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2001-10 Duramax Lift Pump Kit 9-11 PSI

Installation Instructions

P/N# 1050320D

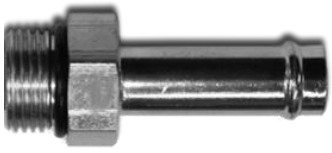
PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLATION

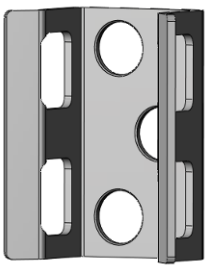
BD Engine Brake Inc.
Plant Address: 33541 MacLure Rd. Abbotsford, BC, Canada V2S 7W2
U.S. Shipping Address: 1124 Fir Avenue, Blaine, WA 98230 U.S. Mailing Address: P.O. Box 231, Sumas, WA 98295
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Kit Contents

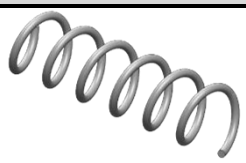
1500365-P2	1500330-D
	
FlowMax Lift Pump V3	***FlowMax Wiring Harness***
Qty: 1	**Qty: 1**

1500380	1500394	1604054	1330157
			
1/2" Quick Connect Female	***1/2" Quick Connect Male***	***1/2" Fuel Hose***	***3/4" ID Protective Loom***
Qty: 1	**Qty: 1**	**Qty: 90"**	**Qty: 90"**

1500313-M	1500313	1452821
		
Filter Fitting x 1/2" Barb	***-AN 8 ORB x 1/2" Barb***	***Hose Clamp***
Qty: 1	**Qty: 1**	**Qty: 4**

1500358	1500355	1500392	1500373
			
T-Bolt Clamp (Pump Body)	***Mounting Bracket***	***Mount Strap 20.7"***	***Flowmax Bracket (Channel Frame)***
Qty: 2	**Qty: 1**	**Qty: 2**	**Qty: 1**

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1500356	1500317	1300529	1300131
			
Vibration Isolator	**Spring (Yellow)**	***Self-Tap Screw***	**Tie Wrap**
Qty: 3	**Qty: 1**	**Qty: 1**	**Qty: 12**

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**

Introduction

The 2001-2010 Duramax 6.6L engine is unlike other common rail injection systems as it lacks an electric fuel pump. Instead, the high pressure CP3 pump relies on an internal gear pump to suck fuel from the tank. This system has drawbacks. As engine demand is increased, the suction on the tank line is increased and this can limit available fuel supply to the high pressure pump, limiting horsepower. Additionally, when changing filters the system must be manually primed as there is no lift pump to do that for you.

The BD Diesel FlowMax fuel lift pump is a high performance upgrade for your trucks fuel system that eliminates the downsides of a suction only system. This lift pump can supply up to 150 gph of fuel, enough to support 600 horsepower.



GEROTOR DESIGN

Installing this kit is now easier thanks to the supplied quick connect fuel fittings meaning no more cutting the fuel lines.

The FlowMax V3 pumps are a high longevity gerotor design which results in low noise and high reliability.

Optional Accessories

1050340-WSP Water Separator Add On Kit
STRONGLY RECOMMENDED

This kit adds a high micron (low pressure loss) filter to the inlet of the pump with integral water separator and drain. This is strongly recommended to avoid debris or water contaminating your FlowMax lift pump.



1050340-PFF Fine Filter Add On Kit

This kit adds a low micron filter to the outlet of the pump. This is recommended when bypassing the factory fuel filter on the engine or for additional fuel filtering performance beyond what the factory filter offers.



1050345 High Flow Draw Straw Kit

This kit bypasses the stock fuel tank suction connection to provide higher flow. The kit has a new top mount bulkhead fitting with an extra-large diameter convoluted pickup tube for reduced restriction.



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.



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Pump Pressures and Spring Options

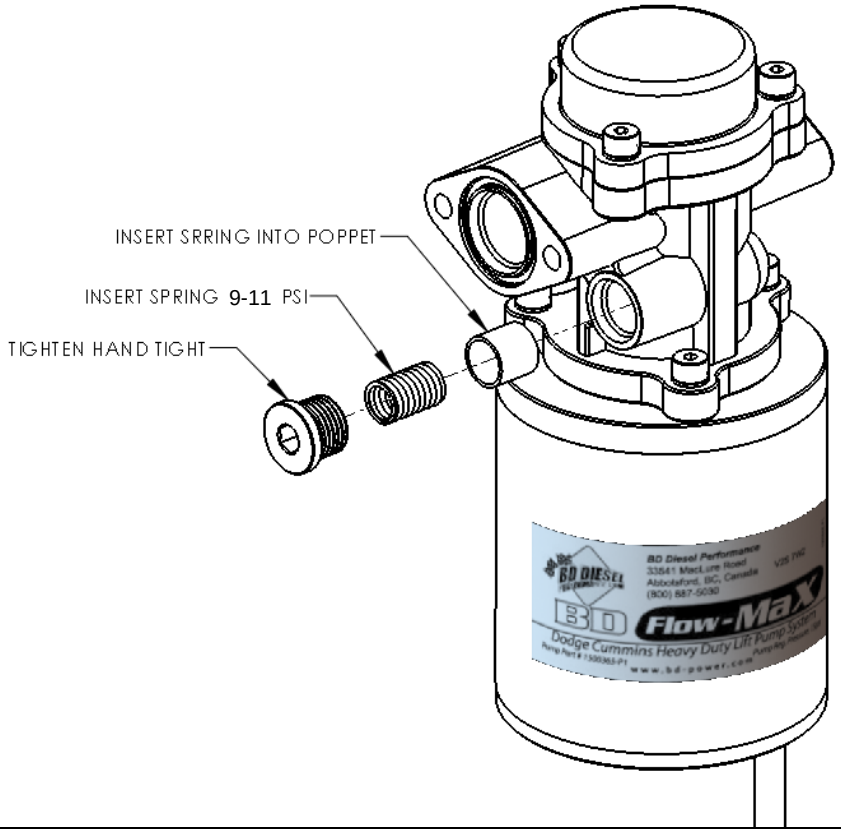
9-10 PSI	Spring in pump
11 PSI	Yellow spring

Using a 1/4” hex tool, loosen the hex plug to access the spring.

Note: You may need to use a vice with soft jaws to help secure the pump.

