Ford

Industrial Power Products

ALTERNATOR SERVICE MANUAL

ALTERNATOR MODELS

38, 45, 55, 60 and 105 AMP

Industrial Engine & Turbine Operations
Village Plaza, 23400 Michigan Avenue, Dearborn, Michigan 48124

Ford

Industrial Power Products

Contents

Foreword

This manual is intended as a comprehensive guide for those concerned with servicing Ford Autolite and Leece-Neville alternators installed on Ford Industrial Engines. Included are complete instructions on Diagnosis, Testing and Adjustments. In addition, complete service Specifications are included in the back.

The instructions contained herein are written for the use of a minimum of test equipment. If specialized alternator testing equipment is used, the instructions of the equipment manufacturer should be followed.

An identification plate is affixed to each alternator. The plate contains all the pertinent information, including the type and serial number. When ordering parts, or carrying on correspondence concerning the alternator system, all information on the identification plate should be mentioned.

Replacement parts can be obtained through local Ford Industrial Products Distributors and Dealers or by writing directly to Industrial Products. Replacement parts having an application common to Ford Truck and Car Engines may be obtained from local Ford Dealers.

INDUSTRIAL ENGINE & TURBINE OPERATIONS
FORD MOTOR COMPANY
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General Description

The alternator-type charging system consists of an alternator, alternator regulator, battery, charge indicator light or gauge, and the necessary wiring to connect the components (Figs. 1 and 2).

The alternator is belt driven from the engine. The mechanical construction of the alternator differs from a generator in that the field rotates, and the generating windings are stationary. Energy is supplied to the rotating field through two brushes and slip rings. The slip rings are mounted on the rotor shaft and are connected to the field coil. (See Figs. 3, 4, and 5)

The alternator produces power in the form of alternating current, rectified to direct current by six diodes. The direct current is then used for charging the battery and supplying power to the electrical system.

The output of the alternator is controlled by a simplified regulator. The regulator is composed of two control units, a field relay and a voltage limiter, mounted as an assembly. A cutout relay is not needed as the alternator diodes block reverse current when the engine is not running. In addition, the alternator is self current limiting, thus a current limiter is not needed.

The system diagrams shown in Figs. 1 and 2 illustrate the hook-up for Ford Autolite Alternators. The hook-up for Leece-Neville alternators is identical except for the identifying markings used on

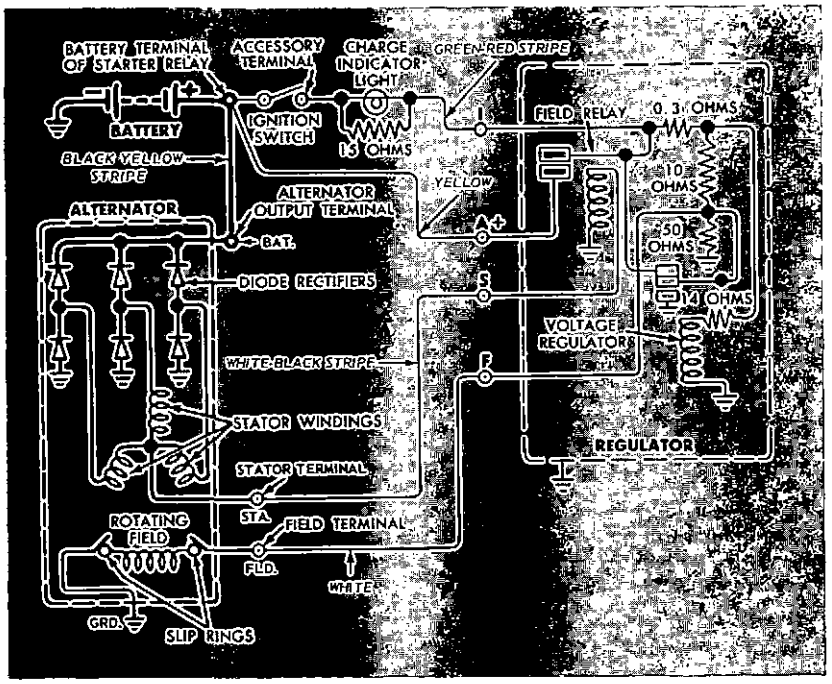

Fig. 1 — Ford Autolite Alternator System Diagram with Charge Indicator Light

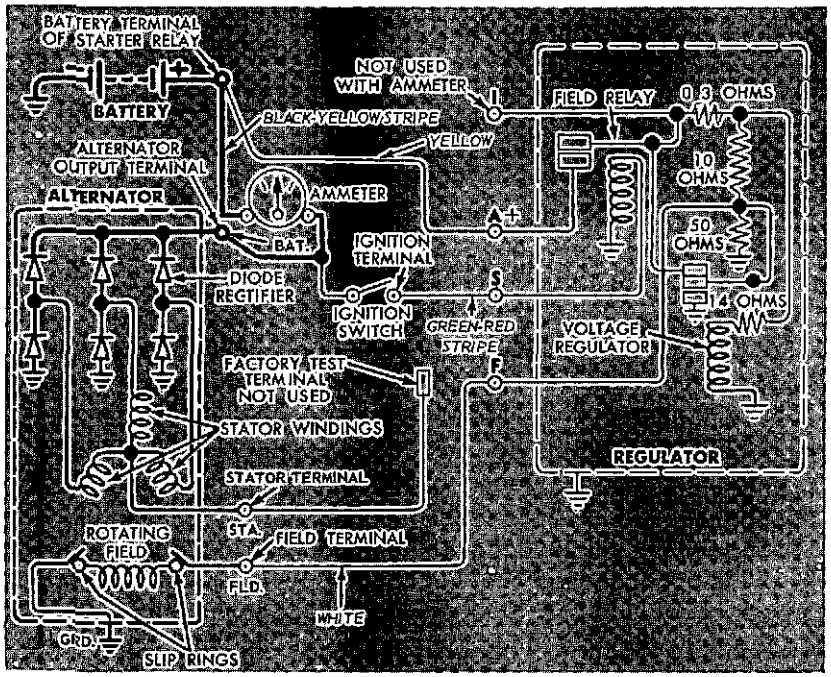

Fig. 2 — Ford Autolite Alternator System Diagram with Ammeter

the alternator and regulator wiring attaching terminals. A comparison of both the Ford Autolite and Leece-Neville identifying markings is shown below.

