



Septic Tank Level Control

FILTERED PUMP VAULT



INSTALLATION – MAINTENANCE & OPERATION MANUAL

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RioVation.com

Apriance LLC * dba: RioVation®

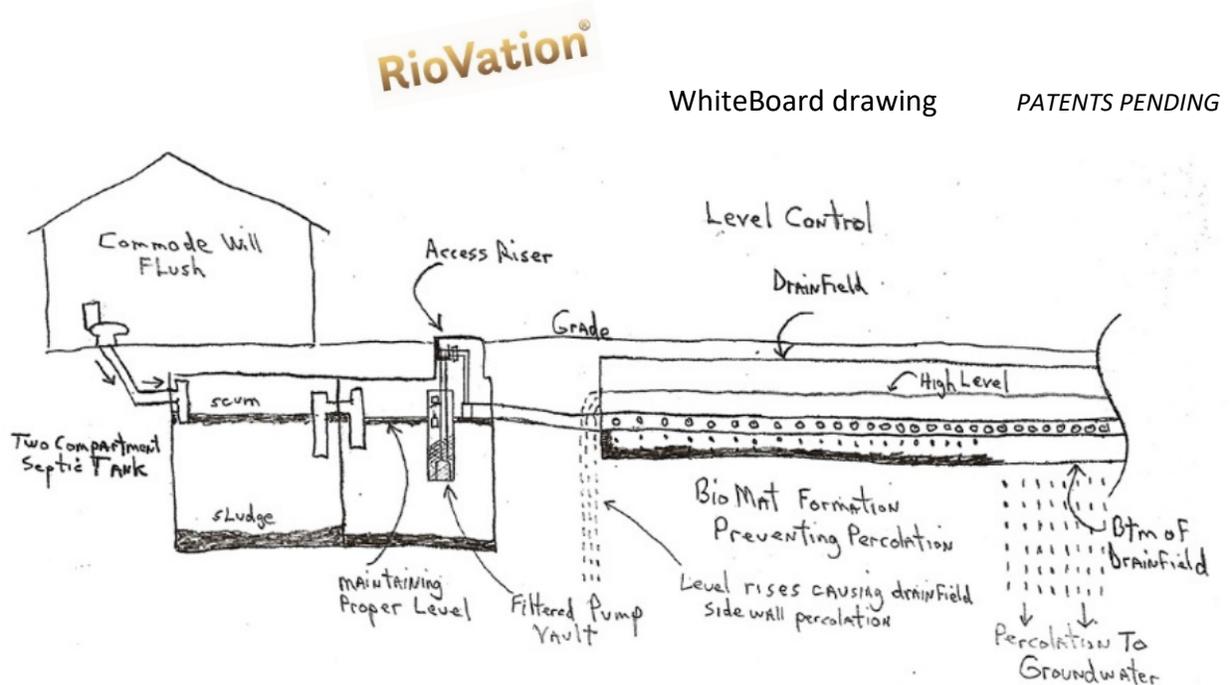
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INTRODUCTION

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 anaerobic bacteria to treat the wastewater. However, most of the treatment is accomplished in the drainfield. The treatment occurs when anaerobic bacteria attach themselves to the soil interface on the bottom and sidewalls of the drainfield. In the proper condition, 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 some number of years more and more soil interface will become plugged.

Now 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. During this period of the drainfield life homeowners have been faced with drainage issues such as toilets will not flush, slow drains, gurgling sounds, tubs will not drain, etc. For homeowners, this has been a big problem and they spend tens of thousands of dollars every year having the septic tank pumped out, trying to fix the problem ... only to have it reoccur.



RioVation® has a product to solve this problem! The Septic Tank Level Control Filtered Pump Vault!



RioVation® has the product for homeowners to solve the problem of slow drains, toilets not flushing and drain field backup problems! It is called the **Septic Tank Level Control (STLC) Filtered Pump Vault (FPV)**. This product simply controls the level in your septic tank no matter what is going on in the drainfield or how many people you have invited over for supper.

Homeowners, now you NEVER have to pump your septic tank again to flush your toilets!

----- **How the RioVation® Septic Tank Level Control Filtered Pump Vault Works** -----

The **Septic Tank Level Control 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.



Septic Tank Level Control Filtered Pump Vault and Assembly Parts



The ...
Pump Assembly ...
 inserted into
Filter Screen Housing ...
 inserted into
Protective Outer Pump Vault ...
 of the
RioVation® Septic Tank Level Control (STLC) Filtered Pump Vault! (FPV)

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Septic Tank Level Control Filtered Pump Vault

The pump, check valve, discharge piping, hose, flow orifice, and level control switch is assembled all together. (Pump Assembly – see picture on page 7.)

The *Septic Tank Level Control (STLC) Filtered Pump Vault (FPV)* has intake ports located such as to allow only septic tank effluent from the clear zone of the septic tank to enter the Filter Screen Housing area. This prevents unnecessary solids from entering and extends filter maintenance intervals. With the Pump Assembly and Filter Screen Housing placed into the *Septic Tank Level Control FPV* it is now connected with a clamp to act as one unit. The STLC FPV may now be installed and has a flow line mark 6" from the top edge of the Vault to make installation easy.

The U-shaped support bracket is mounted to the top side of the septic tank access riser. The STLC 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 Pressure Discharge Cap 4" which is connected to the septic tank outlet pipe within the septic tank. (* See following picture on page 4.)

