Tesla, Inc. Service Bulletin		*Inspect Electromechanical Brake Booster Electrical Connector*	
SB-20-17-005 May 6, 2020			
Classification		**Section/Group**	**Mobile Service**
Campaign Bulletin		17 - Electrical	Cannot Perform
Model Year	**Model**	**Country/Region**	**Version**
2020	Model S	Europe, Asia Pacific	All

The model(s) and model year(s) listed are a general approximation of the affected VIN list. Refer to the VIN/Bulletin Tracker or Customer/Vehicle profile to determine applicability of this bulletin for a particular vehicle.

Campaign Bulletin: This campaign bulletin addresses a known non-safety-related condition and provides recommended technical diagnosis and repair procedures. Apply this procedure to all vehicles in the affected VIN list.

Condition

On certain Model S vehicles, pins 1 and 9 in connector X117 (electromechanical brake booster electrical connectors) might be loose and fall out of the connector or cause an intermittent connection, which would result in the electromechanical brake booster not being properly powered. The driver may report that the brake pedal is harder to press than usual.

Correction

Inspect pins 1 and 9 in connector X117. If the pins are loose or damaged, repair the pins. In addition, if pin 1 or 9 of the electromechanical brake booster connector was found to be bent or damage, replace the electromechanical brake booster as well.

Correction Description	Correction	Time
SB-20-17-005 Not Applicable	S012017005	0.00
Inspect Connector X117; No Wires Repair Needed (RHD)	S022017005	0.15
Inspect Connector X117; No Wires Repair Needed (LHD)	S032017005	0.40
Repair Wire(s) At Connector X117 (RHD)	S042017005	0.70
Repair Wire(s) At Connector X117 (LHD)	S052017005	0.75
Replace Electromechanical Brake Booster Assembly And Repair Wire(s) At Connector X117 (RHD)	S062017005	2.55
Replace Electromechanical Brake Booster Assembly And Repair Wire(s) At Connector X117 (LHD)	S072017005	2.60

	Part Number	Description	Quantity
Parts Required (if necessary)	1061177-00-B	WIRE HARNESS REPAIR KIT	1
	1115737-00-A	TERMINAL REPLACEMENT KIT 3 (Use terminal 1102107-00-B)	As required
	1037123-00-B or	ELECTROMECHANICAL BRAKE BOOSTER (LHD)	1
	1043885-00-B	IBOOSTER - MODEL S (RHD)	1
	These part numbers were current at the time of publication. Use the revisions listed or later, unless otherwise specified in the Parts Catalog.		
Special Tools	1060908-00-A	Soldering Iron and Heat Tool Kit	
	1451046-00-A	Crimp Tool	
	1451045-00-A	Wire cutting and stripping pliers	

⚠ **CAUTION:** Pins 1 and 9 in connector X117 are safety-critical circuits. Repair instructions of these circuits is described later in this document. Refer to SI-17-17-002, “Electrical Harness Repair” for additional information regarding the repair of these circuits.

Remove

NOTE: The figures in this document show a Left Hand Drive (LHD) vehicle. Unless otherwise noted, Right Hand Drive (RHD) is similar.

1. Remove the rear underhood apron (refer to Service Manual procedure 12251102).
2. Remove the LH and RH underhood aprons (refer to Service Manual procedure 12251202).
3. Remove the HEPA filter inlet duct (refer to Service Manual procedure 18105002).
4. Remove the HEPA filter outlet duct (refer to Service Manual procedure 18105202).
5. Disconnect 12V power (refer to Service Manual procedure 17010300).
6. **LHD only:**
    a. Remove LH front wheel (refer to Service Manual procedure 34015001).
    b. Remove the LH front wheel arch liner (refer to Service Manual procedure 12010702).
    c. Disconnect the LH front ride height sensor electrical connector (Figure 1).

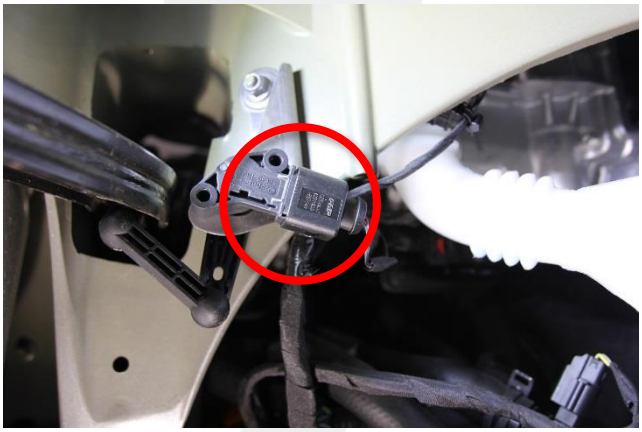

Figure 1 – LHD only

7. **RHD only:**

    a. Partially lift the RH side of the cowl screen panel, but do not remove the cowl screen panel from the vehicle; leave the LH side of the cowl screen panel fastened (Figures 2 and 3) (refer to Service Manual procedure 12250902).

