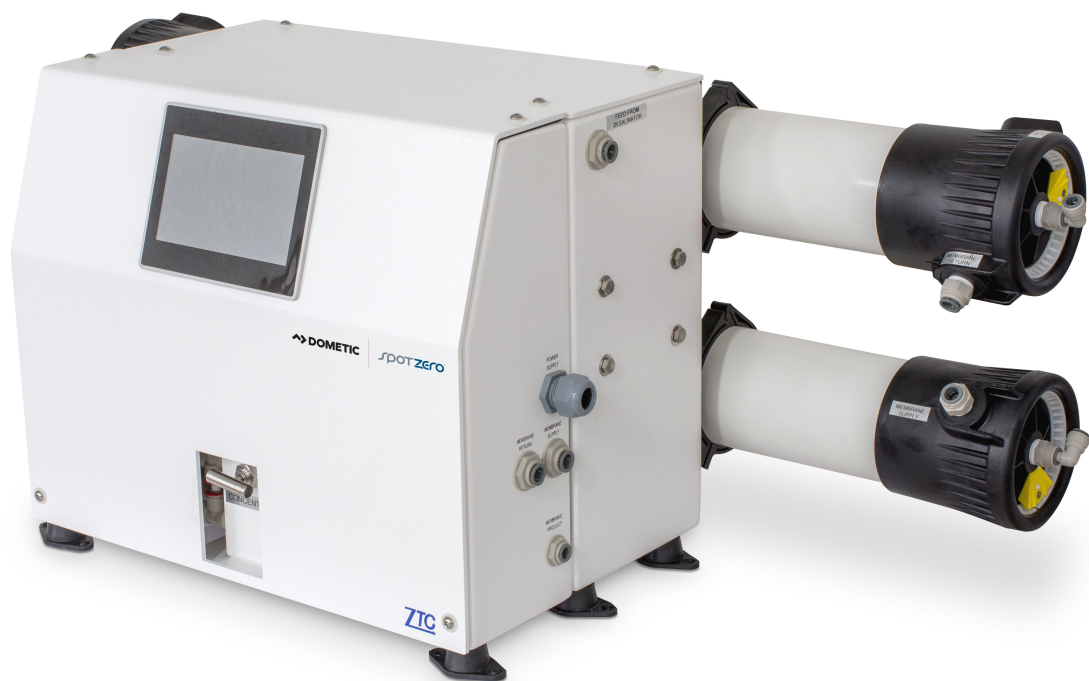




spotzero[®]
Fresh Water Reverse Osmosis



ZTC

ZTC2000 ZTC3000

www.spotzerowater.com

TABLE OF CONTENTS

1. INTRODUCTION	4
Congratulations.....	5
System Requirements and Operation Guidelines.....	5
Acronyms and Definitions	7
Principles of Reverse Osmosis	8
Unit Specifications	9
2. INSTALLATION AND COMMISSIONING	10
Feed Water.....	11
Electrical Connections.....	14
Commissioning Report Form	18
3. SYSTEM OPERATION.....	19
Home Screen.....	20
Emergency Stop	21
Operation from Dock Feed	22
Water Maker Source	23
Menu Options	24
Summary	25
System Information.....	25
Alarms	26
Alarm History	27
Service Menu	28
Units of Measurement	28
Maintenance	29
Remote Support.....	29
Enable Remote Support	30
Remote Touch Screen Setup.....	36
4. SYSTEM MAINTENANCE	40

5. SYSTEM SCHEMATICS 46

6. SYSTEM SPECS AND PARTS 51

1. INTRODUCTION

CONGRATULATIONS

Your Spot Zero™ reverse osmosis system is a durable piece of equipment, which, with proper care, will last for many years. This User's Manual outlines installation, operation, maintenance and troubleshooting details vital to the sustained performance of your system.

Your system is designed to operate at a pressure of 80- 150 psi, unless otherwise stated. The recovery set for your system is between 50%-75%.

NOTE: Prior to operating or servicing the Spot Zero reverse osmosis system, this User's Manual must be read and fully understood. Keep it and other associated information for future reference and for new operators or qualified personnel near the system.

SYSTEM REQUIREMENTS AND OPERATION GUIDELINES

Plumbing

The membranes and high pressure pumps used on Spot Zero systems require a continuous and non-turbulent flow of water to the system with a minimum feed pressure of 20 psi during operation, which does not exceed 105°F.

The tubing or piping used for the inlet of the feed water is 1/2 NPT. The tubing or piping used for the discharge of the concentrate is 3/8 O.D. and should be run to an open over board in a free and unrestricted manner.

The tubing or piping used for the product is 3/8 O.D. and can be transported to the holding tank or directly through a high quality nylon tubing or PVC pipe or other FDA accepted materials.

Material must not precipitate in the system. Be certain that all of the components of the feed water are soluble at the concentrations attained in the system

CAUTION: Any restrictions or blockage in the overboard discharge line can cause back pressure, which will increase the system's operating pressure. This can result in damage to the system's components and possible leaks of components or tubing.

Electrical

The motors used on Spot Zero™ systems are pump and motor combinations. They are available in single-phase 115 volt or 230 volt AC.

Please ensure that the electrical circuit supplying the system is compatible with the requirements of the specific Spot Zero™ model.

Pre-Filtration

Spot Zero™ systems are supplied with a 1 micron sediment pre-filter (part # 252404005) that filters out most particles over 1 microns, a GAC/KDF (part # 252404004) Cartridge that removes chlorine, chloramine, VOCs and heavy metals. CAUTION: a traditional carbon block filter must not be used as it will not remove chloramines and will cause permanent membrane damage. Pre Filters should be changed every 100 hours and/or whenever there is a pressure difference of 15 psi or more between the pressure readings before and after the filter. The pump must NEVER be run dry. Operating the pump without sufficient feed water will damage the pump. ALWAYS feed the pump with filtered water. The pump is susceptible to damage from sediment and debris.

NOTE: THE SZ10KDF2 CARTRIDGE MUST BE FLUSHED OUTSIDE OF SYSTEM BEFORE OPERATING TO REMOVE CARBON DUST. You can head to www.spotzero.com/support to see demo videos. Do not attempt to clean used filter cartridges. The SZ10KDF2 is rated to absorb chlorine, chloramine, heavy metals, etc. up to 18,000 gallons of feed water, which is the equivalent to approximately 100 hours of run time.



CAUTION: If the pre-filter becomes clogged and the water flow to the pump is reduced or interrupted, cavitation will occur. This will damage the pump.



Reverse Osmosis Systems

SZ-10KDF2
Dometic P/N#252404004

COCONUT SHELL GAC/2 LBS KDF
4.5" OD x 1.1" ID x 9.875"L

DIRECTIONS FOR USE: Flush with water hose for minimum of 60 seconds prior to use to remove carbon dust. Use only with microbiologically safe & adequately disinfected water. These filters must be replaced every 100 hours of use to prevent chlorine and/ or chloramine damage to membranes.

- Superior Chlorine Reduction
- Superior Chloramine Reduction
- Effective Bad Taste & Odor Reduction
- Greater VOC Reduction than Standard GAC Cartridges
- Post-Filter to Reduce Carbon Fines
- 15,000 US Gallon Capacity
- Water-washed Coconut Shell Activated Carbon
- Available in a Variety of Sizes and Flow Rates
- 2.0 lbs KDF-55 Media

Temperature Ratings: 40°F to 100°F

2000 N Andrews Ave. Ext.
Pompano Beach, FL 33069
954-973-2477 F 954-979-4414
marinesales@dometicUSA.com www.spotzerowater.com



Reverse Osmosis Systems

SZ-45-1001
Dometic P/N#252404005

SEDIMENT DEPTH FILTER: 4.5" ODx1" IDx9.785"L

- 1 µ Nominal Filtration
- 100% Polypropylene Sediment Filter Cartridge
- Four Separate Layers of Filtration
- Excellent Dirt Holding Capacity
- High Efficiency, Low Pressure Drop and a Long Life
- Tested for Performance & Verified by Independent Laboratory.

Temperature Ratings: 40°F to 100°F

2000 N Andrews Ave. Ext.
Pompano Beach, FL 33069
954-973-2477 F 954-979-4414
marinesales@dometicUSA.com www.spotzerowater.com

Do not use with microbiologically unsafe water and water of unknown quality without proper disinfection before or after the filter.

ACRONYMS AND DEFINITIONS

ACRONYM/SYMBOLS	DEFINITION
FWF	FRESH WATER FLUSH
RO	REVERSE OSMOSIS
PSI	POUNDS PER SQUARE INCH
GPM	GALLONS PER MINUTE
GPD	GALLONS PER DAY
TDS	TOTAL DISSOLVED SOLIDS
PPM	PARTS PER MILLION
TCF	TEMPERATURE CORRECTION FACTOR
LP SWITCH	LOW PRESSURE SWITCH
HP SWITCH	HIGH PRESSURE SWITCH
Φ	PHASE
SW	SEA WATER
FW	FRESH WATER

PRINCIPLES OF REVERSE OSMOSIS

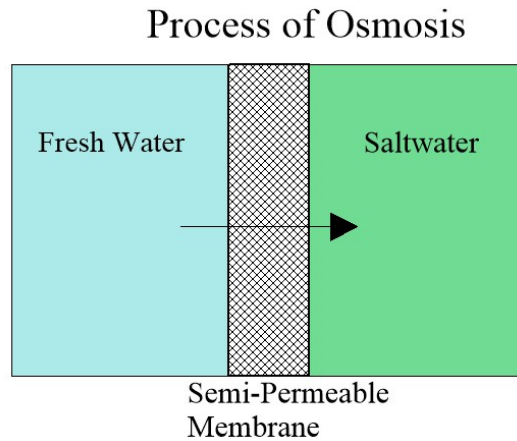
REVERSE OSMOSIS

How Fresh Water Is Produced

Reverse Osmosis or “RO” is a process where freshwater water is produced by pumping saltwater through a semi-permeable membrane.

Osmosis

Osmosis is a naturally occurring process where a weak solution will cross a semi-permeable membrane to mix with a highly concentrated solution. For example a freshwater solution will naturally want to mix with a saltwater solution.



Reverse Osmosis

To reverse this process work is put into the system using a pump. The pump causes pressure to build up on the saltwater side of the membrane. This pressure forces water across the semi-permeable membrane. The membrane is designed to allow the water molecules to pass while preventing the salt and other solids from doing so. Fresh water is collected on the other side of the membrane as a result.

UNIT SPECIFICATIONS

ZTC MODEL	2000	3000
FW Configuration (Spot Zero)	1 Vessel	2 Vessels
Feed Water Source	Fresh Water	Fresh Water
Rated Production Dock Water –gpd(ldp)	2000(7571)	3000(11356)
Rejection and Flow Rates		
FW Nominal TDSRejec- tion % (Spot Zero)	95%	95%
FW Minimum Concen-trate Flow gpm (lpm)	1 (3.7)	1(3.7)
Connections		
FW Feed inch (Spot Zero)	1/2"	1/2"
Product inch	3/8" QC 9.5mm	3/8" QC 9.5mm
Concentrate inch	1/2" QC 12.7mm	1/2" QC 12.7mm
Membranes		
FW Membrane Per Vessel	1	1
FW Membrane Size	4039	4039

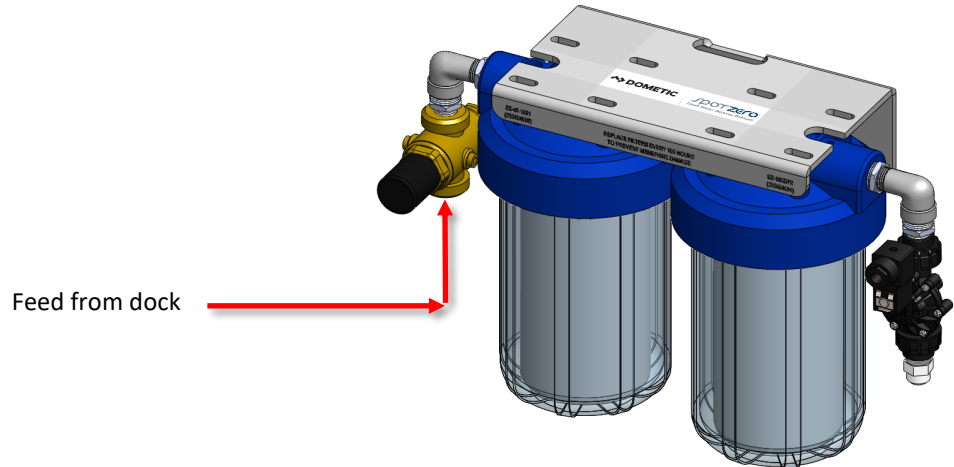
Pumps		
FW Pressure Pump Type	Vane	Vane
FW RO Motor amps	5.1	5.1
Electrical		
Voltage	230V 50/60Hz 1Φ	230V 50/60Hz 1Φ
Weight lb. (kg)	108(49)	108(49)

2. INSTALLATION AND COMMISSIONING

INSTALLATION PROCEDURE

FEED WATER

1. Plumb the feed water from the dock into the pre-filter inlet pressure regulator fitting. 1/2" FNPT or 1" MNPT custom connection from customer.



2. Tube cutting and installation procedure.

Cut the tube square



Cut the tube square and remove burrs and sharp edges. Ensure the outside diameter is free of score marks. For soft or thin walled tube we recommend the use of a tube insert.

Push up to tube stop



Push the tube into the fitting, to the tube stop.

Pull to check secure



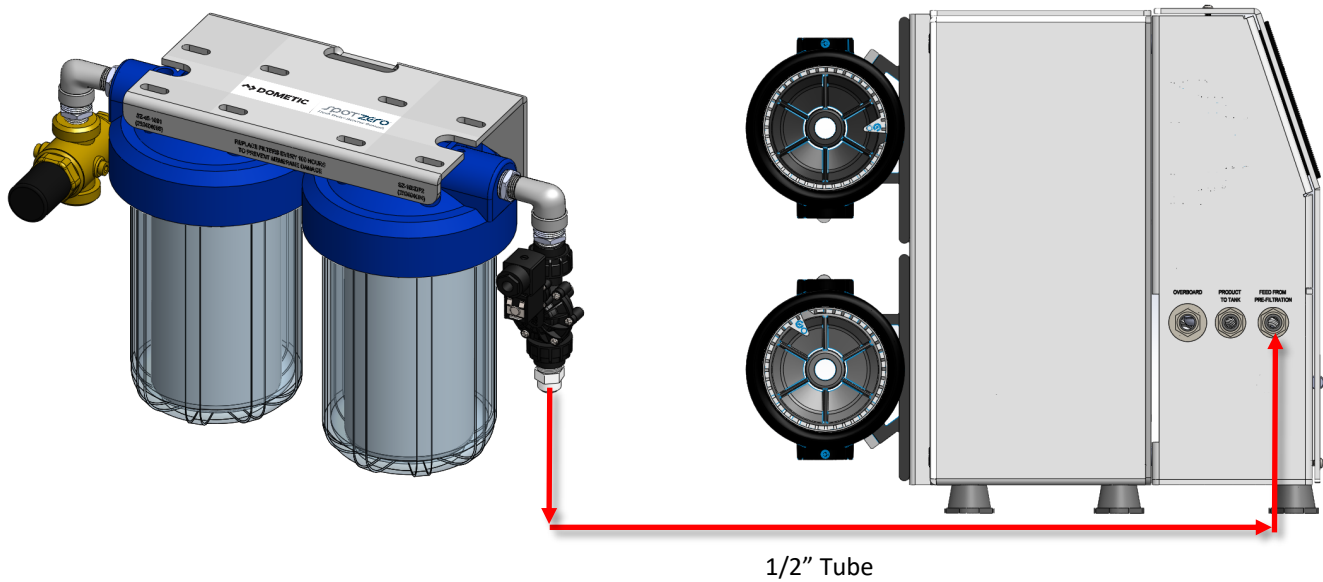
To disconnect

Push in collet and remove tube



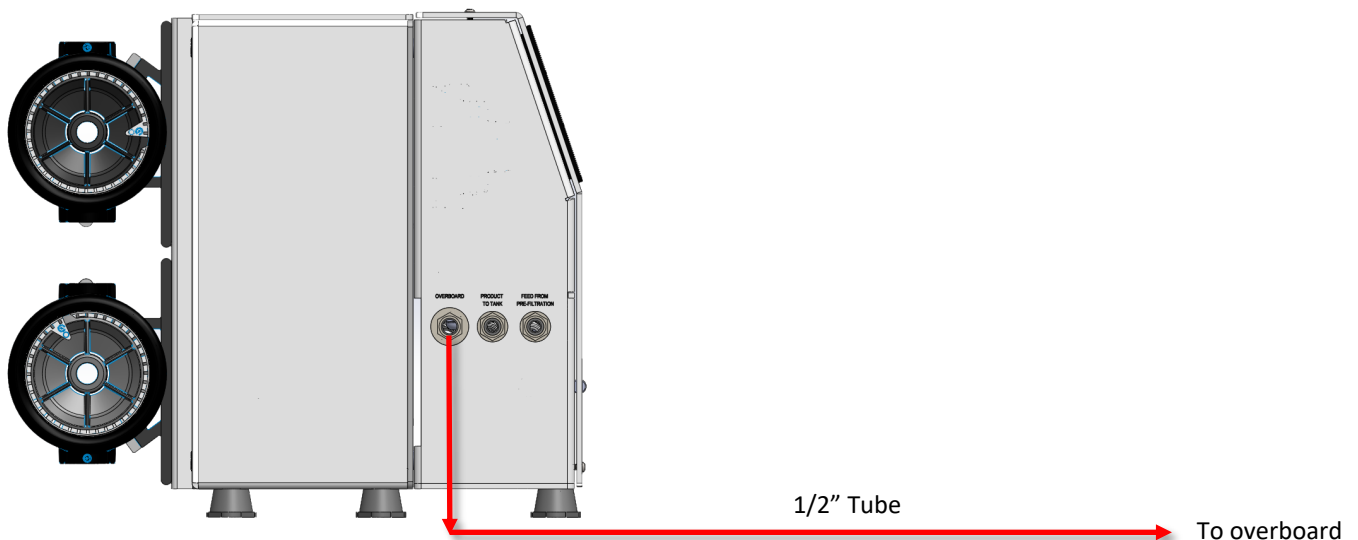
To disconnect, ensure the system is depressurized, push the collet square against the fitting. With the collet held in this position the tube can be removed.

- From the pre-filter outlet fitting, run the white nylon 1/2" Spot Zero water tubing to the feed from pre-filtration fitting.

