

Operating instructions H₂O GUARD® 60v

Installation
Function
Operation
Service



ELYSATOR 
engineering water

swiss made 

Table of contents

1. Safety instructions	4
2. Function	5
3. Standard delivery	5
4. Specification	
4.1. Device description	6
4.2. Dimensions	7
4.3. Performance data	7
5. Installation	
5.1. Determining the installation position	8
5.2. Connecting at full volume flow (direct)	8
5.3. Connecting bypass circuit (partial flow)	9
6. Commissioning	10
6.1 Filling/Venting	
7. Operation	
7.1. System water	11
7.2. Checking the condition of the anodes	11
7.3. Suspended solids filter	11
8. Options	
8.1. PUROTAP® i-control-21, conductivity meter	12
8.2. Disposable depth filter	13
8.3. Differential pressure measurement	14
8.4. Automatic differential pressure switch kit	15

9. Maintenance	
9.1. Sludge removal	16
9.2. Checking and assessing the condition of the anodes	17
9.3. Changing anodes and checking/cleaning the suspended solids filter	17
9.4. Replace PUROTAP® i-control 21	18
9.5. Replacing/cleaning the suspended solids filter	18
9.6. Installing/replacing the disposable depth filter (optional)	19
9.7. Differential pressure measurement kit, manual (optional)	20
9.8. Automatic differential pressure measurement kit, with switch (optional)	20
10. Spare parts	20
11. Accessories	20

1. Safety instructions



Not drinking water



Maximum 100 °C



Maximum 10 bar pressure



100 % recyclable

2. Function

The H₂O GUARD® 60v provides any closed circulation system with sustainable protection from damage caused by dirt, suspended solids or corrosion.

The following functions are combined in the H₂O GUARD® 60v:

- pH regulation by means of a corrosion-protective magnesium anode
- Micro gas bubble separator (degassing)
- Magnetic flow filter (neodymium magnet)
- Suspended solids filter (300 µm)
- Optional permanent conductivity monitoring of water (activity)
- Optional temporary disposable filtration with 5 µm disposal depth filter
- Optional visual filter monitoring via pressure measurement at inlet and outlet
- Optional filter monitoring via automatic differential pressure switch (changeover switch for signal output)

By combining functions (e.g. connecting identical devices in parallel), the system is suitable for any system capacity and volume flow (Tichelmann system).

The device can also be used "only" as a filter. In this case (depending on the conditions of use/materials chosen for the water circuit), the two anodes may still be removed.

3. Standard delivery

1 × complete vessel consisting of:

- | | |
|--|--|
| 1 × document folder | • EPP insulation with thick wall thickness |
| 1 × operating instructions | • 2 x high potential magnesium anodes |
| • Stainless steel vessel | • 1 × ELYSATOR® air vent INOX, can be shut off |
| • 1 × 1" ball valve | • Stainless steel suspended solids filter |
| • Magnetic rod fitted with neodymium magnets | |

4. Specification



- 1 ELYSATOR® air vent INOX with gasket
- 2 Vessel with EPP insulation
- 3 Magnet
- 4 Drain valve 1"
- 5 Stands x 3
- 6 Inlet 2"
- 7 Outlet 2"

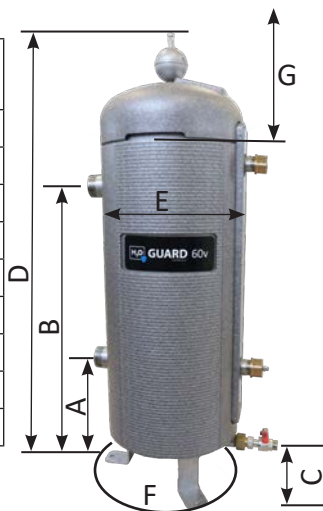
4.1. Device description

4.1.1 Materials

Vessel material:	INOX 1.4301 / AISI 304 / SS 2333
Suspended solids filter:	INOX 1.4301 / AISI 304 / SS 2333
Air vent Inox:	INOX 1.4301 / AISI 304 / SS 2333
Suspended solids filter moulded gasket:	Silicone
Flange gasket:	Flat hard gasket
Insulation:	EPP
Anode:	High potential ultrapure magnesium (99.9 %)
Magnet:	4 neodymium magnets à 12,000 Gauss

