



2003 – 2008 Nissan 350z Fuel Pump Modifications

(including G35 coupes, and some G37s)

Fuel Pump Upgrade & Return Conversion Guidelines

Revision 6/3/2015

Sections:

- 1: Important Notice
- 2: Vehicle Preparation
- 3: Depressurize Fuel System
- 4: Fuel Pump Module Removal
- 5: Disassembly
- 6: Idle Pressure Fix
- 7: Return Fuel Conversion
- 8: Fuel Pump Installation
- 9: Reassembly

Section 1: Notice

Gasoline is extremely flammable and dangerous. Professional care needs to be taken while servicing the fuel system.

Proper ventilation needs to be provided around the vehicle while the fuel system is open.

This document demonstrates examples of some typical procedures, and is not intended to be used as installation instructions. A professional installer and the vehicle owner must apply individual discretion for each step of installation to ensure the vehicle is safe to operate. **Special care must be taken to prevent leaks, heat damage to hoses or components, inadequate hose slack between chassis and engine connections, or any other potential hazards.**

Thermal barriers need to be installed between any fuel system component and hose in close proximity to sources of high heat, such as, but not limited to: exhaust manifolds, turbo-chargers, downpipes, waste-gates, and exhaust pipes.

Section 2: Vehicle Preparation

The fuel tank level needs to be below 1/8 on the gauge before opening the tank.

Park the vehicle somewhere with good ventilation.

Set the parking brake firmly.

Disconnect negative terminal of battery.

If the engine is warm, allow it to cool down for several hours.

Section 3: Depressurize Fuel System

OEM automotive fuel injection systems are intended to maintain fuel pressure after the engine is shut off. This means that, unless the vehicle has been sitting for a very long period of time, the fuel system will still be under pressure.

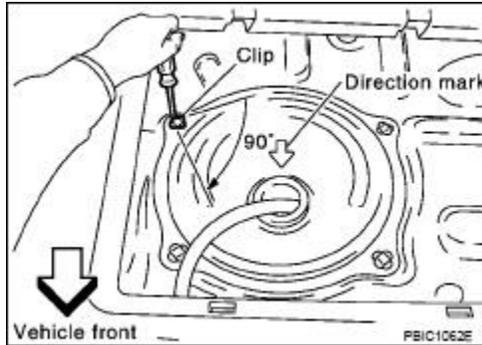
When opening the fuel system, there will be a brief blast of fuel escaping. You need to take care to prevent this from spraying in an unpleasant or hazardous direction. Wear your protective eyewear for the duration of this installation.

It important that the battery remains disconnected while the fuel system is open. Some vehicles will seemingly unpredictably charge the fuel system even with the ignition off. While this is not typical of current Nissans, removing battery power is a good habit to build.

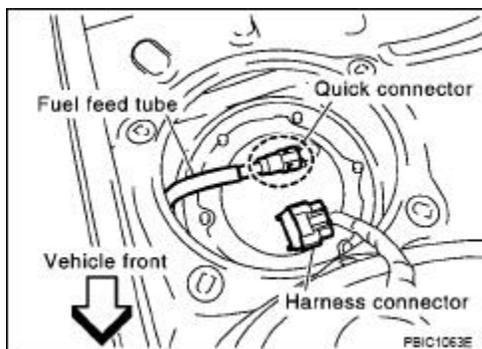
Section 4: Fuel Pump Module Removal

The 350z fuel pump access panel is located in the compartment behind the passenger seat. Remove the floor of the compartment by popping it up in the front and pulling it out. There will be a sheet of sound deadening material to set aside. In a G35, the access panel is underneath the back seat.

When you reach the access panel, rotate the 4 clips 90 degrees clock-wise.



Disconnect the harness connector and the fuel feed tube connector. Have towels ready to absorb fuel from the connector when it is removed. **THE FUEL MAY STILL BE UNDER PRESSURE AND SPRAY OUT WHEN DISCONNECTED. PROTECT YOURSELF AND YOUR VEHICLE INTERIOR.** Excess fuel drip will remove the corrosion protection coating on the top of the fuel tank. You can cable-tie a dry rag to the fuel line connector to collect remaining fuel as you push it aside to work in the fuel pump area.



