

AQUA[®] FORTE

User Manual AP-Series AIR PUMPS



Contents

1. Introduction.....	3
1.1. Purpose of this manual.....	3
1.2. Target audience.....	3
1.3. Intended and non-intended use.....	3
1.3.1. Intended Use.....	3
1.3.2. Non-Intended Use.....	4
1.4. Reading guide.....	4
1.5. Warranty.....	4
2. Safety.....	5
2.1. Warnings.....	5
2.2. Safety information.....	5
3. Product specifications.....	5
3.1. Features.....	6
4. Installation Guidance.....	7
4.1. Pipe divider and air stones.....	7
5. Operation.....	7
5.1. Starting the pump.....	8
5.2. Operating principle.....	8
6. Maintenance.....	8
6.1. Replacing the diaphragm.....	9
6.2. Cleaning and replacing the filter sponge.....	9
7. Disposal.....	10

1. Introduction

You have purchased a high quality device that is designed to be silent, energy saving, long lasting and easy to use.

This information belongs exclusively to, and is inextricably linked to the AP-Series Air Pumps. Without written permission it is not permitted to make any change to the pump or the accompanying documentation.

1.1. Purpose of this manual

The purpose of this manual is to help users understand the features and functions of the air pump, and to provide guidance on how to use it safely and effectively.

The manual includes all relevant information on:

- [Safety \(on page 5\)](#) provides important information on how to use the product safely, including warnings and precautions that users should be aware of.
- [Product specifications \(on page 5\)](#) describes the dimensions, features and other relevant information about the product.
- [Installation Guidance \(on page 7\)](#) provides step-by-step instructions on how to install the product, including information on electrical connections, and positioning.
- [Operation \(on page 7\)](#) explains how to use the product, including how to set the temperature, how to turn it on and off, and how to adjust the settings.
- [Maintenance \(on page 8\)](#) provides guidance on how to keep the product in good working order, including information on cleaning and regular maintenance tasks.

Overall, the product manual is an essential resource for anyone who owns or operates an air pump. By following the instructions and guidance provided in the manual, users can ensure that they can get the most out of their investment.

1.2. Target audience

An air pump is an important investment for anyone in need of a steady air supply. This manual is intended for everyone using or installing an air pump.

1.3. Intended and non-intended use

CAUTION



Safety Hazard

Make sure that the air pump is installed according to the procedures described in this manual.

An air pump is a device that provides a pressurised air supply for various applications. However, it is important to understand both the intended and non-intended uses of an air pump for this purpose. In all deviating situations, the manufacturer or an authorized dealer must be consulted in advance.

1.3.1. Intended Use

An air pump serves several intended purposes:

- providing an air supply for seafood tanks or aquarium fish;
- inflating air mattresses;
- vacuum packaging;
- providing an air supply for medical equipment;
- providing an air supply for industrial applications.

1.3.2. Non-Intended Use

While an air pump can provide an air supply for various purposes, there are also some non-intended uses that should be avoided. For example, an air pump should not be used underwater.

Additionally, an air pump should not be used in environments with a lot of dust or moisture.

By understanding both the intended and non-intended uses of an air pump, you can ensure that you are using the device in the most efficient and cost-effective way possible.

1.4. Reading guide

This manual contains important warnings and notes that highlight information relevant to the user:

WARNING

This section warns that there is a safety hazard.

Indicates a hazardous situation that could result in serious injury or death and/or serious damage to the product or environment if the safety instructions are not followed.

CAUTION

This section warns of a possibly hazardous situation.

Indicates a hazardous situation that could result in minor or moderate injury and/or damage to the product or environment if the safety instructions are not followed.

 Information that is considered important but is not injury-related (e.g., information related to property damage).

 Information that's useful for future use.

 Information that is relevant to the context or understanding of the user.

 Tips and tricks to make usage easier or more convenient.

1.5. Warranty

This product comes with a 24 month general product warranty starting at the date of purchase.

The warranty covers any defects in materials or workmanship under normal use and maintenance. If a defect arises during the warranty period, you should contact your dealer immediately.

To make a warranty claim, you must provide proof of purchase, the defective product and a description of the problem. The warranty does not cover damage caused by improper installation, unintended use, abuse, or neglect. It also does not cover normal wear and tear of wearable parts such as membranes and air chambers, or any damage caused by acts of nature such as lightning.

