



The Clear Choice
Water Filtration Systems

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Catalog

Accessories



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FHPRA series

Washing Machine Filter



Made in EU

General Description:

AQUAFILTER presents **FHPRA** series - washing machine filter. Are filled with polyphosphate, anti-scale and anti-lime media.

Polyphosphate prevents scale by reacting with dissolved hardness minerals (e.g. calcium carbonate and calcium bicarbonate) and transforming them into harmless, microscopic crystals of calcium orthophosphate. These crystals stay suspended in water and will not create scale build-up in heating elements, pipes, water heaters, boilers, etc.

Moreover polyphosphate helps to deal with iron and all the problems which it causes. Polyphosphates do not remove iron from water. Rather they stabilize and disperse the iron so that the water remains clear and does not produce iron stains.

The **FHPRA series** filter cartridges require very little maintenance, no backwashing and no salt. Cartridges include pre- and post-filters preventing media particles from being washed out. **FHPRA** is designed for use with cold tap water. This filter should be installed between water supply valve and washing machine using connection adapter 3/4" male x 3/4" FIP.

Features:

- High quality
- Competitive pricing
- Prevents stains on dishes, glasses, silverware
- Protects washing machine and dishwasher against damage caused by calcification
- Equipped with end filter preventing particulates of filtration media from being washed out
- Environmentally Friendly
- No Regular Maintenance
- Does Not Require Salt
- No Wasted Water or Electricity
- Simple installation—no electrical and drain hookup.
- Well and High Quality Control
- Prompt Delivery
- Competitive Prices
- Eliminates the build-up of scale inside the elements of home appliances



FHPRA with brass insert



FHPRA2 multi-use



FHPRA3 made in EU, 30% more media

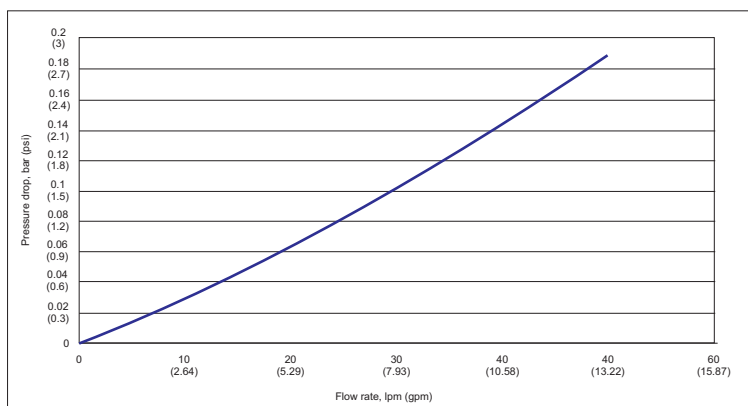
FHPRA-R water conditioning media (polyphosphate) for FHPRA2



Reduces detergent consumption



Protects expensive equipment from scale formation



NOTE

- Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- Water filtration systems can help reduce the presence of contaminants. In addition, some water filtration systems can help reduce the presence of microorganisms or other contaminants with potential health effects.

LIMITED WARRANTY: AQUAFILTER warrants that this product is free from defects in materials and workmanship. This warranty, together with any and all warranties implied by law, shall be limited to a period of one (1) years from the date of original purchase. This limited warranty does not apply to failures that result from abuse, misuse, alteration or failure to properly comply with installation or cartridge change instructions.

We strongly recommend adding to all point of use and point of entry a Pressure Limiting Valve to guard against unwanted extreme water pressure events pressure increases, surges, and water hammer which could occur in the water pipes. Not having one installed could mean that if you ever did have to claim damage caused by a burst water filter system, the claim will be denied.

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FHSH-1_K

Shower Filter

General Description:

Shower Filter **FHSH-1_K** from Aquafilter

Do you or a member of your family suffer from a itchy scalp or stinging eyes after a shower or have a skin complaint.

Heavy metals and chlorine which are in our water supply are two of the major contributors of skin irritation so remove them.

Over time, chlorine in your shower water can wreak havoc upon your body.

While the purity of our drinking water is of primary importance, contaminants and chlorine byproducts also enter our bodies through the skin via the water in which we bathe. Also, our lungs absorb toxic fumes from the gaseous chlorine byproducts that are released in a steamy shower.

Chlorine in shower water can strip protein from our hair and skin causing dry, irritated eyes, itchy skin, and dandruff.

Aquafilter's high quality shower filter will reduce the amount of chlorine that reaches your body, ensuring healthy skin for you and your family. In addition the KDF[®] bacteriostatic filter media will retard the growth of bacteria within your shower head. This filter cartridge will last around 6 - 7 months* before needing to be replaced.

*depending on water consumption and its quality.

Features:

- High quality
- Competitive price
- Coconut Shell Carbon with KDF[®]-55 media
- Reduces chemical absorption and vapor inhalation
- Chlorine reduction
- 90% heavy metals reduction
- Bacteriostatic - will retard the growth of bacteria
- Less damage to hair and skin
- Replaceable cartridge
- Recommended filter cartridge replacement is 6-7 months
- Made in the EU

Specifications:

Thread Diameter: 1/2" MIP

Working Temp.: 2°C - 60°C (35°F - 140°F)

O-ring: EPDM



FHSH-1_K



**FCSH-1_K cartridge
for FHSH-1_K**

KDF has a wide spread effectiveness against a large number of impurities in water. KDF is optimised when used in conjunction with Activated Carbon.

KDF is known to kill algae and fungi, control bacteria growth, remove chlorine, pesticides, rust, unpleasant taste and odour, hydrogen sulfide, iron, lead, nickel, chromium, cadmium, calcium, aluminium, mercury, arsenic and other organic compound.

Activated Carbon has long been known for its effectiveness at removing chlorine along with a wide spectrum of chemicals including VOC's (Volatile Organic Compounds) including herbicides and pesticides.

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FHSH series

Shower filter

General Description:

AQUAFILTER FHSH-5-C and **FHSH-6-C** are the most advanced shower filters on the market. These high performance shower filters combine easy operation and maintenance with the ultimate in structural integrity and overall reliability. In contrast to most products commercially available both **FHSH-5-C** and **FHSH-6-C** are sold in a standard chrome colour.

Installation is quick and easy. Just attach a shower head to your shower hose and that is all you need to do. Each shower filter is sold together with one shower filter cartridge. Due to unique design it exhibits very low pressure drop, which is a major drawback in competitive products.

This multimedia filter cartridge, they effectively remove up to 99% of free chlorine and convert it to harmless salt. Moreover they reduce scale and other contaminants content, such as heavy metals (lead, mercury), hydrogen sulfide and iron oxide from your shower water. Another undeniable benefit is that it can balance pH and releases various microelements which are beneficial to human skin. In other words it performs like drinking water filter does. This filter cartridge will last around 2-3 months* before needing to be replaced.

*depending on water consumption and its quality.

Features:

- High quality
- Competitive price
- Low pressure drops
- Easy to install with no additional tools
- Eliminates chlorine
- Removes heavy metals
- Improve taste and smell of water
- Minimizes adverse reactions to chlorine: smoother, softer skin, lessen eyes' irritation and healthier looking hair
- Filter head with three massage settings.
- Entire filter is chrome plated
- Cartridge included
- 3 different shower massage functions
- This product is safe for infants, children, - individuals with sensitive skin and the elderly

Specifications:

Thread Diameter: 1/2" MIP

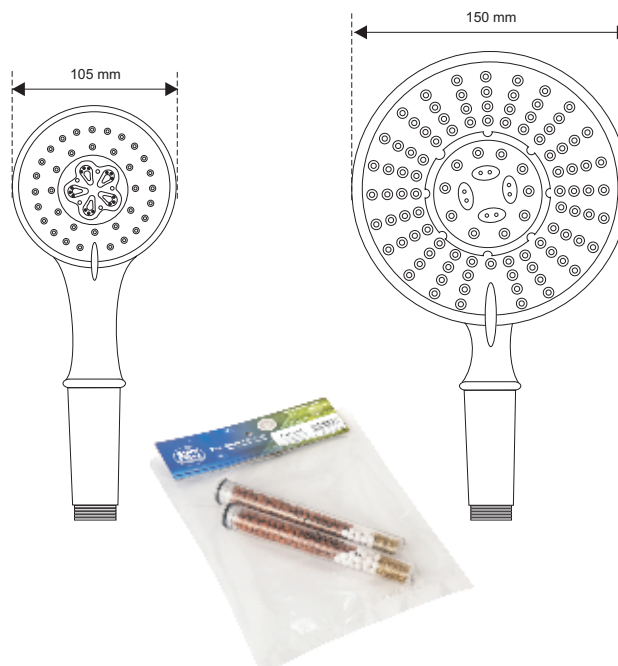
Working Temp.: 2°C - 60°C (35°F - 140°F)

O-ring: EPDM



FHSH-5-C

FHSH-6-C



**Cartridge set for FHSH-5-C
and FHSH-6-C**

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FHSB

Bath Ball

General Description:

AQUAFILTER FHSB is the most advanced bath filter on the market. It is a safe, non-toxic device.

FHSB bath ball is easy to use. Simply submerge and swirl it through water a few times (as needed) using the attached cord.

Utilizing a mixture of active media such as **KDF**® it effectively removes chlorine, hydrogen sulfide ("rotten egg" smell), iron oxides ("rust water") and heavy metals (lead). Moreover it can release various microelements which can be absorbed through the skin making it smoother, softer and healthier.

Using **FHSB** in your bath will make it the healthiest and most refreshing experience ever. It's like bathing in spring water! While bathing with **FHSB** you will experience relief from dry itchy sensation and improved soap lathering. **FHSB** is especially recommended for children and people with sensitive skin.

Features:

- High quality
- Competitive price
- Eliminates 90% of free chlorine
- Releases various microelements
- Safe and non-toxic in use
- Recommended for use with children
- Recommended for people with dry and sensitive skin
- Good for use for up to 12 months or 400 bathtubs*
- Universal detachable harness connects to most fixtures
- The Bath Ball conditions the water for a relaxing and luxurious bath

Specifications:

Working Temp.: 2°C - 60°C (35°F - 140°F)

Filter life: 12 months or 400 bathtubs*

*depending on water consumption and its quality.



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AIMIAO2_K

Mechanical leak prevention sensor, used to undercounter and reverse osmosis systems

General Description:

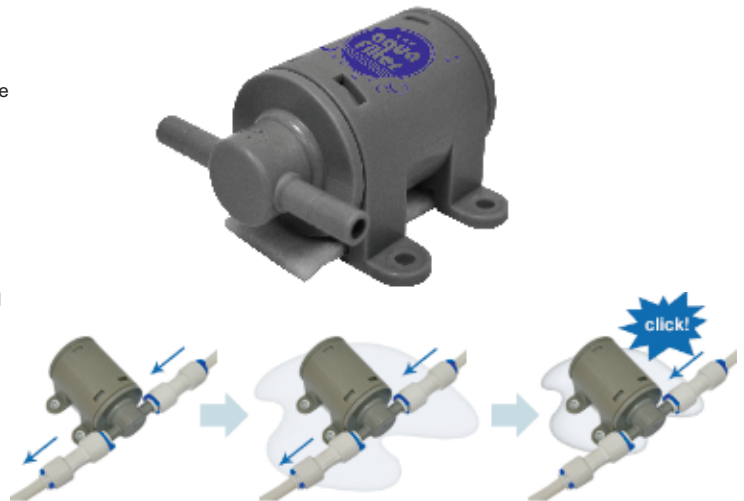
Damage caused by a leakage is one of the most common reason people make claims on their home insurance.

Even with an annual inspection, careful routine maintenance you might experience potentially very expensive flooding. Help protect your home and save the time and money with **AIMIAO-2_K** mechanical leak prevention sensor.

This mechanical sensor is mostly used to undercounter and reverse osmosis systems. In the event of detection a small amount of liquid, it cuts off water, which flows to the filter and protects your home and wallet from unwanted and unexpected expenses caused by a flooding.

Features:

- High quality
- Competitive Pricing
- Quick delivery
- Effectively protects against flooding
- Do not requires electrical connection



How AIMIAO2_K works

AIMIAO-T_K

Meter valve

General Description:

These unique meter valves provide automatic shut off of a potable water system for filter replacement after a pre-determined quantity of water has been filtered.

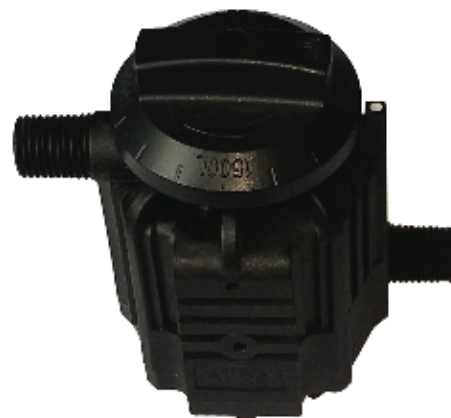
Meter valve provides automatic shut off for your home water filtration system. Designed with quick and easy installation, the meter valve will ensure proper performance and maintenance of your home water treatment system. Simple turn dial setting allows you to set the meter anywhere between 250 and 6,000 liters in 250 liters increments. Once activated, resetting the valve is completed through simply turning the dial back to your desired setting.

Features:

- 6000 Liters capacity
- Easily reset to any capacity in increments of 250 liters
- Accuracy within 10% of setting
- Operating pressures from 1bar to 6bar
- Burst pressure tested to 25 bar
- Manufactured using NSF listed materials
- Available in black color

Specifications:

- Standard 1/4" male NPT molded threads, 1/4" JACO Nut
- Housings Materials Nylon
- Operating Conditions Accuracy +/- 10 %
- Maximum Pressure 8 bars
- Factory preset for 3 liters per minute flow rate
- 6000 Liters Capacity
- Dimensions: 95mm H, 65mm W, 65mm D
- Working Temp.: 2°C (35°F) - 23°C (73.4°F)



Aquafilter Flow Meter Valve
1/4" JACO Male NPT Fittings

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**Picture is representative and may vary slightly from the actual product

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PLV-0104 SERIES

PRESSURE LIMITING VALVE

General Description:

Aquafilter Pressure Limiting Valve (PLV) rated to 6 bar (90 psi) with 1/4" tube ports is a must for any under counter water filter system.

Not having one installed could mean that if you ever did have to claim insurance on damage caused by a burst water filter system may be denied due to the lack of Certified pressure limiting protection installed.

All complete under counter water filtration systems sold by Aquafilter include either a 3.5 bar (52.5 psi) or 6 bar (90 psi).

Certified pressure limiting valve (PLV) to protect the water filter system from extreme water pressure events which could occur in the water pipes.

If your system does not already have a PLV it is simple to install. Simply turn off the water to your filter system, cut the tubing between the water source tap and the filter system, push the tubes into each end of the PLV (ensuring that the flow arrow on the PLV is pointing the same way as the water is running) turn the water back on and that's it.

Features:

- High quality pressure limiting valves being appicated for high pressure system to protect downstream components - Water filters, Drink dispensers, RO system
- Protect water filtration devices by limiting water pressure and reducing water hammer
- Different pressure ratio setting for options to suit different application
- Quick fitting connector for easy to install onto your application
- Protects water filter units by limiting water pressure to inline cartridges & housings
- Reduces water hammer
- PLV-0104-50 valves are designed for water filters, ice makers, coffee machines, etc.
- PLV-0104-80 valves are suitable for RO water systems
- Acetyl body, complete with speedfit connections, 1/4" tube
- Easy Installation
- Mounting bracket included
- Guaranteed for 12 Months





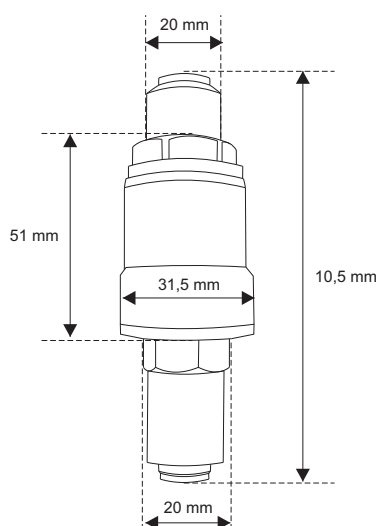
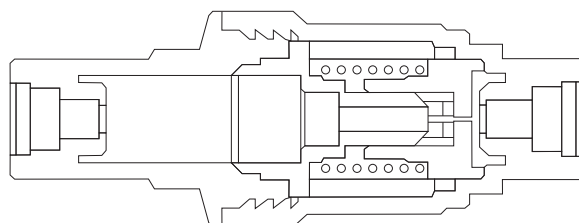
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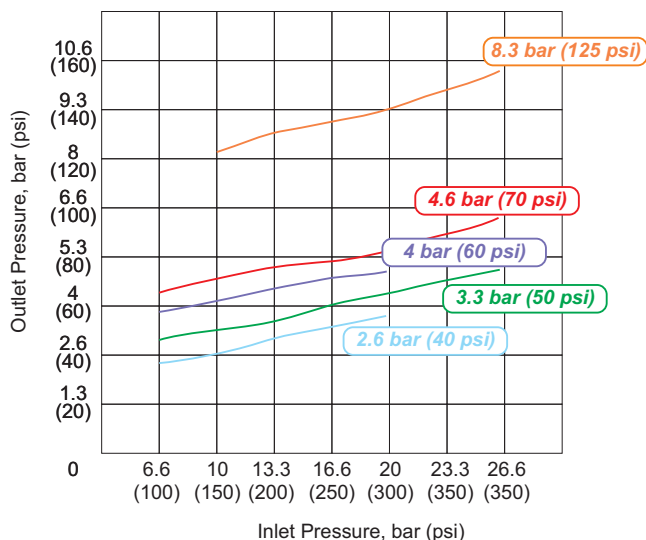
PLV-0104 SERIES

PRESSURE LIMITING VALVE

Schematic Diagram



1/4" Tube Inlet/Outlet



Specification:

- Flow rate: 7.5 lpm (1.98 gpm) at 6.5 bar (100 psi) inlet pressure
- Outlet pressure (bar): 2.6, 3.3, 4, 4.6, 5.3, 8.3 +/-10% at 10 psi
- Outlet pressure (psi): 40, 50, 60, 70, 80, 125 +25 /-10% at 150 psi
- Max inlet pressure: 15.3 bar (230 psi)
- Working temperature: 2°C - 23°C (35°F - 73.4°F)

Description

- 3.3 bar (50 psi) Aquafilter 1/4" QC
- 5.3 bar (80 psi) Aquafilter 1/4" QC

Part

- PLV-0104-50
- PLV-0104-80

Important Notice:

Under counter and Reverse Osmosis filter systems are designed with a maximum working pressure of around 6 bar - 6.3 bar (90 psi - 95 psi).

It's important that you know that municipal water supplies occasionally or often have "water pressure spikes". These spikes can go over 9.3 bar (140 psi).

Pressure spikes above 6.6 (100 psi) will damage your system, result in a water leak, and will VOID your warranty. (We will test for this if the product is returned).

When you buy one of these filter systems you are obligated to either find out what your water service pressure is- or install one of these inexpensive **Aquafilter Pressure Limiting Valves (PLV)**.

This Pressure Limiting Valve by **Aquafilter** will protect everything downstream by limiting the water pressure to 5.3 bar (80 psi). Simple yet totally effective.

Installs in a matter of seconds by cutting the 1/4" tubing going into your filter system and shoving the cut ends firmly into the Quick Connect openings at each end. That's it! It locks tight and produces a secure high pressure connection that won't come loose!

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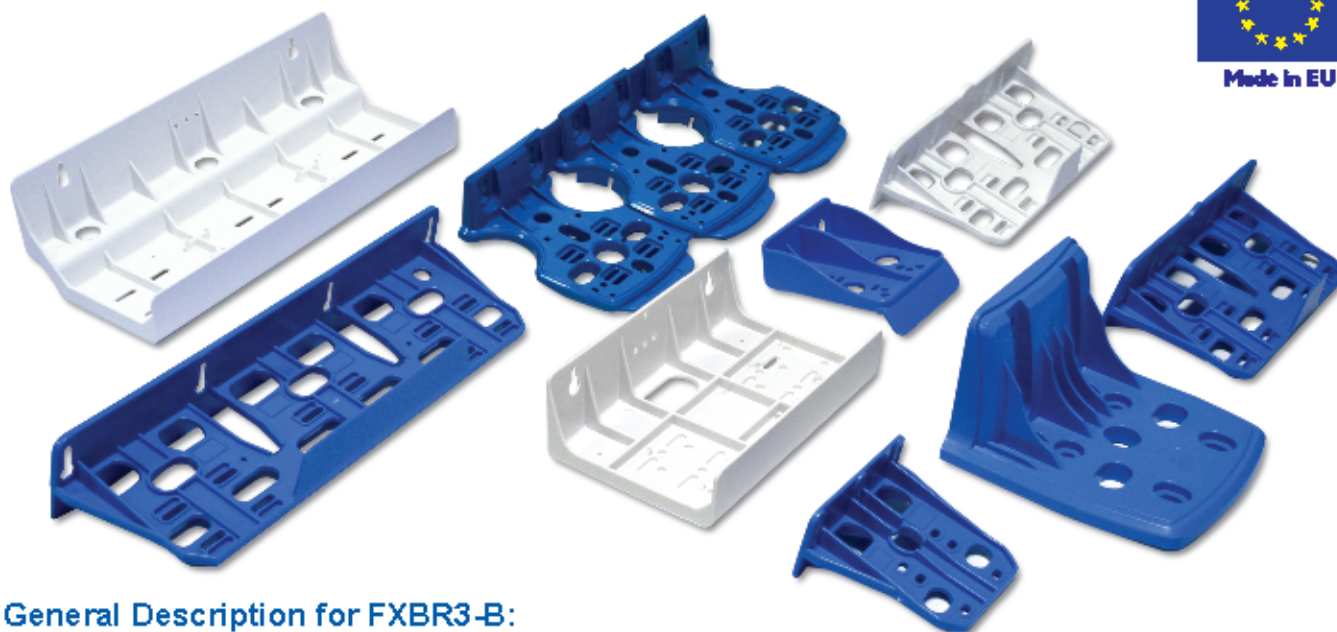




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Plastic mounting brackets



General Description for FXBR3-B:

Multi purpose special FXBR3-B plastic triple brackets for 5" and 10" filter housings available on the market only from Aquafilter.

RO or UF membrane vessels and in-line filter cartridges 2" or 2 1/2" can be attached to the bracket using special inserts or mounting hangers on side of bracket.



Possibility to install additional 2 1/2" in-line cartridges and tighten mounting brackets for 2 1/2" in-line cartridges



Possibility to install additional 2" in-line cartridges with the **FXBR3PN-IW** port

General description for plasticl bracket's:

Available brackets are single, double and triple to meet customers demands. They fit most 5", 10" and 20" housings (including Big Blue®) commercially available.
Color can be customized.





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Plastic mounting brackets



CATALOG#	Description
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FXBR1PB	Single blue mounting bracket for all 10" housings
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CATALOG#	Description
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FXBR2PN-W	Universal, plastic double brackets for 5" and 10" filter housings
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CATALOG#	Description
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FXBR1PG	Single blue mounting bracket for all 10" housings
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CATALOG#	Description
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FRXBR3	Universal, plastic triple bracket for 5" and 10" filter housings
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CATALOG#	Description
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FXBR1PN	Single blue mounting bracket for all 10" housings
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CATALOG#	Description
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FXBR3PN	Universal, plastic triple brackets for 5" and 10" filter housings
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CATALOG#	Description
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FXBR1PN-G	Single blue mounting bracket for all 10" housings
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CATALOG#	Description
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FXBRBBP-B	Single brackets for Big Blue® HB1B, HB1C, HB2B and HB2C filter housings
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CATALOG#	Description
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FXBR3-B	Special universal triple bracket for 5" and 10" filter housings with option to install additional filter cartridges
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CATALOG#	Description
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FXBR3PN-1W	Insert for FXBR3-W or FXBR3-B (white color) for 2" in-line cartridge installation
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CATALOG#	Description
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FXBR2	Universal, double bracket for 5" and 10" filter housings
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CATALOG#	Description
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FXBR2PN	Universal, plastic double brackets for 5" and 10" filter housings
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CATALOG#	Description
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EKOPF4-SLIM-BC	Blue plastic bracket and cover for EKOPF4-SLIM type filter housings.
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Metal mounting brackets



General Description for metal bracket's:

Available metal brackets are single, double and triple to meet customers demands. They fit most 5", 10" and 20" and Big Blue® housings commercially available.



