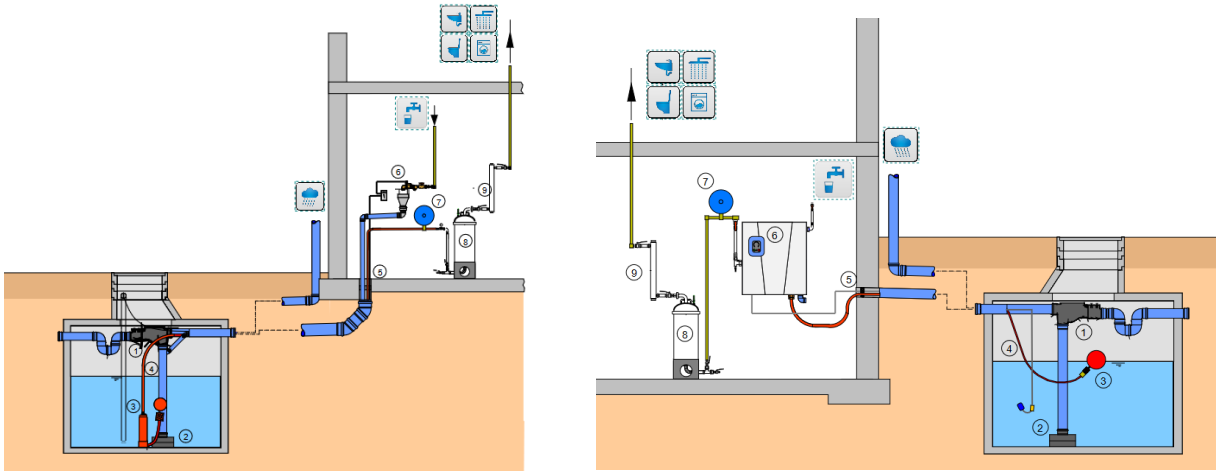

AQUALOOP DW systems

Assembly and operating instructions

AL-DW1000 Multi10
(with Multi10 submersible motor pump and drinking water feed into cistern)

AL-DW1000 RMF-40SC
(with suction pump and integrated drinking water replenishment)

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1 Introduction

The AQUALOOP AL-DW 1000 systems have been developed to treat rainwater (roof run-off water) to drinking water quality. They can even be retrofitted in detached houses and many other areas of application.

Reasons can be:

- the public water supply is insufficient or non-existent
- the quality is too poor
- the user wants to be water self-sufficient
- Water prices are too expensive

As rainwater has already been purified through the evaporation process, it is one of the best and cleanest sources of water available today. The prerequisites for the use of such a system are

- Suitable precipitation (distribution, quantity and low air pollution)
- Suitable roof surfaces (no materials containing pollutants and green roofs)
- Suitable cisterns (see www.intewa.com)

If there is not enough rainwater available, e.g. for a self-sufficient water supply, domestic grey water or waste water from small sewage treatment plants can be used as a second water source. This water can be treated with our AQUALOOP systems and reused as service water for toilets and irrigation. For existing buildings, this is only possible if a required second pipe system for the service water can be retrofitted.

For the AL-DW 1000 systems, however, the building's existing drinking water pipe system can be used. Using a category 5 system separator for the domestic drinking water connection (e.g. RM Favorit-SC), retrofitting, even in existing buildings, is possible in accordance with standards.

These system overviews describe the structure and function. The two systems differ in terms of the pump technology used and the type of drinking water make-up:

- AL-DW1000 MULTI 10
  with submersible motor pump and drinking water feed into the cistern
- AL-DW1000 RAINMASTER F-40 SC
  with suction pump and integrated drinking water feed

For installation, operation, maintenance and troubleshooting, the instructions for the components used, which are marked with 🕮 are required.
These can be found in the download area (https://www.intewa.com/de/downloads/) under instructions/data sheets:

2 Overview of the cleaning and reprocessing stages

The following cleaning and treatment stages are used in the AL-DW 1000 systems:

- Pre-filtration (0.9 mm mesh size) with self-cleaning PURAIN rainwater filter (alternatively PLURAFIT filter basket if no height offset can be realized)
- PURAIN overflow skimmer for regular removal of floating matter
- PURAIN backflow flap, also as protection for small animals
- PLURAFIT calming pot for optimum inflow of pre-filtered water into the cistern without swirling up sediment
- Sedimentation and degradation processes within the cistern
- Floating extraction with suction filtration (1.2 mm mesh size)
- Hygienization using ultrafiltration membranes (0.02 µm pore size)
- UV disinfection as a redundant safety level

Note:
In areas with particularly high levels of air pollution, additional treatment stages may be necessary or useful:

- Reverse osmosis (RO)
- Adsorption (activated carbon) to remove dissolved substances and Flavour neutralization
- Point-of-use (POU) filter (in front of the kitchen tap)

Whether one of the additional treatment stages is required must be determined after installation and verification of the water quality achieved.

3 Safety instructions

Before installing the product, you must read these installation and operating instructions carefully. The instructions contained therein must be observed. Modifications to the product are not permitted, as this will invalidate any warranty.

Dissolved, organic or inorganic substances (chemicals) in raw water are not removed by ultrafiltration. If the water is intended for human consumption, it must be ensured that these substances do not exceed the limit values of the Drinking Water Ordinance. **For drinking water applications, the treated water must therefore be analyzed before use.**

If the product is not used regularly, it must be cleaned or disinfected before use (see chapter Storage). Contamination on the treated water side must also be avoided.

The operator is responsible for regular quality and safety checks. Ensure that you meet all local requirements for water reuse and the Drinking Water Ordinance. If the filtration results deteriorate (e.g. increase in turbidity), the system must be stopped, cleaned and checked immediately.

The operator is responsible for compliance with the safety and installation regulations.

The following points must be observed for installation and operation:

- Check the product for visible defects before installation. If there are any defects, the product must not be installed.
- All products must be checked regularly to ensure that they are in good condition.

Note
The operator is responsible for maintaining and checking the water quality and maintaining the system and is only intended for his own consumption.

4 Guidelines, standards and legal bases

Notes:
Whenever the AL-DW1000 systems are used, the local, statutory and legal requirements for connection, installation and operation must be observed. These can vary greatly around the world. Due to the lack of legislation and standards, the operator of the system is particularly responsible for operation, maintenance and quality.

When installing a rainwater harvesting system in Germany, the following regulations, among others, must be observed:

Table: German directives and standards

Regulatory area	**Rules and regulations**	**Contents**
Water supply	DN1989	Standard for rainwater systems
	DIN 1989 Part 1	Planning, implementation, operation and maintenance
	DIN 1989 Part 2	Rainwater filter
	DIN 1989 Part 3	Rainwater storage tank
	DIN 1989 Part 4	Components for control and monitoring
	DIN EN1717	Protection of drinking water from contamination ...
	DIN 4034 Part 1	Concrete manholes
	DIN 1986-100	Residual standard: Drainage systems for buildings and properties
	DIN EN 12056	Drainage inside buildings ...
	DIN EN 752	Drainage outside buildings ...
	DVGW regulations	Drinking water supply from small systems and non-stationary systems - Part 1: Small systems - Guidelines for drinking water requirements, design, construction, operation and maintenance of systems https://www.beuth.de/de/norm/din-2001-1/297361550

Table: Notification and approval requirements:

Regulatory area	Rules and regulations	Contents
Building permit	State building regulations	As a rule, cisterns of the usual size for detached and semi-detached houses are not considered to be subject to approval. A description of the proportion of the rainwater system in the property drainage as part of the drainage application is sufficient. The use of existing tanks as rainwater storage requires a permit
Water supply	AVBWasserV §3	Application for partial exemption from the obligation to connect and use + obligation to notify the municipal water supplier before installing the system
	AVBWasserV §14	The municipal water supplier is entitled to inspect customer systems after they have been commissioned
	Drinking water ordinance 2023	Obligation to notify the public health department when commissioning, decommissioning or making structural changes Obligation to label service water pipes, strict separation of drinking and service water networks, testing obligations with regard to microbiological parameters, chemical parameters, indicator parameters. Download: https://www.bundesgesundheitsministerium.de/service/begriffe-von-a-z/t/trinkwasser.html#c28491
	Local drinking water regulations	The municipal water supplier is entitled to inspect customer systems after they have been commissioned

The statements on notification and approval requirements are to be regarded as standard values. Details can be obtained from the relevant local authorities. With regard to any fees, the municipal regulations, usually from the local water supply and disposal company, must be observed.