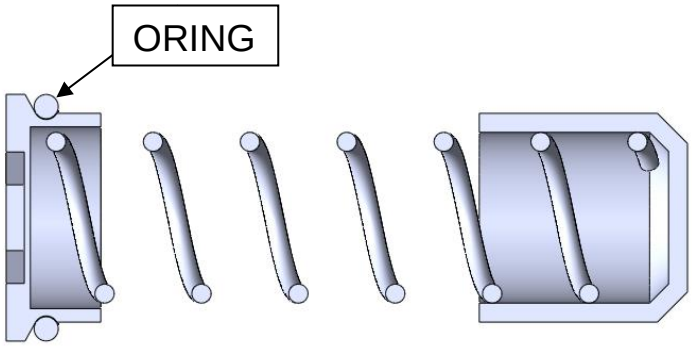
Once the plug is removed you can access the spring to be changed.

Important: Do not remove the piston behind the spring.



When reinstalling the plug and spring assembly, ensure the spring is centered in the poppet.

NOTE: There is no need to over torque the plug because there is an oring seal.



Tools Required for Installation

Required Tools
- 1/2" Fuel Line Disconnect Tool
- Knife To Cut Fuel Hose
- 5/16”, 7/16”, 9/16” and 10mm sockets
- Ratchet wrench

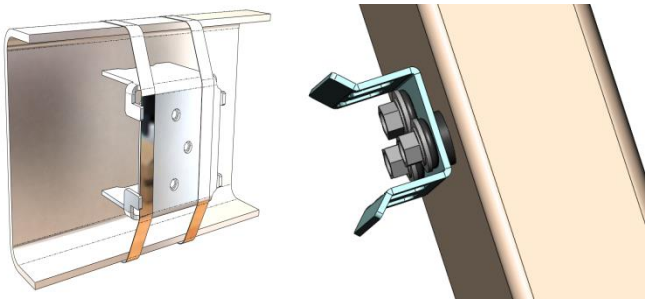
Optional Tools
- 5mm Allen wrench
- 1/4” Hex Tool and Ratchet
- Tape Measure
- Drill and 1/8” and 21/64” Bits
- Pliers

Installation

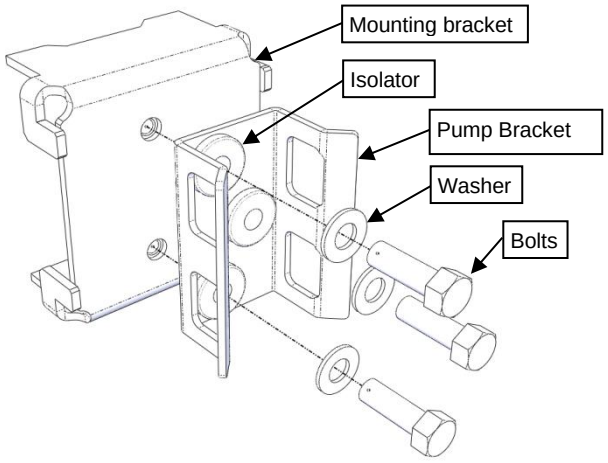
Disconnect both batteries for safety.
Raise the vehicle and support it safely.

This kit is supplied with self-threading bolts and matching washers to allow for direct mounting to the frame if desired. This is not the suggested installation method for most vehicles. Standard cab trucks must use direct frame mounting on the outboard side of the frame as there is insufficient room on the inside of the frame. See bottom of instructions for optional frame mounting or continue reading for normal installation method.

Strap Mount vs. Direct Frame Mount

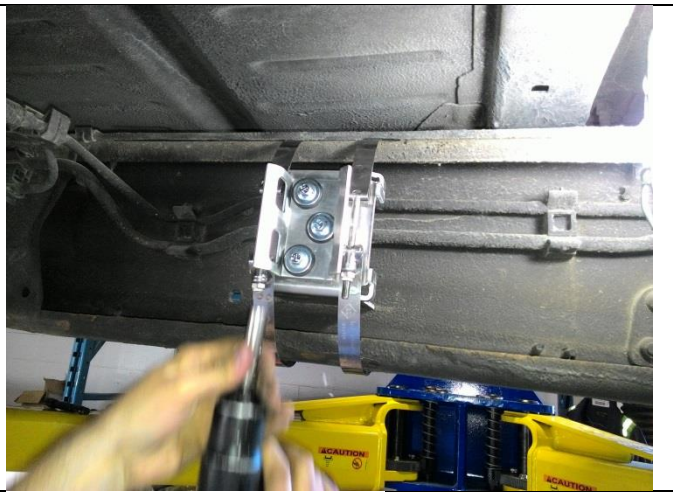


Insert the three vibration isolators (1500356) into the pump bracket (1500355). Install the three M8 bolts (1900015) with the three M8 washers (1402609) and bolt to the frame mount bracket (1500373).

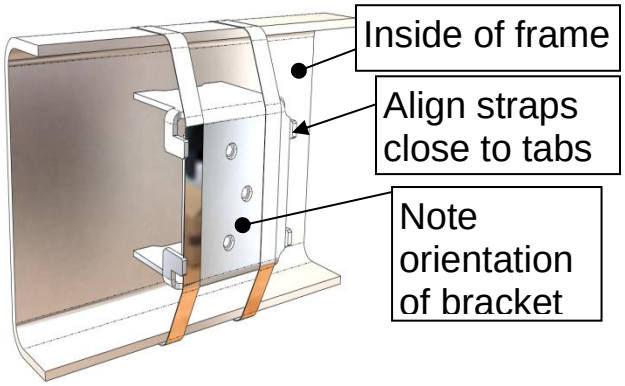


Position the frame mount bracket on the inside driver side of the frames C-channel and determine mounting location. Install the two long band straps around the frame taking care to route them so they do not pinch the wiring loom or brake lines.

