Please read all instructions before installation.

Thank you for purchasing the ATS High Performance Fuel System for the Ford 6.0L Power Stroke. This manual is to assist you with your installation of the system. If you are installing this system for a customer, please pass this manual on to your customer for future reference.

This installation, while not complicated, is time consuming. Some steps can be difficult due to the position of some components in the engine compartment. Please read through all of the instructions, and if you are not comfortable with the install, have a qualified technician do it.

1. Begin with Stage 2 instructions until directed here.
2. Raise the pickup and support it with jack stands or hoist that are rated to safely support the weight.
3. Lower fuel tank assembly.
4. Remove fuel tank sending unit. Cap old supply line end with provided vacuum cap and hose clamp. Note: Take care not to bend fuel float arm.
5. Mark location for fuel tank inlet tube to be placed. Be sure to position inlet tube to clear frame and/or truck body, you need at least 3 inches of space between the sending unit and the truck bed to mount the bulkhead, 90º, and hose barb fittings.
6. Drill marked location on sending unit top to 7/8”. A Unibit works well for this, be sure to keep metal shavings from entering the fuel tank.

Example of pick-up tube hole.

This location will vary for different truck and tank styles.

The important thing is sufficient clearance for the fitting above and the tube below.
8. Assemble pickup tube with fittings \( L, M, N, O \) and the two copper washers. Place the longer end of the bulkhead fitting inside the fuel tank because clearances outside the tank may be tight.

9. Measure tube distance from sending unit sealing surface to bottom of stock fuel pick-up foot. Foot may have slid down stock tube during removal; ensure it is fully seated on stock tube for an accurate measurement. ATS fuel pick-up tube is sent long to allow for final length adjustment. Trim tube until it is 1/4” above the bottom of the stock fuel pick-up foot, as shown below. **Note:** If tube is too close to the bottom of the tank the pump suction will not have adequate flow and may cavitate. This will cause insufficient fuel flow to your engine and will eventually damage the fuel pump. It is critical to keep the tube mouth off of the bottom of the tank. Also, cutting the tube too short will result in fuel starvation of your truck with adequate diesel left in the tank. **DO NOT RE-USE STOCK FUEL PICK-UP FOOT ON NEW ATS PICK-UP LINE (EVEN THOUGH IT MAY FIT NICELY), THIS WILL CAUSE TOO MUCH SUCTION RESTRICTION AND LEAD TO FUEL PUMP CAVITATION.**
10. Final assemble pickup tube assembly copper rings both on top of and below the sending unit plate. A small amount of “Ultra Black” silicone is recommended around sealing area after nut is tightened.

11. Attach #821-10 hose to fitting $Q$. **Note:** **Hose is a push-loc design, no hose clamp is required.** Push hose onto fitting until it seats against plastic ring. A slight amount of oil or diesel fuel may help to assemble fitting and hose.

12. Attach fitting $Q$ to 90º bulkhead fitting $O$ (on pickup tube assembly) and tighten.

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**Stock fuel pick-up foot.**

**Fuel tank sending unit with new pick-up tube assembly installed in tank.**

**Cap on stock fuel pick-up tube.**
13. Route hose inside frame rail and re-install fuel tank assembly. Be careful not to pinch hose.
14. Route hose to existing fuel pump Horizontal Fuel Conditioning Module (HFCM) on inside frame rail.
15. Remove fuel pump module (HFCM) from frame rail.

16. Using fittings $Q$, $R$, $S$, $T$, and $U$, assemble fuel filter and pump assembly as shown above. Ensure correct orientation of filter and pump (the filter has an arrow for the direction of flow and the pump inlet is marked). **Tighten all fittings.**
17. Attach fuel pump to mounting plate and then attach mounting plate to existing fuel pump module (HFCM) mounting bracket as shown. (picture unavailable as of press time)
18. Trim fuel supply hose #821-10 to length and attach to hose fitting $Q$ on the supply end of the filter.
19. Attach #821-8FR hose to fitting $U$, making sure hose seats against plastic ring.
20. **Re-check fitting tightness.**
21. Route #821-8FR fuel line from pump to fuel filter housing in engine compartment. Keep hose clear of moving parts (steering shaft, front driveshaft, etc.) and exhaust manifold.
22. Remove fuel supply line and fitting from fuel filter housing. Fuel supply line can be removed from vehicle if so desired.

**Stock Fuel Filter Housing.**

**Stock Fuel Return Line.**

**Stock Fuel Supply Line.**

**Stock Driver’s Side Front Cylinder Head Supply Line.**
23. Install fitting $V$ into fuel filter housing where fitting was removed. **Note:** If you have an 05-06 then fitting $V$ will be made up of two fittings.
24. Install 90° fitting $W$ into fitting $V$.
25. Trim fuel supply hose to length and attach hose fitting $U$.
26. Attach fuel supply hose and fitting $U$ to fuel filter housing.
27. **Tighten all fittings.**

![Fuel filter housing supply line fittings. Note: In 05-06 models part $V$ will be two fittings.](image)

28. Using tie-straps, secure fuel line from tank to engine to maintain the least amount of movement. Be sure to keep fuel line away from moving parts and hot exhaust components.
29. Locate electrical connection that was disconnected from fuel pump module (HFCM) at frame rail. There were three of them, the one you want is the one that was the frame rail side and most forward. See picture below for location. In that connector is a pink and black wire, this is the one you will tap to control the new fuel pump relay. The wiring

![Steps 22-26. Fuel return line and driver’s side cylinder supply line removed for clarity.](image)
diagram will provide more details. For now, don’t remove your old fuel pump relay, it will be the one that controls your new relay. The Aeromotive fuel pump requires a 30 amp circuit vice the 20 amps needed for the old pump. We kept the old relay in the circuit for two reasons: One, this prevents having to hunt around at the power distribution box for the correct wire and Two, the fuel pump inertia shut-off switch will remain in the circuit for the new pump.

