
# SERVICE MANUAL

## VOLVO 164 1971

Part 1

# SERVICING AND MAINTENANCE

# CONTENTS

# 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, 10 W-50 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 off immediately after the car has been driven and while the engine is still warm. For this, use 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° C=—4° F) or when cold-starting difficulties are anticipated, multigrade oil SAE 5 W-20 is recommended.

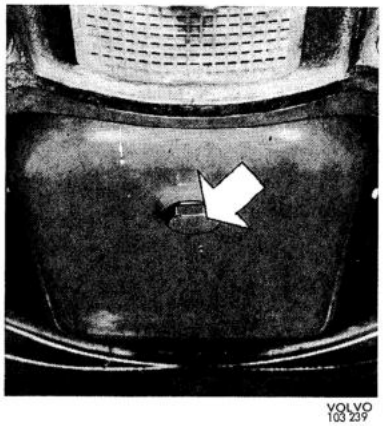

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**Fig. 1-1. Drain plug on sump**

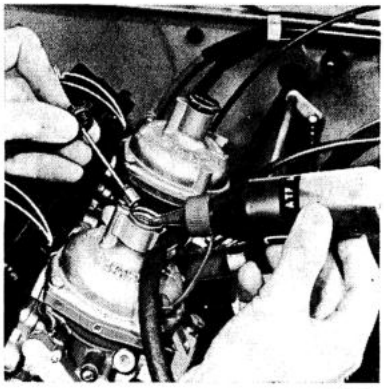

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**Fig. 1-2. Checking the oil level in centre spindle**

If multigrade oil is not used, the viscosity should be SAE 10 W below —10° C (14° F), SAE 20/20 between —10° and +30° C (14 and 86° F) and SAE 30 for temperatures above 30° C (86° F), all this presuming a stable air temperature.

The quantity of oil changed is 5.2 litres (9.15 Imp.-pints=10.97 US pints). The corresponding quantity when the oil filter is included is 6.0 litres (10.56 Imp.-pints=12.66 US pints).

### CARBURETTORS

Each time the engine oil 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 ATF 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 2 500 km (1 500 miles). The oil should subsequently be 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.

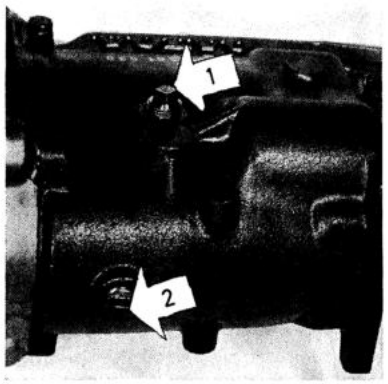


**Fig. 1-3. Gearbox**
1. Filler plug 2. Drain plug

When draining the oil, remove the plugs marked 1 and 2 in Fig. 1-3.

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 90 is used for the gearbox all the year round. Where the air temperature is continuously below —10° C (14° F), SAE 80 should, however, be used. Alternatively engine oil with viscosity SAE 40 can be used all the year round.

The oil changing quantity is 0.6 litre (1.1 Imp.pints=1.3 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.

In the case of a new or reconditioned gearbox, the oil should be changed after the first 2 500 km (1 500 miles). The oil should subsequently be changed after every 40 000 km (25 000 miles).

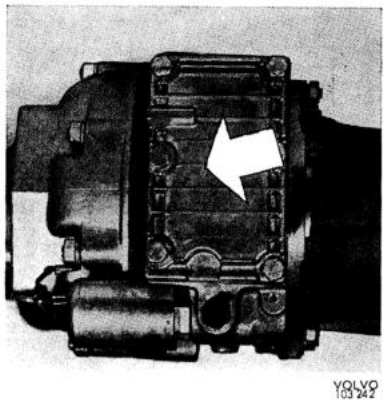


**Fig. 1-4. Overdrive**

The oil should be drained off immediately after the car has been driven and while the oil is still warm. To do this remove the plugs marked 1 and 2 in Fig. 1-3 as well as the cover for the oil strainer, see Fig. 1-4. Also clean the oil strainer as indicated in group 43 B.

Re-fit the drain plugs and bolt on the cover securely. Fill with new oil. Fill slowly to enable the oil to run over into the overdrive. The oil should reach up to the filler hole (1, Fig. 1-3). Screw tight the filler plug. For a gearbox with overdrive, engine oil with viscosity SAE 30 is used all the year round. As an alternative, multigrade oil SAE 20 W-40 can be used. The oil changing quantity is 1.4 litres (2.46 Imp.pints—2.95 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).

