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## **Installation and Operation Manual**



# MP-MBA-15T-30T using the 255/762 Logix Control Valve

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## Installation and Operating Instructions for 255/762 Logix Top Mount Water Softener

Model #:

MP-MBA-15T	15,000 Grain Water Softener
MP-MBA-30T	30,000 Grain Water Softener

## Shipping Carton Description / unit:

# of cartons	Contents	Description
1	Mineral tank	Distributor pipe installed
1	Brine tank	Brine pick-up tube assembly <b>*NOTE:</b> 255/762 Logix valve is shipped in brine tank.
1	255/762 Logix control valve	255/762 timer and backwash flow control and 256 bypass with 3/4" copper or pvc connection
	C-800	PRE-LOADED AT FACTORY

## System Description:

The softener tank has a Logix top mounted automatic control valve with an impulse meter to initiate regeneration. The Logix Valve is constructed of non-corrosive Noryl® material and is rated at a maximum working water pressure of 100 psi. This softener includes a manually operated bypass device which enables the softener to be isolated from the water service lines for maintenance and service while maintaining the continuity of the (untreated) water supply. It uses a 762 microprocessor based timer in conjunction with an internal impulse meter to actuate regeneration in the following ways:

- a. Microprocessor based water meter to initiate regeneration
- b. Manual regeneration button to start an emergency regeneration
- c. Calendar day override
- NOTE: THIS SOFTENER IS NOT INTENDED TO BE USED FOR TREATING WATER THAT IS MICROBIOLOGICALLY UNSAFE OR OF UNKNOWN QUALITY WITHOUT ADEQUATE DISINFECTION WHETHER BEFORE OR AFTER THE SYSTEM.

**NOTE:** The model MP-MBA-30T has been tested and certified by the Water Quality Association according to NSF/ANSI 44 for the specific performance claims as verified and substantiated by test data as follows:



Rated Efficiency:3890 Grains per pound of salt3.5 lbs salt:13.6 Kg Capacity9 lbs salt:26.7 Kg Capacity15 lbs salt:31.0 Kg CapacityRated Service Flow:10.0 GPM @ 12 psi pressure dropResin:1.0 Cubic Ft. Cation Exchange resin

## Water Softener Positioning:

- 1. Place water softener in desired position, far enough from walls and other obstructions to allow for servicing the unit.
- 2. Place the water softener within reasonable access to a grounded 115V/60 HZ circuit and a legal drain line connection.

## Logix Control Valve:

 When facing the front of the Logix timer, the inlet connection (Figure 1) is located on the left and the outlet connection is on the right. The control valve's inlet and outlet connections are either 3/4" copper or pvc equipped with gasket and nut.



Install the 256 bypass valve (See Figure 2) with inlet and outlet handles facing upward. Place gasket into nut and secure 3/4" copper or pvc tail piece with a nut. Repeat the procedure for the outlet connection.

## DO NOT OVERTIGHTEN THE NUT.



- 2. The control valve's drain connection is 1/2" npt and is located on the back of the control valve.
- 3. Turn the control valve upside down and ensure that the control valve o'rings are in place. Use silicone lubricant on the o'rings.
- 4. Place the control valve onto the distributor pipe.
- 5. Thread the control valve hand tight to 20 foot pounds!

## DO NOT OVERTIGHTEN!

# \*\*DO NOT USE PETROLEUM!\*\* \*\*USE ONLY SILICONE \*\*

## Service and Drain Piping:

- 1. Pipe water softener into the service lines .The inlet and outlet connections of the control valve are 3/4" copper or pvc and are located on the back of the valve body. As you face the timer the inlet is on the left and the outlet is on the right. Always follow local plumbing codes when installing our water treatment equipment.
- If sweat fittings are used, be sure soldering is done in such a manner as not to allow heat to reach the control valve or bypass. (If Schedule 80 PVC is used make sure to follow the proper primer and solvent instructions.)
- 3. The drain line connection is located on the back of the valve as you face the timer. It is recommended you install a 1/2" union on the drain line for servicing. The drain line must be of adequate size to allow for full regeneration flow.





