



Residential

AdvanTex

Installation

using a steel tank



Anchorage Tank

INTRODUCTION

It's a team effort

As the installer, operator, service provider, or homeowner of an onsite wastewater treatment system, you play a crucial role. Neighbors, regulators, dealers, and manufacturers all rely on your expertise.

All onsite systems require servicing. No matter how much we'd all like to flush and forget, proper installation and regular servicing optimizes the treatment process and ensures that onsite systems are a sustainable technology.

To make servicing easier, Anchorage Tank & Welding, Inc. and Orenco Systems, Inc. have configured the Advantex Treatment System and its components to be one of the most trouble-free and service-friendly residential treatment systems available in Alaska. We have also provided this manual. Inside you will find information about...

- The Advantex System configurations and treatment process
- System components
- Step-by-step Illustrated Installation Instructions

Installation, Operation, Maintenance, and Testing of an onsite treatment system requires an understanding of all this information. So, before firing up the backhoe and rolling up your sleeves, take the time and read through this manual. Then write all over it. Reading this manual and maintaining current and accurate records will save everyone time, trouble, and money in the long run.

AdvanTex® Installation

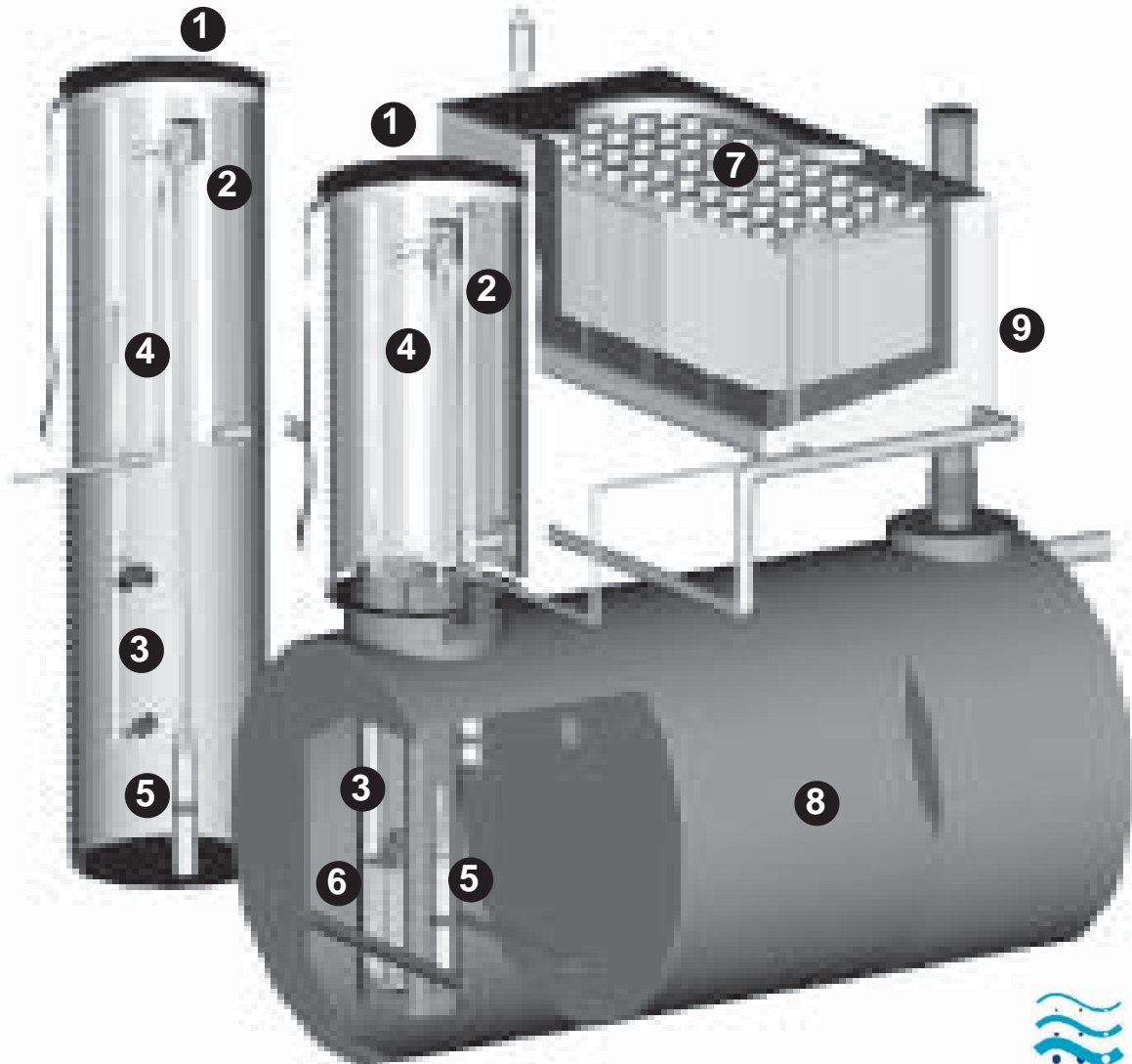


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AdvanTex[®] Installation

SYSTEM COMPONENTS



Outstanding Wastewater Treatment

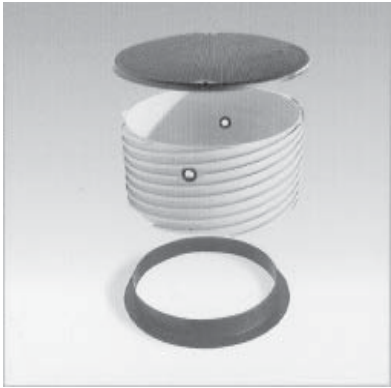
This system is a combination of a steel septic tank with Orenco Systems, Inc. AdvanTex[®] filter and pump. Here's how it works: Effluent from the building enters the tank and travels the entire length of the tank. A pump located in a Biotube[®] Pump Vault near the outlet end of the

tank pumps the filtered effluent up to a distribution manifold in the top of the AdvanTex Filter. This manifold evenly distributes the effluent over the surface of the filter media, where it trickles down through the media and back into the septic tank. There, it flows back to the

pump, completing one cycle. Wastewater is circulated several times through the AdvanTex Filter media. When the tank is full, the filtered effluent then flows to a significantly reduced drainfield.

Covered by U.S. Patent numbers 5,980,748; 5,531,894; 5,480,561; and 4,439,323. Additional patents pending by Orenco Systems, Inc.





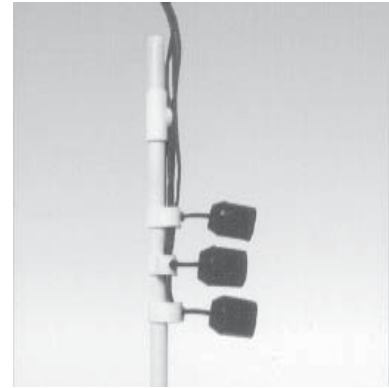
1 Riser, Lid, and Accessories

- Allow easy access to tank
- Attractive, non-skid lids
- Strong & lightweight
- Insulated with 2" urethane foam
- Standard 72" length
- Longer risers available in 12" increments
- Bolt-ring, gaskets, and bolts



2 External Splice Box

- UL listed
- At-grade installation
- Strong & lightweight
- Completely watertight
- Provides easy access for inspection and servicing
- Covered by U.S. Patent numbers D461,870 & D445,476



3 Float Switch Assembly

- For reliable pump control
- Pilot duty or motor-rated switches
- Be aware that float settings are not set at the factory. Please confirm the proper float levels with the drawings herein.



4 Hose and Valve Assembly

- Intelligently designed with quick disconnect unions, ball valves, and flexible hose and fittings
- Provides easy access for maintenance and servicing of the pump system
- Configurations available for deep installations and designed for Alaskan conditions



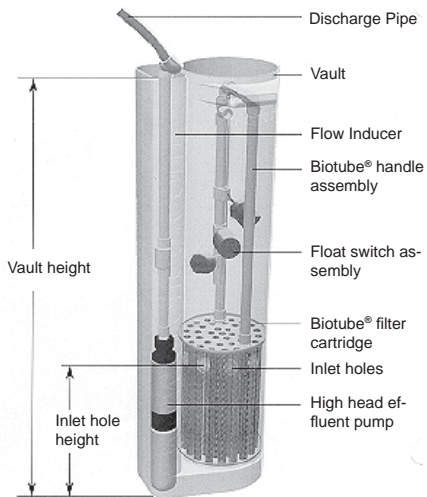
5 Effluent Pump

- Turbine-type effluent pump manufactured specifically for wastewater applications. UL listed
- Lightweight (about 25 pounds) yet powerful
- High pressure capacity to clear plugged orifices.
- Extremely durable and versatile



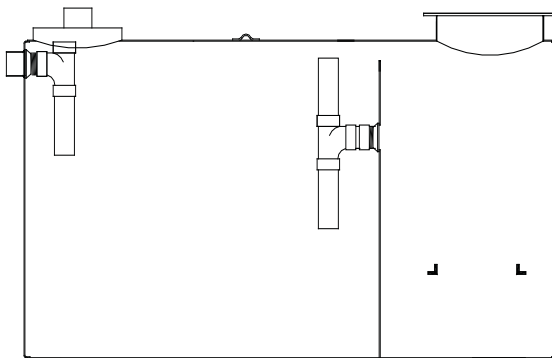
VeriComm® Control Panel

- UL listed
- Engineered specifically for AdvanTex® applications
- Corrosion-proof enclosures
- Coupled with a web-based telemetry system for 24/7 remote monitoring without disturbing the homeowner.



6 Biotube® Pump Vault

- Composed of highly durable, molded polyethylene
- For use with Orenco 4" Submersible Effluent Pumps
- Float Stem: Sched. 40 PVC
- Covered by U.S. Patent numbers 4,439,323 and 5,492,635



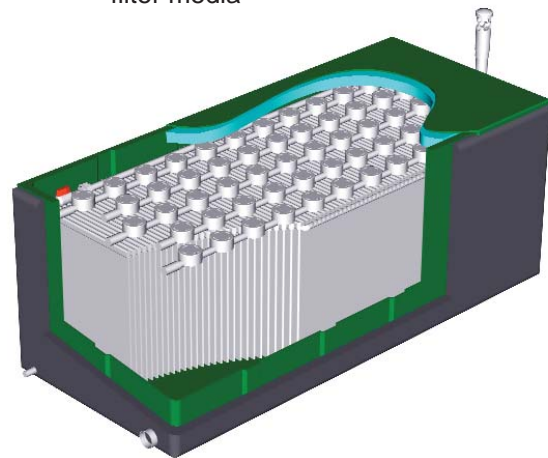
8 Steel Tank

- Twice as thick as traditional steel septic tanks.
- Welded and sandblasted inside & out
- Special plastic coating inside & out.



7 Distribution Manifold

- Distributes effluent evenly over filter media



9 AdvanTex® Filter

- Preassembled with distribution manifold and media already in place.
- Insulated for tough Alaskan conditions.
- Sturdy, tamper-proof lids provide access to the entire filter media for easy maintenance.
- Gas shock lids keep the lid open for single-person maintenance.

SYSTEM OVERVIEW

The Tank.

Your tank is a specialized steel tank designed and constructed especially for the AdvanTex® system. It is not a standard septic tank. Fabricated from thicker steel and specially coated to last indefinitely, this tank is equipped with a pump vault and a manway with an insulated riser. This riser is for pump and plumbing access.

The AdvanTex® Filter.

This filter housing and media from Orenco Systems, Inc. provides a controllable environment for the bacteria colonies to treat the septic tank effluent before returning it to either the second compartment of the tank or on to the drainfield.

The Biotube® Pump Vault.

The manway on the outlet end of the tank contains the pump vault and plumbing. This vault is constructed of sturdy, molded polyethylene and is not affected by the caustic environment of the septic system. It is your primary insurance against drainfield failure due to clogging from particulate matter and grease. It must be maintained on a regular basis, usually when the tank requires pumping. (Refer to the maintenance section for instructions.) This vault contains the following components:

- a.) molded polyethylene compartment in which a Biotube® filter is located.
- b.) an adjustable float assembly for the level control float switches.
- c.) a nylon retrieval rope.
- d.) an external flow inducer that can accommodate either one or two effluent pumps. Typically, it contains a 1/2 horsepower submersible turbine pump especially designed as an effluent pump. In the unlikely event that it ever needs replaced, it must be replaced by exactly the same type pump, which is available only from Anchorage Tank or Orenco Systems®. *A similar looking well pump is not designed for use in septic effluent, it will almost certainly not provide the same flow rates and volumes required for proper system operation, and it is **not UL listed** as an effluent pump.* The piping and fittings are all common schedule 40 PVC plastic, available from almost any plumbing store.

The VeriComm® Control Panel.

The electrical control/alarm panel is weatherproof and should be mounted outside on a 4x6 post. The pump motor contacts inside the panel make a clunking noise when activated, *so it is NOT advisable to mount the panel inside or onto the home.* The electrical controls inside the box are activated by float switches in the tank. Since the control panel is mounted outside, the Municipality of Anchorage requires a remote alarm mounted indoors. This alarm is fed through telephone wire from a relay in the main electrical control box. Inside the control box are the main circuit breaker (gray), the alarm circuitry, and the terminal strip where the connections to the house power and the tank are made. Replacement parts for all electrical components are available from Anchorage Tank.

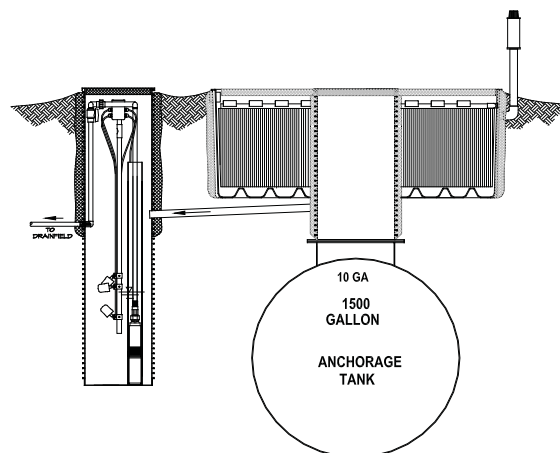
Optional Equipment

Ultra-Violet (UV) Filtration.

Some systems require the effluent pass through an ultra-violet filtration unit before discharge into the native soil. An additional basin is provided downstream of the AdvanTex system to house the filter and allow for maintenance and UV bulb replacement.

Discharge Pump Basin.

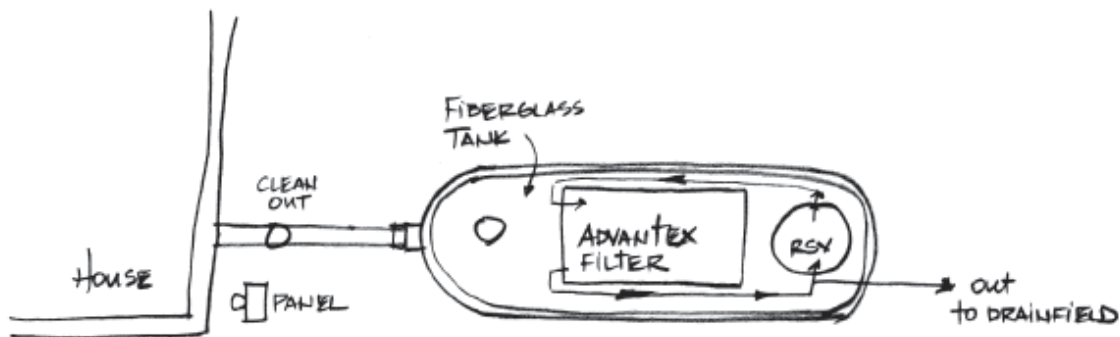
If the site does not permit gravity flow of the AdvanTex system effluent to the drainfield, an additional basin is needed. Effluent from the system gravity flows into the pump basin where it is then pumped up to the drainfield.



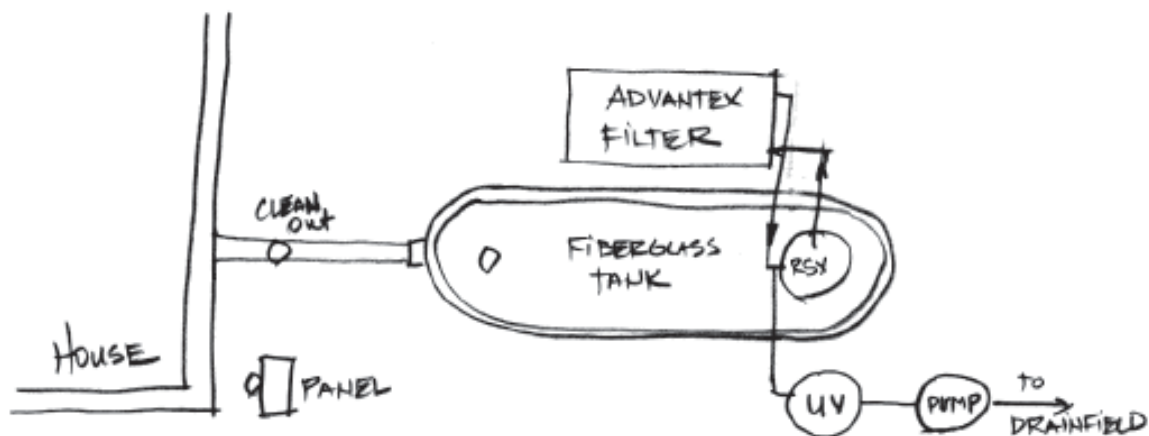
AdvanTex® Installation

DETERMINE WHERE EVERYTHING GOES

The AdvanTex® Treatment System is quite versatile and can be installed in many different configurations. The project engineer will determine what components are necessary for the system, but it may be up to you to decide their configuration. It's best to sketch the positions of the tank and the filter on the site so you have a plan of attack. Be sure to include the location of the control panel, which needs to be in eyesight of the tank and filter. The textile filter can be placed in several different positions in relation to the tank below. While determining which configuration is best, look to see how the filtrate return line (coming out of the filter) needs to be run. It's a good idea to orient the system so that the plumbing of the filtrate return line is easy to plumb, as it has a slope requirement (1/4" per foot).



