

# AP500

## Operation & Maintenance Manual



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# AP500

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## Safety

# IMPORTANT

**YOU MUST COMPLETELY  
READ AND FULLY  
UNDERSTAND THESE  
INSTRUCTIONS BEFORE  
INSTALLING, OPERATING,  
OR SERVICING THIS UNIT.**

**Be sure you have read all installation, operation, maintenance and safety instructions before you install, service or begin to operate this unit.**

Accidents occur every year because of careless use of industrial equipment. You can avoid hazards by following these safety instructions, and applying some ordinary common sense when operating or servicing this unit.

Keep in mind that ***full operator attention and alertness*** are required when operating or servicing this unit.

**USE COMMON SENSE!!** Most accidents can be avoided by using ***common sense and concentration*** on the job being done.



**Carefully read safety information when you see any safety symbols.**



# Safety

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OR SERVICING THIS UNIT.**

Identify all possible hazards. Determine what safeguards are needed and implement them. **Only you, the user, understand your product and system characteristics fully. The ultimate responsibility for safety is with you. Your safety ultimately rests in your hands.** Do your part and you will enjoy safe, trouble free operation for years to come. This instruction manual is not intended to include a comprehensive listing of all details for all procedures required for placement, operation and maintenance. If you have a question about a procedure or are uncertain about any detail, **Do Not Proceed.** Please contact Ixom Watercare Customer Service at **866-437-8076** to speak to a representative.



### IMPORTANT!!!

Follow all federal and state laws in regards to safety regulations of working at heights, confined spaces, rescue, etc. as required by the U.S. Department of Labor, Occupational Safety and Health Administration. Use necessary PPE when placing and servicing this unit.



### Thin Ice Hazard

**WARNING: ICE SURROUNDING MACHINE MAY NOT SUPPORT WEIGHT, KEEP CLEAR OF THIN ICE.**



### ELECTRICAL HAZARD

**WARNING: THIS EQUIPMENT CONTAINS HIGH VOLTAGE! ELECTRICAL SHOCK CAN CAUSE SERIOUS OR FATAL INJURY. ONLY QUALIFIED PERSONNEL SHOULD ATTEMPT PLACEMENT, OPERATION AND MAINTENANCE OF ELECTRICAL EQUIPMENT. REMOVE ALL SOURCES OF ELECTRICAL POWER BEFORE PERFORMING ANY SERVICE WORK TO THE MACHINE. USE PROPER LOCKOUT TAGOUT (LOTO) PROCEDURES TO ENSURE A SAFE WORK ENVIRONMENT.**



### Crush Hazard

**WARNING: DO NOT REMOVE ANY FLOAT ASSEMBLY BOLTS OR PINS WHILE EQUIPMENT IS FLOATING IN WATER. EQUIPMENT MUST BE SECURELY SUPPORTED BEFORE PERFORMING SERVICE.**



### Rotating Hazard

**CAUTION: KEEP BODY APPENDAGES OR LOOSE CLOTHING AWAY FROM EQUIPMENT WHILE OPERATING. ENSURE EQUIPMENT IS OFF BEFORE ATTEMPTING SERVICE.**



### Entanglement Hazard

**WARNING: ENSURE THAT PERSONNEL ARE CLEAR OF THE ELECTRIC CORD AND CHAIN TO AVOID ENTANGLEMENT.**



### Laceration Hazard

**CAUTION: EDGES MAY BE SHARP AND CAUSE LACERATION IF PROPER CARE IS NOT USED.**

# Safety

## Protect Yourself

It is important that you comply with all relative OSHA and local regulations while installing and performing any maintenance to the mixer circulation equipment.

Key OSHA Compliance Standards that must be followed (and not limited to) are:

- **1910.146 Permit-required confined spaces**
- **1910.147 Lockout/Tagout**
- **1926.500 Fall Protection**

## Fall Protection Tips

- Identify all potential tripping and fall hazards before work starts.
- Look for fall hazards such as unprotected floor openings/edges, shafts, open hatches, stairwells, and roof openings/edges.
- Inspect fall protection and rescue equipment for defects before use.
- Select, wear, and use fall protection and rescue equipment appropriate for the task.
- Secure and stabilize all ladders before climbing.
- Never stand on the top rung/step of a ladder.
- Use handrails when you go up or down stairs.
- Practice good housekeeping. Keep cords, welding leads and air hoses out of walkways or adjacent work areas.

