

BRASSMASTER & BRASSMASTER PLUS+

Water Softener Installation / Operation Manual



BrassMaster and BrassMaster Plus Technical Video Library:
<https://watercontrolinc.com/residential-technical-support/residential-technical-videos>
BrassMaster technical videos demonstrate how to set up or remove the control module.
Replacement control modules are available at <https://watercontrolinc.com/residential-technical-support/>

Specifications

Feedwater

Minimum inlet pressure	20 PSIG
Maximum outlet pressure	125 PSIG
Minimum water temperature	34 ^o F
Maximum water temperature	110 ^o F

Power

Voltage	120VAC
Frequency	60Hz
Power consumption	3 Watts Maximum

Installation

Location	Indoors (Protect from direct sunlight)
Minimum ambient temperature	34 ^o F
Maximum ambient temperature	122 ^o F

Salt Capacity

Cabinet models	200 lbs
Two-Tank models	300 lbs

Maximum Flow To Drain

B24	(0.66 ft ³ resin) – 2.0 GPM*	BP27	(0.85 ft ³ resin) – 2.0 GPM*
B32	(0.80 ft ³ resin) – 1.7 GPM*	BP35	(0.92 ft ³ resin) – 3.5 GPM*
BT24	(0.60 ft ³ resin) – 1.7 GPM*	BPT27	(0.82 ft ³ resin) – 2.0 GPM*
BT32	(0.80 ft ³ resin) – 1.7 GPM*	BPT35	(1.10 ft ³ resin) – 3.5 GPM*
BT48	(1.30 ft ³ resin) – 2.4 GPM*	BPT48	(1.30 ft ³ resin) – 3.5 GPM*
BT60	(2.00 ft ³ resin) – 4.0 GPM*	BPT60	(2.00 ft ³ resin) – 5.0 GPM*
WB24	(0.75 ft ³ resin) – 1.7 GPM*	WBP27	(0.90 ft ³ resin) – 2.0 GPM*
WB32	(1.0 ft ³ resin) – 2.0 GPM*	WBP35	(1.15 ft ³ resin) – 2.0 GPM*
WBT24	(0.75 ft ³ resin) – 1.7 GPM*	WBPT27	(0.90 ft ³ resin) – 2.0 GPM*
WBT32	(1.0 ft ³ resin) – 2.0 GPM*	WBPT35	(1.15 ft ³ resin) – 2.0 GPM*
WBT48	(1.5 ft ³ resin) – 2.4 GPM*	WBPT48	(1.5 ft ³ resin) – 2.4 GPM*
WBT60	(2.0 ft ³ resin) – 4.0 GPM*	WBPT60	(2.0 ft ³ resin) – 4.0 GPM*

* rated drain flow during regeneration

Note: This system is not intended to be used for treating water that is microbiologically unsafe or of unknown quality without disinfection before or after the system.

Wisconsin units conform to ANSI/NSF-44 for specific performance claims as verified and substantiated by test data.

