## PSDS DUAL TANK MIX & DELIVERY BICARB SYSTEM DISINFECTION PROCEDURE

### Introduction

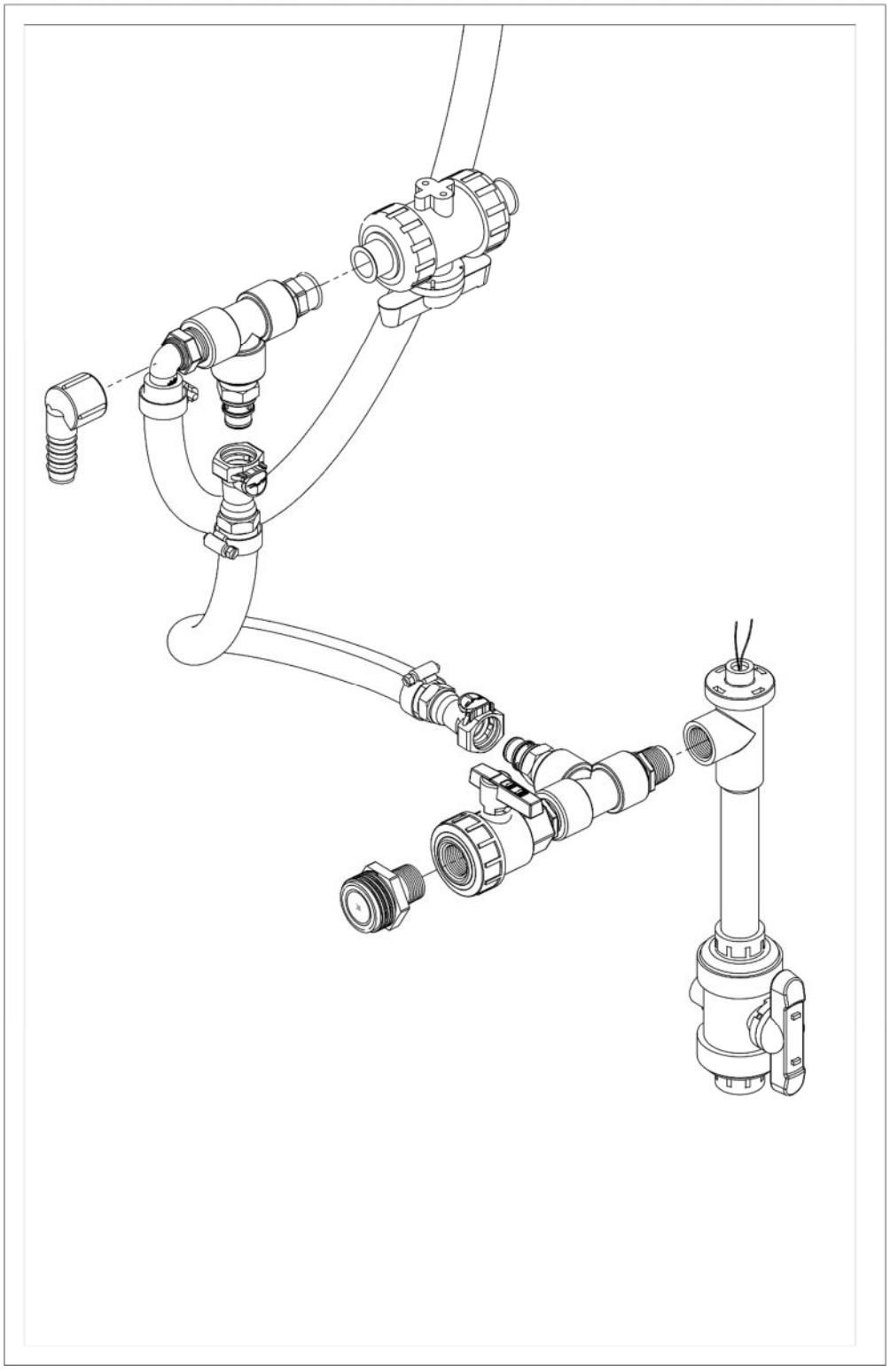
This procedure is to improve the disinfection process of the entire bicarb mix and delivery system with added attention to the main inlet water feed line, primarily when hot water loop disinfection has been incorporated into the dialysis water distribution system. It is used on the PSDS model, either 100-gallon and/or 70-gallon systems. This procedure is intended to be incorporated into the existing one as stated in the latest revision of the Pressurized Solution Distribution System Operation & Maintenance Manual.

