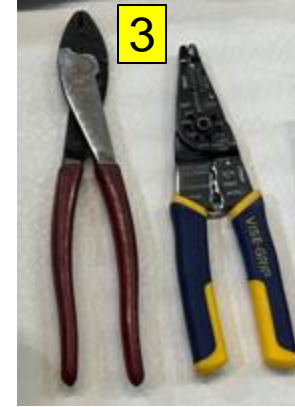


# Ekko Rework Instructions – Gen 5 & 6:

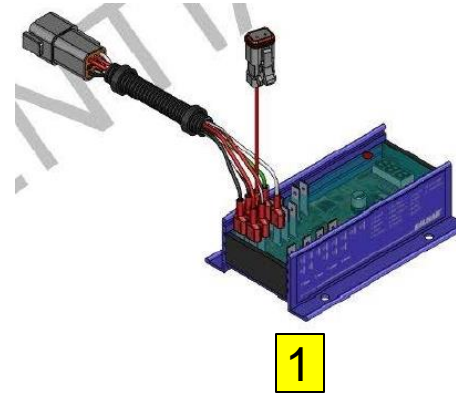
## Tools required-

1. Torque wrench capable of Ft/Lbs. and In/Lbs.
2. Socket –17mm deep well.
3. Wire stripper and crimper..
4. Screw gun with #2 Philips.



## Parts required: Recall Kit #RC7910-23-774

1. New Balmar Regulator MC-618-WB3
2. Winnebago Breaker Control Harness
3. Orange torque paint



# Step 1 – Disconnect all Power sources from the coach.

1. Disconnect the 110v power cord from the coach – See Image 1.
2. Turn off the house disconnect switch – See Image 2.
3. Turn off the 12v battery 250-amp main Breaker/Breakers – See Image 3.
4. Turn off the inverter disconnect – See Image 4.
5. Turn off the 12v house Battery/Batteries by holding down the power button on the top of the Battery/Batteries for 3 seconds. Make sure the blue LED lights are off. See Image 5.

Image 1



Image 2



Image 3



Image 4



Image 5



# Step 2 – Replace the Regulator.

Image 1

1 – Unplug the 2-pin and (2) 4-pin connectors from the regulator.

2 - Remove the 4 Philips mounting screws.

3 – Discard original regulator (MC-618-WB) and replace with (MC-618-WB3) .

4 – reattach new regulator to panel and reconnect connectors.



# Step 3 – Adding Breaker Control Harness.

1. Locate the 8-Pin Lithionics battery connector. Pull back the convoluted tubing 24" and cut all 4 circuits – BCA, BCB, KE5 and KE10. KE5 (Run only trigger) is the only circuit you will be using. – Remove and discard circuits BCA, BCB and KE10 from the original Winnebago harness – see Image 1.
2. Take circuit KE5 that was previously connected to the 8-Pin battery connector and splice it to the new circuit “KE” on the breaker control harness with the provided butt splice. Next, locate the brown wire on the new Balmar regulator harness, and the “BRN” circuit on the breaker control harness. Connect these circuits together with the provided butt splice - See image 2
3. Locate the 250 A breaker and remove circuits BCA and BCB from the back of the breaker and remove these circuits from the original Winnebago harness - They are being replaced by new BCA and BCB circuits from the breaker control harness – See Image 3. Connect the new BCA and BCB circuits to the breaker and torque the terminals to 12 In/Lbs.
4. Locate new circuit “LOC” on the breaker control harness. Connect this circuit to pin 16 on the Balmar regulator - See image 4