4.2. Dimensions

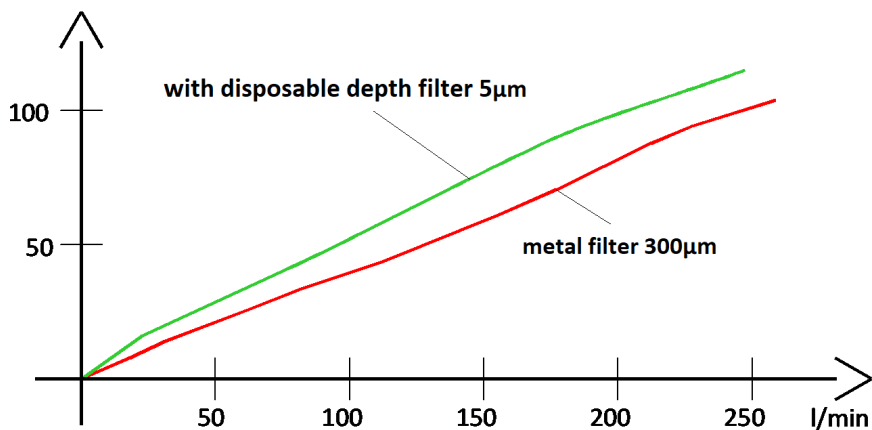
Dimensions		H ₂ O GUARD® 60v
A	Inlet height	310 mm
B	Outlet height	780 mm
C	Drain height	95 mm
D	Overall height	1130 mm
E	Vessel diameter	350 mm
F	Stand diameter	approx. 400 mm
G	Minimum maintenance height	580 mm
	Inlet/outlet connection	2" male
	Drain connection	1" male



4.3. Performance data

	H ₂ O GUARD® 60v
System volume	< 15 m ³
Volume flow	< 250 l/min

pressure drop
m bar



5. Installation

5.1. Determining the installation position

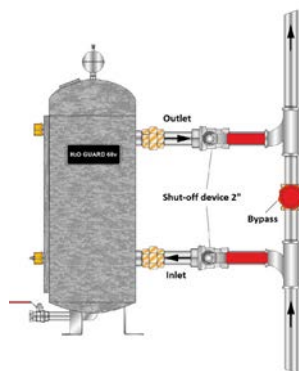
Bear in mind the following points when selecting the installation position of an H₂O GUARD® 60v:

- The H₂O GUARD® 60v operates at full volume flow, i.e. the entire volume of water passes through the device.
A bypass must be created to ensure continuous operation during service.
- The H₂O GUARD® 60v can also be operated through a bypass circuit, so that only part of the volume flow passes through the device. The installation position must be selected so that the entire system content flows through the H₂O GUARD® 60v at regular intervals. ($V_{\min} = 10 \text{ l/min}$)

IMPORTANT NOTE!

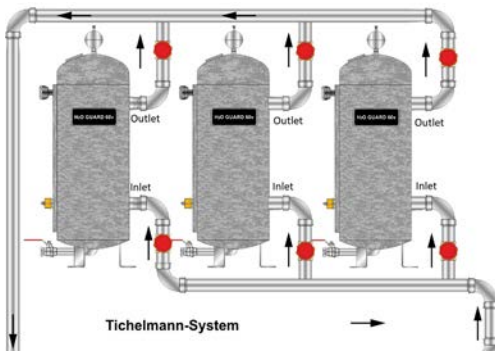
Selecting the correct installation position for an H₂O GUARD® 60v is the responsibility of a heating contractor. We are happy to provide the contractor with assistance.

5.2. Connecting at full volume flow (direct)



5.2.1. Connecting several devices in parallel

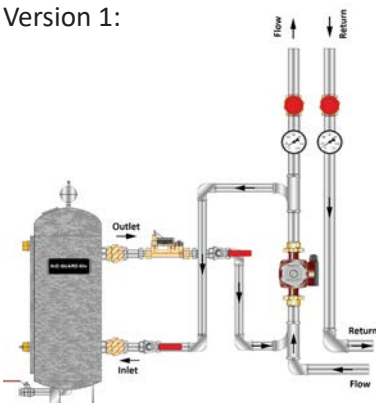
The Tichelmann system describes a routing technique in which the consumer with the shortest flow gets the longest return. In this way, pressure losses are the same on all flow paths and hydraulic balancing is controlled.



