

## Build the Perfect Garden Pond



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Water gardens add a unique dimension to homes and even with limited space, you can design a water feature that brings the beauty of nature into your backyard.

#### PLANNING AHEAD

Having a precise plan is the best way to start your water garden. This will allow you to incorporate things like filtration and other equipment into your design.

**1. BUDGET** - Determining your budget will influence the style and size of your water feature. Remember, building a water garden is an investment that can add value to your home. Planning ahead will not only prevent mistakes but will also save you time and money.

**2. CHOOSING THE CORRECT POND TYPE** - After you have decided on your budget, a style can be selected. Styles include liner ponds, pre-formed ponds, self-contained water features and waterfalls.

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### 3. CHOOSING THE CORRECT LOCATION - Do's and Don'ts.

- ✗ Don't place your pond in an area that always stays wet.
- ✗ Don't choose a position close to overhanging trees because falling leaves will contaminate the water.
- ✗ Don't dig in an area where there are power cords below ground.
- ✓ Do choose a level site in an area which gets sunlight for at least half the day.
- ✓ Do position the pond where it can be easily observed from the house.

### 4. DETERMINE THE SIZE OF THE FEATURE - The only limit to the size, shape and style of your water feature is your imagination. Plan ahead to know which size and shape of pond will incorporate into your landscape.

### 5. KEEP IT LOOKING NATURAL - Making sure your pond blends in with your landscape will help keep your pond looking natural. When choosing rocks, make sure they vary in size. Adding plants and fish is also a great idea as they bring colour and interest to a pond.

### 6. POND LIGHTING - Incorporating pond lighting is a great way to truly enjoy your water feature at night. They beautifully compliment features and focal points and will help turn your backyard into a stunning retreat.

### 7. SAFETY - Excavating the hole for a large pond can be a strenuous job – ask the help of friends, family or rent appropriate equipment and look after your back!

#### THE RIGHT POND SIZE



Water gardens come in all sorts of styles and sizes. Which one is right for you?

1- 20L Ponds – Offer a carefree way to enjoy small water plants up close.

75-150L Ponds – Get your feet wet. Provide a serene area for you to enjoy small to medium sized pond plants. You can also have a small pump and maybe even a goldfish. Even better – they're easy to maintain.

200-2000L Ponds – A great place to start, not a big commitment. However, once you discover your enthusiasm for pond keeping, it won't be long before you're making plans to expand.

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2000-12000L Ponds – This size will allow you to keep fish and a large variety of pond plants. Consider location, filtration and the number of plants and fish that you want to keep when planning your pond.

12000L Ponds and over - Many people find water gardening and fish keeping to be the hobby of their dreams and will invest the time and money to get the maximum enjoyment out of their water garden. With water gardening the only limit is your imagination.

## POND STYLE

Once you know the size of your pond and selected your location, you need to decide on either using a pre-formed or liner-type pond. There are several advantages to using a pre-formed pond. They take a lot of the guesswork out of designing your water garden. They are made of heavy-duty, rigid polyethylene, are designed to withstand extreme conditions such as hot summers and frigid winters, and they come in a variety of shapes and sizes. The disadvantage is that you are limited to the pre-formed shape. A pond liner offers many advantages when designing your water garden. The soft rubber liner is highly flexible and durable, which make them ideal for custom installations. However, be careful what you buy. Some liners are not intended for pond use and can contain oils and fungicides that are harmful to fish and plants. You will also have to decide whether you want a waterfall or a fountain or perhaps both. Remember, a pond is a combination of tranquil sounds, movement and colour. By creating a pond, you are bringing the beauty of nature into your garden. The sensory dimension that your pond will add will amaze and delight you.

## PRE-FORMED PONDS



Pre-formed ponds are available in a wide variety of shapes, sizes and depths. Many come with pre-contoured shelves and steps. Choose a style that best suits your garden and selected location. Another point to consider when selecting your pre-formed pond is water depth. If you wish to winter your fish in a harsh climate you will need to select a pond with a depth of at least 4 feet (1.2 m) therefore a liner may be more suitable.

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## LINER PONDS



For those who want to design an original pond, Pond Liners allow you to create a unique and natural looking water garden. Installing Liner Ponds a bit more work but the flexibility of design is well worth the extra efforts. Water features such as streams and waterfalls are easily incorporate into liner ponds. Liner ponds also provide greater opportunities for planting shelves. Liner Ponds allow you to greatest flexibility in pond design. Before you go out and buy a liner, you will need to calculate the correct size - use the formula later in this guide.

## ADDING A WATERFALL

Whether you have a pre-formed or liner pond, the following steps are common to both.

If you decided to create a simple pond all you need to do is add water, decorate and enjoy your creation. However, if you've decided to do a little more planning and work, you can enhance the beauty of your water garden by adding a waterfall. A waterfall is very beneficial as it will provide needed oxygen while adding the soothing sound of running water.

