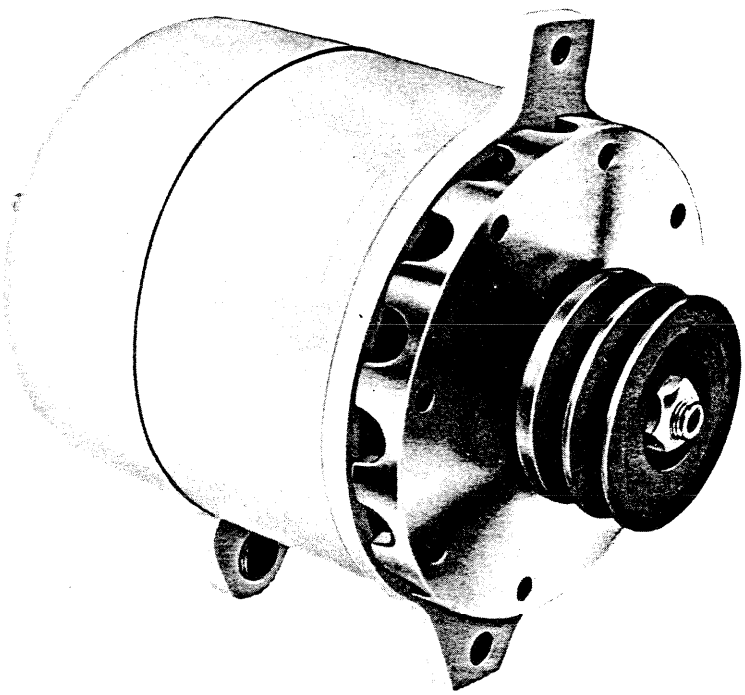
E8003-2S

ElecTroDyne®
BRUSHLESS ALTERNATOR



TROUBLESHOOTING and REPAIR PROCEDURE

Form 80-238 (1-83)

wagner
a division of allied systems company

Operation

The inductor design of the Electrodyne has several advantages over conventional designs:

Electrodyne units use the largest output windings in the industry and have no magnetic flux reversal; therefore, they produce more amps per horsepower and create less heat than conventional designs.

Electrodyne alternators use the highest capacity bearings in the industry and require a single grease seal, which has a double lip for greater reliability.

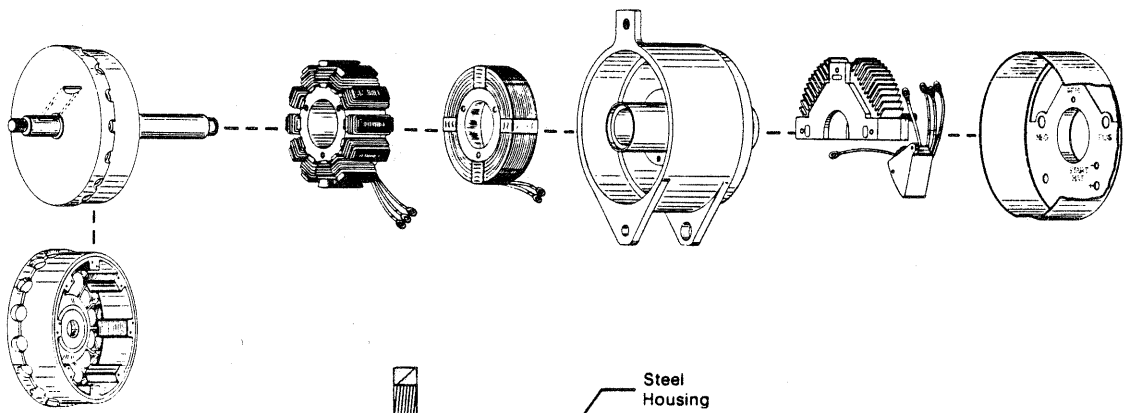
In normal use we recommend that a 400,000 mile rebuild cycle be used with Electrodyne alternators. A normal rebuild should only require new bearings, one seal and grease.

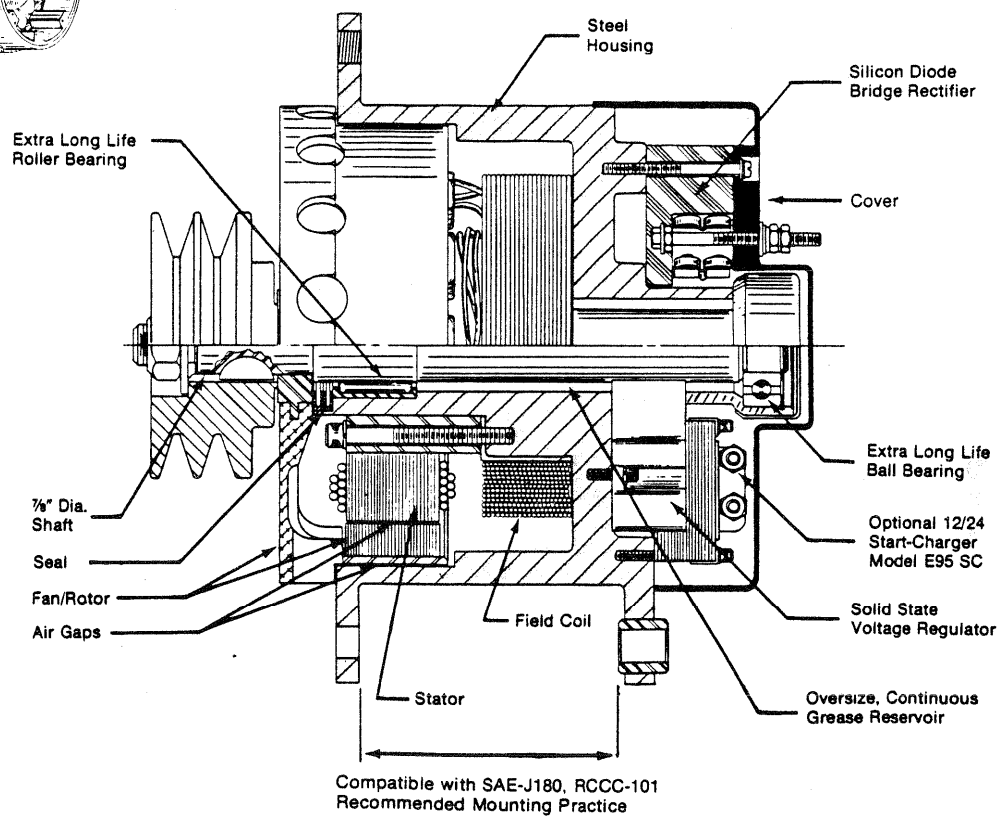
Electrodyne alternators use a steel housing eliminating through bolts and end plates.

All electrical windings are epoxy coated for long trouble free life.

All electrical components are stationary.

Built with a single moving part (rotor), the Electrodyne is designed for 20,000 hour life and the lowest cost per vehicle mile.





ALTERNATOR TROUBLE SHOOTING AND REPAIR PROCEDURE

This publication applies to Electrodyne belt drive alternators with the following model number, part number designations:

E95	101024-1
E80-24	101024-2
E75-32	101024-3

E80	101024-4
E100-32	101024-5
E80LC	101024-6

E150	101024-7
E100-24	101024-8
E105-SC	101023-1

Diagnosis, repairs and maintenance of ELECTRODYNE equipment requires minimal testing equipment and is serviceable with common tools and equipment normally found in a quality service establishment. ELECTRODYNE units require no soldering operations as all electrical terminations are of a mechanical fastener type.

These procedures are designed for simplicity in testing, removal, and replacement of all components. The contents listed below are arranged and indexed so that the proper procedures for the particular component diagnosed as faulty may be sequentially followed.

CONTENTS

CHARGING SYSTEM POTENTIAL MALFUNCTIONS

A review of this section will aid in identification of probable malfunction causes. Where an alternator or Start-Charge System component is identified below as suspect, proceed to Maintenance Sections identified for specific instructions.

Electrical

The normal charging system for a particular application exists when the following conditions are met:

a. Battery(s) remain(s) in full charge state for engine cranking purposes.

b. No excessive use of battery water. Typically, added water should not be required at less than 30-day intervals or 15,000 miles @ 80° F.

OVERCHARGE of the battery(s) is indicated by excessive use of battery water which may be caused by:

a. Voltage Regulator setting too high for application - Refer to "Voltage Regulator Adjustment" Procedure, Page 3.

b. Faulty Voltage Regulator - Refer to "Full Field Diagnostic Test," Page 4.

c. Faulty Field Coil - Refer to "Field Coil Test," Section H, Page 13.

UNDERCHARGE of the battery(s) is indicated as insufficient battery power to rotate the engine to specified cranking speeds, and may be caused by:

a. Faulty or corroded wiring or terminals - visual inspection.

b. Loose or glazed drive belt(s) - visual inspection.

c. Loose mounting brackets - visual inspection.

d. Improper pulley ratio for application - Refer to "Alternator Output Characteristics," Page 19.

e. Under capacity alternator for application - Refer to "Alternator Output Characteristics," Page 19.

f. Under-sized wire gauge in the vehicle wiring - Refer to Vehicle Manufacturer's Recommended Wiring Practice.

g. Voltage regulator set too low for application - Refer to "Voltage Regulator Adjustment" Procedure, Page 3.

h. Apparent intermittent alternator operation as noted by operator - Refer to "Apparent Intermittent Alternator Operation," Page 4.

i. Faulty voltage regulator - Refer to "Full Field Diagnostic Test," Page 4.

j. Faulty rectifier(s) - Refer to "Rectifier," Sections F and G, Page 12.

k. Faulty stator - Refer to "Stator Test," Section J, Page 13.

l. Faulty field coil - Refer to "Field Coil Test," Section H, Page 13.

m. Faulty start-charge system (SC MODELS ONLY) - Refer to "Optional Start-Charge System Potential Malfunction," Page 20.

Mechanical

GENERAL

During the course of trouble shooting and repair of the alternator, all parts should be visually examined for mechanical abuse, cracks, excessive wear, or damage etc, that could result in potential failure. Mechanically faulty parts should be scrapped.

NORMAL ALTERNATOR NOISE

Any rotating electromechanical device, including generators of all types, exhibit inherent, normal "noise" which may vary with speed and electrical load. An extreme variation in the usual operating noises may indicate possible mechanical malfunction.

ABNORMAL ALTERNATOR NOISE MAY BE CAUSED BY:

a. Loose or broken mounting brackets.

b. Loose pulley.

c. Loose or glazed belts.

d. Foreign material within the alternator.

