

PENNINGTON
Aquagarden
beautifully simple water gardening®

pond air pump kits

Single
Air Stone

**SMALL
POND**

Twin
Air Stones

**STANDARD
POND**

Four
Air Stones

**LARGE
POND**

Please visit www.penningtonaquagarden.com
for helpful hints, tips, **how-to** videos and spares

www.penningtonaquagarden.com



PenningtonAquagarden



Congratulations on buying a Pennington® Aquagarden Air Pump.

These air pumps have been specifically designed for water gardening applications, where sufficient aeration is an essential part of a successful pond. They are also ideal for hydroponics/aquaponics systems.

BENEFITS OF POND AERATION

Fish and other pond life require oxygen-rich water in order to remain healthy. Filter bacteria, essential to the breakdown of highly toxic ammonia and nitrite, also require oxygen to flourish and keep the pond free from the build up of toxic waste. Use of a Pennington® Air Pump will increase the level of oxygen in the pond and reduce levels of carbon dioxide, thus aiding in preventing the pond from stagnating, by injecting air into the water. Additionally, by placing the air stones directly into the filter chambers, beneficial filter bacteria will be encouraged to grow. This will improve the efficiency of a pond filter, as well as improve fish health.

Aeration in a pond is especially important during spells of warm weather, when water holds much less oxygen, and at night when plants stop producing oxygen and begin to use it. Fish seen gulping at the surface or swimming lethargically may be showing signs of a lack of oxygen.

In winter, use of an air pump will keep an area of the pond ice-free, preventing the build up of toxic gases which can be fatal to fish and other aquatic life.

Oxygenation, provided by the use of an air pump, is essential when treating fish diseases, as suffering fish require higher levels of oxygen, and many treatments deplete oxygen levels in the water.

IMPORTANT: PLEASE ATTACH PROOF OF PURCHASE TO THIS MANUAL AND FILE IN A SAFE PLACE

CONTENTS

Safety Instructions	2-3
Important Safety Instructions	2-3
Electrical installation	4
Locating your Air Pump	5
Connecting air line and air stones	5
Getting to know your Air Pump	6-11
Single Outlet (Parts, Spares & Technical Specification)	6-7
Twin Outlet (Parts, Spares & Technical Specification)	8-9
Four Outlet (Parts, Spares & Technical Specification)	10-11
Maintenance	12-13
Replacing the intake filter	12
Replacing the Outlet O-Ring	12
Replacing the Diaphragm & Flapper Valve	13
Troubleshooting	14-16
Troubleshooting and maximising performance	14
Faults - Problems Procedure	15
Guarantee	16
Consumer advice contact details	16

FOR INDOOR AND OUTDOOR USE IMPORTANT SAFETY INSTRUCTIONS

WARNING - TO REDUCE THE RISK OF ELECTRIC SHOCK, INSTALL ONLY ON A CIRCUIT PROTECTED BY A GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI).

WARNING - TO GUARD AGAINST INJURY, BASIC SAFETY PRECAUTIONS SHOULD BE OBSERVED, INCLUDING THE FOLLOWING:

- A) **READ AND FOLLOW ALL SAFETY INSTRUCTIONS.**
- B) **DANGER** – TO AVOID POSSIBLE ELECTRIC SHOCK, SPECIAL CARE SHOULD BE TAKEN SINCE WATER IS EMPLOYED AND INTENDED FOR FOUNTAINS, WATERFALLS, AND PONDS. FOR EACH OF THE FOLLOWING SITUATIONS, DO NOT ATTEMPT REPAIRS BY YOURSELF; RETURN THE APPLIANCE TO AN AUTHORIZED SERVICE FACILITY FOR SERVICE OR DISCARD THE APPLIANCE. IF THE APPLIANCE SHOWS ANY SIGN OF ABNORMAL WATER LEAKAGE, IMMEDIATELY UNPLUG IT FROM THE POWER SOURCE. DO NOT OPERATE ANY APPLIANCE IF IT HAS DAMAGED CORD OR PLUG, OR IF IT IS MALFUNCTIONING OR HAS BEEN DROPPED OR DAMAGED IN ANY MANNER.
- C) CLOSE SUPERVISION IS NECESSARY WHEN ANY APPLIANCE IS USED BY OR NEAR CHILDREN.
- D) TO AVOID INJURY, DO NOT CONTACT MOVING PARTS DIRECTLY.
- E) CAREFULLY EXAMINE THE PUMP AFTER INSTALLATION, IT SHOULD NOT BE ENERGIZED IF THERE IS WATER ON PARTS NOT INTENDED TO BE WET.
- F) ALWAYS UNPLUG AN APPLIANCE FROM AN OUTLET WHEN NOT IN USE, BEFORE PUTTING ON OR TAKING OFF PARTS, AND BEFORE CLEANING. NEVER YANK CORD TO PULL PLUG FROM OUTLET. GRASP THE PLUG AND PULL TO DISCONNECT.
- G) DO NOT USE AN APPLIANCE FOR OTHER THAN INTENDED USE.
- H) READ AND OBSERVE ALL THE IMPORTANT NOTICES ON THE APPLIANCE.
- I) DO NOT CONNECT TO ANY VOLTAGE OTHER THAN SHOWN ON THE PUMP.
- J) ENSURE THAT THE POWER SUPPLY CORD LOOPS BELOW THE ELECTRICAL OUTLET TO FORM A "DRIP LOOP". THIS WILL PREVENT WATER FROM RUNNING DOWN THE CORD INTO THE ELECTRIC OUTLET.

SAVE THESE INSTRUCTIONS

GROUNDING INSTRUCTION

WARNING - TO PREVENT POSSIBLE ELECTRIC SHOCK RESULTING FROM WATER BACK-SIPHONING, PUMP SHOULD BE LOCATED HIGHER THAN WATER LEVEL. THIS PUMP IS SUPPLIED WITH A GROUNDING PLUG.

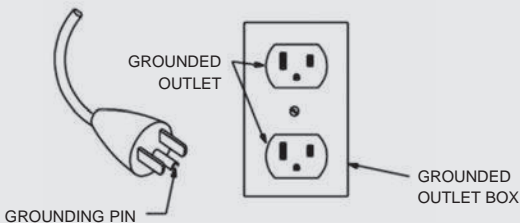
WARNING - RISK OF ELECTRIC SHOCK - THIS PUMP IS SUPPLIED WITH A GROUNDING CONDUCTOR AND GROUNDING TYPE ATTACHMENT PLUG. TO REDUCE THE RISK OF ELECTRIC SHOCK, BE CERTAIN THAT IT IS CONNECTED ONLY TO PROPERLY GROUNDED, GROUNDING-TYPE RECEPTACLE.

THIS PRODUCT MUST 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 THIS PRODUCT 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.

WARNING - IMPROPER INSTALLATION OF THE GROUNDING PLUG IS ABLE TO RESULT IN A RISK OF ELECTRIC SHOCK. WHEN REPAIR OR REPLACEMENT OF THE CORD OR PLUG IS REQUIRED, 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 OR SERVICEMAN WHEN THE GROUNDING INSTRUCTIONS ARE NOT COMPLETELY UNDERSTOOD, OR WHEN IN DOUBT AS TO WHETHER THE PRODUCT IS PROPERLY GROUNDED. DO NOT MODIFY THE PLUG PROVIDED; IF IT DOES NOT FIT THE OUTLET, HAVE THE PROPER OUTLET INSTALLED BY A QUALIFIED ELECTRICIAN.

THIS PRODUCT IS FOR USE ON A NOMINAL 120-V CIRCUIT AND HAS A GROUNDING PLUG SIMILAR TO THE PLUG ILLUSTRATED IN SKETCH AS BELOW. ONLY CONNECT THE PRODUCT TO AN OUTLET HAVING THE SAME CONFIGURATION AS THE PLUG. DO NOT USE AN ADAPTER WITH THIS PRODUCT.



ELECTRICAL INSTALLATION

ELECTRICAL SAFETY INFORMATION:

Caution: Household indoor and outdoor use.



WARNING - Risk of Electric Shock. Mount the unit at a height greater than 1 foot from the ground surface. Install only to covered Class A GFCI receptacle that has a weatherproof enclosure with the attachment plug cap inserted or removed.

The power supply must meet the specification of the product.

AIR PUMP

The electric cord is permanently connected and sealed in the motor body. If the supply cord is damaged the pump must not be used. Do not use the supply cord to lift the pump as this may cause damage. The motor is double insulated.