Image 1



Image 2



Image 3

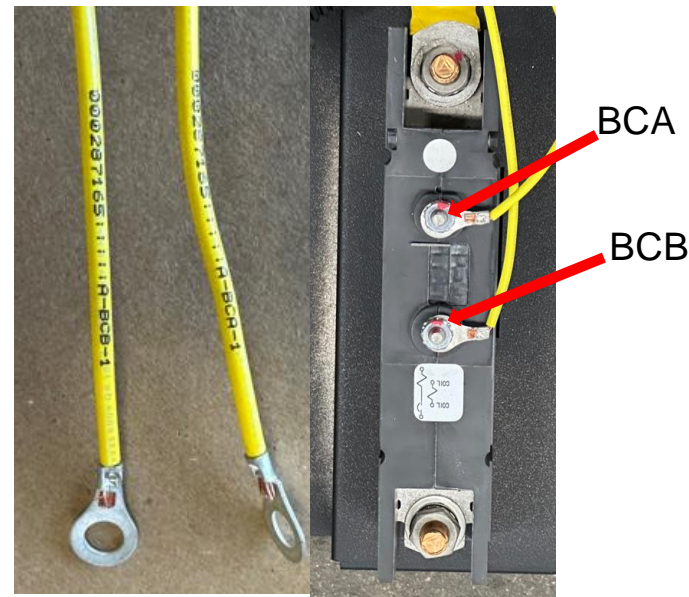
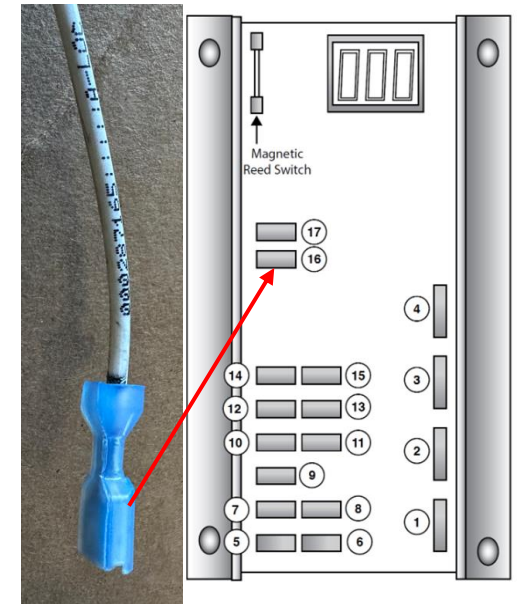


Image 4



**WINNEBAGO**  
INDUSTRIES

Note: the 3/8" ground ring terminal connects to the 5-position ground bar, and the 3/8" positive ring terminal connects to the 3-position or 5-position positive buss bar under the seat (Depending on the generation of Ekko).

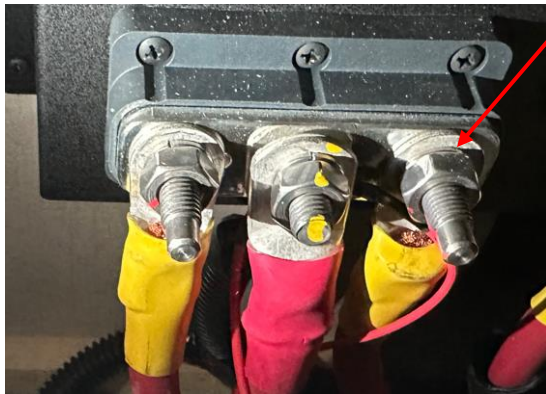
# Step 3 – Continued

Positive cable connection - 3 or 5 position  
buss bar located under 3-Point seat.

3-Position – Gen 5

5-Position – Gen 6

See attached diagram for additional information.



Remove nut and lock washer and connect the 3/8" positive ring terminal from the relay harness here. Reattach lock washer and nut, and torque to 190 In/Lbs.

Remove nut and lock washer and connect the 3/8" ground ring terminal from the relay harness here. Reattach lock washer and nut, and torque to 190 In/Lbs.

Ground cable connection- 5  
position buss bar located in  
battery compartment



Apply orange torque paint to both  
reworked connection points

# Step – 4 Wire Connection Validation – Breaker Control

1. Reconnect the 8-Pin battery control connector back into the Main battery or the battery with the temp sensor – See Image 1 - and turn on the 12v house battery/batteries by holding down the power button on the top of the battery. Make sure the blue LED is lit and turn on the 250 A Breaker.
2. Open the Lithionics Battery Monitor application and connect to the main battery through the App – Note: The battery serial number is on the side of the battery, select the correct serial number listed on the app – See Image 2.
3. Select the "Settings" gear icon in the upper right corner of the application – See Image 3.
4. Select "Terminal Console" - See Image 4
5. With the terminal console open, type "BT" in the command line and hit "done" - See Image 5.
6. Once you hit the "done", the 250-amp breaker should open. "BT" is the command for breaker test. If the breaker opened, proceed to step 7. If not, verify all wiring connections with the diagram included on the last page of this document.
7. Turn on the inverter disconnect but leave the 250-amp breaker off.

