

Installation Manual
FUEL BOSS Mechanical LP
P/N FB-98502



1998.5 - 2002 DODGE CUMMINS

“FUEL BOSS!”

Mechanical Lift Pump System

Installation Instructions
Fuel Boss LP System p/n FB-98502

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-98502 is for installation on 1998.5 thru 2002 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



9ea. JIC x 3/8" PushLok



2ea. JIC Tee's



GDP Bypass Valve



JIC to 1/4" MPT



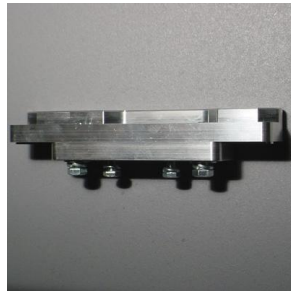
JIC to 1/4" MPT 90°



GDP Check Valve



2ea. FPT to 3/8" PushLok



Pump Mount and Slider Assembly



M8 x 30MM Allen Head Pan Bolts



FB-1000 Pump and Dust Shield



Crankshaft Adapter



24T -12T Pulley & Belt Set



25' Parker PushLok



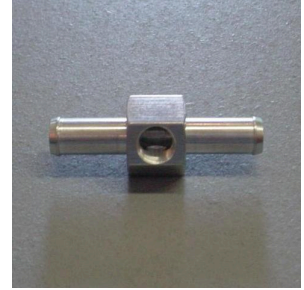
Return Manifold



2ea. 1-1/2" Clamps



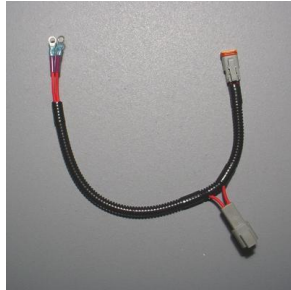
5ea. 3/8" Clamps



Aluminum Pressure Sender Tee



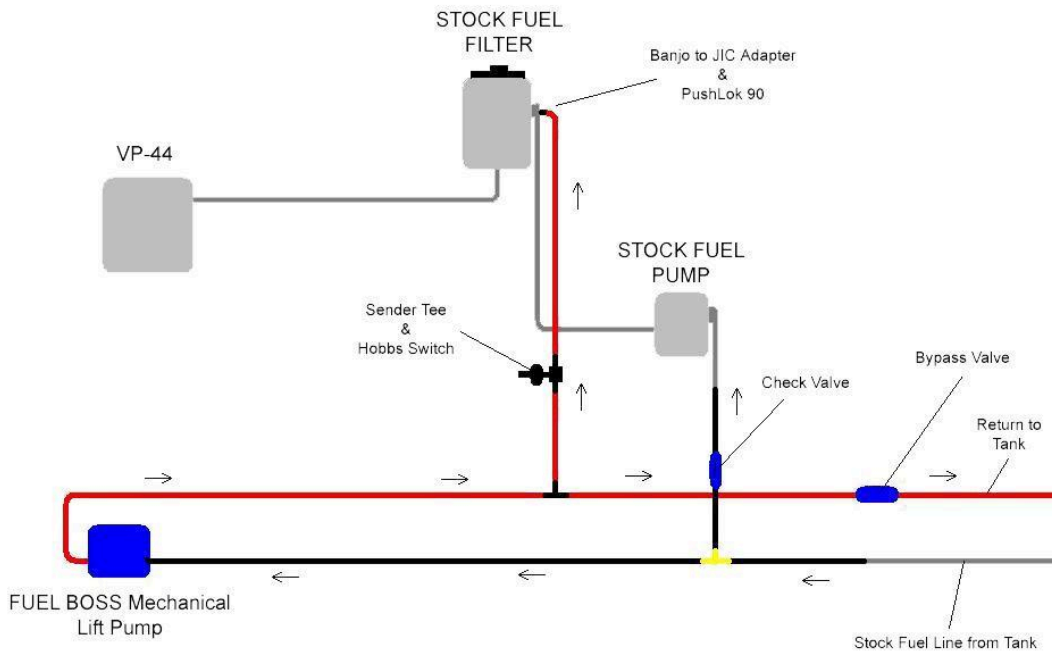
Adjustable Hobbs Pressure Switch



Hobbs Trigger Harness

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.

