LEDI
GARRISON
Desalination

Portable. Reliable. Ready when you are.

Ledi.com.au | User Manual | Version 2.0

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Introduction

About the LEDI Garrison

The LEDI - Garrison is designed to be portable, quick and easy to use. The Garrison is a 48V system. It can be powered directly using a 48V battery + PV power supply or with mains power using the supplied water proof power supply unit.
The system will use a maximum of ~1500W and produce ~100 Litres of drinking water per hour from the ocean with slightly more from fresh sources, dependant upon conditions.

What's in the Box

Each Garrisoncomes with the following:

a. LEDI Garrison
b. 2 x 5m Water inlet and Waste hoses with 25mm Camlock
c. 1 x 5m Clean water outet hose with 16mm Camlock fitting
d. 1 x washable suction filter
e. 1 x 32A CEE extension lead
f. Installed NSF 55 Class A UV Steriliser
g. Installed cartridge filters
h. 4 x SW 4040 reverse osmosis membranes
i. 3 x spare set cartridge filters
j. Tool kit
k. User manual and quick start guide

General Warnings

Please read and follow all warnings and cautions to ensure safe operation and maintain water quality. Failure to do so may result in equipment damage, poor water output, or risk to personal health.

General Use

- DO NOT run dry.
- Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- Do not operate unattended for extended periods.
- Use only with the correct voltage and power supply as specified.
- Do not exceed the system's rated pressure. Over-pressurisation may cause failure or injury.

Water Quality & Safety

- This system is designed to produce water that meets WHO recommendations. However, it is not guaranteed to always remove all contaminants. Internal damage from misuse, storage, age, temperature etc may cause damage to the membranes that is not immediately detectable. As such, avoid using water sources affected by industrial waste or agricultural runoff.
- Always discard the first few minutes of product water after prolonged storage or disuse.
- Regular flushing and maintenance are required to ensure water remains safe for consumption.
- Equipped with UV steriliser. Note that UV treatment is not a substitute for proper filtration. Ensure all filters and membranes are installed and functioning.
- If in doubt, fit new membranes.

Maintenance & Handling

- Disconnect power before performing any maintenance or opening housings.
- Allow the system to fully depressurise before disconnecting hoses or fittings.
- Use only LEDI-approved replacement parts to maintain performance and compliance.
- Do not allow the system to freeze, as internal damage may occur.

Storage & Transport

- If storing the system for more than 14 days, follow the preservation procedure detailed in this manual.
- Store in a cool, shaded area away from direct sunlight to protect components.
- Ensure all hoses and fittings are secured before transport to prevent damage or leaks.

Environmental & Disposal

- Dispose of used filters and membranes according to local regulations.
- This device contains electrical components. Do not dispose of with general waste—refer to e-waste disposal guidelines.

Water Source Guidelines

For best performance and safe drinking water, the Garrisonshould only be used with natural water sources such as seawater, brackish water, or freshwater that are free from heavy chemical contamination. Avoid using water from industrial discharge, mining runoff, or areas with known chemical pollutants. The system is designed to remove salt, sediment, and microbiological contaminants when used correctly, but it is not intended to treat water with unknown or hazardous chemical content.

Suitable: clear seawater, clear running freshwater sources (rivers, lakes)

Avoid: Stagnant water, water with visible contamination, or wastewater

Water Source Guide

Preferred Sources

- Clear seawater (open ocean, coastal areas with minimal sediment)
- Clear, flowing freshwater (rivers, creeks, and lakes without visible pollution)
- Brackish water from estuaries or coastal wells

Use With Caution

- Turbid water (heavily sedimented) may require pre-settling or filtration to prevent fouling
- Algae-rich water may clog filters and should be avoided if possible
- Rainwater runoff can vary in quality depending on surface collection area

Unsuitable Sources

- Stagnant or pooled water with foul odour, surface scum, or mosquito larvae
- Industrial discharge or mining runoff
- Water with chemical contamination (e.g., pesticides, hydrocarbons, heavy metals)
- Wastewater or greywater

Note: The Garrison system removes salt, sediment, and microbiological contaminants. It is not designed to treat chemically hazardous or unknown contaminants. When in doubt, choose a cleaner alternative.

