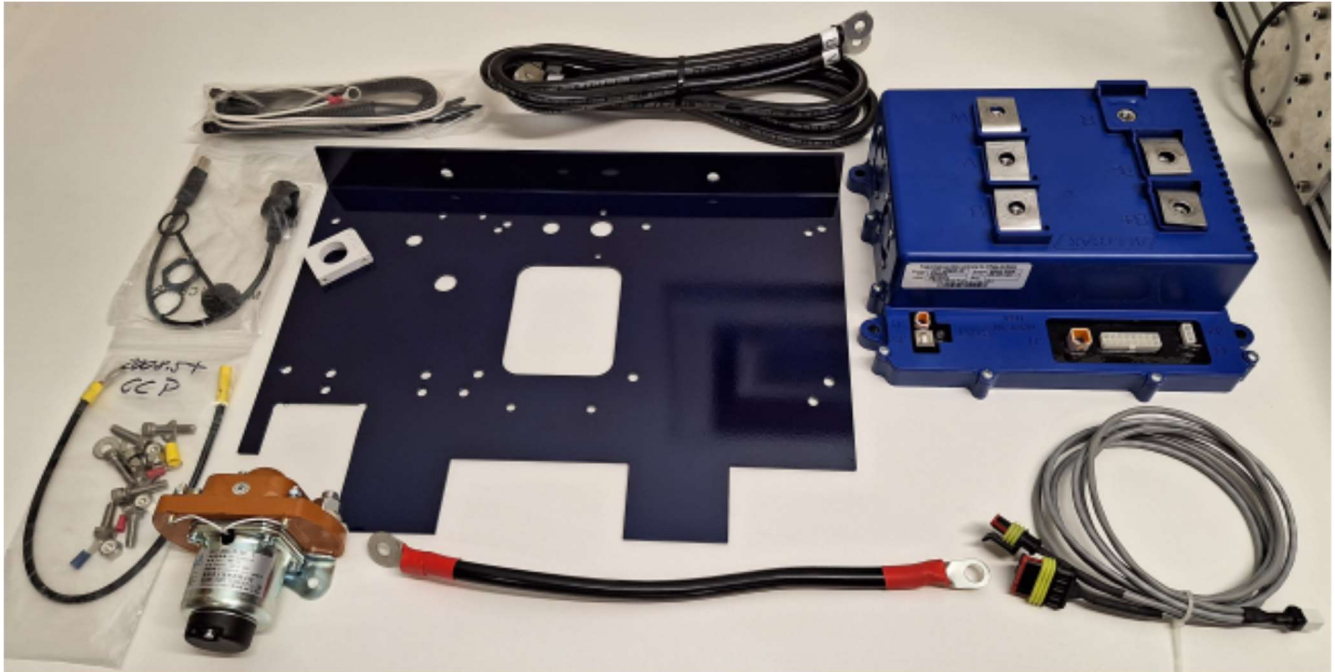
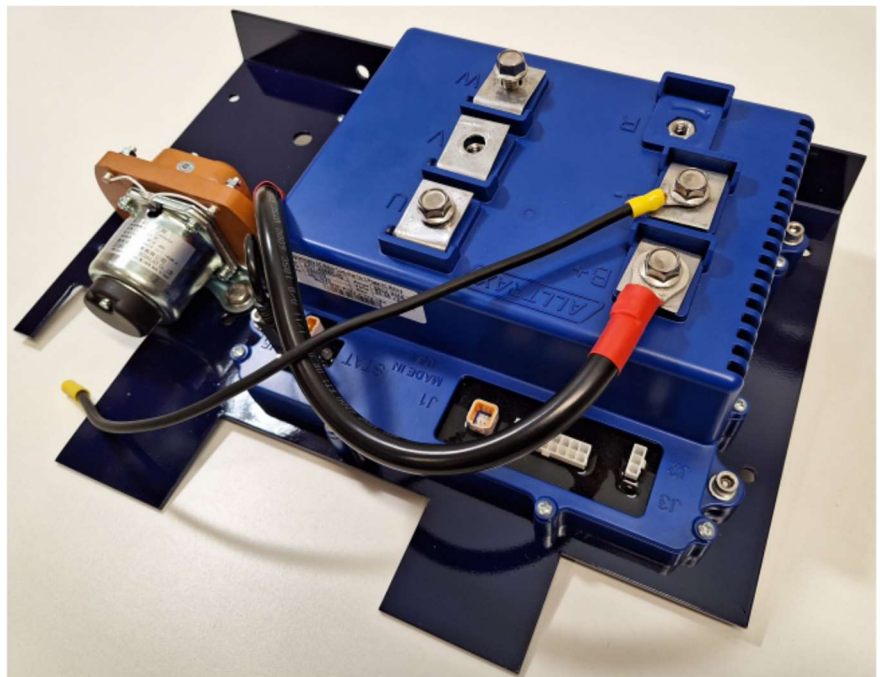


**CLUB CAR PRECEDENT, TEMPO, ONWARD 2008.5+  
ALLTRAX AC1 CONVERSION****BEHIND THE BATTERY POWER PANEL****COMPLETE KIT:**

- >Controller AC1
- >Panel & Hardware
- >AC Motor Ground wire
- >AC Motor 3 Phase Cables
- >2AWG Batt cable to SOL
- >10awg Charge Neg EXT
- >USB Extension cable  
(Solenoid not included)
- ...(Fuse not included)



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## 1. Document Scope

**WARNING: Follow all safety and warning recommendations in the GENERAL WARNINGS SECTION in the AC1 Operators Manual.**

**It is the installers responsibility to utilize proper safety glasses and other PPE safety gear using tools, equipment, or working on or around batteries and energy sources.**

## 2. Document History

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- 9/20/2023, REV A, Initial release AC1 for BEHIND THE BATTERY, EC-9/25/2023

## 3. Tools Required:

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A suggested list of tools to install this kit. Not all tools may be listed.

- Socket set 3/8" drive (Metric and SAE)
- Socket set 1/4" drive with 4" extension
- SAE Allen wrench set
- Box wrench set
- Phillips screwdriver
- Flat blade screw driver
- Wire cutter
- Wire stripper
- Terminal Crimper
- Dremel or other cutoff wheel to cut plastic
- Safety glasses and PPE working on and around lead acid batteries, drilling, etc.

### 3.1. Parts Required (not supplied)

The conversion requires other components to complete the project, the items are not supplied but required:

- NEW SOLENOID – See AC1 Operators manual CONTACTORS (SOLENOID) Section for ratings and type.
- BATTERY FUSE, see AC1 operators manual FUSE section for ratings
- BATTERY CABLES, see AC1 operators manual WIRING section for gauge and type

#### **4. Club car Precedent, Tempo, Onward DC Models:**

The Club Car Precedent, Tempo, Onward with controller power panel BEHIND the batteries, 2008.5 and newer with DC motor factory build.

The power panel is form fitted to fit behind the batteries in a cut out of the battery rear tub. Access to the controller and motor is from the car bag well. This panel will be replaced with the Alltrax supplied power panel for the Alltrax AC1 conversion. Batteries will have to be removed to replace the power panel and the OBC bypass will be required for aftermarket controller upgrades.

Please note the OBC Bypass instructions for warnings and safety issues when performing the bypass.