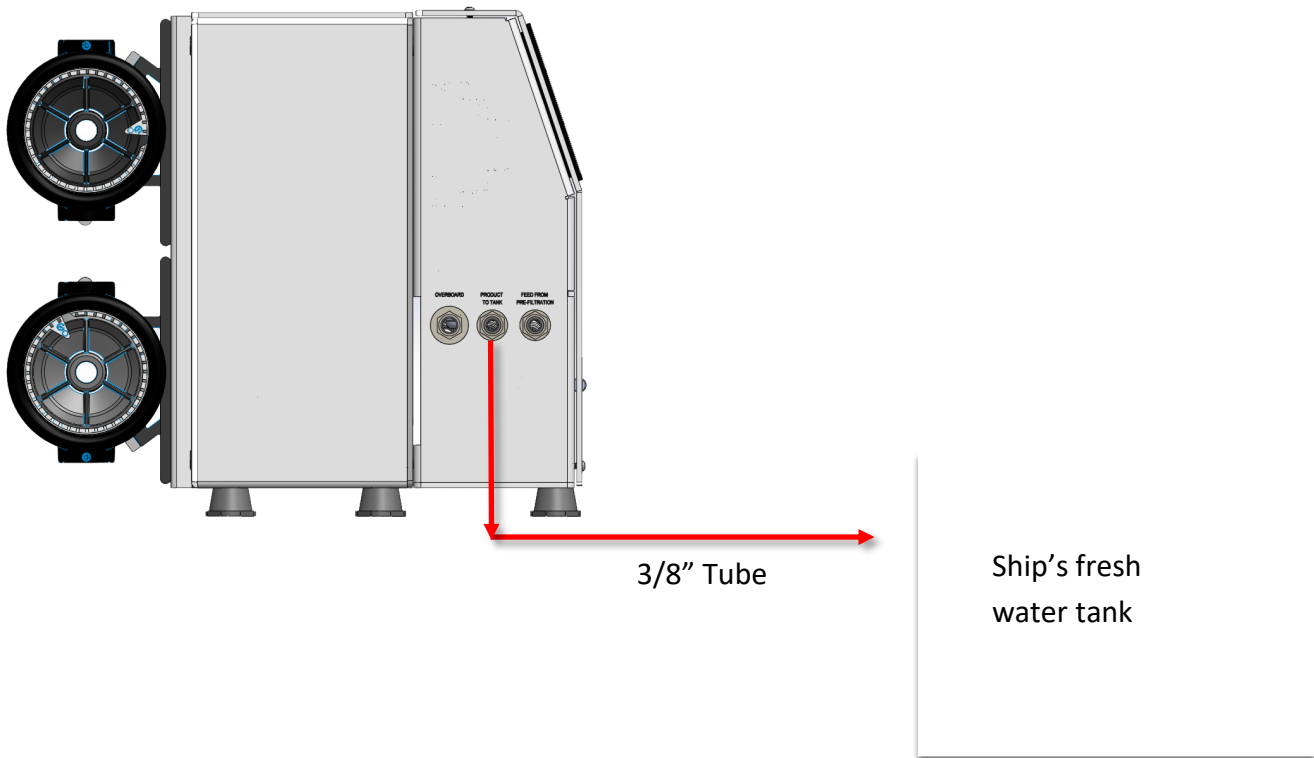


- From the "Overboard" discharge fitting, run the white nylon 1/2" Spot Zero water tubing to a dedicated overboard fitting. Water must be allowed to run freely, without any restrictions or blockage in the brine discharge line. Be sure that no back pressure exists in the "Overboard" discharge line.

Note: There is an internal check valve in the brine discharge line in the system.

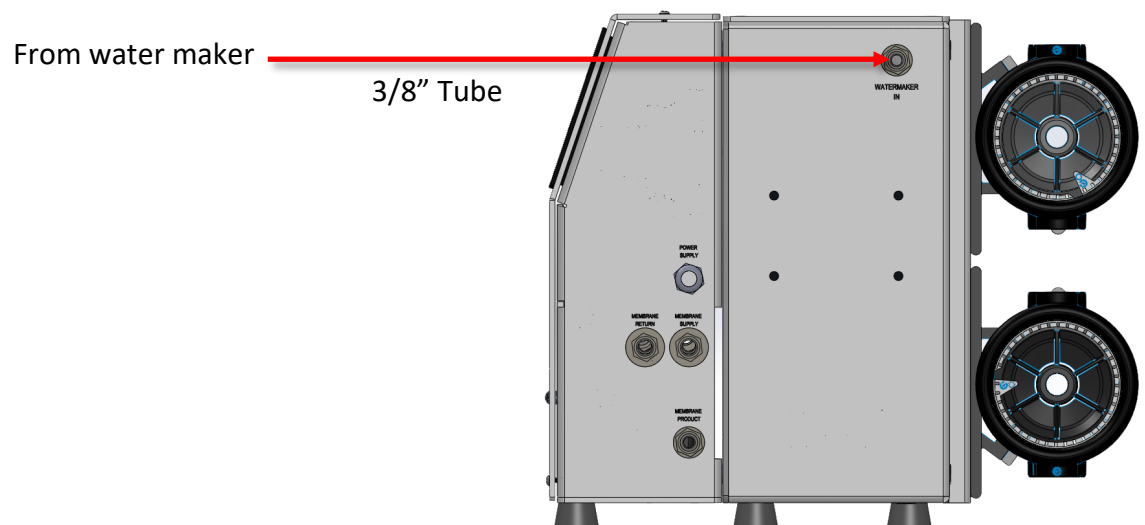


5. From the product to tank fitting, run the white nylon 3/8" Spot Zero water tubing to the vessels fresh water tank.



FEED FROM WATERMAKER

1. Connect the 3/8" product line from the water maker to the "WATER MAKER IN" fitting. Always install a three way valve in line with this, so the water can be diverted to the spot zero system, or to the vessels fresh water tank.



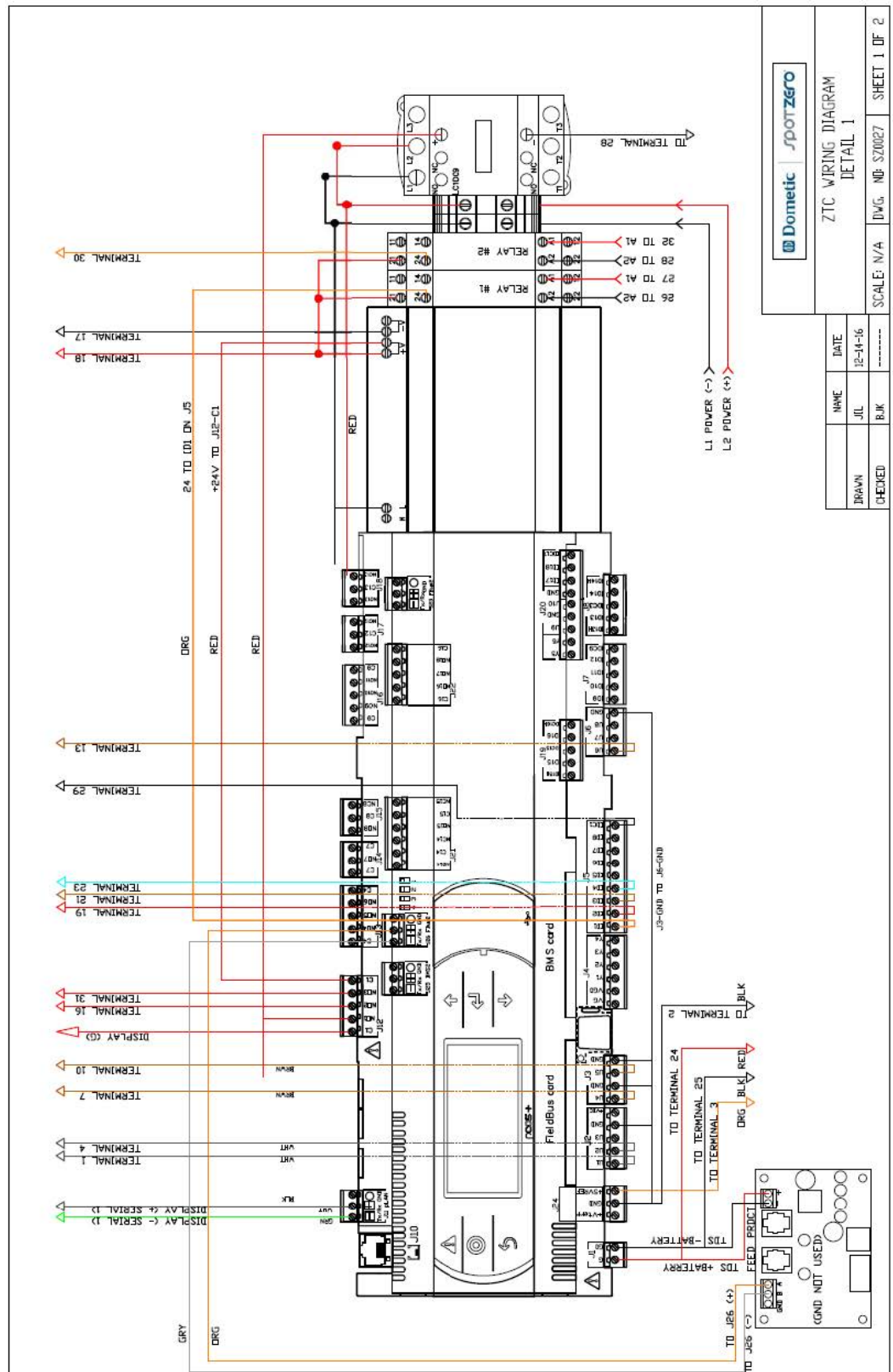
Electrical Connections

1. Supply and connect specified power (115v or 230v) from the vessels panel to the ZTC panel. Connect line 1 and line 2 to the terminals, and connect the ground wire to the ground bus bar. Be sure to confirm systems rated voltage before applying power. Reference DWG SZ0027.

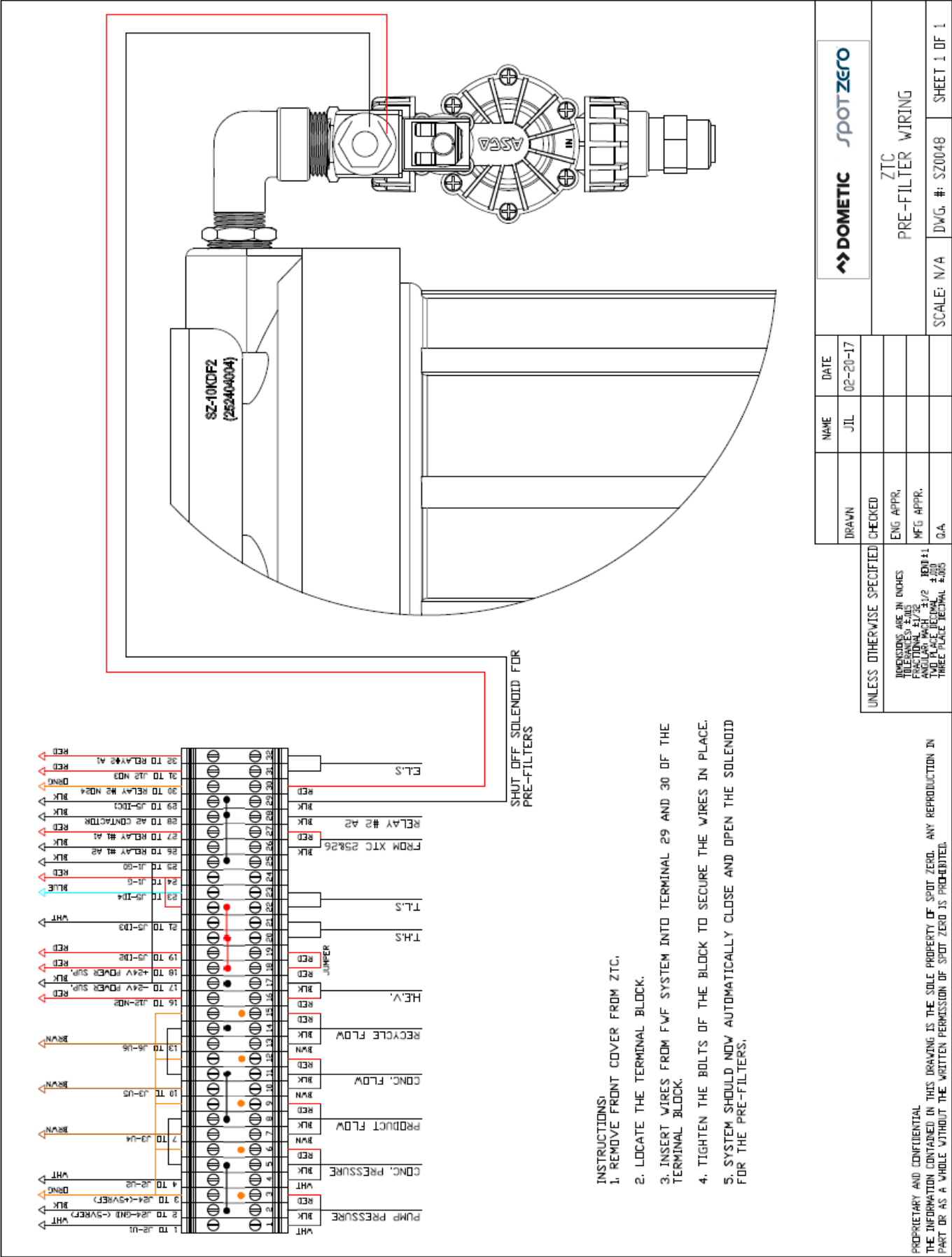
NOTE: IT'S RECOMMENDED THAT A QUALIFIED ELECTRICIAN WIRE YOUR SYSTEM IN ACCORDANCE WITH ABYC REQUIREMENTS.



WARNING: TO REDUCE THE RISK OF ELECTRICAL SHOCK, THE INCOMING POWER SUPPLY MUST INCLUDE A PROTECTIVE GROUND.



2. Connect the Pre-filter power leads as shown below.



LEGEND



CHECK VALVE



NEEDLE VALVE



SOLENOID VALVE



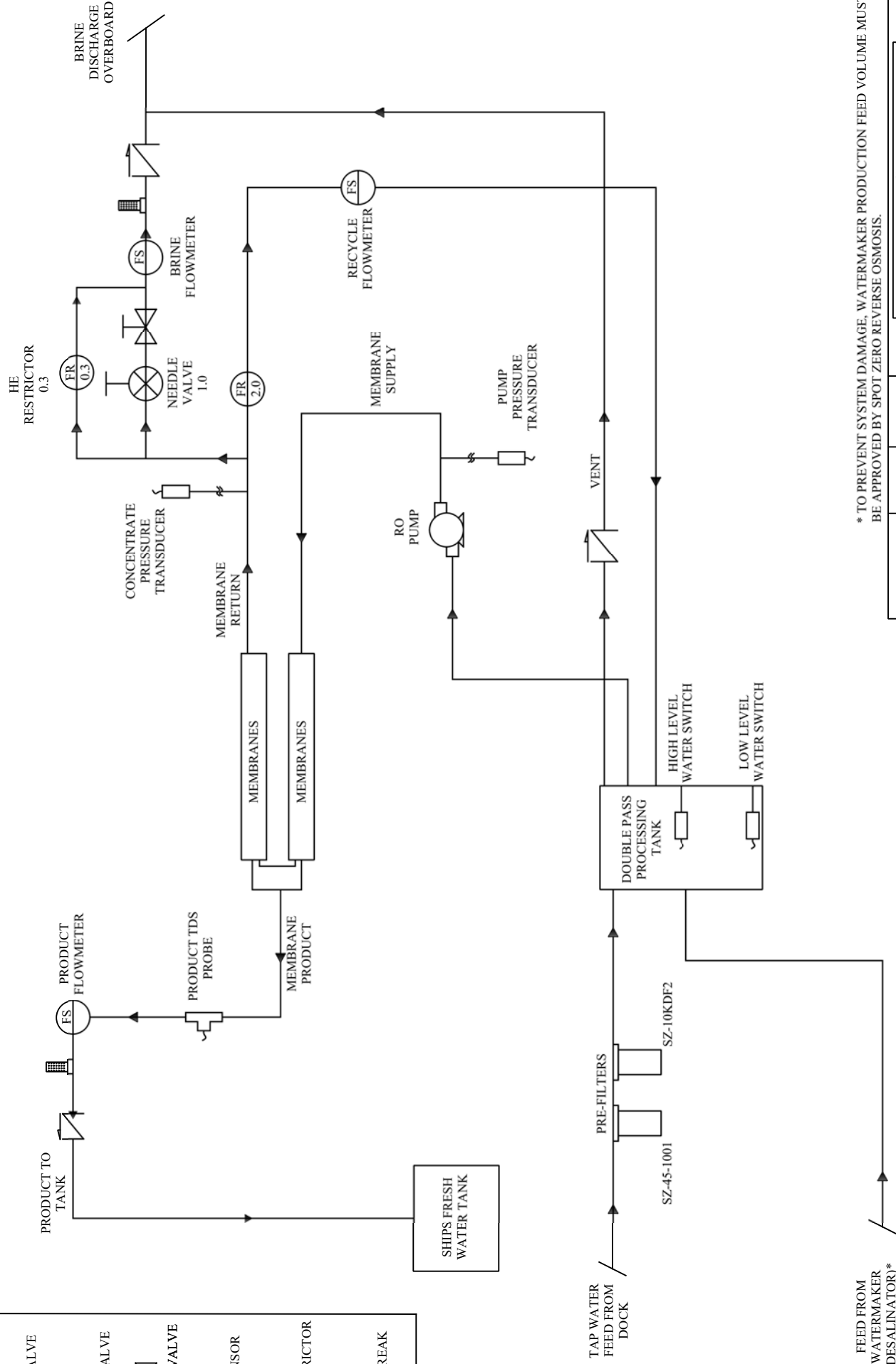
FLOW SENSOR



FLOW RESTRICTOR



SYPHON BREAK



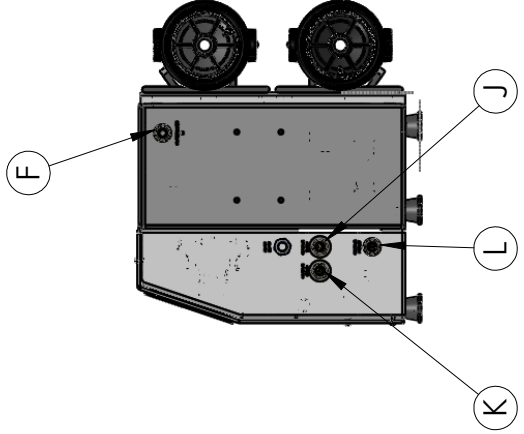
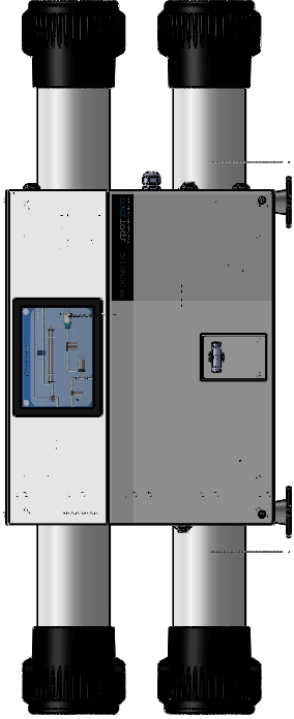
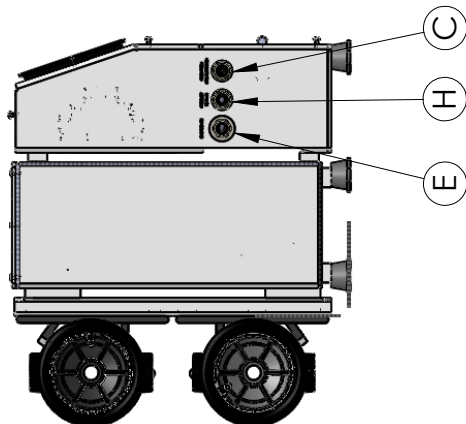
* TO PREVENT SYSTEM DAMAGE, WATERMAKER PRODUCTION FEED VOLUME MUST BE APPROVED BY SPOT ZERO REVERSE OSMOSIS.

