



Multisol Pro VA Operation & Training Manual

Peacock Salt

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1. Saturator Tank Diagram example

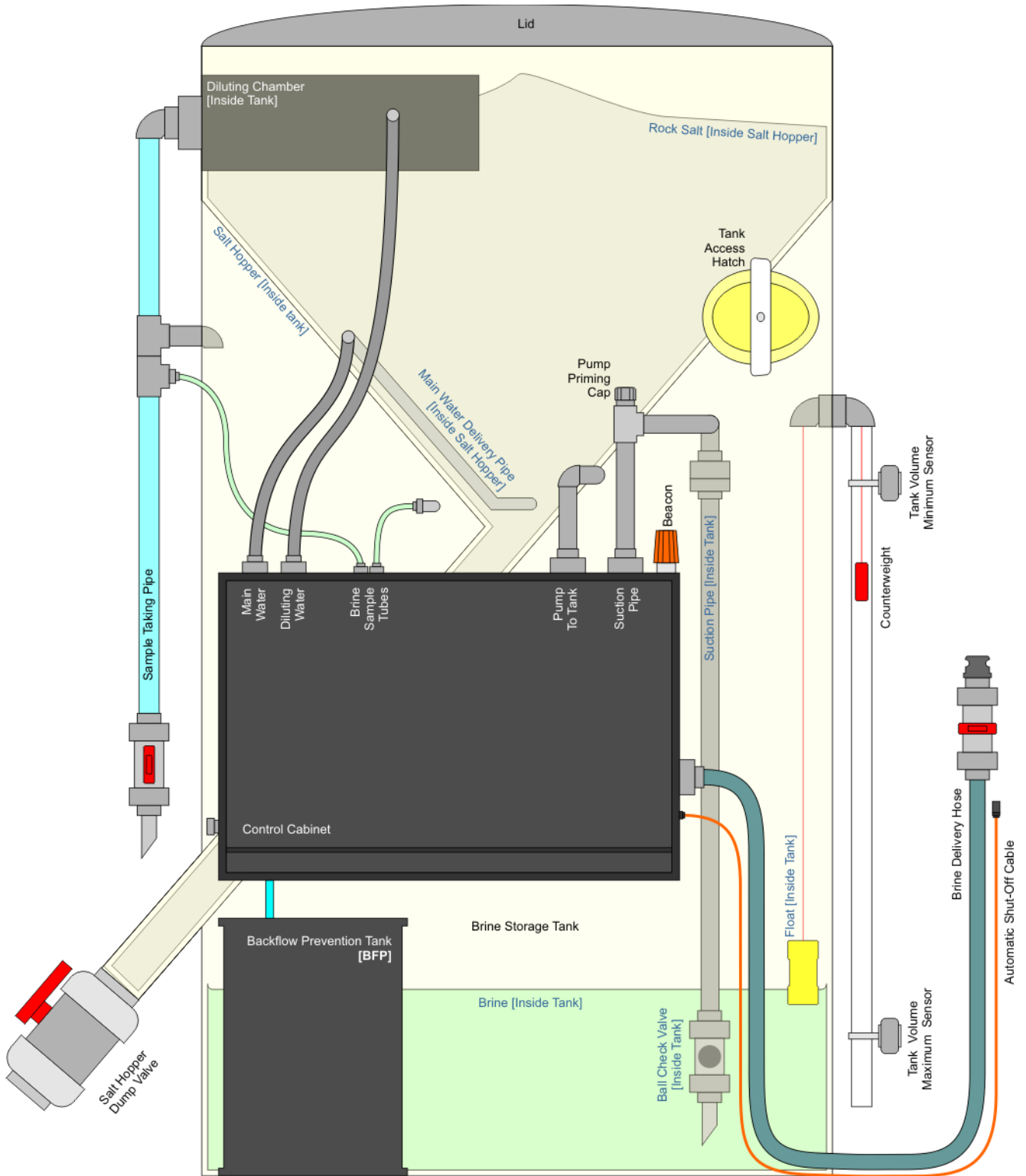


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2. Saturator Cabinet Diagram (for all models pre-2014)