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CLUB CAR LLC corporation



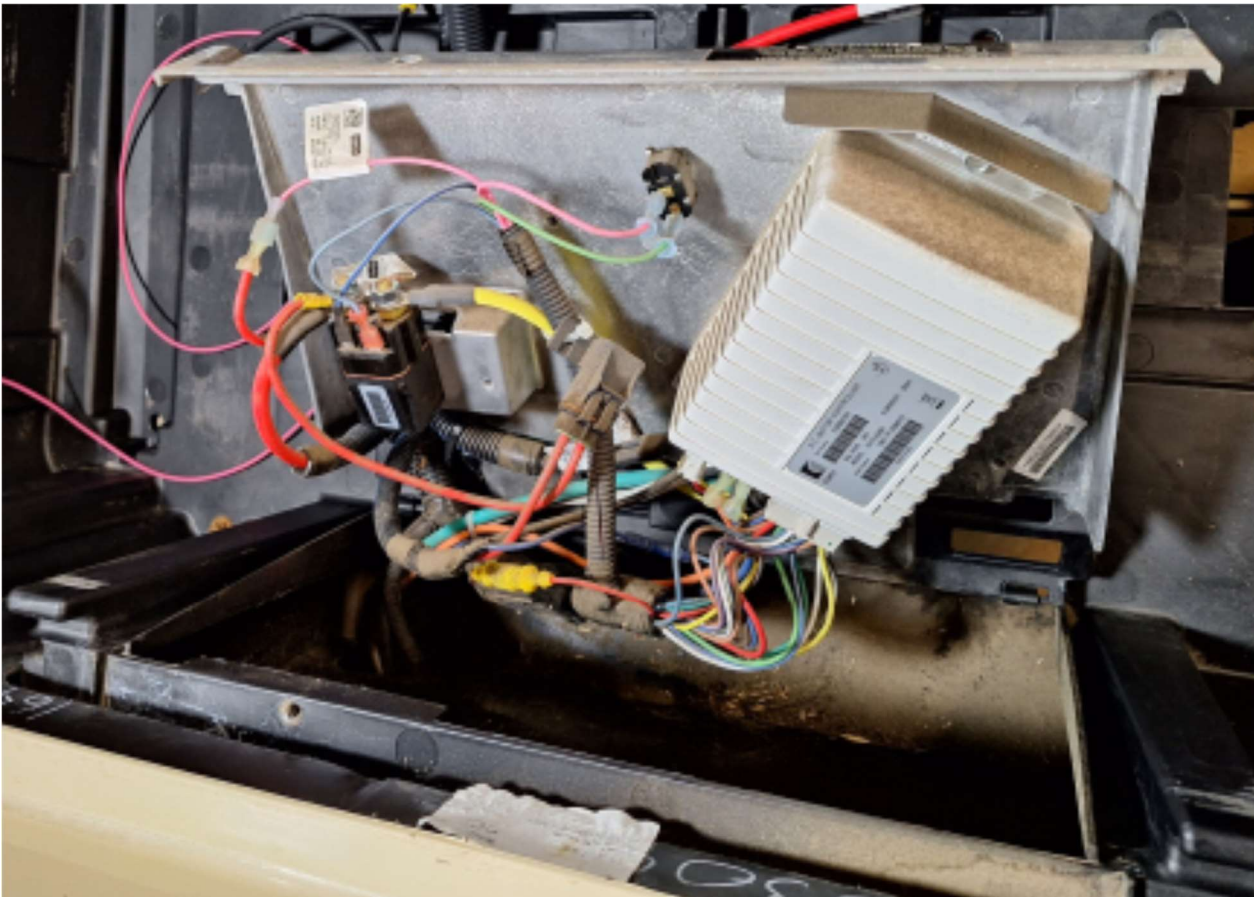
## 5. Conversion Procedures:

The conversion requires removing the entire Club Car power panel, remove TOW/RUN switch (which will be reused). A new properly rated solenoid is required to maintain the ALLTRAX warranty. See AC1 Operators manual for more information.

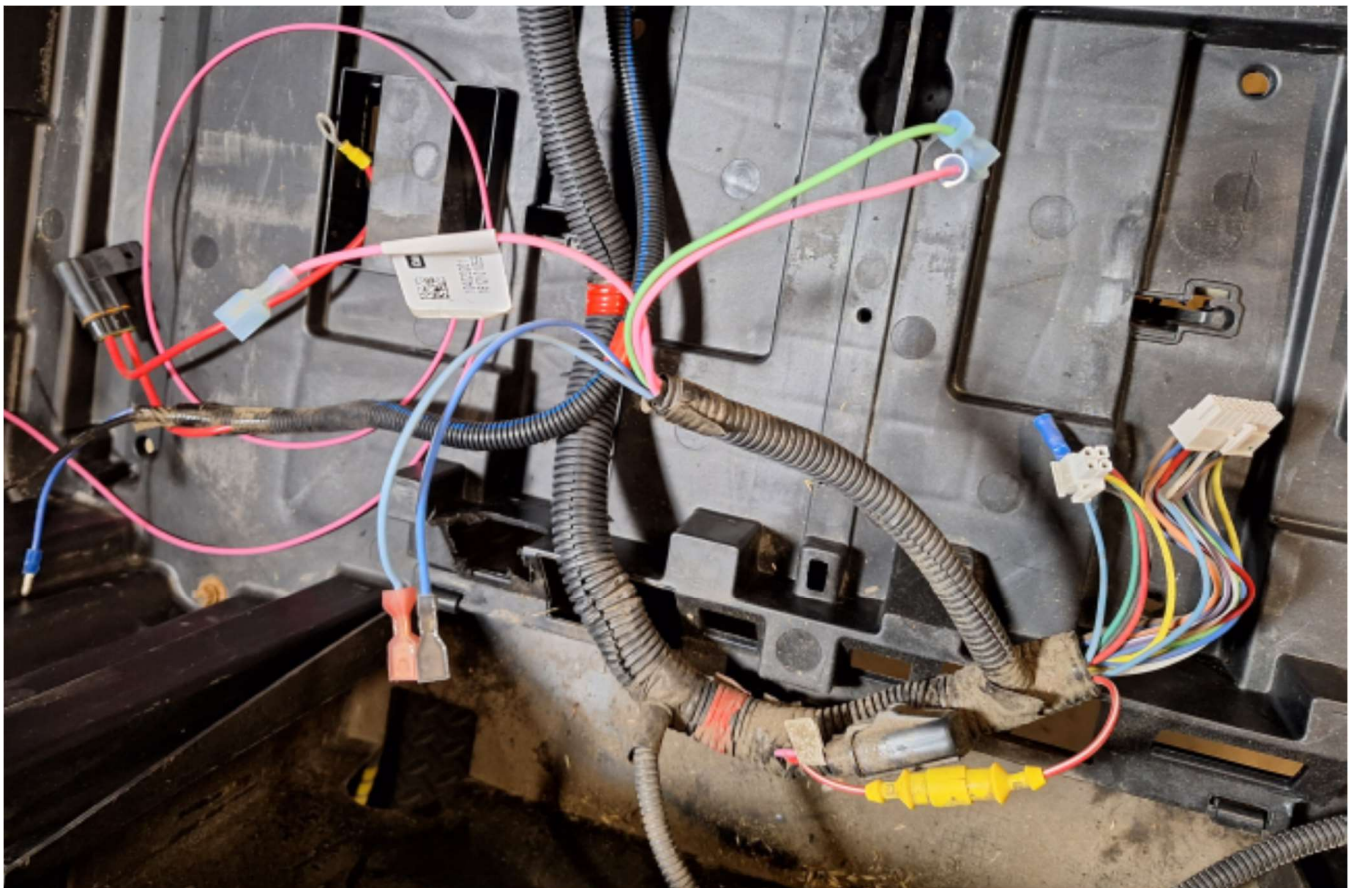
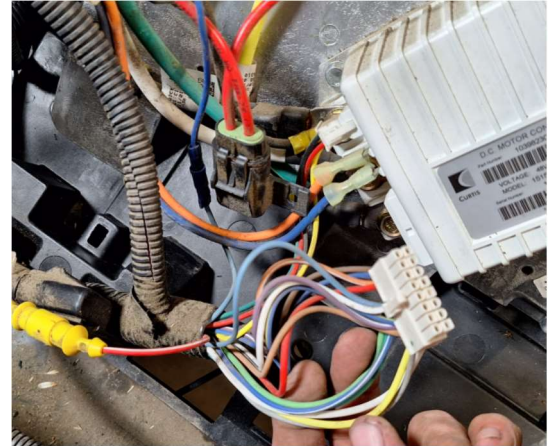
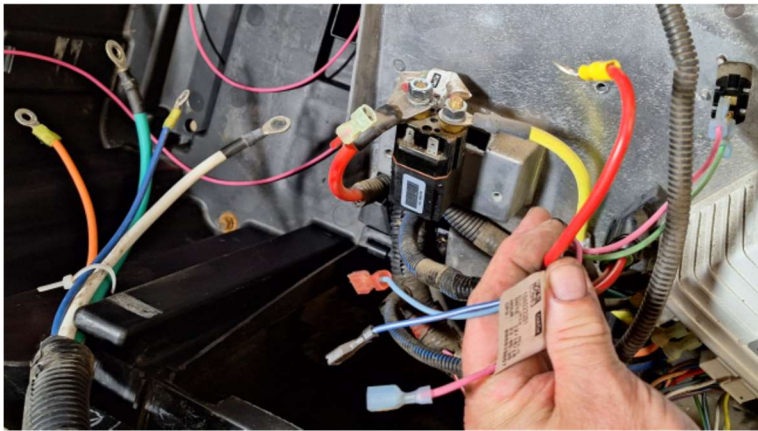
### 5.1. Power panel removal:

The WHITE motor controller panel shown below, other controller Grey or Black with OBC are similar. The entire panel will be removed and replaced.

