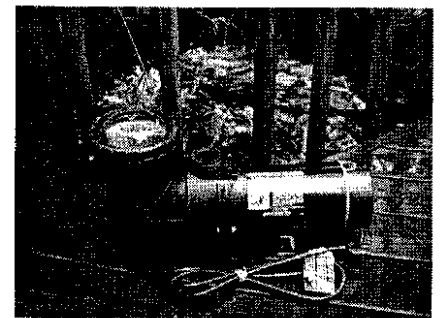


External Pond Pumps

There are numerous benefits to external pumps. First of all, just any external pump will not do. Most external pumps available over the counter are designed to be used on swimming pools or shallow wells. That fact is not the problem. The problem is that you want to purchase a pump which has as high a head pressure rating as possible while maintaining a power consumption rating as low as possible. The warranty period is also a concern. Most submersible pumps are warranted for only 1 year, while many external pumps carry a full 2 year warranty on the pump and motor. We are constantly on the look out for pump manufacturers to find what we consider to be a single all purpose external pump with as high a head pressure as possible at a reasonable energy consumption. Low speed is the most desirable for the filtration cycle and consumes only 2.6 to 3.6 amps and maintains a very good head rating. High speed is typically used to backwash our Aquadyne systems and the backwash time is typically less than 5 minutes. High speed typically draws between 8.8 and 12 amps, on Jacuzzi pumps. In large waterfall applications, the volumous effect at a strong head pressure can be impressive. You will see pumps such as the Sequence or the newly emerging Performance Pro pumps offering high flow rates at 2.8 and 3.1 amps. The great advantage of the Performance Pro pumps is that as you forcibly reduce the flow through these pumps either by valve restriction or filter loading, the pumps become more electrically efficient! You can actually take a ¼ Hp Performance Pro pump which pushes 5000 gph at 314 watts and reduce the flow to 1200 gph and the motor uses only 225 watts of power! Performance Pro pumps all have the famous Baldor motor drives with ball bearings, and there is a full 3 year warranty to boot. Unfortunately there is usually not a universal pump to fit everyones needs, however we will be glad to suggest the pump that will best suit your personal needs. On bead systems with the new Dyna~Max air assisted bead washing system, you can use virtually any high efficiency pump as appropriately sized for your pond and your desired water flow effect.

Jacuzzi High Efficiency Pumps
 * 1 HP 2 Speed
 1/16 Hp on Low
 2.6 amp power consumption on low
 1800 Gph on low
\$335.00
 If purchased with an Aquadyne **\$305.00**
 Recommended for models .60 and 1.1B

Jacuzzi High Efficiency Pumps
 * 1.5 HP 2 Speed
 1/12 Hp on Low
 3.6 amp power consumption on low
 2600 Gph on low
\$365.00
 If purchased with an Aquadyne **\$335.00**
 Recommended for all models



What does a pump cost to operate?

To determine the cost to operate a pump and motor unit, you need to know the rate your utility company charges you, ie. cost per kilowatt hour (\$/KWH) and the watts used by the unit. Rates vary widely from area to area, but are generally in the .06\$/KWH to \$/KWH range.

For example, lets take an average rate of .10\$/KWH (10 cents per kilowatt hour). For the Performance Pro pump ¼ HP that uses 316 watts, and which will be run 24 hours per day every day, the following calculation will provide the cost to run it for an average month.

$$\text{Monthly cost} = \text{Watts} \times \text{rate} \times 24\text{hrs} \times 30.4\text{days} \quad \text{1/4 HP} \quad \text{Monthly cost} = 316 \times .10\text{cents} \times 24\text{hrs} \times 30.4\text{days}$$

Total Monthly Operating Costs = \$23.05

This same calculation can be used for any pump if you know the wattage of the pump. Many people mistakenly substitute Amps x Volts to get wattage. However, this is not true for induction type motors. For motors you calculate, Watts = Amps x Volts x Power Factor. Since power factors change from motor to motor, and at different load points, the exact calculation is a bit more tricky.

If you use Watts = Amps x Volts x .75 (power factor) your wattage calculation will be much more accurate for any pump.

Also, contrary to popular misconception, changing from low to high voltage, does not cut your operating costs in half. When you double your voltage, ie. change to 220 volts, your amps are cut in half, however, the resulting watts are unaffected, and watts are what you pay for, not voltage.

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