

CNC Fabrication takes great pride in the quality and fitment of our products, and we thank you for purchasing **“The Original 4-Line Feed”** fuel line kit for your 03-07 6.0L Powerstroke.

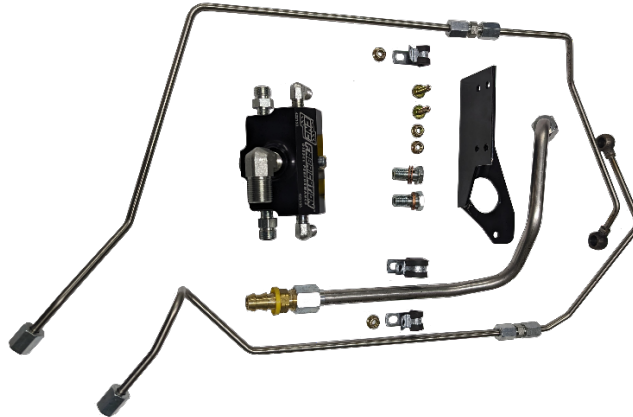
CNC Fabrication, LLC 4 Line Feed Fuel Line Kit for 03-07 6.0L Ford Powerstroke Installation Instructions with a Stock Intake Manifold installed.

PN's: 422150, 422151, 422152

\*\*Please read these instructions first to give you an idea and continue to refer to the pictures as a reference guide. If you feel uncomfortable doing this install, please seek out one of our many authorized dealers, a professionally trained diesel mechanic, or someone very familiar with hydraulics and fuel systems.\*\*

## CONTENTS:

*Fittings are pre-installed on the lines and on the manifold block*



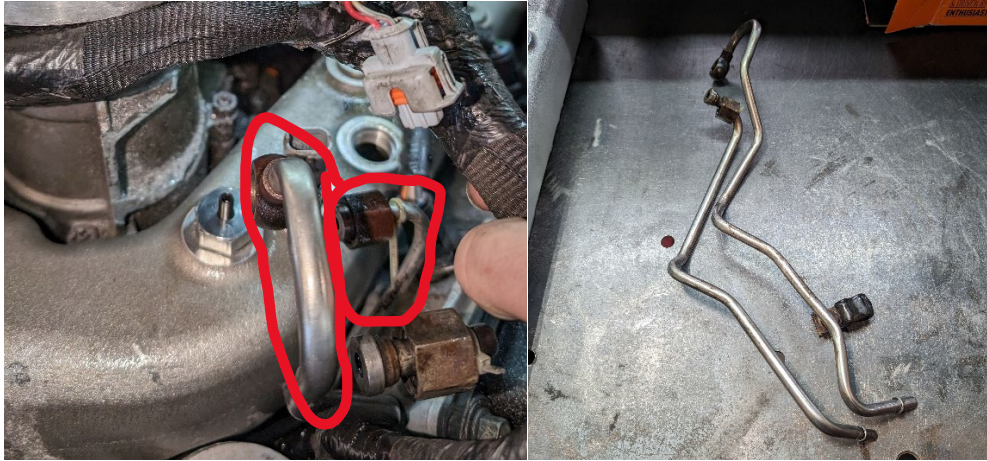
- 1qty driver rear line
- 1qty passenger rear line
- 1qty fuel supply hard line to manifold with brass Pushlok fitting
- 1qty fuel manifold with fittings all installed (pressure sensor port on top and used to bleed the air out during installation)
- 1qty fuel manifold bracket (attached to manifold block)
- 1qty supply line clamp
- 2qty line clamps for driver and passenger lines on top of intake
- 2qty banjo bolts with banjo sealing gaskets
- 4qty M6x1.0 nuts (to hold the cushion clamps and bracket to the intake)
- 2qty M6x1.0 bolts (already installed to hold the manifold onto the mounting bracket)

1. Remove the battery ground clamps on each battery for safety reasons.
2. Remove the air filter and intake tube to the turbo.
3. Remove the drive side intercooler pipe.
4. Remove the 90-degree air intake inlet elbow and place masking tape or duct tape over the opening to prevent anything from falling into the intake.
5. Remove the passenger side intercooler pipe.
6. Remove the accessory belt and remove the alternator (this is NOT necessary, but does not take long to do and creates more space to work during the installation).
7. Disconnect the fuel lines from the fuel filter housing on top of the engine.
8. Remove the oil/fuel filter housing from the engine and do NOT remove the factory fuel lines that go to the front of the cylinder heads. Place a clean rag/towel over the oil filter housing area to keep debris out of the oil system.
9. After the oil/fuel filter housing has been removed, place it on a work bench to secure it down and cut off the fuel filter housing off the oil filter housing with either a Sawzall, grinder with a cut-off wheel, or similar cutting tool. (Be sure to wear safety glasses for this procedure). Be sure you cut off enough material on the oil filter housing so the driver side fuel line does not touch the housing. If you purchase the 6.4L Powerstroke oil filter housing (PN: 3C3Z6881AA) then disregard cutting off the fuel filter housing off the oil filter housing.