Turbidity

- Water should be as clear as possible, with low levels of visible sediment. Ideal turbidity is below 5 NTU (Nephelometric Turbidity Units). High turbidity (>20 NTU) can clog filters, reduce system performance, and damage membranes. If only turbid water is available, allow settling or pre-filter through a cloth or sediment filter before use.

If treating very high turbidity water, use an additional pre-filtration modules. This will extend pre-filter and membrane life while increasing barriers against harmful bacteria and viruses entering the system. If intending to run for long durations (over 1 week) consider adding a descalant dosing system.

100 NTU **50 NTU** **20 NTU** **5 NTU**

Regulatory Guidelines

Garrison helps users produce drinking water that aligns with recognised WHO health targets when operated correctly, but legal compliance sits within the jurisdiction where it's used. Operators should benchmark performance and verification against local regulations.

Before production

- Conduct a source risk check: avoid industrial/mining runoff, sewage, or chemical spills; prefer low-turbidity sources. Record location, date, conditions.
- Inspect unit, ensure clean hoses, cartridges, membranes; confirm consumables in date

During operation

- Log pressure, flow rate, TDS, turbidity, and temperature at start-up and hourly (or per local operating procedures).
- For taste/acceptability, note TDS; palatability typically best <600 mg/L and often unacceptable >1,200 mg/L.

