

Ample Power Company



Getting Troubleshooting Assistance

Introduction

Any failure is disconcerting, particularly when there has been no warning signs. And when the failure is electrical, finding a cure isn't easy. Troubleshooting support may be necessary. By preparing to help the support team, you'll be helping yourself get a solution promptly. Here's how to do that.

Get Prepared

Until you've followed the steps outlined below, asking for help will generally be wasted time. Before technicians can diagnose a problem, they need information about the problem. That information has to be detailed . . . simply failing to work is not sufficient information to troubleshoot a system.

Before proceeding, be sure to read other application notes from Ample Power regarding electrical system and alternator troubleshooting. Troubleshooting Electrical Systems and Troubleshooting the Alternator System are two such articles.

Describe the Circumstances

Write down the circumstances leading to the discovery that a problem exists. Make it as clear as possible. If you're not charging, and you just installed a new alternator, suspecting the regulator has gone bad may not be the best decision. Wiring errors, or compatibility issues between the alternator and regulator are prime suspects.

When reporting failures on smart regulators which have an error indicator that flashes codes to identify problems, be sure to precisely measure the on and off times. Undue confusion results when error codes are not reported correctly.

Measure Everything!

Voltage and current readings are the vital signs of the electrical system. Without those signs, even the best of technicians can't troubleshoot the electrical system.

While you're measuring, be sure not to disturb normal wiring. We know of one instance where readings were taken by the user who meticulously removed each wire from the terminal block and then measured the potential on it before re-connecting it. Needless to say, the technicians scratched their heads a long time trying to figure out how the readings could be so crazy.

When you suspect that an alternator regulator may be at fault, measure all the regulator terminals with the ignition switch off, and again with the ignition switch on. In the latter case, the engine doesn't need to be running. Unless directed otherwise, all measurements should be taken relative to ground. That is, connect the negative voltmeter lead to system negative. Connect the positive lead to each of the terminals to be measured.

Full Field the Alternator

An alternator can be tested quite easily by full fielding it. This means to activate the field with full battery voltage and check for high alternator output. The full field test should only be done momentarily since overcharge will occur otherwise.

To full field a P-type alternator, (most hot rated alternators are P-type), disconnect the wire connecting the field terminal to the regulator. Now connect the alternator field wire briefly to battery voltage. Expect to get a spark or two. You should be able to hear the engine *load down* as the alternator starts charging.

Now Ask for Support

Armed with a good description of the failure, including error codes, all terminal measurements with and without the ignition switch on, and the results of the full field test, you are ready to ask for assistance. A troubleshooting bulletin board is the best place to ask for support.