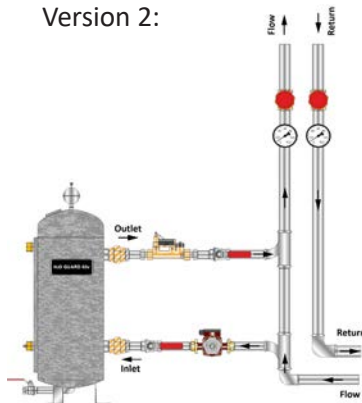
	1 × H ₂ O GUARD® 60v	2 × H ₂ O GUARD® 60v	3 × H ₂ O GUARD® 60v	4 × H ₂ O GUARD® 60v
System volume	< 15 m³	< 40 m³	< 80 m³	< 120 m³
Throughput	< 250 l/min	< 400 l/min	< 600 l/min	< 900 l/min

5.3. Connecting bypass circuit (partial flow)

Version 1:

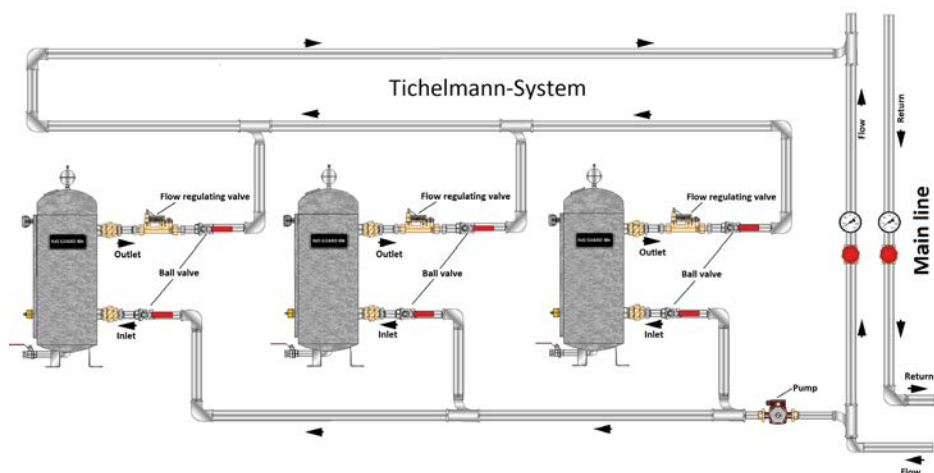


Version 2:



5.3.1. Connecting several devices in parallel

The Tichelmann system describes a routing technique in which the consumer with the shortest flow gets the longest return. In this way, pressure losses are the same on all flow paths and hydraulic balancing is controlled.



	1 × H ₂ O GUARD® 60v	2 × H ₂ O GUARD® 60v	3 × H ₂ O GUARD® 60v	4 × H ₂ O GUARD® 60v
System volume	< 30 m ³	< 55 m ³	< 80 m ³	< 100 m ³
Throughput total bypass circuit	18 - 20 l/min	33 - 38 l/min	50 - 60 l/min	70 - 80 l/min
Throughput single device	18 - 20 l/min	18 - 20 l/min	18 - 20 l/min	18 - 20 l/min
Connection size	1"	1"	1½"	1½"

6. Commissioning

6.1. Filling/Venting

The H₂O GUARD® 60v can be filled with demineralised water via the drain valve. To do so, the air vent on the device must be unscrewed. The 2" inlet and outlet must be closed. Once water starts to come out of the top of the H₂O GUARD® 60v, the air vent can be screwed back on and the shut-off valves opened again.

7. Operation

7.1. System water

The quality of the heating water must comply with the general guidelines (VDI 2035, SWKI BT 102-01, ÖNORM 5195-1) unless the system manufacturer requests other values. The H₂O GUARD® 60v can also be operated with water that has been enriched with chemical substances. Chemical additives must continue to be dosed and monitored in accordance with the manufacturer's instructions. The corrosion-protective magnesium anode system, however, works more reliably with water without chemical additives.