10. Unplug any necessary sensors to get the main engine harness out of your way as much as possible to make room to work during the installation. The more you unplug the more the harness will be out of your way, but you do NOT have to remove the whole engine harness.

11. Remove the factory supply and return line set from the front of the engine that fed the factory fuel filter housing. See below



12. Remove the rear fuel rail end plugs on the back side of the driver and passenger cylinder heads. Up-pipes do NOT need to be removed but will make the job easier if you loosen the bolts at the exhaust manifold and/or the V-band clamp at the turbo. Picture below is the back of the passenger side head.

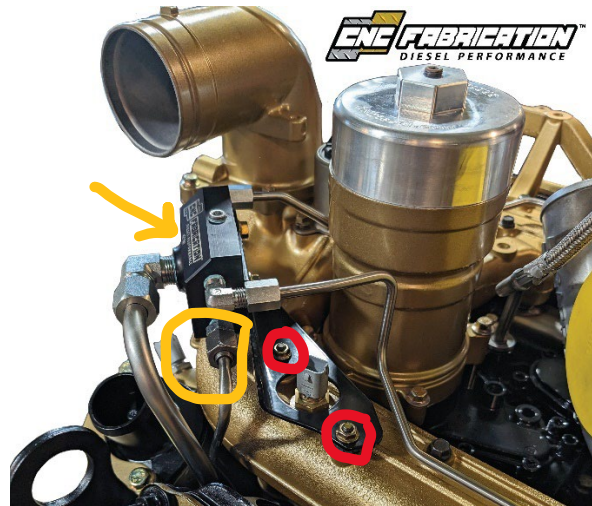


13. Clean the sealing flat spots where the banjo washers seal.

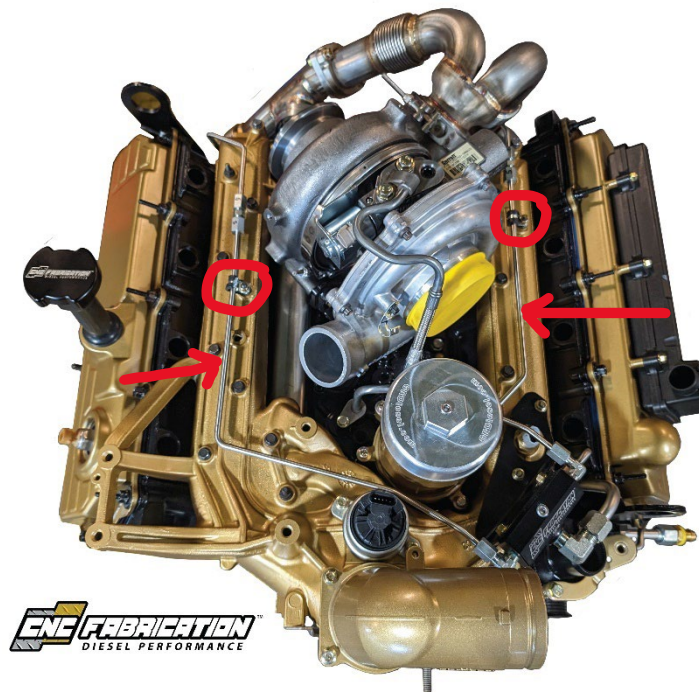
14. Undo the union on the CNC Fabrication fuel lines and install the driver and passenger rear fuel line halves. Do NOT tighten down the banjo bolts at this time.



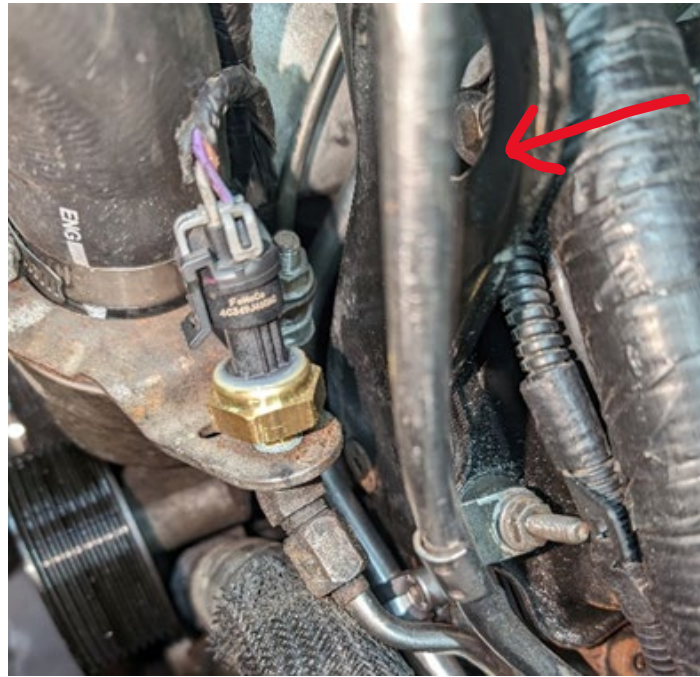
15. Install the fuel manifold/bracket assembly, only finger tight the nuts and bolts so you can align the fuel lines properly. \*\*See fuel line alignment pictures at the end of the install instructions\*\*. When aligned correctly, the tube nut should thread on without using a wrench.



