



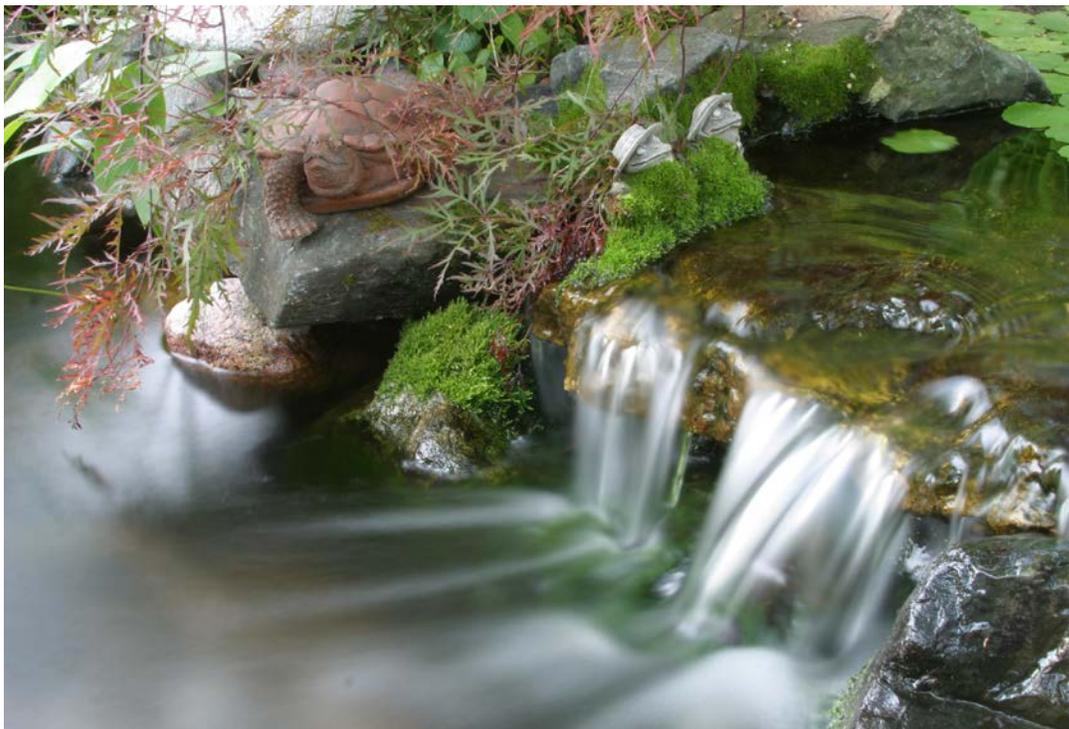
Pond Pump

Question: What size pump do we need for our water garden pond?

Answer: This is a common question with a variety of answers. The answer is not based on the size of the pond, but rather on the style and use of the pond. The first thing that must be asked is what is the purpose of circulating water in a pond? Most people have two reasons. First, they want to have a pretty water feature of a waterfall or of a fountain. Second, they want the water to be filtered so it looks clear and is safe for the pond inhabitants.

Waterfalls

To create a pretty waterfall, we need to know what a person thinks is pretty. For many people who are creating a backyard basic water garden, a water flow of one hundred gallons per hour for each one inch of waterfall width will create a nice sounding and nice looking waterfall. This flow will be about one quarter of an inch thick. To create a noisier and crashier flow of water, you would need to go a half an inch thick or more. Since this prettiness part of the equation is very subjective, it is best to actually look at existing waterfalls that are being run with a pump of known capacity to be sure of what you want. The same holds true with a fountain, it is best to look at an existing one to see if it is the proper size and prettiness, and then find out what size pump is being used to create it.



Filters

For the filtering portion of our equation we need to look at the two major types of filtration. Filters can be used to remove the large, visible pollutants in a pond (mechanical filtration) and to remove the invisible pollutants (biological filtration). Skimmers are typically used to remove the large, medium and small particles as they float around in the pond. Properly designed mechanical filters will not send particles to clog up the biological filter where the invisible chemicals are to be removed.

The properly sized skimmer would pull enough water in to the nets and filter mats to keep the water clear of floating debris. The properly sized biological filter would keep up with the amount of pollution being created by the fish and other animals and the breakdown of any organic matter. Typically, for many water garden ponds, the amount of water desired for the water feature effect is more than enough to keep up with the two filtering needs.

It may be desirable to use two pumps for the pond. A small pump that can run twenty-four hours a day for the filtration needs and a larger pump that only runs when the pond owner wants to see a prettier waterfall. This two pump system is only possible when using pond skimmers with sealed doorway sidewalls because they are the only ones efficient enough to work with the smaller pumps. The small pump uses less electricity and since there is less splashing, there is less evaporation, thus saving water too.

Most backyard ponds have far more fish in them than the similarly sized amount of water found in nature. In a natural situation the natural chemical processes work because there is a great amount of dilution. The smaller the pond, the larger the pollution load on the filter system from the same number of fish and so the water ought to go through the filters more often on a smaller pond.

Starter Ponds

A small starter pond of less than 500 gallons of water with only a few fish can have a water circulation starting at once per hour (500 gallons per hour) all the way up to five or six times that amount to 3,000 gallons per hour. At the lower limit, the pond will probably not easily stay clear and free of pollutants and at the upper limit the pond will probably begin to be churned up so much that the water will not be clear, just from all the bubbles. A pond of this size will stay filtered and look and sound pleasing with a water circulation of about 1,000 to 2,000 gallons per hour.

Water Gardens

A basic water garden from 500 to 3,000 gallons or an advanced water garden from 2,000 to 10,000 gallons will tend to have a lot of plants and other filter biological filter system components like gravel and bacteria. At first when a pond is installed, the fish are small and do not require much filtration. Over time, the fish grow, but the filter system does not, so ponds with small filters depend more and more on the other ecosystem components making up for their deficiencies. Water gardens with large volumes of gravel, lots of plants and bacteria and few fish do not need large pumps circulating the

water. Water volume turnovers of one to five times are often created by the waterfalls and are more than enough to handle the mechanical and biological filtration needs of the pond. The larger the pond the lower the number of turnovers necessary, unless there are too many fish and then the extra filtration of more turnovers will help.

Koi Ponds

Koi ponds are usually lacking many plants and other biological components, like rocks and streams. Occasionally, they are connected to plant filter areas that help with the filtration. In spite of often being over 10,000 gallons these ponds can have very large fish loads. Large filter systems and large pumps are used to make up for the lack of biological filtration from the ecosystem. In these ponds, waterfalls are not the prime consideration and the pumps are sized depending on the amount of water the filter manufacturer says is the optimum amount necessary for proper filtration. Water volume turnovers of one or two times per hour are often enough for these ponds.

Buying a kit where the manufacturer has specified all of the components, is a good starting point for determining the proper size of pump and filters necessary.