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RainSoft®
Water Treatment Systems

**SILVER COMPOSITE
SERIES VALVE
Manufactured After June, 2000**

**Service
Manual**

Part No.: 15401
Rev. 12/01

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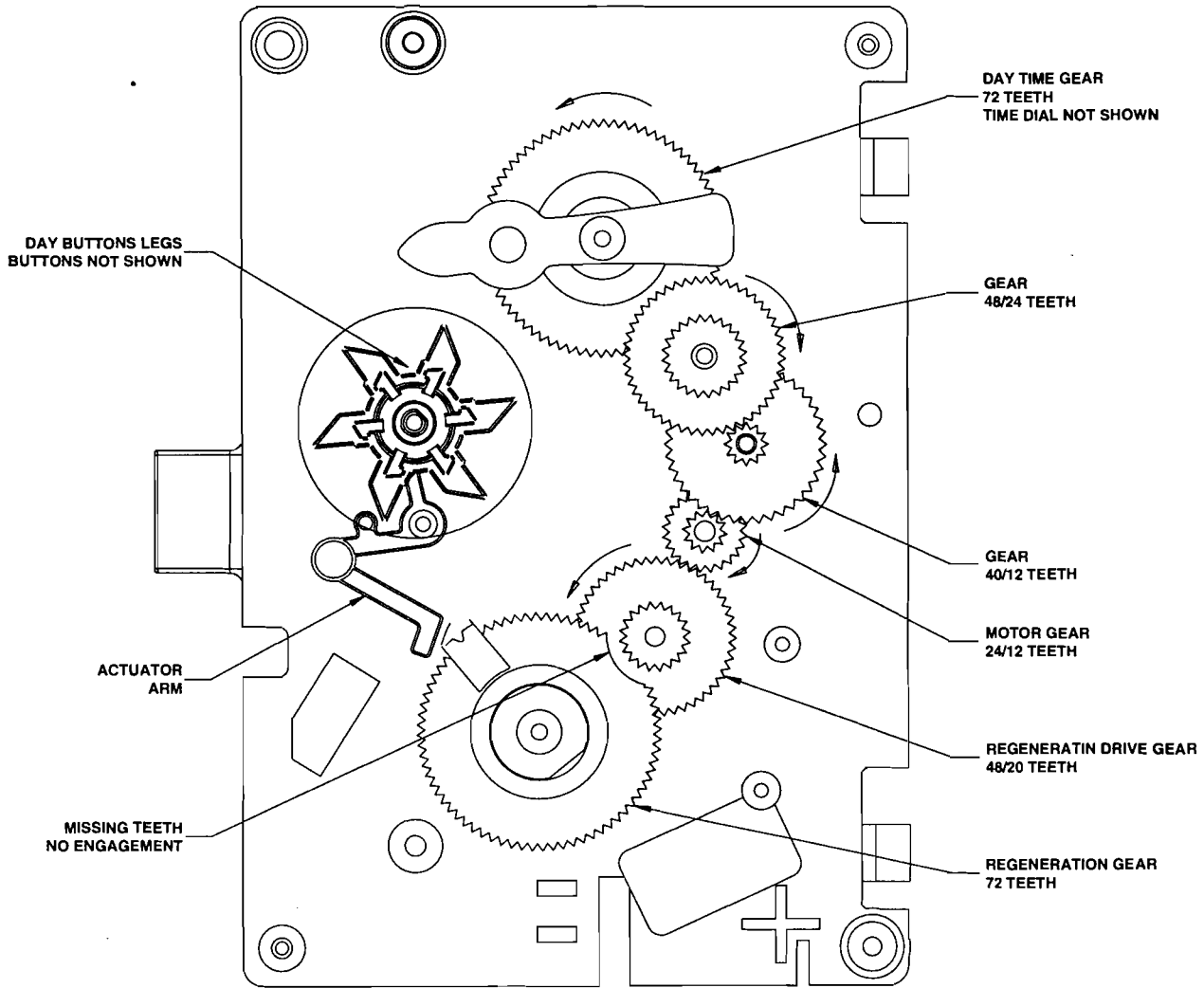
CHAPTER ONE

Water treatment devices sold to retail consumers in California, accompanied by certain health claims, must be certified by the State of California Department of Health Services. This product is not certified in California.

OPERATION & ADJUSTING THE TIMER MECHANISM

COMPONENTS OF THE TIMER MECHANISM

GEARS IDLE RUN (SERVICE TIME)



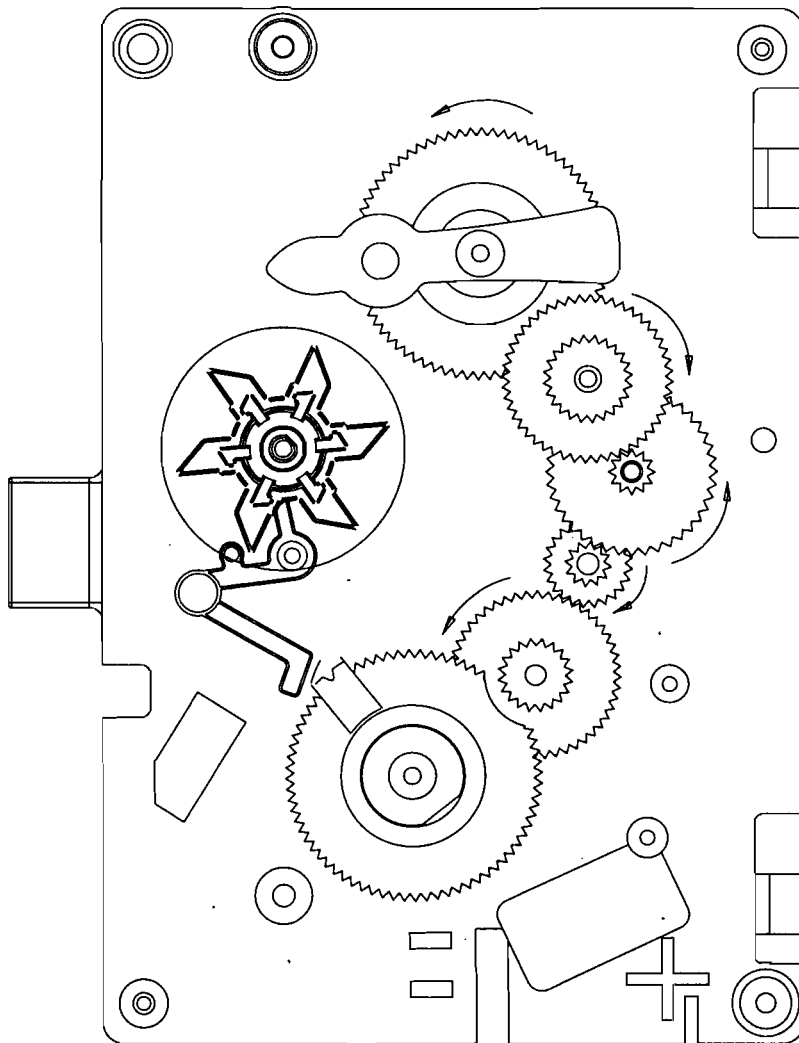
OPERATION OF THE TIMER MECHANISM

The Timer Motor gear drives the Mechanism. The speed of the motor gear is 1/30 revolutions per minute. You will not be able to verify its movement visually. Marking the motor gear with a felt tip pen is a good way to verify it is turning. The gear will rotate 360 degrees in 30 minutes (one rotation).

The motor gear drives the upper gear assembly that turns the time dial. The time dial makes one revolution every 24 hours. The gear motor also turns the lower gear assembly. However, it does not engage the regeneration cam unless it is going to move into regeneration.

Every 24 hours at the set regeneration time the regeneration arm rotates the day wheel. If the appropriate day pin is pushed in, the pin will push on the actuator arm, this will engage the regeneration cam.

Once the regeneration cam is engaged it will do one rotation. The mechanism is back at service when the missing teeth disengage the wheel.



