



Freya Cleaning and CIP Guide

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Find your local technical support contact at:
<https://www.moleaer.com/moleaer-support-contacts>

Cleaning and Desalting

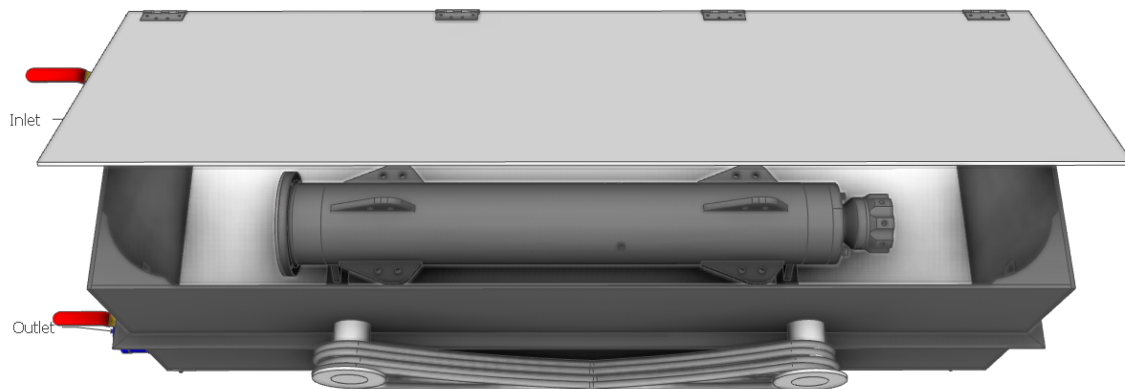
MATERIALS REQUIRED

- 1) Salt X or Salt Away Solution
- 2) Freshwater Supply
- 3) Bucket or container
- 4) Soft Brush
- 5) Protective gloves and eyewear
- 6) Rust inhibitor solution

CLEANING INSTRUCTIONS

Prior to cleaning, ensure the pump is turned off and disconnected from the power source. Wear protective gloves and eyewear to protect from water and chemical splashes.

- 1) Scrub the surface of Freya body and nozzle thoroughly with a soft bristle brush.
- 2) Rinse thoroughly with **fresh** water to eliminate loose dirt, salt deposits, and contaminants.
- 3) If necessary, disassemble the nozzle, pump, nanobubble generator, and Freya body components. Disassembly instructions are available in a separate document.
- 4) Prepare a cleaning solution by mixing Salt X or Salt Away with fresh water as per the product instructions.
- 5) Immerse the Freya and components in the cleaning solution as shown in the image below or apply it generously using a spray bottle.



- 6) Follow the cleaner manufacturer's specific instructions for contact time. In most cases, a submergence time of *10-15 minutes* is needed to ensure effective cleaning. Use a soft brush to gently scrub the parts ensuring all salt deposits are removed.
- 7) Rinse thoroughly with fresh water to remove any residual cleaner.

- 8) Air dry all components to prevent any moisture that could promote corrosion or microbial growth. You can use a clean, dry cloth to speed up the process.
- 9) Use a marine-grade protective coating to shield components from the harsh sea water environment.
- 10) This could be paint, varnish, or specialized marine coating. Follow manufacturer's instructions for application and curing times.
- 11) Apply a rust inhibitor spray to all metal components, this will help prevent oxidation and corrosion. Ensure the rust inhibitor is compatible with the materials of your pump.
- 12) Inspect all components for any missed spots or areas that may need additional treatment. Ensure all items are completely dry.
- 13) If disassembled, reassemble the Freya and components. Freya assembly instructions are available in a separate document.
- 14) Before storage, ensure the components and Freya are dried. To maintain the Freya's performance and longevity, repeat this cleaning process after each use.

Clean-In-Place (CIP)

For proactive cleaning of Freya, this must be executed weekly or monthly.

PREPARING FOR CIP

Required Equipment

1) Personal Protective Equipment (PPE)

- Protect hands, skin, & eyes when performing CIP. You will be working with pressurized acidic fluid used to clean contaminants. Avoid solution spray.



2) Cleaning Kit (Part number: 99K0-043)

- A 32oz Spray Bottle is provided with the purchase of your Moleaer Nanobubble System. This spray bottle can be manually pressurized to pump solution through the NBG.
 - CIP 32oz Bottle



- Air Fitting FNPT to Push-to-Connect
- 12mm Tubing, Semi-Clear, PVDF, 4ft long
- Ferrule Fitting, Stainless Steel (3)
- ½ BSPT Female X ½" NPT Male Adapter
- 12mm Ferrule Fitting X ½" NPT Female



Note: Ferrule Fitting is ONLY for connection to Swage Lok plumbing systems. Do not use with push-to-connect fittings.

