



eVault Max 18.5 BATTERY MODULES DISASSEMBLY

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1 – INTRODUCTION

This guide will help with the disassembly and reassembly of the eVault Max battery to allow moving the battery modules separately from the frame and electronics. We will be handling charged large battery modules that can discharge over 1,000 Amps if shorted, this can be fatal. **Only certified installers** should perform this task. Any damage that occurs during this is not covered by Fortress power and may void the warranty. Please follow the installation guide prior to following any step listed here verifying the batteries operation----make sure you understand the proper installation before attempting to open and troubleshoot the eVault Max. **Always read the warning notices on the installation manual** and take all necessary safety precautions when dealing with 48V batteries.

2 – eVault MAX GENERAL DISASSEMBLY

Please refer to the following steps when disassembling the eVault Max:

- 1) Remove the eight (8) screws that attach the front metal cover (Appendix A-1)
- 2) Slowly slide off the front cover as far as the LCD wires will allow—be careful not to pull too far and strain the LCD wires
- 3) Remove the six (6) screws that hold the plexiglass cover (Appendix A-2)
 - a. You can now access the BMS panel

Steps 3 and onward are for further disassembly

- 4) Remove the eight (8) screws that attach the back metal cover (Appendix A-3 **red**)
- 5) Remove the eight (8) screws that attach the side metal covers (Appendix A-3 **green**)
- 6) Slide off the covers, exposing the Battery Modules
- 7) You should now have access to the battery internals (Appendix A-4)
- 8) Turn off the BMS by removing the Power cable. This connector may have some RTV Silicon on it preventing it to be easily removed. If this is the case, carefully use a razor knife in the connector (Appendix A-4)

3 – eVault MAX BATTERY MODULE DISASSEMBLY

Once the battery cover has been removed, it is now possible to remove the battery packs directly. **SPECIAL CARE** must be taken to install everything exactly as it was including the specific location of each battery module. Be careful not short battery internals with metal tools. If possible, use only insulated gloves once inside the compartment.

3A – DISCONNECTING THE POWER LEADS AND BUS BARS

The battery is charged to 50 to 56 Volts. (Appendix C-2). The four Battery Packs are approximately 13 Volts each. (Appendix C-3). **TAKE EXTREME CAUTION** when working with power distribution and use electrical tape on all flexible cables to protect from shorting during disassembly and reassembly.

- 1) The standard color designation is **BLACK for NEGATIVE (–)** and **RED for POSITIVE (+)**
 - a. Failure to keep these consistent can lead to personal injury and/or battery damage
- 2) Make sure the battery is off. The power on the have accidently turned on when cover was removed.
- 3) Make sure the battery breaker is OFF
- 4) Label the Battery Modules 1, 2, 3, 4. Top Battery is 1, bottom is 4
- 5) Before proceeding have electrical tape readily for the next step
- 6) On the side of the battery with Bus Bars connecting the battery modules, carefully disconnect one **NEGATIVE (BLACK)** Cable Lug and wrap the lug with black tape. (Appendix B-2) Then, carefully disconnect the other **NEGATIVE (BLACK)** Cable Lug and wrap the lug with black tape.
- 7) On the side of the battery with Bus Bars connecting the battery modules, carefully disconnect one **POSITIVE (RED)** Cable Lug and wrap the lug with black tape. Then, carefully disconnect the other **POSITIVE (RED)** Cable Lug and wrap the lug with black tape (Appendix B-3)

- 8) Carefully disconnect the three Bus Bars. (Appendix B-1)
- 9) Cover the positive and negative terminals of the four battery modules with electrical tape.
- 10) On the BMS carefully remove the four Battery Module's sampling cables. On the BMS these are labeled CON-4, CON-5, CON-6, CON-7. These connectors may have some RTV Silicon on them preventing them to be easily removed. If this is the case, carefully use a razor knife in the connector (Appendix B-4)
- 11) You are now able to remove the Battery Modules

3B – REMOVING THE BATTERY MODULES

Before removing the battery modules organize your workspace because each module weighs over 50 pounds and should not be dropped and needs to be placed right side up on a solid clean surface.

