

*“HIGH PERFORMANCE FUEL DELIVERY SYSTEM”*



FROM: Diesel Performance Products, Inc.  
SUBJECT: Welcome/Thank You  
TO: Valued Customer

We at Diesel Performance Products, Inc. (DPP) would like to thank you for your confidence in purchasing one of the FASS Products. Building a quality product and providing excellent customer service is # 1 at DPP. Behind each fuel system/fuel pump are many years of design experience. We have implemented very rigorous testing procedures before bringing any item to the market along with very strict manufacturing procedures to provide a superb product. Our confidence is evident in the products we make as each product is backed by an industry leading warranty.

*We, Diesel Performance Products, promote “ALL” retail business through our dealer network to provide better customer service! We are confident that everyone involved is best serviced in this manner. We have given our dealer network proper knowledge and support to promote and service our line of products.*

Dealers receive appropriate troubleshooting guides to refer to. These have proven to be excellent references for those who choose to use them. We provide excellent assistance to our dealers so they in turn can assist their customers. DPP has decided to place this information on our website to accommodate all of our customers needs.

Our R & D Department in conjunction with our Dealer Support Department is continually searching for ways to improve quality, expand our product line, and provide superb support to our network of dealers so they can support their customers.

**Please make sure to fill out your product registration form and return the original form to Diesel Performance Products, Inc. within 30 days of purchase accompanied with a copy of the purchase receipt. Doing so will qualify you for the Limited Lifetime Warranty!**

Steps to customer satisfaction can be found on the next page.

## STEPS TO CUSTOMER SATISFACTION

We want you to be happy with your FASS Fuel System. Customer satisfaction, your satisfaction, is the all-important ingredient for success in our business, as it is in any other.

Normally, warranty problems can be resolved by your Dealer's sales or service departments. That's why you should always talk to your Dealer's Service department first. If you're not satisfied with the dealership's response at this level, Diesel Performance Products, Inc. (DPP) recommends that you follow these steps, in order:

- STEP 1:** Discuss the problem with the owner or General Manager of the dealership.
- STEP 2:** If your dealership is unable to resolve the problem, contact Diesel Performance Products, Inc. Customer Care Center in writing; the address is located on page 14 of this manual or fax it to 636-433-5913. Be prepared to provide the Customer Center with the following information:
- Your Name, address and daytime phone number
  - Model and Serial Number (Not Model Number)
  - Dealer, contact name and phone number
  - Date of purchase
  - Nature of Problem

Once you have followed the two steps described, a DPP representative will review your situation. DPP will then follow up by contacting the dealer for more information. Depending on the situation a representative from the selling dealer or a representative of DPP may elect to contact you.

Thank you for your business, from the men and women of Diesel Performance Products, Inc.

Dear Valued Customer,

A small percentage of our customers have experienced hard start issues when placing our pumps on trucks with the VP44 injection pumps, these pumps are found on 1998.5 – 2002 Dodge Cummins pickups. The hard start issues we incur are only found on this application. The hard start issue would occur with any fuel pump putting good flow and pressure to the VP44 after the injection pump has experienced 5psi or less in fuel pressure. A VP44 receiving less than 5psi in fuel pressure will more than likely be damaged, creating the hard start issue with good fuel flow and pressure. Please read the following if you experience the hard start issue.

### **Hard Starts**

Usually the FASS only encounters hard starts on the 1998.5 – 2002 Dodge Cummins with the VP44 injection pump. If this occurs it is usually on a VP44 with high mileage, and/or a VP44 that has been subjected to around 5psi of fuel pressure or less. It is more likely to occur when the weather is warmer/hot.

Explanation of Diaphragm: The diaphragm in the VP44 is designed to move about .5mm with proper fuel pressure (about 7psi min.). When the VP44 is subject to about 5psi or less the diaphragm can move up to 2mm, an increase in movement of 4 times more than what it was designed to move. With this type of movement the diaphragm will eventually develop stress cracks thru out the body of the diaphragm. One job of this diaphragm is to separate low fuel pressure and high fuel pressure in the housing of the VP44, when the cracks are present this separation does not occur. This will lead to hard starts even with a stock OEM lift pump!!

Here is a simple test:

Note: Not all failed pumps with broken diaphragms will start with low to no supply fuel. Sometimes the diaphragm is so broken that charging pressure is not able to build to a level that allows the pump to deliver fuel.

Try starting the vehicle without waiting for the fuel pump to cycle. Meaning when you turn the key to the on position immediately engage starter.

