

Innovitech

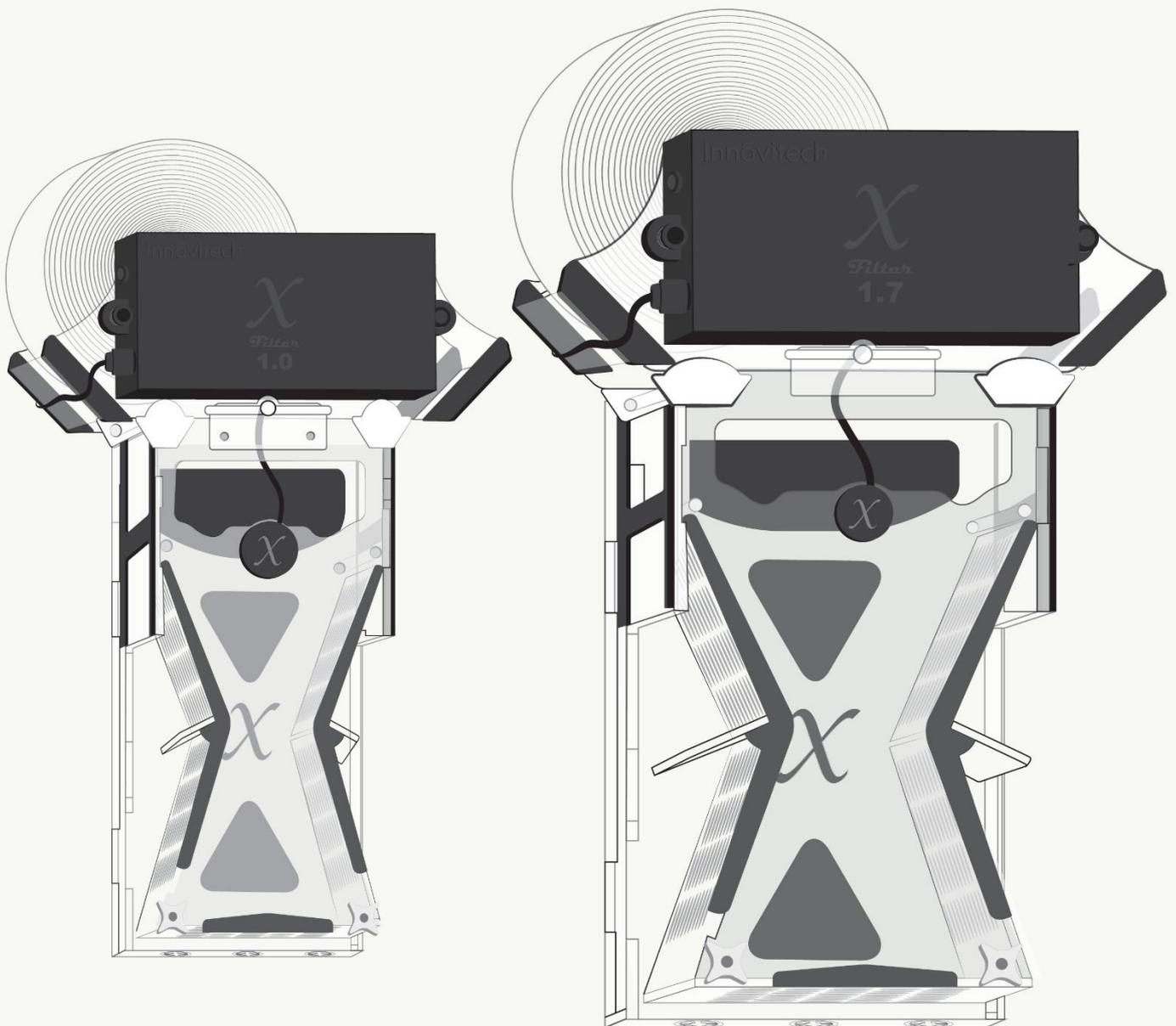
X

Filter

1.0

1.7

USER MANUAL



Version: 1.3

User Manual

Contents

X Filter Installation	3
Plumbing Installation Options.....	7
Vortex Generating Bypass Controllers.....	9
Fine tuning based on pipe positioning	10
Filter Media Installation	11
Filter Media Replacement.....	16
Maintenance	17
Alarm & Redundancies.....	18
Alarm.....	18
Self-cleaning function	19
Unit Assembly	20
Detailed Measurements.....	23
Troubleshooting.....	24

X Filter Installation



The X Filter can be separated into three major sections to aid fitting if required.

The bottom section could be fully submerged and maneuvered to install on sump glass

