Installation Manual
FUEL BOSS Mechanical LP
P/N FB-05007

2005 - 2007 DODGE CUMMINS

"FUEL BOSS!"

Mechanical Lift Pump System

Installation Instructions
Fuel Boss LP System p/n FB-05007

PLEASE READ ALL INSTRUCTIONS BEFORE BEGINNING INSTALLATION

WARNING!!!

Improper installation of the bypass valve can cause extreme fuel pressure and fuel system damage!!!

Installation of the Fuel Boss is quite simple if the guidelines are followed. However, due to the extreme pressure and flow capabilities of the Fuel Boss Pump the installation of the bypass valve in the correct direction is critical. If installed in the reverse direction the bypass valve will not be able to open causing the fuel pump to build maximum pressure. This will cause damage to the fuel filter lid and fuel lines.

We do not recommend running this system without a fuel pressure gauge to monitor fuel pressures.

Kit p/n number FB-05007 is for installation on 2005 thru 2007 Cummins powered Dodge Rams. If the part number on the installation manual and the package you received do not agree or apply to your vehicle please contact us immediately.

Safety Guidelines!

WARNING! Always secure the vehicle from rolling.

WARNING! Always disconnect vehicle batteries before working on electrical components.

WARNING! Always wear safety glasses when operating power tools such as drills and grinders or using punches and chisels.

WARNING! Always properly secure fuel lines and wiring to prevent chaffing.

WARNING! Always have a fire extinguisher available when working with fuel systems.

WORK SAFELY!

FUEL BOSS Kit Contents


High Flow Banjo to JIC Adapter


2ea. Cummins Seal Washers


2ea. JIC x 3/8” 90° PushLok


6ea. JIC x 3/8” PushLok


1ea. JIC Tee


GDP Bypass Valve


JIC to 1/4” MPT


JIC to 1/4” MPT 90°


GDP Check Valve


2ea. FPT to 3/8” PushLok


Pump Mount and Slider Assembly


M8 x 45MM Allen Head Pan Bolts


FB-1000 Pump and Dust Shield


Crankshaft Adapter


24T -12T Pulley & Belt Set


35’ Parker PushLok


Return Manifold


2ea. 1-1/2” Clamps


7ea. 3/8” Clamps


Aluminum Pressure Sender Tee


Adjustable Hobbs Pressure Switch


2 ea. 15’ Hobbs Leads & 15’ Loom


2 ea Butt Conn’s
2 ea Ring Term’s


Fleetguard Inline Strainer


14” Flexible Pick-up Tube


3/8” MPT x 3/8”

