

BENCH TESTS

Rectifier Short or Grounded and Stator Grounded Test

These tests are performed with an 02-0364 tester or equivalent. Set the "Multiply By" knob at 10, and calibrate the ohmmeter as directed inside the instrument cover.

1. Contact one ohmmeter probe to the alternator BAT terminal (Fig. 5) and the other probe to the STA terminal (rear blade terminal). Then, reverse the ohmmeter probes and repeat the test. A reading of about 60 ohms should be obtained in one direction and no needle movement with the probes reversed. A reading in both directions indicates a bad positive diode, a grounded positive diode plate or a grounded BAT terminal.

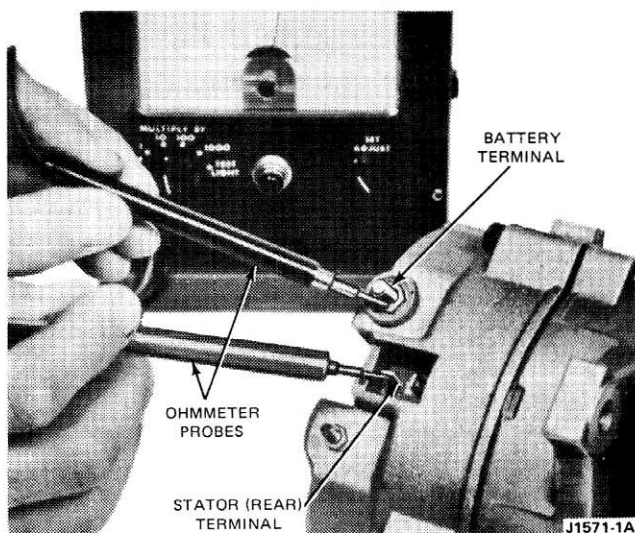


FIG. 5 Rectifier Short or Grounded and Stator Grounded Test

2. Perform the same test using the STA and GND (ground) terminals of the alternator. A reading in both directions indicates either a bad negative diode, a grounded stator winding, a grounded stator terminal, a grounded positive diode plate, or a grounded BAT terminal.
3. Infinite readings (no needle movement) in all four probe positions in the preceding tests indicates an open STA terminal lead connection inside the alternator.

Field Open or Short Circuit Test

This test is performed with an ohmmeter (Tool 02-0364) or equivalent. Set the ohmmeter "Multiply By" knob at 1 and calibrate the ohmmeter as directed inside the instrument cover.

1. Contact the alternator field terminal with one probe and the ground terminal with the other probe (Fig. 6). Then, spin the alternator pulley. The ohmmeter reading should be between 2.4 and 25.0 ohms, and should fluctuate while the pulley is turning.
2. An infinite reading (no meter movement) indicates an open brush lead, worn or stuck brushes, or a bad rotor assembly.

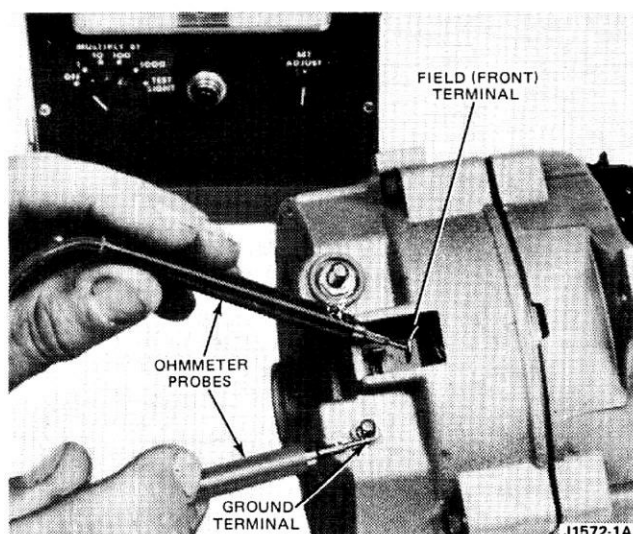


FIG. 6 Field Open or Short Circuit Test

3. An ohmmeter reading less than 2.4 ohms indicates a grounded brush assembly, a grounded field terminal or a bad rotor.

Diode Test

Remove the rectifier assembly from the alternator as outlined in Section 5. Set the ohmmeter Multiply By knob at 10 and calibrate the meter as directed inside the cover.

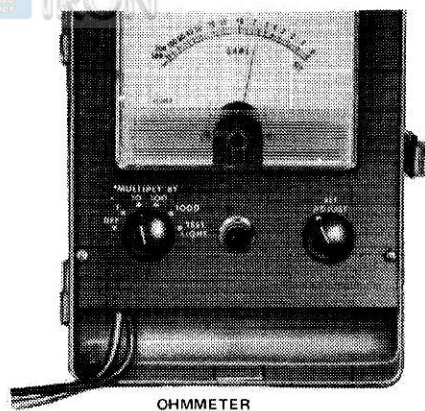
1. To test one set of diodes, contact one probe to the terminal bolt as shown in Figs. 7 and 8 and contact each of the three stator lead terminals with the other probe. Reverse the probes and repeat the test. All diodes should show a low reading of about 60 ohms in one direction, and an infinite reading (no needle movement) with the probes reversed.
2. Repeat the preceding tests for the other set of diodes except that the other terminal screw is used.
3. If the meter readings are not as specified, replace the rectifier assembly.

Stator Coil Open or Grounded Test

These tests are made to determine if the stator coil is operating properly. Disassemble the stator from the alternator as outlined under Disassembly in Part 31-10 or Part 31-12.

Set the 02-0364 ohmmeter or equivalent "Multiply By" knob at 1000.

1. Connect the ohmmeter probes to one of the stator leads and to the stator laminated core. Be sure that the probe makes a good electrical connection with the stator core. The meter should show an infinite reading (no meter movement).
2. If the meter does not indicate an infinite reading (needle moves), the stator winding is shorted to the core and must be replaced.
3. Repeat this test for each of the stator leads. **Do not touch the metal probes or stator leads with the hands. Such contact will result in an incorrect reading.**



OHMMETER

CONTACT EACH TERMINAL

CONTACT DIODE PLATE

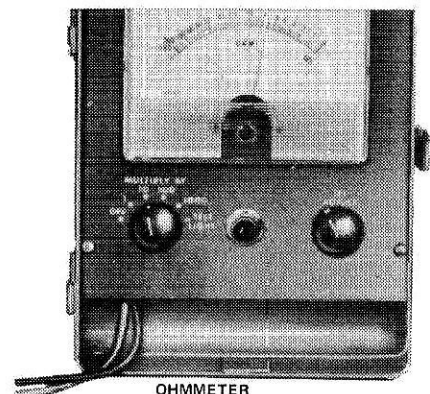
J1211-1F

FIG. 7 Diode Test—Rear Terminal Alternator Except 61-Ampere

Rotor Open or Short Circuit Test

Disassemble the front housing and rotor from the rear housing and stator as outlined under Disassembly in Part 31-10 or Part 31-12. Set the ohmmeter (02-0364 or equivalent) "Multiply By" knob at 1 and calibrate the meter as directed inside the ohmmeter cover.

