ALTERNATOR ASSEMBLY

A. Install Front Bearing

The front bearing is a slip-fit in the housing. Under normal circumstances, bearing can be installed with only finger pressure. However, in some instances, application of light pressure in a press will be expedient, using extreme care not to damage the bearing.

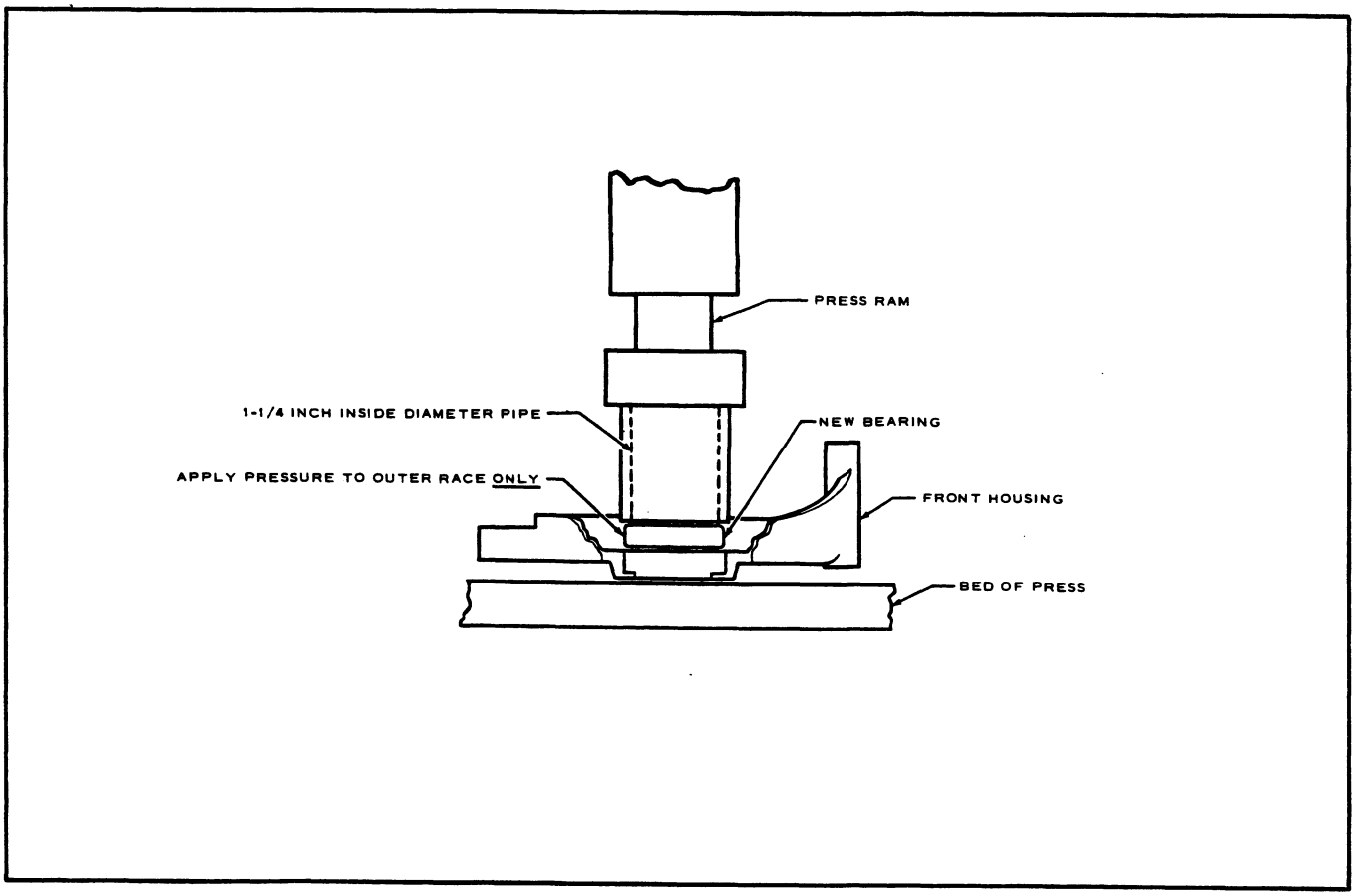


FIGURE 56

1. Position front housing in press as shown.

2. Position bearing squarely into bearing pocket in housing.

3. Use a 1-1/4 inch inside diameter pipe to press bearing into housing. Apply pressure to outer race only. Pressure on inner race will damage bearing.

