



INSTRUCTION TO SERVICE

ITS60298		October 22, 2021
SECTION:	292-Electrical Harnesses	
WRITTEN BY:	Hugo Freire	
SUBJECT:	MCI D45CRT/D4520 Coach MDP Replacement with Circuit Breaker Assembly	
ISSUE:	This is to inform you that your vehicle may contain a defect that could affect the safety of a person. The Main Distribution Panel (MDP) in the battery compartment has experienced failures that may result in thermal events and/or uncommanded vehicle shutdown.	
SUMMARY:	Due to the Main Distribution Panel failures resulting from supplier quality and environmental issues, it is recommended the MDP be replaced with a circuit breaker assembly.	

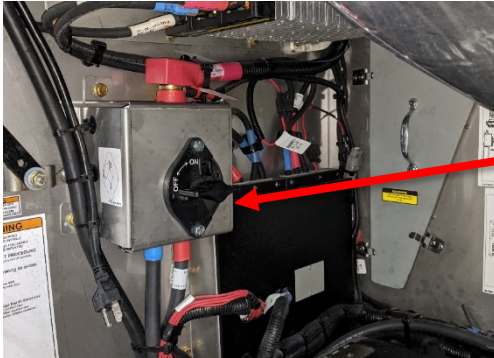
ITS60298

Ref. NHTSA Recall No.	Ref. Transport Canada Recall No.
21V-748	2021-595

THIS ITS DOCUMENT SHOULD BE RETAINED AND REFERRED TO FOR FUTURE MAINTENANCE UNTIL THE PARTS AND/OR SERVICE MANUAL IS UPDATED TO REFLECT WORK DONE AS A RESULT OF THIS DOCUMENT. ENSURE THAT THIS DOCUMENT IS AVAILABLE FOR PARTS AND MAINTENANCE STAFF GOING FORWARD.

PROCEDURE:

1. Set park brake and chock wheels.
2. Turn the Main Battery Disconnect Switch to the "OFF" position.



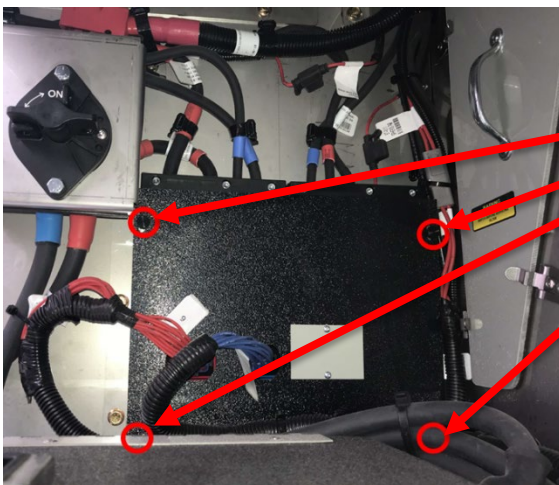
Turn off
MDS.

3. Disconnect GND, 12V, and 24V battery cables from the coach batteries. Ensure the battery cables do not come in contact with each other or the coach.



Disconnect all
battery cables.

4. Locate the MDP compartment mounted on the rear wall in the battery compartment. Remove and discard the 4 thumb screws to release the MDP cover.



Remove and discard
thumb screws.

5. Remove 5 tyraps located at the bottom of the plastic MDP cover to remove the cover.



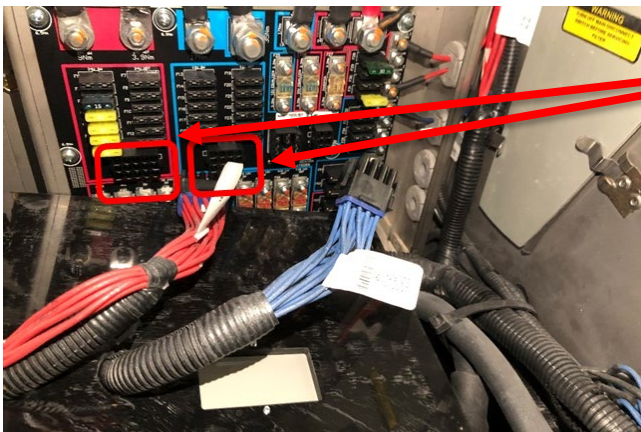
Remove 5 tyraps & remove cover.

6. Remove tyraps that secure BT-P162 to the Main Disconnect Switch cables.



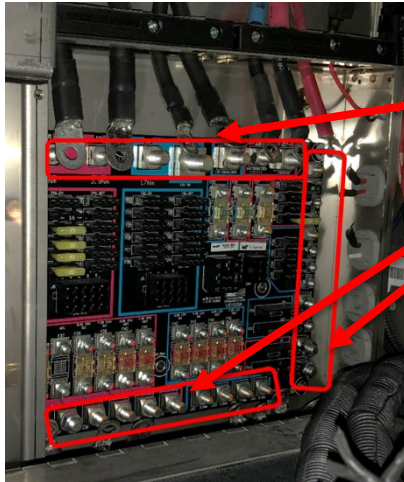
Remove BT-P162 tyraps on battery cables.

7. Disconnect connectors BT-P161 and BT-P162 from MDP.



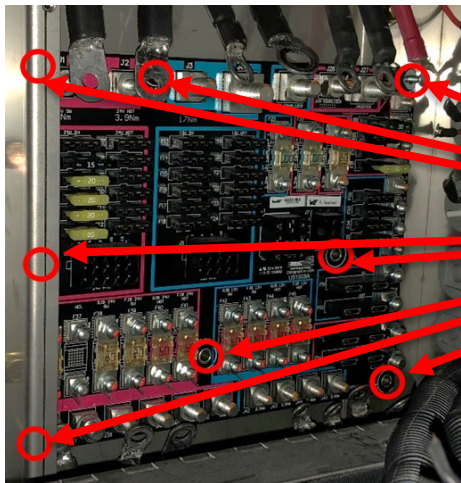
Disconnect BT-P161 and BT-P162.

8. Remove all cables from MDP. Make a note of where each cable is connected on the board. Place nuts and lock washers back on studs after the cables are removed.



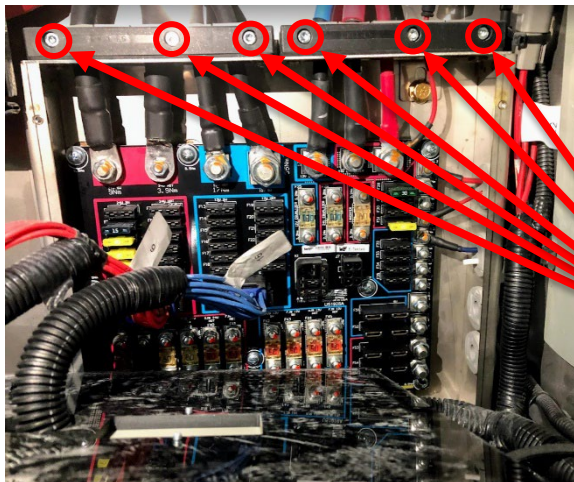
Remove all cables from MDP.

