control unit (7) which converts the impulses from the various sensors in the engine to control signals which regulate the six solenoid-actuated fuel injectors (15). The control signals influence the opening times of the injectors and thereby the amount of fuel injected.

The mixture of fuel and air is modified the whole time according to the conditions under which the engine is running. Engine speed is governed by the triggering contacts (13) in the distributor, the operating temperature by the sensor (17) for the coolant, the temperature of the induced air by the sensor (1) and the engine load by the pressure sensor (5) which is connected to the inlet duct. In addition, the control unit is provided with information concerning the position of the throttle valve by means of the throttle valve switch (2). This information is "computerized" in the control unit and re-transmitted in the form of control impulses to the injectors.

Fuel is injected into the inlet ports in the cylinder head just before the intake valves. The fuel is delivered to the injectors via an electric fuel pump (12) which maintains a constant pressure of 30 psi (2 kp/cm²) in the fuel line with the help of a pressure regulator (14).

The car is fitted with a system to check fuel evaporation from the fuel tank.

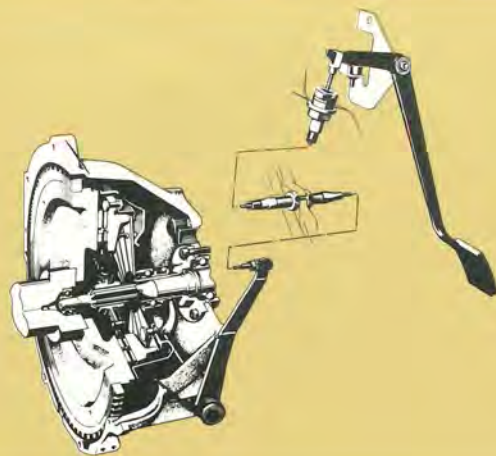


Principle of operation, fuel injection system B 30 F

1. Temperature sensor for induction air
2. Throttle valve switch
3. Throttle housing
4. Cold start valve
5. Pressure sensor
6. Inlet duct
7. Control unit (electronic)
8. Battery
9. Fuel tank
10. Fuel filter, suction side
11. Fuel filter, discharge side
12. Fuel pump
13. Triggering contacts in distributor
14. Pressure regulator
15. Injectors
16. Thermal timer contact
17. Temperature sensor for coolant
18. Auxiliary air regulator
19. Idling adjusting screw

12. Fuel pump
13. Triggering contacts in distributor
14. Pressure regulator
15. Injectors
16. Thermal timer contact
17. Temperature sensor for coolant
18. Auxiliary air regulator
19. Idling adjusting screw

- Partial vacuum in inlet duct
- Fuel at atmospheric pressure
- Fuel under 30 psi (2 kp/cm²) overpressure



Exhaust emission control

Your Volvo is fitted with exhaust emission control, that is, a system which as a result of better mixing and distributing of fuel and air provides a more complete combustion and thereby cleaner exhaust gases.

On the B 30 A engine the system consists of specially adapted carburetors and an intake manifold provided with a preheating chamber and control throttles.

When driving at low speed, the throttles are closed so that the fuel-air mixture passes the preheating chamber. When higher output is required, the throttles

open, so that fuel flows directly to the cylinders.

On the B 30 F, the exhaust emission control is provided by the electronic fuel injection system.

Cooling system

The cooling system is of the sealed pressure type and incorporates a circulation pump.

When the engine is cold, the coolant circulates only inside the engine. As the engine warms up, a thermostat valve starts opening the outlet to the radiator.

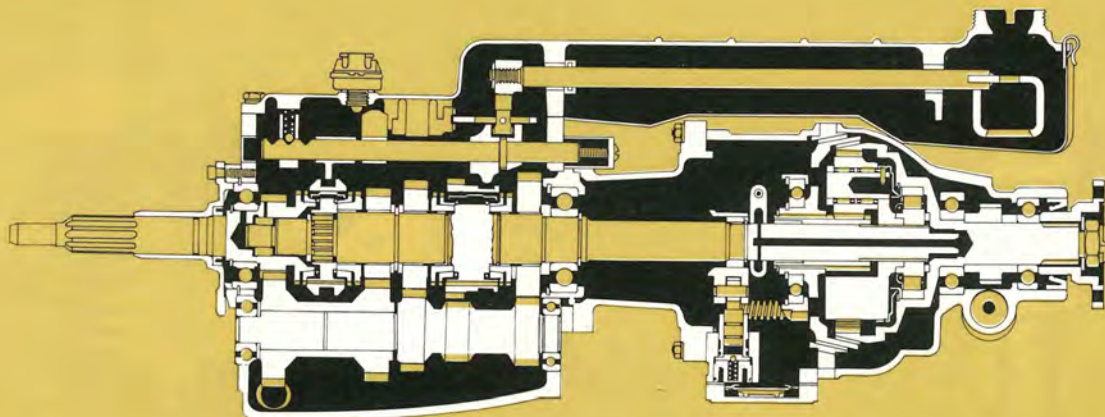
An expansion tank prevents air from cir-

culating with the coolant as this would cause corrosion in the cooling system. The fan is driven via a slip coupling which permits a max. fan speed of approx. 2500 rpm, resulting in a lower noise level.

POWER TRANSMISSION

Clutch

The function of the clutch is to transmit power from the engine to the transmission. The clutch is of the single dry plate type. Pressure on the pressure plate is obtained from a diaphragm spring which in its turn is controlled by the clutch pedal via a throw-out yoke.



Manual transmission

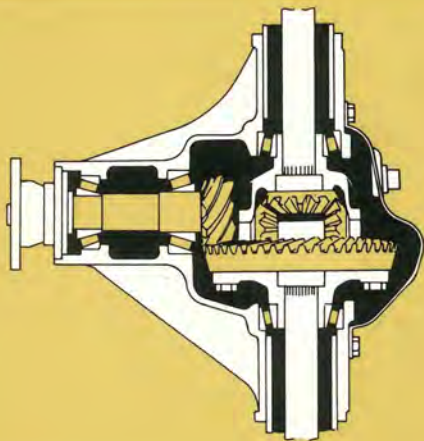
The transmission has synchromesh on all forward gears. Since it is fitted with helical gears and the gear lever is rubber-insulated, excellent sound insulation is obtained.

Automatic transmission

As an alternative, your Volvo can be fitted with a BW 35 automatic transmission. In principle it consists of two main components — a hydraulic torque converter and a hydraulically operated epicyclic gearbox with a control system. The converter serves as a clutch and as an extra gear between engine and transmission.

Overdrive

As an alternative the Volvo 164 can be fitted with an overdrive. With the overdrive it is possible to reduce engine speed while maintaining road speed. This is less wearing on the engine and reduces fuel consumption at the same time.

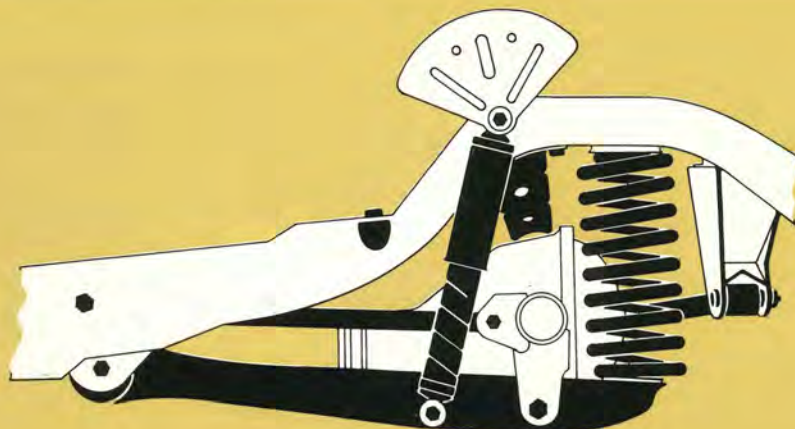


Propeller shaft

The propeller shaft, which is the link up between transmission and rear axle, is divided into two sections. The forward section is journalled at its rear end in a rubberized ring.

Final drive

Engine torque is transmitted via the propeller shaft to the rear wheels through the final drive. The final drive is of the hypoid type, that is, the drive pinion lies below the center line of the drive shafts.



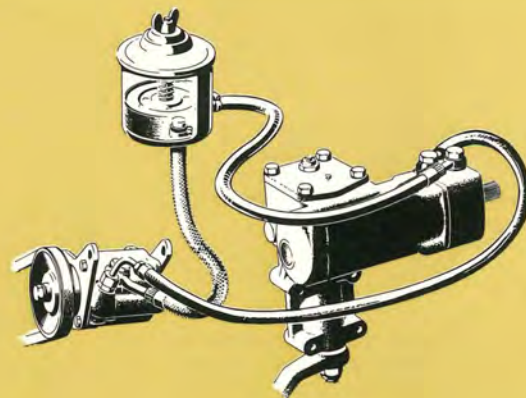
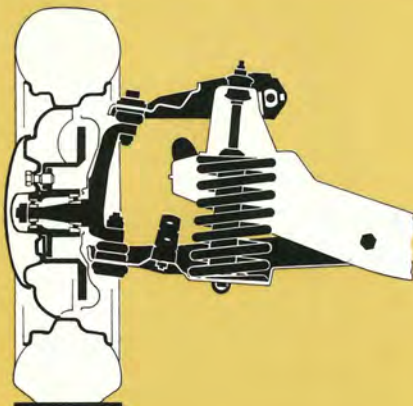
Limited slip

A limited slip differential can be obtained as extra equipment. A rear axle with a limited slip automatically transmits the tractive power to the wheel having the best road grip when a wheel begins to spin. Except for the differential, the rear axle is similar in design to a conventional rear axle.

Do not rotate a jacked-up rear wheel if the other rear wheel is still on the ground. Due to the differential, there is still drive on the wheel in contact with the ground. **Rotating the jacked-up rear wheel would thus move the other rear wheel and may cause the car to topple off the jack.**

Rear axle

The rear axle is carried on two support arms the front ends of which are bolted to the body. The rear axle casing is secured to the support arms by means of levers. Two torque rods are journalled on the casing and the body. A torque rod prevents lateral movement of the body and rear axle in relation to each other.



FRONT END AND STEERING

Front end

The front suspension units are mounted on a strong box member. The member is bolted firmly to the front section of the body. The front wheels are journalled in tapered roller bearings. The front springs consist of coil springs in which telescopic shock absorbers are fitted. The car is provided with stabilizers secured to the lower control arms and to the body.

Servo steering

The servo cylinder and guide valves are built into the cam-and-roller type steering gear. When the steering wheel is turned, the guide valves direct the pressure oil from the servo pump to one of the sides of the piston in the servo cylinder. The resultant pressure on the piston side affected assists in turning the steering wheel.

ELECTRICAL SYSTEM

The electrical system is of the 12-volt type and is fitted with a voltage-regulated alternator. The starter motor is operated by means of the ignition switch. This switch is also the main switch for the rest of the electrical system. The headlights, parking lights and interior lighting, however, are not wired via the ignition switch so they can be switched on and off without the ignition key being in position.

Lighting

The front lighting on the vehicle consists of two headlights (full and dipped beam) together with two turn indicators and parking lights.

At the rear, the lighting consists of two tail lights, turn indicators, brake warning lights and reversing lights. There are also two lights for the rear license plate.

The car is also fitted with marker lights mounted on the side of the fenders.

The interior lighting consists of a roof light and one in the glove compartment.

The engine compartment and trunk also have a light which goes on automatically when the hood or trunk lid is opened.