ALTERNATOR

Alternator Terminal	Ford Autolite Marking	Leece-Neville Marking
Battery	BAT	BAT
Stator Neutral	STA	NEUT
Field	FLD	F
Ground	GRD	GRD

REGULATOR USED WITH CHARGE LIGHT

Regulator Terminal	Ford Autolite Marking	Leece-Neville Marking
To Charge Light	I	LAMP
To Battery	A+	BAT
To Alternator Stator	S	NEUT
To Alternator Field	F	FLD
Ground	—	—

REGULATOR USED WITH AMMETER

Regulator Terminal	Ford Autolite Marking	Leece-Neville Marking
To Battery	A+	BAT
To Ignition Switch	S	IGN
To Alternator Field	F	FLD
To Alternator Stator	I (not used)	—

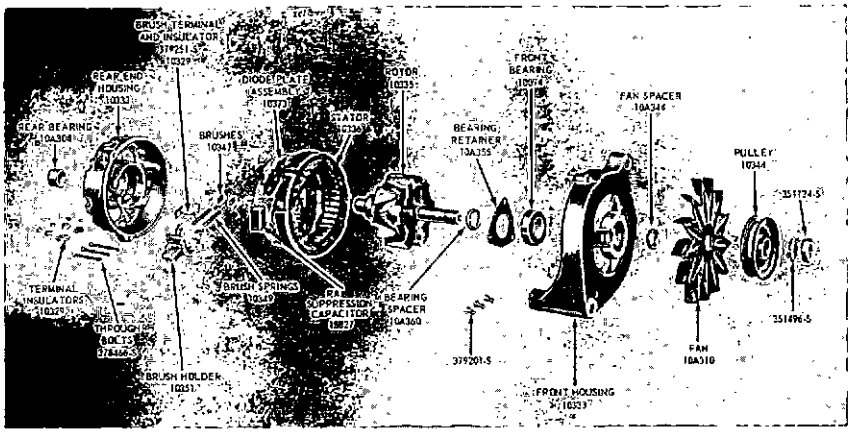

Fig. 3 — Disassembled Ford Autolite Alternator

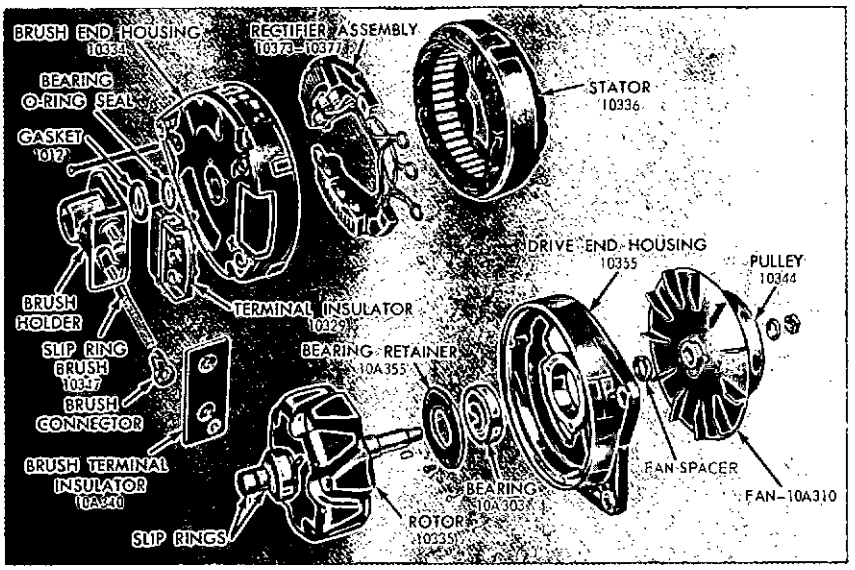

Fig. 4 — Disassembled 60-Amp Leece-Neville Alternator

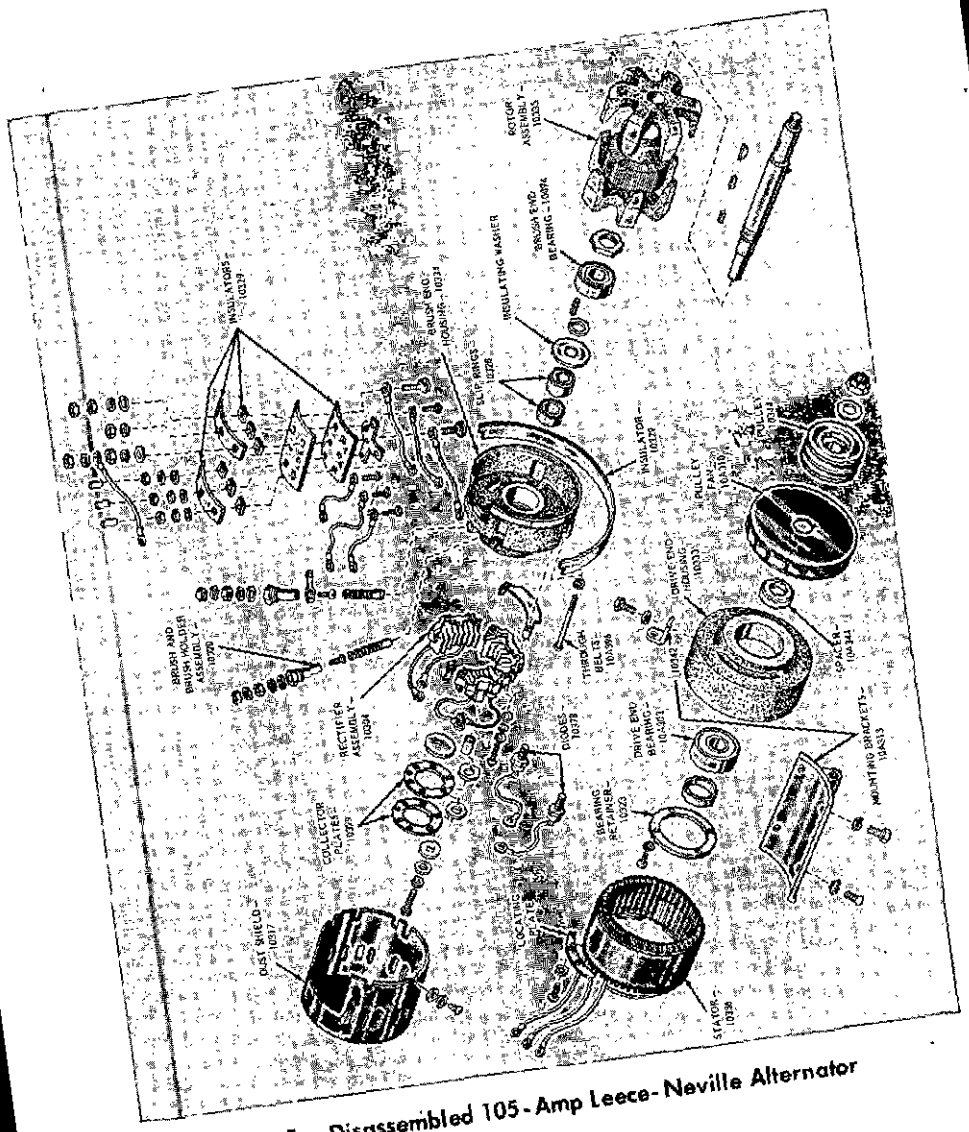

Fig. 5 — Disassembled 105-Amp Leece-Neville Alternator

Diagnosis And Testing

The operating characteristics and design of an alternator charging system differ considerably from a D.C. generator charging system. Due to this difference, alternator systems require different testing and servicing procedures. The diagnosis and testing procedures contained in this section will provide a comprehensive guide to recognize alternator system problems and isolate the trouble.

On alternator equipped units, always adhere to the following safety precautions whenever testing or servicing the charging system or battery. Failure to do so can result in damage to the alternator or regulator.

CAUTION

ALTERNATOR INSTALLATION

DO NOT connect the battery cables until all wiring harness connections have been made and properly tightened.

If accidentally grounded, the lead to the battery terminal of the alternator will burn the wiring harness.

DO NOT pry against the steel center-section (stator), the rear housing, or the through bolts when adjusting drive belt tension. Always place the pry bar against the front housing.

Prying against the wrong parts will bend the through bolts and cause alternator assembly misalignment.

DO NOT attempt to polarize the alternator. It can damage the voltage regulator and is not necessary.

DO NOT connect battery terminals in reverse polarity. This will burn out the alternator diodes. Connect positive (+) to positive and negative (-) to negative.

DO NOT disconnect alternator wires before disconnecting battery cables. Accidental grounding will burn the wiring harness.

DO NOT connect a battery charger to the battery before disconnecting the battery cables. When connecting the battery charger, connect positive (+) to positive and negative (-) to negative.

DO NOT use an electric welder on machine unless both battery cables and alternator wires are disconnected.

DO NOT ground the field circuit, either at regulator or alternator.

DO NOT operate alternator with the rotor winding energized unless it is connected to an external load.

ALWAYS use a recommended diode tester to check diodes.

ALTERNATOR SYSTEM DIAGNOSIS GUIDE

SYMPTOM	PROBABLE CAUSE AND REMEDY
BATTERY LOW IN CHARGE	BROKEN, LOOSE OR SLIPPING ALTERNATOR BELT • Replace and/or adjust belt. CORRODED, LOOSE OR DAMAGED CIRCUIT WIRING AND/OR CABLES • Inspect all connections, wire and cables. Service or replace as necessary.

SYMPTOM	PROBABLE CAUSE AND REMEDY
