BPS5000-SS
BRINE PRODUCTION SYSTEM
INSTALLATION & OPERATIONS MANUAL

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BPS 5000 Brine Production System
Installation Instructions

1. Move the Brine Production System into position using a suitable front end loader with forks or a large forklift (Note: System weighs approx. 3,600 lbs). It may be necessary to provide fork lift support across the bottom front of the unit.

2. The system must be placed on a rigid floor slab or proper footings sufficient to handle the weight of the system (approx. 18,000 lbs). Important: Shim properly so that the system is LEVEL, then bolt all four of the system's feet to the floor slab or footings and double check again to ensure system is still LEVEL.

3. Power supply to system must be 220V, Single Phase running from a minimum 30 amp breaker. Power supply should be run in water-resistant rigid or flexible conduit with a proper ground wire. This work should be done by a certified electrician according to applicable electrical codes.

4. System should be connected to water supply which can provide 50 GPM minimum flowrate. Ensure both water supply lines to system are protected from backflow conditions with proper backflow protection meeting applicable plumbing codes (a Reduced Pressure Zone Backflow Preventor (RPZ) Valve located upstream of the system is strongly recommended and is required by most plumbing codes).
If water supply is not potable water, then ensure a 40 mesh or finer strainer is installed on the water supply to minimize sand and other particulates from getting into water spray pipes on system. Main water supply to system should be 2" hose with "camlock" style female coupler at one end to attach to Water Inlet Valve (Valve W) on system. This is the only water supply hookup needed for the system.

5. Install 2" hoses with "camlock" style female couplers at each end from storage tank suction port to "Storage Tank Suction Valve" (Valve B) on system and from "Storage Tank Discharge Valve" (Valve C) on system back to the storage tank's fill or recirculation port. Note: it is recommended that you pull from, fill and recirculate the storage tank using fittings near the bottom of the tank-this provides better pump performance and mixing action.

BPS 5000 Brine Production System
Safety Procedures

1. Power supply to system must be 220V, Single Phase running from a minimum 30 amp breaker. Power supply should be run in water-resistant rigid or flexible conduit with a proper ground wire. This work should be done by a certified electrician according to applicable electrical codes.
2. Ensure water supply line to system is protected from backflow conditions with proper backflow protection meeting applicable plumbing codes (a Reduced Pressure Zone Backflow Preventor (RPZ) Valve located upstream of the system is strongly recommended and is required by most plumbing codes).
3. Do not smoke near system-hydraulic fluid vapors are flammable!
4. Do not climb on system-instead use the sight gauge windows to observe the salt pile height.
5. Always "lock out" the Control Panel before servicing the system. Also, exercise the hydraulic control valve several times to eliminate residual pressure in the hydraulic system before servicing it.

BPS 5000 Brine Production System
Maintenance Procedures

1. The BPS 5000 Brine Production System requires little maintenance. However, please note the the following recommended maintenance items:
   A. If you will not be using the system for awhile, then flush out the lower Brine Holding Tank with water. Also, wash off the skid frame. The Control Panel is water-tight, but still do not spray water directly onto the Control Panel.
   B. If the system is stored outside or in a room where temperatures drop below freezing, then disconnect the Brine Tank suction hose and Storage Tank suction hoses. Then open the Storage Tank Suction Valve and drain out all plumbing. Also disconnect the System Suction hose from lower brine tank, push open the check valve and drain this hose out also. Open the pump's drain valve and also open the "Winterization Valve" (Valve X) to let air in and drain out the pump and pump's suction valves fully. Disconnect Tubing from the two Salinity adjustment valves and open both valves to drain out the Salinity Sampler and both Salinity Adjustment Valves. Disconnect the camlock fitting on the water salinity adjustment hose to drain it out. Drain out the other water plumbing also as follows: Turn the Power Switch On. Then turn the "Auto-Off-Shut Down" Switch to Auto. Then open the Manual Water Supply Valve so all water drains out. Then double check each item to ensure is fully drained.

Important: Read & Understand complete Operating Manual before using system or these procedures.

MAKING A BRINE BATCH:

1. FILL HOPPER NEAR FULL WITH SALT & MAINTAIN THIS LEVEL
2. OPEN SYSTEM SUCTION VALVE "A"
3. CLOSE STORAGE SUCTION VALVE "B" & WINTERIZATION VALVE "X"
4. OPEN STORAGE DISCHARGE VALVE "C"
5. OPEN WATER INLET VALVE "W" & WATER SALINITY REDUCTION VALVES "WS"
6. CLOSE WATER DRAIN VALVE "WD"
7. ON CONTROL PANEL:
   A. ENSURE MAIN DISCONNECT SWITCH (SIDE) IS "ON"
   B. TURN BLACK "PUMP ONLY" SWITCH TO "OFF"
   C. TURN BLACK "HYDRAULIC SYSTEM" SWITCH TO "OFF"
   D. TURN BLACK "AUTO/SHUTDOWN" SWITCH TO "ON"
8. RUN UNIT, CHECK BRINE SALINITY % PERIODICALLY USING SALIMETER INSIDE SALINITY SAMPLER TUBE BY OPENING THEN CLOSING SALINITY SAMPLER VALVE "S"

