



PATENTS PENDING

SG2872 True Aerobic® (ATU) Conversion Kit-Suspended Growth Model

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 sheet found online.

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

(903) 215-8855

www.RioVation.com

Apriance LLC * dba: RioVation®



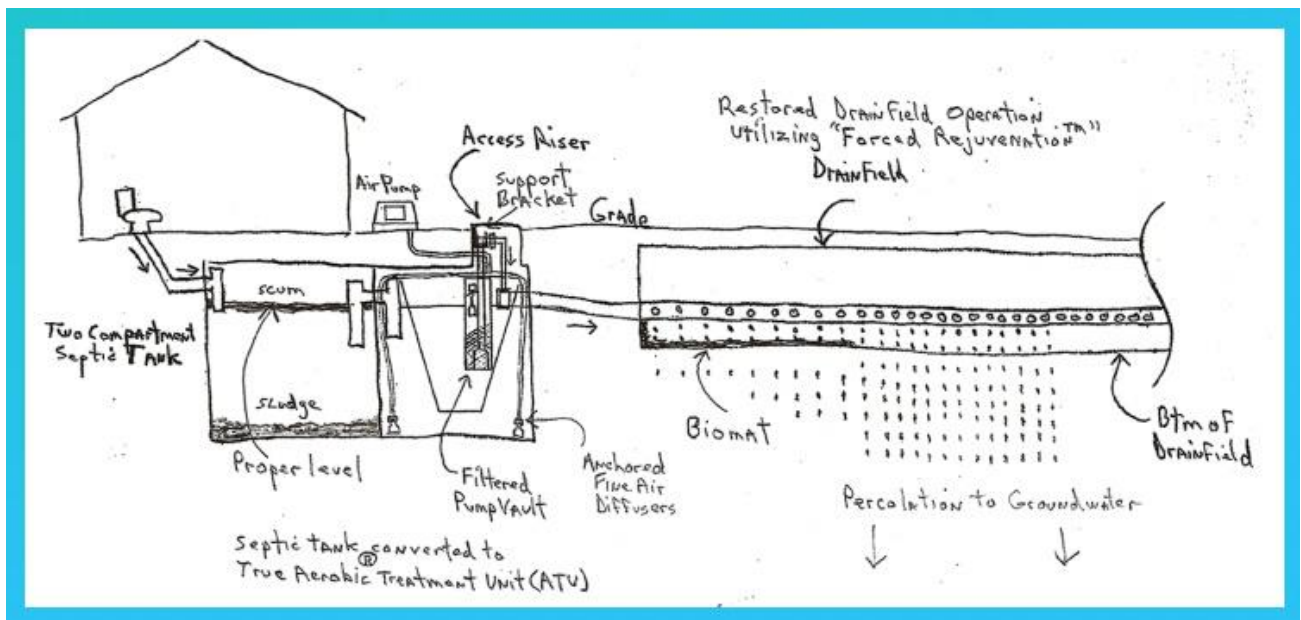
INSTALLATION – MAINTENANCE & OPERATION MANUEL

INTRODUCTION

The RioVation® TRUE AEROBIC® ATU Conversion Kit product, converts an existing septic tank into an Aerobic Treatment Unit (ATU). When the septic tank is converted, the effluent coming out of the septic tank and going into the drainfield becomes odorless, high in dissolved oxygen and aerobic bacteria. As the aerobic bacteria consume the problem causing biomat, the drainfield is rejuvenated and the soil interface is protected against further biomat plugging. See RioVation® WhiteBoard drawing below.

White Board drawing *with* TRUE AEROBIC® ATU Conversion Kit

also Filtered Pump Vault (*Septic Tank Level Control*) is shown. *PATENTS PENDING*



How the RioVation® TRUE AEROBIC® ATU Conversion Kit Works

AEROBIC® (ATU) Conversion Kit product, converts an existing septic tank into an Aerobic Treatment Unit (ATU). When the septic tank is converted, the effluent coming out of the septic tank and going into the drainfield becomes odorless, high in dissolved oxygen and aerobic bacteria. As the aerobic bacteria consume the problem causing biomat, the drainfield is rejuvenated (Forced Rejuvenation®) and the soil interface is protected against further biomat plugging. Basic model includes clarifier, diffuser/anchor assembly, outlet tee assembly, and air pump and housing with integrated alarm.