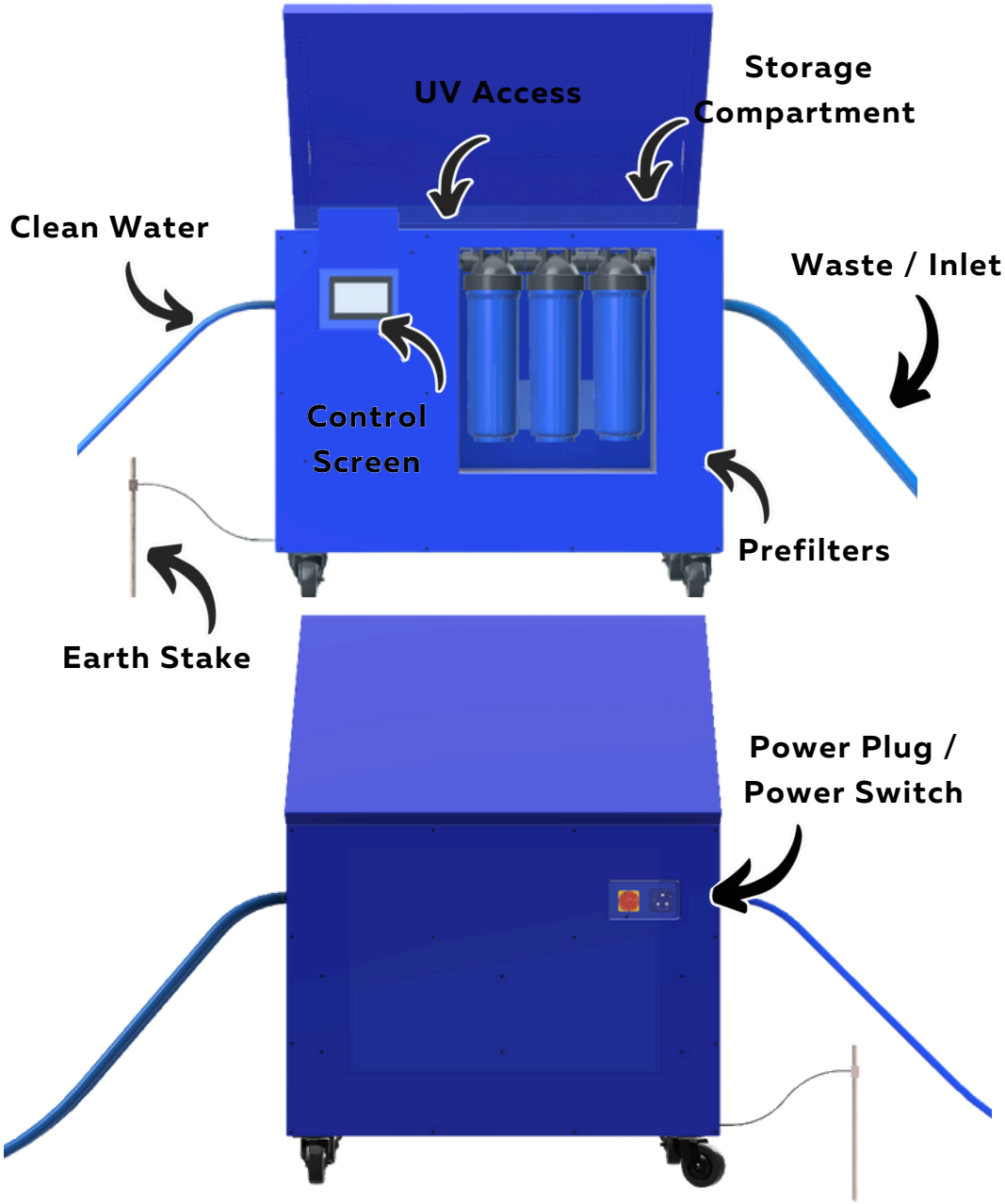
Verification

- Perform periodic microbiological testing (E. coli in 100 mL) via an accredited lab or validated field kit; any detection triggers corrective action and retesting.
- Retain logs, test results, maintenance records, and any incidents for audit and local regulatory review.

After transport or storage

- Recommission: reinstall/preserve membranes as specified, disinfect/flush lines, then verify turbidity, TDS

Key Components



Handling and Transport

Weight & Lifting

- Weight: approx. 350 kg dry; 400 kg wet.
- Lift from base using a forklift.
- Ensure wheels are locked prior to lifting.

Securing for Vehicle Transport

- Secure the unit so it cannot slide, tip, or bounce.
- Use two or more tie-downs to fixed anchor points.
- Avoid prolonged high vibration or impacts—sensitive components may be damaged despite ruggedised construction.

Air Transport

- The Garrison contains no batteries or magnets and is generally suitable for air freight.
- Confirm requirements with the carrier and declare the unit as water-treatment equipment.

Preparation Before Any Transport (Short Haul)

1. Shut down the system and isolate power.
2. Remove and empty pre-filters of water.
3. cap/plug open ports.

Handling and Transport

Long-Haul / Air Freight Preparation

1. Remove RO membranes and pre-filters.
2. Drain the system thoroughly (pumps, housings, lines).
3. Fit caps/plugs to inlets/outlets to prevent drips and contamination.
4. Pack membranes and filters separately (labelled and preserved as applicable).
5. Protect fittings and gauges with padding; place unit on a pallet

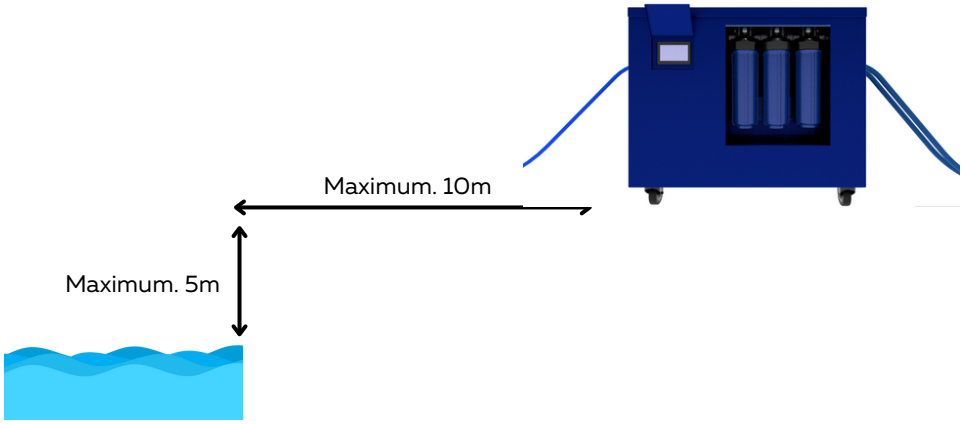
On Arrival – Recommissioning Checklist

- Refit membranes and pre-filters; confirm correct orientation and seals.
- Inspect for shipping damage and loose fittings.
- Pressure test at low pressure, check for leaks, then resume normal operation.