The example system sketched above consists of a tank with the filter pod placed directly above it. Filtrate will gravity flow from the Recirculating Splitter Valve (RSV) to the drainfield. Note that even though the house is located nearby, the control panel is mounted on a 4x6 post. Motor contactors inside the panel make a "clunk" when activated and it would sound like a moose kicking the house should the panel be mounted on the siding.

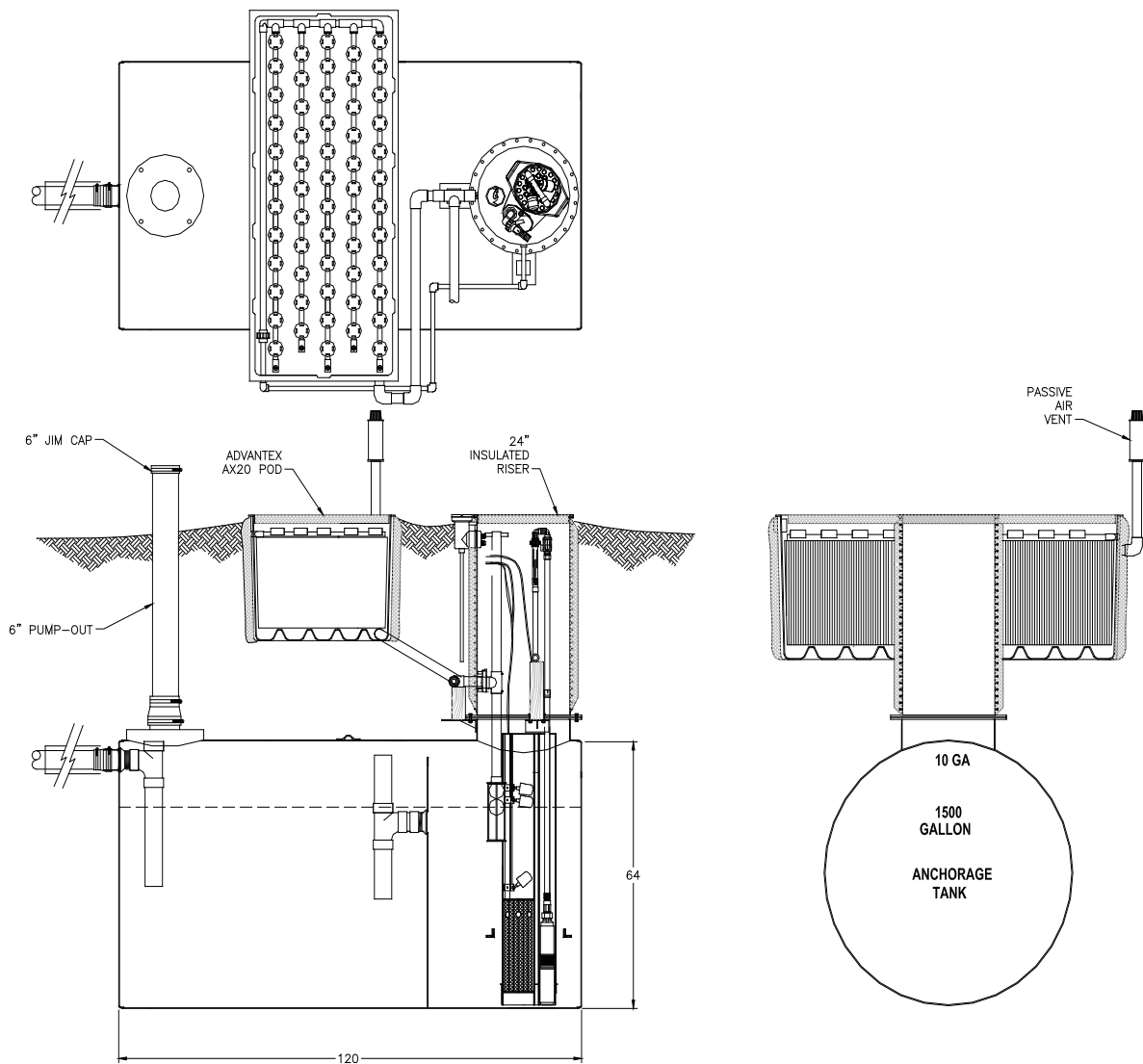


The example system sketched above consists of a tank with the filter pod placed at the side of the tank. (Whenever the filter isn't placed directly over the tank, place blueboard insulation over the tank & under the filter.) Filtrate will gravity flow from the RSV to a basin that contains an optional UV filter, then continues to gravity flow to another basin with a discharge pump. There, the filtered effluent is pumped

EXAMPLE SYSTEM CONFIGURATION

MODE 1A

This is the most typical system configuration with the filter located above the tank and the filtrate gravity feeding to the drainfield. Mode 1B would be similar with the addition of a pump basin downstream of the tank should there be a need to pump up to a drainfield. For more information on Mode 1B, see page 39.



AdvanTex® Installation

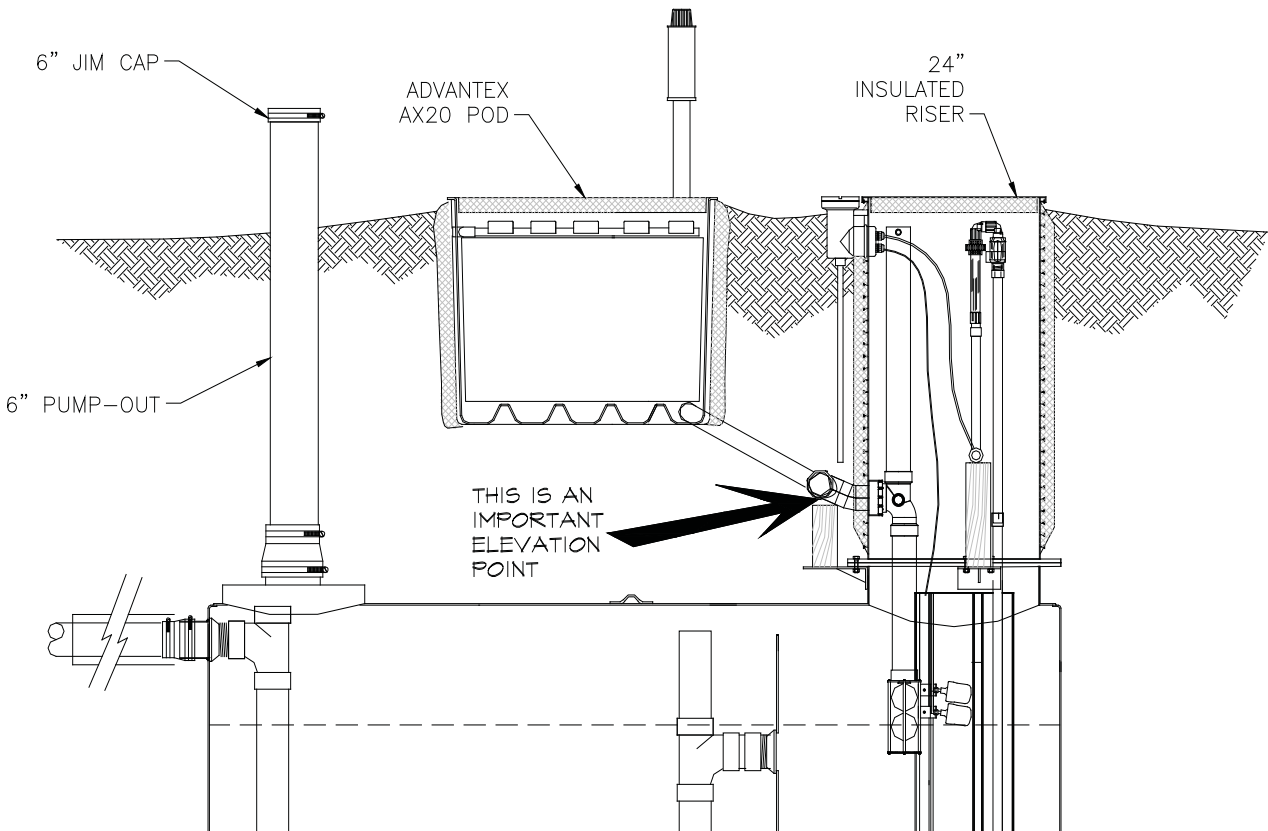
EXCAVATING THE HOLE

Determining the elevations

Before excavating the holes for the tank and/or filter, consider the elevations required:

The 2" filtrate return line (that's the line that exits the filter and runs back to the riser) should be sloped a minimum of 1/4" per foot. Also, if the line is less than 6 feet long, it needs to have a minimum elevation difference of 1-1/2" between the outlet of the filter and the inlet at the riser.

The top of the AdvanTex® filter needs to be 1" to 2" above finished grade. Take into account any landscaping that might affect the finished grade and be sure it slopes away from the green lid. It make for a nice-looking installation to have the lid of the filter at the same elevation as the lid of the riser.

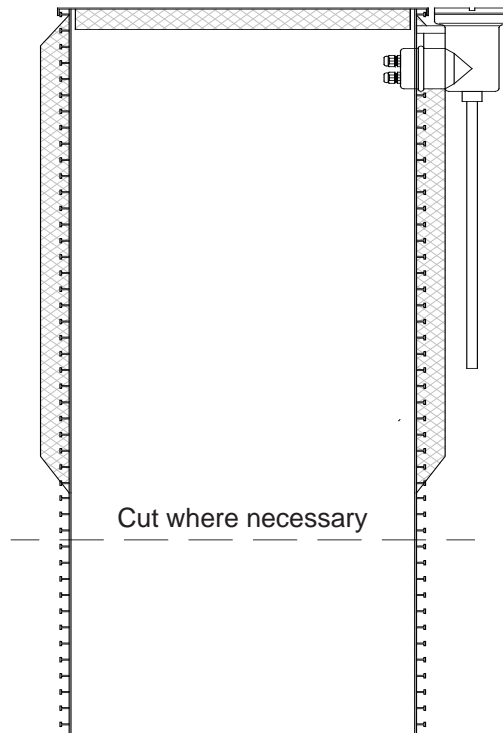


PREPARING THE RISER

Since no two AdvanTex installations are the same, all plastic risers are shipped 6 feet long with the top four feet insulated and the external splice box installed.

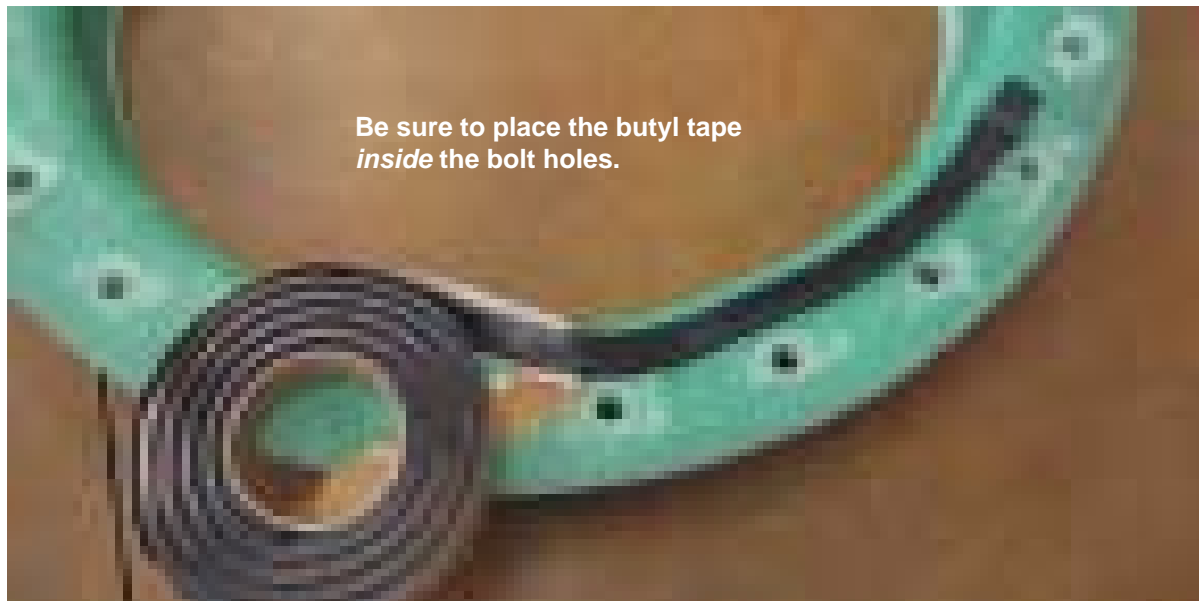
Determine the desired length of the riser. Be sure to consider what elevation the riser lid needs to be and to allow for the backfill to slope away.

If the riser needs to be cut, **you may do so at the bottom**. A Saw-zall or circular saw can be used to cut the riser. Try to keep the cut as flat as possible since the riser will rest on that surface.



NEW RISER GASKET MATERIAL

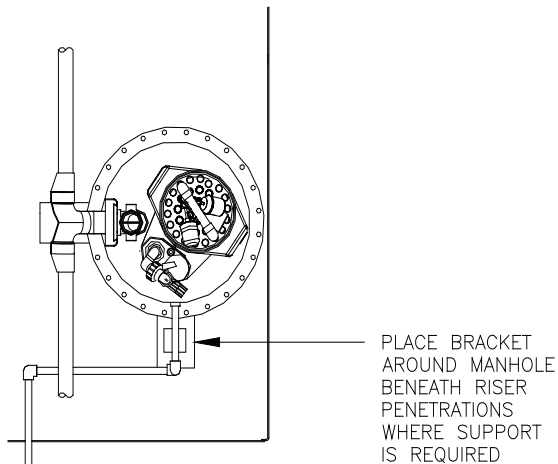
The new process used to make the fiberglass bolt ring creates an uneven surface for the bolt flange. Therefore the 1/8" neoprene gasket has been replaced with a roll of butyl tape to form a watertight seal. Also, you will be supplied with 2" long bolts for this extra thickness.



AdvanTex[®] Installation

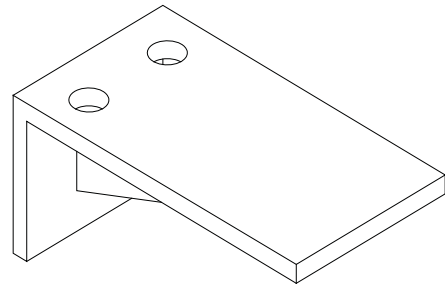
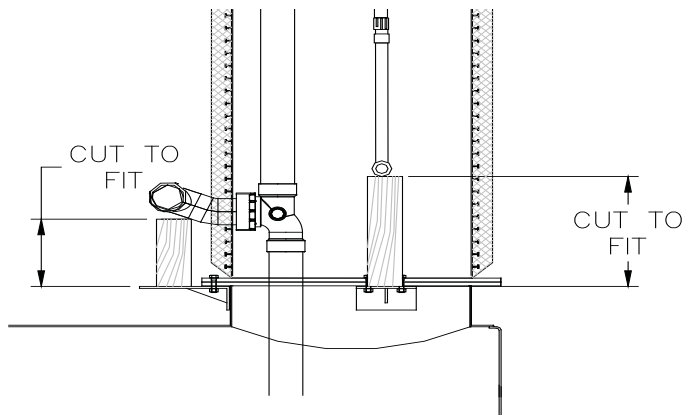
PREPARING THE RISER CONTINUES

Pipe Support Brackets



No matter how careful you are when compacting around AdvanTex risers, it's the nature of Alaskan soil that settling will occur.

In an effort to prevent damage to piping that penetrate fiberglass risers, we have developed a steel support bracket to hold the piping in place as the ground settles around it.

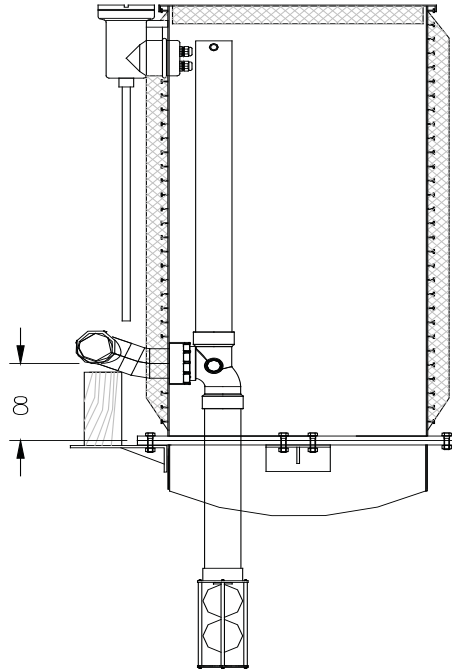


Two pipe support brackets will be provided with each AdvanTex Treatment System. While bolting on the riser adapter ring, simply bolt the bracket to the manhole riser beneath the pipe penetration. Cut a piece of treated wooden post, leftover Trex, plastic pipe, anything you have handy to place between the bracket and the piping. Then carefully backfill around it.

