

MUCH
MORE
WATER

BlueBox 60 RO SOLAR



Operating manual



PURE WATER – ANYTIME – ANYWHERE

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BlueBox 60 RO SOLAR
Post-chlorination and UV-disinfection features

PURE WATER – ANYTIME – ANYWHERE

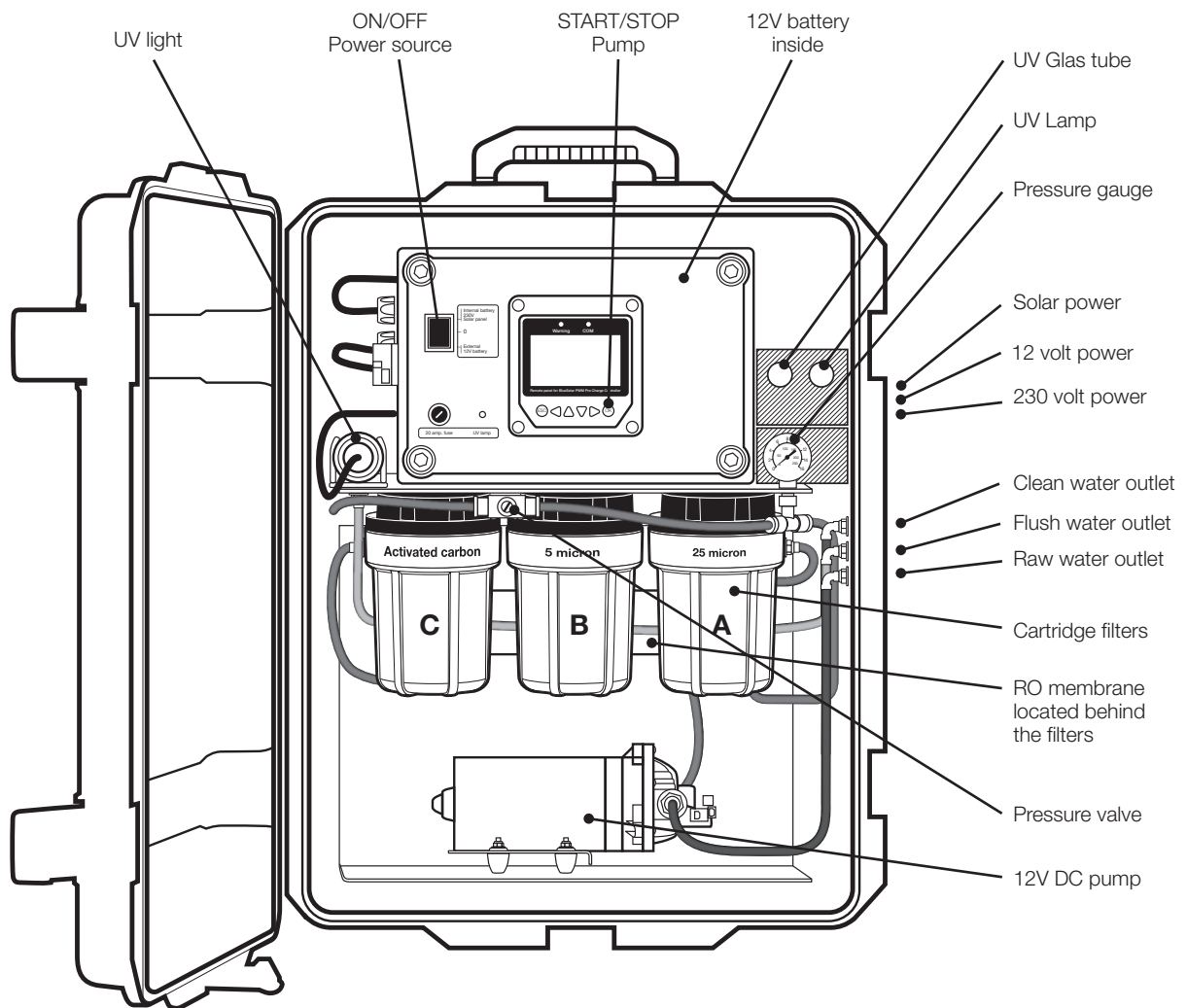
INTRODUCTION

Congratulations on your BlueBox Suitcase solution, which provides drinking water quality anywhere. The BlueBox Suitcase models from Much More Water A/S are ultra-mobile solution for purifying non-potable fresh water into pure drinking water. The models are designed for small groups operating in remote areas.