WARNING - All models must be used with a GFCI. To reduce the risk of electric shock, connect only to a properly grounded, grounding-type receptacle. To reduce the risk of electric shock, install only on a circuit protected by a ground fault circuit interrupter (GFCI).

Do not remove the grounding pin from the power cord plug. Attention has been drawn to the fact that special rules may exist concerning the installation of your pump. Always disconnect the power source whilst the equipment is being installed, repaired, maintained or handled.



WARNING - Never submerge the pump. The product should be placed in a place free of water and at a certain installation height, the height should be 12"-18" higher than the ground level.

INSTALLATION

LOCATING YOUR AIR PUMP



WARNING - Never submerge the pump. The product should be placed in a spot free of water and at a height of 12"-18" higher than the ground level.

The **Pennington® Air Pumps** have been designed to be weatherproof, so that they can be installed in a range of Hydroponic and Aquaponic situations, either outdoors or indoors, close to your chosen power supply. The pump should be located on a firm surface a minimum of 3'3" away from the water's edge, which will not vibrate or act as a sounding board, such as a concrete floor or paving slab.

The air pump should be positioned in a clean and dust free environment. Excessive dirt will block the air filters, reducing the air pumps performance and increasing the speed of wear on the internal mechanism.

The air pump should be installed above the level of the water to ensure water cannot back siphon into the pump in the event of a power supply failure. Locate the pump above the water level.

IMPORTANT - The air pump must be stood the correct way up - with all four rubber feet touching the surface on which it is installed. This will ensure the maximum protection from adverse weather conditions. Water ingress will cause damage, and void the warranty.

CONNECTING THE AIR LINE AND AIR STONES

Your Air Pump has been designed to run continuously and ideally unrestricted. This will maintain maximum performance and the best possible life span for all replaceable parts, e.g. diaphragms and flapper valves.

Ideally all outlets should have an air line and air stone connected, this will give your pond maximum aeration and ensure that damaging back pressure is kept to a minimum. Over time, air stones will become blocked leading to a reduction in air pump performance, therefore it is advised to replace the air stones every twelve months as a minimum, or more frequently depending on the cleanliness of the air pumps environment.

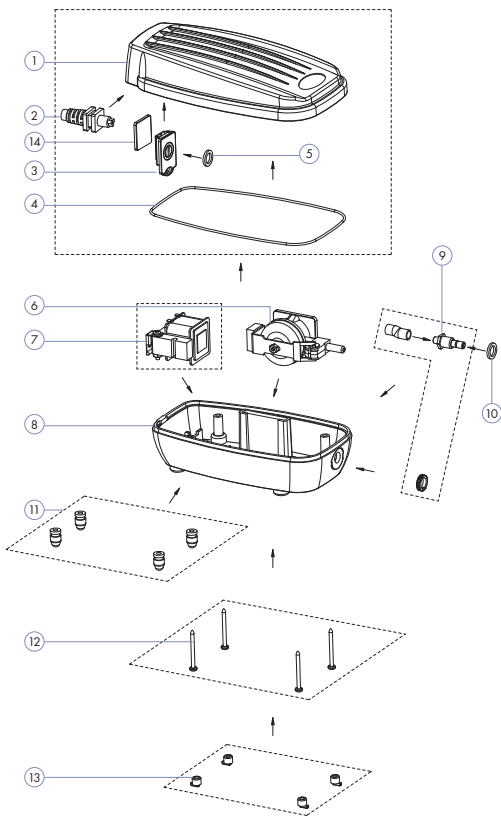
Attach one end of the air line to the metal outlet on the Air Pump, attach the air stone to the other end of the air line. Then simply place the air stone into your pond or filter, and turn on the air pump.

The air stones should be positioned to provide maximum aeration and circulation in the pond. (Note: for use in winter, the air stones should be placed no lower than 30cm from the bottom of the pond, this will ensure the warmer lower water regions remain undisturbed.)

TIP: Warm the end of the air line in 1" of hot water to make it easier to fit onto the outlet nozzle.