The clarifier is collapsed and inserted into the septic tank through the access opening in the lid of the septic tank. Once inside the septic tank the clarifier is un-collapsed and connected to the septic tank outlet pipe. It is supported in place by the floats.



PATENTS PENDING



*The ...
RioVation®
TRUE
AEROBIC®
ATU Conversion
Kit installed into
an existing septic
tank.*

The
diffuser(s) are
lowered in place
between the
septic tank wall
and the clarifier

wall. The air pump (and optional housing) is mounted at grade and is connected to the diffuser(s) by the air hose. Once the air pump is properly plugged into the house outlet, the septic tank is a fully functional ATU.

The effluent going to the drainfield becomes odorless, high in dissolved oxygen and aerobic bacteria and now with each passing day this effluent consumes more and more of the problem causing biomat in the drainfield,

opening the plugged pores in the drainfield and soil interface and rejuvenating the drainfield. As this process occurs, the wastewater once again enters the environment and is conducted away from the drainfield. The system is again functioning as intended.

ASSESSING the septic tank before install of RioVation® TRUE AEROBIC® ATU Conversion Kit

Assess the septic tank(s) before installing the BioMaze™ Biofilm Reactor Conversion Kit. 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 or tanks 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 or tanks, identify the outlet end if a single compartment tank or the last tank or the last compartment of a divided tank. This is where the septic effluent discharges to the drainfield from. A riser and lid should be installed on the septic tank lid, preferably above the outlet tee assembly. If the tank is a single compartment tank it is preferable to locate the riser at the outlet end of the tank although it can be located at the center if necessary. For future maintenance ease a 24" diameter riser is recommended. 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 and have adequate riser(s) with lid(s) to the grade surface you are ready to start the RioVation® TRUE AEROBIC® ATU Conversion Kit 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® TRUE AEROBIC® ATU Conversion Kit

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!!!
2. 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.
3. Glue or solvent weld the three-inch (3") outlet insert fitting into the inside of the thoroughly cleaned septic tank outlet pipe. Using the proper fittings convert the three-inch (3") schedule 40 PVC socket to four-inch (4") SDR 35 pipe. (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") clarifier pipe to later be easily removed to install other options.)

INSTALLING the TRUE AEROBIC® Collapsible Clarifier into the Septic Tank

The TRUE AEROBIC® Clarifier should be installed into the final compartment of a two compartment septic tank or it may also be installed in a single compartment tank.

1. Prepare the Clarifier for installation. Remove the clarifier and components from the box. Bring the seam edges of the clarifier together and connect with screws and nyloc nuts provided. Push screws through predrilled holes from inside clarifier, place nuts on outside of clarifier and tighten.

- Using the nylon twine provided, tie the floats to the clarifier approximately eight-inches (8") from the clarifier top using the four-inch (4") spaced holes (pre-drilled). Tie the float(s) to the inside of the clarifier allowing a ½" space between the clarifier and the float, using a square knot on the outside of the clarifier.
- Put the two clarifier hoop pieces together to form a circle using the two couplings. Then set aside for later installation. Next, connect the hoop clips to the inside of the clarifier two-inches (2") down from the top of the clarifier (holes are predrilled) with the screws and nuts provided and tighten (do not over tighten). NOTE ... *Position the clip openings down.*

TRUE AEROBIC® ATU Conversion Kit

- Clarifier hoop installed along inside top with hoop connection clips. →
- Floats tied inside of Clarifier with twine. →
- Clarifier is seamed with screws and nuts. →
- The 4-1/4" hole in the Clarifier goes over the septic tank outlet pipe. →



- The clarifier is now ready to be installed into the septic tank. You may prefer to fill the septic tank with water to the bottom of the outlet pipe (flow line) before proceeding.
- Collapse the clarifier as shown (in earlier above pictures) and lower into the septic tank. Then, un-collapse the clarifier and bring it into a circular shaped position. Now take the completed clarifier hoop and compress enough to get it through the riser. Then position hoop inside clarifier and push the hoop up into the hoop clips one at a time, spinning the clarifier as needed to position each clip where it is easily accessible through the riser. When completed the clarifier will now be held in a circular shape. Now attach (slide) the 4-1/4" hole in the clarifier over septic tank outlet pipe by bringing the four-inch (4") PVC outlet pipe in through the 4-1/4" hole in the clarifier and dry fit the outlet tee assembly to it. (There is no need for it to be glued.)