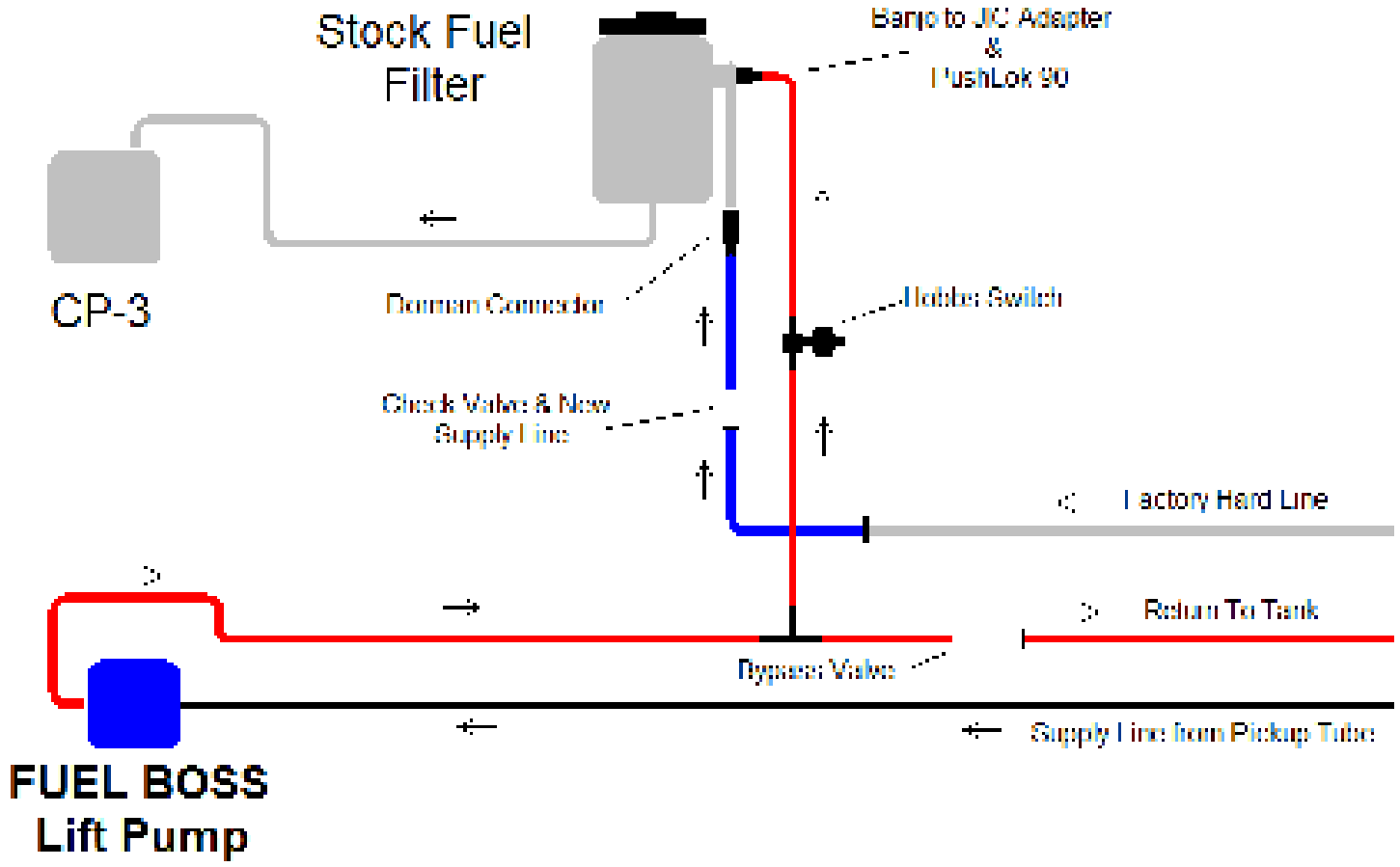

Bulkhead


Tank Sealing O-ring


Tank Sealing Ring

Please check your parts inventory against the above parts list before beginning your installation.

FUEL BOSS HOSE ROUTING & VALVE PLACEMENT



Preparation

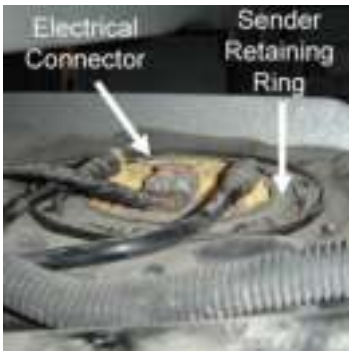
1) Secure vehicle from rolling.

2) Disconnect both batteries.

3) Raise vehicle and support safely.

4) Drain fuel filter housing into an approved container via the water/fuel separator.

Fuel Tank Prep



Stock Reference Photo


Photo 1A

Photo 2B


Photo 3C


Photo 4D


Photo 5E

5) Disconnect the tank vent line from the connection at the top of the fuel tank. Remove the rubber fill hose from the vehicle. Disconnect the suction and return line from the top of the sending unit. Disconnect the factory electrical connector from the top of the sending unit.

6) Remove the fuel tank from the vehicle. Having the tank very close to empty will make this task much easier.

7) Make a reference mark on the tank, retaining ring and sending unit for realignment during reassembly.

8) Remove the sending unit retaining ring from the top of the fuel tank by tapping it lightly with a mallet and punch in a counter clockwise direction.

9) Once the retaining ring is removed carefully lift the sending unit out of the tank making sure not to bend the fuel level float arm.

10) Drill a **15/16”** hole in the tank as shown in the Photo 1A. Make sure not to oversize the hole. You want to be able to thread the bulkhead fitting in.

Note: On Mega Cab trucks the bulkhead fitting may have to be moved to a location **ahead** of the sending unit to clear the frame cross member. Please note the location of the frame cross members above the fuel tank and find a clear location for the bulkhead fitting **before** drilling the top of the tank!

