BPS3000-SS
BRINE PRODUCTION SYSTEM
INSTALLATION & OPERATIONS MANUAL

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BPS 3000 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. 3,600 lbs). Bolt all four of the system's feet to the floor slab or footings. It is also recommended that the system be located in a heated room with a floor drain and sufficient ceiling height (Note: system is 8'0" tall). Room must also have sufficient power and water supply-see below.

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).
Also ensure a 40 mesh or finer strainer is installed on the water supply lines to minimize sand and other particulates getting into the system's water spray pipes. 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 3000 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 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).
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 3000 Brine Production System
Maintenance Procedures

1. The BPS 3000 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

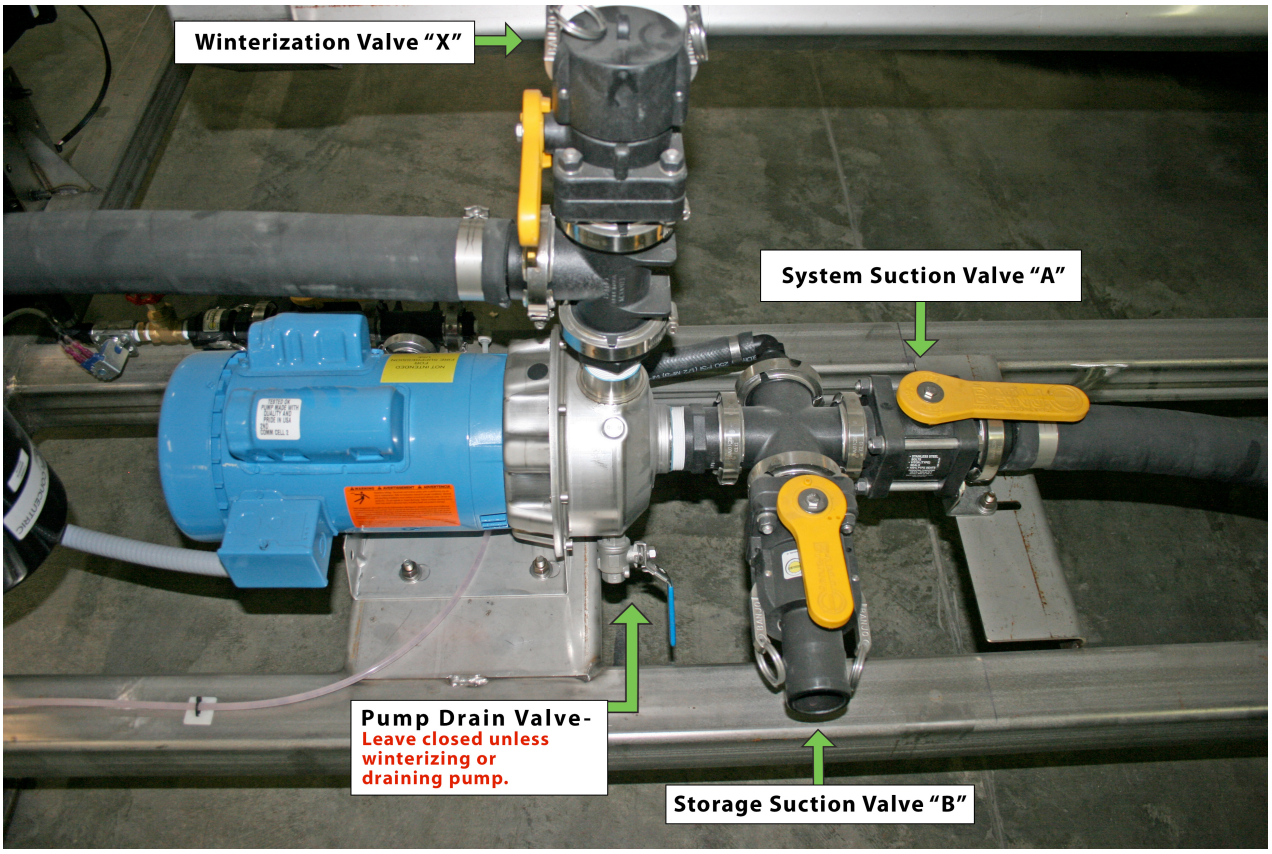
CIRCULATING BRINE STORAGE TANK ONLY WITH SYSTEM PUMP (NO SALINITY ADJUSTMENT):

