



CZP Fuel Rail & Return Kit - Nissan 350Z & Infiniti G35 Coupes Installation Guide

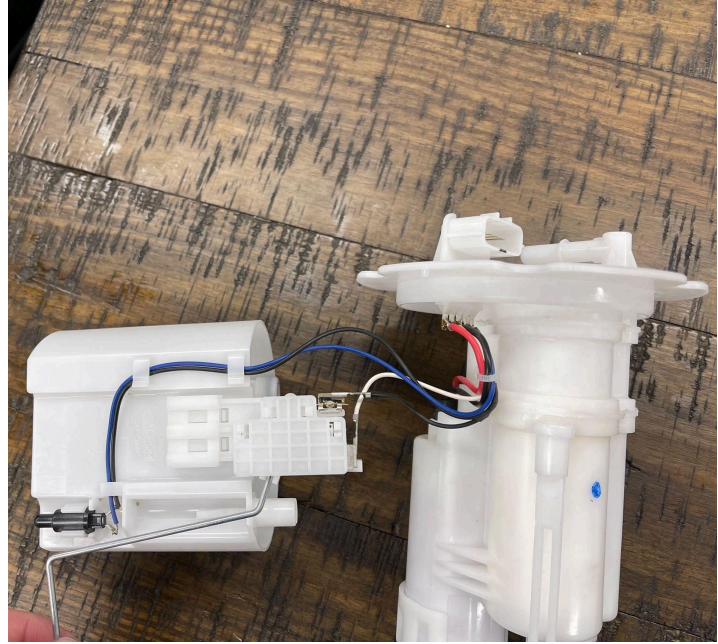


Thank you for your purchase of the CZP 350Z/G35 Coupe Fuel Rail & Return Kit. Please make sure your kit came with all of the necessary components listed below:

- 1x CZP Fuel Damper Replacement Fitting/Line
- 1x -4 AN Bulkhead Fitting
- 1x -4 AN Bulkhead Nut
- 2x -4 AN Dowty Sealing Washer
- 1x -4 AN Female to -6 AN Male Adapter Fitting
- 1x -6 AN Male to -6 AN Male ORB Fitting
- 4x -6 AN Male to -8 AN Male ORB Fitting
- 4x -8 AN ORB Aluminum Plug
- 1x -6 AN Fuel Return Line (Long line with two straight ends)
- 1x -6 AN Fuel Rail Feel Line (Medium line with one straight and one 45 degree end)
- 1x -6 AN Fuel Rail Crossover Line (Short line with one 45 degree end and one 90 degree end)
- 1x -6 AN Fuel Regulator Feed Line (Medium line with two 45 degree ends)
- 1x 20-0458 Radium VQ35 Fuel Rails
- 1x 20-0623-00 Radium Fuel Pressure Regulator
- 1x 20-0624 Radium FPR Mounting Kit
- 1x 20-0029 Radium Fuel Pressure Gauge
- 2x 1/2in ID Vibration-Damping P-Clamp
- 4x CZP Fuel Line Support Clip
- 3x M6x1x16mm Flanged Bolt
- 5x M6x1 Flanged Nylon Lock Nut
- 1x CZP 5/16 Quick-Disconnect to -6AN Male Adapter Fitting
- 2x M6x1 Rivnut for Metal
- 1x Rivnut Installation Tool
- 3ft Black 3.5mm ID Silicone Vacuum Line
- 1x 17342-CE800 OEM Nissan Fuel Pump O-Ring

Fuel Pump Modifications

1. Disconnect your battery.
2. Remove the fuel pump sending unit as instructed in the Nissan factory service manual:
<https://conceptzperformance.com/items/72701/docs/FL.fm.pdf>
3. Remove the basket from the pump assembly by prying out the small plastic tab as shown. Make sure not to stress any of the wires and just place the basket to the side.