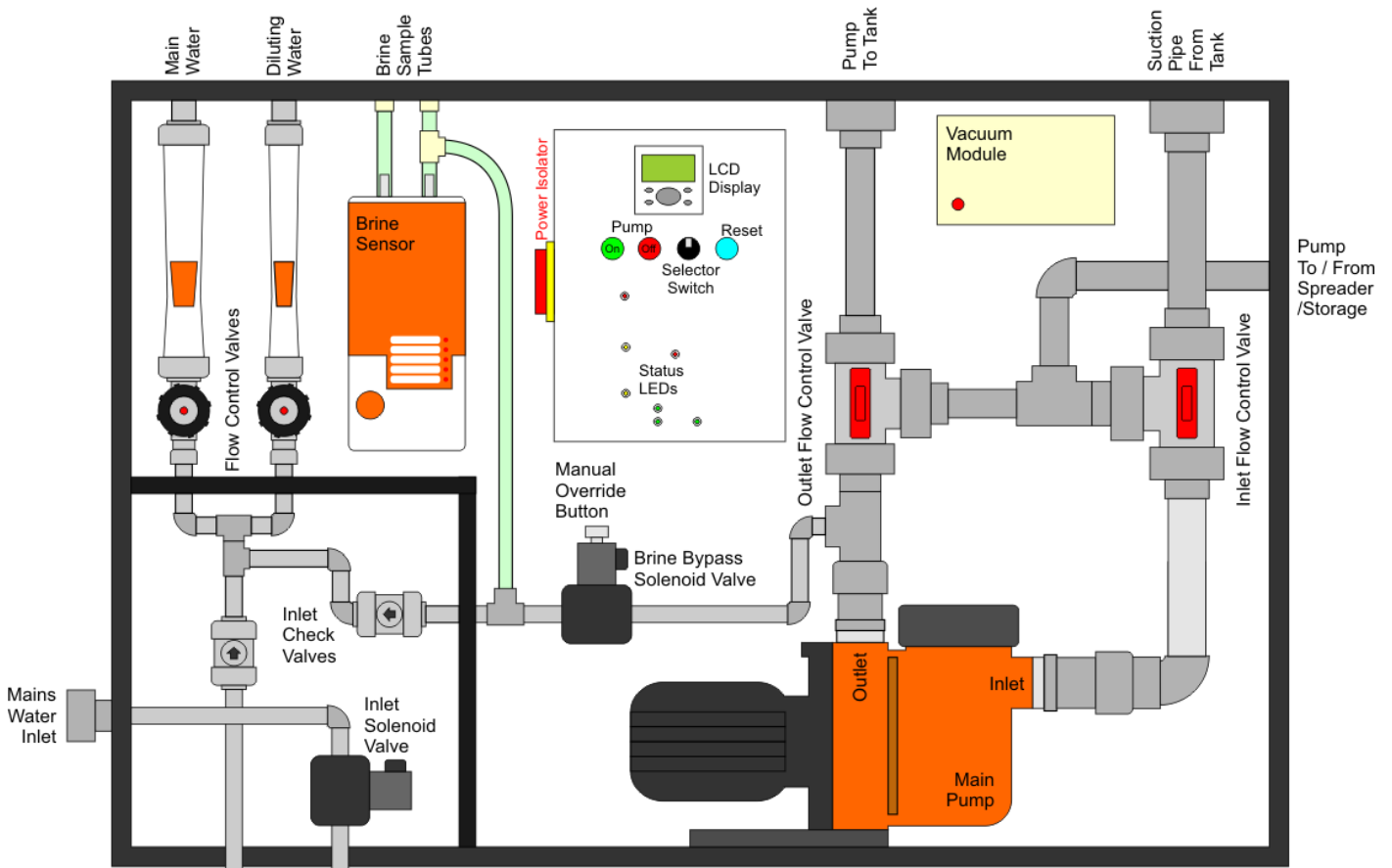
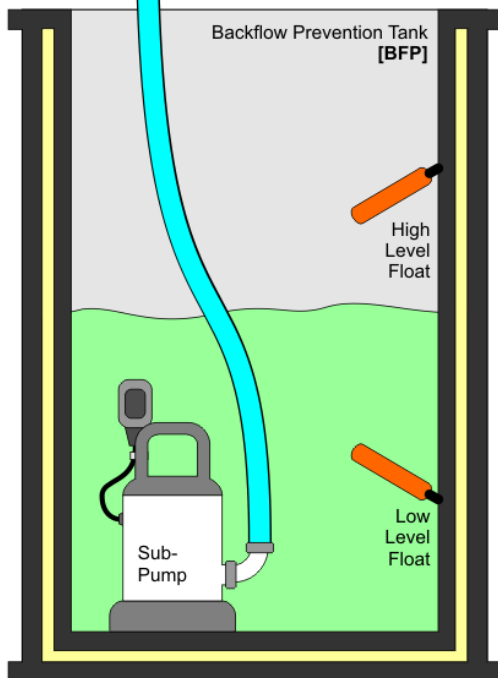


