UNIVERSAL FUEL MODULE UPGRADE KIT INSTALLATION DIRECTIONS

PLEASE READ THE DIRECTIONS THOUROUGHLY BEFORE BEGINNING THE INSTALLATION.

OVERVIEW

Thank you for purchasing the AirDog® Fuel Module Upgrade Kit. This kit is designed to bypass the factory in-tank fuel pump and restrictive factory suction line without drilling additional holes in the top of the fuel tank. This kit also helps eliminate 1/4 tank starvation issues that are sometimes associated with traditional draw straws.

SAE J2044 QUICK CONNECT SYSTEM OVERVIEW

The bulkhead fitting that is supplied in this kit is pre-assembled with a male J2044 quick connect fitting. SAE J2044 is the most commonly used fuel system fitting in the automotive industry. If you are not using an AirDog® or Raptor® fuel system and would like to use this kit, you will need 1/2" ID fuel hose and one of our FQC12S fittings to hook up to this fitting. Below is a photo of how the female fitting connects to the male J2044 fitting. To connect the assemblies, simply insert the female end form onto the mating male connector. Push firmly until you hear it "click" into place. To disconnect the fittings, press down on the two tabs on the female connector while you firmly pull the assembly apart.

Fuel Module Upgrade Parts List

QUANTITY	DESCRIPTION	IMAGE
1	**Bulkhead Assembly** (Includes Bulkhead, Male J2044 Fitting, Rubber Sealing Washer, and Nylon Lock Nut)	
1	**Bracket**	
2	**Screw and Lock Nut**	
5	**Tube Clamp**	
1	**OE-Style Flexible Fuel Line**	
1	**Nylon Suction Tube**	
2	**Tie Strap**	
1	**Washer**	
1	**Grommet Adapter** **(For Fuel Modules W/O In-Tank Fuel Pump)**	

INSTALLATION GUIDELINES!

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

1. Inventory the package components completely. Notify *PUREFLOW AIRDOG* (317-421-3180) 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. Be sure to drill the two additional ½" fuel ports in the basket as shown in this manual!

5. When installing the fuel lines, be sure to connect the ORIGINAL ENGINE RETURN LINE to the fuel module as it was from the factory when the installation is complete!

If any installation procedure is uncertain, contact
PUREFLOW® AIRDOG for technical assistance.

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 installation.

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.

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

PREPARATION FOR INSTALLATION

1-1. To access the fuel tank to install the upgrade kit, it is necessary to either drop the fuel tank or lift the bed.

CAUTION: If you are unsure of the proper procedure for removing the fuel tank or truck bed, consult your vehicle manufacturer's service manuals for detailed instructions.

NOTE: The tank in the pictures is for example only and may not be the same as your tank.

1-1a. Should you choose to pull the bed, make sure to disconnect the light wires, grounds, filler tube, and any other accessories or components that may be secured to the frame and bed. Properly support the truck bed to prevent serious injury or death and remove the bed.

Figure 1

1-1b. Should you decide to remove the tank, it is best to run the fuel level as low as possible to make the removal easier. If a transmission jack is used, be sure to have it securely strapped to avoid injury.

Figure 2

1-2. Once the top of the tank is accessible, thoroughly clean around the fuel module and lock ring to prevent debris from falling into the tank and contaminating the fuel.

1-3. Once the area is cleaned, use a large screwdriver and mallet to back the lock ring off the tank.

Figure 3

1-4. Disconnect the electrical plug and the factory supply and return lines. Now, remove the fuel module for modification. Take care to not damage your fuel level float.

