

Z1 370Z BILLET FUEL PUMP TOP HAT UPGRADE INSTALLATION MANUAL



This Installation Manual is intended for the following models:

2009-2020

Nissan 370Z

PROLOGUE:

Study these instructions completely before proceeding to assembly. The installer must have a thorough knowledge of automotive systems operation. If unfamiliar with any of the concepts outlined in this instruction, we recommend the installation be completed by a qualified professional.

WARNING!

Extreme caution should be taken when performing maintenance or performance upgrades to your vehicle. Please observe and abide by any Warning or Caution labels placed on the various components and tools used when servicing your vehicle. If you have any questions regarding installation or the various components included with the Z1 Motorsports 370Z Billet Fuel Pump Top Hat Upgrade, consult with a Professional Mechanic or contact Z1 Motorsports for more information.

PARTS INCLUDED:

Item	Quantity	Description
1	1	Assembled Z1 Top Hat
2	2	Top Hat Rods
3	6	M5 x 6mm Socket Head Cap Screws
4	1	Loctite
5	1	Bulkhead Connector Set
6	24"	Submersible Fuel Hose
7	2	Screw Clamps
8	1	Optional: 90 Degree 3/8" Male Quick Connect ORB to 3/8" Hose Barb
9	1	Optional: AN8 ORB Slim Plug

TOOLS REQUIRED:

- Hydraulic Jack
- (2) 2-Ton (or greater) Jack Stands
- Ratchet
- Ratchet Extension(s)
- AN Wrenches
- Assorted Metric Sockets/Wrenches
- 4mm Allen/Hex Key
- Pliers
- Wire Stripper
- Wire Crimp Tool

SAFETY REQUIREMENTS:

- Always wear safety glasses and any necessary protective garments. If using any fluids, chemicals, or solvents, a respirator is recommended.
- Always turn the ignition to the OFF position and disconnect the NEGATIVE battery terminal.
- Always use properly rated jack stands when working under your vehicle.
- Always keep limbs and parts away from moving drivetrain parts.
- Only operate drivetrain in safe space and well-ventilated areas.

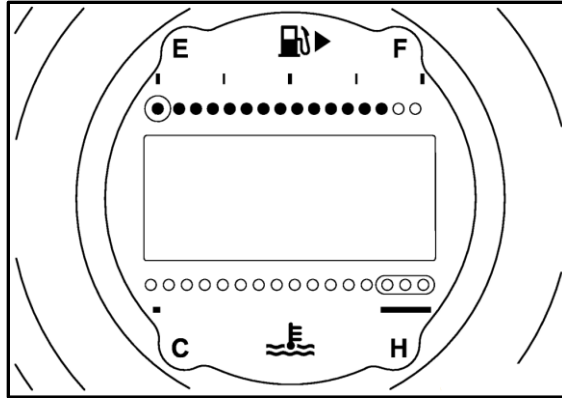
BEFORE YOU BEGIN:

Remove contents from the Z1 Motorsports 370Z Billet Fuel Pump Top Hat Upgrade and verify that ALL necessary hardware is present.

PROCEDURE:

1. Place the transmission in Park position (or in Reverse gear if equipped with a manual transmission). Apply the parking brake.
2. Locate proper jacking points on vehicle's chassis (refer to vehicle's Owner Manual). Raise and support vehicle using jack & jack stands.

3. It is recommended to install this kit with the gas tank NOT full. Nissan recommends at least 2 dots on the gas gauge to be unlit, see picture below.



4. Remove the carpeted shelf floor behind the passenger seat (shown below).

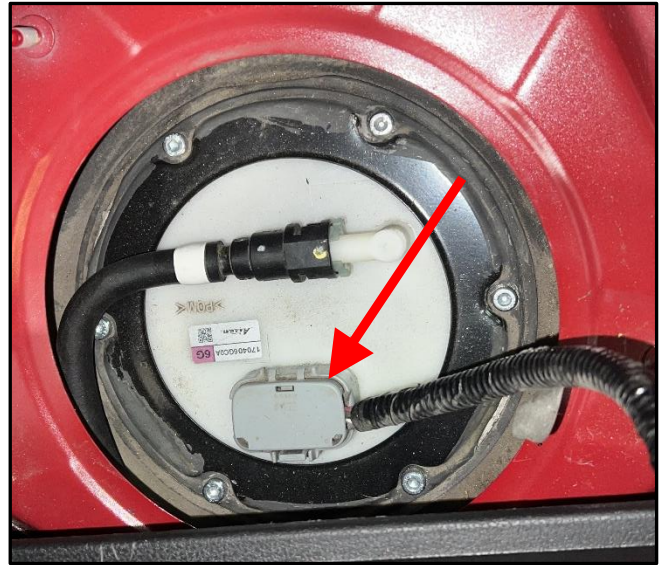


5. Remove the nuts securing the inspection cover to the chassis (shown below). Then remove the cover and set aside. The wiring harness will remain attached through the grommet, just rotate the cover out of the way.



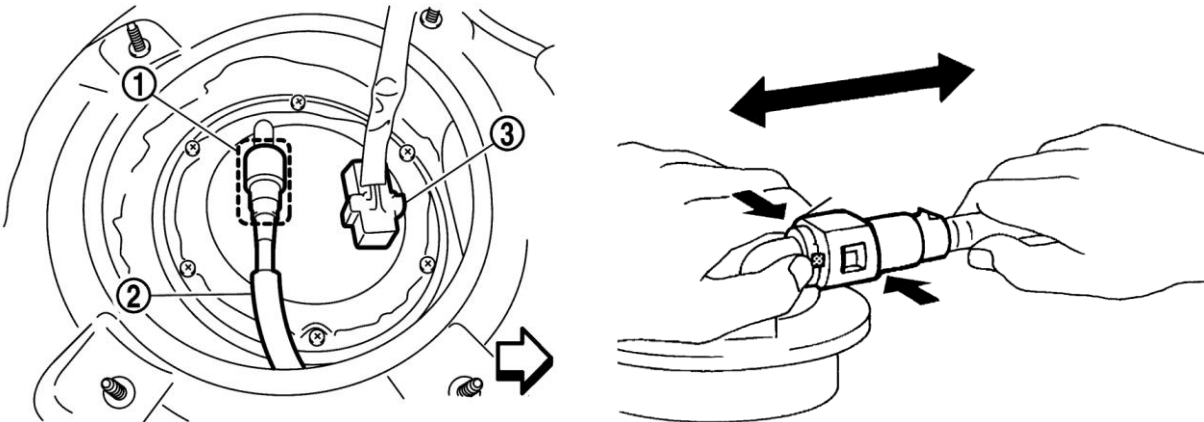
6. It is now time to release the fuel system pressure. There are a couple ways to do this:
 - a. If you have access to CONSULT:
 - i. Turn ignition switch ON.
 - ii. Perform "FUEL PRESSURE RELEASE" in "WORK SUPPORT" mode with CONSULT.
 - iii. Start engine.
 - iv. Wait for engine to run out of fuel and stall.
 - v. Crank engine over two or three times to release remaining fuel pressure.
 - vi. Turn ignition switch OFF.

