

DA-1

INSTALLATION INSTRUCTIONS

The DA-1 small lake aeration/destratification system is extremely versatile. The air compressor can be mounted as far as one-half mile away from the lake and still use the 1/2-inch tubing to get the air to the lake.

The diffuser assembly can be operated in water as deep as 40 feet and the compressor can be left off for extended periods without damage from corrosion. Maintenance consists of an easy diaphragm replacement after two years of continuous running, and cleaning of the air diffusers after 3 or 4 years of continuous running (more often if the system is turned off for extended periods).

The following instructions will enable the easy connection of all components of the system and place the unit into operation. Please check the delivery and make sure that the following items have been received:

1 each	Lockable Steel Cabinet with Fan
1 each	AQ10T Compressor and Outlet Hose (8 ft.)
1 each	P200S 1/2" Tubing (100 ft.)
1 each	ALA-4GL Diffuser Manifold w/Polyethylene Underlay
15 each	T120R Nylon Ties
4 each	SSA 1/2" Stainless Steel Clamps
1 each	101A Coupling for Tubing
2 each	Lag Bolts

Installation of the DA-1 System is divided into four steps:

1. Locating and mounting the cabinet
2. Unrolling and attaching bricks on tubing.
3. Attaching and lowering diffuser manifold.
4. Attaching all components together.

Locating and Mounting the Cabinet

The DA-1 system employs a lockable steel cabinet designed to be attached to a 4-inch by 4-inch post (it could also be mounted on a dock pilking). One carriage bolt and one stud are provided for attachment.

Located at the back center of the cabinet are two pre-drilled mounting holes, one of which is a slide mount. Hold the cabinet against the pole where it is to be mounted the unit. Mark the pole with a pencil through the top mounting hole. Drill the top hole about 2 inches deep, using a 1/4-inch drill bit. Measure 8 inches down and drill another 1/4-inch hole, 2 inches deep.



Using a 9/16-inch wrench or socket, screw a lag bolt into the lower hole, leaving a space of 1/8-inch between the bolt head and the wood. Attach the cabinet by inserting the lag bolt head through the large lower hole and sliding it up into the slot. Rotate the cabinet into position so that the upper holes of the cabinet and pole align, screw the second lag bolt in, and tighten.

Unrolling and Attaching Bricks on Tubing

Prior to unrolling the 1/2-inch black polyethylene tubing, please read and review the enclosed sheet on the best techniques for doing so.

Two basic rules must be followed for continuous year-around operation in cold weather areas:

1. The land-based run of tubing must be buried below the area's frost depth, and the air line must be insulated between the compressor and the ground.
2. The air line must enter the water in a trench below the area's average winter ice depth.

Allow enough tubing to reach attachment point (black flexible discharge hose of the **AQ10T** compressor) and bury land-based portions prior to proceeding. This will allow an anchorage for one end of the air supply line prior to installing the water-based portion of the line. The easiest method to place the bricks and lower the air line is for two people in a row boat to work together. One person provides movement and direction, while the other (in the rear of the boat) slowly unrolls tubing as shown in the instruction sheet, and attaches common 3-hole brick with ties as illustrated. (If installing the system on a windy day, lower the diffuser first, for extra weight, and work from shore out to the diffuser end.) When the end of the air line tubing is reached, attachment of the ALA4GL manifold and underlay will be required.

Attaching and Lowering Diffuser Manifold

The 6-inch diffuser stones must be prepared before mounting to the diffuser manifold. First, dip the stones into the water with the threaded end up. Once completely submerged, invert and remove from the water while keeping the threaded end down. This procedure removes any remaining dust from the machining process in the manufacture of these stones. The stones should then be hand tightened only onto the manifold. Tightening should only be to the point where slight resistance is felt and no further.

The polyethylene underlay prevents silt from being picked up and moved through the pond or lake. Two sets of pre-drilled holes are available to use two black nylon ties (supplied) to make this attachment. The air line is attached to the manifold by one of the SSA clamps. By looping a small diameter line through the diffuser manifold, it can be lowered to the bottom. The compressor will compensate for any depth encountered, but it is important that the diffuser is flat, and has the manifold above the underlay. Remove the line used to lower the manifold, and return to shore for the final connection.

