



INDUSTRIAL Fuel Air Separation System

INSTALLATION MANUAL

UNIVERSAL DIESEL ENGINE APPLICATIONS

AIRDOG® FP11-125



NOW WITH DEMAND FLOW

Revised 8/28/2026



PROUDLY MADE IN THE USA

www.airdogdiesel.com
1-573-635-0555 or
1-877-463-4373

Providing "Test Cell Performance" in "Real World Conditions" Since 1993

PATENT

www.AirDogDiesel.com/patents

AirDog[®] INDUSTRIAL Fuel Air Separation System

THE RIGHT CHOICE FOR YOUR DIESEL ENGINE



SMALL and COMPACT
7" Long x 3.2" Wide x 10" Tall

SYSTEM OVERVIEW

Welcome to the **AirDog® Heavy Duty FPII-125**
Fuel Air Separation System

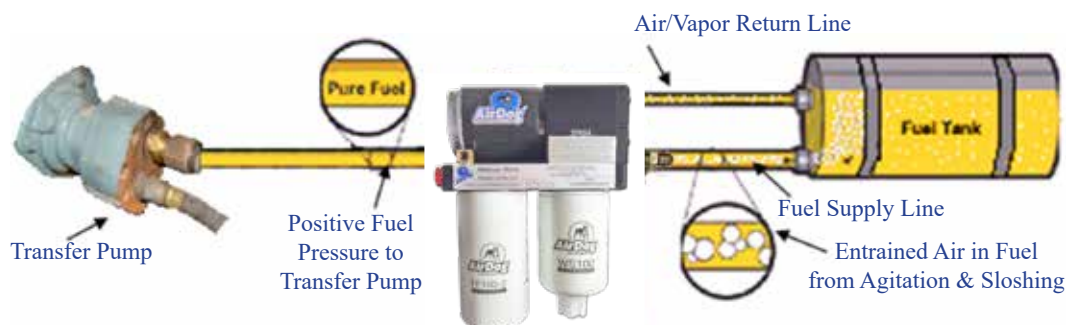
The **AirDog® FPII-125** with **ADVANCED FUEL AIR SEPARATION, DEMAND FLOW, ADJUSTABLE REGULATOR, LOW PRESSURE SENSOR with LED INDICATOR LIGHT** and the **4G-HD FUEL PUMP**, is a premium fuel filtration and delivery system for the diesel engine.

The **AirDog® FPII-125** removes water, particulates and the air that becomes entrained in diesel fuel from sloshing and agitation from the fuel flow to the engine. The entrained air and vapor separated from the fuel is returned to the fuel tank through a small return line. The fuel flow to the engine's transfer pump is at a **NET POSITIVE PRESSURE HEAD** preventing cavitation and the formation of vapor thus overcoming the performance related problems from plugged fuel filters, high altitude operation and torque loss at higher engine RPM's.

Air and vapor are compressible. When Air/Vapor is present in a fuel injection system, the pressure buildup and injection of fuel is delayed while the air/vapor is being compressed. This delays the injection timing causing a shorter power stroke and low power, increased fuel consumption and increased exhaust emissions. Preventing the formation of vapor from pump cavitation and removing entrained air from the fuel flow to the injectors restores *Correct Injection Timing*. Diesel engines equipped with the **AirDog®** can now perform as designed, delivering "test cell" performance while in "real world" use!

All **AirDog®** products are manufactured with a personal touch, unsurpassed attention to detail and the most stringent quality assurance.

TYPICAL INSTALLATION LAYOUT



The **AirDog® FPII-125** returns entrained air and vapor (foam) with very little fuel flow back to the tank and requires **only one small return line to only one tank** for quick and easy installations.

