



Quotation for the supply of Rainwater Harvesting Equipment

Prepared by:
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Hanley Taite Design Partnership
Architects and Design Consultants

Virginia Shopping Centre,
Virginia, Co. Cavan,
Ireland.

Our reference : RWHSI346TIP5-3-2024

Your Proposal

Hi Garvan,

Our 5000litre shallow dig RWH DUK 2 system with Top multimix pump with pressure vessel.I have also quoted our UV Filter complete kit, ECOM-MIX and RO unit. This will allow you to use rainwater everywhere within the dwelling for all uses including for human consumption.

Have included all fitting instructions also for your information. Please feel free to contact me at any time if any queries 087 9125803.

Regards

Thomas Mc Nally.



State-of-the-art quality systems and a quotation tailored to your needs



**WTL
we're
listed!**



Thank you for your enquiry about products from Rainwater harvesting Systems Ireland and for the information about the site you have given us. We have pleasure in providing this document that will answer all of your questions about our systems and also provide you with the component list and exact pricing of each type of system which might be available to you. If we provide the Tank Size Calculator filled out with your site's data, please check the figures as this forms the basis of your quote.



BS8515
Rainwater harvesting

We provide tanks and components conceived and manufactured to conform not only to the applicable British norms (The Environment Agency's Code for Sustainable Homes, BREAAAM, WRAS, the UK and Republic of Ireland Building Regulations and the Code of Practice for rainwater harvesting systems BS 8515-2009) but also to international quality standards ISO9001 Design & Build, EN976, EN858, TÜV or CE .

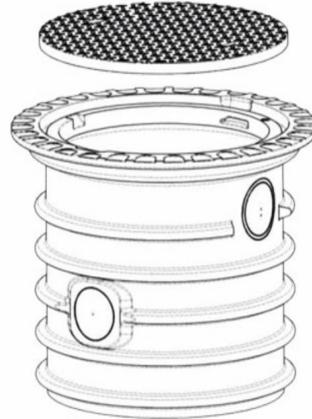
Components and Prices – Supply Only

Components

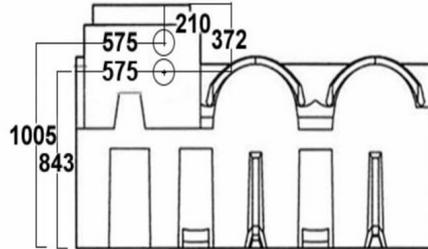
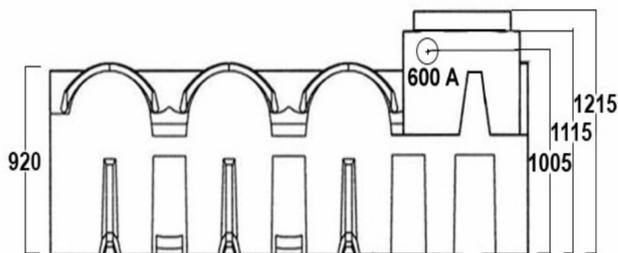
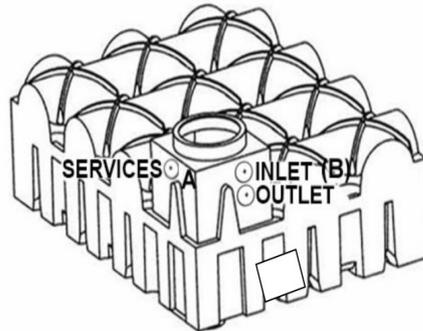
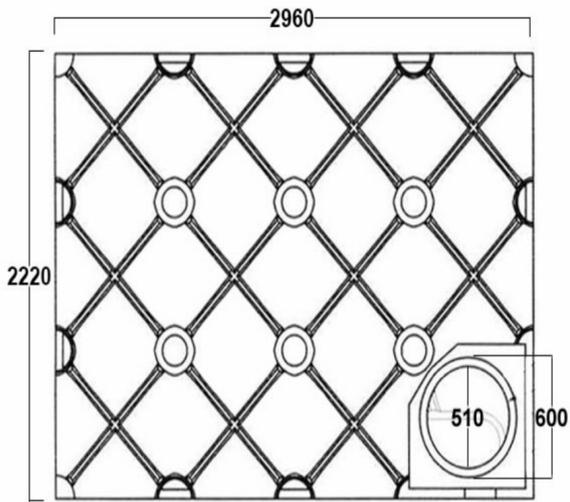
Product Code	Description	Qty
RWFT5001	F-LINE 5000L SHALLOW TANK PRE ASSEMBLED(ACTUAL CAPCITIY 5800 LITRES)	1
WATCH-FLO	WATCHMAN FLOW UNIT	1
RWH-HYD03	TOP MULTI MIX PUMP WITH PRESURE VESSEL	1
RWH-FLINE01	McCLEAN FILTER PRE ASSEMBLED	1
RWH-FLINE02	CALMED INLET PRE ASSEMBLED	1
GF-340512	FLOW CONTROL VALVE FOR STORM ATTENUATION	1
RWH-FLINE03	OVERFLOW SIPHON ODOUR AND RODENT GUARD PRE ASSEMBLED WITH 10" 20 MICRON FILTER	1
UV-4-STAGE	UV 4 STAGE ULTRAVIOLET FILTRATION UNIT 25LITRES PER/MIN	1
RO-UNIT	REVERSE OSMOSIS UNIT STANDARD	1
500L-BOOSTER TANK	500 LITRE BOOSTER TANK WITH MULTI TECH PUMP	1
ECO-MIX 10/44	ECO-MIX 10x44 CLACK WATER SOFTENER	1

5000L F-Line

635



Cut max 400



F-Line Flat Tank shallow dig underground tank

Why buy this tank?

- The F-Line is a high quality, rotationally moulded, one piece rainwater tank that can be installed without the need for concrete, thereby minimising installation costs and supported by our long term **25 year tank guarantee**.
- Minimal installation depth
- Easy and quick to install
- Small excavation pit and little earth excavation preserves your garden
- Ideal for installation in new or existing properties
- Can be installed in ground water up to tank shoulder
- Easy to install

The F-line flat tank can be installed into much higher water tables than a standard round tank. If you don't know what your water table will be like in the winter, you're safer to install a flat tank. The F-Line tanks are flat and the installation depth is up to 60% less than other rainwater tanks. The excavation can be up to 70% less, meaning little earth excavation, easy handling and less cost for you! The small excavation pit is easily filled in and your garden will look just like it did before.

Size	Length	Width	Height tank body	Height incl. Entrance shaft	Weight
1500 litre*	2400mm	1200mm	650mm	1015mm	80kg
3000 litre	2400mm	2400mm	650mm	1015mm	170kg
5000 litre	2960mm	2220mm	920mm	1350mm	250kg
7500 litre	3340mm	2310mm	1125mm	1415mm	310kg



Warranties, terms and conditions of sale.

1. Product Warranty

RainWater Harvesting Systems Ireland warrants that its products and parts will be free from defects in materials and workmanship for a warranty period of

- One (1) year from the date of shipment in the case of electrical products and or products with moving parts (including but not limited to pumps and rain management systems), except
- One(1) years from the date of shipment in the case of the Multi-tech submersible rainwater pump RWH-HYD03
- One(1) years from the date of shipment in the case of products without moving parts (including but not limited to filters, pipes and tanks), or
- Fifteen (15) years from the date of shipment in the case of rainwater harvesting tanks from the F-line range of Germany.

RainWater Harvesting Systems Ireland is a retail supplier of rainwater harvesting products. The company offer's installation and service of products or systems supplied by the company.

2. Repair, Replacement or Reimbursement Warranty

If the product proves defective during the warranty period, RainWater Harvesting Systems Ireland will:

1. repair the product by means of telephone support or by its authorized service representative or installer at no charge for parts or labour,
2. replace the product with a product of comparable quality which may be new or refurbished, or,
3. refund the amount paid for the product, less a reasonable allowance for usage, upon its return.

In the maintenance of the product, RainWater Harvesting RainWater Harvesting Systems Ireland Ltd may use new or equivalent to new parts, assemblies or products for equal or improved quality. All defective parts, assemblies, and products become the property of RainWater Harvesting Systems Ireland and may require the return of parts, assemblies and products to a designated representative from which the part, assembly, or product was originally purchased. Return and claims will be handled according to the current RainWater Harvesting Systems Ireland procedure.

3. Diagnosis and remote support

RainWater Harvesting Systems Ireland recommends the Customer first utilize support materials shipped with the product, product diagnostics, information contained on the Web, email and phone support. If unsuccessful, to obtain service under this warranty, the Customer must notify RainWater Harvesting Systems Ireland Telephone Support or its authorized service representative of the defect within 14 days of becoming aware of the defect and at the latest before the expiration of the warranty period. Customers will provide appropriate assistance to Telephone Support personnel to resolve issues. If the product contains features that enable RainWater Harvesting Systems Ireland or its authorized service representative to diagnose and repair problems with the product remotely, RainWater Harvesting Systems Ireland may request that the Customer allow such remote access to the product.

4. Exclusions

These warranties shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care after delivery. The warranty does not cover normal 'wear and tear' that occurs in normal everyday use or damage sustained by misuse or use outside the manufacturer's instructions or any costs connected with installation and fitting. RainWater Harvesting Systems Ireland shall not be obligated under these warranties:

- a) to repair damage resulting from attempts by personnel other than RainWater Harvesting Systems Ireland representatives to modify, repair or service the product unless directed by a RainWater Harvesting Systems Ireland representative,
- b) to repair damage, malfunction, or degradation of performance resulting from improper use or connection to incompatible equipment,
- c) to repair an item that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product or degrades performance or reliability,
- d) to repair damage, malfunction, or degradation of performance resulting from failure to perform user maintenance and cleaning as prescribed in published product materials,
- e) to repair damage, malfunction, or degradation of performance resulting from use of the product in an environment not meeting the operating specifications set forth in the product's user manual,

Any service identified in the above list and provided by RainWater Harvesting Systems Ireland at the Customer's request shall be invoiced to Customer at RainWater Harvesting Systems Ireland then current rates for parts, labour and travel.

5. Sole Remedy

The above warranties are given by RainWater Harvesting Systems Ireland with respect to each product and its related items in lieu of any other warranties, express or implied. RainWater Harvesting Systems Ireland and its vendors or representatives disclaim any implied warranties of merchantability or fitness for a particular purpose or any similar standard imposed by applicable legislation. RainWater Harvesting Systems Ireland responsibility to repair, replace, or offer a refund for defective products and related items is the sole and exclusive remedy provided to the customer for breach of these warranties.

6. Respect of customer's legal rights

Some states, provinces, and countries do not allow the exclusion or limitation of incidental or consequential damages or exclusions or limitations on the duration of implied warranties or conditions, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary by state, province, or country.

7. Consequential Damages

To the extent allowed by local law, except for the obligations specifically set forth in this warranty statement, in no event shall RainWater Harvesting Systems Ireland and its vendors be liable for any indirect, special, incidental or consequential damages (including loss of profits) whether based on contract, tort, or any other legal theory and irrespective of whether RainWater Harvesting Systems Ireland or the vendor has advance notice of the possibility of such damages.

8. Terms and Conditions of Supply

RainWater Harvesting Systems Ireland ("the Company", "our" or "us") provides business and consumer supplies of goods (together, the "Services") through its website, by post, by personal contact during a visit to your premises or by personal contact on our premises and by telephone. By completing an order form online or placing an order by post, by phone or by personal contact you are submitting an order for the specified goods and you are accepting that your order and the contract between the Company and you are subject to these terms and conditions ("Service Terms"). These Service Terms do not affect your statutory rights.

9 The Contract

The Company must receive payment of the whole of the price for the goods that you order before your order can be accepted, and the contract formed. Once payment has been received the Company will confirm that your order has been received and accepted by sending an email to you at the email address you provide in your order form. The Company's acceptance of your order brings into existence a legally binding contract between the Company and you which is subject to the Service Terms (the "Contract"). Any terms or conditions sought to be imposed by you in your order will not form part of the Contract.

To cancel the Contract you must notify the Company in writing as follows:

- Email: info@rainwaterharvestingsystemsireland.com
- By post to: Sales Department, Rainwater Harvesting Systems Ireland, MainDepot, Quigleys Point Co Donegal .

B. If you have received the goods before you cancel the Contract then you must send the goods back to the Company at your own cost and risk. If you cancel the Contract before you have received the goods, but the Company has already processed the goods for delivery, you must not unpack the goods when they are received by you and you must send the goods back to the Company at your own cost and risk. All goods, which are the subject of a cancelled Contract, must be returned by you at your cost and risk and as soon as possible after (and in any event within 14 days from) the date you cancelled the Contract to the Company at:

Rainwater Harvesting Systems Ireland, Main street, Glenties Co Donegal

C. Once you have notified the Company that you are cancelling the Contract, any sum debited by the Company from your credit card or debit card will be re-credited to your account within thirty (30) days of the date you notified us of the cancellation PROVIDED THAT the goods in question are returned by you and received by the Company in the condition they were in when delivered to you. If you do not return the goods delivered to you or do not pay the costs of delivery, the Company shall be entitled to deduct the direct costs of recovering the goods from any amount to be re-credited to you.

D. Any goods returned by you must be returned unused and 'as new' in their original packaging and including all manuals and components.

10 Cancellation of the Contract by the Company

A. The Company is entitled to cancel the Contract if:-

1. the Company has insufficient stock to deliver the goods ordered by you;
2. the Company does not deliver the goods in your area; and/or
3. one or more of the goods you ordered was listed at an incorrect price (whether due to a typographical error, an error in the Company's pricing information, as a result of taxes (including VAT) or duty changes, or for any other reason whatsoever).

B. If the Contract is cancelled by the Company, the Company will notify you by e-mail at the address given by you in your order form. Any sum debited by the Company from your credit card or debit card will be re-credited to your account within thirty (30) days of the date you placed your order. The Company will not be liable for any loss or damage you incur as a consequence of such cancellation or be obliged to offer any compensation to you.

11 Delivery of Goods To You

A. The Company will deliver the goods ordered by you to the address you gave the Company for delivery at the time you make your order. The Company is entitled to make deliveries in instalments or partial deliveries.

B. The Company will use its reasonable endeavours to deliver the goods to you and perform the services within reasonable time after your order is accepted and in any event will use its reasonable endeavours to do so within thirty (30) days of the date of your order. All delivery times quoted are estimates only, based on availability, normal processing and delivery companies. Time of delivery is not of the essence and the Company shall not be liable for



any loss or damage or for any costs, charges or expenses caused by any delay in delivery of the goods.

C. You will become the owner of the goods you have ordered when they have been delivered to you provided that the Company has received payment for them. If delivery occurs before the Company has received payment for the goods title in the goods will remain with the Company until the Company has received payment for them. Once goods have been delivered to you they will be held at your own risk and the Company will not be liable for their loss or destruction.

D. You shall provide such access, assistance and co-operation as the Company and/or its authorised representatives may require for the purposes of delivering the goods.

12 Liability

A. If the goods delivered are not what you ordered or are damaged or defective the Company shall have no liability to you unless you notify the Company in writing of the problem within seven (7) days of the delivery of the goods in question.

B. If you do not receive goods ordered by you within thirty (30) days of the date on which you placed your order, the Company shall have no liability to you unless you notify the Company in writing within forty (40) days of the date on which you placed your order for the goods. Any notice to be given by you for this purpose (or for the purposes of (a) above) must be in writing and given to the Company at:

Email: info@rainwaterharvestingsystemsireland.com

By post:

Rainwater Harvesting Systems Ireland, Main Depot, Quigleys Point Co Donegal

C. If you notify a problem to the Company under (a) or (b) above, the Company's only obligation will be, at its sole option:- to replace or deliver (as the case may be) any goods that are damaged or have not been delivered or to refund to you the amount paid by you for the goods in question.

D. Subject to C above and save as may be precluded by law, the Company will not be liable to you for any shall be liable for any economic loss or loss of profit (direct or indirect) or any indirect, special or consequential loss or damage howsoever caused, or any liability arising to any third party.

E. Nothing in these terms and conditions is intended to limit any rights you might have as a consumer under applicable local law or other statutory rights that may not be excluded nor in any way to exclude or limit the Company's liability to you for any death or personal injury resulting from the Company's negligence or for fraud.

13 Amendment

A. The Company reserves the right at any time (and from time to time and without notice) to make changes to the Services (including, without limitation, these Service Terms).

B. You will be subject to the Service Terms in force at the time that you use the Site and/or Services.

14 Notices

Except where expressly stated otherwise in these terms and conditions, all notices from you to the Company must be in writing and sent to the Company at:

Email: info@rainwaterharvestingsystemsireland.com

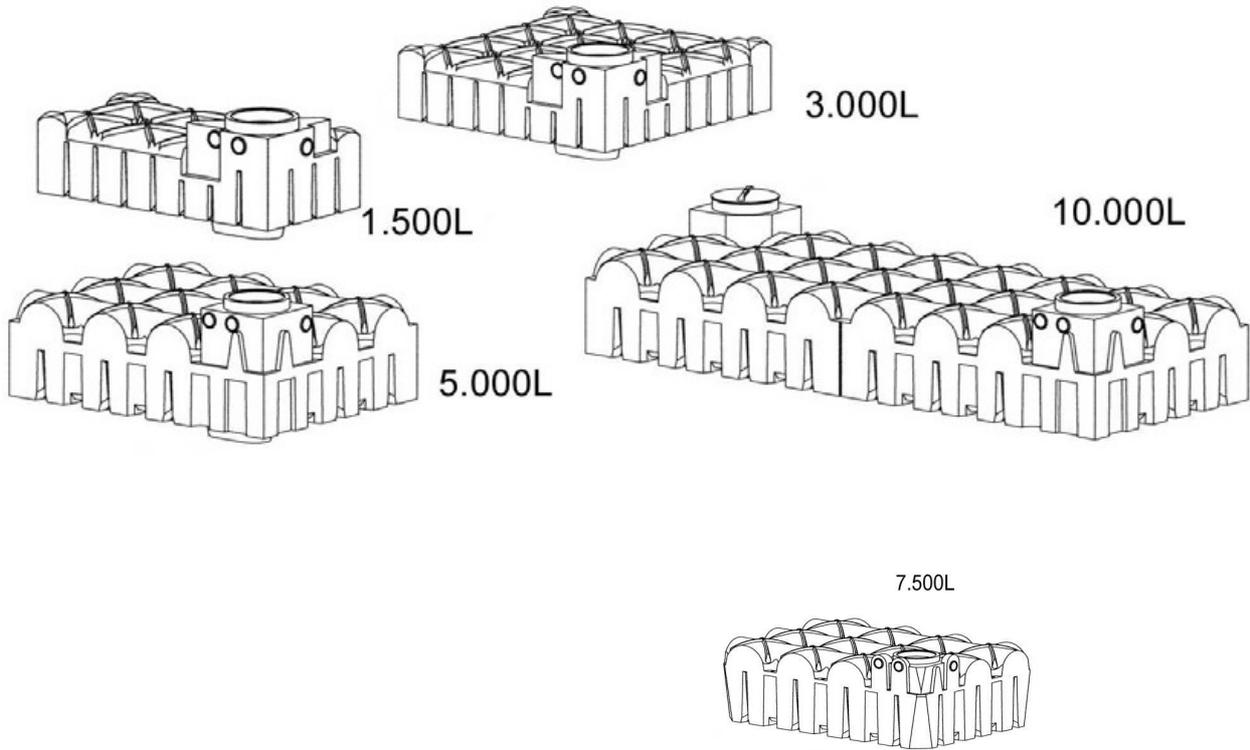
By post:

Rainwater Harvesting Systems Ireland, Main Depot, Quigleys Point Co Donegal

All notices from the Company to you will, at the Company's discretion be displayed on the Site or be sent to you in writing by email or by post (in each case at the address you gave to the Company when placing your order).