If it is suspected that a mechanical problem exists within the alternator, remove drive belt(s), disconnect positive and negative output leads and rotate the alternator fan by hand to confirm that the problem is of a mechanical nature. A higher than normal resistance to rotation and/or noise may be caused by bearings, seals, rotor and shaft assembly and snap rings.

TEST PROCEDURES

Voltage Regulator Adjustment

Prior to making any voltage adjustment, determine that the drive belt(s) are at proper tension, mounting brackets are tight, all wiring connections are clean and tight, and the battery(s) are at, or near, full charge. Make corrections as necessary.

VOLTAGE READING

a. Connect a reliable Voltmeter to alternator Pos. (+) and Neg. (-) terminals. See Fig. 1

b. Observe battery voltage and record.

c. Crank engine and run at medium speeds.

d. Observe Voltmeter reading. Voltage should slowly increase to:

13-15 volts	12 volt system
26-29 volts	24 volt system
35-38 volts	32 volt system

If it is determined that the running voltage is within the specifications, but higher or lower than the particular application requirements, voltage adjustment is required.

VOLTAGE ADJUSTMENT

a. Locate Volt Adjustment access hole in rear cover. See Fig. 2

b. Insert small flat blade screwdriver through access hole and engage slot in potentiometer.

c. Slowly rotate potentiometer clockwise to raise voltage or counter-clockwise to lower voltage.

d. Do not override mechanical stop of potentiometer as damage will occur. Use caution.

If the voltage adjustment procedure will not lower reading to within specified limits, proceed to Section Q, Page 18 for component disassembly, replacement, reassembly, and final test.

If the voltage adjustment procedure will not raise reading to within specified limits, proceed to the "Full Field Diagnostic Test" section below.

Full-Field Diagnostic Test

This procedure will isolate problem area to either open field circuit (voltage regulator or field coil) or, open or shorted output circuit (rectifiers or stator).

a. Locate illustration in Fig. 2 that matches the alternator under test. Connect jumper lead (Min. #12 gauge wire recommended) as required in Fig. 1.

b. Start engine, run at medium speed, observe voltmeter.

c. If voltage rises above specifications, test proves that problems are with Voltage Regulator.

d. For models with Full Field access hole (see Figs. 1 & 2), use jumper lead "A" test method. If voltage does not rise above specifications, test proves that problems are with Stator, Rectifiers or Field Coil. For models without Full Field access hole, use jumper lead "B" test method (see Figs. 1 & 2). Jumper lead "B" test method also excites regulator. If voltage does not rise above specifications, this test proves that a problem could exist in the Stator, Rectifiers or Field Coil and also in the Regulator Output Stage.

Apparent Intermittent Alternator Operation

Important Note: A confusing condition which may indicate the charging system has an oscillating or intermittent output can be established when the following conditions exist.

a. Engine running medium to high speeds and the battery(s) fully charged, and no electrical loads applied.

b. Vehicle ammeter showing "O" charge, or oscillating.

This condition is the result of battery(s) voltage reaching the maximum voltage level of the voltage regulator causing the voltage regulator to "turn-off" until the battery voltage is lowered. This can be determined by turning on the headlights or other loads to present a voltage differential in the system. This condition can also be created during a voltage adjustment procedure if the voltage regulator is reset to a lower voltage than the battery(s) are at that time. The above conditions are normal with all makes of alternator systems using solid state voltage regulators.

