SB-13-50-003 **April 29, 2013**

Tesla Motors, Inc.
Service Bulletin

High Power Wall Connector Fuse Replacement

Classification	Repair Bulletin - Level I	**Section/Group**	50 - Vehicle Charging Systems	**Country/Region**	North America
Year	All	**Model**	Model S	**Version**	All

Bulletin Classification: *This repair bulletin provides instructions and guidelines for a noted condition or a customer concern. The information provided can address a broad range of known or perceived issues with the operation of Tesla vehicles. This bulletin might not be VIN-specific.*

Condition

Transient current spikes can cause the high power wall connector (HPWC) fuses to blow. If fuses are blown, no diagnostic lights (red or green) display on the front of the HPWC. If car logs are visible remotely, they indicate no pilot signal and no charge when the user attempts to charge using the HPWC.

Correction

Upon customer complaint, test both fuses. If either fuse is blown, remove both bus bar subassemblies and replace both fuses. Even if one fuse is still functional, it might have been stressed by the loss of the other fuse and can therefore blow at a later date.

Procedure

WARNING: Only Service Technicians that have received and completed high voltage training are authorized to perform this service.

1. Turn off the electricity to the HPWC at the circuit breaker. Verify that the breaker was not already tripped (which would also explain the HPWC not functioning).

WARNING: Electricity must be turned off at the circuit breaker before continuing this procedure. Failure to follow this requirement might result in serious injury or death due to high voltage exposure.

2. Use a T20 Torx driver to remove the security screws on the bottom of the HPWC.

3. Release the front cover by pulling it forward far enough to disconnect the ribbon cable from the cover. Disconnect the ribbon cable from inside the main enclosure to fully remove the front cover.

CAUTION: When removing the front cover, do not damage the ribbon cable. Disconnect the ribbon cable before fully releasing the front cover.

NOTE: Tesla Motors employees are not allowed to service anything below the L1/L2 terminals. All components in the bottom half of the HPWC are considered house wiring, and are therefore off-limits to Tesla Service. House wiring must be connected by a certified electrician.

4. Use a properly rated high-voltage voltmeter or multimeter to check the AC input terminals. Ensure that the correct power breaker has been turned off to de-energize the HPWC.

5. Use a multimeter to check points on either side of each fuse and identify which fuse(s) failed (Figure 1). If neither fuse failed, stop this procedure and contact Engineering for support.