Image 1



Image 2

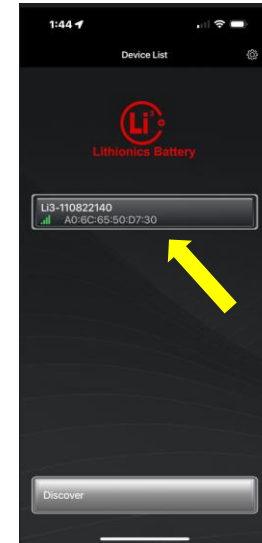


Image 3

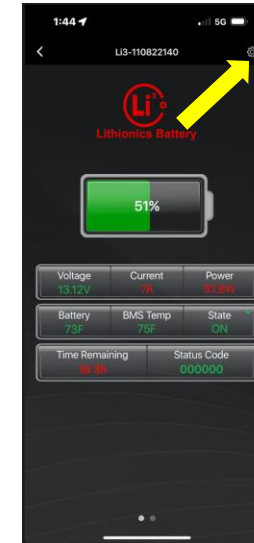


Image 4

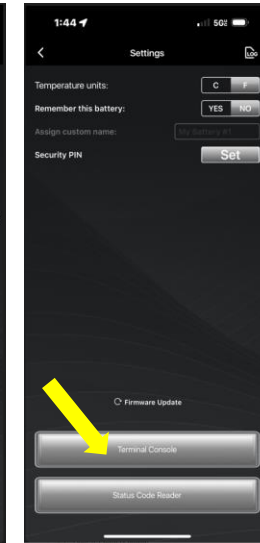
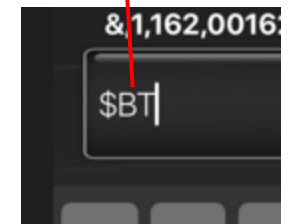
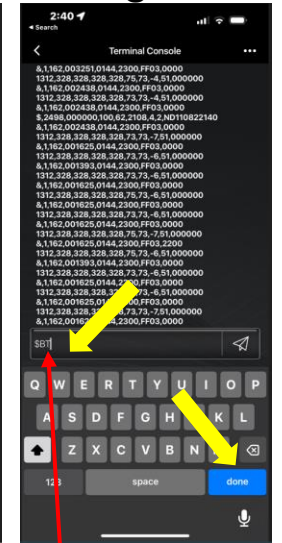


Image 5



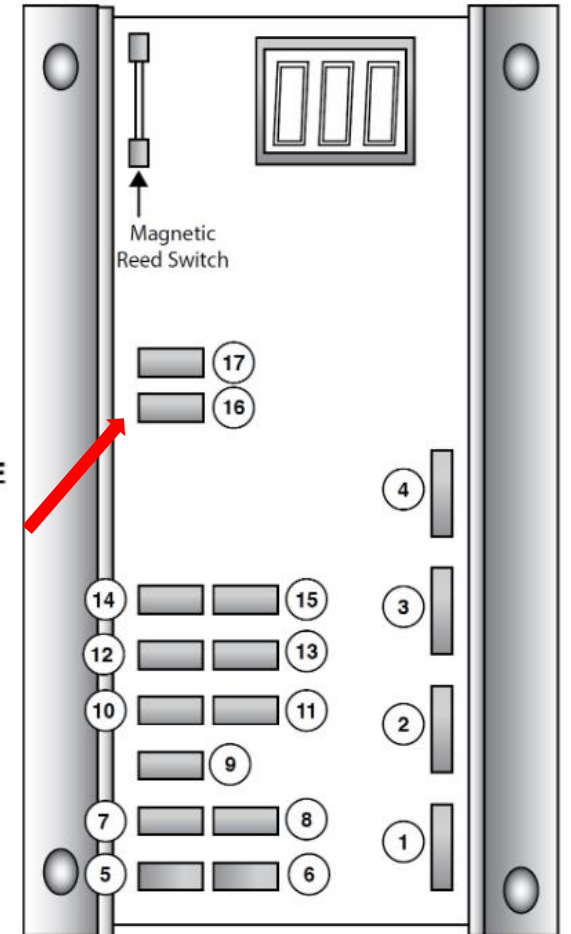
# Step 5 – System Validation and Testing - Alternator.

