

# AirDog® II

FUEL PREPARATOR

#19

## *DF-100, DF-165, & DF-200* **INSTALLATION MANUAL**

### **DURAMAX DIESEL POWERED Chevy & GMC TRUCKS**

2001 thru 2010

*High Performance Fuel System*

*With New Quick Connect Components!*

**PLEASE READ THE INSTRUCTIONS THOROUGHLY  
BEFORE BEGINNING INSTALLATION**



# AirDog® II

FUEL PREPARATOR

Approved for Sale and Use in California by CARB!



**SMALL RETURN LINE  
FOR AIR, VAPOR AND  
FOAM**



**PRESET OR  
ADJUSTABLE PRESSURE  
REGULATOR**

## DEMAND FLOW SERIES

FLOWS ONLY THE AMOUNT OF FUEL THE ENGINE DEMANDS

**SMALL and COMPACT**

**7" Long X 3.2" Wide X 10" Tall**

## OVERVIEW

### Welcome to **PureFlow® AirDog®II**

Fuel Air Separation, Filtration and Delivery System for the Diesel Engine

The **AirDog®II** Fuel Preparator®, the Original Fuel Air Separation System, is a premium fuel pump and complete filtration system for the DuraMax Diesel Engine. The system removes water, particulates and entrained air from the fuel. The entrained air separated from the fuel is returned to the tank through a small return line. The fuel is then delivered to the engine at the correct pressure flow to meet the demands of the engine under all operating conditions.

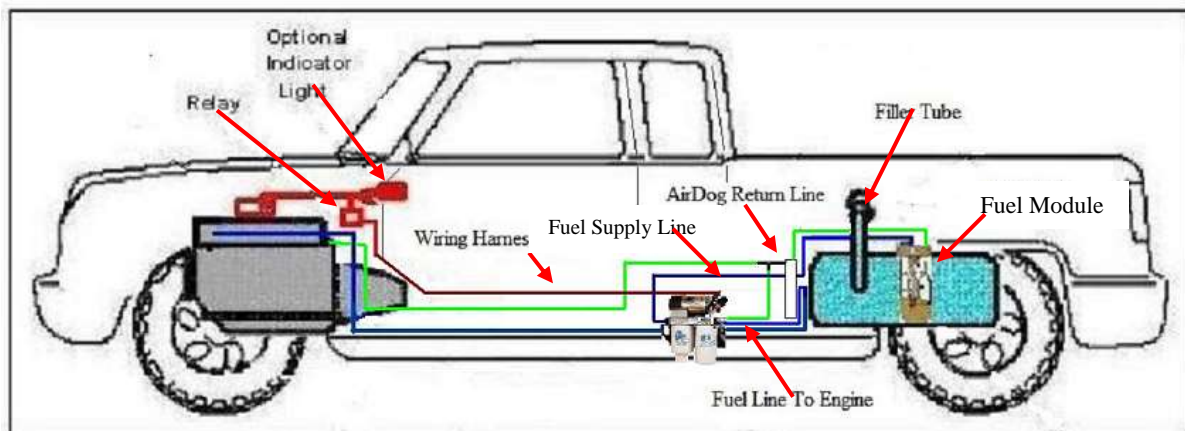
The **AirDog®II** DF-100 & DF-165 features an **Adjustable Pressure Regulator**. These AirDogs are preset set from the factory at 10 PSI. All AirDog®II systems include a complete installation kit.

The **AirDog®II** DF-100 is recommended for stock and slightly modified DuraMax Diesels.

The **AirDog®II** DF-165 Adj. are recommended for highly modified DuraMax Diesels.

The **AirDog®II** DF-200 is recommended for **Ultra High Performance** DuraMax diesel engines.

***PureFlow® products are manufactured with a personal touch,  
unsurpassed attention to detail  
and  
the most stringent Quality Assurance!***



The AirDog®II draws fuel from the fuel tank, removing water, particulates, and air/vapor. A regulated pressurized flow is maintained to meet the engine's varying fuel demands. The separated air/vapor is returned to the fuel tank.

