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2005-2012 Dodge Lift Pump Kit Installation Instructions




165 GPH – 15 psi





2005-2012


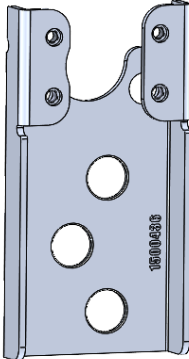


1050333




PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLATION

Kit Contents

1500431-15	1500307	1500311
		
<p><i>Venom Lift Pump; Assembled</i> Qty: 1</p>	<p><i>Wiring Harness 2005-2012 Dodge</i> Qty: 1</p>	<p><i>-AN 8 ORB x 3/8" Barb</i> Qty: 2</p>

1505001	1500428	1604053	1330175
			
<p><i>Hose Clamp</i> Qty: 5</p>	<p><i>3/8" Quick Connect Male</i> Qty: 2</p>	<p><i>3/8" Fuel Hose</i> Qty: 150"</p>	<p><i>5/8" ID Protective Loom</i> Qty: 126"</p>

FT-0141716	1500436	1500391	1500333
			
<p><i>Bolt; M6x1 - 90mm SHCS</i> Qty: 4</p>	<p><i>Bracket; Pump</i> Qty: 1</p>	<p><i>Mount Strap 21.5"</i> Qty: 2</p>	<p><i>Frame Bracket; 2.50"</i> Qty: 1</p>

1500356	1300529	1300131
		
<i>Vibration Isolator</i> Qty: 3	<i>Self-Tapping Screw</i> Qty: 1	<i>Tie Wrap</i> Qty: 12





1900015	1402609	1500359	1500357
			
<i>Flange M8 x 30mm Bolt</i> Qty: 3	<i>M8 Flat Washer</i> Qty: 3	<i>Self-Threading 3/8" Bolt</i> Qty: 3	<i>3/8" Flat Washer</i> Qty: 3

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Introduction

The BD Diesel Venom fuel lift pump is a high-performance upgrade for your trucks fuel system that eliminates the factory fuel limitation. This lift pump can supply up to 165 gph of fuel, enough to support 900 horsepower.

The Venom pump is built in-house and uses ball bearings to reduce the parasitic drag within the pump allowing the pump to operate efficiently and quietly. A fuel pressure regulating diaphragm is used to improve fuel pressure regulation, allowing for more consistent fuel pressure and maximizing flow. Military grade type III hard coating is applied to the pump body to maximize durability. The Venom lift pumps are a high longevity gerotor design which results in low noise and high reliability.

Installing this kit is now easier thanks to the supplied quick connect fuel fittings which eliminate cutting the factory steel lines. This kit comes with 3/8" fuel line and fittings to connect to the factory system. See the next page for a list of optional accessories that can be used to get even more from your fuel system including 1/2" fuel line, draw straws, fuel bowl deletes, etc.



GEROTOR DESIGN

Tools Required for Installation

Required Tools

- Knife to cut fuel hose
- 5/16", 7/16", 9/16" and 10mm sockets
- Ratchet wrench
- Flat Screwdriver
- 3/8" fuel line disconnect tool
- 5mm Allen wrench

Optional Tools

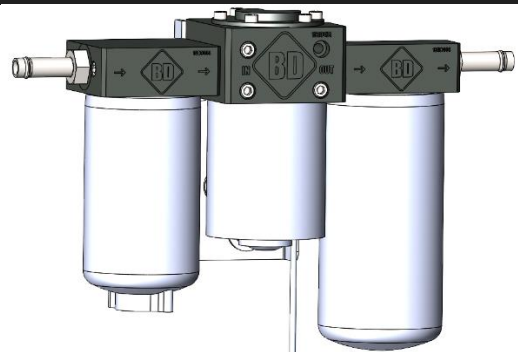
- Tape Measure
- 1/8" and 21/64" Drill Bits
- Drill
- Pliers
- 90-degree pick tool

Assembled Dimensions

Final assembled dimensions are

13.75" wide x 9" tall x 3.375" deep
(With fittings)

10" wide x 9" tall x 3.375" deep
(Without fittings)



Optional Accessories

1050346 Fuel Heater Kit 12V 320W

Self-regulating 320W heater designed to prevent cold weather gelling of your fuel system with PTC heating element. Sandwiched between the water separator, pre-filter and/or the filter head.



