BOSCH

American Motors
8 Cylinder Models

DESCRIPTION

Bosch type K1 alternator features a solid state regulator which mounts on the rear end of the alternator and includes an integral brush holder and brush assembly. The alternator is available with ratings of 45 and 55 amperes, and consists primarily of front and rear housings, stationary stator windings, rotating field windings (rotor) and rectifying diodes. The rotor is supported in the drive end housing and in slip ring housing by ball bearings. Bearings contain enough lubricant to eliminate the need for periodic lubrication.

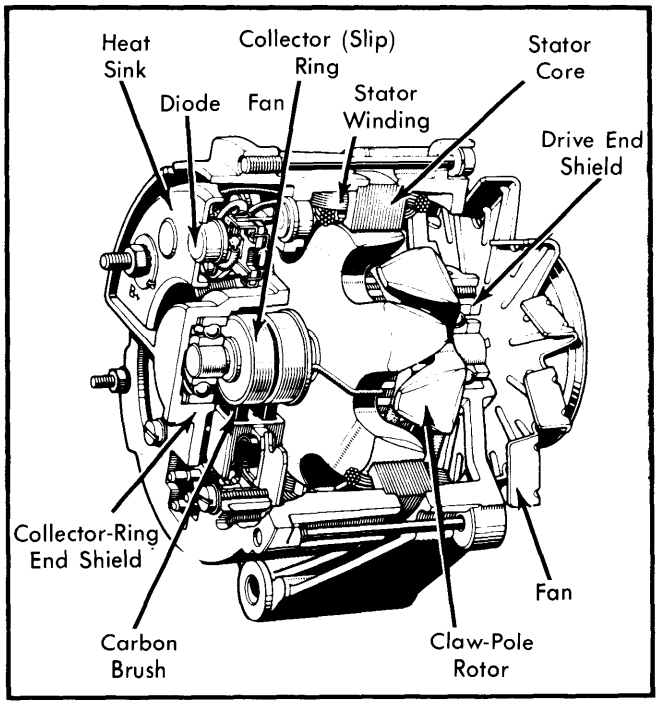

Fig. 1 View Showing Internal Components of Bosch K1 Alternator

OPERATION

Current is passed to the rotating field through slip rings and 2 brushes integral with the voltage regulator mounted on the rear housing. Stator windings are assembled on the inside of a laminated core that forms part of the alternator frame. A diode plate connected to the stator windings contain 6 diodes (3 positive and 3 negative) soldered to the stator windings. Diode plate assembly changes the stator AC voltage to DC voltage. Blocking action of diodes also prevents battery discharge through the alternator. A capacitor (condenser) mounted on end housing protects diode plate assembly from high voltages and suppresses radio noises.

ADJUSTMENTS

No periodic adjustments or maintenance of any kind is required on entire alternator assembly. Voltage regulator is factory preset and no adjustment is possible.

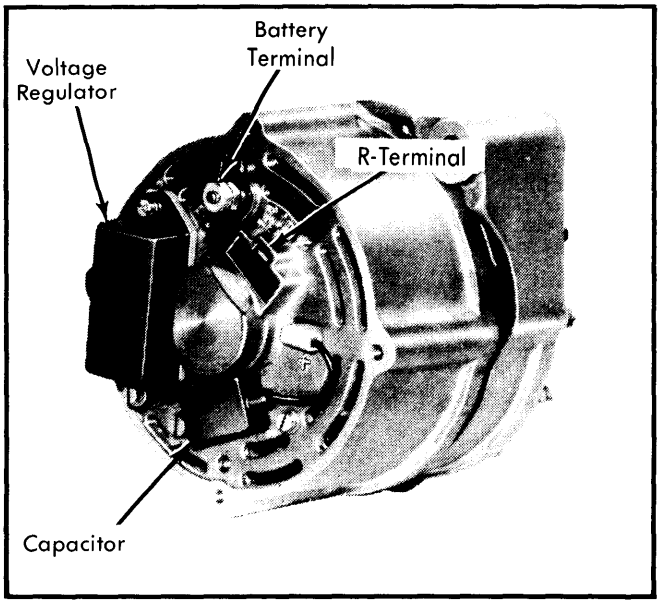

Fig. 2 Identification of Rear Housing External Components and Terminal Locations

TESTING

UNDERCHARGED BATTERY

1) With ignition switch at "ON" position, connect a voltmeter from alternator "BAT" terminal to ground, then from R-terminal to ground. A zero reading indicates an open between connection and battery. An open R-terminal lead will cause uncontrolled voltage. This may cause overcharge and possible damage to accessories. Opens in this circuit may be between terminals at the crimp between harness wire and terminal, or in wire.

