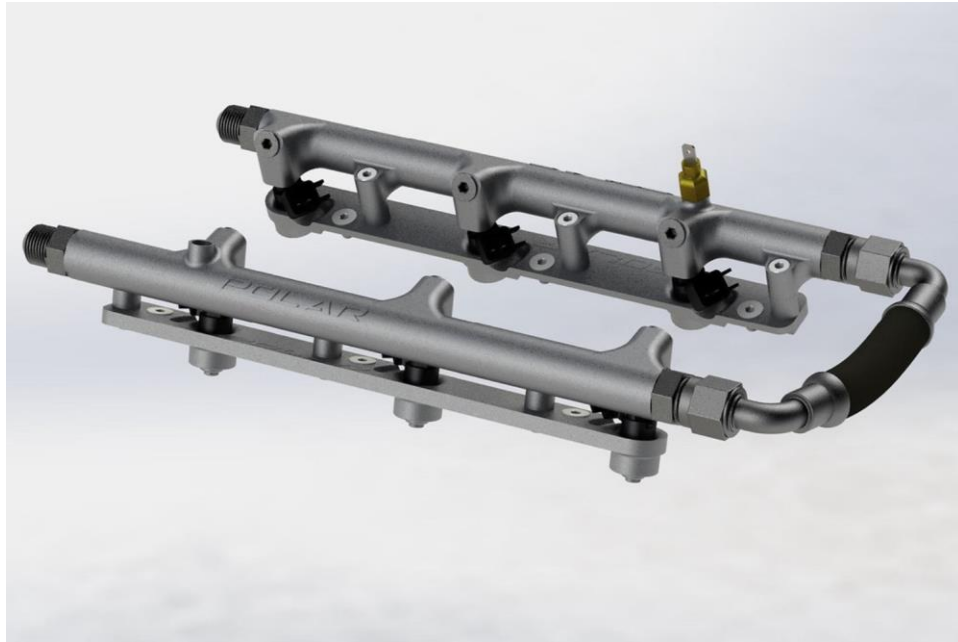


POLAR ENGINEERING

Nissan Z32 300ZX Billet Fuel Rail

(For 34mm top feed injectors)



Thank you for purchasing Polar Engineering Nissan Z32 300ZX Billet Fuel Rails. This kit is designed to allow you to install top feed fuel injectors on your VG30DE/TT **without any machining** to lower intake manifold. All components of this kit are designed to bolt up to factory lower intake manifold and require only minor trimming to intake plenum castings. Aftermarket intake manifolds require no modifications in most known cases. Please read and understand the instructions completely before proceeding with installation. If you have ANY questions about the installation process or functions of your kit, please do not hesitate to contact me. We will gladly address all your questions. Please keep in mind that this kit designed for off-road use only. Always obey federal and your local laws.

Kit contents:

2 x Fuel rail (one passenger and one driver side)

2 x Fuel injector mounting plates (not side dependent)

6 x Mounting plate bolts

6 x Fuel rail mounting bolts

1 x Connecting hose

6 x Mounting plate o-rings

1 x Grounding cable

Miscellaneous fittings

Installation instructions:

Before you begin doing anything, please read and understand all instructions and images in this manual!

These fuel rails are designed to be used with 34mm ID injectors.

Suitable ID part numbers are:

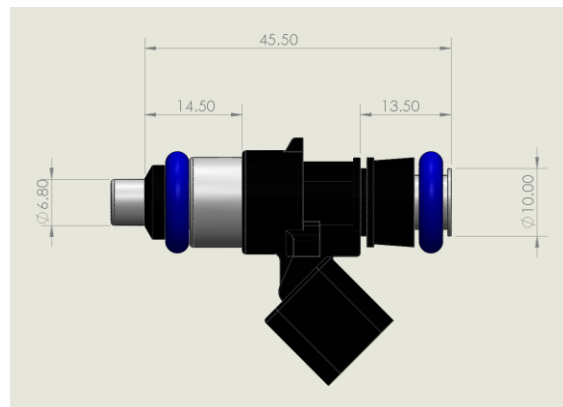
1050cc – 1050.34.14.14

1300cc – 1300.34.14.14

1700cc – 1700.34.14.14

2600cc – 2600.34.14.14 (please contact your tuner for approval before installing these)

