



**Aqualife
Products®**

STEAM STERILISER WATER SYSTEM

**EXCELLENCE IN WATER TREATMENT
& LOW COST MAINTENANCE SYSTEMS**

AquaClave® Mark III Reverse Osmosis
Water Treatment Systems



WaterMark



Installation Instructions User Manual

Thank you very much for selecting AQUALIFE.

In order to bring the best use of your system, please read the user's manual carefully before installation and follow the regulations.

IMPORTANT

This is a scientific instrument.

**The installation of this equipment must comply with AS/NZS 3500.1
The Australian plumbing installation code.**

Please ensure that only Aqualife® approved replacement components are used. Inferior pre-filtration, polishing filters and membranes may result in reduced water quality and reduced production performance.

Please note that components designed for home water treatment reverse osmosis system are NOT suitable for use in this system.

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Attention

This AquaClave® Mark III water treatment system has been specifically engineered to supply feed water to any steam sterilising equipment.

The product water is not recommended for human consumption. Drinking water solutions are also available from Aqualife Products (Australia) Pty Ltd.

IMPORTANT

For the correct operation and maintenance of this product, it is essential to observe the manufacturer's instructions.

The system has been engineered to operate within a controlled environment.

Where high water pressure risks exist above 860 Kpa (125 psi) the supplied 500 Kpa pressure limiting valve **MUST** be installed to avoid nullifying the warranty and is essential for Australian Industry compliance.

Australian Plumbing Industry regulations also require the installation of a dual check valve and this is a plumber's responsibility.

The system will not operate from gravity fed rainwater tanks.

The AquaClave® Mark III series is designed to operate on municipal water supplies. Water feed supply from other sources should be referred to Aqualife.

Please consult your supplier on the chemical analysis of your feed supply because the level of dissolved minerals and salts (TDS) will adversely impact the performance of the AquaClave® Mark III.

Water quality can vary within very large metropolitan water supplies. Where doubt exists a complete chemical analysis should be obtained.

Introduction

AquaClave® Mark III - Automatic Flushing Membrane System

Incorporating the best Reverse Osmosis (RO) technology the built-in automatic flushing system of the AquaClave® Mark III brings you premium water with less than 1ppm in total dissolved solids quality at your fingertips! This special Aqualife RO function can extend the service life of the membrane. It also automatically provides the ability to wash away carbon fines when changing filters.

AquaClave® Mark III provides the quickest way to know the quality of your water. The system is capable of removing 99% of total dissolved solids, and all organic compounds. AquaClave® Mark III meets all different water quality needs. The total dissolved solids (TDS) test meter can be used on every occasion when drawing water for use.

