

### WHAT IS "FLOW RATE" ON PUMPS AND FILTERS?

Flow rate refers to how often your aquarium water is filtered by your filter or moved by your powerhead (water pump) in one hour. If you examine the retail box of an aquarium power filter or powerhead, you will find the rating in gallons per hour (gph). Recommended flow rates depend on what's in the aquarium. Use these suggested turnover rates (how many times all of the water in your aquarium is filtered per hour) to determine the best flow rate for your aquarium.

Freshwater Saltwater (fish only) Reef aquarium 3-4 TIMES PER HOUR 8-10 TIMES PER HOUR 10+ TIMES PER HOUR

For example: 30 gallon freshwater aquarium with all 30 gallons to be turned over at least 3 times an hour would require a power filter with a flow rate of at least 90 gph.

## WHAT TYPE OF HEATER DO I NEED FOR MY AQUARIUM?

We recommend submersible heaters for all aquariums. ALL AQUARIUMS 3-5 WATTS PER GALLON

#### HOW MUCH GRAVEL DO I NEED IN MY AQUARIUM?

Approximately 1# per gallon, but this depends on the type of aquarium you have.

Gravel (freshwater) Fine Sand (saltwater) Coarse Sand (saltwater) Live rock (saltwater) 1# TO 1.5# PER GALLON 1# PER GALLON 1.5# PER GALLON 1# TO 2# PER GALLON

WHAT SIZE PROTEIN SKIMMER FOR MY SALTWATER AQUARIUM? Protein skimmers are normally rated for fish only aquariums. If you have a fish only aquarium, follow the rating on the skimmer's box. If you have a **reef aquarium**, there is the added load of corals, as well as other animals not found in a fish only aquarium. So, for those aquariums, cut the rating of the protein skimmer in half. For example: If you have a 55 gallon reef aquarium, you need a skimmer that is rated for a 110 gallon aquarium.

## HOW DO I CHOOSE A PUMP FOR MY POND?

When choosing a pond pump there are two main factors that must be considered - **maximum flow rate** and **maximum head height**.

Maximum Flow Rate refers to the amount of water that can be circulated by the pump in one hour at the surface of the pond with no hose attached. The entire body of water should be circulated, at the very least, once every two hours. The more circulation - the better. For example: A 500 gallon pond should have a pump rated for at least 250 gallons per hour.

**Maximum Head Height** refers to the height at which water flow STOPS. When a pump pumps water straight up the flow rate lessens considerably. For example, a Mag-Drive pump that is rated at 500 gph flow rate at surface level drops to 250 gph when plumbing up 5 feet for a fountain or waterfall.

Flow rates are also affected by the length of tubing attached to the pump. Add one foot of "head" height for every 10 foot of tubing. Also, waterfalls require 75+ gph for every inch of falls width.

# HOW CAN I CALCULATE THE AMOUNT OF WATER IN MY POND?

Find the dimensions of your pond, then use this simple equation to calculate the gallons of water in your pond.

For **rectangular ponds** the measurements need to be in inches: Length" X Width" X Height", divided by 231 = gallons

For **round ponds** the measurements need to be in feet:

(((.785 X (top diameter' X bottom diameter' X depth') X 7.5) X 2) = gallons