1. Contact each ohmmeter probe to a rotor slip ring. The meter reading should be 2.4 to 4.9 ohms.
2. A higher reading indicates a damaged slip ring solder connection or a broken wire.
3. A lower reading indicates a shorted wire or slip ring. Replace the rotor if it is damaged and cannot be repaired.
4. Contact one ohmmeter probe to a slip ring and the other probe to the rotor shaft. The meter reading should be infinite (no deflection).
A reading other than infinite indicates the rotor is shorted to the shaft. Inspect the slip ring soldered terminals to be sure they are not bent and not



OHMMETER

CONTACT EACH TERMINAL

CONTACT
DIODE PLATE

CONTACT TERMINAL SCREW

J1567-1B

FIG. 8 Diode Test—Side Terminal Alternator

touching the rotor shaft, or that excess solder is not grounding the rotor coil connections to the shaft. Replace the rotor if it is shorted and cannot be repaired.

FUSE LINK CONTINUITY TEST

1. On the Cougar, LTD II, Mustang, Thunderbird, Lincoln Continental and Continental Mark V, make certain first that the battery is OK, then turn on the headlights or any accessory. If the headlights or an accessory do not operate, the fuse link is probably burned out.
2. On the Ford, Mercury, Fairmont, Zephyr, Pinto and Bobcat, there are two fuse links (Fig. 1). Use the same procedure as in Step 1 to test the fuse link that protects the vehicle equipment.

To test the fuse link that protects the alternator, make certain that the battery is OK then check with a voltmeter for voltage at the BAT terminal of the alternator. No voltage indicates that the fuse link is probably burned out.

REMOVAL AND INSTALLATION

FUSE LINK REPLACEMENT

1. Procure the proper service fuse link for the vehicle being repaired (Fig. 1). Make sure that the replacement fuse link is a duplicate of the one removed with respect to gauge, length and insulation. **Do not substitute any other type of**

gauge or wire. The two fuse links shown have an eyelet terminal for a 5/16-inch stud on one end. When the terminal is not required, cut off the fuse link as close to the terminal as possible and strip approximately 1/8-inch of insulation from the cut end.

2. Disconnect the battery ground cable.

3. Disconnect the fuse link and/or fuse link eyelet terminal from the battery terminal of the starter relay. On the Thunderbird, Lincoln Continental and the Continental Mark V, the fuse link is looped outside of the wire harness behind the point at which the harness is clipped to the right rocker cover above the starter.

ALTERNATOR CHARGE INDICATOR LIGHT WIRING ASSEMBLY INSTALLATION PROCEDURE

The "Service Only" wiring assembly is used to replace an inoperative warning lamp bypass resistor wire (15 ohm) located in the main 14401 wiring assembly. The following procedure should be followed to detect and replace an inoperative resistor wire.

NOTE: The charge indicator light circuit must be tested with a test lamp containing a trade number 97 bulb.

Disconnect the regulator connector from the regulator. Turn the ignition switch to RUN position. Touch one test probe from the test lamp to the regulator connector "I" terminal and the other to the regulator base. The test lamp will come "on" if the circuit is in proper working order. If the 15 ohm resistor circuit is open, the indicator light will operate at full brightness and the test lamp will be out.

The resistor wire is part of the 14401 main wiring assembly. If the resistor wire is open replace only this wire and not the entire 14401 wiring assembly.

REPAIR PROCEDURES

FUSE LINK GENERAL REPAIRS

To repair any blown fuse link (Fig. 1) use the following procedure:

1. Determine which circuit is damaged, its location and the cause of the open fuse link. If the damaged fuse link is one of three fed by a common number 10 or 12 gauge feed wire, determine the specific affected circuit.
 2. Disconnect the negative battery cable.
 3. Cut the damaged fuse link from the wiring harness and discard it. If the fuse link is one of three circuits
4. Identify and procure the proper fuse link and butt connectors (Figs. 9 and 10) for attaching the fuse link to the harness.
 5. To repair any fuse link in a 3-link group with one feed:
 - a. After cutting the open link out of the harness, cut each of the remaining undamaged fuse links close to the feed wire weld.
 - b. Strip approximately 1/2 inch of insulation from the detached ends of the two good fuse links. Then,

fed by a single feed wire, cut it out of the harness at each splice end and discard it.