**Initial test and startup procedure.** Make sure coach battery is on (Blue LED is lit), Engine is off, and the 250-Amp breaker is off/open. Check the voltages at the following regulator terminals to ensure the wiring is correct. Use a hand-held multi-meter and test the following terminals for voltage: See Image 1 for terminal location.

1. TEST # 1: Engine/Ignition Off - Regulator is unpowered - LED display should be dark or off)
  - a) Terminal 2 - RED Power Wire – under 1Vdc.
  - b) Terminal 9 - Positive Voltage Sense Wire - under 1Vdc.
  - c) Terminal 3 - BROWN Ignition Wire - 0 Vdc.
  - d) Terminal 4 - BLUE Field Wire - 0 Vdc.
2. TEST # 2: Engine/Ignition Off, turn on the 250-amp breaker. Regulator is powered - LED display should be dark or off)
  - a) Terminal 2 - Primary RED Power Wire - 12 -14.5 Vdc.
  - b) Terminal 9 - Positive Voltage Sense Wire - 12 -14.5 Vdc.
  - c) Terminal 3 - BROWN Ignition Wire - 0 Vdc.
  - d) Terminal 4 - Primary BLUE Field Wire - 0 Vdc.
3. TEST # 3: Engine Off, chassis in accessory mode (If equipped push the Start button without pressing the brake pedal). Regulator is powered - LED display should be dark or off)
  - a) Terminal 2 - Primary RED Power Wire - 12 -14.5 Vdc.
  - b) Terminal 9 - Positive Voltage Sense Wire - 12 -14.5 Vdc.
  - c) Terminal 3 - BROWN Ignition Wire - 0 Vdc.
  - d) Terminal 4 - Primary BLUE Field Wire - 0 Vdc.

Image 1

1. GROUND INPUT
2. POWER INPUT
3. IGNITION INPUT
4. FIELD OUTPUT
5. ALT. TEMP. (-)
6. ALT. TEMP. (+)
7. BAT. TEMP. #1 (-)
8. BAT. TEMP. #1 (+)
9. POSITIVE VOLTAGE SENSE
10. SmartLink™ TX
11. SmartLink™ RX
12. STATOR IN
13. TACHOMETER OUT
14. BAT. #2 TEMP. (-)
15. BAT. #2 TEMP. (+)
16. AUX. #1 LAMP
17. DASH LAMP













Pin 16 is the alternator fault lockout trigger circuit

# Step 5 – System Validation and Testing continued.

Image 1

4. TEST # 4: Start the engine - Engine on - Regulator is powered – Data showing on LED display.
  - a) Terminal 2 - RED Power Wire - 12 -14.5 Vdc.
  - b) Terminal 9 - Positive Voltage Sense Wire - 12 -14.5 Vdc.
  - c) Terminal 3 - BROWN Ignition Wire - 12 -14.5 Vdc.
  - d) Terminal 4 - BLUE Field Wire – 4- 14.5 Vdc.
  - e) LED Display will be rolling through and displaying the following information in sequential order. See “Image 1” for additional info.
    - 1) BAL
    - 2) 618
    - 3) CFP
    - 4) -b-
    - 5) bv – Then it will display the actual battery voltage.
    - 6) Cv - Then it will display calculated target battery voltage.
    - 7) b1 - Then it will display the battery temperature.
    - 8) AL - Then it will display the alternator temperature.
    - 9) b2 - Then it will display NC since only one battery temp sensor is used.

