

# FRESH WATER FLUSH PREFILTER FAULT

This document should be used by anyone who needs to solve the issue of a prefilter alarm during a fresh water flush.

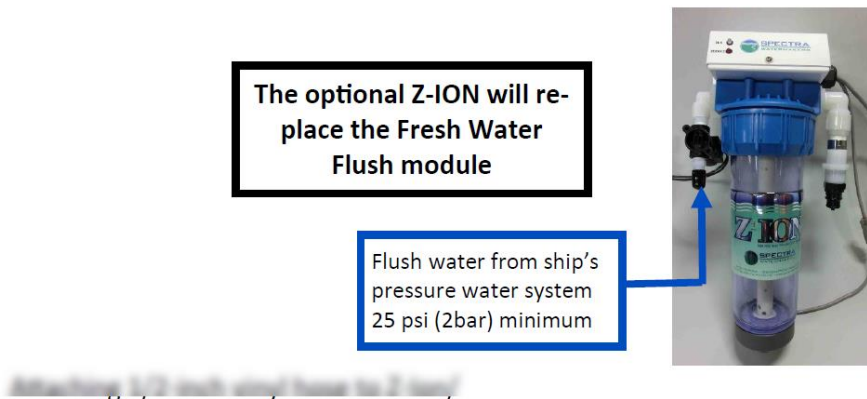
The service prefilter alarm is triggered by a pressure sensor on the inlet side of the feed pump. The alarm is designed to trigger when the filters get dirty/clogged and the water pressure (and general flow) reduces to below 10 psi. The 10 psi can be changed via Low Vacuum Limit in system settings. If this pressure sensor reads a value below 10psi at any time the system will alarm with, "SERIVICE PREFILTERS."

During the fresh water flush it is not likely that dirty filters are causing this alarm as it should be only clean fresh water going through the system. What can happen is the Spectra feed pump and the boats fresh water pump can have different speeds which then leads to cavitation and a drop in pressure at the inlet of the feed pump.

This false alarm can happen when:

- The low vacuum limit is at a value above 10 psi.
- The Spectra feed pump flush speed has not been correctly set during new system commissioning.
- The boats fresh water house pump has become weak.
- The boats fresh water pump does not meet the minimum specifications for the Spectra system that is outlined in the manual
  - House Pump needs to be able to supply 1.5 Gallons per minute at 25 PSI. Manual excerpt below:

**Fresh Water Flush:** Route a feed line from the domestic cold pressure water system to the 1/2-inch hose barb on the fresh water flush module. This needs to be pressurized when the boat is unattended for the fresh water flush system to function properly. *The domestic fresh water pump must be able to deliver 1.5 gallons per minute (6 LPM) at 25 PSI (1.7 bar).*



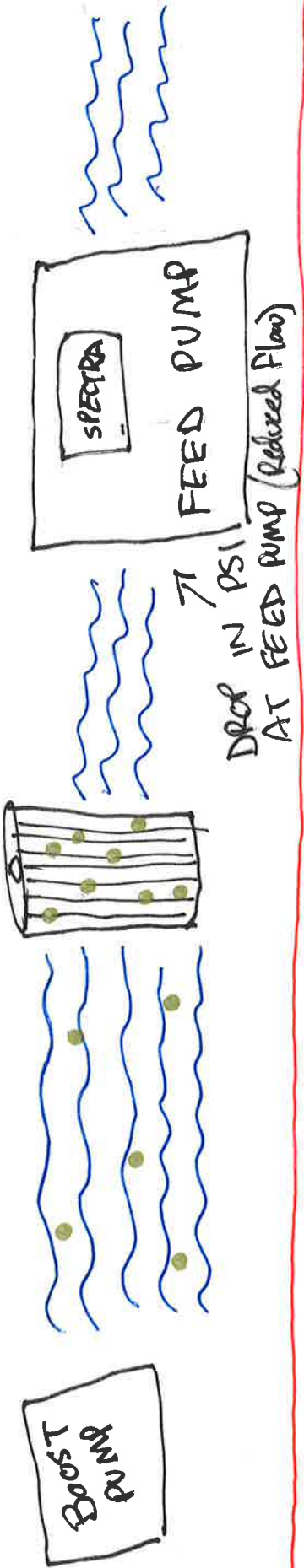
If the low vacuum limit and the ships house pump are to spec ***the remedy for this is to slow down the feed pump service speed or to slow the pump during a fresh water flush.***

On the following page I have a diagram that demonstrates this false alarm.