UNLESS OTHERWISE SPECIFIED		NAME	DATE	SPOT ZERO ZTC PIPING & INSTRUMENTATION	SCALE: N/A	DWG. #: SZ0025	SHEET 1 OF 1
	DRAWN	JIL	11-01-16				
	CHECKED	BJK	09-08-14				
	ENG APPR.						
	MFG APPR.						

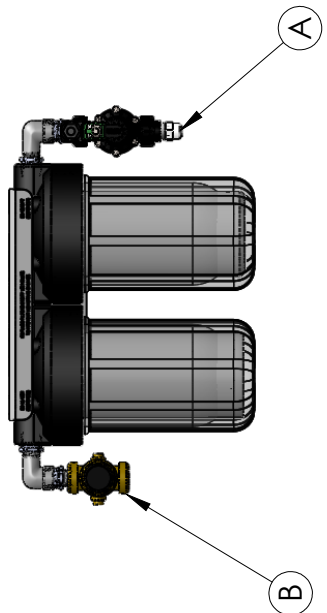


PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SPOT ZERO. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SPOT ZERO IS PROHIBITED.

NOTES:
1. SOME PARTS REMOVED IN ORDER
TO MAKE VISUALS MORE CLEAR.



PRE-FILTERS



INLETS & OUTLETS		
LOCATION	DESCRIPTION	TUBE SIZE
A	TO ZTC TANK	1/2"
B	FEED FROM DOCK	1/2" NPT
C	FEED FROM PRE FILTER	1/2"
E	VENT/OUTBOARD	1/2"
F	WATERMAKER IN	1/2"
H	PRODUCT TO TANK	3/8"
J	MEMBRANE SUPPLY	1/2"
K	MEMBRANE RETURN	1/2"
L	MEMBRANE PRODUCT	3/8"

DRAWN	NAME	DATE
CHECKED	JIL	04-17-17
ENG APPR.		
MFG APPR.		
Q.A.		
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONAL $\pm 1/32$ ANGULAR $\pm 1/2$ BEND ± 1 TWO PLACE DECIMAL ± 0.010 THREE PLACE DECIMAL ± 0.005		
DOMETIC spotZERO		
INLET & OUTLET LOCATIONS ZTC		
SCALE: 1:10	DWG. #: SZ0032	SHEET 1 OF 1

SPOT ZERO COMMISSIONING REPORT FORM

System Information:

Model number - _____

Serial number - _____

Date of Commission - _____

Commissioned by- _____

Installed by - _____

Vessel hull number- _____

First step to commissioning a new system is to look over the install to be sure everything is installed correct. This check-list must be gone through prior to powering up the system.

___ Have all plumbing connections have been made, and secured?

___ Have all plumbing lines been run to the correct locations?

___ Is the boost pump installed below the water line?

___ Has wire reinforce hose been used on the suction side of the boost pump?

___ Is raw water intake open?

___ Is the overboard open and free of obstructions?

___ Is the system _____ voltage, _____ hertz, and _____ phase correct?

___ Is the circuit breaker sized properly with sufficient wire gauge?

___ Is the power cable connected to the power inlet terminals of the system?

Now power up the system,

___ Are all displays on and functional?

At this time follow the start-up procedure in the manual and operate the system for an hour at its rated capacity, then record the following data.

System operating readings

Pre-filter inlet _____ psi

Pre-filter outlet _____ psi

Concentrate pressure _____ psi

Concentrate flow _____ gpm

Product flow _____ gpm

Product TDS _____ ppm

Feed water TDS _____ ppm

Feed water temperature _____ F or C

Hours on system _____ hrs

Amp draw _____ Voltage _____

Location system was tested _____

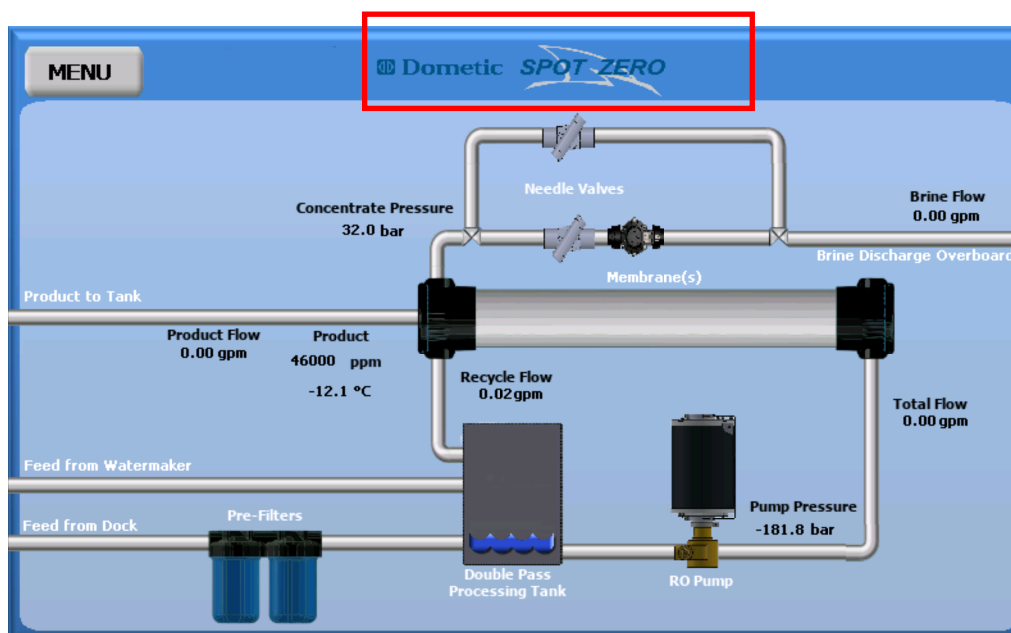
Problems or other notes:

3. SYSTEM OPERATION

SPOT ZERO ZTC TOUCHSCREEN NAVIGATION

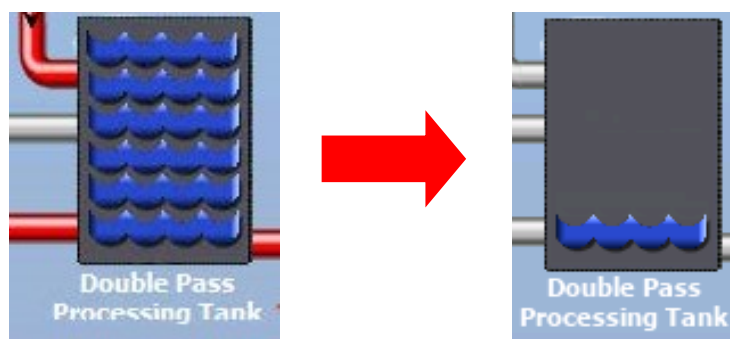
Home Screen

From any screen the Spot Zero icon can be pressed to return to this home screen. There is also a lot of information on this home screen that is important to the operation of this system. Some of the images can be pressed to bring up different information and setting choices. Also the menu button can be pressed to access more information. This manual will go through these options.



Operation Procedures

The Spot Zero ZTC is a fully automatic system. The capacity of the system is shown on the membrane in center of the screen. It will operate when water is present, and shut down when water is no longer fed to the system. On the home screen the double pass processing tank shows the water level present in the system. When the tank is full the unit will start to operate. When the tank is emptied, the system will shut down.

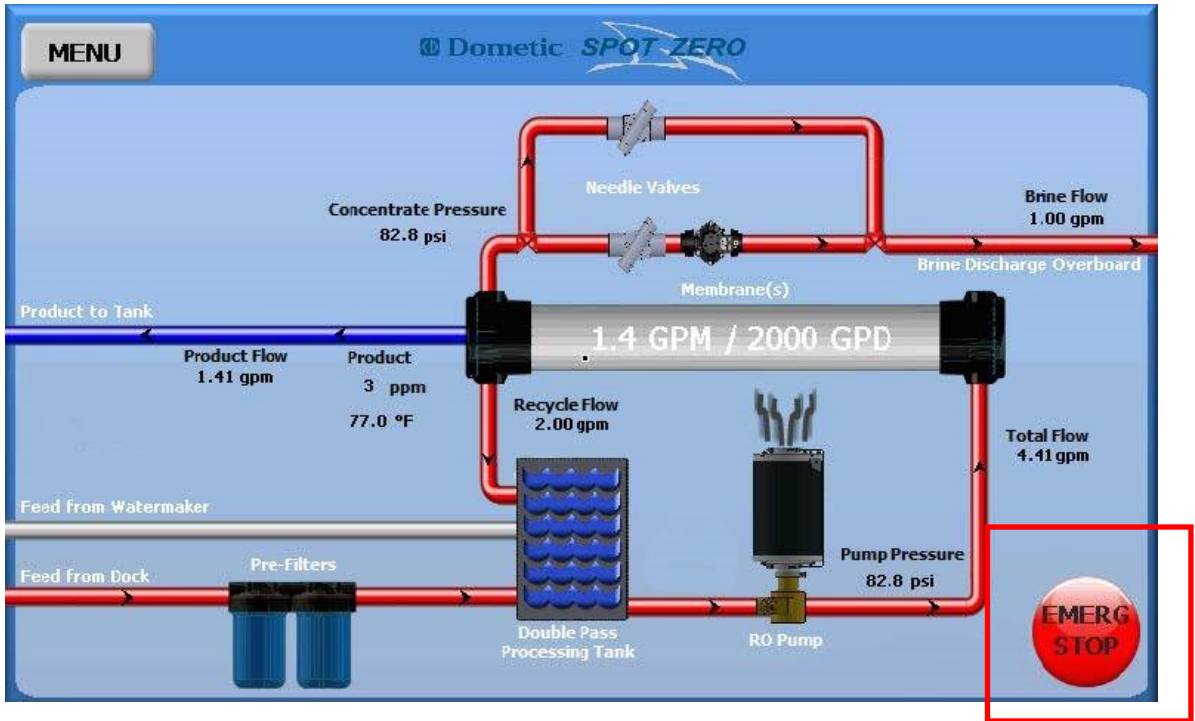


System will turn ON

System will turn OFF

Emergency Stop

While the system is operating the emergency stop button will appear. Pressing the emergency stop button will shut down the system.

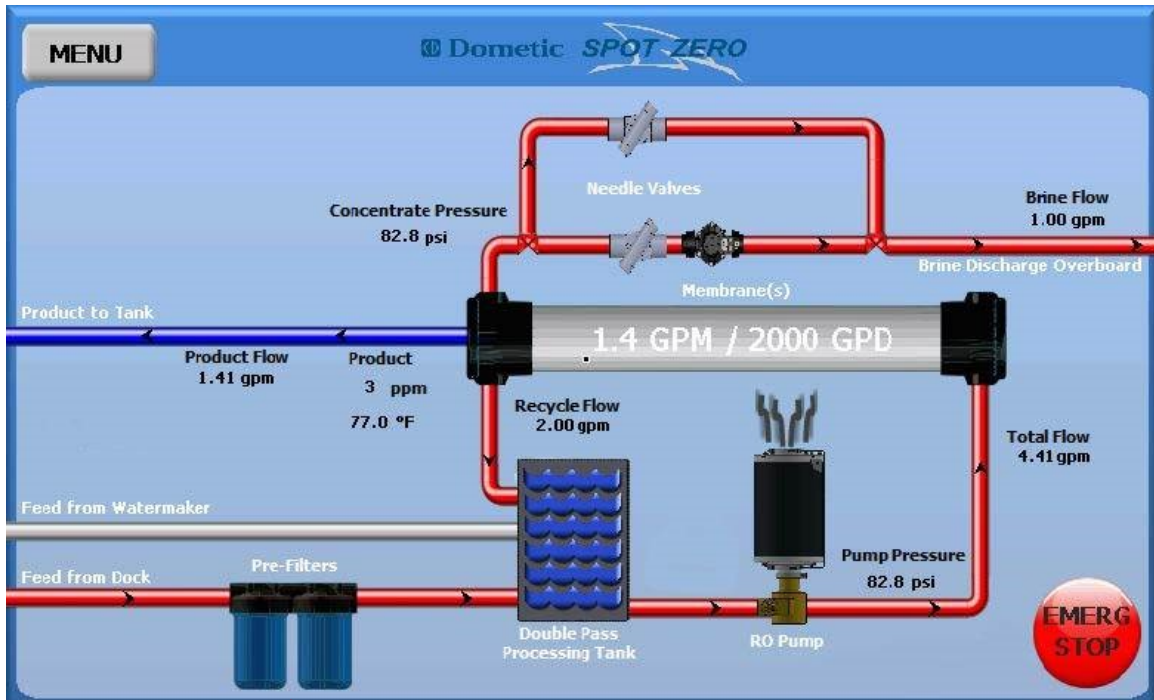


To restart the system, press the reset button



OPERATION FROM DOCK FEED

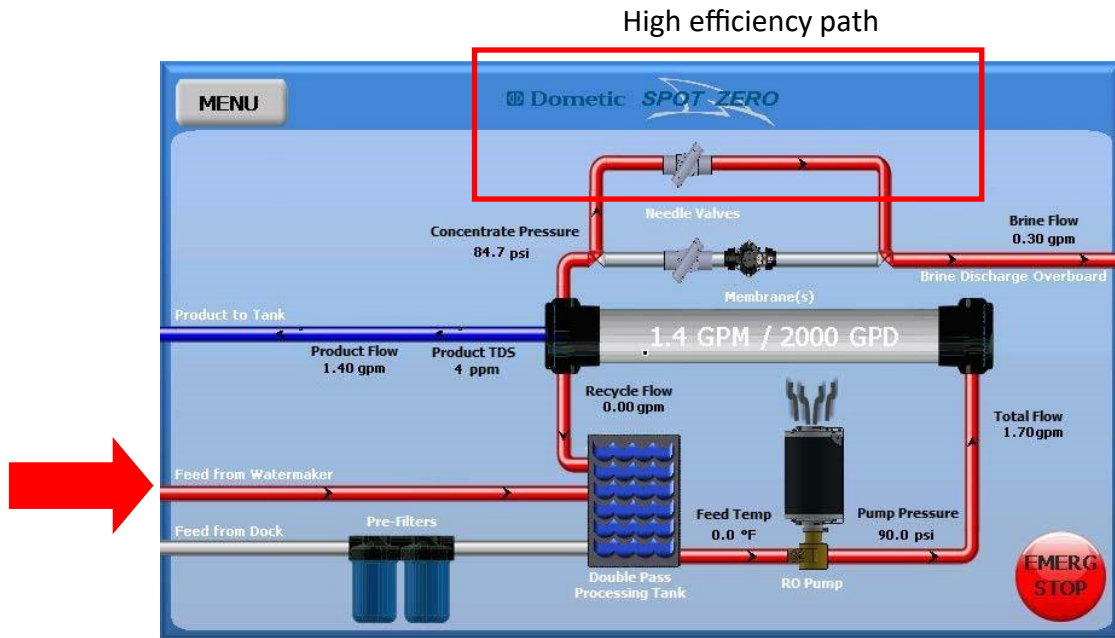
When operating from dock water, the system will show the water passing through the pre-filtration then into the double pass processing tank. The brine water will discharge overboard.



The dock water must flow through the pre-filtration to remove chemicals and contaminants that will harm the system and ruin the membranes.

Water maker Source

When operating from water maker product water, the flow will be shown going directly into double pass processing tank. The brine water from the water maker supply will be directed through the high efficiency valve then discharge overboard.

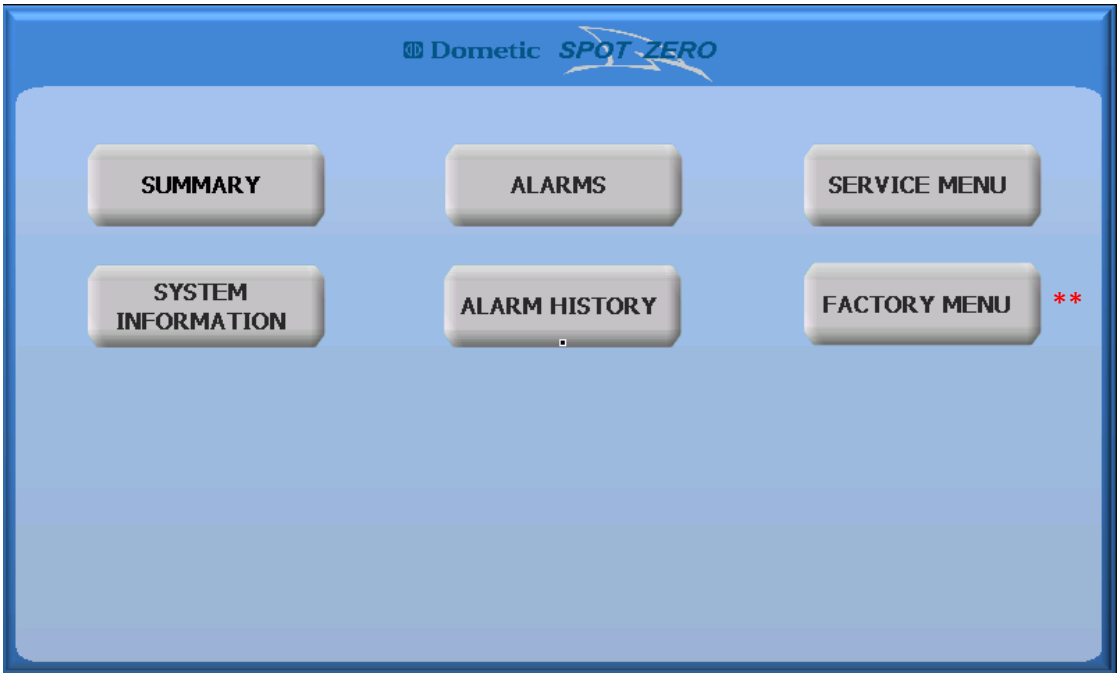
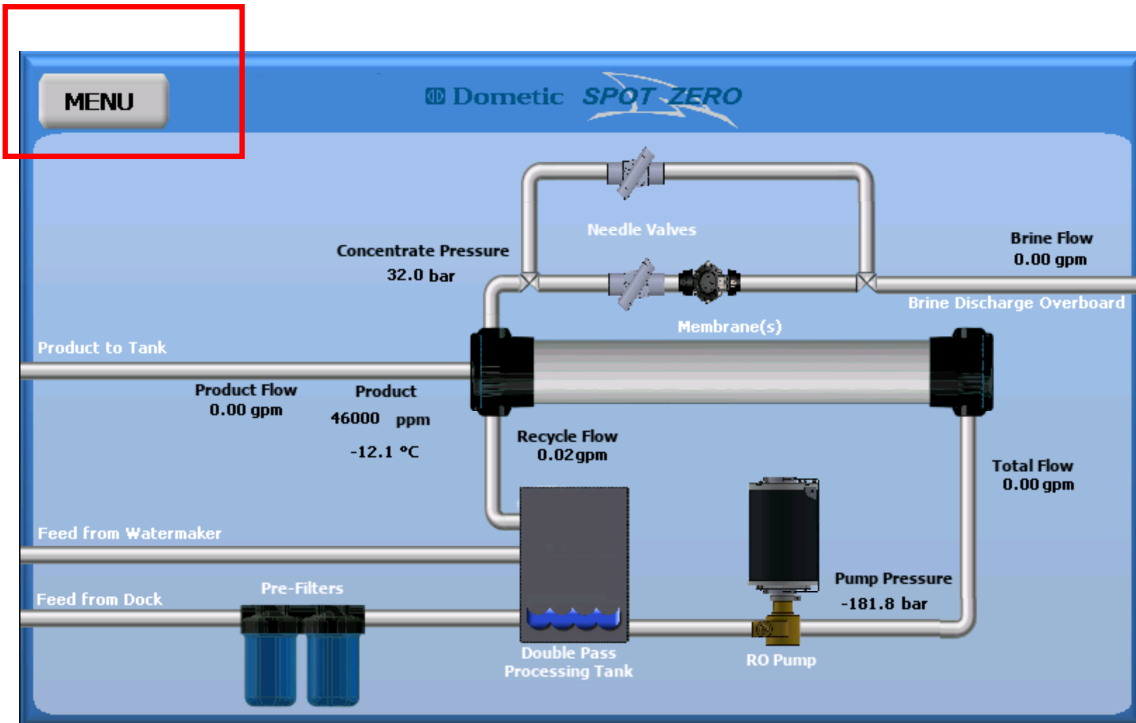


The product water from the water maker has already gone through a desalination system and does not contain the chemicals and contaminants that dock water has in it. Therefore this water flows directly to the double pass processing tank.