Figure 2

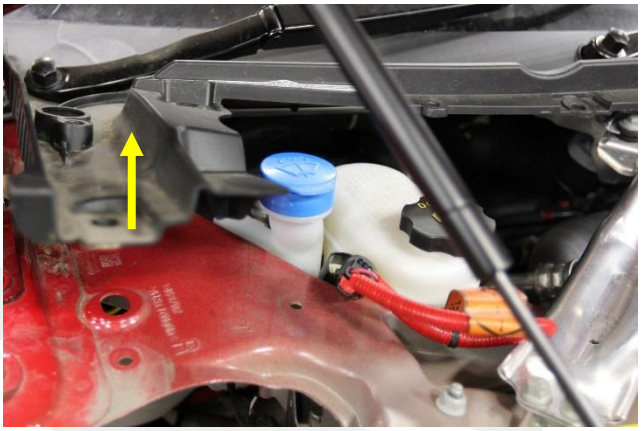

Figure 3

    b. Disconnect the brake fluid level sensor electrical connector (Figure 4).

Figure 4 – RHD only

8. Disconnect the electromechanical brake booster assembly electrical connector (connector X117):

    a. Release the red locking tab (Figures 5 and 6).

Figure 5

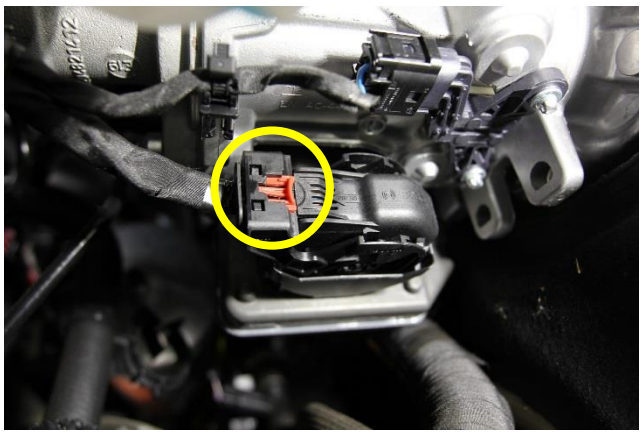

Figure 6

b. While pressing the black locking tab (Figure 7), swing the lever (Figure 8), and then disconnect the electromechanical brake booster assembly electrical connector.

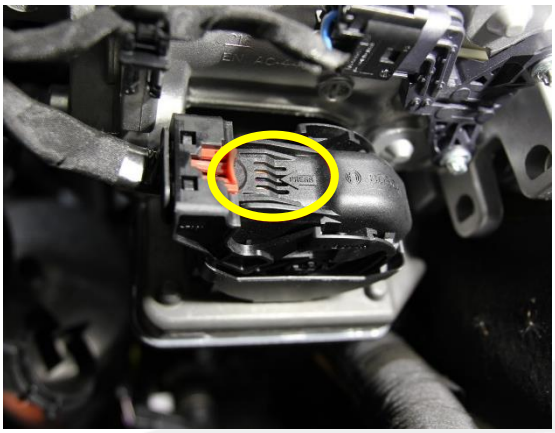

Figure 7

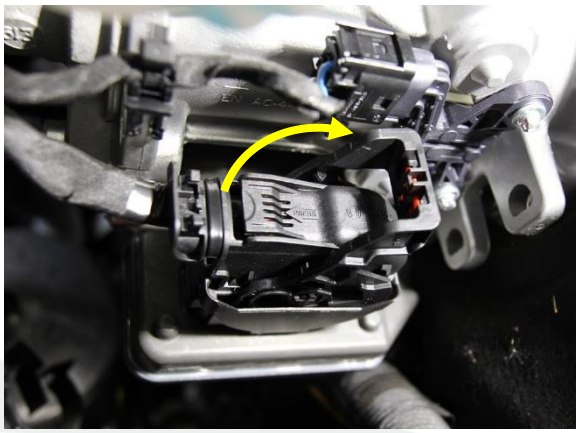

Figure 8

9. Release the edge clip that attaches the brake pedal sensor electrical harness to the electromechanical brake booster assembly (Figures 9 and 10).

