

# INDUSTRIAL PACKAGED WATER SOFTENERS



(Triple System with Skid Mount, Prepipe and Prewire Option Shown)

Quality Products for Quality Water



## SYSTEM DESIGN

MARLO "MHC" water softeners utilize a system of integrated components selected for optimum performance and reliability. Ease of field service and availability of parts are also important criteria in the selection of components.

### ■ High Capacity Resin

MARLO high capacity resin is of uniform bead size possessing high exchange capacity and low pressure loss combined with excellent stability over a wide range of operating conditions.

### ■ Regeneration Module

Individually sized diaphragm valves arranged in a piping module according to the flow pattern of each mode of regeneration ensure reliable and efficient operation. Flexibility of design is possible without the use of auxiliary service valves associated with multiport control valves. Automatic by-pass during regeneration is provided on single units.

### ■ Regeneration Control

The regeneration modes are automatically controlled by a staging pilot coupled to a programmable time clock. The staging pilot can be supplied with hydraulic or pneumatic pressure for flexibility of operation. Pushbutton start and means for manual operation are provided as standard.



## APPLICATION DATA

### ■ Pressure Range

30 psi minimum pressure required to ensure proper brining. 100 psi maximum pressure with standard units. Equipment available for higher pressures.

### ■ Temperature

Standard equipment is suitable for water up to 120° F. Custom fitted equipment is available for higher temperatures and special applications.

### ■ Electrical

110 volt, 60 hertz, 1 phase AC power is standard. MARLO controls are available for other electric requirements. Electrical enclosures are NEMA 12 rated as standard. Other NEMA ratings are available on request.

## RESIN TANK

### Standard Construction

The resin tank is fabricated of heavy gauge carbon steel, electrically welded and epoxy lined (10-12 mil) over a sand blasted surface to ensure proper adhesion and complete coverage of all surface areas, exterior surfaces are prime painted ready for finish coating after installation. A 11" x 15" manway in the upper head is provided on 48" diameter through 72" diameter sizes. Larger sizes are supplied with 12" x 16" manways.

### ASME Code

The resin tank is available fabricated in accordance with ASME code, certified, and stamped with standard pressure rating 100 psi working pressure - 150 psi test, with other pressure ratings available.

### Exterior Finish Coatings

Tank exterior finish coatings are available. MARLO "Safety Blue" epoxy (4-6 mil) is supplied on request. Consult MARLO'S engineering staff for other exterior coating requirements.

## UNDERDRAIN

The MARLO hub-radial distribution system ensures utilization of the entire bed area during all flow rates and also minimizes channeling during periods of low flow.

The hub-radial design features non-clogging strainers arranged in a radial network. The strainers are molded from ABS and the radial pipes are fabricated from heavy duty PVC pipe. This construction provides the ultimate in corrosion resistance and long trouble-free service. The system uses a single layer of fine washed gravel to avoid intrusion of resin fines and eliminate wasted capacity in the bottom area of the resin bed.

### Upper Distributor

An inlet baffle type distributor is provided to properly distribute the inlet water and collect the backwash water.

# ... DESIGNED FOR PERFORMANCE

## OPTIONS

### ■ Water Meters

A water meter increases the efficiency of operation where demand is variable. Often times capital costs can be reduced by installing smaller multiple tank meter controlled softeners capable of regenerating several times daily.

#### MA Series

- Electronic programmable with digital volume and flow display.
- Operates 1 to 3 softeners in single, alternating or parallel configurations.
- Utilizes full diameter non metallic turbine meter. - 2" size only

#### MF Series

- Electromechanical programmable with dial volume indicator.
- E. T. electronic digital display register is also available.
- Operates 1 to 3 softeners in single, alternating or parallel configurations.
- Utilizes full diameter brass turbine meter. 2" and 3" size only



## DIAPHRAGM VALVES

The diaphragm valves used are of the "Y" pattern design allowing for higher flow rates at lower pressure drops. The valves use a guided stem design and are operated hydraulically with the system water pressure, or pneumatically with plant air pressure. Double acting service butterfly valves are supplied on 6" and 8" systems.

### Backwash Controller

An automatic flow controller maintains the proper backwash flow rate over wide variations in operating pressure, utilizing a variable orifice concept requiring no field adjustments.



### Timer/Stager

The timer uses a calendar clock for flexibility in regeneration scheduling, with a means for manual initiation as standard.

A motor driven multiport stager is coupled with the timer to automatically control each step of the regeneration cycle. The stager can be manually operated in the event of electrical power failure. The sequence timer is adjustable to allow for variations in operation conditions.