PAUSING OR ENDING A BATCH:

1. LEAVE MAIN DISCONNECT SWITCH (SIDE) "ON"
2. TURN BLACK "AUTO/SHUTDOWN" SWITCH TO "SHUT DOWN"
3. CLOSE WATER INLET VALVE "W"
4. WAIT UNTIL PUMP STOPS
5. TURN BLACK "AUTO/SHUTDOWN" SWITCH TO "OFF"

REDUCING SALINITY OF BATCH IN STORAGE TANK:

1. CLOSE SYSTEM SUCTION VALVE "A", WINTERIZATION VALVE "X" & WATER DRAIN VALVE "WD"
2. OPEN STORAGE SUCTION VALVE "B"
3. OPEN STORAGE DISCHARGE VALVE "C"
4. LEAVE WATER INLET VALVE "W" & WATER SALINITY REDUCTION VALVES "WS" OPEN
5. ON CONTROL PANEL:
   A. TURN BLACK "AUTO/SHUTDOWN" SWITCH TO "OFF"
   B. TURN BLACK "PUMP ONLY" SWITCH TO ON
   C. RECIRCULATE 5 MINUTES
   D. CHECK BRINE SALINITY % USING SALIMETER SAMPLER
   E. CONTINUE CHECKING SALINITY % IN 5 OR 10 MINUTE INCREMENTS (USE WATER ADD CHART AS GUIDE).
   F. ONCE DESIRED SALINITY IS ACHIEVED, CONTINUE RUNNING TO CIRCULATE STORAGE TANK FULLY WITH WATER SALINITY ADJUSTMENT VALVES "WS" CLOSED.

ADDING SALINITY TO BATCH IN STORAGE TANK (MUST HAVE SEPARATE STORAGE TANK PUMP):

1. OPEN SYSTEM SUCTION VALVE "A"
2. CLOSE STORAGE SUCTION VALVE "B", WATER DRAIN VALVE "WD" & WINTERIZATION VALVE "X"
3. CLOSE WATER SALINITY REDUCTION VALVES "WS"
4. CONNECT YOUR STORAGE TANK PUMP DISCHARGE HOSE TO WATER INLET VALVE "W" & OPEN VALVE
5. OPEN STORAGE DISCHARGE VALVE "C"
6. ON CONTROL PANEL:
   - A. TURN BLACK "AUTO/SHUTDOWN" SWITCH TO "ON"
   - B. TURN BLACK "PUMP ONLY" SWITCH TO "OFF"
   - C. RECIRCULATE 5 MINUTES
   - D. CHECK BRINE SALINITY % USING SALIMETER SAMPLER & VALVE "S"
   - E. CONTINUE CHECKING SALINITY % EVERY 5 MINUTES
   - F. ONCE DESIRED SALINITY IS ACHIEVED, SEE CIRCULATION ONLY PROCEDURES BELOW

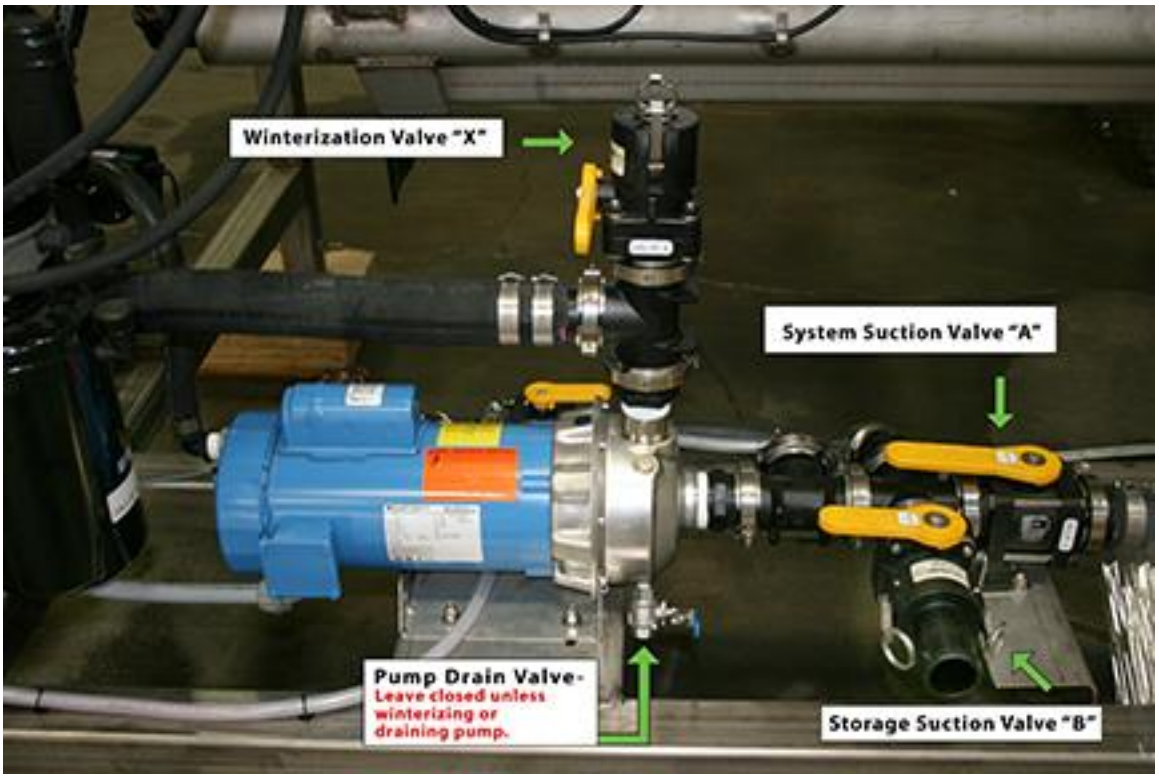
CIRCULATING BRINE STORAGE TANK ONLY WITH SYSTEM PUMP (NO SALINITY ADJUSTMENT):

