**444fab Fuel System Instructions**

 **Obs efuel 94-97**

**Important Info**

**You must carefully read and understand these instructions beginning to end, there are many important details you may miss.** Before starting the install take the time to layout the whole system. Make sure you completely understand its install, operation and are fully equipped to finish the job. This install is recommended for advanced mechanics with knowledge in 7.3s and aftermarket fuel systems. Do not bring to local mechanics who have never installed a system like this before as you will likely get unsatisfactory results.

**Disclaimer:** For off-road use only unless permitted by law**. End user assumes all liability for this system.**

**Needed:** socket and wrech set, crow’s feet wrenches, needle nose vice grips, zip ties, wire strippers and crimpers, electrical tape, drill bit set, Dremel (97 trucks only), crash safety switch (inertia switch), fuel pressure gauge (budget kit), rtv sealant, brake clean, liquid Teflon based thread sealant rated for fuels and oil.

Use caution when working with all fuel system components. Never install components in such a way they will vibrate, rub or chafe on other parts. Double check all connections for leaks and re-tighten all flare connection after 1 week. Periodically check all lines for wear or leaks, service filters minimum every 10-20k miles depending on conditions and listen for abnormal pump and regulator operation.

**Replacement Parts**

Filters wix 3367 pre pump and 3528 post

Filter base wix 4770

Fuelab regulator 51502, rebuild kit 14601

Common pumps, walbro gsl392, bosch 69136

Lingo used in instructions you may not know:

Street fitting: Fitting with male on one side and female on the other (drivers rear brass fuel fitting)

JIC: 37\* flare connection (regulated return and premium pump unit hardline connections)

NPT: National pipe thread, tapered connection (Fittings into cylinder heads and filter bases)

For all npt (Pipe Thread) connections, thoroughly apply **liquid thread sealant** to the male threads filling the threads completely. All 1/8” npt connections are hand tightened plus 1-2 full turns. ½” npt is hand tight plus 2-3 full turns. **Don’t overtighten you could crack the head causing serious damage. Teflon tape is NOT recommended.**

Any connection using blue pushlok hose on a fitting with a **yellow ring** does not require a clamp. Simply lubricate the hose and push on the fitting until the yellow ring cannot be spun. For all other hose connections secure with provided clamps of appropriate size.

***Feel free to contact us at any point during the install with questions***

**Email:** **fueledby444fab@gmail.com** **subject: tech support “order number”**

**Please reference which step you are stuck on, include pictures if able.**

**Once you have followed these instructions we can arrange a phone call if needed**

 **Regulated Return Install Premium Kit**

* Start by removing the fuel bowl, pump, and 1/4” lines at all four corners of the cylinder heads. Make sure to clean thoroughly around all 4 fittings in the cyl head before removing to ensure no contaminants enter the fuel rails (brake clean and a wire brush works well). Valley fuel pump is removed by unbolting and then turning the engine over with a breaker bar to push the pump out. Plug hole with supplied freeze plug and rtv sealant, a socket may be used to drive the plug in, insert just past flush.
* For 94-96 trucks with 2-piece fitting on drivers rear feed line, separate the two piece fitting leaving the street 45\* in the cyl head and install the new 45\* steel jic fitting into the existing brass street 45\*. Don’t alter the angle of the brass 45 much it is facing the correct way from the factory.
* For 97 trucks with a 1 piece fitting you must cut the fitting in half with a Dremel type tool to gain enough room for removal then install new brass street 45\* facing forward followed by the steel jic 45\*. You must also grind some material off the up-pipe flange or the new brass 45\*(preferred) to gain enough clearance. Turbo removal may also be considered on 97 trucks but not necessary. Contact us for 97 help.
* **This fitting arrangement can be a difficult part of the kit. The angle of the 2 fittings greatly affects how the stainless lines will align. The brass 45 faces straight forward and the steel 45 is angled to meet the stainless line you will be installing next. Closeup is shown in included pictures. Be patient and contact us if you need help.**
* **If you are using aftermarket intake plenums** that are much thicker than stock you may have a clearance issue with the brass 45, simply grind the brass fitting or plenum to fit.
* Install the straight jic fitting in the passenger rear cyl head.
* Brake clean out new stainless fuel lines to ensure no contaminants are in the lines.
* **Installing rear feed lines**. Remove the tee and barb fitting until both lines are in place. Lines are shipped with fittings on the correct ends, don’t install drivers line backwards, if you lose direction of drivers line the end that’s 4in from the bend goes rearward. Both passenger and drivers lines go between turbo pedestal and block underneath plenums as shown in pictures. It takes a little wiggling to get the drivers line up between pedestal and head, push up from underneath the pedestal with your left hand while moving the line rearward with your right hand. Install passenger line into gap between pedestal before connecting rear flare. **Do not** **install passenger line resting on corner of plenum**. If hardlines are not lining up they are either in thewrong position or the fittings are angled incorrectly, **never bend them to fit. See Pictures.** Make sure flares are lined up correctly with fittings.Connect front of feed lines to tee and then tighten all flare connections with a very firm snug using backup wrenches.
* Install both front jic 45\* into cylinder heads. These will face up and rear ward however the final angle will need to be adjusted to meet the stainless lines. Ebps tube must be loosened from the sensor and moved down to gain enough clearance for passenger front connection. Drivers front accessory bracket must be loosened or removed to gain access to drivers front fitting.
* Assemble jic straight fittings into fuel lab regulator with supplied **O-rings** and 90\* to barb adapter on the bottom port with barb facing back (See fuelab instructions for regulator setup) **Do not hook up boost reference port, simply leave the barb fitting open and installed in the side of regulator**
* Install bracket onto regulator and bolt regulator down to existing bolt on hpop reservoir bracket. Add a few ¼” **washers** under the bracket to get it to sit flat.
* Install front stainless lines between cyl heads and regulator, adjust fitting angle in cylinder heads accordingly, straighten regulator and tighten flares firmly with backup wrenches. Taller line is drivers side, see pictures
* Connect outlet on bottom of regulator to factory steel 5/16 return line with provided short black piece of 5/16 hose. Factory steel return line can be gently bent to point at regulator outlet. Some special order systems or integrated return sumps will not reuse factory return line and will come with enough blue pushlok to replace return line. If applicable connect hose from regulator to new return inlet such as “R” port on integrated return sump.
* Route blue pushlok hose from filter/pump unit outlet to rear feed line tee. A gently tightened fuel injection clamp on the tee barb connection is a good idea here due to heat and vibration but not 100% necessary. Follow the factory steel fuel lines, secure properly, keep away from exhaust manifold. This is the longest section of blue hose used so make sure to run this first and use leftover sections for the smaller runs.
* **Rear lines are supply, regulator is return, do not hook supply line to regulator.**
* If you have a problematic flare fitting that won’t seal a small amount of thread sealant can be used on the flare mating surface. Be careful not to get any inside the lines. Under normal circumstances do not use thread sealant on flare fittings.