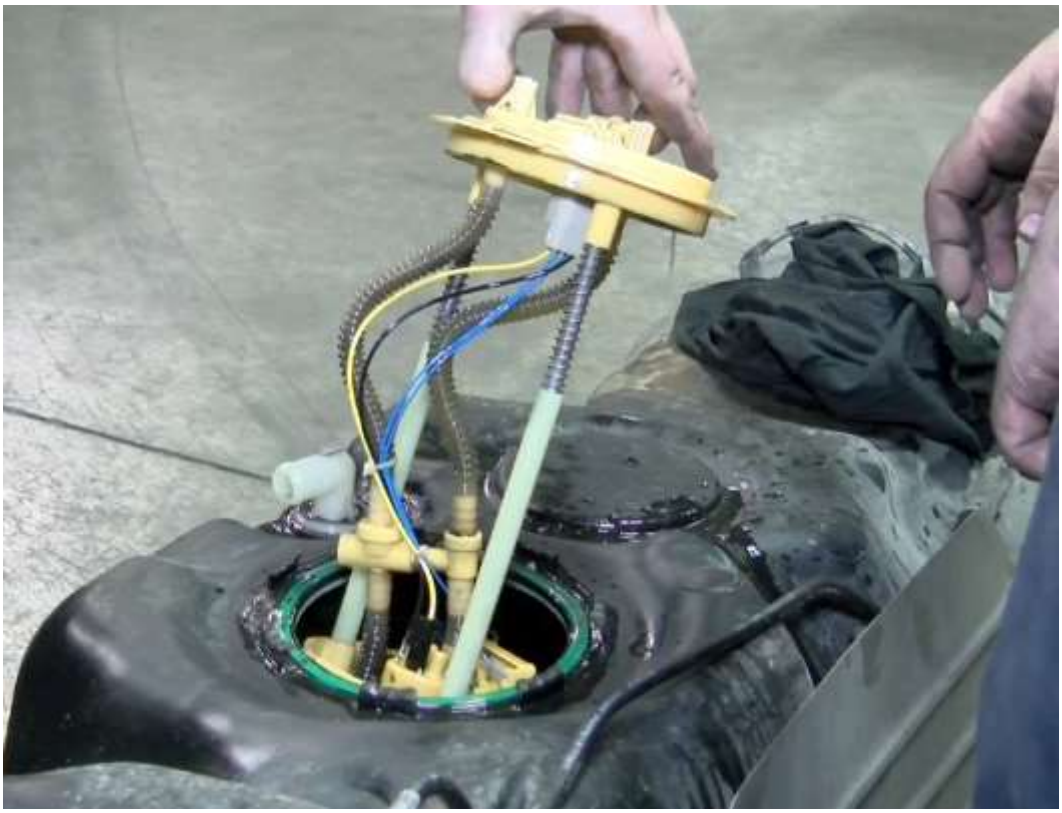

Figure 4

Depending on the year of your truck, you either have a fuel pump mounted on the engine block or in the fuel tank. If your truck has the engine mounted fuel pump, skip to section 4.

NOTE: The fuel module pictured in this section may not be exactly the same as yours.

2-1. Disconnect the power and ground wires from the pump in the fuel module basket (Figure 5). The power and ground wires can be cut from the top of the module as they are not to be used (Figure 6). **Be sure to not cut or damage the blue fuel sender wires!!!** Remove the cut wires from the basket.

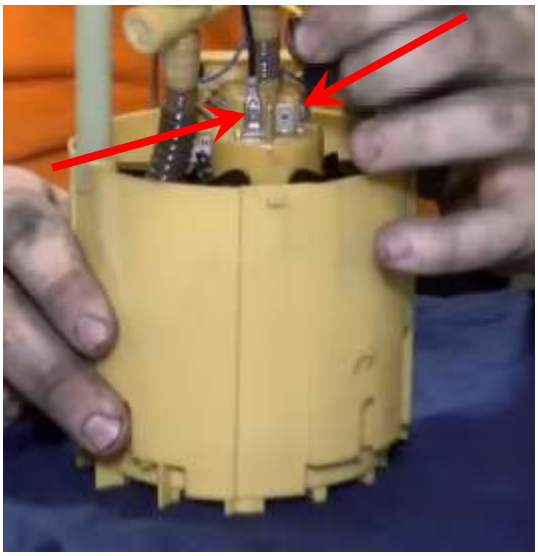

Figure 5

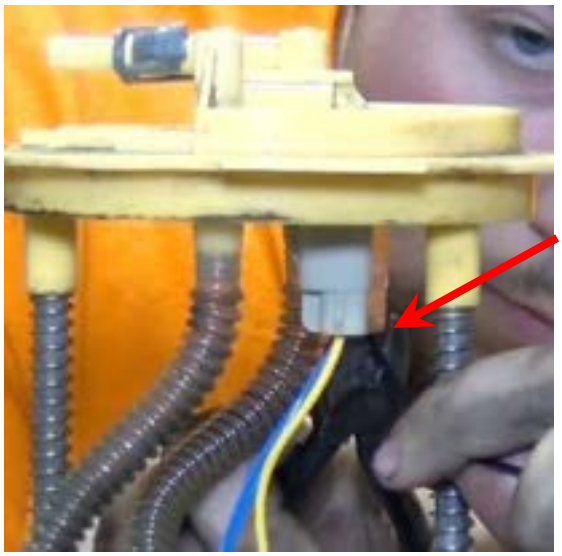

Figure 6

2-2. Trim the factory suction and return lines in the basket.