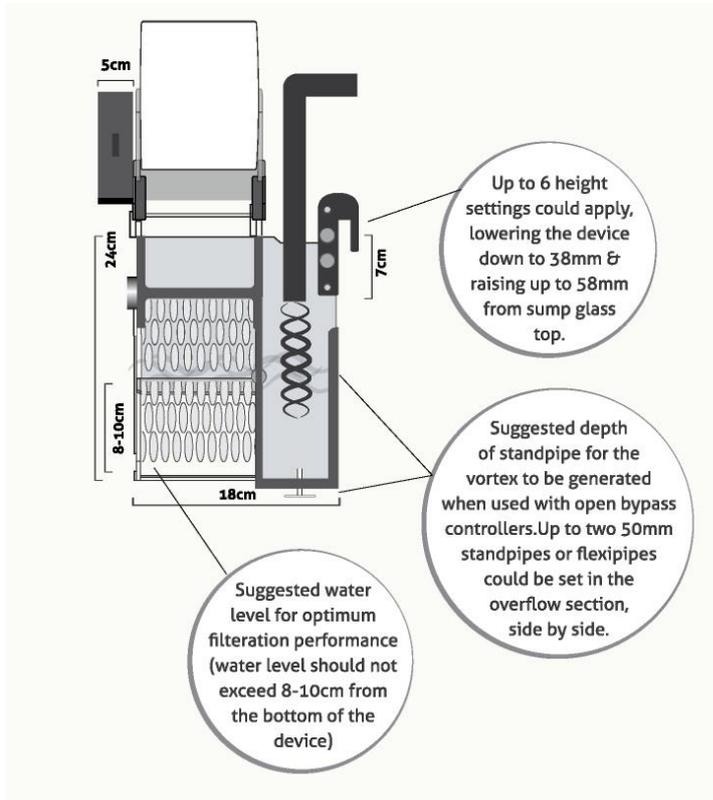
WARNING: Black electronics enclosure should never be submerged under water



Using the hooks, hang the filter to the desired position into the sump

Position the X Filter based on the instructions of the next page

X Filter 1.0 placement



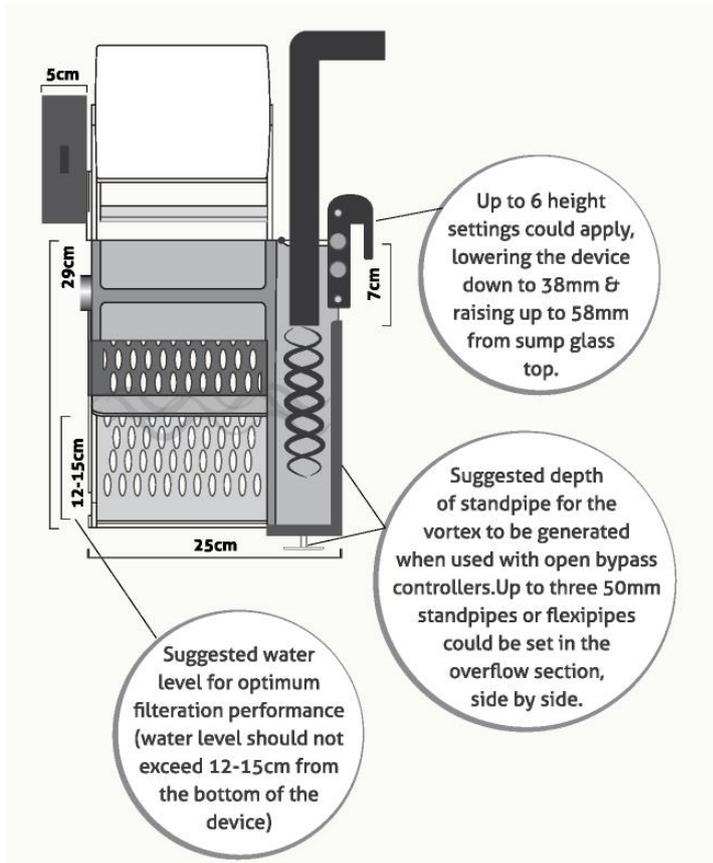
Optimum water level:

8 -10cm from bottom of unit

Standpipe/flexpipe depth within overflow:

7cm from top of overflow section to magnify the vortex effect when the vortex generating bypass controllers are used.

X Filter 1.7 placement



Optimum water level:

12 -15cm from bottom of unit

Standpipe/flexpipe depth within overflow:

7cm from top of overflow section to magnify the vortex effect when the vortex generating bypass controllers are used.



The adjustable spacer should be used for sump glass thickness up to 6mm. Above 6mm the spacer could be removed. Removing and adjusting the spacer

The spacer supports the unit to be level.

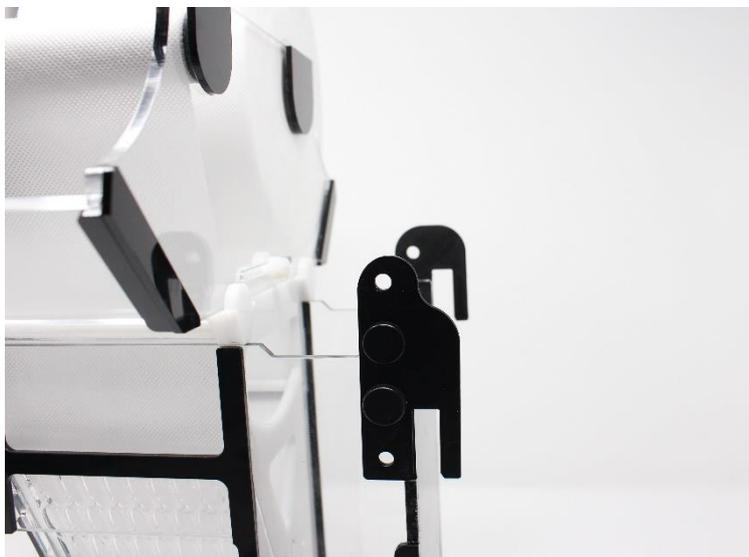
IMPORTANT NOTICE: It's important the unit to be set as level as possible in order for the optical sensor to detect water level more accurately and fully take advantage of the fleece media



The hooks allow the unit to be set into different heights

The middle holes provide the ideal height, as the top section can move over the sump glass

WARNING: Do not use the higher section (upper holes) unless absolutely necessary
HIGH RISK OF WATER SPILLING OVER SUMP GLASS



There's a second set of hooks provided that are designed to elevate the unit even higher in order to obtain ideal water level for the filter.

