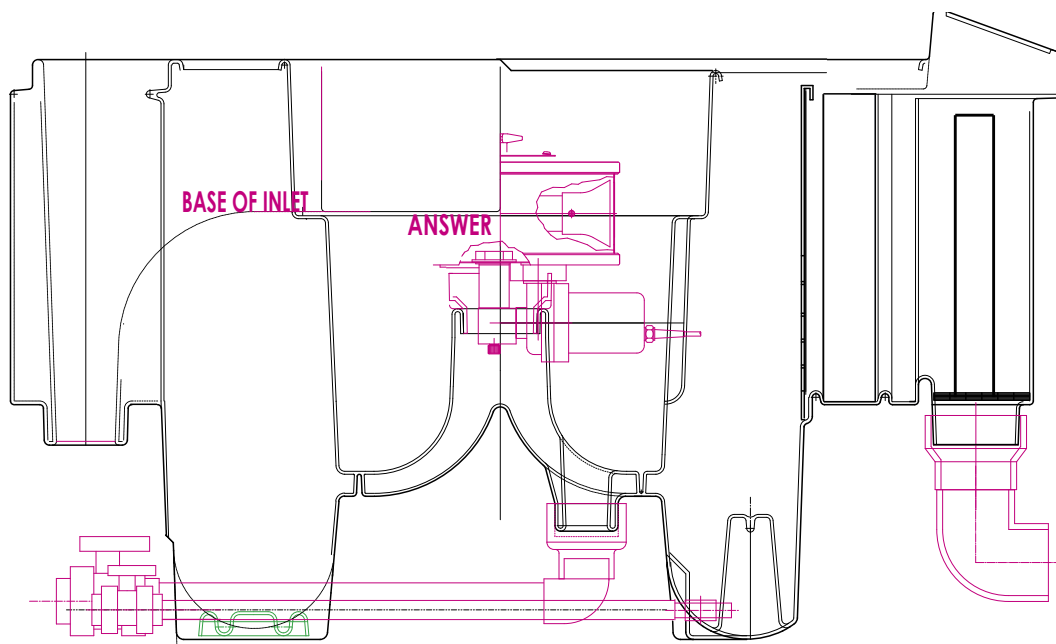


nexus³⁰⁰

FILTRATION system

P U M P F E D



Installation & Operating Instructions

Note: Do not attempt to operate this unit before reading the manual thoroughly

Manufactured by Evolution Aqua Ltd.

Evolution House

Kellett Close

Wigan WN5 0LP

Tel: +44 (0) 1942 216554

Fax: +44 (0) 1942 216562

Web: www.evolutionaqua.com

E-mail: info@evolutionaqua.com



Thank you for purchasing the 'Nexus 300' Filtration System; we are sure you will be very pleased with its results.

You should have already decided whether your filter system will be pump or gravity fed. THIS INSTRUCTION MANUAL IS ONLY FOR PUMP FED SYSTEMS. If you decide to install it as a gravity fed system, please contact Evolution Aqua to request a gravity fed manual and any additional conversion kits.

It is important to read this installation manual thoroughly before attempting to position & install your Nexus 300 filter.

Fig. 1



The 'Nexus 300' filtration unit has been designed on the principles of minimum maintenance, high performance and a compact footprint. This design delivers optimum water quality by using the Kaldnes Moving Bed™ process.

Basic Operation:

This section briefly explains the basic operation of the Nexus 300 Filtration System. Water is delivered to the inlet of the filter and enters chamber A (fig. 12). This chamber is the main mechanical stage of the filter. A standard Nexus 300 contains a large cylindrical foam block (fig. 5) or it can be fitted with an 'Answer'. The majority of solids and debris are stopped in chamber A (fig. 12) and are sumped to waste via the 1.5" ball valve provided. The water then passes to chamber B containing the Kaldnes K1 media where the biological filtration takes place. The air ring at the base of chamber B constantly agitates the media, the water passes from chamber B into chamber C, through the foam block which removes final small particles before the water finally returns to the pond. ***This acts as a very efficient fine particle filter, which is simple to maintain.***

Follow these instructions carefully to ensure your filter perform correctly providing a perfect environment for your Koi.