BATTERY LOW IN CHARGE (Con't)	BATTERY NEEDS REPLACEMENT • Perform a battery Capacity Test as outlined in this section. Replace the battery if test indicates it is worn out or under capacity. ALTERNATOR SYSTEM NOT FUNCTIONING PROPERLY • Test alternator system, starting with "Alternator Output Test" in this section. Service or replace components as required.
BATTERY WON'T HOLD CHARGE	UNWANTED EXTERNAL LOAD • Disconnect battery ground cable. Connect voltmeter between battery negative post and cable. With all circuits off, meter should read zero. If voltage is indicated, check for improper wiring connection. BATTERY NEEDS REPLACEMENT • Perform a battery Capacity Test as outlined in this section.
CHARGE INDICATOR LIGHT STAYS ON AMMETER SHOWS CONSTANT DISCHARGE ALTERNATOR HAS NO OUTPUT ALTERNATOR HAS LOW OUTPUT	DRIVE BELT, WIRE, CABLE AND/OR BATTERY NOT WITHIN SPECIFICATIONS • Replace, and/or adjust drive belt. • Inspect all connections, wire and cables. Service or replace as necessary. • Perform a battery Capacity Test as outlined in this section. ALTERNATOR OUTPUT LOW OR NO OUTPUT • Test alternator system starting with "Alternator Output Test" in this section. Service or replace components as directed.
ALTERNATOR NOISY	First try to localize the noise to make sure the alternator is at fault, and not the belt,

SYMPTOM	PROBABLE CAUSE AND REMEDY
ALTERNATOR NOISY (Cont'd.)	water pump or other part of the engine. A shorted diode will cause a whine (magnetic noise) at idle speed. Check alternator output; if approximately 10 amps less than normal, a shorted diode is indicated. If noise is traced to the alternator, and the cause cannot be determined, remove the alternator and inspect the bearings.
SHORT BATTERY LIFE BATTERY USES EXCESSIVE WATER DISTRIBUTOR POINTS OR COIL BURN OUT	FAULTY WIRING CONNECTION IN CHARGING SYSTEM – INCLUDING REGULATOR GROUND WIRE • Inspect all wiring and connections. Tighten or repair as necessary. ALTERNATOR REGULATOR VOLTAGE LIMITER NEEDS ADJUSTMENT • Check voltage limiter setting. If within specifications, set at low end. If setting is too high, inspect contacts. If burned, replace regulator. If in good condition, adjust setting to specifications. See "Regulator Voltage Limiter Test," this section.
WARNING LIGHT FLICKERS OR AMMETER NEEDLE FLUCTUATES	DIRTY OR OXIDIZED REGULATOR CONTACTS • Clean contacts or replace regulator. LOOSE OR DAMAGED WIRES AND/OR CABLES • Tighten connections and/or replace wiring. WORN ALTERNATOR BRUSHES OR IMPROPER BRUSH TENSION • Remove alternator and replace brushes.
FLASHING OF WARNING LIGHT AND OIL LIGHT WITH SWITCH OFF	SHORTED POSITIVE DIODE • Remove alternator and test diodes. Replace as necessary.

BATTERY CAPACITY TEST

A high-rate discharge tester, a voltmeter and a specific gravity tester are used for this test. *The battery solution must be within 60° F. to 100° F. and at the proper level.* Connect the voltmeter and high-rate discharge tester to the appropriate battery terminals. The voltmeter clips must contact the battery posts and not the high-rate discharge tester clips. Unless this is done, the actual terminal voltage will not be indicated.

Perform the test following the directions in Fig. 6. Replace battery if test indicates it is no longer serviceable.

