

# INSTALLATION MANUAL

#36

## FOR 24 VALVE 5.9L CUMMINS POWERED **DODGE TRUCKS** 1998 ½ THROUGH 2002



### **MODEL FRRP-100** **FACTORY REPLACEMENT RAPTOR PUMP** READ THESE INSTRUCTIONS THOROUGHLY BEFORE BEGINNING INSTALLATION

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# RAPTOR Fuel Pumps



*Adjustable  
Regulator*

**MOUNTS IN THE SAME LOCATION AS THE OE TRANSFER PUMP**



## OVERVIEW



### Welcome to the **Raptor™ FRRP Fuel Pump**

The Raptor™ FRRP-100 Fuel Pump is a Premium replacement lift pump for the Dodge Cummins 24 Valve 5.9L diesel engine. A complete installation kit is included.

The output pressure for the 5.9L 24 Valve Cummins engine is factory set at 14/16 PSI.

Pressure and flows are approximate as they will vary with fuel temperature and as the brushes wear in.

The FRRP-100 is for stock 5.9L Cummins Diesels.

The Raptor™ FRRP-100, a gerotor fuel pump, features an adjustable pressure regulator

## SAFETY GUIDELINES!

The installation of the **Raptor™ FRRP Fuel Pump** can be made easy by following the steps outlined in this manual.

1. Inventory the package components completely. Notify *PUREFLOW AIRDOG* immediately of any parts missing or damaged.
2. Read the installation manual and understand how the system operates before beginning installation.
3. If any installation procedure is uncertain, contact *PUREFLOW AIRDOG* for technical assistance.

**NOTE: SOME OF THE PICTURES USED IN THIS MANUAL ARE FOR EXAMPLE ONLY AND MAY NOT PICTURE A COMPONENT EXACTLY THE SAME AS FOUND IN YOUR TRUCK.**

