



Heavy Duty Alternator Charging System Troubleshooting



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Alternator Charging System Troubleshooting

Squealing noises under the hood?

Headlight bulbs blow out repeatedly or dim?

Is the dash voltmeter gauge out of range - either too high or too low?

These are common indicators that something may be wrong with the charging system. If any of these symptoms are evident, then follow these five steps to pinpoint the issue.

Helpful Hint:

If you find something wrong at any step, it's wise to complete the remaining steps anyway to ensure you've given the charging system a thorough review.

Visit <http://tinyurl.com/delcoremyvideos> to watch our Tech Tip videos

1

**Perform
Visual Inspection**



2

**Inspect Battery
Battery Voltage Test
Battery Load Test**



3

**Measure
Voltage at Battery**



4

**Test
Alternator Output**



5

**Troubleshoot per
Service Manual**

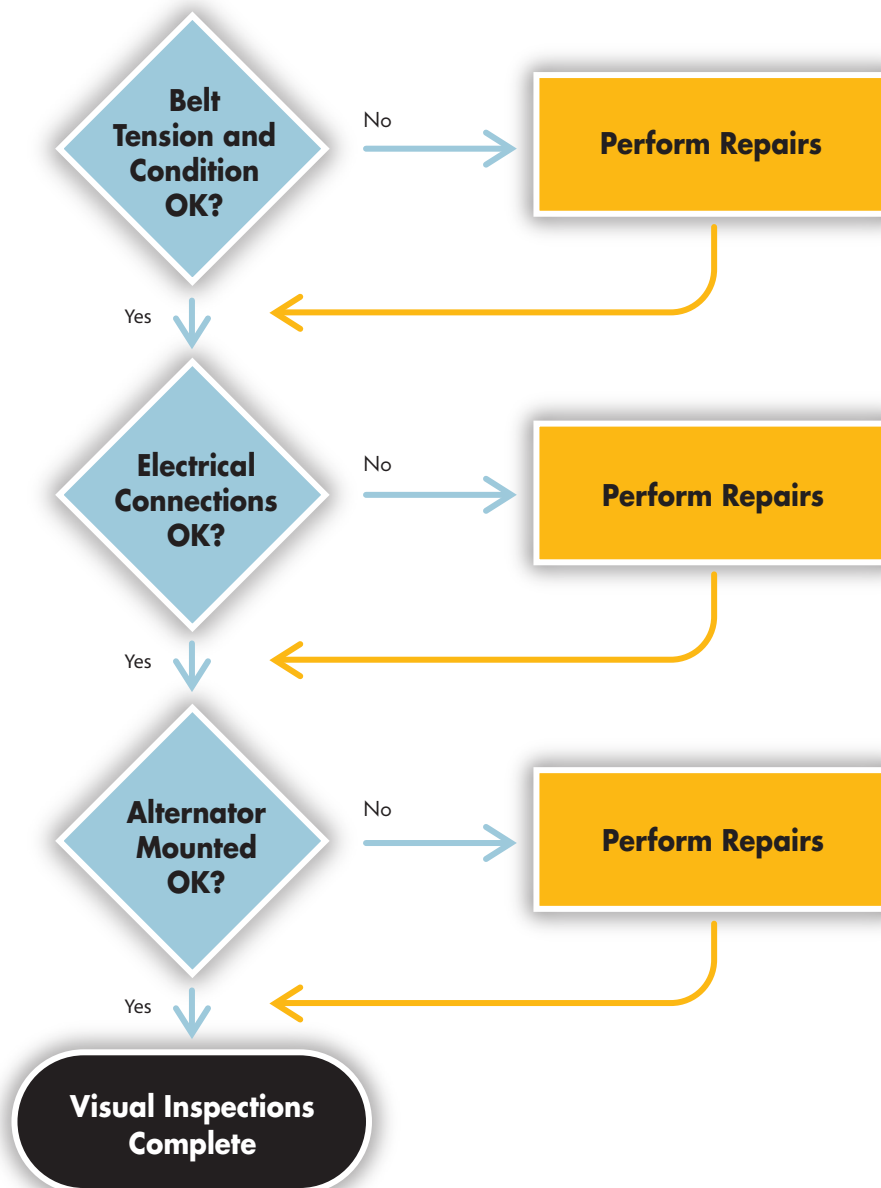


**Troubleshooting
Complete**

1 Perform Visual Inspection

Perform a visual inspection under the hood

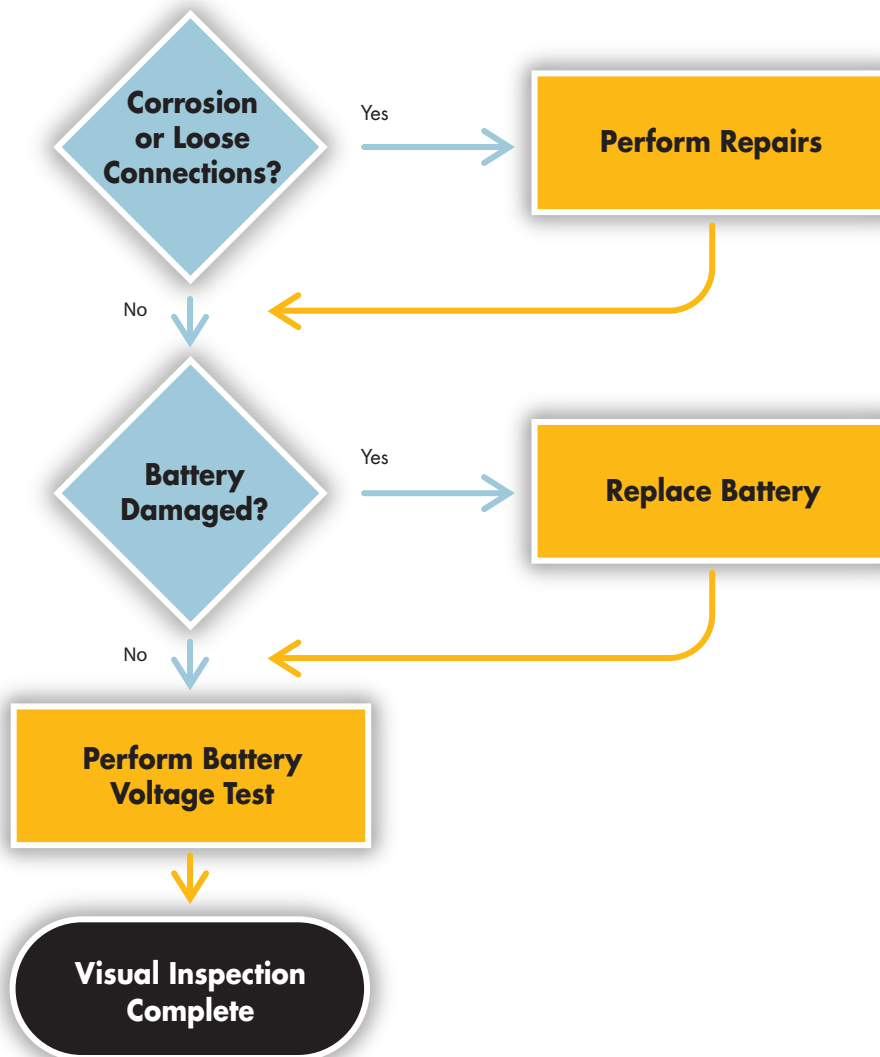
Look at the belt tension and condition. Next, check electrical connections and cables for corrosion and proper tightness. Finally, make sure the alternator is mounted properly.



