Reynolds Equipment Company
Technical Note

Title: LVC Battery Change Out Procedure
Doc Number:
Revision: A
Date: 6-21-02

Drawn By: Curtis Jones Date: 6-21-02
Checked By: Jeff Barker Date: 6-23-02
QC approved By: Curtis Jones Date: 6-23-02

This technical notice shall be used to describe recommended steps to be used when visiting the LVC in the field, and battery change out is being contemplated. This procedure shall accomplish the following:

1. Insure that the integrity of the RAM backup is intact.
2. Allow the user to measure the PCB continuous sleep current (quiescent current draw from battery), in situations where accelerated or pre-mature battery drain is suspected.
3. Change Main Battery pack.

This will insure that proper continued and long-term operation of the LVC will be maintained. This is only accomplished by optimizing all critical areas, especially in instrumentation that is designed to operate at such a low power level.

Procedure:

1. Using a voltmeter, measure the lithium cells (refer to drawing entitled LithBattLoc). These are located underneath the aluminum shield, which covers the PCB, in the upper left corner of the board. Measure across BT3 first (BT3 is the vertically oriented cell). Touch the negative lead to the top end of BT3 (actually insert the probe in under battery cover to access the actual battery terminal ends). Touch the positive lead to the bottom end of BT3. The meter should read at least 3.5 volts. Measure across BT4 next. This is accomplished by simply moving the negative probe (currently located on top side of BT3) to the positive end of BT4. The meter should again read at least 3.5 volts (Note: the reading may be displayed as a negative value but this is Ok). If voltages are OK, proceed to next step. If either cell is lower than this specified voltage, DO NOT UNPLUG THE MAIN BATTERY PACK. Instead, carefully remove the aluminum shield and replace both lithium cells, before proceeding to next step.
2. If it is suspected that accelerated or unusually high battery drain is occurring, it is necessary to verify proper current draw of the main PCB. This is accomplished by unplugging the main battery pack. Then temporarily installing the LVC Current Harness (part number 61-9614), an ammeter capable of reading microamps, and a new LVC Battery Pack (part number 61-9070). Refer to drawing LVCHARNX.SKF as necessary. The continuous sleep (quiescent) current must be between 40-90 uA. Note: If meter speed has been configured to FAST, current may be a little higher (possibly up to 110uA). If current level exceeds these specifications, the PCB is defective and this LVC should be removed from service and returned to factory for repair. If current level falls within this normal range, simply remove the test harness and plug in the new battery.
3. Notes:

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a) While reading continuous sleep current, an occasional "blip" to a higher current value may occur if instrument wakeups up due to scroll or scheduled wakeup. This is normal.
b) Units exhibiting high continuous sleep current, should be returned to factory for repair.
c) Units with normal sleep current, but containing dead lithium cells, do not need to be returned to factory. They only require that all new batteries (lithium and main) be installed.
d) If resistance to PCB shield plate removal is encountered, user may choose to obtain a new style shield plate. In some cases, user may choose to discard the shield, rather than replace it.

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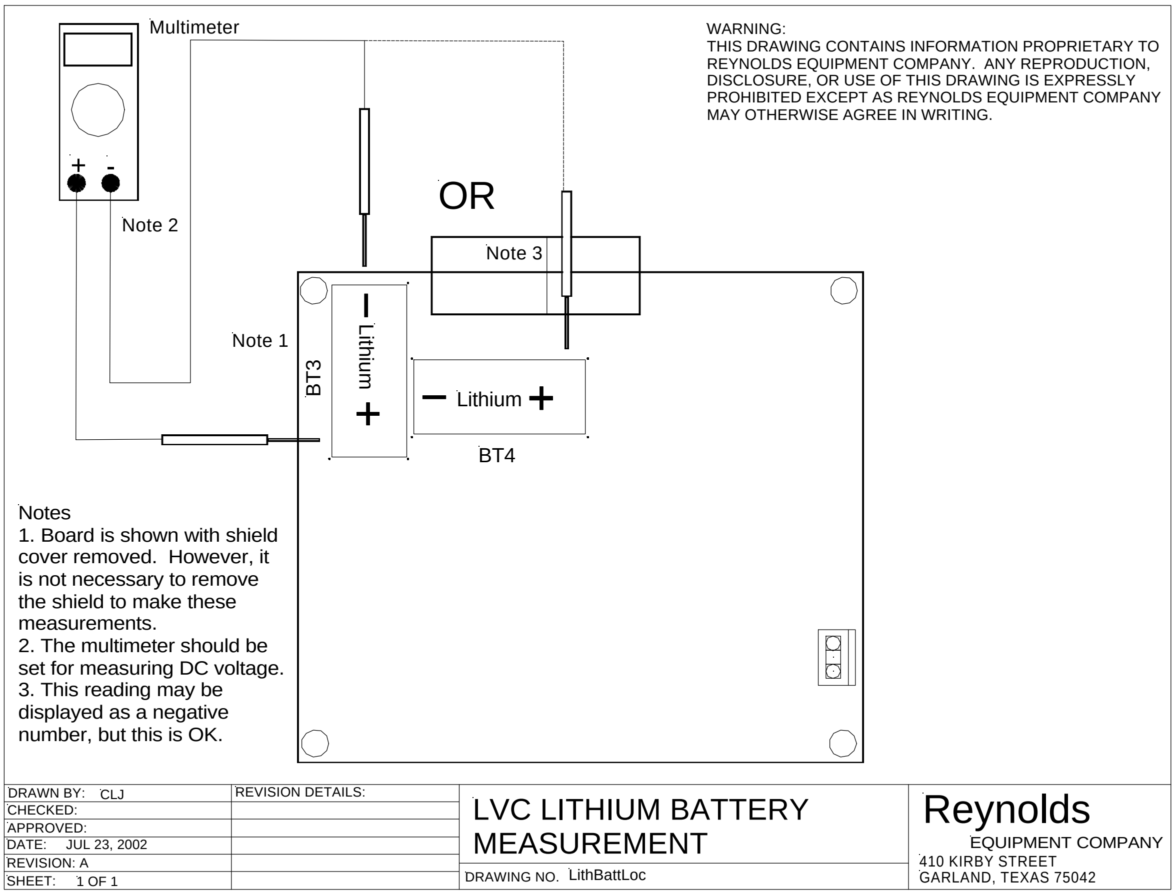