4. Position bearing retainer to front housing with flanged edge (52 amp model) positioned outward as shown.

5. Install three hex head bearing retainer screws. Do not overtighten. Torque 25-40 in. lbs.

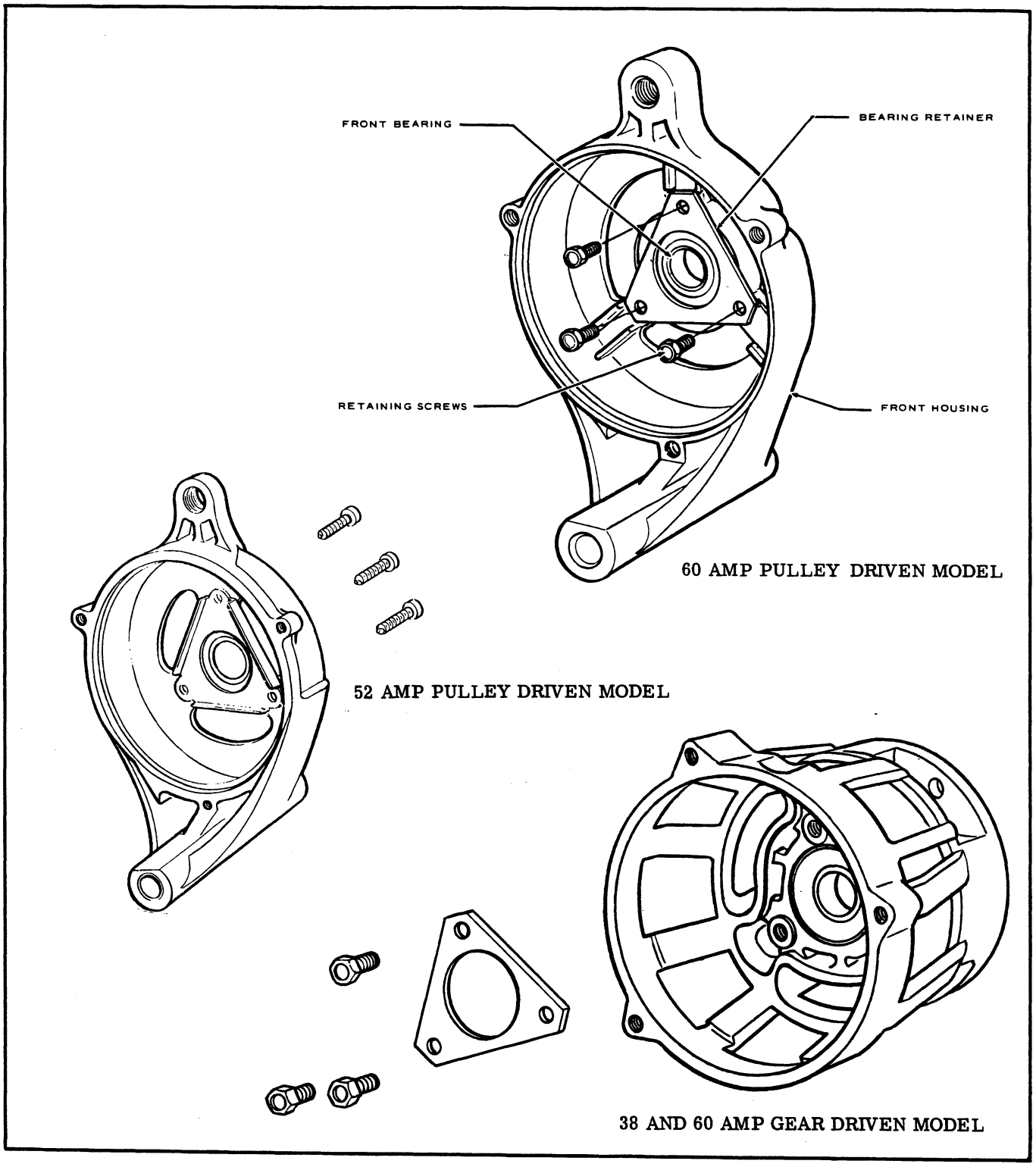


FIGURE 57

B. Install Front Housing to Rotor Assembly.

1. Slide bearing stop onto shaft and against stop ring on 38 and 60 amp models.

2. Insert rotor shaft into front housing.

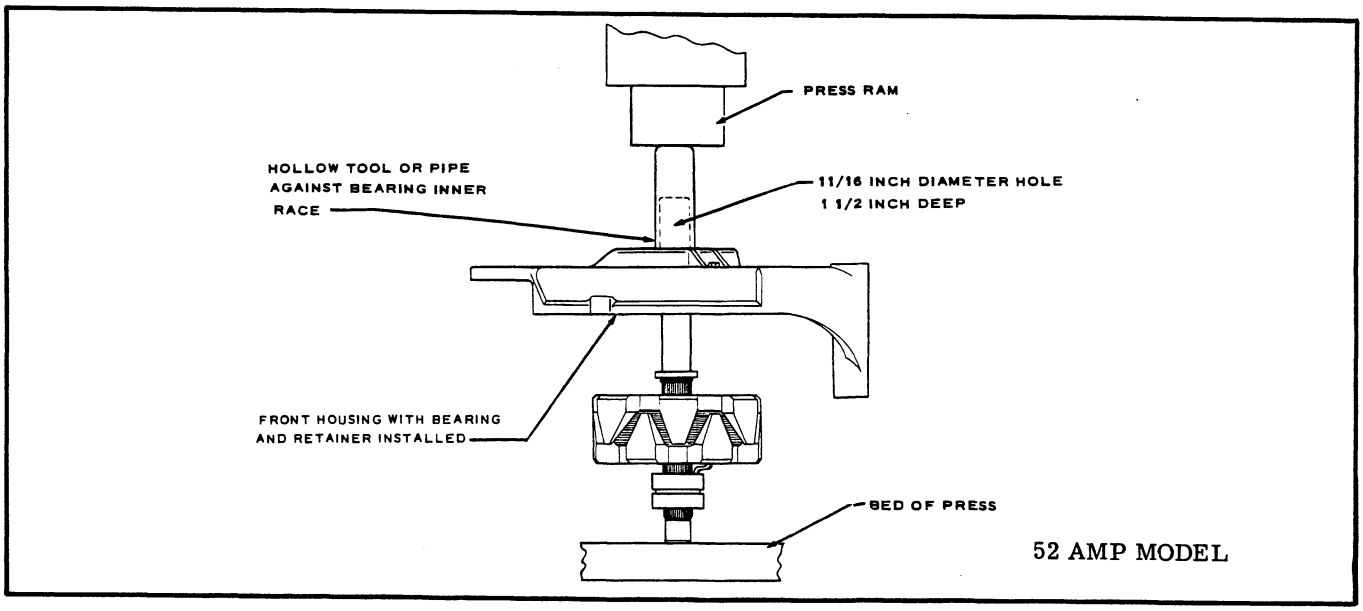


FIGURE 58

3. On 52 amp units position rotor assembly in arbor press with flat surface at rear end of shaft against a flat and true surface of press as shown.

4. Position front housing and bearing assembly to rotor shaft. The bearing must be square with the rotor shaft.

5. Position a 3/4 inch I. D. steel pipe, or the special tool shown, between the bearing inner race and press ram. Press the bearing onto the shaft and against the stop.

C. **Press Pulley Onto Shaft - 52 Amp Model**

1. Position rotor and front housing assembly in arbor press with flat surface at rear end of shaft against a flat and true surface of press.

2. Position pulley square to rotor shaft and bring press ram into contact with pulley.

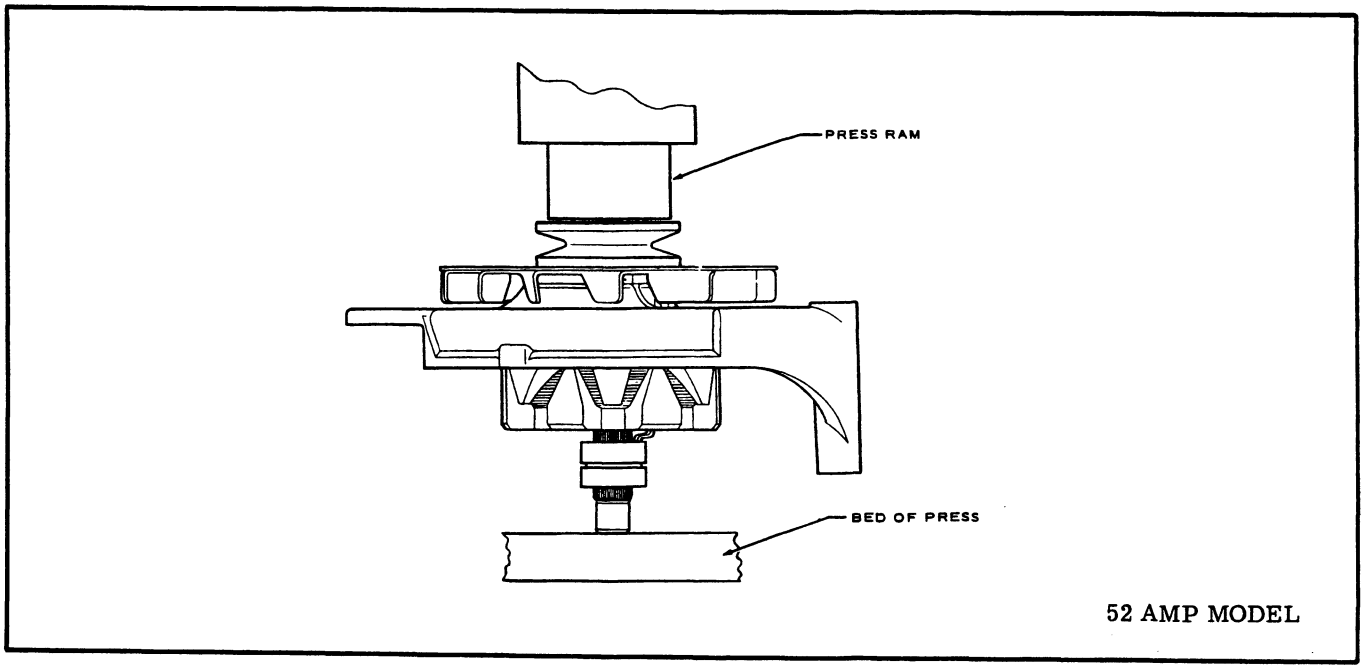


FIGURE 59

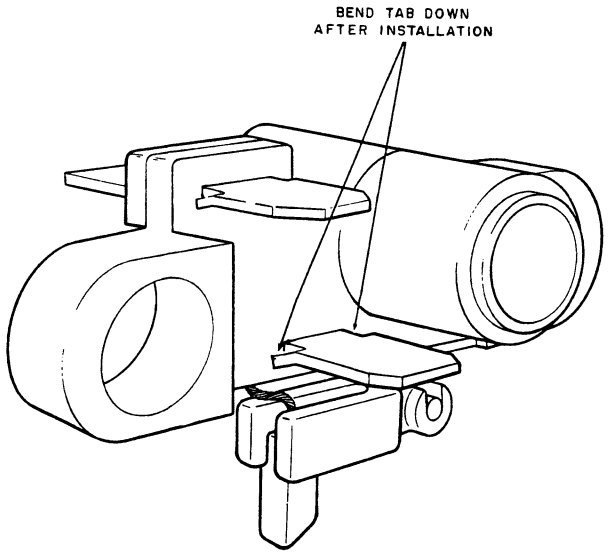
NOTE

A pulley which has been removed and installed several times may have to be replaced because of the increased bore diameter. Most pulleys will withstand three or four on-off cycles before replacement is necessary. As a rule of thumb, a pulley is not suitable for reuse when more than 1/4 of the shaft length will enter the bore of the pulley with light pressure.