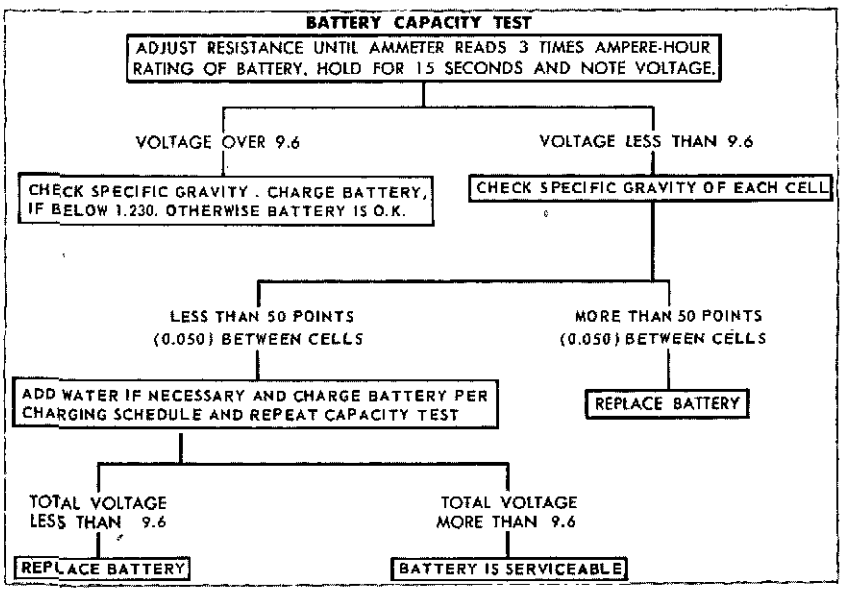

Fig. 6 — Battery Capacity Test

ALTERNATOR OUTPUT TEST

This test measures the current output at rated speed and voltage. The test result is a measure of the ability of the alternator to produce its rated output.

The instructions contained herein are for the use of a minimum of test equipment — ammeter, voltmeter, and a standard carbon pile rheostat. Test equipment manufacturers have developed a special "Battery Post Adapter Switch" which makes the insertion of an ammeter in the circuit convenient and relatively safe. In addition, special alternator testing equipment is also available. If this equipment is used, follow the instructions of the manufacturer.

TEST CONNECTIONS — The test connections are shown in Fig. 7. Disconnect the battery ground cable. Remove the alternator lead wire from the battery terminal on the starter relay. Connect the ammeter between the starter relay battery terminal and the removed alternator lead wire. Also connect a voltmeter between the removed alternator lead wire and battery negative terminal. If a battery post adapter switch is used, it is not necessary to remove the alternator wire from the starter relay. In this case, the ammeter leads are attached to either side of the switch and the voltmeter leads are attached to the outer side of the switch and battery ground.

On Ford Autolite systems, disconnect the connector plug from the regulator and install a jumper wire across the "A+" and "F" terminals on the plug. Spade connectors on the jumper wire will be required for most applications. On Leece-Neville systems, disconnect the "BAT" and "FLD" leads from the regulator and connect the leads with a jumper.

Install a carbon pile rheostat across the battery terminals.

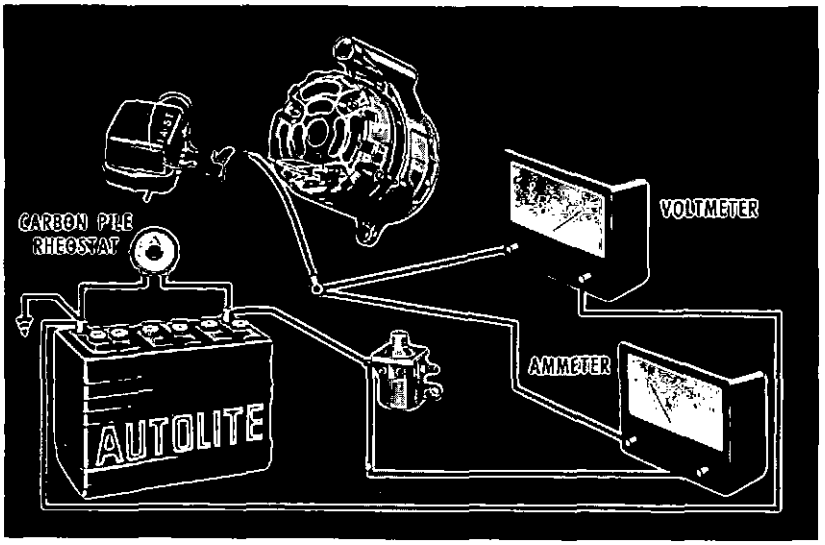

Fig. 7 — Alternator Output Test — Typical

TEST PROCEDURE — Reconnect the battery ground cable. If a battery post switch is used, close the switch. Start the engine and open the battery post switch. Slowly accelerate to 1500 rpm while adjusting the carbon pile rheostat to maintain 15 volts.

Compare the amperage reading on the ammeter with the rated output for the alternator being tested. (See Specifications). If no output current is noted during the period of acceleration, stop the test. If

a battery post switch is used, add five amperes to the ammeter reading as approximately this amount is hidden from the ammeter, but supplied by the alternator.

TEST CONCLUSIONS — If alternator amperage output meets or exceeds the rated output, any suspected malfunction is probably located elsewhere in the system. Check all wiring, especially the resistance wire around the light, and the setting of the regulator. On Ford Autolite alternators, a neutral voltage test is also required to determine if field coil voltage is available.

An output less than specified is an indication of a poor connection, a broken wire in the wiring harness or connector plug, or a faulty alternator. Perform the circuit resistance tests. An output of 2 to 5 amperes less than specifications is usually an indication of an open diode or slipping drive belt. An output of approximately 10 amperes less than specifications is usually caused by a shorted diode.

If there is no alternator output, repeat the test using jumper wires to bypass the alternator output lead to the test ammeter, and the wiring from the alternator field terminal to the positive side of the battery. Remove the alternator for repairs if there is still no output.

ALTERNATOR NEUTRAL VOLTAGE TEST — AUTOLITE

This test determines if there is sufficient voltage to close the regulator field relay in the charge indicator light system.

TEST CONNECTIONS AND PROCEDURE — The alternator system should be completely assembled and connected. Attach a voltmeter positive lead to the alternator STA terminal and the negative lead to ground. Start the engine and run at 1000 rpm. The voltage should be six volts or more.

TEST CONCLUSIONS — If the voltage is six volts or more, any malfunction is in the wiring, connections or regulator. If voltage is less than six volts, remove the alternator and make the bench tests.