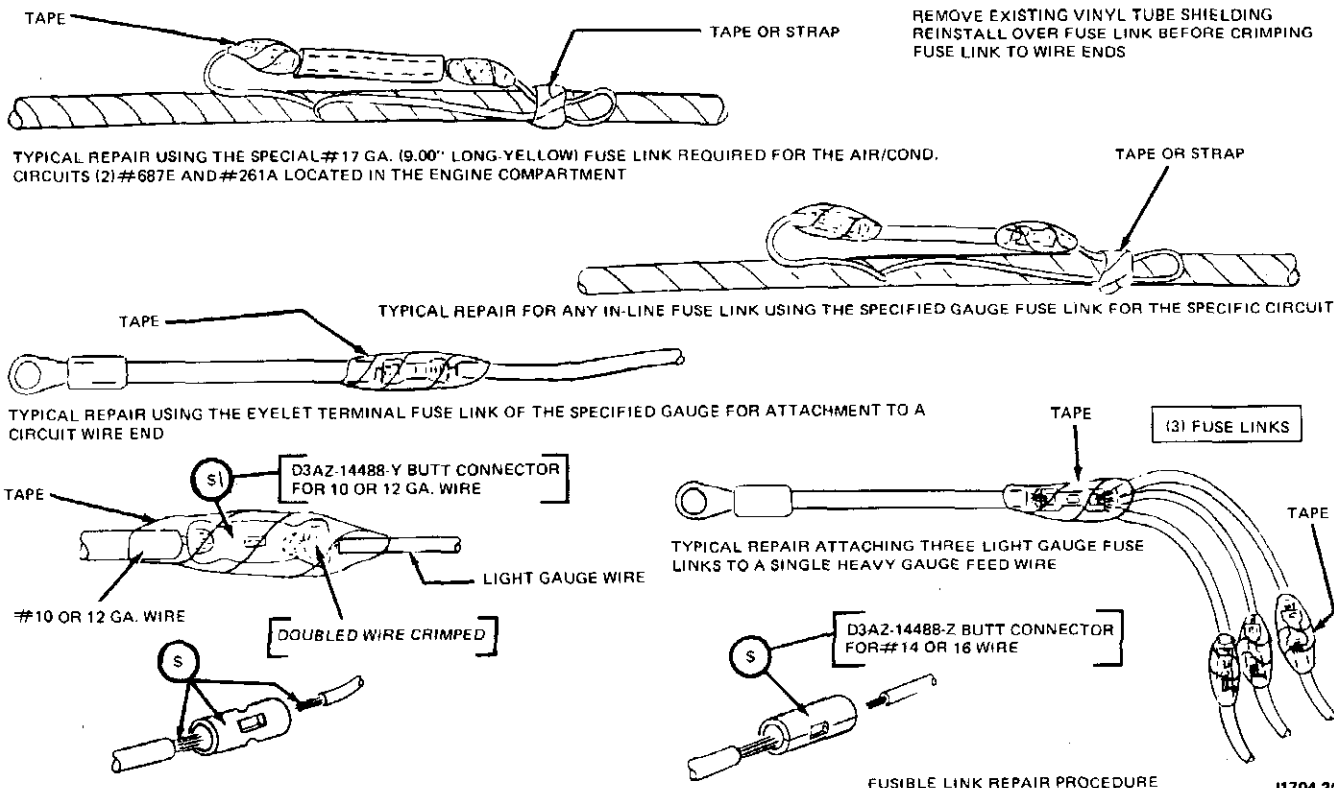
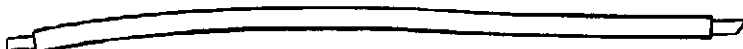


FIG. 9 Fusible Link Repair Procedure

WIRING ASSEMBLY—FUSE LINK

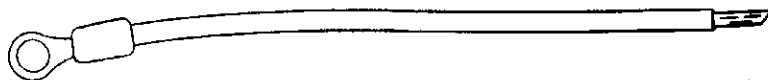
(WITH INSULATION STRIPPED BOTH ENDS)



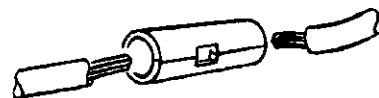
D3AZ-14A526-H	# 14 GAUGE WIRE - 9.00" ± .50 LENGTH (GREEN INSULATION)
D3AZ-14A526-J	# 16 GAUGE WIRE - 9.00" ± .50 LENGTH (ORANGE INSULATION) AS REQ'D.
D3AZ-14A526-K	# 17 GAUGE WIRE - 9.00" ± .50 LENGTH (YELLOW INSULATION) AS REQ'D. (SPECIAL USED WITH AIR CONDITIONING SYSTEM)
D3AZ14A526-L	# 18 GAUGE WIRE - 9.00" ± .50 LENGTH (RED INSULATION) AS REQ'D
D3AZ-14A526-M	# 20 GAUGE WIRE - 9.00" ± .50 LENGTH (BLUE INSULATION) AS REQ'D.

WIRING ASSEMBLY—FUSE LINK

(WITH EYELET TERMINAL AND ONE END STRIPPED)



D3AZ-14A526-D	14 GAUGE WIRE - 9.00" ± .50 LENGTH (GREEN INSULATION) AS REQ'D.
D3AZ-14A526-E	# 16 GAUGE WIRE - 9.00" ± .50 LENGTH (ORANGE INSULATION) AS REQ'D.
D3AZ-14A526-F	# 18 GAUGE WIRE - 9.00" ± .50 LENGTH (RED INSULATION) AS REQ'D.
D3AZ-14A526-G	# 20 GAUGE WIRE - 9.00" ± .50 LENGTH (BLUE INSULATION) AS REQ'D.

BUTT CONNECTOR—WIRING SPLICE

D3AZ-14488-Y FOR 10 AND 12 GA. WIRE
(LOAD CIRCUIT) AS REQ'D.

D3AZ-14488-Z FOR # 14 AND 16 GA. WIRE
(LOAD CIRCUIT) AS REQ'D.

J1707-2C

FIG. 10 Fuse Link and Butt Connector Identification

insert the two wire ends into one end of a D3AZ-14488-Y or Z Butt Connector (Fig. 13) and carefully push one stripped end of the replacement fuse link into the same end of the butt connector and crimp all three together firmly. **Care must be taken when fitting the three fuse links into the butt connector as the internal diameter is a snug fit for three wires. Make sure to use a proper crimping tool as pliers, side cutters, etc. will not apply the proper crimp to retain the wires and withstand a pull test.**

c. After crimping the butt connector to the three fuse links, cut the weld portion from the feed wire and strip approximately 1/2 inch of insulation from the cut end. Insert the stripped end into the open end of the butt connector and crimp very firmly.

d. To attach the remaining end of the replacement fuse link, strip approximately 1/2 inch of insulation from the wire end of the circuit from which the blown fuse link was removed, and firmly crimp a D3AZ-14488-Y or Z Butt Connector (Fig. 13) to the stripped wire. Then, insert the end of the replacement link into the other end of the butt connector and crimp firmly.

e. Using rosin core solder with a consistency of 60 percent tin, 40 percent lead, solder the connectors and the wires at the repairs and insulate with electrical tape.

6. To replace any fuse link on a single circuit in a harness, cut out the damaged portion, strip approximately 1/2 inch of insulation from the two wire ends and attach the appropriate replacement fuse link to the stripped wire ends with two proper size butt connectors. Solder the connectors and wires and insulate with tape, as in Step 5.

7. To repair any fuse link which has an eyelet terminal on one end such as the charging circuit (Fig. 10), cut off the open fuse link behind the weld, strip approximately 1/2 inch of insulation from the cut end and attach the appropriate new eyelet fuse link to the cut stripped wire with an appropriate size butt connector (Fig. 10). Solder the connectors and wires at the repair and insulate with tape, as in Step 5.

8. Connect the negative battery cable to the battery and test the system for proper operation.

DO NOT MISTAKE A RESISTOR WIRE FOR A FUSE LINK. The resistor wire is generally longer and has print stating, "Resistor—do not cut or splice."