Whether pre-formed or a liner and natural rocks, your waterfall will need to be carefully checked for water leaks and steady flow in order to prevent water loss or stagnant areas. Ensure that the base of your waterfall is solid. Fill any gaps or crevices with sand or soil and tamp into place. Make sure that the upper levels overlap the main pond or liner to assure a smooth flow of water. Although the waterfall may look artificial to start, it will quickly become more natural looking as your pond ages and matures. Adding live plants will also make the waterfall look more natural.

As much as possible, conceal the hose from your water pump. To achieve this you can use rocks, small stones, mulch and plants.

Planning ahead will help you determine if you want flowers or ornamental shrubs planted around or alongside your waterfall. The addition of lighting and ornaments can also make a striking visual effect of your pond.

Once you have achieved the waterfall look you want, it is time to add the water.

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The water may appear cloudy or dirty depending on your type of installation. Don't worry about this. As soon as you have your water accessories installed, it will clear up quickly. Now the fun begins, tweaking and tuning the waterfall for sound and flow.

## CHOOSING A POND PUMP



Any water garden will benefit from the use of a pump. Water must flow constantly for effective filtration to take place. Filtration is critical in keeping pond water healthy, clean and clear. Fish and plant life will thrive in a well-circulated pond. Without water circulation and filtration your pond could suffer from a lack of oxygen and, consequently, poor water quality.

Before buying your pump, you must first determine how much work you are asking it to do. Will it just circulate water or will it pump water through a U.V. sterilizer, waterfall, fountains, ornaments, and filter. Answering these questions will help determine the size of your pump. The more features you add, the more work you are asking your pump to do, and therefore, the more powerful it has to be. Also, it is a good idea to buy a pump with a capacity slightly greater than your initial needs, especially since you may want to add to your system later.

To keep ponds healthy, a general rule of thumb is that pond water should be circulated at least once every two hours. A 500-lt pond, for example, requires a pump capable of generating a minimum flow of 250lt per hour. To figure out the volume of water your pond will need to circulate use the following calculation. Please note that you should state measurements in feet for these calculations.

For a square or rectangular pond:

Length x Width x Average Depth x 1000 = Total litres

For a round pond:

Radius x Radius x 3.142 x Depth x 1000 = Total litres

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## Find your ideal Pond Pump in four easy steps

### Step 1

Roughly calculate your pond size using the formula above.

### Step 2

Decide what type of pump you need. If you want your pump to run a fountain you will need a solids blocking pump such as Fountain pump.

If you need a pump to run external filtration or a waterfall you will need a solids handling pump that can pass solid particles such as waterfall pumps.

### Step 3

Estimate waterfall height

Waterfall height is the distance between the surface of the pond and the outlet point of the water. (If you do not have a waterfall height is 0)

### Step 4

Find your ideal pump from the graph

PUMP FLOW RATE IN LITRES PER HOUR

Head (m)

10.00				0
9.50				1000
9.00				1800
8.50				2850
8.00				4050
7.50				5900
7.00	0			7100
6.50	900	0	0	8800
6.00	1400	1950	2000	10700
5.50	2000	2850	3450	11300
5.00	0	2300	3750	4500
4.50	1000	2800	4600	6000
4.00	1600	3400	5800	8100
3.50	2800	3900	6600	9650
3.00	3000	4500	7100	10450
2.50	3900	5100	7850	12200
2.00	4500	5800	8400	13650
1.50	5000	6500	9000	14200
1.00	5500	7100	9700	15000
0.50	6000	7900	10600	15700
0.00	6500	8500	11000	16000
<b>Model</b>	<b>PM6500H</b>	<b>PM8500H</b>	<b>PM11000H</b>	<b>PM16000H</b>
				<b>PM20000H</b>

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Find your ideal pump by finding your pond size up the side of the graph, then your waterfall height along the bottom of the graph. Where the two lines meet indicate your ideal pump size!

## CHOOSING A POND PUMP

It is always a good idea to buy a larger pump than you require initially, as it will allow you to add additional equipment or more flow to the waterfall if the need arises.

After you've calculated:

- A) The total volume of water in your pond
- B) The total head height of fountains and waterfall
- C) The width of your waterfall
- D) The total length of hosing used

Your pump must be submerged in your pond. The intake should be positioned away from any potential flow obstructions such as plants or a side wall.

When installing a pump it is important to read and follow all instructions.

## FILTRATION

All ponds will benefit from the addition of a filtration system. Filters keep ponds clean, clear and healthy. Without a filter, water quality can suffer. Impurities could accumulate and create a toxic and cloudy environment. Filters perform three filtration functions: mechanical, biological and chemical.

Mechanical filtration refers to the following process: as dirty water flows through filter foam or other mechanical media it traps dirt and debris. Filtered water returns to the pond free of debris. A filter foam must be as fine as the debris it is removing.

Biological filtration refers to the process of providing an area where beneficial bacteria can grow and multiply. This is important to biologically break down harmful toxins such as ammonia from fish waste. An ideal media to support large colonies of beneficial bacteria is Bio-Max.

Bio-Max is pre-packed with a mesh bag for convenient placement and can be added to almost any filter.

Once biological toxins are broken down, chemical filter media and pond plants can help to control the resulting compounds.