**Filter and Pump Install**

**Cheapskate Kit**

* Plan layout of filter/pump setup, system flows from selector valve into 3367 water separator, out water separator to inlet of pump, out pump and into 3528 post filter and out post filter to feed tee on engine. A picture is included showing an easy to assemble design you can use. Picture shows unit flowing right to left for outside frame mount, reverse for inside.
* Install fittings and plugs into filter housings with thread sealant, paying attention to in/out flow markings on top. Make sure to tighten for full thread engagement but not overtighten or the housing can crack. 30 ft lbs roughly. The post pump filter will hold 65 psi of fuel so a proper seal is important. **Pro Tip** we gently heat the housing and tighten a second time to ensure no leaks in the premium kits. Due to the nature of this diy product warranty **does not** cover leaks or cracks from field assembled housings.
* Install barb adapters into fuel pump with copper washers if applicable.
* Drill two holes in bracket to mount pump and attach with ¼" hardware.
* Attach filter housings to bracket with ¼" hardware.
* Connect pump to filter housing with short sections of blue hose roughly 18”, clamps ends if needed. Use leftover sections after running new supply line to engine.
* Follow instructions for the premium kit regarding bolting bracket to frame.
* Cut the 5/16 rubber fuel line on the outlet of the selector valve and use the 5/16 to 3/8 barb adapter, connect to inlet of first base with blue pushlok hose**. Line closer to frame on selector valve is supply.**

**Cheapskate Regulated Return**

* The Cheapskate kit reuses the factory hardlines under the turbo for the supply and the factory flexible front lines as the return to the regulator.
* Before removing the factory fuel pump, remove the banjo bolt with a 1-1/4 wrench
* Install the new banjo to barb adapter fitting using the two new ford seals and reuse factory banjo bolt. Tighten with the 1-1/4 wrench but make sure to use a backup wrench or large pliers to keep the new adapter from twisting. This new barb fitting is where you will hook the new supply line.
* For the front return and regulator, if you selected the **tightwad mod** you will be reusing and modifying the factory regulator, seperate the regulator from the bowl.
* The factory regulator will be tapped with a 1/4 npt tap in the return and the included 5/16 barb adapter installed, This is where the return to tank will hookup. The two flexible lines go to the same spots as factory.
* If you need more info or pictures on the tightwad mod part, email us an we can show you some helpful forum links.
* If using a fuelab regulator, install the two 1/4" 90 degree fittings in the side ports and connect these to the factory flexible lines. Then install the 90 degree fitting with 5/16 barb in the bottom port and this is the return to tank.