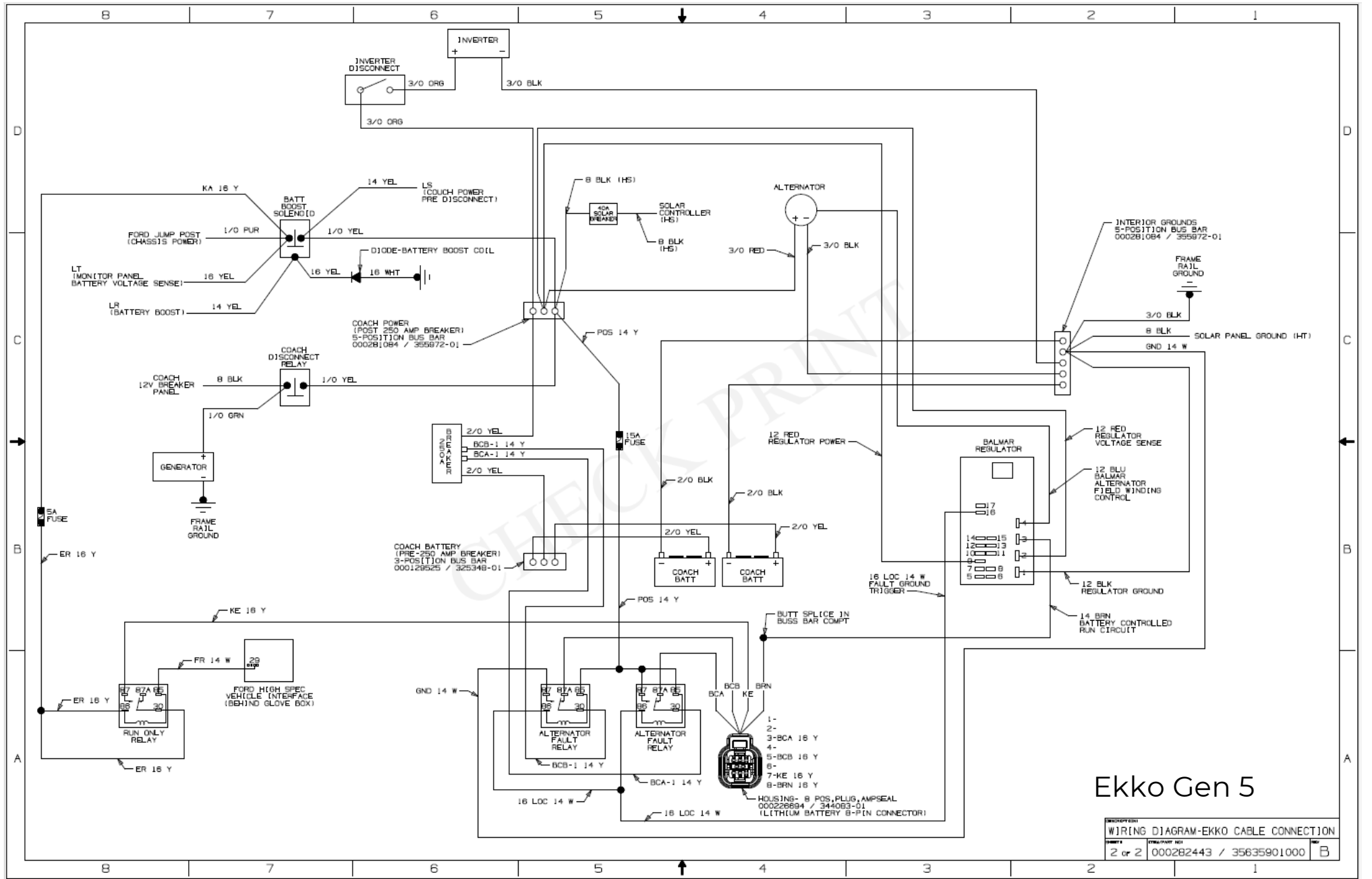
|   |  |
|---|--|
|  | <b>BAL</b> Indicates Balmar  |
|  | <b>618</b> Indicates MaxCharge model, such as MC-618   |
|  | <b>CFP</b> Indicates Regulators Custom factory Program– The Winnebago program  |
|  | <b>F-0</b> Indicates the Regulator’s Max Field Percentage (Belt Load Manager) . Ranges from F-0 to F-9                             |
|  | <b>-b-</b> Indicates stage of charge. “b” indicates bulk. “-A-” indicates absorption. “-F-” indicates float. “-r-” indicates ramp. |
|  | <b>bv</b> Indicates system battery voltage. Followed by actual voltage reading.  |
|  | <b>Cv</b> Indicates Calculated Voltage (Target voltage based on preset program levels). Followed by voltage reading.               |
|  | <b>b1</b> Indicates Battery #1 Temperature. Followed by NC (not connected), or temperature in Celsius.                             |
|  | <b>AL</b> Indicates Alternator #1 Temperature. Followed by NC (not connected), or temperature in Celsius.                          |
|  | <b>b2</b> Indicates Battery #2 Temperature. Followed by NC (not connected), or temperature in Celsius.                             |

