

INSTALLATION INSTRUCTIONS

AIR PUMP MODEL AP1 & AP2

IMPORTANT: PLEASE READ ALL INSTRUCTIONS BEFORE ASSEMBLING AND INSTALLING THE AIR PUMP. Consult local plumbing & electrical codes.

OPERATING CONDITIONS: The Air Pump is water resistant, NOT water proof. The pump can operate with some room moisture, but should not be exposed to rain or very wet conditions. The Air Pump should not be used outdoors. The pump can withstand temperatures from 40 to 100 degrees F as long as there is not a great amount of moisture. Humid locations should use air dryers to prevent moisture accumulation in pump. Air pump may be mounted vertically with outlet port facing down. This may minimize moisture build-up inside pump head and the fouling of valves. Low pump pressure can occur when valves and head become fouled with moisture & debris.

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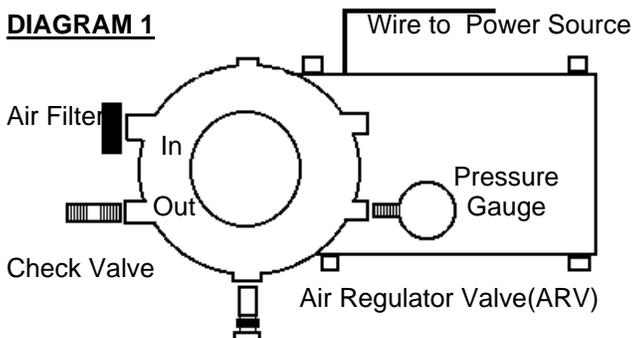
SECTION 1: ASSEMBLING AIR PUMP

Caution: Identify all parts before assembling.

PARTS LIST

1. Air Pump w/ air filter
2. Pressure Gauge
3. (2)-1/4" Check Valve
4. Air Regulator Valve (ARV)
5. Poly Tubing
6. (2) Tubing connectors
7. (3) Rubber feet or (1) shelf w/ (3) vibration mounts.

DIAGRAM 1



TOP VIEW

1. Use Teflon tape on male thread connections. **Do not over-tighten fittings. Pump Head will crack.**
2. Remove side plug and back plug on outlet side of pump. Use a 1/4" Allen wrench or channel locks.
3. Install pressure gauge in back port (opposite

outlet).

4. Install Air Regulator Valve (ARV) into side port.
5. Install first check valve into outlet port. Arrow and flow should point away from Air Pump toward injection point.
6. Thread the three rubber feet into base of pump.
7. Air Pump assembly is complete. It can now be tested for head pressure.
8. Reserve second check valve and tube connectors for installation explained in Section 3.

SECTION 2: SETTING AND CHECKING HEAD PRESSURE

(Air Pump should be assembled before continuing)

Checking Head Pressure:

1. Loosen lock nut (counter clockwise) on Air Regulator Valve (ARV).
2. Now turn adjustment nut counter clockwise. Back out at least half way. This will relieve the tension on the ball and spring allowing air to flow freely out the ARV. This will prevent excess pressure from building up when you close off outlet port. **DO NOT LET PSI EXCEED 100 PSI.**
3. Plug Air Pump into appropriate voltage outlet.
4. Slowly close off outlet port (This will simulate a line pressure). To close outlet use:
 - a. 1/4" ball valve threaded on check valve.
 - b. 1/4" cap threaded on check valve.
 - c. Temporarily remove check valve and use extra plug.
 - d. For lower psi settings, hold thumb over check valve.
5. Continue to gradually seal off outlet port. Air should be free flowing from ARV and the pressure gauge reading should be zero. If not, continue to turn adjustment nut counter-clockwise to release pressure.
6. With Air Pump on, outlet port completely closed, and pressure gauge reading at 0 psi, air should be flowing from ARV.
7. You are now ready to test the ability of the Air Pump to build head pressure. You can also set ARV at a desired pressure. (Explained at the end of this section.)
8. To build up head pressure, gradually rotate clockwise the adjustment nut on ARV. The pressure will begin to rise as you increase the tension on the ball and spring. Do not exceed 100 psi.
9. When the desired pressure is reached and air is releasing out the ARV, the Air Pump is set at the proper head pressure to introduce air into the water line pressure.
10. Do not set ARV above 75 pounds because this

could cause the standard water pressure relief valve (usually located on pressure tank) to possibly discharge water in the event of excess pressure build up.

To set and secure ARV setting:

1. Use adjustment nut to set desired pressure, then thread lock nut clockwise and secure it against the ARV body. Snug lock nut with wrench. This will lock adjustment at the desired pressure setting.
2. If pressure does not build while turning in adjustment nut, check the 3 ports on the outlet side of Air Pump for leaks (Pressure gauge, ARV, and outlet port). If there are no leaks, the Air Pump may be damaged or seals are worn to the point where no head psi can be created. (Repair kits are available.) The Air Pump may run but no head pressure will be created.
3. When pressure builds up to the desired pressure and ARV is secure, the Air Pump is now ready to install.
4. See Section 4 for fine adjustments of the ARV.