Or:

Unplug the FASS pump or remove the fuse so the FASS pump does not operate. Note: If the engine operates without fuel pressure for a period of time the **VP44 will be destroyed**. Understanding this condition, start the truck. ***If the truck starts shut it off immediately!!!!*** This test just indicated that the better/increased fuel pressure from the FASS pump is overriding the defective/thinner diaphragm and/or cracked o-rings surrounding the diaphragm in the VP44. Here are some solutions:

- 1.** Receive the most current flash from your Dodge Dealer.
- 2.** On our WH-1002 harness, cut the red wire between the FASS relay and engine harness. Splice a length of the same gauge wire to the red wire coming out of the relay. Relocate this wire to a fuse that is hot only in the “Run” position. An example is the Power Window or Windshield Wiper fuse. This will cut power to the FASS when cranking.
- 3.** Repair the VP44. VP44’s were manufactured with a thinner diaphragm which can and will cause hard starts with hot weather and or higher fuel pressures. Thicker diaphragm’s for the VP44 were released around 2003 for correcting this situation. Remember it doesn’t matter if the VP44 has the thinner or thicker diaphragm, if the VP44 has been subjected to a failing transfer pump (lower fuel pressure) or a failed transfer pump it will lead to this problem. The damage was done by the failing or failed lift pump before the FASS was installed.

# **FILTER CROSS REFERENCE SHEET**

## **Cross Reference List for the FASS 150 Series Fuel Filter**

Recommended Fuel Stratapore™ or Microglass  
Filter Media:

<b><u>BRAND</u></b>	<b><u>Part #</u></b>	<b><u>Micron Rating</u></b>	<b><u>Material</u></b>
FASS	FF-1010	10	Stratapore™
FASS	FF-1003	3	Stratapore™
CIM-TEK	70032	10	Microglass
CIM-TEK	70213	3	Microglass
Fleetguard	HF6601	8	Cellulose/Synthetic
Fleetguard	HF6610	16	Cellulose
Fleetguard	HF6613	12	Microglass
Fleetguard	HF6607	6	Microglass
Fleetguard	HF6604	3	Microglass
Caterpillar	3T8642		

## **Cross Reference List for the FASS 150 Series Water Separator**

Recommended Water Stainless Steel/Water Separator  
Filter Media:

<b><u>BRAND</u></b>	<b><u>Part #</u></b>	<b><u>Micron Rating</u></b>	<b><u>Material</u></b>
FASS	WS-1001	144	Stainless Steel/Water Separator
Fleetguard	FS1023	144	Stainless Steel/Water Separator

**NOTE:** The use of a hydraulic fuel filter is because the canister is much thicker and provides more durability than a fuel filter canister.

# **WARNING!!**

Installing the improper FASS Fuel System or installation kit can cause severe engine damage.

This installation manual applies to the FASS 150/95-1008 & FASS 150/150-1008 contained in the same package. The serial number on the installation/owners manual package should match the serial number on the outside of the box. If it doesn't, call your dealer.

***This FASS 150/95-1008 (95gph) or FASS 150/150-1008(150gph) applies to this application:***

Recommendation: FASS 150/95-1008 - the Dodge Cummins Truck 1998.5 - 2004, with stock to moderate horsepower modifications.

Recommendation: FASS 150/150-1008 - the Dodge Cummins Truck 1998.5 - 2004, with extreme horsepower modifications.

Because of the higher fuel flow these systems have to offer, you may encounter stock fuel module problems. The STK-1001 will solve these problems.

## **SAFETY GUIDELINES AND WARNINGS!**

**TIP!** Flush and clean all brass fittings and fuel line free from debris.

**WARNING!** ***SECURE VEHICLE FROM ROLLING!***

**WARNING!** Use care not to drill into any electrical wires, air lines or other damageable components when drilling.

**WARNING!** Consult vehicle manufacturer's instructions concerning the electrical system before attempting any electrical connections.

**CAUTION:** Wear safety glasses when operating power tools such as drills and grinders or when using a punch or chisel.

**CAUTION:** Properly secure lines to prevent chaffing.

***VERY IMPORTANT: THE RETURN FUEL FITTING LOCATED IN THE BASE OF THE FASS FUEL SYSTEM SHOULD NOT BE REMOVED. THERE IS A SPECIAL CUT IN THIS FITTING THAT ASSISTS IN REGULATING PRESSURE. ALSO, DO NOT REMOVE ANY STEEL ALLEN HEAD FITTINGS. THESE PORTS WERE USED IN THE MACHINING PROCESS.***

# INSTALLATION MANUAL

Welcome to the **FASS Fuel/Air Separation System**.