2.A Inspect Batteries

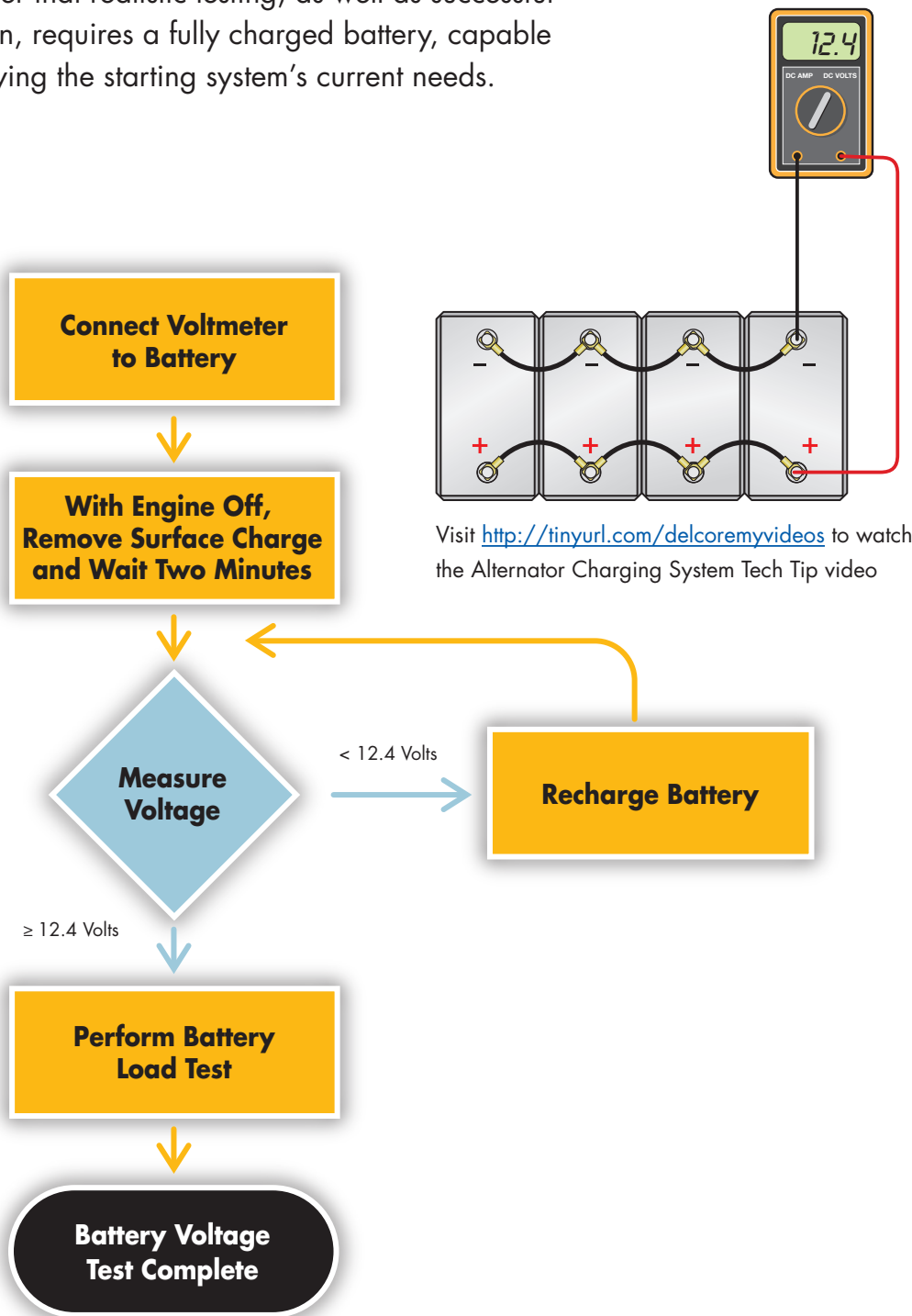
Visually inspect and test the batteries

Inspect the batteries for any signs of physical damage, cracks in the casing, loose terminals or leaking fluid. Clean, repair connection and replace any damaged batteries found. Ensure that all batteries used in the same circuit are of the same manufacturer, CCA rating type and age. Then test the batteries using a standard battery test. Remember that realistic testing, as well as successful operation, requires a fully charged battery, capable of supplying the starting system's current needs.



2.B Battery Voltage Test

Test the batteries using a standard battery test. Remember that realistic testing, as well as successful operation, requires a fully charged battery, capable of supplying the starting system's current needs.



