



Version

05

Document Title

Water Purification System 2.0

Release Date

2020-02-14



Water Purification System 2.0

For Enapter Systems

Installation Manual

Water Purification System 2.0 Manual



Version	Document Title	Release Date
05	Water Purification System 2.0	2020-02-14

Rev05

February 2020

Enapter Srl

Registered office: Via Lavoria 56/G

56040 Crespina (PI) Italy

VAT no. 13404981006

All rights reserved. No parts of this Manual may be reproduced, stored in a data retrieval system or transmitted by any means without the prior written permission of the issuer.

The following exception apply: photocopying pages from the manual for instruction for or by lecturers is allowed.

Subject to change without prior notice.



Version	Document Title	Release Date
05	Water Purification System 2.0	2020-02-14

CONTENT

CONTENT	5
WELCOME	6
Scope of the document	6
Approved use.....	6
PREFACE.....	7
Warnings, Hazards, Warranty and Technical data.....	7
WATER PURIFICATION SYSTEM 2.0 OVERVIEW	8
WORKING PRINCIPLE	8
DATASHEETS	9
Bonaqua 500.....	9
Miniblock 70	10
WATER PURIFICATION SYSTEM 2.0 INSTALLATION	11
Packaging	11
Water connection	12
Electrical connection	14
Power ON.....	14
Power OFF	14
INTEGRATION WITH WATER TANK MODULE 2.0	15
LEDS MEANING	15
MAINTENANCE.....	15



Enapter

Version

05

Document Title

Water Purification System 2.0

Release Date

2020-02-14

WELCOME

Thank you for choosing the Water Purification System 2.0. Please read through this Installation Manual carefully before performing any operation.

If you have any further question on the installation of the device, please contact the Enapter Srl Help Centre. Quote the system serial number when contacting us; you will find the serial number on the type plate placed on the rear side of the modules.

Enapter Srl

Headquarters: Via di Lavoria 56/G

56040 Crespina (PI) – Italy

T.: +39 050 644 281

Website: www.enapter.com

Scope of the document

This Installation Manual provides the installer with the information needed to carry out the installation of the Water Purification System 2.0. The information contained in this manual will help you to install the Water Purification System 2.0 safely and as intended.

Keep this Installation Manual in a safe place and readily available. Always follow its instructions. It is the operator's responsibility to ensure that an installed Water Purification System 2.0 is always in a proper condition. Please observe any additional local requirements applicable to the installation of the Water Purification System 2.0.

Approved use

The Water Purification System 2.0 has been designed to produce low-conductivity water that can be used for the Enapter Electrolyzers.

The unit must only be operated for this purpose, according to the specifications and instructions provided in this manual and in those provided by BWT, included.

Observance of this Installation Manual is part of "normal use".



Enapter

Version	Document Title	Release Date
05	Water Purification System 2.0	2020-02-14



Danger of injury due to improper use!

Improper use of the product can result in serious injuries.

- Ensure that the manual is always accessible.
- Make sure you have read and understood this manual in its entirety.
- Comply with all safety instructions and warnings.
- Store the manual and other documentation in a safe place and pass them on to future owners of the product.
- Comply with all local regulations.

PREFACE

Warnings, Hazards, Warranty and Technical data

Do not use the Water Purification System with non-drinking water and/or sea water or with water with a very high salt content.

Do not use the Water Purification System if clearly damaged.

For other information Refer to BWT manuals included in the packaging.