When the system is being run from a water maker the high efficiency valve will close and only allow a portion of the brine to discharge. Allowing the system to operate at a higher efficiency.

MENU OPTIONS

To access the menu, press the menu button in the upper left hand corner of the home screen.

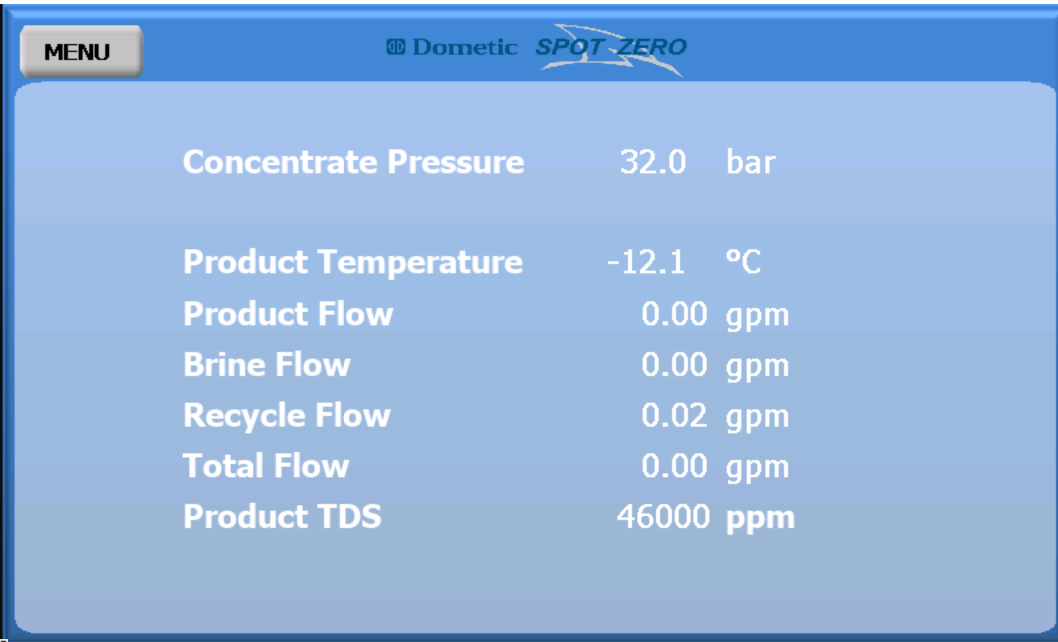


NOTE: The factory menu is password protected and for factory use only.**

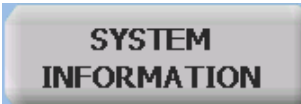
SUMMARY



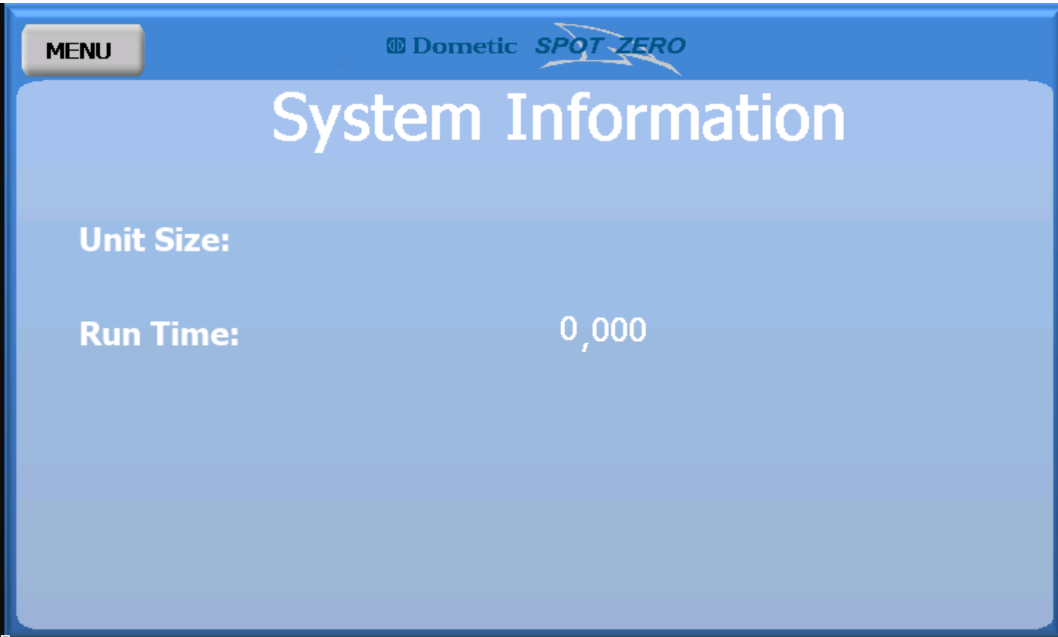
The summary screen shows the current values of the system



SYSTEM INFORMATION



The serial number of the system can be found here, also the system capacity, and the run time.



ALARMS



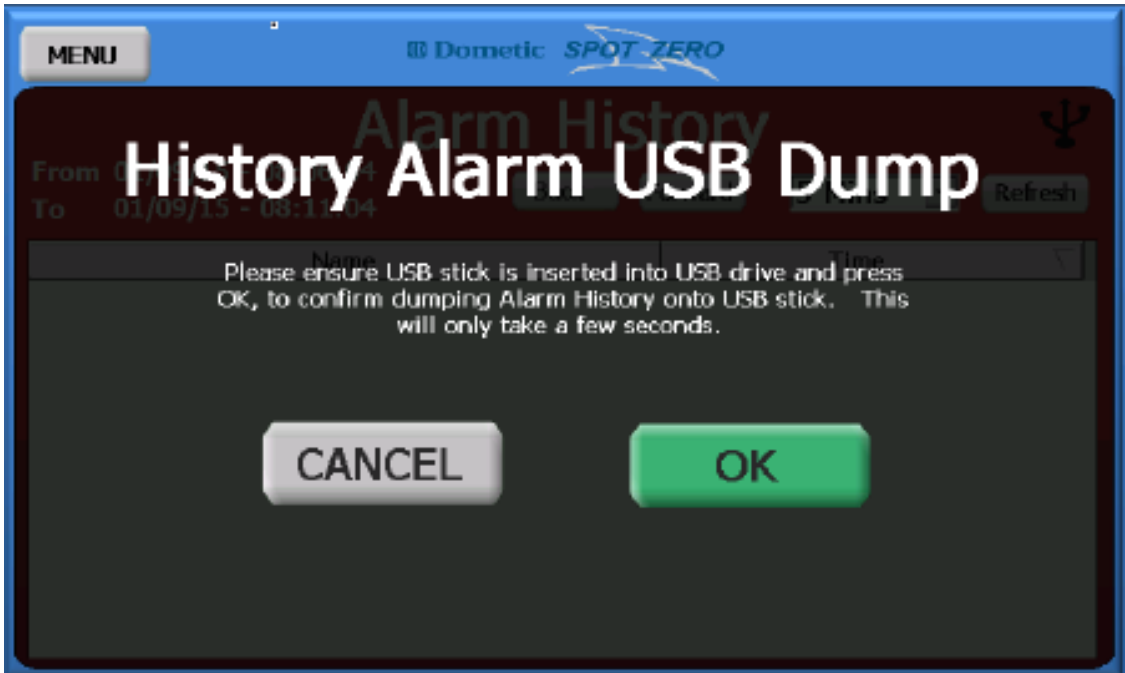
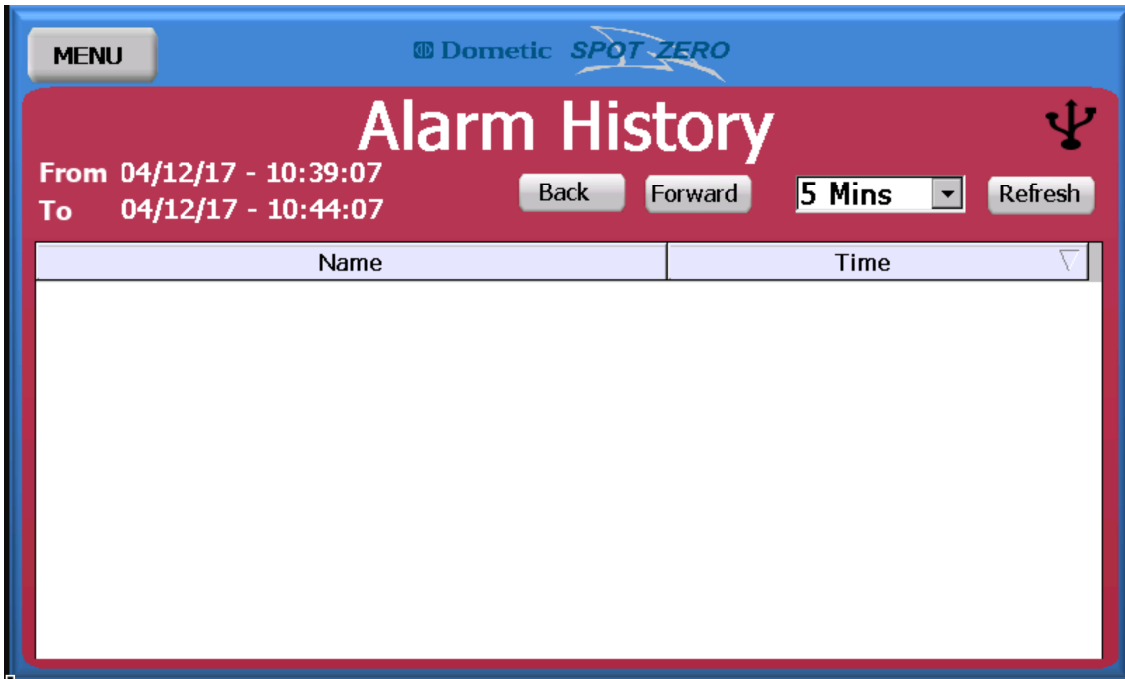
Any active alarms will be displayed here. When the system is in alarm a red alarm image will show at the top of the home screen. Pressing the alarm image will also open this screen.



Press the reset button after the issue has been fixed in order to clear the system

ALARM HISTORY

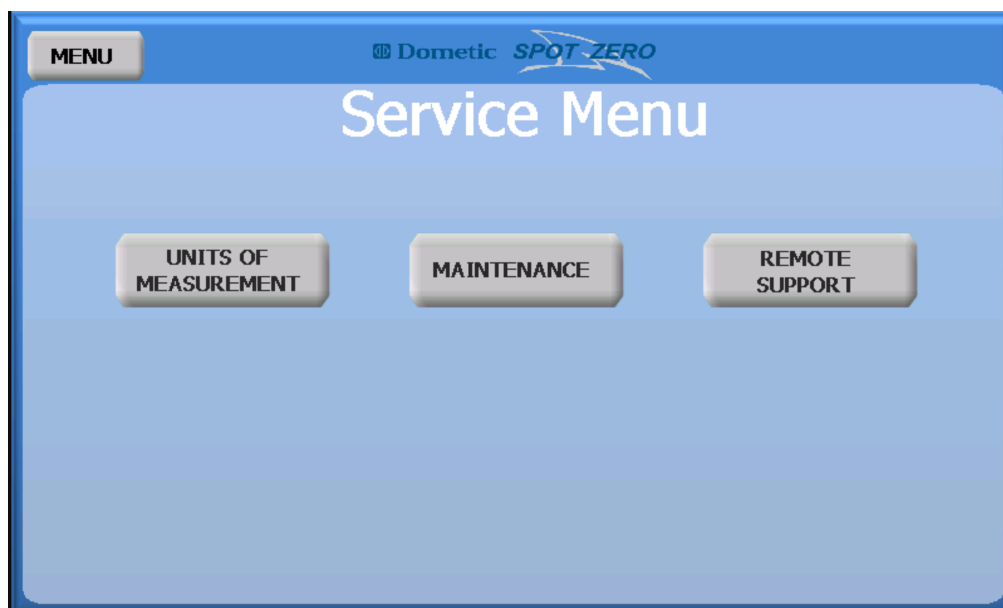
The alarm history can be scrolled through using the back and forward buttons. The amount of time that has passed can also be changed in the drop down menu. Pressing the USB icon will allow the history to be transferred to a USB.



SERVICE MENU

SERVICE MENU

The “SERVICE MENU” give you access to 3 system options as indicated on the screen below.



UNITS OF MEASUREMENT

UNITS OF
MEASUREMENT

Change the systems units of measurement. Choose between imperial units or metric system. Once you have selected what units you want to use, simply press the “SERVICE” button to go back or the main logo to return to the home screen.



MAINTENANCE



When maintenance is required it will be listed here. If no maintenance is due, then it will say no maintenance needed. If maintenance is needed then after it has been completed press reset.



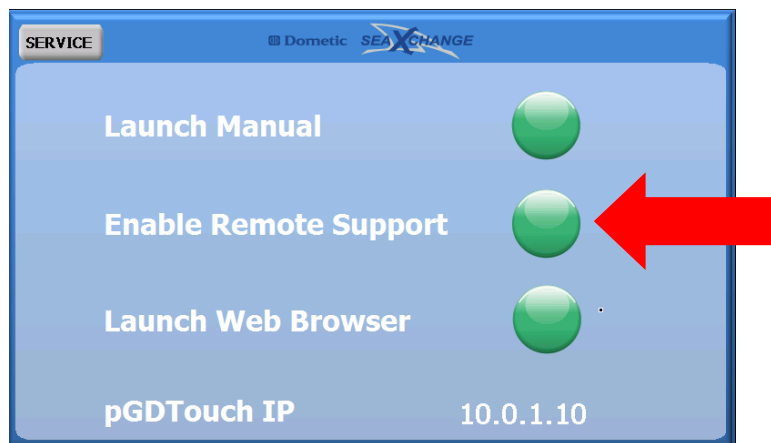
REMOTE SUPPORT



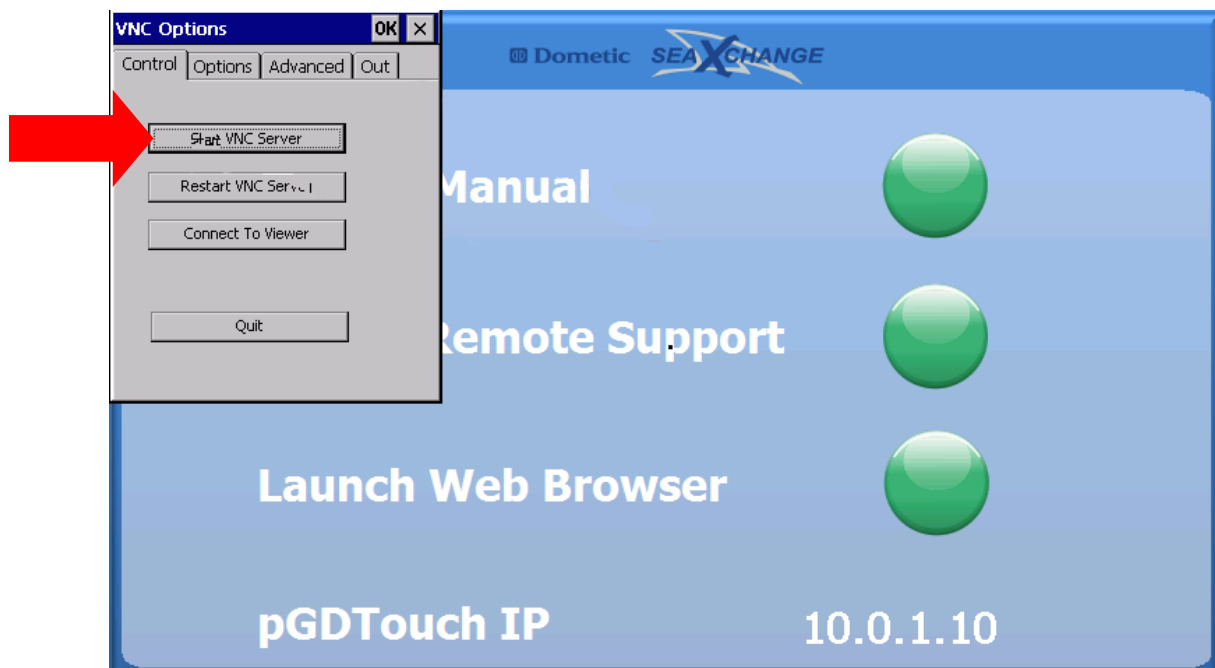
In this menu the pGD Touch IP address will be shown at the bottom of the screen if the system is wired to a router. This will be needed to connect to the VNC viewer app. This manual will be brought up if the launch manual button is pressed. The VNC viewer menu will pop up if the enable remote support is pressed. The web browser will pop up is the launch web browser is pressed. To enable remote support, see the VNC viewer procedure section of the manual.

