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## SHALLOW POND DIFFUSED AERATOR INSTALLATION/OWNERS MANUAL



### Contents:

• <u>Initial Inspection</u>	<u>2</u>
• <u>General Information</u>	<u>3</u>
• <u>Electrical Grounding</u>	<u>3, 4</u>
• <u>Placement &amp; Operation</u>	<u>4, 5, 6, 7</u>
• <u>Maintenance</u>	<u>8, 9, 10, 11</u>
• <u>Product Warranty</u>	<u>13</u>

# **INITIAL INSPECTION**

## **UPON RECEIVING YOUR ORDER – OPEN AND INSPECT PRODUCT IMMEDIATELY**

### **Product damaged in delivery**

The Aqua Control Inc., (ACI) aeration system was properly packed and accepted by the freight carrier for shipment. It is therefore their responsibility to deliver the system in perfect condition.

### **Apparent damage or loss**

If upon delivery the equipment or containers indicate DAMAGE IN TRANSIT, such goods should be refused or not accepted until the transportation company's agent has noted such on the freight bill. A copy of such bill will be given to you, noting the nature and extent of the damage. If any part of shipment is LOST IN TRANSIT, have shortage noted on freight bill by agent.

### **Concealed damage**

If damage is discovered, that was not apparent upon delivery, notify the transportation company immediately to inspect damaged equipment. The inspector will be required to provide a "CONCEALED BAD ORDER" report. Inspections must be requested within 15 days of delivery. Do not move damaged goods from original point of delivery. Retain all original packing/containers for inspection. File a "FULL VALUE REPLACEMENT" claim against the transportation company."

### **Product warranty**

ACI will repair or replace any defective part for a period of three years from date of receipt. Customer is responsible for return shipping of any goods for warranty inspection by ACI. After inspection, if product shows manufacturing defect, ACI will replace or repair it at no cost to customer. Should inspection indicate non-warranty failure (incorrect voltage, faulty installation procedures, vandalism, customer negligence, etc.) warranty would be void.

## **SYSTEMS MATERIAL LIST**

Upon receipt, inspect to ensure that all of the components are included. If your aeration system has experienced damage from shipping, promptly report the damage to the carrier that provided delivery. Verify that you have received the following equipment.

- **Compressor**
- **Stainless Steel Diffuser Base(s)**
- **Self-Weighted Air Supply Tubing (Purchased separately for model SP30 and SP40)**
- **3/8 Hose barbs come preinstalled in manifold and diffusers for Model SP10 and SP20**
- **3/8 and 5/8 Hose barbs wrapped with thread seal tape for Model SP30 and SP40 only.**
- **Blue check valve assembly**
- **Hose clamps**
- **Manifold assembly (Not included in model SP10)**

## **GENERAL INFORMATION**

**CAUTION:** The pump is designed for air only. Do not allow corrosive gases or particulate material to enter the compressor. Water vapor, oil-based contaminants or other liquids must be filtered out.

**CAUTION:** Ambient temperature should not exceed 40C (104F). For operation at higher temperatures, please consult the factory. Keep out of direct sunlight when ever possible.

**CAUTION:** To avoid risk of electrocution, do not use this product in an area where it could become submerged in water or other liquids.

