

Part 1

# SERVICING AND MAINTENANCE

## CONTENTS

Instructions for oil level checking and changing .....	1 : 1
Engine .....	1 : 1
Gearbox .....	1 : 1
Final drive .....	1 : 3
Steering gear .....	1 : 3
Instructions for lubricating .....	1 : 4
Distributor .....	1 : 4
Ball joints .....	1 : 4
Body .....	1 : 5
Checks in connection with filling the tank .....	1 : 6
Lubricating chart	

# LUBRICATION

## INSTRUCTIONS FOR OIL LEVEL CHECKING AND CHANGING

### ENGINE

The oil level should be checked with the help of the dipstick, see Fig. 1-15. With a new or reconditioned engine, the oil should be changed after the first 2,500 km (1,500 miles). Subsequent changing should normally take place every 10,000 km (6,000 miles), however, under the following conditions:

The intervals for changing engine oil are dependent to a very great extent on the oil used. For lubrication of the engine, oil grade "For Service MS" should be used. Concerning viscosity a **multigrade oil** is primarily recommended. This type of oil is better suited for demanding operating conditions such as continuous driving in city traffic interrupted by frequent starting and stopping and with the engine idling for lengthy periods. **For engine oil with viscosity SAE 10 W-30 (multigrade), 10 W-40 or 20 W-50, oil changing takes place every 10,000 km (6,000 miles). If an engine oil with viscosity SAE 10 W (singlegrade), 20/20 W or 30 is used, the oil should be changed every 5,000 km (3,000 miles), however, at least twice a year.**

The oil should be drained immediately after the car has been driven and while the engine is still warm. To drain the oil, remove the oil drain plug, see Fig. 1-1. When all the oil has run out, check the washer and screw the plug tightly into position again. Oil is added through the rocker arm casing after removing the filler cap.

As is shown above, an engine oil with grade "For Service MS" is used for subsequent topping-up. Concerning viscosity, multigrade oil SAE 10 W-30 is primarily recommended. At very low temperatures (below  $-20^{\circ}\text{C}$  =  $-4^{\circ}\text{F}$ ) or when cold-starting difficulties are anticipated, multigrade oil SAE 5 W-20 is recom-

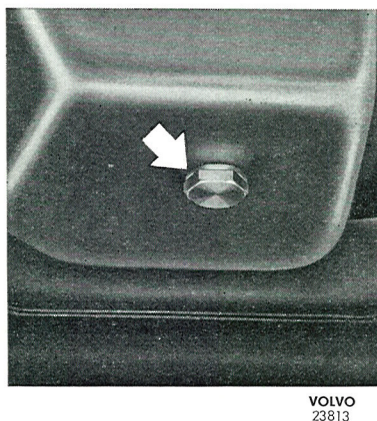


Fig. 1-1. Drain plug on sump

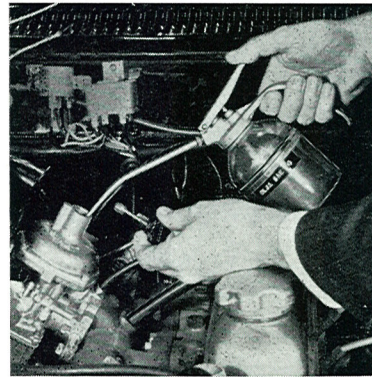


Fig. 1-2. Checking the oil level in centre spindle

mended. If multigrade oil is not used, the viscosity should be SAE 10 W below  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ), SAE 20/20 W between  $-10^{\circ}$  +  $30^{\circ}\text{C}$  ( $14$  and  $90^{\circ}\text{F}$ ) and SAE 30 for above  $30^{\circ}\text{C}$  ( $90^{\circ}\text{F}$ ), all this presuming a stable air temperature.

The quantity of oil changed is 3.25 litres (5.72 Imp. pints = 6.86 US pints). With the oil filter included, the corresponding quantity is 3.75 litres (6.60 Imp. pints = 7.91 US pints).

