Atomic Fabrication and Performance

GM Truck 1999-2018 In-Tank Fuel Surge Tank

V1.2 May 2025

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Purpose and Background Info

This product was designed with the intention of solving the biggest problem most guys encounter when they upgrade the fuel pump on their truck: fuel pump starvation from fuel sloshing. A surge tank is usually a separate fuel tank fed by the main tank with the sole purpose of keeping the main fuel pump and pump pickup completely submerged to prevent a disruption in fuel flow. If fuel flow is disrupted it will result in a loss of fuel pressure to the engine which can easily cause engine damage from a lean condition.

The AFP Surge Tank puts the surge tank inside of the main fuel tank so there is no need for external feed and return lines between the main and surge tanks. There is no modification necessary to the main fuel tank except for mounting the fuel level sensor (optional). This is compatible with the 04+ “returnless” fuel tanks that have the larger 5” opening. The 99-02/03 “return style” tanks have a smaller opening (~3”) and must be swapped out for a later tank for this to be installed. A compatible fuel tank is generally easy to find at any local salvage yard.

There are currently 6 versions of the AFP Surge Tank utilizing different fuel pump configurations. There is a dual pump version utilizing 2x Walbro 450 or 525 pumps, a triple pump version utilizing 3x Walbro 450 or 525 pumps, a version for the Aeromotive in-tank brushless pumps the 3.5-10GPM pumps are externally all identical), and a version for the Fuelab 1100lph pump. The versions with the Walbro and Fuelab pumps will include the pumps, however the Aeromotive version will not include the large pump, it will only include the tank and fill pump. Currently all versions utilize a Walbro 255 as the fill pump to keep the surge tank full. The compatible Aeromotive pumps are for their “universal” kit which means you have to trim the inlet tube yourself (only difference to the vehicle or cell specific kits). It will need to be trimmed to 4.25” in length.

Aeromotive Brushless Compatible Pumps				
Pump Size	**3.5 GPM**	**5.0GPM**	**7.0GPM**	**10.0GPM**
Standard Speed Part #	18374	18375	-	-
Variable Speed Part #	18394	18395	18384	18385

18395 is my pump recommendation for the Aeromotive pumps.

Surge Tank Design Overview

Overall Design

The AFP Surge Tank is made from 6061 aluminum and is compatible with all fuels. The surge tank is secured to the factory tank utilizing the stock tank Oring and top locking ring. All welds are TIG welded as needed. The top and bottom pieces are laser cut for the highest accuracy and best finish possible. The joining hardware is 304 stainless. For the dual and triple Walbro pump versions the pumps are suspended from the top via a stainless rod and held in place by 2 laser cut holders and stainless clamps. The fuel hoses are corrugated plastic secured with oeitker clamps so there is no risk of leaks as with rubber (even the fancy 30R10 rated stuff) hose.

The pump outlets are joined to a single -10AN ORB outlet via a custom billet bulkhead fitting. The return fitting for all versions is a -8AN and has an elongated return tube to prevent aeration in the surge tank by excessive fuel splashing. The vent has both rollover and splash prevention features by using both an internal floating and sinking ball and has a -6AN connection at the top. In the event of a vehicle rollover or overfilling the tank the vent will be plugged to prevent fuel from spilling out. In the case of dual pump configurations, the 3rd port on the billet block will be blocked off so a 3rd pump could be added later relatively easily if desired.

Figure 1: AFP Surge Tanks, Assembled

Pump Configuration Options

There are many factors to consider when deciding which pump configuration is right for you. The Walbro pumps are relatively cheap compared to the large single pumps, but having multiple pumps introduces multiple points of failure and is inherently more complicated. The current draw is also very high compared to the more efficient large single pumps. The large single pumps are much more expensive by comparison and are not as easily serviced. Below is a performance comparison between the different versions I offer:

Configuration	Max Current Draw (amps)	E85 RWHP	Gas RWHP	E85 Seconds at WOT
Dual Walbro 450	42	1000	1350	68
Dual Walbro 525	49	1100	1400	41
Triple Walbro 450	61	1600	2000	18
Triple Walbro 525	72	1700	2100	15
Aeromotive 5GPM	32	1800	2100	13
Fuelab 1100LPH	35	1900	2250	14

*80psi rail pressure design point. BSFC of 0.95 for E85 and 0.75 for gas

Figure 2: Fuel Pump Comparison

The power requirements for the fuel pump setup should not be ignored as pump performance will degrade with inadequate wiring or alternator performance. A triple 525 setup drawing 70amps+ is a lot. My preference is the Fuelab 1100LPH based on its low current draw, PWM design, and high output.

Fuelab 1100LPH 93905 Pump

This is my personal preference fuel pump and what I use in my own vehicle. There are several wiring configurations that can be used. It is natively PWM controlled and can be used with any aftermarket ECU. If using a stock ECU then you have the option of using a separate PWM controller or using a boost controller or hobbs switch to cycle between half speed and full speed when the load demands it. Refer to the Fuelab instructions for more details on wiring control. It is much quieter than other style large single fuel pumps (especially the Aeromotive pumps). There are 3x 8AN-O ring ports for use on the pump hat. I use them for

the surge tank wiring, tank vent, and return fuel. This keeps everything neatly contained without need for addition ports on the tank itself.