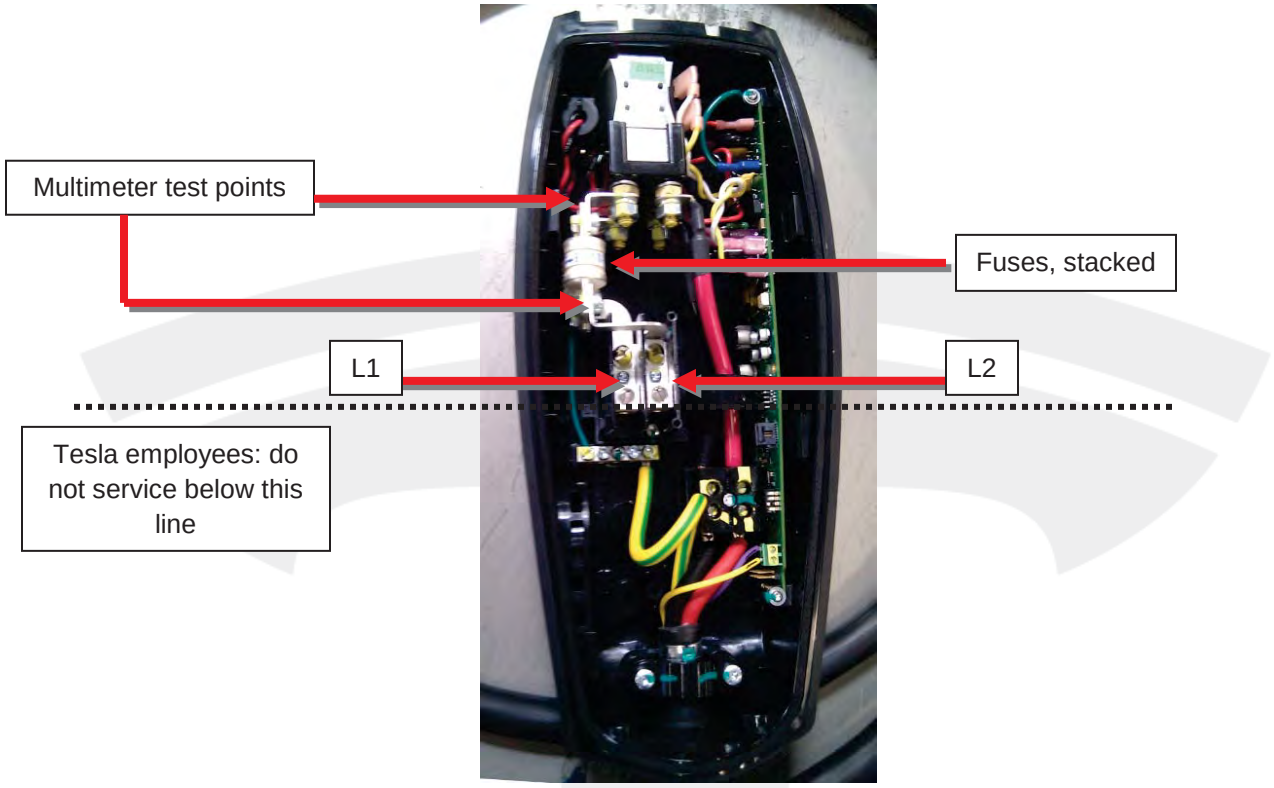


Figure 1 (Unit shown is not connected to house wiring)

6. Before disturbing any components, inspect the interior around the fuses. In the repair order, include:
   - A note stating which fuse failed (L1, L2, or both).
   - A description of the interior if any wiring insulation has melted, or any of the bus bars show discoloration. Even if the bus bars are discolored, they are still good for reuse.
   - The serial number of the HPWC unit (located on the lower right outside of the cover).

⚠ **CAUTION:** If the wiring is damaged, the entire HPWC must be replaced; close the unit and call a certified electrician to remove the unit.

7. Use a Philips screwdriver to remove the screws that connect the bottom of both lower bus bars to L1 and L2 (torque 2.0 Nm) (Figure 2).

