

Operating instructions
H₂O DESAL® d-toc 33

Installation
Function
Operation
Service



ELYSATOR 
engineering water

swiss made 

Table of contents

1. Safety instructions	4
2. Function	5
3. Standard delivery	6
4. Specification	
4.1. Properties of the H ₂ O DESAL [®] d-toc 33 cartridge	6
4.2. Dimensions	7
4.3. Performance data	8
5. Operation	
5.1. Connection and commissioning	8
5.2. Treating the system water	9
6. Maintenance	10
7. Spare parts	10
8. Consumables	10
9. Options	10
10. FAQ H ₂ O DESAL [®] d-toc 33	11
11. Disclaimer	11

1. Safety instruction



Not drinking water



Maximum 4 bar pressure at 20 °C



Maximum 2 bar pressure at 40 °C



Disposal with household waste



Operation under supervision



Maximum throughput 3 l/min



Max. water volume to be treated per cartridge
1500 litres at 100 mg/l TOC

2. Function

Heating and cooling systems use water as a heat transfer medium. The water circulates from the place where heat is generated to the consumer and back. Even if the system always reuses the same water, aggressive substances can still get into the closed water system due to leaks or errors during filling, which may lead to corrosion and damage modern components.

One of the ways to determine whether aggressive substances are present in the system is to measure the sum parameter of TOC (total organic carbon) in the circulating water. Clean water has a TOC content of 1-2 mg/l. SWKI guideline BT 102-01 specifies a target value of < 30 mg/l for TOC in closed systems without antifreeze. There are many possible causes for an increased TOC value, including:

- Use of contaminated hoses/pumps/material during filling
- Refrigerant breakthrough in the heat exchanger
- Antifreeze or brine fluid in the system
- Microbiological processes
- Other unclear causes

The H₂O DESAL® d-toc 33 cartridge can be used to reduce the TOC content in water for technical applications. This serves as corrosion protection in closed systems.

H₂O DESAL® d-toc 33 works on the basis of adsorption. This means that harmful carbon compounds accumulate on the specially selected filter material and are thereby removed from the water.

Only 2 hoses are required to use the H₂O DESAL® d-toc 33 cartridge.

In a closed system, the device with the built-in H₂O DESAL® d-toc 33 cartridge is connected in the bypass flow and operated with a pump at a low flow rate. The system volume should be circulated at least 3 times. Up to 1500 litres of water with a TOC value of up to 100 mg/l can be purified with one cartridge.

Several cartridges or the H₂O DESAL® d-toc 55 cartridge set must be used for treating larger system volumes.

Due to the risk of transferring contaminants, the cartridge may only be used once on a system. The cartridge must be disposed of after a single use.



- Pre-rinsing necessary
- Connect in the bypass flow
- At least 3 system circulations recommended
- For single use

3. Standard delivery

- H₂O DESAL® d-toc 33 cartridge (incl. flow limiter to 3 l/min)
- Operating instructions

4. Specification

4.1. Properties of the H₂O DESAL® d-toc 33 cartridge

When the cartridge is first used, both the pH value and the conductivity in the water may change slightly. This is balanced out over the course of operation, so that the initial values are reached again at the end.

If the system water is too dirty (coarse particles), the cartridge may become prematurely clogged. If this degree of contamination is present, a particle filter should be installed upstream.

The efficiency of the H₂O DESAL® d-toc 33 cartridge varies depending on the origin and composition of the total organic carbon (TOC) in the water. The following table provides guidance on this:

Origin of the TOC contamination	Efficiency
Antifreeze	(+)
Corrosion inhibitor	++
Refrigerant	+
Cleaner with complexing agent	(+)
Microbiological*	+

++ very good reduction

+ good reduction

(+) limited reduction

- no or virtually no reduction

* for a sustainable TOC reduction in the case of microbiological contamination, additional cleaning steps are necessary

4.2. Dimensions

H ₂ O DESAL® d-toc 33	Dimension
Height of the cartridge	79 cm
Diameter	11 cm
Weight	approx. 3.8 kg

