

## Introduction to Spectra Chemicals

We use four types of chemicals: SC-1, SC-2, SC-3, and propylene glycol antifreeze. SC-1 and propylene glycol are for system storage, while SC-2 and SC-3 are for membrane cleaning. **Do not use metasodium-bisulfate, citric acid, or any other storage chemical not supplied by Spectra.** These chemicals, used to store other watermaker brands, are very acidic and will damage the Clark Pump and void the warranty.

**Note: Never use any chemicals with the system pressurized!** Always open the pressure relief valve 1/2 turn. Always follow the instructions for purging the chemicals as shown in the New System Startup section (page 39) of your owner's manual.

### Storage

SC-1 prevents biological growth when your system is idle. It should not be used as a cleaning chemical, nor will it protect your system from freezing. A jar of SC-1 is mixed with 1 to 2 gallons of product or dechlorinated fresh water in a bucket and circulated through the system for 10 minutes. This treatment will protect the system for six months, after which the SC-1 treatment must be repeated. To use SC-1, follow the instructions for **Catalina Storage Procedure** on page 54.

Spectra systems should be stored with propylene glycol if freezing is likely to occur. Propylene glycol can be used instead of Spectra SC-1 storage chemical for storage in any climate, and treatment is effective for one year. Propylene glycol is a food-grade antifreeze used to winterize RV's, boats, and cabins. Do not use ethylene glycol automotive antifreeze, which is toxic and will damage the system.

The propylene glycol formulations sold in marine and RV stores are usually diluted with water. The water remaining in the watermaker before the storage procedure will further dilute the antifreeze, reducing the microbial protection and increasing the temperature at which the mixture will freeze.

Antifreeze labeled "Minus Fifty" is a 25% solution and will begin to form an icy slush at about +15Degrees F (-10C) and will only provide burst protection to about Zero F (-18C). After a further 50% percent dilution by water remaining in the watermaker, "Minus Fifty" antifreeze will only protect from bursting down to about +25F (-4C). Therefore if low temperature freezing protection is required a 60% or stronger antifreeze should be used. 60% solutions are labeled "Minus 100" and will provide burst protection to -15F (-27C) even after a fifty percent dilution with residual water. "Minus 200" formulations are pure propylene glycol.

## Introduction to Spectra Chemicals continued...

Complete microbial protection requires a 25% solution of propylene glycol, so care must be taken that the solution remaining in the watermaker during long term storage is at least 25%, even if freeze protection is not required. For these reasons Spectra recommends that all pickling be carried out with a 60% or greater concentration.

See **Winterizing with Propylene Glycol** on page 55.

Propylene glycol can be difficult to flush from a membrane, especially after extended storage periods with a high concentration. Residual propylene glycol causes high salinity water (high PPM) and residual flavor in the product water. We recommend flushing the system WITH THE PRESSURE RELIEF VALVE OPEN for 4-6 hours after storage with propylene glycol—the longer the better. If, after extended flushing, you still experience low product water quality, cleaning with SC-2 usually removes all traces of propylene glycol and returns the salinity to the level it was before storage with propylene glycol. See the **Cleaning Procedure** on page 56.

### Cleaners

Cleaning can be detrimental to the membrane and shorten its life. Avoid unnecessary cleaning, and avoid cleaning as a diagnostic tool.

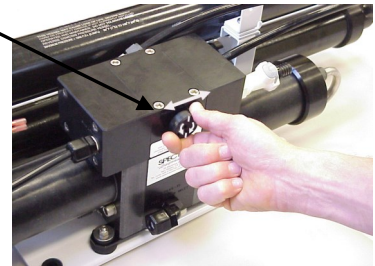
**SC-2** is an alkaline cleaner used to remove light oil, grime and biological growth. It is most effective if heated to 120 deg. F (49 deg. C), which is difficult on a boat. In most cases the water quality will increase in PPM (salinity) after an SC-2 cleaning. After a few hours it should recover to near the level it produced before the cleaning.

**SC-3** is an acid cleaner used to remove mineral and scale deposits. In most cases this is used first and if there is no improvement, go on to the SC-2. SC-3 will in most cases lower the product PPM and overall pressures. Scaling is a slow process that may take several months or years. SC-3 is less harmful to the membrane and will almost always improve the performance of an older membrane.

For cleaning with either SC-2 or SC-3, see the **Cleaning Procedure** on page 56.

## Catalina 340 Z Storage Procedure

1. Close the intake seacock.
2. Push **Auto Store** to fresh water flush the system. Repeat, to flush the system twice.
3. Remove the quick disconnect fitting from the brine discharge outlet of the Clark Pump, and replace it with the quick disconnect brine discharge service hose. Lead the brine discharge service hose into a 5-gallon (20 liter) bucket. Push the **Auto Store** button and run the feed pump until you have one gallon of fresh water in the bucket from the brine discharge service hose. Press **Stop** to stop the system.
4. Remove the fresh water flush hose from the fresh water flush module or Z-Ion at the Quick Connect fitting, connect the intake service hose, and lead it into the bucket.
5. Mix 1 container of SC-1 storage compound with the water in the bucket.
6. **Make sure the pressure relief valve on the Clark Pump is OPEN (un-pressurized) by turning 1/2 turn counterclockwise.**
7. Flip the toggle switch on the feed pump module to the SERVICE setting. The solution will be drawn from the bucket with the intake service hose, and returned to the bucket from the brine discharge service hose. Circulate the storage chemical in this manner for approximately 10 minutes. Return the toggle switch to the RUN AUTO position to stop.