Figure 3: Fuelab Pump and Surge Tank

Wiring

The fuel pumps are wired to electrically insulated ¼-20 stainless bolts attached to the top of the surge tank. These bolts are secured to the top of the surge tank with locking nuts and are meant to be used with ¼" ring terminals for the main wiring from the truck power source.

There will be 4 studs in total with different color locking nuts to differentiate their use. The BLACK nut will be the ground to be wired to the nearby frame or directly to the negative post on the battery. The SILVER nut will be for the primary pump (the one that will always be running) power (12v) and will also power the surge tank fill pump. The GOLD nuts will be the secondary pump(s) that should be activated from an external trigger. Typically, this will be a signal from a boost controller, aftermarket ECU, hobbs switch, or TPS window switch. It is not recommended to run all pumps all the time as this will cause excessive electrical

load and fuel heating and may make idle fuel pressure unstable. When using a hobbs switch setup I prefer to run two in parallel as to have redundancy in case one malfunctions. They are relatively cheap and easy to wire.

Optional with the surge tank will be a wiring harness with appropriately sized 8ga wiring for the power leads to the pumps, a 6ga ground lead, and electrical terminals for the wiring to the surge tank and relays. In the case of the triple walbro 525 setup, the combined current from all pumps at 80psi is in excess of 70amps! This is not insignificant. The wiring kit will contain 3x 50amp relays along with 3x 15ft runs of 8ga GXL wiring (red, orange, white). GXL wiring has a thicker coating than the common TXL wire used mainly for ECUs. The shorter 6ga ground wire should be run directly to a clean spot on the frame and secured with a bolt or self-tapping screw. Having the "big 3" electrical upgrade is recommended (0ga or better from battery NEG to frame, alternator to battery POS, and engine block to frame). There will also be 3x 15ft (black, yellow, and pink) runs of 18ga wire for activation of the relay.

Figure 4: Wiring Harness

Fuel Level Sensor

In order to maximize the surge tank volume the fuel level sensor will need to mounted separately from the surge tank. A separate fuel level sensor assembly is included (float also included but not shown) and utilizes a stock 40-250ohm sensor from a 2005 and later truck. It is directly compatible with a stock fuel level gauge or any programmable aftermarket ECU. If you have a 99-03 “return style” truck with the factory gauge cluster then for the sensor to read correctly it will either need to be flipped on the holder so it is upside down, or the tables in the ECU will need to be reversed. Connection is similar to the fuel pumps usuing electricall insulated studs and ring terminals with locking nuts. Polarity is not important in the connection.

Figure 5: Fuel Level Sensor

Mounting location will need to be towards the driveshaft side of the tank with enough room for the float to move freely. The studs are 1/4” diameter and ¾” apart for the holes that need to be drilled for installation. The float should be positioned such that the arm moves across the tank from left to right as shown below (it is perpendicular to the mounting bolts). There are multiple sensor mounting hole locations so it can be adjusted up or down on the mount if needed. For reference there is approximately 2” of fuel left when the low fuel light comes on. The holes can be plugged with NPT plugs at a later date if desired.

Figure 6: Surge Tank and Level Sensor Installed

Installation Notes

The installation will be relatively straight forward with the only modification necessary being the two holes for the fuel level sensor. The surge tank itself is a direct drop in and is accomplished by first inserting the fill pump towards the rear of the truck then swinging the rest of the tank into place and letting it drop down. It should be aligned such that the fill pump is toward the rear of the truck and/or the return fitting is towards the front (the large -8AN fitting on top). The factory large o-ring is installed between the surge tank hat and the tank and the surge tank is secured by the factory lock ring which may need to be tapped into place with a rubber mallet.

Tank Venting

The vent line should be run to a filter/breather at least 6" above the tank level, preferably to above the fuel fill port on the bed side. There should also be a loop in the line to prevent any vapor smell. If your truck still uses a tank pressure sensor, you can tee it into this line.

There are 3 factory vents on the tank, one on each end and one in the middle. These are the grey ports on top. These will need to be vented similar to the surge tank port so the tank can be filled easily. You can do this with a 4-way tee or using 2x 3-way tees and running the open leg to the filler port with a breather filter. If you tee them all together then you will likely have filling issues.

FIRST START: On first startup the surge tank will need to be primed before you attempt to start the engine. This can be accomplished by either filling the tank via the return fitting with 1/2 gallon of fuel, or you can power the main/fill pump for 30 seconds to let it fill with fuel to submerge the pumps.

Walbro Dual/Triple Surge Tank

The connectors are top of the surge tank consist of the following:

-8AN (male) return line
-6AN (male) vent line
-10AN ORB (triple) or -8AN ORB (dual) pump feed line
-1/4" power connectors (for dual and triple setups)
-#8 screw power connectors for Aeromotive compatible surge tank
-1/4" fuel level sensor connectors

After following the steps above make sure the electrical connectors are all tightened between the locking nut and the cap nut. Use 2 wrenches (one on each nut) to ensure the bolt is not turned in the tank.

