

## About the System

### ORP/Conductivity Controller

Receives output ORP & Conductivity sensors and energizes oxidizer and ferric pumps based on set points

**System ORP.** Should be value near "AL 1" set point.

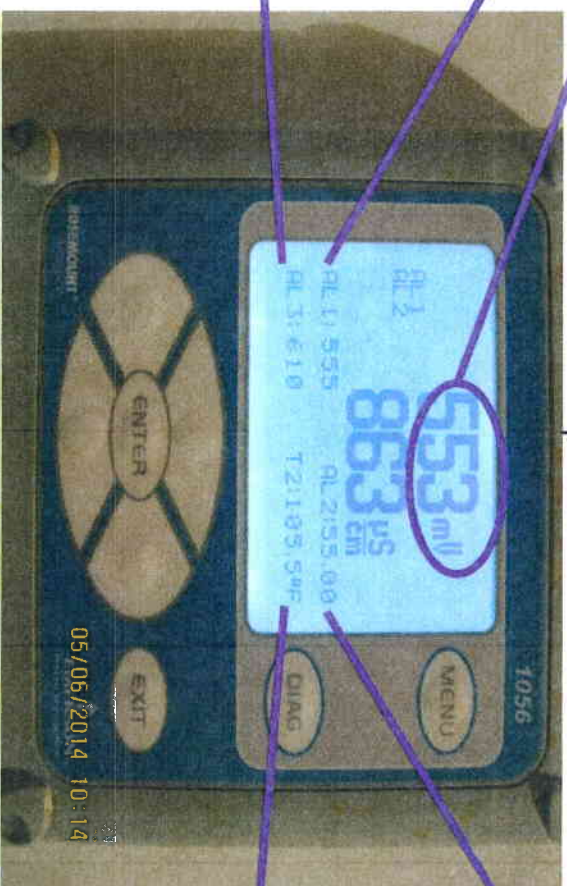
**WARNING:** As this value approaches 700mV, Chlorine Gas may form!

**AL 1** = ORP set point for operating. When value falls below this set point, system adds Sodium Chlorate ("Oxidizer").

**AL 3** = ORP set point for HIGH ALARM. When System ORP goes above this set point, system goes into alarm.

**ADD IRON POWDER IMMEDIATELY** to avoid chlorine gas formation—forms  $\approx 700\text{mV}$

**Specific Gravity "System Balance"** (related to Baumé). Optimum system balance should be close to "-0000" but will typically fluctuate +/- 0500. (Usually a negative value.)



points

**AL 2** = Conductivity set point for operating. When value falls below this set point, system adds Hydrochloric acid ("Acid").

**T2** = Temperature of system. This is not a set point, just a readout of the fluid temperature going through the regen unit sampler.



**System Specific Gravity (related to Baumé).** Value increases as Baumé increases or as metal/carbon content of bath increases. If this value goes above float set point, system adds water.

### SPECIFIC GRAVITY CONTROLLER

# SYSTEM START-UP PROCEDURE



Press Power Button



Touch "Main Screen"



Touch "Mode Control"



Touch "Auto"



"1999" "Enter"



Should read "FLOW"  
(if "NO FLOW" see troubleshooting chart for "no flow")



Should read "AUTO". If not, go back to "Mode Control" above.

Verify chemical flow valve and sensor positions. Put in "HAND" mode by touching "Mode Control" "Hand" "1999" "Enter" This should bring up buttons "MANUAL" for chemical feed checks.



In HAND mode, touch "MANUAL" and verify each float raises to set point on sight glass & adjust with red valve for each as needed



Verify sight glass sensors positioned correctly



Put back in "AUTO". (Mode Control, Auto, 1999, Enter)



In System Control screen, verify "FLOW"



In System Control screen, "Spent Valve" should only be "ON" if sump level higher than float sensor in sump. See troubleshooting chart as needed for "spent valve" issues



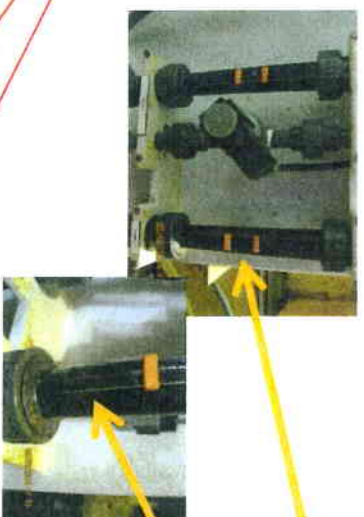
## SHUTDOWN OF SYSTEM:

As long as ORP value is not approaching value of AL3, System can be shut down using only green "POWER" button. If ORP is approaching dangerous levels, add iron powder and stabilize chemistry before turning off power.