- 1. SET KEY-SWITCH AND TOW/RUN SWITCH TO OFF**
- 2. DISCONNECT THE BATTERY CABLES**
3. Remove the batteries from the compartment. A good time to clean any acid or corrosion. A good foaming engine cleaner will help neutralize and acid.
4. Tilt the power panel forward to gain access to the wiring.



5. Carefully unplug the 16 pin connector from the motor controller.
6. Unplug the motor SPEED SENSOR cable from the motor.
7. Remove wires from the solenoid, note the FUSED 18AWG wire assembly to the INPUT to the solenoid. It will be replaced onto the new solenoid.
8. Remove the GREEN and PINK TOW/RUN wires.
9. Remove the TOW/RUN switch, it will be reused.
10. Remove the battery positive & negative, motor wires from the motor controller.
11. Remove the Power panel from the car.



**REMOVE PANEL CONTINUED:**

12. Remove the TOW/RUN wires from the TOW/RUN switch. The TOW/RUN switch will be removed and will be installed onto the new AC1 panel.
13. Push the two tabs on the TOW/RUN switch and remove from panel.



14. Remove the rear shroud (it will not be reused).



## 6. AC1 Panel Installation:

The AC1 Panel Installation is formed to mount the TOW/RUN switch, USB Extension cable, and Solenoid (any solenoid with 2.5" bolt spacing). The MZJ-400AMP solenoid is recommended for the AC1-48650 controller.

### 6.1. Install the USB EXTENSION ADAPTER:

1. Locate the (2x) #6-19x3/4" PLASTIC tapping screws
2. Locate the (1x) USB Plastic PLS005 adapter.
3. Locate the USB EXTENSION. This adapter will be preassembled for installation onto the panel.
4. Install the CAP retention ring onto the USB, it is keyed one way but ensure the CAP-CUP is facing the same side as the USB end.

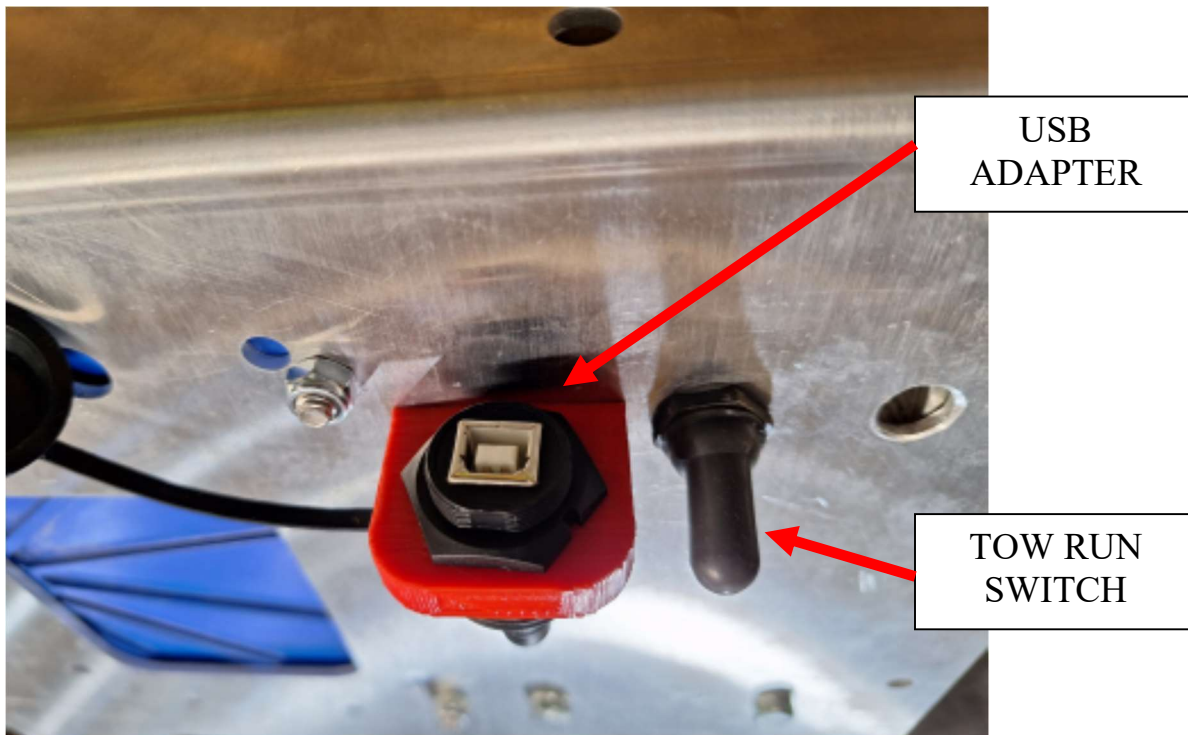
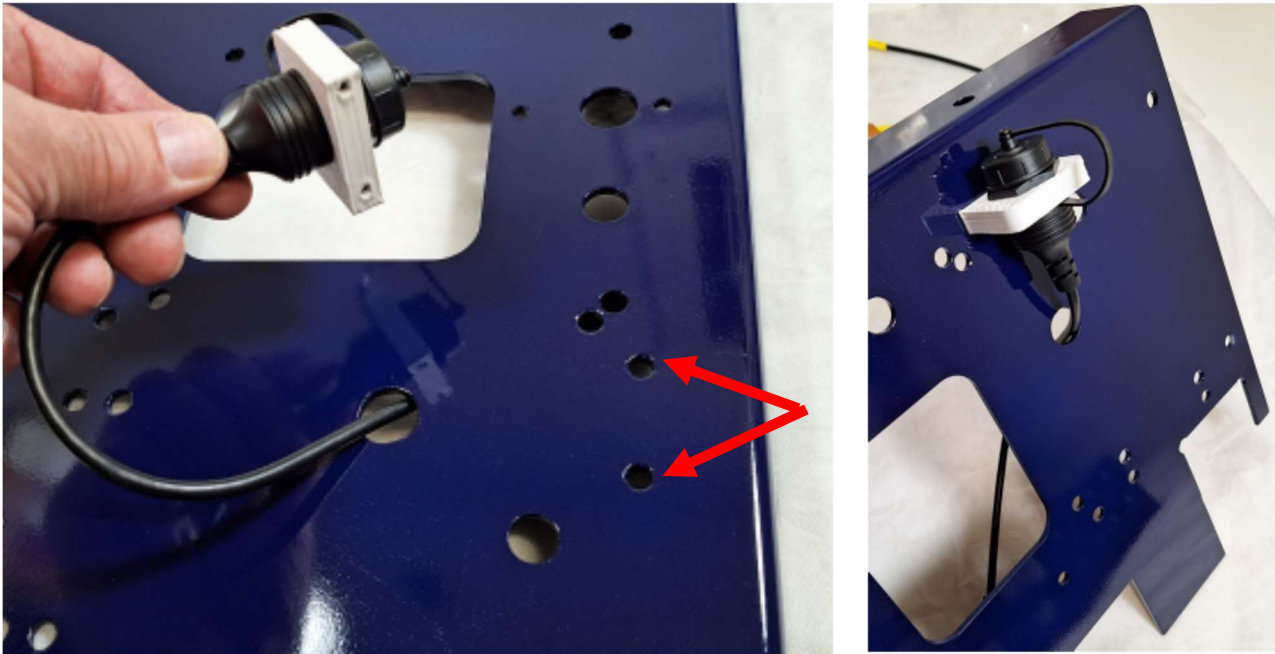


