

Fuel Rail Cross-over (FRx) Kit Installation Instructions



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IMPORTANT: Before starting installation, please be sure that all items which were supplied with the kit are accounted for.

FRx Fuel Pressure System with 3 Regulator Springs
Viton O-ring for Fuel Pressure Regulator
Replacement Parker fuel return line sleeve
Gasola NPT Thread Soft-set
2 new 5/32" Allen screws
4 pages of Installation Instructions



Required Tools:

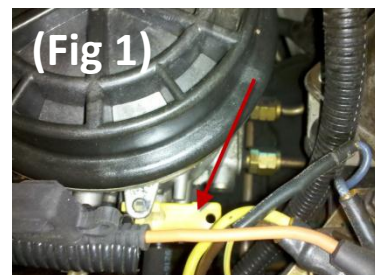
T-25 Torx Driver
13 mm Deep Socket
Vice Grip or 6-Inch Adjustable Wrench
5/16" Combination Wrench
5/32" Allen Wrench
Optional Tools/Supplies
Container for draining fuel bowl (pint or quart)
Small Bungee Cord
Wire Loom (used as protective cover for hoses)

CAUTION: Make sure to not lose the supplied fuel sleeve, or the fittings will not create a seal on the hard fuel line and you will experience severe fuel leakage. Always remove old sleeve before installation of the new supplied sleeve.

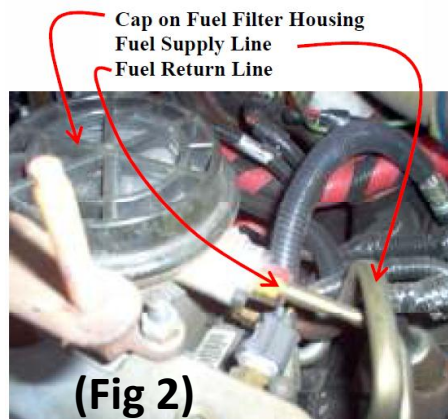
Installation:

- 1) If present, remove Power Stroke cover (above fuel filter - #4 in Reference Schematic - 13mm deep well socket).
- 2) Drain the fuel filter housing in order to prevent spillage of diesel fuel into the engine valley when you later disconnect the fuel lines (turn the yellow handle on back side of housing). (Fig 1)
- 3) Disconnect the Fuel Return line from the right (driver) side of the fuel filter housing (#2 in Ref. Schematic), which is connected at a point almost directly above the line feeding the fuel filter housing. (Fig 2)

NOTE: It may be helpful to use a bungee cord if you're working by yourself to hold the fuel return line out of the way.



(Fig 1)



(Fig 2)

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4. Remove the two Torx bolts holding the OEM fuel pressure regulator to the fuel filter housing (the adapter where the Return line was connected – Torx T25). Be careful to not lose the spring and plunger from inside the fuel pressure regulator. (Figure 3)



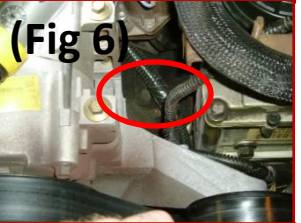
5. Choose which spring you want to install to get the pressure desired (Silver = 58-61 psi, Gold=62-65 psi, or Black=67-70 psi) Insert the spring and plunger into the new FRx regulator block, and make sure to CENTER the spring into the stepped bore of the FRx to ensure proper pressure regulation. Otherwise, if the spring is not centered, there will be excessive fuel pressure in the lines.



6. Install the new Riffraff fuel pressure regulator block to the side of the fuel filter housing where the OEM regulator had been using the supplied O-ring.
7. Loosen the two fuel bowl mounting bolts (on front of HPOP reservoir) until the threads disengage from the fuel bowl. It is not necessary to completely remove the bolts from the reservoir. Unbolting the fuel bowl will allow about 3/4" sideways movement and will give you the necessary additional room to mount the new FRx regulator block on the bowl. (Figure 4)



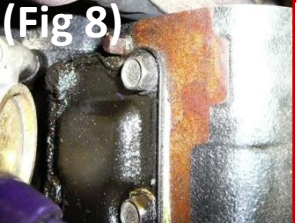
8. Re-install fuel return line to the FRx housing with supplied Parker fuel sleeve installed. Make sure you remove the old sleeve prior to installing the new sleeve. Reinstall and tighten the fuel bowl mount bolts (Figure 5)



9. Remove the fuel test port plug on the passenger side (#6 in the Reference Schematic, front of engine near fuel filter housing – 9/32 inch square head on it and may be hidden behind a wire loom that can be pushed aside for easier access. Use either Vice Grips or an adjustable wrench to break this plug free. Then use a 5/16 inch wrench/socket to complete its removal. (Figure 6) Note: A 5/16" 8-point socket will also fit this plug if available.



10. Use the supplied packet of Gasoila thread sealant to install one of the supplied 1/8" NPT-JIC fittings in place of the plug and connect the shorter of the two hoses from the FRx regulator to the fitting. (Figure 7)



IMPORTANT: NEVER use plumber's Teflon tape since small pieces of Teflon will get shaved off and can find their way into an injector and foul it. Use thread sealant on tapered pipe threads ONLY.

