

higher speeds the generator voltage will burn out the lights, overcharge the battery, and raise various other problems if it is not held down to a certain level.

In the H1 with its electromagnetic field, a mechanical contact type regulator controls the current in the field windings, and as field current is raised or lowered, the magnetic field strength varies, keeping output voltage constant even with changes in speed.

2) Operation

In the H1 the current generated in the armature is regulated by limiting the exciter current flow in the rotor field windings with a mechanical contact-type regulator.

Figure 399 is a diagram of the circuit including the regulator. The generated voltage causes current to flow in the relay coil B, magnetizing its iron core. Depending on the amount of this current flow, movable contact  $C_c$  is pulled by the magnet away from fixed contact  $C_1$  and toward  $C_2$ , changing the resistance in the field current path and thereby regulating armature voltage.

(1) Low Speed

During periods of slow engine rotation when

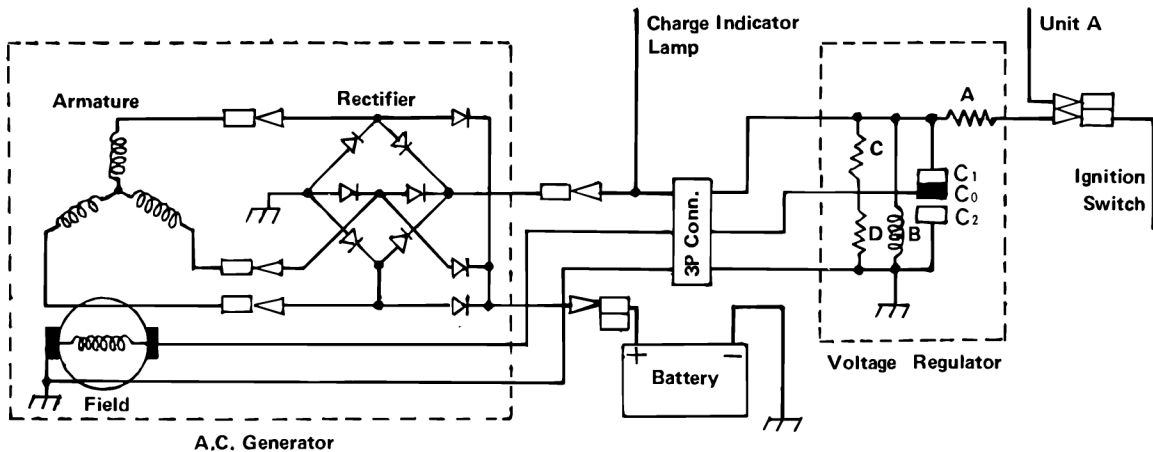
the generator voltage is lower than the battery terminal voltage, no current flows from the generator to the regulator or the field windings. Instead, field current is supplied by the battery, flowing from the battery negative terminal through ground, up through the field coils, and via contacts  $C_0$  and  $C_1$  and resistor A back to the battery. A small amount of current also flows from the battery through relay coil B, but not enough to move relay contact  $C_0$ .

(2) Medium speed

As engine speed increases, there is a corresponding increase in generator rotation and the generator terminal voltage rises above that of the battery. Battery current stops flowing through the field coil and is replaced by generator current. Generator current also flows (a) into the negative battery terminal to charge the battery; (b) up through relay coil B; (c) through load resistor D.

If rotation speed increases further, the higher generated voltage forces a larger current through coil B, strengthening the magnetism of the coil core. This pulls contact  $C_0$  away from  $C_1$ , opening the field current path. Field current must now pass through resistor C, causing field current to drop and thus generated voltage to decrease.

Low Speed



Medium Speed