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 the 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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INSTALLATION GUIDELINES

The installation of your AirDog® FPII-125 can be made relatively easy by following the steps outlined in this manual, and:

1. Inventory the package components. Immediately notify PureFlow® Technologies, Inc. of any missing or damaged parts.
2. Read the installation manual completely. Understand how the system operates and the installation recommendations before beginning.
3. Proper location of the AirDog® FPII-125 on the vehicle is essential. Consider hazards presented to the equipment by road debris and the elements.
4. The installation recommendations and guidelines contained herein are suggestions only. Individual installations may vary.
5. Use diesel compatible thread sealer when installing fittings with NPT threads. (Loctite® 545 Thread Sealer is diesel compatible)

SAFETY GUIDELINES

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

CAUTION: Disconnect the battery cables before proceeding with the AirDog® installation.

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

CAUTION: Do not drill into or weld the top of the frame rail or within 1-½" of the frame rail flange on the side of the frame rail.

CAUTION: Route the fuel lines and electrical harnesses keeping them away from hot exhaust components and/or moving parts. Properly secure the fuel lines and electrical harnesses to prevent chafing using zip ties included in installation kit.

CAUTION: Do not subject the AirDog® system directly to high-pressure wash systems. Doing so may damage seals and electrical components, and such damage is NOT covered under warranty.

If you are uncertain of any installation procedure, please call PureFlow® Technologies, Inc. at 877-463-4373 for technical assistance.

NOTE: The pictures used in this manual are for example only and may not depict the exact components as found on your vehicle.

PureFlow® Technologies, Inc.

AirDog® FPII-125

UNIVERSAL DIESEL APPLICATIONS

Section 3

Installation Parts List

Parts List

QTY	Description	Part Number	Image
1	AirDog® Diesel Fuel System including: Fuel Filter FF100-2 Water Separator WS100	FPII-125	
1	AirDog® FPII-125 Bracket	001-3C-0004-PC	
1	Frame Brackets	010-3C-0002PC 010-3C-0001PC	
1	Wire Harness w/ Indicator Light & Dash Plate 1 ea Indicator Light 5G-1-1-47674 1 ea Dash Plate 201-3-0004-S-M716	5E-2-010 908-5G-1-1-47674	
1	1/2" General Purpose Hose (Fuel Line) - 30 ft Section	4C-1-02-08-004-030	

