

nexus Eazy

FILTRATION system

200 / 300

Installation and Instruction Manual



Evolution House
4-6 Kellet Close
Wigan, WN5 0LP
United Kingdom
Ph: +44 (0) 1942 216 554
Fax: +44 (0) 1942 216 562
Web: www.evolutionaqua.com
Email: info@evolutionaqua.com

EVOLUTION
AQUA

TABLE OF CONTENTS

	Page
Introduction	1
Explanation	2
Installation	3
Gravity Fed Installation	4
Pump Fed Installation	6
Waste Pipe Installation	7
Getting Started	8
Cleaning	9
Kaldnes Biomedia	11
Appendix A	12
Dimensions	13

Thank you for purchasing your Nexus Eazy™ filter. We are sure you will be delighted with its performance. The Nexus System is supplied gravity fed, though is easily adapted to become a pump fed unit. For pump fed installations refer to the relevant pages of this brochure and read thoroughly before installation.

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

Your Nexus Pack should contain:

Figure	Part No	Description
1.1	NPC.125	4"-4" (110-125mm) rubber boot
1.2	NAC.1004	4"-2" (122-68mm) rubber boot
1.3	825-50-50	1.5" (50mm) single union ball valve
1.4	1200-400/100-400	inlet slide plate (200/300)
1.5	5000-707	safety outlet grill
1.6	MEDIA30L / 45L	bag Kaldnes K1 for Eazy (30L - 200/ 45L - 300)
1.7	MEDIA50L	50L bag Kaldnes K1 (1x Nexus 200, 2x for Nexus 300)
1.8	5000-329	Eazy isolation pipe



Fig 1.1



Fig 1.2.



Fig 1.3

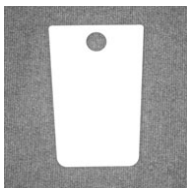


Fig 1.4

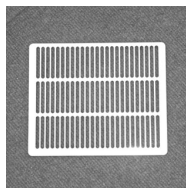


Fig 1.5



Fig 1.6



Fig 1.7

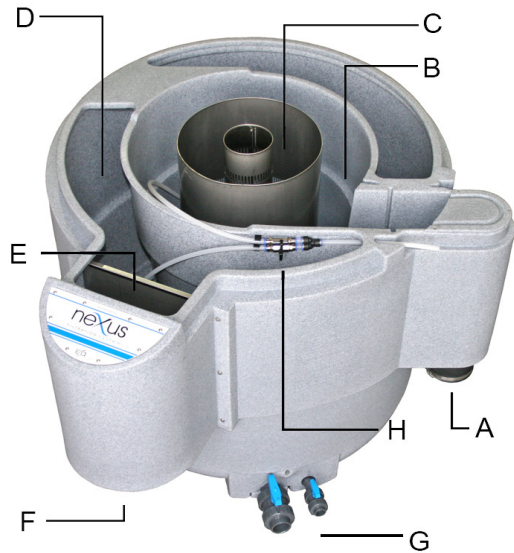


Fig 1.8

EXPLANATION

Basic Operation Nexus:

The Nexus filter is simple yet innovative. Water enters the Nexus via inlet (A) Fig 2 into the inner chamber (B) which works as a basic vortex allowing larger solids to settle out. The water then passes through the Eazy (C) where the finer particles are removed and the first step in biological treatment takes place. From the Eazy the water passes into the outer chamber (D) where the remainder of the biological treatment takes place using the Kaldnes Moving Bed Process.



The water then passes through the grill into the Outlet Chamber (E), where it is returned to the pond through the outlet (F). All waste is discharged through the waste valves (G). The Eazy is cleaned by diverting the air from the Outside chamber to the Eazy using the valve (H).

Basic Operation Eazy :

Fig 2

The Eazy™ is a stainless steel vessel containing a set volume of static K1 media (30L for Nexus 200, 45L for Nexus 300) which is located within the centre chamber of the Nexus. After water enters the Nexus it rotates around the Eazy in the centre chamber with a downward motion allowing the larger solids to settle to the bottom of the chamber before passing through the slots of the Eazy into the static K1 media. After passing through these slots the water flows upwards through the K1 media where mechanical filtration takes place as small particles are caught within the K1 media. The water then flows over the slots in the centre column and into the outer chamber.