**CAUTION:** Chock the vehicle's tires to prevent rolling.

**CAUTION:** Disconnect the battery cables to both batteries before proceeding with the Raptor™ Fuel Pump installation.

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

**Use Good Judgment and Common Sense  
When Installing the Raptor™ FRRP-100**

## Parts List









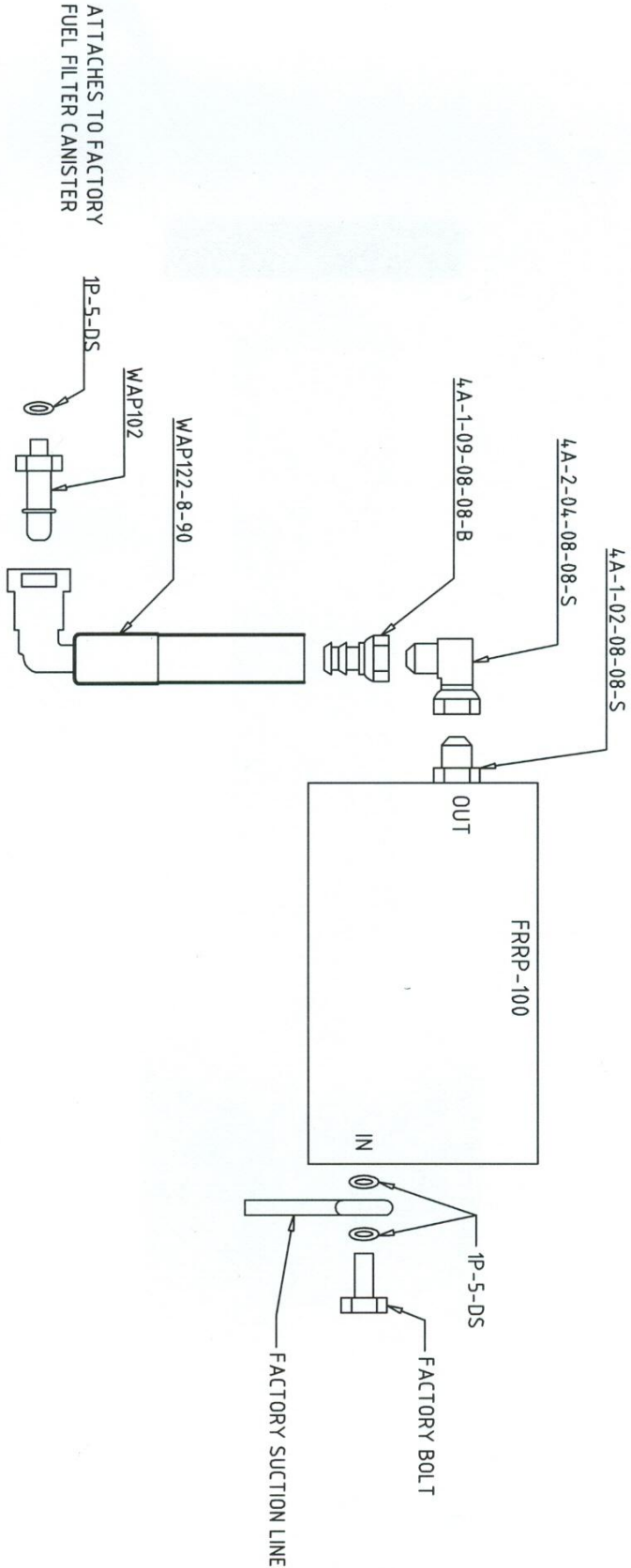
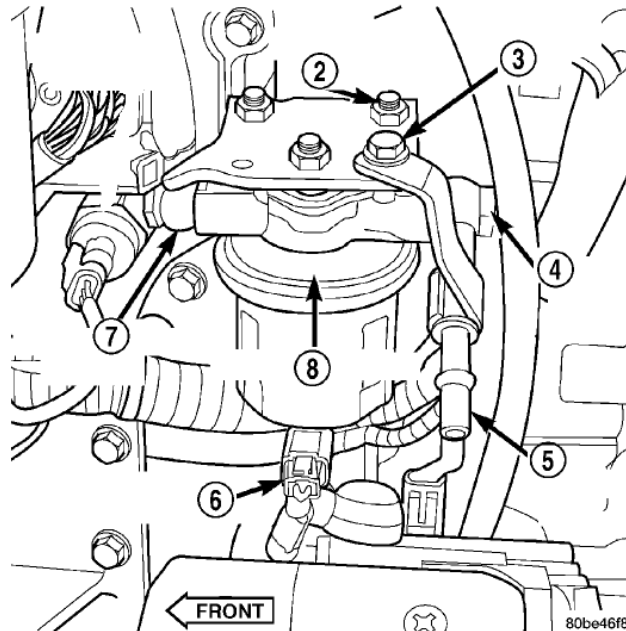
| QTY | DESCRIPTION  | Part Number      | IMAGE  |
|-----|--|------------------|--|
| 1   | <b><i>RAPTOR™</i> FRRP FUEL PUMP</b>                                       | FRRP-100         |   |
| 1   | <b>Mounting Hardware Kit</b>   | 901-61-0102-FRRP |   |
| 1   | <b>Customer Service Oring Replacement Kit</b>                              | 906-05-0100      |  |
| 1   | <b>¾"-16 Oring Boss X -8 JIC Fitting</b>                                   | 4A-1-02-08-08-S  |     |
| 1   | <b>Fitting, ½" Push Lock X -8 Female JIC Swivel</b>                        | 4A-1-09-08-08-B  |    |
| 1   | <b>Fitting, -8 Male JIC x -8 Female JIC Swivel, 90° Elbow</b>              | 4A-2-04-08-08-S  |   |
| 1   | <b>Output Hose Assembly</b>  | WAP122-8-90      |   |
| 1   | <b>12mm X ½" Male SAE J2044 Quick Connect Fitting</b>                      | WAP 102          |  |
| 3   | <b>Sealing Washer (installs on WAP102 fitting and factory inlet banjo)</b> | 1P-5-DS          |   |
|     |  |                  |  |
|     |  |                  |  |

ILLUSTRATION OF COMPONENTS



# INSTRUCTIONS

## REMOVING THE STOCK PUMP



**Fuel Transfer Pump Location**

- 2 - PUMP BRACKET NUTS (3)
- 3 - SUPPORT BRACKET BOLT
- 4 - BANJO BOLT (REAR)
- 5 - FUEL SUPPLY LINE
- 6 - ELECTRICAL CONNECTOR
- 7 - BANJO BOLT (FRONT)
- 8 - FUEL TRANSFER PUMP

**FIG 1. (SOURCE: alldatapro.com)**

1. Disconnect the electrical connector. See #6
2. Remove the banjo fitting on the inlet side of the stock fuel pump. See #4. **Do not discard this banjo fitting. It will be reused.**
3. Remove the banjo fitting from inlet of the filter canister.
4. Remove the fuel line support from the mounting bracket. See #3.
5. Remove the 3 mounting nuts at the top of the bracket. See #2.
6. The stock pump along with the outlet hose can now be completely removed from the vehicle.