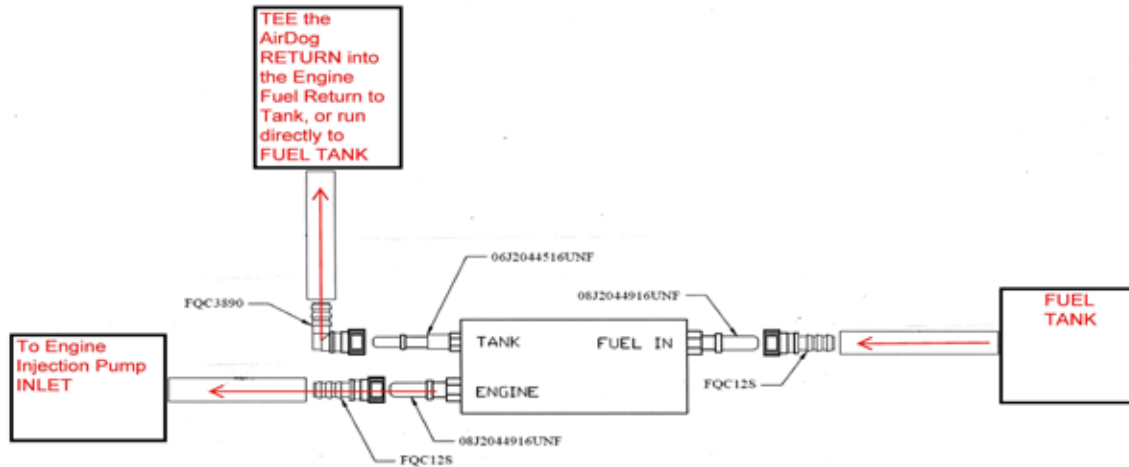
ADFK-460 Installation Kit

1	Fuel Pressure Sensor	5C-9-007-SC-06	
1	Spacer	010-3C-0003A-P	
1	Zip Tie Bundle	5H-2-1-06/12B	
1	908-5E-2-018/022 Add-A-Circuit Fuse Tap Adapters 1 ea Add-A-Circuit Fuse Tap Adapter Mini 1 ea Add-A-Circuit Fuse Tap Adapter ATO	5E-2-018 5E-2-022	
1	Mounting Hardware Kit (1) Nut Packet 908-61-0125-N (1) Washer Packet 908-61-0125-W 1/4-20 x 1-1/4 SHCS (4) 1L-A20SZ 5/16-18 x 2-3/4 FHSCS (4) 1M-B44SZ 3/8-16 x 4-1/2 HHCS (3) 1J-1-C72SZ	901-61-0125	

908-01-0460-QC Fitting Kit

1	3/8 ID 7/8 OD Rubber Grommet	5J-1-1-04-2758	
2	1/2 F 90° Hose Quick Connect Fitting	4A-9-FQC1290	
2	1/2 F Straight Hose Quick Connect Fitting	4A-9-FQC12S	
1	3/8 F 90° Hose Quick Connect Fitting	4A-9-FQC3890	
2	1/2 M J2044 Quick Connect x 9/16 UNF	4A-9-08J2044916UNF	
1	3/8 M J2044 Quick Connect x 5/16 UNF	4A-9-06J2044516UNF	
3	#8F JICX x 1/2 Push-lock Hose Barb	4A-1-09-08-08-B	
2	#8M JIC x 3/8 M ORB Straight Connector	4A-1-01-08-06-S	
1	3/8-18 M NPTF x 3/8-18 F NPTF x 3/8-18 F NPTF Tee	4A-4-01-06-S	
1	#8M JIC x 3/8 M NPTF Straight Connector	4A-1-02-08-06-SZ	

Illustration of Quick Connect Components



Installing the J2044 Quick Connect Fittings & Pressure Sensor into the AirDog® FPII-125 Filter Base

- 4-1. Dip the threaded end of the 1/2" M J2044 quick connect x 9/16" UNF (4A-9-08J2044916UNF) fittings into clean motor oil and hand-thread into the "ENGINE" and "FUEL IN" ports of the AirDog® FPII-125 filter base as illustrated in Figures 1, 2, and 3. Using a 3/4" deep socket, torque the fittings to 120in-lb or 10ft-lb. **Do NOT overtighten the fittings or damage may occur.**
- 4-2. Dip the threaded end of the 3/8" M J2044 quick connect x 5/16" UNF (4A-9-06J2044516UNF) fitting into clean motor oil and hand-thread into the return port of the AirDog® FPII-125 filter base as illustrated in Figures 1 and 4. Using a 5/8" deep socket, torque the fitting to 60in-lb or 5ft-lb. **Do NOT overtighten the fittings or damage may occur.**
- 4-3. Remove the 1/8" NPT plug in the 45° elbow. Install the pressure sensor into the elbow.



Figure 1



Figure 2

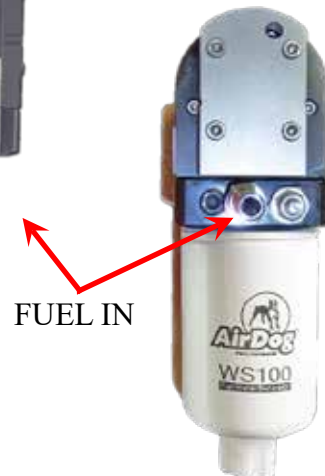


Figure 3



Figure 4

4-4. Assemble the AirDog® mounting bracket (PN 001-3C-0004-PC) to the frame bracket (PN 010-3C-0001PC) using the spacer (PN 010-3C-0003A-P) as shown in Figure 5 using the four bolts, lock washers, and nuts included in the mounting bracket hardware kit (PN 901-61-0125) shown in Figure 6. Properly torque all fasteners. You will need a 3/16" allen and a 1/2" wrench. The bracket assembly should look like Figure 7.



