Document Title	E140-1003 EV002 48A Assembly Process
Revision Number	7
Status	Release
Issue Date	08/01/2022

Document Revision History

Revision	Date	Author	Description of changes
1	03/03/2020	Henry Plascencia	Initial Version
2	06/22/2020	H Plascencia	Updated spring,added magnet, updated screws
3	7/8/2020	H Plascencia	Updated BOM, Updated assembly procedure order
4	7/22/2020	H Plascencia	Added Warning label, removed UL label
5	10/05/2020	H Plascencia	Updated BOM, added process changes from CAR
6	10/19/2020	H Plascencia	Modified to be 48A specific
7	08/01/2022	H Plascencia	Updated assembly operations

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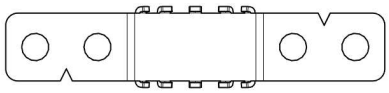
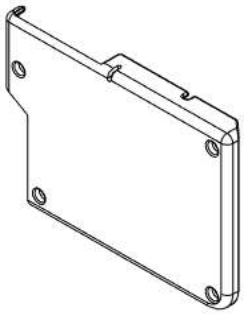
Tools Required

- T10 Torx Screwdriver
- T15 Torx Screwdriver
- T20 Torx Screwdriver
- PH2 Screwdriver
- Slotted Screwdriver
- ⅛” Flathead Screwdriver

Bill of Materials

Quantity	Item	PN
2	Strain relief brackets	Evercharge E310-0008 
1	Lid/Lens Assembly	Evercharge E700-1010 
1	LV Shroud	Evercharge E330-0002 
1	HV Baffle	Evercharge E330-0003

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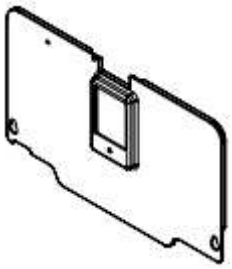
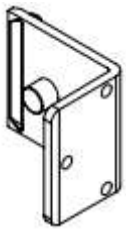
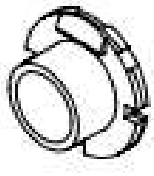
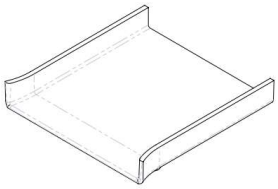
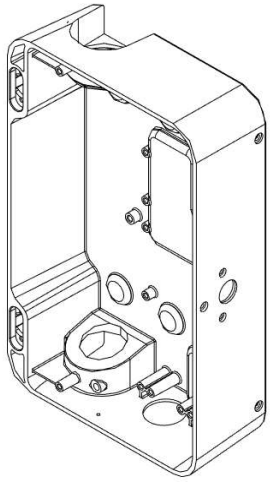
1	Occlusion Panel	Evercharge E330-0004 
1	Grommet	Evercharge E330-0005 
1	Latch	Evercharge E330-0007 
1	Breaker bracket	Evercharge E330-0010 

1	Catch	Evercharge E330-0012 
1	Button	Evercharge E330-0013 
1	Modem Support Tray	EverCharge E330-0014 
1	Enclosure	Evercharge E340-0001 
1	EV002 LV PCBA	EverCharge E700-1001
1	EV002 HV PCBA	EverCharge E700-1002

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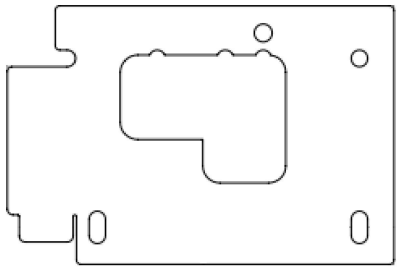
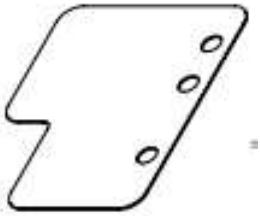
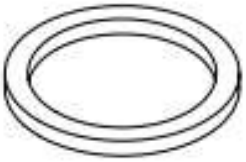
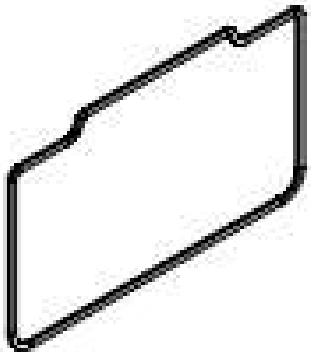
1	insulator, HV	Evercharge E350-0001 
1	pad, thermal	Evercharge E350-0002 
1	seal, inlet	Evercharge E350-0003 
1	seal, door	Evercharge E350-0004 
1	Output Cable	ITT J2CE4821

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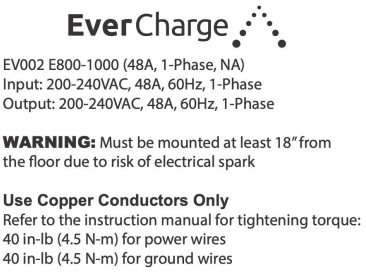
2	Hinges, Black	E700-1029 
1	Breaker	General Electric THQB2160 (for 48A unit) 
1	Internal Label	Evercharge E180-1001 
1	Warning Label	Evercharge E180-1004

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1	O-ring, 1.50mmCS X 19.00mmID	EverCharge E300-0019
1	Spring Outer Dia 0.480", wire dia 0.043", length 1.250", Rate 10.00 lbs/in, music wire spring	EverCharge E300-0012
4	3.5 x 15, Delta PT - Flat head	Evercharge E320-0002 
2	4 x 15(w/shoulder), Taptite II (DIN7500) - Special	Evercharge E320-0001 
11	4 x 12, Taptite II (DIN7500) - Pan Head	EverCharge E300-0001
4	6-32 x .625, Taptite II (DIN7500) - Flat Head - (82°)	EverCharge E300-0003
9	3.5 x 10, Delta PT - Pan Head	EverCharge E300-0003
2	4 x 12, Delta PT - Pan Head	EverCharge E300-0004

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12”	Wire Sheathing	Tech-Flex PTN0.25BK
1	RF ANT 2.4GHZ FLAT PATCH IPEX	Taoglas FXP70.07.0259A 
1	8 Position Cable Assembly Rectangular Socket to Socket, Reversed	JST Corporation A08KR08KR26E305A 
1	16 Position Cable Assembly Rectangular Socket to Socket, Reversed	JST Corporation A16KR16KR26E305A
1	GFCI CT Assembly	Evercharge E700-1009 
1	Magnet Neodymium Iron Boron 8.00mm x 2.50mm	Radial Magnet Inc 9029 
As needed	Anti-Corrosion Gel	Super Lube 82016

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1. Apply adhesive in the round boss where the magnet is to be located on the occlusion panel (E330-0004). Place magnet in location and allow adhesive to dry.