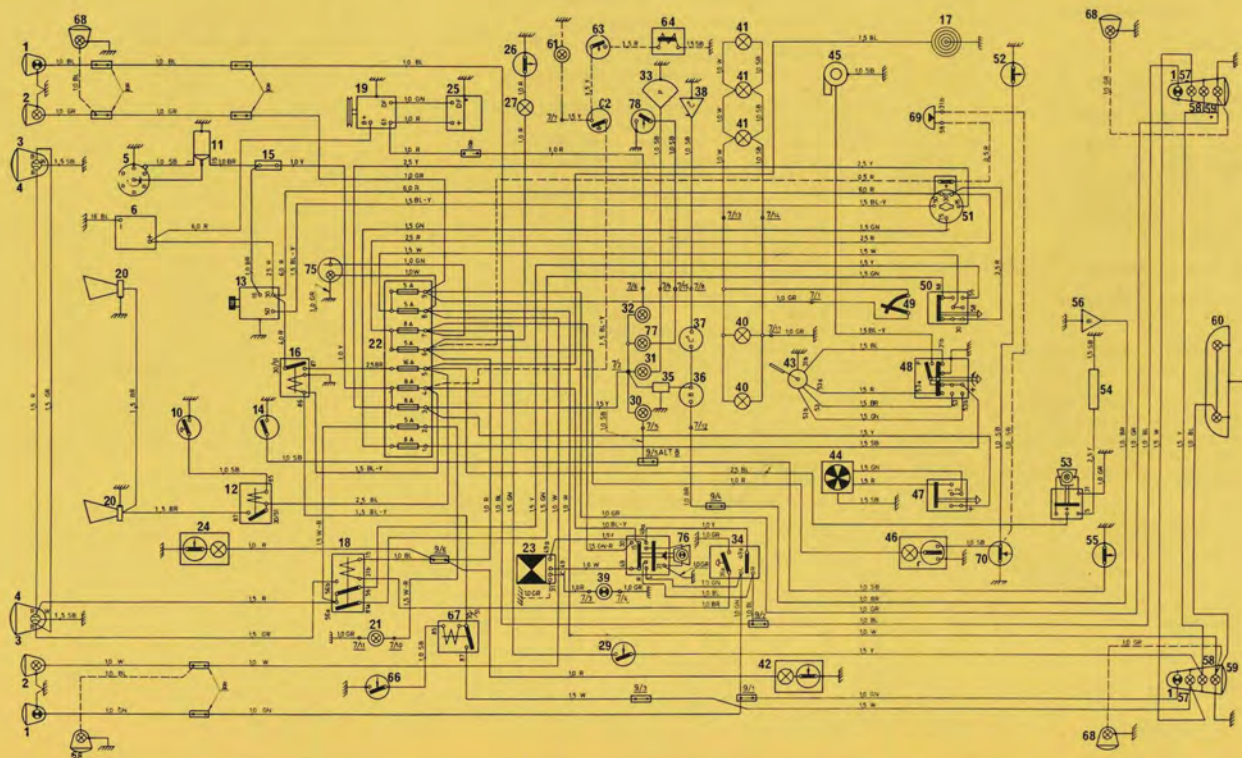
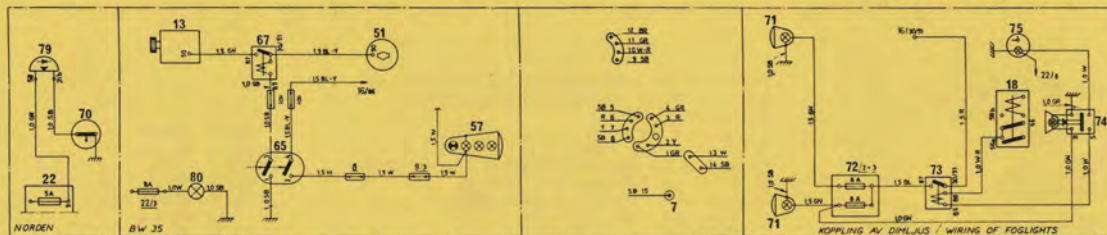
Concerning replacement of bulbs, see pages 52-55.

Wiring diagram (B 30 A)

1. Turn indicators 32 cp
2. Parking lights 5 W
3. Dipped headlights 40 W
4. Fullbeam headlights 50 W
5. Distributor
6. Battery 12 V, 60 Ah
7. Instrumentation terminal
8. Connector
9. Part of 6-pole terminal block
10. Horn ring
11. Ignition coil
12. Relay for horn
13. Starter motor 1 h.p.
14. Brake warning contact
15. Resistor
16. Main relay, ignition switch
17. Cigarette lighter
18. Step relay for fullbeam dipped headlights also headlight flasher
19. Alternator 12 V, 55 A
20. Horn
21. Warning lamp for headlight fullbeam, 1.2 W
22. Fusebox
23. Flasher unit
24. Engine compartment light, 18 W
25. Charging regulator
26. Switch for glove locker light
27. Glove locker light switch
29. Brake stop light contact
30. Warning light for parking brake, 1.2 W
31. Warning light for oil pressure, 1.2 W
32. Warning light for battery charging 1.2 W
33. Oil pressure sensor
34. Switch for indicator blinkers and fullbeams
35. Voltage stabilizer
36. Fuel gauge
37. Temperature gauge
38. Temperature sensor
39. Warning light for flashers, 1.2 W
40. Instrument panel lighting, 2×3 W
41. Lighting for heater controls 3×1.2 W
42. Trunk light, 18 W
43. Windshield wipers
44. Heater
45. Windshield washers

46. Interior light 10 W
47. Switch for heater
48. Switch for windshield wipers and washer
49. Rheostat for instrument panel lighting
50. Lighting switch
51. Ignition switch
52. Door switch
53. Switch for electrically heated rear window
54. Electrically heated rear window
55. Switch for parking brake control
56. Fuel level indicator unit
57. Reversing lights 15 W
58. Brake stop lights } 32/4 cp
59. Rear lights
60. License plate lighting 2×5 W
61. Warning light for overdrive, 1.2 W
62. Switch for overdrive
63. Switch for overdrive, on transmission
64. Solenoid for overdrive
65. Switch on transmission, BW 35
66. Switch for reversing lights only for M 400 and 410
67. Relay for reversing lights on M 400, M 410 and starter relay on BW 35
68. Side marker lights
69. Warning buzzer, ignition key
70. Door switch, left
71. Foglights
75. Clock with bulb, 2 W
76. Switch for emergency warning flashers
77. Warning lamp, choke
78. Contact, choke control
80. Shift positions light (autom. transmission)

SB = Black
 BR = Brown
 GR = Gray
 BL = Blue
 W = White
 Y = Yellow
 R = Red
 GN = Green
 W-R = White-Red
 BL-Y = Blue-Yellow
 GN-R = Green-Red



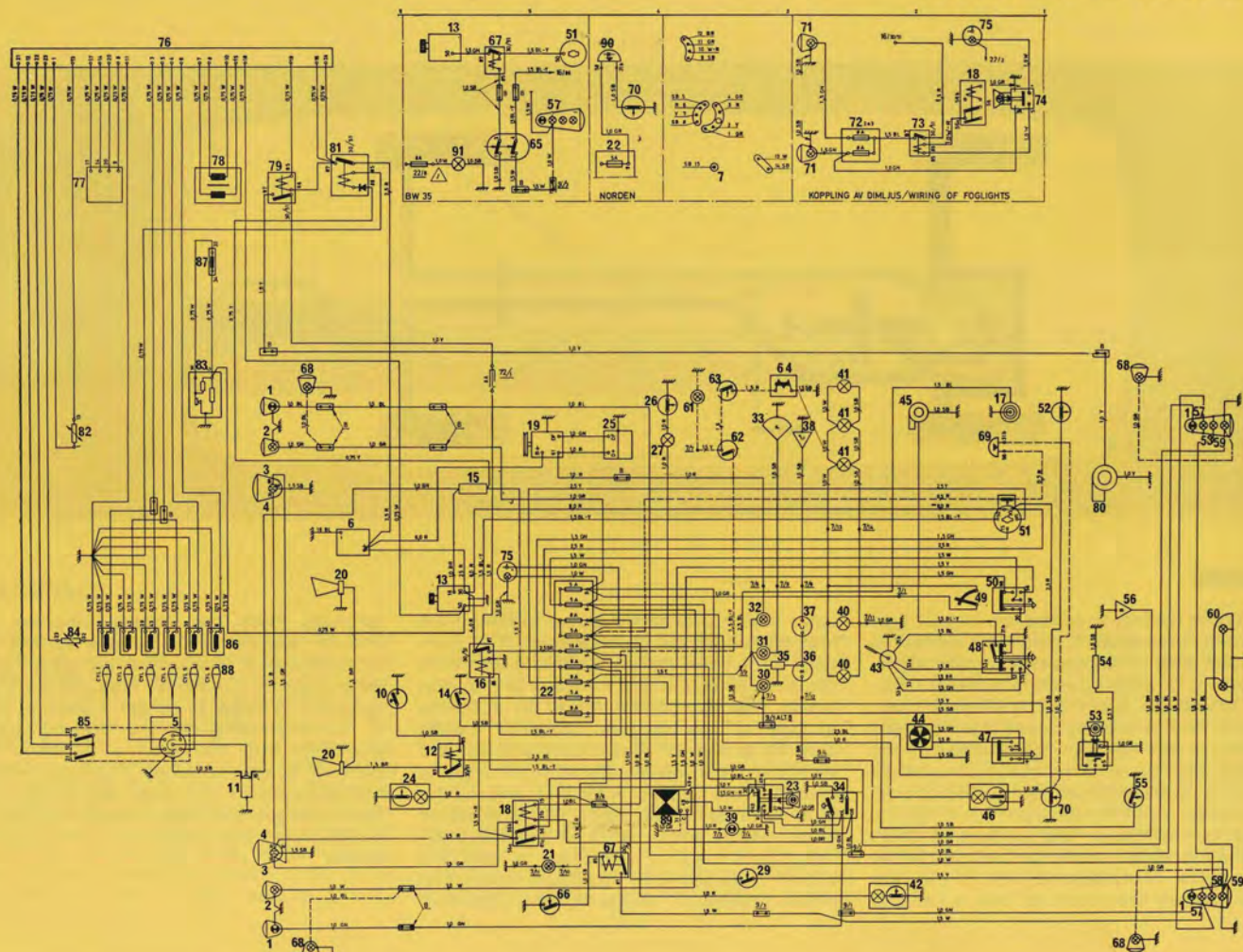
TECHNICAL DESCRIPTION

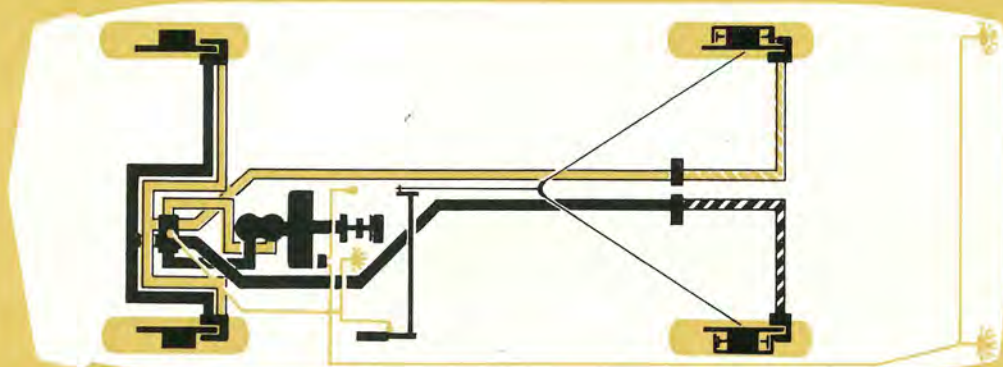
Wiring diagram (B 30 F)