Basic Operation Outer Chamber:

The outer chamber of the Nexus contains the Kaldnes Moving Bed Process this is where the final stage of biological treatment occurs. Biological breakdown occurs through different strains of bacteria living on the K1 media. These bacteria consume Ammonia and Nitrite transforming them into harmless Nitrate. The amount of Ammonia and Nitrite produced in the pond is dependant on feed rates and the type of food. For higher feed rates additional K1 media should be added into the outer chamber (250g/day of average protein content food will be broken down by 50L of K1).

Nexus Setup

This section should be thoroughly read before proceeding with any installation.

Checks to do BEFORE Installation

Check the jubilee clips on the rubber boots are tightened to prevent leaks

Check that the collars on the waste valves are tight

(This is required as some loosening may have occurred in transit)

Preparation

Important:

A solid and level base/ground is required. It should be a minimum of 1.2m x 1.0m, to allow easy access to valves and for maintenance purposes. The Nexus filter needs to be equally supported, 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 well packed gravel would be sufficient as long as the Nexus sits level and is not allowed to deflect under the weight of the water.

The Airpump should always be situated well above water level to prevent water siphoning back into the pump should a power failure occur.

Installation Equipment required

1. Pond Pump, with a maximum actual (taking into account the head loss) flowrate no more than your Nexus model allows see Appendix A on page 12 for specs.
2. Air Pump to power the Kaldnes K1 Moving Bed, see Appendix A on page 12 for specification of pump size.
3. Length of hose or braided pipe (10 mm inner diameter) to connect the air pump to the Nexus
4. A valve should be fitted before and after the Nexus so that the Nexus can be isolated if required. On Gravity Fed systems this should be a 4 inch (110mm) ball valve located on the inlet side of the Nexus close to your filter house wall.
5. A reducer to connect the 2 inch Nexus rubber boot to your pump.
6. It is highly recommended that a suitably sized UV unit is installed with the Nexus for removal of single celled algae. UV systems are always installed after the pump, so on Gravity fed Nexus the UV is after the Nexus and prior to the Nexus on Pump fed installations.
7. It is also highly recommended that you fit an overflow pipe/drain to your pond.

The Nexus can be installed in either of two ways Gravity Fed or Pump Fed, the Nexus is shipped complete to be set up in either format with all the necessary components. The following sections explain how this is done.

GRAVITY FED INSTALLATION

A gravity fed system is where the water level in the Nexus is at the same height as the water level in the pond, therefore the top of the Nexus should approximately be at the same height as the top of the pond as shown in Figure 3.

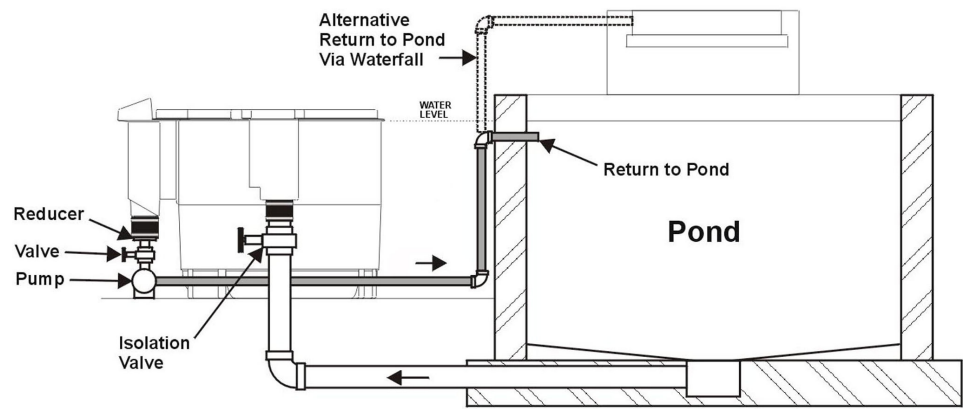


Fig 3

The water on a Gravity fed systems should be fed from a appropriately placed bottom drain through at least a 4 inch (110mm) pipe with as short a length and fewer bends as possible (For optimum flow swept bends should be used). At the end of the bottom drain line before entering the Nexus a valve is required so that the line can be shut and the Nexus isolated.

For long bottom drains it is recommended that a purge valve line is installed to remove solids that may settle in your bottom drain line. This should discharge straight to waste (if possible) or into a suitably sized sump.

It is very important that when laying the bottom drain line that there is no section where the pipework rises then falls as airlocks can form in this area which will block flow. Figure 4 below describes what should and shouldn't be done.

Pipework should be level until reaching the filterhouse where it should ideally go through a swept bend 90 into the Nexus inlet.