PREPARING THE RISER CONTINUES

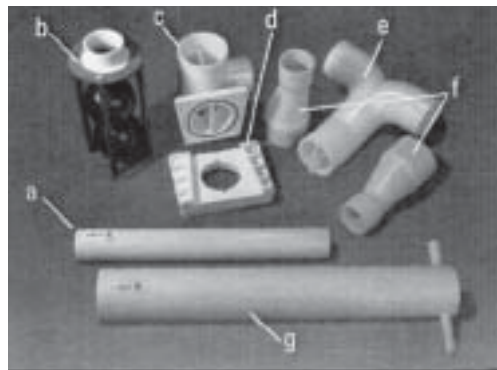
Now that you have the riser cut to the correct length, it's time to install the bracket that will hold the recirculating splitter valve (RSV). This is where your sketch comes in handy. You will want to place this hole so it will line up with your plumbing from the filter to the riser and on to the drainfield. The orientation of the electrical splice box (factory installed) is also considered.

The drawing at the right shows a completed RSV hanging on the bracket inside the riser. Normally a hole cut 8 inches above the bottom will do the trick but you will want to make sure that will allow for the correct plumbing drain slope from the filter to the riser and from the riser to the drainfield. You may need to go higher on the riser to accomplish this, especially if your riser is taller than 4 feet.



INSTALLING THE RECIRCULATING SPLITTER VALVE (RSV)

The RSV controls the flow of the water from the filter and the liquid level in the tank below. During periods when the tank is quiet (nothing flowing in) all of the filtered water returns to the tank. When sewage enters the tank and the level rises, the two plastic balls in the cage will rise and not allow any liquid from the filter to enter the tank. This filtered water will then be diverted to the drainfield for disposal. When the liquid level in the tank eventually drops, the recirculation process starts again.



- a) stinger - **you may need to substitute a longer pipe**
- b) Mode 1 ball cage
- c) valve body
- d) bracket
- e) split-flow tee
- f) reducing couplers
- g) handle

Note: some of these parts are ABS while others are PVC. Use all-purpose cement (IPS Weld-On 790 or equivalent) to join them. Do not use primer on ABS parts.

AdvanTex® Installation

INSTALLING THE RECIRCULATING SPLITTER VALVE (RSV) CONTINUES

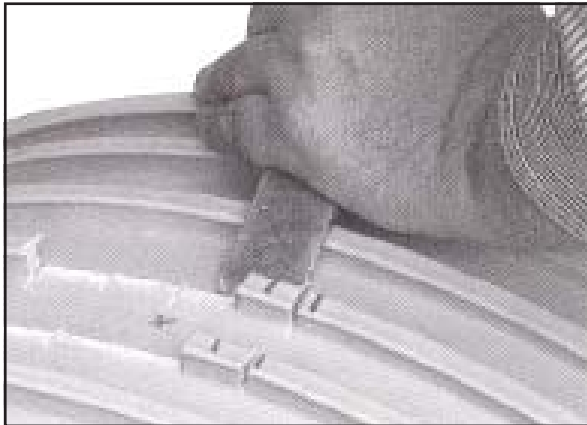


Grinding access riser ribs

Once you've located the desired position of the RSV on the riser, use a grinder or other cutting tool to notch through the PVC ribs on the outside. (You may also have to chisel away foam insulation from the riser.)

Using a hammer and chisel, break the ribs from the riser. Use a grinder to remove any remaining rib material. From the inside of the riser, use a hole saw to drill a 4" hole.

This is a good time to also drill the hole for the hose & valve assembly. Using the Hole Saw Sizing Chart below, select a hole saw for the grommet installation and drill out the opening.



Removing ribs from the access riser



Drilling hole for the RSV

Grommet Hole Saw Sizing Chart

Grommet Size inches	Pipe Diameter inches	Hole Saw Size inches
1/2	0.84	1
3/4	1.05	1 1/4
1	1.315	1 9/16
1 1/4	1.66	1 3/4
1 1/2	1.90	2 1/8
2	2.375	2 3/4
3	3.50	3 7/8
4	4.50	5

Hose & Valve Assembly

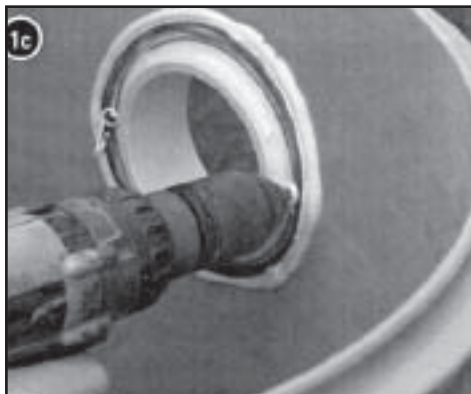
INSTALLING THE RECIRCULATING SPLITTER VALVE (RSV) CONTINUES

A coupling with a curved flange is supplied. This mounts on the inside of the riser wall into the 4" hole you just drilled. Apply a bead of SS115 or equivalent methacrylate adhesive around the inside of the flange that will face the riser. Insert the coupling through the hole in the riser. *It's easier to do this with the riser upside down so be sure that the notch in the coupling faces the actual top of the riser.* Press the flange firmly against the inside of the riser.

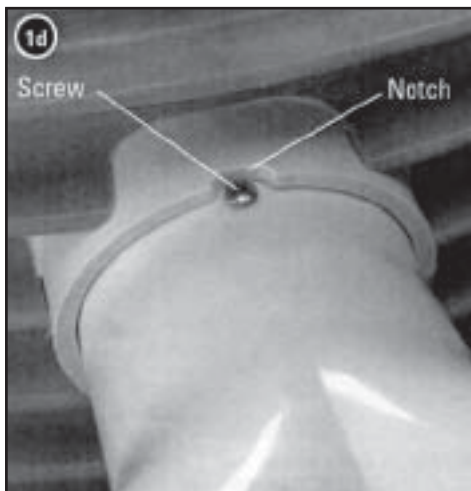


Applying adhesive to the coupling.

IMPORTANT: Make sure that the curve of the flange is perfectly aligned with the curve of the riser, with the notch pointing directly at the actual top of the riser. Proper alignment is essential so that the split-flow tee will be level when it is installed later.



1c. To hold the coupling steady while the adhesive is curing, insert the short stainless steel screws supplied into the 1/8" holes in the flange and drive them into the riser. Use your finger to make a fillet with the excess adhesive around the flange.



1d. Apply a generous amount of all-purpose cement (IPS Weld-On 790) to the outside stem of the split-flow tee. From the outside of the riser, insert the tee into the coupling so that the screw in the top fits the notch in the coupling. Make sure that the branches of the tee are level. The width of the notch allows you to rotate the tee slightly to accomplish this.

1e. Apply a generous amount of all-purpose cement to the quick disconnect bracket. Place the bracket over the protruding part of the tee, aligning the notch in the bracket with the divider in the tee, and press it firmly against the inside of the riser, tapping it gently in place if necessary. You do not need to bolt the assembly to the riser.



INSTALLING THE RISER



Apply adhesive to the outer edge of the adapter

HANDY HINT

The fiberglass bolt ring glues to the bottom of the riser. It's much easier to bolt this ring, gasket, and steel pipe supports onto the tank first. Then you can apply glue to the inside of the riser, and give it a twist as you seat it in place.

Carefully inspect the condition of the fiberglass bolt ring to be sure the bottom (the surface facing the gasket) is flat. If it is warped, please return it to Anchorage Tank as it will not properly seal and water will enter the tank through this seam.

The riser bolt-ring adapter is a green fiberglass ring that fits on top of the outlet end of the tank. By now, it should be bolted onto the tank with the gasket and pipe support brackets in place.

Take a moment to look over the riser itself to make sure the holes have been drilled and gommets installed for the RSV and hose & valve assembly. If everything looks OK, then it's time to glue.

This stuff stinks! Since you will be outside, ventilation will not be a problem. The bag-o-glue will have two pockets to separate Part A from Part B. Remove the plastic that separates the Parts and squeeze the bag until the adhesive is thoroughly mixed. It will look like cake frosting.

This stuff is temperature sensitive so it will "go off" in about 20 minutes. Be careful not to let the bag freeze. You should also avoid placing the bag on your truck dashboard as the window defroster will cause it to go off in the bag before you can use it.

Carefully cut a corner off the zip-lock bag to squeeze the adhesive out like you were decorating a cake.

Apply a heavy bead of adhesive around the outside edge of the riser adapter first, then squeeze the remainder around the inside of the riser.

INSTALLING THE RISER & CLEAN-OUT

Carefully lower the riser into the hole and place it on the adapter.

Before the glue sets, spin the riser so it faces the desired direction.

Make sure the riser is standing straight. This is where your care in cutting off the bottom pays off.

Leave the riser alone while it's drying. **You will have a structural seal within an hour - a watertight seal in 24 hours.**

This is a good time to install the 6" PVC clean-out pipe at the front end of the tank.

You may begin careful backfilling over the tank in preparation for placing the filter.

OK, so the photos on this page show a fiberglass tank. The concept is the same for a steel tank.



Moving the riser into position



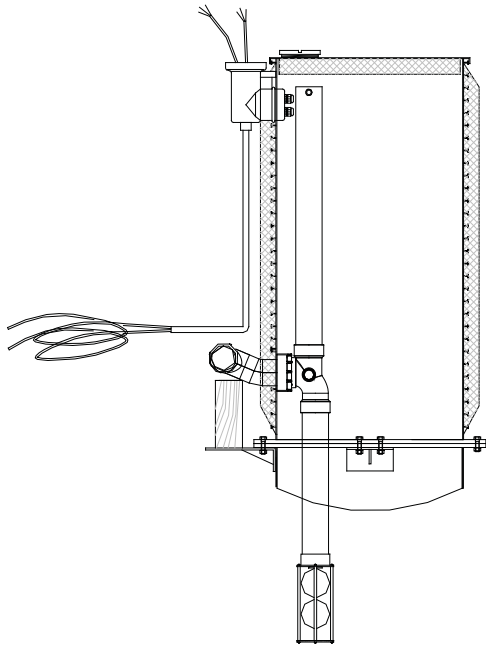
Spin the riser to face the desired direction



Installing the clean-out

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ROUGH IN WIRING



For residential applications lay 2 pieces of 3 wire, UF (Underground Feed) conductor (with ground) in the trench between the electrical control box and the tank. (Use 12 GA for runs less than 175' and 10 GA for longer runs.) That's a total of 6 insulated wires and 2 bare grounds. Commercial applications require the wiring to be in conduit. All exposed wiring must be in conduit. There should be a layer of fill over the piping and tank before laying the wire. Mark one of the cables at each end (usually by taping it) for easy identification once the trench is backfilled. Lay two coils of wire at the house.

Although not required, it is **highly recommended** that all wiring be placed in a conduit. Experience has shown that wires between the control panel and the riser can go bad. The homeowner will appreciate your ability to snake a new wire through the conduit rather than digging up their new hydro-seeded lawn.

BACKFILLING CONTINUES PLACING THE FILTER



Using sand, continue to backfill above the tank to a level where the Filter will rest.

The Filter must be level and it makes for a nicer installation to have the lid of the Filter at the same height as the lid of the riser.

Be sure the Filter is turned so the inlet & outlet openings are pointing in the direction you want them.

Don't forget to place blueboard insulation over the tank *but not under the Filter*. You want to allow heat from the tank to rise up to the Filter.

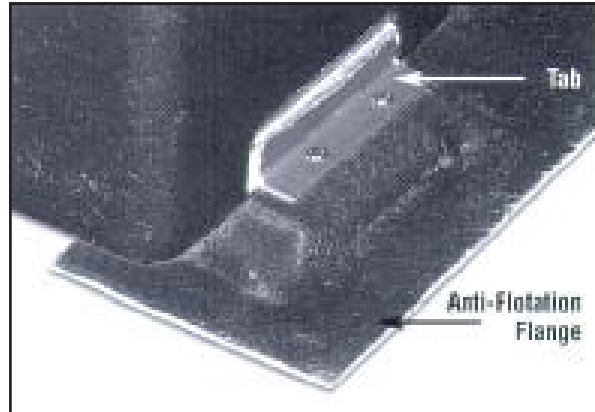
INSTALLING THE ANTI-FLOATATION FLANGES

Each Filter comes standard with pre-drilled tabs on the bottom corners, three on each side, and a pair of anti-floatation flanges. These are the long green fiberglass pieces with three raised areas. The anti-floatation flanges help prevent the Filter from “floating out” of the ground under saturated soil conditions or frost heaving.

Contrary to popular belief, the Filter does not retain a lot of water and is lighter than you may think. With the soil conditions in Alaska, these flanges are cheap insurance against a disaster.

Installation of these flanges is mandatory.

The anti-floatation flanges come with stainless steel bolts for attachment to the pre-drilled fiberglass tabs on the Filter. You’ll notice that one side of the three raised areas of each flange is curved to match the bottom corner of the Filter. Insulation may have to be chipped away in order for the flanges to snug up against the Filter. With the flanges in position under the Filter, mark and drill $17/64$ ” diameter holes in the flanges to line up with the pre-drilled holes in the tab. You may find it easier to bolt the flanges to the Filter by tipping the Filter to one side. If you are careful, sling a strap on opposite corners of the Filter lid to suspend the pod in the air. This makes the installation a little easier.



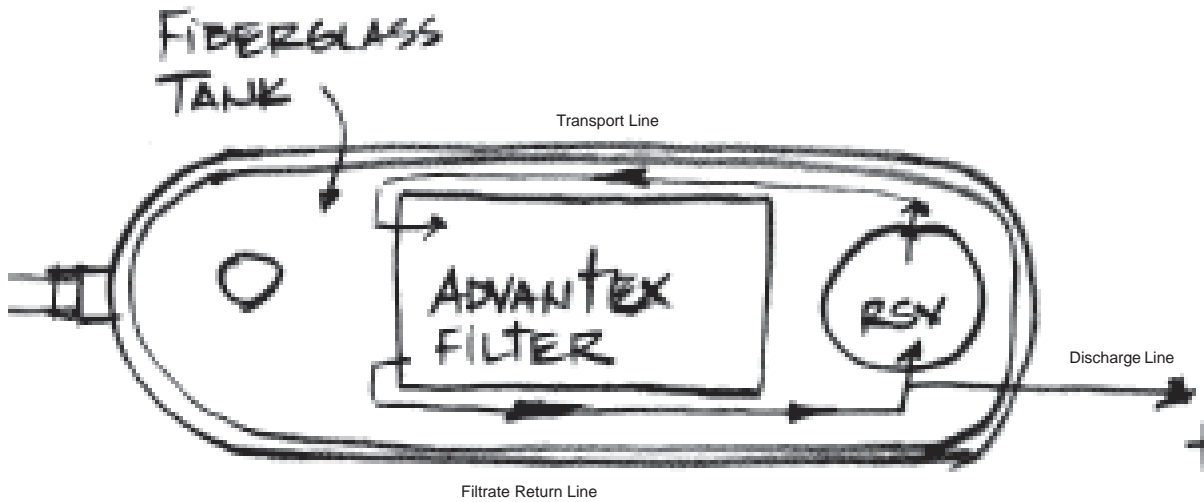
Tilting the Filter on one side to bolt on the flange.



AdvanTex® Installation

INSTALLING THE FILTRATE RETURN & DISCHARGE

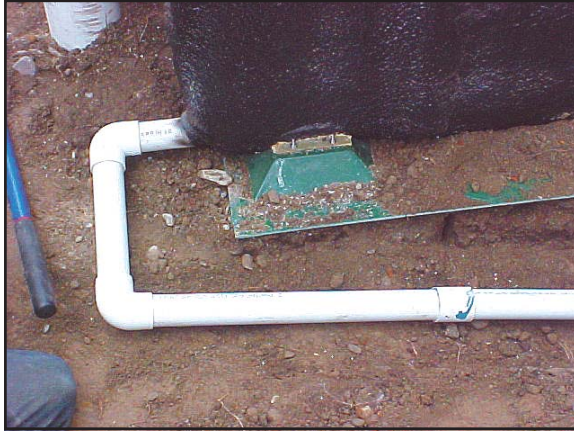
Determine Elevations and Connections



This is where you want to review the sketch you made earlier to orient yourself as to where the piping goes.

The Filtrate Return Line is the 2" PVC pipe that extends from the Filter to the Riser. This line needs to slope a minimum of 1/4" per foot. If this line is *less than 6 feet in length*, there needs to be a minimum of 1.5" elevation difference between the outlet of the Filter to the inlet of the Split-Flow Tee in the Riser. Be sure the 2" Filtrate Return Line is continuously sloped. Don't allow any undulations or flat sections in the pipe as this will impair proper drainage and air movement. **Improperly installed pipes have frozen in the past!!**

INSTALLING THE FILTRATE RETURN & DISCHARGE



Filtrate Return Line flows back towards the Riser.

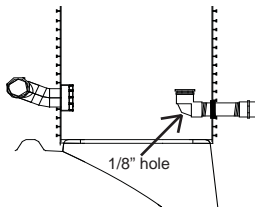


Discharge Line flows from the Riser to the drain-

INSTALLING THE TRANSPORT LINE

The Transport Line carries effluent from the tank to the Filter. Install 1" PVC pipe for this line. It is mandatory for this line to drain back into the tank between pump cycles, so slope it accordingly.

You've already installed the 2" grommet in the Riser. Lubricate the grommet and push the Transport Line through the Riser wall. You'll connect the Hose & Valve Assembly to this in the Riser later.



Make sure the elbow is sticking up inside the riser and that there is a 1/8" hole for drainback.

HANDY HINT

At this time, it's a good idea to open the lid of the Filter and disconnect the Transport Line at the Manifold union, just inside the Filter. By temporarily disconnecting the Filter manifold, any debris in the start-up line will be flushed out during the first pump cycle when you test the pump later on. If junk gets pumped into the manifold, you'll have a lot of orifice cleaning in your future.

Be sure to reconnect the manifold when you're sure the line is clear.