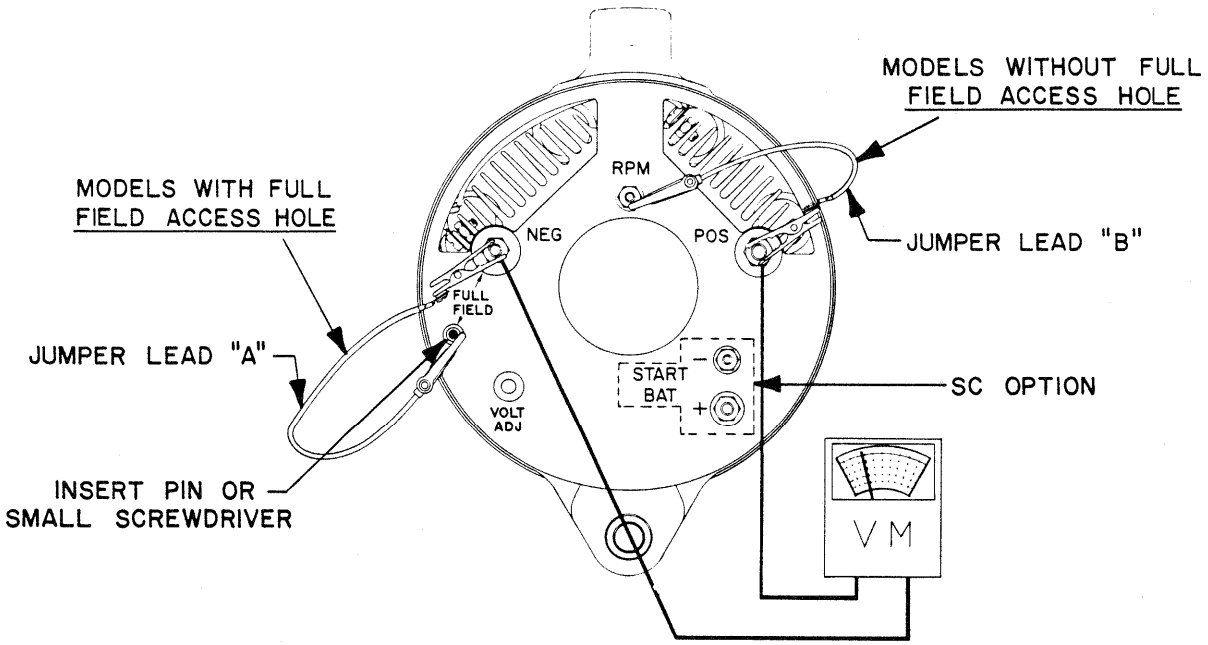


FIG. 1

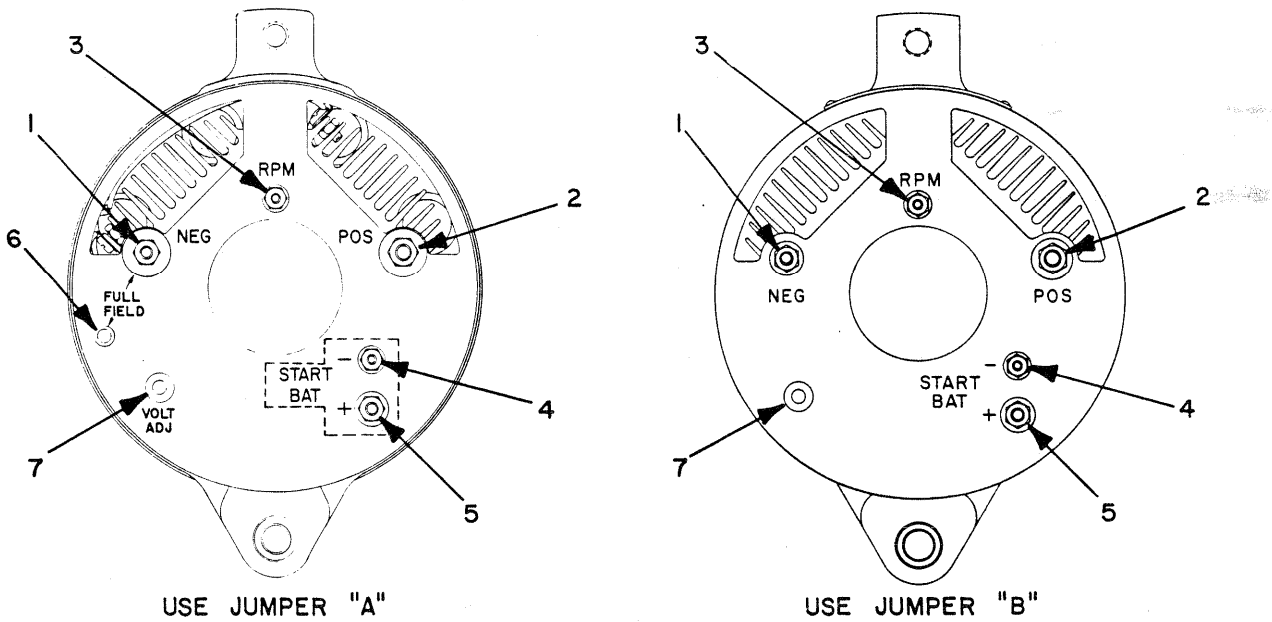


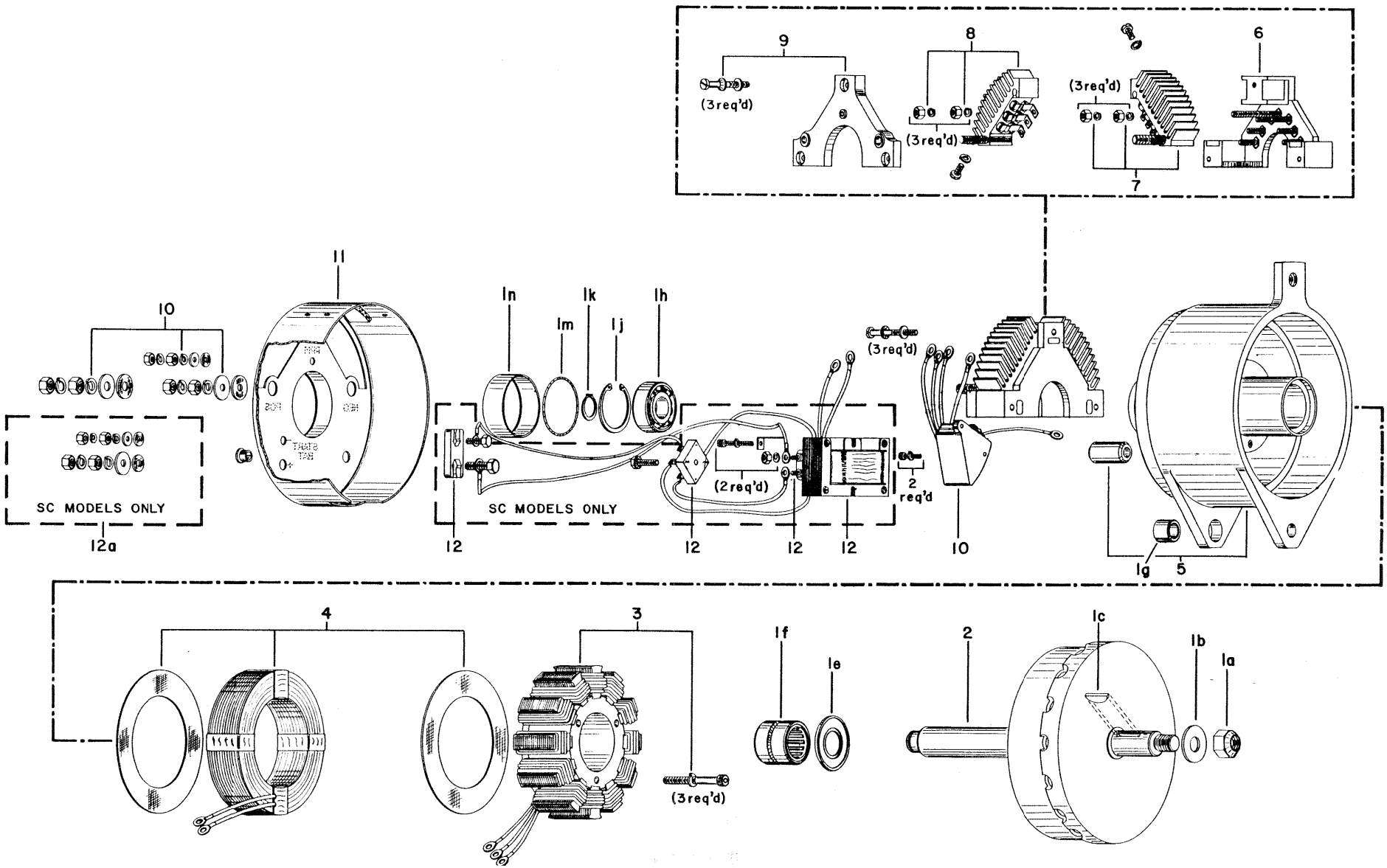
FIG. 2

Terminal Number	Description
1	Alternator Negative (-)
2	Alternator Positive (+)
3	RPM (AC Signal for tachometer, etc.)
4	SC Negative (-)
5	SC Positive (+)
6	Full Field access hole
7	Voltage Regulator Adjustment access hole

REPAIR PARTS KITS (E-4000 NO'S) contain all required hardware associated with the part name indicated. The Mechanical Parts Service Kit, ME-4000, contains a component selection (all reference numbers prefixed "1") which not only facilitates bearing replacement, but also serves as an excellent preventative maintenance kit to be utilized in conjunction with repair parts required in long service Electrodyne units.

SERVICE PARTS (E-4500 NO'S) are replacement parts associated with the part name indicated.

Electrodyne Application		Ref. No.	Description	Electrodyne Part No.
	ALL	1(a-p)	Mechanical Parts Service Kit	E-4000
	ALL	1a	Locknut	E-4511
	ALL	1b	Washer	E-4512
	ALL	1c	Woodruff Key	E-4513
	ALL	1e	Seal	E-4501
	ALL	1f	Roller Bearing	E-4500
	ALL	1g	Split Bushing	E-4502
	ALL	1h	Ball Bearing	E-4504
	ALL	1j	Snap Ring, Internal	E-4505
	ALL	1k	Snap Ring, External	E-4506
	ALL	1m	"O" Ring	E-4508
	ALL	1n	Grease Cap	E-4507
	ALL	1p	Terminal Hardware	E-4503
	ALL	1	Grease	E-4510
	ALL	2	Rotor & Shaft Assembly	E-4003
E105-SC ~~E95SC~~	101023-1	3	Stator, 12V	E-4009
E95	101024-1	3	Stator, 12V	E-4009
E80	101024-4	3	Stator, 12V	E-4009
E80-24	101024-2	3	Stator, 24V	E-4010
E80LC	101024-6	3	Stator, 24V	E-4010
E75-32	101024-3	3	Stator, 32V	E-4011
E100-32	101024-5	3	Stator, 12V	E-4012
E150	101024-7	3	Stator, 12V	E-4013
E100-24	101024-8	3	Stator, 12V	E-4014
E95SC	101023-1	4	Field Coil, 12V	E-4019
E95	101024-1	4	Field Coil, 12V	E-4019
E80	101024-4	4	Field Coil, 12V	E-4019
E80LC	101024-6	4	Field Coil, 12V	E-4019
E150	101024-7	4	Field Coil, 12V	E-4019
E80-24	101024-2	4	Field Coil, 24V	E-4020
E100-24	101024-8	4	Field Coil, 24V	E-4020
E75-32	101024-3	4	Field Coil, 32V	E-4021
E100-32	101024-5	4	Field Coil, 32V	E-4021
	ALL	5	Housing & Split Bushing	E-4002
	ALL	6	Rectifier Bottom Support	E-4018
ALL Except E150		7	Rectifier, Positive	E-4015
E150	101024-7	7	Rectifier, Positive	E-4023
ALL Except E150		8	Rectifier, Negative	E-4016
E150	101024-7	8	Rectifier, Negative	E-4024
	ALL		Rectifier, Top Support	E-4017
E95SC	101023-1	10	Voltage Regulator, 12V	E-4006
E95	101024-1	10	Voltage Regulator, 12V	E-4006
E80	101024-4	10	Voltage Regulator, 12V	E-4006
E80LC	101024-6	10	Voltage Regulator, 12V	E-4006
E150	101024-7	10	Voltage Regulator, 12V	E-4006
E80-24	101024-2	10	Voltage Regulator, 24V	E-4007
E100-24	101024-8	10	Voltage Regulator, 24V	E-4007
E75-32	101024-3	10	Voltage Regulator, 32V	E-4008
E100-32	101024-5	10	Voltage Regulator, 32V	E-4008
	ALL	11	Cover	E-4001P
101023-1		12	Start-Charger Service Kit	E-4022
101023-1		12a	Terminal Hardware (SC)	E-4509



EXPLODED VIEW - PARTS IDENTIFICATION

DISASSEMBLY PROCEDURE

A. REAR COVER REMOVAL

A1. Remove attaching hardware from positive, negative and RPM terminals and note position of insulating washers.

A2. Remove cover.

B. REAR SECTION COMPONENT REMOVAL (see Fig. 3 and 4)

B1. Remove three rectifier top support mounting screws and rectifier top support.

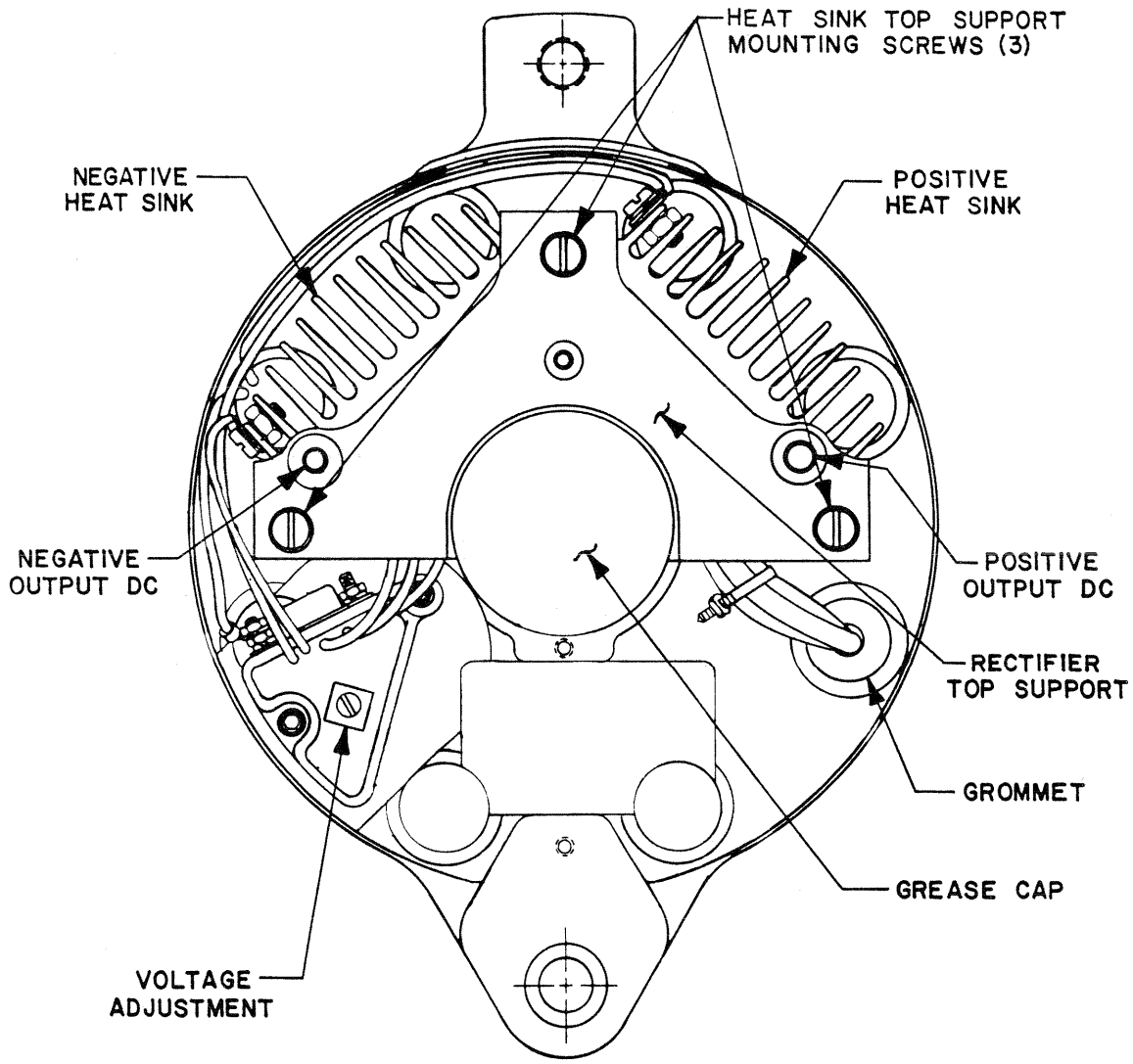


FIG. 3

B2. Remove attaching hardware from voltage regulator AC leads at negative rectifier.

B3. Remove regulator field leads from positive heat sink fin, and regulator lead from negative heat sink fin.

B4. Remove field leads from transistor stud on regulator.

NOTE: Field coil may now be tested per Section H, Page 13, if desired.