WATER PURIFICATION SYSTEM 2.0 OVERVIEW

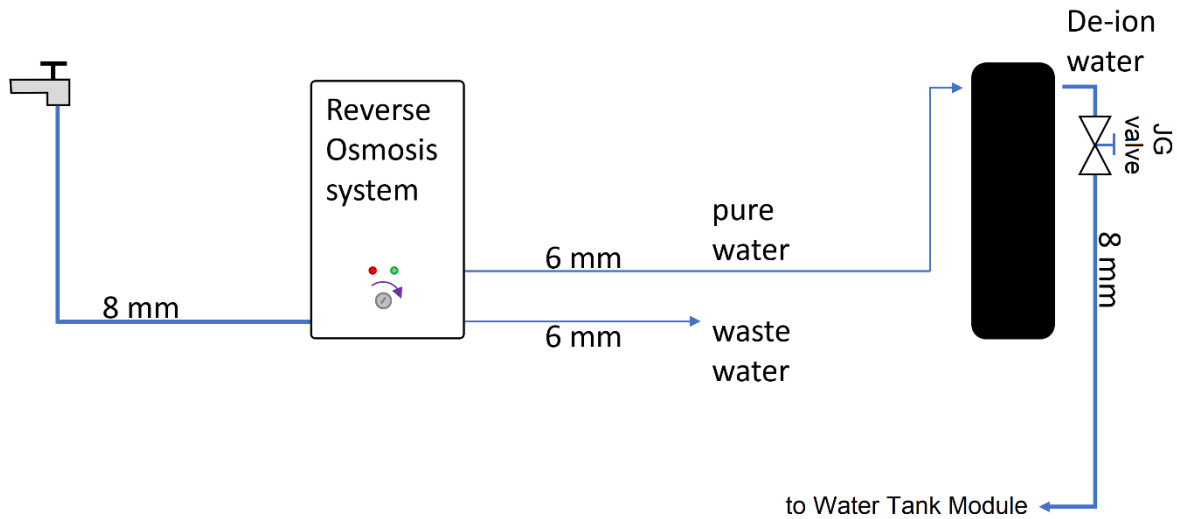


Figure 1: Set up Overview

WORKING PRINCIPLE

When there is necessity of water, the produced decrease in pressure at the outlet of the system activates the pump (located within the Reverse Osmosis system). De-ionized water starts to flow out of the machine.

When water is not anymore required (a downstream valve is closed), the produced increase of pressure stops the pump.



DATASHEETS

Bonaqua 500

Model BWT-BONAQUA	Unit	500
Production with water at 20°C and salinity 500 mg/l (TDS)*	l/min	1,3*
Operating pressure water system min. /max.	bar	2,5-5,0
Number of BEWAPUR HQ S filters	n.	1
Number of osmotic module 500 GPD	n.	1
Slaughter of salt content	%	> 95
Treated water storage tank	-	-
Anti-flooding device	-	water inlet solenoid valve
Power supply	V/Hz	230/50 - single-phase
Operating voltage	V DC	24
Installed power	kW	0.08
Water supply fitting	mm	Quick coupling Ø 6
Permeate fitting	mm	Quick coupling Ø 8
Drain fitting	mm	Quick coupling Ø 6
Connection to drinking water mains	pollici	1/2"
Drain collar connection fitting	pollici	1/4"
Water temperature min. /max.	°C	10-25
Environment operating temperature min. /max.	°C	10-35
Empty weight approx.	kg	18
Maximum replacement interval of BEWAPUR HQ S filter	-	5000 litres of water dispensed or one year of operation
Osmotic module replacement interval	-	**

(*) Maximum salinity water to be treated 2000 mg/l TDS.

The reduction of temperature and the increase in the salinity of the water to be treated entail a reduction in the production of water treated.

The remaining chemical-physical and microbiological parameters of the water in feed must be within the D. L. 31/2001, concerning the quality of water intended for human consumption.

(**) The interval of replacement of the osmotic module depends on the salinity and on the chemical composition of the water to be treated.