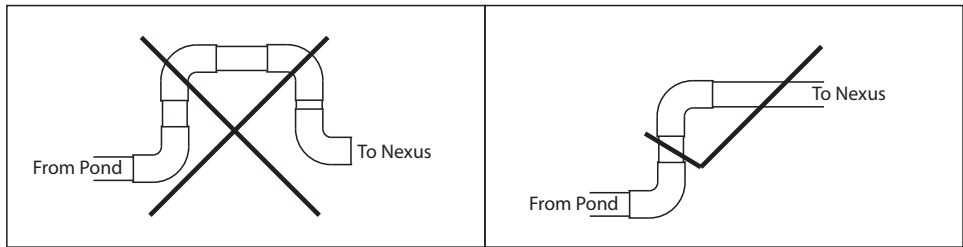
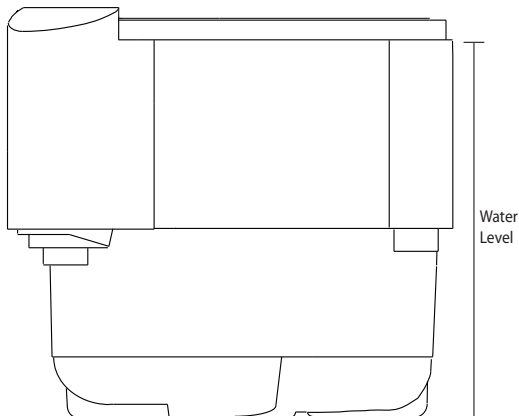


Fig 4

* Useful Tip on Getting your water Level right

Getting the water level right in your Nexus is important as if this level is too low it will affect the flow rate from your bottom drain as well as the efficiency of your Eazy both in cleaning and blocking rate. If the level is too high, you may get Kaldnes overflowing between chambers. The ideal level is located just under the top lip of the Nexus as shown in Figure 5.



The way to measure how high your Nexus base should be is to measure the height between your pond water level and filter bay using a spirit level or a laser level. And with a tape measure calculate the appropriate base level.

Gravity Fed Installation Steps

1. Attach the 4"-4" Boot (Fig 1.1) to the Nexus Inlet (A) then to the 4" bottom drain pipe by tightening both jubilee clips
2. Attach the 4"-2" Rubber Boot (Fig 1.2) to the Nexus Outlet (F)
3. Connect the 1.5" Single Union Ball Valve (Fig 1.3) to the 4"-2" Rubber Boot (Fig 1.2) with the union side facing down towards the pump (depending on your arrangement you may require an elbow between the boot and valve)
4. Connect your water pump to the Single Union Ball Valve (Fig 1.3) on the union side
5. Place the 50L K1 media bag into the outside chamber (D) of the Nexus (300 x 2)
6. Place the K1 bag marked either 30 or 45 into the Eazy basket (C)
7. Connect your air pump to the Nexus air inlet (H) located next to the water inlet using suitable hosing such as standard 12mm diameter garden hose
8. Connect your pump outlet to the remainder of your pipework including a UV steriliser.
9. Insert the safety exit gill (Fig 1.5) into the exit chamber (E)
10. Connect the waste valves (G) to your waste outlet (Described on Page7)

YOUR NEXUS IS NOW READY FOR USE

Pump fed installation is where the pump supplies water to the Nexus and water returns by gravity through a 4" (110mm) pipe. Figure 6 shows an example of a pump fed system.

PUMP FED INSTALLATION

It important that on the return line back to the pond there is no section of pipe where the pipe rises then falls as airlocks will form in this section stopping flow an example of this is shown in Figure 4.

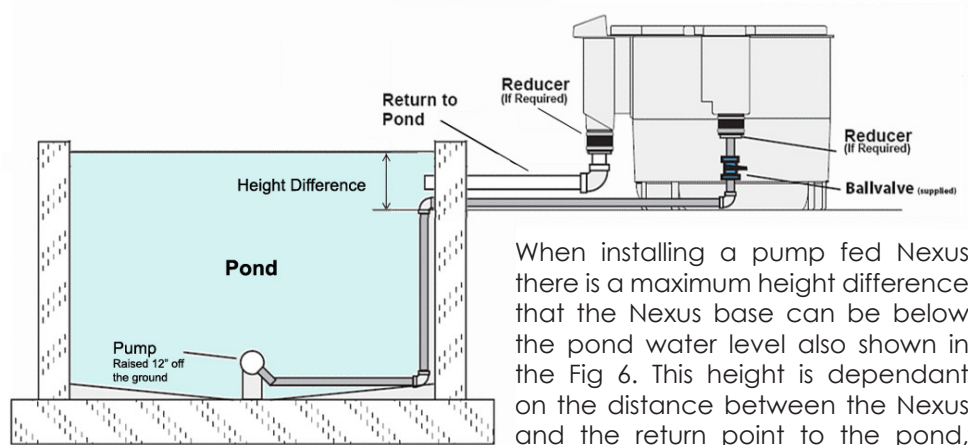


Fig 6

heights and distances when using 4" (110mm) pipe.

