

ALTERNATOR & REGULATOR

1993 Mitsubishi Montero

1993 ELECTRICAL
Mitsubishi Alternators & Regulators

Montero

DESCRIPTION

Mitsubishi alternators are conventional 3-phase, self-rectifying type units containing 6 diodes (3 positive and 3 negative) which are used to rectify current. All models use a case-mounted Integrated Circuit (IC) voltage regulator.

Alternator relay or resistor with diode is used to ensure charging of battery even if charging indicator light is defective.

ADJUSTMENTS

ALTERNATOR BELT ADJUSTMENT TABLE

Application	Deflection In. (mm)
New Belt (1)25-.31 (6.4-7.9)
Used Belt (1)35 (8.9)

(1) - With 22 lbs. (10 kg) pressure applied midway on belt run.

TROUBLE SHOOTING

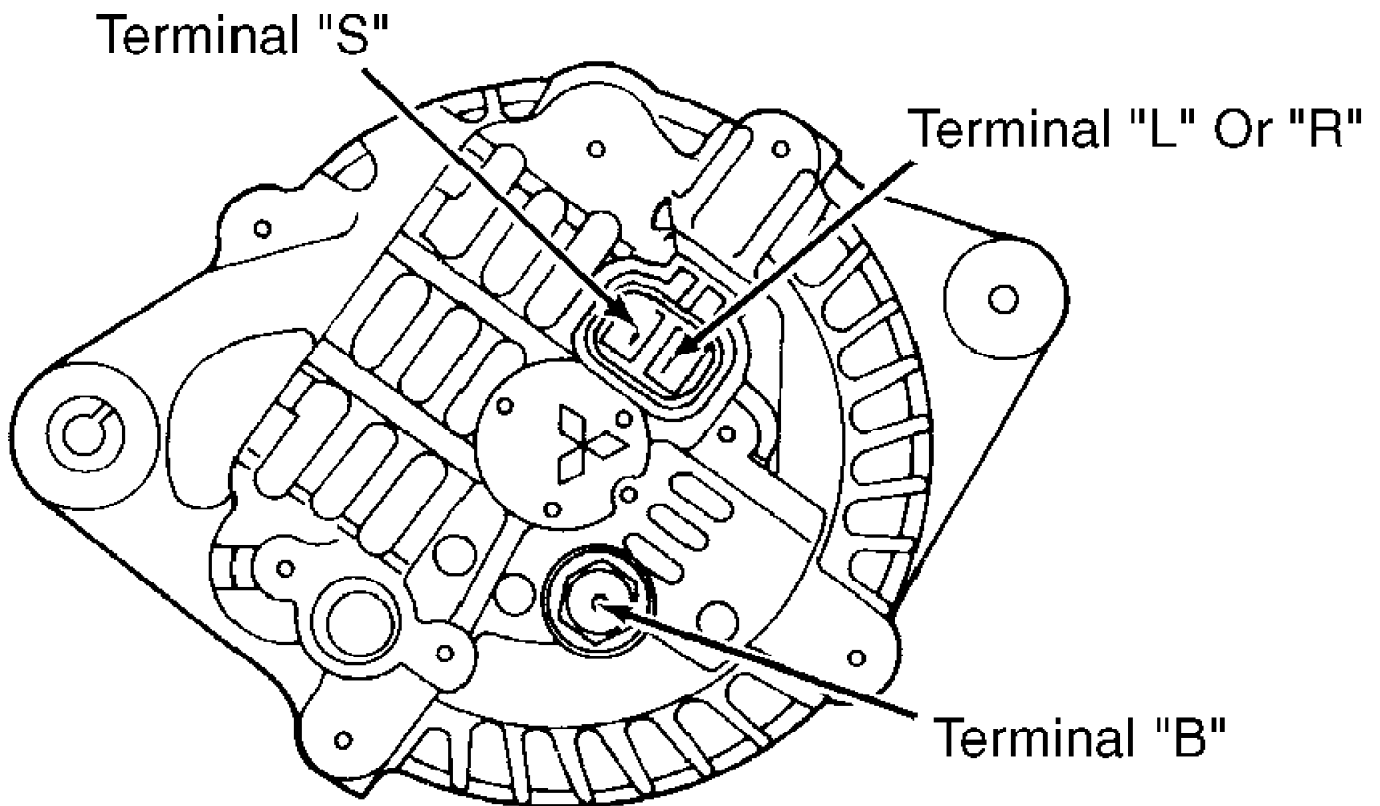
NOTE: See TROUBLE SHOOTING - BASIC PROCEDURES article in the GENERAL INFORMATION Section.