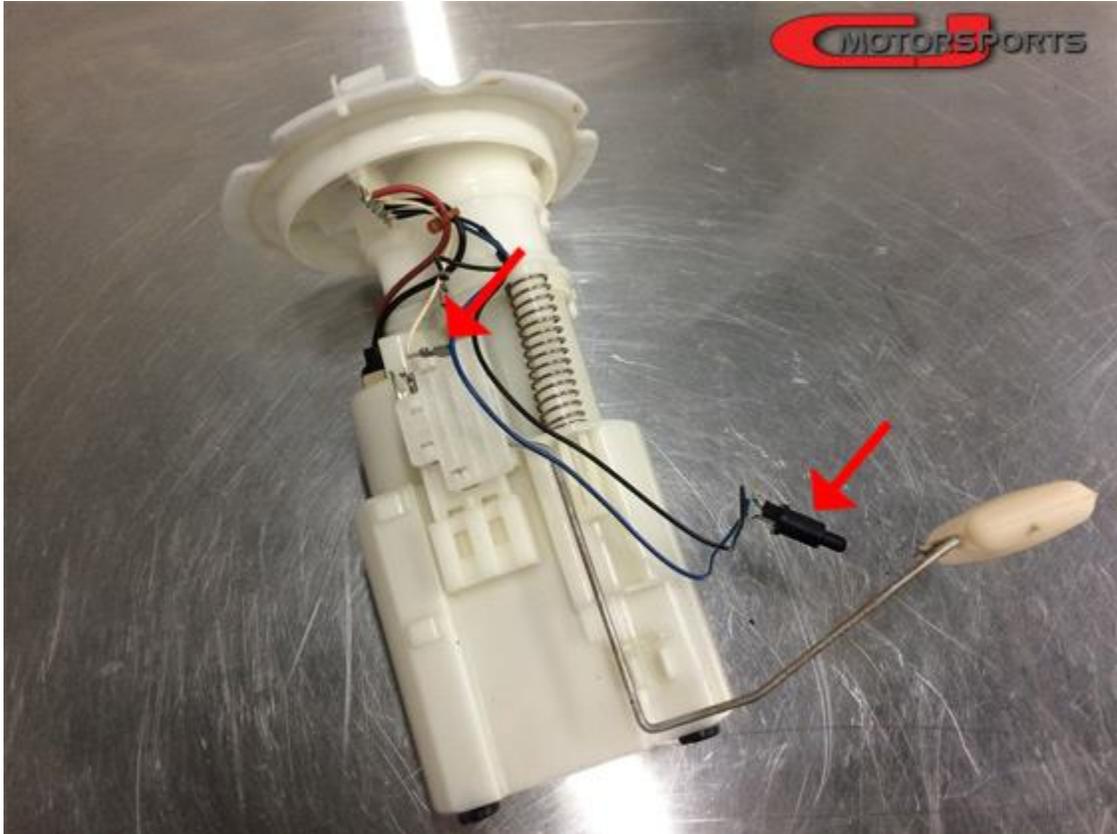
Remove all 6 fuel pump retainer screws (usually 8mm) and set aside the metal retainer ring. Gently lift the pump assembly up an inch or so and remove the tank seal o-ring. You can gently slide the O-Ring over the top of the assembly with very little stretching by using care. The O-Ring may expand and become difficult to reinstall if it comes in contact with gasoline.

Gently navigate the assembly out of the fuel tank. Handle with care to prevent bending or damaging the fuel level sensor sending unit or float arm. Be aware of the fuel siphon hose that is connected to the fuel pump assembly on the side that faces the rear of the vehicle as you lift it out. When the assembly is a couple inches out, you can remove the siphon hose and drop it into the tank. If needed, you can rotate the assembly 90 degrees counter-clock-wise to ease removal of the siphon hose.