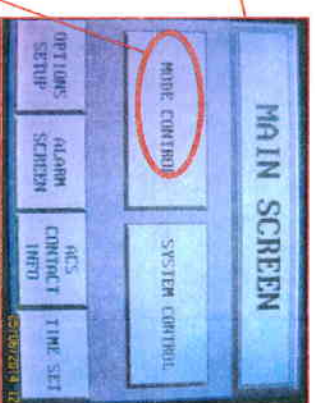
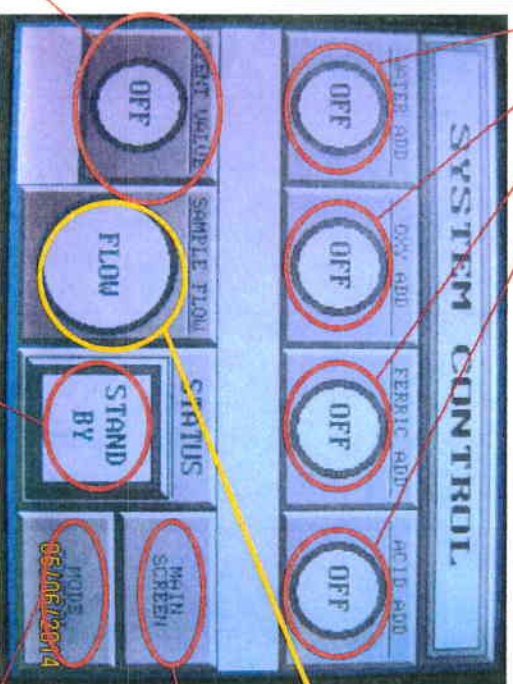


**ON** = Chemical listed above "on" button is being added to machine. When these are "ON", the top of the float for that chemical should be between the orange markers on the sight glass for that chemical.

**OFF** = Chemical listed above "off" button is NOT adding at that time. Float for sight glass should be resting on the bottom.



**FLOW** = Ferric is flowing through the controller system and is being monitored by the sensors  
**NO FLOW** = Ferric in the machine is NOT flowing through the controller (verify recirculation pump is on, verify that red "SAMPLE" valve is on and sight glass float is between orange markers and verify sight glass sensor positioned on lower orange marker)



**ON** = excess Ferric from machine is flowing to waste bulk tank  
**OFF** = No Ferric is flowing to waste bulk tank.  
 If Ferric spilling out of sump and this is OFF, check/adjust recirculation pump (blue) valve and check machine sump float sensor

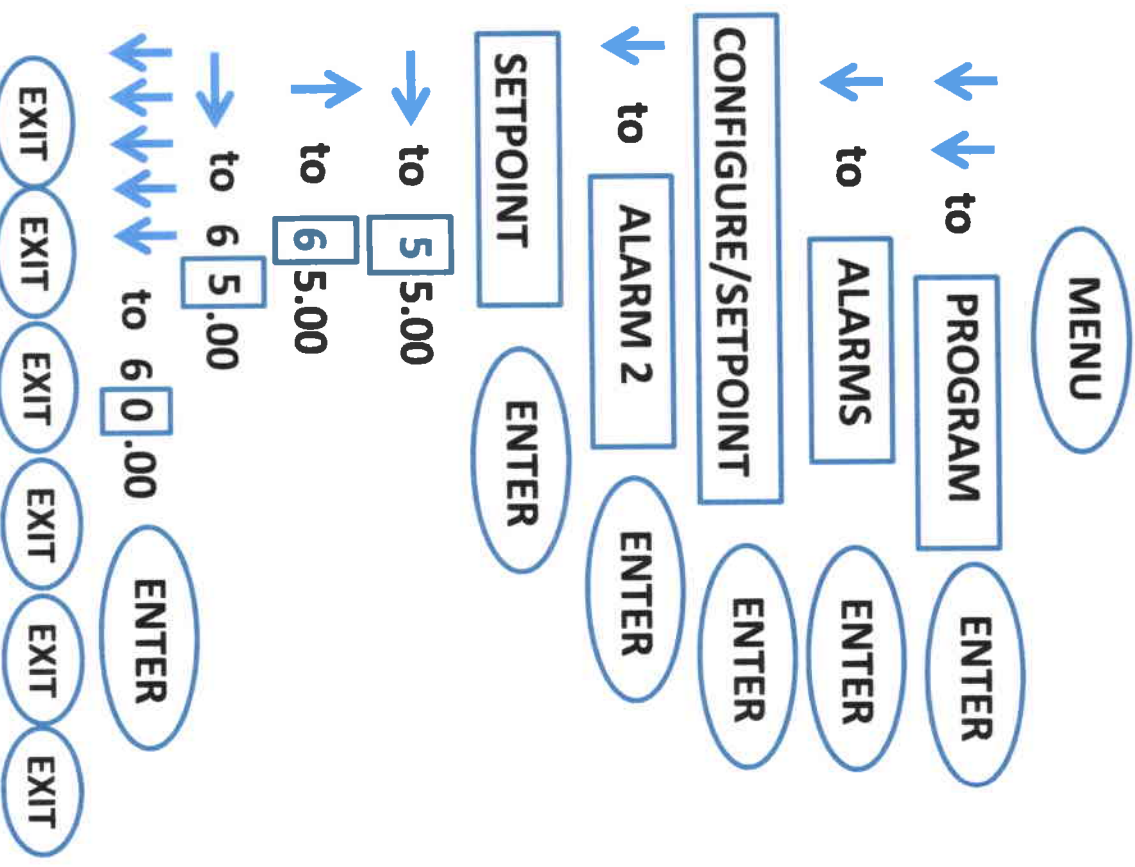
**STAND BY** = Regen NOT running  
**AUTO** = Regen is running  
**HAND** = Regen is running in manual mode (used only for system checks—when in HAND mode, you will see "Manual" buttons underneath each chemical in the areas that are white in this picture)