The vehicle should stand level. Move the selector lever to position "P" and let the engine run at idling speed. 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. **N.B. 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). The lower section (1 and 2, Fig. 1-5) 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

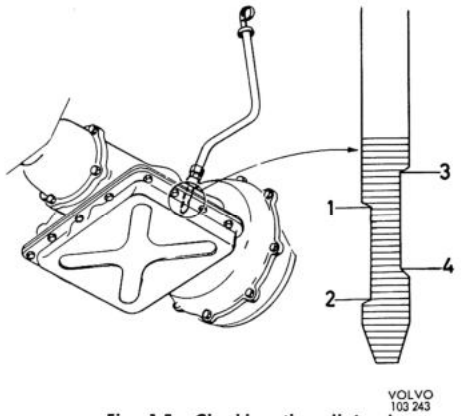


**Fig. 1-5. Checking the oil level**
1. Max. oil level, cold transmission
2. Min. oil level, cold transmission
3. Max. oil level, warm transmission
4. Min. oil level, warm transmission

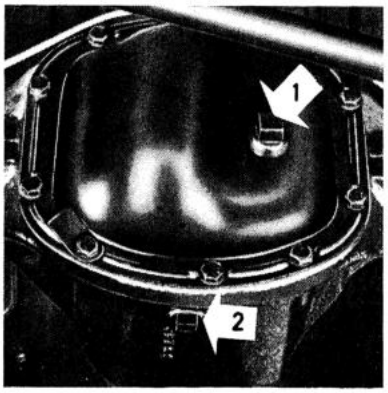


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**Fig. 1-6. Final drive**
1. Filler plug 2. Drain plug

is about 0.5 litre (1 pint). For topping-up, use oil ATF, Type F, that is, a fluid meeting Ford specification H2C 33F.

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 2 500 km (1 500 miles). Oil changing should therefore be carried out only when overhauling is being done.

Oil changing should preferably be done immediately after the vehicle has been driven and while the oil is still warm. When draining the oil, remove the plugs marked 1 and 2 in Fig. 1-6.

Clean the magnetic plug (2) well. It is of great importance for the lifetime of the final drive that particles and other impurities accumulated during the running-in are removed.

After the drain plug or cover has been re-fitted, fill with new oil. The oil should reach up to the filler hole and the oil capacity is about 1.6 litres (2.82 Imp. pints=3.38 US pints). For changing the oil in the final drive oil which meets the requirements of the American Military Standard MIL-L-2105 B, SAE 90, is normally used. Where the air temperature is continuously below —10° C (14° F), however, SAE 80 should be used.

A final drive fitted with a differential lock 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 lock. 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 lock.

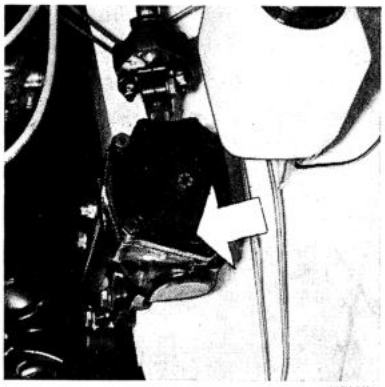

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**Fig. 1-7. Steering box filler plug**

## STEERING BOX, MECHANICAL STEERING

To check the oil level, remove the filler plug (Fig. 1-7) and then check to ensure that the oil reaches up to the hole for the plug.

Normally it is not necessary to change the oil in the steering box 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, or the steering box can also be removed and emptied. Hypoid oil SAE 80 is used for the steering box all the year round.

The oil capacity of the steering box is 0.6 litre 1.1 Imp. pints=1.3 US pints).

## SERVO STEERING

### CHECKING THE OIL LEVEL

The oil level should be checked every 10 000 km (6 000 miles). First check the level with the engine standing to check possible oil loss. The oil level should

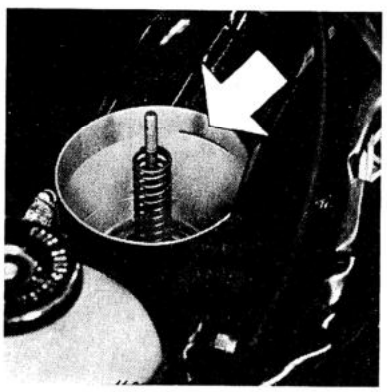

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**Fig. 1-8. Oil level**

then lie about 5—10 mm (5/8") above the level mark. If the level is lower than this, fill with oil with the engine standing to eliminate the risk of air being sucked in. Start the engine and re-check the oil level, which should now have fallen to the level mark, see Fig. 1-8. When the engine has stopped, the level should rise to about 5—10 mm (5/8") above the mark.

