

PERRIN

Universal Adjustable Fuel Pressure Regulator Kit

2018-10-03

ASM-FUL-300

Thank you for purchasing this PERRIN product for your car! Installation of this product should only be performed by persons experienced with installation of aftermarket performance parts and proper operation of high performance vehicles. If vehicle needs to be raised off the ground for installation, the installer must use proper jacks, jack-stands and/or a professional vehicle hoist for safety of the installer and to protect property. If the vehicle is lifted improperly, serious injury or death may occur! Please read through all instructions before performing any portion of installation. If you have any questions, please contact our tech department prior to starting installation. We can be reached in any of the following methods:

Email Tech@PERRINperformance.com

Instant Chat off the main page of www.PERRINperformance.com

Or simply call our tech team at 503-693-1702

GENERAL MODIFICATION NOTE

Modifications to any vehicle can change the handling and performance. As with any vehicle extreme care must be used to prevent loss of control or roll-over during sharp turns or abrupt maneuvers. Always wear seat belts, and drive safely, recognizing that reduced speeds and specialized driving techniques may be required. Failure to drive a vehicle safely may result in serious injury or death. Do not drive a vehicle unless you are familiar with its unique handling characteristics and are confident of your ability to maintain control under all driving conditions. Some modifications (and combinations of modifications) are not recommended and may not be permitted in your state or country. Consult the owner's manual, service manual, instructions accompanying these products, and local laws before purchasing and installing these modifications. You are responsible for the legality and safety of the vehicle you modify using these components.

SPECIAL NOTES:

- **WARNING!!** Dealing with fuel improperly can lead to death and or injury. Never smoke or have any open flames around during installation of this part.
- This regulator is designed for high performance racing engines and may have one undesirable effect for street driven cars. The slow start condition that may occur and is totally normal. This is the regulator dropping pressure as the cars sits and engine not running. This drop in pressure does not affect the actual pressure of the fuel system, but rather the fuel pressure at the initial key-on position. To counteract the slow start, simply turn the key to the on position and let it sit for 2 seconds before trying to start the car. In some instances of extreme temps or extended periods of time sitting, two cycles of the key to the on position may be required.
- Installing this fuel pressure regulator will increase the amount of fuel being delivered and having the car retuned is highly recommended.
- Use a factory service manual or fuel pressure gauge to determine what base fuel pressure reading should be before starting installation.
- Each regulator has been adjusted to 45psi base pressure. Your vehicles base fuel pressure may be different than this setting. Adjustment, using a quality fuel pressure gauge, is required for proper operation of this product. See adjustment instructions below.
- Setting base fuel pressure is VITAL to ensuring your engine runs safe. **If base fuel pressure setting is set too low, a lean condition will occur causing engine damage.**
- This product is designed to work with modern type fuel injection systems (25-90psi), not on vehicles utilizing carburetors (5-25psi).
- This product will NOT work on engines that use return-less type fuel systems. If installing on a return-less type fuel system, steps must be taken to add a return line.
- The operation pressure ratio is 1:1. This means if a base fuel pressure of 45psi is set with vacuum hose removed, under boost of 10psi, your fuel pressure will increase 10psi making for a total of 55psi (assuming a proper fuel system is being used).
- Plan ahead with fuel system design. There are many aspects to designing a fuel system with component placement, proper hoses, and routing.
- Installation of this part on some vehicles will require additional fittings, adapters, hoses and brackets.
- Contact your PERRIN dealer for additional fittings and hose.

Parts Included With PERRIN Fuel Pressure Regulator Kit

- (1) PERRIN Fuel Pressure Regulator Assembly
- (2) M6x50 Socket Cap Screw
- (2) M6 Lock Nut
- (2) M6 Fender Washer
- (1) 3/32" Allen Wrench
- (2ft) 5/32" Vacuum Hose

