

# BRASSMASTER PLUS+



## LS MODELS

### Nitrate-Only Filter Installation / Operation Manual



**IMPORTANT:** Test your water 2x annually (every 6 months) to ensure proper system operation!  
Two postage pre-paid test bottles included!

To reorder, visit [watercontrolinc.com/nitramax-nitrate-removal](https://watercontrolinc.com/nitramax-nitrate-removal) or scan this QR code:



**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/>

# Warning!

Consuming water with combined nitrate/nitrite levels above the USEPA MCL (Maximum Contaminant Level) of 10 PPM (10 mg/L) can cause breathing/oxygen absorption problems in infants and animals — and may be linked to certain cancers.

Always install and operate this system according to manufacturer instructions. Test water every six months to verify proper system operation.

Water Control offers inexpensive, non-certified test services (the first 2 test bottles are included free with system).

## Nitrate (+ Nitrite + Sulfate) Filter

Specifications	NM-150-LS	NM-250-LS
Nitrate+Nitrite+Sulfate capacity (raw water) (PPM)	100	100
Anion (nitrate) media (cu.ft.)	1.5	2.5
Max hardness (raw water) (GPG)	3	3
Max iron (raw water) (PPM)	0	0
Service flow rate (GPM)	8	13
Water used per regeneration (gals)	70	85
Salt used per regeneration (lbs)	8	13

## Capacity Calculation

Multiply nitrate and nitrite concentration (PPM\*) by 0.0474 to calculate Grains per Gallons of nitrate and nitrite

\*PPM=mg/L

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# Installation Procedure

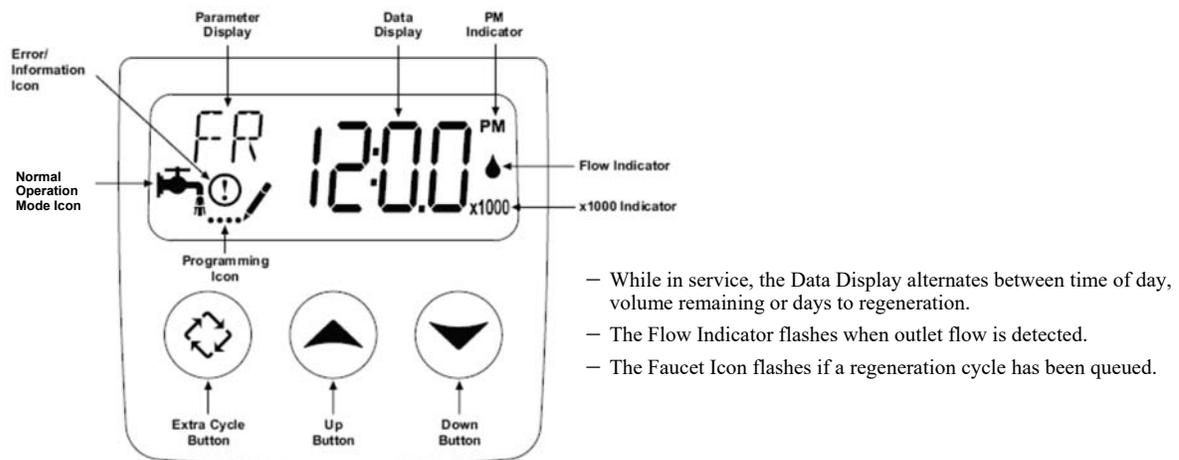
1. **Identify installation location for NitraMAX system.** Piping should be such that all household water, with the exception of outside hydrants, flows through NitraMAX. This system and installation must comply with state and local laws and regulations. NitraMAX must be supplied with soft water (<3 GPG). Always install down stream of water softener.
2. **Connect water piping.** This unit has been supplied with a manually operated bypass device which enables the system to be isolated from the water service lines for maintenance and service, and also maintain a constant water supply when the NitraMAX is disconnected. *Important: Make all sweat-solder connections within 6 inches of NitraMAX 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 drain line fitting from parts bag. Apply thread seal tape to threads and install into the female threaded opening on the back side of the control valve. Connect 5/8” drain line (supplied in parts bag) to barbed 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 an 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.** 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 120VAC, 15Amp, ground fault interrupt (GFI) outlet.
7. Add 1—2 bags of sodium chloride or potassium chloride to the brine tank. WCC recommends pellet salt from manufacturers such as Morton or Diamond.

**Proceed to start-up procedure.**

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.