Specifications

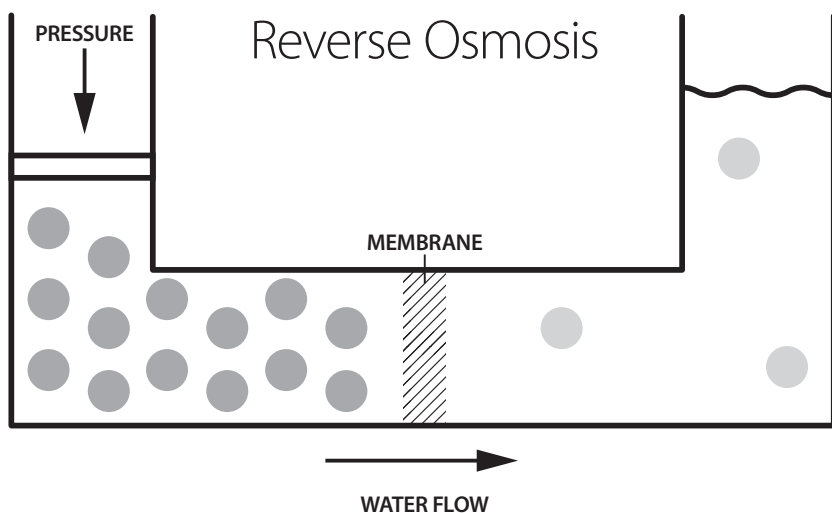
AquaClave® Mark III

PRODUCTION	50LPD maximum
POWER	240V DC 2.5A Transformer
SAFETY APPROVAL	TUV (EN60950) CE Mark The system has been designed to comply with Australian electrical standards
SPECIAL TECHNICAL DESIGNS	Patent No. 068018.Flush Membrane
READY FOR INSTALLATION	100% factory tested and sterilized Tested and supplied fully assembled
OPERATION PRESSURE	5-80 psi
OPERATING WATER TEMPERATURE	5°-27°C Note - Do not allow the system to freeze and do not use water above
WATER STORAGE	20L NSF tank Note - 40L and 80L tanks optional
FEATURES	FDA approved polypropylene made flat cap housings Automatic shut-off valve Flow restrictor 500 Kpa pressure limiting valve Long reach attractive faucet suitable for the application if specified Feed water connector and delivery valve Drain saddle clamp 1/4" tubing for system connection Leak detector TDS meter
DIMENSIONS	System W 47cm x D 20cm x H 54cm (Allowing for filter change) Tank L 29 cm x W 29 cm x Ht 41 cm (including the tank ball valve)
WEIGHT	System 15kg Tank 4kg

What is Reverse Osmosis?

Reverse Osmosis was originally designed to make sea water drinkable for the US Navy.

Reverse osmosis is the reversal of the natural flow of osmosis. In a water purification system, the goal is not to dilute the salt solution, but to separate the pure water from the dissolved salts and other contaminants. When the natural osmotic flow is reversed, water from the salt solution is forced to pass through the membrane in the opposite direction by application of pressure, thus the term REVERSE OSMOSIS. Through this process, we are able to produce pure water by screening out the salts and other contaminants.



Component Identification



European Ceramic Faucet
(if specified)



20L Water Storage Unit



Filter Housing Wrench



Combination Water Connection



Tundish



Membrane








Tank Ball Shut-off Valve



1/4" Tubing for System Connection
Plumbers responsibility

Cartridge Filters

CARTRIDGE FILTER	DESCRIPTION	SERVICE LIFE
STAGE 1 P/N WC1001/5P 	PRETREATMENT <p>This pleated cartridge commences the treatment process by removing the suspended solids such as dirt and rust.</p> <p>Since the pleated cartridge has got more surface area, the cartridge will hold a significant volume of suspended contaminants.</p>	6 Months 1
STAGE 2 P/N WC 1005L 	PRETREATMENT <p>The purpose of this high performance carbon filter is to further remove free chlorine and organic content of the water. It completes the 2 stage pre-treatment of the feed water supply.</p>	6 Months 2
STAGE 3 P/N WC 1016B 	RO TFC MEMBRANE <p>This specifically engineered high volume production capacity with high rejection TFC membrane is manufactured in the USA.</p> <p>The membrane removes approximately 99.99% of all dissolved minerals and salts present in the feed water supply. Production and performance will be influenced by the chemical analysis of the water supply.</p>	2 - 3 years
STAGE 4 P/N WC1011A 	POST CARBON FILTER: ORGANIC ZAPPER <p>NSF approved. This post membrane carbon filter is designed to remove organic residue. It removes residual impurities and odours from the tank and provides a finer conditioning of pure water.</p>	6 Months
STAGE 5 P/N WC 1025 	NON-ORGANIC POLISHING CARTRIDGE <p>This final process addresses all non-organic residue leaving a quality of water that complies with <i>AS 2182 1998 Appendix C Quality of Feed Water for Steam Generation</i> when the system is operated in accordance with this manual.</p>	6 Months 5

Steam Steriliser Operation; AquaClave® Plumbing Diagram

When the RO system is installed a 1/2" brass tee is cut into the water supply line and a 1/2" to 1/4" 500kPA Pressure Limiting Valve and a 1/4" stop tap fitted.

The 1/4" plastic hose is connected and leads to the inlet on the front of the 1st Housing which has a plastic tee with the other side of the tee going to a low pressure switch.

The hose from the elbow at the rear of this housing runs from the inlet solenoid to the pump.

The outlet of the pump is attached to the elbow at the rear of the 2nd housing with the outlet from this housing going to the elbow on the inlet of the membrane housing (the end with the cap).