Please verify that you are planning to install correct fuel injectors (pictured below)



Please understand that moderate technical knowledge is required to install this kit successfully. If you are not comfortable at any point during installation process, PLEASE SEEK HELP!

DO NOT tamper with hex plugs (3 on each fuel rail)! They are sealed and are not meant to be removed. Removal of these plugs will void any warranty and support.

It is **YOUR responsibility** to make sure that the kit is installed correctly and all fittings are tightened in a proper manner to ensure leak free seal. This is VERY important and needs to be triple checked. Fuel leaks can (and most likely will) lead to a fire. Triple check for leaks after installation and check three times within a month of installation. You cannot check this too often!!!

It is **YOUR responsibility** to properly splice in new pigtail connectors into your EFI harness. Everyone's setup will be different and wires need to be routed in a suitable manner for your setup. I recommend keeping all wiring under the intake plenum.

1.

Step one is to remove your upper intake manifold and factory fuel rail to a point where your lower intake manifold is exposed like this. **Please note that you do not need to remove lower intake manifold from the engine. The lower manifold is pictured separately from the engine in this installation manual to allow for better views during installation.**



2.

In this case we will be installing an **EARLY STYLE** fuel rail kit since this option requires the most material to be removed from upper intake manifold casting. For **LATE STYLE** manifolds all steps are almost entirely the same, but much less material needs to be removed.



Above is a picture of an EARLY style lower intake manifold. At this point you need to clean this mounting surface as thoroughly as you possibly can. Please make sure to use rags in your runners to prevent debris from falling in. I strongly suggest to apply shop vacuum cleaner the each port as you are cleaning the mounting surface to minimize the chance of getting dirt into intake ports. Please use your best judgment and make sure to inspect each port after cleaning.

Please make sure that the mounting location is as clean as it can be. You will need to inspect the mounting surface for scratches, debris and pitting (from corrosion). If any of those are present, I strongly suggest using liquid gasket instead of o-rings in the next step. Again, you need to inspect the surface and HONESTLY answer your own question on whether the surface is smooth and can properly accept an o-ring. Above is a sample picture for reference. That mating surface is clean, has no pitting and will make proper, tight seal when using an o-ring. Please be honest in this step. If you take a shortcut here, the only person with a boost leak will be you!

3.



Install the provided o-ring (color may vary) in each one of six locations. I strongly recommend liberal use of petroleum jelly on o-ring and on surfaces that it contacts. Petroleum jelly will help the o-ring properly sit between machined surfaces and increase contact area providing a better seal. Avoid using motor oil here.

4.



Place the mounting plate in its location and press down on it to make sure it bottoms out without obstruction. Plates are not side dependent.

5.



This step requires caution and patience! Start installing the countersunk bolts one by one. Only get each bolt started in the threads no more than 2 turns each. It helps pressing down on the mounting plate and moving in around. Once all 3 bolts are in about 2 turns, start tightening them one by one. Get them all close to the mounting plate at the same time and only then start tightening them. Break up the tightening sequence into steps. I suggest tightening them down in at least 3-5 steps to make sure they center themselves and the mounting plate properly in mounting bored. Do not use excessive force at any point during this process. Wiggling the mounting plate around helps significantly.

6.



All 3 bolts should sink into the mounting plate. At this point tighten each bolt using a hex screwdriver. You will feel when the plate compresses the o-rings, bottoms out and bolts sit all the way in. Do not use force excessive force after that happens! Make sure the mounting plate sits evenly and all bolts and sunk in.