B5. Remove voltage regulator mounting screws and remove regulator.

B6. Remove attaching hardware from stator leads at positive rectifier studs.

NOTE: Rectifier and stator may now be tested per Sections F, G, and J, if desired.

B7. Remove attaching hardware from diode straps at postive and negative rectifier studs.

B8. Push positive and negative heat sinks from rectifier bottom support.

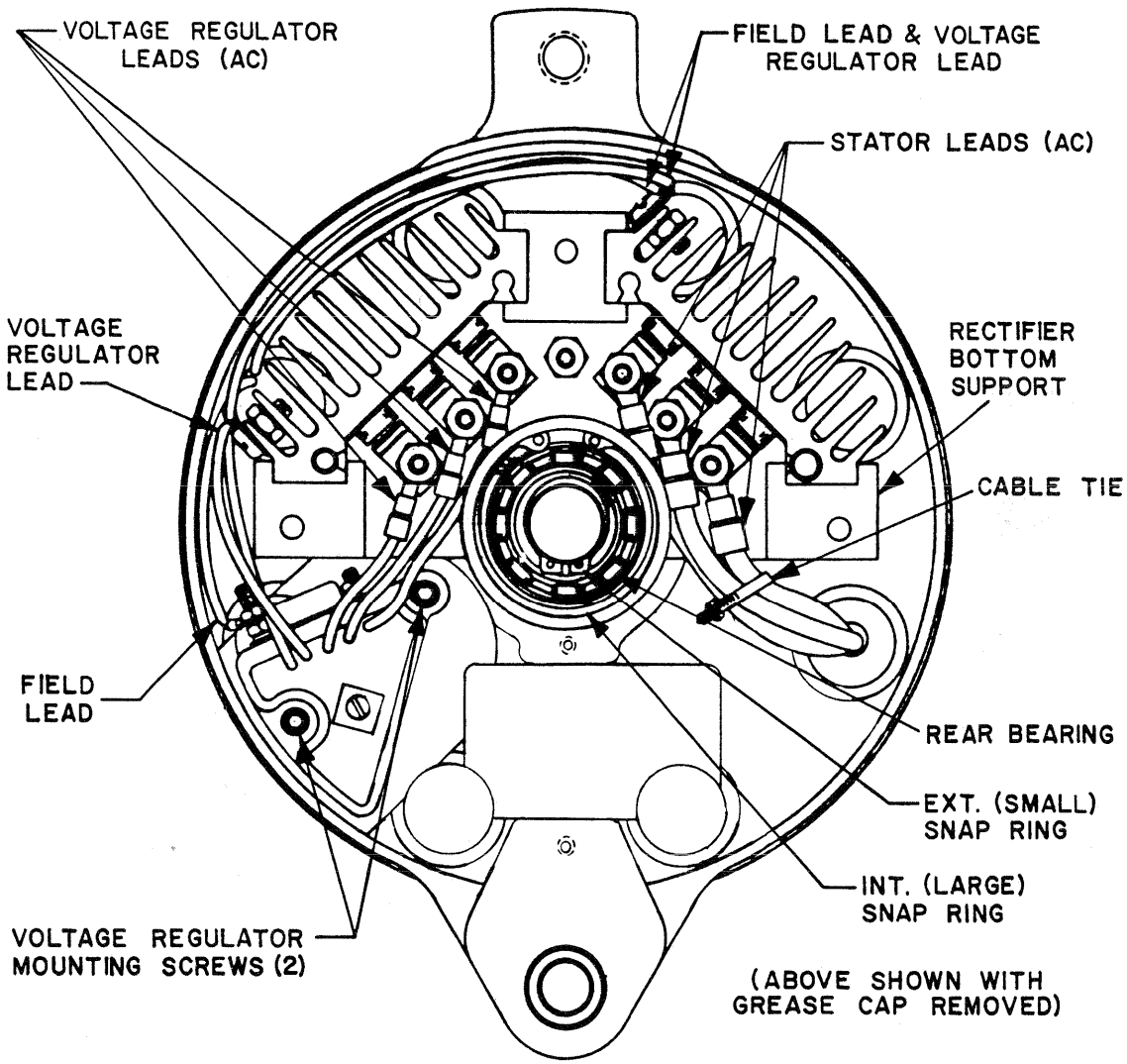


FIG. 4

C. FRONT COMPONENT PARTS REMOVAL (See Page 7 For Exploded View)

C1. Rear Grease Cap Removal - Use large pliers and grasp rear grease cap on back edge. Rotate back-and-forth while exerting outward force to break edge crimps and vacuum. See Fig. 5.

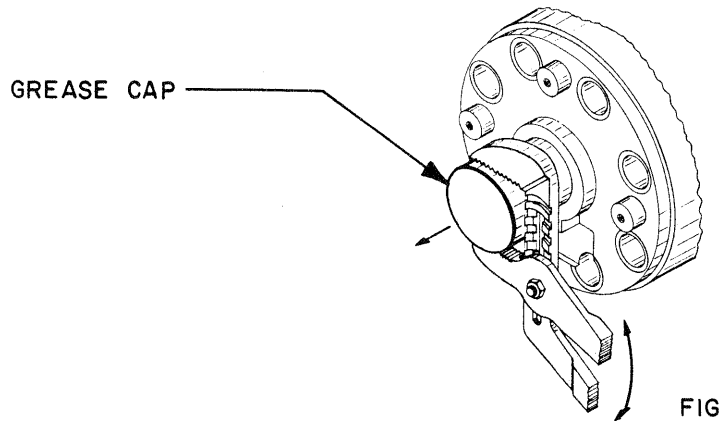


FIG. 5

C2. External Snap Ring Removal - Remove external (small) snap ring from rotor shaft.

C3. Rotor and Shaft Assembly Removal - Support alternator housing in hydraulic press as indicated and press out rotor and shaft assembly. See Fig. 6.

C4. Internal Snap Ring Removal - Remove internal (large) snap ring. Insert bar through front bearing and contact rear bearing race. Tap rear ball bearing out with mallet.

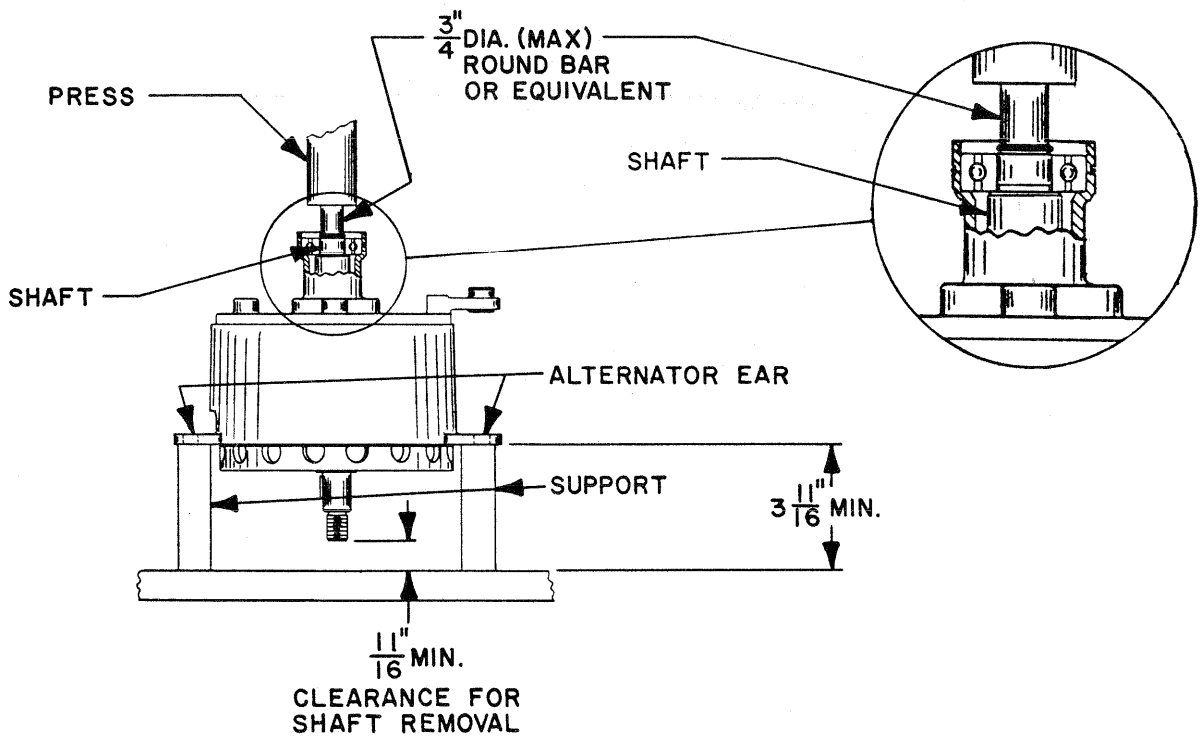


FIG. 6

C5. Front Seals and Front Bearing Removal - Insert proper diameter (1-3/8" O.D.) socket or other appropriate tool through rear bearing bore and contact outer race of front bearing. Place socket extension or bar on socket and drive out seals and bearing. Be sure socket is sufficiently large to contact outer race. See Fig. 7.