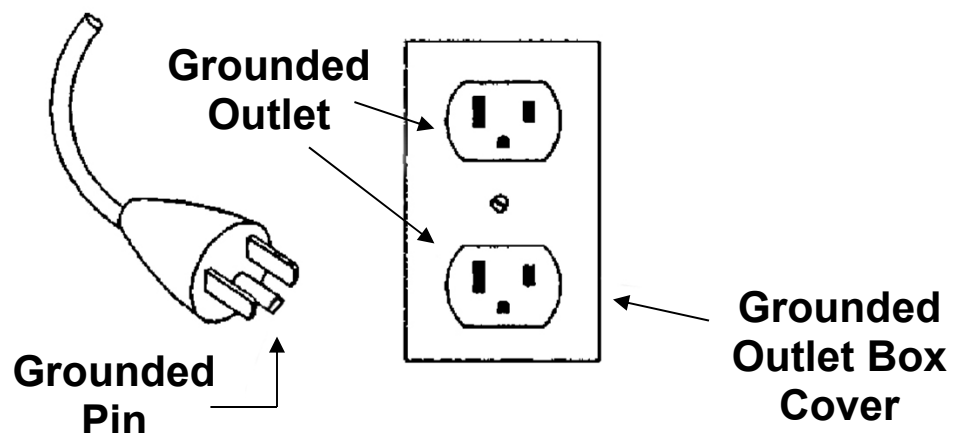
**CAUTION:** Do not block the flow of cooling air around the compressor in any way. The life of the pump may be reduced or malfunction could occur if hazard is ignored.

## **GROUNDING INSTRUCTIONS** **FOR ALL GROUNDED, CORD-CONNECTED PRODUCTS**

This product should be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. The compressor is equipped with a cord having a grounding wire with an appropriate grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

**! DANGER:** Improper installation of the grounding plug can result in a risk of electric shock. If repair or replacement of the cord or plug is necessary, do not connect the grounding wire to either flat blade terminal. The wire with insulation having an outer surface that is green, with or without yellow stripes, is the grounding wire.

Check with a qualified electrician if the grounding instructions are not completely understood, or if in doubt as to whether the product is properly grounded. Do not modify the plug provided; if it will not fit the outlet, have the proper outlet installed by a qualified electrician. This product is for use on a nominal 120 volt circuit



## **EXTENSION CORDS**

Use only a 3-wire extension cord that has a 3-blade grounding plug, and a 3-slot receptacle that will accept the plug on the product. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current that your product will draw. A cord no longer than 50 feet, No.14 AWG extension cord should be used. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. For outdoor use, use an extension cord that is approved for outdoor use.

## **PLACEMENT**

The pump should be in an upright, level position and remain on a stable, rigid operating surface for proper operation. It is preferred that the compressor not be placed in direct sunlight or in an area with obstructed air flow.

## **OPERATION**

**WARNING:** Lower housing and compressor surfaces can become very hot during operation. Do not touch these surfaces until unit has been shut off and allowed to cool.

**CAUTION:** Do not operate if the cord or plug is damaged, or if the compressor is malfunctioning, dropped, or damaged in any way.

## **AERATION EXPECTATIONS**

The following benefits can be expected from an Aqua Control, Inc. (ACI) aeration system:

- Increased and constant oxygen levels from the surface to the bottom.
- Constant temperature from the surface to the bottom.
- Reduction of oxygen-depleting bottom muck and the foul odors associated with it.
- Increased area for healthy aerobic bacteria growth.
- Elimination of oxygen related fish kills.

## **DROWNING DANGER!**

Using an aeration system during freezing conditions in an ice-covered lake will cause large holes in the ice or that are extremely thin. Injury or fatality may result if people fall through the ice in these locations. ACI strongly recommends that these areas and the associated dangers be clearly posted in multiple locations around the lake, pond or marina. The owner will assume **all responsibility** for using the ACI Aeration System during winter months.

## **MAINTENANCE SAFETY**

Use only authorized parts that are supplied or approved by ACI. Use of other parts may result in poor performance, could create a hazardous situation, and will void the warranty.

Unplug the system from the outlet and refer servicing to a qualified electrician under the following conditions:

- When the power cord is damaged or frayed.
- If the cabinet is producing unusual noises or odors.

## **INSTALLATION TOOLS & MATERIALS**

For quick, easy and professional installations, the following tools and materials are needed:

- Utility razor knife
- Flat head screwdriver

## **COMPRESSOR INSTALLATION**

The compressor is designed for easy placement on the ground. The entire system can be hidden behind landscaping and foliage. Do not cover the compressor with a fake rock or other enclosure, as it needs fresh air to keep it cool. In places that reach over 100°F, shading of the compressor is recommended.