Installation of PERRIN Fuel Pressure Regulator

1. Follow factory service manual to relieve fuel pressure from fuel system. **NOTE: This step is important to ensure there is no fuel spray when hoses are removed.**
2. Using factory service manual, determine which hoses are feed and return hoses from fuel tank. Locate OEM fuel pressure regulator and fuel lines going to it. Determine which fittings and adapters will be needed for installation. **Note: All ports on PERRIN Fuel Pressure Regulator are threaded for - 6AN o-ring type fittings. Do not use Teflon tape or NPT type fittings in these ports.**
3. Install regulator making sure to keep it far away from exhaust manifolds, turbos and other extremely hot exhaust type parts.
4. Install desired fittings (using proper o-ring seals) and connect hoses as shown in below diagram.
5. Using markings on junction block, connect hose from fuel pump (pressurized) to lower port marked "FUEL PUMP FEED".
6. Using markings on junction block, connect return fuel hose to upper port marked "RETURN TO TANK".
7. Follow one of two diagrams below to connect PERRIN Fuel Pressure Regulator to fuel rails.
8. Install boost/vacuum reference hose to small fitting on top of regulator. Connect other end of hose to intake manifold. **NOTE: Do not connect this to a boost tube, turbo housing, or vacuum hose that has other sensors or components (such as solenoids) attached to it.**

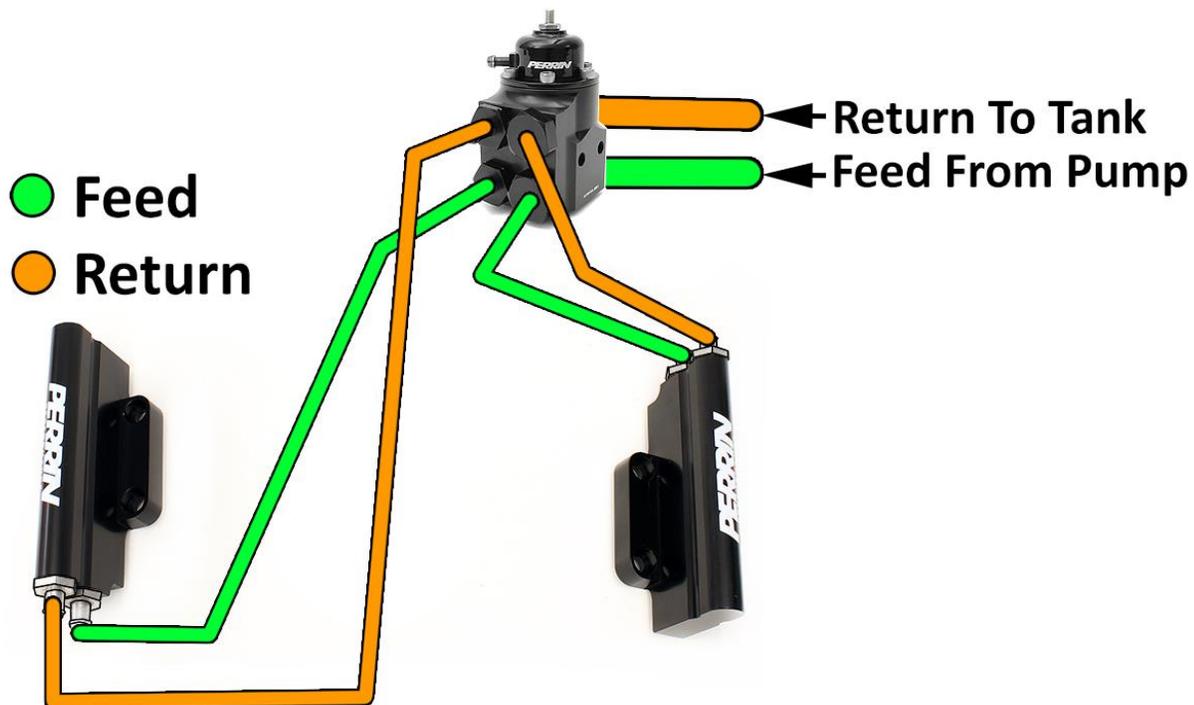


9. Turn key to the on position (Not starting the engine) for 4 seconds to prime the fuel system. Do this roughly 5 times and check for fuel leaks at all connection points.
10. Start engine and let run for 10-15 seconds, then shut it off. Check for fuel leaks. If no leaks are found, continue with fuel pressure and orifice adjustments. **Note: If at any time fuel leaks are found, stop and fix them immediately!**
11. Recheck for fuel leaks after 1 day of driving, and then one final check after 1 week of driving.