When attaching a single number 16, 17, 18 or 20 gauge fuse link to a heavy gauge wire, always double the stripped wire end of the fuse link before inserting and crimping it into the butt connector for positive wire retention.

Batteries

PART
31-02

Applies to All Models

SUBJECT	PAGE	SUBJECT	PAGE
TESTING	02-1	SPECIFICATIONS	02-2

CK3360-2B

TESTING

CAUTION: Hydrogen and oxygen gases are produced during normal battery operation. This gas mixture can explode if flames, sparks or lighted tobacco are brought near the battery. When charging or using a battery in an enclosed space, always provide ventilation and shield your eyes.

WARNING — Keep out of reach of children. Batteries contain **SULFURIC ACID**. Avoid contact with skin, eyes or clothing. Also, shield your eyes when working near the battery to protect against possible splashing of the acid solution. In case of acid contact with skin, eyes, or clothing, **FLUSH IMMEDIATELY WITH WATER FOR A MINIMUM OF FIFTEEN MINUTES**. If acid is swallowed, drink large quantities of milk or water, followed by milk of magnesia, a beaten egg, or vegetable oil. **CALL A PHYSICIAN IMMEDIATELY**.

To prevent sparks, carefully secure connecting points when using a booster battery. To jump start (negative grounded battery):

1. Be sure the ignition key is in OFF position.
2. Shield eyes. Use safety goggles or similar eye protection.
3. Connect ends of one cable to positive (+) terminals of each battery.
4. Connect one end of the other cables to negative (-) terminal of "good" battery.
5. Connect other end of cable to engine bolthead or similar good contact spot on the vehicle being started (NOT to negative (-) terminal of battery).
6. To prevent damage to other electrical components on vehicle being started, make certain that engine is at idle speed before disconnecting jumper cables.

NOTE: Batteries are heavy, weighing 30 lbs. or more. Lift them with your legs rather than your back to prevent muscle strains, and be careful not to drop them (possible breakage) nor to spill the contents (sulfuric acid).

NOTE: 12-volt starting motors can be damaged beyond repair if connected to a 24-volt power supply (two 12-volt batteries in series, or a 24-volt motor-

generator set), even when cranking loads are relatively light. Extensive starting motor damage is more likely if the starter is connected to a 24-volt supply while being subjected to prolonged heavy cranking loads such as attempting to start an engine in subzero temperatures.

Tests are made on a battery to determine the state of charge and also the condition. The ultimate result of these tests is to show that the battery is good, needs recharging, or must be replaced.

If a battery has failed, is low in charge, or requires water frequently, good service will determine the reason for this condition. It may be necessary to follow troubleshooting procedures to locate the cause of the trouble.

Refer to Part 31-01 for charging system troubleshooting procedures.

Before attempting to test a battery, it is important to give it a thorough examination to determine if it has been damaged. Possible battery damage, with replacement often necessary, is indicated by moisture on the outside of the case (possible cracked and leaking case) and/or low electrolyte level in one or more cells (possible leak or weak cell).

Original equipment batteries incorporate a single one-piece cover which completely seals the top of the battery and the individual cell connectors. This cover **MUST NOT** be pierced with test probes to perform individual cell tests.

TESTS USING THE CHRISTIE TESTER 41-0002 (OR EQUIVALENT)

Follow instructions supplied with tester.

TESTS USING THE ROTUNDA BATTERY-STARTER TESTER (02-0204 OR EQUIVALENT) BATTERY CAPACITY TEST

A high rate discharge tester (Rotunda Battery-Starter Tester 02-0204) or equivalent in conjunction with a voltmeter is used for this test.

1. Turn the control knob on the Battery-Starter Tester to the off position.

2. Turn the voltmeter selector switch to the 20-volt position.
3. Connect both positive test leads to the positive battery post and both negative leads to the negative battery post. The voltmeter clips must contact the battery posts and not the high-rate discharge tester clips. Unless this is done, the actual battery terminal voltage will not be indicated.
4. Turn the load control knob in a clockwise direction until the ammeter reaches the applicable discharge rate specified in the discharge rate table.
5. With the ammeter reading the required load for 15 seconds, note the voltmeter reading. Avoid leaving the high discharge load on the battery for periods longer than 15 seconds.
6. If the voltmeter reading is 9.6 volts or more for a 12-volt battery, the battery has a good output capacity and will readily accept a charge, if required. Check the specific gravity. If the specific gravity is 1.230 or below, add water if necessary and charge the battery until it is fully charged. **Always disconnect the battery ground cable when charging the battery.** The battery is fully charged when the cells are all gassing freely and the specific gravity ceases to rise for three successive readings taken at hourly intervals. Additional battery testing will not be necessary after the battery has been properly charged.
7. If the voltage reading obtained during the capacity test is below 9.6 volts for a 12-volt battery, check the specific gravity of each cell.
8. If the difference between any two cells is more than 50 points (0.050), the battery is not satisfactory for service and should be replaced.
9. If the difference between cells is less than 50 points (0.050), the battery should be charged according to the charging schedule in the Specifications Section.
10. In some cases the electrolyte level may be too low to obtain a specific gravity reading. In such cases water should be added until the electrolyte level just covers the ring in the filler well, then charge the battery at 35 amperes for the maximum charging time indicated in Specifications for the capacity of the battery being tested.
11. Batteries that are completely discharged may not accept a fast charge. If this is found, the battery should be slow charged at the 20 hour rate for 2 hours, so the battery will be capable of accepting a fast charge. A specific gravity reading taken at this time will show no change from the original reading, but the battery should be charged according to the High Rate Charge Time Schedule.
12. After the battery has been charged, repeat the capacity test. If the capacity test battery voltage is still less than 9.6 volts, replace the battery. If the voltage is 9.6 volts or more, the battery is satisfactory for service.
13. If the battery is found to be discharged only, check for a loose fan belt, loose electrical connections, lights on and charging system performance.

SPECIFICATIONS

BATTERY CHARGE RATES (EXCEPT MAINTENANCE-FREE BATTERY)

Allowable Battery High Rate Charge Time Schedule ③						
Specific Gravity Reading	Charge Rate Amperes	36	Battery Capacity — Ampere Hours			
			41 & 45	53 & 54	77	80
1.125-1.150 ①	35	50 min.	65 min.	80 min.	115 min.	115 min.
1.150-1.175	35	40 min.	50 min.	65 min.	95 min.	95 min.
1.175-1.200	35	30 min.	40 min.	50 min.	70 min.	70 min.
1.200-1.225	35	25 min.	30 min.	35 min.	50 min.	50 min.
Above 1.225	5	②	②	②	②	②

① If the specific gravity is below 1.125, use the time indicated for the 1.125 specific gravity, then charge at 5 amperes until the specific gravity reaches 1.250 at 80°F.