Figure 2

8. Use a 13 mm socket wrench to loosen the nuts that fasten the top of the upper bus bars (torque 3.5 Nm) (Figure 3).

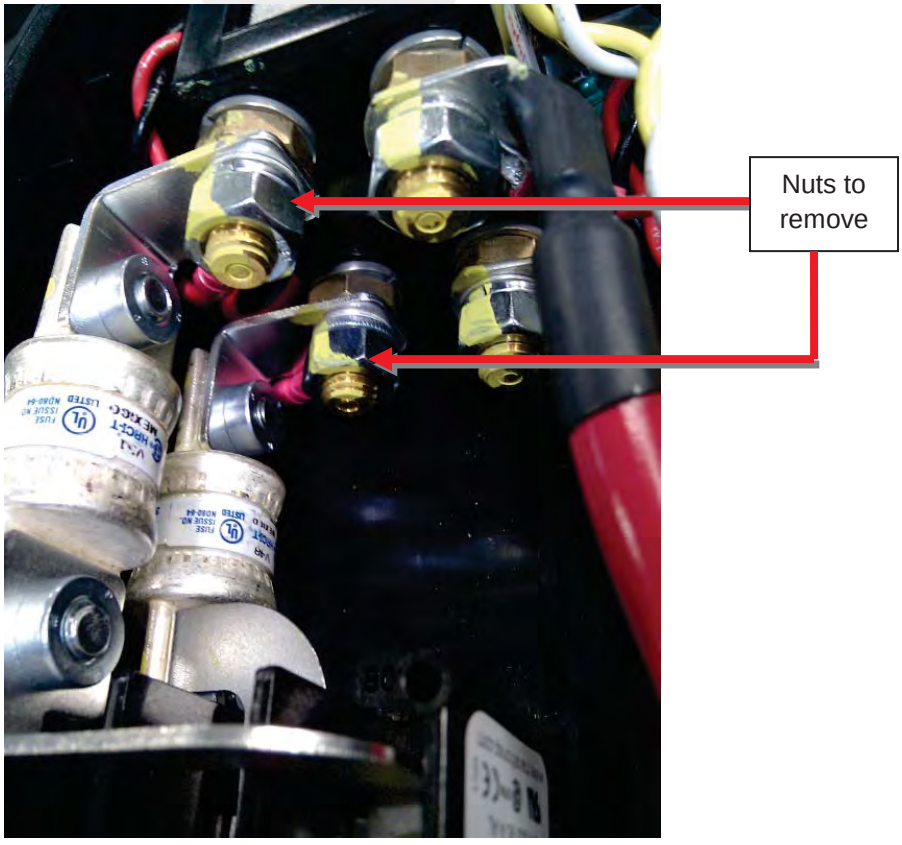


Figure 3

9. Before removing the bus bar assemblies completely, note the order of the components from bottom to top: nut, split washer, lug, bus bar (Figure 4). The red wire is attached to the outer (L2) assembly, the black wire to the inner (L1) assembly.

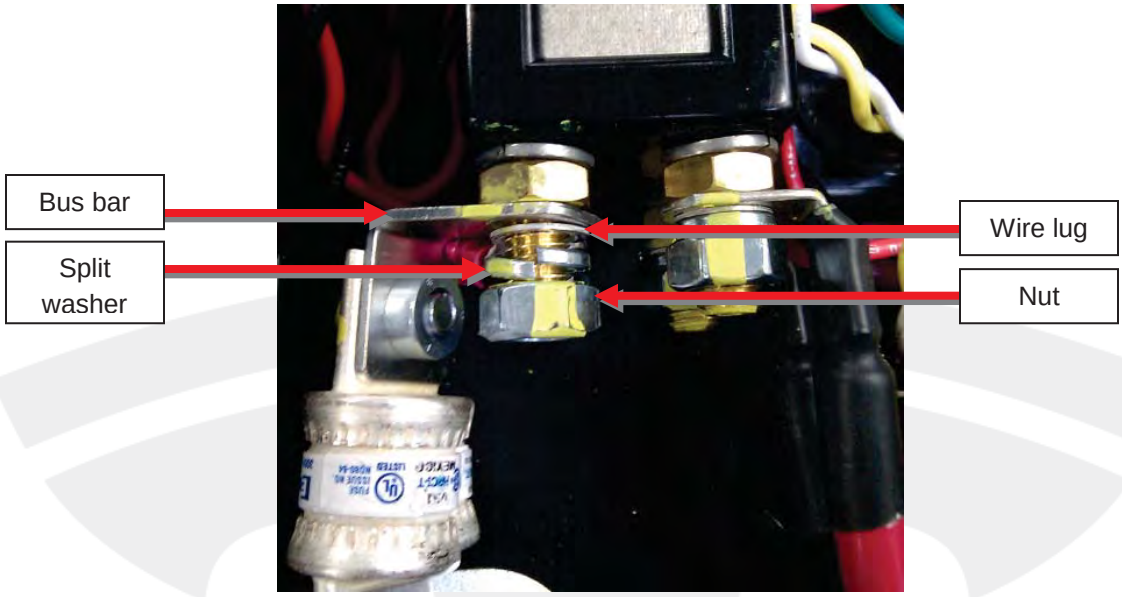


Figure 4

10. Use an 8 mm socket (torque 2 Nm) to remove the bus bar halves from both ends of each fuse. Note for later reinstallation that the lower bus bars are shaped differently for the outer and inner assemblies (Figure 5).