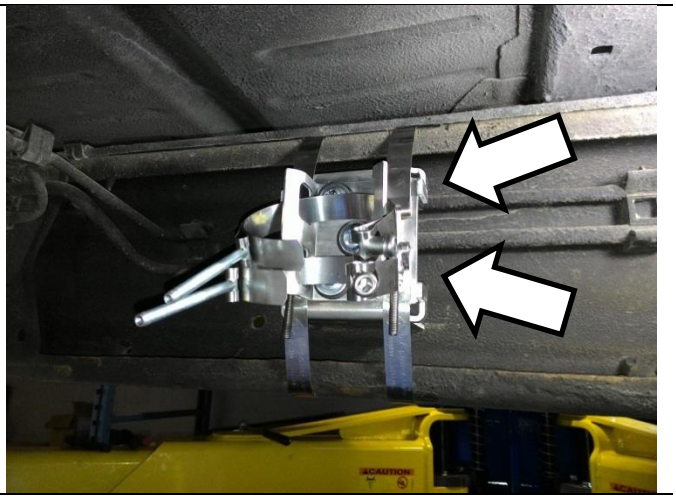
The clamps threaded section and nut can be on either side of the frame, just ensure it is away from any bracket or frame edges.



Tighten the band straps until the bracket is snug. There is no need to overtighten these straps, the nuts are self-locking and will not back off. Recommended torque 80-90 in-lbs.



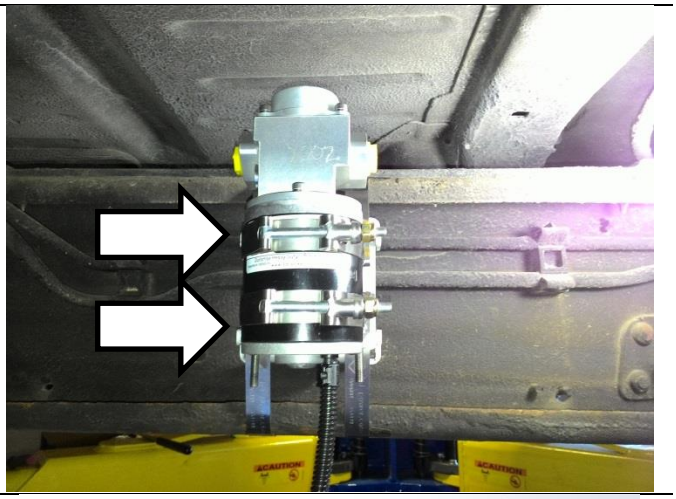
Remove the 7/16” nuts from the two smaller band clamps (1500358). Loosely install the clamps through the pump mount bracket ready to receive the fuel pump. Keep the nuts within arm’s reach for the next step.



Lift the pump into place and rotate so that the IN is orientated to the rear of the truck and OUT is towards the front of the truck.

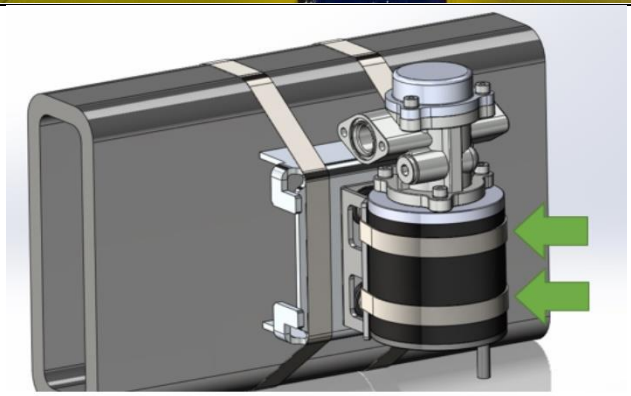
Start the nuts on the band clamps. Center the pump so that the clamps are both holding the black section of the pump body then tighten.

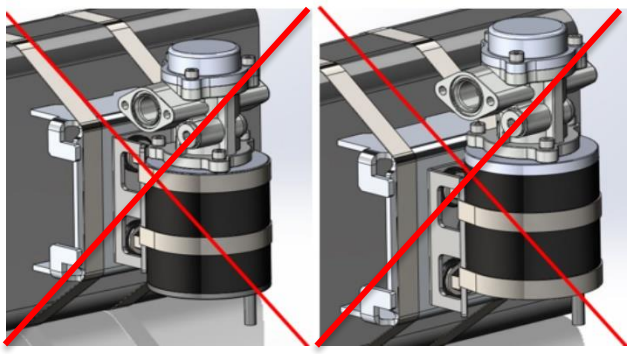
Recommended max torque 72 in-lb.



NOTE Clamping the pump too high or too low may put strain on the motor and cause shaft misalignment leading to premature wear or increased motor loading.

Ensure both straps are secured to the black motor body only.



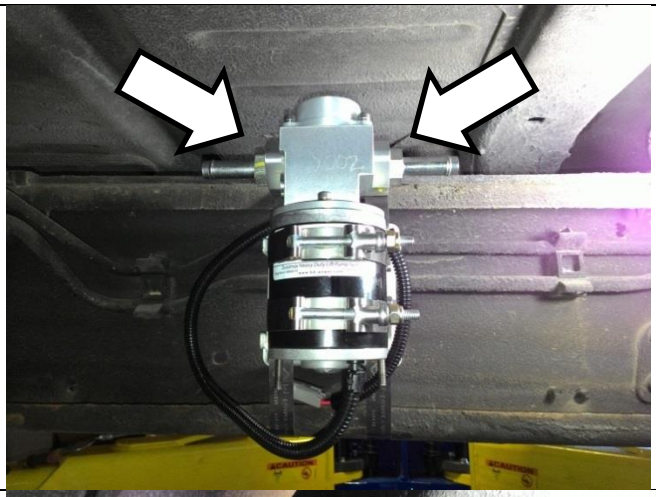


If installing the optional filter kits, install these now and skip the next step. (Refer to filter kit instructions for install of fittings.)



Install the inlet (1500313-M) and outlet (1500313) hose fittings into the pump by removing the plastic protective caps and threading in the supplied fittings.

IMPORTANT The fitting with the screen is installed to the **IN** port of the pump and functions as a debris screen.



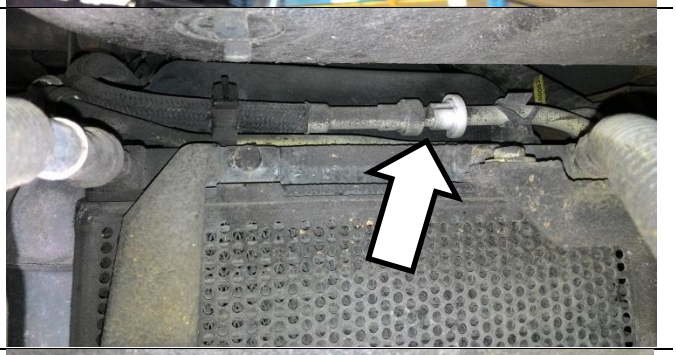
Now that the pump (and optional filter assembly) is mounted, locate the factory fuel line disconnect at the top of the fuel cooler, directly ahead of the fuel tank.