GETTING TO KNOW YOUR AIR PUMP

SINGLE OUTLET AIR PUMP PARTS DIAGRAM



GETTING TO KNOW YOUR AIR PUMP

SINGLE OUTLET AIR PUMP SPARE PARTS

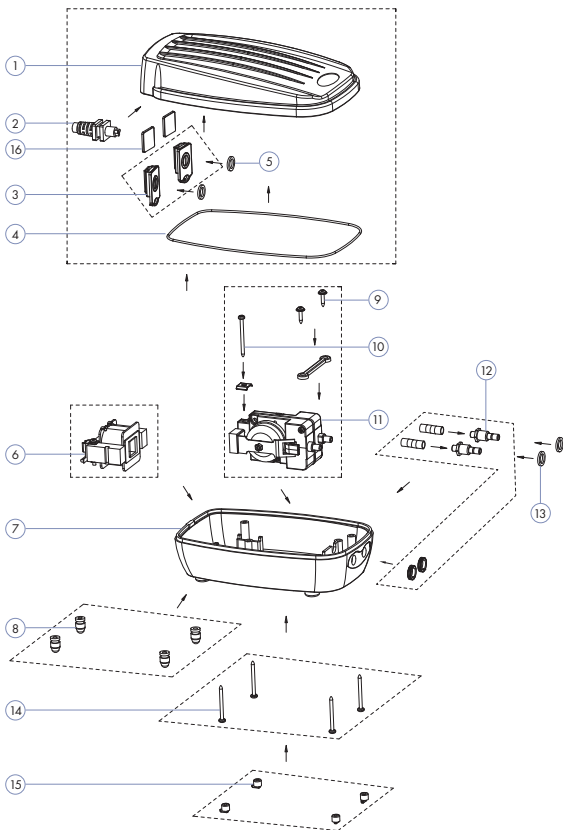
Part No.	Part Description (Single Outlet)	Spare Code
1	Air Pump Single Lid	N/A
2	Cable Gland	N/A
3	Air Filter Pad Holder	8911
4	Air Pump Single Lid O-ring	
5	Air Filter Pad Holder O-ring	
6	Air Pump Single Diaphragm & Flapper Valve	
7	Air Pump Single Motor	N/A
8	Air Pump Single Base	N/A
9	Air Pump Outlet	N/A
10	Air Pump Outlet O-ring	8911
11	Air Pump Single Rubber Feet	
12	Air Pump Single Base Screws	
13	Air Pump Single Base Screw Caps	
14	Air Filter Pad	

SINGLE OUTLET TECHNICAL SPECIFICATION

Air Pump Model	Single Outlet
Cable length	6 feet
Power input	120v / 60Hz
Power Consumption	3 Watts
Maximum flow rate	37 gal/hr
Maximum pumping depth	3'11"
Weatherproof rating	IPX4