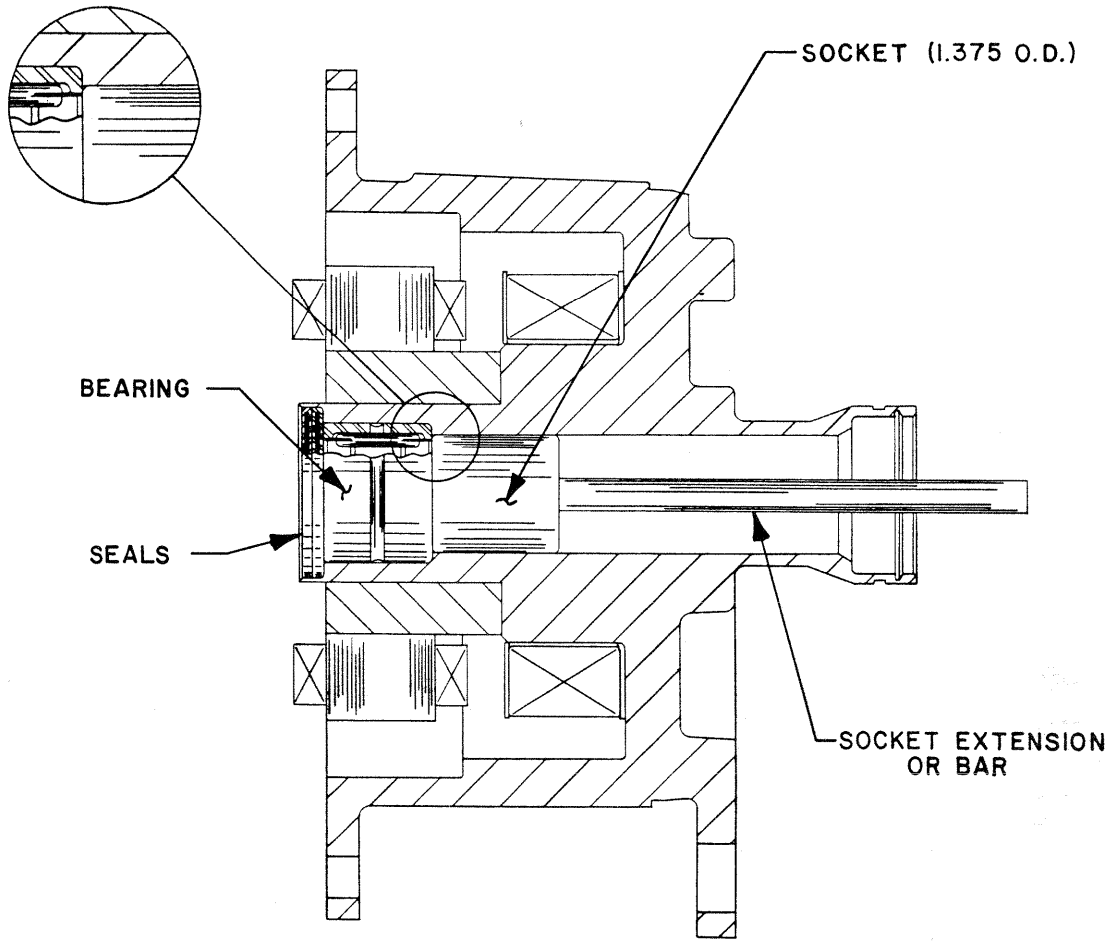


FIG. 7

Important Note: Prior to removal of stator, seals and bearing must be removed. See Step C5.

C6. Stator Removal - Straighten bends in stator AC leads so they will be in line with the access hole insulating grommet and remove the grommet. Remove three attaching screws from stator and slide stator off housing core (penetrating oil may be required to assist removal). Be sure that stator AC leads remain in a small group to ease removal.

D. FIELD COIL REMOVAL

To remove field coil, use diagonal cutter pliers and cut through a few windings at a time and unwind from housing core. An alternate coil removal means is provided by two (.200" dia.) holes in rear housing through which pins can be pressed for coil removal - field coil should then be scrapped.

E. HOUSING - INSPECTION, CLEANING, AND PAINTING

E1. Remove all old lubricant from the housing bore, clean thoroughly.

E2. Inspect mounting ears for wear of mounting holes. A new rear bushing must fit tight in rear ear, otherwise the housing is to be scrapped.

E3. Inspect bearing bores for wear. If bearings are loose in housing when removed in steps C4 and C5, it is indicative that excessive bearing housing bore wear is present.

E4. If field coil is retained, do not put housing in tumbler type degreaser machine or immerse in liquid degreaser.

E5. If it was necessary to remove the field coil, clean all adhesive and insulating material from field coil support area.

E6. Paint exterior of housing except component mounting surfaces and rear ear bushing bore.

COMPONENT TEST AND INSPECTION

NOTE: Prior to any electrical testing of the rectifier assemblies, disconnect the Stator leads and the Voltage Regulator AC Leads. This will prevent erroneous interpretation of the test results.

F. POSITIVE RECTIFIER TESTING (See Fig. 8)

F1. Connect the positive lead of an ohmmeter or a battery powered test light to the positive output terminal. Touch the negative test lead to each of the three positive rectifier studs. The ohmmeter should indicate a high resistance or the test light should not light.

F2. Reverse the test leads and the ohmmeter should indicate a low resistance or the test light should light.

F3. Visually inspect for good mechanical joints and that hardware is intact.

G. NEGATIVE RECTIFIER TESTING (See Fig. 8)

G1. Connect the negative lead of the ohmmeter or test light to the negative output terminal. Touch the positive test lead to each of the three negative rectifier studs. The ohmmeter should indicate a high resistance or the test light should not light.

G2. Reverse the test leads and the ohmmeter should indicate a low resistance or the test light should light.

G3. Visually inspect for good mechanical joints and that hardware is intact.

Failure of either of the above tests indicates a faulty diode and the applicable rectifier assembly must be replaced.

NOTE: Some manufacturers of multimeters reverse ohms polarity - if this is the case, test results of F and G above will be reversed.

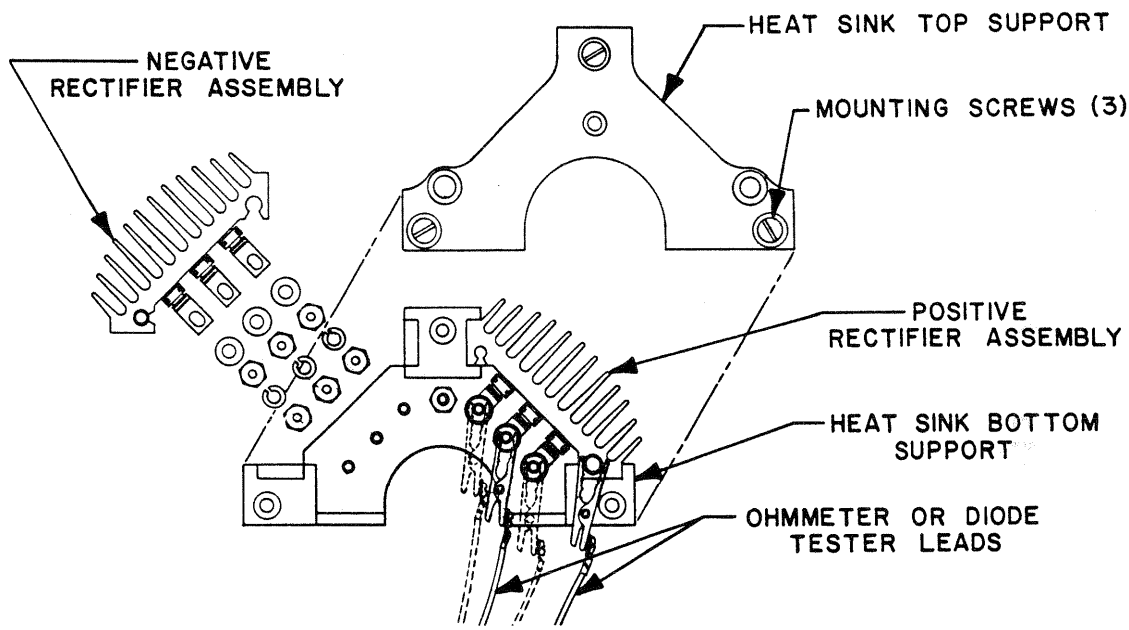


FIG. 8

H. FIELD COIL TEST (See Fig. 9)

H1. Connect ohmmeter across field coil leads. Resistance reading should be:

2.2 ohms*	12 volt systems
11.5 ohms*	24 volt systems
13.1 ohms*	32 volt systems

*Plus or minus 10%

H2. Connect ohmmeter test leads to one field coil lead and to alternator housing. A high resistance and no leakage should be indicated. Replace field coil if any short is indicated.

H3. If original field coil is not removed, reach through rear housing air holes and determine that field coil bonding is secure.

H4. Visually inspect field coil for chaffing marks, abuse, or heat discolorations.

J. STATOR TEST (See Fig. 9)

J1. Because of the low resistance of the stator windings, it is impractical to attempt to measure with typical ohmmeters. The windings can be tested for grounds and continuity between phases with a test light. Connect test light across:

Leads 1 and 2	Should Light
1 and 3	Should Light
3 and 2	Should Light
Lead 1 to housing	Should Not Light
2 to housing	Should Not Light
3 to housing	Should Not Light

J2. A visual check of the windings will usually reveal any defective phase. Replace stator if any heat discoloration is apparent.

