



## Operating and Installation Instructions

### **CAUTION!**

This product is to be installed only by persons knowledgeable in the repair and modification of vehicle fuel systems and general vehicle systems modification. Only a qualified technician or mechanic who is aware of applicable safety procedures should perform the installation of this product.

### **GASOLINE AND OTHER FUELS ARE FLAMMABLE AND CAN BE EXPLOSIVE!**

Perform the installation in a well ventilated location only to minimize the build up of fuel vapors. **NO** open flames, smoking or other sources of ignition are to be present during installation, to prevent fire or explosion that can cause serious injury or death. Grinding, cutting, and drilling must be performed with care to prevent ignition. Draining and removal of all fuel and ventilation of vapors in vehicle and fuel system is recommended when performing such procedures. Proper eye and personal protection is required at all times during installation.

### **WARNING!**

The Vehicle's fuel system may be under pressure! Do not loosen any fuel connections until relieving all fuel system pressure. Consult an applicable service manual for instructions to relieve fuel system pressure safely.

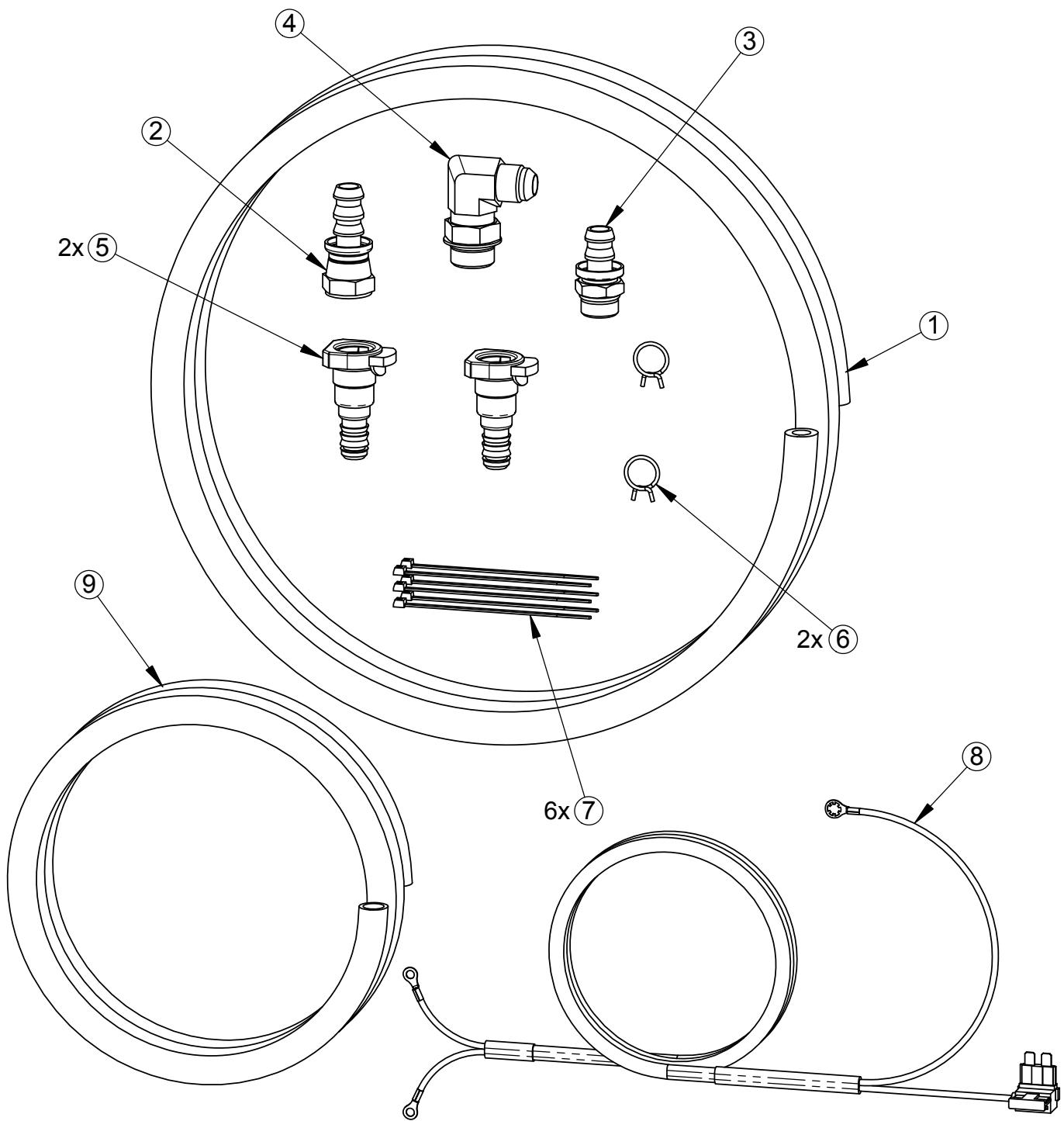
#### **Application:**

This Installation Kit is intended to work with Fuelab® Velocity Series 100 Fuel System, Model 30302. Consult instructions included with Fuelab® Velocity Series 100 Fuel System, to complete this set of instructions pertaining to the use of this Installation Kit. This Installation Kit is also intended to be used for replacement of OEM lift pump systems that are originally installed on vehicle. This kit applies to GM Duramax® Diesel Vehicles, between and including the years of 2001-2010. If this Kit is not correct, please contact your Fuelab® distributor immediately for replacement or selection of an appropriate Installation Kit.

#### **Product Contents:**

Verify the contents of this box, against list of components below and on the next sheet, to ensure that nothing is missing. Contact your Fuelab® distributor immediately for replacement. You may have extra parts left over after installation since Fuelab® has included extra parts for all years of the application described. While this kit is designed for designated vehicles, vehicle manufacturers routinely change production components, even during the same production year. Please contact Fuelab® if the particular vehicle has different descriptions or components that are incompatible as described within these instructions.

ITEM	P/N	Description	Qty