CATALOG#	Description
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FXBR5	Single white metal mounting bracket for: FHHOT-1, FHHOT20-1, FHPR-L, FHPRC-L
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CATALOG#	Description
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FXBRBB3	Triple white metal mounting bracket for 10" and 20" Big Blue® housings
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CATALOG#	Description
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FXBRBB	Single white metal mounting bracket for 10" and 20" Big Blue® housings
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CATALOG#	Description
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FXBR7	Universal triple, metal mounting bracket for 10" and 20" housings. Not for Big Blue® series
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CATALOG#	Description
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FXBRBB2	Double white metal mounting bracket for 10" and 20" Big Blue® housings
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CATALOG#	Description
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MBK-09	Metal mounting bracket for RO system pump
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Hangers



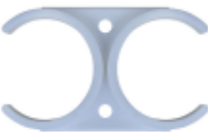
CATALOG#	Description
KF101	Single white clip for 2" in-line cartridge



CATALOG#	Description
DC-2000W	Double white clip 2" x 2"



CATALOG#	Description
C2500W	Single white clip for 2 1/2" in-line cartridge



CATALOG#	Description
DC-2500W	Double white clip 2" x 2 1/2"



CATALOG#	Description
C3000W	Single white clip for 3" in-line cartridge and RO housings



CATALOG#	Description
DC-3000W	Double white clip 1 1/2" x 2 1/2"

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JACO Connectors

General Description:

AQUAFILTER among its range of products has a broad list of JACO fittings. Available JACO fittings are listed below.

CATALOG#	Description	CATALOG#	Description
	AJ-1042 Male connector JACO 1/8" MIP (NPT) x 1/4" tube		AJ-6044 Male Branch Tee JACO 1/4" tube x 1/4" MIP (NPT) x 1/4" tube
	AJ-1044 Male connector JACO 1/4" MIP (NPT) x 1/4" tube		AJ-6064 Male Branch Tee JACO 3/8" tube x 1/4" MIP (NPT) x 3/8" tube
	AJ-1064 Male connector JACO 1/4" MIP (NPT) x 3/8" tube		AJ-6066 Male Branch Tee JACO 3/8" tube x 3/8" MIP (NPT) x 3/8" tube
	AJ-1564 Male connector JACO 3/8" MIP (NPT) x 1/4" tube		AJ-7044 Union Tee JACO 1/4" tube x 1/4" tube x 1/4" tube
	AJ-1066 Male connector JACO 3/8" MIP (NPT) x 3/8" tube		AJ-7066 Union Tee JACO 3/8" tube x 3/8" tube x 3/8" tube
	AJ-1564 Reducing Union JACO 1/4" tube x 1/4" tube		AJ-7544 Tee JACO 1/4" tube x 1/4" tube x 1/4" MIP (NPT)
	AJ-1544 Union Connector JACO 1/4" tube x 1/4" tube		AJ-7564 Tee JACO 1/4" tube x 1/4" tube x 3/8" MIP (NPT)
	AJ-2044 Bulkhead Union JACO 1/4" tube x 1/4" tube		AJ-7566 Tee JACO 3/8" tube x 3/8" tube x 3/8" MIP (NPT)
	AJ-2066 Bulkhead Union JACO 1/4" tube x 1/4" tube		AJ-7644 Male Reducing Tee JACO 3/8" tube x 1/4" MIP (NPT) x 1/4" tube
	AJ-2542 Female Connector JACO 1/4" tube x 1/8" FIP (NPT)		AJ-7646 Male Reducing Tee JACO 3/8" tube x 3/8" MIP (NPT) x 1/4" tube
	AJ-2544 Female Connector JACO 1/4" tube x 1/4" FIP (NPT)		AJ-4042-CV-O Connector JACO 1/8" MIP x 1/4" tube (with nut) and return valve
	AJ-4042 Male Elbow JACO 1/8" MIP (NPT) x 1/4" tube		AJ-0104 Nut 1/4"
	AJ-4044 Male Elbow JACO 1/4" MIP (NPT) x 1/4" tube		AJ-0308 Nut 3/8"
	AJ-4064 Male Elbow JACO 1/4" MIP (NPT) x 3/8" tube		AJ-INS14 Insert JACO for tube 1/4"
	AJ-4048 Male Elbow JACO 3/8" MIP (NPT) x 1/4" tube		AJ-INS38 Insert JACO for tube 3/8"
	AJ-4066 Male Elbow JACO 3/8" MIP (NPT) x 3/8" tube		
	AJ-1418 Female Elbow JACO 1/8" tube x 1/4" FIP (NPT)		
	AJ-4544 Female Elbow JACO 1/4" tube x 1/4" FIP (NPT)		
	AJ-5044 Union Elbow JACO 1/4" tube x 1/4" tube		

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Quick Connectors

General Description:

AQUAFILTER among its range of products has a broad list of QC Connectors. Available QC Connectors are listed below.

CATALOG#	Description	CATALOG#	Description
AQ-A4MC2-W	Connector 1/8" MIP (NPT) x 1/4" tube	AQ-A4UE4-W	Elbow (quick connector) 1/4" tube x 1/4" tube
AQ-A4MC4-W	Connector 1/4" MIP (NPT) x 1/4" tube	AQ-A5UE4-W	Elbow (quick connector) 3/8" tube x 1/4" tube
AQ-A4MC5-W	Connector 1/4" MIP (NPT) x 3/8" tube	AQ-A5UE5-W	Elbow (quick connector) 3/8" tube x 3/8" tube
AQ-A5MC4-W	Connector 3/8" MIP (NPT) x 1/4" tube	AQ-A4SE4-W	Elbow (quick connect) 1/4" tube x 1/4" push-in
AQ-A5MC5-W	Connector 3/8" MIP (NPT) x 3/8" tube	AQ-A4SE5-W	Elbow (quick connect) 1/4" tube x 3/8" push-in
AQ-A4UC4-W	Quick connector 1/4" tube x 1/4" tube	AQ-A5SE4-W	Elbow (quick connect) 3/8" tube x 1/4" push-in
AQ-A5UC4-W	Quick connector 3/8" tube x 1/4" tube	AQ-A5SE5-W	Elbow (quick connect) 3/8" tube x 3/8" push-in
AQ-A5UC5-W	Quick connector 3/8" tube x 3/8" tube	AQ-A4MBT4-W	Tee (quick connect) 1/4" tube x 1/4" MIP (NPT) x 1/4" tube
AQ-A4FA4-W	Quick Connector (adapter) 1/4" tube x 1/4" FIP (NPT)	AQ-A5MBT5-W	Tee (quick connect) 3/8" tube x 3/8" MIP (NPT) x 3/8" tube
AQ-A4FA716-W	Quick Connector (adapter) 1/4" tube x 7/16" faucet	AQ-A4TUR5-W	Tee (quick connect) 1/4" tube x 3/8" tube x 1/4" tube
AQ-A4FA12	Quick Connector (adapter) 1/4" tube x 1/2" FIP (NPT)	AQ-A5TUR5-W	Tee (quick connect) 3/8" tube x 1/4" tube x 3/8" tube
AQ-A4SA4-W	Connector 1/4" MIP (NPT) x 1/4" push-in	AQ-A4TU4-W	Tee (quick connect) 1/4" tube x 1/4" tube x 1/4" tube
AQ-A4SA5-W	Connector 1/4" MIP (NPT) x 3/8" push-in	AQ-A5TU5-W	Tee (quick connect) 3/8" tube x 3/8" tube x 3/8" tube
AQ-A5SA4-W	Connector 3/8" MIP (NPT) x 1/4" push-in	AQ-A4MT4-W	Tee (quick connect) 1/4" tube x 1/4" tube x 1/4" MIP (NPT)
AQ-A5SA5-W	Connector 3/8" MIP (NPT) x 3/8" push-in	AQ-A5MT4-W	Tee (quick connect) 3/8" tube x 1/4" tube x 1/4" MIP (NPT)
AQ-A4BU4-W	Quick connector with adapter 1/4" tube x 1/4" tube	AQ-A4TR4-W	Tee (quick connect) 1/4" tube x 1/4" push-in x 1/4" tube
AQ-A4BU5-W	Quick connector with adapter 1/4" tube x 3/8" tube	AQ-A5TR5-W	Tee (quick connect) 3/8" tube x 3/8" push-in x 3/8" tube
AQ-A5BU5-W	Quick connector with adapter 3/8" tube x 3/8" tube	AQ-A4SRT4-W	Tee (quick connect) 1/4" tube x 1/4" tube x 1/4" push-in
AQ-A4ME2-W	Elbow (quick connect) 1/8" MIP (NPT) x 1/4" tube	AQ-A5SRT5-W	Tee (quick connect) 3/8" tube x 3/8" tube x 3/8" push-in
AQ-A4ME4-W	Elbow (quick connect) 1/4" MIP (NPT) x 1/4" tube	AQ-A4TWD4-W	Two Way Divider (quick connect) 1/4" tube x 1/4" tube x 1/4" push-in
AQ-A4ME5-W	Elbow (quick connect) 1/4" MIP (NPT) x 3/8" tube	AQ-A5TWD5-W	Two Way Divider (quick connect) 3/8" tube x 3/8" tube x 3/8" push-in
AQ-A5ME4-W	Elbow (quick connect) 3/8" MIP (NPT) x 1/4" tube		
AQ-A5ME5-W	Elbow (quick connect) 3/8" MIP (NPT) x 3/8" tube		
AQ-A4ME2-CV-W	Elbow (quick connector) with check valve 1/8" MIP x 1/4" tube		



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Quick Connectors



- AQ-A4LC-BL Locking Clip - 1/4" - Blue color
- AQ-A5LC-BL Locking Clip - 3/8" - Blue color
- AQ-A4LC-R Locking Clip - 1/4" - Red color

AQCWW-W Universal wrench
for QUICK CONNECT SYSTEM



- AQ-PL2-B_K Blue color Plug - 1/4"
- AQ-PL2-G_K Green color Plug - 1/4"
- AQ-PL2-R_K Red color Plug - 1/4"
- AQ-PL2-Y_K Yellow color Plug - 1/4"
- AQ-PL2-W_K White color Plug - 1/4"
- AQ-A4W Collets - 1/4"
- AQ-A5W Collets - 3/8"

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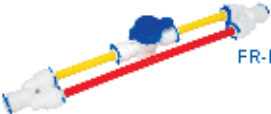


Valves



General Description:

AQUAFILTER among its range of products has a broad list of valves. Available valves are listed below.

CATALOG#	Description
 CV1418	Check valve 1/4" MIP (NPT) x 1/8" MIP (NPT)
 CV14	Stainless steel check valve 1/8" MIP (NPT) x 1/8" MIP (NPT)
 SEWBV1414	Ball valve 1/4" tube x 1/4" MIP (NPT)
 AT-BV250W	Ball Valve 1/4" FIP (NPT) x 1/4" FIP (NPT)
 AQ-SEWBV1414-PP	Ball Valve 1/4" tube x 1/4" MIP (NPT)
 AQ-BV250W	Ball Valve (Quick connector) 1/4" tube x 1/4" tube
 AJ-S-3000W	Four-Way Valve JACO 4 x 1/4" tube
 AQ-S-3000W	Four-Way Valve (Quick connector) 4 x 1/4" tube

 AQ-BV9014	Ball valve QUICK connect type for RO water storage tank 1/4" tube x 1/4" FIP (NPT)
 AT-SV-1000	Electromagnetic valve for RO systems Power (24VDC-230MA)
 F10SV-2	Ball valve for in-line filters series: H10G, H101, H103, H104 3/8" FIP x 3/8" MIP (NPT)
 FR-FLUSH	RO flush kit for membranes. This kit allows you to bypass the flow restrictor and "power flush" the membrane(s) to remove scale build-up and organic and inorganic contaminants from the membrane surface. By flushing the membrane(s) regularly you can help extend the life of the membrane
 C-256	Check valve JACO type
 C-220	Check valve QUICK connect

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KTPE series

Tubing

General Description:

AQUAFILTER KTPE14 and KTPE38 are tubings made of 100% virgin grade, FDA compliant linear low density polyethylene (LLDPE).

Tubings made of such material exhibits high degree of inertness (both chemical and biological) which is essential in a various branches of industry, eg. food, beverage and chemical.

Another undeniable benefit of polyethylene is low cost which satisfies many requirements that call for inexpensive, lightweight tubing.

PE tubing handles a wide variety of applications ranging from potable water feed, drain lines and many more. The tubings was designed for customers who demand top quality product.

In order to ensure instant but permanent leak-proof connection pushing a tube into a fitting is all what you need to do. **KTPE14** and **KTPE38** are available in various colours and lengths to meet customers demands.

Recommendations for Use:

- RO systems
- Water filtration systems
- Aggressive chemical environment

Features:

- High quality
- Competitive Pricing
- Four Stages of Filtration
- Made in EU
- Available in many colors
- Available in two sizes - 1/4" and 3/8"
- Strong, Flexible, and Robust
- Manufactured from FDA CFR-21 compliant materials (Food Quality)



Made in EU



CATALOG#	KTPE14W	KTPE14W-50	KTPE14BL	KTPE14R	KTPE14Y	KTPE38BL
Size	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"
Material	PE	PE	PE	PE	PE	PE
Max. Working Pressure	6 bar (90 psi)	6 bar (90 psi)	6 bar (90 psi)	6 bar (90 psi)	6 bar (90 psi)	6 bar (90 psi)
Working Temperature	2°C - 23°C (35°F - 73.4°F)	2°C - 23°C (35°F - 73.4°F)	2°C - 23°C (35°F - 73.4°F)	2°C - 23°C (35°F - 73.4°F)	2°C - 23°C (35°F - 73.4°F)	2°C - 23°C (35°F - 73.4°F)
Lenght	300 m	50 m	300 m	300 m	300 m	150 m
Color	White	White	Blue	Red	Yellow	Blue

Specifications:

Material used: FDA compliant LLDPE
Colour: various

Length: from 50 to 300 meters

Available size: 1/4" and 3/8"

Working temperature: 2°C - 23°C (35°F - 73.4°F)

Max. working pressure: 6 bar (90 psi)

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Diaphragm pumps for Reverse Osmosis systems - the set contains connectors, mounting bracket, valves (high and low pressure) and transformers

General Description:

AQUAFILTER pumps are very effective and were designed for many years of efficient service (continuous duty pumps).

Moreover these pumps are very quiet. You will have to listen closely to know if they are working.

The pumps were designed especially for RO filtration systems and are used when water supply pressure is less than 2.8 bar. The pumps will increase water inlet pressure ensuring good performance of any RO system. They shut off automatically when the tank is full. Very easy to install.

Features:

- High quality
- Competitive pricing
- Fast product delivery
- Made in EU*

* only AFXPOMP-4

Specifications:

Flow: 1.5 l/min

Max. inlet pressure: 2 bar (30 psi)

Max. outlet pressure: 5.5 bar (82.5 psi)

Current Intensity - pump: 1.2 A

Current Intensity - transformer: 1.7 A

Power: 24 V / DC

AFXPOMP-4 dimensions (H x W x L): 160 mm x 155 mm x 345 mm

AFXPOMP-4

Features:

- Contains water softening and iron removal cartridge, which prevents pump from being damaged.
- Compatible with most RO systems commercially available.
- High efficiency.
- Available with transformer, mounting esthetic case and connector fittings.
- High and low-pressure valves included.
- Product available with aesthetic casing.



AFXPOMP

Features:

- Compatible with most RO systems - commercially available
- High efficiency
- Available with transformer, mounting bracket and connector fittings
- High and low-pressure valves included



M1207515_K

Features:

- Compatible with most RO systems - commercially available
- High efficiency

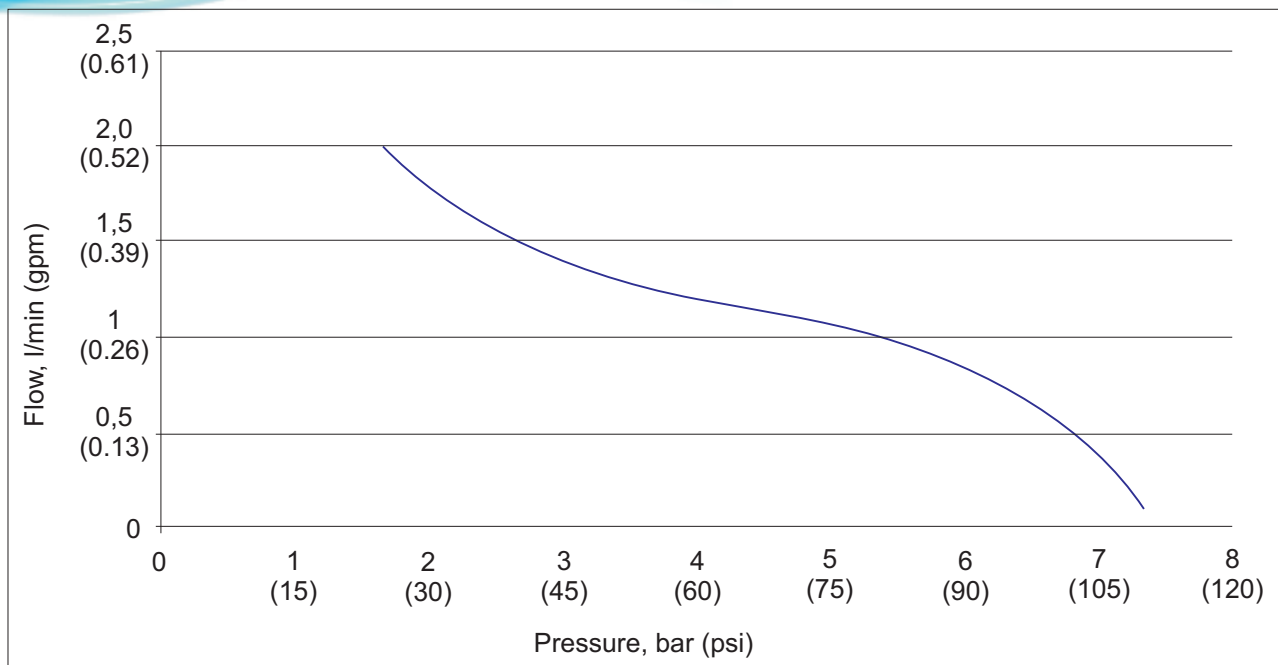




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Accessories for pumps



CATALOG#	Description
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AQ-HP1000-B	High pressure switch for RO pump - 1/4" QC
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CATALOG#	Description
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AJ-HP1000-B	High pressure switch for RO pump - 1/4" tube
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CATALOG#	Description
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AQ-HP1000-W	High pressure switch for RO pump - 1/4" QC
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CATALOG#	Description
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AQ-LP1000-B	Low pressure switch for RO pump - 1/4" QC
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CATALOG#	Description
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AQ-LP1000-W	Low pressure switch for RO pump - 1/4" QC
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CATALOG#	Description
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AT-LP1000-B	Low pressure switch for RO pump - 1/4" tube
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CATALOG#	Description
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M120501-T50	Transformer for RO pumps Power (230 / 24V) Current Intensity (5 A)
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CATALOG#	Description
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M120501-TNPL-1	Transformer for RO pumps Power (230 / 24V) Current Intensity (1.5 A)
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CATALOG#	Description
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M120501-T17	Transformer for RO pumps Power (230 / 24V) Current Intensity (1.7 A)
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PH600 and TDS-3



PH-600



TDS-3

General Description:

AQUAFILTER PH-600 is an electronic device for measuring of the pH (acidity or alkalinity).

It is ideal for testing applications such as hydroponics & gardening, pools & spas, aquariums & reef tanks, water ionizers, drinking water and more.

Perfect for both consumer or commercial use. Meter also measure temperature of water and has "HOLD" function - for accurate and convenient reading.

It is equipped with battery saving mode - capable of turning itself off after 10 minutes of no activity. **PH-600** can be easily re-calibrated using standard buffer

Features:

- High quality
- Competitive Pricing
- Quick delivery
- Measures pH and Temperature simultaneously automatic digital calibration
- Water resistant
- Large LCD display
- Low power battery indicator
- Auto-off and Hold functions
- Includes a cap, batteries, storage solution and pH 7.0 buffer
- Factory Calibrated. The meter can easily and quickly be recalibrated with digital calibration to pH 4.0, 7.0 or 10.0 using the meter's simple one-touch process

Specifications:

pH Range: 0 - 14
Resolution: 0.1
Accuracy: +/- 0.2 pH
Temperature Range: 1°C - 80°C (33.8°F-176°F)
Temperature resolution: 0.1 °C/F
Temperature accuracy: +/-2%
Calibration: automatic calibration
Minimum EC/TDS: 10 µS/5 ppm
Electrode: Glass sensor and reference tube electrodes
Housing: Water resistant
Power source: 3 x 1.5V button cell batteries (model LR44 or equivalent included)
Dimensions: 15.3 x 3.2 x 1.8 cm (6.0 x 1.3 x 0.7 inches)
Weight: 53.9 g (1.9 oz)

General Description:

AQUAFILTER TDS-3 is a professional equipment for **TDS measuring**. **TDS (Total Dissolved Solids)** are the total amount of mobile charged ions, including minerals, salts or metals dissolved in a given volume of water.

This value is expressed in units of mg per unit volume of water (mg/l), also referred to as parts per million (ppm). **TDS** is directly related to the purity of water and the quality of water purification systems.

The product is ideal for all water purification applications, wastewater regulation, aquaculture, hydroponics, etc. Perfect for both consumer or commercial use. Meter also measure temperature of water and has "HOLD" function - for accurate and convenient reading. It is equipped with battery saving mode - capable of turning itself off after 10 minutes of no activity.

TDS-3 can be re-calibrated using NaCl 342 ppm solution. Product is sold with a carrying case.

Please note that TDS meter does NOT measure water hardness.

Features:

- High quality
- Competitive Pricing
- Quick delivery
- Measures pH and Temperature simultaneously automatic digital calibration
- Water resistant
- Large LCD display
- Low power battery indicator
- Auto-off and Hold functions
- Includes a cap, batteries, storage solution and pH 7.0 buffer
- Factory Calibrated. The meter can easily and quickly be recalibrated with digital calibration to pH 4.0, 7.0 or 10.0 using the meter's simple one-touch process

Specifications:

Measurement range (ppm): 0 - 9990 ppm
Temp. measured: 2°C - 80°C (35°F-176°F)
Resolution: 0-999: 1 ppm 1000-9990: 10 ppm (indicated by a 'x10' icon)
Temperature Resolution: 0.1 °C/F
Accuracy: +/- 2%
EC-to-TDS Conversion Factor: NaCl (avg. 0.5)
Power source: 2 x 1.5V button cell batteries (included) (LR44 or equivalent)
Battery life: approx. 1000 hours of usage
Dimensions: 15.5 x 3.1 x 2.3 cm (6.1 x 1.25 x 1 inches)
Weight with case: 76.5g (2.7 oz)
Weight without case: 56.7g (2 oz)

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FXT-PROF

Professional Tester Set

AQUAFILTER Water Test Kit - reliable, accurate and cost effective. Designed in a way allowing non-professionals to conduct basic tests, i.e. pH, free chlorine, total hardness, total iron, manganese, hexavalent chromium, nitrites (chemical testers, which base on the principle of visual color comparison), ORP and TDS (electronic meters). The kit is packed in a handy case.

Features:

- High quality
- Competitive Pricing
- Quick delivery



CATALOG#	Description
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EODC-WTR-PH

Fast, easy to use and accurate water pH tester. Capable of testing colorless liquids in 4-10 pH range. One 15ml bottle allows to conduct up to 150 tests.



CATALOG#	Description
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EODC-WTR-Cl-1

Fast, easy to use and accurate free chlorine tester. Allows to measure free chlorine content in water in 0,05 – 1 mg/l (ppm) range. One set allows to conduct up to 50 tests.



CATALOG#	Description
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EODC-WTR-TH-3

Fast, easy to use and accurate water hardness tester. Allows to measure water total hardness in 1,5-45 dH* range. One set allows to conduct up to 50 tests.