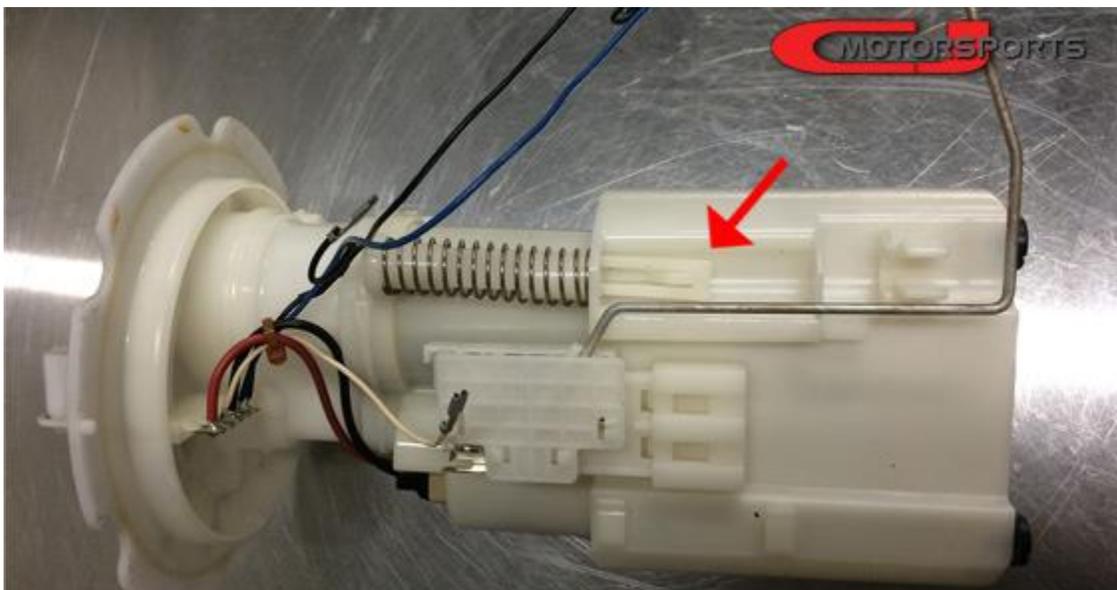
Place a towel under the pump assembly before carrying it away from the gas tank opening to prevent spilling gasoline in the vehicle interior.

Section 5: Disassembly

Using a small tool, remove the black and white wires from the level sensor, and unclip the fuel temperature sensor from the canister. The level sensor is fragile; use care to gently work the terminals off.



Lift the retaining tab and slide the canister off the module. Take care not to lose the large springs, and set them aside for later use.



Section 6: Idle Pressure Fix

Installing a high-output fuel pump will increase bypass fuel volume. Increased bypass fuel volume will generate excess bypass pressure due to restrictive venturi jet-pumps integrated into the bypass channels. During moments of low fuel consumption such as engine idle, excess bypass pressure will defeat the fuel pressure regulator and cause fuel system pressure to rise above the regulator setting.

If you upgrade the fuel pump without performing this modification, your fuel pressure will spike at idle, regardless of what regulator or setting you use. For vehicles running the factory fuel pressure regulator, the regulator itself will also require modification in this section.

To lower bypass channel pressure, one of the jet-pumps is accessible and easily modified by enlarging the venturi orifice. The goal is to enlarge this orifice as little as possible, while still achieving your target idle pressure setting. Gratuitously oversizing the orifice will lower bypass system pressure too much, defeating the function of the venturi jet-pumps.

Locate the swirl jet-pump on the bottom of the module canister. Carefully extract it with small pry tools by evenly applying downward pressure until it snaps out.



With the jet-pump removed, use a small drill to enlarge the pinhole outlet.

The pinhole is about 0.050" diameter from the factory. For a 255lph pump, about 0.080" is a good starting point. For larger pumps, 0.100 – 0.110" is a good starting point. Each installation may differ due to various factors. If your pressure regulator is unable to control fuel pressure at engine idle when your fuel system work is completed, this step will need to be revisited to further enlarge this jet-pump outlet.

When drilling, take special care not to drill all the way through the component. Sometimes the drill will try to "thread" into the plastic rather than drilling it. If it gains traction while your drill is spinning, it may pull the drill in quickly and push it through the opposite end.

Before and after enlarging for 255lph pump application:



Reinstall the swirl jet-pump component by pressing it back in to its home until it snaps into place.

If reusing the factory regulator, remove it following the guidelines in the Return Fuel Conversion section. With the regulator removed, drill its outlet orifice larger as well. 7/64" or about .110" has worked well for 255lph pumps. Reinstall the regulator after modification and replace its cover.