9. Remove & discard 8 MDP mounting screws and washers to remove the MDP from the coach.



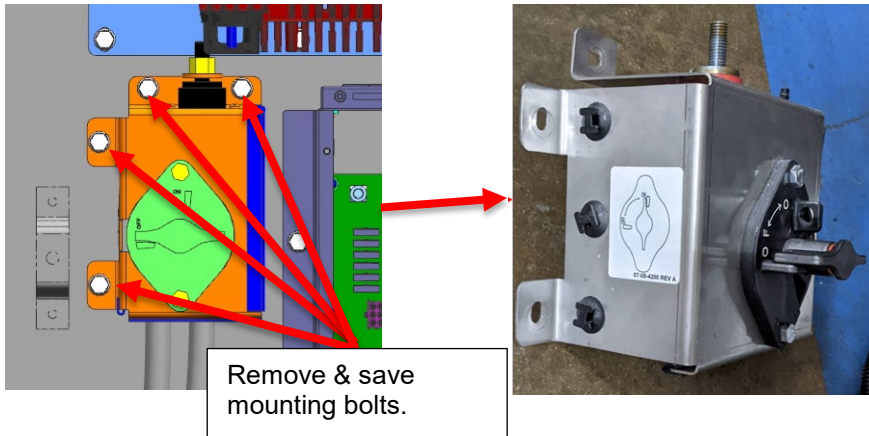
Remove mounting screws.

10. Remove & discard the hex bolts used to seal the cables on the top and bottom of the MDP enclosure.

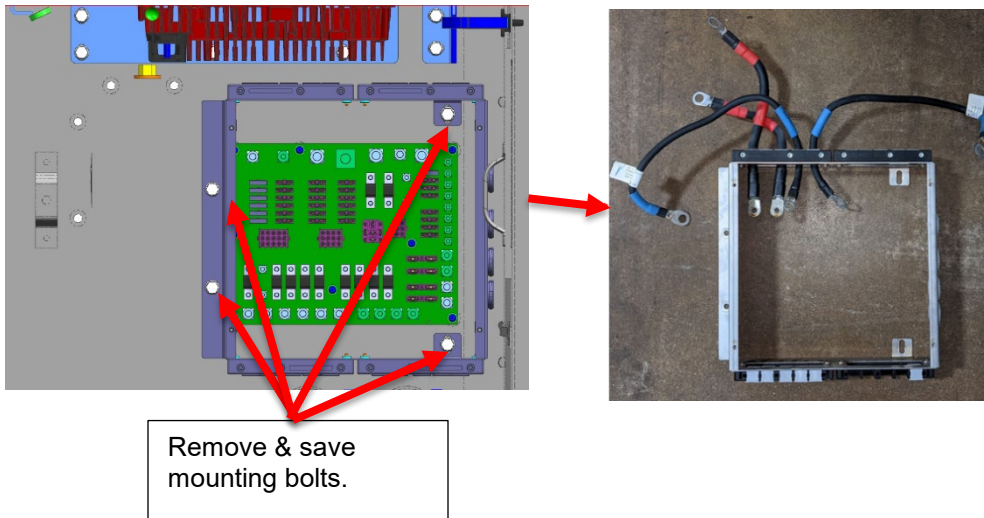


Remove cable seal bolts

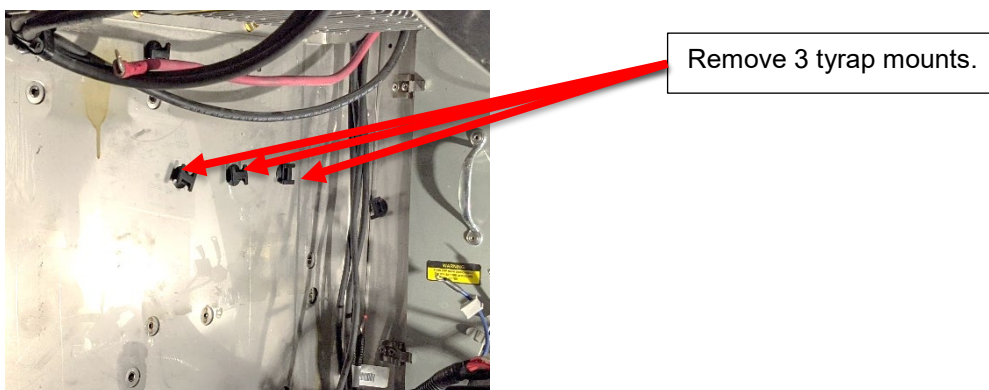
11. Remove & save Main Disconnect Switch mounting bolts. Disconnect battery cables from MDS and feed-through stud, saving hardware. Remove and save trim lock from the MDS.



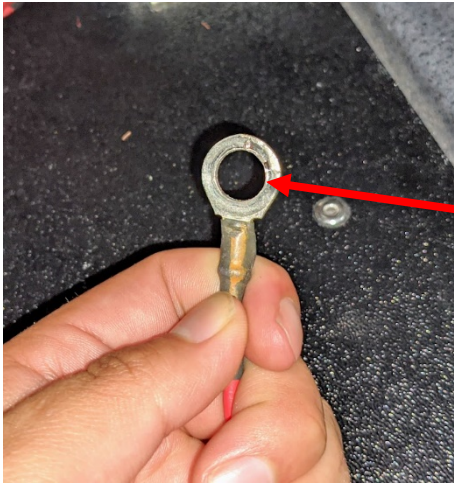
12. Remove & save the MDP box mounting bolts. Discard MDP box with cables connected to studs J1-J4.



13. Remove the 3 tyrap mounts from the left battery compartment wall.



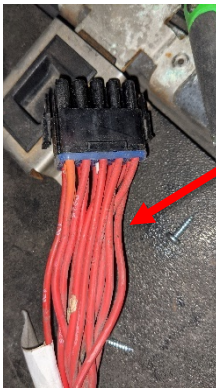
14. Using a step-up drill bit and the table below, carefully increase the stud size on 9 ring terminals removed for the MDP from ¼ to 5/16”.



Enlarge hole.

Source (MDP)	Source Wire ID	Description
J36	07-09-1814	EVAP 24V SW
J38	07-09-2013	RJB 24V SW
J39	07-09-2015	FJB 24V SW
J40	07-09-2017	RJB 24V HOT
J41	07-09-2019	FJB 24V HOT
J42	07-09-2014	RJB 12V SW
J43	07-09-2016	FJB 12V SW
J44	07-09-2018	RJB 12V HOT
J45	07-09-2020	FJB 12V HOT

