

C. Starter

In the integral starters

Bosch, Type EJD 1,8/12 R 29
Bosch, Type EJD 1,8/12 R 56
Bosch, Type EJD 1,8/12 R 70
Bosch, Type EJD 1,8/12 R 82
Bosch, Type EJD 1,8/12 R 88

with an electromagnetic meshing mechanism, a rated output of 1.8 HP, a rated voltage of 12 volt and an armature housing diameter of 112 mm the main current flows via the contacts of the attached solenoid switch, whereas only the control current flows via the starter switch and through the windings of the solenoid switch.

The electric starter is a series-wound motor with drive pinion and meshing mechanism. The series-wound motor supplies the torque necessary to overcome inertia during the first compression stroke and cranks the engine with the speed required for starting. In order to generate the necessary torque with reasonably dimensioned starter and battery the small pinion of the starter engages in the ring gear mounted on the flywheel of the engine. Due to the extreme gear ratio between pinion and ring gear the pinion should not be continuously engaged with the ring gear, because the pinion and the rotor of the starter would then reach unpermissible speeds. After the starting of the engine the positive coupling between the starter rotor and the engine flywheel must therefore be disengaged automatically. This is solved by the fact that the pinion is not rigidly connected with the starter shaft but by way of a roller-bearing free-wheel coupling which disconnects the power train as soon as the flywheel overruns the pinion.

The starter leads must be dimensioned according to regulations and must make good contact, so that there will be no loss of potential and power-consuming contact resistances. The loss of voltage should not be more than 4 % of the rated voltage, that is 0.5 volt at the most.

If faults are observed on the starter, the cause may not only be located in the starter itself but also in the battery, the switches, the connections or in a defective ground lead.

D. Generator and Regulator Switch

The generator has the task of supplying the different current consumers with electric power and to charge the battery properly. The generator is driven by the engine by means of a V-belt. Generally, the speed of the engine continuously changes throughout the entire speed range from idling speed to maximum speed. Therefore, the generator speed changes accordingly and consequently also the voltage, the amperage and the power output of the generator.

Furthermore, a higher or lower output of the generator is required depending on the switched-on current consumers and the charging condition of the battery.

In order to meet these manifold requirements the generator needs a regulating device, the so-called regulator switch or cutout.

The regulator cutout can be installed in the generator, mounted on the generator, or can be separated from the generator (remote installation).