2.C Battery Load Test

Connect Carbon Pile and Voltmeter to Battery



Adjust Carbon Pile to One-half the Cold Cranking Amp Rating for 15 Seconds



< Minimum Loaded Voltage



Replace Battery

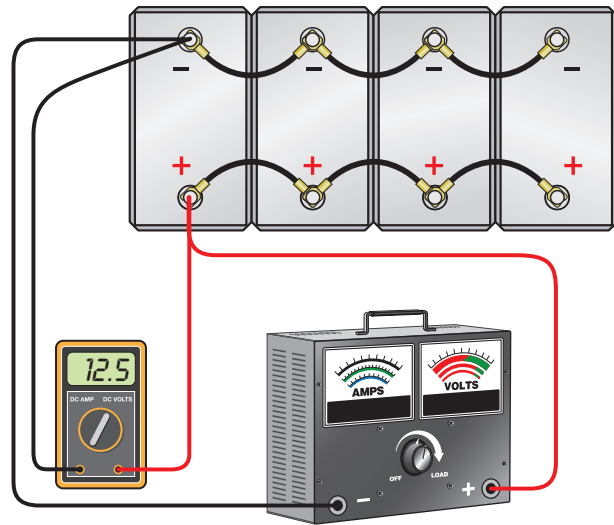
≥ Minimum Loaded Voltage



Battery Passes



Battery Load Test Complete



Visit <http://tinyurl.com/delcoremyvideos> to watch the Alternator Charging System Tech Tip video

3.A Measure Voltage at Battery

Fig 1. With the engine running, use a voltmeter to measure voltage at the battery. If voltage is greater than or equal to 13.8 volts, you can move on to Step 4.

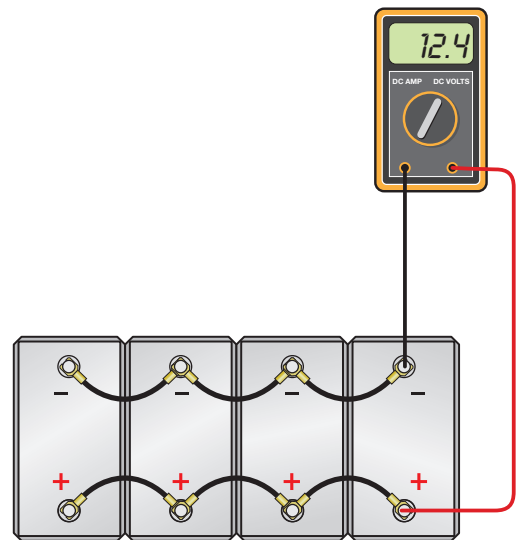


Fig 1

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Fig 2. However, if it is less than 13.8 volts, then you should measure voltage at Alternator B+ and the alternator case. (Note: If the model is insulated, you have to use a ground stud to get a reading.)

At that point, if the voltage falls between 12.6 and 13.7 volts, you need to replace your alternator. If it's greater than or equal to 13.8 volts, a voltage drop test needs to be performed.

Learn how to perform a voltage drop test by visiting our YouTube page and watching our *Tech Tip - Voltage Drop Test* video.

Link: tinyurl.com/delcoremyvideos.