- 1) Using a Philips-head screwdriver, on the back of the battery, remove the four back frame bars. (Appendix B-1)
- 2) Carefully move Battery 1 sampling cable to protect it from any damage when removing the battery module mounting bolts
- 3) Using a 13mm box end wrench or ratchet, on Battery Module 1 (top), remove the four (4) bolts on the both sides of the battery module (Appendix C-2)
- 4) Carefully move Battery 1 sampling cable to allow it to easily slide out and be free from the frame when the battery pack is pulled out of the back and placed on another clean surface.
- 5) Slide Battery Module 1 out the back, keeping in mind this is heavy and that there are built in handles on the battery pack to allow you to hold it up. Carefully place the battery module on clean surface with bottom side down (do not place on sides or top).
- 6) Repeat Battery Module removal of 2 then repeat for Battery Module 3 then Battery Module 4

4 – eVault MAX BATTERY MODULE RE-ASSEMBLY

4A – REPLACING THE BATTERY MODULES

Before removing the battery modules organize your workspace because each module weighs over 50 pounds and should not be dropped and needs to be placed right side up on a solid clean surface. Also take care not to not short out the terminals.

- 1) Slide Battery Module 4 from the back into the bottom position, keeping in mind this is heavy. Take care so the sampling cable is not pinched or damaged.
- 2) Using a 13mm box end wrench or ratchet, install the four (4) bolts on the both sides of the Battery Module (Appendix C-2)
- 3) Carefully move Battery 4 sampling cable thru the feed hole to the BMS
- 4) Repeat Battery Module installation for Battery Module 3 then repeat for Battery Module 2 then Battery Module 1
- 5) Using a Philips-head screwdriver, on the back of the battery, install the four battery pack bars. (Appendix B-1)

4B –CONNECTING THE POWER LEADS AND BUS BARS

The battery is charged and can delivery over 1000 Amps if shorted. TAKE EXTREME CAUTION when working with power distribution inside the eVault MAX to protect from shorting during reassembly.

- 1) The standard color designation is **BLACK for NEGATIVE (-)** and **RED for POSITIVE (+)**
 - a. Failure to keep these consistent can lead to personal injury and/or battery shortage
- 2) Make sure the battery breaker is OFF
- 3) On the BMS connect the four Battery Modules sampling cables. Sampling Cable 1 to CON-4, Sampling Cable 2 to CON-5, Sampling Cable 3 to CON-6, Sampling Cable 4 to CON-7. (Appendix B-2)
- 4) Remove electrical tape from the positive and negative terminals of the four battery modules.
- 5) Carefully connect the three Bus Bars. (Appendix B-1)
- 6) On the side of the battery with Bus Bars connecting the battery modules, remove the electrical tape from one POSITIVE (RED) Cable Lug and connect it to battery module 4. Then remove the electrical tape from the other POSITIVE (RED) Cable Lug and connect it to battery module 4
- 7) On the side of the battery with Bus Bars connecting the battery modules, remove the electrical tape from one NEGATIVE (BLACK) Cable Lug and connect it to battery module 1. Then remove the electrical tape from the other NEGATIVE (BLACK) Cable Lug and connect it to battery module 1
- 8) Connect the BMS Power cable. (Appendix A-4)
- 9) Install both side panels (Appendix A-3)
- 10) Install the back panel (Appendix A-3)
- 11) Install the plexiglass cover on the front then the front panel. (Appendix A-2, Appendix A-1)
- 12) You can now turn on the battery

5 – FURTHER HELP

Please contact techsupport@fortresspower.com with any concerns or questions.