WARNING/DISCLAIMER: These hooks should be used under your own risk. There's a risk of water spilling over the sump glass if not installed properly or excessive flow is used.



The top module can be **placed left or right** from the centre, depending on installation requirements or clearance

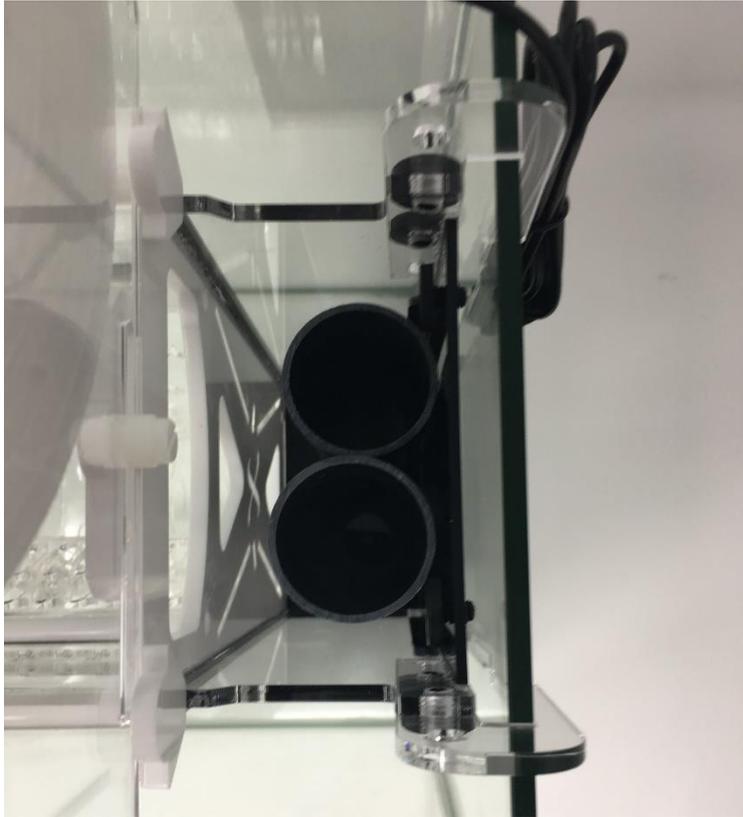
Top module moves on a track of 7,5cm from one end to another

By releasing or tightening the white screws (front screw shown) will allow or restrict movement



After setting the position of the top module, ensure front and back screws (back screw shown) are tight enough to restrict movement of the top module

Plumbing Installation Options



The X Filter doesn't require hard plumbing, as it features an overflow box to support different types of plumbing

X Filter 1.0: Overflow box measures **6,5cm depth** (front to back from sump glass) & **11cm width**

X Filter 1.7: Overflow box measures **6,5cm depth** (front to back from sump glass) & **17cm width**

X Filter 1.0 overflow box can hold a **single** 50mm (2 in.) or up to **two** 40mm (1 ½ in.) hard PVC or flexible pipes

X Filter 1.7 overflow box can hold a up to **two** 50mm (2 in.) or up to **three** 40mm (1 ½ in.) hard PVC or flexible pipes

Pipes should sit as close as possible towards the back of the filter (black plate)



The openings on the white plate should never be blocked!

WARNING: Pipes should have a clearance of at least **16cm from the**

bottom of the box in order to let the flow move freely. Picture only for illustration purposes.

RISK OF SPILLAGE ON HIGH FLOWRATES



If flow rate allows it, a hose from another component, such as a reactor, could compliment the filtering and clarity of the water

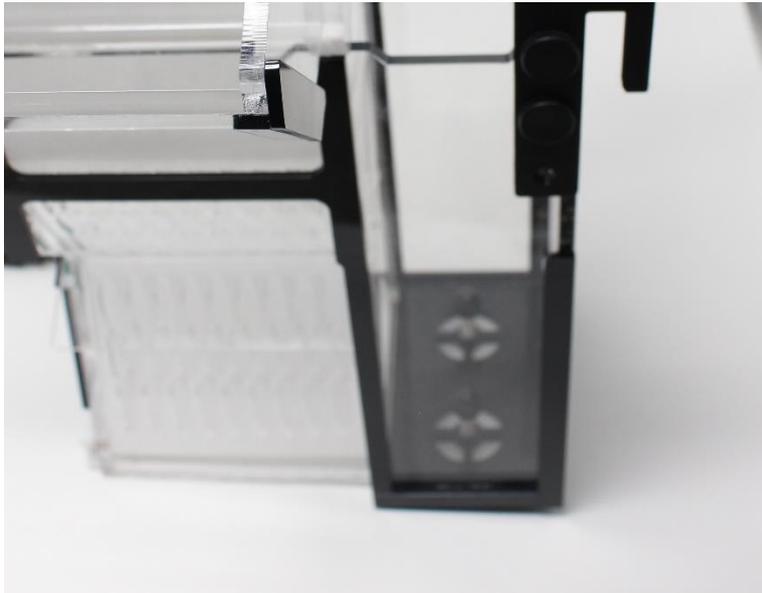


After installation, use the power supply provided and connect it with the cable from the black box with.