 Damage caused by improper or insufficient release of air pressure is **not** covered by the warranty!

This warranty is the sole and exclusive warranty for this air pump. We make no other warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose. In no event shall we be liable for any incidental, consequential, or special damages arising out of or in connection with the use or inability to use this product, even if we have been advised of the possibility of such damages.

2. Safety

 This manual does not include site and/or country specific regulations, the installer of the drum filter is responsible for following the local rules and regulations.

We have provided important safety messages in this manual and on your device. Read all safety information and instructions. Failure to observe the safety information and instructions may result in electric shock, fire and serious injury. Keep all safety information and instructions for future reference.

2.1. Warnings

DANGER

Electrical hazard

- BEFORE cleaning the product, shut off the power!
- Normal users MUST NEVER attempt to service or open the product cover!
- If the device is malfunctioning, contact your nearest dealer or service center.
- Never touch the plug with wet hands.

CAUTION

- Packing parts (e.g. plastic bags) may be dangerous. Therefore, store away from children, domestic animals and anyone incapable of understanding the dangers. This device is not a toy.
- Never leave the device unattended.



Service and/or disposal MUST be carried out by people with proven expertise.

2.2. Safety information

- Only operate the device with the voltage and frequency requirements show in the [product specifications \(on page 5\)](#).
- The device should be grounded while in use to protect the operator from electric shock.
- If the device falls into the water, don't reach for it. First unplug it and then retrieve it. The device must be checked by a qualified technician.
- Carefully examine the device after installation. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid any hazards.
- Don't carry the device by the power supply cord. Disconnect the plug of the device when it is not in use, before putting on or taking off parts or before cleaning.
- Periodic maintenance (see chapter [Maintenance \(on page 8\)](#)) of the appliance is necessary.
- During operation, if the sound is interrupted or anything abnormal occurs, immediately unplug the power cord from the outlet and contact your dealer or an Authorized Service Center.
- Repairs may only be carried out by a trained service technician. If repairs are required, please contact the nearest after-sales service centre. Any repairs should be performed in strict accordance with this manual.
- Switch off the product during installation of and/or repairs to the product.

3. Product specifications

Model	Voltage	Wattage	Max. Flow	Max. Pressure	dB
AP-35	220-240VAC 50Hz	20	35 l/m	2.8 m	32
AP-45	220-240VAC 50Hz	25	45 l/m	3.0 m	33
AP-60	220-240VAC 50Hz	38	65 l/m	3.5 m	35
AP-80	220-240VAC 50Hz	55	80 l/m	3.6 m	36

Model	Voltage	Wattage	Max. Flow	Max. Pressure	dB
AP-100	220-240VAC 50Hz	65	100 l/m	3.8 m	36
AP-150	220-240VAC 50Hz	120	190 l/m	4.5 m	45
AP-200	220-240VAC 50Hz	180	250 l/m	5.0 m	46

3.1. Features

The AP-Series air pumps use a high-grade aluminium alloy to shape the case. The case provides a double damping system and a noise absorbing function, providing high performance with low noise. Double air chambers produce a large quantity of air and strong air pressure. The non-oil lubricated design provides pure compressed air. The device quickly dissipates heats through its unique structure. The structure is rainwater proof, so that no water leaks in.

