

# Leece-Neville

## Maintenance Instructions

### 3425JC SERIES ALTERNATORS

3425JC 12V - 75 Amps  
3426JC 24V - 65 Amps  
3428JC 24V - 65 Amps  
3525JC 12V - 90 Amps  
3625JC 12V - 105 Amps  
3627JC 24V - 100 Amps  
3632JC 32V - 115 Amps  
3725JC 12V - 130 Amps  
3628JC 24V - 100 Amps

File: Alternator Maintenance Section

### Description

The 3425 JC Series alternators are direct driven, flange mounted units, designed for Detroit Diesel engines, to function in 12 volt, 24 volt and 32 volt systems.

These units are insulated to function in positive or negative ground systems and are equipped with plug-in type regulators and brush holders, extra long brushes, heavy-duty rotors, stators and rectifiers.

The regulators are equipped with external "IGN." terminals for instant field coil excitation.

Three external AC terminals are provided for accessories such as transformer-rectifiers, powerpacks, tachometers etc.

### Mode of Operation

The regulator channels excitation to the brushes, slip rings and the rotor coil, to strengthen the existing (residual) magnetic field around the rotor. When the rotor is set in motion, the magnetic field induces a low voltage alternating current (AC) in the stator.

As the speed of the rotor increases, the voltage in the stator reaches approximately 1 volt. This triggers the regulator to turn on full battery voltage to the field coil which causes the output voltage in the stator to increase to the rated alternator voltage.

**NOTE:** When the "IGN." terminal is used and the ignition or "run" switch is turned on, then battery voltage is applied to the field coil. When the rotor speed builds up, the voltage in the stator increases to the alternator rated voltage. The use of the "IGN." terminal is optional, (except for 3628JC and 3428JC because the circuit used in these units requires "IGN." switch activated field current).

The current produced is channelled to the rectifier assemblies to be converted from AC to direct current (DC). The alternator output terminals are connected to the rectifier assemblies and serve as junction points with the rest of the vehicle electrical system.

Regulator sensing leads are connected to the rectifier assemblies so the regulator can check the output voltage. When the voltage drops below or increases above the set voltage, the regulator takes corrective action so the output voltage is maintained at the proper level.

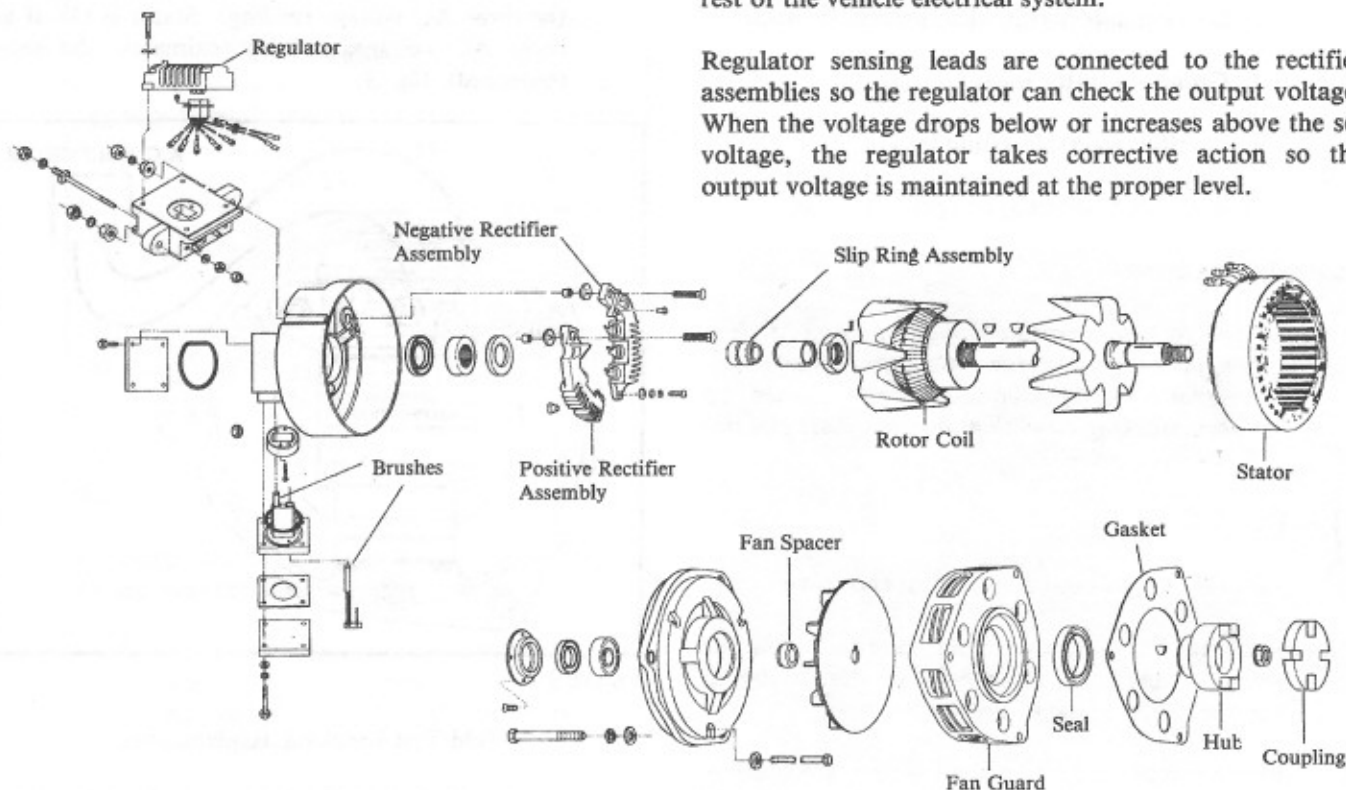


Figure 1

## Causes of Charging System Failure Alternator Type: 3425 JC Series

A charging system malfunction is detected by battery condition.

1. **OVERCHARGED BATTERIES** caused by improper regulator voltage setting, a defective regulator or an internal battery problem. If batteries are OK, adjust regulator. (See page 3.)
2. **UNDERCHARGED BATTERIES** caused by:
  - A. Corroded, broken or dirty terminals; broken or grounded wiring, undersize wiring.
  - B. Alternator field circuit malfunction caused by either one, or combination of the following:
    - a. Regulator - improperly adjusted, or defective.
    - b. Brushes - damaged or worn.
    - c. Rotor coil leads - inadequate connections to slip rings.
    - d. Slip rings - damaged or worn.
    - e. Rotor coil - shorted, open, or grounded.
  - C. Alternator generating section malfunction caused by either one, or combination of the following:
    - a. Stator phase(s) grounded, shorted or open.
    - b. Grounded stator leads.
    - c. Rectifier assembly grounded.
    - d. Rectifier(s) shorted, or open.

## Trouble Shooting

**NOTE:** 1. For fast and accurate trouble shooting, follow these instructions in the order presented. 2. Insure that all wiring, terminals, and batteries are in good working condition, and that batteries are 95 - 100% charged.

1. Full Field Test
  - 1.1 Shut OFF engine and all electrical accessories
  - 1.2 Measure DC voltage across alternator output terminals and make a note of it. (Use a digital voltmeter with 1/100 of a volt display.)
  - 1.3 Remove four 10-32 hex head screws from cover plate and insert the shank of a 1/16" drill bit (or a paperclip) in brush holder access hole. Fig. 2.

- 1.4 Connect a jumper to NEGATIVE output terminal and to drill bit.
- 1.5 With voltmeter connected to output terminals, start engine and run at approximately 1200 - 1500 RPM.

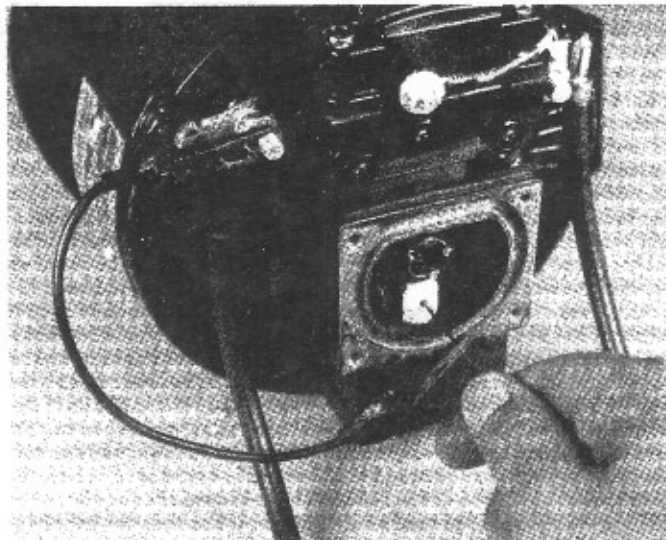


Figure 2

**CAUTION:** Insure that all electrical accessories are OFF to avoid high voltage damage.

- 1.6 Check DC voltage across output terminals and make a note of it.
- 1.7 Connect AC voltmeter across alternator AC terminals 1 & 2, 1 & 3, 2 & 3 and compare each of the three AC voltage readings. Stator is OK if all three AC voltages are approximately the same (balanced). Fig. 3.

