



# INSTALLATION MANUAL

#24



## FOR 12 VALVE 5.9L CUMMINS POWERED **DODGE TRUCKS** 1989 THROUGH 1993



### **MODEL RP-100 & RP-150**

*With New Quick Connect Components!*

**READ THESE INSTRUCTIONS THOROUGHLY  
BEFORE BEGINNING INSTALLATION**

*PureFlow AirDog*

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# **RAPTOR**

## **Fuel Pumps**



*Wire Screen  
Insert In Fuel Inlet  
To Protect the Gerotor*

*Fuel Inlet  
On Left Side*

*Adjustable  
Regulator*

**INCLUDED FITTINGS ARE FOR INSIDE FRAME RAIL MOUNTING.**



## OVERVIEW



### Welcome to the Raptor™ Fuel Pump

The Raptor™ Fuel Pump is a Premium replacement lift pump for the Dodge Cummins 12 Valve 5.9L diesel engine. A complete installation kit is included.

The output pressure for the 1989 - 1993 5.9L 12 Valve Cummins engine is factory set at 15/18 PSI.

Pressure and flows are approximate as they will vary with fuel temperature and as the brushes wear in. The pressure will also vary per application through variation of vehicle voltage/amp output and fuel line installation.

The RP-100 is recommended for stock and slightly modified 5.9L Cummins Diesels. The Raptor™ RP-150 is recommended for highly modified 5.9L Cummins Diesels.

The Raptor™, a gerotor fuel pump, features an adjustable pressure regulator and has a protective wire screen insert at the fuel inlet.

*PureFlow AirDog Products are Manufactured with a Personal Touch,  
Unsurpassed Attention to Detail  
And  
The Most Stringent Quality Assurance!*

### TYPICAL DODGE CUMMINS INSTALLATION LAYOUT.

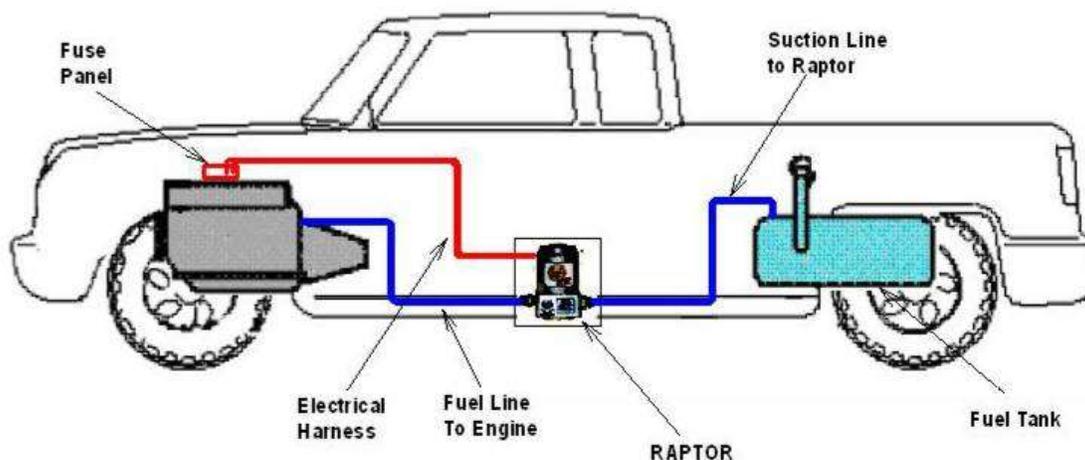


Figure 1

**NOTE:** The pictures used in this manual are for example only and may not be exactly the same as your truck.

# QUICK CONNECT COMPONENT OVERVIEW

Provided in this kit is an OE style quick connection system. This system allows a quick, clean, and professional install.

## SAE J2044 Quick Connect System

The SAE J2044 quick connect system is the most commonly used system in the automotive industry. The images below show the formation of SAE J2044 connection. To connect the assemblies, simply insert the male end form into the mating female connector. Push firmly until you hear it “click” into place. To disconnect the fittings, press down and hold the tabs on the female connector while you firmly pull the assembly apart.



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## **Raptor™**

### **MODEL RP-100 & RP-150**

The installation of the **Raptor™ Fuel Pump** can be made relatively 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. The installation recommendations contained herein are suggested installation guidelines only. Individual installations may vary.
4. 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.

