REGOLATORE ESTERNO

VOLTAGE REGULATOR TEST

When you have inspected and repaired any wires and connections, inspected belts and replace as needed, and after you have determined that your batteries are properly charged, set your voltmeter to 12V and connect the voltmeter's negative lead to the BLACK ground wire at the regulator. Normally, connection is accomplished by inserting the negative lead alongside the ground wire in the regulator harness plug (see Figure 31) and the positive lead alongside the wire referred to in each specific test. With the voltmeter securely connected to the regulator's ground, test for voltage at the points listed below.

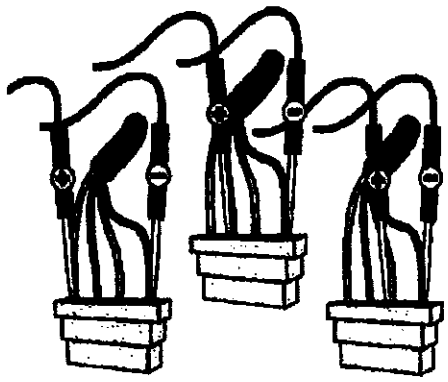

Figure 31 - *Testing voltage at regulator.*

1. With the ignition in the OFF position and your voltmeter's ground wire connected to the regulator's ground, check for voltage on the red (sensing), blue (field) and brown (ignition) wires in the regulator plug by inserting the positive lead of the voltmeter alongside each wire in the regulator harness plug. The voltmeter should read:

IL ROSSO E' COLLEGATO AL +

IL MARRONE E' COLLEGATO AL CAMPO

IL BLU E' COLLEGATO AL + SOTTOCHIAVE

	Red Wire	Brown Wire	Blue Wire
Expected Reading	12 V *	0 V	0 V
Your Reading			

2. With the ignition in the ON position (engine not running) and your voltmeter's ground wire connected to the regulator's ground, check for voltage on the red (sensing), blue (field) and brown (ignition) wires in the regulator plug. The voltmeter should read:

	Red Wire	Brown Wire	Blue Wire
Expected Reading	12 V *	12 V	7 - 12 V
Your Reading			

3. With the ignition in the ON position (with engine running at 1,400 rpm fast idle) and your voltmeter's ground wire connected to the regulator's BLACK wire, check for voltage on the red (sensing), blue (field) and brown (ignition) wires in the regulator plug. The voltmeter should read:

	Red Wire	Brown Wire	Blue Wire
Expected Reading	12 - 14V**	12 V	3 - 11 V
Your Reading			

** 11.5 - 12.8 VDC battery voltage at rest (no charging occurring). If your batteries are isolated and your RED (sensing) wire shows voltages other than those shown above, make sure that the wire is connected on the "battery" side of the isolator. The RED wire must "see" the battery directly.*

*** 13.5 - 14.5 VDC battery voltage when charging.*

If your readings differ substantially from the "Expected Readings" listed in the charts above, the regulator may be malfunctioning, or there may be a continuity problem. Contact our technical support staff at (360) 435-6100. Keep your recorded readings in the spaces provided below the "Expected Readings" so you can share them with the technical support person. If your readings match those listed in the charts, your regulator should be working correctly. Continue with tests below to determine if your alternator may be the source of charging difficulties.If the preceding tests do not prove the existence of a failure within the regulator or alternator, we recommend you contact a licensed marine electrician who can test your system for wiring and circuit damage or other system failures that could be responsible for charging difficulties. If you determine that repair service is necessary for either your alternator or regulator, please gather the following information before contacting our service technicians.

1. Model of alternator.
2. Model of voltage regulator.
3. Voltage readings on red, brown and blue wire at regulator with engine off, key on.
4. Voltage readings on red, brown and blue wire at regulator with engine running at a fast ideal 1400 rpm.

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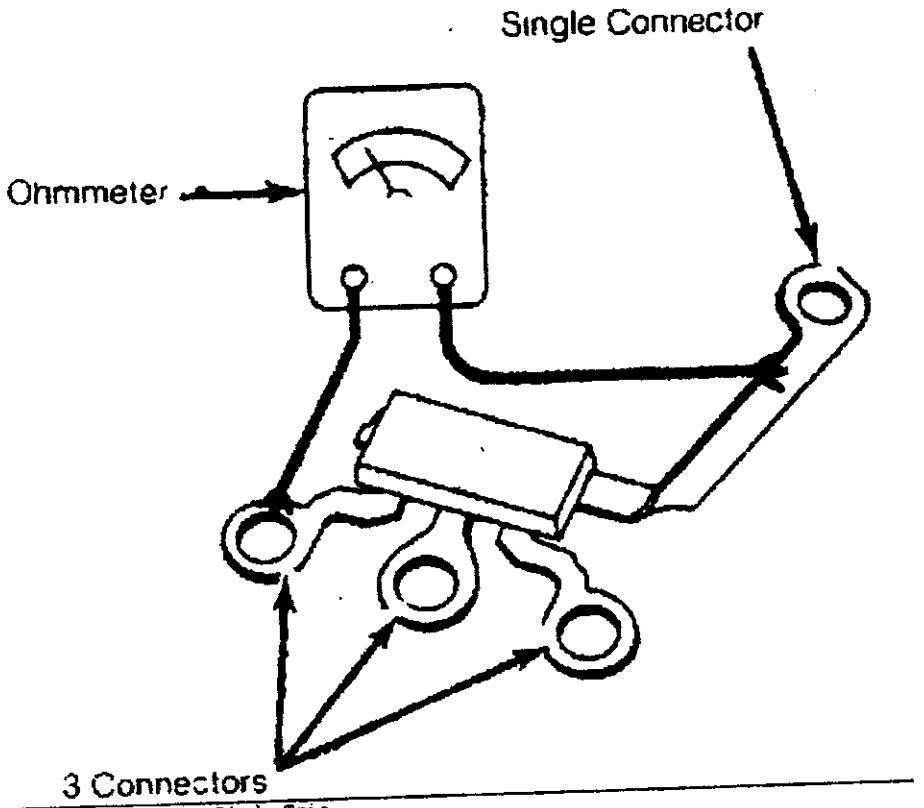