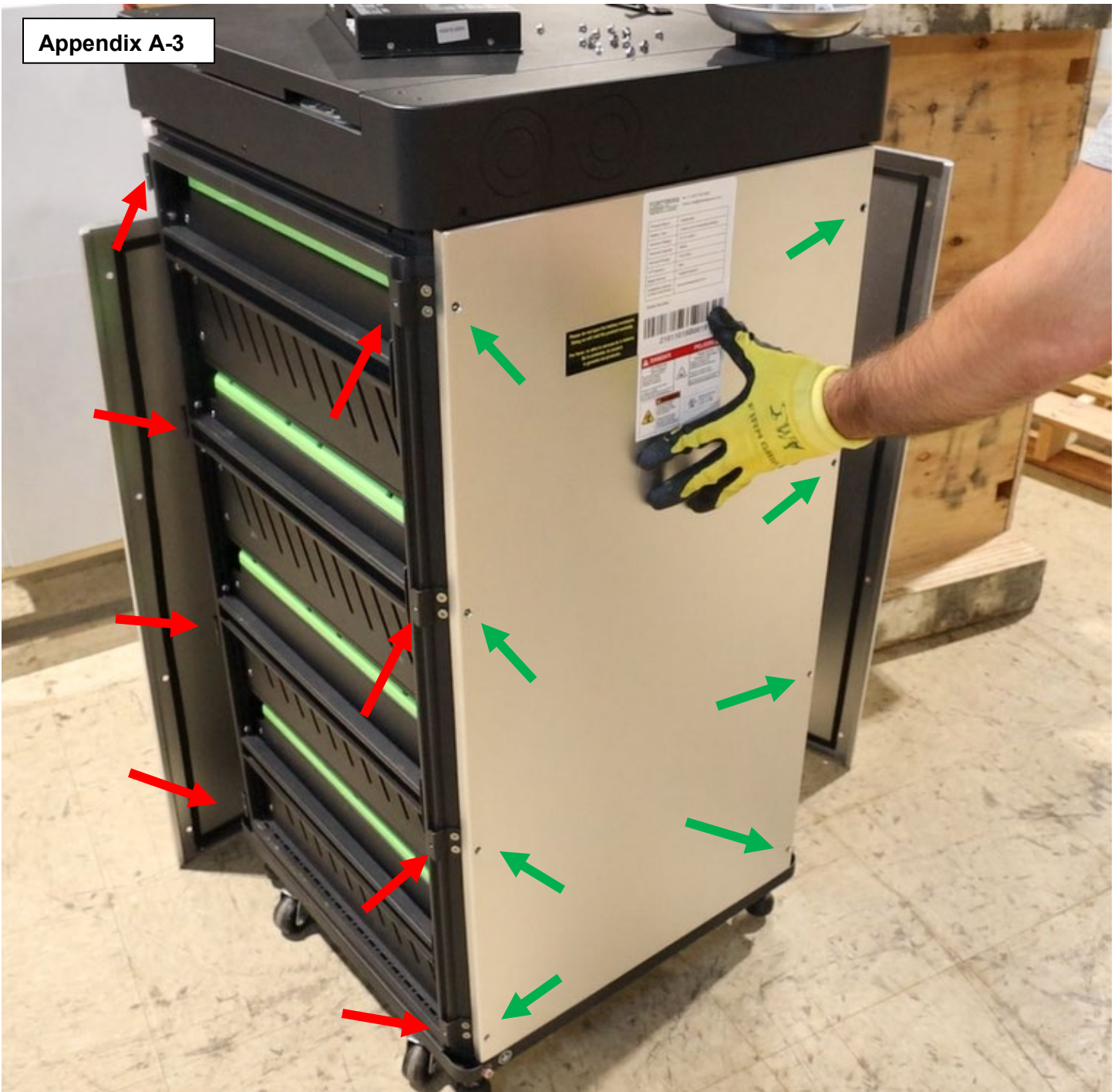
APPENDIX

APPENDIX A

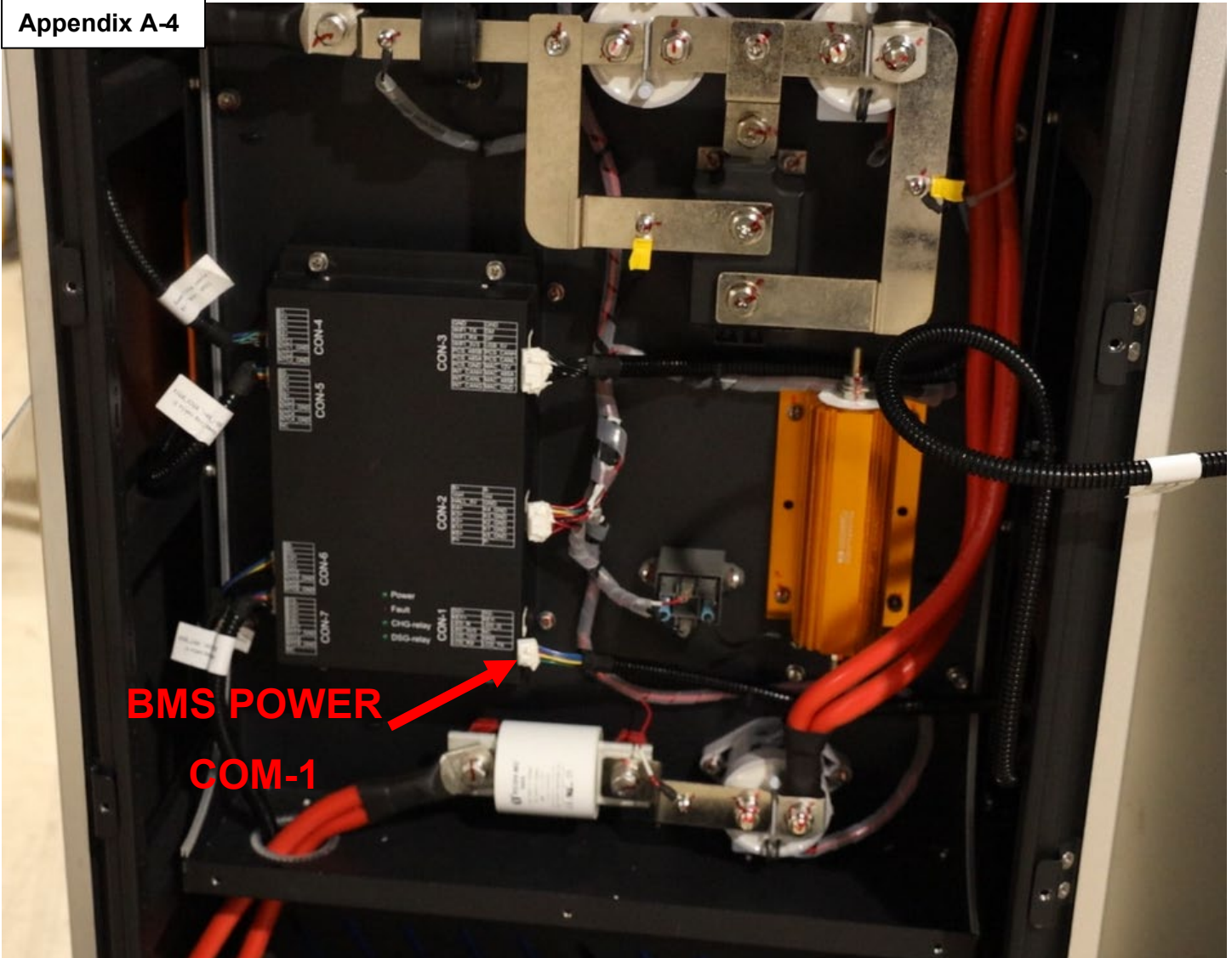