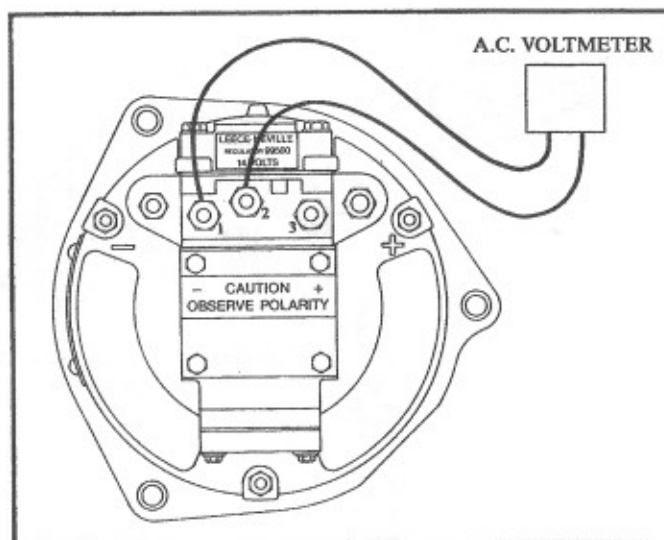


Figure 3

### Full Field Test Results & Explanations:

A. DC voltage higher in step 1.6 than in step 1.2 and AC voltages are balanced — Alternator OK,

Stator OK. (See Regulator Adjustment.)

B. DC voltage higher in step 1.6 than in step 1.2 and AC voltages are not balanced—Alternator is malfunctioning. Stator or rectifier(s) is defective\*.

C. DC voltage lower or same in step 1.6 as in step 1.2 and AC voltages are balanced — Alternator is malfunctioning. Stator OK\*.

D. DC voltage lower or same in step 1.6 as in step 1.2 and AC voltages are not balanced—Alternator is malfunctioning. Stator or rectifier(s) is defective\*.

\*This statement is true only if the batteries are 95 - 100% charged.

1.8 Remove jumper from output terminal, and drill bit from brush holder. Reassemble "O" ring and cover plate, when alternator checks out OK.

## 2. Regulator Adjustment.

2.1 Shut OFF all electrical accessories and run engine at approximately 1200 - 1500 RPM.

2.2 Measure voltage across output terminal with a digital voltmeter and make a note of the reading.

2.3 Remove the regulator and check the position of the voltage screw.

2.4 Compare the voltage reading from step 2.2 with the values shown in the chart below:

	Voltage	Screw Position
12 Volt Units	13.4V—13.8V	Lo*
	13.9V—14.1V	Middle
	14.2V—14.6V	Hi
24 Volt Units	26.9V—27.5V	Lo*
	27.8V—28.2V	Middle
	28.5V—29.1V	Hi
32 Volt Units	35.6V—36.4V	Lo*
	36.7V—37.3V	Middle
	37.6V—38.4V	Hi

\*Factory set

If voltage reading in step 2.2 is outside figures shown, then regulator must be replaced.

*NOTE: When new regulator is installed, insure that voltage set screw in new regulator matches the position of the set screw in the old regulator.*

If voltage is within values shown, then voltage

adjustment is not necessary, unless a specific application requires a higher voltage setting.

2.5 To set voltage to a desired voltage range (see chart above for specific values), remove voltage set screw and install it in hole marked "Hi" or "Lo", or the middle hole. Fig. 4.

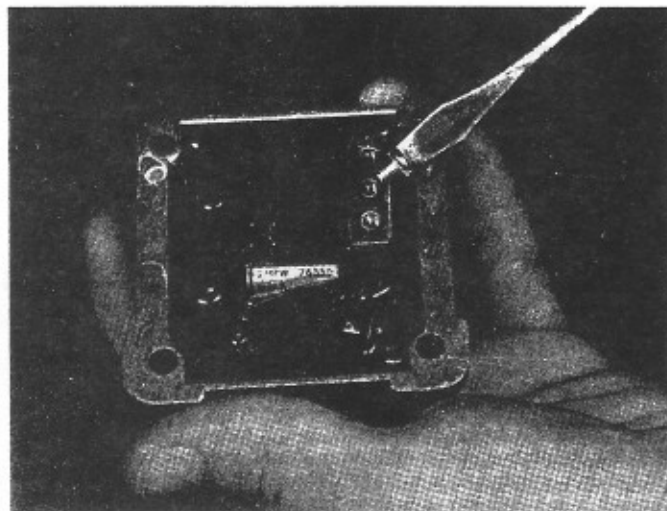


Figure 4

## Component Testing & Disassembly

1. Remove alternator from engine.

1.1 Remove wiring from output terminals.

1.2 Remove three 3/8" hex head mounting bolts and carefully remove alternator from engine.

*NOTE: The coupling in relation with drive hub must be kept in the same position that it was in while alternator was mounted on engine.*

1.3 Check gap between drive hub fingers and coupling slots. Gap must not exceed .012" (.30mm). Fig. 5.

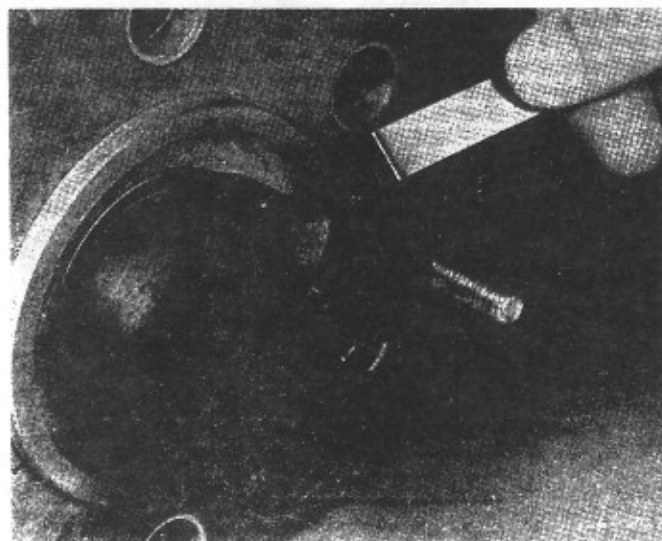


Figure 5



2. Hold the drive hub with a strap wrench and remove the shaft nut to remove the hub.
3. Remove fan guard and inspect gasket and oil seal. Replace as required. Fig. 1.
4. Remove fan, woodruff key, and fan spacer.
5. Remove brush holder and brushes. Inspect brushes and replace if they are burned, cracked, broken or worn to less than 3/16". Also if the spring or shunt is broken or burned, then brush must be replaced. Fig. 6.

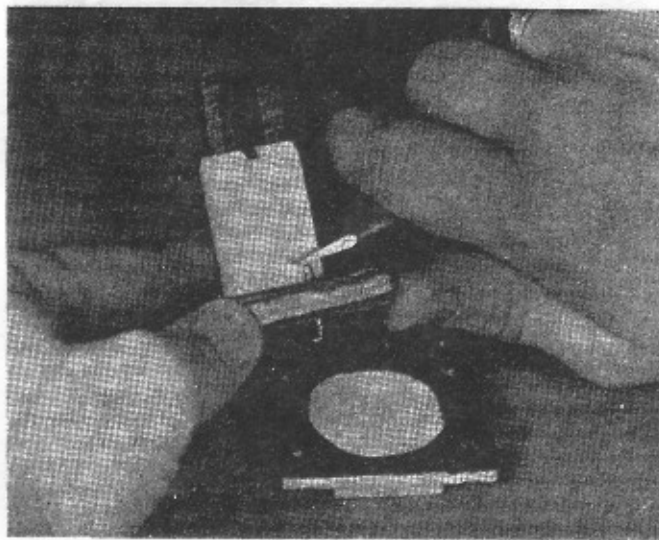


Figure 6

6. Remove three through bolts and remove drive end (DE) housing from slip ring end (SRE) housing and stator. Fig. 7.

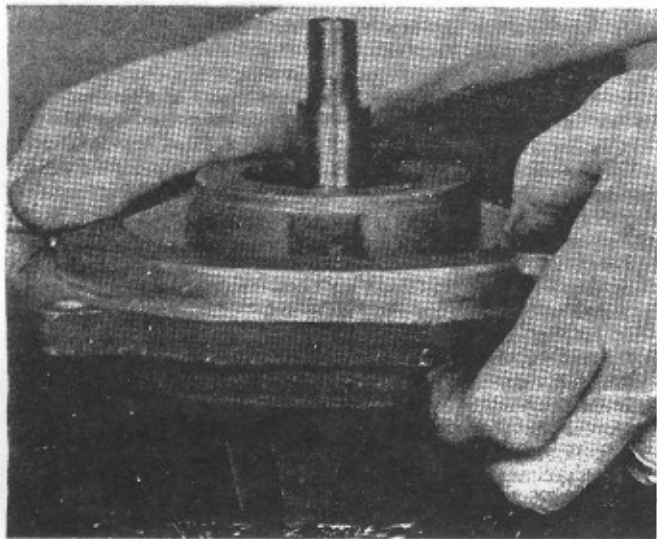


Figure 7

*NOTE: If stator does not readily separate from DE housing, tap housing with a rawhide or fiber hammer.*

7. Remove three self locking nuts from AC terminals

to disconnect stator leads and remove stator.

**CAUTION:** Always stack stators in a way that prevents damage to winding insulation and leads.

8. Perform rectifier assembly ground test.

*NOTE: Use a test light or ohmmeter.*

- 8.1 Connect one test lead to the positive (+) output terminal and the other test lead to any bare metal surface on the SRE housing. Repeat this procedure with the negative (-) output terminal (Fig. 8). If test light turns on or if a low resistance reading is observed, then rectifier assembly is grounded. Further disassembly necessary to locate inadequate insulator(s). Continue with step 9 to establish if rectifiers are in good working condition.