## **SAFETY GUIDELINES!**

- CAUTION:** Proper location of the Raptor™ on the vehicle is essential. Consider hazards presented to the equipment by road debris and the elements.
- 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:** Vehicle frame rails should not be drilled into or welded upon.
- 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.

Use Good Judgment and Common Sense When Installing the Raptor™!



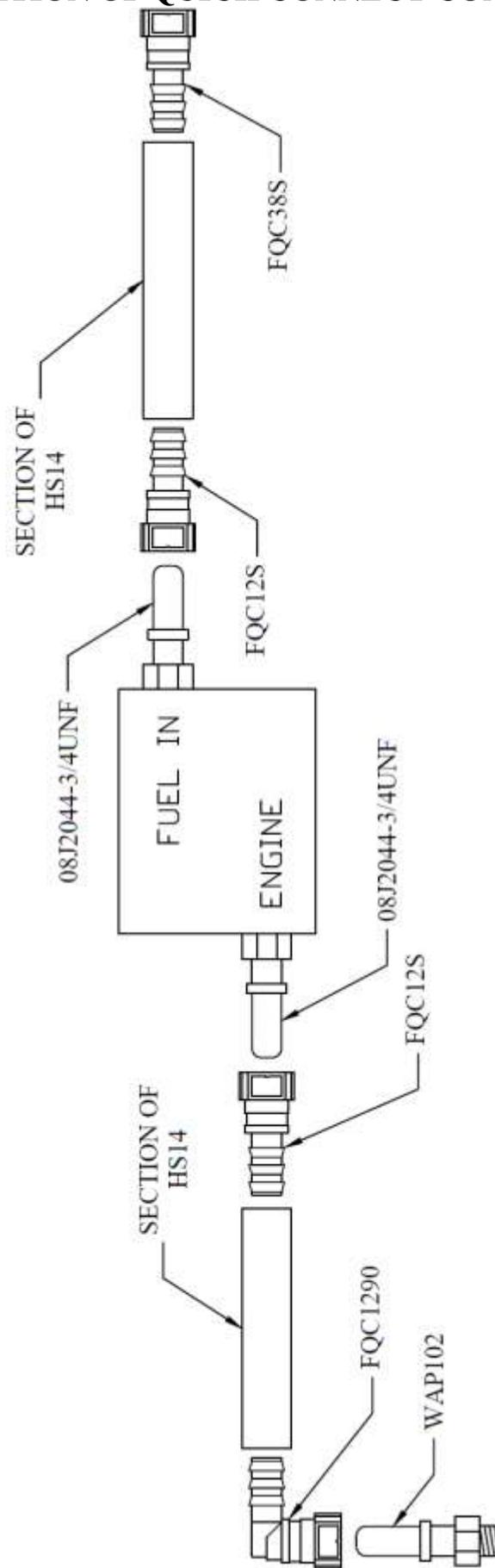
**Raptor™ 100 & 150 Parts List**

**Raptor Parts List**



QTY	DESCRIPTION	Part Number	IMAGE
1	<b>RAPTOR™ FUEL PUMP</b>	RP-100 Or RP-150	
1	<b>WIRING HARNESS</b>	5E-2-012	
1	<b>Frame Bracket Set</b>	010-3C-0002PC 010-3C-0001PC	
1	<b>Mounting Hardware Kit</b>	901-61-0102-PM-RP	
1	<b>Cable Ties</b>	5H-2-1-06/12	
1	<b>Spacer</b>	010-3C-0003-A-P	
1	<b>14ft of Fuel Line</b>	HS14	
2	<b>1/2" Straight Hose Quick Connect Fitting</b>	FQC12S	
1	<b>1/2" 90° Hose Quick Connect Fitting</b>	FQC1290	
1	<b>3/8" Straight Hose Quick Connect Fitting</b>	FQC38S	
1	<b>Customer Service Oring Replacement Kit</b>	901-05-0100	
2	<b>1/2" Male QC x 3/4-16 ORB</b>	08J2044-3/4UNF	
1	<b>12mm X 1/2" Male SAE J2044 Quick Connect Fitting</b>	WAP 102	
1	<b>Sealing Washer (installs on WAP102 fitting)</b>	1P-5-DS	
1	<b>Male Spade Connector</b>	5D-1-08-A-16/14	
2	<b>5/16" Push Lock X 1/4" Male NPT</b>	4A-1-18-05-04	
1	<b>"VE" Pump/Injector Return Tee</b>	001-4A-1-0008	
1	<b>"VE" Pump Flexible Return Line</b>	4C-1-02-05-001	

# ILLUSTRATION OF QUICK CONNECT COMPONENTS



## Mounting the Raptor™ to the Truck's Frame.

The Raptor™ Fuel Pump is best mounted with the electric motor up, as shown.