### MB Series

- Electronic programmable with digital data display.
- Electromechanical auto reset register is also available.
- Operates 1 to 3 softeners in single, alternating or parallel configurations.
- Utilizes full diameter metallic disc or turbine meter from 2" to 6" with AWWA listing.

### MX Series

- Electronic programmable with digital volume remaining, flow rate, totalizer and regeneration cycle indicators.
- Operates 1 to 3 softeners in single, alternating, parallel or additive flow configurations.
- Utilizes insertion type paddlewheel flow sensor from 2" through 8".

### ■ Lockouts

Lockout circuitry and components are provided to prevent simultaneous regeneration of multiple unit configurations.

### ■ Alternator

To provide one or more units in service with one or more units in a standby mode. This assures a constant supply of soft water without interruption.



## BRINE MAKER

MARLO'S combination salt storage and brine measuring system allows for maximum salt storage. The system, in essence, provides two tanks in one. MARLO'S brine maker tanks are constructed of rotationally cast rigid polyethylene. 90"-diameter tanks and larger are of FRP construction. Both contain a separate well for housing the brine valve.

### Injector

A PVC pressure compensating hydraulic injector is used to convey brine to the softener at the correct brine rate and concentration.

### ■ SRS Salt Recovery Option

Provides a significant improvement to water softener regeneration efficiency by reducing the amount of salt usage by 25% with no loss in treated water quality. Usable brine is recovered during regeneration and diverted back to the brine maker.

### ■ SCH 80 PVC Manifolds

Piping and valves are supplied with SCH 80 PVC materials in place of standard piping with cast iron bodied operation valves. This will provide corrosion free exterior surfaces.

### ■ Pumped Brine System

For use with existing bulk brine makers.

### ■ Skid Mount Option

Mineral tanks mounted on a common structural steel base. Prewired with single power connections. Prepped interconnecting piping supplied with inlet, outlet and drain single point customer connections.



## BRINE VALVE

Precise volumetric control of both refill and brine draw is provided by a single float operated brine valve. An integral air check assures positive brine shutoff. On site adjustment of salt dosage without disassembly of the brine maker is easily accomplished by adjusting the brine valve float setting.

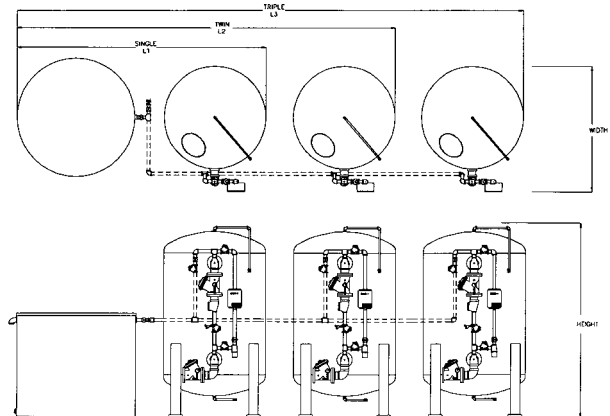
# SPECIFICATIONS MHC SERIES

CATALOG NUMBER	EXCHANGE CAPACITY/(Grains) SALT DOSAGE (Pounds) SALT USAGE (Pounds) □		FLOW RATES			PIPE SIZE		RESIN CU. FT.	TANK SIZES		SALT STORAGE LBS
			SERVICE		BACKWASH	SERVICE	DRAIN		SOFTENER	BRINE □	
	MAX.	MIN.	CONT. GPM □	PEAK GPM □	GPM	IN.	IN.	IN.	IN.		
MHC-1200-2	1,200,000/ 600/ 600	800,000/ 240/ 240	100	140	60	2	2	40	48 x 72	52 x 60	2600
2-1/2			160	186		2-1/2	2				
3			215	300		3	2				
4			310	410		4	2				
MHC-1500-2	1,500,000/ 750/ 750	1,000,000/ 300/ 300	102	143	80	2	2	50	54 x 72	66 x 46	3300
2-1/2			165	191		2-1/2	2				
3			225	308		3	2				
4			405	600		4	2				
MHC-1950-2	1,950,000/ 975/ 975	1,300,000/ 390/ 390	104	145	100	2	2-1/2	65	60 x 72	60 x 66	4000
2-1/2			168	193		2-1/2	2-1/2				
3			235	325		3	2-1/2				
4			445	650		4	2-1/2				
MHC-2400-2-1/2	2,400,000/ 1,200/ 1,200	1,600,000/ 480/ 480	175	199	120	2-1/2	3	80	66 x 72	66 x 72	5800
3			245	340		3	3				
4			480	690		4	3				
6			650	940		6	3				
MHC-3000-3	3,000,000/ 1,500/ 1,500	2,000,000/ 600/ 600	255	355	140	3	3	100	72 x 72	82 x 60	7300
4			500	720		4	3				
6			700	1050		6	3				
MHC-3600-3	3,600,000 1,800/ 1,800	2,400,000/ 720/ 720	260	360	165	3	3	120	78 x 72	82 x 60	6000
4			520	730		4	3				
6			750	1100		6	3				
8			950	1430		8	3				
MHC-4200-3	4,200,000 2,100/ 2,100	2,800,000/ 840/ 840	265	365	190	3	3	140	84 x 72	90 x 60	7500
4			540	760		4	3				
6			780	1130		6	3				
8			1000	1450		8	3				
MHC-4800-4	4,800,000/ 2,400/ 2,400	3,200,000/ 960/ 960	600	753	220	4	4	160	90 x 72	90 x 60	6500
6			800	1005		6	4				
8			1060	1670		8	4				
MHC-5400-4	5,400,000/ 2,700/ 2,700	3,600,000/ 1,080/ 1,080	675	820	250	4	4	180	96 x 72	96 x 60	7700
6			880	1250		6	4				
8			1150	1700		8	4				