3. Press the pulley onto the shaft until the hub just touches the inner race of front bearing.

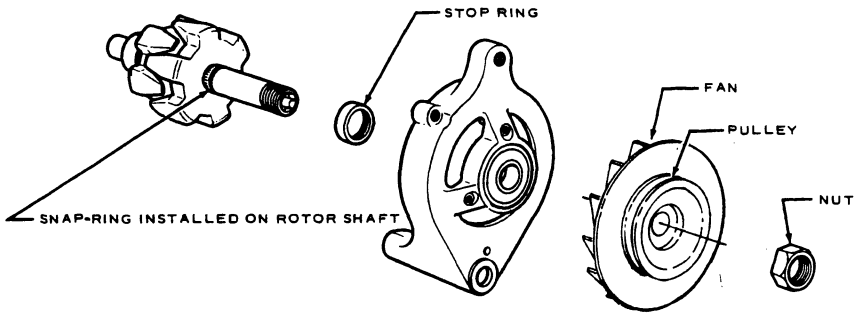
D. Install Brushes and Holders - 52 Amp Model.

1. Position both brush holders to the terminal spacer and install spring as shown.
2. Insert blade terminal of brush lead into slot in terminal spacer. Brush pig-tail should extend toward brush holder. Locking tabs must be visible beyond outside of spacer.
3. Lift the inside brush holder and install brush to holder. Position brush with angle as shown.
4. Install outside brush to the brush holder.



52 AMP MODEL

FIGURE 60



60 AMP PULLEY DRIVEN MODEL

FIGURE 61

E. Install Rotor - Pulley Driven 60 Amp Model

1. Install stop ring to rotor shaft with the counter bore contacting the snap ring.
2. Insert rotor shaft through front bearing.
3. Install: pulley and nut on rotor shaft. Install nut finger tight.

F. Install Rotor - Gear Driven 38 & 60 Amp Models

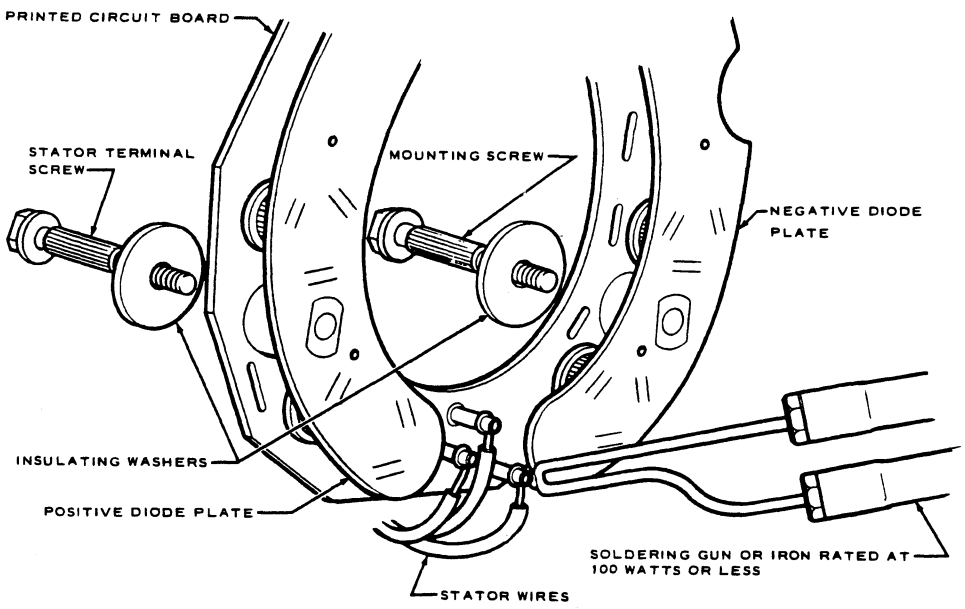
1. Install woodruff key and fan assembly on rotor shaft.
2. Insert rotor shaft through front bearing.

CAUTION

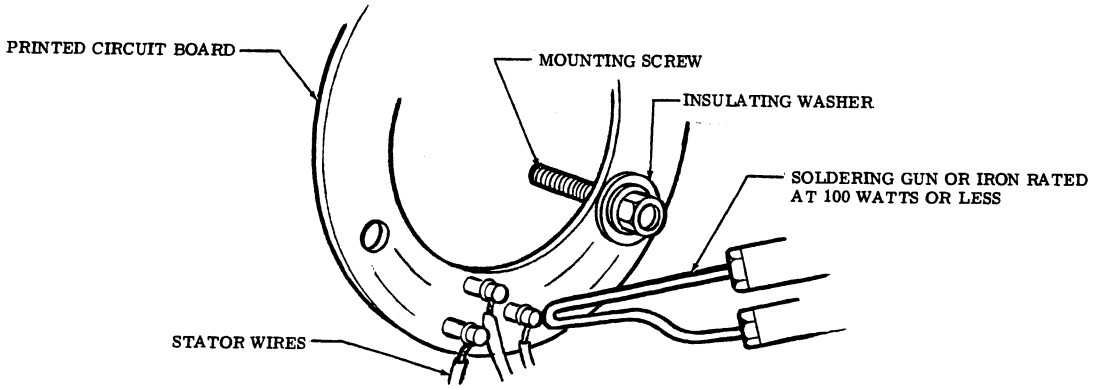
Do not clamp rotor pole fingers in a vise. Damage to the rotor fingers will produce noisy operation or broken fingers. A hex hole, provided in the drive end of the rotor shaft for use during pulley nut tightening or loosening, should be utilized.

G. Install Rectifier Assembly to Stator Assembly - 38 and 60 Amp Models

1. Install stator terminal screw and an insulating washer as shown.
2. Install mounting screw and an insulating washer as shown.
3. Solder three stator lead wires to rectifier terminals. Polarity is not important but solder each wire to the nearest terminal with the center wire on the center terminal. Maintain a spacing of approximately one inch between circuit board and stator core. Bend surplus length of stator wire sideways to prevent them from contacting the rear housing.