② Charge at 5 ampere rate only until the specific gravity reaches 1.250 at 80°F.

③ At no time during the charging operation should the electrolyte temperature exceed 130°F.

BATTERY DISCHARGE RATES

Except Maintenance-Free Battery		Maintenance-Free Battery	
Battery Capacity (Ampere Hours)	Discharge Rate (Amperes)	Battery Capacity (Ampere Hours)	Discharge Rate (Amperes)
36	155	53	200
41	145	63	215
45	190	68	235
53	175		
54	225		
68	220		
77	228		

E.E.D. Rear Terminal Alternator

PART 31-10

Applies to All Models

SUBJECT	PAGE	SUBJECT	PAGE
DESCRIPTION AND OPERATION	10-1	REMOVAL AND INSTALLATION	10-3
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Belt Adjustment	10-2	SPECIAL TOOLS	10-7

CK3361-2B

DESCRIPTION AND OPERATION

The alternator is belt driven from the engine. Current is supplied from the alternator-regulator system to the rotating field of the alternator through two brushes to two slip rings.

The alternator produces power in the form of alternating current. The alternating current is rectified to direct current by six diodes (eight diodes in 61 ampere alternators). The alternator regulator automatically adjusts the alternator field current to maintain the alternator output voltage within prescribed limits to correctly charge the battery. The alternator is self-current limiting.

If a charge indicator lamp is used in the charging system (Fig. 1), the system operation is as follows: when the ignition switch is turned ON, a small electrical current flows through the lamp filament (turning the lamp on) and through the alternator regulator to the alternator field. When the engine is started, the alternator field rotates and produces a voltage in the stator winding. When the voltage at the alternator stator terminal reaches about 3 volts, the regulator field relay closes. This puts the same voltage potential on both sides of the charge indicator lamp causing it to go out. When the field relay has closed, current passes

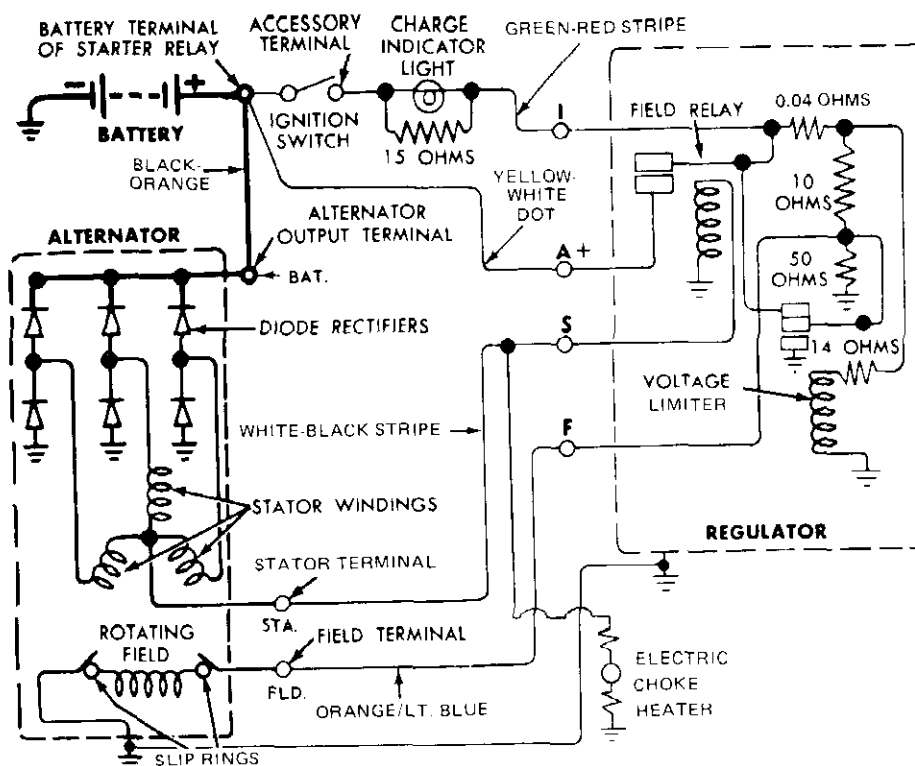
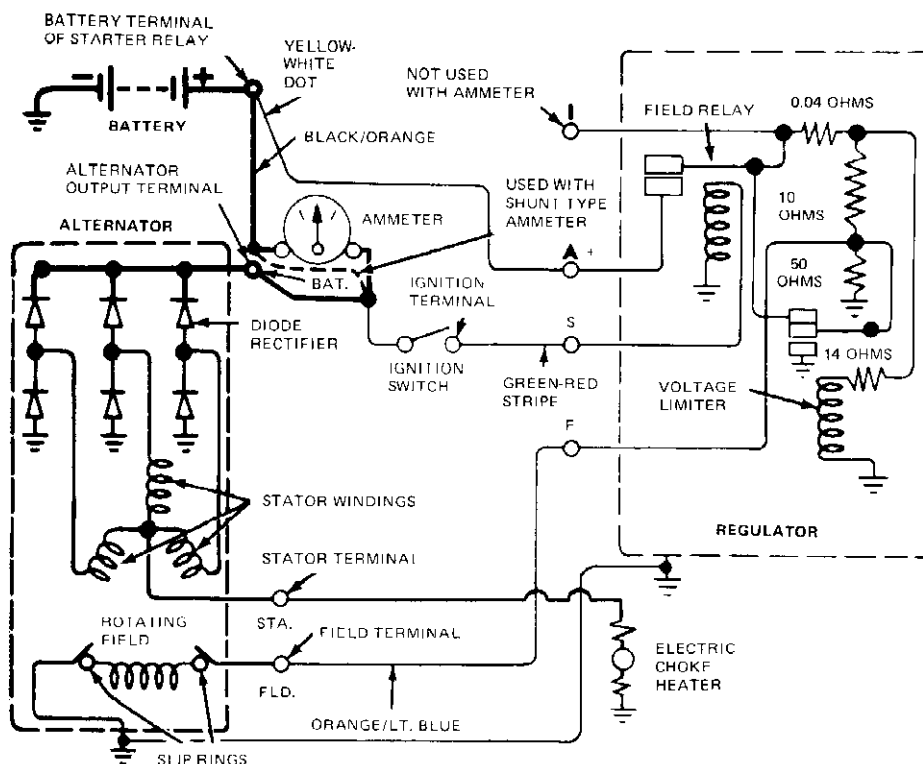


Fig. 1 Alternator Charging System—Indicator Lamp



J1205-2K

FIG. 2 Alternator Charging System—Ammeter

through the regulator A terminal and is metered to the alternator field.