5 System illustration: AL-DW1000 Multi 10

The AL-GW1000 Multi 10 package includes all components, except tank, pipes and piping, for creating the treatment system.

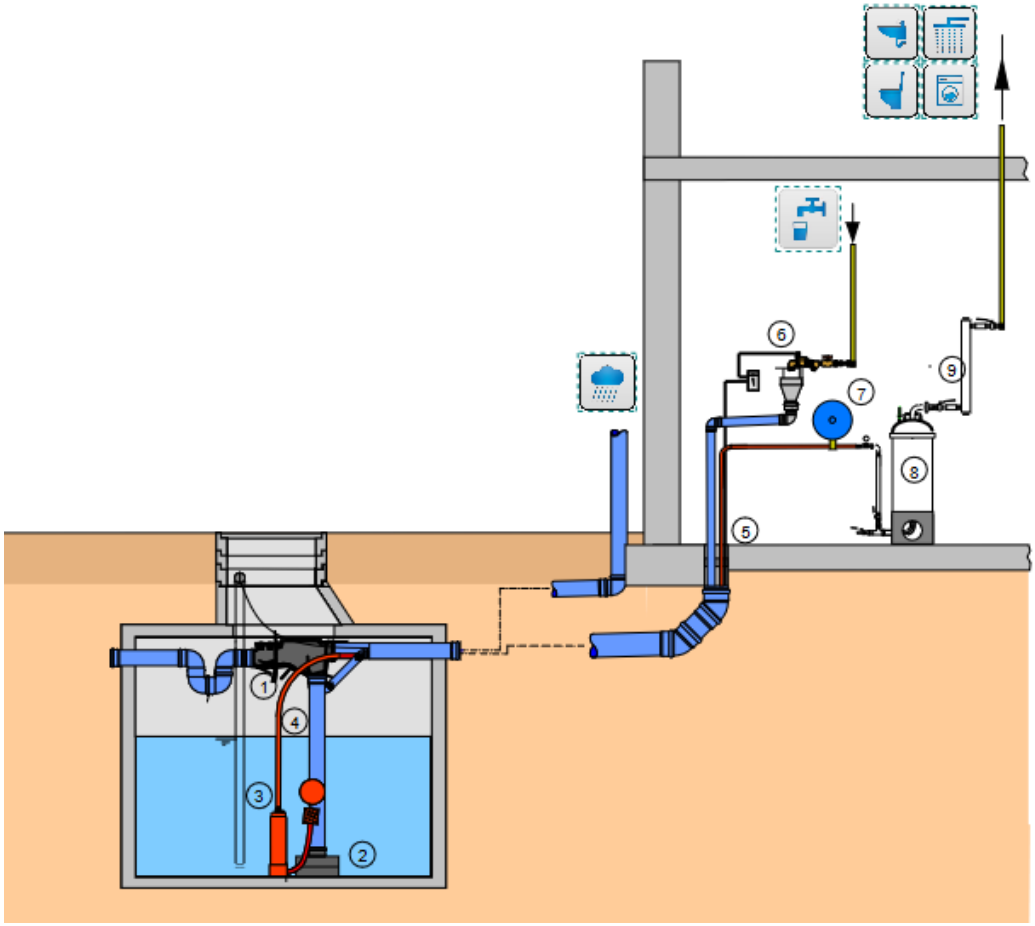
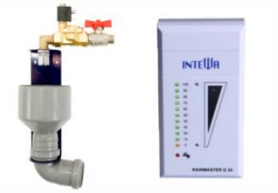


