

TROUBLESHOOTING: THE ALTERNATOR CHARGING SYSTEM – A TECHNICAL TIP FROM REMY AUTOMOTIVE

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Whenever I am asked to contribute helpful technical tips for the readers of CVW, I always try to relate these to the actual feedback that we get from our customers in the UK market. For this issue I want to look at typical problems with the HD alternator charging system.

There are three typical indications that you have a problem in this area:

- Squeaking noises under the bonnet
- Headlight bulbs that blow out repeatedly or dim
- The dash voltmeter gauge is 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, I would propose that you follow these five important steps to pinpoint the issue:

- Perform a visual inspection under the bonnet

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

- 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 and repair the connection and replace any damaged batteries found. Ensure that all batteries used in the same circuit are from 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.

- Measure the system voltage

With the engine running, use a voltmeter to measure the voltage at the battery. If the voltage is greater than or equal to 13.8 volts, you can move on to Step 4. 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 is greater than or equal to 13.8 volts, a voltage drop test needs to be performed. You can learn how to perform a voltage drop test by visiting Remy's YouTube page online.

- Test alternator output

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

- **Troubleshoot using the service manual**

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

- **A final helpful hint**

If you find something wrong at any step, it is still wise to complete the remaining steps anyway to ensure that you have given the alternator charging system a thorough review.

To conclude this article I thought that it would be helpful to cover some common issues with HD alternators.

- **Loose belt or tensioner**

When a pulley has heat discoloration - distinctly blue - and the alternator rotates freely, look for a loose belt or defective tensioners, which should be replaced as needed.

- **Environmental**

Inspect for unusual environmental conditions, such as corrosion, dirt, oil or other contamination. If the bridge or access holes are plugged, then the alternator is not cooling properly, which could result in overheating and premature failure.

- **Improper installation**

Hand tighten mounting bolts before applying torque. This helps eliminate binding and unwanted stress on the housing, which can break mounting flanges. Excessive torque can also cause this failure mode.

- **Loose Pulley**

Inspect for evidence of a loose pulley, wear on the fan hub clamping surface or bearing race. Radial wear on a rotor shaft also may be visible. A lot of HD alternators are supplied without pulley. As a result the old pulley has to be put on the new alternator. Fixing the pulley properly on the new alternator is essential to avoid warranty issues.

The enhanced efficiency ratings of the high output alternators provide fleets measurable fuel savings. Delco Remy high output alternators feature a durable brushless design. Brushless alternators have fewer moving parts. Fewer moving parts mean less wear on the alternator and a much longer life.