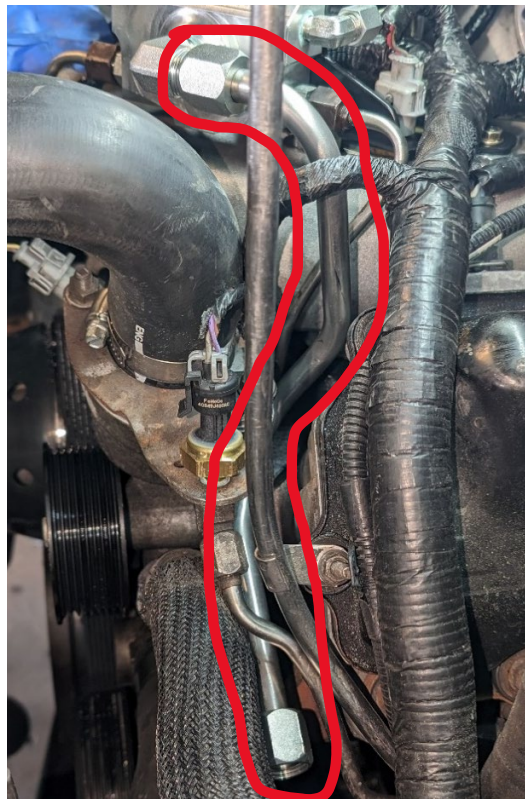
16. Reconnect the factory front driver and passenger fuel line nuts onto the lower o-ring faced fittings that are already installed on the CNC Fabrication fuel distribution manifold. See picture above in step 15 circled in yellow.
17. Install the CNC Fabrication driver and passenger front half fuel lines to the fittings on the manifold. Do NOT tighten the fuel fittings yet. Install the 1/4 inch cushion clamps onto the passenger and driver lines on the factory stud nuts.



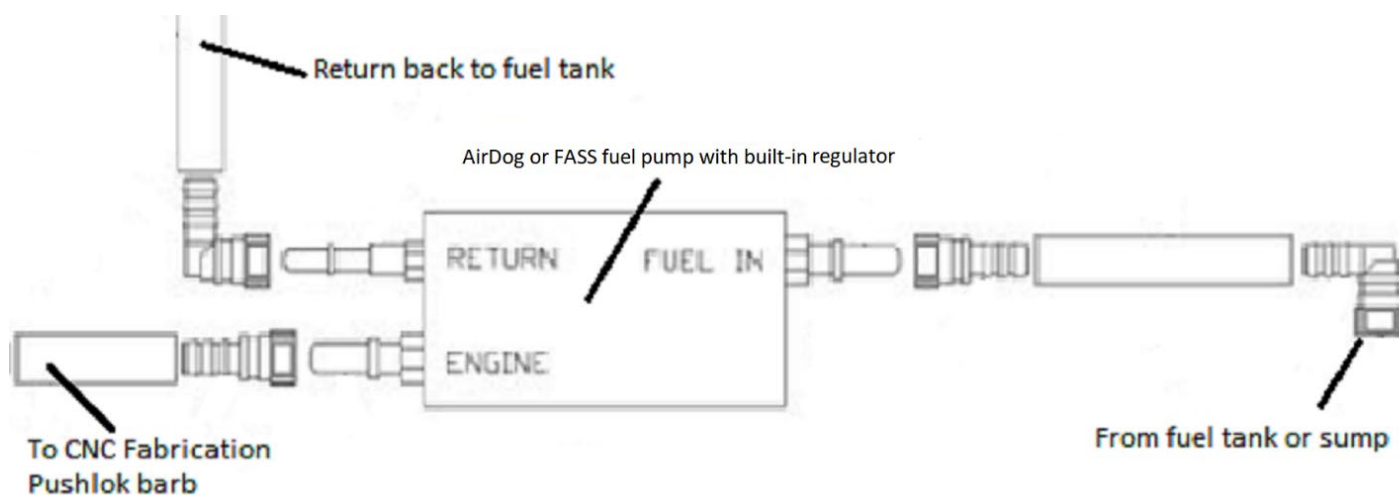
18. Remove the driver front “engine removal eyelet”. This is NOT absolutely necessary, but will make it easier to install the CNC Fabrication ½ inch fuel supply line.