CALCULATING AND SET UP OF THE MECHANISM

Test the water hardness and iron. Determine the number of people in the household. Is there an automatic dishwasher? A clothes washer?

Calculating Regeneration Schedule

- Calculate the regeneration schedule based on the number of people in the household, gallons used, number of grains of hardness and tank capacity. Proceed as follows:

Calculate gallons of water used per week:

- Take the number of gallons each person will use each week (average of 500 per person).
- Add 250 gallons for dishwasher and 250 for washing machine if applicable.
- Multiply by the number of people in their household (4 in this example) to find gallons of Water used per week.

Calculate the number of grains to be softened each week:

- Take the number of gallons used per week (2000 in this example).
- Multiply by the grains of hardness in each gallon (10 in this example).
- Add 5 grains of hardness for each part iron (1 ppm iron=5 grains). (10+5=15).
- Find the grains per gallon (gpg) to be treated each week. $15 \times 2000 = 30,000$ grains

Calculate the number of regenerations per week:

- Take the number of grains to be softened per week (30,000)
- Divide the total grains per week by 7 days to find out the grains per day.
- Take the grains per day and divide by the medium capacity for the unit selected.
- The result is the amount of days between regenerations.

$$\begin{array}{r} 500 \text{ gallons per person} \\ \times 4 \text{ number of people} \\ \hline 2,000 \text{ gallons} \\ \times 15 \text{ grains hard} \\ \hline 30,000 \text{ grains per week} \end{array}$$

Divide 30,000 by 7 days a week = 4285 grains per day

In this example we will use the medium capacity of a AMC 75 T of 14500. Now divide the medium capacity of 14500 by the grains per day of 4285 = 3.38 (remember always round down). This unit should regenerate every three days. A complete capacity-rating chart is on the following page.

CAPACITY CHART

Model	Low	Medium	High
AMC 50T	N/A*	9,800 Grains @ 5 lbs.	11,500 Grains @ 7.5 lbs.
AMC 50D	N/A*	14,300 Grains @ 5 lbs.	17,000 Grains @ 7.5 lbs.
AMC 60T	N/A*	10,625 Grains @ 5 lbs.	13,250 Grains @ 7.5 lbs.
AMC 60D	N/A*	13,000 Grains @ 5 lbs.	15,500 Grains @ 7.5 lbs.
AMC 75T	12,500 Grains @ 5 lbs.	14,500 Grains @ 7.5 lbs.	17,000 Grains @ 10 lbs.
AMC 75D	15,250 Grains @ 5 lbs.	20,500 Grains @ 7.5 lbs.	24,500 Grains @ 10 lbs.
AMC 100T	13,000 Grains @ 5 lbs.	19,875 Grains @ 10 lbs.	24,325 Grains @ 15 lbs.
AMC 100D	15,800 Grains @ 5 lbs.	25,700 Grains @ 10 lbs.	27,265 Grains @ 15 lbs.
AMC 150T	19,750 Grains @ 7.5 lbs.	29,800 Grains @ 15 lbs.	36,988 Grains @ 22.5 lbs.
AMC 150D	24,250 Grains @ 7.5 lbs.	38,580 Grains @ 15 lbs.	41,898 Grains @ 22.5 lbs.
AMC 250T	30,500 Grains @ 10 lbs.	44,000 Grains @ 20 lbs.	54,500 Grains @ 30 lbs.
AMC 250D	34,000 Grains @ 10 lbs.	56,000 Grains @ 20 lbs.	68,000 Grains @ 30 lbs.

*Low saltings are not recommended on these models.

SETTING THE TIME OF DAY, DAY OF THE WEEK, AND THE REGENERATION TIME.

To set the time of day pull out on the time dial and turn to the correct time.

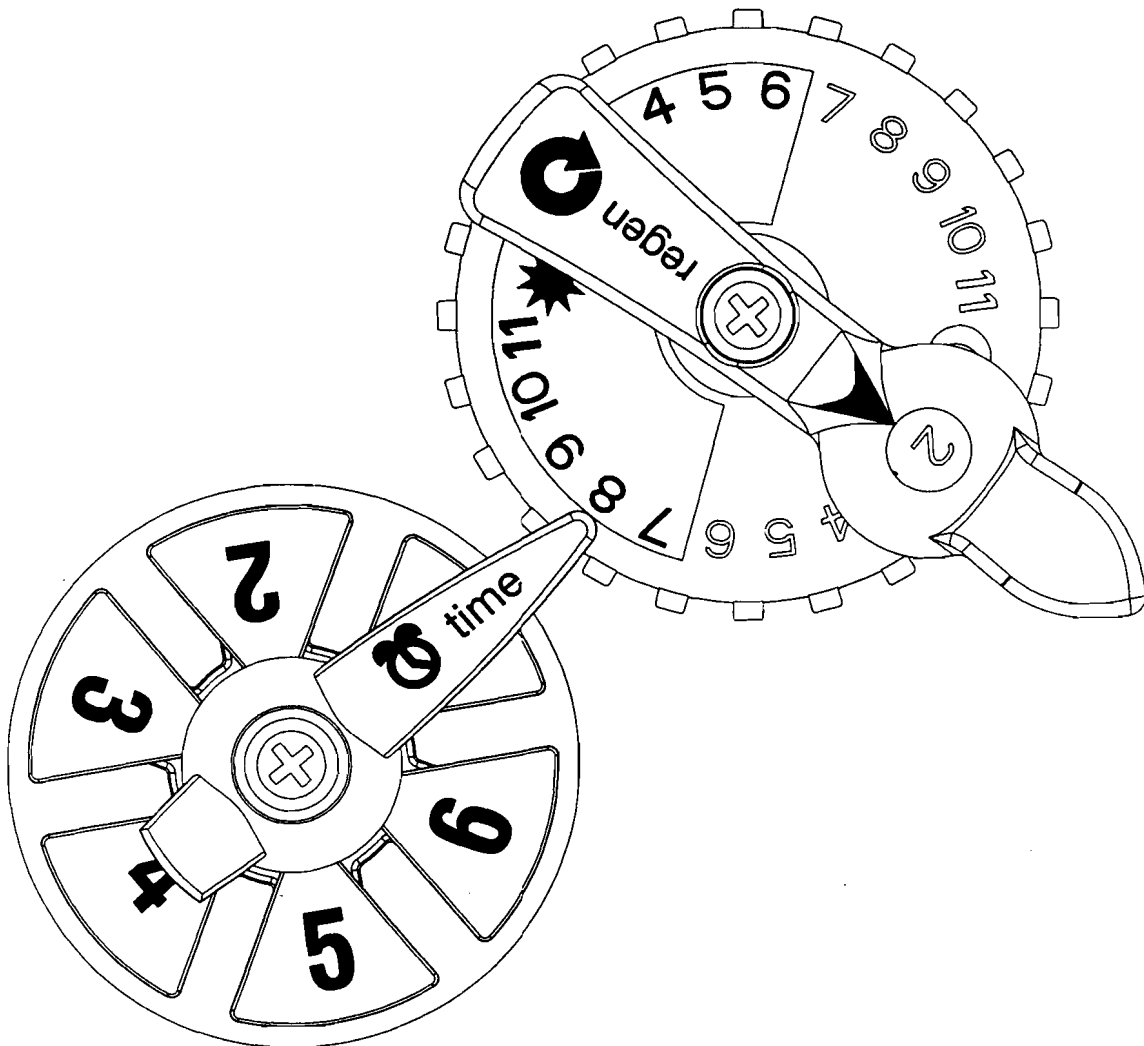
Note: The time indicator arrow is attached to the day wheel.

To set the regeneration time, pull out the arrow and set to the desired time.

Note: Ensure arrow springs back into place.

To set the frequency of regeneration, use the appropriate Capacity Chart. Locate the medium salt (lbs.) figure for the unit you are installing.

The capacity chart and instructions on how to calculate are listed on page 6 & 7.