Fig.1: AL-DW1000 Multi 10 system with submersible motor pump and make-up unit

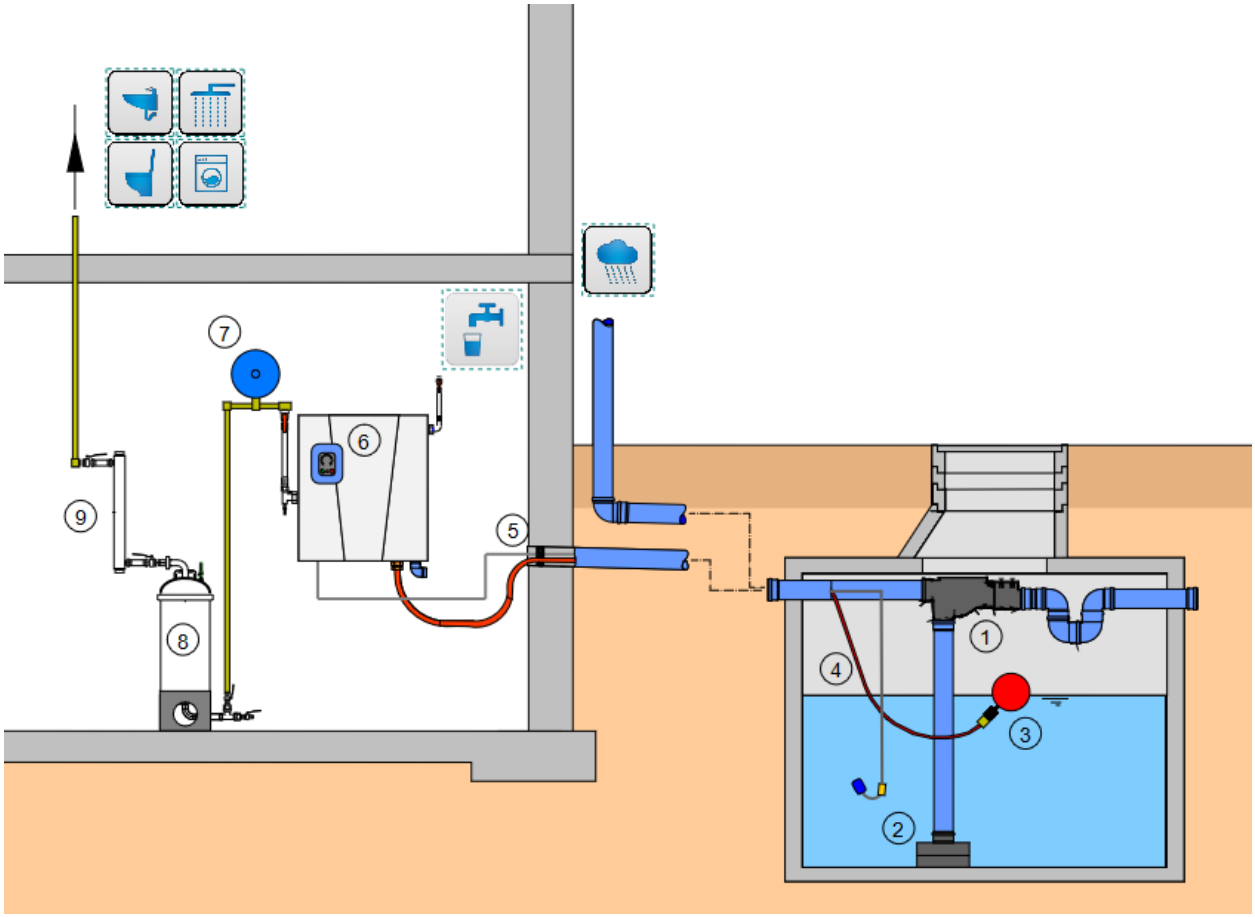
The so-called "roof run-off water" is first pre-filtered via a PURAIN ① pre-filter before it enters the cistern. The skimmer overflow of the PURAIN filter removes surface contamination. The integrated backflow flap prevents small animals and dirt from entering the cistern. The calming pot ② prevents soil sediment from being stirred up.
The MULTI-IS 10 ③ multi-stage, vertical submersible motor pump draws the rainwater from the cistern via a floating suction filter and pushes it through the AQUALOOP-Direct ultrafiltration unit ⑧. Due to the small membrane pore size of 0.02 µm, particles, bacteria and even viruses are retained. Pressure surges are buffered via an expansion vessel ⑦. After this membrane filtration, the water passes through an additional UV unit ⑨ for redundant disinfection before it reaches the consumers. When a consumer such as toilets, washing machines, showers, bathtubs, washbasins and the garden system is opened, the pump unit automatically detects a drop in pressure and starts. If there is not enough rainwater available, the INTEWA make-up unit ⑥ with a so-called "free outlet" in accordance with DIN EN1717 is used to add drinking water to the cistern as required via a pipe.