- 4-1. Install 1/2" O-ring Boss X 3/4" male fitting (08J2044-3/4UNF) into the Raptor™ port marked "IN".



- 4-2. Install 1/2" O-ring Boss X 3/4" male fitting (08J2044-3/4UNF) into the port marked "OUT". Properly torque the fitting.

**NOTE:** The kitting provided is intended for inside frame rail mounting. Mounting inside the frame (Fig. 4) will give more protection from road debris.



Figure 3

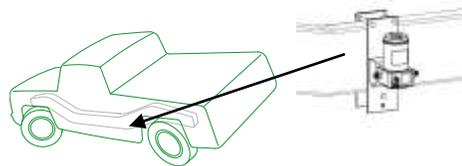


Figure 4

- 4-3. Assemble the Raptor™ to the mounting bracket as shown in Fig. 3. Hold the assembly next to the selected location on the frame to check for clearance (Fig. 4). Adjust the Raptor™ up or down on the mounting bracket to clear fuel lines or wiring on the frame. Use the spacer block to clear lines and wiring harnesses on the frame.
- 4-4. Loosely assemble the mounting bracket and pump assembly to the frame with the backing plate using the 4 1/2" x 3/8" bolts, lock washers, and nuts. After satisfactorily positioning the bracket and pump assembly, properly torque the fasteners.



Figure 5



Figure 6

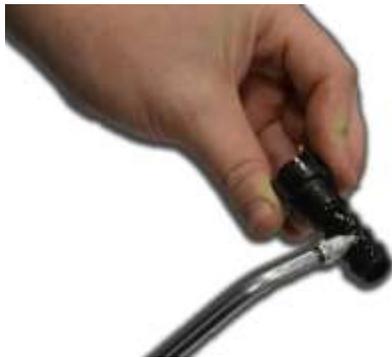


**NOTE:** Some pickup model frame rails have a bracket that is used to support the frame during the manufacturing process. If this bracket is on your frame rail and obstructs the proper positioning of the Raptor™ mounting bracket, you may remove it! Be very careful not to damage the frame.

## Assembling the Fuel Lines

**This kit includes a length of fuel line and separate fuel line ends to allow for much cleaner looking installations! Assemble the fuel lines as you install them. You won't want to pre-assemble the hoses or your lengths may be off.**

- 5-1. Take the fuel line end and lubricate the barbed end with clean motor oil (Figure 7) and press it into the fuel line (HS14) until all three barbs are covered (Figures 8 and 9). The fuel line end should look like Figure 9.



**Figure 7**



**Figure 8**



**Figure 8**

- 5-2. Now plug that fuel line with that fitting into the connection on the either the Raptor or the truck where the manual calls it out.
- 5-3. Run the fuel line along the frame away from any hot or moving parts such as exhaust or the driveshaft (Figure 10). Cut the hose to length and insert the other fuel line end that the manual calls out into the fuel line as outlined in step 5-1.



**Figure 10**

**NOTE: Hose clamps are not needed for these push-lock connectors.**

## Section 6A: VE Injector Pump and Injector Bleed Line Return.

**NOTE:** The Injector Pump return line and the Injector Fuel Bleed return line must be combined and returned to the tank through the original return line.



Figure 11



Figure 12

6A-1. Disconnect the original fuel return line from the injector pump steel return line. Connect the new flexible fuel return line included in the installation kit to the steel engine return line.

6A-2. Disconnect the 8mm banjo bolt and banjo fitting from the filter head.