CAP strap to the **ROUNDED EDGES** of  
the USB adapter



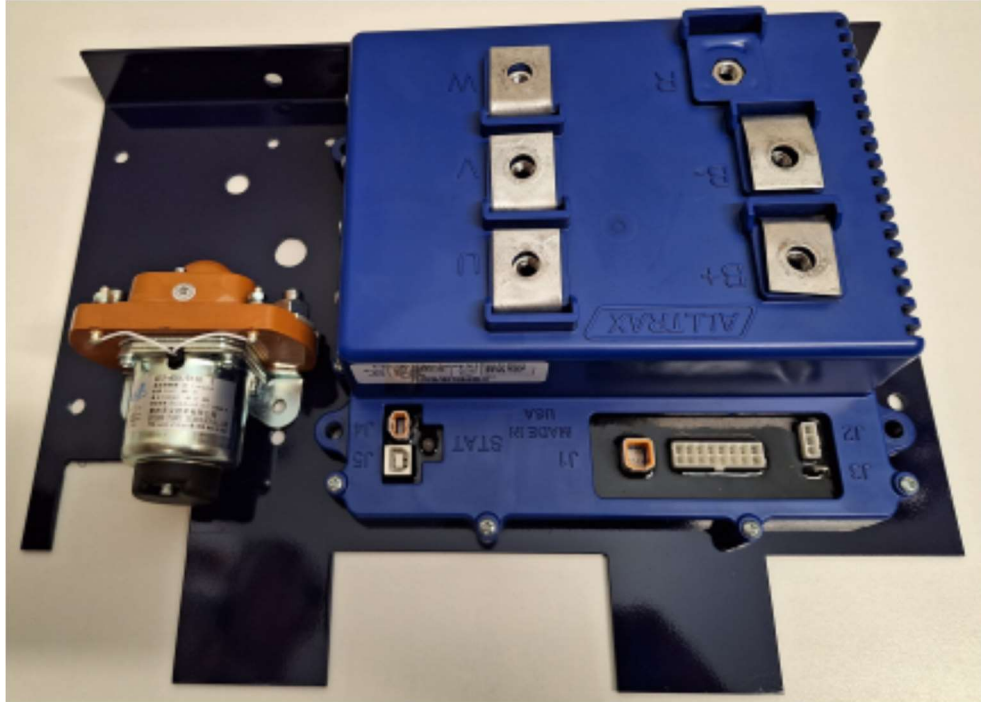
USB Extension Continued:

5. Thread the cable through the large 5/8" USB hole.
6. Place a piece of 1/4" split loom over the cable to protect against the edge.
7. Align and install the USB EXTENSION adapter with the 2 supplied 6-19x3/4" Plastic cutting screws. DO NOT overtighten.
8. Install the TOW/RUN switch.



## 6.2. Install the Motor Controller

1. Place the AC1 Motor controller with CONNECTOR WELL FACING DOWN towards the two BOTTOM TABS. (The mount holes only line up one way)



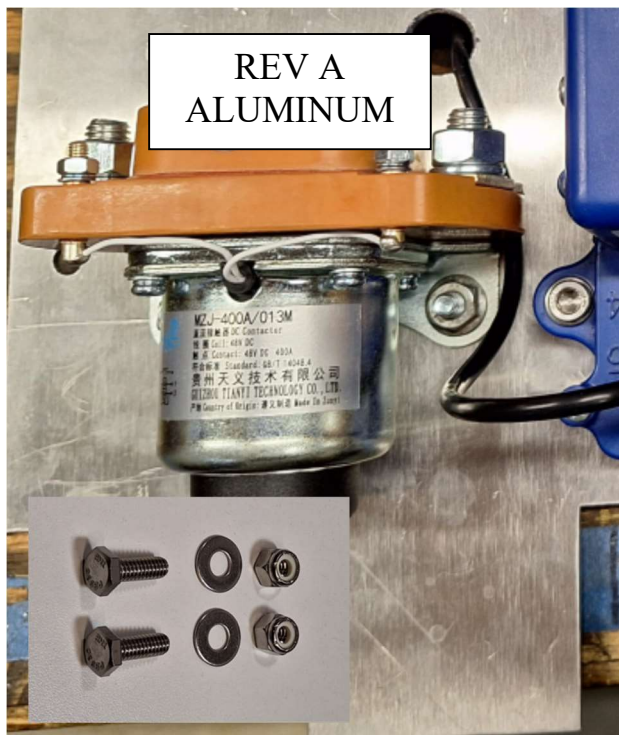
2. Install the (4x) 1/4-20x1" SOCKET HEAD CAP SCREWS with (4x) SMALL OD 6mm FLAT Washers into the 4 controller mounting tabs. Do not over tighten.
- NOTE REV A: ALUMINUM panels – the panel does NOT have PEM nuts installed – LOCATE the (4x) 1/4-20 NYLOC nuts and secure the controller. Do not overtighten.
  - NOTE REV B: STEEL POWDER COATED BLUE panels have "PEM nuts" stamped into the rear of the panel. NYLOC nuts are not needed.



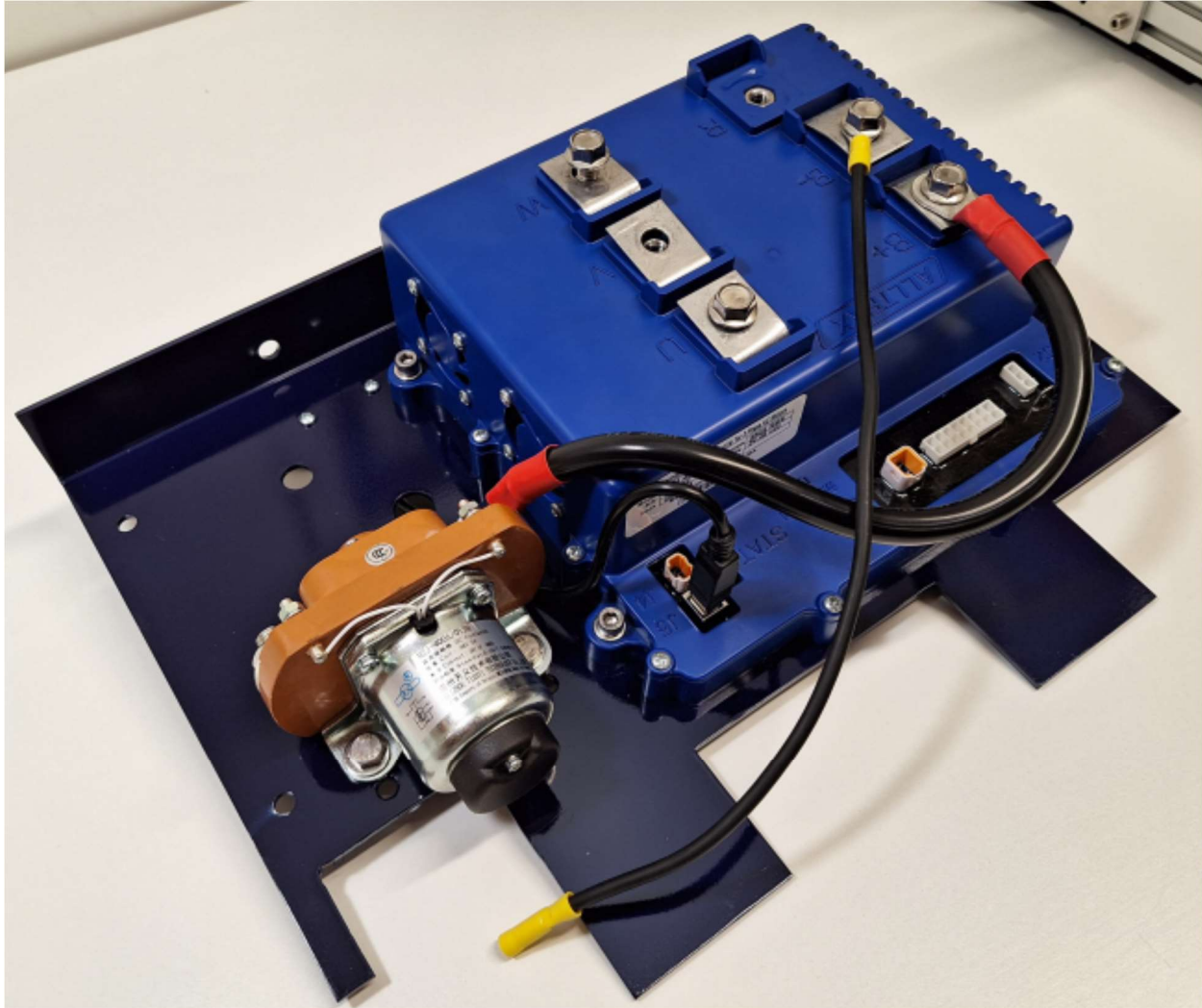
### 6.3. Install the SOLENOID (not included).