After powering on the power supply, the green LED on the bottom of the black box will turn on.

WARNING: Keep the connector clear and safe from water or potential risks of water spillages as it will void warranty.

Vortex Generating Bypass Controllers



The Vortex Generating Bypass Controllers are positioned at the bottom of the overflow section of the unit.

X Filter 1.0 has two (2) bypass controller.

X Filter 1.7 has three (3) bypass controllers.

The Vortex Generating Bypass Controllers are used to make the media fleece consumption more efficient and effective and allow any microlife to exit the unit (copepods etc.)

NOTE: The water clarity and effectiveness of the unit is not compromised by the use of this mechanism. The vortex generated when unit is installed as advised, will help effectively swirl detritus to the filtering section of the unit.



The bypass controllers are controlled by the external white discs at the bottom of the unit, as displayed.

Open controller by turning counter clockwise (CCW)

Close controller by turning clockwise (CW)

NOTE: The Vortex Generating Bypass Controllers allow fine tuning of flow at extreme precision the way they have been designed.

It is advised to use the controllers open on new installations and fine tune when the filter has gone through the breaking in period.

Fine tuning based on pipe positioning



If there is a single pipe installed, it is advised to be installed towards the side of the overflow box (left or right).

This will enhance the vortex generated and aid in better catchment of particles into the filtering section.

The opposite bypass generator should be used as the main bypass, while the one directly below the standpipe could be used if more flow is required to pass as a secondary.



If two or more standpipes are used, the vortex generating bypass controllers should open equally.

Filter Media Installation



The clear tube provided is used to hold the roll in place

Note: This part is reusable. Do not throw away on filter media change



Set the tube through the roll opening

The tube is longer than the width of the roll

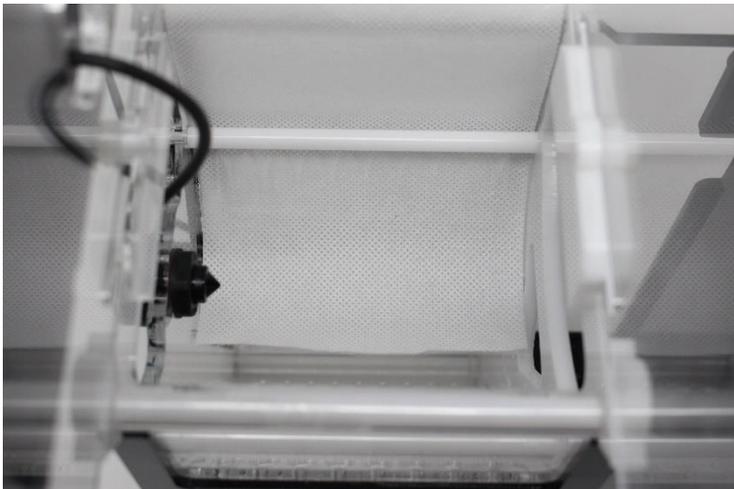
Allow the tube to protrude from the roll equally on each end



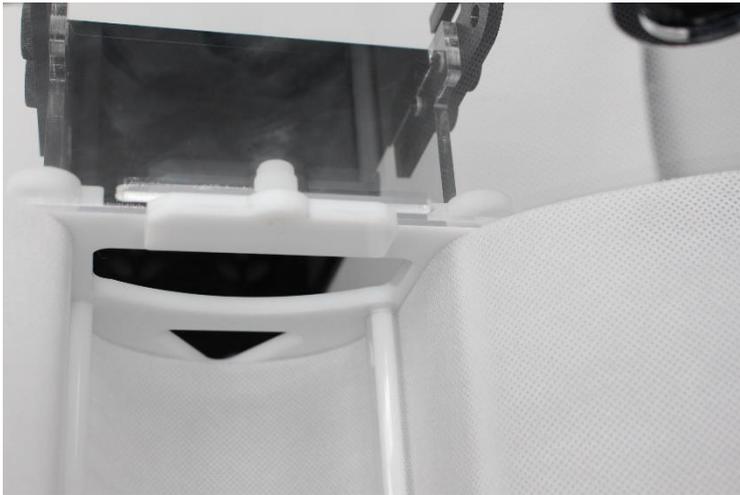
Set the media on the side of the unit where the "Innovitech" logo is shown on the black box

IMPORTANT: Ensure the outer layer of the roll faces the outer side of the unit

Set the media with the clear tube on the designated slots



Pass the media over the top rod and under the lower rod as shown

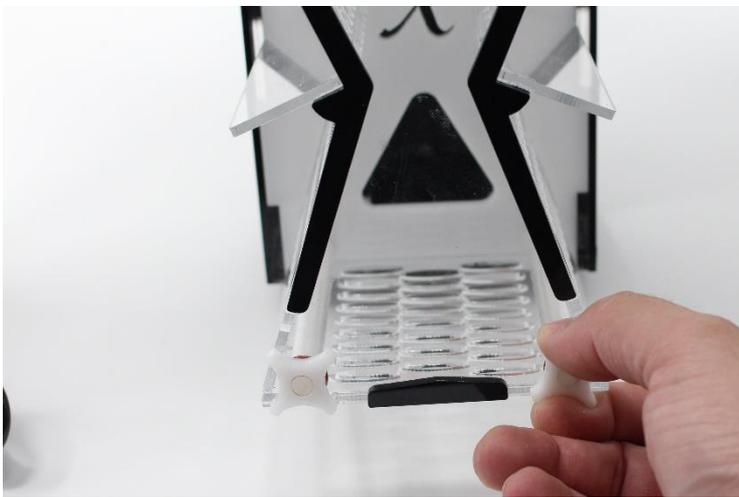


Take the media across and below the optical sensor

Pass the media under the lower rod and over the upper rod

TIP: At the four (4) top rods, the correct placement of the fleece is OVER – UNDER – UNDER – OVER, as shown in the picture.

