Maintenance Instructions
Alternators: 2500JB Series and 2540JB Series

The Following Alternators Are Covered:

Alternator No.	Volts	Amps
2300JB, 2340JB*	14	65
2301JB, 2341JB*	28	20
2302JB, 2342JB*	37.5	60
2303JB, 2343JB*	28	45
2304JB, 2344JB*	28	65
2360JB, 2346JB	14	75
2400JB	14	80
2490JB	14	90
2500JB, 2540JB*	14	100/105
2509JB, 2549JB*	28	60
2511JB, 2541JB*	28	90
2526JB	14	108
2600JB, 2640JB*	14	105
2670JB	14	115/130
2674JB*	14	120
2700JB, 2740JB*	14	130
2800JB, 2802JB, 2840JB*	14	160
2805JB, 2803JB, 2845JB*	14	145

**These units are part of the 2540JB Series Dust Protected alternators*.

After Date Code 8702, the 2500JB alternator output was changed from 90 amps to 100 amps.

Description

The 2500JC and LC Series alternators are heavy-duty, belt driven, air cooled units designed for diesel engine applications.

These units feature an integral voltage regulator, fully enclosed brushes, heavy-duty bearings, built-in rectifier assemblies with extra large heat sinks, a dynamically balanced rotor, and heavy-duty stator.

The 14 volt units are presently equipped with a three-step adjustable regulator (dome top). Previously, a fully adjustable regulator (flat top) was used. See Figure 1 for visual identification of the two types of regulators. 28 volt and 37.5 volt alternators use the continuously (fully) adjustable regulators.

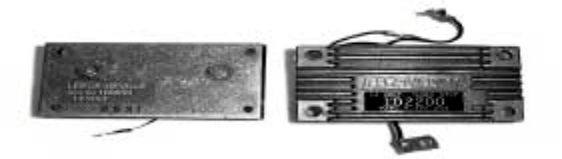


Figure 1

Mode of Operation
(See Figure 2)

The vehicle battery supplies excitation to the field coil (rotor coil) through the regulator and brushes to create a magnetic field around the rotor and through the stator.

When the rotor is set in motion, the moving magnetic field induces an alternating current (AC) in the stator windings. This output current increases with the speed of the rotor.

The AC produced in the stator is converted to direct current (DC) by the positive and negative rectifier assemblies. The rectifier assemblies are connected to the alternator output terminals to provide DC output for charging the batteries and to satisfy the vehicles electrical loads.

The regulator monitors the output voltage through sensing leads which are connected to the positive and negative rectifier assemblies. When the output voltage deviates from the set voltage, the regulator takes corrective action to maintain the output voltage at the proper level.

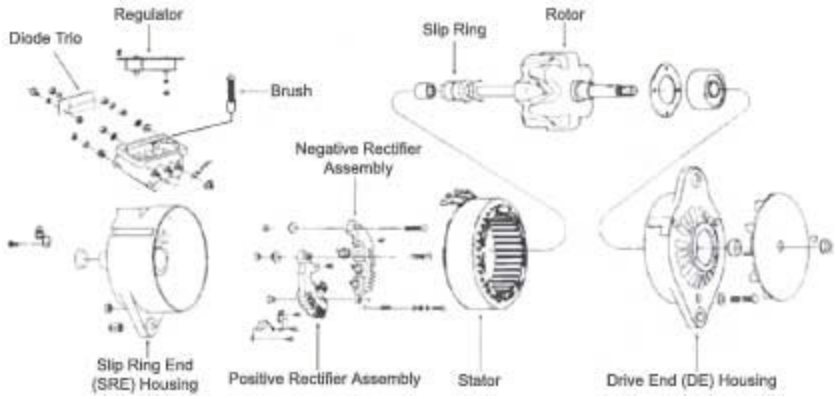


Figure 2

Causes of Charging System Failure:

Charging system malfunction is identified by battery condition:

1. **Overcharged Batteries** caused by one or a combination of the following:

   A. Defective battery.

   B. Defective or improperly adjusted regulator.

   C. Poor sensing lead contact to regulator or rectifier assembly.

2. **Undercharged Batteries** caused by one or a combination of the following:

   A. Loose belts; corroded, broken, loose, or dirty terminals; broken wiring; undersize wiring; defective batteries.

   B. Alternator field circuit malfunction caused by one or a combination of the following:

      a. Poor contact between regulator and brushes.

      b. No residual magnetism in rotor.

      c. Defective or improperly adjusted regulator.

      d. Damaged or worn brushes.

      e. Damaged or worn slip rings.

      f. Poor connection between slip ring assembly and field coil leads.

      g. Rotor coil shorted, open, or grounded.

C. Alternator generating section malfunction caused by one or a combination of the following:

a. Stator phase(s) shorted, open, or grounded.

b. Rectifier assembly grounded.

c. Rectifier(s) shorted or open.

On-Vehicle or Test Block Troubleshooting:

For fast and accurate troubleshooting follow these instructions in the order presented. Insure that belts are properly tensioned, and that wiring and terminals are in good working condition. Check batteries per manufacturer's specifications to establish if they are defective. Insure that batteries are 95-100% charged.

A. Perform output test as follows:

1. Shut off all electrical accessories and run engine at approximately 1000 - 1200 rpm.

2. Connect a DC voltmeter to the battery terminals and measure voltage. Make a note of the readings. Compare to the values specified by the vehicle manufacturer. If reading is above specified voltage, then a OVERCHARGE condition is present.

If the reading is below specified voltage, then an UNDERCHARGE condition is present. See Step C.

CAUTION: *Use an accurate voltmeter to measure output voltage. DO NOT rely on dashboard gauges.*

B. Troubleshooting the **OVERCHARGE** condition.

NOTE: The procedures described below are designed to identify the source of the overcharge problem. Refer to the "Disassembly and Component Testing" and "Assembly" sections for detailed descriptions on how to remove, test, and properly reassemble components.