Refer to 29 CFR 1926.500 for complete regulations set by OSHA. Refer to your state's regulations if your state established and operates their own safety and health programs approved by OSHA.

## Lockout Tagout

When the On/Off switch is in the "ON" position, the mixer may start up at any time if not already operating. The mixer's On/Off switch can be locked out by placing a pad lock thru the door latch of the controller after the switch has been turned to the "OFF" position. The On/Off switch is to be used as the emergency stop.



## Permit-Required Confined Spaces

A confined space has limited openings for entry or exit, is large enough for entering and working, and is not designed for continuous worker occupancy. Confined spaces include underground reservoirs, ground storage tanks, elevated tanks, silos, manholes, and pipelines.

## Confined Space Tips

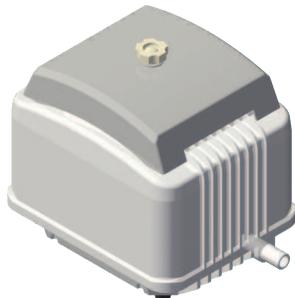
- Do not enter permit-required confined spaces without being trained and without having a permit to enter.
- Review, understand and follow employer's procedures before entering permit-required confined spaces and know how and when to exit.
- Before entry, identify any physical hazards.
- Before and during entry, test and monitor for oxygen content, flammability, toxicity or explosive hazards as necessary.
- Use fall protection, rescue, air monitoring, ventilation, lighting and communication equipment according to entry procedures.
- Maintain contact at all times with a trained attendant either visually, via phone, or by two-way radio. This monitoring system enables the attendant and entry supervisor to order you to evacuate and to alert appropriately trained rescue personnel to rescue entrants when needed.

Refer to 29 CFR 1910.146 for complete regulations set by OSHA. Refer to your state's regulations if your state established and operates their own safety and health programs approved by OSHA.

## Package Contents

**IXOM**  
WATERCARE

## AP500



\*AU-200



50' Air Hose



Connection Kit



50' T316SS Chain  
(Retrieval Chain)

\*For application where the water depth is deeper than 12', contact Ixom Watercare Customer Service at 1-866-437-8076.



## Unit Installation and Basic Operation

AP500

### Attachment of Suspension Arm and Retrieval Chain

1. Attach the suspension arm with the bolts provided.
2. Attach the retrieval chain by using the quick link provided, to the quick link attached to the suspension arm.

### ANCHORING

For pedestal configurations, the weight of the unit is adequate for holding the unit in place when resting on the bottom. For suspension application, use the retrieval chain that is attached to the quick link on the suspension arm.

### Basic Operation

The AP Unit is designed to circulate water by bringing water from below and sending it out across the top in a thin layer causing a mixing effect.

The air diffuser creates thousands of tiny bubbles which produces a "Low Pressure Zone" that creates an uplift suction flow through the intake draft tube, and a slight mound at the water surface, producing gentle flow radially outward from the AP Unit.

The water layers flow outward radially, in diverging "stream lines" from the unit. As it does, vertical flow is induced in between the water being drawn below and the water above.

At the level of the flow intake, water is drawn from all corners of the pond. As this lower layer of fluid makes its way inward with converging streamlines to the AP Unit, the water is forced upward, toward the surface, providing gentle mixing, de-stratification, and surface renewal.

The AP Unit requires a minimal amount of supplied air. The air is supplied to the AP Unit with the provided air feed hose that connects to air manifold.



### (Basic Operation Cont.)

It is acceptable to use the AP Unit on an as needed or required basis. This will allow for reduced power consumption and will benefit in energy savings. This will require the AP Unit to run on a timer or local SCADA system.

Refer to air supply manufacturer for recommended duty cycle and other operational recommendations and constraints.