### Carburettors

Each time the oil in the engine is changed, the oil level in the centre spindle of the carburettors should be checked to see that it reaches up to about 6 mm ( $1/4$ ") from the edge of the spindle. If this is not the case, oil approved as "Oil for Automatic Transmissions, Type A" should be used for filling up.

### GEARBOX (WITHOUT OVERDRIVE)

To check the oil level, remove the filler plug (1, Fig. 1-3) and see whether the oil reaches up to the hole for the plug.

In the case of a new or reconditioned gearbox, the oil should be changed and the gearbox flushed out after the first 5,000 km (3,000 miles). The oil should be subsequently changed after every 40,000 km (25,000 miles).

The oil should be drained off immediately after the car has been driven and while the oil is still warm. When draining the oil, remove the plugs marked 1 and 2 in Fig. 1-3.

Oil for flushing is added through the filler hole (1, Fig. 1-3) after the drain plug has been screwed back into position. The engine should then be allowed to run for a few minutes with one of the gears engaged



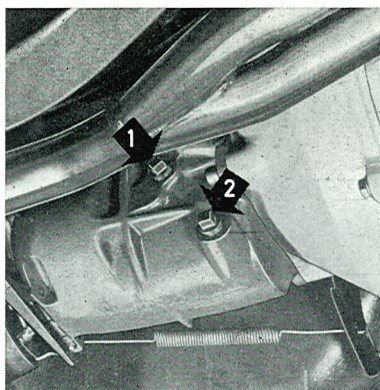


Fig. 1-3. Gearbox

1. Filler plug 2. Drain plug

and both the rear wheels jacked up. The engine should then be stopped, the rear wheels lowered and the oil drained off.

**WARNING.** On no account must only one of the rear wheels of a vehicle equipped with a differential brake be jacked up since torque is transferred to the other wheel in contact with the ground so that the vehicle can topple off the jack.

Fill up with new oil after the drain plug (2) has been screwed tightly back into position. The oil should reach up to the filler hole (1). Screw the filler plug tightly back into position.

Gear oil SAE 80 is used for the gearbox all the year round. Where the air temperature is continuously above 30° C (90° F), SAE 90 should, however, be used. As an alternative, engine oil with viscosity SAE 30 or multigrade SAE 20 W-40 can be used all the year round.

The oil changing quantity is 0.75 litre (1.42 Imp. pints = 1.58 US pints).

## GEARBOX WITH OVERDRIVE

To check the oil level, remove the filler plug (1, Fig. 1-3) and then check to see that the oil reaches up to the hole for the plug.

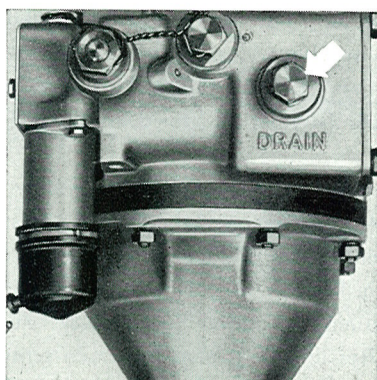


Fig. 1-4. Overdrive

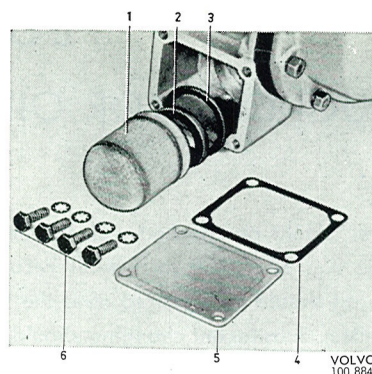


Fig. 1-5. Checking the oil level

1. Max. oil level, cold transmission  
2. Min. oil level, cold transmission  
3. Max. oil level, warm transmission  
4. Min. oil level, warm transmission

In the case of a new or reconditioned gearbox, the oil should be changed after the first 5,000 km (3,000 miles). The oil should subsequently be changed after every 40,000 km (25,000 miles).

The old oil should be drained off after the car has been driven and while the oil is still warm. Observe due care that the oil does not come into contact with your skin. To empty the oil, remove the plugs (1 and 2, Fig. 1-3) and the cover (Fig. 1-4). Also clean the oil filters, see Group 43 B.

