Highway Factors Attachment – AccuBatch Brine Maker Operator Manual located at the NTEMP S3 maintenance facility

Fort Worth, TX

HWY21FH005

(22 pages)

ACCUBATCH®
brine maker

Operation Manual Including Install/Setup Procedure

Cargill®

A Cargill Deicing Technology Product

Providing customers with deicing solutions that save lives, enhance commerce and reduce environmental impact.

CAUTION:

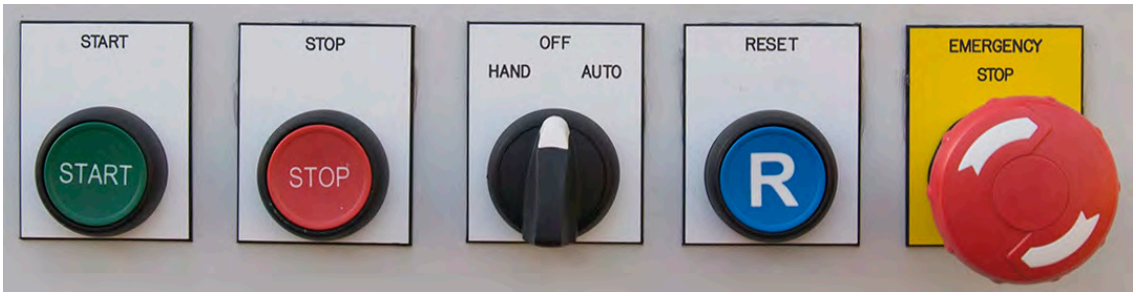
1. **Always wear appropriate Personal Protective Equipment when setting up or operating the Accubatch brine maker system.**
2. **Before setting up and operating the Accbuatch brine maker system please thoroughly read the entire Operator Manual.**
3. **Follow electrical safety guidelines when plugging in or working with any electrical component of the Accubatch system. All electrical troubleshooting, maintenance or repair should be done by a trained and certified electrician.**
4. **Never move or lift the Salt Tank or the Brine Tank if loaded with water or salt. Damage to the tank and/or personal injury could occur.**
5. **Refer to the "Accubatch Setup Procedure" section in the operator manual for instruction on how to properly lift and move each tank.**
6. **Do not fill the Salt Tank above the upper rim of the tank. The optional spill deflector attachment is not designed to bear any load.**
7. **Always take precaution when disconnecting hoses as contents may be under pressure.**
8. **Before disconnecting any hoses please ensure the pump is in the off position and not operating.**
9. **Please ensure that the pump does not operate without liquid in the suction lines. Running the pump without liquid may result in irreparable damage to the pump.**
10. **When opening either the discharge port located at Valve #1 on the Brine Tank OR the cleanout valve on the bottom side of the Salt Tank, steps should be taken to capture tank contents and properly disposed of if customer does not want it contacting the ground and surrounding environment.**

AccuBatch® brine maker Install Procedure

Safety

The AccuBatch® machine is supplied with an Emergency Stop that ceases the operation of the motor. However, due to static head pressure in the state at which the E-Stop was activated, water will still be flowing from salt tank, brine tank or a customer supplied storage containers. (storage tank, tanker truck, etc.). Water flow due to static head pressure can be managed by the valves included on the AccuBatch® system as well as valves located on customer supplied storage containers (storage tank, tanker truck, etc).

To restart the machine once the E-stop has been activated, simply pull out and twist in a clockwise motion to reset the E-stop. Then press the blue Reset button. The machine will then be ready to operate in either Hand or Auto mode depending on the position of the switch. The System will not reset until the Blue reset button is actuated.

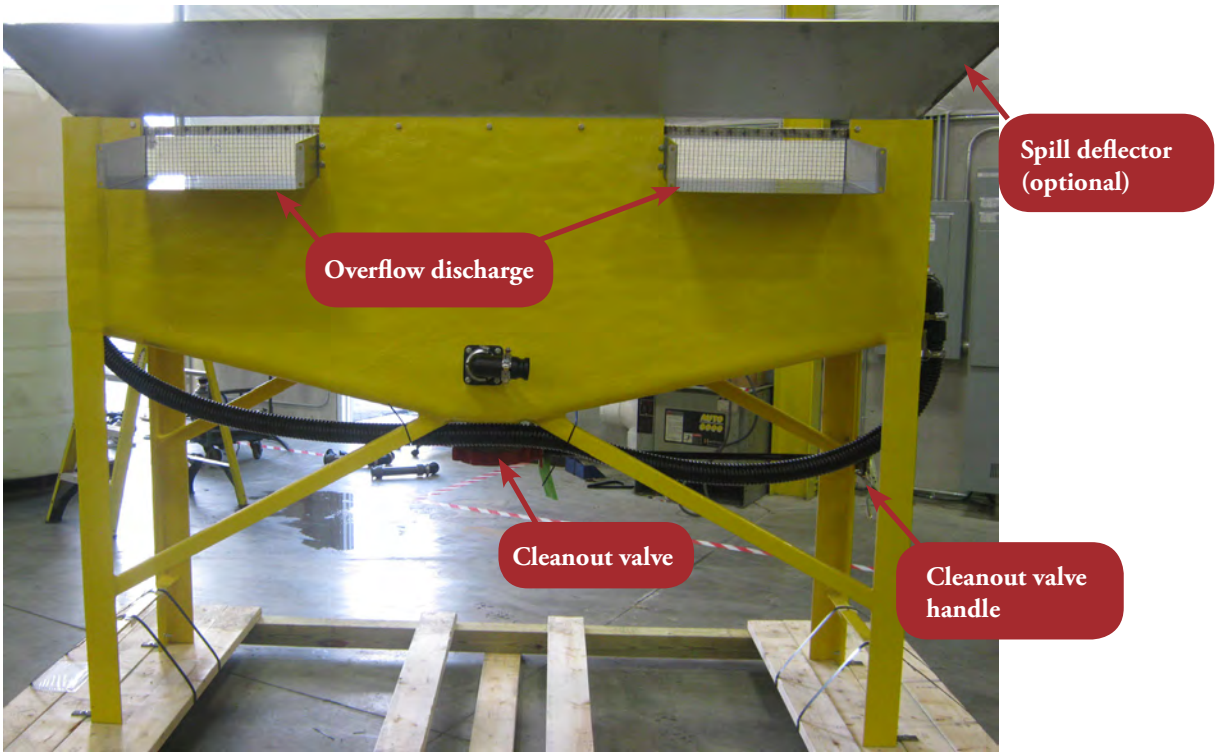


The Electrical Panel should be accessed by qualified personnel only. The System is equipped with voltage indicating LEDs mounted on the front of the Control Panel. These will aid in the troubleshooting process should a system error occur.