Figure 5



Figure 6



Figure 7

4-5. Attach the AirDog® FPII-125 to the frame bracket assembly as shown in Figure 8 using the supplied hardware in the mounting bracket hardware kit.

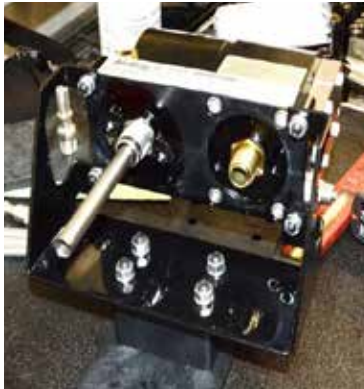


Figure 8

NOTE: We recommend installing the AirDog® on the inside of the frame rail, but we understand some applications don't have room. The photos in this manual may not be the same as your application.

4-6. Be sure to tuck the AirDog® FPII-125 as far up as possible without it rubbing on anything to prevent damage from road debris. The bracket assembly is adjustable to achieve this.

NOTE: Some 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 AirDog® FPII-125 mounting bracket, you may remove part or all of it, as needed. Be very careful not to damage the frame flange (Figures 9 & 10).



Figure 9



Figure 10

4-7. Clamp the frame between the AirDog® bracket assembly and the **backing plate** (PN 010-3C-0002PC) (Figure 11) using the 3/8" bolts, lock washers, and nuts included in the kit. You will need two 9/16" wrenches. Properly tighten all fasteners. **BE SURE** to mount the AirDog® FPII-125 with the "FUEL IN" port toward the rear of the vehicle (Figure 12).

Figure 11



Figure 12



FUEL IN

VEHICLE
FRONTVEHICLE
REAR

Assembling the Fuel Lines

Assemble the fuel lines and fuel line ends as you install them. It is not recommended to pre-cut fuel lines, as pre-cut lengths may not be accurate.

5-1. Take the fuel line end and lubricate the barbed end with clean motor oil (Figure 13) and press it into the fuel line until all three barbs are covered (Figure 14). The fuel line end should look like Figure 15.



Figure 13



Figure 14



Figure 15

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

When installing the AirDog® fuel system, it is recommended to bypass the factory filter canister for optimum engine performance.

5-2. Remove the original factory fuel supply line at the fuel inlet port of the injection pump (Figure 16).