### OIL CHANGING

Normally the oil should be changed in connection with replacement of the servo steering components, see Part 6 of this Service Manual. On this occasion, the filter in the oil container should also be changed.

## CHECKING THE BRAKE FLUID LEVEL

This check can be made without taking off the cap. (See Fig. 1-9.) 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. Brake fluid with the later designation SAE 70 R 3 (J70B) or SAE J1703 can also be used. 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 vent-hole in the cap is not blocked.

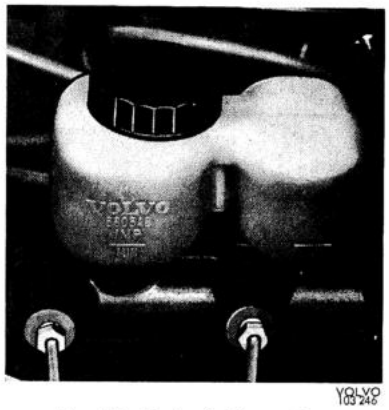


**Fig. 1-9. Brake fluid container**

# INSTRUCTIONS FOR LUBRICATING

## DISTRIBUTOR

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

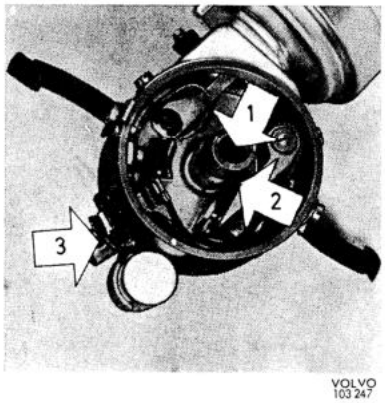


**Fig. 1-10. Distributor**
1. Lubricating wick 2. Cam disc 3. Oil cup

## 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 shoul be filled with multipurpose grease (universal grease).

## BODY

To avoid squeaking and unnecessary wear, the body should be lubricated as described below. Nos. 2, 8, 10 and 11 of the lubricating scheme on the next page 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.