1050330 High Flow Sump Kit

This kit installs in the bottom of the fuel tank to reduce restriction on the supply line. Kit can be installed without dropping the tank. Includes a screen to keep debris from entering the fuel line.



1050331 Monster 1/2" Line Kit

Replaces the stock 3/8" line with 1/2" all the way from the tank to the engine. Includes fittings for the Venom pump and the CP3 as well as fuel hose and clamps. Requires use of sump or draw straw kit. Bypasses stock filters.



1050351 Water in Fuel Sensor

Relocates the stock WIF sensor from the fuel bowl on the engine to the Venom water separator. Includes extension harness with built in resistor and new sensor that threads into bottom of the new filter. Requires 1050340-WSP. Use with fuel bowl deletes.



Installation

Disconnect both vehicle batteries for safety. Raise the vehicle on a hoist, or support the vehicle with jack stands for safety.

Fuel Tank Modification

Note: It is recommended to wait to begin installation when the fuel tank is almost empty or to siphon the tank down to reduce the weight to make it easier to remove.

Note: Removing the rear driveshaft makes fuel tank removal and future installation steps easier but is not explicitly required

Support the fuel tank with a transmission jack or similar tool and remove the two fuel tank strap nuts.



With the tank loose, reach up on top of the tank and un-clip and remove the factory fuel line quick connects. Lower the fuel tank.



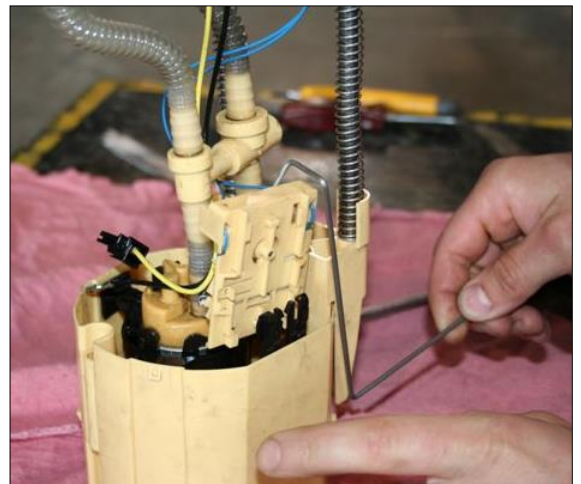
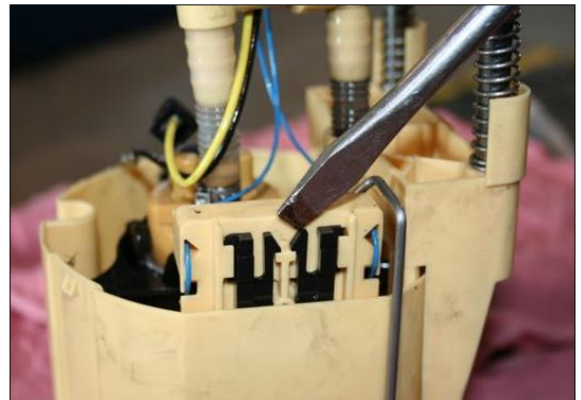
Using a punch and hammer, hit the lock ring in a counter clockwise direction as viewed from the top. Continue until the lock ring can be removed.



Remove the factory pickup can/basket from the top of the tank.



With a flat head screw driver, release the two locking clips that secure the float. With the float out, you should have more room to work with.





With a sharp knife cut the plastic tube to release the hose off of the O.E. hose barb. Take caution to not cut into the plastic barb while doing this.