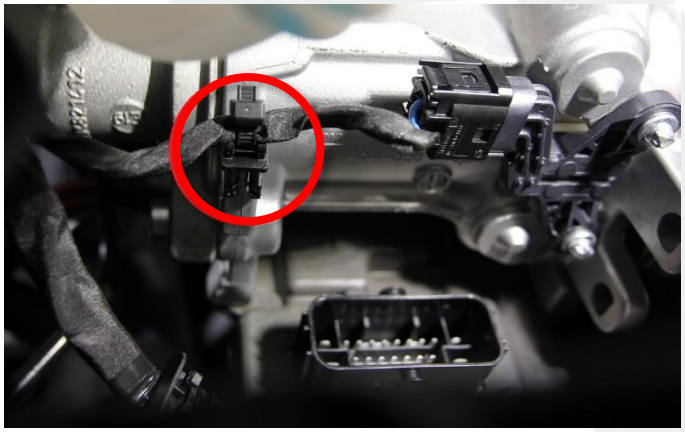

Figure 9

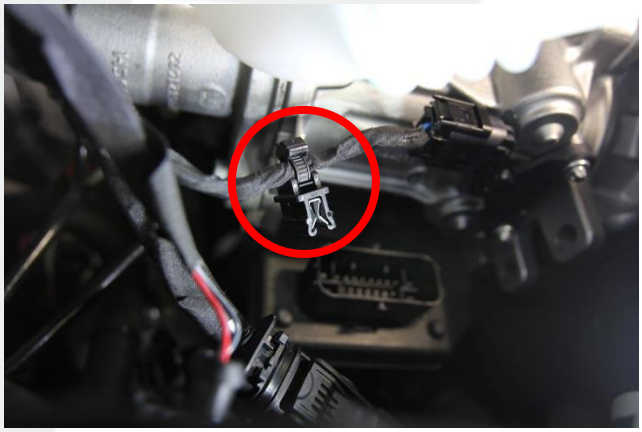

Figure 10

10. Disconnect the brake pedal sensor electrical connector from the electromechanical brake booster assembly (Figure 11).

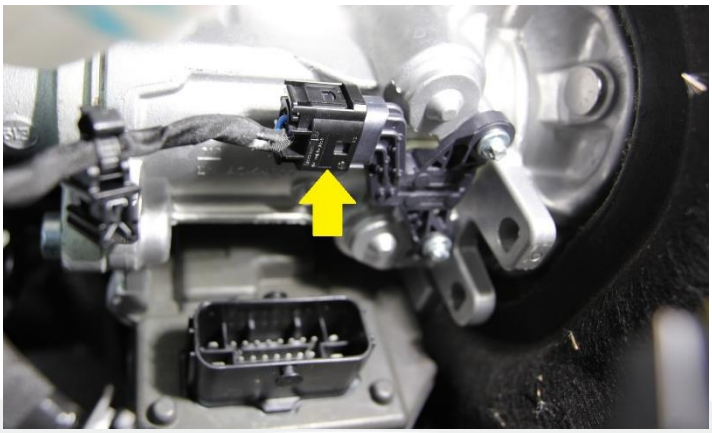

Figure 11

11. **LHD only:** Move connector X117 into the LH wheelwell area for inspection later in this document (Figure 12).

Figure 12 – LHD only

Inspection

1. Inspect the connector at the electromechanical brake booster assembly (Figure 13):

   - If the pins are bent or damaged, replace the electromechanical brake booster assembly (refer to Service Manual procedure 33201002), and then continue to next step.
   - If the pins are not bent or damaged, continue to the next step.

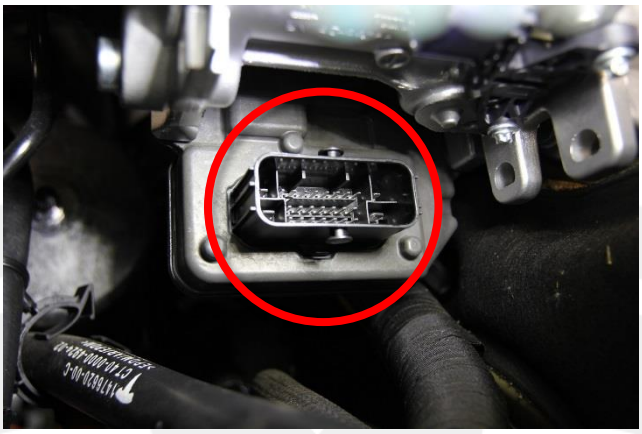

Figure 13

2. Inspect connector X117 at pins 1 and 9 for damage (Figures 14 and 15). Make sure that the pins are properly seated in the connector housing and that there is no damage to the pin or connector. If damage is found, skip to section “Wire Repairs at Connector X117” later this document.