- b. If you do not have access to CONSULT:
 - i. Disconnect the electrical connector on the top of the fuel tank (shown at right).
 - ii. Start engine.
 - iii. Wait for engine to run out of fuel and stall.
 - iv. Crank engine over two or three times to release remaining fuel pressure.
 - v. Turn ignition switch OFF.



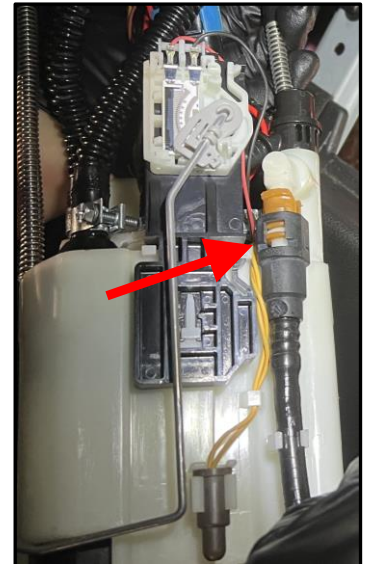
7. Remove the gas filler cap to release any pressure left in the tank.
8. Assure the ignition is in the OFF position and disconnect the NEGATIVE battery terminal.
9. It is recommended to clean the top of the OE fuel top hat and surrounding areas of the tank to prevent dirt or contaminants from falling in when you remove it.

10. Place a rag around the OE fuel supply hose (2) on the OE fuel top hat, and then disconnect the hose by pressing the sides of the retaining clip (1) in and pulling the hose away. If the clip comes off with the hose that is fine, it can be put back on later.



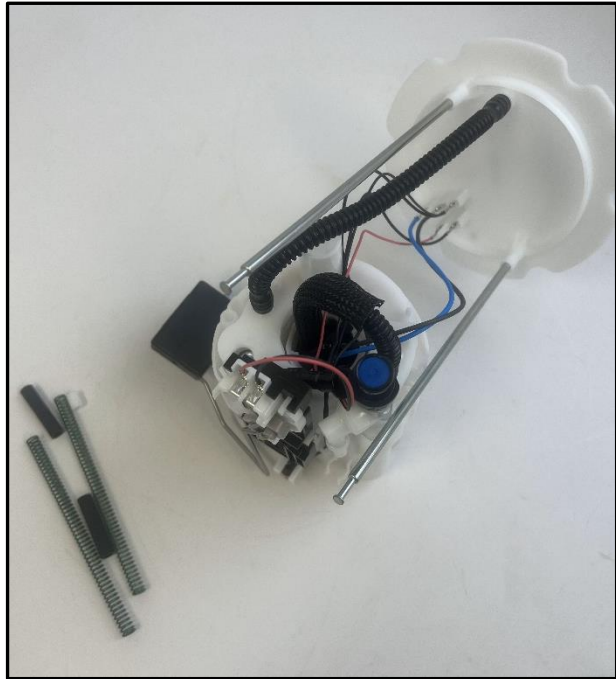
11. Using an 8mm socket, remove the (6) M5 bolts securing the OE fuel top hat to the fuel tank.
12. Carefully lift upwards to begin removing the fuel pump basket assembly. There is an internal siphon hose connected to the basket that needs to be removed. Once the basket is about halfway out, disconnect the siphon hose similar to how the fuel supply hose was disconnected in step #10 (shown at right).

Note: The image at right shows a modified 370Z basket assembly that is fully removed from the car to better show the siphon hose. It is recommended to disconnect the siphon hose prior to fully removing the basket assembly.



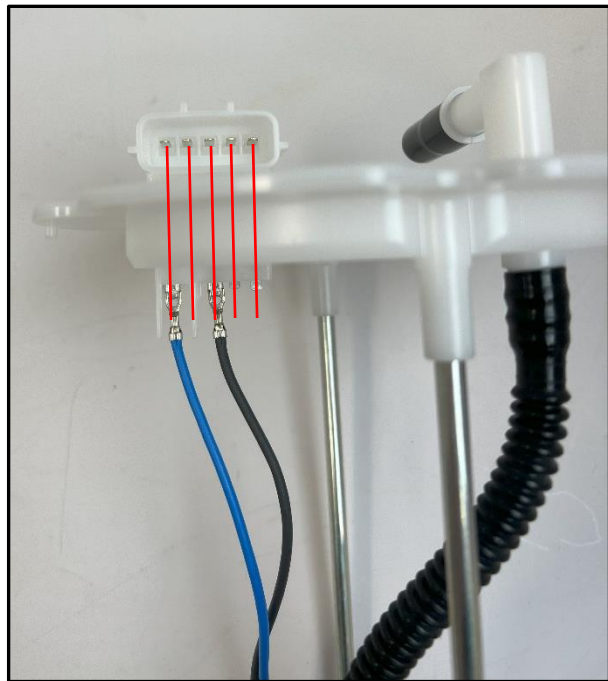
13. Once the siphon hose is disconnected, fully remove the fuel pump basket assembly. Be careful not to bend or damage the floater on its way out.
14. Depending on how much fuel was in your tank, the basket assembly will likely be full of fuel, drain any fuel into an appropriate container.
15. Move to a clean work table to begin disassembly of the OE fuel basket.

