AKS-BM2-2 DUAL TANK AUTOMATIC BICARB MIXING AND DELIVERY SYSTEM

“CAUTION”: FEDERAL LAW RESTRICTS THIS DEVICE TO SALE BY OR ON THE ORDER OF A PHYSICIAN

INDEX

REQUIREMENTS

PLUMBING:

FEED WATER:

MINIMUM SIZE 3/4" PVC R.O. OR DE-IONIZED WATER LINE

DRAIN:

FLOOR SINK OR 1.5" DRAIN PIPE WITH AIR GAP

ELECTRICAL:

120 VAC, 60 HZ., 1 PHASE, 20 AMP. SERVICE.

WARNING

MIXED BICRB SOLUTION MUST BE RINSED FROM THE SYSTEM AND BICARB LOOP TO THE DIALYSIS MACHINES AT THE OF EACH DAY. REFER TO THE RINSE PROCEDURE IN THIS MANUAL. BICARB SOLUTION MUST NOT BE KEPT IN THE SYSTEM OVER NIGHT.

STORING BICARB SOLUTION OVER NIGHT MAY CONTRIBUTE TO ORGANIC GROWTH THAT CAN BE HARMMFUL TO THE PATIENTS.

OPERATING INSTRUCTIONS

PRIMING THE LOOP

IF THE LOOP HAS BEEN RINSED OF BICARB SOLUTION, THE LOOP MUST BE PRIMED BEFORE STARTING THE DIALYSIS MACHINES.

WARNING:

THE FOLLOWING MUST BE PERFORMED TO PREVENT RINSE WATER IN THE BICARB LOOP FROM DILUTING THE BICARB SOLUTION IN THE DELIVERY TANK.

START-UP PROCEDURE:

1) TURN THE 3-WAY VALVE ON THE LEFT SIDE OF THE OF THE DISTRIBUTION TANK TO "DRAIN".

2) CLOSE VALVE "BV2" AT THE BOTTOM OF THE MIX TANK, AND TURN ON THE PURIFIED WATER VALVE LOCATED ON THE PURIFIED WATER LINE ON THE WALL.

3) TURN ON THE "POWER" SWITCH.

4) PRESS THE "RESET" SWITCH TO START FILLING THE MIX TANK. WATER WILL ENTER THE TANK THROUGH THE INLET SPRAYER AT THE TOP OF THE TANK. KEEP THE LID CLOSED TO PREVENT OVER-SPRAY.

5) WHEN THE TANK IS FULL, THE INLET WATER SOLENOID WILL AUTOMATICALLY CLOSE. ADD _____ BAGS OF BICARB POWDER. **THE NUMBER OF BAGS TO BE USED IS DETERMINED BY THE VOLUME PER BAG AND THE CONCENTRATION REQUIRED. THIS INFORMATION MUST BE OBTAINED FROM THE BICARB POWDER MANUFACTURER.**

6) TURN ON THE MIXER AND ALLOW THE BICARB POWDER TO MIX FOR THE TIME PRESCRIBED BY THE BICARB POWDER MANUFACTURER. **IF THE CONDUCTIVITY IS NOT WITHIN LIMITS AFTER MIXING, THE SOLUTION WILL NOT TRANSFER TO THE DISTRIBUTION TANK.**

7) PRESS THE "TRANSFER" SWITCH ON THE CONTROL UNIT. THE TRANSFER PUMP WILL START AND THE TRANSFER SOLENOID ON THE DISTRIBUTION TANK WILL OPEN. WHEN THE MIX TANK IS EMPTY OR THE DISTRIBUTION TANK IS FULL, THE TRANSFER SOLENOID WILL CLOSE THE TRANSFER PUMP WILL SHUT OFF.

8) OPEN VALVES "BV6" AND CLOSE "BV7" LOCATED UNDER THE DISTRIBUTION TANK. TURN ON THE RINSE PUMP TO PRIME THE BICARB LOOP WITH BICARB SOLUTION. A SAMPLE VALVE IS LOCATED ON THE “RETURN PIPE” ON

THE LEFT SIDE OF THE DISTRIBUTION TANK (LOCATED NEXT TO THE 3-WAY VALVE). TEST THIS SAMPLE PORT EVERY 30 SECONDS WITH A PORTABLE CONDUCTIVITY METER UNTIL THE RETURN INDICTAES PROPER CONDUCTIVITY. AT THIS TIME, ANOTHER BATCH OF BICARB CAN BE MIXED.

