INSTALLATION MANUAL

#26

FOR 24 VALVE 5.9L CUMMINS POWERED

DODGE TRUCKS

1998 ½ THROUGH 2002

RAPTOR Fuel Pumps

MODEL RP-100 & RP-150

With New Quick Connect Components!

READ THESE INSTRUCTIONS THOROUGHLY
BEFORE BEGINNING INSTALLATION

Performance Fuel System Parts

AirDog FUEL PREPORATOR

RAPTOR Fuel Pumps

Wire Screen
Insert In Fuel Inlet
To Protect the Gerotor

Fuel Inlet
NOW
On Left Side

Adjustable
Regulator

OVERVIEW

Welcome to the **Raptor™ Fuel Pump**

The Raptor™ 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 15/18 PSI.

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

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

TYPICAL DODGE CUMMINS INSTALLATION LAYOUT!

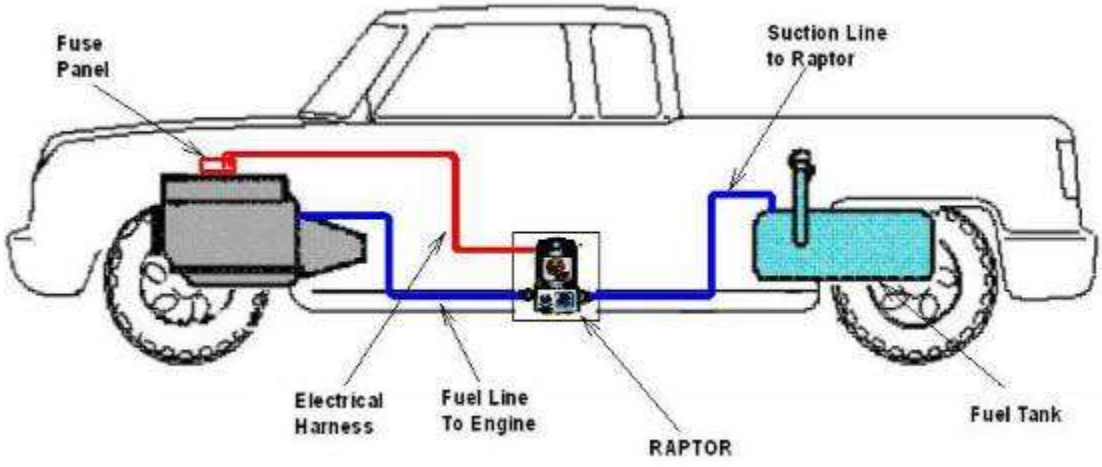


Figure 1

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 blue tabs on the female connector while you firmly pull the assembly apart.

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.
5. Should your vehicle be equipped with an in-tank fuel pump, you **must** bypass it in order for the Raptor**™** pump to work properly.

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.

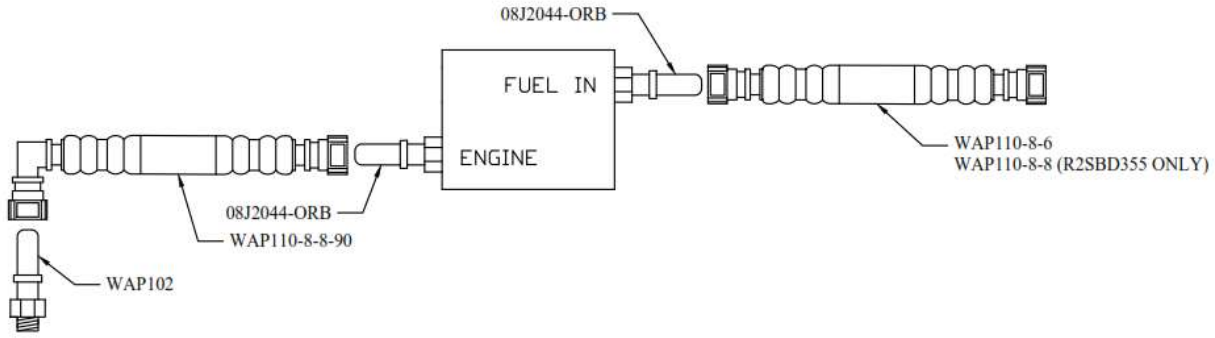
CAUTION: Use common sense when routing fuel lines and electrical harnesses. Keep them away from hot exhaust components and/or moving parts. Properly secure lines to prevent chaffing.