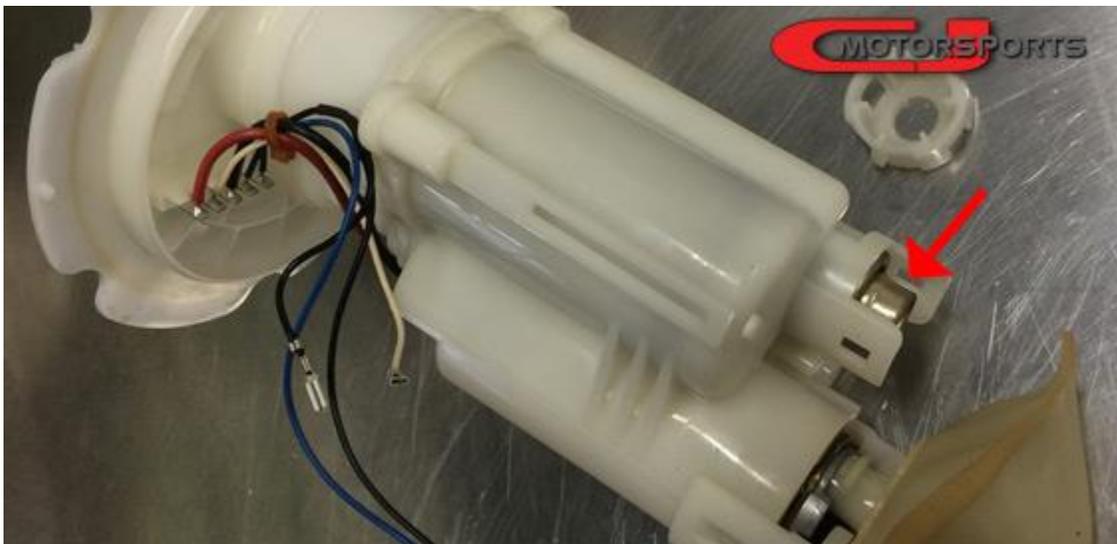


Section 7: Return Fuel Conversion (with CJM Return Correction Kit)

Extract the fuel pressure regulator by removing its cover. Gently spread the clip tabs until it can be released. Use extra care; these tabs are brittle and easy to break. Spread them as little as possible.



With the regulator exposed, pull it downward to remove.



Install the fuel pressure regulator retaining cap to the CJM regulator delete fitting and thread in the elbow fitting.



To tighten, you can hold the delete fitting by its largest diameter. This is not a sealing surface and any marring of the part will not affect its sealing. Tighten the elbow fitting with an adjustable wrench. This connection does not need to be extremely tight, just tight enough to get a decent seal. No thread sealant is necessary.



Install the supplied hose and clamp as shown. Slide the clamp halfway down the hose, push the hose onto the elbow fitting, and slide the clamp down to the end to tighten. It's a snug fit to get the clamp in there. Try and orientate the clamp as shown for vertical clearance.



Install the plastic spacer and o-ring from the factory regulator onto the delete fitting.



Install the CJM supplied o-ring into the regulator cavity.



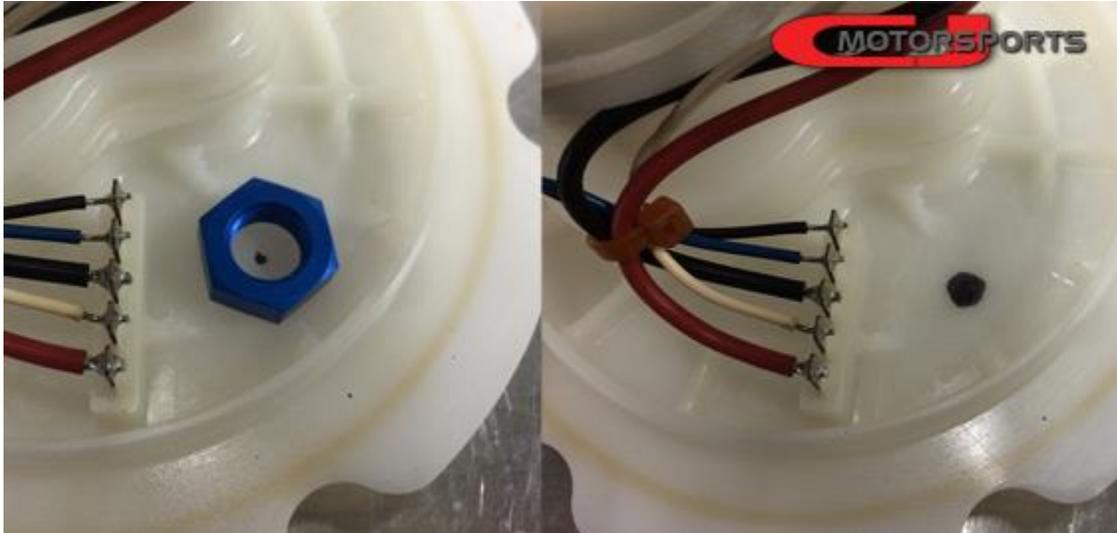
Install the delete fitting assembly into the cavity, making sure both o-rings stay in place. Check that the cap is secured in place by both locking tabs.



Using a rotary tool, grind away the structural webbing behind the electrical connector on the bottom side of the tank flange. Take care to make this area relatively smooth and flat to help ensure good sealing later.



