



Model Number 30301 Velocity Series 100 Fuel System

Operating and Installation Instructions

This product is protected by U.S. Patent 8388322

CAUTION!

This product is to be installed only by persons knowledgeable in the repair and modification of vehicle fuel systems and general vehicle systems modification. Only a qualified technician or mechanic who is aware of applicable safety procedures should perform the installation of this product.

GASOLINE AND OTHER FUELS ARE FLAMMABLE AND CAN BE EXPLOSIVE!

Perform the installation in a well ventilated location only to minimize the build up of fuel vapors. **NO** open flames, smoking or other sources of ignition are to be present during installation, to prevent fire or explosion that can cause serious injury or death. Grinding, cutting, and drilling must be performed with care to prevent ignition. Draining and removal of all fuel and ventilation of vapors in vehicle and fuel system is recommended when performing such procedures. Proper eye and personal protection is required at all times during installation.

WARNING!

The Vehicle's fuel system may be under pressure! Do not loosen any fuel connections until relieving all fuel system pressure. Consult an applicable service manual for instructions to relieve fuel system pressure safely.

Product Contents:

Check the diagram and list of components (right) to ensure that no components are missing from box. Contact your Fuelab® distributor immediately for replacement.

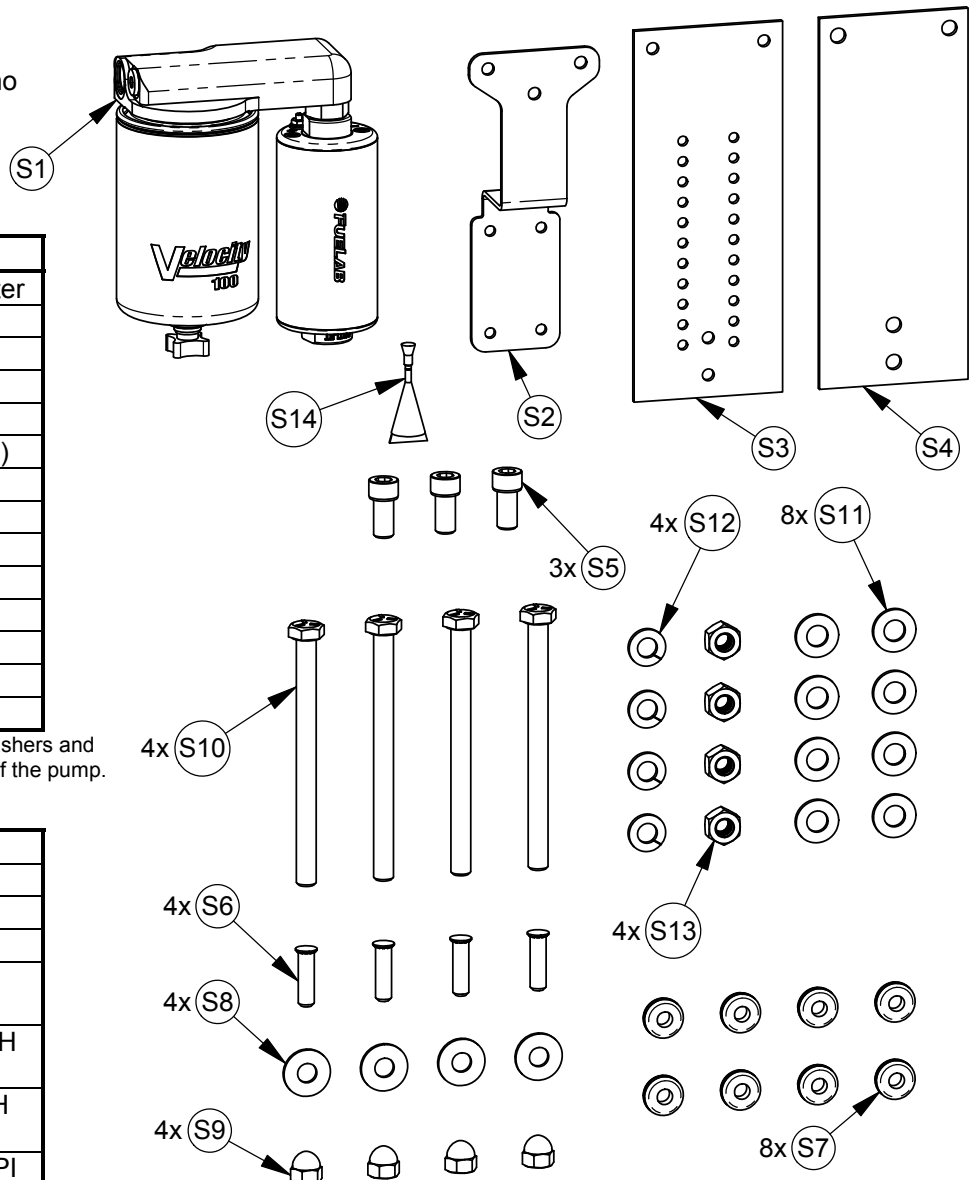
Model 30301 Components:

