



**DOWNLOAD THE LATEST
INSTALL MANUALS AT
www.bddiesel.com**




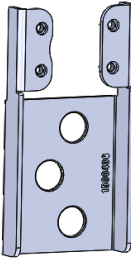
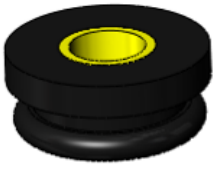
2008-2010 Ford 6.4L PowerStroke Venom Lift Pump Kit

1050319




2008-2010 Ford 6.4L Venom Lift Pump





PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLATION



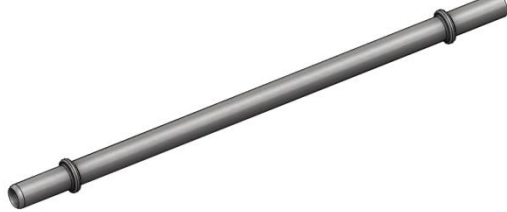
Kit Contents

	1500436	1500356
		
Venom Pump Assembly – Updated w/ WIF sensor, filter, and adapters	Mounting Bracket, Pump	Vibration Isolator
Qty: 1	Qty: 1	Qty: 3

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

1500372	1500391	1300131	FT-0141716
			
Frame Mount Bracket	Mounting Strap 21.5”	Tie Wrap	Bolt; M6x1-90 SHCS
Qty: 1	Qty: 2	Qty: 8	Qty: 8

1500313	1604054	1452821	1330157
			
<p>-AN 8 ORB x 1/2" Barb</p>	<p>1/2" ID Fuel Hose</p>	<p>Hose Clamp</p>	<p>3/4" ID Protective Loom</p>
<p>Qty: 2</p>	<p>Qty: 96"</p>	<p>Qty: 4</p>	<p>Qty: 96"</p>

1500380	1500394	1500395
		
<p>1/2" Quick Connect Fitting</p>	<p>1/2" Quick Connect to Hose Adapter</p>	<p>3/8" Fuel Line Connector</p>
<p>Qty: 1</p>	<p>Qty: 1</p>	<p>Qty: 1</p>

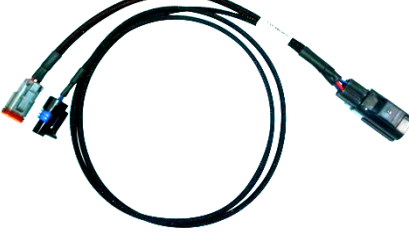

1500389	395351700S
	
<p>Wiring Harness</p>	<p>Water in Fuel Sensor</p>
<p>Qty: 1</p>	<p>Qty: 1</p>

Table of Contents

Kit Contents	2
Table of Contents.....	4
Introduction	4
Required Tools	4
Installation.....	5
Before You Start	5
Removing Original Equipment	5
Installation	8
Frame Mount (OPTIONAL)	8
Preferred Mounting	8
Electrical Connections	13
First Startup	14
Flow Specifications	14
Pressure Checks.....	14
Plumbing and Wiring Diagram	15
Trouble Shooting	16

Introduction

The BD Venom fuel pump kit for the Ford 6.4 replaces the Ford HFCM fuel pump module with a high flow performance fuel pump. The Venom kit for this application comes with quick-connect fittings to connect to the existing fuel lines and requires no cutting of the OE lines. The kit also includes a plug-in wiring harness for the pump and a water-in-fuel sensor that works with the factory system. The Venom comes with a water separator for this application to replace the original separator in the HFCM.

Fuel Pump Flow Rate Comparison

Ford HFCM	1.0 GPM / 60 GPH
BD Venom	2.75 GPM / 165 GPH

The 6.4L PowerStroke engines operate with a low supply fuel pressure, regulated inside the OE fuel filter bowl on the engine. The key on this engine is to provide sufficient volume rather than high fuel pressure as was the case on earlier HEUI PowerStroke engines.