## DIMENSIONS

CATALOG NUMBER	DIMENSIONS				
	HEIGHT □	WIDTH	LENGTH □		
			SINGLE/L1	TWIN/L2	TRIPLE/L3
MHC-1200-2	8'-4"	5'-2"	10'-0"	15'-8"	21'-3"
MHC-1200-2-1/2		5'-2"			
MHC-1200-3		5'-4"			
MHC-1200-4		5'-8"			
MHC-1500-2	8'-5"	5'-6"	11'-8"	17'-10"	24'-0"
MHC-1500-2-1/2		5'-8"			
MHC-1500-3		5'-10"			
MHC-1500-4		6'-2"			
MHC-1950-2	8'-6"	6'-2"	11'-8"	18'-4"	25'-0"
MHC-1950-2-1/2		6'-2"			
MHC-1950-3		6'-4"			
MHC-1200-4		6'-8"			
MHC-2400-2-1/2	8'-9"	6'-8"	12'-8"	19'-10"	27'-0"
MHC-2400-3		6'-10"			
MHC-2400-4		7'-2"			
MHC-2400-6		7'-8"			
MHC-3000-3	8'-10"	7'-4"	13'-8"	21'-4"	29'-0"
MHC-3000-4		7'-8"			
MHC-3000-6		8'-2"			
MHC-3600-3	9'-2"	7'-10"	15'-0"	23'-6"	32'-0"
MHC-3600-4		8'-2"			
MHC-3600-6		8'-8"			
MHC-3600-8		9'-4"			
MHC-4200-3	9'-6"	8'-4"	16'-0"	25'-0"	34'-0"
MHC-4200-4		8'-8"			
MHC-4200-6		9'-2"			
MHC-4200-8		9'-10"			

CATALOG NUMBER	DIMENSIONS				
	HEIGHT □	WIDTH	LENGTH □		
			SINGLE/L1	TWIN/L2	TRIPLE/L3
MHC-4800-4	9'-10"	9'-2"	17'-0"	26'-6"	36'-0"
MHC-4800-6		9'-8"			
MHC-4800-8		10'-6"			
MHC-5400-4	10'-2"	9'-8"	18'-0"	28'-0"	38'-0"
MHC-5400-6		10'-2"			
MHC-5400-8		10'-10"			



□ **Salt Dosage** – the total quantity of salt required per regeneration to achieve the published Exchange Capacity.

**Salt Usage** – the quantity of new salt required to obtain the published Salt Dosage.

② Max. – provides 2,000 Grains removal per pound of salt used.

② Min. – provides 3,330 Grains removal per pound of salt used.

Both Salt Dosage and Salt Usage values are equal for MHC series softeners not equipped with Salt Recycler System. Adding the SRS option will reduce the salt usage amount by 25%.

□ At pressure loss not exceeding 15 psi.

□ At pressure loss not exceeding 25 psi.

□ When less than 4 hours is expected between regenerations of a twin softener, two brine tanks are required. Overall length to increase by brine tank diameter.

□ Includes one Salt Dosage as liquid brine.

□ Allow a minimum of 24 inches above softener tank for loading. ASME tanks will add 10" to height.



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