GENERAL MOTORS (MITSUBISHI) ALTERNATORS

Chevrolet Chevette (Diesel Engine Only)

Pontiac T1000 (Diesel Engine Only)

DESCRIPTION

The Mitsubishi alternator for diesel engine vehicles is basically the same as a conventional integral regulator alternator with a single exception. This alternator has a vacuum pump mounted on the back of the alternator and driven by the alternator shaft. The pump provides vacuum to operate various control systems throughout the vehicle.

SPECIFICATIONS

Alternator Part No.	Volts	Rated Amp. Output
94234987	12	55

Rotation – Clockwise as viewed from drive pulley end.

Brush Length – Standard, .787 inch; Service limit, .551 inch.

Charging Voltage – 14.0-14.6 volts at 68°F.

BENCH TESTING

ROTOR

Check slip ring surfaces for contamination or roughness. Sand surface of rings and clean as necessary. Measure outside diameter of slip rings. Replace rotor if slip ring diameter is not 1.18-1.24". Check resistance of rotor coil across slip rings. Resistance should measure 4.2 ohms at 68°F. If no continuity exists, coil is open and must be replaced. If resistance is substantially lower than specification, coil is shorted and must be replaced. Check for continuity between either slip ring and rotor core. If continuity exists, coil is grounded and must be replaced. Check front and rear bearings for wear or roughness and replace if necessary.

STATOR

Check for continuity across all 3 stator coils. If no continuity exists in any 1 of the coils, replace the stator. Check for continuity across any of the stator coils and the stator core. If a continuity exists, one of the coils is grounded and stator must be replaced. Resistance of each coil, measured from coil lead to terminal "N", should be 0.1 ohms at 68°F.

RECTIFIER ASSEMBLY

Check for continuity of positive side diodes between each stator coil terminal and "BAT" terminal. Reverse ohmmeter lead polarity and recheck for continuity. If continuity exists in both polarity directions or does not exist in both polarity directions, diode is defective and must be replaced. Check for continuity of negative side diodes between each stator lead and "E" terminal. Reverse ohmmeter leads and recheck for continuity. Once again, continuity should only exist in one direction.

INTEGRATED CIRCUIT REGULATOR

1) Assemble a test circuit using the following components: One 10 ohm 3 watt resistor (R_1), one 0-300 ohm 3 watt variable resistor (R_2), two 12 volt batteries (BAT_1 & BAT_2) and on one 0-30 volt DC voltmeter. *See Fig. 1.*

2) Adjust variable resistor (R_2) until voltage at V_4 reads the same as voltage at V_3 (this should be all the way to one end of travel or 0 ohms).

3) Connect the test circuit to the integrated circuit regulator terminals. Measure voltage at V_1 and V_2. Voltage should measure 10-13 V at V_1 and 0-2 V at V_2. Disconnect terminal S from circuit and measure voltage at V_3. Voltage at V_3 should measure 20-26 V. Reconnect terminal S.

4) Measure voltage at V_2 while increasing resistance at R_2 from 0 ohms. V_2 should increase from 2 V up to 10-13 V. Stop increasing R_2 when V_2 reaches 10-13 V. If increase at V_2 is interupted at any point up to 10-13 V, while increasing resistance at R_2 regulator is defective.

5) Measure voltage at V_4 while R_2 is still at same setting, from previous step, that produced 10-13 V reading at V_2. If V_4 is not within 14-14.6 V, regulator is defective.

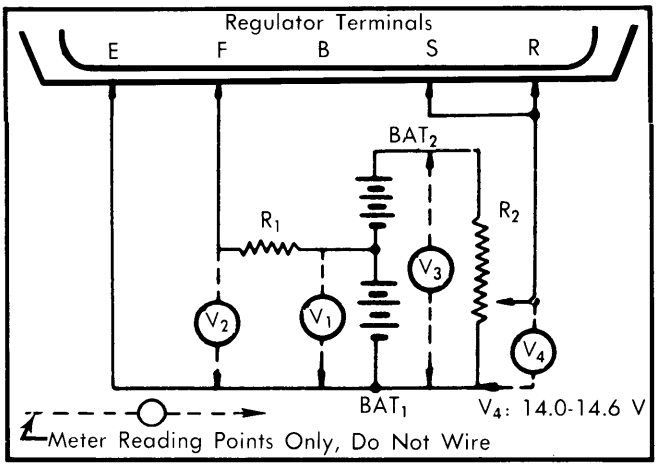

Fig. 1 Test Circuit For Integrated Circuit Regulator

6) Disconnect the wire attached to terminal "S" and connect it to terminal "B". Repeat procedure from step **4)**. If V_2 does not vary or V_4 is not within 14.5-16.6 V, regulator is defective and replacement is necessary.

VACUUM PUMP

Inspect all parts for abnormal wear or damage. Replace as necessary. Measure length of vanes and replace if not 0.511-0.531". Measure inside diameter of housing. Replace if not 2.2440-2.2441". Examine check valve for damage and ensure that valve operates smoothly. Replace vacuum pump oil seal in rear end housing if necessary.

