Installation Instructions for the Lingenfelter Gen 6 Camaro Fuel Pump Voltage Booster Kit

PN: L460417316

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Parts List
Lingenfelter 2016 Camaro
Boost-A-Pump (BAP) Kit (PN: L460417316)

#	Description	Part number
10″	Dual Lock Tape	
3.5′	4mm Silicon Hose	
1	7.0 MM Hose Clamp	
1	9.5 MM Hose Clamp	
2	5/16″ Ring Terminal	
1	BAP Switch Mount	L960200000
1	1/8 NPT to 1/8 Barb 90°	
6″	Heat Shrink Tubing 3/8″	
1	Splice Clip	
6″	Heat Shrink Tubing 1/4″	
40	Cable Ties 4″	
2	22-18 Ga. Ring Tongue	

Tools & Materials Required

- Wire tool
- Crimping tool
- Pry Tool
- Pliers
- Drill
- Heat gun
- Thread sealant
- 3/16″ drill bit
- 7 mm socket
- 10 mm socket
- 13 mm socket
- 14 mm socket
- 22 mm socket
- Ratchet
- Electrical tape
- Wire stripping tool
- Pin tool

Optional Parts

#	Description	Part number
1	Vacuum switch	LF20-V-211110-S
1	RPM activated switch	L460040000
1	High current sealed relay kit, 40 AMP SPDT	L450100000

The fuel pump voltage booster (FPVB) increases fuel flow by increasing the voltage to the fuel pump, increasing the RPM of the fuel pump motor.

This fuel pump voltage booster kit offers a fuel pump voltage setting of 15.5 volts. 15.5 volts is the maximum we recommend for the stock 2016-2019 Camaro fuel pump and the factory fuel pump controller. The production fuel pump controller monitors fuel pump voltage and current and could set a diagnostic code at higher voltages and current loads.

Why are we voltage boosting the fuel pump controller and the fuel pump and not just the fuel pump? The reason this is done is that the fuel pump voltage booster increases the voltage outpu in order to do so it has to increase the amount of current it draws on the low voltage, input side of the voltage booster. For example, if you are outputting 17 volts and 15 amps to the pump that is 255 watts output (17x15=255). In order to output 255 watts you must draw 19 amps at 13.5 volts (255/13.5 =19). This assumes 100% efficiency of the voltage booster. At a more realistic 85% efficiency, you are now drawing 22 amps. If we had the voltage booster between the pump and the fuel pump controller, the fuel pump controller would have to operate at these elevated current levels, causing heat and other reliability related problems. By having the fuel pump controller also operating at elevated voltage the fuel pump controller doesn't see the higher current level on the low voltage side of the fuel pump booster, reducing durability and diagnostic code problems.

Fuel flow requirements depend on the efficiency of your engine (brake specific fuel consumption, BSFC). As a general guide, for supercharged applications over roughly 750 hp (at the crank), we recommend voltage boosting the factory pump and for naturally aspirated applications over roughly 800 hp we recommend voltage boosting the factory pump. The voltage boosted Camaro SS and ZL1 factory pump can support between 900 hp (supercharged or turbocharged applications) to 1100 hp (naturally aspirated applications). For higher power applications, we recommend our E85 compatible high flow fuel pump module.

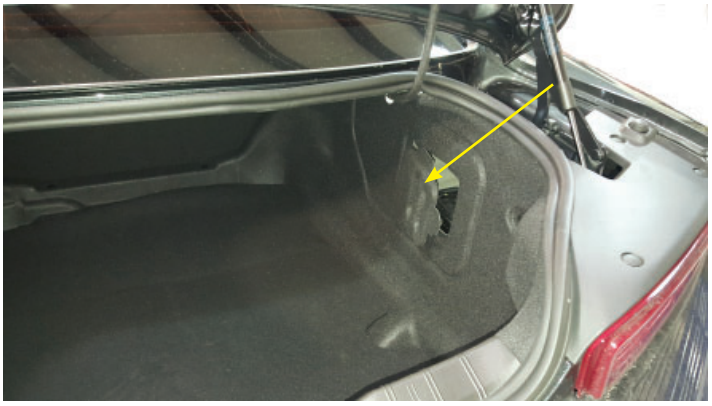
Read the entire instruction manual before beginning installation. Some stock parts will be used in reassembly. Estimated installation time is two hours.

When referencing the side of the vehicle in these instructions, the driver side of the vehicle is considered the left side and the passenger side of the vehicle is considered the right side of the vehicle.

Make sure that the FPVB is connected to a good clean ground free of paint, rust or other material. Damage to the unit can occur if a good ground is not used. If you are using a different ground than what the instructions specify, be sure to properly clean and prep the area or use another existing ground.