2) Disconnect battery ground cable. Connect an ammeter in the circuit at the "BAT" terminal of alternator. Reconnect battery ground cable. Turn on all available accessories. Connect a carbon pile across battery. Operate engine at moderate speed and adjust carbon pile as required to obtain maximum current output. If ampere output is within 10 amps of rated output as stamped on alternator case, alternator is good. If output is not within 10 amps of rated output, check field winding, diode plate, and stator.

OVERHAUL

DISASSEMBLY

1) Scribe marks on front and rear housing for assembly reference. Remove regulator/brush holder retaining screws, tip regulator assembly and remove from rear housing. Unplug condensor wire, remove retaining screw and condensor.

2) Separate front and rear housings and place tape over slip ring end frame bearing to prevent entry of dirt. Place rotor in vise and remove shaft nut, lock washer, pulley, key and fan. Remove bearing retainer screws from front housing and remove rotor assembly.

BOSCH (Cont.)

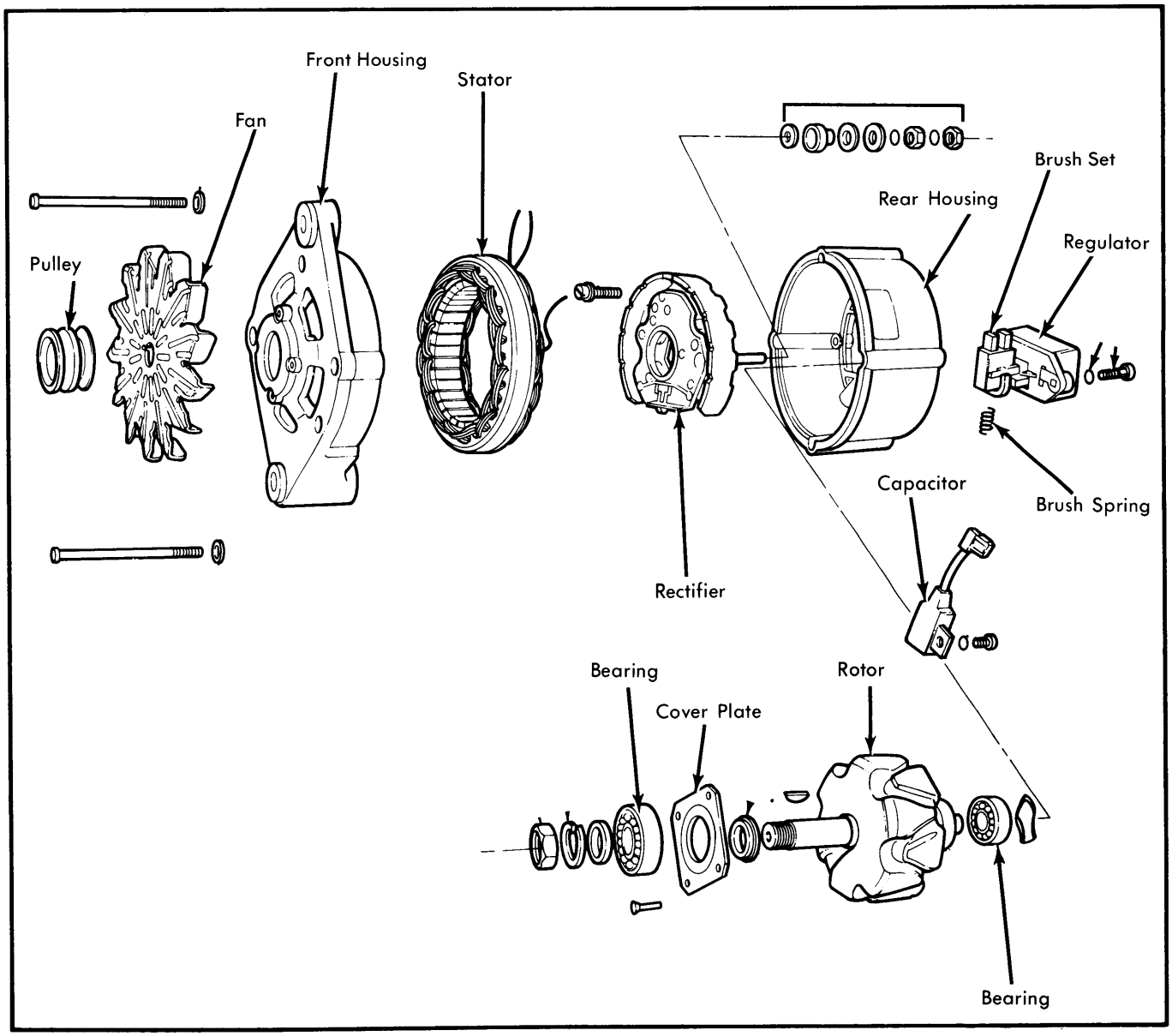

Fig. 3 Exploded View of Bosch Type K1 Alternator

3) Remove stator and diode assembly from, rear housing and unsolder stator leads from diode plate assembly.

4) Remove front and rear bearings from rotor shaft.

INSPECTION

1) Clean poles of rotor with oleum spirits.

NOTE – *Do not clean with degreasing solvent.*

2) Clean slip rings with solvent and check for roughness. Polish with commutator paper. If necessary, true out-of-round slip ring in lathe to .002" maximum indicator reading.

3) Clean stator, brushing with oleum spirits. Inspect brushes for wear or contamination and clean thoroughly with a soft dry cloth until free of residue.

TESTING (BENCH)

Rotor Short-to-Ground – Use an ohmmeter set to the 1000 scale or a 110 volt test lamp. Hold one lead to rotor shaft and touch other lead to one slip ring. Repeat with other slip ring. Ohmmeter should indicate infinity (no needle movement) or test lamp should not light. If ohmmeter indicates any reading or lamp lights, a short-to-ground exists. Check for excess solder, replace rotor if damaged.