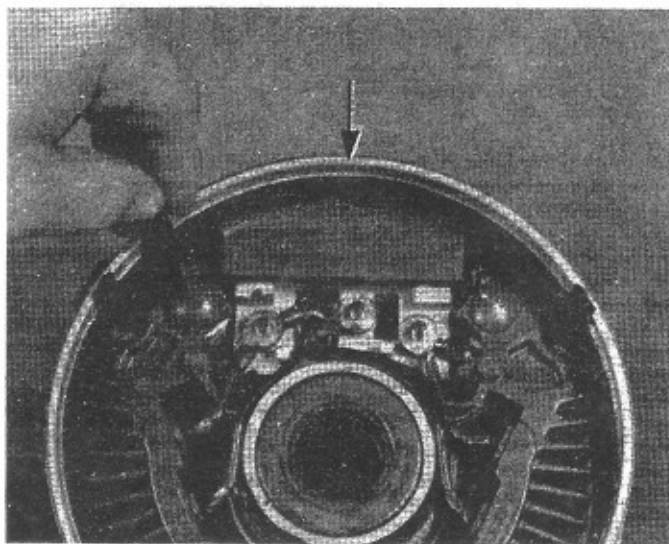


Figure 8

9. Perform Rectifier Tests.

*NOTE: a) Use an ohmmeter set to  $R \times 10K$  range.  
b) These tests can be performed without removing rectifier assemblies from SRE housing.*

- 9.1 Positive rectifier test.

- 9.1.1 Connect negative (-) test lead to positive (+) output terminal (or heat sink).

- 9.1.2 Connect positive (+) test lead to each of the three eyelet terminals. Fig. 9.

HIGH resistance indicates a DEFECTIVE (open) rectifier — the positive rectifier assembly must be replaced.

- 9.1.3 Connect positive (+) test lead to positive (+) output terminal (or heat sink).

- 9.1.4 Connect negative (-) test lead to each of the three

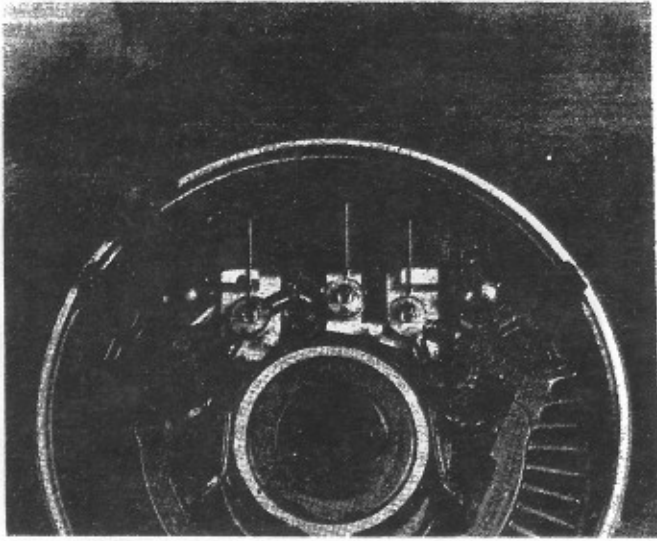


Figure 9

LOW resistance indicates a DEFECTIVE (shorted) rectifier. Replace positive rectifier assembly.

*NOTE: Positive rectifier assembly is OK when a LOW resistance reading is observed for each of the three rectifiers in step 9.1.2 and a HIGH resistance reading is observed in step 9.1.4.*

## 9.2 Negative rectifier test.

9.2.1 Connect positive (+) test lead to negative (-) output terminal.

9.2.2 Connect negative (-) test lead to each of the three eyelet terminals. Fig. 10.

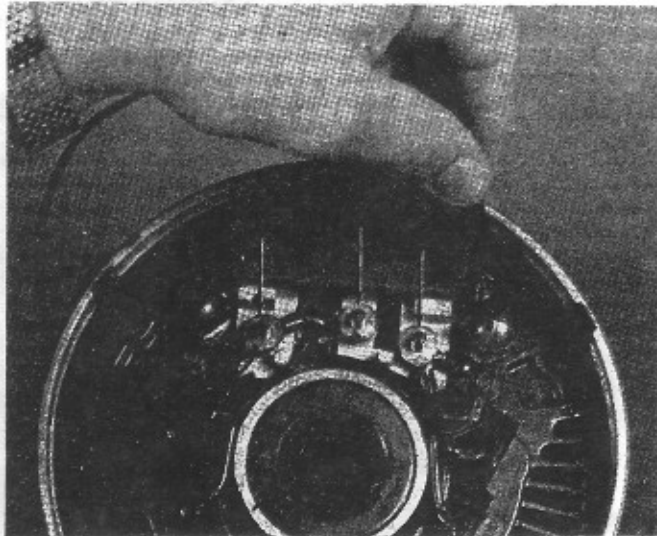


Figure 10

HIGH resistance indicates a DEFECTIVE (open) rectifier. Replace negative rectifier assembly.

9.2.3 Connect negative (-) test lead to negative (-)

output terminal.

9.2.4 Connect positive (+) test lead to each of the three eyelet terminals.

LOW resistance indicates a DEFECTIVE (shorted) rectifier. Replace negative rectifier assembly.

*NOTE: Negative rectifier assembly is OK when a LOW resistance reading is observed in step 9.2.2 and a HIGH resistance reading is observed in step 9.2.4.*

10. Visually inspect stator. If windings are burned, charred, or if bare wires are noticed, then stator must be replaced.

11. Perform stator ground test.

*NOTE: Use an ohmmeter.*

11.1 Connect one test lead to a bare metal surface on stator lamination and connect the second test lead to each of the three stator terminals. Fig. 11.

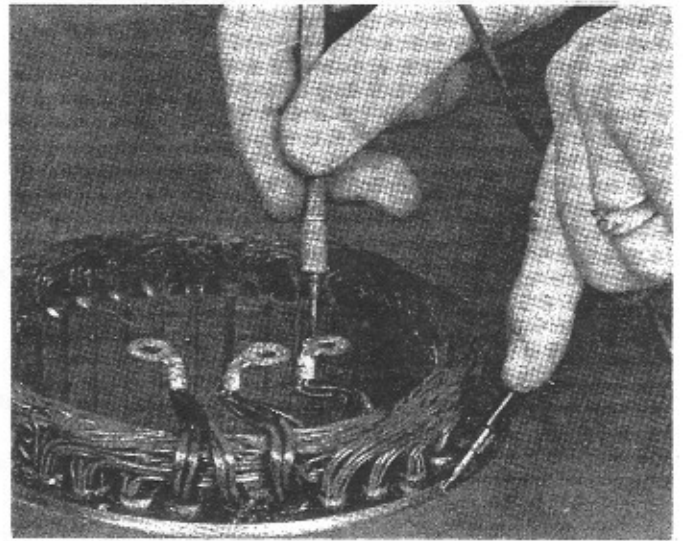


Figure 11

HIGH resistance indicates that stator is NOT grounded.

*NOTE: It is recommended that a "high pot" test be performed on stator by a qualified electrical shop.*

12. Perform stator phase resistance test.

*NOTE: A. If stator was found to be OK in the "Full Field Test" section, then this test may be omitted.*

*B. Use a digital ohmmeter with 1/1000 of an ohm (mΩ) display capability.*

*C. A suitable meter is Model 8012A, Digital Multimeter, Fluke Mfg., Mountlake Terrace, WA.*

*NOTE: It is recommended that a "high pot" test be performed on stator by a qualified electrical shop.*

- 12.1 Connect test leads to stator terminals 1 & 2, 2 & 3, and 1 & 3. Fig. 12.

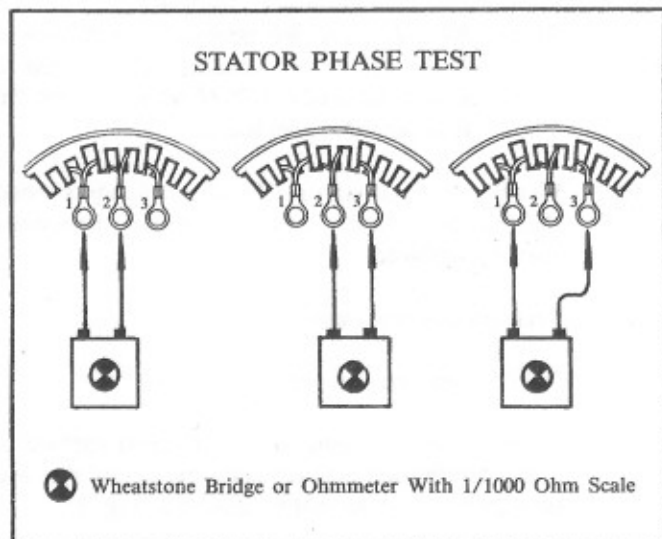


Figure 12

If the values are approximately the same (balanced) across each set of terminals (phases) then stator is OK.

13. Perform rotor coil ground test.

*NOTE: Use a test lamp or an ohmmeter set to the highest resistance possible.*

- 13.1 Connect one test lead to one slip ring and the second test lead to bearing inner race. If test light turns on, or if a LOW resistance reading is observed, then the rotor coil is grounded and must be replaced. Fig. 13.