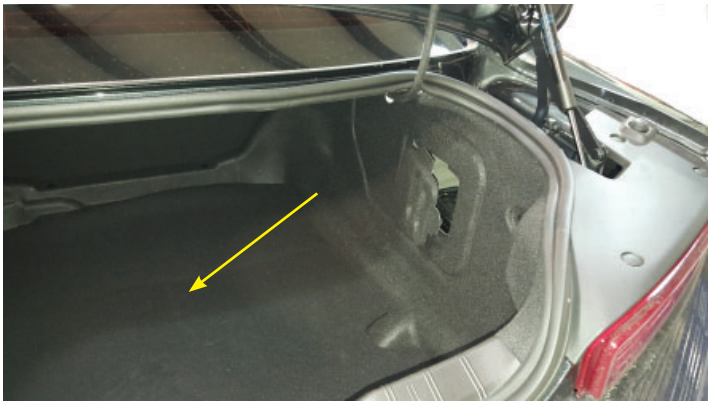
CARRY A SPARE 40 A FUSE WITH YOU AT ALL TIMES!!! If the fuse blows, the fuel pump will no longer work and your vehicle will no longer run.

1. Open the trunk of the vehicle to access the battery.

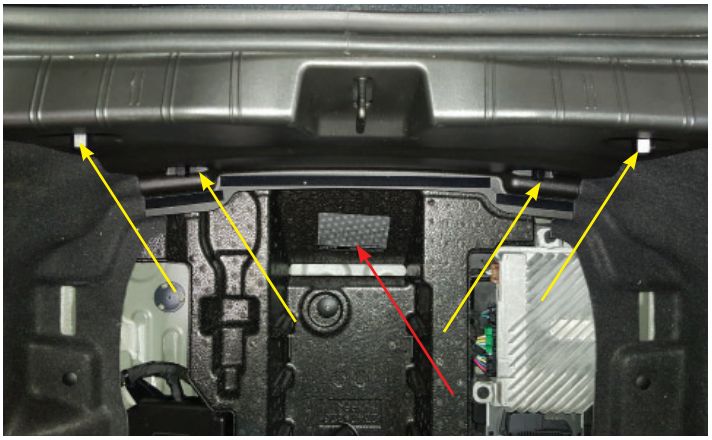


2. Remove the battery access panel that is located in the trunk.

3. Disconnect the negative battery terminal using a 10mm socket.

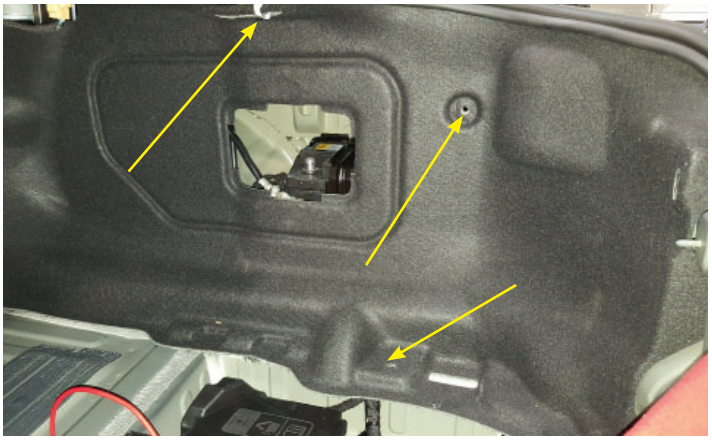


4. Remove the rear compartment floor panel trim.



5. If the vehicle uses net retainers, use a plastic flat-bladed tool to disengage the push-in retainers from the rear end trim finish panel. Otherwise, remove the rear end trim finish panel using a 14mm socket to remove the 4 plastic nuts.

   NOTE: RPO CODE LOCATION. NECESSARY FOR STEPS 19 AND 24



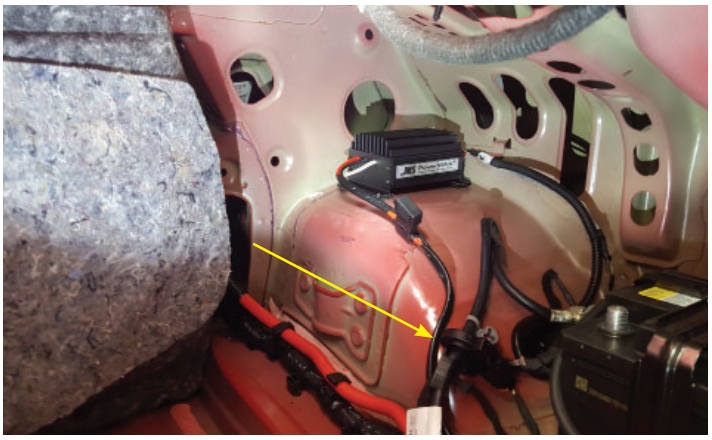
6. Remove the 3 push rivets indicated by the yellow arrows.