Rotor Open – Use an ohmmeter set to the 1 scale or a 110 volt test lamp. Touch one test lead to one slip ring and other test lead to other slip ring. Ohmmeter should indicate 3.0-3.7 ohms or test lamp should light. Any variance indicates rotor winding is open.

Rotor Internal Short – Use a 12 volt battery and an ammeter. Connect battery and ammeter in series with slip rings.

BOSCH (Cont.)

The field current at 12 volts and 80°F temperature should be 3.5-5.0 amps. Ammeter reading above 5.0 amps indicates shorted rotor windings, below 3.5 amps indicates excessive resistance.

Stator Short-to-Ground – Connect a 110 volt test lamp or an ohmmeter from any stator lead to stator frame. If test lamp lights or if resistance is other than infinity, windings are grounded.

Stator Continuity – Use an ohmmeter set to the 1 scale and touch the leads to 2 stator leads and note the reading. Test all stator leads in this manner and equal readings should be obtained for each pair. If readings are not equal, check solder connections. If connections are good, replace stator.

Diodes – Unsolder stator windings. Place ohmmeter test probes on heat sink and diode junctions individually. Each combination of terminals tested should give one high reading and one low reading. If not observed for all diodes, replace diode plate assembly.

ASSEMBLY

1) Fill cavity between retainer plate and bearing ¼ full with Bosch lubricant No. Ft1v34.

NOTE – *Do not overfill as this may cause bearing to overheat.*

2) Install front and rear bearings on rotor shaft and assemble rotor into front housing.

3) Solder stator leads to diode plate assembly and install stator assembly to rear housing.

4) Remove tape and assemble front-to-rear housing; align scribe marks and install through bolts and tighten. Install fan, pulley, washers and nut.

5) Install condenser, voltage regulator and brush assembly to rear housing. Plug in condenser wire.

Alternator/Regulator Specifications

Application	Specification
Alternator Output	
Standard	45 amps.@ 14 volts
Optional	55 amps.@ 14 volts
Alternator Field Current	3.5-5 amps.@ 80°F
Alternator Rotation	
Viewed from Drive End	Clockwise
Regulator Voltage	14.1-14.7