Return Manifold Installation

- 4) Remove the fuel filler hose from the vehicle and mark a reference line for re-alignment on the hose. Remove 1" of the fill hose from the area shown in the picture and replace it with the return manifold.
- 5) 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.
- 6) Reinstall the fuel fill hose and return manifold assembly.



FUEL BOSS Pump & Drive Installation

- 7) Using a 15mm socket, break loose the 4 harmonic balancer bolts but leave the bolts installed.

Note: 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. Another way to break bolts free is to use a breaker bar and a dead blow hammer.

- 8) Remove the 3 bolts across the front passenger side of the oil pan and thoroughly clean the bottom front lip of oil pan to ensure it is oil and dirt free.
- 9) Install the Fuel Boss pump mounting bracket with the 3 supplied black Allen cap screws. Be sure to get all 3 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 a good automotive grade RTV to the first inch of threads. Reinstall cap screw and torque. Repeat this procedure for other two cap screws as well.

Recommended torque is 15-18 foot-pounds.

- 10) Remove the 4 harmonic balancer bolts.

Caution: When bolts are removed the harmonic pulley could slide off of crank.

- 11) Install the crankshaft adapter with harmonic balancer bolts and be sure to get all 4 bolts fully threaded before any torque is applied. Torque on harmonic balancer bolts is 92 foot pounds. As mentioned above it may be 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.
- 12) Install the smaller 12 tooth pulley with the Allen set screws. The end of the hub shaft and the pulley need to be flush before tightening the set screws.

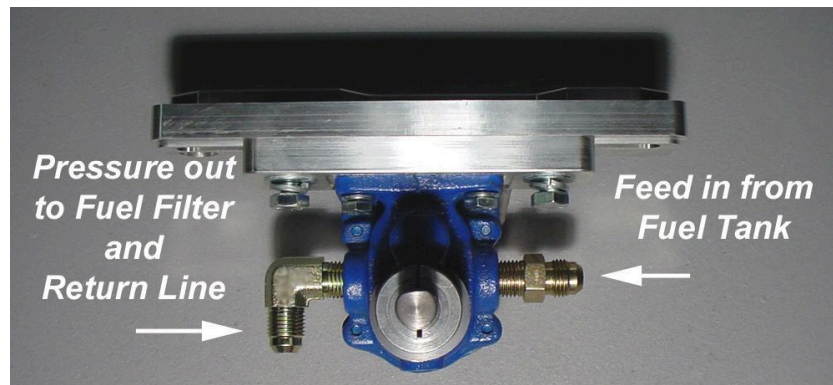
We strongly recommend the use of Loctite on the Allen set screws.

- 13) 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.
- 14) **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.