Chemical filtration refers to the process of controlling and changing specific water conditions. This does not mean that the media is a chemical. Natural products can be considered chemical media.

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## CHOOSING A FILTER

We offer a wide range of filters to suit your pond needs. Remember you can never have too much filtration.

### PRESSURE FILTERS:



Pressure Filters are high performance water filtering systems that keep pond water clean and healthy. These all-in-one filters provide mechanical, biological\* and UV Sterilization and are designed to work in tandem with a solids handling pumps.

They also feature a revolutionary Backwash-Cleaning System that easily cleans the entire surface of the foam filters without opening the filter. This patent-pending system is one of a kind. Backwash cleaning can be done easily and comfortably in a few minutes without opening the lid. This feature ensures that the filters perform at optimal levels for many days and prolongs the time between full maintenance sessions. An easy-view cleaning indicator signals when it's time to perform backwash cleaning.

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## INSTALLING

### Installing a fountain

A fountain can help aerate pond water and provide soothing water sounds. It is installed by submerging the pump in the desired area and making sure it is level and unobstructed. Adjust the water flow for the desired height and fountain head spray.

Note: When installing a fountain, it is important to read and follow all instructions.

### Installing a UV Sterilizer

You may want to consider the addition of a UV Sterilizer to work in conjunction with your filter to help control green water. UV Sterilizers eliminate green water and create beneficial pond conditions for fish and plants. When installing a UV Sterilizer, it is important to read and follow all instructions.

### Install lighting

The addition of underwater and accessory lighting can make a pond come alive at night. Make sure to plan ahead if you intend to add lighting and have the extra electrical GFI outlet nearby. Experiment with the direction and colour of your lighting until the desired look or mood is achieved.

## ADDING PLANTS

The addition of plants to your pond will complete its natural look. However, care should be taken in the selection and placement of plants in or around your water area. There are four categories of pond plants:

Marginal: Grow in soil covered by several centimetres of water. They eventually emerge out of the water along the pond edge.

Deep-Water: Rooted in soil and then placed in water deeper than 11.8" (30 cm). The leaves and flowers grow on or above the water surface.

Floating: Not rooted in soil, the plant remains on top of the water.

Submerged (also known as aerators): May or may not be rooted at the bottom of the pond. They grow entirely under the water. They grab nutrients and help prevent the growth of algae.

Bog: Grow in soil that is constantly moist, normally near water.

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## ADDING FISH



Now that all the essential components have been installed to sustain a healthy pond environment it's time to add your pond fish.

Fish add colour, movement and grace to your water garden. However there are several rules of thumb that should be reviewed before you add your fish.

Limit the initial number of fish you introduce into your pond, as they produce a lot of waste. This waste is potentially toxic to them, better to have too few than too many. Fish will often reproduce and grow quickly in a pond environment.

Treat them with great care. Any handling or transportation, even introducing them to your pond, can induce stress.

1. Introduce them to the pond slowly, matching the water temperature by floating the bag in the pond before release.
2. Additionally, you can add a little pond water into the bag to help them get used to any differences there may be in water quality.
3. After approximately 20 minutes of this gradual introduction process, you may release your fish into their new home. Any handling of the fish should be minimal. Use a soft net to handle them.

### TIP

When adding fish to your pond, treat the water with Water Prep. This product makes tap water safe for fish and plants by eliminating harmful chlorine or chloramine and neutralizing toxic metals. In addition, it coats and protects fins and scales that could have been damaged when fish are handled or transported.

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## MAINTAINING CLEAR WATER

Warm temperatures, intense sunlight, and the accumulation of organic waste are factors that can contribute to an unattractive pond. There are a number of products available that can help offset the results of these environmental conditions.

One of the best things you can do to control and prevent cloudy water is to ensure that your filter is clean and working to capacity.

For a "quick fix", add a traditional water treatment, such as PondMAX 3 in 1. This product's fast acting formula helps clear cloudy or green water by causing minute particles of organic waste to clump together. The filter easily traps the resulting clumps.

### Helpful Tips:

- 1) Always treat pond water before adding livestock. Chlorine and chloramine in tap water may kill or injure fish.
- 2) Keep sharp objects away from pond liners.
- 3) Install pumps on bricks or blocks keeping them from the bottom of the pond to minimize clogging.
- 4) The maximum height of your fountain should not exceed half the width of your pond.
- 5) Allow for 1 inch (2.5 cm) of fish per square foot of surface area.
- 6) If you are going to keep large Koi, they should be kept in large, well filtered ponds. The pond should be at least 3 ft. (1 m) deep.
- 7) Oxygenating plants provide oxygen only during day-light. Fish can suffer stress during warm, still nights unless extra oxygen is supplied. Water agitation created by a splashing fountain or waterfall is ideal.
- 8) Although most pumps operate using a normal electrical supply, the installation should be a permanent one using a GFI (Ground Fault Interrupter). Always use cables and connectors designed for outdoor and water garden use. Have your system installed or checked by an electrician.
- 9) The finishing touches. It's important to choose the right fish and plants for your pond.

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