SECTION 3: INSTALLATION OF THE AIR PUMP WITH WELL PUMP PRESSURE SWITCH AS THE POWER SOURCE

1. Installer may choose to:
 - A) Secure Air Pump with rubber feet.
 - B) Mount on a shelf.
 - C) Suspend with straps.
 Position close to electric source.

Pump must be installed above the injection point. Compressed air will create condensate. Air pump may be mounted vertically with outlet port facing down. This may minimize moisture build-up inside pump head and the fouling of valves. Low pump pressure can occur when valves and head become fouled with moisture & debris.

Mounting above the injection point allows condensate to flow down toward injection point. This will help reduce moisture build-up from back flowing into Air Pump. (See installation diagram 2 on last page).

2. Install second 1/4" check valve into injection point on vent head. Be sure the arrow and flow are pointing into injection point and away from Air Pump.
3. Install a tubing connector on each check valve (at injection point and Air Pump)
4. Connect tubing from Air Pump to injection point.
5. **Tighten all fittings making sure not to over-tighten.**
6. Electrical connection: Install appropriate 115 volt or 230-volt receptacle and connect wire from receptacle to pump (load) side of pressure switch. This will allow the Air Pump to turn on with the well

pump.

7. Turn water on. Check for leaks.
8. If ARV has not been preset, start with it halfway open to avoid excessive air build up. See Section 2.
9. Plug Air Pump into receptacle. Run well pump through a few cycles. Fine-tune or adjust Air Pump as needed. (See next section.) Increasing the size of the holes in plastic cover can eliminate excessive noise from the air filter. (Please remove cover before drilling existing holes larger.)

SECTION 4: REGULATING AIR FLOW

To adjust the Air Regulator Valve loosen lock nut (thin nut in middle of fitting). Now the outer adjustment nut can be turned clockwise to increase pressure and air flow; or counter clockwise to reduce pressure and air flow during well pump cycle. If threaded out too far, air will flow freely out of regulator valve instead of pumping air into water line. Furthermore, if adjustment nut is removed, the check-ball and spring will fall out. If this happens, simply insert ball and spring, and thread nut back in.

While the well pump and Air Pump are running you can set the Air Regulator Valve (ARV) to desired pressure. Start with ARV half way open. As you turn adjustment nut clockwise, pressure will build in pump head. When pressure at head meets line pressure, air will be pushed into water line. Air injection is not recommended during the entire pump cycle when using Braukman mechanical vent. This can possibly add excessive air to the water system. Air injection is usually only needed during part of the pump cycle. To decrease or limit the introduction of air, set the ARV 5-10 pounds above the start up pressure of well pump. When the well pump starts up, the air pump also turns on, adding air during the beginning of pump cycle. Once the line pressure exceeds the setting on Air Pump ARV, no more air will be introduced into water line. The Air Pump will continue to run during the rest of the pump cycle but the excess air will be released out the ARV. (You should be able to hear or feel the air escaping.) If more air is desired, gradually set ARV to a higher pressure.

EXAMPLES

<u>Air Input</u>	<u>Well pump setting</u>	<u>ARV Setting</u>
Minimum	30-50 psi	35 psi
Medium	30-50 psi	40 psi
*Maximum	30-50 psi	50 psi

*** FOR MAXIMUM AIR INPUT USE MAXI VENT OR SMARTVENT. MAXIMUM AIR INPUT NOT RECOMMENDED WHEN USING MECHANICAL VENT.**

After setting ARV adjustment nut, secure lock nut to regulator body by rotating clockwise. This will lock the setting of the ARV. To re-adjust, loosen lock nut, reset adjustment nut, and secure lock nut. Follow up visits may be required to fine tune ARV.

SECTION 5: AIR PUMP SUMMARY

1. Do not add too much air. The ARV is used to control the volume of air needed, see section 2 and 3.
2. Aeration tanks provide necessary contact time for proper oxidation. The size of the aeration tank needs to be at least the same size as the water treatment filters. We recommend a minimum tank size of 2.14 cubic feet (10"x 54").
3. The Air Pump will keep the vent tank topped off with air. An air-venting device is required on the aeration tank. This valve serves to release excess air.
4. The Air Pump will build air pressure equal to line pressure. It will gradually increase as line pressure increases up to ARV set point.
5. If Air Pump is set at 60 lbs. and well is 30-50 lbs, Air Pump psi will start at 30 lbs. and gradually build with line pressure up to 50 lbs. Air Pump pressure gauge will not register 60 lbs because line pressure does not get that high. The ARV in this case will act as a pressure relief valve. If psi reaches 60 lbs. the ARV will expel excess air.

SECTION 6: OZONE & SPECIAL APPLICATIONS

Ozone Applications:

1. Consult Ozone manufacturer when using Air Pump for Ozone application.
2. Ozone voids the Air Pump warranty.

Special Applications:

1. Special Stone Diffusers known as Fishstones are available. Fishstones are used to create small air bubbles and are normally located in wells or cisterns when there is a need to aerate sulfur, methane and other gases.
2. In rare situations, a continuous air feed may be required. For more information about these special cases, please call.
3. The Air Pump can introduce air at any point in your filtering sequence. In cases where there is high manganese and iron levels over 5 mg/l, customers may gain greater efficiency and less maintenance if water is passed through a water softener before introducing air into the aeration tank and additional filtration. The Air Pump is perfect for these situations.