Item	Qty	Description
S1	1	Fuel System with Filter
S2	1	System Bracket
S3	1	Front Rail Bracket
S4	1	Rear Rail Bracket
S5	3	Cap Screw (5/8"L)
S6	4	Captive Stud (7/8"L)
S7	8	Bushing
S8	4	Stud Washer
S9	4	Acorn Nuts
S10	4	Rail Bolt (4"L)
S11	8	Rail Bolt Washer
S12	4	Rail Lock Washer
S13	4	Rail Bolt Nut
S14	1	Thread Adhesive

Special Note: Pump Electrical Terminal Washers and Nuts are loosely installed on the terminals of the pump.

Model 30301 Specifications:

Outlet Pressure Rating	18 PSI
Inlet Port Size	-8AN
Return Port Size	N/A
Outlet Port Size	-10AN
Free Flow Rating (Full Speed)	N/A
Free Flow Rating (Normal Speed)	100 GPH
Working Flow Rating (Normal Speed)	60 GPH
Filter Thread	1"-14 TPI



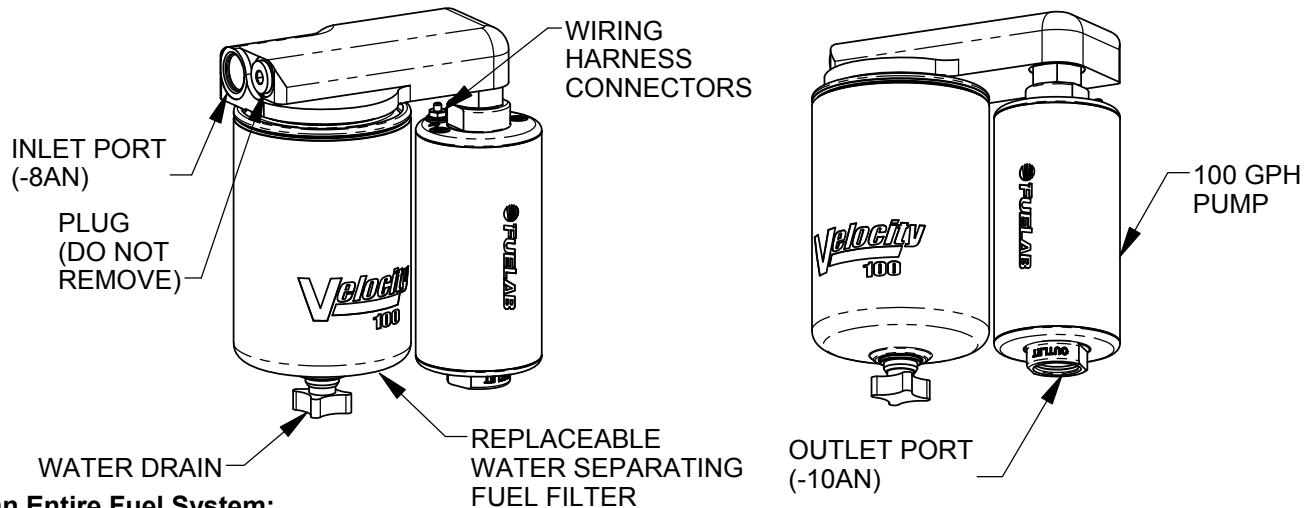
Application:

Additional installation kits are available for this Lift Pump / Filtration System to be installed on various OEM vehicles. See brochure, catalog or other information for specific OEM applications. For applications not using an additional Fuelab® Installation Kit, please refer to “Plan Entire Fuel System” section of these instructions. If an additional installation kit is being used with this installation, then please refer to the “Application” section of those instructions to verify compatibility with this Lift Pump / Filtration System and follow all of those instructions as well.

