



RioVation®

LET'S CLEAR SOME THINGS UP FOR YOU!

www.RioVation.com

(903) 215-8855



LC25LH LEVEL CONTROL FILTERED PUMP VAULT

In order to get the most out of your two year limited warranty, please register your product at <https://riovation.com/product-registration>

This limited warranty does not become effective until the end user completes and submits the warranty form found online.

Warranty information may be found at <https://riovation.com/limited-warranty>

INSTALLATION MAINTENANCE & OPERATION MANUAL

For RioVation® LC25LH LEVEL CONTROL FILTERED PUMP VAULT

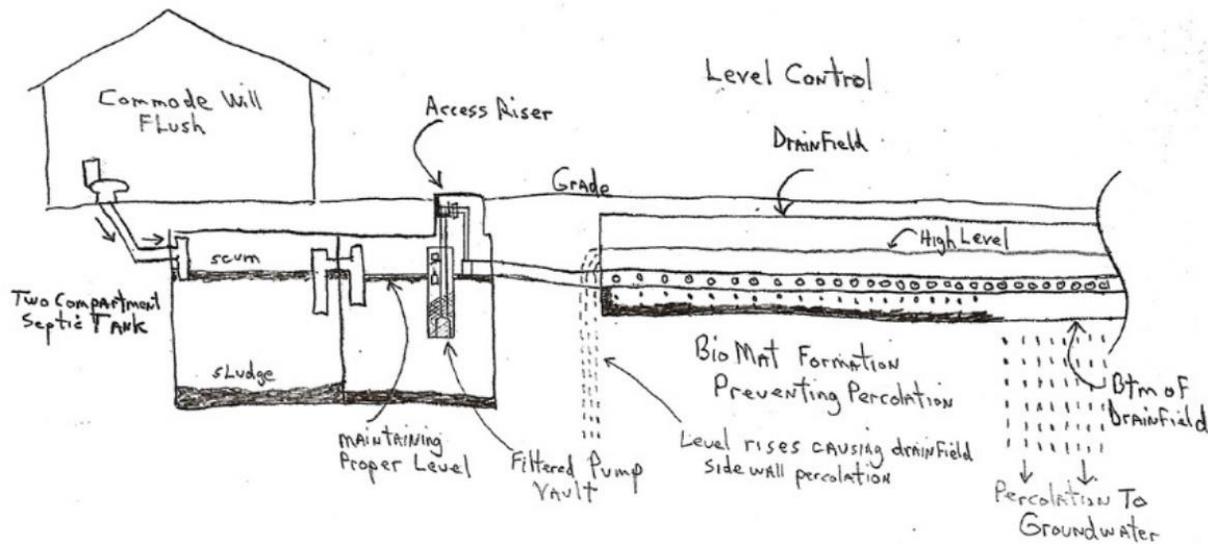
INTRODUCTION

The Conventional Septic Tank and Gravity Flow Drainfield has been used to treat and dispose of domestic wastewater from homes and small commercial establishments successfully for years. In fact, it is still the method of choice throughout the United States and the world.

The septic tank and drain field use anerobic bacteria to treat the wastewater. However, most of the treatment is accomplished in the drainfield. The treatment occurs when anerobic bacteria attach themselves to the soil interface on the bottom and sidewalls of the drainfield. In proper conditions, as the wastewater passes through the soil interface the bacteria metabolize or treat the waste before the effluent reaches the environment or ground water. This anaerobic treatment process also grows a Bio-Mat on the soil interface and starts to plug off the soil. After a number of years more and more soil interface will become plugged.

As a result, during periods of high usage (parties, gatherings, holidays, etc.) and wet weather conditions, wastewater backs up in the septic tank causing toilets not to flush and drainage problems. This process occurs over several years. With the drainfield in this condition, homeowners have been faced with drainage issues such as toilets not flushing, slow drains, gurgling sounds, tubs not draining, etc. For homeowners, this is a problem and they spend thousands of dollars every year having the septic tank pumped out and trying to fix the problem.

Whiteboard drawing PATENTS PENDING



RioVation® has a product to solve this problem! The LC25LH Filtered Pump Vault!