7.2. Checking the condition of the anode

Periodic inspection of magnesium anodes is mandatory (e.g. together with the suspended solids filter inspection, see 7.3.). An inspection must be carried out at least once a year.

7.3. Suspended solids filter

The basic specification of the H₂O GUARD® 60v includes a large, extremely robust, stainless suspended solids filter with a mesh size of 300 µm, as well as the two silicone moulded gaskets mounted on the front. This filter permanently filters the circulating water (with practically no pressure drop).

- The suspended solids filter requires periodic inspection (remove sludge or clean if necessary) to prevent malfunctions during operation. We recommend maintenance at least once a year.

8. Options

8.1. Option PUROTAP® i-control-21, conductivity meter

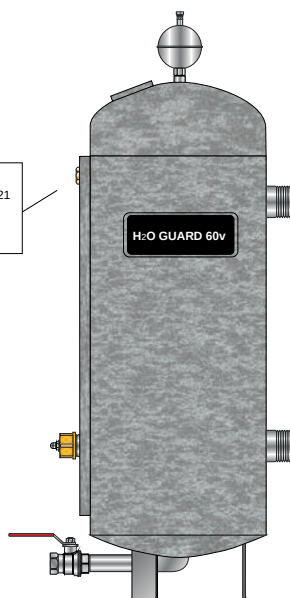
Permanent conductivity inspection

The conductivity of the system water is indicated by the green, orange and red LEDs and can be interpreted easily.

The PUROTAP® i-control-21 can be connected to an external display (4-20 mA) and/or a building management system (floating contact).

Operation with an external power supply is also possible.

Compliance with the guidelines and limit values is therefore visible at all times.



max. 60°C with PUROTAP® i-control-21
Max. 60 °C

max. 4 bar with PUROTAP® i-control-21
Max. 4 bar pressure



See operating instructions
PUROTAP® i-control-21 (scan QR code)

8.2. Disposable depth filter option

The disposable depth filter is only used for temporary fine filtration of the circulating water. The depth filter filters out the smallest suspended particles through the fine 5 μm mesh. The entire system volume should be filtered through several times. The depth filter must then be disposed of.



Due to the very fine mesh and depending on the state of the water (amount of dirt particles), the pressure drop can be considerable, so the filter has to be removed quickly from the system. Failure to do so may result in system malfunctions.

The disposable depth filter can only be used/installed without anodes. The two anodes must therefore be removed briefly during operation with the disposable depth filter.



Installation of silicone moulded gasket (here without disposable depth filter)



Installation with disposable depth filter, upside down so that the depth filter opening is facing downwards.

8.3. Differential pressure measurement option

Filter contamination can be monitored through differential pressure measurement. This will allow you to see when the filters are contaminated and are severely obstructing the volume flow.

The differential pressure kit consists of:

- 2 × tees 2" female / ½" male / 2" female
- Overlap ½" male / 1/4" female
- 2 × pressure gauges 0-16 bar, ¼" male

The kit is screwed to the inlet and outlet connectors of the H₂O GUARD[®] 60v.

This allows the degree of contamination in the suspended solids filter to be assessed. As the suspended solids filter becomes more contaminated, the flow resistance increases and the differential pressure increases.



8.4. Automatic differential pressure switch kit option

This differential pressure switch is designed to monitor the differential pressure of liquids. In addition, the optical scale allows a direct view of the set switching point. A ΔP can be set between 0.25 and 2.0 bar.

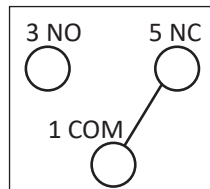
Filter contamination can thus be monitored automatically. When the preset differential pressure is reached, a floating changeover switch is applied. The signal can be used to trigger a visual or acoustic alarm. It can also be fed into a home automation system.