## **DIFFUSER ASSEMBLY – ALL MODELS**

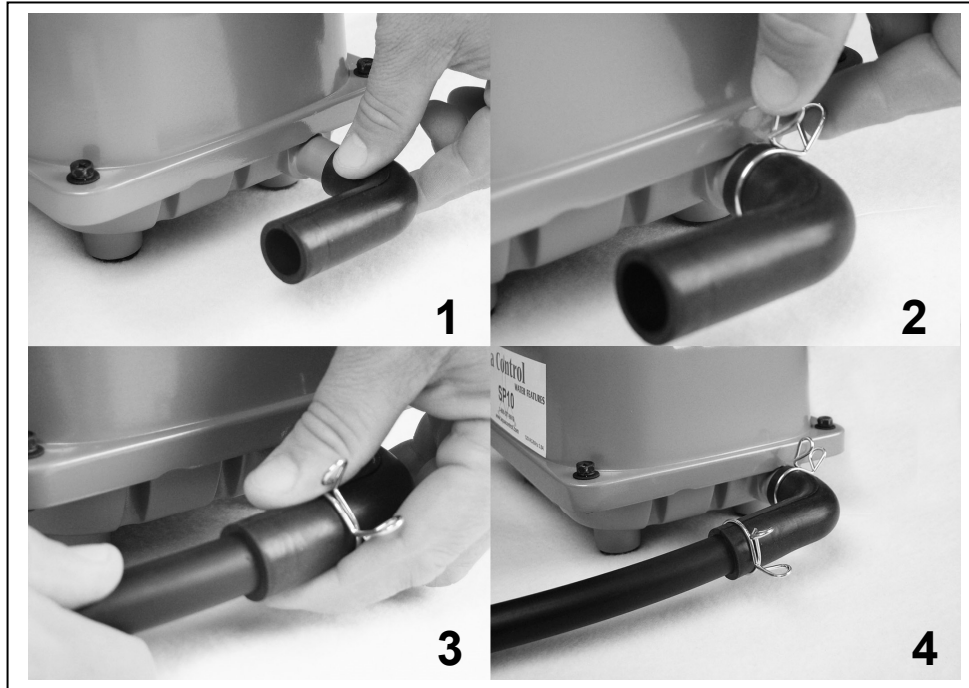
The following steps still need to be completed prior to installing the Diffuser:

- Screw Membrane Diffuser Tube to blue check valve (arrow on check valve must point towards tube diffuser) as shown below. Hand tighten only.
- Push self-weighted air tubing onto barb. Tighten together using hose clamp.
- For SP30 and SP40, you will need to install the appropriate Hose Barb for the size of self-weighted tubing that is being utilized.



## **SELF-WEIGHTED AIR TUBING ATTACHMENT FOR MODEL SP10**

Slip rubber elbow over the circular discharge outlet of the compressor.  
Slide pinch clamp over the rubber elbow and secure around circular discharge outlet.  
Slide 3/8 inch Self-Weighted Air Tubing into rubber elbow approximately 1 inch and secure with remaining pinch clamp. (See pictures below)



## **MANIFOLD ATTACHMENT FOR MODELS SP20, SP30 AND SP40**

To attach the Manifold, push the 5/8" black air tubing over the circular discharge outlet of the compressor. Tighten securely with accompanying hose clamp.

The Manifold will have either two, three, or four valves. The valves allow for adjusting air flow to specific diffusers. When the pump is turned on, ALL Manifold valves MUST be completely open so not to overload the compressor at start-up. During operation never completely close any valves.



*Model SP10 does not require the use of a Manifold.*

*Model SP30 and SP40 will need the appropriate  
Hose Barb installed for the size of Tubing being utilized.*

## **DIFFUSER BASE PLACEMENT**

Correct placement of the Stainless Steel Diffuser Base is critical. The ability of the aeration system to affect your pond is dependent upon the position of the Diffuser.