The installation of the **FASS FUEL SYSTEM** can be relatively simple when the following steps are followed.

1. Inventory the package components completely. Notify place of purchase immediately of any parts missing or damaged.
2. We have invested many hours into the development of the installation and owner's manual's to simplify the installation and operation of the **FASS Fuel System**. Please read the owner's manual and the installation manual completely before attempting installation. Understand how the system operates and installation recommendations before beginning installation. Most of the questions that you will have will be answered in one of these manuals. If you have a question please review the installation or owner's manual.
3. The installation recommendations contained herein are suggested installation guidelines only. Each installation can and may vary considerably because of the many options and accessories available to the truck market.














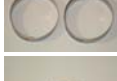





**Installation personnel should use good judgment and common sense when installing the FASS Fuel System.**

If any installation procedure is uncertain, contact place of purchase.

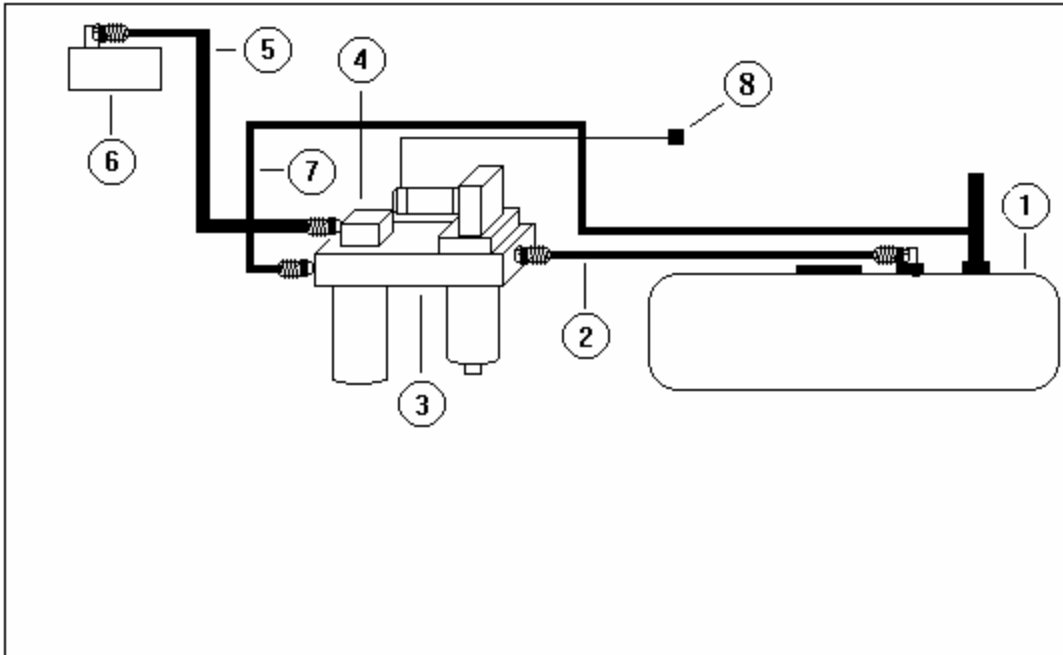
Due to training, communication and our relationship we have with our authorized dealers we recommend an authorized FASS Fuel Systems dealer for the installation of the FASS System. They are prepared to install the FASS System with the most efficiency. If a situation/problem arises during the installation they are most prepared for that situation/problem. It may take more time for an unauthorized shop to address the situation/problem. We will not be responsible.

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Contents Include:

	Description					Quantity		Part #	
1.	Pump/Filtration Unit	--	--	--	--	1	--	FASS-150	
2.	Fuel Pump Bracket	--	--	--	--	1	--	BR-2001	
3.	Owners Manual	--	--	--	--	1	--	OM-1001	
4.	Electrical Harness w/relay	--	--	--	--	1	--	WH-1002	
5.	3/8" Fuel Line	--	--	--	--	17'	--	FL-1001	
6.	1/4 "mounting bolts	--	--	--		(2 – 1" & 3 – 1 1/2")	--	--	
7.	3/8" mounting bolt and flanged nut	--	--	--		6 ea.	--	--	
8.	3/8" x 1/2" (Push Lock x MPT)	--	--	--		2	--	PL-1001	
9.	3/8" x 1/2" (Push Lock x Female Flare)	--	--	--		1	--	PL-1002	
10.	3/8" Quick Disconnect	--	--	--		1	--	QD-1001	
11.	3/8" x 3/8" (Push Lock x 90° Female Flare)	--	--	--		1	--	PL-1003	
12.	1 1/2" Return Manifold	--	--	--		1	--	RM-1002	
13.	3/8" Line Hose Clamp	--	--	--		2	--	HC-1001	
14.	1 3/4" Line Hose Clamp	--	--	--		2	--	HC-1004	
15.	Injection Pump Fuel Line Fitting (O'ring)	--	--	--		1	--	DIPF-1001	
16.	Frame Bracket ("L" Shaped) (dim. 9.5" x 4.3" x 3")	--	--	--		1	--	FB-1001	
17.	Ring Terminal	--	--	--		2	--	NRB516-K	
18.	Washer (Thickness 3/16")	--	--	--		2	--	WA-1001A &	
	Washer (Thickness 11/16")	--	--	--		3	--	WA-1001B	
19.	1/2" x 1/2" 90 degree Elbow (mpt x fpt)	--	--	--		1	--	--	

## SYSTEM DIAGRAM



1. FUEL TANK
2. FUEL SUPPLY LINE TO PUMP UNIT
3. PUMP/FILTRATION UNIT
4. FUEL TO ENGINE MANIFOLD
5. FUEL SUPPLY LINE TO INJECTION PUMP
6. INJECTION PUMP
7. RETURN LINE (NOTE: LINE WILL “T” INTO OVER FLOW TUBE NEXT TO FILLER NECK.)
8. WIRE HARNESS FROM FASS FUEL PUMP TO STOCK FUEL PUMP ELECTRICAL CONNECTION

### **INLET/OUTLET PORTS USED FOR PLUMBING ARE MARKED AS FOLLOWED:**

- “T” – the fuel line from the fuel tank enters this port.  
“R” – this is the return port back to the fuel tank.  
“E” – this is the port leading to the engine’s injection pump.  
“H” – these are the heater ports for coolant, unidirectional. The heater DOES NOT HAVE TO BE USED and the read plugs can be left in place.  
“G” – this is the gauge port. A 0 – 30psi gauge is recommended if any gauge is being used.

**The 2 – 1/2” allen head plugs have no function.**

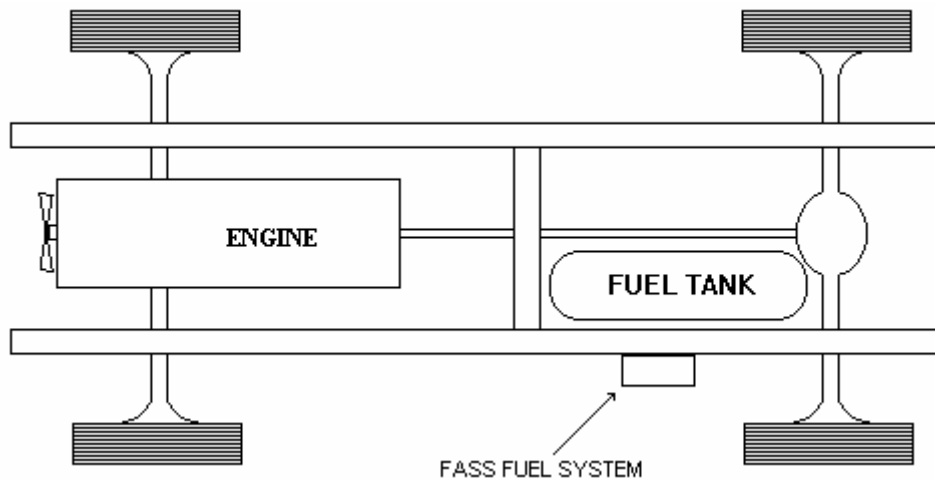
## Location of the FASS FUEL SYSTEM PUMP/FILTRATION UNIT

The proper location of the **FASS Fuel System** on the vehicle is most important.

- Best performance
- Protection from the elements and road debris
- Ease of service

### Suggested location:

(Hint: The best place we have found on the Dodge  $\frac{3}{4}$  and 1 ton trucks is on the driver's side frame rail up underneath the bed of the truck and in front of the rear tire.)