Fuse links are included in the charging system wiring on all models (Part 31-01). This fuse link is used to prevent damage to the wiring harness and alternator if the wiring harness should become grounded, or if a booster battery is connected to the charging system with the wrong polarity.

If an ammeter is used in the charging system (Fig. 2), the regulator I terminal and the alternator stator terminal are not used. When the ignition switch is turned ON, the field relay closes and electrical current passes through the regulator A terminal and is metered to the alternator field. When the engine is started, the alternator field rotates causing the alternator to operate. The ammeter indicates current flow into (charge) or out of (discharge) the vehicle battery.

TESTING

Do not run the engine with the battery disconnected.

Check the alternator drive belt and adjust it to specification before proceeding with any tests. Check and tighten all connectors at the starter relay and battery. Refer to Part 31-01 for charging system diagnosis and test procedures.

ADJUSTMENTS

BELT ADJUSTMENT

1. Check the belt tension with Tool T63L-8620-A or equivalent. The belt tension should be within specification.
2. If the belt is not within specification, loosen the alternator mounting bolt to a snug position and loosen the adjusting arm bolts.
3. Use Tool T63L-8620-A or equivalent. To check belt tension, apply pressure on the alternator front housing only and adjust belt tension to specification.
4. Tighten the adjusting arm to alternator bolt.
5. Tighten remaining mounting bolts.

REMOVAL AND INSTALLATION

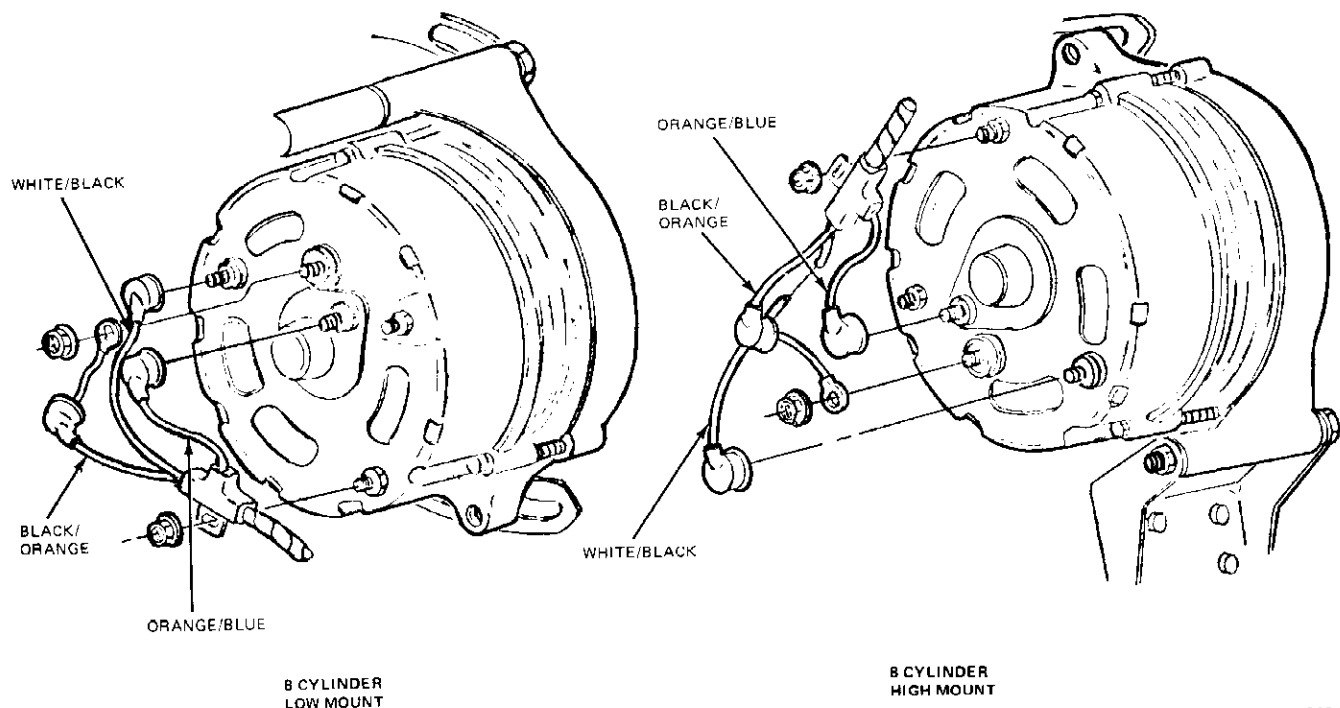
CAUTION: Exercise care. Do not permit flames, sparks or lighted tobacco near battery.

Removal

1. Disconnect the battery ground cable.
2. Loosen the alternator mounting bolts and remove the adjustment arm alternator attaching bolt. Disengage the alternator belt.
3. Remove the electrical connectors from the alternator. The stator and field connectors are the push-on type. They should be pulled straight off the terminal studs to prevent damage to them.
4. Remove the alternator mounting bolt, and remove the alternator.

Installation

1. Position the alternator to the engine, and install the spacer (if used) and the alternator mounting bolt. Tighten the bolt to a snug position.
2. Install the adjustment arm to alternator attaching bolt.
3. Adjust the belt tension using Tool T63L-8620-A or equivalent. **Apply pressure on the alternator front housing only, when tightening the belt. Tighten the adjusting arm bolts and the mounting bolt.**
4. Install the alternator wiring harness (Fig. 3).
5. Connect the battery ground cable.



