

“HIGH PERFORMANCE FUEL DELIVERY SYSTEM”



FASS FUEL SYSTEMS



FOR: UNIT INJECTOR MECHANICAL ENGINES
(UIME)

A MUST READ

FROM: Diesel Performance Products, Inc.

SUBJECT: Welcome/Thank You

TO: Valued Customer

We at Diesel Performance Products, Inc. (DPP) would like to thank you very much for your confidence in purchasing the FASS Fuel System or the FASS Fuel Pump. 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. DPP feels as though we have given our dealer’s proper knowledge and support to promote and service our line of fuel pumps.

Dealers receive appropriate troubleshooting guides to refer to. These have proven to be excellent references for those who choose to use them. We offer 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.

We believe that our dealers are more than well educated to problem-solve. It is our position that this is the most logical way to provide good customer service. We are always trying to improve quality, expand our product line, and provide support to our network of dealers so they can support their customers in a satisfactory way for all involved.

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 warranty!

Again, thank you very much for your business and have a great day!

Diesel Performance Products, Inc.

WARNING!!

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

This installation manual applies to the FASS 95/95-UIME (95gph) and the FASS 95/150-UIME (150gph) 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 the factory.

The FASS 95/95-UIME & FASS 95/150-UIME applies to these applications:

UNIT INJECTED MECHANICAL ENGINES (Example: Mechanical Detroit; Big Cam Cummins NTC/PT PUMP)

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.












NOTE: The use of a hydraulic fuel filter is because the canister is much thicker and provides more durability than a fuel filter canister. The element inside a hydraulic filter filters fuel exceptionally well!

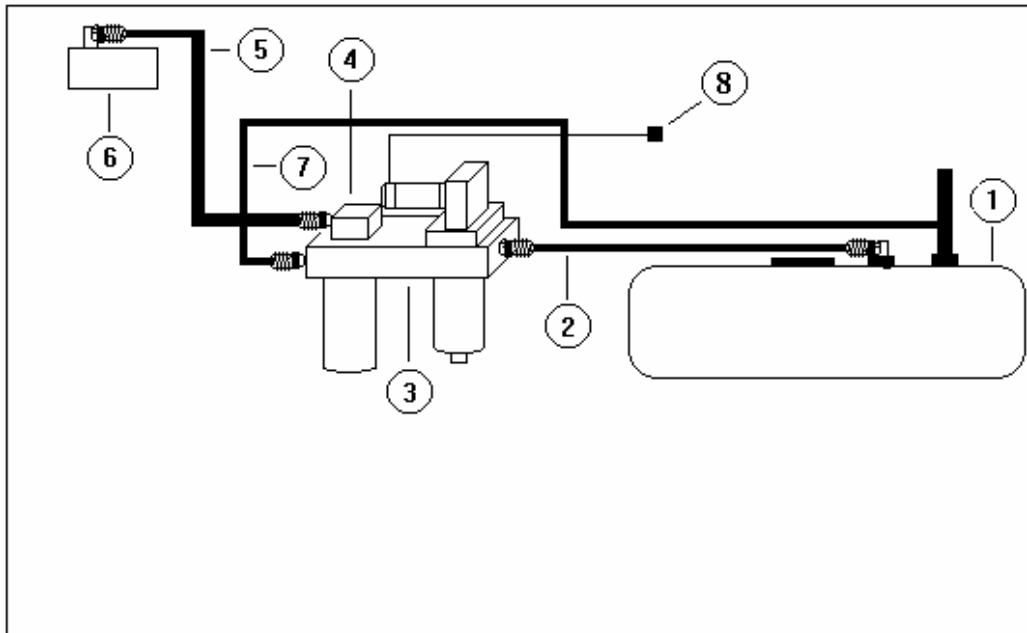
For the 2 year warranty please fill out the "PRODUCT REGISTRATION FORM" and attach a copy of the sales receipt. We must receive the original product registration form and sales receipt within 30 days of the purchase or the 2 year warranty will not be valid.