The BlueBox Suitcase models are delivered ready for operation; All you need to do is to find a surface water source (not sea water). In the case of non solar powered versions, you will also need to have an energy source available; e.g. 12V or 230V.

This guide provides important information on setup, operation, and shut-down procedures. Much More Water recommends reading this guide carefully before taking the system into operation.

INSTALLATION GUIDE



Exterior		Interior
L x W x D: 62.5 x 50 x 36.6 cm 24.60 x 19.70 x 14.40 inches		L x W x D: 55.9 x 43.2 x 32.2 cm 22.00 x 17.00 x 12.70 inches
		Bottom depth: 27.2 cm (10.70")
Weight: 27 kg (59.8 lbs)		Lid depth: 5.1 cm (2")
Weight w/Solar PV124W: 31.5 kg (69.7 lbs)		
Vol: 0.114 m ³ (4.03ft ³)		
Wheels: YES		
Retractable handle: YES		

Main components

- 1 pcs sturdy travel suitcase
- 1 pcs 12V battery
- 1 pcs control unit
- 3 pcs filter housing
- 1-2 pcs RO membrane (depending on model)
- Power adapter and cables
- UV disinfection light (if purchased with solution)
- Solar panels (if purchased with solution)

The BlueBox Suitcase models are delivered "plug'n'play" ready for operation. However, we ask that the following installation guide is thoroughly followed to avoid risk of damage to system and health.

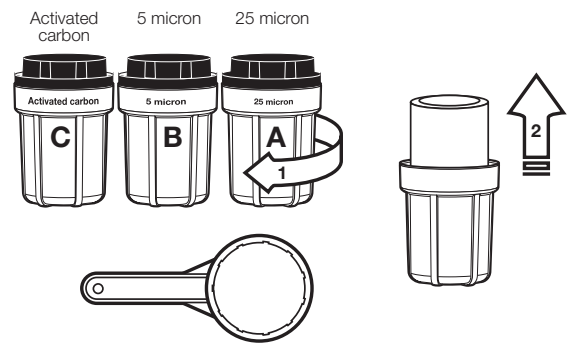
START-UP PROCEDURE

Make sure that the correct filter have been placed inside each of the filter housings.

A: 25 micron, 5" cartridge filters

B: 5 micron, 5" cartridge filters

C: Activated Carbon, 5" cartridge filters



IMPORTANT

The filters must NOT be wrought or squeezed

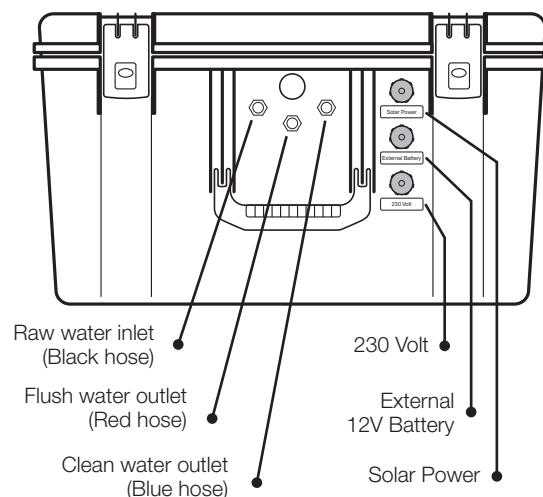
Particle filters are replaced when they are clogged by particles. Reduced water production can help you estimate whether the filters are becoming too worn out. The Activated Carbon filter is replaced when clogged or after maximum 6 months of operating.

Before screwing on the filter housings, make sure that the rubber o-ring inside the housing is placed correctly, and that it is wet. The latter will prevent potential leaking. Be careful not to tighten the filter housings too much, since they could break.

Connect the BlueBox Suitcase model to the chosen water source by placing the black hose with particle filter at the end into the source. You might consider using a recipient instead of placing the unit by a lake or river.

The red flush water hose can be led back to the raw water source for re-use. This water is NOT potable (drinking water), but neither does it pose an environmental risk, since there is nothing added to this water from the system.

Connect the BlueBox Suitcase model to a 12V or 230V/50Hz power connection. If solar power panels are available, connect them to the solar power in-take plug.



Make sure that the pressure valve is completely open (open position is all the way **counter-clockwise**). The pressure valve is located just below the control unit, fitted onto a red hose.