15. Cut the wires from BT-P162 and BT-P161 12 inches from the connector.



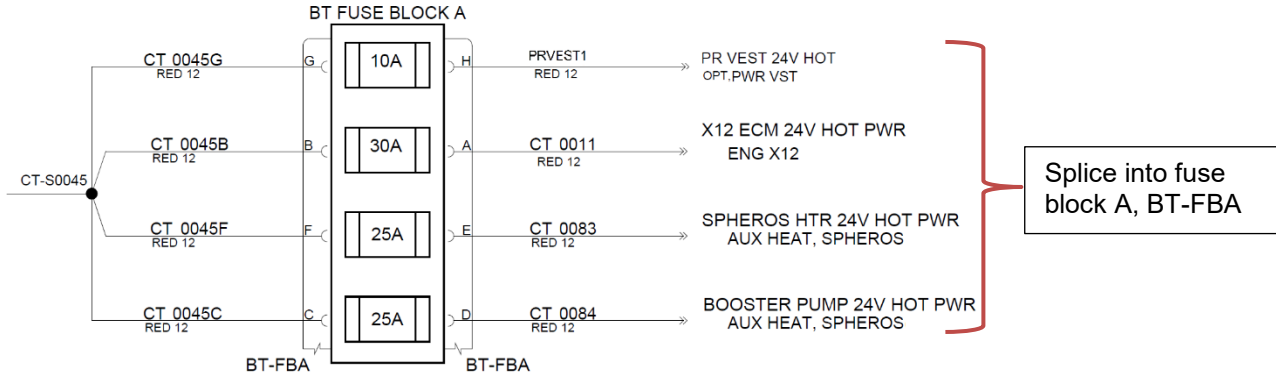
Cut Wire 12” from connector

16. Tie back all spare wires from BT-P161 and BT-P162 using heat shrink, MCI P/N: 19-11-1465. Also, tie back Alt 55SI sense wire CT 0012D.



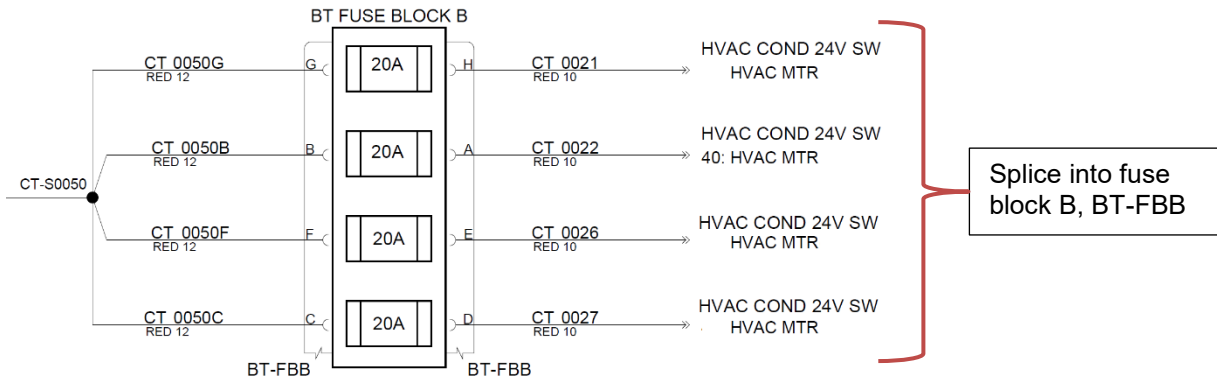
Tie back 20 unused wires

17. Using butt splices, MCI P/N: 19-11-431, and black heat shrink, MCI P/N: 19-11-1465, attach the ECM, Spheros, and booster pump power wires to BT-FBA part of fuse holder jumper, MCI P/N: 933736, as shown below.

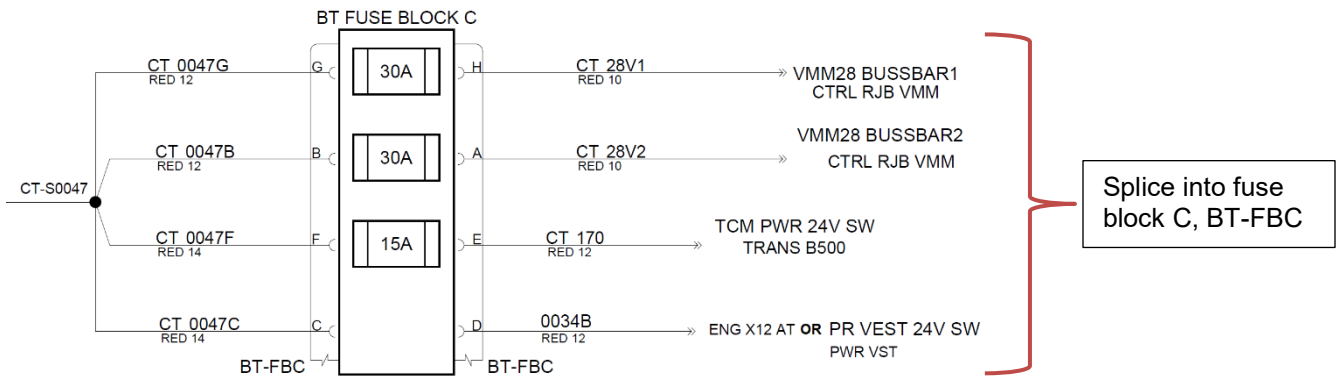


NOTE: PRVEST1 is an optional wire part of harness 07-12-9149, splice into cavity H if present, otherwise tieback.

18. Using butt splices, MCI P/N: 19-11-431, and black heat shrink, MCI P/N: 19-11-1465, attach the HVAC condenser wires to BT-FBB part of fuse holder jumper, MCI P/N: 933736, as shown below.

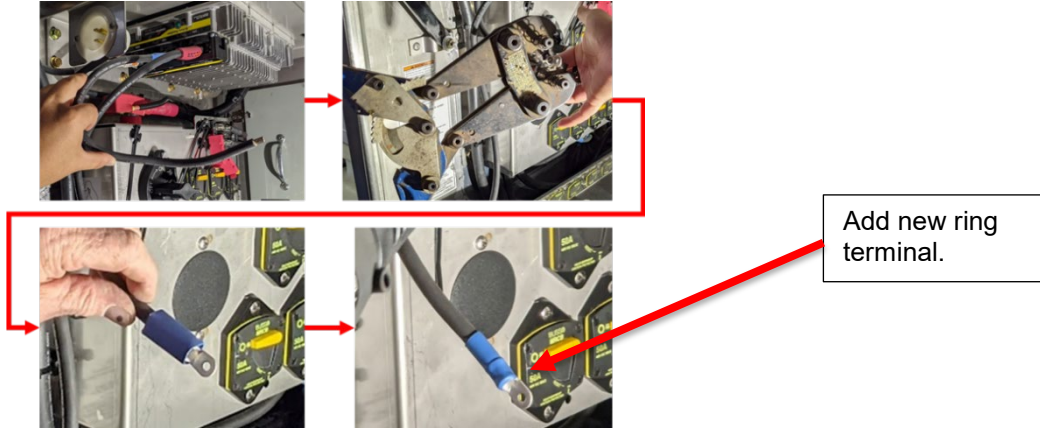


19. Using butt splices, MCI P/N: 19-11-431, and black heat shrink, MCI P/N: 19-11-1465, attach the MCM, TCM, and line heater power wires to BT-FBC part of fuse holder jumper, MCI P/N: 933736, as shown below.