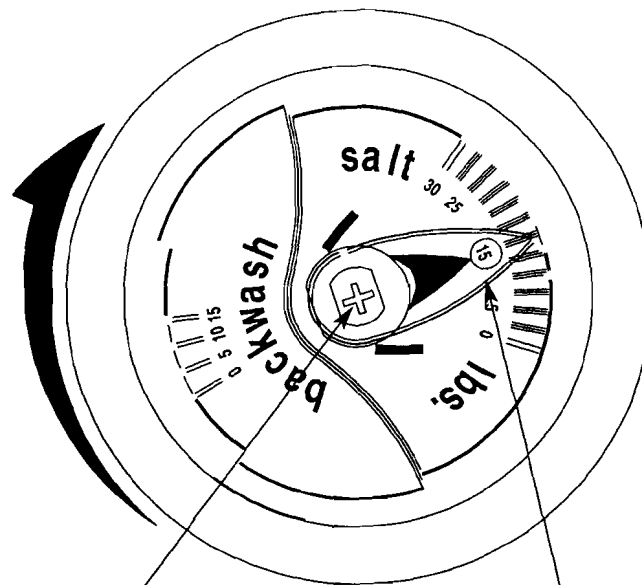


ADJUSTING THE SALT SETTINGS

The Regeneration cycle is set at the factory for a medium Salt and Low Backwash Time. Under certain conditions you may wish to change these settings.

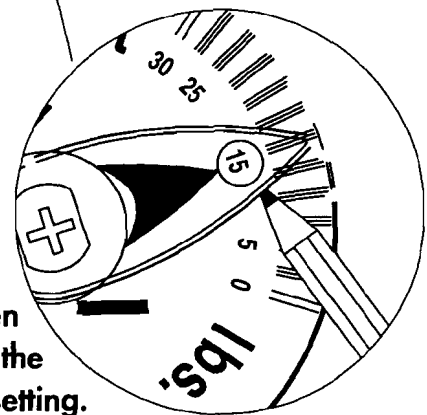
To adjust the salt setting, Hold the outside edge of the circuit timer and adjust the arrow to the proper amount of salt in pounds to be used.

Note: Do not turn the circuit timer, this will begin a regeneration. If a regeneration is accidentally started, rotate the circuit timer until the salt arrow is aligned with the word "reset" on the cover plate. This will return the valve back to service.



NOTE: Do not loosen this screw for adjustment, only for disassembly.

NOTE: The easiest way to adjust the pointer is to use a tip of a pen or pencil. Then lift slightly up on the arrow and adjust to the proper setting.

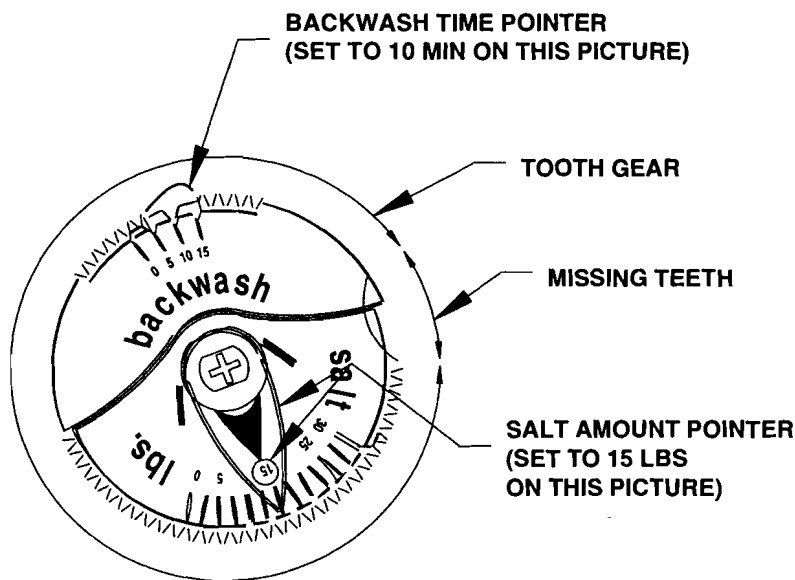


ADJUSTING THE BACKWASH SETTINGS

To adjust the backwash time, hold the arrow and turn the circuit timer to the proper minutes you want to use in backwash.

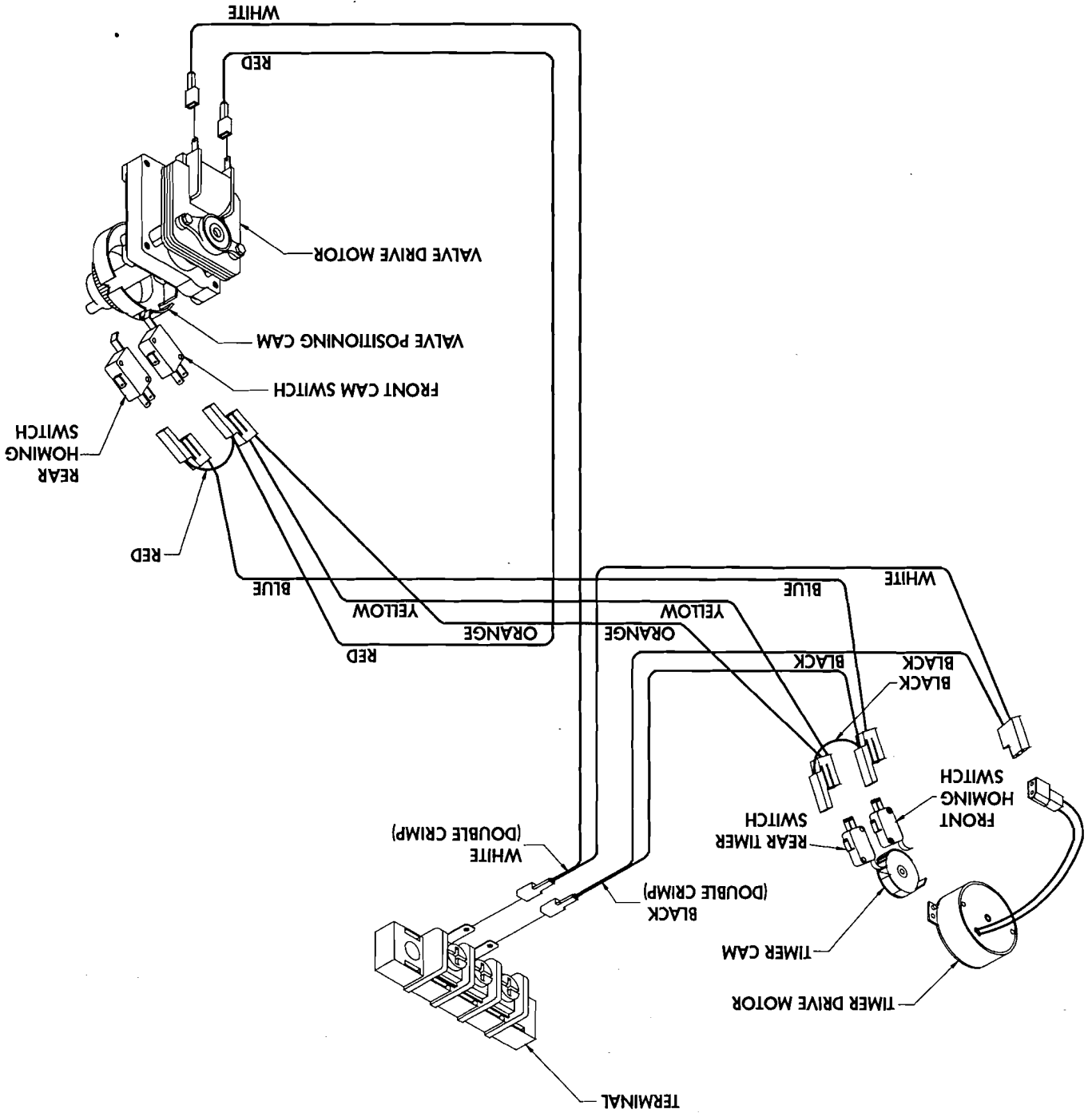
Note: Do Not Turn the circuit timer, this will begin a regeneration. If a regeneration is accidentally started, rotate the circuit timer until the salt arrow is aligned with the word "reset" on the cover plate. This will return the valve back to service.