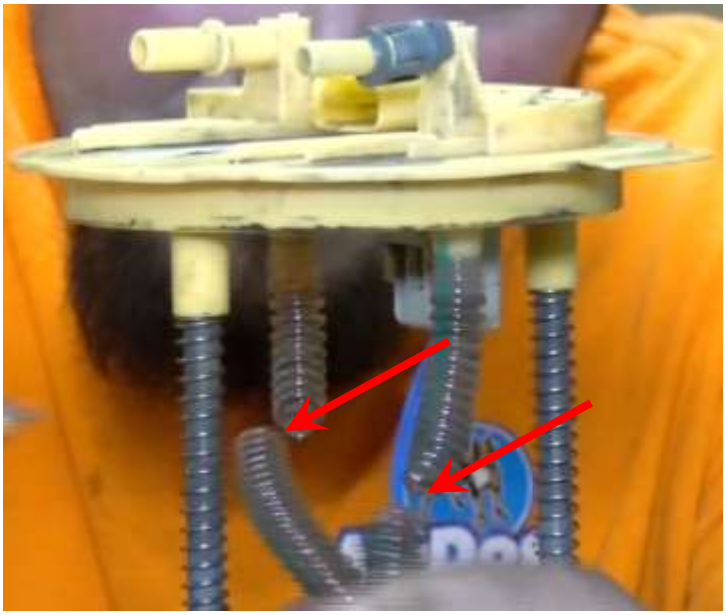

Figure 7

2-3. The factory fuel pump will need to be removed from the factory basket. This can be achieved by carefully unclipping it from the basket, or a pair of side cuts can be used to cut it out of the basket. Once the factory fuel pump is free, remove it from the module basket.

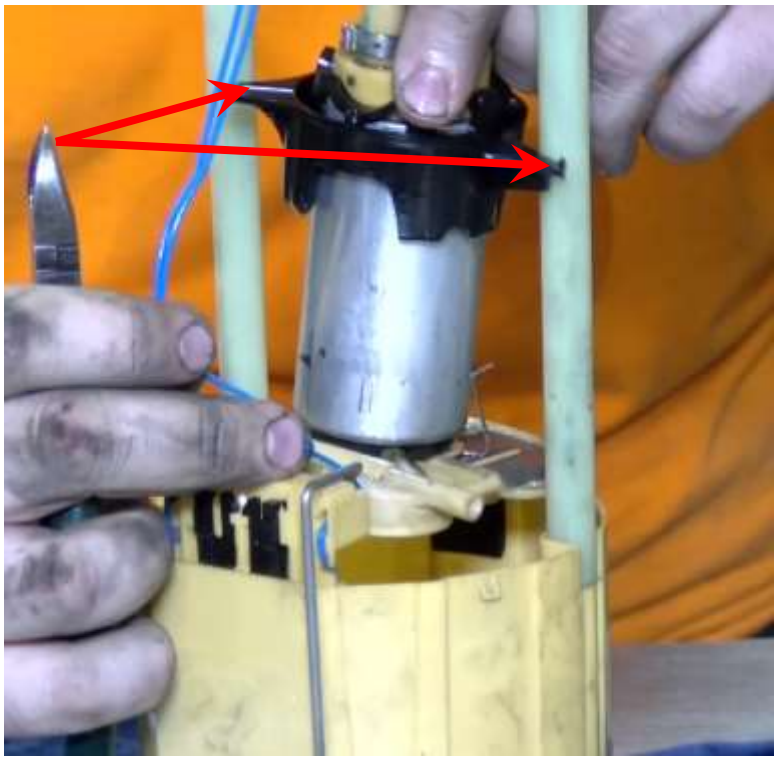

Figure 8

2-4. If your fuel module has a ribbed structure on top of it, it will need to be removed before the bulkhead fitting can be installed. An angle grinder with a cut off wheel works nicely. Be sure not to cut too deep and damage the basket top. Take all safety precautions when operating an angle grinder. Wear safety glasses.

Figure 9

Figure 10

2-5. Check the spacing on the bottom side of the top of the module to make sure the washer will clear for the spot you have chosen to drill a 5/8 hole for the bulkhead fitting. Now drill the 5/8 hole in the top of the basket (Figure 11). A step drill will help reduce the brittle plastic from breaking (Figure 12).