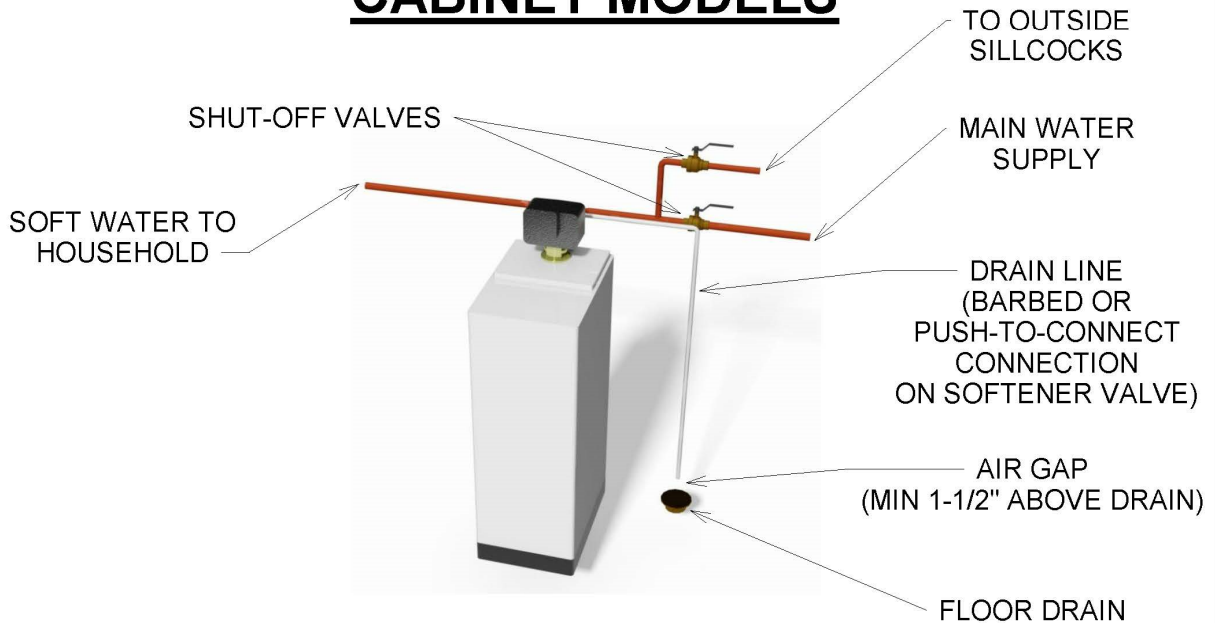
Installation Procedure

1. **Identify installation location for water softener.** Piping should be such that all household water, with the exception of outside hydrants, flows through softener. A hard water line may be run to a kitchen tap if so desired. This system and installation must comply with state and local laws and regulations.
2. **Connect water piping.** This unit has been supplied with a manually operated bypass device which enables the softener to be isolated from the water service lines for maintenance and service, and also maintain the continuity of the water supply when the softener is disconnected. *Important: Make all sweat-solder connections within 6 inches of softener before applying threaded fittings to supplied bypass valve. Overheating may cause damage to valve.* Turn supplied bypass valve to “Bypass” position and make connections to household water lines. Leave unit in “Bypass” position until startup procedure.
3. **Connect drain line.** Remove barbed or push-to-connect drain line fitting from parts bag. Apply thread seal tape to threads, and turn into the female threaded opening on the back side of the control valve. Connect 5/8” drain line (supplied in parts bag) to barbed or push-to-connect end of drain line fitting, and run to a nearby drain.
IMPORTANT: It is highly recommended that a hose clamp be used to secure tubing to drain fitting to ensure tubing from being removed during elevated pressure situations. Be sure not to submerge drain line end into drain, as a 1 1/2” minimum air gap must be maintained to prevent potential backflow hazard. Firmly secure at drain, while maintaining a minimum 1 1/2” air gap (See detailed drawing on back side of piping diagram).
4. **Connect brine line (two-tank models only).** Connect 3/8” brine line (supplied in parts bag) to fitting on brine tank, and on the control valve. Tighten both fittings with an adjustable wrench.
5. **Install brine tank overflow line.** Install overflow fitting (supplied in parts bag) into hole in side of brine tank. An owner-supplied overflow line should then be attached and run to a nearby drain. *Failure to run overflow line could cause flooding and water damage should the brine tank overflow.*
6. **Connect to electrical power source.** Connect power cord to a separate 120v, 15 amp, ground fault interrupt (GFI) outlet.

