

SEV MOTOROLA ALTERNATORS

Audi
Fox
Porsche
Volkswagen

DESCRIPTION

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

NOTE — Both SEV Motorola and Bosch alternators are used by Audi, Porsche and Volkswagen. Due to the wide variance in application and output for the various models, not all individual part numbers and ratings may be shown.

APPLICATION

Model	Rating	ⓐPart No.
Audi Fox		
W/Out Air Cond.	55 Amps	049 903 015
W/Air Cond.	65 Amps	056 903 015E
Porsche		
911 & Turbo	70 Amps	911 603 120.02
924	75 Amps	063 903 017
928	928 603 113.03
Volkswagen		
Type 1	55 Amps	043 903 023C
Type 2	55 Amps	021 903 023F
Dasher, Rabbit & Scirocco		
W/O Air Cond.	55 Amps	049 903 015J
W/Air Cond.	65 Amps	056 903 015E

ⓐ — Audi, Porsche or VW part numbers.

SPECIFICATIONS

Nominal Test Output

Application	Amps/RPM	Voltage
Audi Fox	25 @ 3000	12.5-14.5
Porsche	ⓐ	12.5-14.5
Volkswagen		
Type 1	45 @ 3000	12.5-14.5
Type 2	36 @ 1000	14
Dasher, Rabbit & Scirocco		
W/O Air Cond.	25 @ 3000	12.5-14.5
W/Air Cond.	44 @ 3000	12.5-14.5

ⓐ — Data not furnished by manufacturer.

TESTING

ON CAR TEST

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

2) Start engine and run at test RPM. Adjust variable resistance to give amperage readings as follows: Type 1 and models with air conditioning — 45 Amps, Type 2 — 30 Amps, other VW's without air conditioning and Audi Fox — 25 Amps. Open bat-

tery cutout switch, separating battery from test circuit. Load current is now determined by variable resistance.

3) 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.

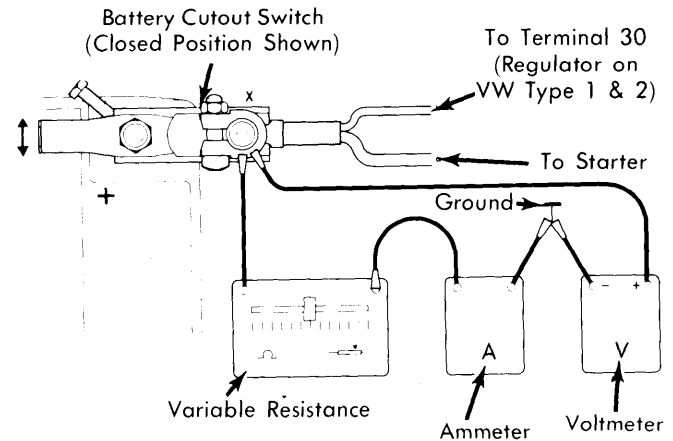


Fig. 1 Alternator Testing Set-Up

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.

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 suitable 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.

TESTING

Stator — Check stator for short-circuiting. If one or more of the coils are burned, there must be a short-circuit in stator. Connect test lamp (12 volt, 2-5 watt) between stator plates and a terminal on stator (see illustration). If lamp lights, isolation between stator winding and stator plates must be burned, in which case stator should be replaced. **NOTE** — Use only test lamp as specified. DO NOT use a 110-volt or 220-volt test lamp on this or any alternator test procedure.

SEV MOTOROLA ALTERNATORS (Cont.)

Diodes — Check diodes with a diode tester. If any of the rectified diodes are shorted or open, the diode holder must be replaced. If any isolation diode is faulty, replace holder, complete with isolation diodes. If diode tester is not available, diodes should be unsoldered and tested with an ohmmeter. Diodes should show high resistance in reverse direction and low resistance in flow direction.

Rotor — Check to make sure slip rings are not dirty or burned. Check winding for breakage or damaged isolation. Measure resistance between slip rings. It should be as specified. If winding is faulty, rotor must be replaced. **NOTE** — It is recommended that bearings be replaced whenever alternator is disassembled.

