

INFINITI Q50/Q60 & NISSAN Z DUAL LSFP

INSTALL INSTRUCTIONS

Introduction ///

The goal of AMS Performance is to provide the highest quality, best performing products available. By utilizing research and development, and rigorous testing programs AMS Performance will never compromise the quality or performance of our products. In addition, AMS Performance will only provide the finest customer service offering only parts and advice that are in the best interests of the customer. AMS Performance was built on a foundation of integrity. This is who we are. This is what you can count on.

A vehicle modified by the use of performance parts and tuning may not meet the legal requirements for use on public roads. AMS Performance makes no claims of compliance unless otherwise stated on a per-product basis. Use or installation of performance parts and tuning may adversely affect the drivability and reliability of your vehicle, and may also affect or eliminate your insurance coverage, factory warranty and new OEM part warranty. There is no stated or implied guarantee by AMS of continued OEM vehicle warranty, insurance coverage, or emissions compliance, due to the stress placed on your vehicle by performance parts and our inability to monitor its use, tuning or modification.

These instructions are not intended to be a comprehensive guide for installation as there are many variables that may affect your particular vehicle, including but not limited to model year differences, sub-model/trim/optional equipment differences, the presence of non-OEM parts, or other modifications that may have previously been completed. A basic understanding of automotive parts and systems and novice mechanical skills should be all that is necessary for installation, but certain circumstances may necessitate professional installation.

AMS Performance is committed to providing quality support for our products. If you are in need of technical support, installation help, or a replacement component, our Customer Service Team is available directly via telephone at 847-709-0530, or digitally via the contact form linked here: amsperformance.com/support

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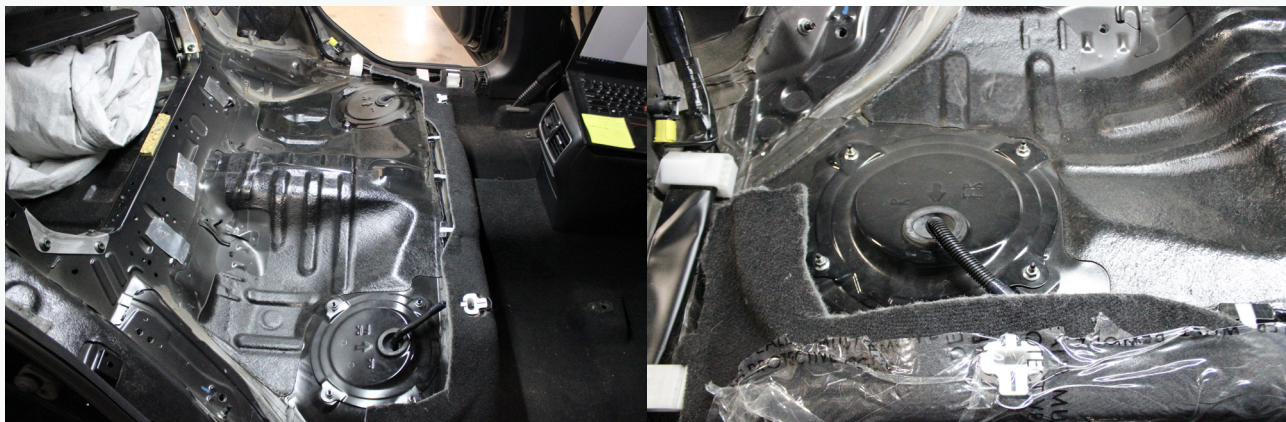
Tools needed:

- Basic mechanics tool set
- Oetiker (2 ear) clamp tool
- Heat gun
- Wire strippers
- Barrel crimper for insulated and non-insulated connectors.

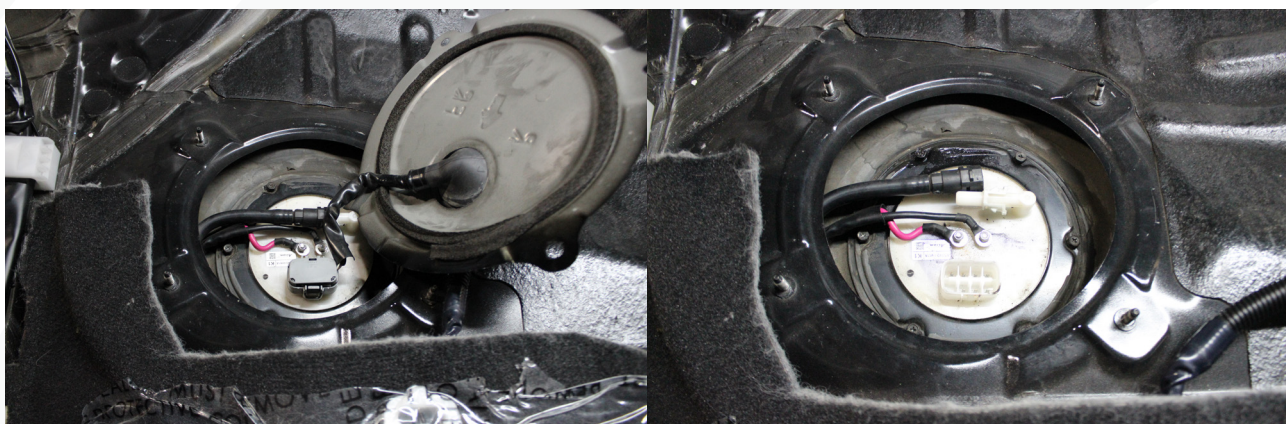
DISASSEMBLY:

1. Recommended to have less than a ¼ tank of fuel before starting.
2. Remove the passenger side cowl cover and surround.
3. Disconnect the battery.
4. Remove rear seat bottom to gain access to the two rear fuel tank access panels.
5. Remove the passenger side interior sill plates and front kick panel.

Note: There are extra panels removed in the photos below, however this is not necessary.

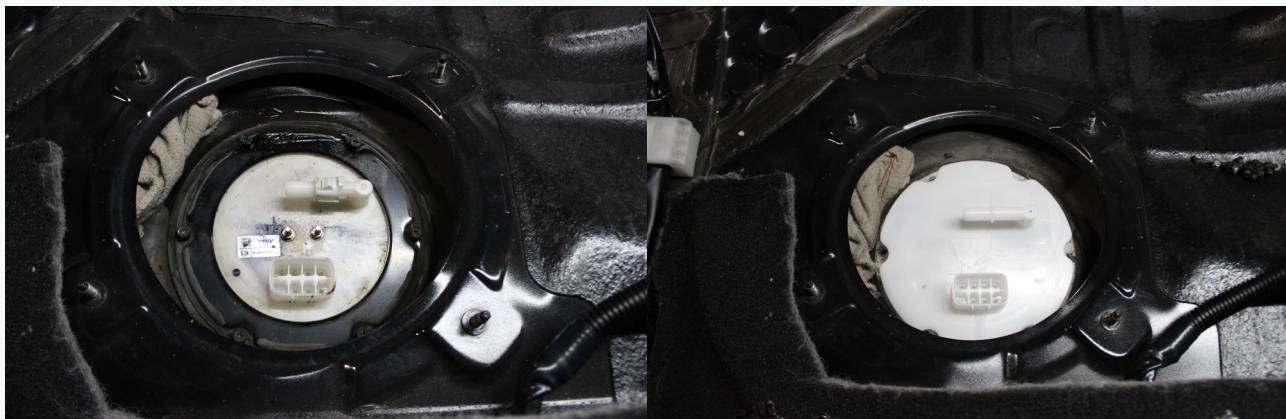


6. Remove the access panel and disconnect the fuel line quick disconnect and top hat electrical connector.

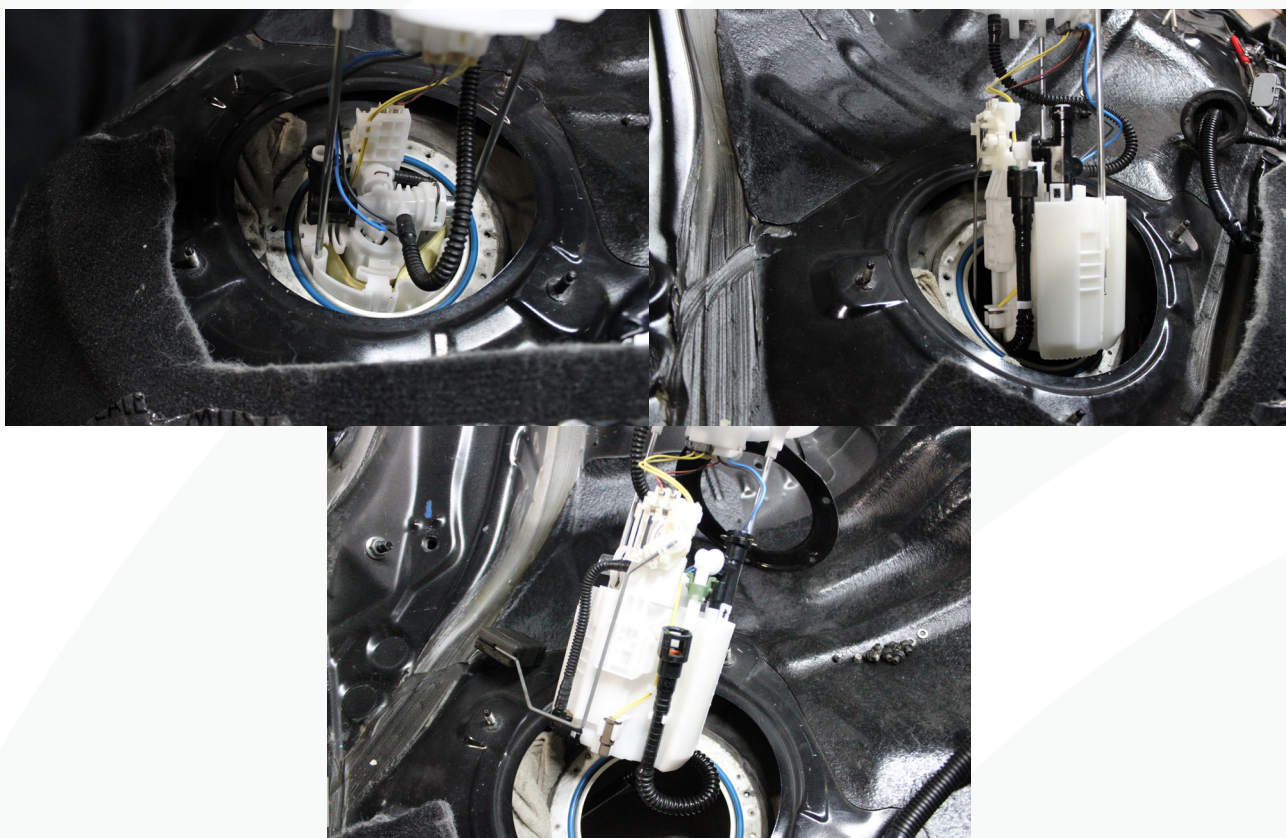


Note: This vehicle has another aftermarket system installed which you can see by the two extra eyelet connections on the top hat. This system will be removed during installation of the AMS Race X LSFP.

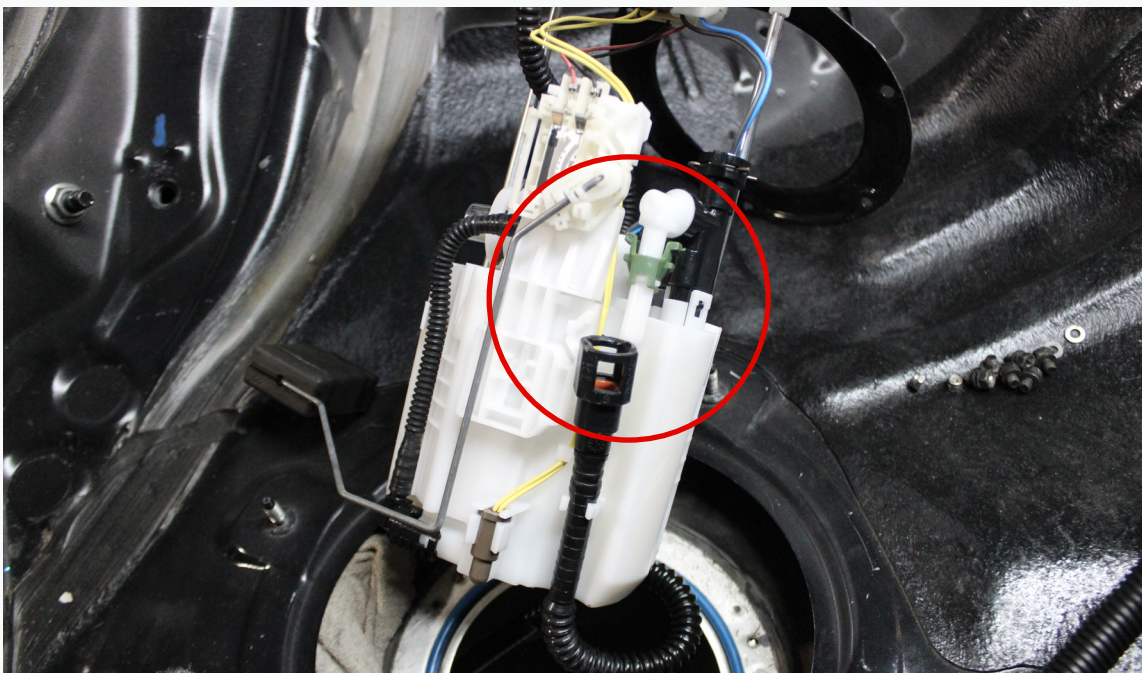
7. Stuff a shop rag between the fuel tank and body to keep the fuel line out of the way. Remove the (6) M5 top hat retaining ring bolts.



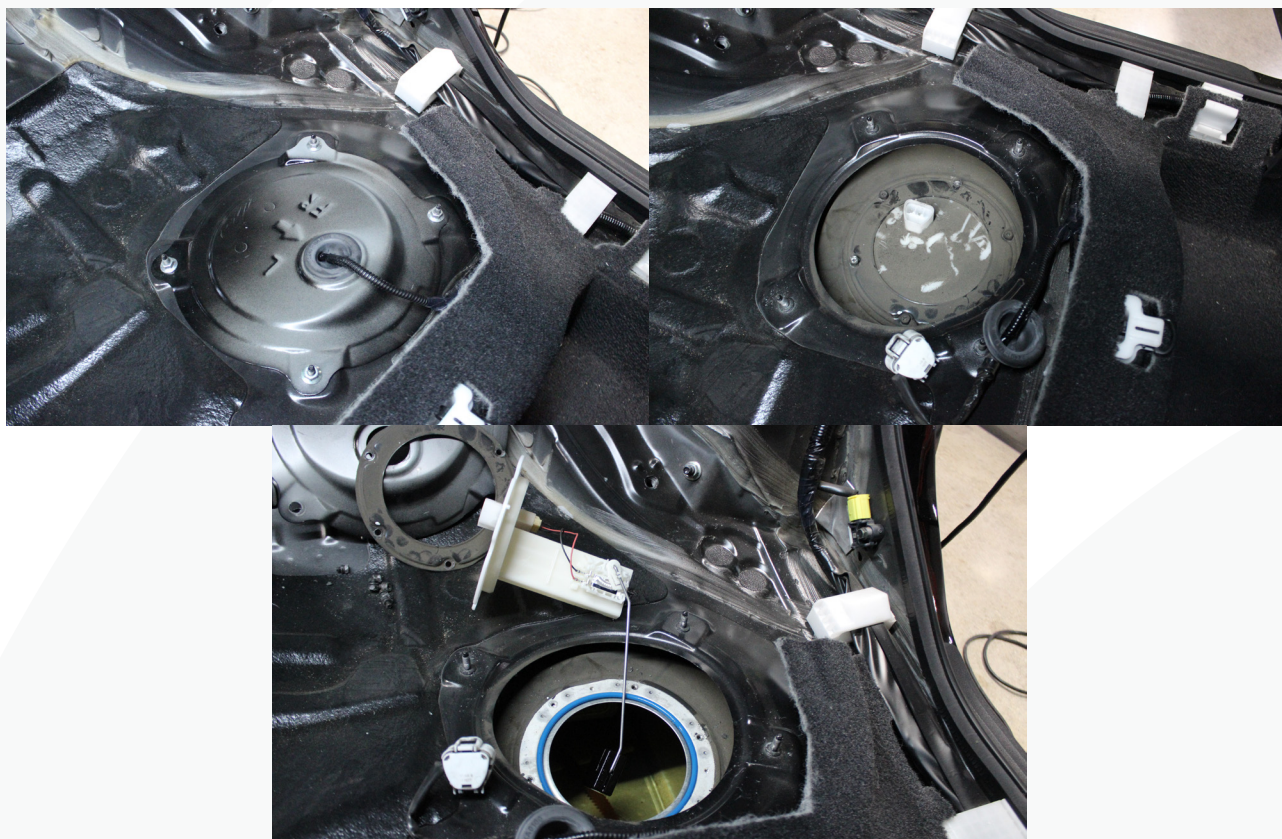
8. Carefully lift the fuel tank sending unit to not damage any of the corrugated tubing or wiring. Once you have it mostly out you will need to tip it back slightly to get past the level sender.



9. With the sending unit out, disconnect the quick disconnect connection on the side of the fuel basket. Set the fuel basket aside for a later step.



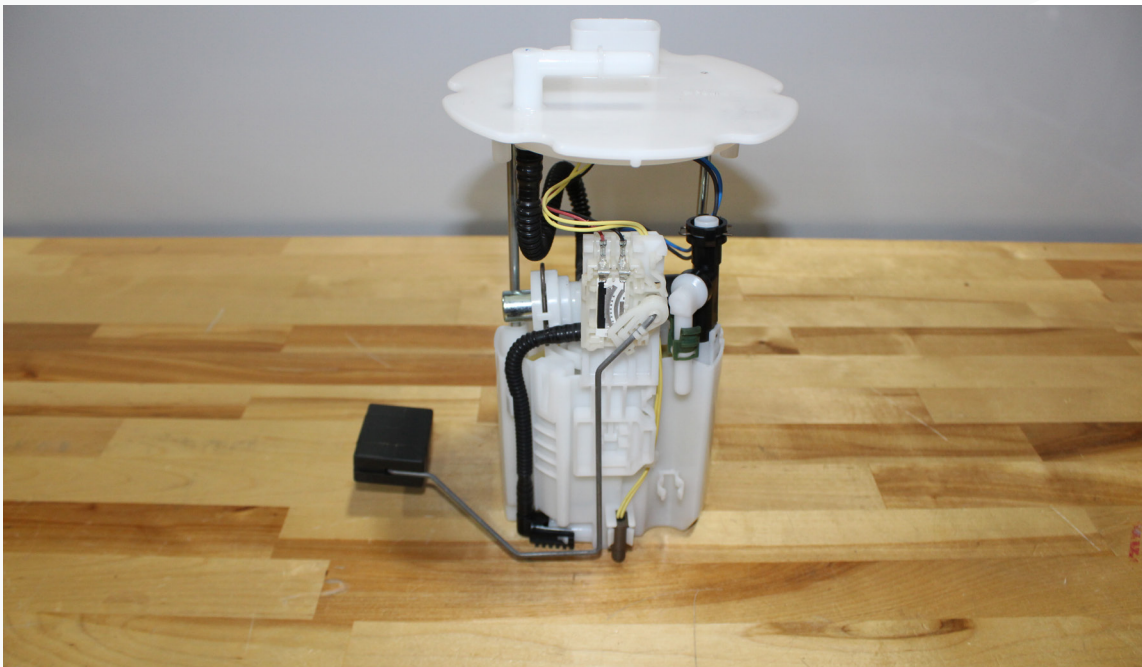
10. On the driver's side, remove the top hat/level sender assembly just like you did for the passenger side. Set it aside for now.



Note: If you already have the AMS Single Pump installed, skip to “setting up the Dual Pump system” on page 9. Otherwise continue with step 11.

PREPARING THE SENDING UNIT

11. Grab the OEM fuel sending unit, we will need to transfer some of the parts to the new sending unit.



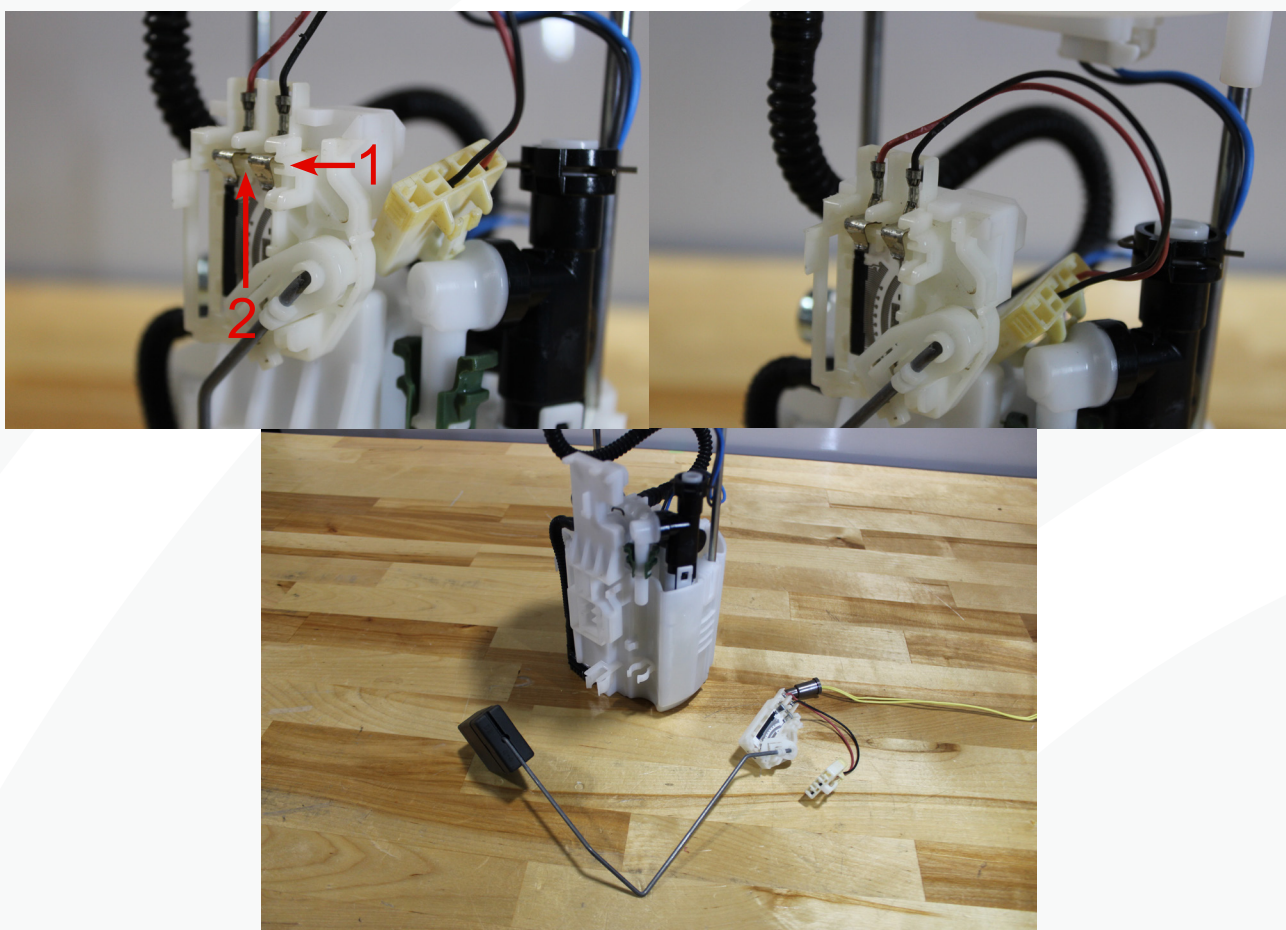
12. Disconnect the two electrical connectors.



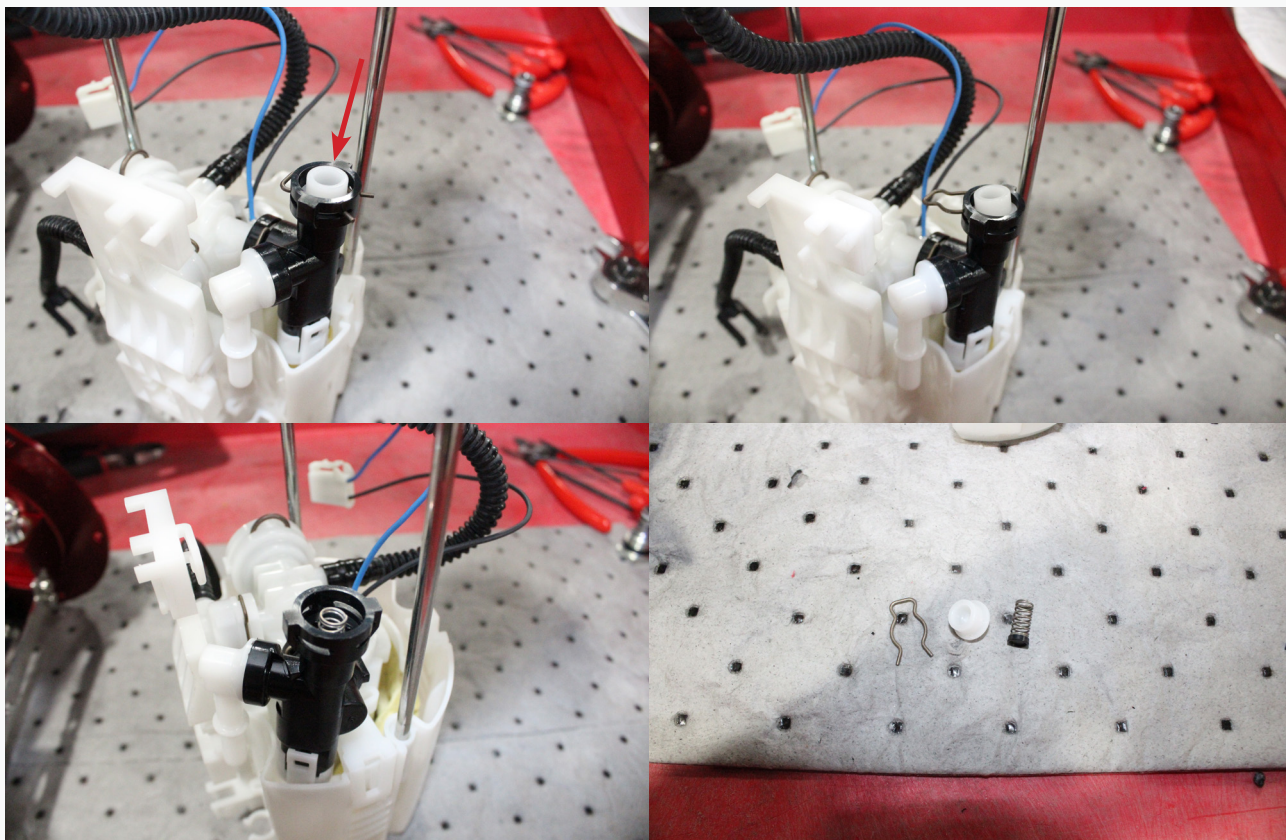
13. Unclip the fuel temp sensor harness and sensor.