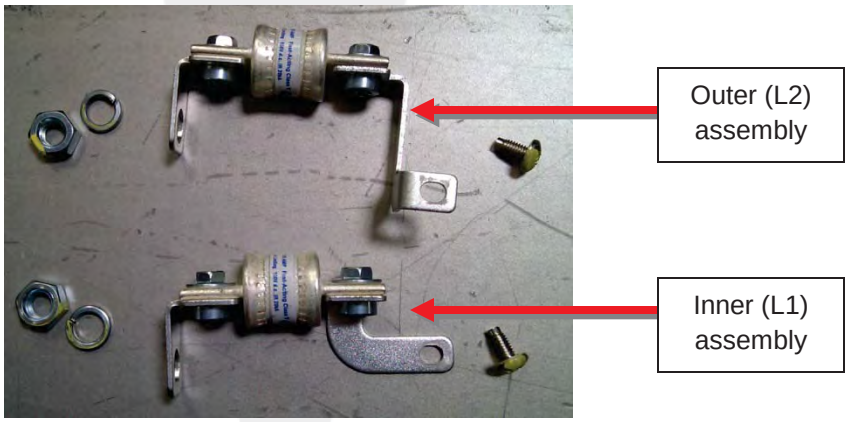


Figure 5

11. Note the date code on both removed fuses and add them to the repair order notes. The code is printed above the manufacture location (Figure 6).

Figure 6

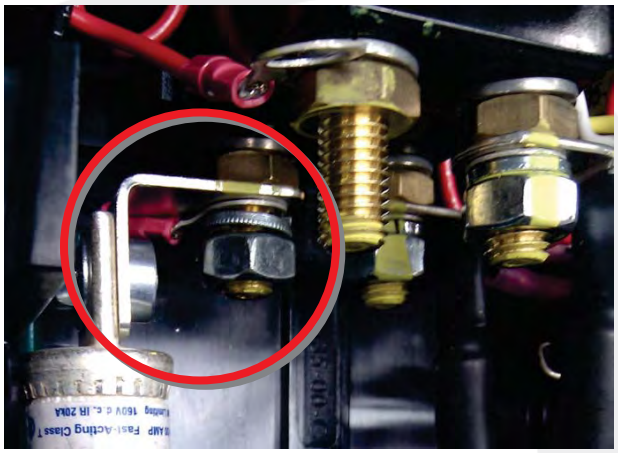
Installation is the opposite of removal, with the following exceptions:

1. Before reassembly, clean the contact surfaces of both new fuses and ALL contact surfaces on the upper and lower bus bars with alcohol wipes.

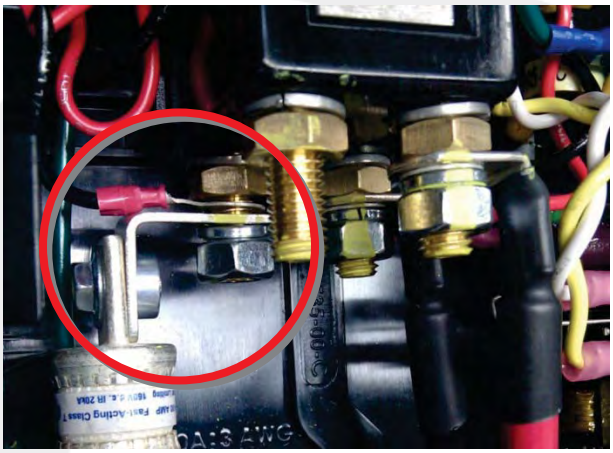
2. Use a paint or ink pen to mark the torque position after reassembly, using a different color than manufacturing (manufacturing usually uses yellow). Use one continuous motion to mark the bolt, washer, nut, and bus bar (Figure 3).