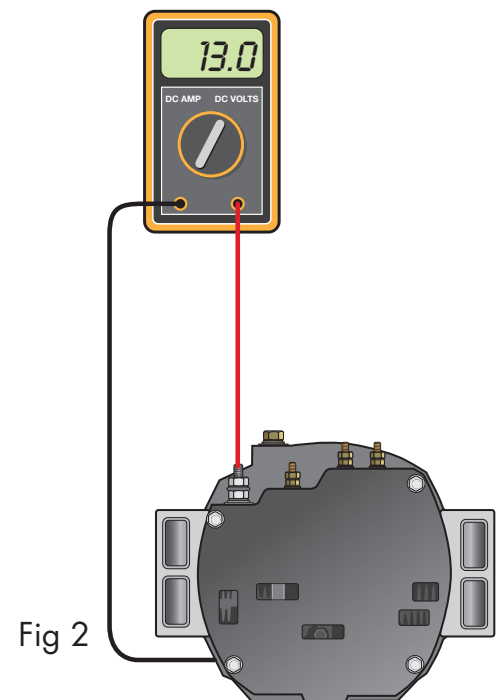
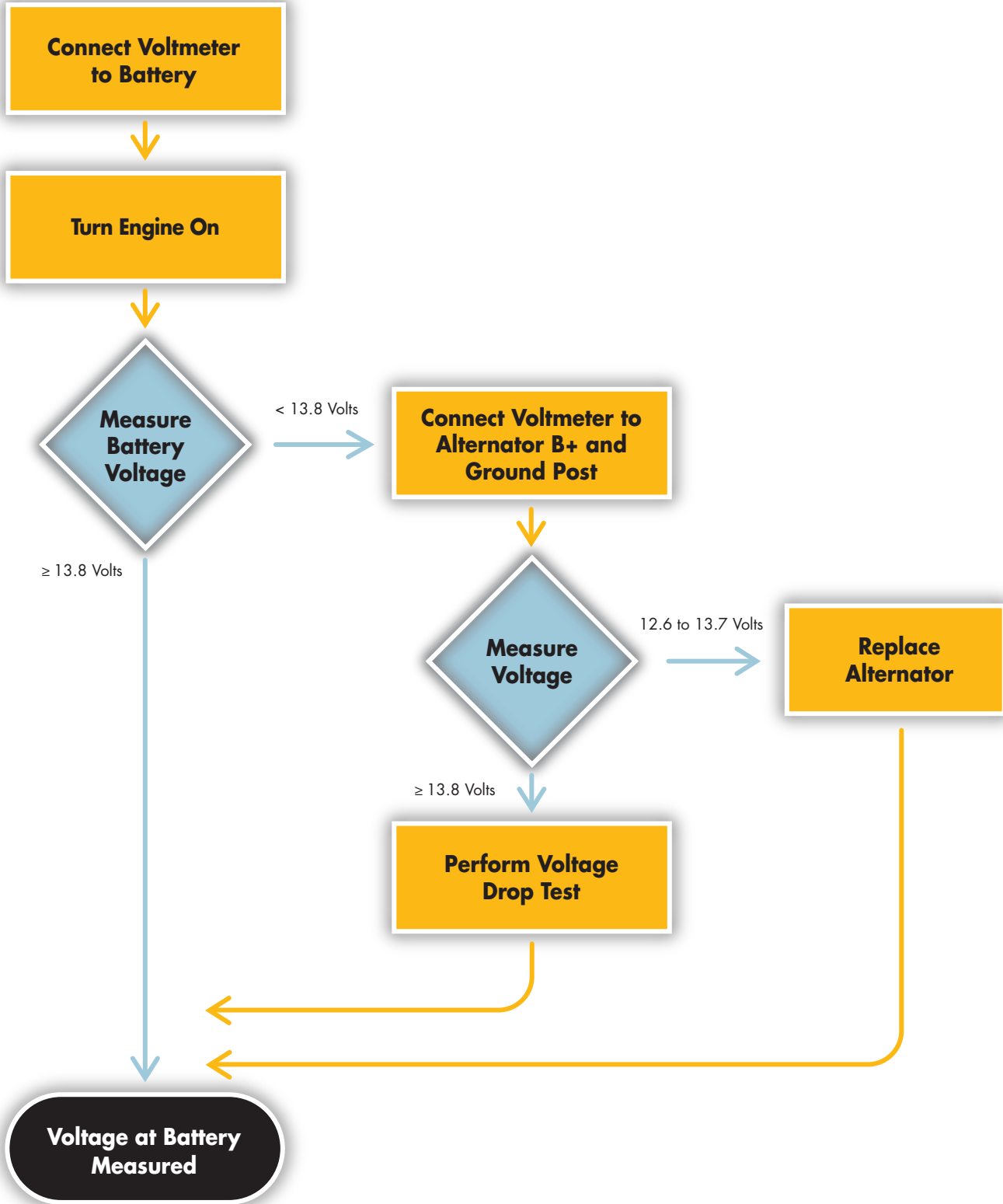