1. Turn indicators 32 cp
2. Parking lights 5 W
3. Dipped headlights 40 W
4. Fullbeam headlights 50 W
5. Distributor
6. Battery 12 V, 60 Ah
7. Terminal for instrumentation
8. Connector
9. Part of 6-pole terminal block
10. Horn ring
11. Ignition coil
12. Relay for horn
13. Starter motor 1 h.p.
14. Brake warning contact
15. Relay for reversing lights
16. Resistor
17. Main relay, ignition switch
18. Cigarette lighter
19. Step relay for fullbeam and dipped headlights and also headlight flasher
20. Brake stop light contact
21. Alternator 12 V, 55 A
22. Horn
23. Warning lamp for headlight fullbeams, 1.2 W
24. Fusebox
25. Switch for warning flashers
26. Engine compartment light
27. Charging regulator
28. Warning buzzer, ignition key
29. Glove locker light
30. Brake contact
31. Warning light for parking brakes 1.2 W
32. Warning light for oil pressure, 1.2 W
33. Warning light for battery charging, 1.2 W
34. Oil pressure sender
35. Switch for indicators and fullbeam flashers
36. Voltage stabilizer
37. Fuel gauge
38. Temperature gauge
39. Temperature sensor
40. Warning light for flashers, 1.2 W
41. Instrument panel lighting, 2×3 W
42. Lighting for heater controls, 3×1.2 W
43. Trunk light, 18 W
44. Windshield wipers
45. Heater
46. Windshield washers
47. Interior light 10 W
48. Switch for heater

49. Switch for windshield wipers and washers
50. Rheostat for instrument panel lighting
51. Lighting switch
52. Ignition switch
53. Door switch, right
54. Switch for electrically heated rear window
55. Electrically heated rear window
56. Switch for parking brake control
57. Fuel level indicator unit
58. Reversing lights 15 W
59. Brake stop lights } 32/4 cp
60. Rear light
61. License plate lighting 2×5 W
62. Warning light for overdrive, 1.2 W
63. Switch for overdrive
64. Switch for overdrive, on transmission
65. Solenoid for overdrive
66. Switch on transmission, BW 35
67. Contact, choke control
68. Reversing lights relays on M 400 and M 410 and starter relay on BW 35
69. Side marker lights, 4 cp
70. Warning buzzer for ignition switch
71. Door switch, left
72. Foglights, 55 W
73. Electronic control unit
74. Throttle switch
75. Pressure sensor
76. Relay for fuel pump
77. Fuel pump
78. Main relay for fuel injection
79. Temperature sensor I
80. Thermal timer contact
81. Fusebox
82. Temperature sensor II
83. Triggering contacts
84. Injectors
85. Cold start valve
86. Spark plugs
87. Flasher unit
88. Shift positions light (autom. transmission)

- SB = Black
 BR = Brown
 GR = Gray
 BL = Blue
 W = White
 Y = Yellow
 R = Red
 GN = Green
 W-R = White-Red
 BL-Y = Blue-Yellow
 GN-R = Green-Red





BRAKES

The brake system is of the two-circuit type with disc brakes all round. The system is provided with a tandem-type master cylinder and a directly-operating booster cylinder. When the brake pedal is depressed, the master cylinder operates mechanically via the booster cylinder, this increasing the pedal force about three times. The brake pressure is transmitted hydraulically from the master cylinder through the brake to the wheel cylinders. The pistons in these are then pressed outwards and apply the brake pads. The pressure lines to the rear wheel brakes are provided with a reducer

valve which prevents the rear wheels from locking before the front wheels. The principle of the two-circuit system is that both the front wheels are connected to one rear wheel, that is, should there be a failure in one of the circuits, there is always braking power on both front wheels and the other rear wheel. So at normal pedal pressure the braking effect of one of the circuits is 50 %, but when pedal pressure is increased, about 80 % of the full braking power can be obtained in the one circuit. This provides maximum safety and prevents lateral dragging and rear-end

lurching. With the engine stopped, the booster assists the braking a further two or three times after which the pedal pressure must be increased about three times as much in order to obtain a braking power corresponding to the braking power available with the engine running. The parking brake operates the rear wheels mechanically as the brake discs have also been designed as brake drums in order to incorporate the shoes for the parking brake.



GENERAL

Before the vehicle was delivered from the factory it was subjected to a very thorough inspection. Your dealer, in his turn, carried out a further delivery inspection in accordance with the specifications of the Volvo Factory. In addition to this there is a service inspection after 1500 miles (2 500 km) when the oil in the engine, transmission and rear axle is changed. Subsequent servicing of the vehicle should follow the routine in the service book which is based on service inspections every 6 000 miles (10 000 km). The simplest way to provide

the vehicle with the servicing it requires is to have all the servicing done by a Volvo workshop. The workshop stamp in the service book will show when the vehicle was serviced.

When the car was being designed particular attention was given to the "safety details" (e.g. front end, brakes and steering). They are calculated to withstand the severest stresses with a wide safety margin. However, if you use your car for hard driving, you should take the precaution of checking these parts for fatigue cracks

during the useful lifetime of the car, for instance, when the parts concerned are being reconditioned. If you prefer to carry out the simpler servicing procedures yourself or if you are sometimes obliged to have them done by a workshop outside the Volvo organization, this chapter contains same advice as to when and how they should be carried out. For the sake of convenience, the servicing procedures have been summarized in a maintenance schedule in the next two pages.

SERVICING

MAINTENANCE SCHEDULE — (You will be charged for these services)

More frequent service intervals will be required if the vehicle is operated in extremely dusty conditions or low temperatures or for extended periods of idling, short

runs or trailer towing. It is beneficial to you to discuss your particular type of operation with your Volvo Dealer's Service Manager so that he can tailor this main-

tenance schedule to best suit your particular operation.

MAINTENANCE OPERATION		SERVICE INTERVAL				Description on page	MAINTENANCE OPERATION		SERVICE INTERVAL				Description on page
Thousands of miles or number of months, whichever comes first		6	12	18	24		Thousands of miles or number of months, whichever comes first		6	12	18	24	
Lubricate body		○	○	○	○	42	Change coolant and pressure test system			○		○	49
Change engine oil and oil filter		○	○	○	○	43, 47	Clean and adjust spark plugs	○			○		50
Carburetors — fill oil in damping cylinders		○	○	○	○	44	Replace spark plugs			○		○	50
Transmission — check oil level		○	○	○	○	44, 45	Check and adjust ignition points	○	○	○	○	○	50
Transmission — change oil					○	44, 45	Check and adjust ignition timing — retard and advance units	○	○	○	○	○	50
Rear axle — check oil level		○	○	○	○	45	Check and adjust carburetor(s) — idle speed, fast idle and choke			○		○	50
Servo steering — check oil level		○	○	○	○	46	Check battery charge	○	○	○	○	○	51
Service crankcase ventilation system			○		○	46	Check headlight alignment	○	○	○	○	○	51
Clean fuel filter screens		○	○	○	○	47	Check and adjust clutch free play	○	○	○	○	○	56
Change fuel filter — injection system			○		○	47	Check drive shaft and U-joints	○	○	○	○	○	56
Change air filter					○	48	Check brake operation and brake linings	○	○	○	○	○	56
Change filter — evaporative control system canister					○	48	Change servo cylinder air filter, overhaul the brakes		Every third year				56
Adjust valve clearance			○		○	48	Check ball joints and seals, steering rods and seals			○		○	56
Compression test		○	○	○	○	48	Check tire wear pattern	○	○	○	○	○	57
Check and adjust engine drive belts		○	○	○	○	48							

The following items should be checked weekly by driver

Engine oil level
 Brake fluid level
 Radiator coolant level
 Battery water level
 Tire pressure, all five tires
 Operation of all lights
 Horns
 Windshield wipers
 Level of windshield washer fluid

Descrip-
tion on
page

43
46
49
51
57

The following should also be carried out regularly

Washing
 Polishing
 Anti-rust treatment
 Cleaning

Descrip-
tion on
page

59
60
60
61

SERVICING

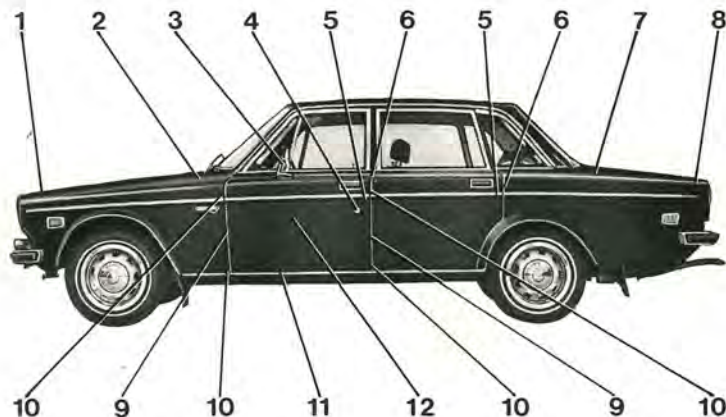
LUBRICATION

Chassis maintenance

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

Oil should be changed or the oil level checked after every 6 000 miles (10 000 km) in accordance with the lubricating chart at the end of the book. The measures taken in this inspection are also to be found in the lubricating chart.

Always use only first-class lubricants of a well-known make. The right lubricants in the right quantity at the right time will increase both the lifetime and the reliability of your car.



Lubricate body

To avoid rattle and unnecessary wear, the body should be lubricated once a year. The hinges on the hood, doors and trunk lid as well as door stops should be lubricated every 6 000 miles (10 000 km). During the wintertime, the locks in the door handles and trunk lid should also be given reliable anti-freeze to prevent them from freezing up.

No. Lubricating point

1. Hood lock
2. Hood hinges
3. Ventilation window lock and hinge
4. Key holes
5. Striker plate
6. Door lock outer sliding surfaces
7. Trunk lid hinges
8. Trunk lid lock
9. Door stop
10. Door hinges
11. Front seat slide rails and latch devices
12. Window regulator locking device (Accessible after door upholstery panels removed)

Lubricant

Paraffin wax
Oil

Oil
Lock oil
Paraffin wax

Paraffin wax
Oil
Oil
Lock oil
Paraffin wax
Grease

Paraffin wax,
oil
Oil, grease
Silicon grease



be abnormally high. If necessary, top up by filling through the oil filler hole in the rocker arm casing with new oil of the same type already in the engine.

The distance between the dipstick markings corresponds to about 2.1 US qts/1.8 Imp. qts. (2.0 liters).

Change engine oil

With a new or reconditioned engine, the oil should be changed after the first 1500 miles (2500 km). Subsequent oil changing is according to the intervals given below. For engine lubrication, oil grade "For API Service DS, SE or CC" (API Service MS) is to be used.

At very low temperatures below -18°C ($= -0^{\circ}\text{F}$) multigrade oil SAE 5 W-20 is recommended. However, this oil should not be used when the temperature is continuously above 0°C (32°F).

The old oil is drained off by removing the drain plug on the pan. Draining should take place after driving when the oil is still warm.