- 5% Vinegar *Not included with cleaning kit



Note: Any off-the-shelf vendor of 5% Vinegar will work. For heavy clogging, 30% Vinegar can be used.

Contact Moleaer service for information on alternative cleaning solutions if necessary.

CIP BOTTLE ASSEMBLY

- 1) Screw Air Fitting onto threaded outlet of the bottle.

A small strip of Teflon tape will assist in creating a waterproof seal (not required). Hand tighten or gently tighten with adjustable wrench.

Do not over-torque.



2) Insert the Tube into the Air Fitting. It is a Push-to-Connect fitting.

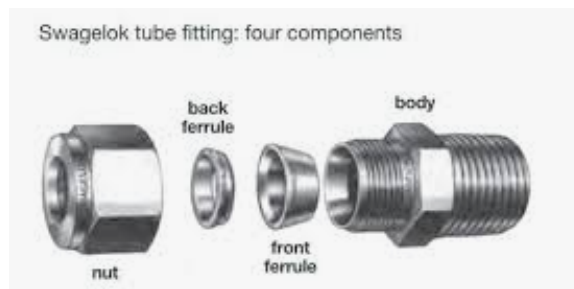


3) Example of 32oz bottle with 1/4" tube assembly.



4) If your NBG system is equipped with Swage Lok plumbing fittings (not push to connect) then you will use Ferrules on the **output** side of your tube.

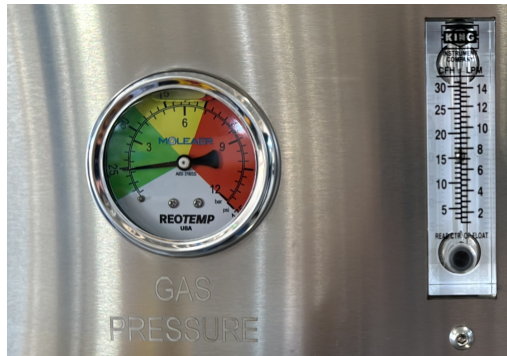
Slip the nut, back ferrule, and front ferrule over your tube, and then connect the Swage body over your NBG. Hand tighten and **lightly use adjustable wrench**.



PERFORMING A CIP

- 1) Record the current Gas Pressure and Flow Meter levels (varies based on application).

Make note of the two readings.



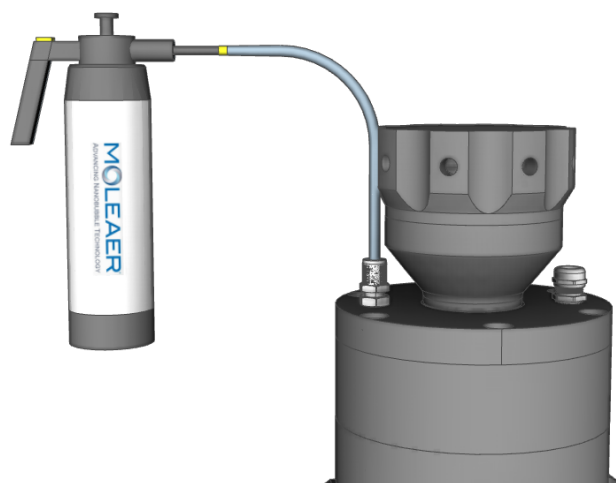
- 2) Turn off the system.
- 3) Fill the bottle about 2/3 full of 5% Vinegar.

32oz bottle uses 800mL.

Pressurize the bottle by pumping the piston.



- 4) Set up system for the PRESSURIZE configuration.
- 5) Disconnect the gas tubing from the fitting at the top of the Freya Body and attach the ½ BSPT to ½ NPT Female Adapter.
- 6) Connect Compression Fitting to Adapter and insert 12mm tubing from CIP Bottle. With the bottle pressurized, press the button on the bottle handle. Allow the bottle to pump pressurized fluid into the NBG. Pressurize the system with fluid for 10 minutes.



- 7) Reconnect original tubing back into the fitting. All gas tube connections should look as they did before CIP.
- 8) Turn the entire system ON. For sensitive biological applications, allow water to rinse through before reconnecting downstream water outlet.
- 9) Run the system for 10 minutes. Record the Gas Pressure and Flow rate. With fouling remove, expect to find the gas pressure is lower, and gas flow rate is higher than before the CIP.
- 10) If the pressure is still high, and has not improved, contact Moleaer for the suggested course of action.
- 11) Rinse your bottle thoroughly with water.