## INSTALLING THE FRRP-100

1. Replace the 2 original sealing washers on the stock banjo fitting with the 2 new ones provided (part# 1P-5-DS). You will have a washer on each side of the fitting.
2. Firmly tighten the factory fuel supply line in the inlet port of the FRRP using the factory banjo fitting. The factory support bracket is no longer used.
3. Install the Boss O-ring fitting (part# 4A-1-02-08-08-S) into the outlet port of the FRRP and tighten firmly.
4. Firmly tighten the FRRP to the stock bracket using the hardware supplied. See Fig 2

Fig 2



5. Install the 12mm X 1/2" Male SAE J2044 Quick Connect Fitting (part# WAP102) with seal washer supplied into the inlet port on the fuel filter canister. Do not over tighten. The fitting could crack or break! See Figures 3 & 4.



Figure 3

Figure 4

**Note:** Figures 3 & 4 depict a push lock style connection. This kit is supplied with connects as shown in the parts list.

6. Connect the quick connect end of the "Output Hose Assembly" (part# WAP122-8-90) (See Figure 5) to the inlet fitting installed in step 5. It will "click" when properly connected.



Figure 5

## INSTALLING THE FRRP-100 CONTINUED

7. Cut the open end of the “Output Hose Assembly” to the desired length and install the ½” push lock x -8 swivel (part# 4A-1-09-08-08-B) into the end. See Figures 6 & 7

Figure 6



Lubricate the fitting with oil.

Figure 7



Push the hose completely on the barb.

8. Loosely install the male end of the 90° elbow (part# 4A-2-04-08-08-S) on the hose assembly.
9. Loosely install the female end of the 90° to the outlet fitting of the FRRP previously installed in step 3.
10. Route the hose assembly in a fashion to prevent kinking or chaffing.
11. Tighten the connections that were left loose in steps 8 and 9.
12. Connect the factory power lead to the lead from the motor of the FRRP-100.

## INITIAL START PROCEDURE

1. Turn the starter key to the on/run position.  
Note: It may be necessary to bump the starter for the ECM to energize the **Raptor™ FRRP-100 Fuel Pump**.
2. While the **Raptor™ FRRP-100 Fuel Pump** is on, bleed the fuel line to the filter canister by disconnecting the quick connect at the canister. As soon as the line is purged of air and fuel is observed, quickly reinstall the female quick connect. A click will be heard when properly installed.
3. Start engine!



## Adjusting the Pressure Regulator

**NOTE: PureFlow AirDog strongly recommends the use of a fuel pressure gauge to monitor the output pressure on all of its fuel systems.**

To adjust the fuel pressure, loosen the 9/16" lock nut on the regulator adjustment screw. Using a flat blade screw driver, rotate the adjustment screw clockwise to increase pressure or counter clockwise to decrease pressure. Be careful not to loosen the 3/4" regulator assembly nut. If you do, tighten it immediately. When finished, properly torque the regulator adjustment screw lock nut!

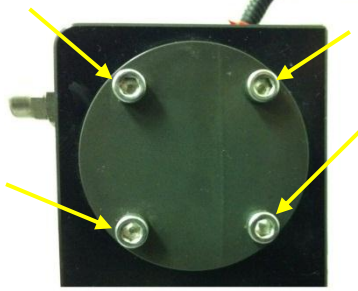
Properly tighten the adjustment screw ***Lock Nut*** when finished.