Check oil level in engine

The oil level in the engine should be checked each time the fuel tank is filled. The check should be carried out with the engine switched off but warm and, in order to obtain comparable values, about one minute after the engine has been stopped. Wipe the dipstick before measuring. The oil level should be between the two marks on the dipstick. It must never be permitted to go down below the lower mark, but on the other hand, it should not be above the upper mark since oil consumption will then

Viscosity	Temperature range	Oil change interval miles (km)*	Oil capacity
SAE 20 W-40 SAE 20 W-50	SUMMER (above $-12^{\circ}\text{C} = +10^{\circ}\text{F}$)	every 6000 miles (10 000 km) or twice a year	Without oil filter: 5.5 US qts./4.5 Imp. qts. (5.2 liters)
SAE 10 W-30	WINTER (below $-12^{\circ}\text{C} = +10^{\circ}\text{F}$)		With oil filter: 6.3 US qts./5.3 Imp. qts. (6.0 liters)
At very low temperatures: SAE 5 W-20. This oil should not be used at continuous temperatures above $\pm 0^{\circ}\text{C} = 32^{\circ}\text{F}$			
*) During running-in the oil should also be changed after the first 1500 miles (2500 km).			

SERVICING

Carburetors

At each oil change check that the oil level in the center spindle of the carburetors is about $\frac{1}{4}$ " (6 mm) from the top of the spindle. If it is not, fill up with Automatic Transmission Fluid (ATF).

Transmission without overdrive M 400

The oil in the transmission should be checked after every 6 000 miles (10 000 km). The oil level should be up to the filler hole. If necessary top up with recommended oil. After every 24 000 miles (40 000 km) the oil in the transmission should be changed. In the case of a new or reconditioned transmission the oil should also be changed after the first 1 500 miles (2 500 km). The old oil should be drained off immediately after the vehicle has been run while the oil is still warm.

Transmission with overdrive M 410

For cars fitted with an overdrive, the oil level should be checked and the oil changed parallel with similar procedure for the transmission. The overdrive and the transmission have a common oil level and oil filler hole. Make sure when topping-up that the oil runs over into the overdrive. The oil is drained out by removing the gearbox drain plug and the cap for the overdrive oil strainer.

At each oil change the oil filler of the overdrive should be cleaned. This should be done by a Volvo workshop.

Automatic Transmission Fluid (ATF)

Oil grade	Viscosity	Oil capacity
Gear oil alt. engine oil	SAE 90 If gear oil is not available, engine oil SAE 40 can be used	1.6 US pints 1.3 Imp. pints 0.6 liter

Oil grade	Viscosity	Oil capacity
Engine oil	SAE 30 or Multigrade SAE 20 W-40	3.0 US pints 2.5 Imp. pints 1.4 liters

Automatic transmission BW 35

The oil level should be checked every 6 000 miles (10 000 km). The filler pipe with graduated dipstick is to be found under the hood just in front of the firewall.

Note. The dipstick has different graduation marks for a warm and cold transmission. When the oil level is being checked, the car should be standing level. With the engine idling in position "P", the level should be between the upper and lower graduation marks on the dipstick. When topping-up is necessary, use only Automatic Transmission Fluid, Type F.

The oil in the automatic transmission should be changed every 24 000 miles (40 000 km).

The dipstick should be wiped with a cloth, paper, etc., but not with anything that leaves fluff on the dipstick.

Rear axle

The oil level in the rear axle should be checked after every 6 000 miles (10 000 km). The oil level should be up to the filler hole. If necessary top up with the recommended oil. The oil in the rear axle should be changed after the first 1500 miles (2500 km). The old oil is drained off by removing the bottom plug. After this only the oil level need be checked and topping-up with recommended oil carried out if required.

The oil should then be warm and the magnetic plug must be well cleaned. It is of great importance to the lifetime of the final drive that particles and impurities from running-in are removed.

Limited slip differential

Cars fitted with a limited slip differential are delivered from the factory with a rear axle oil MIL-L-2105 B provided with an additive for rear axles with differential. A similar type of oil should be used for subsequent topping-up and changing. Oil level checking and oil changing are to be carried out at the same intervals and in the same way as for a rear axle without a limited slip differential.

Oil grade	Oil capacity
Automatic Transmission Fluid, Type F	17.7 US pints 14.8 Imp. pints 8.4 litres

Oil grade	Viscosity	Oil capacity
Rear axle oil acc. to MIL-L-2105 B	SAE 90	3.4 US pints 2.8 Imp. pints 1.6 litres

Rear axle oil MIL-L-2105 B which should have additive for limited slip differential.

SERVICING

Servo steering

The oil level in the servo steering should be checked every 6000 miles (10 000 km). Before checking wipe the oil container clean. Then remove the cap and check the level with the engine not running. The oil level should be about $\frac{1}{4}$ " (5–10 mm) above the level mark in the container. If the level is lower than this, top up with oil, with the engine stopped to prevent air from being sucked into the container. Start the engine and recheck the oil level, which should now fall to the level mark. When the engine and re-check the oil level, which about $\frac{1}{4}$ " (5–10 mm) above the mark. The oil and filter in the servo steering do not need replacing other than during repairs or reconditioning.

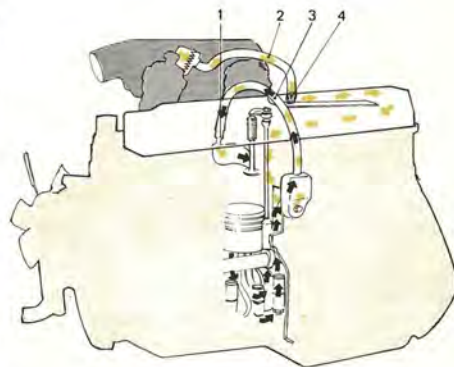


Brake fluid

The brake system is fitted with a tandem-type brake fluid container with a section for each circuit but with the same filler hole. The brake fluid level should be between the "Max" and "Min" marks.

Oil grade	Oil capacity
ATF Type A or Dexron	2.5 US pints 2.1 Imp. pints 1.2 liters

Use only brake fluids conforming to specification SAE J 1703 for the hydraulic brake system. Brake fluid with designations DOT 3 or DOT 4 can also be used.



ENGINE

Crankcase ventilation system

The engine is provided with positive crankcase ventilation which prevents the gases in the crankcase from being released into the atmosphere. Instead, they are sucked into the intake manifold and take part in the combustion process whereupon they are blown out through the exhaust pipe together with the other combustion gases. Every 12 000 miles (20 000 km) remove and clean the nipple (1), the hoses (2 and 3) and the flame protector (4). Rubber hoses should also be replaced if they are in a poor condition.



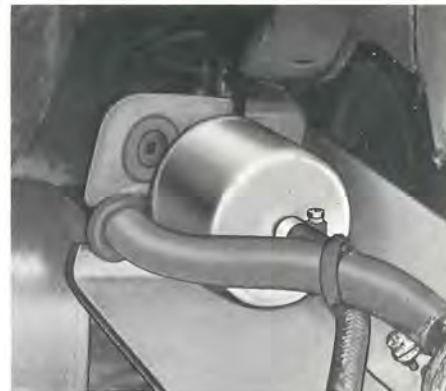
Oil filter

The engine is fitted with a full-flow type oil filter, which means that all the oil passes through the filter on its way from the oil pump to the various lubricating points. Impurities in the oil are collected in the filter and gradually block it. For this reason, the filter must be changed every 6 000 miles (10 000 km). Scrap the old filter then. If the oil filter is replaced without the engine oil being changed, the engine should be topped up with 1.7 US pints/1.4 Imp. pints (0.8 liter).



Fuel filter (B 30 A)

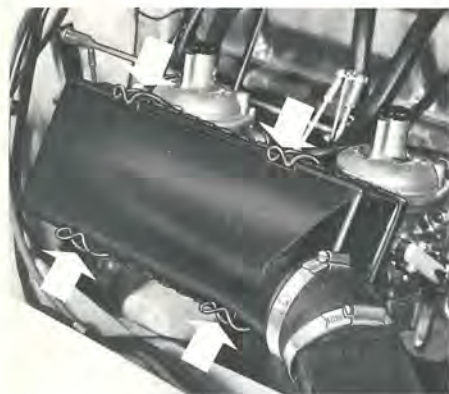
The fuel filter should be cleaned after every 6 000 miles (10 000 km). Loosen the screw, remove the cover and the filter and clean them. Check that the gasket is not damaged and make sure that it seals properly when the plug with filter is re-fitted.



Fuel filter (B 30 F)

The fuel filter is located under the car close to the fuel tank. This filter is to be changed after every 12 000 miles (20 000 km). The filter is replaced as one complete unit.

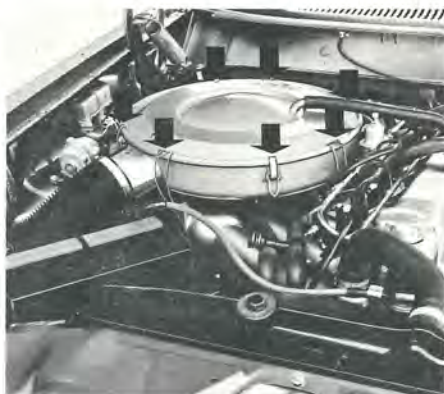
Clean the fuel lines and the surrounding components before carrying out the change. When changing the filter, pinch the fuel lines to prevent fuel from running out. Notice when fitting the new filter that the arrow on the filter housing is to point in the direction of flow. Filter replacement should be carried out by an authorized Volvo workshop.



Air cleaner (B 30 A)

The air cleaner consists of a plastic cover with replaceable paper insert. The insert should be replaced every 24 000 miles (40 000 km). With continuous driving in dusty conditions, it may be necessary to change the cleaner more often. No kind of cleaning whatsoever should be carried out between the above intervals.

To replace, disconnect the hose clamp for the air preheating unit and also the clips holding the air cleaner cover. The insert is then accessible for removal. Make sure when fitting the top section that the thermostat body for the intake air is not damaged.



Air cleaner (B 30 F)

The air cleaner consists of a container with replaceable paper insert. Replace the insert every 40 000 km (24 000 miles). Replace more often when driving regularly on dusty roads. No other servicing is required outside the interval just stated.

When replacing undo all the clips securing the cover to the air cleaner container. Lift off the cover and replace.

When refitting the cover the arrow points on the cover and the cleaner container should coincide.

Evaporative control system

The foam plastic filter for the evaporative control system should be changed every 24 000 miles (40 000 km). The foam plastic filter is fitted on the bottom side of the cannister and can be replaced when the cannister has been removed. This work should be carried out by an authorized Volvo workshop.

Valves

The valve clearance should be checked after every 12 000 miles (20 000 km).

The check should be carried out in a workshop.

Compression test

To get some idea of the condition of the engine, a compression test should be carried out after every 6 000 miles (10 000 km). This test should preferably be carried out in a workshop.

Drive belts

The belt tension can be checked by pressing in the fan belt at a point midway between the alternator and the fan. It should be possible to press down the belt there about $\frac{3}{8}$ " (10 mm) with normal pressure (55–80 lb = 7.5–11 kp).

The check can suitably be carried out in a Volvo workshop.

Also check the tension on the drive belt for the servo pump. It should be possible to depress the belt about $\frac{3}{16}$ " (5 mm).



Check coolant level

The cooling system must be well filled with coolant and not leak if it is to operate at maximum efficiency. Check the coolant level when filling up with fuel. **The level should be between the "Max" and "Min" marks on the expansion tank.** The check should be carried out with particular thoroughness when the engine is new or the cooling system has been empty.

Do not remove the filler cap other than for topping-up with coolant. Frequent removal may prevent coolant circulation between the engine and the expansion tank during engine warming up and cooling.

Top up with coolant

Top up with coolant by filling the expansion tank when its level has gone down to the "Min" mark. Use all the year round a mixture of 50 % reliable anti-freeze and 50 % water. Top up to the "Max" mark.