7. Slide the rear compartment side trim out of the way to gain access to the wheel well. Use a weight to hold the panel out of the way.

8. Remove the rear body fuse block cover.

9. Raise the vehicle with a vehicle hoist or a jack and jackstands. Be careful to follow the GM lifting procedures on the 6th Gen Camaro due to the aerodynamic components being easily damaged and the low ride height of the vehicle. Refer to your owner's manual for correct vehicle lifting procedures.

10. Apply the dual lock tape to the FPVB as shown



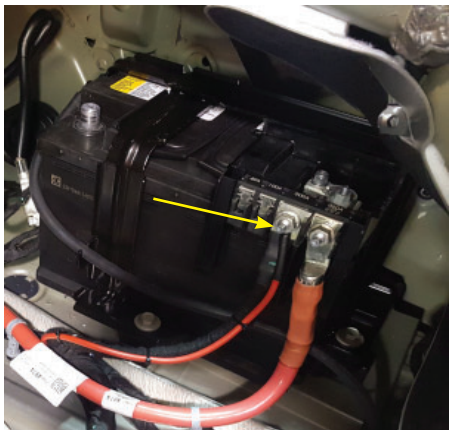
11. Mount the Boost-A-Pump in the location shown. Tape 3 main wires together to keep the routing clean. Tape to approximately 8 inches from the fuse.

12. Route the FPVB harness (white, black, red wires) as shown.

13. Remove the body wiring harness terminal nut using a 13mm socket.

14. Cut the Red FPVB wire to length if needed. Slide on 1.25” of heat shrink, crimp on eyelet*, and then heat up the heat shrink.

    *Note - It is recommend that the eyelet be soldered after crimping.



15. Slide the red wire ring terminal over the stud. Reinstall the nut and torque to 106 lb-in (12 Nm).

16. Reinstall the rear body fuse block cover

17. Route the black wire from FPVB to stud indicated by the yellow arrow. Cut the black wire to length, slide on 1.25” of heat shrink, crimp eyelet*, and then heat up the heat shrink.

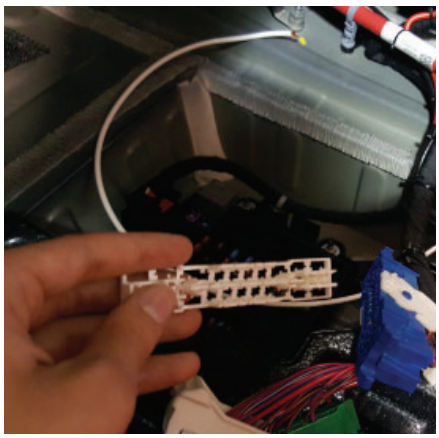
    *Note - It is recommend that the eyelet be soldered after crimping.

18. Connect the black wire from the FPVB to the stud indicated by the yellow arrow. Tighten using a 10mm socket.

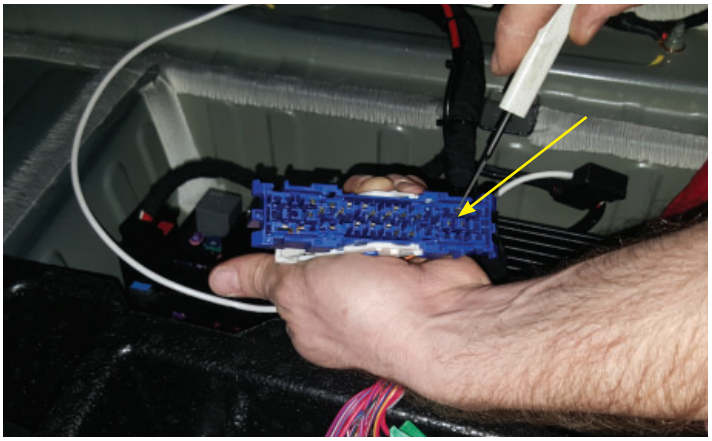
19. Vehicles that are equipped with the electronic axle positraction-limited slip differential (G96) please skip to step 24.

    Refer to step 5 for RPO sticker location.

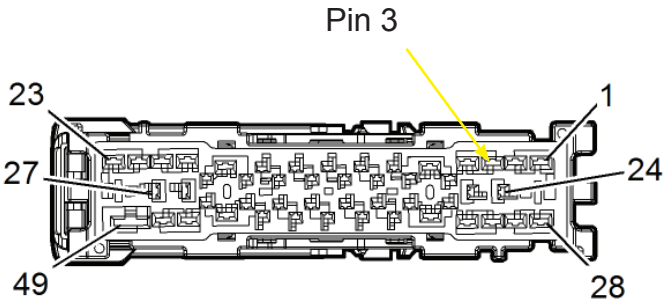
    Locate the body wiring harness junction block and disconnect connector X2 (blue) indicated by the yellow arrow.