5. From your mobile device, Download "Lithionics Battery Monitor" from Google play or Apple app store.
6. Open the Lithionics Battery Monitor application.
  - a) Connect to the main battery through the App – Note: The battery serial number is on the side of the battery, select the correct serial number listed on the app.
  - b) On the main screen. Locate the Cell “C.” – Current.
  - c) With the engine running at 2000RPM, the display in cell “C.” should be green and displaying a reading of 160-170A. If two batteries are connected to the coach, the current is distributed equally to each battery. In this case, you need to log into each battery and add the cell “C.” values together and the total should be 160-170A.
7. Testing is now complete.

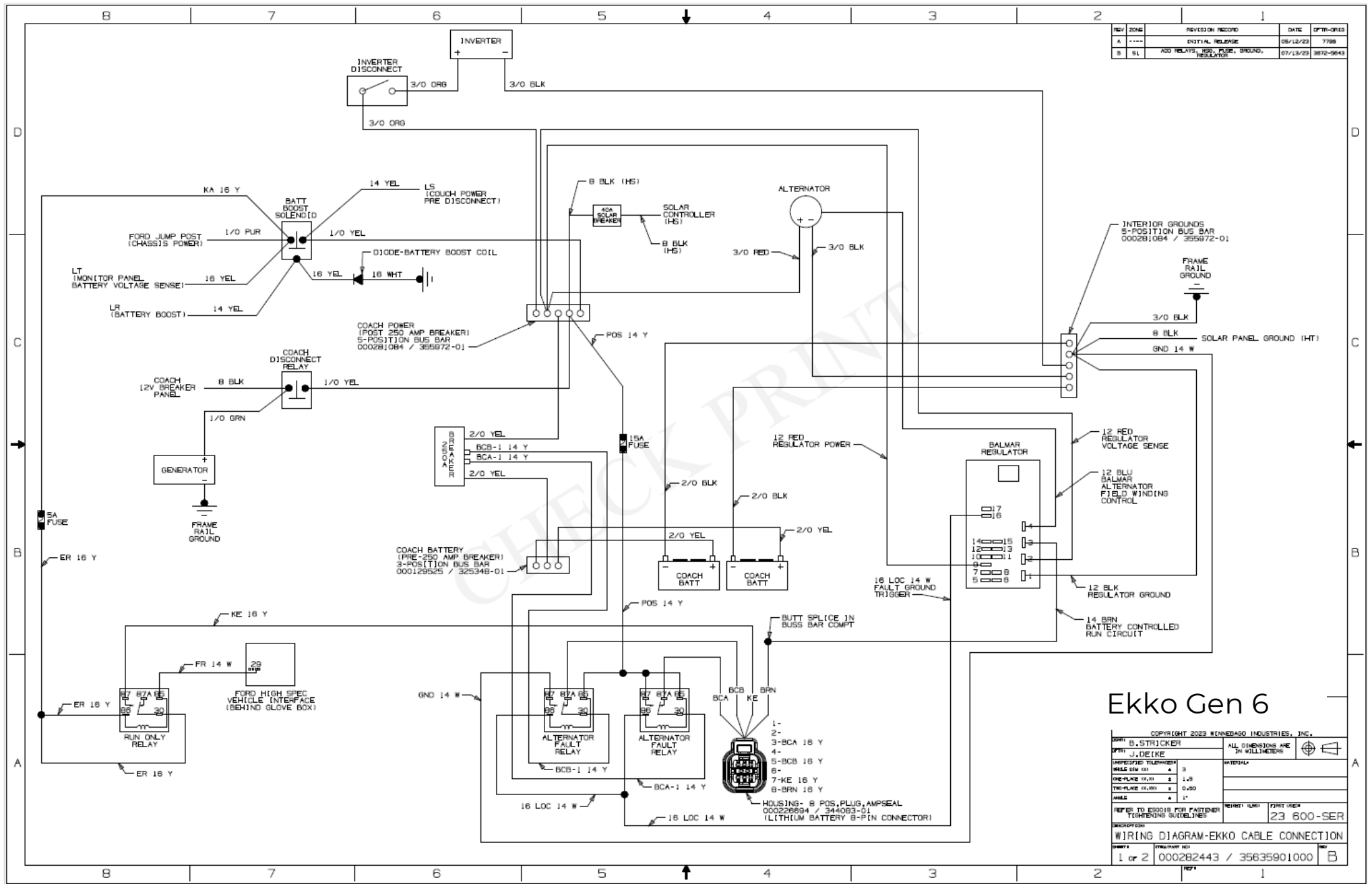


# Blank Slide-

# Gen 5 Diagram



# Gen 6 Diagram



## Ekko Gen 6

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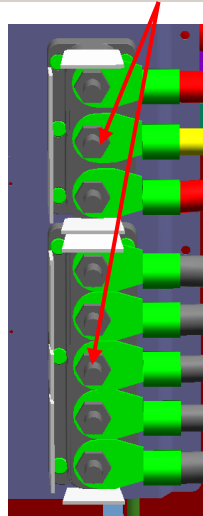
|   |                                      |
|---|--------------------------------------|
| DESIGNER<br>B. STRICKER                               | ALL DIMENSIONS ARE<br>IN MILLIMETERS |
| DRAWN BY<br>J. DEIKE                                  |                                      |
| APPROVED BY<br>[Signature]                            |                                      |
| SCALE 1:1   |                                      |
| DATE 08/12/23   |                                      |
