



TECHNICAL SERVICE BULLETIN

PARTS & SERVICE DEPARTMENT

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TO: Manufacturers' Representatives, District Sales Managers, Regional Managers, Technical & Customer Service Personnel, Service Agents & Marketing Personnel

SUBJECT: Polarity Sensitivity in Regards to Turbo Charger, Efficiency Plus, & Energy Rite Systems

Reverse polarity? So what really happens when polarity is reversed on a EWN, TNR or EP. Typically a unit will fire and maybe even run, but intermittent problem are likely to occur. All three of these units use a hot surface ignition system which is dependent upon flame rectification. The Turbo Charger and the Energy Rite both use an igniter that is accompanied by a flame rod. The Efficiency Plus uses the PLT3400 igniter, which is the igniter/flame rectifier combination.

The basics of the flame rectication process are pretty simple. After the ignition module goes through the ignition sequence it sends an AC signal to the flame rod. Due to a de-ionization process that occurs when the flame contacts the flame rod, a small DC micro-amp current is produced. This current is what the module looks for to prove the flame. Typically the signal will need to be a minimum of a .5 micro amp for the module not to lock out.

So what does polarity have to do with this? When polarity is reversed on the unit the flame rectification process is altered. Now that the power leads are switched voltage is being "pushed" through the chassis instead of "collected" by the chassis. This reverses the de-ionization process, causing the DC micro amp signal to be too high. The ignition module receives this high micro amp signal and locks out because it senses a short.

This same principle applies to all hot surface ignition systems. So the next time you troubleshoot a unit that has locked out due to flame failure, don't forget about the possibility of reversed polarity.