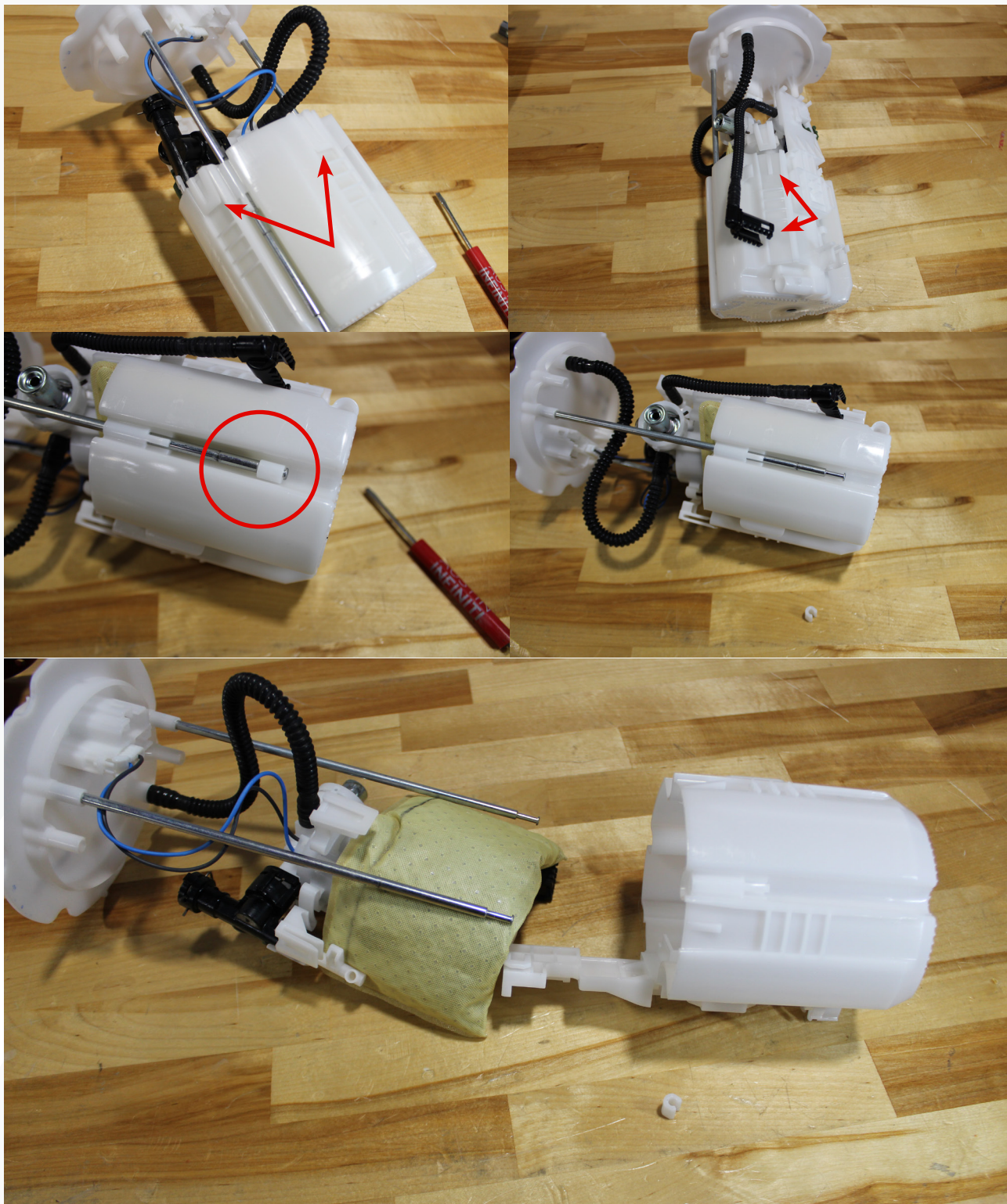
14. Push the level sensor retaining lock over and slide the sensor up and out. Set it aside for later.



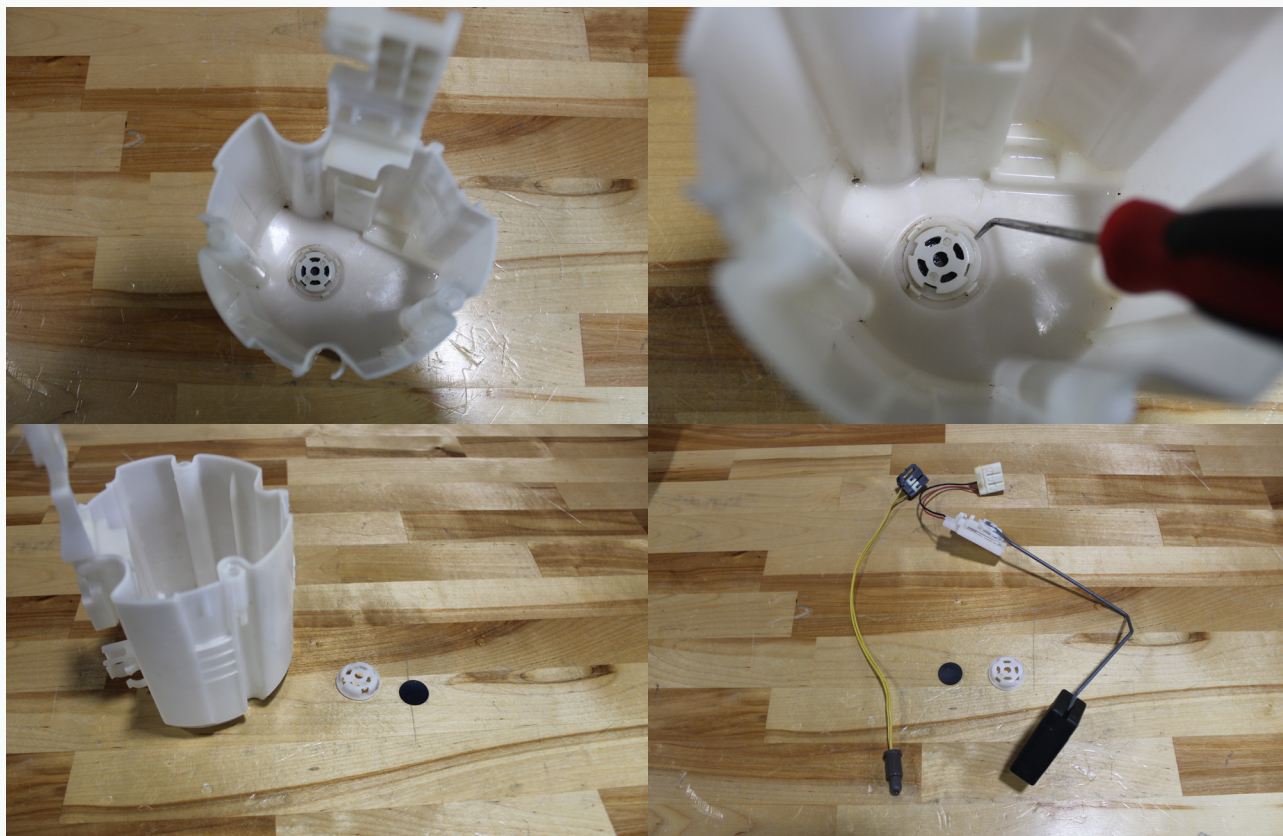
15. Lightly compress the plastic white cap and carefully remove the retainer clip, there is a small spring with plunger built in. Set these parts aside.



16. Unclip the three clips on the fuel sending unit, unclip the black hose, and remove plastic retaining clip to slide the sending unit out of the lower basket.



17. Using a small pick or similar, carefully remove the round flapper door retainer and rubber flapper from the basket and set them aside.

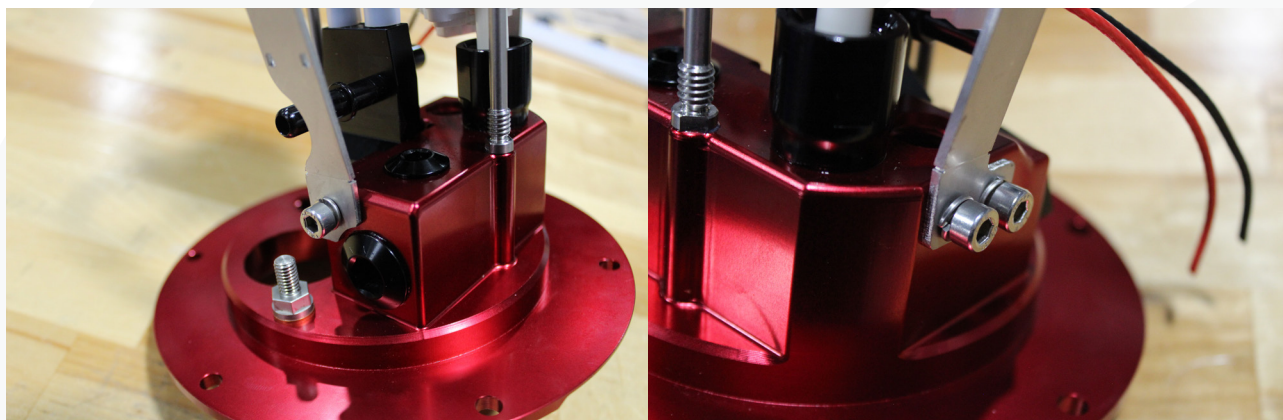


SETTING UP THE DUAL PUMP SYSTEM

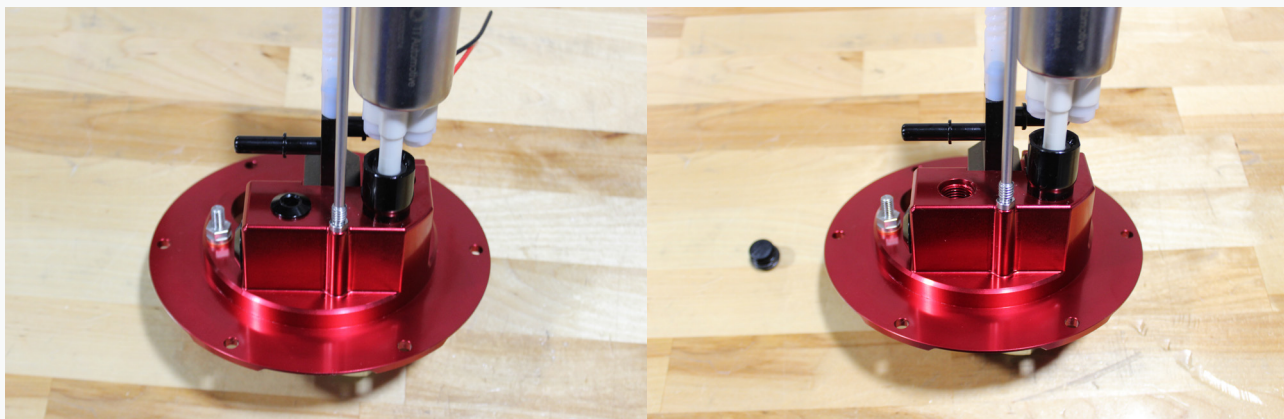
If you just bought the single fuel system with the dual add on or you previously had a single and now are upgrading, you are in the right place. Out of the box the AMS Fuel System has been partially assembled for a single dead or dual head system reusing the OEM feed line out of the tank. If you are planning to run an external regulator, we'll cover that shortly.

18. Remove the three bolts holding the fuel pump hanger bracket to the top hat.

Note: In case you had the single system previously, you do not need to fully remove the hanger, just remove the bolts and tilt it out of the way slightly.

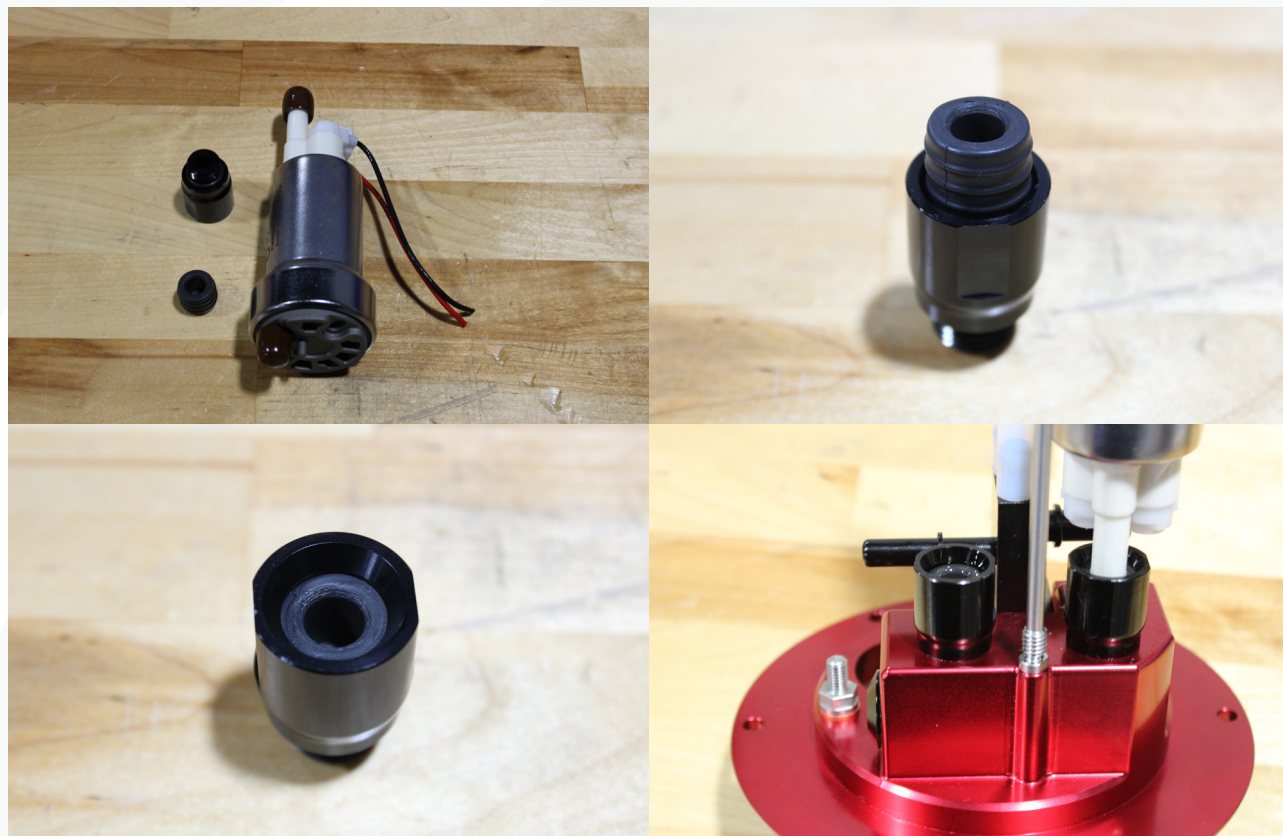


19. Remove the 6AN plug on the underside of the top hat.



20. Grab the fuel pump, fuel pump grommet, and fuel pump fitting. Lubricate the grommet inside and out, then install it into the fitting. Then lubricate the O-ring and install the fitting in the open port.

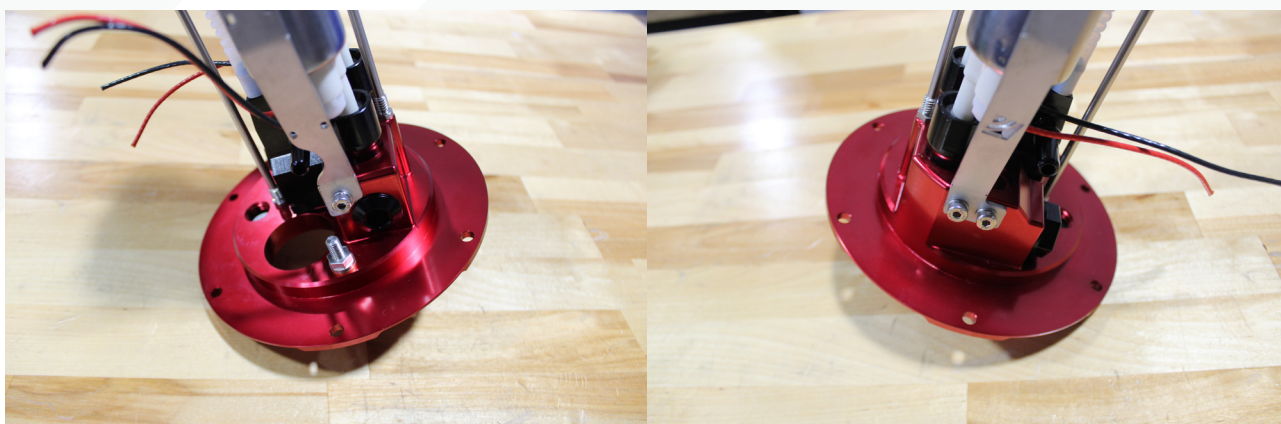
Note: For the Z, there will be a hose, oetiker clamps and an ORB barb fitting to connect the second pump in the same manner as the first pump was configured by AMS.



21. Install the pump into the fitting and clock it slightly the opposite direction to mirror the other. The pumps should be parallel to the fitting and perfect 90 degrees to the top hat.



22. Reinstall the fuel pump hanger.



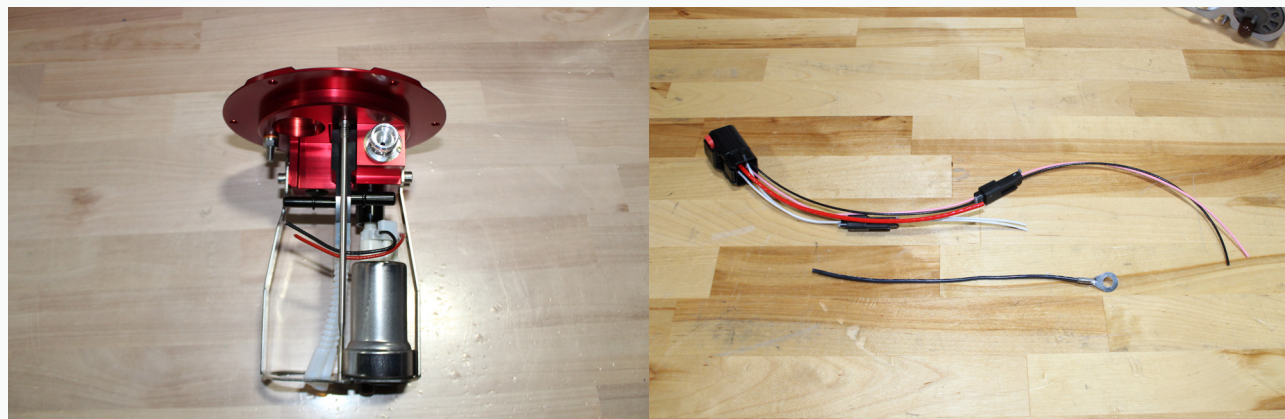
Note:

Installing a brand-new system? Follow step 23 on the next page.

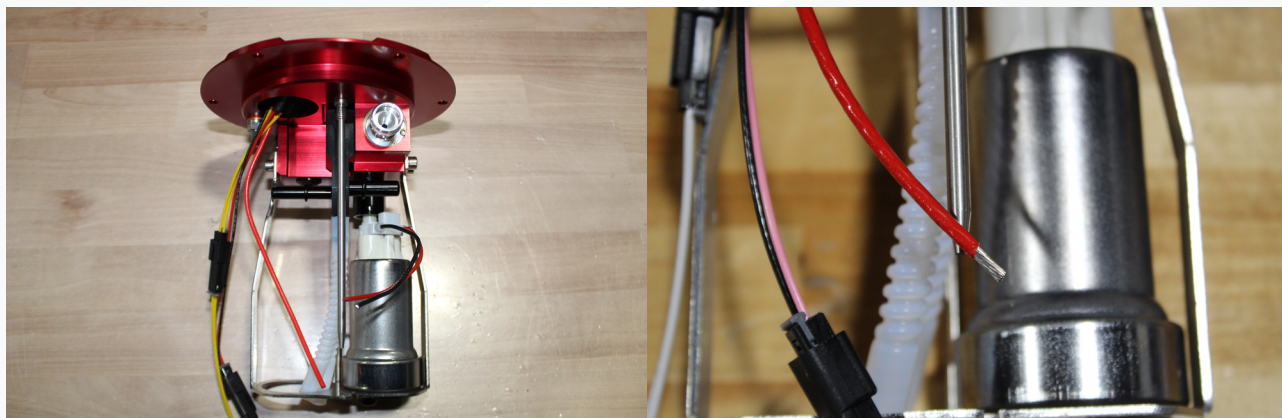
Upgrading a previous installed system, your single pump is already wired, skip to step 34.

Planning to use an external fuel pressure regulator and running a new feed line. Review the END of THESE instructions to remove the pre-installed regulator.

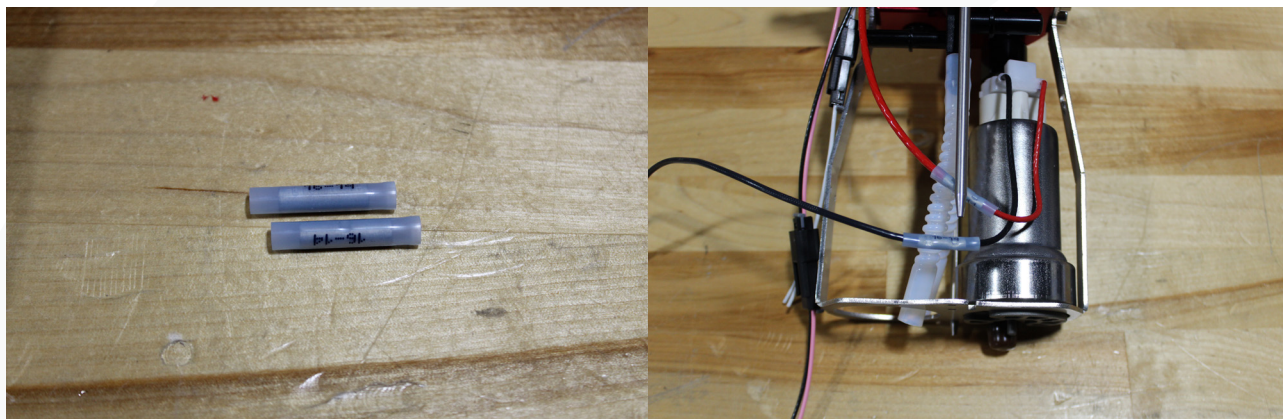
23. Locate the in-tank harness and short black wire with eyelet.



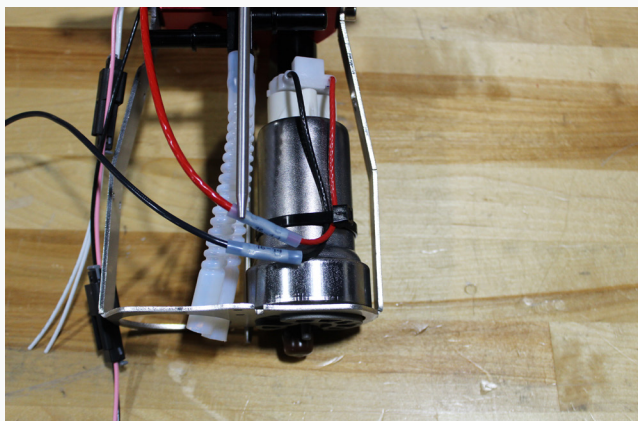
24. Place the large connector side of the harness through the opening in the top hat about an inch or so. Strip the end of the red wire of the harness about 3/8" from the end. Repeat on the fuel pump red and black wires along with the single black wire with eyelet.



25. Using two blue butt connectors, match the colors red to red, black to black and crimp them using crimping pliers for insulated connectors.



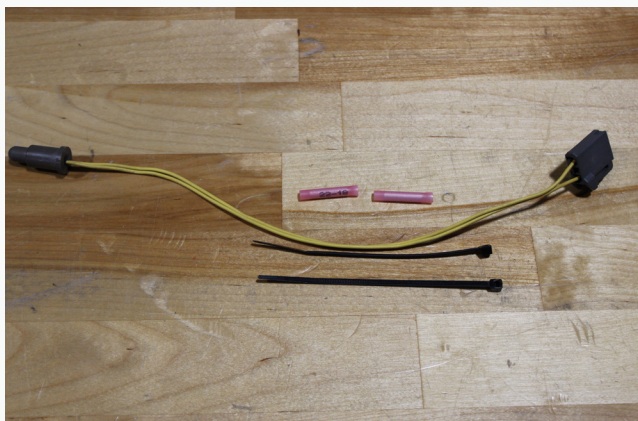
26. Grab one zip tie and secure the wire around the pump as shown below.



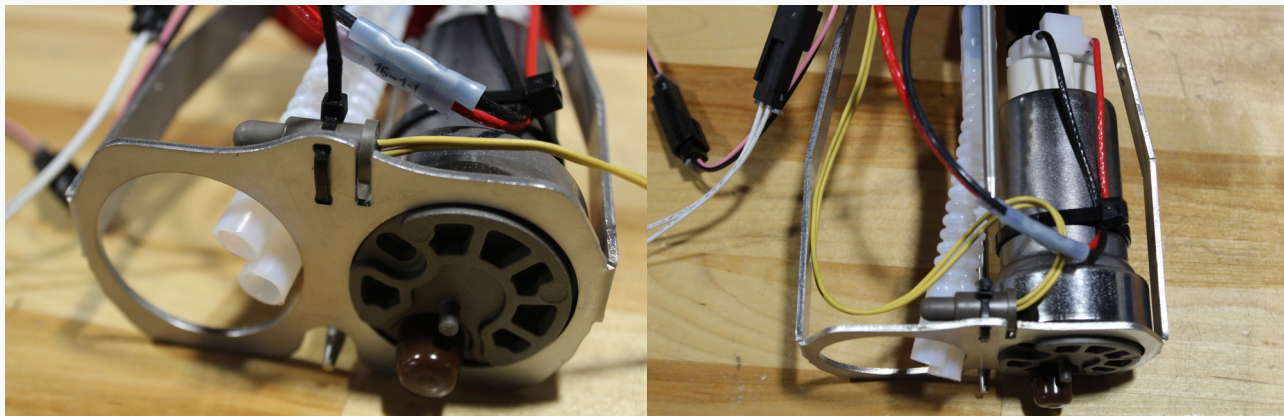
27. Loosely install ground wire eyelet to the stud on the bottom of the top hat using the provided M6 nut and split washer in the orientation shown below to hold it temporarily.



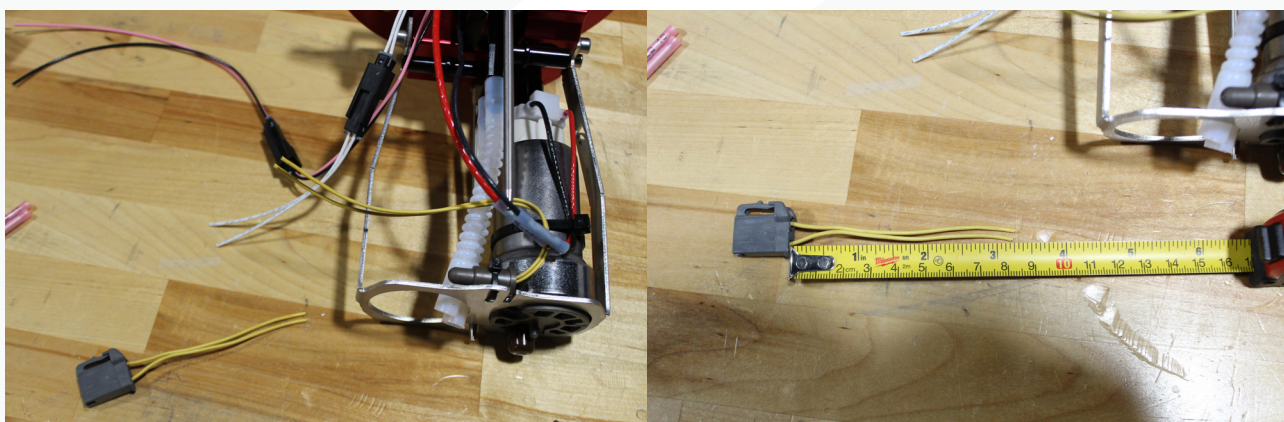
28. Using the temp sensor removed in an earlier step, grab two red butt connectors and two small zip ties.