**NOTE:** The vehicle used for these installation pictures is a 2009 Chevy 4 Door Crew Cab Pickup!

## QUICK CONNECT COMPONENT OVERVIEW

Provided in this kit is an OE style quick connection system. This system works to allow for 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 blue tabs on the female connector while you firmly pull the assembly apart.



## AirDog® II

The installation of your **AirDog® II** can be made relatively easy by following the steps outlined in this manual, and:

1. Inventory the package components completely. Notify *PUREFLOW AIRDOG* immediately of any parts missing or damaged.
2. Read the installation manual completely. Understand how the system operates and installation recommendations 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.
5. **When installing the AirDog® fuel lines be sure to keep the ORIGINAL ENGINE RETURN LINE connected as it is from the factory!**

### SAFETY GUIDELINES!

**CAUTION!** Please be sure to chock the vehicle's tires to prevent rolling.

**CAUTION!** Please use proper supports when working beneath an elevated vehicle.

**CAUTION!** Most diesel pickups have two (2) 12volt batteries. Disconnect the battery cables to both batteries before proceeding with the AirDog II 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.

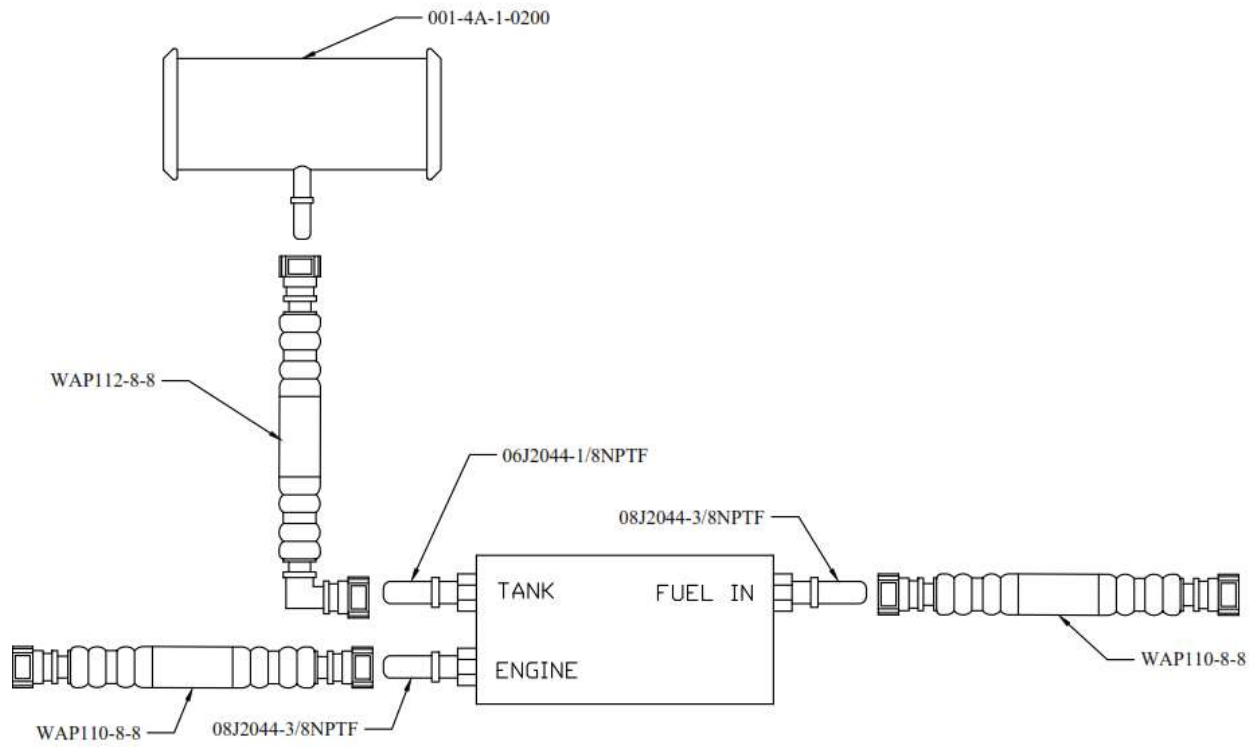
**CAUTION!** Use common sense when routing fuel lines and electrical harnesses. Keep them away from hot exhaust components and/or moving parts. Properly secure lines to prevent chaffing.

