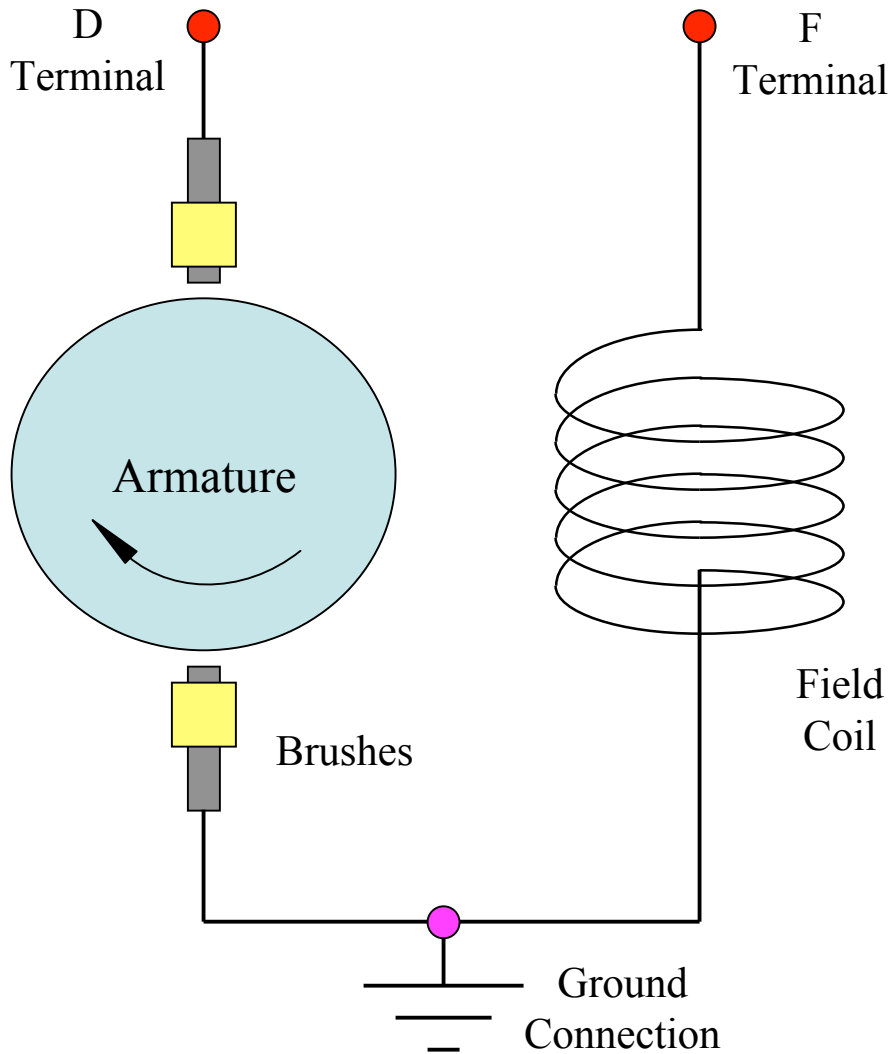


Basic Generator Layout



D Terminal

The output connection of the armature, or “dynamo”.

F Terminal

The input to the field winding.

Field Coil

An electro-magnet used to create a magnetic field for the armature.

Brushes

Since electrical connections must be made to the rotating armature, carbon blocks are used. These are both conductive and at the same time slippery enough to wear at a very slow rate.

Ground

Both the armature and the field winding are electrically connected to the body of the generator. The generator body then makes connection to the engine, regulator and battery.

Basic Generator Information

The generator (aka the “dynamo”) is probably the least understood simple machine that ever existed. In actuality, it’s so simple in design and manufacture that it’s really very clever.

All Lucas and Miller motorcycle generators work the same way and their layout is described in the diagram. Power is applied to the F terminal by the voltage regulator. The “field” is nothing more than a coil of wire wrapped around an iron core to produce a giant electro-magnet. The amount of power applied to the F terminal determines the strength of the magnetic field being created. When the engine turns the armature, it rotates in this magnetic field and more electrical power is created than is being consumed by the field.

Total output of the armature is determined by the strength of the magnetic field **and** the RPM of the armature.

The regulator then senses the requirements of the battery (Are the lights ON? Is the battery fully charged?) and compares this reading to the output of the armature, and then simply applies more or less power to the field until the battery’s need for generator output is appropriately met.

Therefore in a generator electrical system, the 2 most complicated parts are the armature and the regulator, both of which are non-serviceable units. Armatures are tested on a special machine called a “Growler”. Mechanical regulators are best replaced with a modern solid state unit, such as one by Podtronics.

The 3 most common issues with generators are (in order of occurrence):

- Loss of “ground” connection between the battery, regulator and generator. Replace or clean all the contacts.
- Dirty, oil covered, or worn down carbon brushes. Simply replace the brushes with new parts.
- Loss of the “residual” magnetism in the field’s iron core. To renew the core’s memory, connect a temporary wire from the Neg - battery terminal (assuming Pos + ground) to the F terminal of the generator for 1/2 second. Spark it 2 or 3 times and remove the wire.