BACKWASH TIME & SALT AMOUNT DIALS



ADJUSTMENTS FOR PROBLEM WATER

- If there is Iron in the water increase the backwash time to 15 minutes.
- If Iron is present in the raw water, an iron cleaner should be used each time salt is added. Follow the manufacturer's directions on proper use and handling. In some areas salt with iron cleaners additives is available.
- If the Iron content is greater than 3 PPM the salt setting should always be set on the High Setting for that particular model.
- Be careful when making adjustments you could move the circuit timer far enough to start regeneration. If a regeneration is accidentally started, rotate the circuit timer until the salt arrow is aligned with the word "reset" on the cover plate. This will return the valve back to service.

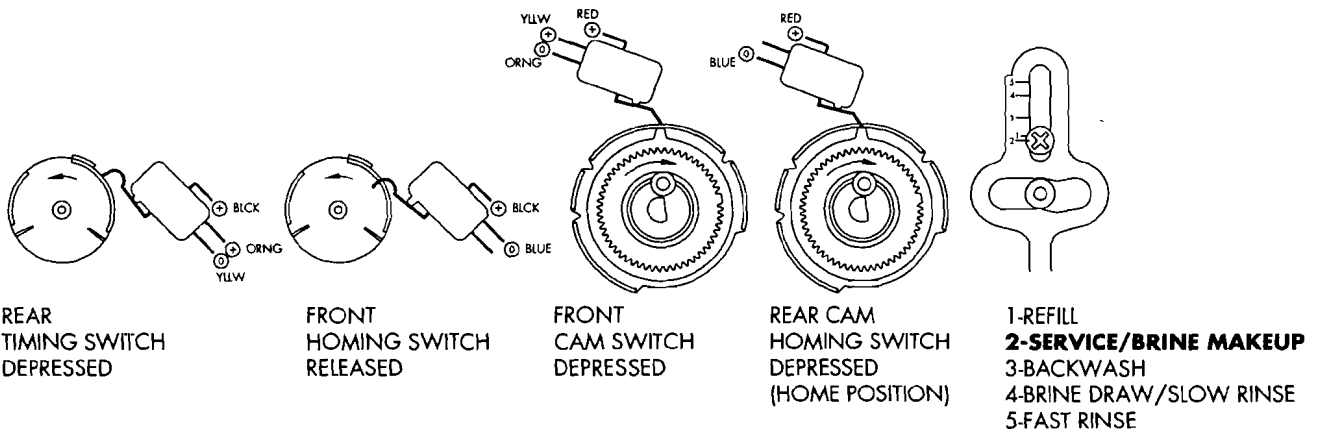


SILVER SERIES WIRE DIAGRAM

REGENERATION CAM AND VALVE CAM POSITIONING INCLUDING SWITCH AND PISTON POSITIONS.

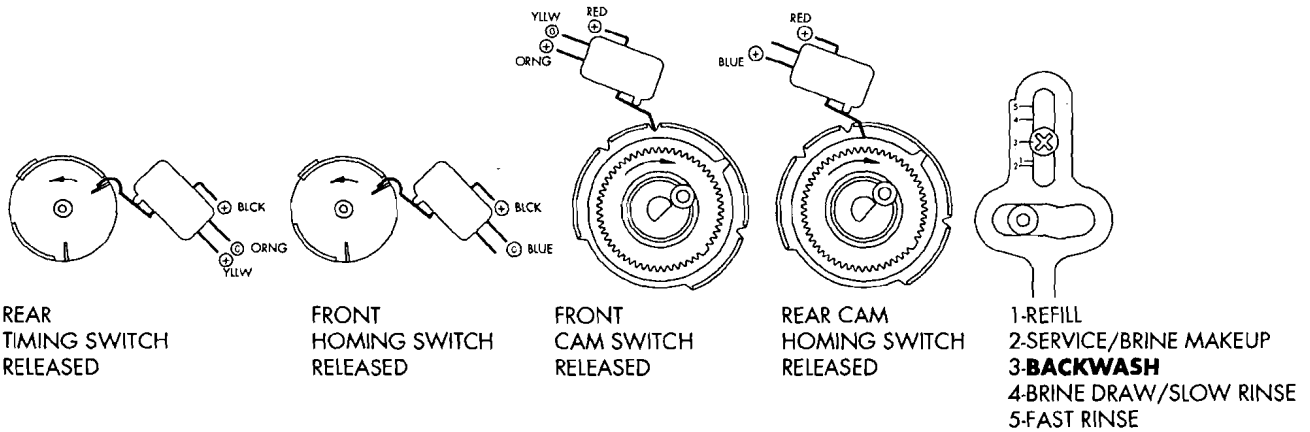
The following charts show the Regeneration and Valve Cams in each cycle. Also shown are the switch positions with electrical current identified by a ⊕ sign on the terminal connection. Open or no electrical current will have a ⊙ symbol. On the right side of each chart is the piston position for each cycle.

Service Position:



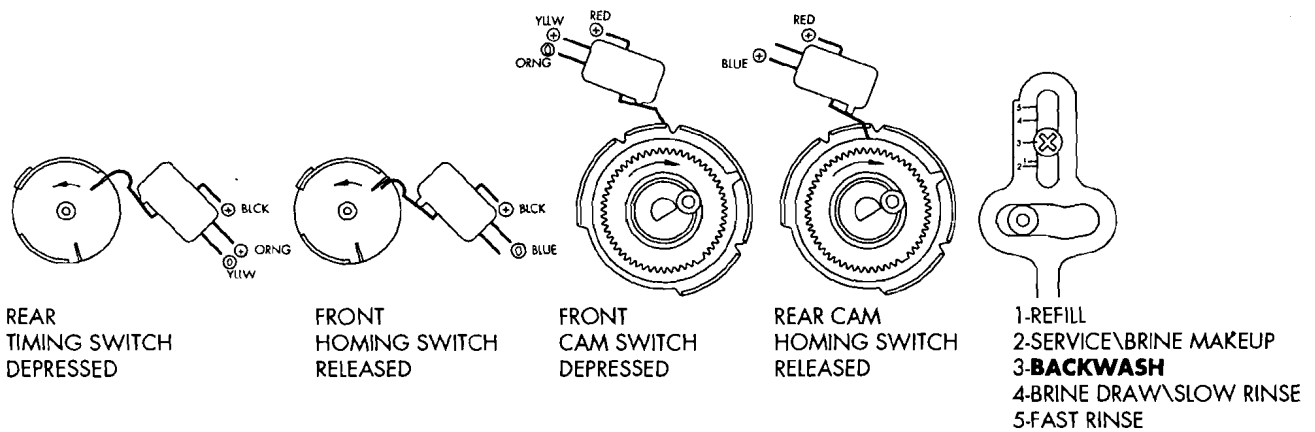
BACKWASH BEGINS

Valve cam moves to backwash position and stops.



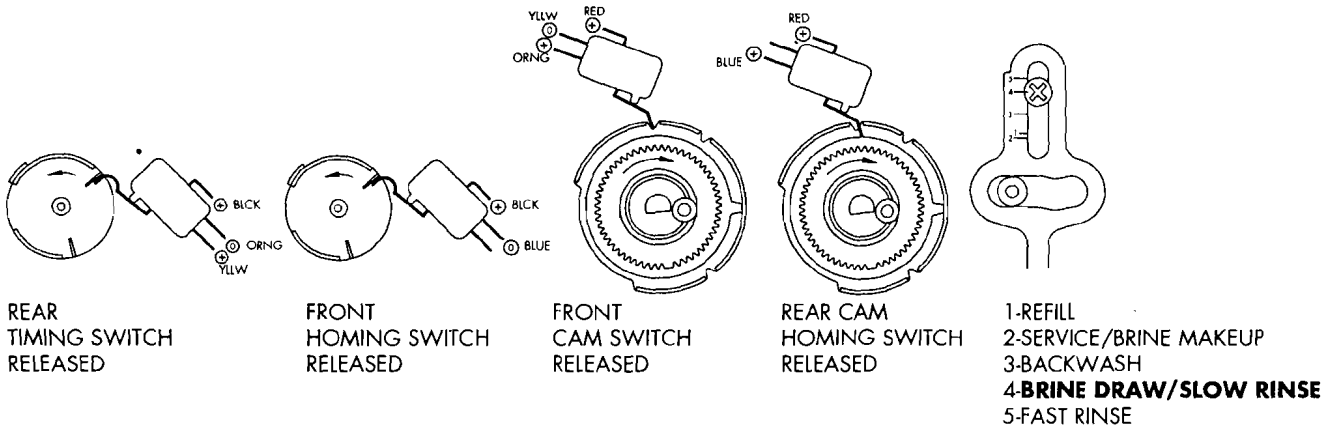
BACKWASH ENDS

Valve cam moves out of the backwash position (notch) and stops.



