KATADYN®

AQUIFER 3000-MIL

User Manual

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1. Layout of Manual

1.1 Description of Symbols

The following symbols will be used in the manual to highlight important indications and warnings:

DANGER: This symbol indicates a shock hazard or exposure to risk.

CAUTION: This symbol indicates that there is the possibility of damaging the system and/or its components.

ATTENTION/WARNING: This symbol indicates accident prevention for the operator and/or for any exposed persons.

NOTE: This symbol indicates useful information.

Safety Notices

The following table lists all system specific **Danger, Caution, Warning,** and **Note** messages. Read and follow these instructions carefully to ensure safe operation and to avoid equipment damage.

	***DANGER:*** This symbol indicates a shock hazard or exposure to risk.
	***DANGER:*** Prior to washdown procedures, disconnect and **remove** the Control Box. Ensure the unit remains dry at all times.
	***DANGER*:** Do **not** operate the Aquifer system with water that may contain oil, chlorine, or chemicals.
	***DANGER:*** Verify product water quality before transferring to the storage tank. Water must meet potable standards of less than 750 parts per million (ppm) Total Dissolved Solids (TDS).
	***CAUTION:*** This symbol indicates that there is the possibility of damaging the system and/or its components.
	***CAUTION*:** Do not install in polluted waters. Observe all warning labels.
	***CAUTION:*** Ensure drain holes at the front and rear of both cases remain clear to allow proper drainage in case of leaks.
	***CAUTION*:** Pressurizing the membrane with storage chemicals can cause damage.
	***CAUTION*:** Use two people to lift Pump Case A and Membrane Case B. Always use side handles and avoid drops—impacts can cause internal damage.
	***CAUTION*:** In hot conditions, place the unit in shade. Do not operate above 95°F (35°C) without protection from heat and UV.
	***CAUTION*:** Keep the product tank no higher than 10 ft (3 m) above the membrane case to prevent back pressure damage.
	***CAUTION:*** DO **NOT** OPERATE THE AQUIFER 3000 WITHOUT A 5 MICRON PREFILTER INSTALLED IN THE FILTER HOUSING. DAMAGE WILL OCCUR TO SYSTEM.

Safety Notices Cont.

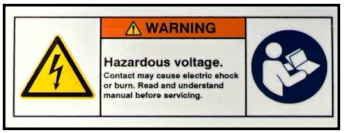
	ATTENTION/WARNING: This symbol indicates accident prevention for the operator and/or any exposed persons.
	ATTENTION/WARNING: Your watermaker contains a nontoxic preservative from the factory. Do not pressurize the membrane until the preservative is flushed out.
	ATTENTION/WARNING: Ensure you are connecting the system to the correct voltage. The system requires 208-240 VAC, Single Phase, 50/60 Hz.
	ATTENTION/WARNING: The watermaker should never be left unattended as system damage may occur.
	***ATTENTION/WARNING*:** Ensure the feed water is clean and non-chlorinated. Do not place the feed hose into potable water intended for storage, as residual water in the hose or strainer may contaminate the water supply. Contamination can introduce debris or microorganisms, potentially impacting water quality in the storage container.
	NOTE: This symbol indicates useful information.
	NOTE: We will not be held responsible for shortages that are not reported within 30 days of the ship date.
	NOTE: EMC certificates (CISPR 11 Class A), and Chemical Safety Data Sheets (SDS) are available upon request.
	***NOTE*:** Boost Pump can run inside of case or be removed from case.
	***NOTE*:** Boost Pump self-primes up to 10 ft (3 m).
	NOTE: If the low-pressure switch fails, a distinctive “knocking” sound may occur. Adjust pressure or shut down system.
	***NOTE*:** Always check crankcase oil visually before use to prevent major damage.
	NOTE: After 500 hours it is recommended that the Boost Pump (EL-FP-10GPMDP12V) be replaced for increased reliability.

Read this manual before operating to ensure safety and prevent damage. Always power off and lock out the system before maintenance. Inspect for leaks, handle high-pressure connections with care, and review warning labels. Upon delivery, check for shipping damage within 24 hours, confirm all components against the shipping list, and keep packaging until verified.

NOTE: We will not be held responsible for missing or damaged items that are not reported within 30 days of the ship date.

1 - LAYOUT OF MANUAL

ATTENTION/WARNING: Be aware of the caution, warning, and danger signage on the system. Review and identify the stickers on the body of the system before operating.

	Sticker Image	Signal Word and Message	Location on System
1.		**DANGER** – Keep hands away from gears	On gear drive housing cover
2.		**NOTICE** – Check Oil	On Desalination Pump
3.		**CAUTION** – Hot surface; burn hazard	On motor
4.		**CAUTION** – Equipment exceeds 40 lbs; two-person lift required	On handles
5.		**WARNING** – Hydraulic system parts and connections can contain high pressures, which if suddenly and unexpectedly released can cause serious injury	Above Desalination Pump on inside of case
6.		**WARNING** – Hazardous voltage; Contact may cause electric shock or burn. Read and understand manual before servicing.	On outside of Control Box housing

1.2 Important Information

Read entire manual before operation. Study the system layout diagram, component photos, and descriptions before installation.

Before operating, lay out the system and identify each module and component. Ensure that there is enough clearance around the components for removal of filters and system service.

CAUTION: Do not install in polluted waters. Observe all warning labels. Use two people to lift boxes marked "Heavy".

Aquifer 3000 Shipping List:

ATTENTION/WARNING: **Please read any warning labels in packaged materials which may include SDS sheets and further documents.**

Pump Case A Assembly:

- Laminated Quick Start Guides
- Desalination Pump/Frame
- Control Box Assembly
- Boost Pump Assembly
- Boost Pump Extension Hose
- 5-Micron Prefilter
- Cold Weather Kit (if purchased)

Membrane Case B Assembly:

- Laminated Quick Start Guides
- (3) Membrane Housings
- (2) High Pressure Hoses (attached to membranes)
- Low Pressure Hoses (Inlet and Brine)
- Boost Pump Extension Cable
- Product Water Hose
- Storage Bag (in case):
    - Strainer Assembly
    - Tools Kit (filter bowl wrench and user manual)

NOTE: EMC certificates (CISPR 11 Class A) and Chemical Safety Data Sheets (SDS) are available upon request.

2. Product Overview

2.1 System Description and Components

The Aquifer 3000 is a high volume desalination system designed to make 3,000 gallons per day (GPD) (11.4 m^3) of drinking water from any water source including seawater, rivers, lakes, or brackish wells. It removes salts, organic chemicals, pesticides, endocrine disruptors, parasites, cysts, bacteria, and viruses—ensuring safe, potable water in a wide range of environments.

The system pumps 4-7 gallons (15.1–26.5 L) of inlet water per minute through a reverse osmosis membrane. Approximately 30% becomes purified water, while the rest is returned as brine. No contaminants are retained inside the unit.