Technical Documentation Underground Container F-Line 1.500L, 3.000L, 5.000L, 7.500L





Location

1.1 Position to buildings

The excavation space must not be within the minimum distance to buildings, see point 3 figure 1. The tank may only be built over if the appearing loads are not higher than the traffic loads.

1.2 Traffic conditions

Loading class A15 (e.g. pedestrian, cyclist): no special equipment necessary. Loading class B (passenger car, minibus; max. axle loading 2,2 Tonne): Driveable complete set I and II. Minimum distance from tank top to the earth's surface: 600 mm

1.3 Ground conditions

The tanks may lie in ground water and/or surface water up to the tank top max. (shoulder height; see figures under point 4). The soil coverage must be at least half as high as the immersion depth in the ground / surface water (lifting protection). In non permeable ground the depth may not exceed 250 mm.

1.4 Hillside situation

The soil of the area has to be checked for possible soil movement (DIN 1054 edition 1/2003, E DIN 4084 edition 11/2002) and if necessary it will need to be secured with a supporting structure (e.g. a wall). Further information is available at the local public authorities and building enterprises

1.5 Installation details

In clay ground conditions: 1.75-m depth of the excavation (picture 2 and 13a under point 3) no angle of repose necessary. The excavated area should be wide to allow compression of the filling material. (200 mm in picture 2 under point 3). With installations deeper than 1.75 m an area of 500 mm is necessary; the tank should be covered with at least 300 mm thick of filling material (picture 13a under point 3). In loose ground conditions (coarse sand, gravel) the above information is valid for 1.25-m excavation depth. Also with excavated area widths of 500 mm, in the pictures from 3 to 12 as well as 13a, shown installation steps are valid.

1.6 Further criteria

Existing pipelines, pipes, vegetation as well as other specifics must be considered, so that damage or hazards will be avoided. The soil coverage from the tank shoulder (point 4) may be up to a maximum 1.5 m.

2. Installation

2. 1 Backfill material at the tank (backfill, bedding; point 3 figures 2, 3, 4, 13 and 13a) The backfill material has to be well compactable and permeable to water, allowing a close packing and no damage the surface of the tank. If the filling material contains sharp or sharp-edged components, the wall of the tank has to be protected by a sandy coating.

2.1.1 Sand -gravel mixtures (SW and GW to German Institute for Standardization 18196 and ENV 1046) are the most favourable filling materials, because they have a grain line which consists of several grain sizes with only a low amount of fines (fines: under \emptyset 0,06mm). At the description of the mixtures the first number gives the mesh width (simplified \emptyset) of the smallest grain and the second one those of the biggest grain: e.g., 0/32; 2/16; 2/8; 2/32; 4/16. Which mixtures are available, strongly depends on the regional supplies.

2.1.2 Concrete gravel, or treated concrete rubble, with a particle size of 0/32 mm is particularly well suited for use in clay/loam soil conditions with ground water and a high water table. When ground water and a high water table are present, it is particularly important to ensure good compaction, especially at hard to reach places.

2.1.3 Stone Chippings -crushed rock particles between 2/32 mm in size and is primarily suited as a filling

material; however due to its sharp edges, the tank must be protected against damage, for example using a sand coating.

2.1.4 Excavation, sand and gravel mixture with mixed particle sizes is suitable for use as a filling material when it meets the criteria listed under Item 2.1.

2.1.5 Top soil, clay, loam and other types of cohesive soils are not suitable filling materials.

2.2 Filling beyond the backfill

Excavated soil or other material can be used if this is stable and permeable.

2.2.1 Compression around the pump sump (1500L-5000L). The area around the pump sump must be very meticulously compressed. To compress the area behind the pump sump the material must be filled in gradually and pressed down with a suitable device, e.g., a roof batten.

2.3 Backfilling and compaction methods

2.3.1 The backfilling and compaction methods to be used are described in Section 3 (Installation instructions)

2.3.2 Methods that are not to be used include in particular adding water. Adequate compaction is not achieved and the mixture of particle sizes combine in such a way that the compaction is unstable.

2.3.3 Base layer driveable version A range of grain size 2/45 must be used

2.4 Pipes

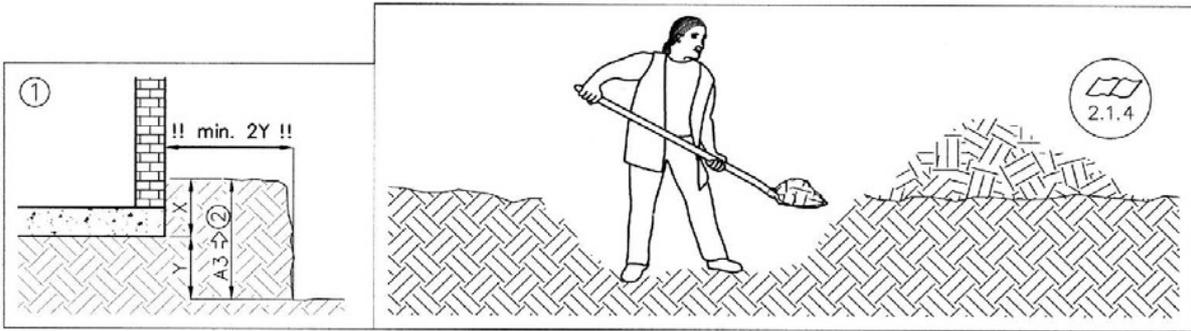
2.4.1 The feed pipe should be laid with a fall to the tank (>1%).

2.4.2 The overflow / drain pipe should have a deeper fall away from the tank than the fall from the feed pipe to the tank.

2.4.3 The service pipe is to be installed to prevent any flooding from the tank entering the service room (e.g., cellar) if the tank is full. This can be achieved, for example, by a high

enough incline of the pipe from the house to the tank. Or by the installation of a seal in the ductwork for cables.

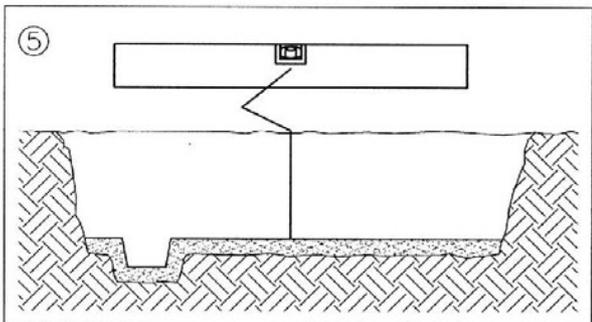
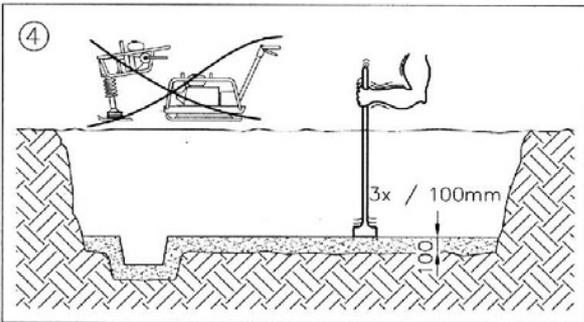
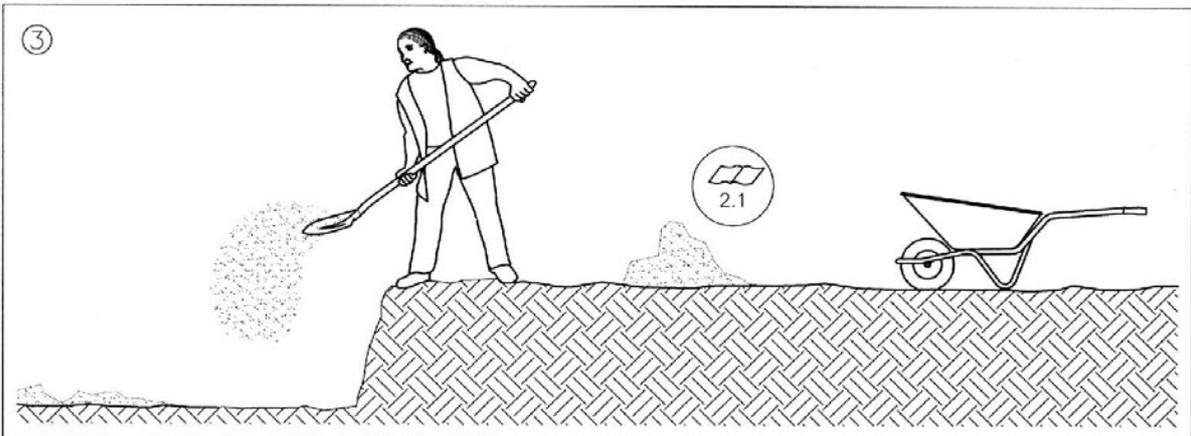
2.4.4 The pipes have to be installed in such a way that frost damage is avoided. This is to be arranged according to the local climatic circumstances, if necessary in co-ordination with the local authorities.

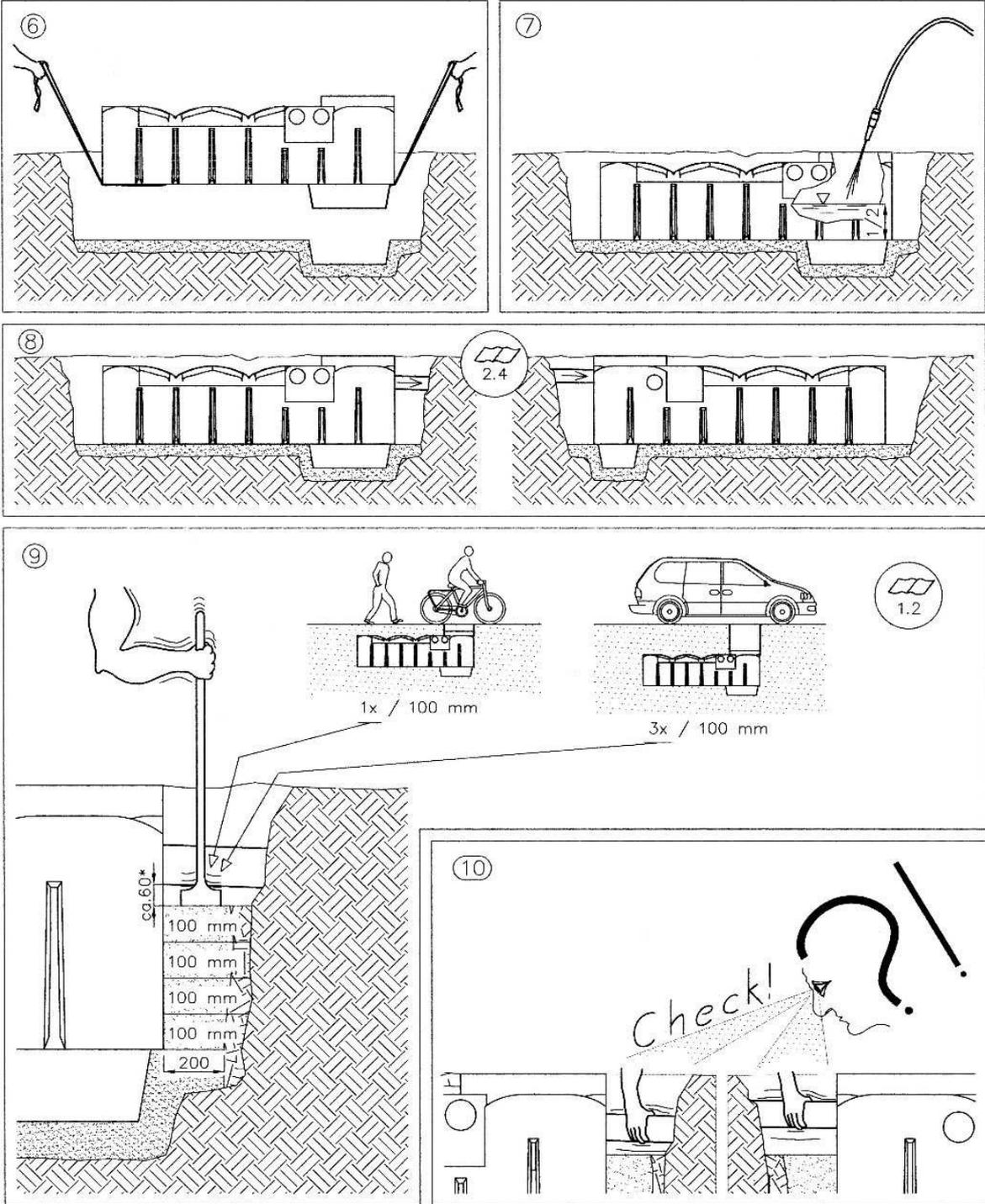


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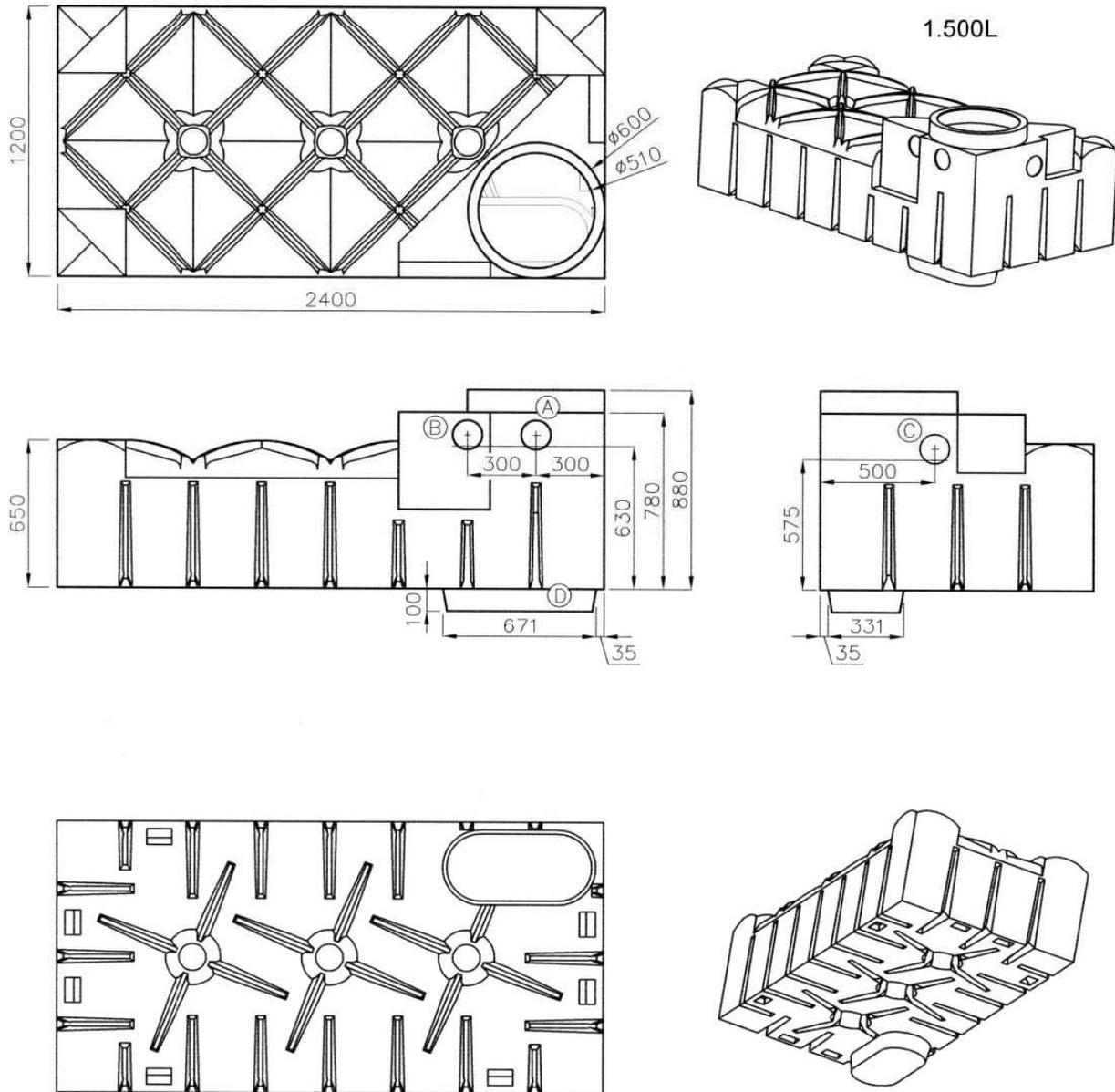
F-Line	1500 L	3000 L	5000 L	10000 L
A1	2400	2400	2960	5930
A2	1200	2400	2220	2220
A3	980*	980*	1315*	1315*

* A3 > 1250 / 1750 → 1.5 (13a)