1. Shut off engine.

If overcharge condition is still present, then make a note of the output voltage and continue with "Regulator Adjustment" section.

C. Troubleshooting the **UNDERCHARGE** condition.

NOTE: The procedures listed below are designed to identify the source of an "UNDERCHARGE" condition. Detailed descriptions of how to properly remove, test, and install components are given in "Disassembly and Component Testing" and "Assembly" sections.

1. Disconnect battery ground cable.

2. Remove regulator from holder far enough to expose the two contact pads. If corrosion or dirt is found, then clean contact pads with #600 (or finer) grade sand paper (Figure 3).

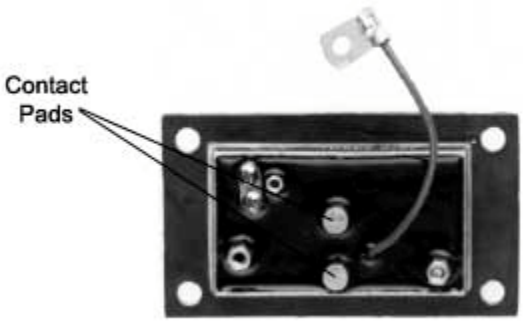


Figure 3

3. Remove brushes and visually inspect them. If brushes appear burned, cracked, broken, or if they are worn to a length of 3/16" or less, then brushes must be replaced. Check shunt lead within the brush spring. Check shunt lead within the brush spring. If the shunt lead is broken, then install new brushes. Clean brush contact caps with #600 (or finer) grade sandpaper.

4. Reinstall brushes and regulator. Reconnect battery ground cable.

5. Perform FULL FIELD TEST and AC OUTPUT TEST as follows:

NOTE: To perform these tests you will need an AC/DC voltmeter (preferably digital with 1/100 of a volt display; range 0 to 50 volts); a short jumper with insulated clips; a 1/32" drill bit or a stiff paper clip wire.

5.1 With the engine and all electrical accessories turned OFF, measure voltage across battery terminals. Make a note of the reading (use a digital voltmeter).

5.2 Start engine and run at approximately 1000 - 1200 rpm with the voltmeter connected to the battery terminals.

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

5.3 Connect a short jumper to the alternator NEGATIVE output terminal and to the shank of 1/32" drill bit (or a piece of stiff paper clip wire).

5.4 Insert the drill bit in the full field access hole as far as it will go and make a note of the voltage reading (Figure 4).

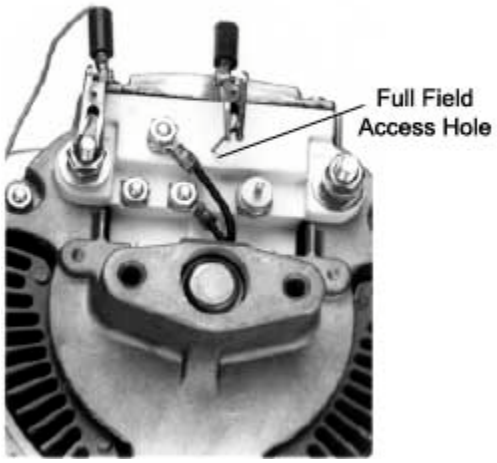


Figure 4

5.5 Connect an AC voltmeter across alternator AC terminals 1 & 2, 1 & 3, 2 & 3, and compare each of the three AC voltage readings. If all three AC voltages are approximately the same, (balanced), then the stator is OK (Figure 5).

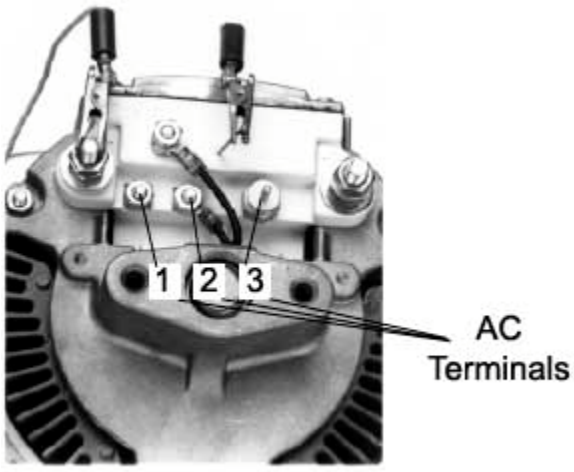


Figure 5

5.6 Remove jumper and drill bit from alternator as soon as AC voltage readings are obtained, and refer to explanations in the Full Field Test Results and Explanations.

Full Field Test Results and Explanations:

A. DC voltage higher in Step 6.4 than in Step 6.1 and AC voltages are balanced - alternator OK, stator OK*. Continue with "Regulator Adjustment" section/

B. DC voltage higher in Step 6.4 than in Step 6.1 and AC voltages are not balanced - alternator is defective. Stator and rectifier(s) defective.

C. DC voltage lower or the same in Step 6.4 as in Step 6.1, and AC voltages are balanced - alternator is defective. Stator OK*.

D. DC voltage lower or same in Step 6.4 as in Step 6.1 and AC voltages are not balanced - alternator is defective. Stator or rectifier(s) defective.

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

Regulator Adjustment

NOTE: Insure that batteries are fully charged before any adjustments are made.

1. Three-Step Adjustable Regulator (dome top) adjustment performed as follows:

1.1 Shut off all electrical accessories and run engine at approximately 1200 rpm. Connect a voltmeter across battery terminals and measure voltage. Compare to vehicle manufacturer's specifications.

1.2 Shut off engine and disconnect battery ground cable.

1.3 Remove the four screws from the regulator cover. Lift regulator far enough to expose the voltage adjustment strap.

1.4 To adjust voltage remove and reinstall voltage adjustment strap in any of the three positions available. A & B (High), A & C (Medium), or C & B (Low). See Figure 7.

Each change in position of adjustment strap will result in an INCREASE or DECREASE in voltage of approximately .4 volts.