RioVation® has the product to solve the problem of slow drains, toilets not flushing and drainfield backup problems! It is called the **LC25LH Filtered Pump Vault (FPV)**. This product controls the level in the septic tank where the drainfield is plugged with biomat and the septic tank has been converted to a biofilm reactor with the RioVation BioMaze™ product. The discharge flow rate of the FPV is 4 gallons per minute which mimics a typical gravity discharge.

How the RioVation® LC25LH Filtered Pump Vault Works

The LC25LH Filtered Pump Vault consists of a pump, check valve, discharge piping, hose, flow orifice, support bracket, level control switch, filter screen housing and a protective outer vault.



LC25LH
Filtered
Pump
Vault and
Assembly
Parts



The
Pump
Assembly

inserted into
Filter Screen
Housing

inserted into
Protective
Outer Pump
Vault

of the
RioVation®
LC25LH
Filtered Pump
Vault

The LC25LH Filtered Pump Vault (FPV) ships as seen in the above left picture. The FPV has a flow line mark 6" from the top edge of the FPV to make installation at the normal flow line within the tank easy.

The U-shaped support bracket is mounted to the top side of the septic tank access riser. The FPV is lowered into the septic tank through the access riser and secured in place by the U-shaped support bracket via the Pump Discharge Support Assembly piping. The flow line mark on vault is located to the septic tank flow line (or bottom of the septic tank outlet pipe). The discharge hose is connected to the included 3" spigot pressure discharge fitting which is connected to the septic tank outlet pipe within the septic tank by means of an appropriate adaptor fitting which is sold separately on our website. (We recommend installers keep a stock of each of the three adaptors on hand in order to accommodate any of the typical discharge pipe sizes/types.)

Once electricity has been properly connected the LC25LH Filtered Pump Vault is fully functional. Now, as wastewater enters the septic tank from the home the level rises to the preset float switch turn-on point, the pump turns on and discharges wastewater effluent to the drainfield until the level reaches the preset float switch turn-off point and the pump turns off. This process repeats itself and maintains the level in the septic tank continually.



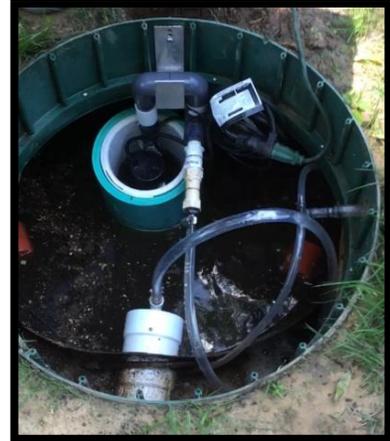


← Hang the Pump Discharge Support Assembly on U-shaped support bracket.

FPV suspended into tank from U-shaped bracket mounted to top side of septic tank access riser. →

← High level alarm float attached at the proper location. (Float provided with separately purchased PA100 Pedestal alarm. See website)

3" Pressure discharge fitting is connected to septic tank outlet pipe within the septic tank →



ASSESSING the septic tank before the install of RioVation® LC25LH Filtered Pump Vault

Assess the septic tank(s) before installing the LC25LH Filtered Pump Vault. More than likely the septic tank has been in the ground for a number of years and is covered with grass. Septic tanks can be one large tank, or a large tank separated into two or more compartments (usually two). It can also be two or three separate tanks in series. It is important to locate the entire tank(s) to accurately assess the septic tank before beginning the installation process. This can be easily done with a probe rod. Once you have located the outer edges of the tank(s), identify the outlet end of a single compartment final tank or the final compartment of a two-compartment tank. This is where the septic effluent discharges to the drainfield from. If there is not a riser with a minimum of 16" diameter already installed a riser and lid are required to be installed on the septic tank lid above the outlet discharge assembly. It is preferred that a 24" diameter riser be installed although a minimum of 16" diameter may be installed. Follow the riser manufacturer's installation instructions and comply with state and county regulatory requirements.