The Solenoid mounting holes are standard 2.5" which fit most heavy-duty HI-AMP solenoids, recommended is the MZJ400.

1. Install the new Solenoid with the terminals facing up using the two 1/4-20x1" HEX HEAD bolts with 1/4" FLAT Washers. Secure using the 1/4-20 NYLOC NUTS.
- **NOTE REV A:** ALUMINUM panels – the panel does NOT have PEM nuts installed – LOCATE the (2x) 1/4-20 NYLOC nuts and secure the SOLENOID. Do not overtighten.
  - **NOTE REV B:** STEEL POWDER COATED BLUE panels have "PEM nuts" stamped into the rear of the panel. NYLOC nuts are not needed.



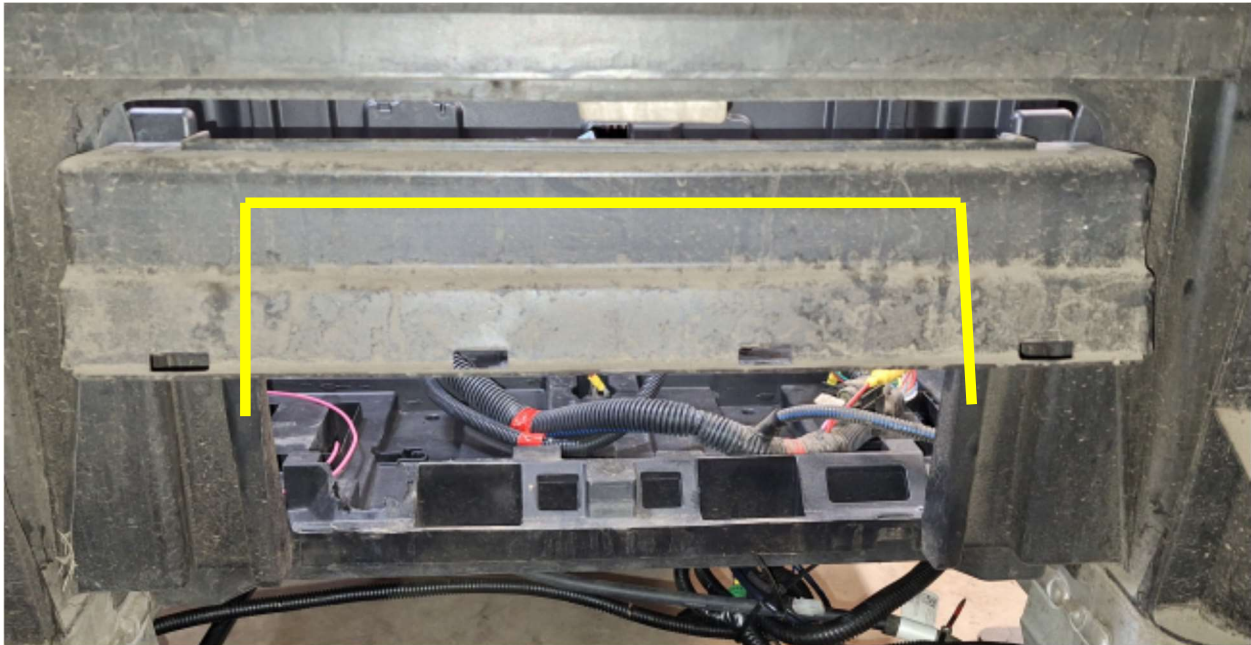
2. Install the 2AWG 12" cable with RED-RED heat shrink and install between Solenoid and AC1 B-POS
3. Loosely install the 10AWG black 13" extension, leave loose.
4. Route the USB cable between the Solenoid and the Controller.



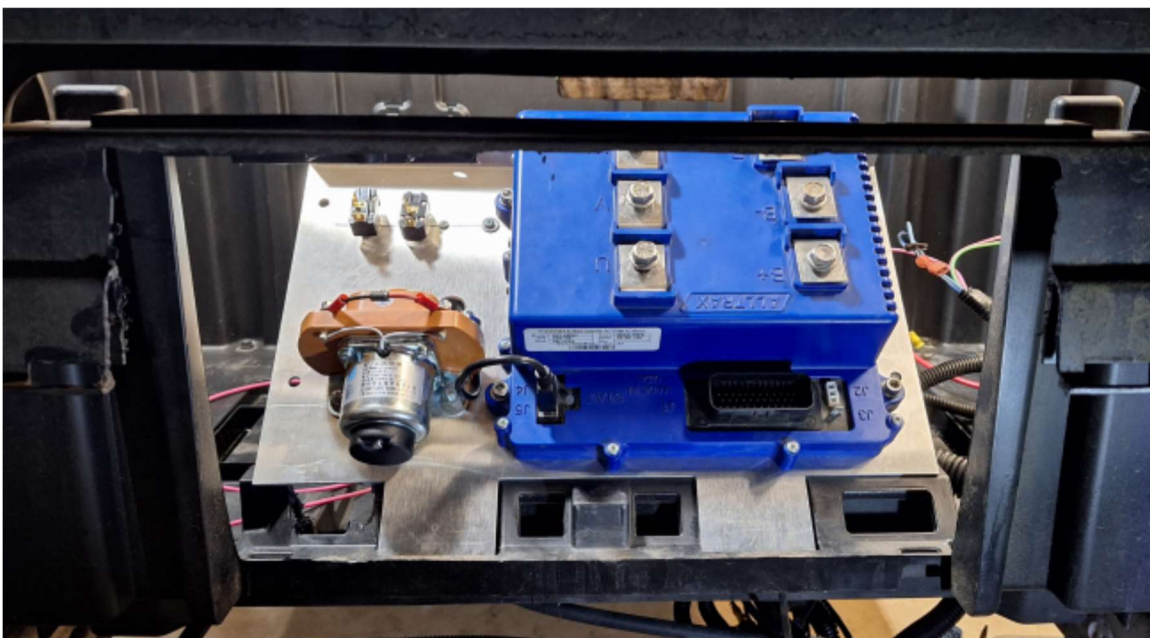
#### 6.4. PANEL INSTALL – BATTERY TUB MODIFICATION

The AC1 48650 controller is much larger than the OEM controller, some plastic is required to be removed for clearance. Do NOT cut too much material and leave the square slots for ZIP TIE locations to hang cables.

1. From the bag well, using a silver marker – mark the rear shroud as shown.
2. Use a Cut off tool (Dremel®) with a plywood or milling bit, carefully cut the plastic leaving the outside two slots for wire retainment. CAREFUL NOT TO CUT ANY WIRES!



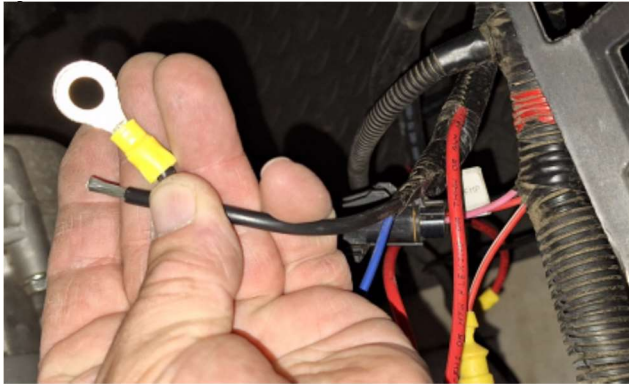
3. Place panel into place – check for proper clearance