Fuel System Inspections:

The use of this Lift Pump / Filtration System assumes the use of 3/8” fuel line or larger, including Inlet and Outlet lines. A careful and complete inspection of all fuel lines, electrical wiring and connections are **REQUIRED** to ensure a safe and reliable installation. Repair and replace all plumbing and electrical items as required that are not included with this installation kit. Replacement fuel line must be rated for fuel use, while electrical wire must be 14 gauge size wire or larger in size. Solder connections with shrink wrap, for all wire splices if electrical repair is required.

Features of the Velocity 100 Series Fuel System:

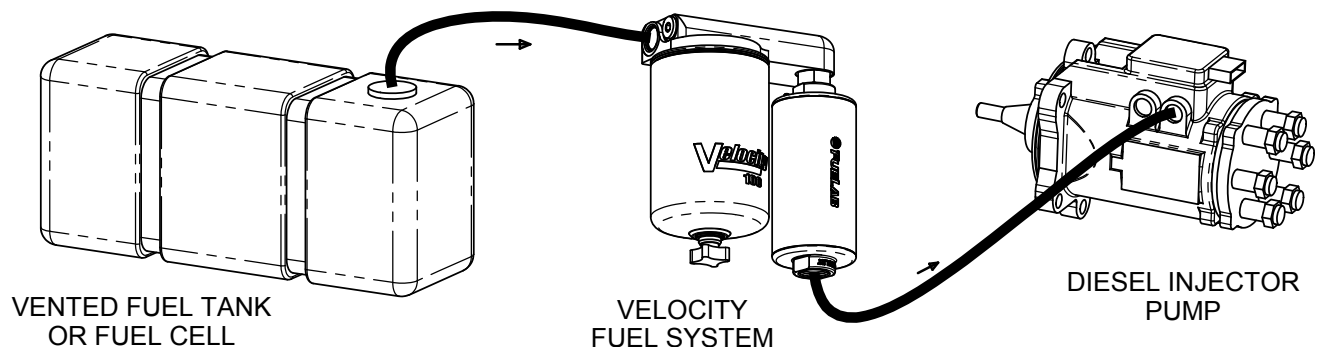


Plan Entire Fuel System:

Additional installation kits are available for this Lift Pump / Filtration System to be installed on various OEM vehicles. If an additional Fuelab® OEM specific installation kit is used in conjunction with this Lift Pump / Filtration System, then follow those instructions and installation steps. For specific applications, not covered by an additional installation kit, additional information and planning is required for a successful installation contained within this section.

Plumbing Planning Notes (without use of additional Fuelab® OEM specific Installation Kit)

This fuel system does not require an additional inlet straining filter. Fuel passes through the water separating filter prior to being sent to the fuel pump. Mounting the Lift Pump / Filtration System as described herein is recommended. Minimize the length of the fuel line feeding the Lift Pump / Filtration System. Use of a minimum of 3/8” (or -6AN) standard fuel line is required for both the Inlet and Outlet lines for the Lift Pump / Filtration System. If possible, avoid “cross-drilled” style 90° elbow fittings or check valves on fuel plumbing, upstream of Lift Pump / Filtration System. Be sure that fuel tank is adequately vented either by fuel cell manufacturer’s recommendations, or to OEM specifications. See diagram below, for an example plumbing schematic.



Electrical Planning Notes (without use of additional Fuelab® OEM specific Installation Kit)

While use of an aftermarket relay is recommended to ensure a quality electrical installation, the current draw is low enough to allow use from the OEM circuit designed for the fuel system. Be sure to use a minimum size of 14 gauge wiring, suitable for an automotive environment. Fuse circuit with a 20 Amp fuse, as well as be sure to have an adequate ground connection to vehicle frame or body. Use of the OEM fuel pump circuit to drive the relay or pump action is recommended.