2. Place the label jig on top of the panel, then apply the label using the jig as a guide.

3. Insert an M4x12 Delta-PT style screw into the hole on the right side of the panel.

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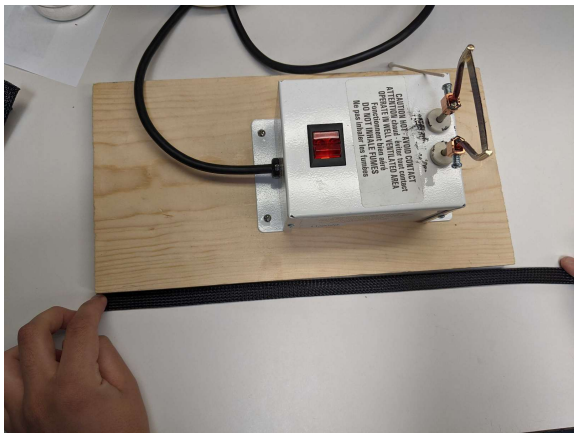
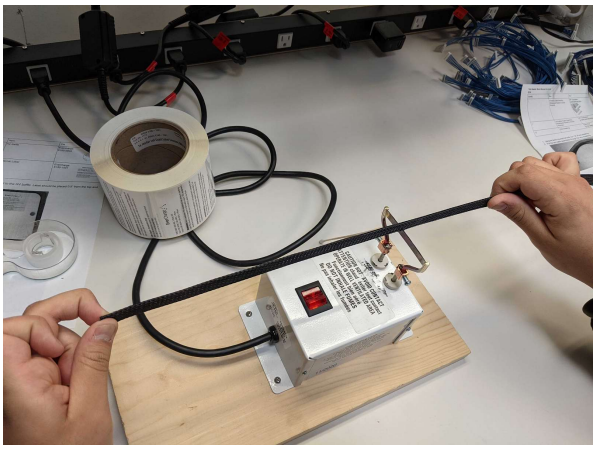
4. Using the label jig, apply the internal label to the HV baffle. Label should be placed 0.5” from the top and centered (~1 1/8” from either side)

5. Using the bench mounted hot knife, cut ~12” of wire sheathing.
    a. Pull the sheathing to the end of the wooden mount



    b. Bring the sheathing up over the blade and pull straight down, keeping your hands and fingers away from the blade



6. Pull the two cable assemblies through the wire sheathing

7. Apply a zip tie at a distance of 9.5” from the end of the connector.

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8. Secure the 60A breaker(THQB2160) on to the high-voltage PCBA (E700-1002).
    a. Place the breaker bracket into the breaker.

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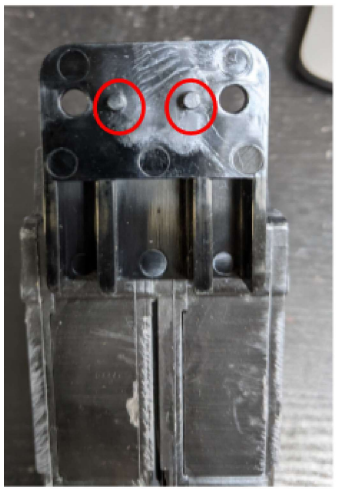
b. Position the breaker and bracket (E330-0010) onto the PCBA. the alignment pins on the breaker bracket should be seated into the PCBA.



c. Being very careful that the screws are not cross-threaded, use a torque screwdriver to tighten the two (2) Phillips head screws on the breaker to 33in-lbs.

NOTE: If the screw is accidentally cross-threaded, the PCB nut should be replaced in the PCBA before proceeding.

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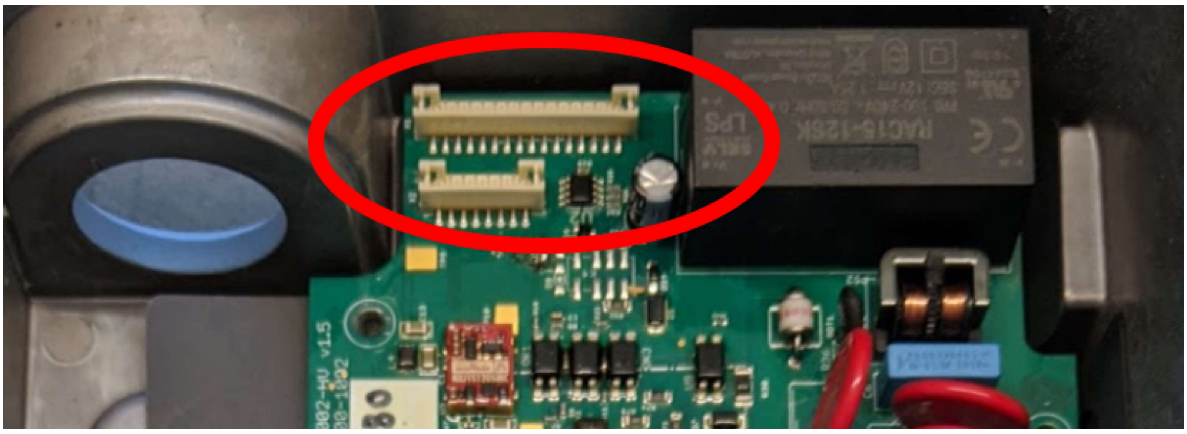
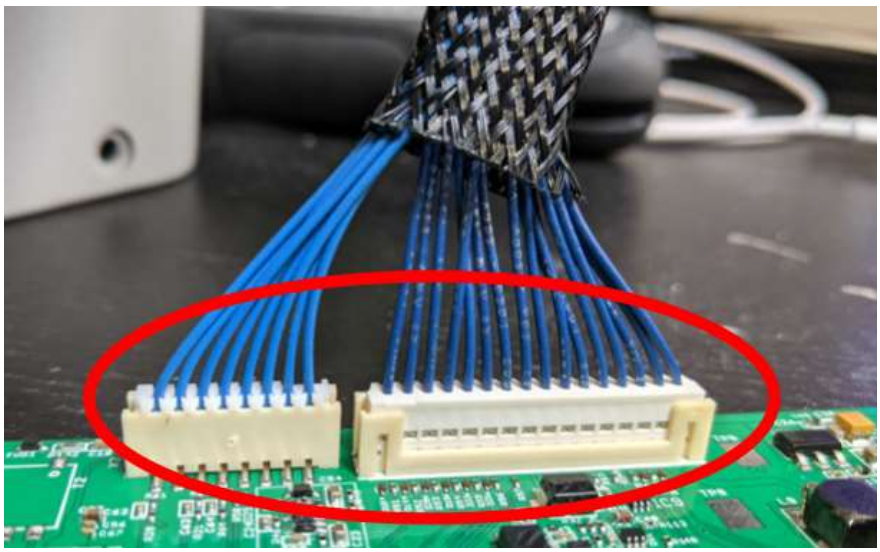
9. Liberally apply anti-corrosion grease to the screws
10. Apply a generous amount of anti-corrosion grease to the inside of the pin connectors on the HV PCBA.



