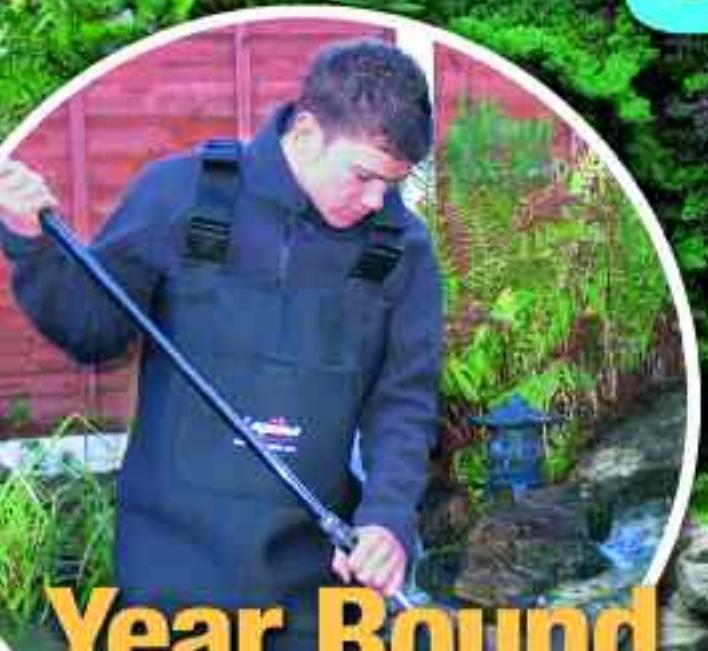


£2.00

Living Ponds

& water features



Year Round Pond Tips

PROJECT:

Create a rock
feature in 4
easy steps!

NEW
Clearflo Kits

The latest
pond products
in store

Laguna

Beautifully simple water gardening



www.lagunaponds.com

Laguna

Living Ponds

& water features

A new year, a new pond!

Water brings so much to your garden – beauty, light, sound – as well as a vital element which attracts a wide variety of wildlife and insects, many of which benefit your garden in return. Even a small water feature can add a new dimension to relaxing on your patio.

Laguna is dedicated to making it easy to create and maintain ponds large and small. With our quality range of pumps and accessories, plus the tips and advice from our experts, you'll find plenty of ideas and inspiration in this issue of Living Ponds.

Contents

PROJECT 1

4 Inspiration

Photos of amazing ponds from the Great British Horticultural Shows.

PROJECT 2

8 Create a rock feature in 4 easy steps!

Ideal for patio installations, Laguna's new rock ornaments look and feel like real stone and are remarkably easy to set up.

PROJECT 3

10 FREE-FLO PUMPS

Meet Laguna's high performance fountain pump - it's versatile and powerful!

14

MAX-FLO PUMPS

The Max-Flo range now boasts a new monster pump providing massive power and 10mm solids handling PLUS a new Powerpump for spectacular waterfalls.

16
PROJECT 3

Construct a pond with a flexible liner

Flexible liners give you the freedom to create the shape of your pond, follow our guide to success.

18

FILTERS & STERILISERS

Laguna's range now includes Clearflo - the ultimate partnership of power and performance!

20

Ask the team about water, fish & plants

6 pages of practical advice about ponds and pond products.

28

Water Gardener's Calendar

Month-by-month pond maintenance and fish care.



 **HAGEN**
www.hagen.com



MEMBER OF OATA
Ornamental Aquatics Trade Association

Laguna pumps and filters are manufactured in Italy and distributed by:
Rolf C. Hagen (UK) Ltd, California Drive, Whitwood Industrial Estate,
Castleford, West Yorkshire WF10 5OH.

TELEPHONE OUR HOTLINE FOR DETAILS OF YOUR NEAREST STOCKIST
AND FURTHER INFORMATION ABOUT THE LAGUNA RANGE OF PRODUCTS

01977 556622



New Ideas from the





Great British Shows



Glass, metal, canvas, mirrors, nowadays these materials are as much a part of garden design as flowers, shrubs and trees. But there is no doubt that water adds a special dimension and today's garden designers make full use of its potential to create stunning ponds and amazing effects.

Chelsea, Tatton Park, Hampton Court - every year these fabulous shows give our best designers the opportunity to show what they're made of, and every year water plays a considerable part of their designs. Take a look at these exciting exhibits from recent shows.

Top Tips

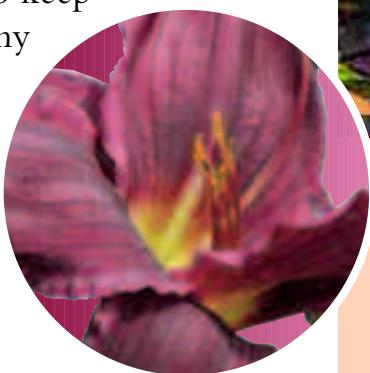
for a great pond

A successful pond relies on some good planning right from the start so, before you fetch the spade, it's important to have a clear idea of what you're going to commit yourself to.

How big will it be?

Are you going to keep fish? Are there any safety issues to consider?

What pond equipment do you need to buy?



the right place

- Don't site your pond in boggy ground.
- Avoid positions close to over-hanging trees because leaf litter will contaminate the water.



- Don't dig in areas where there are mains services below ground.
- Choose a level site in a spot which gets sunlight for at least half the day.
- If you have kids, position the pond where it can be easily observed from the house.
- Avoid positions where pesticides are used.

be prepared

From the guidelines provided it should be easy to draw up a rough list of materials and equipment you need for the style of water garden feature you desire. Take a little time to acquaint yourself with the various types of water garden equipment, their purpose

and use. Planning ahead also means understanding what's needed to make a water feature work and continue to do so, trouble-free. Many problems can be avoided, for example, by carefully choosing the best range of equipment and materials for your needs.

planning

Building a pond or water feature, however small, involves outlay of both cash and effort. If you decide part way through that you've been over-ambitious it might prove to be difficult and expensive to undo what has already been done. A precise plan is the best way to start, so you can make major decisions before rushing headlong into a project.



fish

- The size of your pond determines how many fish it can accommodate.
- Deeper pools help to avoid the extremes of temperature which can be detrimental to fish.

- Koi are specialised fish and need much greater volumes and space in a pond.
- Remember that fish are living creatures. Treat them with care and they'll repay you with years of enjoyment.
- Always buy pond fish from a reputable supplier.
- Don't be tempted to take fish from the wild as they often carry parasites and disease which will contaminate your pond.
- Supervise children if you allow them to feed the fish, they are more likely to over feed them.



style

Modern pond equipment can make almost anything possible in replicating natural forms of water in the garden, from a crashing waterfall to a gently bubbling spring. Make sure that the feature blends with the rest of the garden. Above all don't try to bring together a collection of incoherent forms of water feature which don't fit comfortably into the landscape of the garden, otherwise the overall look will seem contrived and your interest in it is likely to wane.

features

Waterfalls and fountains do more than look good. By creating movement on the pond surface, oxygen is added to the water. This is particularly helpful during hot weather when oxygen levels are depleted and fish become listless.

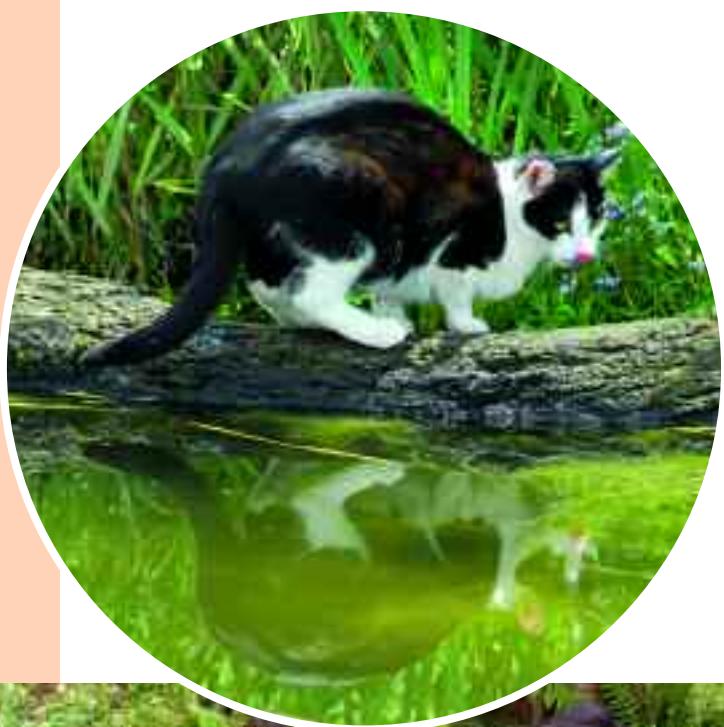


plants

- Don't plant more than 2-3 plants per square metre of surface area.
- Plants play an important role in establishing a healthy, clear water environment.
- Floating plants combat green water and give shelter for fish in the heat of the day.

sunlight

Sunlight is an essential consideration when planning your pond and you should choose a spot where the pond will get at least half a day's sunshine. The energy of the sun is vital to both fish and plants. Fish become more active with the warmer water temperatures and plants need sunlight for correct growth.



kids

Water is an irresistible attraction for children. Always monitor young children near ponds and open water of any kind and take the necessary steps to make your own pond safe.



safety

- Always use a circuit breaker with any pond equipment installation.
- Excavating the hole for a large pond can be a strenuous job - enlist the help of friends or family and look after your back!
- If you have very young children you can build a safe feature like the Rock Feature on page 8.
- Use a pond cover for exposed ponds where children play.

Have a look at these Pond Safety websites:

www.rospa.com/waterandleisuresafety/factsheets/pondsafety.htm

www.practicalfishkeeping.co.uk/pfk/pages/show_article.php?article_id=380

project1

CREATE A SAQQARA ROCK FEATURE IN 4 EASY STEPS!

It couldn't be more simple



data

Finished size and volume:

Approx 66cm(26") x 40cm (16")

Time required:

Approx 45 mins

Materials and equipment required:

Laguna round goldfish tub

Reservoir cover plate

PowerJet 800 pond pump

Laguna Saqqara rock ornament

Pebbles

Laguna Rock Ornaments

Stylish and attractive, these elegant ornaments look and feel like stone, but weigh much less, making them very convenient to transport and install. They add flair and a feeling of relaxation to any home and they are designed to withstand extreme weather conditions and will not flake or chip due to UV or temperature exposure.

1

Dig a whole slightly bigger than the reservoir ready to back fill with soil once the tub is in place.

2

IMPORTANT

Take time to check that the tub is completely level as this will give the best effect once the feature is in place.



Laguna Rock Ornaments



SAGADA POT ORNAMENT

This exotic looking pot looks and feels like the actual stone of the Sagada cave walls in the Phillipines, but it is actually lightweight and easy to move.



FOAMING ROCK ORNAMENT

This monolithic ornament is an elegant replica of granite, but weighs far less.

