

LEDI TROOP

Portable Desalination



Portable. Reliable. Ready when you are.

Ledi.com.au | User Manual | Version 4.0

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Introduction

About the LEDI Troop

The LEDI - Troop is designed to be portable, quick and easy to use. The Troop 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 Troop comes with the following:

- a. LEDI Troop
- b. 3 x 5m 12mm potable water grade hose with stainless steel quick connectors.
- c. 1 x washable suction filter
- d. 1 x 1500W, 240V AC - 48V DC power supply
- e. Installed LED UV Steriliser
- f. Installed product water salinity & temperature tester
- g. Installed 3m self priming supply pump
- h. Installed cartridge filters
- i. 2 x SW 2521 reverse osmosis membranes
- j. 3 x spare set cartridge filters
- k. Tool kit
- l. 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 Troop should 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

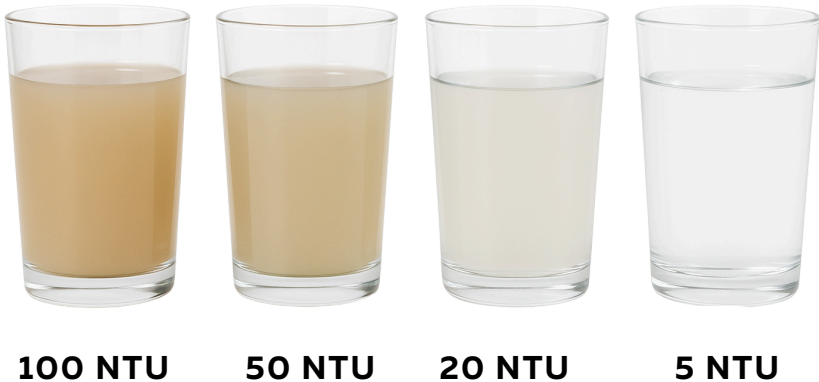
Unsuitable Sources

- 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 Troop 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 the LEDI Ultra Filtration module. This will extend prefilter and membrane life while increasing barriers against harmful bacteria and viruses entering the system.



Regulatory Guidelines

Troop 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

Quick Start



Pre-Filters

**Reverse
Osmosis
Access
port**

**Run Mode
selector**

**LED UV
steriliser**

**Waste
outlet**

**Water
inlet**

**Salinity
Sensor**

Run Switch

**Clean water
outlet**

Power Point

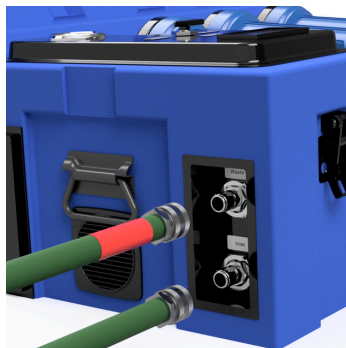
Quick Start

1.



CONNECT CLEAN WATER HOSE

2.



CONNECT SOURCE WATER HOSES

3.



SET VALVE TO START

4.



**PLUG IN AND SUCTION WILL
START TO PRIME SYSTEM**

5.



WAIT 1 MIN, TURN ON RUN SWITCH

6.



WAIT 5 MIN, SET VALVE TO RUN

Quick Stop

1.



SET VALVE TO FRESH

2.



**WAIT 5 MINUTES AND SWITCH OFF
POWER SWITCH**

3.



SET VALVE TO START

Handling and Transport

Weight & Lifting

- Weight: approx. 35 kg dry; 40 kg wet.
- Lift with two people using the integrated carry handles. Do not lift by hoses, piping, or cables.
- Use a trolley where available; bend knees, keep back straight, and share the load.

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 Troop 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. Empty pre-filters of water.
3. Set Valve Selector to "Salt" to minimise residual leaks.
4. Drain any accessible low points; 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 in a crate or padded case.
6. Attach a Handling Note: "Keep upright, avoid impact and vibration."