In the diagram below the center cap nut is for the pump hanger and the outer bolts are to attach the pump hanger assemble to the tank. If you need to take the surge tank apart be careful with the outer bolts, they are threaded in aluminum and can strip (NO power tools!).

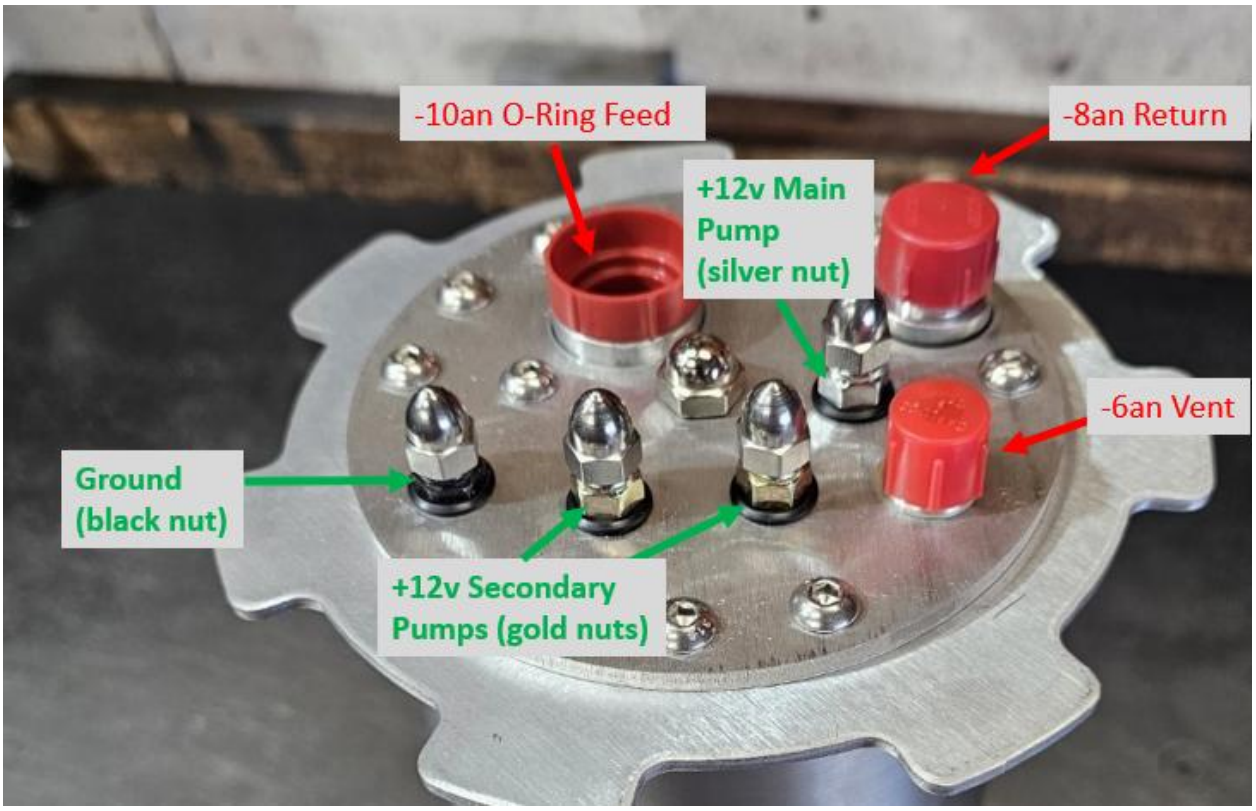

Figure 7: AFP Surge Tank for Walbro Pumps

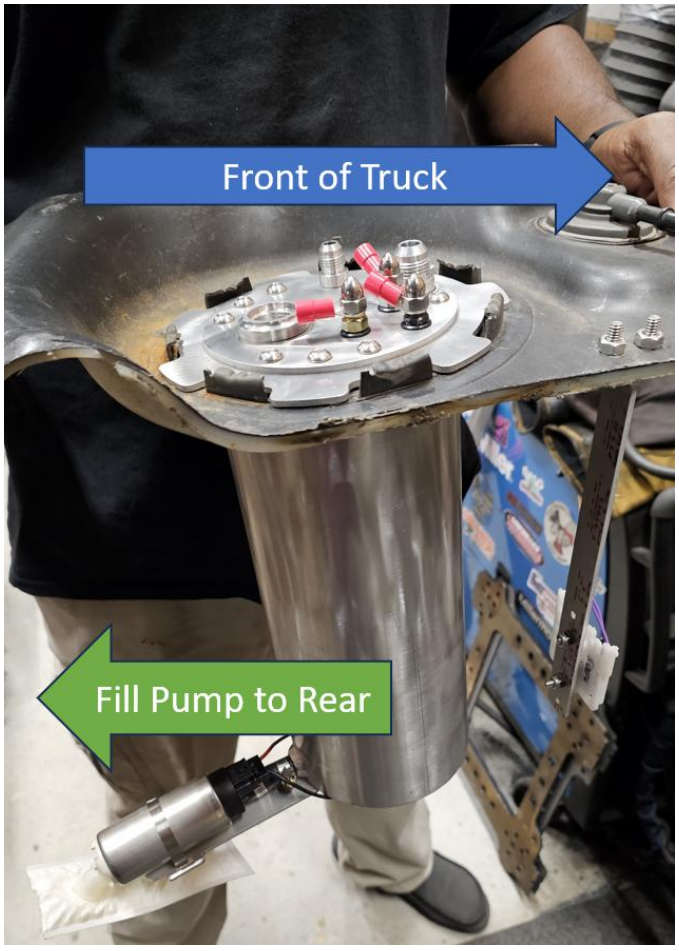

Figure 8: Surge Tank Installed

Aeromotive Compatible Surge Tank

This version will include the external fill pump and aluminum tank, but will need the main pump supplied separately (I do not stock these currently). Refer to the chart on page 2 for part numbers. The fuel inlet tube will need to be trimmed to 4.25” in overall length to fit correctly.