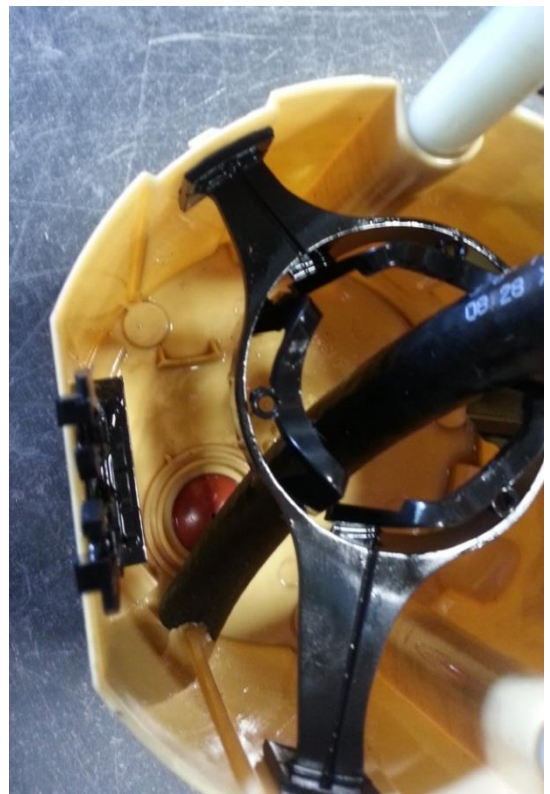
DO NOT CUT INTO THE PLASTIC BARB.



Cut a 7" section of 3/8" fuel hose and carve a v-notch into the base of it using a razor blade or similar.



Remove the power and ground wires leading to the O.E. supply pump and remove supply pump from basket. Several small picks or Allen keys may be used to retain the locking tabs out of the way.



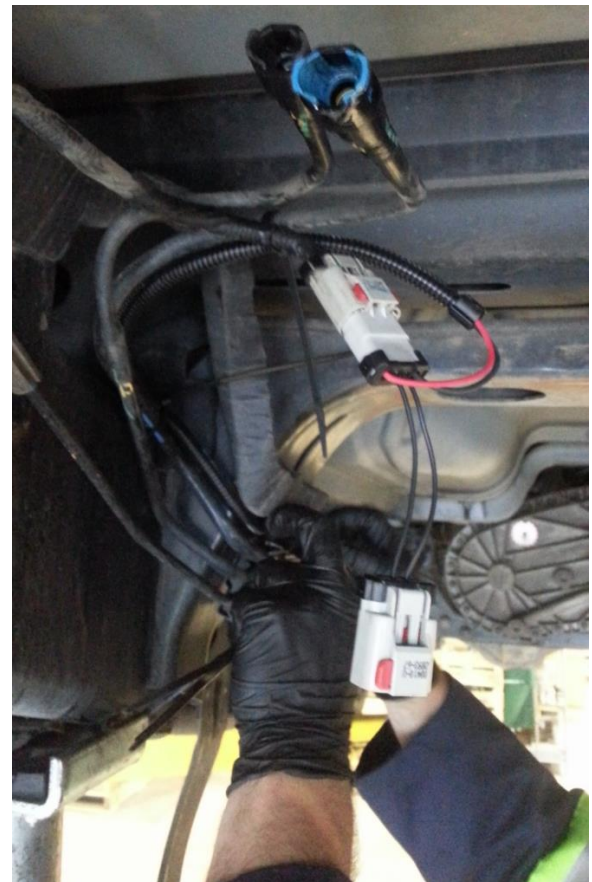
Slip the hose onto the O.E. hose barb with the notched end into the bowl and secure using the supplied hose clamp.

Ensure the hose inlet is not obstructed and secure the hose to the original supply pump frame using zip-ties or similar.



Re-attach the float. Drop the modified basket into the fuel tank and secure with the locking ring.

Plug in pump wiring harness and zip tie out of the way. Let pickup plug hang until fuel tank is lifted as seen in photo.



Venom Pump Mounting

Find a suitable place to mount the bracket to the inside of the frame; closest to the fuel tank. Avoid mounting where the bracket could rub on fuel lines, brake lines and cables.

Note: Center hole is to be positioned to the left.



Position the fuel pump bracket under the band straps. Orient the straps so that the threaded stud end is on the top to make tightening easier.

Start the nuts by hand and tighten the band straps until the bracket is snug. Ensure that the straps rest nicely on the bracket. Torque the band straps to **80 in-lbs**.



Insert the three vibration isolators in through the back side of the pump bracket and mount to the frame bracket using the M8 bolts and washers.

