

## INSTALLATION INSTRUCTIONS

### PRODUCT: EARLY DODGE FUEL SYSTEM UPGRADE KIT WITH POWERFLO® LIFT PUMP

FPE-2019-31  
Revised May, 2024  
Page 1 of 14

**FITMENT:** 1998.5 – 2002 Dodge Cummins

**KIT P/N:** FPE-34754

**ESTIMATED INSTALLATION TIME:** 3-4 Hours – Installation completed with the use of a vehicle hoist

**TOOLS REQUIRED:** 1/4" drive ratchet, 1/4" drive 7mm socket, 1/2" drive impact or ratchet, 10, 13, 15, 17, and 21mm sockets, 11/16" and 13/16" wrench, large hammer, punch or chisel, strap wrench, needle nose pliers, diagonal cutters

#### KIT CONTENTS:

Item	Description	Qty
1	PowerFlo lift pump assembly with float arm	1
2	Donaldson 3 Micron Fuel Filter	1
3	Water-in-fuel (WIF) sensor	
4	Single filter base mount	1
5	Distribution filter block to filter coupler	1
6	-8 to 3/4"-16 straight fitting	2
7	3/4"-16 hex plug socket	1
8	M12 to -8AN fitting	1
9	-8, 45deg to hose barb fitting	3
10	-8, 120deg to hose barb fitting	1
11	1/8" NPT socket plugs	2
12	1/2" push lock hose	16 ft
13	12mm sealing washer	1
14	Fuel line retaining clip	1
15	Zip ties	10



#### WARNINGS:

- Ensure all fuel lines are clean immediately prior to installation.
- The purchaser and end user releases, indemnifies, discharges, and holds harmless Fleece Performance Engineering, Inc. from any and all claims, damages, causes of action, injuries, or expenses resulting from or relating to the use or installation of this product that is in violation of the terms and conditions on this page, the product disclaimer, and/or the product installation instructions. Fleece Performance Engineering, Inc. will not be liable for any direct, indirect, consequential, exemplary, punitive, statutory, or incidental damages or fines cause by the use or installation of this product.

## PUMP INSTALLATION PROCEDURE:

**STEP 1:** With the truck on a hoist, disconnect the fuel filler hose and vent with a 7 mm socket.



**STEP 2:** Reaching over the top side of the tank, disconnect the fuel lines and electrical connection for the OEM sending unit.



**STEP 3:** Remove the cross-member (if equipped) located at the front of the fuel tank. There will be four, 15mm bolts to remove. Some trucks will not have this cross-member.



**STEP 4:** Secure the tank with a lift or jack to lower the tank down to the ground on.



**STEP 5:** Remove 15 mm nuts that retain the fuel tank hanger brackets at the front and rear of the tank. Remove the hangers.



**STEP 6:** Slowly lower the tank.



## STEP 7: SENDING UNIT REMOVAL

With the tank on the ground, make note of the orientation of the OEM sending unit in the tank. The PowerFlo pump will be oriented in the same manner during installation.



Using a strap wrench, or hammer along with a chisel or drift, rotate the sending unit's retaining ring counterclockwise.



Remove the retaining ring and remove the sending unit assembly from the tank. Have a bucket nearby to catch fuel from the OE unit when removed.





**STEP 8:** Remove the original seal ring from the tank.



**STEP 9:** Install the new seal ring included in the kit into the fuel tank. Clean the original retaining ring of debris and prepare it for re-use onto the new PowerFlo pump.



**STEP 10:** Install the fuel level float arm onto the PowerFlo lift pump by gently clipping the arm into the fuel level sensor. With the pump resting on a flat surface, press down on the cap to simulate the installed position of the cap - move the float arm up and down and ensure that the arm does not contact the pump wires or fuel tubes in the full up or full down position. If the tubes or wires contact the float arm, this will affect the fuel gauge reading. Check and confirm clearance before installing.



**STEP 11:** Install the PowerFlo pump assembly into the tank. Check that the gasket is fully seated.



**STEP 12:** Ensure proper orientation of the pump and fitting by matching the orientation of the original sending unit.

Apply white lithium grease to the inside edge of the retaining ring where it contacts the lift pump cap. Reinstall the retaining ring and tighten using a hammer and punch or a strap wrench by rotating it clockwise to the fully engaged position.



*NOTE: Use caution when installing the pump to not damage the float arm. When tightening the retaining ring, DO NOT allow the pump cap to rotate once the pump is installed in the tank, you will damage the float arm or sending unit if the flange rotates when the retaining ring is tightened.*

**STEP 13:** Remove the protective shipping caps from the fittings and install the new fuel line locking tab that is included in your kit onto the return side fitting.



**STEP 14:** Lift the fuel tank into place. Re-install the two strap hangers that secure the tank with the two 15mm nuts. Install the center support with the 4, 15mm bolts that were removed.