1	FL500	Fuel Line, 1/2" , Superflex	12'
2	PORB88	08 ORB x 1/2" Push-lok®	1
3	PO188	08 FJIC swivel x 1/2" Push-lok®	1
4	853810	10 ORB x 08 MJIC 90°	1
5	QC500	1/2" QC	2
6	WCL500	Hose Clamps	2
7	CBT6	Cable Ties, Nylon 5"	6
8	EPH17-2	Extended pump harness with fused adapter kit, Fuse Tap	1
9	CBLW-1	Optional Use Convoluted Cable Wrap	11'



Check above photo and list shown on previous page, to ensure no components are missing or damaged. Contact your Fuelab® distributor immediately for replacement.

**Some items listed in these instructions are included in Lift Pump / Filtration System, sold separately (reference sheet 1, under Application).**

**FOLLOW ALL INSTRUCTIONS HEREIN AS WELL AS INSTRUCTIONS INCLUDED WITH THE LIFT PUMP / FILTRATION SYSTEM. BOTH SETS OF INSTRUCTIONS CONTAIN IMPORTANT INFORMATION!**

The most difficult step of the installation procedure is removing the vehicle's fuel tank (this step may not be required for all vehicles). With very little room between the top of the fuel tank and the Bed of the vehicle, it may be difficult to get the fuel lines disconnected. Make sure that the fuel tank is as empty as possible. Even at approximately 1/8th of a tank of fuel, a substantial amount of fuel is still inside. Drain as much as possible! The installation may also be performed with the Bed of the vehicle removed, without the requirement of tank removal. If the tank requires drilling during modification however, the fuel tank **MUST** be removed from the vehicle and completely drained of **ALL FUEL**. For fuel connections using pipe threaded fasteners (tapered threads or non o-ring or flare connections), use Teflon® tape. On connections using Tapered Ends, or Fittings using O-rings, **DO NOT** use Teflon® tape.

In addition to typical professional automotive tools, items you may want to ease the installation, that are not included with this Installation Kit are:

Heat gun or hair dryer and a small amount of oil, to lube the fittings and soften the fuel line for the Push-lok® fittings. Additional items that would be helpful include box cutter or shears for the fuel lines and an air source to blow out all the fittings and hoses. A few extra small to medium size hose clamps can also help (**DO NOT** over-tighten worm gear style clamps) as well as additional Cable Ties.

**Step 1:** Inventory all of your parts with the included packing list. Lay out the parts to verify that everything is included (see diagram on previous sheet as well as Contents List on the first sheet). Also inventory and lay out all parts of the Lift Pump / Filtration System (sold separately, shown below – Reference Model 30301).

