

### TITANIUM SIGNATURE SERIES PLUS

### INSTALLATION MANUAL

ALL 1/2" FUEL PORTS

#### **APPLICATION:**

TSP-C15-180F-140G (140GPH@ 70-75PSI) TSP-C15-250F-220G (220GPH@70-75PSI) TSP-C15-290F-240G (240GPH @ 60-65PSI)





TUNED DURAMAX L5P 2020-2023





### Thank you for choosing FASS, from Diesel Performance Products, Inc.

FASS specializes in building extremely high-quality fuel products. We have earned an unsurpassed reputation for excellence in our industry by using only the highest-quality American-made components. In order to support our American workers and our American economy, more than 98+ percent of our products are manufactured completely in the United States.

Of course, that dedication to excellence comes at a price, but it is important to remember that price does not dictate quality-quality dictates price! We will never compromise by using cheaper, foreign-made components, like so many of our competitors do.

Customer satisfaction is our top priority and we strive always to provide outstanding customer service. Our Research and Development department, in conjunction with our Dealer Support Department, continually searches for ways to improve quality, expand our product line, and provide superb support. Our exclusive ViP Network ensures that customers receive the proper products and support at the local level. The extended lifetime warranty is only available on products purchased from the network. There is no warranty on products not purchased outside the network.

#### **IMPORTANT:**

In order to qualify for the lifetime extended warranty, your product registration form and proof of purchase from an authorized dealer must be submitted to FASS Fuel Systems within 30 days of purchase. Failure to comply will void the warranty. We have the right to deny any warranty believed to be false, altered or purchased through an unauthorized or terminated dealer. A current list of authorized dealers can be found on our website, FASSRide.com.

The complete conditions of the Limitation of Warranty can be found in the back of this manual, and FASSRide.com.

For more information, contact Technical Support: Diesel Performance Products, Inc. 16234 State Hwy O. Marthasville, MO 63357 636-433-5410





#### **WARNING!**

### This product has **NO WARRANTY** unless:

- 1. It has been purchased from an Authorized or ViP FASS Dealer. If in doubt, check www.FASSRide.com.
  - 2. It is registered within thirty (30) days of purchase. Other conditions may apply. Please see full warranty information.

**NOTE:** Warranty is **void** if product was purchased below FASS website advertised pricing.

#### **ATTENTION!**

Before you begin installation Register for your Warranty ONLINE at

https://www.fassride.com/register-a-warranty/

No online access, call our TECH Support at

1-866-769-3747





### **WARNING!**

This system is designed for the 2020-2022 L5P

Duramax WITH AFTERMARKET TUNING!! If the truck is not equipped with an aftermaket tune and the ability to delete specific codes, the vehicle will have a MIL after the FASS installation. Consult with your calibration supplier prior to the FASS installation to confirm they are able to delete specific diagnostic codes.



# FOLLOW THESE STEPS TO ENSURE A SIMPLE, CORRECT INSTALLATION OF YOUR NEW TITANIUM FUEL SYSTEM

#### **ATTENTION:**

Be sure to identify the proper FASS System and fuel line configuration. For help, our product finder can be found at www.FASSride.com. Follow the instructions to see fuel line detail.

- Be sure the serial number on this installation manual matches that on the outside of the box
- 2 Pay close attention to ALL WARNINGS
- **3** Read all instructions before starting installation of this product.
- 4 Inventory the package components. Notify the place of purchase immediately of any parts missing or damaged.
- 5 The installation recommendations contained herein are guidelines. Use good judgment and take into consideration your vehicles' accessories.
- For best results in accuracy and efficiency (due to training, communication, and our relationship with our dealer network), we recommend a VIP FASS dealer for the installation. They are prepared to install the FASS fuel pumps with the most efficiency. If a situation or problem arises during the installation, the dealer is prepared to handle it. Diesel Performance Products, Inc. is not responsible for any installation mistakes.
- 7 If you have any questions or concerns that cannot be addressed with your dealer, email or call FASS.

If any installation procedure is uncertain, contact FASS technical support.

Call customer service at 636-433-5410,

or send us an e-mail: techsupport@FASSride.com

with the following information:

Your name, address and daytime phone number Model (TSP-C15-180F-140G) or (TSP-C15-250F-220G) or (TSP-C15-290F-240G)

Serial Number Last 6 digits of vehicles' VIN Date of purchase Nature of Your Concern Serial number







### INSTALLATION MANUAL TSP-C15-180F-140G TSP-C15-250F-220G TSP-C15-290F-240G

(Installation Videos are available at www.fassride.com)

#### **Recommended Application**

**TSP-C15-180F-140G:**Duramax 2020-2023 with stock to 700 horsepower **TSP-C15-250F-220G:**Duramax2020-2023 with 700 to 900 horsepower **TSP-C15-290F-240G:** Duramax 2020-2023 with 900 to 1,200 horsepower

- 1. Read all instructions before starting installation of this product!
- 2. Installing the improper FASS Pump can cause severe engine damage.
- 3. Secure vehicle from ROLLING!
- 4. Cab and Chassis may require modifications
- 5. Consult vehicle's manufacturers' instructions concerning the electrical system before at-tempting any electrical connections.
- 6. Be sure that the serial # on this installation manual matches that of the outside of the box.
- 7. Flush and clean all brass fittings and fuel line from debris.
- 8. Keep debris from entering the internals of the system during installation. Getting debris in the water separator nipple can lock up the motor. If the motor does lock up from debris call FASS for technical assistance.