**STEP 15:** With the tank mounted in place, access the top side of the tank from the rear wheel-well and make the fuel line connections at the sending unit.



**STEP 16:** ROUTE FLEECE HARNESS TO THE ENGINE BAY

Route the Fleece harness along the frame rails to the engine bay and battery. Route the harness in a manner that it will not interfere with any moving parts and retain it with zip ties. Mount or secure the relay in the engine bay.



**STEP 17:** BATTERY CONNECTIONS

Run the orange fused line to the positive (+) terminal of the battery. Run the black line to the negative (-) terminal of the battery.

*IMPORTANT: Never use a higher rated fuse than provided with the harness. If you experience a blown fuse always troubleshoot the problem before replacing the fuse. A blown fuse can be an indication of a short to ground in the harness, the relay, or inside the pump assembly.*





## STEP 18: SWITCHED POWER

Connect the switched power lead for the PowerFlo pump to the OE pump signal line, located near the starter.

**\*\*NOTE – If the control signal for the PowerFlo is wired to an ignition source instead of the OE signal line from the ECU you may encounter hard start issues.**



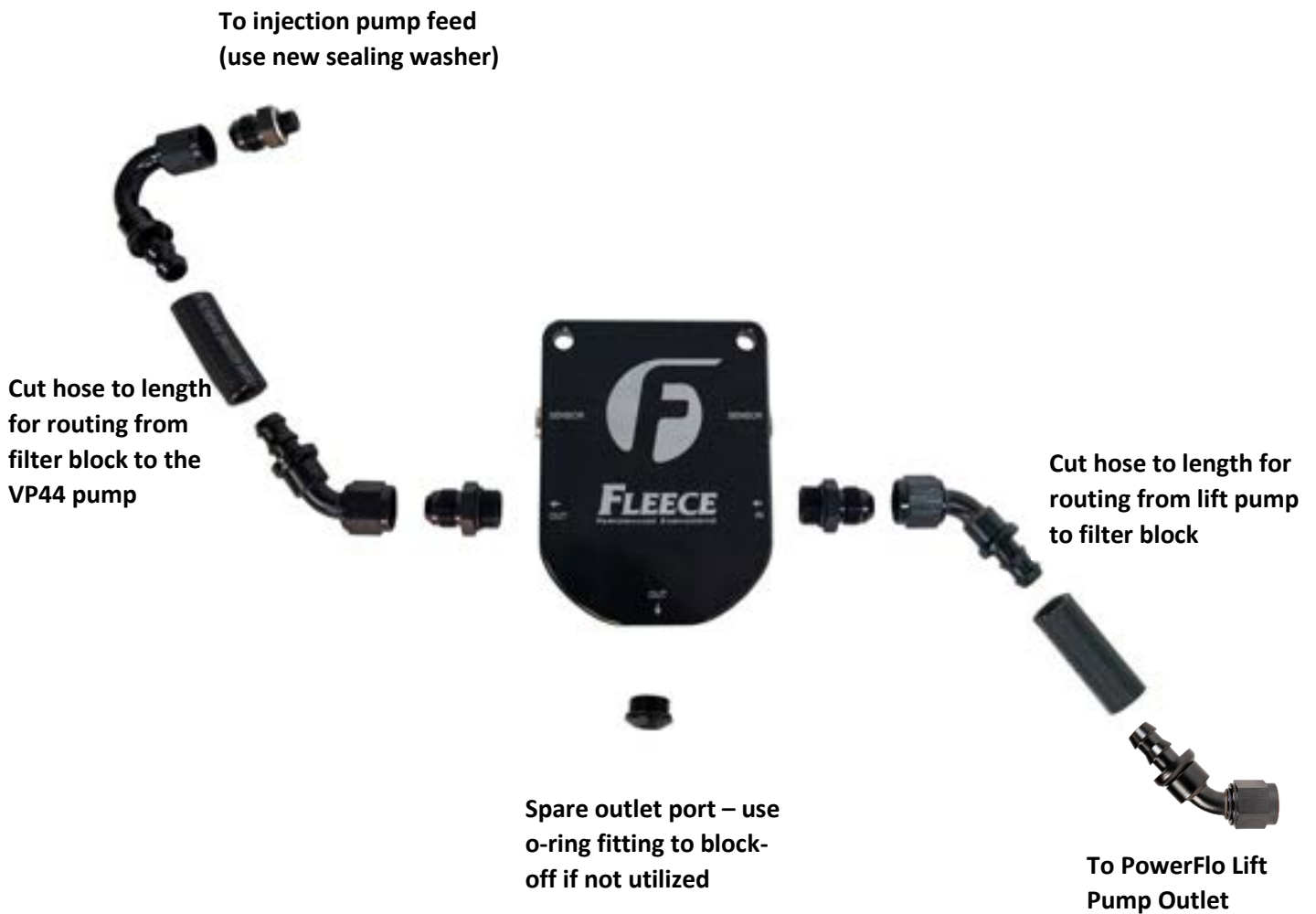
**STEP 19:** From the driver's side rear wheel-well, connect the electrical wiring harness to the PowerFlo lift pump connector.