The System Bracket (item S2) attaches to the Lift Pump / Filtration System (item S1) as shown below. Fuelab® recommends attaching the System Bracket to Lift Pump / Filtration System after System Bracket is installed on Front Rail Bracket (item S3, and see next step) for ease of assembly. Dry-fitting your system with rail brackets (explosion view available in companion instructions) is recommended first, to ensure desired bracket adjustment, prior to final assembly.

Make sure to **USE** Loctite® 242 thread adhesive (item S14) on the Captive Studs (items S6) and Acorn Nuts (items S9), prior to final assembly. If the supplied thread adhesive is not used, then unit can vibrate and loosen over time. The thread adhesive is supplied with Lift Pump / Filtration System. Location for Locktite® use during the final assembly is highlighted in the companion instructions (instructions for Model 30302).



## Getting to Know the Vehicle

Most Duramax Trucks originally were not equipped with lift pumps. The CP3 Injection Pump draws fuel through the OEM Filter Assembly. The OEM Filter Assembly is along the side of the engine, towards the rear. The figure to the right shows the OEM Filter Assembly and its features. Maintenance of the filter system includes occasionally draining of water (contaminated fuel) at the drain, located at the bottom of the Filter Assembly as well as Filter Element replacement. The Filter Assembly includes a hand pump on top of the assembly that allows a "manual priming" of the fuel system after Filter Assembly maintenance.

Some vehicle's fuel systems have had modifications that include the addition of an aftermarket fuel lift pump as well as additional Filters added. Inspect the engine compartment for additional filters, fuel lines as well as inspect for the presence of the OEM Filter Assembly. Under the vehicle, along both Frame Rails, inspect for an aftermarket lift pump assembly or additional aftermarket fuel filter assemblies.

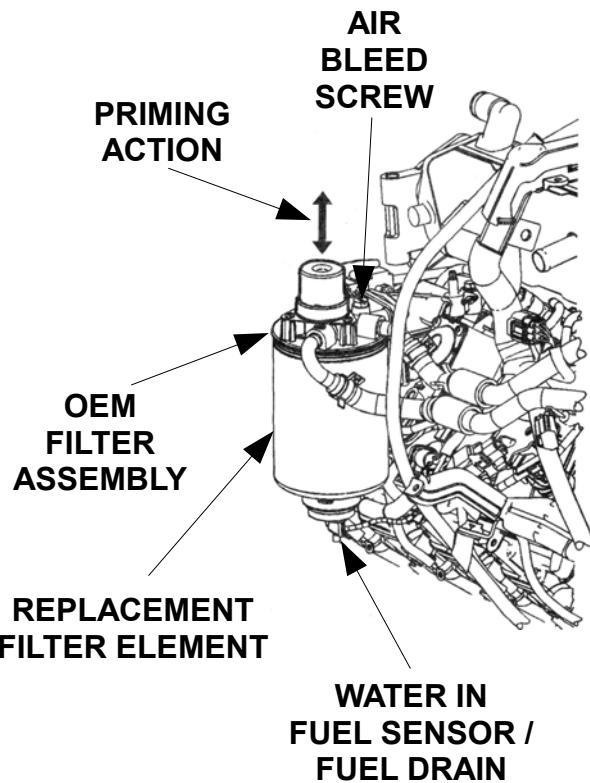
## Plan for Build

ANY aftermarket lift pump assembly that has been installed MUST be removed from the vehicle. The OEM Filter Assembly can be retained for use, however the following procedure (filter replacement) will have to be performed during installation:

- Unplug the Water in Fuel (WIF) Sensor Electrical Connector.
- Remove the lower, outer casing of the Filter Element using a filter or strap wrench, loosening the Filter Element from the Filter Assembly.
- Loosen and remove Air Bleed Screw from Filter Assembly.
- Loosen the Water in Fuel (WIF) from the Filter Element.
- Use ONLY a new replacement Filter Element.
- Using new o-ring, re-install the Water in Fuel (WIF) Sensor into the new Replacement Filter Element.
- Re-Install the Replacement Filter Element to the rest of the Filter Assembly.
- Re-Plug the Water in Fuel (WIF) Sensor Electrical Connector.
- Use hand pump in Filter Assembly to draw fuel from the rest of the fuel system until the fuel comes out of the Air Bleed Screw Port. Re-Install Air Bleed Screw.