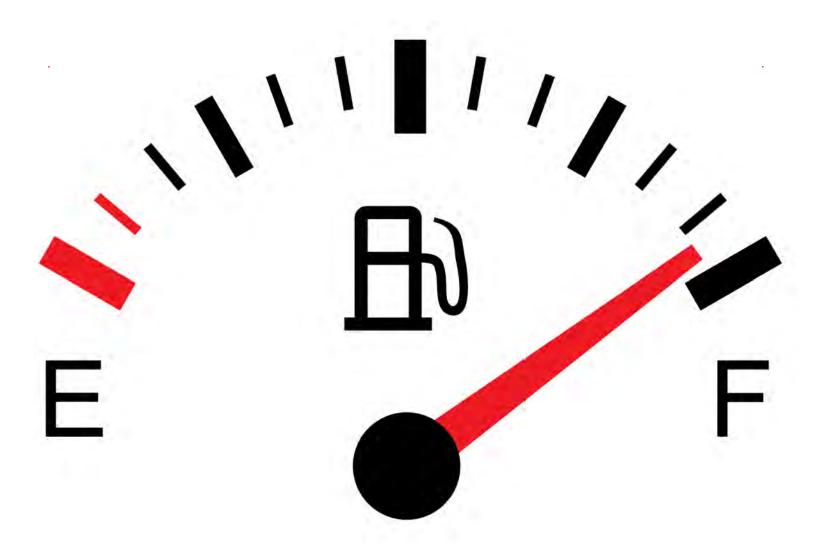


- 9. Wear safety glasses when operating power tools such as drills and grinders or when using a punch or chisel.
- 10. Properly secure lines to prevent chaffing.





Always be sure to fill the fuel tank to full after a new FASS installation. Failure to do so can result in excessive sound output, or priming issues!



(866) 769.3747

### iesel Fuel Systems SIGNATURE SERIES PLUS 140 GPH or 220 GPH or 240 GPH

**TITANIUM** 

70-75 psi (Approximately)





### **PUMP GUIDE:**

- 1. "E" To Engine
- 2. "R" Return to Tank
- 3. Serial Number
- 4. "T" Fuel Inlet
- 5. Electric Heater Ports
- 6. "G" Gauge Port

### INSTALLATION **GUIDE:**

- **Step 1.** Install Electrical Harness
- Step 2. Prep the FASS
- **Step 3.** Mount the FASS
- Step 4. Fuel Line Supply
- Step 5. Review Installation

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### Diesel Fuel Systems SIGNATURE SERIES PLUS 140 GPH or 220 GPH or 240 GPH

**TITANIUM** 

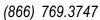
70-75 PSI (Approximately)

Note: Going over 100 PSI WILL void warranty.

NOTE: WARRANTY MAY BEVOID IF SILICONE **BAND IS REMOVED FROM MOTOR!!** 

The silicone band is in place to retain motor wires, preventing damage to the electric motor.







### **CONTENTS**

NOTE: Owner's Manual available for download on our website,

www.FASSride.com





**DIELECTRIC GREASE** 

TWO (2) OR-017



OD 070

NOTE: THESE SPARE BASE O-RINGS ARE INCLUDED WITH THE KIT IN THE EVENT OF A PINCHED O-RING DURING ASSEMBLY



**MP-TSP-9092** 



**RELAY COVER** 



**GMSPCR-1001** 



**RS-2004** 





FL-1058-BK x5'



**PBR-2001** 



PFB-2002 SHORT



### MOUNTING **PACKAGE CONTENTS**

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TWO (2) **PL-1005-BK** 



PL-2003-BK



**AN-8-ORB-10-BK** 



TWO (2) **RING TERMINAL** 



**BHF-1008** 



**BHF-1010** 



**TWO (2) BHN-1005** 



TWO (2) **OR-119** 



TWO (2) PL-2058-BK



**AN-10-ORB-10-BK** 



46177



46116



FOUR (4) LOCKING **NUT 3/8**""





**THREE (3) HEX BOLT** 1/4"-20x1 3/4""



FOUR (4) Hex Bolt 3/8"-16x11/2"



TWO (2) **RS-2002** 



**FIVE (5) HC-1001** 



THREE (3) **WA-1001D** 



**CABLE TIES** 





### **MOUNTING PACKAGE CONTENTS**

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**HC-4001** 



TWO (2) **RING TERMINAL** 



TWO (2) **STF-1001** 



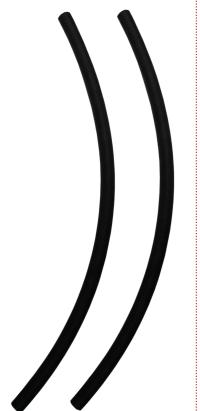
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**Hex Bolt** M12-1.75 x 60mm



**FLAT WASHER** 



TWO (2) FL-1007 5/8" VITON HOSE



5/16" VITON HOSE FL-1006



# Diesel Fue System STEP 1: INSTALL ELECTRICAL HARNESS

The installation of the electrical harness is done first, allowing power to be applied to the pump for lubrication purposes later in the installation.