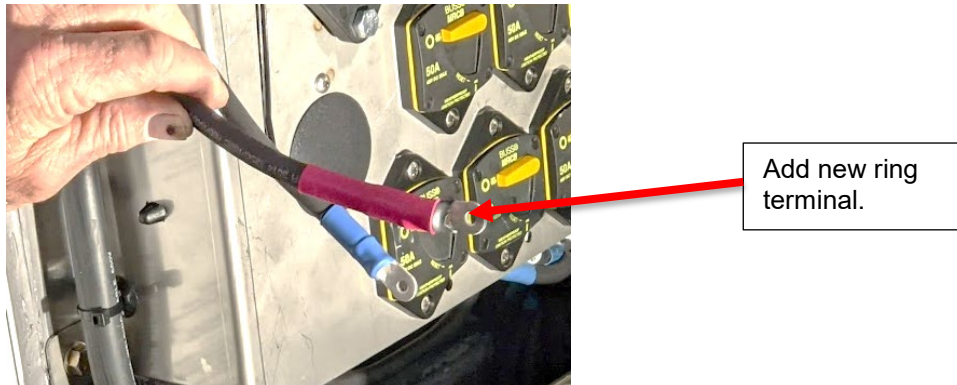


NOTE: If PR VEST 24V SW wire is present splice into cavity D of jumper, otherwise splice in wire 0034

20. Cut 18.5" from 12 SW EQ cable, MCI P/N: 07-09-1812. Place a 2" piece of adhesive heat shrink, MCI P/N: 19-11-67, and 2" blue heat shrink, MCI P/N: 117202, and crimp ring terminal, MCI P/N: 19-11-3763 to the cable. Use a heat gun on heat shrink, the blue heat shrink should be on top.

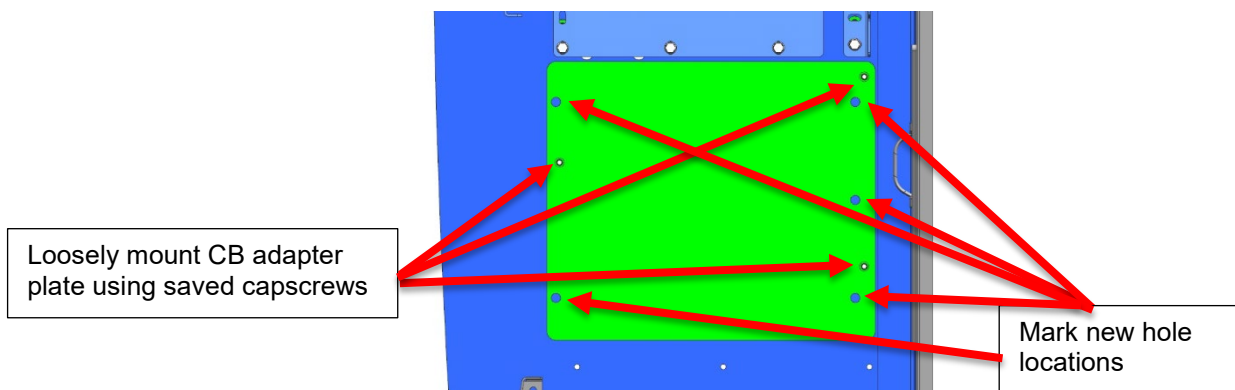


21. Cut 16.5" from 24 SW EQ cable, MCI P/N: 07-09-1811. Place a 2" piece of red heat shrink, MCI P/N: 19-11-2371, and crimp ring terminal, MCI P/N: 19-11-3763 to the cable. Use a heat gun on adhesive heat shrink.

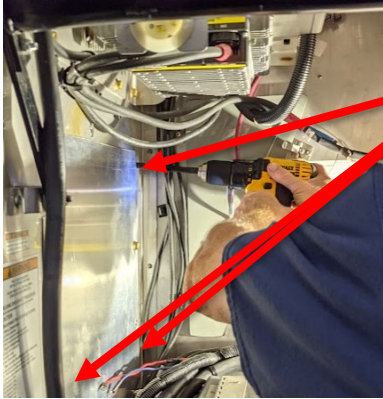


22. Add #10 ring terminal, MCI P/N: 19-11-3417, to ramp power wire RMP 0041 previously on J53 of the MDP.

23. Loosely mount the adapter plate, MCI P/N: 935087, on the left wall using the 3 saved cap screws, MCI P/N: 19-01-1532, at the highlighted locations. Mark the 5 mounting locations for the CB assembly.



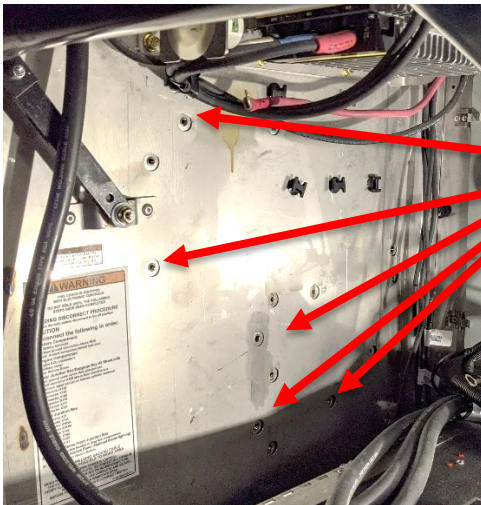
24. Remove adapter plate, MCI P/N: 935087. Using a drill stop, drill three 35/64" holes at the marked circuit breaker assembly locations. Pay close attention to not to puncture the fuel tank on the other side of the wall.



Drill 3 35/64" holes on the marked hole locations.

- NOTE:** Ensure extreme caution while drilling on the left battery compartment wall to avoid puncturing the fuel tank on the other side of the wall.

25. Cover 10 unused holes on the left battery compartment wall with RTV silicone.



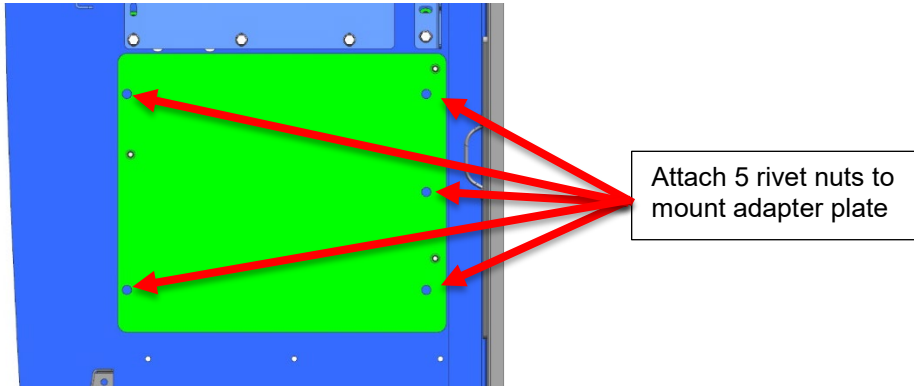
Cover unused holes with RTV silicone

26. Place a 1/4" bead of RTV silicone around 1" inside edge of the back side of the adapter plate, MCI P/N: 935087, before mounting.