Place the bulkhead nut in the newly flat area. Make sure there is enough flat area around it for a socket to clear the webbing. When satisfied, mark the location with a marker, remove the nut, and darken the location marker.



From the top you will see the location marker through the translucent plastic. Place a seal washer there to verify there is ample clearance around it. Add a location marker to the top side so that it is easier to see when drilling.



The best way to drill this is using a stepped drill as shown. Typical drills have a helical flute (twist) that will attempt to thread into the plastic rather than cutting it after initially piercing the second surface. This makes it easy to break or chip the plastic rather than drilling. A step drill uses vertical flutes, so it does not attempt to thread. If you do not have access to a stepped drill and will be using standard drills, you will want to start very small and incrementally enlarge the hole with several steps.

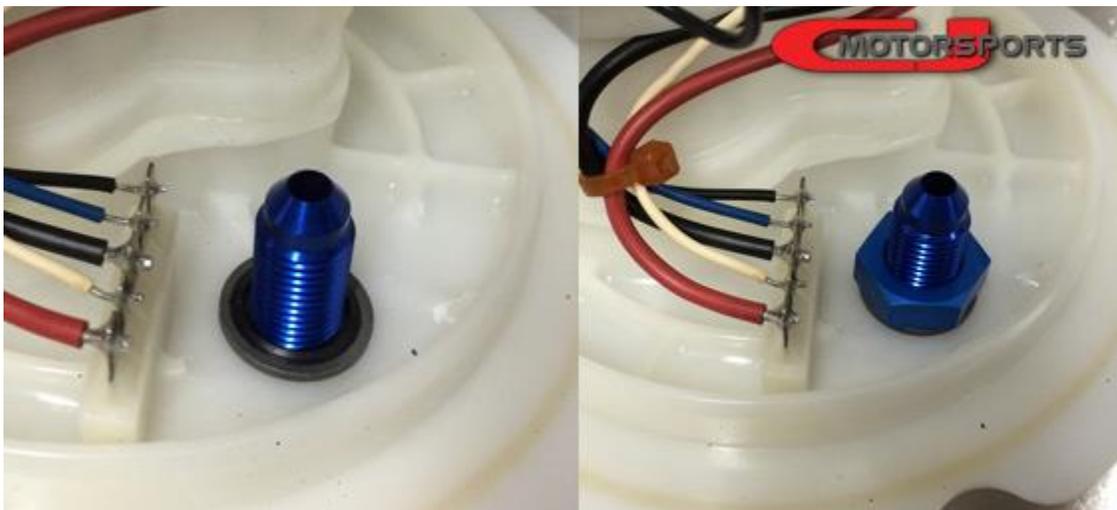
Mark the 7/16" step on the drill so you know where to stop. You will use this step to make the hole 7/16" diameter.



Install one of the seal washers to the bulkhead fitting, and insert the fitting into the tank flange.

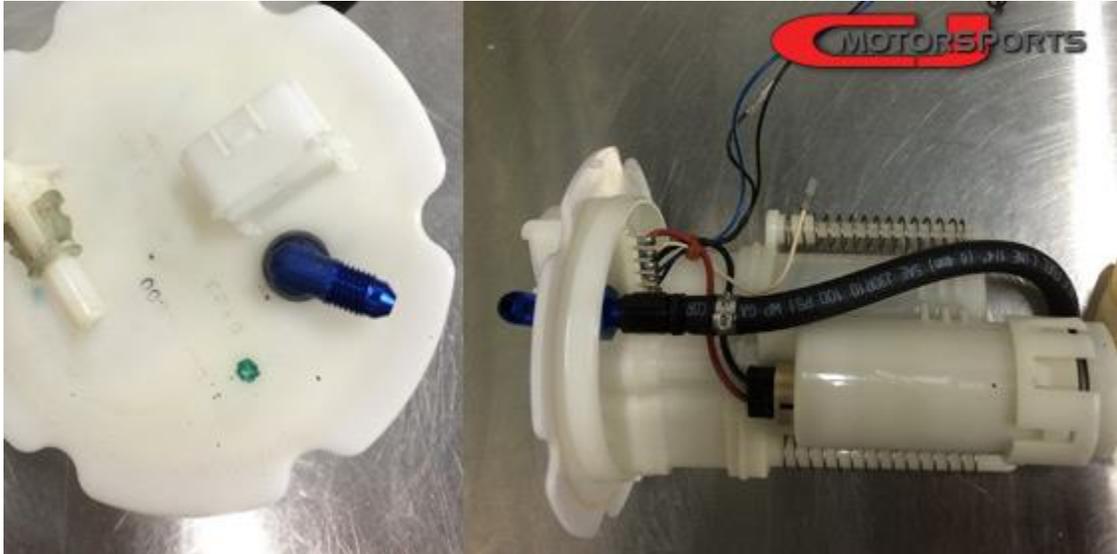


Install the second seal washer to the bulkhead fitting on the inside of the tank flange, and thread on the bulkhead nut.