4. Remove the small white cap at the base of the pump, it is quite tricky. It is easiest to get a small plastic pry tool between the clip and the cap and gently pry away from the cap. Be careful, you still want the clips left intact as they will hold the new pressure regulator delete fitting in place.



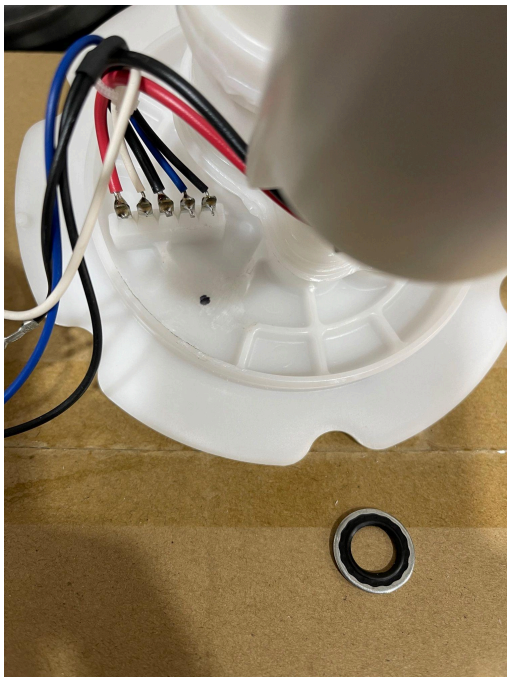
5. Now that you have the cap removed you can see the small metal OEM pressure regulator. Just pull up on the regulator, it is just held in place by its two o-rings. It may be necessary to take some pliers to it to pull it out, you won't be needing it anymore.
6. Everything is now disassembled, so we now need to start removing some plastic. Take one of the sealing washers and mark a good location to place the return line bulkhead fitting. You will need to use a Dremel or similar rotary tool to slowly and carefully grind down the webbing in the areas you plan to place the bulkhead fitting. Just to the side of the electrical connector is the best place we have found. Try your best to keep the area flat and not dig any deep cavities as we will be sealing against this surface.



7. Besides grinding the webbing on the bottom of the hat, we have to remove the majority of the three ribs on the side of the canister, so our return line has room to squeeze in and not obstruct the basket from fitting and moving freely.



8. Now you can sit the sealing washer flat on the bottom of the hat, and mark the center of the washer for your hole. Now transfer that mark to the top of the hat, it can help to shine a light up from the bottom so you can see where the center mark you placed is.



9. Being careful not to go too large, and using a stepped drill bit, drill a 7/16" hole through the spot you just marked.



10. Make sure both surfaces are smooth and clean, and place the bulkhead fitting with one of the sealing washers down through your hole, oriented away from the electrical connector. Feed the other sealing washer up from the bottom and secure the fitting with the included nut.



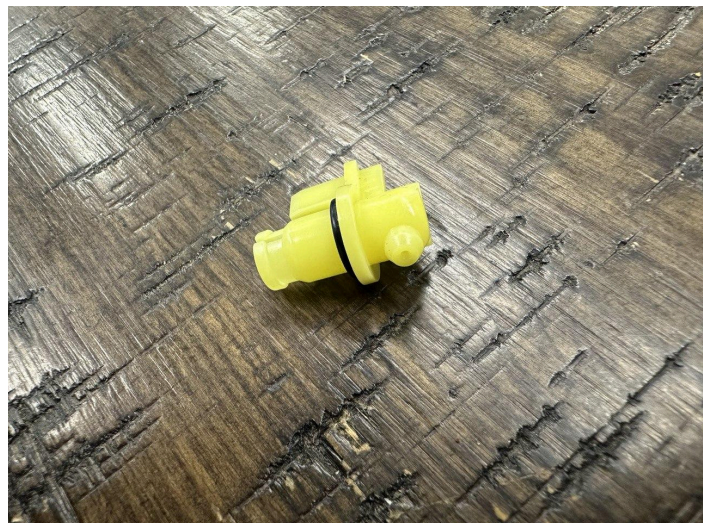
11. Now take your pressure regulator delete line and screw the -4AN female end to the bottom of the bulkhead fitting we just tightened down.