The installation of the Fuelab Lift Pump / Filtration System can also be performed retaining the Fuel Line from underneath of the vehicle leading to the OEM Filter Assembly (on installations retaining the OEM Filter Assembly).

While retaining the use of the Filter Assembly can be a convenience for plumbing, Fuelab does not recommend the use of additional aftermarket filter assemblies due to possible performance shortcomings.



## OEM FUEL FILTER ASSEMBLY FEATURES

**Step 2:** Disconnect the Vehicle's Battery (or batteries, as diesel trucks typically have more than one) by disconnecting the Negative or Ground Terminal(s) of each Battery to disable the Vehicle's Electrical System.

**Step 3:** Loosely attach the System Bracket (item S2) and bushings (items S7) to the Front Rail Bracket (item S3), using the four (4) Captive Studs (items S6), Stud Washers (items S8) and Acorn Nuts (items S9). Follow the companion instructions for proper assembly orientation. For convenience, the Wiring Harness (item 10) can be attached to the Lift Pump / Filtration System, prior to final installation (reference Step 11, of these instructions). Be sure to note proper wiring polarity, otherwise permanent damage to Lift Pump will result.

**Step 4:** Find a suitable place to mount the Lift Pump / Filtration System. On a short bed truck, the space is very tight. The Lift Pump / Filtration System normally mounts on the inside of the vehicle's frame.



**SPECIAL NOTE:** GM Frame Rail appears differently than as shown in photos.



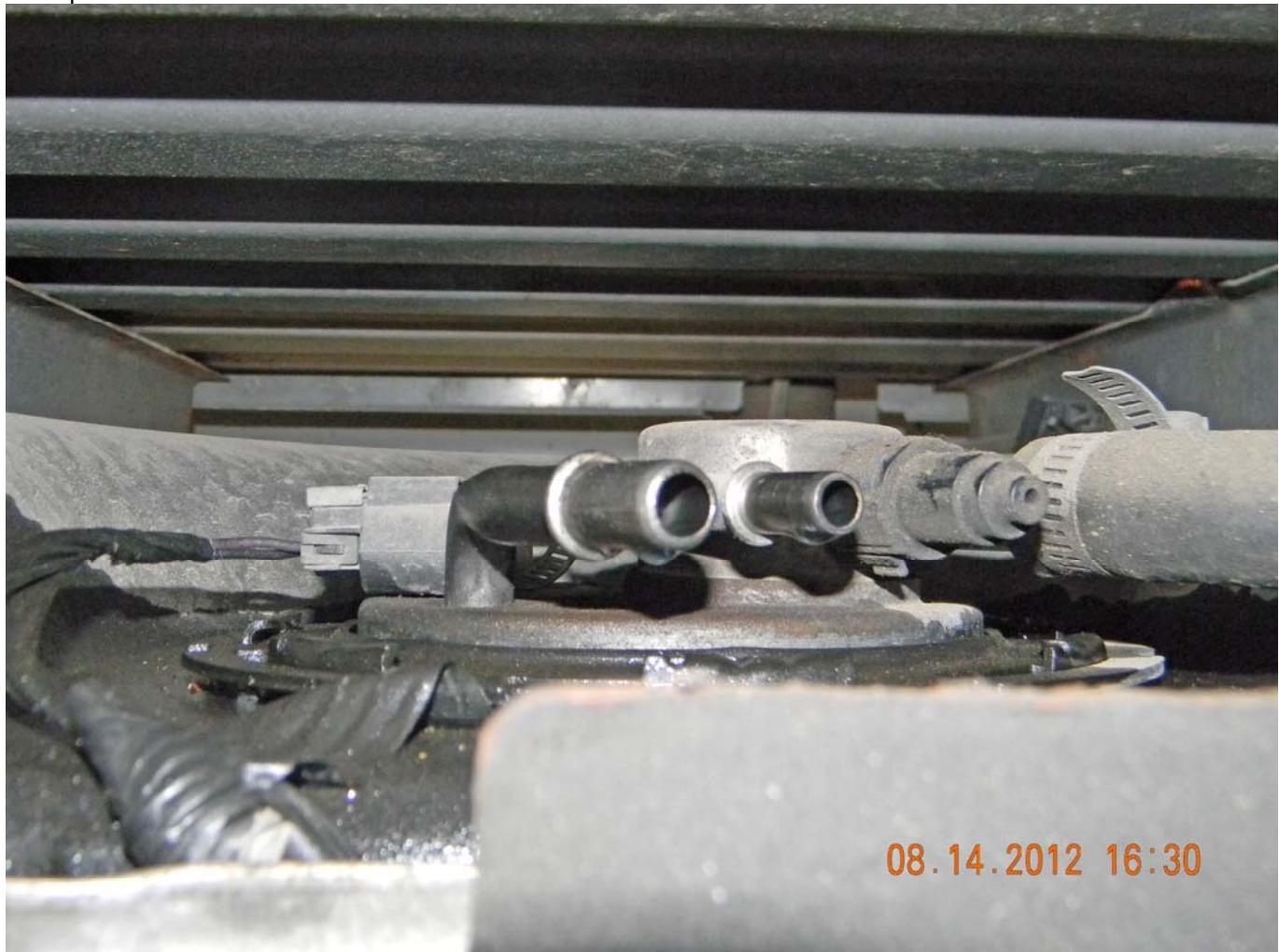
Placing the Lift Pump / Filtration System into position as a dry-fit (such that the thread adhesive is not being used, and the fasteners are loose) can be helpful, to determine the desired adjustment position of the bracket system as well as determining the desired placement along the vehicle's frame. Multiple height positions are possible by attaching the System Bracket through using the different hardware positions of the Front Rail Bracket. **DO NOT** position to where the Lift Pump / Filtration System can rub against the cab body.