Water filtration occurs in three stages:

1. **Strainer** – Removes large debris and keeps the suction hose positioned below the water surface.
2. **5-micron prefilter** – Protects the Desalination Pump by removing silt, algae, and fine particles.
3. **Reverse Osmosis Membrane** – Allows freshwater to pass while rejecting salt, bacteria, viruses, and other impurities, which are discharged as brine.

The Aquifer 3000 operates on **AC power (208–240 VAC)** and consumes **0.85 kW in low mode** and **1.65 kW in high mode** under nominal conditions. **A 3.5 kW generator or power source** is recommended to accommodate startup surges and system variables.

Strainer/Inlet Hose Assembly:

This assembly contains the components necessary to feed the pumps from any appropriate water source.

Strainer: The strainer is housed in a 100 micron mesh bag that is designed to protect the system from larger particulate and contaminants such as gravel, general debris, and marine life.

- **Strainer Float:** The assembly has a large float designed to support the strainer at a depth beneath the water surface.
- **Inlet Anchor:** The assembly has a small anchor and rope designed to secure the inlet location and guarantee the strainer remains submerged. The rope length can be adjusted in order to ensure the float is not submerged along with the strainer, while also securing the inlet location to avoid drift with tides and water flow.

Strainer Assembly

Inlet Hose Assembly

Boost Pump Assembly:

The two pressure gauges indicate inlet flow pressure before and after the prefilter, providing an analog reading of filter condition.

NOTE: The Boost Pump assembly may be operated inside the case or removed for external use. Removal may be necessary to:

1. **Improve priming capability** – Positioning the Boost Pump closer to the water source helps overcome priming issues, particularly when the point of use is elevated. The Boost Pump can self-prime up to a maximum vertical lift of 10 ft (3 m).

2. **Reduce motor temperature** – In hot weather or when the case is exposed to direct sunlight, external operation can help lower the pump motor's operating temperature.

CAUTION: DO **NOT** OPERATE THE AQUIFER 3000 WITHOUT A 5 MICRON PREFILTER INSTALLED IN THE FILTER HOUSING. DAMAGE WILL OCCUR TO SYSTEM.

Pump Case A Assembly:

1. This assembly contains (2) laminated quick start guides, (1) Desalination Pump/frame, (1) Control Box assembly, (1) Boost Pump assembly, (1) Boost Pump extension hose, and (1) 5-micron prefilter, along with (1) power cable and (1) salinity probe cable.
2. This assembly has (5) connections:
    - (2) Low pressure fittings — (1) low pressure seawater inlet (labeled black) and (1) low pressure brine discharge (labeled red).
    - (2) High pressure hose connection points (labeled white and purple).
    - (1) Salinity probe cable (from Control Box) that routes to Membrane Case B during operation.

Desalination Pump

Pump Case A Dimensions:

52" W x 18" L x 18" H | 175 lbs.

1.32 m W x 0.46 m L x 0.47m H | 79.4 kg.

Membrane Case B Assembly:

1. This assembly contains (2) laminated quick start guides, (3) membrane housings, (2) high pressure hoses (attached to the membranes), (2) low pressure hoses (Inlet and Brine), (1) Boost Pump extension cable, and (1) product water hose. A Storage Bag is also included, which contains the strainer assembly, tools kit, filter bowl wrench, and user manual.
2. This case has (3) connections:
    - (2) High Pressure Hoses (labeled purple and white).
    - (1) Low Pressure Product Water Tubing (labeled blue).

Membrane Case B Dimensions:

52” W x 18” L x 18” H | 153 lbs.

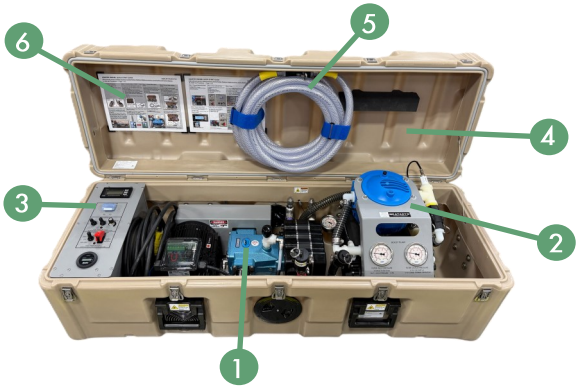
1.32 m W x 0.46 m L x 0.47m H | 69.46 kg.

2.2 Typical Operating Parameters

Operational parameters vary based on factors like inlet water temperature, salinity, Nephelometric Turbidity Units (NTU), air temperature, and priming height. The values below reflect ideal conditions, not all possible setups.

	Operational Condition	**Safety Shut-Off Limit**
Gal/day	High Speed: 3,000 gal Low Speed: 1,600 gal	N/A
Ocean Salinity parts per thousand (ppt)	Approx. 0-45 ppt	N/A
Ocean Temperature	Approx. 68°F (20°C)	N/A
Filter Outlet Pressure pounds per square inch (psi)	High Speed: 15-20 psi Low Speed: 15-20 psi Boost Pump only: 30 psi	3 psi
Membrane Pressure	High Speed: 780 psi Low Speed: 700 psi	1,000 psi
Max Operating Temp	105°F (40.5°C) | 95°F (35°C)	N/A

2.3 Parts Identification

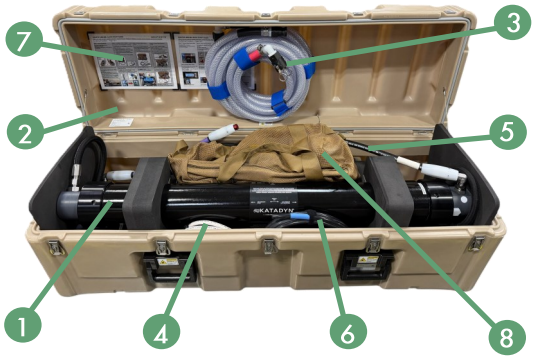


Pump Case A Dimensions:

52” W x 18” L x 18” H | 175 lbs.

1.32 m W x 0.46 m L x 0.47m H | 79.4 kg.

Pump Case A	
1	Desalination Pump Frame
2	Boost Pump Assembly and (1) 5-Micron Prefilter (inside bowl)
3	Control Box Assembly
4	(1) Mil-Spec Case
5	Boost Pump Extension Hose
6	(2) Quick Start Guides



Membrane Case B Dimensions:

52” W x 18” L x 18” H | 153 lbs.

1.32 m W x 0.46 m L x 0.47m H | 69.46 kg.