CIRCUIT RESISTANCE TESTS

Excessive resistance in the charging circuit can cause an undercharged battery condition. Two tests are necessary to determine circuit resistance, and both tests require a current flow of 20 amperes and a voltage loss or drop measurement.

TEST CONNECTIONS AND PROCEDURE — The test connections are shown in Fig. 8. Disconnect the battery ground cable. Remove the alternator lead wire from the battery terminal on the starter relay. Connect an ammeter between the starter relay battery terminal and the removed alternator lead. Also connect a voltmeter between the removed alternator lead and the output terminal (BAT) on the

alternator. (Solid lines in Fig. 8). On Ford Autolite alternator systems, disconnect the regulator connector from the regulator and install a jumper wire across the "A+" and "F" terminals on the connector. On Leece-Neville systems, remove the "BAT" and "FLD" wires from the regulator and connect the wires with a jumper.

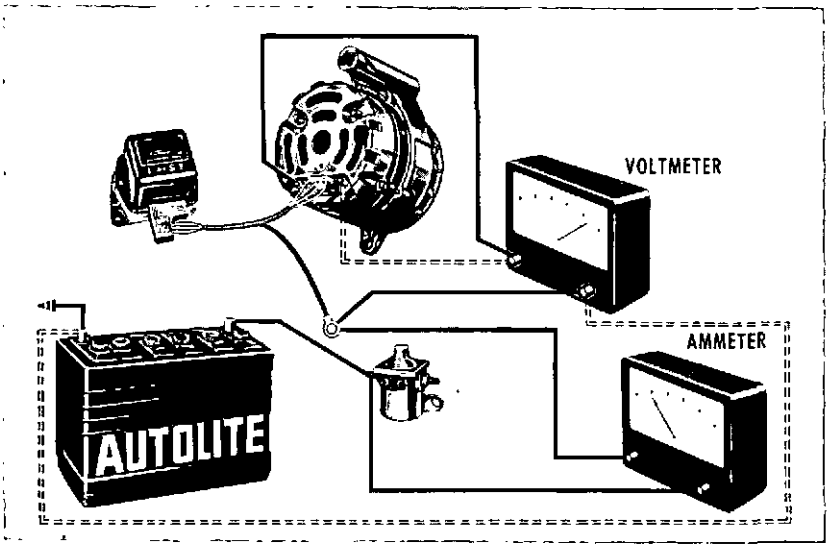

Fig. 8 — Circuit Resistance Tests

Reconnect the battery ground cables, start the engine and accelerate until an amperage reading of 20 amps is obtained. Observe the voltmeter reading, which should not exceed 0.3 volt on engines equipped with a charge lamp, or 0.7 volt on engines with an ammeter.

To test the ground circuit, connect the voltmeter negative lead to the alternator frame, and the positive lead to the battery ground post. (Dotted lines in Fig. 8). Start the engine and observe the voltmeter while the ammeter reads 20 amps. The voltage should not exceed 0.3 volt.

TEST CONCLUSIONS — The majority of high resistance readings can be traced to improper or corroded connections. Check and clean all connections.

REGULATOR VOLTAGE LIMITER TEST

Voltage limiter tests are essential when battery water usage or state of charge are the cause of trouble. Voltage limiter calibration tests must be made with the regulator cover and gasket in place, and with the regulator temperature normalized. If necessary, run the engine at a fast idle for 20 minutes to normalize the temperature.

For accurate voltage limiter testing, the battery specific gravity must be at least 1.225. If the battery is low in charge, either charge it to 1.225 specific gravity or substitute a fully charged battery.

TEST CONNECTIONS AND PROCEDURE — The test connections are shown in Fig. 9. Disconnect the battery ground cable. Remove the alternator lead wire from the battery terminal of the starter relay. Connect a 1/4-ohm resistor and an ammeter in series between the starter relay battery terminal and the removed alternator lead. Also connect a voltmeter between the removed alternator lead and the battery negative terminal.

Attach a voltage regulator thermometer to the regulator cover. Reconnect the battery ground cable, and start the engine. Operate engine at approximately 2000 rpm for 5 minutes.

When the battery is charged, and the voltage regulator has been temperature stabilized, the ammeter should indicate less than 10 amperes.

It is important to cycle the regulator at this time: stop the engine, restart the engine and increase the speed to 2000 rpm. Allow the battery to normalize for about a minute, then read the voltmeter and thermometer.

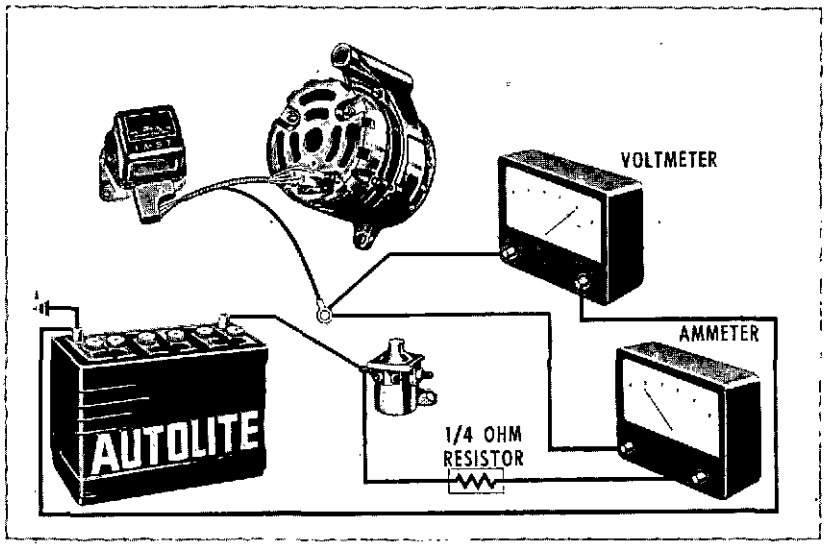

Fig. 9 — Voltage Limiter Test

TEST CONCLUSIONS — If the regulated voltage is not within the specifications for the recorded temperature shown in the chart, an adjustment should be made (Refer to regulator adjustments in the Adjustment Section). After each adjustment, be sure to cycle the regulator before each reading. The readings must be made with the regulator cover in place.

VOLTAGE LIMITER SETTING VS. AMBIENT AIR TEMPERATURE

Ambient Air Temperature °F.	Voltage Limiter Setting (Volts)
50	14.3-15.1
75	14.1-14.9
100	13.9-14.7
125	13.8-14.6

FIELD RELAY TEST

This test is normally made with the regulator on the bench, and checks the field relay closing voltage.