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

Parts List

QTY	DESCRIPTION	Part Number	IMAGE
1	**INSTALLATION MANUAL**	205-1-0109	
1	***RAPTOR*™ FUEL PUMP**	RP-100 or RP-150	
1	**Wiring Harness**	5E-2-013	
1	**Mounting Brackets**	010-3C-0002PC 010-3C-0001PC	
1	**Mounting Hardware Kit**	901-61-0102-PM-RP	
1	**Cable Ties**	5H-2-1-06/12	
1	**Spacer**	010-3C-0003-A-P	
1	**Suction Hose Assembly**	WAP110-8-6	
1	**Pressure Hose Assembly**	WAP110-8-8-90	
1	**Suction Hose Assembly(R2SBD355 only)**	WAP110-8-8	
1	**Customer Service Oring Replacement Kit**	901-05-0100	
2	**Push Lock Hose Splice**	001-4A-1-0026	
2	**1/2" Male QC x 3/4-16 ORB**	08J2044-3/4UNF	
1	**12mm X ½" Male SAE J2044 Quick Connect Fitting**	WAP 102	
1	**Sealing Washer (installs on WAP103 fitting)**	1P-5-DS	
1	**Fuel Module Up Grade Kit (R2SBD355 only)**	901-01-0510	

ILLUSTRATION OF QUICK CONNECT COMPONENTS



Section 4: 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".

Figure 2

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 or outside frame rail mounting. Mounting inside the frame (Fig. 4) will give more protection from road debris.

Figure 3

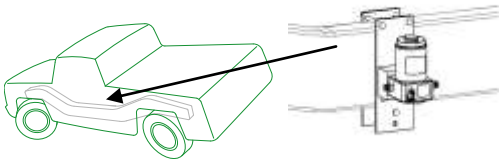


Figure 4

4-3. Assemble the Raptor™ to the mounting bracket as shown in Fig. 3 with the supplied allen head bolts. 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. Be sure to tighten pump and spacer to frame bracket before moving to step 4-4

4-4. Loose assemble the mounting bracket and pump assembly to the frame with the backing plate using the 4½" x 3/8" bolts, lock washers, and nuts. After satisfactorily positioning the bracket and pump assembly, properly torque the fasteners before mounting the brackets to the frame.

Figure 5

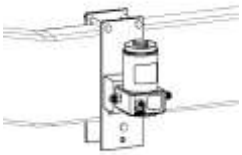


Figure 6

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.

Section 5A: Connecting the Raptor™ to the Filter Canister.

5A-1. Remove the Banjo Fitting and fuel supply line from the original factory fuel filter canister.

Fuel Filter Canister

1998.5 - 1999

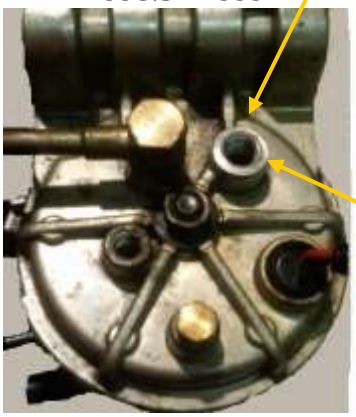


Figure 7

2000 - 2002

Figure 8

5A-2. Install the 12mm X ½" Male SAE J2044 Quick Connect Fitting with supplied seal washer into the inlet port on the fuel filter canister. Properly torque the fitting. Do not over tighten. The fitting could crack or break!