OVERHAUL

DISASSEMBLY

1) Remove vacuum pump attaching bolts. Remove vacuum pump while holding center plate. Remove brush cover, brush

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attaching bolts and brushes. Wrap vacuum pump drive shaft with tape to protect rear seal. Remove through bolts.

2) Separate front end housing from stator and rear end housing. Remove pulley fan and front end housing from rotor. Remove front bearing retainer screws, retainer and bearing from front end housing. Remove bolt and nuts attaching stator, diodes and brush holder to rear end housing. Note position of insulating washers for correct reassembly.

3) Separate rear end housing from stator and diode assembly. Remove diodes from stator by melting away solder from terminals. Protect diodes from heat damage while melting solder. Melt solder off of regulator holder plate terminal and remove regulator assembly.

4) Remove center plate, rotor and vanes from vacuum pump. Remove "O" rings from center plate.

REASSEMBLY

To assemble, reverse removal procedure and note the following: Protect all parts from heat damage when resoldering connections. Apply tape to rear end of stator shaft when installing rear end housing to protect oil seal. Check for freedom of shaft rotation after tightening through bolts.

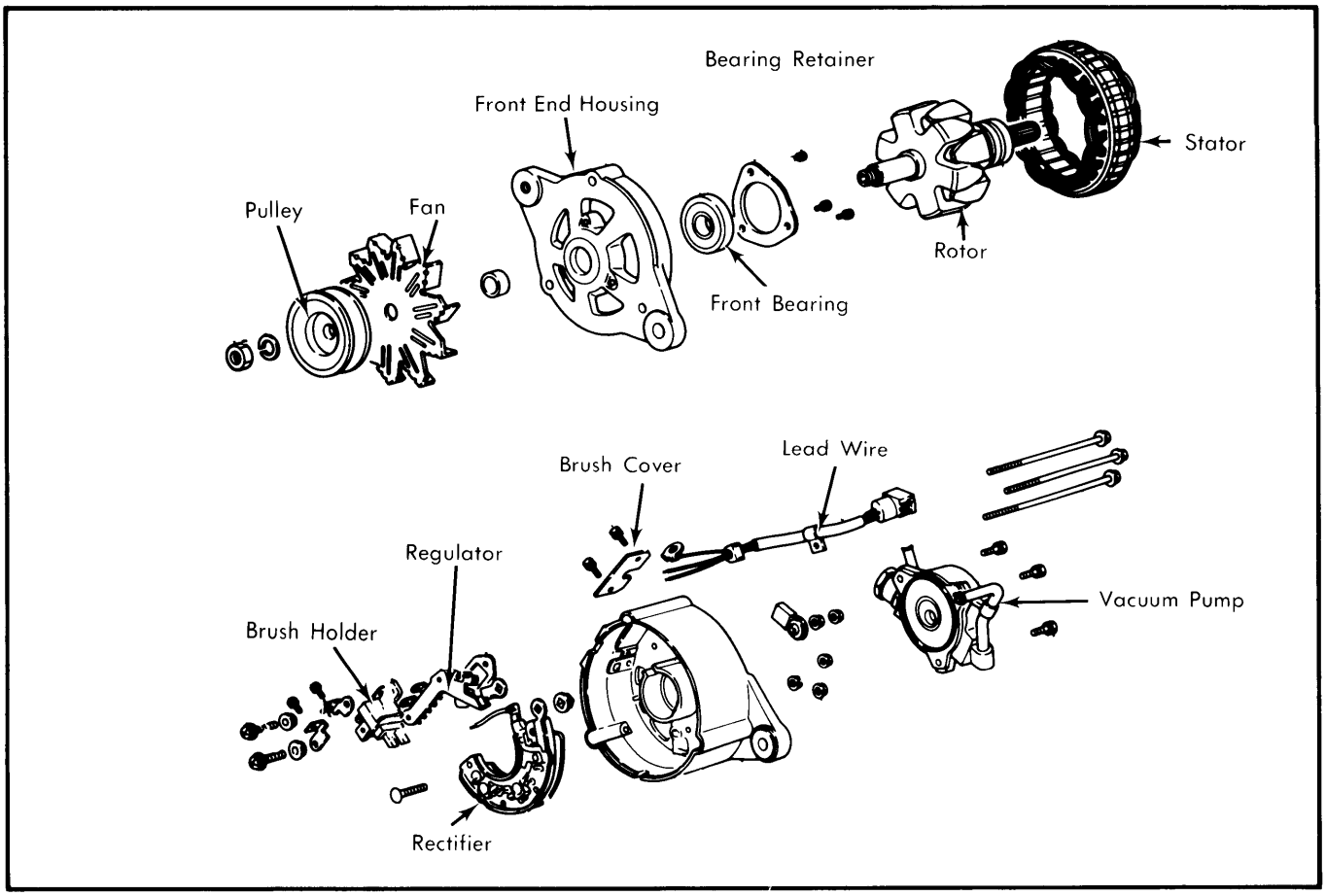

Fig. 2 Exploded View of General Motors (Mitsubishi) Alternator