Installation Steps:

1. Follow all Warnings, Cautions and Instructions written within these instructions herein as well as instructions that come with any Fuelab® Installation Kit that is being used with this system.
2. Typical vehicles modified with an aftermarket fuel system may be able to have this installation performed with fuel still contained within fuel tank, as the fuel inlet for the pump system is above tank level. Double check all lines and position of fuel system's inlet, to be sure fuel tank contents will not drain out during installation. Fuelab® recommends not having fuel inside tank during any fuel system installation. If the vehicle's fuel system has not been modified (from OEM specifications), an additional kit may have to be used, to provide an adequate feed to Lift Pump / Filtration System. An open draw tube with 3/8" line size or larger is REQUIRED. 3/8" line size or bigger is REQUIRED for outlet line (line running from Lift Pump / Filtration System to Vehicle's Diesel Injector Pump)
3. Disconnect the ground terminal (-) from the vehicle's battery and allow the vehicle's engine and exhaust system to cool. Fuel pressure should not be present, if an aftermarket fuel system is on the vehicle. To be sure pressure is not present, loosen outlet fitting of aftermarket fuel pump, or inlet of vehicle's injector pump. Loosen fitting while having connection wrapped in shop rag or towel. Once fitting connection is loose or removed, then fuel pressure is relieved.
4. Find a suitable place to mount the new Fuelab® Velocity Series 100 Fuel System. While many locations are possible for mounting to the vehicle's frame rail, the inside of frame rail is recommended.
5. Use supplied Bolts (item S10), Studs (item S6), Nuts (items S13 and S9), Washers (items S8 and S11) and Bushings (item S7) to loosely assemble Lift Pump / Filtration System onto vehicle's frame rail. Loosely install fasteners, to ensure proper location of new Lift Pump / Filtration System. The Fuelab® Velocity Series 100 Fuel System has an adjustable bracket system (six locations possible) for the installer to find the best possible height location. The higher the better, as long as the Lift Pump / Filtration System does **NOT** touch the vehicle's bed or cab. This "pre-assembly" step ensures the maximum road clearance and best mounting position, to help prevent road debris from damaging the Lift Pump / Filtration System. Be sure to not damage or crimp brake lines, wires or other hoses that may run along the frame rail of the vehicle at the location selected for Lift Pump / Filtration System. The Fuelab® Velocity Series 100 Fuel System's System Bracket is designed to offset the Lift Pump / Filtration System away from these lines. Be sure that the Frame Rail Brackets (item S3 or S4) slip behind these lines. **DO NOT PLACE FRAME RAIL BRACKETS OVER BRAKE LINES, THEY MUST BE SLID BEHIND ALL LINES TO PREVENT DAMAGE!**
6. When an acceptable location and Rail Bracket position is determined, mark or count the desired hole locations of the Studs on the Front Frame Rail Bracket (item S3). Remove all brackets and hardware for the Lift Pump / Filtration System from vehicle. Assemble System Bracket (item S2) to Front Rail Bracket (item S3), using supplied Studs (item S6), Bushings (item S7), Washers (item S8), and Acorn Nuts (item S9). Be sure to feed Studs through the pre-determined hole locations. Prior to installing Acorn Nuts (item S9), use the supplied Loctite® Thread Adhesive (item S14) on threads of the supplied Studs and Acorn Nuts. Only one or two drops of Thread Adhesive is required for effective use. This step is important, as this hardware assembly not only mounts the bracket, but also allows for vibration and sound dampening. If the supplied thread adhesive is not used, then the bracket can loosen over time, leading to catastrophic failure. **USE THE SUPPLIED LOCTITE® 242 THREAD ADHESIVE!** Tighten Acorn Nut until Bushings start to compress. Tighten nut between 5-15 ft-lbs of torque.
7. Use Cap Screws (item S5) to secure the System Bracket (item S2) to Lift Pump / Filtration System (item S1). Supplied Thread Adhesive (item S14) is recommended to be used on the threads of the Cap Screws (item S5), prior to installation.
8. Use supplied Bolts (item S10), Washers (item S11) and Nuts (items S12 and S13) to assemble Lift Pump / Filtration System back onto vehicle. Torque the Frame Rail Bracket Bolts to 15-20 ft-lbs. If these Frame Rail Bracket Bolts are replaced for any reason, replace with only automotive grade 5, 5/16" bolts or stronger. Although four (4) Hardware Sets are supplied, depending on the vehicle, one of the lower Hardware Sets may not be used.