ORIENTAL BOULDER WITH FOUNTAIN

Impressive and formidable, this oriental water feature is a visual standout. The sounds of water trickling from the fountain will soothe the soul. The addition of pebbles (not included) in the concave 'seat' of the boulder will bring added visual appeal.

MAINTENANCE:

The only maintenance required is frequent topping up of water lost through evaporation. Pay particular attention to this as the pump may be damaged if it runs dry.



3

Pass the attached hose from the rock feature through the grid and attach it directly to the outlet of the pump. Place the pump in to the tub, put the grid in place and locate the rock feature in the centre of the grid.



4

Fill the tub with water and arrange the pebbles around the base of the rock feature, covering the rim of the reservoir. The soil surrounding the feature can now be planted up with greenery or decorated with gravel or more pebbles depending on the appearance you want to create.



A water garden cannot thrive without a pump. It is the power behind the circulation that filters pond water to keep it clean. It powers fountains, waterfalls ornaments, filters and sterilisers and other water operated features or equipment.

FREE-FLO

For fountains and waterfalls



...the versatile choice
for features large and small



Bell fountain INCLUDED IN KIT

3-tier fountain INCLUDED IN KIT

Foam jet OPTIONAL

Foam free

Powerjet Free-Flo is a high performance, foam free pond pump. The outer strainer casing is designed to reduce maintenance but, when cleaning is required, all of the foam free models feature a unique backwash function to simply flush away clogging pond debris.

Low, low running costs

Free-Flo pumps are available in a wide range of models to suit most ponds and are capable of running a fountain and a waterfall at the same time. Every pump is designed for powerful performance with low running costs - a major issue when the pump needs to run constantly - even the largest pump costs little more to run than a 100 watt light bulb!

Click fit

'Click fit' describes the job of the unique Laguna connectors which enable easy, quick attachment of hosing to any other Laguna equipment you may wish to add to your system.

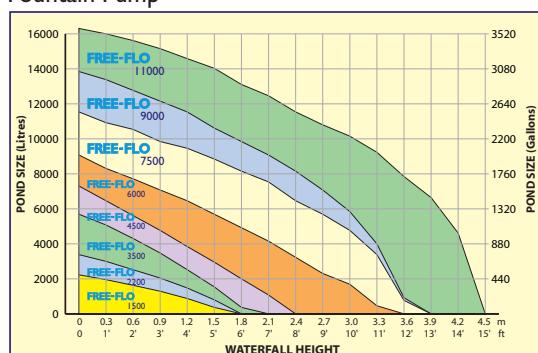


Laguna Powerjet Free-Flo pump kits include the pump, 2 quality fountain heads for different effects and a 3 year guarantee.



POWERJET FREE-FLO

Fountain Pump





How to choose the right pump:

To get the best performance from your pump you need to choose the correct size for your pond's requirements. It is always better to opt for a larger model than stated in case you want to add more accessories in the future.

Working it out:

Roughly calculate the size of your pond using these formulae:

| | | |
|-----------|--------------------------------|--------------------------|
| Metric: | Length x width x average depth | = Volume in cubic metres |
| | Multiply volume by 1000 | = Pond size (litres) |
| Imperial: | Length x width x average depth | = Volume in cubic feet |
| | Multiply volume by 6.23 | = Pond size (gallons) |

Estimate waterfall head height:

This is the vertical distance between the surface of the pond and top of the waterfall. Use the graph on the opposite page. Find your ideal pump by finding your pond size up the side of the graph and the waterfall height along the bottom. Where the two lines meet indicates your ideal pump size! If you do not have a waterfall, your waterfall height is 0.

NOTE:
A WATERFALL REQUIRES 75 - 100 GPH FLOW RATE FOR EVERY INCH OF WIDTH.

THE PUMP YOU CHOOSE SHOULD BE CAPABLE OF TURNING OVER THE CAPACITY OF THE POND, THROUGH THE FILTRATION SYSTEM, EVERY 2 HOURS.

Technical data for the Powerjet FREE-FLO Pump

| POWERJET FOUNTAIN PUMP KIT | 200 PT100 | 600 PT122 | 1200 PT126 | 2200 PT126 | 3500 PT129 | 4500 PT130 | 7500 ELECTRONIC PT132 | 10000 ELECTRONIC PT134 | 15000 ELECTRONIC PT136 | 22000 ELECTRONIC PT138 |
|--|------------------------------|-----------------------------|-----------------------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| LPH / GPH | 380 / 86 | 810 / 180 | 1620 / 330 | 2310 / 480 | 3030 / 610 | 4050 / 840 | 5880 / 1300 | 7500 / 1650 | 9000 / 1900 | 10000 / 2300 |
| MAXIMUM HEAD HEIGHT (METRES) | 0.8 | 1.3 | 1.7 | 1.8 | 1.8 | 2.45 | 3.5 | 3.7 | 3.7 | 4.5 |
| MAXIMUM POND VOLUME (LITRES) | 250 | 1620 | 2900 | 4400 | 7400 | 9500 | 16400 | 15000 | 18000 | 22000 |
| WATERBELL FOUNTAIN HEAD (WIDTH cm) | 13-25 cm | 20-38 cm | 36-46 cm | 38-51 cm | 41-66 cm | 46-86 cm | 51-102 cm | 61-122 cm | 76-152 cm | 91-244 cm |
| TIERED FOUNTAIN HEAD (cm) | 2 TIER 48-69 H 41-58 W | 3 TIER 50-71H 28-56 W | 3 TIER 61-81H 41-74 W | 3 TIER 66-102 H 48-79 W | 3 TIER 66-122 H 48-84 W | 3 TIER 66-152 H 51-131 W | 3 TIER 71-233 H 51-131 W | 3 TIER 81-259 H 51-131 W | 3 TIER 91-274 H 51-131 W | 3 TIER 91-366 H 53-190 W |
| ELECTRICAL USE | 15W | 12W | 21W | 32W | 55W | 55W | 80W | 100W | 100W | 125W |
| CORD LENGTH (M) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| INLET DIAMETER | 14.5mm | 20mm | 25mm | 25mm | 30mm | 30mm | 32mm | 32mm | 32mm | 32mm |
| DIVERTER OUTLET DIAMETER | 12.5mm | 20mm | 25mm | 25mm | 32mm | 32mm | 32mm | 32mm | 32mm | 32mm |

project2

CONSTRUCT A POND WITH A RIGID, PRE-FORMED LINER

Pre-formed ponds made from polyethylene or glass fibre reinforced plastic are available in a range of sizes and both formal and informal shapes. They are particularly durable and quite easy to install provided that you choose a design without too many irregular corners.



data

Finished size and volume:

Max width: 124cms

Max length: 282cms

Depth: 48cms

Capacity: 700 litres

Time required: Approx. 4 hours

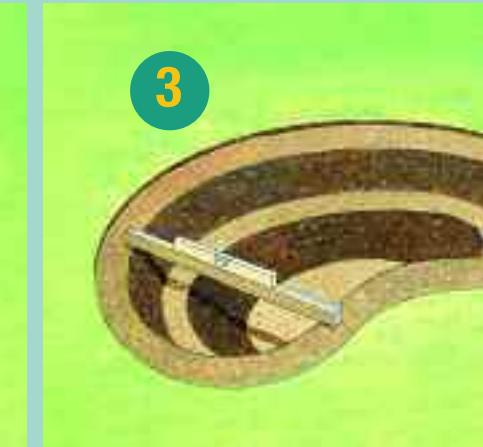
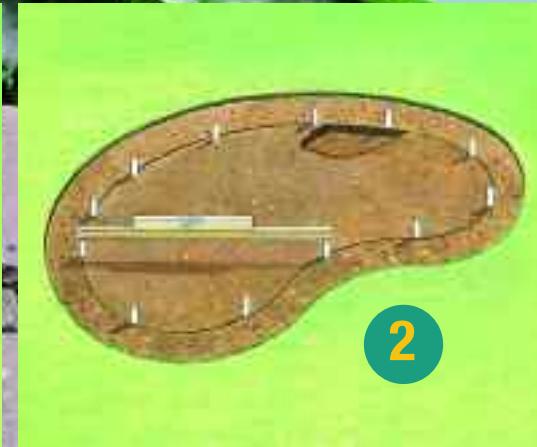
Materials and equipment required:

High density polyethylene pre-formed pond

Free-flo 2200 Pond Pump

Powerflo Max Underwater Filter

Although pre-formed designs are an ideal solution for a small pond it is wise to consider their limitations. Even the largest models offer less than 10 sq. metres water surface and the depth is usually a maximum of 60 cm (2") or so. Large water lilies require more space and a greater planting depth than is normally offered and the very shallow depth designs are not really suitable for over-wintering fish. But for an easy way of creating a small pond that will remain perfectly waterproof and last for years you could not make a better choice.



Installing a pre-formed pond

1 Place the pond in position and carefully mark out its shape with pegs or a trail of sand or flour.

Don't turn the pond upside down to mark out the shape, as this gives a mirror image of the pond.

2 Check the surface level and start digging down to the shelf.

3 Reposition the pond, mark out the inner deeper section and continue digging out to the bottom. Remove any loose stones or sharp objects from the hole and spread a layer of damp sand, approx. 5cm (2") thick, over the bottom of the hole. Check the level at the bottom.

4 Position the pond in the hole and firmly backfill with sand or soil. Fill with water and leave to settle for at least a week before finishing off with your choice of edging.

Pre-formed ponds must have good all round support. Make sure you pack in the sand between the hole and the sides of the pond.



Installing a fountain pump and filter



Laguna pond pumps are easy to install and quite unobtrusive in use, out of sight under water in the pond.

The power cable is all that shows above water and this can be buried below ground level, protected with a suitable grade of conduit. This will avoid any accidents occurring when later working in the garden.

The **Laguna Free-flo 2200** pump is ideal for this size of pond. Its large foam free cage actually prevents solid particles from passing through the cage, giving longer intervals between cleaning and maintaining a constant flow to the ornamental fountain head.

This pump can be combined with the **Pressure-flo 2500 filter** to provide extra biological filtration and clear water, thanks to the Pressure-flo's high power Ultra Violet steriliser. It is also configured to fit to most pond pre-filters for extra filtration.

Maintenance of this pump is quick and easy, thanks to the easy clean cage and Free-flo's unique back wash facility.

(See page 10 for details).

Raised ponds

Raised ponds add height and interest to flat areas in the garden, terrace or patio and pre-formed liners are absolutely ideal for this use. Use formal, square shapes as raised ponds don't really lend themselves to 'curvy' schemes. You can use a variety of different materials to finish off the pond - tiles, old railway sleepers, bricks, stone, paving slabs - use your imagination or take a cue from the existing style of your garden.

A raised pond can also be part of a larger pond project, acting like a 'header' tank, feeding a cascade of water into the bigger pond.



People will always spend more time sitting by water so plan your raised pond with this in mind. You will need to build sturdy, low walls to enclose the liner and cap the top edges with tiles or wood.

Really small features can be very simple, just water and a few plants - you don't really need a pump or an electricity supply - but it won't be big enough to support fish.