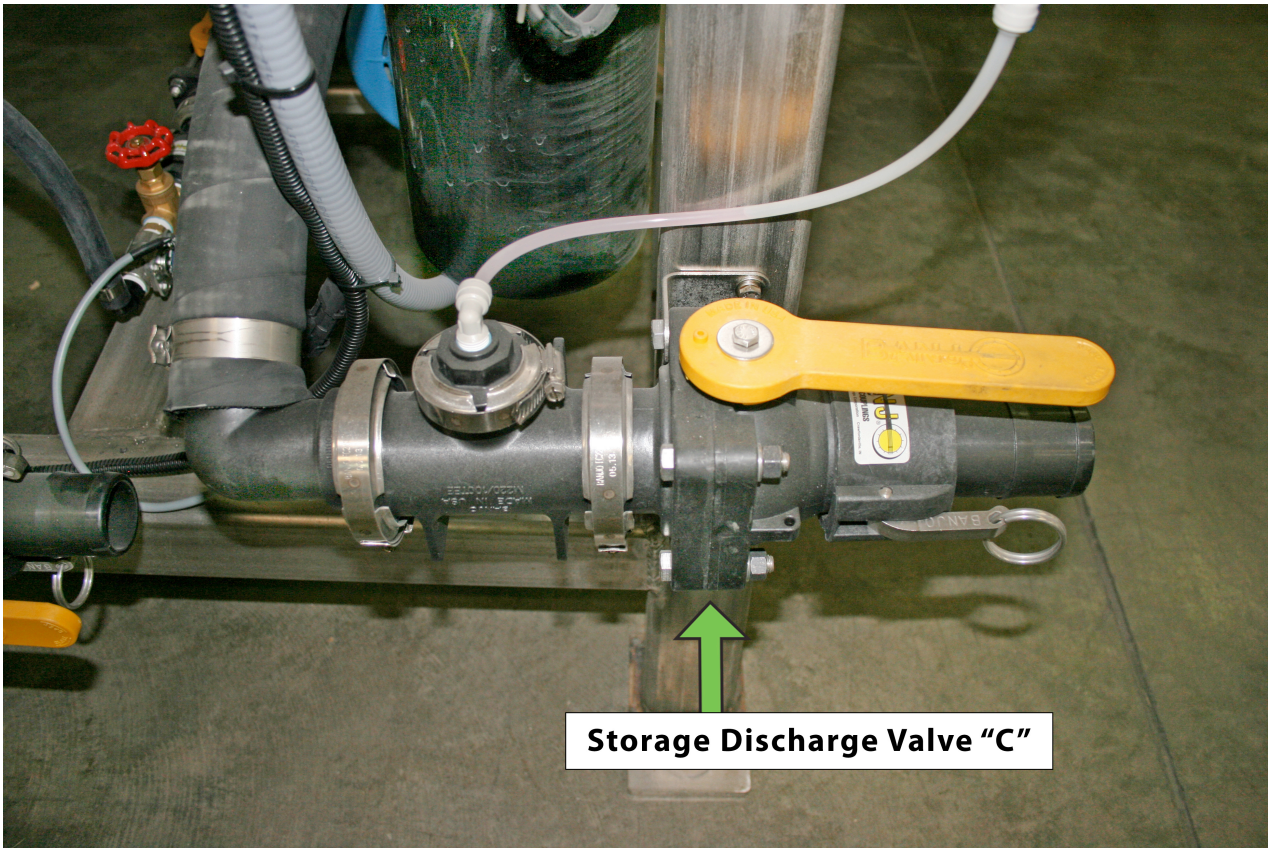
1. CLOSE SYSTEM SUCTION VALVE “A”, WATER INLET VALVE “W”, WINTERIZATION VALVE “X”
2. OPEN STORAGE SUCTION VALVE “B”, STORAGE DISCHARGE VALVE “C” & TANK VALVES
3. ON CONTROL PANEL:
   A. TURN BLACK “AUTO/SHUTDOWN” SWITCH TO “OFF”
   B. TURN BLACK “PUMP ONLY” SWITCH TO “ON”
4. CIRCULATE TANK FULLY SO BRINE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