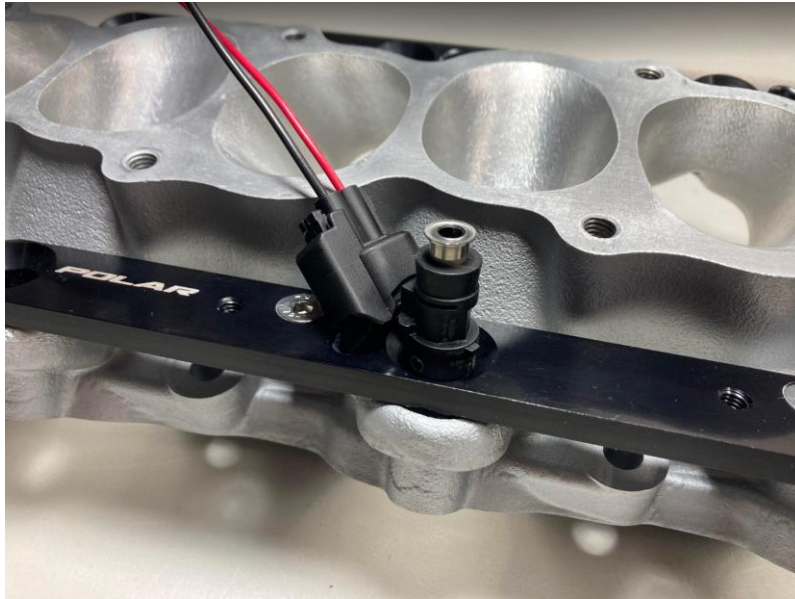
7.



Repeat the same procedure for the other side.

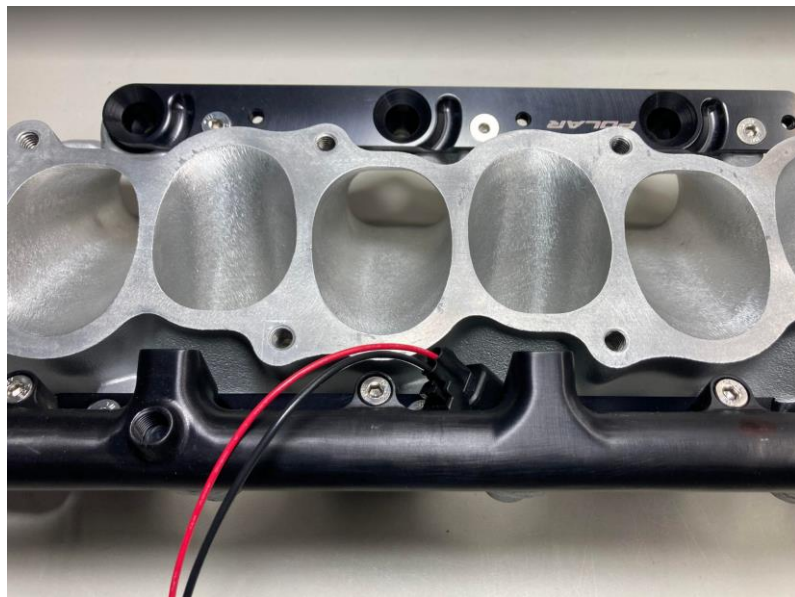
I strongly suggest coating the injector bores in the mounting plates with petroleum jelly. It will make injector installation easier and ensure that injector o-rings properly seal against the mounting plate bore.

8.



At this point, you need to install your fuel injectors (pictured without top o-rings). Please use petroleum jelly in injector bores and on lower injector o-rings during installation. I recommend installing injectors with connector attached. You will still be able to attach connector later if you choose to do it that way, but the fit is very tight!

9.