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

- 16) 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. **WARNING -**

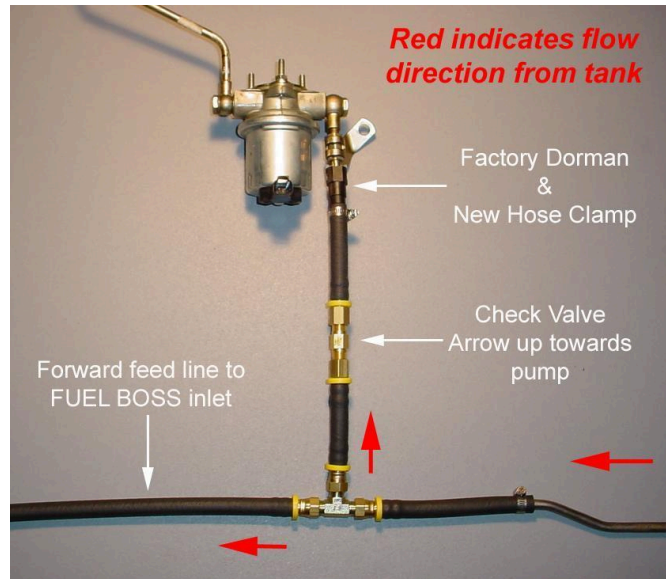


DO NOT OVER-TIGHTEN FITTINGS, THE HOUSING WILL CRACK. Install the

straight 1/4" pipe to JIC adapter in the driver side of the pump using thread tape or sealant and tighten. **WARNING - DO NOT OVER-TIGHTEN FITTINGS, THE HOUSING WILL CRACK** The straight adapter will be your fuel inlet.

Pump Supply Lines Installation

Supply line overview: You will remove the flexible supply line from the frame to the stock lift pump. The new line will go from the factory hard line to a JIC Tee. From here one short supply line will go from the top of the Tee up to the stock lift pump and have the one way check valve in it. The other line will go forward and connect to the driver's side inlet of the new FUEL BOSS lift pump.



Sample routing shown above.

- 17) 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 lift pump. 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 lift pump by squeezing the plastic tabs and pulling gently. Save this line and Dorman connector.
- 18) Carefully remove the Dorman connector from this line by splitting the line with a utility knife. The Dorman connector will be reused to connect the new supply line to the stock lift pump.
- 19) Measure out a short piece of new fuel hose to go from the factory hard line on the frame rail to a point just underneath the stock lift pump inlet. Cut the hose and install a female JIC PushLok in the end of this line. Attach this fitting to one leg of the JIC Tee. 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 it with one of the supplied hose clamps. This Tee will become the feed junction for the stock lift pump and the new FUEL BOSS lift pump.
- 20) Assemble the check valve using the supplied female pipe thread to PushLok fittings.

- 21) Build a new supply line to go from the top of the JIC Tee to the stock lift pump using one of the female JIC to PushLok fittings in one end, the stock Dorman fitting secured with a hose clamp in the other end and the check valve in the center with the arrow pointing to the stock lift pump inlet. (Refer to photo on page 7)

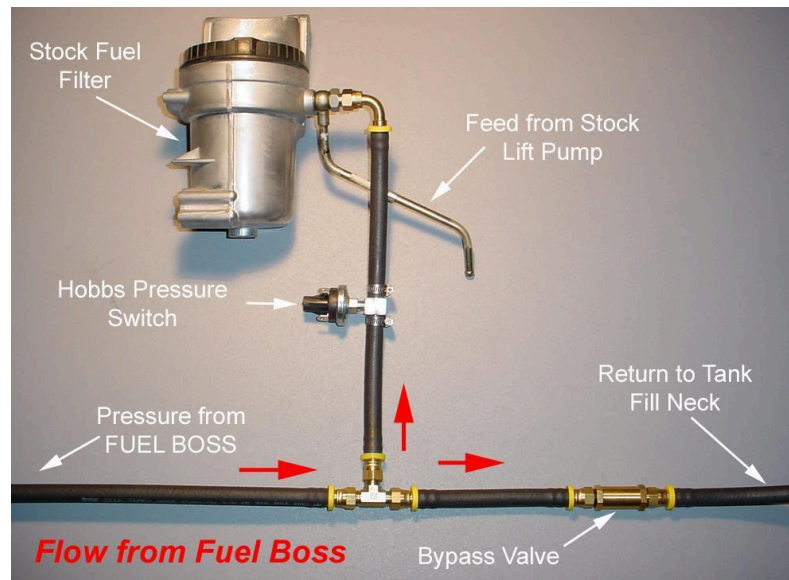
Make sure that the arrow on the check valve faces in the direction of flow and up towards the stock lift pump. Failure to do this will result in low fuel pressure.