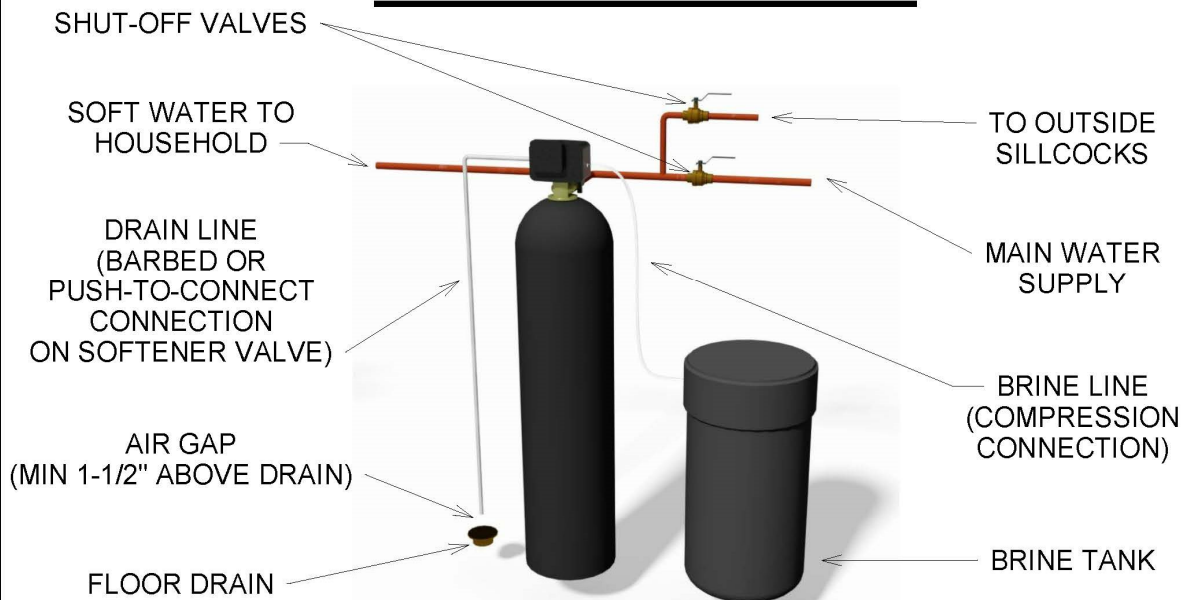
Proceed to start-up procedure.