When all 6 injectors are installed (USDM driver side will have connectors point forward and passenger side will have connectors point back) go ahead and install the rail over each 3 injectors. Pictured 1 injector for reference to avoid wiring clutter in picture. Each rail sits on 3 black aluminum spacers. Do not install the rail without spacers underneath! It is convenient to attach a small piece of tape to the side where spacer and rail meet to keep spacer in place during installation. Once rail is bolted down, tape can be removed.

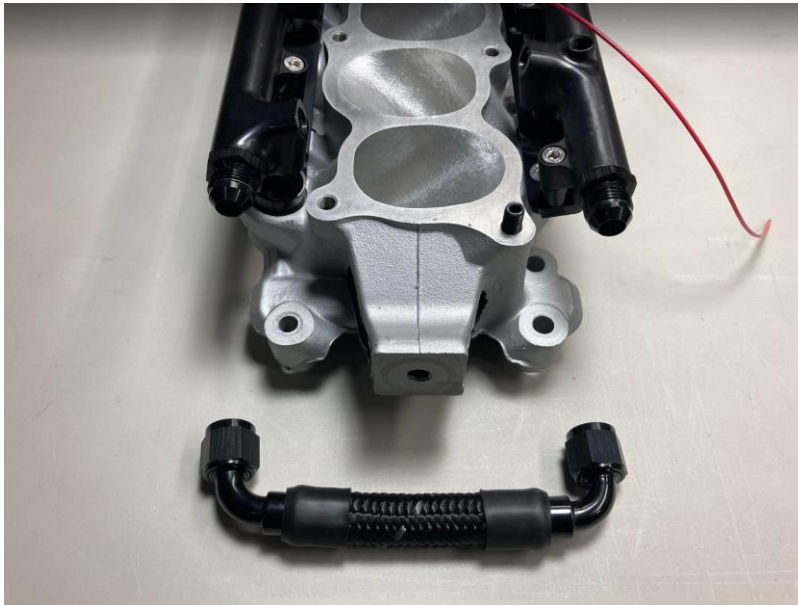
Be careful not to drop spacers in your intake runners!!!

10.



This is how both rails installed should look like. Do not tighten the rails down. Keep them loose at this point in installation process.

11.



Next, you will be installing the connecting hose. This step also requires you to be careful to make sure the AN fittings sit properly. If you are looking at the hose, USDM driver side fitting will be at 90 degrees and passenger side is going to have a slightly larger angle. You should be able to notice a visible difference in fittings angles even though it is minor.

12.



I found hose installation to be much easier if you bend the hose upwards and start threading in the fittings by hand until the fitting bottoms out. NO TOOLS AT THIS POINT!!!

13.



When fittings bottom out and you can no longer turn them by hand, with both thumbs press down in the middle of the hose. It will snap into a downward position. Next, tighten down the 6 bolts holding the rails in. You can now tighten the fittings with PROPER TORQUE (absolutely no more than necessary). Hold the fitting on the other end of the rail with a wrench. Do not apply torque to a rail when it is unsupported! **Please use your best judgement here.** You can pressurize the rail later and tighten the fittings more in case a leak is detected.

14.



At this point, if you are planning to use the factory fuel temperature sensor, install one (6mm) end of grounding cable into a factory grounding location.

15.



The other end of the grounding cable goes between the rail and fuel temperature sensor. The grounding cable is made with some extra length to let you decide on the best way to ground it. Feel free to ground it at a different location if needed. Please make sure that the new location is actually a good ground.

16.