Refit the drain plugs and bolt on the cover securely. Fill with new oil. Fill slowly to enable the oil run over into the overdrive. The oil should reach up to the filler hole (1, Fig. 1-3). Screw tight the filler plug. Engine oil with viscosity SAE 30 is used all the year round for gearboxes with overdrive. As an alternative, multigrade oil SAE 20 W-40 can be used. The oil changing quantity is 1.6 litres (2.82 Imp. pints = 3.38 US pints).

## AUTOMATIC TRANSMISSION

Normally oil changing only needs to be carried out when the transmission is reconditioned. The oil level, on the other hand, should be checked after every 10,000 km (6,000 miles).

When about to carry out the oil level check, make sure that the vehicle is on level ground. Move the selector lever to position "P" and let the engine run at idling speed. The filler pipe with dipstick is located in front of the bulkhead on the right-hand side of the engine. Wipe off the dipstick with a nylon cloth, paper or chamois leather. Do not use waste or fluffy rags. Insert the dipstick, pull it up and check the oil level, see Fig. 1-5. **Note that there are different levels for a warm or cold transmission.** For a warm transmission, which is the case after driving 8–10 km (5–7 miles) the upper section applies (3 and 4, Fig. 1-5).



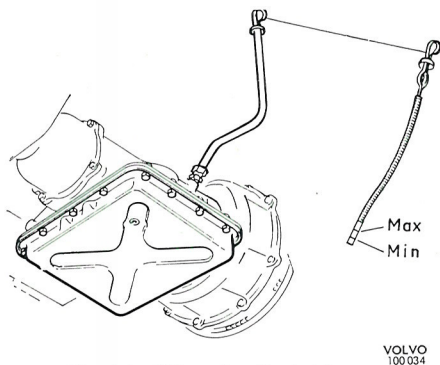


Fig. 1-6. Filler plug final drive

The lower section (1 and 2) applies to a cold transmission. The text on the dipstick will also remind you of this.

If necessary, fill up with oil until the level reaches the "Max" mark. Do not fill above this mark, as this can cause the transmission to become overheated. The difference between the "Min" and "Max" marks is about 0.5 litre (1 pint). For topping-up use oil approved as "Oil for Automatic Transmissions, Type A". If frequent filling up is found to be necessary, this indicates leakage which must be put right immediately.

## FINAL DRIVE

To check the oil level, remove the filler plug (1, Fig. 1-6) and then check to ensure that the oil reaches up to the hole for the plug.

With a new or reconditioned final drive, the oil should be changed after the first 5,000 km (3,000 miles). Oil changing should thereafter be carried out only when overhauling is being done.

The oil should preferably be changed immediately after the vehicle has been driven and while the oil is still warm. The oil is sucked up through the filler hole. It can also be emptied by removing the cover but in this case the utmost cleanliness must be observed in order to prevent dirt from getting into the final drive. Check that the cover gasket is in good condition, otherwise replace it.

When flushing, fill with new oil through the filler hole. Then run the engine for several minutes with the rear wheels jacked up and a gear engaged. Thereafter lower the vehicle and drain off the oil.

**N.B. The warning given under the section "Gearbox without overdrive" applies also when flushing the final drive.**

Fill with new oil. The oil should reach up to the filler hole and the oil changing quantity is about 1.3 litres (2.29 Imp. pints=2.74 US pints). Normally hypoid oil SAE 90 is used for changing oil in the final drive.

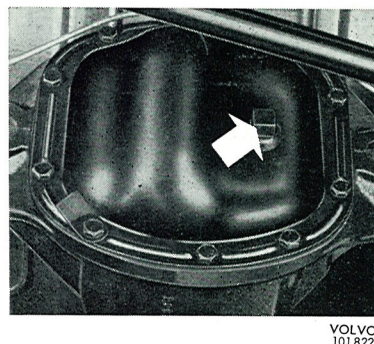


Fig. 1-7. Steering box filler plug

Where the air temperature is continuously below  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ), however, SAE 80 should be used.