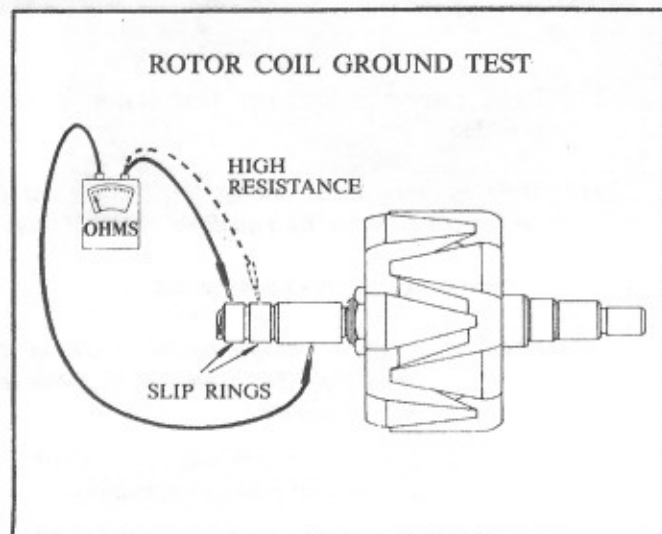


Figure 13

14. Perform rotor coil resistance test.

*NOTE: Use an ohmmeter.*

- 14.1 Connect test leads to slip rings (Fig. 14), and compare to values listed below:

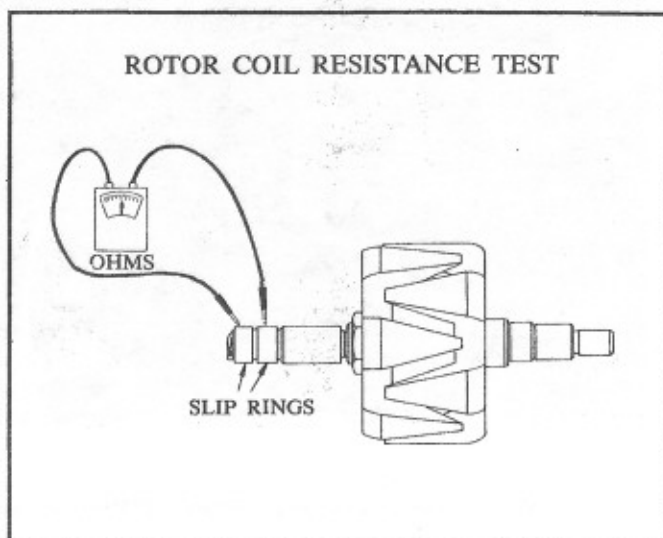


Figure 14

UNIT #	ROTOR COIL RESISTANCE
3425JC	3.0 - 3.3 Ohms
3426JC	12.5 - 13.5 Ohms
3428JC	12.5 - 13.5 Ohms
3525JC	2.0 - 2.2 Ohms
3625JC	2.0 - 2.2 Ohms
3627JC	12.5 - 13.5 Ohms
3628JC	12.5 - 13.5 Ohms
3632JC	12.5 - 13.5 Ohms
3725JC	3.0 - 3.3 Ohms

If the resistance readings are within the values shown then rotor coil is OK.

15. Check slip ring diameter (Fig. 15). Minimum diameter allowed = .767"

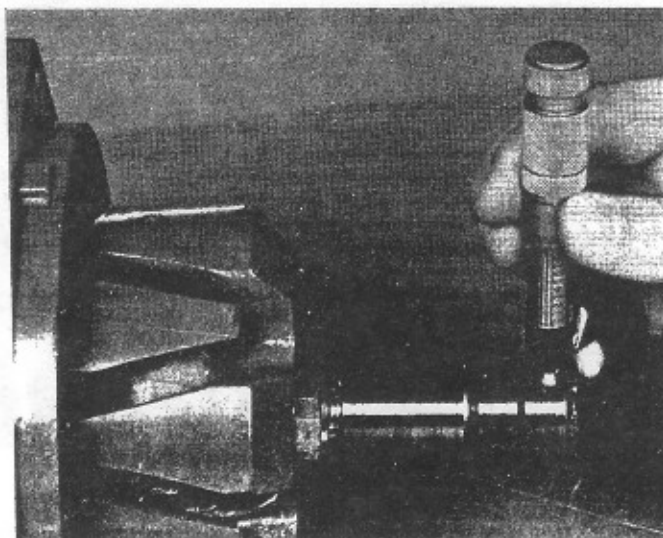


Figure 15

16. Check bearing inner race diameter (Fig. 16). Minimum diameter allowed = .8709"



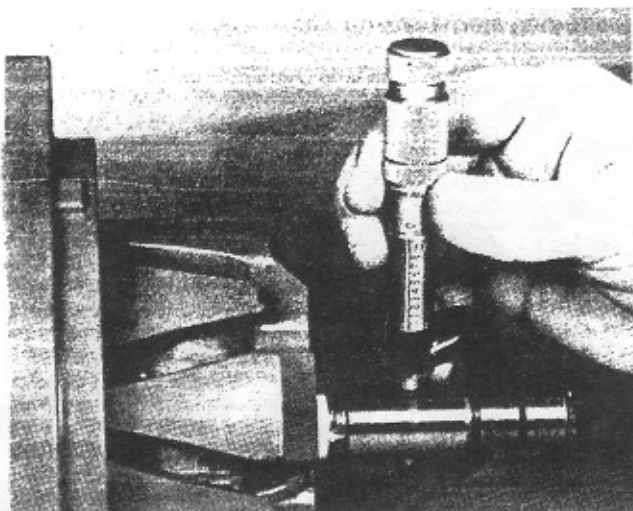


Figure 16

**CAUTION:** Bearing inner race must be smooth and round within .002".

## Alternator Disassembly & Service Procedures

1. Remove Defective Rectifier Assembly(ies).
  - 1.1 Remove 6-32 hex head screws from rectifier assembly(ies) and disconnect leads.
  - 1.2 Remove nuts from output terminals.
  - 1.3 Remove 10-32 pan head screws, insulation bushings and washers.
  - 1.4 Cut three leads from defective rectifier assembly as close as possible to eyelet terminals, and remove assembly.

*NOTE: When a rectifier assembly is found to be OK, but is grounded, then DO NOT cut rectifier leads. Instead, perform step 1.5.*

- 1.5 Inspect all insulation washers and bushings including the bushings inside the output terminal holes. Item Nos. 1, 2, 3, 4, 5, and 6. Fig. 17.

*NOTE: Grounded rectifier assemblies are caused by cracked, broken or burned insulation washers and bushings.*

2. Remove defective connector assembly.
  - 2.1 Remove two 4-40 round head screws from connector assembly.
  - 2.2 Remove all nuts and washers from AC terminals and all 6-32 hex head screws from rectifier assemblies.
  - 2.3 Disconnect all wires from AC terminals.

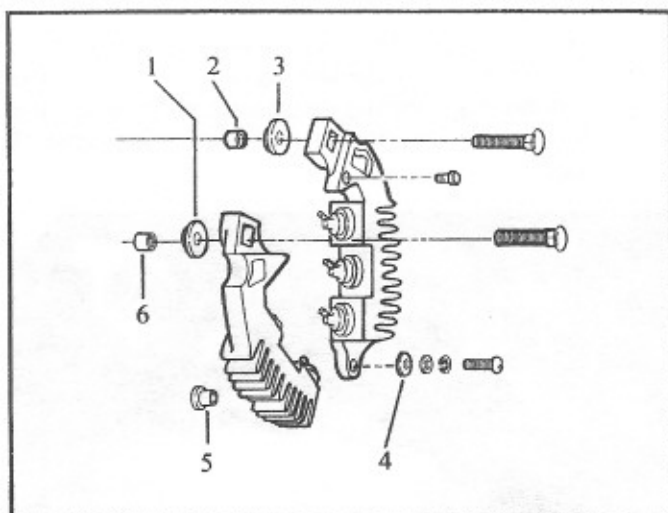


Figure 17

- 2.4 Remove two 6-32 round head screws and pull out brush holder adapter, and cut leads connected to it. Fig. 18.

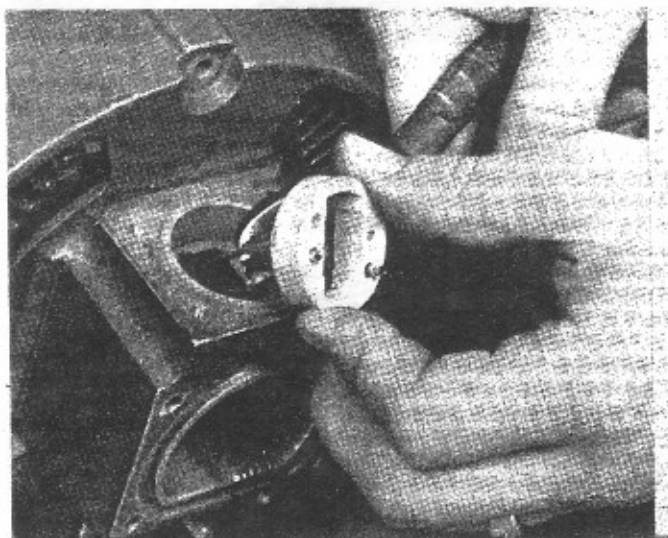


Figure 18

- 2.5 Pull RED and BROWN wires through access hole in the housing and remove the rubber grommet from the hole.
- 2.6 Remove regulator holder and pull the connector assembly.
3. Remove SRE bearing and seals.