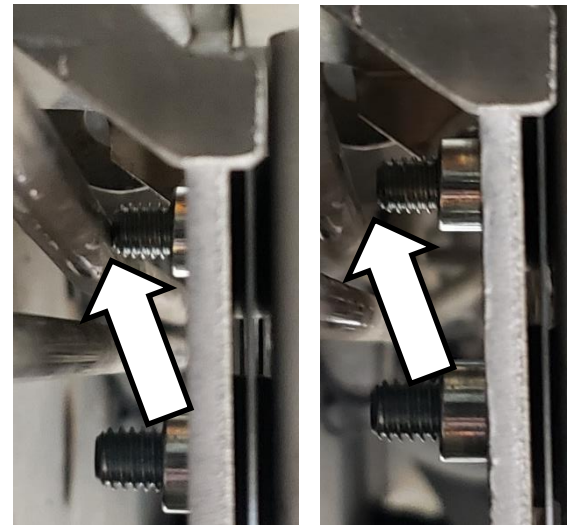
Tighten the supplied M8 bolts through each vibration isolator of the support bracket and into mounting bracket (PEM) nut.

Torque the three bolts to **12 ft-lbs.**



Once the bolts are installed, check the bracket to ensure that the bolts do not rub on any hoses/wiring.

If the bolts are in contact, gently reposition the lines/wiring to create clearance and prevent wear.



Screw in the 3/8" barb fitting onto either end of the pump.

Mount the Pump to the bracket using the four M6 bolts. Torque the four bolts to **8 ft-lbs.**



Mounting Option 2 - Mounting Directly to the Frame

Place fuel pump and bracket in place to ensure ample clearance. Then, use the fuel pump bracket as a template and mark the locations to be drilled.

Mark holes with center punch. Drill pilot holes to 1/8". Drill main holes to 21/64". Insert the three rubber isolators into the support bracket.

Place the large washers on the inside of the bracket against the rubber isolator.

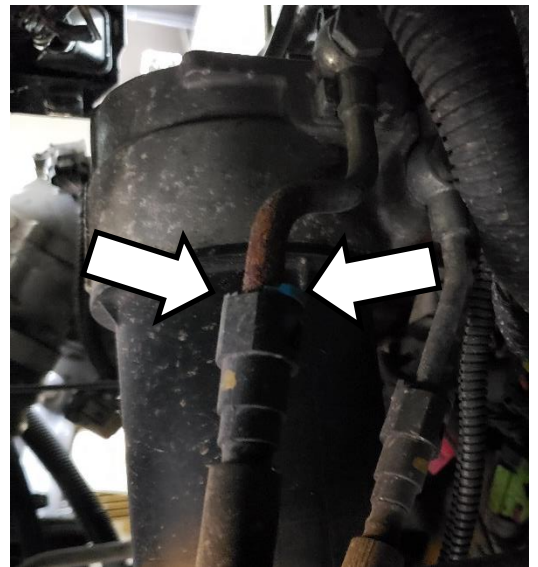
Using an air ratchet with a 9/16" socket tighten the self-threading 3/8" bolt through each hole in the support bracket assembly and into the frame. Repeat this step for the other 2 bolts.

Torque the three bolts to **25 ft-lbs.**

Fuel Line Routing

Locate the stock fuel line disconnect on the rear side of the factory fuel filter assembly. Position a drain pan below to catch any spills.

Press inwards on the quick connect fitting to release it from the factory line and remove by pulling downwards.



Prior to install in the truck, wrap the fuel line in the provided 3/4" loom.



Route the 3/8" Fuel hose along the frame rail down to the approximate mounting location of the Venom pump. DO NOT CUT HOSE AT THIS TIME.

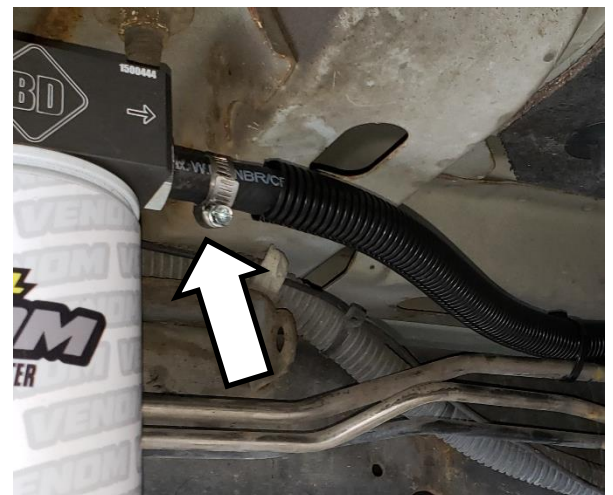


Insert a 3/8" quick connect fitting into the hose and secure using a hose clamp.