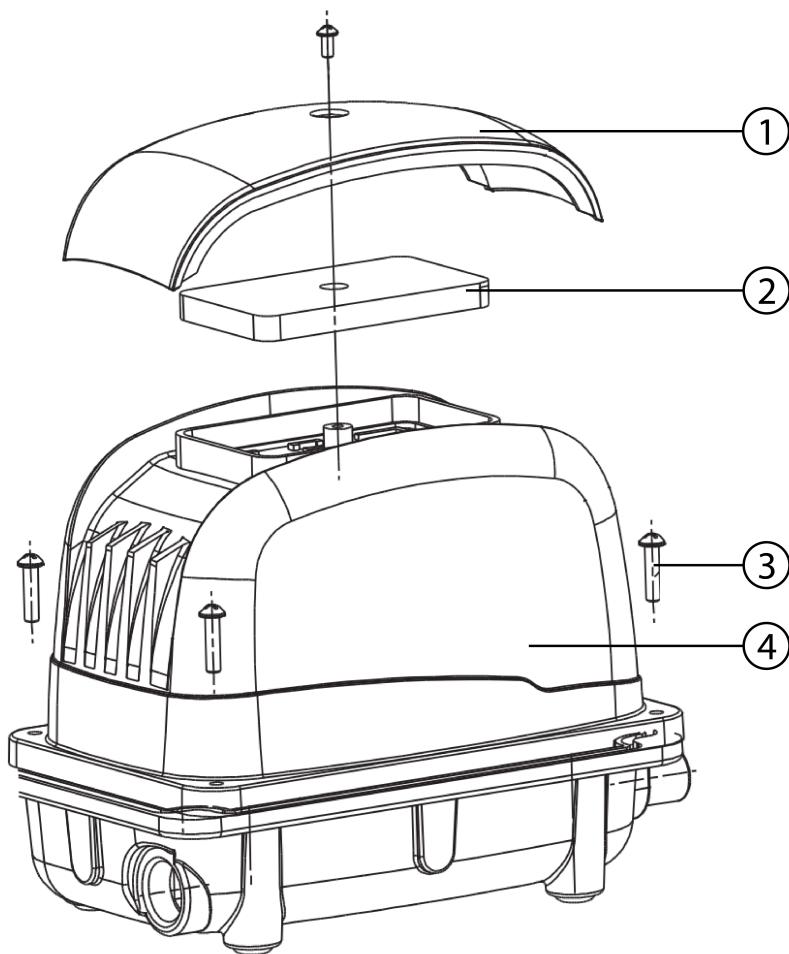


Figure 1. Features

1. Entry air cover
2. Air filter sponge
3. Screws
4. Cover

4. Installation Guidance

CAUTION

- Never fully close of the pump outlet. Ensure that the pump can discharge sufficient air at all times, otherwise the pump will heat up, leading to damage.
- Install the pump above water level to prevent any water flowing back into the pump when powered off. The pump may be placed below the water line if a non-return valve is used on the outlet pipe.
- Never place the air pump in water.
- Do not connect the pump to any other voltage than that shown on the rating label of the pump.
- Do not use the power cord coiled to avoid induction problems.
- An ambient temperature above +40°C can cause the diaphragm to crack.



To guarantee a long service life, the pump must be installed in dry conditions, without moisture or dust. Dirt and moisture can seriously shorten the service life of this pump.

4.1. Pipe divider and air stones



The capacity of the pump will be reduced if:

- There are bends in the air pipe;
- Air stones are placed too deep;
- Air stones are too small, old or dirty;
- Etc.

One or more air stones can be connected to the pump outlet with a pipe & an air divider. Choose an air pipe that suits your installation equipment and ensure that all pipes are secured with clips when installing the air pump. Use a larger bore pipe and avoid sharp bends to improve the performance of this air pump. Use new and sufficiently large air stones with enough discharge capacity. Place them no deeper than 3 m in the pond.

5. Operation

CAUTION



During operation, if the sound is interrupted or anything abnormal occurs, immediately unplug the power cord from the outlet and contact your dealer or an Authorized Service Center.

5.1. Starting the pump

1. Check that the pump is placed correctly:
 - Install the pump above water level to prevent any water flowing back into the pump when powered off.
 - The pump may be placed below the water line if a non-return valve is used on the outlet pipe.
2. Form a drip loop on the power cable and plug it into the outlet.



Figure 2. Drip loop

5.2. Operating principle

When the electromagnetic coils facing each other inside the device are energized by AC power, a magnetic force is generated. This magnetic force will then act to induce the magnetic poles between the permanent magnets fixed to the rod. The electromagnets cause magnetically attract and repulse the rod in the respective directions, as shown in [Figure 3: Operating principle \(on page 8\)](#). The rod vibrates at the frequency of the AC power supply. The diaphragm moves and the intake and exhaust valves create repeated cycles of air intake and compression. As a result, air is exhausted by a change in volume of the space enclosed by the housing.