Miniblock 70

Miniblock 70

Model		70
Max flow rate	l/h	280
Min flow rate	l/h	35
Max pressure	bar	6
Max - Min water temperature	°C	10 - 30
Max - Min ambient temperature	°C	5 - 40
Cyclic capacity	ppm of CaCO ₃ x m ³	150
Resins	liters	7

Conductivity sensor

Power supply	V - Hz	230 - 50/60
Max - Min water temperature	°C	10 - 30
Alarm threshold	uS	adjustable

WATER PURIFICATION SYSTEM 2.0 INSTALLATION

Packaging

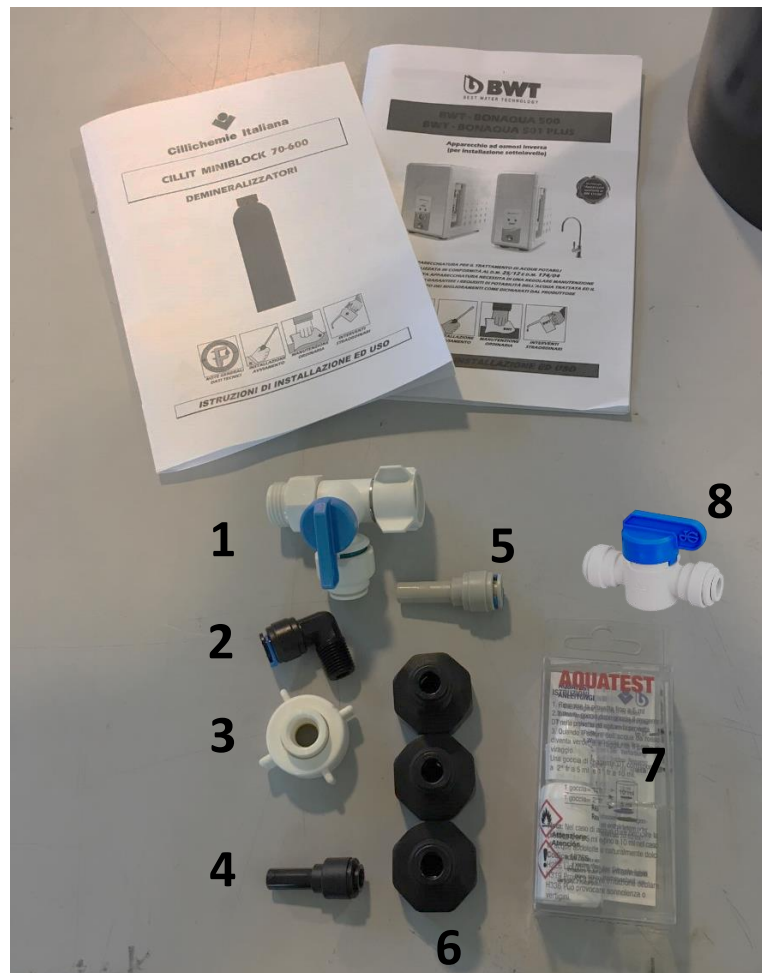


Figure 2: Components present inside the packaging


You'll find also:

- a tube collar connector for wastewater (for 6 mm pipe)
- a 1/2" cap


Water connection

Required tools

Water connections

	<p>Plastic pipe cutter</p>
---	----------------------------

Piping and tubing

<p>Water connections:</p>	
	<p>8 mm and 6 mm Ø LLDPE pipe (6 bar pressure resistant)</p>

Connections working principle

1. Cut the tube square and remove sharp edges. Ensure the outside diameter is free of score marks.
2. Push the tube into the fitting, to the tube stop.
3. Pull on the tube to check it is secure. Test the system before use.



OPERATORS MUST PERFORM THE FOLLOWING ACTIONS:

- Be sure that the screw on the frontal panel of the Bonaqua 500, below the red and the green leds, is fully tight (clockwise).
- According to your needs, use piece n.6 or pieces n.1 and n.5 together (with or without cap), connect an 8 mm Ø LLDPE pipe to the tap. The other end of the pipe must be inserted in the “Ingresso Acqua” port, using connectors n.2 and n.3 together. Cut the pipe according to your site. Cutting it, please consider that you will need another 8 mm Ø LLDPE pipe from the Resins bottle to the Water Tank Module 2.0 (see Figure 1).
- Cut the 6 mm Ø LLDPE pipe in two pipes and connect them to the remaining ports on the rear of the Reverse Osmosis system Bonaqua 500:

- The “Uscita acqua di scarico” port is the port where wastewater comes from: connect it to your wastewater system, eventually using the tube collar connector provided.
- The “Uscita acqua osmotizzata” port is the port where pure water comes from: directly connect it to the resins bottle inlet. As shown in Figure 3.