11. Connect one end of the cable assemblies to the HV PCBA. Apply grease to the top of the connectors on the cable assembly



12. Place the enclosure (E340-0001) on a flat work surface.

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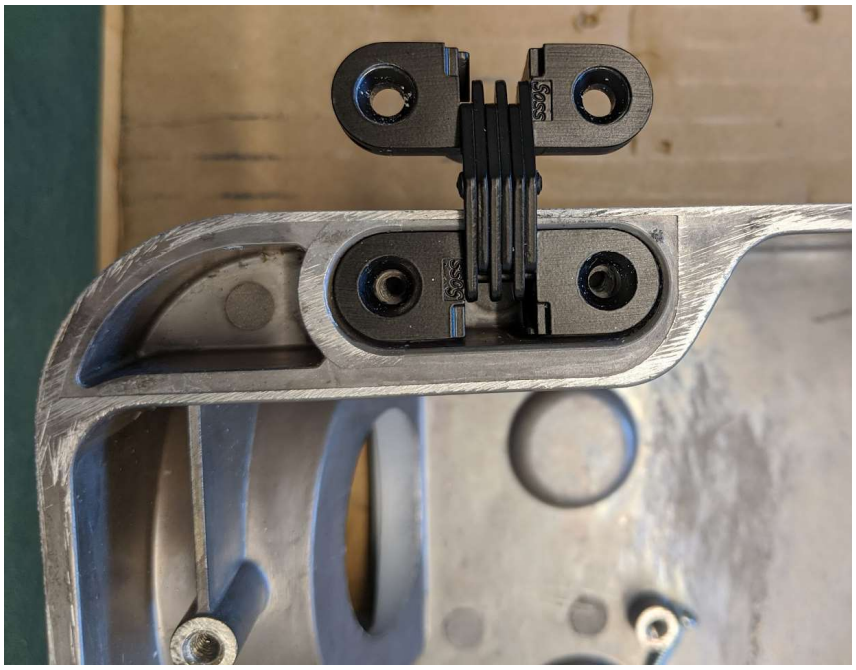
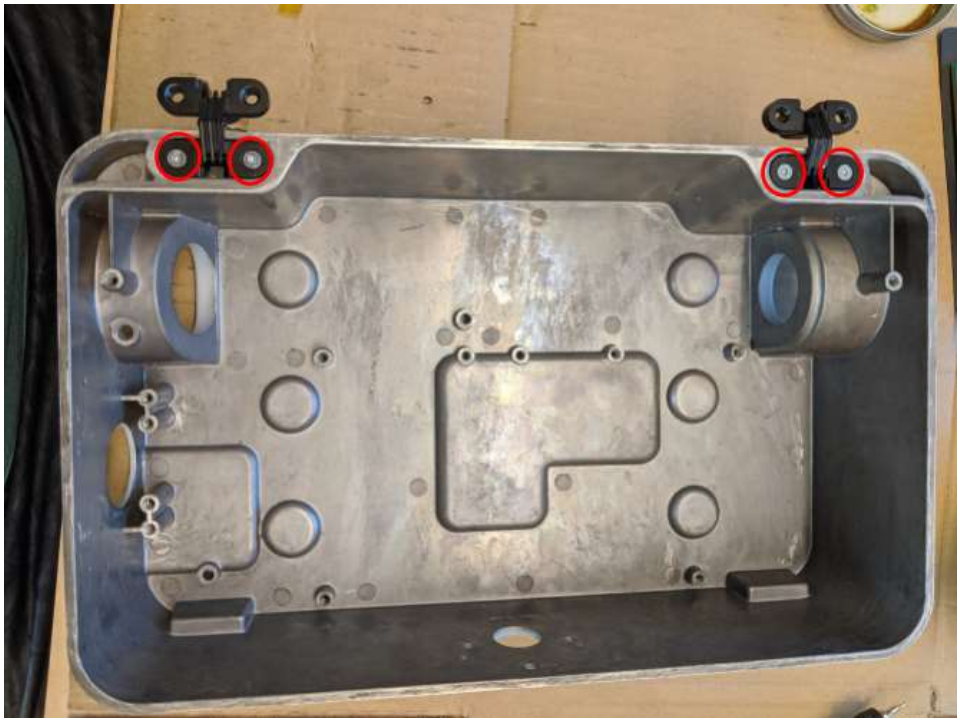
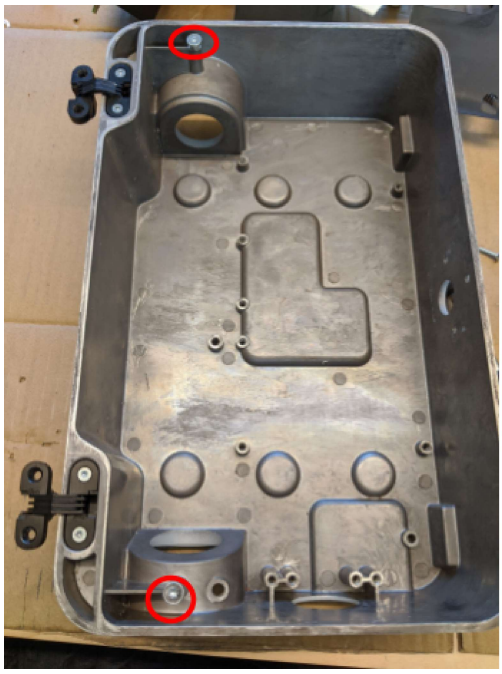
13. Place the hinges into the enclosure (E340-0001).