### Parts Required

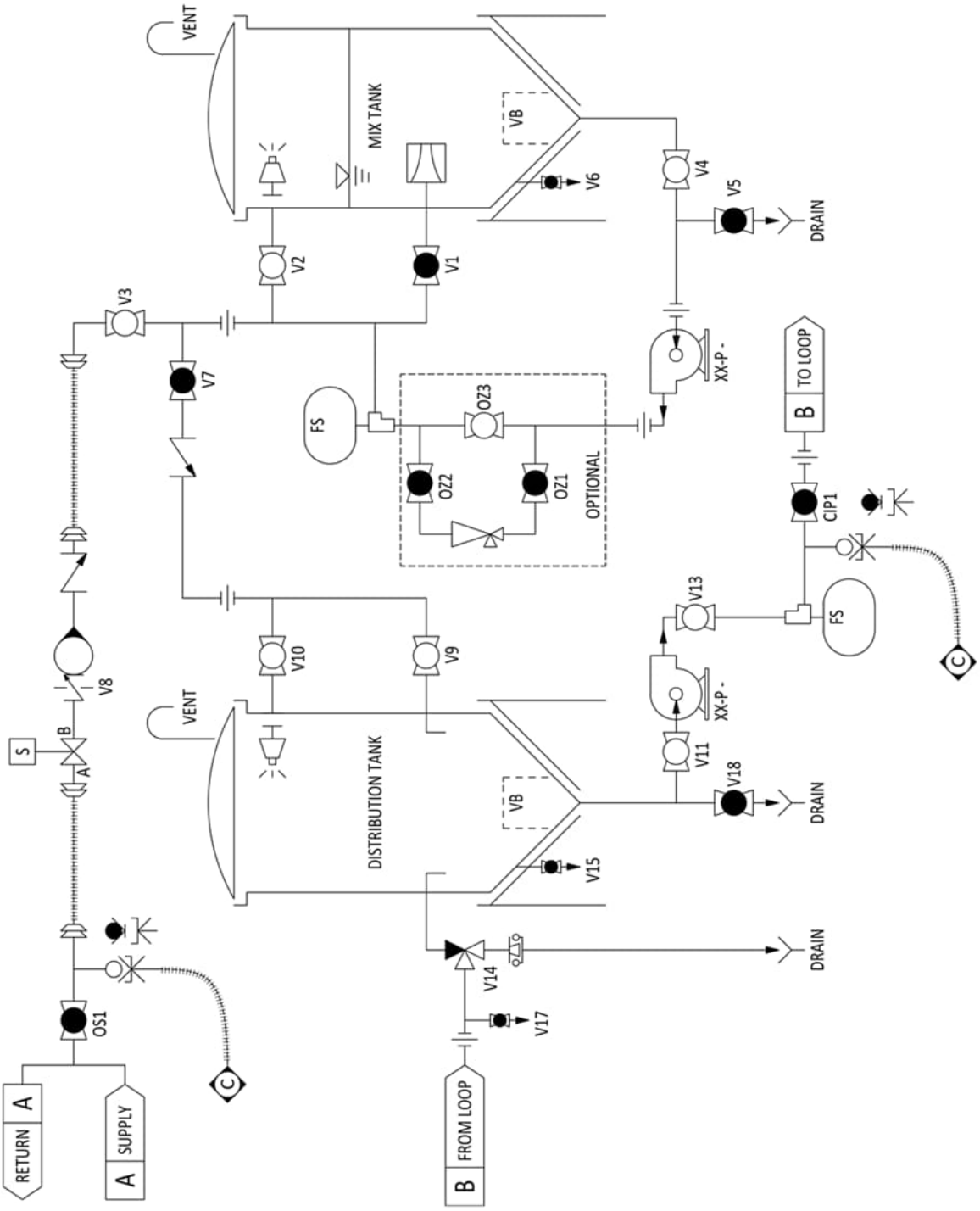
Kit (W3T578022)

This kit includes the necessary parts, fittings, and instructions to update your current PSDS model plumbing arrangement allowing you to disinfect the inlet hydraulic path when used with a heat disinfect RO water distribution loop. This kit should be installed just prior to a scheduled disinfection procedure of your PSDS unit.