CAUTION: *Use a magnetic tip screwdriver to avoid loosing the small #4 screws used for installing the voltage adjustment strap.*

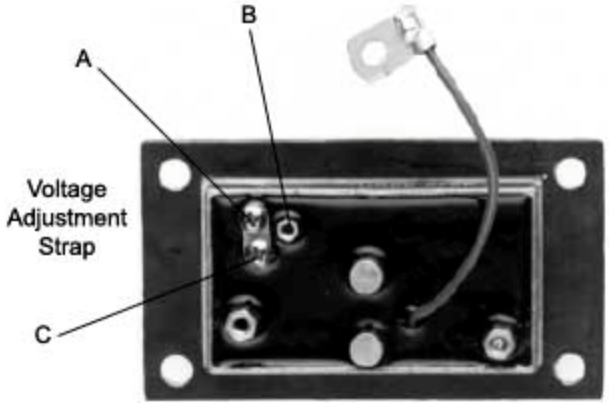


Figure 7

Example

a) Voltage at battery with engine at 1000-1200 rpm 13.6 Volts

b) Vehicle manufacturer spec. for voltage setting 14.0± .1 Volt

c) Voltage adjustment strap position. A & C

Necessary Adjustment: Voltage adjustment strap should be changed to "A & B" position to increase voltage by (approximately) .4 volts to 14.0 volts

CAUTION: *Recommended torque for the #4 cross head screws used for securing voltage adjustment strap is 4-5 in. lbs. Overtightening these screws may cause them to break and the regulator would become unusable.*

1.5 Reinstall regulator and brushes in regulator housing. See "Assembly" section for proper procedure.

1.6 Reinstall battery ground cable and repeat Step 2.1 in this section. If voltage across battery terminals is not within vehicle manufacturer's specifications, then regulator is defective and must be replaced.

NOTE: The statement above is based on the assumption that all procedures listed in the "Troubleshooting" section have been performed prior to regulator adjustment.

Disassembly and Component Testing

1. Remove alternator from vehicle.

2. Hold pulley with a strap wrench and remove shaft nut with an impact wrench to remove the pulley and fan. Remove woodruff key and fan spacer from shaft.

3. Remove the four screws from the regulator. Lift regulator far enough to expose the wiring, and disconnect all regulator connections. Remove regulator.

4. Remove and inspect brushes. If brushes appear burned, cracked, broken, or if they are worn to less than 3/16", then replace brushes. Check shunt lead within the brush spring. If lead is broken, the replace brush.

5. Remove three locking nuts to remove the three assembly screws which hold alternator together.

6. Separate drive end (DE) housing and rotor assembly from the slip ring end (SRE) housing and stator. If DE housing binds to the stator, tap mounting ear with a plastic or rawhide mallet.

7. Remove three nuts to disconnect stator leads, and remove stator from SRE housing.

8. Perform rectifier assembly ground test as follows:

NOTE: Use a test light or ohmmeter. Do not perform on case ground alternators.

Connect one test lead to the positive (+) output terminal and the other lead to any bare metal surface on the SRE housing. Repeat this procedure with the negative (-) output terminal (Figure 9). If test light turns on, or if a low resistance reading is observed, then the rectifier assembly is grounded. Further disassembly is necessary to locate the defective insulator(s). Continue with Step 11 to establish if rectifiers are good working condition.

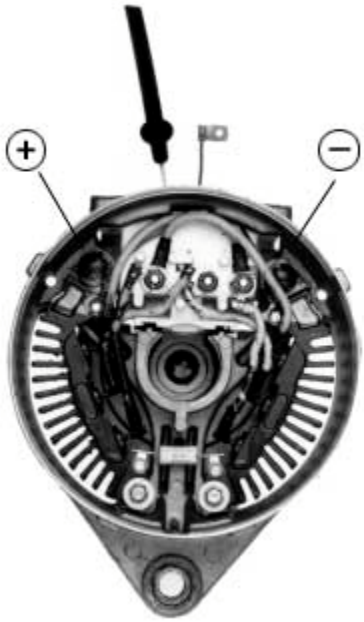


Figure 9

9. Perform positive rectifier test as follows:

NOTE:

a. Use an ohmmeter set to Rx 10K range.

b. These tests can be performed without removing rectifier assemblies from SRE housings.

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

9.2 Connect positive (+) test lead to each of the three eyelet terminals (Figure 10).

Figure 10

High resistance indicates a DEFECTIVE (open) rectifier - the positive rectifier assembly must be replaced.

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

9.4 Connect negative (-) test lead to each of the three eyelet terminals.

Low resistance indicates a DEFECTIVE (shorted) rectifier.

Replace defective positive rectifier assembly.

NOTE: Positive rectifier assembly is OK when a low resistance reading is observed for each of the three rectifiers in Step 11.2, and a high resistance reading is observed in Step 11.4.

10. Negative rectifier test performed as follows:

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

10.2 Connect negative (-) test lead to each of the three eyelet terminals (Figure 11).

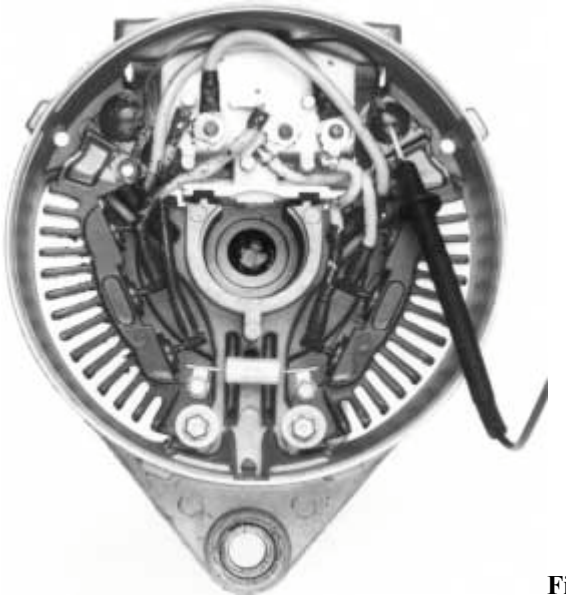


Figure 11

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

10.3 Connect negative (-) test lead to negative (-) output terminal.

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

Low resistance indicates a DEFECTIVE (shorted) rectifier.