Install the quick connect fuel line fitting onto the factory quick connect line on the fuel filter housing.



Connect the other end of the hose to the 3/8" hose barb installed in the Venom pump using a hose clamp.



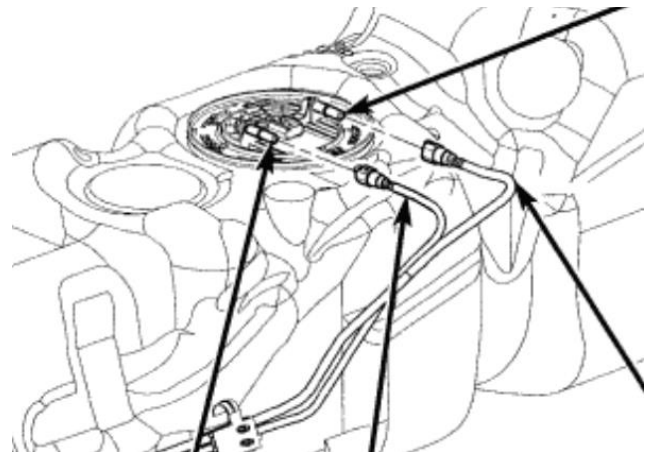
Install one end of the hose on the 3/8" hose barb using a hose clamp. Install the 3/8" quick connect fitting into the other end of the hose using a hose clamp so it is ready for install onto the tank.

Fish the other end of the hose over the top of the fuel tank, so that the hose crosses the frame rail as shown.



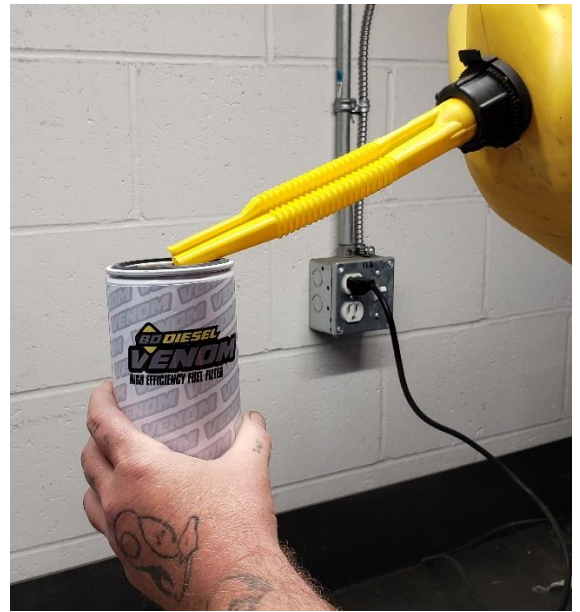
Lift the fuel tank back into the truck using the lift. Re-attach the factory quick connect fuel return line and connect the supplied 3/8" quick connect fitting to the supply line.

Ensure the wiring harness is connected to the pickup before the tank is lifted all of the way. Reconnect the filler neck and breather. Secure the tank using the factory support straps.



All of the fuel line routing should be complete. Make certain that all fuel lines and wiring harness' are fixed in place. Check the lines are adequately supported. Ensure no fuel hose or wiring is exposed to possible chafing.

To help with priming the lift pump, fill each filter with diesel and install into the pump.



Installation of kit should now be complete. Reconnect the batteries and test the pump for operation.

With everything reconnected, cycle the ignition to "ON" several times before attempting to start the vehicle. This primes the fuel pump which should purge some air out of the system. Once cycled several times, the vehicle can be started. With the key in the on position, you should hear the pump running.