- The control valve drain connection is 1/2" npt.
- Never decrease the drain piping size to below1/2"OD
- Maximum drain line length is 30 feet.
- Maximum drain line height is 6 feet above the control valve.
- The drain line must be piped to an open air gap (See Figure 3)
- Always follow local plumbing codes.

## UNDER NO CIRCUMSTANCES SHOULD THERE BE A DIRECT CONNECTION WITH SANITARY SEWAGE FACILITIES.

NOTE: The drain flow rate during regeneration (backwash) will be:

MP-MBA-15T	1.6 GPM
MP-MBA-30T	2.5 GPM



## **Typical Piping Layout**



**NOTE:** All Master Water Conditioners must be installed after the well tank or water meter if its public water supply.

Temperature : MAX: 120 F, MIN: 34F Pressure: MAX: 100 PSI, MIN: 20 PSI Electrical: 115V/ 60 HZ

## Electrical Requirements:

Always follow all local electrical codes when installing our water treatment equipment.

- 1. Provide an 115v/60Hz properly grounded dedicated electrical outlet. (It's very important that the polarity be correct) Avoid using outlets that are switch controlled.
- 2. Maximum amperage required is 5 amps.
- 3. Make sure the electrical service provides power 24 hours per day. We recommend installing a **surge protector** to protect unit from power surges, which are not covered by warranty.

## Brine Tank:

- 1. The brine tank should be located directly beside the water softener mineral tank.
- Connect the 3/8" poly tubing to the 3/8" white elbow compression fitting located on the right side of the Logix control valve.
  See Figure Below.

Air Check for 255 Valve



If the brine tank is equipped with a shutoff valve, the float height was preset at the factory.



## Logix Control Valve Electrical Connection:

Note: Do not touch the wiring harness between the Logix timer and the motor, it's positioning is critical and therefore already installed at the factory.



742/762 Turbine Input or Dry Contact Signal Input

Do not run wires through holes in topplate.



- 1. Remove plastic control valve cover by spreading sides while lifting.
- 2. Plug transformer into back of timer following existing wires.
- 3. Plug transformer into a properly grounded 120V/60 HZ electrical outlet.
- 4. The screen will now change between the "Gallons Remaining to Regeneration" and the current "Gallons per Minute" (gpm) flow rate.

## Filling Water Softener with Water:



1. Push the FOR REGENERATION button (Figure 4) on the controller down for 5 seconds. This will initiate a manual regeneration. You will notice a flashing hour glass during regeneration.

The controller will indicate that the motor is turning the camshaft to cycle C1 (BACKWASH). The controller will indicate the total regeneration time remaining. Filling tank in this position allows air to escape from drain.

Open the bypass inlet valve 1/4 turn and allow water to flow into the mineral tank at a slow rate.

## Warning: IF WATER ENTERS THE TANK TOO FAST, ALL THE RESIN WILL BE FLUSHED TO DRAIN DURING START UP.

- 2. When water is running steadily at the drain, open the bypass valve's inlet and outlet to their maximum position.
- 3. Simultaneously press the SET and UP buttons on the controller for 1 second then release, the motor will advance the cam to C2. Once C2 is displayed simultaneously press the SET and UP buttons on the controller for 1 second then release, the motor will advance the cam to C3. Repeat this procedure until the timer enters the C7 (FAST RINSE) position. The softener will go through the rinsing cycle and then automatically advance to (BRINE REFILL) C8 and fill the brine tank with the proper amount of water.
- 4. The control valve will advance to C0 (REGENERATION COMPLETE) and Time of Day will be displayed. This is treated water.