A final drive fitted with a differential brake is filled at the factory with a transmission oil which meets the requirements of the American Military Standard MIL-L-2105B provided with an additive for final drives with differential brake. For subsequent topping-up and when changing, oil is according to MIL-L-2105B having the above-mentioned additive. The oil level should be checked and the oil changed at the same intervals and in the same way as for a final drive without a differential brake.

## STEERING GEAR

Normally it is not necessary to change the oil in the steering gear except after reconditioning has been carried out. However, should the oil have to be changed for any reason, the old oil can be sucked out by using a suitable device, for example, an oil syringe, which is inserted through the filler hole. The steering gear can also be removed and emptied. Hypoid oil SAE 80 is used all the year round for the steering gear.

When empty, the steering gear can be filled with 0.25 litre (0.44 Imp. pint = 0.53 US pint).

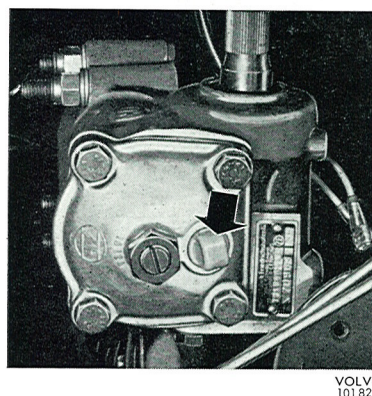


Fig. 1-8. Brake fluid container

## CHECKING THE BRAKE FLUID LEVEL

This check can be made without taking off the cap. If the check is carried out in connection with a visit to a workshop, the level should be attended to if it is lower than the "Max" mark. Under no circumstances may the level be below the "Min" mark. If necessary, top up with first-class brake fluid which

meets the requirements according to SAE 70 R 3. Clean the brake fluid container cap before removal and observe maximum cleanliness when filling with oil. Avoid spilling brake fluid on to the paintwork since this will damage it. Check to make sure that the venting hole in the cap is not locked.

## INSTRUCTIONS FOR LUBRICATING

### DISTRIBUTOR

After every 10,000 km (6,000 miles) the distributor shaft, cam and ignition advance mechanism should be lubricated. The distributor shaft is lubricated by filling the oil cup (3, Fig. 1-9) with engine oil. After filling, close the cup. The contact surface of the cam (2) should be lubricated with a thin coating of grease, Bosch Ft 1 v 4, or corresponding grease. The ignition advance mechanism should be lubricated by pouring 2—3 drops of light engine oil (SAE 10 W) on the wick (1) in the distributor shaft.

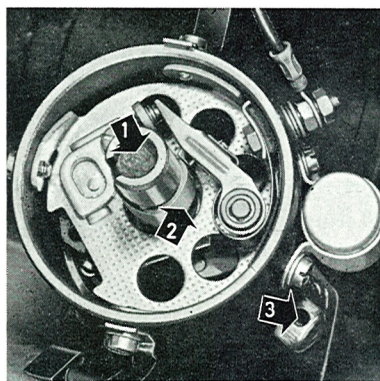


Fig. 1-9. Distributor

1. Lubricating wick 2. Cam disc 3. Oil cup

### BALL JOINTS

The upper and lower ball joints of the front end together with the ball joints of the tie rod and steering rod are plastic-lined. Therefore, they do not require lubricating and thus have no grease nipples. As the sealing is extremely important with regard to the

service life of these ball joints, the rubber seals should be checked every 10,000 km (6,000 miles) to ensure that they are not damaged. If cracked or damaged, they should be replaced, see Part 6. When being fitted, the rubber seals should be filled with multipurpose grease (universal grease).

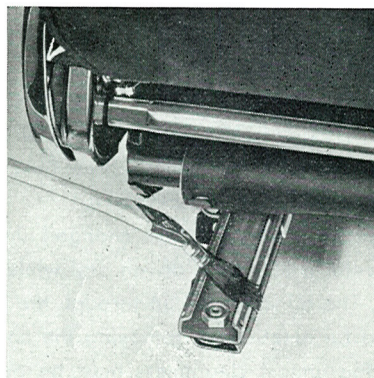


Fig. 1-10. Lubricating the slide rails

### BODY

To avoid squeaking and unnecessary wear, the body should be lubricated as described below. The lock buttons of the door handle should be lubricated approx. every 10,000 km (6,000 miles) and other parts of the body about once a year. Moreover, during winter the door handle luggage compartment lid locks should be lubricated with a suitable lock oil which would prevent them from freezing up.