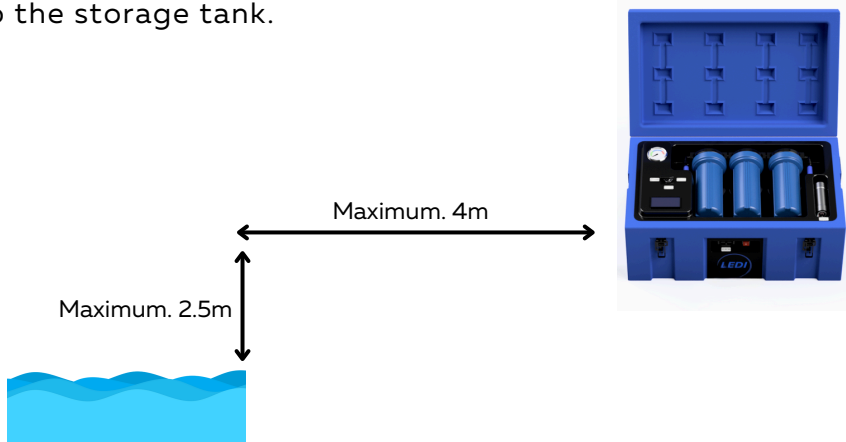
On Arrival – Recommissioning Checklist

- 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 Troop on a flat, stable, dry surface outdoors. Ideally raise the unit (e.g. on a sturdy table or pallet) for easier hose routing, drainage, and operator access.
- **Distance to source:** Position within 4 m of the water source. If the source is further away or at a lower level, use an intermediate buffer tank (>100 L) with a suitable supply/transfer pump feeding that tank. For best results, position the Troop close to the water source and use it to produce potable water, which is then pumped or gravity-fed to the storage tank.

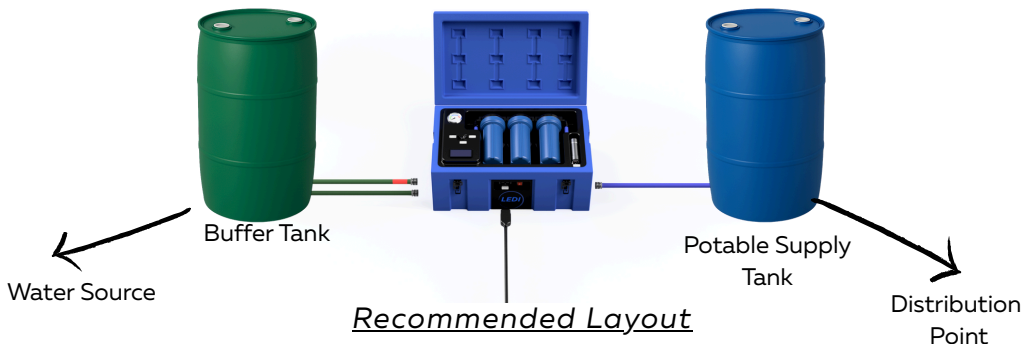


- **Weather:** Troop is water-resistant, not waterproof. Avoid heavy rain. If rain is expected, use a simple shelter (tarp/canopy) and a small guard over air vents to prevent water ingress.
- **Ventilation:** Keep all air vents clear. Maintain at least 150 mm clearance around vents and the rear panel. Do not enclose the unit without forced ventilation.
- **Electrical safety:** Keep the IP67 power supply off the ground and away from puddles. Verify earthing/RCD per local rules. Route cables and hoses to avoid trip hazards and mechanical damage.

Positioning and Layout

Recommended Layout:

1. Water source → Transfer Pump → Buffer/Storage Tank (>100 L).
 - Use a screened intake to limit debris.
 - Place the storage tank as close as practical to Troop and above ground to keep lines short and visible.
2. Buffer/Storage Tank → Troop inlet via ½" BSPM adapter or 12mm hose barb.
3. Troop clean water outlet → Potable Supply Tank via ½" BSPM adapter or 12mm hose barb.
4. Potable Supply Tank → Tap stand / distribution point.



Additional good practice

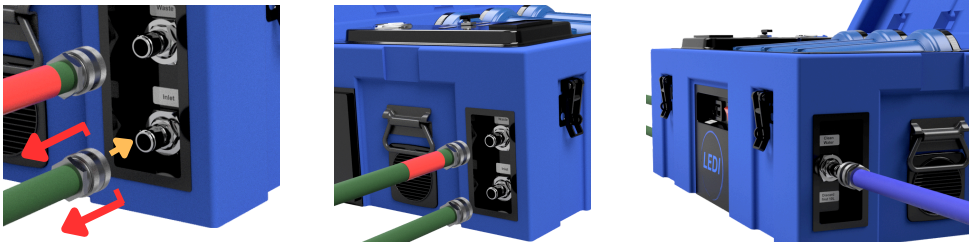
- Hose management: Support hoses to avoid sharp bends, abrasion points, and trip hazards. Keep permeate hoses off the ground and capped when not connected.
- Elevation & suction: Minimise suction lift and long runs on the feed side. If unavoidable, use a priming tee/valve or a higher-capacity transfer pump.
- Reticulated Water System: Troop 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 can be removed by disconnecting the push-fit receptacles. The entire filter module can be removed for easy access. When reinstalling ensure the arrow on top is pointing to the right and push the tube as far as possible into the receptacle. It will leak otherwise.