It's the larger of the two lines.

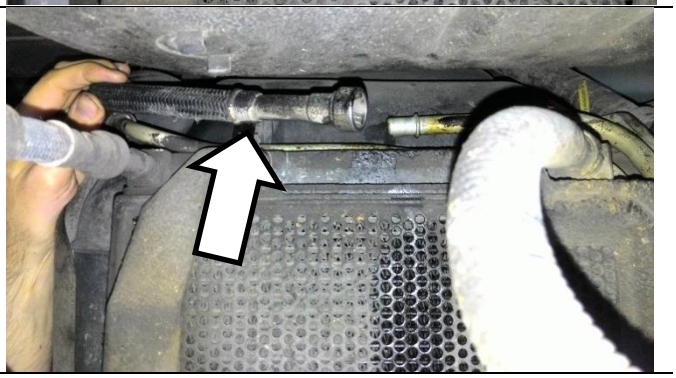


Position a drain pan or bucket below the connection to catch any spilled fuel.
Use a 1/2" fuel line disconnect tool to release this fuel line connection.





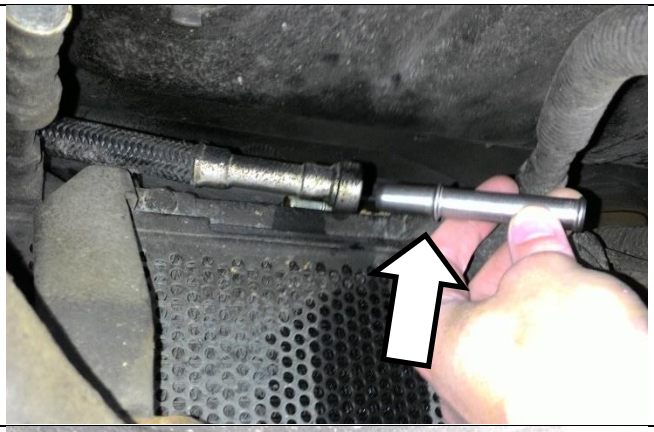
Remove the flexible side from the plastic clip to gain access to the line.



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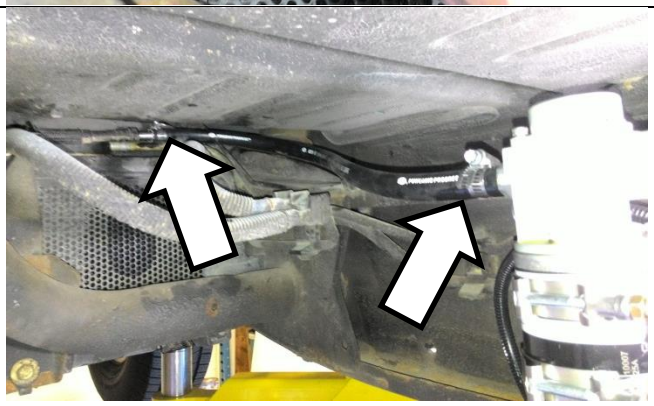
Install the supplied 1/2" male quick connect fitting (1500394) into the flexible line coming from the tank.





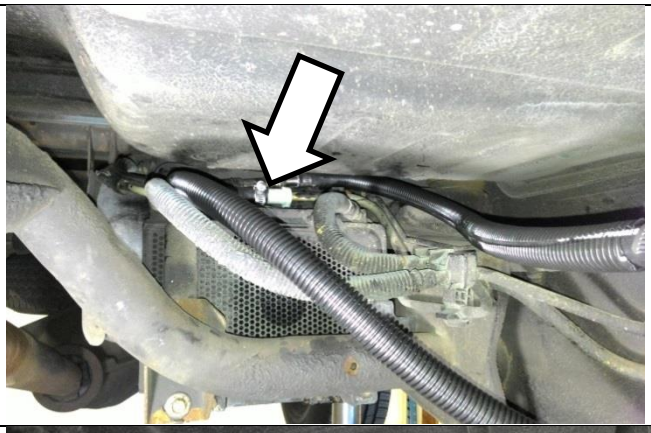
Use a section of the supplied rubber fuel line (approx. 27 inches) to connect this fitting to the inlet (IN) of the FlowMax fuel pump. Make sure not to push the rubber line too far on the quick connect fitting so that the release tool will still fit for future service. Clamp both ends.

Install the included convoluted split loom (1330157) on this hose to protect it from chafing.

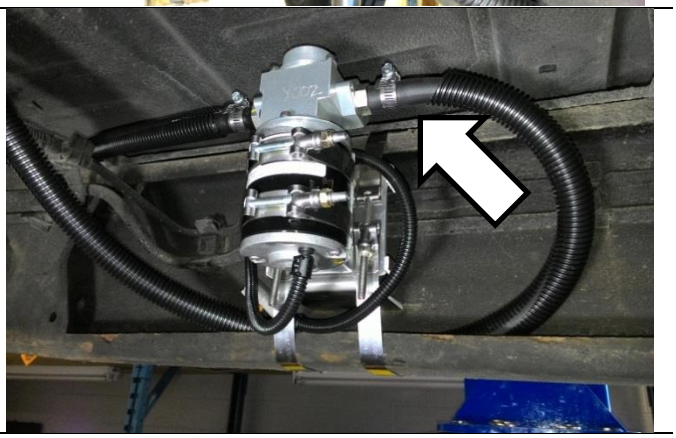


Push the 1/2" female quick connect fitting (1500380) into the end of the remaining fuel hose and install hose clamp. Then connect this hose to the factory hard line above the fuel cooler.

