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Technical Service Bulletin WSB-14 Repair Instructions

Purpose: Update the electrical system for Open Trail Motorhomes with a 51-volt system.

Models: 2025 & 2026 Open Trail Motorhomes

Flat rate code & Time allowed *To file the warranty claim for payment, please use the following flat rate code.* Repaired - **8914SB00 for 6 hours**.

NOTE FOR UNITS WITH OWNER UPGRADES: Please verify with owners if any modifications have been completed. Some systems that have been modified will not need all repairs.

Tools Needed:
Socket Set
Phillips bit w/ drill

Parts Needed:
5197403 51-Volt kit

****Torque specifications listed on page 10 unless otherwise noted****

Repair Instructions

1. Turn off all power to coach.
   - Disconnect the shore power cord from coach.
   - Turn off the battery disconnect switch found in the step well and power off lighted blue LED battery switch
   - Disconnect chassis battery at the battery disconnect by removing the access panel next to the accelerator pedal. Push in red or black tab and disconnect. NOTE: Wait 20 minutes after turning engine off to avoid any unintentional short circuit or engine warning lights. See Figure 1A and 1B.

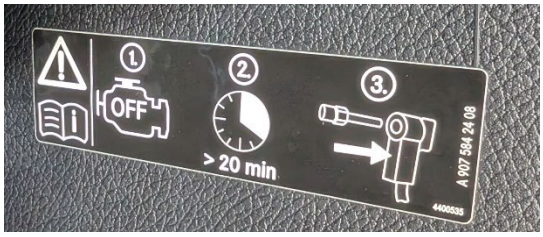


Figure 1A

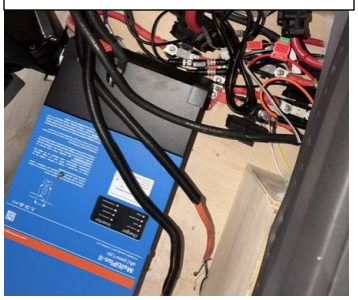

Figure 1B

2. Remove the cushions and the furniture access panel to access the electrical connections located in the seat base (furniture options will vary).
   - Disconnect positive cable from battery and tape terminals for protection.

Figure 1a - Original Inverter



Figure 1b - Inverter/charger



Inverter

3. Remove the old inverter from coach, see figure 1a.
   - Remove cover from inverter to access cable connections
   - Disconnect 10-2 wires
   - Disconnect ground and positive cable connections.
   - Remove screws that secure inverter to floor of the electrical box.
   - Discard old inverter.
4. Install new Inverter, part #5177575, figure 1b, pre-programmed inverter
   - Remove covers from new inverter.
   - Install the previously removed 10-2 wires, being sure to verify the labeling on the wire to correctly hook up the inverter in and inverter out wires.
   - Route the 10-2 wire through the rubber grommets and clamps, secure clamps but do not overtighten.
   - Reinstall ground and positive cables to the corresponding lug on new inverter
   - Secure the base of the new inverter to the battery box and reinstall the cover over the wiring connections.
   - Ground the inverter by installing a ground cable from inverter to the ground buss bar.
5. Install Victron Cerbo, part #5177277



Figure 2

- **Victron Cerbo Cable Connections see figure 2**
  1-Inverter to Cerbo
  2- Victron Terminator
  3-BMS Communication

4-Victron Terminator
5- Solor Controller
6-Victron Screen HDMI
7- Victron USB Power

6. Install Victron Touch Screen, part #5159363, see figure 3.
7. Drill a 1” hole in the side of the sofa by the B-pillar for the Cerbo touch screen cable path.
8. Route the USB power cable and the HDMI video cable down the B-pillar, through the 1” hole and to the Victron Cerbo. Remove the 110 receptacle in the B-pillar to allow additional access for cable routing. (refer to previous image for connections)



Figure 3

BMS Communication Cables

1. Install part # 5177649 from the battery harness to the Victron Cerbo.
2. Connect BMS communication cable from BSM to orange wire from alternator harness (located in battery box). See diagram, figure 4.