Fig. 2



Fig. 3



Fig. 4



Fig. 4a



Fig. 5

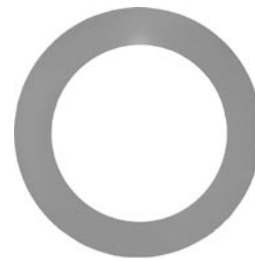


Fig. 6

On opening your Nexus you will find the following;

1. Nexus main body (fig. 1).
2. 100 litres Kaldnes K1 bio media (fig. 2).
3. Two rubber connecting adapters already installed on both the inlet and outlet of the Nexus main body.
4. A 1.5" pressure ball valve and a 0.75" pressure ball valve are pre-fitted on the Nexus 300 and can be connected to the waste connection points.
5. One adjustable stand pipe (fig. 3).
6. One foam block comes fitted into the outlet behind the stainless steel grill. (fig. 4 & 4a).
7. One cylindrical foam block comes fitted to the central cone in the inner chamber (A) (fig. 5).
8. One air ring already installed with connection pipe for the air pump.



Fig 7.
Ball valves

The following optional items may be in your Nexus 300 box if purchased separately;

1. Orifice plate for 'the Answer' (fig. 6).
2. The Answer.
3. Single piece lid.
4. Additional Kaldnes K1 bio media is available in 50 litre bags.

Nexus 300 Filtration System Flow Rates & Pond Sizes

One of the factors that can have a significant influence on the general parameters of our ponds, is turn over rate. This is the time that it takes for the total volume of the pond to pass through the filter system once. On bigger ponds a turn over of every 2 to 3 hours is found to be best.

Nexus 300 Specification

Nexus 300 - Standard:

Maximum flow rate: 13,000 litres per hour (2,859 UK GPH or 57.240 US GPM).

Nexus 300 - Answer 325:

Maximum flow rate: 10,000 litres per hour (2,200 UK GPH or 44 US GPM).

Nexus 300 - Answer 410:

Maximum flow rate: 13,000 litres per hour (2,859 UK GPH or 57.240 US GPM).

Dimensions

Figures 8 and 9 show useful dimensions to assist with you with our installation. We suggest that you carefully consider your pipe work, accessibility of the waste valves etc.. before deciding on the final location of the Nexus unit.

