TROUBLESHOOTING GUIDE

Before beginning the troubleshooting procedures, the CommandLIFT battery needs to be 12.4 volts or higher and test good.

Disconnect and test the CommandLIFT battery.

	Battery 1	Battery 2	Battery 3	Battery 4
Rated CCA				
Rated RC				
Open Circuit Voltage				
Test Results				
Tester Used				

Note: All batteries must pass load test or be replaced before proceeding.

LED indications:

The STATUS LED will indicate several different conditions of the Trail Charger with Lockouts. This is accomplished by the use of a Bi-Color LED that will indicate with either a solid color or a blinking color at three different blink rates. (See table below):

RATE	**TIMING**
Slow	1 second on, 1 second off
Medium	½ second on, ½ second off
High	¼ on, ¼ off

Definition of indications are found below:

LED off	Module off, ignition or input voltage not present	Fault: n/a
	Input Command Shutdown: n/a	Input Command Reduce: n/a
LED, Red, high blink	FAULT, any on the fault list below	Fault: Any
	Input Command Shutdown: n/a	Input Command Reduce: n/a
LED, Green, medium blink	SHUTDOWN mode (Pg. 14)	Fault: None
	Input Command Shutdown: ON	Input Command Reduce: n/a
LED, Green, slow blink	Reduce power mode, charging (Pg. 14)	Fault: None
	Input Command Shutdown: OFF	Input Command Reduce: ON
LED, Green, solid	Charging or Charged **(Working Properly)**	Fault: None
	Input Command Shutdown: OFF	Input Command Reduce: OFF

A RED LED blinking at a high rate indicates one of the following fault conditions exist:

A. Input over-voltage limit. (T/S procedure pg. 13)
B. Input under-voltage limit. (T/S procedure pg. 13)
C. Output over-voltage limit. (T/S procedure pg. 13)
D. Output over-current limit / Output FET's over thermal limits. (T/S procedure pg. 14)

A fast blinking RED from any fault indication has a higher priority than all other indications if the ignition is on.

PURKEYS FLEET ELECTRIC

05/05/2011

VERSION 1.03

TRAIL CHARGER WITH LOCKOUT

TROUBLESHOOTING GUIDE

A. Checking for INPUT under voltage condition – High Rate Blinking Red LED
   1. Plug in a know good power source into the trailer, this can be a tractor or portable battery source.
   2. With the Trail Charger operating, test the voltage at the TC pin #1 and TC pin #3. The voltage must be over 9.0 volts. If yes, proceed to step B. If no, record the reading and move to the next step. Voltage reading: _____.
   3. Test the voltage at the aux. pin of the 7-way nose box at the front of the trailer. Note the voltage and amount of current flowing and record. Voltage: _____ Amps: _____
   4. Subtract the voltage reading in step 2 from the reading in step 3 and compare to the chart referencing the amp reading in step 3.
      1. At 20 amps the allowable voltage drop is 3.0 volts.
      2. At 15 amps the allowable voltage drop is 2.25 volts.
      3. At 10 amps the allowable voltage drop is 1.5 volts.
      4. At 5 amps the allowable voltage drop is .75 volts.
   5. If higher than allowed, repair the wiring from the nose box to the Trail Charger.

Note: The trailer wiring could be fine and the problem is in the power source (tractor and 7-way cord) which should also be tested per TMC's RP-137.