DISCRETE RECTIFIER ASSEMBLY



INTEGRAL RECTIFIER ASSEMBLY

38 AND 60 AMP MODELS

FIGURE 62

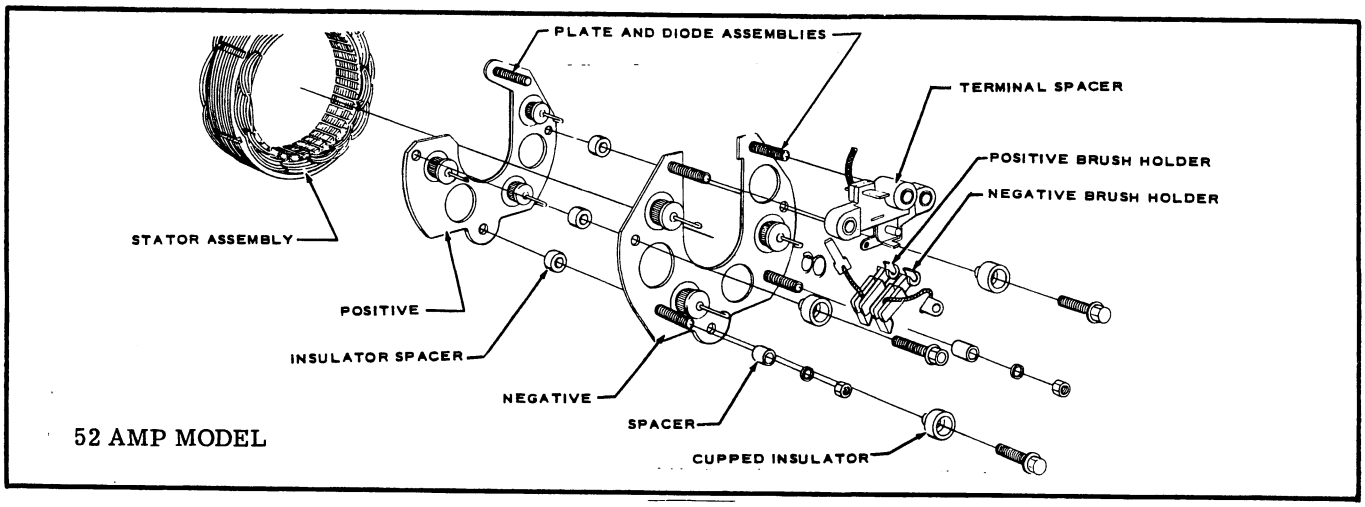


FIGURE 63

H. Assemble Rectifier - 52 Amp Model

1. Position the positive and negative plate and diode assemblies as shown.

2. Position an insulator spacer between the plates and loosely install a washer head screw, and a cupped insulator to the positive plate as shown. Loosely install the two remaining screws, cupped insulators, and insulator spacers.

3. Line up terminal spacer with the three diode plate studs. Install outside brush eyelet terminal to the negative plate stud. Refer to Figure 64. Crimped edge of eyelet must be toward spacer. Position terminal spacer against diode plate.

4. Tighten the three washer head screws.

5. Position brush pig tail wires away from each other toward the front and rear, as precaution against short circuiting.

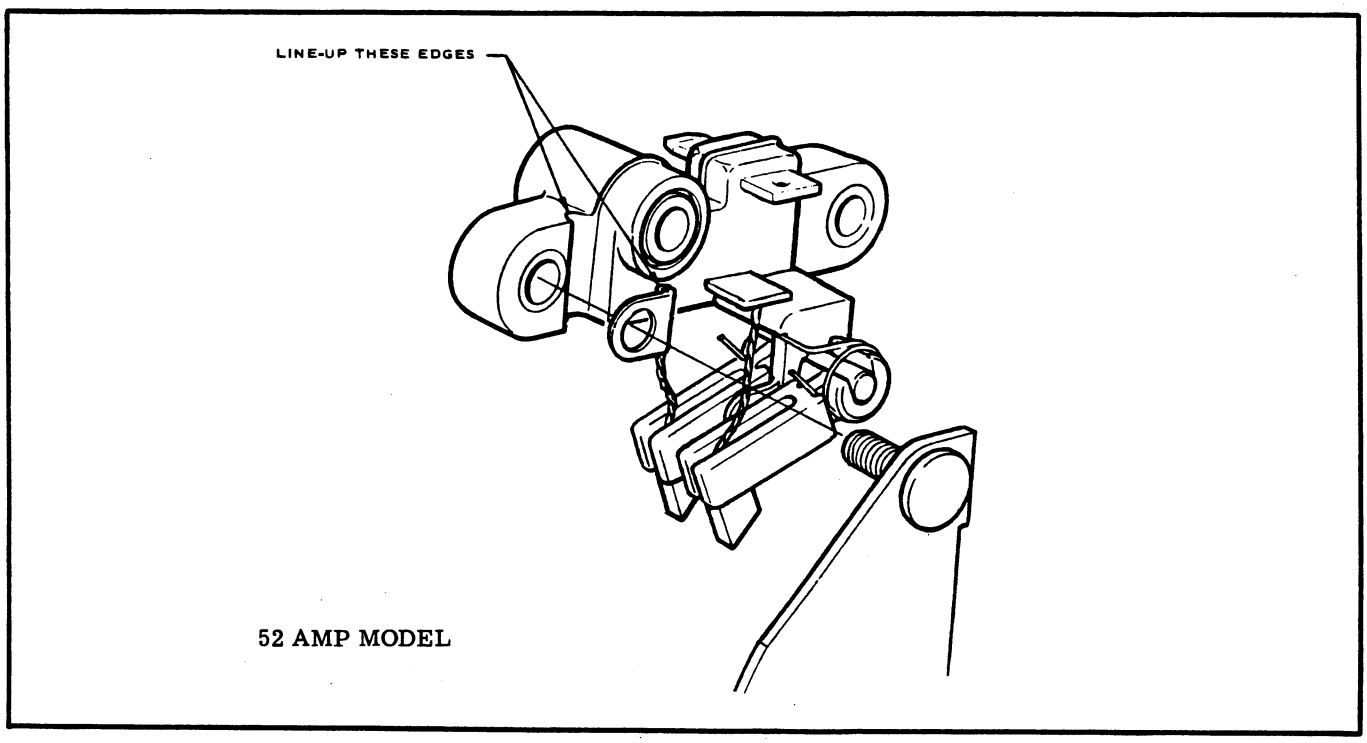


FIGURE 64

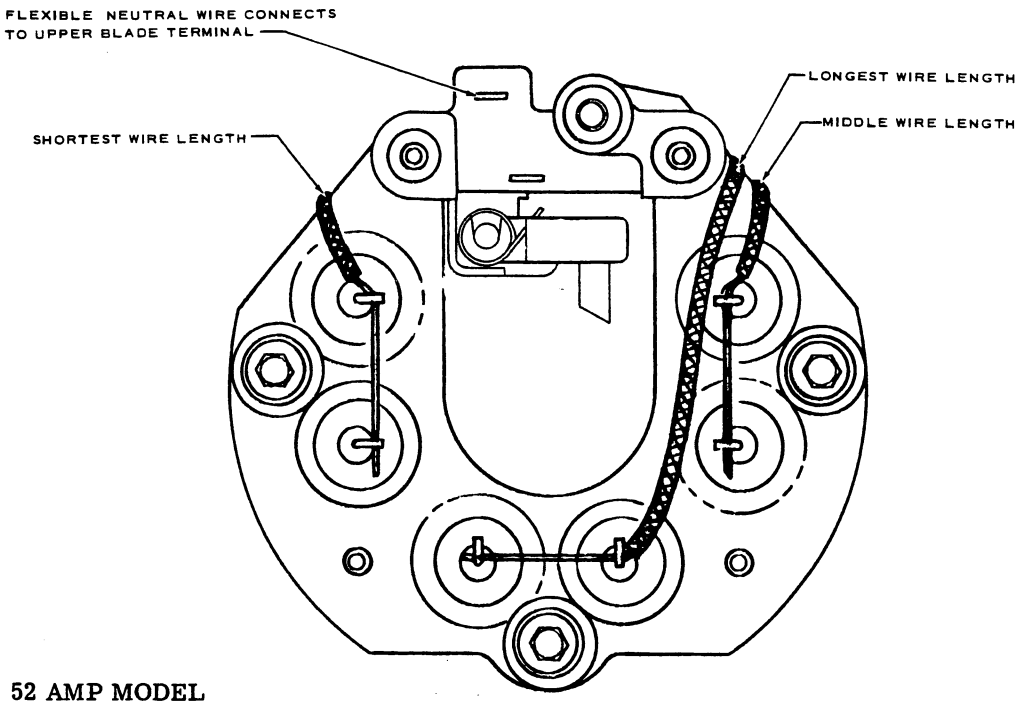


FIGURE 65

J. Connect Stator Wires to Diodes - 52 Amp Model

1. Use fine sandpaper to brighten all wires that will be soldered. Tin all wires with ROSIN CORE solder.

NEVER USE ACID CORE SOLDER FOR ELECTRICAL CONNECTIONS

2. Place a 1/4 inch thick wood or fiber block (used as a temporary spacer) on top of stator assembly, position rectifier on block and adjust lead wires as shown.