Use Good Judgment and Common Sense When Installing the AirDog®!

## AirDog® II Parts List

1	<b>Installation Manual</b>	201-1-0222	
1	<i>AirDog® II</i>	DF-100 DF-165 DF-200	
1	<i>AirDog® II</i> Mounting Bracket	001-3C-0004	
1	<b>Mounting Hardware Kit,</b>	901-61-0102-PM-C	
1	<b>Frame Bracket Set</b>	010-3C-0002PC 010-3C-0001PC	
1	<b>Wiring Harness</b>	5E-2-010	
1	<b>Bundle of Plastic Ties</b>	5H-2-1-06/12	
1	<b>Spacer</b>	010-3C-0003-A-P	
1	<b>Suction Hose Assembly</b>	WAP110-8-8	
1	<b>Return Hose Assembly</b>	WAP112-8-8	
1	<b>Pressure Hose Assembly</b>	WAP110-8-8	
1	<b>Customer Service Oring Replacement Kit</b>	901-05-0100	
3	<b>Push Lock Hose Splice</b>	001-4A-1-0026	
2	<b>1/2" Male J2004 Quick Connect x 3/8" NPTF</b>	08J2044-3/8NPTF	
1	<b>3/8" Male J2004 Quick Connect x 1/8" NPTF</b>	06J2044-1/8NPTF	
1	<b>Return Fuel Filler Tube</b> (with 2 Clamps)	001-4A-1-0200	

# ILLUSTRATION OF QUICK CONNECT COMPONENTS





## Installing the AirDog® II & Mounting Brackets on the Truck's Frame!



Figure 2



Figure 3

- 4-1. Assemble the AirDog II mounting bracket to the frame bracket.

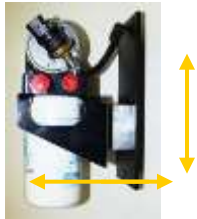


Figure 4



Figure 5



Figure 6

- 4-2. Use the spacer block to clear lines and wiring harnesses on the frame. Adjust the assembly up or down on the frame bracket as necessary for clearance.

- 4-3. Install a 1/2" male J2004 quick connect x 3/8" NPTF (08J2044-3/8NPTF) into the "ENGINE" and "FUEL IN" ports in the AirDog II.

Out to ENGINE

FUEL IN



Figure 7

- 4-4. Install the 3/8" male J2004 quick connect x 1/8" NPTF (06J2044-1/8NPTF) into the "TANK" port of the AirDogII. This is the smaller port next to the port marked "ENGINE".



Figure 7a

**WARNING:** The NPT fitting threads must be lubricated with oil or anti-seize compound before installation to prevent galling!

- 4-5. Attach the AirDog II® to the completed bracket assembly as shown in figures 4 and 5.



Figure 8



**Section 4**

**AirDog® & Mounting Brackets**

**Installing the AirDog® & Mounting Brackets on the Truck's Frame, cont'd!**

**NOTE:** The AirDog® II can be mounted on the inside or the outside of the frame. Some bed and cab configurations may only allow system to mount on the outside of the frame.



Figure 9

Driver's Side  
Frame Rail.



Figure 10

- 4-5. Clamp the frame between the AirDogII bracket assembly and the backing plate using the 3/8" x 4" bolts, lock washers, and nuts included in the kit as shown in figure 11.