Once you have located and removed all inspection ports and have pumped and cleaned all of the compartments of the septic tank in accordance with state and local requirements and have adequate riser(s) with lid(s) to the grade surface you are ready to start the LC25LH Filtered Pump Vault installation. *NOTE! When pumping, take appropriate precautions and refill the tanks immediately. Leaving the tank(s) empty could result in the tank(s) floating to the surface.*

INSTALLATION Instructions for the RioVation® LC25LH Filtered Pump Vault

1. Looking down into the riser you should see the outlet tee with down pipe. Usually four- inch (4") white PVC plastic. It will be glued to the septic tank outlet pipe through which the septic tank effluent travels to the drain field by gravity flow. Using a hand saw or reciprocating saw with a long blade, cut the outlet tee and outlet pipe off flush with the inside of the septic tank wall or even with outside edge of the riser. Be careful NOT to drop it into the septic tank.

Now thoroughly clean the inside of the outlet pipe of debris around the edges and inside at least four inches (4") into the pipe. Use strong detergent followed by acetone. Use enough to clean surface and thoroughly remove tarnish to expose the PVC. This will allow the special outlet insert fitting to bond properly. Now measure the inside diameter of the outlet pipe and make sure your outlet insert fitting is the right size. Also do this by dry fitting the outlet insert fitting into the inside of the outlet pipe. It should fairly, easily slide into the pipe but also fit snug enough to provide a proper solvent weld (glue) joint. (Do NOT glue yet!)

2. Install the U-shaped support bracket by bolting it to the inside of the riser as high as you can and still be able to close the riser lid correctly with all security devices properly in place. Normally the U-shaped support bracket should be located opposite the outlet pipe.

Stainless Steel Connection Clamp →

Stainless Steel Connection Clamp secures Pump Assembly, Filter Screen Housing & Outer Protection Vault together as one unit.

Pump Discharge Support Assembly (with barb) →

U-shaped Pump Support Bracket →

Discharge Pressure Cap 3" (with barb fitting) →

Clear 1/2" PVC Discharge Hose and Clamps →



3. For installation purposes the LC25LH Filtered Pump Vault (FPV) consists of three main components.

(1) The actual Filter Pump Vault, (2) the Pump Discharge Support Assembly, and (3) the three-inch (3") spigot pressure discharge fitting with hose barb fitting and discharge hose used to connect the FPV discharge to the septic tank outlet pipe within the septic tank.

The FPV must reside in the septic tank at the proper depth. To accomplish this, you must calculate the length of one-inch (1") schedule 40 PVC pipe needed. It will be solvent welded (glued) between the FPV and the Pump Discharge Support Assembly. To calculate, follow these steps.

- (1) Measure the distance from the top of the riser to the bottom of the outlet pipe inside the septic tank (the flow line). = **A**
- (2) Measure the distance from the top of the riser to the bottom of support basket. = **B**
- (3) Use the formula below to calculate the length of one-inch (1") schedule 40 PVC pipe to be glued between the FPV and the Pump Discharge Support Assembly:
 $A - B - 5-1/4"$ = Length of 1" schedule 40 PVC pipe needed.

Using proper PVC solvent welding practices, glue the one-inch (1") schedule 40 PVC pipe between the FPV coupling and the Pump Discharge Support Assembly. Let the solvent welded (glue) joints cure a sufficient length of time. Attach the float that is included with the PA100 pedestal alarm (sold separately on our website) to the FPV using the cable clamp that is pre-installed on the FPV housing. The float cord should be placed in the cord clamp and reattached to the FPV housing with a tethered length of 2 ½" from the center of the clamp to the float (as seen in picture below).



4. Lower the FPV into the septic tank thru the access riser. Support the FPV from the U-shaped support bracket, hanging it by the Pump Discharge Support Assembly.
5. Now glue the three-inch (3") outlet insert fitting into the inside of the thoroughly cleaned septic tank outlet pipe. Using the correct fittings connect the three-inch (3") spigot pressure discharge fitting to the three-inch (3") outlet insert fitting. (NOTE! It is best to make this connection with dielectric grease and then secure with a stainless-steel screw which is provided. This allows the three-inch (3") spigot pressure discharge fitting to later be easily removed and discharge converted back to gravity flow if needed.)
6. Connect the half-inch (½") clear PVC hose to the Pump Discharge Support Assembly barb and the other end to the three-inch (3") spigot pressure discharge fitting barb using the two squeeze clamps provided.