3. Push the neutral wire (wire with taped splice) into hole in blade terminal. Solder wire to terminal.

4. Select longest stator wire (approx. 6-1/2" long). Insert tinned wire into hooks on the two diodes located between the lower mounting studs. Use gentle bends, sharp bends may break. Close hooks onto wire. Solder wires to hooks. Clip off excess wire length.

NOTE

Too much heat can destroy the diodes or shorten their service life. Use long nose pliers between hook and diode as shown. Complete soldering operation as quickly as possible consistent with good flow of solder into the joint. A 100 watt soldering gun is adequate in size for this purpose.

5. Select the next longest stator wire and connect it to the diodes located on the right side. Use the technique described in the preceding step to solder wires to hooks.

6. Connect remaining stator wire to diodes on left side. Use the technique in step 4 to solder wires to hooks.

7. Position wires close to rectifier assembly to provide clearance to rear housing.

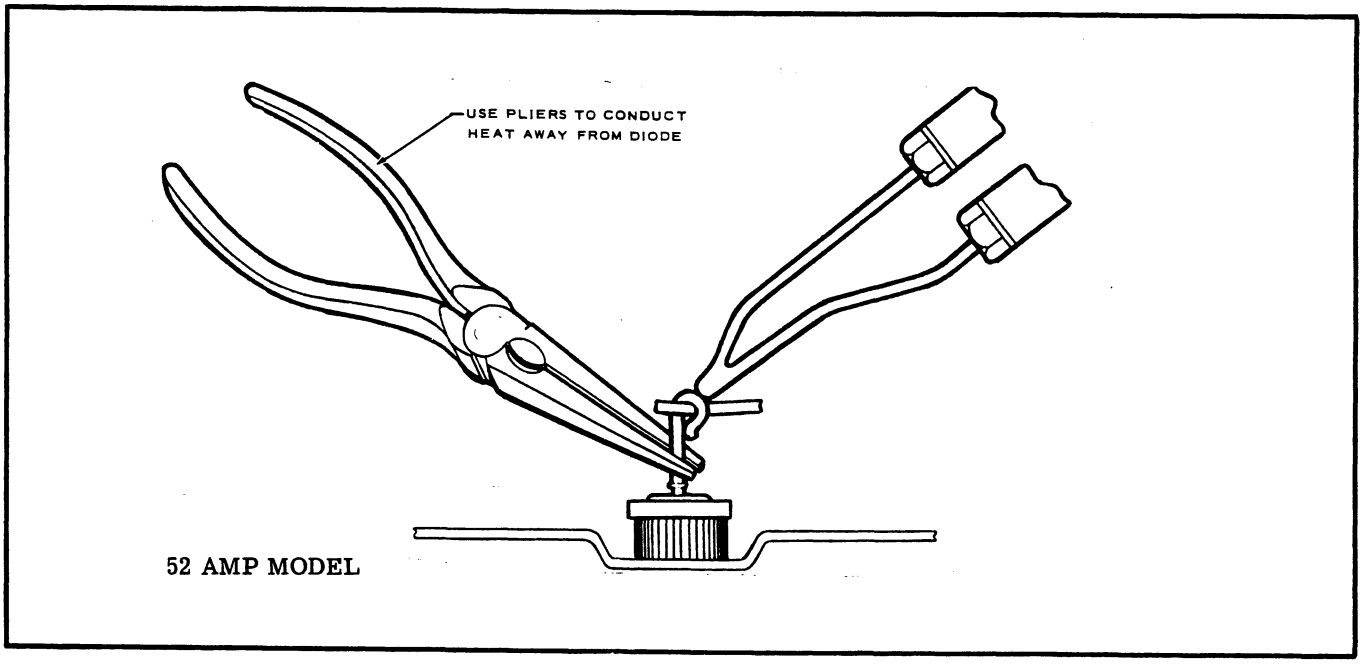


FIGURE 66

K. Install Bearing.

1. Position housing on flat surface in arbor press.

2. Position bearing and installation tool square to housing. Installation tools must be cleaned before use.

3. Press bearing into housing until top surface of bearing is flush with top surface of boss. Use a flat washer on installation tool or flat stock approximately 1-1/2" square between press ram and bearing.

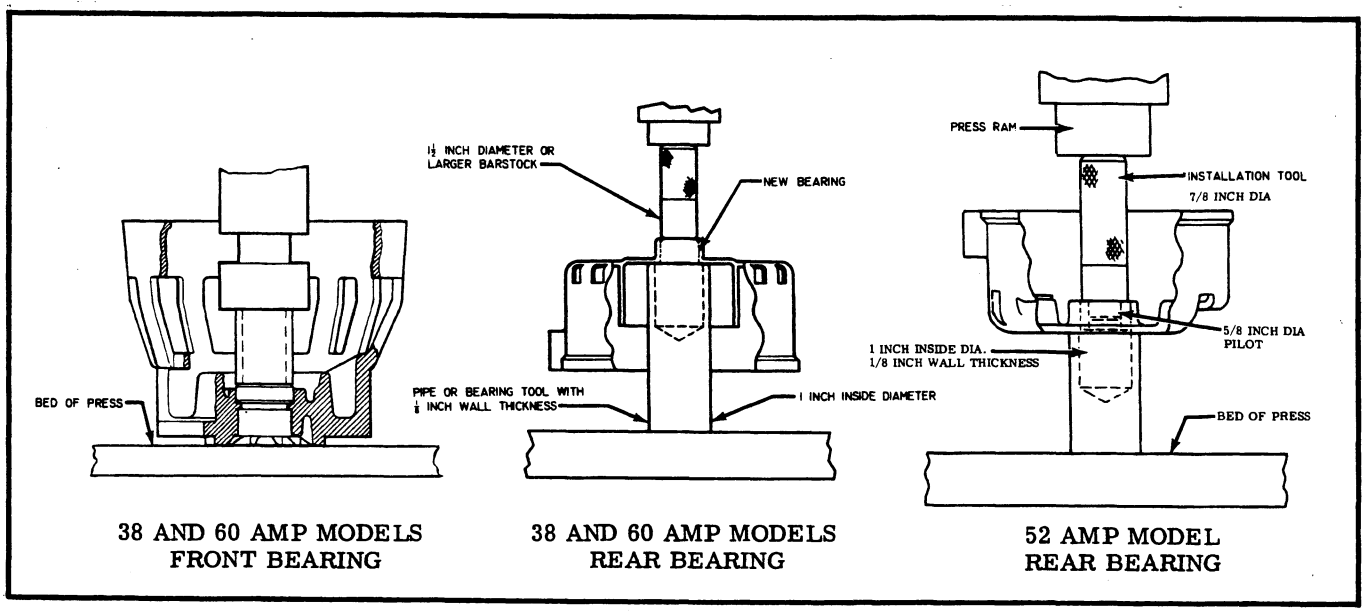


FIGURE 67

L. Install Brush Holder and Brushes - 38 AMP & 60 Amp Model

1. Install brush springs to brush holder.

2. Identify the insulated brush by the eyelet terminal having straight sides and pig-tail wire connected at a right angle. Insert insulated brush into holder with pig-tail wire extending from slot in holder. Flat end of brush must be in contact with spring as illustrated.