AccuBatch® brine maker System Components

Salt Tank

This is the tank in which all salt is dumped and the water from the brine tank is recirculated to in order to build brine concentration. It should be arranged to allow for easy access by your front end loader.



Brine Tank

This is the shorter, rectangular shaped tank that used to size the quantity of the brine solution and contain it once it has reachhold the brine solution batch. When the brine reaches the targeted concentration, the brine solution being held in the brine tank will be the finished product and transferred to storage tank or truck.

Motor/Pump/Valve Stack Assembly

The motor and pump are mounted on a mounting plate attached to the brine tank. The conductivity probe is housed on the discharge side of the pump and measures the concentration of the brine as it is being made. The next downstream component is the manual 3-way valve that diverts the water being pumped either to the salt tank (brine production) or to brine storage after the target brine concentration is reached. Within the pump assembly is a check valve that keeps the salt solution in the salt tank from flowing back into the pump and brine tank when the pump is not in operation.

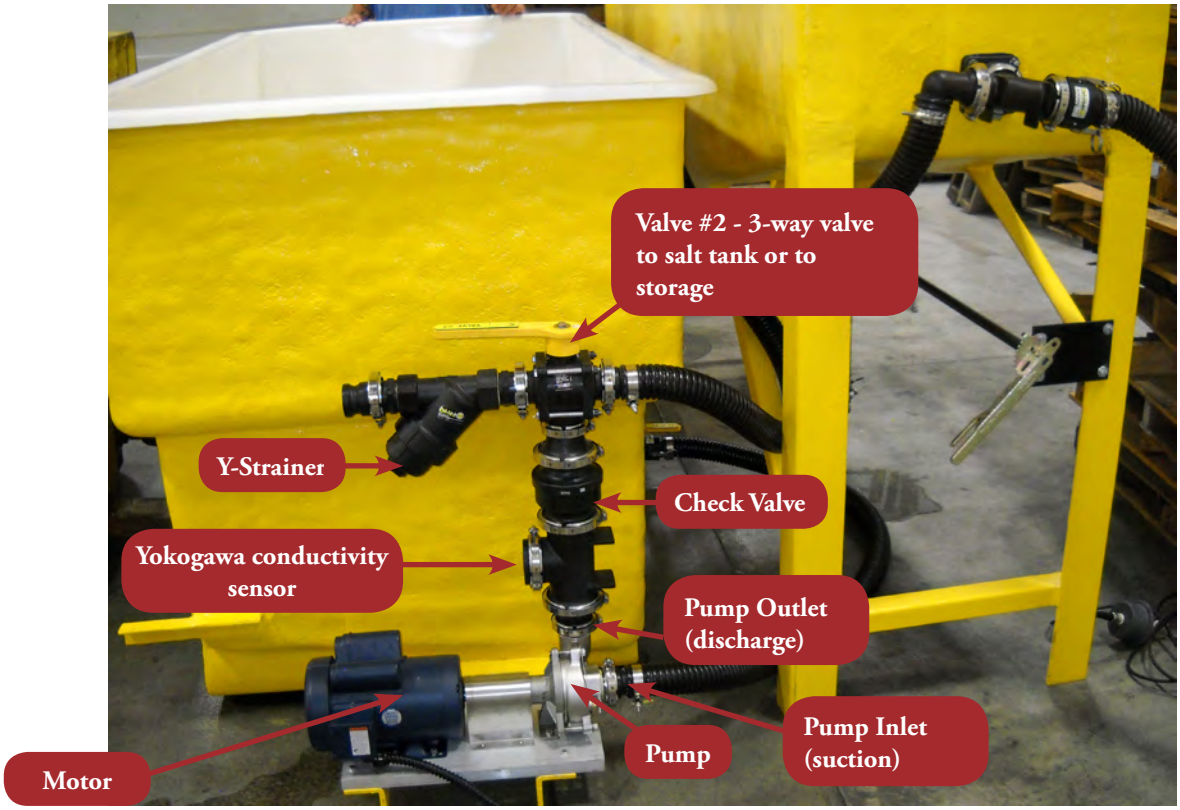


Figure 1

Control Panel

This is the control panel that houses the main power disconnect, the Emergency stop button, all the manual start/stop controls, and the brine conductivity analyzer. It should be mounted within 15' of the AccuBatch® and comes with 15' of power cord that can be plugged into customer power service rated at 240V, 30A, single phase.

1. POWER INDICATORS – All indicators should be normally lit by default.
    a. 240VAC
        i. Illuminated light indicates that 240VAC is available to panel, and 240VAC breaker has not tripped.
    b. 24VDC
        i. Illuminated light indicates that the power supply is outputting 24VDC, and the 24VDC breaker has not tripped.
    c. Overload
        i. Illuminated light indicates that no overload fault has occurred. If the overload has faulted, the light will extinguish and the motor will not run.
    d. E-STOP
        i. Illuminated light indicated that the E-Stop has not been engaged. If the E-stop light is NOT illuminated, the E-stop has been pushed and the motor will not run.
2. HAND/OFF/AUTO Switch (Figure 2)
    a. Auto
        i. Selecting the auto option will allow the Yokogawa unit to control the motor. The Yokogawa will indicate the product's status via the stack light. The stack light will display yellow for usable product, green\yellow for when product is ready, and red for a fault. The motor will run until the Yokogawa triggers a product ready state. When the product ready state is reached the Yokogawa unit will automatically shut off the motor.

b. Hand (Manual)

i. When this option is chosen, it will allow the motor to run continuously until it is manually stopped by pressing the STOP button or a fault occurs.

c. OFF

i. Auto or manual mode is not selected, and the motor will not start until one is selected.

3. START / STOP / E-STOP

a. Start (Figure 2)

b. Pressing start while HAND or AUTO is selected will start the motor in the selected mode. The motor will not start if OFF is selected. Pressing the Start button once starts the system and does not need to be held down.

c. Stop (Figure 2)

i. This button is intended to stop the system during normal use. If START is pressed after STOP, the system will resume normal operation if a fault or E-Stop has not occurred.

d. E-Stop (Figure 2)

i. Pressing the E-STOP button triggers the safety relay and halts the system. When the safety relay is triggered power is prevented from reaching the motor until the E-STOP is cleared. Resetting the E-STOP button is done by twisting the button in direction indicated by the arrows on the button(clockwise) followed by pushing the RESET button(Figure 5).

e. Reset (Figure 2)

i. The reset button will reset the safety relay back to its normal state once the E-STOP push button has been reset. If the E-STOP switch has not physically reset, pressing the reset button will not reset the safety relay.