5A-3. Insert the female quick connect end (see figure 9) of the "Pressure Hose Assembly" into the male quick connect fitting previously installed in the port marked "OUT". You will hear a "click" when it connects.

Figure 9

5A-4. Connect the other end of the "Pressure Hose Assembly" (Figure 10) to the inlet fitting installed in step 5A-2. It will "click" when properly connected.

Figure 10

Connecting the Raptor™ to the Filter Canister/Filter Head, cont'd.

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.

Section 5B: Fuel Suction Line for Raptor

NOTE: If you purchased kit R2SBD355 (W/ In-tank pump), follow the instructions in the fuel module upgrade kit. Otherwise proceed to 5B-1

5B-1. Insert the female quick connect end (see figure 18) of the "Suction Hose Assembly" to the male fitting install in the fuel "IN" port during step 4-1 of this manual. A "click" will be heard when the fitting is properly connected.

Figure 18

5B-2. Remove the original fuel suction line Quick Connect fitting from fuel tank by squeezing the tabs on the end of the connector together. Consult factory manual if unsure.

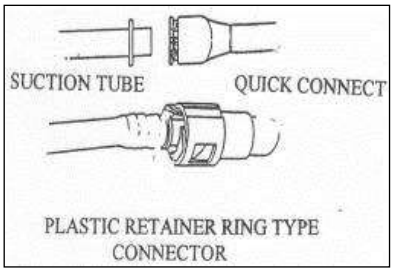
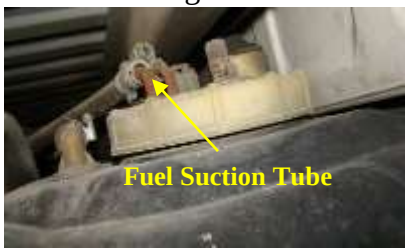


Figure 12



View From Beneath Bed

Figure 13

Figure 14

In More Detail

To release the quick-connect fitting from the fuel tank suction tube, push the fitting toward the suction tube while firmly holding the plastic retainer ring into the fitting. With the plastic ring firmly depressed, pull the fitting assembly from the suction tube. Use care to hold the retainer ring square to the Quick Connect Fitting body. It may be difficult to disconnect the fitting if the retainer is cocked or becomes cocked during removal.

Fuel Suction Line for Raptor Cont'd.

5B-3 **VERY IMPORTANT:** After removing the factory line check to make sure that the blue plastic retainer was removed with the line. If the blue retainer remained attached to the tank tube, it MUST be removed before the new fuel line Quick Connect will connect and seat to the tank suction tube.

5B-4. Attach the other end of the "Suction Hose Assembly" to the male quick connect on the top of the fuel module where the factory suction line was once located. A "click will be heard when the assembly is properly connected.

Figure 15

5B-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.

The *Raptor™ Fuel Pump* is equipped with a relay controlled wiring harness that is activated through the OE fuel pump connection.

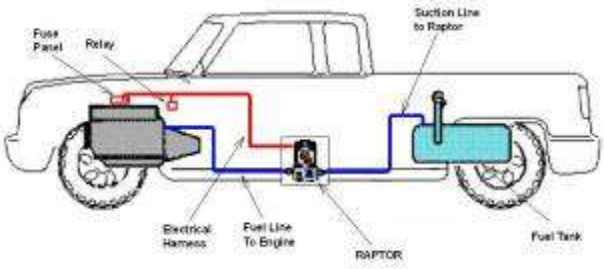


Figure 16

Securing the Relay and Fuse Holder to the Vehicle

6-1. Secure the relay and fuse holder to the vehicle on the firewall near the steering column or a more suitable location, if appropriate.