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CABINET MODELS



TWO-TANK MODELS



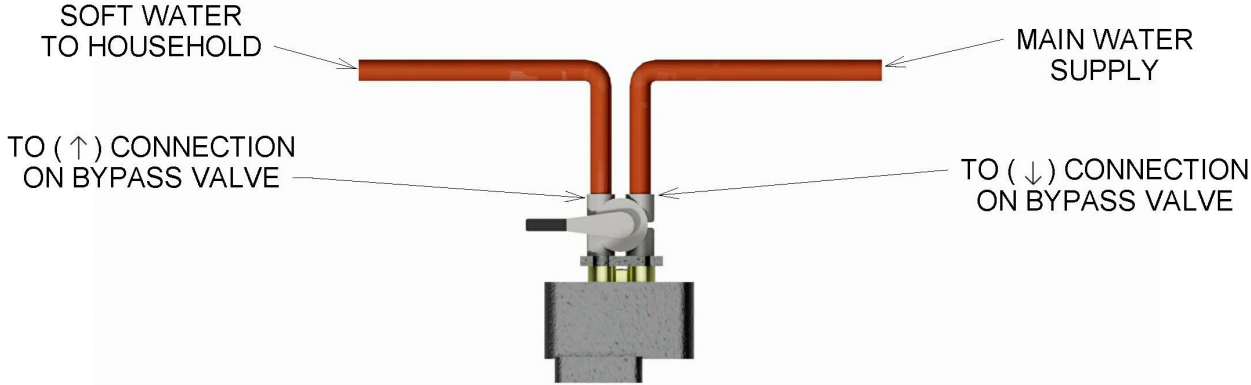
BrassMaster
BrassMaster Plus

Piping Diagram

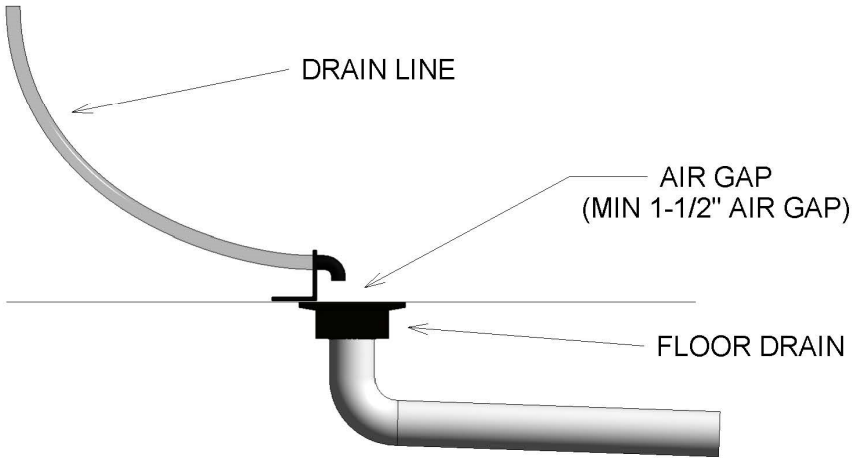
Date 12/28/2021

Drawn by MGS

BYPASS CONNECTION



DRAIN CONNECTION



NOTE:
 1) SECURE THE DRAIN LINE TO THE FLOOR DRAIN AND MAINTAIN A MINIMUM OF 1-1/2" AIR GAP
 2) THE SUPPLIED DRAIN LINE MAY NOT MEET LOCAL CODES FOR DRAIN LINE PIPING. VERIFY LOCAL CODES WITH LOCAL CODE OFFICIALS PRIOR TO INSTALLATION



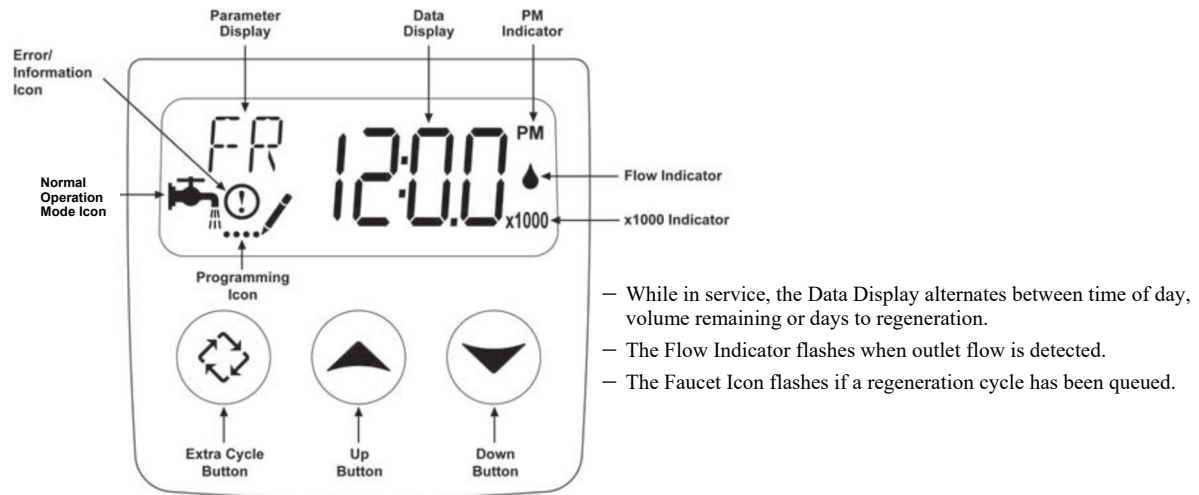
BrassMaster
BrassMaster Plus

Drain & Bypass Connection

Date	12/28/2021
Drawn by	MGS

Start-Up Procedure

Placing unit into service



1. Fill the mineral tank with water

- Keep softener in BYPASS
- Press and hold the extra cycle button for 5 seconds, display will indicate BW, Backwash cycle.
- Push extra cycle button once and let go, display will indicate BD, Brine Draw cycle.
- Push extra cycle button again and let go, display will indicate RR, Rapid Rinse cycle.
- Slowly open bypass valve and allow water to flow for 2-4 minutes. This will allow the media in the tank to become saturated.
- Open bypass valve to the service position.
- Push extra cycle button once and let go, display will indicate BF, Brine Fill cycle.
- Allow timer to fill the brine tank for the entire time on the display. The unit will advance to the service position when completed.
- Push extra cycle button for 5 seconds, this will start a manual regeneration from start-to-finish. This will take approximately two hours.