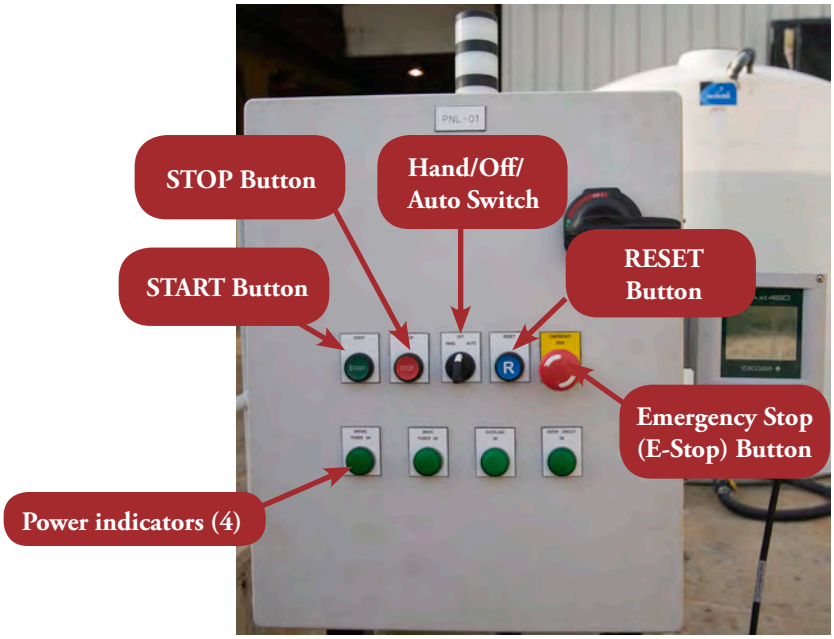


Figure 2

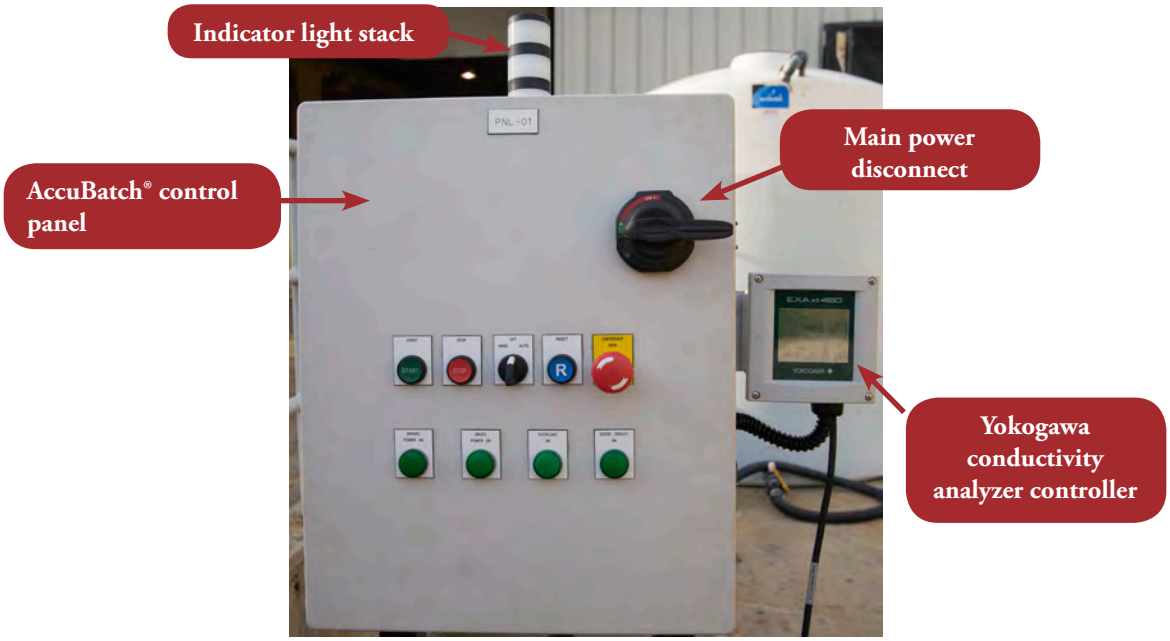


Figure 2a

AccuBatch® brine maker Setup Procedure

Unloading

CAUTION: BOTH THE SALT TANK AND BRINE TANK CAN BE EASILY MOVED WITH A FORK LIFT. PLEASE TAKE PRECAUTION TO MOVE THE TANKS CAREFULLY INTO POSITION, AS DROPPING A TANK COULD RESULT IN DAMAGE THAT WILL NOT BE COVERED UNDER WARRANTY.

The brine tank has fork pockets built into the underneath side of the tank. Please position the forks in order to engage the fork pockets. Carefully lift and slightly tilt the mast of the forklift toward the operator to minimize the risk of the tank sliding off the forks.