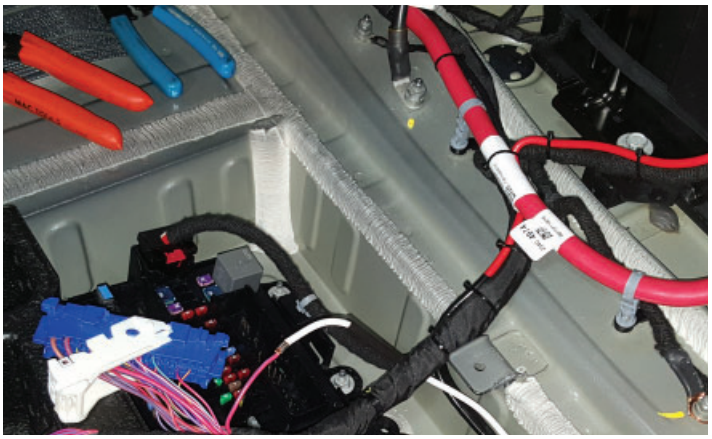
20. Remove the white security lock from connector X2.



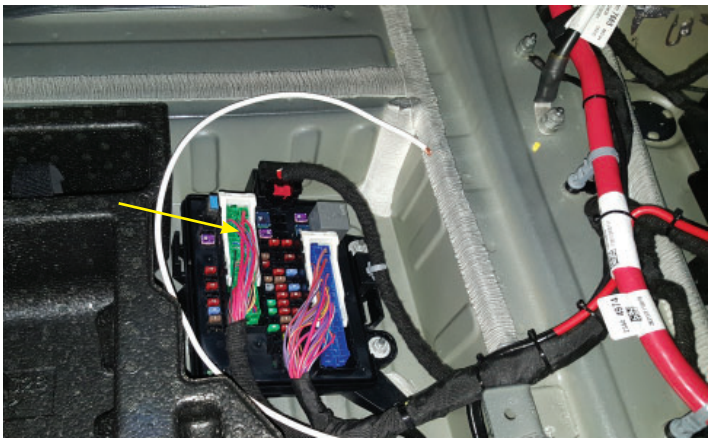
21. Remove pin 3, red/violet wire, from connector X2 using depinning tools.



22. Cut the terminal off of the red/violet wire that was pulled out of the connector. Reinstall the security lock back onto the connector.



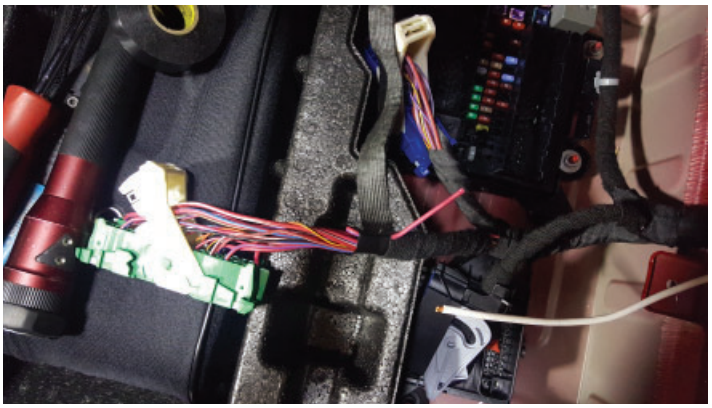
23. Slide a section of heat shrink over the Booster wire (white), and then connect the white wire to the red/violet wire from X2 pin 3 (using splice clip) and then heat the heat shrink. Reconnect the connector back onto the body wiring harness junction block. Vehicles that are not equipped with the electronic axle positraction-limited slip differential (-G96) please skip to step 29.



24. Refer to step 5 for RPO sticker location.

    Locate the body wiring harness junction block and disconnect connector X1 (green) indicated by the yellow arrow.

25. Remove the white security lock from connector X1.



26. Remove pin 29, red/violet wire, from connector X1 using a depinning tool.

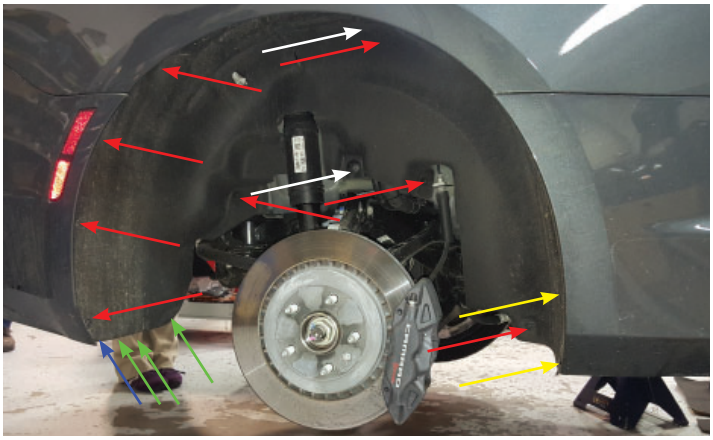
27. Cut the terminal off of the red/violet wire that was pulled out of the connector. Reinstall the security lock back onto the connector.