14. Using a T10 torx bit, install four (4) 6-32x.625” flathead screws, tightening screws to 22 lb-in.



15. Using a T15 torx bit, install two (2) E320-0001, into the enclosure (E340-0001). Tightening to 38 lb-in.



16. Using a swab soaked in Isopropyl Alcohol, clean the inside surface of the enclosure. Allow to dry. Remove the protective back from the inlet seal (E350-0003), and install it into the top of the enclosure as shown.

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17. Bend the HV insulator (E350-0001) along the scored lines on the right side of the piece. Place the bent insulator into the enclosure, with the bend going up the side of the enclosure.

18. Gather the catch (E330-0012), button release (E330-0013), spring, and o-ring.

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a. Place the o-ring into the groove in the button

b. Place the spring inside the button release.

c. Place the button assembly into the catch, ensuring that the three slots are aligned to the alignment features in the catch

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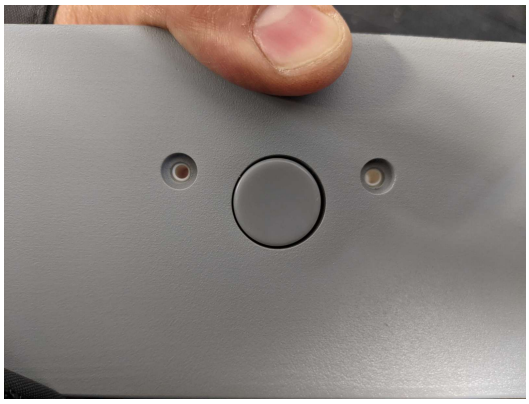
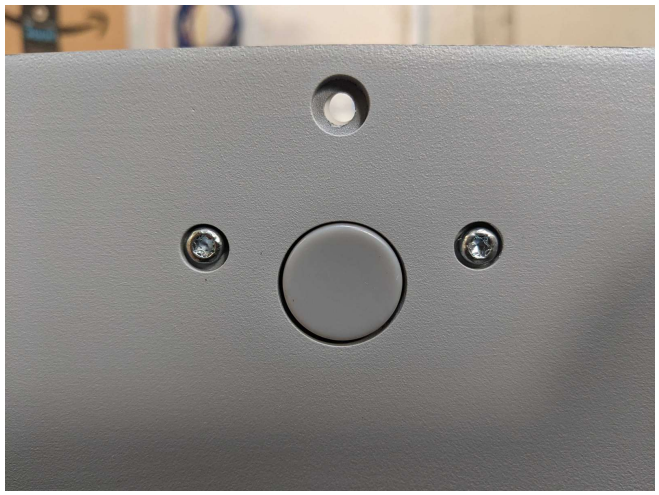
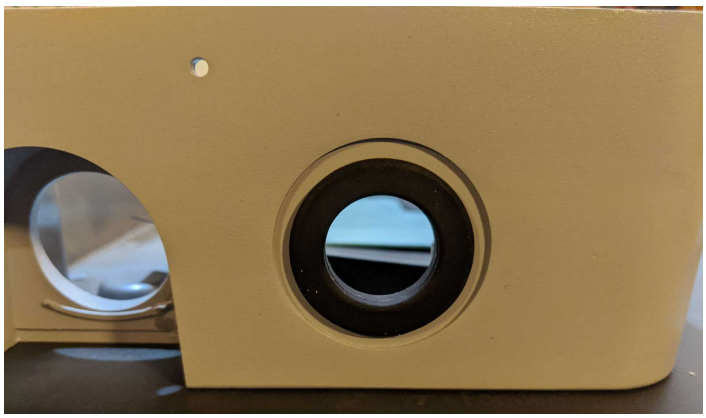
19. Place the button release assembly into the right side of the enclosure, making sure that the alignment ridges fit into the lower holes.

a. Secure assembly by using a T10 Torx screwdriver and two (2) M3.5x10 Delta PT screws. Tighten screws to 10 lb-in



20. Insert the grommet (E330-0005) to the bottom of the enclosure. The smaller side of the grommet should be facing outward.



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21. Carefully remove the protective plastic from both sides of the thermal pad (E350-0002). Align the holes of the thermal pad with the holes in the enclosure. Gently lay down the thermal pad.

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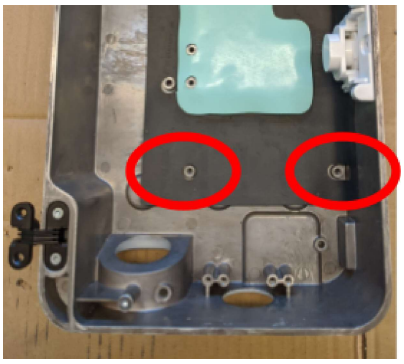
22. Place two alignment pins into the enclosure.



23. **Being very careful not to damage the thermal pad**, place the PCBA into the enclosure. Secure the board using a T20 Torx screwdriver and four (2) M4x12 Taptite screws, tightening to 33 in-lbs.