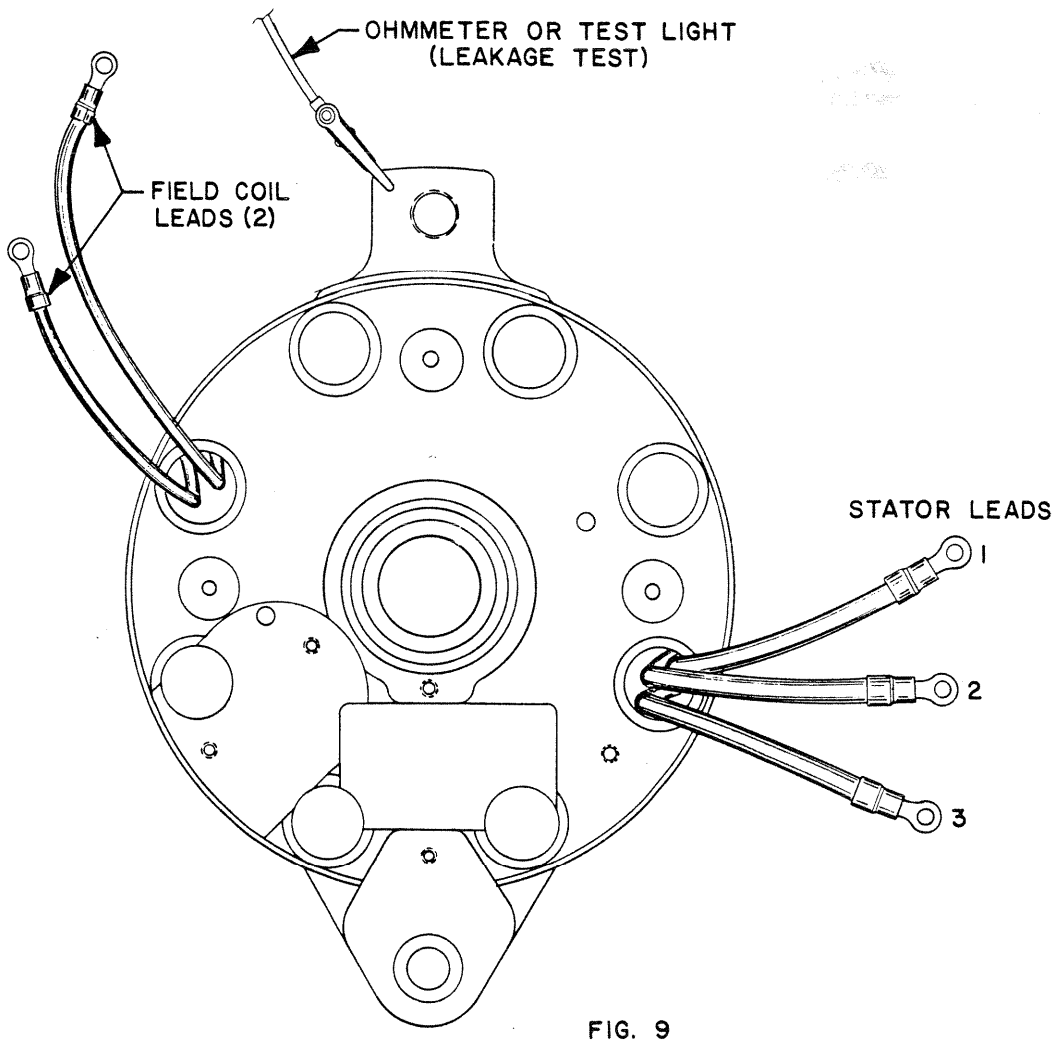
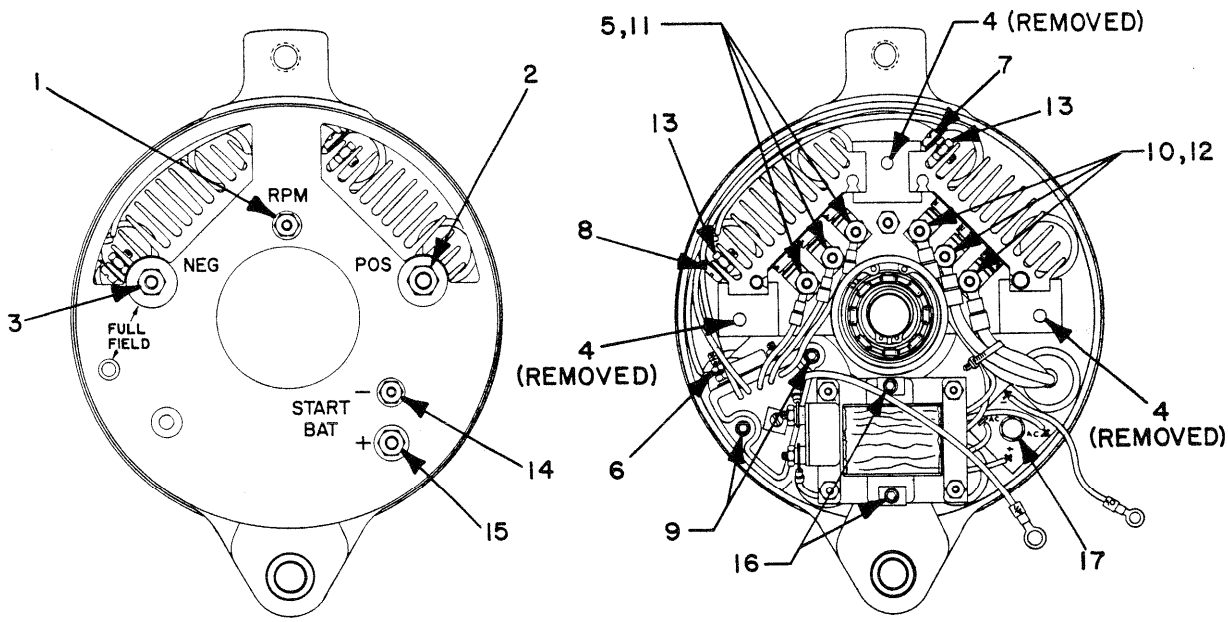


FIG. 9

FASTENER TORQUE REQUIREMENTS

Item	Description	Quantity	Thread Size	Torque Spec.
1	Nuts	2	#10-32	25 in. lb.
2	Nuts	2	5/16"-18	50 in. lb.
3	Nuts	2	1/4"-20	50 in. lb.
4	Screws, Pan Hd.	3	#10-32x1-3/4"	25 in. lb.
5	Nuts	3	#10-32	25 in. lb.
6	Nut	1	#6-32	10 in. lb.
7	Screw, Pan Hd.	1	#10-32x1/2"	25 in. lb.
8	Screw, Pan Hd.	1	#10-32x1/2"	25 in. lb.
9	Sock, Hd. Cap Screw	2	#8-32x5/8"	25 in. lb.
10	Nuts	3	#10-32	25 in. lb.
11	Nuts	3	#10-32	25 in. lb.
12	Nuts	3	#10-32	25 in. lb.
Not Shown	Sock, Hd. Cap Screw (Stator Mounting)	3	1/4"-20x2-1/2"	150 in. lb.
13	Nuts	2	#10-32	24 in. lb.
	(SC UNITS ONLY)			
14	Nuts	2	#10-32	15 in. lb.
15	Nuts	2	1/4"-20	15 in. lb.
16	Sock, Hd. Cap Screw	2	#8-32x1-1/4"	50 in. lb.
17	Screw-Self Locking	1	#10-32x7/8"	50 in. lb.



ASSEMBLY PROCEDURE

CAUTION: Stators, rotors, housings, and bearings may be magnetized - extreme cleanliness control procedures should be used to avoid contamination from metallic foreign material during assembly.

K. FIELD COIL INSTALLATION (See Fig. 10)

K1. Mix epoxy adhesive - supplied in field coil replacement kit.

K2. Coat both sides of first insulating ring.

K3. Slide insulating ring over housing core and into contact with back plate of housing, smoothing out any wrinkles.

K4. Liberally coat inside of insulating sleeve and slide over housing core until it is close to back plate.

K5. Liberally coat the side of the field coil that will face the back plate and liberally coat the inside diameter of the field coil that will be supported by the housing core. All bonded surfaces should have 100% coating.

K6. Slide field coil into position with the field leads exiting through the proper hole in the back plate. See Fig. 9. Recheck positioning.

K7. Fill all voids on the field coil I. D. parting line with adhesive.

K8. Spread excessive adhesive over top face of field coil.

K9. Coat one side of second insulating ring and place over exposed coil windings.

K10. Allow 48 hours for curing at room temperature before rough handling or mounting to engine.

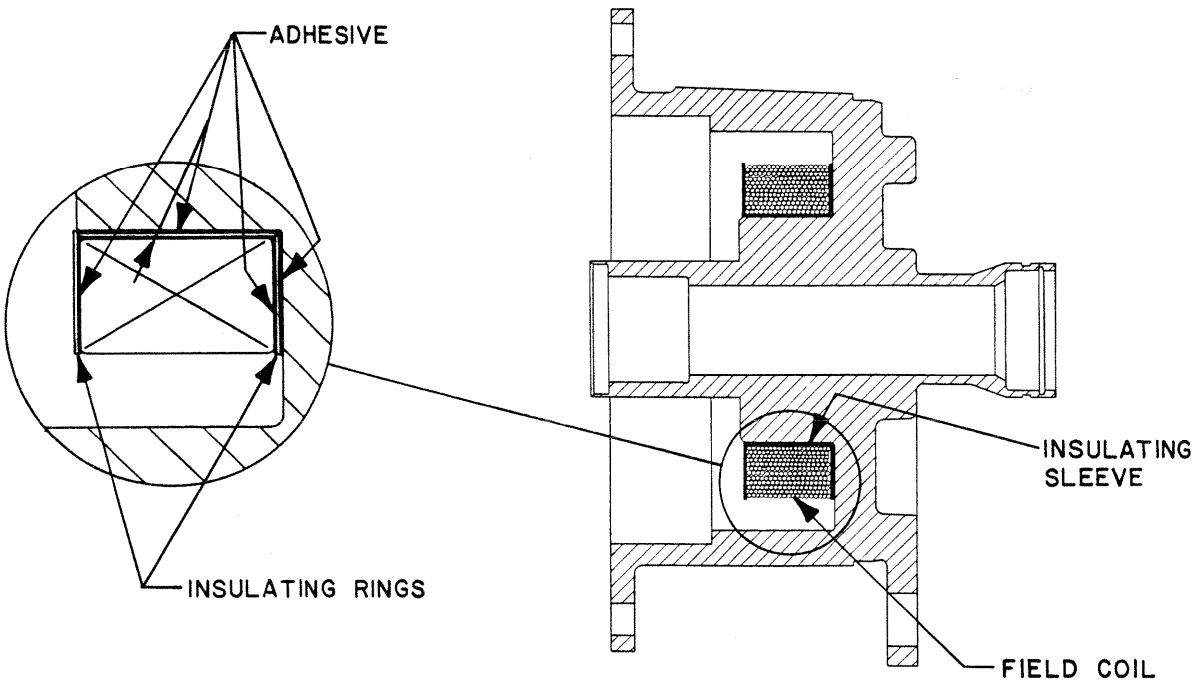


FIG. 10

L. STATOR REPLACEMENT

L1. Insert stator AC leads through grommet access hole and align stator core onto housing.

L2. Align and attach three stator mounting screws - if stator binds on housing, use penetrating oil to ease alignment.

L3. Coat inside and outside of insulating grommet with Dow-Corning or GE Silicone sealant and place into proper hole in housing around the stator wires. See Fig. 3.

M. FRONT BEARING AND SEALS REPLACEMENT

M1. Repack bearing fully with SRI-1 or SRI-2 lubricant. Lightly coat outer bearing race with lubricant to prevent galling during pressing operation. Support housing in press and using proper diameter socket or other appropriate tool on outer race, press in bearing until it bottoms in bore.

M2. Prick-punch bearing bore in four places of forward edge for bearing retention. Locate smooth side of grease seal and place facing in. Use proper tool and press into bore until it bottoms on the bearing race. See Fig. 11. Place second seal in the same position and press in until it bottoms on first seal. Do not over-press as damage will occur to seals.