Positioning and Layout

Site selection & placement

- Surface: Place Garrison on a flat, stable, dry surface outdoors.
- Distance to source: Position within 10 m of the water source. If the source is further away or at a lower level, use an intermediate buffer tank (>200 L) with a suitable supply/transfer pump feeding that tank. For best results, position the Garrison close to the water source and use it to produce potable water, which is then pumped or gravity-fed to the storage tank.



- Weather: Garrison is water-resistant, n ot waterproof. Avoid heavy rain. If rain is expected, use a simple shelter (tarp/canopy) and a small guard over air vents to prevent water ingress.
- Electrical safety: Keep the power lead off the ground and away from puddles. Verify earthing/RCD per local rules. Route cables and hoses to avoid trip hazards and mechanical damage.Ensure Earthing stake is fitted and driven deep into moist earth.

Positioning and Layout

Recommended Layout:

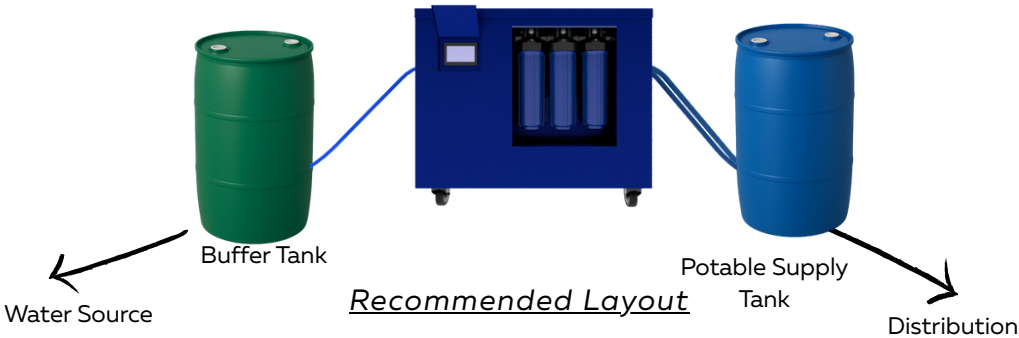
1. Water source → Transfer Pump → Buffer/Storage Tank (>200 L).

- Use a screened intake to limit debris.
- Place the storage tank as close as practical to Garrison and above ground to keep lines short and visible.

2. Buffer/Storage Tank → Garrison inlet via 1″ Camlock fitting

3. Garrison clean water outlet → Potable Supply Tank via ½″ Camlock adapter.

4. Potable Supply Tank → Tap stand / distribution point.



Recommended Layout

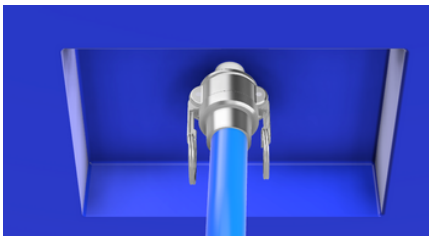
Additional good practice

- Hose management: Support hoses to avoid sharp bends, abrasion points, and trip hazards. Keep permeate hoses off the ground and capped when not connected.
- Elevation & suction: Minimise suction lift and long runs on the feed side. If unavoidable, use a priming tee/valve or a higher-capacity transfer pump.
- Reticulated Water System: Garrison is not authorised for use with reticulated water without local approvals.
- Leak & spill control: Place absorbent pads or a shallow tray under hose junctions if operating near sensitive areas.