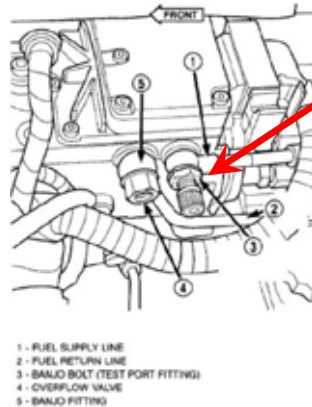


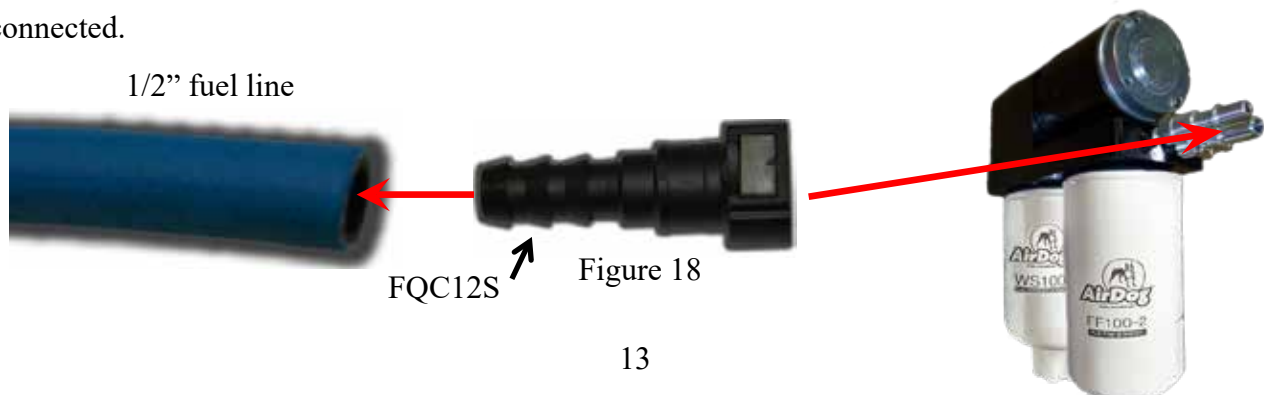
Figure 16

5-3. Assemble one end of the 1/2" fuel line (reference Section 5) using a #8 F JIC Swivel x 1/2" Pushlock Hose Barb (PN 4A-1-09-08-08-B) (Figure 17). Then connect the swivel end to the fuel inlet of the injection pump. A #8 M JIC x 3/8 M ORB Adapter (PN 4A-1-01-08-06-S) has been supplied in this kit; however, you may need to adapt as necessary for your specific engine application.



Figure 17

5-4. Run the fuel line along the frame away from any hot or moving parts, such as exhaust or driveshaft, to the "Engine" port in the AirDog®. Cut the fuel line to length and insert fuel line end FQC12S (Figure 18) or FQC1290 per step 5-1. Once the connector is installed, connect it to the male J2044 fitting in the "Engine" port in the AirDog®. A "click" will be heard once properly connected.



5-5. It is advised to remove the factory supply lines between the tank and the filter canister, if equipped. Also, remove the factory supply line between the filter canister and the injection pump. Then plug the ports on the filter canister (Figure 19). This will prevent fuel spillage.



Figure 19

NOTE: Be sure to keep the ORIGINAL ENGINE RETURN LINE connected as it is from the factory. In many cases, the return runs through the flange of the filter canister.

5-6. Assemble one end of the 1/2" fuel return line (reference Section 5) using fuel line end **FQC3890** and plug it into the "Return" J2044 fitting installed in the AirDog® (Figure 20). A "click" will be heard once the fitting is properly connected.

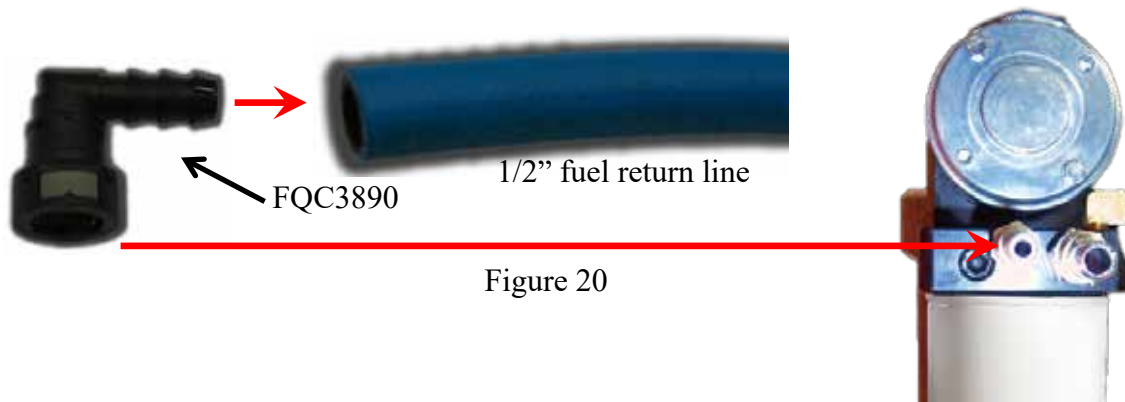


Figure 20

5-7. Run the fuel return line along the frame away from any hot or moving parts, such as exhaust or driveshaft, to the tank. Cut the fuel return line to length and insert a **#8 F JIC Swivel x 1/2" Pushlock Hose Barb (PN 4A-1-09-08-08-B)** (Figure 21) and connect to return to tank, after regulator, if equipped, and before splitter, if equipped with dual tanks.