Required Tools

- 8mm, 10mm, 7/16", 9/16" sockets and ratchet
- Drill and 3/8" drill bit
- Hose cutter or utility knife
- Fuel line disconnect tool for 1/2" and 3/8" line

Installation

Before You Start

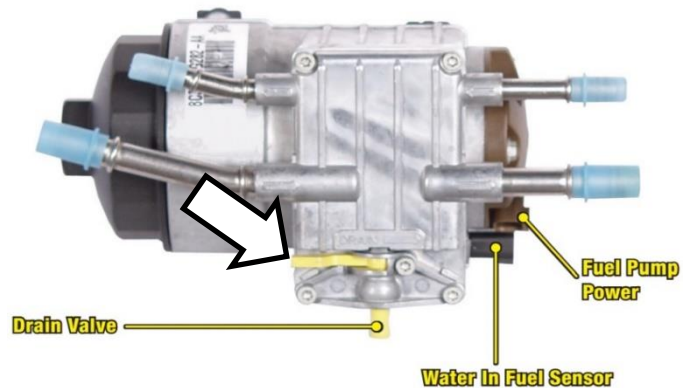
- Check that your kit includes all parts required for installation on your vehicle.
- Ensure you have the tools required for this job before beginning.

Removing Original Equipment

Lift and support vehicle on a hoist or jack stands.

Locate the HFCM (Horizontal Fuel Conditioning Module) on the driver side frame rail.

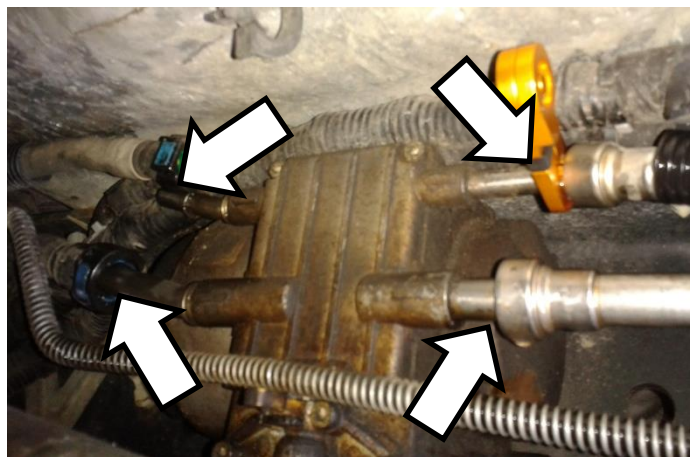
Place a drain pan below the drain valve outlet on the bottom of the module and open the drain valve lever on the side of the module. Allow the module to drain before proceeding.



Disconnect the gray fuel pump sub-harness connector just above the HFCM. Undo the plastic clip holding it to the main harness.



Undo the four quick connect fittings at the HFCM using a 3/8" and 1/2" quick connect release tool.



Remove the three 13mm nuts from the other side of the frame securing the HFCM to the frame rail.



Remove the HFCM from the vehicle.



Install the fuel return line bypass tube into the two 3/8" quick connect fittings on the vehicle to reconnect the return line.

The return line is the upper line, the supply line is the lower line.

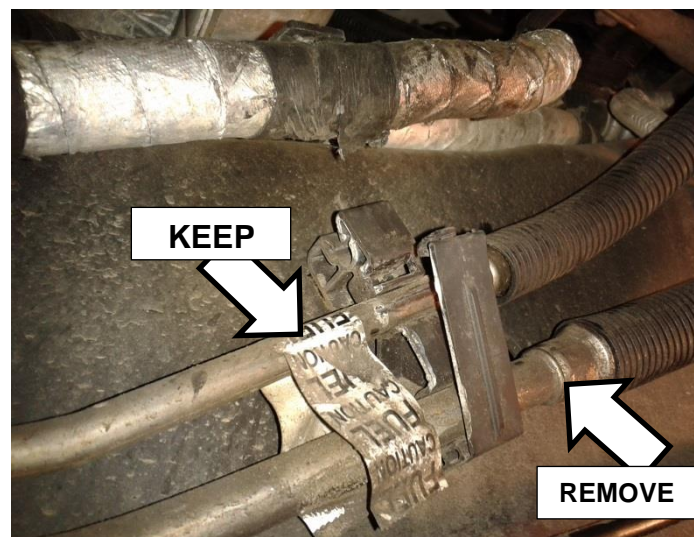


At the back of the engine (just behind the driver's side engine mount), disconnect the 1/2" feed line from the engine.

Leave the original 3/8" return line in place.



Now that the OE fuel feed line from the pump to the engine has been disconnected at both ends, it can be removed from the vehicle. Pop open the plastic bracket that supports the lines on the frame rail just behind the engine and remove the 1/2" feed line, it will not be re-used. Refasten the bracket and leave the 3/8" return line in place.