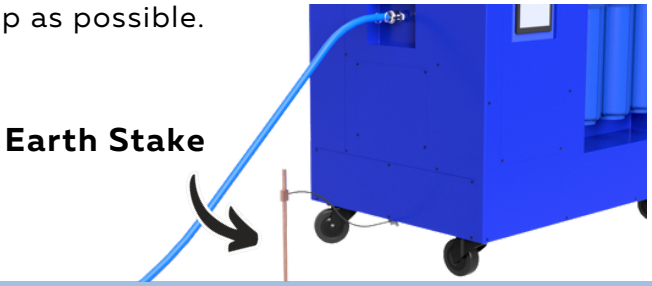
Preparing for Use

1. **Install the pre-filters:** The pre-filter housing can be removed by unscrewing with the included wrench. Turn Counter Clockwise to loosen. When tightening ensure the O-ring is seated. If not, the housing will leak.

2. **Prime and Install Hoses:** Fill hoses with water. All hose fittings have Camlock Style fittings. To fit, ensure the wings are pushed forward. Seat the receptacle and pull wings back towards hose. Ensure they are fully depressed. Ensure Inlet and waste hose are fully submerged in water.



3. **Connect Earthing Stake.** Connect Earthing Stake Lug to wing nut under Garrison (on bottom, below Clean water hose). Hammer the earthing stake into moist soil. Ensure the stake is driven as deep as possible.



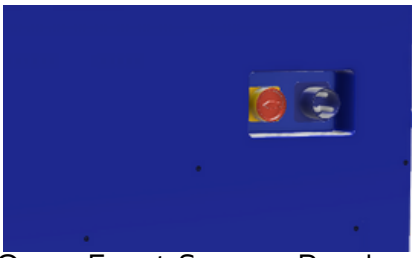
Operation

MAKING WATER

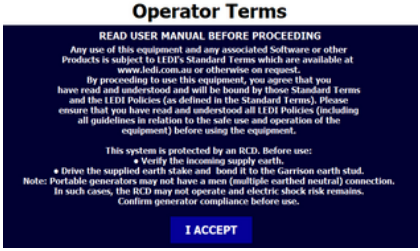
WARNING DO NOT run the system dry (without water).

1. Ensure all hoses are connected and the inlet hose has been primed (filled with water) and Earthing stake installed.

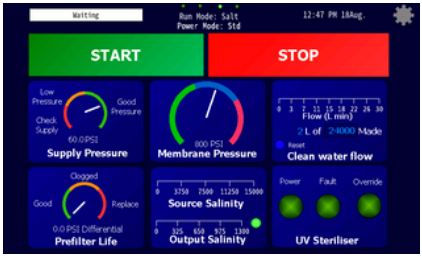
2. Connect Power and Switch on.



3. Open Front Screen. Read and acknowledge the terms.



4. Select Start and ensure steps complete. Press start.



5. Garrison will go through start up sequence and automatically start making water. (estimated 5 minutes)

PROGRAM QUANTITY OF WATER TO MAKE

1. Garrison must be running.

2. Reset water made since start up by pressing small button

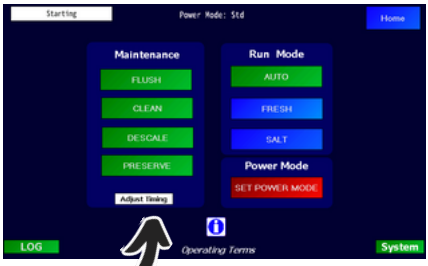
Reset

3. Set quantity to make by clicking 24000. Enter Qty and press Ent.

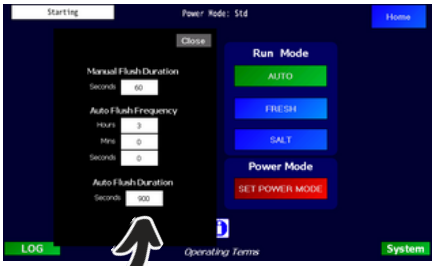
4. Garrison will run until it has produced roughly the QTY set. It will automatically shut down once complete

ADJUST AUTOFLUSH

During operation the Garrison will periodically reduce pressure and fast flush the membranes. This will extend life of the system and allow the Motors to rest. The frequency can be adjusted by the user. The system will also flush if it senses motors overheating. Select the settings gear on home screen.