TRUE AEROBIC® ATU Clarifier is installed. →



← Outlet Tee Assembly

Outlet Tee Assembly is installed onto septic tank outlet pipe. →

PATENTS PENDING



INSTALLING the Anchored Porous Fine Air Diffusor(s)

The following instructions apply to each anchored diffusor installed.

1. Remove the anchored diffusor(s) and hose, and hose clamps from the box. Attach the clear 3/8" air hose to the barb fitting on the top of diffusor(s) and install the clamp.
2. Lower the anchored diffusor by the air hose, through the access riser, and position diffusor so it sets on the tank bottom and is positioned between the wall of the septic tank and the wall of the clarifier. Mentally draw a line from top of clarifier to bottom of septic tank and position diffusor(s) a minimum of 5" from vertical line toward septic tank wall. (Note: Aeration should not bubble up into the clarifier. It should remain a quiet zone.)
3. Drill a 3/4" hole in the side of the access riser a few inches below the grade. Place the clear 1/2" connection hose through the 3/4" hole into the riser. Attach the clear 1/2" connection hose to the clear 3/8" air diffusor hose using the reducer barb fitting and clamps. Leave an extra two or three feet (2' or 3') of clear 3/8" air hose rolled up in the riser. Caulk and seal the clear 1/2" connection hose to the riser



Anchored Porous Fine Air Diffusor Parts

← TRUE AEROBIC® Air Pump.

← The clear 1/2" connection hose is shown attached to Air Pump air discharge port.

← Anchored Porous Fine Air Diffusor.

← The clear 3/8" air diffusor hose is shown coiled with reducer barb adapter fitting and clamps.

4. Air Pump & Housing with Integrated Alarm - Installation

A. When considering where to locate the Air Pump & Housing with Integrated Alarm, it is recommended that it be located near an existing 120 volt outlet but no further than 75' from the septic riser. If an existing electrical outlet is not available, then a weatherproof 15 or 20 amp, 120 volt outlet should be installed in the desired location in accordance with local and national electric code requirements. Once you have decided on the location for the Air Pump Housing make sure it is level and high. Set the Air Pump & Housing with Integrated Alarm and position in such a way that when hinged open it is **not obstructed**.

B. Remove the security screw and hinge open the housing open. Remove all shipping straps. The only assembly required is the attachment of the beacon light to the top of the housing and plugging it into the wiring harness inside the housing. Simply place the beacon male fitting through the hole in the top of the housing and tighten the nut. Plug the wiring harness into the male spades provide on the beacon light. Run the male electrical plug on the cord from the alarm assembly through the hole provided in the housing base. Once the installation is complete the male plug will be plugged into the 120 volt outlet.

The RioVation® TRUE AEROBIC® ATU Conversion Kit is now installed and fully functional!



RioVation®



Air Pump & Housing
with Integrated Alarm.
Comes pre-assembled!



HOW to Maintain Your RioVation® True Aerobic® ATU

Your septic tank is now an Aerobic Treatment Unit (ATU) that actively treats the wastewater from your home every day. By utilizing aerobic microorganisms (bacteria), your ATU converts your wastewater to an odorless effluent high in dissolved oxygen and aerobic bacteria which then passes to your drainfield for drainfield rejuvenation and protection. As with any biological or mechanical system, your True Aerobic® ATU requires routine inspection and service. It should be performed at a minimum of every six (6) months with the following steps.