Illustration with new parts installed



Schematic showing new parts installed



**Procedure:** Use the following STEPS to perform the PSDS Inlet Disinfection Procedure.

**WARNING: Wear gloves, eye protection and protective clothing as required by the chemical manufacturer and your clinic's Policy and Procedures.**

**WARNING: Place a label on the Bicarb system stating "WARNING: DO NOT USE".**

**Mix Tank Fill Procedure**

1. Ensure the availability of an inlet water supply.
2. Prepare the PSDS for mix tank fill.
    a. Ensure valves V1, V3, V4 and V5 are open.
    b. Ensure valves V2, V6 and V7 are closed.

**NOTE:** For systems with ozone, OZ3 should be open and OZ1 and OZ2 should be closed.

3. Ensure the Main Power switch is in the ON position. Ensure the Distribution Tank Low Level Alarm switch is set to BYPASS/RESET.
4. Turn the Mix Tank Auto Fill hand switch to the MANUAL position and hold.
5. Verify water is flowing into the mix tank.
6. Set the flow meter valve, V8, to 2.5 GPM.
7. Release the Mix Tank Auto Fill hand switch.
8. Prepare the PSDS for mix tank fill.
9. Close valve V5.
10. Set the Auto Fill Mode Timer for 20 minutes in combination with the previously set V8 fill rate of 2.5 GPM to fill the mix tank to 50 gallons.

    **Example:** 2.5 GPM x 20 minutes = 50 gallons.

    a. The Auto-Fill Mode Timer may be cancelled and reset at any time during the countdown period by turning the Mix Tank Auto Fill switch to the START position.
    b. Resetting the timer during the countdown period will result in an incorrect volume of water in the mix tank. If the timer is initiated, the fill timer will operate for the original timer setting.

11. Turn the Mix Tank Auto Fill switch to the START position and release. The timer will blink "ON".

**NOTE:** As the timer counts down the display will be reduced from a full black bar to a dashed white bar and OFF OUTPUT will be shown when finished.

12. Verify the fluid level in the mix tank once filling is complete.

    a. If additional water is required, the Mix Tank Fill hand switch may be held in the Manual position until the needed level is reached or the timer may be reset with a calculated fill rate and the switch set to the START position.

    b. If the water level is greater than what is required, the mix tank drain valve, V5, can be opened until the desired level is reached.

13. When tank is filled to the proper water level, close valve V3.

**WARNING: The Inlet Water valve (V3) should be closed at all times except when the mix tank is being filled with water. The Transfer Valve (V7) should remain closed at all times except when intentional transfer of solutions is to occur. If these valves are left open during treatments, and the inlet solenoid valve fails, the bicarbonate solution will be diluted, causing interruption of treatment.**

**Disinfect Solution Mix Procedure**

Please read and follow all the chemical manufacturers' instructions and labels regarding the preparation of chemical solution before continuing with this procedure.

**WARNING: Thoroughly follow all manufacturer recommendations for mixing and testing the chemical solution.**

1. Open the mix tank lid and slowly add the appropriate amount of chemical to the mix tank.
2. Close the mix tank lid.
3. Ensure valve V3 is closed.
4. Turn the Mix Pump hand switch to the MIX position and verify the water and chemical is circulating.
5. Allow the solution to thoroughly mix.
6. Open valve V2.
7. Close valve V1

**NOTE:** The Mix Pump will operate for a maximum of 10 minutes. If additional mixing is required, cycle the hand switch from Mix to OFF to MIX to restart pump.

8. Verify the solution is completely mixed by checking with the applicable chemical test strip.
    a. A sample can be taken from the mix tank sample valve V6.
    b. Continue mixing until the solution is completely mixed and a positive result has been achieved from sample valve V6.
9. Turn the Mix Pump hand switch to the OFF position.
10. Chemical solution is ready to be transferred to the distribution tank.

**Chemical Solution Transfer Procedure**

1. Ensure the chemical solution has been tested and is ready for use.
2. Position the PSDS valves for distribution tank fill.
    a. Open valve V7.
    b. Close valve V1.
    c. Ensure valves V4 and V9 are open.
    d. Ensure valves V2, V3, V5, V10, V15, V17 (sample valve), and V18 are closed and close V13 and CIP valve CIP1.
    e. Ensure valve V14 is set to tank return (three-way valve handle towards tank).
3. Turn the Mix Pump hand switch to the TRANSFER position and verify the solution begins transferring.

**NOTE:** The solution will continue to transfer until the Mix Pump float is engaged and the low flow alarm is activated.

4. When the Mix Tank goes empty, press the mute switch to silence the alarm and turn the Mix Pump Hand Switch to the OFF position. Close valve V7.
5. Turn the Distribution Tank Low Level Alarm switch to the ON position.