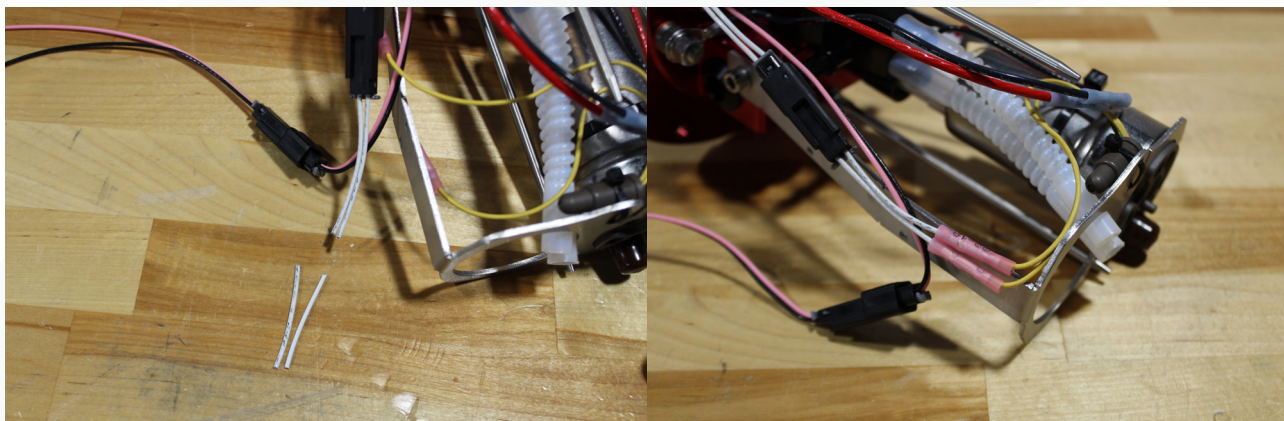
29. Secure the temp sensor to the bottom of the fuel pump hanger making sure the sensor fits into the cut-out feature.



30. Cut off the connector about 3 ¼" from the connector.



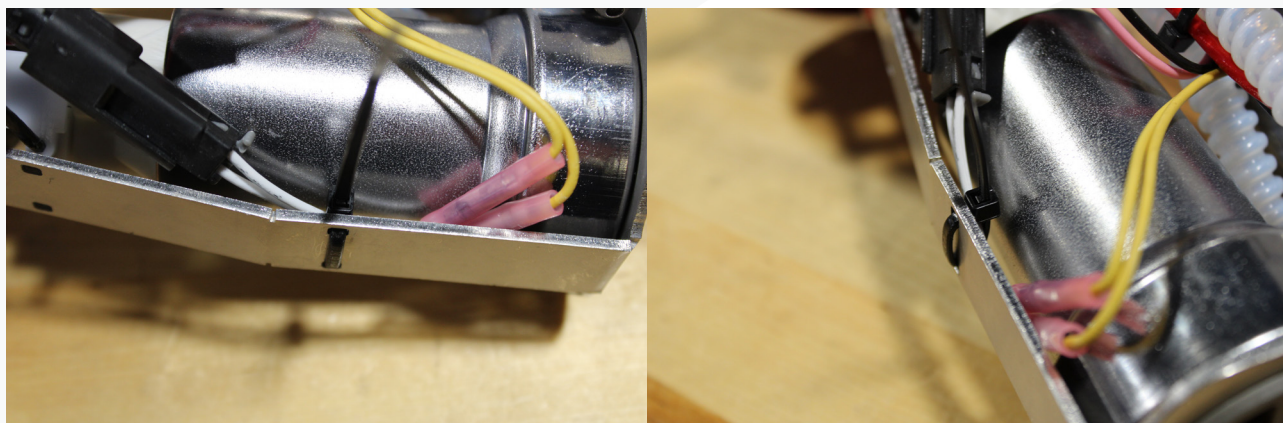
31. For the Q50/60, trim about an inch off the provided AMS harness. Using a wire stripper, prepare the wires to make two butt connections. Polarity does not matter in this step.



32. Install the filter sock to the bottom of the fuel pump assembly. Be sure it is fully seated.



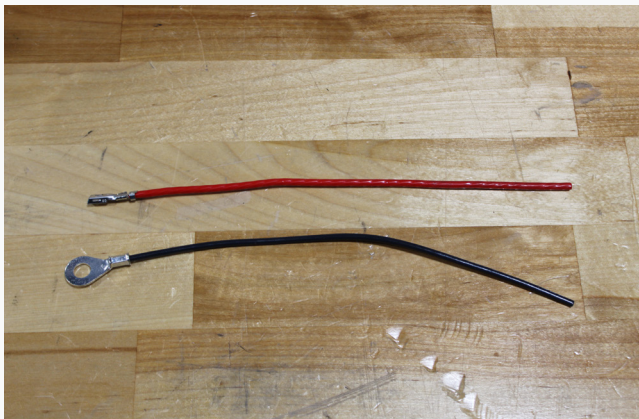
33. Using one zip tie, attach the section of wire to the side of the hanger. Put retainer side of the zip tie on the inside as shown below.



34. Release the blue terminal lock on the connector with a small screwdriver or pin tool.



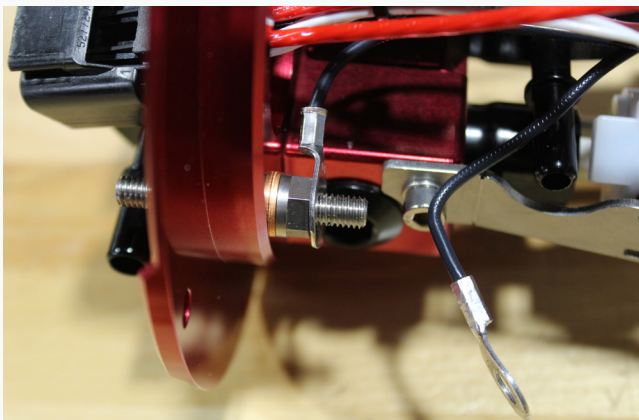
35. Locate the red and black unterminated wires.



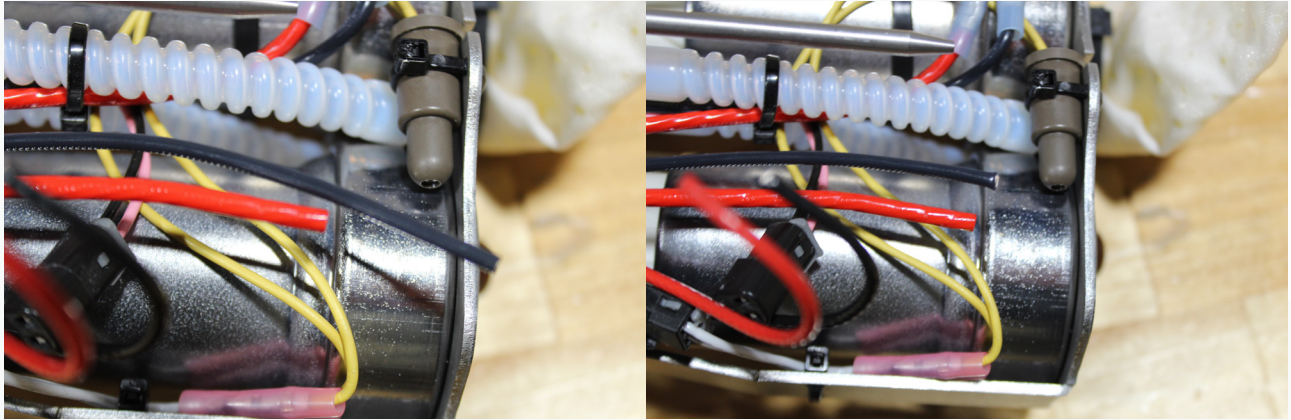
36. Install the pinned red wire into the open cavity next to the other red wire on the connector.



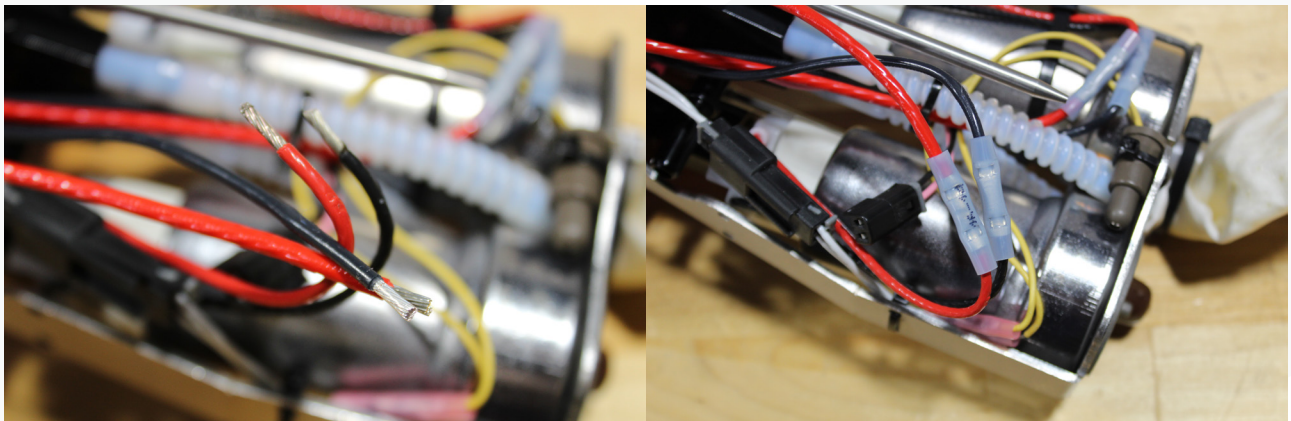
37. Remove the ground nut from the top hat and install the second ground wire. Position the two eyelets back-to-back and tighten the nut. Be sure to clock them down so they are almost touching the top hat but out of the way of the connector hole in the top hat.



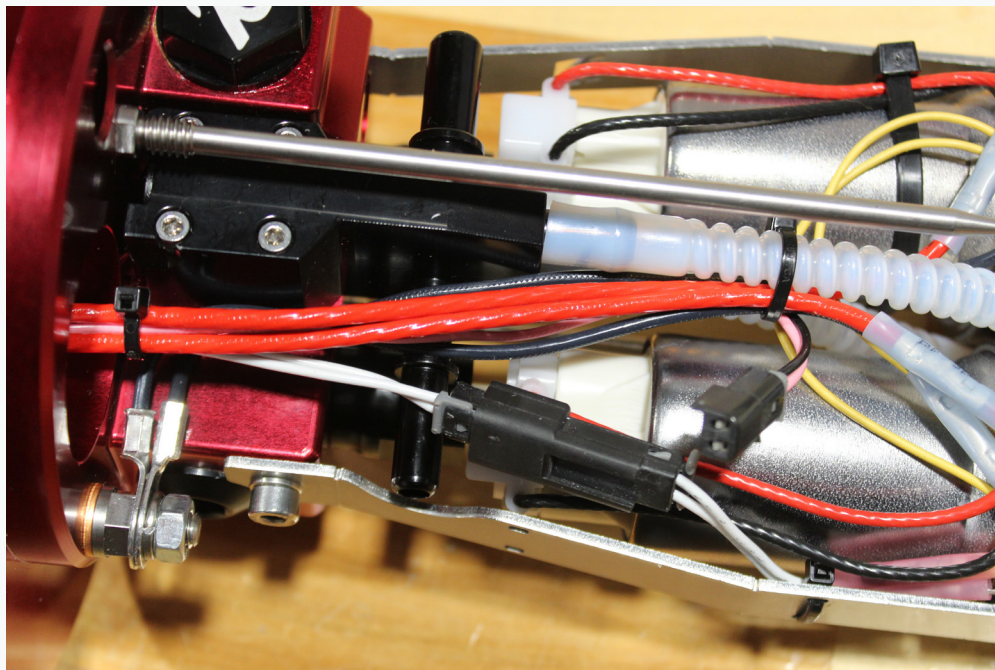
38. Run the ground wire with the rest of the wires on the connector, if necessary, trim the black ground wire so it is the same length as the red wire.



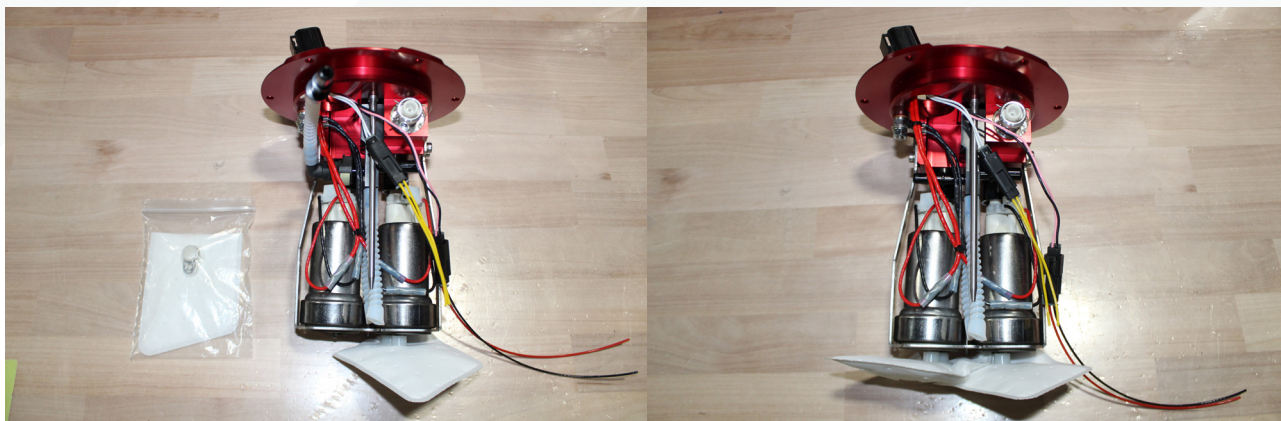
39. Strip the four wires and connect red to red and black to black with two blue butt connectors.



40. If you are working with a previously installed system, cut the existing zip ties securing the wires together. Then using two new zip ties, re-secure the wires with the added red wire in two locations shown below.

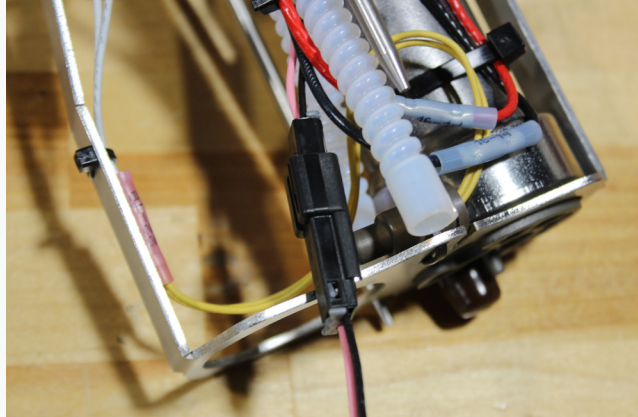


41. Install the second filter sock to the pump. Then use one zip tie to secure the filter sock away from the locating pin.

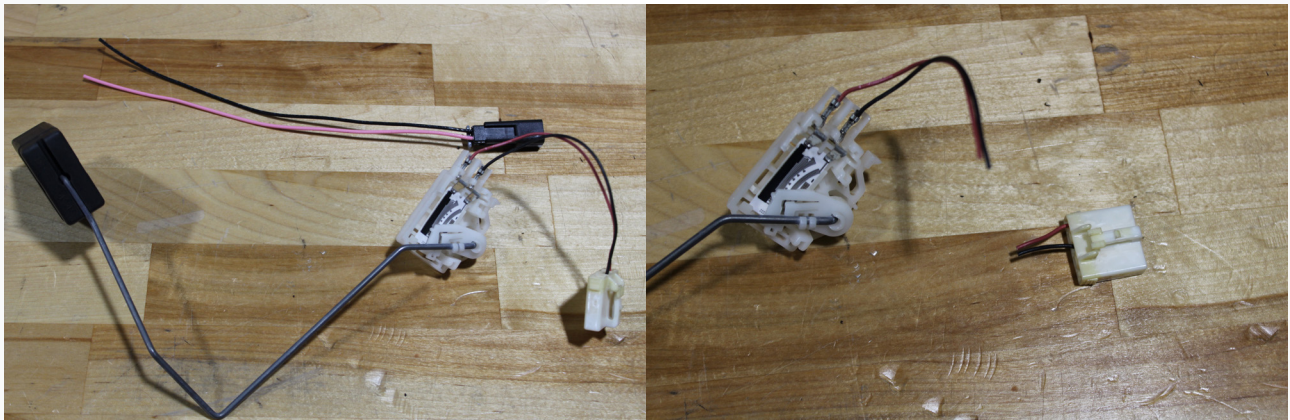


PREPARING THE BASKET:

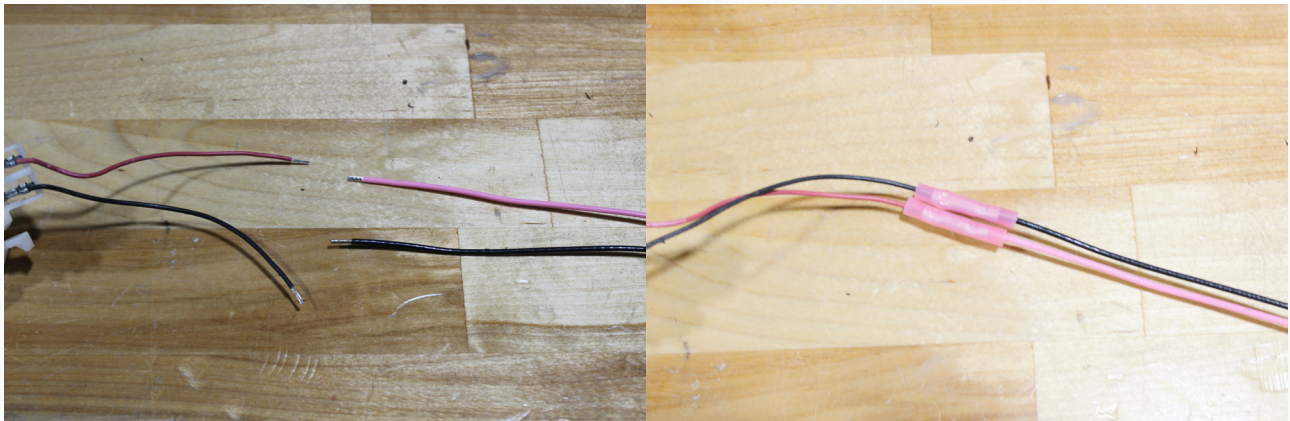
42. Disconnect the connector with the red/pink and black leads on it.



43. Cut off the OEM level sensor connector about an inch away from the connector.



44. Using two red butt connectors, strip the wires and make the connections by matching up the colors.



45. Carefully take apart the two basket halves by removing all six of the T15 screws.



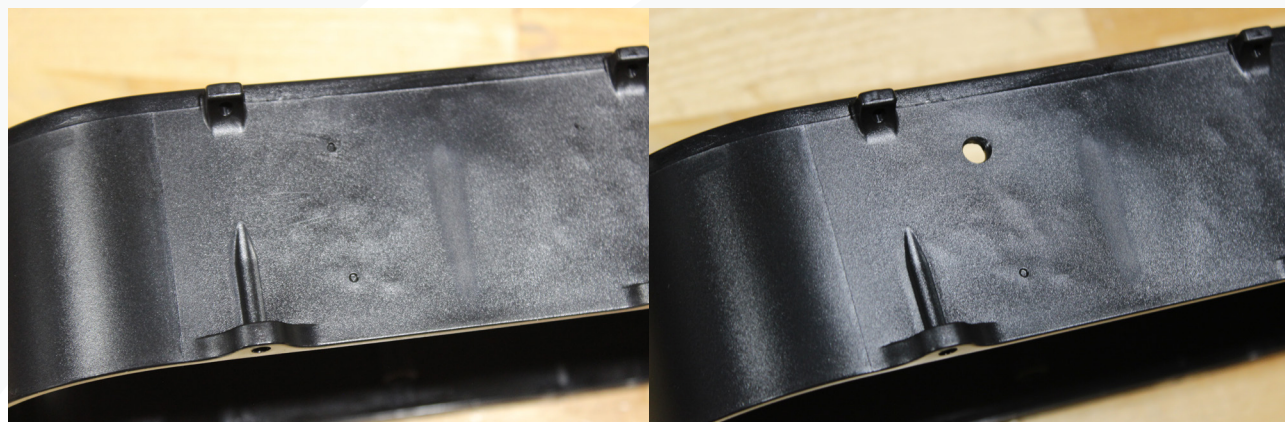
46. On the bottom basket, place the rubber flapper door over the hole in the bottom basket. Align with the ribs as shown below.



47. Carefully place the flapper door retainer over the flapper being careful not to damage it. Be sure the retainer is fully secured into the basket. Tip the basket over to be sure the flapper door can move freely.

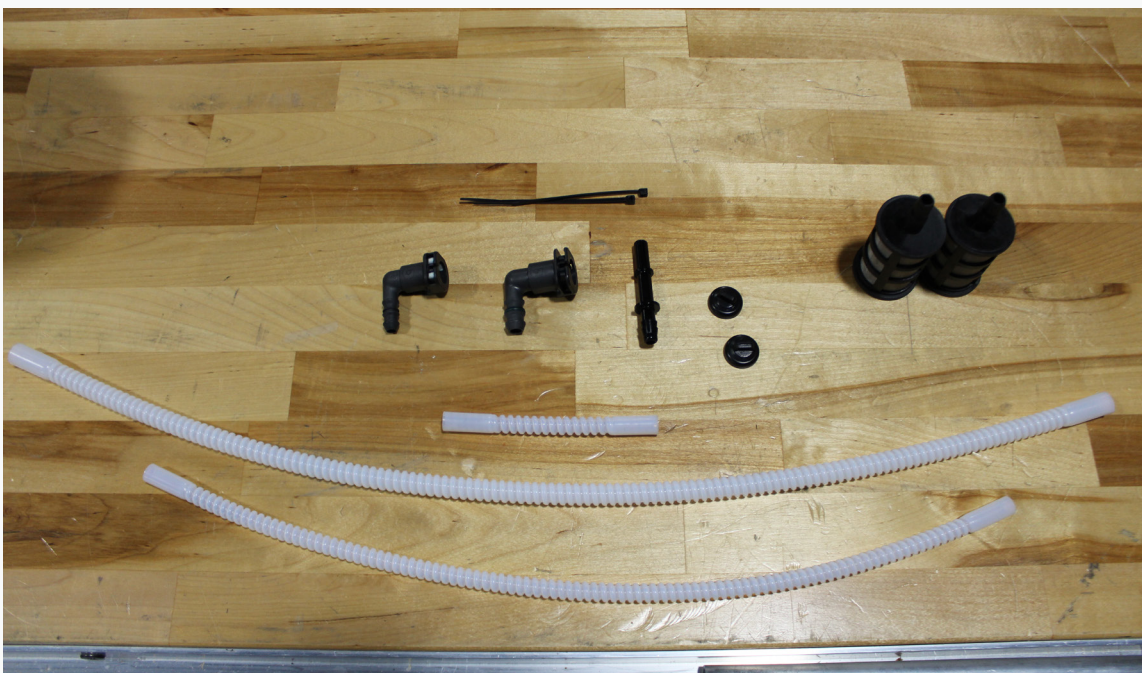


48. On the side of the basket there will be two dimple features. The Q50/60 you will need to drill the top hole with a 13/64 drill bit. On the Z the basket has three tiers, so you will need to drill both the holes on **only** the top tier.



PREPARING THE SIPHON LINES

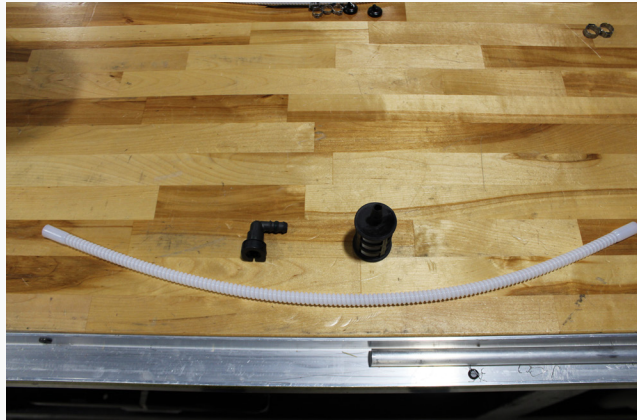
49. On the bench, lay out (3) siphon lines, (2) 90 degree quick connect fittings, quick connect to barb fitting, (2) magnets, (2) siphon strainers (2) zip ties and cinch clamp.



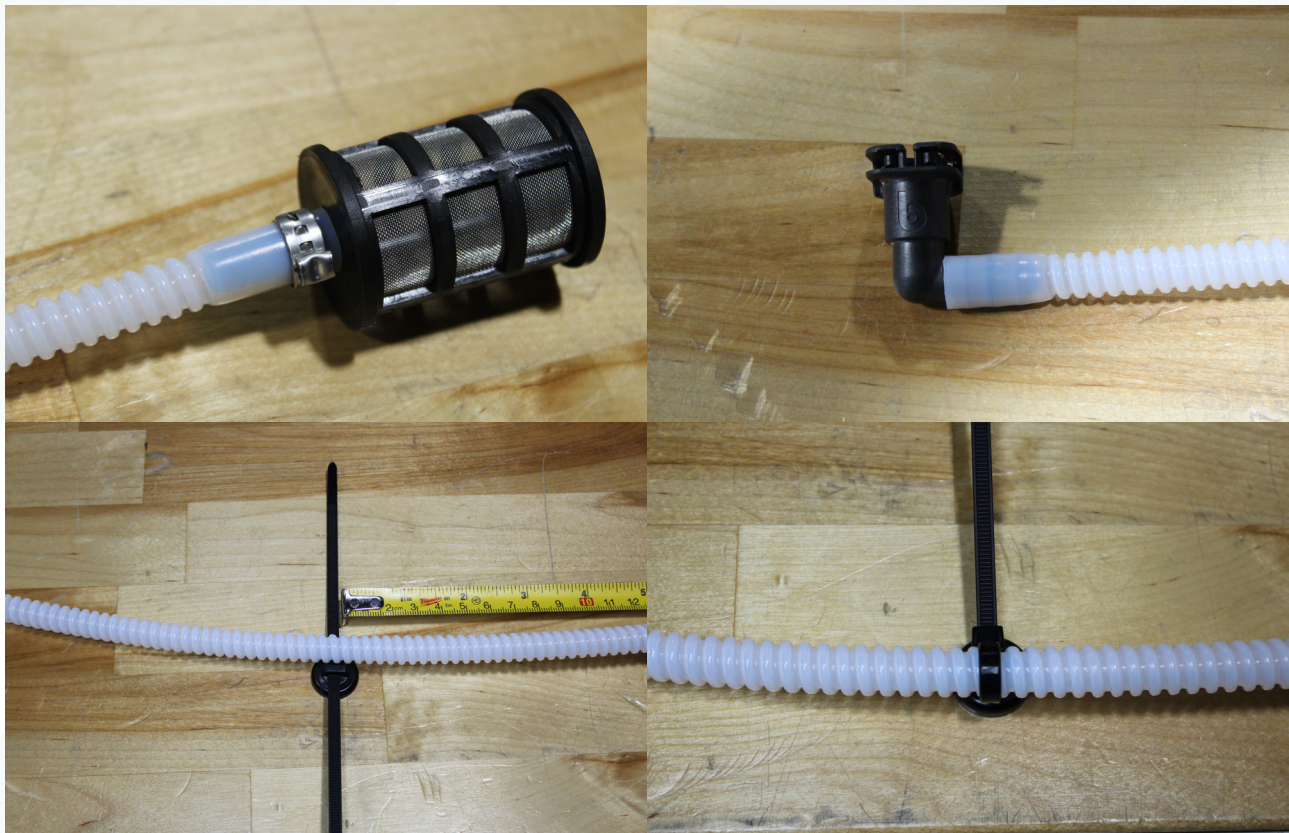
50. Assemble the small siphon adapter hose using the 5/16 90 degree quick connect fitting, siphon hose and adapter fitting. Carefully apply a little heat to the end of the hose using a heat gun to fully seat the siphon hose. **Caution:** Too much heat may permanently damage the hose. Install the [green quick connect](#) clip on the siphon adapter.