11. Remove your air intake hose/tube and turbo inlet tube for access to the rear fuel port fitting on the driver's side. (As Required)

12. As in Step 9, remove the rear fuel port plug in a similar fashion as used for the first one. (Figure 8)



13. Install the second 1/8" NPT-JIC fitting into the fuel port where the plug was located, using Gasoila thread sealant. (Figure 9)

NOTE: If you have an early '99 model engine, you will need to grind some off the up-pipe collector to make room for the fittings. Reference picture is on same page as Reference Schematic.

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14. Route the longer (lower) hose underneath the turbo intake tube area so that it follows the engine valley. Ensure that the hose does not ride against any wiring or components. Using sleeving or wire loom will aid in protecting from chafe damage.

Warning: *Please be aware that correct routing of lines is important to prevent chaffing of the line itself or other objects it contacts. Riffraff Diesel is in no way liable for improper, incorrect, or inexperienced installation.*

NOTE: *The hoses supplied in this kit are 20 % Biodiesel compatible as well as heat and vibration resistant. Close proximity to the turbo will not affect the hose.*

15. Re-install the turbo intake tube and the air filter intake hose/tube.

16. Get ready to test for leaks – remove any tools, rags, etc. which can vibrate loose and fall into the engine area.

17. Without starting the engine up, insert the key into the ignition and turn it to the “on” position so the fuel pump can re-fill the fuel filter housing. Leave the switch on until the pump shuts off (about 20 seconds), and then turn the ignition switch off. To purge all the air from the fuel lines, repeat this process 2-3 more times.

18. Check for leaks before starting the engine.

19. Start the engine and check for leaks.

20. You should take the truck out to run it for at least 10-15 minutes as a way to ensure that all potential air has been completely purged from the entire fuel supply/return system. In rare cases, it may take a little longer to purge all air from the entire system,

21. Re-check for leaks once more upon returning from the test run in the previous step.

22. Re-install the Power Stroke cover, if desired.

NOTE: **This product, like any other OE or aftermarket part, is a “wear” item and must be checked periodically for wear or chaffing from installation variations or use.**

Credit for pictures and information to Pete (F250_), Robin Payson (PaysonPSD) , Ken (Woodnthings) and the whole FTE crew. Thanks!

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Buyer affirms products purchased are engineered to increase automotive performance and are used at buyers own risk and accepts full responsibility.

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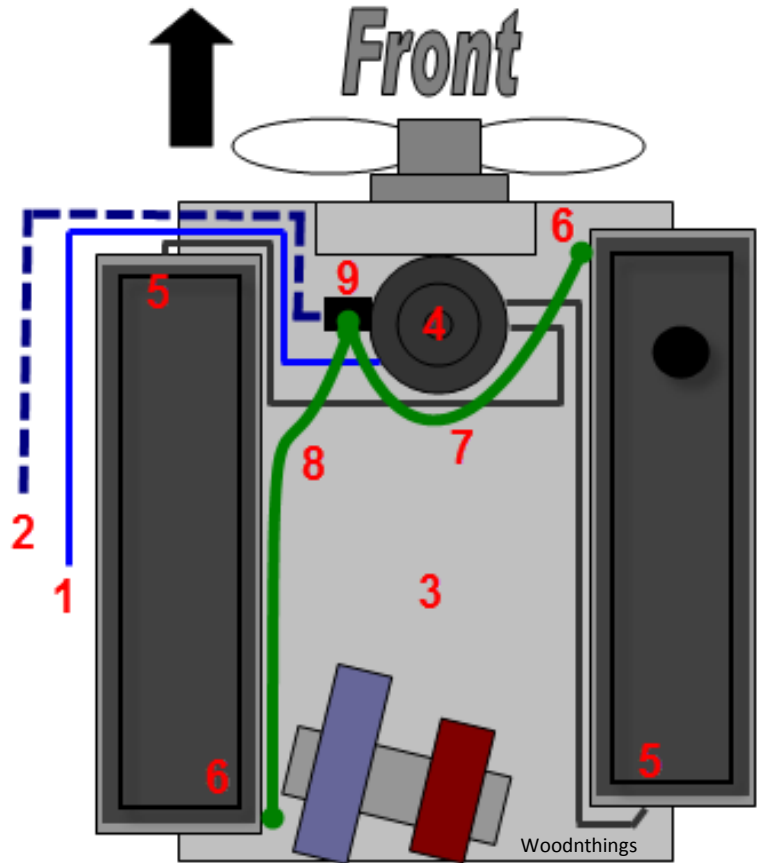
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Riffraff Diesel FRx Kit Reference Schematic

Legend for Schematic

- 1) OEM Diesel Supply Line
- 2) OEM Diesel Return Line
- 3) Engine Valley
- 4) OEM Filter Housing
- 5) OEM Supply Fuel Ports
- 6) Previously Unused Fuel Test Ports
- 7) Passenger Side FRx Hose
- 8) Drivers Side FRx Hose
- 9) FRx Regulator Housing



Reference Picture Early '99 Models



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