# NOTE: USE SUPPLIED DIELECTRIC GREASE SPARINGLY ON ALL ELECTRICAL CONNECTIONS! BE SURE TO GREASE RELAY PIGTAIL!







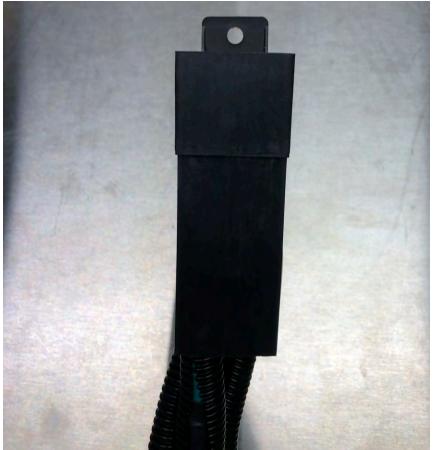


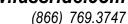
### STEP 1: INSTALL ELECTRICAL HARNESS

The installation of the electrical harness is done first, allowing power to be applied to the pump for lubrication purposes later in the installation.

## Install the Relay Cover onto the relay on the FASS harness.





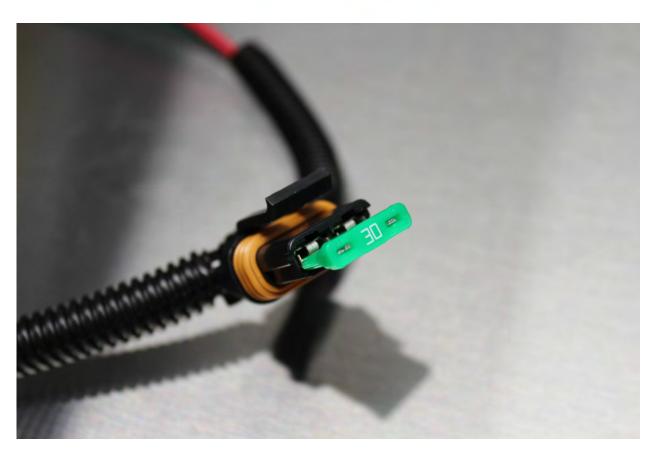


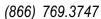
## Diesel Fuel Systems STEP 1: INSTALL ELECTRICAL HARNESS

The installation of the electrical harness is done first, allowing power to be applied to the pump for lubrication purposes later in the installation.

# NOTE: BE SURE TO INSTALL THE SUPPLIED 30 AMP FUSE INTO THE FASS WIRING HARNESS!!



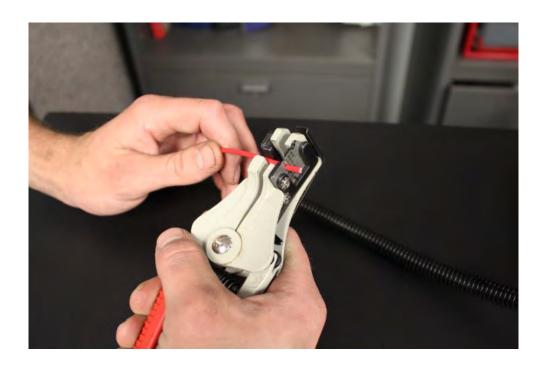


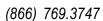


## Diesel Fuel System STEP 1: INSTALL ELECTRICAL HARNESS

The installation of the electrical harness should be completed first. This will allow power to be applied to the pump during installation.

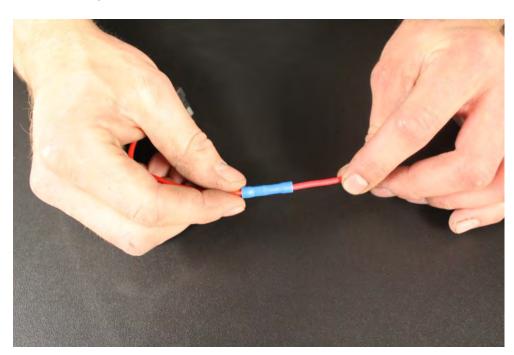
**A.** Using wire stripping tool,remove excess insulation off the add-a-fuse and the WH-1006-3.