OVERVIEW

Section 1	Parts List
Section 2	Safety Guidelines and Warnings
Section 3	Pump/Filtration Unit
Section 4	Fuel Lines
Section 4A	<p><u>NOTE: SINGLE DRAW/SINGLE RETURN LINE SYSTEMS:</u></p> <p><i>Read pages 10, 11 and 12 for completion of the single draw/single return line fuel systems.</i></p>
Section 4B	<p><u>NOTE: SINGLE DRAW/SINGLE RETURN LINE SYSTEMS WITH PICKUP OUT OF THE CROSS OVER FUEL LINE:</u> Mostly on 359 Peterbilts!</p> <p><i>Read to page 13 for directions.</i></p>
Section 4C	<p><u>NOTE: DOUBLE DRAW/DOUBLE RETURN LINE SYSTEMS:</u></p> <p><i>Read to pages 14, 15 and 16 for completion of the double draw/double return line fuel systems.</i></p>
Section 5	Electrical Harness
Section 5A	Grounding FASS Fuel System
Section 6	Final Check List

Contents Include:

	Description				Quantity		Part #	
1.	Pump/Filtration Unit	--	--	--	1	--	FASS-95	
2.	Fuel Pump Bracket	--	--	--	1	--	BR-2001	
3.	Owners Manual	--	--	--	1	--	OM-1004	
4.	Electrical Harness	--	--	--	1	--	WH-1001	
5.	1/4" mounting bolt	--	--	--	5	--	--	
6.	3/8" Thick Washer	--	--	--	5	--	WA-2001	
7.	3/8" mounting bolt and flanged nut	--	--	--	4 ea.	--	--	
8.	3/8" mpt x 5/8" flare	--	--	--	2	--	--	
9.	Oil Pressure Switch (Part # 78143)	--	--	--	1	--	--	
10.	Spade Connector	--	--	--	2	--	T-1043	
11.	Grommet	--	--	--	1	--	--	



1. FUEL TANK
2. FUEL SUPPLY LINE TO PUMP UNIT
3. PUMP/FILTRATION UNIT
4. FUEL TO ENGINE MANIFOLD
5. FUEL SUPPLY LINE TO ENGINE FUEL PUMP
6. ENGINE FUEL PUMP
7. RETURN LINE
8. IGNITION
9. FIREWALL
10. DASHBOARD
11. STAND PIPE/DRAW TUBE

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 lift pump.
- “H” – these are the heater ports for coolant, unidirectional. These port do not have to be hooked up.

Please Note: The 2 – 3/8” allen head plugs located in the main base of the unit have no function except to close off passages that were needed for machining purposes.

SAFETY GUIDELINES AND WARNINGS!

WARNING! **DO NOT REMOVE ANY FACTORY INSTALLED SECONDARY FUEL FILTER. REMOVAL OF A FACTORY INSTALLED SECONDARY FUEL FILTER MAY VOID THE ENGINE MANUFACTURER'S WARRANTY. THIS IS THE FUEL FILTER BETWEEN THE ENGINE FUEL PUMP AND THE INJECTORS.**

NOTE: Proper location of the Pump/Filtration Unit on the vehicle is essential. Consider hazards presented to the equipment by road debris and the elements, as well as the best location in relation to the fuel tanks and fuel pump.

WARNING! Top and bottom frame rail flanges should not be drilled into or welded upon. Consult vehicle manufacturer's guidelines and warnings.

WARNING! Use care not to drill into any electrical wires, air lines or other damageable components when drilling through the frame rails, dashboard or firewall of the vehicle.

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.

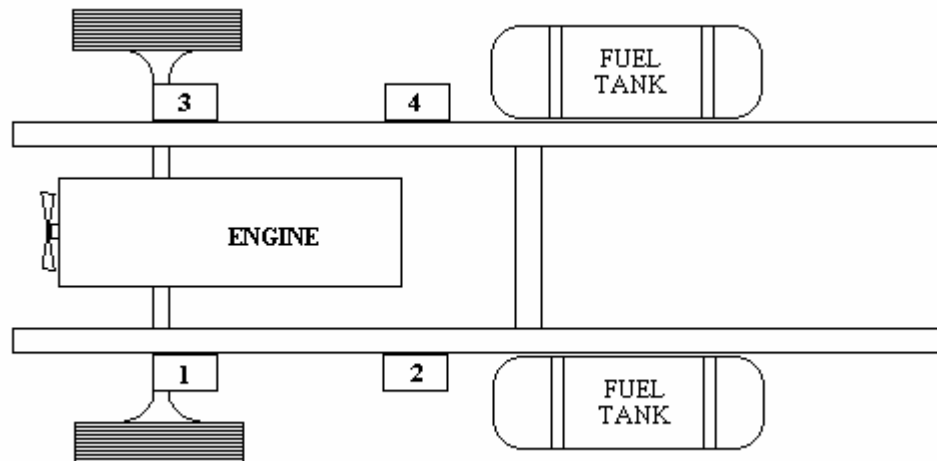
CAUTION: Use common sense when routing fuel lines and electrical harnesses. Keep them away from hot exhaust components and/or moving parts. Properly secure lines to prevent chaffing.