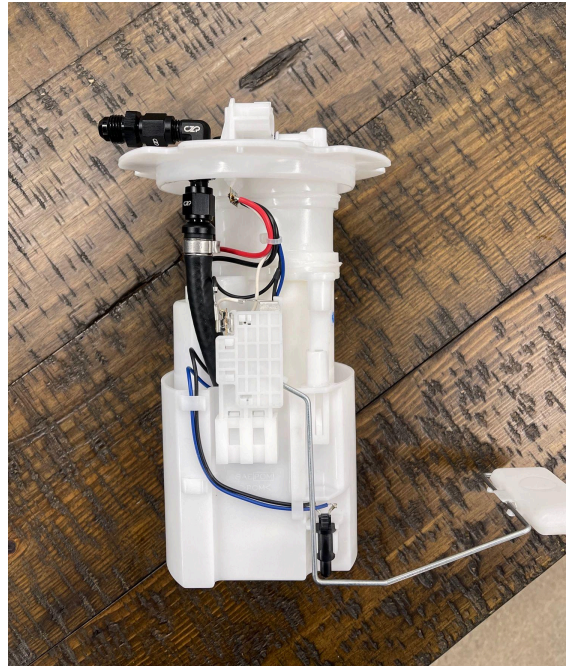
12. Make sure the o-rings are on the pressure regulator delete fitting and are well lubricated. Take the delete fitting and install it into the port we took the fuel pressure regulator out of. There should be a satisfying click as the regulator delete fitting clips into place.



13. ***If you are using a stock flow rate fuel pump, skip this step.*** If you are using a higher flow rate pump than the OEM pump you need to modify the venturi system that draws fuel from the other side of the saddle style tank. When you put a higher flow fuel pump in, at idle and lower RPMs the fuel pressure regulator works a bit harder and has to bleed off more fuel than the venturi system is expecting, leading to a build up of pressure in the system and as a result inconsistent fuel pressures. In order to fix this we need to enlarge the venturi output nozzle. The stock diameter is around 0.050 inches and for larger fuel pumps you need to increase its size accordingly. We have found a diameter of 0.075 inches work well for pumps that flow around 255 liters per hour. For even higher flow rate pumps this diameter needs to be expanded even more to around 0.100 inches or possibly even larger. In order to get access to the venturi, you need to push it out from the bottom of the basket where it is clipped in. By pressing down firmly from the top with a long screwdriver or similar tool you can pop out the yellow nozzle. Use a drill and very **carefully** bore it out to the correct diameter making sure **not** to go all the way through the backside of the plastic. Clean any plastic debris from the drilling and pop the nozzle back into the bottom of the basket.



14. All of the modifications to your sending unit are done! You can carefully reinsert the main body into the basket until the small plastic tab clicks into place. It may be necessary to adjust the routing of the wires and the new return line to get everything seated and happy.



15. Reinstall the fuel pump sending unit with the new o-ring as instructed in the Nissan factory service manual: <https://conceptzperformance.com/items/72701/docs/FL.fm.pdf>

Return Line Installation

16. Using the finger of a rubber glove and some tape (or some similar means), protect one end of the long -6AN fuel return line and feed it into the gap between the gas tank and the unibody from the fuel pump access panel in the car. You'll find the only place to sneak it through is approximately angled towards the passenger door handle.



17. Keep feeding the line into the void, it can help to have someone underneath the car to pull and help guide the line.
18. Attach the line to the -6AN fitting we installed on top of the fuel hat and tighten it carefully with two wrenches, so as to not apply too much torque to the fitting installed on the plastic fuel hat.
19. Route the line under the car around the corner of the gas tank and secure it to the hole on the corner with one of the P-clamps, the M6x1x16mm Flanged Bolt, and M6x1 Flanged Lock Nut.