A raised pond is an ideal way for disabled gardeners to get closer to their pond, fish and pond plants.

High-sided ponds are a bit more child-friendly than sunken ones, at least until the child is old enough to climb!

Maintenance is much the same for a raised pond as any other but in winter tiny ponds may freeze solid. It's a good idea, in this instance, to drain off the water and use the space to overwinter potted plants.

Try linking two small ponds together, at different heights. This way you can create a mini waterfall or spouting feature to animate the display.

The Powerjet Max-Flo pond pump provides the ultimate in solids handling technology. Designed for use with waterfalls and additional filtration, the Max-Flo passes solids up to 10mm directly to your filter. High power specification and proven reliability makes the Max-Flo the ideal choice for any non-fountain system.

MAX-FLO

For filtration and waterfalls

...the supreme choice
for low cost power in your pond



Solids handling

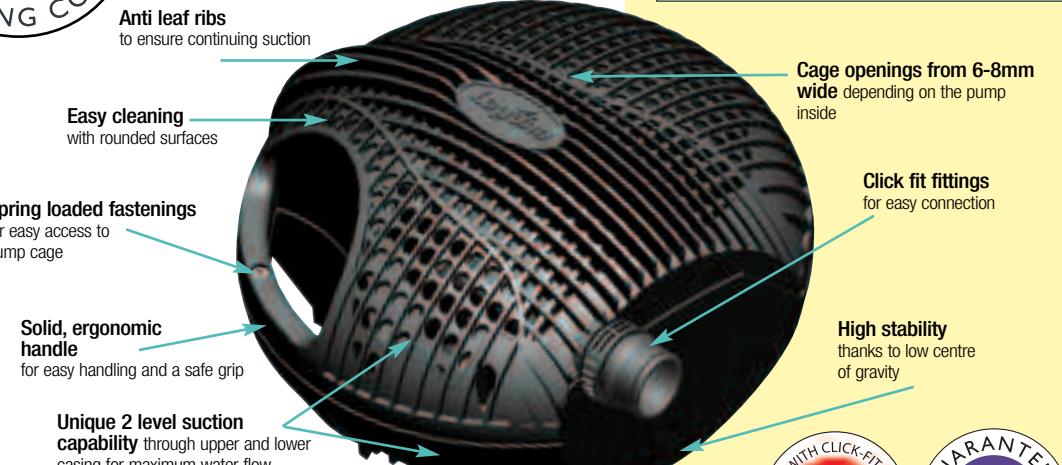
Because there is no pre-filter, large solid particles of pond debris (up to 10mm), can pass straight through the Max-Flo's outer casing to be captured by the filter. Once there, the suspended solids promote the growth of filter bacteria. The Max-Flo solids handling capability also reduces the risk of clogging, especially in summer when warm weather increases the incidence of blanketweed.

Max power for waterfalls

Max-Flo is a very powerful pump, ideal for circulating large volumes of water and creating waterfalls as it needs to 'push' water uphill to achieve a high head.

Size matters

When buying a new pump it's important to establish how high you want the water to be pumped and how wide the waterfall will be. Take into account whether you want to achieve a gentle cascade or a gushing flow. Use the information on page 11 and refer to the chart above to help you choose the right size pump for your needs.



New monster additions!..

The Max-Flo range now includes a new 16000 lph pump for larger pond installations. With its impressive performance comes 10mm solids handling and the power to circulate ponds of up to 32000 litres! Also new to the range is the Max-Flo Powerpump which is specially designed for waterfalls, pond filtration and pondless waterfall systems, giving a massive 5.6m head height! The Powerpump is also ideal for maintenance work where the transfer of water, or sumping, is needed.

TIPS...

- If you have fish, you must keep the pump running 24 hours a day, 7 days a week. Fish will suffer if water circulation is stopped, especially at night when oxygen levels are at their lowest.

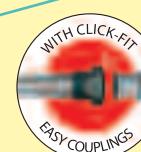
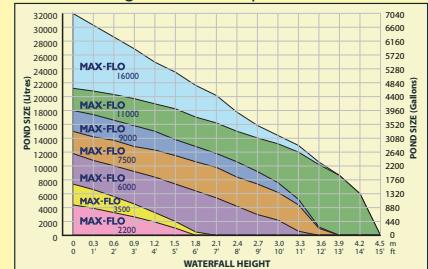
- Running costs are a major consideration when buying a pump. Don't opt for a cheaper pump or you'll get some nasty surprises with your electricity bill.

Laguna pumps are low wattage and even the largest model costs around £2.20 per week to run.

- On no account should a pump be dragged from the pond by its electrical cable. All but the smallest Laguna pumps have sturdy handles for ease of handling.

POWERJET MAX-FLO

Solids Handling Waterfall Pump





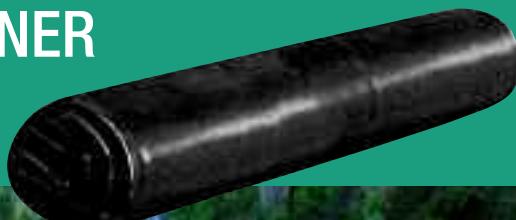
Technical data for the Powerjet MAX-FLO Pump and MAX-FLO POWERPUMP

| HEAD HEIGHT mtr | POWERJET MAX-FLO | | 4.5m MAXIMUM HEAD HEIGHT | | 4.5m MAXIMUM HEAD HEIGHT | |
|--------------------|---------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | 0 | 1.3m MAXIMUM HEAD HEIGHT | 0 | 1.3m MAXIMUM HEAD HEIGHT | 0 | 1.3m MAXIMUM HEAD HEIGHT |
| 4.2 / 13' | | | | | 3000 lph | 3800 lph |
| 3.8 / 12' | | | | | 4500 lph | 4800 lph |
| 3.4 / 11' | | | 500 lph | 400 lph | 5000 lph | 5200 lph |
| 3.0 / 10' | | 300 lph | 200 lph | 3000 lph | 3000 lph | 4400 lph |
| 2.6 / 8' | | 1000 lph | 1000 lph | 3000 lph | 3000 lph | 2300 lph |
| 2.2 / 7' | | 1500 lph | 1000 lph | 4000 lph | 3000 lph | 1900 lph |
| 2.0 / 6' | | 2000 lph | 1200 lph | 5000 lph | 3000 lph | 1600 lph |
| 1.8 / 5.9' | 0 | 2500 lph | 1800 lph | 5000 lph | 4000 lph | 13000 lph |
| 1.6 / 5.3' | 500 lph | 1000 lph | 4000 lph | 3000 lph | 3000 lph | 11200 lph |
| 1.4 / 4.6' | 3000 lph | 1000 lph | 4000 lph | 2000 lph | 3000 lph | 10000 lph |
| 1.2 / 4.0' | 1500 lph | 1000 lph | 4000 lph | 1000 lph | 3000 lph | 7000 lph |
| 1.0 / 3.3' | 1000 lph | 1000 lph | 4000 lph | 1000 lph | 3000 lph | 5000 lph |
| 0.8 / 2.6' | 500 lph | 1000 lph | 4000 lph | 1000 lph | 3000 lph | 3000 lph |
| 0.6 / 2.0' | 2000 lph | 1000 lph | 4000 lph | 1000 lph | 3000 lph | 2000 lph |
| 0.4 / 1.3' | 1000 lph | 1000 lph | 4000 lph | 1000 lph | 3000 lph | 1000 lph |
| 0.2 / 0.6' | 500 lph | 1000 lph | 4000 lph | 1000 lph | 3000 lph | 500 lph |

| POWERJET WATERFALL & FILTER PUMP | 2300 PT340 | 3300 PT342 | 6000 ELECTRONIC PT344 | 7500 ELECTRONIC PT346 | 8000 ELECTRONIC PT348 | 11000 ELECTRONIC PT350 | 13000 ELECTRONIC PT352 | POWERPUMP 38000 lph |
|-------------------------------------|---------------|---------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|------------------------|
| LPH / GPH | 11000 / 4000 | 15000 / 5500 | 34000 / 12000 | 20000 / 7000 | 30000 / 7000 | 100000 / 35000 | 100000 / 35000 | 130000 lph |
| MAXIMUM HEAD HEIGHT (METRES) | 1.8 | 1.9 | 3.5 | 3.7 | 3.7 | 4.5 | 4.5 | 3.6 |
| MAXIMUM POND VOLUME (LITRES) | 4400 | 5400 | 10400 | 15000 | 18000 | 23000 | 30000 | 42000 |
| ELECTRICAL USE | 12W | 25W | 80W | 100W | 100W | 125W | 165W | 134W |
| CORD LENGTH (M) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| SOLIDS HANDLING SIZE | 6mm | 6mm | 8mm | 8mm | 8mm | 8mm | 10mm | 10mm |
| OUTLET DIAMETER | 25mm | 25mm | 25mm | 32mm | 32mm | 32mm | 32mm | 32mm |

project3

CONSTRUCT A POND WITH A FLEXIBLE LINER



A pool liner allows maximum freedom in choice of shape and size of a pond and is ideal where a natural look is required. Cost effective and long lasting, there are a series of options depending on your budget. These range from inexpensive polythene up to quality products such as butyl rubber, which carry lifetime guarantees against sunlight degradation and other forms of wear.

Calculating the size of liner

It can be very easy to underestimate the size of the liner you require and it's worthwhile outlining the shape of your pond using string, wooden pegs or a hose-pipe to enable accurate measurements to be taken. Irrespective of the pond's shape or configuration calculating liner size follows a simple formula:

**First determine the maximum length, width and depth of the pond.
Then add double the depth to both the length and width measurements.
This will allow for the slope of the sides and shelves and the overlap needed at the edge of the pond.**

Our pond, for example, measures 2.5m x 3m and 60cm deep and requires a liner 3.7m x 4.2m which translates into the nearest sheet size as 4m x 4.5m.

Note: It's well worth buying the best quality liner. Look for those with at least a 20 year guarantee.

data

Finished size and volume:

Max width: 2.5m

Max length: 3m

Max depth: 60cm

Capacity: 4500 litres

Time required: Approx. 8 hours

Materials and equipment required:

Butyl Rubber Liner 4m x 4.5m

Fibre Underlay 4m x 4.5m

CLEARFLO 8000 Pond Kit

Tip: Design your pond with large open curves and flowing lines. Avoid narrow gullies as they will not benefit from water circulation.

Installing a pond liner

1 Use the outline of the pond marked earlier as a guide to remove any turf and all of the soil down to the first shelf level at a depth of around 23cm (9"). Level the sides sloping inwards at an angle of 20° from vertical to prevent the soil from caving in and in winter, when the pond freezes, avoid this causing damage to the liner.

2 Use a plank and spirit level to make sure the hole is level. Check for any stones or tree roots that could puncture the liner.



3 Mark out the position of your inner deeper section using string or wooden pegs as before and dig out the inner section making sure the bottom is level.

4 Spread a layer of damp sand approx. 5cm (2") thick over the bottom and the ledges and then cover with liner underlay.

5 Position liner evenly over the hole letting it warm in the sun briefly to make it more flexible and easy to handle and make sure the centre touches the base of the excavation.