Membrane Case B	
1	(3) Membrane Housings
2	(1) Mil-Spec Case
3	(1) Inlet and Brine Hose (stacked)
4	Boost Pump Extension Cable
5	(2) High Pressure Hoses
6	Blue Product Hose
7	(2) Quick Start Guides
8	Storage Bag

Storage Bag

Storage Bag
Strainer Assembly
Tools Kit/Filter Bowl Wrench/ User Manual

2 - PRODUCT OVERVIEW

Pump Case A

(2) Quick Start Guides

Desalination Pump

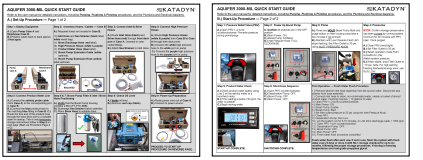
Boost Pump Assembly

Boost Pump Extension Hose

5-Micron Filter

Membrane Case B

(2) Quick Start Guides



High Pressure Hoses (attached)

Low Pressure Hoses (inlet and brine)

Boost Pump Extension Cable

Product Water Hose

Storage Bag

Strainer/Inlet Assembly

Tools Kit

3. Installation

3.1 Choosing a Site (Location and Placement)

Water Source Guidelines

- Select clean, calm water with low sand, silt, and algae to protect the prefilter.
- In bays or lakes, draw from deeper water to avoid sediment.
- The Aquifer 3000 handles 0–45,000 ppm TDS and up to 50 NTU.
- High turbidity shortens filter life; avoid contaminated source water.
- Choose locations with stable NTU and salinity—tides or runoff can affect performance.
- If temperatures approach freezing, use the Cold Weather Kit to maintain flow.

***NOTE*:** Boost Pump self-primes up to 10 ft (3 m).

***CAUTION*:** Ensure drain holes at the front and rear of both cases remain clear to allow proper drainage in case of leaks.

***CAUTION*:** Pressurizing the membrane with chemicals can cause damage.

Ensure the purge process is completed and hoses are not kinked.

Setup Tip**:** Place all cases and hardware in position before connecting any electrical or plumbing components.

***CAUTION*:** Use two people to lift Pump Case A and Membrane Case B. Always use side handles and avoid drops—impacts can cause internal damage.

***CAUTION*:** In hot conditions, place the unit in shade. Do not operate above 95°F (35°C) without protection from heat and UV.

***CAUTION*:** Keep the product tank no higher than 10 ft (3 m) above the membrane case to prevent back pressure damage.

Maintenance Tip: Keep Pump Case A's vents clear of dust and blockages to ensure airflow and reliable operation.

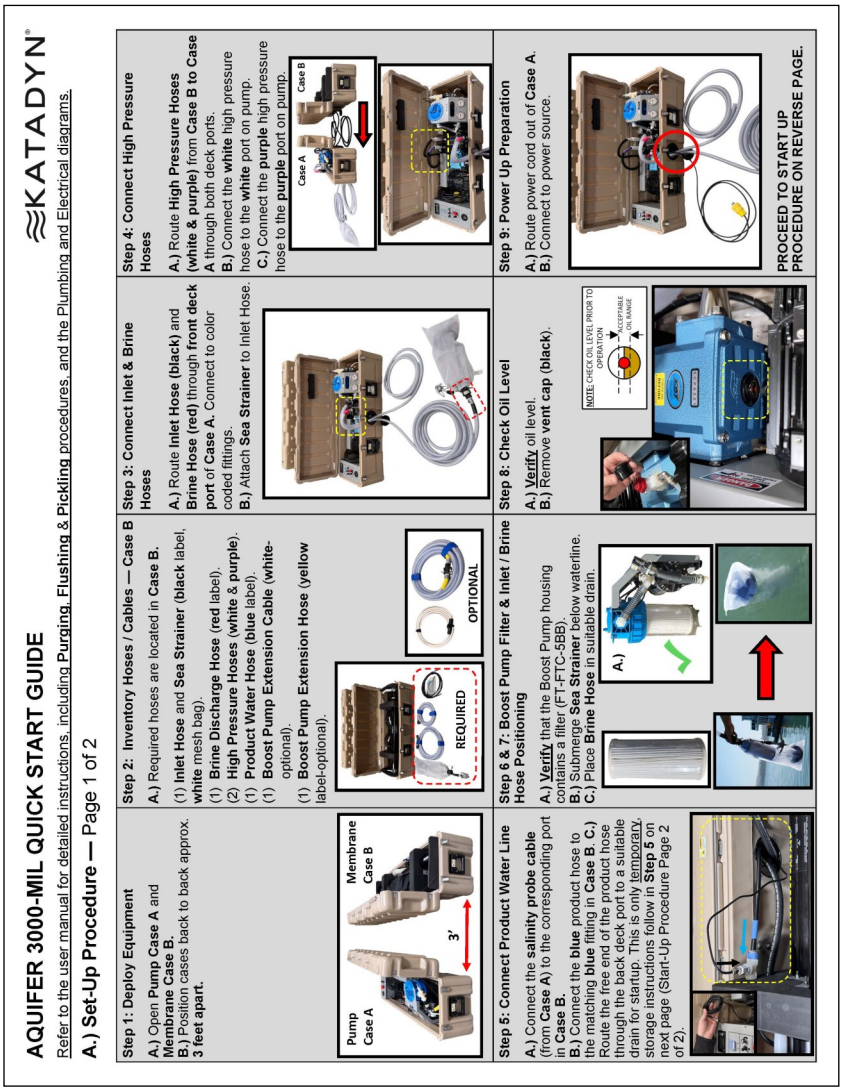
DANGER: Prior to washdown procedures, disconnect and **remove** the Control Box. Ensure the unit remains dry at all times.

CAUTION: DO **NOT** OPERATE THE AQUIFER 3000 WITHOUT A 5 MICRON PREFILTER INSTALLED IN THE FILTER HOUSING. DAMAGE WILL OCCUR.

4. Operation

4.1 Quick Start Guide (Page 1 of 2)

Scan the QR code to view full size version of the *Quick Start Guide* .
https://static.myqrcode.mobi/user-media-prod/AQUIFER_3000_QUICKSTART_GUIDE_9.8.2025_Color_Version_a70a15e7_u3ywns



AQUIFER 3000-MIL QUICK START GUIDE

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Refer to the user manual for detailed instructions, including **Purging, Flushing & Pickling** procedures, and the Plumbing and Electrical Diagrams.

B.) Start-Up Procedure — Page 2 of 2

Step 1: Pressure Relief Valve (PRV)

A.) Open PRV 1–2 turns counterclockwise. Prevents pressure during prime/purge.

Step 2: Power Up Boost Pump

A. Confirm all switches are in the OFF position.
B.) Main Power: ON.
C.) Boost Pump: ENABLE.
D.) Inlet Pressure Knob: FULL CLOCKWISE.

Step 3: Prime

A.) Press and **HOLD** Boost Pump Start and purge button on filter housing (may take a few minutes if not primed).
B.) Maintain until Low Pressure Fault LED stops flashing. Set Filter Outlet to 30 psi using INLET PRESSURE KNOB.

Step 4: Pressurize

STOP: Confirm storage preservative has been purged by running system minimum for 30 minutes with PRV open. Once purged:

A.) Close PRV (hand tight).
B.) Set Filter Outlet to 35 psi.
C.) Select operation mode RUN HIGH/RUN LOW.
Watch system pressure.
D.) When stable, drop Filter Outlet to ~15 psi. Note: For high salinity/ freezing feedwater/energy save, use RUN LOW.

Step 5: Product Water Check

A.) Check product water quality using Line 2 on the salinity meter or a handheld meter.
B.) If the reading is below 750 ppm, the water is potable.
C.) Begin storing water.