GETTING TO KNOW YOUR AIR PUMP

TWIN OUTLET AIR PUMP PARTS DIAGRAM



GETTING TO KNOW YOUR AIR PUMP

TWIN OUTLET AIR PUMP SPARE PARTS

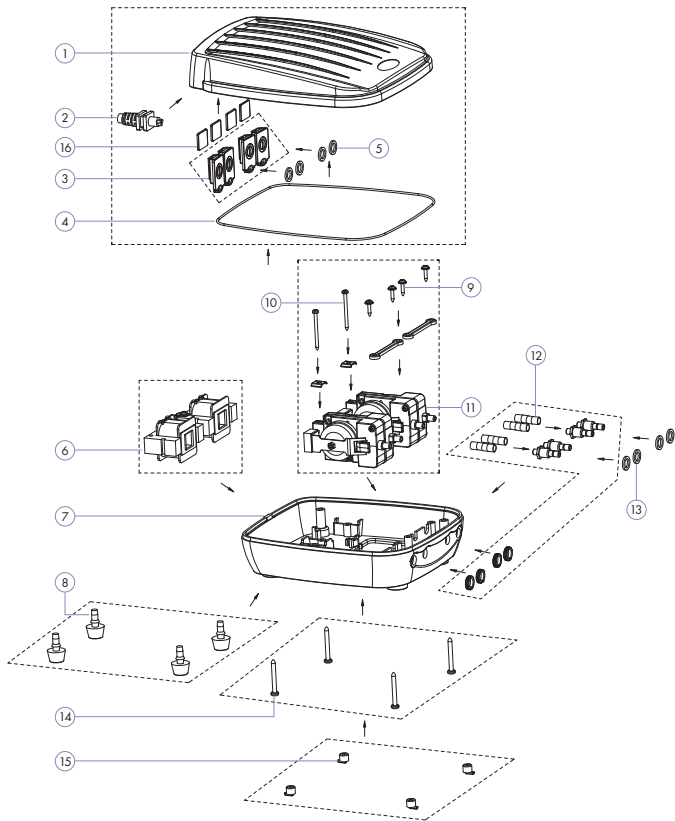
Part No.	Part Description (Twin Outlet)	Spare Code
1	Air Pump Twin Lid	N/A
2	Cable Gland	N/A
3	Air Filter Pad Holder	8912
4	Air Pump Twin Lid O-ring	
5	Air Filter Pad Holder O-rings	
6	Air Pump Twin Motor	N/A
7	Air Pump Twin Base	N/A
8	Air Pump Twin Rubber Feet	8912
9	Air Pump Outlet Bridge & Screws	N/A
10	Air Pump Twin Diaphragm and Valve Screw & Clamp	N/A
11	Air Pump Twin Diaphragm & Flapper Valves	8912
12	Air Pump Outlet	N/A
13	Air Pump Outlet O-ring	8912
14	Air Pump Twin Base Screws	
15	Air Pump Twin Base Screw Caps	
16	Air Filter Pads	

TWIN OUTLET TECHNICAL SPECIFICATION

Air Pump Model	Twin Outlet
Cable length	6 feet
Power input	120v / 60Hz
Power Consumption	4 Watts
Maximum flow rate	85 gal/hr
Maximum pumping depth	4'7"
Weatherproof rating	IPX4

GETTING TO KNOW YOUR AIR PUMP

FOUR OUTLET AIR PUMP PARTS DIAGRAM



GETTING TO KNOW YOUR AIR PUMP

FOUR OUTLET AIR PUMP SPARE PARTS

Part No.	Part Description (Four Outlet)	Spare Code
1	Air Pump Four Lid	N/A
2	Cable Gland	N/A
3	Air Filter Pad Holder	8913
4	Air Pump Four Lid O-ring	
5	Air Filter Pad Holder O-rings	
6	Air Pump Four Motor	N/A
7	Air Pump Four Base	N/A
8	Air Pump Four Rubber Feet	8913
9	Air Pump Four Outlet Bridge & Screws	N/A
10	Air Pump Four Diaphragm & Valve Screw & Clamp	N/A
11	Air Pump Four Diaphragm & Flapper Valves	8913
12	Air Pump Outlet	N/A
13	Air Pump Outlet O-ring	8913
14	Air Pump Four Base Screws	
15	Air Pump Four Base Screw Caps	
16	Air Filter Pads	

FOUR OUTLET TECHNICAL SPECIFICATION

Air Pump Model	Four Outlet
Cable length	6 feet
Power input	120v / 60Hz
Power Consumption	8 Watts
Maximum flow rate	169 gal/hr
Maximum pumping depth	5'2"
Weatherproof rating	IPX4

MAINTENANCE

IMPORTANT - The power supply to the air pump must be turned off and unplugged before any maintenance is performed.

Replacing the air intake filter (all sizes)

1. Slide out Air filter Pad Holder (part 3) from the rear section of the air pump.
2. Remove the felt pad inside the holder.
3. Insert new, clean felt pad.
4. Reinsert Air Filter Pad Holder in the rear section of the air pump.

Replacing the outlet O-ring (all sizes)

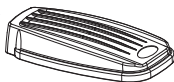
1. Remove base screw rubber caps, and unscrew the base screws.
2. Lift off air pump lid.
3. Disconnect the air line in between diaphragm/flapper valve and the metal outlet.
4. Unscrew outlet lock-nut on the front of the air pump.
5. Push the outlet into the air pump for removal.
6. Remove the O-ring and replace with new.
7. Follow the above steps in reverse to reassemble.

MAINTENANCE

REPLACING THE DIAPHRAGM & FLAPPER VALVE (Single Outlet Air Pump)

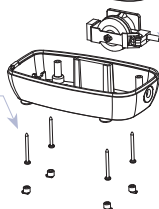
Step Two

Gently
remove lid.