Installation

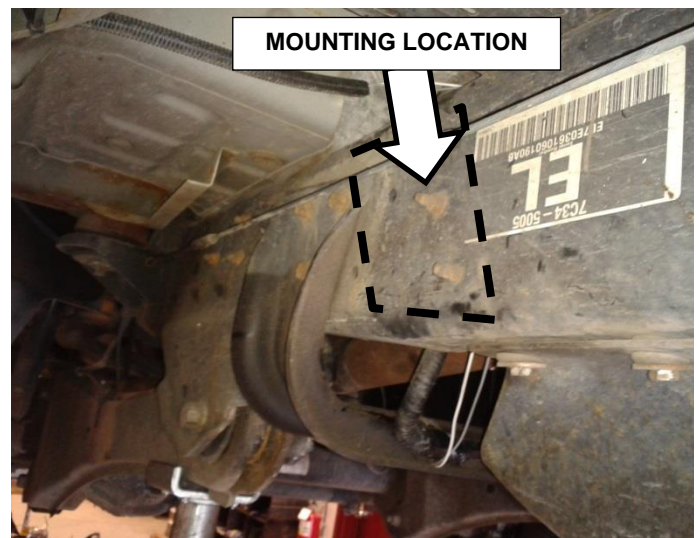
Frame Mount (OPTIONAL)

The Venom frame bracket can be mounted directly to the frame using the three self-threading screws (1500359) with washers (1500357) provided in this kit. These are not required if using the frame bracket and steel band strap method outlined below.

If the installer wishes to use this method of attachment. Insert the vibration isolators (1500356) and use the pump bracket as a reference for hole locations, ensure there is nothing behind the chosen location to be damaged by drilling. Drill three pilot holes into the frame that are 1/8" diameter, then enlarge the holes to 21/64" and install the 3/8" self-threading screws to **25 ft-lb**.

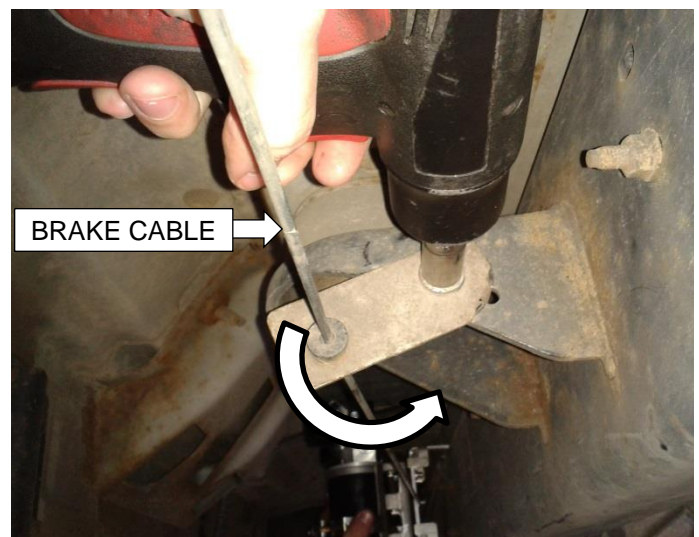
Preferred Mounting

The Venom pump will mount on the outside of the frame rail below the driver's door. The emergency brake cable will be in the way so it must first be repositioned.

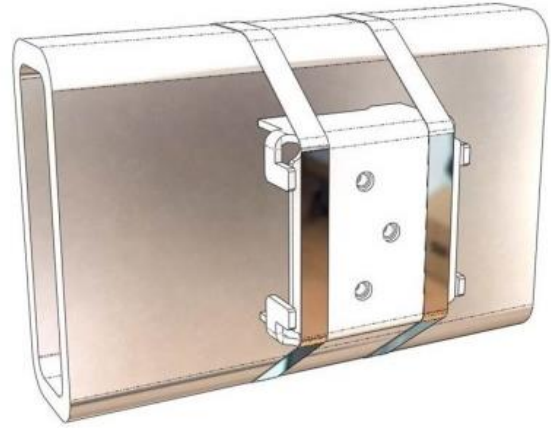


Loosen the 13mm bolt that fastens the emergency brake cable support to the side of the frame rail.