11) Assemble the bulkhead as shown in Photo 2B. Install the pick-up tube receiver in the bottom of the bulkhead fitting and tighten. Make sure that the bevel on the aluminum washer faces the O-ring. Thread the bulkhead fitting down into the hole until the O-ring makes contact with the tank. Install the locking star washer and nut onto the bulkhead fitting. Tighten the nut on the bulkhead fitting. Install the 90° fitting in the top of the bulkhead using thread sealer if available and tighten. Refer to Photo 3C and 4D (older tank shown for example only).

12) Insert the end of flexible pick-up tube with the compression collar straight up into the receiver fitting on the bottom of the bulkhead. You will have to flex the tube against the bottom of the tank to make a straight connection. This is correct and the natural tension of the tube will keep the supply end firmly on the bottom of the tank. Slide the compression nut up to the bulkhead fitting and loosely make the connection. Rotate the pick-up tube towards the center rear of the tank making sure that it is clear of the area where the bottom of the stock sending unit will sit when re-installed. Shorten the pick-up tube until the end is centered in the tank by trimming the end of the tube a little at a time. Tighten the compression nut.

Note: The pick-up tube is intentionally shipped longer than needed and is easily trimmed with a utility knife. Trim the tube back until the end is roughly centered in the tank. To allow even lower fuel levels to be pulled from the tank a very small section can be removed from the bottom tip of the tube. Samples are shown in the pictures below.

13) Reinstall the pickup module making sure that your marks are lined up and that the retaining ring engages all seven locking tabs.

14) Mark a reference line on the fill hose for re-alignment. Remove 1” of the fill hose from the area shown in Picture 5E and replace it with the return manifold.

15) Position the cut ends of the fuel fill hose 1” apart with your marks aligned. Orient the manifold with the 3/8” connection towards the front of the vehicle and secure with the supplied clamps.

FUEL BOSS Pump & Drive Installation

16) Using a15mm socket, break loose the 4 harmonic balancer bolts but leave the bolts installed. If you are unable to loosen the bolts you may need to hold the front of alternator with a 22mm or 7/8” inch socket to help prevent the crank from rotating.

17) Remove the 2 bolts in the center front position of the oil pan and thoroughly clean the bottom front lip of oil pan to ensure it is oil and dirt free.

18) Install the Fuel Boss pump mounting bracket with the 2 supplied black Allen cap screws. Be sure to get both cap screws equally and fully threaded and snug lightly. Now, remove one cap screw at a time, thoroughly clean any oil off of the threads and apply RTV sealant to the threads. Reinstall cap screw and torque. Repeat this procedure for other cap screw as well. Recommended torque is 15-18 foot-pounds.

19) Remove the 4 harmonic balancer bolts. Caution: When bolts are removed the harmonic pulley could slide off of crank.

20) Install the crankshaft adapter with harmonic balancer bolts and be sure to get all 4 bolts fully threaded before any torque is applied. There is a small dowel pin that may protrude between two of the bolts. Make sure that the relief hole in the rear of the adapter lines up with this down pin. Failure to do this will keep the adapter from fully seating and will cause damage to the adapter! Torque on harmonic balancer bolts is 92 foot pounds. As mentioned above it maybe necessary to hold alternator pulley nut with 22mm or 7/8” socket to prevent the crank from rotating while each bolt is brought up to torque.

21) Install the smaller 12 tooth pulley with the set Allen screws. The end of the hub shaft and the pulley need to be flush before tightening the set screws. Rotate the fan slowly by hand and verify the clearance of each fan blade. Due to the varying injection mold quality of the fans you may find one or two blades that touch the front of the small pulley. This is easily remedied with a small file or razor blade. Most trucks require no modification at all.

We strongly recommend the use of Loctite on the Allen set screws of BOTH pulleys.

22) Install large 24 tooth pulley on Fuel Boss pump. Ensure that **neither** Allen is aligned with flat of pump drive shaft but on the rounded portion. The end of the pump shaft and the pulley need to be flush before tightening the set screws.

23) **Setting Belt Tension:** Slide pump to center under the harmonic balancer. Install the timing belt around small pulley then around large pulley. Adjust the pump so that there is JUST ENOUGH tension to keep the belt teeth engaged. Proper tension for the belt is **LOOSE**. While this may seem odd, this is a cogged timing belt and requires **zero** tension to stay engaged. Grab the pulley on the pump and rotate it to place tension on one side of the belt. There should be a loose bow to the non-tension side of the belt. If in doubt, looser is better!