Step One

Remove base
screw rubber
caps, and
unscrew the
base screws.



Step Three

Disconnect the
air line between
the diaphragm/
flapper valve and
the metal outlet.



Step Four

Remove old diaphragm and flapper
valve assembly - replace with new.

Step Five

Follow steps 1, 2 and 3 in
reverse order to reassemble.

REPLACING THE DIAPHRAGM & FLAPPER VALVE (Twin and Four Outlet Air Pumps)

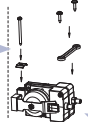
Step Two

Gently
remove lid.



Step Five

Unscrew the
diaphragm
and flapper
valve clamp.



Step Three

Disconnect the
air line between
the diaphragm/
flapper valve and
the metal outlet.



Step Four

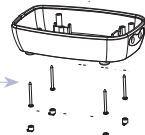
Unscrew outlet bridge.

Step Six

Remove old diaphragm and flapper
valve assembly - replace with new.

Step One

Remove rubber
base screw caps
and screws.



Step Seven

Follow steps 1 to 5 in
reverse order to reassemble.

TROUBLESHOOTING

Low air output/ noisy operation

- If the pump is on a sounding board, such as a wooden shed floor, place the pump on a patio slab, which will reduce the effect, or relocate the pump to a more suitable location.
 - Check if the airlines and valve are free from obstruction, or if the air line is kinked.
 - Placing the air stones deeper in the water increases the back pressure, as it works harder to push the air, the noise generated by the air pump will increase.
 - Check and replace any blocked air stones.
 - Replace blocked or dirty air filter pads.
 - Check diaphragm and flapper valve assembly for wear and tear – replace as necessary.
-

No air output/pump stopped

- Check if the power supply is on.
- Check fuses and wiring.
- If the pump has been installed below the pond level, and without check valves, water may have siphoned back into the motor – if this is the case, cease using the pump.
- The flapper valves and diaphragms may have failed – replace as necessary.
- Air filter pads may be severely blocked – replace as necessary.

TROUBLESHOOTING

FAULTS - PROBLEMS PROCEDURE

Before returning your Air Pump to your retailer or contacting our Consumer Advice Department, please carry out the following steps. This will solve most problems quickly and easily.

1. Ensure electrical procedure has been followed fully.
Check fuses and any cable connectors or switchboxes.
2. Follow the maintenance steps from pages 12-13.
Follow the troubleshooting options (above).
3. Return pump to point of purchase for inspection and advice
(proof of purchase may be required).

Please visit www.penningtonaquagarden.com for helpful hints, tips, how-to videos and spares.

www.penningtonaquagarden.com  PenningtonAquagarden

GUARANTEE

GUARANTEE

This product is guaranteed against defects in material and workmanship for 2 years from the date of purchase, under normal usage. **The guarantee DOES NOT APPLY in case of improper use**, negligence, lack of maintenance or accidental damage either to the pump, controller, or impeller.

If the air pump fails due to a manufacturing fault within this period it will be either repaired or replaced free of charge. Liability is limited to replacement of the faulty product only, no other costs will be reimbursed.

This guarantee is not transferable and does not affect your statutory rights. This guarantee does not confer any rights other than those expressly set out above. Excludes all replaceable parts (diaphragm & flapper valves, air line, air stones, air filter pads and O-rings), which may become worn over time. If any parts need replacing, spares are available from your local retailer.

CONSUMER ADVICE CONTACT DETAILS

Pennington, 1280 Atlanta Hwy., Madison, GA 30650

Tel: 1-800-285-7333 www.PenningtonAquagarden.com



Environment friendly disposal

You can help protect the environment. Please remember to respect the local regulations by handing in non-working electrical equipment to an appropriate waste disposal centre.

Please visit www.penningtonaquagarden.com for helpful hints, tips, how-to videos and spares.

www.penningtonaquagarden.com  PenningtonAquagarden

PENNINGTON
Aquagarden
beautifully simple water gardening®

Pennington, 1280 Atlanta Hwy., Madison, GA 30650

Tel: 1-800-285-7333 www.PenningtonAquagarden.com

Pennington and Pennington Aquagarden Beautifully Simple Water Gardening with design are registered trademarks of Pennington Seed, Inc.



Intertek
3130158
AIR PUMP