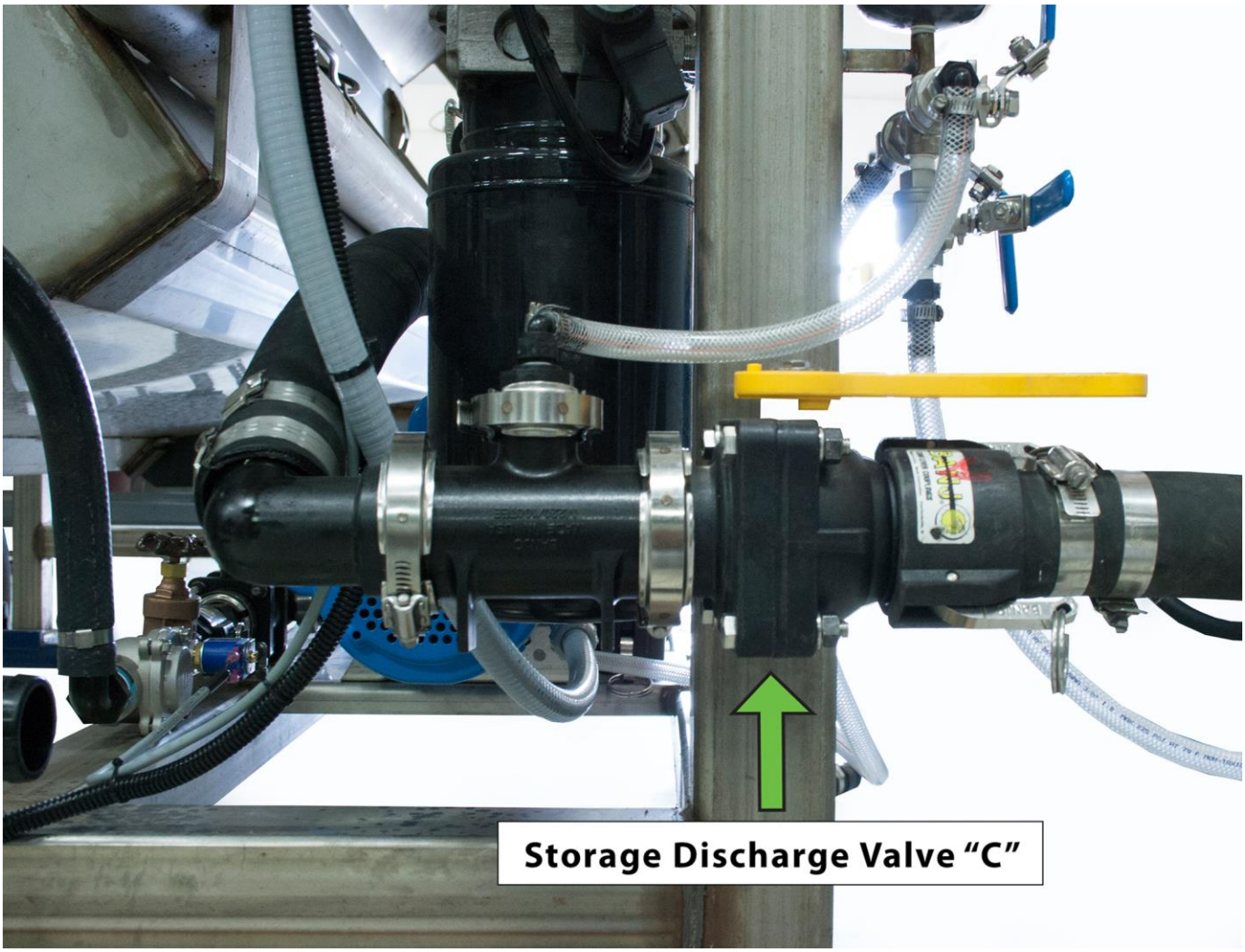
1. CLOSE SYSTEM SUCTION VALVE "A", WATER INLET VALVE "W", WINTERIZATION VALVE "X"
2. OPEN STORAGE SUCTION VALVE "B", STORAGE DISCHARGE VALVE "C" & TANK VALVES
3. ON CONTROL PANEL:
   - A. TURN BLACK "AUTO/SHUTDOWN" SWITCH TO "OFF"
   - B. TURN BLACK "PUMP ONLY" SWITCH TO "ON"
4. CIRCULATE TANK FULLY SO BRINE IN STORAGE TANK IS NOT STRATIFIED