Figure 11

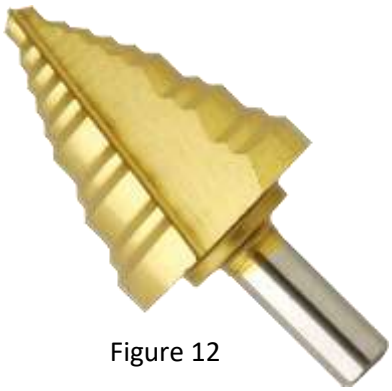

Figure 12

2-6. Now install the bulkhead fitting. Be sure the rubber sealing washer is between the fitting and the top of the basket. The washer and nylon nut go on the bottom side of the top of the basket. If you do not have enough space for the washer, the nut will be sufficient enough.

Figure 13

Figure 14

2-7. Now take the bracket and space it about mid-way up the basket, in a clear spot, as shown in figure 15 and mark where to drill two 3/16 mounting holes.

NOTE: The bracket on the outside of the basket is to mark where to drill the holes, ONLY. Be sure there is room to mount the bracket on the inside of the basket once the holes are drilled.

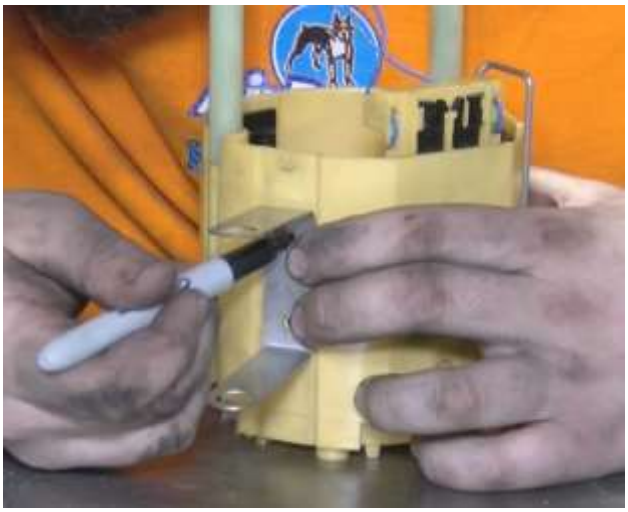

Figure 15

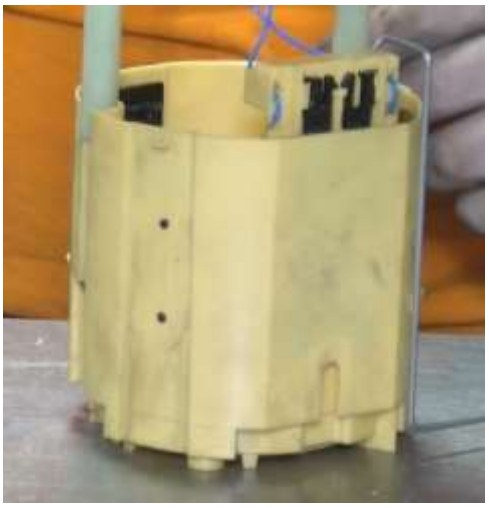

Figure 16

2-8. Drill the two holes and mount the bracket on the inside of the basket using the supplied machine screws and lock nuts.

