

PERRIN

PERRIN HIGH FLOW SIDE FEED FUEL RAIL KIT

07/08/10

Thank you for purchasing the PERRIN fuel rail kit. Installation of this kit should only be performed by A person experienced in the installation and proper operation of the Subaru fuel system. Please read through all the instructions before performing installation. Planning ahead with this install is necessary to route hoses properly.

NPT Fitting Education: Included with this kit are NPT fittings. NPT stands for National Pipe thread Taper. These fittings do not bottom out into part! NPT fittings seal with out the use of compounds or o-rings. They create a mechanical seal, by crushing the peak of the threads as the 2 opposing tapers meet together. To ensure proper seal, tight fitting by hand and turn 1 to 2 extra full turns. Over tightening can damage parts.

WARNING: This part is designed, manufactured, and sold solely for use on off-road and racing vehicles not controlled by federal and or local emissions laws. It is not intended for use on vehicles that operate on public streets and highways. Use of this part on emissions controlled vehicles may be in violation of federal or local law! ASMC, LTD. is not responsible for any damages as a result of misuse of this part. Check your local laws prior to use or installation.

SPECIAL NOTES:

- This kit will fit all 2004-2006 Subaru STIs, Legacys, and Forrester that utilize side feed type injectors.
- Take time with determining hose length as this will pay off in a professional looking install.
- The use of a factory service manual is highly recommended. These can be purchased or downloaded online at <http://techinfo.subaru.com>
- The use of a nipper tool is required for this installation. This tool can be purchased at any home improvement store or at www.PERRINPERFORMANCE.com
- Installing these fuel rails will increase the amount of fuel being delivered, and having the car retuned is highly recommended.

PARTS INCLUDED WITH PERRIN FUEL RAIL KIT

- (1) SET OF PERRIN FUEL RAILS (LEFT AND RIGHT) AND JUNCTION BLOCK
- (10') 5/8" PERRIN PYROSHIELD
- (10') 3/8" DOT FUEL INJECTION HOSE
- (4') 5/16" DOT FUEL INJECTION HOSE
- (3') 1/4" FUEL HOSE
- (3') 5/32" VACUUM HOSE
- (2) 3/8" TEES
- (1) 1/4" TEE
- (2) 1/4" STRAIGHT CONNECTORS
- (2) 1/4" NPT-5/16" BRASS BARB
- (15) 17.0 OETIKER SS CLAMPS
- (5) M8x20MM SS SOCKET HEAD BOLT
- (2) FUEL RAIL STICKERS (x-psp-eng-215)
- (1) JUNCTION BLOCK STICKER (x-psp-eng-216)

Checked by _____

Removing Factory Fuel Rails

1. Follow factory service manual procedures for removing intake manifold.
2. Once removed from the engine, remove steel brackets surrounding each fuel rail. (4-6) 12mm bolts hold these on.
3. Electrically unplug all sensors, fuel injectors, grounds and solenoids connected to manifold.
4. Remove wire harness from manifold. Depending on the year, there will be (2-3) bolts securing this to manifold.
5. Remove (6) 12mm bolts securing fuel lines and rails to manifold.
6. Remove fuel injectors and fuel pressure regulator from rails.
7. Remove hose clamps connecting rubber hoses to steel pipes.
8. Remove fuel rails from manifold. Take note of small blue tee and steel hose it connects to. This blue tee will be connected to a supplied 1/4" hose later in the installation process.