The BlueBox Suitcase model is now installed correctly and is ready to be started.

OPERATION

START

Switch the start button on the control unit towards the chosen energy source as shown on the control unit; Upwards for 230V or internal battery use and downwards for external 12V battery use. Water will now flow in through the BlueBox Suitcase. Let the unit run for 5 minutes until air bubbles are removed from within the system.

- Carefully turn the pressure valve **clockwise** to apply operating pressure 8 bar
- Keep an eye on the pressure gauge
- The system should be operating at 7-8 bar for Reverse Osmosis units
- The pressure can be adjusted by turning the pressure valve
- Place the BLUE drinking water hose in a drinking water recipient
- The system is now fully operational

Discard the first batch of drinking water as a safety precaution. Let operate for 5 minutes before starting to drink/store the drinking water. This is done the first time, when the water purification membrane is new. It is also advisable to discard the first produced litres of water when the system has been shut down for longer periods of time (more than 2 days), since the water in the tubes can become unhealthy.

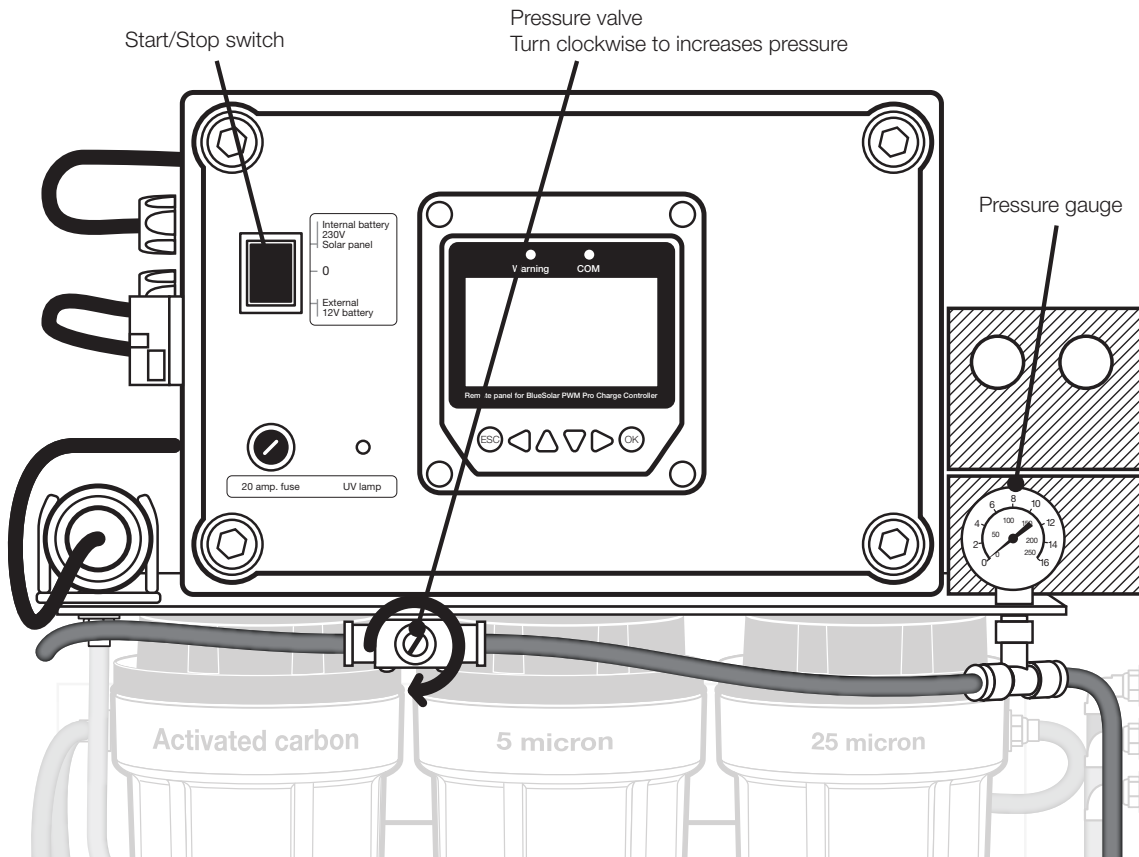
The LED display on the control unit will monitor the internal battery power levels.