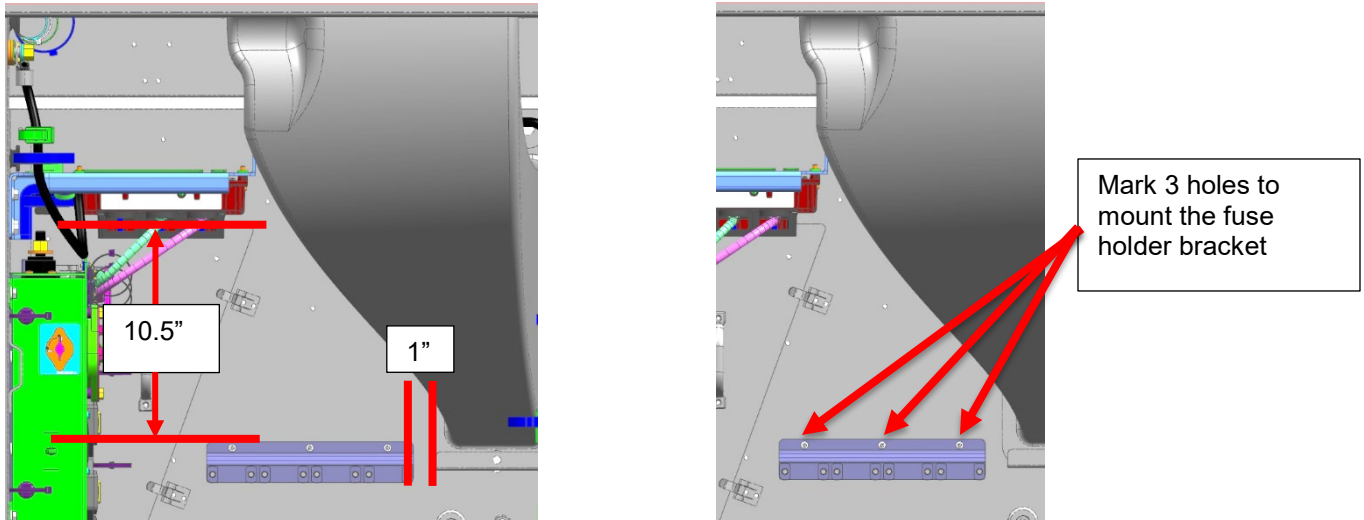


Place a 1/4" bead of RTV silicone around edges of plate.

27. Mount adapter plate, MCI P/N: 935087. Install 5 rivet nuts, MCI P/N: 6485136, to the newly drilled holes.



28. Remove MDP decal from the back wall. Use the fuse holder bracket assembly, MCI P/N: 07-10-2254, as a template to mark 3 mounting holes 10.5" from the top of the Evap filter door and 1" from the HVAC duct.

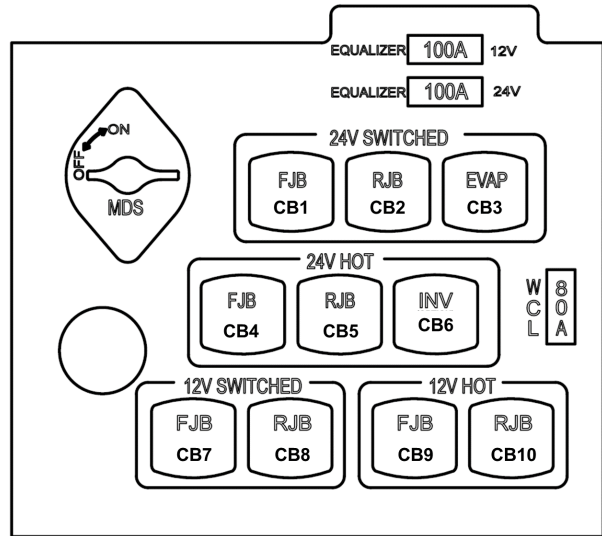
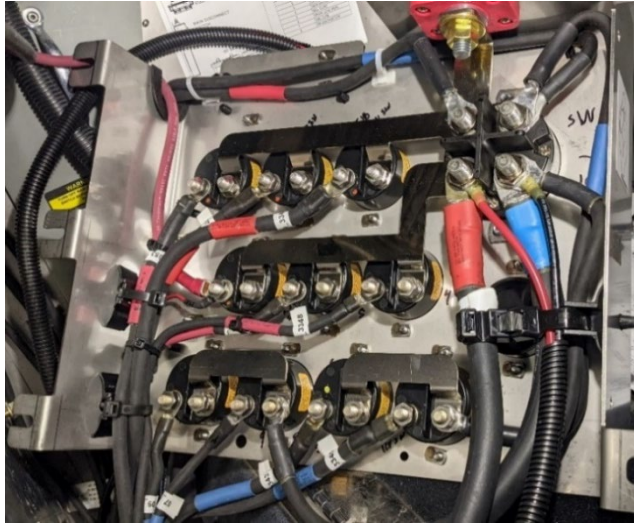


29. Use a 13/64" drill bit to drill the 3 marked holes. Mount the FH bracket assembly using 3 rivets, MCI P/N: 19-13-137.



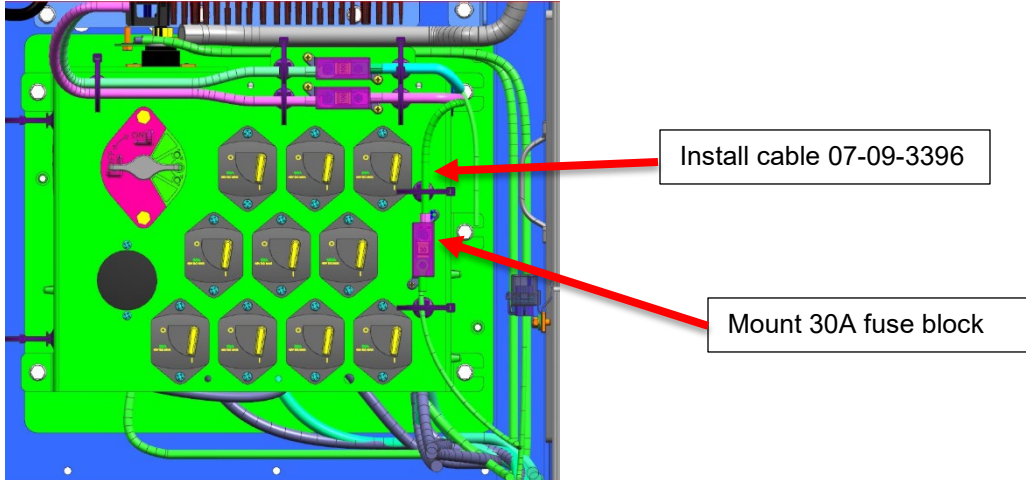
30. Install fuse holder decal, MCI P/N: 934008, and CB panel decal, MCI P/N: 07-10-2283 above the fuse holder bracket.

31. Install cables and fuse holder jumper ring terminals, MCI P/N: 933736, to the CB assembly. Add adhesive Loctite, MCI P/N: 21-7212-18, to threads before tightening. Torque studs using the reference connection chart below.