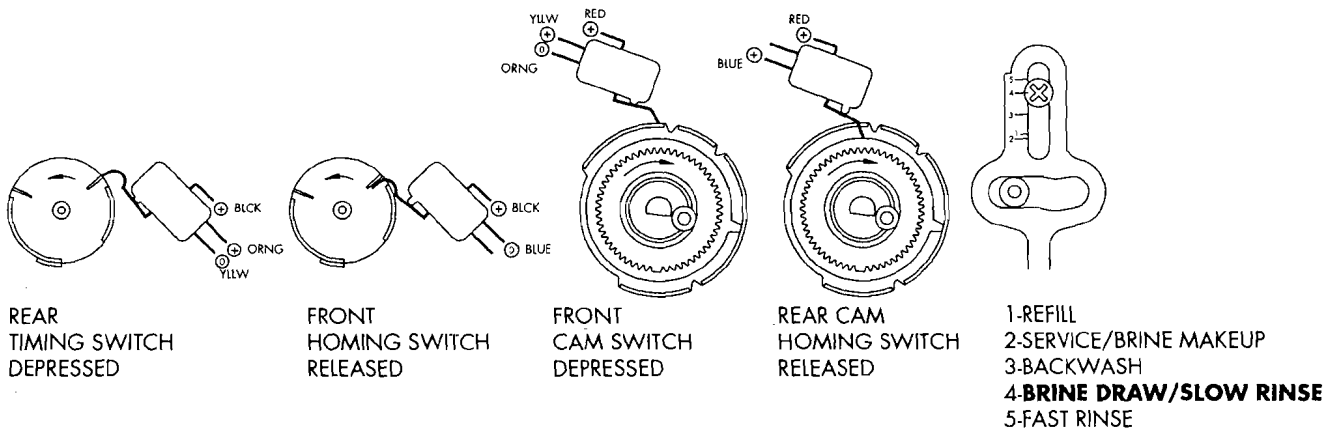
BRINE DRAW AND SLOW RINSE BEGINS

The valve cam moves to Brine Draw/Slow Rinse position, which is the next notch in the cam.



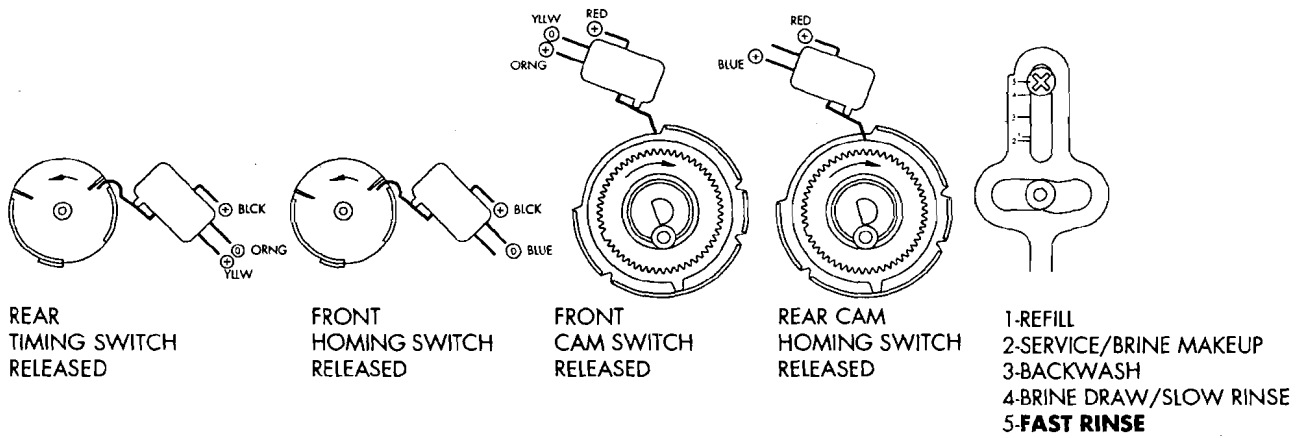
END OF SLOW RINSE

The valve cam moves out of the Brine Draw/ Slow Rinse Notch and stops.



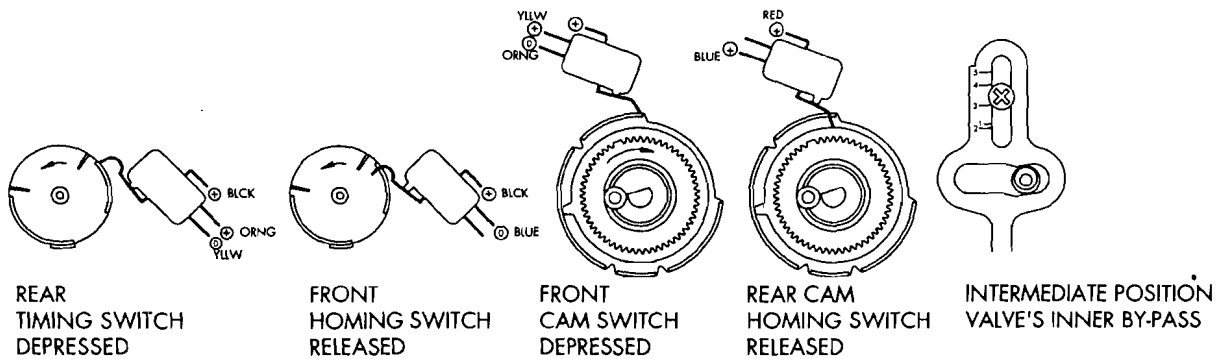
FAST RINSE BEGINS

The Valve Cam moves to the Fast Rinse Notch



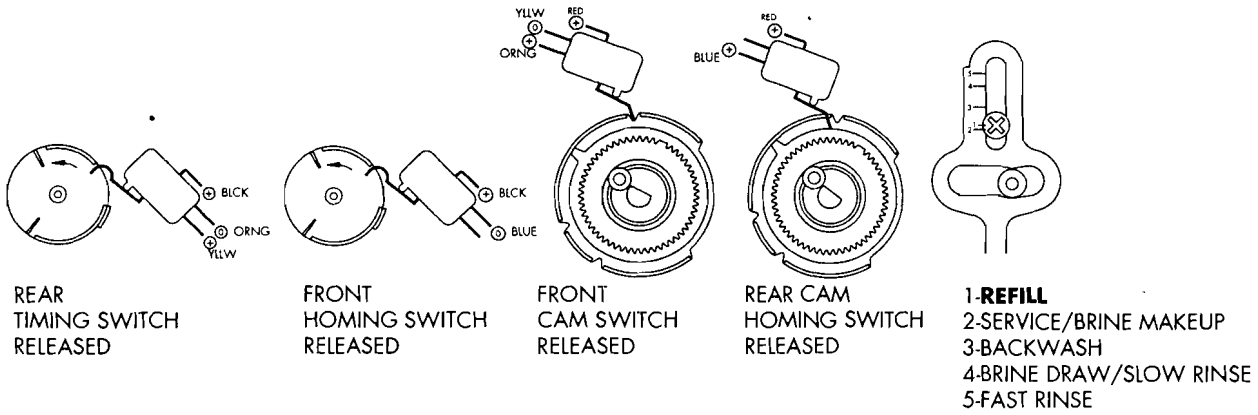
END OF FAST RINSE

The valve cam moves to a intermediate position.