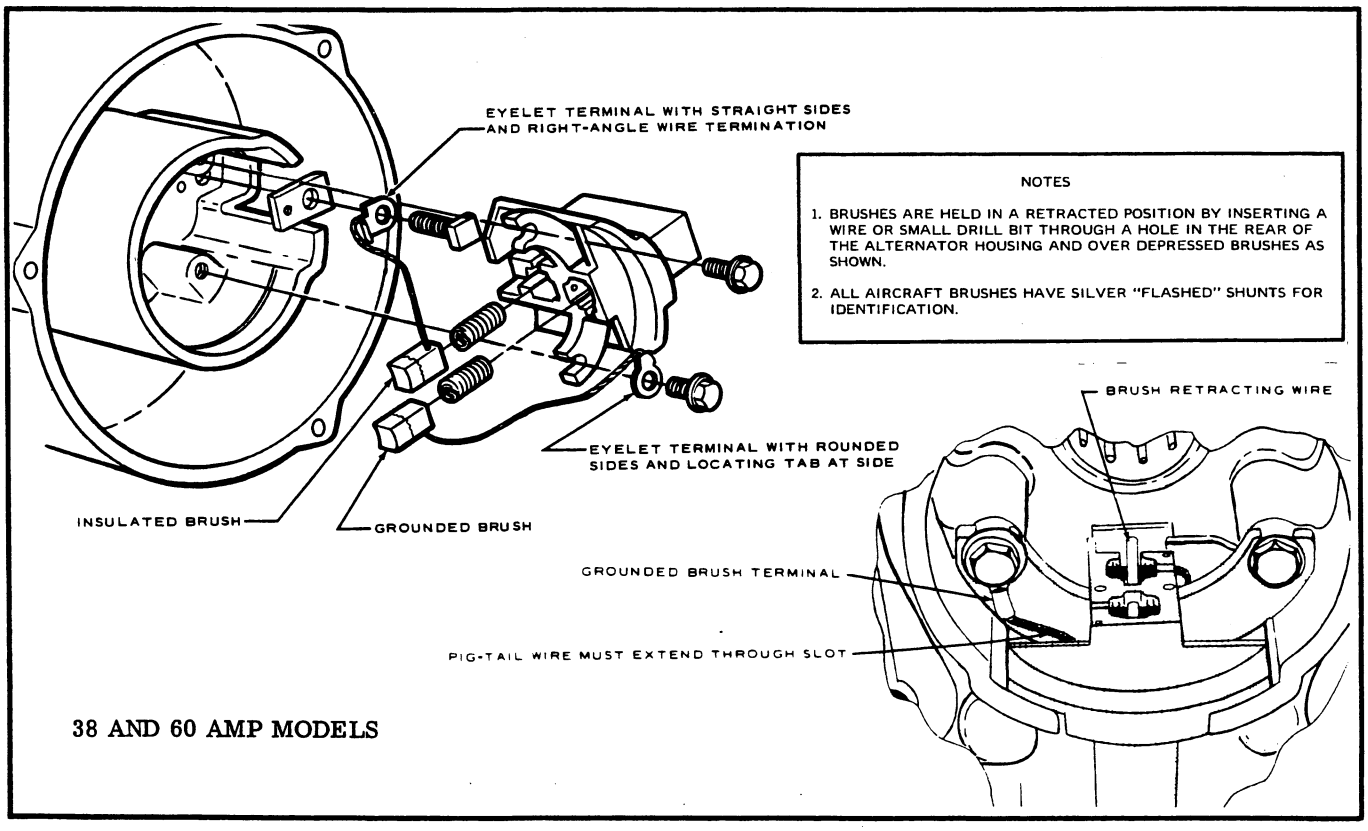


FIGURE 68

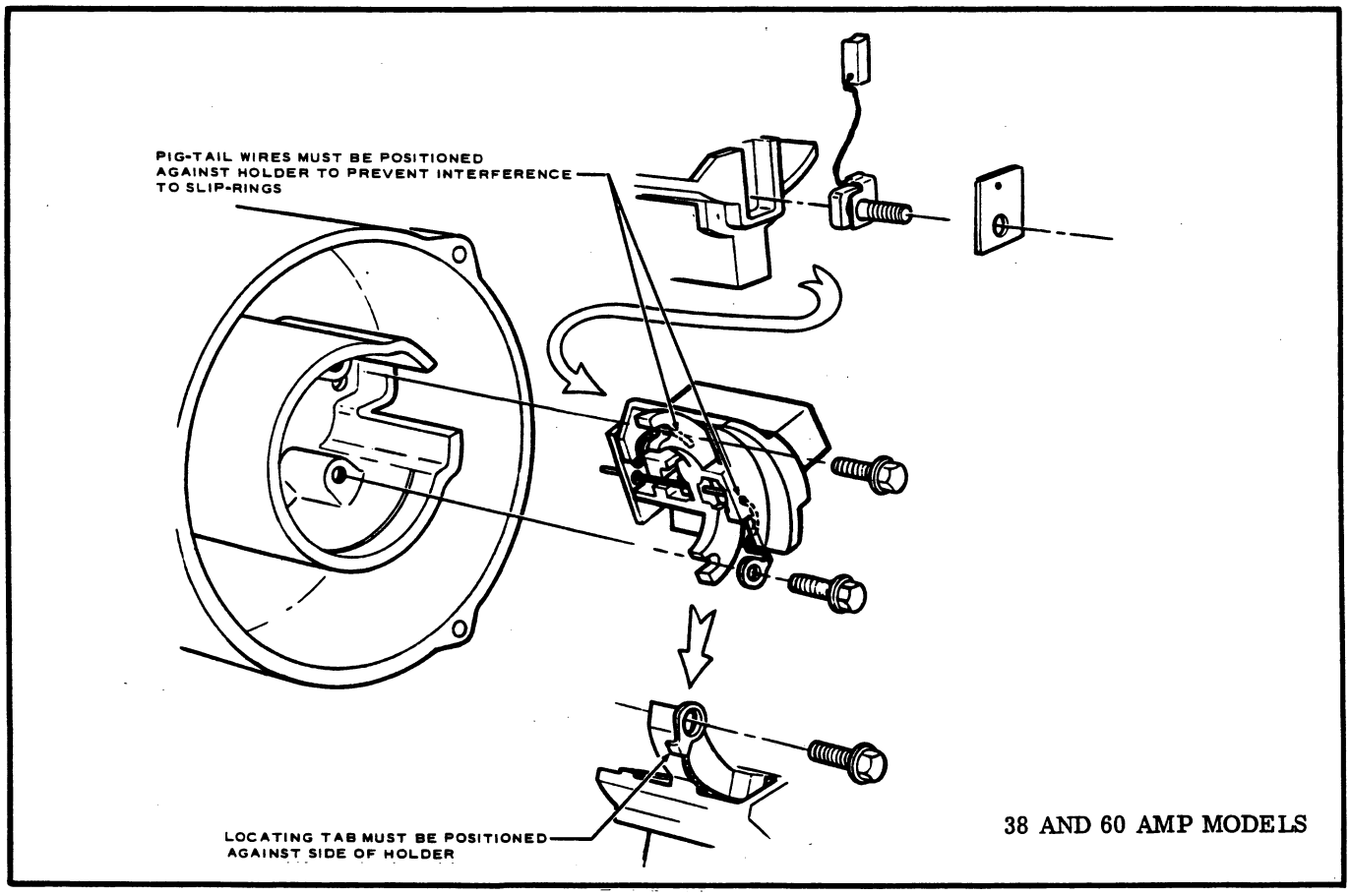


FIGURE 69

3. Depress brush using a two inch long "brush retracting wire" (paper clip) until wire enters the hole in the partition between brush cavities.