*NOTE: Replacement of seals is recommended when alternator is overhauled.*

**CAUTION:** If replacement seals are not available, then DO NOT remove seals, because seals cannot be reused after removal from housing.

- 3.1 Remove 10-32 hex head screws, cover plate and "O" ring. Inspect "O" ring and replace if required (See Fig. 1, Items No. 18, No. 19 and No. 20).

- 3.2 Insert a proper size punch in one of the pilot holes on either side of the bearing. Knock out the seals and bearing. Bearing may be reused provided it is not excessively worn, or damaged during removal. Fig. 19.

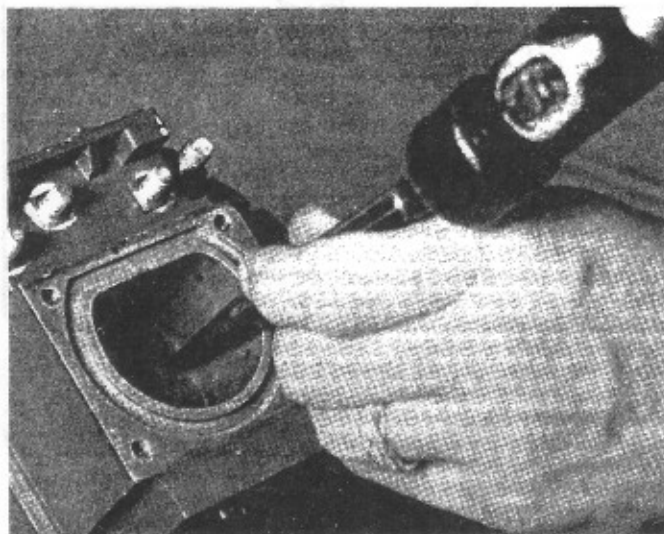


Figure 19

4. Remove malfunctioning rotor from DE housing.
- 4.1 Use an arbor press to separate rotor assembly from DE housing. Fig. 20.

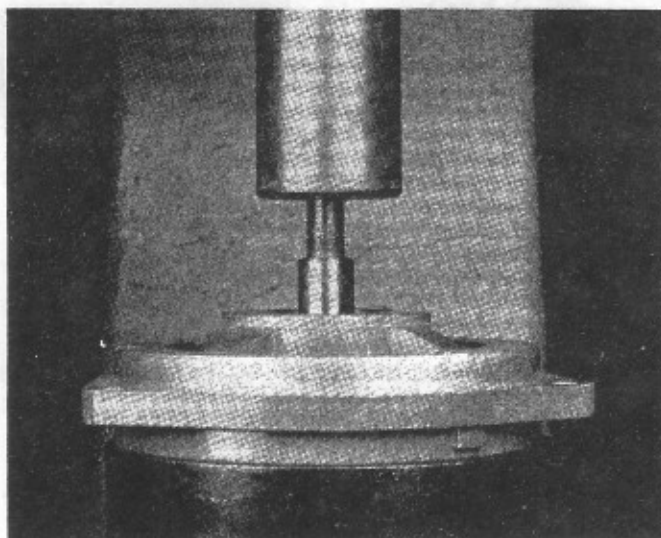


Figure 20

5. Rotor disassembly.
- 5.1 Unsolder and disconnect slip ring and rotor coil connections, and straighten the rotor coil leads.
- 5.2 Perform rotor coil resistance test.

*NOTE: If rotor coil resistance falls within values shown on page 6, then slip ring assembly must be replaced.*

- 5.3 Use a puller and bearing separator to remove the

slip ring assembly from shaft. Fig. 21.

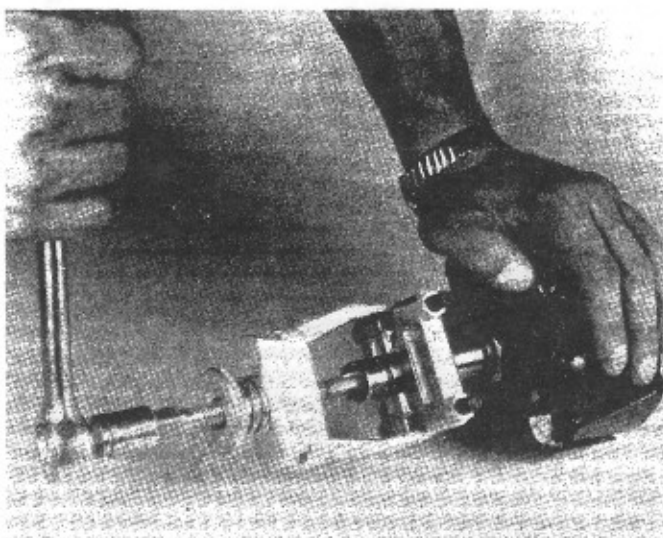


Figure 21

- 5.4 Repeat the same procedure to remove SRE bearing inner race from shaft.

*NOTE: Appropriate puller and separator for steps 5.3 & 5.4, are available from Snap-On Tool Co. Puller #CG240, Bearing Separator #CG949.*

- 5.5 Remove hex nut and free rotor coil leads from shaft and rotor-half slots. Save slot insulator.
- 5.6 Place rotor assembly in an arbor press and separate shaft from rest of assembly by applying pressure on serrated end of shaft. Fig. 22.

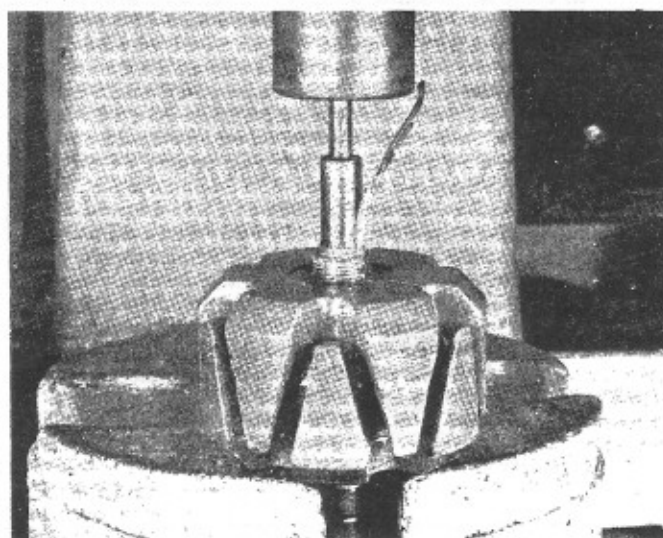


Figure 22

*NOTE: Insure that shaft threads are not damaged during this operation.*

- 5.7 Separate rotor halves from hub and rotor coil. Mark or tag rotor halves so matching sets are used at reassembly. If for any reason a rotor half needs



to be replaced, then order and install a complete rotor assembly.

## 6. DE housing disassembly.

*NOTE: If bearing and seal appear in good working order then disassembly is not necessary.*

- 6.1 Remove four 10-32 flat head screws and remove bearing retainer. Inspect seal and replace if necessary. Fig. 23.

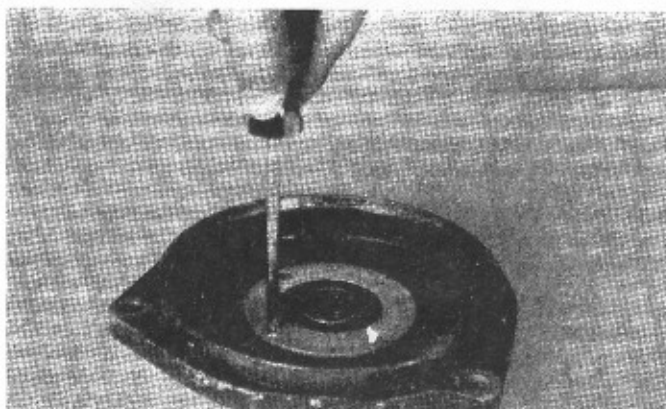


Figure 23

- 6.2 Press out DE bearing if necessary.

## Component Cleaning

### 1. Stator and rotor assembly.

- 1.1 Use a cloth dipped in kerosene or unleaded gasoline.

**CAUTION:** DO NOT immerse stator or rotor assemblies in any solvents or paint thinners.

- 1.2 Dry off with compressed air or a dry cloth.

2. All other components (except stator, rotor and bearings) are cleaned by immersing in kerosene or unleaded gasoline.

## Assembly

### 1. DE housing assembly.

- 1.1 Press DE bearing in housing with open side of bearing facing the interior of housing.

**CAUTION:** When bearing is pressed inside housing, pressure must be applied on OUTER RACE only.

- 1.2 Press oil seal (approx. 2" O.D.) in bearing retainer, so FLAT side of seal fits flush with flat side of retainer. Apply 1½ level tablespoon of Chevron SRI-2 grease to seal cavity. Use an ordinary tablespoon to measure grease quantity

required.

- 1.3 Press bearing retainer and seal assembly in DE housing.

- 1.4 Secure retainer with four 10-32 flat head screws.

### 2. Rotor Assembly.

- 2.1 Clean the two faces of the rotor hub and the inside areas of the rotor halves, so when assembled, the hub fits as flush as possible against the rotor halves.

**CAUTION:** This operation must be performed to avoid poor alternator performance.

- 2.2 Insert two #8 woodruff keys in shaft.

- 2.3 Use an arbor press to push shaft through DE rotor-half.

- 2.4 Press hub on shaft so it fits flush against rotor half.