Select Adjust Timing



Adjust Duration and Frequency

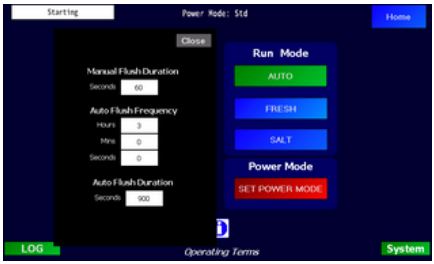
ADJUST POWER MODE

The Garrison has two preprogrammed power settings. Eco and Standard. By default the system will start in eco mode. Eco mode is suitable for use with power supplies with 5Kw available. Standard mode will produce more water and ensure that the membranes are sufficiently flushed. Standard mode requires a power supply with 7.5Kw available. If treating fresh water only use Standard Mode.

1. Enter Settings

Enter Settings

2. Select “Set Power Mode”



3. Select Eco or Standard

4. System will speed up or slow down

SALT SETTINGS

The Garrison will automatically detect the salt quantity in the source water and adjust pressure to optimise recovery rate. In general there is no need to change these settings. However, the mode can be manually adjusted if the sensor is reading incorrectly or the flow rate is too low.

1. Enter Settings

Enter Settings

2. Select Run Mode. “Auto”, “Fresh”, “Salt”

POWER OFF

The Garrison has two power off options. Emergency Stop and Normal Shutdown. Emergency Stop will cancel all operations and shut off the system ASAP. Normal Shutdown will tell the system to commence Shut down as soon as is safe. It is always best to use “Normal Shutdown”

Remote Access

Connect Garrison to Network

The Garrison can be accessed via computer or mobile phone where It can be monitored and controlled. To enable remote access the Garrison needs to be connected to wifi or to have a 4G Sim card installed.

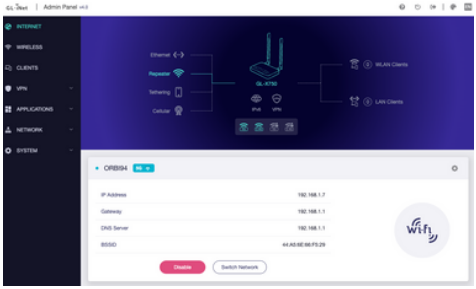
1. Connect Power and Switch on Garrison

2. Power on Wifi Module (Starlink, Hotspot, etc)

3. Open your computer and in browser search http://192.168.8.1

4. Logon to the router. Password: **garrison_ONLINE**

5. Log on to Wifi



Select Switch Network

Connect Computer to Network

1. Request logon on network (Email info@ledi.com.au)

2. You will receive an invite to join an app called Tailscale. Set up an account and install on computer. This will connect you to the Garrison Network. Ensure VPN is activated when trying to connect to Garrison. (Tailscale can also be installed on Mobile phone)

Connect to Garrison

1. Search http://192.168.8.100/remote_control_full.html?pic_format=jpg

Username: garrison_OPERATE
Password: garrison_ONSITE

Fresh Water Flush

It is very important that the Garrison is flushed with fresh water at the end of every usage period. This removes salt, deposits and bacteria from the system.

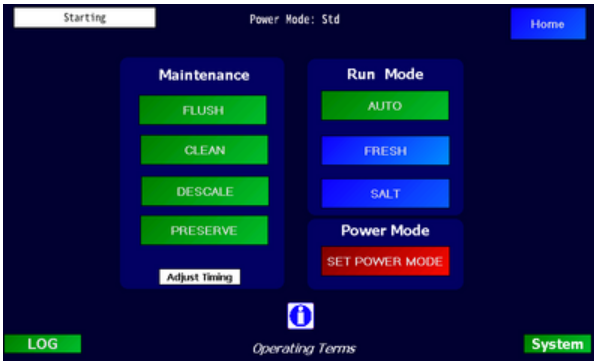
Required Parts:

- **100 -150L permeate or purified fresh water**

1. Place Inlet hose in fresh water

2. Place waste hose in drain

3. Select Flush on Screen



Clean & Descale

To maintain optimal performance it is strongly recommended that the unit is cleaned and descaled every 500hrs of general use, after use with “dirty” water and before preservation or storage.