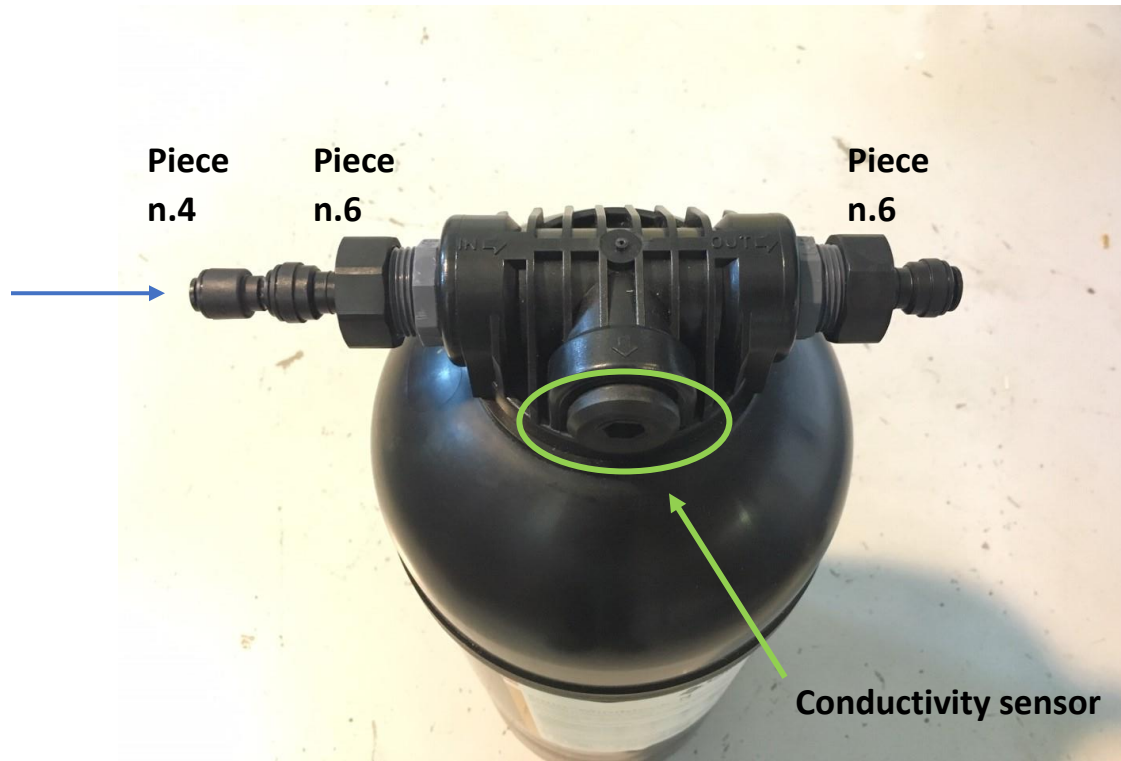


Figure 3: Resins bottle set up

- Connect the outlet of the resins bottle to the inlet of the Enapter’s Water Tank Module 2.0 port W1.5, using an 8 mm Ø LLDPE pipe. Place right after the Resins bottle the provided 8mm John Guest valve (see Figure 1).
- Optionally, you can also connect the conductivity sensor to the resins tank. Use Teflon. Set the threshold for the required water quality to 5 uS/cm.



Notice: the conductivity sensor led color can become red if the machine is not working for some time: it is normal. If the led is red also while providing de-ionized water, it means the resins are exhausted and they must be changed.

Electrical connection

- Connect the power supply

Power ON

When the water connections and the electrical connection are performed it is possible to turn on the system.

Switching the power supply from “O” to “I” the system will directly start producing pure water.



