Alternators & Regulators

SEV MOTOROLA ALTERNATORS

DESCRIPTION

SEV Motorola alternators are conventional 3-phase, self-rectifying type alternators. Six silicon diodes (3 positive and 3 negative) are used to rectify AC current.

NOTE: Either SEV Motorola or Bosch alternators may be used on all models listed. Due to the wide variance in application and output for the various models, not all individual part numbers and ratings may be shown. Always check identification plate attached to housing.

ALTERNATOR APPLICATION

Model	Amp Rating	[1] Part No.
Audi	....	9AR2753P
	....	9AR2754P
BMW	65	9GD2NA2A25
Chrysler	60	8AL2066L
Datsun	55	8AL2063A
	55	8AL2087K
	55	8AL2088L
	62	8AR2057L
	55	8AR2058K
Honda	55	8AL2078K
	55	8AL2092K
	55	8AL2095K
	55	8AL2096K
LUV	55	8AL2098K
	55	8AL2099K
Mazda	62	8AL2100L
	55	8AL2103K
Mercedes-Benz	51	9AR2785K
Peugeot	70	9AL2607P
	50	9AR2638P
	....	9AR2990P
Renault	50	9AL2589K
	....	9AL2572K
Saab	70	9AR2638P
Subaru	55	8AL2091K
Toyota	55	8AL2065K
Volkswagen	55	8AR2064K
	55	8AL2057K
	55	9BB2K2A06
	55	9FB2KB2A06
	65	9FB2LD2A07
	65	9FE2ND2A42
	65	9FE2NE2A43
	65	9BE2NB2A45
	65	9FE2NF2A44
	....	9AR2500K
	....	9AR2520K
	....	9AR2606K
Volvo	62	8AL2105L
	51	8AL2071K

[1] — Motorola part numbers.

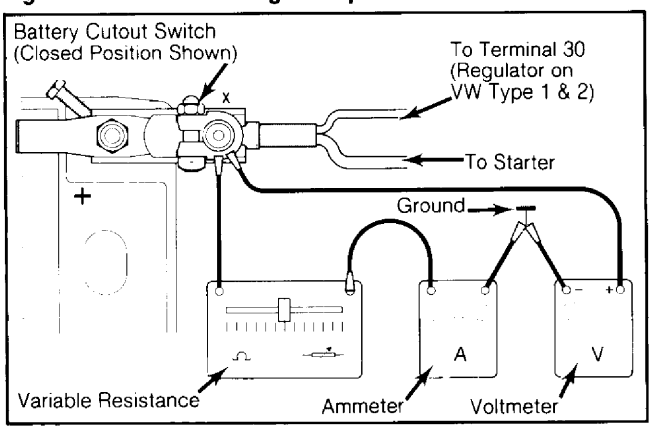
TESTING

NOTE: Some testing is described as part of Overhaul procedure in this article. The following testing is performed with alternator installed on vehicle.

ON-VEHICLE TEST

1) Disconnect battery cables and install cutout switch, variable resistance, ammeter and voltmeter. *See Fig. 1.* Connect ground cable and check that cutout switch is in closed position.

Fig. 1: Alternator Testing Set-Up



2) Start engine and run at 3000-4000 RPM (do not exceed manufacturer's RPM limits). Adjust variable resistance to give the following amperage readings: Models with 65 amp alternators — 45 amps, with 55 amp alternators — 25 amps.

3) Open battery cutout switch to separate battery from test circuit. Load current is now determined by variable resistance. Readjust variable resistance to provide Test Output Amperage. Voltage should be as specified.

CAUTION: Never run alternator without battery connected unless variable resistor is installed to provide load. Alternator or regulator or both could be severely damaged without providing current load.

OVERHAUL

NOTE: Since battery current reaches the alternator when the ignition is not on, battery ground strap should be disconnected when removing or installing alternator.

DISASSEMBLY

1) Remove drive pulley and cooling fan. Remove regulator and brush assembly. Mark front and rear housing along with stator for proper orientation during reassembly.

2) Remove through bolts and carefully separate front housing with rotor from rear housing with stator. Rotor may be removed from housing after bearing retaining plate screws have been removed.

NOTE: Bearings must be removed and installed using press with adaptors. Never reinstall used bearings.

3) Remove nuts holding diode assembly to rear housing and separate housing and stator. If diodes are faulty, complete assembly must be replaced rather than individual diodes. Use heat sink when making solder connections.

Alternators & Regulators

SEV MOTOROLA ALTERNATORS (Cont.)