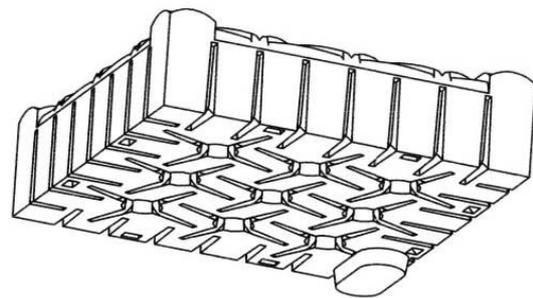
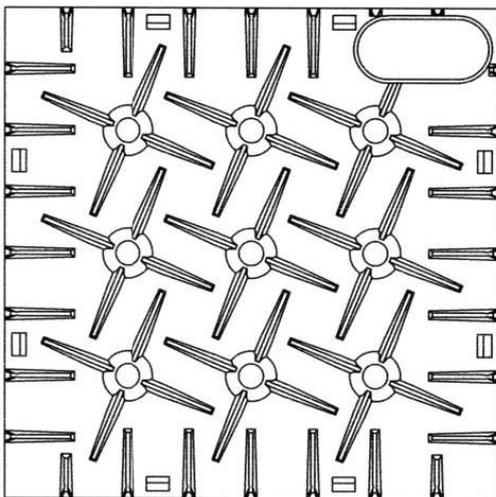
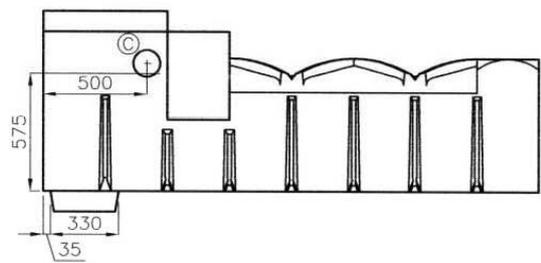
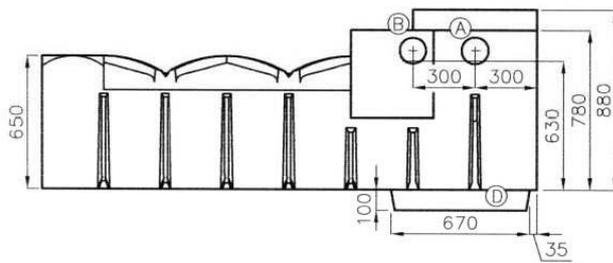
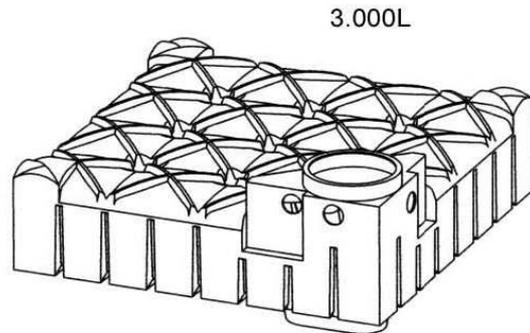
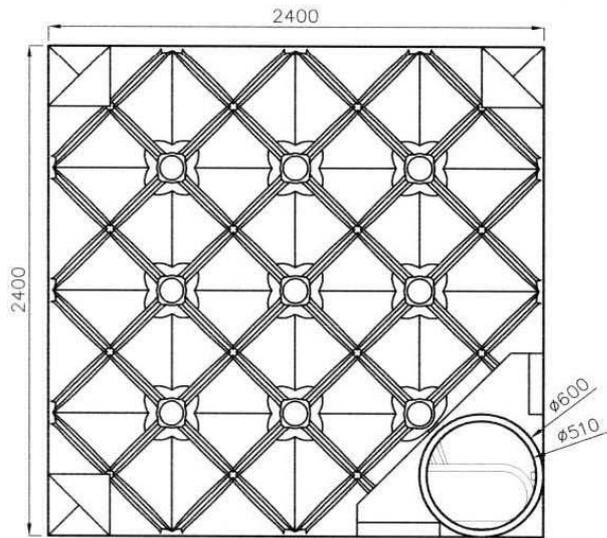




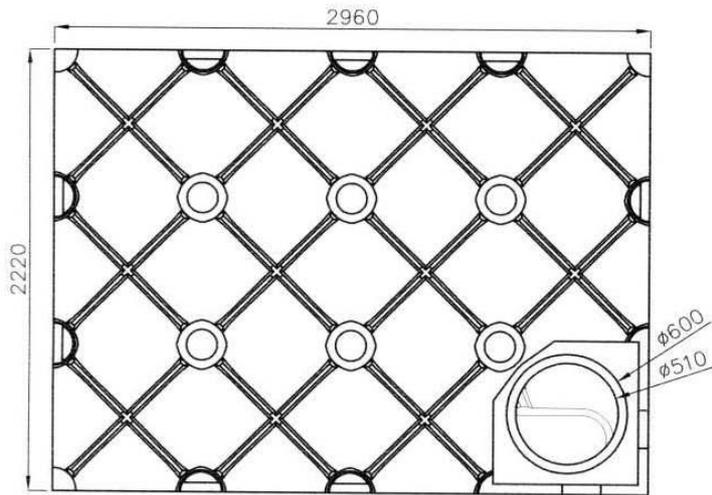
4. Main dimensions and positions of the standard connections



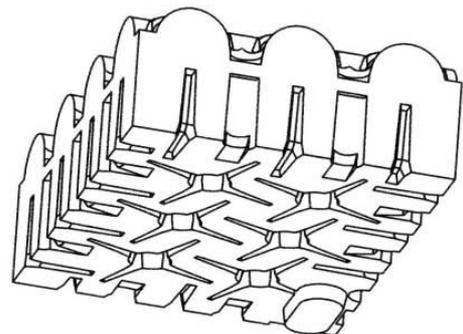
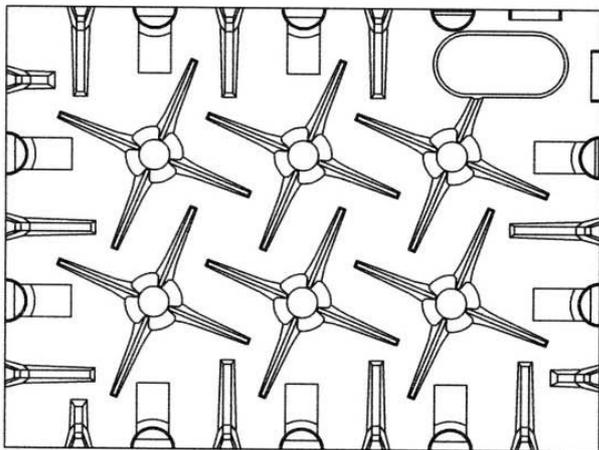
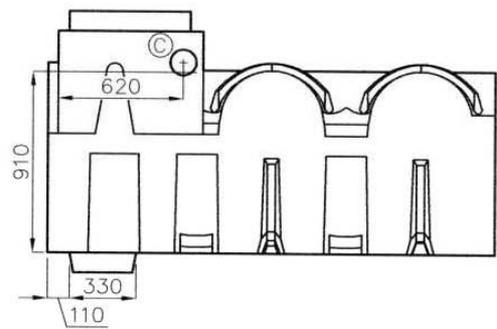
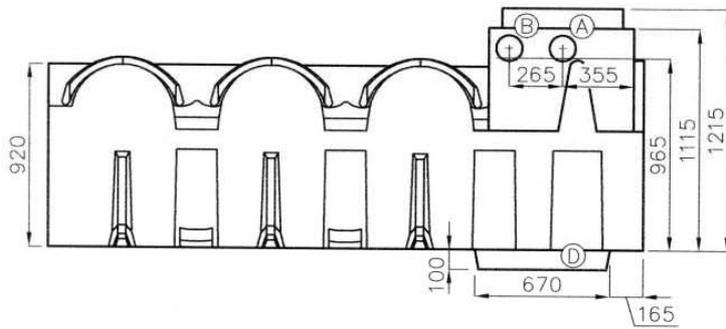
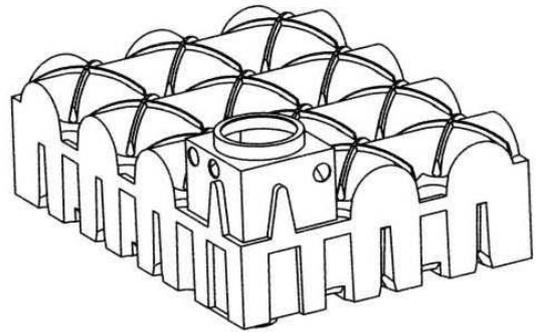
- A : Connection service pipe DN 100
- B : Connection inflow DN 100
- C : Connection overflow DN 100
- D: Pump Basin



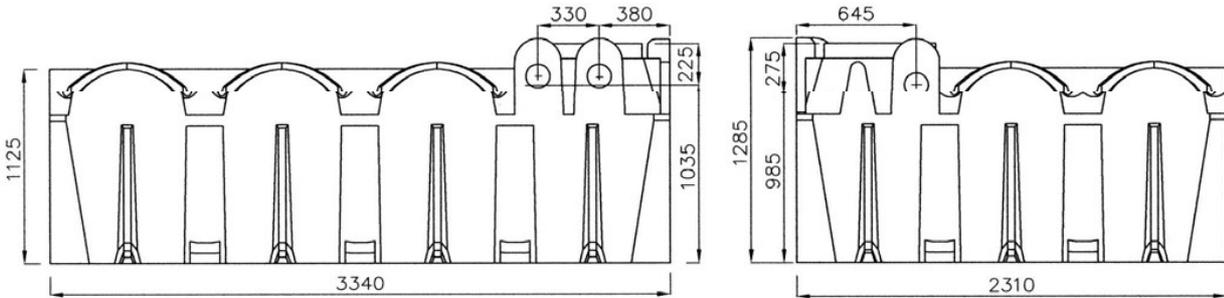
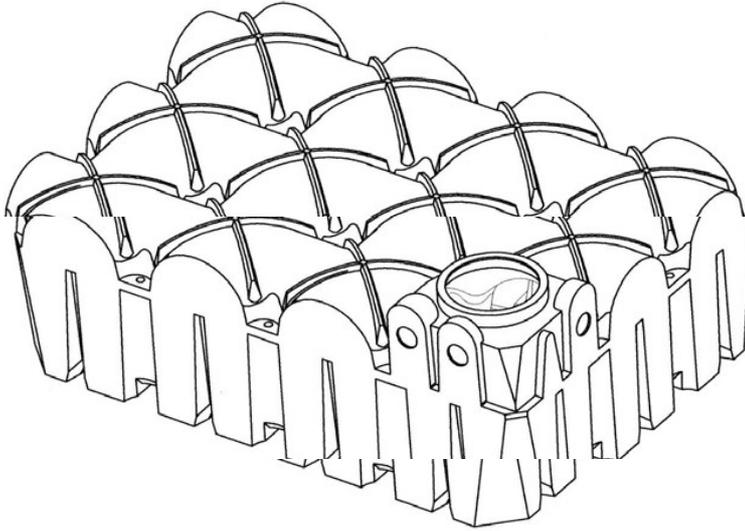
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5.000L



7500litre

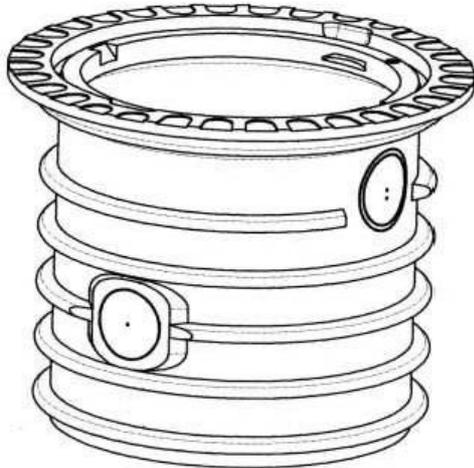


Optional Accessories

- durch Zuschneiden kürzbar

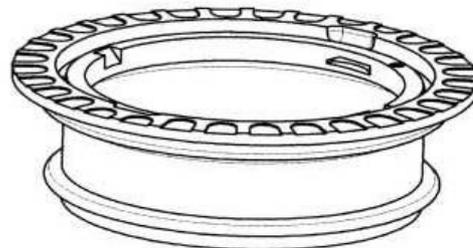
Extension shafts * VS 60 and VS 20

- can be shortened by cutting



VS 60

Verlängert netto bis 600 mm
Lengthens up to max. 600 mm



VS 20

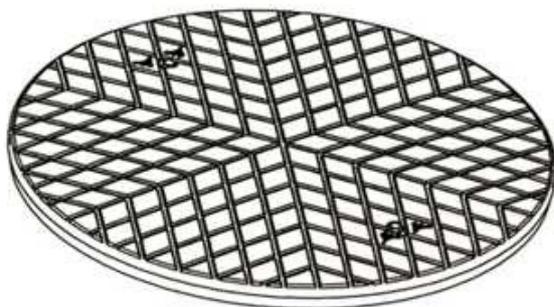
Verlängert netto bis 200 mm
Lengthens up to max. 200 mm

* Hinweis: Bei Zukauf dieses Artikels, für die Einbautiefe bitte die entsprechende Einbauanleitung beachten.

* Note: When purchasing this article please refer to the appropriate installation manual

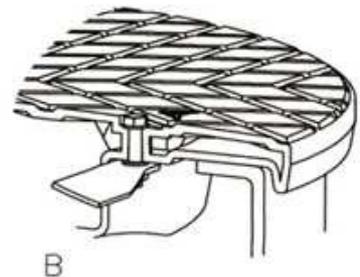
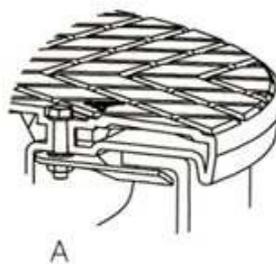
Shaft coverage TopCover according to DIN 1989

Walk-on Plastic Cover, for 600mm shaft-systems with safety latch according to EN 10891.
External diameter 648 and profile according to DIN 19596.



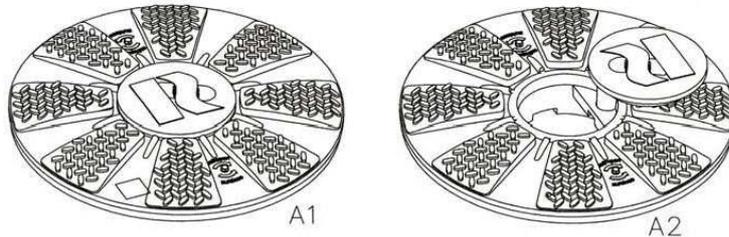
A Safety latch closed

B Safety latch opened

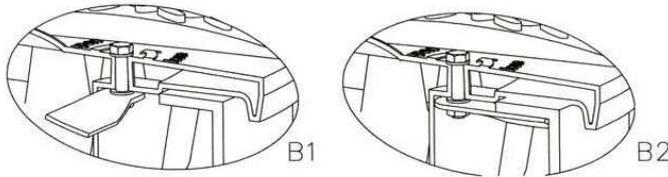


Shaft coverage TwinCover according to DIN 1989

Walk-on Plastic Cover, for 600mm shaft-systems with safety latch according to EN 10891 and integrated inspection opening, which is lockable. External diameter 648 mm and profile according to DIN 19596.



A2 Inspektionsöffnung geöffnet
B1 Sicherungsriegel geöffnet
B2 Sicherungsriegel geschlossen

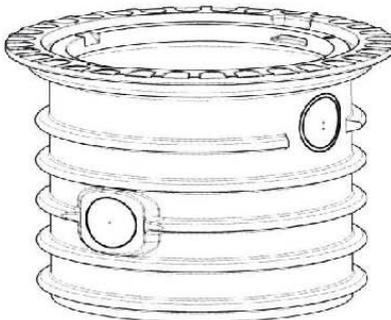


A1 inspection opening closed
A2 inspection opening open
B1 safety latch opened
B2 safety latch closed

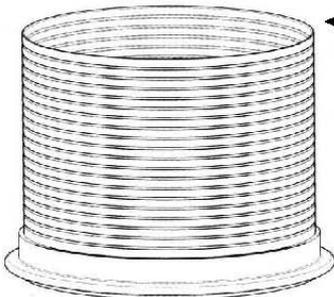
PKW-Komplett-Set * / Car set complete *



← Stahldeckel / Steel cover



← Verlängerungsschacht BS 60 / Extension shaft BS 60



← Zwischenring (auch einzeln erhältlich) / Spacer ring (also individually available)

Verlängert netto bis 550 mm / Lengthens up to max. 550 mm

* Hinweis: Bei Zukauf dieses Artikels, für die Einbautiefe bitte die entsprechende Einbauanleitung beachten.

* Note: When purchasing this article please refer to the appropriate installation manual for the installation depth.

TOP MULTI-TECH

Multi-stage automatic submersible pumps

-  Clean water
-  Domestic use
-  Civil use

**AUTOMATIC
START & STOP**



PERFORMANCE RANGE

- Flow rate up to **120 l/min** (7.2 m³/h)
- Head up to **42 m**
- Restart pressure: **1.5 bar**

APPLICATION LIMITS

- **5 m** maximum immersion depth
- Maximum height between pump and point of use **10 m**
- Maximum liquid temperature **+40 °C**
- Suction down to **22 mm** above ground level
- Continuous service **S1**

CONSTRUCTION AND SAFETY STANDARDS

Complete with:

- **10 m** long power cable
- internal electronic device for pump starting (when tap opened) and stopping (when tap closed)
- threaded connector 1¼" (delivery)
- hose connector Ø 35 mm

EN 60335-1
IEC 60335-1
CEI 61-150

EN 60034-1
IEC 60034-1
CEI 2-3



CERTIFICATIONS

Company with management system certified DNV
ISO 9001: QUALITY
ISO 14001: ENVIRONMENT



INSTALLATION AND USE

TOP-MULTI-TECH pumps are recommended for pumping **clean water** and liquids that are not chemically aggressive for the materials from which the pump is made.

Because of their high efficiency and reliability they are suitable for use in applications such as domestic water supply from reservoirs, tanks or relatively deep wells, for drawing rain water from cisterns to water gardens or for use in irrigation systems, etc.

An internal electronic device starts or stops the pump automatically when the tap is opened or closed.

PATENTS - TRADE MARKS - MODELS

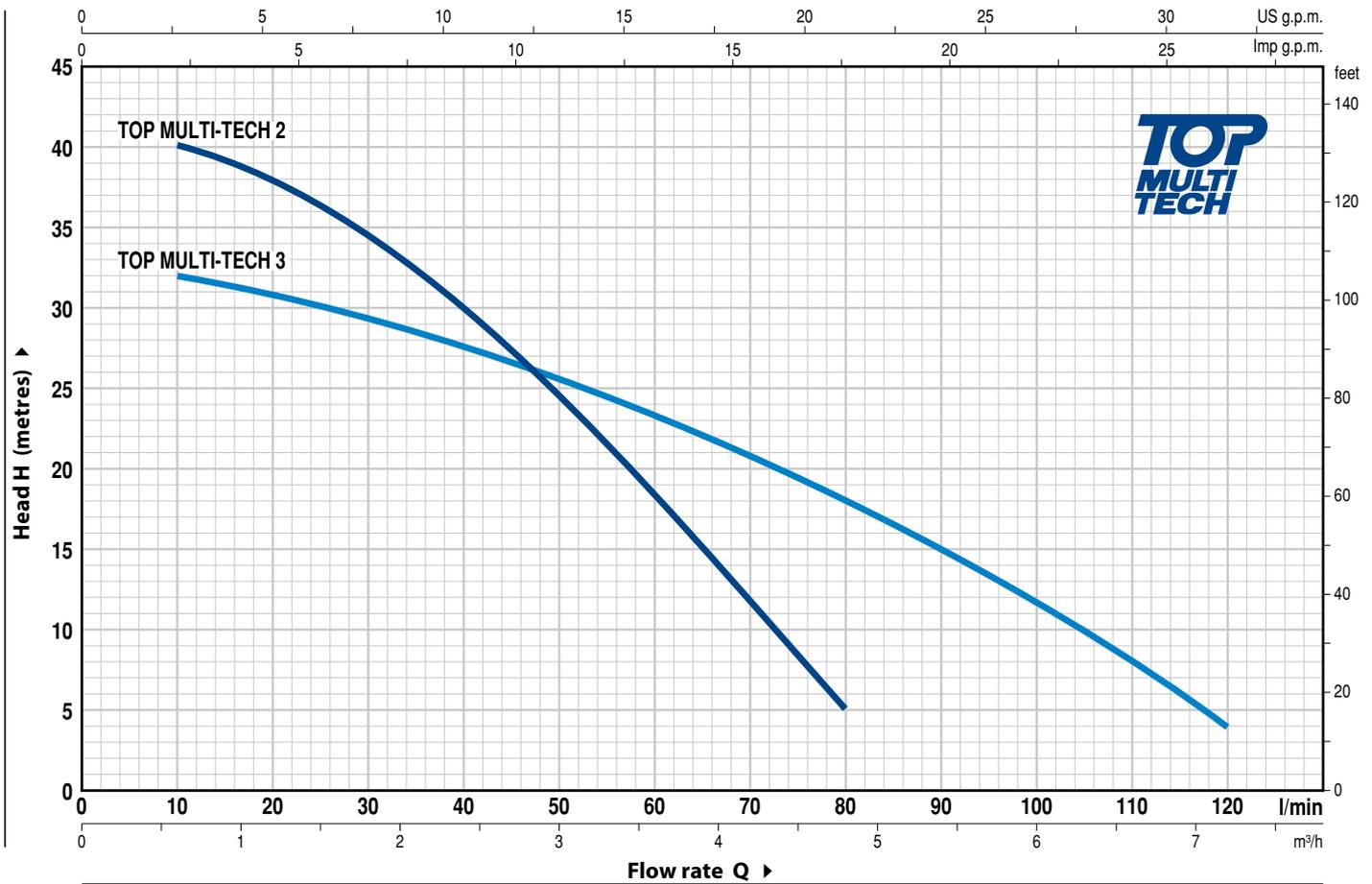
- Patent n° EP2990653
- Registered Trade Mark n. 0001334477 TOP MULTI®

OPTIONS AVAILABLE ON REQUEST

- Other voltages or 60 Hz frequency

CHARACTERISTIC CURVES AND PERFORMANCE DATA

50 Hz n= 2900 rpm



MODEL Single-phase	POWER (P ₂)		Q	0	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2
	kW	HP		0	10	20	30	40	50	60	70	80	90	100	110	120
TOP MULTI-TECH 2	0.55	0.75	H metres	42	40	38	34	30	24	18	11.5	5				
TOP MULTI-TECH 3	0.55	0.75		33	32	31	29.5	28	25.5	23	20.5	18	15	12	8	4

Q = Flow rate H = Total manometric head

Tolerance of characteristic curves in compliance with EN ISO 9906 Grade 3B.