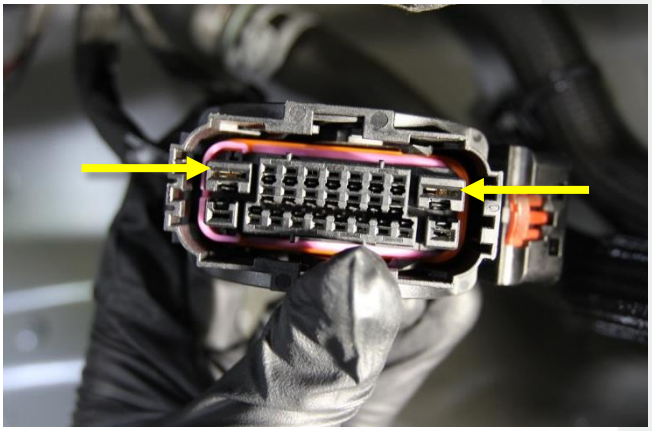

Figure 14

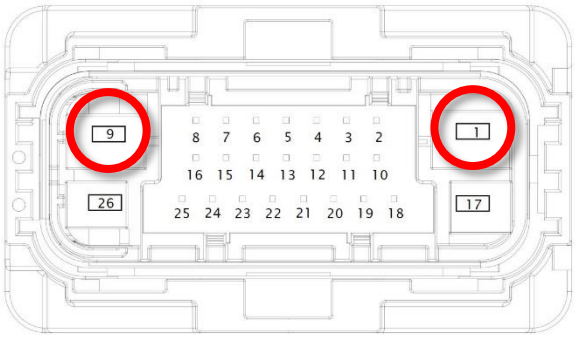

Figure 15

3. Obtain a drag test terminal Part Number (PN) 7114-4030 (Yazaki) (Figure 16). Refer to Toolbox article #41023 for additional information.

NOTE: Make sure that the drag test terminal is in new condition and undamaged.

Figure 16

4. Perform a pin drag test of connector X117 at pins 1 and 9 (Figure 17):

   CAUTION: This test should be performed 1 time only. Repeating this test several times on the same terminal pin will damage the pin due to reduced spring tension.

   - If pin damage is found, go to section “Wire Repairs at Connector X117” next in this document.
   - If pins are undamaged, skip to the “Install” section of this document.

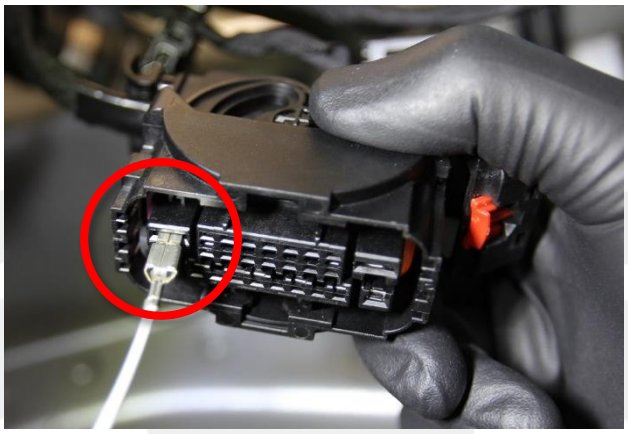

Figure 17 – Pin 9 shown, pin 1 similar

Wire Repairs at Connector X117

NOTE: Create a Toolbox session to document the safety-related wire repair of this critical electrical circuit.

NOTE: This section describes how to repair pin 9 at connector X117. The repair procedure for pin 1 is the same as the one described for pin 9. Therefore, substitue pin 9 when repairing pin 1.

1. **RHD only:**
   a. Raise and support the vehicle on a 2 post lift (refer to Service Manual procedure 10000205).
   b. Remove RH front wheel (refer to Service Manual procedure 34015001).
   c. Remove the RH front wheel arch liner (refer to Service Manual procedure 12010702).
   d. Move the connector X117 into the RH wheelwell area (Figure 18).

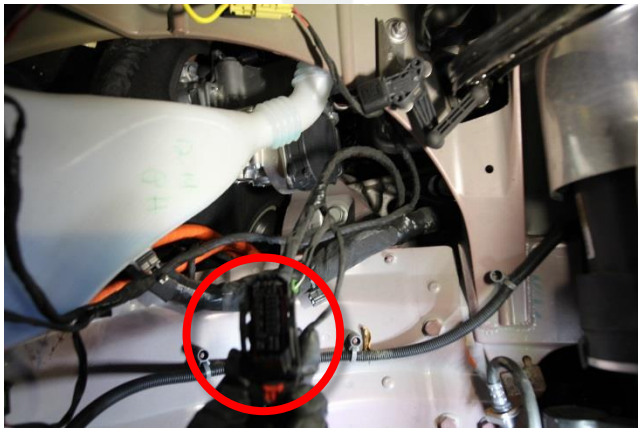

Figure 18 – RHD only

2. Cut the cable tie from the cover unit of connector X117 using diagonal cutters (Figure 19).

Figure 19

3. Release the locking tabs (x2) by disengaging through the opening at the base of the connector X117 (Figure 20), tilt the cover (Figures 21 and 22), and then remove the cover backing from connector X117 (Figure 23).