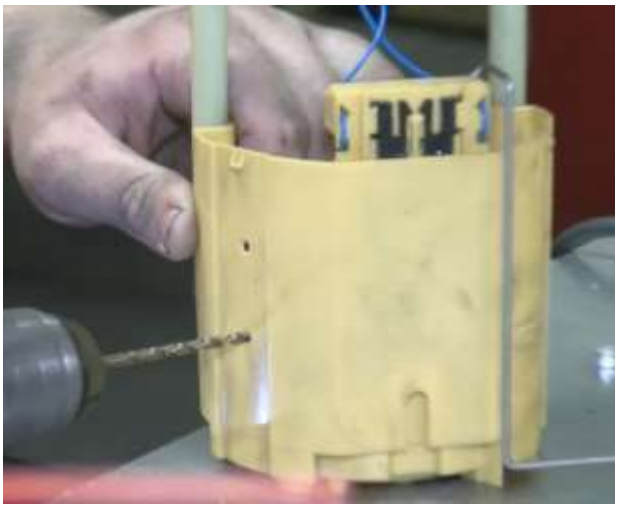

Figure 17

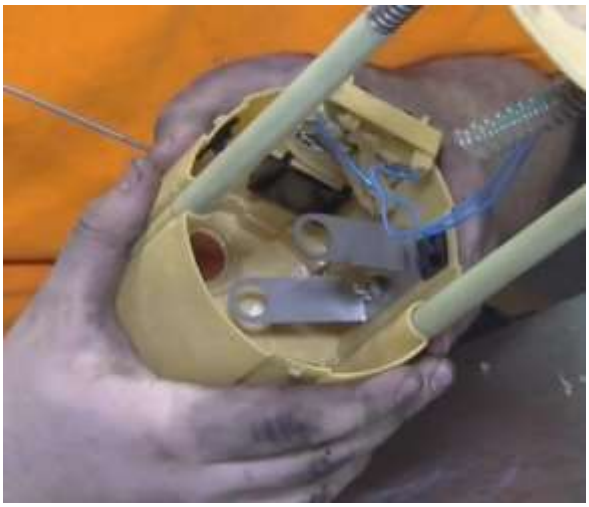

Figure 18

2-9. Next, the Flexible fuel line will be attached to the bulk head fitting. Start by placing two of the clamps over the flexible fuel line as pictured below.

Figure 19

2-10. Now you will install the flexible tube on the previously installed bulk head fitting. Once pressed on the fitting, move the clamps over the aluminum portion of the tube to securely fasten to the bulkhead fitting.

Figure 20

Figure 21

2-11. Next, you will need to trim the nylon suction tube. Set the nylon tube in the bracket in the basket with the angled end and mark where the tube will need to be cut.

Figure 22

2-12. Now cut the tube to length and reinstall in the bracket in the basket. Be sure the tube is burr free.

Figure 23

Figure 24

2-13. Now install 2 more of the clamps to the bottom of the flex line. Install the flex line over the nylon tube and move the clamps over the nylon tube to secure the flex line to the nylon tube.

Figure 25

Figure 26

2-14. Next, use the step bit to drill holes in the side and bottom of the fuel basket to allow the basket to fill with fuel. **Drill, at least, Six ½ inch holes in the bottom of the basket.** Again, use a step bit to help reduce the risk of breaking the basket. This step is very important! Failure to drill the holes will cause the basket to not fill fast enough for the AirDog/Raptor to pull enough fuel. Loss in fuel pressure will result at any fuel level below the basket.

Figure 27

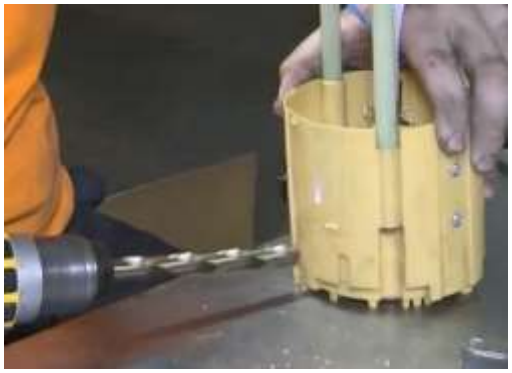
Figure 28

2-15. Clean out the module of all plastic shavings created from drilling the holes.

2-16. One final check. Compress the basket to make sure the flexible suction line does not kink shut when the line flexes. If everything looks good, continue to section 3. If the line kinks, refer to steps 2-11 to 2-13 and adjust the height of the hard straw.

3-1. Before re-installing the fuel module, be sure the top of the fuel tank is cleaned of all debris. Be sure the fuel module seal is seated in the groove as well. Refer to Figure 29.

Figure 29

3-2. Re-install the fuel module. Be sure the float is pointing in the right direction. There will be an indicator mark on the tank that will let you know the correct orientation of the tab on the module. Install the locking ring by a large flathead screwdriver and mallet. The Ring will go clockwise to install.

Figure 30

3-3. Now re-install the fuel tank or truck bed. Be sure to connect the factory engine return to the original fitting, connect the wiring, and connect the filler neck and vent. Continue with your AirDog or Raptor Instructions.

4-1. You'll need to remove the fuel tank or bed per step 1-1. The following steps are tips to get the fuel line connections and wiring harness connector off.

4-2. Disconnect the factory fuel lines by sqeezing the tabs while pulling the fittings away. You may need a pick and some brake clean to clear dirt and debris out of the clip to get them off.

Figure 31

4-3. Disconnect the wiring harness connector by sliding the red tab over to "unlock" the connector, then, press the tab while pulling the connector away.

Figure 32

4-4. Use a large flat-head screw driver and mallet to remove the plastic lock ring.

Figure 33

4-5. Remove the fuel module from the tank. Be sure to have a bucket ready to drain any fuel in that is in the module basket.

Figure 34

5-1. Remove the bottom of the fuel module by using a small flat head screw driver to pry the tabs up. Note: these fuel baskets are old and brittle. Take care not to crack the plastic.