Setting Up PERRIN Rail and Hose Routing

1. Loosely install rails and junction block to intake manifold making sure to install phenolic spacers between manifold and rail.
2. Set manifold onto engine and prepare to route fuel lines. NOTE: Make sure to loosely install coolant fill tank, as this will change the hose routing.
3. Route fuel lines as such that they stay away from moving parts or extreme heat. Included with kit is 10' of PERRIN Pyroshield to help protect the hose against such things.
4. Start with lower fittings on rails. Run supplied hose to both lower fittings, keeping in mind that somewhere in middle of hose, there will be a tee installed. This tee will join hoses to junction block.
5. Run supplied hose to both upper fittings on rails, keeping in mind that somewhere in middle of hose, there will be a tee installed. This tee will join hoses to junction block.
6. Bolt junction block to manifold on drivers side of car. Use one of two mounting holes, and supplied bolt, used to bolt intercooler bracket to manifold. Remove junction block to re-install intercooler bracket if top mounted intercooler is reinstalled.
7. Install hose to Junction block fitting closest to front of car, and route hose to lower fuel rail hose. Cut lower hose directly where junction block

hose meets. This is where the tee will be installed later on.

8. Install hose to remaining Junction block fitting, and route hose toward upper fuel rail hose connection. Cut upper hose directly where junction block hose meets. This is where the tee will be installed later on.
9. Cut Junction block hoses to fit to their corresponding fuel hoses. Hose routing is complete.
10. If done correctly hose routing will be smooth, free from kinks, and routed away from moving parts and extreme heat.