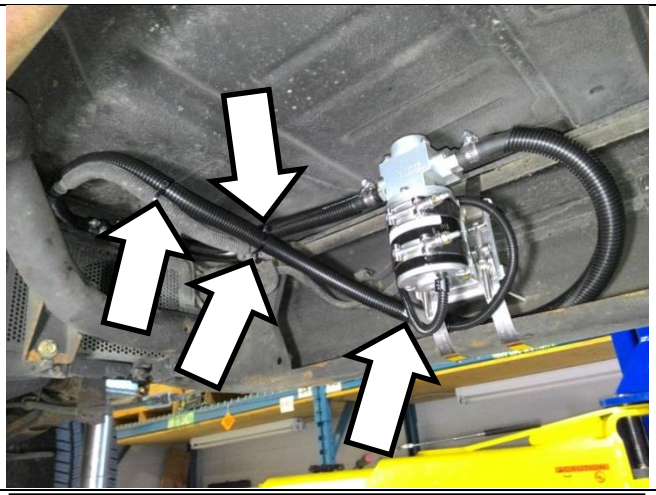




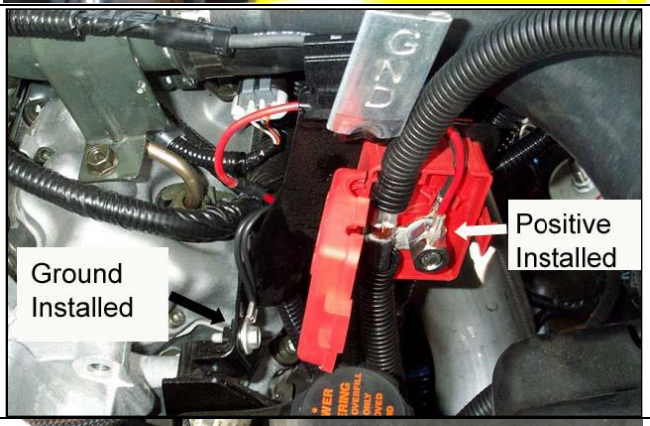
Route the other end of the hose to the outlet fitting (OUT) of the FlowMax pump. Follow the other factory fuel return line and loop gently as shown. Cut to length (approx. 51 inches). Install hose clamp at the pump end. Install the supplied protective loom (1330157) to protect this hose from chafing.



Secure the two hoses with the supplied zip ties to the existing lines.



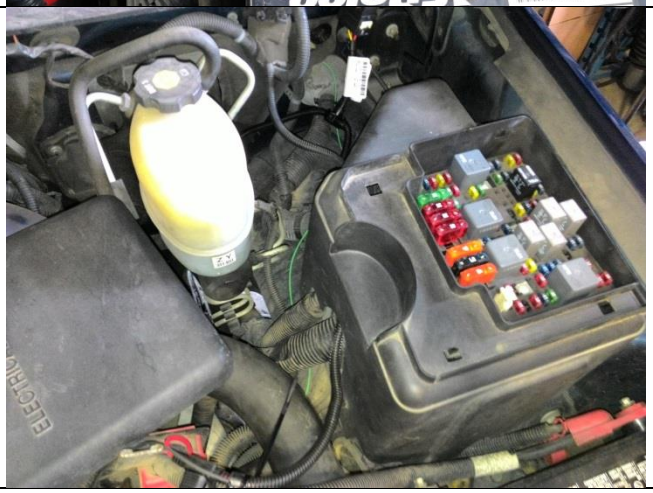
In the engine bay, connect the supplied wiring harness to battery power and ground. The red wire with ring terminal is the positive, the black wire with ring terminal is the ground.
On LB7, LLY, LBZ (2001-2007) trucks, connect the positive to the battery junction box on the engine, connect the ground under the bolt securing the junction box bracket to the engine.



On LMM (2007-2010) trucks, connect the positive to the small stud on the driver side battery terminal, and connect the ground to either the battery negative or to a body ground.