30. See attached wiring diagram. Wiring can either be cut or tee’d into existing harness. Be sure to solder and shrink tube all connections. **T-taps are not an acceptable wiring attachment.**

31. Mount the Relay and Fuse Holder near your vehicle’s battery, ensure the red 10 gauge wire from the Fuse Holder will reach the positive battery terminal, do not connect it at this time.

32. Route the harness with #10 red & #18 white wires from near the battery to the new fuel pump.

33. At the Aeromotive fuel pump, cut the 10 gauge red wire to length, attach an eye fitting, and connect it to the positive terminal of the pump. Ensure connection is tight.

34. Near the Aeromotive fuel pump, locate the stock fuel pump connector that was forward and closest to the rail (in picture above it is the grey one). Locate the pink and black wire in the harness that runs to this connector. Cut the wire far enough from the connector so that you will have room to splice back to it if you ever want to go back to your stock system. Butt-splice the 18 gauge white wire into the pink and black wire. Reference wiring diagram.

35. At the Aeromotive fuel pump, attach the ~ 2 foot long 10 gauge black wire to the negative pump terminal and to a good frame ground nearby. Wire can be cut to length as needed. Steps 36 and 37 involve the truck’s batteries. There is a significant amount of stored potential in them, **enough to kill you if an accident occurs.** Pay special attention to and heed all precautions for work on or around the batteries.
36. At the truck battery, connect the 10 gauge red wire from the fuse holder to the positive terminal of the battery. Ensure the terminal is clean and free of corrosion. **CAUTION: DO NOT SHORT POSITIVE BATTERY TERMINAL TO GROUND, EXPLOSION AND DEATH COULD RESULT.**

37. At the truck battery, connect the 18 gauge black wire to the negative terminal of the battery. Ensure the terminal is clean and free of corrosion. **CAUTION: DO NOT SHORT NEGATIVE BATTERY TERMINAL TO POSITIVE, EXPLOSION AND DEATH COULD RESULT.**
Install supplied 5/16” steel tube into return line section where HFCM was disconnected, as shown below. **NOTE:** Do not cross the lines, ensure 5/16” line is installed into the fuel return line and not the fuel supply line. There are arrows on the fuel pump to use as a reference for which is the supply and which is the return line.

38. Reinstall the air box.
39. Reinstall the intercooler pipes.
40. Reconnect the negative battery cables.
41. Start the truck. Check for any fuel leaks. Using a fuel pressure gauge adjust pressure to 50psi at idle. To adjust pressure loosen locknut on regulator and turn clockwise to raise pressure and counter-clockwise to lower pressure. Pressure above 50 is not needed nor is it desirable. Fuel pressure will ramp up to 70psi under load which is sufficient to feed injectors.

Note: Fuel pump has a 2-year Manufacturers warranty.
We strive to make our instructions as clear and complete as possible. To achieve this, our instructions are under constant construction. We encourage you to visit our Technical Support Website (http://www.atsdiesel.com/ATSWebsite/Technical.asp) to check for the **most up-to-date manuals and diagrams** as well as other information. If you have any suggestions as to how we can improve this installation manual, let us know at Suggestions@ATSDiesel.com

Thank you for purchasing the ATS High Performance Fuel System. Call or check our website for other products that ATS has developed for the 6.0L Power Stroke including E-Power Tuners, Head Studs and Fire Rings, fuel injectors, Aurora Turbochargers, Five Star™ Viskus Drive Torque Converter, Heavy Duty Transmission, Torque Pro Propane Injection, and Stainless Steel Exhaust. If you have problems with this install, please call or e-mail our Technical Service Department, 8:00am to 5:30pm Mountain Standard Time, Monday through Friday.

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ATS Diesel Performance
Limited Warranty Statement

ATS Diesel Performance warrants the original purchaser that any parts purchased shall be free from defects in material and workmanship. ATS Diesel Performance is the warrantor of this product, in the event this product is purchased form a distributor or retailer other than ATS Diesel Performance the customer must contact ATS Diesel Performance for any warranty concerns, not the purchasing dealer. A defect is defined as a condition that would render the product inoperable. This warranty does not cover deteriorating of plating, paint or any other coating. ATS liability is limited to the repair or replacement, at ATS’s option, of any warrantable product returned prepaid with a complete service history and proof of purchase to the factory. A valid proof of purchase is a dated bill of sale. Repaired or replaced, product will be returned to the customer, freight collect on a like-for-like part number basis. Accepted warranty units, which have been replaced, become the sole property of ATS.

A Return Product Authorization number obtained in advanced from an ATS customer service representative must accompany products returned for warranty determination. ATS will be the final authority on all warranty decisions.

This warranty shall not apply to any unit which has been improperly stored or installed, subjected to misapplication, improper operating conditions, accidents, or neglect; or which has been improperly repaired, altered or otherwise mistreated by the owner or his agent.

This warranty shall terminate at the end of 12 months in service with the original user. Labor cost incurred by the removal and replacement of an ATS product, while performing warranty work, will be the responsibility of the vehicle owner; in no case does the obligation of ATS Diesel Performance exceed the original purchase price of the product as indicated on the original bill of sale.

Except as set forth in this warranty, ATS disclaims any implied warranty, including implied warranties of merchantability and fitness for a particular purpose. ATS also disclaims any liability for incidental or consequential damages including, but not limited to, repair labor, rental vehicles, hotel costs or any other inconvenience costs. This warranty is in lieu of all warranties or guarantees, either expressed or implied, and shall not extend to any customer or to any person other than the original purchaser residing within the boundaries of the continental US or Canada.

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