TEST CONNECTIONS AND PROCEDURE — A 100 ohm rheostat and a voltmeter are used to make this test. The test connections for Autolite regulators are shown in Fig. 10. If the test is made with the regulator in place, disconnect the battery ground cable and all connections at the regulator before proceeding.

Remove the regulator cover. If the test is performed on the bench, connect a ground wire from the regulator base to the battery negative terminal. On Leece-Neville regulators, the rheostat and voltmeter connections are made at the regulator "NEUT" terminal for warning light systems, or at the regulator "IGN" terminal for ammeter systems.

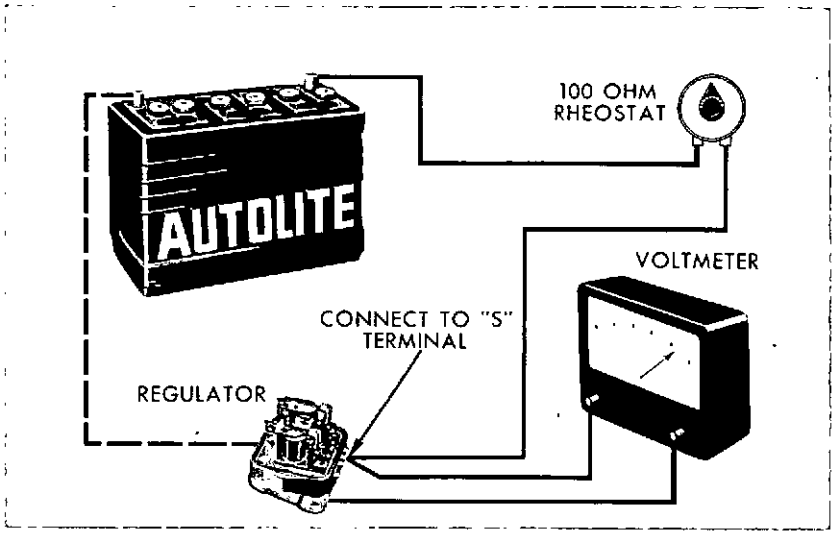

Fig. 10 — Field Relay Test Hook-Up — Ford Autolite Shown

Adjust the rheostat to the maximum resistance position. Slowly reduce the resistance until the field relay contacts close. Observe the voltmeter reading at the moment the relay contacts close. If the voltage jumps and a reading cannot be obtained, reverse the rheostat leads.

TEST CONCLUSIONS — The field relay closing voltage should be within the specifications shown in the Specifications Section. If relay needs adjustment, refer to the Adjustments Section.

ALTERNATOR FIELD TEST

This test determines the condition of the field coil and brushes. It is normally made with the alternator removed from the engine.

TEST CONNECTIONS AND PROCEDURE — Attach a jumper wire between the alternator field terminal and the negative post of a 12 volt battery. Attach an ammeter between the battery positive post and the alternator frame. Compare the reading on the ammeter with the field current shown in the Specifications for the alternator being tested.

TEST CONCLUSIONS — If there is little or no current flow, the field coil or brushes have a high resistance or are open. A higher than specified current flow indicates a shorted or grounded field coil or touching brush leads. If the test shows that the field is shorted or open and the field brush assembly or slip rings are not at fault, the entire rotor must be replaced.

DIODE TESTS

Diode tests determine whether a diode is good, open or shorted. It is recommended that a diode tester be used. Regardless of the tester used, however, it must be remembered that a good diode will allow current to flow only in one direction. For example, a positive diode will allow current to flow from negative to positive, but will block current flow from positive to negative. A shorted diode will allow current to flow in both directions, while an open diode will not allow current to flow in either direction.

TEST CONNECTIONS AND PROCEDURE — FORD AUTOLITE ALTERNATORS — There are two types of Autolite alternators in service. One design has a radio interference capacitor attached internally to the diode plate assembly. The other design does not have an internal capacitor. If fitted, the capacitor is on the outside.

The procedure for testing the positive diodes in an Autolite alternator without the internal capacitor is shown in Fig. 11. Make the connections as shown. Contact the probe to each stator lead terminal.

Make sure that the tip of the probe is sharp and that it penetrates the varnish at the stator terminals.

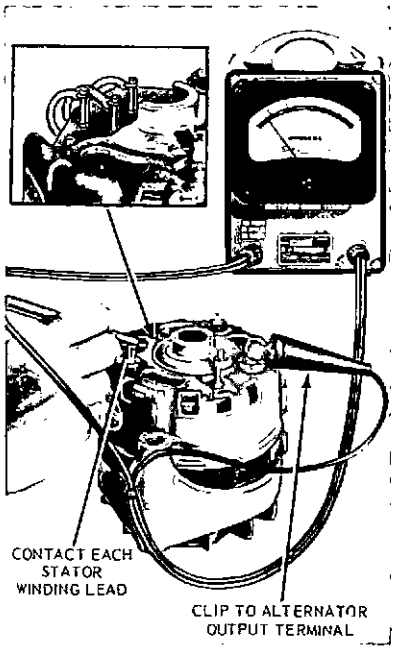

Fig. 11 – Positive Diode Test – Ford Autolite Alternator without Internal Capacitor

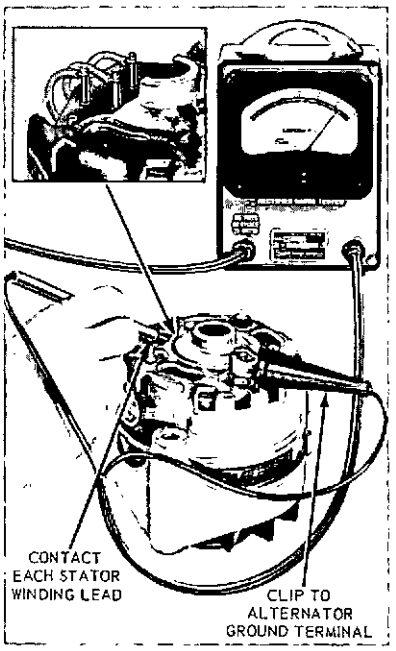

Fig. 12 – Negative Diode Test – Ford Autolite Alternator without Internal Capacitor

To test the negative diodes, make the connections shown in Fig. 12. Follow the same procedure as for the positive diodes.

To test the diodes in an Ford Autolite alternator that has an internal capacitor, the alternator must be disassembled and the diode assembly disconnected from the stator. Make the test connections as shown in Fig. 13.

To test the negative diodes contact one probe to the diode plate as shown and contact each of the three stator lead terminals with the other probe. Reverse the probes and repeat the test. Test the positive diodes in the same way.