**6.5. WIRING:**

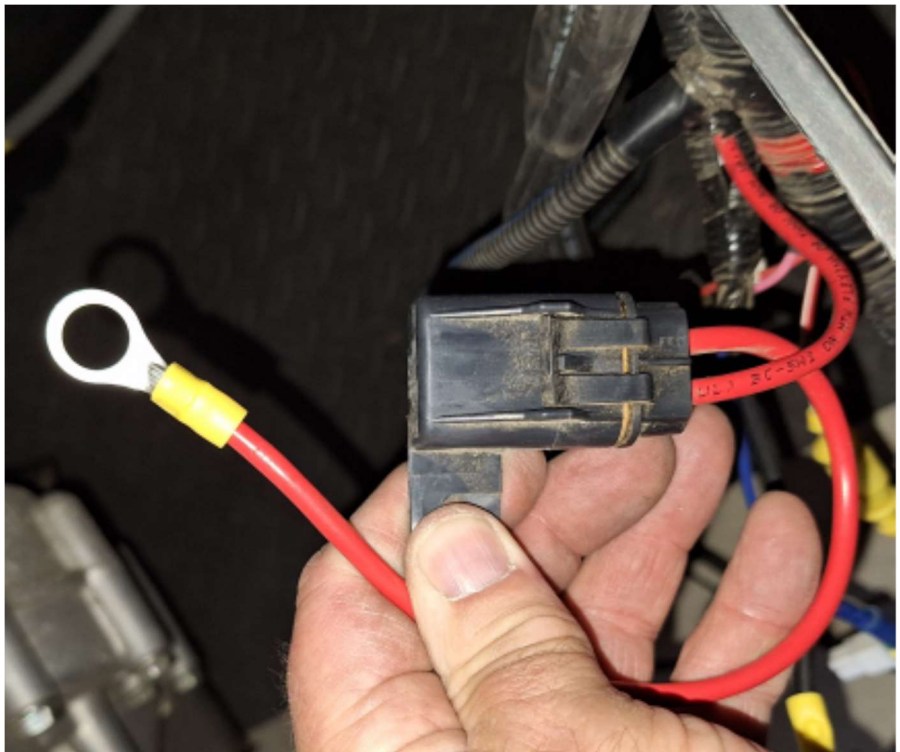
Locate the BLACK 10AWG cable with the 5/16" ring terminal. This was connected to the OEM Controller's B-NEG terminal.

1. Cut the 5/16" Ring terminal and strip ~1/4" insulation.
2. Crimp to the 10AWG 13" extension cable from the AC1 Motor controller B-NEG terminal.



Locate the RED FUSE holder for the charger port with 5/16" terminal. This was connected to the solenoid INPUT from the battery positive.

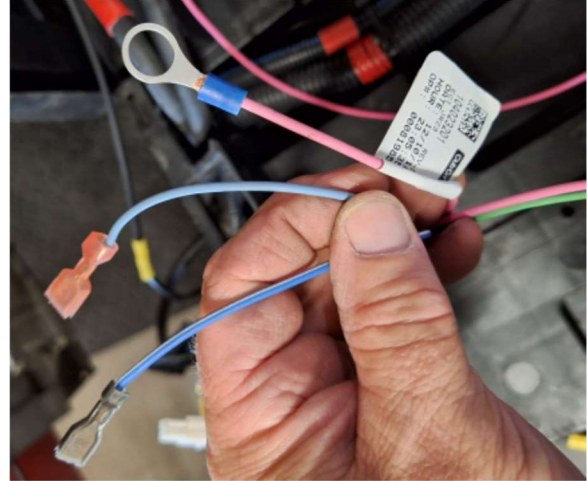
1. Cut the 5/16" Ring terminal and strip ~1/4" insulation.
2. Crimp to the YEL-3/8" RING terminal. This will connect to the SOL-INPUT coming from the battery positive.



**WIRING Continued:**

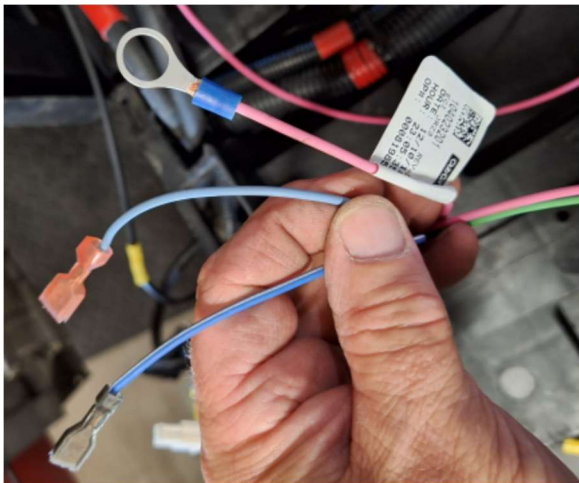
Locate the PINK TOW/RUN wire with the label:

1. Cut the BLUE FASTON terminal and strip ~1/4" insulation.
2. Crimp to the BLUE 3/8" RING terminal. This will connect to the SOL-INPUT coming from the battery positive feeding TOW/RUN.



Locate the two LT/BLU and DK-BLU with WHT stripe. They have FASTON terminals for the small OEM solenoid coil.

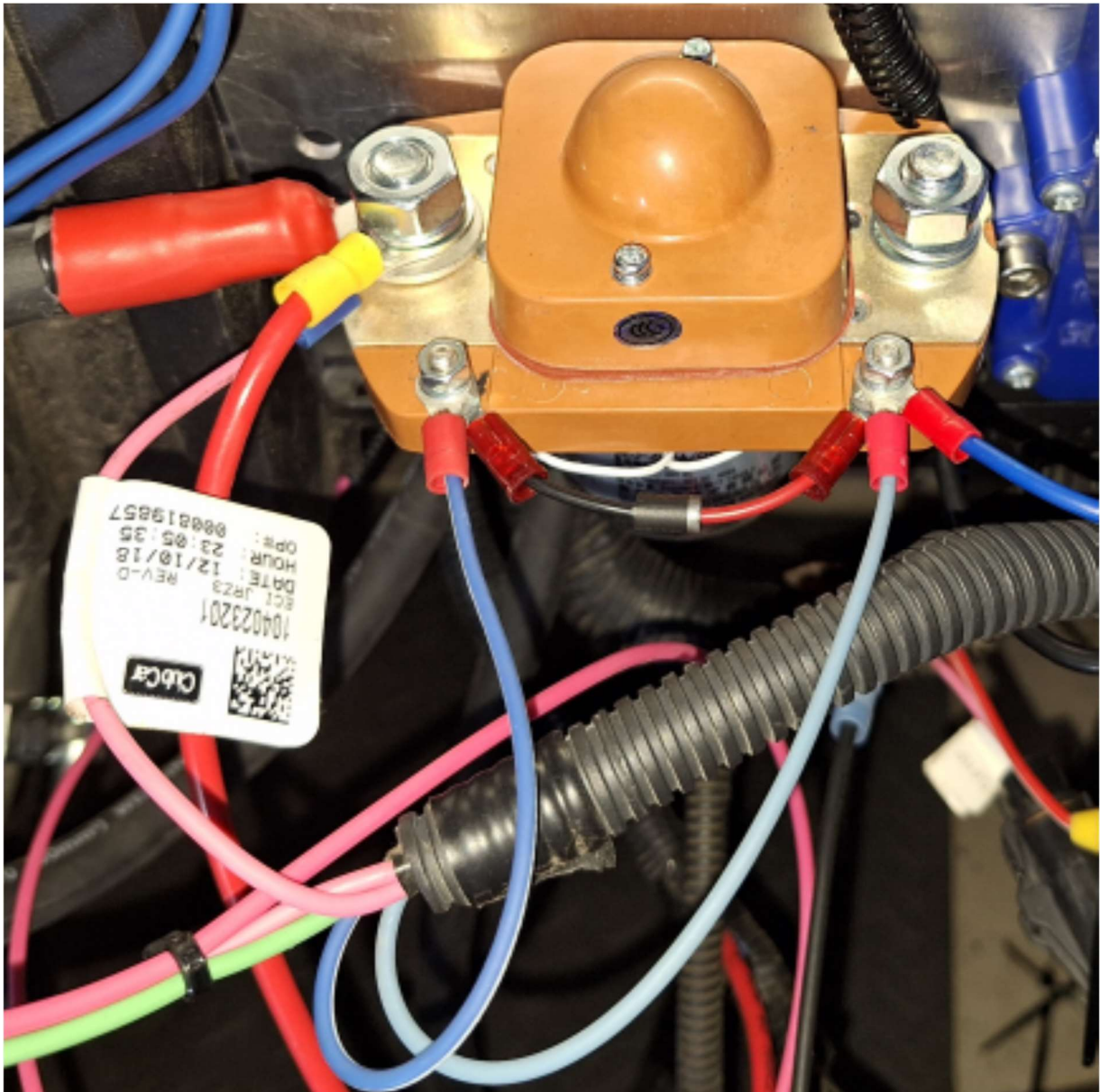
1. Cut the FASTON terminals and strip ~1/4" insulation.
2. Crimp to the RED #10 RING terminal onto each wire. LT/BLU will connect to the SOL-POS COIL terminal. The DK-BLU with WHT Stripe is COIL-NEG.