When installing the pump retaining ring (black in the picture below) the gap should be faced towards the fuel return tube (see below). The pump inlet filter will be a tight fit, but the top is notched to allow the filter to pass through.

The electrical connectors for the fill pump are not pictured below, however they are similar to the Walbro version only smaller (#8 instead of ¼”) to accommodate the larger pump. They are connected to power in a similar way and should be set to always be powered with ignition power.

The surge tank will need to be installed with the external fill pump situated towards the rear of the vehicle. It is designed to swing in to the tank similar to the Walbro tank version. It may be snug but should not need to be forced.

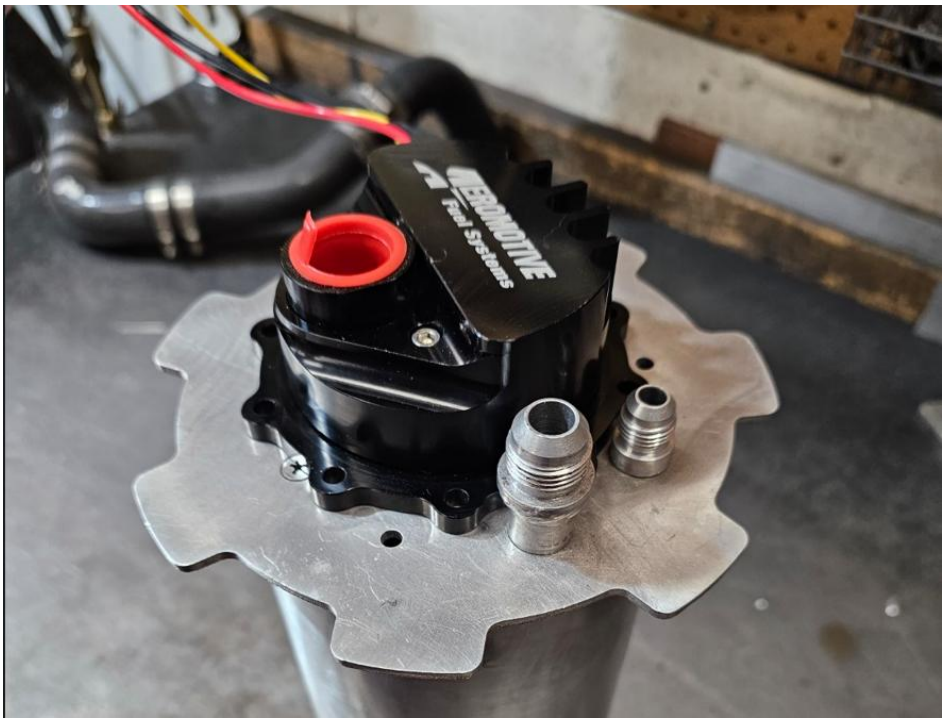

Figure 9: AFP Surge Tank with Aeromotive Pump

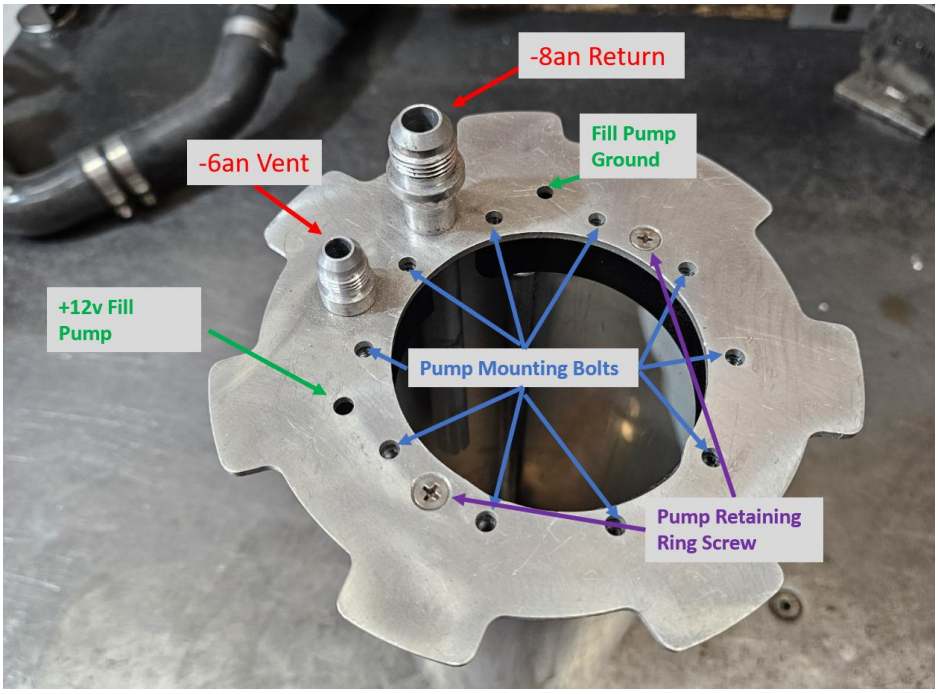

Figure 10: AFP Surge Tank for Aeromotive Pump Diagram

Fuelab Surge Tank

With the Fuelab pump option the surge tank will arrive with the pump already installed. The pump has 4x 8ANO-Ring ports total (fluid fittings not included). One of them is the outlet, and the other 3 will need to be used for the fuel return (in the case of a return-style fuel system), a tank vent, and wiring for the fill pump. The fill pump wiring fitting will already be installed with bare leads for the pump ready for your final installation. There are 3 wires from the main pump controller, the red goes to battery positive, the black to ground, and the white is the speed control wire.

Figure 11: Fuelab Surge Tank Installed

The pump can be rotated as needed by removing the hold down screws, but this should not be necessarily. Be careful if you must remove it as the threaded aluminum can be striped if over torqued. The order of the 3 ports function does

not matter and can be moved if needed. I recommend using a metri-pack style connectors so it can be removed easily if desired.

An exert from the Fuelab manual is copied below to make these instructions more complete, but please refer to the full Fuelab document on their website for more information.

Electrical Planning Notes:

Reference below, for schematic wiring diagram example. Use electrical components as described including electrical connectors that are appropriate for the operating environment of the fuel system, whether its use in street, racing, or marine applications. Electrical connectors for the power leads must be capable of high current draw, note all connections, wire, and component rating requirements herein. Solder and use shrink wrap for wire splices for extra reliability. Main wiring schematic diagram below shows the control of relay by ignition switch. This source can be changed as described, or by a toggle switch. Some forms of racing have specific rules regarding electrical switching of fuel system. Consult appropriate racing guidelines, rules, and regulations.

Speed Control: A "PWM (Pulse Width Modulation) Signal" is a signal that alternates between a "High" voltage level that is limited to approximately 5 Volts to near 0 Volts or ground level (relative to the Power Ground Wire). The signal shape is typically a square wave (when viewed on an oscilloscope) at a fixed frequency. This signal is measured differentially between the PWM Signal (White) Wire and the Power Ground (Black) Wire. The ratio of the signal being "High" vs. "Low" defines the "Dwell Time" in percentage. The Controller interprets a PWM signal's "Dwell Time" range between 5% and 95% to communicate pump flow performance between the minimum speed available and the maximum speed available, respectively. If the Controller fails to interpret or loses the signal, the Controller will default to the maximum speed (or flow) setting. Electronic devices such as Engine Management Units may have an output that can produce PWM Signals compatible with this Controller. If not in use, cover and secure the white, signal terminal (S) wire. If/when white signal terminal (S) wire is set to ground, the pump functions at 50% Duty Cycle.

MAIN WIRING SCHEMATIC DIAGRAM: (Some electrical components shown are not supplied with kit)

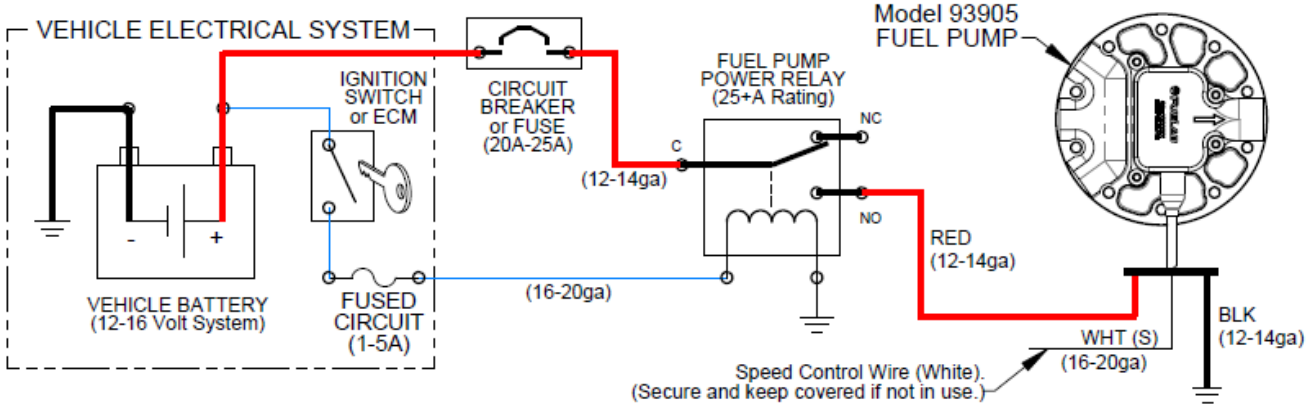

Figure 12: Fuelab Pump Wiring

Fuel Pump Assembly Removal

The dual/triple setups and the fuelab setup are installed in the surge tank before shipping. There is no reason to disassemble the surge tank before installation, but if you choose to do so, you will need to be careful with certain aspects.