Figure 11

- 4-6. Position the AirDog® on the frame as necessary for clearance. Properly torque all fasteners! The bracket is adjustable so be sure to adjust for clearance before tightening brackets to frame.

## Installing the AirDog II Fuel Supply Line to the Engine

To install the AirDog II fuel supply line to the engine you must first remove the (flexible) factory fuel line connecting the fuel tank to the frame mounted steel fuel line. It will be the larger of the two lines that are on the frame.



Figure 12

**NOTE:** The fuel tank connections are located behind the tank shield. It may be necessary to remove or bend the tank shield down to access the suction tube quick connect fitting.



Fuel Tank Suction Tube  
Figure 13

5A-1. Remove the factory fuel supply line from the fuel tank suction tube. Place the 1/2" fuel line disconnect tool around the fuel line and press into the Quick Connect fitting to release the locks. Carefully pull the factory quick connect fitting and fuel line from the fuel tank suction fitting.

The DISCONNECT TOOL can be purchased from your local auto parts store. **This tool is not included in the kit**



The connection to the steel fuel line is located on the front of the fuel tank. It will be the larger of the two lines that are on the frame.



Figure 14



Figure 15

5A-2. Disconnect the other end of the fuel supply line from the steel line. This connection is located between the fuel cooler and the front of the fuel tank. You may now remove the 18" of factory flex line. **NOTE:** Some model years will not have a Fuel Cooler however the fuel line will be in the same location.

**Section 5A**

- 5A-3. Attach, by pushing, the female 1/2" SAE J2044 quick connect end (Figure 16) of the "Pressure Hose Assembly" onto the factory male quick connect that was disconnected in step 5A-2 (Figure 15). You will hear a "click" when properly connected and the final install will look like image 14.



Figure 16

- 5A-4. Insert the female quick connect end (figure 17) of the "Pressure Hose Assembly" into the male quick connect fitting previously installed in the port marked "ENGINE". You will hear a "click" when properly connected.



Figure 17

- 5A-5. Any excess fuel hose can be addressed by routing the hose in a fashion to take up the extra length, or a section of the hose can be removed. Push lock splices have been included if you choose to remove the excess hose.

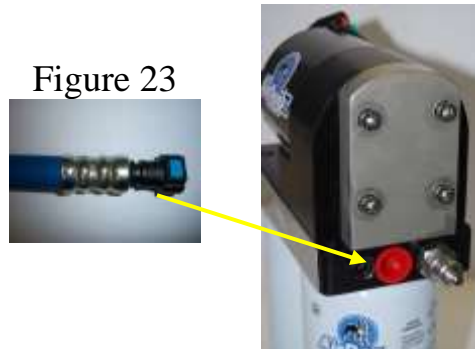


Figure 18

**CAUTION:** Properly secure all fuel lines to prevent damage from chaffing and/or abrasion.

## Fuel Suction Line for AirDog® II

- 5B-1. Insert the female quick connect end (see figure 23) of the “Suction Hose Assembly” into the previously installed male fitting in the “Fuel In” port. A “click” will be heard when the fitting is properly connected.



- 5B-2. Route the fuel line “Suction Hose Assembly” up along the frame back to the fuel tank making sure not to kink or route the hose in such a manner where it can be damaged. Use supplied tie straps to secure.

- 5B-3. Route and attach the female ½” SAE J2044 end (Figure 26) of the “Suction Hose Assembly” to the male quick connect fitting shown in figure 25. You will hear a “click” when properly connected.



Figure 25



Figure 26

- 5B-4 Any excess fuel hose can be addressed by routing the house in a fashion to take up the extra length, or a section of the hose can be removed. Push lock splices have been included if you choose to remove the excess hose.