**STEP 20:** Add sufficient fuel back into the tank to submerge the pump bucket.

**CAUTION:** *Never run the pump dry or without fuel in the tank, damage will occur to the pump.*

## FILTER BLOCK AND PLUMBING:



## FILTER BLOCK AND PLUMBING INSTRUCTIONS:

**STEP 1:** Using an 11mm socket, loosen the hose clamp on the charge tube shown circled at right. Use a 10mm socket to remove the four bolts retaining the intake horn as well as the bolt retaining the oil dipstick. Remove the intake horn.

**STEP 2:** Using a 13mm socket, remove the three bolts retaining the APPS module on the front driver's side corner of the engine. Place the APPS module to the side.

**STEP 3:** Using a 17mm socket, remove the banjo bolt connecting the fuel feed line from the fuel bowl to the VP44.

**STEP 4:** Locate the OE fuel bowl on the driver's side of the engine block. Disconnect the water in fuel (WIF) sensor and the fuel heater connectors.

*NOTE: This kit does not include a provision for the fuel heater. You will need to wrap the fuel heater connector in electrical tape.*





**STEP 5:** Disconnect the fuel feed line on the rear-facing side of the fuel bowl. Use a rag to capture any spilled fuel. Using a 10mm socket or wrench, remove the two bolts retaining the fuel bowl to the engine block. Remove the fuel bowl.

*NOTE: The two bolts removed from the fuel bowl mount will be reused when mounting the Fleece Performance filter base.*



**STEP 6:** Place the 12mm sealing washer on the M12 threaded side of the M12 to -8 AN adapter and install into the feed port on the VP44. Use a 21mm socket or wrench to tighten the fitting.

*NOTE: Ensure that the original sealing washer has been removed*



**STEP 7:** Remove the original fuel line and route the new fuel line from the lift pump to the filter block housing. Retain the fuel line to the chassis using zip ties. Avoid routing the line near moving components.

**STEP 8:** Install the two -8 AN to 3/16"-18 fittings onto the new Fleece Performance fuel filter base using a 13/16" socket or wrench. Install the included o-ring plug into the spare outlet port.





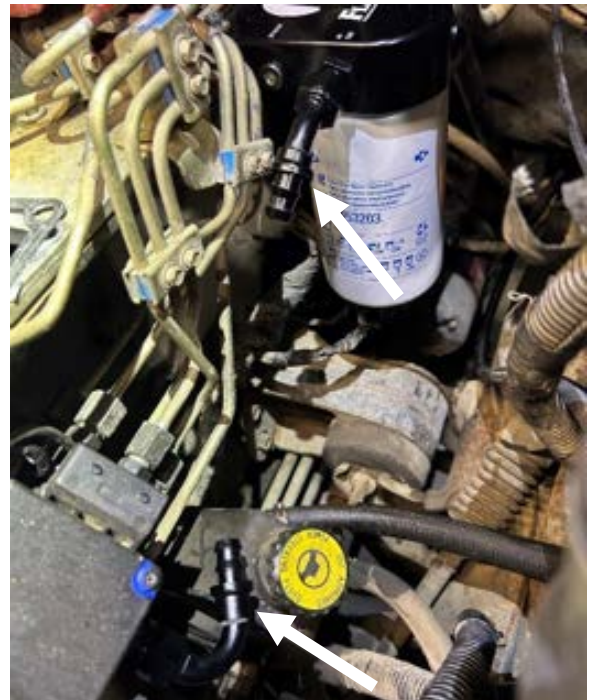
**STEP 9:** Install the filter O-ring onto the filter base threaded snout. Remove the water drain plug on the bottom of the filter and install the included WIF sensor onto the filter by screwing it into the end as shown at right.



**STEP 10:** Using the two 10mm bolts removed from the OE fuel bowl, mount the new filter base. Install the fuel feed line running from the lift pump on the rear-facing side of the filter base. Reconnect the WIF sensor plug.



**STEP 11:** Install the 120-degree pushlock fitting onto the adapter previously installed on the VP44. Install the 45-degree pushlock fitting onto the "OUT" port on the front side of the new fuel filter housing.



**STEP 12:** Measure and cut the remaining hose to the length needed. Route the fuel hose from the filter block to the VP44 as seen at right.

**STEP 13:** Reinstall the intake horn, APPS, and oil dipstick. Reconnect the charge tube to the intake horn.

**STEP 9:** Bleed and prime the fuel system. Start the vehicle and check for leaks.