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

The proper location of the **FASS Fuel System** on the vehicle is most important. When making the decision as to where to locate the **FASS Fuel System**, the following points should be considered:

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

Suggested locations: 1, 2, 3 and 4.



INSTALLING PUMP/FILTRATION UNIT ON FRAME

- 3-1** Clean frame area where Pump/filtration Unit is to be mounted.
- 3-2** Utilizing the 5 mounting holes that match, align the fuel pump bracket to the pump/filtration unit. Before installing & tightening bolts to 110 inch lbs place 3/8" thick washers between filtration unit & fuel pump bracket, then torque to proper specifications. Now temporarily install fuel filter and water separator.
- 3-3** Hold Pump/Filtration Unit with attached bracket to frame at selected mounting location. Check for clearance.
- 3-4** Clamp assembly to frame using `C` clamps or Vise Grip® type welding clamps.
- 3-5** Carefully lower hood/cab, if applicable. Check for clearance. If mounted between the frame and steer tire, check for tire clearance. Turn steering wheel fully to the left and right, check for clearance.
- 3-6** Using a center punch, properly mark the center of each bolt location.
- 3-7** Drill 4 - 7/16" holes.
- 3-8** Loose assemble Pump/Filtration Unit to frame using bolts and flanged nuts. Torque to proper specifications.

FUEL LINES

The **FASS Fuel System** has been engineered to eliminate fuel related problems, not create them. It is important that the fuel lines be assembled and installed so as not to cause fuel flow restriction. It is recommended that fuel lines that are replaced or added meet or exceed SAE 100R5 requirements.

UNEVEN FUEL LEVEL CONDITIONS CAN OCCUR BETWEEN THE TANKS IF THE PICKUP/RETURN LINES ARE IMPROPERLY INSTALLED. WHEN ROUTING THE RETURN LINE FROM THE FASS FUEL SYSTEM, FIRST IDENTIFY YOUR CURRENT FUEL SYSTEM. NOW MATCH YOUR CURRENT FUEL SYSTEM WITH THE FUEL LINE SELECTION BELOW AND FOLLOW THE INSTALLATION PROCEDURE. Please read the entire section that applies to your application!

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.

SINGLE DRAW/SINGLE RETURN LINE SYSTEM:

Read section 4A pages 10, 11 and 12 for completion of the single draw/single return line fuel systems.

SINGLE DRAW/SINGLE RETURN LINE SYSTEM WITH PICKUP OUT OF THE CROSS OVER FUEL LINE: Mostly on 359 Peterbilts!

Read section 4B, page 13.

DOUBLE DRAW/DOUBLE RETURN LINE SYSTEM:

Read section 4C, pages 14, 15 and 16 for completion of the fuel line connections.

FUEL LINES, CONT'D

SINGLE DRAW/SINGLE RETURN LINE SYSTEM **ONLY**

IF THE FUEL SUPPLY LINE IS CONNECTED TO THE CROSS-OVER LINE AT ANY POINT, REFER TO PAGE 13.

- 4A-1** If equipped, remove the original primary fuel filter head and bracket from the vehicle. This is the fuel filter between the fuel tank and engine fuel pump

It is most important that any restriction causing devices, i.e., fuel filters, water separators etc., are removed from the fuel supply system between the fuel tank and the FASS Fuel System.

NOTE: CUMMINS ENGINES: The FASS Fuel System will replace the fuel filter between the fuel tank and the engine pump.

- 4A-2** Visually inspect the original fuel supply line to the primary fuel filter head. The fuel line must be at least a size #8 for the FASS Fuel System to perform properly. If the interior lining has deteriorated or is cracked, or if it is too short or too small, it should be replaced
- 4A-3** Re-route the fuel supply line (Ref. 4-2) to the inlet of the FASS Fuel System. If it is necessary to replace it, measure and cut length of fuel line required, when properly routed, to make connection. Assemble fuel line per standard procedures. Properly route and secure fuel line. Connect and properly tighten the fuel fittings per vehicle manufacturer's specifications.
- 4A-4** The fuel line from the FASS Fuel System to the engine transfer pump should also be at least a #8 size line. It is also necessary to inspect this line for deterioration.