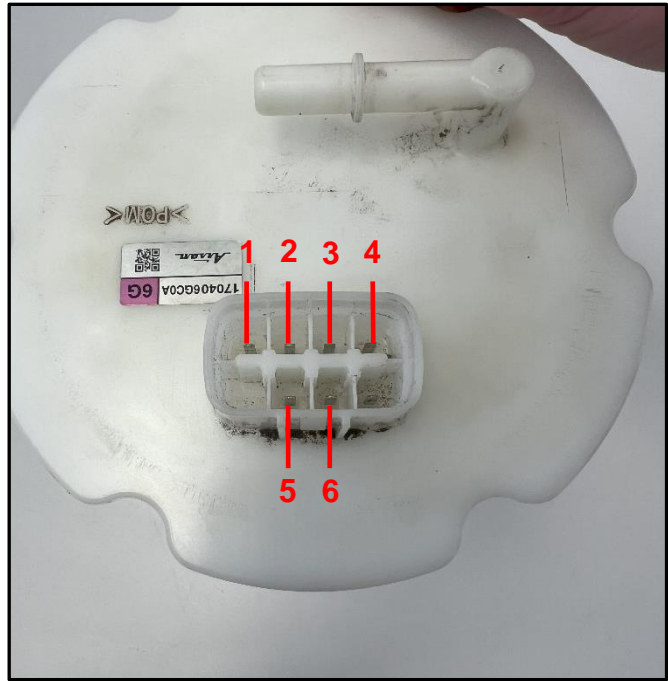
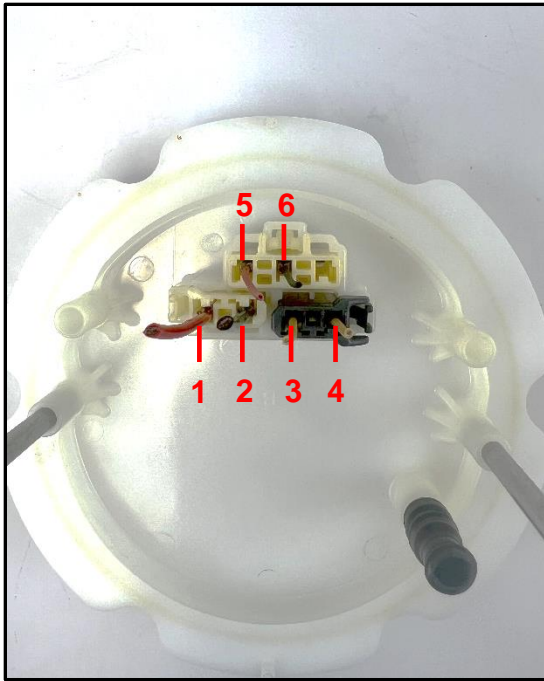
16. Compress the top hat/springs and using a pick or flathead screwdriver, remove the locking retainer on one of the top hat rods (shown below).
17. Once the locking collar is removed, separate the top hat from the lower basket assembly (shown below).



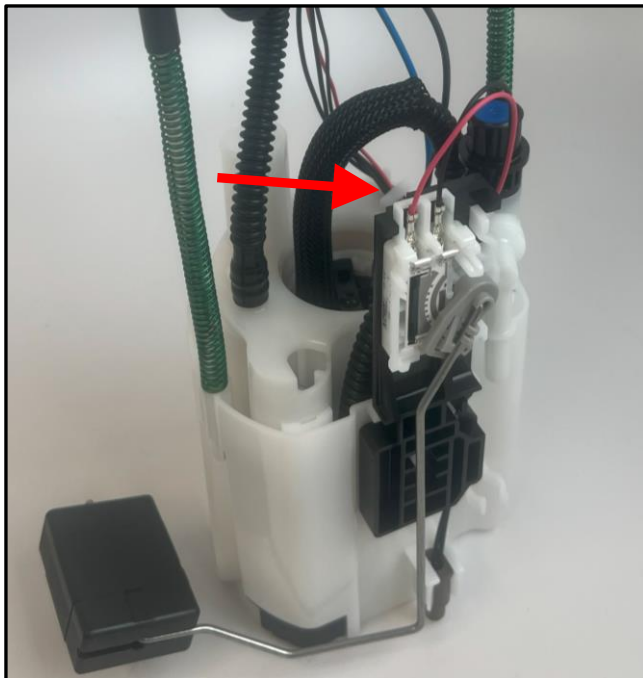
18. There are 2 different styles of the 370Z top hat and they have different style connectors on both the top and underside of the top hat, early model years up to 2015 (production date before 02/2015) and late model years 2015+ (produced after 02/2015). Pictured below is the early style, pictured on the next page is the late style.

Take a picture or note where all the connectors on the underside of the top hat go to AND their position in the connector. For example, in our image/test vehicle below, the thick blue wire goes to the positive side of the fuel pump and is in the top left corner of the connector on the underside, and far left on the top side. The colors and orientation changed over the years. It would be best to use tape or a label of some kind to denote what each wire connects to, but a picture or note at a minimum will work.