Enable Remote Support

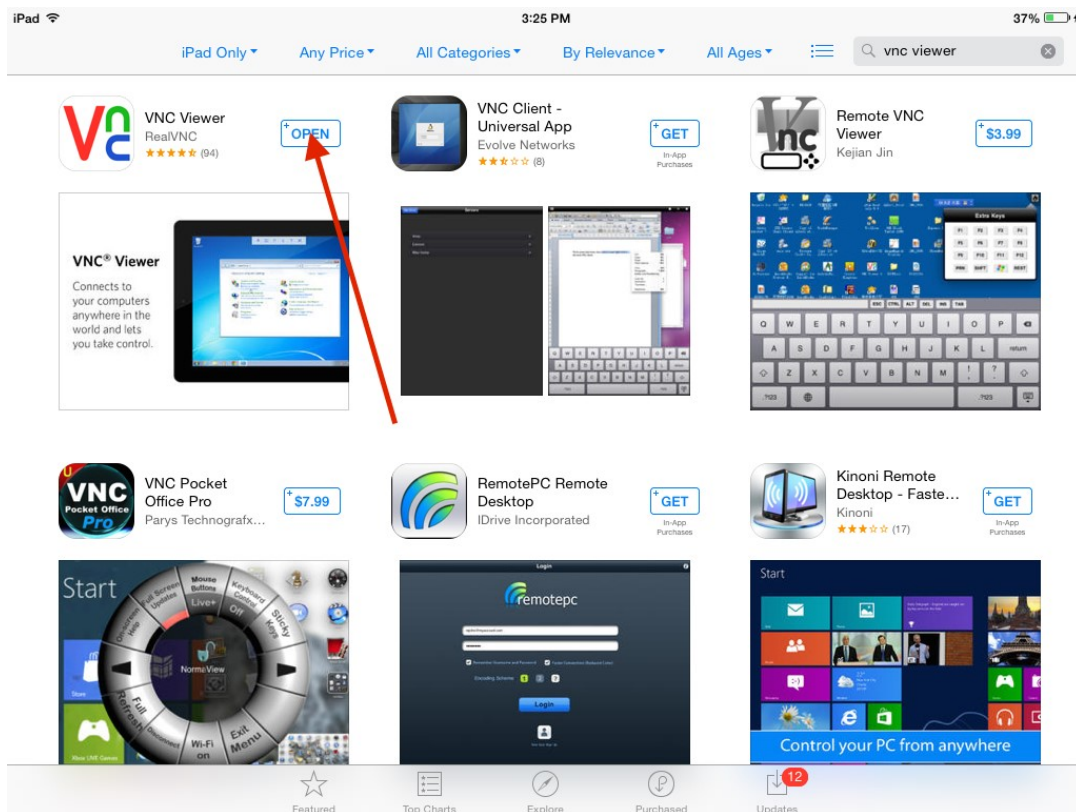
1. Press the green button next to Enable Remote Support



2. In the service menu, press the enable remote support button. Another menu will pop up. Press the start VNC server button, then press ok



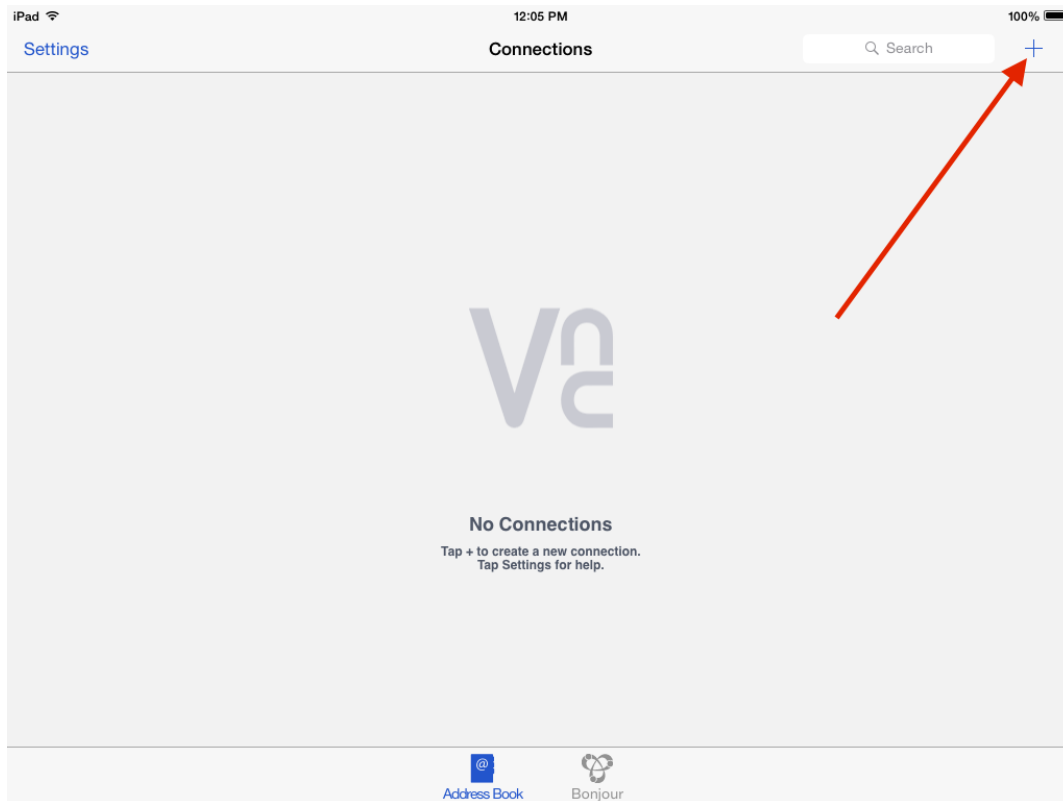
3. Download the Free VNC Viewer app from the app store.



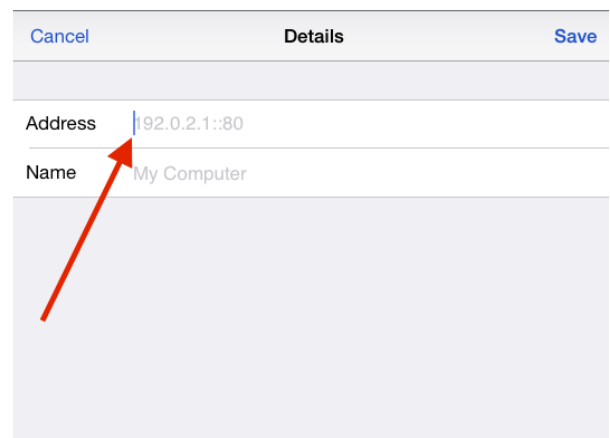
4. Search for the VNC Viewer Icon on you device and open it.



5. Press the plus sign in the upper right hand corner to set up new connection.



6. Type in the IP Address found in the unit's service menu, in the remote support menu at the bottom of the screen. Then give it a name.



EXAMPLE

Cancel

Details

Save

Address

10.0.1.10

Name

XTC

✕

7. Next, press the “Connect” button

Edit

XTC

Done



Connect

Address

10.0.1.10

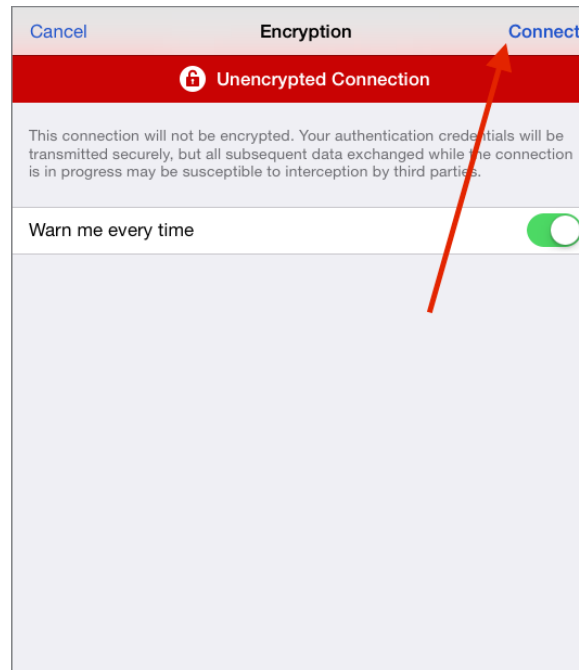
Name

XTC

Picture Quality

Automatic >

8. The following screen will pop up. Simply press the “Connect” option.

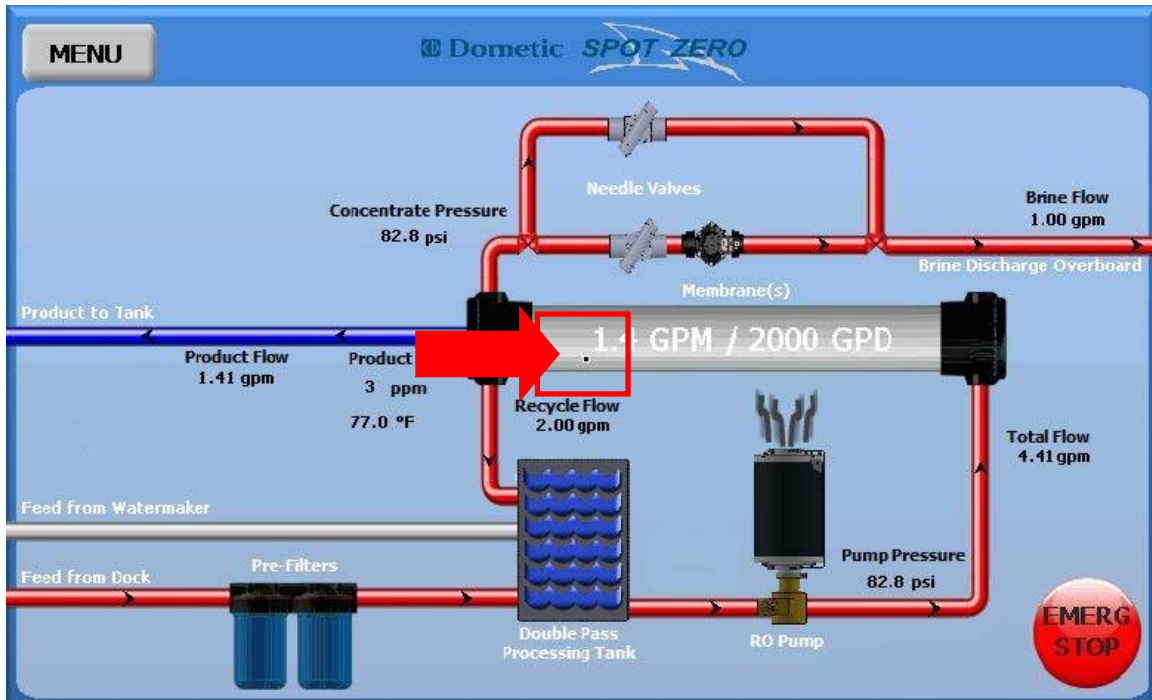


9. Finally it will show you the connecting screen. When it is done connecting you will see the same image on your display and your device

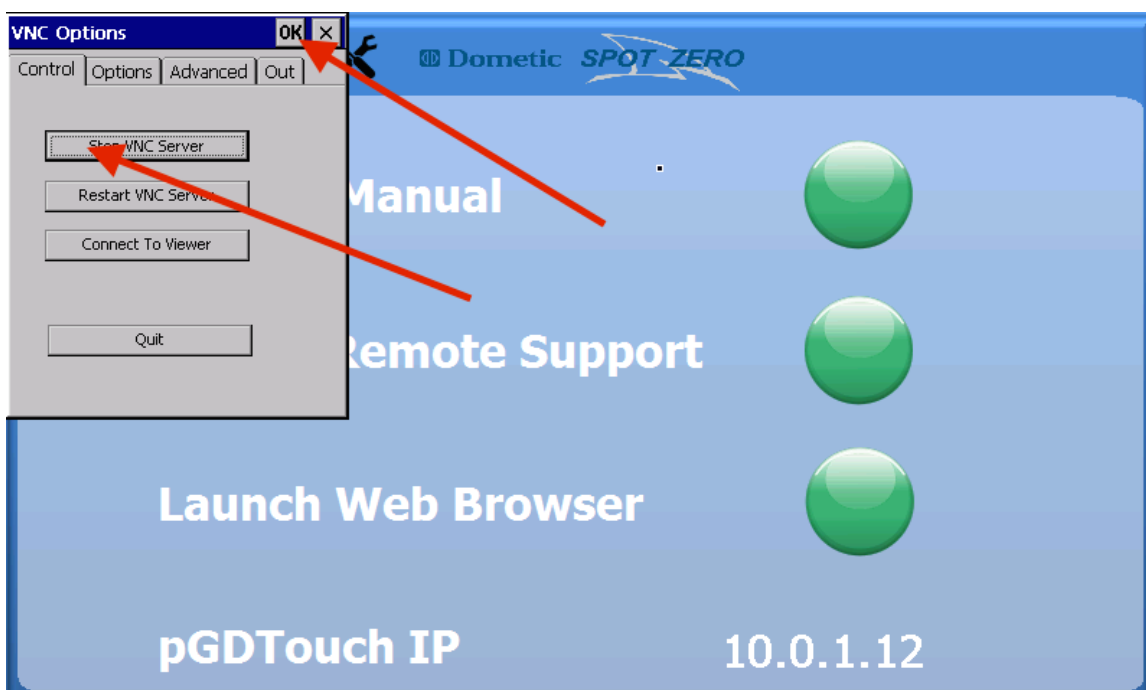


Cancel

10. In order to browse and navigate the screen on you phone, a small dot will appear. This is a cursor that allows you to select icons and menus. Move the cursor with your finger to an icon you want tp press and tap the screen to select it.

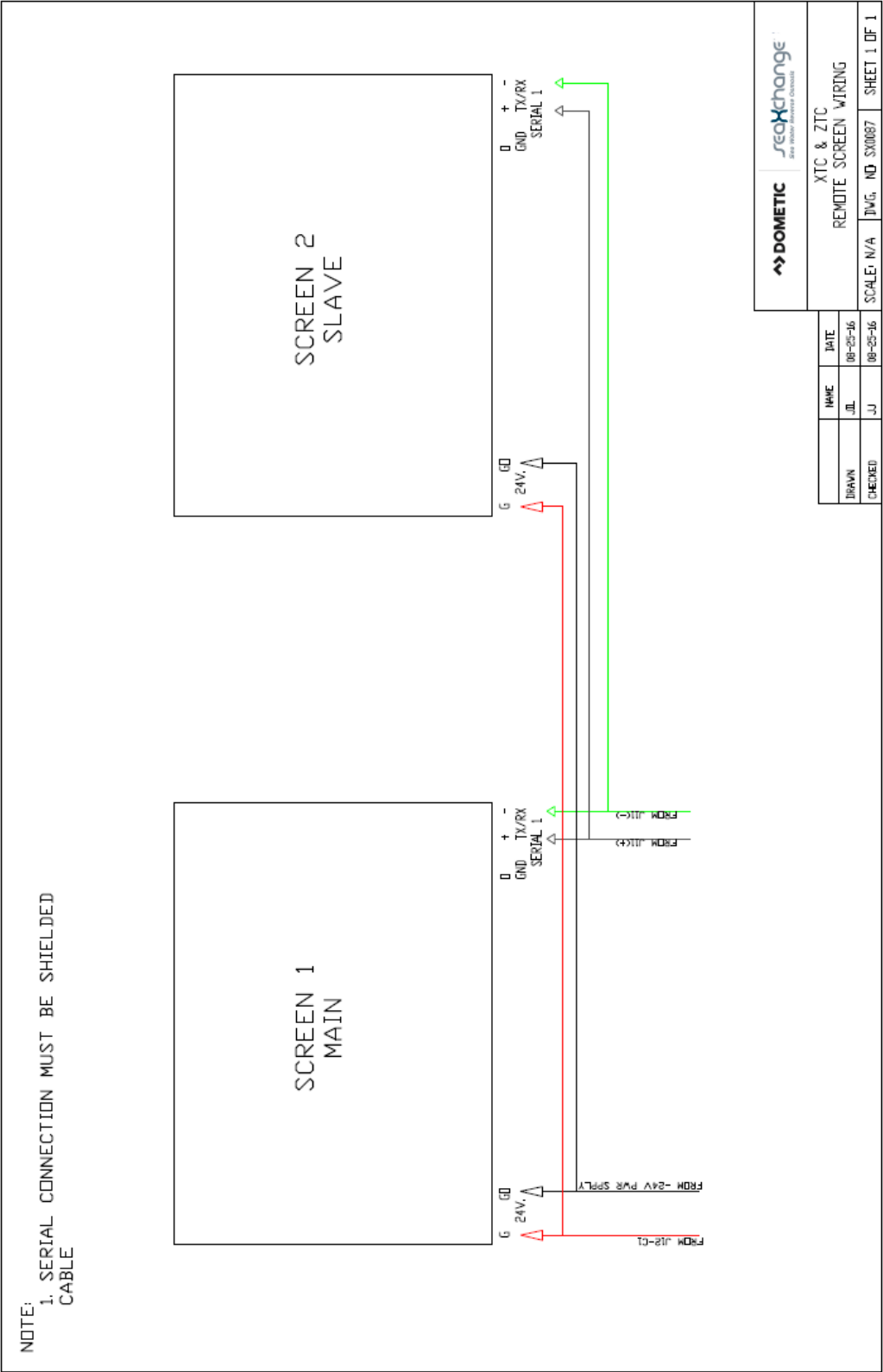


10. If there is a problem connecting, the enable remote support button can be pressed. Another menu will pop up. Select the start VNC server button, and press ok. Try to connect again.

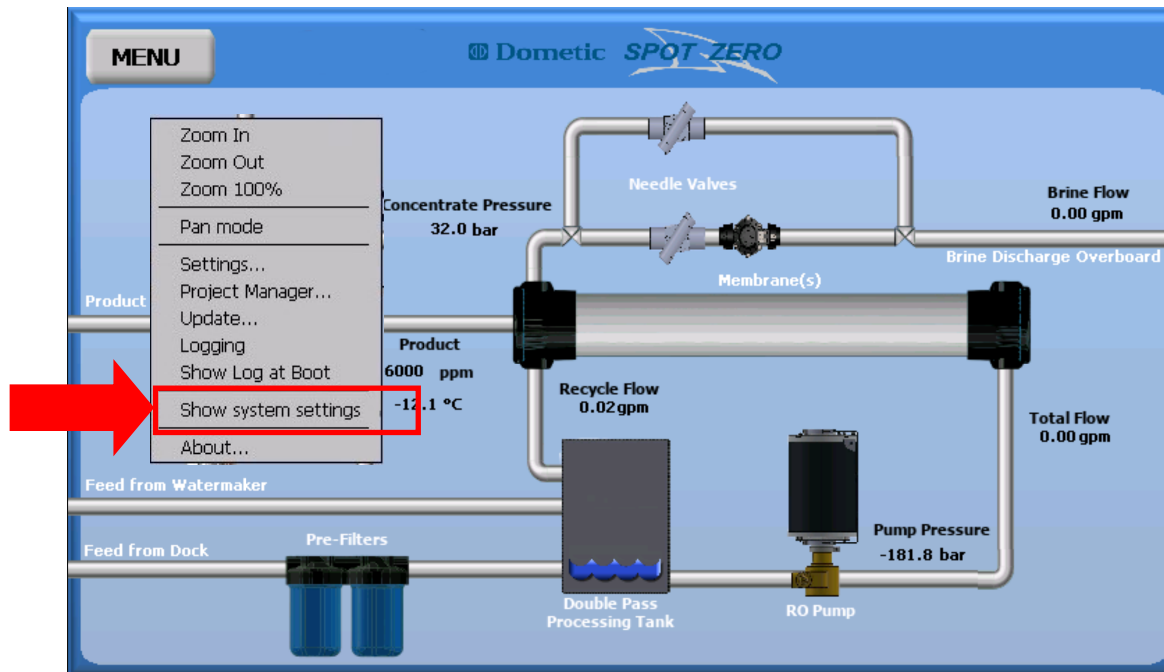


REMOTE TOUCH SCREEN SETUP

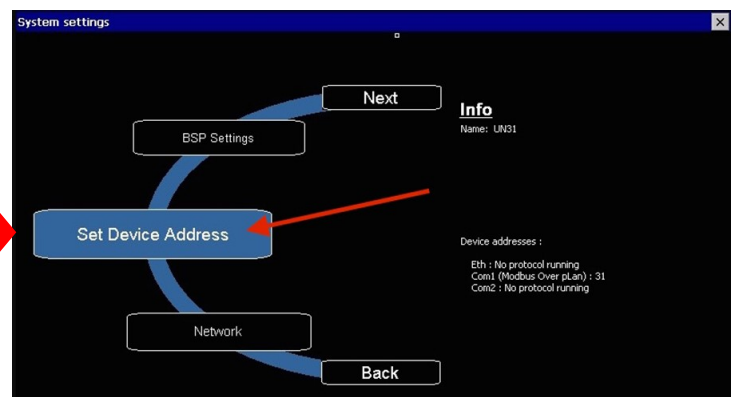
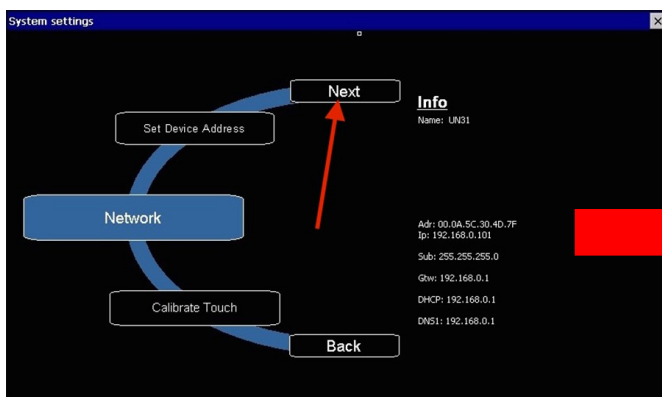
- 1. Run a 4 conductor cable piggy backed on the power terminal and communication terminal on the display on the unit to the same terminals on the remote display .



