

## HOW NOT TO TEST AN ALTERNATOR

Recently I had the opportunity to attempt a repair on a home appliance. Unfortunately, I was unsure of the correct trouble shooting procedures. A quick search on the internet seemed to return many contradicting opinions of what to do and more importantly what not to do.

This got me to thinking about what is posted in online “help” forums related to testing alternators. A quick search returned numerous results, some good and some awful. One suggestion was the old school belief that in order to test an alternator all one has to do is disconnect the battery with the engine running. The theory is that if the vehicle quits running, you have a bad alternator. Certainly, some of the worst advice one could give or receive.

Let’s first explore what could happen on older model vehicles, those built before the days of computer controlled cars. The voltage regulator, which controls the alternator output, senses battery voltage and “tells” the alternator to charge. If the battery is removed from the circuit the voltage regulator will basically tell the alternator to charge all that it is capable of, many times resulting in alternator damage. Depending on the alternators RPM, the voltage can easily exceed 50 or 60 volts. At that voltage, any electrical devices that are in the “on” position will likely be damaged.

Now, let’s jump forward to today’s computer controlled vehicles. If 50 to 60 volts were to be applied to the circuit, the circuits in newer vehicles would also likely be fried. Fortunately, most newer vehicles (but not all) are redundantly protected by secondary regulation and Zener blocking technology. Zener blocking technology is basically just a way to block high voltages from damaging the vehicle’s electronics. Secondary regulation is a second voltage set point used by the regulator to shut the alternator down if it detects high voltage output. Once the voltage rises above this set point, it is possible that the vehicle will quit running, even though the alternator is good. If the vehicle is not protected, the likely result will be damage to very expensive computers and other components.

As for that appliance, I went to the local appliance parts center and obtained the proper troubleshooting advice. The repair center made a parts sell and my wife is now happily using the dryer again. Well... as happy as a wife can be while doing the laundry I guess.