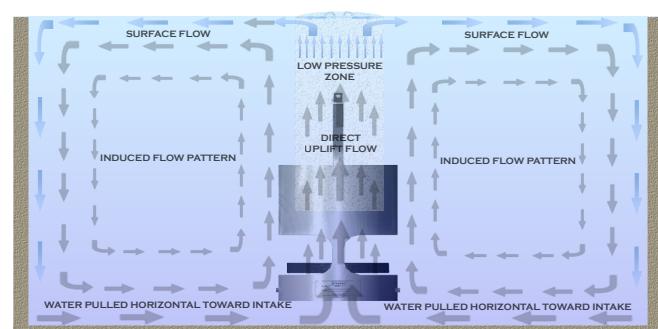


Figure 1: AP Unit Pedestal Configuration Flow Pattern

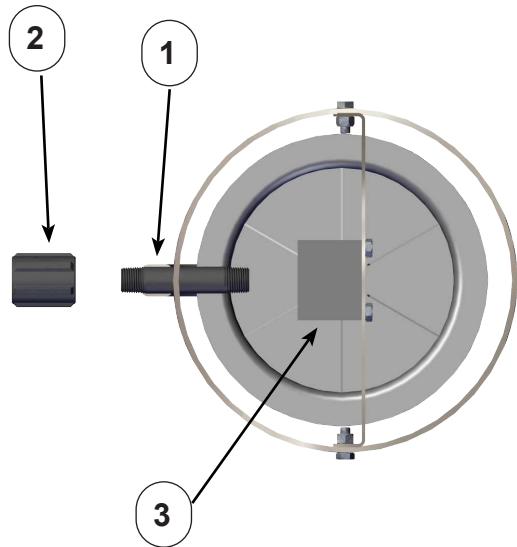
## Unit Installation and Basic Operation

AP500

### Attachment of the Air Supply Connection

Attach the nipple (1) to the coupling (2) and then attach the assembly to the diffuser block (3) and hand tighten.

(See **Figure 2** below.)