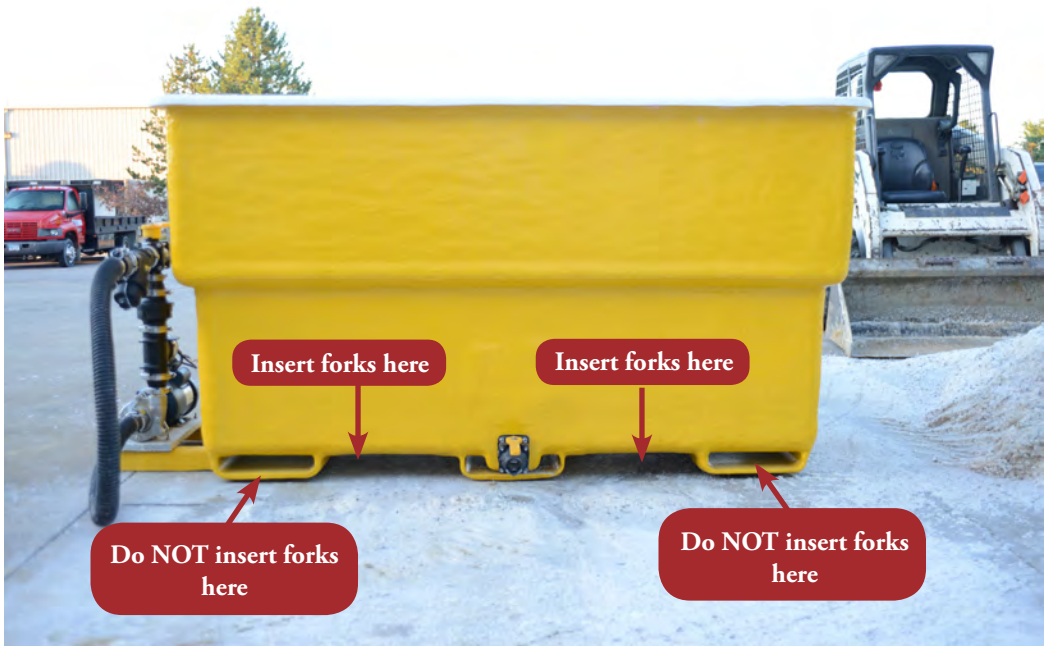


Figure 3

THE SALT TANK DOES NOT HAVE FORK POCKETS. The forks should be carefully placed on either side of the 6" cleanout valve but inside the vertical support legs and above the diagonal supports. Carefully lift and slightly tilt the mast of the forklift toward the operator to minimize the risk of the tank sliding off the forks.

Figure 4

Figure 5

Machine Placement/Orientation

The machine overall footprint of the machine, including the two tanks adjacent to one another is approximately 10'-6" wide x 8'6" deep. The salt tank should be arranged so that there is easy and clear access to dump salt in on the side that has no metal spill deflector with your loading equipment.

The brine tank can be oriented with either the pump stack on the right or the left, which is normally driven by the location of customer power source, as long as it is close enough so that the water from the overflow properly flows into the brine tank. Also note that the floor is sloped from the fresh water inlet to the discharge port for cleanout purposes. It is recommended that the discharge port on the brine tank be facing away from the salt tank to allow easier access to the discharge port and shutoff valve. The motor and pump mounting plate cannot be changed. Depending on the orientation of the brine tank, Valve #2 may need to be rotated 180 degrees to make the hose connections more convenient. This can be done by loosening the stainless steel flange clamp that attaches the Valve #2 to the top of the check valve, rotating the entire Valve #2 assembly and then tightening the clamp again. Be sure the gasket is correctly seated before tightening.

The AccuBatch® can be placed indoors or outdoors. The control panel can be mounted within 15 feet of the pump/motor and has a power cable with a type L6-30 twist-lock plug that is also 15 feet in length.

Machine Setup

1. Ensure both tanks are sitting on level ground. If you are not placing the tanks on concrete, you may have to place a footer of some type under each leg of the Salt Tank to avoid the legs sinking into the surface over time. The approximate overall footprint is 11 ft. x 9 ft.
2. Take proper safety precautions when plugging in the power cord to a designated service line rated at 240V, 30A, single phase.

Figure 6

Figure 7

Figure 8

3. The factory default settings for the Yokogawa conductivity analyzer are set for temperature in degrees Fahrenheit. The low alarm, which indicates the lowest brine concentration acceptable for use, is set at 22%. The target alarm, which shuts the machine off once this concentration is reached, is set at 23.3%. These values can be changed to better meet the customer's need. Please see instructions below under the heading "Yokogawa Operation Instructions"

Hose Connections

The Accubatch is supplied with two hoses. The end of each hose should be labeled with a color coded tag that corresponds to the connection point with the same color tag. If these labels become removed during shipment see the following description and figures of how the hoses should be connected below.

1. **Hose #1** – approximately 5.5 feet in length. Connects Valve #1 at the discharge port of the Brine Tank to the inlet port(suction) of the pump. (Figure 9)
2. **Hose #2** – approximately 8 feet in length. Connects Valve #2 at the top of the Pump/Valve stack assembly to the quick disconnect fitting located in the center of the long side of the Salt Tank. (Figures 9 & 11)
3. **Quick Disconnect #1** – This is located on the end of the Salt Tank and is where the customer supplied fresh water line should be connected. Depending on the layout of the facility both fittings can be swapped to the opposite sides of the tank on which they come mounted. This is simply done by loosening the clamps that secure each fitting, removing, remounting and retightening the clamps. (Figure 9)
4. **Quick Disconnect #2** – This is located downstream of the Y-strainer located at Valve #2. This is a customer supplied line that takes the finished brine product from the Brine Tank to the Customer Supplied storage device(tank or truck). (Figure 10)

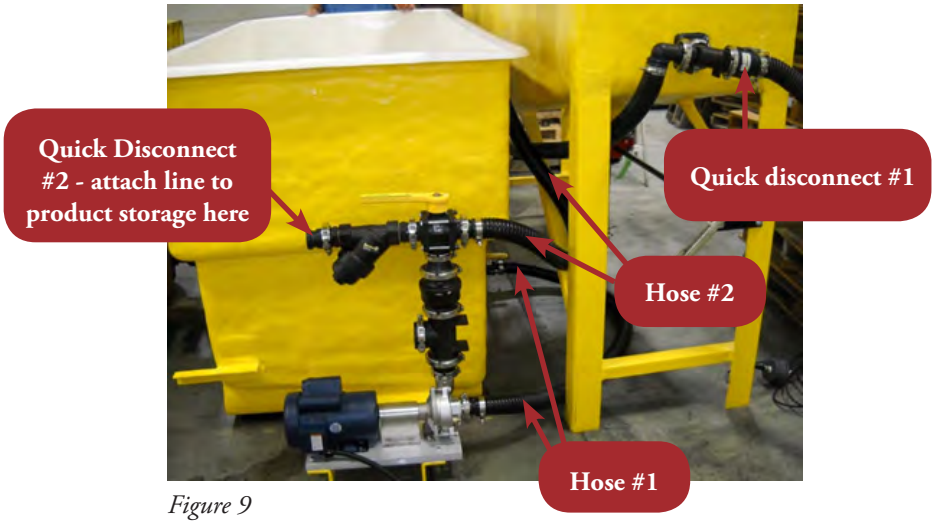


Figure 9

Figure 10

Figure 11

Yokogawa Conductivity Analyzer Setup Instructions

Figure 12

1. Plug in main power of Accubatch system
2. Turn the main disconnect on the control panel to "ON".
3. The Yokogawa screen should power up and be ready to make a batch. All settings are pre-set at the factory.

Follow the below instructions in order to set your acceptable brine concentration ranges.

Definitions:

S1 Alarm - The S1 alarm sets the lowest brine concentration at which point you would consider "usable" brine if brine production is in high demand and you don't have the time to wait on the brine reaching "target concentration". Once the brine concentration reaches the "lower acceptable limit" value set as S1, an amber/yellow light located on the control panel will illuminate. However, the machine will continue to run until the target concentration(S2 alarm value) is met or if the operator turns the Hand-Off-Auto switch to Off. The operator can set S1 and S2 alarms to the same value if a lower acceptable concentration will not be used. The factory setting for the lower acceptable concentration is set at 22%.