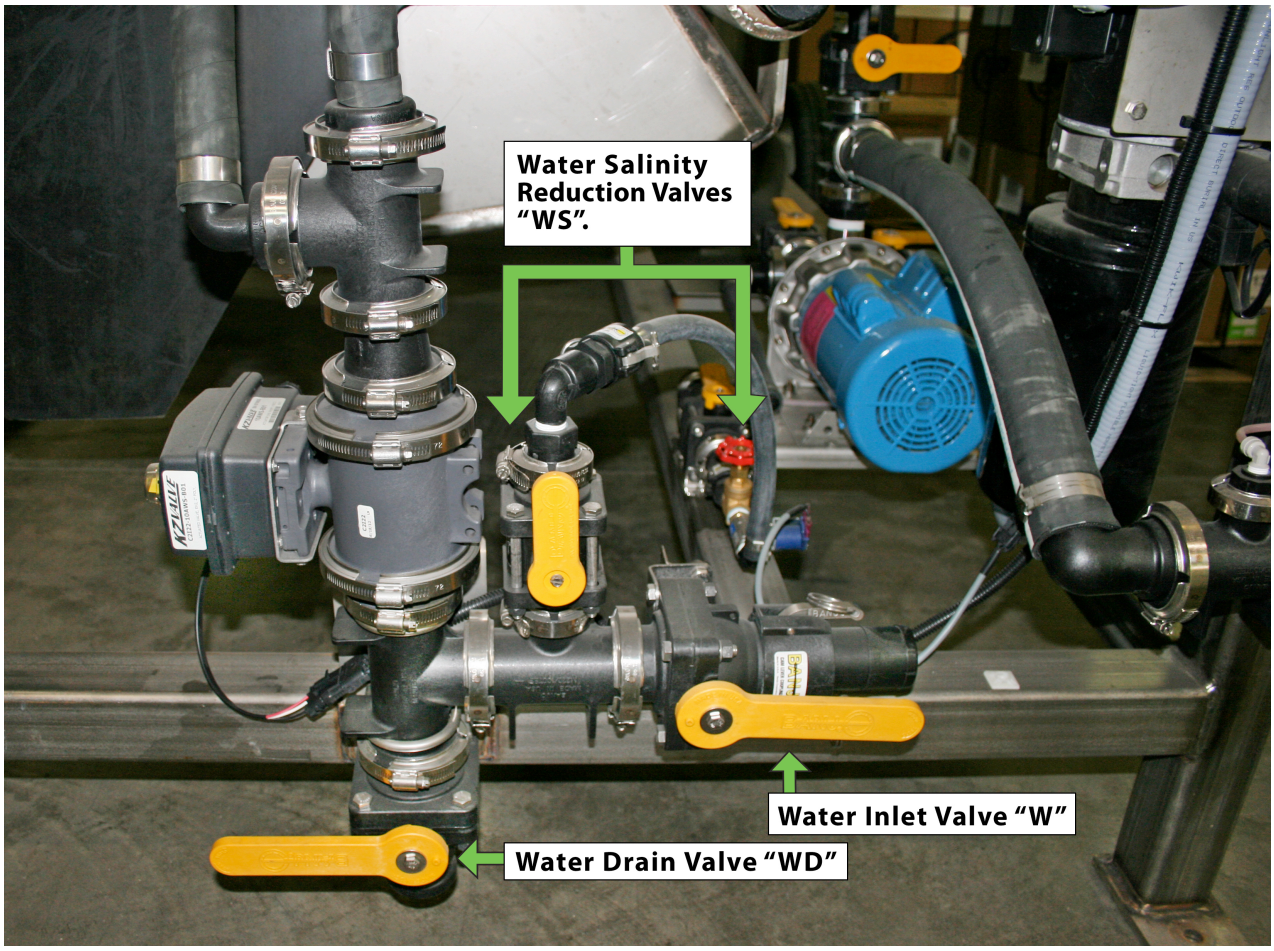
LOADING TRUCKS WITH SYSTEM PUMP:

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"

BPS3000 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).

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 5,000 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 ; however, if necessary after cleanout, you may "recirculate" this 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 should 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.

BPS3000-SS Brine Production System
Parts Listing
For 2014 Models at Later
Sept 24, 2014

Item	Qty	Description
DU BPS3000-BARE	1	BARE BRINE PROD FRAME/SS AND HYDR ONLY
DU BPS-PANEL	1	CONTROL PANEL FOR BPS3000-SS
DU BPS-SHIELD	2	RUBBER SIDE SHIELD FOR BRINE PROD. SYSTEM
GL 3ST1H4C4	1	SS TRANSFER PUMP-3HP/1PH,2X1-1/2
KE 2-PVC-CLEAR	1	2" CLEAR PVC PIPE SCH40 PER FOOT
KZ C2I66W1	1	2" 24V POLY VALVE SS BALL,2" FLANGE 1.5S
HYDRAULIC PUMP	1	CONCENTRIC FTA0428-1 (BM000076), 1HP,1 PH

Other Detailed Parts Listing:

Item	Qty	Description
AB·122A-1/2	1	BRASS HEX NIPPLE, 1/2
AR·2A554	2	POLY FLOAT SWITCH
BD·JS201	2	SS BANDIT CLAMP
BD·UL210	8	2-3/4" SS BANDIT ULTRA CLAMP
CT·304-1-1/4XCL	4	1-1/4XCLOSE 304SS NIPPLE, SCH40
CT·304-1/4XCL	3	1/4XCLOSE 304SS NIPPLE, SCH40
CT·7LL1145	2	1-1/4 304SS 45 ELBOW, 150LB
CT·7TT14	1	1/4 304SS TEE, 150LB
CT·80142	1	1/4X2 304SS NIPPLE-SCH80
DD·D7634	1	SS WALL HOOK, 4" DEEP
DE·466PS-24	1	3/4" SS SOLENOID, 24VAC
DR·CFS2	2	FLOAT SWITCH, 20' CORD
EV·FNB75GHT	1	HOSE NOZZLE, 3/4" FGHT
FC·UN204-100N	1	NAT NYLON TUBE, 1/4X100
FC·75G	6	3/4 EPDM GASKET
GA·3204-1413	23 FT	1/2 BLACK BULK HOSE, ADAPTAFLEX
GA·3204-1425	6 FT	3/4 BLACK BULK HOSE, ADAPTAFLEX
GD·N645-1-1/4	6 FT	EPDM SUCT/DISCHARGE HOSE
GD·N645-2	9 FT	EPDM SUCT/DISCHARGE HOSE
GN·316-114	2	1-1/4" SS BALL VALVE
GN·316-14	3	1/4 STAINLESS BALL VALVE
JK·SC200T	1	2" SWING CHECK VALVE
LM·ELT1414	4	90 ELL, 1/4MPT X 1/4TUBE
MP·620-12	20	6712-1 BOX/10 CLAMPS-NO BROKEN BOXES
MP·620-8	10	6708-1 BOX/10 CLAMPS-NO BROKEN BOXES
MP·620-8	20	6708-1 BOX/10 CLAMPS-NO BROKEN BOXES
PL·847-2	2	2" PVC SLIP CAP
RV·WPM-15	1	MALE WEATHERPACK PINS (14-16G)
RV·WPS-GRN	1	WEATHERPACK DUST SEAL (GREEN)
TK·FC100	6	1" FLANGE CLAMP
TK·FC200	11	2" FLANGE CLAMP
TK·FC220	7	2"FP FLANGE CLAMP
TK·HB125SS	2	1-1/4 316SS HOSE BARB
TK·MVSF220FP	3	VALVE 2"FP FLANGE X 2"ADAPTOR
TK·MV100CF	2	1"VALVE/FLNGE X FLNGE FP
TK·MV200CF	1	2"VALVE/FLNGED X FLNGED
TK·M100PLG025	2	1"FLANGE PLUG W/1/4 FPT