STOP

- Stop the BlueBox Suitcase model by opening the pressure valve (turn it counter-clockwise)
- Switch the button on the control unit to Stop [0]
- Un-screw the cartridge filter housings and empty them for water

IMPORTANT

The BlueBox 60 RO must be started every 3 months in order to maintain flexibility in rubber parts and to avoid build up of contaminants.



**RUN FOR 5 MINUTES BEFORE
DRINK/STORE DRINKING WATER**

MAINTENANCE

CHANGE OF CARTRIDGE FILTERS

Unscrew the filter housings with the plastic key.
DO NOT USE ANY OTHER TOOL.

A: 25 micron, 5" cartridge filters

B: 5 micron, 5" cartridge filters

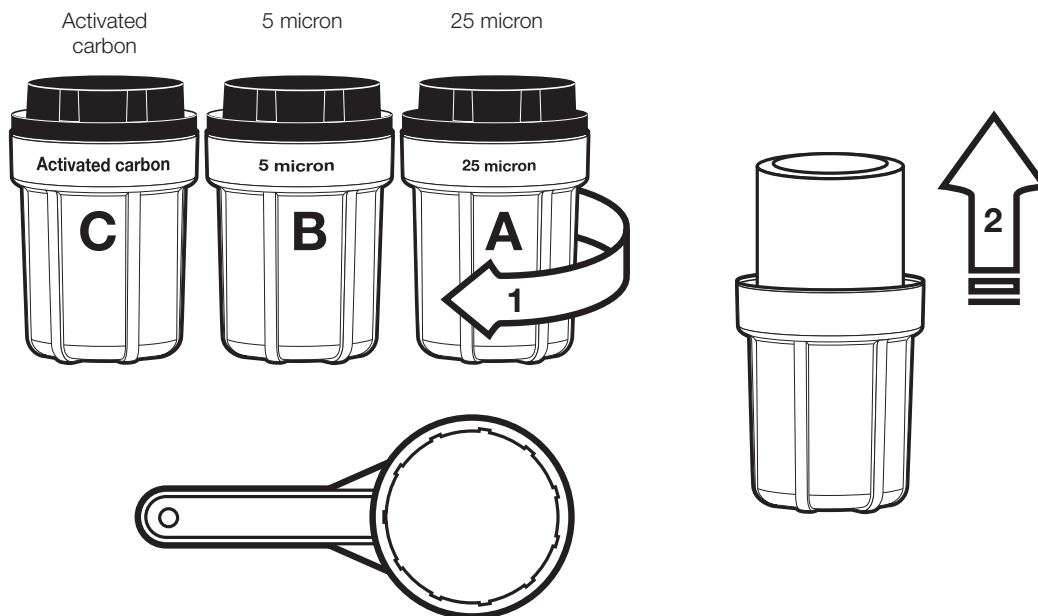
C: Activated Carbon, 5" cartridge filters

CHANGE OF RO MEMBRANE

When the RO membrane no longer provides sufficient water capacity due to clogging it must be discarded and replaced with a new membrane.

The RO membrane is located behind the cartridge filter housings. Due to the limited space available, the three cartridge filter housings (A, B and C) should be removed before attempting to remove the RO membrane.

Unplug the RO membrane by the 3 quick couplings fitted to the membrane and pull it out. You might need to remove a small locking clip, which holds the houses in place. Make sure to take note of which hose goes where. Replace it with a new membrane and connect the quick couplings as they were originally.



CLEANING

CLEANING OF THE THREE FILTERS CARTRIDGES:

- 1 Screw off the three filters housings using the supplied tool
- 2 Remove the filter from the housing
- 3 rinse both with clean water to remove particles



Rinse the filters in water to remove particles or discard and replace them when they are worn out.

Particle filters are replaced when they are clogged by particles. Reduced water production can help you estimate whether the filters are becoming too worn out.

The Activated Carbon filter is replaced when clogged or after maximum 6 months of operating.

Before screwing on the filter housings, make sure that the rubber o-ring inside the housing is placed correctly, and that it is wet. The latter will prevent potential leaking. Be careful not to tighten the filter housings too much, since they could break.

AFTER MORE THAN 14 DAYS OF STANDSTILL

and before storing, the Bluebox 60 RO must undergo a complete cleaning process.

Please ensure that you have approximately 50 litres of clean water available before you start the cleaning process.