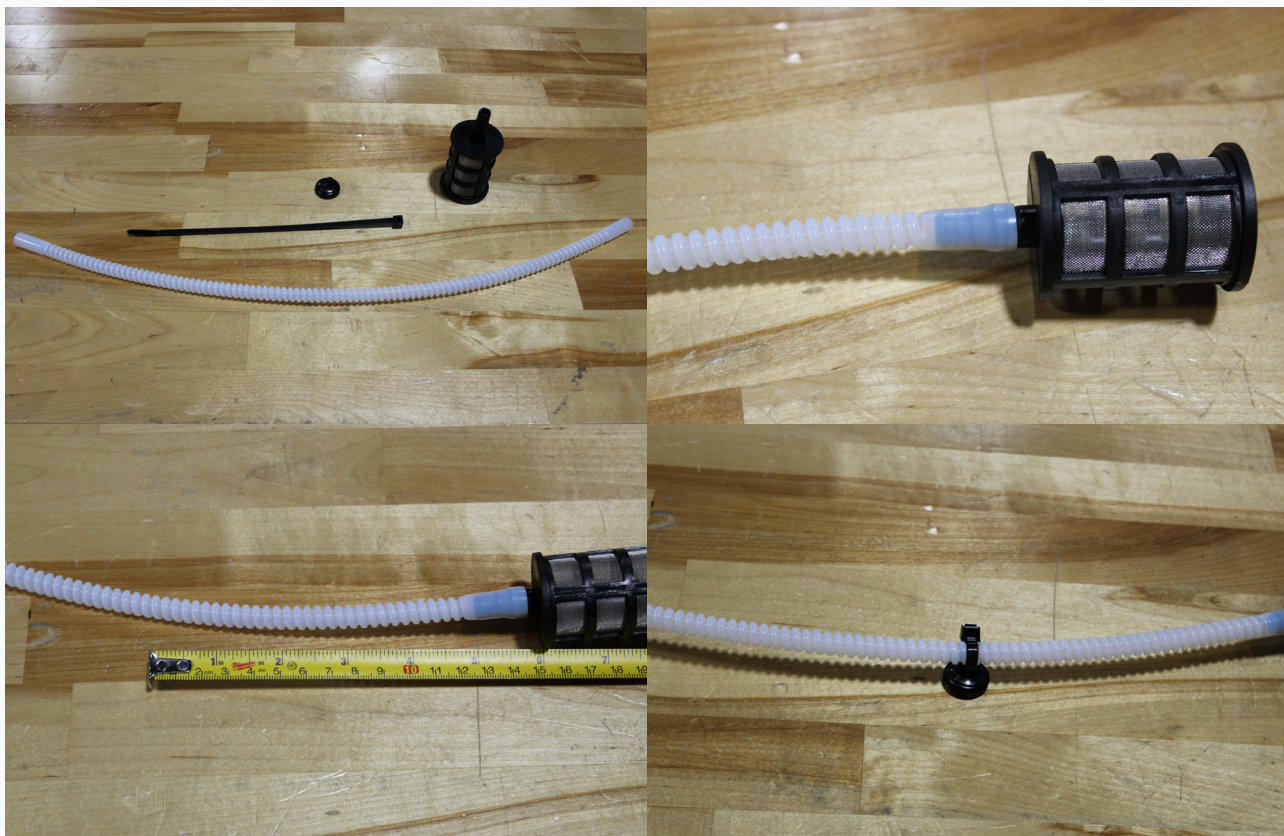
51. Gather the larger 3/8 siphon hose, 3/8 90 degree quick connect fitting, siphon strainer, magnet, zip tie and cinch clamp #14.5.



52. Assemble the hose as shown below, using the cinch clamp on the siphon strainer. Again, using a small amount of heat without damaging the hose, affix the 3/8 quick connect fitting to the other end of the siphon hose. Measure 6" from the strainer, fix the magnet to the hose with 1 zip tie.



53. Using the 5/16 siphon hose, fix the second siphon strainer to one end, using a small amount of heat to the end of the hose. Slide it up onto the larger set of barbs on the siphon strainer. Measure 6" from the strainer and fix the magnet to the siphon hose with a zip tie.

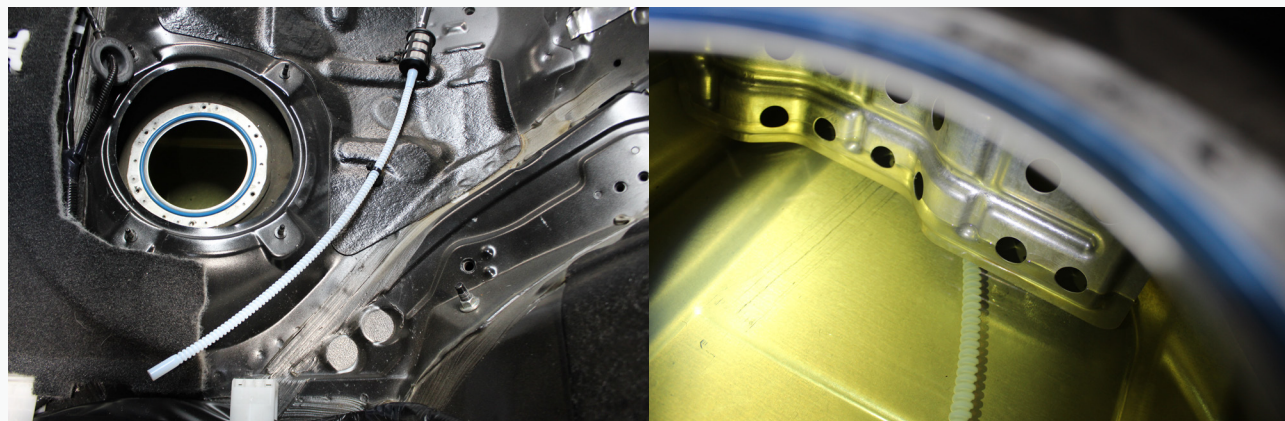


54. Now all three hoses should be assembled like shown below.

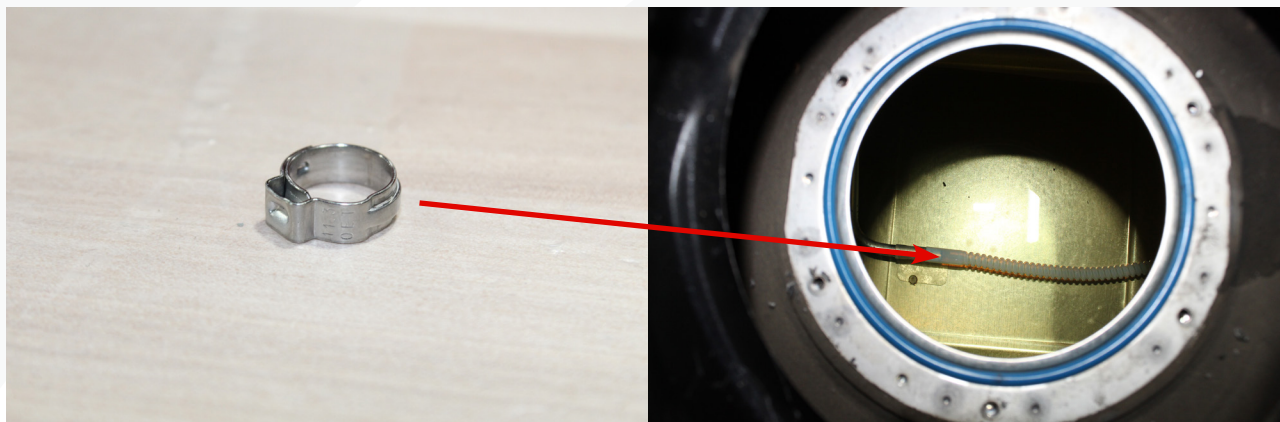


INSTALLATION

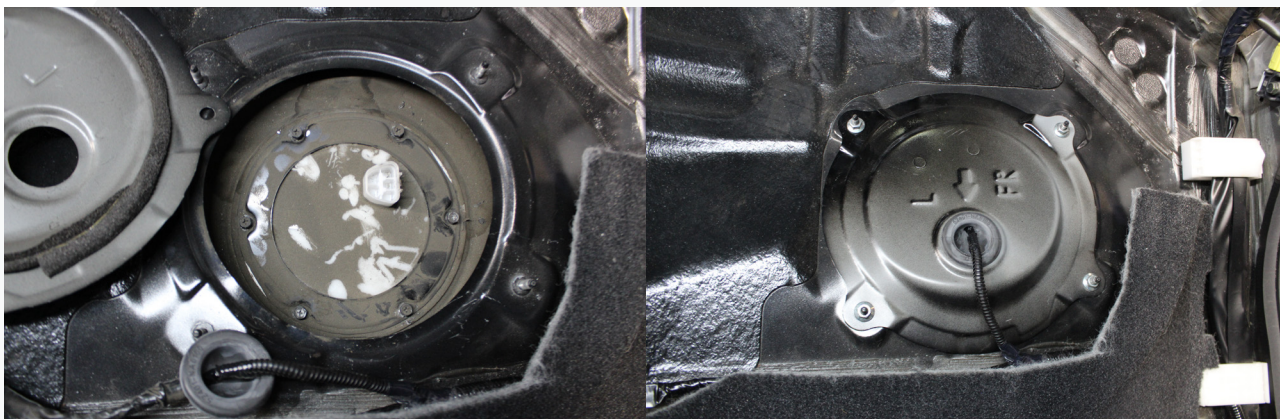
55. Take the medium length line and install it into the driver side of the tank. Carefully pull up the baffle in the tank and route the end with the siphon strainer towards the rear of the fuel tank. Make sure the magnet is facing down to hold it in place. Don't go too far as it will start to walk up the backside of the tank which will then provide no added benefit.



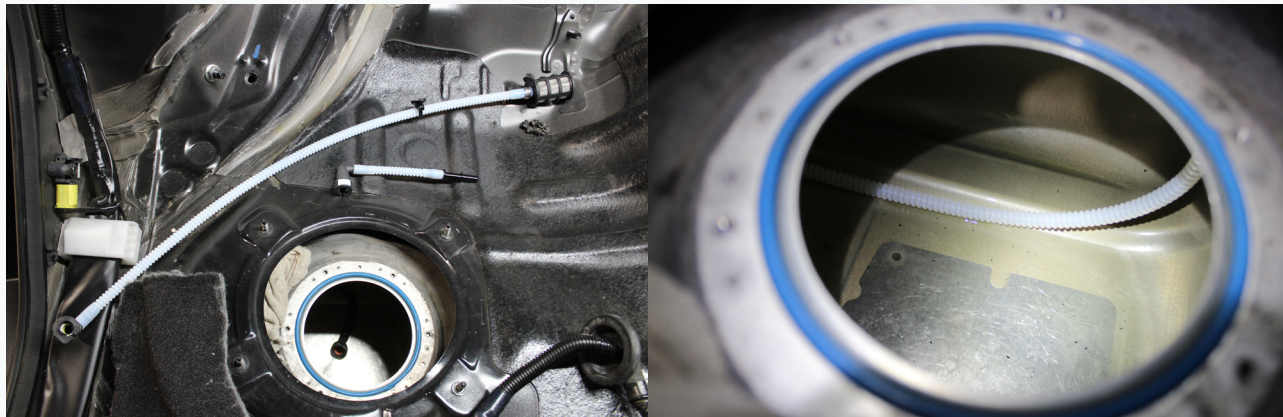
56. Install a 11.3 Oetiker clamp onto the end of the hose and push the open end of the hose onto the metal tube at the front of the tank. Cinch the clamp with Oetiker pliers to secure the line to the tube.



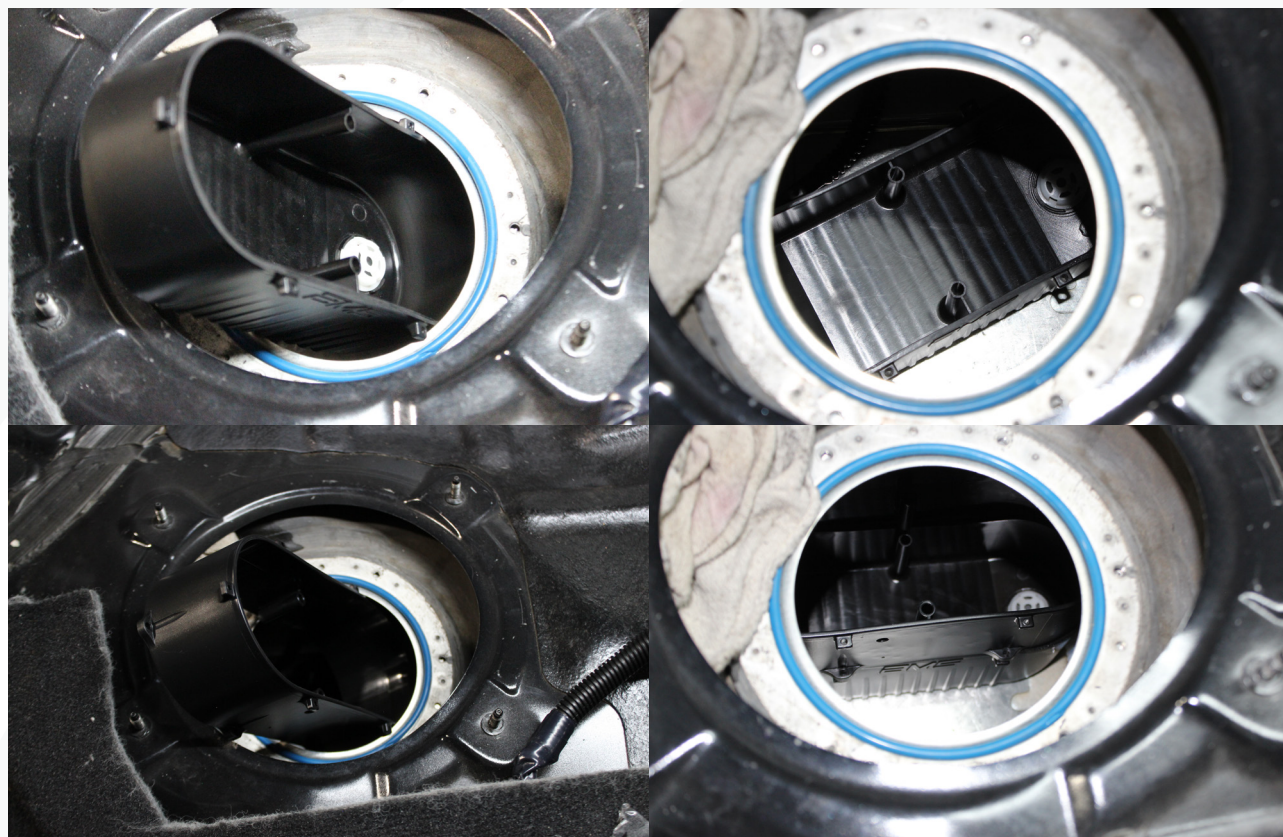
57. Reinstall the driver's side top hat and replace the O-ring if necessary. Then reinstall the connector and cover panel.



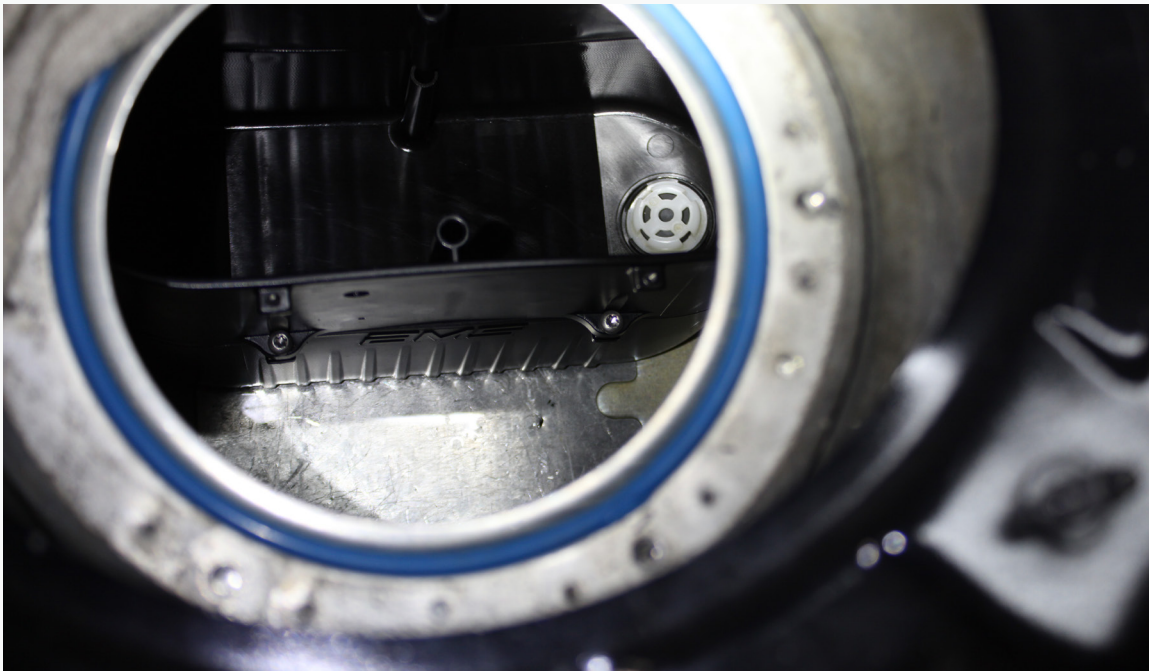
58. On the passenger side, start with the longest siphon hose and route the end with the siphon strainer under the baffle in the same fashion as the other side making sure the magnet is in place and the siphon strainer is at the bottom back of the tank.



59. Place the new bottom basket into the tank followed by the upper basket. Match up the alignment tubes on the inside of the basket, they only match up one way.



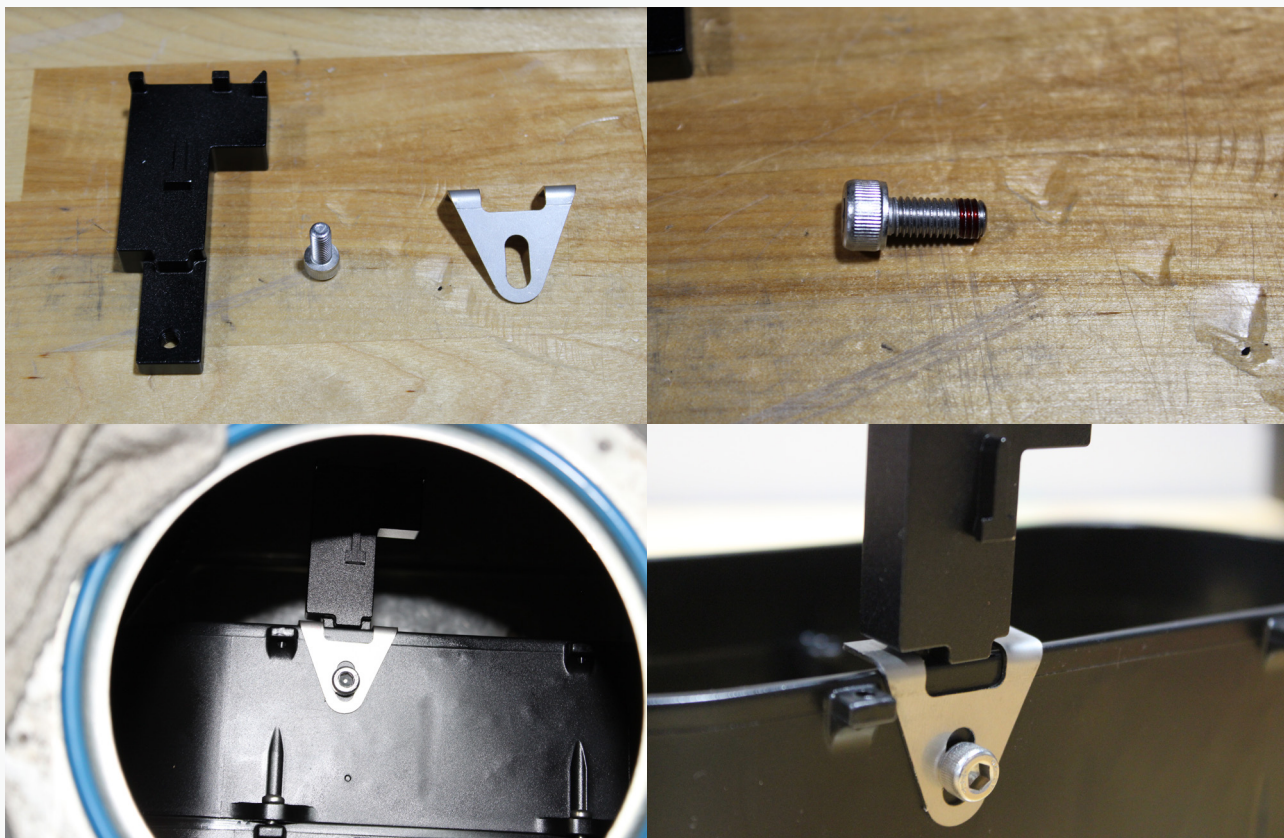
60. Loosely reinstall all the screws to hold the basket together. Then carefully snug them down until you feel resistance. **DO NOT OVERTIGHTEN** or you will strip the plastic.



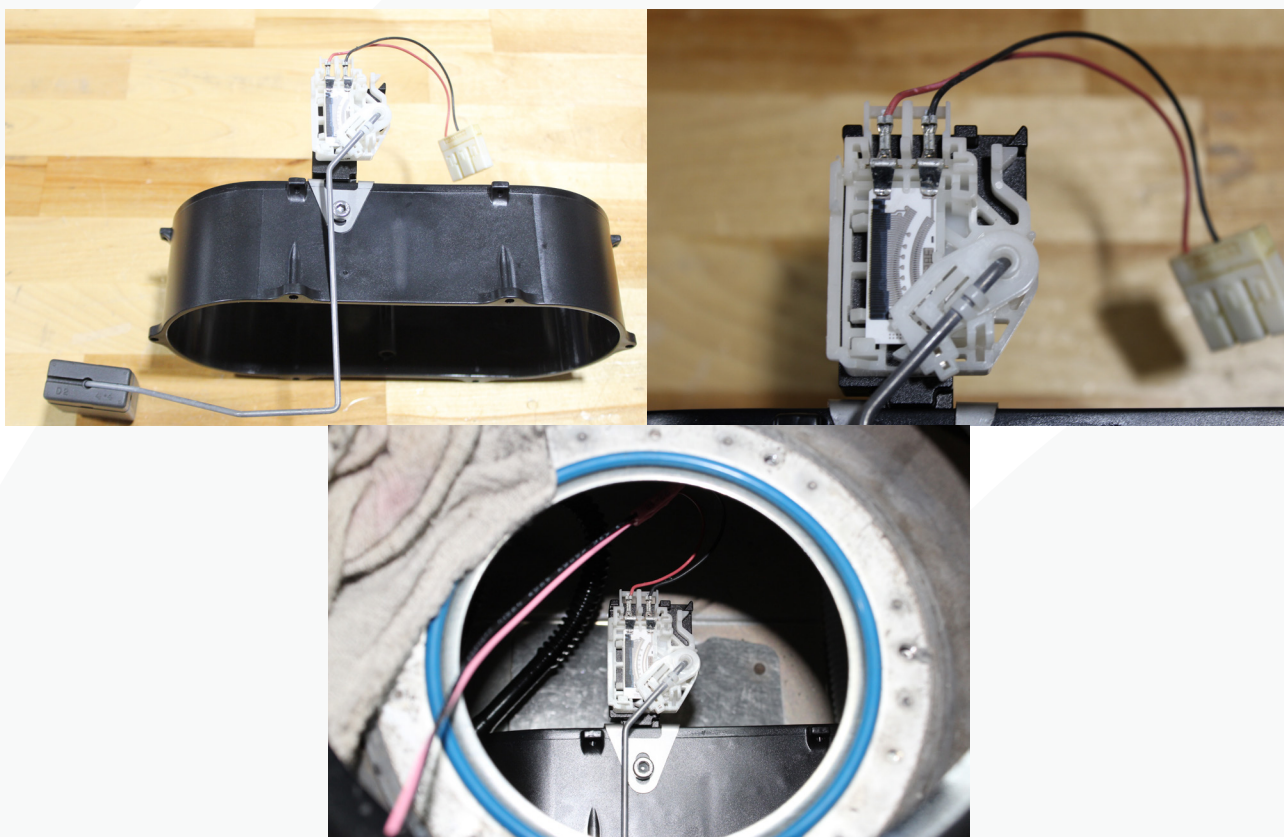
61. Lay the basket on its side so that the hole you drilled in the side is visible.



62. Lay out the level sensor mount, level sensor bracket, and M5 bolt. Apply a small amount of red Loctite to the bolt and install the level sensor mount to the basket as shown below.