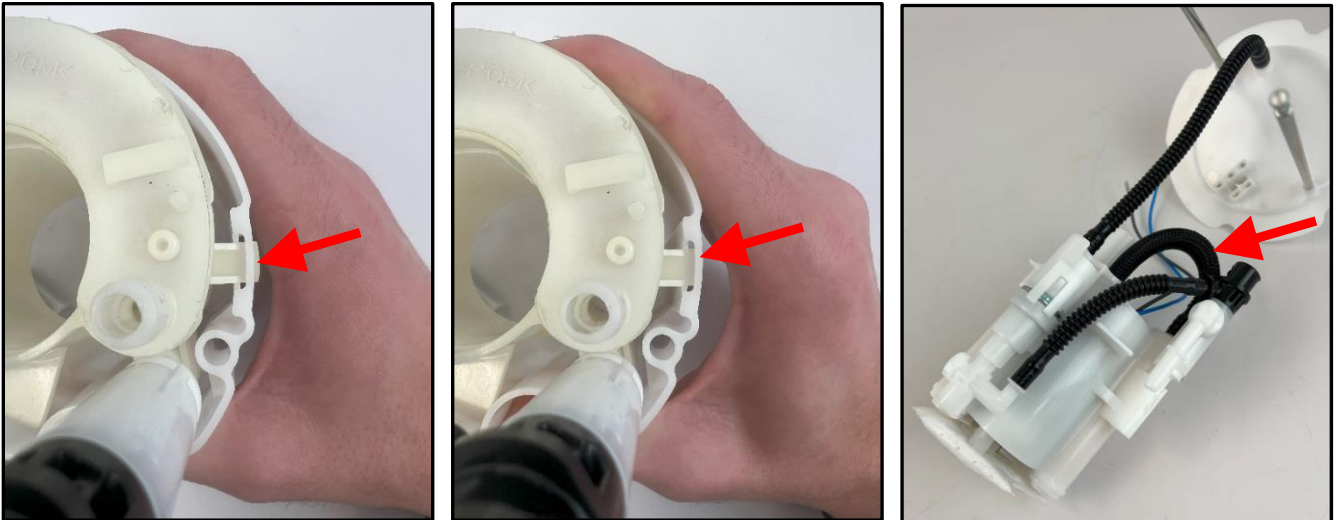


19. Once you have taken a picture/note/labeled the wires and are confident in where each one goes to, cut all (6) wires on the underside of the top hat as close to the connectors/terminals as possible.
20. Remove the wires for the fuel level sensor and fuel temperature sensor from the clip on the top of the fuel pump housing (shown with arrow below).
21. Cut the black corrugated fuel tube connecting the top hat to the lower inner fuel pump housing (fuel filter), the OEM top hat should now be fully disconnected from the lower basket assembly.



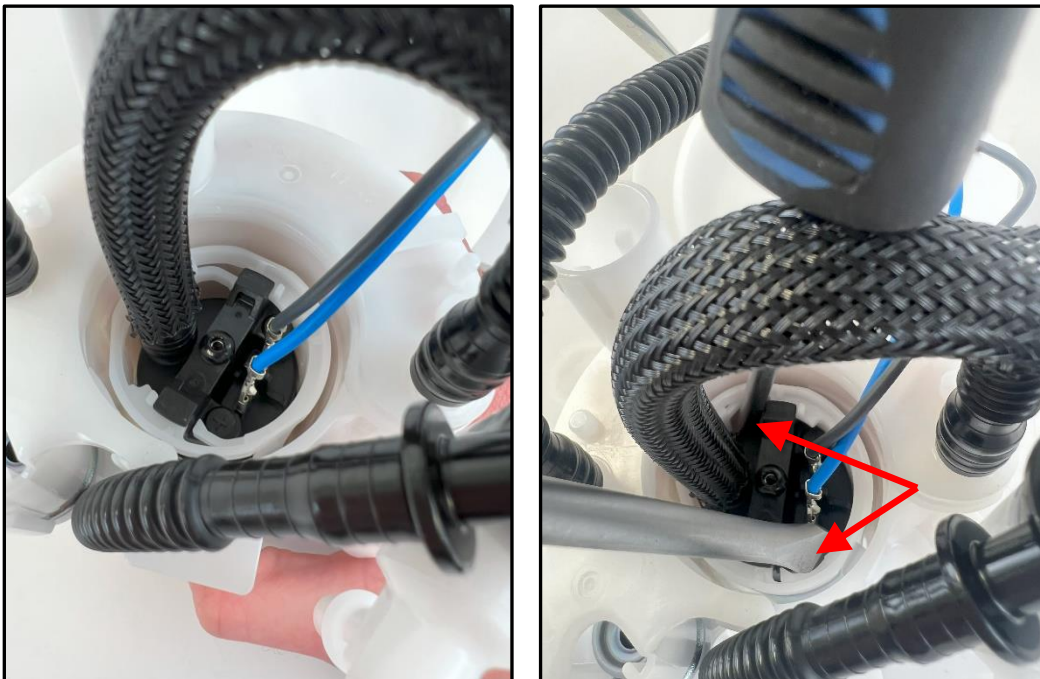
Steps # 22-41 are for those installing an aftermarket fuel pump. If you just purchased the top hat kit but are still using an OEM fuel pump, skip to step # 43.

22. Remove the fuel pump housing from the lower basket that contains the fuel pump by squeezing/wiggling the lower basket to unclip it. Once unclipped, firmly pull up to remove the fuel pump housing.



23. Cut the black corrugated fuel tube connecting the OE fuel pump to the OE fuel filter (shown with arrow in picture above at right).