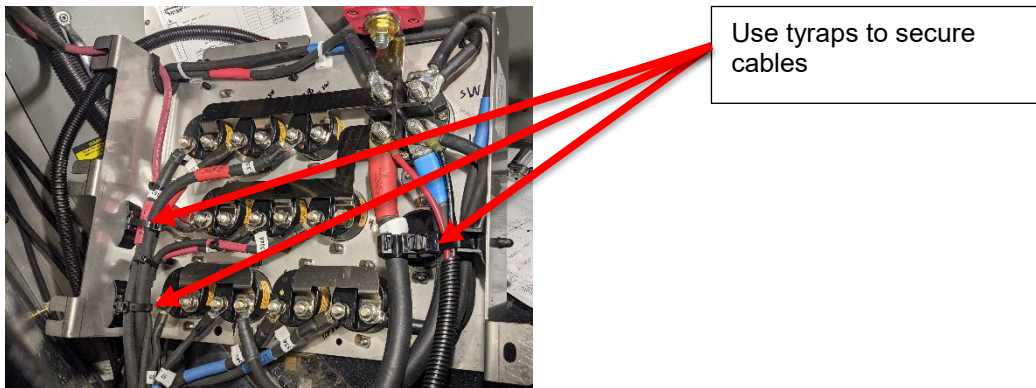


Source	Source Wire ID	Description	Target	Description	Torque Rating
J25	07-09-1812	12 SW EQ	BT-T125	BT-F25	36-40 IN-LBS
J26	07-09-1811	24 SW EQ	BT-T126	BT-F26	36-40 IN-LBS
J27	07-09-1815	24 HOT INV (OPTION)	BT-T516	CB6	70-75 IN-LBS
J27	07-08-2627	BATT CHARGER	BT-T516A	CB6	70-75 IN-LBS
J27	-	AMEREX (INLINE Fuse)	BT-T516	CB6	70-75 IN-LBS
J36	07-09-1814	EVAP 24V SW	BT-T513	CB3	70-75 IN-LBS
J38	07-09-2013	RJB 24V SW	BT-T512	CB2	70-75 IN-LBS
J39	07-09-2015	FJB 24V SW	BT-T511	CB1	70-75 IN-LBS
J40	07-09-2017	RJB 24V HOT	BT-T515	CB5	70-75 IN-LBS
J41	07-09-2019	FJB 24V HOT	BT-T514	CB4	70-75 IN-LBS
J42	07-09-2014	RJB 12V SW	BT-T518	CB8	70-75 IN-LBS
J43	07-09-2016	FJB 12V SW	BT-T517	CB7	70-75 IN-LBS
J44	07-09-2018	RJB 12V HOT	BT-T520	CB10	70-75 IN-LBS
J45	07-09-2020	FJB 12V HOT	BT-T519	CB9	70-75 IN-LBS
J53	RMP 0041	LE RAMP PWR	BT-T33	BT-F33	36-40 IN-LBS
-	0045	FUSE BLOCK A	BT-T3B	24V HOT MDS	150 IN-LBS
-	0050	FUSE BLOCK B	BT-T4B	EC PWR BUSBAR	65 IN-LBS
-	0047	FUSE BLOCK C	BT-T4C	EC PWR BUSBAR	150 IN-LBS
-	07-09-1819	12V BATTERY	BT-T1C	12V HOT MDS	150 IN-LBS
-	07-09-1818	24V BATTERY	BT-T3A	24V HOT MDS	150 IN-LBS
BT-T4	07-09-1600	EC PWR STUD	BT-T4	EC PWR STUD	300 IN-LBS

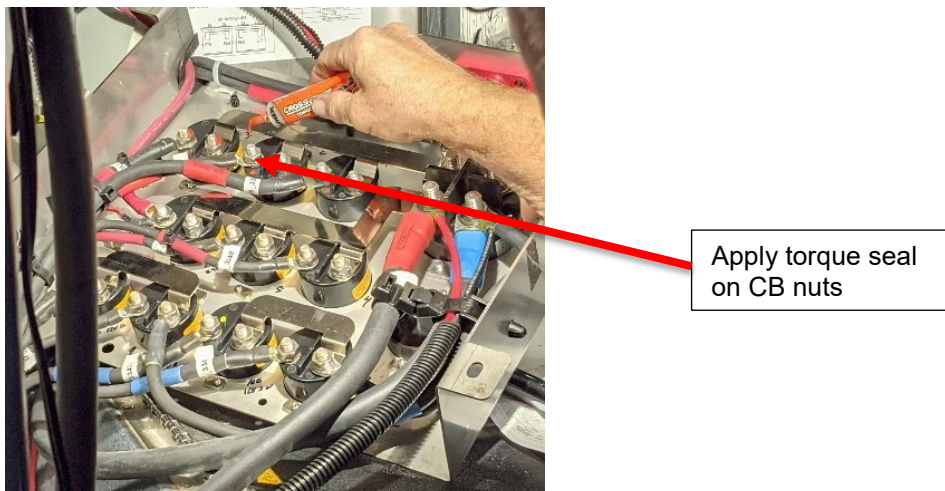
32. Install 30A fuse block, MCI P/N: 07-10-2419, on the front right section of the CB using existing CB assembly hardware. Connect the WCL power cable, MCI P/N: 07-09-3396, to the 24V SW MDS stud and BT-F33 on the top of the 30A fuse block.



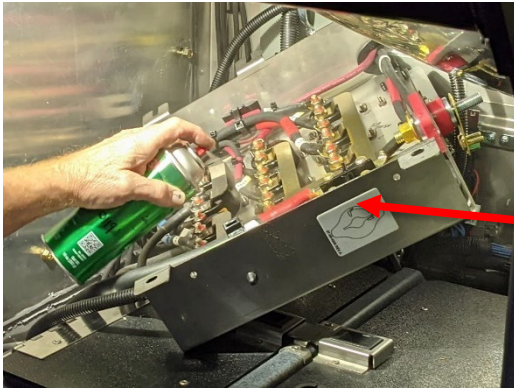
33. Using tyrapas included in the switch assembly, secure cables connected to the MDS and circuit breakers. Ensure smooth curves and routing on all cables.



34. Apply torque seal, MCI P/N: 5023844, to each stud after being torqued.

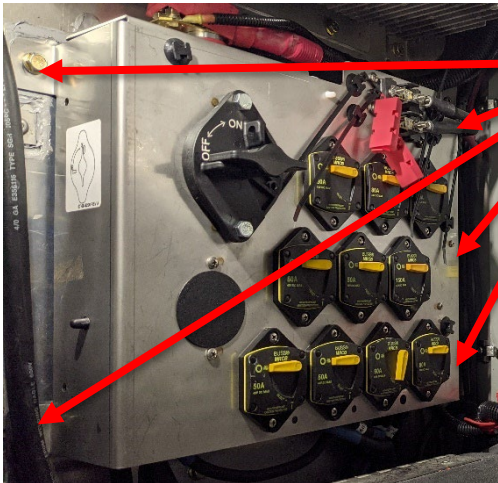


35. Spray back of circuit breaker assembly (bus bars and studs), MCI P/N: 07-09-3366, with anti-corrosive spray, MCI P/N: 23-02-0119.