Figure 35

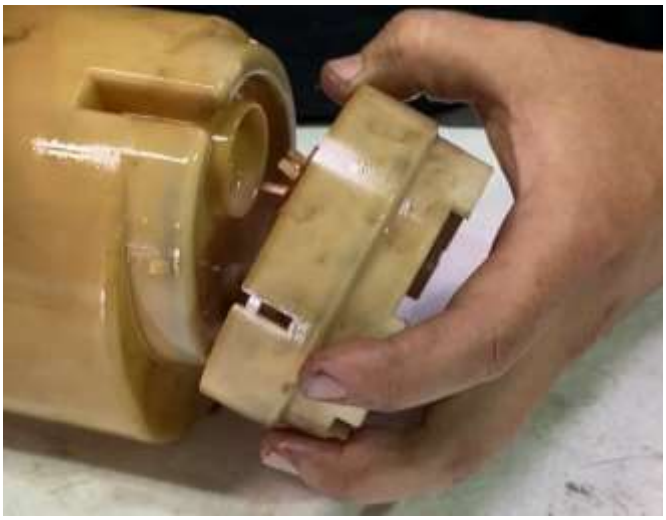

Figure 36

5-2. Cut out **all** of the mesh screen with a razor. Dispose of the screen.

Figure 37

Figure 38

5-3. The bracket that is included in the kit aligns with the hole that is in the bottom of the module when using the flat edge of the module.

Flat Edge

Figure 39

Figure 40

5-4. Doing your best to eyeball the alignment of the bracket to the hole, hold the bracket on the module and offset the bracket from the bottom of the module by 1-1.5in. Mark the mounting holes to be drilled. Using a 3/16" Drill bit, drill out the two marked holes.

Figure 41

Figure 42

5-5. Next, separate the top and bottom of the module by using three flat head screwdrivers to wedge the basket over the clips. Pull the basket apart. **Be sure not to damage the factory black nylon lines!!! Take care to not crack/break the basket. The plastic is old and brittle.**

Figure 43

Figure 44

5-6. Using the supplied hardware, install the bracket on the inside of the basket. You can bend the top tab of the bracket up to gain better access to the mounting hardware.

Figure 45

Figure 46

5-7. Feed the hard straw through the bracket and the bottom of the basket and re-install the bottom plate. Be sure the straw touches the bottom plate. Also, make sure the tapered end is pointing down.


Figure 47


Figure 48

5-8. If the straw does not align perfectly with the hole in the basket, you can use a step bit to open the hole up until it does fit. Wear safety glasses.


Figure 49

5-9. Mark the straw, with a sharpie, at where the straw protrudes through the top part of the bracket that was installed in step 5-6.


Figure 50

5-10. Now hold the flexible straw up to the hard straw and mark the hard straw, again, just before the corrugated portion of the straw starts. Cut the straw to length.

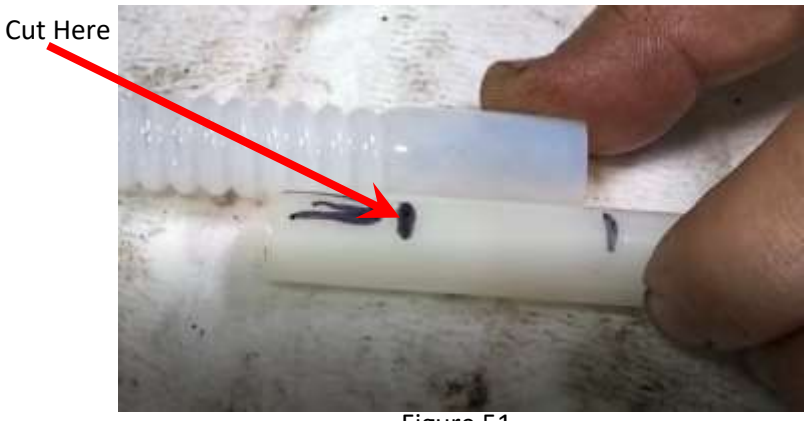

Figure 51


Figure 52

5-11. Reinstall the hard straw for the last time. Again, be sure the straw contacts the bottom plate portion of the basket as per step 5-7.

5-12. Before the flexible straw is installed, pre-install two clamps on each side of the straw. Make sure the clamps are on the corrugated portion and not on the smooth section. Offset the clamps 180deg to use less space and to get a more even clamping force.