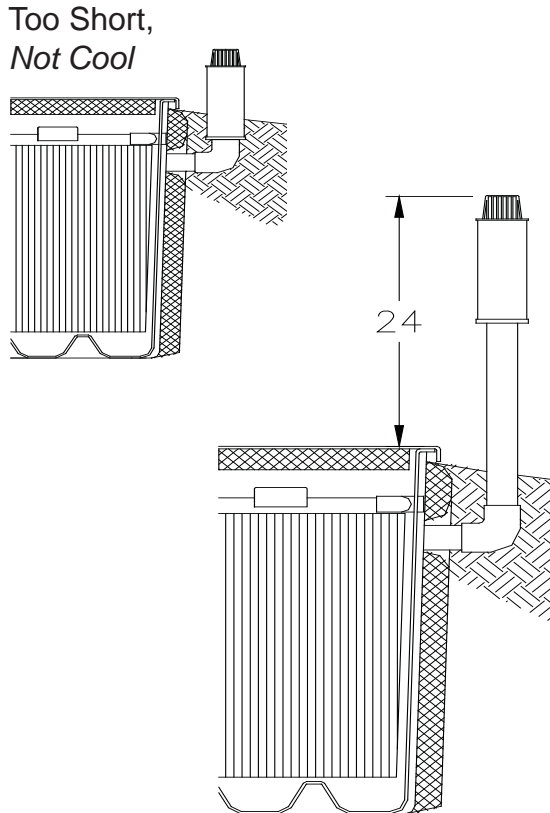
Also, check to be sure the ball valves are closed at the end of each manifold lateral.



Transport Line flows from the Riser to the Filter. This line slopes to drain back to the tank.

AdvanTex® Installation

INSTALLING THE PASSIVE AIR VENT



On the end of the Filter, opposite the inlet and outlet openings, you'll find a 2" coupling sticking in the insulation about 10" down from the lid. This is where the Passive Air Vent mounts. Cut a piece of 2" PVC pipe to a length that puts the Air Vent 24" above the Filter lid and another piece to push it away from the Filter.

Since the Passive Air Vent can be tripped over, or the homeowner may find it unsightly, it may be desirable to install the vent near a wall or in a location where it can be hidden by landscaping. The homeowner may even paint it a different color.

However, in all cases the line between the Air Vent and the Filter must be sloped back towards the Filter. To prevent the accumulation of water, do not allow any "bellies" or low spots in the vent piping. Keep the 2" PVC vent piping to a total length of less than 20 feet.

Please ensure the Passive Air Vent doesn't impinge on the Filter lid opening. We've seen the vents snapped off while opening a Filter lid.

BACKFILLING THE SYSTEM



Proper backfilling and compaction is the key to your successful installation.

At this point, you are ready to carefully backfill the system. Take care not to break the piping to and from the Filter.

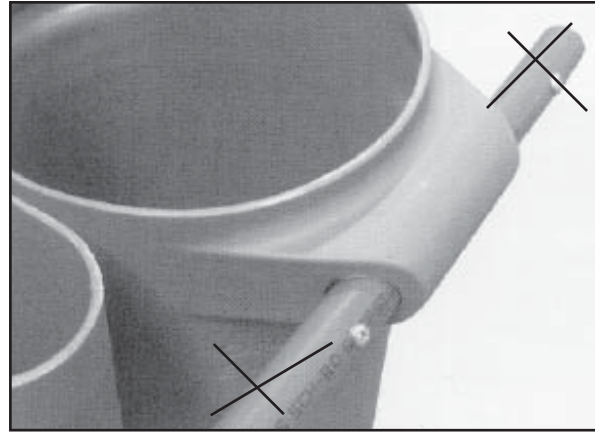
Backfill and compact around the Filter in maximum 12" lifts. Native material is acceptable if there are no large or sharp rocks that might damage the filter walls. If the native soil is not usable, and it rarely is, backfill with sand or pea gravel. Slope the ground away from the filter to prevent surface water from ponding on or around the filter.

*Use sand around the Riser bottom and Filter base. Be sure to firmly compact the sand around the Riser. **If this area settles, the riser could collapse.** Equally important is the area supporting the Split-Flow Tee that sticks out of the Riser. If the Split-Flow Tee settles and becomes no longer level, all sorts of problems will result.*

INSTALLING THE BIOTUBE PUMPING PACKAGE

Preparing the Vault

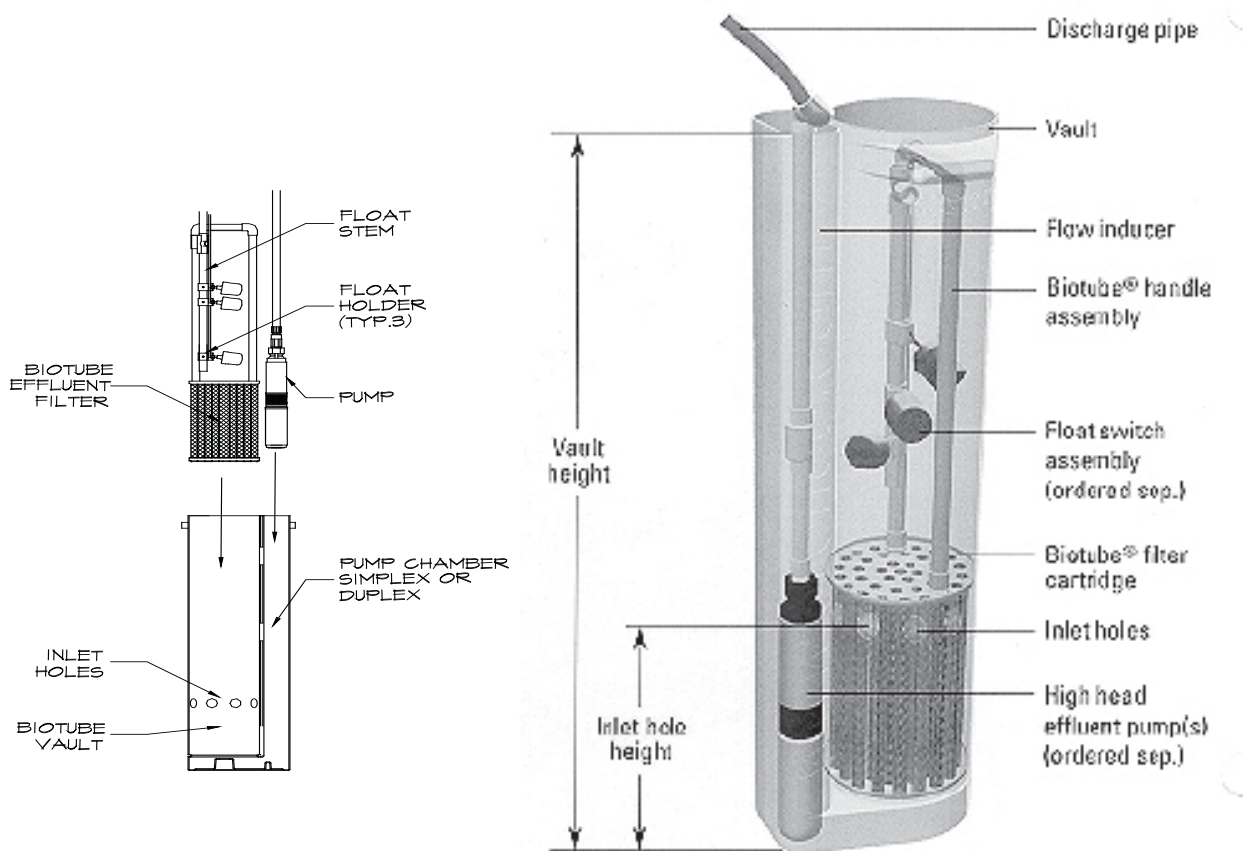
Your Universal Pump Vault (the tall blue plastic tube) may have two schedule 80 support pipes installed like the photo to the right. The purpose of these support pipes is to allow the Pump Vault to hang inside the tank. Your vault will stand on the bottom of the tank between the two retaining angles and *will not hang*. Orenco won't remove these tubes and Anchorage Tank will try to remember to.



Therefore, remove one set screw from each of the support pipes and pull them through the brackets. Toss them in the trash so they won't get mixed up with the rest of your piping.

Remove the support pipes.

Anatomy of a Pump Vault



INSTALLING THE BIOTUBE PUMPING PACKAGE

Finish Plumbing

Stop for a moment and orient ourselves, we have completed the dirtwork. We are standing on the ground looking through a 24" diameter manhole into the tank. We are now going to set the vault, set the floats, and make up all the plumbing.

Remove all packaged items from the pump vault. Set all the loose pieces aside as we'll use them shortly. Referring to the drawing on page 27, set the float levels for your size tank. **Float levels are not set at the factory. You must verify their proper locations in order for the system to properly function.**

Remove the float assembly from the vault. Loosen the set screw in the upper float holder and slide it to its proper location. The measurement is made from the top of the blue pump vault to the centerline of the cord grip. Retighten the set screw and reinstall the float assembly in the pump vault. *Do not alter the floats' tether lengths.* Make sure the floats can swing freely without hanging up on each other or on the screen so you may need to turn them so they swing free.

Gently lower the blue Biotube[®] pump vault through the 24" diameter riser into the tank and it will rest on the tank bottom. Drape the retrieval rope over the electrical j-box. Be sure to bring up the float wires as the vault is lowered. Push the float cords through the 3 cord other grips on the splice box. Tighten the cord grips by hand, then test the tightness of the grip by tugging firmly on the cord. A cord is secure when the cord grip is tight enough to prevent slippage.

NOTE: All splicing should be done with heat shrink/butt connectors and/or watertight wire nuts by your electrician. Leave a length of electrical cord coiled inside the riser adequate to allow easy removal of pumps and floats. Leave wires long enough inside splice box to permit possible cutting and resplicing in the future.

The colored wire marker on each float cord identifies that float's particular use as follows:

Yellow – "high water alarm"

Green - "override timer on & off"

White – "redundant off/low level alarm"

Hose & Valve Assembly

Before completing the following steps, please make note of the following cautions:

Always use lots of teflon paste on all the threaded joints. They are designed, as you can see, to be taken apart. Therefore, it should go without saying that these joints should never be glued, although we've seen it done. Joints must be hand tightened only. Move the swing joints to make the plumbing fit. If it doesn't fit, you're probably doing something wrong.

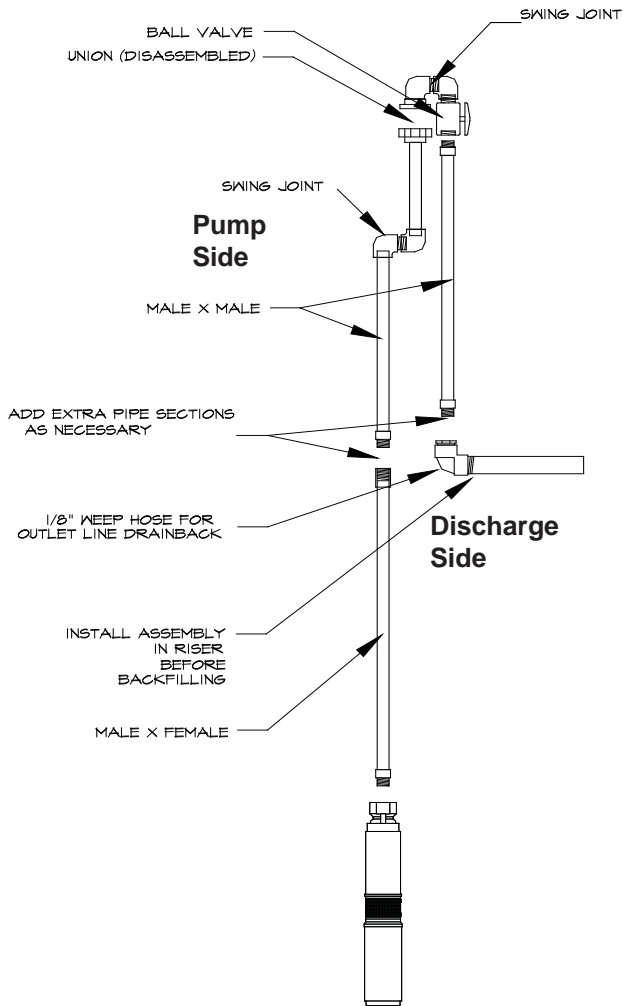
Lay out the pipe pieces of the hose & valve assembly as shown on the drawing on the next page. The swing joint piece usually needs to be twisted to the way it looks on the drawing. If using a 6' long or longer manway, add one of the extra lengths of pipe to each side of the plumbing.

Start with the discharge side of the hose & valve assembly. Disconnect the union in the swing joint and thread the double male end pipe into it. Reach down into the riser and screw it into the threaded 90° fitting you installed in the riser when you put in the 1" diameter grommet. This is why alignment of the 90° was so important. Don't cross thread it. If you can't thread this piece in from ground level, it may be necessary to go down into the tank to do it. The PVC piping will stand a little bending, but go easy. If excessive strain causes the piping to break, you can bet it will do so at 30 below, after the tank has been in use for a while. In cases of gross misalignment, it may be necessary to cut the vertical pipe and install a small length of 1-1/4" pressure hose to obtain the necessary flexibility for aligning this piece with the other plumbing.

Next you make up the pump side of the plumbing by connecting all the pieces shown in the drawing. Carefully lower the pump into the oval opening in the blue plastic vault. It doesn't matter which side, as it is designed to hold two pumps. Turn the vault and the swing joints to align the union halves. You'll have a little bit of wiggle room but be sure to leave room of the RSV. Connect the unions hand tight only. Make sure the floats can swing freely without getting hung up on the plumbing. It's a tight squeeze!

INSTALLING THE BIOTUBE PUMPING PACKAGE

Hose & Valve Assembly



This is what the Hose & Valve Assembly looks like when you pull all the parts from the blue pump vault.



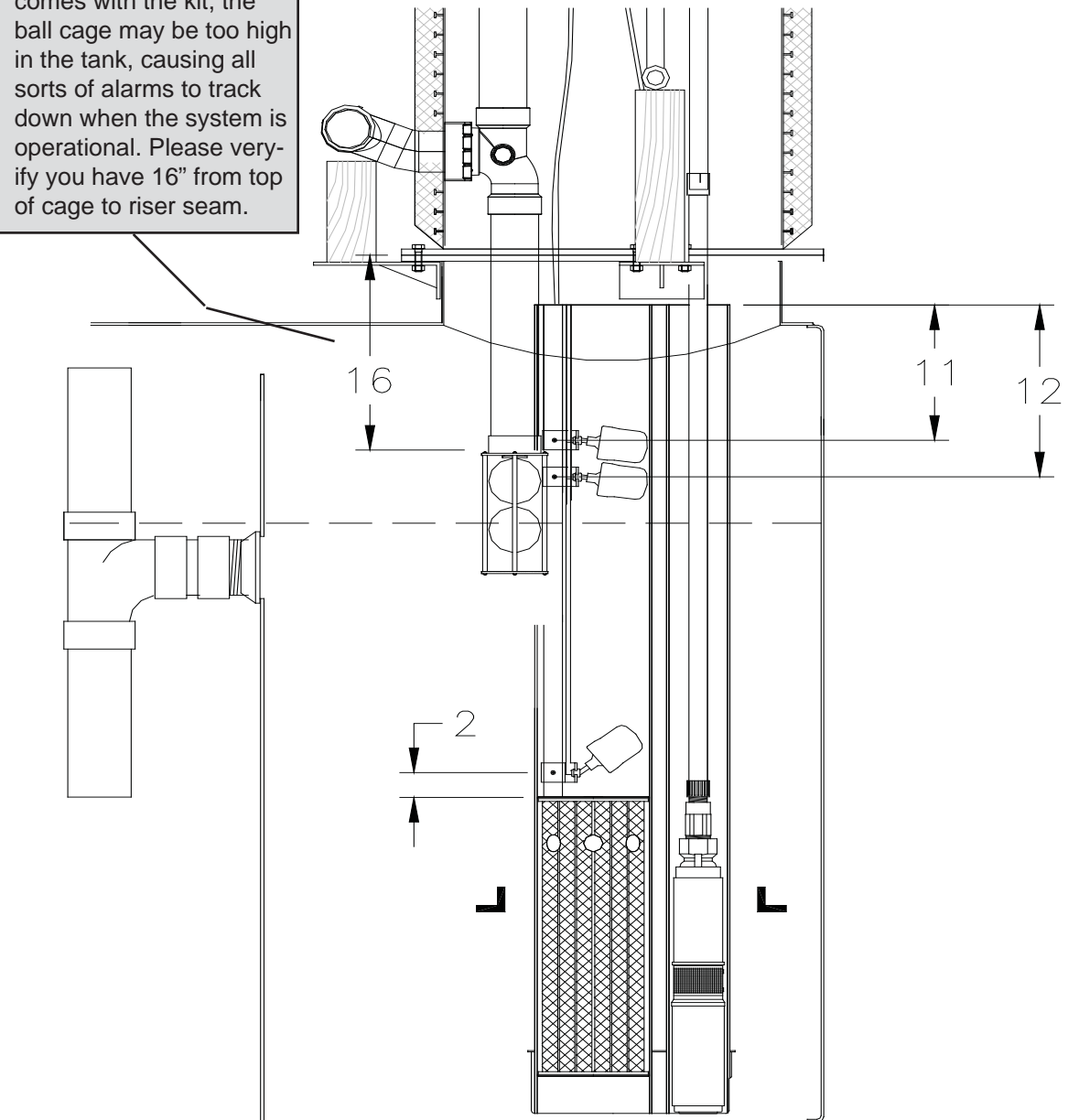
This is what the completed pump vault should look like, all neat & tidy.

At this point, your Biotube® pump vault, complete with Pump, Hose & Valve Assembly, and Floats are installed in the tank through the riser. Take a look around down there to be sure you haven't forgotten anything: All Pump & Float wires attached to the Splice Box? The Hose & Valve Assembly is hand-tightened? The Floats are at their proper levels and can swing freely?
Before leaving the job, ask yourself, "Could I service this?"