Notice: In order to increase the Miniblock resins lifetime, if the machine has not been working for more than 2 weeks, purge the initial (first 10 minutes) pure water coming from Bonaqua 500. To do so, please disconnect the 6 mm Ø LLDPE pipe from the inlet of the resins (the blue arrow in Figure 3), turn on the Bonaqua 500 system, wait 10 minutes, turn off the system and connect everything as mentioned in “Water connection” paragraph. Now it is ready to be powered ON.

Power OFF

If you want to disconnect components:

- Shut off the tap water supply.
- Turn off the Bonaqua 500 system with the dedicated switch.
- Close the JG valve between the resins bottle and the Water Tank Module 2.0.
- Disconnect the pipe on the Water Tank Module 2.0 side.



- Pay attention, water stuck inside the pipe could flow out.
- Open the valve directing it into a little container: this step is necessary to release the pressure that is accumulated inside the resins bottle and inside the reverse osmosis system. A little water will come out at a considerable speed.
- Now it is possible to disconnect each pipe from the Reverse Osmosis system, from the resins bottle and from the Water Tank Module: be careful, the water stuck inside the pipes will flow out.

INTEGRATION WITH WATER TANK MODULE 2.0

The De-ionised water coming out from the Resins can be fed into Enapter’s Water Tank Module 2.0, in order to store it.

The connection is very easy: as stated in the “Water connection paragraph”, please connect the 8 mm Ø LLDPE pipe from the Resins bottle to the Water Tank Module 2.0, placing right after the resins cylinder the 8 mm John Guest shut off valve.

LEDs MEANING

Red led “blinking”: No tap water is fed to the Bonaqua 500 or, if it is, it is at the wrong pressure.

Green led “on”: Proper functioning of the system.

MAINTENANCE



Be sure to fully understand this section. If you don’t respect these instructions, low-quality water will be fed to Enapter’s Electrolyzers, potentially damaging them.

Depending on the quality of the tap water, the Bonaqua 500 system and the Miniblock 70 N resins bottle have a different lifetime.

For the Bonaqua 500 this variation is not that important, and it is possible to state that:

- the BEWAPUR SMALL cartridge must be replaced each 6 months
- the Reverse Osmosis cartridge must be replaced each 2 years

For the Resins the lifetime follows this table:

Tap water conductivity [microSiemens/cm]	Out from Bonaqua [microSiemens/cm]	Lifetime [liters]*	Lifetime [NI of H2 produced]	Lifetime (1 EL) [production hours]
BAD (>1500, max 2500)	120 (or 6 °f)	1150	1250000	2500
MEDIUM (between 500 and 1500)	70 (or 3.5 °f)	1600	1750000	3500
GOOD (<500)	25 (or 1.5 °f)	2500	2825000	5650

* being conservative: 20%



Enapter

Version

05

Document Title

Water Purification System 2.0

Release Date

2020-02-14

You must check the conductivity of the water produced by the Bonaqua 500 using the Aquatest kit included in the packaging:

- Disconnect the Resins bottle and measure the conductivity of the water coming out from the Reverse Osmosis system Bonaqua 500 port “Uscita acqua osmotizzata” after at least 5 minutes of operation.



Do not measure the conductivity of the first water produced by the Bonaqua 500 system: it will be a very high value.

- Understand in which condition you are: BAD, MEDIUM or GOOD tap water conductivity
- Check out the lifetime of your resins.

You can check the values of NI of H2 produced on the dashboard of the Enapter’s cloud. **When you reach the lifetime value you must substitute the Resins bottle.**

You can also check the conductivity value with the Conductivity sensor included.

Example:

If you measure – with the Aquatest kit – the quality of the water coming out from Bonaqua 500 system port “Uscita acqua osmotizzata” and you get a value of 4°f, it means you have a MEDIUM quality tap water. This implies a lifetime of the resins equal to 3500 operating hours or 1.75 million Normal liters of hydrogen produced. When you reach this value (you can check it on the dashboard of the Enapter’s cloud) it’s time to change the resins bottle.



Enapter

Version	Document Title	Release Date
05	Water Purification System 2.0	2020-02-14

You are ready to use your Water Purification Module 2.0.

Enjoy it!