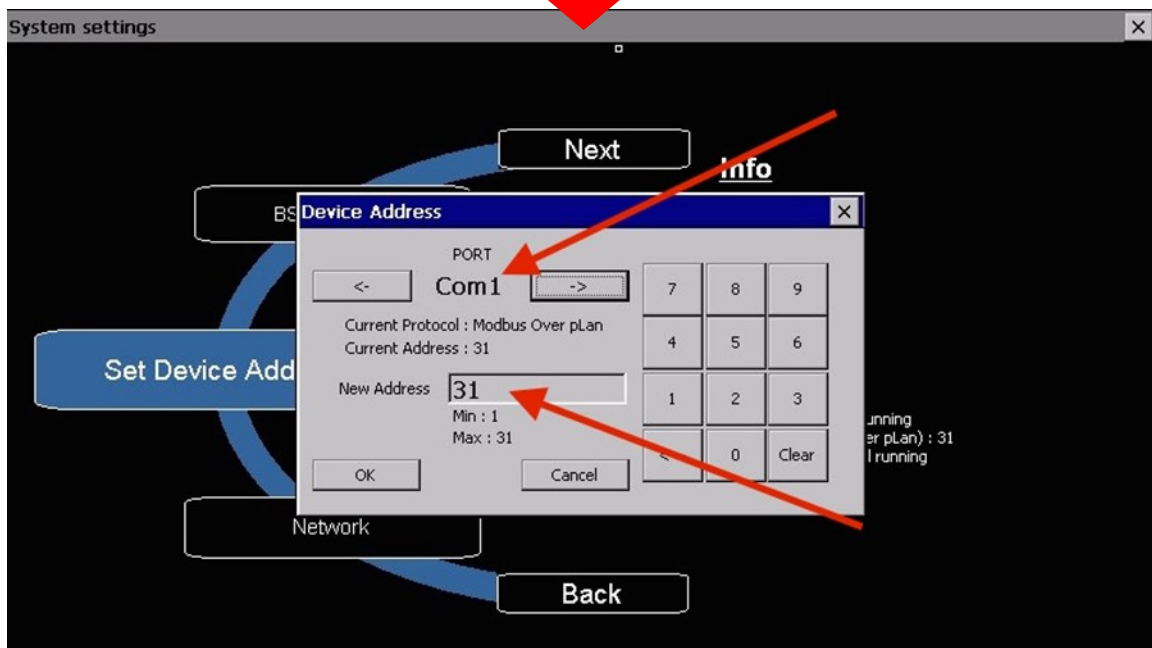
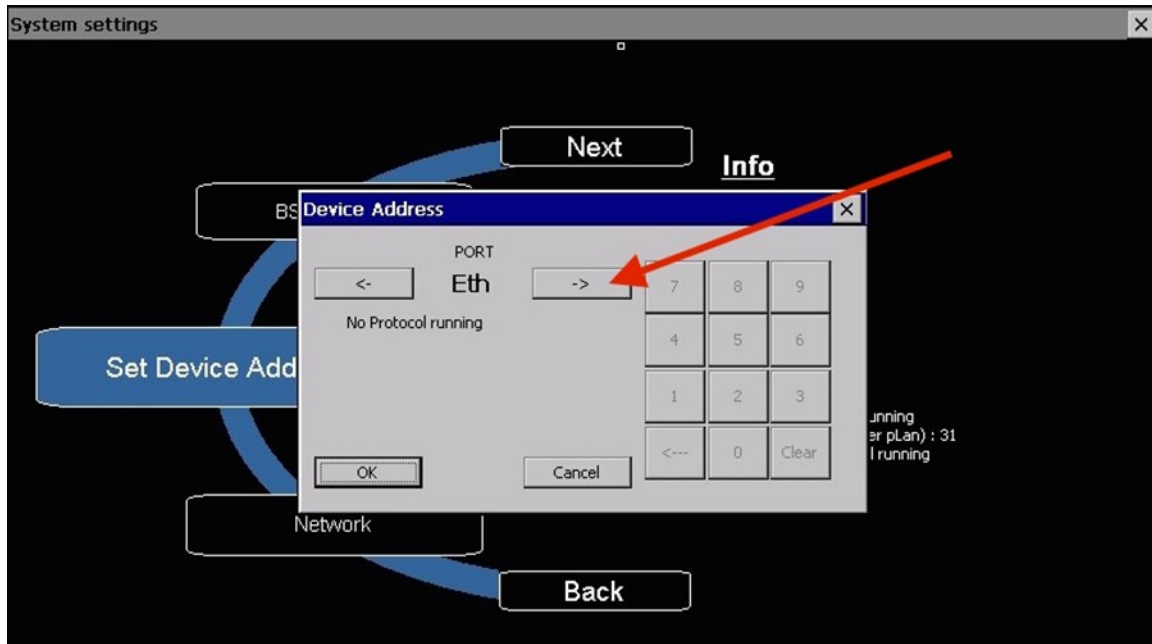
2. Press and hold the screen in a spot that does not bring you to another screen. A hidden menu will pop up. Press the Show System Settings selection.



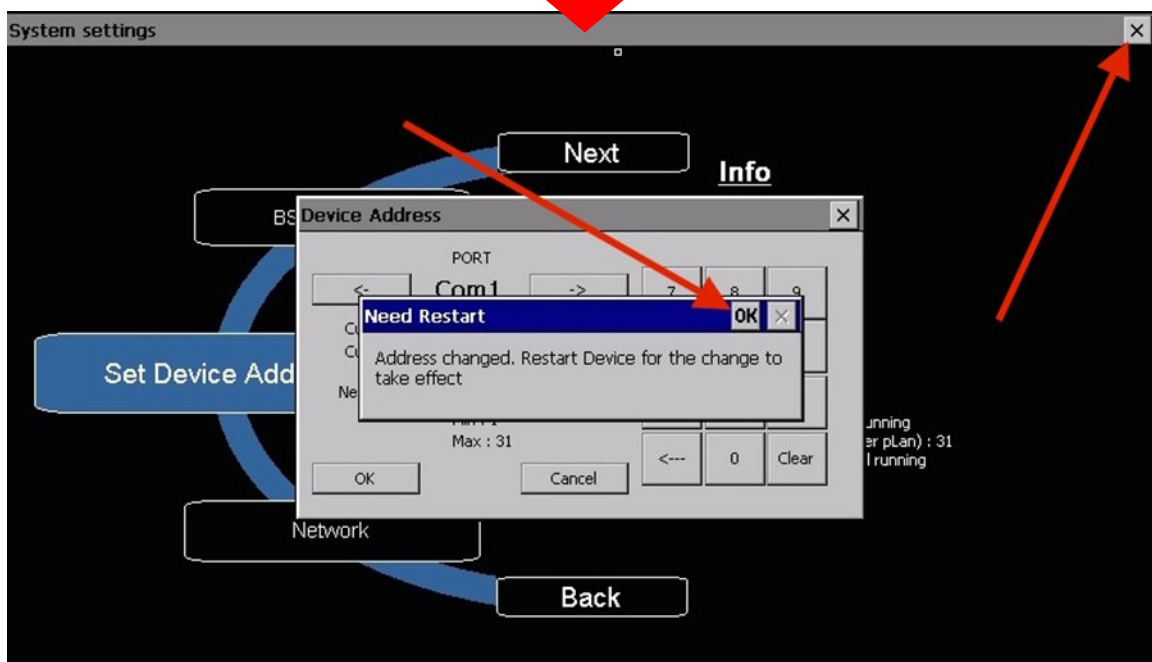
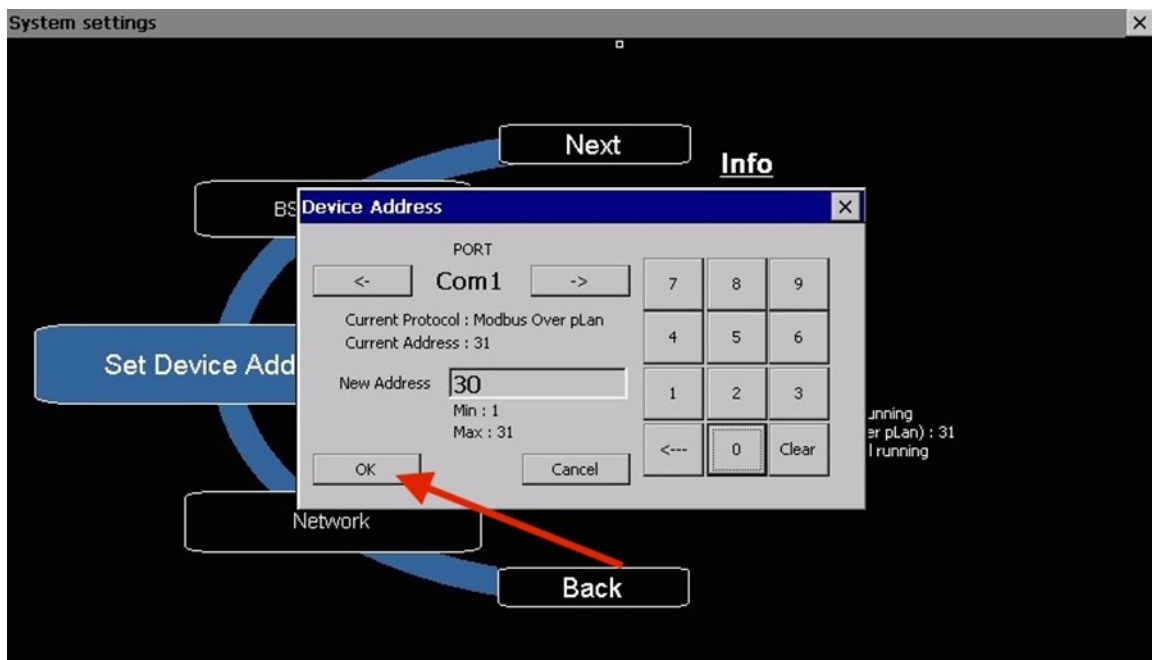
3. Press the “Next” button until Set Device Address is highlighted. Then press “Set Device Address”.



4. Press the Port selection button to select "COM 1". You will see it set for address 31. Press the box that has the 31 in it and change it to 30.



5. Press "ok". You will then be instructed to cycle the power of the unit for the changes to take effect. Press "ok", then "x" out of the screen and cycle the power to the machine. Now the display should be functioning correctly.



4. SYSTEM MAINTENANCE

Is my System Working Properly?

TDS Rejection

The Spot Zero ZTC reverse osmosis system is designed to reject 94% or more total dissolved solids (TDS). The rejection percentage is calculated by the following formula:

$$\% \text{ Rejection} = ((\text{Feed TDS} - \text{Product TDS}) / \text{Feed TDS}) * 100$$

$$\text{Example 1 : } ((117\text{ppm} - 4\text{ppm}) / 117\text{ppm}) * 100 = 96.58\%$$

$$\text{Example 2 : } ((900\text{ppm} - 45\text{ppm}) / 900\text{ppm}) * 100 = 95\%$$

Both examples represent membranes in perfectly operating condition. The quality of your product water will rely strictly on the feed quality going in.

Example 1 gives product water at 4 ppm

Example 2 gives product water at 45 ppm

In both examples both systems are operating at normal conditions.

Membrane Cleaning Procedure

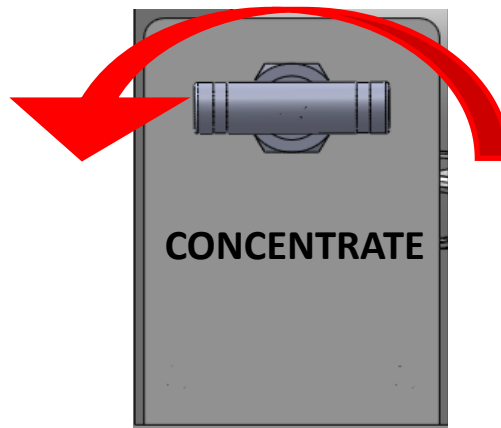
SZ-CCC part number 252404006

When membrane performance is reduced and is not due to temperature or feed water quality, a chemical cleaning may be required to remove scaling on the membrane film.

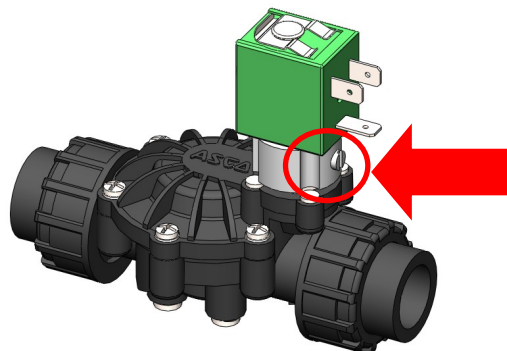


Note: Damage to membrane film caused by chlorine or chloramine is irreversible and cannot be corrected by chemical cleaning.

1. Procure part number 252404006 Spot Zero Chemical Cleaning Cartridge.
2. Turn System off.
3. Disconnect product to tank and discard any product during cleaning process.
4. Temporarily Install SZ-10KDF2 in first housing in place of SZ-45-1001.
5. Insert SZ-CCC in second housing in place of SZ-10KDF2.
6. Open concentrate valve counter clockwise until fully open.



7. Open feed solenoid valve manually via solenoid bypass valve with feed water present for 2 minutes or until concentrate flow meter shows signs of discoloration. Close bypass on feed solenoid valve.



8. Allow membranes to soak for 2 hours. For heavily scaled membranes, soak for 24 hours.
9. After 2-24 hours soak time, re-open bypass on solenoid to allow system to flush for 30 minutes while machine is off.
10. Return SZ-45-1001 filter to first housing and SZ-10KDF2 to second housing and return system to normal operation.

Restore System Settings

For Spot Zero 2000 (SZ 2000)

Set concentrate valve to produce specified flow rates of: 2 GPM of recycle, 1 GPM of concentrate flow, 1.38 GPM of product @ 77 Degrees F (25 Degrees C)

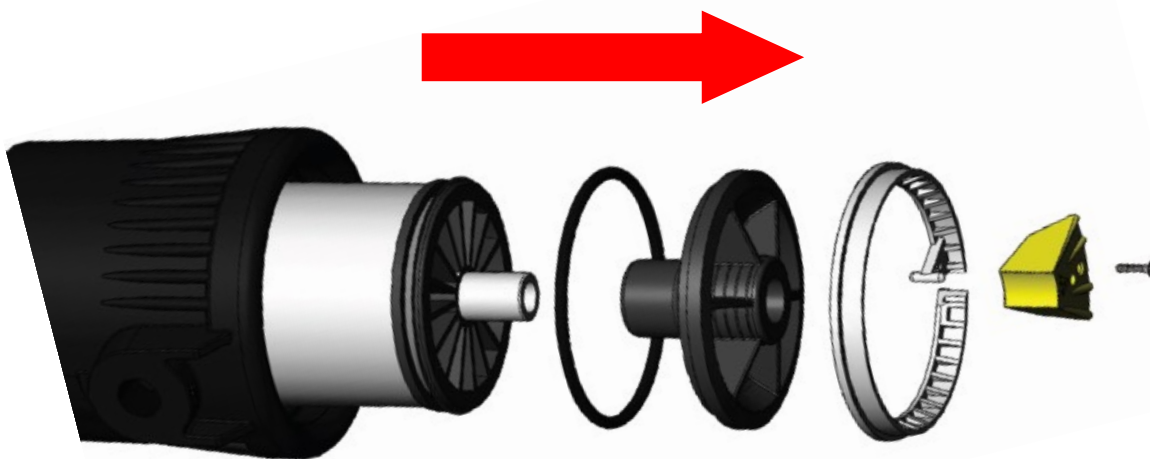
For Spot Zero 3000 (SZ 3000)

Set concentrate valve to produce specified flow rates of: 2 GPM of recycle, 1 GPM of concentrate flow, 2.0 GPM of product @ 77Degrees F (25 Degrees C)

Membrane Change

NOTE: The system must be off.

1. Locate the inlet end of the pressure vessel, that is opposite to the flow direction.
2. Remove the screw from the yellow snap ring lock at the end of the pressure vessel
3. Remove the white Nylon snap ring from the end cap.
4. Remove the end cap from the pressure vessel.

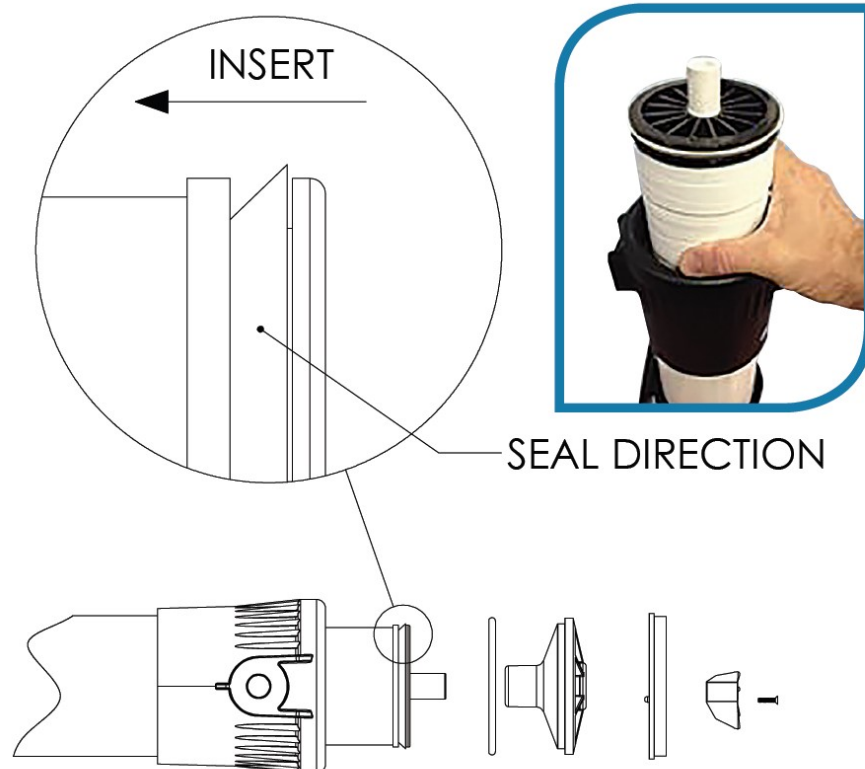


5. Slowly remove the membrane element from the pressure vessel being careful not to grasp it by the permeate tube. Needle nose pliers may be necessary to pull the old membrane element out of the pressure vessel.



