CHRYSLER CORP. WITH ELECTRONIC REGULATOR

DESCRIPTION

Alternator is a conventional three-phase, self-rectifying type. Main components are two end housings, stator, rotor and rectifiers. The rotor consists of a field coil encased between two six-fingered overlapping sections which are the pole pieces and produces a 12 pole magnetic field. Ends of the field coil are connected to the field windings through brushes and slip rings. Pre-lubricated bearings provide support of rotor shaft at the end housings. Three silicone diode rectifiers having negative polarity are pressed into the end housing and three similar diodes having positive polarity are pressed into a die-cast aluminum sink. Alternator output is controlled by a voltage regulator.

CAUTION — Reversed polarity or excessive voltage will result in extensive damage to alternator system. Do not reverse battery leads upon battery installation and both battery cables must be disconnected during charging of battery with a "Fast Charger". Do not use a "Fast Charger" to provide starting voltage.

SPECIFICATIONS

Alternator①	Volts	②Amps.
3438165	15	46,50
3438168	15	60
3438173	15	46,50
3438174	15	60
3438178	15	46,50
3438180	15	60
3438806	15	50
3438807	15	60
3438809	15	50
3438813	15	60
3438846	15	60
3621853	15	50
3621861	15	60
3656218	15	50
3656219	15	60
3755404	15	41
3755406	15	50
3755407	15	60
3755413	15	60

① — Alternator stamped number.
② — Checked at 1250 RPM. Specification is ±3 amperes.

TESTING

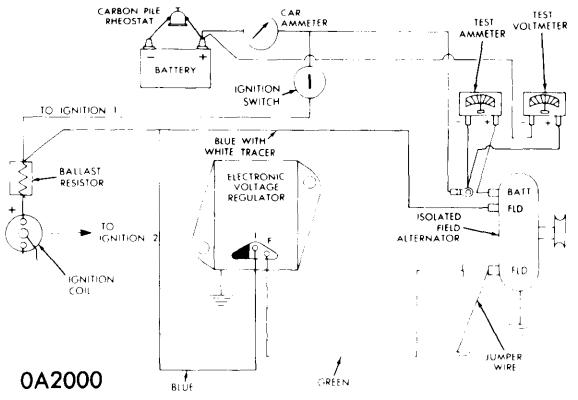
NOTE — Following tests are without the use of special equipment. If special test equipment is used, follow directions of equipment manufacturer. Make all tests with battery fully charged and engine at normal operating temperature.

CHARGING CIRCUIT RESISTANCE

NOTE — Before making test connections, disconnect battery ground cable at battery negative post to avoid accidental shorting of charging or field circuits.

1) Disconnect "BAT" lead at alternator and connect a 0-75 ampere scale D.C. ammeter in series between alternator "BAT" terminal and disconnected lead. Connect positive lead of a voltmeter to disconnected "BAT" lead and connect negative voltmeter lead to battery positive terminal. Disconnect field lead from alternator, then connect a jumper lead from alternator field terminal to ground. Connect a tachometer and then connect battery ground cable. Connect a variable carbon pile to battery terminals.

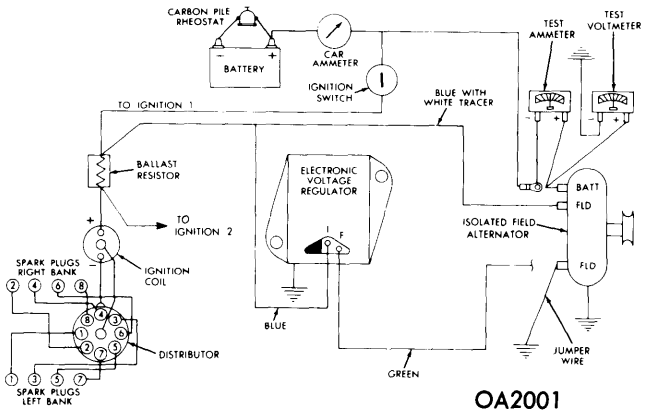
2) Start engine and operate at idle. *CAUTION — To avoid damage, reduce engine speed to idle immediately after starting.* Adjust engine speed and carbon pile to obtain 20 amperes flowing in circuit. Voltmeter reading should not exceed .7 volts. If a higher voltage drop is indicated, inspect, clean and tighten all connections in charging circuit. *NOTE — If necessary, test voltage drop at each connection to locate connection with excessive resistance.*



CHARGING CIRCUIT RESISTANCE TEST

CURRENT OUTPUT

1) Connect test equipment the same as for Charging Circuit Resistance test, move negative lead of voltmeter to a good ground and then move the positive lead of voltmeter to "BAT" terminal of alternator. Start engine and operate at idle. *CAUTION — To avoid damage, reduce engine speed to idle immediately after starting.*



CURRENT OUTPUT TEST

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2) Adjust engine speed and carbon pile until a speed of 1250 RPM and a voltmeter reading of 15 volts is obtained. *CAUTION — Increases in engine speed should not be large enough to allow voltage to exceed 16 volts.* Observe ammeter, current output should be within specifications.