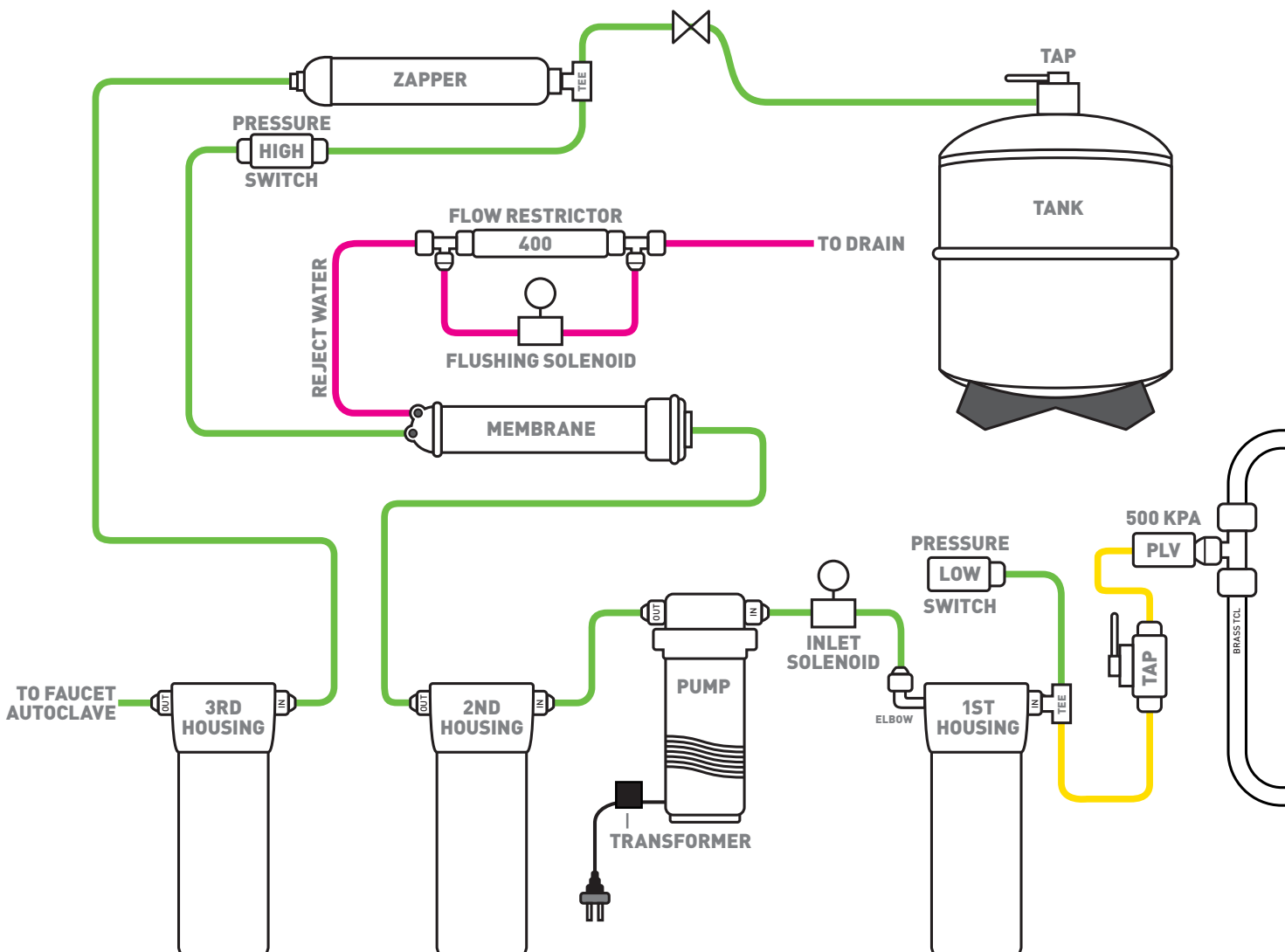
Water passes through the membrane to 2 outlets in the housing.

1. One leads to a tee and through a High Pressure Switch to the inlet of the Zapper and the other side of the tee goes to the tank.
2. The other outlet is the reject water to the drain via a 400 Flow Restrictor.

The Flush Solenoid allows a diversion around this Flow Restrictor when the system is in flush mode.

The Product Water passes through the Zapper to the inlet at the front of the 3rd housing. From the elbow at the rear of this housing, Product Water goes to the Faucet and/or Autoclave.

When the tank is full, the system automatically shuts down until Product Water is required and first flushes to the drain thus clearing the membrane of fouling material.



