

## Starter motors

### 1. Checking the electrical start system:

Please check the following points before deciding to replace the starter motor:

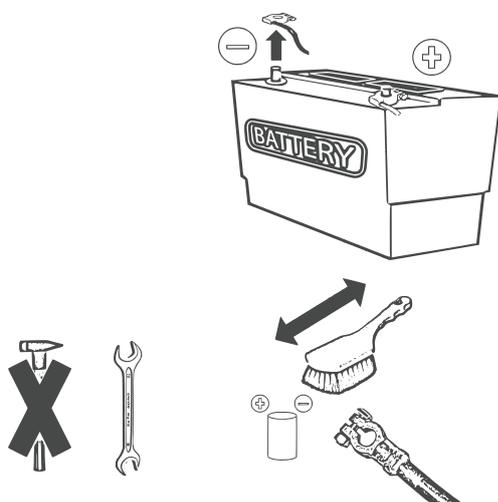
- Is the battery fully charged and in good condition?
- Are the battery leads correctly connected and not damaged?
- Are all electrical connections tightly fitted and free of corrosion?

### 2. Disconnecting the vehicle battery—warning!

- Disconnecting the vehicle battery may result in the loss of codes in certain vehicle systems. In this case the systems must be reprogrammed or the codes re-entered.
- Before disconnecting the battery, follow the vehicle manufacturer's recommended guidelines.

### 3. Replacing the starter motor:

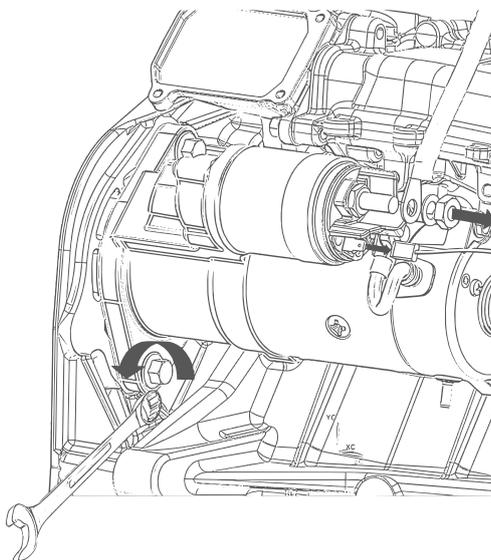
**3.1** Disconnect the battery leads, first the negative lead, then the positive lead.



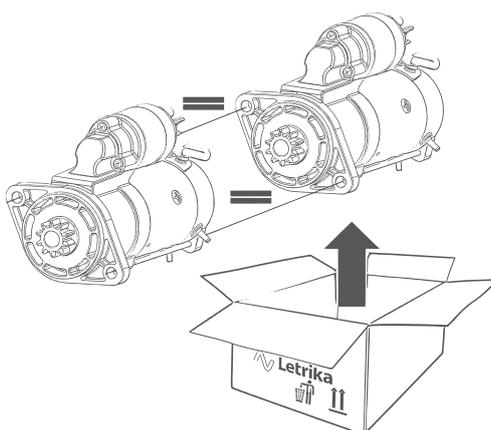
**3.2** Mark the cables connected to the starter motor according to the associated terminals.

**3.3** Remove the cables connected to the starter motor.

**3.4** Remove the starter motor from the engine.

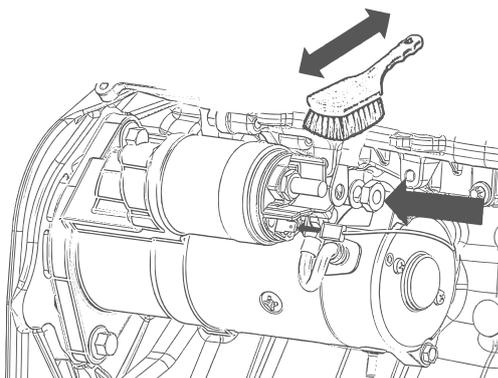


**3.5** Make sure that the new starter motor matches the starter motor you just removed. Compare the number of teeth, the flange design, the electrical connections, the rated voltage, the direction of rotation, etc.

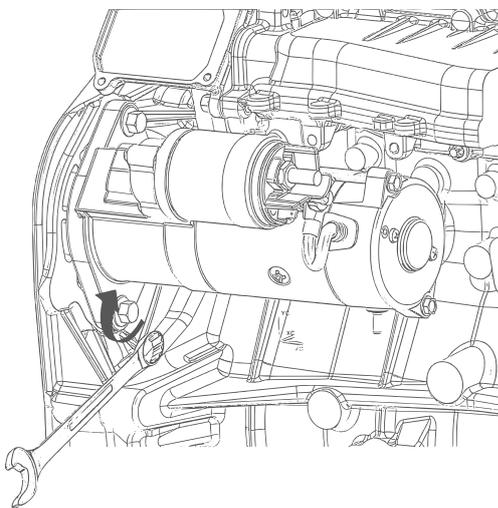


**3.6** Before installing the starter motor, check the following points:

- The gear rim must not be damaged or dirty. Clean the flywheel housing if heavily soiled.
- The surface of the starter motor flange and the flywheel housing must be clean and free of corrosion.

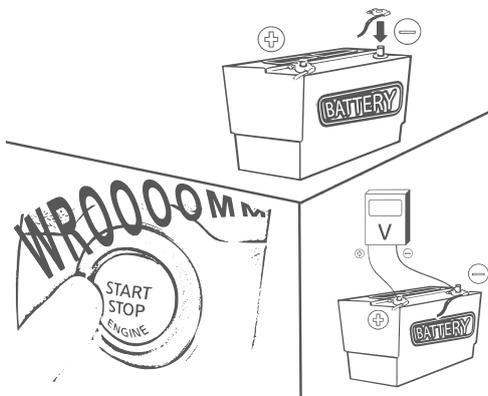


**3.7** Install the starter motor on the engine and properly tighten the fixing bolts. Follow the vehicle manufacturer's instructions.



**3.8** Connect the starter motor. Make sure to connect all cables to the associated terminals. Take care to route the cables properly, making sure that the cables do not come into contact with hot or abrasive surfaces.

**3.9** Connect the battery leads to the battery. First connect the positive lead, then the negative lead.



**3.10** Before starting the vehicle, make sure that the battery is fully charged and that the vehicle body and engine are properly earthed.

**3.11** Start the engine to check that the starter motor is working properly.