Technical Note

Link 2000

512-0082-01-01 Rev 1

Converting “N” Field Alternator to “P” Field External Regulation

Overview

This Technical Note provides procedures for converting an internally regulated or “N” field alternator to “P” field external regulation.

CAUTION—Xantrex Technology Inc. is not responsible for any damage due to improperly modified alternators!

Converting N field alternators to P field alternators

These instructions are for converting internally regulated or "N" field alternators into the "P" field externally regulated type allowing them to be regulated by external regulators such as the Link 2000R, Link 200R and Incharge. Please note that modification must also include removing the diode trio in addition to the modifications listed below. For this reason, it is recommended that alternator modifications be performed by a qualified alternator mechanic with the customer specifically pointing out the need to disconnect the diode trio.

CAUTION— If the diode trio is not disconnected, extremely high DC voltages can occur which can damage other electrical equipment!

To convert the alternator:

1. Make a reference mark on the case front and back halves. This reference mark is to ensure that the alternator is reassembled with the case halves oriented the way they were before disassembly.
2. Remove the four long bolts that hold the case halves together. Gently tap and pry the front and back case halves apart. The pulley, shaft and rotor will come away as a unit with the front housing. The laminated steel core and stator windings stay with the back case half.

   At this point, the spring-loaded brushes should have popped out of the brush holder.

   There is a hole in the back of the rear housing situated so that you can insert a toothpick or piece of wire to hold the brushes compressed in the holder during re-assembly. Use this process later during re-assembly.

   The goal of this next operation is to end up with one brush directly connected to ground and the other brush connected only to a wire that will be routed outside of the alternator case.

3. First the negative brush: With an ohmmeter or continuity tester, check to see if one brush is already in direct connection with ground. On most alternators, the case is the ground. Others will have a ground stud isolated from the case. In both situations the resistance between the brush and ground should be very near zero. If neither brush is grounded, select one of the brushes and solder a jumper wire onto the brush lead and connect the jumper to ground.
4. Disconnect the other brush from whatever it is presently connected to, and soldered it to a length of wire. This wire should be labeled "Field" or "F", and routed outside of the alternator case.

   Pay special attention to maintaining insulation and clearance from wires rubbing on moving parts. Use a tie-wrap to secure the "F" wire where it exits in the alternator case.

   This is a good time to buff the tarnish off the slip rings where the brushes ride.
5. Re-assemble the brushes in the holder, spring first, brush on top, ensuring the brushes can slide freely in their slots.
6. Now use the toothpick or piece of wire to hold the rear most brush while loading the other brush and spring. Advance the toothpick or wire to hold down the last brush and spring.
7. Re-assemble the case front and back halves ensuring the reference marks made in Step 1 are aligned.
8. Insert and firmly fasten the four long case bolts tightening them evenly.
9. Pull out the toothpick. You will hear a click-click as the two brushes snap down on the slip rings.

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Part number: 512-0082-01-01 Rev 1

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