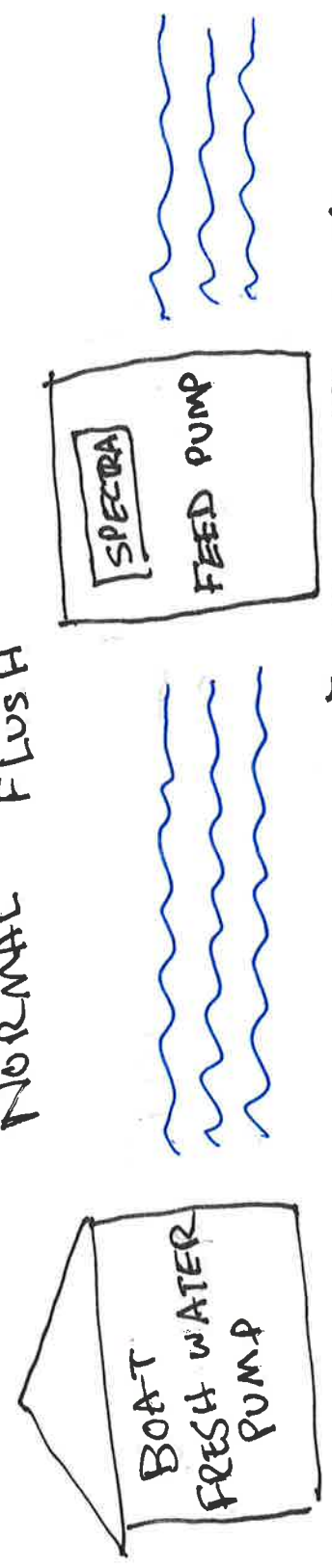
On page 3 of this document I have attached the section of the Newport 400 user manual that goes over how to adjust the flush speed.

***IMPORTANT: If you slow your flush speed you may need to increase your flush length so enough fresh water gets into your system. See step 3 on page 5 along with programming on page 6 for instructions on increasing your flush duration.***

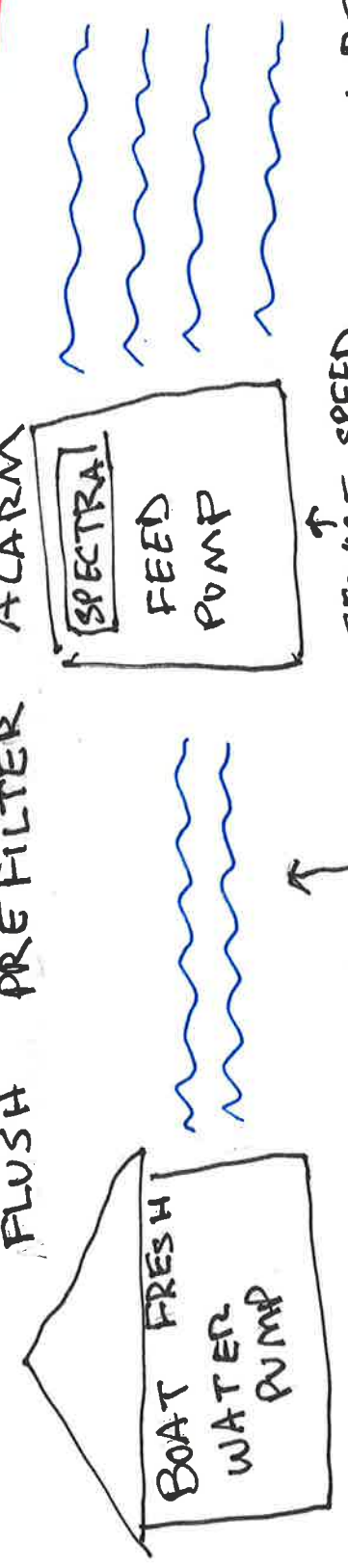
# DIRTY FILTERS (VANE PUMP SYSTEMS)



# NORMAL FLUSH



# FLUSH PRE FILTER



\* REMEDY  
SLOW DOWN SPECTRA PUMP DURING FLUSH CYCLE

↑ SERVICE SPEED TOO FAST  
↓ EFFECT IS SAME DROP IN PSI WITH DIRTY PRE FILTER

## Auto Store

**Warning!** Proper understanding of the Spectra flush system and the vessel's fresh water system is mandatory for extended use of Auto Store. The flush cycles must not be allowed to drain all the fresh water from the tank or damage to the vessel's systems and the watermaker may occur.