28. Slide a section of heat shrink over the Booster wire (white), and then connect the Booster wire (white) to the red/violet wire from X1 pin 29 (using splice clip) and then heat shrink. Reconnect the connector back onto the body wiring harness junction block.

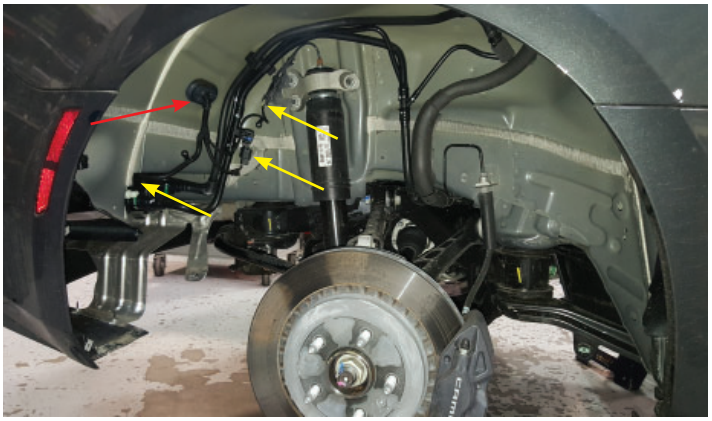
29. Reinstall the body wiring harness junction block cover.

30. Use the supplied zip ties to secure the white, black, and red FPVB wires along OEM harness.

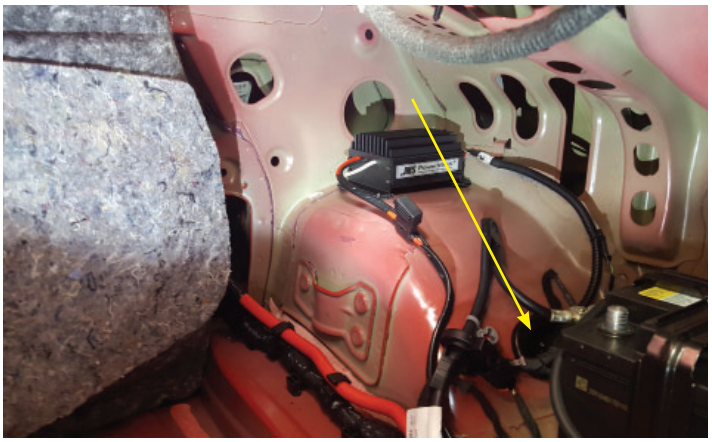
31. Remove the passenger rear wheel using a 22mm socket.



32. Remove the rear wheelhouse liner by removing:
    - 2 push rivets indicated by the yellow arrows
    - 2 spinning discs indicated by the white arrows
    - 8 Torx screws indicated by the red arrows by using a T15 Torx bit
    - 1 Torx screw for ZL1 only indicated by the blue arrow using a T15 Torx Bit
    - 3 bolts indicated by the green arrows by using a 7mm socket.



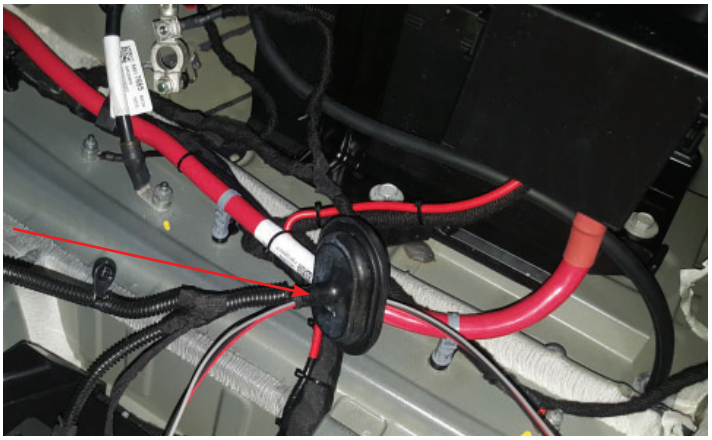
33. Next we are going to be disconnecting connectors that are attached to the harness that runs through the grommet indicated by the red arrow. Disconnect the connectors indicated by the yellow arrows and the harness mounting clips to free harness in preparation for the following steps.