4. Identify the grounded brush by the eyelet terminal having round sides and a locating tab extending from the side. Insert grounded brush into holder with pig-tail wire extending from slot in holder. Flat end of brush must be in contact with spring as illustrated.

5. Depress brush with a stiff wire or small screwdriver. Push retracting wire over end of brush and against opposite side of holder.

6. Insert square headed screw into eyelet terminal on insulated brush pig-tail wire as illustrated. Work pig-tail wire into slot and square headed screw into channel as illustrated. Pig-tail wire must be positioned against holder to prevent interference with rotor slip-rings.

7. Position flat insulator against brush holder with retracting wire and screw thread protruding.

8. Position brush holder to rear housing. Press holder firmly against housing to produce maximum sealing effect.

9. Locate eyelet terminal to holder with locating tab positioned between the holder and housing. Install both retaining screws to brush holder. Be sure pig-tail wires are positioned against brush holder to prevent interference with rotor slip-rings.

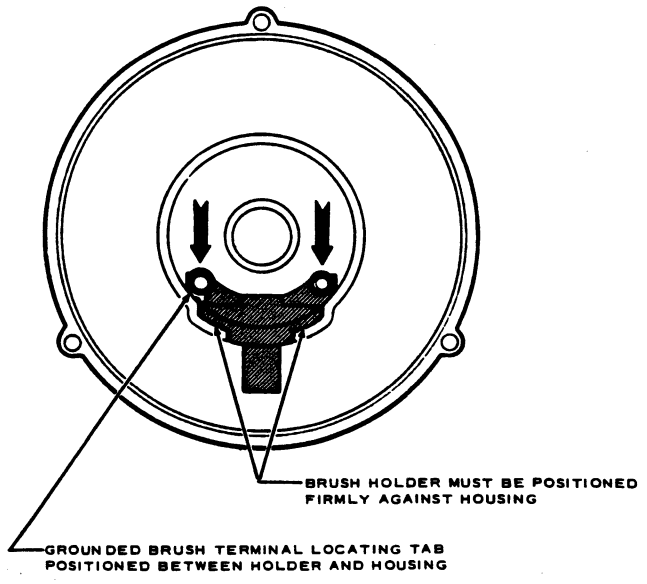
CAUTION

Do not over tighten screws or cracked brush holder may result (torque 17-25 in. lbs.).

10. Position the orange terminal insulator to field terminal stud and install retaining nut and washer assembly.

M. Install Stator and Rectifier Assembly to Rear Housing

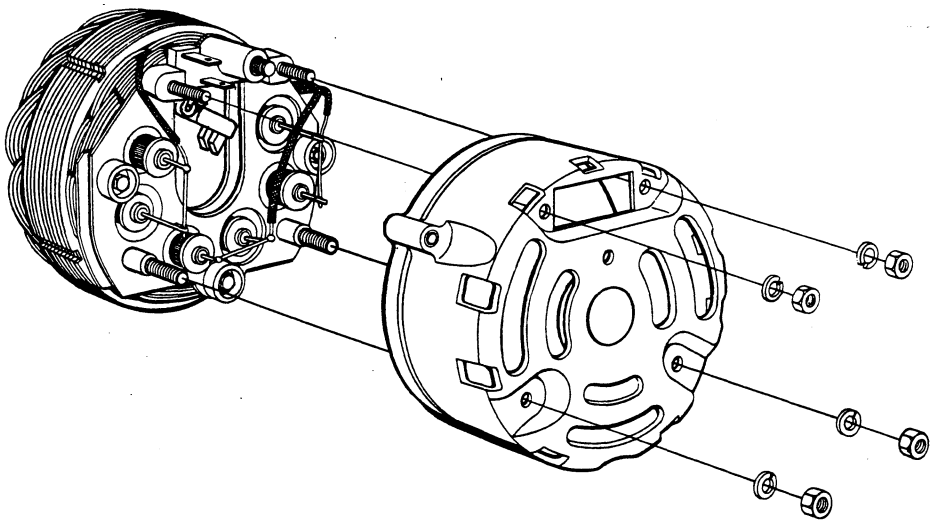
1. Install small stepped insulator to stator terminal screw. Position the radio noise suppression capacitor to the rectifier terminals. Install the large stepped insulator on the battery terminal stud.