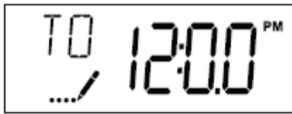
Start-up procedure is now complete.

The unit is now pressurized with water and ready for service.

Proceed to setting current time of day.

Start-Up Procedure (continued)

Setting current time of day



Setting Current Time / Day

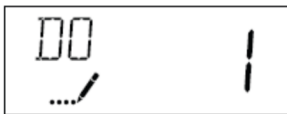
1. Press either the Up or Down buttons to adjust current time of day by one digit. Push and hold either up or down set button to adjust current time of day display by several digits.

User programming

User Programming Mode Options		
Abbreviation	Parameter	Description
DO	Day Override	The timer's day override setting
RT	Regeneration Time	The time of day that the system will regenerate (meter delayed, timeclock, and day-of-week systems)
H	Feed Water Hardness	The hardness of the inlet water—used to calculate system capacity for metered systems
RC	Reserve Capacity	The fixed reserve capacity

User Programming Mode Steps (Refer to chart above for user mode indications)

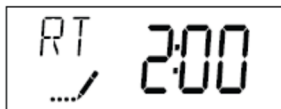
1. Press the Up and Down buttons for five seconds while valve is in service. Display will enter programming mode. (Note: Timer will discard any changes and exit programming mode if any button is not pressed for sixty seconds.)



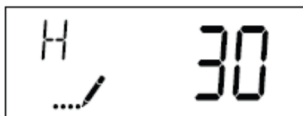
Start-Up Procedure (continued)

User programming (cont'd)

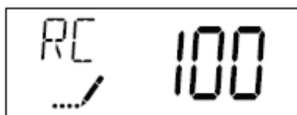
- 2. Set Day Override:** This setting specifies the maximum number of days between regeneration cycles. System will regenerate regardless of usage if the days since last regeneration cycle equals the day override setting. This ensures regular regeneration periods. In areas of heavy iron water conditions, this setting should not exceed 5 days.



- 3. Adjust Regeneration Time:** Press the Extra Cycle button to advance to next option. This setting determines the time of day that the unit will enter the regeneration cycle. The most common / default setting is 2:00 AM.



- 4. Set Water Hardness:** Press the Extra Cycle button to advance to next option. Set the hardness of the incoming water. For each PPM of iron, add 4 GPG to this setting. This will determine the amount of water usage allowed between regeneration cycles.



- 5. Set Fixed Reserve Capacity :** Press the Extra Cycle button to advance to next option. Set the Fixed reserve capacity for the household. This is the amount of water needed in reserve to reach the delayed regeneration time. Standard setting is 50 gallons for each person in the household.

Control programming is now complete. Press the extra cycle button, and the control will exit from the programming mode and resume normal operation.

Sanitization of Unit

After complete installation of unit, dilute 1/2 cup of unscented laundry bleach in 3 gallons of water, and add to brine tank. Initiate a manual regeneration by depressing the extra cycle button. Allow the unit to complete its cycle and advance to the "Service" position. The unit is now sanitized and ready for operation.

Softener Operation

As water enters the softener, it passes over a resin bed in a special tank. The resin consists of tiny beads of a plastic called styrene. These beads attract and hold sodium ions and exchange the sodium for hardness ions when encountered. Over time, the resin becomes saturated with hardness ions and no longer removes hardness materials. The softener goes into a "regeneration" to flush hardness materials to the drain and refresh the resin with sodium. Regeneration is typically programmed to take place in the middle of the night when little or no water is in use.

Regeneration consists of four cycles:

1. Backwash Position

Backwash is a rapid upward flow of water that loosens the resin bed and flushes iron particles, dirt and sediments filtered in the bed out to the drain.

2. Brine Draw / Slow Rinse Position

Brine Draw is the process in which brine is drawn out of the brine cabinet and passed through the resin in a downward direction. This rinses the resin and large amounts of sodium ions replace the hardness ions accumulated during service.