Replace defective negative rectifier assembly.

NOTE: Negative rectifier assembly is OK when a low resistance reading is observed in Step 12.2, and a high resistance reading is observed in Step 12.4.

11. Remove screws (and clamp if so equipped) and remove capacitor connected across the bottom of rectifier assemblies. Test capacitor with a capacitor tester. Capacitor rating is: .5MFD, 200 working volts DC.

If a capacitor tester is not available, connect an ohmmeter across the capacitor terminals. A low resistance indicates a shorted (leaky) capacitor which must be replaced.

12. Remove nuts from output terminals and remove terminal screws.

13. Remove regulator holder and insulators from output terminal holes. Inspect insulators and replace if damaged.

14. Remove lower mounting screw to remove defective rectifier assembly. If the two rectifier assemblies are joined with common eyelet terminals, then cut the three rectifier leads at the eyelet terminals.

NOTE: If a rectifier assembly was found to be OK, but was grounded, then do not cut rectifier leads. The ground is probably caused by defective insulators.

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

16. Perform stator ground test as follows:

Connect one ohmmeter test lead to a bare metal surface on stator lamination and connect the second test lead to each of the three stator terminals (Figure 12).

High resistance indicates that stator is NOT grounded.

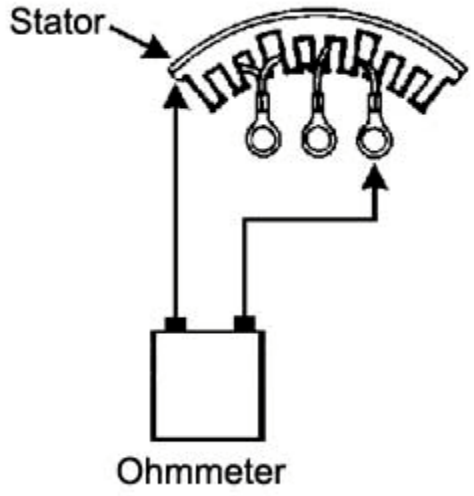


Figure 12

NOTE: It is recommended that a “high pot” test be performed on a stator for grounds by a qualified electrical shop.

THIS TEST (HIGH POT) MAY CAUSE SEVERE INJURY OR DEATH!!

THIS TEST IS RESTRICTED TO QUALIFIED PERSONNEL ONLY!

17. 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 (m) display capability. A suitable meter is Model 8012A, Digital Multimeter, Fluke Mfg., Mountlake Terrace, WA.

Connect test leads to stator terminals 1 & 2, 2 & 3, and 1 & 3 (Figure 13).

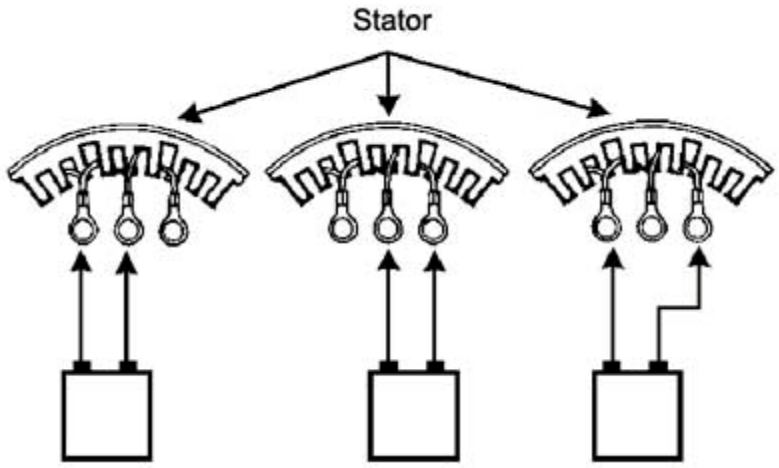


Figure 13

Each of the three measurements should be approximately the same (balanced).

Alternator #	Phase Resistance
2300JB & 2340JB	.105 - .115 ohms
2301JB & 2341JB	.680 - .740 ohms
2302JB & 2342JB	.193 - .213 ohms
2303JB & 2343JB	.126 - .140 ohms
2304JB & 2344JB	.126 - .140 ohms
2360JB & 2346JB	.060 - .068 ohms
2400JB	.068 - .076 ohms
2490JB	.068 - .076 ohms
2500JB & 2540JB*	.075 - .083 ohms
2500JB & 2540JB*	.051 - .055 ohms
2509JB & 2549JB	.193 - .213 ohms

2511JB & 2541JB	.090 - .097 ohms
2526JB, 2600JB & 2640JB	.050 - .056 ohms
2670JB & 2674JB	.036 - .041 ohms
2700JB & 2740JB	.036 - .041 ohms
2800JB, 2802JB & 2840JB	.027 - .032 ohms
2805JB, 2803JB & 2845JB	.028 - .033 ohms

*Before Date Code 8702 After Date Code 8702

18. Perform rotor coil ground test as follows:

Connect an ohmmeter test lead to a bare metal surface on the rotor shaft and the second test lead to each of the two slip rings.

A low resistance indicates a ground, and rotor assembly must be replaced.

19. Perform rotor coil resistance test as follows:

Set an ohmmeter to Rx1 scale, and connect test leads to each slip ring (Figure 14).