ON-VEHICLE TESTING

ALTERNATOR TO BATTERY CONTINUITY TEST

NOTE: Check alternator wiring harness connections and drive belt tension and ensure battery is fully charged before performing test.

1) Turn ignition switch to OFF position. Disconnect negative battery cable. Remove output lead from alternator terminal "B". See Fig. 1. Install a 100-amp ammeter in series with terminal "B" and disconnected output lead. Install positive lead of ammeter to terminal "B" and negative lead to disconnected output wire.



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Fig. 1: Alternator Terminal ID
 Courtesy of Mitsubishi Motor Sales of America.

2) Install a digital voltmeter between alternator terminal "B" and positive battery terminal. Install positive voltmeter lead to terminal "B" and negative lead to positive battery terminal. Reconnect negative battery cable.

3) Start engine. Turn accessories on and adjust engine speed until ammeter indicates 20 amps, and note voltmeter reading. If voltmeter indicates .2 volt or less, system is okay.

4) If voltage is greater than .2 volt, wiring is defective between alternator terminal "B", fusible link and positive battery terminal. Disconnect negative battery cable, and remove test equipment.

ALTERNATOR OUTPUT TEST

NOTE: During alternator output test, a slightly discharged battery should be used as a fully charged battery may not allow full alternator output.

1) Turn ignition switch to OFF position. Disconnect negative battery cable. Disconnect alternator output wire from terminal "B". Install positive lead of 100-amp ammeter to terminal "B" and negative lead to disconnected output lead.

CAUTION: Tighten each connection securely as heavy current flow will exist. DO NOT use clips on ammeter.

2) Connect positive voltmeter lead (0-20 volts) to alternator

terminal "B" and negative lead to ground. Install tachometer, and reconnect negative battery cable.

3) Ensure voltmeter indicates battery voltage. If no voltage exists, an open circuit is present in wire between alternator terminal "B" and negative battery terminal. Check grounds and fusible link.

4) Turn headlights on, and start engine. Set headlights at high beam and heater switch on HIGH. Quickly accelerate engine speed to 2500 RPM and note alternator output current on ammeter. Minimum output should be within specification. See ALTERNATOR MINIMUM OUTPUT SPECIFICATIONS table.

NOTE: Output voltage changes with electrical load and temperature. Ensure proper electrical load is applied while checking output. Nominal output may not be obtained if alternator or ambient temperature is excessive. Allow alternator or temperature to cool, and recheck output. Alternator output is stamped on metal plate attached to alternator case.

5) If minimum output is not obtained and alternator wiring is okay, repair alternator. Disconnect negative battery cable, and remove test equipment.

ALTERNATOR MINIMUM OUTPUT SPECIFICATIONS TABLE

Application	Amps
Montero	52.5

REGULATED VOLTAGE TEST

NOTE: Ensure battery is fully charged and proper drive belt tension exists.

1) Turn ignition switch to OFF position. Disconnect negative battery cable. Connect positive voltmeter lead to terminal "S" of alternator. See Fig. 1. Connect negative voltmeter lead to ground.

2) Disconnect alternator output wire from terminal "B". Install a 100-amp ammeter in series with terminal "B" and disconnected output lead. Install positive lead of ammeter to terminal "B" and negative lead to disconnected output wire. Install a tachometer, and reconnect negative battery cable.

3) Turn ignition switch to ON position and ensure voltmeter indicates battery voltage. If no voltage exists, there is an open in wire between alternator terminal "S" and positive battery terminal or fusible link is blown.

4) Start engine. Ensure all lights and accessories are off. Operate engine at 2500 RPM and read voltmeter when alternator output current drops to 10 amps or less. Voltage regulator is okay if voltage output is within specification. See REGULATOR VOLTAGE SPECIFICATIONS table.