NOTE. Do not top up with water only, particularly during the wintertime. Water by itself reduces both the rust-protective and anti-freeze qualities of the coolant. It can also cause damage to the cooling system if ice should form in the expansion tank.

NOTE. In very warm parts of the country where there is little risk of frost, water can be used without anti-freeze.



Change coolant

The coolant retains its properties for approx. 12 000 miles (20 000 km) when it should be changed. A suitable time to do this would be in the autumn to preclude any damage by frost during the coming winter. To drain the cooling system, open the drain tap located on the right-hand side of the engine and disconnect the hose connected to the bottom of the radiator. The expansion tank is emptied by removing it from its brackets and lifting it to a sufficient height so that the coolant can flow into the radiator.

Before filling with new coolant, flush the entire system with clean water.



The cooling system is filled with coolant through the filler opening on top of the radiator. When this is being done, the heater control should be set to max, heat to ensure that the entire system is filled.

Fill the radiator to the top and fit on the cap. Then fill the expansion tank to the "Max" level or slightly above this.

Run the engine for a short period, switch off the ignition and allow the engine to cool. Check that the radiator is full and that the coolant in the expansion tank is at "Max". If necessary, top up the system.

Clean and adjust spark plugs

Remove the spark plugs after every 6000 miles (10 000 km) and adjust the electrode gap. The gap should be 0.028–0.032" (0.7–0.8 mm).

Change spark plugs

The spark plugs should be changed every 12 000 miles (20 000 km)

Tightening should preferably be done with a torque wrench. When fitting new plugs, be sure to fit the right type (see page 65).

When changing the plugs, check that the suppressor connectors are in good condition. Cracked or damaged connectors should be replaced.

Ignition system

The distributor contact breaker gap and the engine ignition timing should be checked every 6 000 miles (10 000 km). All adjusting work should be done by a workshop with the proper equipment. The distributor is one of the most sensitive units in the engine and careless handling can lead to decreased engine output and high fuel consumption or even serious damage to the engine.

Checking and adjusting carburetor — idling speed, rapid idle and choke

These checks should be made every 12 000 miles (20 000 km) by an authorized workshop.

Fuel

For the B 30 A engine fuel with an octane rating of min. 97 (ROT*) can be used. When driving chiefly in town traffic, fuel with an octane rating of 100 (ROT*) is recommended for the B 30 A engine.

For the B 30 F engine fuel with an octane rating of at least 91 (ROT*) should be used.

* or corresponding

Special instructions when working on the electronic fuel injection system

1. **Never** let the engine run without the battery being connected.
2. **Never** use a high speed battery charger as a starting aid.
3. When using a high speed charger to charge the battery in the vehicle, the battery should be disconnected from the rest of the electrical system.
4. The control unit **must not** overheat above 185° F (+85° C). The control unit must not be connected up (the engine started) when the ambient temperature exceeds 158° F (+70° C). (With paintwork, etc., when the vehicle is being stove-heated, it may not be driven out of the oven, it must be conveyed out. If there is risk of temperatures exceeding 185° F (+85° C), the control unit must first be removed.)
5. The ignition should be switched off before connecting up or disconnecting the control unit.
6. For all work with fuel lines, **great** care must be taken to ensure that no dirt enters the system. Even small dust particles can jam injectors.

Any work to be done on the electronic fuel injection system should be carried out by an authorized Volvo workshop which has the proper equipment for doing this.

ELECTRICAL SYSTEM**Check battery electrolyte level**

Check the battery electrolyte level when filling the tank with fuel. The level should be between $\frac{3}{16}$ — $\frac{3}{8}$ " (5—10 mm) above the top of the cell plates. If the level is too low, top up with distilled water.

Never check the electrolyte level by lighting a match. The gases formed in the cell are highly explosive.

Check state of charge of the battery

The state of charge of the battery should be checked after every 6 000 miles (10 000 km). Check with an hydrometer which shows the specific gravity of the battery acid. See page 66 for battery data. At the same time, check the lead terminals and terminal studs to make sure that they are tight, coated with grease and that the battery is firmly in position.

Check headlight alignment

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

This car is fitted with an alternator.

When changing the battery or when carrying out work involving the electrical system, the following should be observed.

1. A battery connection to the wrong terminal will damage the rectifiers. Before connections are made, check the polarity of the battery with a voltmeter.
2. If assist batteries are used for starting, they must be properly connected to prevent the rectifiers from being damaged. The negative lead from the assist battery for starting must be connected to the negative terminal stud of the car battery and the positive lead from the assist battery for starting to the positive terminal stud.
3. If a rapid charger is used for charging the battery, the car battery leads should be disconnected. A rapid charger may not be used as an aid in starting.
4. Never disconnect the battery circuit (for example, to change the battery) while the engine is running, as this will immediately ruin the alternator. Always make sure that all the battery connections are properly tightened.
5. If any electrical welding work is to be carried out on the vehicle, the ground lead and all the connecting cables of the alternator must be placed as near the welding point as possible.

Replace bulbs

To obtain maximum lighting effect and to forestall the chances of lights going out, the headlight bulbs should be changed every year, suitable during the autumn. The replacement of bulbs in the various lighting units is shown on the following pages. Make sure when fitting lamps that

the guide pin on the socket fits into its corresponding recess. When fitting bulbs, do not touch the glass with your fingers. The reason for this is that grease, oil or any other impurities can be carbonized onto the bulb and damage the reflector.

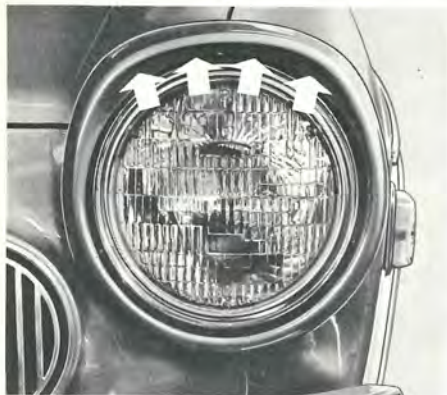


Replace bulb for roof light

To replace the bulb for the roof light, remove the light glass by pressing in the catch with a narrow screwdriver which is inserted in the opening on the right-hand side. Then pull the glass off. The bulb is then accessible for replacement.

Replace bulbs for instrument lighting and heater control lighting

Owing to the location of the bulbs, their replacement should be carried out by a Volvo workshop.



Changing headlights (Sealed Beam)

Sealed Beam headlights are changed as a complete unit.

1. Remove the outer rim by pulling it upwards — forwards.
2. Slacken the screws for the inner rim a couple of turns. Turn the inner rim and lift it off.
3. Remove the headlight contact by pulling it backwards. Lift out the headlight.
4. Fit the new headlight and make sure that it is fitted properly.
Check headlight alignment.



Replace bulbs for front turn indicators and parking lights

Remove the two Philips screws which hold the glass. The bulbs can now be removed by pressing them inwards and then turning them a little anti-clockwise. The inner bulb is for the parking light, the outer for the flasher.



Replace bulbs for rear turn indicators, parking lights, stop lights and reversing lights

Remove the two Philips screws which hold the glass. The bulbs can now be removed by pressing them inwards and turning them slightly anti-clockwise at the same time. The top bulb is the indicator, the one under that the reversing light and the bottom one for stop-rear light. Make sure the sealing strip fits well against the glass when refitted.



Replacing the bulbs for the license plate light

The two bulbs for the license plate light are mounted on a holder located under the trunk lock. Loosen the two screws which hold the glass and remove it. The bulb is now accessible for changing.



Replace bulbs for side marker lights

Remove the two Philips screws which hold the glass. The bulb can now be removed by pressing it inwards and turning it slightly anti-clockwise.

Replace bulbs for trunk and engine compartment lights

Release the screw holding the lamp globe. The bulb is then accessible for replacement.

Replace bulb for glove locker

The bulb is located under the dash above the glove locker door. To replace the bulb, press it in slightly and turn it anti-clockwise.

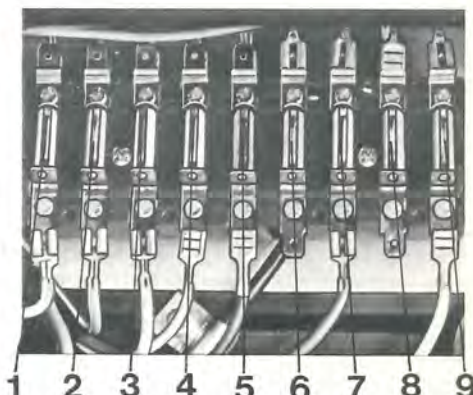


Changing fuses

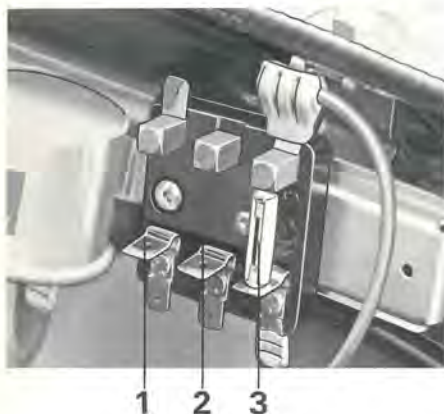
The electrical equipment is protected by a number of fuses grouped under the instrument panel and accessible after the control panel in front of the shift lever has been folded down. The panel is folded down after the screws at the upper corners have been slackened slightly with a screwdriver or small coin.

If a fuse has to be replaced, always make sure it is replaced with a fuse of correct rating. If fuses blow repeatedly, do not replace them with fuse of higher rating but have a workshop check the electrical system.

The various fuses protect the following components:



- | | |
|---|------|
| 1. Windshield wipers, washer | 8 A |
| 2. Warning lamp, fullbeam headlights | 5 A |
| 3. Heater fan, temperature and fuel gauges | 8 A |
| Warning lamps for brakes, oil pressure, battery charging, choke. Shift positions light, autom. transmission | |
| 4. Turn indicators, reversing lights, overdrive | 8 A |
| 5. Horn, elec. heated rear window, cigarette lighter | 16 A |
| 6. Interior lighting, glove locker light, warning buzzer for ignition key | 5 A |
| 7. Stop lights, clock, warning light | 8 A |
| 8. Left rear light and parking light, license plate light, clock light | 5 A |
| 9. Instrument panel light | 5 A |
| Right rear light and parking light | |
| Right side marker lights | |



On the Volvo 164 E there is also an extra fusebox located in the engine compartment on the left-hand wheel arch.

The fuse protects:

1. Reserve
2. Reserve
3. Fuel pump relay

8 A

POWER TRANSMISSION

Check clutch yoke travel

To avoid risk of the clutch slipping, the clutch yoke travel should be checked and adjusted if necessary every 6 000 miles (10 000 km).

Check propeller shaft

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

Replace booster cylinder air filter and overhaul brakes

Every third year or 36 000 miles (60 000 km) the car should be taken to a Volvo workshop for replacement of the booster cylinder air filter.

The brake system seals should also be replaced at the same time.

FRONT END

Check ball joints, steering rods, etc.

After every 12 000 miles (20 000 km) the vehicle should be taken to a workshop for a check on the front end concerning excessive play in the ball joints, steering gear, etc.

After every 12 000 miles (20 000 km) or at least once a year, the ball joint seal should also be checked for damage and leakage. When new seals are fitted they should be filled with the recommended grease.

BRAKES

Check brakes

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

WHEELS AND TIRES

General

The car is fitted with pressed steel wheels with wheel cap which is bolted to the hub cap.

The wheels have size 5½ J 15" F.H. All wheels are accurately balanced. The tires are 165 R 15 radial tubeless.

With the 165 R 15 tire, the maximum permissible speed is 115 mph (180 kmph).