TOP MULTI-TECH

POS. COMPONENT

CONSTRUCTION CHARACTERISTICS

1	DELIVERY BODY	Glass fibre reinforced technopolymer
2	PUMP BODY E SUCTION FILTER	Glass fibre reinforced technopolymer
3	MOTOR SLEEVE	Stainless steel AISI 304
4	IMPELLERS	Noryl FE1520PW
5	DIFFUSERS	Noryl complete with anti-wear ring
6	MOTOR SHAFT	Stainless steel EN 10088-3 - 1.4104
7	ELECTRONIC DEVICE	<p>TOP MULTI-TECH pumps are fitted with an internal electronic device which starts the pump when the pressure of the system falls below 1.5 bar (eg. when opening a tap) and stops it when the flow falls below 3 litre per minute.</p> <p>It protects the pump:</p> <ul style="list-style-type: none"> – against dry running; – against blockage: after long periods of pump inactivity the electronic device starts the pump every 48 hours for 10 seconds.
8	TWO MECHANICAL SEALS SEPARATED BY AN OIL CHAMBER	

Seal Model	Shaft Diameter	Position	Stationary ring	Rotational ring	Elastomer
STA-13R	Ø 13 mm	Motor side	Ceramic	Graphite	NBR
STA-12R SG	Ø 12 mm	Pump side	Silicon carbide	Graphite	NBR

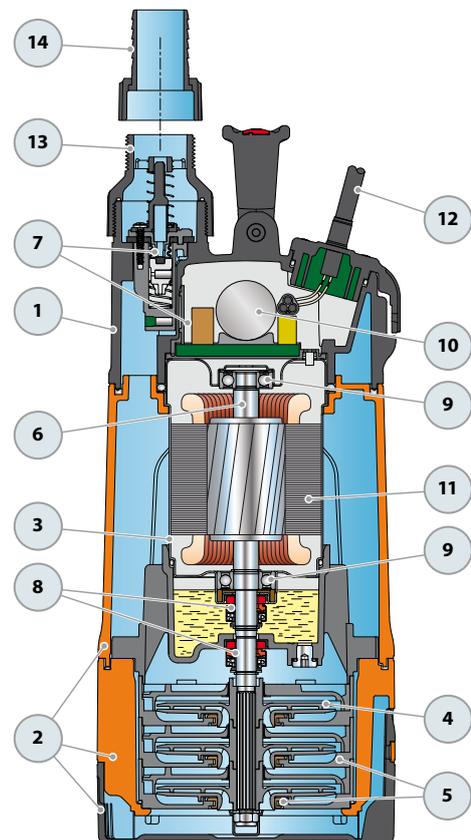
9	BEARINGS	6202 ZZ - C3 / 6201 ZZ
10	CAPACITOR	
	Capacitance	
	(230 V or 240 V)	(110 V)
	12.5 µF 450 VL	25 µF - 250 VL

11	ELECTRIC MOTOR
	TOP MULTI-TECH: single-phase 230 V - 50 Hz with thermal overload protector incorporated into the winding.
	– Insulation: class F
	– Protection: IP X8

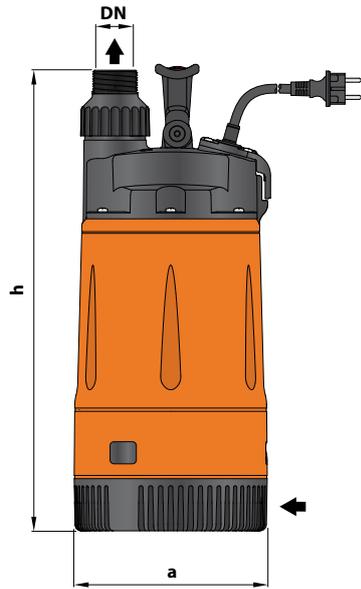
12	POWER CABLE
	"H07 RN-F" with Schuko plug
	Standard length 10 metres

13	THREADED CONNECTOR
	Threaded connector 1¼"

14	HOSE CONNECTOR WITH RING NUT
	Ø 35 mm hose connection



DIMENSIONS AND WEIGHT



Standard installation



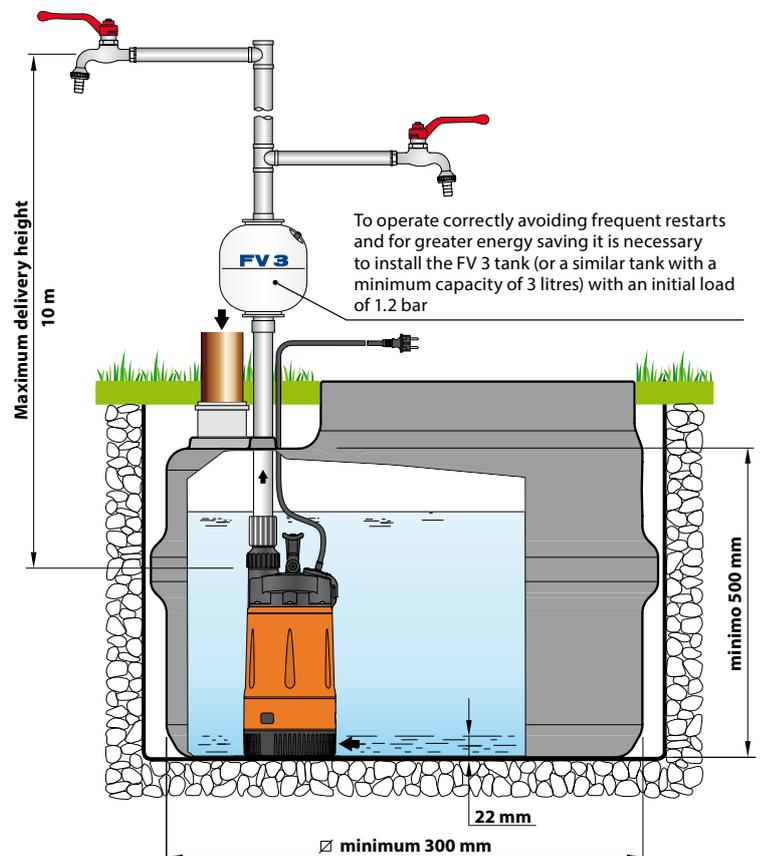
MODEL	PORT	N. STAGES	DIMENSIONS mm		kg
			a	h	
Single-phase	DN				
TOP MULTI-TECH 2	1 1/4"	3	178	428	9.5
TOP MULTI-TECH 3					

ABSORPTION

MODEL	VOLTAGE	
	Single-phase	230 V
TOP MULTI-TECH 2	3.4 A	6.8 A
TOP MULTI-TECH 3	3.6 A	7.2 A

PALLETIZATION

MODEL	GROUPAGE	CONTAINER
	n. pumps	n. pumps
TOP MULTI-TECH 2	60	80
TOP MULTI-TECH 3	60	80



Owner's Manual



Powered by
Sterilight

Models:
VH150, VH200, VH410, VP600, VP950,
VH410M, VP600M, VP950M
**NSF Standard 55 Class B
Validated Models:**
VH200-V, VH410-V, VH410M-V



System Tested and Certified by
NSF International against CSA
B483.1 and NSF/ANSI 55 for
Disinfection Performance, Class B



Congratulations

on the purchase of your ultraviolet (UV) water disinfection system! This system uses the most advanced UV technology on the market and is designed to provide you with years of trouble free operation with minimal maintenance required to protect your drinking water from microbiological contaminants.

To ensure ongoing disinfection of your water, UV lamps need to be replaced annually with VIQUA factory-supplied replacements. VIQUA lamps are the result of extensive development resulting in a highly efficient disinfection platform with extremely stable UV output over the entire 9000 hour lifetime. Its success has led to a proliferation of non-genuine copies in the market.

The UV lamp is the heart of the disinfection system, and there should be no compromise when it's time for a replacement.

Why should you insist on genuine factory supplied VIQUA replacement lamps?

- Use of widely available, non-genuine, replacement lamps has been shown to damage the control module of VIQUA UV disinfection equipment.
- An increasing number of calls to VIQUA Technical Support are connected with non-genuine lamps being used (unknowingly) as replacements.
- Damage arising from the use of non-genuine lamps poses a safety risk and is not covered by equipment warranty.
- Unless the UV equipment is equipped with a UV sensor (monitor), it is not possible to verify the UV (invisible) output of replacement lamps.
- Similar appearance to the original lamp and the presence of (visible) blue light does not mean equivalent disinfection performance.
- VIQUA replacement lamps undergo rigorous performance testing and strict quality control processes to ensure that the safety and performance certifications of the original equipment are not compromised.

So, you can see that it's simply not worth the risk! Insist on genuine VIQUA replacement lamps.

Section 1 Safety Information

These are the original instructions. Please read this entire manual before operating this equipment. Pay attention to all danger, warning, and caution statements in this manual. Failure to do so could result in serious personal injury or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired. DO NOT use or install this equipment in any manner other than that specified in the installation manual.

1.1 Potential Hazards:

Read all labels and tags attached to the system. Personal injury or damage to the system could occur if not observed.

	Waste electrical and electronic equipment (WEEE). This symbol indicates that you should not discard wasted electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.		This symbol indicates not to store any combustible or flammable material close to the system.
	This symbol indicates there is Mercury present.		This symbol indicates that the contents of the transport package are fragile and the package should be handled with care.
	This is the safety alert symbol. Obey all safety messages that follow this symbol to avoid potential injury. When on the equipment, refer to the Operational and Maintenance manual for additional safety information.		This symbol indicates safety glasses with side protection is required for protection against UV exposure.
	This symbol indicates a risk of electrical shock and/or electrocution exists.		This symbol indicates gloves must be worn.
	This symbol indicates the marked equipment may contain a component that can eject forcibly. Obey all procedures to safely depressurize.		This symbol indicates safety boots must be worn.
	This symbol indicates the system is under pressure.		This symbol indicates the operator must read all available documentation to perform required procedures.
	This symbol indicates there is a potential UV hazard. Proper protection must be worn.		This symbol indicates the plumber must use copper piping.
	This symbol indicates the marked item could be hot and should not be touched without care.		This symbol indicates that the system should only be connected to a properly grounded, grounding-type controller receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI).
	This symbol indicates there is a potential for VERY hot water when flow is started.		

1.2 Safety Precautions:

⚠ DANGER	
 	<p>Failure to follow these instructions will result in serious injury or death.</p> <ul style="list-style-type: none"> • Electric Shock: To avoid possible electric shock, special care should be taken since water is present near the electrical equipment. Unless a situation is encountered that is explicitly addressed by the provided maintenance and troubleshooting sections, DO NOT attempt repairs yourself, refer to an authorized service facility. • GROUNDING: This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electrical shock. This system is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances. Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified electrician or service personnel if you are in doubt as to whether the outlet is properly grounded. DO NOT modify the plug provided with this system – if it does not fit in the outlet, have a proper outlet installed by a qualified electrician. DO NOT use any type of adapter with this system. • GROUND FAULT CIRCUIT INTERRUPTER PROTECTION: To comply with the National Electrical Code (NFPA 70) and to provide additional protection from the risk of electric shock, this system should only be connected to a properly grounded, grounding-type controller receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI) or to a residual current device (RCD) having a rated residual operating current not exceeding 30 mA. Inspect operation of GFCI as per manufacturer's suggested maintenance schedule. • DO NOT operate the disinfection system if it has a damaged cord or plug, if it is malfunctioning or if it has been dropped or damaged in any manner. • DO NOT use this disinfection system for other than intended use (potable water applications). The use of attachments not recommended or sold by the manufacturer / distributor may cause an unsafe condition. • DO NOT install this disinfection system where it will be exposed to the weather or to temperatures below freezing. • DO NOT store this disinfection system where it will be exposed to the weather. • DO NOT store this disinfection system where it will be exposed to temperatures below freezing unless all water has been drained from it and the water supply has been disconnected.

Safety Information

⚠ WARNING



- During extended periods of no water flow, the water in your chamber can become very hot (Approx. 60 °C) and potentially lead to scalding. It is recommended to run your water until this hot water has been purged from your chamber. Do not allow water to contact your skin during this time. To eliminate this condition, a temperature management valve can be installed at the outlet of your UV system.



- Do not pass water through the UV system for a minimum of 5 minutes after applying power (including after power interruptions) to avoid passing under-treated water that may, in rare instances, pose health hazards.
- This system contains a UV Lamp. Do not operate the UV Lamp when it is removed from the chamber. Unintended use or damage of the system may result in the exposure of dangerous UV radiation. UV radiation may, even in little doses, cause harm to the eyes and skin.
- Changes or modifications made to this system without the consent of the manufacturer could render the system unsafe for operation and may void the manufacturer's warranty.



WARNING: This product can expose you to chemicals including phthalates, which is known to the state of California to cause cancer, and mercury, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

⚠ CAUTION



Failure to follow these instructions could result in minor or moderate injury.



- Carefully examine the disinfection system after installation. It should not be plugged in if there is water on parts not intended to be wet such as, the controller or lamp connector.
- Due to thermal expansion concerns and potential material degradation due to UV exposure, it is recommended to use metal fittings and at least 10" of copper pipe on the outlet of your UV chamber.
- **Hg EXPOSURE:** The UV lamp contains mercury. If the lamp breaks, then avoid inhalation or ingestion of the debris and avoid exposure to eyes and skin. Never use a vacuum cleaner to clean up a broken lamp as this may scatter the spilled mercury. Obey local regulations and guidelines for the removal and disposal of mercury waste.

NOTICE



- The UV lamp inside the disinfection system is rated at an effective life of approximately 9000 hours. To ensure continuous protection, replace the UV lamp annually.
- The UV system is not to be used or played with by children. Persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, are also not to handle the UV system unless they have been given supervision or instruction.
- This system is intended to be permanently connected to the water lines.
- This system is not intended to be used in or above water or outdoors or used in swimming pools when persons are in the pool.
- **EXTENSION CORDS:** If an extension cord is necessary, use only 3-wire extension cords that have 3-prong grounding-type plugs and 3-pole cord connectors that accept the plug from this system. Use only extension cords that are intended for outdoor use. Use only extension cords having an electrical rating not less than the rating of the system. A cord rated for less amperes or watts than this system rating may overheat. Exercise caution when arranging the cord so that it will not be tripped over or pulled. DO NOT use damaged extension cords. Examine extension cord before using and replace if damaged. DO NOT abuse extension cord. Keep extension cord away from heat and sharp edges. Always disconnect the extension cord from the receptacle before disconnecting this system from the extension cord. Never yank cord to pull plug from outlet. Always grasp the plug and pull to disconnect.
- If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its service agent.
- **SYSTEM PROTECTION:** To protect your Controller, a UL1449 certified (or equivalent) transient voltage surge suppressor is strongly recommended.
- The UV lamp in this system conforms to the applicable provisions of the Code of Federal Regulations (CFR) requirements including, Title 21, Chapter 1, Subchapter J, Radiological Health.
- This Class B system or component conforms to NSF/ANSI 55 for the supplemental bactericidal treatment disinfected public drinking water or other drinking water that has been tested and deemed acceptable for human consumption by the state or local health agency having jurisdiction. The system is only designed to reduce normally occurring non-pathogenic nuisance microorganisms. Class B systems are not intended for treatment of contaminated water.
- Read and understand the Owner's Manual before operating and performing any maintenance on this equipment.