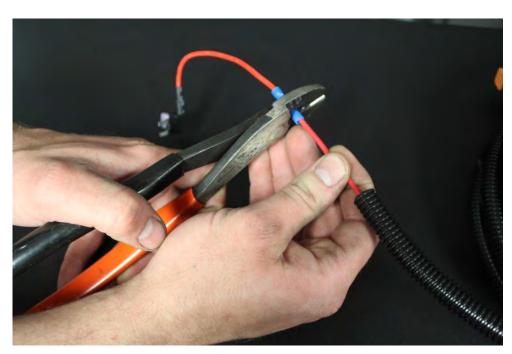




## STEP 1: INSTALL ELECTRICAL HARNESS

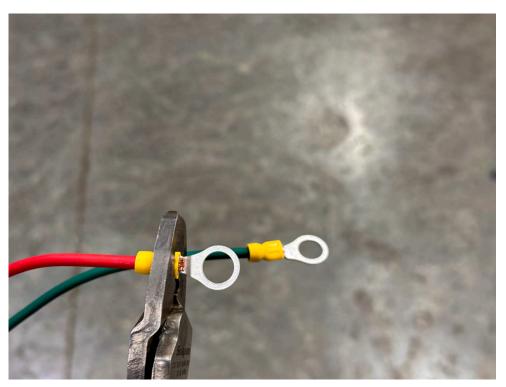
**B.** Place wire from 46044 and single red bare wire from WH-1006-3 into butt connector. Using crimping tool connect 46044 and WH-1006-3 with butt connector. Install 46260 to 46044 top slot (opening that is near the spade).



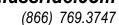




**C.** Crimp the ring terminals to the red and green wires of the WH-1006-3 Wire Harness. Attach red wire to the positive terminal of the battery and the green terminal to the negative terminal. The use of a corrosion preventative on electrical connections is recommended.

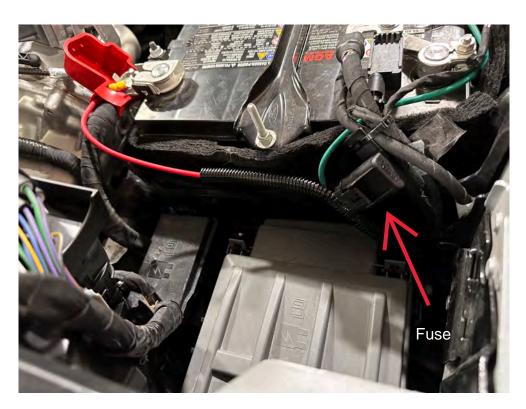


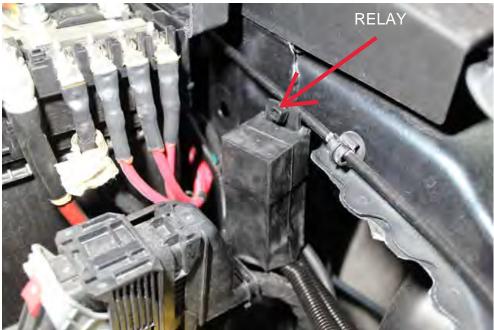


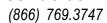


## Diesel Fuel System STEP 1: INSTALL ELECTRICAL HARNESS

**D.** Secure relay and fuse in an upright position, as shown, to prevent moisture from entering. Di-electric grease may be applied to prevent corrosion.

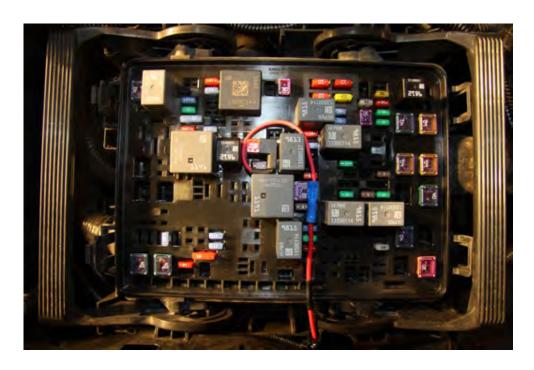






# Diesel Fuel System STEP 1: INSTALL ELECTRICAL HARNESS

**E.** Locate a key-on 12v+fuse, and put Add-A-Fuse in place. Install fuse previously removed into Add-A-Fuse.







## STEP 1: INSTALL ELECTRICAL HARNESS

**G.** Route WH-1006-3 wire harness along frame rail to mounting location of pump. Completion of this step will be addressed in the Mounting Step 3.



**A.** Remove the filler neck and overflow tubes from the truck by loosening the clamps at the fuel tank and fuel tank module. Disconnect electrical connector on top of fuel tank module.





**B.** Disconnect factory suction and return lines (located in front of fuel tank).



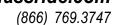




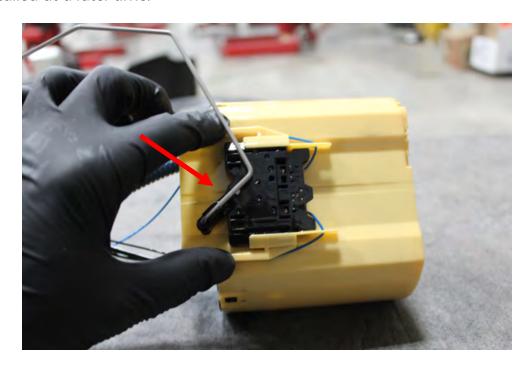
**C.** With the fuel tank empty of fuel, unbolt the tank straps and remove it from the vehicle. Disconnect the 2 fuel lines from the fuel tank module by releasing locking tabs. Clean the fuel module area then remove the lock ring on the top of the fuel tank. This is spring loaded, so, holding it down while removing the ring will prevent the sending unit from popping up and possibly causing damage.