As described in Normal Operation and Fresh Water Flush, on page 43, the Auto Store function flushes the watermaker at programmed intervals. As long as the watermaker is flushed with fresh water every 5 days (30 days with the Z-Ion) you need not store the system with chemicals.

- Make sure there is enough water in the fresh water tanks to supply the watermaker for more than the expected time of operation in the Auto Store mode. If there isn't enough fresh water in your tank, seawater will be drawn in to make up the difference, and the system will not be completely flushed with fresh water. The Newport 400 MkII requires about 7 gallons (26 liters) for each flush. The boat's pressure water supply must be on and stay on while the system is in Auto Store mode. If these conditions cannot be met, then pickling with SC-1 storage chemical or propylene glycol is preferable.
- Make sure the pressure relief valve on the Clark Pump is closed.
- The system must be continually powered during the Auto Store mode. Turning off the power will disable the automatic fresh water flush and damage may occur.
- **Pressing the Auto Store button once** will flush the system and then activate the flush interval cycle: The display will read "FRESH WATER FLUSH" with a countdown timer, and the feed pump will run. After 6 minutes (adjustable) the pump will stop, the display will read "FLUSH TIMER INTERVAL," and the countdown timer will reflect the number of hours until the next flush.
- **Pressing and holding the Auto Store button for 5 seconds will engage a one-time flush.** The display will read "FRESH WATER FLUSH" while flushing, then the default display will appear when finished. The system will not re-flush at programmed intervals.
- **Pressing the Stop button** will cancel the Auto Store Mode.

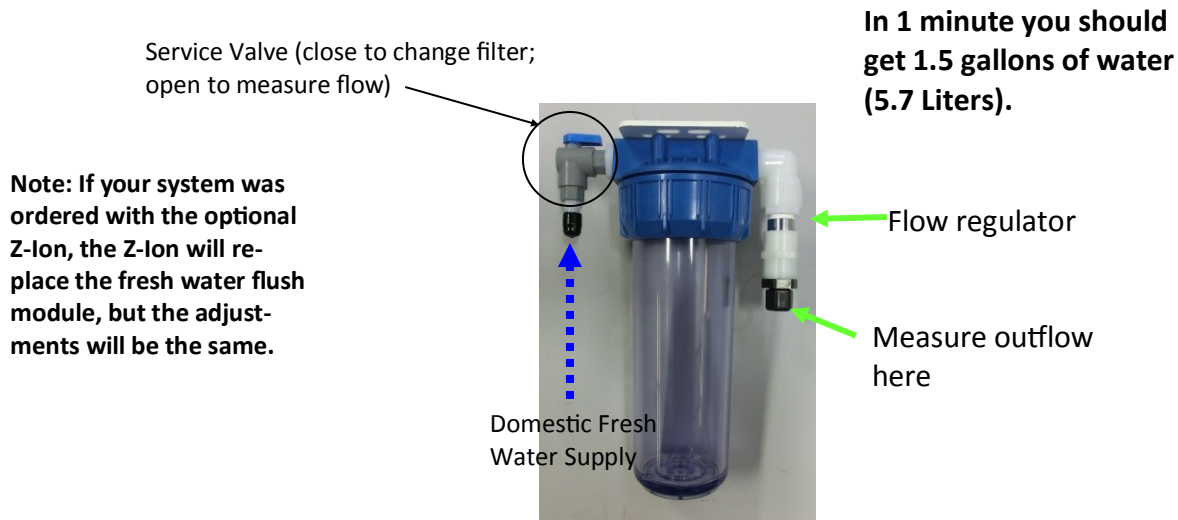
## Flush Adjustments

The default flush adjustments for your Newport 400 MkII are usually about right to ensure that sea water is thoroughly flushed out of the watermaker using the least amount of fresh water. However, due to different lengths of hose runs, different rates of flow, and different pressures in ship-board fresh water systems, the flush duration can be optimized for your boat. The flush cycle is adjusted with three settings: the pressure regulator, the pump speed, and the flush duration:

### 1. Check the flow rate

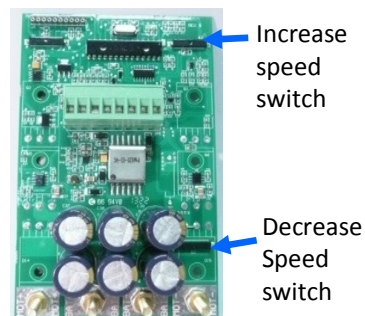
The charcoal filter in the fresh water flush circuit is rated for 1.5 GPM (6 LPM). If your house pressure water system pushes more than 1.5 GPM through the charcoal filter (4.5 gallons in 3 minutes) then chlorine won't be adequately removed from the flush water. Place the output hose from the charcoal filter into a bucket and open the service valve. A 1.5 Gallon Per Minute flow regulator is built into the fresh water flush module, and flow of more than 1.5 GPM indicates a malfunction. Please contact the factory if you measure a flow rate of more than 1.5 GPM.

## Flush Adjustments continued...



**2. Check/adjust the feed pump flush speed:** Disconnect the brine discharge overboard hose from the quick connect on the side of the Clark Pump, and replace it with the brine discharge service hose from your service kit. Run the brine discharge service hose into a graduated bucket.

Under the top of the feed pump module, under the MPC box, is the pump speed controller. On the speed controller board are two magnetic reed switches for adjusting the pump motor speed. The switches are narrow black bars, 5/8" (16mm) long. The increase speed switch is labeled S2; the decrease speed switch is labeled S3. Each time a small magnet is placed near the switch with the pump is running, the speed will change slightly.



Push the Auto Store button. The flush valve will open and water will flow backwards through the filters and strainers. After about 30 seconds the backflush will end and the feed pump will come on, starting the forward flush of the Clark Pump and membrane. Once the feed pump starts, measure the flow from the brine discharge service hose. Once again you should measure 1.5 GPM (6 LPM), or slightly less. If more than 1.5 GPM comes from the brine discharge, slow down the feed pump; if less comes from the brine discharge, speed up the feed pump. Once you've adjusted the speed correctly, the speed controller will stay programmed for this speed during fresh water flushes.

**3. Check/Adjust the flush duration:** Detailed instructions about how to access the programming function and set the flush duration can be found on pages 74-76, Programming from the Display. Set the flush duration so that the fresh water flush comes to an end just as the salinity of the brine discharge drops below 1000 PPM, or no longer tastes brackish. You can either taste the brine discharge, or measure it with a handheld salinity meter. Since the flush duration can only be adjusted in round minutes, you may want to lessen the duration to 4 minutes, to save water, or increase to 6 minutes to ensure a thorough flush.

## Programming from the Display

To enter **Program Mode** the system must be in **Standby Mode**. If the system has been de-powered recently you may need to bypass the Purge Sequence by pressing Auto Run and Stop at the same time.

**To enter Standby Mode**, press the Stop button from any other mode. The display will read SPECTRA WATERMAKERS A-XX. To have the watermaker running during the programming process, start the machine using the run manual toggle switch on the control box. The watermaker will run but the controls will be in standby mode.

**To Enter Program Mode** push and hold the Stop and Alarm/Displ buttons at the exact same time, holding them down for 4 seconds, after which the display should read "System Units." If the display doesn't read System Units, try again.

After entering Program Mode the buttons on the display will have different secondary functions as follows:

**Alarm/Displ:** Scrolls through the various programming windows.

**Stop:** Selects the digit in the Rotoflow meter calibration constant window to be changed. Has no function in other windows.

**Auto Run:** Changes the selected parameter down one unit per push.

**Auto Store:** Changes the selected parameter up one unit with per push.

**\*\*LOW VACUUM LIMIT:** *Set point for the maximum allowable pressure drop through the pre-filter. If the inlet pressure reading drops below this point the unit will alarm "Service Prefilter" and shut down. This set point is in absolute pressure, and determines the "Replace" end of the Prefilter Condition bar graph. In most cases this parameter should be set to 10.*

**\*\*To increase your flush length find the screen labeled, "FLUSH DURATION".** The number in the upper right hand corner is the time in minutes the flush will occur.

**To Exit Program Mode:** Press and release the Stop and Alarm/Displ buttons simultaneously. The control will automatically revert from Program Mode to Standby Mode if no buttons are pressed for 40 seconds.