Clock the bulkhead in the desired direction, and tighten the nut. The nut usually fits an 11/16" socket, or an 18mm will work. Hold the bulkhead in the proper direction with a 7/16" or 11mm wrench. This is cumbersome to hold while tightening. When tight, you should not be able to rotate the bulkhead fitting by hand.

Connect the hose fitting to the bottom of the bulkhead. Again hold the top of the bulkhead with a wrench while tightening the hose end. The hose end usually fits a 9/16" wrench.



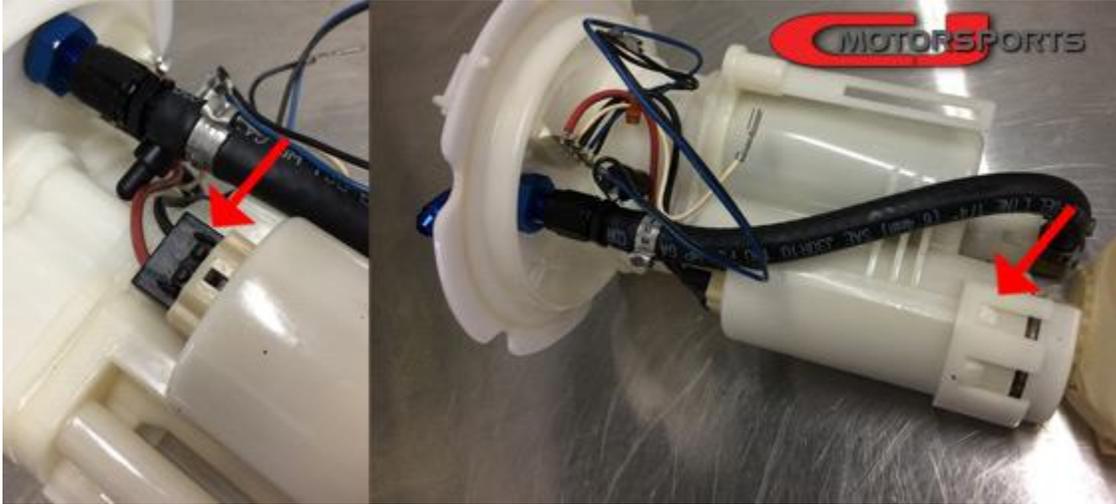
Lastly, recommended but not required, is to trim some of the structural webbing shown to improve hose clearance when reassembled.



Section 8: Fuel Pump Installation

The following guidelines will demonstrate typical procedures for installing a Walbro 255 GSS342. Some aftermarket fuel pumps will directly replace the factory one. Others will require further modification.

First, remove the factory fuel pump by removing the electrical connector and retaining cap.



Push the fuel pump out by applying downward pressure to its connector receptacle. Place the fuel pump output bushing onto the new fuel pump.



Many high output fuel pumps will be taller than the factory pump. In this case, you will want to make the pump as short as possible to assist reinstalling the retaining cap.