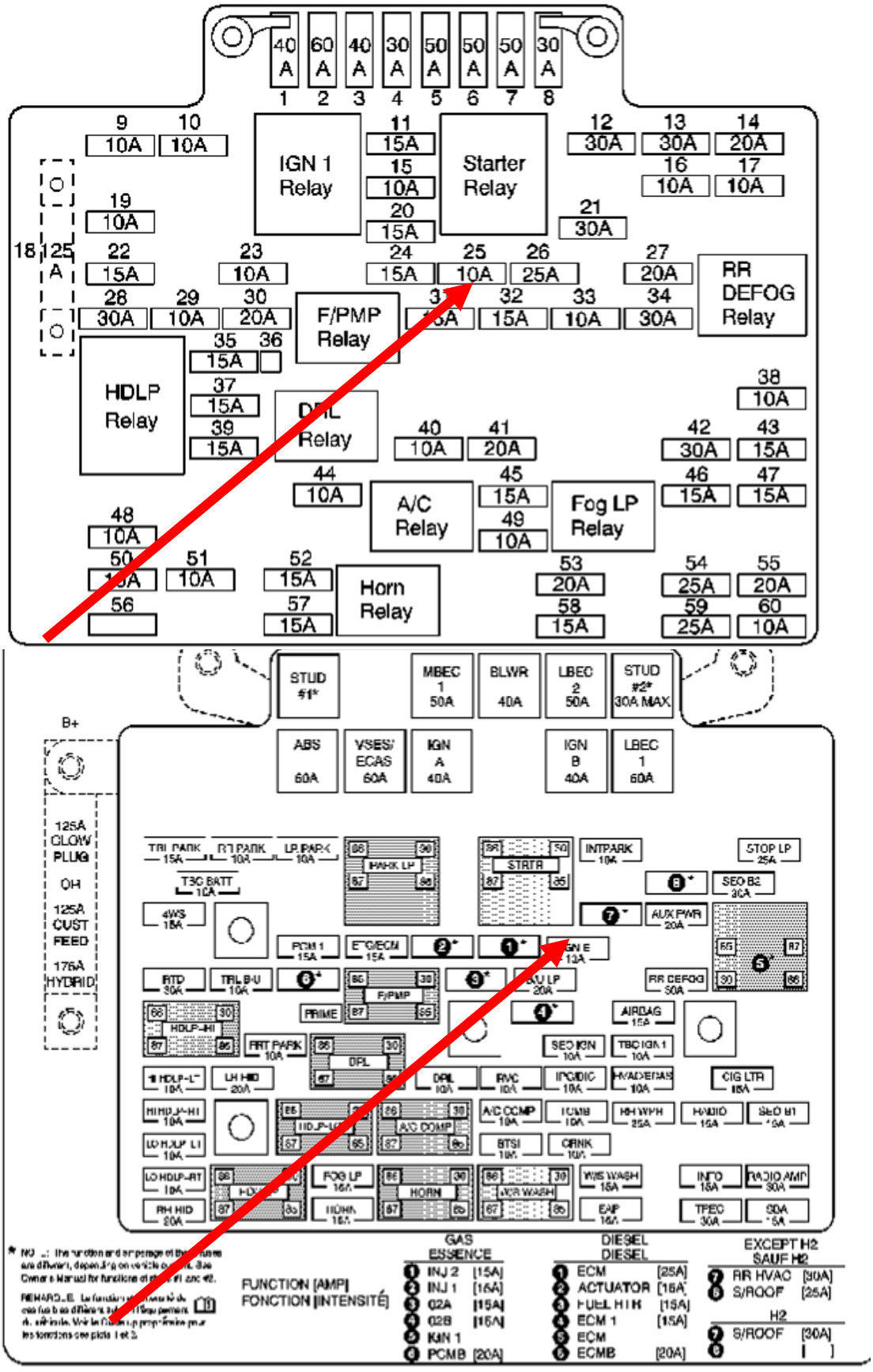


Install the fuse tapper in the fuse box so that it is attached to a switched ignition feed. This is what will trigger the pump to run. (You may optionally solder this wire to a switched ignition power source, the fuse tapper is supplied for convenience). You may need to make a slot in the fuse box so that the lid closes correctly over the wire.



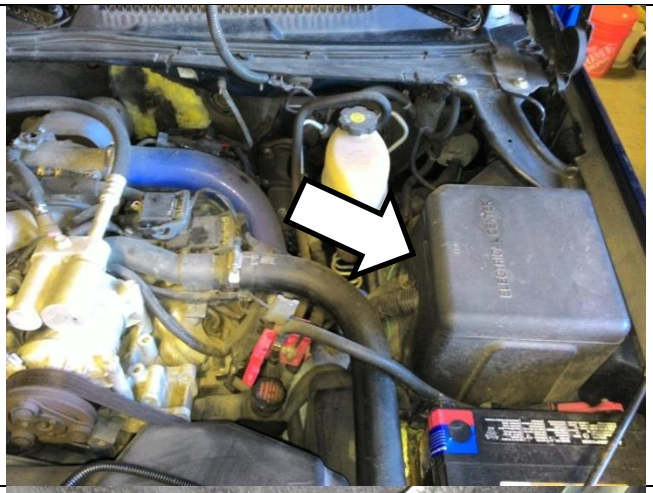
2001-2010 Fuse Box Layouts

Attach to the 10A IGN E fuse. The two early style fuse box layouts are shown.



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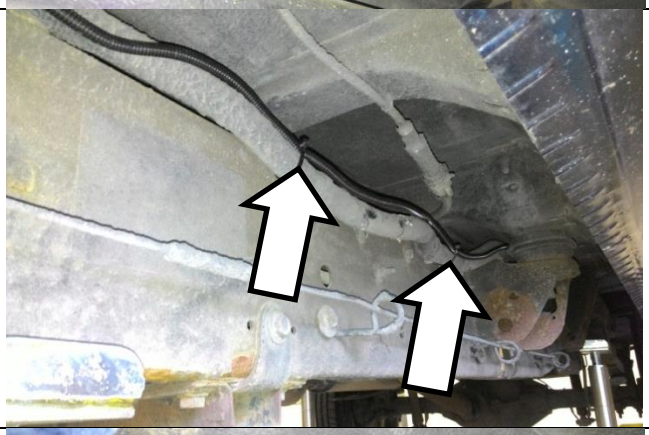
Mount the relay in the engine bay, using the supplied self-tapping screw (1300529) to secure it to the side of the fuse box. You may alternatively zip tie the relay holder to a nearby wiring harness.



Feed the pump wire down the firewall keeping it away from the steering shaft, moving parts and the exhaust manifold. Zip tie the harness to the wiring harness running down the frame rail.



Continue to zip tie the harness along the frame rail towards the fuel pump. On some models the large OE wiring harness may be on the top, outside or inside of the frame rail, just follow that harness and secure it approximately every 18 inches.



Connect the harness to the FlowMax fuel pump and zip tie any excess wire out of the way if applicable. (Here the wiring is shown on the outside of the frame rail).



Installation should now be complete. Reconnect batteries, and test the pump for operation. Upon key on, you should hear the pump running. Fuel pressure should be approximately 9-11 psi depending on spring chosen.



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

Mounting Option 2 - Mounting the Pump Bracket to the Frame

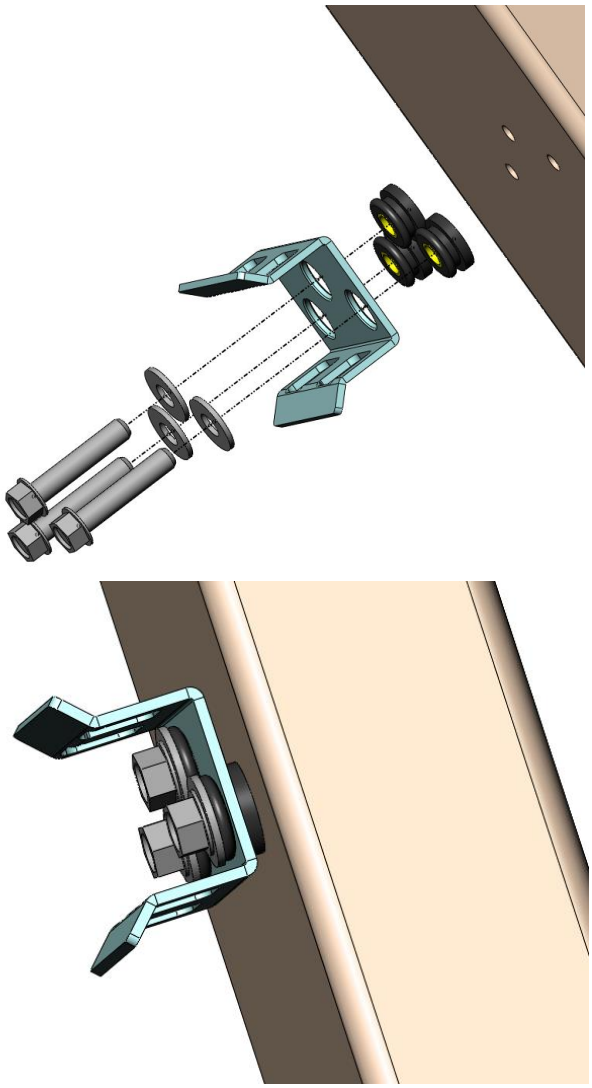
Place fuel pump and bracket in place to ensure ample clearance. Then, use the fuel pump bracket as a template and mark the locations to be drilled.