**Premium Kit Pump Station Install**

* Install stainless lines between pump and filters, they are numbered. **Pumps may shift during shipping causing misalignment, simply straighten pump and/or p clamps if this happens.**
* Find a suitable location to mount bracket to frame, usually forward of selector valve under the cab or in place of front tank if single tank swapped. The bracket is very universal and can be mounted in almost any safe location on the frame. You may choose to bolt the bracket tucked up high for clearance or lower for show.
* Premium kits are built for inside or outside frame mount depending on your order. The outlet of the pumping station will point forward respectively for a clean install.
* Line up a few factory holes with the back of the bracket and drill out bracket to match. (Make Level) Many Obs trucks have lots of 5/16 factory holes, these can easily be enlarged to 3/8. Bigger bolts are included as well, you can use these for the larger factory holes or enlarge smaller holes for even more strength. A minimum of two properly torqued 3/8 grade 8 bolts must be used.
* Bracket can also be welded on if no other suitable location, but bolting is usually preferred and easier.
* Cut the 5/16 rubber fuel line on the outlet of the selector valve and use the 5/16 to 3/8 barb adapter, connect to inlet of first base with blue pushlok hose**. Line closer to frame on selector valve is supply.**

**Wiring**

* Follow diagram in included pictures, wire pump with included fuel pump relay kit. Mount relay on firewall or inner fender lip. Be careful with fuel pump terminals as they are very delicate.
* Relay may be triggered by any fused key on/accessory off circuit **(such as old fuel bowl heater circuit, red/green wire)**.
* Red main power wire of relay can be hooked directly to battery or to junction lug on fuse panel (slightly cleaner look).
* **An inertia (crash safety) switch** must also be added in series on the yellow wire to shut down the fuel pump in event of a crash. These can be sourced from an efi ford vehicle in a pick n pull junkyard for next to nothing.
* In high corrosion environments it’s a good idea to cover the pump terminals with silicone or rubber boots.
* **Premium kits** have a pair of yellow wires to attach the inertia switch. If you don’t have a switch these wires may be jumped together in place of the inertia switch to temporarily test a new system.
* **Premium kits** come with a mostly plug and play harness.
* Make sure to remove wiring harness off factory fuel bowl and **plug ipr back in**. Ipr plugs commonly deteriorate, check carefully. **Pro Tip:** an old uvch injector plug can replace one.
* **RACE PUMPS:** Fuelab pumpsmust be wired with a jumper for constant low speed operation (this will be completed on a premium kit). Twin walbro and some twin bosch kits must be wired to run with only one pump for continuous operation. Automatic solutions like hobbs boost switches or internally triggered gauges have been used. Contact with any questions about proper setup of these high performance systems.

**Sump or Drawstraw (Delete Dual Tanks)**

* When using a sump or drawstraw be sure to crimp or block off the unused factory line from the tank, otherwise fuel leakage will occur.
* Disregard connecting to selector valve, this can be removed entirely. Instead connect pushlok hose from your sump, straw or tank pickup to inlet of pump station.
* If using a stock tank pickup remove factory quick connect from supply line coming out of tank. Slide pushlok over the ridge and secure with a fuel injection clamp. Supply is the larger of the two.
* Use extra 5/16 black hose to connect return lines together in place of selector.
* Follow instructions included with sump or drawstraw
* **If using 5/8 pushlok** you must use a heat source such as hot water or heat gun to soften the hose enough to allow it to push all the way on a pushlok fitting.

**Start Up**

* **Check** everything is hooked up correctly before energizing the fuel pump.
* **Check** supply line from pump station is hooked to rear of cyl heads and the bottom of regulator is hooked to return line
* **Ensure** source that the pump unit is drawing from to be free from restriction and the tank clean
* **Fill pre-pump water separator 3367** with clean diesel and system will self-prime.
* **Set regulator to 65psi (60psi for walbro pumps)** according to fuelab instructions using a gauge in the regulators 1/8 npt gauge port. If 0 pressure builds by the time the regulator screw is halfway down, something is wrong, shutdown and correct issues to ensure pump damage does not occur.
* Run pump for a few minutes before starting engine to bleed out all air and possible contaminants.
* It is **not** recommended to leave a mechanical gauge permanently installed in the regulator however an electric in cab fuel pressure gauge is highly recommended.
* Double and triple check for fuel leaks!!!!

**\*Dual Tank Concerns** Although many people hook up an efuel kit to an existing dual tank system with no problems some will have issues. Broken pickup feet and clogged or failed selector valves and lines can cause complete or partial restrictions resulting in damage to electric fuel pumps. Due to 20+ years of use we recommend everyone to clean their tanks and inspect or replace the strainer feet as well as having a properly working selector valve. If your dual tank system has noticeable issues before such as one nonfunctional tank, fuel returning to the wrong tank or excessive repeated failures of the factory mechanical fuel pump you may have issues with an efuel kit. Although rarer, even proper working dual tank systems can start having issues from the increased flow of efuel. Single walbro or single oem Bosch sd are the only pumps to be used with dual tanks. Walbro fuel pumps are very sensitive to restrictions like these above and therefore any warranty is solely at our discretion. Bosch pumps are more tolerant of partial restrictions however complete restriction or continued use while partially restricted can and will cause failure.