6. Remove new membrane element from container and inspect. Make sure that all parts are clean and free from dirt. Examine the brine seal, and permeate tube for nicks or cuts. Replace the O-rings or brine seal if damaged.
7. Lubricate the brine seal with a food grade lubricant
8. Install the membrane element so the brine seal will be located and the opposite end of the flow direction.

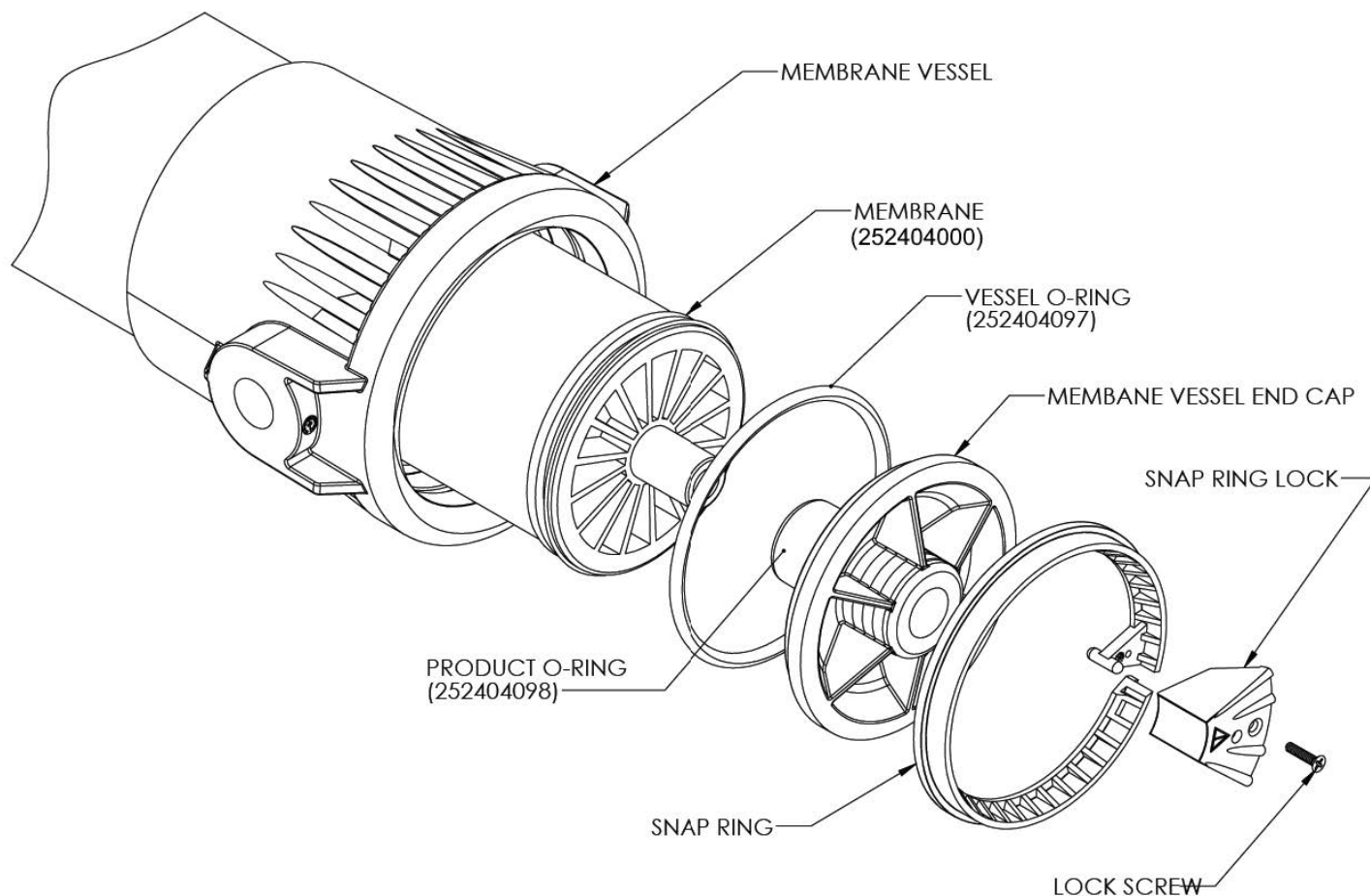
9. At a slight angle insert membrane while slightly rotating element being careful not to tear or flip the brine seal. Relube the brine seal if necessary.



10. With a smooth and constant motion, push the membrane element into the housing so that the brine seal enters the housing without coming out of the brine seal groove. A slow twisting motion should be used to insert the membrane element, to ensure that the brine seal stays in place.
11. Re-install the end caps by gently twisting the end cap while pushing it onto the housing. Ensure that you do not pinch or fatigue any O-rings while pushing the end plug on. Push the end plug on until the outer diameter of the plug is flush with the outer diameter of the membrane housing. (A rubber mallet may be necessary).
12. Re-install the white nylon snap ring and the yellow snap ring lock
13. These directions should be observed for installation of each element in each housing

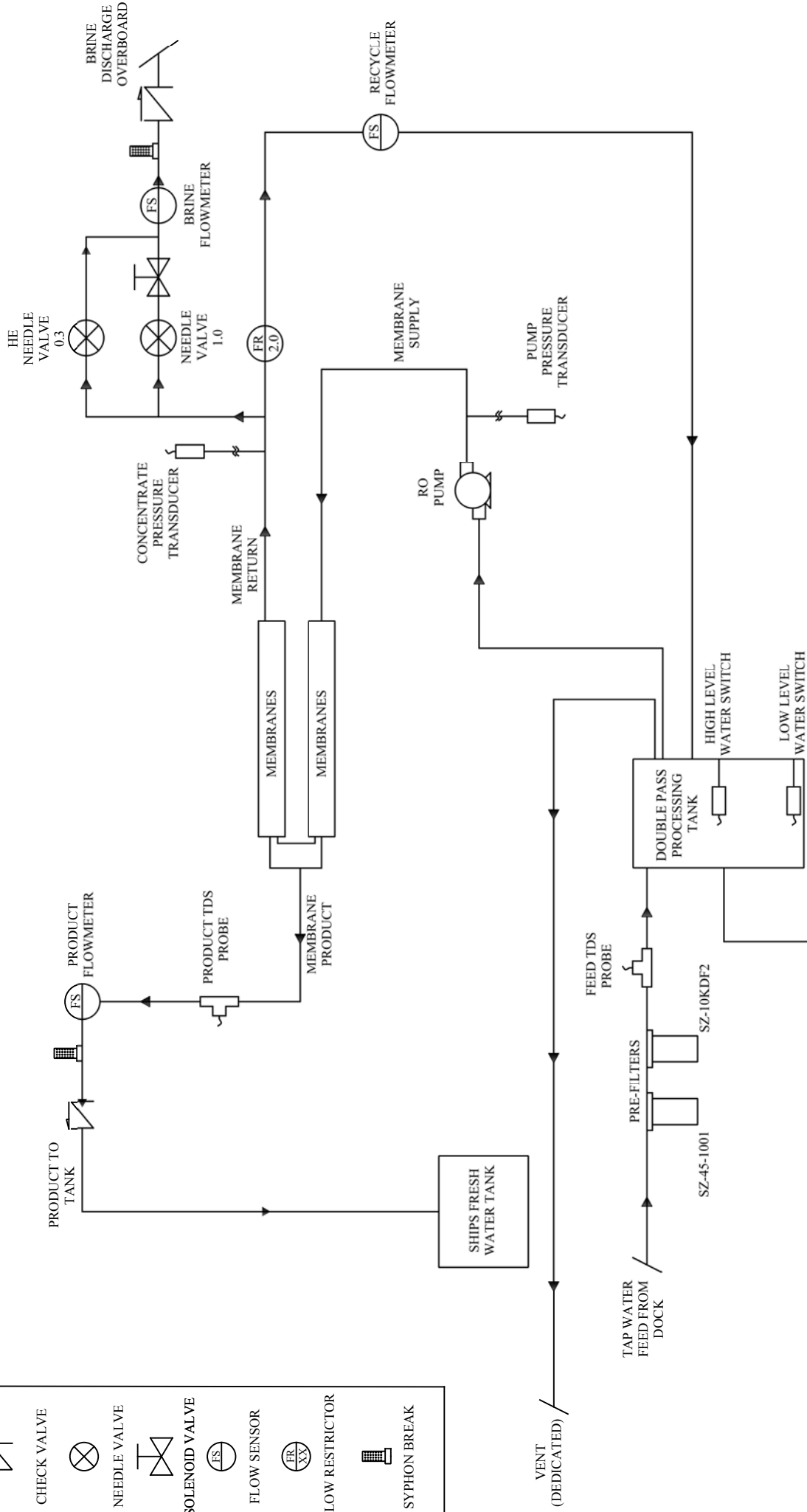
NOTE: As time progresses, the efficiency of the membrane will be reduced. The permeate flow rate will begin to decline slightly after one year of operation, but can be extended with diligent flushing and cleaning of the system. A high pH and/or precipitation of hardness can cause premature loss in rejection of membrane elements in the system.

NOTE: To get best results from the system change membranes every 1,000 hours.



5. SYSTEM SCHEMATICS

LEGEND	
	CHECK VALVE
	NEEDLE VALVE
	SOLENOID VALVE
	FLOW SENSOR
	FLOW RESTRICTOR
	SYPHON BREAK



* TO PREVENT SYSTEM DAMAGE, WATERMAKER PRODUCTION FEED VOLUME MUST BE APPROVED BY SPOT ZERO REVERSE OSMOSIS.

			
NAME	DATE	DRAWN	DATE
JIL	03-05-15	BJK	09-08-14
CHECKED		ENG APPR.	
		MFG APPR.	
G/A.			

SPOT ZERO ZTC PIPING & INSTRUMENTATION		SCALE: N/A	DWG. #: SZ0025	SHEET 1 OF 1
---	--	------------	----------------	--------------

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 DECIMALS TO 0.015
 FRACTIONS 1/32
 ANGULAR: MACH ±1/2 BEND ±1
 TWOT PLACE DECIMAL ±.010
 THREE PLACE DECIMAL ±.005

PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SPOT ZERO. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SPOT ZERO IS PROHIBITED.