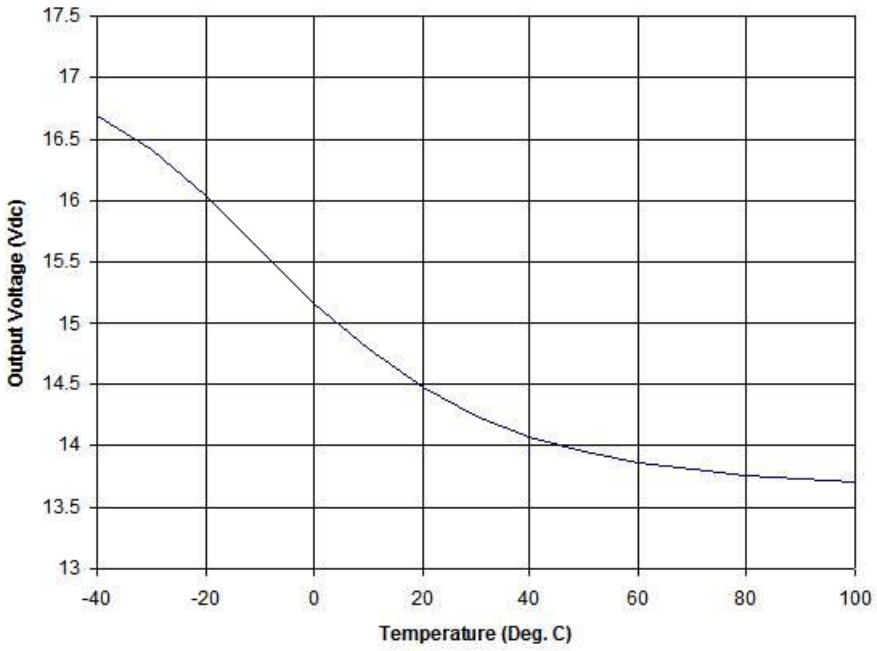
B. Checking for INPUT over voltage condition – High Rate Blinking Red LED
   1. Plug in a know good power source into the trailer, this can be a tractor or portable battery source.
   2. With the Trail Charger operating, test the voltage at the TC pin #1 and TC pin #3. If the voltage is over 16.7 volts, your voltage source is defective (overcharging) and needs to be either repaired or replaced.

C. Checking for OUTPUT over voltage condition – High Rate Blinking Red LED
   1. Plug in a known good power source into the trailer, this can be a tractor or portable battery source.
   2. With the Trail Charger operating, test the voltage at the TC pin #1 and TC pin #3. Also record the ambient temperature the battery box has been subjected to in the last 24 hours.
      Voltage reading: _____ Ambient Temperature: _____
   3. Compare the voltage and ambient temperature recorded in step 2 to the chart below. The voltage and temperature from step 2 should be near the curve on the chart. Note: If a trailer is moved that has sat outside for a day that has been subjected to 0 degrees F temperature into the shop it could take the batteries more than 24 hours to warm up to the shop temperature. When making the comparison, base it on the temperature the trailer has been subjected to before moving the trailer into the shop.

Note: Before replacing the Trail Charger it is suggested that the CommandLIFT battery be tested by installing a known good battery that has been charged and tested. Defective or severely discharged batteries can impact the test results.

TROUBLESHOOTING GUIDE

Temperature Compensation



D. Checking for over current condition and/or FET over the thermal limits – High Rate Blinking Red LED
   1. Plug in a know good power source into the trailer, this can be a tractor or portable battery source.
   2. With the Trail Charger operating, place a clip on ammeter around the wire from TC pin #2 to the liftgate battery positive. Measure and record the amps. Amps: _____
      1. The amps should not exceed 23 amps.

Note: Before replacing the Trail Charger it is suggested that each of the liftgate batteries be tested individually or that the system be tested with known good batteries that have been charged and tested. Defective or severely discharged batteries can impact the test results.

TROUBLESHOOTING GUIDE

Checking the shut down mode – Medium Rate Blinking Green LED

1. Plug in a know good power source into the trailer, that can be a tractor or portable battery source.
2. With the Trail Charger operating, unplug the six pin connector from the Trail Charger. The green LED should stop blinking.
3. If it does not stop blinking then the Trail Charger is defective and needs to be replaced.
4. If it does stop blinking then pin #2 from the six pin plug on the Trail Charger needs to be checked for voltage.
5. If pin #2 has more than 3.0 volts the Trail Charger will turn off and have a medium rate blinking green LED. Normally the brake circuit is connected to this circuit. When the brakes are off, you should see 0.0 volts should be at pin #2. When the brakes are applied, you should see battery voltage. Repair the circuit as needed.

Checking the reduced power mode – Slow Rate Blinking Green LED

1. Plug in a know good power source into the trailer, this can be a tractor or portable battery source.
2. With the Trail Charger operating, unplug the six pin connector from the Trail Charger. The green LED should stop blinking.
3. If it does not stop blinking then the Trail Charger is defective and needs to be replaced.
4. If it does stop blinking then pin #1 from the six pin plug on the Trail Charger needs to be checked for voltage. This should have a reading of 0.0 volts. If voltage is present then make the necessary repairs.
5. If the green LED does stop blinking then pin #6 should be checked for voltage. Any voltage under 5.0 volts will cause the green LED to blink slowly.

Note: This circuit is only used when the interior lights are connected.