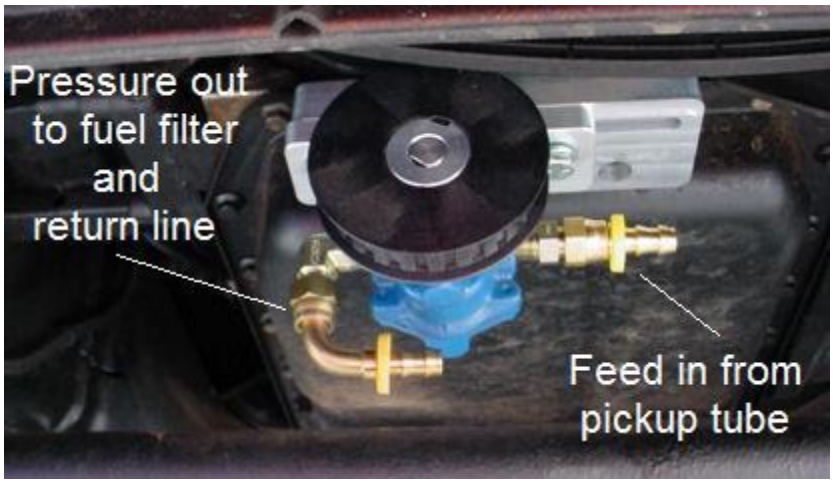
Any tension on the belt will cause early pump wear and seal failure. Pumps that show shaft wear from over tension will not be covered under warranty.

24) Tighten the two bolts that are outside of the pump on the pump slide bracket.

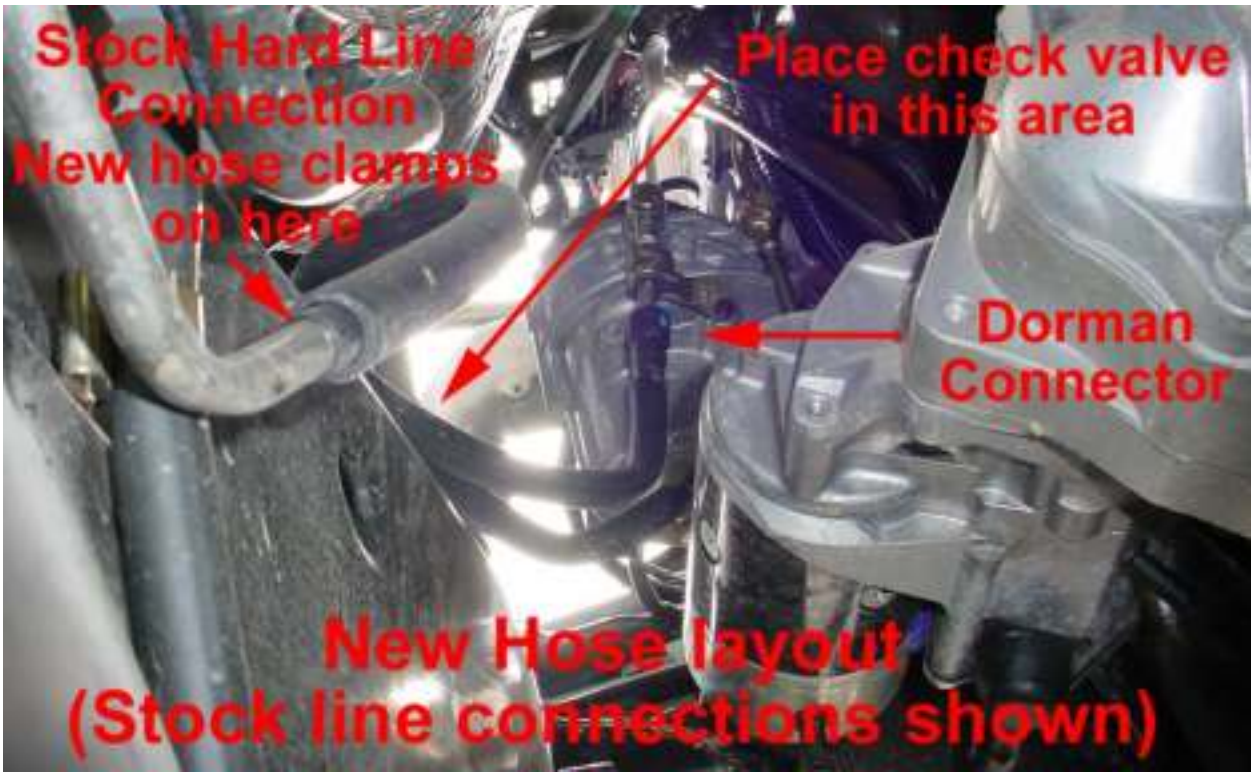
DO NOT START ENGINE WITH PLUGS IN THE FUEL BOSS PUMP AND BELT HOOKED UP! PUMP DAMAGE WILL OCUUR!