Important: Cleaning and descaling procedures are identical except for the chemical used. These steps must be performed separately, not combined.

Required Parts:

- **Sachet of LEDI cleaning/descale solution (500g)**
- **150L permeate or purified fresh water**
- **2 x large buckets, drums or tanks**

1. Flush Troop. Following fresh water flush instructions.

2. Prepare Garrison. Remove Pre-filters #1 and #2 (unscrew the housing, remove the filter, refit empty housing) leave #3 in place. Place the intake and wastewater tubes into the prepared solution.

3. Select Clean or Descale on the Screen

4. Follow Instructions on the Screen

Preservation

The system must be preserved if it will sit idle for more than **4 weeks.** It should be flushed and re-preserved after 3 months

Required Parts:

- **1 sachet of LEDI preservation solution**
- **50L permeate or purified fresh water**
- **Large Drum**
- **New Set of Pre-filters**

1. Flush Troop. Remove pre-filter #1 and #2. Place the intake tube in dechlorinated fresh (permeate) water . Select Flush and run the system for 5 minutes to flush out any saltwater from the Garrison

2. Prepare Solution. Mix one sachet of preservation chemical into 50 L of permeate water. Stir until completely dissolved.

3. Place both Waste and Inlet hose in drum.

4. Run Preserve function for 15 min.

5. Remove Hoses and instal caps on all fittings

6. wash and dry frame

7. Label Garrison with date and time of preservation for future reference.

9. Store in dry place.

Pre-filter Replacement

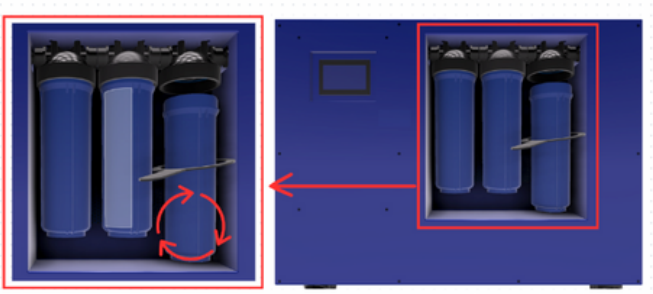
WARNING Ensure the Garrison is depressurised and does not have power applied before any maintenance is conducted.

The pre-filters will gradually clog, the time interval depends on the water sediment rate, reducing the system's efficiency. The Garrison will monitor and inform when the prefilters appear to be clogging.

Required Parts:

- **New Set of Pre-filters**

1. Remove the Pre- filters. Power off Garrison and allow the system to rest for at least 15 minutes after last use to allow internal pressure to subside. Using the supplied Filter Wrench remove by twisting counter clockwise.



2. Swap With new Filters. #1 20micron pleated, #2 20micron Carbon, #3 5micron depth filter. Do not run without the 5 micron filter.

3. Reinstall filter housings. Ensure O-ring is seated or the filters will leak.

4. After Starting the Garrison depress the air release to prime housings.

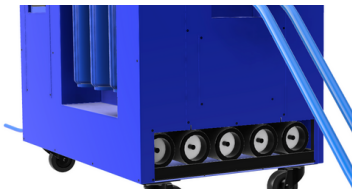
Membrane Replacement

WARNING Ensure the Garrisonis depressurised and does not have power applied before any maintenance is conducted.

Over time, the reverse osmosis (RO) membrane will degrade, reducing the efficiency and output of the Garrison.