24. Using (2) screwdrivers or picks, unclip the fuel pump and rotate it counterclockwise to remove it from the housing.

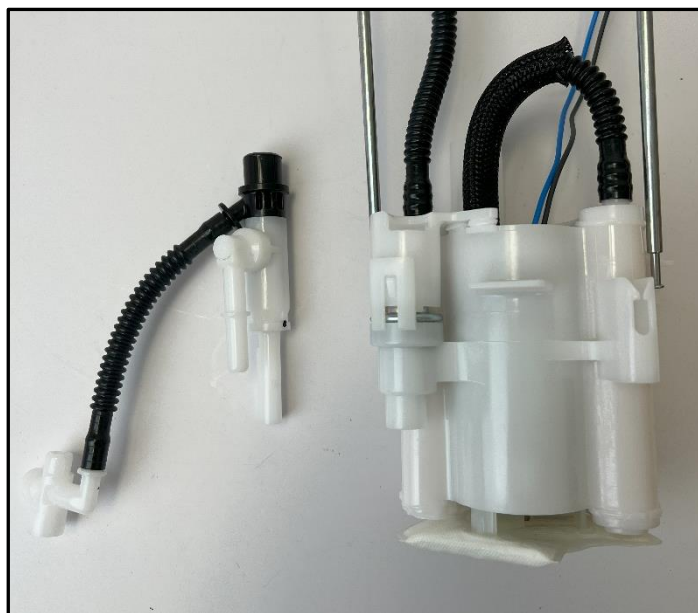


25. You should now be left with just the fuel pump housing/fuel filter and a few components of the venturi system.

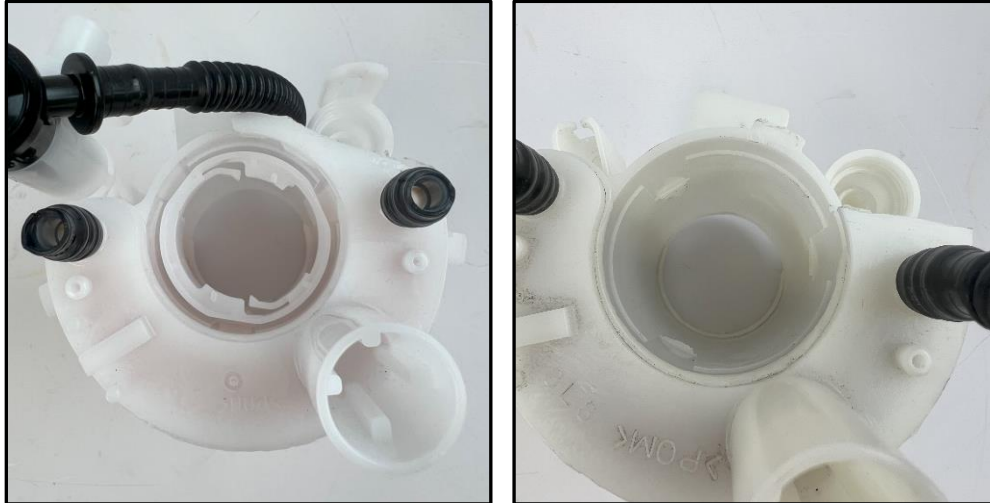


26. Rotate and pull down on the corrugated black hose connecting to the bottom of the OE fuel pressure regulator.

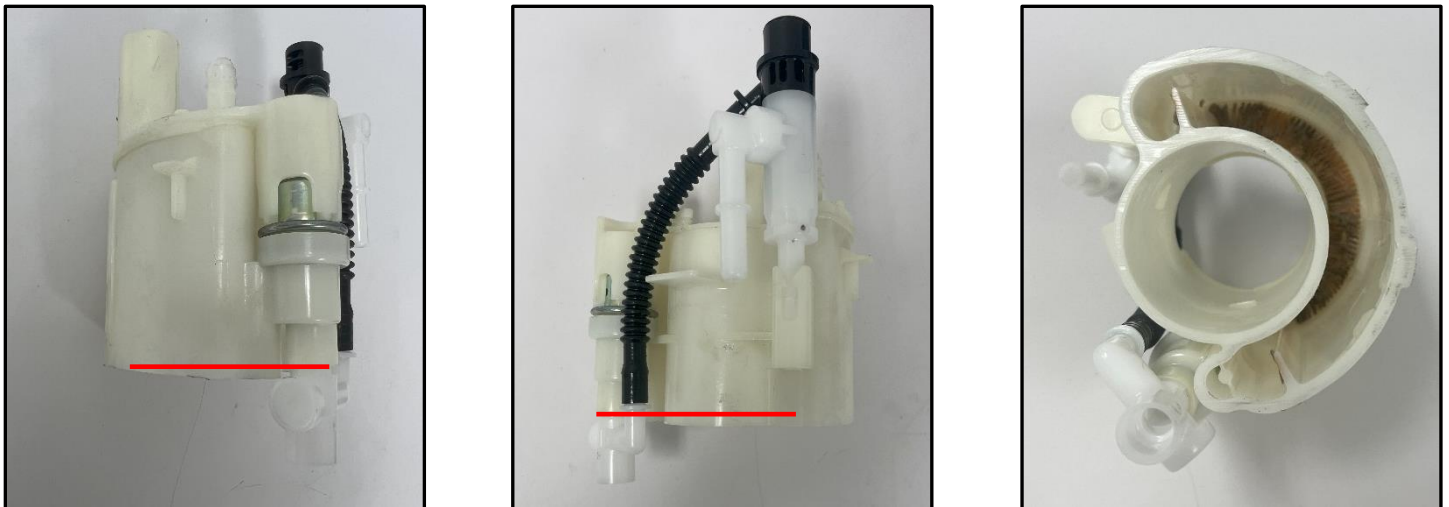
27. Using a pick, separate the plastic clip and pull up to remove the valve and hose (as shown below).



28. For all upgraded fuel pumps: Using snips/Dremel/body saw, cut the retaining clip out of the interior of the fuel pump housing. Using a file or Dremel, smooth out the bore to remove any burrs until it is relatively smooth.



29. For 485/525 fuel pumps (requires external regulator, see instructions on page # X):
Due to the increased diameter of the bottom of the fuel pump, you will need to cut off much more of the fuel pump housing and clean/scrape out the interior OE fuel filter. The housing will need to be cut off up to roughly where the outlet of the OE fuel pressure regulator housing is. Below are some pictures showing an example, with the red line showing where the OE fuel pressure regulator housing ends.



30. At the bottom of the lower basket there is a small black plastic piece that is part of the venturi refill system. This piece directs the output of the fuel that is bled off by the fuel pressure regulator. When you upgrade your fuel pump and increase the amount of fuel the regulator has to relieve at low idle situations, this venturi component can become a restriction causing high fuel pressure at idle. To increase the amount this piece can flow, you must slightly drill out the orifice on the bottom. The orifice is roughly 0.050" when unmodified.

From the inside of the lower basket, push this venturi refill piece out. You do not need to remove it, pushing it from the inside will push it about halfway out, just enough to access the orifice on the side (as shown below).



31. This is not an exact science, as many components affect how well the venturi system will function. If your fuel pressure regulator is unable to maintain low enough fuel pressure at idle, this step will need to be repeated with a slightly larger drill bit. It is better to start small and have to redrill, then to drill too much.