Appendix A-3

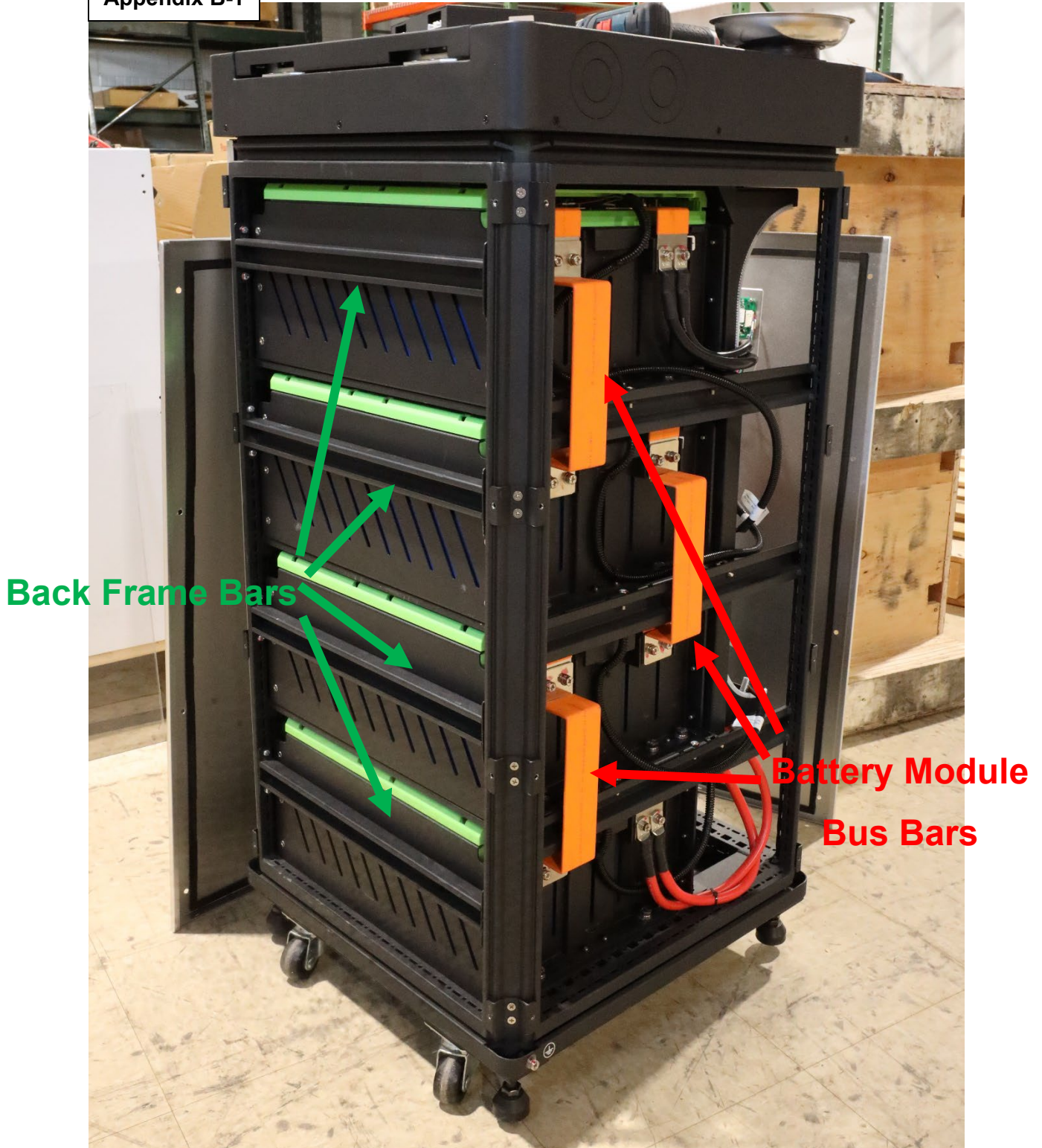


Appendix A-4