**NOTE:** Throughout this manual there are photos of the FASS 150 with the previous mounting bracket (part # BR-1001). The instructions for mounting the new bracket are the same throughout this manual except for the mounting of this bracket to the FASS, for which there are pictures.

## **BEGIN INSTALLATION**

**STEP 1:**     **Preparing Suction Line and Return Line:**     Use the following photo's to complete this step.



**Photo 1A**



**Photo 1B**



**Photo 1C**



**Photo 1D**



**Photo 1E**

**NOTE:**     **IT IS NOT NECESSARY TO REMOVE THE BED OF THE TRUCK. REMOVED TRUCK BED FOR PHOTO.**

1. Remove the filler neck tube from the truck by loosening the clamps at both ends.

**STEP 1:     Preparing Suction Line and Return Line:     Continued**

2. Disconnect the factory suction line and clip as seen in photo 1B. The factory line is removed by pressing in on the two tabs located in the connecting harness. These tabs are opposite of each other.

*Note: If the truck has had the retrofitted in-tank pump installed, usually installed by a Dodge Dealer after a fuel lift pump failure, a separate suction tube will need to be installed in the fuel tank. This retrofit will not allow fuel to be drawn through! The part number for the suction tube is a STK-1001 and is available through your Authorized FASS Dealer.*

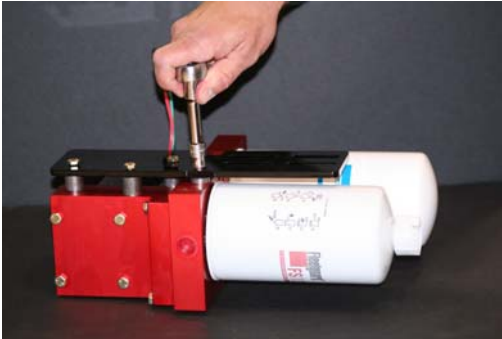
**Some symptoms if this does occur:**

Sporadic, Low Fuel Pressure	Hard to prime, if not impossible
Engine will keep dieing shortly after started	Excessive pump noise

3. Attach fuel line to quick disconnect fitting using a 3/8" hose clamp as seen in photo 1A. Torque to proper specifications.
4. Connect the quick disconnect fitting to the suction port on the fuel tank. As seen in photo 1B and 1C. Pull back on the black plastic in the quick disconnect as you slide it onto the fuel supply line. It will lock into place.
5. Review photo 1D and the location of the return manifold before completing this step. Cut the rubber tube to allow the return manifold to junction with the filler tube. When assembling the return manifold into the filler tube position it to where the 3/8" junction pipe aims to the outside of the bed. It may be necessary to remove approximately 1/2" – 3/4" of the rubber where the 3/8" junction tube exits the manifold.
6. Assemble the return manifold using the 2 – 1 3/4" hose clamps. Do not tighten at this time.
7. Reinstall the filler tube.
8. Connect the opposite end of the 17' fuel line addressed in step 4 of this section to the 3/8" junction pipe of the return manifold using a 3/8" hose clamp.
9. Now torque all hose clamps to proper specifications.

**NOTE:     YES THE FUEL LINE MAKES A LOOP FROM THE TANK TO THE FILLER TUBE. THIS WILL BE ADDRESSED LATER.**

**STEP 2:**     **Mounting FASS System:**     Use the following photo's to complete this step:



**Photo 2A**



**Photo 2B**



**Photo 2C**



**Photo 2D**



**Photo 2E**



**Photo 2F**



**Photo 2G**



**Photo 2H**

## **STEP 2: Mounting FASS System: Continued**

1. Assemble the fuel pump bracket to the FASS System using the 5 washers & bolts. The 2 - 3/16 washers & ¼" x 1" bolts will be used to space the bracket away from the main base of the FASS. The 3 - 11/16" washers & ¼" x 1 ½" bolts will be used to space the bracket away from the pump assembly of the FASS. Refer to photo 2A. Torque to proper specifications.
2. Assemble 3/8" x 1/2" (push lock x mpt) fittings into ports label with the letters "T" and "E" **using tread tape**. Refer to photo 2A. (If installing on a 2003 – 2004 4 x 4 short bed install the ½" x ½" 90 degree elbow as seen in Photo 2H.) Torque to proper specifications.

Note: The FB-1001 (frame bracket) now has multiple slots, use the slots at the end of the bracket for long beds and the middle set of slots for shorts beds.

3. Assemble the FASS System with bracket to the frame bracket as seen in photo 2B using the 4 – 3/8" bolts and flanged nuts.