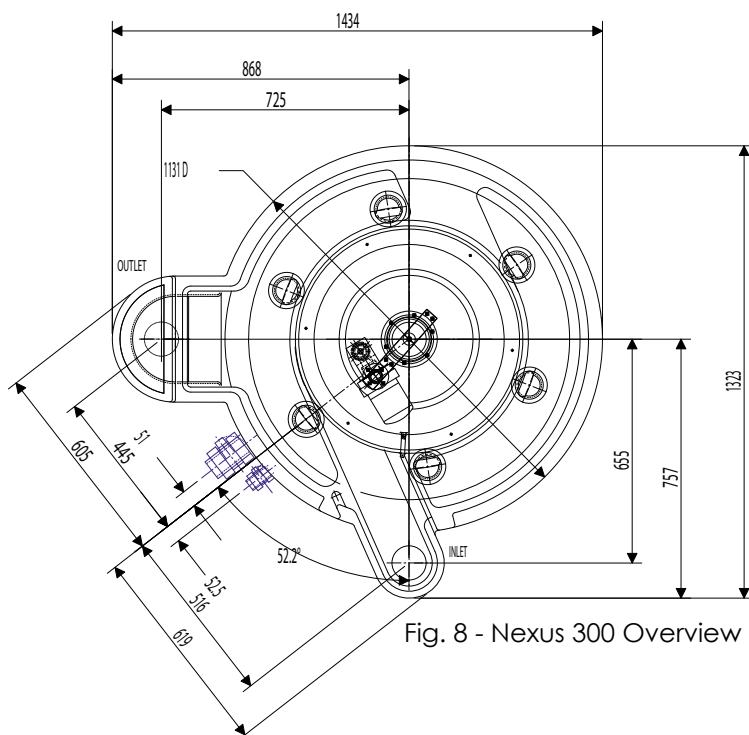


Fig. 8 - Nexus 300 Overview

Fig. 9 - Nexus 300 Cross Section

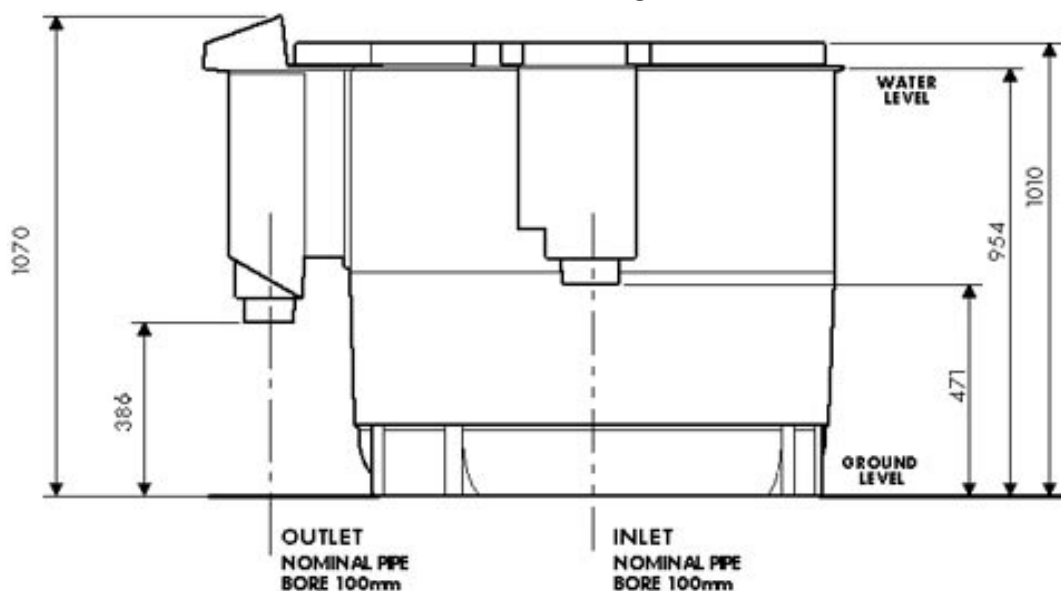
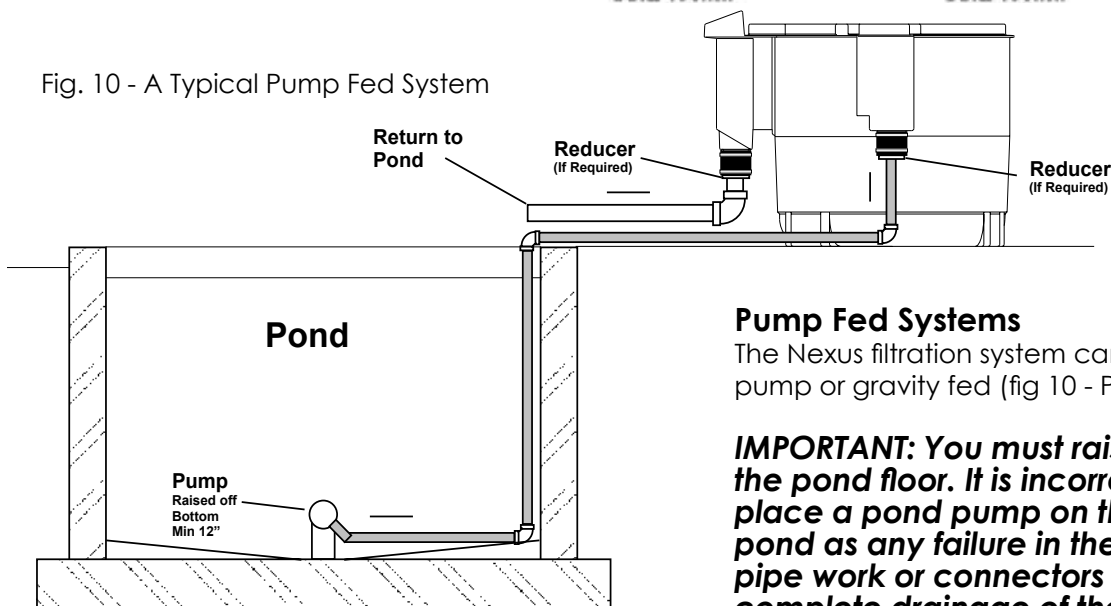