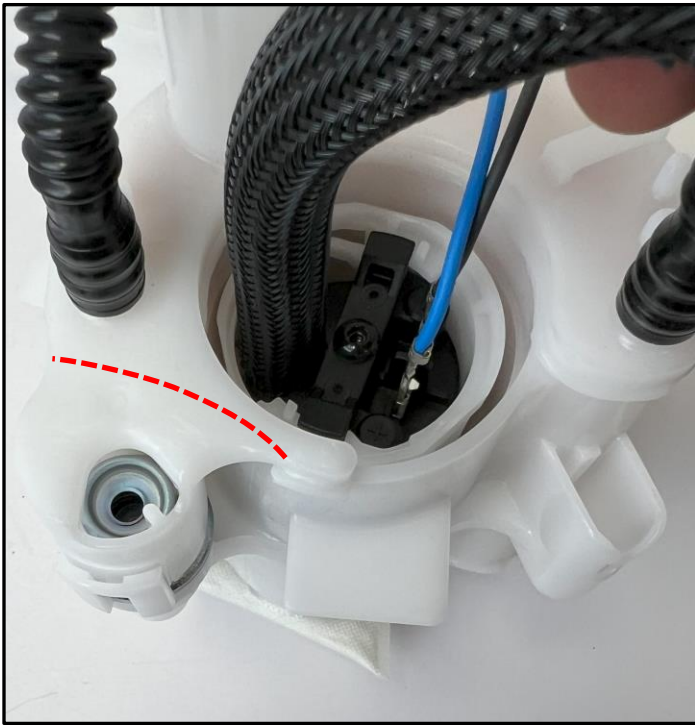
Be careful when drilling as this component is not sold separately and if damaged, will require the purchase of an entire new sending unit/fuel basket. Be careful to make sure the drill bit does not quickly thread into the orifice but is actually drilling. Do not drill through the backside of the piece.

Depending on the size of the upgraded pump you are installing, drill out the orifice to the recommended size shown below:

Pump Size	Recommended Orifice Size	Recommended Drill Bit Size
255lph or 340lph	~0.075"	#49 drill bit = 0.0730", #48 drill bit = 0.076", 5/64 drill bit = 0.0781", 2mm drill bit = 0.0787"
525lph	~0.125"	1/8 drill bit = 0.125", 3.2mm drill bit = 0.126"

Once drilled, reinstall the venturi orifice piece into the lower fuel basket.

32. The OE fuel pressure regulator will need to be removed when using the Z1 regulator. Using a body saw or die grinder, trim the corner of the fuel pump housing where the OE fuel regulator is (shown below).

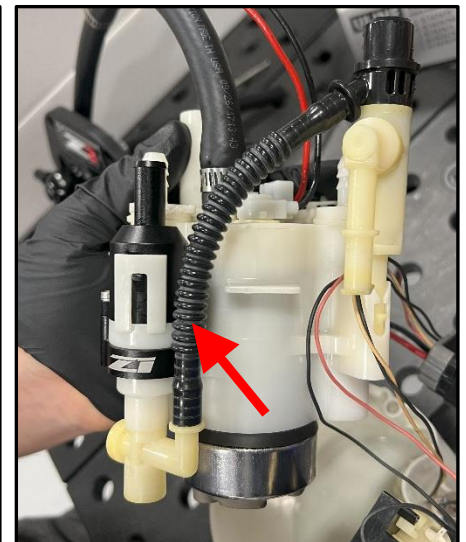


33. Once trimmed, remove the OE regulator (as shown above). Retain the o-rings as they will be reused.

34. Locate the Z1 regulator delete piece, remove regulator delete from bag and separate the two pieces. Install the o-rings onto the Z1 regulator delete (as shown below).

35. Install the larger delete piece into the fuel pump housing where the OE regulator was removed from.

36. Place the retainer on the bottom of the housing and secure the pieces together with the provided M3 bolts (as shown below).

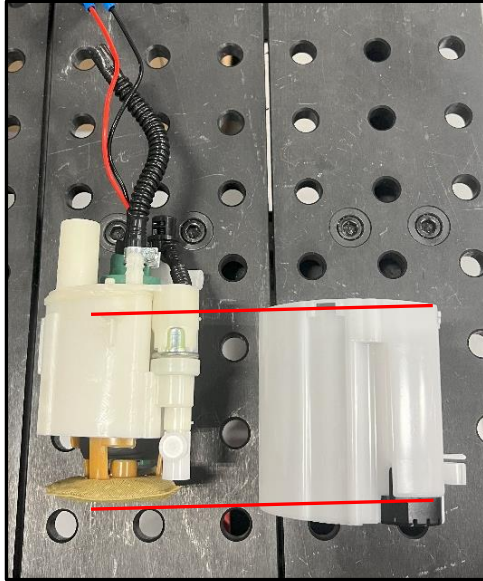


37. For old style baskets that do not have the located clip, make sure the corrugated fuel tube is in-front of the bolt for the regulator delete as shown with an arrow in the image at right above.

38. Once the lower baskets have been modified for your fuel pump/regulator, locate your new fuel pump.

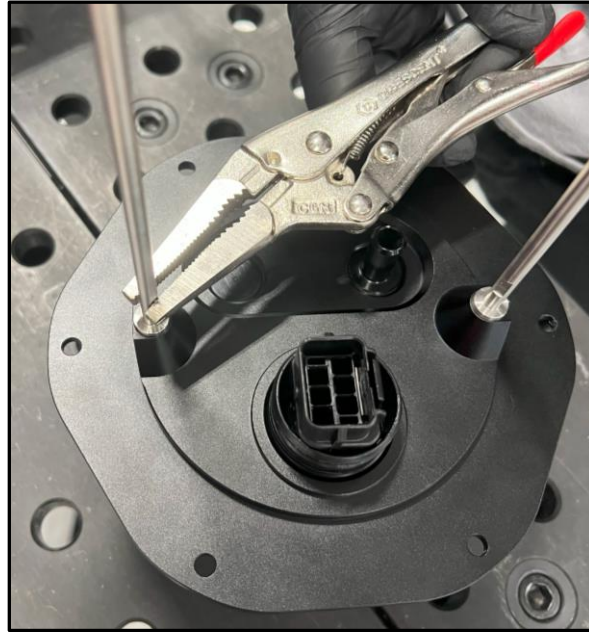
39. Transfer the OE fuel strainer from the OE pump onto the new pump.