Connecting to Engines with Two Fuel Rails

The PERRIN adjustable fuel pressure regulator has two additional ports that can be used to eliminate junctions, Y's or T's in aftermarket fuel systems. This allows each fuel rail on each head to have its own supply and return hose allowing for additional fuel flow. Additional fittings, hoses and clamps will be needed if you choose to utilize these ports. See your PERRIN dealer for additional parts.

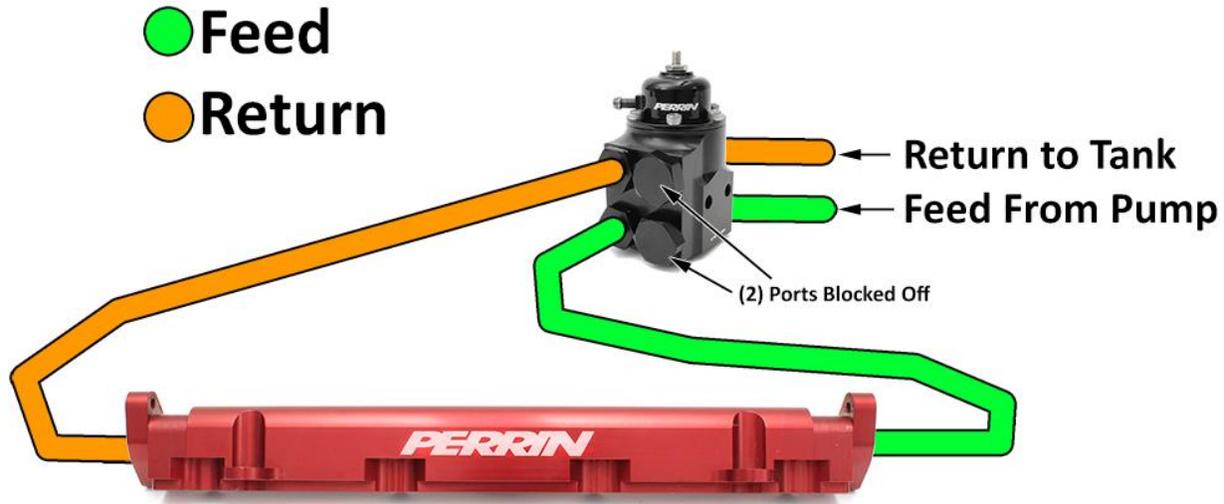
- Using markings on junction block, connect both lower ports marked "FEED TO RAIL" to the each of the fuel rails feed ports. Most aftermarket rails do not have a flow direction to them (ports on front and back), simply connect to either front or back ports.
- Using markings on junction block, connect both upper ports marked "RETURN FROM RAIL" to each of the fuel rails return ports. Most aftermarket rails do not have a flow direction to them (ports on front and back), simply connect to either front or back ports.



Connecting to Engines with a Single Fuel Rail

The PERRIN adjustable fuel pressure regulator has two additional ports that can be used to eliminate junctions, Y's or T's in aftermarket fuel systems. These (2) additional ports need to be blocked off if installing this to a single fuel rail type setup. Additional fittings, hoses and clamps will be needed if you choose to utilize these ports. See your PERRIN dealer for additional parts.

- Block off (1) of each of the ports side of Fuel Pressure Regulator marked "RETURN FROM RAIL" and "FEED TO RAIL"
- Using markings on junction block, connect open lower port marked "FEED TO RAIL" to fuel rails feed port. Most aftermarket rails do not have a flow direction to them (ports on left and right), simply connect to either port.
- Using markings on junction block, connect open upper port marked "RETURN FROM RAIL" to fuel rails return port. Most aftermarket rails do not have a flow direction to them (ports on left and right), simply connect to either port.