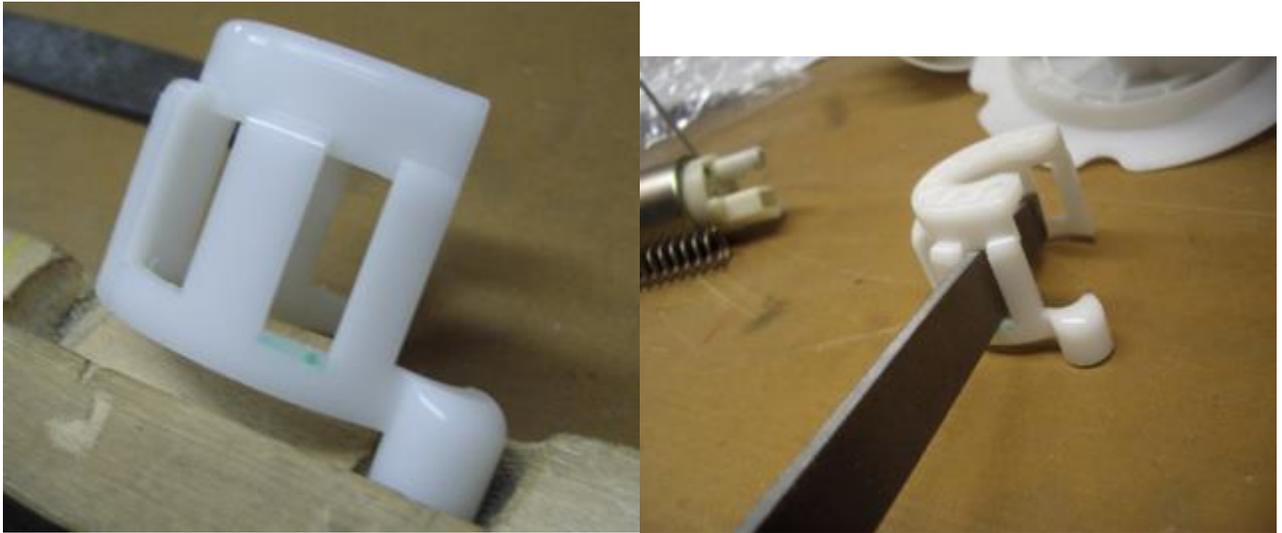
Carefully remove the vertical tabs on the bottom of the pump to reduce its height under the retaining cap. It is best to remove these with a rotary tool or file. Cutting them off may cause the material to chip away deeper and further than you want. If the floor of the pump breaks, the pump might be destroyed. Avoid plastic shavings entering the pump when removing material.



Carefully remove the fuel pump pickup from the factory fuel pump by using small pick tools to extract the metal retainer ring. Replace the fuel pump pickup to the new pump or install a new pickup. Install the metal retainer. Test fit the fuel pump into the housing by inserting the output barb into the receptacle of the pump housing and aligning the electrical connector.



Check the fitment of the fuel pump retainer cap. With some pumps, you might find that it still needs modification to secure the taller pump. File down the example areas evenly until you are able to snap the fuel pump retainer back in place. When complete, plug in the electrical connector.



For this example Walbro 255LPH GSS342, no modification to the retainer was necessary after removing the vertical tabs on the bottom of the pump.