40. With either the foam sleeve included with the fuel pump, or the other provided foam sleeve installed onto the new pump, install the fuel pump into the bore of the fuel pump housing. Use of silicone spray is recommended.
41. The fuel pump and strainer will need to be at a certain height and clocking to allow the fuel pump housing to be reinstalled into the lower basket. Reference the pictures below to adjust the height and clocking of your fuel pump and strainer.



42. Install the fuel pump housing assembly with the new fuel pump into the lower basket making sure the locking tabs are seated.
43. Reinstall the level sensor or fuel temp sensor onto the lower basket.
44. Locate the Z1 Top Hat kit. The top hat will be partially pre-assembled.
45. Install the 3/8 (larger) quick disconnect threaded adapter fitting onto the pump side 90° barb fitting.
46. For return style systems: Using an 8mm hex key, install the loose 90° barb fitting into the return port of the top hat just like the preinstalled pump side.
47. For returnless style systems: Using an 8mm hex key, install the 8AN ORB slim plug.

48. Using a 4mm wrench or pliers on the flat spots and with a dab of the supplied Loctite, install the long threaded rods into mounting bosses on the underside of the top hat.



49. Using the provided wire terminals, crimp a terminal onto each wire that was cut in step # 19 and onto the new fuel pump power and ground wires. You will not need the full length of the new fuel pump wires. Hold the top hat next to the basket roughly where it will sit and cut the new fuel pump wires at an appropriate length to reach the bulkhead connector.
50. There are two connectors supplied with the kit, one for inside the tank and one for outside. The outside connector will have red seals on the backside of the connector and a grey locking piece. The in-tank one may have the grey locking piece but **WILL NOT** have the seals. Both connectors should come with the blue locking tab, in the unlocked position. You can tell if it is unlocked if the blue piece is flush with the top of the connector housing. If it is not unlocked using a pick or small pliers, pull the tab into the unlocked position.



In-tank
connector

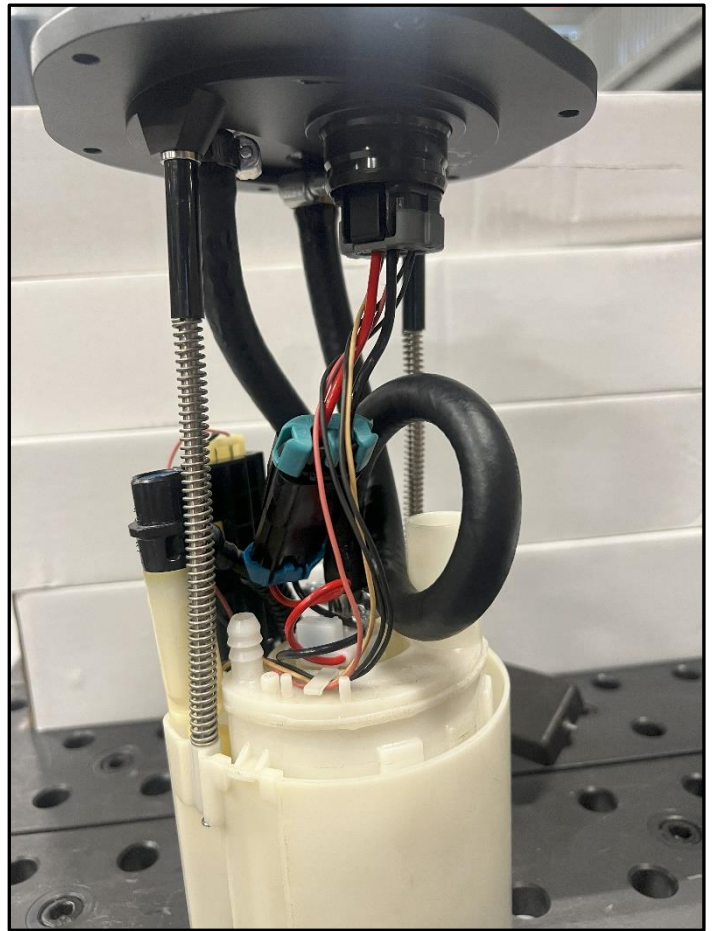


Outside tank
connector

51. Install the crimped terminals through the backside of the in-tank connector, the backside is the one without the blue locking tab. It does not matter which pin in the connector the wires go through as long as the outside connector is wired the same way. The outside connector will have a flipped pinout as it shifts when going through the bulkhead. Make sure to take a note or picture of what wire is connected to what pinout in the diagram above so you can properly wire up the outside connector. This is where the note/picture taken in step # 18 comes into play. Once all wires are installed, press the blue locking tab to lock them in place.
52. Install the OE fuel pump basket springs and collars that came off the OE rods, onto the Z1 rods with the collar first then springs. Then install the Z1 rods with the top hat into the lower basket. Secure with the OE locking collar that was removed in step # 16.
53. Connect the new in-tank connector to the bulkhead on the bottom side of the Z1 tophat.
54. Locate the provided submersible fuel hose and (4) small clamps.