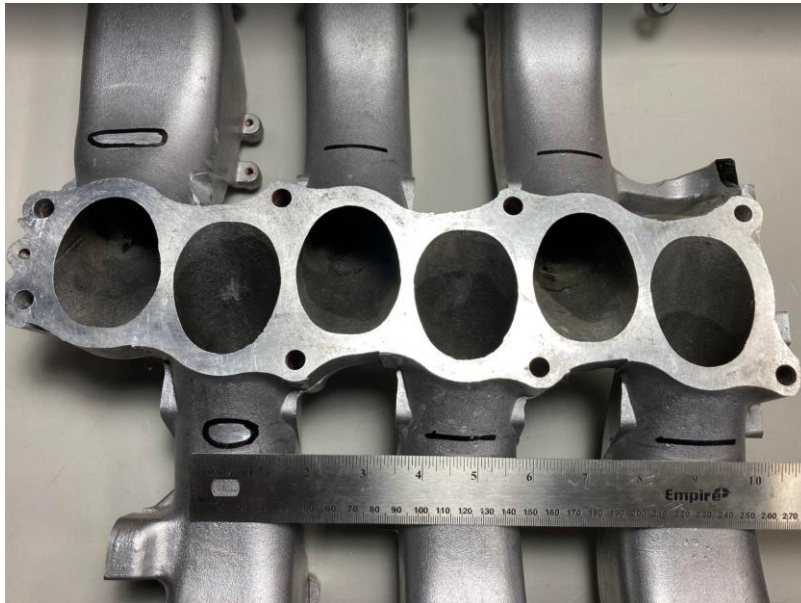


IF YOU ARE RUNNING ASHSPEC INTAKE MANIFOLD, NO GRINDING IS REQUIRED!!! Please, carefully test fit the manifold in its mounted position to verify all clearances.

BEFORE YOU PROCEED WITH STOCK PLENUM SETUPS!!! I suggest for this step covering top of each fuel rail with masking tape to prevent scratches to ceramic coating.

Next step is best done with a grinder. You will need to grind down a 0.75"x0.75" (approximately) area on the intake plenum. Ground down area is colored in black. You need to make sure your plenum looks the same. A grinder does this job in about 2 minutes. Please control shavings and don't let them get into intake runners. Taking off a bit more material is better, but not any less.

17.



In EARLY style setups, circled areas will also need a tiny amount of grinding. LATE style setups will likely not require grinding these area (but please carefully confirm fitment). The amount of material removed in EARLY setups is tiny and about 2 passes with a grinder is all it will take. I also suggest doing a pass or two over the 4 areas with black lines, but that should not be mandatory.

18.



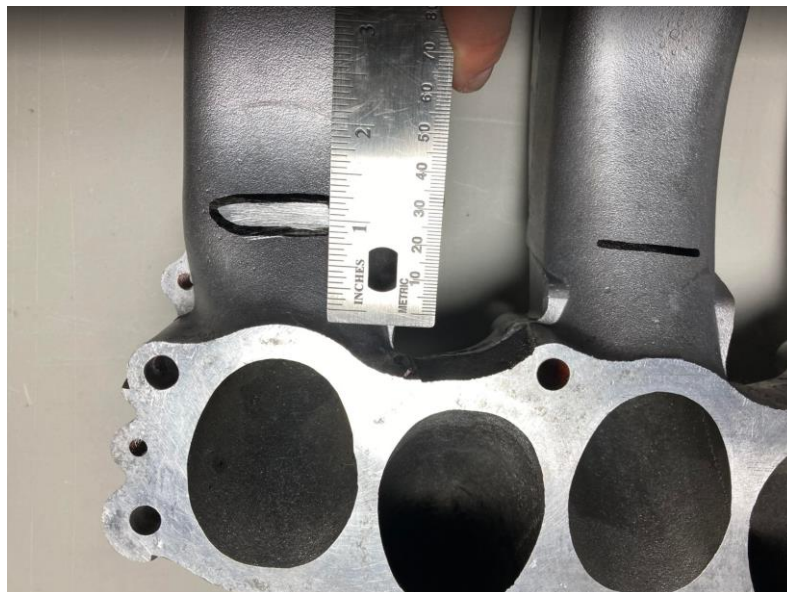
This is the size of an area that will need grinding on runner for cylinder 5. For reference the thickness of material removed is about 0.7mm. Please use your best judgement when doing this and don't remove more than necessary. Check clearance with fuel rail once your are done. If necessary grind down a bit more.