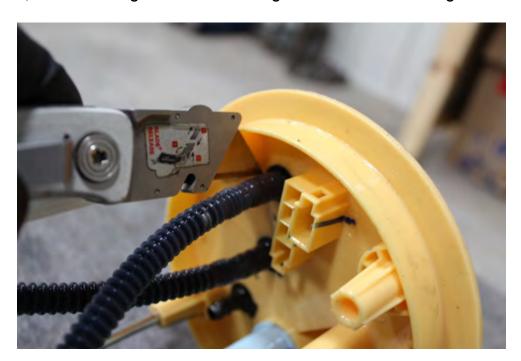


**D.** Disconnect the fuel sending unit electrical connector and remove the fuel sending unit from the fuel tank module to prevent damage to the float. Please note that this will be reinstalled at a later time.





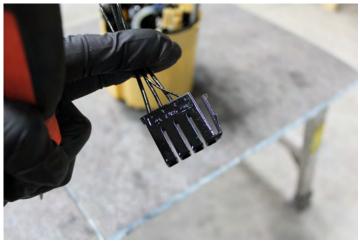
E. Carefully cut and remove the 2 sections of plastic convoluted tubing from the fuel tank module, do not damage the barbed fitting that secures the tubing.



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# Diesel Fue Suction & RETURN LINES PREPARE SUCTION & RETURN LINES

**F.** Disconnectthefuelpump electrical connector. Release the locking tabs and separate the upper and lower section of the fuel tank module. Remove the fuel pump, fuel pump screen, and small plastic fuel pump housing. Cut the tabs from the black plastic fuel pump retainer and remove it from the lower section of the fuel tank module. Reassemble the upper and lower sections of the fuel tank module.





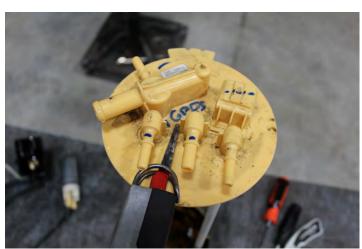






**G.** With an appropriate cutting tool, remove the spare fuel port and the OEM engine feed port from the fuel tank module. Using a 7/8'' hole saw, drill the center of the 2 open fuel ports.











**H.** You must create a good smooth sealing surface for OR-212. Be sure to remove all plastic burrs.

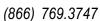




**I.** Install OR-119 on BHF-1008 and BHF-1010, place BHF-1008 in the hole closest to the electrical connector.







**J.** Install BHF-1008 and BHF-1010 onto the fuel tank module with OR-119, apply Loc-Tite onto threads and install BHN-1005 onto both. Tighten BHN-1005 to BHF-1008 and BHF-1010 accordingly.







VERY IMPORTANT: Support fuel tank on both ends allowing the natural formation of the tank to take place. Failure to perform this step will hinder precision installation.



**FUEL TANK SUPPORTS** 



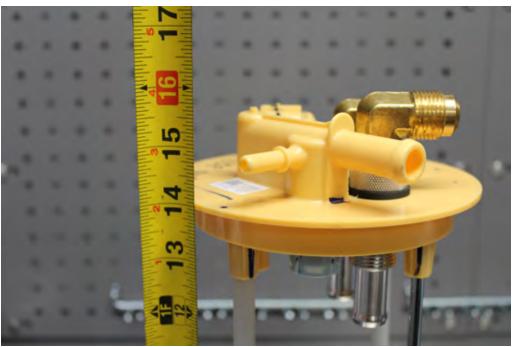
**K**. Install a STF-1001 in each FL-1007 with HC-1001 as shown, tighten the hose clamp accordingly.

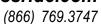




**L**. Using a tape measure, measure from the bottom of the fuel tank to the top of the oring sealing surface where the fuel tank module makes contact and take note of the measurement. Compress fuel tank module to the exact height measurement taken in previous step, measure and mark both FL-1007 with 1/2" clearance from bottom of fuel tank module. NOTE: ACTUAL MEASUREMENTS WILL VARY FROM IMAGES!

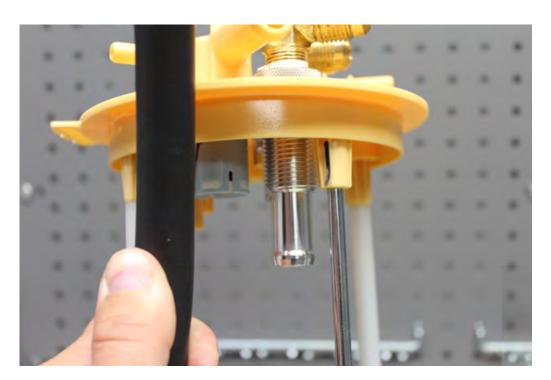




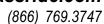


# Diesel Fuel System STEP 2: PREPARE SUCTION & RETURN LINES

**M**. Cut each FL-1007 to the same length and install them onto BHF-1008 and BHF-1010 with a HC-1001, tighten the hose clamp accordingly.