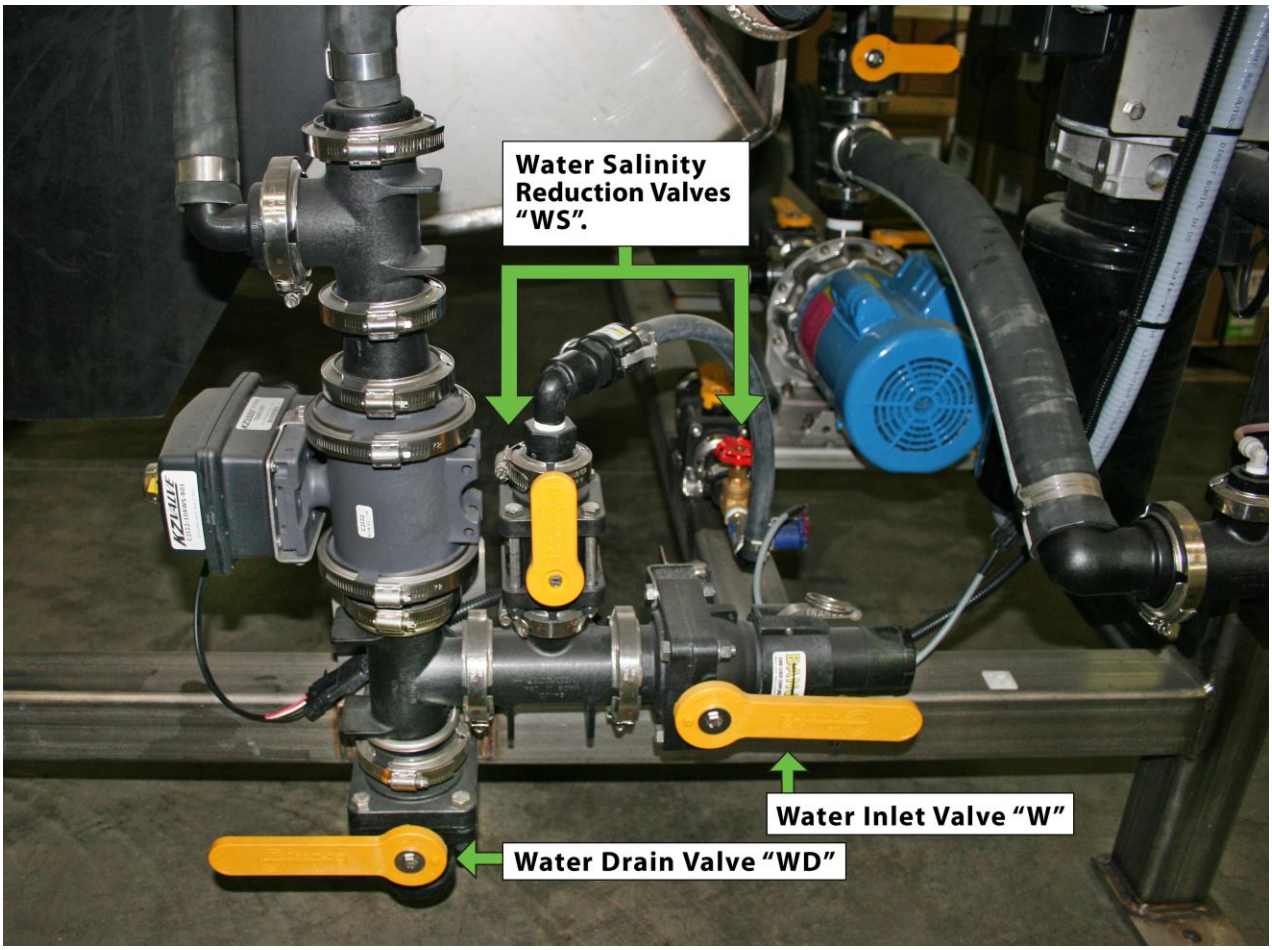
LOADING TRUCKS WITH SYSTEM PUMP:

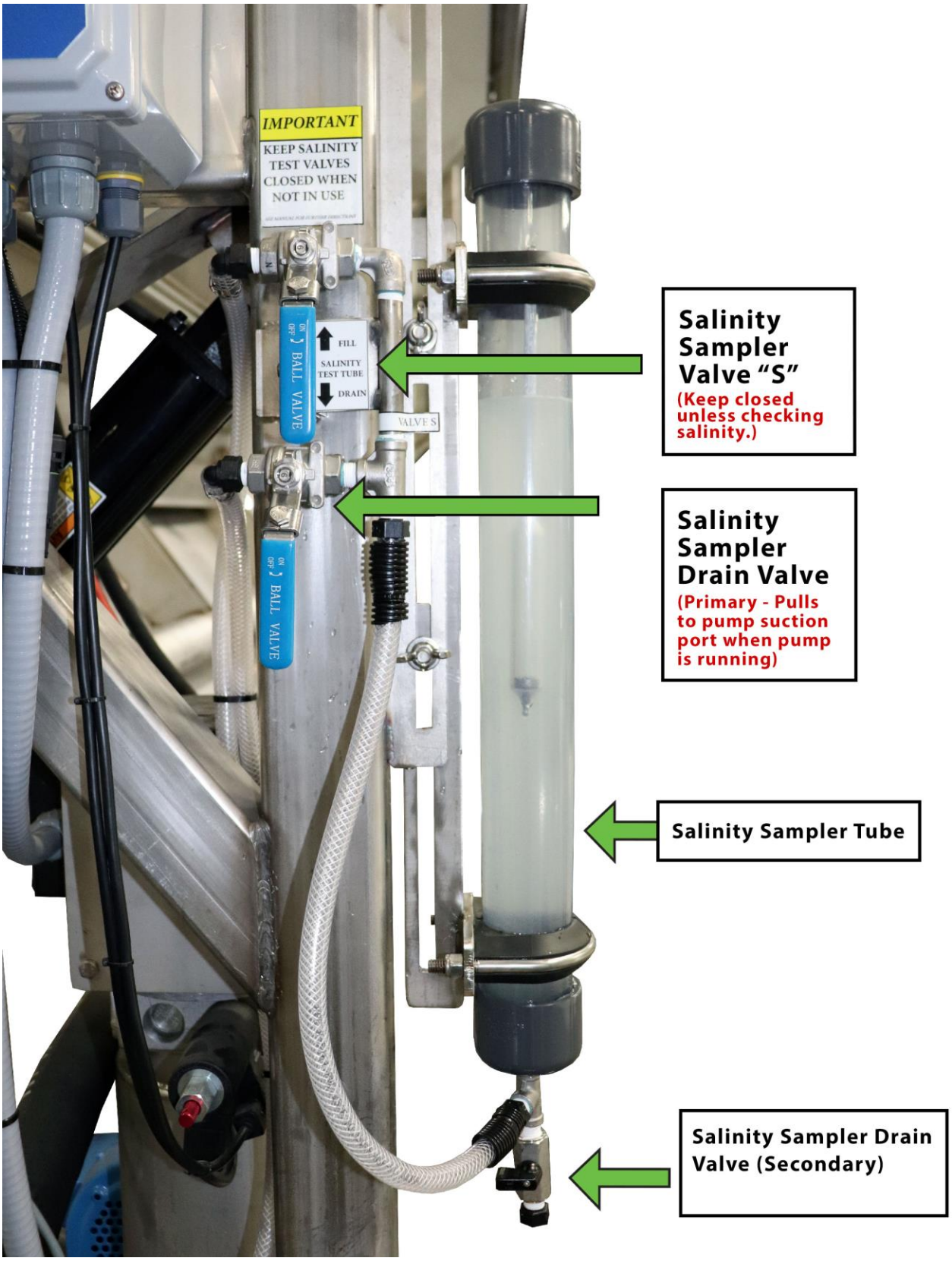
1. CLOSE SYSTEM SUCTION VALVE "A", WATER INLET VALVE "W", WINTERIZATION VALVE "X"
2. OPEN STORAGE SUCTION VALVE "B"
3. CONNECT DISCHARGE HOSE FROM STORAGE DISCHARGE VALVE "C" TO TRUCK FILL PORT
4. ON CONTROL PANEL:
   - A. TURN BLACK "AUTO/SHUTDOWN" SWITCH TO "OFF"
   - B. TURN BLACK "PUMP ONLY" SWITCH TO "ON"
   - C. WHEN TRUCK IS NEAR FULL, TURN "PUMP ONLY" SWITCH "OFF"