9) WHEN THE RETURN TO DRAIN INDICATES BICARB IS IN THE LOOP, TURN THE 3- WAY VALVE TO "RETURN TO TANK" AND TURN OFF THE RINSE PUMP.

10) ONCE THE BICARB LOOP TO THE DIALYSIS MACHINES IS PRIMED, TURN ON THE "DISTRIBUTION " PUMP. ADJUST VALVE "BV3" FOR THE CORRECT PRESSURE AT THE DIALYSIS MACHINES. **THIS NEDS TO BE PERFORMED ONLY DURING THE INITIAL SETUP OF THE SYSTEM.**

11) A "LOW LEVEL" FLOAT SWITCH WILL ACTIVATE A LOW LEVEL ALARM LIGHT AT THE NURSES MONITOR WHEN THE BICARB LEVEL IN THE TANK DROPS BELOW 2/3 OF FULL CAPACITY.

10) A PUMP SHUT-OFF FLOAT SWITCH WILL SHUT OFF THE DISTRIBUTION PUMP, AND THE RINSE PUMP, WHEN THE TANK IS EMPTY.

RINSE PROCEDURE:

CAUTION - RINSING THE SYSTEM SHOULD BE PERFORMED PRIOR TO INTRODUCING BLEACH TO DISINFECT THE MIX AND DELIVERY TANKS, AND LOOP. FAILURE TO RINSE THE BICARB FROM THE SYSTEM MAY CAUSE BICARB TO PRECIPITATE IN THE PUMPS, SOLENOIDS AND BICARB LOOP. **RINSING WITH RO WATER SHOULD ALSO BE PERFORMED AT THE END OF EACH DAY.**

1) TURN OFF THE DISTRIBUTION PUMP, AND TRUN ON THE DISINFECT KEY. THIS WILL ACTIVATE AN AUDIBLE AND VISUAL ALARM ON THE CONTROL UNIT, AND AT THE NURSES MONITOR, AND WILL ALLOW THE MIX TANK TO TRANSFER DISINFECTING SOLUTION OR RINSE WATER TO THE DISTRIBUTION TANK. **A FIVE MINUTE TIME DELAY WILL BE ACTIVATED BEFORE THE TRANSFER CAN TAKE PLACE.**

2) TURN THE 3-WAY VALVE ON THE SIDE OF THE DISTRIBUTION TANK TO "DRAIN".

3) OPEN VALVE "BV1" AND “BV3” AT THE BOTTOM OF THE MIX TANK. ALLOW THE MIX TANK TO EMPTY TO DRAIN.

4) PRESS THE "RESET" SWITCH TO REFILL THE MIX TANK. ALLOW THE SPRAYER TO WASH THE INSIDE OF THE MIX TANK. RINSE THE TANK TO DRAIN FOR 10 MINUTES.

5) CONNECT A RINSE HOSE FROM THE R.O. PIPE ON THE WALL TO THE SPRAYER CONNECTION ON THE SIDE OF THE DISTRIBUTION TANK. OPEN THE

BALL VALVE ON THE R.O. PIPE AND ALLOW THE DISTRIBUTION TANK TO RINSE TO DRAIN FOR 10 MINUTES.

6) CLOSE VALVE "BV3" AND ALLOW THE MIX TANK TO FILL. THE INLET SOLENOID WILL SHUT OFF AUTOMATICALLY WHEN THE TANK IS FULL.

7) PRESS THE "TRANSFER" SWITCH TO FILL THE DISTRIBUTION TANK. YOU WILL REQUIRE TWO TRANSFERS FROM THE MIX TANK TO FILL THE DISTRBUTION TANK.

8) AFTER AT LEAST ONE TRANSFER HAS BEEN MADE FROM THE MIX TANK, TURN ON THE "RINSE" PUMP AND TURN THE 3-WAY BALL VALVE TO "DRAIN". THIS WILL PUMP THE WATER FROM THE DISTRIBUTION TANK THROUGH THE BICARB LOOP AND RINSE IT TO DRAIN. TURN ON THE "DISTRIBUTION " PUMP AND ALLOW IT TO RINSE. THE BICARB LOOP PIPE SIZE AND DISTANCE WILL DETERMINE THE NUMBER OF TRANSFERS OF PURIFIED WATER NEEDED TO PROPERLY RINSE THE LOOP AND DELIVERY TANK.