**SPECIAL NOTE:** Inlet fitting may appear different in photos than the fitting supplied with this kit.

**Step 5:** Installer may have to have the fuel tank lowered or any blocking shield to be removed, to gain access to the Fuel Tank Module (located on top of tank). Use a fitting removal tool, to remove supply line from the Fuel Tank Module. Install Quick Connect (Item 5) to fuel line (FL500) leading from the Fuel Tank Module to the inlet of the Lift Pump / Filtration System.

Example module shown below:



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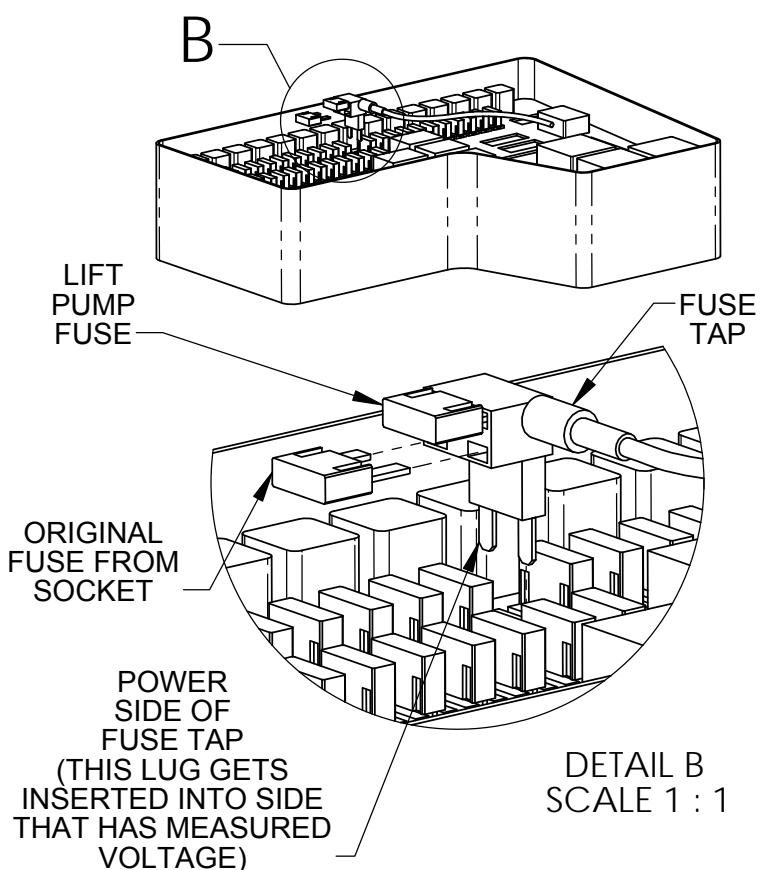
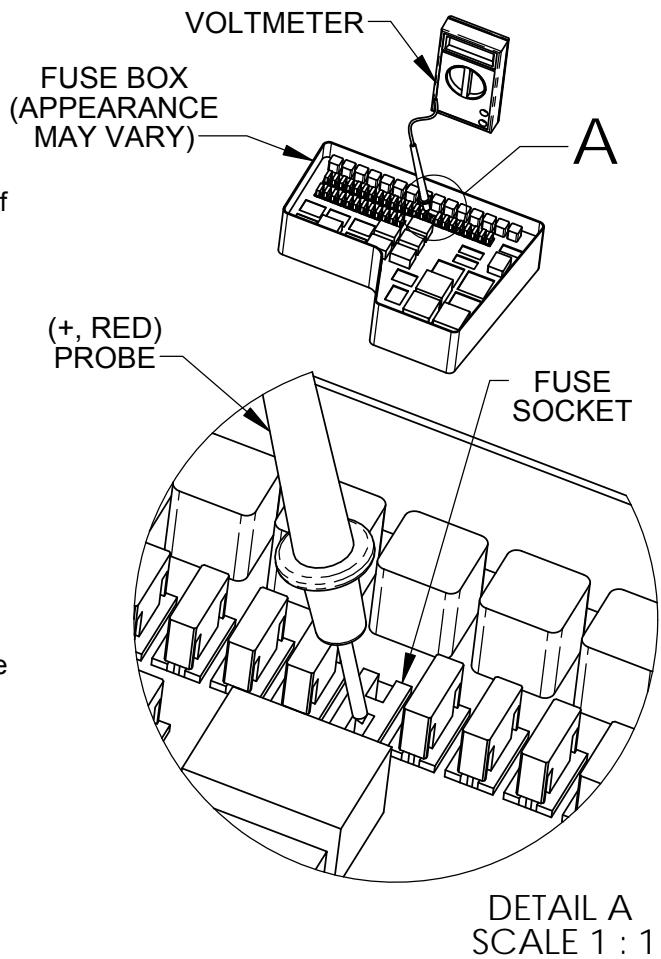
## Topic: Finding proper Fuse Position, Socket Power Side and Fuse Tap Orientation