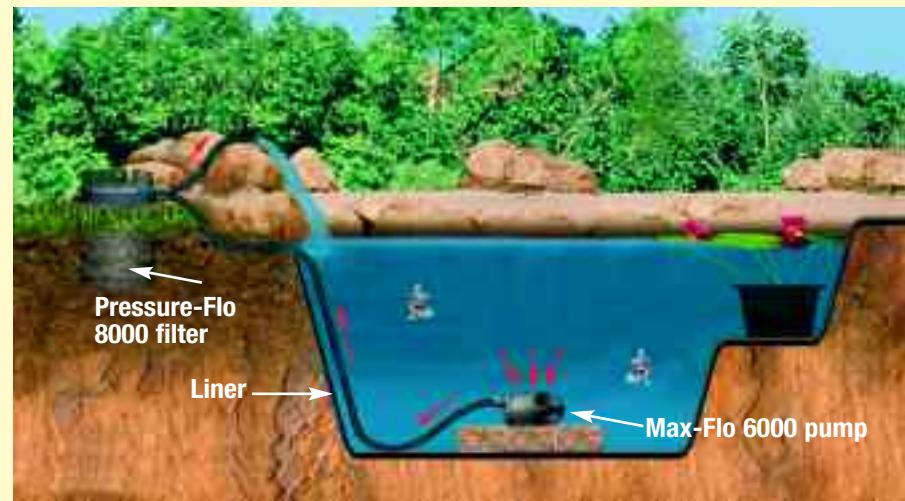
6 Place bricks or other weights around the overlap and begin to slowly fill the pond with water. The liner will stretch and mould itself to the shape of the pond and adjust the weights if necessary as the liner settles.

Be careful when filling the pond with water, if the liner is allowed to contort and stretch too much it may puncture.

7 When the pond is full, trim off any excess liner leaving an overlap of at least 15cm (6"). This surplus can be hidden beneath rocks, turf or paving slabs bedded mortar. Paving slabs should protrude slightly to hide the liner from view.

Don't forget to leave a convenient slot between the slabs for the pump cable.

Finish it off with a pump and filter system



CLEARFLO CLEAR WATER POND KITS

The **Clearflo 8000 Pond Kit** provides a powerful combination of the **Max-Flo 6000 pump** and the **Pressure-Flo 8000 UV filter** and is a great start to the care of your new pond. (See page 19 for the full range of Clearflo Kits). The sizes chosen are ideal for larger, heavily fish-stocked ponds up to 4500 litres (1000 gallons). Pressure-Flo is an extremely hard working filter which will make pond care so much easier, tackling the problems of cloudy water and preventing the harmful build-up of toxins. As well as

providing mechanical and biological filtration, Pressure-Flo also contains a UV lamp to deal with the problems of unsightly green water, leaving the pond crystal clear.

The **Max-Flo 6000 pump** is immersed in the pond and feeds water to the filter which, in turn, feeds clean water back to the pond. Alternatively, because the filter is pressurised, water can be fed up to the head of a waterfall which can be constructed with excess pool liner and excavated soil.



Make sure all the electrical components are installed correctly, if in any doubt get a professional electrician to install them. Any electricity and water combination can be lethal. Before you cover up the wiring with stones, turf and piping, take a photo, it may help in the future.

2



7



Pressure Filter

PRESSURE-FLO

beautifully simple, amazingly effective!

To the newcomer, pond filters can seem terribly technical - but in fact, the basics are surprisingly simple. As well as using a filter with a good quality pump, the key to the efficiency of filters is regular cleaning and, let's face it, you're more inclined to put that off if it's going to be a messy, wet job!

In true Laguna tradition the new **Pressure-Flo High Performance Pressurised UV Filter** has been designed for the water gardener who wants a powerful, effective filter that's easy to use and easiest-of-all to maintain.

Simple backwash system makes cleaning easy - and dry!

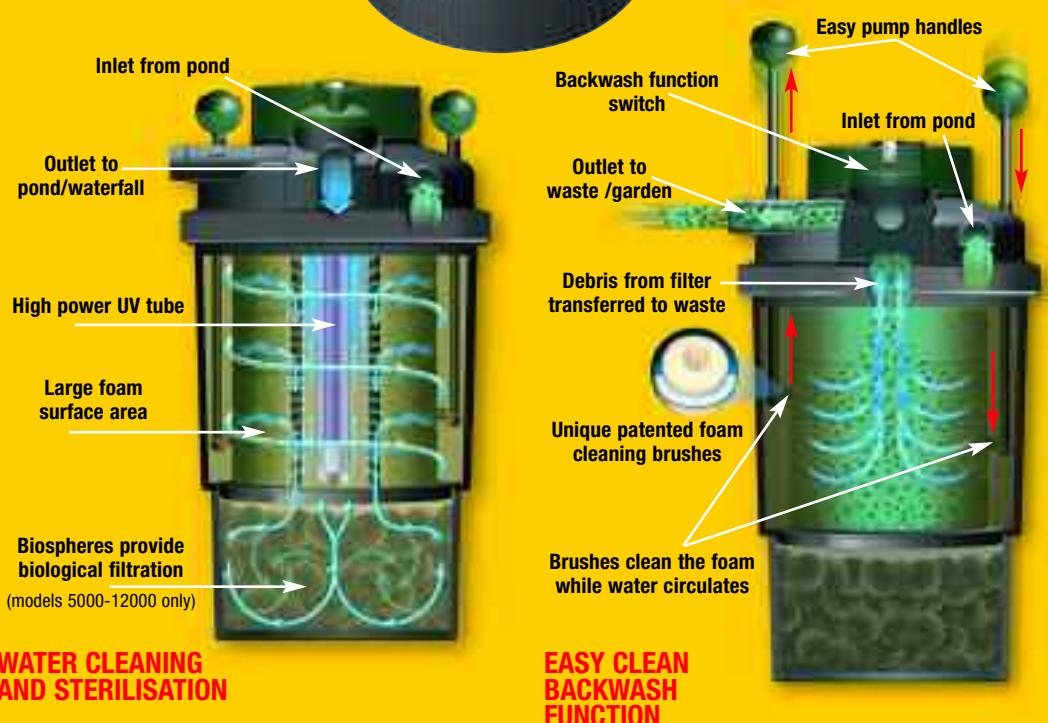
When the Pressure-Flo is ready to be cleaned, the red cleaning indicator will tell you! Simply attach a hose to the backwash outlet (using a 'click fit' connector), turn the function switch towards it before pumping the brush handles up and down to 'squeeze-clean' the foam inside. The debris inside the canister is then transferred to the backwash outlet where it can either be collected in a bucket or hosed straight to waste or onto your garden (the expelled water contains nitrates which is great plantfood!).



PRESSURE-FLO: the inside story....

Pressure-Flo is a pressurised filter containing mechanical and biological filtration. Connected to a pond pump, water is driven into the canister where it is cleaned as it flows through the mechanical and biological filter media and passes the high power UV steriliser lamp. Because it is a pressurised (closed) unit it can be positioned almost anywhere, above or partially below ground, and still provide an excellent water return to the pond.

Pressure-Flo is an ideal filter for most ponds, providing filtration, water circulation and power to waterfalls.



What do filters do?

IN A NUTSHELL - Filters are boxes or enclosed canisters containing media. Pond water is pumped into the filter where the media 'sieves out' solid wastes (mechanical filtration) and helpful, naturally occurring bacteria converts deadly unseen wastes to safer, invisible chemicals (biological filtration). Cleaned water is then returned to the pond. It's as simple as that.

UV Sterilisers

POWERCLEAR MAX



Green water is caused by suspended algal cells which are damaged as they pass a source of UV light. The damaged cells clump together which make it easier for the filter to get rid of them. Pressure-Flo contains a UV lamp inside the canister, while most external box filters need a separate steriliser unit like this LAGUNA POWERCLEAR MAX unit. Its unique spiral shaped contact chamber provides extended UV exposure to water and increases efficiency by 50%. It also kills parasites and other harmful bacteria.



Pressure-Flo's large capacity canister is easy to hide and can be buried below the waterfall level

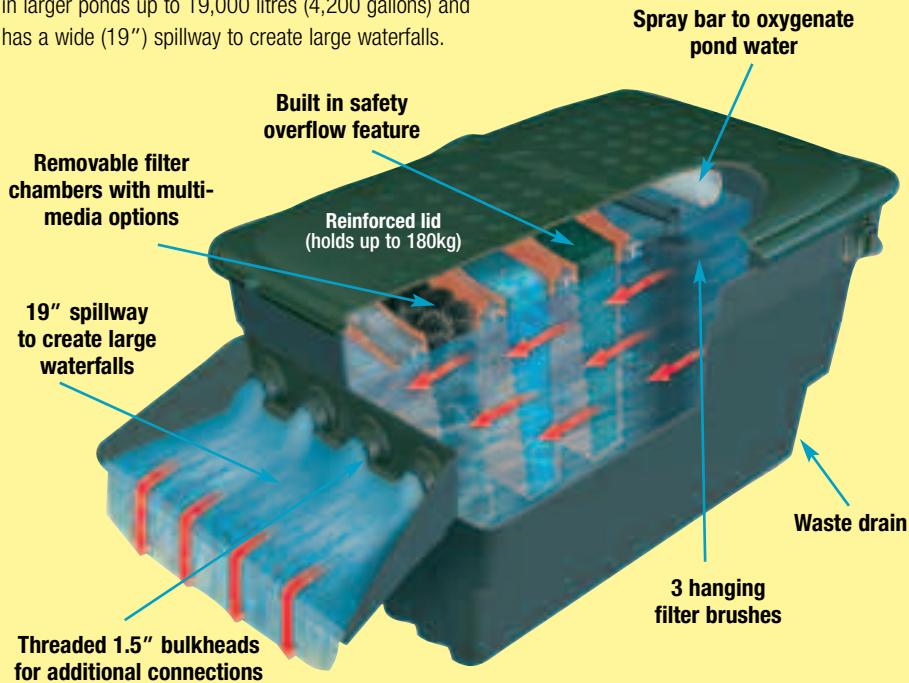


Pressure-Flo is available in 4 sizes for ponds up to 12000 litres and can be used with any pond pump. Comes with a 3 year guarantee and Laguna click fit hose connections.

External Box Filter

POWERFLO

The **Powerflo external filter** gives complete filtration in larger ponds up to 19,000 litres (4,200 gallons) and has a wide (19") spillway to create large waterfalls.



Clear Water Pond Kits

CLEARFLO

Ultimate power - ultimate filtration!