* dH – German degrees of hardness.



CATALOG#	Description
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EODC-WTR-FE

Fast, easy to use and accurate total iron tester. Allows to measure total iron level in water in 0,05 – 1 mg/l (ppm) range. One set allows to conduct up to 25 tests.



CATALOG#	Description
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EODC-WTR-MN

Fast, easy to use and accurate manganese tester. Allows to measure manganese level in water in 0,05 – 10 mg/l (ppm) range. One set allows to conduct up to 25 tests.



CATALOG#	Description
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EODC-WTR-CR-6CL

Fast, easy to use and accurate hexavalent chromium tester. Allows to measure hexavalent chromium level in water in 0,01 – 1 mg/l (ppm) range. One set allows to conduct up to 30 tests.



CATALOG#	Description
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EODC-WTR-NO2

Fast, easy to use and accurate nitrite tester. Allows to measure nitrites content in water in 0,01 – 0,5 mg/l (ppm) range. One set allows to conduct up to 30 tests.

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Controllers & Testers



CATALOG#	Description
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CE24	Electronic controller for RO systems
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CATALOG#	Description
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AIMIAO2_K	Leak detection sensor
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CATALOG#	Description
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TDS81	Flow based TDS meter with LCD screen (inlet/outlet TDS readings)
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CATALOG#	Description
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ELE-220-LT204	Electrolizer
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CATALOG#	Description
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RT750	Water Quality Tester with LED indicator
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CATALOG#	Description
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FXT-AQ	One time use water quality test kit
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Packaging Contents

Colorimetric Test for Water pH and Alkalinity Testing
Colorimetric Test for Water Hardness Testing
Colorimetric Test for Iron Content in Water
Colorimetric Test for Chlorine Content in Water



CATALOG#	Description
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FXT-3-AQ	One time use water quality test kit
----------	-------------------------------------

Packaging Contents

Colorimetric Test for Water pH Testing
Colorimetric Test for Water Alkalinity Testing
Colorimetric Test for Water Hardness Testing
Colorimetric Test for Iron Content in Water
Colorimetric Test for Chlorine Content in Water
Colorimetric Test for Nitrates Content in Water
Colorimetric Test for Nitrites Content in Water

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Accessories

Reducing Connectors



CATALOG#	Description
FX1121	1 1/2" MIP x 1" FIP
FX112	1" MIP x 1/2" FIP
FX134	1" MIP x 3/4" FIP
FX3412	3/4" MIP x 1/2" FIP
FX3414	3/4" MIP x 1/4" FIP
FX3438	3/4" MIP x 3/8" FIP
FX1214	1/2" MIP x 1/4" FIP

Filter Connectors



KF1415	1/4" MIP x 1/4" MIP
KF3815	3/8" MIP x 3/8" MIP
FXCG12	1/2" MIP x 1/2" MIP
FXCG34	3/4" MIP x 3/4" MIP
FXCG1	1" MIP x 1" MIP

Brass Filter Connectors



FXCG12-B	1/2" MIP x 1/2" MIP
FXCG34-B	3/4" MIP x 3/4" MIP
FXCG1-B	1" MIP x 1" MIP
FXCG114-B	1 1/4" MIP x 1 1/4" MIP
FXCG112-B	1 1/2" MIP x 1 1/2" MIP

Cartridge Connectors



CC25	Filter cartridge connector for FCPP and FCPS series
CC45	Filter cartridge connector for FCPP and FCPS series Big Blue®

Brass Connection Adapters



FT02	3/4" MIP x 3/4" FIP
FT03	3/8" MIP x 3/8" FIP x 1/4" FIP
FT04	1/2" MIP x 1/2" FIP x 1/2" FIP
FT06	1/2" MIP x 1/2" FIP x 1/4" FIP
FT07	3/4" MIP x 3/4" FIP x 1/4" FIP

Plastic Connection Adapters



FT06-P	1/2" MIP x 1/2" FIP x 1/4" FIP
FT08-P	1/2" MIP x 1/2" FIP x 3/8" FIP

Tanks for RO



CATALOG#	Description
PRO4000W	Water storage pressurized tank for RO systems
Capacity	15 liters (nominal capacity)
Dimensions	380 mm x 280 mm
PRO3200P	Water storage pressurized tank for RO systems
Capacity	12 liters (nominal capacity)
Dimensions	345 mm x 235 mm

Drainage Clamp



AQ-SC500B14	Drainage Clamp 1/4" tube (Quick connector)
AJ-SC500B14	Drainage Clamp 1/4" NUT

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AT-SC500B14

Drainage Clamp
1/4" NPT

Flow Restrictors



AQ-FR-300 Flow Restrictor - 300cc/min. - 1/4" QC

AQ-FR-420 Flow Restrictor - 420cc/min. - 1/4" QC

AQ-FR-500 Flow Restrictor - 500cc/min. - 1/4" QC

AQ-FR-550 Flow Restrictor - 550cc/min. - 1/4" QC



AT-FR-300 Flow Restrictor - 300cc/min. - 1/4" NPT

AT-FR-420 Flow Restrictor - 420cc/min. - 1/4" NPT

AT-FR-800 Flow Restrictor - 800cc/min. - 1/4" NPT

AT-FR-1200 Flow Restrictor - 1200cc/min. - 1/4" NPT



AJ-FR-300 Flow Restrictor - 300cc/min. - 1/4" NUT

AT-FR-420 Flow Restrictor - 420cc/min. - 1/4" NUT

AT-FR-500 Flow Restrictor - 500cc/min. - 1/4" NUT

Accessories for FHCTF



EB14L-B

Brass, outlet adapter
for counter-top filters
1/4" MIP x Faucet



EB14W-B

Brass, inlet connector
for counter top filters
1/4" MIP x 1/4" tube



FxFVP-2

Chrome-plated connection
adapter with by-pass valve



FXFTP

Connection adapter
for kitchen sink faucet



CTS500

Base stand
for countertop filter



PTS800C-B

Chrome-plated faucet
for kitchen filters FHCTF series

Pressure Gauges

CATALOG#	Description
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KCGA-1	Pressure Gauges
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Measurement range	0 - 10 bar
Thread Diameter	1/4" MIP NPT

KCGA-1-E2	Nickel extension to the pressure gauge
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KCGA-PREG	Pressure gauge w. 0-10 bar range, with pressure regulator.
-----------	--



Disinfection Sets

Single use disinfection set.
Set includes:
sediment filter disinfection
solution, tubing and connectors.

PDEZYN2



SRODEZYN_K Granular disinfection media



Other

Teflon tape

Size

TAS0003	10 meters x 10 mm x 0.1 mm
TAS0004	10 meters x 10 mm x 0.075 mm
TAS0005	4 meters x 10 mm x 0.075 mm



FSCR100L Mesh filter cartridge (100 µm)
for FXO-80L Water Filter

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Accessories

O-rings and Washers

CATALOG#	Description
----------	-------------



OR-N-925X35 Rubber O-ring for H05A (old type) and H10J series

Material NBR

Purpose FHPR5
FHBP

OR-N-880X40 Rubber top O-ring for the housings from H10A, H10B, H10B-AB, H10C, H10K, H105 series

Material NBR

Purpose FHPRx-B-AQ, FHPRx-B1-AQ
FHPRNx
FHPRx-B-AQ-AB, FHPRGx-B-AQ-AB
FHPRx-B1-AQ-AB, FHPRGx-B1-AQ-AB
FHPRx-HP1, FHPRx-HP-S
EG14CWAQ-4, EG14WWAQ-4
EG14CWAQ-5, EG14WWAQ-5
FHPRx-HPR-S

OR-N-900X35 Rubber bottom O-ring for the housings from H10A, H10B, H10C, H10K, H105 series

Material NBR

Purpose FHPRx-B-AQ, FHPRx-B1-AQ
FHPRNx
FHPRx-B-AQ-AB, FHPRGx-B-AQ-AB
FHPRx-B1-AQ-AB, FHPRGx-B1-AQ-AB
FHPRx-HP1, FHPRx-HP-S
EG14CWAQ-4, EG14WWAQ-4
EG14CWAQ-5, EG14WWAQ-5
FHPRx-HPR-S

OR-H10-1 The set of rubber top/bottom O-rings for the housings from H10A, H10B, H10C, H10K, H105 series

Material NBR

Purpose FHPRx-B-AQ, FHPRx-B1-AQ
FHPRNx
FHPRx-B-AQ-AB, FHPRGx-B-AQ-AB
FHPRx-B1-AQ-AB, FHPRGx-B1-AQ-AB
FHPRx-HP1, FHPRx-HP-S
EG14CWAQ-4, EG14WWAQ-4
EG14CWAQ-5, EG14WWAQ-5
FHPRx-HPR-S

CATALOG#	Description
----------	-------------

OR-N-620X35 Rubber top O-ring for the housings from SLIM series

Material NBR

Purpose EKOF4-SLIM1
EKOF4-SLIM2
EKOF4-SLIM3
EKOF4-SLIM4

OR-N-620X20 Rubber bottom O-ring for the housings from SLIM series

Material NBR

Purpose EKOF4-SLIM1
EKOF4-SLIM2
EKOF4-SLIM3
EKOF4-SLIM4

OR-N-890X35 Rubber O-ring for H10G, H101 series (old type)

Material NBR

Purpose FHPRx-3S
FHPRx-3_R
FHPRx-3V_R
F10NN2PC_R
F10NN2PC-V_R

OR-N-890X30 Rubber O-ring for filter housings series H05A, H05A-AB, H10G, H10G-V, H10G-AB, H10G-V-AB (production Poland)

Material NBR

Purpose FHPR5-x, FHPRN5-x
FHPR5-x-AB, FHPRG5-x-AB
FHPR5-x-WB, FHPRN5-x-WB
FHPR5-x-WB-AB, FHPRG5-x-WB-AB
FHPRx-3S, FHPRNx-3S
FHPRx-3S-AB, FHPRGx-3S-AB
FHPRx-3_R, FHPRNx-3_R
FHPRx-3_R-AB, FHPRGx-3_R-AB
FHPRx-3VS, FHPRNx-3VS
FHPRx-3VS-AB, FHPRGx-3VS-AB
FHPRx-3V_R, FHPRNx-3V_R
FHPRx-3V_R-AB, FHPRGx-3V_R-AB



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Accessories

O-rings and Washers

CATALOG#	Description
----------	-------------

OR-N-915X40 Rubber O-ring for the hosings from H10I series

Material NBR

Purpose FHPR12-N
FHPR12-N1
FHPR12-N-TWIN

OR-N-1524X57 Rubber O-ring for the housings from HB1B, HD1D, HD1C, HB2B, HD2D, HD2C series

Material NBR

Purpose FH10Bx_M
FH20Bx_L
FH10B1-B-WB
FH20B1-B-WB
FH10Bx-WB
FH20Bx-WB

OR-N-1080X35 Rubber O-ring for the housings from H102, H20A, H20H series

Material NBR

Purpose FHHOT-1
FHHOT20-1
FHPR-L
FHPRC-L

OR-N-340X20 Rubber O-ring for the housings from HSH1 series

Material NBR

Purpose FHMB12_X

OR-N-390X25 Rubber O-ring for the housings from HSH1 series

Material NBR

Purpose FHMB34_X

CATALOG#	Description
----------	-------------

OR-N-400X20 Rubber O-ring for the housings from HSH1 series

Material NBR

Purpose FHMB1_X

OR-N-630X40 Upper and lower O-ring for RO membrane housing YT-25W

Material NBR

Purpose YT-25W

OR-N-925X40 Oring for RO membrane housing YT-3 (HM35)

Material NBR

Purpose YT-3

OG-E-82X36X25 Seal for air pressure relieve valve for housing series: H10B

Material NBR

Purpose FHPRx-B-AQ
FHPRx-B1-AQ

OR-N-110X255 O-ring for air pressure relieve valve for housing series: H10C, HB1B, HB1D, HB2B, HB2D

Material NBR

Purpose FHPRx-HP1
FHPRx-HP-WB
FH10Bx_M
FH20Bx_L
FH10B1-B-WB
FH20B1-B-WB

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Media

General Description:

AQUAFILTER among its range of products has a broad list of water treatment media. Available media are listed below.

AQ-AA - Activated Alumina Density (lb/ft³): 43 Bed depth (inches): 36+ Service flow (gpm/ft²): 1-2 Backwash flow (gpm/ft²): 8-10  Activated Alumina is "a mixture of amorphous and gamma aluminum oxide" that is used for removal of arsenic, fluoride, selenium, silica and humic acids. For arsenic and fluoride treatment, low pH (5.5-6) is superior. It can be regenerated with sodium hydroxide.	AQ-NN - Anthracite Density (lb/ft³): 50 Bed depth (inches): 24-36 Service flow (gpm/ft²): 5 Backwash flow (gpm/ft²): 12-18:anthracite  Crushed anthracite coal has long been a favorite medium-weight filter for sediment reduction. It is now most often used with sand and other media in media in multi-media filters.	AQ-GA - Garnet Density (lb/ft³): 140 Bed depth (inches): 10+ Service flow (gpm/ft²): 10 Backwash flow (gpm/ft²): 25-30  Garnet is a natural medium used most often in multi-media filters. It is very fine and filters down to the 10-20 micron range.
A8021-01 - Calcite (Crushed marble) Density (lb/ft³): 100 Bed depth (inches): 24-30 Service flow (gpm/ft²): 2-6 Backwash flow (gpm/ft²): 10-12  Calcite is crushed marble. It is naturally occurring calcium carbonate. It is used to raise the pH of acidic water. Since it is dissolved only in acidic water, it is self-limiting. When acidic water reaches neutral pH, no more calcite is dissolved.	A8011-03 - Corosex® Density (lb/ft³): 100 Bed depth (inches): 24-30 Service flow (gpm/ft²): 5-6 Backwash flow (gpm/ft²): 10-12  Like calcite, corosex, which is magnesium oxide, is used to correct low pH situations. Unlike calcite, it has a tendency to overcorrect, especially if the flow rate is low. It is preferred for very low pH and for very high flow rates.	AQ-AG - Filter-Ag® Density (lb/ft³): 25 Bed depth (inches): 24-36 Service flow (gpm/ft²): 5 Backwash flow (gpm/ft²): 8-10  Filter-Ag is a manufactured lightweight sand substitute, which weighs about 1/4 as much as sand. It's main function is for removal of suspended solid but is also used at times for iron reduction.
KDF73  KDF73 high purity copper/zinc granules use redox (exchange of electrons) to remove chlorine and heavy metals. KDF55 is 50% copper and 50% zinc. This grade of KDF is most often used for chlorine and heavy metals reduction. It also has bacteriostatic properties. Has an unusually high flow rate, but also requires a strong backwash stream. Cannot be used in "aggressive" water and is often preceded by some form of neutralization.	999-BT - Granular Activated Carbon Density (lb/ft³): 25 Bed depth (inches): 24-36 Chlorine rem. serv. flow: 3-5 Organic removal flow(gpm/ft²): 1-3 Backwash flow (gpm/ft²): 8-10  Granular carbon is the standard media for most chemical reduction situations. Its high surface area gives it massive adsorptive capacity. It can be manufactured from animal bones, wood, and petroleum, but most carbon is produced from anthracite coal or coconut shells.	KDF55 Density (lb/ft³): 171 Bed depth (inches): 10+ Service flow (gpm/ft²): 30 Backwash flow (gpm/ft²): 30  KDF55 high purity copper/zinc granules use redox (exchange of electrons) to remove chlorine and heavy metals. KDF55 is 50% copper and 50% zinc. This grade of KDF is most often used for chlorine and heavy metals reduction. It also has bacteriostatic properties. Has an unusually high flow rate, but also requires a strong backwash stream. Cannot be used in "aggressive" water and is often preceded by some form of neutralization.
KDF85 Density (lb/ft³): 1741 Bed depth (inches): 10+ Service flow (gpm/ft²): 15 Backwash flow (gpm/ft²): 30  High purity copper/zinc granules that use redox to remove chlorine and heavy metals. KDF85 is 85% copper and 15% zinc. This grade of KDF is most often used for iron, manganese and hydrogen sulfide reduction. It also has bacteriostatic properties. It has an unusually high flow rate, but also requires a strong backwash stream. Cannot be used in "aggressive" water and is often preceded by some form of neutralization.	AQ-MA - Manganese Greensand Density (lb/ft³): 85 Bed depth (inches): 30-36 Service flow (gpm/ft²): 2-5 Backwash flow (gpm/ft²): 12-15  Manganese greensand is a purple-black filtration medium made from naturally occurring greensand coated with manganese. It serves as a catalyst to precipitate hydrogen sulfide, iron and manganese. It can be continuously regenerated with chlorine and/or potassium permanganate, or it can be intermittently regenerated with potassium	AQ-MT - MTM® Density (lb/ft³): 27 Bed depth (inches): 24-36 Service flow (gpm/ft²): 3-5 Backwash flow (gpm/ft²): 8-10  MTM is a granular manganese dioxide filtering medium that works in much the same way as manganese greensand and is regenerated also with chlorine and/or potassium permanganate.
Multi-media (multi-layer) Density (lb/ft³): 92 Bed depth (inches): 36 Service flow (gpm/ft²): 10 Backwash flow (gpm/ft²): 15  Multi-media filters consist of several layers -- usually three to five--of different media. The media are loaded by density--the most dense in the bottom of the tank, the least dense on top. This produces a filter with excellent flow rate and relatively easy backwash properties that will filter down to ten microns. The most common media mix is (top to bottom) anthracite, filter sand, garnet 30 X 40, garnet 8 X 12, and gravel. Corosex, MTM, Birm and FilterAg are registered trademarks of Clack Corporation.	AQ-PY - Pyrolox Density (lb/ft³): 125 Bed depth (inches): 24+ Service flow (gpm/ft²): 5 Backwash flow (gpm/ft²): 25-30  Pyrolox is a mined ore--manganese dioxide--used for manganese, iron and hydrogen sulfide reduction. Like Birm, greensand, and MTM, it acts as a catalyst to oxidation. Waters low in dissolved oxygen can use the catalytic properties of Pyrolox. It must be backwashed aggressively, although no regenerant is needed. The leading causes of filter failure when using Pyrolox are inadequate backwashing and low dissolved oxygen.	A8006 - Birm® Density (lb/ft³): 46 Bed depth (inches): 30-36 Service flow (gpm/ft²): 3.5-5 Backwash flow (gpm/ft²): 10-12  Birm is a manufactured medium designed for iron and manganese reduction. It causes iron and manganese to precipitate then filters out the particulate. It can be used with or without an oxidizer. It's success without an oxidizer depends a great deal on the amount of dissolved oxygen in the water. (Testing for dissolved oxygen isn't easy, so trial and error is often the best policy.)

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Media

General Description:

AQUAFILTER among its range of products has a broad list of water treatment media. Available media are listed below.

999-DL06-A - Granular Activated Carbon Density (lb/ft ³): 25 Bed depth (inches): 24-36 Chlorine rem. serv. flow: 3-5 Organic removal flow(gpm/ft ²): 1-3 Backwash flow (gpm/ft ²): 8-10 Coconut Shell Activated Carbon	 Strongly acidic, high capacity ion exchange resin in sodium form. Replaces calcium and magnesium with sodium ions. Removes water hardness.	 Strongly acidic, high capacity ion exchange resin in sodium form. Replaces calcium, magnesium and iron with sodium ions. Removes water hardness and iron content.
A8004 - Polyphosphate - Anti-Scale Medium Polyphosphates are scale inhibiting chemicals, it was discovered that they could also slow the scale development process when added to the water supply in very small amounts. Polyphosphates interfere with the bonding process of the mineral components, or the cations and anions, of scale. Polyphosphates offer a reasonable, low-cost compromise for scale reduction when compared to more complex technologies such as water softening and Reverse Osmosis. They are reasonably effective in water supplies with hardness levels up to 15 grains per gallon. Above this, alternative methods of scale control should be considered.	 Negative ion ceramic ball is made from natural stones through the nanometer processing which can be continuously produced negative ions, widely used in industry, food industry, water treatment, home and the environment clean. Negative ion ceramic ball has smooth surface without dust and precipitates while dipping in water. Test proved that negative ions can release 1000 / CM3 according to the different demand. Application: By adding negative ions ceramic ball in drinking water, the water can kill bacteria, increase dissolved oxygen, and activate water. Negative ion ceramic ball can also be used for water heaters in bathrooms to make oxygen-rich water and increase air negative ion concentration	 Negative ion ceramic ball is made from natural stones through the nanometer processing which can be continuously produced negative ions, widely used in industry, food industry, water treatment, home and the environment clean. Negative ion ceramic ball has smooth surface without dust and precipitates while dipping in water. Test proved that negative ions can release 2000 / CM3 according to the different demand. Application: By adding negative ions ceramic ball in drinking water, the water can kill bacteria, increase dissolved oxygen, and activate water. Negative ion ceramic ball can also be used for water heaters in bathrooms to make oxygen-rich water and increase air negative ion concentration
AQ-ORP - ORP ceramic ball reducing negative potential(ORP) adjusts oxidation/reduction potential (ORP)	 Potassium hydrogen. Tartrate C4H5KO6, E336 mineralization, increasing potassium content	 Energy ceramic ball and activation decrease water molecules
AQ-FCC - Natural coral Calcium Natural coral Calcium media mineralization, adjusting pH	 Maifan Stone ceramic ball Mineralization	 Mineral stone media mineralization, adjusting pH
AQ-TOU - Tourmaline energy ceramic ball Tourmaline energy ceramic ball activation and adjusting PH value	 Magnetic ceramic ball magnetotherapy	 Far infrared ceramic ball far infrared ray function

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Wrench



General Description:

AQUAFILTER among its range of products has a broad list of wrench. Available wrench are listed below.

CATALOG#	Description	CATALOG#	Description
 FXWR	Wrench for EKOP4 & EKOP4-PLUS undercounter systems and for YT-25W RO membrane housing	 FXWR3-BL	Wrench for 10" tri-part filter housings - produced in Poland
 FXWR1-BL	Universal wrench for 5" and 10" filter housings	 FXWRHOT	Wrench for in-line filter housings series H102 and H20H
 FXWR2	Wrench for 10" filter housings (H10E i H10F)	 FXWR1BB-BL	Filter housing wrench for 10" & 20" Big Blue® filter housings HB1A, HB1B, HB2A and HB2B series
 FXWR3	Wrench for 10' tri-part filter housings	 FXWR1BB-BL	Filter housing wrench for 10" & 20" Big Blue® filter housings - old type

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FXFCH series

Faucets

General Description:

AQUAFILTER FXFCH17-C is a brass chrome plated, single-way kitchen faucet. Using this attractive, high quality dispenser faucet you can provide your family with fresh, great tasting drinking water from your RO system.

Moreover the elegant style of **FXFCH17-C** will enhance any kitchen, lifting the style of it and adding elegance to the place.

AQUAFILTER FXFCH16-C is a brass chrome plated, two-way kitchen faucet. Using this attractive, high quality dispenser faucet you can provide your family with fresh, great tasting drinking water from your RO system.

Moreover the elegant style of **FXFCH16-C** will enhance any kitchen, lifting the style of it and adding elegance to the place. This product is suitable for the RO systems with mineralizing cartridge.