Fig. 10 - A Typical Pump Fed System



Pump Fed Systems

The Nexus filtration system can be used in two ways, pump or gravity fed (fig 10 - Pump Fed).

IMPORTANT: You must raise your pump off the pond floor. It is incorrect practice to place a pond pump on the base of any pond as any failure in the filtration system, pipe work or connectors could lead to complete drainage of the pond. Therefore leave a sufficient gap (min. 12") for your Koi.

INSTALLATION SECTION

We recommend that you read all the following sections, then select the appropriate installation section.

- Preparation
- Installation Equipment
- Pump Fed Installation Section

Preparation

A base of level solid ground is required. It should be a minimum of 1.2 m x 1.0 m, to allow easy access to valves and for maintenance purposes.

Important

The Nexus filter needs to be equally supported on the three pairs of feet which are located under the vessel. This is to prevent possible distortion when it is full of water.

The best option for this would be a level 100 mm thick concrete plinth. Although decking, paving slabs or gravel would be sufficient as long as the Nexus 300 sits level and is not allowed to deflect under the weight of the water.

The unit can be any height above the surface water level (subject to the maximum performance of your chosen pump being able to deliver enough flow), allowing adequate gravity return to the pond. However, care needs to be taken that the top of the Nexus is at least 500 mm higher than the discharge point of the gravity return pipe into the pond or waterfall etc....

Installation Equipment required or recommended:-

1. **Pond Pump**, with a maximum actual flow rate of 13,000 litres per hour / 2,859 UK gallons per hour. The actual flow rate is dependent on the length and the amount of bends within the pipe work.
2. **Air pump** to power the Kaldnes K1 Moving Bed, see specifications for size of pump required on page 5.
3. **Length of hose or braided pipe** (10 mm inner diameter) to connect the air pump to the already positioned / supplied air ring. The length of this depends on the distance between the air pump and the Nexus.
4. **Ensure that the air pump is sited well above water level to prevent water siphoning back from the filter into the air pump due to power cuts or maintenance shut downs.**
5. Pipe work from the unit's waste valves to the intended discharge point. This can be rigid pipe work or a simple flexible hose.

8. A PVC reducer to connect your circulating pump or pipe to the rubber connector supplied with your Nexus 300 (the size of which will depend on your choice of pipe work to and from the pond itself).
9. Care must be taken when connecting the waste valves (fig. 11 for the suggested method) to your chosen point of discharge that the inner chamber of the Nexus will drain completely. An option is to fit a small solid handling pump on the waste water pipe work after the discharge valve.



Fig. 11

Pump Fed Installation Section

Important: Essential First Action

In any pump fed installation the first step is to install the adjustable standpipe (see fig. 12a) into the outlet spigot on the Nexus 300 unit. **THIS MUST BE DONE BEFORE ANY ADDITIONAL INSTALLATION WORK IS CARRIED OUT, OR KALDNES K1 MEDIA IS LOADED INTO CHAMBER C.**