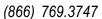






**N**. Once again compress the fuel tank module to the recorded measurement and verify that the STF-1001 has 1/4"-1/2" of clearance from the bottom of the fuel tank module.





**O**. Install FL-1006 onto the factory fuel return barb with HC-1004 and tighten the hose clamp accordingly. Reinstall the fuel level float and reconnect the electrical connector. Gently secure all fuel lines and wires together with a supplied cable tie.







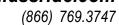
**P.** Carefully reinstall install pick up module making sure the leveling arm is not obstructed by the suction tube. Reinstall factory lock ring. Reconnect factory wire harness and factory fuel lines.





**Q.** Install FL-1058-BK onto PL-2058-BK, install PL-2058-BK onto BHF-1010. Install FL-1002-BK onto PL-2003-BK, install PL-2003-BK onto BHF-1008. Tighten both fittings accordingly.





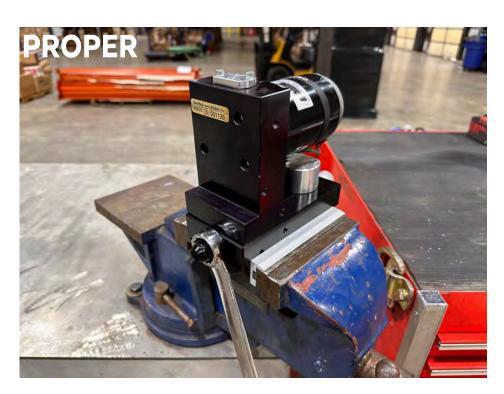
**R.** Reinstall fuel tank into vehicle by reversing steps taken for removal.

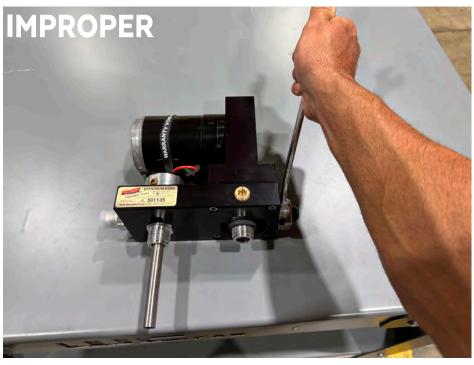




#### **NOTE:**

### ATTENTION: While installing fittings into the FASS DO NOT Apply side pressure to draw tube of the unit.







NOTE: Before installing fittings make sure to inspect for burs or flare imperfections. When cutting fuel line make sure to blow out line to keep debris from moving forward..

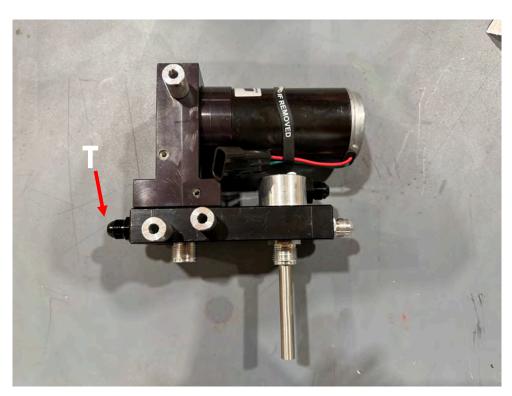
**A.** Install AN-8-ORB-10-BK into the "E" port and AN-10-ORB-10-BK into the "T" port of the FASS, torque to 18ft./lbs.