24. Remove the two alignment pins and secure the board with 2 additional M4x12 Taptite screws, tightening to 33 in-lbs.

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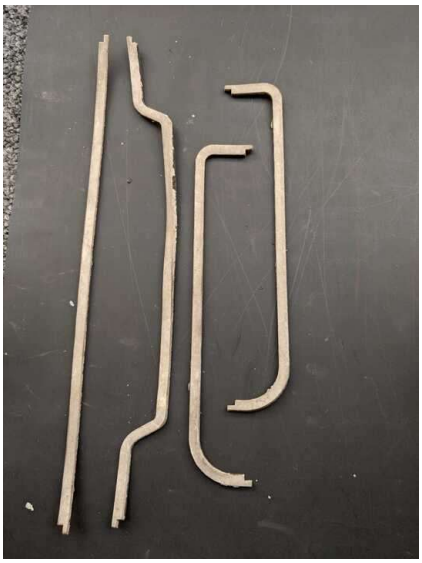
25. Place the HV baffle (E330-0003) into the enclosure and secure it in place using a T20 Torx screwdriver and three M4x12 Taptite screws, tightening to 33 in-lbs.

26. Gather the four lid gasket pieces (E350-0004), and the lid (E700-1010).



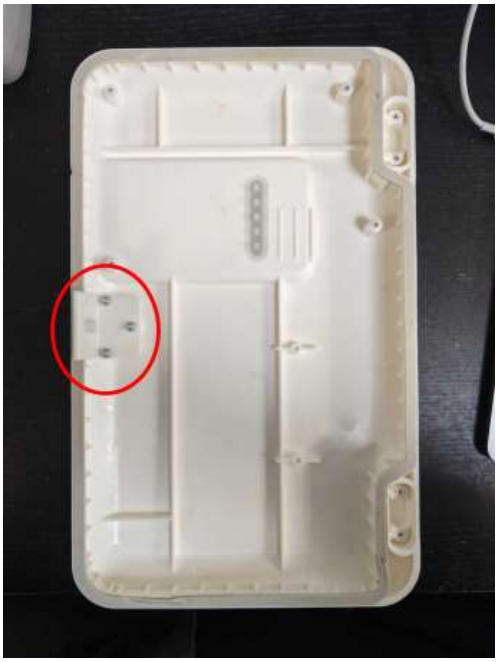
NOTE: The top and bottom pieces are not interchangeable. Please ensure that the curved corners are an exact match.

a. Place the top portion of the gasket piece first, starting with any corner and ensuring the gasket is placed against the outer wall.

b. Place both side pieces into the lid, again ensuring the gasket is near the outside wall and the joints are as close as possible.

c. Place the bottom portion of the gasket, ensuring the joints are tight and the gasket is as close to the outside wall as possible.

27. Secure the latch (E330-0007) to the lid using a T10 Torx screwdriver and three (3) M3.5x10 Delta PT screws, tightening to 10 lb-in.



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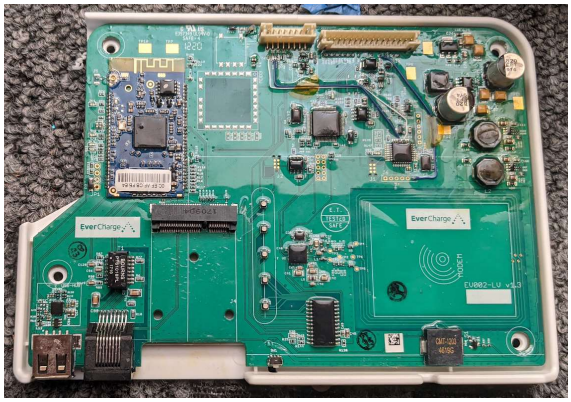
28. Attach the lid to the enclosure using four (4) E320-0002 screws, with a T15 torx drive. Screws should be tightened to 22 in-lbs.

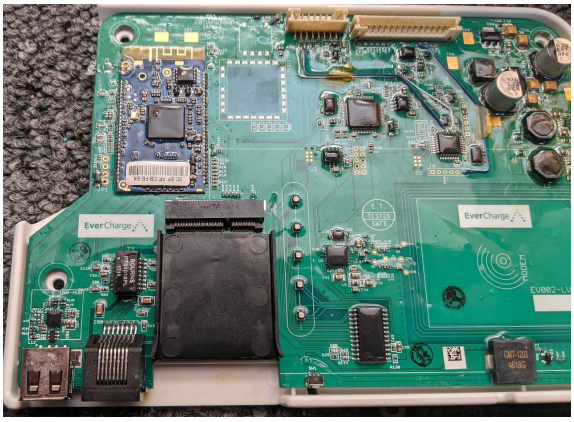
29. Remove the LV PCBA and serialized label from the package. ENSURE LABEL IS NOT MISSING OR MISPLACED!

30. Tape the label to the back of the LV shroud.

31. Place the PCBA into the LV shroud



32. Place the modem tray into the LV board, ensuring that it snaps into place.



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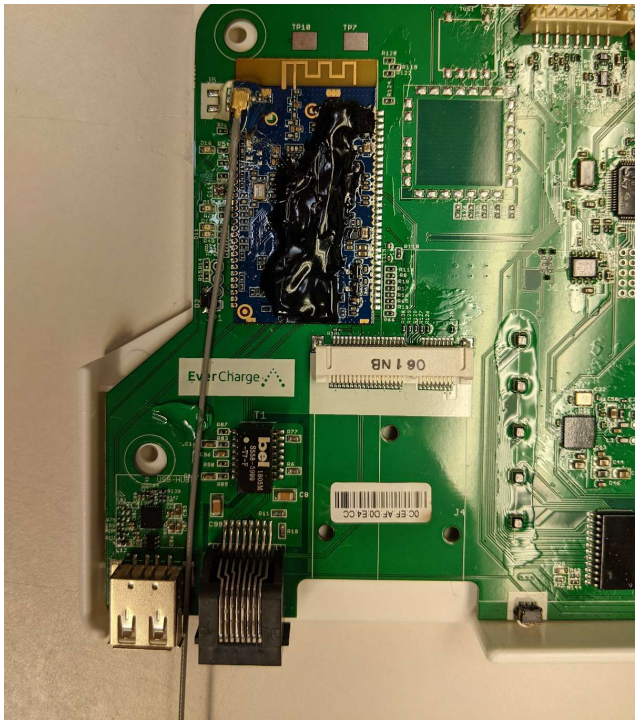
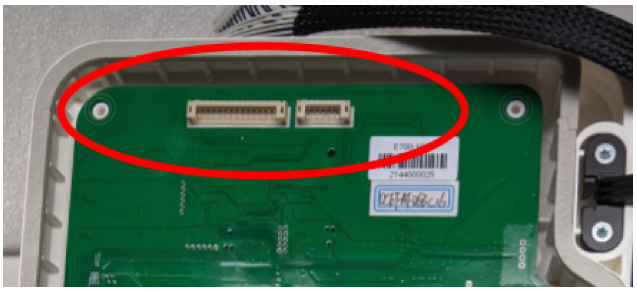
33. Ensure the cable is running down the side of the board between the USB and ethernet ports.