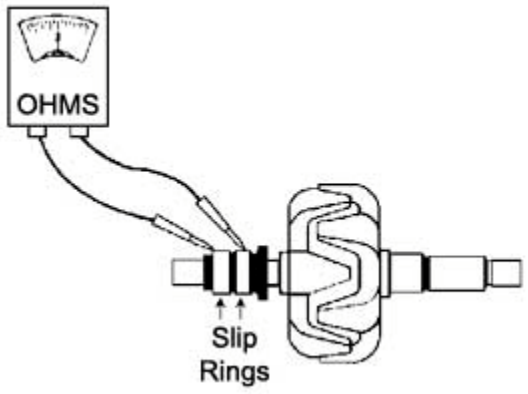


Figure 14

Resistance readings should fall between values listed below.

Alternator #	Coil Resistance
2300JB & 2340JB	4.9 - 5.5 ohms
2301JB & 2341JB	13.5 - 14.5 ohms
2302JB & 2342JB	14.5 - 15.7 ohms
2303JB & 2343JB	10.0 - 10.4 ohms
2304JB & 2344JB	9.4 - 10.5 ohms
2360JB & 2346JB	4.4 - 5.0 ohms
2400JB	2.8 - 3.1 ohms
2490JB	2.3 - 2.7 ohms

2500JB & 2540JB*	2.3 - 2.7 ohms
2500JB & 2540JB*	1.85 - 2.0 ohms
2509JB & 2549JB	7.2 - 7.8 ohms
2511JB & 2541JB	7.2 - 7.8 ohms
2526JB, 2600JB & 2640JB	2.3 - 2.7 ohms
2670JB & 2674JB	1.85 - 2.0 ohms
2700JB & 2740JB	1.85 - 2.0 ohms
2800JB, 2802JB & 2840JB	1.9 - 2.3 ohms
2805JB, 2803JB & 2845JB	1.9 - 2.3 ohms

*Before Date Code 8702 After Date Code 8702

If resistance reading is higher than values given in chart above, then unsolder slip ring lead connections from rotor coil leads and measure resistance across the coil leads. If resistance is still too high, then rotor assembly is defective and must be replaced. If resistance reading is within values shown, then resolder slip ring leads and check resistance across the two slip rings. If resistance is still above values shown, then slip ring assembly must be replaced.

If resistance reading is lower than figures shown, then rotor assembly is defective and must be replaced.

20. Check slip ring for wear. Minimum diameter allows is 1.057". Clean carbon coating off slip rings with strip of emery cloth. If slip rings appear to be in good working condition then continue with Step 26.

21. Remove defective slip ring assembly as follows:

Unsolder the slip ring connections from the rotor coil leads and separate slip ring leads from rotor. Remove slip ring assembly with a small gear puller.

22. Check shaft diameter for wear, where it contacts the roller bearing. If diameter is less than .6688, then rotor must be replaced.

23. Place SRE housing in an arbor press so housing cavity faces down. Press out roller bearing, and seal in LC's alts.

24. Remove defective rotor assembly as follows:

Place DE housing and rotor assembly in an arbor press so threaded end of shaft points up. Press out rotor assembly.

25. Remove DE bearing retainer and place DE housing in an arbor press. Press out defective DE bearing (and felt seals if so equipped).

Component Cleaning

1. Stator and rotor assembly are cleaned with a cloth dipped in kerosene or a stoddard solvent.

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

2. All other components (except rotor, shaft and bearings) are cleaned by immersing in kerosene or a stoddard solvent.

3. Dry with compressed air or dry cloth.

Assembly

1. Assemble DE housing as follows:

1.1 Press ball bearing in bore as far as it will go. Apply pressure on outer race only, using a pipe spacer.

1.2 Center bearing retainer over bearing bore and secure with four phillips or torx head screws.

2. Install slip ring assembly as follows:

2.1 Clean serrated section of shaft and apply a layer of Loctite #2728 (green) to shaft serrations.

2.2 Place rotor in an arbor press with serrated end of shaft pointing up. Align slip ring assembly leads with the two field coil terminals and press slip ring assembly on shaft to dimension shown in Figure 15.

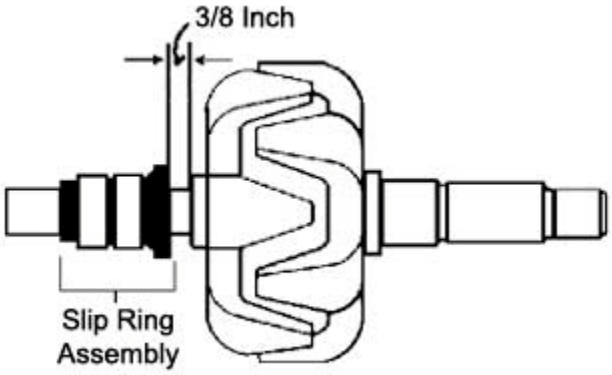


Figure 15

2.3 Preheat slip ring lead and field coil terminal and solder slip ring leads to field coil terminals. Use a soldering iron or gun rated at 500 watts or higher, a rosin type flux, and 96/4 tin/silver solder.

2.4 Chuck rotor assembly in a lathe and take a light cut off both slip rings. TIR = .002". Sand slip rings with 000 grade sandpaper for a smooth, clean surface.

3. Install rotor assembly in DE housing as follows:

Place rotor assembly in an arbor press so slip rings point down, and place DE housing on rotor so DE bearing inner race is centered on rotor shaft. Using a pipe spacer apply pressure on the bearing (INNER RACE ONLY) so DE bearing fits flush against the shaft shoulder.

4. Place SRE housing in an arbor press so housing cavity faces down. Press new roller bearing in bearing bore to dimension shown in Figure 16.

5. On LC alts. place SRE housing in an arbor press so housing cavity faces up. Press new grease seal in seal bore until flush with housing.

