

# **INTELI-POWER 9000/9100 TROUBLE SHOOTING GUIDE**

## **General Information:**

The Inteli-power 9000 / 9100 series of power converters are solid state switching converters that provide filtered DC power to operate 12V accessories and charge the coach battery. This system is designed to work with or without a battery. When used with a battery the converter is connected to the battery with no special controls needed to properly charge the battery. When used without a battery the converter will provide up to 60 amps (PD9160) of DC current to operate the 12V accessories. If the converter is loaded above the rated current the unit will "Fold back" the current and voltage to a safe level to prevent overheating of the converter. The loads will then have to be reduced to allow the converter to recover and return to normal operation. The Inteli-power series of converters also have over-temperature protection, if the unit is mounted in a small area and not enough ventilation is provided the converter will "shut down" reducing the output voltage and current to prevent heat damage to the components. Once the unit has cooled the system will resume normal operation. The units also incorporate reverse battery protection to protect the converter should the battery be connected to the converter reverse polarity. When the battery is hooked up reverse the fuse(s) on the output side of the converter will blow, this will not damage the unit in most cases, simply connect the battery correctly and replace the fuse(s) with the same type and rating.

**ATTENTION:** There are NO User Serviceable Parts contained in this unit, opening the unit will void the warranty. See below for more warranty information.

## **PROGRESSIVE DYNAMICS, INC. POWER CONVERTER LIMITED WARRANTY**

- I. **DURATION:** This warranty is given for a period of two years from the original date of purchase, and is valid only within the Continental limits of the United States and Canada.
- II. **COVERAGE:** Progressive Dynamics, Inc. warrants its power converter to be free from defects of material or workmanship under normal use and service.

Any implied warranties of merchantability and fitness for intended use are limited in duration to the two year period as stated above, unless applicable State law provides otherwise.

Provided the procedures in Part IV of this warranty are followed, Progressive Dynamics, Inc. will repair or replace, at its option, any defective part or assembly without charge for parts or labor, at its factory within 60 days of receipt of the product.

- III. **EXCLUSIONS:** This warranty specifically does not apply to:
- a. Any converter which has been repaired or altered in any way by an unauthorized person or service station;
  - b. Damage caused by misuse, negligence, or accident; or any other converter installed in a vehicle used for commercial purposes;
  - c. Any converter which has had the serial number altered, defaced, or removed;
  - d. Any converter which has been connected, installed or adjusted other than in accordance with the instructions furnished by Progressive Dynamics Inc.
  - e. The following consequential damages: loss of use of the product; inconvenience; loss or damage to personal property or loss of revenues; cost of all services performed in removing and re-installing the power converter.

- IV. **WARRANTY CLAIM PROCEDURE:** Upon discovery of any defect, the owner is to notify Progressive Dynamics, Inc., by mail, phone, or FAX, at the address below. Indicate your name and address, the name and model of the converter, the name and model of the unit in which the converter is installed, and a complete description of the claimed defect.

Upon determination that a defect relating to material or workmanship exists, Progressive Dynamics, Inc. will require the owner to ship the converter, postage pre-paid, to its factory for repair.

Progressive Dynamics, Inc. will bear the cost of repair and return shipment.



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## Operation Summary

The output characteristics of these converters is based on a point and slope feedback system. The trickle voltage point is set by an internal reference and the slope is set such that the output voltage remains very flat to 90% of full capacity giving optimum performance.

The output voltage is monitored and maintained by comparing it to the internal reference voltage and generating a difference signal. Operation is such that output current is reduced to the trickle level when the output voltage equals the reference voltage (difference signal is zero). This is a highly stable reference but with all the associated component tolerance, the nominal output voltage is 13.6 volts +/- 3%.

We have very carefully chose 13.6 as our nominal output voltage. The industry as a whole seems to lack any guideline on a nominal charge voltage. We have seen variations in nominal output level of 13.2 to 14.0 volts. We are very aware of problems with excessive gassing of batteries with the old style linear converter set at the higher output levels. Some battery suppliers even require the nominal charge voltage to be at the lower limits to prevent excessive gassing. Because of the output nature of these older style chargers, this may have been necessary. With the Inteli-Power 9000 / 9100 line of switcher converter, the low ripple output allows higher charging voltages without the excess gassing. We have performed numerous tests to that end. This higher nominal output allows quicker charge times and will accomplish a more complete conversion of the lead sulfate ions back to sulfuric acid and water without the worry of excessive gassing.