Slow Rinse. After brine is completely removed from the brine cabinet into the resin tank the brine valve closes. Water replaces any remaining brine from the resin, flushing hardness ions removed from the resin to drain.

3. Fast Rinse Position

Fast Rinse is a fast flow of water down through the resin tank that follows a **Backwash**. This flushes all remaining brine from the tank and packs the resin bed for softening efficiency.

4. Brine Fill

Brine is water saturated with large amounts of a salt (sodium chloride). During **Brine Fill**, water flows into the salt storage area after each regeneration and dissolves salt. During the regeneration process, hardness ions on the resin beads are replaced or exchanged for sodium ions from the brine solution.

5. Service

When the softener is in **Service** it is flowing water through the system and removing hardness minerals from your water.

Service

Checking for a Salt Bridge

A hard crust or "Salt Bridge" can form in the lower half of the salt storage tank. This can be deceiving because the tank will appear to have plenty of salt, but underneath, salt has hardened and when the system regenerates, water cannot quite reach this level to be made into brine (water and salt).

Breaking a Salt Bridge

Take a wooden broom handle and carefully push it down into the salt, working it up and down. If the tool strikes a hard object (be sure it's not the bottom or sides of the tank), it's probably a salt bridge. Carefully break the bridge with the broom handle. Do not pound on the walls of the tank.

***NOTE:** Salt bridges are typically caused by high humidity or using the wrong kind of salt. In humid areas it is best to fill with less salt, more often. Use only nugget, pellet or coarse solar salt with a purity of 99.5% or higher. DO NOT use rock, block, granulated, and ice cream-making salts.*

Cleaning the Brine Injector Assembly

It is recommended to clean the injector and injector screen annually to ensure proper system operation.

From time-to-time, a softener's brine water injection assembly can become plugged with dirt and debris. This results in poor softener regeneration, which (in-turn) can lead to poor softening performance. Plugging of a brine injector can also cause brine tanks to fill up with water, and eventually overflow.

Cleaning and unplugging a dirty brine injector is an easy process. For a detailed instructional video, please visit: <https://watercontrolinc.com/residential-technical-videos/>

Troubleshooting

1. Softener Fails To Regenerate.	A. Electrical service to unit has been interrupted.	A. Assure permanent electrical service (check fuse, plug, pull chain or switch).
	B. Timer programming bad (improper programming).	B. Check programming and reset as needed.
2. Softener Delivers Hard Water.	A. By-pass valve is open.	A. Close by-pass valve.
	B. No salt in brine tank.	B. Add salt to brine tank and maintain salt level above water level.
	C. Injectors or screen plugged.	C. Clean or replace injectors and screen.
	D. Insufficient water flowing into brine tank.	D. Check brine tank fill time and clean brine line flow if plugged.
	E. Hot water tank hardness.	E. Repeated flushings of the hot water tank is required.
	F. Flow meter jammed.	F. Check flow indicator light for flow. Remove obstruction from flow meter.
	G. Flow meter cable disconnected or not plugged into meter.	G. Check meter cable connection to timer and meter.
	H. Improper programming.	H. Reprogram the control to the proper regeneration type, inlet water hardness, capacity or flow meter size.
	I. Plugged brine line or air check.	I. Remove and clean any sediment from brine tank and brine valve assembly.
	J. Salt bridge has formed.	J. Refer to <i>Breaking a Salt Bridge</i> section in manual.
	K. No water in brine tank.	K. Ensure safety float is not stuck.
	L. Unit is plumbed backwards.	L. Check that the unit is plumbed correctly.
	M. Water hardness has increased or is set incorrectly.	M. Retest hardness and change settings.
	N. Water pressure is too low.	N. Line pressure must be at least 20 PSI.
3. Unit Uses Too Much Salt.	A. Improper salt setting.	A. Check salt usage and salt setting.
	B. Excessive water in brine tank.	B. See problem No. 7.
	C. Improper programming.	C. Check programming and reset as needed.
4. Loss of Water Pressure.	A. Iron buildup in line to water conditioner.	A. Clean line to water conditioner.
	B. Iron buildup in water conditioner.	B. Clean control and add resin cleaner to resin bed. Increase frequency of regeneration.