This kit uses a Fuse Tap Assembly in the wiring harness, to allow a power tap from the Under-Hood Fuse Box to power the Lift Pump / Filtration System. Possible Fuse Positions (see lid of Fuse Box) for this application include Fuse Numbers (choose one):

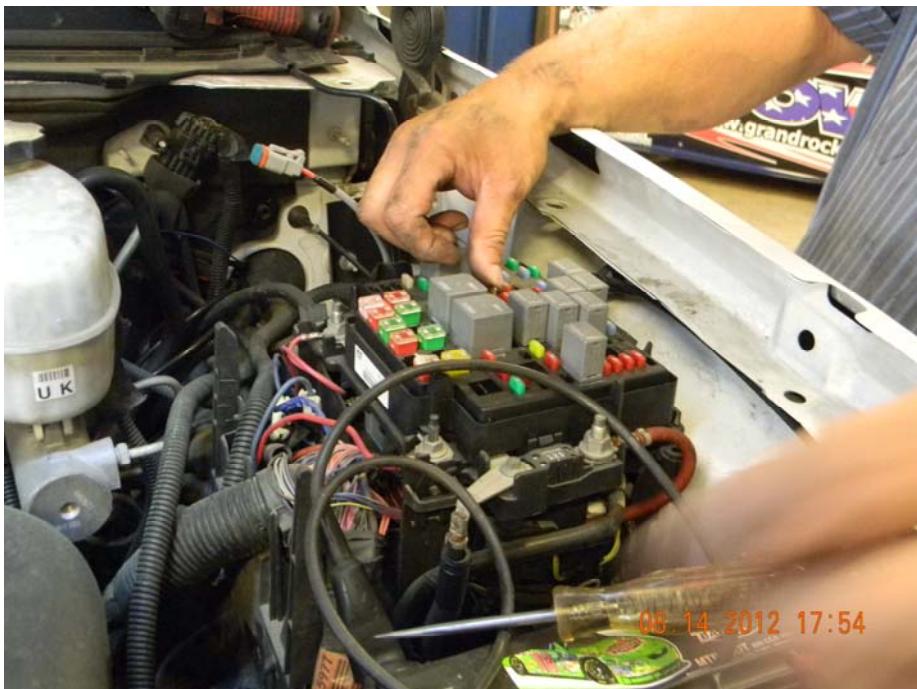
**42, 15, 54, 39, 48, 55 or 56.**

A Test Light or Voltmeter is required to determine the proper orientation of the Fuse Tap. Use the (Positive - Red) probe of the Test Light or Voltmeter to determine the "Power Side" of the Fuse Socket. For the proper leg of the Fuse Tap to be referenced, place probe into one side of the Fuse Socket, while the other Probe (Negative – Black) is placed firmly against a good grounded metal surface. If the probe size is too large, a small straitened paperclip can be used to help establish readings. Check the following conditions before installing the Fuse Tap:

- Check Door or Lid Label for Fuse Block, to verify the correct location of the Fuse (see list above).
- Remove Original Fuse from the Socket, using Fuse Pulling Tool or Needle Nose Pliers.
- With Ignition Key in the "OFF" position, does either side of the Fuse Socket have voltage? If voltage is measured, then look for alternate location, as voltage indicates the wrong operating behavior and therefore is a wrong Fuse Position.
- With Ignition Key in the "ON" position, does either side of the socket have voltage? If no voltage is detected, then re-inspect test equipment and proper Fuse Position. If voltage is measured, then note which side (of the two positions) had measured voltage. This side will be considered to be the "Socket Power Side". When inserting the Fuse Tap, note that the "Power Side" of the Fuse Tap must be inserted into the Socket Power Side to have the proper Fuse Tap Orientation. **SPECIAL NOTE:** Ignition Key may have to be cycled (OFF-ON-OFF) while observing the Voltmeter or Test Light, as power may be intermittent (depending on the actual circuit being tested).
- Note the Fuse and position of the fuses within the Fuse Tap (bottom fuse is the original fuse removed from the socket, while the "upper" fuse is the fuse for the Lift Pump).



**Step 6:** Secure the wiring harness and fuse (item 8) in the engine bay. **DO NOT** make the final connection of the power lines at this time. This will be your last step before starting the vehicle.



Run the wiring harness (item 8) along the driver side frame rail and secure with Cable Ties (items 7).