START-UP COMPLETE.

Step 6: Shut Down Sequence

A.) Open PRV counterclockwise.
B.) Desalination Pump: OFF.
C.) Boost Pump: OFF.
D.) Main Power: OFF.

SHUTDOWN COMPLETE.

Post Operation — Fresh Water Flush Procedure

1.) Remove strainer inlet hose assembly from the source water. Disconnect sea strainer from hose assembly.
2.) Connect inlet hose to clean, non-chlorinated water, ideally a bucket of stored product water. Flushing requires ~ 10 gallons of water.
3.) Open PRV 1–2 turns counterclockwise.
4.) Main Power: ON.
5.) Boost Pump: Enable.
6.) Boost Pump: Start.
7.) Set filter outlet pressure to 25 psi using the Inlet Pressure Knob.
8.) Close PRV.
9.) Desalination Pump: Run Low.
10.) Let the system run for 5-10 minutes, or until brine discharge reads < 1000 ppm.
11.) Open PRV 1 turn counterclockwise.
12.) Desalination Pump: OFF.
13.) Boost Pump: OFF.
14.) Main Power: OFF.
15.) Fresh water flush procedure completed.

Fresh water flush after each use. If not in use, flush the system with fresh water every 5 days or store it with SC-1 storage chemical for up to six months, following the proper storage procedures. If storing in freezing temperatures use food grade propylene glycol.

4.2 Run Modes: Run Low | Run High | Emergency Run

ATTENTION/WARNING: The watermaker should never be left unattended as system damage may occur.

***DANGER*:** Do **not** operate the Aquifer system with water that may contain oil, chlorine, or chemicals.

CAUTION: DO **NOT** OPERATE THE AQUIFER 3000 WITHOUT A 5 MICRON PREFILTER INSTALLED IN THE FILTER HOUSING. DAMAGE WILL OCCUR TO SYSTEM.

Run High (3,000 gal/day): Typical run speed for normal inlet conditions (35 ppt salinity, 50 °F water).
Run Low (1,600 gal/day): Well suited for solar power applications, fuel conservation, extreme inlet conditions, or low noise signature.
Emergency Run: Bypasses normal system safeguards for manual override. Use only when necessary (e.g., automation failure), as this mode may disable some protections. Observe pressure gauges and monitor system for knocking continuously.

4.3 Purging Preservatives

ATTENTION/WARNING: Your watermaker contains a nontoxic preservative from the factory. Do not pressurize the membrane until the preservative is flushed out.

Startup and Purging Procedure

1. **Source**

Use **non-chlorinated** feed water. If only chlorinated is available, temporarily install a **charcoal prefilter** (FT-FTC-CCBB) and use **only** during flushing/purging procedure. Source water is acceptable for purging.

- Submerge feed hose strainer below the surface.
- Keep brine hose at least 6 ft away from your inlet hose.
- Position product hose to drain.

2. **Setup**
   - Follow QuickStart Guide Setup Procedure (page 1 of 2).
3. **Prime**
   - Turn on: **1. Main Power: Power Switch → 2. Boost Pump: Enable → Start**
   - Flip and hold start switch while depressing purge button on filter bowl (may need to hold for several minutes).
   - Verify pressure relief valve (PRV) is open and switch **Desalination Pump** to **Run Low** to purge all preservatives (approximately 30 minutes).
4. **Pressurize**
   - After flushing, **close** (PRV) **hand tight**.
   - Pressure should rise to **650–800 psi (45–52 bar)** (less for brackish/fresh water).
5. **Final Purge and Test**
   - Run for **5–10 minutes** more.
   - Test product water with salinity meter.
   - When below **750 ppm**, water is potable.

DANGER: Verify product water quality before transferring to the storage tank. Water must meet potable standards of <750 ppm TDS. The system is now ready for normal operation.

4.4 Normal Operation and Shutdown

Once the system has been purged, it is ready for extended operation.

1. **Selecting Operating Mode**
   Important: Do **not** switch modes while the system is running. Always perform a complete shutdown of the Desalination Pump before changing modes.

   High Mode: This is the standard mode for most feedwater conditions, providing maximum output.
   - If feedwater is extremely cold (near freezing) or salinity exceeds 35 ppt, consider switching to Low Mode to prevent system pressure from exceeding the 1000 psi safety cut-off.

   Low Mode: Ideal for extreme feedwater conditions or when conserving power.
   - Suitable for solar-powered systems or fuel-conscious operation (consumes <1.0 kW).
   - Operates more quietly—recommended if noise is a concern.

2. **Monitor System Operation**
   - Use the provided **Data Logging Sheet** to record system parameters every two hours. Familiarity with system trends is essential for effective monitoring.
   - The system includes **automated shutdown**:
     *Triggered when filter outlet pressure reaches 3 psi or system pressure exceeds 1000 psi.
     *A **Low/High Pressure Fault** will automatically shut down the unit under these conditions.

NOTE: If the low-pressure switch fails, a distinctive “knocking” sound may occur.
   - Attempt to correct inlet pressure to the pump.
   - If knocking persists, **shut down the system and replace the 5-micron filter (FT-FTC-5BB)**.

3. **System Shutdown Procedure**
   Follow these steps to safely shut down the unit:
   1. Open the **pressure relief valve** one turn to release pressure.
   2. Turn the **Desalination Pump** switch to **Off**.
   3. Turn the **Boost Pump Enable** switch to **Off**.
   4. Turn the **Main Power** breaker **Off**.

After shutdown:
   - **Short-Term Downtime (≤ 2 hours):** No flushing required.
   - **Long-Term Downtime (> 12 hours):** Flush the system with freshwater according to **Section 4.5.**

4.5 Flushing Procedure (Post-Operation)

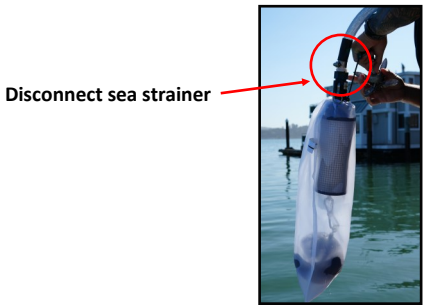
***ATTENTION/WARNING*:** The watermaker should never be left unattended as system damage may occur.

***NOTE*:** Always check crankcase oil visually before use to prevent major damage.

***ATTENTION/WARNING*:** Ensure the feed water is clean and non-chlorinated. Do not place the feed hose into potable water intended for storage, as residual water in the hose or strainer may contaminate the water supply. Contamination can introduce debris or microorganisms, potentially impacting water quality in the storage container.

1. Remove strainer inlet hose assembly from the source water. Disconnect sea strainer from hose assembly.
2. Connect inlet hose to clean, non-chlorinated water, ideally a bucket of stored product water. Flushing requires ~ 10 gallons of water.
3. Open PRV 1–2 turns counterclockwise.
4. Main Power: ON.
5. Boost Pump: Enable.
6. Boost Pump: Start.
7. Set filter outlet pressure to 25 psi using the Inlet Pressure Knob.
8. Close PRV.
9. Desalination Pump: Run Low.
10. Let the system run for 5—10 minutes, or until brine discharge reads <1000 ppm.
11. Open PRV 1 turn counterclockwise.
12. Desalination Pump: OFF.
13. Boost Pump: OFF.
14. Main Power: OFF.
15. Fresh water flush procedure completed.