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SATURATOR PROCESSES

3. Saturator Function

The Multisol Pro VA Saturator is designed to automatically mix salt and water to produce and store sodium chloride brine at a pre-determined concentration. Salt is tipped into the hopper located at the top of the saturator. Brine is pumped into and percolates through the salt, and becomes concentrated brine. Diluting water is added to this brine to regulate its concentration.

4. Inlet water

- i. Water is fed under mains pressure into backflow prevention tank
- ii. Submersible pump is used to deliver water into system.
- iii. Pump function is controlled by two float valves
 - a. Top valve controls maximum fill into backflow prevention tank
 - b. Bottom valve identifies water supply issues – if no water is supplied the system shuts down.
- iv. The water flows in one direction through check valves in the saturator cabinet
- v. The water supply is split into **MAIN FEED** and **DILUTING FEED**
- vi. The **MAIN FEED** water is sent to the base of the salt hopper where it mixes with the salt
- vii. The **DILUTING FEED** water is used to regulate the brine concentration

5. Adding Salt

- i. The lid must be fully opened to add salt using either the lid open / close switch, or the winch mechanism.
 - a. Never operate the lid in high or gusting winds
- ii. Salt must be tipped in gradually into the salt hopper
 - a. Do not tip any material other than rock salt into the hopper
 - b. Take care not to scoop up accumulated debris along with the salt
 - c. For every full spreader (3000 litres), approximately 1 tonne of salt must be added
- iii. Salt must be filled into the hopper until a cone of salt is visible at the top of the tank. This will ensure the saturator will function for as long as possible without requiring to be refilled again.
- iv. Close the lid

6. Producing Brine

- i. Switch the main control switch to setting 1 – Brine Production / Fill to spreader
- ii. Water will be pumped into the saturator cabinet, through the Main Water and Diluting water flow meters. This is indicated by the floats in these meters raising up.
 - a. 2013 onwards models may not have a diluting flow meter, but the function remains the same.
- iii. The diluting water flow rate is automatically adjusted, dependent on the brine concentration being produced.
 - a. Lower specification saturators (pre 2009 installations) need manual adjustment of the diluting water flow rate.
- iv. The main water flow meter is manually adjusted to match the inlet water flow rate. This must never be adjusted unless instructed.
 - a. If the mains water flow rate into the backflow prevention tank is lower than the flow rate through the main water flow meter, the backflow prevention tank will continuously empty.



- b. The flow meter diaphragm valve must be adjusted to ensure the water being pumped from the backflow prevention tank is at a slower rate than the water inlet rate.
- v. Water flows into the salt hopper and mixes with it producing brine.
- vi. The brine flows from the salt hopper into the diluting chamber which is located in the top of the salt hopper
- vii. The concentration of the brine is analysed using the brine sensor. The concentration is displayed in the main CPU display panel.
 - a. The brine concentration is only correct when brine is flowing through the brine sensor.
 - b. If the system is sitting idle, the concentration of brine remaining in the brine sensor will be shown, which is not a true indication of the brine being produced / inside the tank.
- viii. Diluting water is added to the brine in the diluting chamber to reduce its concentration to within pre-determined parameters. This is done automatically, except on lower spec models (pre 2009).
- ix. An instant indication of whether brine is being produced is whether a steady flow of brine is visible in the hopper to tank linkage pipe and sample tube (clear PVC pipe with grey PVC fittings).
- x. Brine flows into the saturator storage tank at a known concentration.
- xi. Brine production will only stop being produced when:
 - a. The saturator / storage tank is full.
 - b. The saturator runs low on salt. If the salt empty light comes on, more salt needs to be added to the saturator and the main control switch needs to be turned to setting 2 then back to setting 1.
 - c. An error arises.