Allow the bracket to pivot on the bolt while installing the Venom pump bracket. It will be re-fastened later.



Position the bracket assembly on the frame and install the stainless steel band straps around the bracket and the frame loosely. The emergency brake cable goes behind the bracket.



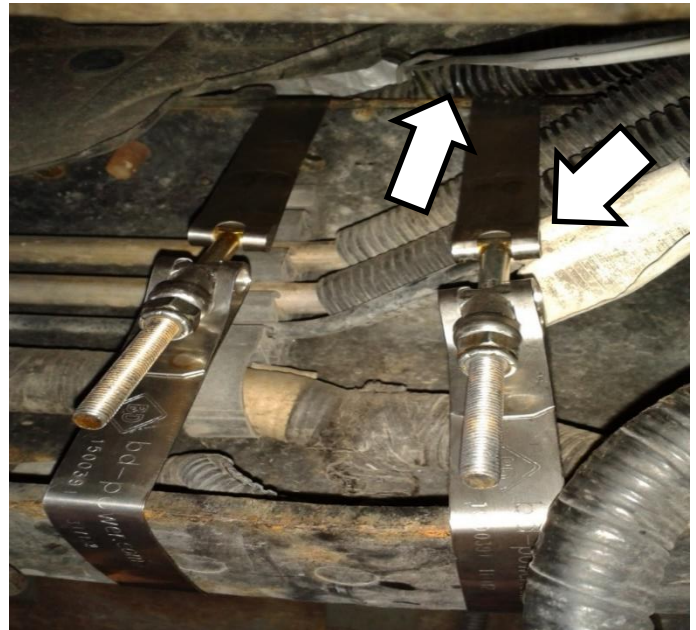
The band strap nut should be on the opposite side of the frame from the bracket.

Use care to ensure the stainless steel band straps will not damage wiring or tubes on the frame.

Do not pinch the transmission wiring harness that crosses the top of the frame rail.

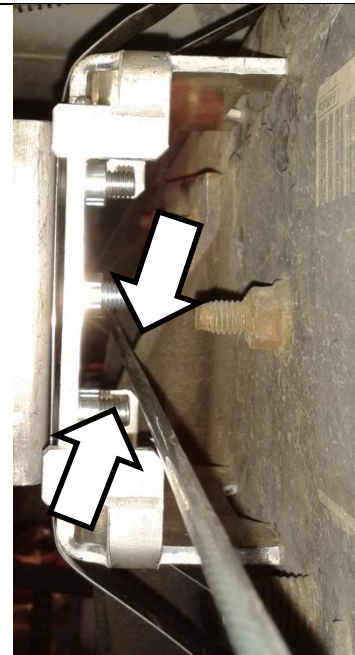
Ensure the straps do not put pressure on the fuel lines or pose a chafe hazard before torquing them down.

Torque to **80-90 in-lb.**



Swing the emergency brake cable support bracket towards the frame rail until the emergency brake cable does not touch the bracket and does not touch the cross-member mount ahead of the bracket.

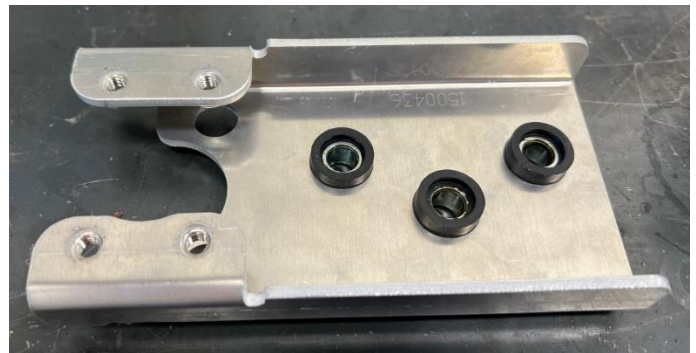
Reposition the pump bracket up and down if necessary.



Once the new position for the emergency brake cable has been determined, drill a 3/8" hole in the OE frame bracket to act as a locator for the cable support bracket. Reinstall the bracket and tighten the 13mm bolt.



Insert the three vibration isolators in through the back side of the pump bracket.