# Start-Up Procedure

## *Placing unit into service*



### 1. Fill the mineral tank with water

- Keep NitraMAX 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

## Setting current time of day



### Setting Current Time / Day

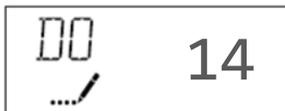
1. Press either the Up or Down buttons to adjust current time of day by one digit. Press and hold either the up or down button to adjust current time of day display by several digits. Ensure the AM/PM setting matches the current time of day.

## 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
H	System Capacity (Nitrate + Nitrite)	Enter setpoint (Grains per Gallon) calculated in Page 2 capacity calculation formula.
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 simultaneously 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.



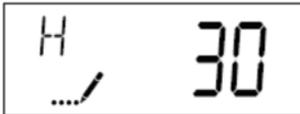
2. **Set Day Override:** This setting specifies the maximum number of days between regeneration cycles. System will regenerate regardless of usage if the days since last regeneration cycle equals the day override setting. This ensures regular regeneration periods. Recommended/standard setting is 14 days.

# Start-Up Procedure

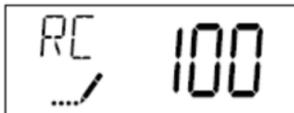
## *User programming (cont'd)*



- 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. NOTE: If installed downstream of other equipment, program all equipment regen times such that each piece of equipment has a minimum of 90 minutes (each) for regeneration.



- 4. Set System Capacity:** Press the Extra Cycle button to advance to next option. Set the system capacity in Grains per Gallon, as calculated on page 2 (round up to the nearest whole number). 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.

# 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, or salt with iron-removing additives.*

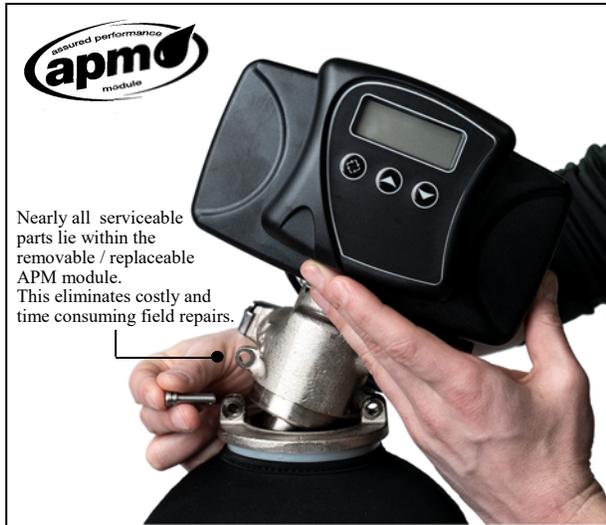
## Cleaning the Brine Injector Assembly

**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/>

# Maintenance



All BrassMaster Plus water treatment systems 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

Failure to maintain salt in the brine tank will allow nitrates into your water!

You must keep salt in the brine tank. The salt tank operates best when the salt level is below half full. Excessive brine tank filling may cause a salt “bridge” to form. The salt pellets wedge against each other preventing the salt pellets from fully submersing. This will prevent a proper brine solution from forming which will not allow the NitraMAX to regenerate properly. The NitraMAX will regenerate 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 manual regeneration. A second system regeneration may be needed to fully recondition the media. You should only use sodium chloride or potassium chloride pellet salt for NitraMAX systems. Other types of salt (rock or snow melting) will contain dirt and chemicals that will affect your system.

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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 143<sup>rd</sup> Ave NW • Ramsey, MN 55303  
Phone: 1-866-405-1268 • Fax: 763-427-5665  
[www.watercontrolinc.com](http://www.watercontrolinc.com)

# Troubleshooting

<b>1. Softener Fails To Regenerate.</b>	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.
<b>2. Softener Delivers Nitrates.</b>	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.	
O. Nitrate breakthrough.	O. Contact Water Control.	
<b>3. Unit Uses Too Much Salt.</b>	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.
<b>4. Loss of Water Pressure.</b>	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)

<b>5. Loss of Resin Through Drain Line.</b>	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.
<b>6. Iron in Conditioned Water.</b>	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.
<b>7. Excessive Water in Brine Tank.</b>	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.
<b>8. Salt Water in Service Line.</b>	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.
<b>9. Softener Fails to Draw Brine.</b>	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.)
<b>10. Drain Flows Continuously.</b>	A. Foreign material in control.	A. Remove piston assembly and inspect bore, remove foreign material & check control in various ports.
<b>12. Loss of capacity.</b>	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.

# Official Warranty

## Water Control Corporation

### BrassMaster Plus Water Treatment Systems

#### Limited Warranty

Water Control Corporation warrants the control valve to be free of manufacturer's 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 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, damages, and health effects resulting from any of the following:
  - Wear or malfunction 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
  - Failure to test water at recommended intervals
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.