Fig 2

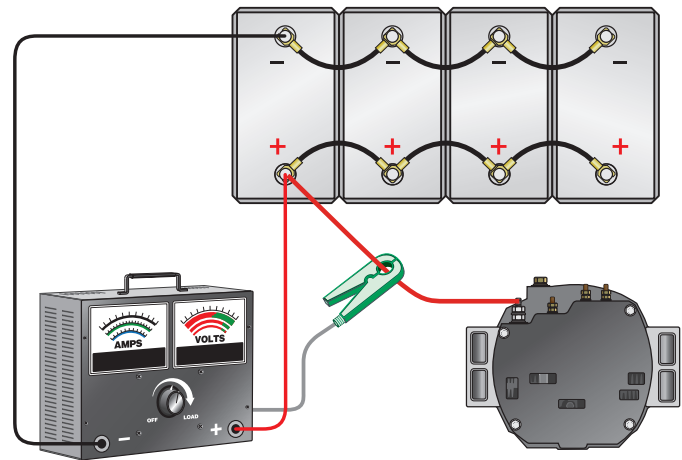
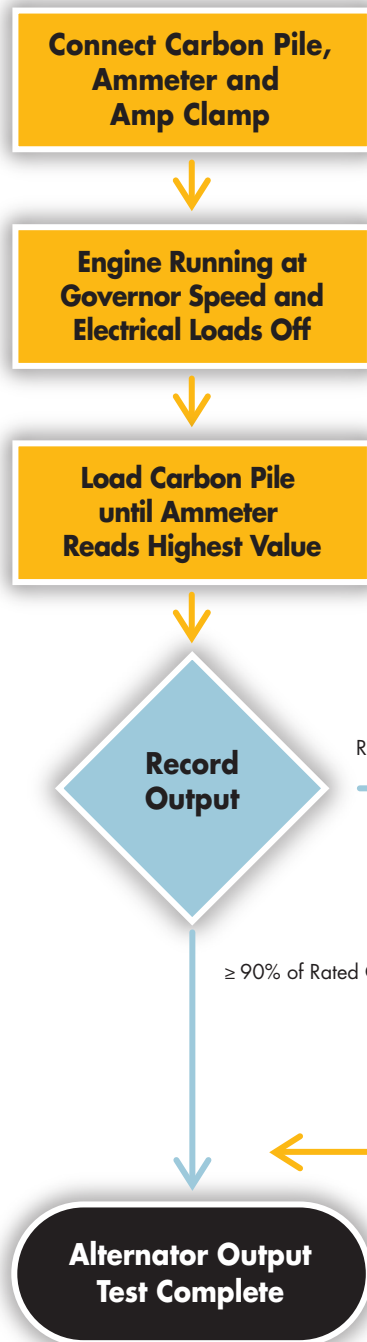
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3.B Measure Voltage at Battery



4 Test Alternator Output

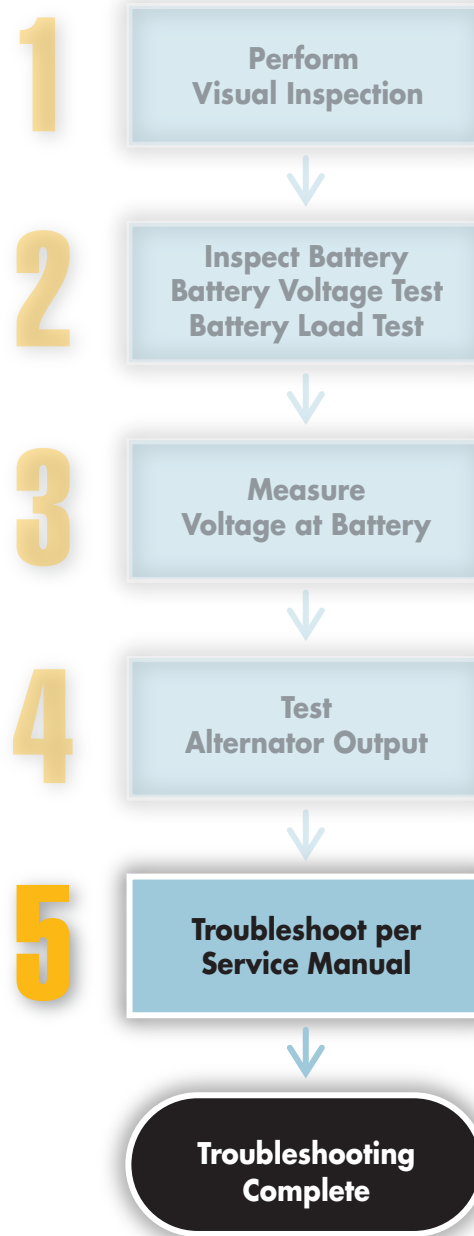
You can use either an automated tester or a manual process to determine the output of the alternator. If the alternator doesn't pass this test, then it needs to be replaced.



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5 Troubleshoot Using the Service Manual

If you've passed through the first four steps, then the alternator is working as designed and your problem is likely caused by something external to the alternator.



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