**RECHECK ALL FUEL FITTINGS FOR LEAKAGE AND PROPERLY TORQUE AS NECESSARY. BE SURE ALL FUEL LINES ARE PROPERLY ROUTED TO PROTECT FROM EXCESSIVE HEAT AND SECURED TO PROTECT FROM CHAFFING AND ABRASION. RECHECK ALL ELECTRICAL LINES, SECURE AS NECESSARY.**

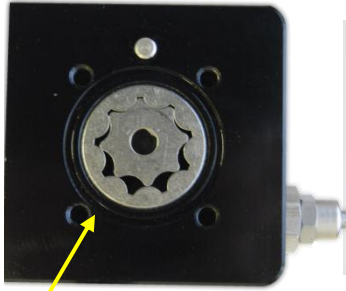
## Cleaning Debris from the Raptor Pump Gerotor Assembly

Step 1



Remove the four (4) socket head cap crews that secure

Step 2



Carefully remove the O-ring, you will need to re-use it.

Step 3



Remove and clean the gerotor. **The rotor should come out very easily. If it doesn't there may be something jammed inside it.**

Step 4



Remove the O-rings and clean the inside of the gerotor pocket.

Step 5



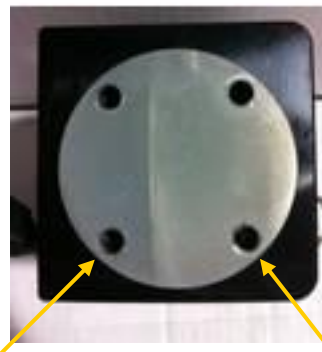
Replace the center gear.

Step 6



Align and install the outer gear and O-rings.

Step 7



Install the gerotor cap. Be very careful not to dislodge or pinch the O-rings. Tighten the cap screws in an opposing pattern.

PUREFLOW AIRDOG  
***4 YEAR LIMITED EXPRESS WARRANTY***  
FOR  
***Raptor™ FRRP-100***

**IMPORTANT NOTICE**

**TO ACTIVATE YOUR PUREFLOW AIRDOG WARRANTY, YOU MUST COMPLETE AND MAIL YOUR WARRANTY CARD TO PUREFLOW AIRDOG WITH A COPY OF YOUR ORIGINAL SALES RECEIPT WITHIN 30 DAYS OF PURCHASE. FAILURE TO COMPLETE AND SUBMIT YOUR WARRANTY CARD WILL RESULT IN A WARRANTY PERIOD OF THE COVERED PRODUCT TO ONE (1) YEAR FROM THE DATE OF PURCHASE.**

PureFlow AirDog (hereafter collectively, “SELLER”) warrants and guarantees only to the Original Purchaser (hereafter collectively, BUYER) that All PureFlow AirDog Systems (hereafter collectively, PRODUCT) shall be free from defects of materials and workmanship in the manufacturing process for as long as the BUYER owns the PRODUCT.

The 4 Year Limited Express Warranty is limited to the PRODUCT purchased by the original BUYER of the PRODUCT and limited solely to the parts contained within the PRODUCT and EXCLUDES ALL ELSE. The BUYER must follow the Warranty Procedure for any PRODUCT that is in question of Warranty. All Warranty claims are subject to the approval of PureFlow AirDog. If it is determined that a Warranty claim exists, PureFlow AirDog will, at its sole discretion, replace the defective PRODUCT with a comparable PRODUCT, repair the defective PRODUCT, or refund the BUYER’S purchase price in exchange for the PRODUCT. Repairs or replacements are warranted for only the remainder of the original warranty period and only to the original BUYER.

Under no circumstances shall the SELLER be liable for any labor charged or travel time incurred in the diagnosis for defects, removal, or reinstallation of the PRODUCT, or any contingent expense.

Under no circumstances will the SELLER be liable for any damage or expense incurred by reason of the use or sale of the PRODUCT.

Other than expressly set forth herein, the SELLER shall in no way be responsible for the proper or improper use and service of the PRODUCT. In no event shall the SELLER be liable for any special, incidental, indirect or consequential damages of any kind or nature, whether or not the BUYER of the PRODUCT was advised of the possibility of damage or harm, arising or resulting from the use or performance of the PRODUCT and BUYER hereby waives the right to any and all such claims.