19.



This is runner for cylinder 6. Again, no more than 0.5-0.7mm of material needs to be removed.

20.



Another view of location of area needed to be ground on EARLY style plenums.

21.



One last location will need a tiny amount of grinding if you are running stock intake manifold. If you are running ASHSPEC plenum, I believe grinding this location will not be necessary. The ground down area is colored in with black marker. This is the minimum that will need to be ground down. Please check for interference after and remove more material if necessary.

22.



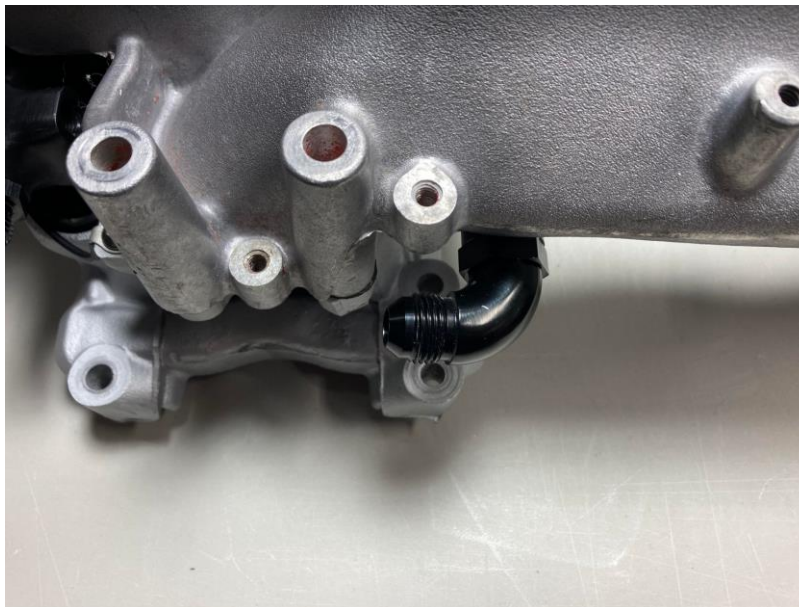
This is what everything should look like after grinding and cleaning up.

23.



When bolting down the throttle linkage to intake plenum, I recommend keep applying upward pressure on it as you are tightening the bolts. That will create a few tens of a millimeter of extra clearance between it and fuel rail hose fitting.

