CHOOSING THE RIGHT PUMP FOR YOUR FOUNTAIN

To decide on the best pump for your application, you need to consider the following questions:

1. Will the pump be in a clean water and not exposed to the sun (e.g. a fountain or enclosed tank) or in an open pond with plants and exposed to the sun?

There are pumps that are suitable for clean water applications only. They do not handle debris, algae or other solid matter that will be present in open ponds exposed to the sun. If you have an open pond application even if the pond looks clean, it will develop algae, and get dirt and dust in the pond.

Avoid using clear silicon tubing where it is exposed to sunlight as it will develop algae and could block – and also starts looking unsightly.

Even in enclosed applications debris can occur.

If you see the flow reducing from the fountain, especially in open ponds, you may need to check for debris and clean the pump.

2. Is the pump close to a 240V power outlet?

If the pump is a long distance from a power outlet you might consider a solar pump. However, solar pumps only work in direct sunlight. They will not work in shade or cloudy conditions.

If you do not wish to use a solar pump you will need to ensure the power cable can reach. You could use an extension lead BUT consider the safety implications discussed below when choosing 240Vac and 12Vac pumps. If not you may need a power outlet installed by an electrician nearby the pump.

3. Do you want a DC or AC pump?

240Vac is what is produced from a standard power point in your home. The danger with using 240Vac outside is that if it is in the garden and is accidentally cut it could be fatal - 240Vac can kill!!

Outdoor cables at 240Vac should be enclosed in conduit and visible. Preferably, and as a guide, they should be in conduit and buried 600mm below ground. You should check with an electrician what requirements exist in the area where you are running 240V cables.

Where this is not possible a low voltage pump can be used. This has a transformer that converts the voltage from the 240Vac to 12Vac which is much safer. This option may be limited by distance of the cable from the pump to the power outlet. So check pump cable lengths. The transformer also needs to be out of the weather as it is only water resistant, not water proof.

4. What size pump is required?

The most important piece of information to decide the size of pump is how high the water needs to be pumped from the pump to the top of the fountain. This is called the ***"Head".***

For example, if the fountain is one metre high and the pump is rated to "1.0 metre head", there will be a small trickle or no water at all at the 1m mark. You would need to choose a pump that can pump above one metre.

The other piece of information is how much flow the pump produces. The Head and Flow are related. At ***maximum Head you get the minimum Flow*** and at the ***minimum Head you get the maximum Flow***. The Flow vs Head Curve is usually found on the box the pump comes in.

Flows are usually provided in litres/hour. To give you an idea of what this means, the flow out of a domestic hose is around 2000 to 3000L/hour

Different pumps will be designed to deliver different Heads and Flows. These will be be provided on the name-plate of the pump or the box they come in.

See the example Pump curve below in Figure 3 on how to determine the flow and head and the pump you require.

5. What size pump should I choose for the pond size?

If you have a very small pond but a large pump, with a large flow, the pump could drain the pond and damage the pump. Likewise, if you have a very large pond and a very small pump the water will be stagnant and not flow. The water coming out of the fountain may also prove to be a trickle.

As an approximation divide the capacity of your pond (in litres) by two (2) to obtain the average flow required in litres per hour. For example, if the pond is 1000 litres you would want a pump around 500L/Hr at minimum Head. Remember, the flow at the pond may be lower if the water is being pumped up to a high head e.g. you have a fountain above the pond. Therefore, if the pump is circulating the water in the pond up through a high fountain you need to choose a bigger pump.

If you want to both pump to a higher head AND provide circulation in the pond so the water does not stagnate, choose a bigger pump. This needs both a higher head, with a higher flow. You will also need to install a bypass valve as show in Figure 1a below to keep the water circulating in the pond, while also pumping to the top of the fountain.

6. How can I adjust the flow?

Unfortunately if you choose a pump with insufficient Flow at the Head you need there is nothing you can do – except get a bigger pump!

If you have too much flow at the end of the pipe there are things you can do. This is why it is always better to get a bigger pump than you need.

Firstly, you can choose an Adjustable Pump that allows you to reduce the flow on the pump itself.

If there is still too much flow or the pump you have cannot be adjusted you can add a bypass line.