| TIME 10:00  |                                      |
| SCALE 1"  |                                      |
| REFER TO ES0016 FOR FASTENER<br>TIGHTENING GUIDELINES | REWORK TIME<br>23 600-SER            |
| WIRING DIAGRAM-EKKO CABLE CONNECTION                  |                                      |
| 1 of 2  | 000282443 / 35635901000              |

# Torque values-

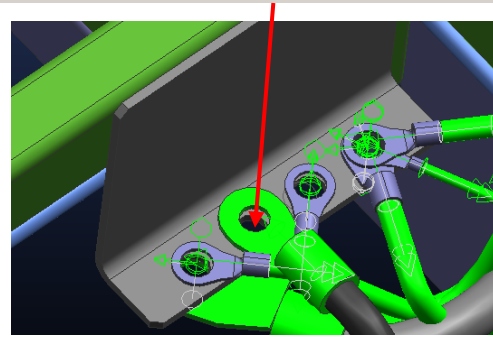
**Lithionics battery-**  
**347028-01-000**  
**13mm Socket**  
**Torque - 132 In-Lbs. x2**



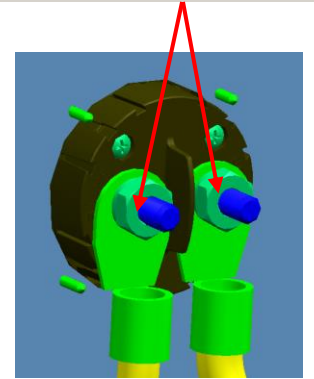
**3 or 5-way buss bar**  
**325348-01-000 3-Way**  
**355972-01-000 5-Way**  
**17mm Deep well Socket**  
**Torque - 190 In-Lbs. x All**



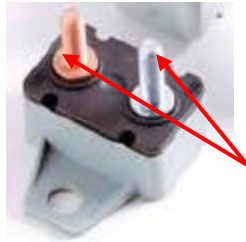
**5/16" Ground Bolt.**  
**All General grounds**  
**1/2" socket and backer wrench.**  
**Torque - 230 In-Lbs. x All**



**Inverter Disconnect-**  
**183904-01-000**  
**9/16" Socket**  
**Torque - 120 In-Lbs. x2**



**Xantrex Inverter-**  
**328076-01-000**  
**13mm Socket**  
**Torque - 88 In-Lbs. x2**



**40A Breaker**  
**333588-01-000**  
**3/8" Socket**  
**Torque - 24 In-Lbs. x2**

**Coach Battery 250-Amp Breaker**  
**347029-01-000**  
**5/8" Socket - Torque - 230 In-Lbs. x2**  
**3/8" socket - Torque - 12 In-Lbs. x2**

**Engine run solenoid**  
**335753-01-000**  
**1/2" Socket-**  
**Torque - 190 In-Lbs. x2**  
**3/8" socket-**  
**Torque - 15 In-Lbs.**

**Coach Battery Disconnect-**  
**180722-01-000**  
**9/16" Socket**  
**Torque - 190 In-Lbs. x2**