**Figure 2:** Attaching Air Supply Connection to Housing



**Figure 3:** AP500 Unit

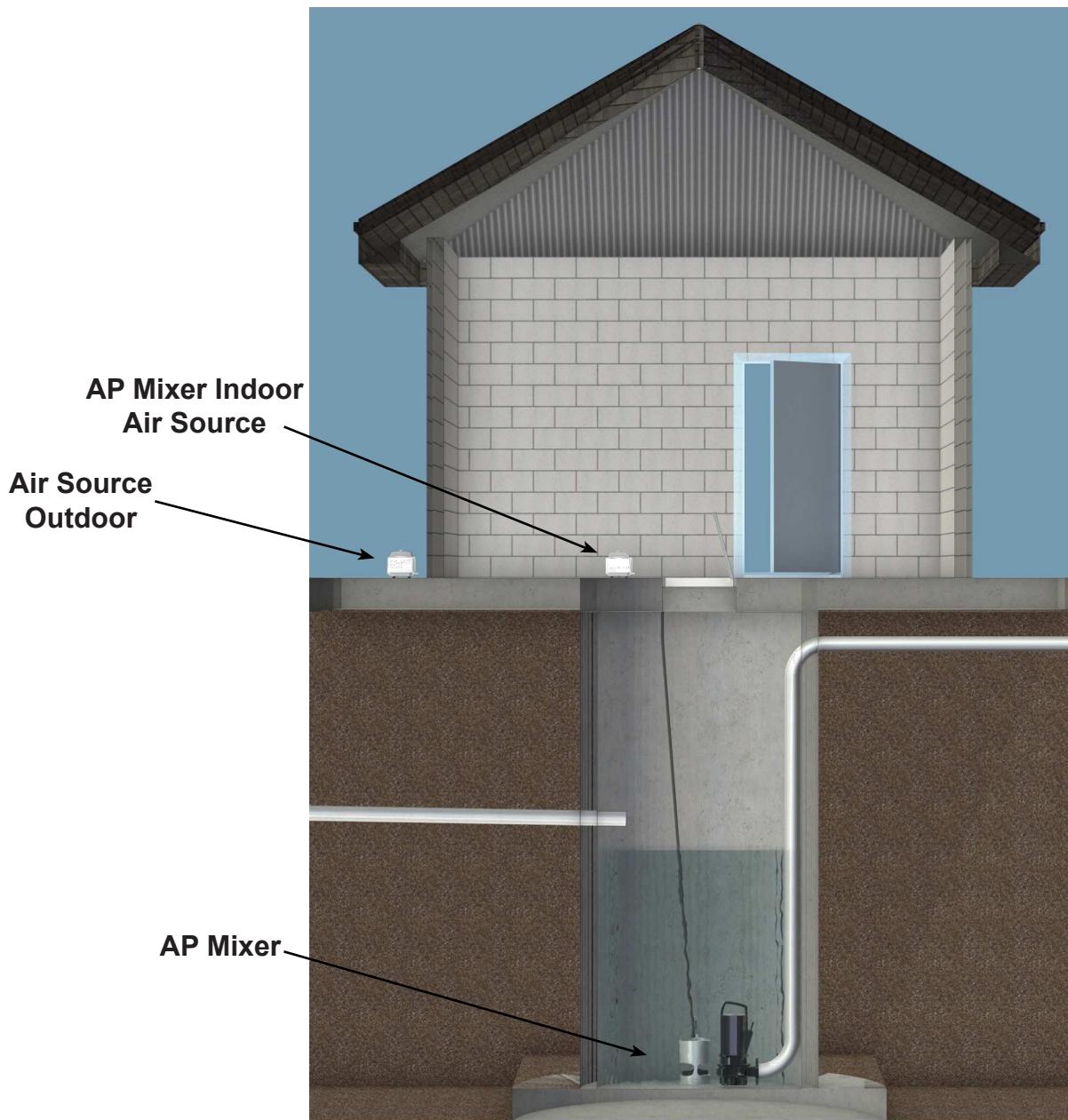


**Figure 4:** Air Supply Connection Location

## Placement Overview

### AP500

The AP mixer is designed for the harshest conditions. For proper operation, place AP mixer air source away from trace gases and high humidity to ensure long life of mixer. If there is not a clean location, place air source outside of harmful environment.



**Note: Air Source must be away from high humidity and trace gases to ensure maximum life expectancy of air unit.**

# Maintenance

## AP500

### UNIT CLEANING

The AP Unit is designed to provide continuous operation with little to no maintenance. However, in some locations significant debris within the pond may eventually get caught on the unit either restricting the flow pattern at the manifold or through the intake housing.

Debris may get caught in the air manifold, either being too large to pass through or resistant to sliding up the manifold housing. Often debris will eventually work its way loose and pass through the unit or may be pulled through as other debris passing through the unit will pull or slide snagged debris through. If significant debris is causing the unit to clog, occasional maintenance and cleaning may be required.

If required, debris should be carefully removed from the manifold and be wiped clean from any scum buildup on the outside of the pipes that may contribute to preventing debris from passing through the unit.