REGULATOR VOLTAGE SPECIFICATIONS TABLE

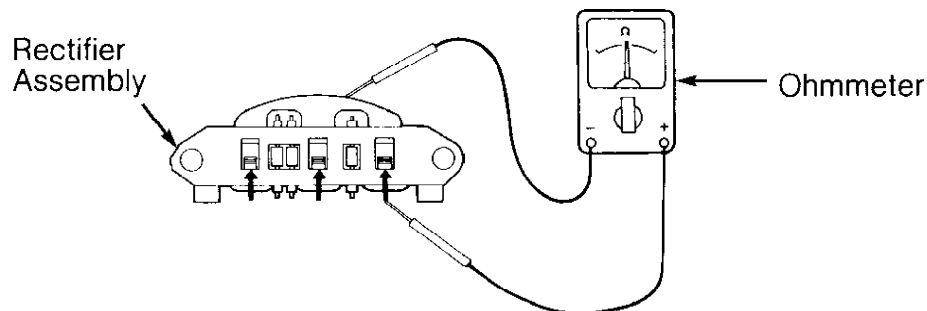
Ambient Temperature	Voltage
-4°F (-20°C)	14.2-15.4
68°F (20°C)	13.9-14.9
140°F (60°C)	13.4-14.6
176°F (80°C)	13.1-14.5

BENCH TESTING

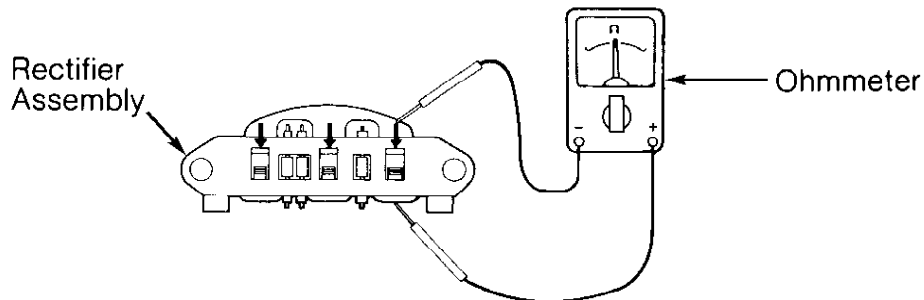
RECTIFIER ASSEMBLY

1) Using ohmmeter, check for continuity between diodes and stator coil lead connection. See Fig. 2. Reverse leads. If continuity exists in both directions, diode is shorted. Replace rectifier assembly.

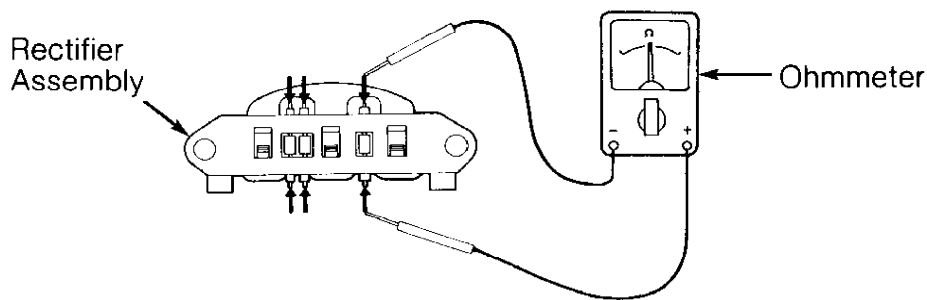
2) To check entire diode assembly, use an ohmmeter to check for continuity between both ends of each diode. See Fig. 2. Switch ohmmeter leads. Continuity should exist in one direction only. If no continuity exists or continuity exists in both directions, diode is defective. Replace rectifier assembly.



TESTING POSITIVE DIODES



TESTING NEGATIVE DIODES



TESTING DIODE ASSEMBLY

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Fig. 2: Testing Rectifier Assembly
Courtesy of Mitsubishi Motor Sales of America.

ROTOR

1) Check continuity across rotor slip rings. Resistance should be 3-5 ohms. Replace rotor if no continuity exists or resistance is not within specification.