- The 8x allen head bolts (standard thread) are stainless and threaded into aluminum. Absolutely no power tools should be used for assembly or disassembly and care must be taken not to overtighten or the threads will strip.
- The power connectors for the fill pump are shared to one of the internal main pumps. After the assembly bolts are removed, you'll pull out the pump assembly about 1/4 way and undo the power studs for the fill pump. Do not pull excessively on this or you will damage the wiring.
- The power studs use insulating bushings on the top hat as to not short on the metal. These will need to installed correctly and not overtightened as not to be damaged.
- The fuel socks will need to be oriented in such a way as to be free flowing when installed, so don't just jam them down in there.
- It is an overall tight fit but goes together without issue so if you have to force something then something is not right.

The pump outlets are connected to the internal fitting with corrugated tubing and oetiker clamps, they are not reusable. If you need to modify a pump for whatever reason the hose and clamps (2) will need to replaced.

Wiring Diagram

This is the recommended wiring method with the optional wiring harness:

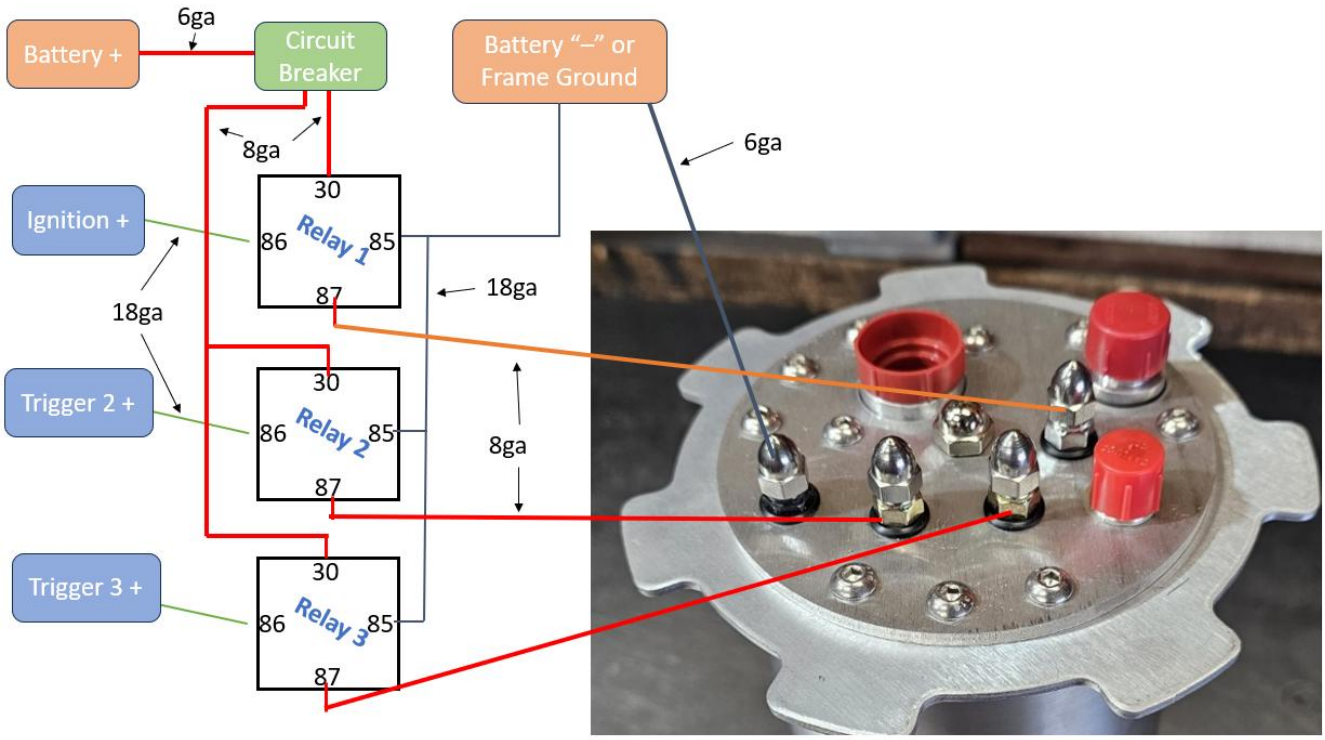

Figure 13: Wiring Diagram

If you don't want to stage the 2nd and 3rd pumps with separate triggers you can combine the 2nd and 3rd relay triggers to a single input on pin 86. This will turn on both the 2nd and 3rd pump at the same time. A 100amp circuit breaker is included as well as some 6ga wiring between the battery and circuit breaker. The silver nut on the surge tank is the primary pump (and fill pump) and must always be triggered by ignition (for the vehicle to run). The gold nut studs are for the 2nd and 3rd pumps. If you have a 2 pump setup, the 3rd stud will be present but unused and missing the cap nut when you receive it. 8ga wiring is included for the relays to the pumps and from the circuit breaker.