Important: Essential Action

For Pump fed units it is important that you get the height of the outlet standpipe correct. The height of this standpipe is very important as it controls the height that

the outer biological chamber of the Nexus runs at. For a standard Nexus installation you need to cut a length of your 4" (110mm) return pipe: 21" (535mm) for a 200 and 23.2" (590mm) for a 300. This needs to be inserted into the exit chamber (E) through the outlet (F) and then secured using the 4"-4" (110mm) (Fig 1.1) rubber boot leaving 2" (50mm) below as shown in Fig 7. 2" (50mm) of pipe below the boot will allow you to connect any fitting onto your Nexus such as a valve, elbow or straight connector. To check that you have the height of the outlet pipe correct you can measure from the top of the standpipe to

	Max distance (H) below water level of Nexus base			
	Nexus 200		Nexus 300	
Next to Pond	350mm	14"	500mm	20"
Within 5m	100mm	4"	250mm	10"
Over 5m	At or above water level			

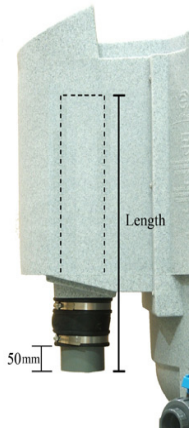


Fig 7



Fig 8

the top of the Nexus plastic lip as shown in Fig 8. For the 200 the distance needs to be 110mm and 120mm for the 300.

Pump Fed Installation Steps:

1. Insert the Exit pipe into the Nexus Outlet (F) and secure using the 4"-4" Boot (Fig 1.1) as described in previous section page 6.
2. Connect the 4"- 2" Boot (Fig 1.2) to the Nexus Inlet (A).
3. Connect the Single Union Ball (Fig. 1.3) to the 4"-2" Boot (Fig 1.2) with the union side towards the pump.
4. Connect the hose/pipework from your pump to the Single union ball valve (Fig 1.3) (If using flexi-hose you will require a hose tail).
5. Connect your 4" pipework from the Exit pipe back to the Pond.
6. Place the 50L K1 media bag into the outside chamber of the Nexus (x2 for 300).
7. Place the K1 bag marked either 30 or 45 into the Eazy basket (C).
8. Connect your air pump to the Nexus air inlet (H) located next to the water inlet using suitable hosing such as standard 12 mm diameter garden hose.
9. Connect the waste valves (G) to your waste outlet (Described Below).

Waste Pipe Connection

The waste valves are where the waste from your Nexus is discharged when cleaning and prior to draining. The 1.5" (50 mm) valve is for the Inner Chamber (B) and is used for when cleaning the Eazy, while the $\frac{3}{4}$ " (20 mm) valve is for draining the outer chamber (D)(only when and if required).

Both of these valves can be connected using a waste pipe kit (optional extra) as shown in Figs 9.1-3 or can just be discharged individually. If the Nexus is located below your drain height the waste can be either discharged into a sump where a submersible pump can be used to pump the waste away or an inline pump can be connected to the wasteline where it can pump directly to waste.

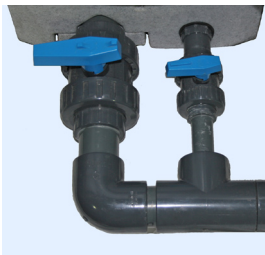


Fig 9.1
As Installed

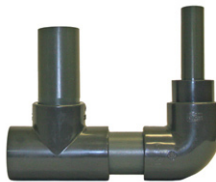


Fig 9.2
Exit to Left

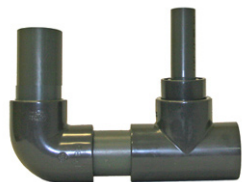


Fig 9.3
Exit to Right

GETTING STARTED

Once your Nexus is installed and plumbed in as described above, you are ready to fill the Nexus and begin treating your pond water.

To fill your Nexus first you need to open all your valves before and after the Nexus. With a pump fed unit you then need to switch on your pump making sure that the flowrate is not too fast (refer to the section below). A gravity fed system will just fill until it reaches water level.