S2 Alarm - The value set as the S2 alarm is the target brine concentration. This is the point at which the operator considers is the optimal concentration for the finished brine mixture. This factory setting is at 23.3%. Once the machine reaches the S2 alarm, the yellow light will stay illuminated and an green light will also illuminate. In addition, the pump will turn off so to eliminate the concentration of the brine going above the target concentration as set by the operator.

S4 Alarm – This alarm indicates any self-diagnosed faults associated with the Yokogawa conductivity analyzer. If any faults occur, the S4 alarm will be tripped, illuminating a red light on the control panel and shutting off the pump. The operator should follow any instructions to troubleshoot/clear the fault as directed by the Yokogawa control screen.

Delay Time – The delay time is the amount of time that you want the brine to read at or above the alarm level before turning on an indicator light or stopping the pump. It ensure that the brine concentration is consistent before executing a function. For example, if the S1= 22% and the delay time for S1 is set at 10 seconds, the brine concentration has to read 22% or above for 10seconds before the yellow light is illuminated. If the concentration hits 22% and reads that for 3 seconds but then reads 21.9%, the counter will start from zero once 22% is measured again.

Hysteresis – Once S1 and/or S2 has been reached the hysteresis controls at which point the light will go out once the brine concentration drops BELOW the hysteresis value. For example, S1 is set at 22%, and the hysteresis is set to 1%. If the brine concentration were to ever fall to 21% or less the yellow light would turn off, indicating the brine concentration has fallen out of alarm range. If hysteresis does not provide the operator any value, it can be set to a large number ensuring that it will never affect the Accubatch system. Hysteresis can be adjusted; please see the Yokogawa operation manual for more details.

Instruction for setting your acceptable brine concentration(Alarms S1 and S2)

S1 – Lower acceptable brine concentration(illuminate yellow light)

Factory Default Value = 22%

1. Push "wrench" in lower right corner of touch screen
2. Push "Down Triangle" to "Commissioning" hit "enter"
3. Push "Down Triangle" once to "Output Setup" then hit "enter"
4. Push "Down Triangle" twice to "S1: Alarm" then hit "enter" twice
5. Push "Down Triangle" once to "Setup Alarm" the hit "enter"
6. Setpoint will be identified. Hit "enter" to change
7. Use numerical pad to enter new value, the hit "enter"
8. New value will be shown….hit "house" to return to main screen

Alarm S2 – Target brine concentration(illuminate yellow and green light; system shuts off once it reaches this setting) Factory Default Value = 23.3%

1. Push "wrench" in lower right corner of touch screen
2. Push "Down Triangle" to "Commissioning" hit "enter"
3. Push "Down Triangle" once to "Output Setup" then hit "enter"
4. Push "Down Triangle" three times to "S2: Alarm" then hit "enter" twice
5. Push "Down Triangle" once to "Setup Alarm" the hit "enter"
6. Setpoint will be identified. Hit "enter" to change
7. Use numerical pad to enter new value, the hit "enter"
8. New value will be shown….hit "house" to return to main screen

After hitting "Enter" in Step 7 your new alarm settings will be saved in the system.

To confirm set up of the Yokogawa analyzer, follow instruction below:

1. Push "wrench" in lower right corner of touch screen
2. Push "Down Triangle" to "Commissioning" hit "enter"
    a. Measurement Setup "enter"
    b. Measure: push "enter" select "Concentration Only" push "enter", push "down triangle"
        i. Configure Sensor: measuring unit "/cm", push "down triangle"
        ii. Cell Constant: 1.05 times I.F. number on probe "enter" then "up arrow"
        iii. Temperature Setting: PT1000
        iv. Unit: deg F push "up arrow"
        v. Temperature Compensation: push "enter"
        vi. Automatic
        vii. Ref Temp: 77.0 deg F
        viii. Method: Concentration 1: NaCl
        ix. Concentration 2: None "up arrow"
        x. Push "down triangle" : Calibration Settings (skip) push "down Triangle"
        xi. Concentration : "enter"
        xii. Additional Table: Enabled
        xiii. Unit for Table: %
    c. Push "up arrow" twice

Push "House" and this will return to main display screen

PLEASE READ ALL SAFETY INSTRUCTIONS PRIOR TO OPERATING THE ACCUBATCH BRINE MAKER.

Production Method 1 - Standard Production

1. Fill the Salt Tank with salt up to or slightly below the top rim of the tank. CAUTION: DO NOT FILL THE SALT TANK ABOVE THE UPPER LIP OF THE FIBERGLASS TANK. THE METAL SPILL DEFLECTORS ARE NOT DESIGNED TO HANDLE LOADING.
2. Turn on fresh water supply to Salt Tank. Once the Salt Tank is full of water, fresh water will begin overflowing through the weirs into the Brine Tank. Once the tank is filled to the desired level turn off fresh water supply. CAUTION: FAILURE TO DO SO MAY RESULT IN THE TANK OVERFLOWING.
3. Make sure the handle on the 3-way valve, Valve #2, is in the position showing flow indicator toward the Salt Tank. This position will allow the water to recirculate from the brine tank to the Salt Tank building concentration.

Figure 13

4. Open the brine tank discharge valve, Valve #1, on the brine tank and ensure the valve handle is in the proper position.
5. Ensure the E-stop is pulled outward.

Figure 14

6. Turn the HAND/OFF/AUTO switch to AUTO.

7. Press the Start Button.

8. Water should begin overflowing from the Salt Tank to the Brine Tank. As the water recirculates between the two tanks, brine concentration will start to increase and can be viewed on the Yokogawa display screen.

Figure 15

9. Once the brine production process has begun, for best results allow the system to run approximately 10 minutes, carefully add another load of salt to the Salt Tank. Once the brine concentration reaches the low alarm level (the lower acceptable brine concentration) the yellow light will illuminate. The machine will continue to run.

Figure 16

10. Once the brine concentration reaches the high alarm(the target brine concentration; factory default at 23.3%) the Yellow light will remain on and the Green light will illuminate. After approximately 15 seconds(factory default) the machine will automatically turn off indicating the brine batch is complete.

