

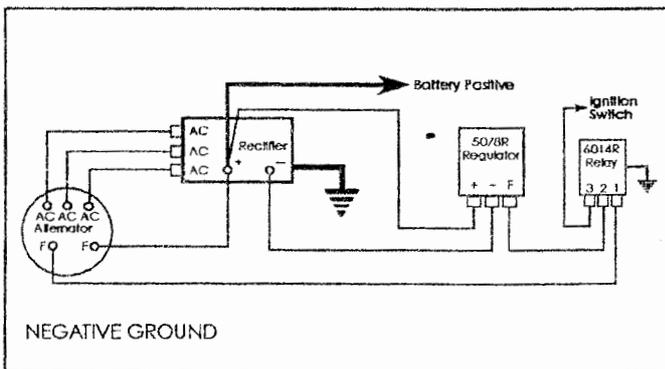
Description

Leece-Neville produces externally rectified alternators in different amperages and mounting configurations. These systems consist of an alternator, external rectifier, regulator, and a relay. The alternator produces alternating current (AC) that is carried via three cables to the external rectifier where it is rectified into direct current (DC) for battery charging and vehicle loads.

Troubleshooting

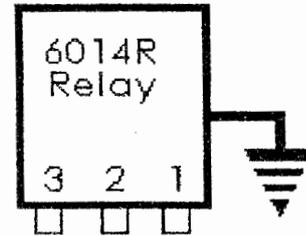
All troubleshooting begins with the basics. Before attempting troubleshooting on this, or any charging system, make sure the battery(ies) are fully charged. **Throughout these procedures observe good safety practices concerning working with high amperage systems and rotating machinery.**

1. Check belt for proper tension and inspect for wear. Replace belts if they are worn.
2. Check all wiring connections to each component to insure that terminals are clean and properly fastened.



Checking the Relay

The relay (part # 6014R) is used as an electromechanical switch to interrupt the field circuit. It is a normally open switch between terminals #2 and #1. Terminal #3 acts as the pull in coil when activated with the key switch to connect terminals #2 and #1, allowing the field circuit to be completed to the alternator.



A. Key Off Voltage Checks

Terminal #3 - No voltage (if voltage is present, key is on or key switch is defective)

Terminal #2 - Approximately 0-2 volts.

Terminal #1 - Battery voltage (if voltage is 0-2 volts, but no voltage on terminal #3, relay is defective, stuck closed, or there is a bad connection recheck all wiring connections).

B. Key Off Continuity Tests (with ohmmeter)

Terminal #3 to Ground - Should show continuity. If ohmmeter shows no continuity coil is defective or relay does not have proper ground. **IMPORTANT:** The 6014R relay uses its case as ground, before condemning relay insure that it is mounted to a clean, grounded metal surface that is free of paint in the mounting screw locations.

Terminal #2 to Terminal #1 - Should show no continuity (open) with wiring disconnected to each terminal. If continuity is present and no voltage present on terminal #3, relay is stuck closed.

C. Key On Voltage Test

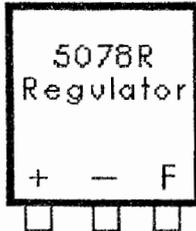
Terminal #3 - Should show ignition voltage. If no voltage is present with key on repair wiring from key switch or repair/replace key switch.

Terminal #2 - Should read approximately 0-2 volts.

Terminal #1 - Should read approximately the same voltage as terminal #2. If battery voltage is present then relay is defective, not grounded, etc.

Checking the Regulator

The regulator (part #5078R) is used to regulate the system voltage by energizing the field coil in the rotor to produce a magnetic field, thereby inducing current in the stator. The 5078R completes the circuit in the field coil by means of grounding the rotor through the regulator ("A" circuit).



A. Key On Voltage Checks

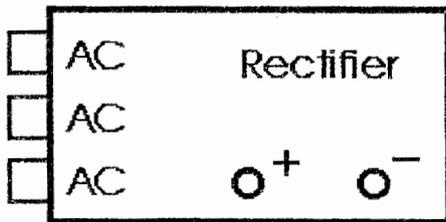
Terminal marked + (positive) - should read approximately battery voltage. If no voltage is present check wire from positive of rectifier or battery.

Terminal marked - (negative) - Check with ohmmeter for continuity to ground. If no continuity is present repair wire to negative of rectifier or ground of battery(ies).

Terminal marked F (field) - should read approximately 0-2 volts.

Checking the Rectifier

The rectifier (part #1111CA or 1112CA) is a solid state device for converting alternating current (AC) into direct current (DC) for maintaining the battery state of charge and supplying DC current for vehicle loads. This is accomplished by means of a series of diodes connected between the three AC inputs and the two DC outputs.



- A. Disconnect ground(s) at battery(ies). After disconnecting ground(s) disconnect the positive cable and all three AC cables. With an ohmmeter, or your meter set on a diode check function, connect the positive lead of the meter to the positive DC connection on the rectifier. Take the negative lead of the meter and touch each AC connection on rectifier (one at a time) and observe reading. Reverse the

meter leads so that the negative lead of the meter is now connected to the positive DC connection of the rectifier. With the positive lead of the meter touch each AC connection (one at a time) with the meter lead and observe the readings. Compare the readings. In one direction you should read high resistance or open. In the opposite direction you should read low resistance or continuity. This shows that the diodes are performing their blocking and passing function properly. Any reading that shows high resistance (open) or low resistance (continuity) in both directions should be considered a defective rectifier. Repair or replace.

Repeat this test on the rectifier negative side also.

System Test

After completing all of the tests you are now ready to perform the on-vehicle system test. For this test you will need to have the key on and engine running. **WORK SAFELY! Do not have radio, quartz or halogen lights, or other sensitive electronics on!** Check to make sure voltage is present at F+ (positive) terminal of alternator. If OK remove wire on #1 terminal of relay and touch to a known good ground while observing voltmeter. You should notice an immediate and rapid climb of system voltage. If the voltage does not increase during this test the problem is in the alternator and it must be removed or repaired. If the voltage did increase, but you have experienced low output complaints, proceed to the next test.

Low Output Test

This test assumes that you have performed Steps 1 through 6, and that you did see an increase in system voltage during Test #6, but have experienced low output complaints. For this test you will need the key on, engine running, and a small load (such as the headlights). With the voltmeter set on an AC voltage setting check from each AC terminal on the back of the alternator to ground. The readings should be 6 or 7 volts AC (approximately one half the output voltage) and close to each other. If the readings are lower, or not balanced, it indicates a possible weak phase or phases in the stator in which case the alternator must be repaired or replaced.