1. Remove the security screws and lid along with any other security devices.
2. Make a sample bottle using a clear graduated cylinder about one quart in size. Divide the container into ten (10) equal parts using a waterproof marker, thus signifying 10% – 100%. Attach the bottle to a 4' handle using Gorilla tape. (PVC ½" pipe works well.)
3. Using the sample bottle, catch a full aeration grab sample from the aeration compartment which is between the septic tank wall and the clarifier wall. Allow the sample to remain still & undisturbed for 30 minutes. Measure the sludge volume by locating interface (the point at which solids settle to) between clarified effluent and settled sludge on graduations. Interface should be between the 20% and 60% mark. Sludge layer should be chocolate in color and full of very, small pieces that resemble small pieces of sponge. If results differ, refer to ATU Condition Chart for corrective action.
4. Next thoroughly wash and clean the sample bottle and catch an effluent sample from inside the clarifier, about six (6") inches under the liquid level. Effluent should have a non-offensive odor and be fairly clear in color. If not refer to ATU Condition Chart.
5. If a scum layer has formed on the liquid surface of the clarifier, remove with a fine mesh net, and dispose of properly. Material may be disposed of by returning upstream of ATU through cleanout.
6. There should be significant turbulence above the anchored diffusers(s) caused by the rising air bubbles. Proper aeration in the True Aerobic® ATU is maintained by the following maintenance operations.
 - A. Clean or replace the air pump intake filter every six (6) months by removing screen on air pump cover. Remove cover and filter. Replace with new one or wash existing filter in mild soap and water, then rinse and dry and reinstall, replacing cover and screen.
 - B. Check the air pressure on the air pump discharge by using the optional Air Pressure Schrader Valve. Remove the plastic cap and connect the optional Quick Chuck Pressure Gauge. If the air pressure exceeds 3.3 PSI, replace all

the diffuser stones following the instructions entitled, Diffuser Stone Replacement. If the air pressure is lower than one (1) PSI, check for air leaks. If there are no air leaks it may be time to replace or rebuild your air pump.

7. Always properly reinstall any related safety devices, and the access cover(s) with security screws.

8. Pumping and Cleaning the septic tank/ATU.

As with all septic tanks your septic tank/ATU will require periodic pumping and cleaning. This is usually necessary every 2 to 4 years. However, there is no set time because tank sizes and loading rates vary and differ from household to household. An aeration grab sample 30 minute Settleability Test should be run every six (6) months or less. (Refer to #3 in this section for instructions.) When the sample reads more than 60%, it is time to pump and clean out by removing all inspection port covers whether to the surface or buried. Pump and wash all compartments with a garden hose, being careful not to damage internal components.

After pumping and cleaning fill all compartments with clean water. Do NOT leave the septic tank/ATU empty as the ground water could float it! Inspect all internal components to make sure they are in proper working order. Make sure the clarifier is floating in its proper place. (See Clarifier Installation Instructions.) Make sure the diffuser(s) are in proper position and have good air flow. (See Diffuser Installation Instructions.) Always properly reinstall any related safety devices and lids, and the access cover(s) with security screws that have been removed.

9. Diffuser Stone Replacement.

A. With riser lid removed, grasp the anchored diffuser by the 3/8" air hose and lift out of the tank as if pulling and anchor onto a boat. Set on ground beside riser.

B. After washing anchored diffuser with a garden hose, unscrew diffuser from anchor. Next remove stainless steel screw holding the assembly together. Disassemble and remove the stones and gaskets taking note of the positions of each. After cleaning the gaskets reassemble in the reverse order using new stones. Replace the stainless steel screw holding assembly together. Screw the diffuser back on the anchor making sure each stone and gasket align properly so as to get a good airtight seal between each stone and the assembly.

C. Lower anchored diffuser back into its proper position. (Refer to Anchored Diffuser Installation Instructions). Replace the riser lid, installing properly all safety screws and any other safety devices.

RioVation® AIR PUMP HOUSING INSTALLATION

1. The Air Pump Housing can be located on high, level ground next to the septic tank/ATU or next to the house. (Locating next to the house can allow for the air pump to be directly plugged into a house electrical outlet.) Once the location is decided upon, level with shovel and firmly pack ground. Set or mount the air pump housing on the level ground chosen.

2. Cut a two inch (2") hole in one corner of the air pump housing base. This will allow the air pump discharge hose and electrical cord to exit the air pump housing.

3. Remove the air pump from box and locate it on the air pump housing base. Remove the black rubber 90 degree discharge fitting from box and connect and clamp to the air pump discharge port.

4. Dig a shallow trench from the Air Pump to the riser containing the TRUE AEROBIC® ATU Conversion Kit. Lay the clear 1/2" connection hose in the trench between the diffuser(s) and the Air Pump. Connect and clamp to the barb fitting on the diffuser air hose in the riser. Connect and clamp the other end to the black rubber 90 degree discharge fitting on the Air Pump. Backfill the trench and properly plug the Air Pump into the electrical outlet.