For single tank application, you may connect the return directly to the tank. If available, an open auxiliary port is an option for the return connection.



1/2" fuel return line

Figure 21

NOTE: For the return to tank connections, a 3/8" NPT Tee (PN 4A-4-01-06-S) and #8 M JIC x 3/8" M NPT Adapter (PN 4A-1-02-08-06-SZ) have been included in this kit, and are adaptable to most applications. As an example, Figure 22 shows the 3/8" NPT Tee used to Tee the AirDog® return with the engine fuel return connected to a port on top of the fuel tank. Additional or replacement fittings may be required to adapt to your specific application.



Figure 22

Fuel Suction Line

Connecting the Fuel Supply Line from the Tank to the AirDog® FPII-125

5-8. Remove the original fuel suction line fitting from fuel tank. The original suction line can be tied out of the way or removed.

5-9. Assemble one end of the 1/2" fuel line (reference section 5) using required fittings. A **#8 F JIC Swivel x 1/2" Pushlock Hose Barb (PN 4A-1-09-08-08-B)** (Figure 23) has been supplied in this kit; however, you may need to adapt as necessary for your specific engine application. Attach to the connection where the factory suction line was just removed in the previous step. A **#8 M JIC x 3/8 M ORB Adapter (PN 4A-1-01-08-06-S)** has been supplied in this kit; however, you may need to adapt as necessary for your specific engine application.



Figure 23

5-10. Run the fuel line along the frame away from any hot or moving parts, such as exhaust or driveshaft, to the AirDog® "Fuel In" port. Cut the fuel line to length and insert fuel line end **FQC12S** or **FQC1290** per step 5-1. Once the fuel line end is pressed in, connect it to the male **J2044** fitting in the AirDog® "Fuel In" port (Figure 24). A "click" will be heard once properly connected.



Figure 24

AirDog® Wire Harness

NOTE: The AirDog® wire harness includes a 15-amp fuse.

The AirDog® wire harness has a low pressure sensor and an amber LED indicator light as standard equipment. The indicator light will illuminate at start-up, remain on for a few seconds, then go off and should remain off unless pressure flow to the engine drops below minimum requirements.

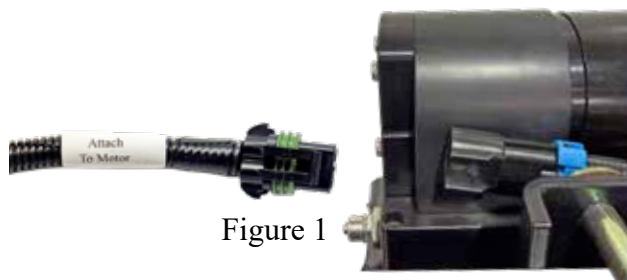


Securing the AirDog® Wire Harness Relay to the Vehicle

6-1. Secure the AirDog® wire harness relay to the vehicle. This picture shows the relay mounted on the firewall.



6-2. Route the AirDog® wire harness pump motor lead and the fuel pressure sensor lead to the AirDog® unit. Connect the wire harness pump motor lead (labeled “Attach to Motor”) to the AirDog® unit pump motor lead (Figure 1).



6-3. Connect the AirDog® wire harness fuel pressure sensor lead to the AirDog® unit fuel pressure sensor.



Relay Trigger Lead and Indicator Light Lead

The AirDog® Wire Harness Indicator Light lead must be routed through the firewall and to the dashboard. The Relay Trigger lead must be connected to a contact point that is electrically “HOT” when the key is in the “RUN” position. This could be either in a spare fuse holder in the fuse panel, using an Add-A-Fuse (included) to add the relay trigger lead to an existing circuit, or on the ignition switch itself.