LINE KIT MUST BE INSTALLED PRIOR TO STARTING ENGINE WHEN FUEL BOSS PUMP BELT IS HOOKED UP!

25) Prepare the pump for line connection. Install the 90 degree 1/4" pipe to JIC adapter in the passenger side of the pump using thread tape or pipe sealant. Tighten the fitting so that the JIC end points down or to the rear of the truck. Install the straight 1/4" pipe to JIC adapter in the driver side of the pump using thread tape or sealant and tighten. The straight adapter will be your fuel inlet.



Check Valve Installation



26) Under the driver's feet, along the frame rail, locate the largest fuel line. This will be the feed line from the tank. If you are unsure trace the line down from the rear of the stock filter canister. Locate the junction of the stock soft supply line and the metal line coming from the tank. Split the stock supply line with a utility knife and remove it from the steel supply line to reveal the end. On the other end remove the Dorman connector from the hard line on the back of the stock fuel filter canister by squeezing the plastic tabs and pulling gently. Split the line and remove the Dorman connector. Save this connector for reuse. This line will be replaced with by a new 3/8" rubber line with the factory Dorman connector in one end and the new check valve in the center over the next few steps.

27) Assemble the check valve using the supplied female pipe thread to PushLok fittings.

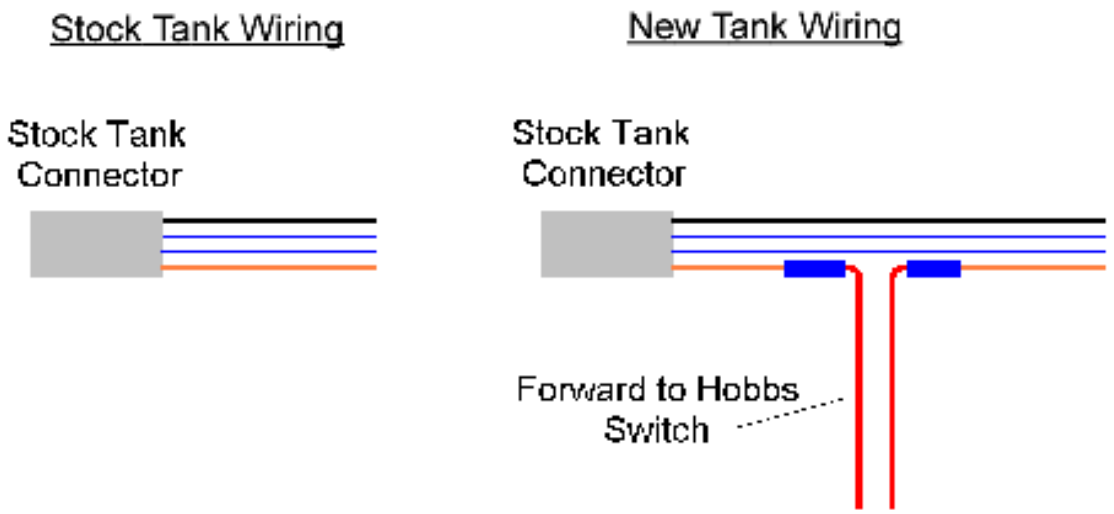
28) Measure out a short piece of fuel hose to go from the factory hard line on the frame rail up to the hard line that goes to the stock filter canister. Cut the hose to length. Assemble the new line using the factory Dorman connector secured with a hose clamp in one end and the check valve in the center with the arrow pointing to the stock fuel filter inlet. See photo for reference.

29) Attach the Dorman connector to the filter inlet hard line making sure to push the Dorman all the way on. The Dorman connector must engage both plastic locking tabs on the retainer clip.

30) Attach the other end of the hose without a fitting directly to the exposed end of the factory hard supply line on the frame rail and secure with one of the supplied hose clamps.

Make sure that the arrow on the check valve faces in the direction of flow and up towards the stock filter housing. Failure to do this will result in low fuel pressure.