FIELD COIL DRAW

Connect a wire between one field terminal of alternator and positive terminal of a fully charged battery. Connect test ammeter positive lead to the other field terminal of alternator and negative lead to battery negative terminal. Slowly rotate alternator rotor by hand. Observe ammeter reading. Field coil draw should be 2.5-3.1 amperes (except on 1974 vehicles, draw should be 2.5-3.7 amperes) at 12 volts. A low coil draw is an indication of high resistance in field coil circuit (brushes, slip rings or rotor coil). A higher coil draw indicates possible shorted rotor coil or grounded rotor. No reading indicates an open rotor or defective brushes.

RECTIFIER (DIODE) TEST

NOTE — Rectifiers may be tested with a test lamp or with Tester C-3829 as follows:

Test Lamp Method — With rectifier end shield and stator assembly separated from alternator proceed as follows: Test rectifiers (diodes) with a 12 volt battery and a test lamp, (No. 67 bulb, 4 candlepower) by connecting one side of test lamp to negative battery post and other side to positive battery post. Contact heat sink of rectifier with one test probe, and the other test probe to strap on top of rectifier. Now reverse probes, if lamp lights in one direction but does not light in other direction, rectifier is good. If lamp lights in both directions, rectifier is shorted. If lamp does not light in either direction, rectifier is open.

Tool C-3829 Method — Remove alternator brushes and through bolts. Separate rectifier end housing and stator from drive end housing and rotor. Test rectifiers as follows:

1) Check positive rectifiers with alternator on an insulated surface. Connect test lead clip to alternator "BAT" output terminal and plug tool into 110 volt A.C. power supply. Touch exposed bare metal connections of each positive case rectifier with test probe. Reading for satisfactory rectifiers will be 1.75 amperes or more and should be approximately the same for each rectifier. When two rectifiers are good and one is shorted, reading taken at good rectifiers will be low and reading at shorted rectifier will be zero. Disconnect lead to rectifier reading zero and retest. Reading of good rectifiers will now be within satisfactory range. When one rectifier is open it will read approximately .1.0 ampere, and two good rectifiers will read within satisfactory range.

2) To check negative rectifiers, connect test lead clip to rectifier end housing. Touch exposed connection of each negative case rectifier with test probe. *CAUTION — Do not break sealing around rectifier lead wire or on inner end of rectifier as this will accelerate corrosion.* Test specifications and results will be approximately the same as for positive case rectifiers, except meter will read on opposite side of scale.

STATOR TEST

Separate stator from both end shields. Press test probe firmly onto any pin on stator frame. Be sure varnish has been removed so the pin is bare. Press test probe firmly to each of the three phase lead terminals one at a time. If lamp lights, stator lead is grounded. Now press test probe firmly on one phase control lead and contact each of the other two stator leads. Test lamp should light when probe contacts each of the terminals. If lamp does not light, stator is open. Install a new stator if it is open or grounded.

OVERHAUL

DISASSEMBLY

1) Remove brush screws, insulating washers, and lift brush assemblies from end shield. *NOTE — Stator is laminated, do not burr stator or end shield.* Remove through bolts and pry between stator and drive end shield with blade of screwdriver. Carefully separate drive end shield, pulley and rotor assembly away from stator and rectifier shield assembly.

2) Remove rectifier and sink assembly by removing three nuts from studs on terminal block. Lift off stator winding terminals and carefully pry stator from end shield. Loosen screws securing negative rectifier and heat sink to end shield, completely remove outer screws and lift assembly out of end shield. Remove two nuts and washers from positive heat sink assembly and self tapping screw from capacitor and lift assembly from end shield.

3) Pulley is an interference fit on rotor shaft. Remove pulley with suitable puller (C-4068) and pry drive end bearing retainer from end shield with a screwdriver. Support end shield and tap rotor shaft with plastic hammer to separate rotor from end shield. Remove drive end bearing using suitable puller (C-4068). If necessary to remove rectifier end frame needle bearing, protect end shield by supporting it with suitable tool (C-4201). Press bearing out using suitable tool (C-3770A).

SLIP RING REPLACEMENT

1) Remove rotor plastic grease retainer. Unwind field coil leads from slip ring lugs. *CAUTION — Do not break wire leads.* Chisel through copper of both slip rings at opposite points (180° apart). Break plastic insulator and remove old slip ring. Scrape ends of coil wires for good electrical contact and position wires to clear path for new slip ring.

2) Position new slip ring on rotor shaft with lugs in proper position for connecting field coil wires. Place suitable tool (C-3900) over rotor shaft and position rotor, slip ring and tool in arbor press. Press ring on shaft. *CAUTION — When ring bottoms on rotor fan, field lead wire should clear access hole, fan and pole piece.* Tin field coil lead wires. Coil each wire around slip ring lug and solder with resin core solder.