- 22) Build the last supply line for the FUEL BOSS using two of the supplied female JIC swivel fittings and a length of the supplied PushLok hose. This line will go from the remaining leg of the JIC Tee forward to the driver's side of the FUEL BOSS (inlet).
- 23) Connect this supply line to the JIC Tee and tighten. Make the connection at the driver side of the FUEL BOSS pump (inlet) and tighten.

Pressure & Return Line Installation

Pressure Line

Overview: In this section you will install the pressure and return line with bypass valve. A hose routing sample is shown at the right.



- 24) 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. (refer to photo on page 9)
- 25) Make a single cut in this new pressure line straight below the fuel filter inlet as shown in the sample routing photo on page 8. Assemble and install the second JIC Tee combination with the top leg of the Tee pointing up towards the filter inlet.

- 26) Remove the factory banjo bolt from the rear of the fuel filter canister (top on older models). Replace with the supplied banjo to JIC adapter and new Cummins sealing washers as shown in the photo on page 8. Tighten the adapter.
- 27) 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. Try to keep the Hobbs location low and close to the factory lift pump. This will ensure that your trigger harness will reach both the factory lift pump and the Hobbs switch.
- 28) 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.
- 29) Now choose a location for installation of the bypass valve between the 3rd leg of the JIC Tee and the fuel tank fill neck.
- 30) 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.

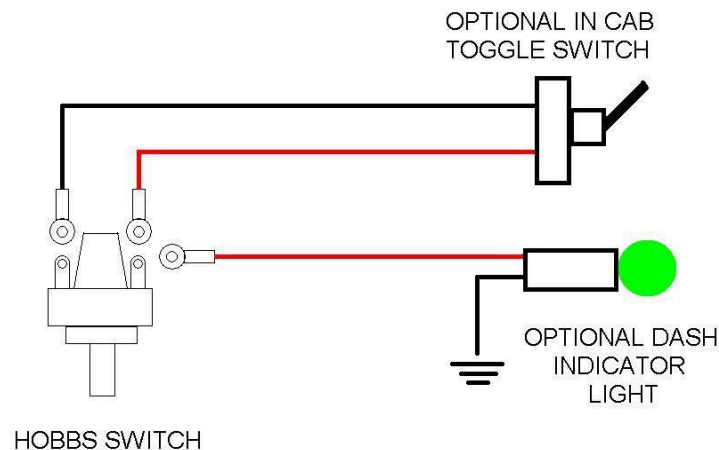
- 31) Connect the remaining hose to the bypass valve using the supplied PushLok connector.
- 32) Route the line up to the return manifold in the fill neck. Cut to length and secure using one of the supplied hose clamps. Your supply, pressure and return plumbing is now complete.

Hobbs Switch & Harness Installation

- 33) Unplug the factory lift pump harness from the stock lift pump.

- 33) Plug the factory lift pump harness into the matching connector on the supplied Hobbs trigger harness.
- 35) Plug the other end of the new Hobbs trigger harness back in to the factory lift pump.
- 36) Attach the two wires with eyelets on the new trigger harness to the screw connection on the Hobbs switch. One wire is connected to each post on the Hobbs switch. It does not matter which wire goes to which post.
- 37) The Hobbs switch will turn your stock lift pump off as soon as 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

- 38) Reconnect both batteries.
- 39) Secure all hoses and wiring using the supplied wire ties.
- 40) 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.

- 41) Start the engine and verify fuel pressure. Fuel pressure may be erratic for a few minutes as the Fuel Boss pulls prime and purges air from the system. After the majority of the air is purged from the system we recommend shutting the truck down, unplugging the factory lift pump electrical connector and starting the vehicle to verify that the truck is running just on the FUEL BOSS pump. After this test reconnect the factory lift pump electrical connection.
- 42) Check all connections for leaks and make sure all wires and hoses are clear of moving parts.
- 43) 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 **866-895-0437**. Thank you for your business and we look forward to helping you with your future performance and accessory needs.

Sincerely,

GDP

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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.