6. Install rectifier assemblies in SRE housing as follows:

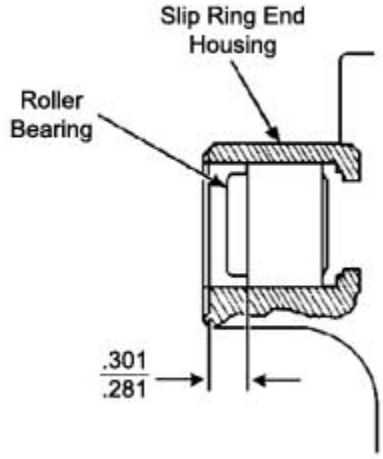


Figure 16

6.1 Clean rectifier assembly screw holes for good electrical contacts (Figure 17).

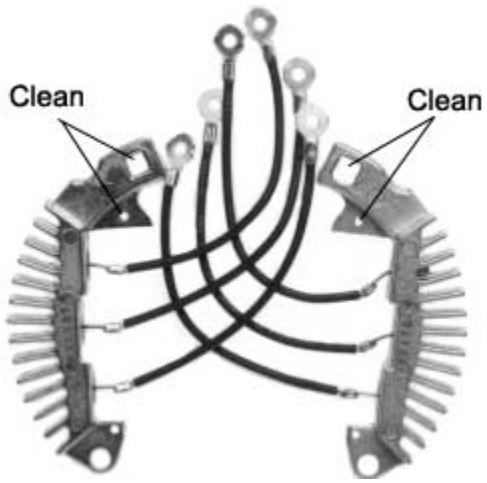


Figure 17

6.2 Insert insulation bushings in the two output terminal holes so flat side faces the inside of housing (Figure 18).

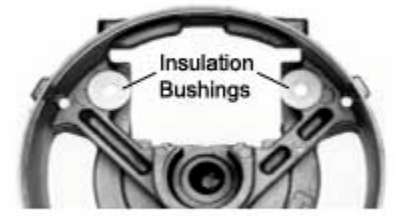


Figure 18

6.3 Apply 1-2 drops of Loctite #29014 to the threads of a 10-32 screw and install the bottom of the NEGATIVE rectifier assembly in the SRE housing. Install screw finger tight. See Figure 19 for proper installation of insulators.

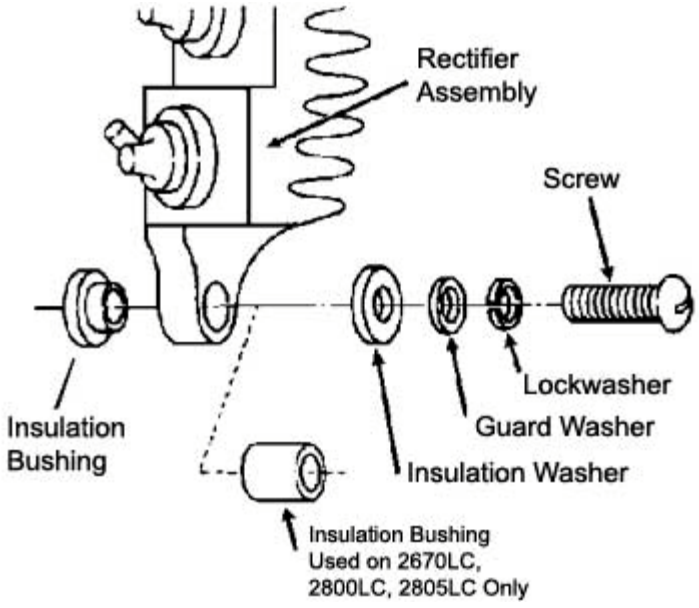


Figure 19

6.4 Repeat Step 5.3 to install the bottom of the POSITIVE rectifier assembly.

6.5 Apply electrical joint compound to the square output terminal holes in the rectifier assemblies, and insert the output terminal screws. Install the 1/4" terminal screw (carriage bolt) in the NEGATIVE rectifier assembly, and the 5/16" terminal screw in the POSITIVE rectifier assembly.

NOTE: Some alternators are equipped with same size output terminals, either 1/4" or 5/16".

6.6 Tighten the two #10-32 screws to 33-39 IN-LB to install the bottom of the two rectifier assemblies to the SRE housing.

7. Install BLACK lead assembly to NEGATIVE rectifier assembly and the RED lead assembly to the POSITIVE rectifier assembly with 6-32 self tapping screws. Route the leads out of the housing through center opening (Figure 20).

Figure 20

8. Install an insulator on each of the two output terminals (from the outside of housing) so insulators fit flush with housing.

9. Install regulator holder on SRE housing so the two output terminals pass through holes in regulator holder ears. Insure that gasket on the bottom of holder is in good condition. Fasten holder to output terminals with tenz nuts. Insure that RED and BLACK leads are routed out of SRE housing

NOTE: Insure that carriage bolt heads are properly seated in the square rectifier assembly holes.

10. Install capacitor to the bottom of the rectifier assemblies with 6-32 self tapping screws. If you are installing an older capacitor with eyelet terminals, secure capacitor to the SRE housing with a clamp and a 6-32 screw.

11. Install rectifier leads 1 & 6 to AC stud “C”, rectifier leads 2 & 5 to AC stud “B”, and rectifier leads 3 & 4 to AC stud “A” (Figure 21). Note the routing of rectifier leads.

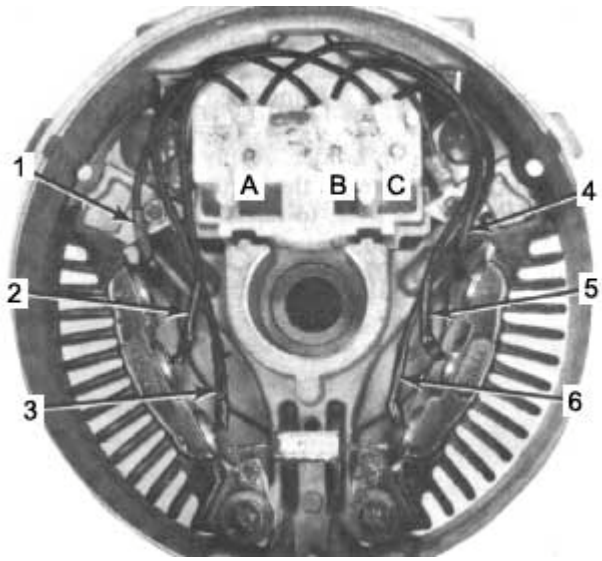


Figure 21

12. Place stator on SRE housing so matching surfaces fit flush against each other. Insure that the three assembly screw holes in the housing and the three holes in the stator are aligned.