Note: The line can be left attached to a float for future retrieval if it is not a liability to boaters, fishermen, and swimmers.

Note: A 101A connector and two extra clamps have been supplied in case repair of the line is ever needed.

Attaching All Components Together

Upon returning to shore, attach the air line to the **AQ10T** discharge air line by another 1/2-inch stainless steel clamp (don't forget insulation of the air lines above the frost line). The **AQ10T** is equipped with a male electrical plug. A simple extension cord with a standard female termination will be adequate for an electrical source. When the **AQ10T** compressor is plugged in, the installation is completed.

Maintenance

The intake air filter is washable in soap and water. Normal maintenance is the cleaning of this filter about twice a year. The airstones may require cleaning after 3-4 years. This is accomplished by using muriatic acid or hydrochloric acid. Simply soak the stones in acid for 24 hours. They are inert to acid. **DO NOT USE BLEACH!!** AIR DIFFUSERS ARE NOT INERT TO BASE SOLUTIONS SUCH AS BLEACH.

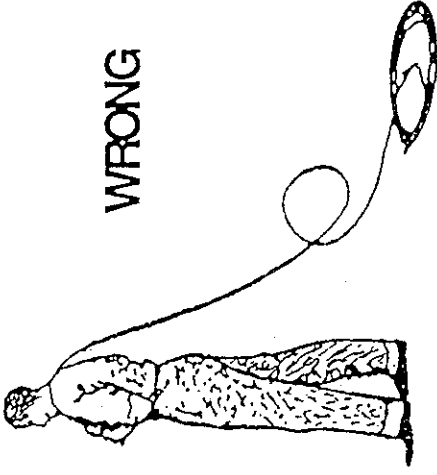
The DA-1 System is designed for continuous year-round operation. In winter, a circular pattern of open water will remain over the diffuser location. If the pond is small, consider moving the diffuser to a shallower depth in winter. This will eliminate the risk of turning the lake into a giant ice cube, by allowing warmer water to remain in the deepest portion. After two years of continuous duty, the diaphragm in the compressor should be replaced. (Part # **AQ10TRK** ordered separately.)

Please contact a member of the **Aquatic Eco-Systems** technical staff if you have further questions or need more assistance.

Installation Instructions

Uncoiling Tubing

WRONG



When uncoiling tubing, always roll the coil like a hoop. If a loop pops out during uncoiling, re-roll to return the loop to the coil to avoid kinking. **NEVER** lay the coil down and throw the tubing out in loops. This procedure will almost invariably result in kinking.

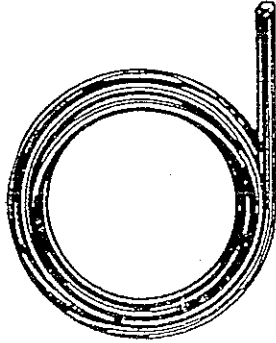
Black Polyethylene Tubing (Part #P200) for Lake Aeration Systems

This 100 psi, heavy duty polyethylene tubing uses insert couplings and stainless steel hose clamps. It is kink resistant and easily repaired.

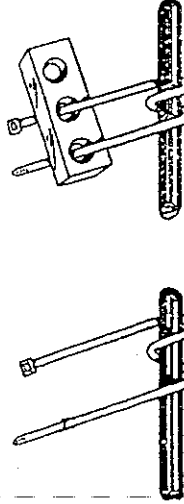
Attaching Weights to Air Distribution Lines

This method of attachment will prevent bricks from sliding during and after installation.

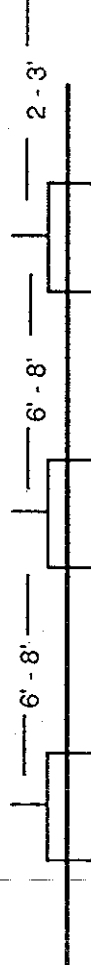
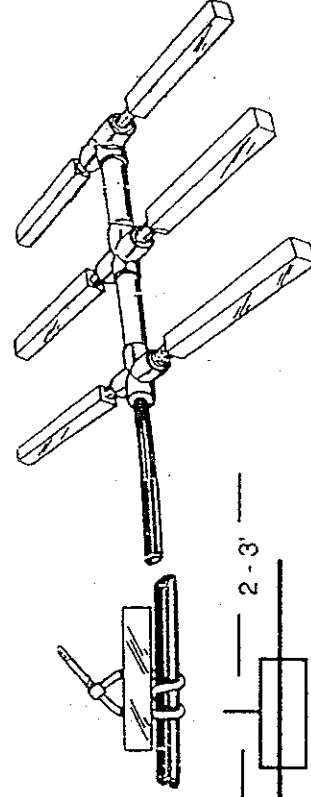
STEP 1 - Double loop tie around air line (Tie is part #T12OR).