FUEL LINES, CONT'D

SINGLE DRAW/SINGLE RETURN LINE SYSTEM **ONLY**

- 4A-5** If it is necessary to replace this fuel line (Ref.4-4), measure and cut length of fuel line required when properly routed, connect FASS Fuel System, “fuel to engine” port to fuel inlet fitting on engine fuel pump. Again, be sure to use at least a #8 fuel line.
- 4A-6** Assemble the fuel line per standard procedures. Properly route and secure the fuel line. Connect and properly tighten the fuel fittings per vehicle manufacturer’s specifications.

FUEL RETURN LINES

THE FASS FUEL SYSTEM MUST RETURN FUEL TO THE SAME TANK IT DRAWS FROM OR IT WILL OVERFLOW.

THE FASS SYSTEM MUST BE EQUIPPED WITH AN ADDITIONAL FUEL RETURN LINE. THE FUEL RETURN LINE MUST BE A #8 SIZE.

NOTE: *The FASS Fuel System “Return to Tank” fuel line should be returned to the fuel tank into its own port. If the tanks do not have any extra ports, it is best to have one made, review the HELPFUL HINT on the following page if there are no extra ports. If you must ‘T’ the engine return and the FASS Fuel System return together, do so directly on top of the tank. To do this mount, the ‘T’ fitting on the tank so it is standing on end with a port on top and a port coming in the side. Connect the FASS Fuel System return line in the top of the fitting and connect the engine return in the side. DO NOT ‘T’ IN WITH THE ENGINE RETURN AT ANY OTHER LOCATION. DO NOT “T” WITH FUEL TANK VENT.*

NOTE: *The reason for not connecting the engine return line with the FASS Fuel System return line (incorrectly) is this can cause back pressure to the engine return. This may cause severe engine damage and a loss of performance. IF THE RETURN LINES MUST BE CONNECTED, ONLY DO SO IN THE MANNER MENTIONED IN THE PREVIOUS PARAGRAPH!!*

FUEL LINES, CONT'D

SINGLE DRAW/SINGLE RETURN LINE SYSTEM **ONLY**

HELPFUL HINT

If there are no extra ports, here is an option. The thicker band of aluminum that is located around the filler cap on most trucks is an excellent place to drill and tap an extra port. We have installed fuel vents with 3/8" pipe threads into the thicker aluminum and ran a small breather line up and over the tank. Now, connect the FASS Fuel System return lines to the old vent location.

NOTE: BE SURE THAT ALL FUEL RETURN LINES AND FITTINGS USED TO CONNECT THEM HAVE INTERIOR DIAMETERS OF NOT LESS THAN 3/8 inch.

You have now completed the fuel line section please go to Section 5.

FUEL LINES, CONT'D

SINGLE DRAW/SINGLE RETURN LINE SYSTEM WITH PICKUP OUT OF THE CROSS-OVER FUEL LINE ONLY

IF THE FUEL SUPPLY LINE IS CONNECTED TO THE CROSS-OVER LINE AT ANY POINT, THE FUEL TANK THAT HAS THE RETURN LINE FROM THE FASS SYSTEM CONNECTED TO IT WILL OVER-FILL. IF THIS IS THE CASE, CONSIDER OPTION 1 OR OPTION 2 BELOW.

OPTION 1:

DRAW THE FUEL DIRECTLY OUT OF ONE FUEL TANK POINT, THUS MAKING A SINGLE DRAW/SINGLE RETURN LINE SYSTEM. NOW REFER TO PAGES 10, 11 AND 12 TO COMPLETE THE FUEL LINE SECTION. IF THIS OPTION IS NOT POSSIBLE CONSIDER OPTION 2.

OPTION 2:

CONSIDER MAKING A DOUBLE DRAW/DOUBLE RETURN LINE FUEL SYSTEM WITHOUT A CROSS OVER LINE. (THIS IS IN PLACE ON ALMOST ALL THE NEW TRUCKS). YOUR TRUCK DEALER CAN HELP YOU CONVERT. READ PAGES 14, 15 AND 16 FOR FUEL LINE CONNECTIONS.