Features:

- High quality
- Competitive pricing
- Modern design
- Fast product delivery
- Made of High Quality materials

Application:

- post RO
- under sink



FXFCH17-C

FXFCH16-C



CATALOG#	Description
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FXFCH5	Filter faucet with ceramic valve
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CATALOG#	Description
----------	-------------

FXFCH4	Double, filter faucet with ceramic valve
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CATALOG#	Description
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PTS800C	Faucet for FHCTF series filters
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CATALOG#	Description
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PTS800C-B	Chrome-plated faucet for kitchen filters FHCTF series
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FXFCH14-4-C_K

Four-way kitchen sink faucet for cold, hot and filtered water

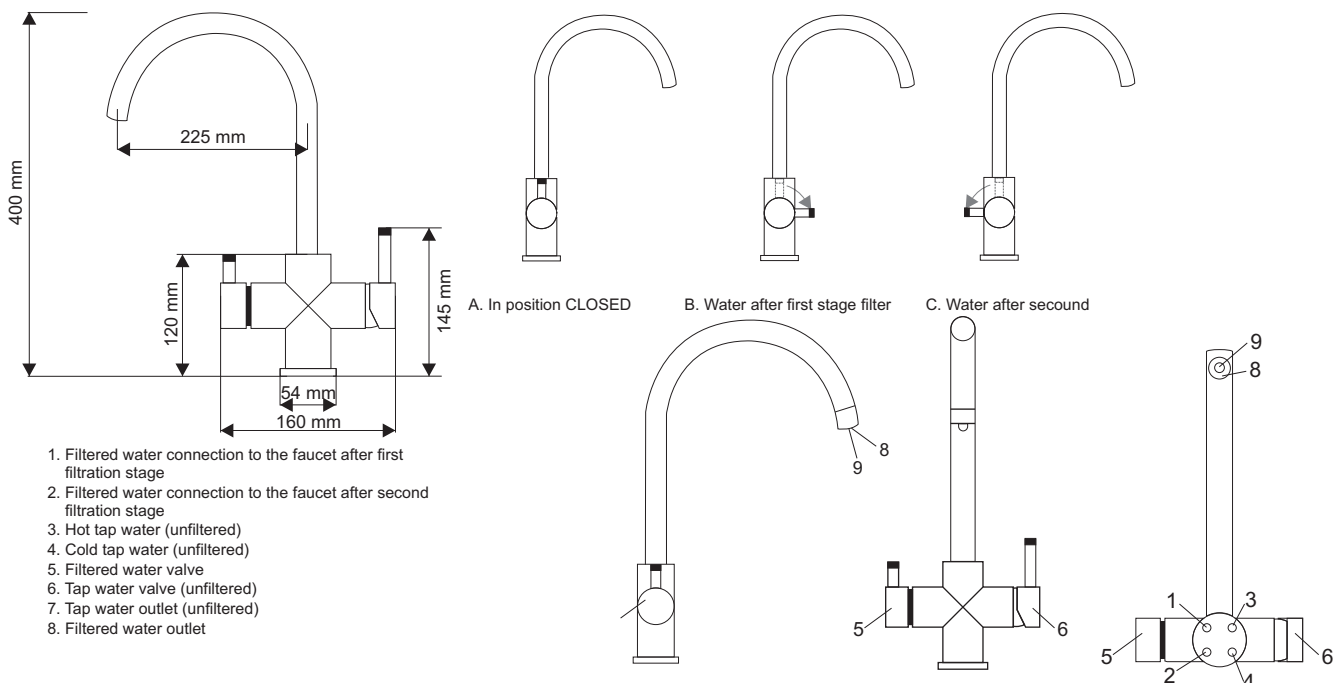


General Description:

FXFCH14-4-C_K - four-way kitchen sink faucet for cold, hot and filtered water. Installation kit includes a set of adapter connectors (tubing, washers, gaskets) necessary for proper connection.

Features:

- High quality
- Competitive pricing
- Modern desing
- Compatible with most RO systems available on the market
- Fit into a modern kitchen



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FXFCH13-4-C_K

Four-way kitchen sink faucet for cold, hot and filtered water

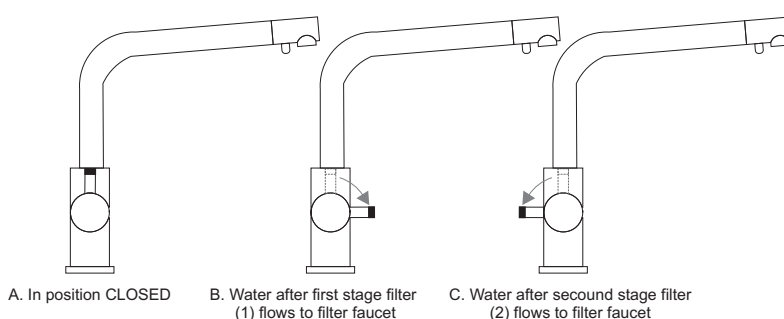
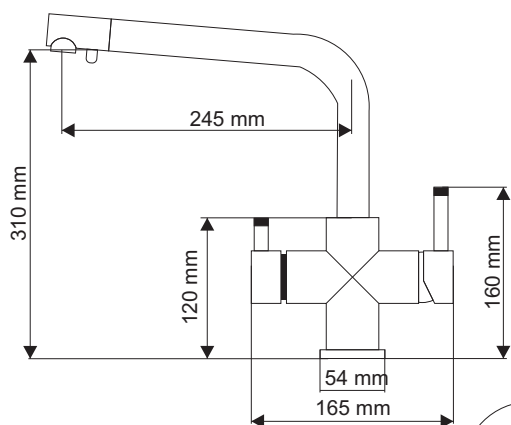


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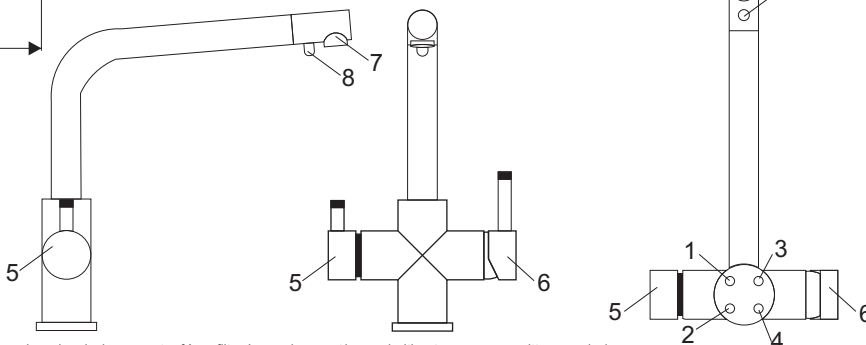
FXFCH13-4-C_K - four-way kitchen sink faucet for cold, hot and filtered water. Installation kit includes a set of adapter connectors (tubing, washers, gaskets) necessary for proper connection.

Features:

- High quality
- Competitive pricing
- Modern desing
- Compatible with most RO systems available on the market
- Fit into a modern kitchen



1. Filtered water connection to the faucet after first filtration stage
2. Filtered water connection to the faucet after second filtration stage
3. Hot tap water (unfiltered)
4. Cold tap water (unfiltered)
5. Filtered water valve
6. Tap water valve (unfiltered)
7. Tap water outlet (unfiltered)
8. Filtered water outlet



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FXFCH13-3-M_K

Three-way kitchen sink faucet for cold, hot and filtered water

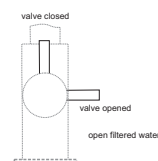
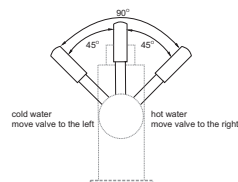
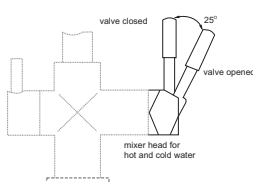
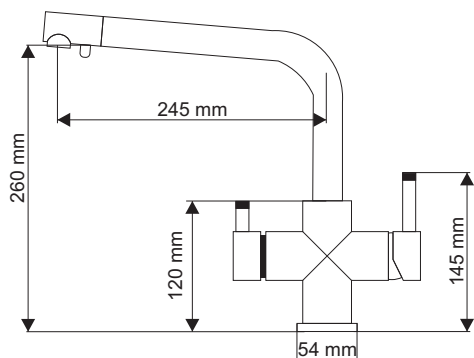


General Description:

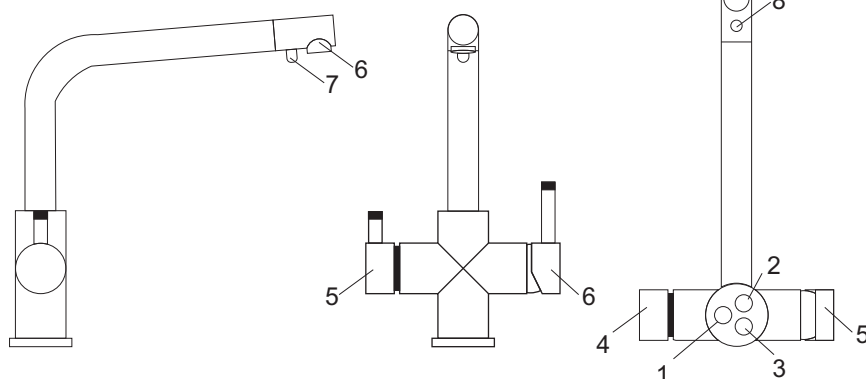
FXFCH13-3-M_K - three-way kitchen sink faucet for cold, hot and filtered water. Installation kit includes a set of adapter connectors (tubing, washers, gaskets) necessary for proper connection.

Features:

- High quality
- Competitive pricing
- Modern desing
- Compatible with most uder-sink systems and RO systems available on the market
- Fit into a modern kitchen



1. Water supply after filtration to filter faucet
2. Cold tap water
3. Hot tap water
4. Opening valve for filtered water
5. Opening valve for tap water
6. Tap water outlet
7. Filtered water outlet



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FXFCH15-3-C_K

Three-way kitchen sink faucet for cold, hot and filtered water

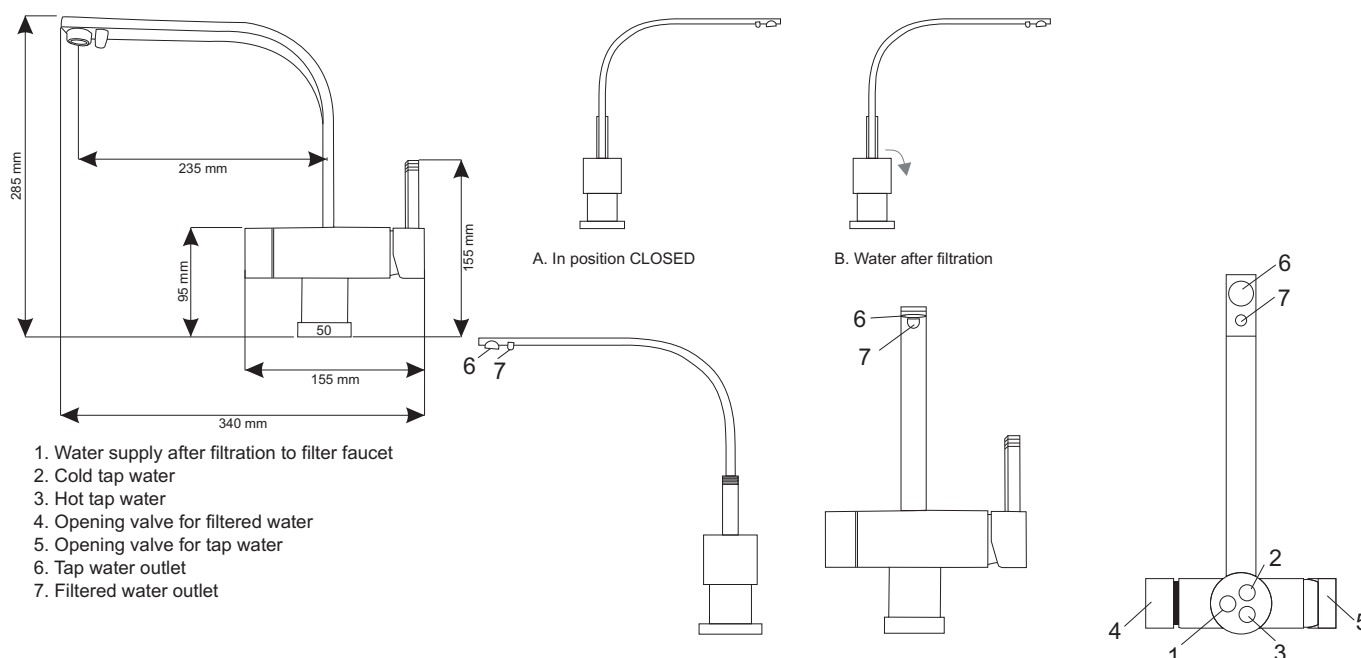


General Description:

FXFCH15-3-C_K - three-way kitchen sink faucet for cold, hot and filtered water. Installation kit includes a set of adapter connectors (tubing, washers, gaskets) necessary for proper connection.

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APPENDIX

FLOW RATE / DIRT LOADING CHART

MESH TO MICRON CONVERSION CHART

MICROMETER COMPARISONS

WEIGHT AND MESURES

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GLOSSARY OF FILTRATION TERMINOLOGY

TERMS AND CONDITIONS OF SALE

PRODUCT RETURN POLICY (RMA)

NOTES



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FLOW RATE / DIRT LOADING CHART

FLOW RATE Liters/Minute	DIRT LAOD (ppm)	% BY WEIGHT	TOTAL DIRT LOAD IN KG IN 24 HOUR PERIOD
95	1	0.0001	0.14
	10	0.001	1.36
	100	0.01	13.61
	1000	0.1	136.05
190	1	0.0001	0.28
	10	0.001	2.72
	100	0.01	27.21
	1000	0.1	272.10
380	1	0.0001	0.55
	10	0.001	5.44
	100	0.01	54.42
	1000	0.1	544.20
950	1	0.0001	1.36
	10	0.001	13.61
	100	0.01	136.05
	1000	0.1	1,361.00
1900	1	0.0001	2.72
	10	0.001	27.21
	100	0.01	272.10
	1000	0.1	2,721.00
3785	1	0.0001	5.44
	10	0.001	54.42
	100	0.01	544.20
	1000	0.1	5,443.00

NOTE: Maximum dirt concentration for effective cartridge filter media applications should not exceed 100 ppm.

MICROMETER COMPARISONS

SUBSTANCE	(MICRON SIZE)
Table Salt	100
Human Hair (average dia)	50-70
White Blood Cell	25
Talcum Powder	10
Cocoa	8-10
Red Blood Cell	8
Bacteria (cocci)	2

MESH TO MICRON CONVERSION CHART

U.S. MESH	INCHES	MICRONS	MILLIMETERS
3	0.265	6730	6.73
4	0.187	4760	4.76
5	0.157	4000	4
6	0.132	3360	3.36
7	0.111	2830	2.83
8	0.0937	2380	2.38
10	0.0787	2000	2
12	0.0661	1680	1.68
14	0.0555	1410	1.41
16	0.0469	1190	1.19
18	0.0394	1000	1
20	0.0331	841	0.841
25	0.028	707	0.707
30	0.0232	595	0.595
35	0.0197	500	0.5
40	0.0165	400	0.4
45	0.0138	354	0.354
50	0.0117	297	0.297
60	0.0098	250	0.25
70	0.0083	210	0.21
80	0.007	177	0.177
100	0.0059	149	0.149
120	0.0049	125	0.125
140	0.0041	105	0.105
170	0.0035	88	0.088
200	0.0029	74	0.074
230	0.0024	63	0.063
270	0.0021	53	0.053
325	0.0017	44	0.044
400	0.0015	37	0.037
550	0.00099	25	0.025
625	0.00079	20	0.020
1,250	0.000394	10	0.010
1,750	0.000315	8	0.008
2,500	0.00197	5	0.005
5,000	0.000099	2.5	0.0025
12,000	0.0000394	1	0.001

WEIGHTS AND MEASURES

TO CONVERT	MULTIPLY BY	TO OBTAIN
atmospheres	33.9	ft of water (at 4°C)
atmospheres	29.92	in mercury (at 0°C)
barrels (US liquid)	31.5	gallons
barrels (oil)	42	gallons (oil)
bars	0.9869	atmospheres
bars	14.5	pounds/sq in
centimeters	0.03281	feet
centimeters	0.3937	inches
centimeters	0.00001	kilometers
centimeters	0.01	meters
centimeters	0.01094	yards
centimeters	10,000	microns
cubic centimeters	0.00003531	cubic feet
cubic centimeters	0.06102	cubic inches
cubic centimeters	0.000001	cubic meters
cubic centimeters	0.001	liters
cubic centimeters	0.002113	pints (US liquid)
cubic centimeters	0.001057	quarts (US liquid)
cubic feet	28,320	cubic centimeters
cubic feet	1,728	cubic inches
cubic feet	0.02832	cubic meters
cubic feet	0.03704	cubic yards
cubic feet	7.48052	gallons (US liquid)
cubic feet	28.32	liters
cubic feet	59.84	pints (US liquid)
cubic feet	29.92	quarts (US liquid)
cubic feet/min	62.43	pounds water/min
cubic feet/min	1.698	cubic meters/hr
cubic feet/sec	448.831	gallons/min
cubic inches	16.39	cubic centimeters
cubic inches	0.0005787	cubic feet
cubic inches	0.00001639	cubic meters
cubic inches	0.00002143	cubic yards
cubic inches	0.004329	gallons
cubic inches	0.01639	liters
cubic meters	35.31	cubic feet
cubic meters	61,023	cubic inches
cubic meters	264.2	gallons (US liquid)
cubic meters	1000	liters
cubic meters/hour	4.4	gallons (US)/min
cubic meters/hour	0.588	cubic feet/min
feet	30.48	centimeters
feet	0.0003048	kilometers
feet	0.3048	meters
feet	304.8	millimeters
feet of water	0.0295	atmospheres
feet of water	0.8826	inches of mercury
feet of water	62.43	pounds/sq ft
feet of water	0.4335	pounds/sq in
feet/minute	0.01667	feet/second
gallons	3,785	cubic centimeters
gallons	0.1337	cubic feet
gallons	231	cubic inches
gallons	3.785	liters
gallons (liq br imp)	1.20095	gallons (US liquid)
gallons (US)	0.83267	gallons (Imp)
gallons of water	8.337	pounds of water
gallons/min	0.002228	cubic feet/sec
gallons/min	0.06308	liters/sec
gallons/min	8.0208	cubic feet/hr
grams	0.001	kilograms
grams	0.002205	pounds

TO CONVERT	MULTIPLY BY	TO OBTAIN
inches	2.54	centimeters
inches	0.0254	meters
inches	25.4	millimeters
inches of mercury	0.03342	atmospheres
inches of mercury	1.133	feet of water
kilograms	2.2046	pounds
kilograms	0.009842	tons (long)
kilograms	0.001102	tons (short)
kilograms/sq cm	2,048	pounds/sq ft
kilograms/sq cm	14.22	pounds/sq in
kilograms/sq meter	0.00009678	atmospheres
kilograms/sq meter	0.00009807	bars
kilograms/sq meter	0.003281	feet of water
kilograms/sq meter	0.002896	inches of mercury
kilograms/sq meter	0.2048	pounds/sq ft
kilograms/sq meter	0.001422	pounds/sq in
liters	0.2642	gallons (US liquid)
liters	2.113	pints (US liquid)
liters	1.057	quarts (US liquid)
liters/min	0.0005886	cubic ft/sec
liters/min	0.004403	gallons/sec
liters/hour	0.004403	gallons (US)/min
meters	3.281	feet
meters	39.37	inches
meters	0.001	kilometers
meters/min	3.281	feet/min
meters/min	0.05468	feet/sec
microns	0.000001	meters
mils	0.00254	centimeters
mils	0.000083333	feet
mils	0.001	inches
ounces	28.349	grams
ounces	0.0625	pounds
ounces (fluid)	1.805	cubic inches
ounces (fluid)	0.02957	liters
ounces/sq in	0.0625	pounds/sq in
pints (liquid)	0.125	gallons
pints (liquid)	0.4732	liters
pints (liquid)	0.5	quarts (liquid)
pounds	453.59	grams
pounds	16	ounces
pounds/sq ft	0.0004725	atmospheres
pounds/sq ft	0.01602	feet of water
pounds/sq ft	0.01414	inches of mercury
pounds/sq in	0.06804	atmospheres
pounds/sq in	2.307	feet of water
pounds/sq in	2.036	inches of mercury
pounds/sq in	0.0145	kilopascals (kPa)
quarts (liquid)	0.03342	cubic feet
quarts (liquid)	57.75	cubic inches
quarts (liquid)	0.0009464	cubic meters
quarts (liquid)	0.25	gallons
quarts (liquid)	0.9463	liters
square centimeters	0.001076	square feet
square centimeters	0.155	square inches
square centimeters	0.0001	square meters
square feet	144	square inches
square feet	0.0929	square meters
square inches	0.006944	square feet
square inches	0.0007716	square yards
square meters	10.76	square feet
square meters	155	square inches



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WATER TREATMENT TABLE

Inorganic chemicals	MCLG1 (mg/L) ⁴	MCL ² or TT ³ (mg/L)	Potential Health Effects from Water Ingestion	Sources of Contaminant in Drinking Water	Treatment Methods
Antimony	0.006	0.006	Higher blood cholesterol; lower blood glucose	Petroleum refinery discharge; solder; electronics; fire retardants; ceramics	Coagulation/filtration Activated carbon* Reverse osmosis Distillation
Arsenic	None ⁵	0.005 (P)	Skin damage; circulatory system problems; higher cancer risk	Discharge from semiconductor manufacture; petroleum refining; wood preservatives; herbicides; animal feed additives; erosion from natural deposits	As+3: Chemical oxidation to convert to As+5 Reverse osmosis (w/prior chlorination) Distillation As+5:
Asbestos (fiber>10µm)	7 million fibers/L	7 MFL	Higher risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; natural deposit erosion	Corrosion control to reduce leaching from distribution pipes Coagulation/filtration Submicron filtration Reverse osmosis Ultrafiltration Distillation
Barium	2	2	Higher blood pressure	Drilling waste discharge; metal refineries; natural deposit erosion	Cation exchange Reverse osmosis Distillation Electrodialysis
Beryllium	0.004	0.004	Intestinal lesions	Discharge from metals refineries and coal-burning factories; and electrical, aerospace and defense firms	Coagulation/filtration Activated carbon* Lime softening Activated alumina Cation exchange Reverse osmosis Distillation Electrodialysis
Cadmium	0.005	0.005	Kidney damage	Corrosion of galvanized pipes; natural deposits erosion; metal refineries discharge; runoff from waste batteries and paints	Coagulation/ filtration Activated carbon* Lime softening Cation exchange Reverse osmosis Distillation Electrodialysis
Chromium (total)	0.1	0.1	Some people who use water with chromium well in excess of MCL over many years could experience allergic dermatitis	Steel and pulp mill discharge; metal finishing industry discharges; natural deposits erosion	Cr+3: Coagulation/filtration Lime softening Cation exchange Reverse osmosis Distillation Cr+6: Anion exchange Reverse osmosis Distillation Organic complexes: Act
Copper	1.3	1.3 = action level; TT6	Short exposure: gastrointestinal distress; Long term exposure: Wilson's disease sufferers should consult personal doctors if above action level	Household plumbing corrosion; natural deposits erosion; leaching from wood preservatives	Cation exchange (20-90%) Reverse osmosis Distillation Electrodialysis
Cyanide (as free cyanide)	0.2	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; plastic and fertilizer factories	Chemical oxidation/ disinfection (pH> 10) Anion exchange Reverse osmosis Distillation Electrodialysis
Fluoride	4	4	Bone disease (pain and tenderness); children may get mottled teeth	Water additive which promotes strong teeth; natural deposits; discharge from fertilizer and aluminum factories	Activated alumina Bone char Reverse osmosis Distillation Electrodialysis
Lead	Zero	0.015 = action level; TT6	Infants/ children: physical/mental developmental delays; Adults; high blood pressure; kidney problems	Household plumbing corrosion; runoff from waste batteries; natural deposits erosion	Cation exchange (20-90%) Coagulation/filtration Activated carbon* Lime softening Reverse osmosis Distillation Electrodialysis
Inorganic Mercury	0.002	0.002	Kidney damage	Natural deposits erosion; refinery/factory discharge; landfill/ cropland runoff; fluorescent lamps	Hg+2: Activated carbon* Lime softening Cation exchange (20-90%) Reverse osmosis Distillation HgCl3- 1: Anion exchange Reverse osmosis Distillation Organic complexes: Activated carbon
Nickel	0.1	0.1	Kidney damage, respiratory difficulties, higher cancer risk	Natural deposits erosion, refinery/factory discharge	Ni+2: Cation exchange Lime softening Reverse osmosis Distillation
Nitrate (as N)	10	10	Infants under 6 months: blue baby syndrome - life threatening without immediate medical attention; symptom: baby looks blue, shortness of breath	Runoff from fertilizer use; leaching from septic tanks, sewage; natural deposits erosion	Anion exchange Reverse osmosis (pressure sensitive) Distillation Electrodialysis
Nitrite (as N)	1	1	Infants under 6 months: blue baby syndrome - life threatening without immediate medical attention; symptom: Baby looks blue, shortness of breath	Runoff from fertilizer use; leaching from septic tanks, sewage; natural deposits erosion	Chemical oxidation To convert to nitrate then: Anion exchange Reverse osmosis (pressure sensitive) Distillation
Thallium	0.0005	0.0002	Hair loss; changes in blood; kidney intestine or liver problems	Leaching from ore- processing sites; discharge from electronics, glass pharmaceutical companies	Cation exchange Activated alumina Reverse osmosis Distillation