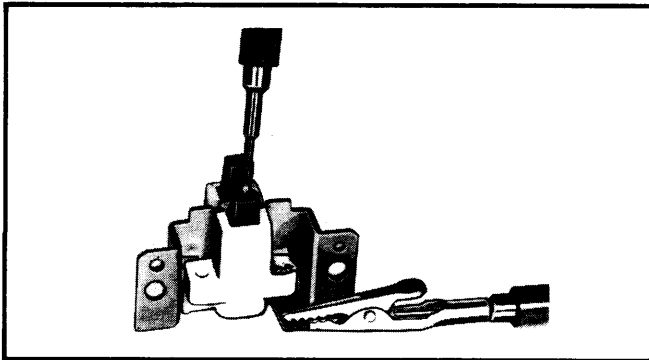


Fig. 2 Checking the Brush Holder

Brush Holder — Connect a test lamp between the brushes. Lamp should not light. Next connect test lamp between "DF" terminal and the "+" brush. Lamp should give steady light even if brush or terminal cable is moved (see illustration). Connect test lamp between brush holder frame and "-" brush. Lamp should give steady light. If test results are not satisfactory or brush length is less than $\frac{3}{16}$ " (5 mm), replace brush holder. **NOTE** — Brush length is measured between brush contact surface and holder, with brush resting against spring.

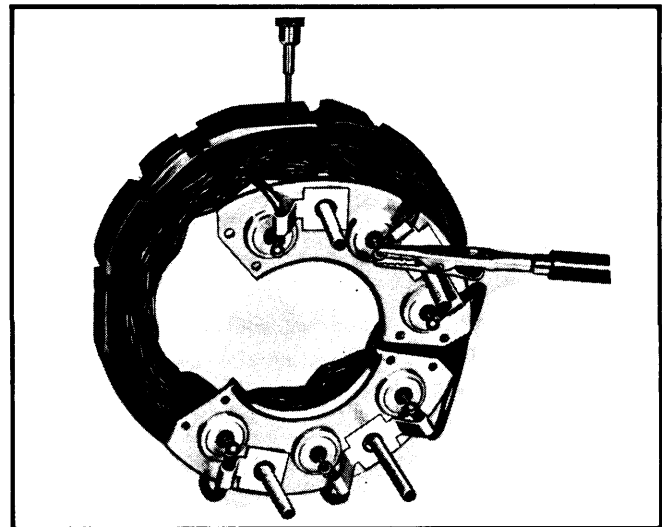


Fig. 3 Checking the Stator

PARTS REPLACEMENT

Diodes — Mark leads connecting stator to diodes, then unsolder leads. Place new diode holder in exact position of holder being replaced. Solder new leads, holding with pliers (this is to conduct heat from soldering point, to avoid damaging new diode). Use a minimum 100-watt, well-heated soldering iron. Never change places of diode holders. Positive holder is isolated from frame by means of isolation washers and sleeves and its diodes are marked in red. Negative diode holder is not isolated and its diodes are marked in black.

REASSEMBLY

Alternator is reassembled by reversing disassembly procedures while noting the following: Rotor must be pressed into drive end shield. Connect a test lamp between "B+" terminal and alternator frame, then reverse connections. Lamp should light only in one direction. After completion of reassembly, test run alternator on bench, using same procedure as described for On Car Testing.

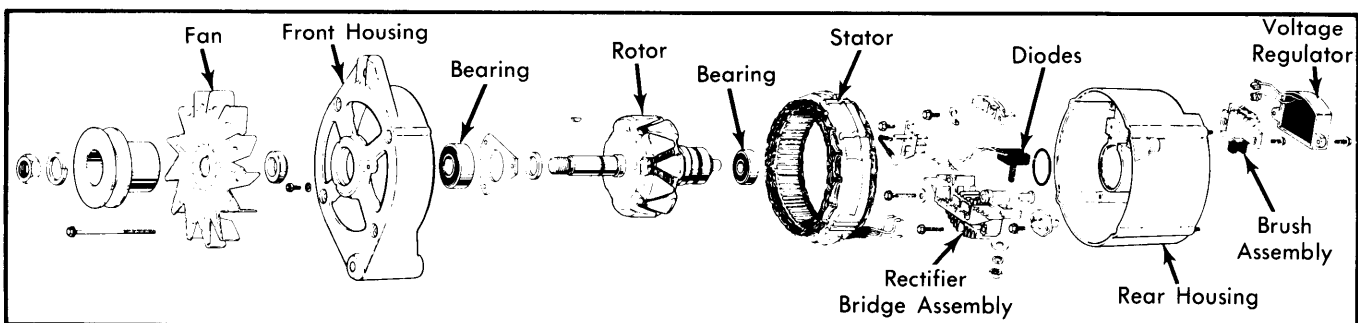


Fig. 4 Disassembled View of SEV Motorola Alternator (Volkswagen Shown)