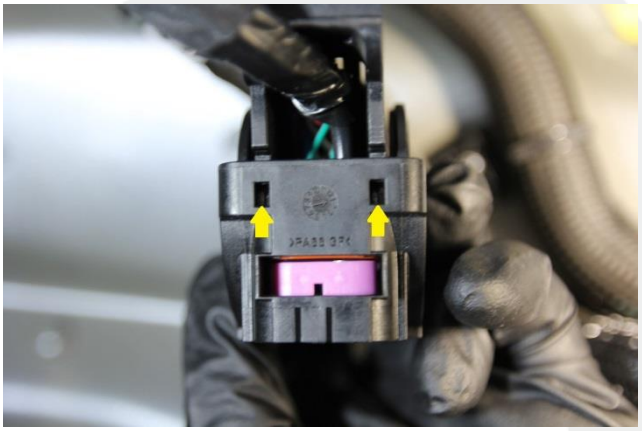

Figure 20

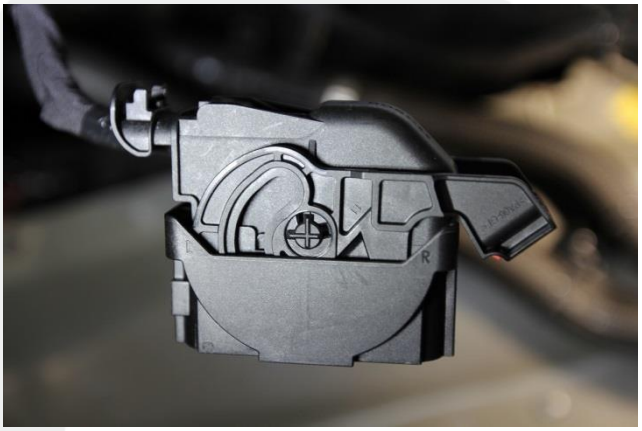

Figure 21

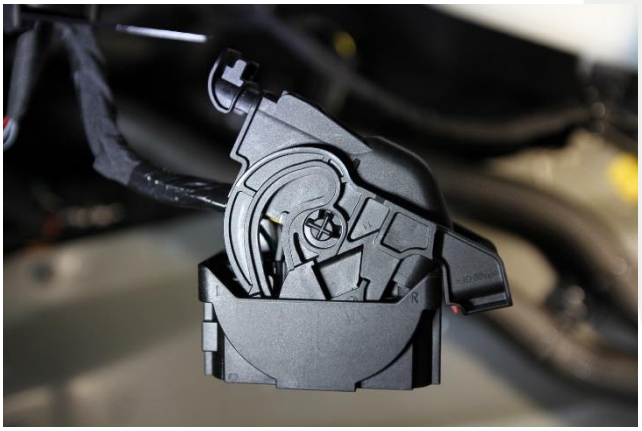

Figure 22

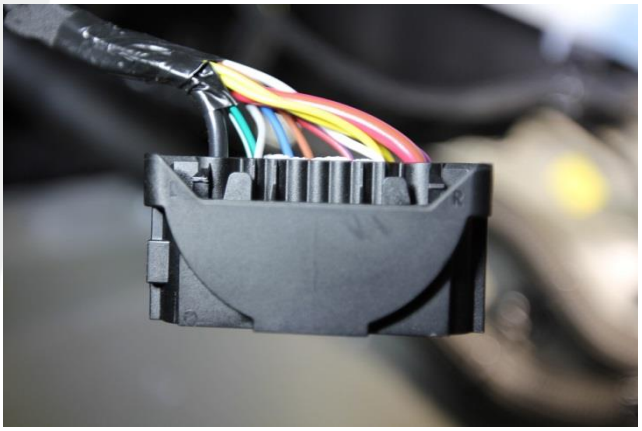

Figure 23

4. Carefully remove the harness tape and open up the wiring loom for rework (Figures 24 and 25).

   CAUTION: The repair location must be performed at least 100 mm away from the connector. Refer to SI-17-17-002, “Electrical Harness Repair” for additional information.

Figure 24

Figure 25

5. Disengage the terminal secondary locking mechanism for the connector using a small flat head screwdriver (Figures 26 and 27).