TK·M100TEE	1	1"FLANGED TEE
TK·M100050FPT	2	1"FLANGE X 1/2FPT
TK·M200CR	1	2" FLANGED CROSS
TK·M200PLG075	1	2"STD PORT FLANGE PLUG W/3/4" FPT
TK·M200TEE	2	2" FLANGED TEE
TK·M201G	10	2"EPDM FLANGE GASKET/2"STD PORT
TK·M220TEE	1	2"FULLPORT FLANGED TEE
TK·M220100TEE	2	2"X2"X1" FP FLANGED TEE, POLYPROP
TK·M220200CPG	1	FLANGED REDUCER 2"FPX2"
TK·M221G	7	2"EPDM FLANGE GASKET/2"FULL PORT
TK·M700C	1	2"FLNGE X 1-1/2MPT ADPTR
TK·M700D	1	2"FLANGE X 2"MPT ADAPTOR
TK·M701E	1	2"FLANGE X 1-1/4 HB
TK·M701G	2	HOSE BARB 2 FLNGE X 2 HB
TK·M702A	1	90 ELBOW 1"FLNG X 3/4 HB
TK·M702E	1	90 ELBO 2"FLNG X 1-1/4HB
TK·M702I	1	90 ELBOW 2"FP FLNG X 2"HB
TK·PEL200	1	2MPTX2HB POLY ELBOW
TK·PEL3434	1	3/4MPTX3/4HB POLY ELBOW
TK·PEL3434	1	3/4MPTX3/4HB POLY ELBOW
TK·P075B	1	3/4 POLY COUPLER W/GUIDE LCK
TK·P075C	1	POLY COUPLER, 3/4"
TK·P075F	2	3/4 POLY ADAPTER
TK·P200B	1	2" MALE COUPLER
TK·P200C	3	2" SHANK COUPLER
TK·P200CAP	1	2" DUST CAP
TK·P200F	1	2" MALE ADAPTOR
TK·UB220	2	220 STAINLESS U-BOLT ASSY
TK·VSF200CF	2	2"VALVE/FLANGED X ADAPTR
TK·V10271	2	90 DEG MOUNT BRACKET, V100FP & V125
TK·V25271	3	90 MOUNTING BRACKET*F/V150-V300FP
TK·908-1/2	1	1/2 90 POLYPRO ST ELL
TW·B203	1	BRASS BARB-3/4MGHT X1/2B
TW·GV-3/4	1	3/4 BRONZE GATE VALVE-IMPORT
UT·E989NNJ	1	PVC ENCLOSURE W/ LID,4X4X2,NEMA 4X
UT·LPCG50	2	PLASTIC STRAIN RELIEF,F/0.20-0.472 CABLE
UT·LT20D	1	1/2" NONMETALLIC 90 FITTING
UT·LT43D	1	1/2" NONMETALLIC STRAIGHT FITTING
UT·15005-100	12	1/2 LIQUIDTIGHT NONMETAL FLEX CONDUIT
ZS·SPN9	1	9/16" LOOP CLAMP
ZV·MC-2CLAMP	1	PUSH CLOSE CLAMP HNGR FOR 2" PVC
ZV·MC-3/4CLAMP	2	PUSH CLOSE CLAMP HNGR FOR ¾ PVC