For the ultimate combination in power and performance Laguna have combined the Max-Flo solids handling pump with the Pressure-Flo UV filter. This perfect partnership ensures sustained performance and stunning water clarity, backed by a 3 year guarantee.



| CLEARFLO KIT | CLEARFLO 2500 PFKIT | CLEARFLO 5000 PFKIT | CLEARFLO 8000 PFKIT | CLEARFLO 12000 PFKIT |
|-----------------|---------------------|---------------------|---------------------|----------------------|
| PUMP INCLUDED | Max-Flo 2500 | Max-Flo 5000 | Max-Flo 8000 | Max-Flo 12000 |
| FILTER INCLUDED | Pressure-Flo 2500 | Pressure-Flo 5000 | Pressure-Flo 8000 | Pressure-Flo 12000 |
| FOR PONDS UP TO | 2500 litres | 5000 litres | 8000 litres | 12000 litres |

...about waterfishplants

The Laguna team of experts answer some of the FAQ's about pond, fish and plant care



Q Can you give me some advice on which types of test kits I need to use to adequately monitor the water quality of my pond?

A A good basic set of tests are contained in the **Laguna Master Test Kit** which includes tests for pH, ammonia, carbonate hardness, nitrite and nitrate. Regular use of these tests will give a clear indication of any deterioration in water quality.

Get the treatment!

*Low readings of pH and/or carbonate hardness are a sign of the acidic conditions usually associated with high nutrient loads and can usually be remedied by undertaking a 20% partial water change. Small adjustments can also be made using **Laguna pH Adjust-Up**, a pond treatment that safely increases pH and hardness. Ammonia and nitrite result from organic pollution and can be caused by overfeeding or dead, decomposing fish in the pond. These pollutants are very toxic and even at low concentrations fish will appear off colour and gasp at the surface. Large partial water changes of 50% or more may be required to remedy the situation coupled with reduced feeding. Ongoing control of these pollutants can also be achieved by*

*regularly dosing the pond with **Laguna Bio Booster**, a biological treatment which employs billions of beneficial bacteria to remove liquefied organic waste. Ammonia and nitrite will eventually break down into less toxic nitrate which at high levels can still be quite troublesome as it stimulates algae growth. **Laguna PhosX phosphate remover**, although primarily designed to remove phosphate, also absorbs nitrite and nitrate.*



Q I'm building a new pond and I'd like some advice on keeping it clean, clear and healthy. In the past my old pond was plagued by green water and blanket weed and the fish never seemed to be healthy.

A Whilst there are many reasons why ponds fail to remain pristine and healthy the main cause is usually poor water quality. New ponds can easily fail from the start due to contamination of the water caused by using the mains supply as a source. Although completely safe to drink, tap water often contains high levels of chlorine and chloramine and harmful heavy metals, all of which can be toxic to fish. It's important therefore to treat tap water used in a pond, both in the initial preparation and for ongoing partial water changes, with a water conditioner like Laguna Water Prep which eliminates chlorine and chloramine instantly and neutralises harmful metals.

As most ponds become more established it's necessary to have a strategy to help reduce the chances of algal build-up



and the algal blooms which cause green water. The main cause is excess nutrients in the water. These are often introduced at significant levels in the tap water used for filling the pond but other sources include soil used in pond planters, generally applied pond plant fertilisers, fish food, fish waste and any decaying dead organic matter. The most common nutrients usually found are nitrite, nitrate and phosphate. There are a number of water treatments available to reduce levels of these and it's best to start a regular course early in the season to minimise ongoing algal problems. Biological based water treatments control levels of nutrients using living beneficial bacteria. These include Laguna Bio Booster and Phosphate Control which successfully compete against algae for these nutrients and regular doses maintain healthy populations of bacteria throughout the season.

Healthy water plants also require high levels of nutrients and can be important allies in the fight against algae. Strongly growing marginal and submerged plants can soon out-compete algae but as they are gross feeders may also deplete the water of vital nutrients such as minerals and

other trace elements. Laguna Plant Gro helps water plants stay healthy by providing these micronutrients and contains no nitrates or phosphates. General plant fertilisers can also be safely applied in the pond using **Once-a-Year Fertiliser Spikes**, which slowly release a well-balanced feeding formula directly to the roots of marginal and submerged aquatic plants.

As time passes the bottom of the pond will eventually become covered in a layer of sludge comprised mostly of dead plant matter and unless this is removed will release nutrients back into the water as it decomposes. Use a sludge-removing product like **Laguna Bio Sludge Control** to reduce decaying organic solids utilising pond sludge digesting beneficial bacteria.

Laguna Barley Straw Pellets



Q Can you please recommend an eco-friendly method of preventing the water in my natural pond turning green each summer?

A There are a number of non-chemical treatments available that, although they may take a little longer to work than chemical products, are still extremely effective. Eco friendly bacterial preparations like Laguna Phosphate Control, Bio Booster and Bio Sludge Control all contain beneficial bacteria that successfully compete with algae for vital nutrients. These liquid products are just added to the pond water and regular dosing of the pond builds up billions of bacteria to re-establish a correct, desirable balance in the pond water ecosystem.

Barley straw based products like Laguna Barley Straw Pellets are also very effective, the slow release pellets employ an enzymic reaction to ensure a continuation of algae combating compounds which maintain clear pond water naturally. Fish and plant friendly this wholly natural product remains active for a month or so when placed in its reusable mesh bag and submerged in the pond.

You could also try planting water lilies and other plants, which cover the water surface. These will effectively shade the water and take up nutrients deterring the formation of the algal blooms causing green water.



Q I recently completely drained my pond and replanted before refilling with fresh water in an attempt to avoid a recurrence of last season's algae problems. Unfortunately blanket weed has quickly started to grow and what's more, the algae has become covered with a film of what looks like brown rust. How can I overcome these problems?

A The problems you are experiencing are not uncommon in many parts of the country and are most certainly due to several different types of nutrients in your pond that have encouraged your algae and silicates which have caused the brown film. Despite your seemingly good intentions regarding changing all of the water in the pond this is probably the major cause of your problems. Although water from the tap maybe of drinking quality it can often contain various compounds that are not beneficial to your pond. Mains water can contain quite high levels of nitrates and phosphates and these act as fertilisers encouraging rapid growth of algae.

Silicic acid at various levels also occurs in mains water particularly when collected as ground water or from catchment areas which are run-off from the land. This material is an essential nutrient for primitive forms of algae such as diatoms and it is these that cause the brown film.

Nitrates and phosphates can be reduced by treating the pond with a phosphate and nitrate remover, which eliminates these nutrients by trapping them in an absorbent matrix. **Laguna PhosX** is ideal for this purpose and will quickly remove all nitrates and phosphates. The PhosX beads can simply be placed in the filter or wherever water circulates.

Silicates are a more difficult problem. Whilst **Laguna PhosX** will absorb and trap silicates it is worthwhile also increasing the pH of the water with **Laguna pH Adjust-up**

to neutral (pH 7.0), or slightly above, to help eradicate the unsightly brown film. Use a **Laguna pH test kit** or **Laguna pH pond test strips** to monitor your results when adjusting the acidity with this water treatment.



The ultimate answer to the green water problem?

Q I suffer from green water in my pond all summer and I've decided to invest in a UV filter. Are there many different types and what should I be looking for?

A UV filters kill the microscopic algae that cause green water together with parasites and other harmful bacteria. These filters are equipped with a fluorescent tube within a transparent sleeve, which emits ultra violet (UV) light. This has a strong sterilising effect on the water passing by the sleeve and kills the algae and other organisms within range. Other life forms in the pond that don't pass by the sleeve are not affected so fish and plants are unharmed.

Features to look for when purchasing one of these filters is strong and sturdy construction and ease of maintenance as the tubes require regular cleaning. In addition ensure the model you choose is correctly sized for your pond as it will be only marginally effective if it is too small. The **Laguna Powerclear** range of UV filters are suitable for a large number of pond sizes with models available for ponds sized from 4500 litres (1000 gal) up to 18900 litres (4200 gal). For larger ponds two or more filters can be used together. The newly introduced **Powerclear Max** range of filters are particularly effective as they have a unique spiral chamber which spins the water around the tube to give longer UV exposure to the water (see page 19).



Laguna Powerclear Max

Q Could you please recommend a good spot treatment to clear the green water that occurs regularly each summer in my pond?

A The algal blooms in a pond that we refer to as green water, are due to biological imbalances and are caused by excess nutrients in the water, namely, nitrates, nitrites and phosphates. The most rapid means of clarifying green water would be by using a water treatment such as **Laguna Clear Fast** which quickly clears green water by flocculating the microscopic algae that are the cause, so that they clump together and sink to the bottom of the pond. This kind of treatment is effective but can only be relied upon as a temporary measure and repeated doses will need to be carried out throughout the summer.

Green water solutions

Laguna PhosX tackles the problem by trapping the phosphate together with nitrates and nitrites in a resin matrix. The resin beads are submerged in the pond in a mesh bag and provide lasting control for several months throughout the season without a repeat treatment.

Laguna Barley Straw Pellets can, similarly, provide a long-term effect and are also placed in a mesh bag and immersed in the pond. This wholly natural option controls green water by chemically inhibiting the growth of new algae cells as it decomposes. Initially there is delay whilst this form of control becomes successfully active so treatment should start early in the season.

The Ultra Violet Steriliser is perhaps by far the superior and most reliable method of control. The UV light quickly clears green water with a powerful sterilising action as the water passes by it and provided the unit of your choice has a suitable flow rate and bulb size adequate for the size of your pond it should quickly clear green water and the pond remain so continuously.

Q I am presently building a water feature consisting of a large pond and cascade. I intend filtering the pond and eventually adding outdoor lighting. Could you advise me of the best way to provide electrical power for this installation?

A The form of installation you describe calls for mains power to operate pumps, possibly a UV filter, lighting and other electrical items. The simplest method, if your pond is close to the house or other indoor power source, would be to drill a hole into the building to allow connections directly to a convenient wall socket. If the pond is more than 30m (98') away from the nearest power source or, as in your case, there are a number of appliances requiring electric power, a better approach would be to install a separate outdoor weatherproofed electrical source close to the pool.

Waterproof power sockets for outdoor use are easily obtainable for connecting individual items of equipment but a neater method for your purpose might be to install a waterproof compartment to house a distribution panel for all

connections. Any non weatherproofed items, such as transformers for pool lighting could also be housed away from the elements in the compartment and the panel connected to the mains switchboard by an armoured PVC cable with three cores each at least 4mm thick. Remember to keep a note of where cables are located to prevent accidents at a later date due to disturbing the cable whilst digging.

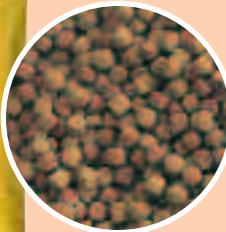
Whichever of these two methods you choose, you will need to protect the current by installing a high sensitivity (30mA) residual current device (RCD). The dangers related to electrical installations outdoors, especially where water is concerned, cannot be over-emphasised. If you are not sure of your ability as an electrician it is recommended entrusting your outdoor electrical installation to a professional who will be fully familiar with regulations and safety standards.

Goldfish losing colour?

Q The goldfish in my pond seem healthy but a number are gradually turning white in colour. Is there something wrong with these fish?