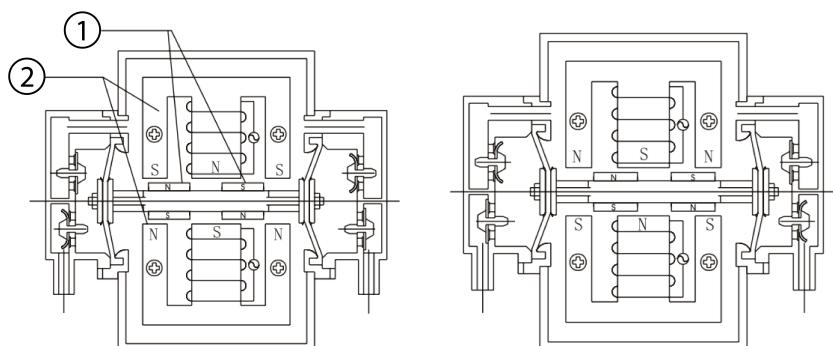


Figure 3. Operating principle

1. Permanent magnet
2. Electromagnet

6. Maintenance

CAUTION



Membranes and wear parts should be replaced every year.

6.1. Replacing the diaphragm

1. Loosen the screws (Figure 4: Replacing the diaphragm (on page 9), pos. 1).
2. Remove the air chamber cover (Pos. 2).
3. Loosen the nut (Pos. 11).
4. Remove the following components:
 - a. diaphragm compressor (Pos. 3);
 - b. electrostatic membrane (Pos. 4);
 - c. diaphragm (Pos. 5).
5. Replace the diaphragm with a new one, making sure the diaphragm fits the slot of the air chamber (Pos. 2) exactly.
6. Install all parts back by following the previous steps in reverse order.

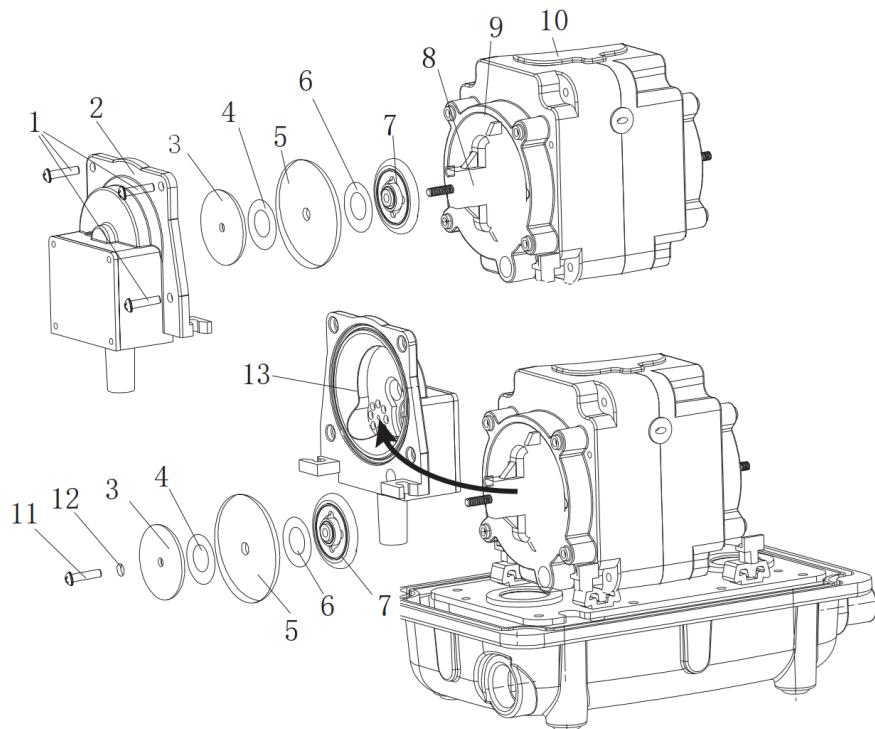


Figure 4. Replacing the diaphragm

6.2. Cleaning and replacing the filter sponge



Any dust or foreign matter attached to the air inlet may cause abnormal noises or result in a failure of the pump.

1. Unplug the pump before starting cleaning or replacement.
2. Remove the filter sponge from the air inlet.
3. Remove any dust or foreign matter from the air inlet, the filter cover and the filter sponge mounting surface.

If the sponge is heavily soiled, a piece of new sponge is required. Alternatively, use a neutral detergent to wash the old sponge. Rinse the sponge well with water and dry it in the sun before reinstalling, as detergent is harmful to fish.

7. Disposal



When disposing of your old device, please do so safely and properly to protect the environment and comply with local regulations.