Pond Waterfalls: How to Plan and Select Waterfall Materials, Liner, and Pump

Drs. Foster & Smith Educational Staff

Creating a waterfall or stream for your pond can add an extra dimension to its beauty. Begin by choosing a location across the pond from where you normally sit, and if possible, where it is visible from inside your house.

Planning

You will first need to decide what type of effect you desire - a churning waterfall, or a gentle, trickling stream. Remember that a crashing waterfall can be hazardous for the inhabitants of the pond. A series of waterfalls is generally more aesthetic, both in beauty and sound, and easier on plants and fish than one larger one. Keeping this in mind, determine how tall and wide you want the total structure to be. Use stacked cardboard boxes or other items to help you estimate the size you want. Stake out the area and measure to determine both the square footage of the base, as well as the entire cubic footage of the structure.

Rocks and dirt

When adding a pond waterfall, having the right equipment and building materials goes a long way toward saving you money, not to mention the reduction in time and effort you will invest in moving and positioning heavy rocks. Depending upon your design, you may use rock or a combination of dirt, gravel, and rocks to raise the grade of your waterfall.

If using some dirt or gravel at the base, purchase the correct cubic feet. When using rock, it is best to determine how much material you will need for the actual waterfall by dry stacking it at the rock yard. Bring your measurements with you to make sure you have enough rock to fill the area created.

Liner

Next, you will need a piece of liner that is at least 2 feet wider **on both sides** than the "wet" area you have planned, and a foot longer than the height. It is always safer to get more liner than you need, because if there is any way water can get out, it will, which will drain your pond in the process. For more information on choosing a liner material, see Digging a Pond and Installing a Liner.

Pump

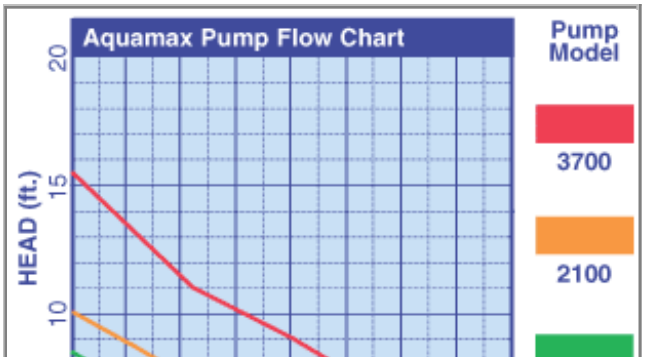
It is usually a good idea to have two pumps for a pond with a waterfall - one for pumping the water through filters, and a separate pump for the waterfall. There are both external (surface) pumps and submersible pumps. External pumps are generally easier to maintain and are often more powerful. A special housing unit will need to be built to house the pump since it must be kept dry and the area well-ventilated. Submersible pumps will be quieter, out of sight, and are most useful for small or medium sized ponds and waterfalls.

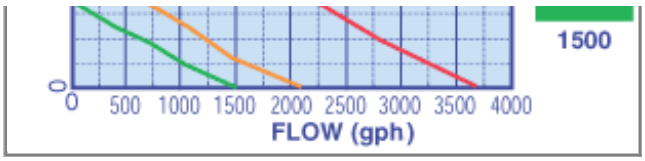
To choose the right size of pump you will need to know the amount of water to be moved and the flow rate. By measuring the head height of the waterfall drop, and determining the gallons per hour (gph) needed, you have all the information necessary to select the right pump.

An average waterfall, requires a pump capable of 100 gallons per hour (gph) per inch of waterfall or stream width. If the width of the waterfall is 5 inches you will need to pump 500 gph. To determine head height, measure from where the pump will be resting up to highest point of waterfall. For example, if your pump is at the bottom of a 2' deep pond and you want a 4' waterfall, your actual head height is 6'. So you will need to find a pump best suited to push 500 gph at a head height of 6 ft. Various manufacturers will have charts to help you determine pump size.

For instance, Aquamax has 3 models of pumps to choose from. To select a model, find the head height in the left column, and follow that gridline to the right to where it crosses the gridline for the desired gph listed along the bottom. The colored line to the right of that intersection represents the recommended pump model.

In our example, we would find a head height of 6' on the left of the chart and follow the line across to where it meets the line coming up from 500 gph along the bottom. The intersection occurs between the green and orange lines. So we would select the orange line, which represents Model 2100.





We choose the colored line to the right since it represents the pump that is somewhat bigger than what we need. Remember, these charts show the pump's maximum output in ideal conditions. Any elbows, curves in the tubing, or a filter, either before or after the pump, will decrease the flow rate. If we choose a larger pump, and the flow rate is too high, we can always reduce it it with valves, but, we cannot make a smaller pump produce more flow than what it was designed for.

You will only want to install the waterfall once, so take your time in planning its design, finding the right materials, and choosing the best liner and pump for your needs.