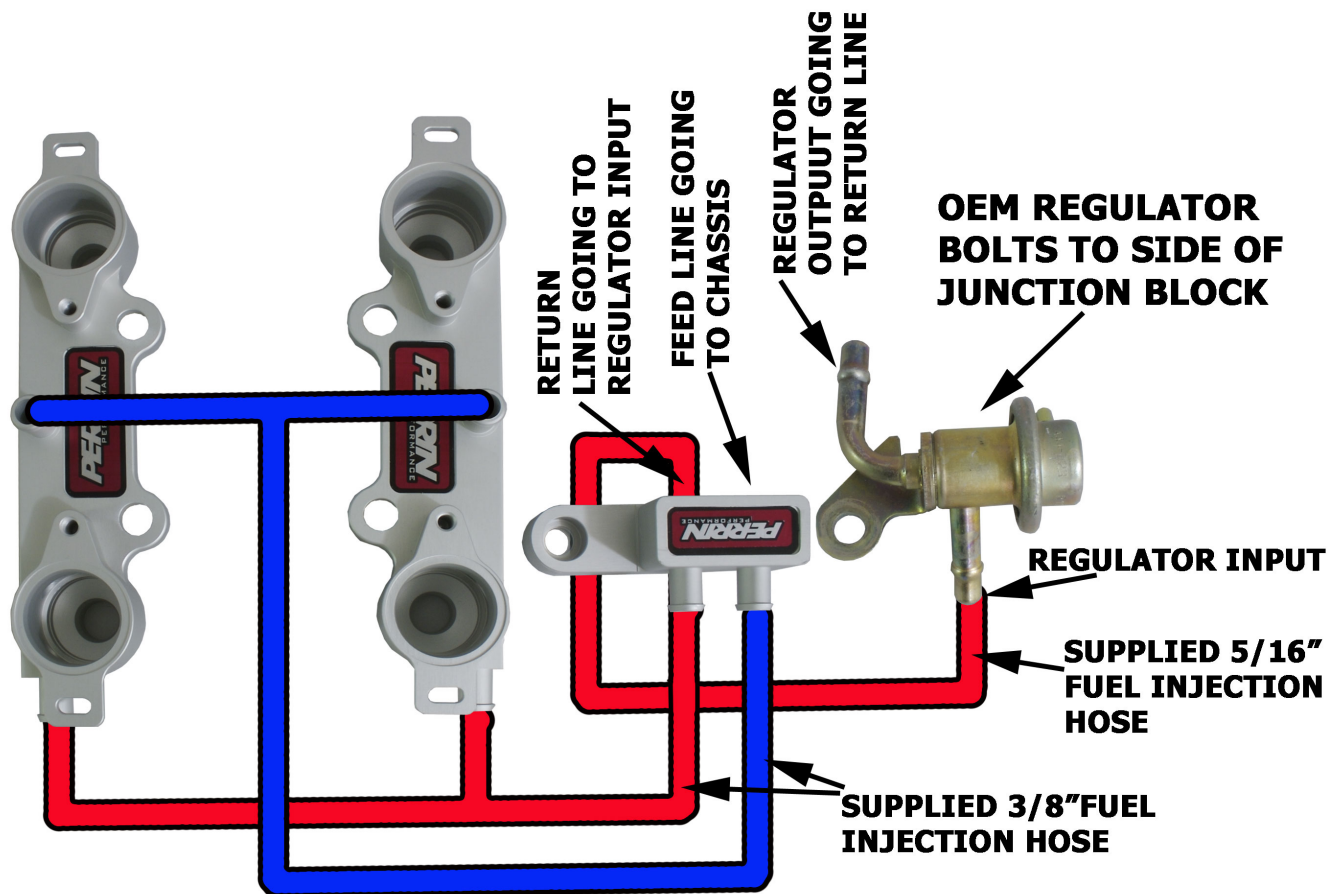
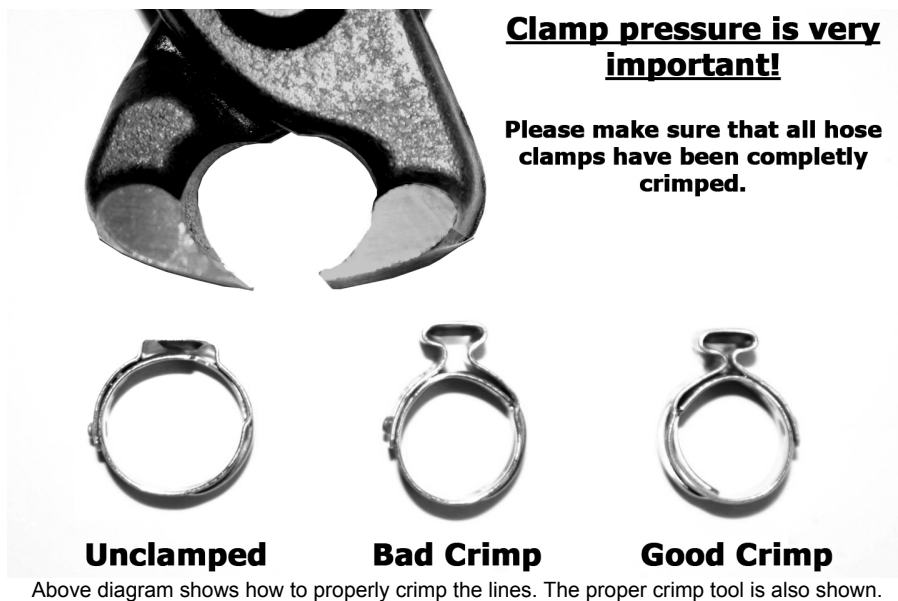


Diagram shows basic hose routing for junction block and fuel rails.

PERRIN PYROSHIELD COVER

1. Once hose lengths are set, remove manifold from engine and prepare to clamp hoses permanently to rails.
2. Install ONE clamp onto each hose and tighten clamp (6 total) with nipper tool. Ensure clamps are tightened as shown below.
3. Cut PERRIN PYROSHIELD to fit over each length of hose. Cutting a little extra length will not hurt, but don't cut too short! Note: Installing Pyroshield over fuel hose can be made easy by "inching" it onto hose. Simply slide Pyroshield over hose as far as possible, then holding one side, slide hose on 1"-2" at a time. Continue this working down hose until cover is completely installed.
4. Install one more clamp onto each hose (6), and Install tee into lower and upper hoses. Making sure to keep corresponding upper and lower hoses connected together.
5. Install junction block hoses to their corresponding tees.
6. Tighten clamps (6) as shown below to each leg of tee.
7. Slide PYROSHIELD over clamps and install rails loosely to manifold making sure to install phenolic spacers between manifold and rails.
8. Loosely install manifold to engine, and recheck for clearances.