WARNING: Incorrect placement of the media through the rods might lead undesired results that could void warranty.



At the bottom of the unit, unscrew both rods by turning the "X" shaped knobs counter clockwise



By using the long "L" shape tool provided, from the top, push the media towards the bottom of the unit

Set the media towards one corner of the bottom of the unit as shown

With the help of the tool, hold the media in place while (if required) and pry the rod through the opening and over the media



Locate the threaded hole on the white backing and screw the rod into place until tight enough to provide a good seal

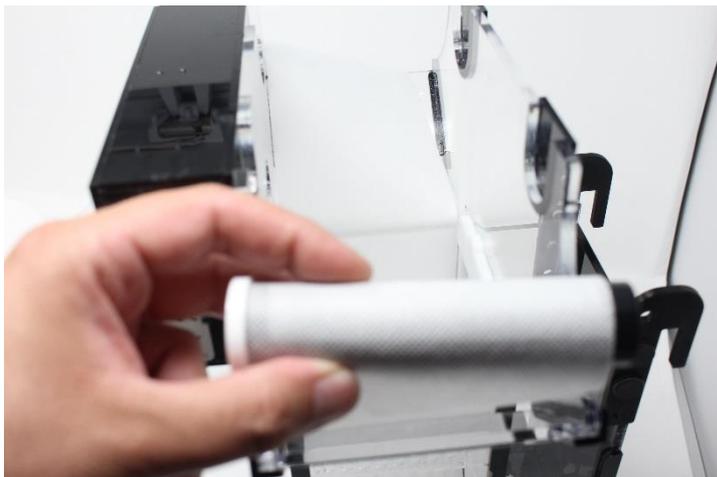
Repeat process on the opposite end

WARNING: While screwing rods back into place, **do not apply too much force** as there's a risk of breaking the rods off or damaging the thread. A good seal is achieved as long as the rods don't move freely. The gasket should be tight enough to keep the rod from turning.



Illustrated is the uptake spool (actual might vary in size and colour). This can be reused as many times required and purchased separately.

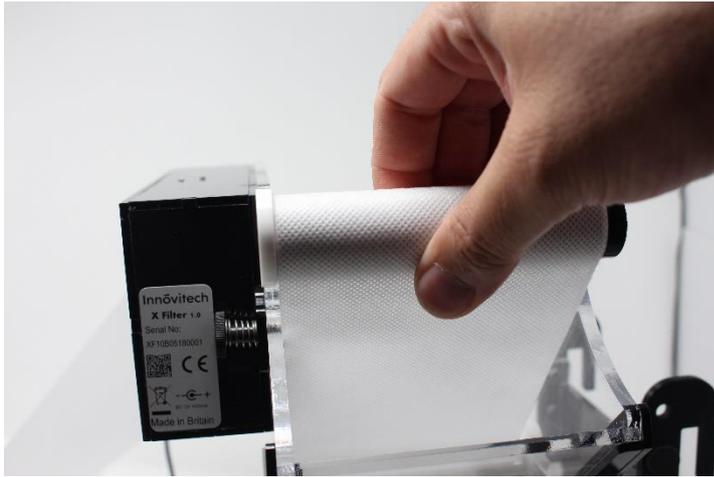
The spool has an anti-slip tape to set the media without the requirement of an adhesive.



The side of the spool with the larger diameter should be set facing towards the black box

Set the media flush on the side of the spool, with the media rolled from the outer side of the spool as shown

Roll at least two to four layers of media **tightly**



Hold the media **tightly** on the spool until the spool is set to its final destination otherwise there's a risk the media will unwind or not set properly

TIP: Media sets better on the spool if it's wet.



By sliding the black box outwards, clearance will be created from the direct drive to let the spool sit into place

Let the black box spring back into position for the direct drive to come into contact with the spool

Twist the spool if required for the direct drive to lock into place



The button on the other end of the black box is the manual media feed

Push the button to roll the media manually

Apply pressure to the uptake spool if required to achieve a tight fit of the media on the spool

WARNING: Failure to achieve a tight fit of the media on the spool, might result to the media slipping under pressure

Filter Media Replacement

When the media has finished or is about to finish, prepare to remove the old filter media by slightly tilting the black box to unlock the direct drive.



ATTENTION: Before tilting the black box, move the used media roll manually back and forth to UNLOCK the direct drive.

In case the black box won't tilt, move the spool slightly by hand while tilting the black box to break the lock

While the direct drive is unlocked and the old media is moving freely, there are two options available

Option 1: Unroll the remaining media and remove the spool. Set the new media as explained in the "Filter Media Installation" section

Option 2: Cut the old media loose, leaving the rest of the unused media on the unit. By using the media left over, it can be used to pull the media in from a new roll



Remove the old media and dispose appropriately

Note: The uptake spool may be reused as many times required by unwinding or cutting the old media. The uptake spool might be disposed with the old media or after natural wear and tear (if reused).