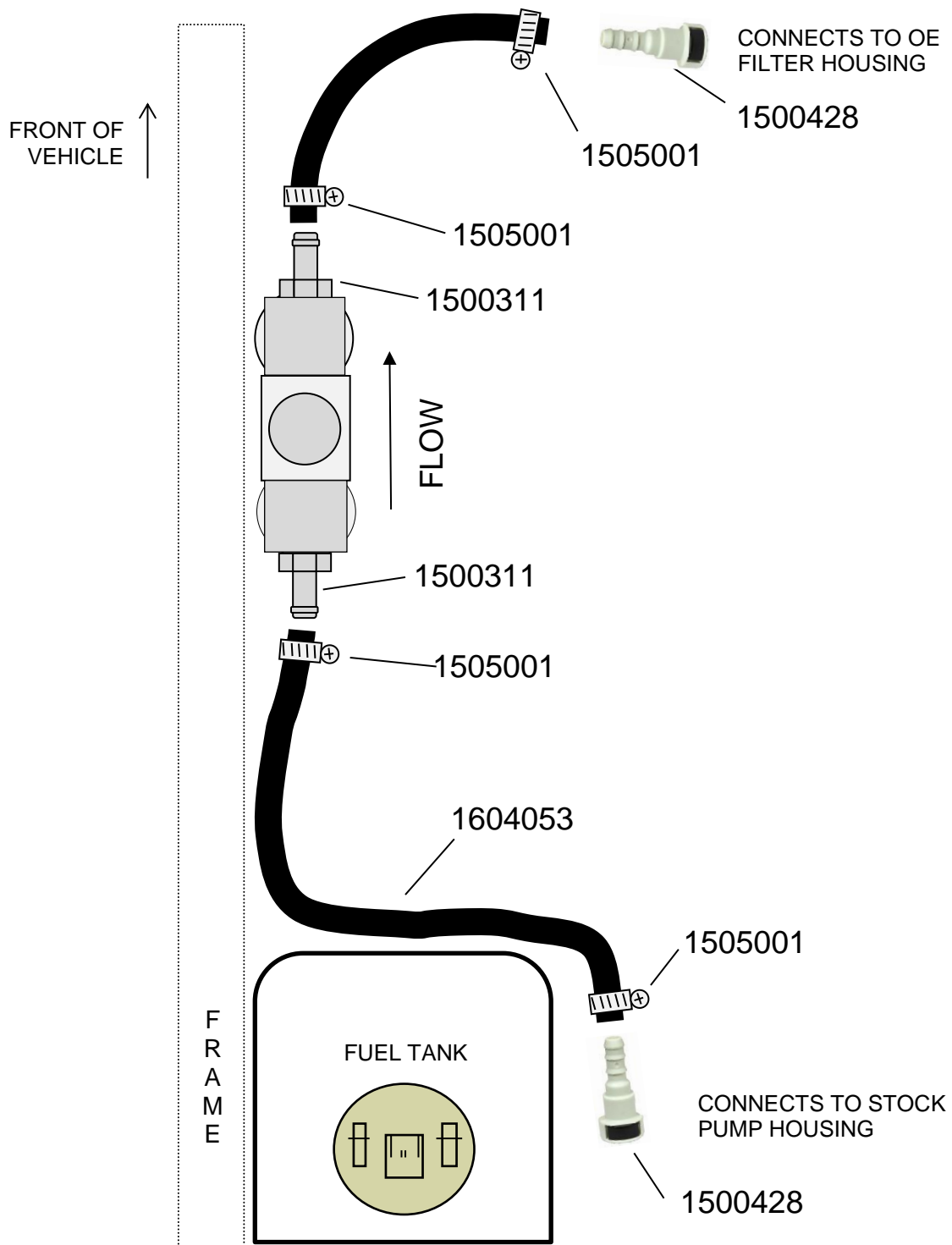
Start the vehicle and allow it to run for several minutes and check for leaks at all connections.

If the pump motor does not run or there is a pressure or supply issue, refer to the end of the manual for troubleshooting.