Troubleshooting (continued)

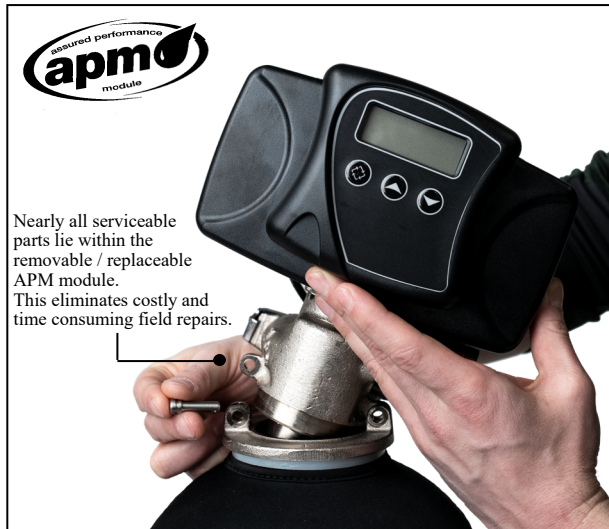
5. Loss of Resin Through Drain Line.	A. Air in water system.	A. Assure that well system has proper air eliminator control and check for dry well condition.
	B. Drain line flow control is too large.	B. Ensure drain line flow control is sized correctly.
6. Iron in Conditioned Water.	A. Fouled resin bed.	A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration. Increase backwash time.
	B. Iron content exceeds recommended parameters.	B. Add iron removal filter or system.
7. Excessive Water in Brine Tank.	A. Plugged drain line flow control.	A. Clean flow control.
	B. Brine valve failure.	B. Clean brine valve.
	C. Improper programming.	C. Check programming and reset as needed.
8. Salt Water in Service Line.	A. Plugged injector system.	A. Clean injector and replace screen.
	B. Improper programming.	B. Check programming and reset as needed.
	C. Foreign material in brine	C. Clean or replace brine valve.
	D. Foreign material in brine line	D. Clean brine line flow control.
	E. Low water pressure.	E. Raise water pressure.
9. Softener Fails to Draw Brine.	A. Drain line flow control is plugged.	A. Clean drain line flow control.
	B. Injector is plugged.	B. Clean or replace injectors.
	C. Improper programming.	C. Check programming and reset as needed.
	D. Line pressure is too low.	D. Increase line pressure (line pressure must be at least 20 PSI at all times.)
10. Drain Flows Continuously.	A. Foreign material in control.	A. Remove piston assembly and inspect bore, remove foreign material & check control in various ports.
12. Loss of capacity.	A. Increased raw water hardness	A. Reset unit to the new capacity.
	B. Brine concentration and/or quantity.	B. Keep brine tank full of salt at all times. Clean it yearly. Salt may be bridged. If using a salt grid plate ensure refill water is over it.
	C. Resin fouling. Future fouling.	C. Call Water Control Corp, find out how to confirm it, clean the resin and prevent.
	D. Poor distribution, channeling (uneven bed surface).	D. Call Water Control Corp. Check distributors and backwash flow.

Water Softener System Parts List

<p>Control Valve</p> <p>Resin Tank</p> <p>Distributor</p> <p>Resin</p> <p>Brine Tank Cabinet</p> <p>Brine Line</p> <p>Overflow Fitting</p> <p>Brine Well</p> <p>Air Check</p> <p>② <u>Cabinet Models</u> 3/4" = 1'-0"</p>		<p>Water Softener Parts List</p>	<p>11/08/2013</p>
<p>Control Valve</p> <p>Resin Tank</p> <p>Distributor</p> <p>Resin</p> <p>Brine Tank</p> <p>Brine Line</p> <p>Brine Well</p> <p>Air Check</p> <p>① <u>Two Tank Models</u> 3/4" = 1'-0"</p>			

Please contact Water Control Corporation or your dealer for parts availability.