20. Remove the plastic fuel line retainers from the bottom of the car by pulling or gently prying downward off of the mounting studs. Slide the clamp forward on the car around an inch and using one of the CZP fuel line support brackets and one of the M6 nylon lock nuts, secure the fuel and brake lines back in place with the addition of the -6AN return line. It is a tight fit so some taps with a rubber mallet may be required to get everything seated in place.



21. Continue down the car routing the new return line next to the factory fuel and brake lines securing it up to the studs using the rest of the CZP Fuel line support brackets and included hardware.



22. Route the return line behind the compression rod, up around the frame rail and into the rear of the engine bay. Secure it to the inside of the rail with the second P-clamp piggybacking off the same bolt that secures the other two fuel lines to the chassis rail.



Fuel Pressure Regulator Installation

23. Attach the mounting bracket, pressure gauge and fittings and plug to the fuel pressure regulator. The pressure gauge goes on the opposite side of a plug and a -6AN male fitting on the side opposite the bracket as well as on the bottom of the regulator (one will be a Vibrant fitting and the other will come with the Radium mounting kit).



24. Locate where you want to place your fuel pressure regulator on the secondary firewall, but remember that the fuel return line we just routed must be able to safely reach the fitting attached to the bottom port and keep hood clearance in mind as well. Mark and drill the 2 mounting holes out to 23/64". Install the two M6x1 Rivnuts into the holes using the supplied tool.



25. Secure the regulator to the secondary firewall with the two remaining M6x1x16mm bolts. The lines and fittings shown may vary slightly from what's included in the kit.



26. Remove the glove finger, or whatever was used to keep the hose free of debris, and attach it to the bottom port of the newly mounted fuel pressure regulator and tighten the hose end onto the regulator.

Fuel Rail Installation

27. Disconnect and discard the stock rubber fuel feed hose located on the right inner frame rail as well as the upper fuel line bracket held by two 10mm bolts. Now carefully bend the metal fuel feed line upwards till it is straight.



28. Install the CZP 5/16 quick-disconnect to -6AN male fitting to the stock metal fuel feed line we just straightened.
29. Grab the -6AN fuel feed line, which has one straight end and one 45 degree end. Screw the straight end of the line onto the adapter fitting we just installed on the passenger side chassis rail.
30. Next, we will assemble the legs onto the fuel rails, trying to get them as close to the center of their adjustment as possible. We'll get our injectors seated and clipped into place with the clips from our factory injectors. One -8AN ORB to -6AN Male fitting will go on each end of both rails, please lubricate the O-rings before installation. If you have pulse dampers (OEM or Radium) install them in the rear location for each of the rails and screw in the plugs for the unused bottom ports, pre-lubricate all of the o-rings.