### Regeneration Cycles:

- C1 Backwash
- C2 Regeneration Draw/Slow Rinse (not used in filter mode)
- C3 Slow Rinse (not used in filter mode)
- C4 System Pause (to repressurize tank)
- C5 Fast Rinse cycle 1
- C6 Backwash cycle 2 (not used in filter mode)
- C7 Fast Rinse cycle 2 (not used in filter mode)
- C8 Regenerant Refill (not used in filter mode)

# Logix Control Valve Timer Settings: (See Figure 5)

**Note:** The control valve is set at the factory. You only need to set the hardness, time of day and regeneration time if required, which is preset at 2 am.



## Time of Day Setting

- 1) Press the SET button. The screen will show the Time of Day in blinking numbers.
- 2) To change the Time of Day, use the UP or DOWN arrows.
- 3) Press the SET button.

## Day of Week Setting

- 1) Press the SET button. The screen will show the Day of Week in blinking triangle.
- 2) To change the Day of Week, use the UP or DOWN arrows.
- 3) Press the SET button.

## Time of Regeneration Setting (the factory default is 2 AM)

- 1) Press the SET button. The screen will show the Time of Regeneration in blinking numbers.
- 2) To change the Time of Regeneration, use the UP or DOWN arrows.
- 3) Press the SET button.

## Regeneration Day Override Setting (the factory default is 0)

- 1) Press the SET button. The screen will show the Regeneration Day Override in blinking numbers.
- 2) To change the number, use the UP or DOWN arrows.
- 3) Press the SET button.

## Salt Amount Setting

- 1) Press the SET button. The screen will show the Salt Amount as pounds in blinking numbers.
- 2) DO NOT CHANGE THE NUMBER.
- 3) Press the SET button.

## Softening Capacity Setting

- 1) Press the SET button. The screen will show the Capacity as grains in blinking numbers.
- 2) DO NOT CHANGE THE NUMBER.
- 3) Press the SET button.

## Hardness Setting (the factory default is 10)

- 1) Press the SET button. The screen will show the Hardness as grains per gallon in blinking numbers.
- 2) To change the number, use the UP or DOWN arrows.
- **3)** Press the SET button.

# Note: The screen will now flash between flow rate and gallons remaining until next regeneration.

# If water was tested by Master Water Conditioning, follow recommendations on water analysis, for hardness setting.

## Final Check:

- 1. Fill the brine tank with Solar Salt and the Res-Up Feeders with Res-Up (one quart is provided).
- 2. Make sure the drain line connection meets all plumbing codes and that the drain line size can handle the backwash flow rate of the softener.
- 3. Make sure the Inlet and Outlet on bypass valve are open.
- 4. Make sure the control valve timer is plugged into an electrical outlet with power 24 hours per day.
- 5. Check all piping for leaks.

### **Disinfection of Water Conditioners**

The materials of construction of the modern water conditioner will not support bacterial growth, nor will these materials contaminate a water supply. However, the normal conditions existing during shipping, storage and installation indicate the advisability of disinfecting a conditioner after installation, before the conditioner is used to treat potable water. In addition, during normal use, a conditioner may become fouled with organic matter or in some cases with bacteria from the water supply.

Thus every conditioner should be disinfected after installation, some will require periodic disinfection during their normal life, and in a few cases disinfection with every regeneration would be recommended.

Depending upon the conditions of use, the style of conditioner, the type of ion exchanger, and the disinfectant available, a choice can be made among the following methods.

### Sodium or Calcium Hypochlorite

### Application

These materials are satisfactory for use with polystyrene resins, synthetic gel zeolite, greensand and bentonites.

### 5.25% Sodium Hypochlorite

These solutions are available under trade names such as Clorox Bleach\*. If stronger solutions are used, such as those sold for commercial laundries, adjust the dosage accordingly.

- 1. Dosage
  - Polystyrene resin: 1.2 fluid ounces per cubic foot.
  - Non-resinous exchangers: 0.8 fluid ounce per cubic foot.

'Clorox is a registered trademark of The Clorox Company.

### 2. Brine tank conditioners

- Backwash the conditioner and add the required amount of hypochlorite solution to the brine well of the brine tank. (The brine tank should have water in it to permit the solution to be carried into the conditioner.)
- b. Proceed with the normal regeneration.