Tank Harness Hobbs Tap



Harness Splice Reference

31) Locate the factory sending unit connector at the top of the fuel tank area and unwrap the wires back to the main harness along the frame. The two smaller center wires on the connector are for the fuel level sending unit. The two heavier wires on the outside of the connector are the fuel pump wires.

32) On the 2005 trucks the fuel pump wires should be Orange with a Red stripe and Black with an orange stripe. On 2006 trucks the wires should be Orange with a Red stripe and a solid Black wire.

33) Choose **one** of the outside wires to tap. Cut **only** the pump wire between the factory connector and the main harness. Locate the two supplied 15' red wires in the installation kit.

34) Using the supplied “crimp and heat” butt connectors attach one red wire to each end of the wire (cut in the previous step) coming from the factory plug. Don’t forget to heat and shrink these connectors for a weather proof connection. These new wires will run forward and be connected to the Hobbs switch.

35) Your completed tap should appear like the reference drawing. This new connection will allow the Hobbs switch to turn the stock tank mounted pump off as soon as the FUEL BOSS builds pressure.

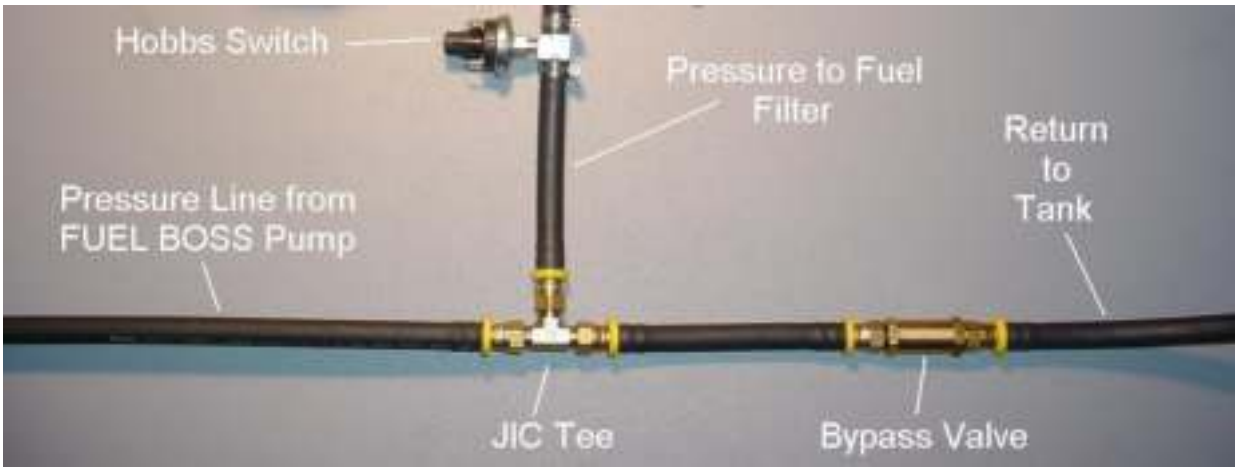
36) At this point you can reinstall the fuel tank. Reattach the factory fuel lines and electrical connections at the sending unit. Reinstall the fill tube and reconnect the tank vent hose. You may find it easier to connect one end of the supplied fuel hose to the PushLok connector in the top of the pickup tube before tank installation. If you do, please make sure you don’t pinch the new fuel line between the top of the tank and the cross members when installing the tank.

Fuel Boss Feed Line Installation

37) Attach one end of the supplied fuel line to the PushLok connection at the new pickup tube installed in the tank. Route the hose forward along the driver side frame rail following the existing fuel lines and secure along the way. Install the supplied inline strainer in this line at a convenient location with the flow arrow facing the front of the truck and secure using the supplied 3/8” hose clamps.

38) Route the hose all the way forward to the driver side of the new FUEL BOSS pump. Cut the hose to length and make the connection to the driver side of the FUEL BOSS (inlet) using one of the supplied straight female swivel JIC to PushLok fittings. Tighten the inlet connection.

Pressure & Return Line Installation



Reference Photo

39) Install a 90° PushLok connector into one end of the remaining hose. Loosely connect this fitting to the passenger side (outlet) 90° JIC fitting of the FUEL BOSS pump. Route this hose all the way back to the nipple on the return manifold placed in the fuel filler neck and cut to length. Do not make the connection at the fill neck yet.