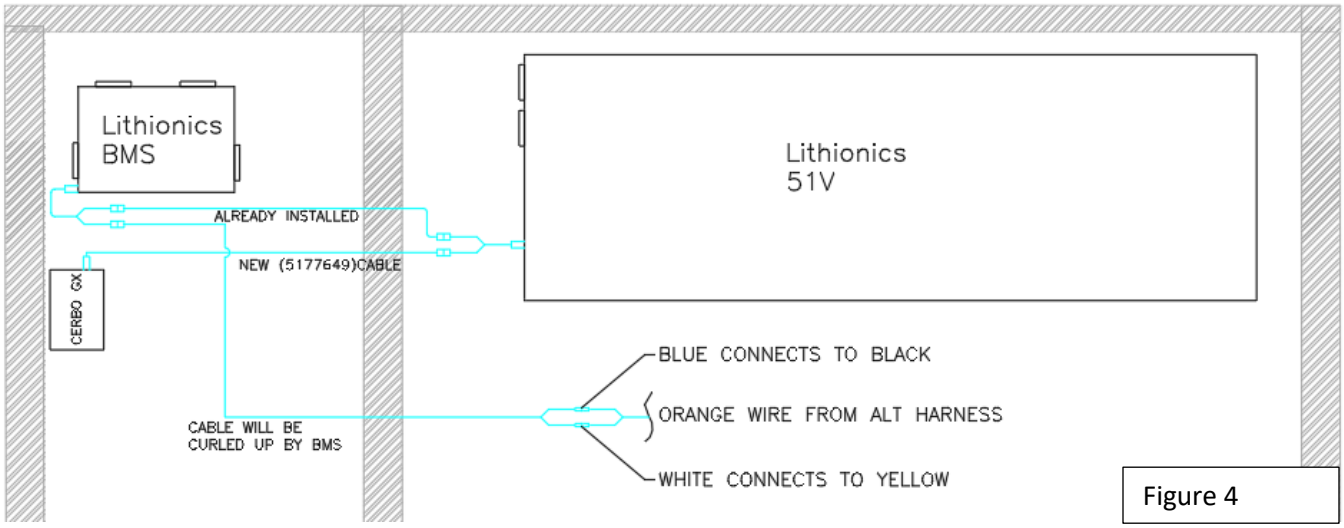


Figure 4

Soft Start

****CAUTION: Follow proper safety precautions to access the roof of the motorhome******

3. Remove cover of A/C unit to verify if a soft start is installed or not.
4. If soft start is needed, install part # 5174989, following the instructions included in the box.

Solar System

****CAUTION: Follow proper safety precautions to access the roof of the motorhome******

5. Mount new support braces (#5197219), one under each roof rack cross member, use existing slots in the cross members for securing the new braces. Figure 5 (prototype brace install, for reference only)



Figure 5

6. Attach solar panel mounting brackets, #5159607, to the side of the new solar panel. See figure 6.



Figure 6

7. Mount new solar panel, part # 5134887, using bracket parts # 5159607, to secure roof rack cross members. See figure 7.

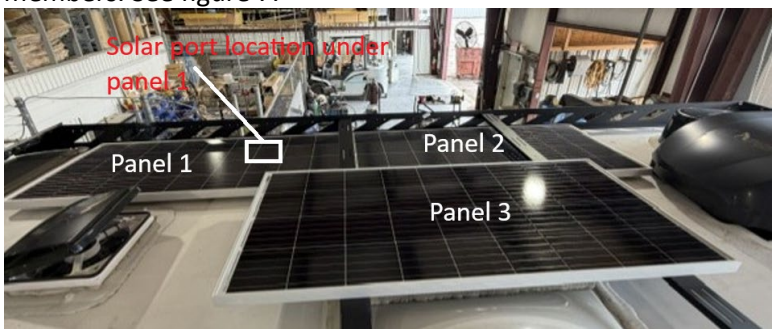


Figure 7

8. Use part # 5113954 to connect the new panel to the existing panels.
9. Remove panel 1 and panel 2 mounting brackets from the roof on the PS of the unit. This will allow access to underneath the solar panels cable connections.
10. Verify the wiring on all solar panels to be wired in series, NOT in parallel. See figure 8.