Once electricity has been properly connected the *Septic Tank Level Control Filtered Pump Vault* is fully functional. Now, as wastewater enters the septic tank from the home the level rises to the preset kick on point, the pump turns on and discharges wastewater effluent to the drainfield until the level reaches the preset kick off point and the pump turns off. This process repeats itself and maintains the level in your septic tank continually.

No matter what the weather conditions or how many people you have invited over, you have the comfort of knowing that your toilets can flush properly, and drains will drain!



RioVation® Septic Tank Level Control Filtered Pump Vault

U-shaped support bracket → mounted to top side of septic tank access riser.

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

← Level Control Switch.

← Pump Assembly is inside Filter Screen Housing & Protective Outer Pump Vault.

← Intake ports are located such as to allow only septic tank effluent from the clear zone of the septic tank to enter Filter Screen Housing area.

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* Completed Install of ...

RioVation®

Septic Tank Level Control

Filtered Pump Vault.

* Pressure Discharge Cap 4" is connected to septic tank outlet pipe (as seen in above picture).

ASSESSING the septic tank before the install of RioVation® Septic Tank Level Control Filtered Pump Vault

Assess the septic tank(s) before installing the *Septic Tank Level Control Filtered Pump Vault*. More than likely your septic tank has been in the ground for some number of years and is covered with landscape grass. It may or may not have a grade access riser and lid at the surface. In years past the septic tank was viewed as a temporary solution to wastewater disposal. Use it just while you wait for the Central Sewer System to come to your area. *No More!* It is now a permanent solution and must be looked at and dealt with as such. With that said, that is why there may or may not be a grade access riser with lid at the surface. How can you effectively maintain a septic tank without it? Enough of that. Let us move forward and assess the septic tank.

More than likely, you have already pumped your septic tank, probably more than once. (*Tired of pumping to flush your toilet ... that is why you are installing the Septic Tank Level Control Filtered Pump Vault!*) Your septic tank can be one large tank, or a large tank separated into two or more compartments (usually two). It can also be two or three tanks in series. It is important to locate the entire tank or tanks to accurately assess your septic tank before moving forward. This can be easily done with a probe rod purchased at a hardware store (Ace, Lowes, Home Depot ...). Once you have located the outer edges of the tank or tanks, identify the last tank or compartment. This is the compartment that the septic effluent leaves from, going to the drain field. This compartment should have an access cover either below ground or at the surface. If not, you must cut an access opening into the septic tank lid. (Follow the instructions under - Riser Installation Instructions.) If necessary, dig down and locate access and remove the cover. Inside you should see an outlet tee or baffle which is designed to prevent floating scum from leaving the tank and going into the drain field. If your septic tank already has a riser and lid coming to the surface it must be a minimum of twelve inches (12") inside diameter. If it does not, you must

install one. We recommend a twenty-four-inch (24") diameter riser with lid. This is the preferred size so future maintenance is easier and if you install other RioVation products in the future there will be adequate room to do so. RioVation® has a complete riser kit available for you along with Installation Instructions.

Once you have pumped and cleaned all compartments of the septic tank and have an adequate riser with lid to the grade surface you are ready to start the RioVation® *Septic Tank Level Control Filtered Pump Vault* installation.

INSTALLATION Instructions for the RioVation® Septic Tank Level Control 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. (You may get acetone at hardware store or use fingernail polish remover.) 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.

Septic Tank Level Control FILTERED PUMP VAULT

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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 Discharge Support Bracket ----->

Discharge Pressure Cap 4" (with barb) ----->

Clear PVC Discharge Hose 1/2" and Clamps ----->



3. For installation purposes the *Septic Tank Level Control* (STLC) Filtered Pump Vault (FPV) consists of three (3) main components. The actual STLC Filter Pump Vault, the Pump Discharge Support Assembly, and the four-inch (4") Discharge Pressure Cap with barb fitting and discharge hose used to connect the FPV discharge to the septic tank outlet pipe within the septic tank.

The STLC 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) The formula follows 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 – five & 1/4 inches (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. (NOTE ... If using the optional High Level Water Alarm attach the float at this time to the FPV. Refer to - High Level Water Alarm Installation Instructions.)

4. Lower the STLC 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 four-inch (4") discharge pressure cap 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. This allows the four-inch (4") Discharge Pressure Cap to later be easily removed and the four-inch (4") gravity flow tee assembly attached.)

6. Connect the half-inch (1/2") clear PVC hose to the Pump Discharge Support Assembly barb and the other end to the four-inch (4") Discharge Pressure Cap barb using the clamps provided.

7. Connect electrical power to the pump and pump level control float switch (and the optional high level water alarm float switch if using/installing) following all applicable National Electric Codes. (NOTE... see Electrical Wiring Instructions)

8. Your septic tank is now on Level Control. The level in your septic tank will be controlled within its normal operating range. No more worrying about toilets flushing or your drains draining!

HOW to MAINTAIN your RioVation® *Septic Tank Level Control* Filtered Pump Vault

As with any mechanical system your Septic Tank Level Control (STLC) Filtered Pump Vault (FPV) 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 STLC 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 STLC 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 STLC 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 refer to previous STLC FPV pictures on pages 3 & 5.)

← 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 STLC FPV - Evaluate whether it is time for regular septic tank maintenance on pumping of wastewater sludge buildup.

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 *Septic Tank Level Control Filtered Pump Vault* is now ready to be carefully reinstalled in the septic tank.
8. Using care, lower the *Septic Tank Level Control 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.



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