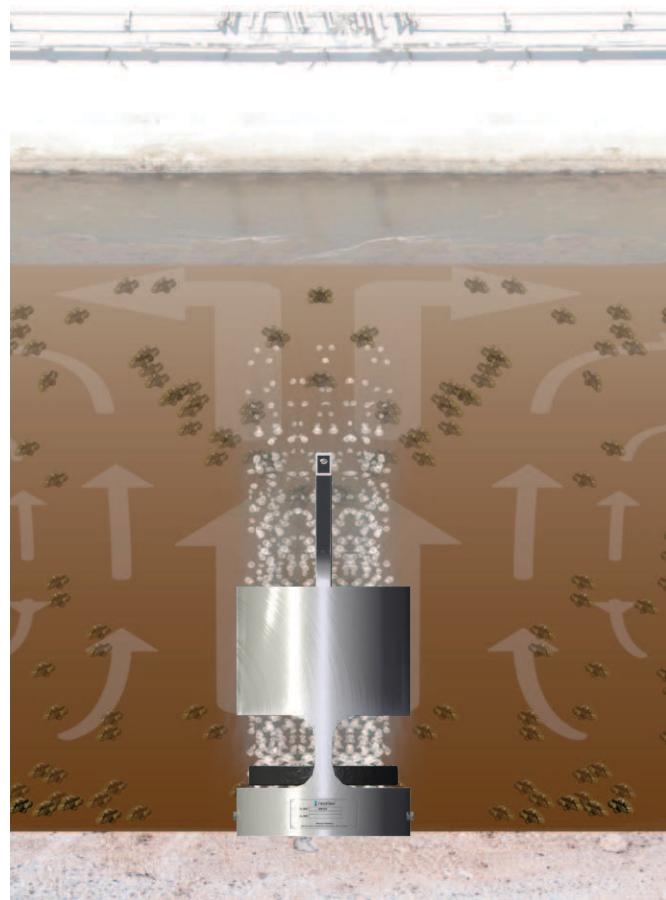


Figure 1: Debris Passing Through AP Unit.

### WINTER CONDITION RECOMMENDATIONS

In freezing conditions, the AP mixer causes thin ice above and around the unit. If the unit is in a position that personnel could be walking on ice above the unit, the unit should be shut off, or removed to protect personnel from thin ice hazards.

# Tethering Deployment

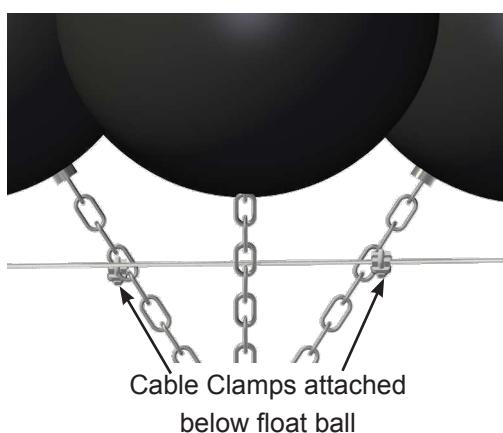
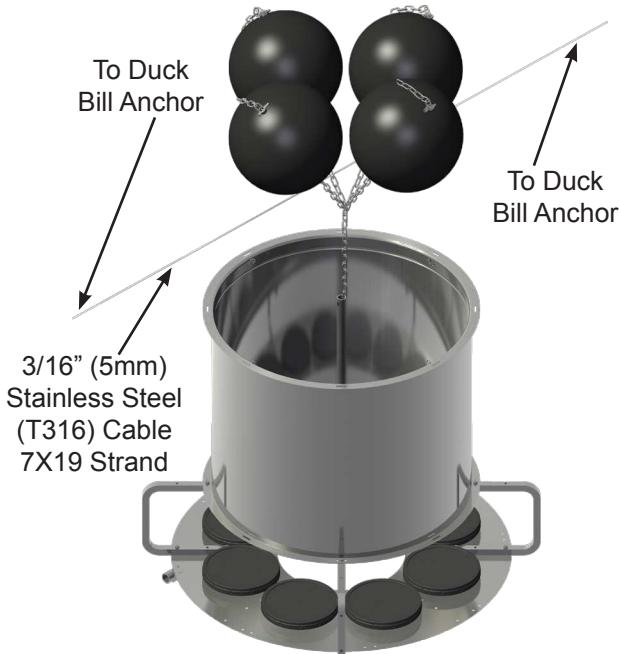
Duckbill Anchors



## Duckbill Anchoring Deployment

for Tethered GridBee AP Machines

**\*Verify that One-Call has been called and that lines have been marked.\***



Rated for 3000 lb (13.3 kN) load.

Set at a depth of 3 ft (1m).

1/4" (6.35mm) Stainless Steel Cable, 42" (1m) length

Aluminum Alloy 356 Duckbill

2 Duckbill anchors per AP Machine

### TOOLS REQUIRED:

Pliers

(2) 10 mm wrench

(2) Duckbill anchors are to be provided by the customer

**STEP 1:** Set two duckbill anchors across the pond from one another so that the center of a straight line between the two points is the approximate location that the machine will be placed.

**STEP 2:** Drive in the duckbill anchors into the ground at desired location.

**STEP 3:** Tie off the tether cable to the eye loop of the duckbill anchor. Use 10 mm wrench to tighten both nuts on cable clamp.