TEST CONNECTIONS AND PROCEDURE — LEECE-NEVILLE ALTERNATORS — The test connections are shown in Fig. 14. To test the negative diodes contact one probe to the heat sink and the other probe to each diode terminal. Reverse the probes and repeat the test. Test the positive diodes in the same way.

TEST CONCLUSIONS — If the tests indicate an open or shorted diode, it is advisable to replace the complete rectifier assembly.

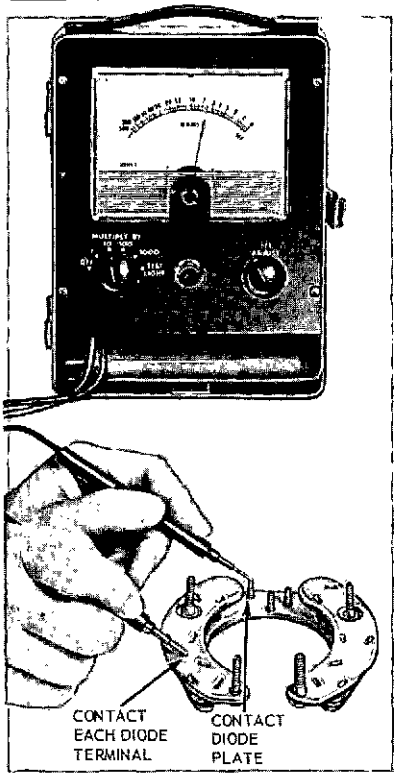

Fig. 13 – Diode Test – Ford Autolite Alternator with Internal Capacitor

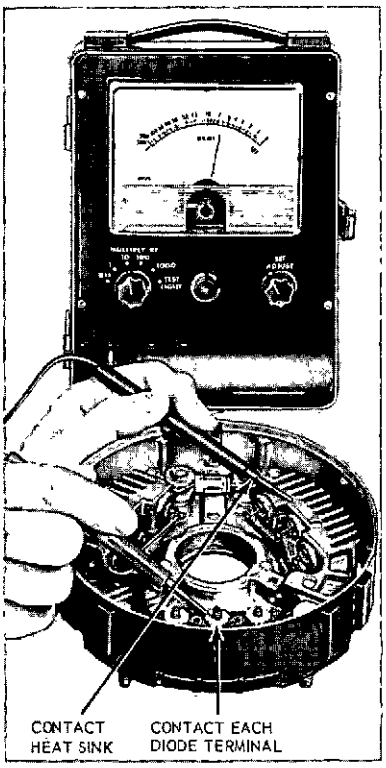

Fig. 14 – Diode Test – Leece-Neville Alternators

OPEN OR GROUNDED STATOR COIL TESTS

These tests are made to verify that the stator coil is defective. Disassemble the stator from the alternator and rectifier assembly for these tests.

OPEN STATOR TEST — ON BENCH — Connect an ohmmeter between each pair of stator leads. If the ohmmeter does not show equal readings between each pair of stator leads, the stator is open and must be replaced.

GROUNDED STATOR TEST— ON BENCH— Connect an ohmmeter between one of the stator leads and the stator core. Be sure that the test lead makes a good electrical connection to the core. The ohmmeter should not show any continuity, if it does, the stator winding is grounded and must be replaced.

Adjustments

Irregular operation of the regulator, indicated by erratic movement of the voltmeter pointer during a voltage limiter test, may be caused by dirty or pitted regulator contacts. *Ammeter pointer waver at certain critical engine speeds and electrical loads is normal.* Use a very fine abrasive paper such as silicone carbide, 400 grade, to clean the field relay and the voltage limiter contacts. Wear off the sharp edges of the abrasive by rubbing it against another piece of abrasive paper. Fold the abrasive paper over and pull the paper through the contacts to clean them. Keep all oil or grease from contacting the points. Do not use compressed air to clean the regulator. When adjusting the gap spacing, use absolutely clean feeler gauges.

FORD AUTOLITE REGULATOR GAP ADJUSTMENTS

VOLTAGE LIMITER — The difference between the upper stage and lower stage regulation (0.3 volt), is determined by the voltage limiter contact and core gaps. Make the gap adjustment with the regulator removed from the unit.

Bend the lower contact bracket to obtain 0.017 to 0.022-inch gap at the lower contacts with the upper contacts closed. (Fig. 15). Maintain the contacts in alignment.

Adjust the core gap with the upper contacts closed. Loosen the center lock screw 1/4 turn. Use a screwdriver blade in the adjustment slot under the lock screw. Adjust the core gap for 0.049 to 0.56-inch clearance between the armature and the core at the edge of the core closest to the contact points. Tighten the lock screw and recheck the core gap.

FIELD RELAY — Place a 0.010 to 0.018-inch feeler gauge on top of the contact spring arm. Bend the contact post arm (Fig. 15) until the bottom contact just touches the upper contact.

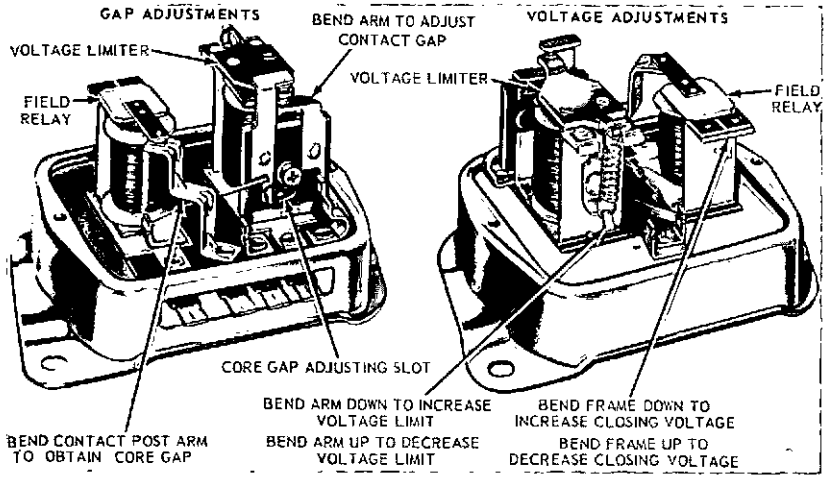

Fig. 15 — Ford Autolite Regulator Adjustment Points

FORD AUTOLITE REGULATOR VOLTAGE ADJUSTMENTS

Final adjustment of the regulator must be made with the regulator at normal operating temperature.