Once the Nexus is full, you will notice that the Kaldnes K1 media is positively buoyant and floating on the water surface. In a pond containing fish the media can attain neutral buoyancy in 2-3 hours while in a newly filled and stocked pond it can take up to a week for this to occur. For people installing a Nexus on an existing pond, the Kaldnes K1 media can be primed before use, by soaking it in pond water prior to installation.

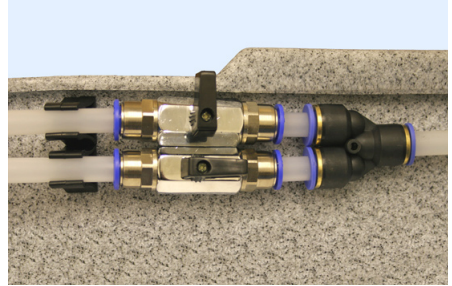


Fig 10

When your Nexus is full it is time to turn on your airpump to circulate the media making sure the valve to the outer chamber (bottom valve) is open and the valve to the Eazy (top valve) is closed, as per figure 10. Once your media has achieved neutral buoyancy it will move and circulate around the outer chamber as shown in Fig 11.

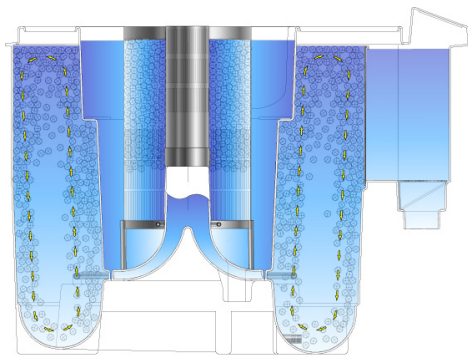


Fig 11

The flowrate of your pump can be adjusted by slightly opening or closing the valve after your pump. For Gravity Fed systems if the level in the outside chamber is dropping (when your eazy is clean) your flowrate is too fast and needs to be slowed down. While with Pump fed systems, if your inner chamber level is rising quickly (when easy is clean) and overflowing into the outer chamber your flowrate is too fast.

Importance of Flowrate

The flowrate through your Nexus affects how your Nexus runs in two different ways. You will visually notice straight away that the levels in both the inner and outer chamber will run at different heights depending on the flowrate. Because of this the flowrate also helps determine the interval between when the Eazy needs to be cleaned though this is mainly dependant on the type of food you are feeding and the amount of algae in your pond.

Gravity Fed

With a gravity setup, the level in the outer chamber (D) will lower as the Eazy becomes dirty and the K1 in the Eazy will rise. By looking into the inner stainless steel column on the Eazy you can see what height the water is passing through the Eazy into the outer chamber. When the water level becomes low on the steel slots and high turbulence is seen the Eazy should be cleaned.

1. Stop the circulation pump.
2. Wait a short period of time to allow the water levels within the Nexus to stabilise.
3. Close off the feed to the biological chamber by inserting the isolation pipe into the centre of the "Eazy", ensuring that the rubber flange engages within the Nexus centre spigot Fig 12.
4. Close the inlet to the Nexus by inserting inlet slide-plate (Fig1.4) supplied with your Nexus. Your Eazy is now isolated from the rest of the system.
5. Now clean the Eazy as in described in "Cleaning the Eazy" on page 10.
6. Remove the Nexus inlet slide-plate allowing the nexus to refill.
7. Remove the Isolation pipe.
8. Restart your pump.

Pump Fed

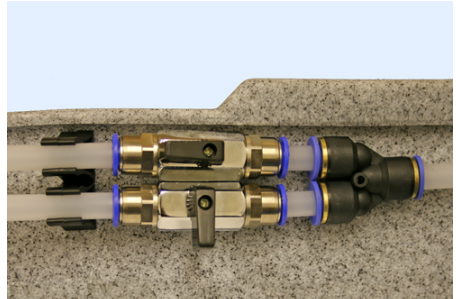
With a pump fed setup the level in the inner chamber (B) rises when the Eazy becomes more blocked, the Eazy has to be cleaned before this level gets too high and overflows into the outer chamber (D).