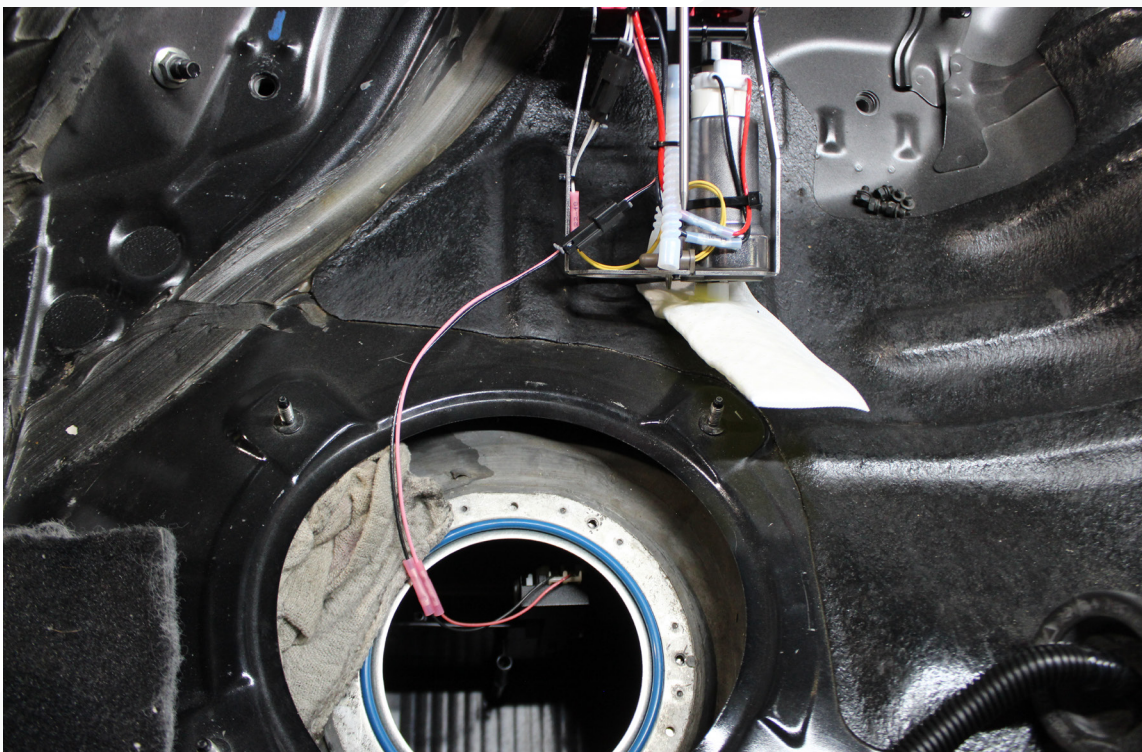
63. Install the level sensor to the level sensor mount and be sure it is properly secured. To demonstrate easier, some images are shown from outside the tank.



64. Position the basket so that the side with the level sensor is facing the back of the car. This should position the float just above the corrugated siphon line previously installed.



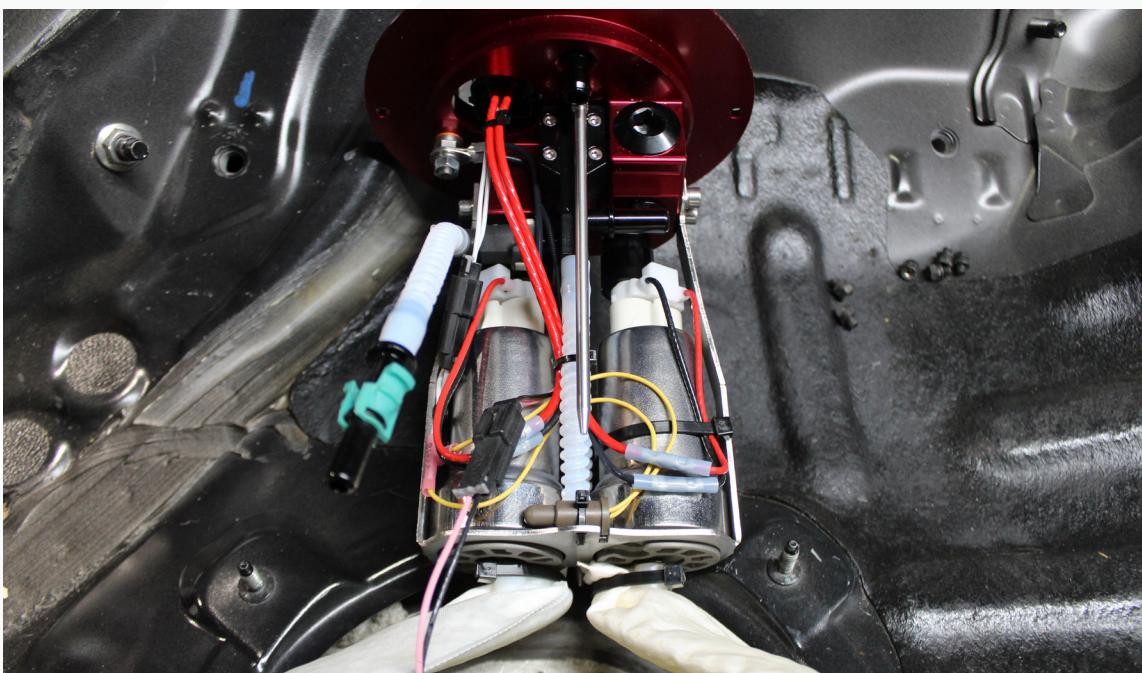
65. Set the basket near the opening in the fuel tank and connect the level sensor.



66. Before installing the fuel pump assembly, check that the corrugated hose routes just underneath the level sensor but does not contact it.

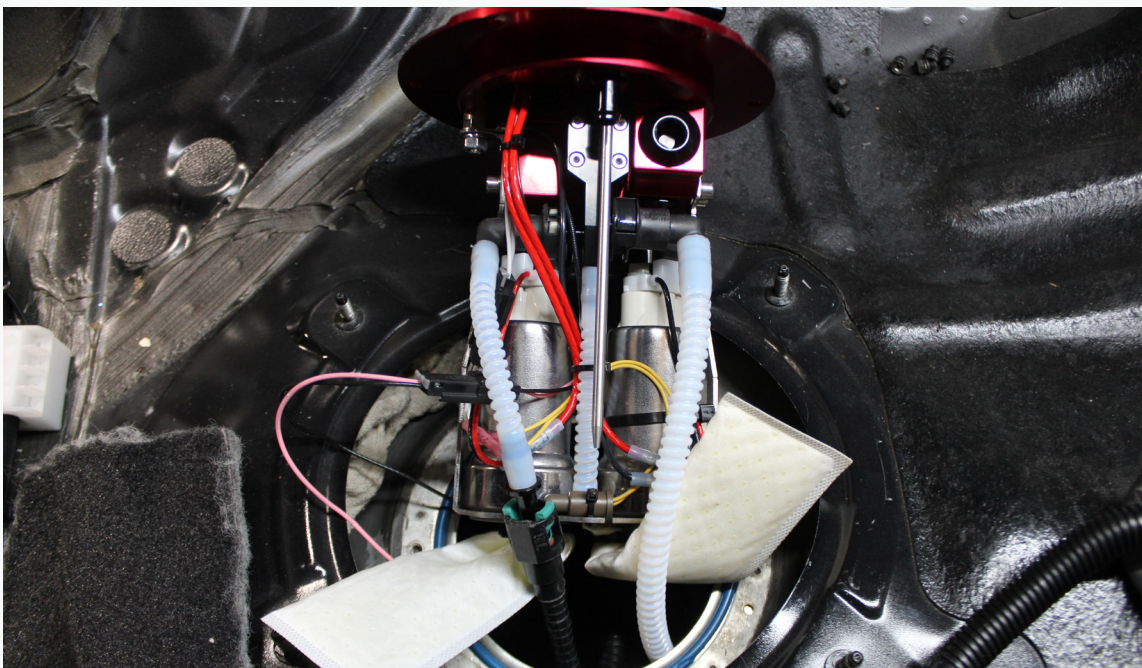


67. Connect the short hose created in step 49 to the siphon block on the fuel pump assembly.

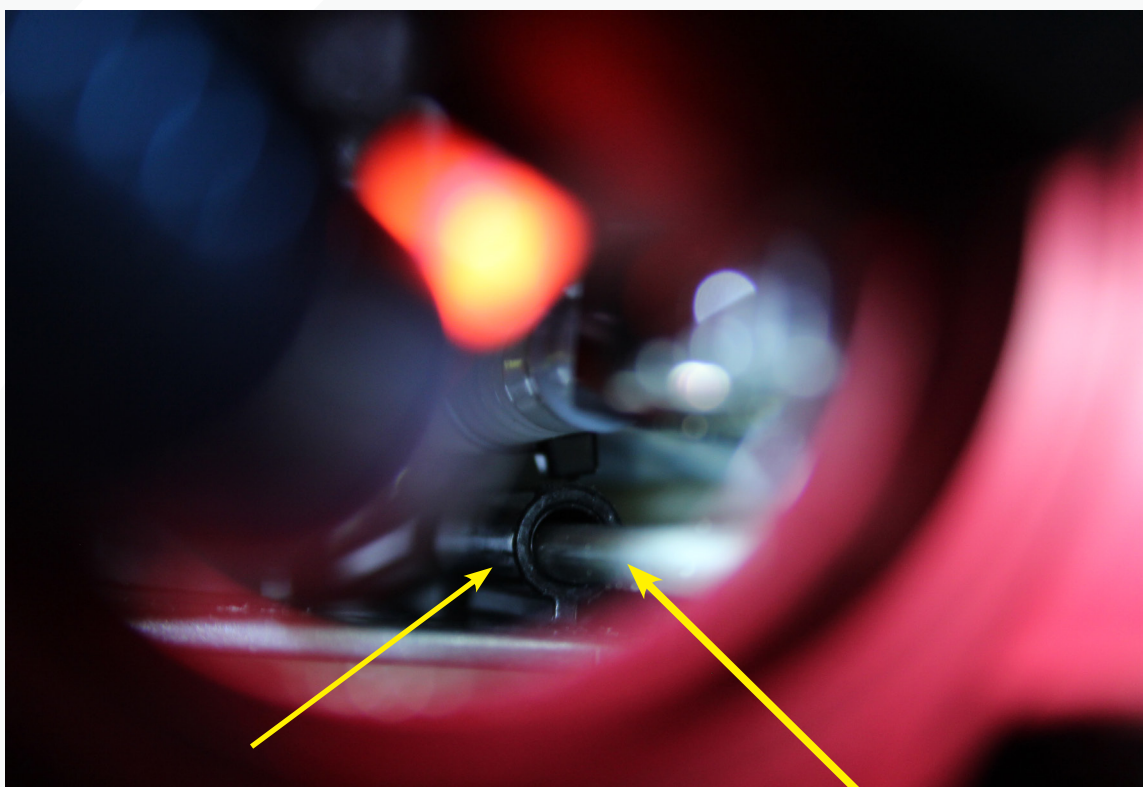


68. While lowering the fuel pump assembly into position, make the two hose connections on the siphon block.

Note: Be careful not to pull on the magnet holding the siphon line in place.



69. Make sure the basket is positioned correctly like in step 64 and carefully lower the fuel sending unit into the tank making sure not to damage the hoses or wiring on the sharp edge of the tank. Make sure the hoses stay routed properly as it installs. When it gets about halfway align the pins into the two holes of the basket. Use the opening in the top hat to help. A long screwdriver may also help directing hoses out of the way.



70. After you have confirmed the fuel sending unit is fully seated and lines are still routed properly. Locate the six m5 bolts, lock washers and flat washers. Secure the top hat.



71. Locate the bulkhead connector, m6 button head bolt, O-ring, and plate. Lubricate the O-ring and slide it onto the connector. Plug in the connector and install it into the top hat with the mounting plate and bolt. We will install the nut at another step.

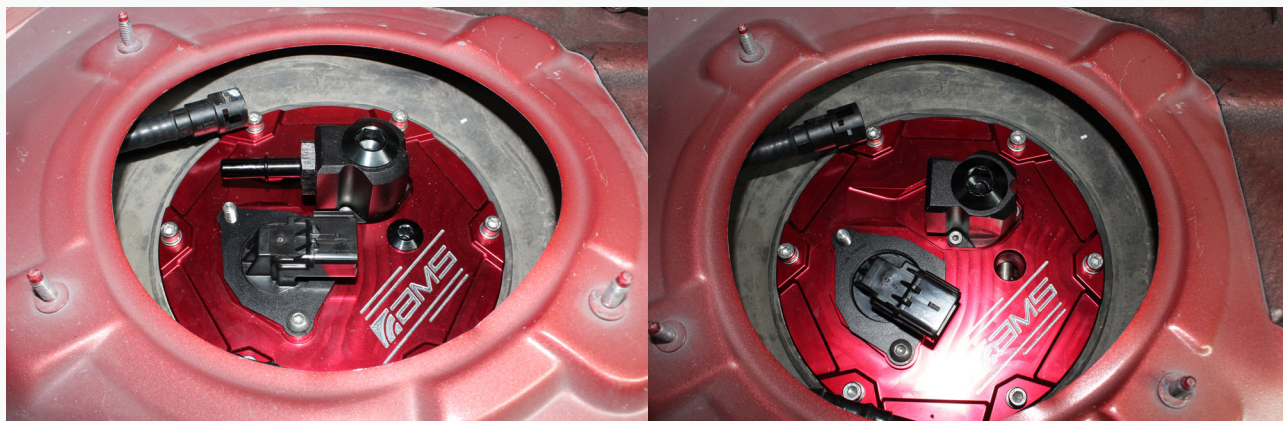


72. Option 1 Dead Head/Returnless - Install the white quick connect removed earlier onto the top hat fitting. Hook the factory line to the top hat.

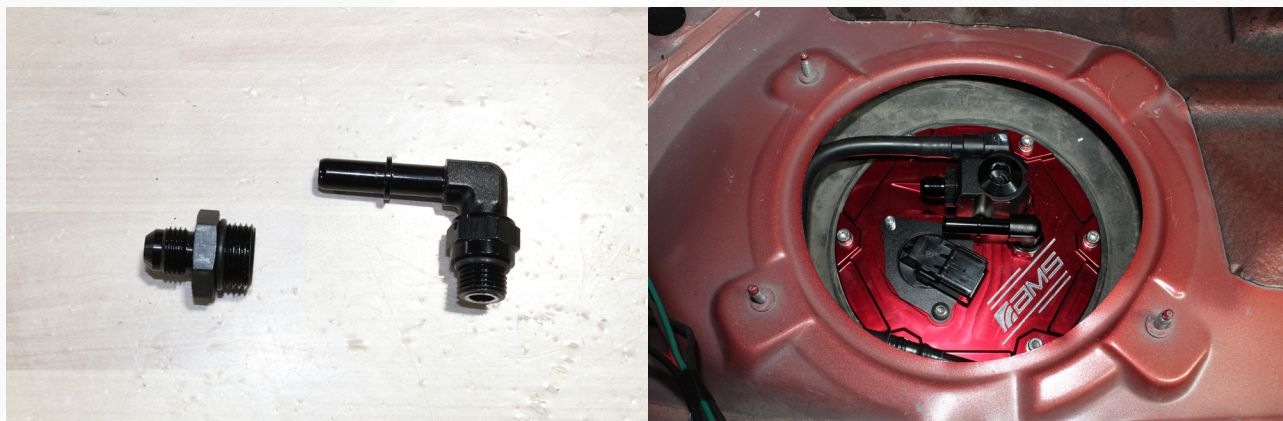


Option 2 Return Style/External regulator(New feed line) - Remove the quick connect fitting from the outlet block and 6AN plug from the top hat.

Note: Be sure you have completed top hat changes at the end of this document for running an external regulator.



a. Install the provided 8AN to 6AN outlet fitting into the outlet block and the swivel quick connect fitting into the top hat.



b. Install the white quick connect clip removed earlier onto the top hat fitting.



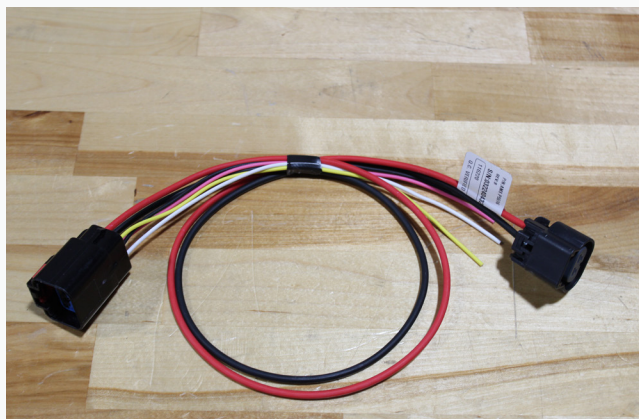
c. Rotate the female connection on the factory hardline 90 degrees to align the release tabs vertically.



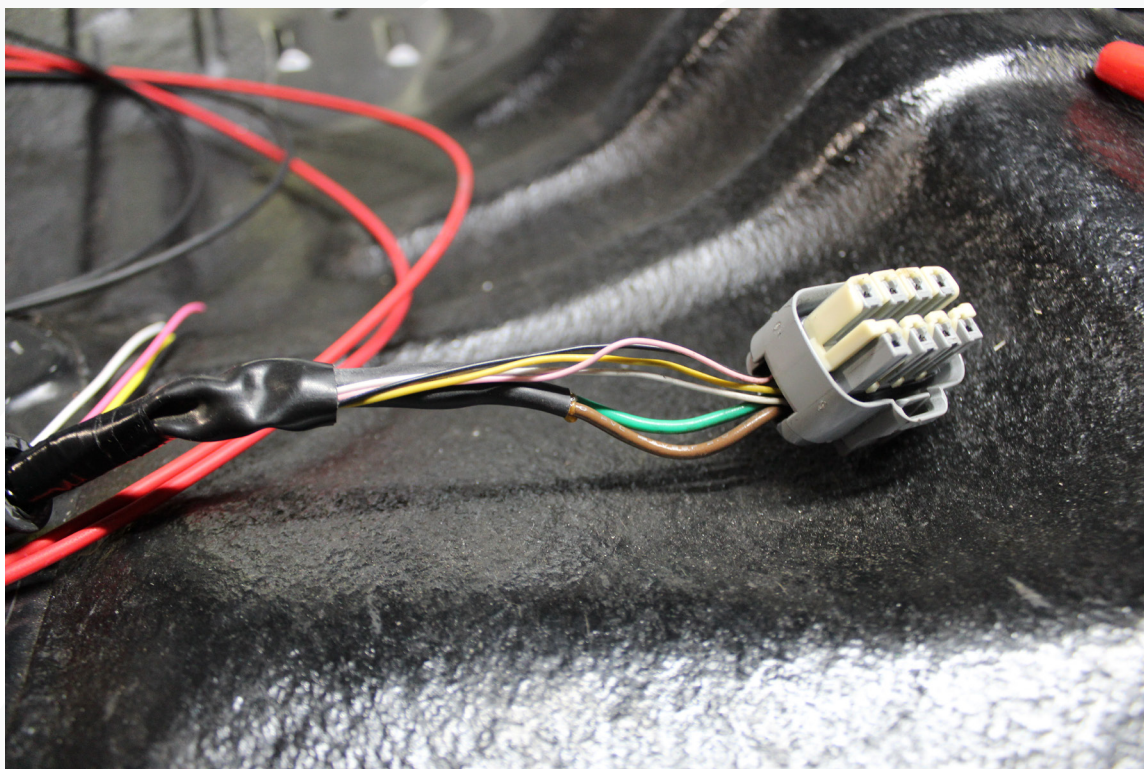
d. Reconnect the factory fuel line to the now return port.



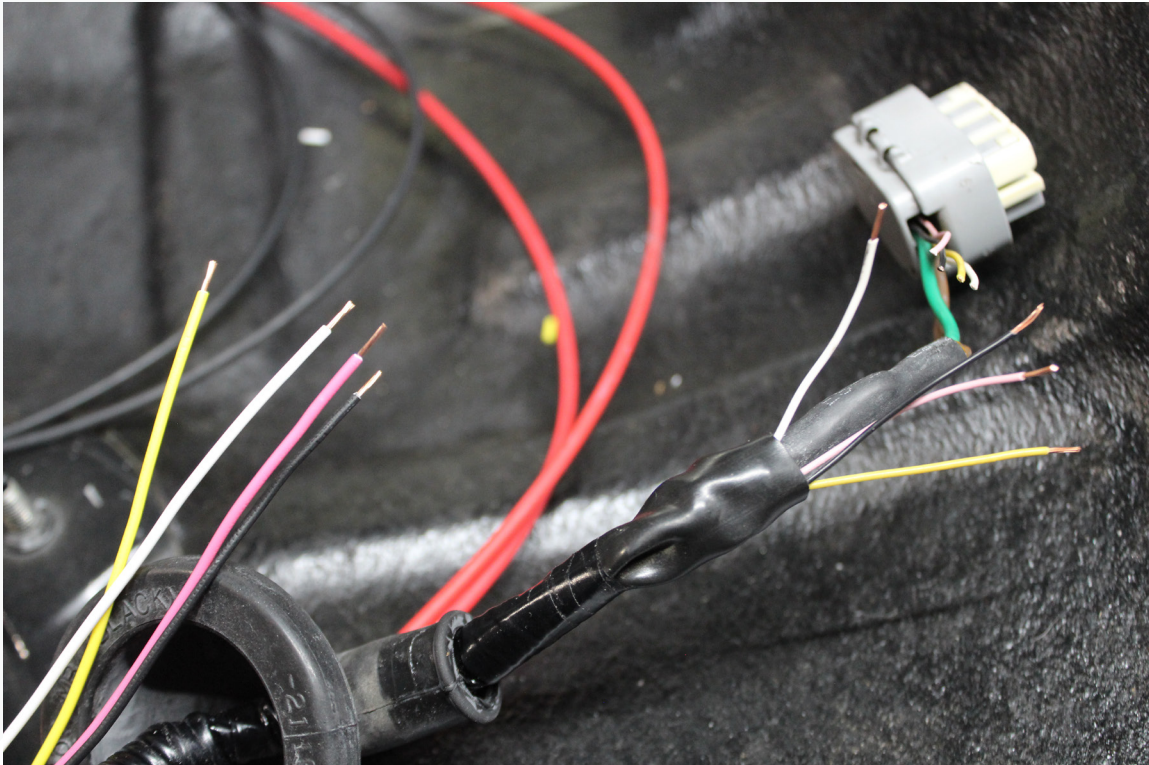
73. Locate the out of tank harnesses shown below.



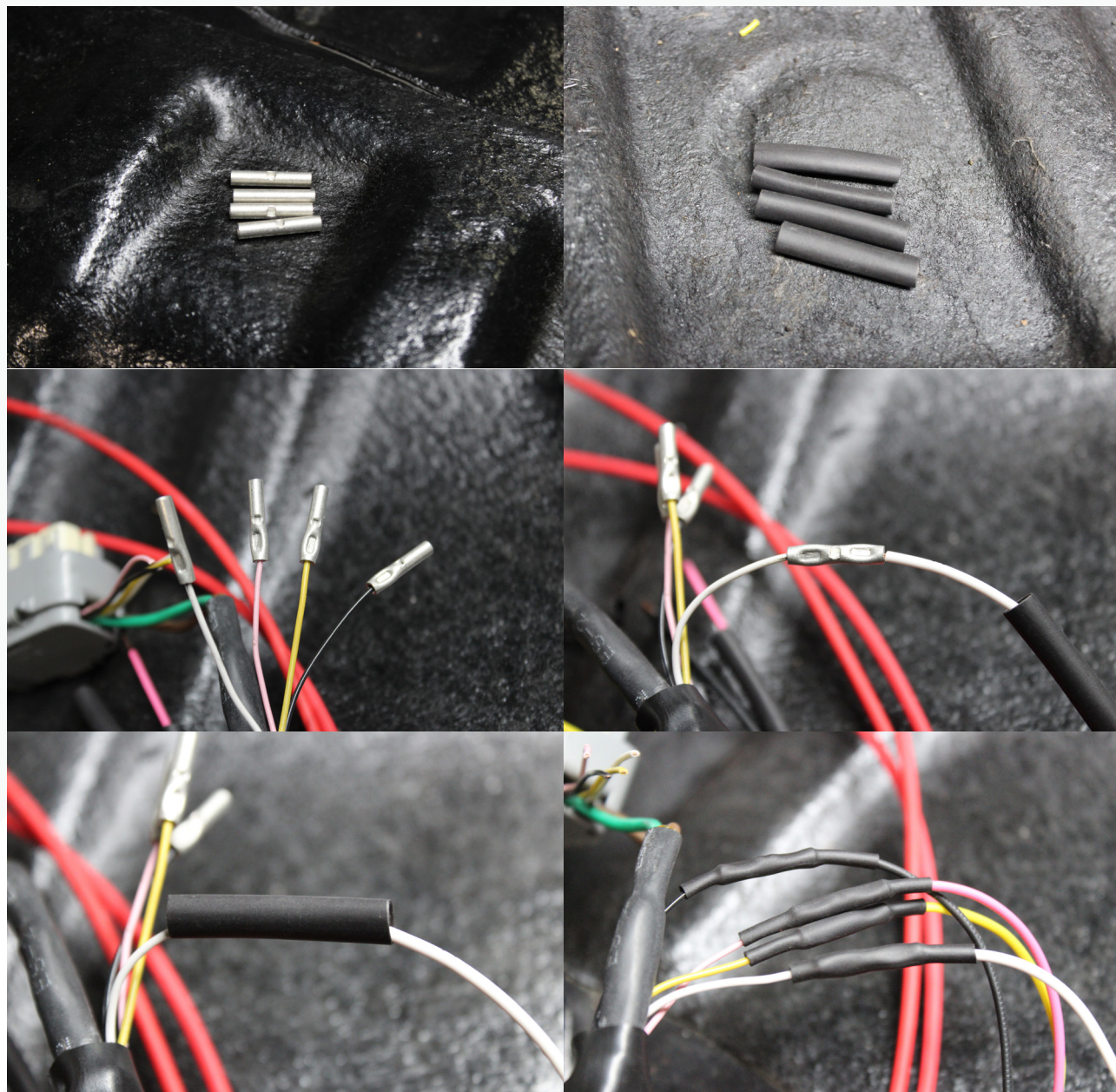
74. Cut back some of the protective loom on the factory top hat connector.



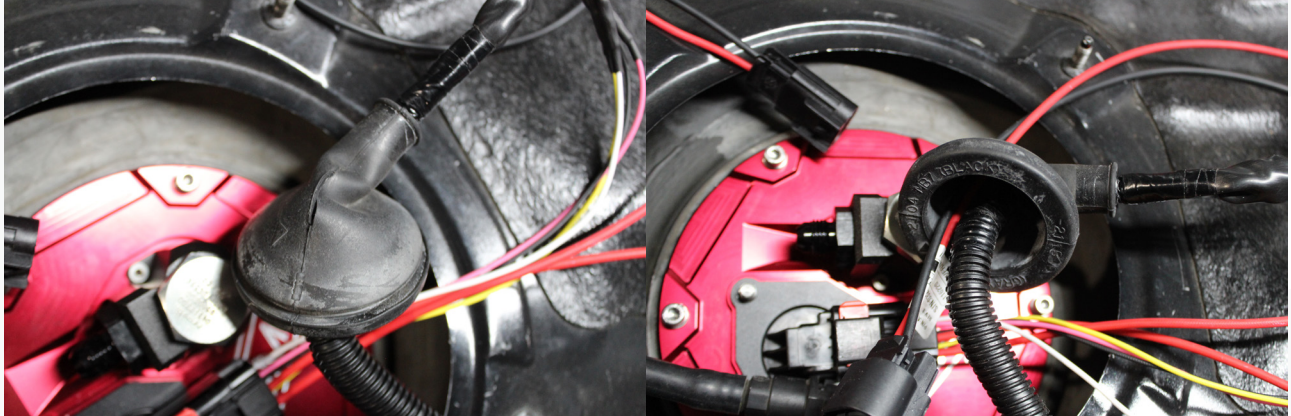
75. Cut the four smaller wires about an inch away from the connector. Strip the ends of the wires on the vehicle harness and the matching wires on the AMS harness.