Cleaning procedure with Sodium Hydroxide and Nitric Acid

(For example RoClean P303 and RoClean P111)

- 1 Un-screw the three filter housings and pull out the filter cartridges. Screw the filter housings back onto the mounts without the filters in.
- 2 **Acid Cleaning (RoClean P303)**
Dilute 1kg of RoClean P303 in 50 litres of water.
Insert all three hoses into the container with the cleaning fluid (Flush water outlet, Raw water inlet and Clean water).
Start the Bluebox and let the system rinse without pressure (open the blue pressure valve) for 10 minutes.

- 3 Turn the pressure valve clockwise to show approximately 8 bars of operating pressure. Run the Bluebox at this setting for 30 minutes.
- 4 Open the pressure valve all the way and run the system with clean water for 10 minutes without pressure, and then again for 10 minutes with 8 bars of pressure.
- 5 **Alkali cleaning (RoClean P111)**
Dilute 1kg of RoClean P101 in 50 litres of water.
Insert all three hoses into the container with the cleaning fluid (Flush water outlet, Raw water inlet and Clean water).
- 6 Start the Bluebox and let the system rinse without pressure (open the blue pressure valve) for 10 minutes.
- 7 Turn the blue pressure valve clockwise to show approximately 8 bars of operating pressure. Run the Bluebox at this setting for 30 minutes.
- 8 Open the pressure valve all the way and run the system with clean water for 15 minutes without pressure, and then again for 15 minutes with 8 bars of pressure.
- 9 Turn off the BlueBox.
If the first filter, 25 micron, is not too damaged (clogged), it can be rinsed and brushed down and reinstalled.

NOTE For a thorough cleaning, please repeat step 2, 3, 6 and 7, 2-3 times and/or let the membranes soak for up to 4 hours.

Preservation of membranes during storage or period of stand-still.

If the unit is to be stored (not used) for longer than 14 days, the membranes must be treated with a 20% glycol solution or RoCide preservation mixture, which will also protect it against freezing temperatures. Remember to run a cleaning process of the system before taking into use.

IMPORTANT

**The cleaning fluid must not exceed 45°C
The pH value of the cleaning fluid must remain within 2-11 pH**

UV LAMP

UV SLEEVE CLEANING AND LAMP REPLACEMENT

WARNING

DO NOT ATTEMPT TO DO THIS WITH POWER ON. UV-RAYS ARE VERY STRONG AND MAY DAMAGE EYE SIGHT PERMANENTLY.

Lamp replacement

- Unplug the BlueBox from electrical power. Make sure that the UV-light LED indicator on the front panel of the control unit is off.
- Let the unit cool for 10 minutes
- Remove the UV-lamp from the container.

Sleeve cleaning

Minerals in the water slowly form a coating on the sleeve. This coating must be removed because it reduces the amount of UV light reaching the water, thereby reducing purification performance.