1.3 Water Chemistry

Water quality is extremely important for the optimum performance of your UV system. The following levels are recommended for installation:

Water Quality and Minerals	Level
Iron	< 0.3 ppm (0.3 mg/L)
Hardness*	< 7 gpg (120 mg/L)
Turbidity	< 1 NTU
Manganese	< 0.05 ppm (0.05 mg/L)
Tannins	< 0.1 ppm (0.1 mg/L)
UV Transmittance	> 75% (call factory for recommendations on applications where UVT < 75%)

* Where total hardness is less than 7 gpg, the UV unit should operate efficiently provided the quartz sleeve is cleaned periodically. If total hardness exceeds 7 gpg, the water should be softened. If your water chemistry contains levels in excess

of those mentioned above, proper pre-treatment is recommended to correct these water problems prior to the installation of your UV disinfection system. These water quality parameters can be tested by your local dealer, or by most private analytical laboratories. *Proper pre-treatment is essential for the UV disinfection system to operate as intended.*

Section 2 General Information

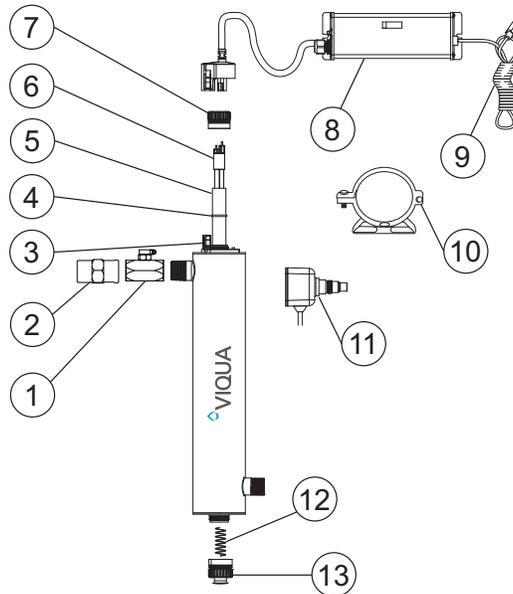


Figure 1 System Components

Item	Description	Part Number	UV Systems
1	Temperature management valve (optional)	440179	Optional
2	Flow restrictor (Only for certified models)	440315-R	VH200-V
		440316-R	VH410-V, VH410M-V
3	Lamp connector base	270276-R	Used on all systems
4	O-ring	410867	Used on all systems
5	Open-ended, GE 214 fused quartz sleeve with fire polished ends	QSO-150	VH150
		QS-001	VH200, VH200-V
		QSO-410	VH410, VH410M, VH410-V, VH410M-V
		QSO-600	VP600, VP600M
		QSO-950	VP950, VP950M
6	Hard glass, coated Sterilume®-HO UV lamps for long, consistent life (9000 hours)	S150RL-HO	VH150
		S200RL-HO	VH200, VH200-V
		S410RL-HO	VH410, VH410M, VH410-V, VH410M-V
		S600RL-HO	VP600, VP600M
		S950RL-HO	VP950, VP950M
7	Retaining Nut	RN-001	Used on all systems
8	Controller (for 100-240V/50-60Hz models only)	BA-ICE-CL	VH150, VH200, VH410, VH200-V, VH410-V
		BA-ICE-C	VP600, VP950
		BA-ICE-CM	VH410M, VH410M-V, VP600M, VP950M
9	IEC replacement power cords for controller (sold separately)	602636	VH150, VH200, VH410, VH410M, VH200-V, VH410-V, VH410M-V, VP600, VP600M, VP950, VP950M (N. America)
		602637	VH150/2, VH200/2, VH410/2, VH410M/2, VH200-V/2, VH410-V/2, VH410M-V/2, VP600/2, VP600M/2, VP950/2, VP950M/2 (EU CEE)
		260012	VH150-2B, VH200/2B, VH410/2B, VH410M/2B, VH200-V/2B, VH410-V/2B, VH410M-V/2B, VP600/2B, VP600M/2B, VP950/2B, VP950M/2B (UK)
		260013	VH150/2A, VH200/2A, VH410/2A, VH410M/2A, VH200-V/2A, VH410-V/2A, VH410M-V/2A, VP600/2A, VP600M/2A, VP950/2A, VP950M/2A (Australia, NZ)
		260019	NO CONNECTOR, 3-WIRE, BARE LEADS
10	Mounting Brackets/Clamp Assembly	410076	Used on all systems

Installation

11	UV Sensor	254NM-C1	VH410M, VH410M-V, VP600M, VP950M
12	Spring	SP008	Used on all systems
13	Retaining nut with the plug	RN-001/1	Used on all systems

Section 3 Installation

3.1 UV Disinfection System

⚠ CAUTION



Electronic controller must be connected to a Ground Fault Protected Circuit (GFCI) receptacle and the lamp connector ground wire connected to the stainless steel chamber.

The disinfection system is designed to be mounted either horizontally or vertically at the point-of-use or point-of-entry depending on the specific flow rate of the unit.

If installing the chamber in horizontal position the outlet port must be pointing upwards to ensure all air is fully purged from the chamber.

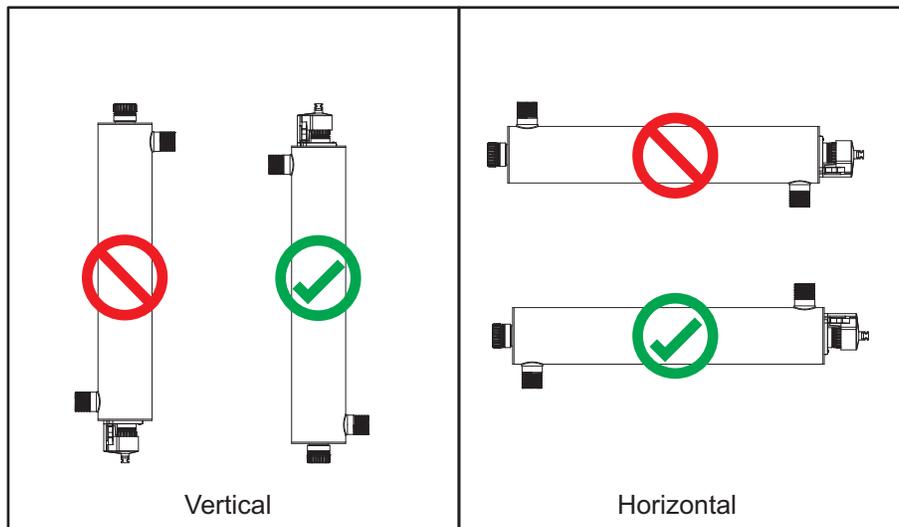


Figure 2 Disinfection Installation - Vertical and Horizontal

Note: The ideal installation is vertical with the lamp connector on top. This is to prevent water damage from occurring on the lamp pins and lamp connector.

- The controller should be mounted either above or beside the chamber. Always mount controller horizontally to prevent moisture from running down cordage and causing a potential fire hazard. Drip loops in all cordage connected to controller is highly recommended. Refer to [Figure 6](#).
- The complete water system, including any pressure or hot water tanks, must be sterilized before start up by flushing with chlorine (household bleach) to destroy any residual contamination. Refer to [Section 3.2](#).
- The disinfection system is intended for indoor use only, do not install disinfection system where it may be exposed to the weather.
- Install the disinfection system on cold water line only, before any branched lines.
- A 5 micron sediment filter must precede the disinfection system. Ideally, the disinfection system should be the last treatment the water receives before it reaches the faucet.

Procedure:

1. **Figure 3** shows the installation of a typical disinfection system and the related components that may be used for the installation. The use of a by-pass assembly is recommended in case the system requires “off-line” maintenance. In this case, note the system requires a supplementary disinfection for the distribution system if any water is used during by-pass condition. In addition, during by-pass, the water will NOT be disinfected and a “DO NOT CONSUME THE WATER” tag should be physically installed on the by-pass assembly until such time as the system is sanitized and returned to service. For more information, refer to **Section 3.2**. If the water is to be consumed while the system is off-line, the water must be boiled for twenty minutes prior to consumption.

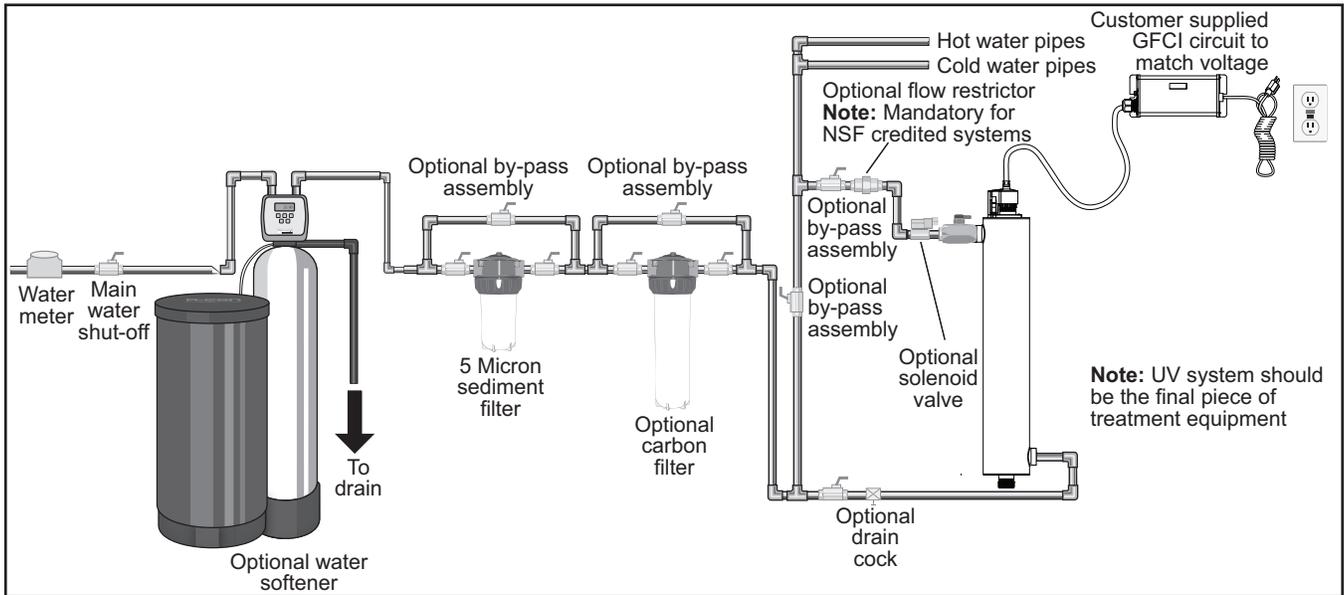


Figure 3 Disinfection System

2. Select a suitable location for the disinfection system and its related components. As it is recommended to install a GFCI, make sure that this is taken into consideration prior to any installation. The system can either be installed vertically (inlet port at the bottom) as shown in **Figure 4 A**, or horizontally as shown in **Figure 4 B**. However, the vertical installation is the most preferred method. When selecting a mounting location, leave enough space to allow the removal of the UV lamp and/or quartz sleeve (typically leave a space equal to the size of the chamber itself).

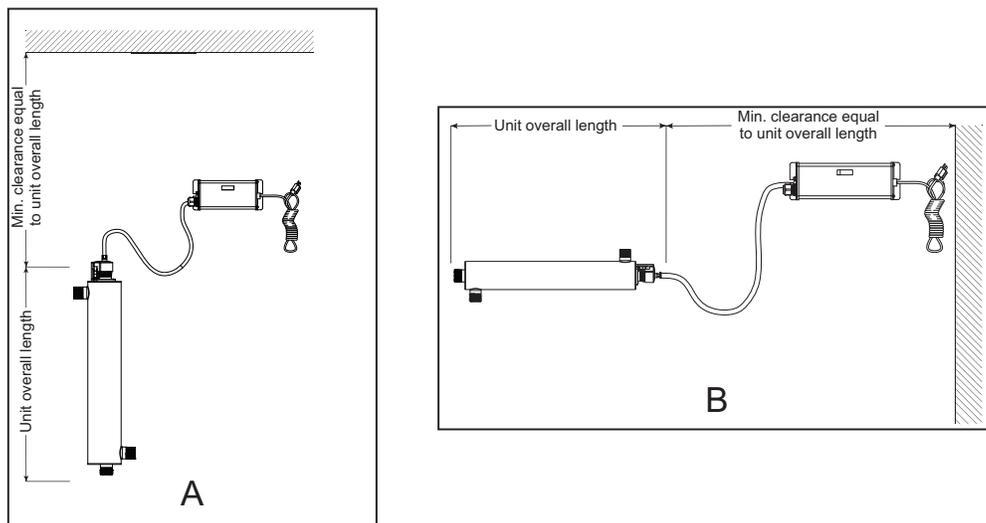


Figure 4 Disinfection Installation - Vertical and Horizontal

Installation

3. Mount the system to the wall using the supplied clamps. Various connection methods can be used to connect the water source to the system, however union type connectors are recommended. The use of a flow restrictor device will help to maintain the manufacturer's rated flow. The flow restrictor should be installed on the outlet port and is designed to be installed in one direction only. Ensure that the flow of the water matches the flow direction as indicated on the flow restrictor. Refer to [Figure 5](#).

Note: DO NOT solder connections while attached to the system as this could damage the O-ring seals.

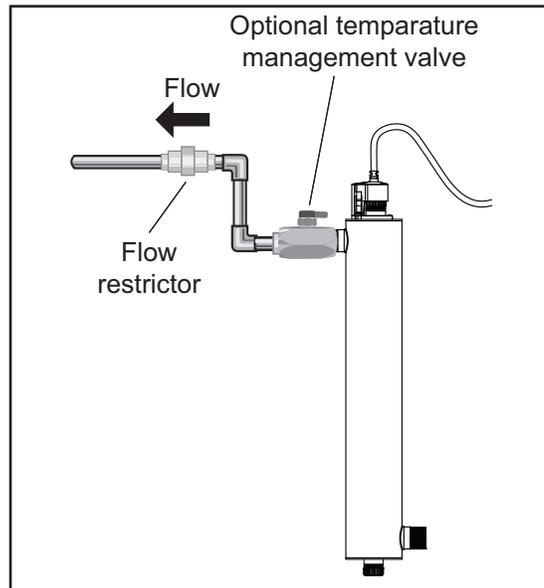


Figure 5 Flow Restrictor

4. Mount the VIQUA ICE controller horizontally to the wall, near the chamber. Ideally place the controller above the chamber and away from any water connection point, to prevent any water from potentially leaking onto the controller by means of a leak at a connection point or a "sweating" system. Make sure you allow for a "drip-loop" as shown in [Figure 6](#) on the lamp, sensor, and power cord, again, to prevent any water from potentially entering the controller.

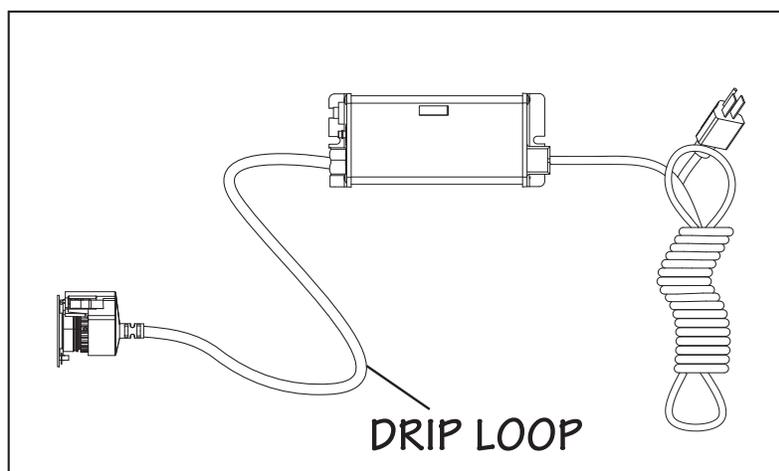


Figure 6 Drip Loop

5. Install the UV lamp. Refer to [Section 4.1](#).

6. When all plumbing connections are complete, slowly turn on the water supply and check for leaks. The most likely cause of leaks is from the O-ring seal. In case of a leak, shut water off, drain cell, remove the retaining nut, wipe the O-ring and threads. Clean and re-install.
7. Once it is determined that there are no leaks, plug the system into the ground fault interrupter and check controller to ensure the system is operating properly. The controller should illuminate without any alarms.

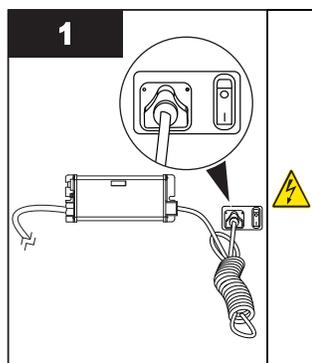
Note: DO NOT look directly at the glowing UV lamp.

8. Allow the water to run for a few minutes to clear any air or dust that may be in the chamber.

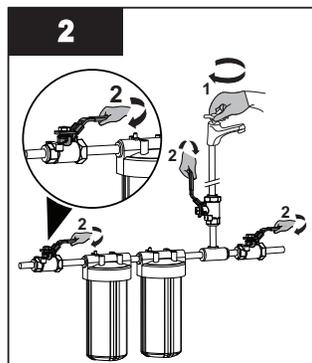
Note: When there is no flow, the water in the cell will become warm, as the UV lamp is always on. To remedy this, run a cold water tap anywhere in the house for a minute to flush out the warm water.

3.2 Disinfection Procedure

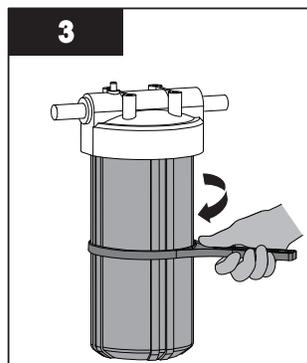
UV disinfection is a physical disinfection process and does not add any potentially harmful chemicals to the water. As UV does not provide a disinfection residual, it is imperative that the entire distribution system located after the UV be chemically disinfected to ensure that the plumbing system is free from any bacteriological contaminants. The disinfection process must be performed immediately after the UV unit is installed and repeated thereafter whenever the UV is shut down for service, without power, or inoperative for any reason. The procedure for sanitizing the plumbing system is readily accomplished as follows:



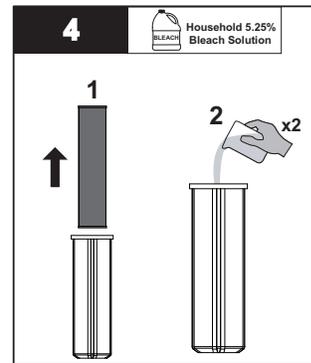
- Ensure the controller is plugged in for entire disinfection process.



- Shut off the water supply.
- Close each faucet.

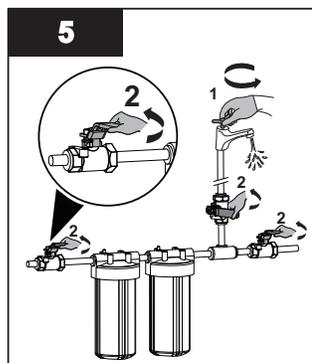


- Remove filter cartridge(s).

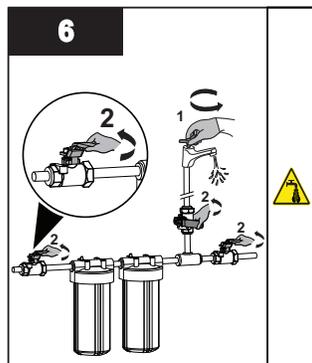


- Pour 2 cups of household bleach solution into the filter housing(s).

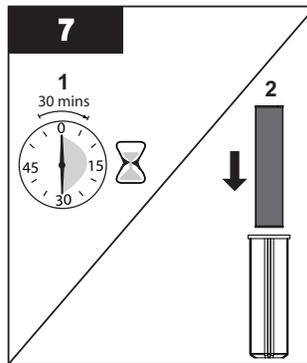
Note: DO NOT use Hydrogen Peroxide.



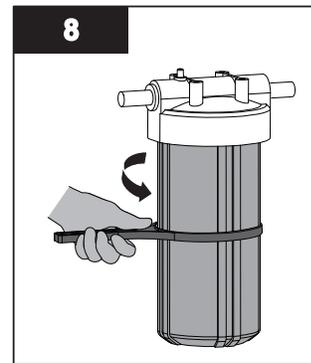
- Re-install the housings.
- Turn on the cold water supply.
- Open each faucet and all water openings until you smell the bleach and then close the faucets.



- Turn on the hot water supply.
- Open each faucet and all water openings until you smell the bleach and then close the faucets.