If possible, radial tires should always be used, even in the wintertime.

The wheels should always be used on the same side throughout their use. This is particularly important for studded snow tires, otherwise it can happen that the studs loosen and fall out if the tire is placed on the other side.

Studded snow tires should also have a running-in period of between 300—600 miles (500—1000 km). During this period try to avoid driving hard round bends and at high speeds, also hefty braking and acceleration.

Snow chains must not be fitted since the space between the brake calipers and wheel rims does not permit this.

Check tire wear pattern

Check the tires at regular intervals for damage and abnormal wear, also for particles which can fasten in the tread. Have them balanced if necessary. Poorly balanced wheels will rapidly increase the wear on tires as well as make for poor riding comfort and driving characteristics.

The tires have a so-called "wear indicator" in the form of a number of narrow strips running across or parallel to the tread. When about 1/16" (1.5 mm) is left on the tread, these strips show up and warn the car owner in good time that the tire is showing signs of wear.

Check tire pressure

Make a habit of checking the pressure in the tires regularly. The simplest way to do this is to check the pressure at a service station while filling up with fuel. See page 67 for the correct air pressure. Do not forget the spare wheel when checking the air pressure.

During driving, the temperature of the tires rises and also the air pressure in relation to the speed of the vehicle and its load. **Normally the air pressure should only be checked when the tires are cold.** When the tires are warm, a change in pressure should take place only when air must be pumped into the tires.

Excessively low air pressure is one of the most common reasons for tire wear. Tires which are insufficiently inflated also result in difficult steering and high fuel consumption. Too high air pressure tends to make for poor riding comfort.

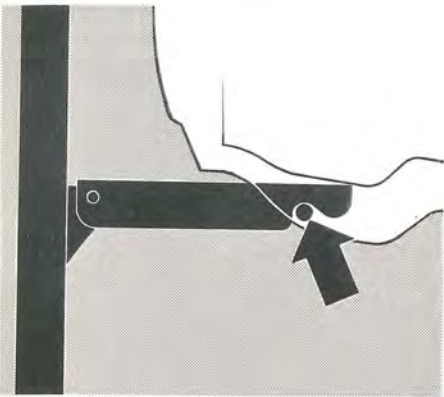
Be careful when parking the car next to the pavement not to damage the tires against the pavement curb.



1



2



3



4

Changing a wheel

The spare wheel is stowed in a recess to the right in the trunk. The jack and tool kit are kept next to the spare wheel. Before the vehicle is jacked up, the parking brake should be applied and one of the gears engaged.

Removing

1. Unscrew and take off the wheel cap.
2. Loosen the wheel nuts $\frac{1}{2}$ —1 turn with the help of the box spanner. All the nuts have right-hand threads which are loosened by turning them in an anti-clockwise direction.
3. Insert the lifting arm of the jack in the appropriate jack attachment of the wheel to be changed. Make sure the jack fits well in the attachment. Jack up the side of the car far enough to lift the wheel off the ground.
4. Unscrew the wheel nuts completely and lift off the wheel. Be careful when lifting off the wheel that the threads of the studs are not damaged.



Fitting

1. Clean the contact surfaces between wheel and hub. Fit the hub cap on the wheel rim from the inside of the rim.
2. Lift on the wheel.
3. Tighten the nuts until the wheel makes good contact with the flange.
4. Lower the vehicle and tighten the nuts alternately.
5. Fit the wheel cap.

Do not rotate the raised wheel if the car is fitted with a limited slip differential as this will also move the other rear wheel on the ground, so that the car may topple off the jack.

BODY

Washing

The car should be washed often since such things as dirt, dust, dead insects, tar spots, etc. usually adhere firmly to the body and may damage the paintwork. Washing also helps to counteract rusting. During the winter, special care should be taken to ensure that all road salt residue is washed off as soon as possible, otherwise corrosion can occur.

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

A detergent can be used to facilitate washing. Special detergents are now available on the market — even dish-washing fluids can be used. A suitable mixture is about $1\frac{1}{2}$ — $3\frac{1}{2}$ fl. ozs. (5—10 cl) of fluid dish washer to 2.6 US galls=2.2 Imp. galls (10 liters) of water. Asphalt spots and tar pittings can easily be removed with white spirit or equivalent, but this should be done after the washing.

When a detergent is used, the car should be well rinsed down with clean water afterwards. Begin with the roof of the car and work down the body. Then dry carefully

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

When washing the car, remember to clean the drain holes in the doors and bottom rails.

Note. When washing the car in a washing bay, the ventilation controls should be closed. In certain cases, the air intakes for the car heater should be covered.

Polishing (waxing)

The vehicle does not need polishing until the surface finish begins to lose its lustre and normal washing is no longer sufficient to make it shine again and remove the layer of dirt on the surface. Under normal conditions it is sufficient to polish the vehicle a couple of times a year on condition that it is carefully looked after and thoroughly washed as soon as it has become dirty or dusty. Before the vehicle is polished, it should be carefully washed and dried to avoid scratches on the paintwork. Before applying wax, make sure that the surface is absolutely clean.

It may often be necessary to use white spirit for cleaning. Waxing should neither be considered as a substitute for polishing nor as a necessary protection for the paintwork against unfavourable weather. For the most part waxing is not necessary until one year after delivery of the car.

Touching-up surface finish damage

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

Damage caused by flying stones requires immediate attention if rusting is to be avoided. Always make a habit, therefore, of checking the finish regularly and touch-up if required. Volvo dealers can supply you with suitable touching-up paint in tins or spray bottles. Always make sure that you get the right colour. Touching-up is as follows:

1. If flying stones should penetrate to the metal of the bodywork, the damaged surface is to be scraped completely clean with a penknife or similar. If, however, the paintwork is not damaged by stones, then all that is needed is light scraping to remove the dirt.
2. In the event of severe damage due to flying stones, it is necessary to treat the spot concerned with anti-rust primer. The primer should cover completely the scratches and the edges rubbed off.
3. When the anti-rust primer has dried, genuine Volvo paint is applied. Stir the paint well or shake the spray bottle thoroughly before use. Apply several thin coats of the paint, allowing it to dry thoroughly between each application.

Chromed parts

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

Anti-rust treatment

Your Volvo is anti-rust treated at the factory. Inspection and any touching-up of the anti-rust protection should be done at regular intervals and at least once a year. The enclosed body sections should also be anti-rust treated by means of spray application at least once a year.

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

Cleaning the upholstery

The leather upholstery is cleaned with a damp cloth, possibly with a mild soap solution. For removal of difficult spots, consult an expert concerning choice of cleaning agent.

The fabric-plastic in the upholstery is cleaned with a mild detergent. For more difficult spots, use a good domestic detergent.

On no account must gasoline, naphta, carbon tetrachloride or similar cleaning agent be used on the upholstery, since these can damage both leather and fabric-plastic.

Cleaning floor mats

The floor mats should be hoovered or brushed clean regularly, especially during the winter when they should be taken out for drying. Take the opportunity of cleaning thoroughly at the same time where the mats have lain.

Spots on textile mats can be removed with a mild detergent.

BEFORE A LONG-DISTANCE TRIP

If you are thinking of taking a long journey with your car, you should have it checked at a Volvo workshop. You will enjoy your journey better if you know that your car is in perfect trim. Irritating incidents can be avoided as well as expensive and time-absorbing stoppages. Wherever you go there should be a Volvo workshop within easy call to attend to your car if required. However, it is always a good idea before making a trip to ensure that, at least on a minor scale, you have with you a comprehensive touring kit. This is particularly the case if you anticipate widely varying conditions as regards climate, roads and the prevalence of much dust. Many workshops stock special kits for this purpose. Remember when filling up with fuel to observe the existing fuel recommendations. If you prefer to look over your vehicle yourself, the following tips are worthwhile noting:

1. Check brakes, front wheel alignment and steering gear.
2. Check engine and drive units with regard to fuel, oil coolant leakage.
3. Examine tires carefully. Replace worn tires.
4. Check engine is running satisfactorily and that fuel consumption is normal.

5. Examine state of charge of the battery and clean terminals.
6. Check tool equipment.
7. Check lighting.

COLD WEATHER

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

Engine cooling system

A good quality anti-freeze should be used all the year round. Thus, the cooling system should always contain water plus anti-freeze and rust inhibitor, even during the summer. Experience has also shown that extremely weak anti-freeze solutions (10—20 %) are very unfavorable from the point of view of rust protection. For this reason, the quantity of anti-freeze should amount to about 50 % of the coolant, that is, 6.5 qts. = 5.5 Imp. qts. (6.2 liters), this lowering the freezing point to -30° (-35° C). Radiator spirit is not recommended as an anti-freeze agent since it evaporates at normal engine temperature.

Engine lubricating system

During the winter multigrade oil SAE 10 W-30 should be used for the engine lubricating system. At very low temperatures (below -0° F = -18° C) multigrade oil SAE 5 W-20 is recommended. These oils reach the lubricating points in the engine more easily at low temperature and also facilitate cold starting. See page 43.

Engine fuel system

During the wintertime with large variation in temperature, condensation water forms

in the fuel tank and this can impair the running of the engine. This can be eliminated by adding a suitable carburetor spirit (but not methylated spirit) to the fuel. Also, there is less risk of condensation water forming if the tank is kept well-filled.

Electrical system

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

Brake system

During very cold weather the brakes are subjected to splash and condensation water which can result in the parking brake freezing up if left on.

When you park the car, do not apply the parking brake but engage first gear or reverse and if possible place blocks behind the wheels. See also page 25.

Windshield washer

Just as anti-freeze is added to the cooling system during the winter to prevent frost damage, anti-freeze should also be added to the water container for the windshield washers. This is particularly important because the windshield during the winter frequently becomes dirty and is often splashed with water which rapidly freezes and thus necessitates the frequent use of the windshield washers and wipers. 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 this in good time and lubricate the locks in advance with some suitable anti-freeze agent. Such agents are now available in small handy tubes which can easily find room in a handbag or coat pocket.

WHEN THE ENGINE STALLS OR WILL NOT START

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

The engine does not start although starter motor turns it over at normal speed

1. Check to make sure there is fuel in the tank.
2. (B 30 A) If the engine is hot, start the engine with the accelerator pedal fully depressed.
3. (B 30 F) Check to make sure the fuel pump is functioning properly. This is done by turning the ignition key to driving position. This will run the pump for 1 to 1½ seconds. If the pump does not function, check to make sure that the pump fuse is not blown.
4. (B 30 F.) Attn. Do not touch the accelerator pedal if the engine is cold. If the engine is hot, start it with the accelerator pedal depressed halfway. Avoid repeated short attempts at starting. Instead, let the starter motor run a little longer (max. 15—20 seconds) at each try.

5. With damp weather, when flashover is possible, wipe the spark plug isolators clean. Release the distributor cap and wipe it dry. Check to make sure that the ignition leads are properly fitted in the distributor head and ignition coil.
6. (B 30 A) Check to make sure that the fuel pipe connections to pump and carburetor do not leak and that fuel reaches the carburetor.
7. (B 30 F) Check to make sure that all contacts for sensors and injectors are properly fitted.
8. If the engine turns over without starting, there may be too much fuel in the cylinders, with damp plugs as a result. Screw out the plugs and wipe them dry. Check the electrode gap.

If the engine misfires, the reason can be:

1. That one of the ignition leads has loosened in the distributor cover or from the spark plug.
2. That one or more of the spark plugs is coated with soot or oiled up, in which case the plug concerned should be cleaned or changed and the spark plug gap adjusted.
3. That the distributor cap and rotor arm are cracked or damaged.
4. That one of the ignition leads is in poor condition.
5. That the ignition points gap in the distributor is insufficient or non-existent.
6. That the ignition points are badly burned.
7. That the electronic system is at fault (B 30 F). In which case have it checked by a workshop.