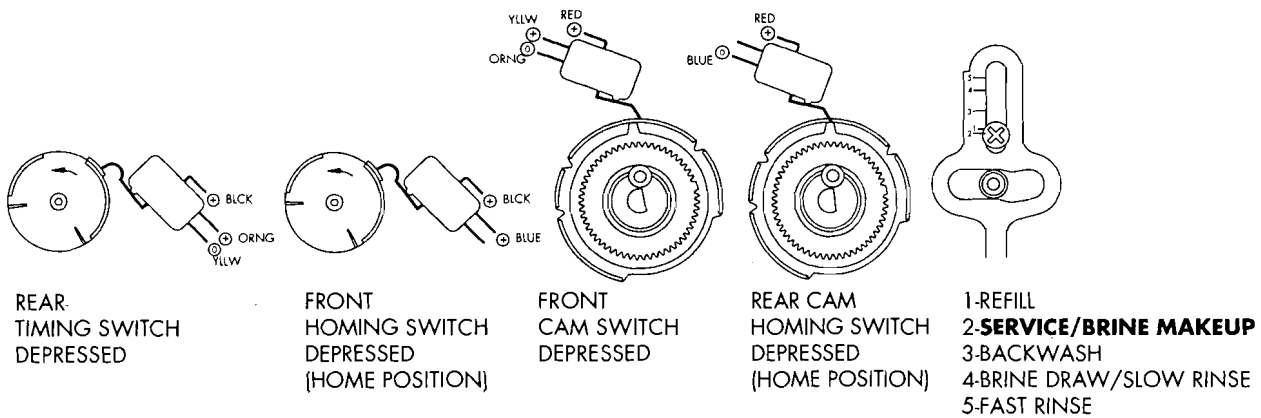
BRINE REFILL

The Valve Cam moves to the Refill Notch.



BRINE REFILL ENDS

The valve cam moves to the Service Position.