## 6.6. SOLENOID WIRING

The Solenoid input has THREE wires, 2AWG BATTERY Positive cable, the CHARGER positive 10AWG fuse holder, and the PINK TOW RUN wire.

1. Connect the three cables, Battery Positive 2AWG INPUT, 10AWG fuse holder Charge cable, and the PINK TOW RUN wire (with LABEL) to the Solenoid as shown.
2. Connect the DK-BLU/WHT Stripe to the COIL-NEG (Black side of the coil suppression diode if equipped).
3. Connect the LT-BLU wire to the COIL-POS (RED side of the coil suppression diode if equipped)





SOLENOID WIRE Continued:

4. A battery fuse is required (Not supplied) an example fuse holder shown below for reference installed in a suitable location. (See AC1 controller operators manual FUSE SECTION for fuse size ratings). Connect BATTERY POSITIVE to the fuse holder.

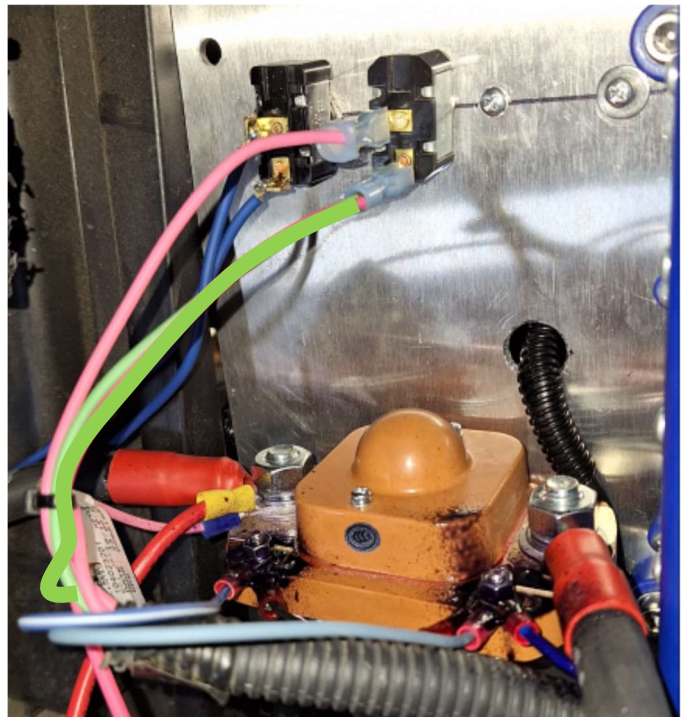
**CAUTION: DO NOT INSTALL THE FUSE YET!**



5. Connect cable 5/16" ring to the fuse, the 3/8" ring to the 400amp solenoid.

For hi-corrosion or coastal environments, its recommended to spray battery terminal sealant on the two COIL wire terminals. This prevents corrosion or conduction by salty area.

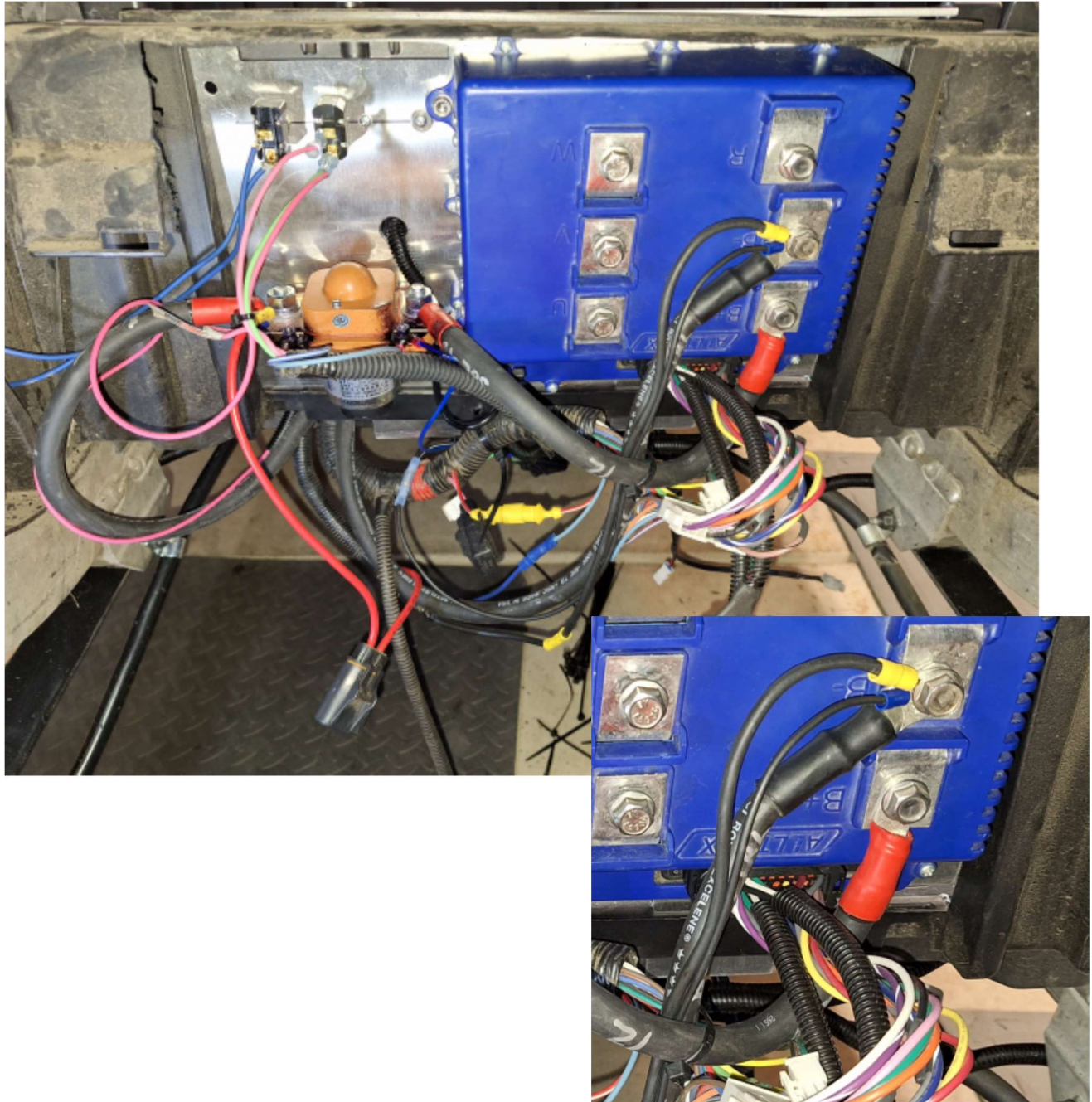
1. Connect the TOW/RUN wires PINK to Center & GREEN to Bottom.
2. Small spray of terminal protector onto the solenoid coil thermals.



**6.7. AC1 CONTROLLER WIRING:**

Battery Negative has THREE wires on the controllers B-NEG terminal.