13. Slide a stator terminal on each of the three AC studs and secure with the 10-32 tenz nuts.

14. Mask roller bearing with masking tape and paint all internal electrical connections with Westinghouse B-6-665 Red Air Dry Epoxy paint (Figure 22).

15. Remove masking tape from roller bearing opening and assemble the rotor and DE housing to the stator and SRE housing. Insure that the three assembly screw holes are aligned and that the mounting lugs are aligned.

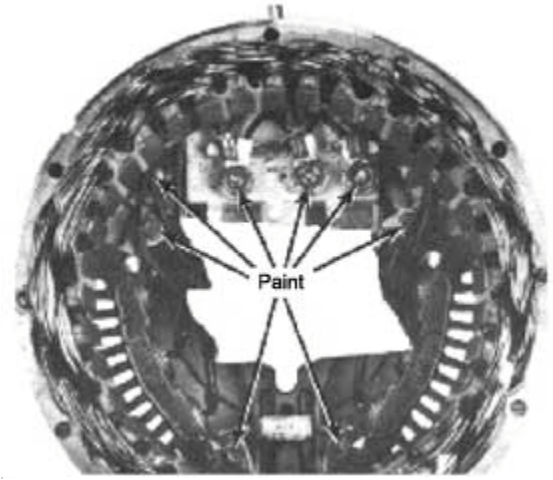


Figure 22

16. Assemble three 10-32 x 5-3/8" long assembly screws and assemble through DE housing holes. Secure with 10-32 locking nuts. Torque to 45-50 in. lbs.

17. If the original brushes are being reused, the clean each of the two brushes with a spray electrical contact cleaner of the type that does not contain silicon. Silicon attacks brushes and will cause short brush life. Clean brush contact caps with #600 grade (or finer) sand paper.

18. Install regulator and brushes as follows:

18.1 Insert a brush in each of the two brush openings. Compress the springs and retain with a pin inserted through the access hole in the regulator holder. A suitable pin can be made of a 1/16" drill or brazing wire (Figure 23).

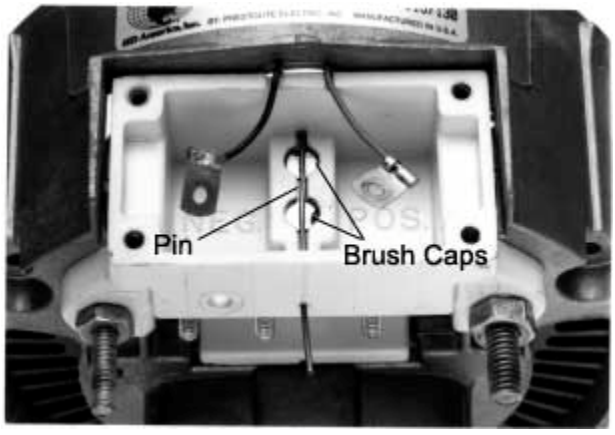


Figure 23

18.2 If the original brushes are being reused, then the wear pattern of the brush must be matched with the radius of the slip rings (Figure 24).

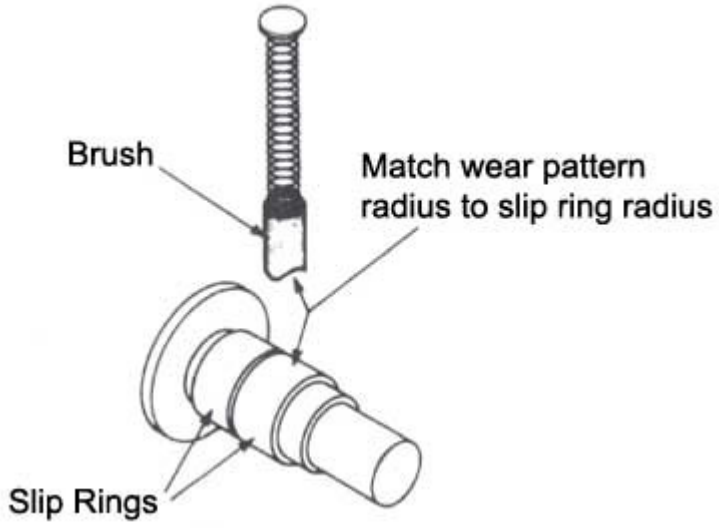


Figure 24

18.3 When replacing a "three-step adjustable" (dome top) regulator, install voltage adjustment strap on the new regulator in the same position as the one on the original regulator. Recommended torque value for the #4 crosshead screws is 4-5 in. lbs.

NOTE: The voltage adjustment strap is factory installed in the "MED" position.

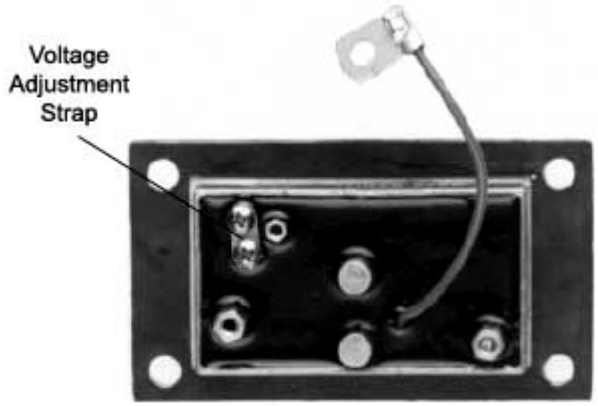


Figure 25

CAUTION: *Overtightening the screws will cause them to break and the regulator will become unusable*.

18.4 Align regulator with the holder so when installed the label on the cover is facing away from the alternator.

18.5 Install the BLACK lead to the left (negative) regulator terminal, and the RED lead to the right (positive) regulator terminal. Secure with #6 screws with lockwashers.