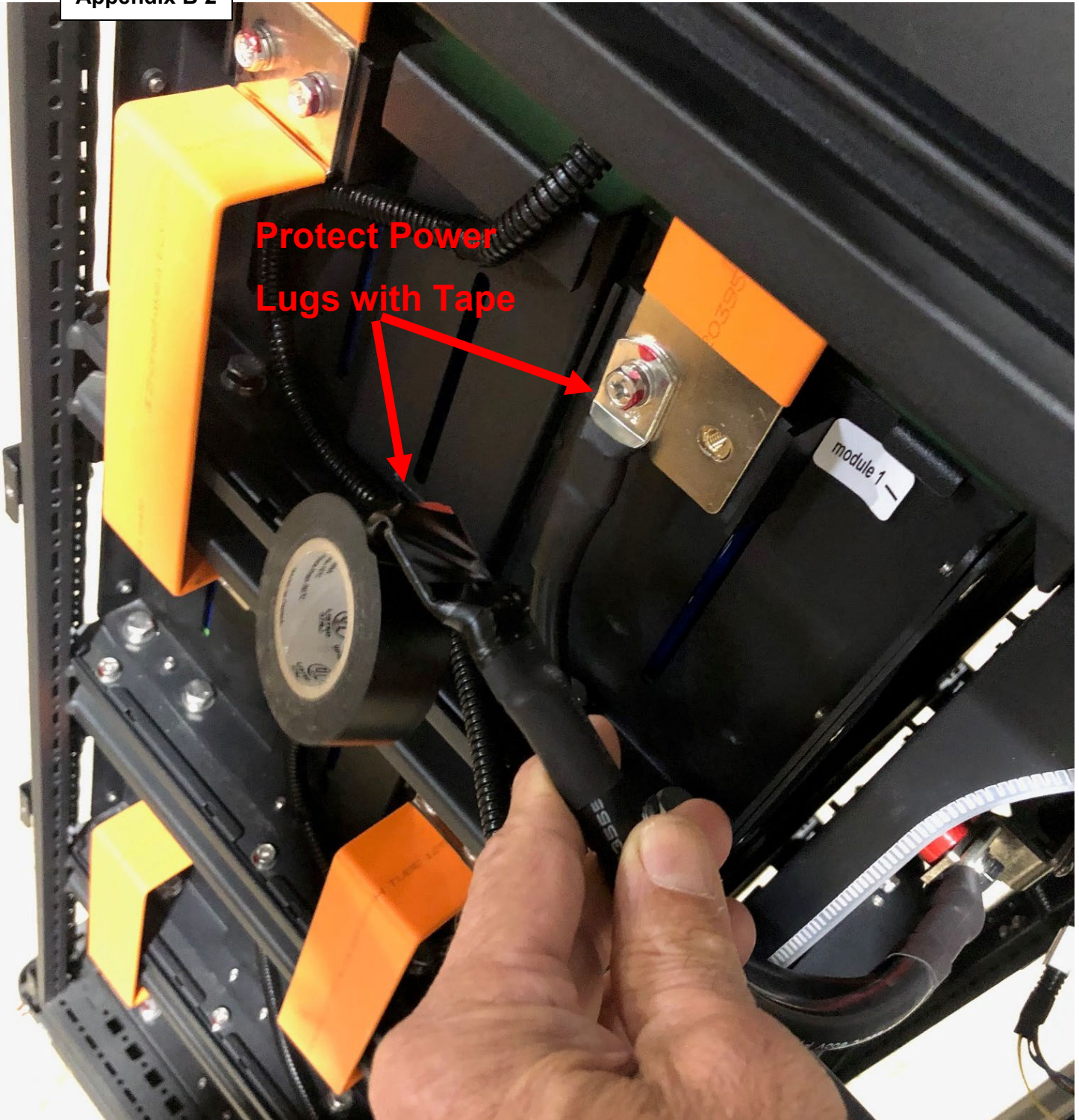


APPENDIX B

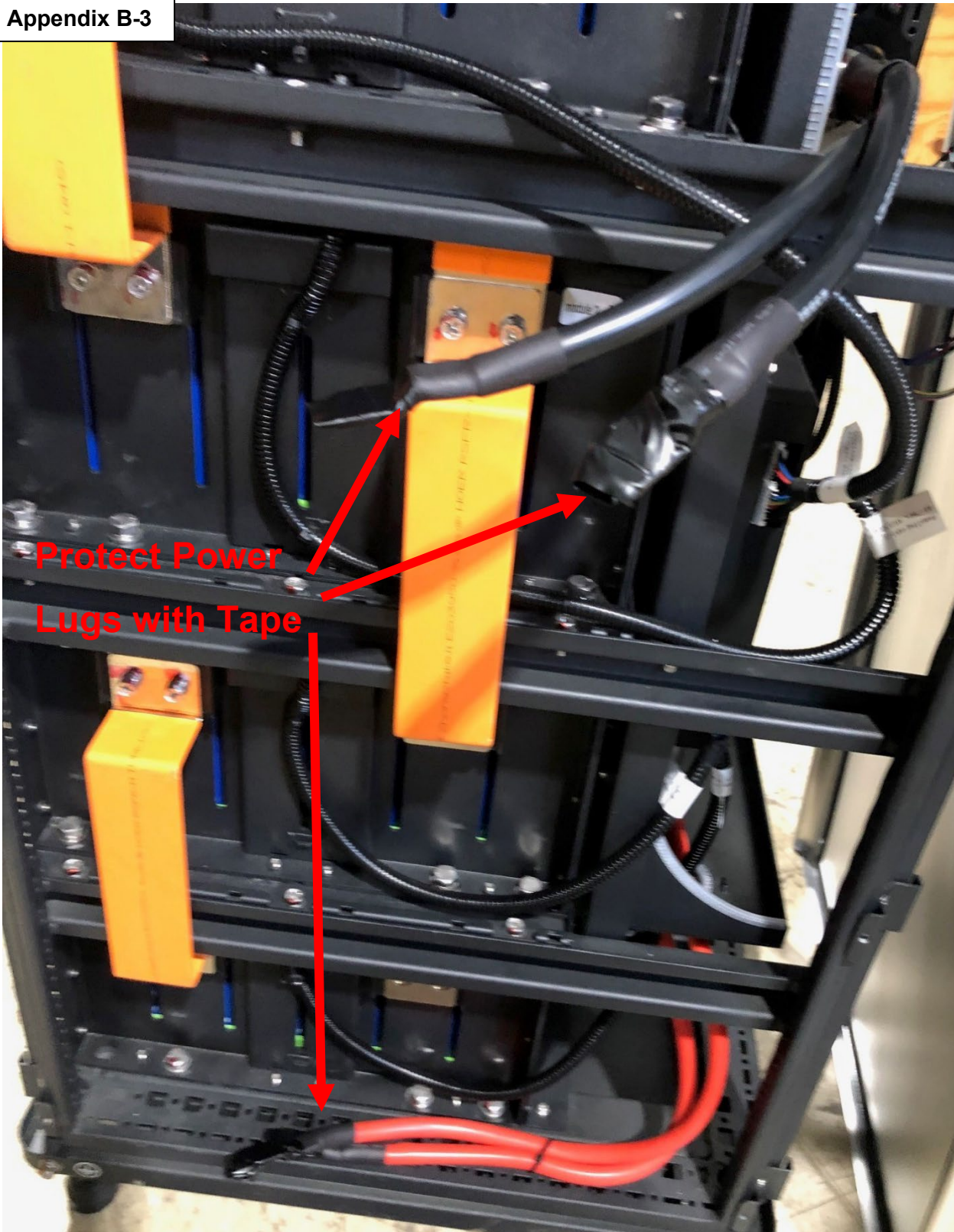
Appendix B-1