**NOTE:** The amber switch light will remain illuminated only when the switch is in the BYPASS/RESET position as a reminder to the operator that the Low-Level alarm is disabled.

**WARNING: Valve V7 should only be OPEN during intentional transfer of fluid between mix and distribution tanks.**

**Inlet Chemical Disinfect Procedure**

1. Position the PSDS valves for inlet chemical disinfection.
    a. Ensure valves V1, V3, V11 and V13 are open.
    b. Ensure valve V7 and CIP valve CIP1 is closed.
    c. Rotate valve V14 to drain (handle will point towards distribution loop).
2. Connect CIP hose to the Distribution Pump outlet QD and the other end to the CIP supply inlet QD.
3. At this time, you may increase the flow rate of V8 if desired.
4. Turn Mix Tank Auto Fill to START to open the inlet solenoid valve.

**NOTE:** If at any time the inlet solenoid valve shuts off, turn the Mix Tank Auto Fill to START to open the valve and again allow RO water to enter the Mix Tank.

5. Allow the chemical solution to transfer back to the Mix Tank until the Distribution Pump flow switch is activated and the pump shuts off.

**NOTE:** If a longer contact time is desired or necessary to effectively meet the standards for bacteria and endotoxin levels, repeat the **Chemical Solution Transfer Procedure** and the Inlet **Chemical Disinfect Procedure**.

**Mix Circuit and Tank Rinse Out Procedure**

1. Open Mix Tank valve V4 and drain valve V5 to fully drain the Mix Tank.
2. Turn Mix Tank Auto Fill switch to START.
3. Valve V1 should be open.
4. Valve V2 should be closed.
5. The Mix Tank should be now flushing through valve V1.
6. Allow flushing to continue through valve V1 for 5 minutes.
7. Open valve V2 and close V1 to allow RO to rinse the Mix Tank walls down and out drain valve V5.
8. Close valves V4 and V5 to allow the Mix Tank to fill.
9. When the Mix Tank fills to 50 gallons, turn off the supply water shut off valve.

**NOTE:** If at any time the inlet solenoid valve shuts off, turn the Mix Tank Auto Fill to START to open the valve and again allow RO water to enter the Mix Tank.

10. Test sample valve V6 using an applicable chemical test strip for a negative residual for chemical.

11. Open valves V4 and V5 and using an applicable chemical test strip test for negative residual for chemical from drain valve V5.

12. Repeat Mix Tank fill and drain procedure until negative residual results are achieved at valves V5 and sample valve V6.

13. After negative residual results are achieved at valve V5 and at sample valve V6, the Mix Circuit and Tank Rinse Out Procedure is complete.

**Distribution Circuit and Tank Rinse Out Procedure**

1. Open Distribution Tank drain valve V18.

2. Be sure valve V11, and valve V13 are still open.

3. Open the supply water shut off valve to allow the RO water to flush through the CIP hose and distribution pump to drain through valve V18 for 5 minutes.

4. Close valve V11.

5. Remove CIP jumper hose.

6. Open valves V3, V7, V9, and V18.

7. Close valve V10.

8. Be sure valves V1, V2, V4, and V5 are closed.

9. Turn the Mix Tank Auto Fill switch to START and allow the RO water to flush through V9 to drain through V18 for 5 minutes.

10. Open valve V10 and close valve V9 and allow the RO water to rinse the Distribution Tank's walls down and out through V18 for 5 minutes.

11. Close drain valve V18 and allow the Distribution Tank to fill to 50 gallons.

**NOTE:** If at any time the inlet solenoid valve shuts off, turn the Mix Tank Auto Fill to START to open the valve and again allow RO water to enter the Distribution Tank.

12. Test sample valve V15 using an applicable chemical test strip for a negative residual for chemical.

13. Open valve V18 and using an applicable chemical test strip test for a negative residual from drain valve V18.

14. Repeat Distribution Tank fill and drain procedure until negative residual results are achieved from sample valve V15 and drain valve V18.

15. After negative residual results are achieved at valve V5 and sample valve V6, the Distribution Circuit and Tank Rinse Out Procedure is complete.

**WARNING: If the disinfection procedure was initiated prior to a new batch of bicarbonate being made, a residual test should be performed prior to the start of the mixing cycle. (Note: See the Bicarb Rinse Procedure).**

Please be sure to contact Technical Support at 888-595-0666 if you have any questions or require further assistance.