4.3. Performance data

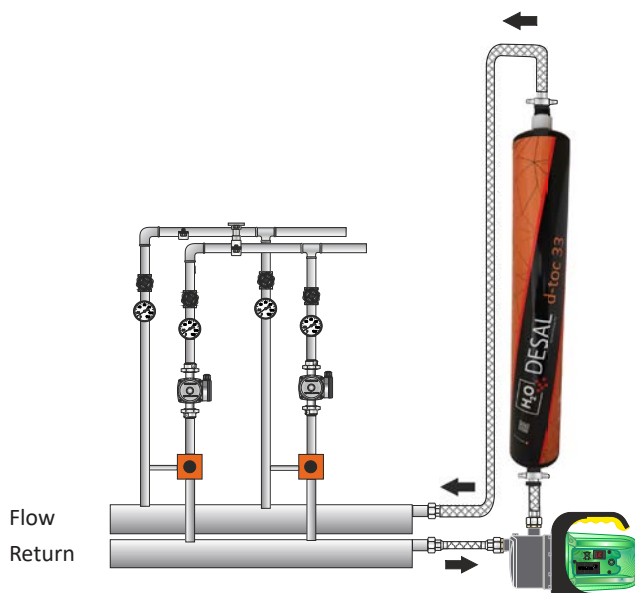
H ₂ O DESAL® d-toc 33	Dimension
Capacity	up to 1.5 m ³ system water at 100 mg/l TOC
Max. throughput	3 l/min (the lower the flow rate, the more efficient the cleaning effect)
Operating pressure for max. 24 h	Maximum 4 bar at 20 °C Maximum 2 bar at 40 °C

5. Operation

5.1. Connection and commissioning

The H₂O DESAL® d-toc 33 should only be used in the bypass flow (partial flow process) at the coldest point of the system.

The flow limiter (3 l/min) at the cartridge outlet must always be used.



The recommended maximum flow rate for the H₂O DESAL® d-toc 33 is 3 l/min. In general, the lower the flow rate, the better the result, as adsorption requires a "dwell period".

The device with the H₂O DESAL® d-toc 33 cartridge is integrated into the bypass flow of the system together with a separate pump (e.g. jet pump, centrifugal pump) and 2 reinforced hoses. The H₂O DESAL® d-toc 33 cartridge should be connected on the pressure side of the auxiliary pump. The flow direction indicated on the cartridge must always be observed. It is important that the system's circulation pumps are in operation and that all valves are open and enable thorough mixing of the system water.

The cartridge must be monitored during use and must not be permanently pressurised.

To protect the cartridge from possible contamination, a filter (MF-21 magnetic dirt filter) should be installed upstream of the differential pressure indicator inlet.

Before use, the cartridge must be pre-rinsed with clean water (drinking water or even better, demineralised water) until clear water flows out of the cartridge. This flushes out any loose powder particles from the filter material. The pre-rinse water can be safely discharged into the drain.

The spent cartridges can be disposed of as household waste.

5.2. Performing system water treatment

- After pre-rinsing, connect the H₂O DESAL® d-toc 33 cartridge with pump in the bypass flow
- Switch on the pump
- Leave the unit to run while supervised until the entire system volume has circulated at least 3 times
- Switch off the pump
- Remove the cartridge
- All components used (pump, hoses, etc.) must be rinsed thoroughly with clean water after each use to remove any TOC residues and to prevent the transfer of contaminants.

6. Maintenance

The H₂O DESAL® d-toc 33 cartridge is maintenance-free and designed for single use only.

7. Spare parts

Item no.	Designation
102 716	H ₂ O DESAL® d-toc 33, complete volume regulator

8. Consumables

Item no.	Designation
102 742	H ₂ O DESAL® d-toc 33 cartridge

9. Options

Item no.	Designation
102 310	MF-21 particle filter (magnetic dirt filter)

10. FAQ H₂O DESAL[®] d-toc 33

What should I do if the flow rate drops sharply at low differential pressure?

- Clean the prefilter

What should I do if the differential pressure is high?

- Cartridge contaminated with dirt --> Change cartridge, perform additional pre-filtration (MF-21) if necessary, before using the H₂O DESAL[®] d-toc 33

11. Disclaimer

All the information in this document is based on current knowledge and does not purport to be complete. No liability claims may be brought in relation to this information.

The process may result in varying degrees of success depending on the origin of the TOC.