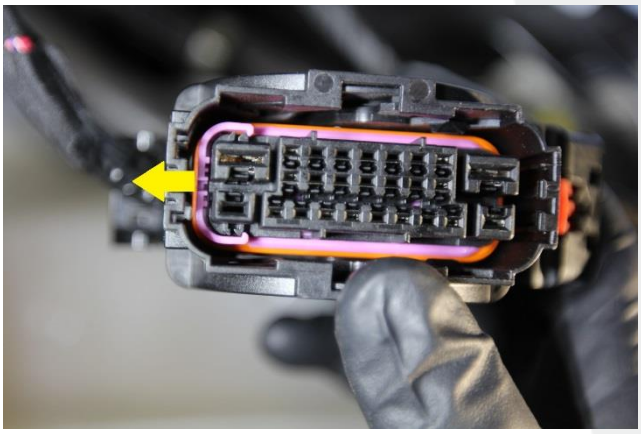

Figure 26 – Pin 9 shown, pin 1 similar

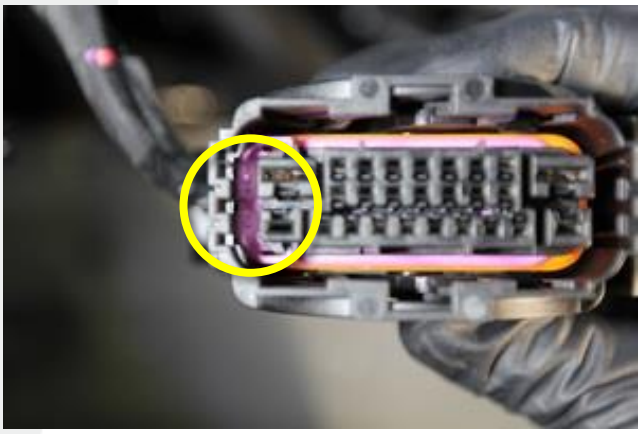

Figure 27 – Pin 9 shown, pin 1 similar

6. Disengage the terminal primary locking tab (Figure 28), and then remove terminal 9 from the connector (Figure 29).

Figure 28 – Pin 9 shown, pin 1 similar

Figure 29 – Pin 9 shown, pin 1 similar

7. Cut off the pin 9 wire at connector (Figures 30 and 31).

   ⚠ **CAUTION:** The repair location must be performed at least 100 mm away from the connector. Refer to SI-17-17-002, “Electrical Harness Repair” for additional information.

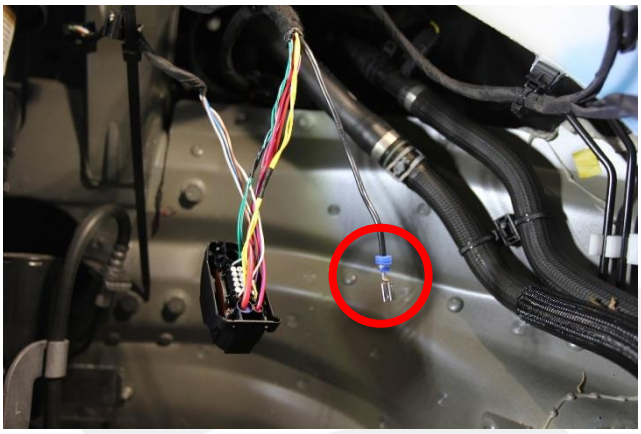

Figure 30

Figure 31

8. Strip away approximately 7 mm of insulation from the end of the wire (Figure 32).

Figure 32

9. Install replacement pin terminal (1102107-00-B) (Figure 33) into the connector housing (Figures 34 and 35), and then perform a push-pull test to verify that the terminal is seated properly.