Maintenance / Warranty Information



All BrassMaster and BrassMaster Plus water softeners feature the Assured Performance Modular (APM) design. If you experience a failure of any valve component, the brass module can be easily removed and replaced. Reference the BrassMaster and BrassMaster Plus Technical Video Library on our website (link is provided below) for detailed steps on how to remove the module. The required (downloadable) form to have your module replaced is also located at this site. Please contact your dealer or Water Control Corporation for module support.

Salt Maintenance

You must keep salt in the tank. The salt tank operates best when the salt level is below half full. If the tank is filled more than that the salt pellets may "bridge". The salt pellets wedge against each other and do not fall into the water at the bottom. Bridging will eventually provide no salt to make brine. The softener will recharge but not recondition the media. A salt bridge can be broken up using a broom handle or similar rod. Carefully pound it into the salt and the pellets will collapse. After loosening the salt pellets wait 2 hours and start a regeneration. A second recharge may be needed to fully recondition the media. You should only use sodium chloride pellet salt for water softeners. Other types of salt (rock or snow melting) will contain dirt and chemicals that will affect your water softener.

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<https://watercontrolinc.com/residential-technical-support/residential-technical-videos>
BrassMaster technical videos demonstrate how to set up or remove the control module.
Replacement control modules are available at <https://watercontrolinc.com/residential-technical-support/>

For factory module support contact:
Water Control Corporation
7150 143rd Ave NW • Ramsey, MN 55303
Phone: 1-866-405-1268 • Fax: 763-427-5665
www.watercontrolinc.com

Official Warranty

Water Control Corporation

BrassMaster Series Water Softeners

Limited Warranty

Water Control Corporation warrants the control valve to be free of manufacturer's defects for a period of 3 (three) years from the date of installation, and the fiberglass reinforced mineral tank, and plastic brine tank, to be free from leaking due to manufacturer's defects for a period of 5 (five) years. We will, at our discretion, repair or replace defective products. This warranty does not include any costs associated with removal of defective products, or installation of replacement products. All replacement parts will be provided FOB Ramsey, MN. This warranty is transferable.

DISCLAIMER OF IMPLIED WARRANTIES

Water Control Corporation makes no warranties except those expressly stated in this document. To the extent permitted by the laws of the applicable state, **ALL WARRANTIES CONTAINED IN THIS DOCUMENT ARE EXPRESSLY IN LIEU OF, AND WATER CONTROL CORPORATION EXPRESSLY DISCLAIMS, ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

WHAT IS NOT COVERED BY THESE WARRANTIES

1. Conditions and damages resulting from any of the following:
 - Wear caused by unfavorable water conditions
 - Improper installation, delivery, or maintenance
 - Any repair, modification, alteration, or adjustment not authorized by the manufacturer or an authorized servicer
 - Misuse, abuse, accidents, or unreasonable use
 - Improper setting of any control
 - Incorrect electric current, voltage, or supply
2. Warranties are void if the original serial numbers have been removed, altered, or cannot be readily determined.
3. The cost of service or service call to:
 - Correct installation errors
 - Instruct the user on proper use of the product
 - Transport the product to the servicer
4. Any costs associated with removal of defective products, or installation of replacement products.
5. Consequential, special, or incidental damages sustained by any person as a result of the breach of these warranties. Some states do not allow the exclusion or limitation of consequential or incidental damages, so the above exclusion may not apply to you.

Official Warranty

Water Control Corporation

BrassMaster Plus Series Water Softeners

Limited Warranty

Water Control Corporation warrants the control valve to be free of manufacturers defects for a period of 5 (five) years from the date of installation, and the fiberglass reinforced mineral tank, and plastic brine tank, to be free from leaking due to manufacturers defects for a period of 5 (five) years. We will, at our discretion, repair or replace defective products. This warranty does not include any costs associated with removal of defective products, or installation of replacement products. All replacement parts will be provided FOB Ramsey, MN. This warranty is transferable.

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 - Transport the product to the servicer
4. Any costs associated with removal of defective products, or installation of replacement products.
5. Consequential, special, or incidental damages sustained by any person as a result of the breach of these warranties. Some states do not allow the exclusion or limitation of consequential or incidental damages, so the above exclusion may not apply to you.