Note: DO NOT connect the AirDog® wire harness relay trigger lead to a point that is “HOT” when the key is in the ACCESSORY position.

Routing the Indicator Light and Relay Trigger Lead through the firewall:

6-4. Many trucks have access holes through the firewall, located below or near the steering column. Remove the plug from one of those access holes, and route the wire leads through the hole. For trucks that do not have an existing hole in the firewall, you will need to drill a 5/8” hole in the firewall for entry of the leads into the cab. Use the provided grommet to seal around the wire loom.



6-5. If an access hole is available, remove the plug and route the lead through the hole. If no access hole is available, select the best location and drill a 5/8” hole in the firewall to allow entry of the relay trigger lead and indicator light into the cab.

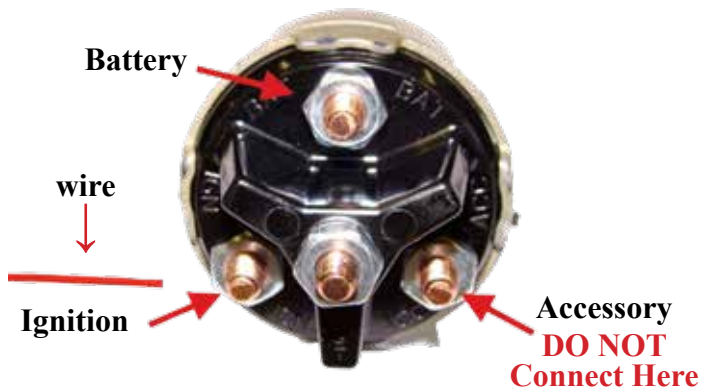
6-6. Route the relay trigger lead (red) and indicator light lead through the firewall. Be sure to seal the opening or install a grommet (supplied) around the wire loom to prevent water leakage and protect it from chafing.

Relay Trigger Lead

This

There are several options for attaching the relay trigger wire:

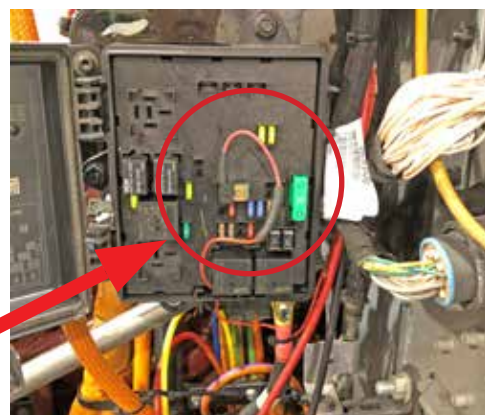
6-7A. Connect the relay trigger lead to a terminal on the ignition switch that is “HOT” when the key is in the “RUN” position, as detailed in this picture:

**OR**

Add-a-Fuse

**That**

6-7B. Using the appropriately sized Add-a-Fuse (included in your AirDog® installation kit), connect the relay trigger lead to a fuse holder in the fuse panel that is “HOT” when the key is in the “Run” position. An example is pictured here:



Installing the AirDog® Wire Harness Indicator Light

LED Indicator Light

6-8. Select a location on the dash that is easily visible to the driver. Remove the dash components as necessary to access the area behind the selected location.



6-9. Drill a 7/16” hole in the dash at the selected location. Be very careful when drilling. Do not damage components located behind the dash.

Installing the AirDog® Wire Harness Indicator Light

LED Indicator Light

6-10. Remove the nut from the indicator light and insert the indicator light through the dash plate. To adhere the dash plate to the dashboard, peel off the paper backing from the back side of the plate to expose the adhesive. Install the dash plate with indicator light into the hole in the dash. Reinstall the nut to the indicator light at the back side of the dash, and tighten the nut until snug.

Connect the positive (orange wire) lead of the wire harness to the positive quick-connect terminal (marked orange) on the indicator light (see image below).