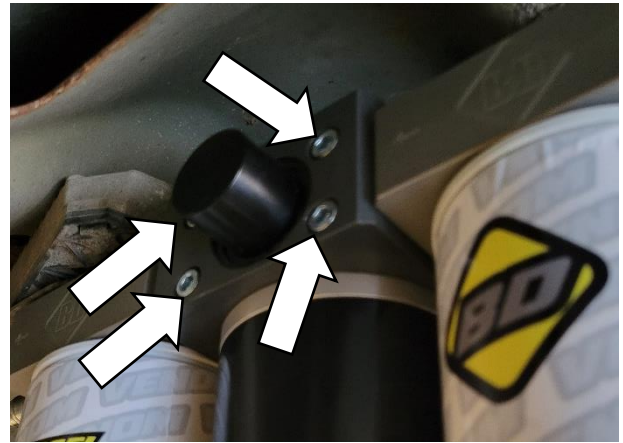
Mount the pump bracket to the frame bracket using the 3x **1900015** M8 bolts and 3x **1402609** M8 washers.

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



Using 4x **FT-0141716** M6x1.0 bolts, attach the Venom pump to the pump bracket.

Torque these bolts to **8 ft-lbs**.



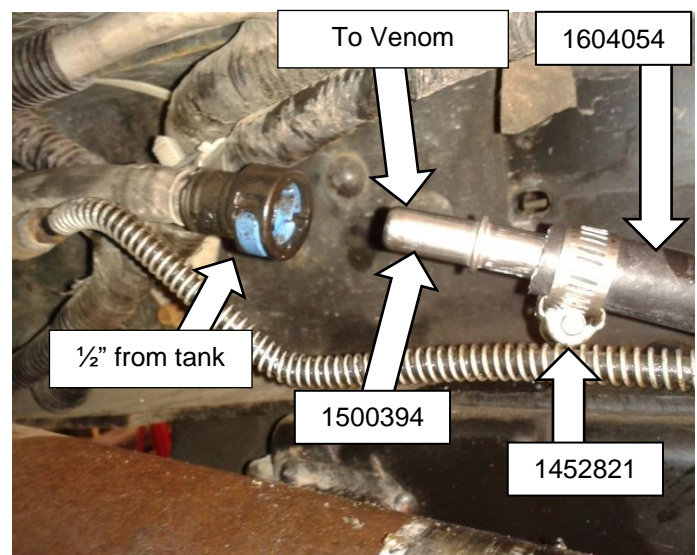
Install the 2x **1500313** fittings to both ends of the pump heads.

Note: Do not over-torque fittings as these use an O-ring seal.



To connect the fuel supply line from the tank to the fuel pump, install the supplied 1/2" quick connect to hose adapter (**1500394**) onto the OE fuel line from the tank that previously connected to the HFCM.

Install a length of **1604054** 1/2" fuel hose (Approx 48 inches long depending on routing) onto this adapter and secure it with one of the supplied **1452821** hose clamps.

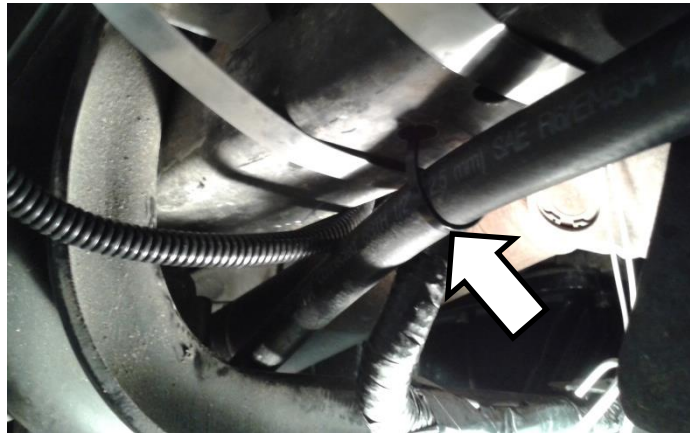


Loop this hose rearward and under the frame rail, then bring it up to the pump in a gentle sweep. Connect this to the IN of the water separator. Clamp the hose to the barb fitting using one of the **1452821** clamps provided.