Figure 17

11. The Yokogawa sensor must be flushed with fresh or brine water at a concentration below the low alarm value in order to reset the system and allow it to run in Auto mode. There are two methods to achieve this:
    a. Method 1 - While filling the brine tank with fresh water, it will reach enough head pressure that will flush the Yokogawa sensor with fresh/diluted brine water.
    b. Method 2 - Another way to flush the system is while the brine tank is filling with fresh water, while the system is in Hand mode, start the pump and let it run for a few seconds. This will draw the fresh water/dilute brine water over the Yokogawa sensor below the low alarm brine concentration level allowing it to reset.
12. To transfer brine from Brine Tank to Storage Tank or Truck, turn the handle on Valve #2 so the flow indicator is pointed away from the Salt Tank.

13. Turn HAND/OFF/AUTO switch to HAND position and press the START button.
14. Be careful to keep the brine level in the Brine tank above the discharge port to not introduce air into the system, leaving approximately 10-12 inches in the bottom of the Brine Tank. Once brine has reached this level, press the STOP button.
15. Once transfer is complete, return handle on Valve #2 so flow indicator is pointed back towards Salt Tank.
16. Repeat steps 1-10 to produce additional batches.

Production Method 2 - Maximum Production Rate

1. Fill the Salt Tank with salt up to or slightly below the top rim of the tank. CAUTION: DO NOT FILL THE SALT TANK ABOVE THE UPPER LIP OF THE FIBERGLASS TANK. THE METAL SPILL DEFLECTORS ARE NOT DESIGNED TO HANDLE LOADING.
2. Ensure Valve #1 on the discharge port of the Brine Tank is open(Figure 18) and Valve #2 located on top of the motor/pump/valve stack is turned so that the flow indicator is pointed toward the Salt Tank for brine production(Figure 19).

Figure 18

Figure 19

3. Turn on Fresh Water supply to Salt Tank which will begin filling the Salt Tank with fresh water.
4. Fresh water will fill Salt Tank and overflow thru weirs into the Brine Tank. Ensure the E-Stop is pulled outward. Once there is approximately 10-12 inches of water in the Brine Tank, turn the HAND/OFF/AUTO switch to HAND and press START. This will start the pump and pull the brine mixture from the Brine Tank and send it back to the Salt Tank. This begins brine production(recirculation).
5. The GREEN and YELLOW lights will illuminate (Figure 20) and the Yokogawa Analyzer will have a concentration reading of 23.3% or higher. As the brine tank continues to fill with water, the brine solution will become less concentrated eventually going below target concentration(factor default 23.3%) at which point the GREEN light will turn off. This will happen when the water level in the Brine Tank reaches approximately two-thirds capacity.
6. Once the GREEN light is OFF, turn the HAND/OFF/AUTO switch to AUTO and press the START button.
7. The YELLOW light will remain on to indicate that the brine in the Brine Tank is below target concentration(23.3% factory default) and above the low concentration target(factory default of 21%).

8. Recharge the Salt Tank with a load of salt. This will improve the rate at which the brine batch reaches target concentration(factory default 23.3%).
9. Turn OFF the Fresh water feed once the Brine Tank has been filled to customer desired capacity.
10. Once the target brine concentration(factory default 23.3%) is reached, the GREEN light will come on and the system will run for another 30 seconds(factory default) after which will automatically shut down. This will indicate the batch of brine is as target concentration and is ready for transfer to Storage Tank or Truck.
11. The Yokogawa sensor must be flushed with fresh or brine water at a concentration below the low alarm value in order to reset the system and allow it to run in Auto mode. There are two methods to achieve this:

Figure 21

a. Method 1 - While filling the brine tank with fresh water, it will reach enough head pressure that will flush the Yokogawa sensor with fresh/diluted brine water.
b. Method 2 - While the brine tank is filling with fresh water, while the system is in Hand mode, start the pump and let it run for a few seconds. This will draw the fresh water/dilute brine water over the Yokogawa sensor below the low alarm brine concentration level allowing it to reset.

12. To transfer brine from Brine Tank to Storage Tank or Truck, turn the handle on Valve #2 so the flow indicator is pointed away from the Salt Tank (toward storage device - tank or truck).
13. Turn HAND/OFF/AUTO switch to HAND position and press the START button.
14. Be careful to keep the brine level in the Brine tank above the discharge port to not introduce air into the system, leaving approximately 10-12 inches in the bottom of the Brine Tank. Once brine has reached this level, press the STOP button.
15. Once transfer is complete, return handle on Valve #2 so flow indicator is pointed back towards Salt Tank.
16. Repeat Steps 1 -15 to produce each additional batch.

Transferring brine to tank/truck

Figure 22

Figure 23

1. Ensure your brine storage line is connected to the Y-strainer side of Valve #2 and to a storage device (tanker truck or storage tank).
2. Turn Valve #2 handle until flow indicator is in the direction of the storage device(opposite the salt tank).
3. Verify that no other valves in line between the pump and storage device are closed.
4. Turn the Hand-Off-Auto switch to Hand mode.
5. Press the Start button. The pump will transfer the brine located in the brine tank to the brine storage device.
6. Be careful to keep the brine level in the Brine tank above the discharge port to not introduce air into the system, leaving approximately 10-12 inches in the bottom of the Brine Tank. Once brine has reached this level, press the STOP button.
7. **CAUTION: DO NOT LET THE PUMP RUN WITHOUT LIQUID AS DAMAGE TO THE PUMP WILL RESULT.**
8. **Immediately shut off the shutoff valve on the storage to prevent accidental drainage of the brine solution from the storage device back into the Accubatch system.**
9. The Yokogawa sensor must be flushed with fresh or brine water at a concentration below the low alarm value in order to reset the system and allow it to run in Auto mode. There are two methods to achieve this:

a. Method 1 - While filling the brine tank with fresh water, it will reach enough head pressure that will flush the Yokogawa sensor with fresh/diluted brine water.
b. Method 2 - Another way to flush the system is while the brine tank is filling with fresh water, while the system is in Hand mode, start the pump and let it run for a few seconds. This will draw the fresh water/dilute brine water

over the Yokogawa sensor below the low alarm brine concentration level allowing it to reset.