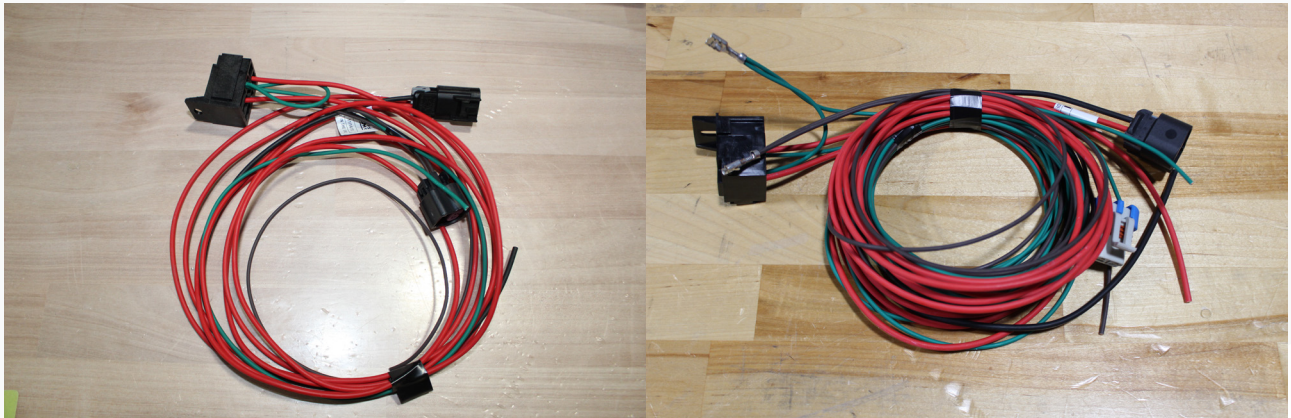
76. Cut four, two-inch-long sections of 1/8" heat shrink and grab four 18–22-gauge butt connectors. Crimp one side to the AMS harness, slide on the heat shrink, then crimp on the vehicle harness matching the colors.



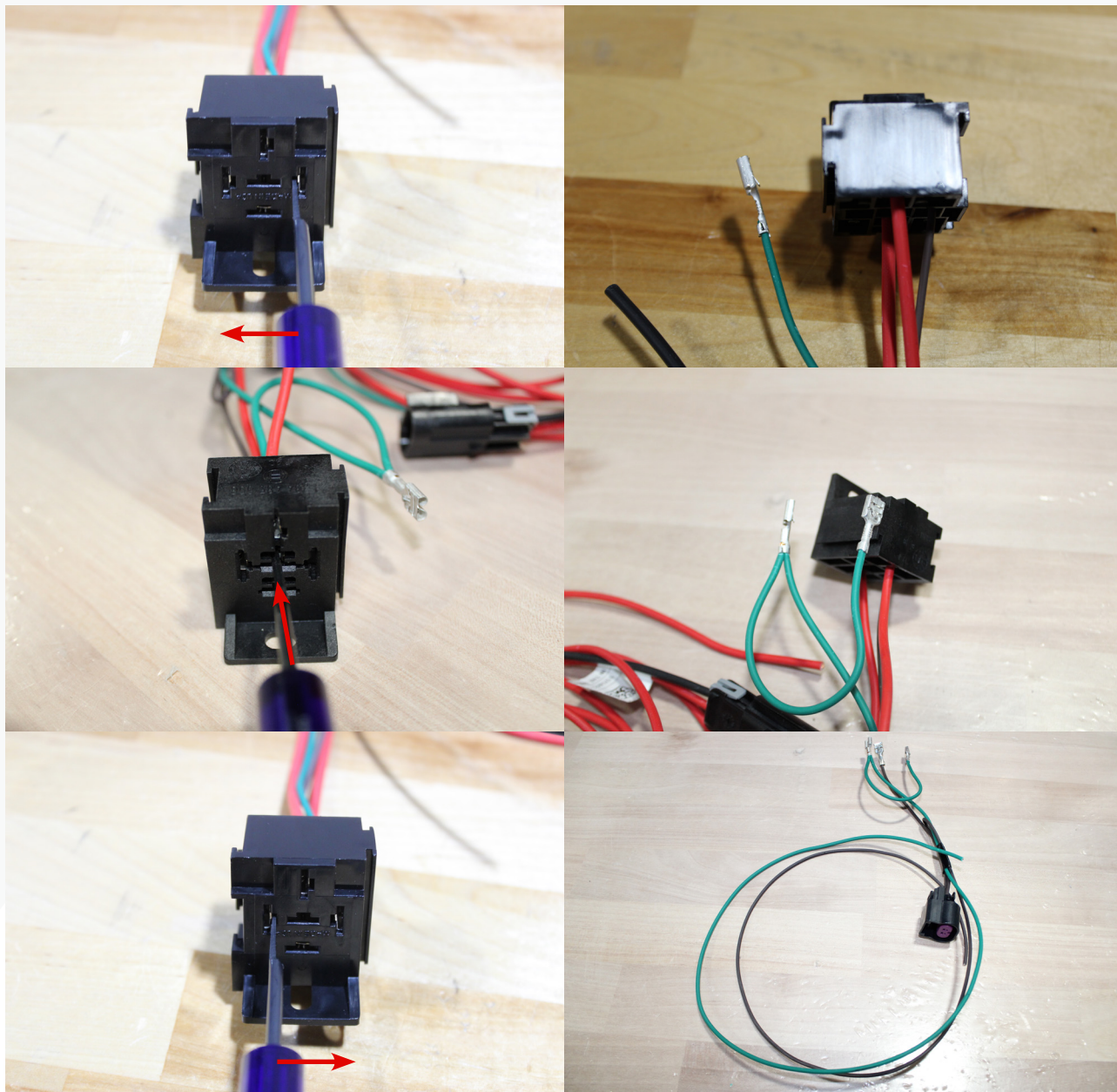
77. Cut a small slit in the vehicle grommet no more than an inch long. Feed the two-pin connector through the grommet as shown.



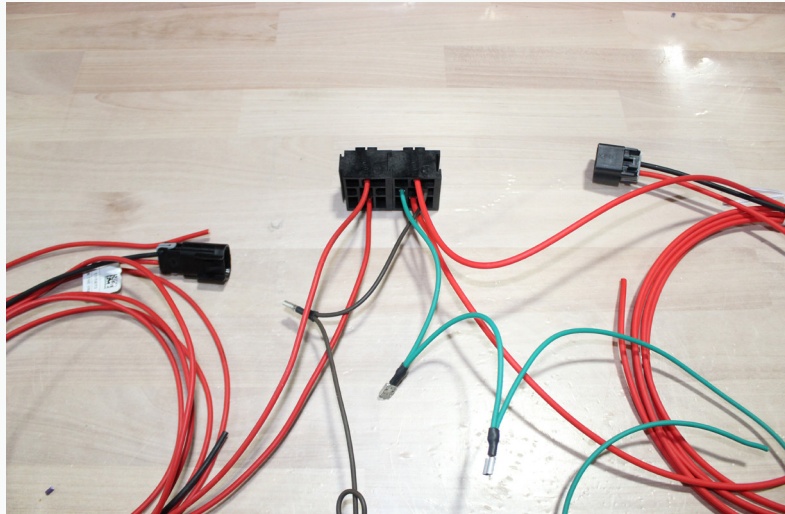
78. Locate the two relay harnesses. The one on the left is the primary pump harness, the one on the right if the add on harness.



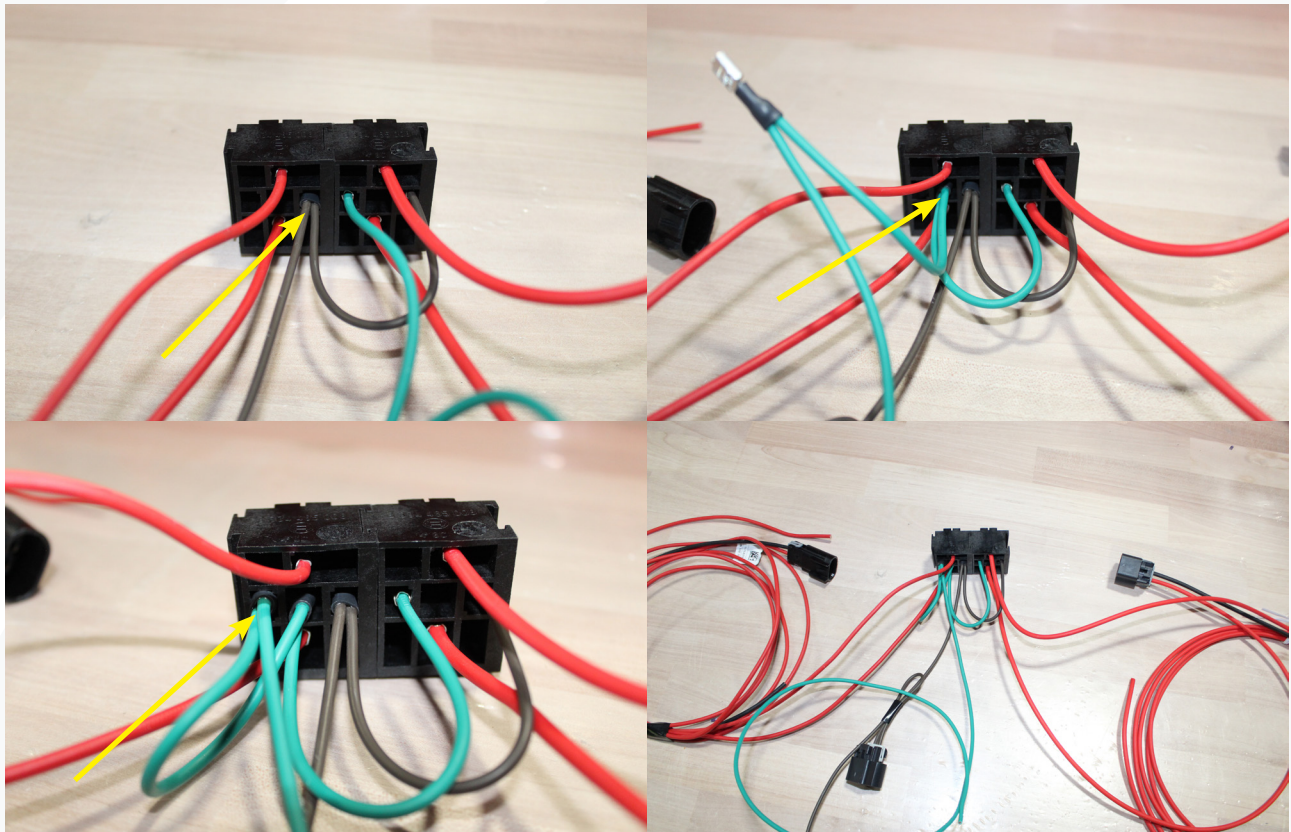
79. Starting with the primary pump harness, de-pin the green and brown wires from the relay holder with a depinning tool or small flat tool.



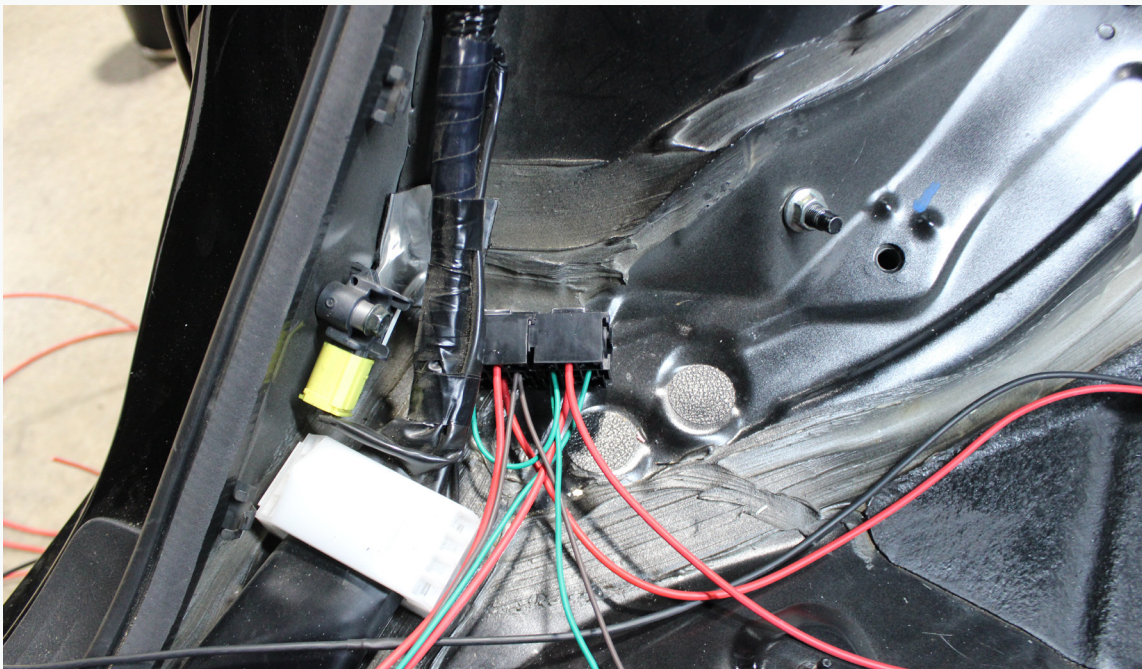
80. Attach the two relay holders together with the primary on the left and “add on” on the right.



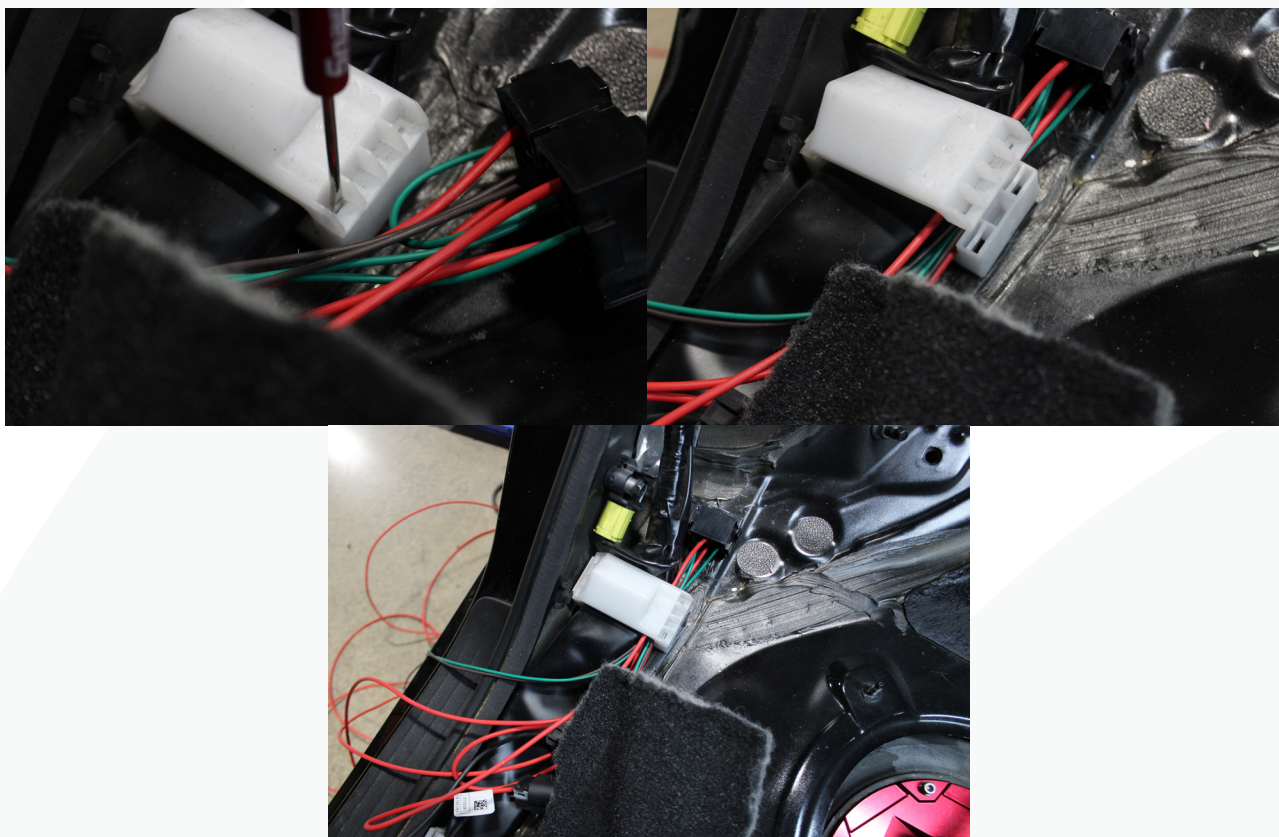
81. Insert the brown pinned wire into the right position on the primary relay harness (86). Then the first green pinned wire into the middle position (87a). Finally, the 2nd pinned wire into the far-left position (85). Make sure all the pins are fully seated, give them a light tight to be sure they won't pop out.



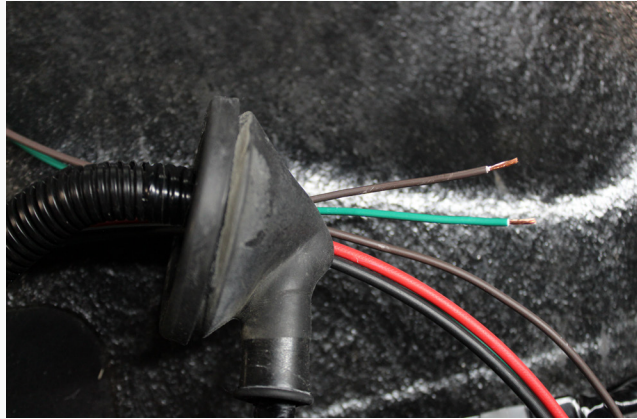
82. Position the relay holders near the corner of the wheel tub.



83. Unclip the two clips holding factory harness retainer with a small flat blade screwdriver. Place the two relay harnesses through the retainer and latch it closed.

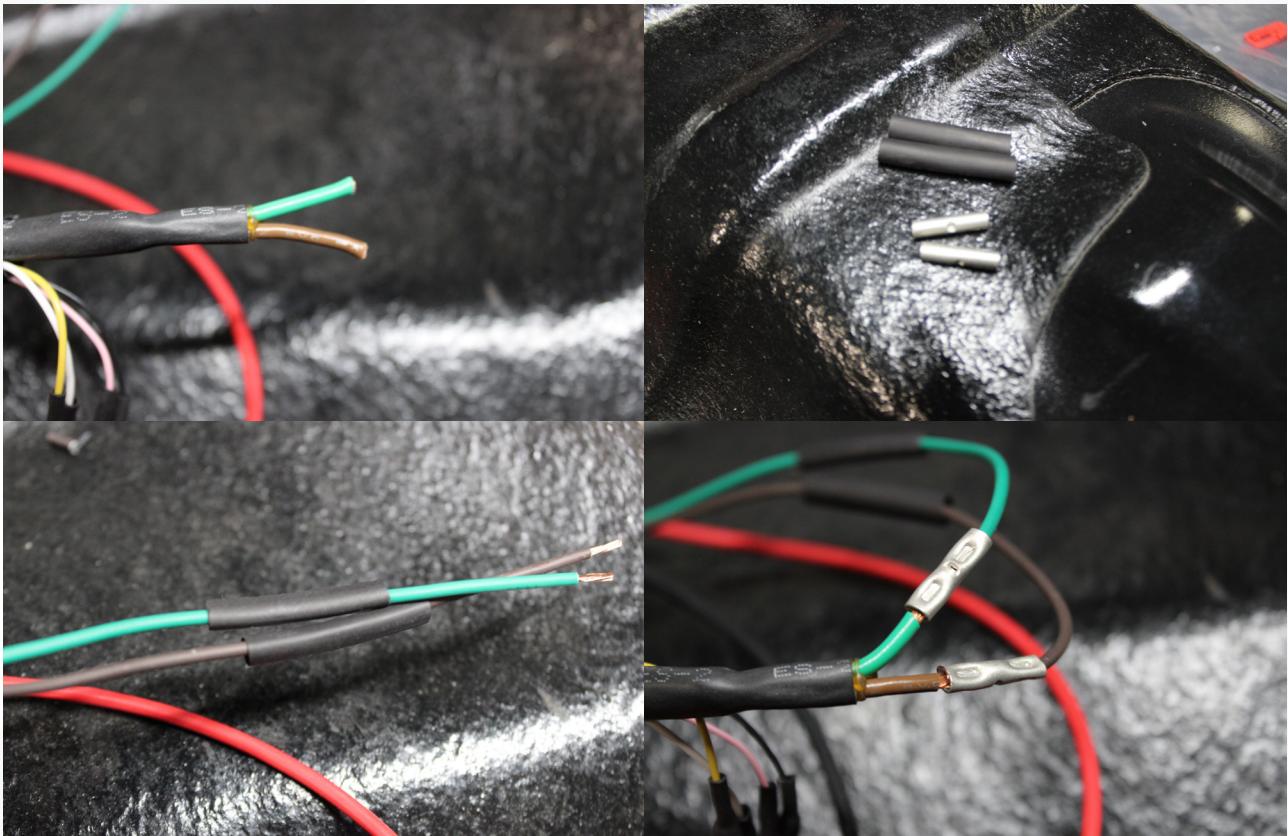


84. Feed the long unterminated ends of the green and brown wires through the same grommet as shown.

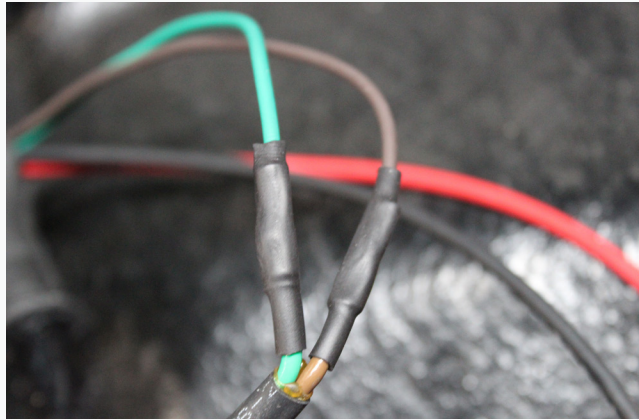


85. Cut the remaining brown and green wires from the OEM Fuel pump connector about an inch away from the connector. Strip the two green and two brown wires. Grab two 14-16 butt connectors and cut two two-inch strips of 3/16" heat shrink. Crimp the wires together and use a heat gun to shrink the heat shrink.

Note: If a single pump has been previously installed cut out the butt connections and follow the next steps.



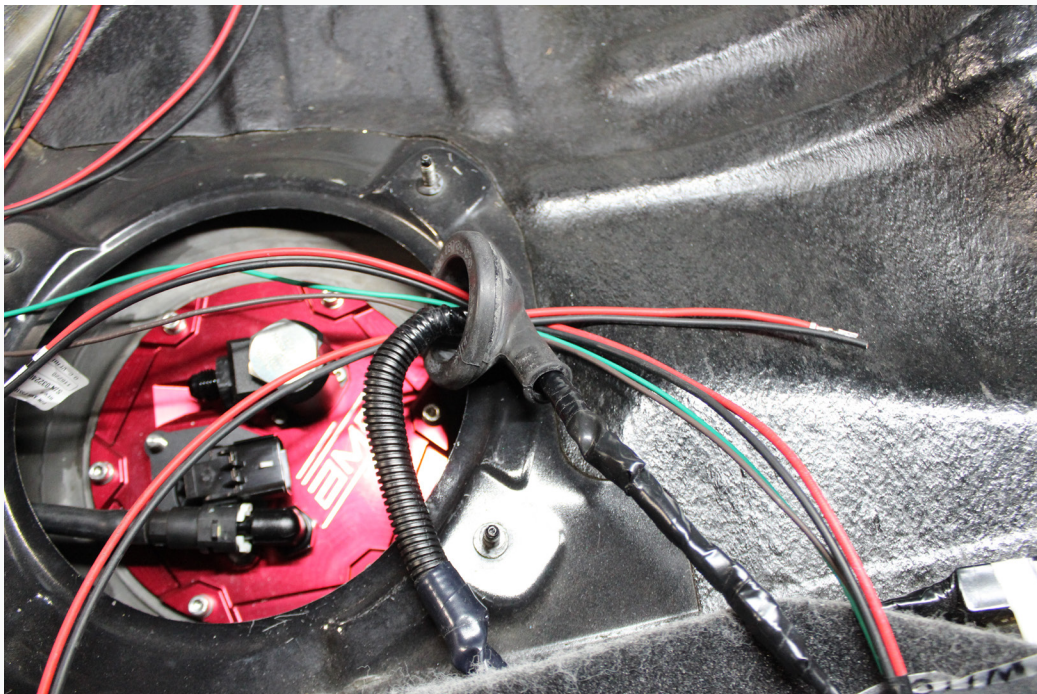
85. Continued.



86. Locate the provided 2-wire harness with a connector on one end, pinned red wire and unterminated black wire.



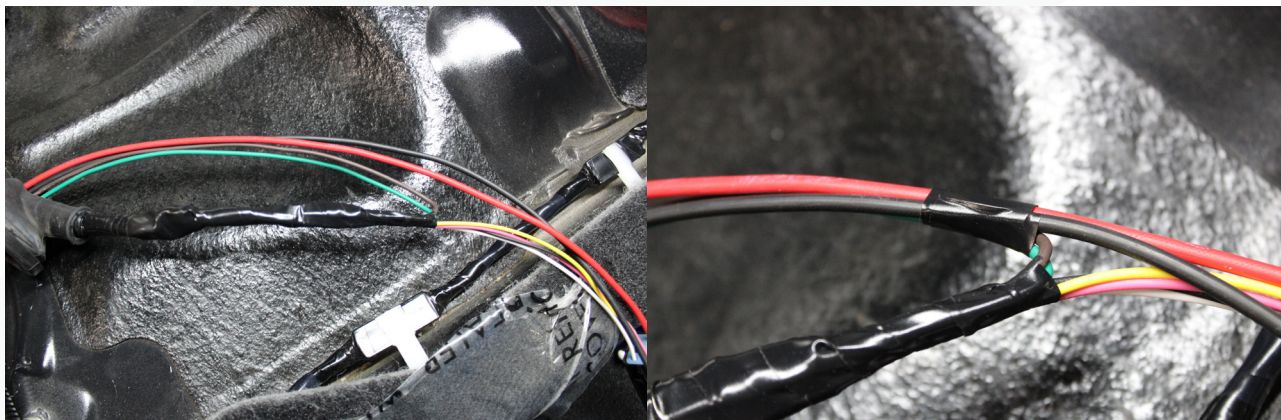
87. Feed the unterminated end through the grommet towards the top hat connector.