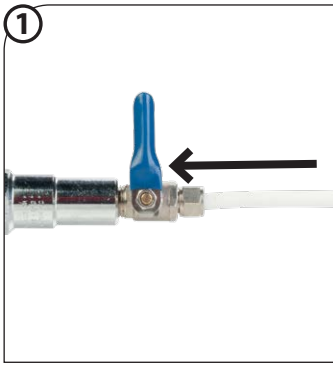
Parts Identification

- ① 1st Pre-Filter Housing
- ② 2nd Pre-Filter Housing
- ⑤ 5th Final Polishing Filter
- ⑥ RO Membrane Pump
- ⑦ Inlet Feed Water
- ⑧ Auto Flush Panel
- ⑩ To Faucet



- ③ RO Membrane Housing
- ④ Post Carbon Filter
- ⑥ RO Membrane Pump
- ⑧ Auto Flush Panel
- ⑨ To Tank
- ⑪ To Drain





Input Water

Connect combination water connection to water source pipe and tube to the "IN" of the leak detector. Connect the "OUT" of the leak detector to **7**



Install Water Tank

Hand tighten plastic shut-off valve to tank. Then connect shut off valve tube to **9**



Install European Ceramic Faucet

Connect the tube to **10**



Assemble RO Membrane

Remove the membrane housing cap and insert the membrane.

Install the new membrane by carefully pushing the spigot end into the socket at the far end of the housing until completely in.



Membrane must be installed before operating the system to get the desired water quality.

General

The Aqualife Leak Detector is a simple mechanical engineering device that uses the principal of expansion in a soft absorbent pad when in contact with water to shut off the water supply. When a leak develops the pad will expand and stop the water supply on the inlet water side of the filter.

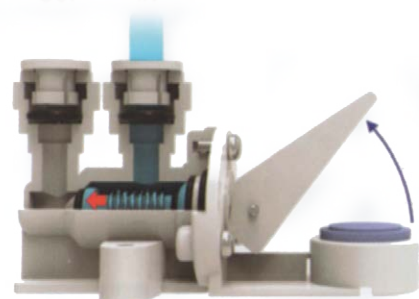
Features

- Easy to use
- Convenient to pinpoint any leak on system
- Provides accurate leak detection
- Speedy cotton pad change
- Covers large detection surface area with tray design
- Hassle-free design, inlet water remains opened during cotton pad change



The leak detector is positioned in the collection tray, which gathers any leaking water to a central position.

An absorbent pad expands as it collects leak water, forcing a switch open which is attached to a shut-off valve. Water flow through the system is cut.

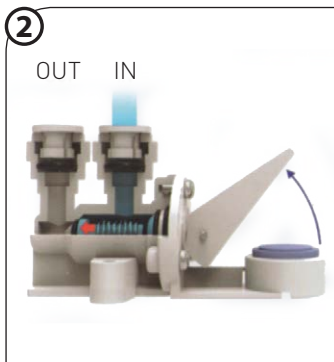


Install Leak Detector



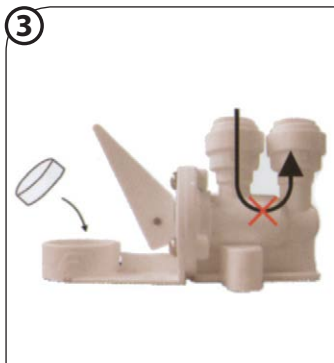
Keep leak detector pads away from installation and commissioning area until the system is installed, commissioned and checked for leaks.

Fasten leak detector mechanism on the base of the tray.



Insert the hose leading from the feed water supply into the quick fit fitting marked 'in'.

Install the hose from the detector quick fit fitting marked "out" to the inlet of the AquaClave RO. ⑦



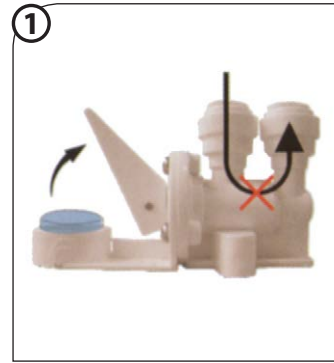
When commissioning the RO ensure the leak detector shut off switch is down.

Remove the plastic covering from the leak detector pad and place in the pad holder.