- DO NOT use water for 30 minutes.
- Flush the system until no chlorine smell is detectable and reinstall the filters.



- Reinstall filter cartridge(s).

Maintenance

Notes: 1) The addition of chlorine (bleach) to a hot water tank that has in the past been fed with untreated raw water with high levels of other contaminants (iron, manganese, hydrogen sulphide, organics, etc.) will result in oxidation of these contaminants and may require repeated flushing of the hot water tank. This contingency must be dealt with independently under the start-up procedure for any other conditioners that may form a part of the pre-treatment for the UV unit.

2) The above disinfection procedure will result in a massive chlorine residual far in excess of the 0.5 to 1.0 mg/L typically present in municipally chlorinated water and of a magnitude consistent with the minimum 50 mg/L chlorine solution recommended for the disinfection of distribution systems known to be contaminated. Do not consume water until complete system has been flushed.

3) As the monitored systems include a 254nm UV intensity monitor, note that the introduction of the bleach solution required for disinfection will trigger a temporary low UV condition. This is due to the fact that the bleach physically "clouds" the raw water. Once the bleach runs through the system, the alarm condition will return to normal. During this sanitization process, the audible alarm condition on the controller can be temporarily deferred by pressing the "RESET" switch for 5 seconds. By doing this, the audible alarm will be silenced. The system will display **R2** on the controller LED. This condition will remain for 12 hours unless the system is manually reset as outlined on page 10 of this manual.

Section 4 Maintenance

⚠ WARNING



- Always disconnect power before performing any work on the disinfection system.
- Always shut-off water flow and release water pressure before servicing.
- Regularly inspect your disinfection system to ensure that the power indicators are on and no alarms are present.
- Replace the UV lamp annually (or biennially if seasonal home use) to ensure maximum disinfection.
- Always drain the chamber when closing a seasonal home or leaving the unit in an area subject to freezing temperatures.

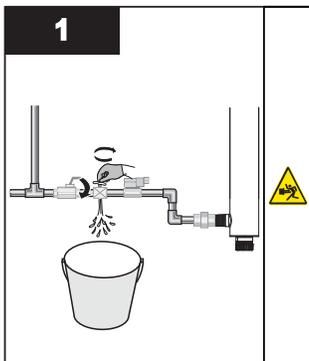
4.1 Replacing UV Lamp

NOTICE

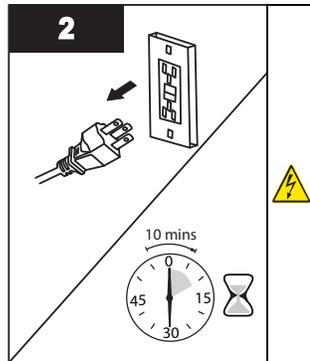
- Reset lamp life timer after lamp replacement. Refer to Section 5.1.3. Refer to www.lamprecycle.org for lamp disposal.
- Do not use water during replacement of UV lamp.

Lamp replacement is a quick and simple procedure requiring no special tools. The UV lamp must be replaced after 9000 hours of continuous operation (approximately one year) in order to ensure adequate disinfection.

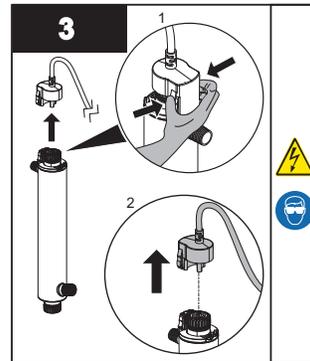
Procedure:



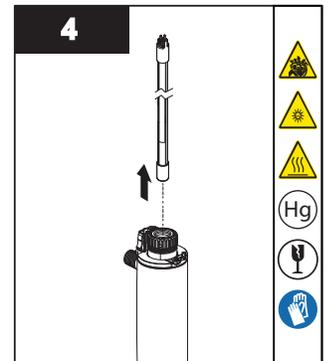
- Shut off the water line to chamber and release system pressure before servicing.



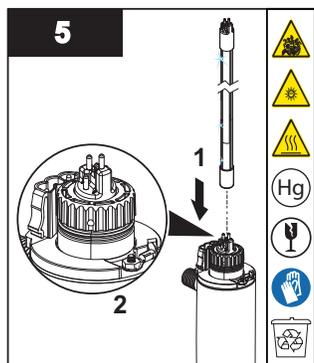
- Disconnect main power source and allow the unit to cool for 10 minutes.



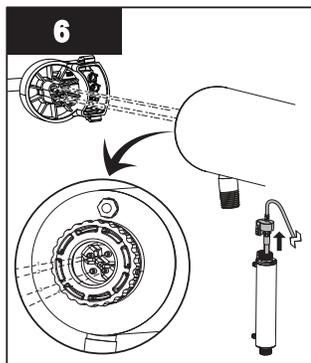
- Remove the lamp connector by squeezing the plastic locking tabs on the side of the connector.



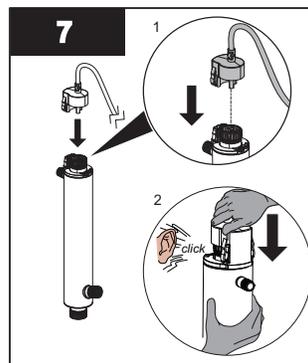
- Remove the lamp in upward direction from the chamber and lamp connector base.
- Always hold the lamp at the ceramic ends.



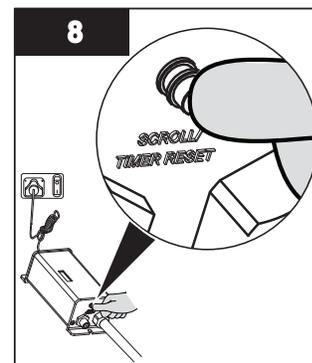
- Insert the new lamp fully into the chamber leaving about two inches of the lamp protruding from the chamber.



- Attach the connector to the lamp and note that the connector will only allow correct installation in one position.



- Push the lamp connector against lamp connector base together until an audible click is heard.
- Re-pressurize the system to check for leaks.



- Hold down the timer reset button and reapply power to the controller until you see **F5E**, then release timer reset button.
- A 5 second delay will occur until you hear an audible tone and LED display will read once again **355**.

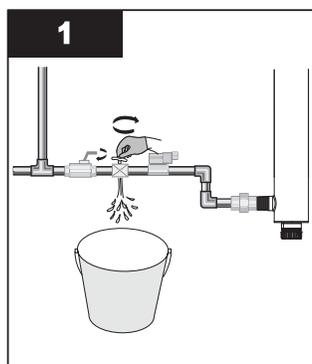
4.2 Cleaning and Replacing Quartz Sleeve

Note: Minerals in the water slowly form a coating on the lamp sleeve. This coating must be removed because it reduces the amount of UV light reaching the water, thereby reducing disinfection performance. If the sleeve can not be cleaned, it must be replaced.

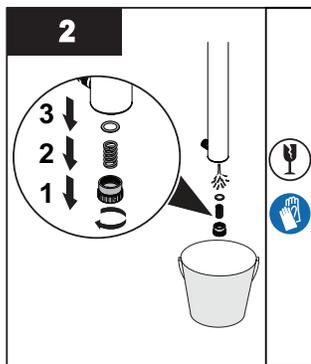
Prerequisites:

- Shut off water supply and drain all lines.
- Remove the UV lamp. Refer to [Section 4.1](#).

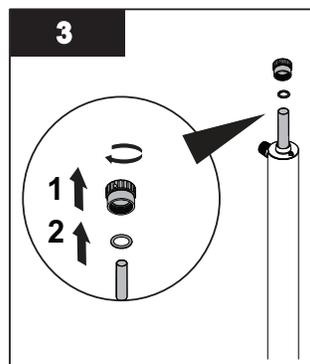
Procedure:



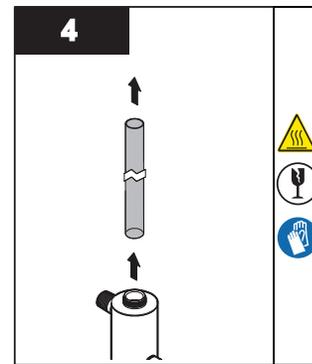
- Drain the chamber by using the drain port.



- Remove the bottom retaining nut, floating spring, and O-ring.



- Remove the top retaining nut and O-ring.

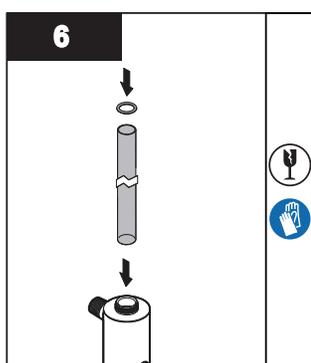


- Remove the quartz sleeve.

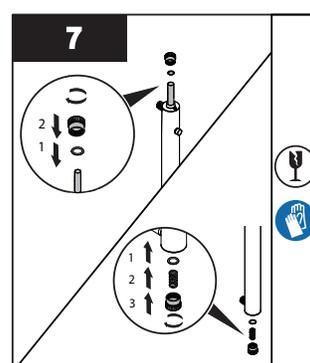


- Clean the quartz sleeve with a cloth soaked in CLR, vinegar or some other mild acid and then rinse with water.

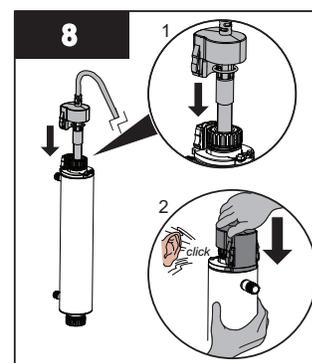
Note: If sleeve cannot be cleaned completely or it is scratched or cracked, then replace the sleeve.



- Reinstall the quartz sleeve in the chamber allowing the sleeve to protrude an equal distance at both ends of the chamber.
- Slide supplied O-rings onto each end of the quartz sleeve.



- Reinstall the top and bottom retaining nuts, floating spring, and O-rings respectively.
- When service is complete, assemble the prerequisites in the reverse order of disassembly.
- Plug in controller and verify the POWER-ON LED display is illuminated and controller power-up sequence operates.



- Push the lamp connector against lamp connector base together until an audible click is heard.
- Re-pressurize the system to check for leaks.

Note: After replacing the UV lamp or quartz sleeve perform the disinfection procedure, refer to [Section 3.2](#).

4.3 Cleaning and Replacing UV Sensor

⚠ WARNING



The UV sensor is very delicate instrument. Extreme care is required when handling and cleaning. The sensor window itself is constructed from quartz which is extremely fragile, be careful you do not chip or break this quartz window. Manufacturer's warranty does not cover damage due to neglect or misuse.

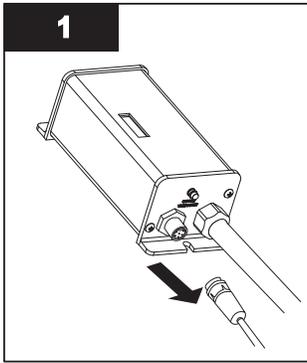
Mineral deposits and sediment may accumulate on the sensor window decreasing the UV energy detected. Good maintenance of pre-treatment equipment will reduce the accumulation of residues. If the system indicates that the UV intensity is low, one cause may be a stained quartz sleeve and/or sensor window.

Prerequisites:

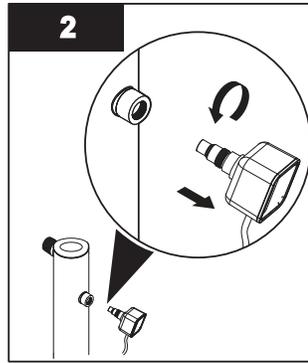
- Remove and clean the quartz sleeve.

Note: The quartz sleeve and UV sensor should be cleaned at the same time.

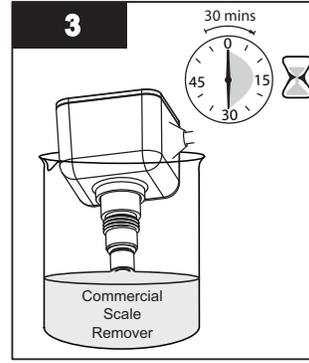
Procedure:.



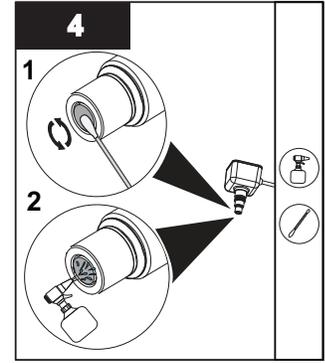
- Disconnect the UV sensor from the controller by disconnecting the sensor cable.



- Remove the UV sensor by grasping the body of the sensor and rotating it counter-clockwise.



- Submerge only the end of the sensor in the commercial scale remover for 30 minutes.



- Clean the sensor with a cotton swab and spray with water.
- Re-insert the UV sensor until a water-tight seal is achieved.

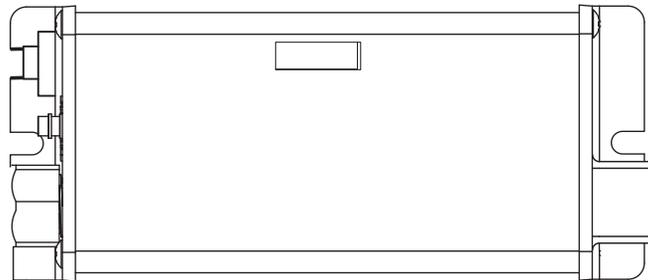
Section 5 Operation

▲ WARNING



The advanced warning system has been installed to provide the optimum protection against microbiological contamination in water. **DO NOT** disregard the warning signals. The best way to ensure optimum UV performance is to have the water microbiologically tested by a recognized testing agency on a regular basis.

5.1 Basic Systems Incorporating BA-ICE-C and BA-ICE-CL Controllers



5.1.1 Lamp Life Remaining (days)

365 The controller tracks the number of days of operation of the lamp and the controller. The default screen will display the total lamp life remaining (in days). The controller will count down the number of days remaining until the lamp requires changing (365 days to 1 day). At “0” days, the controller will display **A3** and sound an intermittent audible chirp (1 second on, 5 seconds off), indicating the need to change the lamp.

5.1.2 Understanding your “A3” Code

A3 DEFERRAL - Once the “A3” or end of lamp life message is shown on the LED display, the audible alarm can be deferred up to 4 separate times. The delay is designed to allow you time to address the alarm while you obtain a new UV lamp. This can be done by simply depressing the timer reset button for 5 seconds, which is located on the left side of the controller. Each time the timer reset button is pressed the controller alarm is deferred seven days. Once the final 7 day deferral has been reached the alarm can only be silenced by changing the UV lamp and manually resetting the controller timer, refer to [Section 4.1](#).

Operation

5.1.3 Resetting Lamp Life

Refer to [Section 4.1](#).

Note: Even though the alarm on the system can be deferred for a period of time, it is important to address each and every alarm condition as they are indicating that there is a potential problem with the system and should be remedied.

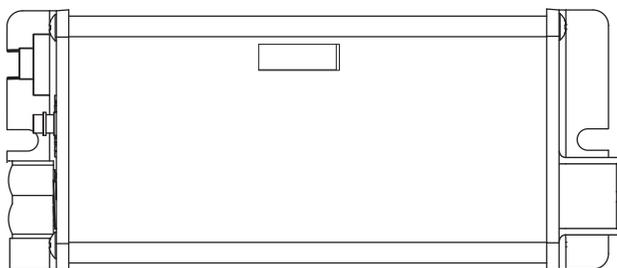
5.1.4 Total Days of Operation

1680 The controller also displays the total running time of the controller. To obtain this reading, press the push-button once. The total running time of the controller will be numerically displayed in days. This information will remain displayed for ten seconds and will then revert back to the lamp life remaining default screen. It should be noted that this value cannot be reset.

5.1.5 Lamp Failure (Blank Screen)

When the system recognizes UV LAMP FAILURE (no current running through the lamp), the display will be blank (no default UV LAMP LIFE REMAINING screen) and the system will sound an intermittent audible tone (1 second on, 1 second off). The system will remain in this state, until this condition is remedied.

5.2 Plus Systems Incorporating BA-ICE-CM Controller



5.2.1 UV Intensity (%)

99 The VIQUA Plus series of products incorporate a UV sensor which detects the discrete 254 nm wavelength of the UV lamp. This information is relayed to the VIQUA controller and is the default display shown in “% UV output”. The system will display the UV output between 50 to 99 percent. When the system drops below 50%, a low UV warning is displayed as **R2** and alternately flashes (at 2 second intervals) back to the actual UV level. Eg. **49**. Additionally, the system will sound an intermittent audible tone (2 seconds on, 2 seconds off), during low UV conditions.

Note: UV levels of

- 65** to **99** Indicates the system is functioning within a normal operating range.
- 56** to **64** Indicates the UV level is still within a safe level, however cleaning or lamp/sleeve replacement may soon be required.
- 50** to **55** Indicates the UV level is nearing the point of unsafe UV intensity, UV system should be immediately serviced.
- < **49** Indicates the UV level has now reached a level that is unsafe. At this level the water should not be consumed. The system/water supply should be examined to determine the reason for the low UV level of the UV intensity. At this level, the solenoid output has been activated and if a solenoid is installed, water will cease to flow.

DEFERRAL - To temporarily defer the audible alarm and re-activate solenoid valve (if fitted) during a low UV alarm, press the timer reset button and hold for five seconds. This will mute the audible alarm condition and activate solenoid output for 12 hours.

Over Temperature - When the water temperature inside the UV reactor chamber exceeds the maximum rating for the UV system (40 °C) the Controller will show “Ot” on the display. This is usually caused by extended periods of no water flow. To clear this condition simply open a faucet and allow water to flow through the system.

Possible causes for low UV alarm conditions:

- a. The UV lamp has perhaps reached a level whereby it can no longer adequately provide a sufficient level of disinfection due to age (> 9000 hours). The lamp should be replaced with a new lamp from the manufacturer of the same size and type.
- b. The quartz sleeve and/or the sensor window have become stained or dirty. Mineral deposits or sediment in the water that was not detected during the original water analysis may be the cause for this. Refer to [Section 4.2](#).
- c. Intermittent voltage drop in the household controller reducing the lamp output. The lamp will return to normal when the power is restored to full voltage.

Note: The monitoring system will not operate during power failures.

- d. The quality of the influent water has changed and is no longer within the acceptable operational range of the UV system. Perform a water analysis to determine the exact constituents and concentration levels.
- e. The UV sensor is not installed correctly.

5.2.2 Lamp Life Remaining (Days)

To obtain this reading, press the timer reset button a single time and follow the steps as outlined in [Section 5.1.3](#), regarding the operation of this feature.

5.2.3 Total Days of Operation

To obtain this reading, press the timer reset button two times in succession and follow steps as outline in [Section 5.1.3](#), regarding the operation of this feature.

5.2.4 Lamp Failure (Blank Screen)

Refer to [Section 5.1.5](#) for explanation of this feature.

Note: On the VIQUA systems, the audible tone provided for lamp failure is a continuous alarm, rather than the intermittent (1 second on, 1 second off) condition on the basic VIQUA systems.