** NOTICE! DO NOT RUN PUMP "DRY"


Winterization Valve "X"
System Suction Valve "A"
Pump Drain Valve-
Leave closed unless winterizing or draining pump.
Storage Suction Valve "B"


Storage Discharge Valve “C”


Water Salinity Reduction Valves "WS".
Water Inlet Valve "W"
Water Drain Valve "WD"


IMPORTANT
KEEP SALINITY TEST VALVES CLOSED WHEN NOT IN USE
FILL
SALINITY TEST TUBE
DRAIN
BALL VALVE
VALVE S
BALL VALVE
Salinity Sampler Valve "S"
(Keep closed unless checking salinity.)
Salinity Sampler Drain Valve
(Primary - Pulls to pump suction port when pump is running)
Salinity Sampler Tube
Salinity Sampler Drain Valve (Secondary)

BPS5000 Brine Production System
Clean-out Procedures

DETERMINING WHEN TO CLEAN-OUT:

1. You should clean out the system after making approximately 10,000 gallons of brine (depending upon the amount of dirt and debris in your salt and if the salt has been screened or not).

2. You should also clean out the system if the "Time to Clean Screen" light comes on (yellow light on control panel), especially if you have made more than 10,000 gallons of brine since the last cleaning.

PREPARING TO CLEAN-OUT:

1. First, continue to make brine until the salt pile height is reduced as follows:

   A. Leave the Power Switch On.

   B. Leave the "Auto-Shut Down" Switch on "On" (this allows water to continue coming into the system in order to reduce the salt pile height).

   C. Stop adding salt to the Hopper.

   D. The salt pile height will start to drop inside the Hopper (look through the sight glass windows on side of hopper.

   2. Monitor the brine salinity periodically using the "Brine Salinity Sampler" (Valve S) and a certified salimeter or hydrometer. When the salt pile drops low enough (about 24” above the trash screen), then turn the "Auto-Shut Down" Switch to "Shut Down" and close the "Water Inlet Valve" (Valve W). Wait until the brine pump stops running (note: this will take a few minutes).

   3. You may then proceed to the "Clean-Out" Section below. (Note: the brine salinity may drop below your minimum desired salinity before the salt pile height has dropped to 24” above the trash screen. This is generally not a problem for a few minutes since it is normally a very small portion of the entire batch of salt brine produced;

however, if necessary after cleanout, you may "recirculate" any weak brine back through the system to strengthen (see “Adding Salinity to Batch in Storage Tank” Instruction).

ACTUAL CLEAN-OUT:

1. Turn the "Auto Shut Down" Switch to "Off", but leave the main Power Disconnect On.
2. Position your 8’ wide 2 or 3 cu yd. loader bucket underneath the Lower Brine Holding Tank (Note: always have a "spotter" in a safe position directing the loader operator during this step).
3. **IMPORTANT!!! Open the screen latches located on the front top of the Lower Brine Holding Tank (this will allow the trash screen to drop with the Lower Brine Tank so all debris will flow into the loader bucket). If these pins are not open with debris on the screen and the lower tank is lowered, damage could occur to the screen and other components.**
4. **IMPORTANT!!! Unlock the side locking pins so the Lower Brine Tank is free to rotate down also. If these pins are not open when the lower tank is lowered, damage will occur.**
5. Turn the "Hydraulic System" Black Switch to “On”.
6. Hold the Green Switch on “Down” so that the Lower Brine Holding Tank (& trash screen) rotates down until all debris on the screen flows into the loader bucket.
7. Then, Hold the Green Switch on “Up” so that the Lower Brine Holding Tank (& trash screen) rotate back up to the closed position.
8. Then, hook the front latch so the trash screen will now stay in the up position and Hold he Green Switch on “Down” so that the Lower Brine Holding Tank rotates down again (trash screen remains up this time so you can access the lower brine tank to clean it).
9. Flush out the remaining silt from the Lower Brine Holding Tank using a hose with a cleaning type nozzle (you may remove the lower screen inside the Lower Brine Holding tank when doing this step).
10. Then, Hold the Green Switch on “Up” so that the Lower Brine Holding Tank rotates back up to the closed position.

11. Re-lock the side locking pins so the Lower Brine Tank is locked in the up position. You are finished with clean out and ready to make more brine.