The uptake spool is purchased separately for a small fee.

Maintenance

After every media change, it's suggested to wipe the optical sensor with a soft cloth to ensure accuracy and precision is always in check

Ensure the sensor is wiped clean at the tip



Ensure that the filter is in good condition. There could be some excessive build-up of slime on the rolls. The rolls are designed to be cleaned by the media (usually resulting by dirt patches on the media), but it is advised to give the unit a thorough clean 1-4 times per year, depending on water conditions.

TIP: If system is planned to be left unattended for a long period of time, it's advised to give the sensor and the unit a good clean and ensure a fresh media roll is installed.

Alarm & Redundancies

Alarm



There are two LED indicators on the top of the black box:

- A. Motor turning
- B. Alarm (Red flashing LED)

The alarm will set and permanently stop the motor if the sensor detects an abnormal operation which is tied to the water level not dropping within the filter. The water will

overflow and spill out of the front of the unit in way to create as much sound as possible. The overflow is designed that way to create an audible "alarm" if the unit overflows.

The motor is very powerful and in order to avoid any damage to the unit or the motor, the unit is programmed to stop the motor UNTIL THE WATER LEVEL DROPS WITHIN THE UNIT.

NOTE: The alarm will set if the water level increases in the sump above sensor level (ie. Return pump turned off). When the water level is restored, the alarm will turn off AUTOMATICALLY and the filter will continue its normal operation **without any intervention to the filter.**

If the media gets jammed either from a foreign object or the filter operates constantly (overwhelmed by really dirty water), the alarm will set.

RESETING THE ALARM: There are three ways to reset the alarm after it's ensured that all faults have been rectified:

1. Advance media manually using the feed button



2. Reset unit by turning power Off and On
3. Automatic reset if the water level drops below the sensor

Designed redundancy: In case there is a serious blockage of the media before the alarm reacts, the designed first point of failure is the uptake spool plastic hex. The hex will snap and allow the powerful motor to move freely till the alarm sets. Since the uptake spool is disposable, it could be replaced with a new one.

Self-cleaning function

When the sensor becomes too dirty, the unit will try to clean it automatically by overflowing the unit but without the alarm LED turning on.

If this gets into your attention, clean the sensor manually to aid the cleaning of the sensor. Once the sensor is cleaned, the media will automatically advance and restore to normal operation.

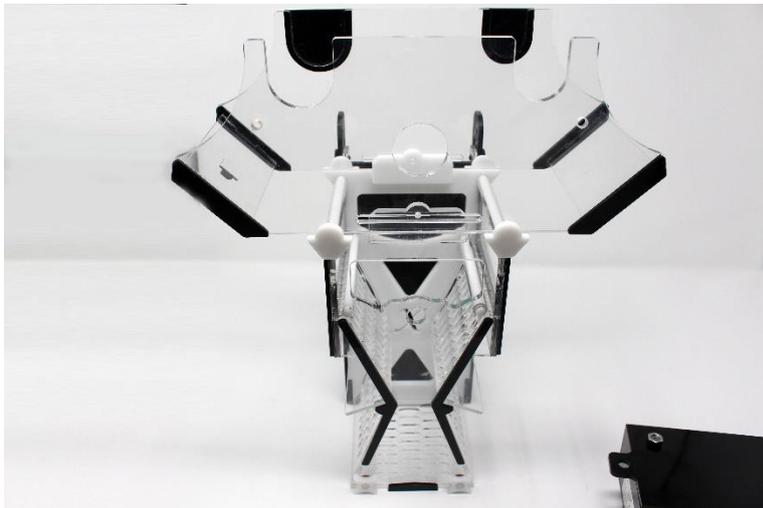
WARNING: There's a risk that the sensor is too dirty and will never restore, especially if there is algae build-up on the sensor. It's advised to keep the sensor out of light sources.

If the media gets oversaturated, there's a potential to get jammed and manual intervention will be required to restore normal operation.

Unit Assembly



Unit is consisted from three main components: Bottom unit (main unit), top unit and electronics/motor assembly



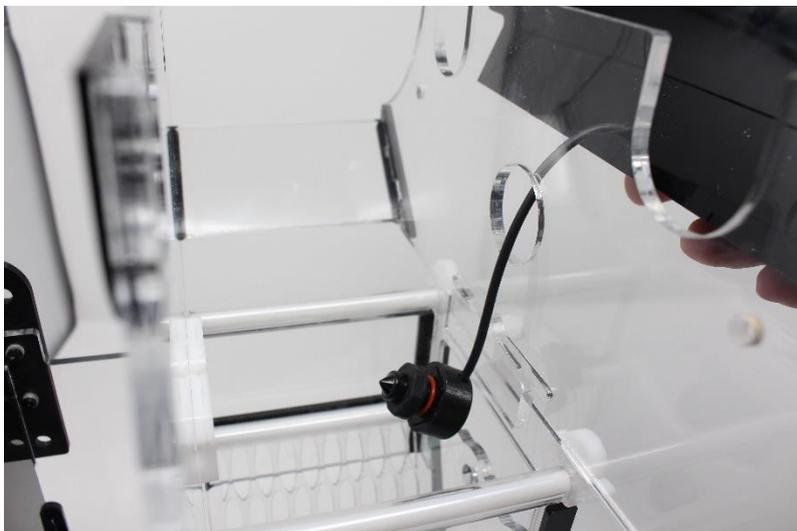
Place the top unit on the rails of the bottom unit. The black stoppers of the top unit should face backwards (towards the overflow section of the bottom unit)



Insert the white screw through the slot of the top unit and the hole of the bracket that protrudes from the bottom unit.