### **Calcium Hypochlorite**

Calcium hypochlorite, 70% available chlorine, is available in several forms including tablets and granules. These solid materials may be used directly without dissolving before use.

- 1. Dosage
  - Two grains (approximately 0.1 ounce) per cubic foot.
- 2. Brine tank conditioners
  - Backwash the conditioner and add the required amount of hypochlorite to the brine well of the brine tank. (The brine tank should have water in it to permit the chlorine solution to be carried into the conditioner.)
  - b. Proceed with the normal regeneration.

## Troubleshooting

## Symptom: Water conditioner fails to regenerate. No soft water.

Possible Cause	Solution
Power supply to 762 control has	Determine reason for power
been interrupted.	interruption and correct. Reset time of
	day.
Water pressure lost.	Restore water pressure.
For 762 series turbine failure.	Clean or replace turbine.
Corrupted programming of 762	Reprogram timer assembly.
Logix timer.	
Defective 762 Logix timer.	Replace timer assembly.
No salt in brine tank.	Add salt and regenerate.
Manual bypass valve is open.	Close manual bypass valve.
Leak at riser pipe seal.	Insure that riser pipe is properly
	sealed at o'ring seal. Inspect pipe for
	cracks.
Insufficient brine.	Check brine float height and clean
	assembly if necessary. Check flow
	rate capabilities of safety float and air
	check assembly.
Plugged injector or injector screen.	Inspect and clean injector and/or
	injector screen.

## Symptom: No Brine Draw

Possible Cause	Solution
Plugged injector or injector screen.	Inspect and clean injector and/or
	injector screen.
Insufficient water pressure.	Increase water pressure above 25 psig (172kPa) minimum.
Corrupted programming of 762	Reprogram timer assembly.
Logix timer.	
Defective 762Logix timer.	Replace timer assembly.
Obstructed drain line.	Remove obstruction.

## Symptom: Insufficient brine draw

Possible Cause	Solution
Partially clogged injector or injector	Inspect and clean injector and/or
screen.	injector screen assembly.
Restricted flow rate in brine line.	Check flow rate capabilities of the
	safety float/aircheck assembly.
Insufficient water pressure.	Increase water pressure above 25
	psig (172kPa) minimum.
Excessive back pressure on	Reduce drain line elevation to height
injector due to elevated drain line.	of valve.
Damaged valve disk.	Replace all valve disks.
Partially restricted drain line.	Remove restriction.

## **Symptom:** Insufficient Refill to Brine Tank

Possible Cause	Solution
Brine refill control	Remove and clean
Restricted flow rate in brine line.	Check flow rate capabilities of the safety float/aircheck assembly.

## **Symptom:** Excessive Water in Brine Tank

Possible Cause	Solution
Plugged drain line flow control.	Clean flow control.
Plugged injector and/or injector	Inspect and clean injector and/or
screen	screen.

## Symptom: Loss of Media to Drain

Possible Cause	Solution
No flow control installed in drain	Install drain line flow control.
line.	

## Symptom: Leak to Drain

Possible Cause	Solution
No flow control installed in drain	Install drain line flow control.
line.	
Insufficient water pressure.	Increase water pressure above 25
	psig (172kPa) minimum.
Damaged valve disk or obstruction	Inspect and if damaged, replace all
in valve disk.	valve disks or remove obstruction.

## Symptom: Loss of Water Pressure

Possible Cause	Solution
Fouled resin bed due to iron	Clean control valve and mineral bed
accumulation.	with cleaner.
Slots in riser pipe or laterals are	Inspect and clean distributor pipe slots
filled with resin fines.	as needed.

## Symptom: Salt in Water to Service After Regeneration

Possible Cause	Solution
Injector is too small for system size.	Install correct injector
Brine draw time excessively long	Increase water pressure above 25
due to low water pressure.	psig (172 kPa) minimum.
Restricted drain line.	Remove drain line restriction.
Insufficient rinse volume.	Increase slow rinse time, fast rinse
	time, or both.
Damaged valve disk.	Replace all valve disks.
Plugged injector and/or injector	Inspect and clean injector and/or
screen.	injector screen.