UPWARD FLOW INFORMATION

The BPS5000-SS also has the ability to make brine in a combined "downward/upward" flow process. The operator should not make any changes to the Control Panel switches or other changes for this process to occur. If the lower trash screen clogs to the point where liquid brine starts to rise upward in the salt hopper, brine will simply rise up and into the "internal overflow weir" located along the front hopper wall. Brine running into this overflow weir runs through its screen, then vertically down and through the main lower trash screen, and into the lower brine tank. If the screen on the overflow weir were to clog up, the float switches in the upper corner of the salt hopper will turn off the water inlet valve periodically so brine does not overflow the salt hopper rim. If the operator were to see this occurring, simply scrape off the screen on the overflow weir with a squeegee.

BPS5000-SS Brine Production System
Parts Listing
For 2020 Models
August 2020

Item Part #	Item Description	Qty	Unit
DUBPS5000-BARE	Bare Brinemaker/SS and Hydr Only	1	EA
DUBPS-PANEL	Control Panel For Bps3000-Ss	1	EA
DUBPS-SHIELD	Rubber Side Shield For Brine Making Sys.	2	EA
SCSSE602S-4.38	2X2 SS Scot Transfer Pump-3HP,1PH	1	EA
KE2-PVC-CLEAR	2 Inch Clear Pvc Pipe, Sch40 Per Foot	2	FT
KZC2I66W1	2 IN 24V Poly Valve,SS Ball, 2 IN FP Flg	1	EA
AR2A555	Stainless Steel Float Switch	2	EA
BDJS205	5/8 x 1-1/2 Inch Clamp,Each	4	EA
BDUL210	2-3/4 Inch Ultra Clamp,Each	8	EA
CT304-1/4XCL	1/4Xclose 304Ss Nipple, Sch40	4	EA
CT304-1-1/4XCL	1-1/4Xclose 304Ss Nipple, Sch40	6	EA
CT7LL1145	1-1/4 304SS 45 Elbow, 150Lb	2	EA
DE478PS-24	1 In Stainless Solenoid, 24VAC, Buna	1	EA
DRCFS2	Float Switch, 20 FT Cord	2	EA
FC75G	3/4 Epdm Gasket, cam fittings	5	EA
GA3204-1431	1 Inch Bulk Hose,Black	2	FT
GDN645-1-1/4	Epdm Suct/Discharge Hose	4	FT
GDN645-2	Epdm Suct/Discharge Hose	9	FT
GN316-114	1-1/4 Inch SS Ball Valve, 1000 PSI	2	EA
GN316-14	1/4 Stainless Ball Valve, 1000 PSI	3	EA
JKSC200T	2 Inch PVC Swing Check Valve	1	EA
PL847-2	2 Inch Pvc Slip Cap, Sch80	2	EA
TKFC200	2 IN Flange Clamp	14	EA
TKFC220	2 IN Fp Flange Clamp	7	EA
TKHB125SS	1-1/4 316SS Hose Barb	2	EA
TKM100FPT	Adaptor 1 IN Flange X 1 IN Fm	2	EA
TKM100PLG025	1 IN Flange Plug W/1/4 Fpt	1	EA
TKM200CR	2 IN Flanged Cross	1	EA
TKM200TEE	2 IN Flanged Tee	3	EA
TKM201G	2 IN Epdm Flange Gasket/2"SP w/Rib	14	EA
TKM220100TEE	2 IN X2 IN X1 IN Fp Flanged Tee, Pol	2	EA
TKM220200CPG	Flanged Reducer 2 IN Fpx2 IN	1	EA
TKM220TEE	2 IN Fullport Flanged Tee	1	EA
TKM221G	2 IN Epdm Flange Gasket/2"FP w/Rib	7	EA
TKM700D	2 IN Flange X 2 IN Mpt Adaptor	2	EA
TKM701E	2 IN Flange X 1-1/4 Hb	1	EA
TKM701G	Hose Barb 2 Flnge X 2 Hb	2	EA
TKM702E	90 Elbow,Poly,2 IN Flng X 1-1/4HB	1	EA
TKM702I	90 Elbow 2 IN Fp Flng X 2 IN Hb	1	EA
TKMV100CF	1 IN Valve/Flnge X Flnge Fp	2	EA
TKMV200CF	2 IN Valve/Flnged X Flnged	1	EA
TKMVSF220FP	Valve 2 IN Fp Flange X 2 IN Adaptor	3	EA
TKP100F	1 IN Poly Adaptor	2	EA
TKP100B	1 IN Poly Coupler	1	EA
TKP100C	1 IN Poly Coupler	1	EA
TKP200B	2 IN Male Coupler	1	EA
TKP200CAP	2 IN Dust Cap	1	EA
TKP200F	2 IN Male Adaptor	1	EA
TKPEL1010	1Mptx1Hb Poly Elbow	1	EA
TKPEL200	2Mptx2Hb Poly Elbow	1	EA
TKUB220	220 Stainless U-Bolt Assy	3	EA

