

DELCO-REMY WITH SEPARATE REGULATOR

DESCRIPTION

Conventional three-phase, self-rectifying type alternators. Major components are a stator and a rotor. Stator is composed of a large number of windings on the inside of a laminated core which attaches to alternator frame. Rotor has field winding wound on rotor shaft and encased between two multi-fingered overlapping iron pole pieces assembled on rotor shaft. Field winding is connected to two slip rings assembled on, but insulated from, rotor shaft.

TESTING (ON CAR)

PRECAUTIONS

Observe the following precautions when making tests on alternator: Do not polarize alternator as it is not required and doing so will damage system. Do not short across or ground any of the terminals on alternator or regulator. Ensure that all connections are secure and tight. Do not operate alternator on an open circuit. Before making any test connections, battery ground cable should be disconnected. Connect ground cable after all test connections are completed. Do not reverse battery leads as this will damage rectifiers.

ALTERNATOR OUTPUT

Disconnect battery ground cable at battery. Disconnect wire at alternator "BAT" terminal and connect an ammeter in series between wire and terminal. Connect a voltmeter from "BAT" terminal to a good ground on alternator. Disconnect "F" and "R" terminal connector at alternator and connect a jumper wire between "F" and "BAT" terminals. Reconnect battery ground cable and connect an adjustable carbon pile across battery posts. Start engine and slowly bring speed to 1500 RPM while adjusting carbon pile load to hold voltage at 14 volts. Amperage should be within specifications.

DIODE ASSEMBLIES

NOTE — Test will indicate good, open or shorted field and shorted diode but will not show a failed open diode. If output was low and following tests are satisfactory, proceed to overhaul.

Positive Diodes — Disconnect battery ground cable at battery. Connect ohmmeter between "R" terminal and "BAT" terminal and note reading. Reverse connections and note reading. Meter should read high in one direction and low in other. A high or low reading in both directions indicates defective diode.

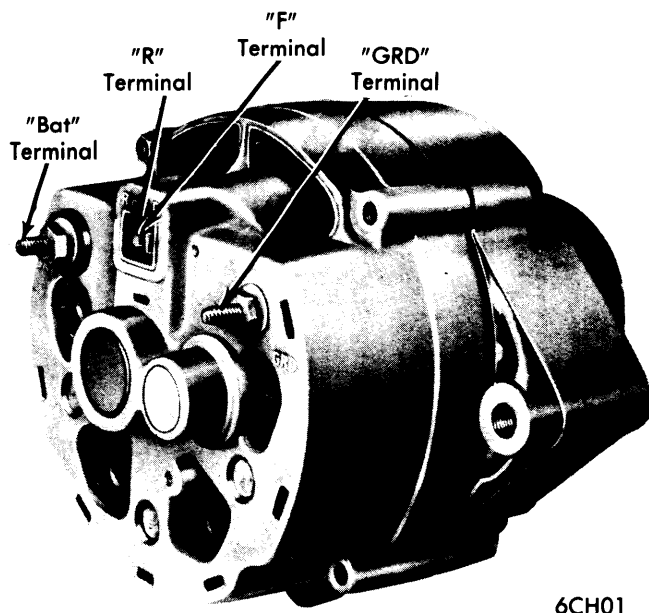
Negative Diodes — Disconnect battery ground cable at battery. Connect ohmmeter between "R" terminal and "GRD" terminal and note reading. Reverse connections and note reading. Meter should read high in one direction and low in other. A high or low reading in both directions indicates defective diode.

Open Field Check — Disconnect battery ground cable at battery. Connect ohmmeter from "F" terminal to "GRD" terminal and note reading with meter on lowest scale. Meter should read 7-20 ohms. If meter reads zero or excessively high resistance, alternator is defective.

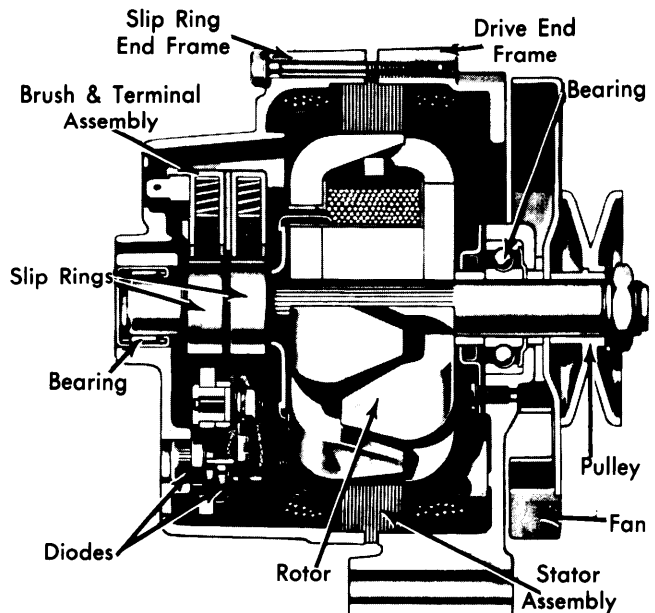
OVERHAUL

DISASSEMBLY

5.5" Series — 1) Hold alternator in a vise, clamping the mounting flange lengthwise. Remove four through bolts and separate end frames by prying at bolt locations. Remove slipping end frame and stator, as an assembly, from drive end and rotor assembly. Tape slip ring end frame bearing to prevent entry of dirt or foreign matter. **NOTE** — Brushes may drop onto rotor shaft and become contaminated with bearing lubricant. Clean brushes, before reinstalling, with a suitable cleaner.



