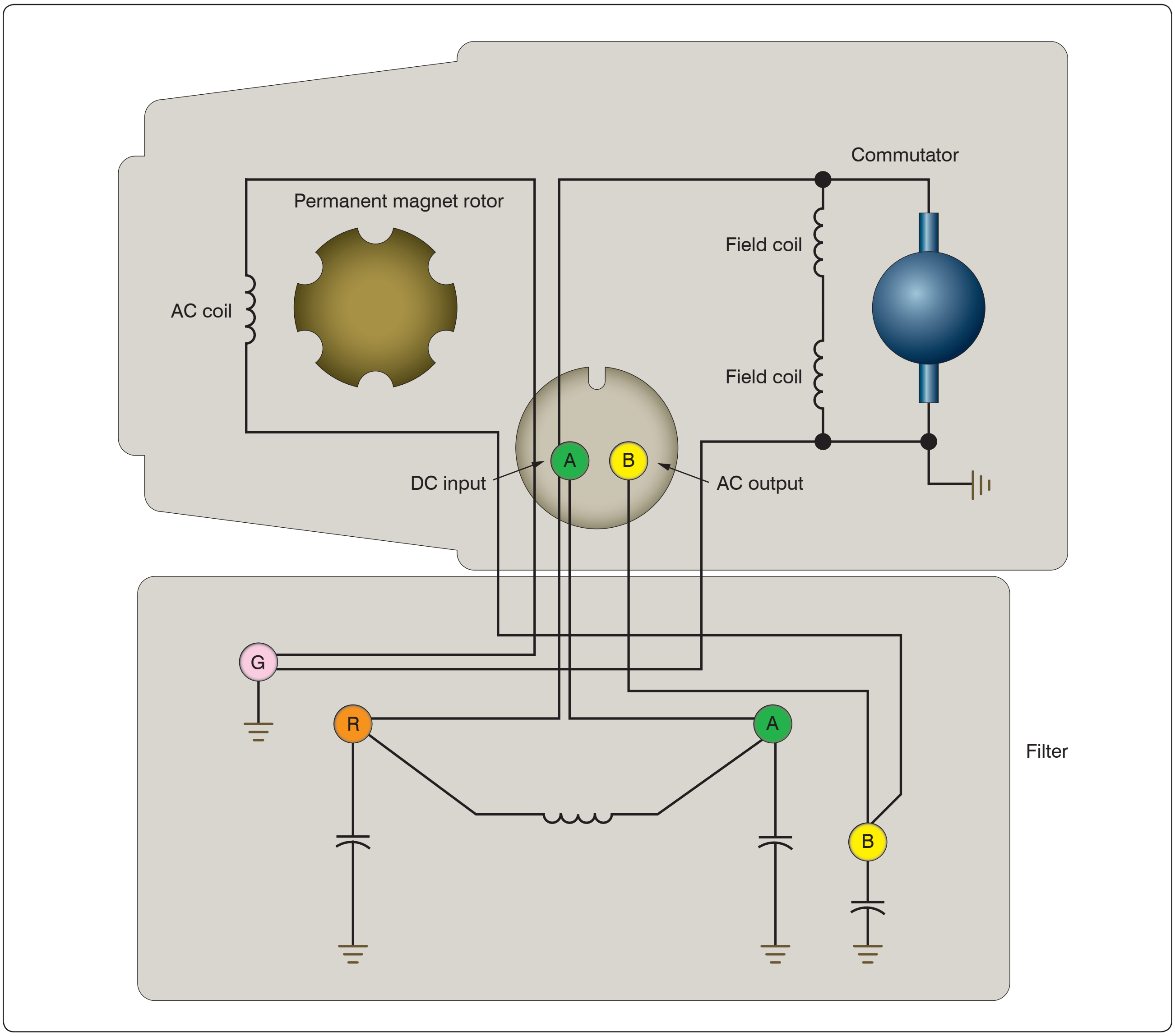

Figure 12-201. *Internal wiring diagram of single-phase permanent magnet rotary inverter.*

The alternator is a three-phase, four-pole, star-connected AC generator. The DC input is supplied to the generator field coils and connected to ground through a voltage regulator. The output is taken off the armature through three slip rings to provide three-phase power. The inverter would be a single-phase inverter if it had a single armature winding and one slip ring. The frequency of this type unit is determined by the speed of the motor and the number of generator poles.

Inductor-Type Rotary Inverter

Inductor-type inverters use a rotor made of soft iron laminations with grooves cut laterally across the surface to provide poles that correspond to the number of stator poles. *[Figure 12-203]* The field coils are wound on one set of stationary poles and the AC armature coils on the other set of stationary poles. When DC is applied to the field coils, a magnetic field is produced. The rotor turns within the field coils and, as the poles on the rotor align with the stationary poles, a low reluctance path for flux is established from the field pole through the rotor poles to the AC armature pole and through the housing back to the field pole. In this circumstance, there is a large amount of magnetic flux linking the AC coils.

When the rotor poles are between the stationary poles, there is a high reluctance path for flux, consisting mainly of air; then, there is a small amount of magnetic flux linking the AC coils. This increase and decrease in flux density in the stator induces an alternating current in the AC coils.