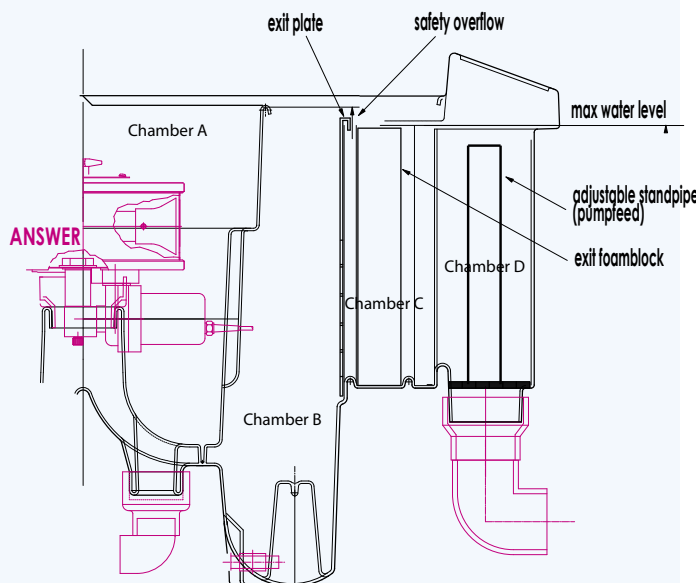


Fig. 12



Fig. 12a Adjustable Standpipe



Fig. 12b Overflow grill

Step 1. Carefully remove the top two bolts and locknuts from the stainless outlet plate. Gently pull the plate forward and firmly push the standpipe in place. Replace the two nuts and bolts being careful not to drop the locknuts into the biological chamber. The adjustable standpipe supplied (Fig 3 & 12a) must be fitted into the inside of the Nexus 300

outlet chamber behind the stainless steel grill. The pipe firmly pushes into the Nexus 300 outlet spigot. The adjustable sliding collar at the top of this pipe is used to ensure a good level of water is maintained within the biological chamber. (The optimum height when running is 75 mm / 100 mm below the top of the central chamber). If this outlet pipe is not fitted the water level within the biological chamber will be insufficient to allow full use of the bio media.

Figure 12 illustrates a typical pump fed installation. When selecting the position of your Nexus 300 filter pump fed installation, carefully consider the following factors:

The unit can be any height above the surface water level, allowing adequate gravity return to the pond (subject to the maximum performance of your chosen pump). However, care needs to be taken that the top of the Nexus is at least 500 mm higher than the discharge point of the gravity return pipe into the pond (assuming that the gravity return pipe discharges above the surface of the pond). If the gravity return pipe discharges below the surface of the pond, please allow 500 mm from the exit of the Nexus to the surface of the pond).

The gravity return pipe work from the exit point of the Nexus to the pond needs to be a minimum of 75 mm (internal diameter) and should have no restrictions. Great care should also be taken to ensure that no air locks are created within the gravity return pipe work. The pipe work from the pond pump to the inlet of the Nexus will need to be connected to the rubber 110 mm connecting adapter that is fitted to the inlet of the Nexus. A PVC reducer is required, the size of which depends on the size of the pipe you have chosen to connect the pump to the Nexus. The 75 mm gravity return pipe work will need to be connected to the rubber adapter on the exit point of the Nexus. This pipe is then extended/ returned to the pond or waterfall as required.



Fig. 13

Care must be taken to provide the gravity return pipe work with sufficient fall and no air locks as explained above.

Foam Installation:

Place the cylindrical foam block on the centre pipe, as shown in fig.14. Then push the foam down until it can go no further.



Fig. 14

Air Pump Installation

The size of air pump required will depend on the amount of K1 media used.

Air Pump Size

40 litres per min
80 litres per min
120 litres per min

Capacity of K1 media

100 litres of K1 media.
100-150 litres of K1 media.
150-200 litres of K1 media.

The air pump is connected using a pipe (10 mm inner diameter) to the air ring inlet which is positioned on the outside of the Nexus). It is recommended to position the air pump higher than the surface water level in the Nexus to prevent water flowing back into the air pump when it is switched off (see fig. 15).



Fig. 15

'Answer' Installation

When installing 'the Answer', the rubber boot fitted to 'the Answer' has to be removed (see fig. 16).

Remove the Answer's rubber boot with a screw driver (fig. 16) and carefully place 'the Answer' in the Nexus 300 with the pump located in the recess provided (fig. 17). **The Answer will then push fit onto the black centre adapter (see fig. 16).**



Fig. 16



Fig. 17

Orifice Plate Installation

In order to install an Answer within the Nexus 300 you must use a Nexus 300 orifice plate. Fitting the orifice plate greatly enhances 'the Answer's' performance by allowing settlement of debris to occur much more efficiently. Place the orifice plate into the inside of chamber A (fig. 18) until it sits on the rim.