Perform a fresh water flush after each use. If not in use, flush the system with fresh water every 5 days. If storage must be longer than 5 days, follow the **long term storage procedure** on the next page.



4.6 Pickling Procedure (Long Term Storage)

To prevent membrane fouling, run your system frequently—ideally every other day. Biological growth, especially in warm environments, is the leading cause of fouling. Regular freshwater flushing helps but may not fully prevent growth.

Pickling coats the system with a storage solution to preserve it during long periods of disuse. Two approved options:

1. **SC-1**: Protects for up to 6 months
2. **Food grade propylene glycol**: Protects for up to 1 year.

Only these two chemicals are approved. Do not use substitutes.

1. **SC-1 Pickling Procedure**

1. **Mix** 2 packets of SC-1 in 2 gal (7.6 L) of fresh, unchlorinated water. Allow 1 hour to dissolve. Any remaining chemicals will be captured by prefilter.
2. This mixes with the 7 gal (26 L) of water remaining in the system (from the membranes, pumps and filter cartridge) for a total of 9 gal (34 L), resulting in an acceptable dilution ratio.
3. **Ensure the system has been flushed within the last 5 days**. If not, perform a full fresh water flush.
4. Place both the inlet and brine discharge hoses in the SC-1 solution bucket. Route product water tubing to drain *above* the bucket.
5. Open the pressure relief valve 1 full turn.
6. **Power ON** and run Boost Pump. Set feed pressure to 15 psi (~1 bar).
7. Let the solution cycle for 20 minutes.
8. Power OFF. Disconnect hoses and wires carefully, avoiding excessive drainage. Cap all ports.
9. Label the unit with the chemical used and pickling date.
10. Install a new 5 micron filter (FT-FTC-5BB).

2. **Propylene Glycol Pickling**

1. **Mix** 2 gal (7.5 L) of 96% food-grade propylene glycol (no water).
2. When combined with system water the final ratio is ~28% glycol—suitable for long-term storage.
    * If using a lower concentration glycol, ensure the final solution is at least 25%.
    * Higher concentrations are safe but require a longer flush during reactivation.
    * Once mixed, follow the same pickling procedure used for SC-1.

Clean Up

1. Discard remaining chemical in a suitable drain.
2. Drain/dry cases, hoses, and parts before storing.
3. Organize and pack system for transport.

4.7 Data Logging Sheet

To fill out the data log, **scan** the provided QR code using a QR code scanner app on your smartphone. Scanning the code will direct you to a webpage or an application where you can enter the required information accurately and conveniently. The page will prompt you with the required data. The only tools that will be required for data logging are as follows:

- Infrared Temperature Reading Gun
- Ocean Salinity Measurement Device
- Product Salinity Measurement Device (provided with unit)
- NTU Measurement Device
- Amperage Measurement Device

Ensure that you have a stable internet connection to complete the data logging process smoothly. If you do not have access to stable internet at your point of use, record these values and upload them when internet access is available. When opening the data logging sheet, save a personal copy for future use and updates.

Data Logging Sheet
https://docs.google.com/spreadsheets/d/18povE1iQJyUUcGAPt8r5KYTLvBhJPqBkqKLb_DVYPWU/edit?usp=sharing

5. Maintenance

5.1 Routine Maintenance

- Always disconnect power before maintenance and follow lockout/tagout (LOTO) procedures; tag the power inlet cable and seawater hose with danger notices.
- If unfamiliar with LOTO procedures, consult the Engineering Officer of the Watch, or Engineering Department.

⚠ ***DANGER:*** Prior to washdown procedures, disconnect and **remove** the Control Box. Ensure the unit remains dry at all times.

Visual Inspection (Before/After Each Use)

1. **Hoses and Tubing:** Check for leaks, chafing, or cracks. Repair immediately if found.
2. **Salt Buildup:** Some crystal formation near the Desalination Pump is normal. Wipe clean with a damp cloth when powered OFF.
3. **UV Damage (soft components):** Look for discoloration, flaking, or brittleness. Replace before failure risk.
4. **Corrosion (metal components):** Ensure all metal is dry. Clean and apply a **hydrophobic oil** like WD-40 (flammable) or tung oil (non-flammable). Never spray directly—apply with a cloth. Avoid products with chlorine, ammonia, heavy metals, or abrasives.

Operational Maintenance (During Use)

Prefilter Monitoring

- During operation, the system's prefilter gradually reaches the end of its service life.
- Replace the filter when the pressure difference between the filter inlet and outlet exceeds 10 psi. The system will automatically shut down if inlet pressure drops to 3 psi.

To Replace Prefilter:

1. Power off system.
2. Open pressure relief valve 1–2 turns to depressurize.
3. Disconnect plumbing and electrical from Boost Pump.
4. Move to a spill-safe area.
5. Remove housing with wrench, replace with Katadyn 5 micron filter (FT-FTC-5BB).
6. Reassemble, reconnect, and restart system.

Performance Monitoring

- If **knocking** is heard (loud piston slamming sound), shut down immediately.
- Retry at lower speed or replace filter.

5.2 Boost Pump, Desalination Pump and Membrane Care

Boost Pump

The Boost Pump requires minimal maintenance beyond regular inspections for leaks. If a leak is found, first try tightening the fitting. If that fails, remove and clean the fitting, apply silicone grease to all mating surfaces, and reassemble.

⚠ ***CAUTION:*** DO **NOT** OPERATE THE AQUIFER 3000 WITHOUT A 5 MICRON PREFILTER INSTALLED IN THE FILTER HOUSING. DAMAGE WILL OCCUR TO SYSTEM.

NOTE: After 500 hours it is recommended that the Boost Pump be replaced for increased reliability.

Desalination Pump

The Desalination Pump crankcase oil should be changed every 2,500 operating hours or sooner if water contamination (milky appearance) is observed. High-pressure pump seals also require periodic replacement, typically every 2,500 hours, while full rebuilds are recommended around 10,000 hours, or earlier if recovery rate drops or leaks appear. A 5% decline in recovery rate signals that valve replacement is necessary.

Membranes

Membrane maintenance is only required when performance issues appear. The most common signs of fouling are foul-smelling water, rising system pressure, declining product flow, and poor water quality. Biological fouling is most common and often occurs when the system is not properly flushed or pickled during storage. For best accuracy, compare current performance against known-good conditions logged during regular operation.

Membrane Cleaning

Use SC-2 or alkaline cleaner for biofouling; this will be evident from the foul-smelling water that does not go away within 20 minutes of use.

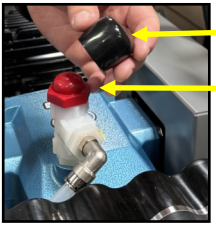
Use SC-3 or acid cleaner if system pressures are high under fair inlet conditions.
Membranes should only be cleaned when performance has degraded.