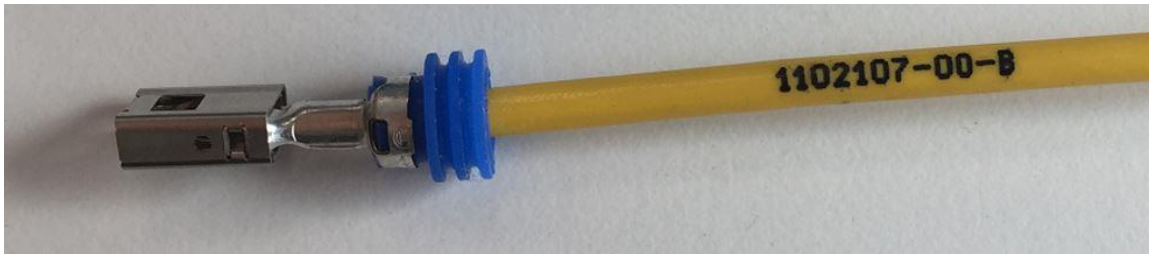

Figure 33

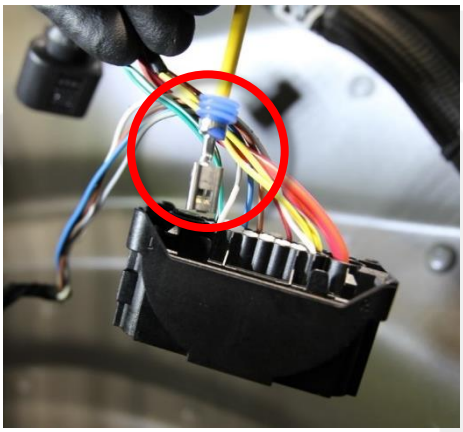

Figure 34

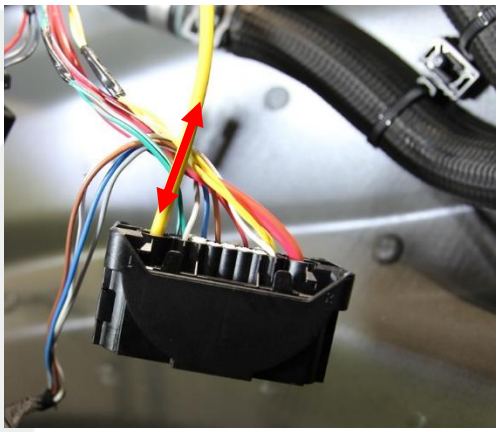

Figure 35

10. Engage the terminal secondary locking mechanism for the connector at pin 9 using a small flat head screwdriver (Figure 36).

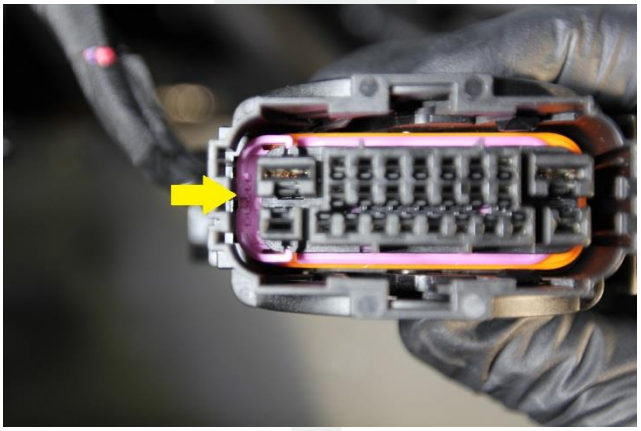

Figure 36 – Pin 9 shown, pin 1 similar

11. Cut the length of the newly installed wire to match with the length required for the rework per SI-17-17-002 (Figure 37).

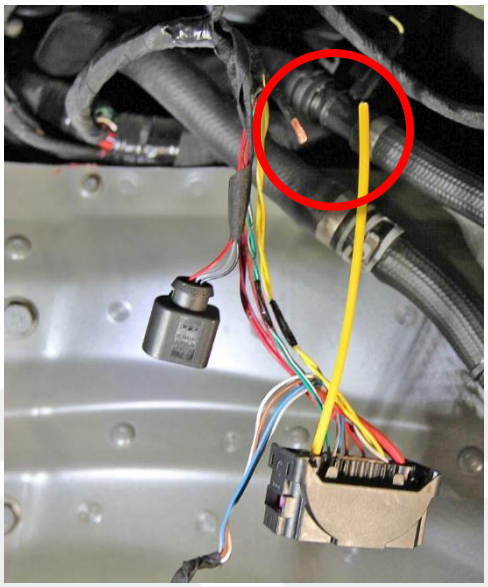

Figure 37

12. Strip away approximately 7 mm of insulation from the end of the newly installed wire (Figure 38).

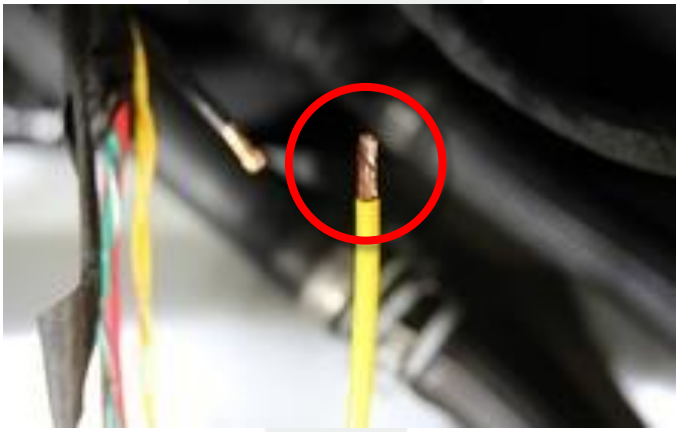

Figure 38

13. Install the heat shrink tubing over the newly installed wire (Figure 39). Refer to SI-17-17-002 for additional information regarding the proper size of heat shrink tube.