AdvanTex[®] Installation

RSV & FLOAT LEVEL DIAGRAM

This is a very important measurement. If you use the stinger pipe that comes with the kit, the ball cage may be too high in the tank, causing all sorts of alarms to track down when the system is operational. Please verify you have 16" from top of cage to riser seam.



INSTALLING THE RECIRCULATING SPITTER VALVE

Determine the Stinger length.

Be sure to calculate the proper stinger length for your system.

Since the RSV Bracket may be installed on the riser wall at any location, the only way to properly determine the Stinger length is to cut it to a length that will allow the top of the RSV Cage to be approximately 16" below the top of the riser flange.

The Stinger pipe supplied is 18" long, so you may have to use another piece of pipe to reach the depth required, depending upon where the RSV bracket is mounted on the riser wall.

This is important! It is highly recommended to keep the Stinger length less than 24" in length.

Stinger lengths greater than 24" allow too much water to stand in them and the two balls in the cage will not float to seal off the RSV properly.

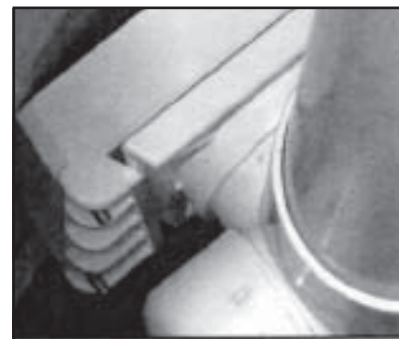
However, if all else fails and your system needs a Stinger length of greater than 24", contact Anchorage Tank for a special reducing washer that can be inserted in the Stinger. The washer reduces the flow into the RSV and permits a greater length.

After you've cut the stinger pipe to the correct length, attach it to both the RSV cage and the RSV body using all-purpose cement. Then attach the handle to the top of the RSV body in the same manner.



Sliding the RSV into the Bracket.

Carefully lower the RSV into the bracket attached to the inside of the Riser. It will be a tight fit, but slide the RSV down until it comes to a rest at the bottom of the bracket. The two stainless steel pins will touch the top of the bracket when it's properly seated.



CALL THE ELECTRICIAN

In the Municipality of Anchorage, an electrician must be employed to do the wiring. Outside the city, whether required or not, this is a good idea unless one is thoroughly familiar with wiring and local codes.

A set of wiring instructions is inside the electrical panel and should override anything printed in this manual. Control Panels change from time to time and the wiring diagram in the panel will be the most accurate for your system.

AdvanTex[®] Installation

CONTROL PANEL INSTALLATION



Look over all the instructions before proceeding with the installation. Improper installation way void warranties.

Look over the control panel and inspect for anything missing or damaged during shipping. Contact Anchorage Tank to obtain replacement parts.

Check to ensure the instructions (inside the front cover of the panel) conform to state and muni regulations.

A qualified electrician must be employed to install and service the panel and ancillary wiring. The installation must comply with the National Electric Code.

PLACEMENT OF THE CONTROL PANEL

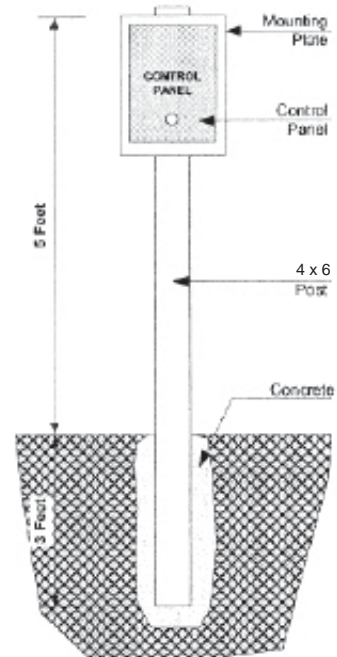
There has been a lot of debate where to place the Control Panel. Each site is different but the rule of thumb is that the physical installation of the Control Panel should be within view of the Tank & Filter, at a convenient height, usually 5 feet above grade.

The Control Panel contains motor contactors that make a clunking sound each time the pump is activated. If the Panel is attached to the wall of a house, it sounds like a moose kicking the wall every ten minutes. With that in mind, it is preferable to mount the Panel on a treated 4x6 post right next to the wall.



Don't forget the Remote Alarm !

It's best to place the remote alarm in the garage. It's loud and the homeowner will certainly hear it there.



This Panel is mounted on the wall of an outbuilding so the sound of the motor contactors does not disturb the homeowners.

CONTROL PANEL INSTALLATION CONTINUES

Floats and Pumps

At this point, the electrical splice box for the floats and pump has been installed at the top of the Riser. The floats and pump is in place and their wires have been stabbed into the splice box.

Just in case they aren't, thread the float and pump cords through the cord grips into the PVC splice box, leaving adequate length of electrical cord coiled inside the riser to allow easy removal of the pump and float assembly. Tighten the cord grips by hand and then check the tightness by tugging on each cord.

The wires from the Control Panel to the splice box should be run in conduit. **A conduit seal should be used to prevent infiltration of water into the splice box.** The number of wires depends upon the number of pumps and floats, but most 3-float 1-pump systems use 2 runs of 3-wire 12 GA direct-burial. That gives you a total of 6 wires and two bare grounds.

Recommended Breaker & Wire Size

Pump Motor Size	Breaker Size	Wire Size	Max Distance*
115 VAC 1/3 hp	20 amp	12 AWG	210 ft
1/2 hp	20 amp	12 AWG	160 ft
230 VAC 1/2 hp	15 amp	14 AWG	400 ft
1 hp	20 amp	12 AWG	400 ft
1 1/2 hp	20 amp	12 AWG	310 ft

* The maximum distance is from the main power panel to the pump motor for the recommended wire size. If actual distance is greater than the listed maximum, or more than one pump is on the circuit, then a larger gauge wire must be used. If the actual distance is close to the maximum distance, then it is recommended that the next larger gauge wire be used.

waterproof wire nuts or butt connectors and heat shrink tubing.

HANDY HINT

At the home's electrical panel, you will use two 20 amp breakers, one for the control side of the panel and the other for the pump side.

Notes:

- Do not remove the colored markers or the paper tags from the float cords. These should be left on the float cord, outside the splice box.

- Do not thread the markers and tags through the cord grips.

- Adequate length of cord should be left within the splice box to allow for easy removal for future disconnecting and re-splicing.

- Wire that is improperly sized (too small) can cause excessive voltage drop and poor pump performance.

- Splices that are not waterproof may cause malfunction of the pump controls if water should leak into the splice box. We've seen it happen.

CONNECTING TO THE CONTROL PANEL

Connect the wires coming from the floats to the terminals in the Control Panel. Refer to the appropriate *Float & Splice Box Wiring Diagram* for the correct terminal locations for your system. The diagram found in your Control Panel supercedes anything printed herewith.

Connect the wire coming from your pump to the pump terminal. The Panel Wiring Diagram will display the correct terminal connections for your system.

Connect the incoming power to the panel. Power to the panel must be appropriate to the Control Panel and pump motor (e.g., 120 VAC, single phase for a 120 VAC motor, 240 VAC single phase for a 240 VAC motor, etc.)

Ensure that the panel is properly grounded and that the fuse or breaker and wire size, from the main power panel to the pump, are correctly sized. A separate circuit for the pump controls and each of the pump motors is recommended.

Note: Voltage for the controls in the panel is always 120 VAC, although the pump voltage may be 120 VAC or 240 VAC.

Use 600 CU conductors only. Torque to the following: Terminal blocks @ 15 LB-IN. Circuit breaker @

WARNING:

Do not service the pump or any electrical wiring in the pump vault without disconnecting the power at the circuit breaker and/or fuse.

Serious injury and/or damage to the system could result if the panel is not properly grounded. Ensure that the fuse, breaker, and wire size, from the main power panel and to the pump, are sized correctly.

The pump vault is a hazardous area and may contain explosive gases. Take appropriate precautions according to local, state, and federal regulations before commencing work in the pump vault.

It is the responsibility of the installer to comply with all local, state, and federal regulations that may govern the installation of systems of this nature. Failure to comply with such regulations may void the manufacturer's warranty and could possibly cause bodily injury.

COMMUNICATION LINE INSTALLATION

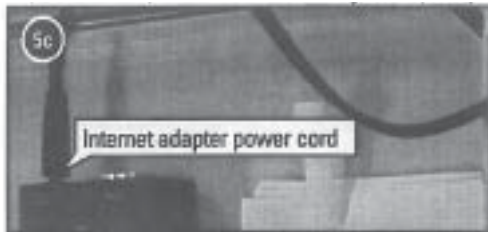
To permit remote monitoring of the system, the VeriComm Control Panels have the option to utilize a common phone line or a high speed internet connection. You will need to check with the homeowner to determine which connection method is available or desired.

Should they decide on a regular phone line, please be aware these panels do not need a dedicated phone line, merely an extension of an existing line.

Installation of a traditional copper-wire analog telephone line is straight-forward. You'll notice a phone jack connection in the middle of the control panel. A DSL line filter/surge arrester is also installed. Once you have a dial tone at the end of this phone line, just plug it in and you're good to go.

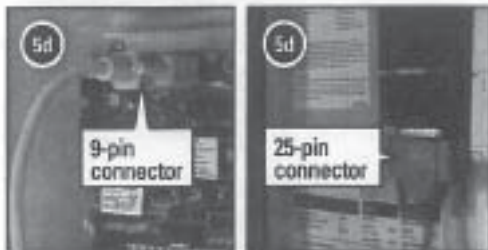
INTERNET CONNECTION INSTALLATION

(Photos compliments of Orenco Systems, Inc.)



If the homeowner has digital telephone service, the control panel utilize a high speed internet connection. This equipment is attached to the inside of the control panel door. The wires are wrapped for shipping.

Photo 5c: Plug in the power cord to the Internet Adapter.



Photos 5d: Plug in the 9-pin end on the serial cable into the 9-pin serial port on the motherboard (located in the upper left hand corner of the panel box). Then plug in the 25-pin end of the serial cable into the 25-pin port on the Internet Adapter.

Note: if the CAT5 cable does not have connectors installed, install them now.



Photo 5e: Plug in the Ethernet cable from the house into the RJ-45 jack on the Internet Adapter.

Note: Since you are using the internet connection and not a telephone line, there should be nothing connected into the DSL filter/surge arrestor.



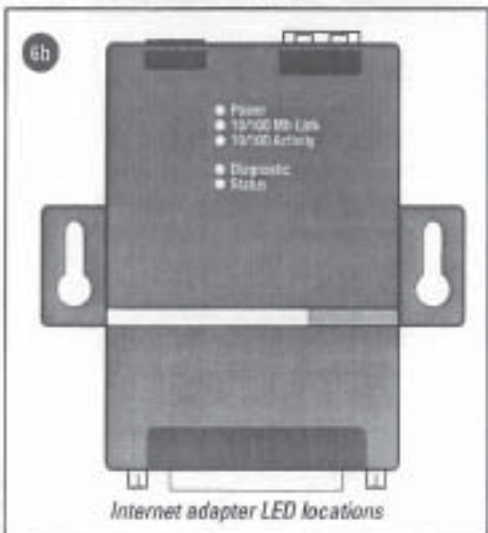
Photo 5f: Neatly coil any excess cables you have and be aware that the control panel door has to open & close without pinching or tugging anything.

Test the connection:

Turn on the control panel circuit breakers, Check that the green LED light on the lower right corner of the motherboard is flashing.

Photo 6b: Check the Internet Adapter for the following LED lights:

- **Power** - lit and steady
- **10/100 Mb Link** - lit and steady
- **10/100 Activity** - blinks irregularly with traffic, if any
- **Diagnostic** - unlit
- **Status** - blinks while the panel tries to make contact



Press the "Push to Silence" button on the front of the control panel door 15 times in rapid succession to force the panel to "phone home". The **Status** LED light will blink while the panel tries to make contact and the **10/100 Activity LED** should blink as the panel communicates.

Confirm that the control panel has made contact. Then call Anchorage Tank 272-3543 to alert them of your efforts. This way we know that the system is "live".



Orconco Systems®
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FACSIMILE
(501) 469-7894
WEB SITE:
WWW.ORTCONCO.COM

- Key**
- = Factory Wire
 - - - = Field Wire
 - A = Alternate Field Wire
 - AS = Alarm Switch
 - CCB = Controls Circuit Breaker
 - DF = Fuse, 120VAC/1A
 - M = Motor Contactor
 - PCB = Pump Circuit Breaker
 - RA = Remote Alarm Relay
 - RTU = Remote Terminal Unit
 - SEA = Serial to Ethernet Adapter
 - TL = Terminal Link
 - TR = Transformer 120-36/18VAC
- *Options**
- HT = Heater
 - PL = Power Light
 - PRL = Pump Run Light
 - PSA = Phone Line Surge Arrester
 - SA = Surge Arrester

Remote Alarm Connections

Orconco Model
AHW or equiv.

For VCOM-AX20A
operation description,
see drawing no.
"EIN-CP-505".

Terminal Block Types

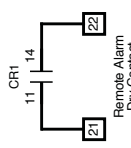
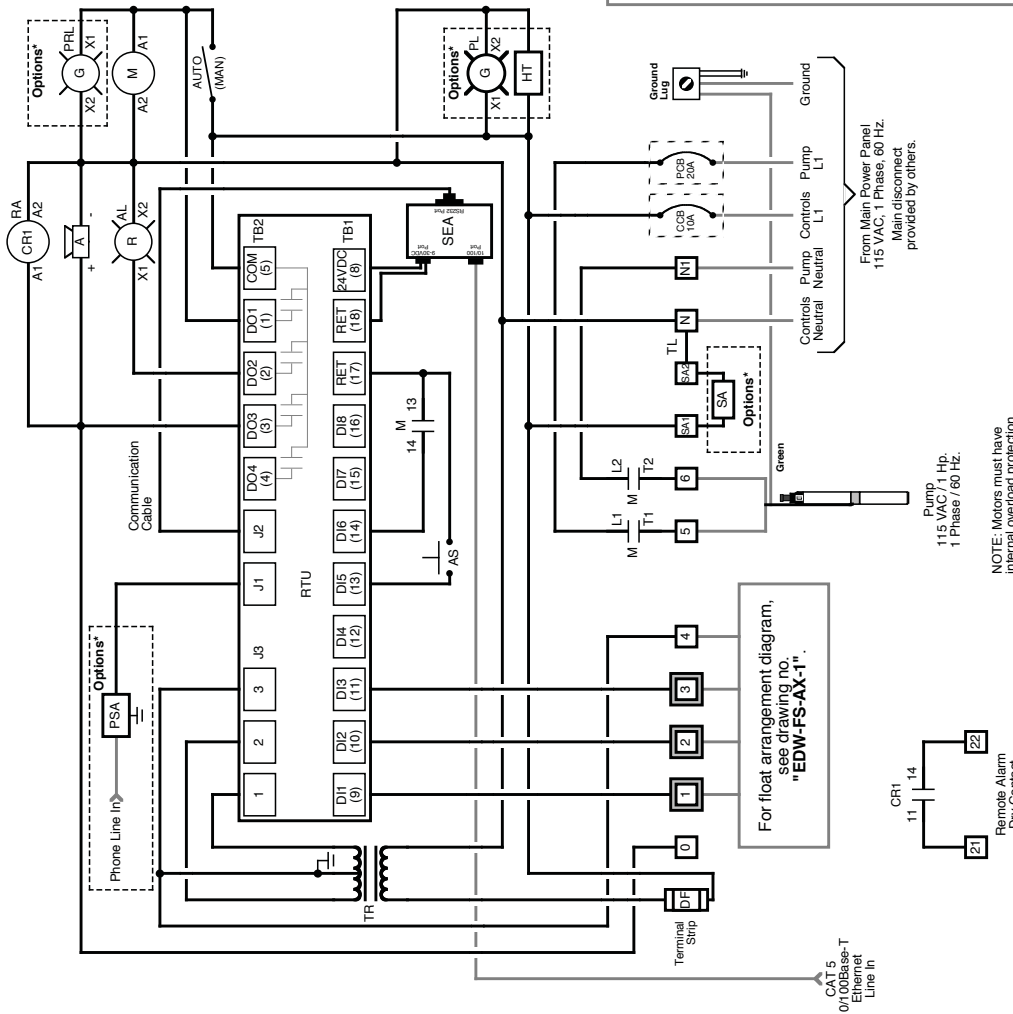
Power Wiring Options

Use one wire nut to connect the pump and controls circuit breakers together with the incoming L1 power line. Use another wire nut to connect the pump and controls neutral lines together with the incoming neutral line.

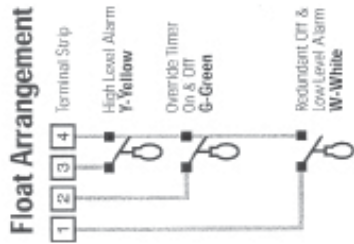
Factory default
Wire as shown.