TKV25271	90 Mounting Bracket	1	EA
TKVSF200CF	2 IN Valve/Flanged X Adaptr	2	EA
UT15005-100	1/2 Liquidtight Nonmetal Flex Conduit	22	EA
UTE989NNJ	Pvc Enclosure W/ Lid,4X4X2,Nema 4X	2	EA
UTLPCG50	Plastic Strain Relief,F/0.20-0.472 Cable	4	EA
UTLT43D	1/2 IN Nonmetallic Straight Fitting	3	EA
ZVMC-1/2CLAMP	Push Close Clamping Hanger For 1/2 IN	2	EA
TWGV-1	1 Inch Brass Gate Valve	1	EA
RVWPM-15	Male Weatherpack Pins (14-16G)	5	EA
RVWPF-15	Female Weatherpack Pins (14-16G)	2	EA
RVWPS-GRN	Weatherpack Dust Seal (Green)	4	EA
RVWPS2	2 Port Female Weatherpack (Shroud)	1	EA
RVWPT2	2 Port Male Weatherpack (Tower)	1	EA
TKFC100	1 IN Flange Clamp	5	EA
UT02041802	18/2 Control Cable Gray Jacket	2	FT
XX2343	Miscellaneous Nuts/Bolts	6	EA
AB122A-1	Brass Hex Nipple, 1 Inch	1	EA
TKPEL1438	1/4Mptx3/8Hb Poly Elbow	4	EA
TK908-1	1 Inch 90 St ELL, Polypropylene	1	EA
TFRF038	3/8 Braided Vinyl Tubing, per Ft	13	FT
DUBPS-DECALKIT	Warning and instruction decals BPS3000	1	EA
BRW-2002-1201	2 Con Rail Mounted Term Block	10	EA
BRW-2002-1291	End/Intermediate Plate, 1Mm (Gray)	2	EA
BRW-249-116	End Stop, 6MM	4	EA
GO1536/L01	Denrail, 2-Meters(78 in)Sold Per IN.	1	EA
BDJS208	5/8 x 2-1/4 Clamp,Each	4	EA
UT16TFFN	18 Gauge Wire, black	25	FT
CT7UN114	1-1/4 304Ss Union, 150Lb	2	EA
UTTHHN10ST-BLK	10 Ga Motor Wire, Black	13	EA
UTTHHN10ST-GRN	10 Ga Motor Wire, Green	7	EA
TKM701D	Hose Barb 2 IN Flnge X 1 IN Hb	1	EA
TKM200CPG45	2 IN 45 Flanged Elbow	1	EA
TKM200PLG025	2 IN Std Port Flange Plug W/1/4 IN F	1	EA
TKM701B	1 IN Flange X 1 IN Hose Barb	1	EA
FS11605	Salimeter,0-100% Saturation, Glass	1	EA
ZSUB2PA6	2 IN 316SS U-Bolt Clamp W/Cushion& Nut	2	EA
CT7TT14	1/4 304SS Tee, 150Lb	2	EA
TKHB025/038SS	3/8HB X 1/4MPT 316SS Hose Barb	3	EA
CT7SE14	1/4 304SS 90 Street Ell, 150Lb	2	EA
DRSMV2-WF2	1/4 FPT Stainless ball valve, PTFE Seat	1	EA
CT304-1/4X4	1/4X4 304Ss Nipple, Sch40	1	EA
**DUBPS-SPRAYHOSE	Hose Assy 23ft Cam lock/GH Nozzle	1	EA
DUBPS-TUBESCREEN	Screen for salinity tube 2.36 INCH	1	EA
DE41-9D-7-3	Solenoid Coil, 24Vac Din Style	1	EA
DE41-77-100110	Female Din Connector	1	EA

****DUBPS-SPRAYHOSE PARTS BREAKDOWN:**

EVFNB75GHT	Hose Nozzle, ¾" FGHT, Red	1 EA
GA3204-1413	½ " Black Bulk Hose	1 EA
TWB203	Brass Hose Barb, ¾" MGHT x ½" Barb	1 EA
TWB203	Brass Hose Barb, ¾" MGHT x ½" Barb	1 EA
TKP100C	1" Poly Coupler	1 EA
TKP100C	1" Poly Coupler, Style C	1 EA
BDJS201	Preformed SS Clamp, 3/8" x 3/16"	2 EA
TKP100D	1" Poly Coupler, Style D	1 EA
TKP100D	1" Poly Coupler, Style D	1 EA
TK901-1X1/2	1" x ½" Polyprop Bushing	1 EA
TKP100D	1" Poly Coupler, Style D	1 EA
TKPHB1212	½" MPT x ½" Hose Barb, Polyprop	1 EA

HYDRAULIC PUMP AND STAINLESS RESERVOIR PARTS:

FTA0428-SS	Hydr. Pump with Stainless Reservoir	1 EA
DUBPS-HYDRESERVOIR-SS	Hydraulic Reservoir Only, Stainless, 1.5 Gal	1 EA