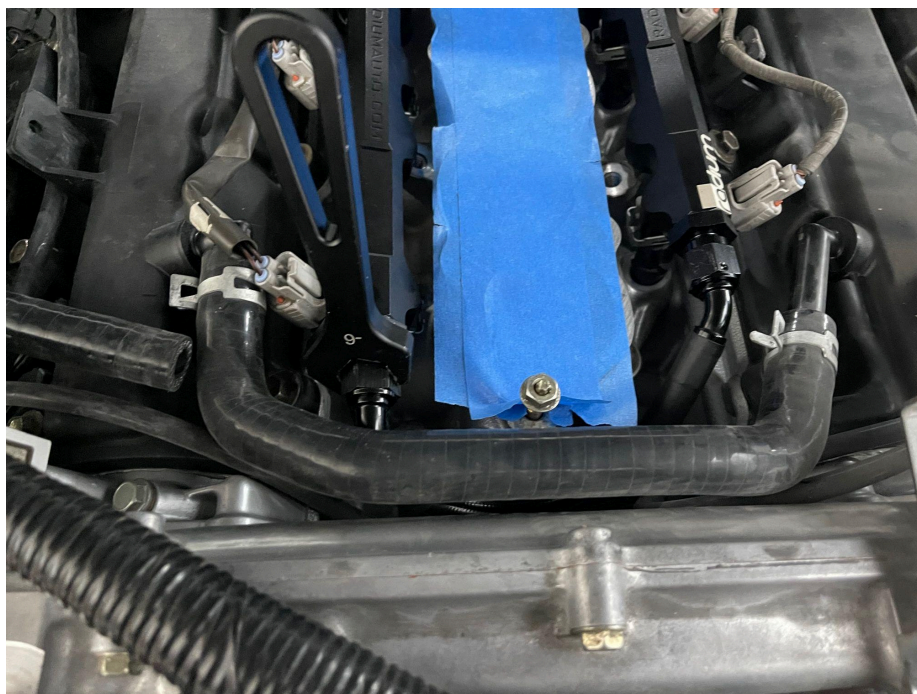
31. The Radium fuel rails do not mount using the same locations we removed the stock fuel rails from. To mount the new rails, first remove the two innermost lower intake manifold nuts on each side. Carefully place the passenger side rail into place, making sure each injector is well seated into its corresponding bore in the lower intake, and secure with the same two nuts we just removed. A low profile 3/8in socket or most 1/4in sockets will fit to tighten the nuts. Torque in two steps, first to 4-7 ft lbs and then to 20-23 ft lbs.



32. Attach the 90 degree end of the short -6AN fuel rail crossover line to the front side of the rail, but do not fully tighten it until we attach the other end.
33. Attach the 45 degree end of the short -6AN fuel rail crossover line to the front side of the drivers side rail, but do not fully tighten it till we mount the rail into place.
34. Carefully place the driver side rail into place making sure each injector is well seated into its corresponding bore in the lower intake and secure with the same two nuts we removed earlier. As with earlier, a low profile 3/8in socket or most 1/4in sockets will fit to tighten the nuts. Torque in two steps, first to 4-7 ft lbs and second to 20-23 ft lbs.



35. Now fully tighten both sides of the -6AN fuel rail crossover line.

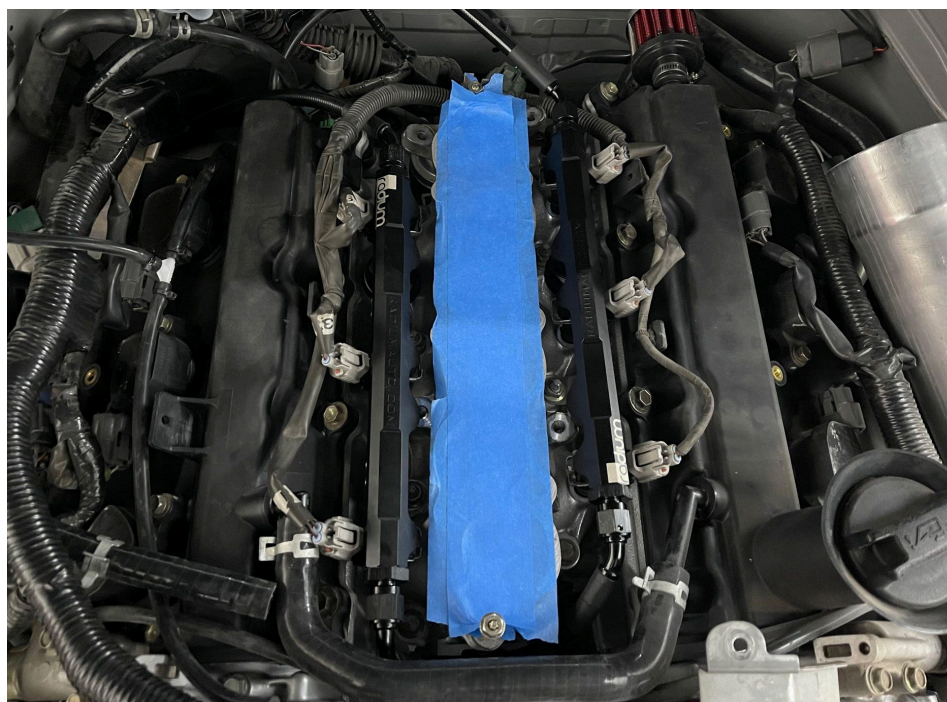


36. Locate the loose 45 degree end of the -6AN fuel feed line from earlier and connect it to the rear fitting on the passenger side fuel rail, and tighten it down.