How to start your car on a downgrade

Switch on the ignition, pull out the choke if required, engage 3rd gear or even 4th and let the car roll downwards with the clutch pedal depressed. When the speed is up to 9—12 mph (15—20 kmph), and not before, release the clutch pedal slowly.

When towed: Secure the towline to the towing loop. The car is towed at an even speed in 2nd gear. Try starting as suggested in the previous paragraph.

Attention! If your car has automatic transmission do not attempt to start it by towing. See recommendations on page 24.

SPECIFICATIONS

MEASUREMENTS AND WEIGHTS

Length	185"	4705 mm
Width	67"	1705 mm
Height unladen (ready to drive)	56.5"	1437 mm
Wheelbase	107"	2720 mm
Ground clearance, fully laden	4.9"	125 mm
Track, front	53.2"	1350 mm
rear	53.2"	1350 mm
Turning circle	33.8 ft	10.3 m
Curb weight (incl. driver)	3135—3210 lb	1425—1470 kg
	depending on vehicle type	
Permissible total weight	4070 lb	(1850 kg)
Vehicle capacity weight	920 lb	(420 kg)
Permissible axle pressure, front	1980 lb	(900 kg)
rear	2200 lb	(1000 kg)
Permissible roof rack load	220 lb	(100 kg)
Max. permissible trailer weight	2000 lb	(910 kg)
Max. hitch load	160 lb	(75 kg)

ENGINE

Type designation	
Output (DIN)	
Output (SAE)	
Max. torque (DIN)	
Max. torque (SAE)	
Number of cylinders	
Bore	
Stroke	
Displacement	
Compression ratio	
Valves	
Valve clearance, warm and cold inlet	
exhaust	
Idling speed (warm engine)	

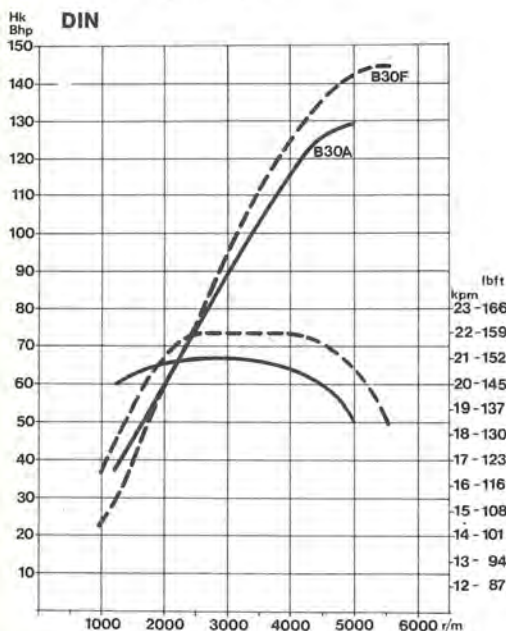
B 30 A

130 hp/5000 rpm
145 hp/5500 rpm
152 lbft (21 kpm) 2500 rpm
163 lbft (22.5 kpm) 3000 rpm
6
3.50" (88.90 mm)
3.15" (80 mm)
2.978 liters
9.3:1
Overhead
0.020—0.022"
(0.50—0.55 mm)
0.020—0.022"
(0.50—0.55 mm)
800 rpm
(700 rpm with BW 35)

B 30 F

145 hp/5500 rpm
160 hp/5800 rpm
160 lbft (22 kpm) 2500 rpm
166 lbft (23 kpm) 2500 rpm
6
3.50" (88.90 mm)
3.15" (80 mm)
2.978 liters
8.7:1
Overhead
0.020—0.022"
(0.50—0.55 mm)
0.020—0.022"
(0.50—0.55 mm)
900 rpm
(800 rpm with BW 35)

Output and torque diagram



Cooling system

Type

Thermostat, begins to open at
fully open at

Fan belt, designation
(early prod. B 30 A)

Positive pressure
10 psi = (0.7 kp/cm²)
closed system
180° F (82° C)
195° F (90° C)
HC—38×888
HC—38×875

Ignition system

Firing order

1—5—3—6—2—4

Ignition setting

stroboscope setting
(vacuum governor disconnected)

B 30 A

B 30 F

Spark plugs, B 30 A

B 30 F

spark plug gap

tightening torque

Distributor, direction of rotation

ignition points gap

10° BTDC, 600—800 rpm
10° BTDC, 600—800 rpm
0.028—0.032" (0.7—0.8 mm)
Bosch W 200 T35**
Bosch W 200 T35*
25—29 lbft (3.5—4.0 kpm)
Anti-clockwise
0.010" (0.25 mm)

Electrical system

Voltage

12 V

Battery, type

Tudor 6 EX4 F o.p.*

capacity

60 Ah

electrolyte, specific gravity

1.28

recharged at

1.21

Alternator max. output

770 W

max. current

55 A

Starter motor, output

1 hp

* or corresponding

SPECIFICATIONS

Lamp bulbs (12 V)	Power	Socket	Number
Headlights	45/50 W	Sealed Beam	2
Parking lights, front	5 W	Ba 15 s	2
Flashers, front and rear	32 cp	Ba 15 s	4
Stop lights — Rear lights	32/4 cp	BAY 15 d	2
Reversing lights	15 W	Ba 15 s	2
License plate light	5 W	SV 8.5	2
Interior light	10 W	SV 8.5	1
Glove compartment light	2 W	Ba 9 s	1
Engine and luggage compartment lights	18 W	SV 8.5	2
Instrument light	3 W	W 2.2 d	2
Light, heater controls	1.2 W	W 1.8 d	3
Clock light	2 W	Ba 7 s	1
Side marker lights	5 W	Ba 15 s	4
Warning lamps:			
charging	1.2 W	W 1.8 d	1
turn indicators	1.2 W	W 1.8 d	1
brakes	1.2 W	W 1.8 d	1
headlights	1.2 W	W 1.8 d	1
oil pressure	1.2 W	W 1.8 d	1
elec. heated rear window	1.2 W	W 1.8 d	1
overdrive	1.2 W	W 1.8 d	1
emergency warning flashers	1.2 W	W 1.8 d	1
choke	1.2 W	W 1.8 d	1
Shift positions, autom. transm.	1.2 W	W 1.8 d	1

Fuses (in ordinary fusebox)

4	5 A
4	8 A
1	16 A

Fuse (in fusebox, engine compartment)

1	8 A (B 30 F)
---	--------------

POWER TRANSMISSION

Clutch

Release lever free travel approx. $\frac{3}{16}$ " (4–5 mm)

Gearbox

Type designation	M 400	M 410	BW 35
Reduction ratios:			
1st speed	3.54:1	3.54:1	2.39:1
2nd speed	2.12:1	2.12:1	1.45:1
3rd speed	1.34:1	1.34:1	1:1
4th speed	1:1	1:1	—
(with overdrive)	—	0.797:1	—
Reverse	3.54:1	3.54:1	2.09:1

× the converter ratio

Rear axle

Type	Hypoid bevel gear	
Reduction ratio	3.73:1	3.31:1 (for BW 35)

Speed in mph (kmph) at 1 000 engine rpm

Rear axle	3.73:1	3.73:1
Transmission	M 400	M 410
1st speed	5.5 (8.9)	5.5 (8.9)
2nd speed	9.3 (14.8)	9.3 (14.8)
3rd speed	14.6 (23.5)	14.6 (23.5)
4th speed	19.6 (31.5)	19.6 (31.5)
4th speed + overdrive	—	24.7 (39.5)
Reverse	5.5 (8.9)	5.5 (8.9)

FRONT WHEEL ALIGNMENT

The alignment values apply to an unladen car but include fuel, coolant and spare wheel.

Toe-in	1/8" (2-5 mm)
Camber	0 to +1/2°
Caster	0 to +1°
King pin inclination	7.5°

WHEELS AND TIRES

Rim size	5 1/2 J 15 F.H.
Tire size	165 R 15

Air pressure cold tires, psi (kp/cm ²)	Front	Rear
1-3 persons	27 (1.9)	27 (1.9)
Fully loaded	29 (2.0)	34 (2.4)

For sustained high speed driving over 75 mph, the pressure must be increased by 4 psi (0.3 kp/cm²). However, total pressure must not exceed 36 psi (2.5 kp/cm²).

CAPACITIES

Fuel tank	15.3 US galls./12.8 Imp. galls. 58 liters
Cooling system	13 US qts./11 Imp. qts. 12.4 liters (of which expansion tank 1.5 US qts./ 1.3 Imp. qts./1.5 liters)
Oil capacity,	
engine, at oil change	5.5 US qts./4.5 Imp. qts. (5.2 liters)
incl. oil filter	6.3 US qts./5.3 Imp. qts. (6.0 liters)
transmission (M 400)	1.3 US pints/1.0 Imp. pint (0.6 liter)
(M 410)	3.0 US pints/2.5 Imp. pints (1.4 liters)
(BW 35)	17.7 US pints/14.8 Imp. pints (8.4 liters)
rear axle	3.4 US pints/2.8 Imp. pints (1.6 liters)
servo steering	2.5 US pints/2.1 Imp. pints (1.2 liters)

TOOL KIT

The tool kit contains:
Wheel nut spanner, tommy bar.

CONSUMER INFORMATION

CONSUMER INFORMATION

Acceleration and passing ability
Vehicle stopping distance
Tire reserve load

The information about the 1972 Volvo 164 and 164 E shown in the following pages is presented in accordance with Federal requirements for comparison with other makes and models. The exacting test procedures established by the National Highway Traffic Safety Administration were followed to obtain the figures.

Notice: The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions and the information may not be correct under other conditions.

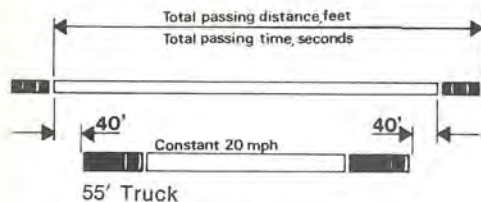
Acceleration and Passing Ability

This chart indicates passing times and distances that can be met or exceeded by 1972 Volvo 164 and 164 E in the situations diagrammed below.

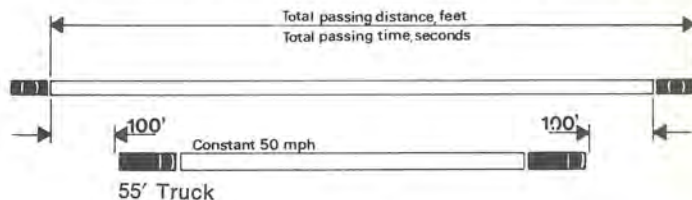
The low-speed pass assumes an initial speed of 20 mph and a limiting speed of 35 mph. The high-speed pass assumes an initial speed of 50 mph and a limiting speed of 80 mph.