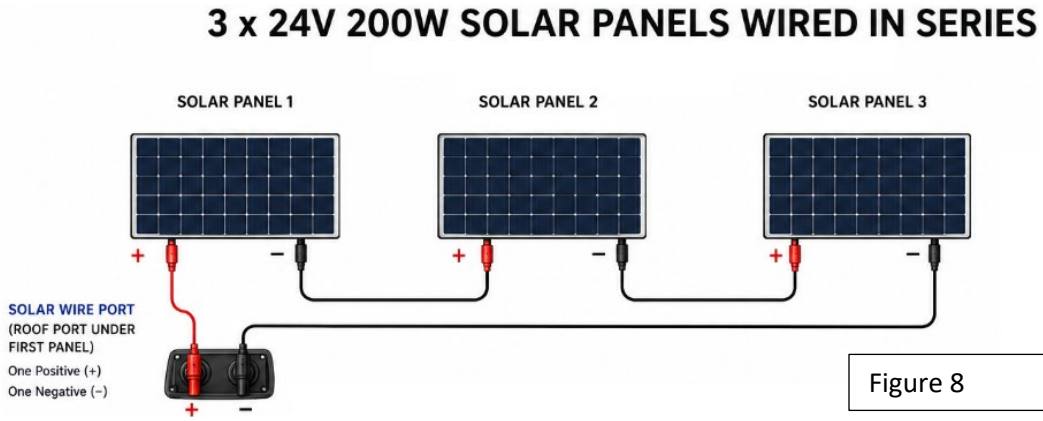


Figure 8

11. Once all 3 panels are connected and wired in series, use White CSL to resecure all solar panel brackets to the roof.
12. Remove existing Lithionics solar controller.
13. Install the Victron Solar controller, part # 5178094.
14. Install harness/cable # 5163250, to connect the solar controller to the Cerbo.

Refrigerator

****** Clearance in motorhome is exceedingly small. Use protection on floor and extra caution not to damage walls, doors or cabinets while moving refrigerator******

15. Open refrigerator access panel on the exterior of the coach.
    - Disconnect the 110 plug and move the plug behind the cabinet, it will not be reused.
    - Cut the 12 Volt wires connecting the fridge to the coach.
    - Remove condensation line.
16. Remove doorknob from bathroom door for clearance.
17. Disassemble refrigerator doors.
    - Remove top hinge plate from the existing fridge.
    - remove the freezer door.

- Open fridge door on one side and remove hinge pin.
- Open fridge door on the other side and pull it out.
- Remove bottom hinge plate.
- Remove fridge door.
- Remove the cover plate and the mounting hardware between the fridge and freezer area.
- Remove the screw covers and screws on the inside of the fridge and freezer area securing it to the cabinet. Keep screws to reinstall the new fridge.
- Remove refrigerator from motorhome.

18. Prep new fridge, part # 5191255 for installation by removing doors and mounting hardware in the same process step 19.
19. Install the new fridge.
    - Be careful to avoid any wire harnesses or plumbing routed through the back of the cabinet.
    - Connect 12-volt power wires to the 12-volt wire terminal on the back of the new refrigerator.
    - Reinstall the condensation line through the same path and location as the previous refrigerator's condensation line.
    - Secure new refrigerator in place with the screws and install screw covers.
    - Reinstall mounting hardware and doors.

Transfer Switch Wiring (only on Gen units)