### Clean Up

Remove the brine discharge service hose from the Clark Pump, and replace the brine discharge hose that leads to the thru-hull. You may now pump the bucket dry by using the manual control switch on the feed pump module.

Remove the inlet service hose and replace the fresh water flush hose at the Quick Connect fitting. Leave the pressure relief valve open, since the next time you run the system you will need to purge the storage chemicals with the system unpressurized.



Connecting brine discharge service hose



Replacing fresh water flush hose with intake service hose



Toggle switch to SERVICE

# Winterizing with Propylene Glycol

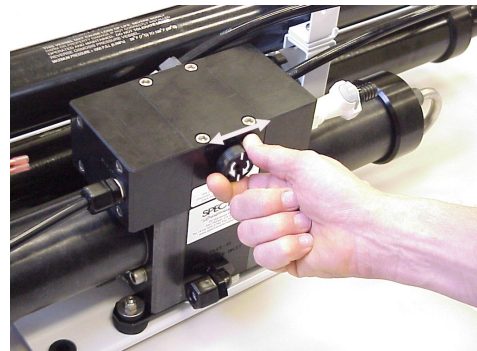
*See description of propylene glycol formulations, and flushing from system, on page 52-53.*

1. Close the intake seacock.
2. Push **Auto Store** to fresh water flush the system. Repeat, to flush the system twice.
3. Remove the fresh water flush hose from the fresh water flush module or Z-Ion at the Quick Connect fitting, connect the intake service hose, and lead it into a bucket. Connect the brine service hose, and run it into a second container.
4. Pour 1 gallon (4 liters) of propylene glycol of appropriate concentration (see pages 52-53) into the bucket with the intake service hose.
5. **Make sure the pressure relief valve on the Clark Pump is OPEN 1/2 turn (un-pressurized).**
6. Run the feed pump using the SERVICE setting on the manual toggle switch until about a gallon of water has flowed from the brine discharge service hose, or antifreeze appears. Propylene glycol will look slightly different, and feel more slippery, than water. Return the switch to RUN AUTO to stop the pump. Add more propylene glycol to the intake bucket if necessary.
7. Lead the brine discharge service hose into the same bucket as the intake service hose. The service hose will now draw propylene glycol solution from the bucket, and the brine discharge service hose will return it. Run the feed pump on the SERVICE setting and circulate the propylene glycol solution for 10 minutes.
8. Stop the feed pump by returning the switch to RUN AUTO. Remove the service hoses. Disconnect the product tubing from the membrane housing and blow residual water out of the tubing. Empty the charcoal filter housing and flush water lines.

Your watermaker is now protected from biological growth and freezing for one year.



Connecting intake service hose



Open the Pressure Relief Valve



Connecting brine discharge service hose



Toggle switch set to SERVICE

## Membrane Cleaning Procedures

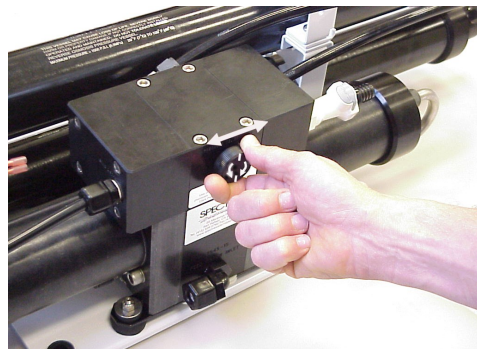
*Spectra cleaning compound (SC-2 or SC-3) must be mixed with fresh water at a ratio of 1 container of compound to 3 gallons (12L) of unchlorinated water. An average of two gallons (8L) of water is already present inside a Catalina 340 Z system, so this water must be figured into the mixture. A Catalina 340 Z system requires one container of compound per cleaning.*

1. Close the intake seacock.
2. Push **Auto Store** to fresh water flush the system. Repeat, to flush the system twice.
3. Remove the quick disconnect fitting from the brine discharge outlet of the Clark Pump, and replace it with the quick disconnect brine discharge service hose. Lead the brine discharge service hose into a 5 gallon (20 liter) bucket. Press **Auto Store** again and let one gallon (4 liters) of fresh water flow into the bucket. Press **Stop** to stop the system.
4. Remove the fresh water flush hose from the fresh water flush module or Z-Ion at the Quick Connect fitting, connect the intake service hose, and lead it into the bucket with the brine discharge service hose.
5. **Make sure that the pressure relief valve on the Clark Pump is open (un-pressurized).**
6. Mix the cleaning chemical in the bucket. If possible, heat the solution to 120 deg. F (49 deg. C).
7. Start the system by flipping the manual toggle switch on the feed pump module to SERVICE. The intake service hose will draw solution from the bucket and the brine discharge service hose will return it. Circulate the solution through the system in this manner for 45 minutes.
8. Stop the pump by returning the toggle switch to RUN AUTO. Replace the brine discharge over-board hose and run the pump until the bucket is empty. Remove the intake service hose and replace the fresh water flush hose at the Quick Connect fitting. Restart the pump and run for 20 minutes to flush the chemicals out of the system (**DO NOT CLOSE the pressure relief valve!**)

The system may now be restarted, flushed, or stored.



Connecting intake service hose



Open the Pressure Relief Valve



Connecting brine discharge service hose



Toggle switch set to SERVICE