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WATER TREATMENT TABLE

Organic Chemicals	MCLG1 (mg/L) ⁴	MCL ² or TT ³ (mg/L)	Potential Health Effects from Water Ingestion	Sources of Contaminant in Drinking Water	Treatment Methods
Acrylamide	Zero	TT ⁶	Nervous system or blood problems; higher cancer risk	Added to water in sewage/wastewater treatment	Control of water treatment chemicals and surfaces in contact with water
Alachlor	Zero	0.002	Eye, liver, kidney or spleen problems; higher cancer risk	Runoff from herbicide used on row crops	Activated carbon
Atrazine	0.003	0.003	Cardiovascular system problems; reproductive difficulties	Runoff from herbicide used on row crops	Activated carbon
Benzene	Zero	0.005	Anemia; lower blood platelets; higher cancer risk	Factory discharges; leaching from gas storage tanks and landfills	Activated carbon Aeration
Benzo(a)pyrene (PAH)	Zero	0.0002	Reproductive difficulties; higher cancer risk	Leaching from linings of water storage tanks, distribution lines	Activated carbon
Carbofuran	0.04	0.04	Blood or nervous system problems; reproductive difficulties	Leaching of soil fumigant used on rice and alfalfa	Activated carbon
Carbon tetrachloride	Zero	0.005	Liver problems; higher cancer risk	Discharge from chemical plants and other industrial activities	Aeration
Chlordane	Zero	0.002	Liver or nervous system problems; higher cancer risk	Residue of banned termiticide	Activated carbon
2,4-D	0.07	0.07	Kidney, liver or adrenal gland problems	Runoff from herbicide used on row crops	Activated carbon
1,2-Dibromo-3-chloro-propane (DBCP)	Zero	0.0002	Reproductive difficulties; higher cancer risk	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, orchards	Activated carbon Aeration
o-Dichlorobenzene	0.6	0.6	Liver, kidney or circulatory system problems	Discharge from industrial chemical factories	Activated carbon Aeration
p-Dichlorobenzene	0.075	0.075	Anemia; liver, kidney or spleen damage; changes in blood	Discharge from industrial chemical factories	Activated carbon Aeration
2,4,5-TP (Silvex)	0.05	0.05	Liver problems	Residue of banned herbicide	Activated carbon
1,2,4-Trichlorobenzene	0.07	0.07	Changes in adrenal glands	Discharge from textile finishing factories	Activated carbon Aeration
1,1,1- Trichloroethane	0.2	0.2	Liver, nervous system and circulatory problems	Discharge from metal degreasing sites and other factories	Activated carbon Aeration
1,1, 2-Trichloroethane	0.003	0.005	Liver, kidney or immune system problems	Discharge from industrial chemical factories	Activated carbon Aeration
Trichloroethylene	Zero	0.005	Liver problems; higher cancer risk	Discharge from petroleum refineries	Activated carbon Aeration
Vinyl chloride	Zero	0.002	Higher cancer risk	Leaching from PVC pipes; discharge of plastic factories	Aeration
Xylenes (total)	10	10	Nervous system damage	Petroleum and chemical factory discharges	Activated carbon Aeration
Radionuclides	MCLG1 (mg/L) ⁴	MCL ² or TT ³ (mg/L)	Potential Health Effects from Water Ingestion	Sources of Contaminant in Drinking Water	Treatment Methods
Beta particles and photon emitters	None ⁵	4 mrems per year	Higher cancer risk	Decay of natural and man-made deposits	Ion Exchange (mixed bed) Reverse osmosis Distillation Electrodialysis
Gross alpha particle activity	None ⁵	15pCi/L ⁸	Higher cancer risk	Decay of natural and man-made deposits	Treatment method depends on specific radionuclide-e.g., radium, radon or uranium, see below
Radium 226 & Radium 228 (combined)	None ⁵	5pCi/L	Higher cancer risk	Decay of natural and man-made deposits	Cation exchange Reverse osmosis Distillation
Radon	0	300 pCi/L (P)	Higher cancer risk	Decay of natural and man-made deposits	Electrodialysis
Micro-organisms	MCLG1 (mg/L) ⁴	MCL ² or TT ³ (mg/L)	Potential Health Effects from Water Ingestion	Sources of Contaminant in Drinking Water	Treatment Methods
Giardia lamblia	0	TT ⁹	Giardiasis, a gastroenteric disease	Human and animal fecal waste	Turbidity reduction to 0,3 NTU and then: Chemical Oxidation/Disinfection Chlorination Ozone Iodine Absolute Filtration (<5 micron-sized particles) Distillation
Heterotrophic Plate Count (HPC)	N/A	TT ⁹	HPC has no health effects, but can indicate how effective treatment is at controlling microorganisms	N/A	Turbidity reduction to 0,3 NTU and then: Chemical Oxidation/ Disinfection Chlorination Ozone Iodine Absolute Filtration (<5 micron-sized particles) Distillation
Legionella	0	TT ⁹	HPC Legionnaire's Disease, more commonly known as pneumonia	Found naturally in water; multiplies in heating systems	Turbidity reduction to 0,3 NTU and then: Chemical Oxidation/ Disinfection Chlorination Ozone Iodine Absolute Filtration (<5 micron-sized particles) Distillation
Total Coliforms (including fecal coliform and E. coli)	0	5%10	Used as indicator other potentially harmful bacteria may be present ¹¹	Human and animal fecal waste	Turbidity reduction to 0,3 NTU and then: Chemical Oxidation/Disinfection Chlorination Ozone Iodine (e.g.,polyiodide resins) Submicron (absolute) filtration (<0,45 micron) Ultraviolet irradiation Distillation
Turbidity	N/A	TT ⁹ ,0,3 NTU	Turbidity has no health effects but can interfere with disinfection and provide a medium for microbial growth. It may indicate presence of microbes.	Soil runoff	Coagulation/Filtration Submicron filtration Ultrafiltration Reverse Osmosis Cartridge filtration (matched to turbidity particle size) Distillation
1,2-Dichloroethane	0	0.005	Higher cancer risk	Industrial chemical factory discharges	Aeration

WATER TREATMENT TABLE

Micro-organisms	MCLG1 (mg/L) ⁴	MCL ² or TT ³ (mg/L)	Potential Health Effects from Water Ingestion	Sources of Contaminant in Drinking Water	Treatment Methods
1,1-Dichloroethylene	0.007	0.007	Liver problems	Industrial chemical factory discharges	Activated carbon Aeration
cis-1,2-Dichloroethylene	0.07	0.07	Liver problems	Industrial chemical factory discharges	Activated carbon Aeration
Trans-1,2-Dichloroethylene	0.1	0.1	Liver problems	Industrial chemical factory changes	Activated carbon Aeration
Dichloromethane	Zero	0.005	Liver problems; higher cancer risk	Pharmaceutical and chemical factory discharges	Aeration
1,2-Dichloropropane	Zero	0.005	Higher cancer risk	Industrial chemical factory discharges	Activated carbon Aeration
Di(2-ethylhexyl)adipate	0.4	0.4	General toxic effects or reproductive difficulties	Leaching from PVC plumbing systems; chemical factory discharges	Activated carbon Aeration
Di(2-ethylhexyl)phthalate (PAE)	Zero	0.006	Reproductive difficulties; liver problems; higher cancer risk	Discharge from rubber and chemical factories	Activated carbon
Dinoseb	0.007	0.007	Reproductive difficulties	Runoff of herbicide used on soybeans and vegetables	Activated carbon
Dioxin (2,3,7,8-TCDD)	Zero	0.00000003	Reproductive difficulties; higher cancer risk	Discharges from chemical factory; emissions from waste incineration, other combustion	Activated carbon
Diquat	0.02	0.02	Cataracts	Runoff from herbicide use	Activated carbon
Endothall	0.1	0.1	Stomach and intestinal problems	Runoff from herbicide use	Activated carbon
Endrin	0.002	0.002	Nervous system effects	Residue of banned insecticide	Activated carbon
Epichlorohydrin	Zero	TT7	Stomach problems; reproductive difficulties; higher cancer risk	Industrial chemical factory discharge; added to water during treatment	Control of water treatment chemicals and surfaces in contact with water
Ethylbenzene	0.7	0.7	Liver or kidney problems	Discharge from petroleum refineries	Activated carbon
Ethylene dibromide (EDB)	Zero	0.00005	Stomach problems; reproductive difficulties; higher cancer risk	Discharge from petroleum refineries	Activated carbon Aeration
Glyphosate	0.7	0.7	Kidney problems; Reproductive difficulties	Runoff from herbicide use	Oxidation Activated carbon
Heptachlor	Zero	0.0004	Liver damage; higher cancer risk	Residue of banned termiticide	Activated carbon
Heptachlor epoxide	Zero	0.0002	Liver damage; higher cancer risk	Breakdown of heptachlor	Activated carbon
Hexachlorobenzene	Zero	0.001	Liver or kidney problems; reproductive difficulties; higher cancer risk	Discharge from metal refineries and agricultural chemical factories	Activated carbon
Hexachlorocyclopenta-diene	0.05	0.05	Kidney or stomach problems	Discharge from chemical factories	Activated carbon Aeration
Lindane	0.0002	0.0002	Liver or kidney problems	Runoff/leaching from insecticide used on cattle, lumber, gardens	Activated carbon
Methoxychlor	0.04	0.04	Reproductive difficulties	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock	Activated carbon
Oxamyl (Vydate)	0.2	0.2	Slight nervous system effects	Runoff/leaching from insecticide used on apples, potatoes and tomatoes	Activated carbon
Pentachlorophenol	Zero	0.001	Liver or kidney problems; higher cancer risk	Discharge from wood preserving factories	Activated carbon
Picloram	0.5	0.5	Liver problems	Herbicide runoff	Activated carbon
Polychlorinated Biphenyls (PCBs)	Zero	0.0005	Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; higher cancer risk	Runoff from landfills; discharge from waste chemicals	Activated carbon
Simazine	0.004	0.004	Blood problems	Herbicide runoff	Activated carbon

NOTE:

Treatment Technique — An enforceable procedure or level of technical performance which public water systems must follow to ensure control of a contaminant.

Lead and copper are regulated in a Treatment Technique which requires systems to take tap water samples at sites with lead pipes or copper pipes that have lead solder and/or are served by lead service lines. The action level, which triggers water systems into taking treatment steps, if exceeded in more than 10% of samples, for copper is 1,3 mg/L and for lead is 0,015 mg/L.

Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human/animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches or other symptoms.

Source: USEPA (Special thanks to Tom Sorg, Kim Fox, and Tom Speth) and Cartwright Consulting



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Glossary Of Filtration Terminology

This section presents definitions for some key words and phrases that are generally associated with filtration processes.

Absorption: The process of substance actually penetrating into the structure of another substance. This is different from adsorption in which one substance adheres to the surface of another.

Abrasion Resistance: Ability of a fiber or fabric to withstand surface wear.

Absolute: A degree of filtration that guarantees 100% removal of suspended solids over a specified size found in the filtrate.

Absolute Pressure: The pressure above an absolute vacuum. One atmosphere (14.70 psi) greater than gauge pressure. Symbolized as psia when the pressure is expressed in psi units.

Absolute Rating: Particle size in micrometers removed at a given efficiency under a manufacturer's defined test condition. Also an arbitrary term assigned by a manufacturer. Implied is 100%, but more often defined as 98.67%, 99%, 99.9% and 99.99%, according to the manufacturer. Aquafilter defines absolute as 99.98% removal (Beta = 5000) as determined by particle counting methods.

Acid: A compound resulting in a pH less than 7 when in aqueous solution, a molecule that can give up a proton to a base, accept an unshared pair of electrons from a base or react with a base to form a salt, a substance that has more free hydrogen ions, H⁺, than hydroxyl ions, OH⁻.

Acidity: Having the properties of an acid; a pH less than 7.

Acidic: The condition of water or soil which contains a sufficient amount of acid substances to lower the pH below 7.0.

Activated Alumina: Activated Alumina is a form of aluminum oxide used as a desiccant (dryer) for gases. It is also used as a carrier for potassium permanganate when the latter is used as a chemisorber.

Activated Carbon: A water treatment medium found in block, granulated, or powdered form which is produced by heating carbonaceous substances, bituminous coal or cellulose-based substances such as wood or coconut shell, to 700°C or less in the absence of air to form a carbonized char and then activating (oxidizing) at 800°C to 1000°C with oxidizing gases such as steam and carbon dioxide (oxygen is never used as the oxidizing gas because its reaction with the carbon surface is too rapid and violent) to form pores, thus creating a highly porous adsorbent material. Activated carbon is commonly used for dechlorination and for reducing trace and soluble materials such as organic chemicals and radon from water.

Activated Carbon Block Filter: Activated carbon block is a blend of fine activated carbon (e.g. 80 x 325 mesh activated carbon), water and a suitable binder (such as polyethylene or a similar material) that is mixed and molded and hardened or extruded to a cartridge filter of any size and shape. Sometimes specialized media are added along with activated carbon to provide customized performances for specific contaminants.

Adhesive: An Adhesive is a material used to coat filter fibers in order to increase the retentivity of dust particles by the fibers.

Adsorbent: An Adsorbent is an adsorber. That upon which adsorption takes place. It is the material to which a gas molecule is attached and retained.

Adsorption: The physical process occurring when liquids, gases, or suspended matter adhere to the surfaces of or in the pores of an adsorbent medium. Adsorption is a physical process, which occurs without chemical reaction.

Advanced water treatment: The level of water treatment that requires an 85-percent reduction in pollutant concentration, also known as tertiary treatment.

Aerobic Bacteria: Organisms which require oxygen to live.

Aggressive water: Water that is soft and acidic and can corrode plumbing, pipes and appliances.

Algae: Algae is a very diverse group of photosynthetic plants, ranging from microscopic single- cell forms to multi-cellular, very large forms such as seaweed. All of them contain chlorophyll and hence most are green, but some of them may be different colors due to the presence of other, overshadowing pigments.

Alkaline: The condition of water or soil which contains a sufficient amount of alkali substances to raise the pH above 7.0.

Alkalinity: The capacity of water to neutralize acids, a property imparted by the water's content of carbonates, bicarbonates, hydroxides and occasionally borates, silicates and phosphates. It is expressed in milligrams per liter of equivalent calcium carbonate.

Alkalizer: an agent that counteracts or neutralizes acidity

Ammonia: An inorganic form of nitrogen, is contained in fertilizers, septic system effluent, and animal wastes. It is also a product of bacterial decomposition of organic matter.

Ammonia NH₃-N (NH₃-N) becomes a concern if high levels of the un-ionized form are present. In this form NH₃-N can be toxic to aquatic organisms. The presence of un-ionized ammonia is a function of the NH₃-N concentration, pH, and temperature. Conversion of NH₃-N to nitrite nitrogen by nitrification requires large quantities of oxygen which can kill aquatic organisms due to the lowered dissolved oxygen concentrations in water. NH₃-N concentrations are reported in mg/L NH₃-N.

Ambient: Refers to "common" environmental conditions in which experiment is conducted. For example: 14.7 psia and 20° to 25°C (room temperature).

Anaerobic: A condition in which there is no air or no available free oxygen. Organism capable of growing without the presence of oxygen.

Anisotropic (ASYMMETRIC) MEMBRANE: A membrane in which the pore size and structure are not the same from one side of the membrane to the other. Such membranes are usually considered "directional" because of the difference in flow characteristics depending on which side of the membrane faces the feed stream.

Anion: An ion with a negative charge. An anion such as chloride (CL⁻), nitrate (NO₃⁻) bicarbonate (HCO₃⁻), or sulfate (SO₄⁻) may result from the dissociation of salt, acid or alkali.

Anion Exchange: An ion exchange process in which anions in solutions are exchanged for other anions from an ion exchange resin. See also ion exchange.

Aqueous: Similar to or resembling water. In reference to solution made in water.

Aseptic: Refers to an operation performed in a sterile environment designed to prevent contamination through introduction of bacteria.

Automatic Water Softener (Or Automatic Filter): A water softener (or filter) that is equipped with a clock timer, which automatically initiates the backwash and or regeneration process at certain preset intervals of time. All operations, including bypass of treated or untreated water (depending upon design) backwashing, brining, rinsing and returning the unit to service are performed automatically.

Backpressure: A backward surge of pressure from downstream to upstream of the filter. Can be the result of closing a valve or air entrapped in a liquid system.

Backwash: The up flow or counter current flow of water through a filter medium or ion exchange medium for the purpose of thoroughly expanding the media bed to remove foreign particulate matter accumulated during the service cycle and to flush it to the drain.

Bacteria: Single-celled organism (singular form=bacterium) which lacks well-defined nuclear membranes and other specialized functional cell parts and reproduces by cell division or spores. Bacteria may be free-living organisms or parasites. Bacteria (along with fungi) are decomposers that breakdown the wastes and bodies of dead organisms, making their components available for reuse. Bacteria cells range from about 1-10 microns in length and from 0.2 to 1 micron in width. They exist almost everywhere on earth. Despite their small size, the total weight of all bacteria in the world likely exceeds that of all other organisms combined. Some bacteria are helpful to man, others harmful.

Bacteriostatic Media: Inhibits the growth of bacteria within the media bed.

Bar: A unit of pressure. One bar = 14.5 psi.

Beta Ratio: The ratio of the number of particles of a given size and larger upstream of a filter to the number of particles of the same size and larger downstream.

> Beta Ratio and Efficiency Relationship

Beta Ratio	% Efficiency
1	0
2	50
4	75
5	80
10	90
20	95
50	98
75	98.67
100	99
1,000	99.9
5,000	99.98
10,000	99.99

BOD: Biochemical oxygen demand.

Bottled water: Water that is sold in plastic containers for drinking water and/ or domestic use.

Bioburden: The load or level of microorganisms in a substance to be filtered.

Biocide: A chemical which can kill or inhibit the growth of living organisms such as bacteria, fungi, molds and slimes.

Biohazard: Biological refuse, possibly pathogenic in nature.

Biosafety: Biological safety or non-toxicity of a substance to a living organism by passing tests as listed in the United States Pharmacopeia. Analogous to "chemically inert." For filters used in biological and health care application, Plastic Class-VI

Blackwater: Wastewater from toilets, latrines, privies, water containing feces or body fluids and water from sinks used for food preparation or disposal of chemical or biological ingredients.

Blue-green algae: Prokaryotic organisms with a bacteria-like cell structure, lacking a nucleus and other organelles, these species manufacture photosynthetic pigments but lack chloroplasts, the specialized photosynthetic organelles in higher plants, in some situations an increase in blue-green algae can indicate an environmental stress such as pollution.

Brackish Water: Water containing dissolved solids in the range 1000-15000 ppm.

Brine: A strong solution of salt(s) with total dissolved solids concentrates in the range of 30,000 to 300,000.

Bridging: Condition of filter loading where contaminants span the open space between adjacent sections of a filter medium, thus blocking a portion of the useful filtration area.

Bubble Point: Pressure drop in inches of water required to expel the first steady (continuous) stream of bubbles (fizz point) from a horizontal disc of wetted filter medium or a filter cartridge immersed in a liquid (usually alcohol).

Bubble Point Pressure: A test to determine the maximum pore size openings of a filter. The differential gas pressure at which a wetting liquid (usually water) is pushed out of the largest pores and a steady stream of gas bubbles is emitted from a wetted filter under specific test conditions. Used as filter integrity test with specific, validated, pressure values for specific pore-size (and type) filters.

Bubble Point Test: A common, nondestructive method used to test the integrity of cartridge construction to compare relative porosities of filter media or to monitor product consistency as a quality control method.

Buna-N: A Nitrile rubber seal compound. This is a generic term covering many formulations.

Burst Pressure: The pressure causing rupture. The inside-out differential pressure that causes outward pressure on the structural of a filter medium, filter or housing.

Bypass: Fluid flowing through a passage other than the filter medium and/or leakage around filter media seals.

Bypass Flow Restrictor: A device to direct feed material through the membrane elements retentate flow channels while allowing a controlled amount to bypass these channels.

By-product: A by-product is an incidental or secondary product made in the manufacture of a primary product. For example, a by-product of cheese production is whey which through membrane filtration can be fractionated into valuable products such as whey protein concentrate and whey protein isolate; a by-products of biodiesel production is glycerine and a by-product of bioethanol production is DDGS.

Cake: Solids deposited on the filter media.

Calcium: A metallic element essential for the normal development and functioning of the body. Calcium is an important constituent of bones and teeth; the matrix of bone, consisting principally of calcium phosphate, accounts for 99% of the body's calcium. Membrane filtration systems can be used to harvest the calcium but more commonly it can be used to remove the calcium from water (and other solvents).

Candle Filter: A reusable filter consisting of a tube made from ceramics or metal.

Flow is from the outside-in with particulate accumulating on the outside of the candle. The candle can be cleaned by various means, including back-pulsing, heat, chemicals etc.

Capacity: Volume of product which a housing will accommodate expressed in gallons or similar units. Also, amount which will filter at a given efficiency and flow rate, expressed in gallons per minute or similar units.

Cappillary membranes:Membranes about the thickness of a human hair, used for Reverse Osmosis, nanofiltration, ultrafiltration and microfiltration.

Carbon Filter: A carbon filter is an air purifier using activated carbon as the air cleansing agent for the removal of gaseous contaminants.

Carbon Tetrachloride Activity: The maximum percentage increase in weight of a bed of tetrachloride has passed through at a given temperature.

Carcinogen: Any substance which tends to produce cancer in an organism.

Cartridge Filter: A device made up of a housing and a removable cartridge (element) for a fluid filtration. In high flow rate commercial applications, the element is clustered in a large housing. Elements can be cleanable and reusable or disposable.

Cation: A positive ion in an electrolyte solution, attracted to the cathode under the influence of a difference in electrical potential sodium ion is a cation.

Cartridge Design Flow Rate: Flow rate at which cartridge published performance was generated in laboratory tests. Flow rates above those listed below will adversely affect the efficiency and dirt-holding capacity of cartridge

Cellulose: (1) fibers used to manufacturer wetlaid paper (2) used as a filter aid in highly refined alpha cellulose form or as the slightly more unbleached form.

Ceramic: Ceramics can be defined as inorganic, nonmetallic materials. They are typically crystalline in nature and are compounds formed between metallic and nonmetallic elements. Typically the ceramic form used in membranes are α -aluminum oxide, titanium dioxide, TiO_2 , zirconium dioxide, ZrO_2 .

Channeling: Tendency for contaminant to pass through a low-density area of an inconsistent filter medium or around cartridge seal points.

Chloramines: Chemical complexes formed from the reaction between ammonia and chlorine being used to disinfect many municipal water supplies. Unlike chlorine, chloramines do not combine with organics in the water to form potentially dangerous trihalomethanes (THMS). Chloramines can exist in three forms: 1. Monochloramine 2. Dichloramine 3. Nitrogen Trichloride. Water containing chloramines must not be used for fish or kidney dialysis applications.

Chlorinated: A compound that has been reacted with the halide chlorine and now contains at least one chlorine atom in the molecule.

Chlorination: The addition of chlorine to water primarily for the purpose of disinfection but also for other biological or chemical purposes.

Chronic toxicity: A long-term toxic effect produced in an organism by a toxicant, a substance or a mixture of substances.

Chromatography: The separation of substances in a mixture based on their affinity for certain solvents and solid surfaces.

Classification: Arrangement or separation of particles by size.

Cleanroom: A Cleanroom is a room (facility) in which the air supply, air distribution, filtration of air supply, materials of construction, and operating procedures are regulated to control airborne particle concentrations to meet appropriate cleanliness levels.

Cleanable: A filter element which, when loaded with contaminant, can be cleaned by a suitable process and returned to service with an acceptable percentage of its original dirt holding capacity.