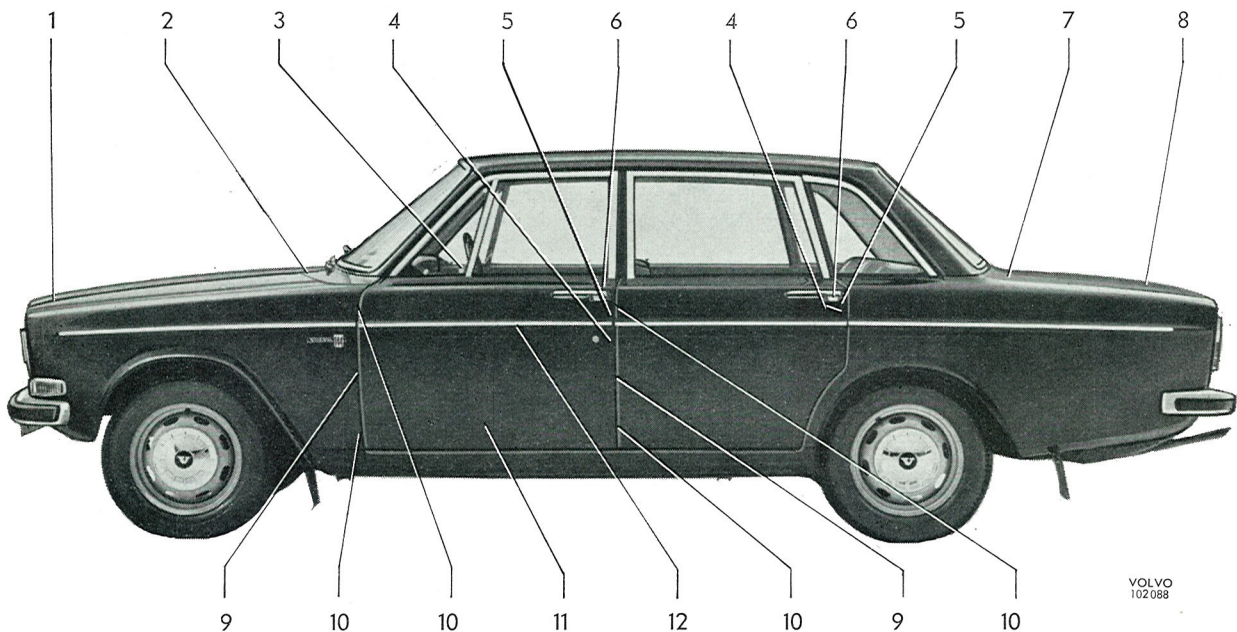


Fig. 1-11. Lubricating points on the body

No. Lubricating point	Lubricant	No. Lubricating point	Lubricant
1 Bonnet catch .....	Petroleum jelly	8 Luggage compartment lid lock ..	Oil
2 Bonnet hinges .....	Oil	Keyholes .....	Oil
3 Ventilation window catch and hinges .....	Oil	9 Door stops .....	Petroleum jelly
4 Striker plate .....	See Fig. 1-13	10 Door hinges .....	Oil
5 Outer sliding surfaces of door lock .....	Petroleum jelly	11 Front seat slide rails and catches	Petroleum jelly and oil
6 Door handle lock buttons .....	Petroleum jelly	12 Window winders .....	Oil and grease
Keyholes .....	Oil	Locks .....	Silicon grease
7 Luggage compartment lid hinges	Oil	(Accessible after the door upholstery panels have been removed.)	