5.1 Scope of delivery

① PURAIN 100 incl. backflow flap 	② Inlet calming DN 100 
③ MULTI-IS 10 submersible motor pump with floating suction 	④ Horizon pressure hose 10 m 
⑤ Wall duct DN 150 	⑥ Make-up unit with RMD 24 
⑦ Expansion vessel 24L 	⑧AQUALOOP-Direct ultrafiltration unit 
⑨ UV system 	

6 System illustration: AL-DW1000 RMF-40 SC

The AL-GW1000 RMF-40 SC package includes all components, except tank, pipes and piping, for creating the treatment system.



AL-DW1000 RAINMASTER F-40 SC system with RMF-SC 40 pump control unit

The so-called "roof run-off water" is first pre-filtered via a PURAIN ① pre-filter before it enters the cistern. The skimmer overflow of the PURAIN filter removes surface contamination. The integrated backflow flap prevents small animals and dirt from entering the cistern. The calming pot ② prevents soil sediment from being stirred up.

The RAINMASTER Favorit 40-SC ⑥ pumping system draws rainwater from the cistern via a suction pipe ④ with floating suction filter ③ and presses it through the AQUALOOP-Direct ultrafiltration unit ⑧. Due to the small membrane pore size of 0.02 µm, particles, bacteria and even viruses are retained. Pressure surges are buffered via an expansion vessel ⑦. After this membrane filtration, the water passes through an additional UV unit ⑨ for redundant disinfection before it reaches the consumers. When a consumer such as toilets, washing machines, showers, bathtubs, washbasins and the garden system is opened, the pump unit automatically detects a drop in pressure and starts. If there is not enough rainwater available, the RAINMASTER Favorit 40-SC automatically supplies the consumers with drinking water via an integrated, DVGW-certified make-up water supply.

6.1 Scope of delivery

① PURAIN 100 incl. backflow flap 	② Inlet calming DN 100 
③ Floating intake 	④ Horizon pressure hose 10 m 
⑤ Wall duct DN 100 	⑥ RAINMASTER Favorit 40-SC with speed control 
⑦ Expansion vessel 5l 	⑧AQUALOOP-Direct ultrafiltration unit 
⑨UV system 	

7 Commissioning

All components must be commissioned in accordance with the commissioning instructions for the respective component (see).

8 Maintenance

8.1 Water quality and monitoring

- A raw water analysis of the roof run-off water must be carried out before the system is installed.
- The use of the filtered water for drinking water purposes and the required quality monitoring is the responsibility of the user/operator. A regular water analysis must be carried out in accordance with TVO 2023.
- Answers regarding obligations and water analysis etc. can be found in the current Drinking Water Ordinance (as of 24.06.2023). This can be downloaded from the website of the Federal Ministry of Health: https://www.bundesgesundheitsministerium.de/service/begriffe-von-a-z/t/trinkwasser.html#c28491

8.2Maintenance overview of the components

The following table provides an overview of the regular maintenance and replacement intervals. There is also a maintenance list in the appendix.

Water quality monitoring for turbidity, odor and color must be carried out daily!

Further information on maintenance can be found in the corresponding component manuals, which are marked with 🕮 These can be found on the download page at (https://www.intewa.com/en/downloads/).