1. Reduce flow to Nexus by closing single union ball valve most of the way, leaving valve partially open.
2. Close off the feed to the biological chamber by inserting the Isolation pipe into the centre of the "Eazy", ensuring that the rubber flange engages within the Nexus centre column Fig 12.
3. Watch the level in the inner chamber rise until the water level reaches the 1" (25mm) below the top of the Eazy outer drum, then close the single union ball valve. It is essential that this water level is maintained to allow efficient cleaning.
4. Switch off the pond pump.
5. Now clean the Eazy as in described in "Cleaning the Eazy"
6. Open the single union ball valve and start pump.
7. Once the water level in inner chamber (B) reaches the level in the outer chamber (D) remove the isolation pipe.

CLEANING THE EAZY

Once you have your Eazy ready to be cleaned as described in the previous section you are ready to clean your Eazy as explained below.

1. Open the top air valve to the Eazy then close the bottom valve to the outer chamber as shown in Fig 13. The Kaldnes in the "Eazy" shall start to aerate within a few minutes as shown in Fig 14.
2. After the "Eazy" has been aerating for a minimum of three minutes, open the 1.5" (50mm) waste valve (G) to drain waste from the inner Nexus chamber.
3. Once the central chamber has drained it is recommended you give a quick clean to the inner chamber and outer stainless steel of the Eazy with a hose then close the 1.5" waste valve.
4. Gravity Fed - Remove inlet slide-plate (Gravity Fed) until level stabilises then replace slide plate.
5. Pump Fed - Open single union ball valve and start pump allowing inner chamber to refill until the water cleaning level is reached as in Fig 14. Then close valve and switch of pump.
6. The Eazy should now be aerating again. After the Eazy has boiled for another few minutes open the waste valve again.
7. Repeat steps 1-6 until the water after aerating is fairly clean
8. Close the air valve to the Eazy and re-open the valve to the outer chamber
9. Go back to previous instruction for pump or gravity fed.



Figures 12-14
Starting Clockwise
from Above



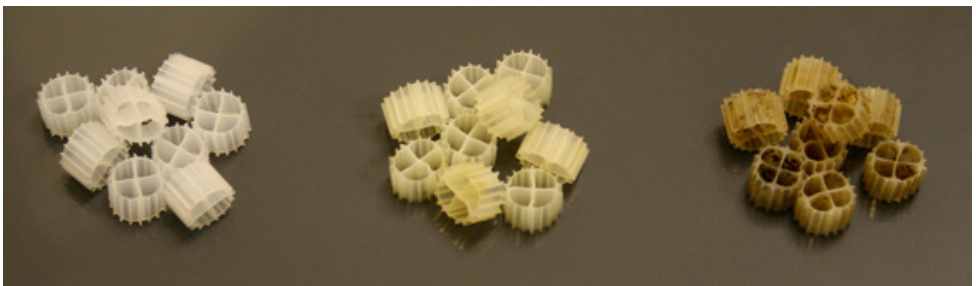
The Kaldnes Moving Bed™ process, has been scientifically tried and tested in fish farming and waste treatment for over 10 years. Developed by Professor Halvard Ødergard at Trondheim University of Science

**AnoxKaldnes**

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 & 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.



Virgin media

Mature media
at low feeding loads

Mature media
at high feeding loads

Appendix A

Specification	Nexus Eazy 200	Nexus Eazy 300
	10,000 Litres/hr	13,000 Litres/hr
Max Flow Rate	2,200 UK Gallons/hr	2,859 UK Gallons/hr
	2,640 US Gallons/hr	3,431 US Gallons/hr
Kaldnes Media	50 ltrs bio/ 30 ltrs Eazy	100 ltrs bio/ 45 ltrs Eazy
Max Capacity	150 ltrs bio / 30 ltrs Eazy	300 ltrs bio / 45 ltrs Eazy
	18,000 Litres	34,000 Litres
Max Pondsize	4,000 UK Gallons	7,500 UK Gallons
	4,800 US Gallons	9,000 US Gallons
Rec. Airpump	Airpump 70 -75	Airpump 95+
Volume filter	Nexus Eazy 200	Nexus Eazy 300
	105 Litres	205 Litres
Chamber B	23 UK Gallons	45 UK Gallons
	28 US Gallons	54 US Gallons
	405 Litres	635 Litres
Chamber D	89 UK gallons	139 UK Gallons
	107 US Gallons	168 US Gallons
	510 Litres	840 Litres
Total volume	112 UK Gallons	185 UK Gallons
	135 US Gallons	222 US Gallons

Total K1 Media in Chamber D	Recommended Airpump
50 - 75 Litres	Airpump 70 - 75
75 - 100 Litres	Airpump 95
100 - 150 Litres	Airpump 130
150 + Litres	Airpump 150