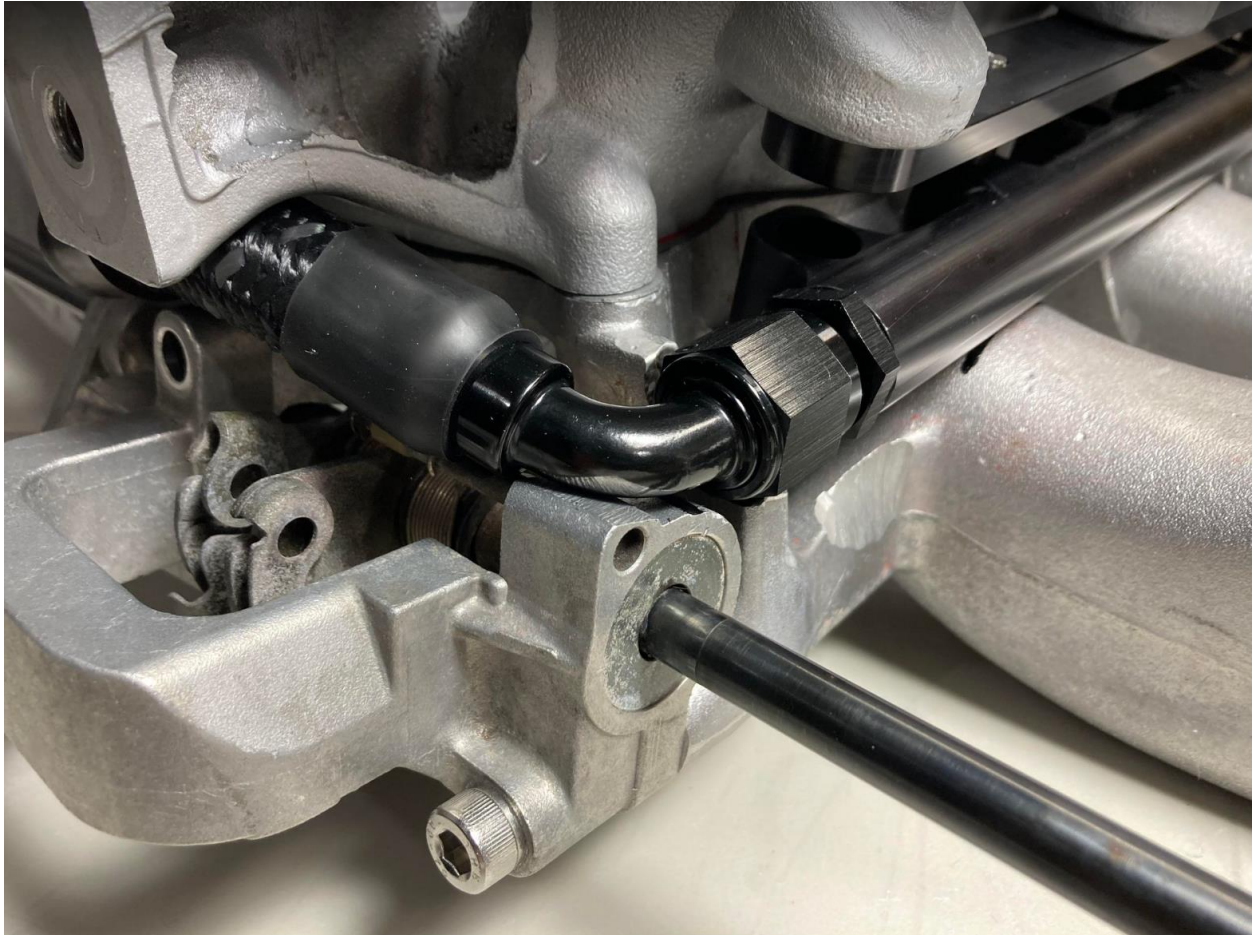
24.



The back fitting on USD side passenger rail comes not tightened. Make sure to tighten it properly and apply petroleum jelly to o-ring. I also strongly suggest using some E85 fuel safe Permatex liquid gasket (**Permatex part number 85420**) on the threads for further peace of mind. Please follow directions on Permatex tube.

If you ordered 8AN option, please connect your hose fitting here. If you ordered 6AN or stock 5/16", please use a supplied adapter.

25.



In this picture, intake plenum is upside down to show you how the fuel rail, hose fitting and hose should fit around the ground down areas. Again, before bolting down the plenum completely, please make sure you don't have interference in these areas and **have some extra space since plenum gasket will compress about 0.4mm.**

26. When you made certain that there is plenty of clearance in areas mentioned in steps above, please splice in injector connector pigtails in appropriate locations on EFI harness and route your fuel lines. I cannot make any recommendations. That will be up to the end user.

27. If you have any interference between USDM passenger rail rear fitting and heater hard line (not likely), please bend the hard line back slightly.

28. CHECK FOR LEAKS before driving the car for extended periods of time.

29. CHECK FOR LEAKS in about a week.

30. CHECK FOR LEAKS in about a month.

31.

Please also find an instructional video on my YouTube channel which will go over all steps of installation in further detail.

Also, it is necessary to mention that this is the first revision of installation manual. If you feel like something is missing, or should have been expressed in a more clear manner, please let me know and I will address all those points.

Please, always use your best judgement during installation. If you have ANY questions, please contact me directly via email, or messengers on social media platforms.

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