34. Secure the connection of the adapter and LV board with hot melt glue.

35. Connect the LV board to the LV Fixture and follow the steps in *E140-1010 LV Board Tester*
36. Apply a generous amount of anti-corrosion grease to the inside of the pin connectors on the LV PCBA.



37. Connect the other end of the connectors from the enclosure to the LV PCBA

38. Apply more grease to the top of the connectors on the cable assembly

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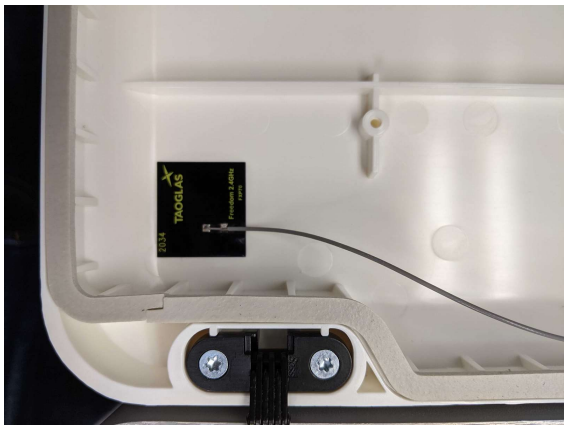
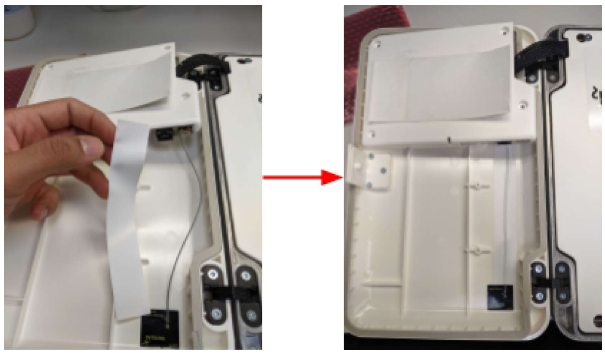
39. Remove the protective back from the back of the antenna, and place it near the bottom of the lid, where the lid begins to curve upward.



40. Cover the antenna cable with the vinyl sticker, ensure the cable is routed as straight as possible.



41. Carefully, place the cover onto the lid, and secure with a T15 Torx screwdriver and four (4) M3.5x10 Delta PT screws, tightening to 10 lb-in. Ensure the cables are being routed towards the top end of the lid.

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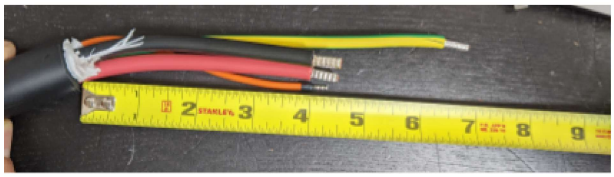
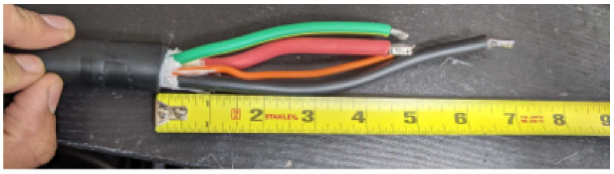
Note: The cable should be routed as close as possible to the top screw and over the hinges, as shown on the left. The cable should NEVER be routed near the bottom of the hinge as this may cause issues powering on the unit.

42. Inspect the output cable and enure the following:
    a. P/E (green/yellow) cable is ~7” long
    b. All other cables are ~5” long
c. Ends of cables are terminated with ferrules





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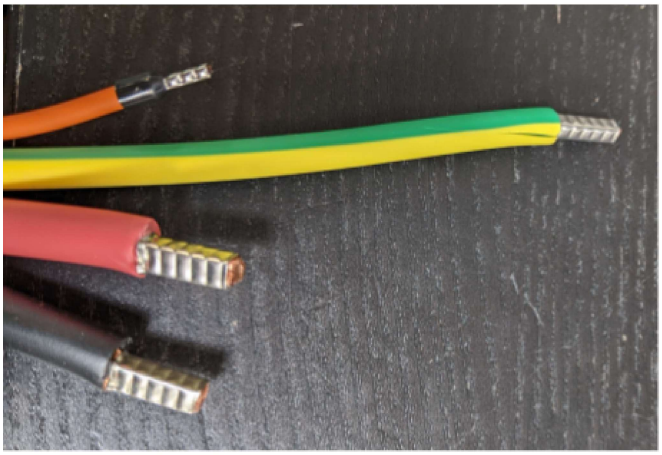
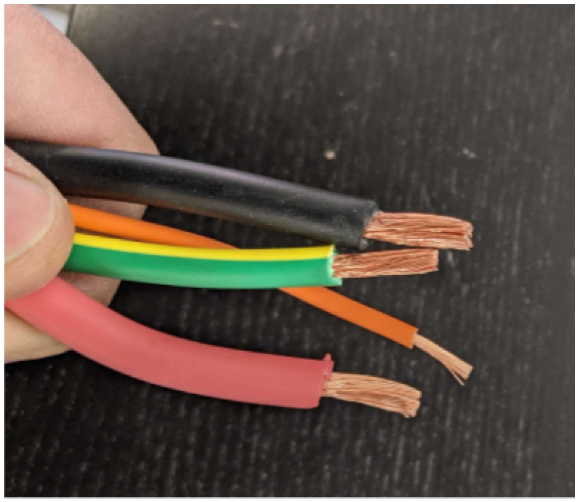
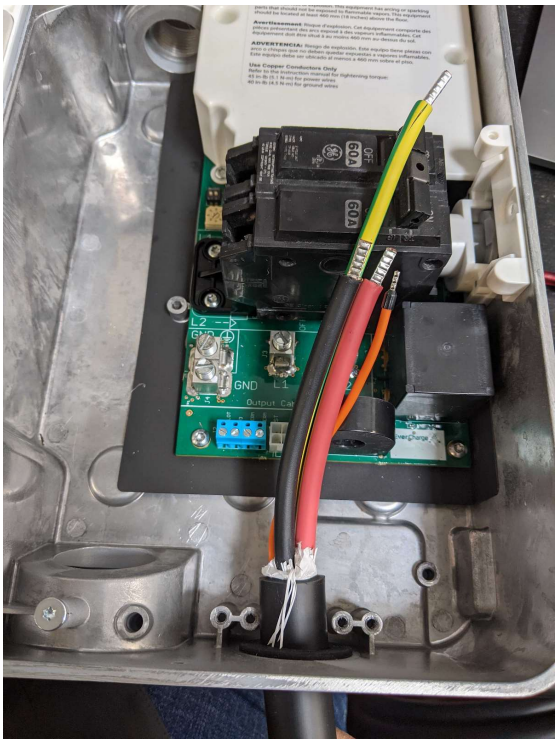