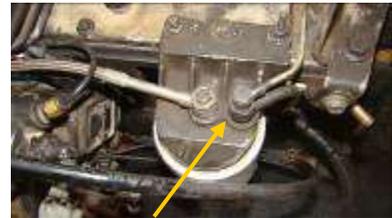


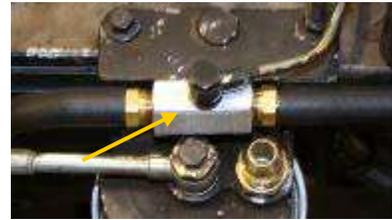
Figure 13



Figure 14



Figure 15



6A-3. Route and connect the flexible fuel return line (Fig. 14) to the push lock 'T' that is included in the installation kit.

6A-4. Using the 8mm banjo bolt and washer, connect the injector bleed return banjo fitting to the push lock 'T' (Fig. 15).

**Section 6B: Connecting the Raptor™ to the Filter Canister.**

6B-1. Install the 12mm x ½” male SAE J2044 (WAP 102) fitting with the seal washer supplied into the inlet port of the fuel filter head. Properly torque the fitting.



Figure 16



Figure 17

6B-2. Assemble one end of the hose (Reference section 5) using fuel line end FQC1290 and plug it into the WAP102 fitting installed in the previous step. A “click” will be heard once the fitting is properly connected.

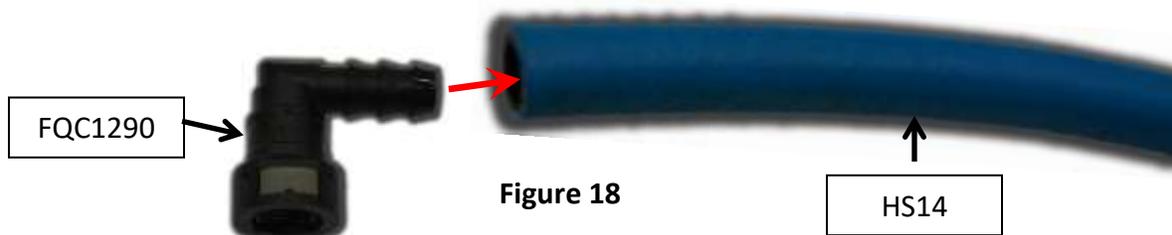


Figure 18

6B-3. Run the fuel line along the frame as mentioned in step 5-3 to the “Out” port in the Raptor®. Cut the fuel line to length and insert fuel line end FQC12S per step 5-1. Once the connector is installed, connect it to the male J2044 fitting in the “Out” port in the Raptor®. A “click” will be heard once properly connected.



Figure 19

## Connecting the Raptor™ to the Fuel Tank

- 6C-1. Remove the original fuel suction line from fuel tank by squeezing the tabs on the end of the *Quick Connect* connector together and carefully removing it from the suction tube.



Figure 20



Figure 21

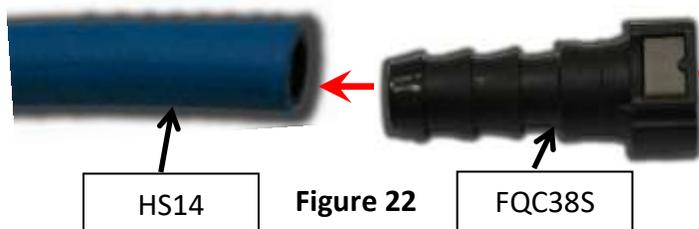
(In more detail)

To release the original fuel supply line from the fuel tank suction tube, center and firmly push the factory Quick Connect fitting against the suction tube. While firmly holding the plastic retainer ring onto the fitting, depress and hold the plastic ring. Now, pull the quick connect fitting from the suction tube. It can be difficult to remove the fitting if the retainer is cocked and not held perfectly square to the tank suction tube.

**IMPORTANT:** After removing the factory line check to make sure that the blue plastic retainer was removed from the suction tube with the line. If the blue retainer remains attached to the tank suction tube, the new Raptor™ fuel supply line Quick Connect will not properly seat.

**Consult the factory manual if unsure of this procedure!**

- 6C-2. Assemble one end of the hose (Reference section 5) using fuel line end FCQ38S and plug it into the male connection to where the factory suction line was just removed in the previous step. A “click” will be heard once properly connected.