9) TURN ON THE DISTRIBUTION PUMP AND THE RINSE PUMP. ALLOW THESE PUMPS TO FLUSH THE BICARB FROM THE SYSTEM AND THE BICARB LOOP, TO DRAIN. WHEN THE TANK IS EMPTY, BOTH PUMPS WILL SHUT OFF AUTOMATICALLY.

DISINFECTION PROCEDURE FOR AKS-BM2-2 BICARB SYSTEM

DISINFECTING THE AKS-BM2-2 BICARB SYSTEM:

DISINFECTION SHOULD BE PERFORMED ONCE A WEEK

BEFORE PROCEDING: BE SURE NO PATIENTS ARE ON DIALYSIS AND NO PATIENTS ARE SCHEDUALED FOR DIALYSIS.

DISINFECTION MUST BE PERFORMED ONCE A WEEK.

Caution - Rinsing the system must be performed prior to introducing bleach to disinfect the mix and delivery tanks and loop. Failure to rinse the bicarb from the system may cause bicarb to precipitate in the pumps, transfer solenoid and bicarb loop. **Rinsing must also be performed at the end of each day.**

RINSE PROCEDURE PRIOR TO DISINFECTON

1. Turn off the bicarb Delivery Pump and turn on the disinfect key. This will activate an audible and visual alarms on the control unit and at the nurses monitor, and will allow the mix tank to transfer disinfecting solution or rinse water to the Distribution Tank. **A ten-minute time delay will be activated before the transfer can take place.**

2. Turn the 3-way valve on the left side of the Distribution Tank " TO DRAIN " (red ball valve points down.)

3. Open valves "BV1" and "BV3" at the bottom of the Mix Tank, and allow the Mix Tank to empty to drain.

4. Press the "Reset Fill" switch to refill the Mix Tank. Allow the sprayer to wash the inside of the Mix Tank to drain for 5 minutes. Close "BV3" and allow the Mix Tank to fill.

5. Open "Distribution Tank Rinse" valve on the R.O. pipe behind the Distribution Tank and open valve "BV7" on the bottom of the Distribution Tank. Allow the tank to rinse to drain for 5 minutes.

6. After the 5-minute rinse, close "BV7 " and "Distribution Tank Rinse" valve. **Caution: If the Distribution Tank Rinse Valve is left open the Distribution Tank will overfill.**

7. Follow Vinegar rinse procedure before continuing with disinfection.

VINEGAR RINSE PROCEDURE

1. After rinsing bicarb from both the Mix Tank and the Distribution Tank, fill the Mix Tank by pressing “Reset Fill”. After the Mix Tank is full, add one gallon of vinegar.

2. Check that the 3-way valve on left side of Distribution Tank is still turned “TO DRAIN”.

3. Press “Mixer” switch. The Mixe Tank will run 15 minutes before shutting off.

4. When “Mixer” light goes out, the mix cycle is complete. Press the “Transfer” switch to transfer the vinegar solution to Distribution Tank.

5. Turn on the “Delivery Pump” and “Rinse Pump”. Allow the vinegar to circulate through the loop and out to drain. The Delivery and Rinse pumps will shut off automatically when the Distribution Tank is empty.

6. Open “BV3” under the Mix Tank. Press “Reset Fill” to rinse the Mix Tank to drain for 5 minutes. Then close “BV3”. Allow the Mix Tank to fill with RO water, then transfer the RO water to the Distribution Tank. THE DISINFECT KEY NEED TO BE IN THE DISINFCT MODE TO ALLOW YOU TO TRANSFER A SOLUTION THAT IS NOT WITHN LIMITS.

7. Open the “Distribution Tank Rinse” valve on the R.O. pipe behind the Distribution Tank and allow the Distribution Tank to fill to 100 gallons.

8. Turn on the “Delivery Pump” and “Rinse Pump” to rinse the vinegar from the loop by circulating R.O. water through the loop and out to drain. When the vinegar is completely rinsed out of the bicarb loop, turn off Delivery and Rinse pumps. Continue with bicarb system disinfection procedure.