THE FOLLOWING ITEMS (7&8) ARE APPLICABLE ONLY TO STANDARD SATURATOR SYSTEMS, AND NOT ONES WITH STORAGE TANKS ATTACHED.

7. Pumping brine from the Saturator tank to the spreader

If the tank minimum light is illuminated, this function will not work as there is not enough brine in the Brine Storage Tank

The spreader shut-off cable must be docked, either in the saturator cabinet or the spreader, otherwise the pump will not function

- i. Connect Spreader to saturator using loading hose and electrical shut-off cable.
 - ii. Open valves at end of loading hose and on spreader
- NEVER RUN THE PUMP AGAINST CLOSED VALVES**
- iii. Turn the pump delivery valves to the correct settings, as indicated inside the cabinet. Automatic valves will change automatically, specific to the switch setting selected.
 - iv. Turn the control switch to setting1 – fill spreader
 - v. Press the green pump-on button on to start the pump.
 - vi. Supervise the pumping process, never leave it unattended.
 - vii. Brine delivery pump can be stopped as follows:
 - a. Automatic pump stop – this will happen when the float switch inside the spreader is activated, sending a signal to the saturator to stop the pump
 - b. Manual pump stop – press the Red pump-off button
 - viii. Close valves at end of loading hose and on spreader
- NEVER RUN THE PUMP AGAINST CLOSED VALVES**
- ix. Disconnect spreader loading hose and electrical shut-off cable
 - a. Dock shut-off cable in saturator docking port.



8. Pumping brine back from Spreader into Saturator tank.

If the tank maximum light is illuminated, this function will not work as there is not enough capacity in the Brine Storage Tank

- i. Connect Spreader to saturator using loading hose. Electrical shut-off cable is not used and must remain docked in saturator docking port.
 - ii. Open valves at end of loading hose and on spreader
- NEVER RUN THE PUMP AGAINST CLOSED VALVES**
- iii. Turn the pump delivery valves to the correct settings, as indicated inside the cabinet. Automatic valves will change automatically, specific to the switch setting selected.
 - iv. Turn the control switch to setting2 – empty spreader
 - v. Press the green pump-on button on to start the pump.
 - vi. Supervise the pumping process, never leave it unattended.
 - vii. Brine delivery pump can only be stopped by pressing the red pump-off button, this must be done before the pump starts to draw air.
 - viii. When pump is switched off, close valves at end of loading hose and on spreader

NEVER RUN THE PUMP AGAINST CLOSED VALVES

- ix. Disconnect spreader loading hose.

THE FOLLOWING ITEMS (9-10) ARE APPLICABLE ONLY TO SATURATOR SYSTEMS WITH AN EXTERNAL BRINE STORAGE TANK

9. Filling the Brine Storage Tank with Brine

- i. When the saturator tank is full, the pump will switch on and deliver the contents to the brine storage tank. The saturator will continue producing brine.
- ii. The pump will stop when the saturator tank is emptied.
- iii. This process will continue until the brine storage tank is full.

10. Pumping brine from Brine Storage tank to Spreader

If the tank minimum light is illuminated, this function will not work as there is not enough brine in the Brine Storage Tank

The electrical shut off cable must always be docked, either in the saturator cabinet, or the spreader, otherwise the pump will not function

- i. Connect Spreader to Brine Storage tank using loading hose and electrical shut-off cable.
 - ii. Open valves at end of loading hose and on spreader
- NEVER RUN THE PUMP AGAINST CLOSED VALVES**
- iii. Turn the pump delivery valves to the correct settings, as indicated inside the cabinet. Automatic valves will change automatically, specific to the switch setting selected.