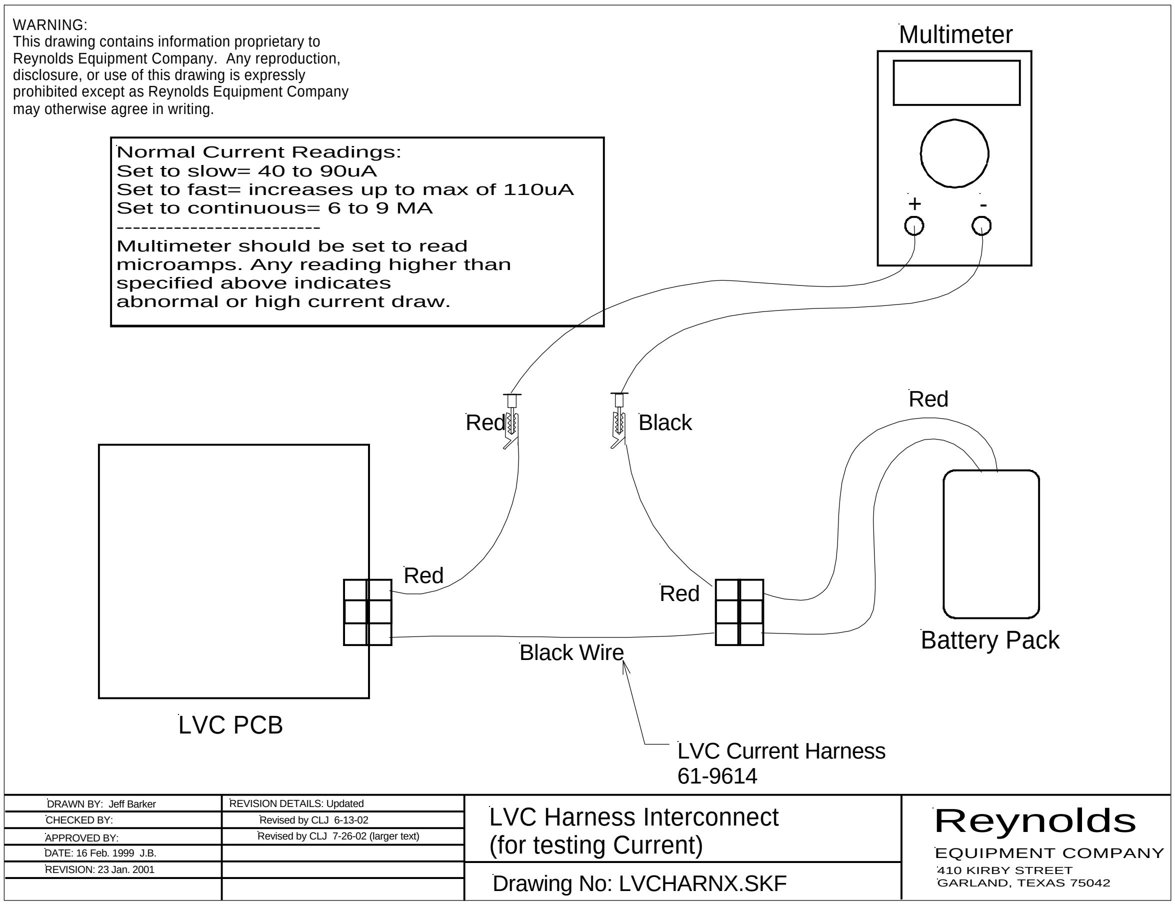
WARNING:
This drawing contains information proprietary to Reynolds Equipment Company. Any reproduction, disclosure, or use of this drawing is expressly prohibited except as Reynolds Equipment Company may otherwise agree in writing.
Normal Current Readings:
Set to slow= 40 to 90uA
Set to fast= increases up to max of 110uA
Set to continuous= 6 to 9 MA

Multimeter should be set to read microamps. Any reading higher than specified above indicates abnormal or high current draw.
Multimeter
+
-
Red
Black
Red
Red
Red
Black Wire
Battery Pack
LVC PCB
LVC Current Harness 61-9614
DRAWN BY: Jeff Barker
CHECKED BY:
APPROVED BY:
DATE: 16 Feb. 1999 J.B.
REVISION: 23 Jan. 2001
REVISION DETAILS: Updated
Revised by CLJ 6-13-02
Revised by CLJ 7-26-02 (larger text)
LVC Harness Interconnect (for testing Current)
Drawing No: LVCHARNX.SKF
Reynolds
EQUIPMENT COMPANY
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