2. Install Hoses: All hose fittings are quick connect fittings. To connect hoses pull back collar, push onto the nipple and release collar.



3. Connect Power Lead. The power lead is a standard 30A Anderson plug. It should be aligned and pushed all the way into the port. It will click and lock into place (this can be difficult the first few times). If it is not correctly connected it will cut out power when bumped.



Operation

MAKING WATER

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

1. Connect the intake (Bottom) and waste (Top) lines. The intake must be placed in the supply water. Brine will be expelled out of the waste line. Make sure the pre-filters are always fitted in order to protect the internal pumps.
2. Set valve to Start. Connect the potable water output line. Connect the power cable and ensure power is supplied.
3. The fan and internal supply pump will start automatically. Allow the Troop to self prime. Once it has primed, water will start to flow from the waste port. Allow to run for 1-2 minutes after water is flowing from waste. This will ensure air is purged from the system
4. Switch on the main pump using the power switch on the front of the unit
5. Wait 5 minutes and turn valve to either Salt or Fresh, depending on the water you are treating.
6. Discard the first 10L produced.



CAUTION Ensure switch is off and valve is set to start before connecting power.

Fresh Water Flush

Regularly flushing the Troop with fresh water is essential to ensure the system operates at optimal capacity. The flushing removes salt build up and prevents corrosion. It should be conducted using dechlorinated fresh water or ideally, reserved purified water from the Troop.

Required Parts:

- **20L bucket filled with purified water**

1. Fill a 20L bucket with fresh purified water (preferably water produced by the unit).

2. Place the inlet hose in the bucket and the waste hose in the drain

3. Set the valve to Start/Flush.

4. Plug in the Troop and turn on power at plug. Allow the Suction pump to run until the bucket is empty. (No need to switch on the switch on front of Troop)



Descaling & Cleaning

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:

- **1 sachet of LEDI cleaning/descale solution**
- **20-30L permeate or purified fresh water**
- **2 x large buckets, drums or tanks**

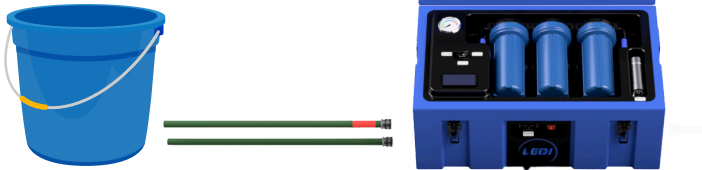
1. Flush Troop. Following fresh water flush instructions.

2. Prepare Solution. Mix one sachet of cleaning or descaling chemical into 10 L of permeate water. Stir until completely dissolved.

3. Prepare Troop. 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. Set Valve to Start / Flush

4. Prime Troop. Turn on the supply pump (plug in to power, leave Troop switch in off position). Allow to Prime for 2 minutes.

**1 x Sachet of Clean/
Descale Solution +
10L fresh,
dechlorinated water.**



5. Power on main pump. Without adjusting the valve - turn on the power switch located on the front of the Troop.

6. Circulate. Run the system for 5 minutes to circulate the solution.

7. Soak. Power off Main pump by turning off the switch on the front of the Troop and unplug system. Leave to Soak for 30 minutes.

8. Repeat circulate. Run the system for 5 minutes to circulate the solution.

9. Final Flush. Place the intake tube in Fresh dechlorinated water and run the system with the power connected and turned on at power point but with switch on the front of the Troop turned off. It is recommended to use 20-30L to fully flush.

10. Pre-Filter. Rinse and instal pre-filters.

NOTE: Discard the first 10L produced when next used.

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**
- **30L permeate or purified fresh water**
- **Large bucket**
- **New Set of Prefilters**

1. Flush Troop. Remove pre-filter #1 and #2. Place the intake tube in dechlorinated fresh (permeate) water . Turn on the supply pump (plug in Anderson plug) and run the system for 5 minutes to flush out any saltwater from the Troop. No need to switch on the switch on front of Garrison.