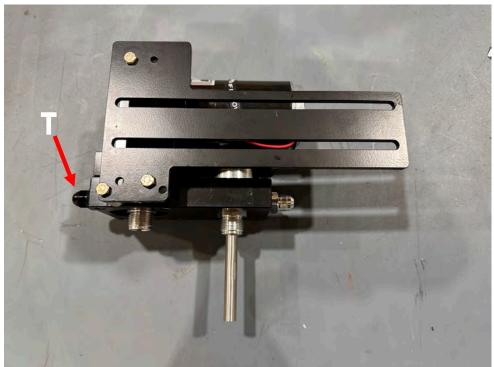






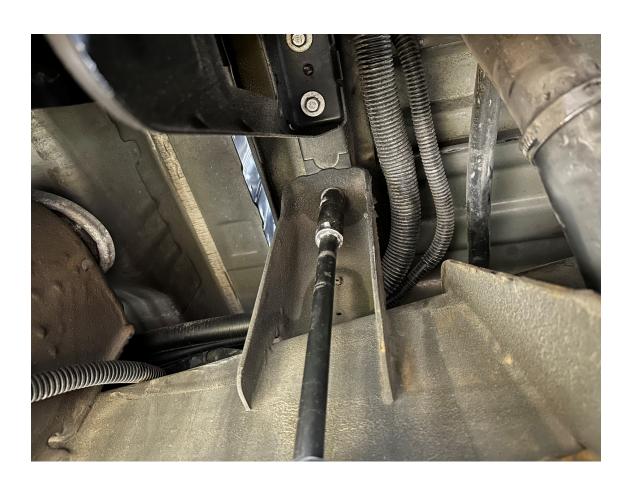
**B.** For fitting purposes. Secure PBR-2001 to pump assembly lightly with (3) 1/4"-20x1 3/4 bolts and (3) WA-1001D. Assembly will be used in future steps for correct fitting of brackets. (Note: Bracket may-be flipped to accommodate your application.)







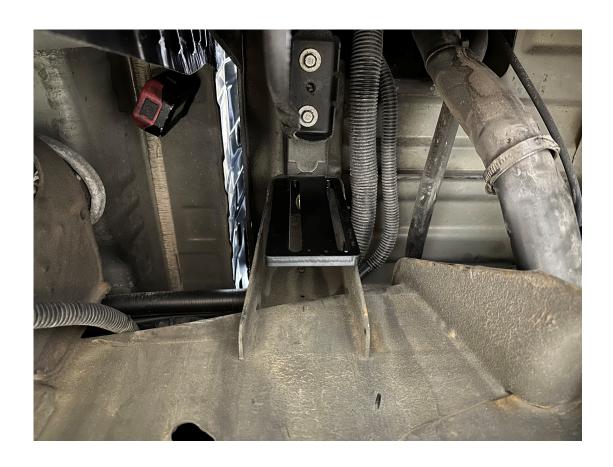
**C.** Remove the bed bold directly in front of the drivers side fender well, this bolt can be discarded. Align RS-2001 with PFB-2002 and DS-1001.

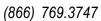




## Diesel Fuel Systems MOUNT FUEL SYSTEM

**D.** Secure PFB-2002 and RS-2001 with 12mm bolt and flat washer supplied in the kit.

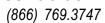




## iesel Fuel Systems STEP 3: MOUNT FUEL SYSTEM

**E.** Position the PBR-2001 to the PFB-2002 with spacer GMCSPCR-1001 pump assembly at the mounting location and check for fit. Once location is established mark location for mounting in next step.





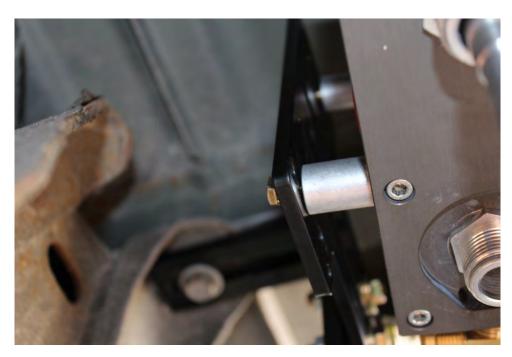
## iesel Fuel Systems STEP 3: MOUNT FUEL SYSTEM

**F.** Assemble the FASS pump bracket PBR-2001 using the RS-2002 spacer's. One between GMCSPCR-1001 & PFB-2002 and one between GMSCR-1001 & PBR-2001 bracket with 4-3/8 bolts, nuts, and washers. Note: Torque bolts not flange nut.





**G.** Once secure use 3-11/2 bolts and 3-WA-1001D spacers to mount the pump to the bracket.







NOTE: If fuel pressure gauge is pulsating after FASS installation, use snubber valve (Cat Part # 7S-3795)

**H.** Apply motor oil to gasket located on filters. Attach to system and hand tighten.



Extreme Water Separator - Install XWS-3002 on side of pump with draw tube in the middle of the filter nipple.

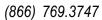


Particulate Filter -Install PF-3001 on filter nipple without the draw tube. Make sure to insert O-Ring provided on nipple.





Note: O-Ring must be put back on suction side of pump. Failure to do so can result in priming issues, cavitation or pressure losses.





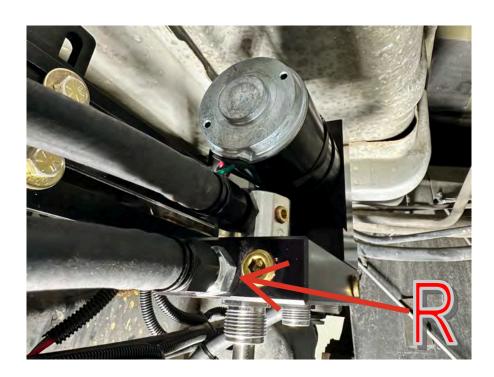
**A.** Route suction line from BHF-1010/PL-2058-BK assembly to the 'T' port of the FASS. Cut FL-1058-BK to length. (measure twice cut once) Insert PL-2058 using oil and attach to AN-10-ORB-10-BK. Torque to 18 ft./lbs.