- 2.5 Slide rotor coil on hub and rotate so rotor coil leads are directly on top of woodruff keys and lined up with the slot in shaft.

**CAUTION:** Insure that the rotor coil width does not exceed the width of the hub.

- 2.6 Press SRE rotor half flush against hub.

**CAUTION:** Insure that rotor coil leads are not pinched between rotor half and hub.

- 2.7 Route rotor coil leads in the SRE rotor-half and shaft slots.

- 2.8 Place insulator strip on top of rotor coil leads, so the leads are protected after the nut is installed. Fig. 24.

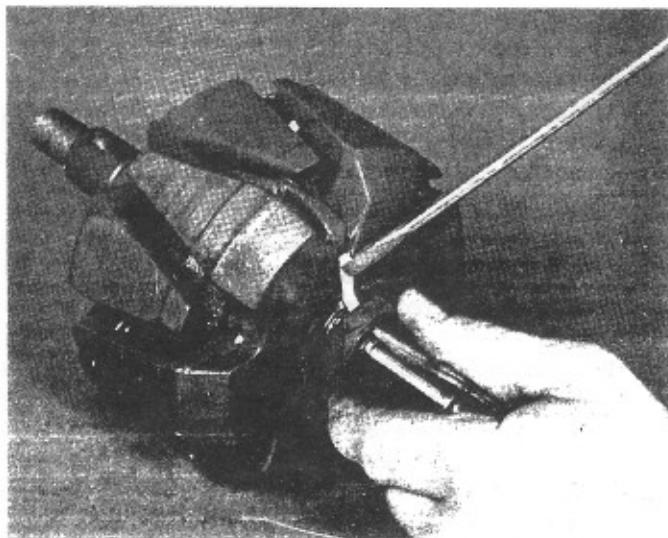


Figure 24

2.9 Apply Loctite #29014 on threads of hex nut and install on shaft. Torque to 40-50 ft. lbs.

2.10 Press SRE bearing inner race on shaft with chamfered side toward serrated end of shaft. See Fig. 25 for dimensions.

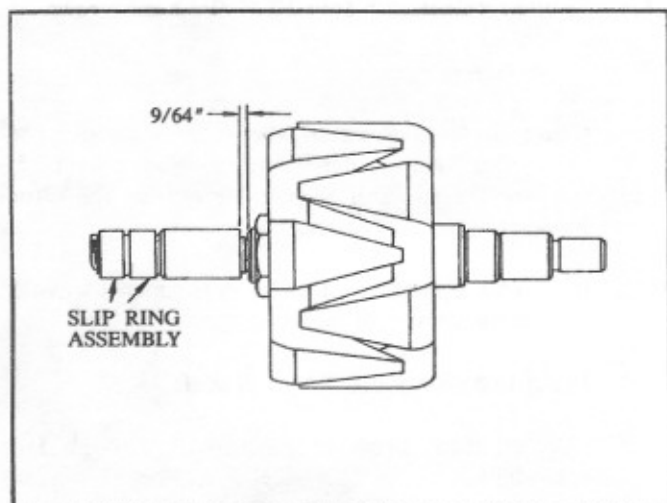


Figure 25

**CAUTION:** Insure that rotor coil leads are not damaged.

2.11 Clean serrated section of shaft, then apply Loctite No. 2728 (green).

**CAUTION:** DO NOT substitute other types of Loctite or epoxy, because slip ring assembly may shift on shaft, causing shortened service life.

2.12 Position slip ring assembly so slot lines up with shaft slot. Carefully press slip ring assembly on shaft.

**CAUTION:** Insure that slip ring tabs and rotor coil leads are not damaged during this operation.

2.13 Clean insulation off section of rotor coil leads which are to be soldered to the slip ring tabs.

2.14 Wind rotor coil leads tightly around slip ring tabs approximately 5-6 turns. Fig. 26.

2.15 Pre-heat tabs and wires and solder. Leece-Neville recommends the use of a rosin type flux and 96/4 tin/silver type solder.

**NOTE:** Use a soldering iron or a 500 Watt (minimum) soldering gun to insure a good soldered connection.

2.16 After the solder sets, cut slip ring tabs to 1/8"-5/32" maximum length. Insure that at least 2 1/2 turns of wire are left on tabs after cut-off.

2.17 Perform rotor coil ground test and resistance tests page 6, to insure assembly performs to specs.

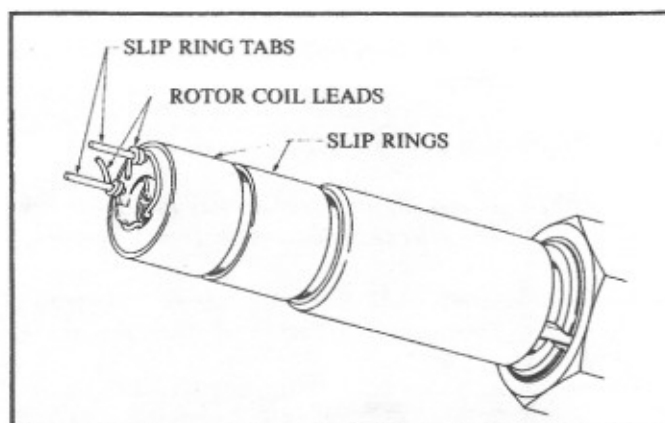


Figure 26

2.18 Place rotor assembly in an oven and heat at 350°F for 33 minutes, then remove from oven and let cool for 2 minutes.

2.19 Roll rotor halves in a varnish bath in a way that the varnish level reaches the nut, but DOES NOT come in contact with the bearing inner race, slip rings or any other part of the shaft. Rotate shaft 2-3 times to insure that the rotor coil is well saturated with varnish. Varnish bath consists of Westinghouse B142-1 (or B142-10) and XYLOL thinner. Mixture is a 3:1 ratio (3 parts varnish with one part thinner).

**NOTE:** Use a clean rag to wipe off any varnish which may accidentally get on the bearing inner race.

2.20 Remove rotor assembly and let excess varnish drain for 3 minutes. Then bake in oven at 350°F for 33 minutes.

2.21 After assembly is cool, paint rotor halves and rotor coil with Westinghouse B-6-665 Red Air Dry Epoxy Enamel.

**CAUTION:** DO NOT allow paint to set on any section of shaft.

2.22 Place rotor assembly in a lathe and take a light cut off slip rings. Maximum slip ring runout = .002". Minimum slip ring diameter .767"

2.23 While rotor is in the lathe, sand slip rings with .000 sand paper. Remove rotor from lathe.

3. SRE housing assembly.

3.1 Press outer seal (1.5" O.D.) in housing so flat side of seal faces the pin holes in the housing. Apply approximately 1/2 level tablespoon of Chevron SRI-2 grease in seal cavity after seal is assembled in housing.

**NOTE:** Use an ordinary tablespoon to measure grease quantity.

- 3.2 Press roller bearing in housing so outer race is flush with insert in housing and apply approximately 1 level tablespoon of Chevron SRI-2 grease to bearing. Fig. 27.

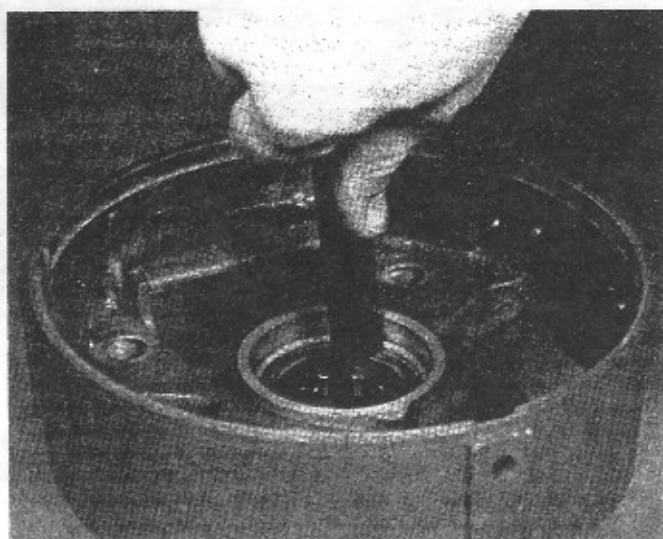


Figure 27

- 3.3 Apply approximately ½ level tablespoon of Chevron SRI-2 grease to inner seal cavity.
- 3.4 Press inside seal (2" O.D.) in housing so flat side of seal fits flush with housing.

**CAUTION:** Insure that metal chips and dirt are kept out of bearing and seal cavities.

- 3.5 Install connector assembly in regulator holder.

**CAUTION:** Insure that the YELLOW leads face the back side of regulator holder.

- 3.6 Route all leads through opening in the back of the regulator holder.
- 3.7 Insert three AC terminal studs in regulator holder, and install #10 guard washers and 10-32 hex nuts.