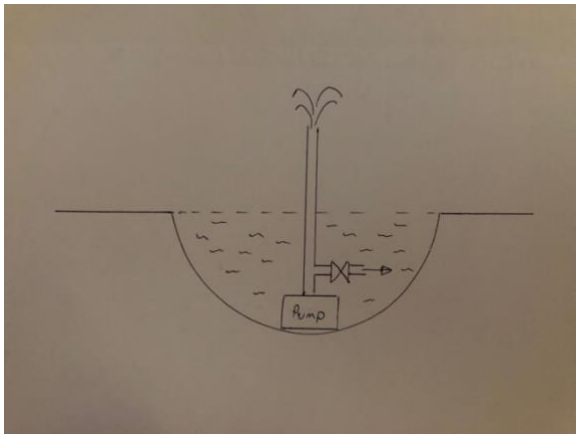

Figure 1a : CORRECT

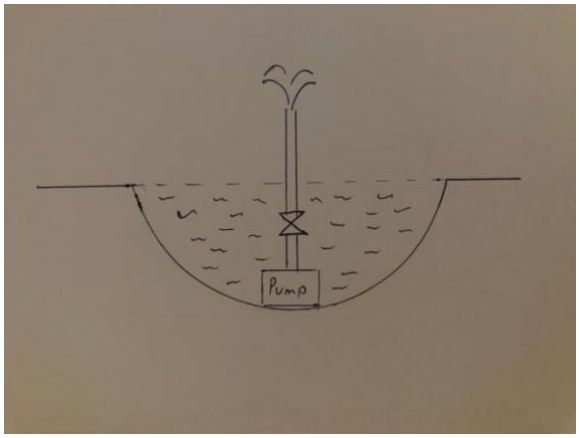

Figure 1b : INCORRECT

If you want to control flow DON'T put a valve or a restriction between the pump and the outlet, as shown in Figure 1b. This restriction could damage your pump as it will be spinning without the required flow and become overheated.

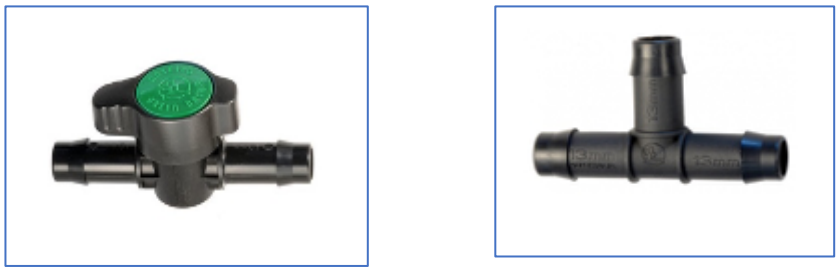

Figure 2: Valve and tee for a bypas line

All you need to install a bypass line is a tee and valve, as shown in Figure 2. These are what are used in garden irrigation systems. Just ensure you choose the size of fittings to match the diameter of your pipe – typically 13mm.

EXAMPLE PUMP CURVES – Figure 3

Let's say we are trying to find a pump that will be big enough to pump water to the top of a 1.5 metre high fountain. The sample pump curves shows the curves of two pumps. "Pump 1" can pump to 2.5 metre head. "Pump 2" can only pump to 1 metre head.

Pump 2 is not suitable as there will be no flow at 1 metre, let alone at 1.5 metres. Pump 1 will still produce 800 L/Hr of flow at 1.5 metres head. (By way of comparison, 2000 to 3000L/Hour is what comes out of your hose).

So Pump 2 will be an option for this fountain.

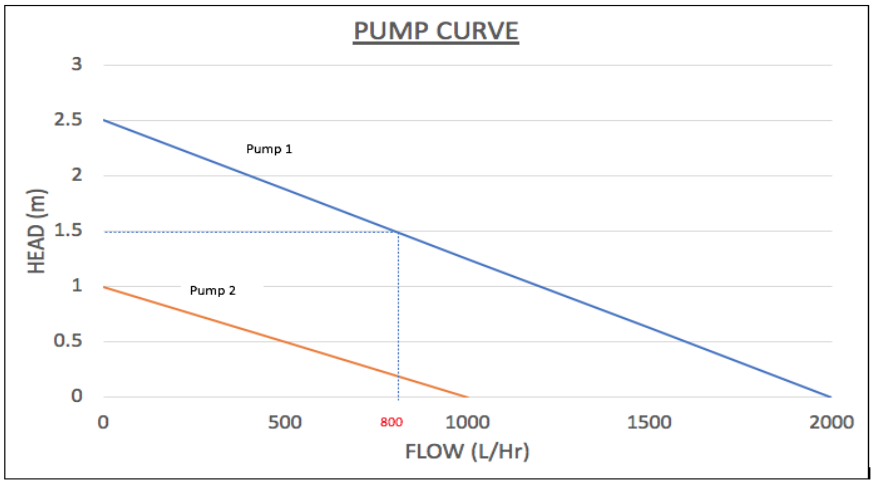

Figure 3 : Example pump curve