## TROUBLESHOOTING

## 700 Series Controller Troubleshooting

Problem	Possible Cause	Solution
ERR 1 is displayed	Controller power has been connected and the control is not sure of the state of the operation.	Press the UP arrow and the control should reset.
ERR 2 is displayed	Controller power does not match 50 or 60 Hz.	Disconnect and reconnect the power. If problem persists, obtain the appropriate controller or AC adapter for either 50 or 60 Hz power.
ERR 3 is displayed	Controller does not know the position of the camshaft. Camshaft should be rotating to find Home position.	Wait for two minutes for the controller to return to Home position. The hourglass should be flashing on the display indicating the motor is running.
	Camshaft is not turning during ERR 3 display.	Check that motor is connected. Verify that motor wire harness is connected to motor and controller module. Verify that optical sensor is connected and in place. Verify that motor gear has engaged cam gear. If everything is connected, try replacing in this order: —Wire harness —Motor —Optical sensor —Controller
	If camshaft is turning for more than five minutes to find Home position:	Verify that optical sensor is in place and connected to wire. Verify that camshaft is connected appropriately. Verify that no dirt or rubbish is clogging any of the cam slots. If motor continues to rotate indefinitely, replace the following components in this order: —Wire harness —Motor —Optical sensor —Controller
Four dashes displayed: — — : — —	Power failure occurred	Press SET to reset the time display.

## 255 VALVE EXPLODED VIEW



\*Warning: Do not use flow control ball with #18A.

## **255 VALVE PARTS LIST**

	Part				Part		
Code	No.	Description	Qty.	Code	No.	Description	Qty.
1	1000232	255 Valve Assembly, w/o Flow Controls	1	14	1000226	Screen/Cap Assembly w/ O-Ring	1
2	1033784	255 Tank Adapter New Style	1	15		Injector (High Efficiency) Options	1
3	1010429	O-Ring BN	1		1030408	"E" Injector (HIgh Efficiency) - Yellow	
4	1010428	O-Ring EP			1030409	"F" Injector (High Efficiency) - Peach	
5	1235340	Top Plate, 255 Valve, 700/860 Series	1		1030410	"G" Injector (High Efficiency) - Tan	
		Controller			1030411	"H" Injector (High Efficiency) - Lt Purple	
6	1235341	Spring, One Piece, 255 Valve	1		1030412	"J" Injector (High Efficiency) - Lt Blue	
7	1236246*	Cover, Valve, 255/Performa, 700/860	1		1030413	"K" Injector (High Efficiency) - Pink	
		Series Controller			1035736	"L" Injector (High Efficiency) - Orange	
8	1001404	O-Ring Group: Tank Adapter	1		1035737	"M" Injector (High Efficiency) - Brown	
9	1040459	O-Ring Group: Piping Boss	1		1035738	"N" Injector (High Efficiency) - Green	
10	1001986	13/16 inch Rubber Insert (Optional)	1		1035739	"Q" Injector (High Efficiency) - Purple	
*	1000250	Valve Disk Kit - Standard	1		1035884	"R" Injector (High Efficiency) - Dark Gray	
*	1041196	Blending Valve Kit 900/700 Series Top	1	16	1000269	Injector Cap with O-Ring	1
		Plate		17		Drain Control Assembly with O-Ring	1
11		Locking Bar	1		1000209	No. 7 (1.2 gpm; 4.5 Lpm)	
	1031402	English Language Locking Bar			1000210	No. 8 (1.6 gpm; 6.1 Lpm)	
	1031403	French Language Locking Bar			1000211	No. 9 (2.0 gpm; 7.6 Lpm)	
	1031404	German Language Locking Bar			1000212	No. 10 (2.5 gpm; 9.5 Lpm)	
	1031405	Italian Language Locking/Bar			1002130	No. 12 (3.5 gpm; 13.2 Lpm)	
	1031406	Japanese Language Locking Bar			1000214	No. 13 (4.1 gpm; 15.5 Lpm)	
	1031407	Spanish Language Locking Bar			1000215	No. 14 (4.8 gpm; 18.2 Lpm)	
	1006093	Locking Bar Screw - No. 8-9/16 inch		18A	1000222	Regenerant Refill Controller, No Ball	1
12		Camshaft Options	1	18B	1243510	Regenerant Refill Controller	
	1235353	Cam 255/700-860 Series Valve, STD,		19		Air Check Kit	1
		Black			1032416	Air Check Kit 3/8-inch male	
	1236251	Cam 255/700-860 Series Valve, TWIN,			1032417	Air Check Kit 1/4-inch male	
		Tan (insert)		20	1235373	Module, Sensor, Photo Interrupter	1
13	1235269	Motor/Optical Cable Assembly, 700	1	21	1235361	Motor w/Spacer & Pinion, 700 Series	1
		Series Controller				Controller, 12 V, 50/60 Hz	
				22	1030502	Ball, Flow Control	1
				*	1033066	New to Old Style Aircheck Adapter	1