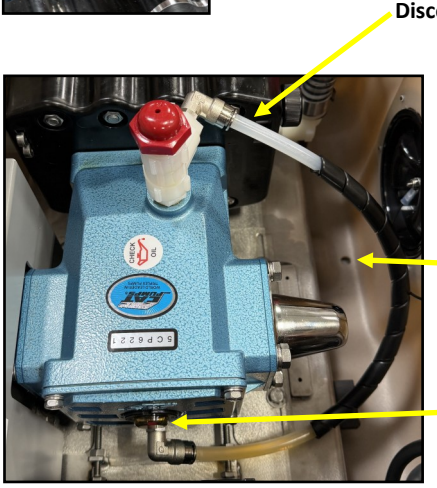
If SC-2 and SC-3 treatments fail to restore operation, this may indicate membrane failure or another system issue. Contact Katadyn before attempting removal or replacement.

5.3 Oil Changes

Desalination Pump – Oil Change Procedure:

1. **Warm the oil:** Run system for 30 minutes to warm the oil for easier draining.
2. **Disconnect the drain tube:** Push the collar on the push-to-connect fitting (on top of the crankcase) and pull the tube out.
3. **Remove spiral wrap (optional):** Take off the protective wrap from the drain tube.
4. **Route drain tube:** Feed the tube through the case's bottom drain hole.
5. **Drain oil:** Place a container below the drain tube and let the crankcase drain completely.
6. **Rewrap and reposition:** Reinstall the spiral wrap and return the drain tube to its original routing.
7. **Remove air vent cap:** Unscrew the red vent cap.
8. **Refill with oil:** Pour 1 pint (450 ml) of **5W-30 synthetic oil** into the vent opening.
9. **Check level:** Use the sight glass to confirm proper oil level.
10. **Reinstall cap:** Replace the red cap securely.
11. **Dispose of used oil:** Follow all local regulations for proper disposal.





5.4 Troubleshooting — Emergency Shutdown Matrix

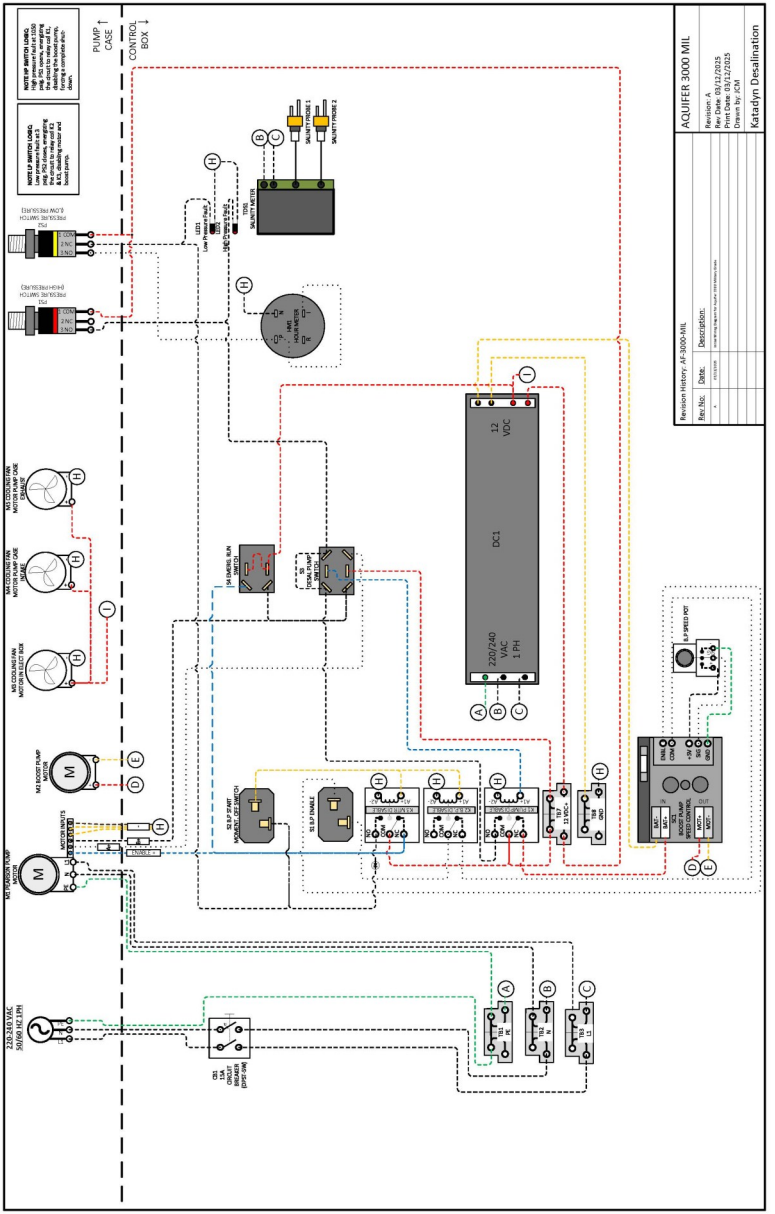
Malfunction	Cause	Solution
Low Pressure Fault — LED flashing	Filter outlet pressure is too low.	Turn Boost Pump knob clockwise, replace filter, adjust Boost Pump speed controller.
High Pressure Fault — LED flashing	System pressure is too high.	Likely cause of a high pressure fault is an obstruction in the product water flow path. Check the product water hose for plugs or closed valves downstream. If no obstructions, the membranes may be "scaled". Use SC-3 for scaling.
System "knocking"	The knocking sound is common for the Desalination Pump but should be avoided. It is caused by an imbalance of inlet and outlet pressure and flow.	Adjust filter outlet pressure (10–25 psi). If still knocking, replace filter.
Low output of product water	Low system pressure, Desalination Pump malfunction.	Tighten pressure relief valve, run flow test.
Cannot "prime" the system	Improper system set-up, Boost Pump malfunction, airlock.	Move system/Boost Pump within 10 ft of waterline, check power, press purge button.

5.4 Troubleshooting — Emergency Shutdown Matrix Cont.

Malfunction	Cause	Solution
Boost Pump will not stay on	Low pressure switch failure. User error.	**Hold** Boost Pump start switch until pressure registers. If it works after unplugging LP switch, replace switch.
Leaking high pressure fitting	Unseated O-ring or loose fitting.	The purple and white high pressure hoses have an O-ring on the brass insert inside the fitting. Ensure this is in place. Check that the fitting is tight. See 6.2 Aquifer Parts 3000 ID.
Product water quality unsatisfactory	Lack of system pressure, faulty membrane.	Close/tighten pressure relief valve, contact technical support.
System pressure is too high	Obstructed flow path, scaled membranes, extreme inlet condition (high salinity, freezing feed).	Clear blockages, switch to low mode.
System pressure is to low	Pressure relief valve open, pump malfunction.	Close pressure relief valve, replace high pressure seals, check valves.
System cycles "on" and "off"	Low pressure fault.	Change filter, increase feed pressure upon start-up. Purge filter bowl of air.
Desalination pump will not turn on	Motor not engaged (yellow light on motor, not green).	Low pressure fault will disengage motor, check inlet pressure.