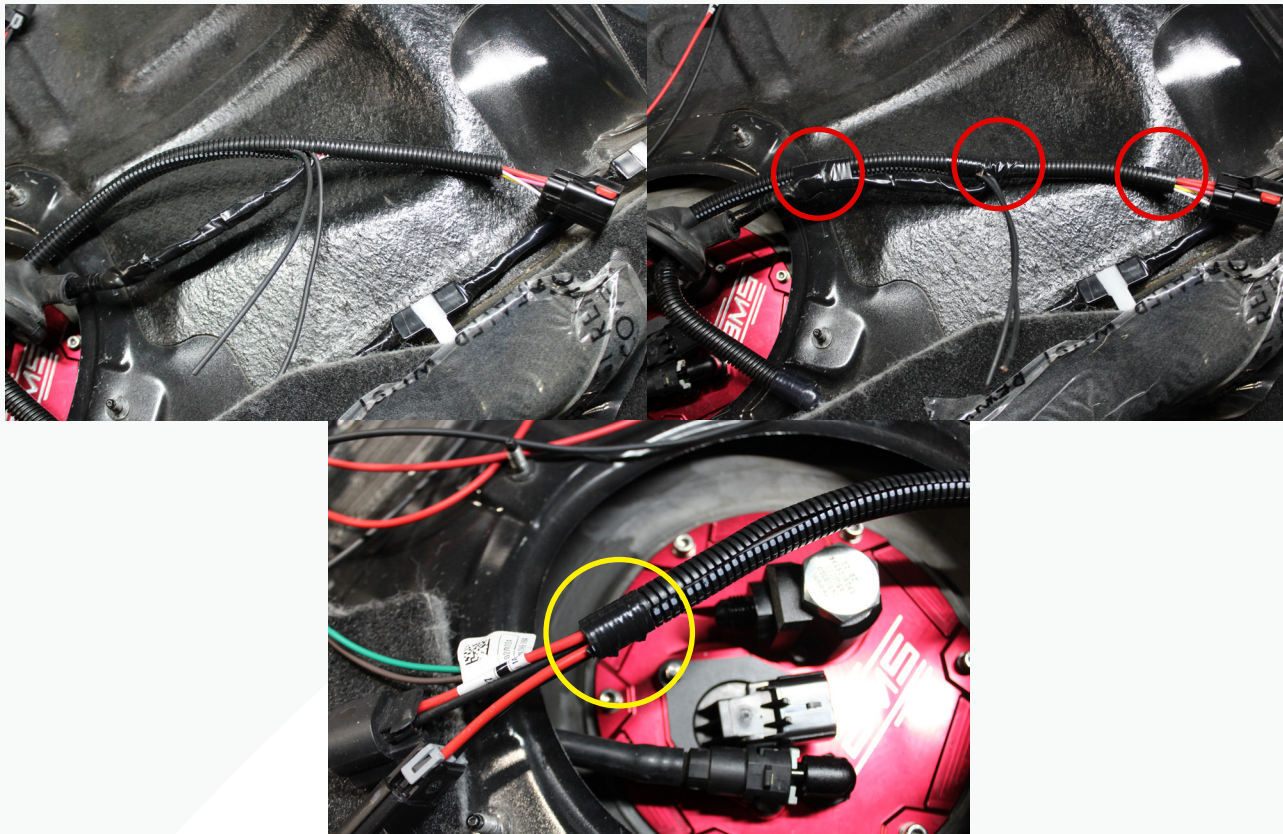
88. Release the pin lock on the connector like you did in step 34 and install the pinned red wire.



89. Put a 180-degree bend in the green and brown wires and then bundle the group of wires together. Starting from the OEM loom, wrap the wiring with electrical tape up to the T. Then place a section of electrical tape near the 180-degree bend to hold the other bundle in place.



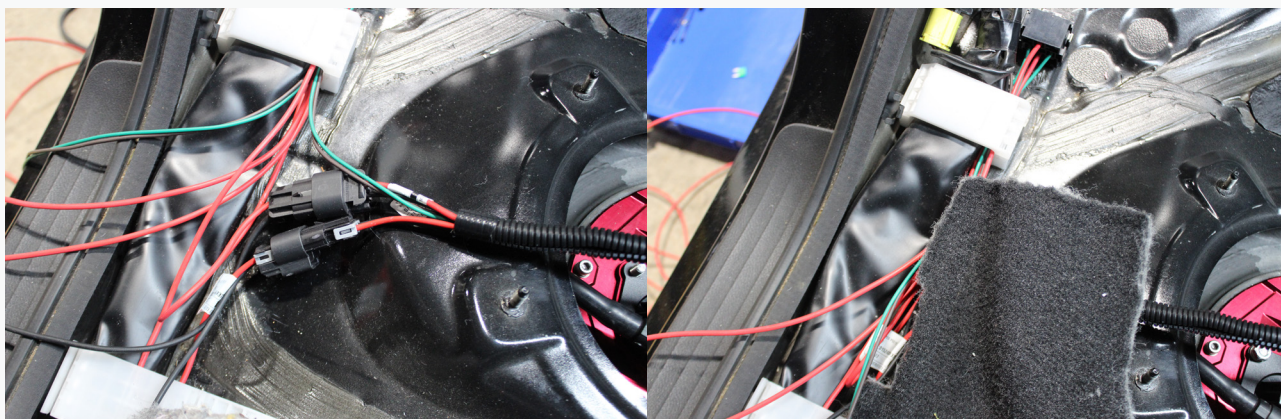
90. Cut a 21" section of wire loom. Feed it through the grommet covering all the loose wires up to the connector. The ground wire will exit the loom at the T where its taped from the previous step. Tape the loom every 6" or so and around the ground wire.



91. Strip the two black wires and crimp on the provided eyelet terminals. Use a heat gun on the heat shrink.



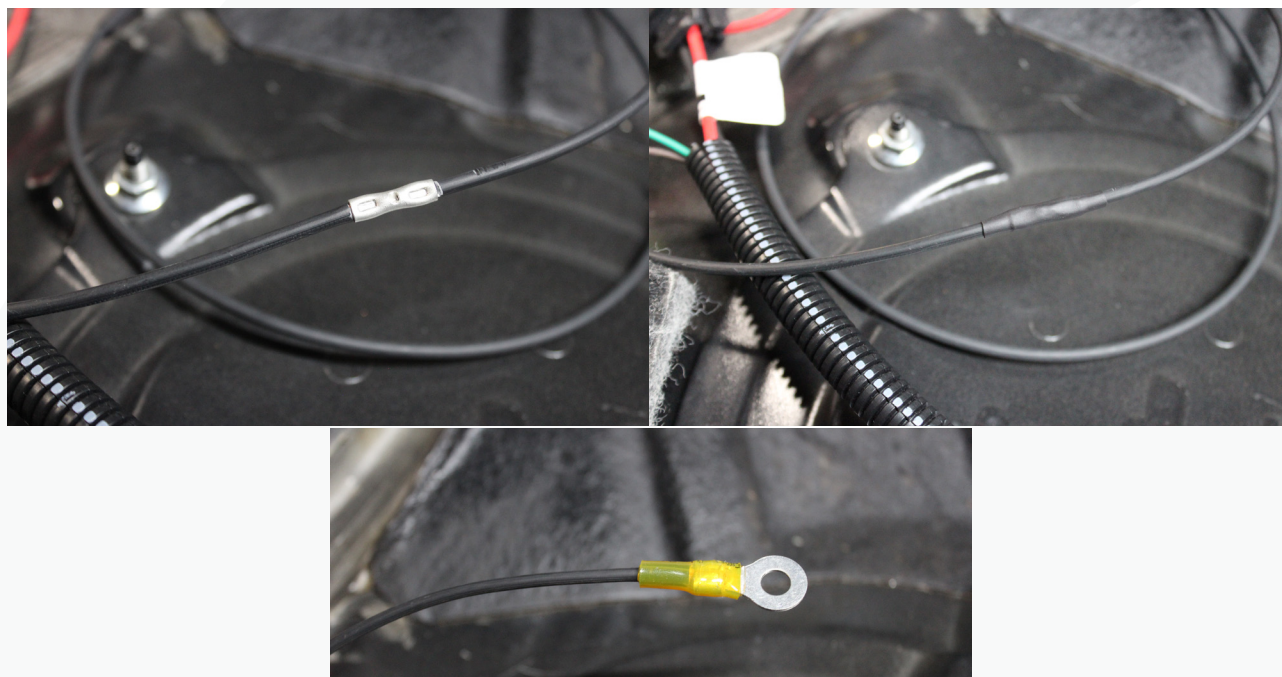
92. Plug in the (2) 2-pin connectors and tuck them under the carpet.



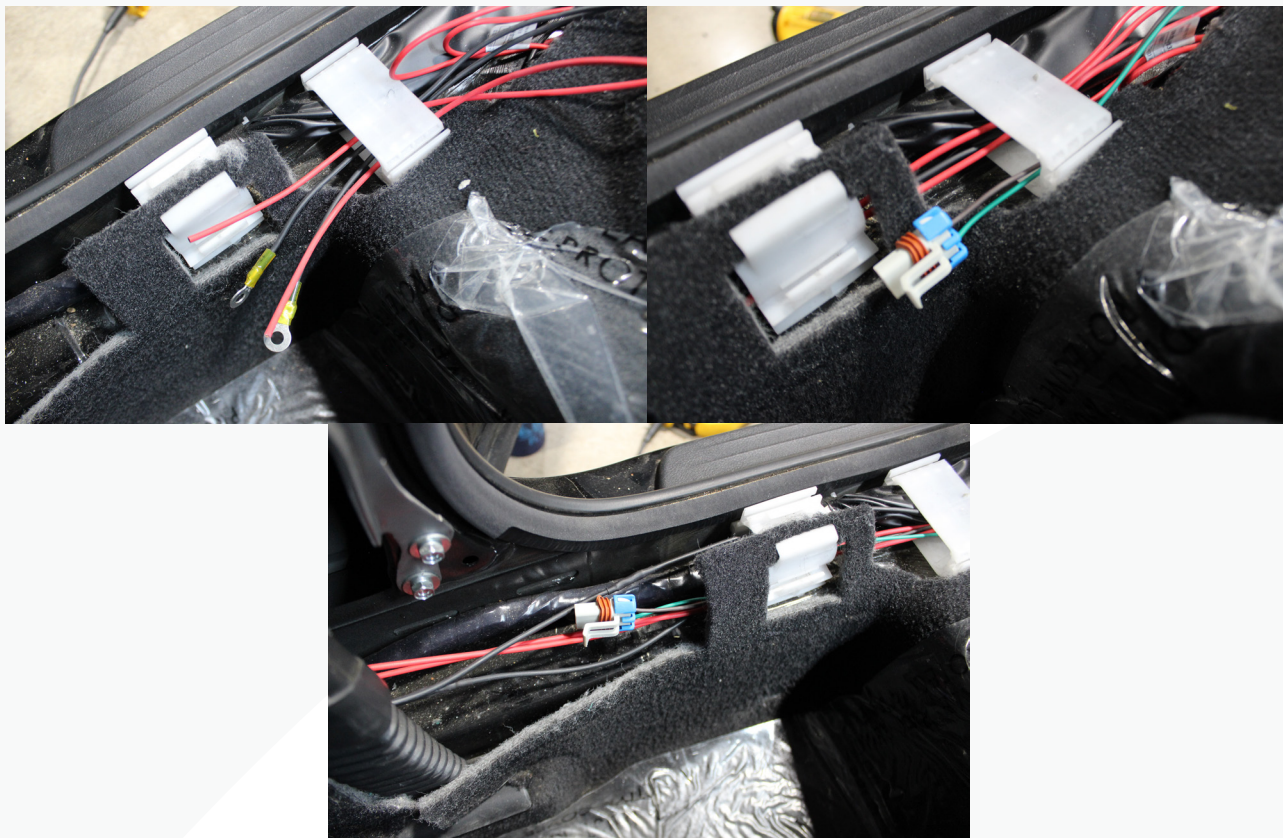
93. Locate the (2) 32" unterminated black wire, ring terminal, butt connector, and a 1-1/4" piece of 3/16 heat shrink. Strip the end of the black wire on the end of the 2-pin connector and both ends of the unterminated black wire.



94. Crimp the (2) black ground wires made in the previous step to the unterminated black wires coming from the 2 pin connectors.



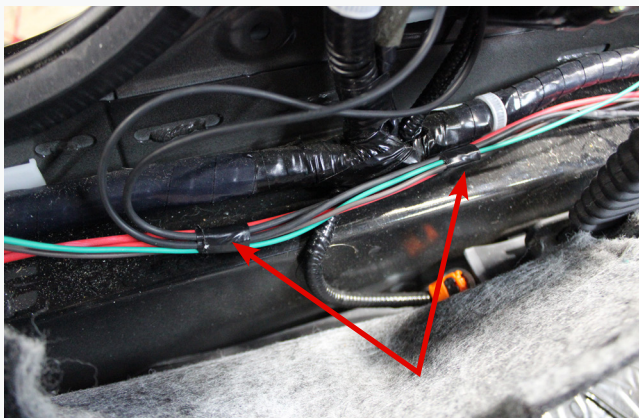
95. Route the (2) red wires, (2) ground wires and green/brown Hobb switch wires through the vehicle harness retainers along the sill up to the b-pillar.



96. Locate the chassis ground on the b pillar above the seat belt retractor and install the ring terminals.



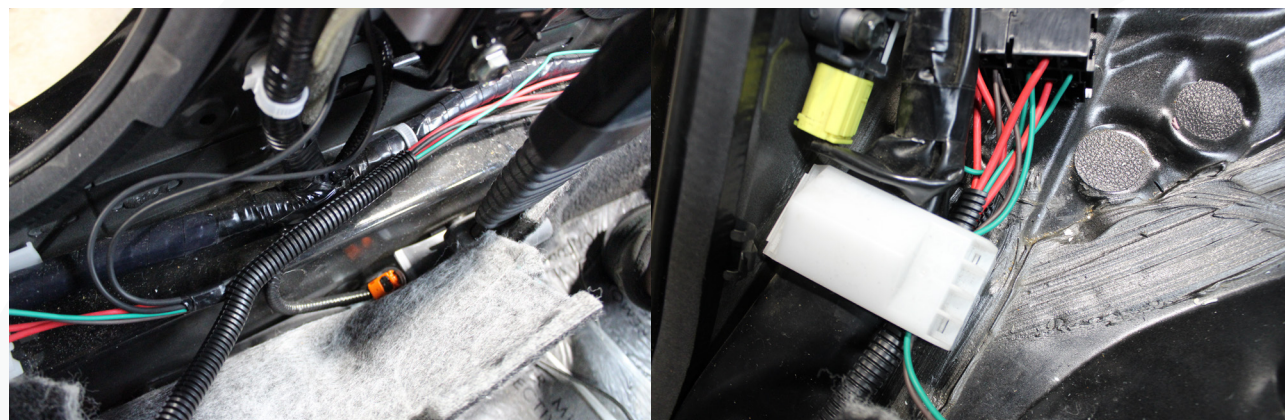
97. Apply two pieces of tape to the group of wires near the B-pillar as shown below



98. Stretch out the 3/8" split loom from the relay towards the front of the car and up into the dash area, mark it, then add 24" so it reaches into the battery compartment.



99. Starting at the b pillar, slide the split loom over the red and black wires towards the relay.



100. Secure the loom closed with electrical tape right before the (2) ground wire leaves the loom at the B pillar.



101. Continue feeding the harness in the loom. Once the whole harness has been loomed, feed it through the rest of the harness retainers along the sill.



102. Locate the vehicle grommet near the battery. On the underside of the dash, release the plastic tabs under the insulation holding it in place.



103. Trim the grommet indicated by the red line below just before it enlarges. This spot will fit tight on the loom to help prevent leaks.



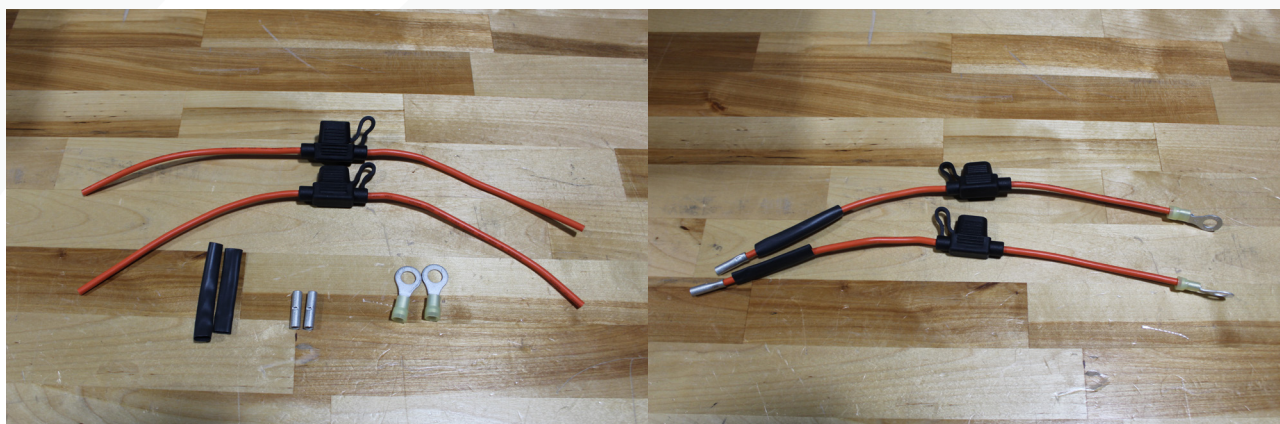
104. Feed the wires up through the hole into the battery compartment. Then while holding the grommet, feed the wires and loom through the grommet at click the grommet back in place.



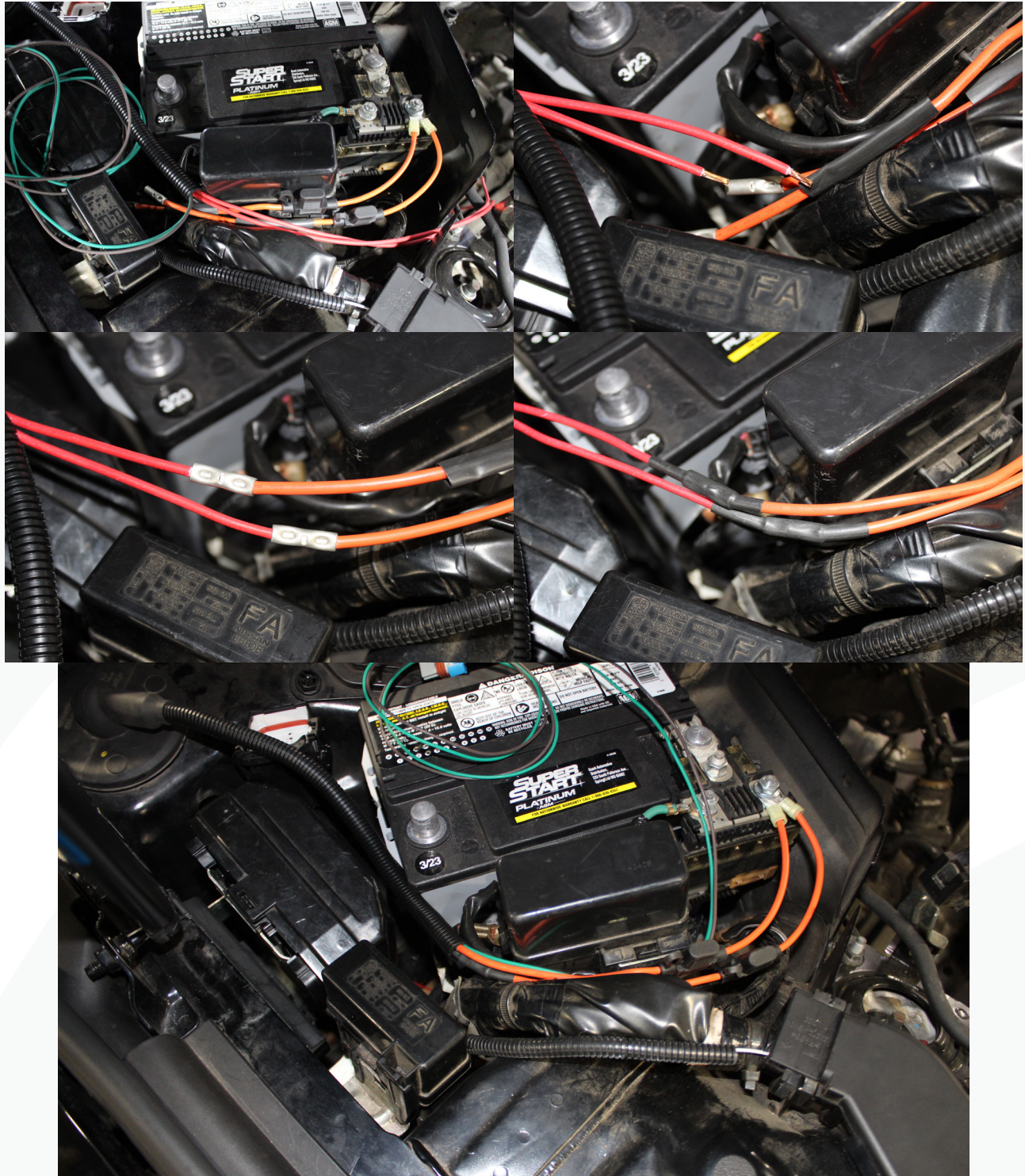
105. If necessary, pull back a little of the loomed harness and secure it to a nearby harness in the passenger kick panel.



106. Locate the (2) orange fuse holders, (2) ring terminals, (2) butt connectors and (2) large heat shrinks. Strip the ends of the fuse holder and install a ring terminal at one end and butt connector at the other. Slide the heat shrink onto the butt connectors.



107. With the fuses **NOT** installed, secure the ring terminals to the open battery post. Route the wires along the vehicle harness and trim the (2) red wires as necessary. Strip the wires and crimp them each to a butt connector. Slide the heat shrink over and shrink it with a heat gun.



Nissan Z - Continue with step 108.

Q50/Q60 - Skip to step 115.

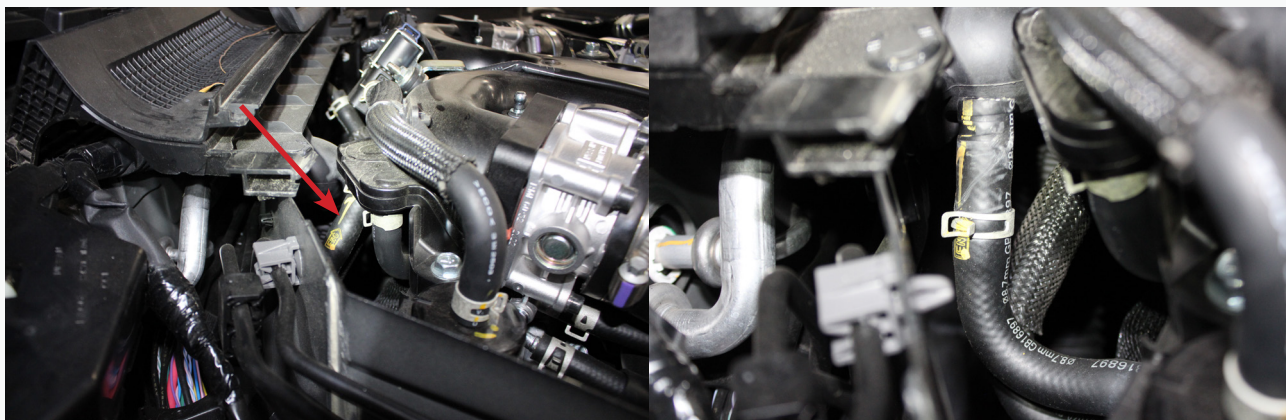
108. **Nissan Z**, mount the pre-set hobbs switch to the battery stud. Install the washer on the stud, then put the clamp on the hobbs switch and point the fitting towards the engine and secure it with the nut. You can bend the clamp down slightly towards the battery for a little extra clearance.



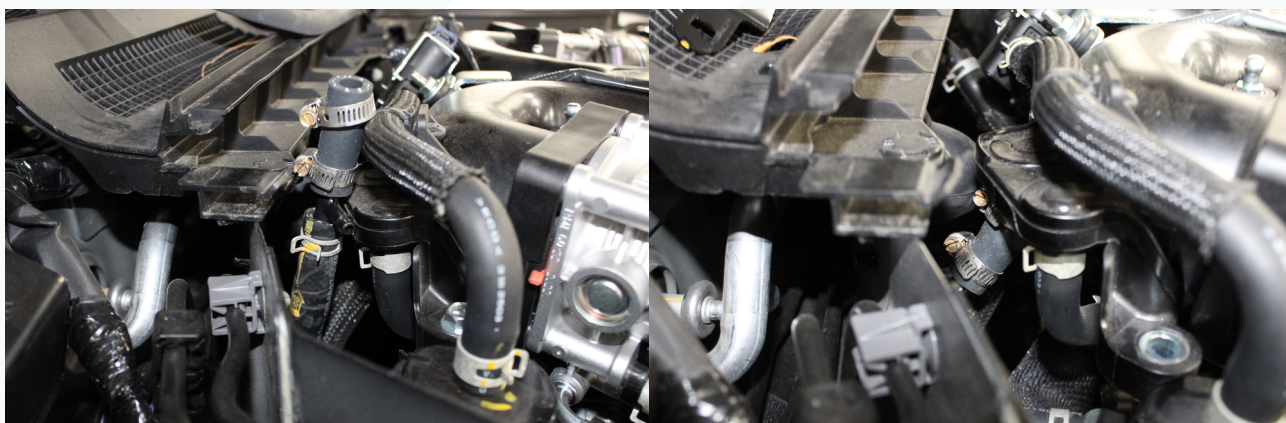
109. The hobbs switch needs to be connected to a boost source. Locate the tee fitting, clamps and small section of hose. Install the section of hose and a clamp on the tee fitting like shown below.



110. On the intake manifold behind the passenger throttle body, disconnect the hose from the intake manifold.



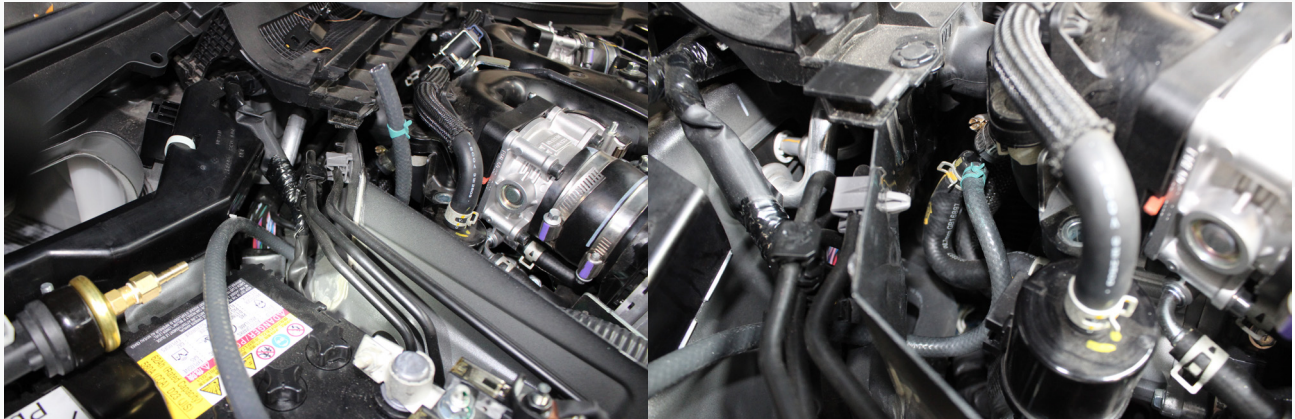
111. Place one more clamp on the small section of hose, then push the open barb onto the hose that was just removed and clamp it. Then install the new hose on the intake manifold barb and tighten the clamp.