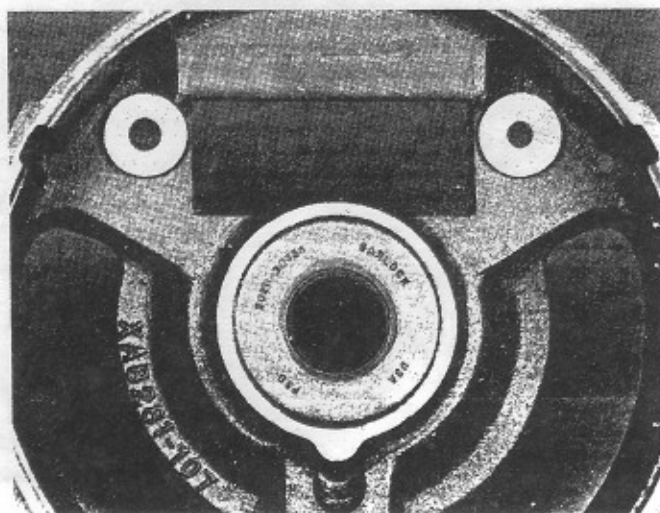


Figure 28

- 3.8 Install two 4-32 × ¼" screws to secure connector assembly to regulator holder.
- 3.9 Insert ¼" ID and 5/16" ID insulation bushings in negative and positive output terminal holes so flat side of bushings face the inside of housing. Fig. 28.
- 3.10 Clean all rectifier assembly holes and terminal screws to insure good electrical contacts.
- 3.11 Apply Loctite #29014 on 10-32 × .75 pan head screw and slide #10 lockwasher, guard washer and insulation washer on screw.
- 3.12 Insert 10-32 screw with washers through bottom hole of negative rectifier assembly and slide insulation bushing on screw so rectifier assembly is sandwiched between insulation bushing and insulation washer. Fig. 29.

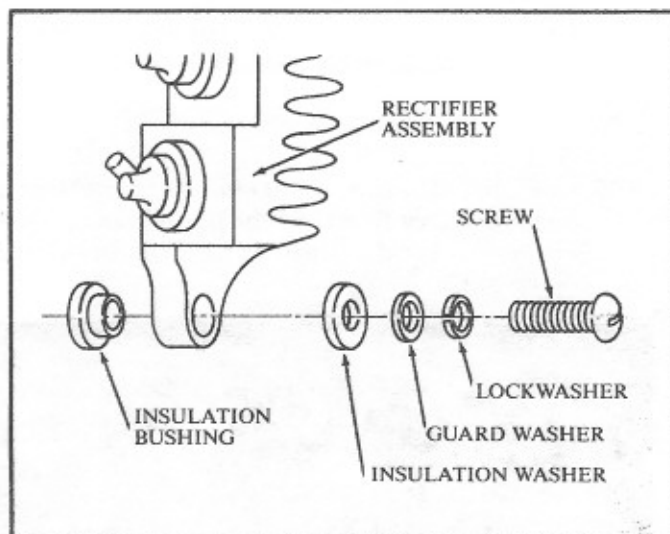


Figure 29

**NOTE:** Insulation bushing must be positioned with flat side against housing.

- 3.13 Place negative rectifier assembly in housing, and start 10-32 screw in hole provided.

**NOTE:** Negative rectifier assembly has a 9/32" square hole for the output terminal.

- 3.14 Apply electrical joint compound (L-N #56624) in and around square hole.
- 3.15 Insert ¼" terminal stud in square hole and pass it through insulation bushing and hole in housing.

**CAUTION:** Insure that ¼" ID insulation bushing is between rectifier assembly and SRE housing.

- 3.16 Tighten 10-32 pan head screw.
- 3.17 Repeat steps 3.10 & 3.11 and insert 10-32 × .75



pan head screw with washers, in bottom hole of positive rectifier assembly.

*NOTE: Positive rectifier assembly has an 11/32" square hole for the output terminal.*

- 3.18 Slide insulation bushing on 10-32 screw so rectifier assembly is sandwiched between insulation bushing and insulation washer. Fig. 29.

*NOTE: Insulation bushing must have flat side against housing.*

- 3.19 Place positive rectifier assembly in housing and start 10-32 screw in hole provided.
- 3.20 Apply electrical joint compound (L-N #56624) in and around square hole.
- 3.21 Insert 5/16" output terminal stud through square hole, insulation bushing, and housing.

**CAUTION:** Insure that insulation bushing is between rectifier assembly and SRE housing.

- 3.22 Tighten 10-32 pan head screw.
- 3.23 Insert 1/4" ID and 5/16" ID insulation bushings in housing so they fit around the negative and positive output terminals. Install bushings flush with housing. Fig. 30.

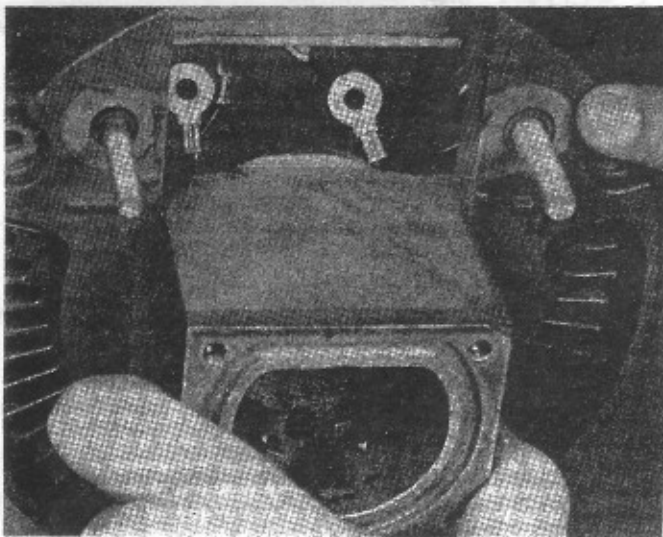


Figure 30

- 3.24 Route connector assembly leads through SRE housing opening and position regulator holder on alternator so output terminals pass through mounting ears. Fig. 31.

- 3.25 Install 1/4-20 and 5/16-18 tenz nuts on output terminals and tighten.

**CAUTION:** Insure that connector assembly leads are not damaged during this operation.

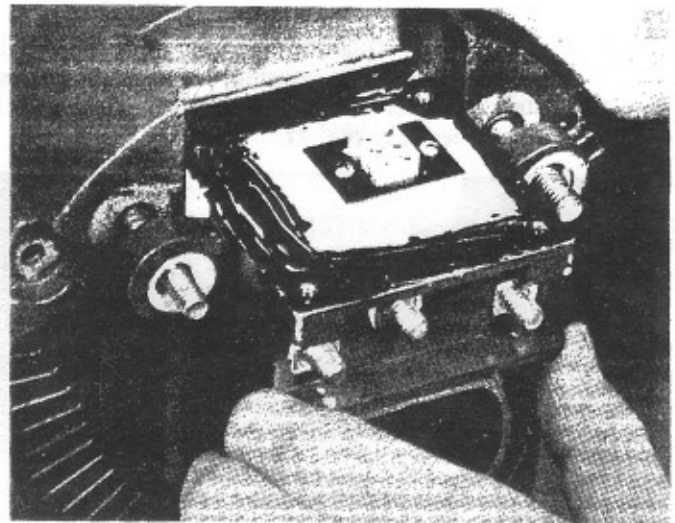


Figure 31

- 3.26 Route RED and BROWN leads through access hole in housing and pass them through the brush holder opening. Fig. 32.

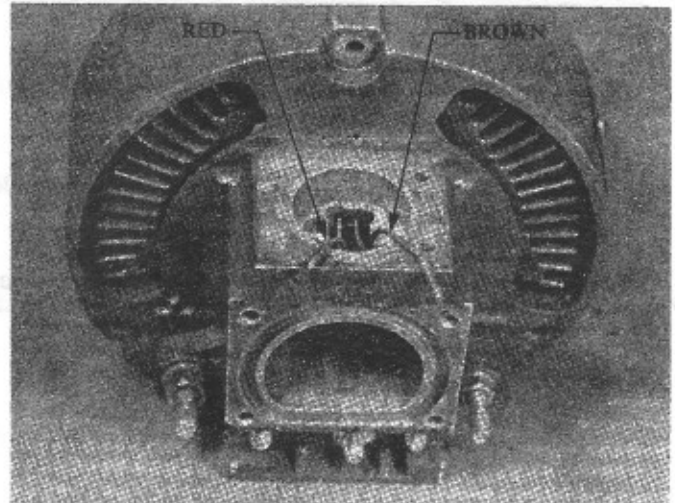


Figure 32

- 3.27 Position brush holder adapter next to housing, in the position it will have after installation. Fig. 33.



Figure 33

- 3.28 Press RED lead terminal in counterbored hole of brush holder adapter so it is closer to the INSIDE of housing. Fig. 33.
  - 3.29 Press BROWN lead terminal in counterbored hole of brush holder adapter, so it is closer to the outside of housing. Fig. 33.
- NOTE: These terminals are designed to lock in adapter. Insure that terminals are not easily removed.*
- 3.30 Press adapter in housing and secure with two 6-32  $\times$  .62 round head screws.
  - 3.31 Press brush holder, with brushes installed, in brush holder adapter. Inspect position of RED and BROWN leads. Insure that only enough wire is left inside brush cavity, to clear brush holder and brushes. Fig. 34.



Figure 34

- 3.32 Press rubber grommet in access hole to insure a good seal.
- 3.33 Remove brush holder and brushes.