EDW-WD-AX-121
Rev. 8.0 © 06/24/13

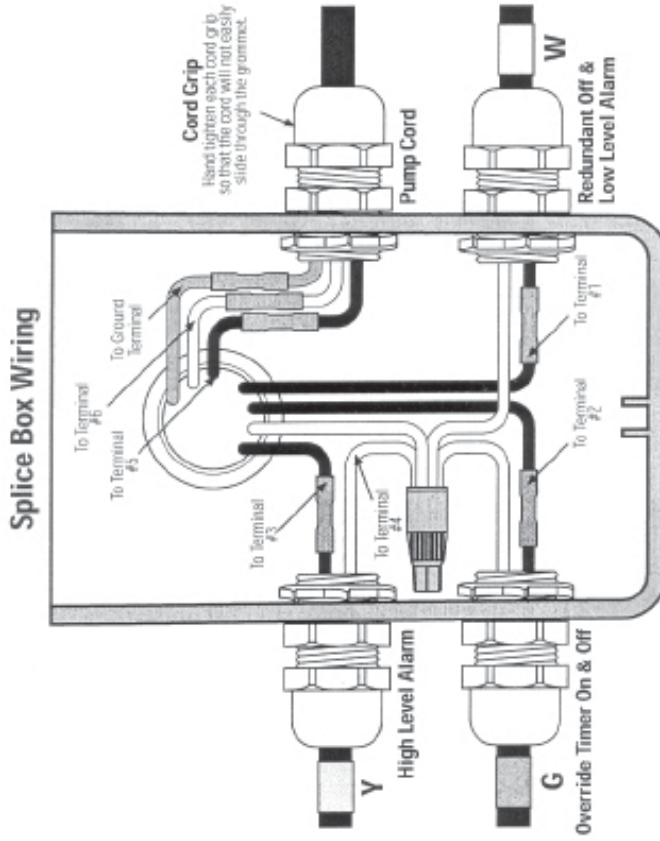
Control Panel Wiring Diagram Model VCOM-AX20A1 RA IP



Float & Splice Box Wiring Diagram



Float Types



Float Tag Colors

- Y** - Yellow **R** - Red
- P** - Purple **O** - Orange
- B** - Blue **E** - Grey
- G** - Green **W** - White

Note: Multi-function floats will have more than one marker

Key

- Black Wire
- White Wire
- Green Wire
- Waterproof Wire Nut
- Heat Shrink & butt Connector

Attention: Failure to follow splicing instructions will void warranty

* Refer to drawing EIN-SB-SB-1 for splicing instructions.

Control Panel Series	Float Function Color Code	Splice Box Model	Drawing No.
VCOM-AXA	YGW	SB4	EDW-FS-AX-1

AdvanTex[®] Installation

VCOM-AXA PANEL OPERATION

What's so special about this gray box?

The VCOM-AXA telemetry-enabled panel is used for remote monitoring and control of timed, recirculating simplex pumping operations with gravity discharge. Other configurations of AdvanTex require a different Control Panel and those will be discussed in another section of this manual. The AXA panel is the most commonly used so we'll look at it first.

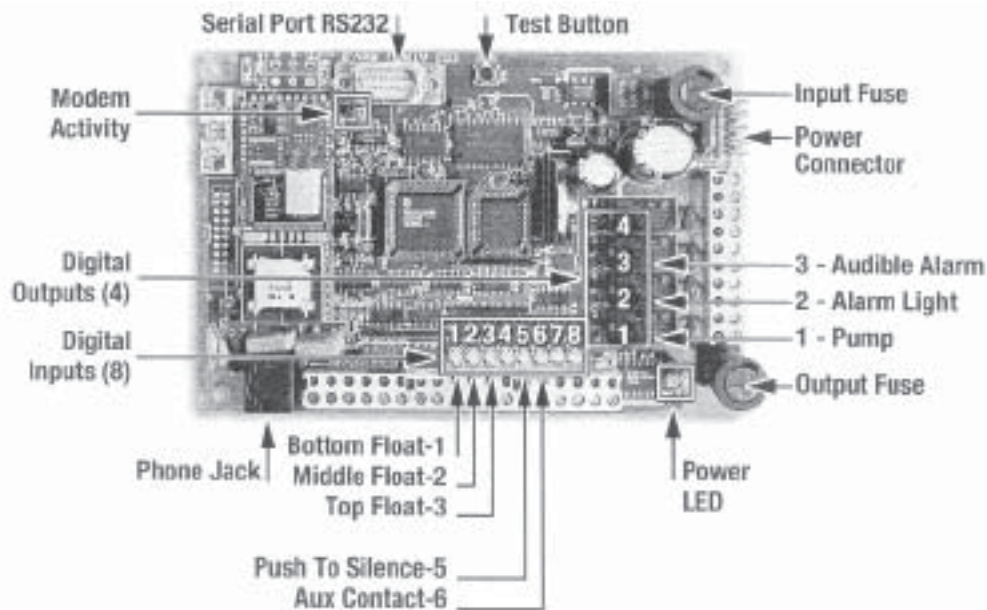
Basic control logic manages the day-to-day functionality of the Control Panel. The VCOM-AXA system continuously recirculates, until the Recirculating Splitter Valve (RSV) seats, then the system discharges small amounts of treated wastewater throughout the day. During peak flow conditions, more aggressive timer settings (overrides) are used to manage the increased demand.

Fault conditions are automatically reported to the VeriComm Monitoring System (a web-based database by Orenco Systems) and not locally at the panel, making the system virtually invisible to the homeowner. Alarms and Alerts cause an email to be forwarded to Anchorage Tank personnel. However, if these conditions are not responded to, or the system cannot communicate with the VeriComm Monitoring System (the phone line might not be connected), then the local alarms at the Panel will activate.

To silence local alarms, press the "Push to Silence" button until the audible alarm stops.

Note: the procedures outlined in the following pages are to verify proper installation; they should be conducted in the sequence outlined while in "Test Mode".

Input and Output Definitions



1. Digital inputs are the yellow LEDs horizontally aligned along the bottom on the controller.
2. Digital outputs are the red LEDs vertically aligned on the right side of the controller.
3. Inputs and outputs are activated by various events (e.g., Floats are activated when the float is in the up position, "Push to Silence" is activated when the push button, located on the front of the panel, is pressed).

CONTROL PANEL INSTALLATION TESTING

1. Verify System Status

- Ensure that the Panel Installation Instructions have been completed.
- Verify that the circuit breakers are in the ON position.
- Verify controlled status. The “Power LED” located on the controller (refer to the photo on the previous page) will either be:
 - Blinking - indicates that the controller is operating normally, or
 - Solid Off (when power is applied) - indicates that there was a possible problem with:
 1. The input fuse on the PC board.
 2. The main fuse located inside the panel
 3. The incoming line voltage.

2. Enable Test Mode

- Hold the “Push to Silence” button on the front of the panel until the audible alarm sounds (approximately 15 seconds) to enable test mode.
 - Digital input #5 should be illuminated when the button is held in.
 - When the audible alarm sounds to indicate that the panel is in test mode, release the button.
- While in test mode, the panel will operate in the following manner:
 - The Call Home function is disabled,
 - Local audible and visual alarms are activated as alarm conditions occur,
 - System Data Logs are suspended, and
 - Timer cycles are shortened.

3. Manual Pump Test

- Verify that the pump is submerged in water before continuing. If the RO (bottom) float drops, the alarm should sound.
- Press down the spring-loaded “MAN/AUTO” switch located inside the panel. The pump should immediately activate. For verification:
 - Digital input #6 should illuminate (refer to the photo on the previous page), indicating that the auxiliary contact is on.
- Measure the voltage and amperage of the pump.
 - Measure the voltage at the pump terminals in the panel while the pump is running. A low voltage condition could indicate that the site wiring is improperly sized.
 - Using a loop ammeter, place the ammeter clamp around the loop of wire located above the pump circuit breaker. The amperage should be within the specifications of the pump.

4. Float Test

In test mode, the floats will function as described:

High Level Alarm (top float): This float activates the alarm light (steady) and audible alarm when lifted. Pressing and holding the illuminated “Push-to-Silence” button on the front of the control panel will silence the audible alarm. The alarm light will remain on until the float is lowered.

Override On/Off (middle float): This float activates the override timer when lifted. The override timer controls the pump during high flow conditions. The override timer function will remain active until set minimum number of overrides has been completed and the float has lowered.

Redundant Off & Low Level Alarm (bottom float): This float enables the timer function when lifted. The timer function controls the pump during normal flow conditions. Note: the timer will start with its off cycle. This float also disables the pump, when lowered, and activates the alarm light (flashing) and the audible alarm. Pressing and holding the “Push-to-Silence” button on the front of the control panel will silence the audible alarm.

CONTROL PANEL INSTALLATION TESTING

To perform the following test, sufficient water is required. If there is not enough water in the tank, turn the pump circuit breaker off.

To test the functionality of the floats and ensure that the panel is installed correctly, complete the following steps:

1. RO/Low Level Alarm Float Test

- Pull the float assembly out of the pump vault and position it so all floats are hanging in the down position.
 - Digital inputs #1, #2, and #3 should NOT be illuminated.
 - The alarm light should be blinking on and off; the audible alarm may be sounding.
- Lift and secure the bottom float in the up position.
 - Digital input #1 should be illuminated.
 - Within a few seconds, the audible & visual alarms should stop.
 - The pump will start to cycle in approximately 36-second intervals, starting with the off cycle.
 - Digital input #1 and digital input #6 should be illuminated during the on cycle.

2. Override Timer Float Test

- Lift and secure the middle float in the up position.
 - Digital inputs #1 and #2 should be illuminated.
 - The pump cycle will shorten to 24-second intervals.
 - Digital output #1 and digital input #6 should be illuminated during the on cycle.

3. High Level Alarm Float Test

- Lift and secure the top float in the up position.
 - Digital inputs #1, #2, and #3 should be illuminated.
 - The audible and visual alarms should activate. Digital outputs #2 and #3 should illuminate.
- Drop the top float and ensure that it is in the down position.
 - The audible and visual alarm should stop after a few seconds. Digital output #2 and #2 should NOT be illuminated.
 - The pump should continue cycling as indicated by digital output #1 and input #6 being illuminated.

4. Returning to Normal Cycle Time

- Drop the middle float and ensure that it is in the down position.
 - The pump should complete the minimum override cycles (default is three) and then return to its normal cycle time.
 - The pump should continue cycling as indicated by digital output #1 and input #6 being illuminated.
 - Digital input #1 should remain illuminated, indicating that the bottom float is in the up position.
- Reinstall the float assembly into the pump vault. Ensure that the floats are free from entanglements
- Ensure that the tank has enough water to maintain the RO (bottom) float in the up position, or there will be constant low-level alarms.

CONTROL PANEL INSTALLATION TESTING

Communication Test

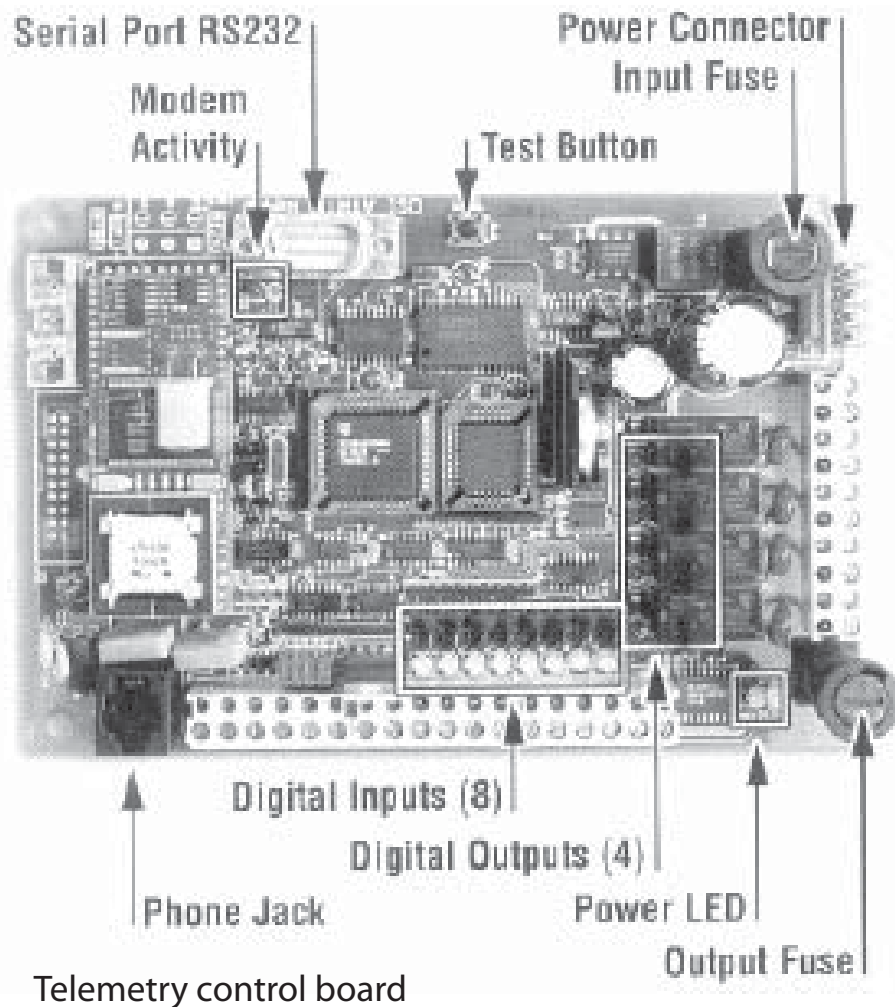
□ Press and release the “Push-To-Silence” button 15 times within a one minute period. This instructs the panel to “phone home”, to call the VeriComm Monitoring System.

- A red LED should illuminate, indicating that the controller has established communication with the host (this may take a few minutes).
- Once the communication session has ended, the modem light will automatically disconnect.
- If the LED does not illuminate within the specified time, verify that the phone line has a dial tone. This can be done by hooking up a phone line that is going into the panel.

Disable Test Mode

□ The panel will automatically disable the test mode and return to normal operation after 30 minutes. To disable the test mode immediately, hold the “Push-To-Silence” button on the front of the panel until the audible alarm sounds (approximately 15 seconds).

- Digital unput #5 should be illuminated when the “Push-To-Silence” button is held in.
- When the audible alarm sounds to indicate that the panel is no longer in test mode, release the button.

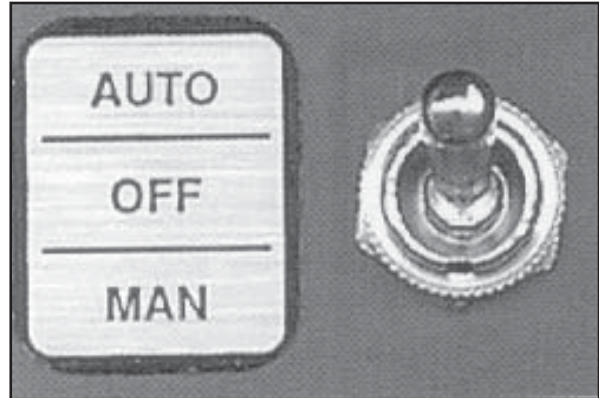


WRAPPING THINGS UP

Now it's time to put the finishing touches on your system. Everything is in its place, the electrician has wired and tested the Control Panel, and there's just a few more adjustments to do before pulling off the job.

Verify Pump Operation

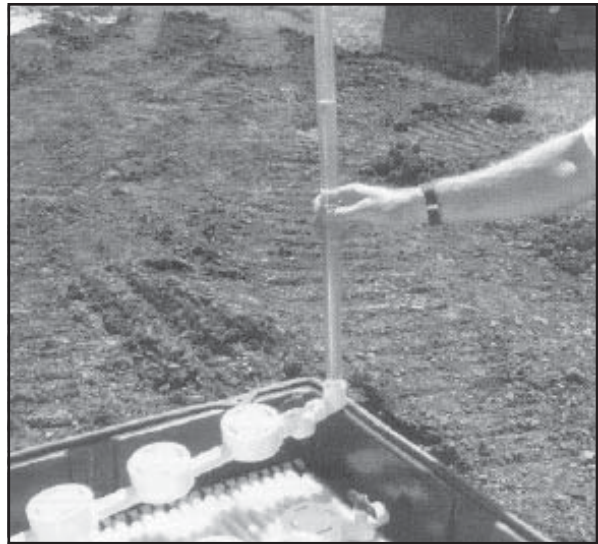
Verify both manual and automatic operation of the recirculation pump. Before running the pump, be sure you have enough water in the tank - at least 4 inches above the bottom float and lower than the top float. As we advised earlier in this manual, open the Filter to make sure the manifold is disconnected from the Transport Line at the union just inside the box. Flip the MOA Switch in the Control Panel to "Manual" to test the pump and flush out any debris that may be in the Transport Line.



Verify Filter Operation

Reconnect the manifold union. With the pump running in "Manual" position, open each lateral ball valve individually for 5-10 seconds to flush out the line. Be sure to close all the lateral valves completely when you're finished.

With the pump still running in "Manual" position, remove several of the orifice shields (those plastic caps that snap onto the lateral pipes) and measure the squirt height with a tape measure. If the squirt height measures between 3-5 feet, you have a healthy system. Record the squirt height so you may compare it to future measurements. Windy conditions (Anchorage hillside for example) will make it difficult to accurately measure the squirt height. The photo on the right shows an alternate method of recording squirt height, using a piece of clear PVC pipe at the end of a lateral.