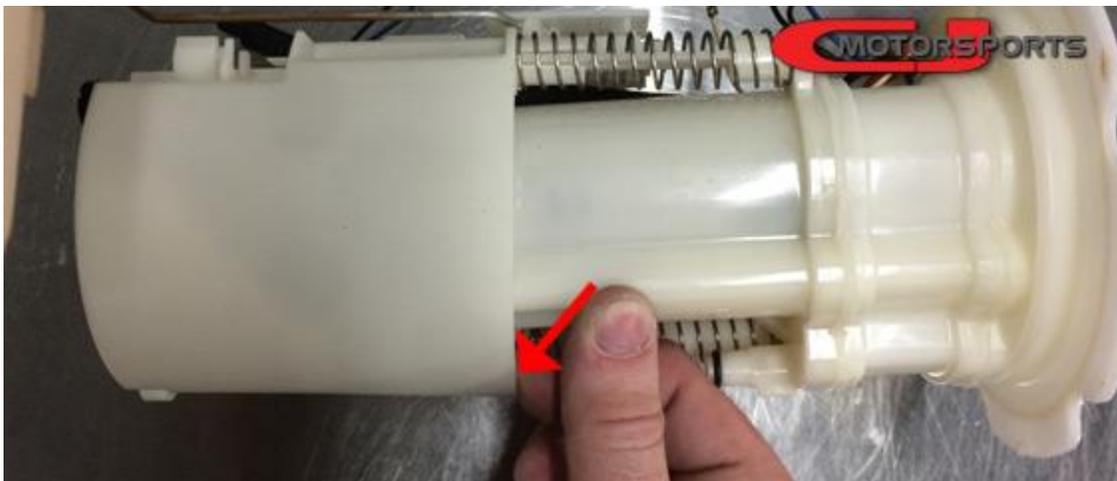


Section 9: Reassembly

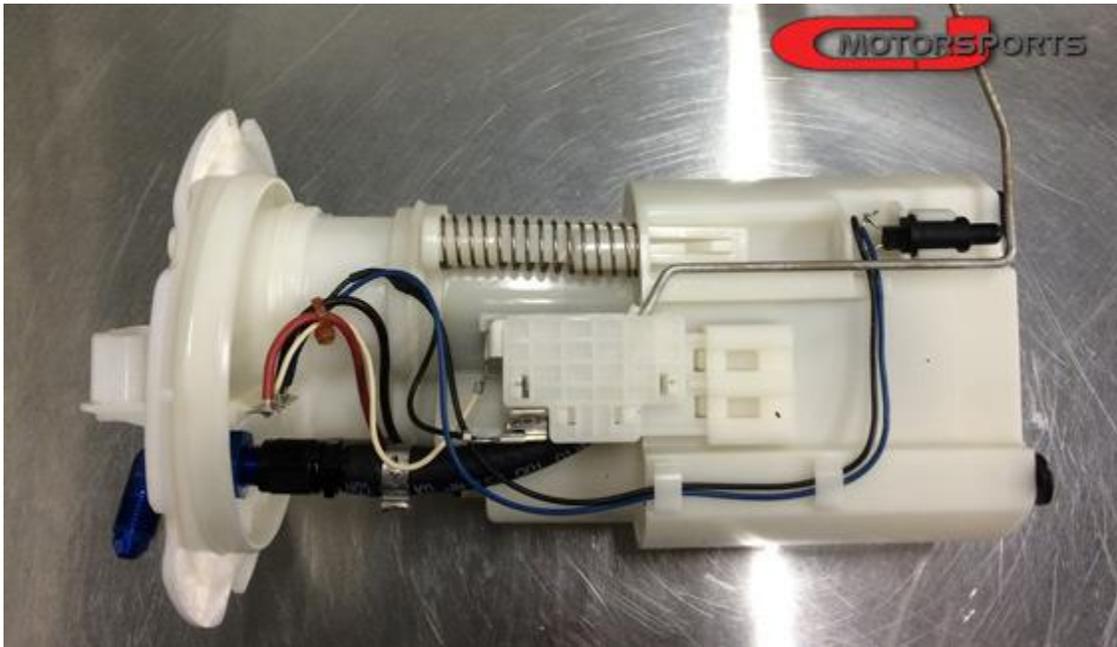
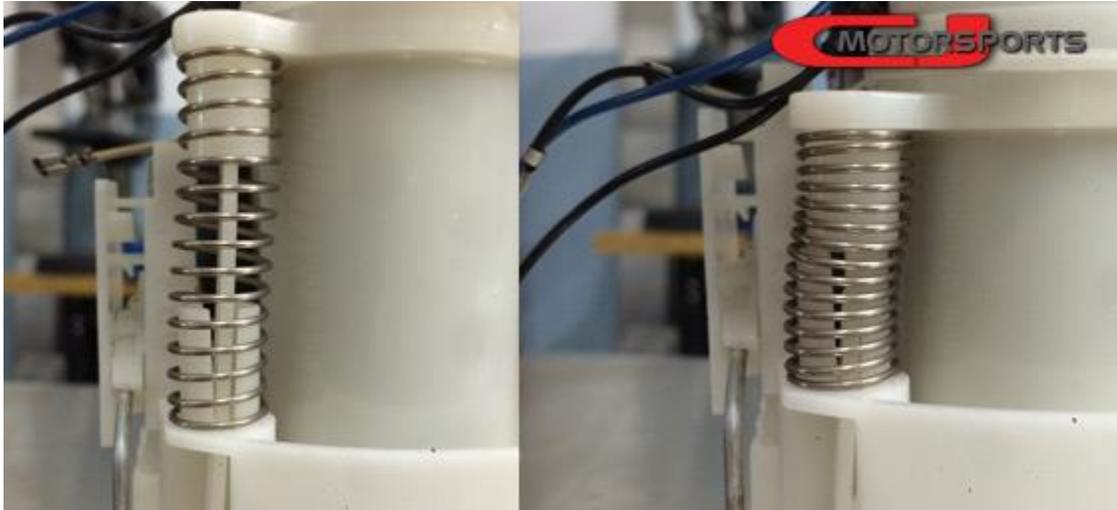
Replace the springs to the housing. Carefully align the canister and reinstall it to the fuel pump module.



Compress the assembly until it snaps into the place. You may find that you need to lightly pull outward on this area of the canister to allow it to compress into position without interference.



Verify that the pump module easily travels its full range of vertical compression:



When reinstalling the fuel pump module to the vehicle, remember to reconnect the in-tank siphon hose, and attempt to adjust its slack away from level float interference.

The level sensor faces forward with the float arm facing inward.

Verify the tank seal o-ring is properly in place.

Reinstall the metal retaining ring using the 6 factory supplied screws. **DO NOT USE** aftermarket screws. If you use longer screws that bottom out in the threaded holes, they will pierce through the thin sheet metal beneath them, and the fuel tank will leak fuel from these screws threads.