

# User's Guide

## Premium Accudoser II Peristaltic Doser Pump Model PA-AD



The perfect dosing pump for two part systems. Doses 1.5 ml per minute +/- 5%. Use your controller or a digital appliance timer that can be timed by the minute to dose it for the correct number of minutes (example: dose of 30 ml, run pump for 20 minutes a day). Get one pump for calcium and one for alkalinity, a third pump can also be used if dosing Magnesium. Uses standard airline tubing (not included). We do not suggest using this pump for auto top off systems. The flow rate is intentionally 1.5mL per minute which makes it too slow for most auto top off needs.

- Flow rate 1.5mL per minute
- Will not back siphon
- Super quiet
- Quad Roller design
- Made in the USA
- Replacement Santoprene roller tube readily available – order part number PA-AD-RK

## IMPORTANT SAFETY INFORMATION

**DANGER:** To avoid possible electric shock, special care should be taken when handling any electrical equipment near water or an aquarium. In case of malfunction, do not attempt repairs yourself; return the appliance to an authorized service facility for service or discard the appliance.

**WARNING:** To guard against injury, basic safety precautions should be observed, including the following:

- a. Do not operate any appliance if it has a damaged cord or plug, if it is malfunctioning, or if it is dropped or damaged in any manner.
- b. To avoid the possibility of the appliance plug or receptacle getting wet, position the pump to one side of a wall mounted receptacle to prevent water from dripping onto the receptacle or plug. You should create a "drip loop" for each cord connecting an aquarium appliance to a receptacle. The "drip loop" is that part of the cord below the level of the receptacle, or the connector. Use an extension cord, if necessary, to prevent water traveling along the cord and coming into contact with the receptacle. If the appliance, plug or receptacle does get wet, DO NOT unplug the cord. Disconnect the fuse or circuit breaker that supplies power to the appliance. Then unplug the device and examine for presence of water in the receptacle.
- c. Close supervision is necessary when any appliance is used by or near children.
- d. To avoid injury, do not contact moving parts.
- e. Always unplug an appliance from an outlet when not in use, before putting on or taking off parts, and before cleaning. Never pull the cord itself to remove the plug from the outlet. Grasp the plug and pull to disconnect.
- f. Do not use an appliance for anything other than its intended use. The use of attachments not recommended or sold by the appliance manufacturer may cause an unsafe condition.
- g. Do not install or store the appliance where it will be exposed to the weather or to temperatures below freezing point.
- h. Make sure an appliance mounted on a tank is securely installed before operating it.
- i. Read and observe all the important notices on the appliance.
- j. If an extension cord is necessary, a cord with a proper rating should be used. A cord rated for less amperes or watts than the appliance rating may overheat. Care should be taken to arrange the cord so that it cannot be tripped over or pulled accidentally.
- k. Appliances with three conductor grounded plugs must be used with similar three wire extension cords. Do not remove or attempt to defeat the ground prong of the plug!
- l. All electrically-powered equipment operated in a damp location, or located near an aquarium or water source, should only be powered by electrical circuits that are protected by a Ground-Fault Circuit Interrupter (GFCI). Always test and maintain GFCI devices per manufacturers' instructions.

### Initial Setup

The pump may be mounted either horizontally or vertically. Use small screws to attach the pump to a wall or other vertical surface. It does not require permanent attachment to a horizontal surface, but we recommend using screws to prevent it from accidentally falling.

The pump can be run dry without risk of damage and does not usually require priming. If you are mounting the pump more than a few inches above the supply source, you could pre-fill the inlet line to minimize the initial startup time.

The pump must be located in a dry location – it cannot be submerged! In the case of splashes or spills, turn off power to the outlet, unplug the pump and wipe it completely dry before resuming use.

The pump is not designed for use with pressurized water systems such as supplied by city water or an RO/DI filter. Ensure that additive supply containers are vented to prevent their collapsing from the pump's suction.

Use standard PVC or vinyl airline tubing to connect the system. The barb fittings do not require mechanical clamping, but you can use small zip-ties for added security. We recommend mechanically attaching the tubing ends in the aquarium or sump, as well as in the additive container, to prevent spills.

## **Operation**

The pump can be run continuously, or controlled by a simple timer. An inexpensive timer from the hardware store is sufficient. Note that the pump uses a 3-prong plug. Do not use a timer that only has a socket for two plug blades!

We recommend using a digital timer to control the pump operation and the volume of liquid being dosed into the aquarium. Depending on the additive being dosed, you may want to select only daytime or nighttime periods. A digital timer, or one with multiple on/off cycles, allows this flexibility. You can also cycle the pump with any commercial aquarium controller that monitors pH, ORP, or other water parameter.