43. Carefully, insert the output cable through the grommet, and into the enclosure.



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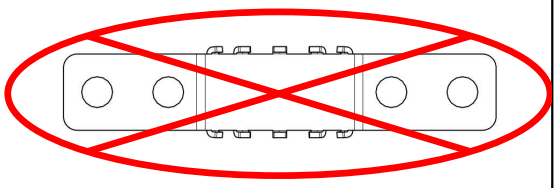
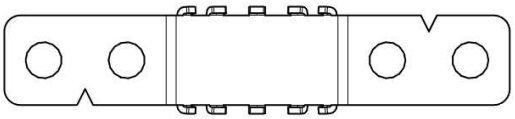
44. Attach the strain relief brackets one-half inch from the top of the cable housing. (E310-0007 for 80A unit, E310-0008 for 48A unit E310-0008 is distinguished by having two notches)

E310-0007 (80A)	E310-0008 (48A)
	

Two brackets must be used per assembly. Brackets must be placed on opposite ends of the cable.

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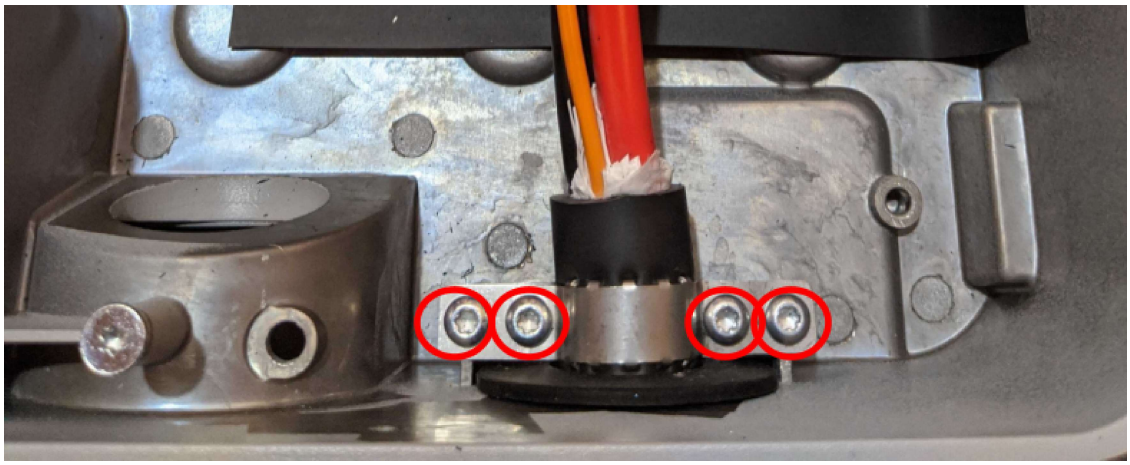
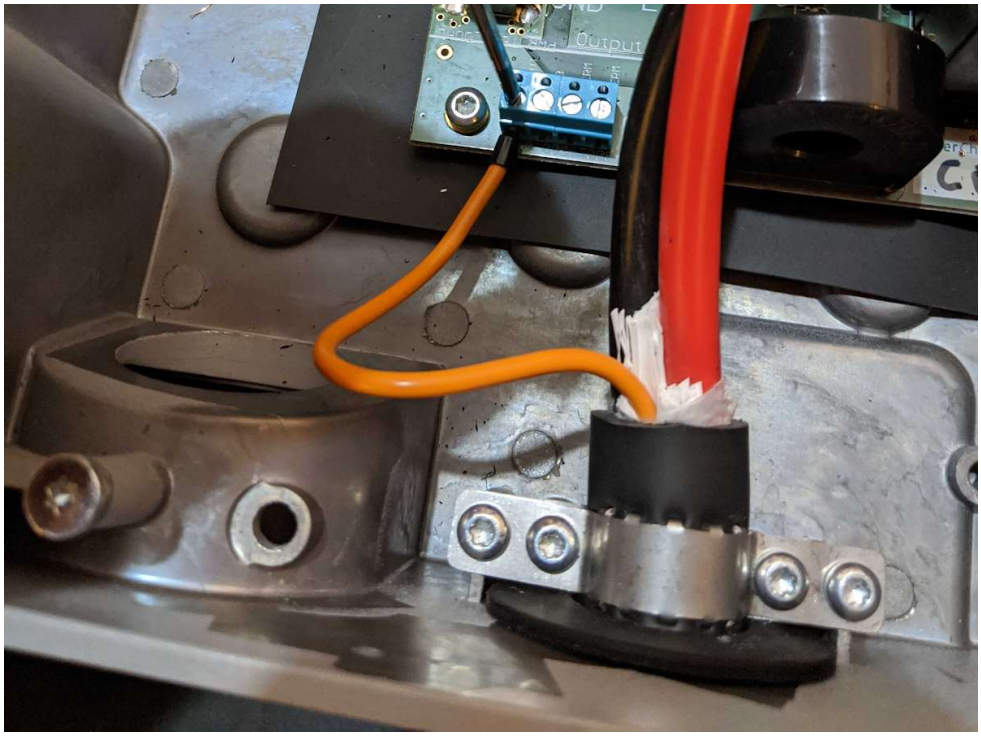
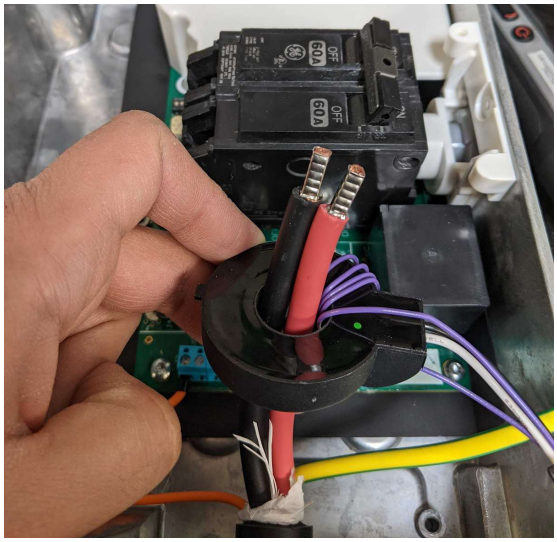
45. Secure the strain-relief bracket to the enclosure using a T20 Torx screwdriver and four (4) M4x12 Taptite screws, tightening to 38 lb-in.