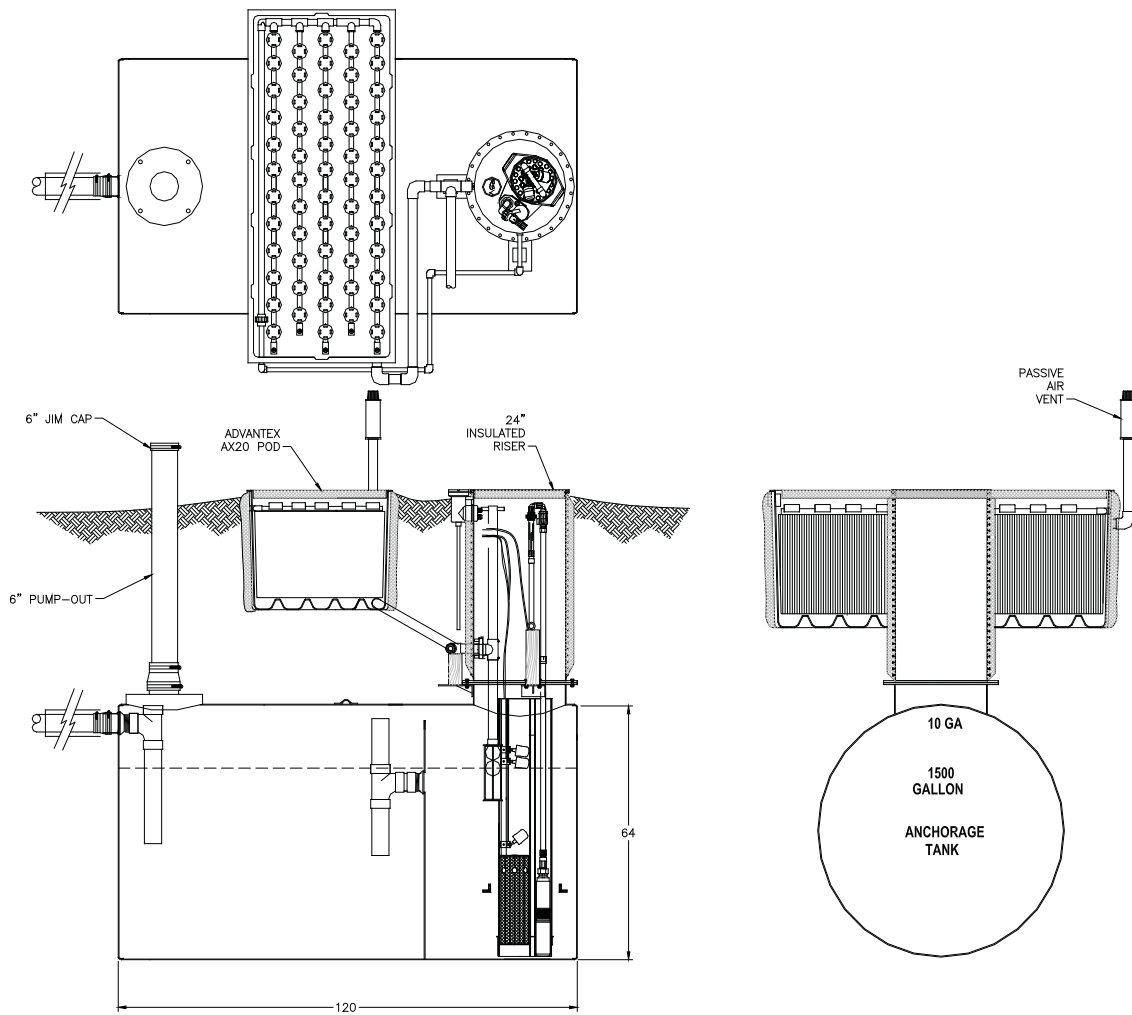
THAT'S ALL, FOLKS

If everything looks fine, close the lid. Be sure both the round lid on the Riser and the rectangular lid on the Filter are securely fastened with the screws provided.

When the system is complete and the communication line is installed, please give a call to Anchorage Tank so we can get it registered with both Orenco Systems and VeriComm, and schedule the System Start-Up with the Service Provider.

OPTIONAL EQUIPMENT: DISCHARGE BASIN MODE 1B

Some systems, where it is not possible to gravity drain from the Split-Flow Tee to the Drainfield, a Discharge Pump Basin must be added alongside the tank. Systems like this are called Mode 1B - Mode 1 refers to the orientation of the filtrate entering the tank into the second compartment, and B refers to the Discharge Pump Basin. A different Control Panel is also needed to handle the extra floats in the Basin. The drawing below shows a typical Mode 1B system.



AdvanTex® Installation

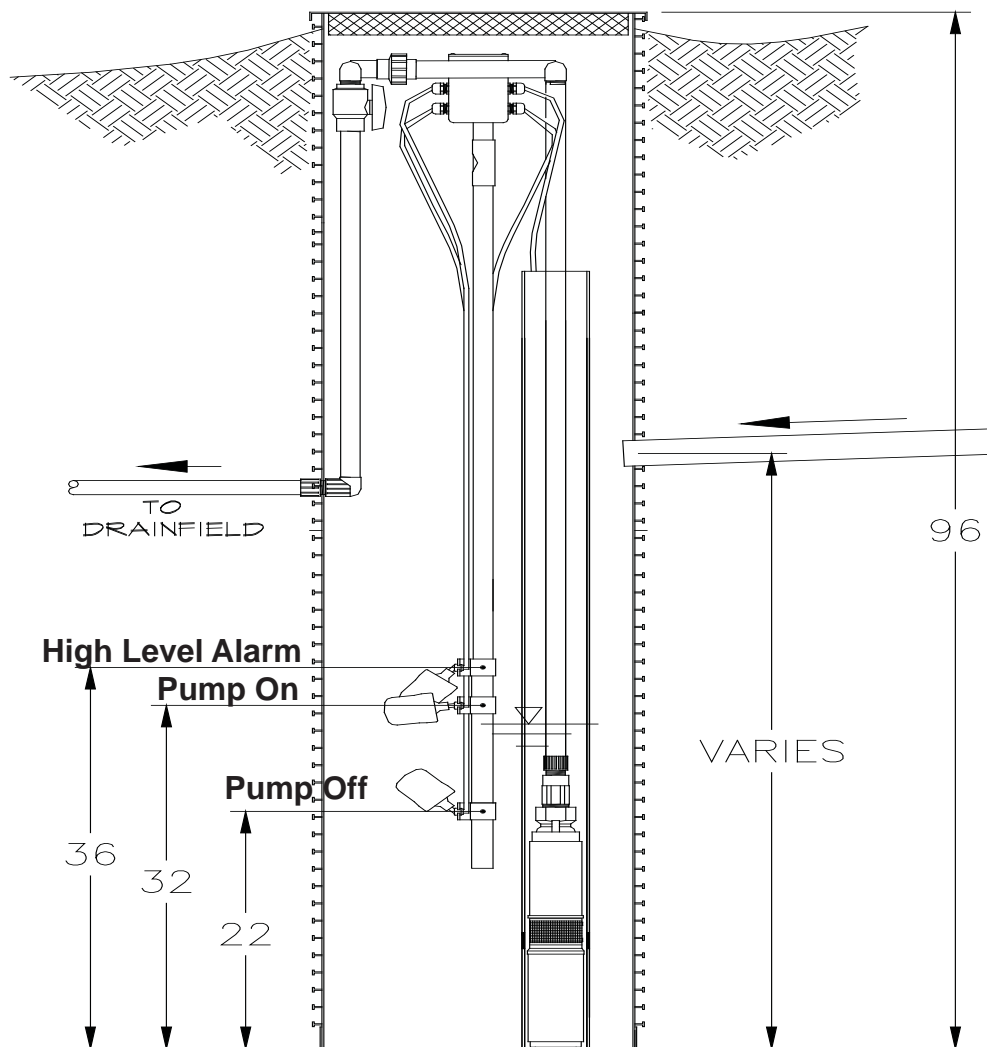
OPTIONAL EQUIPMENT: DISCHARGE BASIN MODE 1B

The Pump Basin height depends on the depth of the system configuration. While the Recirc Pump in the Tank is a timed dose to the Filter, the pump in the Basin is a demand dose (pump on/pump off) to the Drainfield. Float levels will vary in each system but a good thing to know while setting the float levels is that the Basin holds 1.9 gallons per inch.

Depending on the height of the Basin, the Hose & Valve Assembly will be very similar to the one you just made up for the Tank.

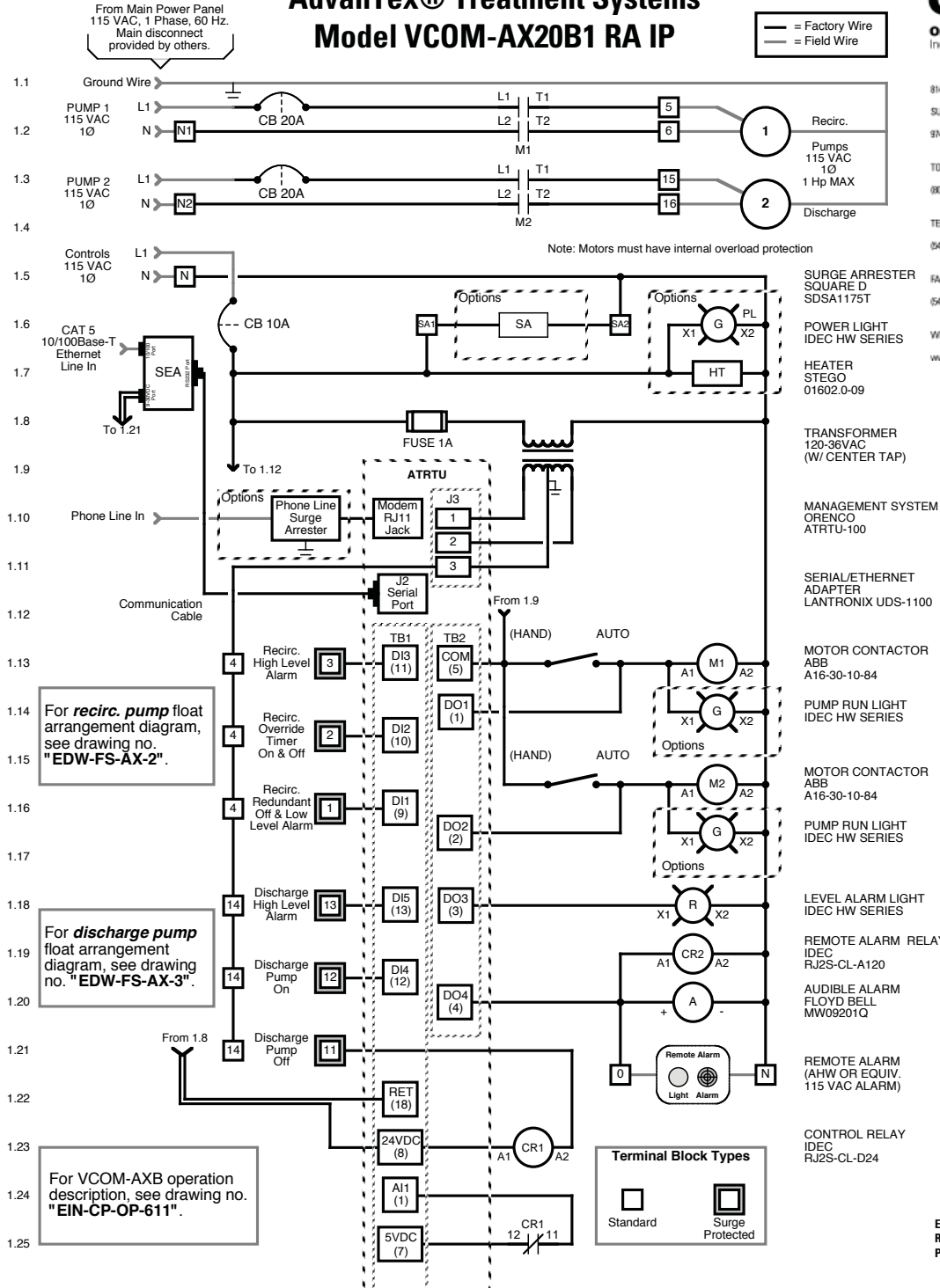
The Splice Box is very similar to the one in the Tank Riser. You'll want to gather the float and pump cords in the same manner. The pump may travel across the bottom of the Basin so it's best to center it as close as possible. We've seen the floats get caught against the wall, causing all sorts of alarms.

A Mode 1B system uses a slightly different control panel so we'll discuss it next.



OPTIONAL EQUIPMENT: DISCHARGE BASIN MODE 1B

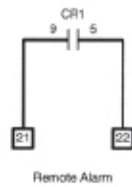
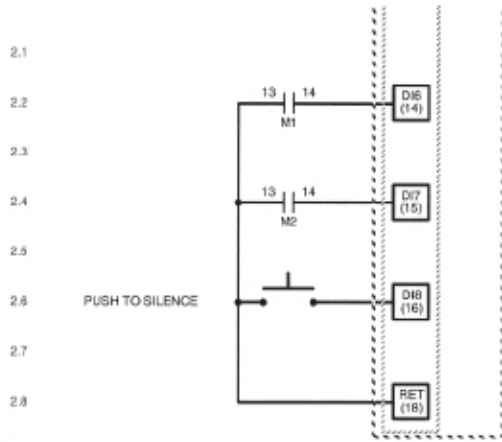
Control Panel Wiring Diagram AdvanTex® Treatment Systems Model VCOM-AX20B1 RA IP



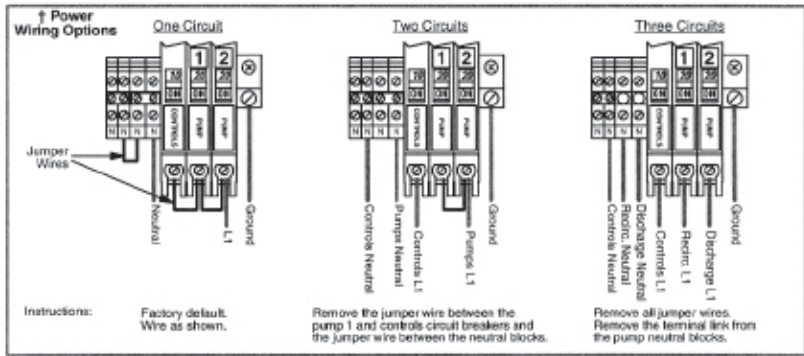
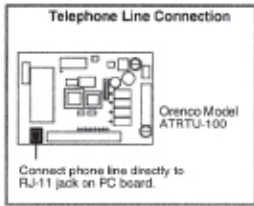
814 AIRWAY AVENUE
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FACSIMILE:
541.459.2884
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AdvanTex® Installation

OPTIONAL EQUIPMENT: DISCHARGE BASIN MODE 1B



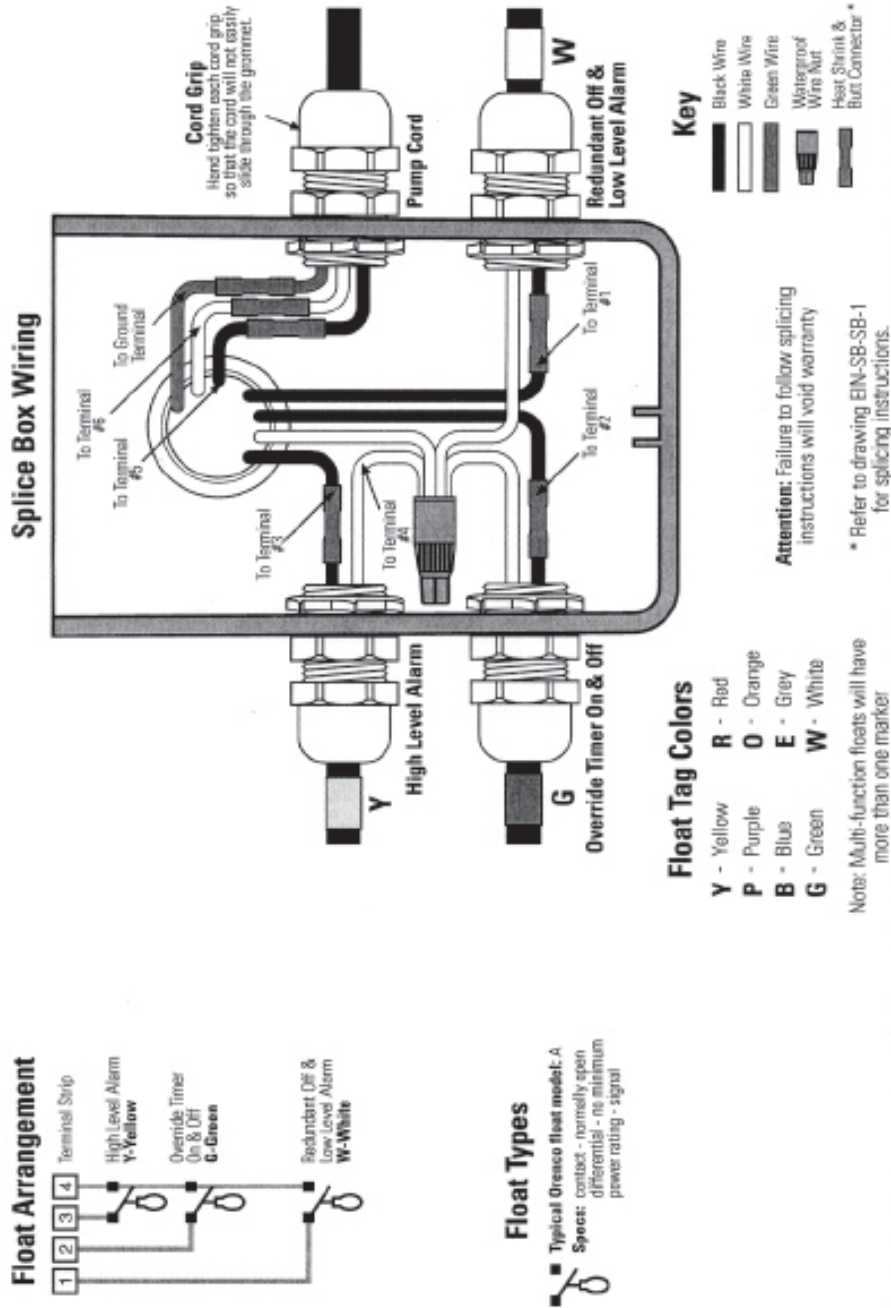
For VCOM-AXB operation description, see drawing no. "EIN-CP-OP-611".



OPTIONAL EQUIPMENT: DISCHARGE BASIN MODE 1B

Float & Splice Box Wiring Diagram

For use in two pump systems, recirc. side.