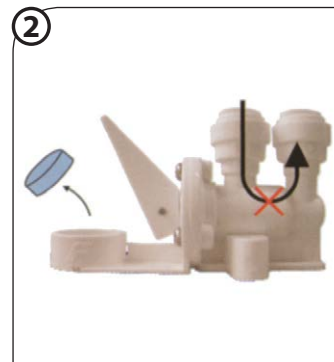


Push the switch down to activate the system.

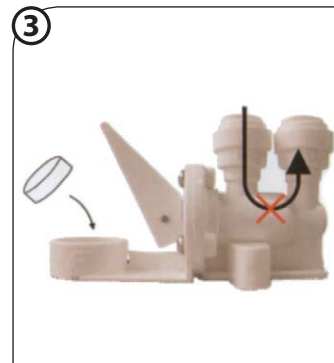
Leak Detector Maintenance



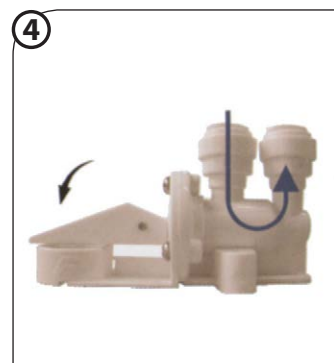
When a leak occurs, the cotton pad upon contact with water rapidly expands and shuts off the water inlet.



Remove and discard the used cotton pad.



Install a new absorbant cotton pad.



Lower the arm to restore the water supply to the system.