DISINFECTION PROCEDURE FOR AKS-BM2-2 BICARB SYSTEM

BEFORE PROCEDING: BE SURE NO PATIENTS ARE ON DIALYSIS AND NO PATIENTS ARE SCHEDUALED FOR DIALYSIS.

DISINFECTION MUST BE PERFORMED ONCE A WEEK.

Caution - Rinsing the system must be performed prior to introducing bleach to disinfect the mix and delivery tanks and loop. Failure to rinse the bicarb from the system may cause bicarb to precipitate in the pumps, transfer solenoid and bicarb loop. **Rinsing must also be performed at the end of each day.**

RINSE PROCEDURE PRIOR TO DISINFECTON

8. **Turn off the bicarb Delivery Pump and turn on the disinfect key**. This will activate audible and visual alarms on the control unit and at the nurse's monitor, and will allow the mix tank to transfer disinfecting solution or rinse water to the Distribution Tank. **A ten-minute time delay will be activated before the transfer can take place.**

9. Turn the 3-way valve on the left side of the Distribution Tank " TO DRAIN " (red ball valve points down.)

10. Open valves "BV1" and "BV3" at the bottom of the Mix Tank, and allow the Mix Tank to empty to drain.

11. Press the "Reset Fill" switch to refill the Mix Tank. Allow the sprayer to wash the inside of the Mix Tank to drain for 5 minutes. Close "BV3" and allow the Mix Tank to fill.

12. Open "Distribution Tank Rinse" valve on the R.O. pipe behind the Distribution Tank and open valve "BV7" on the bottom of the Distribution Tank. Allow the tank to rinse to drain for 5 minutes.

13. After the 5-minute rinse, close "BV7 " and "Distribution Tank Rinse" valve. **Caution: If the Distribution Tank Rinse Valve is left open the Distribution Tank will overfill.**

14. Follow Vinegar rinse procedure before continuing with disinfection.

VINEGAR RINSE PROCEDURE

9. After rinsing bicarb from both the Mix Tank and the Distribution Tank, fill the Mix Tank by pressing "Reset Fill". After the Mix Tank is full, add two gallons of vinegar.

10. Check that the 3-way valve on left side of Distribution Tank is still turned "TO DRAIN".

11. Press "Mixer" switch. The Mix Tank will run 15 minutes before shutting off.

12. When "Mixer" light goes out, the mix cycle is complete. Press the "Transfer" switch to transfer the vinegar solution to Distribution Tank.

13. Turn on the "Delivery Pump" and "Rinse Pump". Allow the vinegar to circulate through the loop and out to drain. The Delivery and Rinse pumps will shut off automatically when the Distribution Tank is empty.

14. Open "BV3" under the Mix Tank. Press "Reset Fill" to rinse the Mix Tank to drain for 5 minutes. Then close "BV3". Allow the Mix Tank to fill with RO water, then transfer

the RO water to the Distribution Tank. THE DISINFECT KEY NEED TO BE IN THE DISINFCT MODE TO ALLOW YOU TO TRANSFER A SOLUTION THAT IS NOT WITHN LIMITS.

15. Open the “Distribution Tank Rinse” valve on the R.O. pipe behind the Distribution Tank and allow the Distribution Tank to fill to 100 gallons.

16. Turn on the “Delivery Pump” and “Rinse Pump” to rinse the vinegar from the loop by circulating R.O. water through the loop and out to drain. When the vinegar is completely rinsed out of the bicarb loop, turn off Delivery and Rinse pumps. Continue with bicarb system disinfection procedure.

BICARB SYSTEM DISINFECTION PROCEDURE

1. Turn the 3-way valve on the left side of the Distribution Tank to “ RETURN TO TANK”.

2. Press the “Reset Fill” switch to start filling the Mix Tank, when the tank is approximately ½ full, turn on the mixer by pressing the “ Mixer” switch. Allow the tank to fill to 50 gallons.

3. Add one gallon of Bleach to the Mix Tank. The mixer must complete the 15-minute mix cycle before allowing the transfer of bleach solution to Distribution Tank.

4. Press the “ Transfer” switch on the control unit to transfer the disinfecting solution to the Distribution Tank. The Transfer Pump will transfer the solution to the Distribution Tank. When the Mix Tank is empty the transfer pump will shut off.