\*Not Shown

## Logix 700 Series Controllers Parts List





700 Control Overlays

	Part				Part		
Code	No.	Description	Qty.	Code	No.	Description	Qty.
		Electronics Modules/Controllers	1			AC Adapter	
	1242150	Logix 742 Controller			1000810	Japanese	
	1242162	Logix 742 F Controller			1000811	North American	
	1242168	Logix 762 Controller			1000812	Australian	
	1242170	Logix 762F Controller			1000813	British	
		Electrical Components			1000814	European	
	1235269	Motor/Optical Cable Assembly, 700			1030234	Transformer Extension Cord 15 foot (4.5m)	
		Series Control		:	1235448	North American Outdoor AC Adapter	
	1235373	Module, Sensor, Photo Interrupter				Overlays	
	1235361	Motor w/Spacer & Pinion, 700 Series			1238472	Overlay, 716 Controller, English	
		Controller 12V, 50/60 Hz			1238476	Overlay, 740C/742C Controller, English	
	1244336	Refill Sensor Probe for Salt Detector					
		Applications					
	1256257	Remote Mount Kit					

## **<u>12 YEAR LIMITED WARRANTY</u>**

As of November 2022

This Residential Water Conditioner is warranted for a period of **one year** from date of purchase by first user against defects in materials and workmanship. In addition, the complete control valve is warranted for **five years**. The control valve body (excluding internals and electrical parts) is warranted for **six years**. The mineral tank, plastic brine tank or cabinet tank (excluding mineral) is warranted against rust, corrosion or bursting for a period of **twelve years** from date of manufacture. Except, as specifically set forth in this paragraph, Master Water Conditioning Corporation makes no other warranties, express or implied.

This warranty shall be void if the conditioner is moved from the place of original installation, or if damage is caused by misuse, misapplication, accident, freezing, flood, fire or if not installed in accordance with instructions furnished by Master Water Conditioning Corporation.

This warranty shall be void in the event of damages from external sources or where the conditioner has been operated at pressure in excess of 100 pounds per square inch or at a temperature greater than 100 degrees F. or less than 32 degrees F. Incidental costs or consequential damages are not covered by this warranty.

All defective parts shall be returned prepaid to Master Water Conditioning Corporation for inspection. Master shall not be liable for labor charges other than Master factory repairs.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state. Some states do not allow limitations on duration of implied warranties or exclusion of incidental or consequential damages, so the above limitations may not apply to you.

All claims must be submitted in writing to Master Water Conditioning Corporation at 224 Shoemaker Road, Pottstown, Pennsylvania 19464 within thirty (30) days from the discovery of the defect. Master Water Conditioning Corporation thereafter will correct defective parts and workmanship or rusting, corrosion or bursting within sixty (60) days.



224 Shoemaker Rd. Pottstown, Pa. 19464