A The gold colouration of goldfish has followed many years of selected breeding of the wild species, which is a dull brown. Unfortunately the pigmentation in ornamental varieties is not altogether stable and the red colouration cells, which give them their gold colour, simply stop producing and the end result is the fish becomes white. Colour enhancing foods will not reverse this colour change once the goldfish has become white but will help to arrest the process developing.

Foods that contain carotene are good for maintaining and even enhancing red colouration and Spirulina based foods like **Laguna Wheat Germ** and **Spirulina** diet can enhance and fix red pigmentation. Since this food is also high in protein it has a high nutritional value and will bring out the best



Laguna Goldfish & Koi Food enhances the vibrant colour of all coldwater fish

colours in all types of ornamental cold water fish. Poor, unhealthy conditions can also trigger lost pigmentation and to ensure the best colours in goldfish, Koi and other ornamental fish they must have a good living environment. It has also been observed that strong red and yellow pigments develop well in waters rich in single celled algae but for most of us maintaining green water conditions in a pond to enhance these colours is hardly an acceptable option.



Q I have a small pond in which I have successfully kept goldfish for a number of years. I am now tempted to introduce Koi but would be grateful for some advice on the pitfalls?

A Many pond keepers become eager to keep Koi after enjoying some success with pond goldfish but this is quite a leap. Koi are more tender subjects than goldfish and less forgiving if not cared for correctly. A pond designed to keep Koi takes into account that they grow large and create very high levels of waste – one Koi equals about eight goldfish in terms of the waste products they create, and they also need a deeper pond to ensure their winter survival.

Essential filtration for Koi!

If your pond is of an adequate depth you might be in a position to upgrade to Koi keeping. A rough guide to stocking levels would be a rate of 1.2m (4') of fish per 4500 litres (1000 gal) which would probably mean improving your filtration. If your current filtration is adequate for your goldfish you might consider supplementing this rather than a full-scale replacement. A Laguna high performance **Pressure Flo** pressurised, combined UV and biological filter powered by a **Max-Flo** submersible pump is an easy addition to make and would be less obtrusive than an external box filter. If you require something larger it might be better to abandon using your existing filter and install a large capacity **Power Flo external box filter**. The largest capacity filter in the Power Flo range is the Filter Falls model, which provides superior mechanical and biological filtration plus can create a spectacular waterfall.



Frozen fish!

Q I lost a number of pond fish last year when the pond froze up for a week or so. They must have suffocated. How can I overcome this problem in the next winter?

A Although fish remain in a state of semi-hibernation throughout the deep winter it is vital to keep an area of the pond free from ice and if possible, maintain a continuous circulation of the water. This ensures the pond is well oxygenated and any build up of gases from the decomposition of organic material in the pond is ventilated into the air.



Q During hot spells my goldfish seem listless and stop feeding. They sometimes gasp on the surface, especially at night, and their breathing seems laboured. Once the weather cools they appear to be healthy and feed well. Don't they like warm temperatures?

A Although regarded as coldwater fish goldfish are related to carp and thrive in warm still water. The most likely reason for the distress your fish experience in hot weather is because the water is low in dissolved oxygen. As temperatures increase oxygen becomes less soluble and the oxygen saturation point of the water is less. Your goldfish, on the other hand, have a greater need of this vital gas, as they become more active at high temperatures. Their greater distress at night is probably due to the plants in the pond which add oxygen to the water during daylight hours through the process of photosynthesis but at night become oxygen consumers and add carbon dioxide to the water, instead, as a byproduct of respiration.

To best overcome your problems during hot weather you need to aerate the water in your pond to add more oxygen during these periods. The best method of aeration is by increasing water movement using a pond pump to operate a fountain or waterfall. Adding more oxygen will soon revive your fish and make them healthy and hungry in these periods.



The Laguna Floating Thermometer is an invaluable tool in monitoring day by day water temperatures particularly as pond temperature is an important factor in fish health and feeding, algae build up and overall pond health.

Q I've been told that pond goldfish can find all of the food they require naturally in the pond and there is no need to feed them a diet of dry foods. Do you agree?

A The main objective in feeding your pond goldfish dry foods like goldfish pellets and sticks is that it will ensure that they have all the nutrients they require for a fully balanced diet.

Following years of research and development Laguna has produced Goldfish and Koi Fish Food, the most advanced quality fish food available. This complete, all season, balanced diet contains many natural ingredients like fish, vegetables and cereals and is fortified with multivitamins and stabilised vitamin C. Complementing this food is **Laguna Wheat Germ** and **Spirulina Goldfish and Koi Food**, which has a high protein content and can also be used right through the season but is especially beneficial for spring and autumn feeding. All Laguna fish foods produce an enthusiastic feeding response, do not cloud the water and are scientifically formulated to meet the full nutritional requirements of all coldwater fish.



Q Now that global warming seems to be a reality, our winters have become a lot milder. Do you think the recommendation that feeding pond fish should discontinue completely from the end of October to the beginning of May needs to be revised?

A Global warming certainly has been associated with the mild winters of recent years and it could be a trend that will continue. Feeding patterns of pond fish, however, relate more to water temperatures than to dates on the calendar. Feeding should take place when water temperatures are stable above 8°C (47°F), the emphasis being on stable. Pond fish can easily become active in the midst of winter if an unusually mild spell occurs and if feeding occurs then a cold snap returns the food can linger in the gut and cause severe problems.

Feeding at the beginning and end of each season should be of a food that is readily digested such as Laguna Wheat Germ and Spirulina diet as the wheat germ content has a mild laxative effect. When temperatures increase from 8°C (47°F) up to 10°C (50°F) staple food diets like Laguna Goldfish and Koi all season diet can be offered.



Q I have great difficulty in growing marginal plants in my pond due to my Koi uprooting them as they feed in the gravel in their planting stations.

A Koi are bottom-feeding fish and like nothing better than rooting around in the pond substrate or any other convenient areas where they can search for food. They are also herbivores and naturally can cause a great deal of damage to marginal plants by feeding on newly developing roots and shoots as they emerge.

The best way to protect your pond planting is by creating some form of barrier to prevent your Koi causing this damage. Shallow marginal planting stations can be protected by building loose walls of walling stone to act as such a barrier or you can try wrapping the roots of marginals in sacking or other material to prevent the Koi access to the roots.

A novel way to solve the problem would be to use the newly introduced **Laguna Floating Planting Bags**. These are ideal for isolating marginal plants and preventing the destructive intentions of fish like Koi. They provide excellent soil containment and can be anchored in one spot with a stone and the attached lanyard provided. Water only gently seeps into these planting bags so they make ideal planting stations for both marsh plants and marginals. The standard Laguna Planting Bags design can also be useful in shallow water where the flexible material side walls can extend to the surface.

Q Can you please give me some tips regarding the summer care of plants in my fish pond?

A As most aquatic plants are vigorous in growth the main task during the summer months is to keep them contained. If there are fish in the pond it's important to retain sufficient open water to allow you to see and enjoy them and often the abundance of submerged growth can prevent this. The **Laguna Pruning Tool** is an ideal implement for this purpose as it has a scissor head for cutting pond vegetation and a pincer head allows grasping and removal of plant remains and other debris. Marginal plants should also be kept within bounds and flower dead heading and light pruning back of growth should be a regular chore through the summer months.

Plants in the water garden owe their vigour to the abundance of nutrients normally found in the pond created by the waste products of the fish and decomposing organic matter. There is no shortage of nutrients such as nitrates and phosphates but, because of the enclosed nature of a pond, some vital nutrients such as trace elements and other micronutrients are taken from the water by the plants and require renewing.

Laguna Plant Grow is formulated to provide a complete range of these nutrients ensuring healthy growth and improved resistance to disease and pests. In small ponds or where spot treatment is required the **Laguna Once-a-Year Pond Spikes** could be a better choice. These spikes deliver a measured dose of a slow release, well-balanced feeding formula and are activated by water temperature. As it says these spikes last for a whole year and can be used to treat marginals and submerged plants individually and directly to their roots.

Laguna
Pruning Tool



Laguna Plant Grow



Laguna Once-a-Year
Pond Spikes

Laguna Power-Glo
Pond Light Kit



Laguna Colour
Lenses available
in 4 colours

Q What is meant by alien plants in the water garden and why should they be of any harm?

A Simply stated, alien life forms are those that don't originate from the area where they are found. A more modern interpretation however suggests something repugnant and foreign to its surroundings. As regards garden plants, it's those types of introduced plants which are very invasive and find their way into the wild colonising areas at the expense of our natural fauna and often destroying the natural habitats of other wildlife.

There are a number of water garden plants which fall into this category, which have been withdrawn from sale including the Parrot's Feather (*Myriophyllum Proserpinacoides*). This is a plant with feathery foliage, which can be partially or totally submerged. It grows at an amazing rate, can be very invasive and often escapes from the pond and grows in the margins provided there are marshy conditions. Azolla Caroliniana (*Fairy Moss*) is also a very invasive floating fern that rapidly colonises open areas of water. Both plants have transferred to the wild and caused damage to natural waterways.

Keeping the natural countryside free from introduced invasive plants has become a burning issue recently and in Scotland a much larger list of alien plants has been compiled. This list includes the popular submerged aquatic *Lagarosiphon Major* (*Syn Elodea Crispata*), often referred to as Canadian pond weed. This is one of the best, if a little invasive, of our submerged aquatics, useful in the control of green water and providing a good spawning ground for many types of ornamental fish.

Lighting up time

Q Our mini pool is located by the patio and it would be nice to be able to enjoy the marginal planting in the evenings by installing some form of pond lighting. What would you recommend?

A If your pond is only tiny, an ideal solution would be to place a **Laguna Power-Glo Mini Pond Light** directly into the pool so that all three 10 watt halogen bulbs shine upwards through the water and silhouette your marginals in a very attractive manner. These lights are pre-wired to make installation easy and are simply connected to the 12 volt weatherproofed transformer.

A more dramatic effect can be obtained in a larger pool by installing the **Power-Glo Pond Light Kit** which consists of two powerful submersible pond lights with a range of snap-on colour lenses (amber, blue, green and red).

Laguna Power-Glo Mini
Pond Lights



SPITTERS

Garden Ornaments

Attach to any pond pump and add the soothing sounds of splashing water to garden and pond settings.

There's a variety of shapes and styles to choose from including a new range of attractive bronze effect ornaments.

Deer Scarer

41cm x 30cm (16" x 12")

Double Koi Bronze colour Spitter

41cm x 33cm (16" x 13")

Mermaid

32cm x 24.5cm
(12.6" x 9.6")

Goldfish

19cm x 20.5cm (7.5" x 8")

Blue Heron

33.5cm x 16cm
(13.2" x 6.3")

Golfer Boy

30cm x 18cm
(11.8" x 7.1")

Fire Troll

31cm x 13.5cm
(12.2" x 5.3")

Pond Net

85-152cm (33" - 60")
Unique design allows easy access to rounded pond corners. Soft netting reduces possible harm to fish.

POND NETS AND SKIMMERS

Shaped to reach all areas of a pond, all nets have telescopic handles and a net guard to reduce wear when sliding along hard edges. Larger nets have collapsible handles for easy storage.