5.5" SERIES ALTERNATOR



CROSS SECTION OF 5.5" SERIES ALTERNATOR

Alternators

DELCO-REMY WITH SEPARATE REGULATOR (Cont.)

2) Remove stator lead attaching nuts and remove stator from end frame. Remove brush holder screws and brush holder. Remove heat sink from end frame by removing "BAT" and "GRD" terminals and attaching screw. Remove slip ring end frame bearing by removing inner seal and slide. Remove drive pulley by inserting suitable Allen wrench in pulley end of rotor shaft to hold rotor while removing pulley nut. Remove washer, pulley, fan and collar from shaft. Remove rotor and spacers from end frame assembly. Remove drive end frame bearing retainer plate and bearing assembly from frame.

6.2" Series - 1) Hold alternator in a vise, clamping the mounting flange lengthwise. Remove brush holder cover, then remove nut retaining indicator light wire to blade connector post and disconnect wire lead from post. Remove screws retaining capacitor and brush holder to rear end frame. Remove brush holder. **CAUTION** - Allow capacitor to remain with alternator since lead is connected inside alternator.

2) Remove three slip ring end frame attaching bolts and nuts. Pry end frame and case apart, then remove end frame. Remove drive end frame attaching bolts and nuts, then remove end frame, rotor and pulley as an assembly. Remove shaft nut, washer, pulley and woodruff key from rotor shaft. Slide rotor from end frame.

3) Remove drive end frame bearing retainer plate and bearing from end frame. Remove slip ring end frame bearing from rotor shaft using suitable puller. Disconnect three stator leads by cutting as close to diode stem as possible. Remove heat sink-to-case retaining screws and remove heat sinks. Insulated heat sink with "BAT" terminal holds positive diodes.

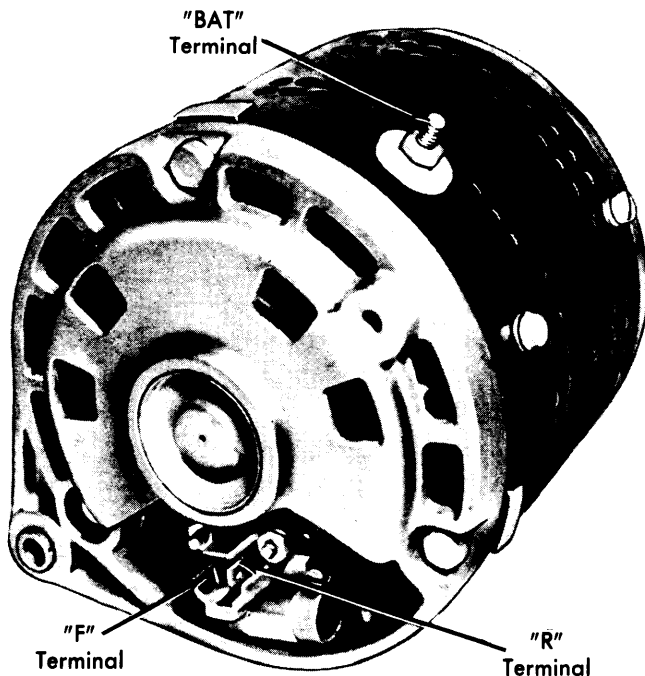
CLEANING & INSPECTION

Wash all metal parts except stator and rotor assemblies. Clean bearings and inspect for sealing, pitting or roughness. Slip rings may be cleaned with 400 grain polishing cloth (rotate shaft while cleaning to prevent flat spots on rings). Slip ring maximum out of round limit is .001". Turn slip rings in a lathe to correct and remove only sufficient material to make rings smooth and round. Polish with 400 grain polishing cloth. **CAUTION** - Slip rings are not replaceable and excessive damage will require rotor assembly replacement. Inspect brushes for wear and if worn halfway, replace. Inspect brush springs for distortion or weakening.