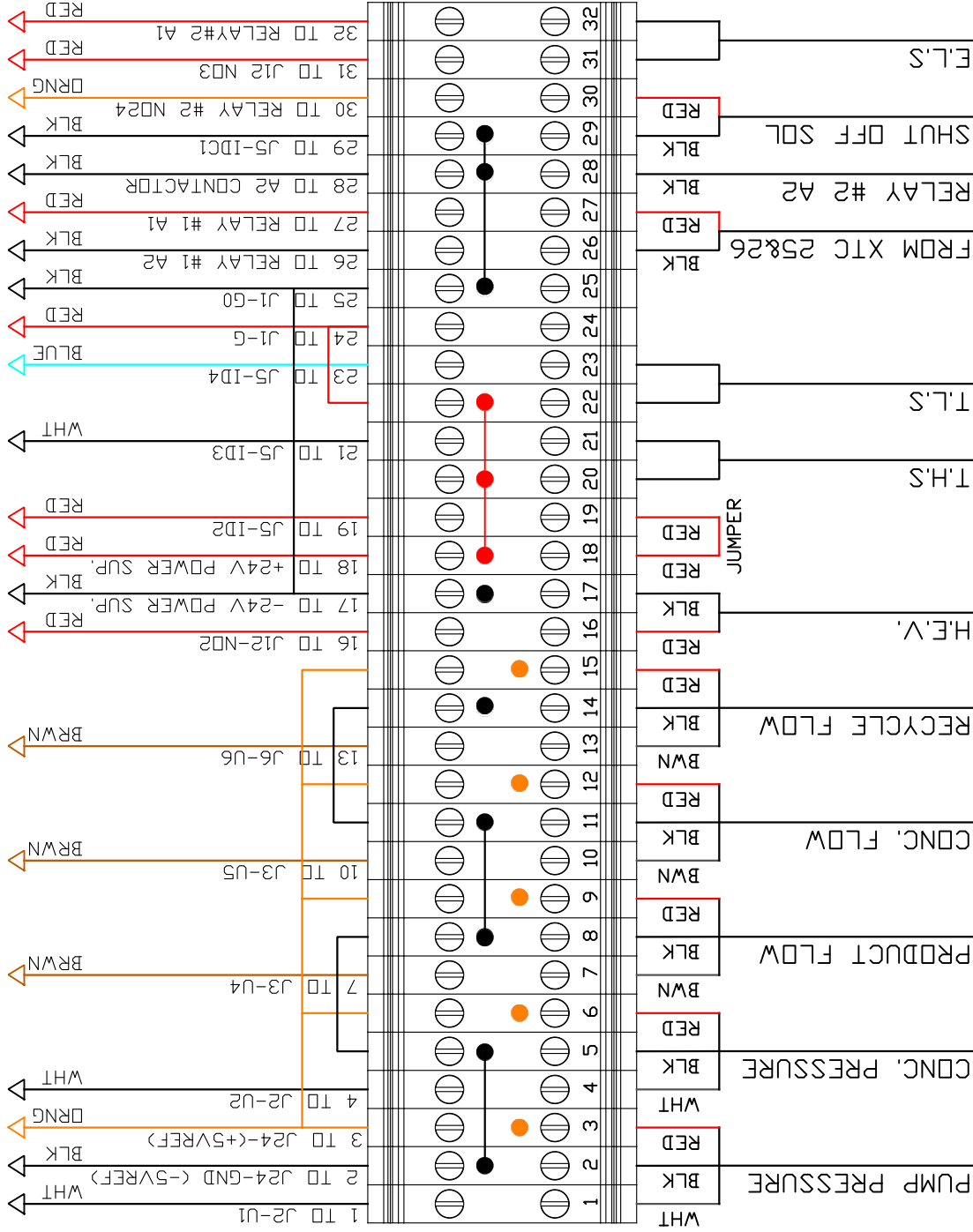


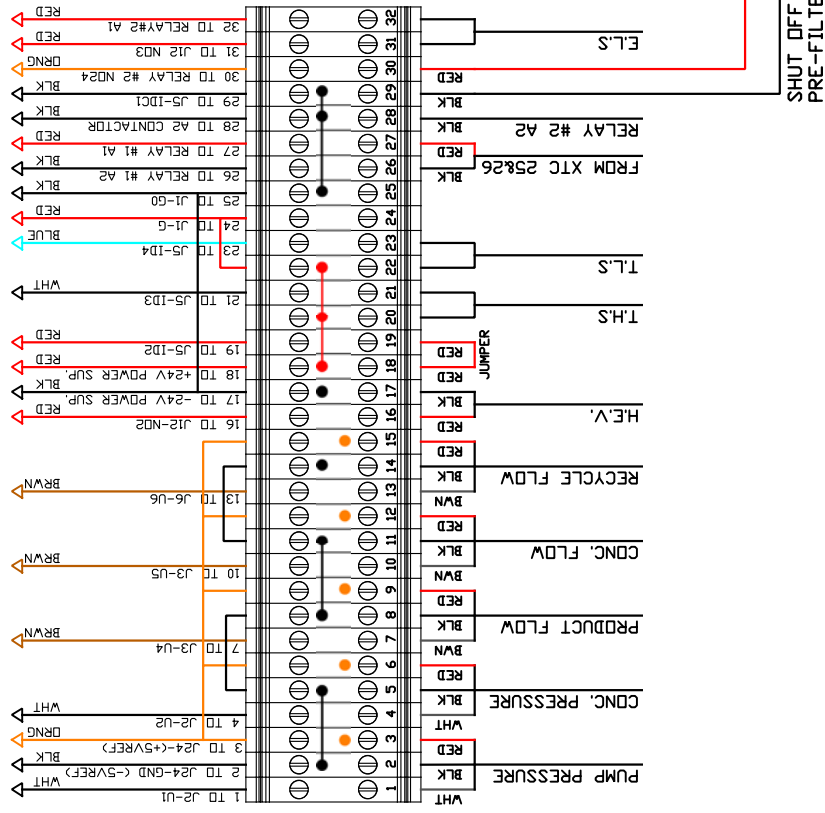
ZTC WIRING DIAGRAM DETAIL 1

	NAME	DATE
DRAWN	JTL	12-14-16
CHECKED	BJK	-----

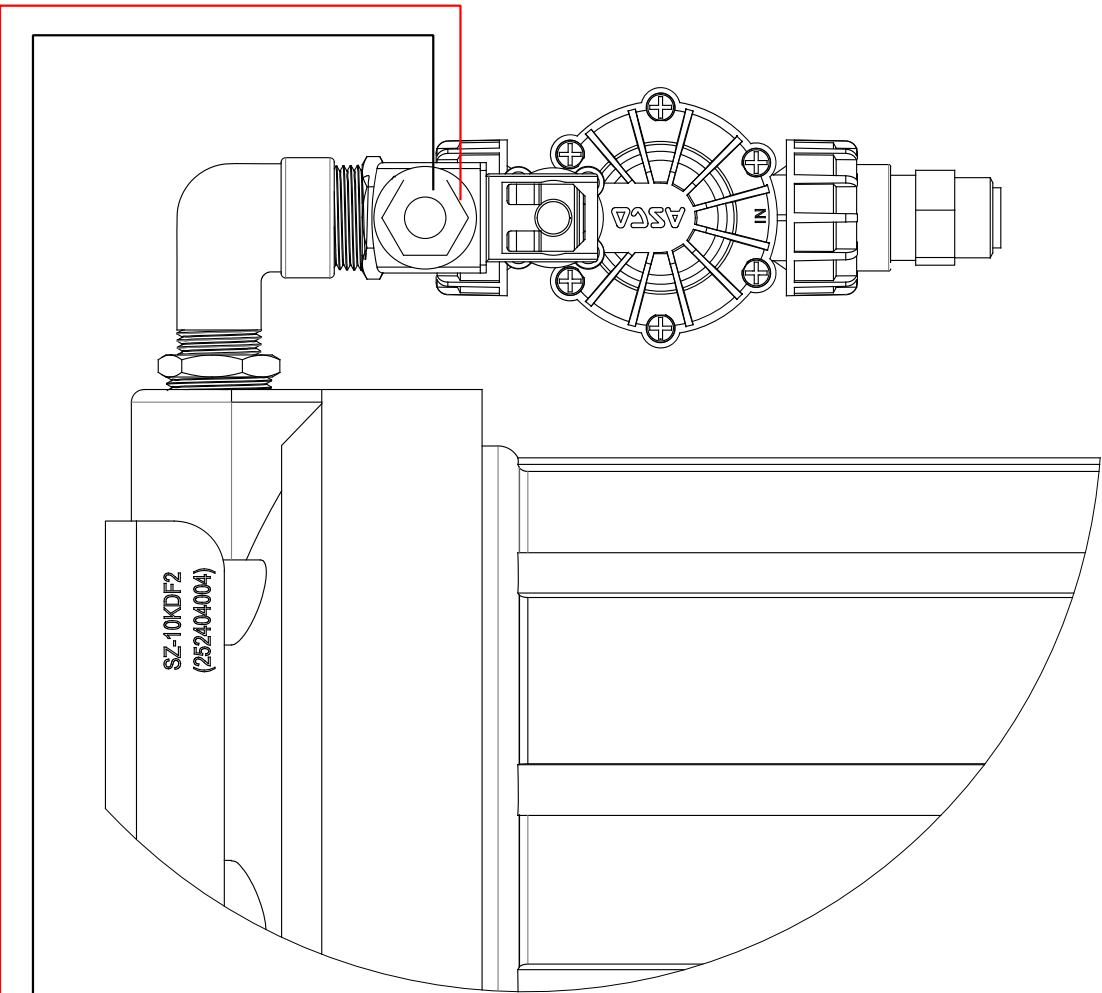
ZTC WIRING DIAGRAM
DETAIL 2

NAME	DATE
JIL	12-14-16
DRAWN	
CHECKED	JJ



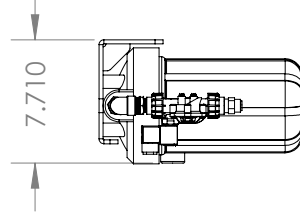
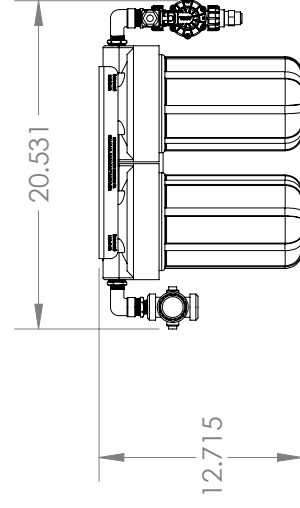
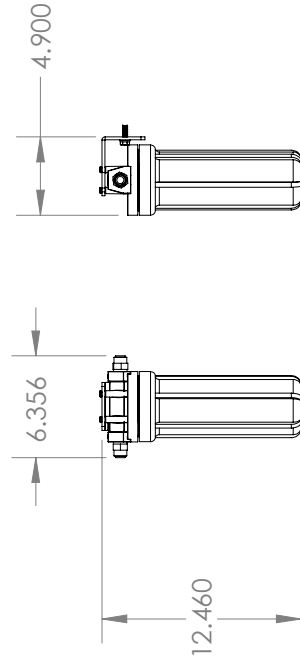
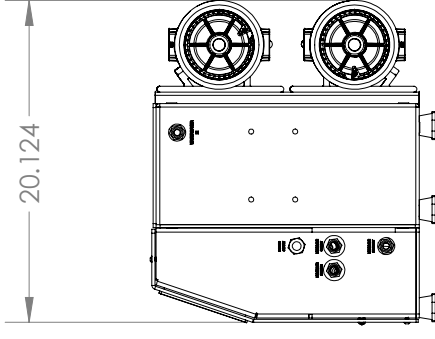
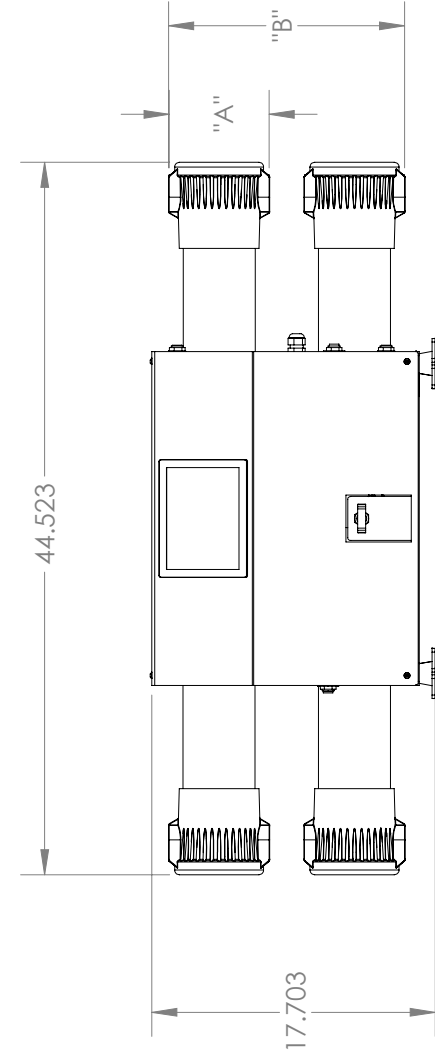


- INSTRUCTIONS:
1. REMOVE FRONT COVER FROM ZTC.
 2. LOCATE THE TERMINAL BLOCK.
 3. INSERT WIRES FROM FWF SYSTEM INTO TERMINAL 29 AND 30 OF THE TERMINAL BLOCK.
 4. TIGHTEN THE BOLTS OF THE BLOCK TO SECURE THE WIRES IN PLACE.
 5. SYSTEM SHOULD NOW AUTOMATICALLY CLOSE AND OPEN THE SOLENOID FOR THE PRE-FILTERS.



	DRAWN	NAME	DATE	DOMETIC spotZERO	
	CHECKED	JTL	02-20-17		
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES FRACTIONS 1/32 ANGULAR EACH ±1/2 TWO PLACE DECIMAL ±.010 THREE PLACE DECIMAL ±.005	ENG. APPR.			ZTC	
	MFG APPR.			PRE-FILTER WIRING	
	Q.A.			SCALE: N/A	DWG. #: SZ0048
					SHEET 1 OF 1

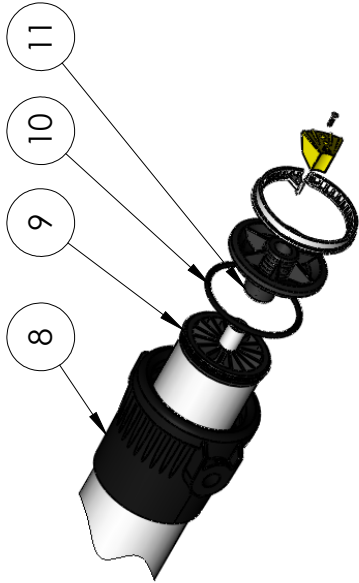
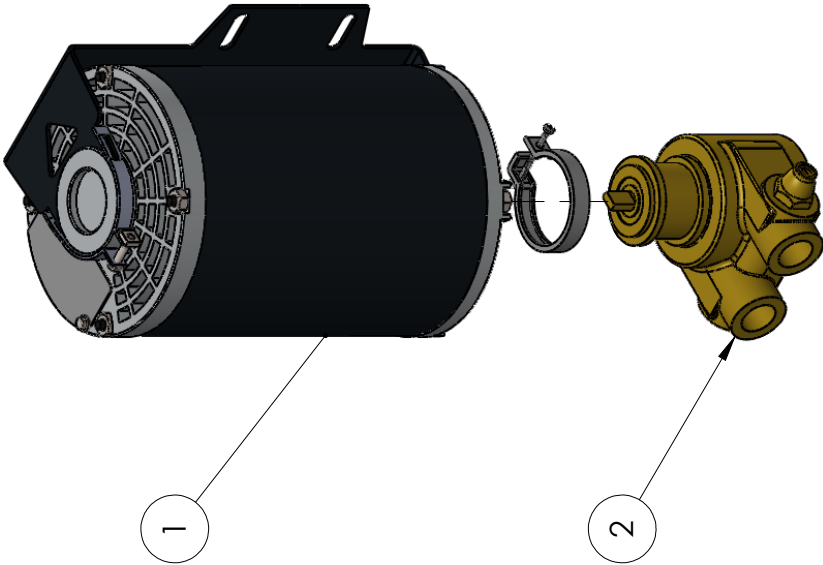
6. ZTC SPECS AND PARTS



LETTER	SYSTEM	WEIGHT
A	ZTC2000	135LBS
B	ZTC3000	150LBS

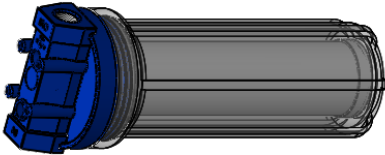
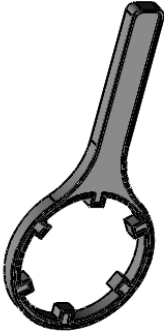
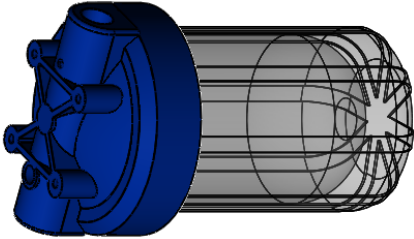
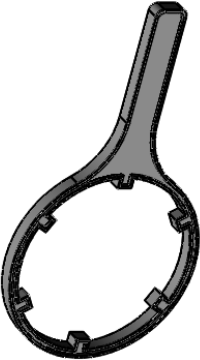
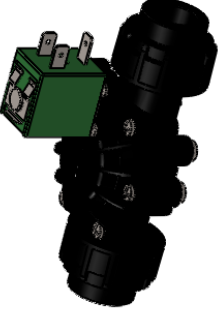
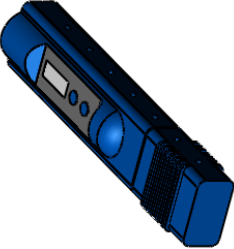
PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SPOT ZERO. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SPOT ZERO IS PROHIBITED.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES DECIMALS - 1/16 FRACTIONAL - 1/32 ANGULAR - MACH ± 1/2 BEND ± 1 TWO PLACE DECIMAL ± .010 THREE PLACE DECIMAL ± .005	DRAWN	NAME JIL	DATE 04-17-17	DOMETIC <i>spotzero</i> ZTC SYSTEM SPECS
	CHECKED			
	ENG APPR.			
	MFG APPR.			
Q.A.				SCALE: N/A DWG. #: SZ0019 SHEET 1 OF 1

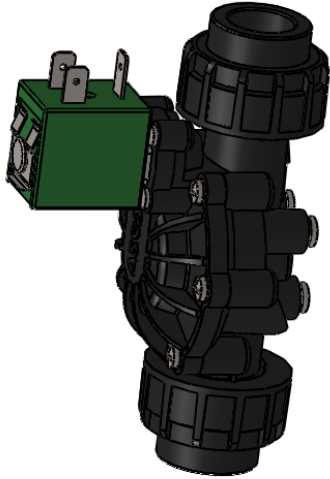


ITEM NUMBER	PART #	DESCRIPTION	ITEM NUMBER	PART #	DESCRIPTION
1	252404026	3/4 HP SINGLE PH MOTOR	9	252404000	SPOT ZERO 4039 MEMBRANE
2	252404143	5.3 GPM VANE PUMP	10	252404097	4" MEMBRANE O-RING
3	252404004	SZ-45-1001 SPOT ZERO CARTRIDGE	11	252404098	1/2" MEMBRANE PRODUCT O-RING
4	252404005	SZ-10KDF2 SPOT ZERO CARTRIDGE	12	252404140	1/2" PRESSURE REGULATING VALVE
5	252404872	2-WAY/NC SOLENOID VALVE 24V			
6	252404302	O-RING FOR 4.5X10 HOUSING			
7	252404322	4.5X10 FILTER HOUSING			
8	252404173	SPOT ZERO UPGRADE VESSEL			

DRAWN		NAME	DATE
CHECKED		JIL	04-19-17
ENG APPR.			
MFG APPR.			
Q.A.			
UNLESS OTHERWISE SPECIFIED:			
DIMENSIONS ARE IN INCHES			
TOLERANCES UNLESS OTHERWISE SPECIFIED:			
FRACTIONAL: ±1/32			
ANGULAR: MACH ±1/2 BEND ±1			
TWO PLACE DECIMAL ±.010			
THREE PLACE DECIMAL ±.005			
ZCT			
PART LIST I			
SCALE: N/A		DWG. #: SZ0051	SHEET 1 OF 1

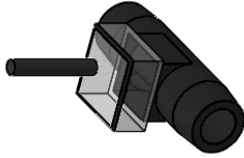
2.5 X 10 FILTER HOUSING		BACTERIOSTATIC REMINEALIZER CARTRIDGE		2.5 X 10 FILTER WRENCH		CHEMICAL CLEANING CARTRIDGE	
252404304	4.5 X 10 FILTER HOUSING	252404141	4.5 X 10 FILTER HOUSING O-RING	252404326	4.5 X 10 FILTER WRENCH	252404006	INLET SOLENOID 2-WAY
252404302		252404302		252404327		252404028-FOR 115V 252404029-FOR 230V 252404872 FOR 24V (ZTC)	
HAND HELD TDS		252404304	2.5 X10 FILTER HOUSING O-RING	252404304		NAME DATE DRAWN CHECKED ENG APPR. MFG APPR. Q.A. JIL 04-19-17 DOMETIC spotzero SPOT ZERO SPARE PARTS II SCALE: N/A DWG. #: SZ0038 SHEET 1 OF 1	

2-WAY SOLENOID VALVE



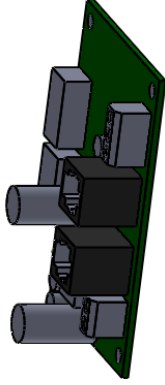
PART #: 252404872

FLOW TRANSMITTER



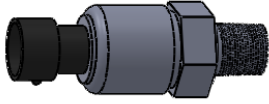
PART #: 252404875

TDS PC BOARD



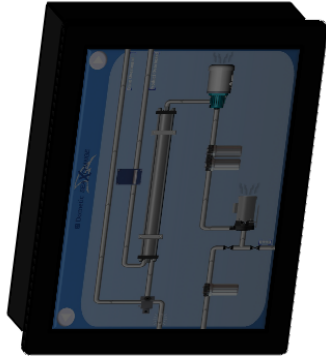
PART #: 252404277

PRESSURE TRANSDUCER



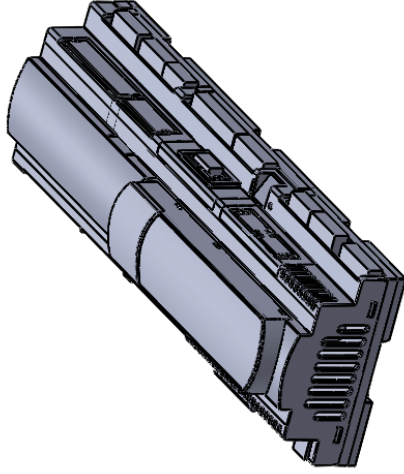
PART #: 252404878

TOUCH SCREEN



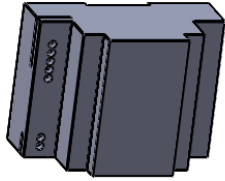
PART #: 252404181

PCO BOARD



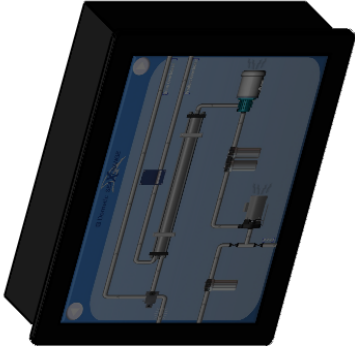
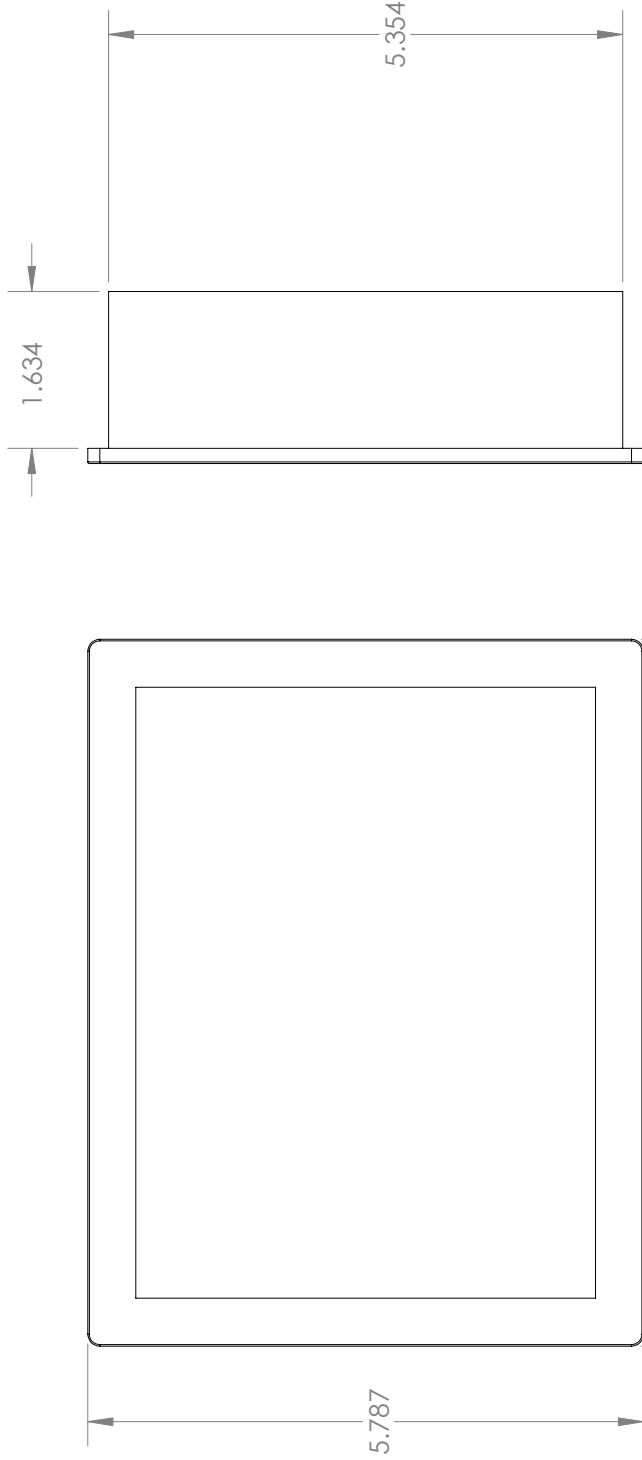
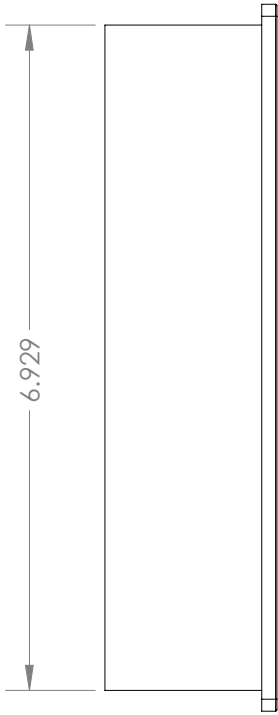
PART #: 252404336

POWER SUPPLY



PART #: 252404873

	NAME	DATE	DOMETIC <i>spot zero</i>	
DRAWN	JIL	04-19-17		
UNLESS OTHERWISE SPECIFIED:	CHECKED			
DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONAL: ±1/32 ANGULAR: MACH ±1/2 BEND ±1 TWO PLACE DECIMAL ±.010 THREE PLACE DECIMAL ±.005	ENG APPR.		ZTC PARTS II	
	MFG APPR.			
	Q.A.		SCALE: N/A	DWG.#: SZ0052. SHEET 1 OF 1



PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SPOT ZERO. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SPOT ZERO IS PROHIBITED.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ARE: DECIMALS $\pm 1/32$ FRACTIONAL $\pm 1/32$ ANGULAR $\pm 1/2$ BEND ± 1 TWO PLACE DECIMAL $\pm .010$ THREE PLACE DECIMAL $\pm .005$	DRAWN	NAME JIL	DATE 12-14-15	DOMETIC SPOT ZERO Fresh Water Reverse Osmosis	SEA XCHANGE TOUCH SCREEN CONTROL
	CHECKED				
	ENG APPR.				
	MFG APPR.				
	Q.A.			SCALE: 1:2	DWG. #: SX0071
					SHEET 1 OF 1