- 6C-3. Run the fuel line along the frame as mentioned in step 5-3 to the Raptor® “In” port. Cut the fuel line to length and insert fuel line end FQC12S per step 5-1. Once the fuel line end is pressed in, connect it to the male J2044 fitting in the Raptor® “In” port. A “click” will be heard once properly connected.



**WIRING DIAGRAM**

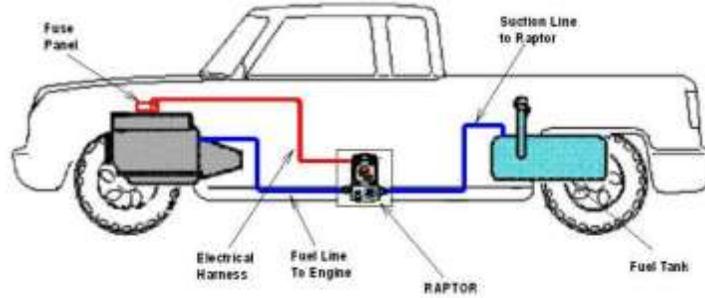


Figure 24

**Installing the Raptor™ Fuel Pump wiring harness.**

- 7-1. Connect the *Power Supply Lead* to the Raptor™, by inserting the 2 pin Deutsch connector on the end of the wiring harness into the corresponding connector on the Raptor™.

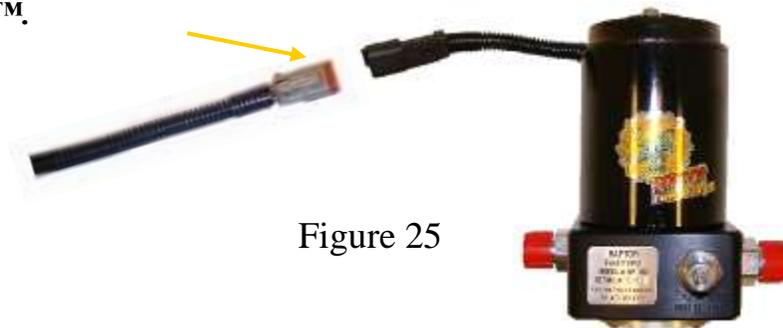


Figure 25

- 7-2. Crimp the male spade connector onto the end of the Red (+) wire.

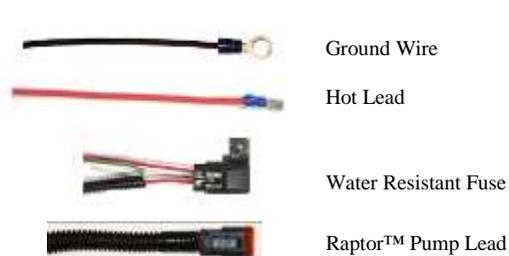


Figure 26



Figure 27



Figure 28

- 7-3. To connect the positive lead, route the Red (+) wire to the fuse panel located under the hood on the driver's side wheel house. Insert the male spade connector into a spare fuse holder on the fuse panel that is "hot" when the starter key is turned to the on position.

- 7-4. Connect the Green (-) wire to an adequate ground.

**BE SURE TO PROPERLY ROUTE AND SECURE THE WIRING HARNESS TO THE VEHICLE.**

## INITIAL START PROCEDURE

- 8-1. Turn the starter key to the on/run position.
- 8-2. While the **Raptor™ Fuel Pump** is on and pumping fuel, bleed the fuel line to the filter head by loosening the fuel line connection at the filter head. As soon as the line is purged of air and fuel is observed, properly tighten the fuel fitting. **NOTE: put a rag or shop towel over and around the fitting to prevent splatter. Catch all spilled fuel and dispose of properly.**
- 8-3. Start engine!

## Adjusting the Pressure Regulator

To adjust the fuel pressure, loosen the Lock Nut on the adjustment screw. Then, 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 regulator assembly base. Should the base nut become loose, re-torque it immediately. When finished, properly torque the regulator adjustment screw lock nut!

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



Figure 29

**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.**

PUREFLOW AIRDOG  
***LIFETIME LIMITED EXPRESS WARRANTY***

FOR  
Covered PureFlow AirDog I, II and Raptor Systems

**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 PRODUCE 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 Lifetime 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 INCLUDING FILTERS AND WATER SEPARATORS. Any PRODUCT that is in question of Warranty must be returned, shipped prepaid, to PureFlow AirDog. 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.