5.5 Electrical and Plumbing Diagrams

Aquifer 3000 Electrical Wiring Diagram



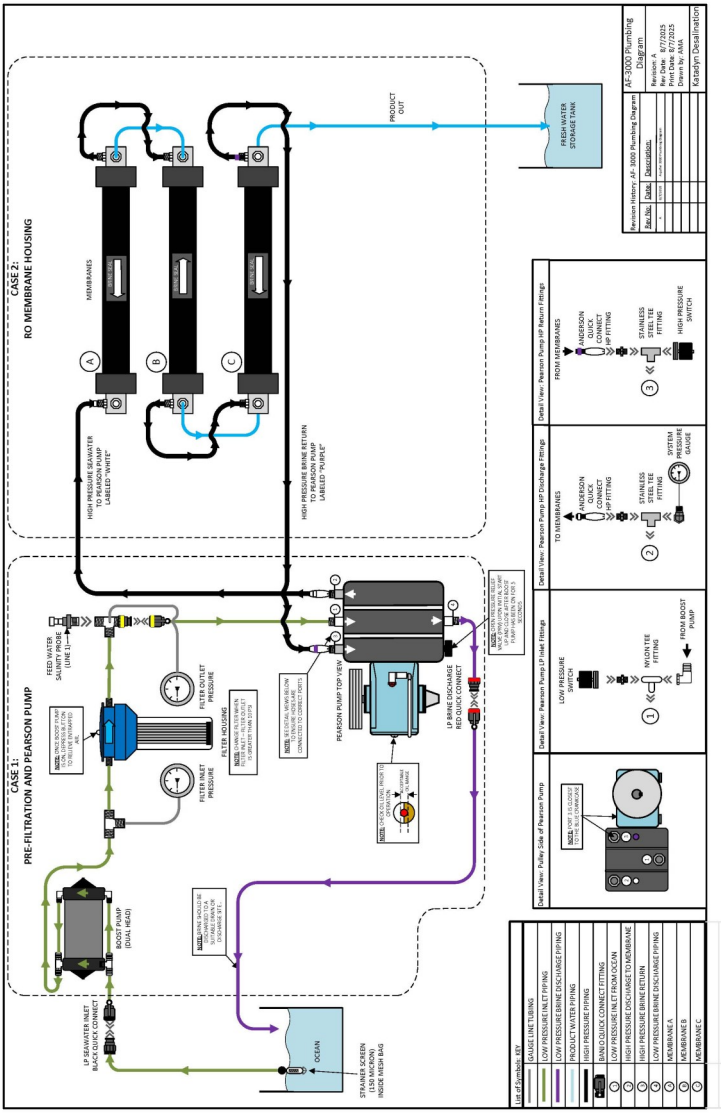
Aquifer 3000 Electrical Wiring Diagram Cont.

Scan the QR code to view full size version of electrical diagram.

https://static.myqrcode.mobi/user-media-prod
AF3000_ElectricalDiagram_250730_2516ff62_w8uwnv

Label	Description	Part Number
CB1	Circuit Breaker	EL-BRK-15ADP
DC1	DC Power Supply	EL-PS-350W12V
HM1	Hour Meter	EL-HM-100K5-28V
LED1,LED2	LED Indicator	EL-LB-LEDFLRE12
M1	Desal Pump Motor	EL-MTR-2HPCPMTR
M2	Boost Pump Motor	EL-FP-10GPMDP12V
M3	Control Box Fan	EL-FN-60MMF12V
M4,M5	Case A Fan	EL-FN-120MMF12V
PS1	LP Pressure Switch	EL-SWT-LP3F
PS2	HP Pressure Switch	EL-SWT-HP1050R
S1	Switch	EL-SWT-TG-SPST
S2	Switch	EL-SWT-TG-SPSTM
S3	Switch	EL-SWT-TG-DPDT
S4	Switch	EL-SWT-TGDPST
SC1	DC Speed Control	EL-MTR-30APWM12/24
TB(1-8)	Terminal Block	EL-TM-DR1P10-26
TDS1	TDS Meter	EL-SLT-SLNMAC

Aquifer 3000 Plumbing Diagram



Scan the QR code to view full size version of plumbing diagram.

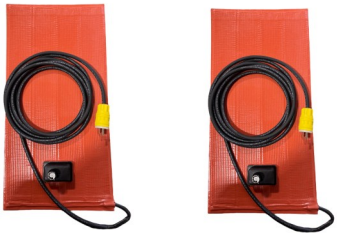
https://static.myqrcode.mobi/user-media-prod/AF3000_PD_250813_(1)_72200748_vmn0gf

6. Suggested Spare Parts

6.1 Recommended Spare Parts and Accessories

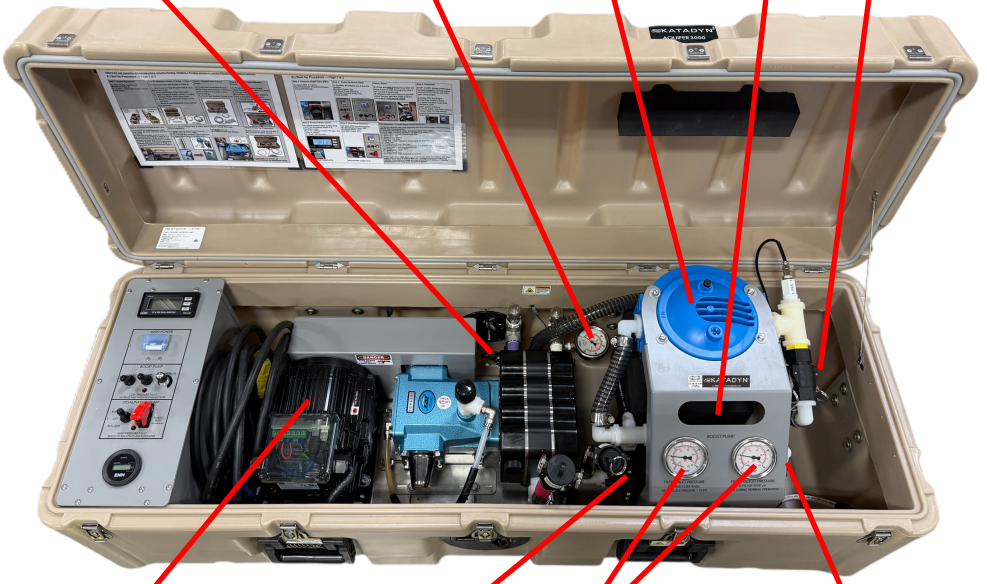
Part Number	Product
FT-FTC-5BB	5-micron filter
FT-FTC-CCBB	10” charcoal prefilter (for flushing with chlorinated source)
KIT-AF-3K-PBF	AF-3000 tool kit
KIT-SP5C-30R2K5	2,500 hours SPP5-30 Desalination Pump rebuild kit
KIT-SP5C-30R10K	10,000 hours SPP5-30 Desalination Pump rebuild kit
KIT-CHEM-SC2	Alkaline membrane cleaner
KIT-CHEM-SC3	Acid cleaner
KIT-CHEM-SC1	Membrane preservative
KIT-MB-4X40SW	4" x 40" membrane kit (1 per kit, 3 in system)
FT-FTB-6X24	Strainer assembly 100 micron mesh bag
PP-5-BD-BLT270H	Pulley belt (on Desalination Pump)
EL-FP-10GPMDP12V	10GPM double diaphragm pump 12V (Boost Pump)

Optional Accessories

Part Number	Product
KIT-AF-CWK	**Cold Weather Kit** Heating system for **Pump Case A** and **Membrane Case B** for operation in extreme cold conditions. 