Change Filters

①



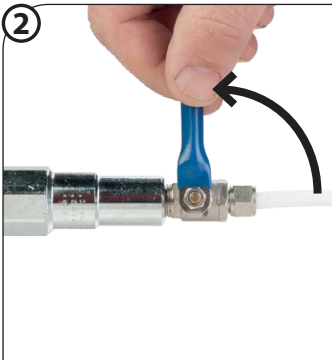
Use the housing wrench

⑤



Open housing with wrench clockwise

②



Turn off water source

⑥



Put the replacement filters in the correct sequence as previously described

③



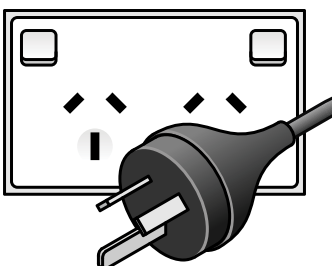
Turn off tank water

⑦



Drain out 5L of water to purify replacement filters

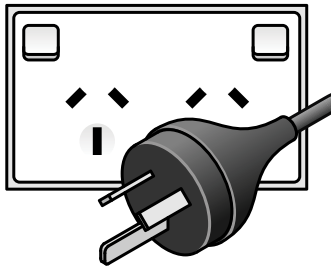
④



Unplug electricity

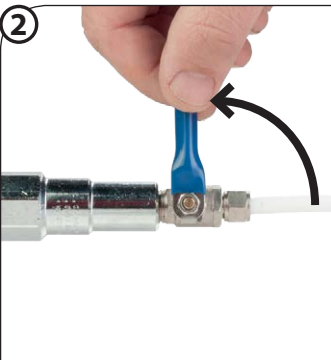
Change Membrane

①



Unplug electricity

②



Turn off water

③



Turn off water

④



Loosen the
Jaco fitting
anticlockwise on
the membrane
housing

⑤



Remove the
membrane
housing cap
anticlockwise

⑥



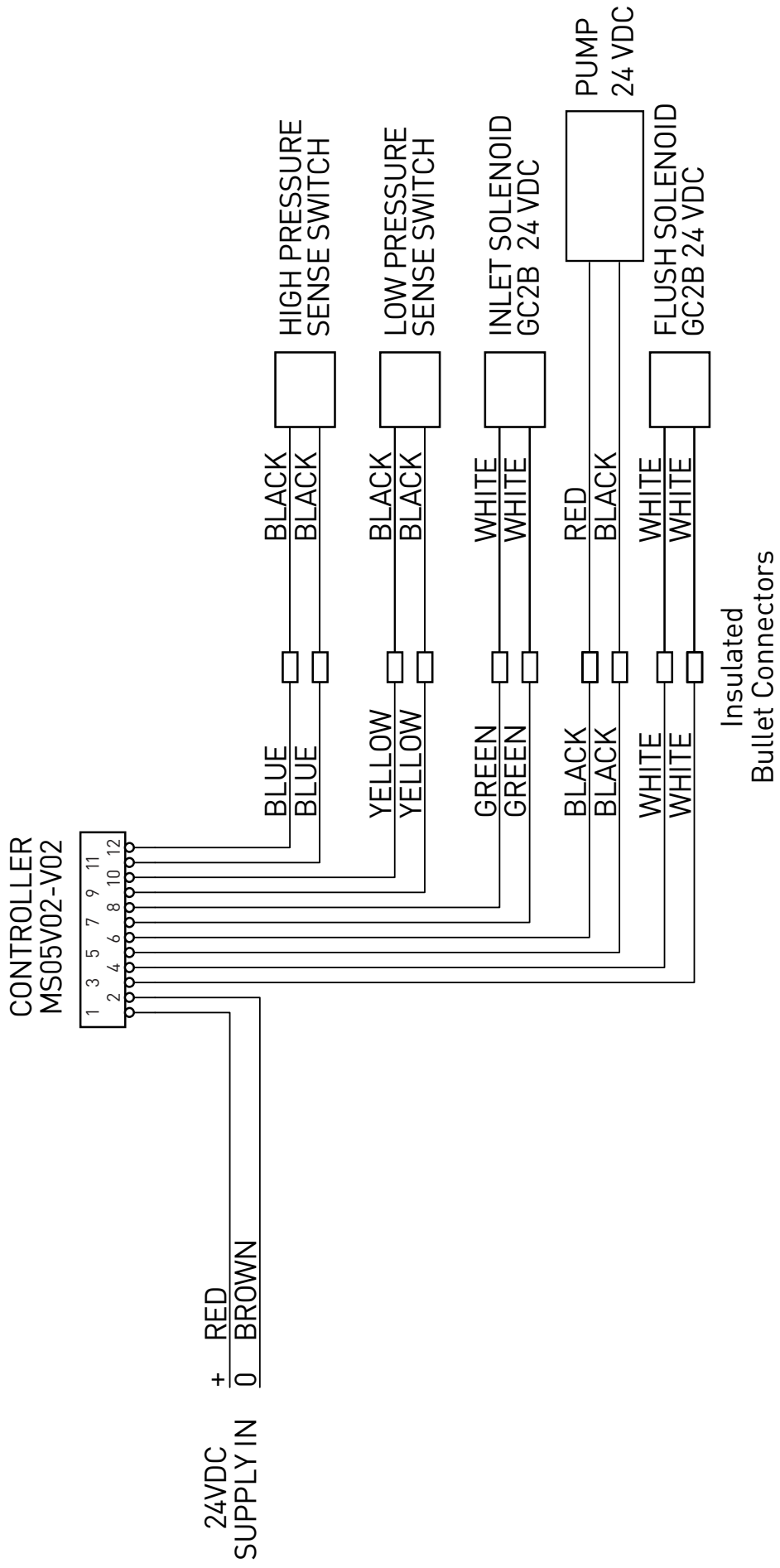
Remove the
membrane with
pincer pliers

⑦



Install the new
membrane by
carefully pushing
the spigot end
into the socket
at the far end of
the housing until
completely in

Wiring Diagram



Commissioning Instructions

1. With everything connected, slowly turn on the water and check for leaks.
2. Make sure the storage tank shut-off valve is "off". Open the sink top faucet.
3. Within a few minutes (up to 5) the water will start to run slowly from the faucet.
4. Let the water run for at least 15 minutes. This flushes the carbon filters on first time use.
Close faucet and again check for leaks.
5. After initial flushing, open the shut-off valve on the tank and close the sink top faucet.
6. Tank will now fill with water (usually 30 - 60 minutes). Open the sink top faucet and drain all water until the storage tank is empty and there is only a small flow from the sink top faucet.
7. Change filters regularly (every 6 months) and have the membrane checked annually.

CAUTION

- **Do not use hot water over 45°C**
 - **Do not allow the system to freeze**
 - **Switch off electricity and water source if away for more than 5 days, and drain the tank.**
 - **Turn off water supply when closing surgery overnight.**
-

FAQ

What is the guarantee on the AquaClave® Mark III system?

The AquaClave® system (excluding filters) is guaranteed for 1 year for material and workmanship. All defective parts will be replaced free within the first year under natural breakdown. The membrane has one year pro-rata guarantee.