Connect the supplied wiring harness (item 8) to the Lift Pump / Filtration System as described.

Connect the black wire to the black negative (-) terminal of Lift Pump. Connect the red wire to the Red (+) terminal of the pump.

**SPECIAL NOTE:**

Tighten snugly, but do not over tighten the ring terminals with the supplied washers and nuts.

**DOUBLE CHECK!**

Reverse polarity can result in a permanently damaged fuel pump, be sure to correctly attach the harness per the color coded scheme.



**Step 7:** The Fuel Line (item 1) and Push-lok® fittings (items 2, 3 and 5) are very tight. Use a small amount of oil on the fittings and use a heat gun to soften the fuel lines slightly, to fully seat them.

Additional hose clamps (not supplied) at the Push-lok® connection points can be used, however is not necessary.

Connect the Lift Pump / Filtration System's fuel hose as indicated in the directions and run the pressurized supply Fuel Line (item 1) along the frame rail to the injection pump.

The Lift Pump / Filtration System has its plumbing ports labeled, as well as these parts are shown in supplied instructions from the Lift Pump / Filtration System. If routed efficiently, approximately 1' of fuel line will remain after installation.

Run the fuel supply line (item 1) along the frame rail and up to the injection pump. Use Cable Ties (items 7) or line clamps (not supplied) as necessary; make sure the lines are secured away from the steering shaft. Special Note: The OEM Filter Assembly can be retained, if Element is replaced.

Empty the factory fuel filter as may be required, by opening the OEM Filter Drain Valve or remove OEM filter.

**Step 8:** Disconnect the factory fuel supply line and install the Push-lok® fitting, Push-lok® adaptor and fuel supply line.

**Step 9: DOUBLE CHECK** the fuel lines, to make sure the tank straps are tight, the fill tube and overflow tubes are reconnected.

**Step 10:** Connect the power/ground wire to the battery and the bulk of the installation should be complete.

Be sure to fill the fuel tank of the vehicle with at least two gallons of fuel. If fuel system is operating (during starting) but Lift Pump / Filtration System does not build pressure, then additional fuel may be required to add to the fuel tank.

