

Generator

General

The generator supplies power to the electrical system and keeps the battery charged. It is driven by a V-belt from the crankshaft. Its output which varies with load and change in speed is governed by a voltage and current regulator.

Operation

The voltage of the DC shunt wound generator is held nearly constant despite changes in engine speed and electrical load by an electro-magnetic vibrating regulator which also prevents overcharging the battery. A cut-out relay automatically prevents the back flow of current and subsequent discharge of the battery when the engine is stopped.

In order to prevent generator damage from overload when the battery is discharged and accessories are in use, a system of regulators is used.

Regulator

The regulator system is composed of a voltage and current regulator which protects the generator from excessive current while keeping the voltage nearly constant up to the maximum load, at which point the voltage drops sharply. This system employs the generator more efficiently and charges the battery more quickly.

Generator construction

The main assemblies are:

housing, pole shoes, field coil,
armature winding and commutator,
brushes and brush holders,
armature bearing and end frames,
and the regulator.

The housing is a magnetically permeable steel walled cylinder inside which the pole shoes and field coils are attached with counter sunk screws.

The field coils, consisting of many turns of insulated copper wire, are wound around the two pole shoes and are connected in series.

The armature, an iron core in which the armature windings are imbedded and on which the commutator is located, turns between the two pole shoes. The current induced in the armature windings is taken from the commutator by the brushes.

The iron core is made of numerous stamped sheet metal laminations whose surfaces are insulated to reduce eddy currents. The armature coils, consisting of insulated copper wire, are placed in the grooves of the armature and are secured against centrifugal forces. This system of coils is called the armature winding and consists of as many coils as there are commutator sections. The end of each coil is soldered to a commutator section to provide a path to the brushes where the generator power is collected.