Mark holes with center punch. Drill pilot holes to 1/8". Drill main holes to 21/64".
Insert the three rubber isolators (1500356) into the support bracket.

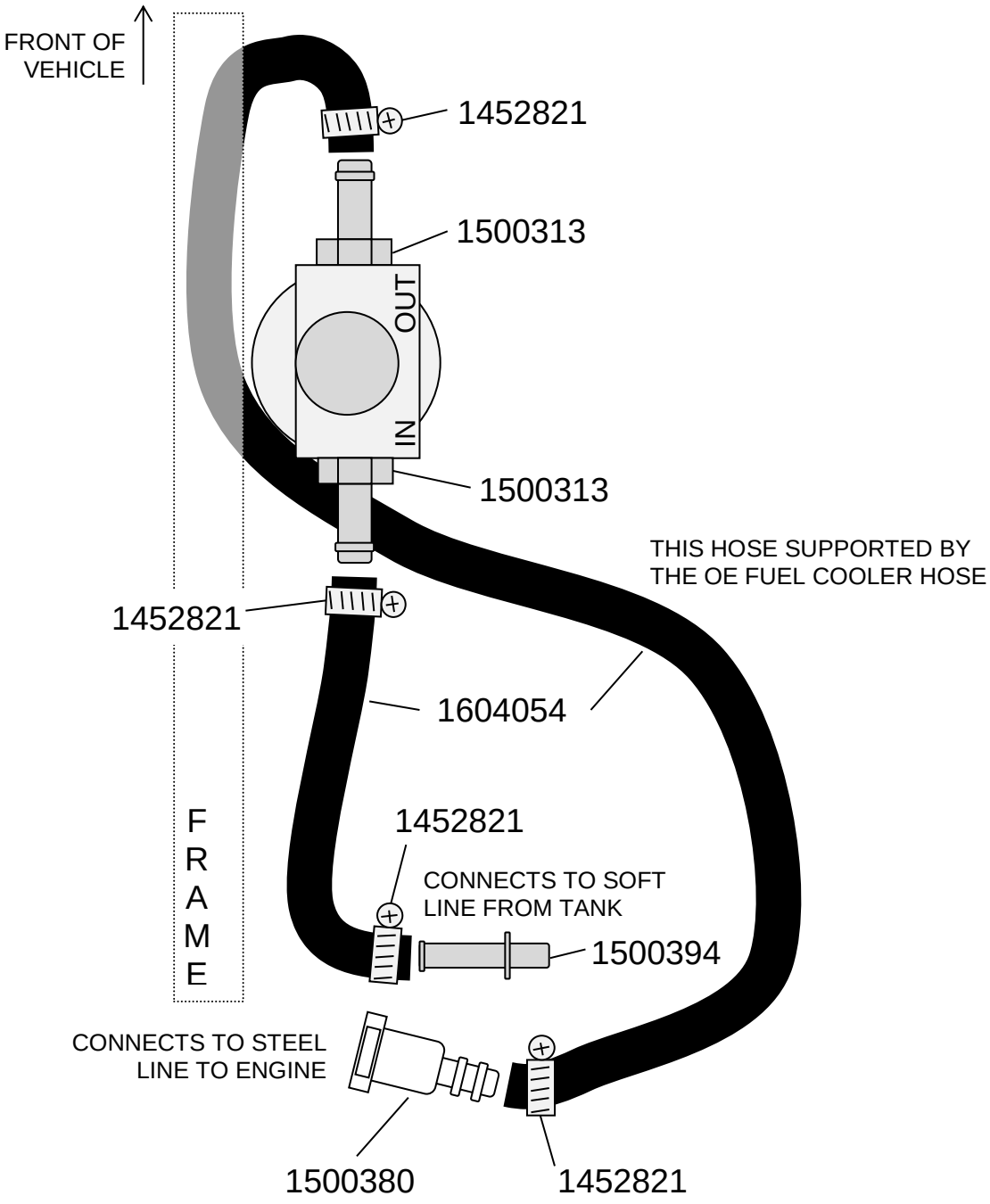
Place the large washers (1500357) on the inside of the bracket against the rubber isolator.

Using an air ratchet (9/16" socket) tighten the self-threading 3/8" bolt (1500359) through each hole if the support bracket assembly and into the frame. Repeat this step for the other 2 bolts.