Cleanability: The ability of a filter element to withstand repeated cleanings, while maintaining adequate dirt capacity.

COD: Chemical oxygen demand.

Colloids: Suspension of submicron particles in a continuous fluid medium that will not settle out of the medium.

Compatibility: Term used in relation to the non-reactivity of filter materials with the substance to be filtered.

Conductivity: Used as an approximate measurement of mineral content. Units commonly used as micro mhos/cm.

Concentrator: An apparatus or method for removing some of the water from a sample to concentrate the substances dissolved or suspended in it; usually used to concentrate solutions of biological macromolecules, e.g., proteins and nucleic acids.

Contaminant: Undesirable insoluble solid or gelatinous particles present in a fluid.

Core: Commonly refers to a perforated tube, which serves as the center of a filter cartridge (element).

Core Yarn: Used in filtration with fiberglass or synthetic yarn. Spun or texturized yarns are twisted around a filament (core) yarn, adding yarn strength and stability.

Crossflow (Tangential Flow) Filtration: A filtration system in which the feed stream flows across the filter media and exits as a retentate stream. The retentate stream is recycled to merge into the feed stream, while a portion of it passes through the filter media, resulting in concentration of the feed stream (referred to as concentrate).

Cross-flow membrane filtration: Cross-flow membrane filtration describes a range of molecular-level separations in the micron and sub-micron scale where either a solvent is separated from solutes or different solutes are separated from each other. Nominal membrane porosity is indirectly proportionate to operating pressure; the "tighter" the membrane, the higher the process operating pressure requirement. This is due to differences in the transport mechanisms involved whereby diffusion plays the key role in separations occurring in the reverse osmosis range while size exclusion is the primary separation mechanism for ultrafiltration.

Cycle Length/Filter Life: The duration, measured in time or volume, that a filter can operate effectively between replacement and/or cleaning.

Cyclone: A conical-shaped vessel for separating mixed sized particulates from the gas stream. The vessel has a tangential entry at the largest diameter allowing the larger particles to drop out and be removed from the bottom of the cone while smaller particulate exits overhead with the majority of the gas stream.

Cyanobacteria: (blue-green algae) A division of bacteria that obtain their energy through photosynthesis. They are often referred to as blue-green algae, although they are in fact bacteria, not algae. The description is primarily used to reflect their appearance and ecological role rather than their evolutionary lineage.

Dead End (Conventional) Filtration: Feed stream flows in one direction only, perpendicular to and through the filter medium to emerge as product or filtrate.

Delta () P: See "Differential Pressure".

Deionization: The removal of all ionized minerals and salts (both organic and inorganic) from a solution by a two-phase ion exchange procedure. First, positively charged ions are removed by a cation exchange resin in exchange for a chemically equivalent amount of hydrogen ions. Second, negatively charged ions are removed by an anion exchange resin for a chemically equivalent amount of hydroxide ions. The hydrogen and hydroxide ions introduced in this process unite to water molecules. This process is also called demineralization by ion exchange.

Density: Mass per unit volume of a substance under specified conditions of temperature and pressure. Mass/unit volume, usually expressed in g/cc, lb./cu. ft or lb./gal.

Depth Filter: A matrix of randomly distributed fibers creating a tortuous path with pores of undefined size and shape.

Depth Media: Generally filter media that are thick and provide graded density construction. Wound, resin-bonded and melt blown cartridges fall into this category. Typically, these cartridges result in lower flow rates, higher initial pressure drops and lower dirt holding capacities than surface media (pleated).

Desalination: The removal of dissolved inorganic solids (salts) from a solution such as water to produce a liquid which is free of dissolved salts. Desalination is typically accomplished by distillation, reverse osmosis or electrodialysis.

Differential Pressure - Delta (Δ) P: The difference in pressure at two points in a water system. Differences may be due to variations in elevation or to friction losses, or to pressure drops caused by resistance to water flow through pipes, softeners, filters or other devices. The change in pressure or the pressure drop across a component or device located within the air stream; the difference between static pressure measured at the inlet and outlet of a component device.

Differential Pressure/Pressure Drop: Difference in pressure between two points in a system. In filters, this is usually measured between the inlet and outlet of the filter housing (is a determining factor of filter service life).

Dissolved oxygen: The concentration of molecular oxygen (O_2) dissolved in water, usually expressed in milligrams per liter (mg/L), parts per million, or percent of saturation. The DO level represents one of the most important measurements of water quality and is a critical indicator of a water body's ability to support healthy ecosystems. Levels above 5 mg/L are considered optimal, and most fish cannot survive for prolonged periods at levels below 3 mg/L. Microbial communities in water use oxygen to breakdown organic materials, such as manure, sewage and decomposing algae. Low levels of dissolved oxygen can be a sign that too much organic material is in a water body.

Di Water: Deionized water; water processed through an ion exchange process by passing through both cation and anion exchange resin beds, or a mixed resin bed to remove both positive and negative ions. The purity of water is measured by its electric resistance. High quality DI water has a minimum resistance of 18 megohm per cm at 25°C.

Dirt Holding Capacity: The weight of a contaminant fed to the filter during a test to reach a predefined terminal pressure drop.

Disposable Filters: Those filters not cleaned or reused. Referred to as one-time or single-use filters.

Dissolve: The process by which solid particles separate from the mass and mix molecule by molecule with a liquid and appear to become part of the liquid.

Dissolved metals: In a liquid, metals which pass through a filter of a designated pore size, are assumed for environmental purposes to be dissolved.

Dissolved organic matter, DOM: Carbon compounds in water solution, generally from the decomposition of natural plant and animal tissues, but including some anthropogenic contaminants.

Distillation: The process of separating the water from the organic and inorganic contaminants through a combination of evaporation (or vaporization), cooling and condensation.

Domestic water use: Water used for household purposes, such as drinking, food preparation, bathing, washing clothes, dishes and dogs, flushing toilets and watering lawns and gardens, most domestic water is delivered to homes by a public water supply facility.

DOP: Dioctyl phthalate, a plasticizer that can be aerosolized to particles of extremely uniform size of the order of 0.3µm. Retention of DOP aerosol is used as a standard procedure for pore size rating of air filters.

Double Open End (DOE): Double Open Ended Cartridge. A filter cartridge configuration such that both ends are open and require housings with knife edge sealing devices.

Downstream Side (Of Filter): The filtrate or product stream side of the filter.

Drinking water: A water supply, treated or untreated which is intended for human consumption and uses and which is considered to be free of toxins and pathogenic bacteria, cysts or viruses, potable water, fit to drink, potable water that has or is to be treated additionally, to enhance aesthetic quality and/or reduce mineral content plus other known or unknown, undesirable substances: by one or more point-of-use water processing devices or systems or purified bottled water.

Dry Heat Sterilization: Sterilization at or above 180°C using a convection or forced air oven without moisture; may concurrently depyrogenate if adequate time and elevated temperature are employed.

Duplex Filter: Assembly of two filters with a valve for selection of either or both filters.

E. coli: *Escherichia coli*: The most prevalent bacteria in the gastrointestinal tract of humans and animals. It occurs in solids and water as a result of fecal contamination.

Efficiency: The ability of the filter medium to remove particles from the fluid stream.

Efficiency (Media Filtration): The percent of contaminant reduction, which occurs with a specified medium volume and specified water contact time. Membrane filtration - the figure obtained (expressed as a percent) by dividing the volume (gallons or liters) of product water produced by the total volume (gallons or liters) of feed water to the particular unit or system.

Effective Filtration Area: The portion of filter that fluid flows through during the filtration (EFA) process.

Effluent: The fluid which has passed through a filter (syn: filtrate or product stream); also, outflow from other types of treatments such as wastewater treatment plants.

Electrolyte: Substances which will conduct an electrical current, either in molten state or in a solution e.g. NaCl in water.

End Caps: Components adhered to a filter element with adhesive or other means to contain the filter medium in a form designed for the element.

End Cap: The end of many types of filter cartridges.

End Point: Final objective or, in petroleum distillation, temperature at which the distillation ceases.

Emulsion: A suspension of small liquid droplets within a second liquid that will not mix.

EPA: Environment Protection Agency regulates environmental monitoring. Establishes and enforces its guidelines.

Evaporation: Evaporation is the process whereby atoms or molecules in a liquid state (or solid state if the substance sublimates) gain sufficient energy to enter the gaseous state. In other words, the process by which a liquid changes into a gas. (vaporization: the process of becoming a vapor; dehydration: the process of extracting moisture).

FDA: The Food and Drug Administration (FDA or USFDA) is an agency of the United States Department of Health and Human Services, one of the United States federal executive departments. The FDA is responsible for protecting and promoting public health through the regulation and supervision of safety of various products. To be used for filtration of foods, beverages, drugs or cosmetics. All filter construction materials must comply with regulations established by the Food and Drug Administration (FDA) as listed in CFR Title 21.

Fecal coliform: A group of bacteria found in the intestinal tract of humans and animals, and also found in soil. While harmless in themselves, coliform bacteria are commonly used as indicators of the presence of pathogenic organisms and other disease-causing bacteria, such as those that cause typhoid, dysentery, hepatitis A and cholera. Measured in number of bacteria per 100 milliliters of water. Failing septic systems and runoff from feedlots are common sources of fecal coliform in water samples.

Feed: Materials to be filtered. Also referred to as concentrate, influent, intake, liquor, mud, prefill, pulp, slime or sludge.

Ferric Iron: Small solid iron particles containing trivalent iron, usually as gelatinous ferric hydroxide or ferric oxide, which are suspended in water and visible as "rusty water." Ferric iron can normally be removed by filtration. Also called precipitated iron.

Ferrous Iron: A divalent iron ion, usually as ferrous bicarbonate which, when dissolved in water, produces a clear solution. It is usually removed by cation exchange water softening. Also called clear water iron.

Flow meter: A device for monitoring and measuring the flow of a substance (typically fluid or gas). GEA Filtration's sister-company, GEA Diessel, is a leading supplier of electromagnetic flow meters.

Flux: The rate of permeate flow through a membrane as expressed per unit of membrane area. (l/m2/hr or gal/ft2/day)

Fiber: Any particle with length greater than or equal to 0.5 micron and at least five times greater than its diameter, leaving substantially parallel sides.

Filter (noun): A device for carrying out filtration which consists of the filter medium and suitable holder for constraining and supporting the filter in the fluid path.

Filter (verb): To pass a fluid containing particles through a filter medium whereby particles are removed from the fluid.

Filter Efficiency: A measurement of how well a filter retains particles. Usually expressed as the percentage of retention of particles of a specific size by a filter; see also "Beta Ratio" and "Log Reduction Value."

Filter Element: (a) Filter media. (b) The combination of media and supports or stiffeners in a filter.

Filter Frame: The Filter Frame is the element which composes the whole outside of the filter. Not all air filters have frames.

Filter Life: Measure of a filter's useful service life based on the amount of standard contaminate required to cause differential pressure to increase to an unacceptable level, typically 2-4 times it initial differential pressure or 50-80% drop in initial flow or the downstream measure of unacceptable particulate.

Filter Media Migration: Problem caused by a filter medium which is constructed of a non-continuous or fibrous polymeric matrix such that portions of the filter change structure causing undefined pore size/distribution, as a function of fluid flow.

Filter Medium : The permeable material that removes particles from a fluid being filtered.

Filter Media: Plural of filter medium.

Filtrate: The effluent of a filtration process. The filtered product.

Filtration: The process by which particles are removed from a fluid by passing the fluid through a permeable material.

Filter Paper: A permeable web of randomly oriented fibers, generally cellulose or glass fiber formed from water draining from a suspension fed in a paper making process. Also, a presentation at a filtration conference.

Filter system: The combination of a filter and associated hardware required for the filtration process.

Filtration: Separation of particulate matter from a fluid by passing the fluid through a permeable medium that will trap a percentage of the particulates.

Filtration Efficiency: That fraction of suspended particles retained by the filter.

Filtration rate: The volume of liquid that passes through a given area in a specified time. Usually expressed as gallons per square foot per minute (or hour).

Flow Decay: Decrease in flow rate as a result of filter plugging or clogging.

Flow Decay Test: An experiment to determine flow rate and throughput of a filter type or combination of filters on a specific liquid, usually by using a small area filters, to determine the sizing of a filter system by extrapolation.

Flow Rate: It is the speed at which a liquid flows and is measured in gallons or liters per minute. Flow rate of a liquid can be affected by the liquids' viscosity, differential pressure, temperature and type of filter used.

Flow Resistance: Resistance offered by a filter medium to fluid flow.

Fluoridated: A compound that has been reacted with the halide fluorine and now contains at least one fluorine atom in the molecule.

Flux: A relationship of flow to surface area; expressed as gallons per minute per square foot.

Forward Flow Test: An integrity test measuring air diffusion. See "Diffusional Flow Test."

Fungi: Fungi are any of a group of parasitic lower plants that lack chlorophyll, including molds and mildews.

Gasket: Material inserted between contact surfaces of a joint to ensure a fluid-tight seal.

Gauge Pressure: Pressure greater than atmospheric pressure.

Gels: Compressible or semisolid materials that can pass through filter media at an undefined and inconsistent degree. Best removed by depth medium.

GAC: Granular Activated Carbon

GMPs: Good Manufacturing Practices. Regulations promulgated by the Food and Drug Administration governing the manufacture of drugs (Ref. Code of Federal Regulations 21 CFR 210 & 211), medical devices (21 CFR 820), and Large Volume Parenterals (21 CFR 212 proposed).

GPH: Gallons per hour.

GPM: Gallons per minute.

Graded Density: Variation in a cartridge that results in the filter medium being more dense toward the core and less dense toward the outside surface. This is useful where a wide range of particle sizes exists because it allows larger particles to be trapped toward the surface and smaller particles toward the core.

Greywater: Wastewater from clothes washing machines, showers, bathtubs, handwashing, lavatories and sinks that are not used for disposal of chemical or chemical-biological ingredients or feces.

Gravity Filter: Filter in which the driving force for filtration is provided solely by the head of liquor above the filter medium.

Gravity Separation: Separation of immiscible phases resulting from a difference in specific gravity by coalescing.

Ground water: Water within the earth that supplies wells and springs, water in the zone of saturation where all penings in rocks and soil are filled, the upper surface of which forms the water table, water that flows in aquifers under the surface of the land and not on the surface, water that flows or seeps downward and saturates soil or rock, the upper surface of the saturated zone is called the water table, water beneath the surface of the ground, consisting largely of surface water that has seeped down, water beneath the earth's surface, occurring in aquifers at one or more depth levels.

Groundwater Testing: Process of collecting and analyzing groundwater in areas where contamination is suspected such as dumpsites and landfills. Look for pesticides, dissolved metals, etc.

Hardness: A common quality of water which contains dissolved compounds of calcium and magnesium and, sometimes, other divalent and trivalent metallic elements. The term hardness was originally applied to waters that were hard to wash in, referring to the soap wasting properties of hard water. Hardness prevents soap from lathering by causing the development of an insoluble curdy precipitate in the water; hardness typically causes the buildup of hardness scale (such as seen in cooking pans). Dissolved calcium and magnesium salts are primarily responsible for most scaling in pipes and water heaters and cause numerous problems in laundry, kitchen, and bath. Hardness is usually expressed in grains per gallon (or ppm) as calcium carbonate equivalent.

Term	Grains/Gallon	Mg/Liter (ppm)
Soft	Less than 1.0	Less than 17.1
Slightly Hard	1.0 to 3.5	17.1 to 60
Moderately	3.5 to 7.0	60 to 120
Hard	7.0 to 10.5	120 to 180
Very Hard	10.5 and above	180 and above

Hard water: Water containing a high level of calcium, magnesium, and other minerals, hard water reduces the cleansing power of soap and produces scale in hot water lines, boilers and appliances.

Heavy Metals: Metallic elements with high atomic weights, e.g. mercury, barium, bismuth and lead. They can damage living things at low concentrations and tend to accumulate in the food chain. Metallic elements having a high density (> 5g/cm5), toxic for the most part.

Herbicides: Chemicals used to kill undesirable vegetation.

Hold Up Volume: Also called Retention Volume. Volume of fluid retained in a filter and/or housing after purging the assemble with air or suitable gas.

Housing: A metal or plastic tank or tube with an inlet and outlet containing a filter (s), allowing for the flow of a fluid and contaminate through the filter, while containing the process.

Hydrometer: An instrument used to measure the density of a liquid.

Hydrophilic: Having a strong affinity (liking) for water, and thereby exhibiting the characteristic of absorbing water. Example - cotton is a hydrophilic fiber. The opposite of hydrophobic. The tendency of a surface to wet with water (water loving).

Hydrophobic: Having a strong aversion (dislike) for water, and thereby exhibiting the characteristic of repelling water. Example - Nylon is a hydrophobic fiber. The opposite of hydrophilic. The tendency of a surface not to wet with water (water hating).

Humidity: Humidity is a measurement of the amount of moisture in the air.

Influent: Fluid entering the inlet of a filter.

Inlet Pressure: The pressure entering the inlet side of the filter. Also called upstream pressure or line pressure.

In-Line Filter: A filter assembly in which the inlet, outlet & filter element are in line.

Integrity Test: A non-destructive test which is used to predict the functional performance of a filter. The valid use of this test requires that it be correlated to standardized bacterial or particle retention test. Examples: Bubble Point Test, Diffusion Test, Forward Flow Test, Pressure Hold Test.

Ion(s): An atom or group of atoms that carries a positive or negative electrical charge as a result of having lost or gained one or more of the electrons.

Ion Exchange: A reversible chemical process in which ions from an insoluble permanent solid medium (the "ion exchanger" - usually a resin) are exchanged for ions in a solution or fluid mixture surrounding the insoluble medium. The superficial physical structure of the solid in not affected. The direction of exchange depends upon the selective attraction of the ion exchanger resin for the certain ions present and the concentration of the ions in the solution. Both cation and anion exchange are used in water conditioning. Cation exchange is commonly used for water softening.

Ion Exchange Columns: Vessels filled with ion exchange resin (anion, cation, or mixed) for producing conditioned or DI Water. Also, type of column used for Ion Exchange Chromatography (IEC).

Ionizer: Ion generators (or ionizers) are a type of air cleaner that act by charging the particles in a room so that they are attracted to and adhere to walls, floors, tabletops, draperies, occupants, etc. Abrasion can result in these particles being re-suspended into the air. In some cases these devices contain a collector to attract the charged particles back to the unit.

ISO - International Organization for Standardization:ISO (International Organization for Standardization) is the world's largest developer of standards. Coordinated from a central office in Geneva, Switzerland, the ISO is a network of the national standards institutes from 157 countries.

Isotropic (Symmetric) Membrane: Membrane in which the pore openings are the same diameter throughout the thickness and on both sides of the membrane. Such membranes are non-directional, i.e., their flow characteristics are independent of which side faces the feed stream.

Iron: A very common element often present in groundwater in amounts ranging from 0.01 to 10.0 ppm (mg/1). Iron may be found in three forms: 1. insoluble form such as in ferrous bicarbonate; 2. bound with a soluble organic compound; 3. as suspended ferric iron particles. Iron above 0.3 nig/1 is objectionable in water because of staining of laundry and plumbing fixtures.

Iron Bacteria: Bacteria which thrive on iron and are able to actually use ferrous iron (as found in water or steel pipes) in their metabolic processes to incorporate ferric iron in their cell structure and to deposit gelatinous ferric hydroxide iron compounds in their life processes.

K or k: The symbol for kilo or 1,000. As in kilogram (kg = 1,000g) or kilometer (km = 1,000m). In information systems, and computers, 1K means 1024 bits of information. A 64K memory stores 65,536 bits.

Laminar Flow: Flow rate at which liquid is in a nonturbulent state (10 ft/ sec) and should not be exceeded to maintain filtration integrity and consistency.

Leaching: Extraction or flushing out of dissolved or suspended materials from the soil, solid waste or another medium by water or other liquids as they percolate down through the medium to ground water or flow laterally through the waste material, the process by which soluble materials in the soil, such as salts, nutrients, pesticide chemicals or contaminants, are washed into a lower layer of soil or are dissolved and carried away by water.

Line Pressure: The pressure in the supply line. Also called inlet pressure, upstream pressure.

Manometer: A U-shaped tube filled with a specific liquid. The difference in height between the liquid in each leg of the tube gives directly the difference in pressure on each leg of the tube. Used to monitor differential pressure.

Mean Flow Pore Measurement: The theoretical diameter of the mean pore. It is calculated as the diameter of the pore of a wetted membrane partially voided of liquid such that air flow of the partially wetted membrane is equal to ý the dry air flow.

Mean Filtration Rating: Average size of the pores of the filter medium.

Media (Medium): Material in a filter element that separates solids from fluid.

Media Migration: Contamination of the effluent by fibers or other material of which the filter is constructed.

Meltblown: A nonwoven manufacturing process for filtration media, where a molten polymer is extruded out of an orifice with high-velocity air to create fine fibers. The fibers can create roll stock or be spray-spun onto porous tubes to create a finished filter.

Membrane: A thin sheet or surface film, either natural or man-made, of microporous structure that performs as an efficient filter of particles down to the size range of chemical molecules and ions. Such membranes are termed "semipermeable" because some substances will pass through but others will not. Usually small ions, water, solvents, gases, and other very small molecules can pass through a membrane, but other ions and macromolecules such as proteins and colloids are barred from passage. Man-made (synthetic) membranes are highly engineered polymer films about 100 angstroms thick and with controlled distributions of pores ranging from 5 to 5,000 angstroms in diameter. Membranes are used in reverse osmosis, electrodialysis, nanofiltration, ultrafiltration, and as pleated final filter cartridges in water treatment.

Membrane Area: The effective wetted membrane contact area available during the cross flow filtration process.

Membrane Filter: A continuous matrix with pores of defined size.

Mesh: A term referring to a woven filtration medium, typically wire cloth or monofilament woven fabric.

Mesh Count: Number of openings or fractions of openings in a lineal inch of wire cloth or monofilament woven fabric.

Mercury: Mercury is a highly toxic element that is found both naturally and as an introduced contaminant in the environment. Although concentrations in water are very low, mercury accumulates through the aquatic food chain, resulting in high concentrations in fish that can threaten the health of people and wildlife. It is measured in units of nanograms per liter (ng/L) in water and milligrams per kilogram (mg/Kg) in fish.

Microbe: A Microbe is a microscopic, single cell organism.

Micron: Correct term is micrometer (µm), which is .000039 inch. Human eye can see a 40-micrometer diameter particle. The common unit of measurement in the filtration industry is the micron or micrometer. One micron equals forty millionths of an inch (0.00004) or expressed differently 25.4 microns equals 0.001 inch.

Micron Rating: A measurement applied to filters or filter media to indicate the particle size at which a substantial percentage of suspended solids above that size will be removed. As used in the water treatment industry standards, this may be an absolute rating or a nominal rating.

Microfiltration: Separation of particles ranging from 0.1µm to 10µm from a fluid by passing the fluid through a membrane. Used for clarification, sterilization or to detect or analyze bacteria and other organisms and particulate matter.

Micrometer (m): Also referred to as "micron." It is a 1/1,000,000 of a meter (1µm = 10-6µm = .000039 in); 25.4µm = 0.001 inch; 60µm = approximately the diameter of a human hair.

Microporous Membrane: Thin polymeric films (e.g. 0.001 to 0.005" thick) often with millions or pores per square inch, aligned as a tortuous path, allowing for the passage of a fluid to remove solids. Often used for sterilizing filtration and other fine filtration purposes. Considered a surface filter medium.

Micron Rating: A measurement applied to filters or filter media to indicate the particle size at which suspended solids above that size will be removed. As used in the water treatment industry standards, this may be an absolute rating or a nominal rating.

MIL: A unit of measure equal to one thousandth of an inch. 1 mil = 0.001 in = 0.025 mm.

Milligrams Per Liter (mg/l): A measure of concentration of a dissolved substance. A concentration of one mg/l means that one milligram of a substance is dissolved in each liter of water. For practical purposes, this unit is equal to parts per million (ppm) since one liter of water is equal in weight to one million milligrams. Thus, a liter of water containing 10 milligrams of calcium has 10 parts of calcium per one million parts of water, or 10 parts per million (10 ppm).