5.2.5 Solenoid Output

Working in conjunction with the UV intensity monitor, the VIQUA controller provides a powered (line voltage) IEC solenoid output connector. (Note: this is not a dry contact) This solenoid output is protected with a replaceable 2 amp isolated fuse. Connection from this output to the solenoid can be done using the IEC solenoid power cable PN 260135. When the UV intensity monitor senses that the water is not adequately being treated and drops to 49% UV intensity or below, the internal relay is opened thereby stopping AC power flowing to the normally closed solenoid valve. The valve will remain closed (no power) until the UV level rises above 49%, at which time the solenoid will open, allowing for water to pass through. (To

Operation

temporarily enable the operation of this solenoid output for up to 12 hours, please refer to the instructions outlined in [Section 5.2.1](#)).

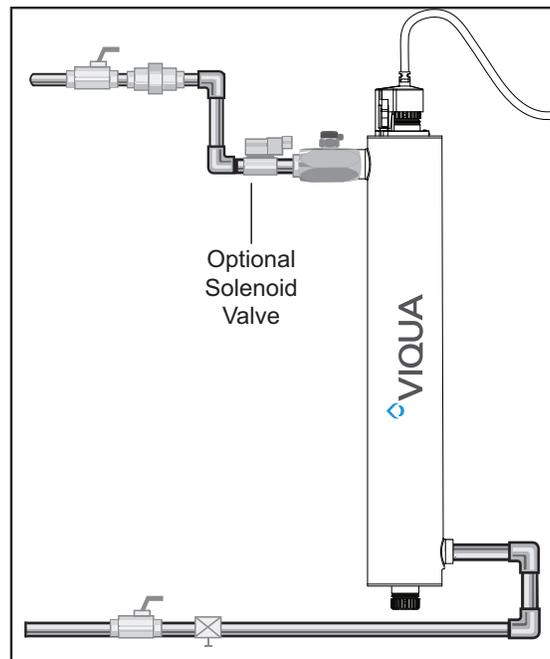


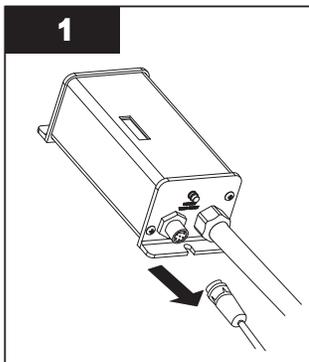
Figure 7 Solenoid Installation

Note: During bypass, do not consume the water until the system has returned to a safe condition.

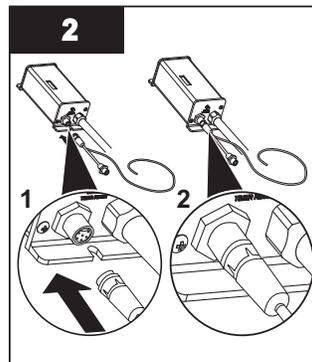
5.2.6 4-20mA Output (Optional)

To achieve the capability to transmit the UV intensity data to a remote location via a 4-20 mA signal, use an optional “Y” cable (PN 260134) is available from your dealer. The “Y” cable comes with 20 meters (65') of cable for the 4-20 mA signal.

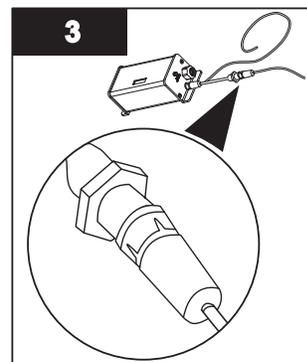
Procedure:



- Disconnect the existing sensor cable from the controller.



- Connect the 'Y' cable to the controller.



- Attach the “male” end of the removed sensor cable to the “female” end of the new “Y” cable.
- Appropriately attach the 4-20 mA cable to the applicable equipment and ensure all connections are hand-tighten.

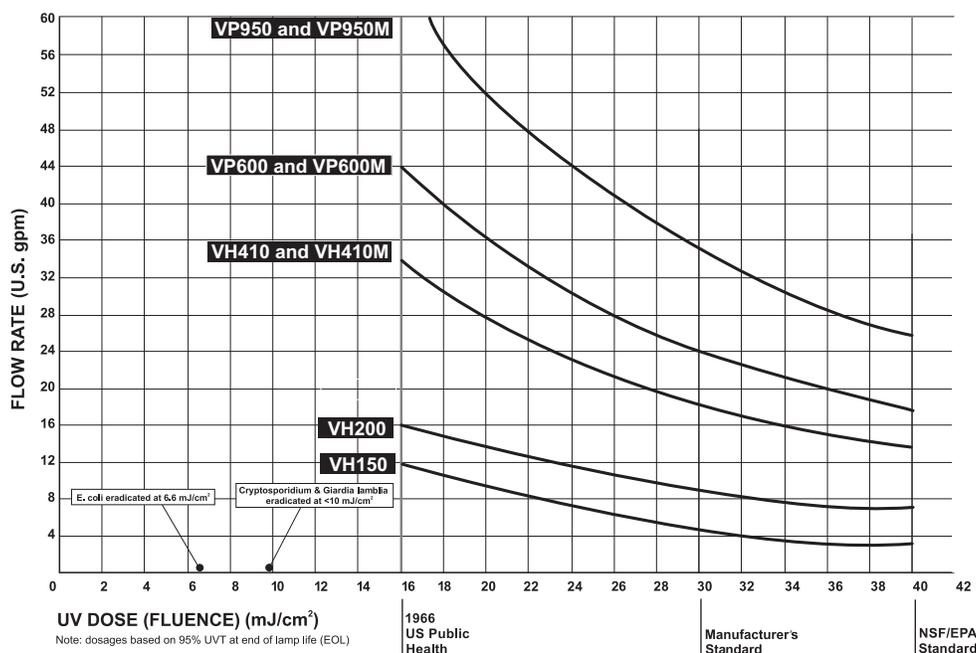
Section 6 Troubleshooting

Symptom	Possible Causes	Solutions
Pressure Drop	Sediment pre-filter clogged	Replace filter cartridge with appropriate 5 micron cartridge. Note: Check source water supply as fluctuations may occur in source pressure.
	Flow regulator	Flow regulator will result in pressure drop when approaching full flow.
High Bacteria Counts	Quartz sleeve is stained or dirty	Clean sleeve with scale cleaner and eliminate source of staining problem (ie. soften hard water, refer to Section 4.2).
	Change in feed water quality	Have source water tested to ensure that water quality is still within allowable limits for this system.
	Contamination in water lines after UV system	It is imperative that effluent water stream be shocked with chlorine (bleach) before water leaves UV system - disinfection system must have a bacterial free distribution system to work effectively. Refer to Section 3.2
	Possible break-through of sediment through pre-filter	Have source water tested for turbidity - may need stepped filtration in order to catch all sediment entering water system (20 micron filter followed by a 5 micron filter followed by UV system).
Heated Product Water	Common problem caused by infrequent use of water	Run water until it returns to ambient temperature.
Water Appears Milky	Caused by air in the water lines	Run water until air is purged.
Unit Leaking Water	Problem with O-ring seal (on retaining nut and/or UV sensor)	Ensure O-ring is in place, check for cuts or abrasions, clean O-ring, moisten with water/ lubricant and re-install, replace if necessary (410867).
	Condensation on chamber caused by excessive humidity & cold water	Check location of disinfection system and control humidity.
	Inadequate inlet/outlet port connections	Check thread connections, reseal with Teflon [®] tape and re-tighten.
System Shutting Down Intermittently	Interrupted controller	<ul style="list-style-type: none"> Ensure system has been installed on its own circuit, as other equipment may be drawing power away from UV (ie. pump or fridge). UV system should not be installed on a circuit which is incorporated into a light switch.
Lamp Failure Alarm on - New Lamp	Loose connection between lamp and connector	Disconnect lamp from connector and reconnect, ensuring that a tight fit is accomplished
	Moisture build up in connector may keep lamp and connector from making a solid connection	Eliminate chance of any moisture getting to the connector and/or lamp pins

DISPLAY FAULT MODES

LED display reads "A3"	<ul style="list-style-type: none"> Lamp life expired - countdown is at "0" days. Refer to Section 5.1.2. Press reset button for a deferred alarm, replace UV lamp.
LED display is blank	<ul style="list-style-type: none"> Controller is in lamp failure mode. Refer to Section 5.1.5. Power system down, allowing it to reset itself; apply power in order to confirm that the controller is able to power lamp. Check to see if there is sufficient power to the UV system. Replace lamps.
Low UV level displayed on screen	<ul style="list-style-type: none"> Test water supply to see if water quality meets recommended parameter limits. Clean quartz sleeves and sensor eye.
LED flashing "A2" and then back to UV level	<ul style="list-style-type: none"> Low UV alarm deferral has been activated. Refer to Section 5.2.1. UV level has dropped below 50% and the audible alarm has been muted by pressing the reset switch and holding it for 5 seconds. This audible alarm deferral will only last 12 hours.

Section 7 Manufacturer's Dose Flow Chart



Note: Not performance tested or certified by NSF.

Section 8 Specifications

8.1 Home and Professional - Standard

Model	VH150	VH200 VH200-V*	VH410 VH410-V*	VP600	VP950	
Flow Rate ¹	*NSF Class B Certified 16mJ/cm ² @ 70% UVT	-	7.8 gpm (29.5 lpm) (1.7 m ³ /hr)	14 gpm (53 lpm) (3.2 m ³ /hr)	-	-
	US Public Health 16 mJ/cm ² @ 95% UVT	12 gpm (45 lpm) (2.7 m ³ /hr) -	16 gpm (60 lpm) (3.6 m ³ /hr)	34 gpm (130 lpm) (7.8 m ³ /hr)	40 gpm (150 lpm) (9.0 m ³ /hr)	60 gpm (230 lpm) (13.7 m ³ /hr)
	VIQUA Standard 30 mJ/cm ² @ 95% UVT	5 gpm (19 lpm) (1.1 m ³ /hr)	9 gpm (34 lpm) (2.0 m ³ /hr)	18 gpm (70 lpm) (4.2 m ³ /hr)	24 gpm (91 lpm) (5.5 m ³ /hr)	34 gpm (130 lpm) (7.8 m ³ /hr)
	NSF/EPA 40mJ/cm ² @ 95% UVT	3.5gpm (13 lpm) (0.8 m ³ /hr)	7 gpm (26 lpm) (1.6 m ³ /hr)	14 gpm (54 lpm) (3.3 m ³ /hr)	18 gpm (68 lpm) (4.1 m ³ /hr)	26 gpm (97 lpm) (5.8 m ³ /hr)
Dimensions	Chamber	33 cm x 8.9 cm (13" x 3.5")	45 cm x 8.9 cm (15" x 3.5")	59.6 cm x 8.9 cm (23.5" x 3.5")	78 cm x 8.9 cm (30.7" x 3.5")	114 cm x 8.9 cm (45.2" x 3.5")
	Controller	17.2 cm x 8.1 cm x 6.4 cm (6.8" x 3.2" x 2.5")	17.2 cm x 8.1 cm x 6.4 cm (6.8" x 3.2" x 2.5")	17.2 cm x 8.1 cm x 6.4 cm (6.8" x 3.2" x 2.5")	22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")	22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")
Inlet/Outlet Port Size ²	Combo 3/4" FNPT/1" MNPT	Combo 3/4" FNPT/1" MNPT	Combo 3/4" FNPT/1" MNPT	1" MNPT	1.5" MNPT	
Shipping Weight	3.6 kg (8 lbs)	5.4 kg (12 lbs)	7.7 kg (17 lbs)	8.6 kg (19 lbs)	13.1 kg (29 lbs)	
Electrical	Voltage ³	120-240 V / 50/60 Hz				
	Max. Current	1.5 Amp				
	Power Consumption	32 W	35 W	60 W	78 W	110 W
	Lamp Watts	22 W	25 W	46 W	58 W	90 W
Total Running Time	Yes	Yes	Yes	Yes	Yes	

Model	VH150	VH200 VH200-V*	VH410 VH410-V*	VP600	VP950
Maximum Operating Pressure	125 psi (861 kPa)				
Minimum Operating Pressure	15 psi (103 kPa)				
Ambient Water Temperature	2-40 °C (36-104 °F)				
Lamp Type	Sterilume™-HO (high-output)				
Visual "Power-On"	Yes	Yes	Yes	Yes	Yes
Audible Lamp Failure	Yes	Yes	Yes	Yes	Yes
Lamp Replacement Reminder	Yes	Yes	Yes	Yes	Yes
Visual Lamp Life Remaining	Yes	Yes	Yes	Yes	Yes
Total Running Time	Yes	Yes	Yes	Yes	Yes
Chamber Material	304SS	304 SS	304 SS	304 SS	304 SS

¹ Flow rates based on End of Lamp Life; 20°C.

² Units ending in "/2B" have BSPT connections.

³ Units ending in "/2" are for 230V applications.

8.2 Home and Professional - Plus

Model		VH410M VH410M-V*	VP600M	VP950M
Flow Rate ¹	*NSF Class B Certified 16mJ/cm ² @ 70% UVT	14 gpm (53 lpm) (3.2 m ³ /hr)	-	-
	US Public Health 16 mJ/ cm ² @ 95% UVT	34 gpm (130 lpm) (7.8 m ³ /hr)	40 gpm (150 lpm) (9.0 m ³ /hr)	60 gpm (230 lpm) (13.7 m ³ /hr)
	VIQUA Standard 30 mJ/ cm ² @ 95% UVT	18 gpm (70 lpm) (4.2 m ³ /hr)	24 gpm (91 lpm) (5.5 m ³ /hr)	34 gpm (130 lpm) (7.8 m ³ /hr)
	NSF/EPA 40mJ/cm ² @ 95% UVT	14 gpm (54 lpm) (3.3 m ³ /hr)	18 gpm (68 lpm) (4.1 m ³ /hr)	26 gpm (97 lpm) (5.8 m ³ /hr)
Dimensions	Chamber	57.9 cm x 8.9 cm (22.8" x 3.5")	78 cm x 8.9 cm (30.7" x 3.5")	114 cm x 8.9 cm (45.0" x 3.5")
	Controller 100-250 VAC	22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")	22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")	22.3 cm x 8.1 cm x 6.4 cm (8.8" x 3.2" x 2.5")
Inlet/Outlet Port Size ²		Combo 3/4" FNPT/1" MNPT	1" MNPT	1.5" MNPT
Shipping Weight		7.7 kg (17 lbs)	8.6 kg (19 lbs)	13.1 kg (29 lbs)
Electrical	Voltage ³	120-240 V / 50/60 Hz	120-240 V / 50/60 Hz	120-240 V / 50/60 Hz
	Max. Current	2.5 Amp	2.5 Amp	2.5 Amp
	Power Consumption	60 W	78 W	110 W
	Lamp Watts	46 W	58 W	90 W
Maximum Operating Pressure		125 psi (861 kPa)	125 psi (861 kPa)	125 psi (861 kPa)
Minimum Operating Pressure		15 psi (103 kPa)	15 psi (103 kPa)	15 psi (103 kPa)
Ambient Water Temperature		2-40 °C (36-104 °F)	2-40 °C (36-104 °F)	2-40 °C (36-104 °F)
Lamp Type		Sterilume™-HO (high-output)	Sterilume™-HO (high-output)	Sterilume™-HO (high-output)
Visual "Power-On"		Yes	Yes	Yes
Audible Lamp Failure		Yes	Yes	Yes
Lamp Replacement Reminder		Yes	Yes	Yes
Visual Lamp Life Remaining		Yes	Yes	Yes
Total Running Time		Yes	Yes	Yes
254nm UV Monitor		Yes	Yes	Yes
Chamber Material		304 SS	304 SS	304 SS
Solenoid Output		Yes	Yes	Yes
4-20 mA Output		Yes (Optional 260134)	Yes (Optional 260134)	Yes (Optional 260134)
¹ Flow rates based on End of Lamp Life; 20°C. ² Units ending in "2B" have BSPT connections. ³ Units ending in "/2" are for 230V applications.				

Section 9 Manufacturer's Warranty

Our Commitment

VIQUA is committed to ensuring your experience with our products and organization exceeds your expectations. We have manufactured your UV disinfection system to the highest quality standards and value you as our customer. Should you need any support, or have questions about your system, please contact our Technical Support team at 1.800.265.7246 or technicalsupport@viqua.com and we will be happy to assist you. We sincerely hope you enjoy the benefits of clean, safe drinking water after the installation of your VIQUA disinfection system.

How to Make a Warranty Claim

Note: *To maximise the disinfection performance and reliability of your VIQUA product, the system must be properly sized, installed and maintained. Guidance on the necessary water quality parameters and maintenance requirements can be found in your Owner's Manual.*

In the event that repair or replacement of parts covered by this warranty are required, the process will be handled by your dealer. If you are unsure whether an equipment problem or failure is covered by warranty, contact our Technical Support team at 1.800.265.7246 or e-mail technicalsupport@viqua.com. Our fully trained technicians will help you troubleshoot the problem and identify a solution. Please have available the model number (system type), the date of purchase, the name of the dealer from whom you purchased your VIQUA product ("the source dealer"), as well as a description of the problem you are experiencing. To establish proof of purchase when making a warranty claim, you will either need your original invoice, or have previously completed and returned your product registration card via mail or online.

Specific Warranty Coverage

Warranty coverage is specific to the VIQUA range of products. Warranty coverage is subject to the conditions and limitations outlined under "[General Conditions and Limitations](#)".

Ten-Year Limited Warranty for VIQUA UV Chamber

VIQUA warrants the UV chamber on the VIQUA product to be free from defects in material and workmanship for a period of ten (10) years from the date of purchase. During this time, VIQUA will repair or replace, at its option, any defective VIQUA UV chamber. Please return the defective part to your dealer who will process your claim.

Three-Year Limited Warranty for Electrical and Hardware Components

VIQUA warrants the electrical (controller) and hardware components to be free from defects in material and workmanship for a period of three (3) years from the date of purchase. During this time, VIQUA will repair or replace, at its option, any defective parts covered by the warranty. Please return the defective part to your dealer who will process your claim.

One-Year Limited Warranty for UV lamps, Sleeves, and UV Sensors

VIQUA warrants UV lamps, sleeves, and UV sensors to be free from defects in material and workmanship for a period of one (1) year from the date of purchase. During this time, VIQUA will repair or replace, at its option, any defective parts covered by the warranty. Your dealer will process your claim and advise whether the defective item needs to be returned for failure analysis.

Note: *Use only genuine VIQUA replacement lamps and sleeves in your system. Failure to do so may seriously compromise disinfection performance and affect warranty coverage.*

General Conditions and Limitations

None of the above warranties cover damage caused by improper use or maintenance, accidents, acts of God or minor scratches or imperfections that do not materially impair the operation of the product. The warranties also do not cover products that are not installed as outlined in the applicable Owner's Manual.

Parts repaired or replaced under these warranties will be covered under warranty up to the end of the warranty period applicable to the original part.