2. Prepare Solution. Mix one sachet of preservation chemical into 10 L of permeate water. Stir until completely dissolved.

3. Prepare Troop. Place the **intake and wastewater tubes** into preservation solution.

4. Circulate. Plug in but leave Troop power switch in off position. Circulate preservation solution through the Troop for 3 minutes.

5. Store. Set valve to Salt. Turn off the supply pump by switching off power supply and unplugging. Remove tubes and cap the connections. Label Troop as preserved, fill out log with date of preservation. Store your Troop in a cool, dry place.

6. Recommission: Replace all 3 pre-filters. Flush for 1 hr (this is to purge all preservative. It is fine to use regular source water. Dispose of the first 10L of purified water.

Pre-filter Replacement

WARNING Ensure the Troop 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 High pressure pump is protected by a low pressure switch. Once the filters clog too much the high pressure pump will not engage and the filters need to be replaced.

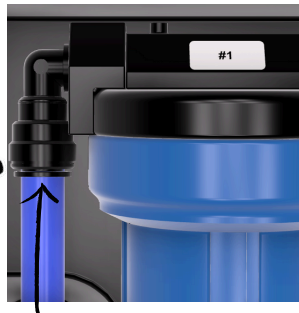
Required Parts:

- **1 sachet of LEDI preservation solution**
- **30L permeate or purified fresh water**
- **Large bucket**
- **New Set of Pre-filters**

1. Remove the Pre- filter module. Allow the system to rest for at least 15 minutes after last use to allow internal pressure to subside. Grab the tube and push all way in to push fit. Depress Push fit collar. While holding the collar in, pull tubing out. Some water may leak out so have towels ready to dry. Repeat for other side. You can now remove the entire module for easier work.



Collar



2. Using the provided Filter Wrench unscrew housings Counter Clock Wise (Left). Being careful not to lose the large sealing O-ring that sits on top of housing.



3. Replace Filters. Replace pre-filters like for like. ensuring the 5micron filter is installed at position #3.

4. Replace bottoms. Replace filter bottoms by screwing clockwise until hand- tight. Once hand-tight use the wrench to tighten about 1 / 4 turn.



5. Replace module. Stand the pre-filter module in Troop Tray. Check to ensure outlet is to the right side, with pre-filter labels #1,#2,#3 Left to Right. Push tubing into push fit housing, ensuring it goes all the way in to the mark. If it doesn't go in all the way it is not aligned. Remove and try again. Lay the module down and tuck in hoses



Membrane Replacement

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

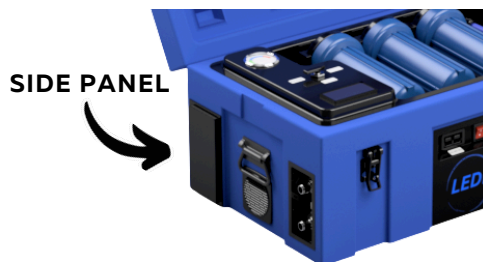
Over time, the reverse osmosis (RO) membrane will degrade, reducing the efficiency and output of the Troop.

Required Parts:

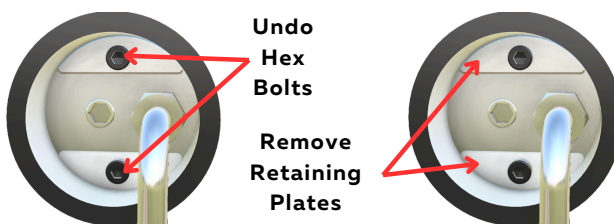
- **2 x 2521 SW RO membrane (Purchase at ledi.com.au)**
- **Quantity of towels/ rags**
- **LEDI tool kit**
- **Needle nose locking pliers**
- **Gloves**