Figure 53

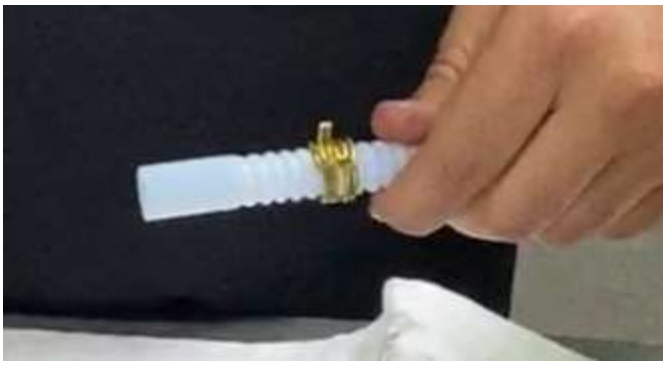
Figure 54

5-13. Install the flexible straw onto the hard straw and slide the clamps down over the smooth portion of the corrugated flexible straw.


Figure 55


Figure 56

5-14. While the basket is apart, you will need to drill a hole for the bulk head fitting. Pick a clear spot on top of the module to drill a 5/8" hole. Be sure there is enough room on the bottom side of the module, inside the ring, to add the washer and nut. Use a step bit to avoid damage to the module. Wear safety glasses.

Figure 57

Figure 58

5-15. Install the bulk head fitting. Make sure the rubber seal is between the module and the fitting. Install the washer on the bottom side and tighten the lock nut. Tighten until there is pressure on the rubber seal on top. Be sure the fitting is pointed in the direction you want for your installation.

Figure 59

5-16. **IMPORTANT STEP!** Drill one hole in the factory suction line. If this is for a Raptor installation, skip this step. This "factory suction line," will become the AirDog return. The factory line will have a check valve in it that that prevents fuel from bleeding back to the tank. This will not allow the AirDog return to flow any fuel. The hole will allow the fuel to flow as well as retain the spring action the line creates for the basket. **DO NOT CUT THE LINE IN TWO!!! The line acts as a "spring" for the basket to be forced to the bottom of the tank.**

Figure 60

5-17. **IMPORTANT STEP!!!** Drill, at least, **six** 1/2" holes in the bottom of the basket. The lower the holes, the better. Try and drill them in the bottom plate. Clean out all the plastic shavings. Wear safety glasses.

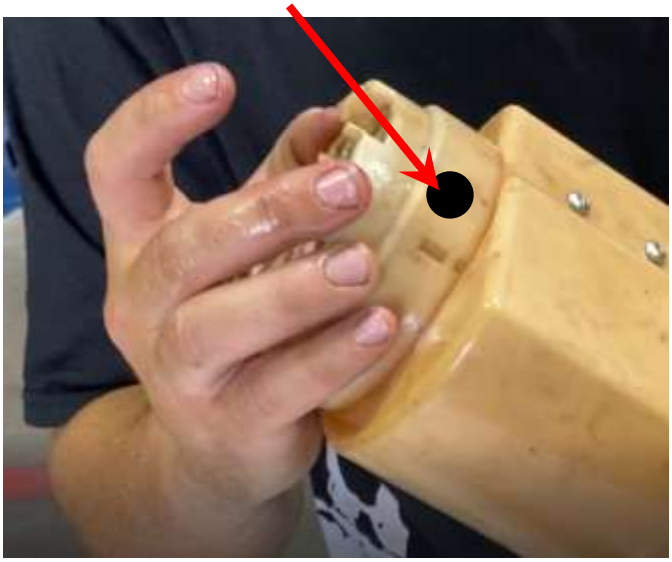

Figure 61

5-17. Re-assemble the basket the way it came apart. Be sure the Factory return line goes back into its slot.

Figure 62

5-18. Slide the straw over the bulk head fitting and slide the clamps up over the fitting to complete the modification.

Figure 63

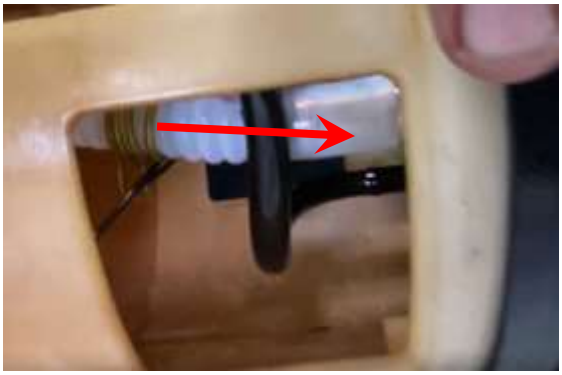

Figure 64

5-19. Lastly, compress the basket to make sure the straw does not “kink” during compression.