Differential pressure kit with switch consisting of:

- 2 × tees 2" female / 2" female / ½" female
- 1 × differential pressure switch
- 2 × MS adaptor M12 × 1.25 female - ½" male
- 1 × Reinforced hose DN8 bent/straight ⅜"/ ⅜" union nut
- 1 × ⅜" twin connector, red brass
- 1 × reducer ½" male/ ⅜" female, red brass
- 1 × elbow ½" female / ⅜" female, red brass



Circuit/diagram:



Single pole changeover switch
(max. 8 A at 24 V DC or 250 V AC)

9. Maintenance

9.1. Sludge removal

The H₂O GUARD® 60v should undergo regular sludge removal. Exactly how often this is required depends on the amount of sludge. However, we recommend sludge removal at least once a year. The condition of the anodes can also be checked at the same time.

Procedure:

1. Open bypass
2. Close valve (6) in supply line
3. Close valve (7) in output line
4. Unscrew air vent (1)
5. Remove cap from drain valve (4)
6. If required, connect a hose and route it to a bucket or drain (tank capacity ~ 60 l)
7. Unscrew and withdraw magnet (3)
8. Open drain valve (4) (if blocked, use a screwdriver or wire to clear it)
9. Connect drain (4) to fresh water supply
10. Fill with fresh water
11. Drain H₂O GUARD® 60v as described in steps 1-8
12. Repeat the procedure until the water comes out clean when draining
13. Fill H₂O GUARD® 60v with demineralised water through drain valve (4)
14. Close drain valve (4)
15. Screw on air vent (1)
16. Open supply line valve (6) and outlet line valve (7)
17. Close bypass

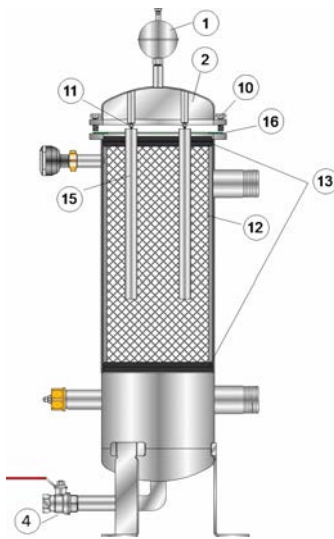
9.2. Checking and assessing the condition of the anodes

The magnesium anode can be inspected visually.

- Anode has a diameter < 10 mm or only a thin steel wire can be seen -> Replace the anode.
- Anode still has a diameter > 10 mm, but is covered with a layer of dirt -> Clean the anode using a wire brush or file.
- Anode still has a diameter > 10 mm -> Anode can continue to be used.

9.3. Changing anodes and checking/cleaning the suspended solids filter

1. Drain H₂O GUARD® 60v (see chapter 9.1. Sludge removal, points 1-7)
2. Remove EEP insulation (2)
3. 10 x flange screws (10) (size 19), loosen and remove



4. Withdraw flange with anodes
5. Loosen and unscrew anode cone screw (11) using a size 10 open-ended spanner
6. Withdraw stainless suspended solids filter (12) with silicone moulded gaskets (13) on both sides
7. Clean suspended solids filter (12) (with brush if necessary)
8. Check silicone moulded gaskets (13) for damage and replace them on front of suspended solids filter
9. Tighten new anodes (15) with anode cone screws
10. Insert new flange gasket (16)
11. Insert flange with anodes

12. 10 x flange screws (10), insert and evenly tighten diagonally (70 Nm)
13. Refit EPP insulation (2)
14. Fill H₂O GUARD® 60v with demineralised water through drain valve (4)
15. Screw on air vent (1)
16. Open bypass

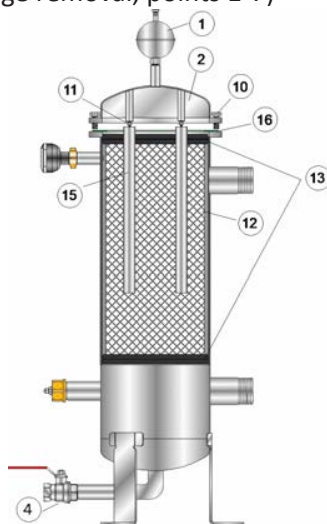
The H₂O GUARD® 60v can also be operated without anodes.