1. Uncoil the roll of self-weighted tubing along the shoreline of your pond. Make sure the tubing has no twist or tangles to make it easier to install the Stainless Steel Diffuser Base.
2. While holding the Stainless Steel Diffuser Base, begin pulling to the desired location in pond. Make sure membrane diffuser is upright.
3. Follow **SYSTEM START-UP PROCEDURES** that follow.

## **SYSTEM START-UP PROCEDURES**

The purpose of the Shallow Pond Diffused Aeration System is to circulate the pond's entire water column. This circulation will increase and maintain oxygen levels and eliminate drastic temperature fluctuations. **To avoid an over saturation of Hydrogen Sulfide and Carbon Dioxide and the potential for a fish kill, the procedures below must be followed.**

- Turn on the system and operate for 15 minutes.
- Turn off the system for the remainder of the day.
- Restart the system the next day and operate for 30 minutes.
- Turn the system off for the rest of the day.
- Each day double the operating time from the previous day until the system is running continuously. This should take approximately 8 days

## **WINTER OPERATIONS & PRECAUTIONS**

**DANGER: If you choose to operate your aeration system through the winter:**

- Operating in freezing conditions on an ice-covered pond will cause large open water areas to remain at the boil sites. In addition, the ice thickness around these open areas will be much thinner than the ice over the remainder of the pond. Injury or fatality may result from people, snowmobiles, etc. falling through the ice. ACI strongly recommends that this danger of thin ice around the boil area be clearly posted in various areas. Owner assumes **all responsibility** for operating aeration systems during winter months.
- To prevent the risk of cooling the entire water column in the pond, the Diffuser(s) should be moved to a shallower portion of the pond (typically one-half of the depth of the original placement) and operated there until spring thaw. Moving the Diffuser to shallower water will allow warmer water to remain in the lower regions of the pond and prevent the water from becoming too cold for your fish.
- The self-weighted tubing on shore must be buried below the frost line or insulated. It should also be sloping downhill without any dips in the line.

**If you choose to turn off the system for the winter:**

- Disconnect the compressor from the air tubing and bring it inside to keep it from freezing.

- In the spring when the system is restarted, the air tubing may still contain ice inside. If this is so, one cup of denatured alcohol per frozen line will melt the ice enough to allow the compressor to push air through the line until heat generated by the compressor melts the remaining ice.

## **MAINTENANCE**

**WARNING:** Always disconnect power before installing or servicing. Failure to do so could result in electrical shock, personal injury or death. The compressor is thermally protected and will automatically restart when it cools if the thermal protection switch is tripped.

**CAUTION:** The filters must be periodically cleaned or replaced. A clogged filter can cause overheating or pump failure.

**\*\*\*Under normal operation conditions, inspection of filters is suggested every three months. A dry, dusty environment may require more frequent filter inspections\*\*\***

When inspecting filter, also inspect and clean housing.

If the pump makes an abnormal noise, or the amount of discharged air is greatly decreased, turn off the power immediately and contact an Authorized Service Facility.

Any servicing of the unit other than that recommended in the instruction manual must be performed by an Authorized Service Facility

For repairs or replacement parts, please contact your distributor or manufacturer.

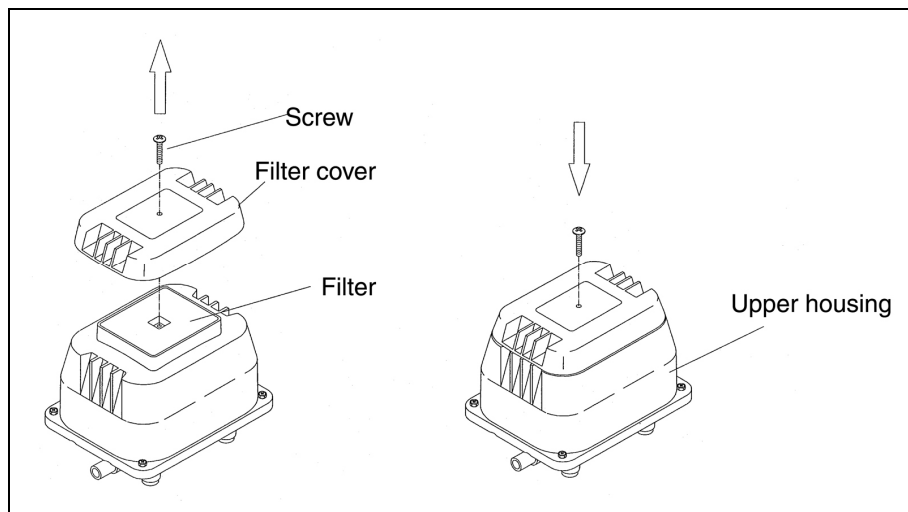
### **Cleaning the filter (Refer to Fig.3)**