What factors affect the quantity and quality of the water production?

There are four major variables to consider:

- **Pressure:** the greater the water pressure, the better the water quantity and quality produced. Water pressure of 60psi is ideal.
- **Temperature:** 23°C is the ideal water temperature for R.O. 5°C water will cause the production of R.O. water to fall to half that at 23°C. The maximum recommended water temperature is 27°C.
- **Total Dissolved Solids (TDS)** - the higher the amount of dissolved contaminants in the water, the lower the quantity of water produced. A high level of Total Dissolved Solids can be overcome with additional water pressure.
- **Membranes** - Different membranes have different characteristics. Some produce more water than others; some have better contaminant rejection capabilities; some have greater resistance to chemical abrasion. For a longer life system include a carefully selected low production, high rejection membrane. The Thin Film Composite (TFC) membrane combines the best of these characteristics and is considered the finest membrane in the world.

Can the Aquclave® system be connected to an extra faucet?

No. This system is specifically engineered for use in the steam sterilisation process.



Aqualife Reverse Osmosis Troubleshooting Guide

POSSIBLE CAUSE	SOLUTION
Not enough water from the Faucet / Holding Tank	
Drain tray leak pad is wet, source light is flashing and system is shut down.	Check for leaks and rectify. Replace the wet leak pad ensuring you remove the plastic covering with a new pad and push the lever down
Feed water valve is closed or clogged with source light flashing	Open or unclog feed water valve
Insufficient feed water pressure or flow	Check feed water valve for restrictions in feed plumbing
Filters are clogged	Replace Filters. Install a prefilter if the filter set or membrane is clogged before the expected service life
Dirty or Fouled Membrane elements	Replace Membrane
Membrane installed incorrectly	Refer Aqualife operation & maintenance manuals for correct membrane installation
Useful life of membrane element expired	Install new membrane
Air pressure in holding tank is incorrect	Empty water from holding tank. Air pressure in valve stem should be between 6-8 psi Pressure can be increased using bike pump or air compressor. If the tank is more than 5 years old, replace the tank
Air Bladder in Holding tank is ruptured	Replace Holding Tank
Holding tank valve is closed	Open valve
No water to drain. Drain flow restrictor is clogged	Replace drain flow restrictor
Check valve on RO membrane housing outlet is clogged	Replace check valve on the membrane housing outlet
Inlet Solenoid valve not opening	Replace Solenoid valve
Pump not operating properly	Check power connection. Replace pump
Product Water is high in Total Dissolved Solids (TDS)	
Clogged filter set & Membrane	Replace Filters & Membrane. Install a prefilter if the filter set or membrane is clogged before the expected service life
RO Membrane is not correctly sealed in housing	Check that RO membrane is correctly installed
Check product water TDS from membrane	If membrane reading is above 10% of incoming water TDS, replace membrane
No water to drain. Drain flow restrictor is clogged	Replace drain flow restrictor
Incoming feed water TDS has increased	An increase in feed water TDS will also give an increase in Product Water TDS
Filters installed in incorrect order	Make sure filters are in correct order
Source light is flashing & Machine not running	Check for closed feed ball valve with blue handle. Open the valve if it is closed.
	Check for leaks and rectify. Replace the drain tray wet leak pads with a new leak pad after removing the plastic wrap and push the drain tray lever down
	Low Pressure Switch wire connectors may have come out. Insert the 2 black wire connectors into low pressure switch properly. If system still does not start, replace the faulty low pressure switch or Auto Flush controller.
System running continuously, tank is full & system not cutting off	High pressure switch wire connectors may have come out. Insert the 2 black wire connectors into high pressure switch properly. If system is still not cutting off, replace the high pressure switch or Auto Flush controller
System starting on / off continually	Faulty Auto flush controller. Replace the Auto flush controller box.
System making an abnormal sound	Faulty Auto Flush controller or Pump. Replace the Faulty Auto Flush controller or pump

Memo

Type of product AQUACLAVE® RO P5 MARK III

Date of Purchase

Name

Address

Telephone

Feed Water Quality TDS

Membrane / Tank Quality TDS

Quality Outlet TDS



**Aqualife
Products®**

*EXCELLENCE IN WATER TREATMENT
& LOW COST MAINTENANCE SYSTEMS*



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