9.4. Replace PUROTAP® i-control-21

1. Open bypass
2. Close valve
3. Depressurise system
4. Drain the H₂O GUARD® 60v (see chapter 9.1. Sludge removal, points 1-7) until the water level drops below the PUROTAP® i-control-21 connectors.
5. Repair/clean/replace PUROTAP® i-control-21 if necessary
6. Fill H₂O GUARD® 60v with demineralised water through drain valve (4)
7. Close drain valve (4)
8. Screw on air vent (1)
9. Open supply line valve (6) and outlet line valve (7)
10. Open bypass

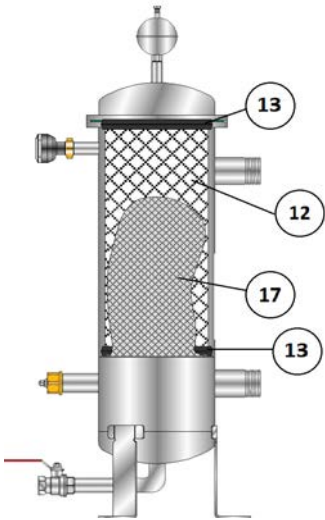
9.5. Replacing/cleaning the suspended solids filter

1. Drain H₂O GUARD® 60v (see chapter 9.1. Sludge removal, points 1-7)
2. Remove EEP insulation (2)
3. 10 x flange screws (10) (size 19), loosen and remove
4. Withdraw flange with anodes
5. Withdraw stainless suspended solids filter (12) with silicone moulded gaskets (13) on both sides
6. Clean suspended solids filter (12) (with brush if necessary)
7. Check silicone moulded gaskets (13) for damage and replace them on front of suspended solids filter
8. Insert new flange gasket (16)
9. Insert flange with anodes
10. 10 x flange screws (10), insert and evenly tighten diagonally (70 Nm)
11. Refit EPP insulation (2)
12. Fill H₂O GUARD® 60v with demineralised water through drain valve (4)
13. Screw on air vent (1)



9.6. Installing/replacing the disposable depth filter (optional)

1. Drain H₂O GUARD® 60v (see chapter 9.1. Sludge removal, points 1-7)
2. Remove EEP insulation (2)
3. 10 x flange screws (10) (size 19), loosen and remove
4. Withdraw flange upwards
5. Withdraw stainless suspended solids filter (12) with upside-down disposable depth filter (17) fitted above with silicone moulded gaskets (13) on both sides
6. Throw away disposable depth filter (17)
7. Clean suspended solids filter (12) (with brush if necessary)
8. Check silicone moulded gaskets (13) for damage and replace them on front of suspended solids filter
9. If necessary, reinstall anodes (15) and tighten with anode cone screws (11)
10. Insert new flange gasket (16)
11. Insert flange with anodes
12. 10 x flange screws (10), insert and evenly tighten diagonally (70 Nm)
13. Refit EPP insulation (2)
14. Fill H₂O GUARD® 60v with demineralised water through drain valve (4)
15. Screw on air vent (1)



Pull the disposable depth filter over the edge of the suspended solids filter. The silicone moulded gasket must then be mounted above it. Place the suspended solids filter with the disposable depth filter upside down, i.e. with the opening facing downwards in the vessel. The disposable depth filter "puffs up" as the water flows in from below.

9.7. Differential pressure measurement kit, manual (optional)

Does not require periodic maintenance.

9.8. Automatic differential pressure measurement kit, with switch (optional)

Does not require periodic maintenance.

10. Spare parts

Item no.	Designation
102 476	H ₂ O GUARD® 60v, anode fittings
102 458	H ₂ O GUARD® 60v, suspended solids filter 300 µm
102 460 (2×)	H ₂ O GUARD® 60v, gasket for suspended solids filter
102 348	H ₂ O GUARD® 60v, flange gasket
102 180	EEAG air vent INOX, 3/8" male

11. Accessories

Item no.	Designation
102 327	H ₂ O GUARD® 60v, differential pressure measurement kit, manual
102 509	H ₂ O GUARD® 60v, differential pressure measurement kit, with switch
102 518	H ₂ O GUARD® 60v, disposable depth filter
102 319	PUROTAP® i-control-21
102 575	H ₂ O GUARD® 60v, bypass circuit kit