J1363-2F

FIG. 3 Wiring Harness Connections—Typical

DISASSEMBLY AND OVERHAUL

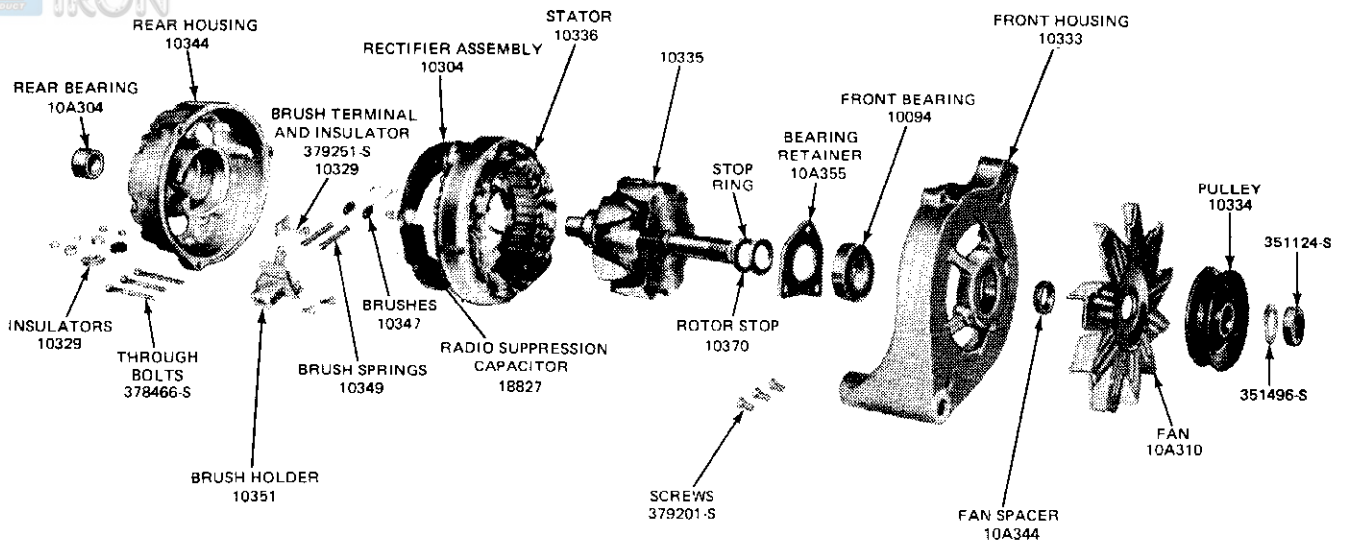
E.E.D. REAR TERMINAL ALTERNATOR

Disassembly

Fig. 4 shows a disassembled view of the E.E.D. rear terminal alternator.

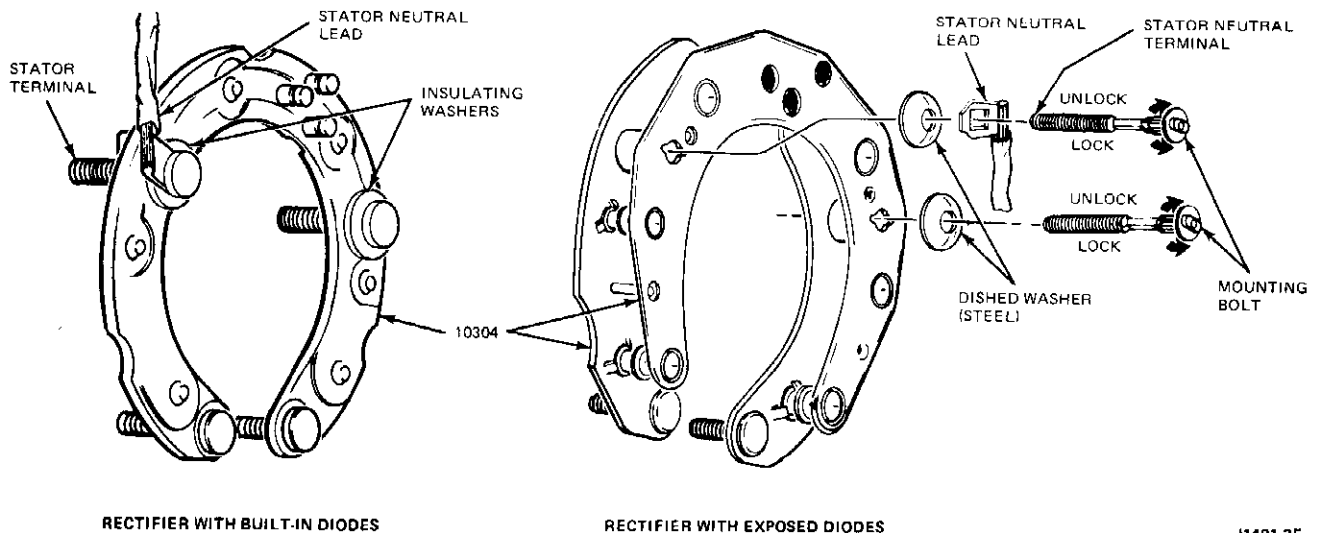
1. Mark both end housings and the stator with a scribe mark for assembly.
2. Remove the three housing through bolts.
3. Separate the front housing and rotor from the stator and rear housing.

4. Remove all the nuts and insulators from the rear housing and remove the rear housing from the stator and rectifier assembly.
5. Remove the brush holder mounting screws and remove the holder, brushes, brush springs, insulator and terminal.
6. If replacement is necessary, press the bearing from the rear housing, supporting the housing close to the bearing boss.



J1186-2L

FIG. 4 Disassembled Rear Terminal Alternator



J1401-2F

FIG. 5 Rectifier Assemblies

- If the rectifier assembly is being replaced, unsolder the stator leads from the printed-circuit board terminals, and disconnect center tap pigtail from stator terminal. Separate the stator from the rectifier assembly. Work quickly to prevent overheating the rectifier.
- Original production alternators will have one of two types of rectifier assembly circuit boards (Fig. 5); one has the circuit board spaced away from the diode plates with the diodes exposed. The other type is a single circuit board with built-in diodes.

If the alternator rectifier has an exposed diode circuit board, remove the screws from the rectifier by rotating the bolt heads $1/4$ turn clockwise to unlock them and then remove the screws. Push the stator terminal screw straight out on a rectifier with the diodes built into the circuit board. Avoid turning the screw while removing to make certain that the straight knurl will engage the insulators when installing. Do not remove the grounded screw (Fig. 6).

- Remove the drive pulley nut with the tool shown in Fig. 7. Then, pull the lockwasher, pulley, fan, fan spacer, front housing and rotor stop from the rotor shaft.
- Remove the three screws that hold the front end bearing retainer, and remove the retainer. If the bearing is damaged or has lost its lubricant, support the housing close to the bearing boss and press out the old bearing from the housing.
- Perform a diode test and field open or short circuit test (Part 31-01).