40) Make a single cut in this new pressure line straight below the fuel filter inlet as shown in the sample routing photo on page 4 and above. Assemble and install a JIC Tee combination with the top leg of the Tee pointing up towards the filter inlet. This will place the Tee directly below the stock fuel filter.

41) Remove the factory banjo bolt from the rear of the fuel filter canister. Replace with the supplied banjo to JIC adapter and new Cummins sealing washers as shown. Tighten the adapter.

42) Create a new pressure line to go from the top leg of the pressure line Tee to the filter inlet using a female swivel PushLok fitting in one end and a 90° PushLok fitting in the other. Choose a location in this line to install the supplied aluminum pressure sender Tee and Hobbs switch.

43) Cut the new pressure line between the JIC Tee and the filter inlet. Now install the aluminum sender Tee in the hose using the supplied hose clamps. Install the Hobbs switch in the aluminum sender Tee using thread tape or pipe sealant. Make sure the Hobbs is easily accessible for electrical connections and minor pressure adjustments.

44) Now choose a location for installation of the bypass valve between the 3rd leg of the JIC Tee and the fuel tank fill neck.

45) Cut the return line, connect the bypass valve using one of the supplied female JIC to PushLok fittings and secure. There is a “T” stamped on the bypass valve body. The “T” marking must be towards the fill neck end of the return line.

WARNING!!! Bypass valve must be installed in the correct direction or fuel system damage will occur!

There are two ways to verify correct bypass valve orientation.

A) The body is stamped with a “T” on the return to tank end.

B) Visually inspect the valve. You will be able to see the spring in the return to tank end of the valve and the face of the piston in the end that connects to the fuel filter side of the pressure return line.

46) Connect the remaining hose to the bypass valve using the supplied PushLok connector.

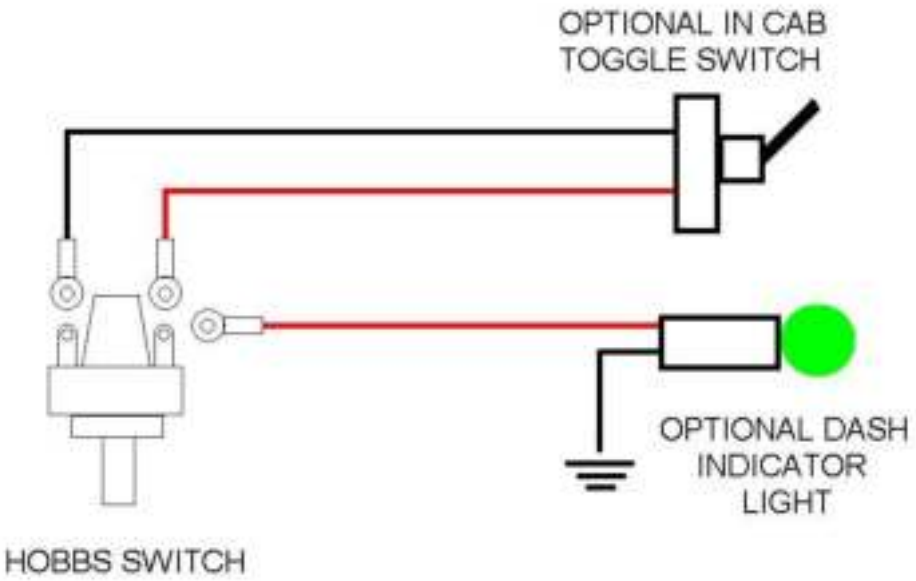
47) Route the line up to the return manifold in the fill neck. Cut to length and secure using one of the supplied hose clamps. Your supply, pressure and return plumbing is now complete.

Hobbs Switch & Wiring Installation

48) Route the two new red wires forward from the tank harness to the Hobbs switch. Cut the wires to length and install the supplied “heat and shrink” eyelet connectors. Connect one wire to each post on the Hobbs switch and tighten the screws. Cover the wires with the supplied split loom and secure.

49) The Hobbs switch will turn your stock lift pump off as soon at the pressure from the FUEL BOSS is greater than the set point. This is usually achieved just a second or two after the vehicle is started.

Note: An in cab override switch can easily be added by the owner to allow the stock lift pump to run for longer periods for priming after filter changes as shown in the diagram below. You can also add a small dash light to show when the stock electric lift pump is running. Both are shown in the diagram below.