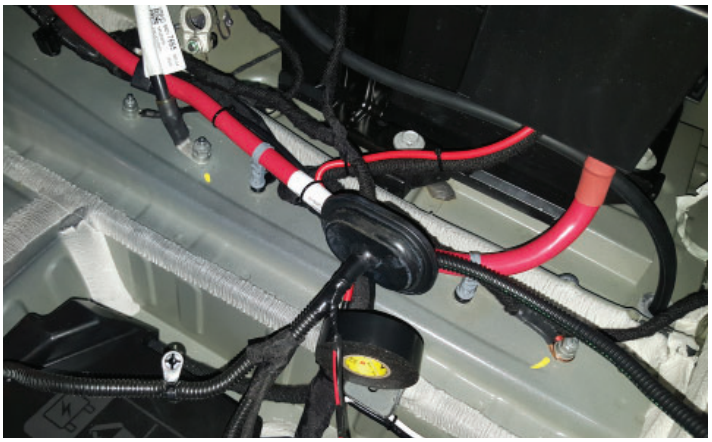
34. Run the FPVB control wires to the grommet indicated by the yellow arrow. Mark FPVB control wire loom at grommet. Cut the loom (not the wires). Remove the section of loom from the control wires. The loom will be used later.

35. Cut the ring terminals off of the control wires (gray and black). Also cut off the single pin connector from the red wire. Seal up the end of only the red wire using a piece of heat shrink.

36. Remove grommet. Push the grommet from the wheel well into the trunk to remove it. Carefully pull the harness into the trunk.



37. Remove tape from existing harness going through grommet. Using a small screw driver, carefully (do not damage existing wires) make a small hole in the grommet seal that is large enough for the FPVB control wires to feed through. Spray the hole and the control wires with silicon. Feed control wires through the grommet.



38. Once the wires are pulled through, wipe down the silicon that was used in the previous step. Retape existing harness. Add the loom that was removed earlier to control wires on the chassis side of the grommet.

39. Reroute wiring through the hole and reinsert the grommet back into the hole.

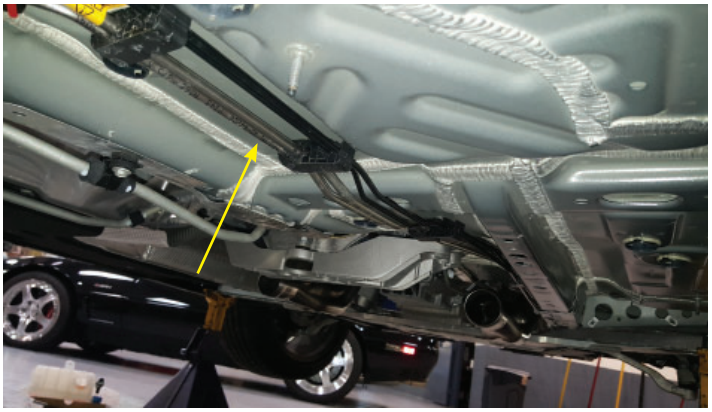
40. Reconnect the three connectors and mounting clips.

41. Route the FPVB activation wires along the purge line.

42. Route the FPVB activation wires along the brake lines.

43. Remove the plastic shield that is located under the car using a 10mm socket.

44. Remove the heat shield to access the fuel line.



45. Route the FPVB activation wires along side the brake lines and fuel line underneath the vehicle.

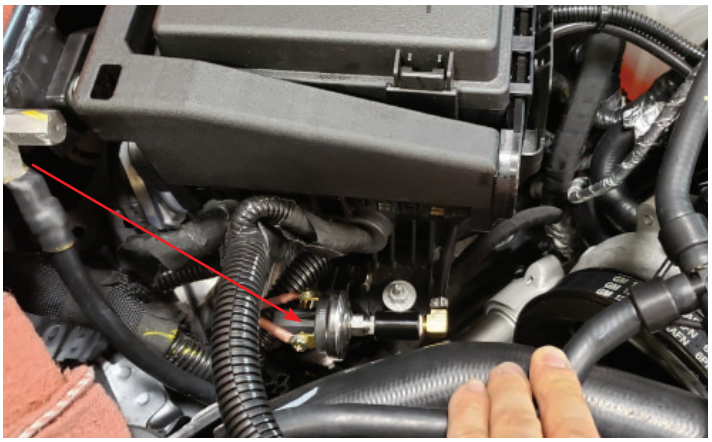
46. Route the FPVB activation wires through the heat sleeve beside the factory bellhousing.

47. Route the FPVB activation wires alongside the fuel line between the fire wall and the engine.

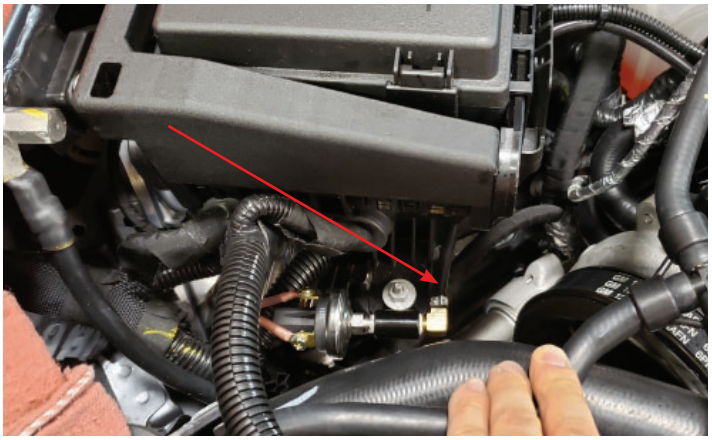
48. Route the FPVB activation wires alongside the valve cover/ coils.