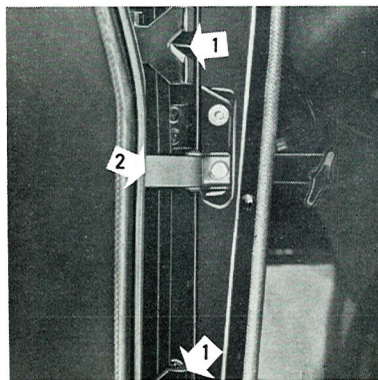


Fig. 1-12. Hinges

1. Hinges (light oil)
2. Door stop (petroleum jelly)

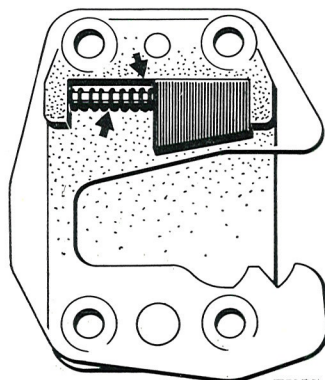


Fig. 1-13. Striker plate

Inner sliding surfaces, spring and pin are lubricated with molybdenum disulphide grease

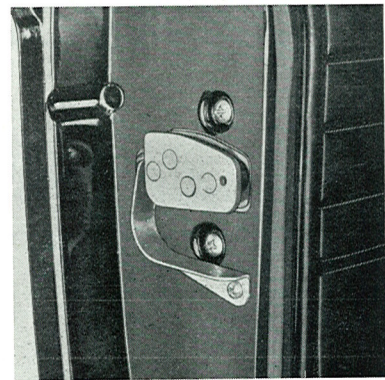


Fig. 1-14. Door lock with guide plate

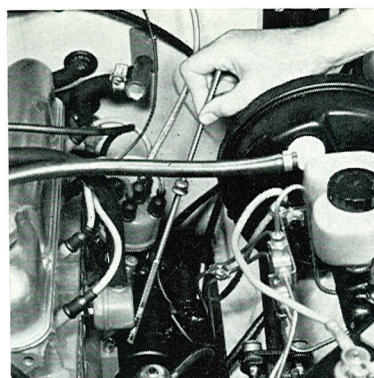
Apply petroleum jelly



## CHECKING WHEN FILLING THE TANK

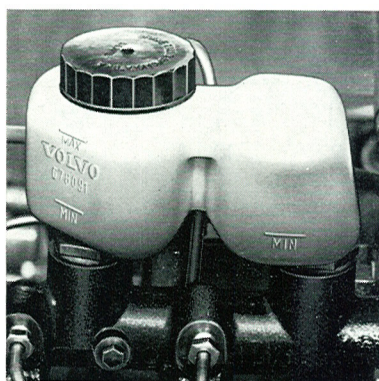
The following should be carried out when filling the tank

1. Check to make sure that the oil level in the engine is between the "Max" and "Min" marks on the dipstick (see Fig. 1-15).
2. Without removing the cap, check that the level in the brake fluid container is above the "Min" mark (see Fig. 1-16).
3. Check that the coolant level is between the "Max" and "Min" marks on the expansion tank (see Fig. 1-17).
4. Check that the fluid container for the windscreen washer is filled (see Fig. 1-18).