Pond Skimmer

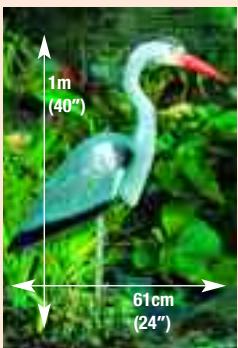
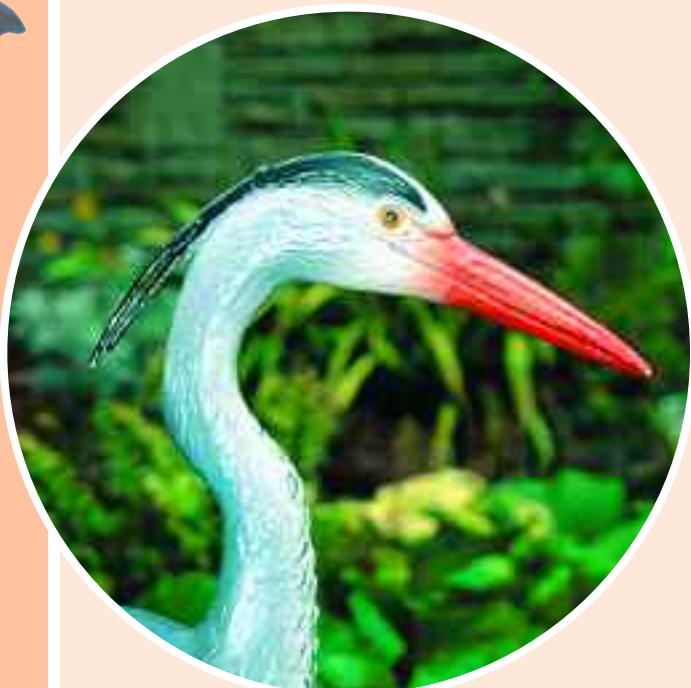
45-76cm (18" - 30")

With a telescopic handle and 'click' collapsible for easy storage

Pro Pond Net

75cm x 140cm (29.5" x 55")
Heavy duty net with extendable aluminium shaft. With fish friendly netting and tear-resistant net guard.

Useful accessories for every pondkeeper



BLUE HERON

Laguna's lifelike Blue Heron will deter the real thing from dining at your pond, as well as bring a stunning ornamental feature to the pondsides

POND VACUUM KIT

The Laguna Pond Vacuum Kit uses the power of your existing water supply to dislodge and remove all types of pond dirt and debris. It attaches via a standard click fitting to any hose pipe and includes a re-usable mesh waste collection bag.



Make light work of pond cleaning



POND WADERS

Need to get knee-deep, or further? Get these superb new Laguna waders, they'll keep you dry, clean and comfortable.

- Excellent waterproof protection
- Heavy duty neoprene
- Reinforced stitching
- Padded knees and crotch
- Seamless rubber boots
- One size fits all



The Laguna Pond Vacuum Kit is the ideal tool to clear the bottom and sides of your pond of leaves, sludge and other debris.

- Adaptor for attachment to all garden hose systems
- Power brush for pond side algae removal
- Re-usable waste collection bag
- Stop valve to turn off water supply



A water gardener's calendar

Here's a series of month-by-month topical tips to make sure your water garden keeps in good condition throughout every season of the year...

January

Pond & Equipment Care

Winters are becoming milder and there is little prospect of a pond freezing solid so it's unlikely that leaving a pump submerged will do it any harm. If the pump is supplying water to a waterfall or a biological filter, this can continue for most of the winter. However, it's worthwhile lifting the pump and giving it a good clean before relocating it in shallow depths where it only circulates the top layers of the pond water. This prevents disrupting the deeper, warmer water at the bottom of the pond where the fish are over-wintering.

The biological activity will continue in the filter if water temperatures remain above 4°C(39°F) and it's worth lagging an external box filter with layers of bubble wrap plastic to prevent freezing and installing a small thermostatically controlled heater in the filter chamber.

Water Quality

Water quality quickly deteriorates if the pond freezes over and no provision is made to vent an area of the pool surface to avoid a build up of harmful gases trapped under the ice. Consider investing in a Pond De-Icer, which helps prevent pond surfaces from completely freezing. The Laguna model is supplied with a venturi aid to provide pond aeration and allow necessary gas exchange.

Fish Care

Resist the urge to feed fish should a mild spell occur. If frosts suddenly return and chill the water food will remain undigested in the digestive tract and decompose causing internal bacterial problems.

Never vent the pond by breaking the ice with a spade or hammer as this creates shock waves, which can distress and even kill fish. If you don't have a pond heater or de-icer stand a pan of boiling water on the ice and allow it to melt through.

February

Pond & Equipment Care

February is likely to be the coldest month and precautions need to be taken to prevent the pond suffering from any severe weather conditions. Check the water level and top up to ensure the depth of the pond is at a maximum. Bypass any connections from the pump to a waterfall and turn off fountains leaving only the biological filter connected. If the pump has a variable control, turn this down to its lowest setting.

Water Quality

Keep the biological filter in operation even though it will only act as a mechanical filter at water temperatures below 4°C (39°F). Little biological activity is likely to occur but running oxygenated water from the pond through the filter will ensure the beneficial bacteria remain alive and intact.

Test the pond water occasionally during the early spring for any deterioration caused by decomposing organic matter. Any anomalies can usually be remedied by a 10% partial water change.

Fish Care

All fish are termed ectothermic meaning they don't maintain a constant body temperature. Their body temperature therefore coincides with the surrounding water. As a result they will remain in a deep torpor hibernating at the bottom of the pond during the cold conditions in this month.



Wait till temperatures stabilise before feeding fish

March

Pond & Equipment Care

During mild periods tidy up around the pond gathering up any leaves lodged in the pond netting and remove other debris which has blown into the pond. This is often a good time to clear any silt and debris which has accumulated at the bottom of the pond. The Laguna Pond Vacuum Kit uses the power of your existing water supply to dislodge and remove all types of pond dirt and debris. Don't forget to add Laguna Water Prep to the pond water after using the vacuum kit to eliminate the chlorine, chloramine and harmful heavy metals in the mains water.

Lift all submersible pumps and carry out the following maintenance procedures. Remove and clean strainer, remove and clean impeller assembly and take off any build up of limescale which otherwise can seriously affect pump performance. A pump strainer can rapidly become clogged depending on pond conditions and is best checked at weekly intervals through to the late autumn whilst the impeller assembly usually requires attention at monthly intervals.



Water Quality

Test the water quality using pH, ammonia and nitrite tests. There is sure to be a build up of decomposing matter in the pond and losses often occur with pond fish as any entering the winter period that are sickly and undernourished usually manage to survive the coldest winter months as they remain dormant. They only fail to revive when temperatures rise. Tests will show low pH and dangerously high levels of ammonia and nitrite if there are decomposing remains in the water.

Remove any dead fish or other decomposing matter and if necessary undertake a partial water change of up to 20% of the pond water.

Fish Care

Although fish may become active in mild spells it is still too early in the season for temperatures to remain stable over 8°C/46°F so refrain from feeding.





April

Pond & Equipment Care

Tidying the pond can now take place in earnest. Lift pond netting and clean and store for the following winter. Marginal and bog plants can be tidied up and, where appropriate, lifted, divided and replanted using only the vigorous outer portions. If the pond needs a thorough clean do it now before plant growth starts. Fish and plants can be found temporary accommodation whilst the pond is emptied and completely spring cleaned. A substantial accumulation of silt and organic debris is likely to need removing and can be added to the compost heap or used to top dress the bog garden.

This is a good time to re-invigorate plants by inserting Laguna Plant Fertiliser Spikes into planting baskets. These will provide balanced nutrition for pond plants throughout the season with no effect on the water quality or fish.

Water Quality

Clean biological filter bed media by flushing pond water through the filter and wash any mechanical sponge filters to clean away trapped debris. Use a biological filter booster such as Laguna Bio Booster to build up strong colonies of beneficial bacteria in the filter and dosing the pond water with Laguna Bio Sludge Control will reduce the frequency at which complete pond overhauls will be required.



Fish Care

The seasons are changing quite significantly and mild winters followed by warm springs have brought water temperatures up to 6°C – 8°C (43° – 46°F) levels by this month in previous years. Once temperatures increase to 8°C (46°F) fish can be fed sparingly with Laguna Wheat Germ and Spirulina floating food pellets.

May's going to be a busy month!



May

Pond & Equipment Care

This month water temperatures rise to 10°C/50°F or above and combined with the high light levels encourage strong bursts of growth both in submerged aquatics and in moisture loving plants in the margins and bog garden. Water lilies are really heavy feeders and it's particularly important that they receive proper nutrition without raising the nutrient level generally in the pond. Laguna Pond Spikes are designed to release fertiliser gradually to the plant through its roots and a number of these spikes, depending on the size of the water lily, can be pushed into the planting basket. The pond water can also be dosed with Laguna Plant Grow, an aquatic plant food containing micronutrients in the form of vitamins and trace elements which, because of the enclosed nature of a pond, can become easily depleted. Plant Grow contains no phosphates and nitrates and will not therefore increase the presence of algae in the pond. Regular doses every two weeks throughout the summer season will ensure water lilies and other aquatic plants will thrive.

Half hardy floating plants like Water Lettuce (*Pistia stratiotes*) and the Water Hyacinth (*Eichhornia crassipes*) are safe to put in the pond by the end of the month.

Small water features like bubble and tub fountains can now be safely assembled for the new season. It's worth starting to make early preparations to control green water, a regular problem that occurs in most ponds during the summer. Green water can be controlled using biological controls like Laguna Phosphate Control which successfully competes against algae for vital phosphate nutrients but takes a little time to build up the beneficial bacterial colonies it encourages and therefore is used best as a preventative measure. Laguna Barley Straw Pellets control green water by slowly releasing enzymes into the water to clear pond water naturally and also take a little time to establish a continuing process.

Water Quality

Water parameters need to be monitored on a regular basis using the Laguna Master Test Kit or individual test kits or strips. Ammonia, pH, nitrite and nitrate are the most important to test and should now be monitored weekly throughout the summer. Water hardness is also worth testing as low levels indicate acidic conditions associated with a high nutrient load in the pond. A 20% partial water change will usually arrest further deterioration created by excesses in the parameters tested but try to avoid a return of poor water quality conditions by removing any decomposing organic material from the pond and try not to overfeed the fish.

Fish Care

The fish will be fully active and benefit from being fed a combined diet of Laguna All-Season food together with Wheat Germ and Spirulina. There are normally sufficient natural foods to be found in an established pond at this time of the year but feeding ensures your fish have a fully balanced and nutritious diet. Feed 2 - 4 times a day but only small amounts, enough to be consumed in five minutes. Floating pellets like those provided in the Laguna foods are ideal as any surpluses can be removed easily with a hand net. Pellet size is also important and Laguna foods offer a choice of three different sizes.