Fig. 18

Getting Started.

When all the connections have been made the Nexus filter may be filled from the pond and the air pump switched on. The K1 media will not attain neutral buoyancy completely to begin with. Most of the media floats, which is normal. In existing mature pond water the media may start to circulate fully in as little as 2 - 3 hours. In a newly filled and stocked pond this full movement may take up to a week to occur. Either way a constant and even circulation should be achieved throughout the chamber. (For more information about this please read the Kaldnes K1 media section).

NEXUS 300 MAINTENANCE - PUMP FED

Daily Maintenance

In **high** feeding situations, the large waste valve (fig. 11) may be opened daily for 15 seconds. This will remove the bulk of the waste from the centre chamber easily. This does not require switching off of the air pump or circulating pump etc.

NB: This does not replace the need for weekly maintenance below.

Weekly Maintenance

On the following pages are the recommended maintenance procedures for the Nexus 300 filtration system. Follow the maintenance procedure appropriate to your system. We suggest that these are carried out weekly. The main benefit of using the Nexus means less maintenance is required. However this maintenance routine will vary from pond to pond, depending on stocking levels, blanket weed etc..

IMPORTANT:
PLEASE TURN OFF THE AIR PUMP BEFORE ANY WEEKLY MAINTENANCE IS UNDERTAKEN.

PUMP FED WEEKLY MAINTENANCE

Nexus 300, Pump Fed with Foam

1. Turn off the air pump.
2. Turn off the pond pump, UV's, heaters etc..
3. Open large waste valve fig. 11 to allow the inner chamber A to empty completely. This will have had the effect of partially emptying chambers B, C & D back through the foam block into chamber A. This process will begin cleaning the foam from the inside out.
4. With the foam block still in position use a hose pipe or power washer to wash the block from above. This may take up to 5 minutes or until the water runs clear from the bottom of the foam block. Alternatively the foam may be removed for cleaning if preferred and then replaced when clean. Allow the inner chamber to empty of all washing water.
5. Close the large centre chamber A waste valve.
6. Close the 3/4" drain valve (chamber B drain valve).
7. Switch on the air pump.
8. Switch on the pond pump, UV's, heaters etc..
9. Top up the pond as required to the correct pond level.

Nexus 300, Pump Fed with 'the Answer'

1. Turn off the air pump.
2. Turn off the pond pump, UV's, heaters etc..
3. Switch off 'the Answer' pump.
4. Open the large waste valve fig. 11 to allow the inner chamber A to empty completely. This will have had the effect of partially emptying chambers B, C & D back through 'the Answer' into chamber A.
5. If required clean 'the Answer' (see the Answer manual).
6. If necessary remove the foam block from the outlet chamber, wash thoroughly and replace.
7. Close the large centre chamber A waste valve.
8. Close the 3/4" drain valve (chamber B drain valve).
9. Switch on the air pump.
10. Bleed 'the Answer' (as per 'the Answer' manual) and switch on 'the Answer' pump.
11. Top up pond as required to correct pond level.

Kaldnes Moving Bed™ Process

Kaldnes Moving Bed™ process, has been scientifically tried and tested in fish farming and waste treatment for over 10 years.

Developed by Professor Halvard Ødergard at Trondheim University of Science and Technology the Kaldnes Moving Bed™ bio film process has been designed specifically to create the most effective



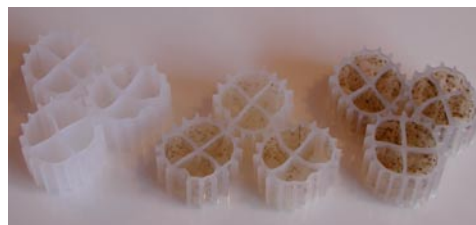
environment for the nitrification process to take place. The media is engineered in a wheel shape and is slightly positively buoyant, allowing a small amount of water flow (created by adding air to the process) to circulate the media throughout the vessel.