**See Next Sheet for Assembly Drawings for Bracket System
(Instructions are continued after assembly drawings, sheet 5)**

9. Connect fittings and fuel line to their proper inlet and outlet ports. Use caution when using worm gear style hose clamps, as over-tightening can cause leakage or hose damage.
10. Install wiring using nuts and washers lightly threaded on the pump itself. Connect red wire with ring terminal to the red terminal of pump (also labeled as "+"). Connect grounded black wire with ring terminal to the black terminal of pump (also labeled as "-"). Tighten terminals snugly, but do not over-tighten. Power is to be applied when ignition is in the "ON" position only, use OEM fuel pump power if possible.
11. Before attempting to "crank" and start engine, prime fuel system first. When ignition key is set to the "ON" position, the fuel pump should start operating. Within a few seconds, the pump will automatically turn off. At this point, turn ignition switch to "OFF" for a few seconds. Repeat the procedure of turning on and off the ignition switch, in order to drive air from the fuel system, prior to operating the vehicle's engine. Lift Pump / Filtration System should be audible although quiet. If Lift Pump / Filtration System is not heard, have assistant near system, to confirm operation by either listening or feeling by hand. Initial starting of Lift Pump / Filtration System has a "vibration" occur (each time it is operated). This is normal, as it is part of the starting sequence of a fuel pump with advanced electronic brushless technology. After several cycles, inspect all fuel connections and fuel line for any leakage. Repair or replace connections or line as required.
12. Once inspection is complete, start engine. With engine running, begin a second round of inspection for leaks over entire fuel system, not just the sections that were repaired. If a leak is found, turn off engine and repair or replace connection as required, then restart engine and continue inspection.
13. After at least ten minutes of inspection with the vehicle idling, then the vehicle is customer ready. If the Lift Pump / Filtration System is installed correctly, only a small part of the bracket and filter should be showing. If the Lift Pump / Filtration System is rubbing or touching the cab or bed of vehicle, redo mounting location, and lower on position (see step 5).
14. The Fuelab® Velocity Series 100 Fuel System has a high performance non-adjustable relief valve (pressure regulator) integrated within its pump. The setting as delivered is adequate for very high horsepower applications (up to 600 H.P.). High idle pressures are not required for system to maintain pressure while flowing, as other lift pump systems may require.

Filter Replacement:

Fuelab® recommends replacement water separating filters, for the Velocity Series 100 Fuel systems be replaced with Fuelab® Model 40101. Replacement filters must be compatible with 1"-14 threads, with filtration rating of 5 microns or higher. This replacement Filter has the same characteristics as Baldwin® or Hastings® Filter per Part Number BF1282. If fuel pressure is shown to "drop off" too much under engine load, or system has periodic loss of pressure, be sure to replace the filter element.

Troubleshooting:

Problem	Possible Cause	Possible Solution
Not operating or slight "clicking" sound when turned on.	<ul style="list-style-type: none"> Faulty, dirty or corroded terminals or improperly sized wire. Possible debris in inlet of pump, causing rotor jam. 	Check voltage to fuel pump, at terminals. If voltage is steady and consistent (within ½ Volt of the vehicle's battery) then contact Fuelab for repair. If voltage is inconsistent as described, repair or replace electrical components as required.
Loss of pressure or erratic pressure pulsation after several minutes of operation.	<ul style="list-style-type: none"> Cavitation (vapor lock) due to overheating or restricted inlet. 	Replace filter (see Filter Replacement section). If symptoms continue, check temperature right after pump failure. If pump is hot to touch (cannot leave hand on pump due to it being too hot), then look for sources of heat such as exhaust. If not contact Fuelab for further diagnostics or pump inspection.
Not building up fuel pressure.	<ul style="list-style-type: none"> Incorrect fuel system initial priming procedure. Loose inlet fuel fittings or leaking plumbing on inlet side. 	Repeat procedure for proper priming. If condition continues, check all plumbing upstream (on inlet side) of fuel pump. Check water drain of filter, to ensure no air is leaking in.
Leakage of fuel at inlet or outlet fuel ports.	<ul style="list-style-type: none"> Improper type of fitting used. 	If leakage is not at fittings, contact Fuelab immediately for repair or replacement. If leakage is at fitting, be sure that the proper fitting style is used (AN o-ring seal type ONLY!). Pipe threaded style fittings are NOT to be used.