FIELD RELAY — The field relay closing voltage is 2.5 — 4 volts and is adjusted by bending the relay frame (Fig. 15). To increase the closing voltage, bend the armature frame down. To decrease the closing voltage, bend the frame up.

VOLTAGE LIMITER — The voltage limiter is adjusted by bending the voltage limiter spring arm (Fig. 15). To increase the voltage setting, bend the adjusting arm downward. To decrease the voltage setting, bend the adjusting arm upward. (See Table in Specifications).

Before setting the voltage and before making a final voltage test, the alternator speed must be reduced to zero and the ignition switch opened momentarily, to cycle the regulator. Final checking of the regulator adjustments must be made with the cover in place.

LEECE-NEVILLE REGULATOR GAP ADJUSTMENTS

VOLTAGE LIMITER — Adjust the contact gap first. Loosen the contact-gap adjusting arm lock screw (Fig. 16), and adjust the contact gap to 0.018 — 0.020-inch. Tighten the lock screw. Adjust the core gap with the lower contacts closed. Loosen the core gap lock screw and move the contact insulator up or down until the core gap is 0.042-0.052-inch between the coil core and the armature. Tighten the lock screw.

FIELD RELAY—Adjust the core gap first. Loosen the field relay air gap lock screw (Fig. 16), and move the contact insulator up or down until the core gap between the coil core and the armature is 0.009-0.011-inch on regulators used with an indicator light circuit and 0.011-0.013-inch on regulators used with an ammeter circuit. Tighten the lock screw. Put the blade of a small screw driver in the field relay adjusting arm slot, and bend the arm to obtain a contact of 0.018-0.020-inch on regulators used with an indicator light circuit, and 0.024-0.026-inch on regulators used with an ammeter circuit.

LEECE-NEVILLE REGULATOR VOLTAGE ADJUSTMENTS

VOLTAGE LIMITER — To increase the voltage setting, bend the adjusting arm downward (Fig. 17). To decrease the voltage setting, bend the adjusting arm upward. (See Table in Specifications). *Before adjusting the voltage, and before making a final voltage reading with the cover in place, cycle the alternator. Reduce the alternator speed to zero and turn the ignition switch to OFF momentarily. This procedure must be repeated each time an adjustment is made.*

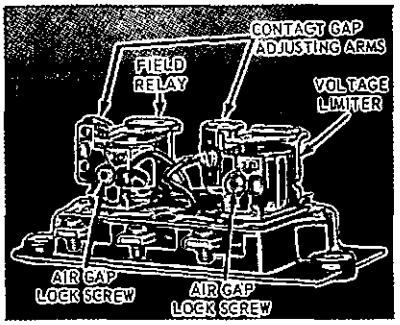

Fig. 16 – Leece-Neville Regulator Gap Adjustments

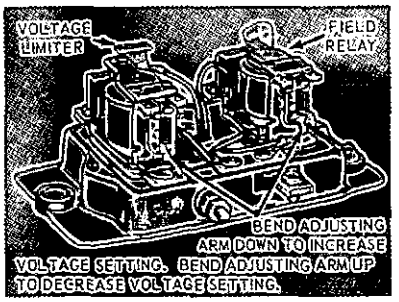

Fig. 17 – Leece-Neville Regulator Voltage Adjustments

FIELD RELAY — The field relay cut-in voltage is increased by bending the adjusting arm downward, or decreased by bending the adjusting arm upward (Fig. 17). The cut-in voltage for a regulator used in an indicator light circuit is 1.6-2.6 volts. The cut-in voltage for a regulator used in an ammeter circuit is 6.2-7.2 volts.

DRIVE BELT ADJUSTMENT

1. Loosen the alternator mounting bolts and the adjusting arm bolts.
2. *Apply pressure on the alternator front housing only* and tighten the adjusting arm to alternator bolt.
3. Check the belt deflection at the longest span. The belt should deflect 1/2 inch with moderate finger pressure. If a belt tension tool is used (Ford T63L-8620-A or equivalent) adjust the belt to the tension specified in the Specifications Section, page 22.
4. Tighten all mounting bolts.

ALTERNATOR

Supplier	Stamp Color	Rating[1] Amps at 15V	Rating[1] Watts at 15V	Field Current Amps at 12V	Cut-In Speed (Engine rpm)	Rated Output Speed (Engine rpm)	Slip-Ring Turning (Inches) Min. Dia.	Slip-Ring Turning (Inches) Max. Runout	Brush Length (Inches) New	Brush Length (Inches) Wear Limit	Pulley Nut Torque (ft.-lbs.)	Belt Tension (lbs) 6-Cyl.	Belt Tension (lbs) 8-Cyl.[2]
Ford Autolite	Purple	38	570	2.5	400	1500 Cold 2900 Hot	1.22	0.0005	1/2	5/16	60-100	60-90	80-110
Ford Autolite	Black	45	675	2.9	400	1700 Cold 2900 Hot	1.22	0.0005	1/2	5/16	60-100	60-90	80-110
Ford Autolite	Red	55	825	2.9	400	1400 Cold 2900 Hot	1.22	0.0005	1/2	5/16	60-100	60-90	80-110
Leece-Neville	–	60	840	2.9	400	1600 Cold 2000 Hot	Light Cut	0.002	1/2	9/32	40-50	60-90	80-110
Leece-Neville	–	105	1470	3.0	360	1150 Cold	Light Cut	0.002	1/2	9/32	40-50	–	80-110

1 Leece-Neville rating is at 14 volts.
2 Used Belt. New Belt 110-140. A used belt is one that has been in operation more than 10 minutes.

REGULATOR

Vendor	Current Reading	Lower Stage Voltage Regulation at 75° F.	Voltage Limiter Contact Gap (Inches)	Voltage Limiter Core Air Gap (Inches)	Field Relay Contact Gap (Inches)	Field Relay Core Air Gap (Inches)	Closing Volts
Ford Autolite	Used with Autolite Alternators	14.1-14.9	0.017-0.022	0.049-0.056	—	0.010-0.018	2.5-4
Leece-Neville Indicator Light Circuit	Used with 53 Ampere Leece-Neville Alternator	14.1-14.9	0.018-0.020 With Lower Contacts Closed	0.042-0.052 With Lower Contacts Closed	0.018-0.020	0.009-0.011 With Contacts Touching	1.6-2.6
Leece-Neville Ammeter Circuit	Used with 53 and 60-Ampere Leece-Neville Alternator	14.1-14.9	0.018-0.020 With Lower Contacts Closed	0.042-0.052 With Lower Contacts Closed	0.024-0.026	0.011-0.013 With Contacts Touching	6.2-7.2