PERRIN FUEL RAIL/INJECTORS/REGULATOR INSTALL

1. Unbolt rails from manifold and install o-ring between manifold and fuel rail. Reinstall rails using supplied bolts, making sure to install
2. Install injectors facing the same direction as stock fuel rails aligned them. Injectors should be turned such that the plugs face in opposite directions (facing front and back of car). Make sure to grease injector o-rings before pushing them into rails.
3. Reinstall wire harness to manifold making sure to plug in all sensors, solenoids, and grounds.
4. Locate Evap solenoid tee behind power steering pump on manifold (blue). Connect supplied 1/4" fuel hose to tee. 1/4" fuel hose will connect to small evap line at firewall after intake manifold is installed.
5. Reinstall intake manifold per factory service manual.
6. Bolt fuel pressure regulator to side of junction block using OEM bolt. Aim fuel pressure regulator outlet (bent fitting on regulator) towards drivers side shock tower.
7. Install brass fittings into junction block using above info regarding NPT fittings.
8. Connect supplied 5/16" fuel hose to brass fitting closest to firewall, and clamp using OEM screw clamp.
9. Route hose from brass fitting to input fitting on side of fuel pressure regulator. The input fitting is the straight fitting on the side of the regulator. Clamp connection using OEM screw clamp.
10. Connect vacuum line from vacuum port on manifold to the fuel pressure regulator vacuum port. Do not pinch vacuum line!
11. Connect 1/4" fuel line from purge solenoid valve tee (Blue T or Black T) to evaporative line at firewall. (Smallest hard line next to shock tower).
12. Connect brass fitting closest to front of car, to bottom hard line next to shock tower. This is the feed line to the rails.
13. Connect regulator output (bent fitting on regulator) to top hard line at the firewall. This is the return line going to fuel tank.
14. Prime the fuel system prior to starting vehicle. Simply turn the key to the on position, but do not start. Do this several times and check for leaks. NOTE: DAMAGED O-RINGS WILL CAUSE A FUEL LEAK AND INCREASE THE RISK OF FIRE. REPLACE ANY DAMAGED O-RINGS.
15. Look closely for fuel leaks around the fuel injectors.
16. **If no leaks are found, start engine.**

NOTE: IF LEAKS ARE PRESENT STOP INSTALLATION. DOUBLE CHECK ALL CONNECTIONS AND O-RINGS FOR SIGNS OF DAMAGE. CONTACT PERRIN PERFORMANCE FOR TECHNICAL ASSISTANCE PRIOR TO PROCEEDING.

If vehicle doesn't start or runs poorly please review the following items before seeking additional technical help:

1. Are each of the coil wires connected? Are they connected to the correct cylinders? White plugs go to front cylinders. Black plugs connect to rear cylinders.
2. Is the crank and cam sensors plugged in, and snug to each sensor?
3. Are each of the injector o-rings (Fuel rail O-ring and manifold O-ring) undamaged and installed?
4. Are all fuel hoses properly connected? (Brass nipple/line connects to the canister behind the washer reservoir.)
5. Was each manifold gasket installed undamaged and aligned with intake ports to avoid vacuum leaks?
6. Re-check each vacuum connection for leaks. Double check inlet hose, PCV etc.

If these check ok please contact technical support. Please have any and all CEL codes pulled for reference. This will significantly aid the prompt and accurate answers to your questions.

Common Questions:

- TGV vent hose should NOT be connected or plugged! Many think this is a vacuum or boost hose, when it is simply a vent hose.
- Do I really need to retune my car? We highly recommend having the car retuned to get the full benefit of having fuel rails.
- I cut my hose too short! We have hose and Pyroshield available for purchase, please contact your dealer.

For questions & comments please contact

TECH@PERRINPERFORMANCE.COM

503-693-1702

AIM contact ALTAPERRINSALES