SECTION 7: OPTIONAL ACCESSORIES

VENT TANKS: Recommended when injecting air to release excess air and sulfur. Standard "filter" tanks or retention tanks may be used as a vent tank.

VENT HEAD KITS: Kits are available for use on 2.5" threaded tanks. These kits include: (1) 1" PVC head, (1) Water diffuser to increase oxidation, (1) ½" cpvc air vent tube, (1) 3/8" x 1/8" brass bushing for air vent. Heads are also available for 4" threaded tanks.

MECHANICAL AIR VENTS: Available in two different styles. The polyamide vent has a built-in shut-off feature to allow for cleaning. The brass air vent releases four

times more air than the polyamide vent but does not have a built in shut-off. Brass ball valves are available for that purpose.

ELECTRONIC AIR VENTS: Available in 115 and 230 volt. These vents are better for commercial applications or when a greater turnover of air is desired. Electric vents provide positive shut-off preventing leaks.

SMARTVENT: Operates without electricity, levers, hinges, springs, or water loss. Recommended for maximum air turnover for methane and hydrogen sulfide reduction.

SECTION 8: WARRANTIES

As a supplier, we do not know the characteristics of your water supply or the purpose for which you have purchased the Air Pump. Please understand that there are variables of water conditions and treatment processes. For these reasons we assume no liability for the determination of the proper equipment necessary to meet your requirements, and we do not authorize others to assume such obligations for us.

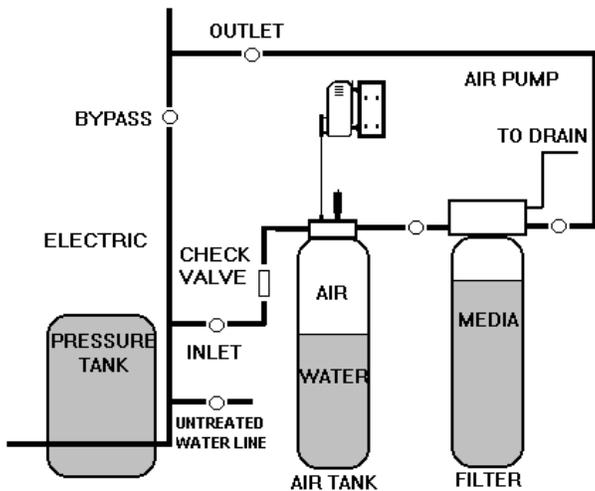
Air Pump Water Solutions, Inc. provides a one (1) year unlimited warranty on the AP1 and AP2 for defective materials or workmanship in manufacturing. This warranty covers replacement parts for the AP1 and AP2, as well as the cost of the labor to replace them when, proven to our satisfaction, that these parts are defective. Users of ozone may receive full warranty on the Air Pump only when the compressor is "pushing" air into an ozone generator. The warranty is void when ozone is drawn through the Air Pump. This warranty is extended to the original purchaser at the original installation address when the pump is purchased from an authorized Air Pump Water Solutions, Inc. dealer.

Air Pump Water Solutions, Inc. assumes no responsibility for consequential damages, labor or expense as a result of any defect or failure due to circumstances beyond our control. Air Pump Water Solutions, Inc. will not be held liable for any fire damage, water damage, or damage to other water treatment equipment and plumbing due to malfunction of the Air Pump. Air Pump Water Solutions, Inc. has no control over misapplication or improper installation of the Air Pump, or improper installation of other water treatment devices.

The laws in your state may not allow limitation for responsibility for consequential damages, and this warranty may give you other legal rights that vary from state to state.

Product improvements and design changes subject to change without notice.

INSTALLATION DIAGRAMS



IMPORTANT INSTALLATION NOTICE:
 AIR PUMP MAY BE MOUNTED VERTICALLY WITH OUTLET PORT FACING DOWN. This may minimize moisture build-up inside pump head and the fouling of valves. Low pump pressure can occur when valves and head become fouled with moisture & debris.

EXPLODED VIEW OF AP1/AP2

DIAGRAM 2 Standard Installation with vent & filter tank

REF #	DESCRIPTION	PART QTY.	AP 1 & 2
1	HEAD	1	AJ347
*2	HEAD GASKET	1	AJ404
*3	VALVE PLATE ASSEMBLY	1	AJ793
4	VALVES	2	AG973/AJ827
*5	O-RING	1	AJ787
6	CYLINDER	1	AK375B
7	SHIMS	AS REQ.	AJ345
8	FRONT GRILLE	1	AG774B
9	FAN	1	AJ856
10	CONNECTING ROD ASSEMBLY	1	AK380
*11	CUP	1	AJ826
12	RETAINER PLATE	1	AK377
13	FAN	1	
14	INERTIA FAN	1	AJ677
15	TOLERANCE RING	1	AJ904
16	DOWEL PIN	1	AK487
17	GRILLE	1	
	REPAIR KIT	1	K767

DIAGRAM 3



*Denotes part included in repair kit

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