Table 1 Overview of the maintenance and replacement intervals s

	Product	Control interval [months]	Cleaning interval [months]	Replacement interval [months]
	PURAIN with backflush nozzle 🕮	3	6	-
	Submersible motor pump set with MULTI-IS 🕮	6	-	-
	RAINMASTER SC 🕮	6	-	-
	Expansion vessel	6	-	-
	Suction set	6	-	-
	AQUALOOP-direct Rainwater (BOD < 5 mg/l) 🕮	3	< 12 l/min at 500 l/day approx. 48 months at 1000 l/day approx. 24 months	UF membranes after 10 years
	UV system 🕮	6	12	UV lamp after 9000 h

9 Warranty

INTEWA GmbH provides a 24-month warranty for the components from the date of purchase. Please keep the proof of purchase as proof of the warranty period.

Within the warranty period, INTEWA GmbH shall, at its discretion, provide warranty by repair or replacement.

The warranty does not cover damage caused by improper use, wear and tear or manipulation by third parties. The warranty does not cover defects that only insignificantly impair the value or usability of the device.

10 Contact us

For customers in Germany:
Please contact INTEWA GmbH directly with any questions, spare parts orders and for servicing, quoting the appliance number and the purchase invoice.

INTEWA GmbH
Auf der Hüls 182
52068 Aachen
Germany
Phone: +49 241 96605 0
Fax: +49 241-96605 10
Email: info@intewa.de
Internet: www.intewa.de

For customers outside Germany:
If you have any questions, need to order spare parts or require servicing, please contact your dealer or the general importer responsible for servicing, quoting the appliance number and the purchase invoice.

Appendix: Checklist for maintenance and replacement intervals

Checklist for annual maintenance:

Commissioning date: __/__/____ Year of operation: 20_ _

Interval	Component	Testing/cleaning	Date	Signature
3 months	PURAIN pre-filter	checked ☐ OK ☐ n. OK cleaned ☐ yes ☐ no		
	AL-Direct	checked ☐ OK ☐ n. OK l/min cleaned* ☐ Yes ☐ No after cleaning: l/min		
6 months	PURAIN pre-filter	checked ☐ OK ☐ n. OK cleaned ☐ yes ☐ no		
	AL-Direct	checked ☐ OK ☐ n. OK l/min cleaned* ☐ Yes ☐ No after cleaning: l/min		
	Submersible motor pump	checked ☐ OK ☐ n. OK		
	Rainmaster Favorit SC	checked ☐ OK ☐ n. OK		
	Floating suction	checked ☐ OK ☐ n. OK cleaned ☐ yes ☐ no		
	Expansion vessel	checked ☐ OK ☐ n. OK Air prepressure bar		
	Water analysis: Sample analysis carried out in accordance with TWV?	takes place ☐yes ☐ no		
	UV system	checked ☐ OK ☐ n. OK		
9 months	PURAIN pre-filter	checked ☐ OK ☐ n. OK cleaned ☐ yes ☐ no		
	AL-Direct	checked ☐ OK ☐ n. OK l/min cleaned* ☐ Yes ☐ No after cleaning: l/min		

12 months	PURAIN pre-filter	checked ☐ OK ☐ n. OK cleaned ☐ yes ☐ no		
	AL-Direct	checked ☐ OK ☐ n. OK l/min cleaned* ☐ Yes ☐ No after cleaning: l/min		
	Rainmaster Favorit SC	checked ☐ OK ☐ n. OK		
	Floating suction	checked ☐ OK ☐ n. OK cleaned ☐ yes ☐ no		
	Expansion tank	checked ☐ OK ☐ n. OK Air prepressure bar		
	Water analysis: Sample analysis carried out in accordance with TWV?	takes place ☐yes ☐ no		
	UV system	checked ☐ OK ☐ n. OK		

**It is only recommended to clean the membranes if the permeate volume (l/min) falls below 12 l/min.*

Checklist for components to be replaced periodically:

Commissioning date: __/__/____ Year of operation: 20_ _

Interval	**Component**	**Testing/cleaning**	**Date**	**Signature**
12 months	UV system	UV lamp exchanged ☐ yes ☐ no		
10 years	AL-Direct	UF membranes exchanged ☐ yes ☐ no		