49. Next, assemble the 1/8 NPT to 1/8 barb (PN: 44555K147), FPVB mount switch (PN: L960200000), and the FPVB switch as shown.

50. Mount FPVB switch to front fuse box as shown.

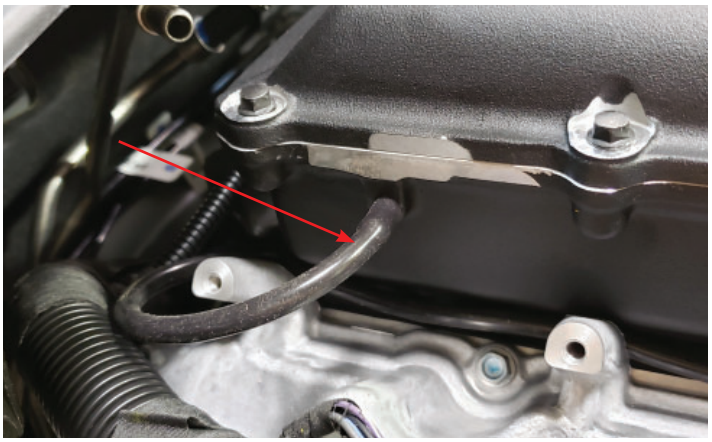


51. Route the FPVB activation wires to the FPVB switch. Use the supplied terminals to attach to switch. Polarity does not matter.



52. Attach the supplied 4mm rubber hose to the BAP switch using the 7.0 MM Oetiker clamp.

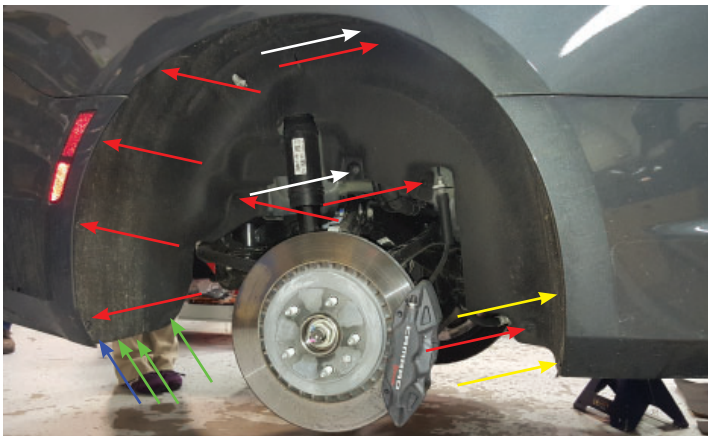
53. Route the reference hose alongside the BAP activation wires to the back of the supercharger.



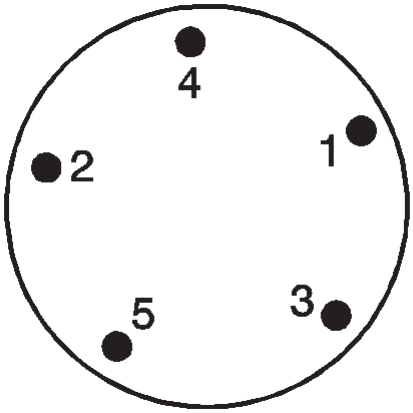
54. Attach the reference hose to the reference fitting on the supercharger indicated by the red arrow. Secure using the 9.5 MM Oetiker clamp.

55. Reinstall the heat shield.

56. Reinstall the belly pan using a 10 mm socket.

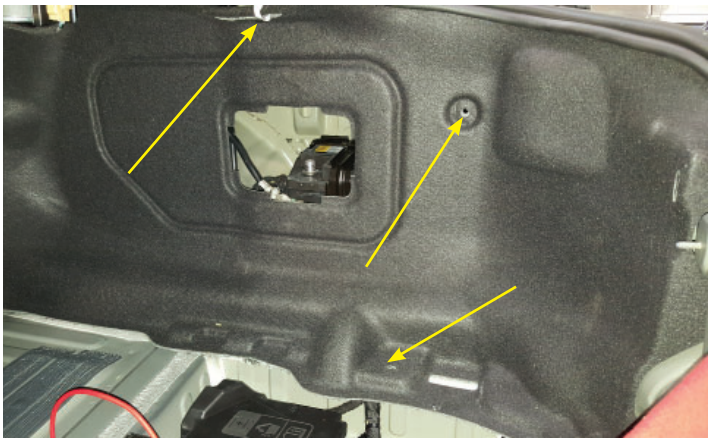


57. Reinstall the real wheelhouse liner
    - Reinstall the 2 push rivets indicated by the yellow arrows
    - Reinstall the 2 spinning discs indicated by the white arrows
    - Torque the 8 Torx screws using a T15 Torx bit to 22 lb-in (2.5 Nm) indicated by red arrows
    - Torque the 1 Torx screw using a T15 Torx bit to 22 lb-in (2.5 Nm) indicated by the blue arrow (ZL1 only)
    - Torque the 3 bolts using a 7mm socket to 44 lb-in (5 Nm)