June

Pond & Equipment Care

Serious algae problems can occur now that water temperatures are high and the days are long. Green water and blanket weed occurs in most ponds and can persist throughout the summer if proper controls are not in place. A UV steriliser can effectively clarify green water and does have some control over filamentous algae by killing the spores and floating material. UV systems should be regularly cleaned to be effective and bulbs replaced at the makers recommended intervals.

Water treatments are also an alternative. Laguna Clear Fast is an approved algaecide which clears green water by clumping the microscopic algae together so they sink to the bottom of the pond or are drawn into the filter. Algaecides are used as spot treatments and for a more prolonged effect a bacterial control like Laguna Phosphate Control or Laguna Barley Straw Pellets which use an enzymic action to clear pond water naturally are the answer. Laguna Phos X is another season long treatment which absorbs and traps phosphate, nitrite and nitrate and starves algae of nutrients. This is one of the best treatments to eliminate blanketweed.



Water Quality

Constant topping up of pond water can mean adding not only chemicals unsafe to fish like chlorine and chloramine but also nutrients such as nitrates and phosphates. Laguna Water Prep added at the same time will eliminate chlorine and chloramine and Laguna Phos X will take care of the nitrates and phosphates.

Fish Care

Fish actively feed at this time of the year but try to keep to a little and often rule to avoid surplus food causing pollution.

A water gardener's calendar

July

Pond & Equipment Care

Filters are fulfilling an important function at this time of year and should be checked and cleaned. Thoroughly wash mechanical filter material and flush the biological filter bed of box and pressure filters with pond water. Dose the filter bed with Laguna Bio Booster.

Strong excessive growths of marginal and submerged plants can lead to unruly top growths and extensive root systems leaving little or no open areas below or on the water surface. Cut back these growths and dose with Laguna Plant Grow to overcome any imbalances and deficiencies, which may be occurring that will inhibit ongoing growth.

Water Quality

Chemical imbalances can soon occur in the close confines of the pond and regular testing of the water parameters often reveals anomalies. If you use fertiliser on your lawn or garden borders, the run off into your pond during sudden rain storms can considerably raise nutrient levels and create acidic low pH conditions. Water washing off buildings and paths especially if new work has been undertaken may lead to heavy alkaline conditions and high pH due to run off from the uncured cement. High nutrient conditions can be reduced by undertaking a partial water change of up to 20% and acidity/alkaline levels can be corrected using Laguna pH Adjust-up and pH Adjust-down.

Fish Care

Alternating Laguna All-Season diet with Wheat Germ and Spirulina food should improve the condition of your fish which will additionally benefit from the Spirulina content which is high in proteins, essential fatty acids and trace elements as well as a natural colour enhancer. Fish will improve in condition and colouration should improve together with sheen and texture of scales.

Laguna All-Season diet will keep fish in great condition and colour!

August

Pond & Equipment Care

This can be the busiest time of the year, the pond will need to be regularly topped up to allow for evaporation, marginal planting will need attending to with dead-heading of spent flowers, and cutting back or staking long growths. Try to control carpet forming floating plants such as duckweeds and Azolla by netting off and discarding excess amounts and use a pruning tool and net to remove rampant growing oxygenating plants and spent water lily leaves and flowers.

Water Quality

Water quality can easily deteriorate during hot spells as the fish will be feeding heavily and replenishing pond evaporation losses can bring further nutrient pollutants into the pond system. Water parameter checks will give a good indication if anomalies are occurring and may indicate that a 10% - 20% partial water change is necessary.

Make sure that the filter pump is working effectively, the Max-flow pumps like those from the Laguna PowerJet range are designed to handle solids without clogging and are superior to older designs fitted with sponge strainers that may need cleaning every 4 or 5 days during this part of the season. Sponge strainers used as mechanical filters in pressure and box filters may also need attention by washing clogged material from the sponge with pond water.

Fish Care

If fish stop feeding, appear listless or are found gasping on the surface, it could be that high water temperatures have reduced the capacity of the water to absorb dissolved oxygen. This occurs mainly at night when the greenery in the pond ceases to produce oxygen through photosynthesis and oxygen levels are at their lowest. The surface of the water is where the greatest gaseous exchanges occur and adding water movement by installing a fountain or waterfall or even allowing the water from a hose to play on the pond surface will increase the area in contact with the atmosphere and reduce the problem.

September

Pond & Equipment Care

Remove debris and dead plant material from the surface of the pond with a pond skimmer net. The Laguna models have telescopic handles and are designed to allow easy access to rounded pond corners. Use a pond vacuum to remove any build-up of sludge and dead plant material on the bottom of the pond and give a dose of Laguna Bio Sludge Control to reinvigorate the bacterial colonies that minimise the build up of organic solids and pond sludge.

Water Quality

As autumn approaches some submerged and marginal plants start to die back and water quality can suffer due to increased decaying organic material in the pond. It's important to keep up water tests and not neglect partial water changes if deterioration in water quality occurs.

Fish Care

High temperatures over the past months may have encouraged infections and parasites as they develop faster in warm water. Fungus and fin rot are common diseases and parasites like anchor worm and the fish louse can appear. If fish show any outward evidence of either infections or parasites or just appear to show signs of irritation like scratching themselves or jumping, seek advice on the symptoms and treatment required.



Keep a close eye on water quality when the weather gets hot!

October

Pond & Equipment Care

Weather conditions at this time of the year can be quite unpredictable so use the water temperature in the pond as a guide to when full preparations for the autumn will be required. Whilst temperatures stay above 10°C/50°F pond conditions should remain similar to those of preceding months. It is important though to try to gauge when the first leaf fall is likely to occur and prepare by installing pond netting to avoid dead leaves fouling the pond.

Laguna Pond Netting is available in a range of sizes and comes supplied with stakes to secure the netting in place. As well as saving a lot of work in

the autumn keeping the pond free from leaf litter this sturdy netting also deters herons, cats and other potential predators.



Water Quality

No matter what precautions are taken to avoid organic pollution due to die back of aquatic plants and fallen leaves it is likely to increase. It's essential to ensure, therefore, that box and pressure filters remain effective by flushing away accumulated debris using pond water and give the pond a further dose of Laguna Bio Sludge Control and the filter Laguna Bio Booster to make certain there are ample beneficial bacteria to handle the increasing organic load.

Fish Care

Feeding can continue using both Laguna All-Season and Wheat Germ and Spirulina Pellets whilst water temperatures remain above 10°C/50°F. Once temperatures fall below this level fish can still be fed but only sparingly with Wheat Germ and Spirulina formulae until feeding ceases at 8°C/46°F.

Falling leaves increase the chances of pond pollution - give further doses of Bio Sludge Control and Bio

November

Pond & Equipment Care

Air temperatures can fall dramatically but the water remains warmer longer than air and cools more slowly. It is not unusual for air temperatures to read below 4°C(39°F) at night whilst pond water temperatures remain above 8°C/46°F throughout the whole twenty-four hour period. If you are amongst the growing numbers of pond enthusiasts that are installing pond heaters now is the time to place the heater in the bottom of the pond and switch on.

Half hardy plants like floating aquatics Water Lettuce (*Pistia stratiotes*) and Water Hyacinth (*Eichhornia crassipes*) can be lifted now and over-wintered indoors but marginals like the White Arum Lily (*Zantedeschia aethiopica*) will resist several degrees of frost if the crowns are protected by 10cm/4" of water.

Dismantle and store the pumps for water features such as bubble fountains. Take indoors any ceramic or clay pots fashioned into water features if they are not frost resistant.

Water Quality

Continue to remove dead foliage and leaves that accumulate in the water or on the pond netting. This is essential because some tree leaves contain strong toxins to prevent browsing predators and can be harmful to fish.

Fish Care

Feeding can continue using Laguna Wheat Germ and Spirulina whilst temperatures remain constant over 8°C/46°F. At lower temperatures fish will be able to depend on their body reserves through to the next spring.

It's worthwhile investing in a pond thermometer like the Hagen Floating Pond Thermometer, which can be left in the pond and allows detailed water temperature monitoring at these times of crucial change in temperature.

Get a Laguna Pond De-icer before the first frosts set in!

December

Pond & Equipment Care

Although in recent years this month appears to be more characteristic of autumn conditions than deep winter, water temperatures are slowly dropping and it's a quiet time of the year in the pond. If you have installed a pond heater you will be aiming to keep temperatures in the bottom of the pond above 4°C/39°F. Most pond heaters are not designed to heat the whole of the pond, some merely maintain a hole if ice forms releasing any harmful gases which otherwise would be trapped below the ice.

Water Quality

The rate of decomposition of any organic material in the pond will be slowing down and water quality should remain stable provided there are no unexpected fish deaths. A daily inspection of the pond should reveal any such problems.



Fish Care

Whilst warm water normally rises to the surface, at water temperatures below 4°C/39°F the reverse of this principle occurs and cold water rises to the surface and warm water settles down in the lower depths.

Fish that were in good condition earlier in the autumn should be perfectly happy as they slowly lapse into a torpid hibernating state in the deepest part of the pond.



POWERFLO MAX-FLO

POWERPUMP

specially designed for waterfalls, pond filtration and pondless waterfall systems. Also ideal as a sump pump

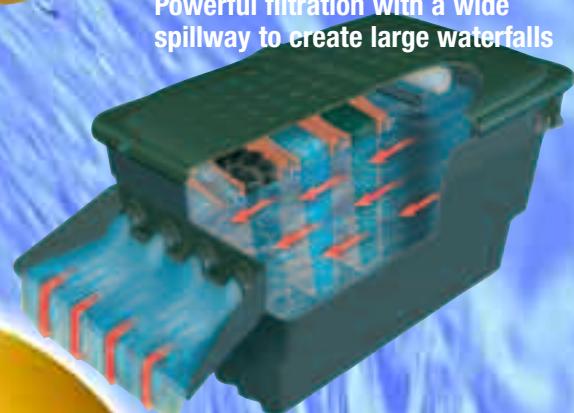


NEW

POWERFLO

FILTER FALLS

Powerful filtration with a wide spillway to create large waterfalls



PRESSURE-FLO

PRESSURISED UV FILTER

High performance filter with easy backwash feature

POWERJET MAX-FLO

FILTER & WATERFALL PUMP

Powerful pump for filters and impressive waterfalls - now with a new monster 16000lph pump

NEW
16000
pump



POWERJET FREE-FLO

FOUNTAIN & WATERFALL PUMP

Versatile fountain pump for ponds, water features and ornaments



All Laguna pond equipment is supplied with click fit hose connections for easy use



Laguna pumps are designed to operate at low, low running costs - even the largest pump costs little more to run than a 100 watt light bulb

 HAGEN.
www.hagen.com

Distributed by:
ROLF C. HAGEN (UK) LTD, CALIFORNIA DRIVE, WHITWOOD IND. ESTATE, CASTLEFORD,
W. YORKS WF10 5QH.

S2170

High performance ✓
Low running costs ✓
Simple to operate ✓

Beautifully simple water gardening