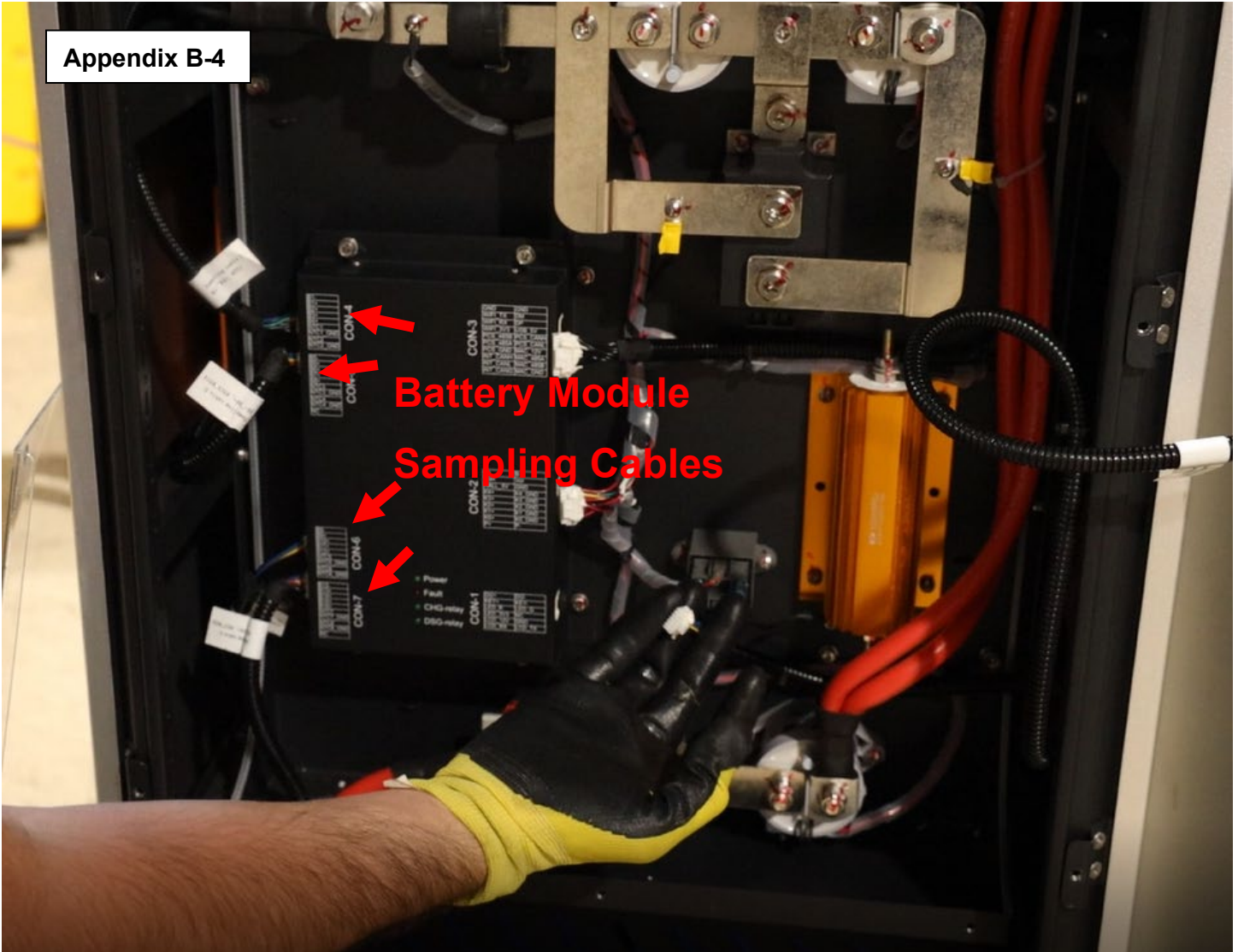


Appendix B-2



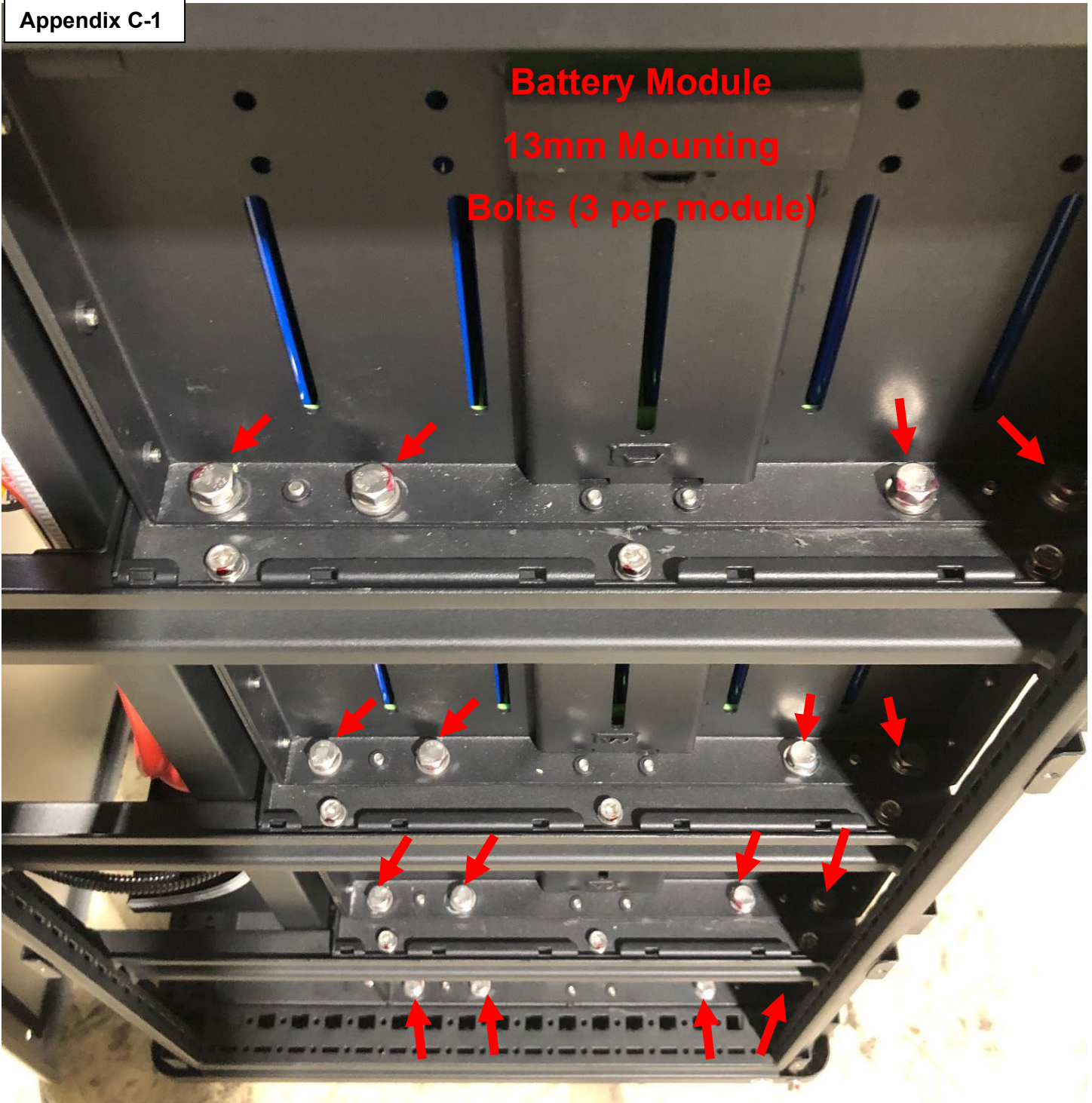
Appendix B-3





APPENDIX C

Appendix C-1



51 to 56 Volts Black Battery Cable lugs to Red Battery Cable lugs

Appendix C-2



13 Volts Battery Module Terminal to Terminal

Appendix C-3