Equipment required

Clean cotton: Latex or plastic gloves are preferred

Scale remover: Vinegar or a citrus-based product

Cloth: Must be soft, lint-free, and chemical-free

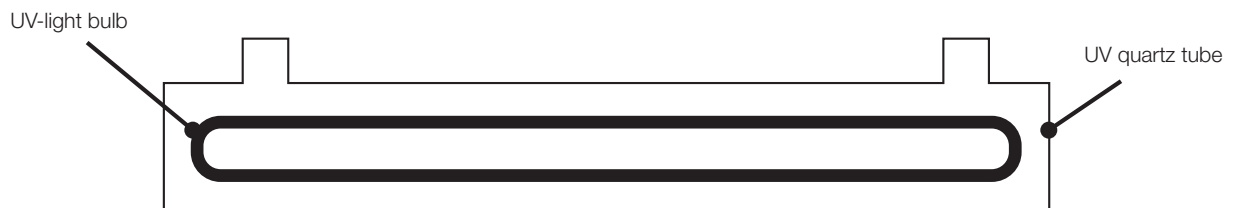
No clean-wipes must be used

Cotton swab

Lamp life

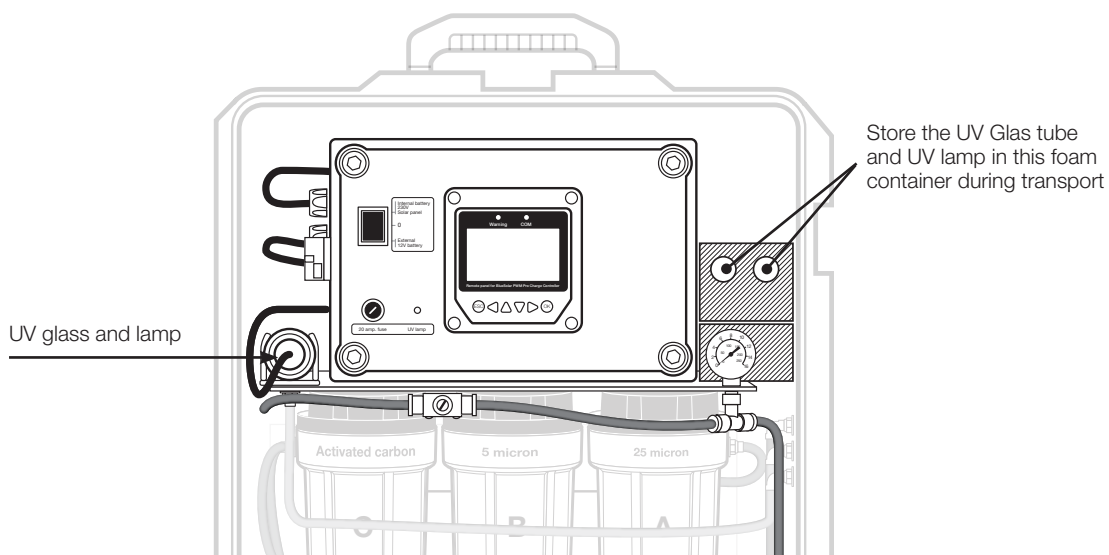
The amount of UV light created by the lamp decreases over time, requiring a replacement of the lamp every 12 months.

Before contacting our support team with an issue, we suggest that the following steps are tried. If the steps do not solve the issue, please contact our support team for further instructions and advice.



IMPORTANT

Before transporting the BlueBox 60 RO Solar, the UV glass and UV lamp must be removed from the housing and stored in the foam container.



TROUBLE SHOOTING GUIDE

Potential Hazard	Safety Measures
UV Exposure	Never illuminate UV Lamp outside of the UV Chamber. Never look directly at illuminated UV Lamp, even when using protective gear. Always use protective gear, including gloves and UV safety glasses. If accidental exposure occurs, immediately cool affected area and consult physician.
Electrical Shock	Disconnect power to system before performing any maintenance or repair. There may be more than one source of power.
Impalement	Never perform any physical inspection, repair or maintenance on UV Chamber unless UV chamber has been isolated and depressurized. Never service UV Lamps, Sleeves or associated hardware until depressurization of UV chamber has been confirmed.
Hot chamber	Allow UV Lamps, UV Chamber to cool for a minimum of 10 minutes before handling.
Cut or ingestion	Ensure the quartz sleeve or lamp is not broken, cracked or damaged in any way when handling equipment.
Scald from water	When there is no water flow, the water in the chamber will become hot. To prevent scalding, allow the system to cool before draining the system.
Fire	Do not store any combustible or flammable material close to the system.
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.
Water leak	Use proper plumbing materials to avoid potential material degradation from UV exposure.

Symptom	Possible cause
Water is leaking from a pre-filter housing	Shut down the system. Un-screw the filter housing with the plastic key. Check for cracks in the top piece and in the filter housing Check that the o-ring is correctly placed inside the housing and that it is wet. Screw on the filter housing, and tighten it slightly. Turn on the system. If water is still leaking then try to carefully tighten the filter housing further.
Little or no drinking water is coming out of the BLUE Drinking Water hose.	Check that the system is operating at recommended pressure level. If not, adjust the pressure level by turning the pressure valve. Change the filter cartridges if they are clogged up. Change the RO membrane if the above does not help.
No power	Check your energy source and connection. Try to fully charging the 12V battery and re-start. Consider trying with an alternative energy source. Contact your solution provider If the above does not solve the issue.
UV-light is not operating	Check power cabling. Un-screw the end piece of the product and check that the lamp and quartz tube are intact. DO NOT ATTEMPT TO DO THIS WITH POWER ON. UV-RAYS ARE VERY STRONG AND MAY DAMAGE EYE SIGHT PERMANENTLY. Replace damaged parts. Contact your solution provider If the above does not solve the issue.
Leak detected at sensor (if so equipped)	UV sensor o-rings are damaged, deteriorated, or incorrectly installed
System is operating but water tests reveal bacterial contamination	Equipment downstream of UV system is acting as a breeding ground for pathogens Pathogens are residing in the distribution lines post-UV Recontamination from pipe dead-ends



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