Replacing the Reverse Osmosis Membrane

1. Unscrew and remove the LEFT side panel of the Troop to access the membrane housing.



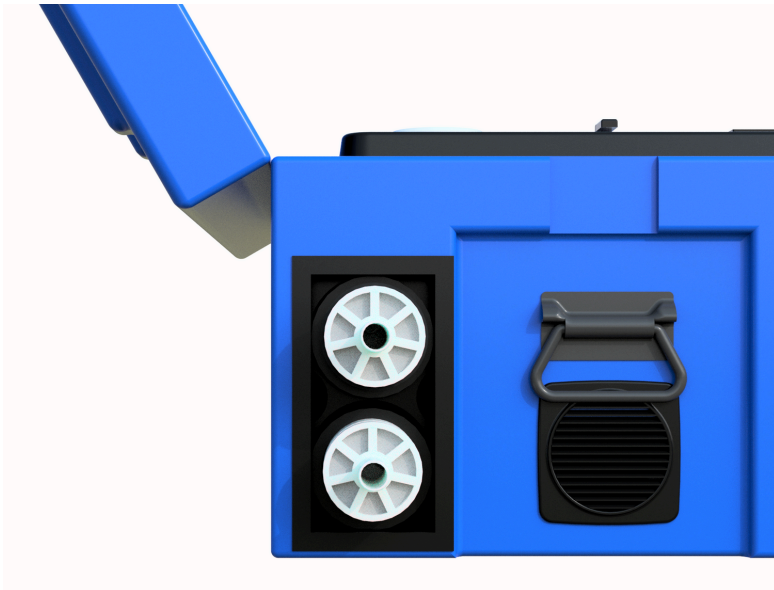
2. Put on gloves and pack towels underneath membrane to catch water that will leak from endcap. Remove the two hex bolts securing the metal retaining plates. Remove the retaining plates.



Handle

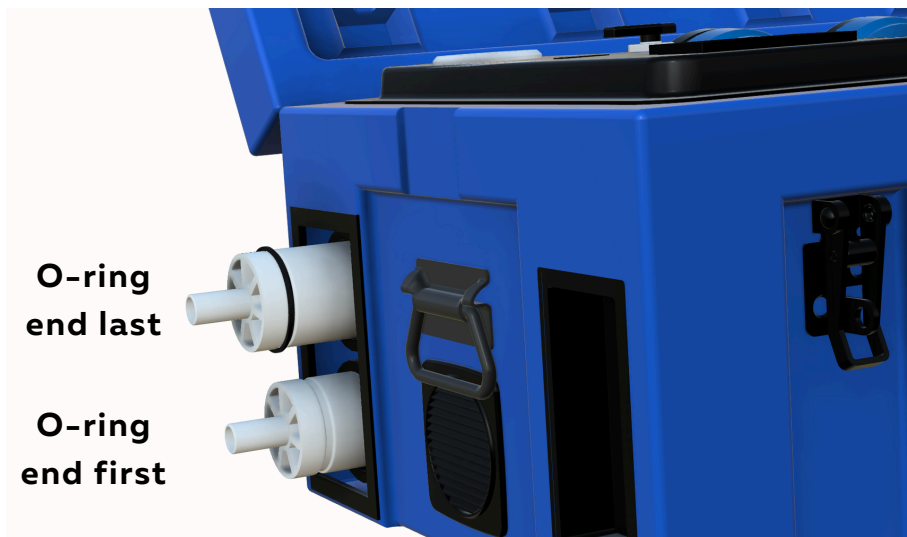


3. Remove the end cap by pulling with a steady force, using the stainless steel tube as a handle. Pull the end cap and membrane out of the housing (it will be stiff). If the membrane doesn't come out with the end cap. Use a pair of needle nose locking pliers to grasp the membrane and remove.



4. Slide the new membrane all the way into the housing. Ensuring the the end with the brine ring (black rubber external o-ring) is the last to be pushed in on the Top housing and the first on the bottom housing. Push the end cap into place. Re-attach the metal retaining plates with the hex bolts. Ensure they are seated into the groove within the housing.

5. The system is now ready for use. Discard the first 10L produced.



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**
- **Troop Tool Kit**
- **2 x new RO membranes (SW30 2521)**
- **New Set of Pre-filters**
- **New Oring**

1. Clean Troop. Follow cleaning instructions.

2. Descale Troop. 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 Troop.

4. Remove Membranes. Following steps 1-5 of **membrane replacement instructions**.

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

6. Store. Dummy fit membrane end caps. Set valve to Salt. Turn off the supply pump by switching off power supply and unplugging. Remove tubes and cap the connections. Label Troop as LONG TERM STORAGE -DONT RUN, fill out log with date of preservation. Store your Troop in a cool, dry place.

7. Recommission: Replace all 3 pre-filters. Fit new end cap Orings and 2 x 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 10L of permeate.

Troubleshooting

1. System Does Not Turn On

Possible Cause

Solution

No power

- Check power cable correctly fitted
- Confirm green light on the power supply is 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

Troop is more than 2.5m above water line.

- Confirm Troop is drawing water for <2m 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
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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 Troop back 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.

Maintenance Log

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