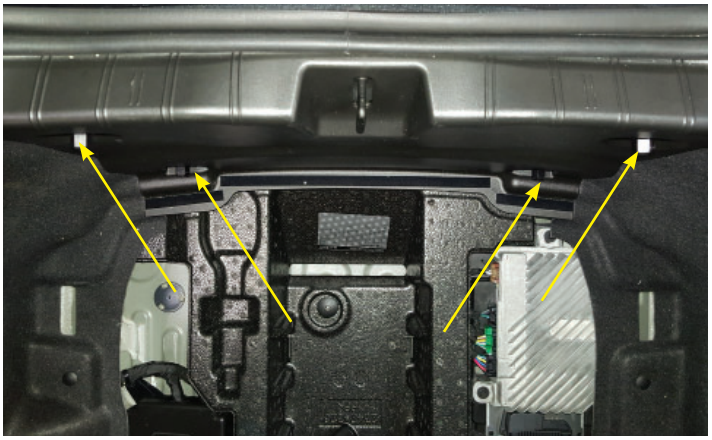


58. Reinstall the passenger side rear wheel. Tighten the lug nuts. Lower the vehicle. Torque the lug nuts in a star pattern:

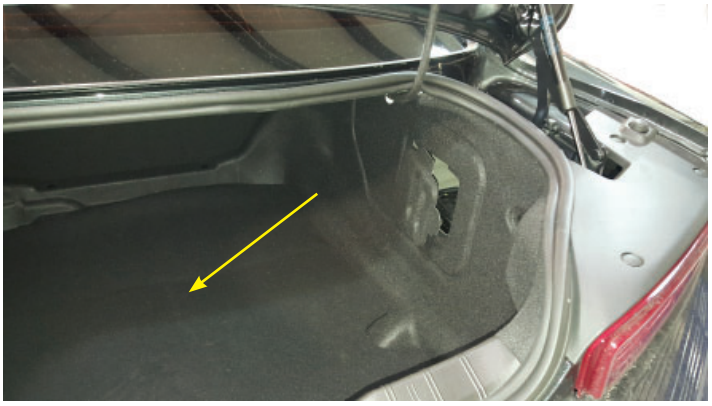
    Torque to 140 lb-ft (190 Nm).



59. Reinstall the rear compartment side trim by reinstalling the 3 push rivets in the location shown by the yellow arrows.

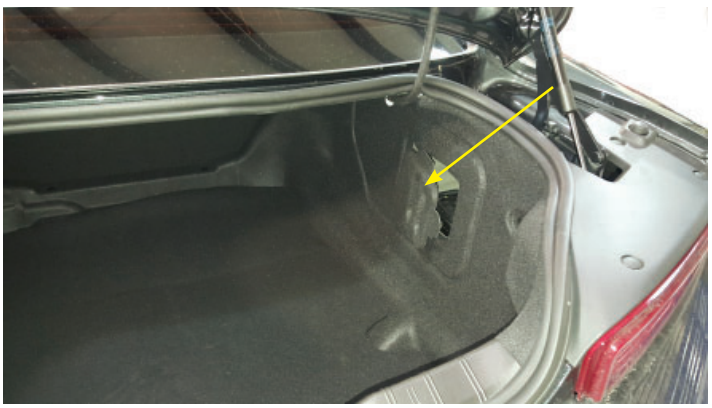


60. If the vehicle uses net retainers, reinstall the push-in retainers from the rear end trim finish panel. Otherwise, reinstall the rear end trim finish panel using a 14mm socket the 4 plastic nuts.



61. Reinstall the rear compartment floor panel trim.

62. Reinstall the negative battery terminal using a 10mm socket. Torque to 62 lb in (7 Nm)



63. Reinstall the battery access panel that is located in the trunk.

You have completed the installation process.

NOTICES:

It is the responsibility of the purchaser to follow all guidelines and safety procedures supplied with this product and any other manufacture's product used with this product.

Lingenfelter Performance Engineering assumes no responsibility for damages resulting from accident, improper installation, misuse, abuse, improper operation, lack of reasonable care, or all previously stated reasons due to incompatibility with other manufacturer's products.

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