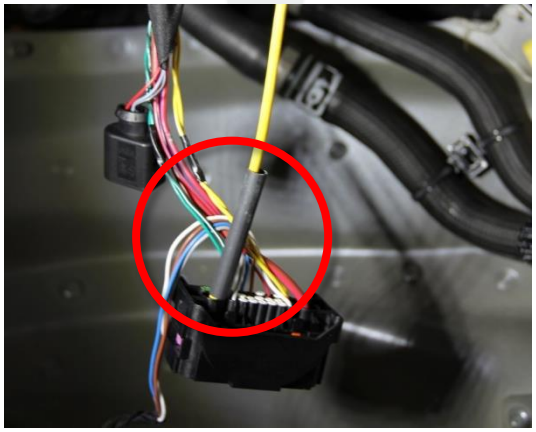

Figure 39

14. Install a barrel connector from the electrical harness repair kit over the wires, and then crimp the wires (Figure 40). Refer to SI-17-17-002 for additional information regarding the proper size of barrel connector.

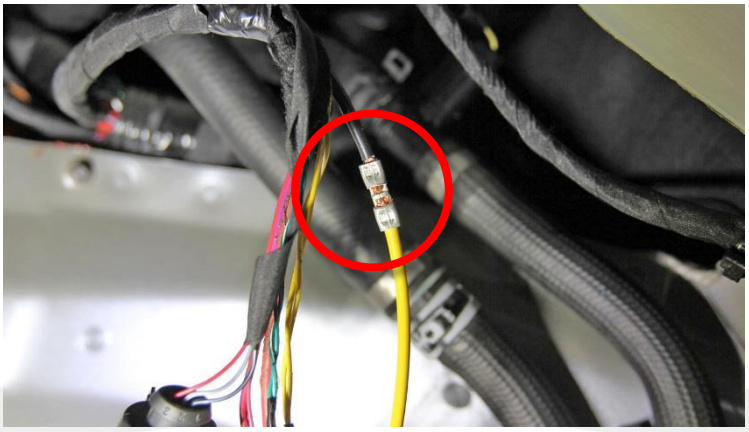

Figure 40

15. Apply solder to the crimp connection.
16. Slide the heat shrink over the wiring rework, and apply heat. Verify that a water tight seal is formed.
17. Repeat steps 5 – 16 for connector 117 pin 1, if the pin is damaged.
18. Apply yellow tape over the area of wiring rework per SI-17-17-002.
19. Apply harness tape back over the electrical harness to achieve a factory-like repair (Figure 41).

Figure 41

20. Install the cover backing onto X117 (Figures 20 – 23) and verify that the cover backing is fully secured onto the connector housing.
21. Install new cable tie onto the cover unit of connector X117 (Figure 19).

Install

1. Return the electromechanical brake booster assembly electrical connector back to its original position.
2. **RHD only:**
    a. Install the RH front wheel arch liner (refer to Service Manual procedure 12010702).
    b. Install RH front wheel (refer to Service Manual procedure 34015001).

3. **LHD only:**
    a. Connect the brake pedal sensor electrical connector (Figure 11).
    b. Install the edge clip that attaches the brake pedal sensor electrical connector to the electromechanical brake booster assembly (Figure 9).
4. Connect the electrical connector to the electromechanical brake booster assembly (Figures 5 – 8):
    a. Gently seat the electrical connector into the brake booster.
    b. Allow the lever to partially engage, and then fully fasten the lever.
    c. Verify that the black locking tab is engaged.
    d. Push in and secure the red locking tab.
5. **RHD only:**
    a. Connect the brake pedal sensor electrical connector (Figure 11).
    b. Install the edge clip that attaches the brake pedal sensor electrical connector to the electromechanical brake booster assembly (Figure 9).
    c. Connect the brake fluid level sensor electrical connector (Figure 4).
    d. Install the cowl screen panel (refer to Service Manual procedure 12250902).
6. **LHD only:**
    a. Connect the LH front ride height sensor electrical connector (Figure 1).
    b. Install the LH front wheel arch liner (refer to Service Manual procedure 12010702).
    c. Install LH front wheel (refer to Service Manual procedure 34015001).
7. Reconnect 12V power (refer to Service Manual procedure 17010300).
8. Install the HEPA filter outlet duct (refer to Service Manual procedure 18105202).
9. Install the HEPA filter inlet duct (refer to Service Manual procedure 18105002).
10. Install the LH and RH underhood aprons (refer to Service Manual procedure 12251202).
11. Install the rear underhood apron (refer to Service Manual procedure 12251102).
12. Remove the vehicle from the 2 post lift.
13. Step on the brake pedal and power on the drive rails.
14. Press the brake pedal several times to verify its operation.
15. Perform a test drive.