Assembly

- The rotor, stator and bearings must not be cleaned with solvent. Wipe these parts off with a clean cloth.
- Press the front bearing in the front housing bearing boss (put pressure on the outer race only), and install the bearing retainer (Fig. 4).
- If the stop-ring on the rotor drive shaft was damaged, install a new stop-ring. Push the new ring

on the shaft and into the groove. **Do not open the ring with snap ring pliers as permanent damage will result**

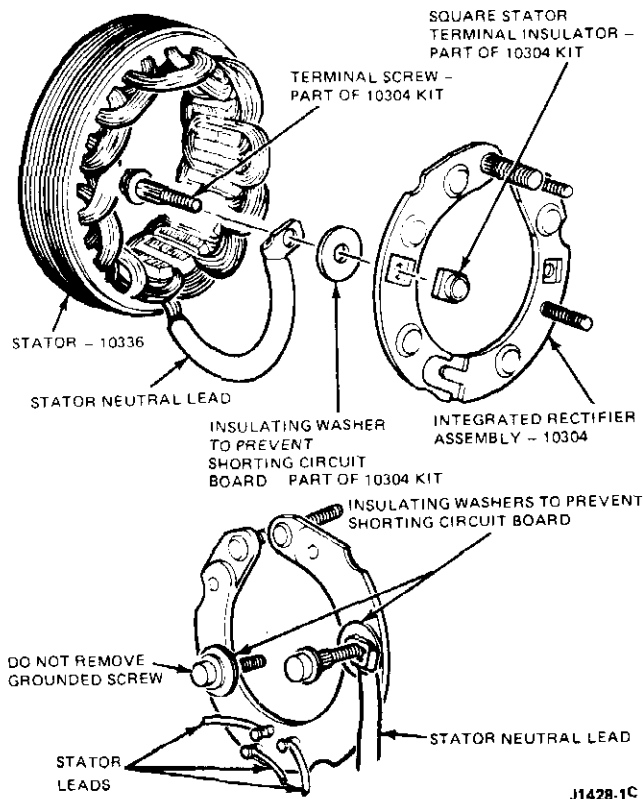


FIG. 6 Stator Terminal Installation—Rectifier With Built-in Diodes

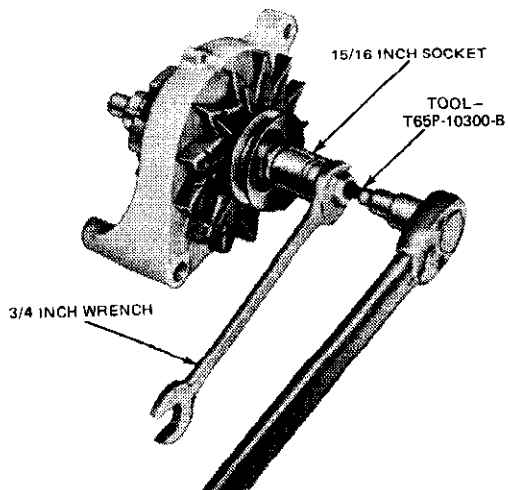


FIG. 7 Pulley Removal—Typical

4. Position the rotor stop on the drive shaft with the recessed side against the stop-ring.
5. Position the front housing, fan spacer, fan, pulley and lock washer on the rotor shaft and install the retaining nut. Tighten the retaining nut with the tool shown in Fig. 7 to the specified torque.
6. If the rear housing bearing was removed, support the housing near the bearing boss and press in a new bearing flush with the outer end surface.

7. Place the brush springs, brushes, brush terminal and terminal insulator in the brush holder and hold the brushes in position by inserting a piece of stiff wire in the brush holder as shown in Fig. 8.

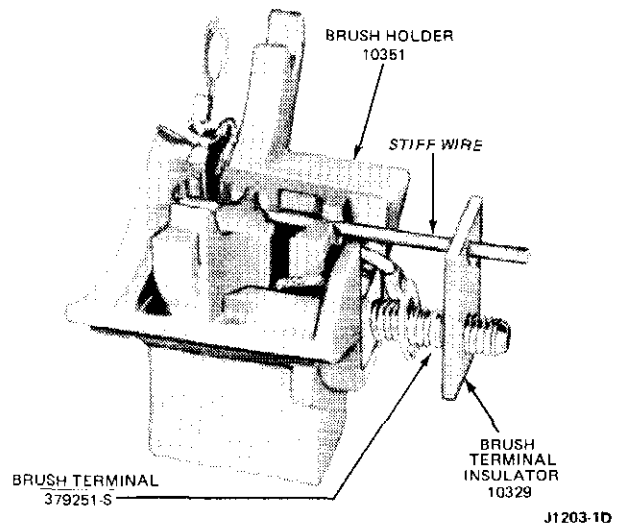


FIG. 8 Brush Holder Assembly

8. Position the brush holder assembly in the rear housing and install the mounting screws. Position the brush leads in the brush holder as shown in Fig. 9.

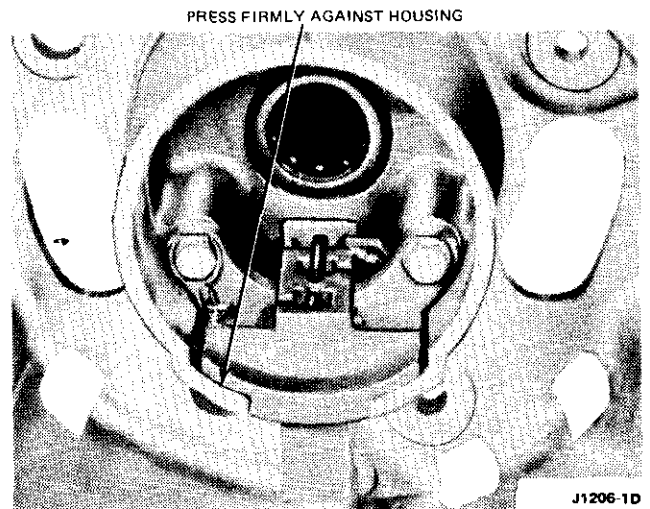


FIG. 9 Brush Lead Positions—Typical

9. Wrap the three stator winding leads around the circuit board terminals and solder them. On 65-amp alternator, push the terminals of the stator wires onto the circuit board terminals and solder them. Work quickly to prevent overheating the rectifier. Position the stator neutral lead eyelet on the stator terminal screw and install the screw in the rectifier assembly (Fig. 6).
10. For a rectifier with the diodes exposed, insert the special screws through the stator neutral wire lug, dished washers and circuit board (Fig. 5). Turn them 1/4 turn counterclockwise to lock them.