LIMITED WARRANTY

FUELAB, a division of FCP, Inc., having its principal place of business at **1605 Eastport Plaza Drive, Suite 125, Collinsville, IL 62234, USA** ("Manufacturer") warrants its **FUELAB** products (the "Products") as follows:

1. Limited Warranty.

Manufacturer warrants that the Products sold hereunder will be free from defects in material and workmanship for a period of 2 Years from the date of purchase to the original purchaser. If the Products do not conform to this Limited Warranty during the warranty period (as herein above specified), Buyer shall notify Manufacturer in writing, or by phone, of the claimed defects and demonstrate to Manufacturer satisfaction that said defects are covered by this Limited Warranty. If the defects are properly reported to Manufacturer within the warranty period, and the defects are of such type and nature as to be covered by this warranty, Manufacturer shall, at its own expense, furnish replacement Products or, at Manufacturer's option, replacement parts for the defective Products. Removal of Products from vehicle (*Vehicle means any automotive, bike or marine transportation powered by an internal combustion engine. This product is **NOT** intended or designed for use on aircraft, experimental or otherwise.*), shipping to Manufacturer and installation of the replacement Products or replacement parts shall be at Buyer's expense.

2. Other Limits.

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Manufacturer does not warrant against damages or defects arising out of improper or abnormal use or handling of the Products; against defects or damages arising from improper installation (where installation is by persons other than Manufacturer), against defects in products or components not manufactured by Manufacturer, or against damages resulting from such non-Manufacturer made products or components. Manufacturer passes on to Buyer the warranty it received (if any) from the maker thereof of such non-Manufacturer made products or components. This warranty also does not apply to Products upon which repairs have been effected or attempted by persons other than pursuant to written authorization by Manufacturer.

3. Exclusive Obligation.

THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of Manufacturer shall be to repair or replace the defective Products in the manner and for the period provided above. Manufacturer shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall Manufacturer be liable for incidental, special, or consequential damages.

4. Other Statements.

Manufacturer's employees, representatives' and/or resellers ORAL OR OTHER WRITTEN STATEMENTS DO NOT CONSTITUTE WARRANTY, shall not be relied upon by Buyer, and are not a part of the contract for sale or this limited warranty.

5. Entire Obligation.

This Limited Warranty states the entire obligation of Manufacturer with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.

6. Warranty Service

What Does This Warranty Not Cover? Any problem that is caused by abuse, misuse, or an act of God (such as a flood) is not covered. Also, consequential and incidental damages are not recoverable under this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

How Do You Get Service? In order to be eligible for service under this warranty you **MUST** return the Warranty Registration card, or register on-line at www.fuelab.com/warranty-registration within 30 days of purchasing the Product.

If something goes wrong with your product contact FUELAB at 618-344-3300, or send an e-mail to: info@fuelab.com for a Return Authorization Number (RMA). After receiving your RMA send it postage paid, fully insured, with a brief written description of the problem to:

FUELAB Warranty Department, 1605 Eastport Plaza Drive, Suite 125, Collinsville, IL 62234

We will inspect your Product and contact you within 72 hours of receipt to give the results of our inspection and an estimate of the labor and/or parts charges required to fix the Product, if applicable. If covered under this limited warranty Manufacturer will repair Product and return it to you at no cost. If the Product is NOT covered under this warranty and if you authorize repairs, we will return the repaired Product to you COD, or prepaid via credit card, within 72 hours. There is no charge for inspection. If return product is found to be free of defects a \$25.00 shipping and handling charge will be applied. We will return the repaired Product to you COD, or prepaid via credit card, within 72 hours.