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This flow chart is intended to assist a technician in trouble shooting the INTELI-POWER 9000 and 9100 series of 12v power converters. When trouble shooting a 9100 series converter with a TCMS interface, remove any accessory plugged into the TCMS interface before performing the following tests.

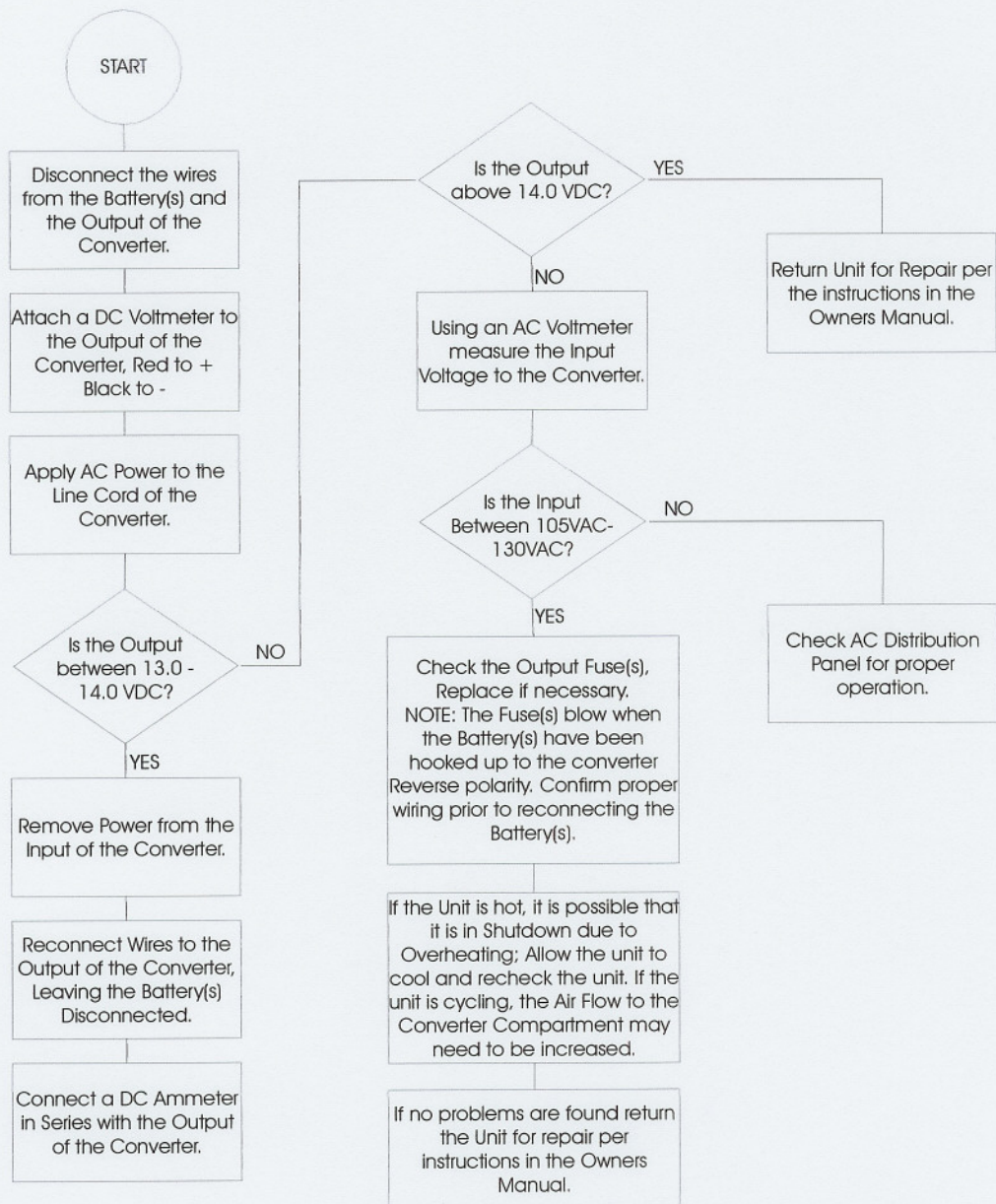
## Required Equipment:

Multimeter capable of measuring 120vac and up to 14vdc

DC Ammeter capable of measuring up to 60ADC

Hex Driver 5/32, Long handle

Straight blade screw driver





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