**Hose clamps are NOT required when using the hose splices.**

## AirDog® Fuel Return Line!

Installing the fuel 'Return to Tank' assembly in Filler Tube

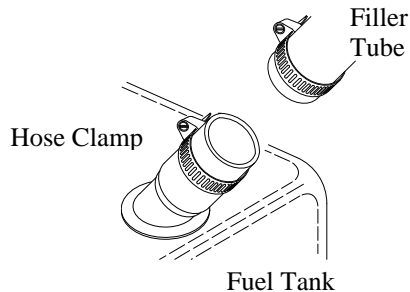


Figure 19

5C-1. Cut filler tube as illustrated, removing ½ inch. Loosen assembly clamps on each end of filler tube.

**NOTE:** Some 01-04 trucks have a plastic tube inside of the fill tube, be sure **NOT** to cut this clear tube. You will need to only cut the outer rubber hose then slide the plastic tube inside the return fill tube supplied in the kit, then clamp the rubber fill tube onto the adapter as shown in figure 19.



Figure 20



Figure 21

5C-2. Insert "Return Fuel Filler Tube" assembly in filler tube. **INSTALL THE FILLER TUBE WITH ARROWS POINTING TOWARD THE TANK!! SEE FIG 20** Properly tighten clamps.

5C-3. Insert the female quick connect end (Figure 21) of the "Return Hose Assembly" into the previously installed male fitting for the tank port (step 4-4). The fitting will "click" when properly installed.

5C-4 Attach the other end of the "Return Hose Assembly" onto the male end of the "Return Fuel Filler Tube" installed in step 5C-2. A "click" will be heard when the fitting is properly connected. Install as shown in figure 19.

5C-5 Any excess fuel hose can be addressed by routing the hose in a fashion to take up the extra length, or a section of the hose can be removed. Push lock splices have been included if you choose to remove the excess hose. Be sure not to kink the hose.



The AirDog® II is equipped with a relay controlled wiring harness.

**WIRING DIAGRAM (In Red)**

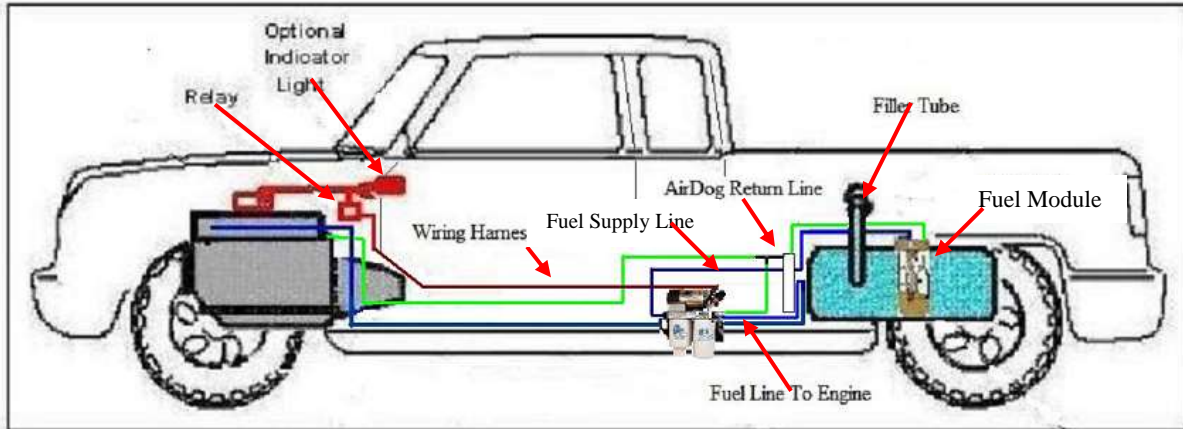


Figure 27  
The AirDog® II wiring harness!