- iv. Turn the control switch to setting1 – fill spreader
 - v. Press the green pump-on button on to start the pump.
 - vi. Supervise the pumping process, never leave it unattended.
 - vii. Brine delivery pump can be stopped as follows:
 - a. Automatic pump stop – this will happen when the float switch inside the spreader is activated, sending a signal to the saturator to stop the pump
 - b. Manual pump stop – press the Red pump-off button
 - c. Close valves at end of loading hose and on spreader
- NEVER RUN THE PUMP AGAINST CLOSED VALVES**
- i. Disconnect spreader loading hose and electrical shut-off cable
 - ii. Dock shut-off cable in saturator docking port.

11. Pumping brine back from Spreader into Brine Storage tank

If the tank max light is illuminated, this function will not work as there is not enough capacity in the Brine Storage Tank

- i. Connect Spreader to Brine Storage tank using loading hose. Electrical shut-off cable is not used and must be docked in saturator docking port.
 - ii. Open valves at end of loading hose and on spreader
- NEVER RUN THE PUMP AGAINST CLOSED VALVES**
- iii. Turn the pump delivery valves to the correct settings, as indicated inside the cabinet. Automatic valves will change automatically, specific to the switch setting selected.
 - iv. Turn the control switch to setting2 – empty spreader
 - v. Press the green pump-on button on to start the pump.
 - vi. Supervise the pumping process, never leave it unattended.
 - vii. Brine delivery pump can only be stopped by pressing the Red pump-off button, this must be done before the pump starts to draw air.
 - viii. When pump is switched off, close valves at end of loading hose and on spreader
- NEVER RUN THE PUMP AGAINST CLOSED VALVES**
- ix. Disconnect spreader loading hose.

12. Maintenance Functions

- i. Stir tank contents
 - a. Turn the pump delivery valves to the correct settings, as indicated inside the cabinet.
 - b. Turn the control switch to setting3 –stir tank contents
 - c. Contents of tank will be agitated through the pump for a period of 30 minutes every 48 hours when this setting is selected.
- ii. Heating function
 - a. In temperatures below 5.5degs, the trace heating cable and the back flow prevention tank heating automatically switches on. This serves to minimise the chance of water freezing.
- iii. Pump maintenance function



- a. At the end of all production cycles, the pump will automatically switch on to flush brine through all pipework. This is to prevent these pipes from freezing.

13. LED Lights and CPU Displays

- i. Tank Min - Indicates that the saturator tank is empty. The pump will not function.
- ii. Tank Max – Indicates that the saturator tank is full. Brine is delivered to brine storage tank until it is full.
- iii. Brine Tank Full - Indicates that the brine storage tank is full. No more brine can be produced.
- iv. Heating on – Heating function is activated
- v. Pump on – Pump is activated
- vi. Temperature display – indicates the cabinet air temperature
- vii. Concentration % - indicates the brine concentration as a percentage
- viii. Status – Indicates the saturator status
- ix. Error messages

14. Error Messages

- i. If an error arises
 - a. Press reset button to remove alarm
 - b. Press OK button on CPU to gain more information on error (where applicable)
 - c. Resolve error or contact support
- ii. Reset Function
 - a. The main control switch needs to be turned to setting2 then back to setting1.
 - b. Allow pump to complete its maintenance cycle before changing settings.

ERROR MESSAGE / LED	ERROR TYPE	REMEDY
Salt empty LED	The saturator has run low on salt	Add more salt and reset the saturator
Overflow LED	There is a blockage between the salt hopper and the brine storage tank	Remove the blockage and reset the system
“Heating Error” displayed	Indicates a fault with the heating systems	Contact Support
“Vacuum Leak” displayed	Indicates a fault with the double skin system	Contact Support
“Conc too Low” displayed	Brine Concentration is produced too low	Contact Support
“Conc too High” displayed	Brine Concentration is produced too high – issue with the diluting water supply	Contact Support
“BFP Tank Empty” or “Water Tank Empty”	Issue with water supply to saturator	Potential site water issues – Identify whether there is a pipe freeze / damage issue in water pipes leading to the saturator. Contact Support if none identified.