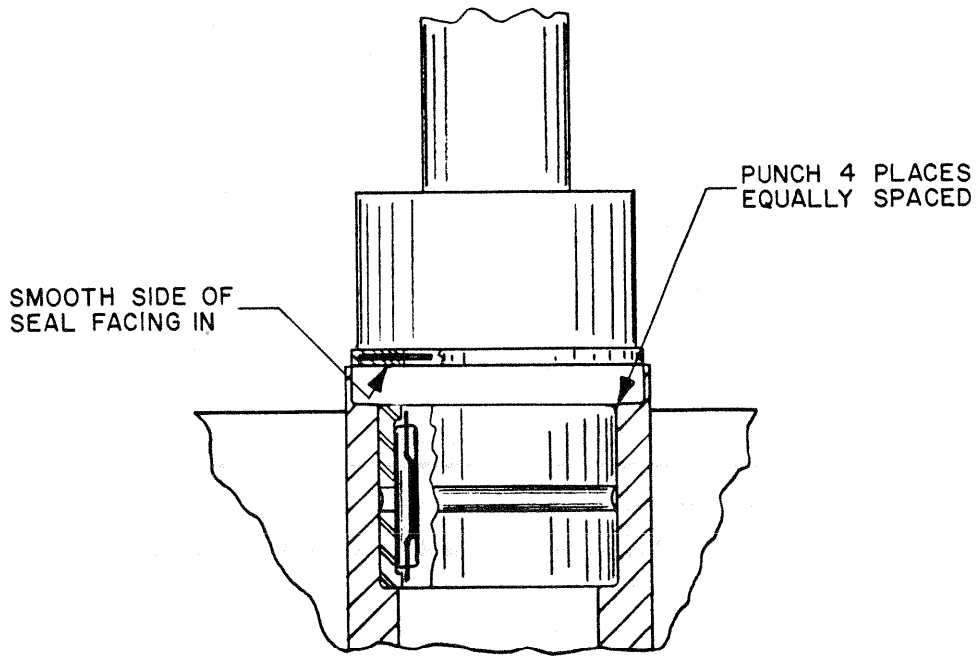


FIG. 11

N. ROTOR ASSEMBLY INSPECTION AND REPLACEMENT

N1. If the Rotor Assembly is to be reused, inspect for wear on the front bearing journal, grease seal rubbing surface, worn rear bearing surface, worn pulley thread, worn keyway, loose laminations. Verify that no movement exists between fan hub and shaft.

N2. Lightly coat entire length of rotor shaft with lubricant. Slowly insert through front seals and rotate shaft as it is pushed through seals and front bearing.

N3. With Rotor assembly held in place, fill entire remaining housing bore with prescribed lubricant (SRI-1 or SRI-2). This can best be accomplished with a hand held pump gun with grease cartridge. In absence of grease gun, pack lubricant into bore with clean tool.

O. INSTALL REAR BEARING AND SNAP RINGS

O1. Pack bearing fully with prescribed lubricant and lightly lubricate outer and inner race to prevent galling. Place alternator in press and position into place. With proper diameter socket or other appropriate tool, place bearing on inner race until it bottoms. See Fig. 12.

O2. Install internal (large) snap ring with flat side toward bearing. Check to be sure snap ring is fully seated per the following instructions: Use .284" gauge as shown to insure minimum gap width on snap ring. If gauge cannot be inserted, ring is not seated properly or installed backwards and may fail. Ring should be removed and reinstalled.

O3. Install external (small) snap ring onto rotor shaft. Check to be sure snap ring is fully seated.

O4. Rotate rotor assembly several revolutions to insure components are properly installed and do not drag.

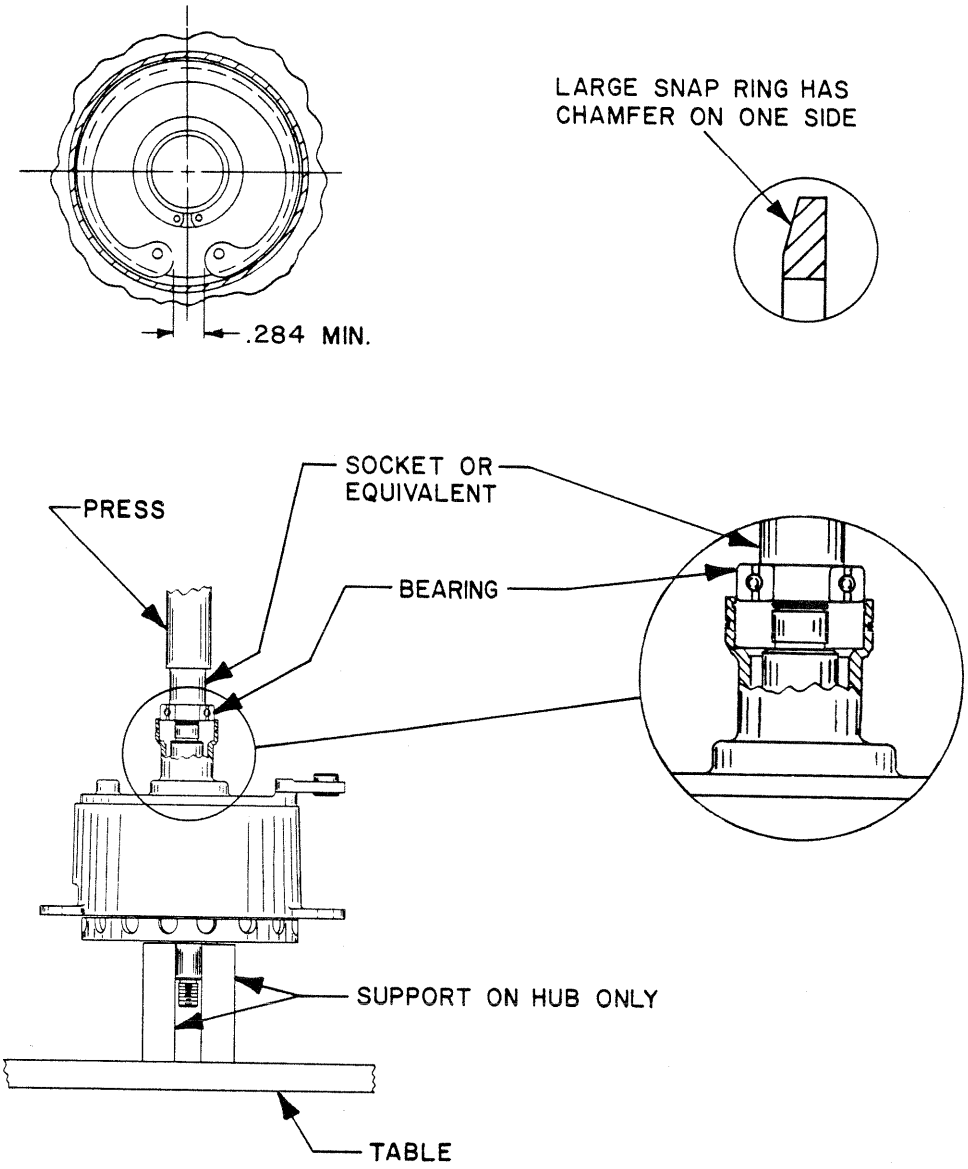


FIG. 12

P. INSTALL "O" RING AND GREASE CAP (See Fig. 13)

P1. Install new "O" ring into groove. Do not roll into groove but stretch only as much as necessary.

P2. Select smooth (.008/.010/.012) feeler gauge blade. Lightly lubricate inside of new grease cover and feeler gauge. Insert feeler gauge over "O" ring. Slowly push cover into place while moving the feeler gauge blade from side-to-side. This procedure is necessary to expell the air that is trapped under the cover. If the air is not expelled, the grease cover will "push" back and not seat into position. Remove feeler gauge.

P3. After the air is expelled, lightly tap the back of the grease cover to insure that it has solidly bottomed. Stake or bend over the front edge of the cap slightly in three places, holding the cap in the bottomed position by hand if necessary.

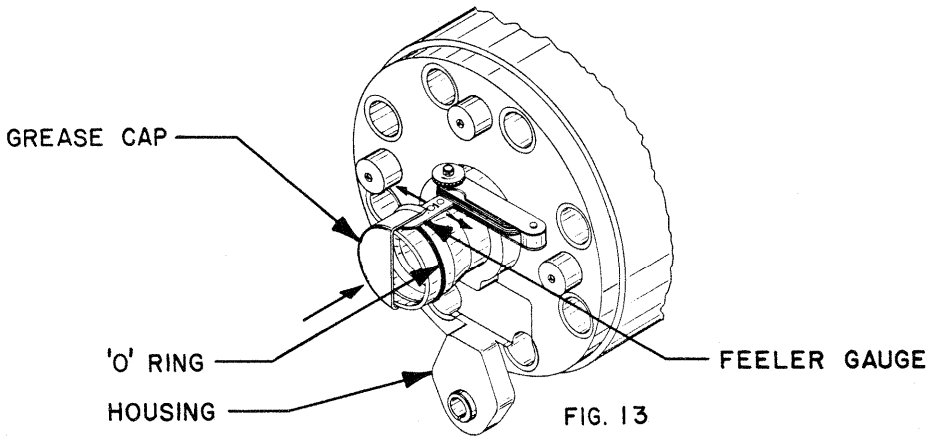


FIG. 13

Q. INSTALL RECTIFIER AND REGULATOR ASSEMBLIES (See Fig. 3 and 8)

Q1. If the rectifier heat sinks were removed from the bottom rectifier support, reinstall heat sinks and mounting hardware and hold into mounted position.

Q2. Connect three AC stator leads with attaching hardware to the three positive rectifier studs.

Q3. Connect three voltage regulator AC leads with attaching hardware to the three negative rectifier studs.

Q4. Coat underside of voltage regulator housing with heat transfer solution (silicone grease or spray).

Q5. Install voltage regulator mounting screws.

Q6. Place rectifier top support into positon and install three mounting screws.

Q7. Connect field coil and voltage regulator leads to heat sink fins.

Q8. Connect field coil lead to stud on voltage regulator (include full field terminal).

Q9. After all leads are properly positioned, apply Silicone RTV adhesive in several places on rear housing plate. Push leads into adhesive blob to prevent fatigue from vibration cycles.

R. INSTALL REAR COVER/BUSHING

R1. Place rear cover in position and align to rectifier top support. Check to be sure that full field terminal is pointing toward the cover and in line with the plastic snap bushing in the cover. See Fig. 14.

R2. Install rear cover attaching hardware and check to see that the insulator washers are in the proper position.

R3. Install rear ear bushing by tapping into position.

Operational Test - Alternator

a. Mount alternator on test stand or engine as required. Make all electrical connections.