Before the first crank, cycle the key to run 3 times to attempt to prime the Lift Pump / Filtration System. When attempting to start, the engine may operate momentarily and die. This is due to the fuel left in the fuel rail and injection pump. Several attempts may be required to successfully start the engine (driving out initial air in the system). Filling the filter with diesel can make the priming process quicker, in order to start the engine faster.

If you installed correctly you will only see a small part of the bracket and filter showing, **DO NOT** position to where the Lift Pump / Filtration System rubs against the cab body.

Check for leaks after running for five minutes at all connections and pump, if no leaks are found, Road test the vehicle for proper performance.

## LIMITED WARRANTY

**FUELAB, a division of FCP, Inc.**, having its principal place of business at **1605 Eastport Plaza Drive, Suite 125, Collinsville, IL 62234, USA** ("Manufacturer") warrants its **FUELAB** products (the "Products") as follows:

### **1. Limited Warranty.**

Manufacturer warrants that the Products sold hereunder will be free from defects in material and workmanship for a period of 2 Years from the date of purchase to the original purchaser. If the Products do not conform to this Limited Warranty during the warranty period (as herein above specified), Buyer shall notify Manufacturer in writing, or by phone, of the claimed defects and demonstrate to Manufacturer satisfaction that said defects are covered by this Limited Warranty. If the defects are properly reported to Manufacturer within the warranty period, and the defects are of such type and nature as to be covered by this warranty, Manufacturer shall, at its own expense, furnish replacement Products or, at Manufacturer's option, replacement parts for the defective Products. Removal of Products from vehicle (*Vehicle means any automotive, bike or marine transportation powered by an internal combustion engine. This product is NOT intended or designed for use on aircraft, experimental or otherwise.*), shipping to Manufacturer and installation of the replacement Products or replacement parts shall be at Buyer's expense.

### **2. Other Limits.**

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Manufacturer does not warrant against damages or defects arising out of improper or abnormal use or handling of the Products; against defects or damages arising from improper installation (where installation is by persons other than Manufacturer), against defects in products or components not manufactured by Manufacturer, or against damages resulting from such non-Manufacturer made products or components. Manufacturer passes on to Buyer the warranty it received (if any) from the maker thereof of such non-Manufacturer made products or components. This warranty also does not apply to Products upon which repairs have been effected or attempted by persons other than pursuant to written authorization by Manufacturer.

### **3. Exclusive Obligation.**

THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of Manufacturer shall be to repair or replace the defective Products in the manner and for the period provided above. Manufacturer shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall Manufacturer be liable for incidental, special, or consequential damages.

### **4. Other Statements.**

Manufacturer's employees, representatives' and/or resellers ORAL OR OTHER WRITTEN STATEMENTS DO NOT CONSTITUTE WARRANTIES, shall not be relied upon by Buyer, and are not a part of the contract for sale or this limited warranty.

### **5. Entire Obligation.**

This Limited Warranty states the entire obligation of Manufacturer with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.

### **6. Warranty Service**

**What Does This Warranty Not Cover?** Any problem that is caused by abuse, misuse, or an act of God (such as a flood) is not covered. Also, consequential and incidental damages are not recoverable under this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

**How Do You Get Service?** In order to be eligible for service under this warranty you **MUST** return the Warranty Registration card, or register on-line at [www.fuelab.com/warranty](http://www.fuelab.com/warranty) within 30 days of purchasing the Product.

If something goes wrong with your product contact FUELAB at 1-800-541-2345, International customers call 001-217-324-3737, for a Return Authorization Number (RMA). After receiving your RMA send it postage paid, fully insured, with a brief written description of the problem to:

FUELAB Warranty Department, 1605 Eastport Plaza Drive, Suite 125, Collinsville, IL 62234

We will inspect your Product and contact you within 72 hours of receipt to give the results of our inspection and an estimate of the labor and/or parts charges required to fix the Product, if applicable. If covered under this limited warranty Manufacturer will repair Product and return it to you at no cost. If the Product is NOT covered under this warranty and if you authorize repairs, we will return the repaired Product to you COD, or prepaid via credit card, within 72 hours. There is no charge for inspection. If return product is found to be free of defects a \$25.00 shipping and handling charge will be applied. We will return the repaired Product to you COD, or prepaid via credit card, within 72 hours.