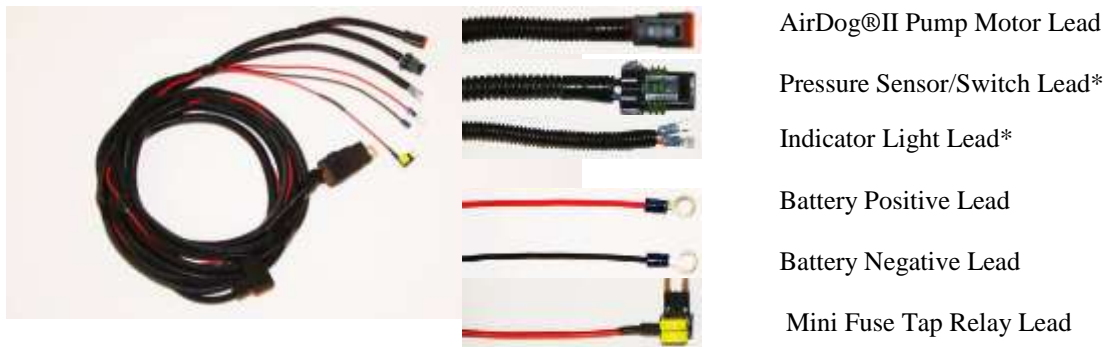


Figure 28

**CAUTION:** If the **OPTIONAL** Low Pressure Indicator Light is not used, be sure to insulate the two (2) #10 Indicator Light connectors and pressure sensor lead to prevent accidental contact.  
**\*The light kit is sold separately and is not included in the kit.**

**Securing the Relay and Fuse Holder to the Vehicle**

6-1. Secure the relay and fuse holder to the vehicle.



Figure 29



Figure 30

## Connecting the AirDog® II Relay Control

- 6-2. Remove the plastic housing (skirt) around the fuse box. On some models it may be necessary to remove the fender/cowl brace to allow access to the fuse box.
- 6-3. After accessing the fuse panel, use a test light or voltmeter to find a fuse terminal that is **HOT** only when the ignition is in the on position. Connect the 'Red' Relay Trigger wire with the mini fuse tap to that terminal. Be sure to install the fuse that is removed back into the fuse tap we supply, once installed into the fuse box the fuse tap should have both fuse spots filled. **TBC Batt, Ign 1 or 2, Acc and HVAC are commonly used to supply power.**



Figure 31

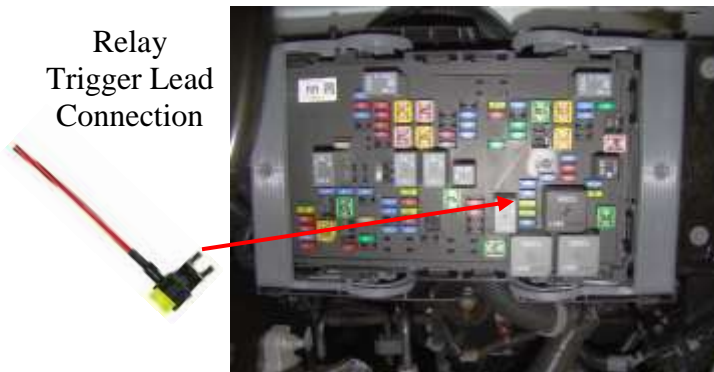


Figure 32

**NOTE:** The power supply leads can be connected to the battery or the alternator. Connecting the power supply leads to the alternator instead of the battery will create a corrosion free connection.

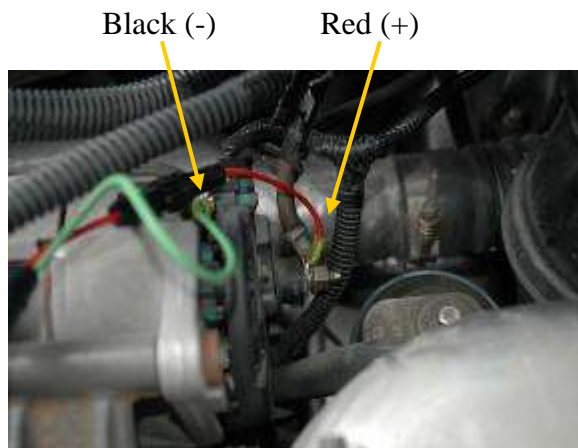


Figure 33



Figure 34

- 6-4A. Route the Red & Black power supply leads to the alternator. Connect the Black (-) lead to the alternator *Chassis Ground* connection. Connect the Red (+) lead to the alternator *Hot Lead* going to the battery.