Fig. 4: Bench Testing Diode Trio

Rectifier Bridge Test

1) Position ohmmeter with one lead touching grounded heat sink and the other lead touching flat metal on one of the 3 terminals or threaded studs. Observe reading and reverse test lead connections. See Fig. 5.

2) If both readings are the same, replace rectifier bridge. A good bridge will give a high and low reading. Retest all terminals (6 tests with insulated heat sink).

3) Connect test leads to insulated heat sink and one edge of the 3 terminals. Observe reading and reverse connections. Repeat test on all terminals (6 tests with insulated heat sink).

4) When all 12 tests have been made, testing is complete. DO NOT use high voltage light to check bridge. DO NOT replace diode trio or rectifier bridge unless at least one pair of readings is the same (with leads reversed).

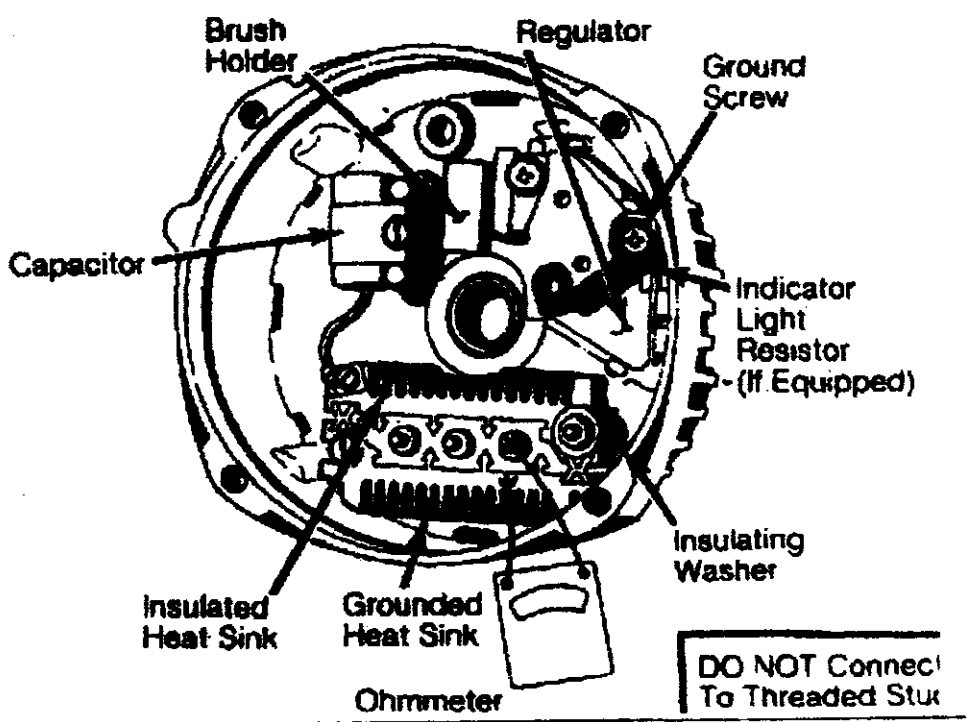
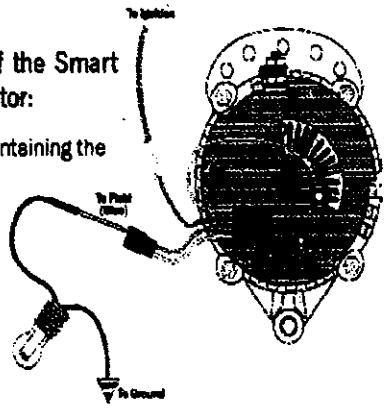


Fig. 5: Bench Testing Rectifier Bridge

Testing Smart Ready® Internally Regulated Alternators

New 6-Series alternators require slightly different diagnosis to determine if the Smart Ready® internal regulator is functioning correctly. To test the internal regulator:



1. Disconnect the external regulator wiring harness from the alternator wiring plug containing the field and stator wires. Turn the ignition switch to the ON position.
2. Contact the positive probe of your test lamp on the FIELD terminal of the wiring plug. Connect the tester's negative probe to ground. If the internal regulator is functioning properly, the test light will illuminate.
3. If testing the operation of the internal regulator with a multi-meter, adjust the meter to read 12V DC before placing probes at the field terminal and ground. If the regulator is working correctly, the meter will show approximately 3V DC.