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

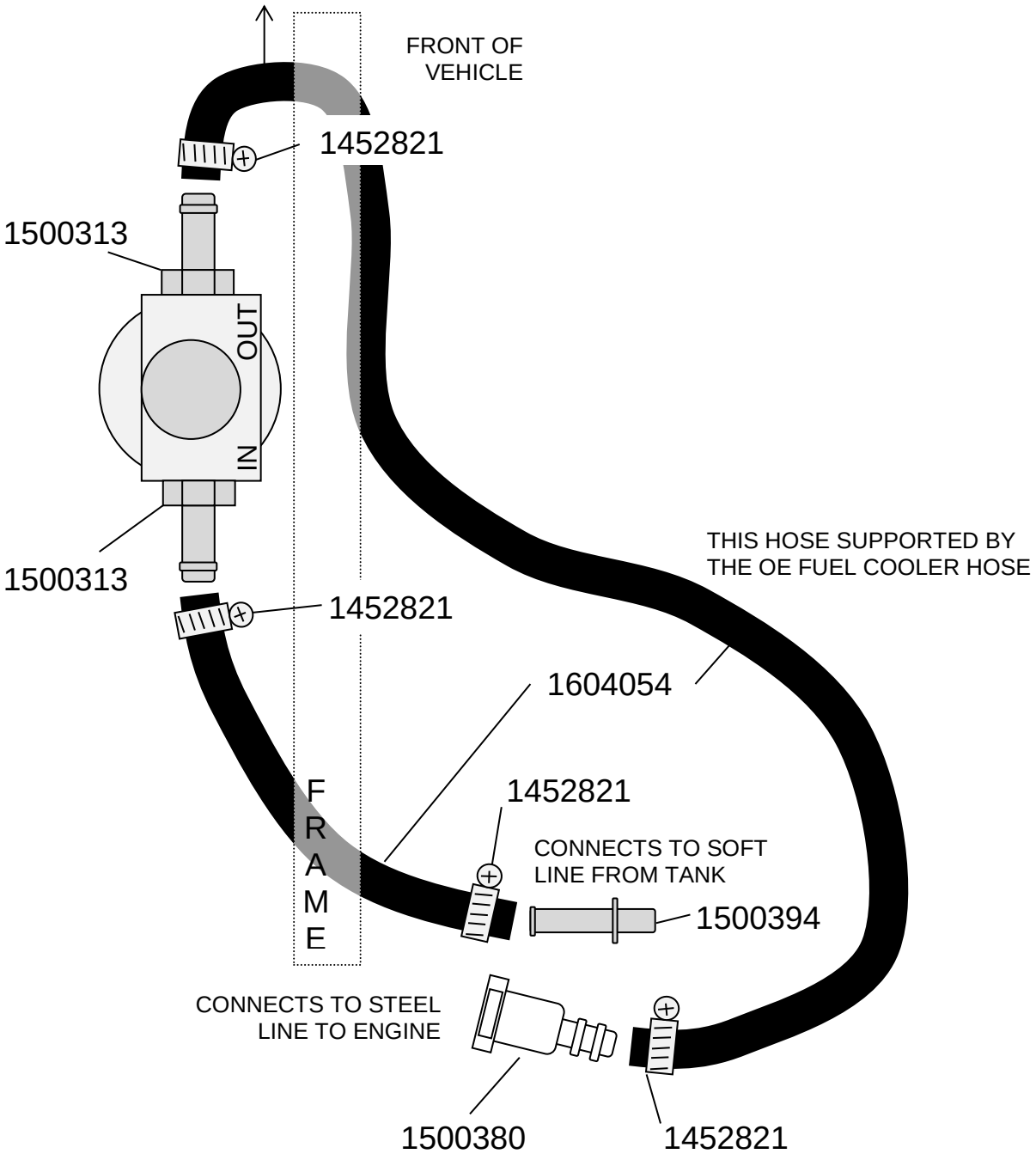


Plumbing Diagram – Inside Frame Rail



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Plumbing Diagram – Outside Frame Rail

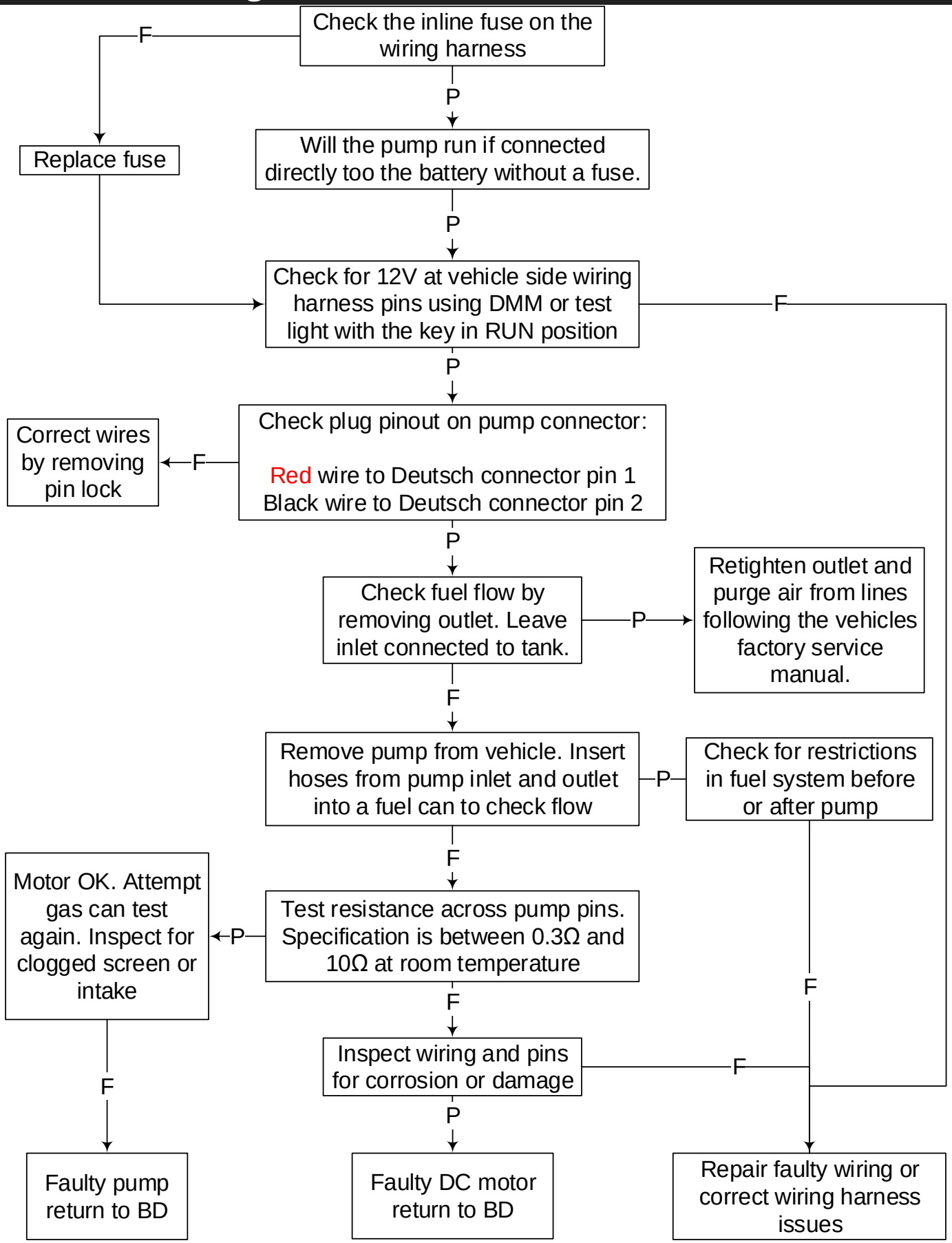


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Flow Specifications

- Flowrate should be MINIMUM 2.5GPM(150GPH) @ 14VDC
  OR
- Filling a 1 gallon container every 24 seconds @ 14VDC

Trouble Shooting



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