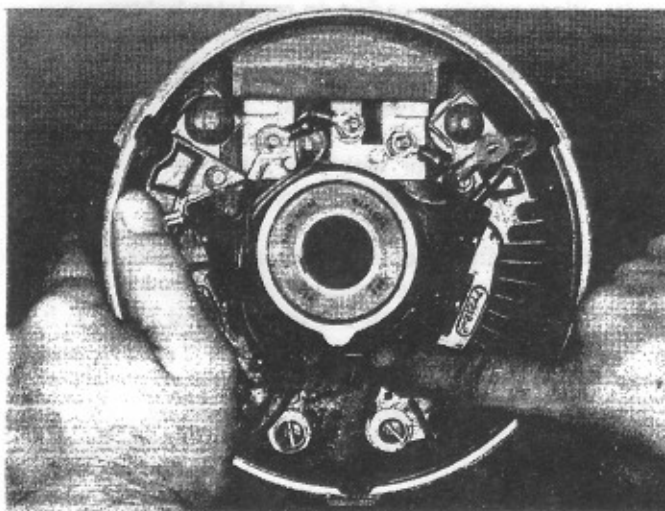


Figure 35

- 3.34 Install the two RED leads to POSITIVE rectifier assembly and BLACK lead to NEGATIVE rectifier assembly with 6-32 hex head self tapping screws.
- 3.35 Place YELLOW leads on AC terminal studs (flat side up).
- 3.36 Install negative rectifier leads to AC terminals. The longest lead must be routed under the bearing and must be connected to LEFT AC TERMINAL. Fig. 35.
- 3.37 The middle and top leads must be connected to the middle and right AC terminals. Fig. 36.

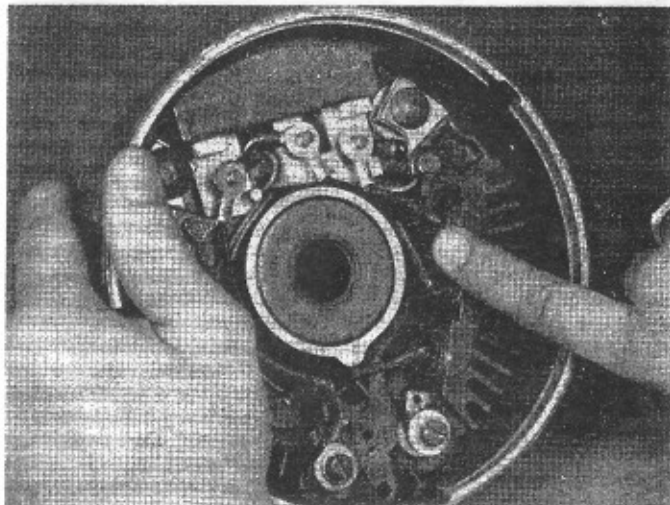


Figure 36

- 3.38 Install positive rectifier leads to AC terminals. The longest lead must be routed beneath the bearing and must be connected to RIGHT AC TERMINAL.
- 3.39 Connect middle and top rectifier leads to middle and left AC terminals.

*NOTE: All terminals must be installed with flat sides up.*

4. Install stator on SRE housing.
  - 4.1 Paint stator with Westinghouse B-6-665 Red Air Dry Epoxy Enamel. Wipe excess paint from stator ID.
- NOTE: This step is not necessary with new stator.*
- 4.2 Secure stator lead terminals flat side up to AC terminals with 10-32 self locking nuts.

**CAUTION:** Rectifier leads and connector assembly leads must be neatly routed around bearing, and all leads (including stator leads) must be as flush as possible with SRE housing.

- 4.3 Paint all interior terminals with Westinghouse B-6-665 Red Air Dry Epoxy Enamel.

5. Install rotor assembly in DE housing.

5.1 Place rotor assembly on the base of an arbor press.

**CAUTION:** Insure that slip rings and inner race are kept clear of any hard surfaces.

5.2 Press DE housing on rotor shaft. Fig. 37.

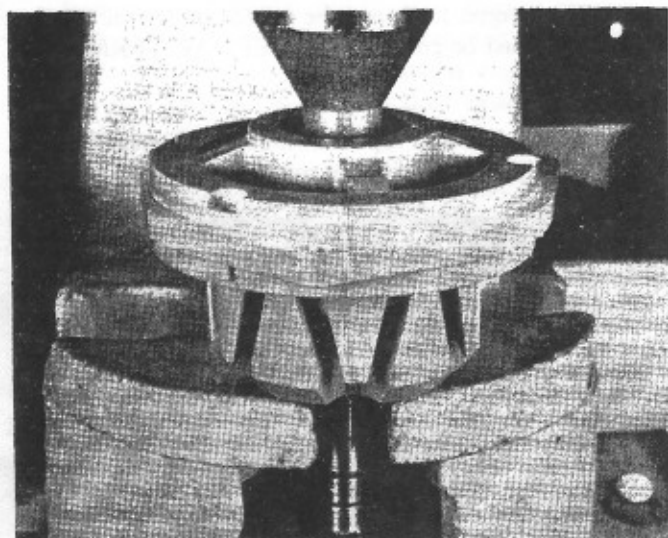


Figure 37

**CAUTION:** Pressure must be applied on DE bearing INNER RACE only.

6. Install DE housing and rotor assembly to stator and SRE housing.

*NOTE: Insure that brush holder and brushes are removed from SRE housing.*

6.1 Set a protective cover over slip rings (See Fig. 38 for dimensions) to avoid damaging the oil seals during assembly.

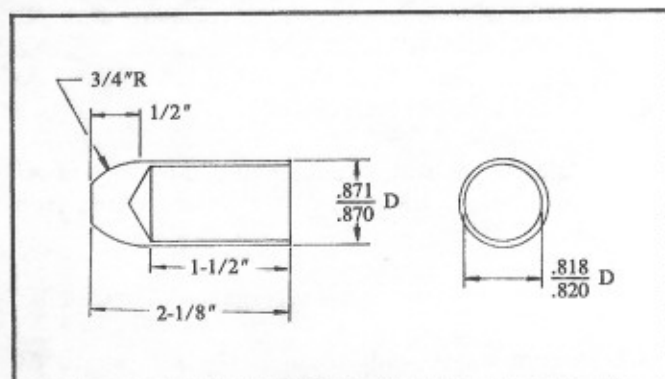


Figure 38

6.2 Pass slip ring end of shaft through seals and line up DE housing thru bolt holes with holes in stator and SRE housing.

**CAUTION:** The position of DE housing mounting flange must match the position shown in Fig. 39.

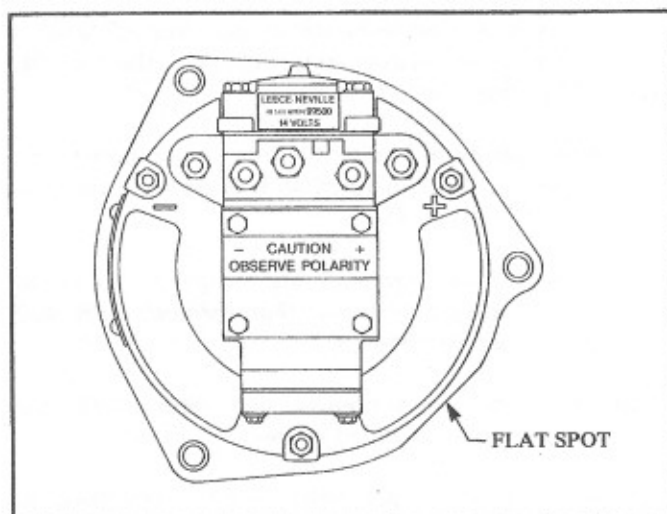


Figure 39

6.3 Install the three 10-32  $\times$  5.44" through bolts and guard washers from the DE side and tighten to 50-60 in. lbs. with self locking nuts.

6.4 Remove protective cover from slip rings.

6.5 Assemble "O" ring in brush holder and press brushes in place.

6.6 Place gasket on brush cover and join with bottom of brush holder.

6.7 Press brush holder in place and install four 8-32  $\times$  1" hex head screws with #8 lockwashers and guardwashers.

*NOTE: Insure that "Full Field Access Hole" faces to the outside of housing.*

6.8 Press "O" ring in back of SRE housing and install cover plate with four 10-32  $\times$  1/2" hex screws.

6.9 Install three 1/4" lockwashers and 1/4-20 hex nuts on AC terminals and tighten.

6.10 Place regulator gasket on regulator holder.

6.11 Line up regulator contact pins with connector holes and plug regulator in.

6.12 Secure regulator with four 10-32  $\times$  1" hex head screws and #10 lockwashers.

7. Install fan spacer, #8 woodruff key, and fan.

8. Place fan guard on DE housing and position it to match the DE housing flange.

8.1 Install three 3/8-16  $\times$  3 1/2" mounting bolts, lockwashers and guard washers, from DE housing side.

9. Slide alternator drive hub on shaft so it meshes



with woodruff key. Hold the hub with a strap wrench and secure the hub to the shaft with a 5/8-18 flange lock nut. Torque to 70-80 ft. lbs.

*NOTE: Lightly grease lip of seal in fan guard with Chevron SRI-2 grease before assembling drive hub on shaft.*

10. Place fan guard gasket against fan guard.
11. Place coupling on drive hub and install alternator on engine. Torque mounting bolts to 30-35 ft. lbs.

**CAUTION:** Gap between drive hub fingers and coupling must NOT exceed .012" (.30 mm)

12. Connect battery cables to output terminals and connect lead to "IGN" terminal if a lead was removed at alternator removal.

13. Connect a jumper to the POSITIVE output terminal and, FOR A SPLIT SECOND touch the other end of the jumper to one of the three AC terminals.

*NOTE: This step is not necessary if the "IGN" terminal is wired into the system.*

14. Perform Full Field Test and AC voltage test to insure that alternator performs properly.