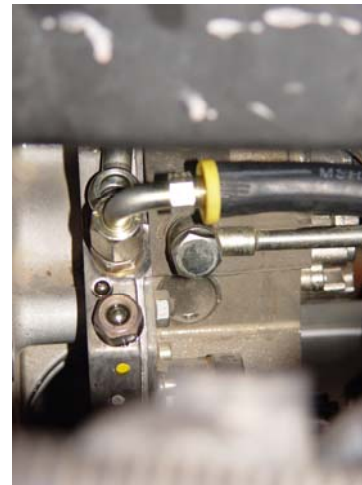
**NOTE: The "L" shaped bracket attaches to the cab support on the short beds and to the bed support on the long beds. Notice vise grips in photo 2E! Refer to photo 2G if installing on a 2003 – 2004 4 x 4 short bed.**

4. Using the above photo's as a guide hold the FASS System (as high as possible) with both brackets attached into the mounting location. (Photo 2C & 2D is of a 2003 short bed 4 x 2 and photo 2E & 2F is of a 2004 long bed.)
5. While holding to the mounting location mark the mounting points.
6. Using a center punch, mark the center of each bolt location.
7. Drill 2 – 13/32 holes as seen in photo 2C to mount the frame bracket.
8. Using the 2 – 3/8" bolts and flanged nuts mount the frame bracket to the proper support. Torque to proper specifications.
9. Torque the 3/8" bolts attaching the frame bracket to the fuel pump bracket to proper specifications.
10. Located on the filters, apply motor oil to the o-rings. Attach fuel filter and water separator. Torque to proper specifications.

**STEP 3:**     **Installing Fuel Line:**     Use the following photo's to complete this step:



**Photo 3A**



**Photo 3B**

1. Route fuel line from the suction port of the fuel tank to the port of the FASS System labeled with the letter "T". Cut and attach to the push lock fitting. Remember to oil the fitting and fuel line before connecting.
2. Route the fuel line from the return manifold to the port on the FASS System labeled with the letter "R". Cut fuel line and insert the 3/8" x 1/2" (push lock x female flare) fitting. Remember to oil the fitting and fuel line.
3. Connect the female flare to the male flared fitting marked with the letter "R". Torque to proper specifications.
4. Disconnect factory fuel line from inlet side of the factory injection pump and install the injection pump o'ring fuel fitting into this inlet port. (Note: This is where the suction fuel line from the fuel filter enters the injection pump.) Photo 3A & 3B shows the common rail system on the 2003 and 2004 trucks, on 1998.5 thru 2002 this port is about 4" back and up about 4". Torque to 18ft lbs.
5. Connect the remaining fuel line to the push lock fitting located in the port on the FASS System labeled "E". Remember to use oil.
6. Route this fuel line to the inlet side of the injection pump and insert the 3/8" x 3/8" (push lock x 90°female flare) fitting into the fuel line. Remember to use oil.
7. Attach 3/8" x 3/8" (push lock x 90°female flare) fitting to the injection pump fitting. Torque to 18ft lbs.

**STEP 4:**     **Installing Electrical Harness:**     Use the following photo to complete this step.



**Photo 4A**



**Photo 4B**

1.     Connect the male end of the wire harness to the female electrical connector on the FASS System.
2.     Route the wire harness along the frame rail to the location of the factory fuel pump.
3.     Disconnect power source to the factory lift pump.
4.     Connect the FASS Systems wire harness (WH-1002) to the factory power source. This was disconnected in the previous step. Photo 4A
5.     Properly secure the relay as seen in photo 4B.
6.     Connect the red wire to the positive terminal of the battery and the green wire to the negative terminal of the battery using the ring terminals. **Note: Connection of these wires to the fuse box will cause damage!!**
7.     Properly secure the wire harness and fuel lines with wire ties.

**STEP 5: FINAL CHECK:**

1. Bolts and fasteners properly tightened?
2. Electrical Harness and Fuel Lines secured or properly tightened?
3. Prime the fuel system! (Refer to owner's manual)!
4. Check for leaks.
5. Start the engine!
6. Recheck all fluid connections and filters for leaks.

**Our part number, IL-1001, is an in-cab indicator light. This kit monitors the fuel system pressures and will indicate when the fuel pressure of the FASS falls below 7psi.**

**NOTE: The electric fuel pump runs continuously while the engine is running. The fuel pump on the FASS System will feel warm or hot to the touch.**

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