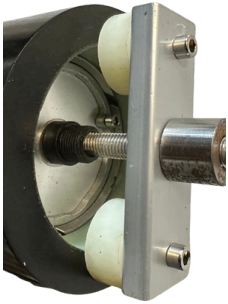
Required Parts:

- **4 x 4040 SW RO membrane (Purchase at ledi.com.au)**
- **Quantity of towels/ rags**
- **LEDI tool kit with end cap removing tool**
- **Needle nose locking pliers**
- **Gloves**



1. Unscrew and remove the RIGHT side panel of the Garrison to access the membrane housings.

2. Remove red end caps from the housings and drain the system



3. Using supplied Hex key remove the Bracket on Membrane housing.

4. Using the supplied tool screw the flat end into the port where the red end cap was installed. Be careful not to cross thread. Remove end cap by twisting the Silver Ring clockwise.

5. Using the Needle Nose Pliers remove the Membranes.

6. Replace Membranes. Ensuring the correct direction of Oring.

Last First Last First

ORING POSITION

Long Term Storage

If the system is to be stored for longer than 12 months it is recommended that it be prepared for long term storage. In this state it can be stored for up to 2 years. We recommend regular inspection to ensure no mould or vermin damage.

Required Parts:

- **100L Fresh clean water**
- **Garrison Tool Kit**
- **4 x new RO membranes (SW4040 LE)**
- **New Set of Pre-filters**

1. Clean Garrison. Follow cleaning instructions.

2. **Descale Garrison**. Follow descaling instructions.

3. Extended Flush. Remove pre-filter #1 and #2. Place the intake tube in dechlorinated fresh (permeate) water . Turn on the supply pump (plug in Anderson plug). Run the system for 10 minutes to flush out any remaining saltwater from the Garrison.

4. Remove Membranes.

5. Dry system. Allow system to drain and dry.

6. Store. Dummy fit membrane end caps. Label Garrison as LONG TERM STORAGE -DONT RUN, fill out log with date of preservation. Store your Garrison in a cool, dry place.

7. Recommission: Replace all 3 pre-filters. Fit new membranes following **Membrane replacement instructions.** Flush for 10 mins (this is to purge all preservative and raw water / source water can be used). Dispose first 100L of permeate.

Troubleshooting

1. System Does Not Turn On

Possible Cause	Solution
No power	• Check power cable correctly fitted • Confirm Power Switch on

2. System Does Not Prime

Possible Cause	Solution
Supply Hose Issue	• Confirm supply hose in water supply • Confirm supply hose correctly fitted into push fit fitting • Confirm suction filter is not clogged
Garrison is more than 2.5m above water line.	• Confirm Garrison is drawing water for <5m vertically
collapsed hose	• Check the suction hose hasn't blocked and collapsed under the suction. Do not use layflat hose.

3. Pumps Not Turning On / Pumps Turning Off

Possible Cause	Solution
No Power	• Refer to 1 on previous page.
System Not Priming	• Confirm system is priming (refer to 2 on previous page)
Low Supply pressure to main pump	• Clean and replace the prefilters

5. Low Drinking Water Production

Possible Cause	Solution
Not Pressurised	• Refer to 7 on next page.
Pre-Filter Clogged	• Remove pre-filter and clean • Replace pre-filter
System Clogged	• Clean water flush the system for 10 minutes • Clean the system
Membrane Clogged	• Replace RO membrane

6. System is Leaking

Possible Cause	Solution
Pre-Filter Loose	• Tighten the pre-filter housing
Hoses Loose	• Check all hoses are pushed all the way in to push fit fittings
Internal Leak	• Remove Garrisonback plate and look for leaks. Tighten fittings or re-seat / replace tube

7. System Does Not Reach Pressure

Possible Cause	Solution
Valve Open	• Confirm valve is closed.
Insufficient Power	• Ensure power supply is plugged into 240V AC power supply. Or confirm 48V DC power is provided direct to unit.
High Pressure Pump Failure	• Contact LEDI to discuss servicing

8. Water Produced is Salty or Smells Bad	
Possible Cause	**Solution**
Internal membrane Fouling	• Flush the system with clean water for 15 minutes • Clean the system following the cleaning instructions.
Damaged RO Membrane	• Replace the RO membrane

Email support@ledi.com.au for other enquiries.

DATE	ACTION	NOTES


LEDI