**To enable Ferric additions**  
(used for running stainless steels and also to help with quality of etch on spring steel when bath is over 550 cubic inches)

1. Main Screen
2. Options Setup
3. Ferric Add: Push to Enable
4. System Control

**Changing "AL" set points:**  
Example shown changing AL 2 set point from 55.00 to 60.00:



Should Read: "AL2: 60.00"

# “NO FLOW” TROUBLESHOOTING

If “no flow”, check machine recirc pump.

Pump OFF

Turn pump ON

Pump ON

Check “Sample” Valve Flow



If no flow, turn red valve on (left) so that float is midpoint between orange markers (this float is too low)

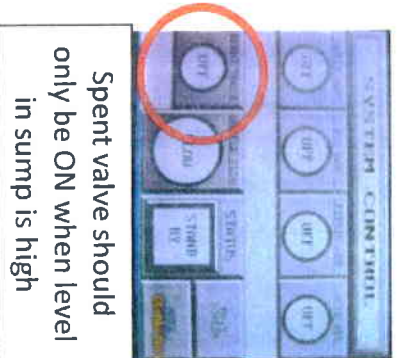


Clean filter. (Turn off recirculation pump. Turn off red valve. Clean filter, being careful with O-Ring. Turn back on.)

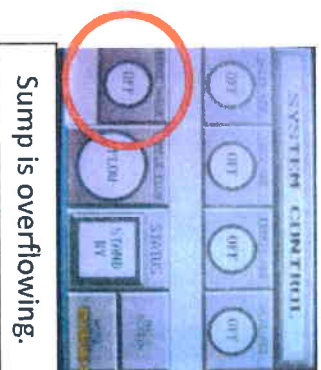
If filter has been cleaned AND if float cannot be adjusted to midpoint between orange markers, slightly close valve on machine recirculation pump line to create more back pressure and try again. (If this doesn't work, call maintenance)

**Note:** individual WATER, OXIDIZER, FERRIC, AND ACID flows can be checked in “HAND” Mode by touching “manual” button on touch screen and checking for float position in sight glass

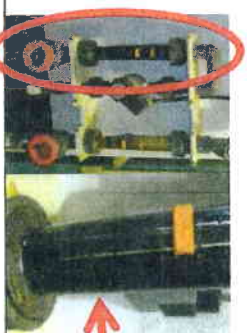
# “SPENT VALVE” TROUBLESHOOTING



Spent valve should only be ON when level in sump is high



Sump is overflowing.



Spent Valve “ON”  
Check spent flow at red valve/sight glass, adjust valve to midpoint between orange marks

If no flow, turn red valve on (left) so that float is midpoint between orange markers (this float is too low)

Spent Valve “OFF”

Check Float switch in sump. If “up”, shut off system and contact maintenance.

## **“NO FLOW” ALARMS:**

- NO FLOW-WATER: machine water valve open? Regen valve open? upstream water valves open? “HAND”/manual flow?
  - NO FLOW-OXIDIZER: drum/tote is empty? Regen valve open? “HAND”/manual flow works?
  - NO FLOW-FERRIC: bulk tank valve open? Bulk tank empty? Regen valve open? “HAND”/manual flow works?
  - NO FLOW-ACID: bulk tank valve open? Bulk tank empty? Regen valve open? “HAND”/manual flow works?
- 

## **“SIPHON” ALARMS:**

For all “Siphon” alarms, verify that ORP (mV) is below AL3, Put system in “Standby”. Then, shut off red valve for whichever chemical is in alarm (turn valve right to shut off) and contact maintenance.

---