



MAINTENANCE &  
TROUBLESHOOTING GUIDE

November 2008  
MTGUIDE1108E



**1. UNDERSTANDING HIGH OUTPUT POWER INVERTER CONSUMPTION – INDUSTRIAL USE**

**1.1. DC AMPERAGE CONSUMPTION (12 VOLTS MODELS)**

Watts	Idle	Max Continuous (@11VDC)	Peak (@11VDC)
1000	0.5 A	92.0 A	184.0 A
1200	0.5 A	111.0 A	222.0 A
1500	0.5 A	138.0 A	276.0 A
1800	0.5 A	166.0 A	332.0 A
2000	0.5 A	184.0 A	368.0 A
2500	0.7 A	231.0 A	462.0 A

**1.2. BATTERY REQUIREMENTS FOR 15 MINUTES OF DUTY @ FULL POWER \***

Watts	Starting / Group 31 - 850 CCA	Deep Cycle / 225 AH
1000 - 1500	3 batteries	4 batteries
1800 - 2000	4 batteries	6 batteries
2500	4-6 batteries	6-8 batteries

\* Quality, temperature, state of charge, and age are factors which may decrease the capacity of the batteries.

**1.3. ALTERNATOR REQUIREMENTS**

Watts	Short term / 5 to 10 minutes /hours	Continuous
1000 - 1500	135 amps	180 amps
1800 - 2000	135 amps	240 amps
2500	160 amps	300 amps

**1.4. TRUCK APPROVED E & HD SERIES / LOW INPUT VOLTAGE PROTECTION**

Alarm	Shut down
11.5 volts	11.0 volts

**QUICK FACTS**

- At any given time, a battery should never be used under 11 volts to avoid permanent damages.
- All our **Truck Approved Series** inverters are equipped with an automatic **shut down at 11 volts**.
- Peak power consumption may cause a rapid shut down if the battery voltage drops below 11 volts.
- Inverters may work with fewer batteries, but the autonomy will decrease.
- A higher number of deep cycle batteries is required to obtain the required amperage strength, which will also increase the amount of autonomy in minutes.

**TUNDRA INTERNATIONAL INC.**

2041-A, Leonard-de Vinci, Sainte-Julie (Quebec) Canada J3E 1Z2

Tel : 450.649.2470 / 1.877.964.2582 Fax : 1.888.855.9834



## 2. PREVENTIVE MAINTENANCE

---

In order to ensure the good functioning of an inverter, it is recommended to do the following check-ups at least every three (3) months.

- 2.1. **Cleaning batteries:** The accumulation of dust and greasy substances may cause bad contacts. This accumulation may also reduce the batteries' life cycle due to constant discharge.
- 2.2. **Inverter verification:** Being careful to unplug cables from batteries, verify the solidity of inverter's DC Input connections. Electrical current can loosen the nuts used to secure cables to the inverter and cause a voltage drop. This can even cause destruction of the inputs.  
Be careful and always disconnect cables from batteries first.
- 2.3. **Verify dust accumulation around and inside the inverter:** If such is the case, it is recommended to take off the cover and remove excess dust with a moderate air blast.  
Be careful and always disconnect cables from batteries before removing the cover.
- 2.4. **Cleaning batteries and fuse terminals:** The combination of lead on batteries' poles and the cables terminals' alloy may cause a chemical reaction and the formation of powder in between them. Contrary to traditional "verdigris", this powder usually forms between 6 to 12 months and must be removed. The one and only way to do so is to remove the terminals and clean them with a steel brush.
- 2.5. **Verification of cables:** A good visual inspection is necessary to detect any damages caused to them by road debris or rubbing against other parts.
- 2.6. **An inverter must never be installed:**
  - In a humid or very dusty area
  - In the batteries' compartment
  - Near volatile products
  - Where there is no air circulation
  - Where there can be direct contact with driver



### 3. BASIC VERIFICATION STEPS – REPORTED DEFECTIVE UNIT

---

All our **Truck Approved** Series Inverters are equipped with a low voltage protection at 11 volts. This protection allows vehicle to restart, but requires a high quality installation. It is mandatory to use the right installation material since all derogations may cause the inverter to malfunction, which is why we highly recommend the use of Tundra's CM installation kits. Also, good maintenance (cleaning) of the batteries and cables is essential.

If you have an AC output voltage below 110 volts or over 130 volts, your multimeter is not compatible with a modified sine wave; use a TRUE RMS multimeter.

#### **STEPS**

- 3.1. If the cause is malfunctioning of an appliance, verify its functioning with a different 120 volts source.
- 3.2. Verify if the inverter works using the front panel switch by disconnecting the remote control.
- 3.3. Verify if the material used for installation complies with our installation guide's recommendations.
- 3.4. Verify the state of cables, fuse and connections. Dust accumulation and greasy substances on terminals may lead to a bad connection and cause inverter to malfunction. Once maintenance is completed, restart inverter.
- 3.5. Verify state of charge of batteries doing a load test. This test will allow you to confirm the batteries' capabilities in giving a constant output. If the test is negative, recharge or change the batteries. It is possible that the alternator is not capable of completely recharging the batteries. Some sequential uses may lead to a partial discharge and not enough capacity to use the inverter.

**During use, inverter will fall in Low Voltage Protection (LVP) mode if the batteries' voltage falls under 11 volts, even for a split second.**

**If the batteries' voltage indicated over 13 volts, but the inverter shuts down once a load is applied, it is possible that the batteries capacity may not be enough to support the inverter consumption and maintain at least 11 volts.**

- 3.6. If the inverter works, but you are unable to obtain its full output, the installation may be defective. To be certain, plug-in a lamp of about 100 watts into the inverter and calculate the tension drop by comparing the voltage at the inverter's input terminals to the batteries' voltage. The cable tension drop in between them should never be above 0.5 volts at full capacity. If the test is not conclusive, gradually increase the charge in order to use the inverter at the maximum of its capacity.