#### **REPLACEMENT FILTERPAD PART#**

SP10 .....	A1361
SP20 .....	A1362
SP 30 & 40 .....	A1363

- Undo the truss screw securing the cover to the pump housing, and remove the Filter pad.
- Gently dust the Filter pad then hand-wash in mild soapy water and be sure to dry well before reinstalling
- Replace the Filter pad and cover. Secure with the truss screw.

**Fig. 3**





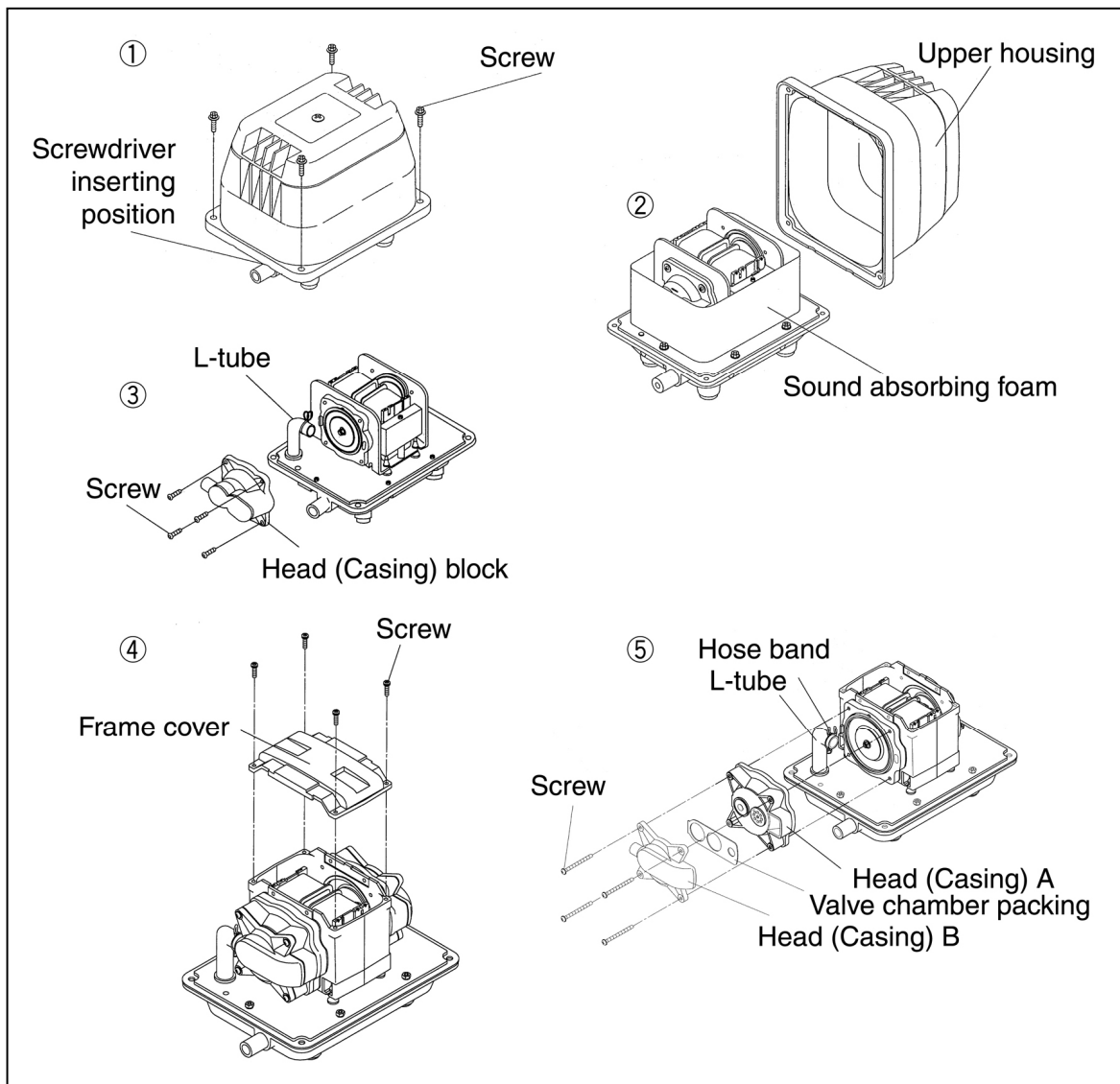
## Changing the Pump (Chamber) Assembly

REPLACEMENT SERVICE KIT PART#	CONTENTS
SP10..... A1351	Head (Casing) block
SP20..... A1352	Diaphragm mounting block
SP30..... A1353	Hex nut (U-Lock nut) / washer
SP40..... A1354	Safety screw / plastic nut (HP-60 and over)

### [1] Remove the Head (Casing) block (Refer to Fig.4)

- Remove the four corner screws (Refer to Fig.4-1), and the Upper housing. (Refer to Fig.4-2) If stuck, insert screwdriver between exhaust outlet and Upper housing, and gently pry apart.
- Remove the Sound absorbing foam. (Refer to Fig.4-2 except for SP10)
- Remove the screws from all the corners of frame cover for subsequent removal of the frame cover. (For SP30 Refer to Fig.4-4)
- Undo the hose band and remove the L-tube from the Head (Casing) block.
- Remove screws attaching the Head (Casing) to the compressor mechanism, and remove Head (Casing) block. (Refer to Fig.4-3). For SP30 Refer to Fig.4-5