**STEP 4:** String the tether cable across the pond and tie it off to the other anchor leaving some slack/droop in the line. The slack is for water fluctuation. If the pond has a large range of fluctuation, more slack should be left.

**STEP 5:** Once the tether cable is stretched across the pond, the machine can be floated out into position.

**STEP 6:** Using cable clamps, attach the machine to the tether line. Position the line inbetween the float balls. Take two separate floats and tie off to the tether line. Tighten cable clamp side using 10 mm wrench.

# Technical Data Sheet



## AP500

**Technology Description-** GridBee® air powered circulation equipment are made of corrosion resistant, 316 stainless steel with a durable clog-free design and no moving parts for low maintenance. The AP500 provides mixing in wet wells, lift stations, industrial tanks, open basins and ponds.

**Materials of Construction** - T316 stainless steel frame and hardware. EPDM and PVC air hose and polypropylene air hose fittings. 50 ft (15.24 m) T316 stainless steel retrieval chain included for machine anchoring. The AP500 will fit through a 13" diameter opening.

**Minimum Water Depth** - Machine requires 18 inches (.46M) of water to effectively circulate. No damage to machine when run dry in shallow water or drained condition.

**Maximum Water Depth** - Powered by a air pump with a maximum diffuser submergence depth of 10ft (3M) Maximum air discharge depth is limited by the air supply pressure available.

**Intake** - The submergence depth on a pedestal unit is simply set by either the floor it rests on or for a suspended unit by the vertical suspending cable or chain.

**AU-200-** 1/2 HP (375 watt) rated air pump unit capable of producing 6.0 standard cubic feet per minute (0.14 standard cubic meters per minute) @ 4 psi (17 kiloPascal). 100% duty-cycle. Connection: Stem for 3/4" I.D. hose. Weather resistant construction, suitable for outdoor use. Ensure unit receives proper shade and ventilation to reduce chance of overheating.

**Electrical Requirements** - 120VAC Air pump requires 120VAC/1PH power source outlet (minimum 20 Amp service), Current range: 3.8 amps (open discharge) - 2.2 (dead head).

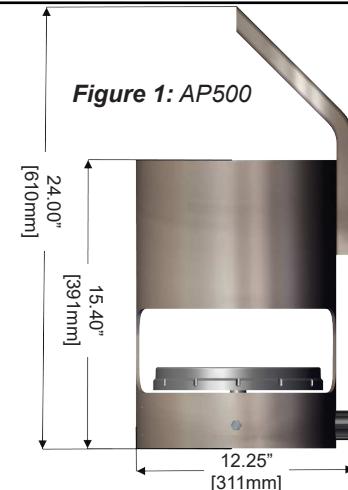
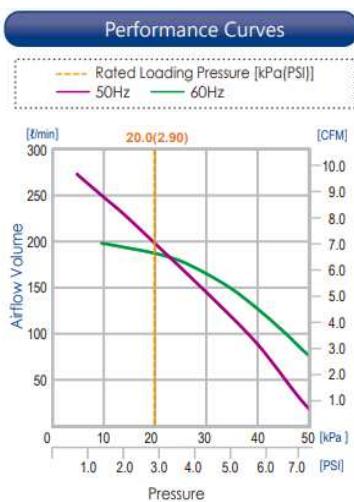


Figure 1: AP500

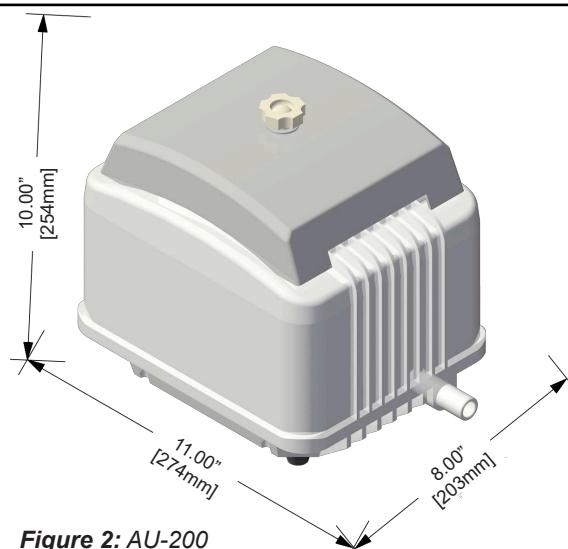


Figure 2: AU-200

**Enclosed Area Warning** - Air pump should not be used in enclosed areas where methane or other explosive gases could build up. Some gases can explode when combined with air. Please verify that you have proper ventilation to prevent a build-up of methane gas or other gases in the headspace above the explosion limit.