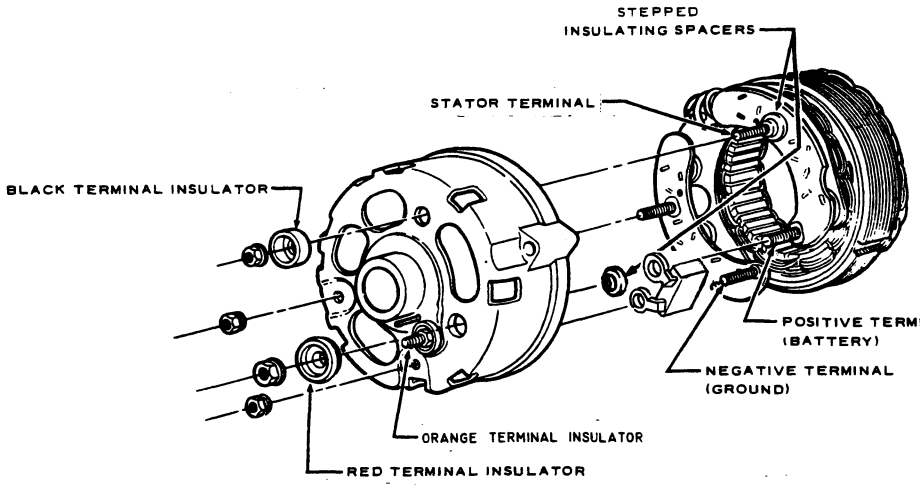


38 AND 60 AMP MODELS

FIGURE 70

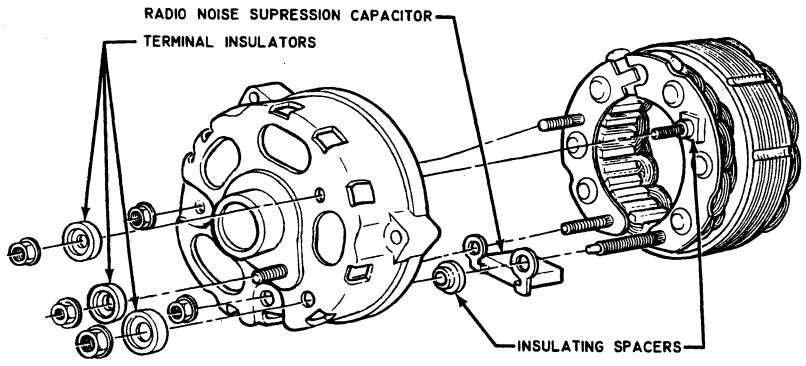
52 AMP MODEL





38 AND 60 AMP MODELS

ALTERNATOR SHOWN WITH DISCRETE RECTIFIER ASSEMBLY INSTALLED



ALTERNATOR SHOWN WITH INTEGRAL RECTIFIER ASSEMBLY INSTALLED

FIGURE 71

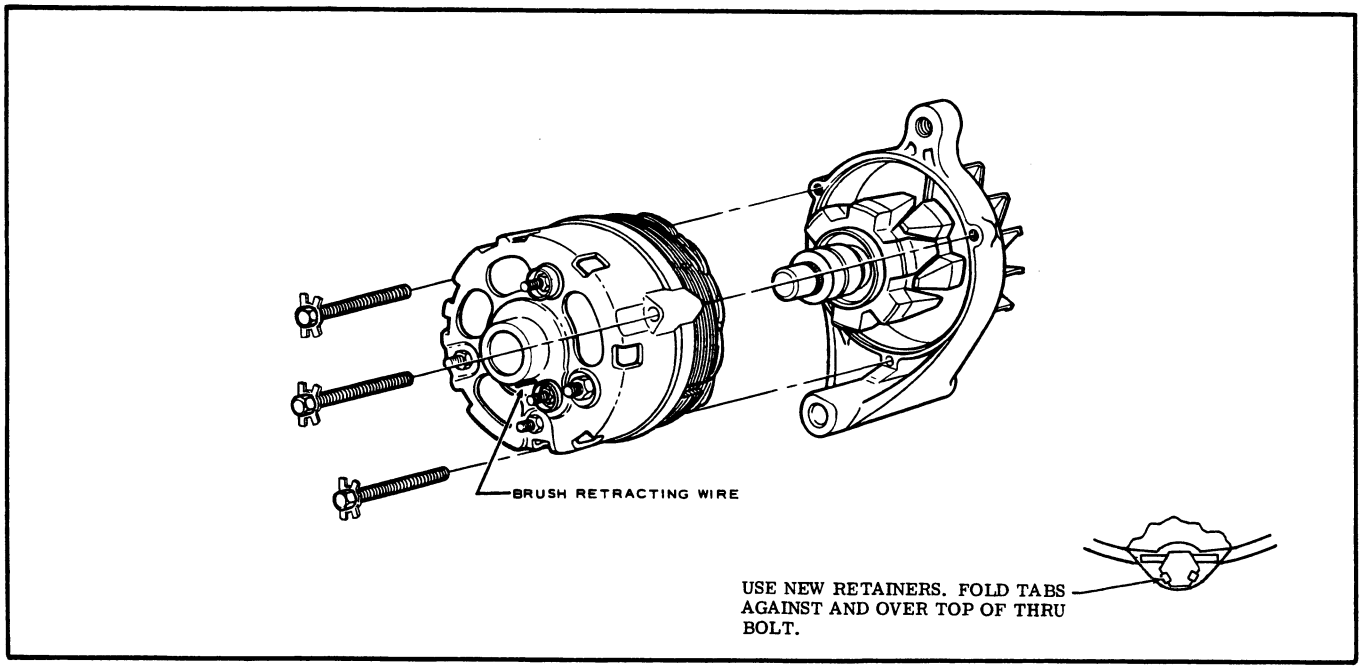


FIGURE 72

2. Position stator and rectifier assembly in rear housing with the large stud (1/4 - 20 thread) inserted into the largest terminal hole (BAT). Be sure that both insulating spacers have been inserted into the BAT and STA terminal holes. Insert stator core into machined step in rear housing.

3. While holding the insulating spacers firmly in place, install the red terminal insulator to the BAT terminals using a 1/4-20 nut with integral dished washer; and the black terminal insulator to the STA terminal using a 10-24 nut with integral dished washer.

4. Install two 10-24 nut and washer assemblies to the two remaining studs.

N. Install Rear Housing, Rectifier, and Stator Assembly

1. Before assembling the alternator front and rear sections, wipe the rear bearing surface of the rotor shaft to insure a clean, dry surface.

2. Position rear housing to front housing with the black stator (STA) terminal or receptacle at the top adjacent to the adjusting ear on the front housing. Be sure that stator is properly seated to both housings.

3. Align through-bolt ears on rear housing with threaded holes on front housing. Install three through-bolts finger tight.

4. Tighten the through-bolts evenly by tightening each a little at a time in sequence until all are tight. Torque to 45-55 in. lbs.

5. Remove brush retracting wire and re-seal hole.

6. Use new retainers. Bend retainer tabs over bolt head.

CAUTION

Damage to the wiring and regulator can occur if the retracting wire is not removed from the alternator.

P. Install Pulley - Belt Driven 60 Amp Models.

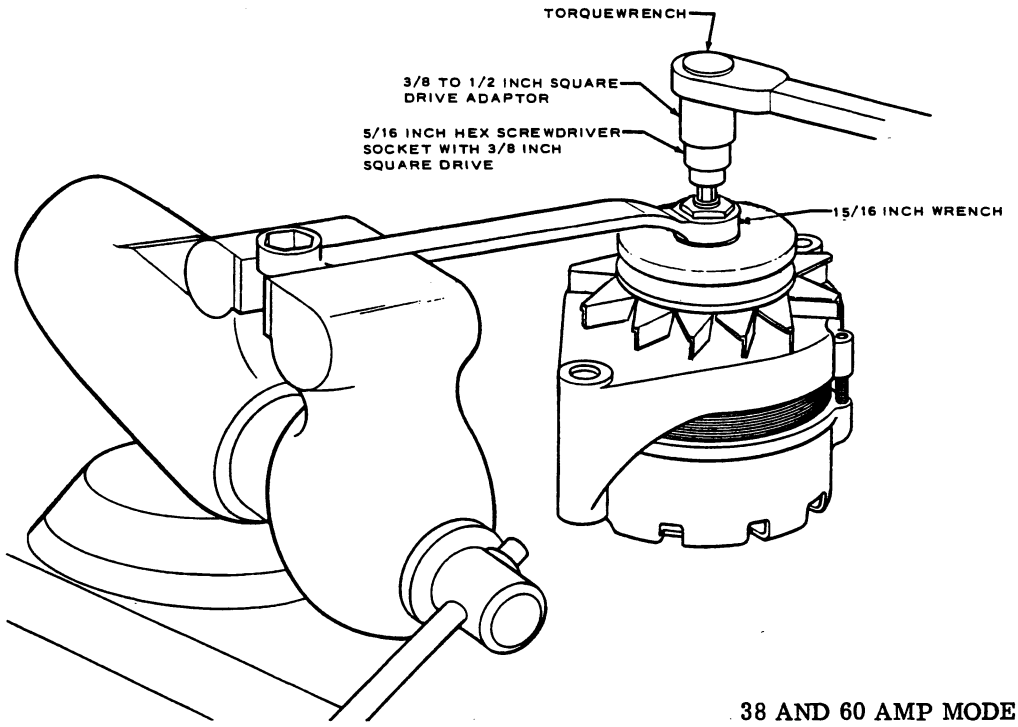


FIGURE 73

1. Position alternator on bench next to vise using tooling shown. The tooling consists of a standard 15/16 inch, box end wrench; a 5/16 inch, 3/8 drive, 6 point hex screwdriver (thick wall) socket; a torque wrench; and a drive adaptor.

2. Rotate shaft in a counterclockwise direction to a torque of 60 to 100 ft. lbs. Be sure that the hex driver is fully seated into the hex hole in the shaft.

Q. Install Drive Coupling - Gear Driven 38 & 60 Amp Models.

1. Slip "O" ring and spacer on rotor shaft.

2. Install woodruff key in rotor shaft.

3. Install seal in front housing.

4. Slip drive coupling assembly and drive gear on rotor shaft.

5. Use a cresent wrench to prevent the rotor shaft and drive gear assembly from turning. Tighten nut until end play of rotor assembly is at minimum. Torque 5 to 20 ft. lb.