Troubleshooting Guide

Problem: Water does not flow into the saturator cabinet from the backflow prevention tank

1. Check the backflow prevention tank
 - (a) Ensure the float switches within the backflow prevention tank are able to move freely. If they are tangled or trapped, free them to ensure complete functionality.
 - (b) If there is no water in the tank and (a) has not remedied this, ensure the mains water supply is turned on.
 - (c) Ensure the pump is operational (check it can be heard and water can be seen flowing through the flow meters inside the cabinet). If it cannot be heard, it is possible that the RCB has tripped and needs resetting.
2. If these remedies do not resolve the issue, please contact a Service Representative

Problem: Saturator does not produce brine.

1. Check the Tank Full light. If this is illuminated, the tank is full to capacity and production will re-commence when brine is taken from the tank.
2. Check the Salt Empty light. If this is illuminated, there is too little salt within the hopper. Add more salt to the hopper and reset the system.
3. Check the Overflow light. If this is illuminated, the level of brine within the hopper is too high preventing the saturator from functioning.
 - (a) If this occurs after filling the hopper with salt, the salt has been added too quickly causing a wave effect at the top of the hopper to trip the sensor. The sensor will reset when the level of brine in the hopper decreases.
 - (b) If the fault persists, check the high level float at the top of the hopper for debris blockages. If any debris is present, it may prevent the float switch from returning to a down position.
 - (c) If the fault is still not remedied, there is a more considerable blockage in the saturator system. Please contact a Peacock representative.
4. Check the Heating On light. If this is illuminated, the temperature is low enough for the mains water supply pipes to freeze. There may be a fault with the heating cable or supply pipes may have frozen leading up to the saturator.
5. Check the Water On light. If this is not illuminated, there is an electrical / connection fault prohibiting water to flow into the saturator. Please contact a Peacock representative.

Problem: Brine production cuts off after short period of time.

1. Check the Salt Empty light. If this is illuminated, there is too little salt within the hopper. Add more salt to the hopper and reset the system.



2. If salt has been recently added to hopper, the brine may not have started to overflow. Continuously reset the system until you see brine flowing in the clear pipe exiting the top of the hopper into the saturator tank below.
3. Check the clear plastic tubes running into the Multisol Automatic Sensor (White box with red LEDs, inside the cabinet). If there is either no red lights showing, or no flow of brine through these pipes, there may be a blockage, preventing the brine concentration analysis. Please contact a Peacock representative.

Problem: Pump functions but only draws air

1. Check the pump has been fully primed. No airlocks should be visible in the view glass on the top of the pump and when operational
 - (a) If the pump has lost its prime, add water to the pump by opening the screw cap at the top of the pipe leading to the pump (outside the control cabinet), and fill this fully with fresh water. Tighten up the screwcap and switch the pump on to prime it.
 - (b) If the pump still does not retain its prime, there is a blockage inside the base of the tank, preventing brine from being drawn. Ensuring the tank is less than half full, open the tank access hatch and assess the priming pipe directly inside the tank. This pipe can be removed and cleaned to enable the pump to be primed again.

Problem: Pump does not function

1. Check the spreader docking cable (orange cable). If this is not docked either inside the saturator or in the back of the spreader, the pump will not function.
2. If the cable is docked in the back of the spreader and the pump still doesn't function, there may be a connection fault within the spreader. To bypass the automatic cut-off function, re-dock the cable in the saturator. Contact the spreader's manufacturer.
3. Check the Pump On light. If this is not illuminated, there could be an electrical / connection fault prohibiting the pump to operate. Please contact a Peacock representative.

Problem: Brine does not flow correctly into or from spreader

1. Check the pump valve positions, ensuring they are correct for the required procedure (only applicable for manual saturators).
2. Check the valves at the loading hose / spreader, ensuring that these are both open.

Problem: Alarm Sounding from saturator

1. If the alarm is coming from the Vacuum module (top right hand side of cabinet), the double skin wall to the saturator may have been damaged. Check the external wall for any visible leaks. Contact a Peacock representative as soon as possible.
2. If the siren and flashing light outside the cabinet are activated, a critical error has occurred. This error will be identified within the CPU in the main control cabinet. Resolve as per the instructions within this manual, and if the error persists, contact a Peacock representative at the earliest opportunity.

Whilst every effort has been made to cover each possible eventuality within this troubleshooting guide, if other problems persist with the saturator, please contact a service representative.