Minimum Bubble Point Pressure: Also referred to as minimum critical bubble point pressure, it is a filter specification derived from diffusional flow – bubble point curves for a number of filters. It is a diffusional flow pressure just before the onset of bulk flow.

Mixed Bed: The intermix of two or more filter or ion exchange products in the same vessel during a service run. The most common use is in ion exchange systems having a 40/60 percent cation to anion resin bed such as that for a deionization polisher unit. In filtration, there may be an intermix of two or more media in a single tank with each stratified into separate layers.

Molecular Weight: Sum of the atomic weights of all atoms in a molecule. Also, Mole or Mol weight.

Mold: Mold is a fungus which grows on damp, decaying organic matter. It is characterized by a fuzzy mat surface.

MTBE (Methyl Tertiary Butyl Ether): A volatile organic chemical (VOC) used as an octane-enhancing lead substitute and more recently as an oxygenating agent in gasoline to reduce carbon monoxide emissions from automobiles. MTBE is volatile, flammable and highly soluble in water. During refueling and gasoline production, MTBE is volatilized to the atmosphere where it dissolves into the atmospheric moisture and returns to earth in precipitation. Since MTBE does not adsorb well with organic matter in soils it is easily washed away. In surface water, MTBE volatilizes into the air, while in ground water, MTBE persists and moves freely. MTBE occurrences in ground water above 40 ppb have so far been attributed to point source contamination such as underground tank leaks, overflows, etc. EPA has tentatively classified MTBE as a potential human carcinogen. MTBE filtration system is available from USFilter model SY2300, product bulletin number 201141.

Nanosilver: silver particles of between 1 nm and 100 nm in size. Used in various applications as antimicrobial agent.

NanoSilver Activated Carbon: made by natural coconut carbon, with essential effect to reduce Taste, Odor, Chlorine for pre-filtering purpose, and plus Bacteria resistance competed to UV Sterilizer but with cost reduction solution. About Nano-meter: Nano-meter (10-9 meter) is in the spectrum particle sizes between molecular and DNA. The coverage Bacteria sorts beyond 650 species to damage the mechanism of germ's metabolism. The interference of cell wall is the root function to kill the existing unicellular germs and their breeding.

Nanofiltration: A membrane treatment process which falls between reverse osmosis and ultrafiltration on the filtration/separation spectrum. The nanofiltration process can pass more water at lower pressure operations than reverse osmosis, can remove particles in the 300 to 1,000 molecular weight range such as humic acid and organic color bodies present in water, and can reject selected (typically polyvalent) salts. Nanofiltration may be used for selective removal of hardness ions in a process known as membrane softening.

Nanotechnology: Nanotechnology is a branch of science that proposes the manipulation of single atoms.

Neutralization: The addition of either an acid to a base or a base to an acid to produce a more nearly neutral solution. The use of alkaline or basic materials to neutralize acidity of some water is common practice in water processing. Neutralization does not always mean the attaining of pH 7.0. When a strong acid reacts (is neutralized) with a weak base, the resulting pH may remain less than 7.0; when a strong base reacts with a weak acid, the pH may remain greater than 7.0.

NFR: Non-fiber releasing. A filter which will not release fibers into the filtrate.

Nitrates: In lakes, most nitrate/nitrogen is in NO3 form. It is measured in milligrams per liter. Elevated levels of nitrates/nitrogen are often caused by over application of fertilizers that leach into waterbodies.

Nominal: An arbitrary term used to describe the degree of filtration and generally not comparable or interchangeable between products or manufacturers. A user should always ask for a copy the test procedure used and results from the manufacturer's lab notebook to understand each rating.

Nominal Filter Rating: Filter rating indicating the approximate size particle, the majority of which will not pass through the filter. It is generally interpreted as meaning that 85 percent of the particles of the size equal to the nominal filter rating will be retained by the filter.

Nominal Rating: Micron size removed at a given efficiency under a manufacturer's defined test condition. An arbitrary term assigned by a manufacturer. Varies from 50%-98% depending on manufacturer and product.

Nonwoven: A filter fabric that is formed of natural or synthetic fibers that are randomly oriented in filtration media. Typically, held together with a binder or fibers are entangled.

Non-potable: Not suitable for drinking due to toxins, pathogens or aesthetics.

Nylon: A thermoplastic, polymeric material that has high mechanical strength & compatibility with many different kinds of chemicals. When used as a membrane it is hydrophilic.

Odor: An Odor is a quality of gases, liquid, or particles that stimulates the olfactory organ.

OEM: Original Equipment Manufacturers.

Open Area: Pore area of a filter medium, often expressed as a percentage of the total area.

Operating Pressure: The manufacturer's specified range of pressure expressed in pounds per square inch (psi) within which a water processing device or water system is designed to function. A range of 30 to 100 psi is often indicated.

Operating Temperature: The manufacturer's recommended feedwater or inlet water temperature for a water treatment system.

Organic: Related to or derived from a living organism. Always contains carbon.

ORP: is a measurement of water's ability to oxidize other substances. The higher the ORP, the greater number of oxidizing agents.

Osmosis: Diffusion of a liquid through a semi-permeable membrane from a dilute solution into a more concentrated solution, thus tending to equalize the concentration of each side of the membrane.

Osmotic pressure: Pressure exerted by mass transfer of fluids between systems moving toward chemical potential equilibrium.

Outlet Pressure: The pressure exiting the outlet side of the filter. Also called downstream pressure.

Oxides: Chemicals formed by reacting with Oxygen eg FeO, Fe₂O₃, CO₂

Ozone (O₃): A very strong oxidizing agent, which is unstable and must be generated on site. Ozone is a highly reactive form of oxygen and can be produced by sending a high voltage electrical discharge through air or oxygen (such as occurs in a lightning storm). Some degree of ozone can also be produced by certain types of ultraviolet lamps. Ozone is an excellent oxidizing agent and bactericide. Ozone is a gas whose molecules are composed of three oxygen atoms. It is an unstable gas which is significantly toxic. The 1989 threshold level value for ozone was 0.1 part per million for an eight hour time weighted average.

Parallel Filtration: Branching a filtration setup so that two assemblies of the same pore size are in parallel, to increase flow rate or simplify filter changes.

Particle: Any discrete unit of material structure; a discernible mass having an observable length, width, thickness, size and shape.

Particle Count: Practice of counting particles of solid matter in groups based on relative size contained in a certain area.

Particulate: Relating to or occurring in the form of fine particles.

Particle Removal Efficiency: Removal of particles as a function of size as determined by counting individual particles.

Parts Per Million (ppm): A measure of proportion by weight, which is equivalent to one unit of weight of solute (dissolved substance) per million weights of solution. Since one liter of water weighs one million milligrams, one ppm is equal to one milligram per liter (mg/l). Milligram per liter is the preferred unit of measure in water or waste water analysis.

Pascal (Pa): A unit of pressure equal to one newton of force per square meter. One thousand pascals equal one kilopascal (KPa); a kilopascal equals 0.145 pounds per square inch. 1 psi = 6895 Pa = 6.895 kN/sq.m = 0.0703 kg/sq.cm

Pasteurization: Partial sterilization of a substance and especially a liquid (as milk) at a temperature and time of exposure that destroys objectionable organisms without a major chemical alteration of the substance. Maintaining the high temperature for only a short period of time is referred to as 'flash' pasteurization.

Pathogens: Micro-organisms that can cause disease in other organisms or in humans, animals, and plants. They may be bacteria, viruses, or parasites and are found in sewage, in runoff from animals, and in water used for swimming. Fish and shellfish contaminated by pathogens, or the contaminated water itself, can cause serious illness.

Peristaltic Pump: A pump functioning by alternate pinching and release of tubing which drives the fluid forward in a pulsing action. The major advantage's are that the peristaltic pump is noninvasive, i.e., the pump does not contact the fluid being filtered, only the inner wall of the tubing contacts the fluid and the low shear imparted.

Permeability: The property of a filter medium that permits a fluid to pass through under a pressure differential (such as gpm/ psi).

Permeate: The fluid which passes through a membrane.

pH: A measure of the degree of the acidity or the alkalinity of a solution as measured on a scale ("pH scale") of 0 to 14. The midpoint of 7.0 on the pH scale represents neutrality - a "neutral" solution that is neither acid nor alkaline. Numbers below 7.0 indicate acidity; numbers above 7.0 indicate alkalinity. It is important to understand that pH is a measure of intensity, not of capacity. That is, pH indicates the intensity of alkalinity or acidity in the same way temperature tells how hot something is but not how much heat the substance carries.

Pesticides: Chemicals used to kill or control pests, such as weeds, insects, fungus, mites, algae, rodents and other undesirable agents.

Phosphates: A phosphate, in inorganic chemistry, is a salt of phosphoric acid. Phosphates are used for water softening and detergency.

Plankton: The total free-floating community of small, mostly microscopic, organisms in water, some are motile but all are at the mercy of water currents.

Plastisol: Suspension of a thermosetting plastic which can be molded into a desired shape. Used as a combination end cap and gasket on an element.

Pleated: A filter element whose medium consists of a series of uniform folds and has a geometric form of a cylinder, cone, disc, plate, etc. Synonymous with "convoluted" and "corrugated."

Polyphosphate: Crystals is an economic and reliable water treatment system for potable and industrial water. It consists of polyphosphate silicate. It can reduce the hardness in water.

Polyester Fiber: Polyester Fiber is a manufactured fiber produced by the reaction of ethylene glycol and terephthalic acid. Polyesters are the most common type fibers used in synthetic fiber filtration media. They are available in a wide range of deniers and are resistant to many chemicals and to moisture.

Point of Entry Filters: Filters installed at the main water line, where water enters the home.

Point Of Use Filters: Filters located immediately prior to where a clean effluent is required in a process.

Polypropylene: A thermoplastic polymeric material which is resistant to a broad range of chemicals. When used as a membrane, polypropylene is hydrophobic.

Polysulfone: Commonly used membrane material. Has excellent flow rates, high mechanical strength, resistant to a broad range of temperatures (can be sterilized) and is hydrophilic. Is not resistant to exposure to many organic solvents.

Pore: Opening in a medium. Also referred to as interstices. Size and shape of the openings are controlled by the manufacturer of the filter medium.

Pore Size: Diameter of pore in a filter medium.

Pore Size – Absolute Rating: The rated pore size of a filter. Particles equal or larger than the rated pore size are retained with 100% efficiency.

Pore Size – Nominal Rating: The pore size at which a particle of defined size will be retained with efficiency below 100% (typically 90-98%). Rating methods vary widely between manufacturers.

Pore Size Distribution: Exclusive to permeable medium: describes the number of pores in various groups of sizes in a way similar to that discussed under particle size distribution.

Porosity: The percent of open areas per unit volume of a medium whether it be a filter cake or roll stock, such as a paper, membrane, woven textile or nonwoven fabric.

Porous Metal: Finely ground chards of sintered metal, which serve as a filter medium. Often used in high-pressure and/or temperature applications.

Porous Plastic: Filter media made from finely ground plastic powder. When filled into a mold and heated, the points of powder contact to fuse, while allowing the spaces between the particles to remain open for fluid flow.

Potable: Drinkable (water).

Potassium Permanganate: Potassium Permanganate is an oxidizing agent. It is frequently impregnated on activated alumina.

ppb: A concentration unit of chemical constituents in solution; the weight of solute per unit volume of solvent, usually water, one thousand micrograms per liter is equivalent to 1 milligram per litre, this measure is equivalent to parts per billion.

ppm: A concentration unit of chemical constituents in solution; the weight of solute per unit volume of solvent, usually water, one thousand milligrams per liter is equivalent to 1 gram per litre, this measure is equivalent to parts per million.

ppt: A concentration unit of chemical constituents in solution; the weight of solute per unit volume of solvent, usually applied to marine, brackish or saline water, this measure is equivalent to parts per thousand.

Precoat: A deposit of material (usually inert), such as a filter aid on a septum prior to beginning filtration.

Protein Binding: Adsorption of a protein to a surface such as a cellulose nitrate or nylon membrane due to several types of interactions between the protein molecules and the surface.

Pressure Differential: The difference in the pressure between two points in a water system. The difference may be due to the difference in elevation and/or to pressure drop resulting from water flow.

Pressure Drop: A decrease in the water pressure (in psi) which occurs as the water flows. Pressure drop may occur for several reasons: internal friction between the molecules of water, external friction between the water and the walls of the piping system, or rough areas in the channel through which the water flows. 2.The difference between the inlet and the outlet water pressure during water flow through a water treatment device such as a water conditioner. Abbreviated AP and measured in pounds per square inch gauge pressure.

Pressure Head: The vertical distance (in feet) equal to the pressure (in psi) at a specific point. The pressure head is equal to the pressure in psi times 2.31 ft/psi.

PSI: Pounds per square inch.

PSIA: Pounds per square inch absolute.

PSID: Pounds per square inch differential.

PSIG: Pounds per square inch Gauge.

Pseudomonas Diminuta: A type of bacteria used in sterility testing. One of the smallest bacteria (0.3µm in diameter), used to challenge a sterilizing grade filter during validation testing. Under HIMA challenge conditions (107 c.f.u./cm2 EFA), sterilizing grade filters must retain all 100% of P. diminuta.

PTFE: Polytetrafluoroethylene; More commonly known as Teflon. Highly durable and resistant to a broad range of temperatures and chemicals. PTFE is hydrophobic

Radial Flow: The flow pattern in which water flows from the outside of a filter element to the center core. For example, a replaceable cartridge filter unit.

Radon (Rn) And Radon Decay Products: A colorless, odorless, short-lived radioactive gas which is produced by decay of the uranium/radium series and is soluble in water. Radon is considered carcinogenic when inhaled by humans. Radon can be removed from water by aeration or activated carbon. Radon is a radioactive gas formed in the decay of uranium. The radon decay products (also called radon daughters or progeny) can be breathed into the lung where they continue to release radiation as they further decay.

Recovery: Ability of a filter to recover bacteria (or other defined particles) from a solution. In Membrane Filtration Technique, expressed as percent of bacteria originally present or observed on a comparable pour plate.

Regeneration: (ion exchange, softening) The use of a chemical solution (regenerant) to displace the contaminant ions deposited on the ion exchange resin during the service run and replace them with the kind of ions necessary to restore the capacity of the exchange medium for reuse. This process is also called recharging or rejuvenation. Catalyst media are recharged similarly.

Rejection: Generally described as a percentage of salt rejection in a reverse osmosis membrane. Calculated as the percentage of salt which is held back by the membrane. $R = 1 - (C_p/C_b)$ where R= Rejection, C_p =Concentration in Permeate, C_b =Concentration in Retentate

Retention: Ability of a filter to retain particles (total number or those of a specific size) suspended in a gas or liquid. Expressed as a percent of particles originally present.

Retention Volume: See "Hold-up Volume."

Reusable Filters: Filters that are washed or cleaned of contaminate, either in-situ or off-line, for additional uses.

Reverse Osmosis (RO): A water treatment process that removes undesirable materials from water by using pressure to force the water molecules through a semipermeable membrane. This process is called "reverse" osmosis because the pressure forces the water to flow in the reverse direction (from concentrated solution to the dilute solution) to the flow direction (from the dilute to the concentrated) in the process of natural osmosis. RO removes ionized salts, colloids, and organic molecules down to a molecular weight of 100. May be called hyperfiltration.

Sanitization, Sanitize: To make clean by removing dirt and other extraneous materials with soap and general disinfectant so as to reduce possibility of growth and spread of pathogenic organisms.

Scavenger: A filter or element in the bottom of a filter that recovers the liquid heel that remains in a filter tank at the end of a cycle.

Screen: Often a flat filter from wire cloth mesh or monofilament fabric filter used to classify particles of a certain size to "to screen out particles". Can also cover an element for protection; also used as a basic material for a separator element of basket in a basket strainer.

Sediment: Undissolved soil particles, sand and minerals washed from the land into aquatic systems as a result of natural and human activities, usually applied to material in suspension in water or recently deposited from suspension, all kinds of deposits from the waters of streams, lakes or seas.

Sedimentation: Action of settling of suspended solids.

Self-Cleaning: Filtering device designed to clean itself by the use of a blowdown or backwash action.

Seperation: Action of separating solids or liquids from themselves (e.g. by size, viscosity, density, charge etc.) or liquids or gases from fluids.

Serial Filtration: Filtration through two or more filters of decreasing pore size one after the other to increase throughput, filtration efficiency, or to protect the final filter.

Sieve: A filter with straight-through capillary pores with identical dimension, e.g. a screen filter.

Single Open End: A filter cartridge configuration such that one end is sealed off by a closed end cap and the opposite end has a O-ring or other seal device.

SOE: Single Open Ended Cartridge

Sorbed: A general term for the results of the process of absorption and adsorption, often used to denote that either or both have occurred.

Specific Gravity: Ratio of weight of a volume of a substance to the weight of an equal volume of another substance typically compared to water with a specific gravity (Sp.G.) of 1.0.

Spin-On-Filter: Cartridge filter in which the filter body and the filter element have been constructed and an integral disposable item. Filter change is rapid by spinning off the used unit from a fixed filter head and rapidly adding on the replacement unit.

Spiral Wound Element: Membranes element configuration which is comprised of flat sheet membrane - permeate channel spacer - flat sheet membrane - feed channel spacer" combinations rolled up around a product collection tube.

Spunbond: A nonwoven fabric formed by producing, laying and self-bonding a web of filament material in one continuous set of processing steps. Usually made of polyester or polyolefin's.

SS: Abbreviation for stainless steel.

Spun Yarn: A continuous yarn for weaving of textiles consisting of staple fibers.

Stacked Disc Filter: A filter housing and device consisting of a plurality of leaves place in a horizontal position. Used widely in food and beverage filtration.

Standard (Nominal) Pressure: A pressure of 1 atmosphere (14.70 psi or 760 mm of mercury) to which measurements of quantities dependent on pressure are often referred.

Sterile, Sterility, Sterilization: To make or be free of any viable microorganisms. Demonstrated by testing to show the absence of microorganisms.

Sterilizing Filter: A non-fiber releasing filter which produces an effluent in which no microorganisms are demonstrable when tested by the method specified in the current edition of the United States Pharmacopeia. Usually accepted as 0.2µm pore-size absolute rating.

String Wound: An inexpensive filter consisting of textile roving (yarn) wrapped around a center core to form a filter medium and filter cartridge (element).

Suspended matter: Solids that are not in true solution and that can be removed by filtration they usually contribute directly to turbidity, small particles of solid pollutants that resist separation by conventional methods; operationally greater than 0.45 microns in size; also known as non-filterable residue, suspended solids or suspended sediment.

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SVP: Small Volume Parenteral; Typically administered to a patient as a bolus or single syringe injection.

Tannin: Any of a group of water soluble, natural organic phenolic compounds that are produced by metabolism in trees and plants, and are part of the degradation-resistant fulvic acid materials formed during the decomposition of vegetation.

Tannins occur in water or in almost any location where large quantities of vegetation have decayed. Tannins can impact a faintly yellowish to brown color to water. Tannin molecules tend to form anions in water above pH 6 and can then be treated with anion exchange resins. Below pH 5, tannins are better treated with activated carbon.

Throughput: The amount of solution which will pass through a filter prior to clogging.

Total Dissolved Solids (TDS): The total weight of the solids that are dissolved in the water, given in ppm per unit volume of water. TDS is determined by filtering a given volume of water (usually through a 0.45 micron filter), evaporating it at a defined temperature (usually 103° -105° Celsius) and then weighing the residue.

Note: A test measuring the electrical conductivity of the water provides only an estimate of the TDS present, as conductivity is not precisely proportional to the weight of an ion and nonconductive substances cannot be measured by electrical tests.

Total Solids: The material residue left in the vessel after evaporation of a sample and its subsequent drying in an oven at 103-105°C. The increase in weight over that of the empty vessel represents the total solids. Used in analyzing drinking water.

Total Suspended Solids: The particles which can be removed from a solution by filtration, usually specified as the matter which will not pass through a 0.45 micron pore-diameter filter.

Toxic: Poisonous or harmful.

Toxicant: An element or compound with a harmful or lethal effect on the physiology, behaviour, reproduction or survival of an organism.

Toxicity: A measure of how poisonous a toxin is to an organism.

Toxicity test: A bioassay to determine the toxicity of a chemical or an effluent using living organisms, a toxicity test measures the degree of response of an exposed test organism to a specified concentration of chemical or effluent sample, living organisms are subjected to varying dilutions of polluted water or water containing known amounts of presumed or known toxins or contaminated sediment, mortality, declines in reproductive rates or behavioral changes indicate a toxic response.

Toxin: A compound or element which is toxic or poisonous in common usage. More strictly a toxin is a natural toxicant made by an organism as opposed to poisons manufactured by man.

Toxic Substances: Chemical elements and compounds, such as lead, radon, benzene, dioxin, and numerous others, that have toxic properties by either ingestion, inhalation, or absorption into the human body. There is considerable variation in the degree of toxicity among the various toxic substances and in the exposure level that induces toxicity.

Trihalomethanes (THMs): A group of organic chemicals, suspected of being carcinogenic, which are formed in water when chlorine being used as a disinfectant reacts with natural organic matter such as humic acids from decayed vegetation. Humic acids are present in all natural water used as sources of drinking water supplies. Chloroform is one of the most common THMs formed in this type of reaction.

Turbidity: The amount of small particles of solid matter suspended in water as measured by the amount of scattering and absorption of light rays caused by the particles. Turbidity blocks light rays and makes the water opaque. Turbidity is measured in nephelometric turbidity units (NTU). Potable water should not exceed 0.3 NTU. Turbidity cannot be directed equated to suspended solids because white particles reflect more light than dark-colored particles and many small particles will reflect more light than an equivalent large particle.

Tourmaline: Now, as a mineral, it has become a focus of research at universities and research centers worldwide. The reason - infrared Tourmaline is the only one mineral to show permanent electricity on the earth and is also a natural (non-manufactured) source of negative ions and far infrared (FIR) rays. It is also known to be helpful for improving circulation, relieving stress, increasing mental alertness and strengthening the immune system function.

Ultrafiltration: A method of cross flow filtration (similar to reverse osmosis but using lower pressures) which uses a membrane to separate small colloids and large molecules from water and other liquids. The ultrafiltration process falls between reverse osmosis and microfiltration in terms of the size of particles removed, with ultrafiltration removing particles in the 0.002 to 0.1 micron range, and typically rejecting organics over 1,000 molecular weight while passing ions and smaller organics.

Ultraviolet (UV) Light: Radiation (light) having a wavelength shorter than 3900 angstroms, the wavelengths of visible light, and longer than 100 angstroms, the wavelengths of x-rays. This wavelength puts ultraviolet light at the invisible violet end of the light spectrum. Ultraviolet light is used as a disinfectant.

Uniformity Coefficient: The measure of the variation in particle sizes of filter and ion exchange media. The coefficient is defined as the ratio of the sieve size that will permit passage of 60 percent of the media material by weight to the sieve size that will permit passage of 10 percent of the media material by weight. A uniformity coefficient of 1.00 denotes a material having particle grains all the same size; numbers increasingly greater than one denote increasingly less uniformity.

Upstream Side (of filter): The feed side of the filter.

Vacuum: The depression of pressure below atmospheric pressure.

Validation: Demonstration that a process or product does what it is supposed to do by challenging the system and providing complete documentation.

Vessel: A container, usually used as alternatively to the word housing e.g. filter vessel.

Virus: A parasitic infectious microbe, composed almost entirely of protein and nucleic acids, which can cause disease(s) in humans. Viruses can reproduce only within living cells. They are 0.004 to 0.1 microns in size, and about 100 times smaller than bacteria.

Volatile: Evaporates easily, converts easily from liquid form to gas.

Volatile Organic Compounds (VOCs): Volatile Organic Compounds are compounds that vaporize (become a gas) at room temperature. Common sources which may emit VOCs into indoor air include housekeeping and maintenance products, and building and furnishing materials. In sufficient quantities, VOCs can cause eye, nose, and throat irritations, headaches, dizziness, visual disorders, memory impairment; some are known to cause cancer in animals; some are suspected of causing, or are known to cause, cancer in humans. At present, not much is known about what health effects occur at the levels of VOCs typically found in public and commercial buildings.