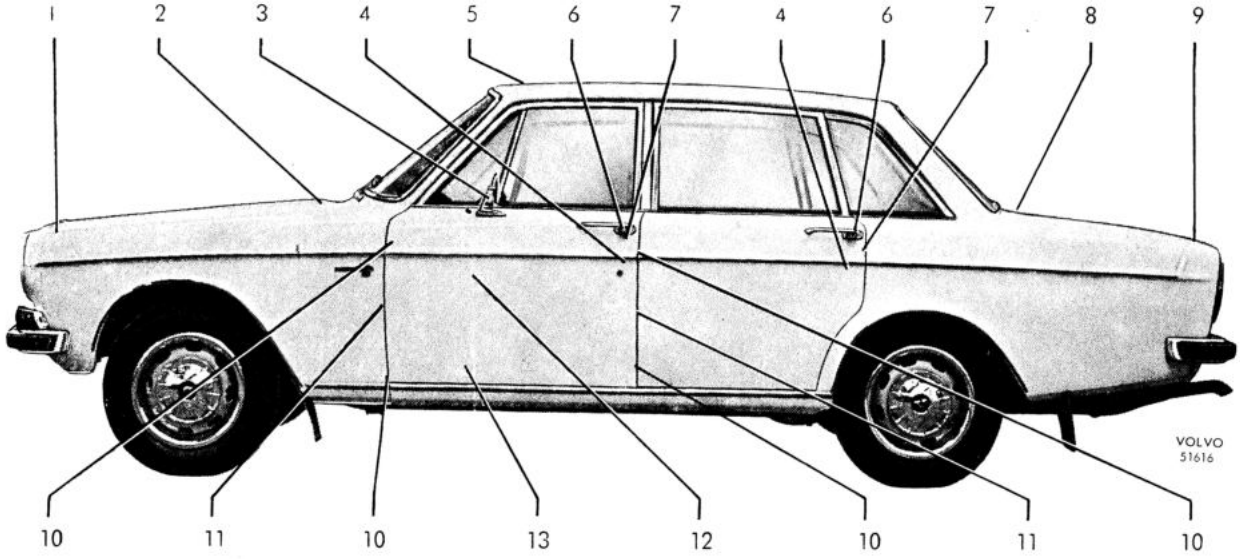


**Fig. 1-11. Lubricating points on the body**

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

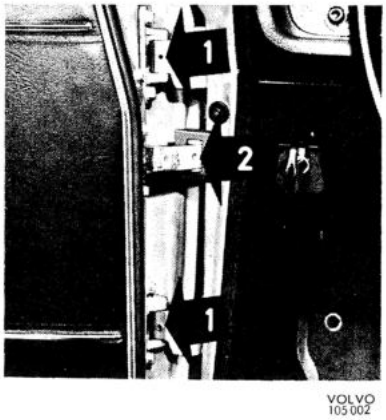


**Fig. 1-12. Hinges**

1. Hinges, grease
2. Door stop, paraffin wax
3. Hinges, grease

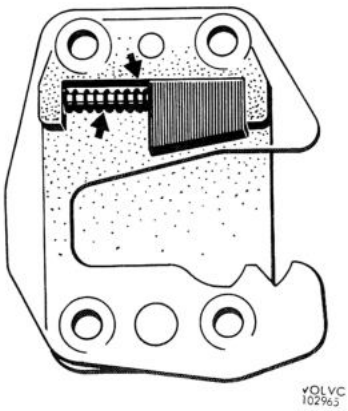


**Fig. 1-13. Striker plate**

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

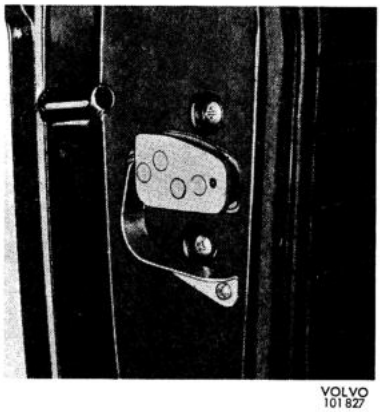


**Fig. 1-14. Door lock with guide plate**

Apply paraffin wax

## CHECKS 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).

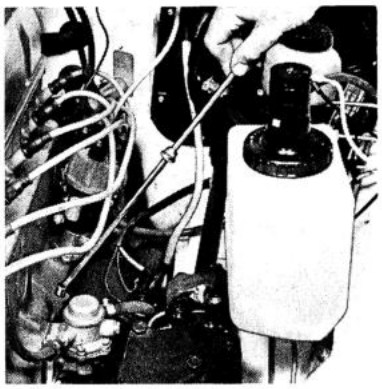

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Fig. 1-15. Oil dipstick

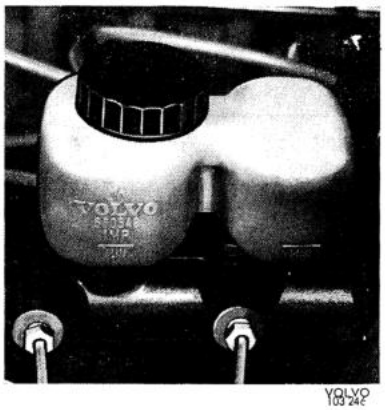

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Fig. 1-16. Brake fluid container

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Fig. 1-17. Expansion tank

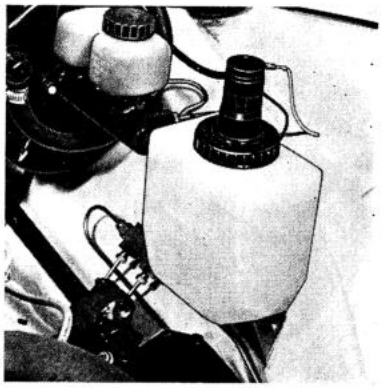

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Fig. 1-18. Fluid container

**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, kp/cm² (p.s.i.) | | | |
|---|---|---|---|---|
| | Front | | Rear | |
| | 165 S 15<br>6.85—15 | 165 SR 15 | 165 S 15<br>6.85—15 | 165 SR 15 |
| 1—2 | 1.6 (23) | 1.7 (24) | 1.7 (24) | 1.8 (26) |
| Max. load | 1.7 (24) | 1.8 (26) | 2.1 (30) | 2.1 (30) |

For prolonged driving at speeds over 140 km.p.h. (90 m.p.h.) the pressure should be increased by 0.3 kp/cm² (4.5 p.s.i.). Maximum tyre pressure for the 165 S 15 type tyre must not, however, exceed 2.1 kp/cm² (30 p.s.i.).
For the 165 S 15 (or 6.85—15) type, the speed should not exceed 175 km.p.h. (110 m.p.h.).

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Fig. 1-19. Battery