10. After the Yokogawa sensor has been flushed, put the Hand-Off-Auto switch back into Auto mode.

Transferring Brine from Storage Tank to Truck

The AccuBatch® pumping system can be used to transfer salt brine from storage tank to fill tanker trucks by following the following steps:

1. Shut off brine tank discharge, Valve #2.
2. Disconnect the hose that connects the brine tank to the pump inlet at the quick disconnect coupling located at Valve #2.
3. Connect the hose from the brine storage tank to the hose disconnected in step 2 above..
4. Connect a hose from the truck onto Valve #3, opposite side of the salt tank. Turn handle on Valve#3 showing the flow in the direction of the hose connected to the truck.
5. Open all valves between the storage tank and truck
6. Turn the system to Hand mode.
7. Press Start button.
8. Press Stop button either when storage tank is empty or truck is full, whichever occurs first. **CAUTION: THE PUMP WILL NOT SHUT OFF AUTOMATICALLY!! DO NOT LET THE PUMP RUN WITH NO LIQUID AS DAMAGE TO THE PUMP WILL RESULT.**

AccuBatch® Cleanout Procedure

The Y-strainer, salt tank and brine tank will need to be cleaned out periodically depending on your salt quality and your short term storage(due to freezing temperatures) and long term machine storage(due to seasonality) requirements . The material in the salt tank will be coarse material while the material in the brine tank will tend to be much finer.

Y-Strainer Cleanout Procedure

1. The cleanout frequency of the Y-strainer is a direct relationship to salt quality and how often brine is sent to storage or truck. The operator should start out cleaning the Y-strainer after each batch unless it is determined by the operator that a lower frequency is adequate.
2. **CAUTION: FAILURE TO CLEANOUT THE Y-STRAINER MAY RESULT LOWER TRANSFER RATES.**
3. **CAUTION: TAKE PRECAUTION WHEN UNSCREWING THE Y-STRAINER BASKET COVER AS LINE MAY BE UNDER PRESSURE.**
4. The Y-strainer is located on the tank storage side (opposite of salt tank) of Valve #2 (Figure 24).
5. Unscrew the "Y-portion" of the strainer by turning counter-clockwise (Figure 25).
6. Once the housing is unscrewed, remove the stainless screen and either brush or wash out the particles captured in the screen (Figure 26).
7. Dump out any particles remaining in the housing.
8. Replace screen in housing and screw housing back into place (Figure 27).

Figure 24

Figure 25

Figure 26

Figure 27

Salt Tank Cleanout Procedure

Figure 28

1. The salt tank can be drained of water or completely emptied of both rock salt and water depending on how far the butterfly valve is allowed to open. In order to open the butterfly valve, simple locate the ratcheted handle on the bottom side of the salt tank, (Figure 28) squeeze the handle and turn counter-clockwise.
2. The salt tank should be at a height to allow positioning of most front end loader buckets underneath the opening to catch and dispose of the waste. Be aware that the contents of the salt tank should easily flow out of the valve once it is opened. Steps should be taken to catch any liquid or solids that the customer does not want to dump onto the ground.
3. The salt will flow easily out of a fully opened valve if there is enough water to achieve a salt/water slurry. If after fully opening the valve, there is salt remaining in the tank one can fill the tank with water by two of the following methods:
    a. Shut the butterfly valve by squeezing the handle and turning clockwise. Ensure there is water in the brine tank. If not, open Valve #1 and fill the tank with an adequate amount of water. Turn the system to "Hand" mode and press the Start button. This will send water from the brine tank, through the three nozzles in the salt tank. After an adequate amount of water has been added, press the Stop button. Open the butterfly valve and repeat the process as necessary until the tank is emptied.
    b. Use a hose or pressure washer to add water and wash down any residual salt through the open butterfly valve.

Brine Tank Cleanout Procedure

Figure 29

1. The brine tank can be either drained or cleaned out via the 2" discharge port located on the bottom side of the tank, opposite the fresh water inlet.
2. Shut off Valve #1.
3. To avoid tank contents to be dumped onto the ground, remove the hose connecting the Valve #1 to the pump inlet at the pump inlet. Place hose in container to catch contents of the brine tank.
4. Connect customer supplied hose used for discharging the waste from the brine tank out of the discharge port.
5. Open Valve #1 (Figure 29).

6. After draining the water in the tank, clean out the remaining residual solids accumulated on the floor of the brine tank as follows:
    a. Use a hose or pressure washer to remove and wash any remaining residual to the cleanout sump and out of the discharge port.
7. After the cleanout procedure is complete, reconnect the hose connecting the brine tank to the pump inlet. Keep Valve #1 in the open position (Figure 30).

Figure 30

AccuBatch® Storage Procedure

The brine tank can be used for short-term brine storage during season. However, it is crucial that the lines and pump are disconnected and drained to avoid freezing and the resulting damage. It is recommended to clean out all liquids and residual solids when machine is not in use in the off-season.

Short Term Storage Procedure

If your AccuBatch® machine resides outdoors or an unheated structure, there may be times where temperatures may get cold enough to freeze any water in hoses or the tanks. Follow the procedure below to drain the main components of the system:

1. Salt tank – open the butterfly valve by turning the ratchet handle counter-clockwise. Open the valve slightly to allow water to drain while retaining the salt in the salt tank.
2. Brine tank – turn the handle of Valve #1 to allow the water to discharge out of the port.
3. Y-Strainer – remove Y-strainer housing and dump out the water and any residual material.
4. Hoses – disconnect all hoses at the quick disconnect point. The operator may have to lift the hoses to assist in draining all of the residual water out of them.
    a. Disconnect the hose connecting the brine tank at Valve #1 to the pump inlet. Open Valve #1 (Figure 31).
    b. Disconnect the hose from the quick disconnect in the center of the salt tank(directly above the 6" cleanout valve.) Raise both hoses that connect the salt tank center nozzle to each end nozzle to ensure any residual water in each hose is removed (Figures 32 & 33).

Figure 31

Figure 32

Figure 33

c. Turn off fresh water supply. Disconnect the fresh water line from the fresh water source at the quick disconnect located on end of salt tank. Drain the fresh water hose (Figures 34 & 35).

Figure 34

Figure 35

Long Term Storage Procedure

At the end of its winter season usage, the Accubatch should be properly cleaned out and stored until the next winter season. Doing so will help increase the life of the parts and components and ensure proper operation during the next season.

1. Follow Salt Tank and Brine Tank Cleanout Procedures found in the Accubatch Cleanout Procedure section above.
2. Fill up the salt tank with fresh water.
3. Ensure Valve #1 is open.
4. Ensure flow indicator on Valve #1 handle is pointed toward the salt tank(recirculation position)
5. Turn system to Hand mode.
6. Press the Run button.
7. Run the system until the tanks and hoses are adequately flushed with clean, fresh water.
8. Press the Stop button.
9. Drain all tanks and hoses following the Short Term Storage procedure found in the previous section above.
10. Unplug the system and store cord in waterproof plastic wrap/tape.