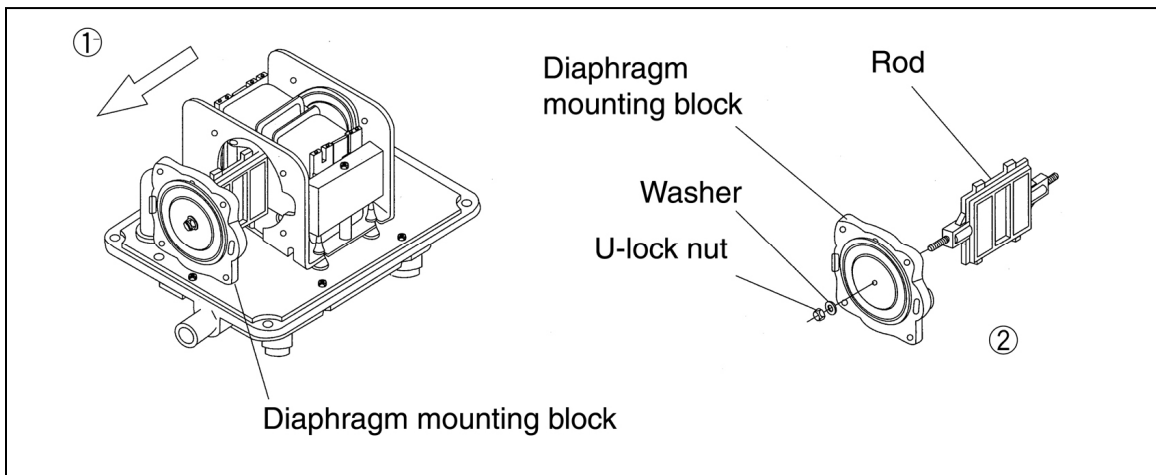
Fig. 4



**[2] Replacing Diaphragm mounting block** (Refer to Fig.5)

- After removing Head (Casing) block, remove one of the hex nut (U-lock nut) and washer in the center of the diaphragm.
- Remove one of the Diaphragm mounting blocks from the Rod, and pull out the other Diaphragm mounting block from the pump body together with the Rod without loosening its hex nut (U-lock nut) and washer. (Refer to Fig.5-1)
- Then remove the other Diaphragm mounting block from the Rod. (Refer to Fig.5-2)
- Reattach a new Diaphragm mounting block on one side of the Rod with new hex nut (U-lock nut) and washer, insert the Rod in accordance with the procedure reverse to that performed when the Rod was removed the pump.
- Reattach washer and new hex nut (U-lock nut) to Rod screw protruding through other Diaphragm mounting block and tighten.

**Fig. 5**



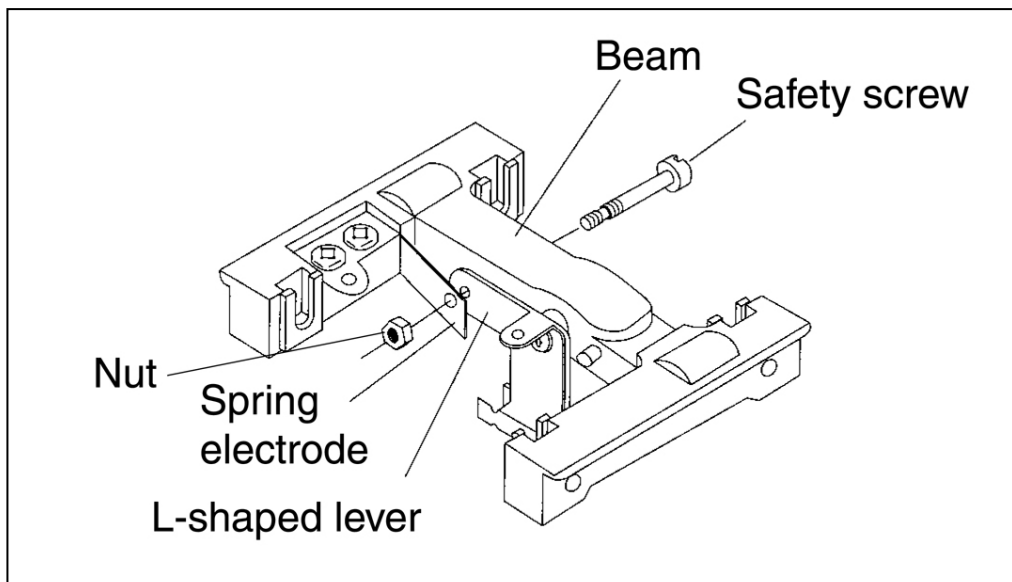
- After the Diaphragm mounting block has been installed, replace with the new Head (Casing) block, reattaching the L-tube and reinstall the 4 screws holding the Head (Casing) on. (Refer to Fig .4-3 or 5)

**[3] Replacement of Safety Screw** (Refer to Fig.6)  
(For SP20, SP30, SP40)

The body of the switch is set on the upper part of the Rod. If the Diaphragm is damaged or unit is dropped, the unusual movement of the Rod will cause the upper part of the Rod to touch the L-shaped lever, contacting the spring terminal, breaking the safety screw. This turns the power off, stopping the compressor automatically. This is a built in safety device to prevent any further damage to the compressor. To replace Safety Screw:

REPLACEMENT SAFETY SCREW PART	
SP20, SP30, SP40.....	A1364

**Fig. 6**



- First remove the compressor plug from the electrical outlet.

**WARNING:** All power must be disconnected or de-energized before servicing unit. If hazard is ignored personal injury or property damage is possible.