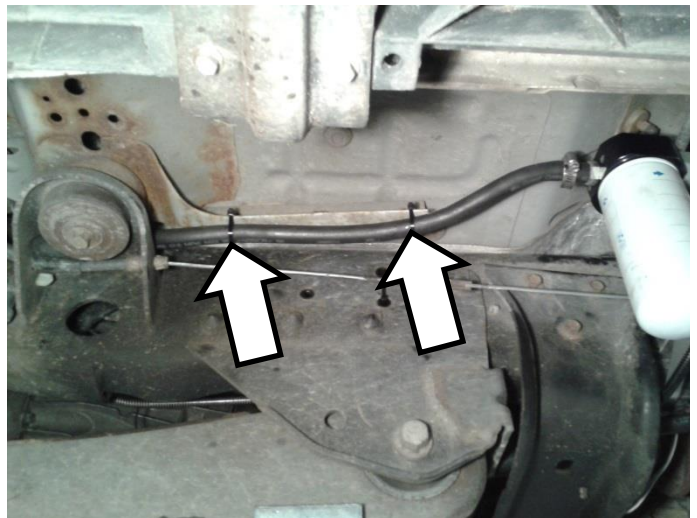
Install the supplied **1330157** 3/4" protective plastic loom over the hose for protection (not shown).

Secure this hose using the supplied cable ties to avoid chafing and abrasion.



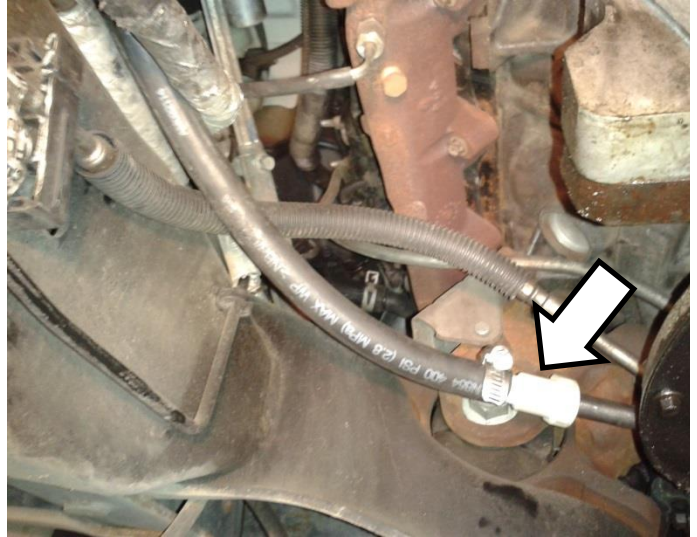
To connect the fuel pump outlet to the engine, connect a length of **1604054** 1/2" fuel hose to the fitting labeled OUT on the Venom pump or optional filter housing. Clamp the hose to the fitting using a **1452821** hose clamp. Route the hose over the frame rail behind the body mount.

Install the supplied **1330157** 3/4" protective loom over the hose for protection. Carefully secure the hose with cable ties provided.



On the inboard side of the frame rail, bring the fuel hose to the back of the engine and connect to the original fuel line using the supplied **1500380** 1/2" plastic quick connect fitting. Clamp the hose to the barbed end using **1452821** clamp.

Install the supplied **1330157** 3/4" protective plastic loom on this hose (not shown) and secure it with cable ties.



Refer to the connection diagram at the end of the manual for more information on hose routing and wiring.

Electrical Connections

Connect the supplied adapter harness to the stock wiring harness where the original fuel pump sub harness connected.



Connect the adapter harness to the Venom fuel pump.



Install the supplied water in fuel sensor in the bottom of the water separator filter by threading in the sensor into the adapter.

Ensure the O-ring is present on the sensor before installation.

Connect the adapter harness to the water in fuel sensor installed in the bottom of the water separator filter.

Secure wiring to frame using the supplied cable ties.



First Startup

Double check that all clamps are tight, filters installed, connections made and that the pump is securely mounted.

Turn the ignition to RUN (not start). This will allow the fuel pump to run for 30 seconds. The pump should now prime. Cycle the key again if it does not fully prime the first time. Once the system has built pressure, check all connections for leaks.

If the pump fails to prime after a number of key cycles, consult the troubleshooting section below.

Start the engine and verify correct operation of the system.