Control Panel Series	Float Function Color Code	Splice Box Model	Drawing No.
VCOM-AXB	YGW/	SB4	EDW-FS-AX-2

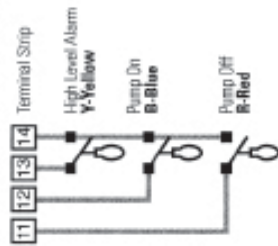
This splice box is in the Tank Riser.

OPTIONAL EQUIPMENT: DISCHARGE BASIN MODE 1B

Float & Splice Box Wiring Diagram

For use in two pump systems, discharge side.

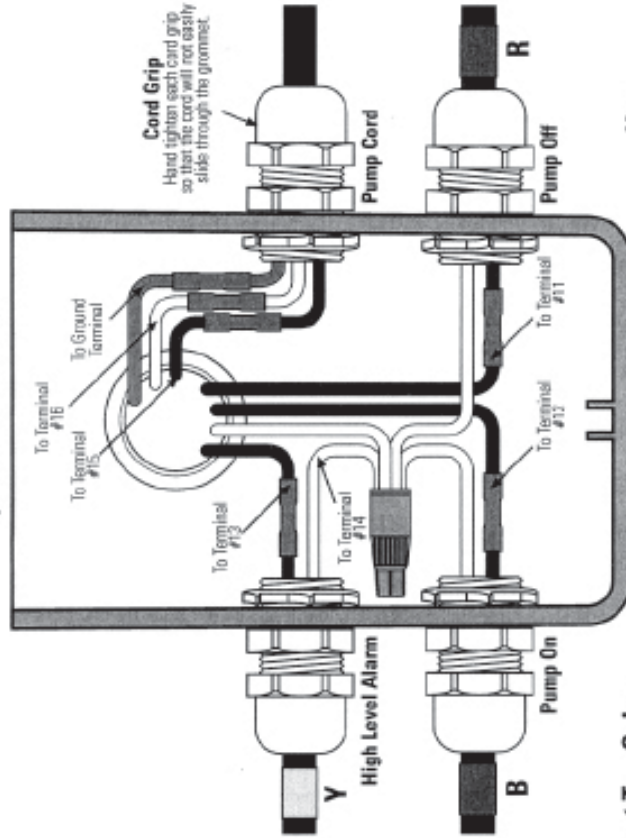
Float Arrangement



Float Types

Typical Orreco float model: A
 Spaces: contact - normally open
 differential - no minimum
 power rating - signal

Splice Box Wiring



Float Tag Colors

- Y - Yellow R - Red
- P - Purple O - Orange
- B - Blue E - Grey
- G - Green W - White

Note: Multi-function floats will have more than one marker

Key

- Black Wire
- White Wire
- Green Wire
- Waterproof Wire Nut
- Heat Shrink & Butt Connector*

Attention: Failure to follow splicing instructions will void warranty

* Refer to drawing EIN-SB-1 for splicing instructions.

Control Panel Series	Float Function Color Code	Splice Box Model	Drawing No.
VCOM-AXB	/YBR	SB4	EDW-FS-AX-3

This splice box is in the Discharge Basin.

VCOM-AXB PANEL OPERATION

What's so special about this gray box?

The VCOM-AXB telemetry-enabled panel is used for remote monitoring and control of the dual pumping operations of a timed recirculating pump (in the Tank) and an on-demand discharge pump (in the Discharge Basin).

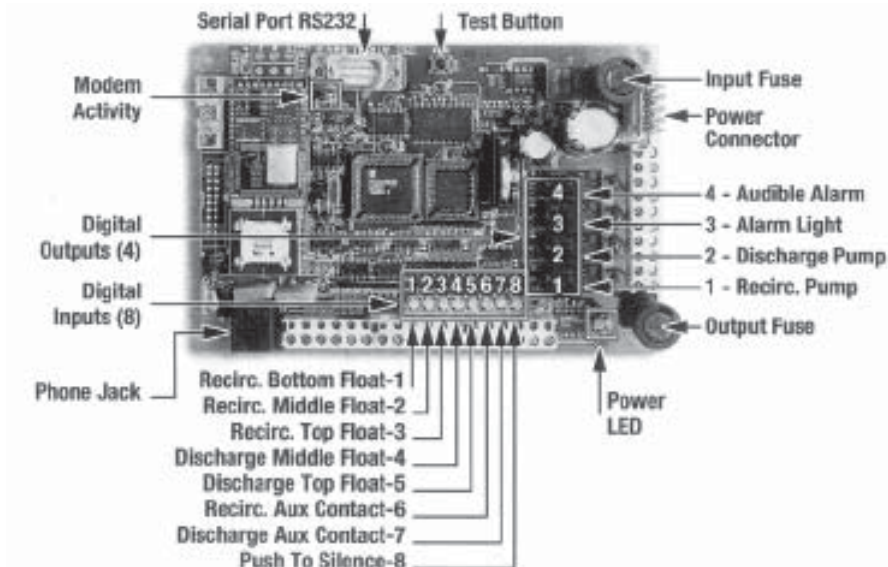
Basic control logic manages the day-to-day functionality of the Control Panel. The VCOM-AXB system continually recirculates influent; until the Recirculating Splitter Valve (RSV) seats, then the system gravity discharges small amounts of treated wastewater throughout the day into the Discharge Basin. During peak flow conditions, more aggressive timer settings (overrides) are used to manage the increased demand. As the Discharge Basin fills with treated effluent, floats activate a discharge pump to a dispersal field.

Fault conditions are automatically reported to the VeriComm Monitoring System (a web-based database by Orenco Systems) and not locally at the panel, making the system virtually invisible to the homeowner. Alarms and Alerts cause an email to be forwarded to Anchorage Tank personnel. However, if these conditions are not responded to, or the system cannot communicate with the VeriComm Monitoring System (the phone line might not be connected), then the local alarms at the Panel will activate.

To silence local alarms, press the "Push to Silence" button until the audible alarm stops.

Note: the procedures outlined in the following pages are to verify proper installation; they should be conducted in the sequence outlined while in "Test Mode".

Input and Output Definitions



1. Digital inputs are the yellow LEDs horizontally aligned along the bottom on the controller.
2. Digital outputs are the red LEDs vertically aligned on the right side of the controller.
3. Inputs and outputs are activated by various events (e.g., Floats are activated when the float is in the up position, "Push to Silence" is activated when the push button, located on the front of the panel, is pressed.

CONTROL PANEL INSTALLATION TESTING

1. Verify System Status

- Ensure that the Panel Installation Instructions have been completed.
- Verify that the circuit breakers are in the ON position.
- Verify controlled status. The “Power LED” located on the controller (refer to the photo on the previous page) will either be:
 - Blinking - indicates that the controller is operating normally, or
 - Solid Off (when power is applied) - indicates that there was a possible problem with:
 1. The unput fuse on the PC board.
 2. The main fuse located inside the panel
 3. The incoming line voltage.

2. Enable Test Mode

- Hold the “Push to Silence” button on the front of the panel until the audible alarm sounds (approximately 15 seconds) to enable test mode.
 - Digital input #8 should be illuminated when the button is held in.
 - When the audible alarm sounds to indicate that the panel is in test mode, release the button.
- While in test mode, the panel will operate in the following manner:
 - The Call Home function is disabled,
 - Local audible and visual alarms are activated as alarm conditions occur,
 - System Data Logs are suspended, and
 - Timer cycles are shortened.

3. Manual Pump Test

- Verify that the Recirc pump is submerged in water before continuing. If the RO (bottom) float drops, the alarm should sound.
 - Press down the spring-loaded “MAN/AUTO” switch for the Recirc pump located inside the panel. The Recirc pump should immediately activate. For verification:
 - Digital input #6 should illuminate (refer to the photo on the previous page), indicating that the auxiliary contact is on.
 - Verify that the Discharge pump is submerged in water before continuing. If the Off (bottom) float drops, the alarm should sound.
 - Press down the spring-loaded “MAN/AUTO” switch for the Discharge pump located inside the panel. The Discharge pump should immediately activate. For verification:
 - Digital input #7 should illuminate (refer to the photo on the previous page), indicating that the auxiliary contact is on.
- ### 4. Combined Pump Test
- Verify that the Recirc and Discharge pumps are submerged in water before continuing.
 - Press down the spring-loaded “MAN/AUTO” switch for both pumps. Digital inputs #6 and #7 should illuminate (refer to the photo on the previous page), indicating that the auxiliary contacts are on for both pumps.
 - Measure the voltage and amerage of the
 - Measure the voltage at each of the pump terminals in the panel while both pumps are running. A low voltage condition could indicate that the site wiring is improperly sized.
 - Using a loop ammeter, place the ammeter clamp around the loop of wire located above the pump circuit breaker. (This should be done for each pump)The amperage should be within the specifications of the pump.

CONTROL PANEL INSTALLATION TESTING

Recirc Float Test

While in test mode, the Recirc floats will function as described:

High Level Alarm (top float): This float activates the alarm light and audible alarm when lifted. Pressing and holding the illuminated “Push-To-Silence” button on the front of the control panel will silence the audible alarm. The alarm light will remain on until the float is lowered.

Override On/Off (middle float): This float activates the override timer when lifted. The override timer controls the pump during high flow conditions. The override timer function will remain active until the set minimum number of override cycles has been completed and the float has lowered.

Redundant Off & Low Level Alarm (bottom float): This float enables the timer function when lifted. The timer function controls the pump during normal flow conditions. Note: The timer will start off with its off cycle. this float also disables the pump, when lowered, and activates the alarm light and the audible alarm. Pressing and holding the illuminated “Push-To-Silence” button on the front of the control panel will silence the audible

To perform the following test, sufficient water is required. If there is not enough water in the tank, turn the Recirc pump circuit breaker off.

To test the functionality of the Recirc floats and ensure that the panel is installed correctly, complete the following steps:

1. RO/Low Level Alarm Float Test

- Pull the Recirc float assembly out of the pump vault and position it so all floats are hanging in the down position.

- If the Discharge high level (top) float is lifted (digital input #5 is illuminated), then go over to the Discharge Basin and pull out that float assembly also and make sure the those floats are in the down position.

- Digital inputs #1, #2, #3, and #5 should NOT be illuminated.
- The alarm light should be on; the audible alarm may be sounding.

- Lift and secure the bottom float in the up position.

- Digital input #1 should be illuminated.
- Within a few seconds, the audible & visual alarms should stop.
- The Recirc pump will start to cycle in approximately 36-second intervals, starting with the off cycle.
- Digital output #1 and digital input #6 should be illuminated during the on cycle.

2. Override Timer Float Test

- Lift and secure the middle float in the up position.

- Digital inputs #1 and #2 should be illuminated.
- The Recirc pump cycle will shorten to 24-second intervals.
- Digital output #1 and digital input #6 should illuminate when the Recirc pump is on.

3. High Level Alarm Float Test

- Lift and secure the top float in the up position.
- Digital inputs #1, #2, and #3 should be illuminated.
- The audible and visual alarms should activate. Digital outputs #2 and #4 should illuminate.

CONTROL PANEL INSTALLATION TESTING

- Drop the top float and ensure that it is in the down position.
 - The audible and visual alarm should stop after a few seconds. Digital output #3 and #4 should NOT be illuminated.
 - The Recirc pump should continue cycling as indicated by digital output #1 and input #6 being illuminated.

4. Returning to Normal Cycle Time

- Drop the middle float and ensure that it is in the down position.
 - The Recirc pump should complete the minimum override cycles (default is three) and then return to its normal cycle time.
 - The Recirc pump should continue cycling as indicated by digital output #1 and input #6 being illuminated.
 - Digital input #1 should remain illuminated, indicating that the bottom float is in the up position.
- Reinstall the Recirc float assembly into the pump vault. Ensure that the floats are free from entanglements.
- Ensure that the tank has enough water to maintain the RO (bottom) float in the up position, or there will be constant low-level alarms.
- The Recirc pump should continue to cycle during the Discharge test.

Discharge Float Test

While in test mode, the Discharge floats will function as described:

High Level Alarm (top float): This float activates the alarm light and audible alarm when lifted. Pressing and holding the illuminated “Push-To-Silence” button on the front of the control panel will silence the audible alarm. The alarm light will remain on until the float is lowered. Note: this float will cut-off the Recirc pump when lifted.

Pump On (middle float): This float activates the Discharge pump when lifted.

Pump Off (bottom float): When lowered, this float turns the Discharge pump off.

To perform the following test, sufficient water is required. If there is not enough water in the Discharge Basin, turn the Discharge pump circuit breaker off.

To test the functionality of the Discharge floats and ensure that the panel is installed correctly, complete the following steps:

1. Pump On Float Test

- Pull the Discharge float assembly out of the Discharge Basin and position it so all floats are hanging in the down position.
 - Digital inputs #4, and #5 should NOT be illuminated.
- Lift and secure the bottom and middle floats in the up position.
 - Digital input #4 should be illuminated.
 - The alarm light should be on; the audible alarm may be sounding.

CONTROL PANEL INSTALLATION TESTING

2. High Level Alarm (Recirc Float Cut-off) Test

- Lift and secure the top float in the up position.
 - Digital inputs #4 and #5 should be illuminated.
 - The audible and visual alarms should activate. Digital outputs #3 and #4 should illuminate
- Silence the audible alarm by pressing the “Push-To-Silence” button on the front of the panel until the alarm stops.
- The Recirc pump should stop cycling.
 - Digital input #6 and output #1 should NOT be cycling. (Wait a few minutes to verify.)
 - The audible and visual alarms should activate. Digital outputs #3 and #4 should illuminate
- Drop the top float.
 - Digital input #5 should NOT be illuminated.
 - The Recirc pump should start cycling again. (Wait a few minutes to verify; digital output #1 and digital input #6 should be illuminated during the on cycle.)

- A red LED should illuminate, indicating that the controller has established communication with the host (this may take a few minutes).
- Once the communication session has ended, the modem light will automatically disconnect.
- If the LED does not illuminate within the specified time, verify that the phone line has a dial tone. This can be done by hooking up a phone line that is going into the panel.

3. Pump Off Float Test

- Drop the middle float and ensure that it is now in the down position.
 - Digital input #4 should NOT be illuminated.
 - The Discharge pump should stop. This is indicated by digital output #2 and input #7 NOT being illuminated.

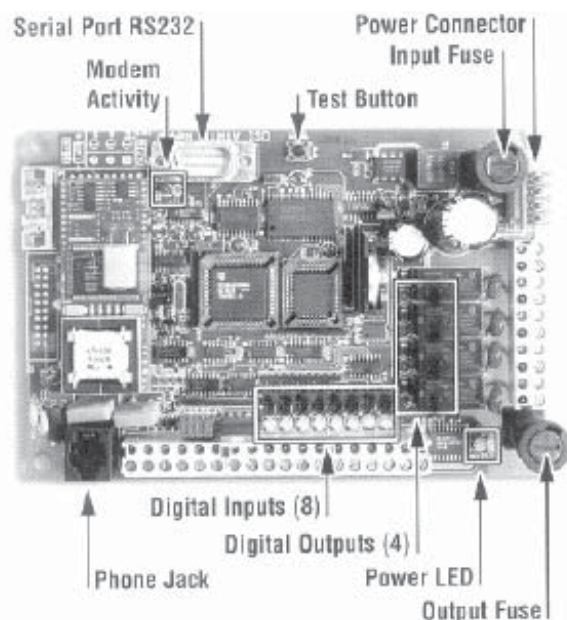
Disable Test Mode

- The panel will automatically disable the test mode and return to normal operation after 30 minutes. To disable the test mode immediately, hold the “Push-To-Silence” button on the front of the panel until the audible alarm sounds (approximately 15 seconds).

- Digital input #8 should be illuminated when the “Push-To-Silence” button is held in.
- When the audible alarm sounds to indicate that the panel is no longer in test mode, release the button.

Communication Test

- Press and release the “Push-To-Silence” button 15 times within a one minute period. This instructs the panel to “phone home”, to call the VeriComm Monitoring System.



AdvanTex[®] Installation

NOW THAT YOU ARE FINISHED:

As you are packing up the backhoe and gathering your shovels, it's a good time to call Anchorage Tank (272-3543) and let us know you are finished. We have extensive record keeping responsibilities and you can greatly assist that by letting us know the following:

- date the installation is complete
- if the house isn't constructed and you might have to visit this site in the future to finish
- any homeowner information you might gather; names and numbers
- is the house is for sale, has it sold yet?

Please put a door hanger (illustrated to the right) on the front door (if there is one) to let the homeowner know the status of your work.

After each installation, a representative from Anchorage Tank and the Authorized Service Provider meets with the homeowner to provide a start-up orientation.

If you simply drive off the job and not tell anyone, these activities are delayed and systems can be used before they have been inspected - nothing good ever comes from that.

Moreover, the homeowner is left in the dark after spending a lot of money on their system. His expectations are high.

If they have a bad experience during or after your installation, it isn't likely they will have nice things to say about any of us to their neighbors - who will, no doubt, also need an AdvanTex system in the future.



Date: _____

Installer: _____

We installed an AdvanTex Treatment System on your property today. Although all the parts of your system are in place, it is not yet ready for use.

Please call Anchorage Tank & Welding, Inc. at 272-3543 to arrange for your system Start-Up.

A representative from the Authorized Service Provider and Anchorage Tank will meet with you to ensure your system is ready for use.



System Start-Up begins the Monitoring & Maintenance Program. Fees for the Program would be due at that time, unless already prepaid.



AdvanTex and VeriComm are registered trademarks of Oresco Systems, Inc.
Covered by U.S. Patent numbers 5,980,748; 5,531,894; 5,480,561; and 4,439,323.
Additional patents pending by Oresco Systems, Inc.

Oresco Systems
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