Flow Charts

The following charts are provided for reference on which configuration would be best suited for a given power goal. I have a more detailed video walkthrough on a video on my youtube channel explaining how to read the charts: https://youtu.be/kg_dwWrLtRo Skip to about 18minutes 30seconds in to get right to the charts.

There are multiple layers of conservatism built into the calculation, so these are worst-case numbers.

All of these charts use an 80psi design point. So if you run a 50psi base fuel pressure this is at 30psi of boost.

Double Walbro450s with Fill Pump

Name	Source	GPH	LPH	GPM	Total Amps
Main Pump	Walbro525 at 13.5v 80psi	84.6	328.0	1.411	37.36
Fill Help	Walbro255 at 0psi 13.5v	87.0	329.3	1.45	5.00

Max HP Recommendation	
	950HP on E85
	1250HP on Gas

Dual Walbro 450 Consumption with E85

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Limit, Sec
800	0.95	760	1.96	2.82	2.31	0.35	-
800	1.05	840	2.17	2.82	2.10	-0.06	684
900	0.95	855	2.21	2.82	2.07	-0.14	305
900	1.05	945	2.44	2.82	1.83	-0.60	70
1000	0.95	950	2.45	2.82	1.82	-0.63	68
~~1000~~	~~1.05~~	~~1050~~	~~2.71~~	~~2.82~~	~~1.56~~	~~-1.15~~	~~37~~

Dual Walbro 450 Consumption with Gas

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Limit, Sec
800	0.65	520	1.43	2.82	2.84	1.42	-
800	0.75	600	1.65	2.82	2.62	0.98	-
1000	0.65	650	1.78	2.82	2.49	0.70	-
1000	0.75	750	2.06	2.82	2.21	0.15	-
1400	0.65	910	2.50	2.82	1.77	-0.72	59
~~1400~~	~~0.75~~	~~1050~~	~~2.88~~	~~2.82~~	~~1.39~~	~~-1.49~~	~~29~~

WOT Limit is the time that you could be WOT until the surge tank drains

Double Walbro525s with Fill Pump

Name	Source	GPH	LPH	GPM	Total Amps
Main Pump	Walbro525 at 13.5v 80psi	93.2	361.0	1.553	44.40
Fill Help	Walbro255 at 0psi 13.5v	87.0	329.3	1.45	5.00

Max HP Recommendation	1100HP on E85
	1500HP on Gas

Dual Walbro 525 Consumption with E85

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Limit, Sec
800	0.95	760	1.96	3.11	2.59	0.63	-
800	1.05	840	2.17	3.11	2.39	0.22	-
1000	0.95	950	2.45	3.11	2.10	-0.35	123
1000	1.05	1050	2.71	3.11	1.85	-0.86	49
1200	0.95	1140	2.94	3.11	1.61	-1.33	32
~~1200~~	~~1.05~~	~~1260~~	~~3.25~~	~~3.11~~	~~1.31~~	~~-1.95~~	~~22~~

Dual Walbro 525 Consumption with Gas

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Limit, Sec
800	0.65	520	1.43	3.11	3.13	1.70	-
800	0.75	600	1.65	3.11	2.91	1.26	-
1000	0.65	650	1.78	3.11	2.77	0.99	-
1000	0.75	750	2.06	3.11	2.50	0.44	-
1600	0.65	1040	2.85	3.11	1.70	-1.15	37
~~1600~~	~~0.75~~	~~1200~~	~~3.29~~	~~3.11~~	~~1.26~~	~~-2.03~~	~~21~~

WOT Limit is the time that you could be WOT until the surge tank drains

Triple Walbro450s with Fill Pump

Name	Source	GPH	LPH	GPM	Total Amps
Main Pump	Walbro450 at 13.5v 80psi	84.6	328.0	1.411	56.04
Fill Pump	Walbro255 at 0psi 13.5v	87.0	329.3	1.45	5.00

Max HP Recommendation	1500HP on E85
	2000HP on Gas

Triple Walbro450 Consumption with E85

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Limit, Sec
1000	0.95	950	2.45	4.23	3.23	0.78	-
1000	1.05	1050	2.71	4.23	2.97	0.27	-
1400	0.95	1330	3.43	4.23	2.25	-1.18	34
1400	1.05	1470	3.79	4.23	1.89	-1.90	21
1600	0.95	1520	3.92	4.23	1.76	-2.16	18
~~1600~~	~~1.05~~	~~1680~~	~~4.33~~	~~4.23~~	~~1.35~~	~~-2.99~~	~~13~~

Triple Walbro 525 Consumption with Gas

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Limit, Sec
1000	0.65	650	1.78	4.23	3.90	2.11	-
1000	0.75	750	2.06	4.23	3.62	1.57	-
1500	0.65	975	2.68	4.23	3.01	0.33	-
1500	0.75	1125	3.09	4.23	2.59	-0.49	81
1800	0.65	1170	3.21	4.23	2.47	-0.74	54
1800	0.75	1350	3.70	4.23	1.98	-1.73	23
2100	0.65	1365	3.75	4.23	1.94	-1.81	22
~~2100~~	~~0.75~~	~~1575~~	~~4.32~~	~~4.23~~	~~1.36~~	~~-2.96~~	~~13~~