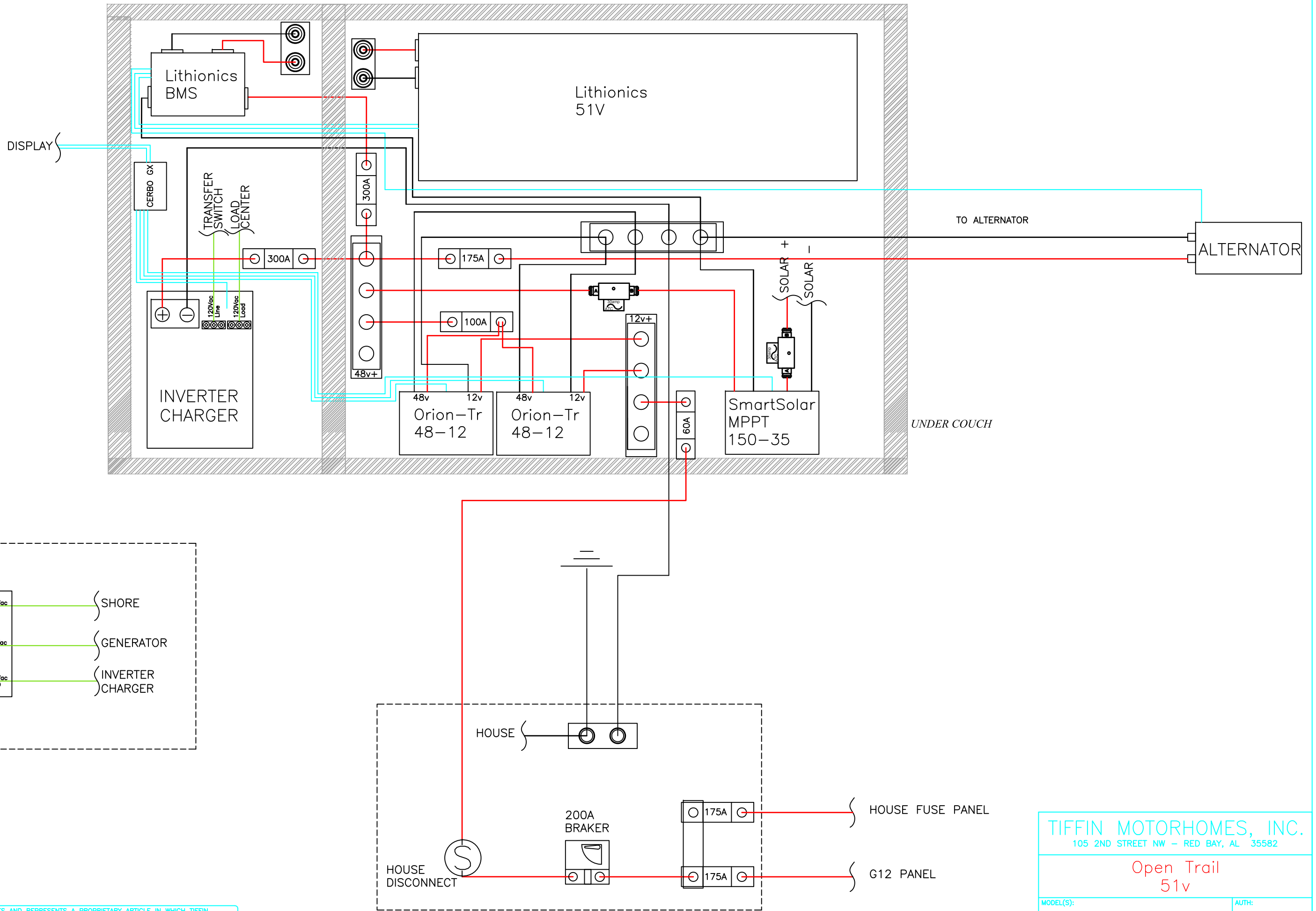
20. Verify the wiring from the shore power to the inverter.
    - Connect shore power cord to the motorhome but **DO NOT** plug into the power outlet.
    - Check for continuity on the house harness labeled inverter in
    - If continuity is present, the transfer switch must be rewired by following the next step.
21. Correct wiring on transfer switch
    - Top breaker on shore power is the inverter out circuit.
    - Pull out of transfer switch and on the output side of the transfer switch should be the wire feeding the breaker box.
    - Those need to be tied together in a sealed junction box, part # 5035742, with wago connectors, part # 5085443.
    - The wire from the smart plug(shore power) is the inverter in circuit.
    - That needs to be moved to the output side of the transfer switch.
    - Run a new wire from the smart plug to be connected to the top breaker on the input side of the transfer switch should be labeled shore power on the transfer switch cover.
22. Verify by plugging in the shore/smart cord and the top breaker should latch.

Final Steps

23. Verify all components are working as designed **after allowing the batteries to fully charge overnight** so that all systems are working correctly.
24. Use expanding foam to seal the electrical box access to the chassis and use silicone sealant as needed to seal any holes.

Description		**Torque (in-lbs.)**
Battery Connection to Inverter	M8	106
Fuse Holder Terminal		110
Circuit Breaker/Disconnect		75

Ground Stud (5/16" - 18)		115
4-Lug Bus bar Terminals		115
Electrical Connections for Bolt Size		110
(Use Only If Not Specified)		110
¼ inch: 50 – 75 (6-8 Nm)		110
3/8 inch: (20-25 Nm)		110
½ inch: (28-40 Nm)		110
BMS Stud Mounting		110
Bolt		110
Battery Terminals		105
Battery Disconnect Switch Terminals		96 (8’ -lbs.)
Starter Terminals	M12	240 (20’-lbs.)
	M6	30
Starter Terminals	M12	240 (20’-lbs.)
	M5	36



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Open Trail
51v

MODEL(S):		AUTH:
CHASSIS:		DATE:
MAT'L#	DWG#	STATUS:
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