BUYER, acknowledges that he/she is not relying on SELLER’S skill or judgment to select or furnish goods suitable for any particular purpose and that SELLER has no liability that will extend beyond the scope of the LIMITED EXPRESS WARRANTY contained herein, and BUYER hereby waives all remedies or liabilities, expressed or implied, arising by operation of law or otherwise.(including, without limitation, any obligation of SELLER with respect to fitness for any particular purpose; merchantability; and special, incidental, indirect or consequential damages) or whether or not occasioned by SELLER’S negligence.

SELLER disclaims any warranty and expressly disclaims any liability for personal injury or damages related to BUYER’S use of the PRODUCT. BUYER acknowledges and agrees that the disclaimer of any liability for personal injury is a material term for this agreement and BUYER agrees to indemnify SELLER and hold SELLER harmless from any claim related to the PRODUCT and its use or performance. Under no circumstances will SELLER be liable for any damages, liabilities, costs or expenses incurred as a result of or by reason of use, performance or sale of the PRODUCT, including without limitation, any damages, liabilities, costs or expenses incurred by reason of BUYER’S negligence related to those uses of the PRODUCT.

The proper installation of the PRODUCT is the sole responsibility of the BUYER. The SELLER assumes no liability regarding improper installation or misapplication of the PRODUCT.

SELLER hereby provides the following limited warranty as to description, quality, merchantability, fitness for the PRODUCT’S purpose, productiveness, or any other matter of SELLER’S PRODUCT sold herewith. The SELLER shall be in no way responsible for the open use and service of the PRODUCT 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.

IN THE EVENT THAT THE BUYER DOES NOT AGREE WITH THIS AGREEMENT, THE BUYER MAY PROMPTLY RETURN THE PRODUCT, IN A NEW AND UNUSED CONDITION, WITH A DATED PROOF OF PURCHASE, TO THE PLACE OF PURCHASE WITHIN THIRTY (30) DAYS FROM THE DATE OF PURCHASE FOR A FULL REFUND. THE BUYER AGREES THAT THE INSTALLATION OF THIS PRODUCT CONFIRMS THE BUYER HAS READ AND UNDERSTANDS THIS AGREEMENT AND ACCEPTS THE TERMS AND CONDITIONS OF THIS AGREEMENT.

## **Warranty Procedure**

In the unlikely event a warranty appears as if it may be warranted, the following steps are taken:

- 1 The customer discussed the symptoms of the problem with a PureFlow AirDog Technician. The customer is to have the system Serial Number and Model Number available for the Technician when the call is made. This will expedite all steps of the process.
- 2 The customer performs any and all tests requested by the PureFlow AirDog Technician. This is done to isolate the potential problem while eliminating potential installation or maintenance related issues,
- 3 If the PureFlow AirDog Technician determines based on the customer feedback concerning the requested testing that system may be at fault, the customer is advised that all returned pumps are tested upon arrival and should this returned pump perform at design criteria upon arrival, the customer will be charged a \$50.00 fee.
- 4 The PureFlow AirDog Technician will first request the customer's phone number in the event the phone call is accidentally disconnected and then transfer the customer to a PureFlow AirDog Customer Service Representative. Should a Customer Service Representative not be available, the Technician will offer the Customer the option to hold, call back, or receive a return call.
- 5 The PureFlow AirDog Customer Service Representative will check to determine if the customer's Warranty Registration Card is on file.
  - a. If no Warranty Registration is found, the customer will be required to supply the original purchase receipt showing the purchase date.
  - b. If no Warranty Registration is found, the customer will be advised of the options should the system in question is out of the default warranty period (1 year).
- 6 The PureFlow AirDog Customer Service Representative will request the customer information, including: Name, Address, Phone Number, Model Number, Serial Number, Year / Make / Model of vehicle, Name of Dealer purchased from, Purchase Date, Description of Problem, Customers' understanding of the resolution, and customer credit card information.
- 7 PureFlow AirDog will cover Ground Shipping charges to ship the replacement unit and will include a prepaid shipping label for the return of the defective unit. Any additional items ordered at the time of the replacement shipment will include their portion of the shipping cost.
- 8 A period of 15 Calendar Days from the time of shipment is provided for the receipt of the defective unit at the PureFlow AirDog facility. Failure to return ship the defective unit to arrive within the defined time period will result in a charge of \$250.00 against the customer's credit card as the purchase cost of the defective unit.