Wastewater: Effluent water carried downstream from a filtration or separation process.

Water Breakthrough Test: An integrity test for hydrophobic filters in which the resistance to water flow is overcome by a specific pressure such that water will flow through a correspondingly specific pore size of the filter. Also called a water intrusion test. Useful test to determine gross loss of integrity (e.g., installation integrity) and filter hydrophobicity.

Water cycle: The natural pathway water follows as it changes between liquid, solid and gaseous states, biogeochemical cycle that moves and recycles water in various forms through the ecosystem, the circuit of water movement from the oceans to the atmosphere and to the Earth and back to the atmosphere through various stages or processes such as precipitation, interception, runoff, infiltration, percolation, storage, evaporation and transportation.

Water Hammer: The shock wave or series of waves caused by the resistance of inertia to an abrupt change (acceleration or deceleration) of water flow through a water piping system. Water hammer may produce an instantaneous pressure many times greater than the normal pressure. For this reason, many building codes now require the installation of a "water hammer arrestor," a device to absorb these shock waves and prevent damage to appliances such as washing machines.

Water pollution: Degradation of a body of water by a substance or condition to such a degree that the water fails to meet specified standards or cannot be used for a specific purpose.

Water quality: A term used to describe the chemical, physical and biological characteristics of water, usually in respect to its suitability for a particular purpose.

Water quality criteria: Scientifically derived ambient numerical values for physical, chemical or biological characteristics of water, biota or sediment which must not be exceeded to prevent specified detrimental effects from occurring to water uses, recommended concentrations, levels or narrative statements that should not be exceeded in order to protect the life or health of organisms.

Water quality standard: Law or regulation that consists of the designated use or uses of a waterbody or a segment of a waterbody and the water quality criteria that are necessary to protect the use or uses of that particular waterbody.

Water Softener (mechanical): A pressurized water treatment device in which hard water is passed through a bed of cation exchange media (either inorganic or synthetic organic) for the purpose of exchanging calcium and magnesium ions for sodium or potassium ions, thus producing a softened water which is more desirable for laundering, bathing, and dishwashing. This cation exchange process was originally called zeolite water softening or the Permutit Process. Most modern water softeners use a sulfonated bead form of styrene/divinylbenzene (DVB) cation resin.

Water Softener Salt: Salt suitable for regenerating residential and commercial cation exchange water softeners. Most commonly used for this purpose is sodium chloride (NaCl) in crystal or pelletized form. Rock grade salt should be 96-99 percent NaCl; evaporated salt should be 99+ percent NaCl. Potassium chloride (KC1) may also be used for the regeneration cycle in the cation exchange process, thus minimizing the amount of sodium added to both the softened water and the spent regenerant water going to the drain.

Water Softening: The reduction/removal of calcium and magnesium ions, which are the principal cause of hardness in water. The cation exchange resin method is most commonly used for residential and commercial water treatment. In municipal and industrial water treatment, the process can be lime softening or lime-soda softening.

Water Source: The basic origin of a water, either a surface source (such as a lake, river, or reservoir) or a subsurface source (such as a well). After treatment and pumping via pipe lines, the treated and pumped water becomes a water supply.

Water table: The level below the surface of the earth at which the ground becomes saturated with water, the surface of an unconfined aquifer which fluctuates due to seasonal precipitation, the top of the water surface in the saturated part of an aquifer.

Water treatment: A method of cleaning water for a specific purpose, such as drinking water, irrigation water or discharge to a stream.

Well: A bored, drilled, or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension and whose purpose is to reach underground water supplies or oil, or to store or bury fluids below ground.

Wet Distillers Grain (WDG): A co-product of drymill ethanol production and a valuable feed for livestock. Wet distillers grain (WDG) is not as easily transportable, but the cost of drying the product is removed.

Zeolite: Zeolite is a type of adsorbent for removal of certain odors. It has, by its unique pore size, an affinity for low molecular weight compounds, specifically ammonia. Zeolites are minerals that have a micro-porous structure. Quite common mineral zeolites includes: analcime, chabazite, natrolite, phillipsite, and stilbite. Zeolites are the aluminosilicate members of the family of microporous solids known as "molecular sieves". Zeolites are widely used as ion-exchange beds in domestic and commercial water purification, softening, and other applications. In chemistry, zeolites are used to separate molecules (only molecules of certain sizes and shapes can pass through), as traps for molecules so they can be analyzed.

Zooplankton: Primarily microscopic animals which swim freely in the water column or are carried about by water currents, many feed on phytoplankton and are in turn a staple diet of small fish.



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TERMS AND CONDITIONS OF SALE

Unless otherwise expressly specified by the Aquafilter, all business and payment transactions are as set forth in the general terms and conditions of sale hereafter defined.

INQUIRY / PURCHASE ORDER

Inquiries and Orders may be sent by fax, and/or e-mail to Aquafilter. Inquiries must include the customer's information (company name, country, address, telephone, fax / e-mail and P.I.C.) and VAT number, if required. Manufacturer's/Aquafilter product part number and order quantity must be used for goods specification. Standard validity of our quotation is 30 days after issuing date. Orders must include, the customer's PO number, manufacturer's/Aquafilter part number, box quantity (we accept order only in box quantity), pricing, if apply, and shipping method. Shipping method must include packing type, actual consignee and delivery address (destination). The customer is requested to specify to be shipped without pallets, or on the pallets (Euro or US standard). In case of any pallet required, its cost of pallet will be charged separately by add the cost to Invoice. Purchase orders received without part numbers will not be processed until the part numbers are verified. Purchase orders must state, if partial shipments are allowed, and must designate required shipping method. If you do not have the parts numbers, pricing or box quantity, please contact our sales department at sales@aquafilter.com or visit our web site www.aquafilter.com.

ORDER CONFIRMATION

All purchase orders will be confirmed by e-mail with Pro forma Invoice. Any discrepancies in pricing, part numbers, descriptions, and/or box quantities will be considered in the order confirmation. It is the customer's responsibility to review the order confirmations. After Proforma Invoice issued and confirmed by the buyer no further purchase order change of specification is allowed. If we do not hear from the customer regarding the confirmation, we will process order according to the confirmation. Prices include packaging that is satisfactory for truck, air, or containerized shipment at no additional charge (applies to full box quantity only).

SHIPPING

The estimated shipping date is based on production times, required to process the order, commencing on the date which Aquafilter receives the order. In the event it is necessary to revise the design OEM; the applicable shipping date shall be extended by the period of time required to achieve the mutually agreed upon corrections or adjustments. Aquafilter reserves the right to make partial shipments. "Shipping date" refers to the date the order leaves Aquafilter warehouse; it does not take into consideration the transit time required to deliver the product between the Aquafilter warehouse and the buyer. If shipment is delayed due to any cause beyond the control of the Aquafilter; Aquafilter holds the right of discretion to the goods. Including but not limited to storage and handling; if necessary, at the risk and expense of the buyer. Aquafilter disclaims any subsequent liability in this regard. All transport operations, insurance, customs, local tax on goods, handling, and jobsite delivery are at the liability, expense and risk of the buyer, which is responsible to check the shipments upon arrival. If the goods are shipped by Aquafilter the shipment will be collected, at the lowest price, unless expressly requested by the buyer, and, in any case, under the full liability of the buyer. Disposable packaging shall not be taken back. Reusable packaging if applicable is to be returned to Aquafilter by the buyer at the risk and expense of the buyer. Aquafilter shall invoice reusable packaging if this is not returned within a period of no longer than 4 weeks after the delivery. The buyer should confirm receiving the goods with signed and stamped shipping document (f.e. CMR), if not, Aquafilter will charge VAT tax as the other cost. All shipments must be inspected for damages and counted for shortages at the time of delivery. Any claims related to freight (Freight claims) must be made immediately and directly to the freight carrier. Aquafilter will not be held responsible for breakage or shortage after products are accepted from common carrier. Any damage or discrepancy must be informed to Aquafilter within 3 days of receipt of merchandise, otherwise, Aquafilter reserve the right to reject such claim. Aquafilter will answer to all claims within 14 working days from the day of accepting the claim.

DELAYS IN SHIPPING (FORCE MAJEURE)

The buyer shall not hold Aquafilter responsible for any delay or for any damages suffered by the buyer by reason of delay due to fires, strikes, riots, acts of god, priorities, government orders or restrictions, delays in transportation, delays by suppliers of materials or parts, inability to obtain necessary labor, or other causes beyond the control of Aquafilter, Aquafilter suppliers and subcontractors. In the event of such delay, (a) the time for Aquafilter performance shall be reasonably extended; (b) both parties shall take reasonable steps to adjust all affected dates in subsequent order; and (c) a purchase price adjustment shall be made for additional costs incurred by Aquafilter. Aquafilter is released automatically from any commitments relating to delivery times under the following conditions:

- 1) if the buyer is non-compliant with the payment terms,
- 2) if the information furnished by the buyer will not arrive in due course,
- 3) in the event of force majeure; Aquafilter will keep the buyer informed, in a timely manner, if any of the forgoing events should occur

WARRANTIES

Aquafilter makes no representations or warranties, except that Aquafilter warrants that all goods manufactured by it shall be free from material defects in material and workmanship for a periods of one (1) year to five (5) years (depending on product line – please check warranties for each product as specify on technical specifications) from the date of shipment to the buyer. If within such periods, goods shall be proven to be materially defective to Aquafilter's reasonable satisfaction, then such defective goods shall be repaired or replaced, at Aquafilter sole discretion. Such corrections or replacements shall constitute a fulfillment of all liabilities in respect of such goods. The warranty for all goods sold by Aquafilter but manufactured by others shall be the warranty provided by such manufacturer for such goods. Aquafilter shall take all reasonably commercial efforts (other than the payment of money) to provide the manufacturer's warranty to the buyer. The foregoing warranties are exclusive and are in lieu of all other express and implied warranties whatsoever (either in fact or by operation of law) including but not limited to implied warranties of merchantability and fitness for a particular purpose or otherwise. Aquafilter is not liable for damage to goods, property or persons arising out of improper installation of such goods, modification, and repair or tampering by anyone other than Aquafilter or Aquafilter authorized personnel of such goods; or utilization of the goods under conditions which exceed specifications for such goods. The parties expressly agree that the limitations of incidental and consequential damages set forth herein are agreed allocations of risk and shall survive the determination of any court of competent jurisdiction that any remedy herein fails of its essential purpose. The warranty does not apply to replacements or operations resulting from normal wear and tear of equipment and cartridges, damage or accidents caused by negligence, lack of supervision or maintenance, and defective use of equipment. Custom work and repairs of equipment are not covered under warrantee. Aquafilter shall have no liability to any person for punitive, indirect, special, incidental, contingent or consequential damages of any description or loss of use, revenue or profits, whether arising out of warranty or other contract, negligence or other sort, or otherwise.

PAYMENT TERMS

Our products' sales prices are set in U.S. Dollars. However, the buyer may select the other currency such as Euro. In such case sales prices in other currency will be fixed by Aquafilter, referring to the average exchange-rate of the preceding week, which is announced by European Central Bank (ECB) www.ecb.europa.eu/stats/exchange/eurofxref/html/eurofxref-graph-usd.en.html. Payment shall be made by the buyer without any deduction as value on invoice by way of a bank remittance. All local and overseas banks' charges borne by the buyer. In case of shortage of amount reached to our bank account, the difference between the amount mentioned in the invoice and actual amount reached to our bank account shall be charged to the buyer and settled by the buyer before next order at the latest. Partial payment against invoices is not acceptable. Payment is due from date of invoice according to the terms on each invoice. The due date set by the invoice is firm and final. The date of having reached to our bank account shall be considered as the date of payment by the buyer. Once the payment due date has expired, the buyer shall be deemed in default. In the event of delayed or deferred payment, Aquafilter shall be entitled to charge interest on past due balances at the rate amount 24% per annum or the respective applicable statutory interest rate on default. The buyer shall be liable for Aquafilter costs of collection, including, without limitation and reasonable attorneys' fees. Any delay in payment entitles Aquafilter to suspend performance of the current contract without suspending the payment of the debt. Payment terms given on approved credit only. Credit will not be extended to accounts with poor payment history. Without approved credit, orders are shipped on a prepaid basis. Large orders and/or special item orders may also be subject to a down payment. OEM, special orders and our special offer for marketing purpose are on 100% prepaid basis. Buyers are required to pay all invoices in full within terms.

RETENTION OF OWNERSHIP

Aquafilter retains title and right of ownership to the items of delivery until all payments from the business relationship with the Customer have been received, until full payment of the principal and interest is made. If the buyer should fail to pay the price on the agreed upon date, then Aquafilter may repossess the goods and the sale will be cancelled automatically if the Aquafilter sees fit to do so. Aquafilter liability ceases upon removal of goods from our workshops or our subcontractors' workshops. In case of non-payment, then Aquafilter reserves the right to repossess the unpaid goods at the buyer's expense and to claim, in addition, for the buyer to pay amount of damages for the depreciation of the goods in the amount of 2.5% for every month the buyer was in possession of the goods. A quote will be made for returning modified goods to their original condition, the amount of which will be deducted from the value of the new product, without cancelling the effect of depreciation. In the event that the Customer acts in breach of the contract, in particular, of nonpayment of the due purchase price, Aquafilter shall be entitled to withdraw from the contract in accordance with the statutory regulations and/or demand that the items of delivery be returned on the basis of the retention of title and resell it. Any demand for the return of goods shall not be deemed to include a simultaneous declaration of withdrawal; on the contrary, Aquafilter shall be entitled to merely demand the return of the items of delivery and reserve the right to withdraw from the contract. In the event that the Customer does not pay the due purchase price, Aquafilter may only assert such rights if Aquafilter has previously and unsuccessfully set the Customer a reasonable deadline for payment or if the setting of such a deadline is superfluous in accordance with the statutory regulations. An application to commence insolvency proceedings concerning the assets of the Customer shall entitle Aquafilter to withdraw from the contract and to demand the immediate return of the items of delivery.

PRICES AND QUOTATIONS

The minimum purchase order is \$3000.00., except the case for the first – trial order. If the order amount is less, we will apply a fee of \$100.00 and add it to our commercial invoice. In any case of such small purchase order, Aquafilter reserves the right to ask the buyer to increase the amount or to cancel such small purchase order. Orders are accepted with understanding that the goods will be billed at price in effect at time of order, unless otherwise specified in approved written quotation by Aquafilter. The price and performance of this order is subject to resource availability and costs within the control of Aquafilter at the time of manufacture. Aquafilter reserves the right to cancel or adjust prices and delivery without notice. Any price discrepancy on orders will require a revised purchase order from the buyer. If after submission of a quotation, which is priced in the currency of the country, variations in exchange rates represent a difference of more than 3%, then Aquafilter is no longer bound by the initial quotation, which must be redone. Aquafilter prices are considered firm and final according to the economic conditions on the date of quotation submission. Any manufacturer's tax, retailer's occupation tax, sales tax, excise tax, duty, custom, inspection or testing fee, or other tax, fee or change of any nature whatsoever, imposed by any governmental authority on or measured by any transaction between Aquafilter and the buyer, shall be paid by the buyer in addition to the prices quoted or invoiced.

FREIGHT

All Aquafilter prices are deemed "Ex-works" prices in accordance with the Incoterms 2010 plus the valid statutory VAT on the date of invoicing. All additional costs, such as special type packaging, transport, customs duties, support with the execution of customs formalities, taxes, other public duties shall be invoiced separately if apply. Delivery terms are FCA at Aquafilter warehouse, Lodz Poland, even in case of transportation organized by Aquafilter on behalf of the buyer. Purchase orders must specify preferred carrier or order will be shipped via Aquafilter's discretion, subject to availability, and pre-payment of such added to the invoice. If additional services are requested, charges are the responsibility of the customer. The buyer must advise what day and time they will pick up the order, including truck number, name of driver and the other information on the pick up, if required. A completed order will be held for a maximum of 5 business days. A restocking charge (5.00\$ per day per 1 pallet/package) may be assessed to any orders that are not picked up within the required time frame. Orders can be picked up Monday – Friday from 9:00 – 16:00. Expediting fees may apply to same day pick ups and drive in / walk in orders.

ORDER CANCELLATION

The buyer may cancel orders only upon reasonable advance written notice, with agreement of cancellation by Aquafilter, and upon payment to Aquafilter, in addition to Aquafilter cancellation charges which include, but are not limited to all costs and expenses incurred, and to cover commitments made (including any raw materials or other commitments), by the Aquafilter and a reasonable profit thereon. Aquafilter determination charges shall be conclusive. No cancellation of OEM or special orders is allowed.

ENGINEERING AND DESIGN CHANGES

Aquafilter reserves the right to make design, specification and/or engineering changes to its products without prior notification unless a written agreement between Aquafilter and the buyer exists as to the design, specification and/ or engineering of the product. Title to, and full and unrestricted ownership, right to use all designs, specifications and engineering information provided by Aquafilter shall at all times be and remain vested in Aquafilter.

DOCUMENTS - TECHNICAL INFORMATION - TERMS OF USE AGREEMENT – MEDIA (Artwork Images, Logos, Product Names, Slogans, Drawings)ACCEPTANCE OF AGREEMENT.

AMF. You agree to the terms and conditions outlined in this Terms of Use Agreement ("Agreement") with respect to our **Aquafilter Media Files (AMF)**. This Agreement constitutes the entire and only agreement between Aquafilter and you, and supersedes all or any prior or contemporaneous agreements, and understandings with respect to the (AMF). No media files can be used until you receive a signed copy of this agreement from Aquafilter.

Right for use AMF. The artwork, graphics, images, photos, logos, product names and slogans and other material related to AMF are protected under applicable copyrights, trademarks and other proprietary (including but not limited to intellectual property) rights. The copying, redistribution, use or publication by you of any such matters or any part of the AMF is strictly prohibited. You do not acquire ownership rights to any AMF or other materials provided. **Trademarks.** Aquafilter, Aquamarket, H200, Excito, Bacinix, Shopure and any others are either trademarks, registered trademarks or trademarks licensed for use of Aquafilter.

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Editing, Deleting and Modification. We reserve the right in our sole discretion to edit or delete any AMF and enforce the use of Specific AMF or represent specific products and logos. If the Aquafilters' products or components will be used by the buyer, modifying those products and/or adding other products to those products, the buyer is not allowed to use both AMF and Aquafilter Trademarks on final product.

Indemnification. You agree to indemnify, defend and hold Aquafilter, attorneys, staff and affiliates harmless from any liability, loss, claim and expense, including reasonable attorney's fees, related to your violation of this Agreement. Nontransferable. Your right to use the AMF is not transferable. Miscellaneous. This Agreement shall be governed by and construed in accordance with the laws of Poland (without regard to conflict of law principles). The language in this Agreement shall be interpreted as to its fair meaning and not strictly for or against either party. All legal proceedings arising out of or in connection with this Agreement shall be brought solely in Poland. You expressly submit to the exclusive jurisdiction of said courts and consents to extra-territorial service of process. Should any part of this Agreement be held invalid or unenforceable, that portion shall be construed consistent with applicable law and the remaining portions shall remain in full force and effect. To the extent that anything in or associated with the AMF is in conflict or inconsistent with this Agreement, this Agreement shall take precedence. Our failure to enforce any provision of this Agreement shall not be deemed a waiver of such provision nor of the right to enforce such provision. OEM Product: Any documents submitted in connection with an OEM quote or execution of a sale shall remain the Aquafilter exclusive intellectual property. Said items may only be used for fulfilling the order and shall in no circumstances be disclosed to third parties, copied or executed without the express written permission of the Aquafilter. If no order results from the proposal, the technical documents included for the quote must be returned upon request. However, in such a case, the buyer is still liable for ensuring non-disclosure compliance. Aquafilter reserves the property rights and copyrights to samples, cost estimates, drawings, calculations, and other information of a material and immaterial nature, which is not generally accessible—including in an electronic form. The Customer shall require the express written consent of Aquafilter before forwarding these to third parties.

RETURNED GOODS

Authorization and shipping instructions for the return of any salable goods must first be obtained by the buyer from Aquafilter, otherwise shipment will be refused. The return of product is limited to no longer than one (1) year from the date of purchase, verified by invoice. Goods built to the buyer's specifications (OEM) or special ordered cannot be returned for credit. Any product returned in anything but sellable condition and in original packages will be refused and returned to the buyer at the buyer's cost. A 30% restocking charge will be deducted from our credit memorandum on the returned goods. Transportation charges on the returned goods must be prepaid and are the responsibility of the buyer. Any cost in excess of 30% restocking charge incurred in placing the goods in sellable condition will be charged to the buyer by a corresponding deduction from the allowed credit. Goods returned for credit must be carefully packed so as to reach Aquafilter's location without damage. If the return of our goods is made necessary through some fault of the Aquafilter, full credit will be allowed, including whatever transportation expense the buyer may have incurred, provided that the return has been authorized by Aquafilter in writing and is in accordance with the packing and shipping instructions. For more detailed information, please refer to RMA at www.aquafilter.com

JURISDICTION – DISPUTES

"Any dispute arising out of or in connection with this contract, including any question regarding its existence, validity or termination, shall be referred to and finally resolved by arbitration under the LCIA Rules, which Rules are deemed to be incorporated by reference into this clause.

The number of arbitrators shall be three. The seat, or legal place, of arbitration shall be Lodz, Poland. The language to be used in the arbitral proceedings shall be English. The governing law of the contract shall be the substantive law of Poland. The decision or legislation of the Arbitration Court will be final and binding.

GENERAL INFORMATION

Aquafilter is not bound to the prices, information in catalogues, advertising leaflets and fees. The Aquafilter reserves the right to make changes to the arrangement, shape, size or material of the devices, equipment parts, the drawings and descriptions of which are found in printed matters and advertisements. Any commitments made by Aquafilter representatives or employees are subject to confirmation directly from Aquafilter. The buyer's acceptance of our acknowledgment of order implies acceptance of Aquafilter terms of sale. The sales contract is only valid if Aquafilter expressly acknowledges acceptance of the customer's order. In the event of any discrepancies between the terms of the English and other language version, the English language version shall prevail in all cases. In the event that a provision or part of a provision of these Terms and Conditions is or shall become invalid, this shall have no effect on the validity of the remaining contract. The contractual parties are obliged to replace the invalid provision with a provision that comes as close as possible to the economic outcome of the invalid provision. All technical errors by Aquafilter are subject to correction. The general information described above supersedes any previously written terms and conditions that appear in company documents. Any changes made to our general information must be authorized by Aquafilter in writing. These Terms and Conditions of Sale supersede any and all preceding versions, language or text.

T&C115



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PRODUCT RETURN POLICY (RMA)

Any item to be returned requires prior authorization from Aquafilter customer service department, email: sales@aquafilter.com, phone (+48 42 6131910, +48 42 6131911) or by fax (+48 42 6559970).

Requests for returns of merchandise (other than materially defective merchandise) must be within one (1) year from the date of the Aquafilter invoice date.

The purchaser's order number or Aquafilter invoice number must be provided when requesting the authorization.

Aquafilter reserves the right to deny requested product returns.

Approved returns will be issued a return authorization number RMA from Aquafilter customer service department.

Product returned without prior authorization by Aquafilter will be refused.

Approved returns will be given a return authorization number RMA.

The RMA must be plainly displayed on the outside of the parcel or parcels being returned or packages will be refused.

Product must be returned within sixty (60) days upon issuance of the RMA.

If product is not returned within sixty (60) days, the RMA will be void and any packages returned will be refused.

Items said to be defective will be submitted to Aquafilter Quality Control Department for evaluation and, if determined to be a material manufacturing defect, credit or a replacement will be issued as Aquafilter option.

Items sent out incorrectly by Aquafilter will be credited upon return of the product.

A replacement order will be sent upon request by purchaser.

Items to be returned as a result of over-stock; being incorrectly ordered, on an order cancelled by purchaser, will be assessed a 30% restocking fee and the company sending the returns will be responsible for return freight charges.

All items returned with the exception of goods claimed materially defective; must be in even case lots, in their original packaging, and in new and unused condition.

Any product returned failing to meet the above guidelines will be destroyed with no credit issued.

Any items returned to seller without seller's authorization or an RMA will be refused.

For further questions regarding this policy, contact the Aquafilter Sales Department sales@aquafilter.com.

www.aquafilter.com



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