FUEL LINES, CONT'D

DOUBLE DRAW/DOUBLE RETURN LINE SYSTEM ONLY:

INSPECT THE ORIGINAL PICKUP LINES FROM THE FUEL TANKS TO THE CONNECTING “T”. THEY MUST BE THE SAME LENGTH AND SIZE. IF THEY ARE NOT, REPLACE THEM. BE SURE THE FUEL LINES ARE ROUTED AND SECURED IN A MANNER THAT ELIMINATES KINKS AND TIGHT BENDS.

- 4C-1** If equipped, remove the original primary fuel filter head and bracket from the vehicle. This is the fuel filter between the fuel tank and engine fuel pump

It is most important that any restriction causing devices, i.e., fuel filters, water separators etc., are removed from the fuel supply system between the fuel tank and the FASS Fuel System.

NOTE: CUMMINS ENGINES: The FASS Fuel System will replace the fuel filter between the fuel tank and the engine pump.

- 4C-2** Visually inspect the original fuel supply line to the primary fuel filter head. The fuel line must be at least a size #8 for the FASS Fuel System to perform properly. If the interior lining has deteriorated or is cracked, or if it is too short or too small, it should be replaced
- 4C-3** Re-route the fuel supply line (Ref. 4-2) to the inlet of the FASS Fuel System. If it is necessary to replace it, measure and cut length of fuel line required, when properly routed, to make connection. Assemble fuel line per standard procedures. Properly route and secure fuel line. Connect and properly tighten the fuel fittings per vehicle manufacturer's specifications.

FUEL LINES, CONT'D

DOUBLE DRAW/DOUBLE RETURN LINE SYSTEM ONLY:

- 4C-4** The fuel line from the FASS Fuel System to the engine transfer pump should also be at least a #8 size line. It is also necessary to inspect this line for deterioration.
- 4C-5** If it is necessary to replace this fuel line (Ref.4-4), measure and cut length of fuel line required when properly routed, connect FASS Fuel System, “fuel to engine” port, to fuel inlet fitting on engine fuel pump. Again, be sure to use at least a #8 fuel line.
- 4C-6** Assemble the fuel line per standard procedures. Properly route and secure the fuel line. Connect and properly tighten the fuel fittings per vehicle manufacturer’s specifications.

FUEL RETURN LINES

THE FASS FUEL SYSTEM ^{MUST} BE EQUIPPED WITH A FUEL RETURN LINE. THE FUEL RETURN LINE MUST BE A #8 SIZE.

NOTE: The FASS Fuel System “Return to Tank” fuel line should be returned to the fuel tank into its own port. If the tanks do not have any extra ports, it is best to have one made, review the HELPFUL HINT on the following page if there are no extra ports. If you must ‘T’ the engine return and the FASS Fuel System return together, do so directly on top of the tank. To do this mount, the ‘T’ fitting on the tank so it is standing on end with a port on top and a port coming in the side. Connect the FASS Fuel System return line in the top of the fitting and connect the engine return in the side. DO NOT ‘T’ IN WITH THE ENGINE RETURN AT ANY OTHER LOCATION. DO NOT “T” WITH FUEL TANK VENT.

NOTE: *The reason for not connecting the engine return line with the FASS Fuel System return line (incorrectly) is this can cause back pressure to the engine return. This may cause severe engine damage and a loss of performance. IF THE RETURN LINES MUST BE CONNECTED, ONLY DO SO IN MANNER MENTIONED IN THE PREVIOUS PARAGRAPH!!*

FUEL LINES, CONT'D

DOUBLE DRAW/DOUBLE RETURN LINE SYSTEM ONLY:

HELPFUL HINT

If there are no extra ports, here is an option. The thicker band of aluminum that is located around the filler cap on most trucks is an excellent place to drill and tap an extra port. We have installed fuel vents with 3/8" pipe threads into the thicker aluminum and ran a small breather line up and over the tank. Now, connect the FASS Fuel System return lines to the old vent location.

NOTE: BE SURE THAT ALL FUEL RETURN LINES AND FITTINGS USED TO CONNECT THEM HAVE INTERIOR DIAMETERS OF NOT LESS THAN 3/8 inch.