3) Test slip rings for ground with 110 volt test lamp by touching one probe to rotor pole piece and other probe to slip ring. Lamp should not light. Test for continuity by placing one test probe on each slip ring, lamp should light. If rotor is not grounded and field circuit is continuous, clean slip ring surface with a 00 sandpaper. Press grease retainer on rotor shaft using suitable tool (C-3921). Retainer will be properly positioned when tool bottoms on rotor shaft.

REASSEMBLY

NOTE — Insure correct rectifier is installed. Identifying part numbers are stamped on rectifier case and rectifiers are color coded: red for positive and black for negative.

1) Position rectifier end shield bearing on suitable base tool (C-4201) and place alternator end shield on top of bearing so it is properly aligned with top part of suitable bearing press

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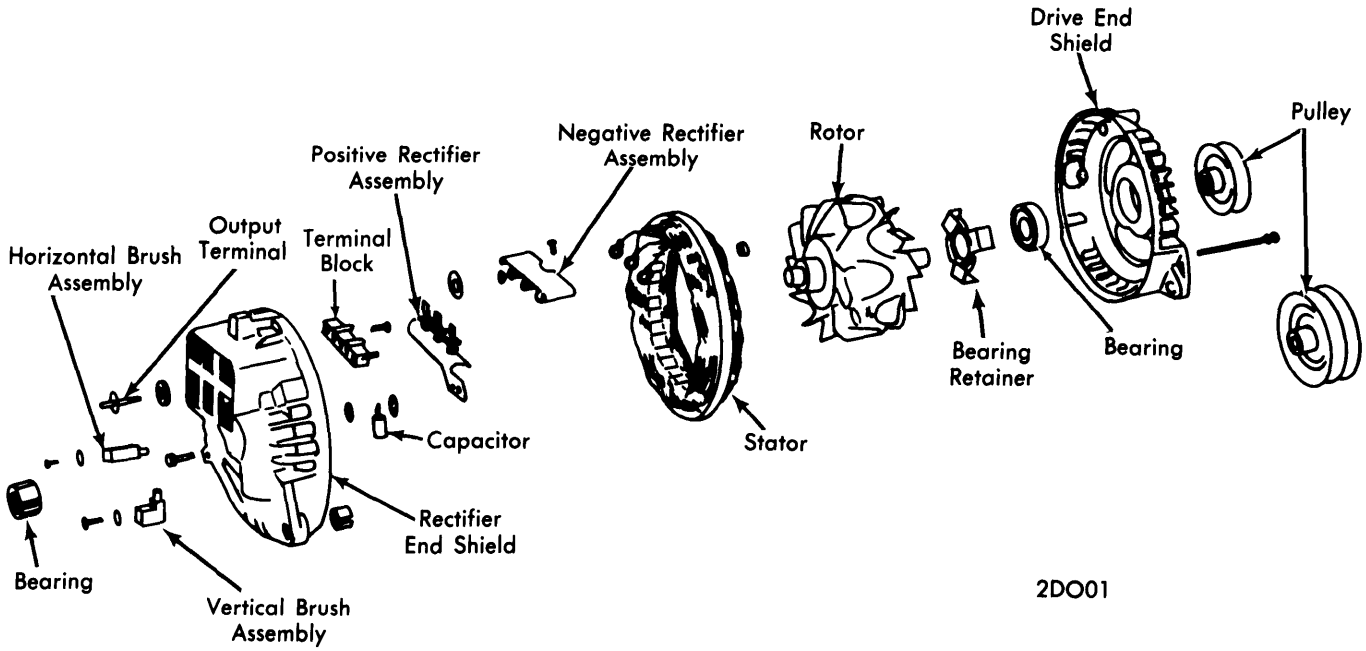
tool and press into place until bearing bottoms. Insert drive end bearing in shield and install bearing retainer plate. Position bearing and drive end shield on rotor shaft, and while supporting base of rotor shaft, press bearing end shield into position on rotor shaft with an arbor press and suitable adapter (C-3858). *NOTE — Make sure bearing is installed squarely.*

2) Install pulley on rotor shaft. Shaft of rotor must be supported so all pressing force is on pulley hub and rotor shaft and not on bearings. Press pulley on rotor shaft until pulley contacts inner race of drive and bearing. *CAUTION — Do not exceed 6800 pounds pressure.*

3) Install output terminal stud and insulator through end shield. Install heat sink assembly over studs, guide rectifier straps over studs of terminal block and install capacitor. Slide negative rectifier and heat sink assembly in place, position straps and install screws.

4) Position stator over rectifier end shield and install winding terminals on terminal block and press stator pins into each end shield. Rotate leads so they cannot contact rotor or sharp edge of negative heat sink. Position rotor and drive end shield over stator and rectifier end shield and install through bolts. Compress both ends manually and tighten through bolts evenly, 20-30 INCH lbs.

5) Install field brushes in insulated holders. Position vertical and horizontal field brushes in proper location in rectifier end shield. Place insulating washer on each field brush terminal and install lockwashers. Be sure that brushes are not grounded. Rotate pulley slowly by hand to be sure rotor fan blades do not hit stator winding leads.



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