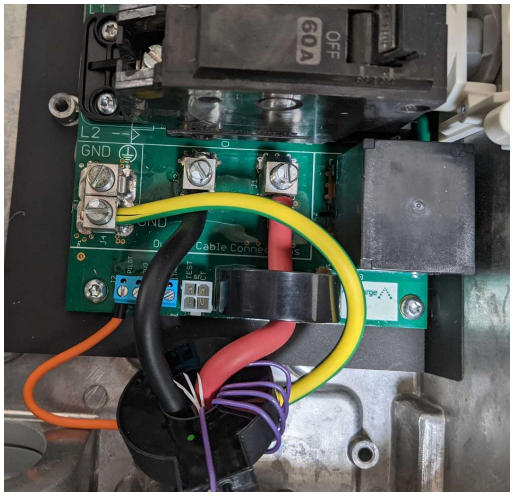


46. Insert the Pilot (orange) cable into the housing and hand tighten the screw using a ⅛” flathead screwdriver. The pilot should be installed in the far left, and is denoted with “PILOT” printed above on the PCBA.

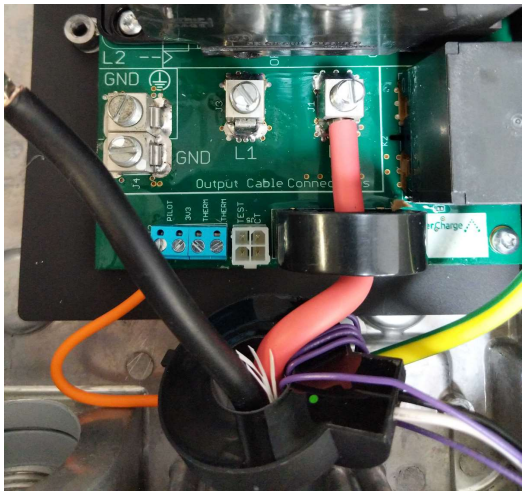


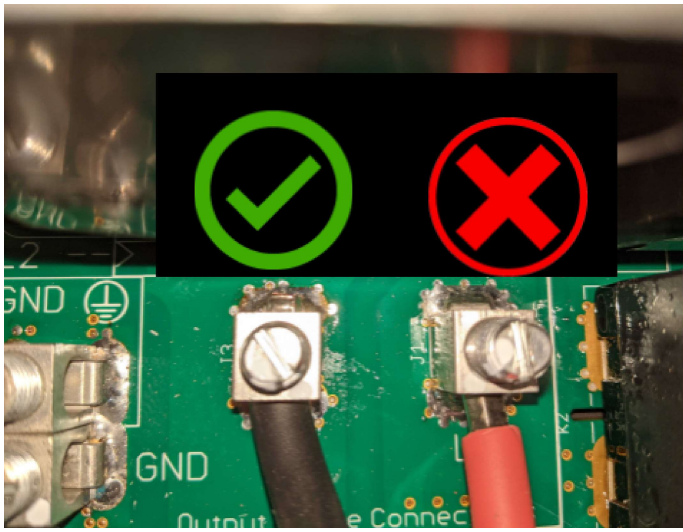
47. Place L1(black) & L2 (red) through the GFCI CT assembly (E700-1009)





48. Pass L2 (red), through the CT on the board.





49. Slide all cables into the lugs

Note: you should be able to see the end of the ferrule just on the other side of the lug. If you cannot, push the cable in a little more until you can see it.

50. Tighten lugs to the appropriate torques listed below:
    L1 & L2: 45in-lb
    Ground: 40in-lb

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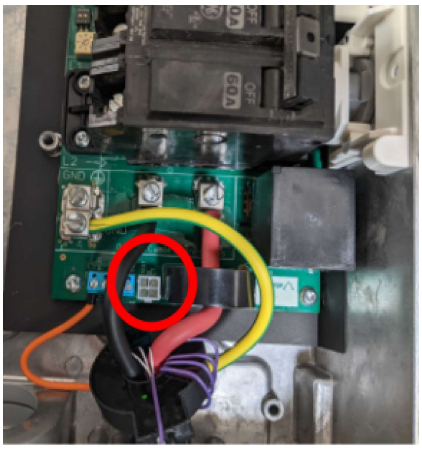
51. Connect the GFCI CT assembly to the board



52. Close the lid, and ensure it latches securely. Door should not be able to be pulled open without pressing the button.

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53. Follow the instructions per document *E140-1009 End of Line Test Manual*. Upon successful completion of the test. Follow the next step.
54. Place the occlusion panel onto the unit. Secure the panel by using a T20 Torx screwdriver and a M4x12 Delta PT screw, tightening to 10 lb-in.

This completed unit is referred to as E800-1000 for the 48A version.

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