AccuBatch® Troubleshooting Guide

1. ***The motor will not run.***
   a. Check to make sure power cord is plugged in.
   b. Check to make sure the main power disconnect is in the ON position.
   c. The E-stop may be depressed/activated - Pull outward and turn clock-wise on the E-stop located on the face of the control panel. After the E-Stop has been reset, Press the blue Reset button. Put the system in Hand mode and press the Start button.
   d. If the system is in AUTO mode, the Yokogawa sensor may be submerged in brine at or above the high alarm that is set in the Yokogawa controller. The factory default is set at 23.3%. To check to see if this is the case, switch the system to Hand mode and press the Start button. If the motor runs, hit the Stop button and follow the steps below to flush the Yokogawa sensor in order to reset the system and have it operate normally in Auto mode:

i. The Yokogawa sensor must be flushed with fresh or brine water at a concentration below the low alarm value in order to reset the system and allow it to run in Auto mode. There are two methods to achieve this:

1. Method 1 - While filling the brine tank with fresh water, it will reach enough head pressure that will flush the Yokogawa sensor with fresh/diluted brine water.
2. Method 2 - Another way to flush the system is while the brine tank is filling with fresh water, while the system is in Hand mode, start the pump and let it run for a few seconds. This will draw the fresh water/dilute brine water over the Yokogawa sensor below the low alarm brine concentration level allowing it to reset.

e. Check to make sure main power source breakers aren't tripped.

2. My system is in brine production Auto mode and the motor is running but no water is going to the salt tank

a. Press the Stop button immediately. Running the system without water going through the pump will result in irreparable damage to the pump that is not covered under warranty.
b. Ensure Valve#1 is open
c. Disconnect the hose at the quick disconnect coupling at the pump inlet to make sure there is no air trapped in the line.
d. Ensure the handle on Valve #2 is in position showing flow toward the salt tank.

3. My system is in brine production Auto mode but the brine concentration is stagnating or not increasing as the machine is running.

a. Dump more salt into the salt tank.
b. You may need to recalibrate the Yokogawa conductivity sensor. In order to perform an "in-place" calibration follow the below steps:
   i. Push "wrench" in lower right corner of touch screen
   ii. The "hand" will be pointing to "Calibration" hit "enter"
   iii. Push "Down Triangle" three times to "sample" hit "enter" twice
   iv. The "hand" will be pointing to "Start Calibration" hit "enter"
   v. After reading "stabilizes" hit "enter"
   vi. Enter value of Sample you are using to calibrate, hit "enter"
   vii. If "Sample" is within acceptable limits of calibration the display will state as such
   viii. Hit "House" to return to main display screen

4. The flow of water/brine into the salt tank appears to be lower than normal.

a. Check the hoses for any residual salt that might be plugging up the nozzles.
b. Remove the check valve directly adjacent to the discharge of the pump to make sure the valve isn't clogged.

5. How do I recover the factory default settings for brine concentration alarms?

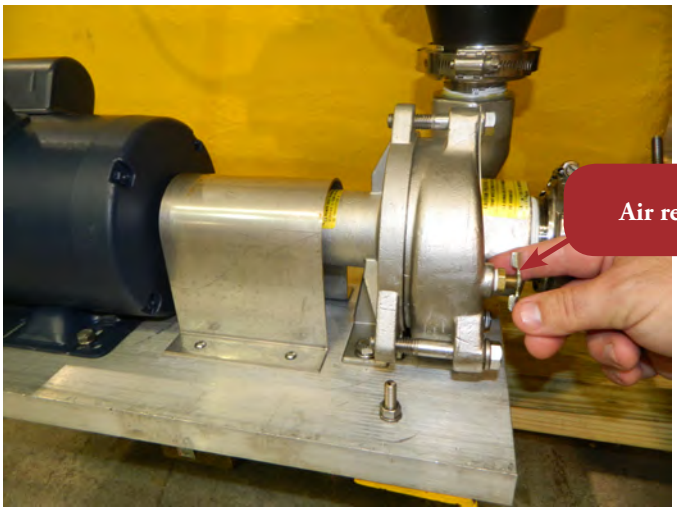
Note: The factory default settings are set at S1= 22%; S2=23.3%

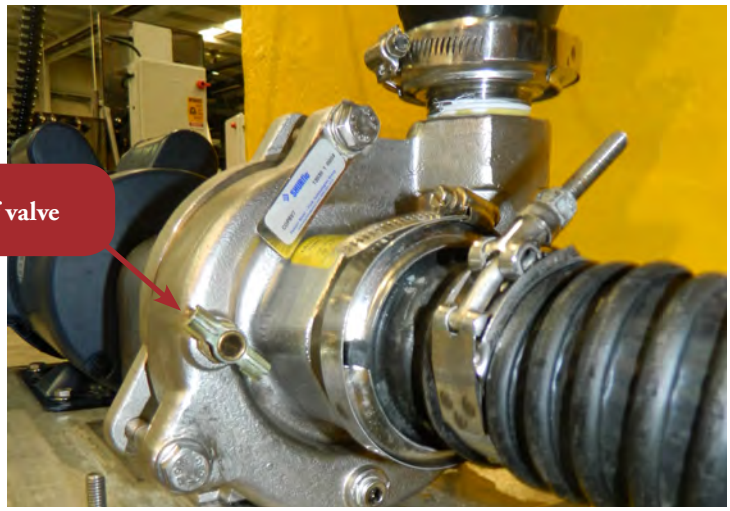
a. Push "wrench" in lower right corner of touch screen
b. Push "Down Triangle" to "Commissioning" hit "enter"
c. Push "Down Triangle" five times to "Advanced Setup" then hit "enter"
d. "Defaults" will be indicated by "hand", push "enter"
e. When screen changes to "Defaults" , push "enter"
f. Push "down triangle" three times to "Load USER DEFINED DEFAULTS" hit "enter"
g. Analyzer will reboot with "user default setting"

6. The Accubatch is off, will not turn back restart and the Yokogawa unit is reading 0 – help!

The salinity sensor is designed to stop the system if no water is detected in the pump. More than likely there is air trapped on the inlet side of the pump keeping liquid from getting to the pump. The fix is simple. The air bleedoff valve is located at approximately 9:00 position when looking at the pump from the inlet end. The valve is left hand thread open it by turning slowly to the left. If this is indeed the problem you will hear a hiss of air escaping, once liquid starts to exit through the valve all air has been removed and the valve can be tightened once again by turning to the right.

Verify that the Hand-Off-Auto mode switch is in Auto and press the Start button, the pump should run normally. The pump MAY run for a few seconds and then turn off. The system requires a few seconds to automatically reset the error code so it may be necessary to push the start button a second time.





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