- Dispose of broken screw. Be sure all debris is removed (may be necessary to turn compressor upside down) from unit.
- Fasten screw with plastic nut. The screw is designed so that the nut will turn freely when it is properly fastened, stop tightening when this happens.

**[4] Reinstall the Upper housing** (Refer to Fig.4)

- Reinstall the 4 screws holding the Frame cover on. (For SP30 Refer to Fig.4-4)
- Reinstall the Sound absorbing form (except for SP10).
- Reinstall the Upper housing and tighten corner screws. (Refer to Fig.4-1)

## TROUBLE SHOOTING

Symptom	Possible cause	Point to check up	Remedy
Pump fails to work	Electrical connection	Plug and outlet	Plug securely into outlet
	Wire cut inside the cord	Check with tester	Change power cord, electromagnet or lead wire
	<b>Safety Screw activated</b>	Check <ul style="list-style-type: none"> <li>• Safety Screw</li> <li>• Chamber Block</li> </ul>	Exchange diaphragm or safety screw/switch
Pump works but makes loud, irregular noise	Diaphragm damaged		
	Faulty valve	Remove upper, lower housing and trace the source of cause	Exchange casing or diaphragm mounting block
	Faulty chamber block		
	Faulty filter	Filter clogged	Clean up filter
	Valve chamber cover out of place	Faulty tube	Repair or replace with new one
Pump works but no air comes from reservoir	Faulty piping connection	Rubber hose out of place, broken	Connect properly or replace with new one
	Pump runs normally	Air piping clogged	Clean properly



# AQUA CONTROL

*Shallow Pond Aerator*

## **3-Year Limited Warranty**

Aqua Control, Inc. warrants to the original purchaser (the end user) of any Shallow Pond Aerator manufactured by Aqua Control, Inc. that any pump component which proves to be defective in materials or workmanship, as determined by the factory within three years from the shipping date, will be repaired or replaced at no charge with a new or remanufactured part, and returned freight prepaid. The included self-weighted air tubing has a 3-year warranty and the accompanying diffuser(s) have a 3-year warranty. The end user shall assume all the responsibility and expense for removal, packaging, and freight to ship to Aqua Control to determine the warranty claim and for all reinstallation expenses.

The warranty is void in cases where damage results from: improper installation, improper electrical connection, improper voltage, alteration, lightning, careless handling, misuse, abuse, disassembly of motor, or failure to follow maintenance or operating instructions. Modification or repair by an unauthorized repair facility will void the warranty.

**In no case will Aqua Control or its distributors accept responsibility for any costs incurred by the user during installation, removal, inspection, evaluation, repair, parts replacement, or for return freight. Nor will any liability be accepted for loss of use, loss of profits, loss of goodwill, for consequential damage, or for personal injuries to the purchaser or any person.**

In the event of problems believed to be covered under warranty, it will be necessary to notify the distributor who will try to help resolve the problem and who may contact the factory for additional assistance. If it is concluded that there may be a defect which may be covered under warranty, it will be necessary to get a Return Material Authorization (RMA) from the distributor before shipment. Freight collect shipments will not be accepted by the factory on warranties or repairs.

The product or part(s) must be returned freight prepaid, to the factory, as directed, and in its original packaging or in a container which will prevent damage. Parts returned under warranty and damaged during shipping will not be covered under warranty for the shipping damage.

If the factory evaluation of the returned goods concludes that the failure is due to defects in materials or workmanship, the part or parts in question will be replaced under warranty with new parts, remanufactured parts, or will be repaired; at the factory's option. The warranty period for all parts supplied under warranty will terminate at the end of the original product's warranty. All warranty shipments from the factory will be shipped freight prepaid.

No implied warranties of any kind are made by Aqua Control, Inc. for its products, and no other warranties, whether expressed or implied, including implied warranties of merchantability and fitness for a particular purpose, shall apply. Should an Aqua Control product prove to be defective in materials or workmanship, the retail purchaser's sole remedy shall be repair or replacement of the product as expressly provided above.

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