Fuel Pressure and Orifice Adjustments

Included with each kit are 3 different style orifices. The smallest one is installed in each regulator, which will work perfect on cars with large single pump running up to 500HP. Beyond that point, you should consider installing one of the larger size restrictors. The purpose is to allow for a low enough base pressure. If you are running extra-large pumps, you may experience your base fuel pressure being too high. If this happens, install the next larger restrictor. Do not run a restrictor that is too large or unstable pressure spikes can occur as well as the adjustment will be very finicky. See chart below for guidance:

- Black Restrictor .100" Orifice (installed) works up to 500HP
- Gold Restrictor .200" Orifice (recommended for 500+HP running dual pumps or special fuel pump setups)

Orifice and Base Fuel Pressure Adjustments

The PERRIN adjustable fuel pressure regulator can be fine-tuned for your application. In order to accomplish these adjustments, a fuel pressure gauge must be installed along feed portion of fuel system. Included with each regulator is a port located on the bottom which can be used to install a pressure gauge or sensor. This port is threaded 1/8NPT which is most commonly used for fuel pressure gauges and sensors.

Base Fuel Pressure adjustments:

1. Start engine with fuel pressure gauge being visible, and let car run for a minimum of 5 minutes or until car is fully warmed up.
2. Remove vacuum tube from regulator and pinch off hose temporarily. **Note: This is done to eliminate intake manifold vacuum from affecting fuel pressure readings.**
3. Using 3/8" wrench, loosen the jam nut on the top of the PERRIN fuel pressure regulator.
4. Using a 3/32" allen key, tighten or loosen set screw.
 - a. To increase fuel pressure turn the set screw in a clockwise rotation.
 - b. To decrease fuel pressure turn the set screw in a counter-clockwise rotation.
5. Tighten jam nut once adjustments have been completed.
6. Recheck fuel pressure reading matches factory service manual one last time.



Orifice Changes:

1. Relieve fuel pressure from vehicle by unplugging fuel pump connector under back seat while car is running. This will cause the car to stumble and die as fuel pressure drops. Continue to start the car at least 4 more times for at least 5 seconds each time. **Note: This will not remove fuel from the fuel lines, but only relieve pressure. When fuel lines are disconnected, fuel will still spill out and proper rags and ventilation will be needed to handle spillage.**
2. Remove six bolts from top of fuel pressure regulator using a 9/64" allen key. **Note: There is a constant pressure applied to the diaphragm and cap by the spring inside the fuel regulator. As screws are loosened, the cap will start to pop up. Be prepared to hold cap down as screws are removed. Make sure parts do not get lost upon removal of these bolts. Take note of orientation of parts as well as use supplied diagram to help determine direction of parts during re-assembly.**
3. Remove cap, spring perch, spring and diaphragm from housing and set aside. **Note: Whenever regulator is disassembled check diaphragm for any wear and tear, which may cause a fuel pressure problem. If the diaphragm is damaged contact your PERRIN dealer to purchase a replacement diaphragm.**
4. Using a 3/8" socket, remove orifice from housing. **Note: Be careful not to scratch or damage the surface of the orifice in any way, as it is a precision ground surface for the diaphragm to seal on.**
5. Choose the proper orifice for your application based on the above info, or your own testing. Put a small amount of oil or grease on threads of orifice to prevent galling of threads. Install and tighten to 10 ft-lbs.
6. Re-assemble the fuel pressure regulator using assembly diagram, making sure small round portion of diaphragm faces orifice and diaphragm is seated in housing properly. Tighten (6) bolts to 24 in-lbs (**not ft-lbs!**)
7. Plug fuel pump connector back onto fuel pump, and turn key to the on position (Not starting the engine) for 4 seconds to prime the fuel system. Do this roughly 5 times and check for fuel leaks at all connection points.
8. Start engine and let run for 10-15 seconds, then shut it off. Check for fuel leaks. If no leaks are found, reinstall back seat, and take car for a 10 minute test drive. Check for leaks one final time. **Note: If at any time fuel leaks are found, stop and fix them immediately!**
9. Recheck for fuel leaks after 1 day of driving, and then one final check after 1 week of driving.

Questions, Comments and Suggestions Contact: Tech@PERRINperformance.com

Visit Our Website for Instant Chat Options at www.PERRINperformance.com

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