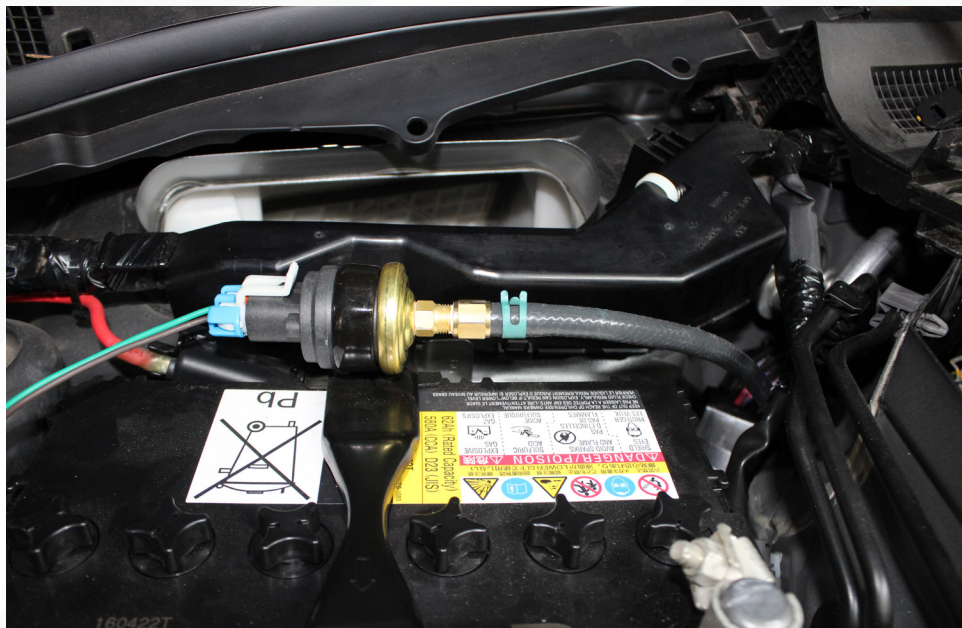
112. Locate the round sticker covering the hole near the battery. This hole will be large enough to pass our vacuum hose through. Remove the sticker.



113. Pass the hose through the hole and connect it to the tee fitting and clamp it.



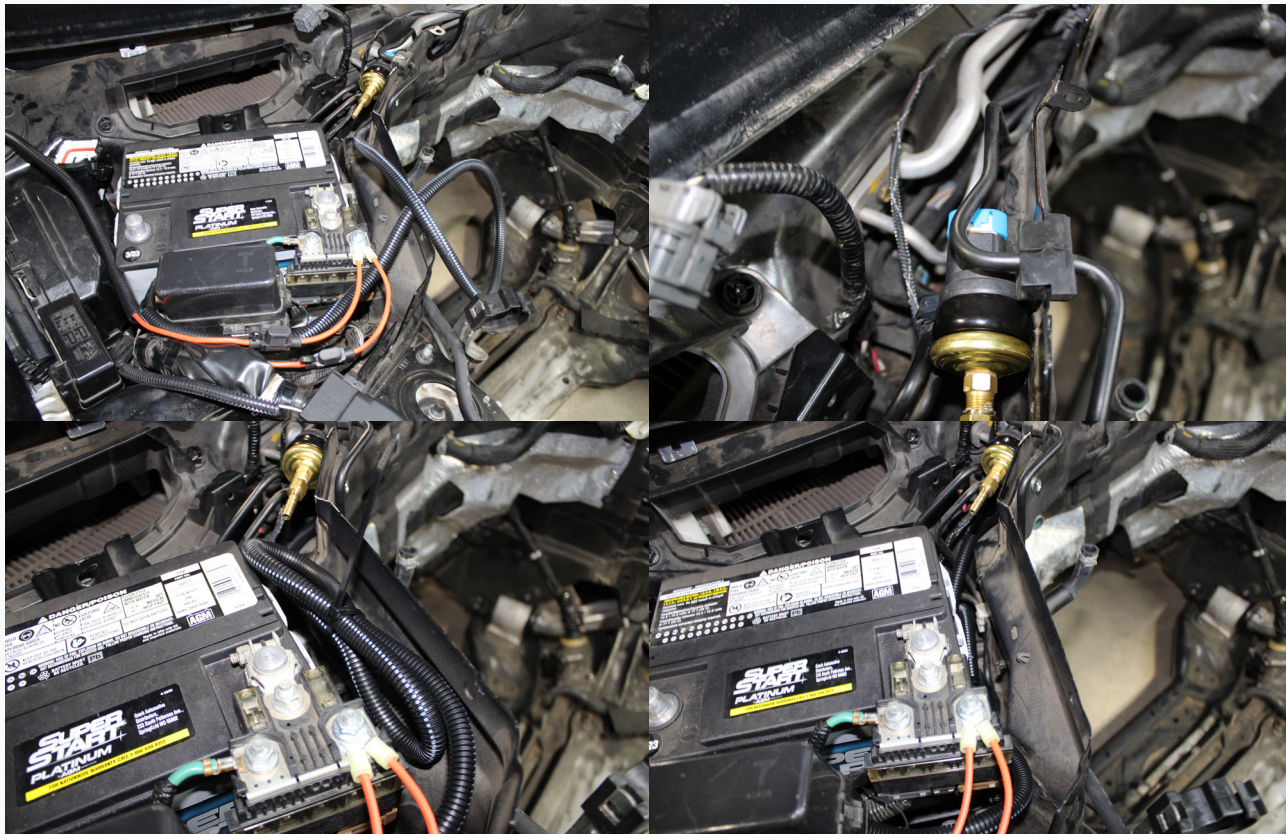
114. Route the hose with enough slack for engine movement back to the hobbs switch on the battery. Trim the hose and secure it with a clamp. **Then skip to step 124.**



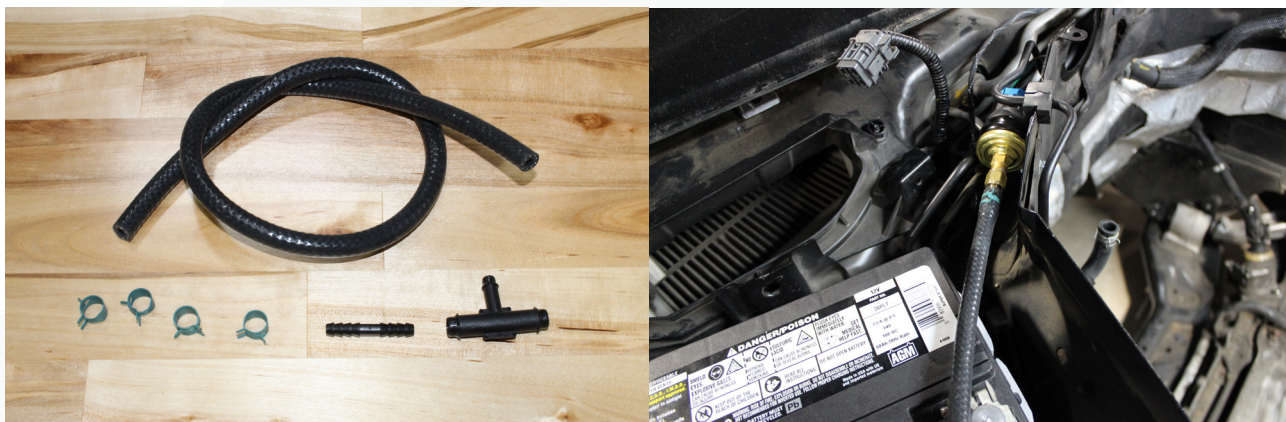
115. **Q50/Q60** - Remove the push clip, Install the large M6 washer, then the small M6 washer onto the bolt and put it through the hole you removed the clip from. Using the vinyl clamp and nut, mount the Hobbs switch in the battery compartment with the barb point towards the battery.



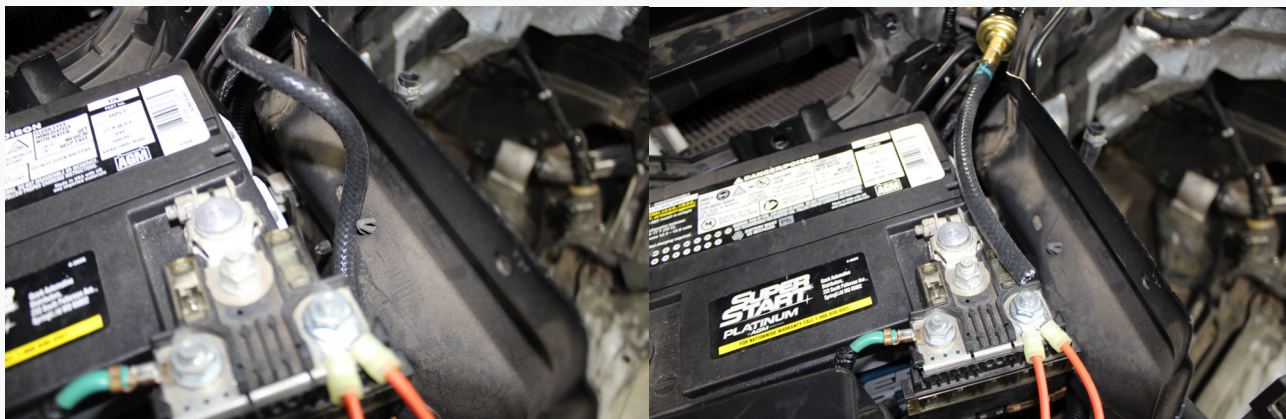
116. Use the remaining split loom on the hobbs switch harness, then plug in the blue and white connector into the hobbs switch. Coil any remaining slack with a zip tie and tuck it away.



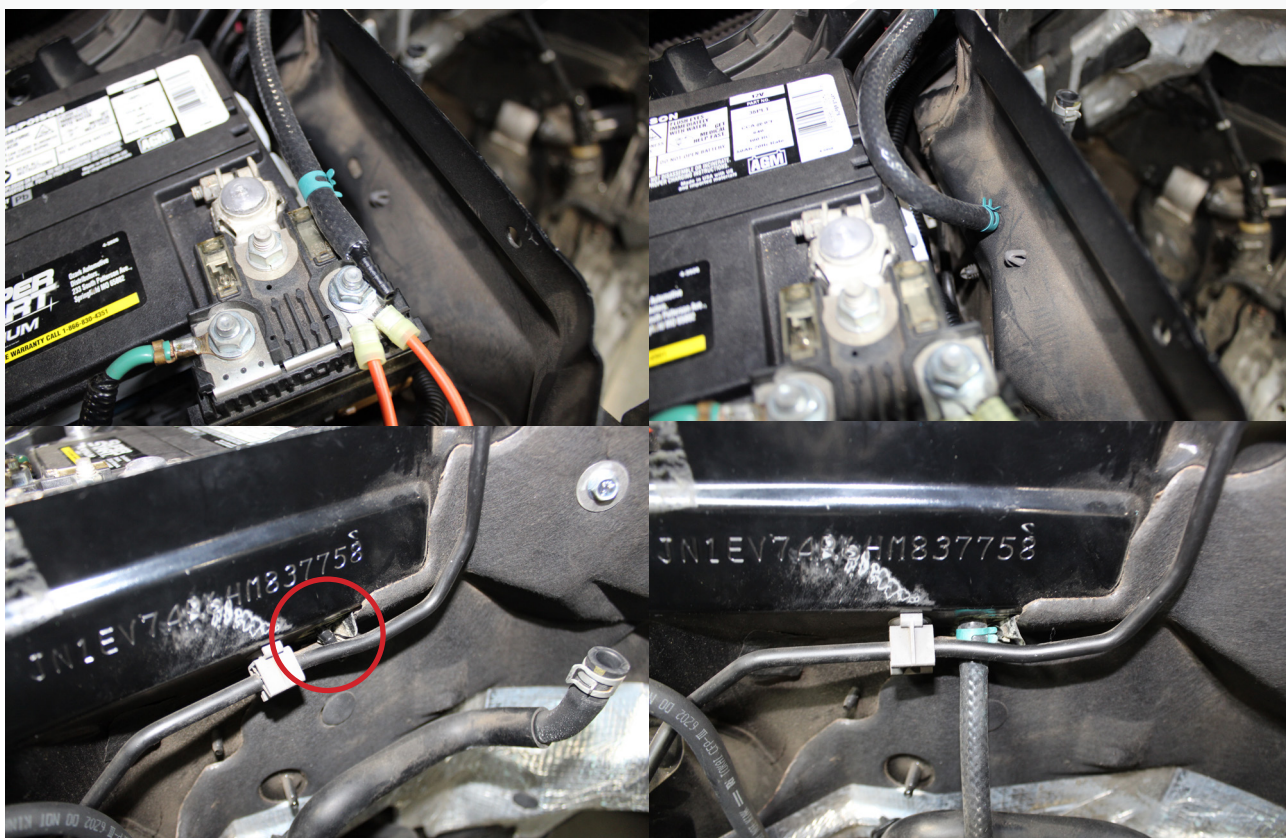
117. Locate the 5mm hose, clamps, and barb fittings. Install one clamp to the hose and then secure it to the hobbs switch.



118. Locate the small hole in the firewall and route the hose towards it and cut it.



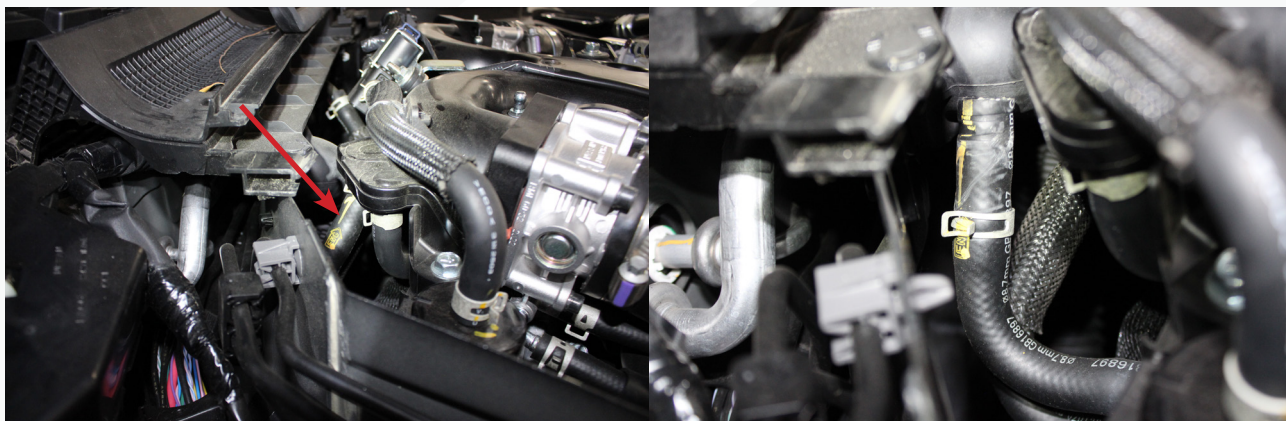
119. Install the straight barb fitting with a clamp and point the other end through the hole. Connect the remaining hose to the barb on the opposite side of the firewall and clamp it.



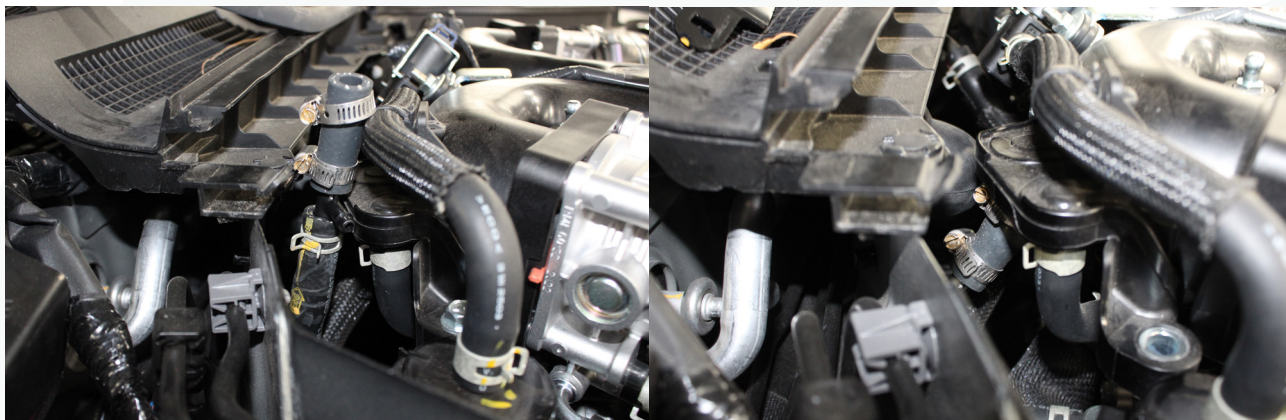
120. The hobbs switch needs to be connected to a boost source. Locate the tee fitting, clamps and small section of hose. Install the section of hose and a clamp on the tee fitting like shown below.



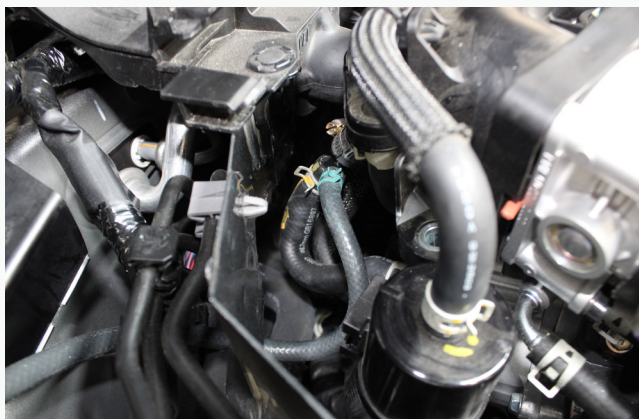
121. On the intake manifold behind the passenger throttle body, disconnect the hose from the intake manifold.



122. Place one more clamp on the small section of hose, then push the open barb onto the hose that was just removed and clamp it. Then install the new hose on the intake manifold barb and tighten the clamp.



123. Connect the vacuum hose from the previous step to the tee fitting and clamp it.



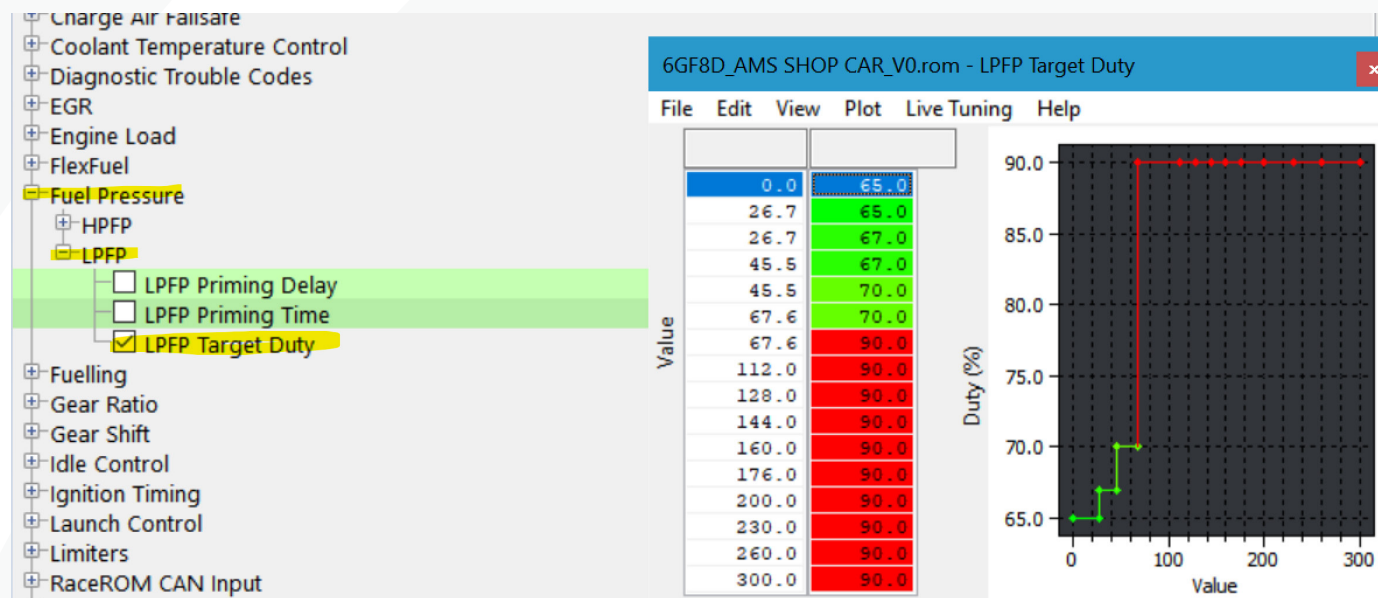
TUNING

124. Be sure the following codes are turned off with the AMS Drop In Fuel System

P025B - Fuel Pump Module Control Range/Performance

P1220 - Fuel Pump Control Module Circuit

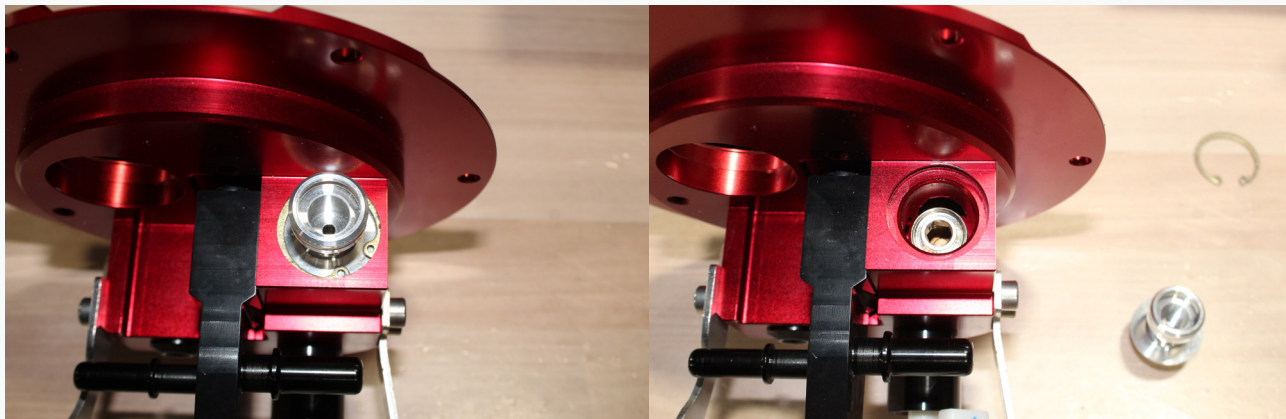
125. Verify LPFP Target Duty is stock. This is important as it can put unnecessary strain on the fuel pumps. Typically, this is modified to get more out of the pump but that is no longer needed in this system as once the hobbs switch is triggered at the preset 10psi the relay will activate and provide the fuel pump with battery voltage which is increase over what the factory controller can output at 100% duty cycle.



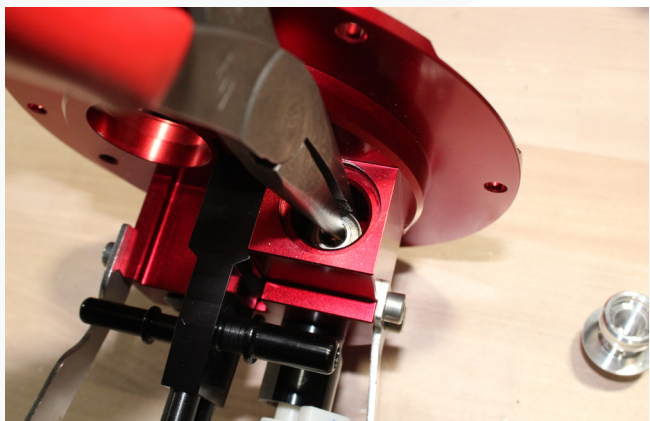
This completes the installation of the Q50/Q60/Z Dual Low Side Fuel Pump System.

CONFIGURING FUEL SENDING UNIT FOR USE WITH AN EXTERNAL REGULATOR

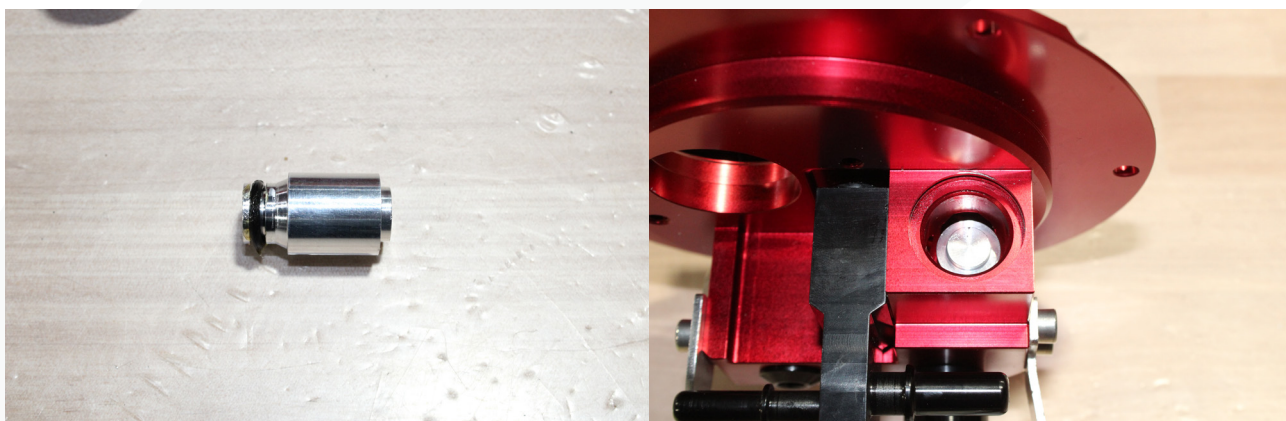
1. Locate the pressure relief fitting on the inside of the top hat. Remove the snap ring and pressure relief fitting.



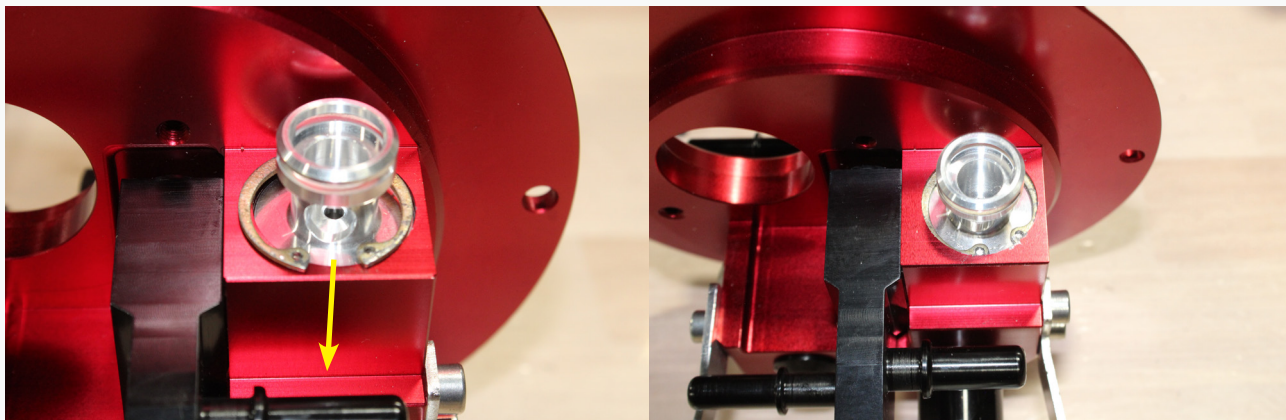
2. With a pair of needle nose pliers, carefully remove the pressure regulator.



3. Locate the provided dummy plug. Place a little lube on the o ring and install it in place of the regulator.



4. Reinstall the pressure relief fitting and snap ring. Make sure the hole in the side is pointing down.



5. Remove the quick connect fitting and 6AN plug from the top of the top hat and install the 6AN to 8AN adpter and the swivel quick connect fitting.



6. Return to the main instructions.