## **Calibration**

While the pump is designed to deliver 1.5 mL per minute, variations in the roller tube dimensions may change that slightly. We recommend that you calibrate your pump before putting it into service by measuring the volume of water delivered during a timed period. For accuracy, run the pump for 30 minutes or an hour into a calibrated measuring cup. Divide the resulting volume by the time to determine your pump's actual delivery rate.

For example, if the pump delivered 96 mL in one hour, the actual delivery rate is 96 mL / 60 minutes, or 1.6 mL per minute.

You should recalibrate the pump after every tubing replacement.

## **Timed Dosing**

If dosing by time alone, you should spread the dosing periods throughout the day or night to maintain constant tank chemistry.

To determine the operating time required to achieve the desired dose of additive, simply divide the volume of required additive (in milliliters) by the pump's 1.5 mL/minute flow rate.

For example, to dose 100 mL of additive per day:

100 mL divided by 1.5 mL/min. = 66.67 minutes of pumping time.

Depending on your timer's capability, set the timer for 60 or 70 minutes of run time per day. You might want to split the run time into 10 or 20 minute increments throughout the dosing period.

## **Continuous Dosing**

If you want to dose continuously, you must dilute the additive supply so that the amount of additive delivered by the pump equals your daily dosage.

The pump delivers approximately 1.5 mL per minute that it runs. If run continuously, it will deliver 1.5 mL x 60 minutes/hour x 24 hours/day or 2,160 mL/day

For example, if you wish to dose 500 mL of an additive every day, you must dilute it into water so that 2,160 mL of liquid contains 500 mL of additive. Do this:

2,160 mL minus 500 mL equals 1,660 mL of pure water. Mix in the 500 mL of additive to total 2,160 mL of diluted additive. This mixture can then be pumped in continuously and you will deliver 500 mL of the additive per day.

You can, of course, scale the calculations to provide a diluted mixture for longer or shorter dosing periods. This provides a convenient method of delivering one-time, or occasional, additive doses to your system.

## Maintenance

The doser pump should be inspected periodically for dirt, grit, or chemical contamination. The pump chamber must be kept clean to prevent wear or breakage.

The pump chamber and roller tube are lubricated from the factory with 100% silicone grease. NEVER use a petroleum product such as bearing grease, lithium-based grease, Vaseline, or any animal or vegetable oils!

You should periodically disassemble the pumping chamber to clean and re-lubricate.

## Cleaning and Tube Replacement

- Unplug the pump from the power source.
- Remove the two screws from the clear plastic pump chamber.
- Pull the pump chamber from the roller assembly – be gentle and note how the pump pieces fit together! There should be silicone grease coating the metal rollers and the old roller tube.
- Remove the tubing assembly from the chamber.
- Carefully pull the barbed connectors from the ends of the roller tubing. You do not need to disconnect your feed lines.
- Clean any grease or residue from the connectors.
- Examine the metal pump rollers and pump chamber for contamination, chemical residue, or other foreign bodies. Clean as needed. Any abrasive contamination will shorten the life of the roller tube and may damage the pump.
- If you are replacing the tubing:
  - Compare the new tubing to your old tubing assembly – note that the two reinforcing sleeves act as spacers to properly align the tubing in the pump chamber and absorb the rotating forces.
  - Slip the new sleeves onto the ends of the smaller diameter roller tubing. The ends of the sleeves should be flush with the ends of the longer piece of tubing.
  - Insert the barbed connectors, checking that they are fully inserted into the tubing and the sleeves remain flush with the ends of the roller tube.
- Apply pure silicone grease to the metal rollers and the roller tubing. If you do not already have silicone grease, you can find it in the plumbing area of your hardware store or building supply center. You **MUST** keep the tube and rollers lubricated to prevent wear and jamming. Do **NOT** use Vaseline, petroleum products, oil, or anything other than pure silicone grease!
- Wrap the tube assembly around the pump's roller assembly and then reassemble the pump chamber. Carefully align the two small plastic tabs that stick out of the clear pump chamber into the mating holes of the black pump housing.
- Insert and tighten the two screws that hold the pump together. Do not over-tighten!
- Plug in the pump and observe that the pump rotates smoothly.
- Reconnect your feed tubes, if needed, and return the pump to service.
- Inspect the pump periodically to monitor its smooth operation and watch for any contamination or spills. Disassemble and clean the pump chamber, rollers, and tube if any contamination occurs.