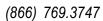






**B.** Route the FASS return line from BHF-1008/PL-2003-BK assembly to the 'R' port of the FASS. Cut FL-1002-BK to length, insert PL-1005-BK using oil and attach to the 'R' port of the FASS. Torque to 18 ft./lbs.







**C.** Using oil, insert a PL-1005-BK into the remaining fuel line, install PL-1005-BK onto the 'E' port of the FASS. Route FL-1002-BK to the O.E.M. fuel supply line in front of the fuel tank.



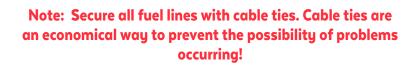




**D.** Install A624C56-55-05 onto the O.E.M fuel supply line, install FL-1002-BK onto A624C56-55-05 with HC-1001 and tighten accordingly. Press the locking tab of A624-C56-55-05.

NOTE: THIS FUEL LINE CONNECTION IS LOCATED IN FRONT OF THE OEM FUEL FILTER. WE SUGGEST REMOVING THE OEM FILTER HOUSING AND INTERMEDIATE FUEL LINE!





(866) 769.3747

## esel Fuel Systems STEP 5: REVIEW INSTALLATION



Note: O-Ring must be put back on suction side of pump. Failure to do so can result in priming issues, cavitation, or pressure loses.

- 1. Blow out any open lines/cover any open ports
- 2. Bolts and fasteners properly tightened?
- 3. Electrical harness and fuel lines secured and properly tightened? Reconnect the battery.
- 4. Has the system been primed?
  - a. Turn key to the ignition position, turning on the FASS pump for 15 sec..
  - b. Crank engine and allow to run for at least 1 minute.
- 5. Check for leaks.
- 6. Start the engine
- 7. Recheck all fluid and filter connections for leaks
- 8. This pump comes with a 1 Year Manufacturer's Warranty based on the date it has been manufactured. To receive your extended Lifetime Warranty, you have 30 days from date of purchase to send the completed warranty information





### LIMITATION OF LIFETIME WARRANTY

Disclaimer: To help insure you receive the proper system and customer support at the local level, FASS has a VIP and Authorized Dealer network representing FASS products. This is one reason you must purchase through a dealer to comply with our warranty policies. If you do not, there is no warranty! We recommend you go to www.FASSride.com, click "Find a Dealer", put in their ZIP code, select the type of dealer, and see if the company you purchased from is listed. If they are not, put their phone number in the field below the ZIP code field to see if they are listed. Below these two fields is a list of "Terminated/Unauthorized" dealers. You may want to review this list. If the company is not listed or is on the "Terminated/Unauthorized" list, we suggest you return the product immediately to that dealer and call FASS. We'll recommend you to the nearest dealer.

Diesel Performance Products, Inc. (hereafter "SELLER") gives 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.

When MANUFACTURER receives the "ORIGINAL" PRODUCT REGISTRATION form with a copy of the "BILL OF SALE/SALES RECEIPT" within 30 days of the sale, then the following applies! The Warranty will then and only then be validated to that of which typically accompanies your unit for your specific application from the date of sale or for recommended service life and limited solely to the original purchaser and/or vehicle and parts contained within the product's kit. This warranty does not cover normal wear on consumable items such as but not limited to filters, fuel line, wire harness & etc. The warranty does not cover seized gears due to lack of filtration. Warranty is voided if used with other than diesel fuel. Returned items will arrive prepaid to the place of purchase. Diesel Performance Products, Inc. will repair, without cost, any product found to be defective during the warranty period; parts only, or at its option, will replace such products in exchange for the product. Repair or replacements are warranted for the remainder of the original warranty period. All Warranty claims are subject to approval by Diesel Performance Products, Inc.

A Return Material Authorization (RMA) number must be obtained before any product is to be returned to Diesel Performance Products, Inc. for warranty consideration, repair or product return. Requests for product returns must be offset by an equal value order. Return parts must be completed and in resalable condition. No returns after 30 days.

Your Name, Address, and Phone Number's Model and Serial Number (Not Motor Number) Example: Model HD Series, Serial: 00125966 VIN Number of Vehicle Date of Purchase Nature of Problem

RMA and Product Serial Number must be on all paperwork and correspondence. Failure to obtain the required information or paperwork will result in \$25.00/item penalty and delay or denial of any warranty claim.

Under no circumstances shall the SELLER and/or MANUFACTURER 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 shall the SELLER and/or MANUFACTURER be liable for any damage or expenses insured by reason of the use or sale of any such equipment. This warranty does not apply to products which Diesel Performance Products, Inc. has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine Diesel Performance Products, Inc. parts.

IN THE EVENT THAT THE BUYER DOES NOT AGREE WITH THIS AGREEMENT: THE BUYER MAY PROMPLY 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 LESS SHIPPING.

THE INSTALLATION OF THIS PRODUCT INDICATES THAT THE BUYER HAS READ AND UNDERSTANDS THIS AGREEMENT AND ACCEPTS ITS TERMS AND CONDITIONS.