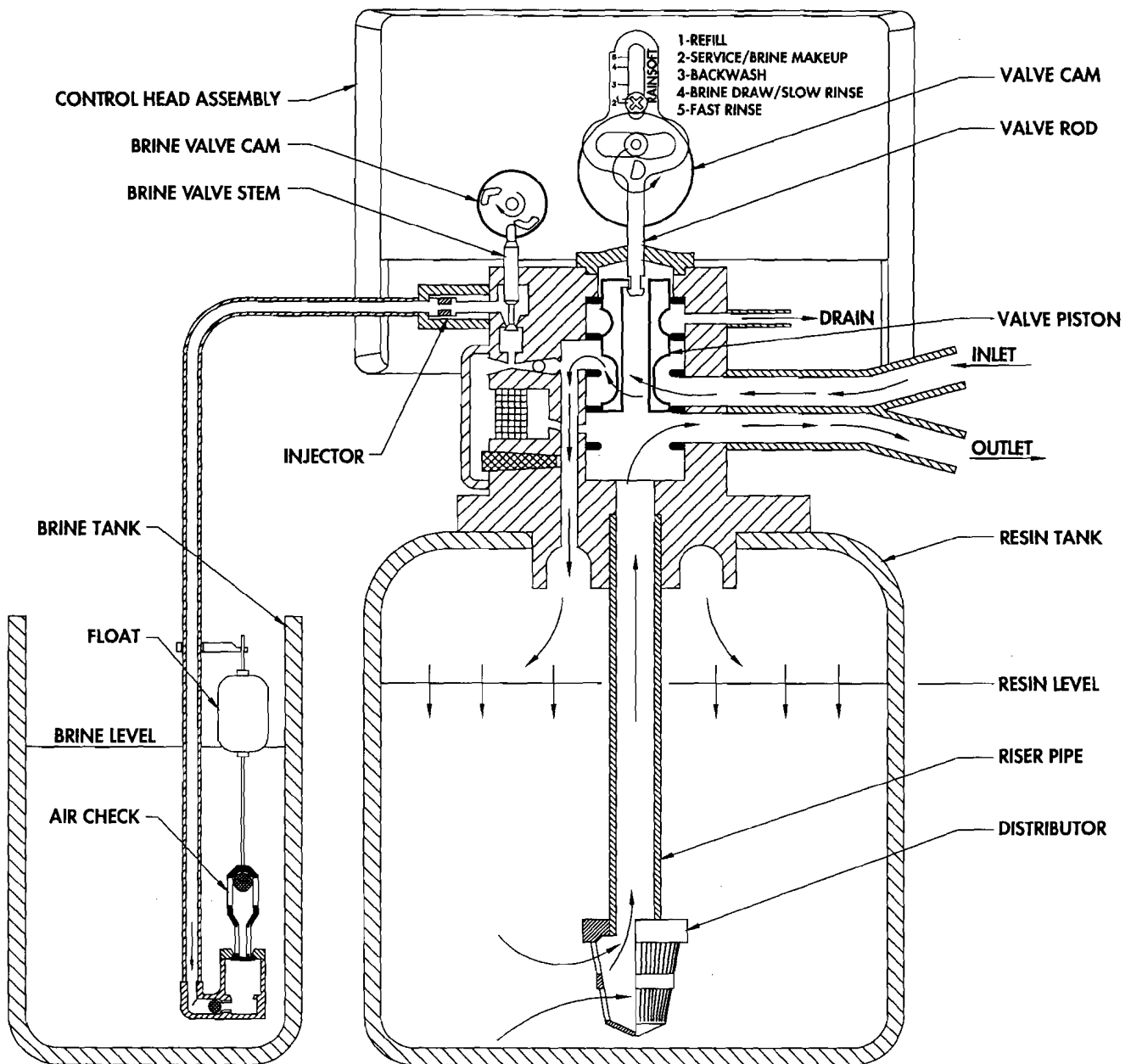


CHAPTER TWO

OPERATION & FLOW DIAGRAMS OF THE VALVE

OPERATION AND WATER FLOW THROUGH THE VALVE

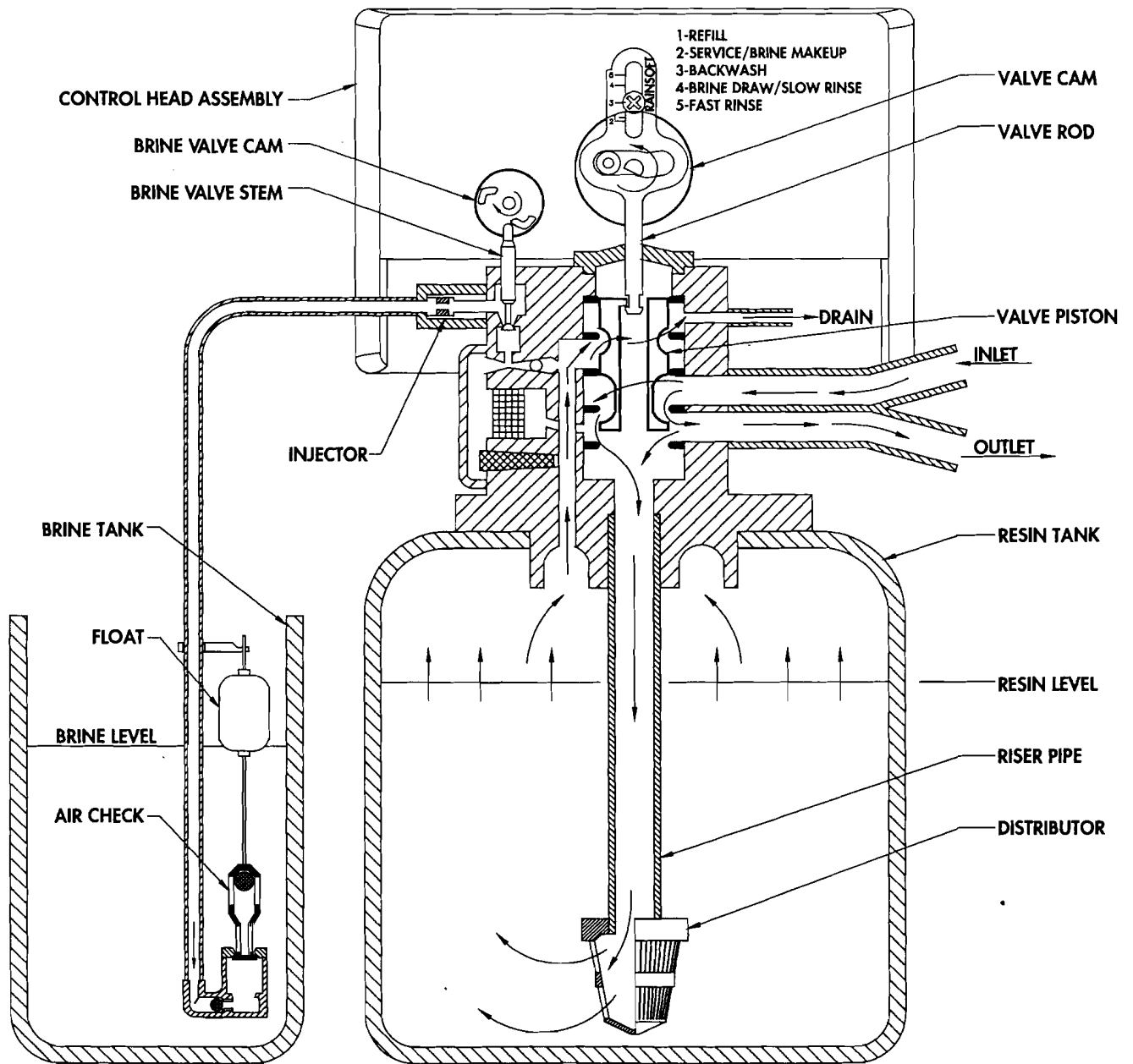
When the valve is in the Service position, the untreated water enters the valve. The water flows around the piston between the number two and four seals, and down the side of the valve. The water now flows down through the mineral tank where the water is treated. The treated water then enters the riser pipe and exits out the outlet port.



BACKWASH OPERATION

In the backwash position the piston moves slightly down and away from the fourth seal. The water enters the valve and flows around the fourth seal and into the outlet port. Then flows past the bottom of the piston and the fifth seal where it enters the riser pipe. As the water exits the Riser pipe it flows up through the mineral bed causing the mineral to expand. When the water exits the mineral tank it flows up through the side of the valve. The water now passes between the second and third seal and out the drain.

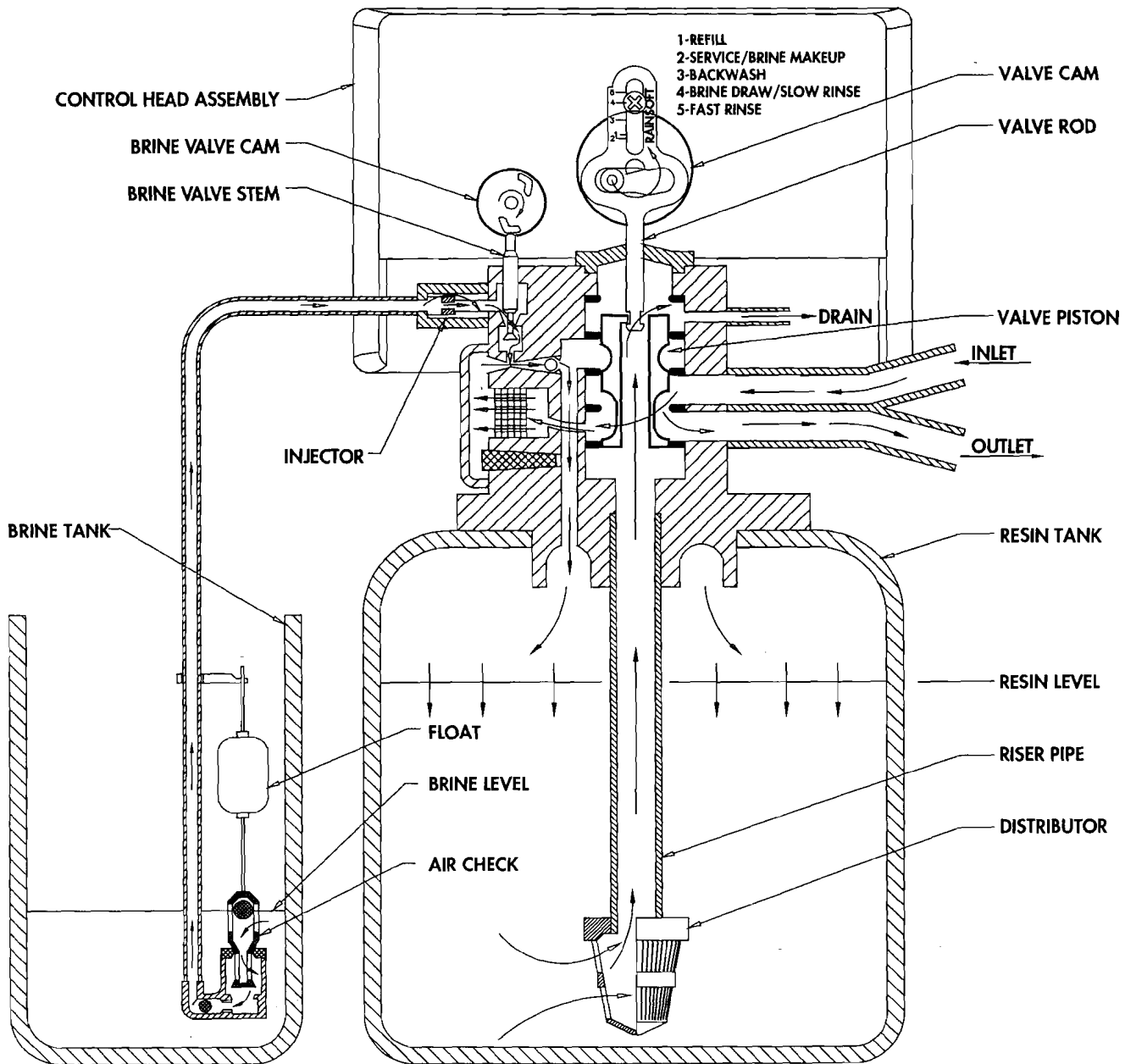
Note: The system in this cycle is on internal bypass and any water used during this cycle is untreated.



BRINE OPERATION

Brine: In the Brine position the piston moves down and depresses against the fifth seal. The Brine Cam rotates and depresses the Brine Refill Stem. The water enters the valve and passes around the piston and through the injector screen. Then the water enters the Brine Injector. When the water passes through the Brine Injector it creates a vacuum or suction. This causes the Brine to be pulled from the brine tank and into the valve where the water and brine mix and flow into the mineral tank. After the Brine solution passes through the resin it flows up the riser and through the center of the piston. It then flows over the top of the piston and past the number one seal and out the drain.