CAUTION: *DO NOT overtighten! - to avoid possible damage to the regulator.*

If a three-step adjustable regulator is being installed, then use #6 crosshead screws with captive lockwashers. Recommended torque is 10-12 in. lbs. Positive flag terminals so they do not interfere with positioning the regulator into its holder (Figure 26).

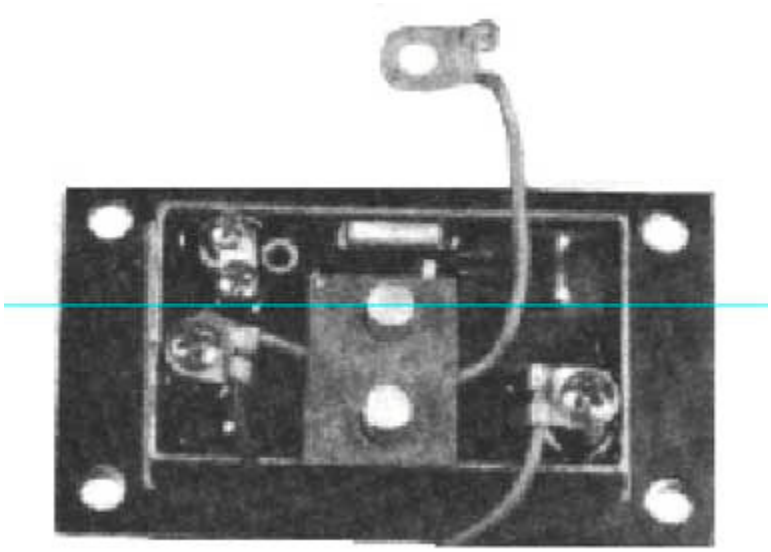


Figure 26

18.6 Install the BLUE (also white with a blue tracer) regulator lead with a #10 square head screw, and a #10-32 tenz nut to the inside of the regulator holder.

18.7 Route the RED and BLACK leads into regulator holder so they seat properly in the two notches in the holder. Insure that leads are dressed so they do not interfere with regulator once it is installed in the holder.

18.8 Place regulator in holder. Apply a small amount of downward pressure on the regulator and REMOVE PIN from access hole to release brush springs. Hold down regulator and secure it with four #8-32 x 7/16" long screws (Figure 27).

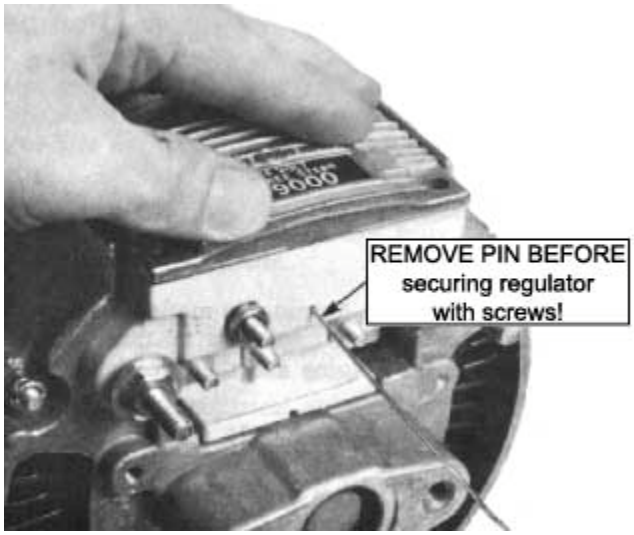


Figure 27

CAUTION: *The pin used to retain the brushes during regulator assembly must be removed before the regulator assembly screws are fastened to avoid regulator damage. WARRANTY IS VOID ON ANY REGULATOR RETURNED WITH PIN DAMAGE!*

CAUTION*: Insure that the RED and BLACK leads are properly seated before regulator assembly screws are tightened to avoid damaging the insulation.*

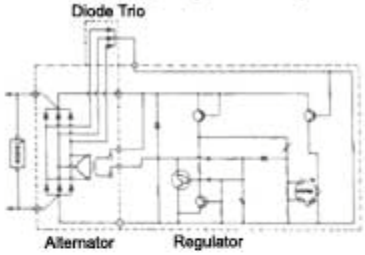
19. Install excite lead to terminal stud on regulator holder with a lockwasher and 10-32 nut. Install other end of lead to the middle AC terminal stud and tighten with a lockwasher and a 10-32 nut.

20. Install #8 woodruff key and slide fan on rotor shaft so it engages the key and fits flush against the fan spacer.

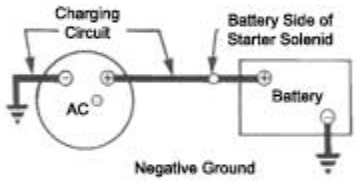
21. Slide pulley on shaft so it meshes with woodruff key. Hold pulley with a strap wrench and secure pulley with 5/8-18 flange lock nut. Use an impact wrench to torque nut to 70-80 ft. lbs.

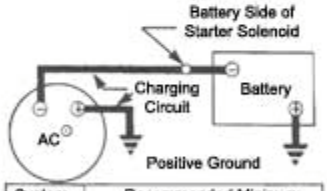
22. Install alternator on engine or test block, connect load lead and ground lead to alternator output terminals and perform “Full Field Test & AC Output Test” in the “Troubleshooting” section to insure that alternator is functioning properly. Figure 28 below identifies wiring diagrams and output curves.

Internal Alternator Wiring Diagram
with "Three Step" Adjustable Regulator



Wiring Diagrams





System	Recommended Minimum Wire Size	
	Total Length of Circuit	
60-65 Amps	12 feet or less	#8
	12 feet to 20 feet	#6
75-105 Amps	12 feet or less	#6
	12 feet to 20 feet	#4
130-160 Amps	12 feet or less	#4
	12 feet to 20 feet	#2

Figure 28