Repeat the process for the back of the unit to secure the top section to the main unit.

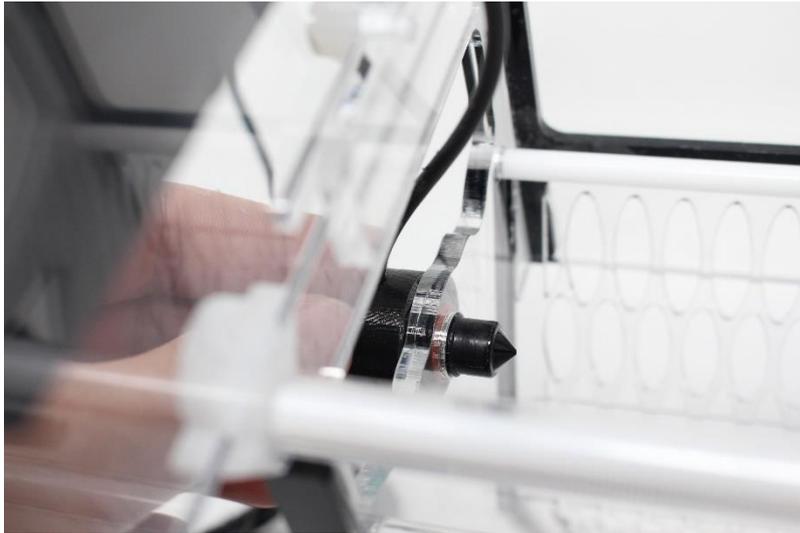


Before placing the black box on the top unit, pass the sensor through the hole in the front of the unit.



Set the long black screw with the **spring** to secure the black box with the top unit. Turn the screw clockwise and make sure the screw doesn't protrude on the other side.

Repeat the process on the other side of the black box.



Now that the black box is secure, pass the sensor outside of the bottom unit through the overflow and set the sensor through the designated hole on the bottom (main unit).

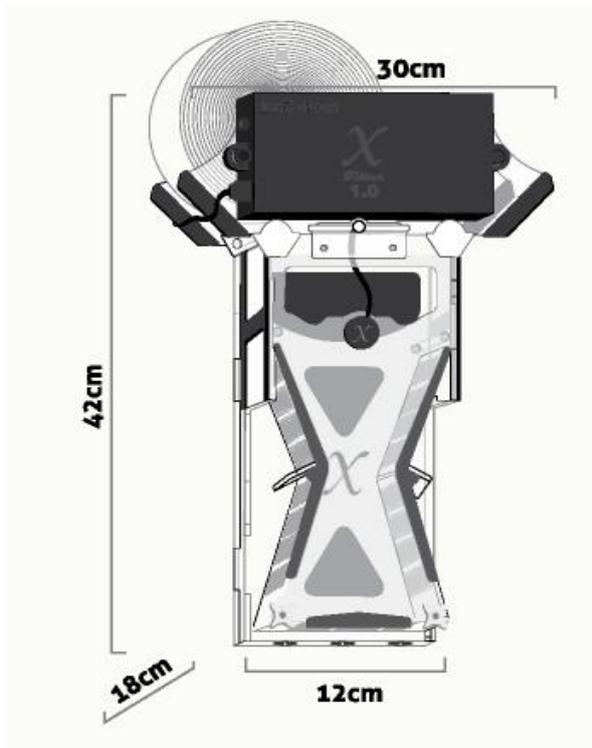


Secure the sensor with the plastic nut provided and make sure the sensor has a good seal with the bottom (main) unit. (The sensor has a gasket set on the base of the sensor).