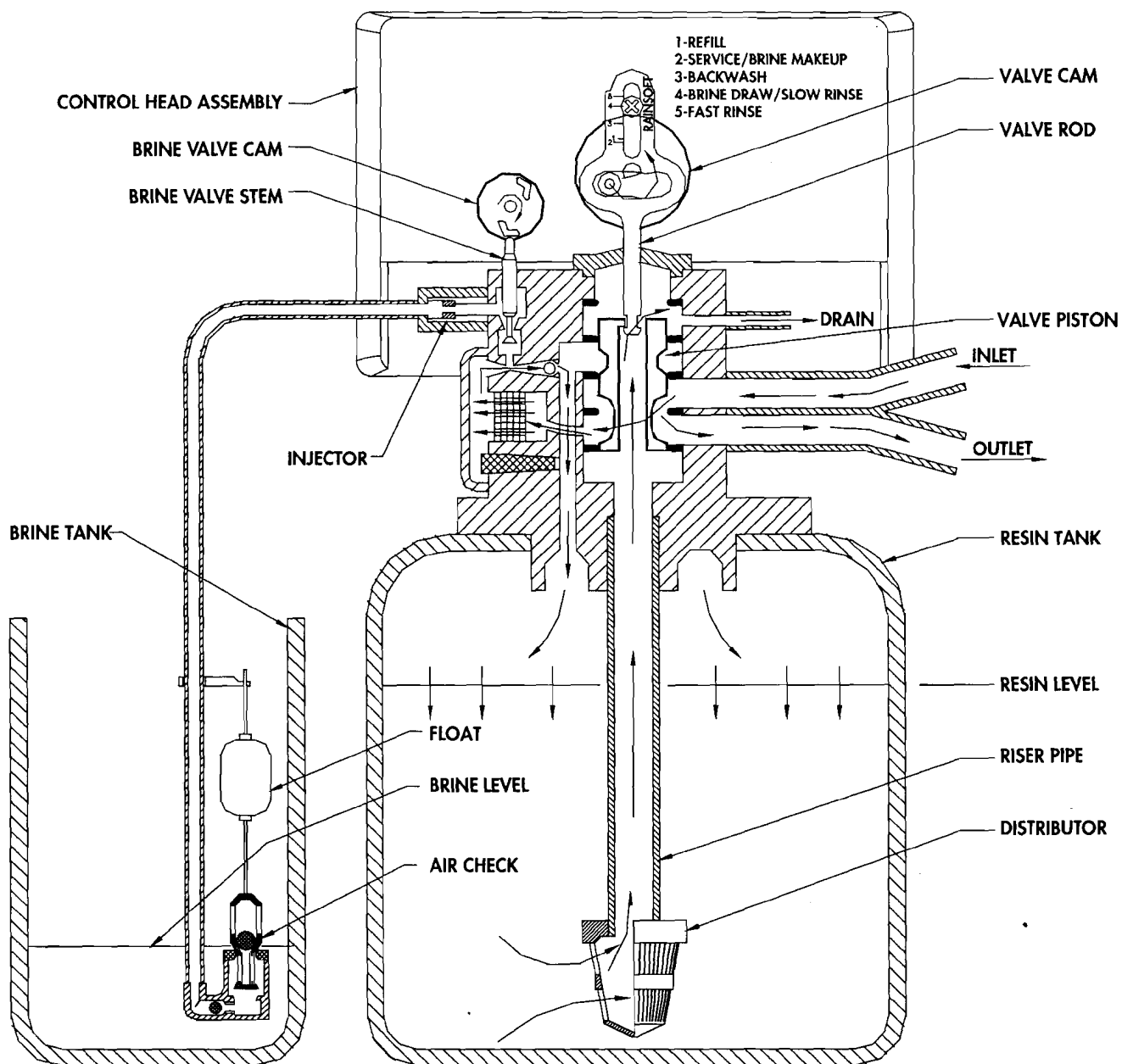
Note: The system in this cycle is on internal bypass and any water used during this cycle is untreated.



SLOW RINSE

After all the brine solution is pulled from the brine tank the Air Check (Ball) in the brine float seats. This prevents any air from entering the mineral tank. The water continues to flow the same as it does in Brine Cycle. However, with no brine solution the water rinses the mineral bed free of any salt.

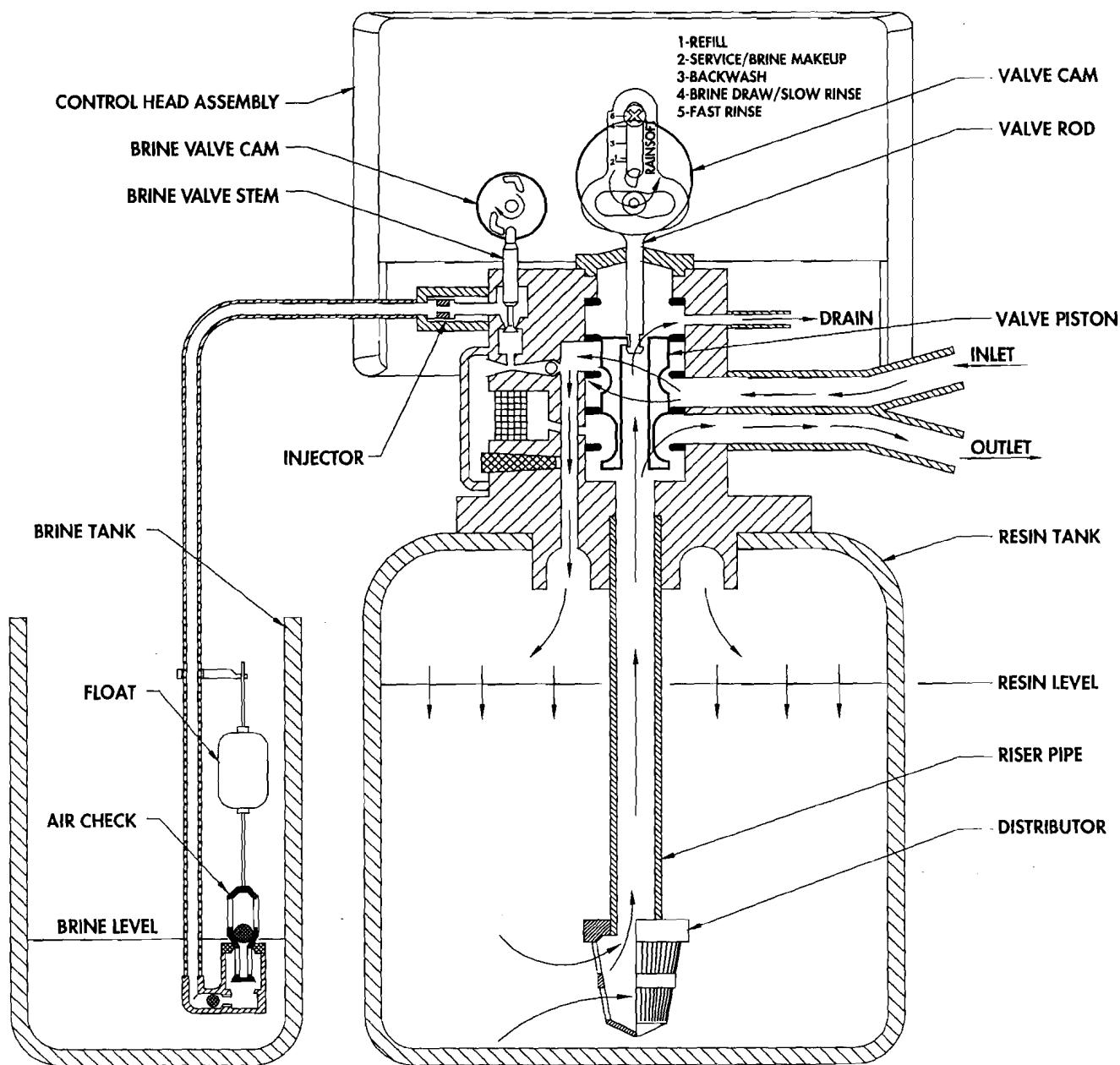
Note: The system in this cycle is on internal bypass and any water used during this cycle is untreated.



FAST RINSE OPERATION

In the fast rinse position the piston lowers. The water flows through the inlet port and around the piston between the number two and four seals. The water then travels down the side of the valve and into the mineral tank where the bed is compacted. The water then flows up the riser and through the center of the piston. As the water exits the top of the piston it flows out the drain port between the number one and two seals.

Note: The system in this cycle is providing treated water to the outlet.



BRINE REFILL OPERATION

In the Brine Refill Cycle the piston moves up. The valve position is almost identical to the Service Position. However the brine cam is now depressing the Brine Refill Stem.

The water flows through the inlet port and around the piston between the number two and four seals. Then travels down the side of the valve and into the mineral tank. The water is treated and then flows up the riser. Then the treated water passes through the injector screen and into the injector throat. The water now flows past the Brine Refill Stem and through the Brine Refill Flow Control before entering the brine tank.

Note: The system in this cycle is providing treated water to the outlet.