Figure 17

Figure 18

Connecting the Raptor™ to the ECM Lead

6-2. Disconnect the OE fuel pump lead at the ECM connector (Deutsch, two pin connector). Carefully route and connect the Raptor™ ECM lead (Deutsch, two pin Connector) to the ECM pump lead. **This lead can be found behind and below the stock filter canister in the same location as the stock pump.**

Figure 19

Figure 20

Figure 21

6-3. Route the wiring harness lead with the Deutsch Pump Lead to the Raptor™. Connect the pump lead on the wiring harness to the corresponding lead on the Raptor™.

Connecting the Raptor™ Power Supply Leads

NOTE: The "Hot Lead" & "Ground Wire" can be connected to either the Alternator, Figure 22 & 23; or the Battery, Figure 24.

Connecting the power supply leads to the alternator instead of the battery will create a corrosion free connection.

Green (-) Red (+)

Figure 22

Replace the Protective Cover

Figure 23

7-3. Route the Red & Green power supply leads to the alternator
Connect the Green (-) lead to the alternator *Chassis Ground* connection. Connect the Red (+) lead to the alternator *Hot Lead*.

6-5. To connect to the battery, connect the RED (+) lead to the POSITIVE (+) post of the driver's side battery. Connect the GREEN (-) lead to the NEGATIVE (-) post of the same battery.

Green (-) Red (+)

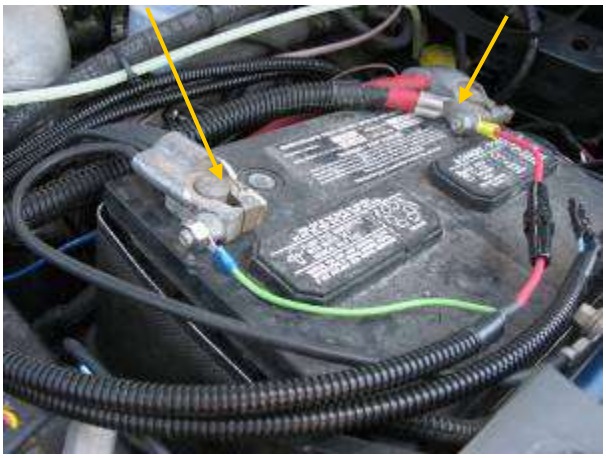


Figure 24

BE SURE TO PROPERLY SECURE THE WIRING HARNESS TO THE VEHICLE.

Initial Start Procedure.

Be sure that all debris or contaminants are cleaned from the fuel tank before starting.

7-1. Turn the starter key to the on/run position, this will cause the pump to run for 3-4sec. **NOTE:** It may be necessary to momentarily engage the starter for the ECM to energize the *Raptor™ Fuel Pump.*

7-2. While the ***Raptor™ Fuel Pump*** is on, bleed the fuel line to the filter canister by loosening the fuel line connection at the canister. 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.

7-3. Start engine!

Adjusting the Pressure Regulator

(Pressure should come pre-set at 15-17psi)

To adjust the fuel pressure, loosen the 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 regulator assembly base. If you do, tighten it immediately. When finished, properly torque the regulator adjustment screw lock nut! **Do NOT exceed 20psi on a VP44 injection pump.**

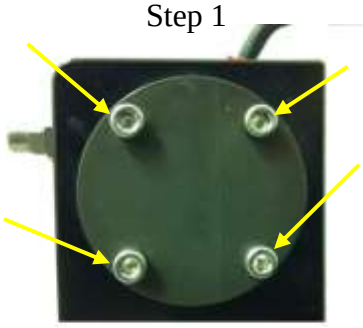
Properly tighten the adjustment screw ***Lock Nut*** when finished.

Figure 25

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.

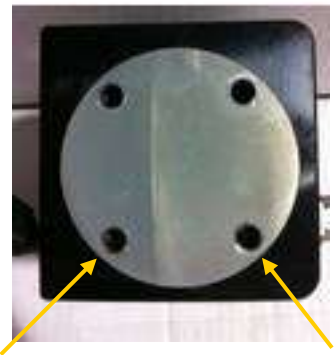
Step 5

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.