WOT Limit is the time that you could be WOT until the surge tank drains

Triple Walbro525s with Fill Pump

Name	Source	GPH	LPH	GPM	Total Amps
Main Pump	Walbro525 at 13.5v 80psi	93.2	361.0	1.553	66.60
Fill Pump	Walbro255 at 0psi 13.5v	87.0	329.3	1.45	5.00

Max HP Recommendation	1700HP on E85
	2200HP on Gas

Triple Walbro 525 Consumption with E85

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Limit, Sec
1000	0.95	950	2.45	4.66	3.66	1.21	-
1000	1.05	1050	2.71	4.66	3.40	0.69	-
1500	0.95	1425	3.68	4.66	2.43	-1.24	32
1500	1.05	1575	4.06	4.66	2.05	-2.02	20
1800	0.95	1710	4.41	4.66	1.70	-2.71	15
~~1800~~	~~1.05~~	~~1890~~	~~4.88~~	~~4.66~~	~~1.23~~	~~-3.64~~	~~11~~

Triple Walbro 525 Consumption with Gas

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Limit, Sec
1000	0.65	650	1.78	4.66	4.32	2.54	-
1000	0.75	750	2.06	4.66	4.05	1.99	-
1500	0.65	975	2.68	4.66	3.43	0.76	-
1500	0.75	1125	3.09	4.66	3.02	-0.07	596
1800	0.65	1170	3.21	4.66	2.90	-0.31	127
1800	0.75	1350	3.70	4.66	2.40	-1.30	31
2300	0.65	1495	4.10	4.66	2.01	-2.10	19
~~2300~~	~~0.75~~	~~1725~~	~~4.73~~	~~4.66~~	~~1.37~~	~~-3.36~~	~~12~~

WOT Limit is the time that you could be WOT until the surge tank drains

Aeromotive 5GPM with Fill Pump

Pump	GPH	LPH	GPM	Amps
AEI 5GPM at 13.5v at 80psi	273	1033.31	4.55	27.0
Walbro255 at 13.5v 0psi	87	329.30	1.45	5.0

MAX HP Recommendation	1800HP on E85
	2200HP on Gas

AEI 5GPM Consumption with E85

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Time, Sec
1000	0.95	950	2.45	3.55	1.10	-
1000	1.05	1050	2.71	3.29	0.58	-
1500	0.95	1425	3.68	2.32	-1.35	26.8
1500	1.05	1575	4.06	1.94	-2.13	17.1
1800	0.95	1710	4.41	1.59	-2.82	12.8
~~1800~~	~~1.05~~	~~1890~~	~~4.88~~	~~1.12~~	~~-3.75~~	~~10~~

AEI 5GPM Consumption with Gas

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Time, Sec
1000	0.65	650	1.78	4.22	2.43	-
1000	0.75	750	2.06	3.94	1.88	-
1500	0.65	975	2.68	3.32	0.65	-
1500	0.75	1125	3.09	2.91	-0.17	207.3
1800	0.65	1170	3.21	2.79	-0.42	85.9
1800	0.75	1350	3.70	2.30	-1.41	25.7
2200	0.65	1430	3.92	2.08	-1.85	19.6
2200	0.75	1650	4.53	1.47	-3.06	11.9

In this particular case 13 seconds may not seem like a long time, however keep in mind this is at over 2000hp at the crank. At most I would expect people would be at this power for 7-8 seconds for a ¼ mile run so 13 seconds is plenty.

Fuelab 93905 with 255 Fill

Pump	GPH	LPH	GPM	Amps
FL 93905 at 13.5v at 80psi	282	1067	4.70	30.0
Walbro255 at 13.5v 0psi	145	549	2.42	5.0

MAX HP Recommendation	1900HP on E85
	2600HP on Gas

FL 93905 Performance with E85

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Time, Sec
1000	0.95	950	2.45	4.70	4.66	2.21	-
1000	1.05	1050	2.71	4.70	4.41	1.70	-
1500	0.95	1425	3.68	4.70	3.44	-0.24	189.1
1500	1.05	1575	4.06	4.70	3.05	-1.01	44.3
1900	0.95	1805	4.66	4.70	2.46	-2.20	20.4
~~1900~~	~~1.05~~	~~1995~~	~~5.15~~	4.70	~~1.97~~	~~-3.18~~	~~14.1~~

FL 93905 Performance with Gas

RWHP	BSFC	Fuel Req, lb/hr	Fuel Req, GPM	Fuel Aval. @80psi, GPM	Return + Fill, GPM	Surge Tank Fill, GPM	WOT Time, Sec
1000	0.65	650	1.78	4.70	5.33	3.55	-
1000	0.75	750	2.06	4.70	5.06	3.00	-
1500	0.65	975	2.68	4.70	4.44	1.76	-
1500	0.75	1125	3.09	4.70	4.03	0.94	-
2000	0.65	1300	3.57	4.70	3.55	-0.02	2197.5
2250	0.75	1687.5	4.63	4.70	2.48	-2.15	20.8
2600	0.65	1690	4.64	4.70	2.48	-2.16	20.7
~~2600~~	~~0.75~~	~~1950~~	~~5.35~~	4.70	~~1.76~~	~~-3.59~~	~~12.5~~