Then connect the negative (blue wire) lead on the wire harness to the negative (unmarked) quick connect terminal on the indicator light.



6-11. Re-assemble the dash components back to their original position.

Connecting the Power Supply Leads

The power supply leads can be easily connected to the appropriate contacts on the battery. Another alternative option would be to connect the power supply leads to the appropriate contacts on the alternator. Any high amperage terminal that is always “HOT” is OK for the Positive + (RED) lead. Be sure the NEGATIVE - (GREEN) lead is connected to a reliable chassis ground.

IMPORTANT: On 24V systems, the power supply leads can be easily connected to the appropriate contacts on the ALTERNATOR. DO NOT connect directly to the 24V batteries.

6-12. Route the red & green power leads to the battery or an alternator. Connect the green (-) ground lead to the negative battery terminal post.

6-13. Connect the red (+) positive lead to the positive battery/alternator terminal post.



NOTE: Secure wire harness with zip ties included in installation kit.



Installing your filter restriction gauge into the AirDog® Gerotor Cap Sensor Port

Does your HD truck have a filter restriction gauge that you would like to continue using with the AirDog®?

7-1. Every AirDog® Heavy Duty Diesel Fuel System is now equipped with a port for your restriction sensor. On the inside surface of the gerotor pump cap, you will find a 1/8" NPT plug.

Port for Sensor



7-2. Remove that plug (3/16" Allen), and install your restriction sensor with the same 1/8" NPT thread, using an elbow if necessary, and you can now connect and use your original filter restriction gauge with the AirDog® system.



Initial Start Up Procedure

The AirDog® is a self priming system. However, to prevent damage to a dry seal and reduce the life expectancy of the system, it is suggested to pre-fill the water separator/pre-filter with diesel fuel to the bottom of the "NUT PLATE".

- ☐ 8-1. Rub CLEAN diesel fuel or oil on filter seals before installing to ensure a proper seal.
- ☐ 8-2. Pre-fill the water separator/pre-filter with diesel fuel up to the bottom of the nut plate.
- ☐ 8-3. Turn the starter key to the on/run position.
- ☐ 8-4. The AirDog® should now be running and pumping fuel, bleed 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 the fitting to prevent fuel splatter or spray. Catch all spilled fuel and dispose of properly. Wear safety glasses.

- ☐ 8-5. Start the engine.

Recheck all fuel fittings for leakage and proper torque. Be sure all fuel lines are properly routed to protect from excessive heat and secured to protect from chafing and abrasion. Recheck all electrical lines and secure as necessary.

Checking for Excessive Pump Noise

NOTE: Each AirDog® FPII-125 has been manufactured in a quality controlled process and wet tested for operation and performance before shipment. This is a smooth running system. With fuel or air alone, the AirDog® FPII-125 fuel pump will run quietly. However, if any fuel fitting on the vacuum side, between the fuel tank and the AirDog® FPII-125 or the pre-filter has been left loose during the installation process, the system may be sucking air at an excessive rate and will be very noisy. Excessive restriction in the suction line from the fuel tank can cause vapor and noise as well. Excessive air from a loose fitting or leaking pre-filter seal or vapor from fuel flow restriction is most likely the reason for the excessive noise. Correct as necessary.

Section 9

Filter Service

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 pre-filter, 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 all 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.



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 weekly or as needed if you experience excessive ‘water in fuel’ conditions. When installing the water separator, be sure to clean the underside of the AirDog® base. Follow the instructions printed on the pre-filter for proper tightening procedures.

Check the water separator/pre-filter for plugging. Clean or replace as necessary. If the light continues to be on, check the screen in the water separator/pre-filter nipple for debris and plugging. Clean as necessary.

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.

Fuel Filter

Remove the fuel filter by turning it counter clockwise. Do NOT pre-fill the fuel filter with fuel. The AirDog® 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.



www.airdogdiesel.com
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1-573-635-0555

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