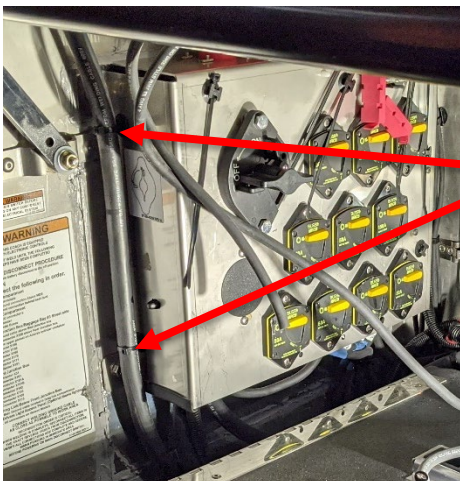
Spray anti-corrosive spray in the back of the CB assembly

36. Mount the circuit breaker assembly, MCI P/N: 07-09-3366, to the adapter plate using 5 saved capscrews, MCI P/N: 19-01-1532. Torque capscrews to 9 FT-LBS.



Mount CB assembly

37. Using tie cable with mount, MCI P/N: 19-11-3472, and tyrap to secure the battery ground to the left side of the CB assembly.



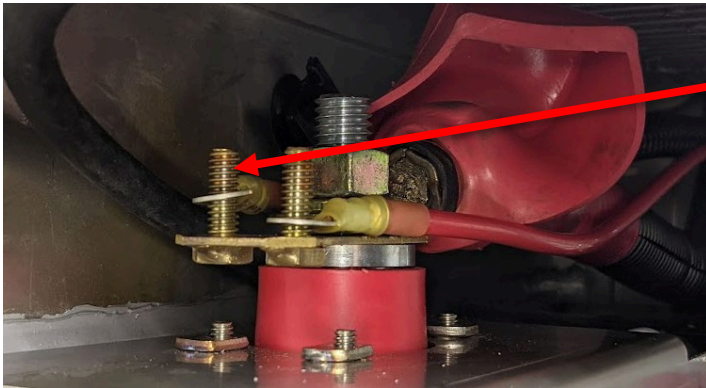
Secure ground cable using tyrap

38. Secure battery cables to the 3 bottom tyrap mounts using tyrap, MCI P/N: 5958112.



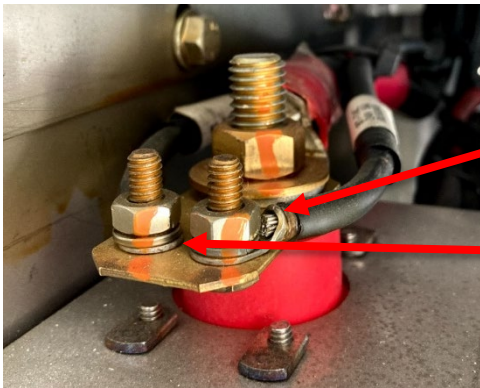
Secure cables using tyrap

39. Connect the fuse block B ring terminal (Wire ID 0050) to the 24V SW stud (BT-T4B) on the circuit breaker busbar, MCI P/N: 7L-8-5055, using lock washer, MCI P/N:19-2-37, and nut, MCI P/N: 19-3-32. Torque nut to 65 IN-LBS. Torque main power feeder to 20-25 FT-LBS.



Connect to BT-T4B stud.

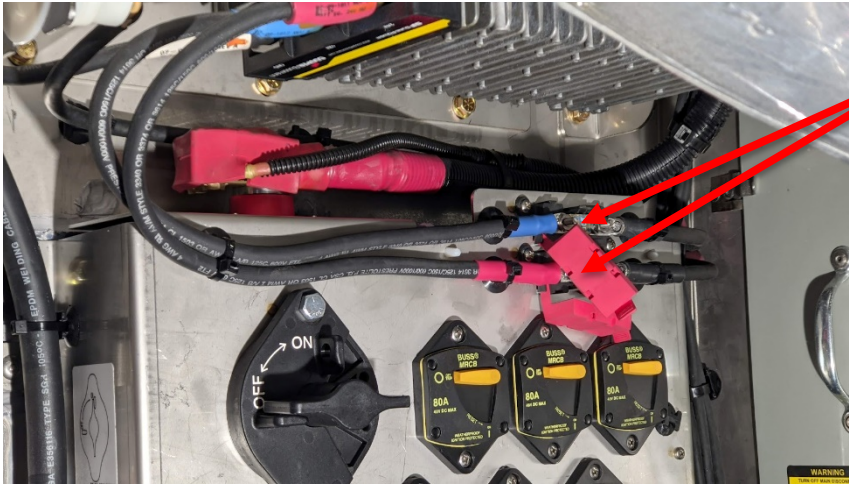
40. Connect the fuse block C ring terminal (Wire ID 0047) to the 24V SW stud (BT-T4C) on the circuit breaker busbar, MCI P/N: 7L-8-5055, using lock washer, MCI P/N:19-2-37, and nut, MCI P/N: 19-3-32. Torque stud to 65 IN-LBS. Spray 3 studs with anti-corrosive spray, MCI P/N: 23-02-0119.



Connect to BT-T4C stud.

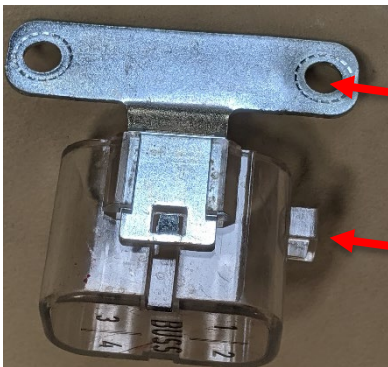
Apply corrosion inhibitor spray

41. Attached reworked equalizer cables to fuse holder BT-125/BT-126. Ensure a smooth curve from the equalizer to the fuse holders. Torque studs to 40 IN-LBS.



Attach 12/24V EQ cables to CB assembly

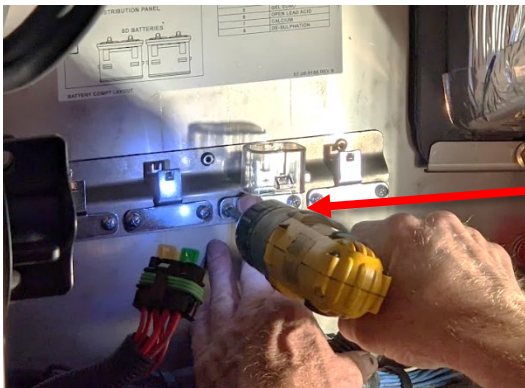
42. From the kit, locate the VEC fuse holder cover, MCI P/N: 07-08-5651, bracket, MCI P/N: 07-08-5652, and assemble them as shown below.