3. Ensure that the red and black ring lugs are correctly reinstalled: black wire on the inner bolt, red wire on the outer bolt.

CAUTION: Always install the bus bar first and the ring lug second. Installing the ring lug first can result in excessive resistance and overheating (Figures 7 and 8).

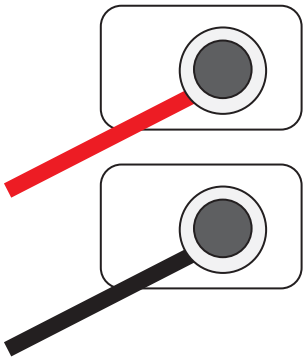


✓ **Figure 7 (Correct)**



✗ **Figure 8 (Incorrect)**

CAUTION: Always clock both ring lugs so that the wires point toward the back of the unit at a 45-degree angle, allowing a gap between the top wire and the bottom bus bar (Figures 9 and 10). Wires must not rest on the bus bars (Figures 11 and 12).



✓ **Figure 9 (Correct)**

✓ **Figure 10 (Correct)**

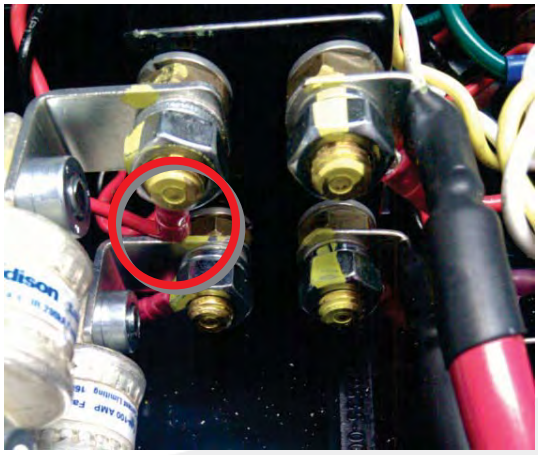


Figure 11 (Incorrect: resting on bus bar)

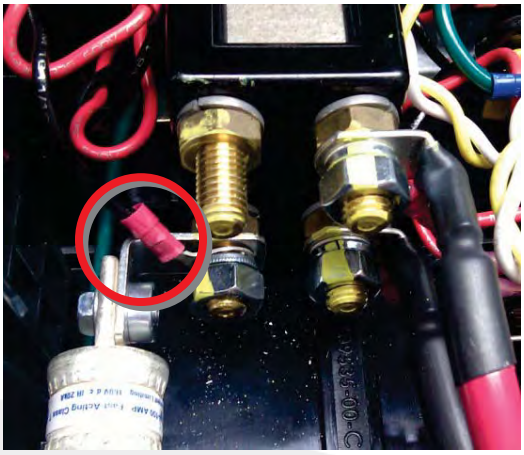


Figure 12 (Incorrect: wire in front of bus bar)

4. After reassembly of the fuses and before closing the HPWC cover, use a paint pen to mark a small dot on the inside lower right corner to indicate the unit has already been reworked (Figure 13).

Figure 13

5. After full reassembly and re-energizing the breaker, check the front diagnostic lights on the HPWC cover. When it is not plugged into the vehicle, the topmost green LED is steady (not flashing).

6. Attempt to charge the vehicle with the HPWC to verify the repair.

Affected Part(s) 1019079-00-A FUSE,100A,300V (Qty. 2 Required)

Warranty/DMS Coding:

Description	Complaint	Cause	Correction	Time
Inspection Only; Fuse Replacement Not Required	A091	B053	S011350003	0.3
Replace Both HPWC Fuses	A091	B053	S021350003	0.5

For feedback on the accuracy of this document, email ServiceBulletinFeedback@teslamotors.com.