The above warranties do not include the cost of shipping and handling of returned items. The limited warranties described above are the only warranties applicable to the VIQUA range of products. These limited warranties outline the exclusive remedy for all claims based on a failure of or defect in any of these products, whether the claim is based on contract, tort (including negligence), strict liability or otherwise. These warranties are in lieu of all other warranties whether written, oral, implied or statutory. Without limitation, no warranty of merchantability or of fitness for a particular purpose shall apply to any of these products.

VIQUA does not assume any liability for personal injury or property damage caused by the use or misuse of any of the above products. VIQUA shall not in any event be liable for special, incidental, indirect or consequential damages. VIQUA's liability shall, in all instances, be limited to repair or replacement of the defective product or part and this liability will terminate upon expiration of the applicable warranty period.



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ECOMIX®



ADVANCED SOFTENING MATERIAL FOR PROBLEM WATER

SIMPLE SOLUTION FOR 5 PROBLEMS

- hardness
 - iron
 - manganese
- natural organic matter
- ammonium

Used by water treatment companies globally since 1998



WHAT IS ECOMIX®



- ▶ ECOMIX® is a composite water treatment technology protected by 6 patents and with a global successful track record since 1998.
- ▶ ECOMIX® effectively purifies **well water and municipal water** from iron, manganese, hardness and natural organic matter.
- ▶ ECOMIX® consists of five ingredients, including two patented materials.
- ▶ ECOMIX® is compatible with normal softener hardware and regenerates with regular softener salt.

Milestones:

- ▶ 82 materials researched during development
- ▶ developed and patented in 1998
- ▶ 6 patents obtained
- ▶ NSF/ANSI and LFGB health certificates
- ▶ successfully marketed and used on 5 continents

Ecomix® purifies water from:

- ▶ hardness
- ▶ iron
- ▶ manganese
- ▶ natural organic matter
- ▶ ammonium

HOW ECOMIX® WORKS

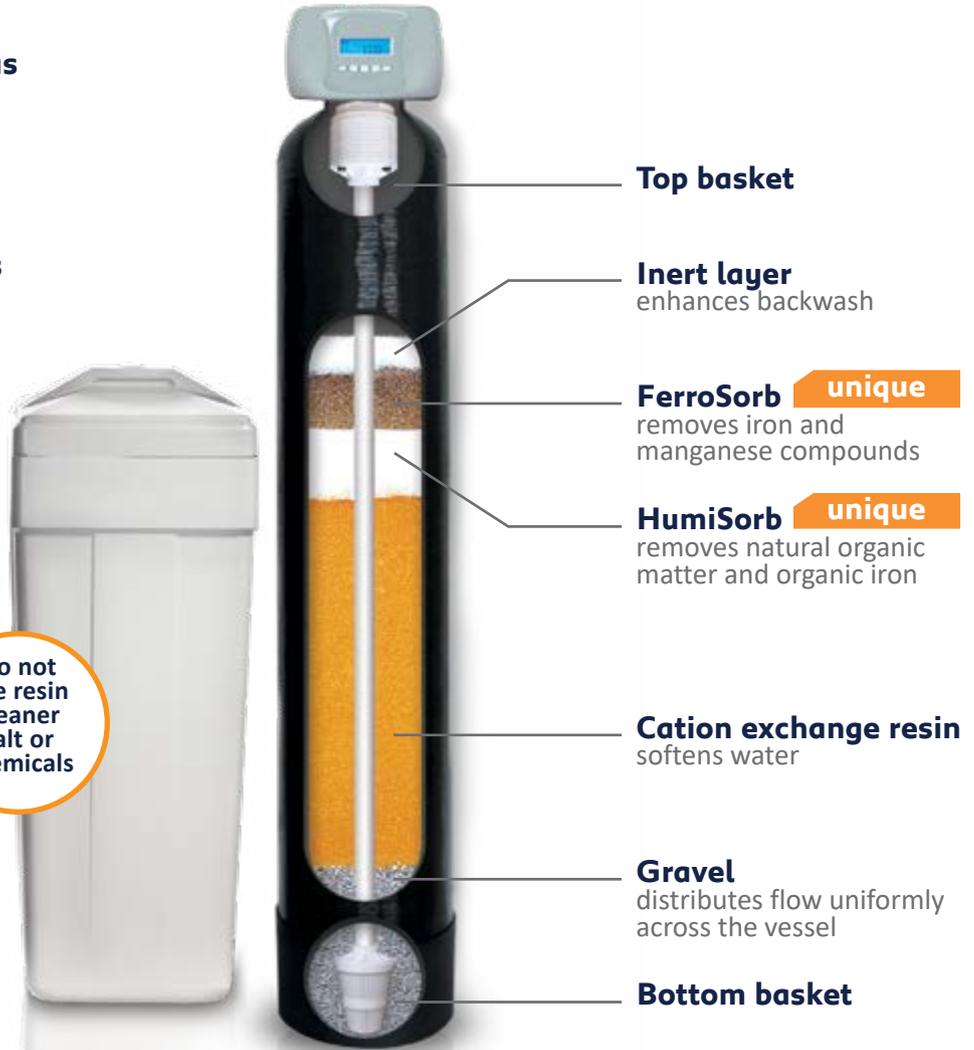
▶ **Delivered and loaded as a single media in bags**

▶ **Stratifies in five layers after regeneration**

▶ **Regenerates with plain softener salt***

Do not use resin cleaner salt or chemicals

* Potassium chloride at a higher dosage can also be used



IRON AND MANGANESE REMOVAL

▶ **FerroSorb is a proprietary sorption material for iron and manganese reduction**



Dissected FerroSorb bead

Mechanism of iron and manganese reduction

ADSORPTION – OXIDATION – ACTIVE LAYER FORMATION – AUTOCATALYTIC OXIDATION

The process chain removes soluble ferrous iron from clear influent water.

The surface layer of FerroSorb beads also contains active sites for binding manganese.

For best results pre-treat with a sediment filter only.

Aeration and oxidative pre-treatment must be avoided.

Treat water against iron bacteria before installing ECOMIX®.

NATURAL ORGANIC MATTER REMOVAL

- ▶ **HumiSorb is a proprietary sorption material for reduction of natural organic matter (reduces color and chemical oxygen demand)**



Fresh HumiSorb beads



HumiSorb beads after service

Organic compounds and organic iron are retained through hydrophobic and ionic interactions with HumiSorb matrix.

Determine chemical oxygen demand before using ECOMIX® to purify high organic color water.

ECOMIX® is intended for the treatment of well water as well as municipal tap water from tannins.

ECOMIX® is not intended for surface water treatment (water from lakes, ponds, rivers, marshes etc).

Water from shallow wells located in vicinity of surface water bodies should be tested for Chemical Oxygen Demand/Total Organic Carbon, and microbial counts.

Microbiologically unsafe water cannot be treated by ECOMIX®.

ECOMIX® REGENERATION

ECOMIX® is regenerated with the same regeneration sequence used with regular softeners:

1. backwash
2. slow brine rinse
3. fast rinse
4. brine tank refill



Calcium and magnesium ions are retained by the **cation exchange resin**, then displaced with sodium ions and flushed during brine regeneration.

Iron and manganese hydroxides are removed from **FerroSorb** by friction. The beads rub against one another when the bed becomes fluidized during backwash.

HumiSorb retains organic molecules and organic bound metals by ion exchange, then the impurities are displaced with chloride ions and flushed during brine regeneration.

EFFICIENCY AND LIMITATIONS OF ECOMIX®



ECOMIX® P	ECOMIX® A	ECOMIX® C
For well or tap water with stable composition	For well or tap water with moderate organics content	For well or tap water with high organics
Requires stable quality of water	Handles seasonal variations in water composition	Handles seasonal variations in water composition without significant impact on treated water quality!

Water Quality Parameter Limitations

Hardness, mg/l CaCO ₃	750	750	750
Iron, mg/l	15	15	15
Manganese, mg/l	3	3	3
Chemical Oxygen Demand, mg/l O ₂	3	8 (reduced ~50%)	20 (reduced ~80%)
Ammonium, mg/l	Is not removed	4	4
Service life, years	3	5	5

OPERATING CONDITIONS:

- ▶ pH 5–9
- ▶ Active chlorine ≤ 1 mg/l
- ▶ No limits on influent hydrogen sulfide or anion content
- ▶ TDS ≤ 4000 mg/l

ECOMIX® TECHNICAL SPECIFICATIONS

▶ Key design parameters for ECOMIX® systems

Parameter	Value
Service flow rate	20-25 m/h
Backwash flow rate	10-15 m/h
Brine (slow rinse) flow rate	3-5 m/h
Minimum bed depth	500 mm
Recommended bed depth	800 mm
Freeboard	40% or more
Salt dosage per bed volume	100 g/L
Brine concentration	8-10%
Water usage per regeneration	max. 10 bed volumes

Rust removal additives, resin cleaner salt, and other aggressive chemicals will affect performance of ECOMIX® and should not be used.

If using potassium chloride, increase salt dosage to 150 g/L.

ECOMIX® will not affect water pH.

COMMONLY USED VESSELS



Size of vessel	1035	1054	1252	1354	1465	1665	2162
Ecomix® volume, L	25	37	50	62	75	100	150
Service flow rate, m³/h	1.0	1.3	1.8	2.2	2.5	3.3	5.5
System capacity, kg, CaCO₃	0.88	1.32	1.7	2.2	2.6	3.5	5.25
Salt per regeneration, kg	2.5	3.8	5.0	6.2	7.5	10.0	15.0
Backwash flow rate, m³/h	0.6	0.6	0.9	1.1	1.2	1.6	2.7

*ECOMIX® is supplied in two bag sizes:

- Bag — 0.88 cu. ft. (25L)
- Half bag — 0.42 cu. ft. (12L)

Please pay attention to the **backwash flow rate** and choose the right **drain line flow control (DLFC)**.

Visit ecosoft.com/ecomix to use the ECOMIX® calculator.

VOLUME CAPACITY OF ECOMIX® SOFTENER

▶ Volume capacity is calculated with only influent hardness and ECOMIX® IX capacity.

Ion Exchange Capacity by Type

- ECOMIX® P – 40 g CaCO₃ / L
- ECOMIX® A – 35 g CaCO₃ / L
- ECOMIX® C – 30 g CaCO₃ / L

$$\text{Volume Capacity, m}^3 = \frac{\text{Quantity of Ecomix, L} \times \text{Ion Exchange Capacity, g CaCO}_3}{\text{Influent Hardness, mg/l CaCO}_3}$$

Iron and manganese determinands are not necessary for calculating volume capacity of Ecomix unit



ECOMIX® SETUP

Treated water



ECOMIX® IN RESIDENTIAL ENVIRONMENT

STANDARD SOLUTIONS



1

Sediment filter for sand, rust and silt removal

2

ECOMIX® system for hardness, iron, manganese, natural organic matter & ammonium removal

3

Centaur activated carbon system for removal of hydrogen sulfide



MULTISTAGE SOLUTIONS



1

2

3



1

2

2

3

ECOMIX® IN COMMERCIAL AND INDUSTRIAL APPLICATIONS



ECOMIX® is used to treat raw water before reverse osmosis systems, to soften and reduce iron from boiler feed water, to purify utility water in hotels, apartment buildings and business centers.

ECOMIX® MANUFACTURING FACILITIES



▶ The manufacturing process includes surface activation of FerroSorb and HumiSorb.

Digital control of ingredient mixing ensures consistent quality of finished product across batches.

ECOMIX® is certified in EU for compliance with LFGB requirements for food-contacting materials by TÜV SÜD.

ECOMIX® is certified in compliance with NSF/ANSI standards:

- NSF/ANSI 61 Drinking Water System Components – Health Effects
- NSF/ANSI 44 Residential Cation Exchange Water Softeners
- NSF/ANSI 372 Drinking Water System Components – Lead Content Scheme

ECOMIX® IN NUMBERS

treats **5** most
common
water quality issues

ECOMIX®
i n s i d e

up to **10** years
service life

- ▶ simple volume capacity formula requiring only raw water hardness
- ▶ high effectiveness regardless of water pH (5...9), H₂S presence, and anionic composition
- ▶ no acid, caustic, or deironing chemical products required for regeneration, just regular softener salt
- ▶ no oxidant pre-treatment required for iron and manganese removal
- ▶ no iron or manganese dumping if volume capacity is exceeded
- ▶ usable with ordinary water softeners
- ▶ low salt demand — typically 100...120 g NaCl per liter (6...8 lbs/ft³) per regeneration
- ▶ low water demand — typically 5-10 bed volumes per regeneration
- ▶ NSF/ANSI and TÜV SÜD health certificates

**ECOMIX® is not only a unique water treatment technology,
ECOMIX® has been a firm foundation for sustainable development of numerous
companies around the world.**

ECOMIX®

SIMPLE SOLUTION FOR 5 PROBLEMS

- hardness
- iron
- manganese
- natural organic matter
- ammonium

ECOMIX® is certified in compliance
with NSF/ANSI standards

ECOMIX® is certified
in EU by TÜV SÜD

meets the requirements
LFGB
ResAP(2004)3
EU Guideline 2002/72/EG

 **ecosoft**

 **BWT** GROUP

www.ecosoft.com



MO550ECOST

Quality standard

Ecosoft reverse osmosis filter MO550ECOST is a 5-stage water purification system.



MO650MECOST

Mineralized water

MO650MECOST model has a mineralizing filter with unique properties. It simultaneously adjusts the mineral composition of purified water, its pH and gives great taste to the water.



MO550PECOST

Solution for low pressure

MO550PECOST model is designed for low-pressure water supply systems. It is equipped with a domestic booster pump to ensure the correct operation of the filter.



Ecosoft products, innovations and modern manufacturing technologies provide pure water to hundreds of thousands of families all over the world.

Pure water for your family is our expertise!



Thank you for choosing Ecosoft products. Replace cartridges in a timely manner and enjoy pure and delicious water every day!

Typical Removal Percentage

Sodium	90 - 95 %	Chlorine	90 - 95 %
Calcium	93 - 98 %	Selenium	90 - 95 %
Magnesium	93 - 98 %	Nitrates	70 - 85 %
Aluminium	93 - 98 %	THMs	93 - 98 %
Copper	93 - 98 %	Fluoride	90 - 95 %
Nickel	93 - 98 %	Strontium	90 - 95 %
Zinc	93 - 98 %	Sulfate	93 - 98 %
Chloride	93 - 98 %	Boron	55 - 60 %
Mercury	93 - 98 %	Arsenic	93 - 98 %
Barium	93 - 98 %	Lead	93 - 98 %



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STANDARD

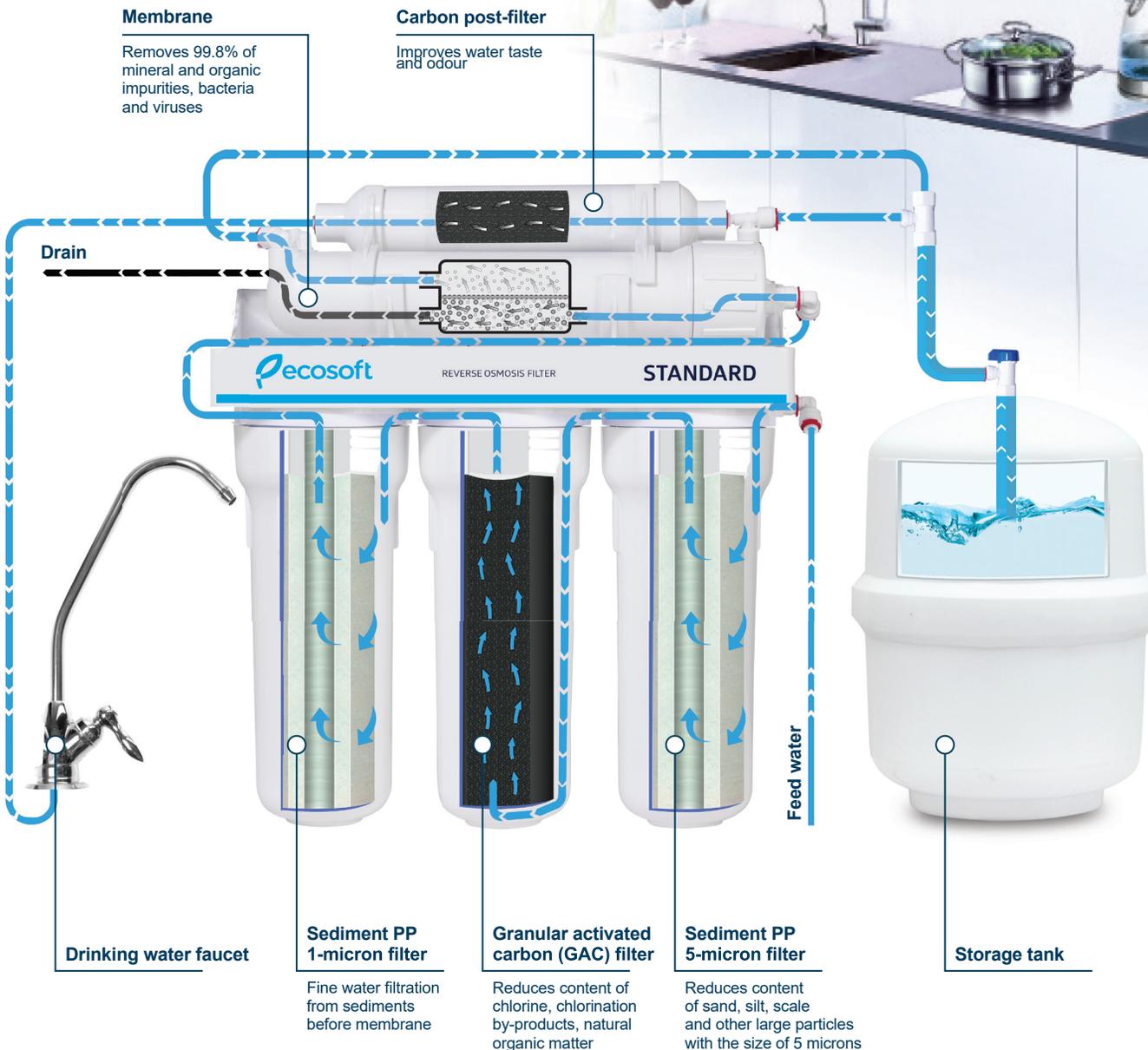


Ecosoft STANDARD is the entry level line of reverse osmosis systems. They represent the most simplistic & reliable systems on the market today

epswater.ie



ECOSOFT STANDARD REVERSE OSMOSIS FILTER



KEY FEATURES OF ECOSOFT REVERSE OSMOSIS FILTER:

Reverse osmosis technology makes water safe even for children

Ecosoft RO membrane

Easy to install – includes everything needed

Filter housing made of pure European food grade plastic

Manufacturer's Warranty



ECOSOFT SET OF
REPLACEMENT FILTERS 1-2-3
FOR REVERSE OSMOSIS
FILTER
Code: 1012401
Replace every 3 months

ECOSOFT SET OF
REPLACEMENT FILTERS 4-5
FOR REVERSE OSMOSIS
FILTER
Code: 1012400
Replace every 12 months