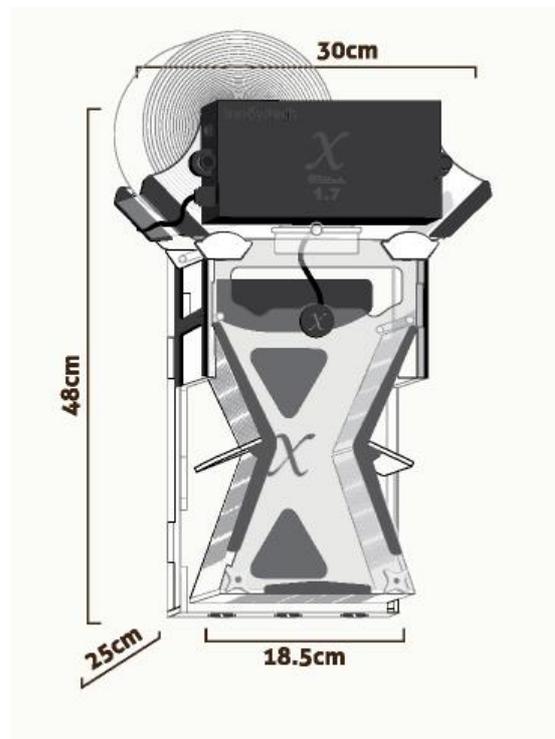
Detailed Measurements

Front View

X Filter 1.0

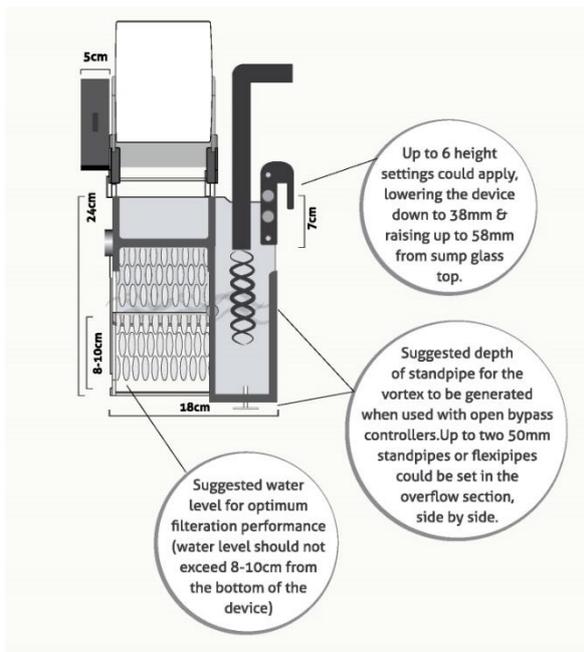


X Filter 1.7

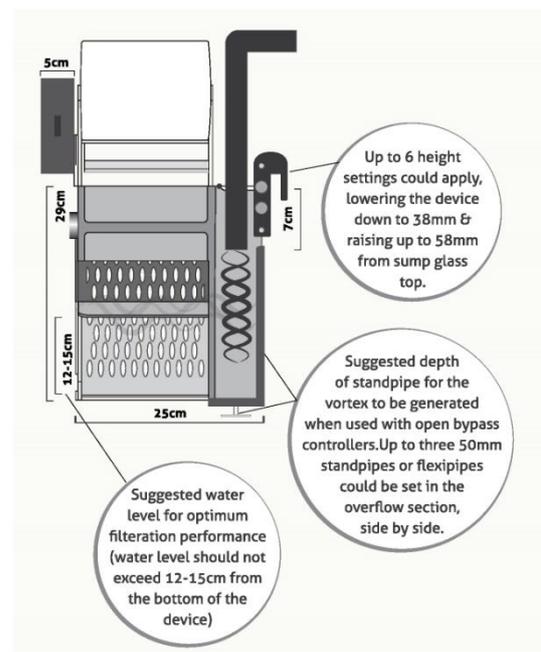


Side View

X Filter 1.0



X Filter 1.7



Troubleshooting

Issue	Solution	Further Instructions
Unit not powering up	Make sure there's a secure connection between the cable from the black box and the power supply unit. Ensure the power supply receives mains power	Green LED will turn on at the bottom of the black box.
Alarm LED (Red flashing light) is on and unit is overflowing	It is normal for the unit to overflow when the alarm is on as it halts the motor till issue is rectified. Make sure the media fleece is not jammed anywhere. You can test the fleece with the manual FEED button (button on the left side of the black box)	Make sure that the uptake spool hex is not broken, as it is the first point of failure in case of a major issue. Also make sure the unit is not overwhelmed with flow. Adjust bypass controllers accordingly and make sure sensor is clean
Unit is overflowing but the alarm is OFF	Two scenarios could trigger this: 1. The unit is powered OFF 2. The unit is in self-cleaning mode	Make sure the sensor is clean
Sensor is triggering or not working randomly	Either the sensor is dirty or there is a strong light source interfering with the optical sensor	Clean the sensor well and avoid direct or strong light on the optical sensor
Media fleece consumption is high, colour of dirty fleece is light brown	Usually this happens because the flow is too much for the unit. Try to reduce flow, open bypass controllers or use high micron grade media fleece	Make sure the unit is level (ref.: Page 5)
Alarm turns ON but water level is below the sensor	This might be triggered by grease or dirty sensor. Avoid using really greasy food (abnormally high Omega-3) and make sure the sensor is clean	
Media fleece doesn't advance easily	The motors on these units are extremely powerful. Usually this might occur because of wrong fleece installation or the new media wasn't aligned properly on the uptake spool	Remove old media fleece and reinstall the uptake spool fresh by removing the old media from it
Water is leaking from the front of the unit, where the white rods end, at sensor level	This is normal if that occurs and should stop after some time. The tolerance is 5-9 microns, so the water that passes through is the same if not better quality from the water that passes through the fleece media. No action required	The rods are fixed on the unit that way, to allow expansion tolerances because of different materials. Also this allows future maintenance if required
Water is leaking from the right side filter panels (as observed from the front of the unit)	This is caused from underutilising the unit's filtering capacity. Course of action options (one of each option or a combination can be chosen): 1. Limit or close bypass controllers 2. Increase flow that passes through the unit 3. Use lower micron fleece media 4. Lower unit to increase outer water level (within suggested range) 5. Increase bioload or feeding	If the unit is underutilised, the media fleece stays at the same spot for a very long time. This causes the fleece to create a buildup of detritus at the same spot and locks it into place, or as known as "caking". This is usually observed at higher micron fleece media (25 microns and above). To have a successful nutrient export, the polluted fleece should not stay in the water for more than 24-48 hours, as detritus will start to organically break down/rot and leach nutrients into the water column.

Innōvitech