7. Install the PA100 Pedestal Alarm. The PA100 hollow post can be cut shorter if desired. Dig a post-hole next to the riser if possible. If the tank depth is very shallow then move to the edge of the tank but no further than 2' from the riser. A wiring chase should be installed between the riser and the post of the pedestal using a section of 2" PVC conduit. Drill an appropriately sized hole in the riser and the pedestal post for the 2" PVC conduit. Seal all penetrations to the riser using a state and county approved mastic that meets ASTM C 990.

An electrical circuit will need to be run to the PA100 alarm which will power the alarm and the FPV.

Route the level switch SO cable, the pump SO cable and the high-level alarm SO cable through the 2" chase to the PA100 and make the electrical connections following all applicable National and Local Electric Codes. Be sure to properly seal all cords/cables penetrating into pedestal wiring compartment with included gromet/fittings. Any fittings not used should also be sealed. (NOTE... see installation Instructions included with the PA100 and online at <https://riovation.com/downloads/>)

8. The septic tank is now on Level Control. The level in the septic tank will be controlled within its normal operating range.

HOW to MAINTAIN your RioVation® LC25LH Filtered Pump Vault

As with any mechanical system your LC25LH Filtered Pump Vault requires routine maintenance. Under normal circumstances the following is a timeline and list of steps to be taken to maintain your FPV for optimum performance.

1. Every six (6) months the FPV should be removed, disassembled, and cleaned.
2. First, completely disconnect all the electrical power to the septic tank and FPV. Unplug the extension cord from the electrical house plug (NOTE ... Be sure to safely secure the extension cord plug where it cannot be reconnected or plugged in while performing maintenance work!) or on permanently wired systems pull the disconnect and secure it and the box safely where it cannot be reconnected while performing maintenance work.
3. Next, remove the septic tank access riser lid. This will give you access to the FPV. Reach in and disconnect the discharge hose from the Pump Discharge Support Assembly by loosening the clamp.
4. Cut the zip tie holding the excess electrical cables. This will allow slack in the wiring so the FPV can be easily removed from the septic tank. (Note ... If optional high level water alarm float is attached to the outside of FPV, make sure it is not damaged while removing!)
5. Reach down and grab hold of Pump Discharge Support Assembly near the U-shaped support bracket and pull the FPV out of the septic tank and set on ground near access riser.



6. Now you are ready to disassemble the FPV for cleaning by unscrewing and removing the stainless steel connection clamp near top of FPV that holds the Pump Assembly, Filter Screen Housing and Outer Protective Vault together as one unit. *(Please note FPV pictures in this manual.)*

← Pump Assembly

First, remove the Filter Screen Housing by simply lifting it up and out to set upright on the ground. Next, remove the Filter Screen Housing from the Outer Protective Vault in the same manor. Using a garden hose (and light scrub brush if necessary) spray and clean all components of all debris using care not to damage the pump float (and optional high level water alarm float).

NOTE: Before you reinstall FPV - Evaluate whether it is time for regular pumping of wastewater sludge buildup in the septic tank.

7. Once all components are cleaned reinstall Filter Screen Housing down into the Outer Protective Vault making sure it aligns and slips over four-inch (4") ring in bottom of the Vault. Next slide Pump Assembly into Filter Screen Housing making sure it sets down all the way, aligning connection clamp holes at the top of Filter Screen Housing and Vault. Reinstall the stainless-steel connection clamp and tighten securely. The *LC25LH* Filtered Pump Vault is now ready to be carefully reinstalled in the septic tank.

8. Using care, lower the *LC25LH* Filtered Pump Vault into septic tank in the reverse order as you removed it. Make sure the electrical cables are positioned so they can be reattached to the Pump Discharge Support Assembly with a zip tie. Securely hang the Pump Discharge Assembly into the U-shaped support bracket. Reattach the discharge hose to barb and tighten with hose clamp. Coil up and attach the excess electrical cables to the Pump Discharge Support Assembly with a zip tie. (NOTE ... Make sure the optional high level water alarm float is not encumbered with cables in any way which would prevent proper high level water alarm function. Also make sure the scum level in septic tank is not too thick for proper high level water alarm function. Also - Evaluate whether it is time for regular septic tank maintenance on pumping of wastewater sludge buildup.) Restore the power supply properly and reinstall septic tank access riser lid correctly, making certain to carefully secure with security screws and all security devices required by state and local rules.