37. Locate the remaining -6AN fuel pressure regulator feed line and attach one end to the rear side of the driver side fuel rail, and the other end to the open fitting on the front of the fuel pressure regulator, and tighten down each side.

38. Attach the connectors for each of the fuel injectors, making sure each connector is fully seated. You may or may not need adapters or conversion/patch harnesses depending on your choice of injectors.



39. It's now a good idea at this point to go around and check all of your connections and make sure the fittings are tight since the whole fuel system should be sealed back up. Go around and make sure your fuel pump is plugged in and all the connections are tight there as well.
40. Now it's recommended to pressure test the fuel system. We'll start by reconnecting the battery and **WITHOUT STARTING THE CAR** cycling the key to the on position to prime the fuel pump and pressure test the system so if there are any small leaks you can find and sort them out now rather than after the whole car is back together. If needed, you can repeat this cycle multiple times. When you key-off, simply wait 10-15 seconds for the ECU to enter "sleep" mode, so the next time you key on, it will prime the pump again.

Reassembly

41. Now that the fuel rails are installed and all of the fuel lines have been run, you can reinstall the plenum and intake, and any other small parts that may have been removed to aid in the installation.
42. Once the plenum is on and the intake connected and everything has been plugged in, you need to run a vacuum line from the pressure regulator to an open port on the plenum. We have found that there is a capped port on the front passenger side of the plenum that works perfectly for this. Route the other end of the line to the fuel regulator and secure both ends with zip ties.



Setting Fuel Pressure & Finishing Up

43. When changing injector size, fuel pump, or installing a return kit, it will almost certainly be necessary to re-tune the vehicle before it can be driven, but the fuel pressure must be set in order to complete the installation. Because these modifications might prevent it from starting safely without a tune, talk to your tuner to find out the best order of operations for you to take, as they may need to provide you with a base tune in order to get you up and running, or they may want to set the fuel pressure themselves during the tuning session.

What you set the base pressure to is up to you and your tuner. A common base pressure for turbo charged cars is 43.5 psi (3 bar), because that is what most injector companies rate the flow of their fuel injectors at. Follow these steps to adjust the fuel pressure:

- a. Loosen the jam nut on the top of the fuel pressure regulator with a 3/8" wrench.
- b. If connected, disconnect the vacuum hose going to the fuel pressure regulator. Be sure to plug or cap the other end, so as not to create a vacuum leak on the engine side.
- c. Start the car and let it idle.
- d. Turn the adjustment rod on the top of the FPR with a 3/32" Allen wrench/key to reach the desired nominal base fuel pressure. Clockwise will increase the fuel pressure, and counterclockwise will decrease fuel pressure.
- e. Once you're satisfied, snug the jam nut back down, and reconnect the vacuum line.
- f. With the vacuum line connected and the engine still idling, the displayed fuel pressure should then drop in relation to your intake manifold pressure (which will be in vacuum while idling).

NOTE: It is not uncommon for the regulator to bleed down pressure when the fuel pump is turned off. This behavior does not mean there is an issue with the regulator.

For more information on the Radium Engineering DMR 20-0623 Fuel Pressure Regulator, please refer to Radium's documentation here:

http://data.radiumauto.com/PublicDocs/19-0248_D.pdf

44. This completes the install of your CZP fuel rail and return kit! If you have any questions, please reach out to us at info@myczp.com, and we will assist you as best we can.