### Connecting the power supply leads, cont'd

- 6-4B. Should you choose to connect the power supply leads directly to the battery, connect the RED (+) lead to the POSITIVE (+) post of the driver's side battery. Connect the BLACK (-) lead to the NEGATIVE (-) post of the same battery.
- Black (-)                      Red (+)

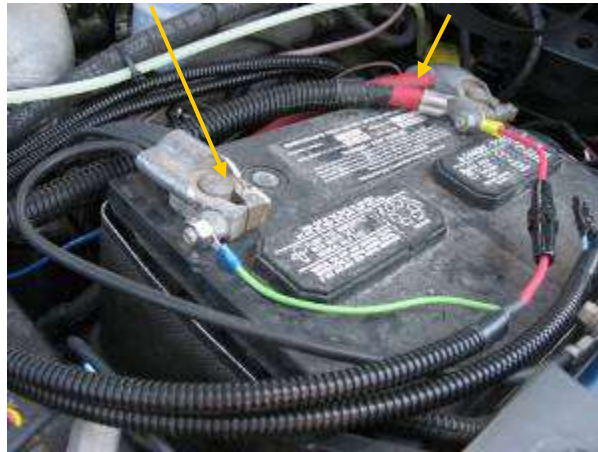


Figure 35

- 6-5. Route the wiring harness to the *AirDog*® II and connect the 2 pin Deutsch connector to the corresponding connector on the *AirDog*® II.



Figure 36

**NOTE:** If the Optional Indicator Light is not used, secure the pressure switch lead to the wiring harness with a plastic tie. Also, cover the pressure sensor lead to protect it, you may want to use it later.

## INITIAL START PROCEDURE

The *AirDog® II* is a self priming system, however, to prevent potential damage and reduce the life expectancy of the system, it is recommended to pre-fill only the water separator with diesel fuel before initial startup.

- 7-1. Fill the water separator with diesel fuel.
- 7-2. Turn the starter key to the on/run position.
- 7-3. While the *AirDog® II* is operating, bleed the air from the fuel line to the engine by loosening the fuel line connection at the engine fitting. As soon as the line is purged of air and pure fuel is observed, properly tighten the fuel fitting. **NOTE: put a rag or shop towel over and around fitting to prevent splatter. Catch all spilled fuel and dispose of properly.**
- 7-4. Start the engine!

**RECHECK ALL FUEL FITTINGS FOR LEAKAGE AND PROPERLY TORQUE. 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.**

### Checking Pump Noise!

**NOTE:** Each *AirDog® II* has been manufactured in a Quality Controlled process and fully tested for operation and performance before shipment. This is a very quiet and smooth running system. With fuel or air alone, the AirDog®II fuel pump will run very quietly. However, if any fuel fitting on the vacuum side, between the fuel tank and the AirDog® II or the water separator, has been left loose during the installation process, the system may suck air at an excessive rate and will be very noisy. To check for this problem, unscrew the water separator 3 or 4 full turns and activate the AirDog® II by turning the ignition switch to on. If the AirDog® II runs quietly, then excessive air from a loose fitting or leaking pre-filter seal is most likely the reason for the excessive noise. Correct as necessary.

- A. The seal groove in the 3” filter is a snug fit and on occasion the seal has been found to not be fully seated. Remove the water separator; remove the seal from the top of the nut plate. Clean and lubricate the seal groove. Carefully replace the seal in the groove. Be sure to fully seat the seal.
- B. Check the fittings, especially the quick connect at the tank.