TESTING

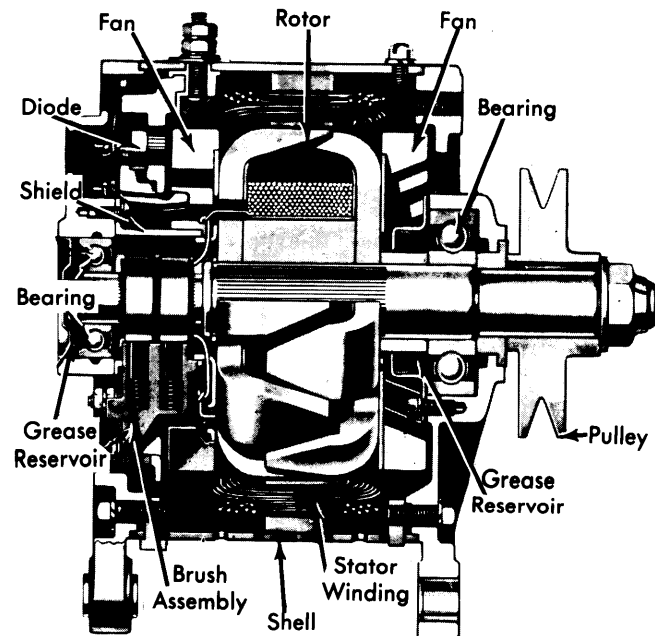
Rotor - To test for grounds, connect a 110 volt test lamp or ohmmeter from either slip ring to rotor shaft or rotor poles. If lamp lights or ohmmeter reading is low, field windings are grounded. To test for open circuit, connect test lamp or ohmmeter to each slip ring. If lamp does not light or if ohmmeter reading is high, windings are open. To test for short circuit, connect a 12 volt battery and ammeter in series with slip rings. If ammeter reading is higher than specified, (see specification table) field windings are shorted. Replace rotor assembly or field windings as necessary.

Stator - To test for grounds, connect a 110 volt test lamp or ohmmeter from any stator lead to stator frame. If test lamp lights or if ohmmeter reads low, windings are grounded. To test for open circuit, connect test lamp or ohmmeter successively between each pair of stator leads. If lamp does not light or ohmmeter reads high, windings are open. A short circuit in stator may be assumed, if all other electrical checks are normal and alternator does not produce rated output.



6.2" SERIES ALTERNATOR

6CH02



CROSS SECTION OF 6.2" SERIES ALTERNATOR

8CH04

DELCO-REMY WITH SEPARATE REGULATOR (Cont.)

Diodes — With diodes disconnected from stator leads, check by using an ohmmeter (test A) or 12 volt test lamp (test B) as follows:

A) Use an ohmmeter with a 1¼ volt cell and use lowest range scale. Connect one ohmmeter probe to end frame and other probe to diode and note ohmmeter readings. Reverse ohmmeter leads and note reading. If both readings are high or low, diode is defective. A good diode will give one low and one high reading.

B) Using a 12 volt test lamp, connect one test lamp probe to diode and other probe to heat sink or end frame, then reverse test lamp probes. If lamp lights in both directions or does not light in either direction, diode is defective. A good diode will cause lamp to light in one direction only.

PARTS REPLACEMENT

Diodes — Support end housing using suitable tool (J-9717-2) and use suitable removal tool (J-9717-1) to press diode out with aid of an arbor press. **CAUTION** — *Do not strike diode as shock may damage other diodes.* To install new diodes, support end frame surface at diode hole, select correct type diode (positive diodes have red markings and negative diodes have black markings) and use suitable installer tool (J-9600-2) on diode to press into position. **CAUTION** — *Do not bend or move diode stem and ensure that diode is square with end frame or heat sink and started straight in hole.*

Bearing — Drive End Frame — To remove, detach retainer plate bolts, then separate retainer plate and seal assembly from end frame. Press bearing out using suitable tube or pipe on inner race (5.5" series) or outer race (6.2" series). If bearing is not pre-lubricated type, fill ¼ full with Delco-Remy No. 1948971 or equivalent. **CAUTION** — *Do not overfill.* To install, press into end frame using suitable tool, as in removal, which fits over outer race.

Bearing — Slip Ring End Frame (5.5" Series) — Replace bearing if grease supply is exhausted. Press bearing from outside of housing toward inside, using suitable tool which just fits inside end frame. To install, place a flat plate over bearing and press in from outside of housing until bearing is flush with outside of end frame. **CAUTION** — *Support inside of end frame around bearing bore to prevent distortion, using extreme care to avoid misalignment.* Saturate felt seal with engine oil and install seal and steel retainer at inner end of bearing assembly.

Bearing — Slip Ring End Frame (6.2" Series) — Remove bearing from rotor shaft using suitable puller (J-6627). To install bearing, use tube or pipe of suitable diameter over inner race and press to locate bearing even with end of rotor shaft.

Slip Ring End Frame & Heat Sink — When replacing these parts, ensure that bolts, terminals and wire are reconnected in proper sequence.

REASSEMBLY

Reassemble alternator by reversing disassembly procedure. After slip ring end frame assembled on rotor and drive end frame assembly, withdraw brush retaining wire from brush holder to allow brushes to drop down on slip rings.