### Shipping Size/Weight

- **AU-200** - 13" x 9" x 11", 26lbs.
- **AP500** - 14" x 14" x 24", 35lbs.
- **50 ft Air Hose** - 22" x 22" x 4", 18lbs.

**Maintenance / Warranty**- Limited maintenance. Limited manufacturer's warranty. See Warranty Statement for details.

Patent Pending

Subject to change without notice

## GridBee AP Mixers

### Limited Replacement Warranty

**GridBee AP Mixers.** These units are warranted to be free of defective parts, materials, and workmanship for a period of two years from the date of installation. This warranty is limited to the repair or replacement of defective components only and does not apply to normal wear and tear. If the factory's service crews performed the original on-site placement and startup, then this warranty also includes labor. Where labor is included, in lieu of sending a factory service crew to the site for minor repairs, Ixom may choose to send the replacement parts to the owner postage-paid and may pay the owner a reasonable labor allowance, as determined solely by Ixom, to install the parts.

**GridBee air pumps, air compressors, control panels, and any optional accessories.** These items are considered "buyout" items for Ixom, and as such include a warranty against defects in material and workmanship for one year from the date of purchase. This warranty covers parts only, not labor. Parts that are determined by Ixom to be defective in material or workmanship under normal use during the one year warranty period will be repaired or replaced. Shipping charges are the responsibility of the customer.

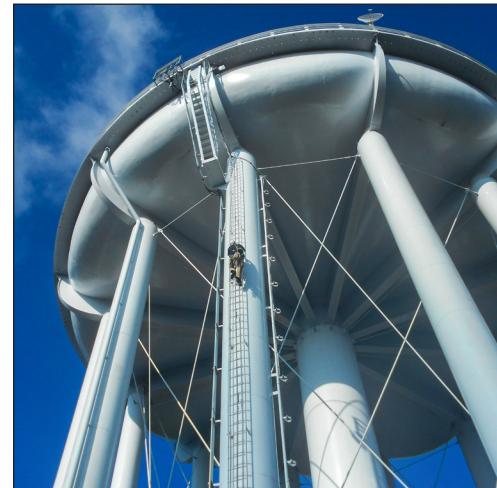
**Terms applicable to all equipment.** This Limited Replacement Warranty is subject to the terms of Ixom's General Terms and Conditions of Sale. In the event of any inconsistency between the terms of this Limited Replacement Warranty and Ixom's General Terms and Conditions of Sale, the terms of this Limited Replacement Warranty shall prevail to the extent of that inconsistency.



## Nationwide Installation & Service

### EVERYONE DESERVES GREAT CUSTOMER SUPPORT

Ixom Watercare earns customer trust with unparalleled service start to finish. Every department in Ixom is dedicated to the support of our Customers and the improvement of water quality. Complete life cycle support is much, much more than a returned phone call or an email. It centers around direct access and communication to those who can help when help is needed from the beginning of a project throughout the life of the equipment.



#### ABOUT IXOM

Ixom combines innovative water quality solutions with top notch manufacturing and nationwide in-field service capabilities to create trusted, full circle support our Customers depend on.

We design and manufacture many trusted brands including GridBee®, SolarBee®, MIEX®, and ResidualHQ® for use across the water quality spectrum. This includes solutions for Water Treatment, Distribution Treatment, Wastewater Treatment and Lakes & Source Water Reservoirs.

Ixom has thousands of installations and is an industry-leader solving water quality problems across the United States, Canada and the world.

**Contact us today to discuss your water quality and service needs.**

**ixomwatercare.com**  
**866-437-8076 • watercare@ixom.com**