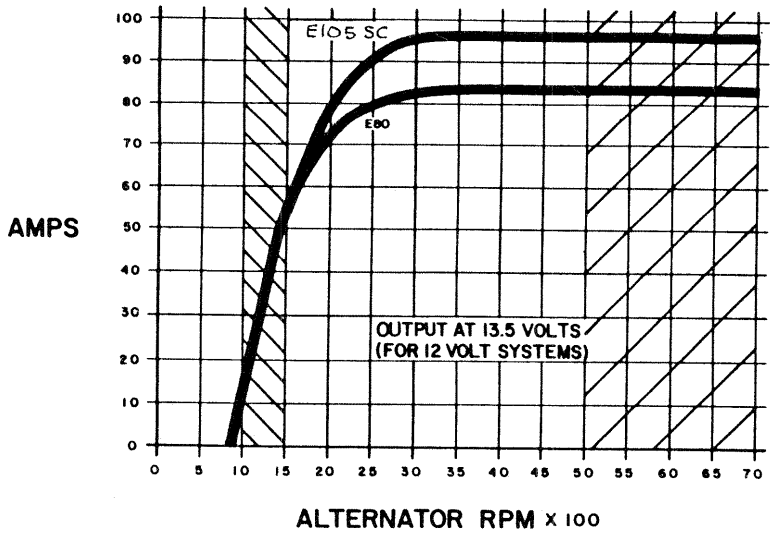
b. As the residual magnetism may have been lost during the disassembly and handling, it may be necessary to restore by the following procedure.

c. Refer to Full-Fielding Diagnostic procedure described previously. See Fig. 1. With engine or test stand operating, momentarily "Flash" the appropriate terminals. This will restore the residual magnetism, and allow initial cut-in. Remove jumper lead.

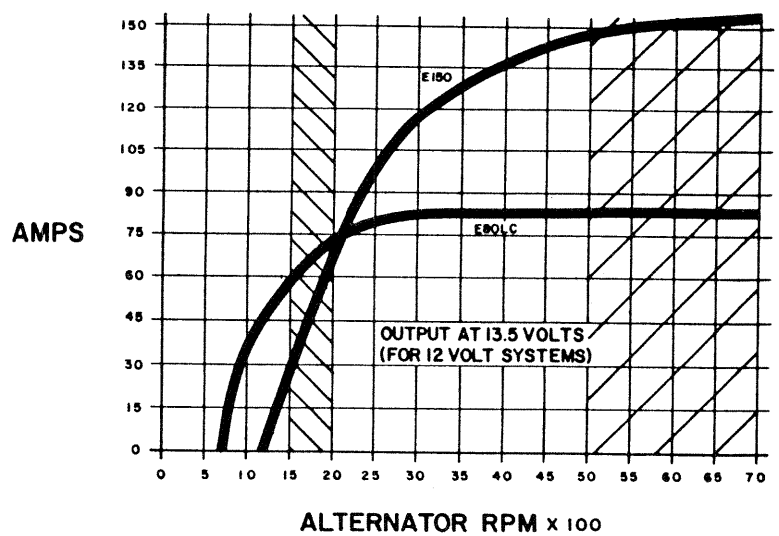
d. With voltmeter connected, run engine at medium speeds with a slight load applied (headlights). Adjust voltage regulator as required.

ALTERNATOR OUTPUT CHARACTERISTICS

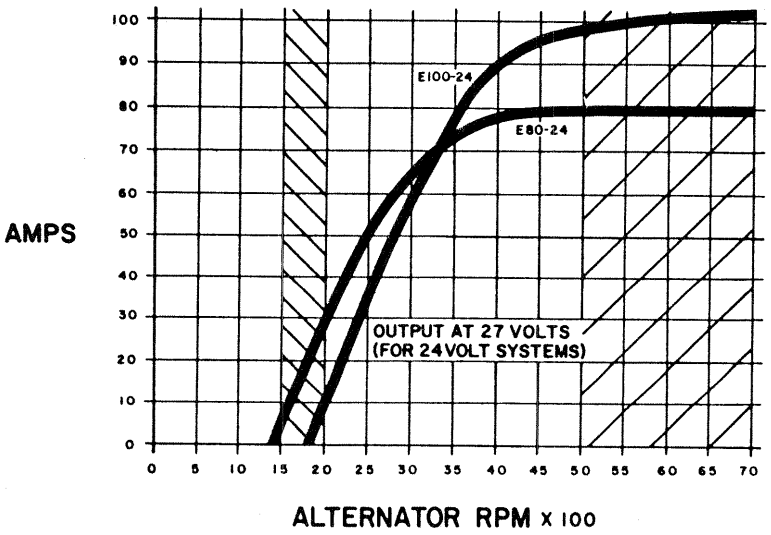
E105-SC



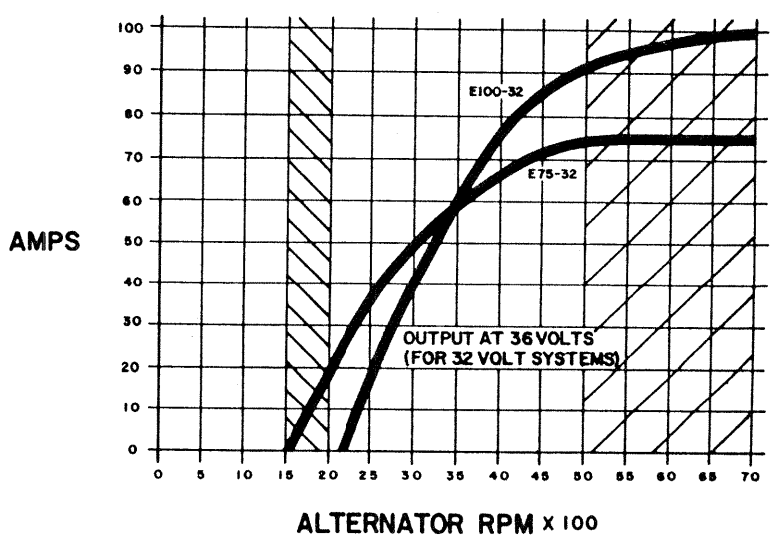
E80LC/E150



E80-24/E100-24



E75-32/E100-32



RECOMMENDED IDLE RANGE
(ALTERNATOR RPM)

RECOMMENDED OPERATING RANGE
(ALTERNATOR RPM)

UNDERCHARGE of the cranking Battery(s) with "Main Battery" set being in a charged condition. This demonstrates that there are faulty components within the Start-Charge section.

Component Test - SC

Important Note: Prior to any functional testing of the Start-Charge section of the alternator, the alternator must be operating within specifications or any test conclusions of the Start-Charge System will be erroneous.

a. All alternator leads must be connected to the battery system in the vehicle as if for normal operation. (If system is to be bench tested, connect Start-Charge DC output terminals to separate 12 volt battery other than that used for testing alternator.)

b. Connect DC voltmeter across the Start-Charge Pos. (+) and Neg. (-) terminals. Voltmeter should read battery voltage. See Fig. 15.

c. Run engine or test stand at medium speeds with a slight load (approximately 15 amps or headlights) on main output and observe voltmeter. Voltage should rise slowly from the initial battery voltage reading.

d. If voltage rises to 13-14 volts after 2-5 minutes of running, Start-Charge is operating normally.

e. If there is no voltage increase from the initial reading, Transformer, Rectifier, and/or Circuit Breaker Assembly must be replaced.

Disassembly Procedure - SC

REAR COVER REMOVAL

a. Remove attaching hardware and note position of insulating washers.

b. Remove cover.

c. Remove charger terminal hardware, noting position of insulating washers.

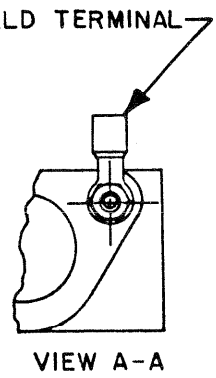
REAR SECTION COMPONENT REMOVAL (See Fig. 14)

a. Remove two Start-Charge Transformer leads from Positive Rectifier Studs.

b. Remove Start-Charge Rectifier mounting screw.

c. Remove Plastic Cable Tie.

d. Remove two Start-Charge Transformer mounting screws and clamps.



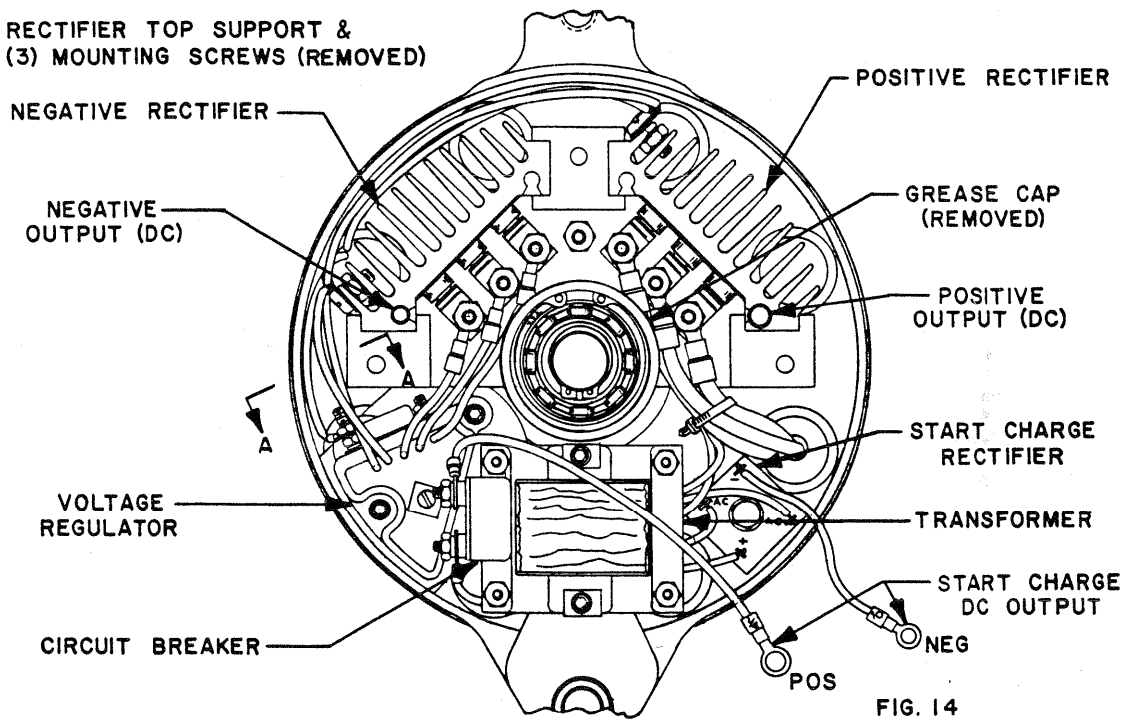


FIG. 14