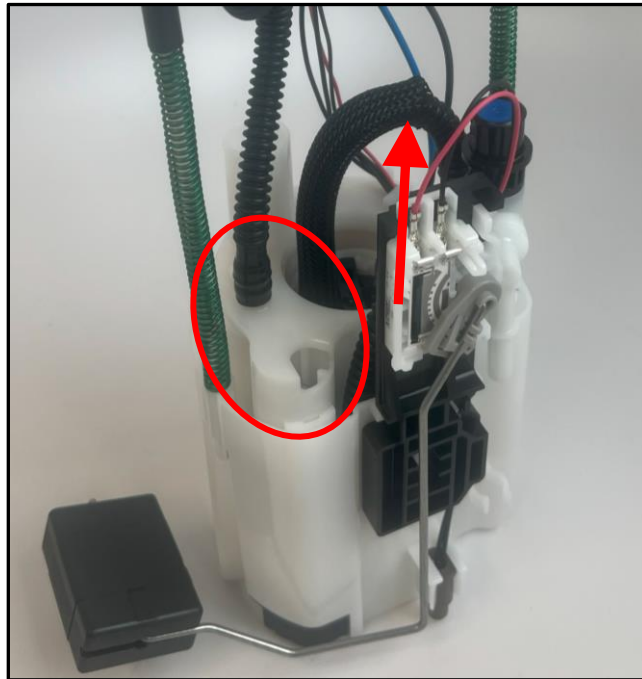
55. For return style systems: Cut a ~14" section of hose that will connect from the fuel pump outlet to the bottom side pump barb on the tophat. The hose is long so it can make a loop between the pump outlet and tophat barb to prevent it from kinking. Secure with a clamp.

Cut another ~7" section of hose to connect the bottom side return barb on the tophat to the top barb of the regulator delete that was installed in step # 36. Secure with a clamp.



56. For returnless style systems: Cut a 14" section of hose to connect from the fuel pump outlet to the barb on the fuel filter similar to how the OE setup was run but with a loop in the hose to prevent it from kinking. This hose is shown below with an arrow on an unmodified basket.

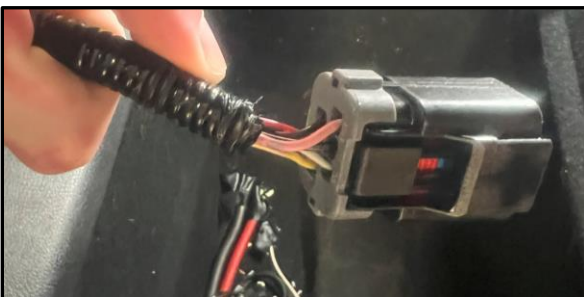
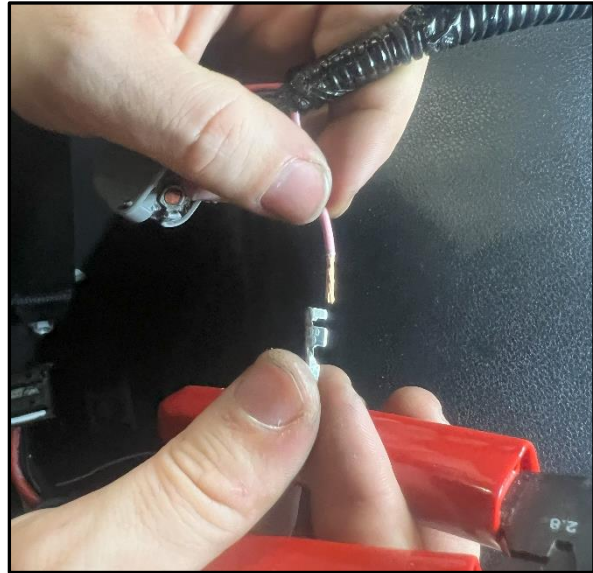
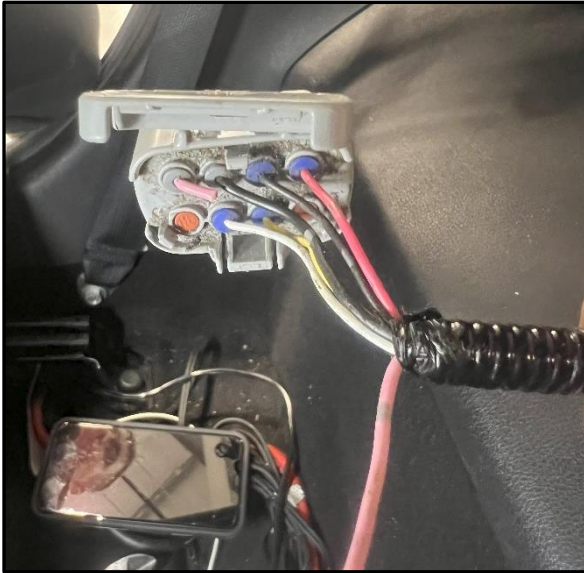
Cut another 7" section to connect from the fuel filter outlet (next to the stock regulator, regulator and hose shown with circle below) to the feed barb port on the bottom side of the top hat.



57. Take the assembled fuel basket over to the vehicle.

58. Cut the wires on the OE chassis side fuel pump connector that was removed from the OE fuel top hat in step # 6b one at a time.

59. Crimp a terminal onto the OE wire. Then, install the terminal into the outside connector through the red seal according to the pinout on page 15. Refer back to your note/picture from steps # 17 and 49 to ensure each wire is connected properly.



60. Once all wires are connected properly to match the connector on the bottom side of the top hat, carefully install the fuel basket assembly into the fuel tank. Be careful not to bend the fuel level sensor or pinch/cut the submersible fuel hose on the fuel tank opening. Make sure to also reconnect the siphon hose from inside the tank.

61. The fuel basket should rest on the bottom of the tank and will need to be compressed a small amount, roughly 5mm, to secure the top hat. Secure the top hat to the fuel tank with the (6) provided M5 x 6mm socket head bolts. Connect the new chassis side harness connector to the Z1 top hat.

62. For 525 pumps you will need to install the included fuel pump relay kit. Refer to the instructions provided with that relay kit.
63. Install your fuel line(s) onto the barb/fittings on the top hat.
64. Check the vehicle for loose tools/items.
65. Reconnect the negative battery cable.
66. Prime the fuel system by turning the key to the on position, but do not start the vehicle.
67. Check the fuel pressure gauge to see if you have fuel pressure and check for leaks. This may take several priming sequences for pressure to build up.
68. Start vehicle.
69. Check for leaks again.
70. Reinstall all other components removed in the previous steps.
71. Properly lower vehicle from jack and jackstands.
72. Take your vehicle for a test drive.

END

Additional Technical Support:
Contact Z1 Motorsports at info@z1motorsports.com
Or call 770-838-7777 between 9am and 6pm ET