6.2 Part Numbers

Pump Case A



6.2 Part Numbers Cont.
Membrane Case B

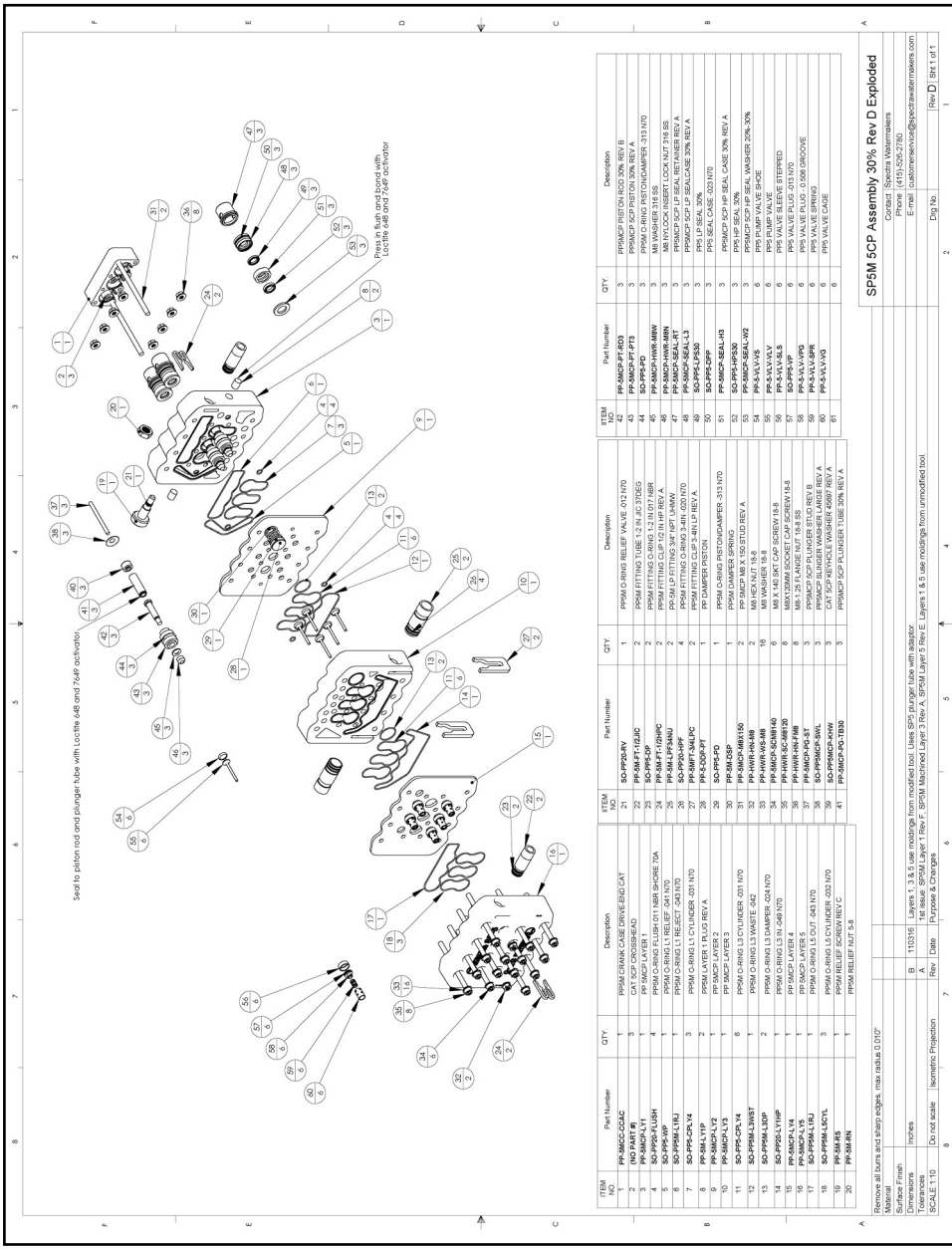
PL-MFS-11/16S12
1-1/16"SAE x 1/2" 37DEG FITT ST. SS
SO0FT01-1/4S
SO-FT-1-1/4S
1-1/4"STRAIGHT FITTING O-RING

SO-PP5-VP
PP5 VALVE PLUG -013 N70

KIT-PVA-4ECWOR
4" END CAP ASSEM. W/O RING

KIT-MB-4X40
4" x 40" SEA WATER MEMBRANE KIT
(1 MEMBRANE PER KIT: 3 total for AF-3000)

6.3 Desalination Pump Exploded View



7. Specifications
7.1 Specifications

Product Specifications
Part Number: AF-3000-MIL
Salt Rejection: 99.5%
Technology: High-efficiency energy recovery seawater reverse-osmosis
Production/Day: 3,000 gal (11,356 L)
Production/Hour: 125 gal (473 L)
Feed Water Source: Seawater | Brackish | Fresh
Voltage: 208-240 V AC
Power Consumption: 0.85 kW on low mode | 1.65 kW on high mode
Watts/Liter: 2.48 W/L
Temperature Limits: Max 110°F (43°C) | Min 36°F (2°C)
Total Weight: Case A: 175 lbs (79.4 kg) | Case B: 153 lbs (69.4 kg)
Dimensions Case A and B: 52" W x 18" L x 18" H (1.32 m W x 0.46 m L x 0.47m H)
Testing: Transit Drop Test: MIL-STD-810H | EMC Test: EN61326-1 Class A | Safety Test: UL 61010-1 3rd Edition

Features

- Reliable performance in all operating conditions with two speed settings:
  - ***High Mode** (3,000 gal/day): Typical run speed for normal inlet conditions (35 ppt salinity, 50 °F water)
  - ***Low Mode** (1,600 gal/day): Suited for solar power applications, fuel conservation, extreme source water conditions, or reduced signature/sound management
- Highly portable: 2-person carry
- Energy efficient: Requires only a small generator (generator not included)
- Tool-free assembly
- Digital Salinity Monitoring Kit included
- Control Box (self contained)
- Self priming assist for up to 10 ft (3 m) source water lift
- Supports up to 500 people | 6 gallons per person per day
- Heavy-duty, military-grade, shock- and impact-resistant cases
- Built-in recovery system for easy use and long-lasting performance

Notes

KATADYN®

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