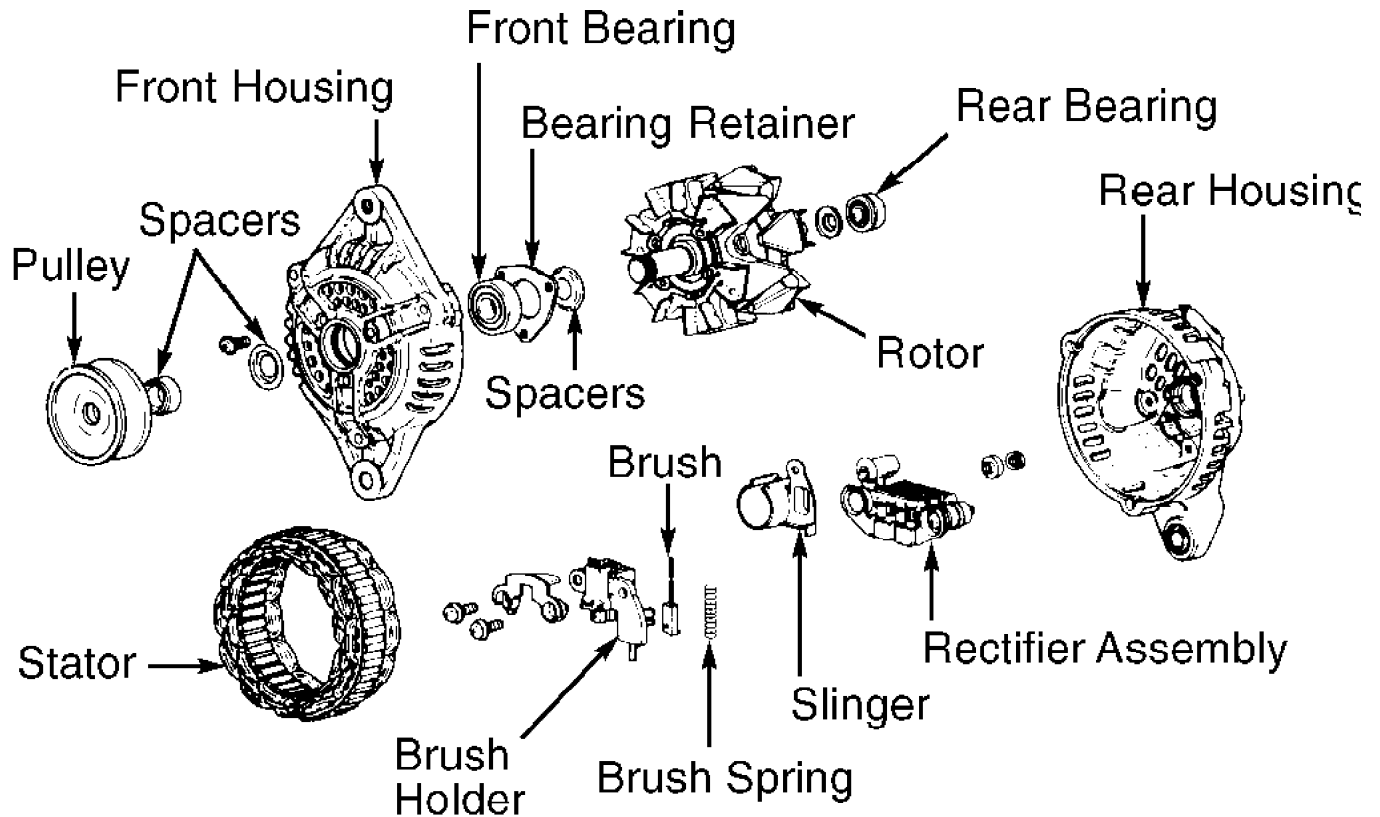
2) Check continuity between individual slip rings and rotor shaft. If continuity exists, rotor coil or slip ring is grounded. Replace rotor.

STATOR

Ensure no continuity exists between stator coil leads and stator core. Check continuity between leads of stator coil. If no continuity exists between coil leads, replace stator.

OVERHAUL

Replace brushes if worn to limit line. Limit line is line closest to rotor contact end of brush. Brushes can be retained in brush holder while installing rotor by inserting wire into back of rear housing. See Fig. 3.



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Fig. 3: Exploded View Of Typical Mitsubishi Alternator
Courtesy of Mitsubishi Motor Sales of America.

WIRING DIAGRAMS

See appropriate WIRING DIAGRAM in the WIRING DIAGRAMS Section.