## Filter Service Recommendations

Plugging of either the fuel filter or the water separator itself will cause low fuel pressure and low flow to the engine. If a low fuel pressure issue exists, replace the fuel filter. Typical fuel filter life is 15-20k miles depending on fuel quality.



### The Water Separator

Replace the water separator every other time you change the Fuel Filter or if it becomes damaged or plugged. It is suggested to check/drain the water separator every three months or as needed should you experience excessive 'water in fuel' conditions. When installing the water separator, be sure to clean the underside of the AirDog II base. Follow the instructions printed on the pre-filter for proper tightening procedures.

**CAUTION:** Be extremely careful to prevent any contaminants or debris from entering the pre-filter when removing it for cleaning! Large debris will jam the Gerotor and cause the fuse to blow. This is not a warranty item. Should this happen, you can easily put the system back into working order. See the instructions on "How to clean the Gerotor" for proper procedures.

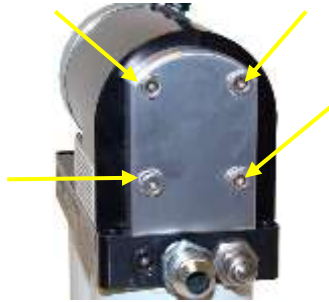
### The Fuel Filter

Remove the fuel filter by turning it counter clockwise. Do Not pre-fill the fuel filter with fuel. The AirDog II will fill the filter and prime the system automatically. Follow the instructions on the filter for proper tightening procedures.

**CAUTION:** Dispose of waste fuel and used filters properly to protect OUR environment!

### Cleaning Debris from the Gerotor Assembly

Step 1



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

Step 2



Carefully remove the O-rings. you will need to re-use them.

Step 3



Remove and clean the gerotor assembly. Be careful not to damage the gerotor.

Step 4



Clean the inside of the gerotor pocket.

Step 5



Replace the center gear.

Step 6



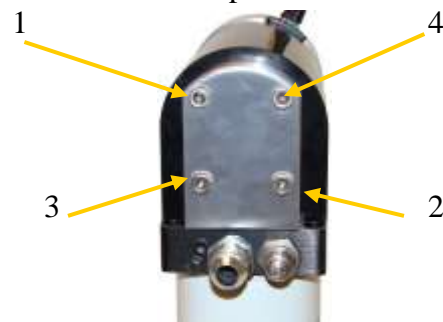
Align and install the outer gear and O-rings.

Step 7



Install the gerotor cap. Be very careful not to dislodge or pinch the O-rings.

Step 8



Loose assemble the cap screws. Torque the cap screws in an opposing pattern.

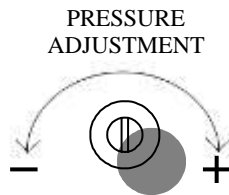
## AirDog II DF-165 with Adjustable Pressure Regulator!

The AirDog®II rises to a new level of excellence with an Adjustable Regulator machined from stainless steel with a double O-ring seal system and a soft seat piston.

### DuraMax Pressure Adjustment



Loosen the Jam Nut  
Re-Torque After Adjusting



Use a Screwdriver to Adjust  
the Pressure Regulator

### DF-165- 8-10 PSI:

Turn the regulator counter clockwise until it stops, then turn clockwise 2 1/2 full turns. Turn the adjustor screw counter clockwise to reduce the output pressure or clock wise to increase the pressure. Be sure to re-torque the Jam Nut after adjusting the regulator.

### Changing the Regulator Spring



- Step 1. Remove the regulator by turning the “Base Nut/Adjustor Body” counter clockwise.
- Step 2. After removing the regulator assembly, remove the spring and the conical plunger. Verify the o-ring is intact.
- Step 3. Reset the conical plunger and place the spring inside the conical plunger.
- Step 4. Replace the assembly in the base. Tighten the Base Nut to proper torque.

**Stainless Steel components with a Double O-ring Seal System and Soft Seat Piston.**  
New o-rings are included in the Customer Service O-ring Kit if replacements are required.