VEC fuse holder bracket

VEC fuse holder cover

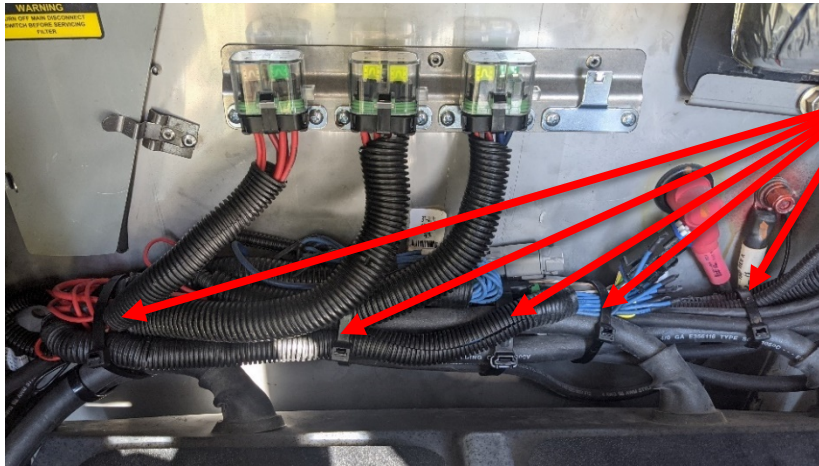
43. Attach 3 VEC fuse holder cap brackets, MCI P/N: 07-08-5652, using 6 screws, MCI P/N:19-1-386, 6 lock washer, MCI P/N:19-2-37, and 6 flat washers, MCI P/N:19-2-23.



Mount 3 fuse holder covers to wall bracket

44. Add 20A/30A/15A fuses according to the fuse layout decal, MCI P/N: 934008, to the fuse holder jumper harness, MCI P/N: 933736. Connect the fuse holder jumper harness to the bracket assembly.

45. Use tyraps, MCI P/N: 5958112, to secure fuse cables to the harness bundle behind the batteries.



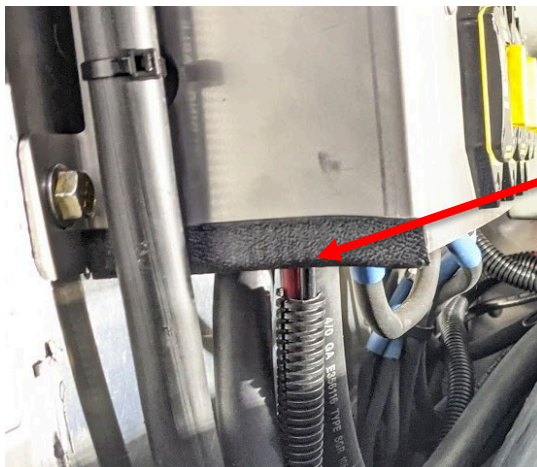
Use tyraps to secure cable bundles

46. Use tyraps, MCI P/N: 5958112, to secure cables behind the batteries circuit breaker assembly.



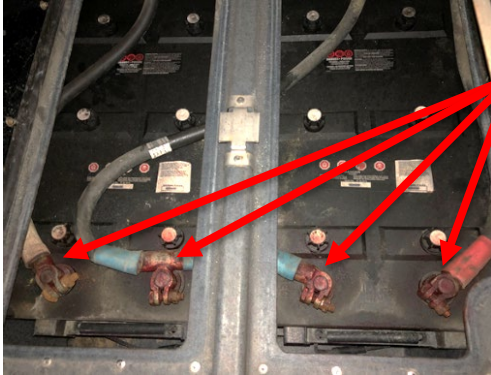
Use tyraps to secure cable bundles

47. Remove a piece of the trim lock from MDS and install it at the bottom left corner of the circuit breaker assembly.



Install trim lock to the bottom left corner of the CB assembly

48. Reconnect the battery cables, torque nuts to 54-60 IN-LBS. Turn on MDS and turn on coach ignition to verify rework.



Reinstall battery terminals



LABOUR ESTIMATE				
	Operation	Number of Technician(s)	Hours	Labor Time T X HR
1	MDP replacement with circuit breaker assembly	1	7.5	7.5

PARTS REQUIRED					
Item	Part Number	Description	Qty. per Coach	Units	Notes
1	117202	HEATSHRINK - 3/4IN, BLUE	1	AR	
2	6485136	NUT, RIVET 5/16" - 18 UNC OPEN END ZINC PLATED	5	EA	
3	07-08-1059	FUSE - MINI, 15A	1	EA	
4	07-08-1061	FUSE - MINI, 20A	5	EA	
5	07-08-1429	FUSE - MINI, 30A	4	EA	
6	07-08-3954	FUSE - MINI 25A	2	EA	
7	07-08-5651	VEC FUSE HOLDER COVER	3	EA	
8	07-08-5652	VEC FUSE HOLDER BRACKET	3	EA	
9	07-09-3366	SWITCH ASSY-MAIN DISCONNECT & BREAKERS	1	EA	
10	07-10-2254	ASSY-BRKT, 4 FUSE HOLDER	1	EA	
11	19-11-2371	HEATSHRINK - 3/4IN, RED	1	EA	
12	19-11-3472	TIE CABLE - WITH MOUNT	2	EA	
13	19-11-3763	#10 RING TERMINAL	2	EA	
14	19-11-431	CONNECTOR-SPLICE, BUTT, 12 10 AWG	12	EA	
15	19-11-67	HEATSHRINK - DUAL WALL, 3/4IN, BLK	1	EA	
16	19-13-137	RIVET-.187	3	EA	
17	19-1-386	SCREW-CAP, HEX, 1/4-20UNC X 1/2 SST 18-8	6	EA	
18	19-2-23	WASHER-FLAT, 1/4 ID, SST	6	EA	
19	19-2-37	WASHER - LOCK, SST, 1/4 ID	8	EA	
20	19-3-32	NUT-1/4-20, SST	2	EA	
21	5958112	TYRAP-7.31" LONG	10	EA	
22	19-11-1465	HEAT SHRINK- 4FT, BLACK	2	FT	
23	7L-8-5055	BAR ASSY-BUS	1	EA	
24	935087	PLATE - ADAPTER CB BT COMPT CRTLE/D4520	1	EA	
25	933736	HARNESS - FUSE HOLDER JUMPER D45CRT	1	EA	
26	934008	DECAL-FUSE LAYOUT BATT COMPT D45CRT	1	EA	
27	07-10-2283	DECAL-CIRCUIT BREAKER PANEL, D45 CRT	1	EA	



28	07-09-3396	CABLE - MDS TO BT-F33, 24V SW	1	EA	
29	07-10-2419	FUSE BLOCK -LMI, BOLT IN, 30A	1	EA	
30	19-11-3417	RING TERM_SOLISTRAND #10_12-10 AWG	1	EA	

SPECIAL TOOLS REQUIRED

Item	Part Number	Description	Qty.	Units	Notes
1	IMP9166-1	Ultra Grey RTV Silicone	1	EA	
2	23-02-0119	CRC SP-400	1	EA	
3	21-7212-18	Adhesive – Loctite 242, Thread Locking	1	EA	
4	NA	TORQUE SEAL, ORANGE,5 OZ.	1	EA	
5	NA	Step-up Drill Bit	1	EA	
6	NA	35/64” Drill Stop	1	EA	
7	NA	Rivet Nut Gun	1	EA	
8	NA	13/64” Drill Bit	1	EA	
9	NA	Heat Gun	1	EA	
10	NA	IN-LBS Torque Wrench	1	EA	
11	NA	FT-LBS Torque Wrench	1	EA	
12	NA	Heavy Duty Terminal Crimp Tool	1	EA	