LOW SPEED

Initial speed: 20 mph Limiting speed: 35 mph

**HIGH SPEED**

Initial speed: 50 mph Limiting speed: 80 mph



Model	Description of Vehicle	Low Speed (20—35 mph)	
		Feet	Seconds
164, Std. Trans., Overdrive		384	7.9
164, Automatic		410	8.8
164 E, Std. Trans., Overdrive		384	7.9
164 E Automatic		397	8.4

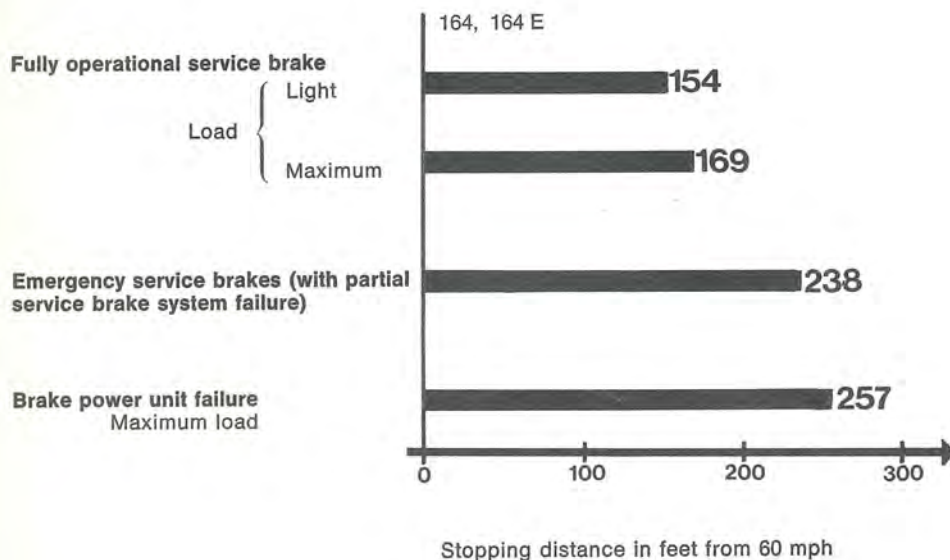
Model	Description of Vehicle	High Speed (50—80 mph)	
		Feet	Seconds
164, Std. Trans., Overdrive		1164	12.2
164, Automatic		1230	13.0
164 E, Std. Trans., Overdrive		1099	11.2
164 E, Automatic		1155	12.1

CONSUMER INFORMATION

Vehicle Stopping Distance

This chart indicates braking performance that can be met or exceeded by 1972 Volvo 164, 164 E without locking the wheels, under different conditions of loading and with partial failures of the braking system.

The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.



Tire Reserve Load

This chart lists the tire size designations recommended by Volvo for use 1972 164 and 164 E with the recommended inflation pressure for maximum loading and the tire

reserve load percentage for each of the tires listed. The tire reserve load percentage indicated is met or exceeded by each vehicle to which the chart applies.

Model	Manufacturer's Recommended Tire Size	Recommended Cold Inflation Pressure psi		Tire Reserve Load (%)
		Front	Rear	
164, 164 E	165 R 15	29	34	5.8

The difference, expressed as a percentage of tire load rating, between (a) the load rating of a tire at the vehicle manufacturer's recommended inflation pressure at

the maximum loaded vehicle weight and (b) the load imposed upon the tire by the vehicle at that condition.

WARNING. Failure to maintain the recommended tire inflation pressure or to increase tire pressure as recommended when operating at maximum loaded vehicle weight, or loading the vehicle beyond the capacities specified on the tire placard affixed to the vehicle, may result in unsafe operating conditions due to pre-

mature tire failure, unfavourable handling characteristics, and excessive tire wear. The tire reserve load percentage is a measure of tire capacity not of vehicle capacity. Loading beyond the specified vehicle capacity may result in failure of other vehicle components.

Symbols



Brake fluid

Grade: SAE J 1703. DOT 3 and DOT 4 can also be used



Rear axle oil

Grade: MIL-L-2105 B
Viscosity: See page 45



Special lubricants

See resp. note



Light engine oil



Engine oil

Grade: "For API Service SD, SE or CC" (API Service MS)
See also page 43

Notes to lubricating chart

Note 1. The wheel bearings are packed at the factory with a special type of grease intended to last the entire lifetime of the bearings. In connection with such workshop operations involving uncovering the wheel bearings, the bearings should be cleaned and then lubricated with high-class, durable grease according to the instructions in the service manual. Except on the above occasion, subsequent adding or changing of lubricant is not required. The rear wheel bearings are lubricated, so changed of lubricant is unnecessary. After the bearings have been removed, however they should be lightly greased with wheel bearing grease.

Note 2. Servo steering: Check that the oil level in the servo steering container is 5—10 mm ($\frac{5}{16}$ "") above the level mark. Use Automatic Transmission Fluid, Type A, or Dexron.

Note 3. Check that the fluid reaches up to the MAX mark.

Note 4. Lubricate the felt wick under the rotor and fill a few drops of light engine oil into the lubricating cup.

Note 5. Check every 6 000 miles (10 000 km) that the oil reaches up to the filler plug. Concerning oil change, see page 44.
N.B. The type of transmission will decide the type of lubricant to be used.

Note 6. At every engine oil change check that the oil level in the center spindle of the carburetors reaches up to about $\frac{1}{4}$ " (6 mm) from the edge of the spindle. Use Automatic Transmission Fluid (ATF).

Note 7. Change the oil filter every 6 000 miles (10 000 km). See page 47.

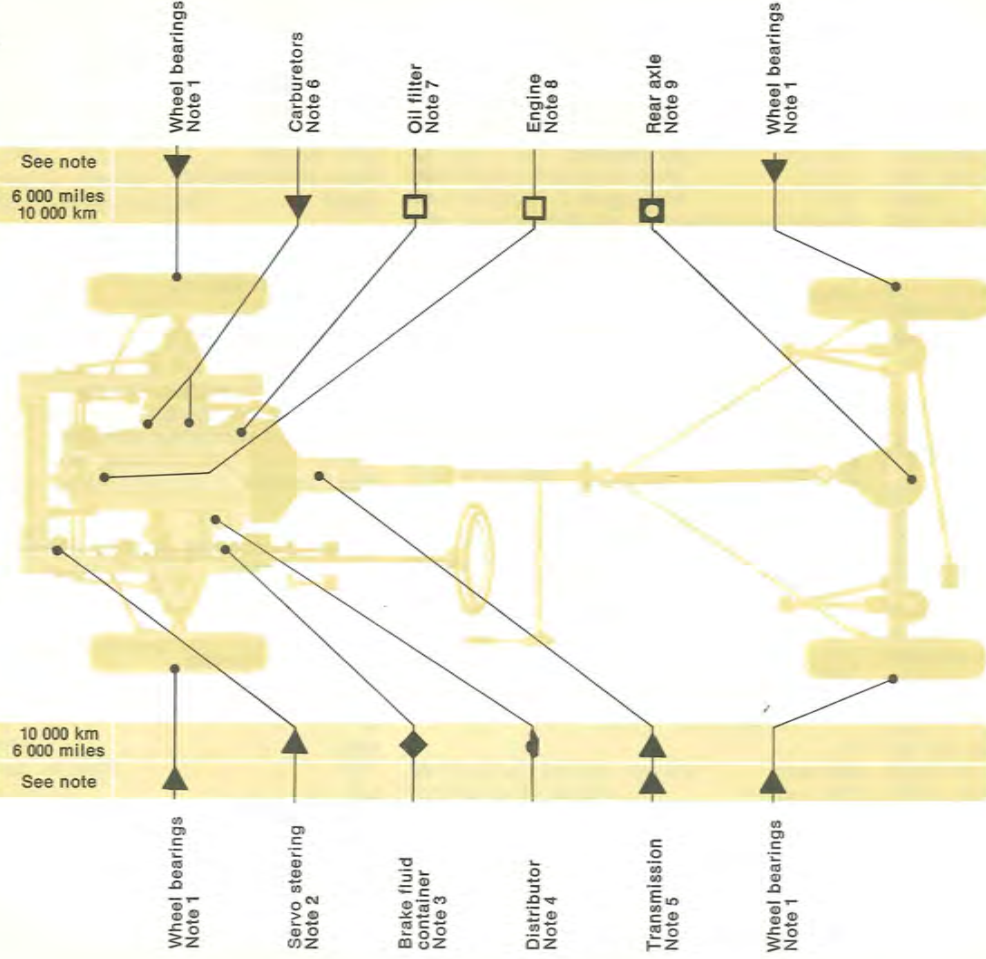
Note 8. Check the oil level when filling the tank. Concerning oil changing, see page 43.

Note 9. Check every 6 000 miles (10 000 km) that the oil reaches up to the filler plug. Concerning lubricant for rear axle with limited slip differential, see page 45.

LUBRICATING CHART

Lubricate after every	10 000 km 6 000 miles
	See note

Lubricate after every	See note 6 000 miles 10 000 km
-----------------------------	--------------------------------------



Oil capacities

Engine excl. oil filter
incl. oil filter
Gearbox, M 400
M 410
BW 35
Rear axle
Servo steering

approx. 5.5 US qts./4.5 Imp. qts. (5.2 liters)
approx. 6.3 US qts./5.3 Imp. qts. (6.0 liters)
approx. 1.3 US pints/1.0 Imp. pints (0.6 liter)
approx. 3.0 US pints/2.5 Imp. pints (1.4 liters)
approx. 17.7 US pints/14.8 Imp. pints (8.4 liters)
approx. 3.4 US pints/2.8 Imp. pints (1.6 liters)
approx. 2.5 US pints/2.1 Imp. pints (1.2 liters)

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WHEN FILLING THE TANK

Check weekly

The only servicing measures required between the 6000 miles (10 000 km) inspections are the adjacent checks, which should be carried out when filling the tank. Given here is a summary of these checks. A more detailed description is to be found in the pages following under the heading "SERVICING".

Check to make sure you have the correct octane, that is, 97 octane for B 30 A and 91 octane for the B 30 F engine.

Headlights and other lighting

Horn

Windshield wipers

Oil level in engine

The oil level should be between the marks on the dipstick. If necessary top up with multigrade oil, see also page 43.

Coolant level

The level should be between the MAX and MIN marks on the expansion tank. If necessary top up with a mixture of 50 % antifreeze and 50 % water.

Windshield fluid level

The windshield fluid container should always be well filled (in winter with water and anti-freeze).

Brake fluid level

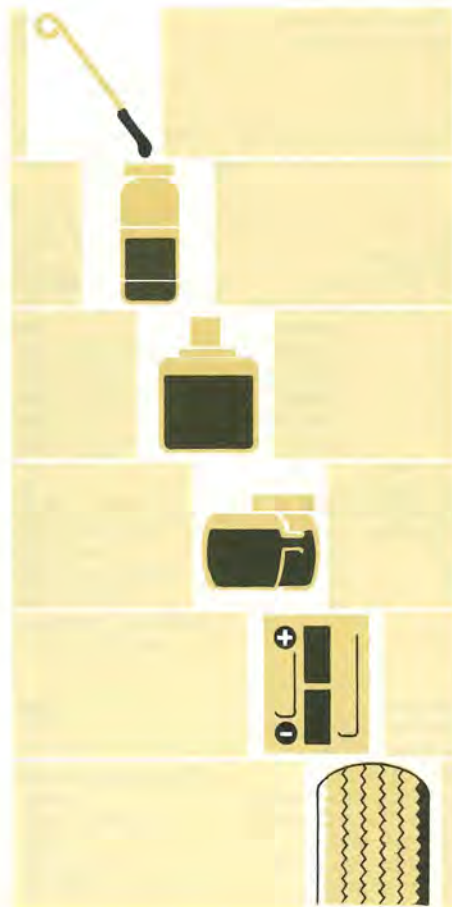
Check without removing cap that the fluid level is above the MIN mark on fluid container. If necessary top up with brake fluid SAE J 1703.

Battery electrolyte level

The level should be between $\frac{3}{16}$ — $\frac{3}{8}$ " (5—10 mm) above the cell plates.

Air pressure in tires

Concerning recommended air pressure in tires, see table on page 67.



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

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