NOTE: USE A "GT EQUALIZER VALVE" WHEN INSTALLING A DOUBLE RETURN FUEL LINE SYSTEM. THE EQUALIZER VALVE SHOULD BE LOCATED BETWEEN THE FUEL TANKS AND MOUNTED ON A CROSS MEMBER BETWEEN THE FRAME RAILS. USE GOOD JUDGMENT WHEN INSTALLING THE EQUALIZER VALVE. Note: We have had excellent results with using a 3/8" T instead of the "GT Equalizer Valve". When using the "T" be very exact when completing step 4C-8.

4C-7 Install a #8 fuel return fitting at the proper location on each fuel tank.

4C-8 Measure and cut two (2) identical lengths of fuel line required, when properly routed, to reach from the fuel return fitting on each tank to the equalizer valve or 3/8" T.

4C-19 Assemble the fuel lines per standard procedures. Properly route and secure the fuel line. Connect and properly tighten the fuel fittings per vehicle manufacturer's specifications.

The "GT EQUALIZER VALVE" is available from most truck dealers.

You have now completed the fuel line section please go to Section 5.

ELECTRICAL HARNESS

5-1 Select best location in firewall for passage of wiring harness from cab to engine compartment.

5-2 Drill one 7/16 in. hole in firewall for electrical harness. (Part No. WH-1001)

NOTE: POSITION HOLE FOR EASE OF INSTALLATION AND PROTECTION OF WIRING HARNESS.

5-3 Route wiring harness (part no. WH-1001) through 7/16” hole in firewall to the ignition.

5-4 Connect the “Red” lead from the wiring harness (Part No. WH-1001) to the “on” terminal on the ignition switch or a terminal on the circuit breaker board that is “hot” when the key is on. (NOTE: The fuel pump of the FASS Fuel System usually draws about 5-8 amps and can possibly surge to 12amps)

WARNING!	Step 5-4 -BE SURE TO CONNECT THE RED WIRE (HOT WIRE) TO THE FUSED SIDE OF THE IGNITION. FAILURE TO DO SO WILL RESULT IN SERIOUS DAMAGE AND/OR POSSIBLE FIRE.
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5-5 Install grommet around wiring harness and position in hole in firewall.

5-6 Plug the end of wire harness (Part No.WH-1001) into the two pin connector on the FASS fuel pump.

5-8 Properly secure all electrical leads and harnesses with plastic ties.

GROUNDING FUEL PUMP/ ELECTRICAL HARNESS, CONT'D

WARNING! AN OIL PRESSURE/GROUNDING KIT (PART #K2003) IS NEEDED WHEN INSTALLING ON THE FOLLOWING ENGINES:

- 1. ANY CUMMINS WITH THE PT PUMP
(SMALL CAM OR BIG CAM CUMMINS WITH PT PUMP)**
- 2. ANY MECHANICAL DETROIT
(NOT THE NEW ELECTRONIC DETROIT 50 OR 60 SERIES)**

**OWNERS WITH THESE ENGINES MUST HAVE THIS KIT!
WITHOUT THIS KIT SEVERE ENGINE DAMAGE CAN AND WILL
OCCUR!!**

- 5A-1** Locate the oil pressure switch (Part #S78143). Place this oil pressure switch somewhere in the oil gallery. Oil pressure will close this terminal to complete the ground.
- 5A-2** Connect the green wire, which is located in the same harness as the red lead wire, to the terminal on the oil pressure switch (Hobbs Part #S78143). **DO NOT ATTACH TO FRAME OR ANY OTHER LOCATION. GROUNDING TO THE FRAME WILL CAUSE PROBLEMS TO ARISE AT A LATER DATE!!**

FINAL CHECK

The installation of the **FASS Fuel System** should now be complete. Let's go through the final check.

- Pump/Filtration Unit clearance OK? -- --
- All bolts and fasteners properly tightened? -- --
- Electrical harness secured and all connections complete? -- --
- Fuel lines secured and fittings properly tightened? -- --
- Install fuel filter and fill water separator!
(See owner's manual) -- -- --
- Prime the system! (See owner's manual) -- -- --
- Bleed the system! (See owner's manual) -- -- --
- **Turn ignition key on.** -- -- --

START ENGINE

- Recheck all fluid connections and filters
for leaks - correct as necessary! -- --

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. The FASS System has an automatic by-pass built in should the electric fuel pump stop. This would allow the engine to operate.