STEP 2 - Insert tie through two adjacent holes of brick.

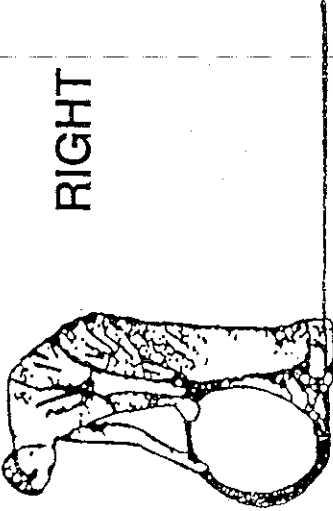


STEP 3 - Tighten securely by wiggling brick and pulling on tie until brick does not slide. It must be tight!



Common brick (about 3 lbs. each) should be spaced approximately six to eight feet apart on 1/2" tubing. Space the first brick about 2 feet from the diffusers.

RIGHT



AQUATIC

ECO-SYSTEMS, INC.

1767 Benbow Court, Apopka, FL 32703 Phone (407) 886-3939 Fax (407) 886-6787

START-UP OF AERATION SYSTEM IN "STRATIFIED LAKES"

The circulation of water by an aeration system produces two benefits. One is the thermal destratification of the lake causing a fairly uniform temperature throughout the lake. The second is the increasing of oxygen levels within the water column top to bottom.

At the same time that the circulation is producing these benefits it can be producing a problem. The circulation of the bottom water up to the surface allows this water to obtain oxygen. But this water may also contain gases and by-products which are produced as a result of the anaerobic (no oxygen) conditions on the bottom. These products when mixed with the upper layers of water may foul the surface layer thus making it unfit for aquatic life. This could result in a fish kill.

Although a fish kill is possible it can be prevented if you just exercise care when first turning on the system.

The following are our recommendations for start-up:

1. After the diffusers have been positioned and the unit is turned on you need to position yourself downwind of the diffuser boil. If a strong odor (rotten eggs, etc.) is noticed this indicates that the bottom water is bad. To prevent it from mixing completely with the upper layers the diffusers should be moved to a shallower area of the pond. Allow the system to run in this area for a few days thoroughly mixing this portion of the lake. Next move the diffusers to deeper water and run them there for a few days. Continue this until you have reached the desired position of the diffusers. This process should take approximately 1-2 weeks depending on the size and depth of the lake.
2. A second approach is similar to the above method but instead of gradually moving the diffuser manifold out to the final site over a period of 1 to 2 weeks you can place it in its final desired position. However, rather than an immediate and continuous running of the aeration system we advise a slow-start break-in period. The first day the compressor will be turned on and the boil should be observed for dark/discolored water or the hydrogen sulfide smell. If this appears, let the compressor run for only 15 minutes the first day before turning off. The next day turn the compressor on and let run for 30 minutes, then turn off. Each successive day double the running time from the previous day until the system is running continuously, 24 hours a day (eight days).

If the smell does not appear, let the compressor run for one hour the first day, two hours the second day, four hours the third day and so on until the system is running 24 hours a day (6 days).

3. Another method to start-up in a "stratified condition" would be to lower the diffuser down via rope from a flotation device. With the initial turn-on two feet below the low or no oxygen level provided this area doesn't represent more than 25% of the total lake volume.
4. A final approach to use if multiple diffusers are needed is to run only a few diffuser manifolds until the thermocline is lowered. This will mix the water at a slower rate.

Remember: These are recommended start-up methods and times, if you are unsure about your lake in particular please contact Aquatic Eco-Systems for further assistance.



2395 Apopka Blvd
Apopka, Florida 32703

Phone (407)886-3939
Fax (407)886-6787