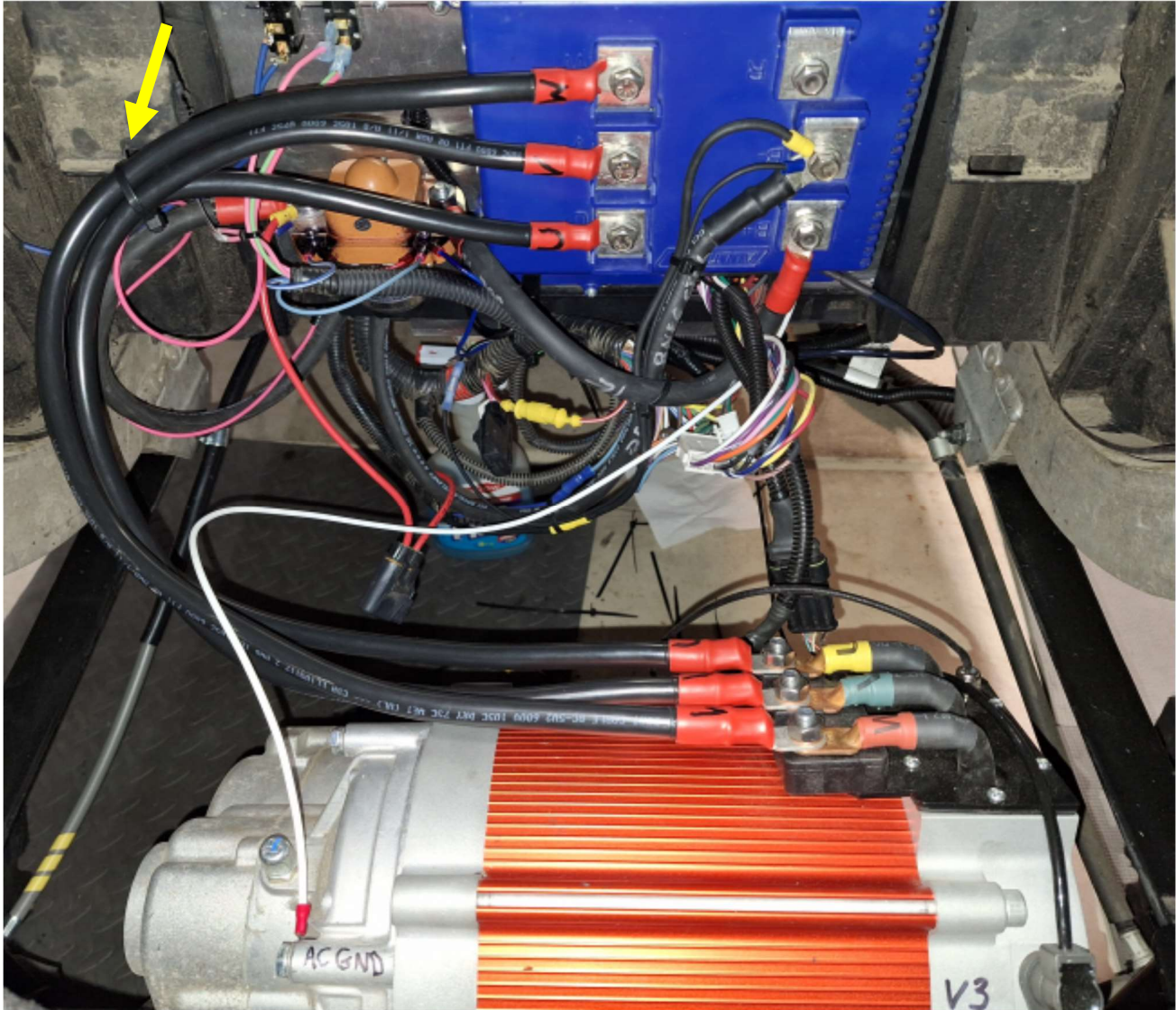
1. Connect the Black 10AWG CHARGER cable, 12AWG BLACK cart harness negative wire, and the BATT-NEG cable to the AC1-B-NEG terminal. Torque to the specifications listed in the operator's manual.
2. Connect the Controller wire harness, PDS, or 16 pin (DCS not supported). The 16 PIN TXT-48 shown below.



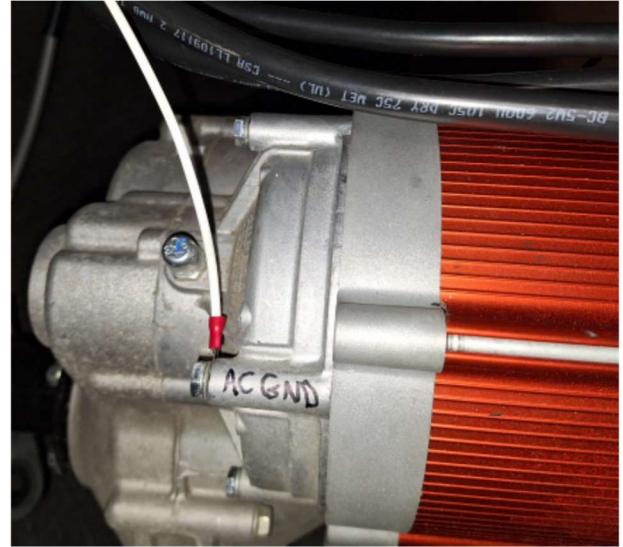
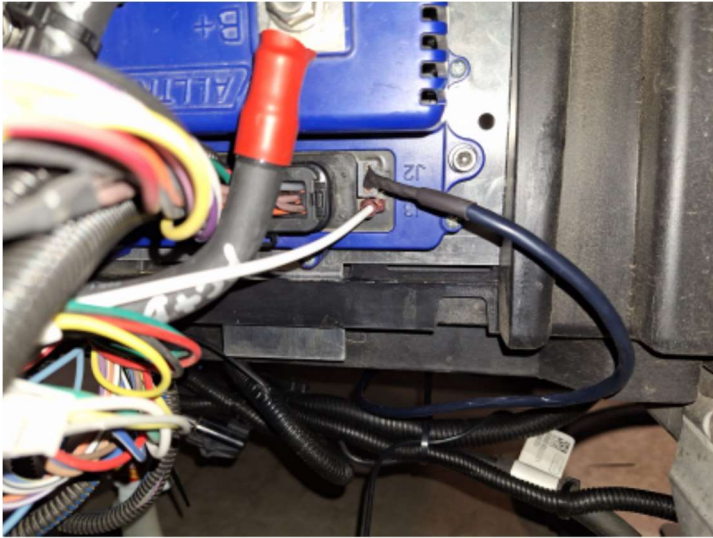
**6.8. AC MOTOR CABLES:**

It is assumed the DC motor and cables were removed and the AC motor installed.

1. Install and connect the 3-phase motor wires as shown with U, V, W going to the correct terminals. **U=BOTTOM / V=CENTER / W=TOP** Torque bolts to specs on AC1 Manual **SPECIFICATIONS SECTION**.
2. ZIP Tie the cables using the slots in the plastic shroud as shown.



3. Connect the **AC ground wire** to the AC motor controller GND faston (next to the 3-pin connector) and to the AC motor and use a motor mounting bolt for the AC ground wire.



4. Connect the 4-PIN SPEED Sensor plug and the TWO pin TEMP sensor plug. Zip tie the cables away from HI-POWER cables.



5. Install the proper ANN Fuse into the fuse holder. (See AC1 operators manual)
6. Measure voltages at the solenoid positive and controller B-NEG and **verify the correct voltage and polarity is available.**
7. Turn on TOW / RUN switch to RUN.
8. It is recommended to do a first test on a jack to determine direction is correct. Do not over-rev the axle, just enough to verify Forward and Reverse direction is correct. If not see the TOOLKIT manual to correct direction in software.

## 7. Accessories:

### 7.1. USB Extension Cable:

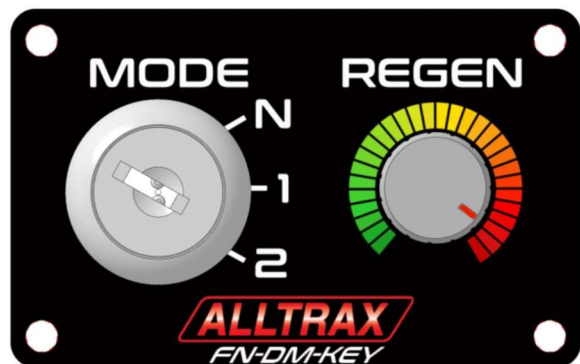
The controller is programmed, monitored, or upgraded through USB or Bluetooth. If Bluetooth option is not available (or enabled) the USB is difficult to reach on the Precedent, Tempo and Onward cars. The 3D printed USB-B cable extension kit is included to mount to the panel as shown next to the TOW/RUN switch. **Unless in use, The USB CAP should be on at all times to keep battery acid out of the connector.**



### 7.2. FN-KEY Personality Switch Box:

The FN-KEY (on left) included in your kit (with optional dash mount FN-DM-KEY shown on right) provides 3 personality functions: Golf Mode (10-14MPH), Street Mode (14-20MPH) or Go-Fast Mode (depending on safe operation and tire size, do not exceed manufacturers RPM limits or braking function). **See the included FN manual for more information.**

Free software on our web site – Download, Adjust, and Drive.



***"Thank You Nikola Tesla for a better motor"***

It was really all he asked for in his lab journal. He said what he designed was for the future, and he hoped we would remember him and his contribution.

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