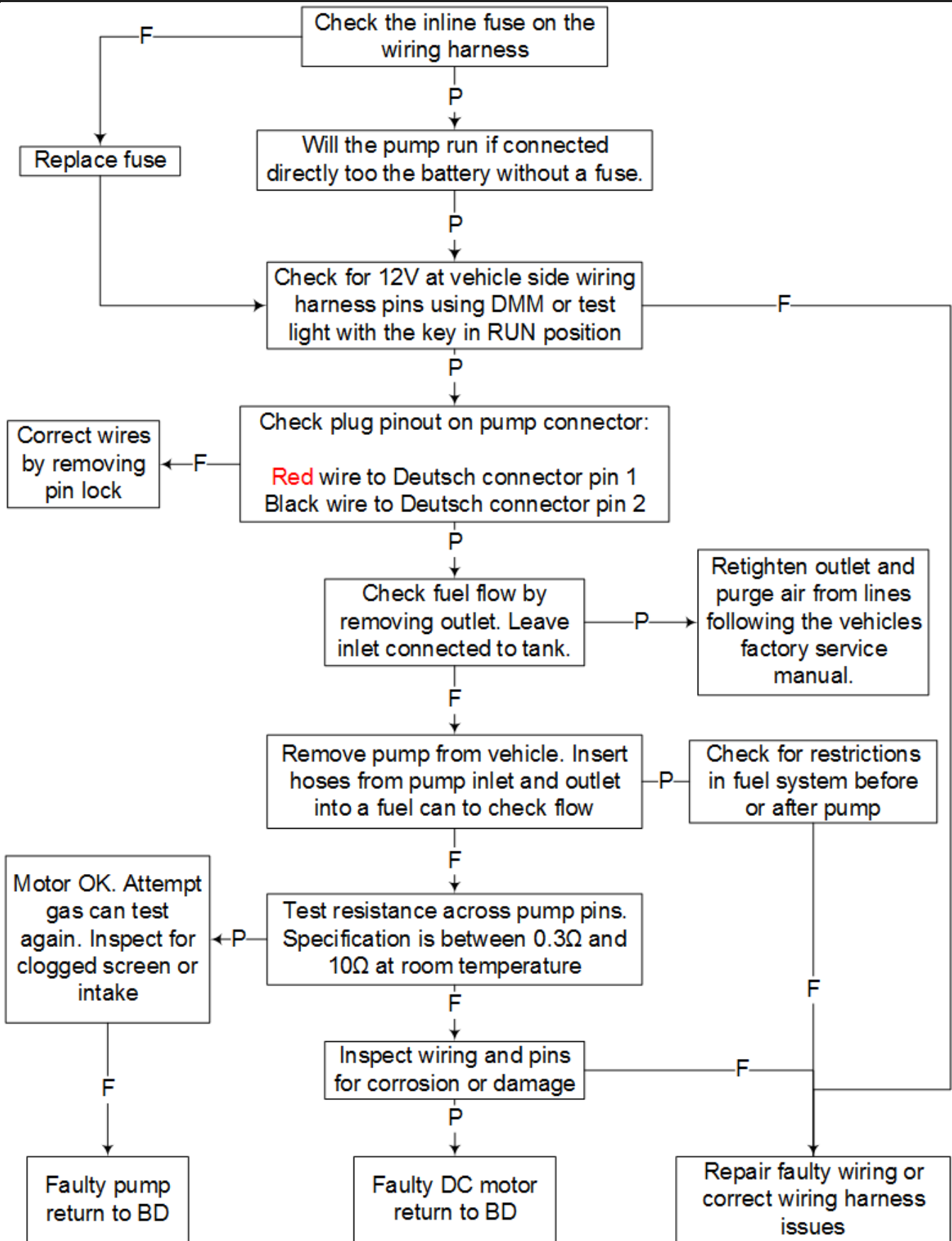
Flow Specifications

- Flowrate should be MINIMUM 2.75GPM(160GPH) @ 14VDC
- OR
- Filling a 1 gallon container every 22 seconds @ 14VDC

Pressure Checks

The Venom pump is internally regulated at 15psi (if dead headed) but the engine mounted fuel filter has a regulator which further reduces this pressure. Pressure at the engine test port will be approximately 10psi at key-on and decrease with load.

Trouble Shooting



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.



Update a Flowmax Pump to a Venom Pump



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	P550249-VEN	BD Diesel	P551315-VEN
Donaldson	P550249	Donaldson	P551315
Baldwin	BF1232	Baldwin	BF7634
WIX	33379	WIX	33626
Luber-Finer	LFF6338	Luber-Finer	LFF4783