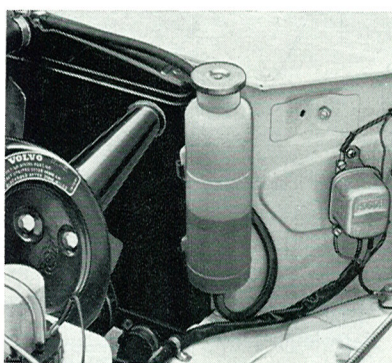
VOLVO  
103586

Fig. 1-15. Oil dipstick



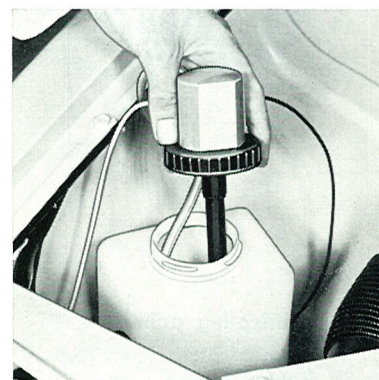
VOLVO  
103582

Fig. 1-16. Brake fluid container



VOLVO  
103555

Fig. 1-17. Expansion tank



VOLVO  
103587

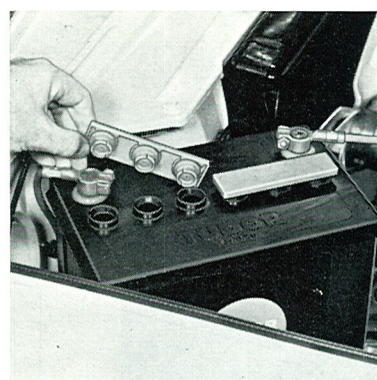
Fig. 1-18. Fluid container

The following should be carried out every other week

1. Check that the electrolyte level in the battery is about 5 mm (3/16") above the plates (Fig. 1-19). If necessary fill with **distilled** water. Also check that the battery and battery terminals are secure.
2. Check to make sure that the pressure in the tyres correspond to the following values:

Persons	Cold tyres, kg/cm <sup>2</sup> (p.s.i.)	
	Front	Rear
1—2	1.4 (20)	1.6 (23)
4—5	1.4 (20)	1.8 (26)
Max. load	1.5 (22)	2.1 (30)

For prolonged driving at speeds above 140 km.p.h. (90 m.p.h.) pressure should be increased by 0.3 kg/cm<sup>2</sup> (4.5 p.s.i.). Maximum tyre pressure must not, however, exceed 2.1 kg/cm<sup>2</sup> (30 p.s.i.).



VOLVO  
103588

Fig. 1-19. Battery



## INSTRUCTIONS FOR LUBRICATING CHART

### SYMBOLS



**Engine oil**  
Grade: "For Service MS"  
Viscosity: Multigrade SAE 10 W-30  
See also page 1 : 1



**Final drive oil**  
Grade: Hypoid oil  
Viscosity: above  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ) SAE 90  
below  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ) SAE 80  
Does not apply to final drive with differential brake, see page 1 : 3.



Lubricant, see respective note.



Light engine oil



Brake fluid  
Grade: SAE 70 R 3

### OIL CHANGING QUANTITIES

Engine, oil changing quantity	approx. 5.2 litres (9.15 Imp.pints=10.97 US pints)
including oil filter	approx. 6.0 litres (10.56 Imp.pints=12.66 US pints)
Gearbox, without overdrive	approx. 0.6 litre (1.1 Imp.pints=1.3 US pints)
with overdrive	approx. 1.4 litres (2.46 Imp.pints=2.95 US pints)
automatic transmission	approx. 8.2 litres (14.43 Imp.pints=17.30 US pints)
Final drive	approx. 1.6 litres (2.82 Imp.pints=3.38 US pints)
Steering gear	approx. 1.2 litres (2.11 Imp.pints=2.53 US pints)

### OTHER LUBRICATING POINTS

In addition to the points indicated in the lubricating chart, the chassis should be greased about once a year at all the joints for the throttle control linkage, handbrake, pedal linkages etc.

### NOTES

- Note 1. In connection with such workshop operations involving uncovering the wheel bearings, the bearings should be removed, cleaned, and then lubricated with high-class durable grease according to the instructions in Groups 46 and 77 respectively. Subsequent filling or replacement of grease in addition to the above should not take place.
- Note 2. Check the oil level. See page 1 : 3.
- Note 3. Check the brake fluid level and, for vehicles with right-hand steering, also the clutch fluid level. See page 1 : 4.
- Note 4. Lubricate the distributor in accordance with the instructions on page 1 : 4.
- Note 5. Every 10 000 km (6 000 miles) check that the oil reaches up to the filler plug. After every 40 000 km (25 000 miles) the oil should be changed (mechanical gearbox). N.B. The quality of oil to be used depends on the type of gearbox, see pages 1 : 1 and 1 : 2.
- Note 6. Check the oil level in the carburettors when changing the engine oil, see page 1 : 1.
- Note 7. Change the oil filter completely according to the instructions in Part 2.
- Note 8. Change the oil according to the instructions on page 1 : 1.
- Note 9. Every 10 000 km (6 000 miles) check that the oil reaches up to the filler plug. Concerning lubricant for the final drive with differential brake, see page 1 : 3.

## LUBRICATING CHART 140