19. Feed the fuel supply hard line down behind the thermostat housing and hand thread the nut onto the fitting on the manifold block. Do not tighten yet with a wrench.



20. Re-install the engine removal eyelet bracket and install the supplied ½ inch fuel line cushion clamp using the factory bolt that held the factory fuel lines in the same spot.
21. Now tighten down all the fuel line fittings (unions for the driver and passenger side lines, connections for the 2 CNC lines at the manifold, 2 factory fuel lines at the manifold, the nut onto the ½ inch 90° on the manifold) and be sure the tube is properly aligned going into the fittings (see picture below at the end of these instructions for tube alignment). The ferrules are already properly “swaged/set” onto the tube from CNC Fabrication, so re-tighten the connection to finger tight (you will feel as you tighten the nut onto the fitting body it will start to straighten the tube and won’t be able to wiggle), and then wrench-tighten another 1/3-1/2 of a turn. **DO NOT OVER TIGHTEN THE NUT ONTO THE BODY OR THE FERRULE WILL CUT TOO DEEP INTO THE TUBE AND CREATE A THIN SPOT POTENTIALLY CRACKING THE TUBE.**
22. Tighten the banjo bolts on the back of the heads, the driver and passenger 1/4 inch cushion clamp nuts on top of the intake, the bracket that holds the fuel manifold to the Odawg intake manifold, and the bolts that hold the manifold onto the bracket.
23. Your CNC Fabrication 4-line feed fuel line kit is now installed.
24. Depending on what fuel pump you have installed, route your supply line/hose from the fuel pump to the 1/2 inch Parker Pushlok hose barb that is pre-installed onto the ½ inch CNC Fabrication supply hard line. We prefer **the AirDog 5G A7SABF593** since it is self-regulated and has an adjustable regulator. You can also use the FASS Titanium series pumps but be sure to select the correct GPH flow rating depending on the size of injectors you have. We like the AirDog and FASS due to the Lifetime warranty you get with them. If you have the factory fuel pump or are using a 6.7L Powerstroke fuel pump, you will need to install a Fuelab 51501-1 (or something similar) to regulate the correct amount of fuel pressure. We recommend setting the pressure to 60-65 psi.
25. If you already have an AirDog or FASS fuel pump installed, the next couple of steps are easy. Just connect the existing ½ inch fuel supply hose to the CNC Fabrication supply hard line. Remove the AirDog or FASS return line out of the engine bay area back to the pump. Then from the AirDog or FASS pump return port on the pump itself, route the return hose back to the fuel tank. See diagram below. There is NO NEED to put a regulator in the engine bay as the FASS or AirDog already have a built-in regulator. Having the regulator on the frame keeps the engine heat away from the regulator and lengthens its longevity and keeps your fuel significantly cooler in the tank.



26. Bleeding the air out of the system. The 1/8th inch allen head plug on top of the manifold block will be slightly loose to help bleed the air out of the system. Use an allen key (T-handle style is preferred) and loosen the allen plug enough so that air can purge out. Place shop rags/towels around the allen plug to keep fuel from spraying all over. Reconnect the battery grounds and cycle the ignition on (DO NOT CRANK OR START THE ENGINE) and be sure the fuel pump turns on. This will send fuel to the engine and purge out the air in the lines. Do this 2-3 times and leave a minute or 2 in between each key cycle time so the fuel can drain down into the lines and heads and push any air back up to the top of the manifold.



27. Remove the 1/8th inch allen head plug and apply fuel grade thread sealant to the threads and re-install the plug. If you have a fuel pressure sensor, install the sensor with the same type of sealant in place of the plug.
28. Cycle the key on again a few times and visually inspect all the connections for potential leaks where you may have forgotten to tighten a fitting.
29. After you verify there are no leaks, remove the battery grounds again and now reinstall all removed parts above earlier in the installation process. For example, the CAC pipes, air filter and intake tube, remove the tape over intake inlet, install the intake elbow, alternator, accessory belt, etc.
30. Re-connect the battery grounds and start the engine. FYI, the engine will more than likely run a bit rough and misfire potentially due to some residual air in the system that did not bleed out. This will purge out rather quickly when the injectors fire. Taking a test drive and giving slightly more than normal acceleration will speed up the air purging out of the lines. Be sure to do this in a safe area in case the vehicle may stall (this is not normal but can happen right after this install).

**Congratulations, you have successfully installed your CNC Fabrication 4-line feed fuel kit.**

**If you have any questions or concerns, please reach out to us at 419-636-0000 and we will be more than happy to assist you. Thank you for purchasing “The Original 4-Line Feed Fuel System”.**