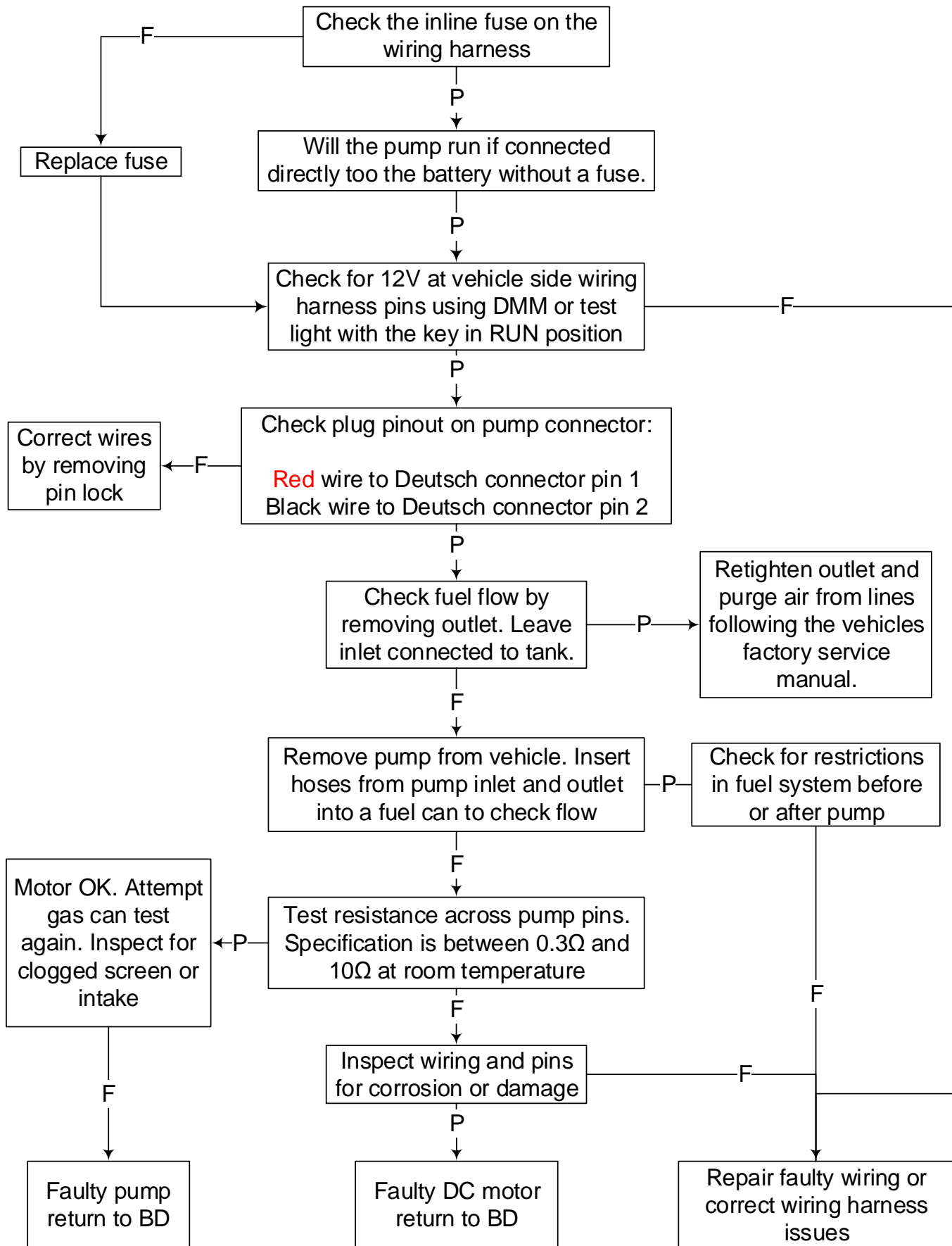
Flow Specifications

- Flowrate should be MINIMUM 2.75 GPM (165GPH) @ 14VDC
OR
- Filling a 1-gallon container every 22 seconds @ 14VDC
- Expected Idle pressure 15-18 psi
- Minimum 8 psi @ Wide open throttle

Fuel Line Routing



Trouble Shooting



Update a Flowmax Pump to a Venom Pump



Replacement Center Section

If the center section needs to be replaced, a **1500430-15** may be ordered as a replacement. Contact BD Diesel for more details.



Replacement Filter Cross Reference

The Venom Lift Pump kit is supplied with a water separator and fuel filter combo. The replacement filter parts through BD are listed below with equivalents.

Water Separator		Fuel Filter	
BD Diesel	P550550-VEN	BD Diesel	P551315-VEN
Donaldson	P550550	Donaldson	P551315
Baldwin	BF1275	Baldwin	BF7634
WIX	33616	WIX	33626
Luber-Finer	LFF9594	Luber-Finer	LFF4783