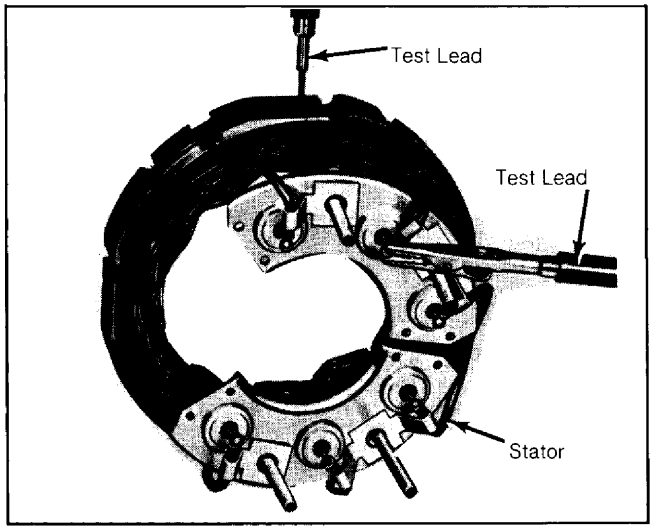
BENCH TESTING

Stator

Check stator for short circuits. If one or more coils are burned, stator shows evidence of shorts. Connect 12 volt, brush holder frame and "-" brush. Lamp should give steady light. If test results are not satisfactory or brush length is less than 3/16" (5 mm), replace brush holder.

CAUTION: Use only specified test lamp. Do not use 110 or 220 volt test lamp on this or any other alternator test procedure.

Fig. 2: Checking Stator For Shorts



Diodes

1) Check diodes with a diode tester for shorts or open circuits. If any diode is defective, entire diode holder with diodes installed must be replaced.

2) If diode tester is not available, diode leads should be quickly and carefully unsoldered and tested with an ohmmeter.

3) Diodes should show low resistance in flow direction and high resistance in reverse direction.

Rotor

1) Check that slip rings are not dirty or burned. Check winding for breakage or damaged isolation. Measure resistance between slip rings.

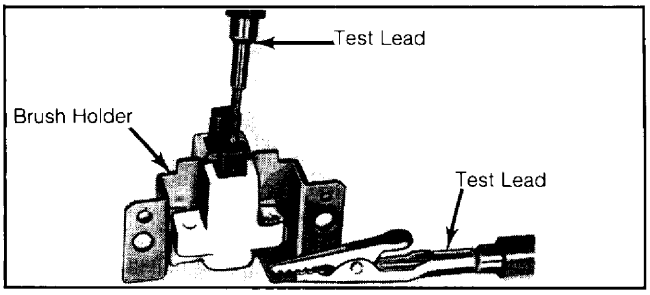
2) Normal resistance should be approximately 4.5 ohms. If winding is faulty, rotor must be replaced.

NOTE: It is recommended that bearings be replaced whenever alternator is disassembled.

Brush Holder

1) Connect a test lamp between brushes. Lamp should not light. Connect test lamp between "DF" terminal and "+" brush. Lamp should give steady light even if brush and/or terminal cable is moved.

Fig. 3: Checking Brush Holder



NOTE: Brush length is measured between brush contact surface and holder, with brush resting against spring.

2) Connect test lamp between 2-5 watt test lamp between stator plates and a terminal on stator. If lamp lights, isolation between stator winding and stator plates is defective and stator should be replaced.

PARTS REPLACEMENT

Diodes

1) Mark leads connecting stator to diodes, quickly and carefully unsolder leads. Place new diode holder in exact position of holder being replaced.

2) Solder new leads while holding with pliers acting as a heat sink. Use minimum 100-watt, well-heated soldering iron. Never change places of diode holders.

3) Positive holder is isolated from frame by means of isolation washers and sleeves, and its diodes are marked in red. Negative holder is not isolated and its diodes are marked in black.

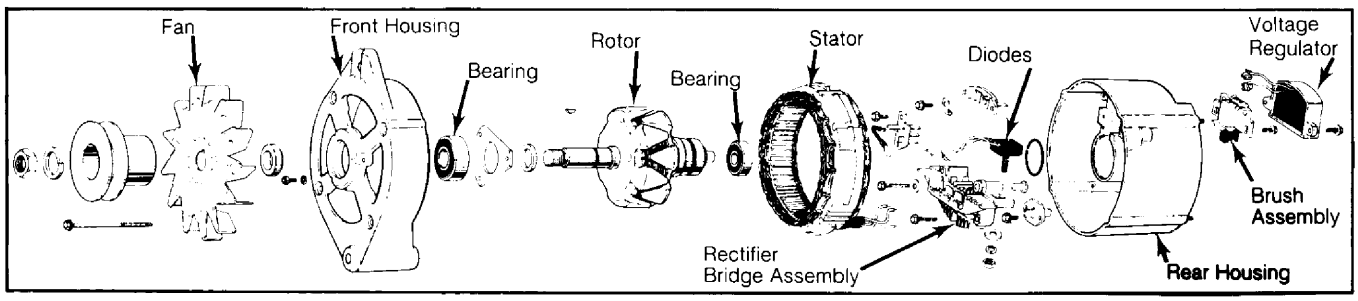
CAUTION: Heat sink must be used during soldering to avoid damage to diodes from overheating.

REASSEMBLY

1) Alternator is assembled by reversing disassembly procedures. Rotor must be pressed into drive end shield. Connect test lamp between "B+" terminal and alternator frame, reverse connections.

2) Lamp should light only in one direction. After completion of assembly, test run alternator on bench using same procedure as described for On Car Testing.

Fig. 4: Exploded View of SEV Motorola Alternator



Volkswagen shown all other models similar.