Finishing Up

50) Reconnect both batteries.

51) Secure all hoses and wiring using the supplied wire ties.

52) Prime the system three to four times to purge all air from the fuel system by turning the key to the run position and bumping the starter without allowing the engine to actually fire. The FUEL BOSS pump is shipped with a heavy oil in the gears to help pull initial prime.

53) Start the engine and verify fuel pressure. Fuel pressure may be erratic for a minute as the Fuel Boss pulls prime and purges air from the system.

54) Check all connections for leaks and make sure all wires and hoses are clear of moving parts.

55) Test drive the vehicle.

Enjoy the quiet performance and long life provided by the “FUEL BOSS lift pump”! If you have any problem or questions please contact Glacier Diesel Power at 509-993-4923. Thank you for your business and we look forward to helping you with your future performance and accessory needs.

Sincerely,

Richard Martin
GDP

GLACIER DIESEL POWER

DISCLAIMER OF LIABILITY

Other than as expressly set forth herein, Glacier Diesel Power (hereafter collectively, "SELLER") shall in no way be responsible for the PRODUCT'S proper use and service. In no event shall SELLER be liable for any special, incidental, indirect or consequential damages of any kind or nature, whether or not BUYER was advised of the possibility of damage, arising or resulting from the use or performance of the PRODUCT, and BUYER hereby waives any and all such claims.

BUYER acknowledges that he/she/it is not relying on SELLER'S skill or judgment to select or furnish goods suitable for any particular purpose and that SELLER has no liability that will extend beyond the scope of the limited warranty contained herein, and BUYER hereby waives all remedies or liabilities, expressed or implied, arising by operation of law or otherwise, (including, without limitation, any obligations of SELLER with respect to fitness for any particular purpose; merchantability; and special, incidental, indirect or consequential damages) or whether or not occasioned by SELLER'S negligence.

SELLER disclaims any warranty and expressly disclaims any liability for personal injury or damages related to BUYER'S use of the PRODUCT. BUYER acknowledges and agrees that the disclaimer of any liability for personal injury is a material term for this agreement and BUYER agrees to indemnify SELLER and hold SELLER harmless from any claim related to the PRODUCT and its use or performance. Under no circumstances will SELLER be liable for any damages, liabilities, costs or expenses incurred as a result of or by reason of the use, performance or sale of the PRODUCT, including, without limitation, any damages, liabilities, costs or expenses incurred by reason of BUYER'S negligence related to those uses of the PRODUCT.

SELLER assumes no liability regarding the improper installation or misapplication of the PRODUCT. It is the installer's responsibility to check for proper installation, and, if in doubt, contact the manufacturer.

LIMITATION OF WARRANTY

SELLER hereby provides the following limited warranty as to description, quality, merchantability, fitness for any product's purpose, productiveness, or any other matter of SELLER'S product sold herewith. The SELLER shall be in no way responsible for the product's open use and service and the BUYER hereby waives all rights other than those expressly written herein. This Warranty shall not be extended or varied except by a written instrument signed by SELLER and BUYER.

The Warranty is Limited to one (1) year from the date of sale and limited solely to the parts contained within the product's kit. The FB-1000 pump (Fuel Boss pump only) is covered for two (2) years from the date of sale. All products that are in question of Warranty must be returned shipping prepaid to the SELLER and must be accompanied by a dated proof of purchase receipt or invoice. All Warranty claims are subject to approval by Glacier Diesel Power.

Under no circumstances shall the SELLER be liable for any labor charged or travel time incurred in diagnosis for defects, removal, or reinstallation of this product, or any other contingent expenses.

Under no circumstances will the SELLER be liable for any damage or expenses insured by reason of the use or sale of any such equipment.

IN THE EVENT THAT THE BUYER DOES NOT AGREE WITH THE TERMS OF THIS AGREEMENT: THE BUYER MAY PROMPTLY RETURN THIS PRODUCT, IN A NEW AND UNUSED CONDITION, WITH A DATED PROOF OF PURCHASE, TO THE PLACE OF PURCHASE WITHIN THIRTY (30) DAYS FROM DATE OF PURCHASE FOR A FULL REFUND. THE INSTALLATION OF THIS PRODUCT INDICATES THAT THE BUYER HAS READ AND UNDERSTANDS THIS AGREEMENT AND ACCEPTS ITS TERMS AND CONDITIONS.