5. A second tank of R.O. water must be transferred to the Distribution Tank to complete a 1-% disinfecting solution.

6. Turn on the Delivery Pump and the Rinse Pump. Allow the bleach solution to circulate through the bicarb loop and back to the Distribution Tank.

7. Verify with a chlorine test strip at the bicarb system drain, that the bleach solution has been pumped throughout the bicarb loop and is in the system. A sample can be taken from the sample valve located on the return line to the Distribution Tank.

8. Test for positive bleach at each bicarb port in the treatment area, and in both Biomed equipment rooms. ALL POINTS OF USE MUST BE TESTED. Complete the Bicarb System Station Checklist.

9. Allow the bleach solution to remain in the system and loop for a minimum of ½ hour.

DISINFECTION RINSE PROCEDURE

1. To rinse disinfectant from the bicarb system, turn the “3-way valve” on the left side of Distribution Tank “ TO DRAIN” and open valve “BV7” on the bottom of the Distribution Tank. The Delivery Pump will automatically shut off when tank is empty.

2. Open valves “BV1” and “BV3” at the bottom of the Mix Tank. Press “Reset Fill” to rinse the Mix Tank to drain for 5 minutes. Check for a negative disinfectant residual at the bicarb jug fill port on bottom of Mix Tank.

3. Close valve “BV3”, and allow the Mix Tank to fill to 50 gallons.

4. Open the “Distribution Tank Rinse” valve on the R.O. pipe behind the Distribution Tank and open valve “BV7” on the bottom of the Distribution Tank. Allow the tank to rinse to drain for 5 minutes. Close valve “BV7”.

5. Press the “Transfer” switch to fill the Distribution Tank with R.O. water.

6. After at least one transfer has been made from the Mix Tank, open valve “BV8” under Distribution Tank.

7. Turn on the “Rinse Pump” and verify the 3-way ball valve is pointing “TO DRAIN”. This will pump R.O. water from the Distribution Tank through the bicarb loop and rinse it to drain.

8. If off, turn on the delivery pump and allow it to rinse. The bicarb loop size will determine the number of transfers of R.O. water needed to properly rinse the loop and Distribution Tank.

9. Allow the pumps to flush the disinfectant from the bicarb loop to drain until the Distribution Tank and all points of use test negative for bleach with a chlorine test strip. Turn off the Rinse Pump and Delivery Pump.

10. Turn the 3-way ball valve on side of Distribution Tank to “RETURN TO TANK”.

11. Press the “Reset Fill” switch and fill the Mix Tank with R.O. water.

12. Once the Mix Tank is full, press the “Transfer” switch to transfer the RO water to the Distribution Tank.

13. Turn on the Delivery Pump and Rinse Pump to circulate R.O. water in the bicarb loop overnight.

14. Remove the 1-micron filter housing and replace the 1-micron filter.

15. Turn the Disinfect Key to normal run position and remove the key.

16. Complete the Bicarb System Disinfection Log.

PARTS LIST

DESCRIPTION	
LAMP, "MIXER ON" 110 VAC NEON	G100-750
LAMP, "TRANSFER" PUMP, 110 VAC NEON	G100-750
LAMP, "DELIVERY" PUMP, 110 VAC NEON	G100-750
LAMP, "POWER ON", 36 VAC	G700-154

LAMP, "TANK FILLING" 36 VAC	G700-154
SWITCH, "ON-OFF" SPST	G300-023
SWITCH, "RESET"	G300-893
FUSE, 1.0 AMP. S.B., "POWER"	G100-720
FUSE, 2.0 AMP. S.B., "DISTRIBUTION PUMP"	G100-892
FUSE, 6.0 AMP. S.B., "MIXER"	G100-754
FUSE, 15.0 AMP. S.B., "RINSE PUMP"	G100-893
INLET SOLENOID	G100-151
1” BALL VALVE	G500-610
½” BALL VALVE	G500-603
½” BALL CHECK VALVE	G500-617
¾” BALL CHECK VALVE	G500-608
FLOAT SWITCH, NORMALLY CLOSED	G300-027
MIXER MOTOR	G300-405
#316 STAINLESS STEEL 36” SHAFT	G300-891
#316 STAINLESS STEEL COUPLING	G300-890

#316 STAINLESS STEEL PROPELLER	G300-892
TRANSFER PUMP	G400-146
DISTRIBUTION PUMP	G300-782
RINSE PUMP	G300-895