Oxygen and food (ammonia and nitrite) gives the bacteria the means to grow, whilst the Kaldnes media provides maximum surface area for the bacteria to colonise and produce bio film. It is this process, which removes harmful ammonia and nitrite from the water. As the Kaldnes media chaotically circulates within the bio tank, it causes old dead bacteria/bio film on the outside, to be removed making space for new younger heavier feeding bacteria/bio film to colonise. Within the wheel, is a protected surface, which enables colonies of bacteria to naturally follow their life cycle, maturing and dying, in turn fuelling the latter stages of nitrification conversion process. It also assists in the breakdown of any small particles passing through from the mechanical stage. Therefore, the Kaldnes media maintains both a young biofilm and a maturing bio film providing a more consistent filter performance, whilst improving water quality, encouraging healthier Koi and aiding in reducing green water and blanket weed. Due to chaotic movement of Kaldnes K1 media, the process is self-cleaning and requires no maintenance. This allows the filter to reach optimum effectiveness without the disturbance of periodic maintenance, avoiding unnecessary loss of bacteria within the filter preventing high levels of ammonia and nitrite within the water. The other major benefit of Kaldnes K1 media is the huge active surface area available for the bacteria to grow on compared to other types of media. This feature allows for smaller filter design, e.g. the Nexus, whilst providing increased biological efficiency.

How it all works

Maturing the Kaldnes bio-media is important. The maturing process needs monitoring closely to ensure that levels of pH, ammonia and nitrite are within acceptable parameters for your fish. Usually, within 2 - 10 weeks the filter will be effective and the parameters should be within acceptable levels, depending on temperature and stocking levels. Bacteria grows faster in warm water. E.g. a pond at 5 Celsius will have a very low bacteria count and a slow growth rate. Therefore temperature is important in reducing the time for a bacteria colony to develop.

Bacteria require food to live otherwise it will starve. The food for bacteria is liquid and solid waste produced by fish. Therefore higher stocking levels will provide more nutrients for the bacteria and help it



Illustrated above are the different stages of maturity that will be experienced during the first few months.

to establish a colony. The liquid waste is called ammonia and is the food for the bacteria. Solid waste is broken down to ammonia, but a Koi keeper is better off removing the solid waste through settlement. The fitting of an Answer filter into your Nexus 300 filter will improve this dramatically.



The ammonia reducing bacteria, nitroso-monas, produce an end product called nitrite, which is again potentially toxic to fish. This is controlled through establishing a large nitrobacter population to convert nitrite to the end product, nitrate. The effect of nitrate is less harmful than both ammonia and nitrite. However if nitrate levels are allowed to rise above 50 mg/L pond keepers may start to experience green water and blanket weed. The Kaldnes Moving Bed Process™ is very useful in controlling these levels as it has the highest removal rate of any submerged media on the market.

Nexus Guarantee

This product comes with a 2 year warranty, which is valid from date of purchase. Proof of purchase will be required.

Any unauthorised repairs, modifications or alterations to this unit will invalidate the warranty.

Evolution Aqua accepts no responsibility or liability due to accident, improper installation or misuse. Liability is limited to replacement of the defective parts. This guarantee is not transferable. It does not affect your statutory rights.

If there is a warranty issue please contact Evolution Aqua's Technical Service department.

Claims for transport damage shall only be recognized if the damage is reported within 24 hours after delivery and confirmed by the carrier.

Evolution Aqua reserve the right to change this product specification without prior notice.

All products designed to ISO 9001 and manufactured to ISO 9000.



Distributed by:

Evolution Aqua Ltd
Evolution House, Kellett Close, Wigan, WN5 0LP
United Kingdom.

UK
Sales: +44 (0) 1942 219 898
Technical: +44 (0) 1942 219872
e-mail: sales@evolutionaqua.com

Europe
Sales: +31 (0) 299 477 729
e-mail: infoeurope@evolutionaqua.com

USA & Canada
Sales: +1 (631) 351 4555
e-mail: salesusa@evolutionaqua.com

Asia
Sales: +65 (6794) 1663
e-mail: infoasia@evolutionaqua.com

www.evolutionaqua.com

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