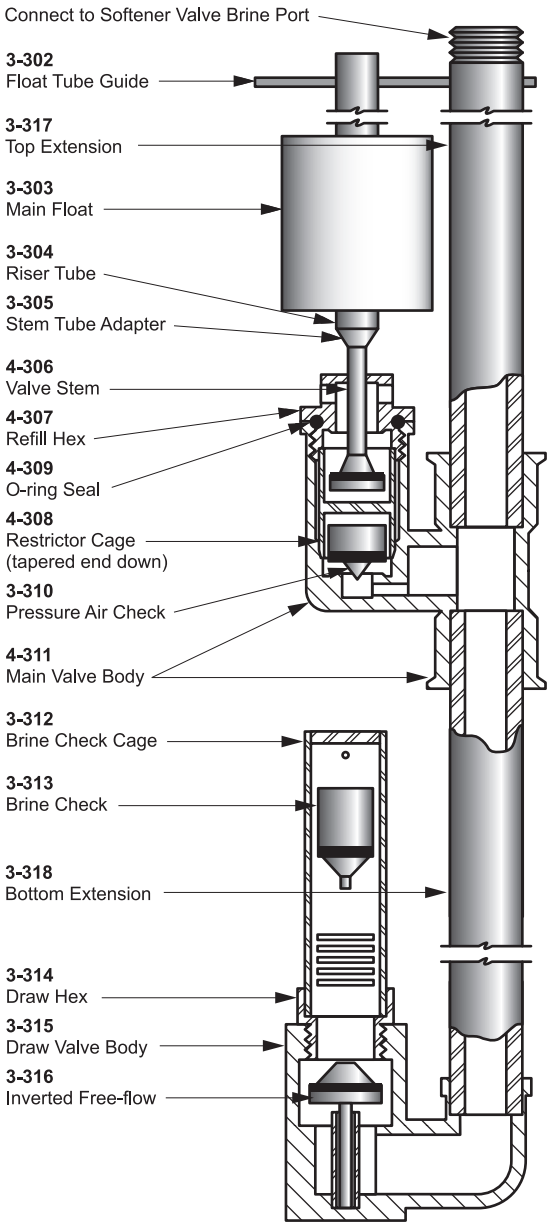
SAFE WATER TECHNOLOGIES, INC.

BRINE VALVE ASSEMBLY INSTRUCTIONS



Part Number	Brine Valve Size	Approx. Draw (gpm)	Approx. Refill (gpm)
SM-IC438DA	3/8"	1 to 4	2 gal @ 45 psi
SM-IC412DA	1/2"	2 to 6	2 gal @ 45 psi
SM-IC434DA	3/4"	4 to 8	2 gal @ 45 psi
SM-IC4100DA	1"	8 to 12	2 gal @ 45 psi
SM-IC4125DA	1¼"	10 to 14	2 gal @ 45 psi

Maximum Operating Temperature: 140°F (60°C)
Standard Overall Length of Valves: 48 inches

HOW THE BRINE VALVE WORKS

1. As the main softener valve goes in the regeneration cycles, specifically during brine draw, a vacuum is created. This vacuum will pull the pressure air check (3-310) down. The inverted free-flow check (3-316) will also be pulled down, opening the path for brine draw. The brine draw is designed to stay open until brine is drawn down to a 1 inch distance above the draw hex (3-314) to protect against pulling floating matters into the system. Once the brine reaches this level, the brine check (3-313) will seal on the draw hex (3-314) and close the path.

2. During the brine tank refill cycle, the inverted free-flow check (3-316) will be pushed up, closing the opening of the brine flow path. The pressure air check (3-310) will also be pushed up, opening the path for the water to fill the brine tank. This cycle will continue until the main valve refill cycle time is used. If the main valve remains in refill, the main float (3-303) will prevent overfilling by pulling the seal up in place, closing the overfill path.

HOW TO SET UP THE BRINE VALVE

The brine valve should be properly set after installation. Brine refill and brine draw should be set based on the main valve design flow used. The brine valve is placed inside of a 4 inch diameter brine well, inside a brine tank.

1. **Brine Refill Set-up:** The distance between the main float (3-303) to the brine check cage (3-312) open slotted area represents the total distance that controls brine refill. This is adjustable for approximately 31 inches maximum and 13 inches minimum. Setting the float and securing it with the O-ring at the desired height will allow the appropriate number of gallons of water in the brine tank for brine refill.

2. **Brine Draw Set-up:** This distance between the float inside the brine check cage (3-312) and the top of the open area of the case, is the distance which controls the brine draw (this is adjustable to approximately 6 inches maximum). Setting the float to the desired height will allow the appropriate gallons of standard brine to the softener. This should be done for brine valves with adjustable brine check (Types B and D).

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BRINE VALVE TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTION
OVERFLOW	A. Loose connections or cracked pipe.	A. Check all pipe connections and joints. If no visible leaks, remove valve and reconnect on outside of brine tank. Turn pressure on. Leak will now be visible.
	B. Foreign matter trapped under free-flow rubber seal (3-316).	B. Grip draw valve body (3-315) and unscrew draw hex (3-314). Inspect seat and remove free-flow valve (3-316), check and clean if necessary. Reassemble.
	C. Matter trapped under valve stem rubber seal (4-306).	C. Grip main valve body (4-311) and unscrew refill hex (4-307). Remove O-ring (4-309) and restrictor cage (4-308). Check hex seat and rubber seal. Reassemble per drawing. Note: Position restrictor cage with tapered edge down.
	D. Riser tube (3-304) not parallel to top extension.	D. Realign by shifting float tube guide (3-302).
	E. Main float is binding against side of brine well.	E. Loosen pipe connection and turn valve so float is free from bind. Note: Do not over tighten pipe connections, it may cause stress cracks.
BRINE TANK NOT REFILLING	A. Control valve stuck shut. No pressure in line.	A. Check control and pressure in line.
	B. Main float up in closed position.	B. Disconnect valve, grip main valve body (4-311) and unscrew refill hex (4-307). Remove pressure air check (3-310) and test for buoyancy. If it does not float, it has a pressure lock in the barrel. Replace pressure air check (3-310).
	C. Refill slots in restrictor cage (4-308) are plugged.	C. Disassemble as in (B) and remove restrictor cage. Clean holes with 1/16 inch drill. Reassemble per drawing.
DOES NOT DRAW BRINE OR DRAWS AIR AFTER BRINE	A. Pressure too low in line.	A. Correct pressure.
	B. Control valve ejector plugged. No vacuum.	B. Clean ejector and check for vacuum.
	C. Cracked line or loose connection.	C. Check line for leaks and tighten all connections.
	D. Bottom brine check (3-313) closed.	D. Pull off brine check cage (3-312) and brine check (3-313). Test check for buoyancy. If it does not float, replace it. If it does float, grip draw valve body (3-315) and unscrew draw hex (3-314). Remove free-flow valve (3-316) and check for foreign matter around free-flow stem.
	E. Pressure air check (3-310) not seating.	E. If valve draws down to refill hex (4-307) only, disassemble as in (B. - Brine tank not refilling) and check for matter on seat under pressure check (3-310).
	F. Slots or openings in brine well plugged.	F. Clean out brine tank. Insufficient supply through brine well slots will cause valve to check out prematurely.
	G. Hole plugged in brine cage (3-312).	G. Clean hole.

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