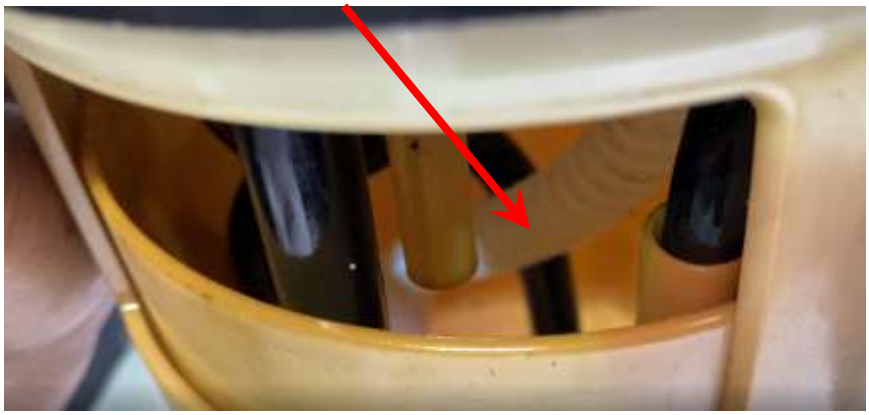

Figure 65

6-1. Before re-installing the fuel module, be sure the top of the fuel tank is cleaned of all debris. Be sure the fuel module seal is seated in the tank, as well.

6-2. Reinstall the module. Be sure the arrow on the module is aligned with the slots on the tank. Refer to Figure 66.

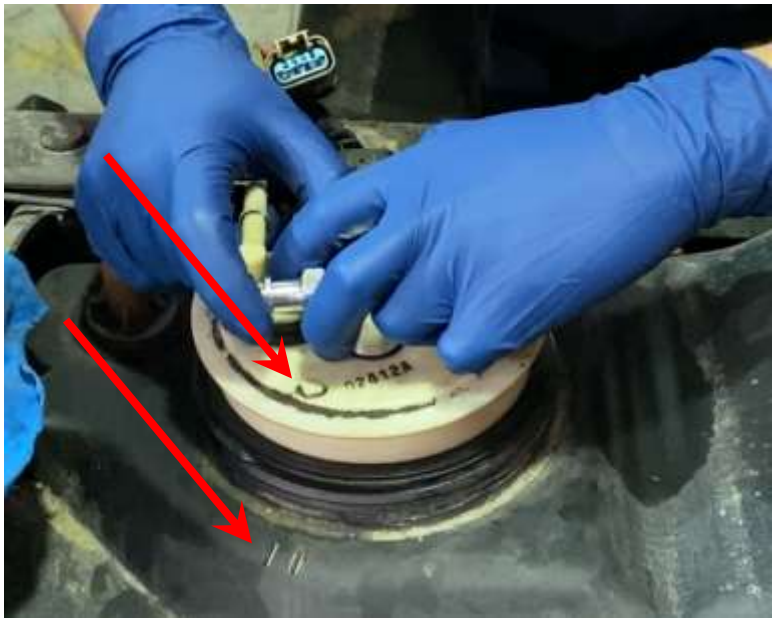

Figure 66

6-3. Install the locking ring and tighten it clock-wise. Be sure the arrow on the module is still aligned. Tighten with a large flat head screwdriver and a mallet.

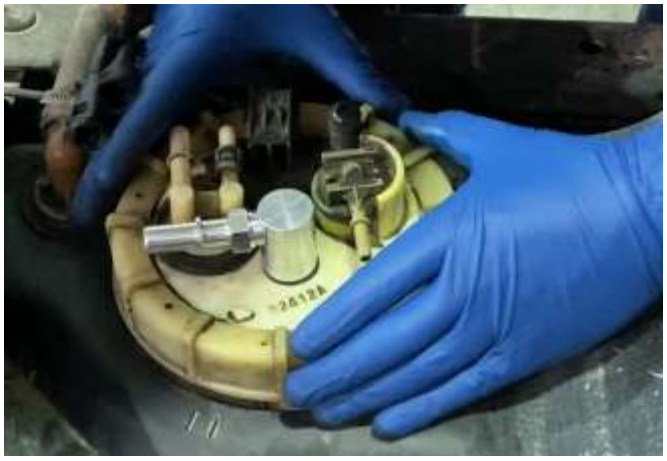

Figure 67

Figure 68

6-4. Reinstall the fuel tank in reverse order to when it was removed. Be sure to connect the factory engine return to the original fitting, connect the wiring, and connect the filler neck and vent. Continue with your AirDog or Raptor Instructions.